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Vol. 1161 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS
April 5, 1994

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
April 5, 1994 Volume 1161 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 2, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,003,630 through 5,005,213
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 31, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,653,119 through 4,654,892
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 22, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,377,872 through 4,378,605
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 23, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,343	07/141,918	9/18/90
(4,565,919)	(06/620,687)	(1/21/86)
Re. 33,548	07/169,913	03/05/91
(4,566,089)	(06/589,914)	(01/21/86)
Re. 34,073	07/637,572	09/22/92
(4,896,099)	(07/284,040)	(01/23/90)
Re. 34,529	07/824,952	02/01/94
(4,896,350)	(07/329,918)	(01/23/90)
4,312,654	06/216,556	01/26/82
4,312,687	06/216,576	01/26/82
4,312,744	06/232,497	01/26/82
4,312,771	06/233,454	01/26/82
4,312,812	06/226,293	01/26/82
4,312,949	06/230,687	01/26/82
4,312,958	06/254,846	01/26/82
4,312,970	06/236,366	01/26/82
4,312,972	06/247,671	01/26/82
4,312,996	06/221,136	01/26/82
4,313,000	06/250,204	01/26/82
4,313,004	06/230,938	01/26/82
4,313,017	06/221,121	01/26/82
4,564,958	06/478,082	01/21/86
4,564,960	06/584,408	01/21/86
4,564,966	06/567,075	01/21/86
4,564,968	06/682,550	01/21/86
4,564,970	06/648,978	01/21/86
4,564,974	06/596,395	01/21/86
4,564,975	06/477,909	01/21/86
4,564,976	06/598,182	01/21/86
4,564,978	06/604,971	01/21/86
4,564,987	06/597,101	01/21/86
4,564,996	06/400,409	01/21/86
4,565,001	06/612,032	01/21/86
4,565,003	06/569,813	01/21/86
4,565,004	06/592,735	01/21/86
4,565,011	06/636,115	01/21/86
4,565,012	06/638,033	01/21/86
4,565,017	06/664,991	01/21/86
4,565,019	06/663,212	01/21/86
4,565,020	06/535,665	01/21/86
4,565,022	06/423,991	01/21/86
4,565,024	06/544,852	01/21/86
4,565,026	06/532,370	01/21/86
4,565,028	06/601,640	01/21/86
4,565,030	06/566,030	01/21/86
4,565,034	06/567,682	01/21/86
4,565,038	06/471,825	01/21/86
4,565,040	06/600,162	01/21/86
4,565,041	06/492,894	01/21/86
4,565,043	06/528,852	01/21/86
4,565,047	06/531,342	01/21/86
4,565,048	06/691,771	01/21/86
4,565,049	06/662,137	01/21/86
4,565,050	06/676,768	01/21/86
4,565,051	06/437,521	01/21/86
4,565,056	06/517,923	01/21/86
4,565,057	06/524,700	01/21/86
4,565,058	06/710,101	01/21/86
4,565,060	06/705,855	01/21/86
4,565,061	06/560,400	01/21/86
4,565,062	06/605,580	01/21/86
4,565,064	06/641,844	01/21/86
4,565,065	06/593,236	01/21/86
4,565,070	06/499,958	01/21/86
4,565,073	06/699,035	01/21/86

Patent Number	Serial Number	Issue Date
4,565,075	06/618,657	01/21/86
4,565,076	06/661,102	01/21/86
4,565,082	06/533,760	01/21/86
4,565,083	06/484,914	01/21/86
4,565,085	06/610,244	01/21/86
4,565,086	06/572,436	01/21/86
4,565,089	06/621,961	01/21/86
4,565,090	06/542,538	01/21/86
4,565,093	06/586,220	01/21/86
4,565,095	06/606,276	01/21/86
4,565,097	06/608,607	01/21/86
4,565,106	06/409,831	01/21/86
4,565,108	06/524,947	01/21/86
4,565,121	06/674,753	01/21/86
4,565,127	06/514,948	01/21/86
4,565,130	06/673,021	01/21/86
4,565,131	06/651,299	01/21/86
4,565,132	06/291,825	01/21/86
4,565,135	06/481,760	01/21/86
4,565,137	06/689,459	01/21/86
4,565,138	06/689,461	01/21/86
4,565,143	06/573,565	01/21/86
4,565,145	06/606,102	01/21/86
4,565,146	06/311,014	01/21/86
4,565,149	06/734,146	01/21/86
4,565,150	06/558,508	01/21/86
4,565,154	06/749,327	01/21/86
4,565,155	06/504,040	01/21/86
4,565,158	06/635,906	01/21/86
4,565,160	06/595,252	01/21/86
4,565,162	06/351,748	01/21/86
4,565,168	06/574,158	01/21/86
4,565,169	06/412,660	01/21/86
4,565,170	06/563,916	01/21/86
4,565,172	06/645,168	01/21/86
4,565,178	06/573,832	01/21/86
4,565,184	06/611,349	01/21/86
4,565,185	06/610,712	01/21/86
4,565,190	06/630,649	01/21/86
4,565,194	06/538,416	01/21/86
4,565,197	06/554,478	01/21/86
4,565,200	06/374,806	01/21/86
4,565,201	06/463,480	01/21/86
4,565,207	06/659,635	01/21/86
4,565,210	06/649,513	01/21/86
4,565,213	06/426,936	01/21/86
4,565,217	06/509,354	01/21/86
4,565,218	06/514,606	01/21/86
4,565,219	06/528,634	01/21/86
4,565,226	06/655,520	01/21/86
4,565,229	06/595,708	01/21/86
4,565,231	06/625,419	01/21/86
4,565,237	06/682,497	01/21/86
4,565,239	06/639,372	01/21/86
4,565,242	06/416,658	01/21/86
4,565,246	06/562,900	01/21/86
4,565,262	06/626,319	01/21/86
4,565,268	06/431,419	01/21/86
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4,565,289	06/676,898	01/21/86
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4,565,300	06/559,234	01/21/86
4,565,303	06/667,207	01/21/86
4,565,305	06/499,783	01/21/86
4,565,311	06/588,730	01/21/86
4,565,312	06/703,135	01/21/86
4,565,316	06/472,036	01/21/86
4,565,318	06/731,743	01/21/86
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4,565,322	06/560,653	01/21/86
4,565,323	06/490,325	01/21/86
4,565,325	06/738,897	01/21/86
4,565,328	06/521,495	01/21/86
4,565,332	06/633,133	01/21/86
4,565,333	06/629,698	01/21/86
4,565,340	06/641,137	01/21/86
4,565,344	06/558,532	01/21/86
4,565,350	06/688,342	01/21/86
4,565,358	06/472,118	01/21/86
4,565,359	06/636,318	01/21/86
4,565,365	06/491,849	01/21/86
4,565,370	06/434,187	01/21/86
4,565,371	06/594,535	01/21/86
4,565,372	06/631,450	01/21/86
4,565,374	06/512,602	01/21/86
4,565,376	06/717,289	01/21/86
4,565,378	06/682,375	01/21/86
4,565,382	06/592,593	01/21/86
4,565,383	06/576,571	01/21/86
4,565,384	06/560,181	01/21/86
4,565,386	06/575,771	01/21/86
4,565,388	06/597,727	01/21/86
4,565,389	06/554,515	01/21/86
4,565,390	06/639,330	01/21/86
4,565,392	06/629,060	01/21/86
4,565,393	06/439,440	01/21/86
4,565,394	06/416,699	01/21/86
4,565,400	06/605,027	01/21/86
4,565,404	06/399,987	01/21/86
4,565,406	06/715,086	01/21/86
4,565,408	06/550,450	01/21/86
4,565,409	06/555,385	01/21/86
4,565,410	06/559,970	01/21/86
4,565,412	06/519,959	01/21/86
4,565,415	06/526,913	01/21/86
4,565,423	06/724,939	01/21/86
4,565,426	06/490,718	01/21/86
4,565,427	06/546,201	01/21/86
4,565,428	06/570,508	01/21/86
4,565,429	06/446,504	01/21/86
4,565,431	06/686,106	01/21/86
4,565,439	06/666,714	01/21/86
4,565,443	06/656,924	01/21/86
4,565,444	06/438,004	01/21/86
4,565,445	06/433,694	01/21/86
4,565,446	06/427,115	01/21/86
4,565,450	06/497,828	01/21/86
4,565,452	06/500,579	01/21/86
4,565,464	06/649,948	01/21/86
4,565,466	06/623,205	01/21/86
4,565,468	06/544,503	01/21/86
4,565,470	06/397,537	01/21/86
4,565,474	06/485,408	01/21/86
4,565,478	06/238,168	01/21/86
4,565,481	06/611,408	01/21/86
4,565,493	06/643,046	01/21/86
4,565,494	06/668,100	01/21/86
4,565,495	06/522,639	01/21/86
4,565,496	06/682,888	01/21/86
4,565,499	06/602,374	01/21/86
4,565,500	06/469,412	01/21/86
4,565,506	06/589,140	01/21/86
4,565,507	06/650,892	01/21/86
4,565,511	06/590,781	01/21/86
4,565,517	06/695,390	01/21/86
4,565,522	06/697,572	01/21/86
4,565,526	06/660,365	01/21/86
4,565,527	06/683,047	01/21/86
4,565,531	06/583,434	01/21/86
4,565,533	06/545,538	01/21/86
4,565,536	06/545,626	01/21/86
4,565,539	06/534,027	01/21/86
4,565,540	06/597,820	01/21/86
4,565,548	06/676,469	01/21/86
4,565,555	06/428,513	01/21/86
4,565,557	06/601,130	01/21/86
4,565,559	06/670,464	01/21/86
4,565,562	06/685,431	01/21/86
4,565,564	06/660,805	01/21/86
4,565,567	06/678,881	01/21/86
4,565,570	06/710,195	01/21/86
4,565,571	06/534,655	01/21/86
4,565,573	06/725,713	01/21/86
4,565,575	06/667,738	01/21/86
4,565,576	06/437,672	01/21/86

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4,565,582	06/631,105	01/21/86
4,565,583	06/603,503	01/21/86
4,565,590	06/693,717	01/21/86
4,565,591	06/597,647	01/21/86
4,565,597	06/724,936	01/21/86
4,565,612	06/680,016	01/21/86
4,565,613	06/622,223	01/21/86
4,565,615	06/667,187	01/21/86
4,565,616	06/730,414	01/21/86
4,565,625	06/680,117	01/21/86
4,565,626	06/557,227	01/21/86
4,565,627	06/220,037	01/21/86
4,565,628	06/626,474	01/21/86
4,565,632	06/690,565	01/21/86
4,565,633	06/608,351	01/21/86
4,565,634	06/557,229	01/21/86
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4,896,341	07/107,961	01/23/90
4,896,342	07/173,693	01/23/90
4,896,355	07/325,400	01/23/90
4,896,366	07/273,411	01/23/90
4,896,373	07/101,867	01/23/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,444,923	06/454,817	04/24/84	12/30/82	11/30/93
4,464,080	06/338,482	08/07/84	01/11/82	02/14/94
4,466,253	06/452,643	08/21/84	12/23/82	11/23/93
4,474,013	06/554,550	10/02/84	11/23/83	11/15/93
4,477,226	06/492,739	10/16/84	05/09/83	11/15/93
4,478,821	06/342,860	10/23/84	01/26/82	09/21/93

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,508,138	06/520,639	04/02/85	08/05/83	11/15/93
4,512,513	06/435,022	04/23/85	10/18/82	02/04/94
4,515,266	06/589,710	05/07/85	03/15/84	02/14/94
4,518,107	06/506,524	05/21/85	06/22/83	02/14/94
4,520,300	06/433,170	05/28/85	12/06/82	01/27/94
4,525,345	06/637,843	06/25/85	08/06/84	11/30/93
4,529,622	06/646,505	07/16/85	09/04/84	02/09/94
4,538,810	06/262,687	09/03/85	07/29/81	12/21/93
4,553,918	06/608,590	11/19/85	05/09/84	02/14/94
4,554,381	06/392,885	11/19/85	06/28/82	01/31/94
4,557,876	06/568,004	12/10/85	01/04/84	02/14/94
4,642,526	06/650,809	02/10/87	09/14/84	02/10/94
4,772,044	07/063,808	09/20/88	06/15/87	01/31/94
4,784,142	06/926,971	11/15/88	11/04/86	01/31/94
4,791,659	06/925,712	12/13/88	10/30/86	02/14/94
4,806,889	07/187,430	02/21/89	04/28/88	11/15/93
4,815,761	07/109,630	03/28/89	10/19/87	01/24/94
4,832,735	07/183,328	05/23/89	04/07/88	11/15/93
4,851,160	07/090,888	07/25/89	08/28/87	12/17/93
4,854,720	06/514,322	08/08/89	07/15/83	02/14/94
4,857,610	06/942,330	08/15/89	12/16/86	12/17/93
4,857,729	07/184,742	08/15/89	04/22/88	12/10/93
4,865,605	07/151,335	09/12/89	02/02/88	12/17/93
4,880,531	07/163,329	11/14/89	03/02/88	02/10/94
4,867,991	07/094,946	09/19/89	09/09/87	12/17/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,488,350, Re. S.N. 08/133,951, Oct. 8, 1993, Cl. 437, METHOD OF MAKING AN INTEGRATED CIRCUIT BIPOLAR MEMORY CELL, Madhukar B. Vora, et. al., Owner of Record: Fairchild Camera and Instrument Corp., Mountain View, Calif., Attorney or Agent: None, Ex. Gp.: 1107

4,817,042, Re. S.N. 08/177,280, Jan. 4, 1994, Cl. 364/478, INSERTION MACHINE WITH PRIORITIZED SELECTION OF INSERTS, Leon A. Pintsov, Owner of Record: *Pitney Bowes Inc., Stamford, Conn.*, Attorney or Agent: Daniel M. Rosen, Ex. Gp.: 2306

4,861,684, Re. S.N. 08/087,470, July 2, 1993, Cl. 429, ELECTRICAL SAFETY SYSTEM FOR BATTERIES, Dwight D. Law, Owner of Record: *Inventor*, Attorney or Agent: Andrew J. Cornelius, Esquire, Ex. Gp.: 1111

4,922,552, Re. S.N. 08/170,410, Dec. 20, 1993, Cl. 2/93, FIREFIGHTER'S GARMENTS HAVING ENHANCED FLEXIBILITY AND MINIMUM WEIGHT, William L. Grilliot, et. al., Owner of Record: *Inventors*, Attorney or Agent: Dennis J. Williamson, Ex. Gp.: 2407

4,942,401, Re. S.N. 08/194,896, Feb. 14, 1994, Cl. 341/157, ANALOG TO DIGITAL CONVERSION WITH CHARGE BALANCED VOLTAGE TO FREQUENCY CONVERTER HAVING POLARITY RESPONSIVE OFFSET, Bill Gessaman, et. al., Owner of Record: *John Fluke Mfg. Co. Inc.*, Everett, Attorney or Agent: George T. Noe, Ex. Gp.: 2104

5,017,286, Re. S.N. 08/170,492, Dec. 20, 1993, Cl. 210/266, FAUCET-MOUNTED WATER FILTER WITH WALL INLET AND ANNULAR CHAMBER, Randy B. Heiligman, Owner of Record: *Inventor*, Attorney or Agent: Lawrence C. Chasin, Ex. Gp.: 1308

5,027,294, Re. S.N. 08/082,263, June 24, 1993, Cl. 364/550, METHOD AND APPARATUS FOR BATTERY-POWER MANAGEMENT USING LOAD-COMPENSATION MONITORING OF BATTERY DISCHARGE, Saifee Fakruddin, et. al., Owner of Record: *Zenith Data Systems Corp., St. Joseph, Mich.*, Attorney or Agent: John S. Paniaguas, Ex. Gp.: 2314

5,046,089, Re. S.N. 08/116,017, Sept. 2, 1993, Cl. 379/399, SUBSCRIBER LINE INTERFACE CURCUIT WITH POWER-DOWN MODE, Angelo Pariani, et. al., Owner of Record: *SGS-Thomson Microelectronics S.R.L., Milano, Italy*, Attorney or Agent: James M. Morris, Ex. Gp.: 2601

5,050,965, Re. S.N. 08/125,646, Sept. 21, 1993, Cl. 359/53, STACKED LCD COLOR DISPLAY, Arlie R. Conner, et. al., Owner of Record: *In Focus Systems, Inc., Tualatin, Oreg.*, Attorney or Agent: William Y. Conwell, Ex. Gp.: 2504

5,072,248, Re. S.N. 08/164,438, Dec. 9, 1993, Cl. 354/266, RELEASE SWITCH APPARATUS, Shinichi Kakiuchi, Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Osaka, Japan* Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2101

5,082,804, Re. S.N. 08/179,480, Jan. 4, 1994, Cl. 50/19, THICK FILM COPPER VIA FILL INKS, Ashok N. Prabhu, et. al., Owner of Record: *David Sarnoff Research Center, Inc., Princeton, N.J.*, Attorney or Agent: William J. Burke, Ex. Gp.: 1108

5,086,911, Re. S.N. 08/191,088, Feb. 4, 1994, Cl. 198/632, FOLDABLE FRAMEWORK FOR BELT CONVEYORS, Patrick J. Douglas, Owner of Record: *Extec Screens And Crushers Limited, Sheffield, Great Britian*, Attorney or Agent: Michael B. Lasky, Ex. Gp.: 3101

5,086,977, Re. S.N. 08/193,384, Feb. 8, 1994, Cl. 239/205, SPRINKLER DEVICE, Carl L.C. Kah, Jr., Owner of Record: Inventor, Attorney or Agent: David S. Fishman, Ex. Gp.: 3104

5,087,087, Re. S.N. 08/191,876, Feb. 4, 1994, Cl. 292/48, SASH LOCK, Gregory J. Vetter, et. al., Owner of Record: *Truth Hardware Corp., Owatonna, Minn.*, Attorney or Agent: Jeffrey L. Clark, Ex. Gp.: 3508

5,087,570, Re. S.N. 08/194,847, Feb. 14, 1994, Cl. 435/240.1, HOMOGENEOUS MAMMALIAN HEMATOPOIETIC STEM CELL COMPOSITION, Irving L. Weissman, et. al., Owner of Record: *Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.*, Attorney or Agent: Timothy E. Torchia Ph.D, Ex. Gp.: 1808

5,102,145, Re. S.N. 08/194,429, Feb. 10, 1994, Cl. 273/360, AERIAL GUNNERY TARGET SYSTEM, Clyde K. Luttrell, Owner of Record: *Teledyne Industries, Inc., Los Angeles, Calif.*, Attorney or Agent: Dennis C. Rodgers, Ex. Gp.: 3304

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5,174,279, Re. S.N. 08/197,167, Feb. 16, 1997, Cl. 128/20, IRIS RETRACTOR FOR USE IN OPERATIONS ON THE EYE OF A LIVING CREATURE, Michael Cobo, et. al., Owner of Record: *Duk University Medical Center, Durham, N.C.*, Attorney or Agent: Henry M. Feiereisen, Ex. Gp.: 3302

5,241,087, Re. S.N. 08/192,867, Feb. 7, 1994, Cl. 549/442, ENANTIOMERIC ENRICHMENT OF CYANOHYDRINS, Paul Van Eikeren, Owner of Record: *Bend Research, Inc., Bend, Oreg.*, Attorney or Agent: Dennis E. Stenzel, Ex. Gp.: 1203

5,253,695, Re. S.N. 08/194,887, Feb. 14, 1994, Cl. 160/370.2, VEHICLE VISOR SUPPORTED INTERIOR CURTAIN, Frank Nenstiel, Owner of Record: *Inventor*, Attorney or Agent: Charles H. Thomas, Ex. Gp.: 3505

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 34,069, Reexam. No. 90/003,309, Jan. 12, 1994, Cl. 536/25.3, PROCESS FOR THE PREPARATION OF OLIGONUCLEOTIDES, Hubert Koster, et. al., Owner of Record: *Millipore Corp., Bedford, Mass.*, Attorney or Agent: David E. Brook, Hamilton, Brook, Smith & Reynolds, Lexington, Mass., Ex. Gp.: 1803, Requester: Robert F. Green, Leydig, Voit & Mayer, Chicago, Ill.,

4,371,862, Reexam. No. 90/003,319, Jan. 24, 1994, Cl. 338/174, VARIABLE RESISTANCE CONTROL, Ellis P. Lipp, et. al., Owner of Record: *Emerson Electric Co., St. Louis, Mo.*, Attorney or Agent: Eric R. Waldkoetter, Indianapolis, Ind., Ex. Gp.: 2106, Requester: Owner

4,387,685, Reexam. No. 90/003,310, Jan. 12, 1994, Cl. 123/439, FLUIDIC CONTROL SYSTEM INCLUDING VARIABLE VENTURI, Harold G. Abbey, Owner of Record: *Inventor*, Attorney or Agent: Michael Ebert, Hopgood, Calimafde, Kalil, Blaustein & Judlowe, New York, N.Y., Ex. Gp.: 3402, Requester: Robert Bosch GmbH, Stuttgart, Federal Republic Of Germany

4,768,417, Reexam. No. 90/003,314, Jan. 21, 1994, Cl. 089/1.11, DETONATOR NET WEAPON, James E. Wright, Owner of Record: *Inventor*, Attorney or Agent: Douglas W. Robinson, Arlington, Va., Ex. Gp.: 2201, Requester: Owner

5,051,835, Reexam. No. 90/003,313, Jan. 18, 1994, Cl. 358/311, DIGITAL PROCESSING OF THEATRICAL FILM, Thomas L. Bruehl, et. al., Owner of Record: *Paramount Pictures Corp., Hollywood, Calif.*, Attorney or Agent: Lyon & Lyon, Los Angeles, Calif., Ex. Gp.: 2615, Requester: Owner

5,054,770, Reexam. No. 90/003,316, Jan. 24, 1994, Cl. 482/053, SHOCK-FREE AEROBIC AND ANAEROBIC EXERCIZING MACHINE FOR USE IN THE STANDING POSITION, John W. Bull, Owner of Record: *Inventor*, Attorney or Agent: F. Eugene Logan, Tustin, Calif., Ex. Gp.: 3302, Requester: Nixon & Vanderhye, Arlington, Va.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED FEBRUARY 14, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
40,303	70/040,303	05/12/1903
91,625	71/066,932	05/13/1913
302,990	71/325,525	05/09/1933
303,000	71/329,008	05/09/1933
303,038	71/333,903	05/09/1933
303,046	71/333,621	05/09/1933
303,071	71/333,768	05/09/1933
303,091	71/329,911	05/09/1933
303,102	71/333,324	05/09/1933
303,103	71/333,436	05/09/1933
303,120	71/332,843	05/09/1933
303,129	71/332,610	05/09/1933
303,132	71/332,425	05/09/1933
565,989	71/613,419	10/28/1952
574,150	71/556,466	05/12/1953
574,152	71/557,523	05/12/1953
574,157	71/561,484	05/12/1953
574,159	71/566,351	05/12/1953
574,161	71/568,137	05/12/1953
574,165	71/579,215	05/12/1953
574,166	71/581,764	05/12/1953
574,168	71/588,124	05/12/1953
574,173	71/591,201	05/12/1953
574,179	71/597,860	05/12/1953
574,190	71/604,820	05/12/1953
574,192	71/603,277	05/12/1953
574,195	71/604,973	05/12/1953
574,201	71/608,231	05/12/1953
574,204	71/609,136	05/12/1953
574,220	71/614,259	05/12/1953
574,226	71/615,685	05/12/1953
574,234	71/616,893	05/12/1953
574,236	71/617,515	05/12/1953
574,238	71/618,583	05/12/1953
574,241	71/619,510	05/12/1953
574,254	71/621,337	05/12/1953
574,256	71/621,437	05/12/1953
574,262	71/621,963	05/12/1953
574,267	71/622,881	05/12/1953
574,272	71/623,219	05/12/1953
574,276	71/624,083	05/12/1953
574,278	71/624,471	05/12/1953
574,280	71/624,625	05/12/1953
574,288	71/625,055	05/12/1953
574,293	71/625,332	05/12/1953
574,301	71/626,335	05/12/1953
574,302	71/626,358	05/12/1953
574,305	71/626,608	05/12/1953
574,306	71/626,623	05/12/1953
574,307	71/626,625	05/12/1953
574,310	71/626,662	05/12/1953
574,312	71/626,698	05/12/1953
574,315	71/626,860	05/12/1953
574,323	71/628,020	05/12/1953
574,328	71/628,307	05/12/1953
574,331	71/628,523	05/12/1953
574,332	71/628,682	05/12/1953
574,335	71/628,885	05/12/1953
574,345	71/629,501	05/12/1953
574,347	71/629,669	05/12/1953
574,355	71/630,022	05/12/1953
574,358	71/630,287	05/12/1953
574,361	71/630,931	05/12/1953
574,367	71/631,519	05/12/1953
574,373	71/632,138	05/12/1953
574,384	71/633,165	05/12/1953
574,390	71/633,987	05/12/1953
574,394	71/634,108	05/12/1953
574,399	71/635,008	05/12/1953

Reg. No.	Serial Number	Reg. Date	958,478	72/396,310	05/08/1973
			958,479	72/400,342	05/08/1973
574,404	71/636,810	05/12/1953	958,482	72/415,777	05/08/1973
574,431	71/610,071	05/12/1953	958,484	72/426,041	05/08/1973
574,444	71/622,233	05/12/1953	958,486	72/426,917	05/08/1973
574,445	71/622,740	05/12/1953	958,487	72/426,918	05/08/1973
574,447	71/624,983	05/12/1953	958,488	72/353,492	05/08/1973
574,449	71/625,189	05/12/1953	958,494	72/398,552	05/08/1973
574,460	71/629,440	05/12/1953	958,495	72/399,563	05/08/1973
574,461	71/629,925	05/12/1953	958,496	72/401,350	05/08/1973
574,462	71/630,373	05/12/1953	958,498	72/401,381	05/08/1973
574,465	71/633,752	05/12/1953	958,499	72/401,617	05/08/1973
574,469	71/638,254	05/12/1953	958,500	72/401,672	05/08/1973
574,470	71/638,255	05/12/1953	958,501	72/402,946	05/08/1973
580,001	71/634,507	09/15/1953	958,506	72/406,772	05/08/1973
947,695	72/383,398	11/21/1972	958,508	72/408,343	05/08/1973
949,957	72/408,387	01/02/1973	958,513	72/411,106	05/08/1973
958,336	72/413,040	05/08/1973	958,514	72/411,110	05/08/1973
958,339	72/420,893	05/08/1973	958,519	72/415,426	05/08/1973
958,340	72/421,095	05/08/1973	958,520	72/418,151	05/08/1973
958,341	72/421,934	05/08/1973	958,529	72/423,067	05/08/1973
958,348	72/406,560	05/08/1973	958,536	72/425,789	05/08/1973
958,349	72/411,608	05/08/1973	958,538	72/425,828	05/08/1973
958,353	72/422,581	05/08/1973	958,544	72/375,964	05/08/1973
958,354	72/435,396	05/08/1973	958,545	72/376,389	05/08/1973
958,355	72/381,922	05/08/1973	958,546	72/379,263	05/08/1973
958,357	72/409,418	05/08/1973	958,547	72/380,121	05/08/1973
958,359	72/343,396	05/08/1973	958,548	72/385,521	05/08/1973
958,364	72/381,808	05/08/1973	958,553	72/398,816	05/08/1973
958,366	72/398,364	05/08/1973	958,554	72/399,828	05/08/1973
958,370	72/410,772	05/08/1973	958,555	72/408,152	05/08/1973
958,372	72/413,341	05/08/1973	958,557	72/409,378	05/08/1973
958,375	72/420,965	05/08/1973	958,558	72/409,379	05/08/1973
958,376	72/421,460	05/08/1973	958,559	72/414,953	05/08/1973
958,379	72/421,463	05/08/1973	958,560	72/416,712	05/08/1973
958,381	72/421,528	05/08/1973	958,564	72/352,898	05/08/1973
958,382	72/421,563	05/08/1973	958,569	72/414,172	05/08/1973
958,383	72/421,661	05/08/1973	958,570	72/414,434	05/08/1973
958,384	72/421,662	05/08/1973	958,571	72/418,336	05/08/1973
958,385	72/421,663	05/08/1973	958,572	72/422,000	05/08/1973
958,386	72/421,700	05/08/1973	958,576	72/403,158	05/08/1973
958,393	72/422,616	05/08/1973	958,578	72/427,821	05/08/1973
958,396	72/423,119	05/08/1973	958,579	72/428,267	05/08/1973
958,397	72/423,142	05/08/1973	958,585	72/385,022	05/08/1973
958,399	72/423,608	05/08/1973	958,589	72/410,676	05/08/1973
958,401	72/425,428	05/08/1973	958,595	72/383,020	05/08/1973
958,402	72/433,550	05/08/1973	958,601	72/393,198	05/08/1973
958,403	72/423,191	05/08/1973	958,609	72/420,157	05/08/1973
958,406	72/334,260	05/08/1973	958,610	72/420,192	05/08/1973
958,407	72/339,120	05/08/1973	958,613	72/395,434	05/08/1973
958,415	72/409,323	05/08/1973	958,614	72/403,015	05/08/1973
958,416	72/409,639	05/08/1973	958,617	72/390,786	05/08/1973
958,418	72/421,370	05/08/1973	958,619	72/417,194	05/08/1973
958,420	72/390,057	05/08/1973	958,620	72/417,195	05/08/1973
958,424	72/423,797	05/08/1973	958,622	72/399,632	05/08/1973
958,426	72/426,669	05/08/1973	958,623	72/404,821	05/08/1973
958,428	72/395,657	05/08/1973	958,625	72/402,962	05/08/1973
958,429	72/361,686	05/08/1973	958,626	72/404,943	05/08/1973
958,434	72/409,997	05/08/1973	958,630	72/409,970	05/08/1973
958,436	72/411,440	05/08/1973	958,636	72/373,903	05/08/1973
958,437	72/413,430	05/08/1973	958,638	72/395,143	05/08/1973
958,440	72/421,122	05/08/1973	958,639	72/398,546	05/08/1973
958,441	72/421,753	05/08/1973	958,653	72/415,041	05/08/1973
958,444	72/423,186	05/08/1973	958,654	72/417,371	05/08/1973
958,445	72/423,235	05/08/1973	958,656	72/418,712	05/08/1973
958,446	72/423,262	05/08/1973	958,657	72/418,942	05/08/1973
958,447	72/423,263	05/08/1973	958,658	72/418,945	05/08/1973
958,448	72/413,972	05/08/1973	958,659	72/419,458	05/08/1973
958,449	72/424,522	05/08/1973	958,663	72/420,577	05/08/1973
958,453	72/407,271	05/08/1973	958,664	72/421,792	05/08/1973
958,464	72/433,476	05/08/1973	958,665	72/422,075	05/08/1973
958,465	72/433,549	05/08/1973	958,672	72/413,381	05/08/1973
958,466	72/353,615	05/08/1973	958,675	72/406,578	05/08/1973
958,467	72/363,179	05/08/1973	958,680	72/418,469	05/08/1973
958,468	72/372,170	05/08/1973	958,681	72/418,470	05/08/1973
958,471	72/409,319	05/08/1973	958,682	72/418,521	05/08/1973
958,473	72/422,456	05/08/1973	958,683	72/418,654	05/08/1973
958,474	72/422,505	05/08/1973	958,684	72/364,882	05/08/1973
958,477	72/388,723	05/08/1973	958,688	72/400,259	05/08/1973

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Reg. No.	Serial Number	Reg. Date
958,689	72/407,658	05/08/1973
958,693	72/417,374	05/08/1973
958,695	72/417,888	05/08/1973
958,697	72/418,348	05/08/1973
958,699	72/421,911	05/08/1973
958,700	72/421,914	05/08/1973
958,701	72/424,236	05/08/1973
958,705	72/347,680	05/08/1973
958,710	72/333,666	05/08/1973
958,714	72/368,121	05/08/1973
958,715	72/376,831	05/08/1973
958,722	72/394,916	05/08/1973
958,726	72/410,023	05/08/1973
958,728	72/410,619	05/08/1973
958,732	72/414,777	05/08/1973
958,734	72/425,970	05/08/1973
958,735	72/432,996	05/08/1973
958,736	72/338,610	05/08/1973
958,741	72/388,827	05/08/1973
958,745	72/396,212	05/08/1973
958,753	72/408,846	05/08/1973
958,761	72/412,795	05/08/1973
958,766	72/412,715	05/08/1973
958,768	72/403,841	05/08/1973
958,770	72/397,447	05/08/1973
958,772	72/398,312	05/08/1973
958,783	72/400,654	05/08/1973
958,787	72/347,211	05/08/1973
958,788	72/363,702	05/08/1973
958,790	72/377,368	05/08/1973
958,791	72/395,135	05/08/1973
958,794	72/377,958	05/08/1973
958,795	72/392,680	05/08/1973
958,799	72/418,115	05/08/1973
962,238	72/404,217	06/26/1973

Closing of Patent and Trademark Office on Thursday, January 20, 1994 and Friday, February 11, 1994

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on January 20, 1994 and February 11, 1994, the Patent and Trademark Office will consider each of those days a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due on either of those days will be considered as timely for the purpose of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on the next suceeeding business day on which the Patent and Trademark Office was open (i.e., Friday, January 21, 1994, and Monday, February 14, 1994, respectively).

March 10, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patent and Trademarks

Advance Notice Of Change To MPEP§ 609

This Notice is to provide advance notice of changes to MPEP §609, regarding handling of information disclosure statements, which will appear in the next revision to the Manual. The changes are as follows:

1) Communications from foreign patent offices in foreign applications sometimes include a list of the family of patents corresponding to a particular patent being cited in the communication. The family of patents may include a United States patent or other patent in the English language. Some applicants submit information disclosure statements to the PTO which list and include copies of both the particular patent cited in the foreign patent office communication and the related United States or other English language patent from the family list. Since this is to be encouraged, the United States or other English language patent will be construed as being cited by the foreign patent office for purposes of a certification under 37 CFR 1.97 (e)(1). The examiner should consider the United States or other English language patent if 37 CFR 1.97 and 1.98 are complied with.

2) Applicants have been advised by the notice published at 1156 Off. Gaz. Pat. Office 91 (November 23, 1993) that the examiner will consider the documents cited in the international search report in the PCT national stage application, when the Form PCT/DO/EO/903 indicates that both the international search report and the copies of the documents are present in the national stage file. Therefore, in such a case, the examiner should consider the documents from the international search report and indicate by a statement in the first Office action that the information has been considered. There is no requirement that the examiner list the documents on a PTO-892 form.

3) An *Ex parte Quayle* action is not a final action under 37 CFR 1.113 as referred to in paragraph (d) of 37 CFR 1.97. Therefore, an information disclosure statement filed after an *Ex parte Quayle* action, but before mailing of a notice of allowance, must comply with the provisions of 37 CFR 1.97(c) rather than those of 37 CFR 1.97(d).

4) Occasionally, documents are submitted and relied on by an applicant when responding to an Office action. These documents may be relied on by an applicant, for example, to show that an element recited in the claim is operative or that a term used in the claim has a recognized meaning in the art. Documents may be in any form, but are typically in the form of an affidavit, declaration, patent or printed publication.

To the extent that a document is submitted as evidence directed to an issue of patentability raised in an Office action, and the evidence is timely presented, applicant need not satisfy the requirements of 37 CFR 1.97 and 1.98 in order to have the examiner consider the information contained in the document relied on by applicant. In other words, compliance with the information disclosure rules is not a threshold requirement to have information considered when submitted by applicant to support an argument being made in a response to an Office action.

At the same time, the document supplied and relied on by applicant as evidence need not be processed as an item of information that was cited in an information disclosure statement. The record should reflect whether the evidence was considered, but listing on a form (e.g., PTO-892 or PTO-1449) and appropriate marking of the form by the examiner is not required.

For example, if applicant submits and relies on three patents as evidence in response to the first Office action and also lists those patents on a PTO-1449 along with two journal articles, but does not file a certification or $200 fee, it would be appropriate for the examiner to indicate that the teachings relied on by applicant in the three patents have been considerd, but to line through the citation of all five documents on the PTO-1449 and to inform applicant that the information disclosure statement did not comply with 37 CFR 1.97(c).

The procedures in this Notice should be used in handling information disclosure statements, effective immediately.

March 2, 1994J. MICHAEL THESZ, *Editor*
Manual of Patent Examining Procedure

Adverse Decisions In Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,734,821, Takeshi Morimoto, Yoshiki Hamatani, Toshiya Matsubara, Naoto Iwano, Hideo Shimizu, ELECTROLYTIC CAPACITOR, Interference No. 102,481, final judgment adverse to the patentee rendered September 27, 1993, as to claims 1-13.

Patent No. 4,879,215, Litai Weng, David Calderhead, Pyare Khanna, Edwin F. Ullman, CONCENTRATING IMMUNOCHEMICAL TEST STRIP, Interference No. 103,130, final judgment adverse to the patentee rendered January 28, 1994, as to claims 1-3 and 5-9.

Patent No. 4,945,515, Manabu Ooumi, Toshihiko Sakuhara, Tatsuaki Ataka, MEMORY WRITING APPARATUS, Interference No. 102, 919, final judgment adverse to the patentee rendered January 24, 1994, as to claims 1-11.

Patent No. 4,962,480, Manabu Ooumi, Toshihiko Sakuhara, Tatsuaki Ataka, MEMORY READING APPARATUS, Interference No. 102,919, final judgment adverse to the patentee rendered January 24, 1994, as to claims 1-13.

Patent No. 4,965,247, Masanori Nishiguchi, SUPERCONDUCTING COIL AND A METHOD FOR PRODUCING THE SAME, Interference No. 102,898, final judgment adverse to the patentee rendered March 2, 1994, as to claims 1-14 and 16-18.

Patent No. 4,980,288, Philip N. Bryan, Michele L. Rollence, Michael W. Pantoliano, SUBTILISIN WITH INCREASED THERMAL STABILITY, Interference No. 103,152, final judgment adverse to the patentee rendered March 9, 1994, as to claims 11 and 24/11.

Patent No. 4,997,838, Hiroshi Akimoto, Takenori Hitaka, Tetsuo Miwa, PYRROLOPYRIMIDINE DERIVATIVES, THEIR PROCUTION AND USE, Interference No. 102,795, final judgment adverse to the patentee rendered February 11, 1994, as to claims 1-3, 5-11, 13, 21, 24 and 30.

Patent No. 5,002,106, Hans Binder, METHOD AND DEVICE FOR THE PRODUCTION OF WOOD SHEETS FROM CUT WOOD, Interference No. 102,990, final judgment adverse to the patentee rendered March 4, 1994, as to claims 1-4 and 7-16.

Patent No. 5,005,994, Akio Yano, PRINTING HEAD OF WIRE-DOT IMPACT PRINTER, Interference No. 103,111, final judgment adverse to the patentee rendered February,22, 1994, as to claims 11-15.

Patent No. 5,077,307, Dieter Binder, Franz Rovenszky, Josef Weinberger, Hubert Ferber, THIENOPYRAN DERIVATIVES, THEIR USE FOR TREATING HYPERTENSION AND ASTHMA, Interference No. 103,238, final judgment adverse to the patentee rendered January 24, 1994, as to claims 1-8.

Patent No. 5,088,533, Hans Binder, METHOD AND DEVICE FOR THE PRODUCTION OF WOOD SHEETS FROM CUT WOOD, Interference No. 102,990, final judgment adverse to the patentee rendered March 4, 1994, as to claims 1, 3, 6 and 7.

Patent No. 5,120,728, Isao Nagakura, CEPHALOSPORIN COMPOUNDS, Interference No. 103,256, final judgment adverse to the patentee rendered March 7, 1994, as to claims 1-10.

Patent No. 5,121,236, Yasuhiro Ukai, Tomihisa Sunata, Teizou Yukawa, LIQUID CRYSTAL DISPLAY ELEMENT AND METHOD FOR TREATING DEFECTIVE PIXELS THEREIN, Interference No. 103,192, final judgment adverse to the patentee rendered February 1, 1994, as to claims 1-10 and 14-17.

Patent No. 5,166,273, Akira Kobayashi, Tatsuo Teraya, Yuji Fujita, Shigeyuki Toki, Eiji Kuchiki, METHOD OF PRODUCING MODIFIED POLYOLEFIN, Interference No. 103,055, final judgment adverse to the patentee rendered March 3, 1994, as to claims 1-10.

Patent No. 5,178,633, T. Scott Peters, SUTURE RING FOR HEART VALVE PROSTHESIS, Interference No. 103,176, final judgment adverse to the patentee rendered January 12, 1994, as to claims10, 11 and 18.

Patent No. 5,181,646, Hiroshi Ushiki, Noboru Fujino, LEAD FRAME HOLDING APPARATUS FOR USE IN WIRE BONDERS, Interference No. 103,207, final judgment adverse to the patentee rendered March 1, 1994, as to claims 1 and 2.

Patent No. 5,196,497, Wilhelm Weber, Theo Achtenberg, Karl-Heinz Sockel, Hans Sattlegger, PROCESS FOR THE PRODUCTION OF ALKOXY-TERMINATED POLY-(DIORGANO-SILOXANES), Interference No. 103,257, final judgment adverse to the patentee rendered March 8, 1994, as to claims 1-7.

NANNIE B. HENRY, *Deputy Clerk*
Board of Patent Appeals & Interferences
(703) 603-3298

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Correction Issue of April 5, 1994

B1 4,716,175	Des. 328,915	Des. 339,899	4,654,842
Re. 34,294	Des. 334,973	Des. 340,568	4,685,489
Re. 34,375	Des. 337,679	Des. 341,871	4,760,192
Re. 34,391	Des. 338,197	4,640,088	4,808,720

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4,856,504	5,150,232	5,197,218	5,216,712	5,229,938	5,235,629	5,243,050	5,250,012
4,869,911	5,151,221	5,197,380	5,216,733	5,230,051	5,235,777	5,243,150	5,250,317
4,870,520	5,152,547	5,197,994	5,216,770	5,230,321	5,235,816	5,243,154	5,250,433
4,881,050	5,154,076	5,198,411	5,216,896	5,230,414	5,235,950	5,243,237	5,250,632
4,906,092	5,154,098	5,198,580	5,217,139	5,230,420	5,236,014	5,243,357	5,251,001
4,920,102	5,154,847	5,198,865	5,217,379	5,230,604	5,236,226	5,243,537	5,251,183
4,925,970	5,155,816	5,198,940	5,217,878	5,230,974	5,236,250	5,243,792	5,251,463
4,943,790	5,156,245	5,199,072	5,217,957	5,230,976	5,236,407	5,243,846	5,251,535
4,956,487	5,157,430	5,199,553	5,218,345	5,230,982	5,236,634	5,243,886	5,251,844
4,957,538	5,158,237	5,200,131	5,218,411	5,231,018	5,236,651	5,243,913	5,251,930
4,961,951	5,159,691	5,200,193	5,218,572	5,231,191	5,236,930	5,243,957	5,251,931
4,980,096	5,161,623	5,200,202	5,218,601	5,231,196	5,237,089	5,244,085	5,252,072
4,983,596	5,162,565	5,200,663	5,218,689	5,231,329	5,237,114	5,244,088	5,252,150
4,997,521	5,163,912	5,200,681	5,218,910	5,231,374	5,237,295	5,244,264	5,252,213
4,999,801	5,164,474	5,200,719	5,220,081	5,231,424	5,237,306	5,244,370	5,252,328
5,011,990	5,166,171	5,200,735	5,220,149	5,231,463	5,237,400	5,244,604	5,252,681
5,013,385	5,166,379	5,201,288	5,220,171	5,231,576	5,237,643	5,244,734	5,253,020
5,013,388	5,166,670	5,201,772	5,220,201	5,231,909	5,237,761	5,244,864	5,253,285
5,022,653	5,167,942	5,201,982	5,220,362	5,231,954	5,237,865	5,244,888	5,253,358
5,026,896	5,168,024	5,202,193	5,220,395	5,232,052	5,237,898	5,245,011	5,253,576
5,028,007	5,168,190	5,202,210	5,220,398	5,232,100	5,238,135	5,245,041	5,254,305
5,028,631	5,169,066	5,202,433	5,220,416	5,232,446	5,238,513	5,245,085	5,254,453
5,032,172	5,169,427	5,202,624	5,220,418	5,232,580	5,238,536	5,245,406	5,254,491
5,045,452	5,170,327	5,202,756	5,220,564	5,232,600	5,238,548	5,245,464	5,254,650
5,059,935	5,171,255	5,203,044	5,220,583	5,232,650	5,238,571	5,245,556	5,254,748
5,064,760	5,171,572	5,203,250	5,221,201	5,232,707	5,238,574	5,245,822	5,254,749
5,066,191	5,171,601	5,203,552	5,221,333	5,232,766	5,238,760	5,245,952	5,254,754
5,066,381	5,172,234	5,204,191	5,221,336	5,232,849	5,238,945	5,245,958	5,254,973
5,069,577	5,174,056	5,204,400	5,221,509	5,233,151	5,239,081	5,246,293	5,255,030
5,072,591	5,174,927	5,204,759	5,221,936	5,233,154	5,239,120	5,246,339	5,255,171
5,074,463	5,175,687	5,206,847	5,221,965	5,233,285	5,239,190	5,246,472	5,255,190
5,075,652	5,176,364	5,204,934	5,221,994	5,233,552	5,239,550	5,246,507	5,255,244
5,075,819	5,176,567	5,205,551	5,222,155	5,232,578	5,239,581	5,246,536	5,255,416
5,086,123	5,176,832	5,205,572	5,222,616	5,233,585	5,239,720	5,246,587	5,255,706
5,092,179	5,177,096	5,205,701	5,222,883	5,233,641	5,239,967	5,246,644	5,255,922
5,093,773	5,177,549	5,206,064	5,222,973	5,233,713	5,240,153	5,246,720	5,256,226
5,093,936	5,177,795	5,206,576	5,223,039	5,234,008	5,240,329	5,246,728	5,256,585
5,096,807	5,178,875	5,206,710	5,223,046	5,234,032	5,240,428	5,246,844	5,256,742
5,098,289	5,179,301	5,207,070	5,223,188	5,234,033	5,240,441	5,247,233	5,256,818
5,098,538	5,180,393	5,207,170	5,223,190	5,234,251	5,240,609	5,247,574	5,257,013
5,098,807	5,181,217	5,207,216	5,223,363	5,234,535	5,240,701	5,247,758	5,257,081
5,098,910	5,181,340	5,208,549	5,223,749	5,234,654	5,240,709	5,247,761	5,257,093
5,103,274	5,181,445	5,208,863	5,223,764	5,234,804	5,241,214	5,247,899	5,257,098
5,103,392	5,182,190	5,209,186	5,223,776	5,234,822	5,241,227	5,247,927	5,257,364
5,105,388	5,182,263	5,209,218	5,224,566	5,234,884	5,241,253	5,248,030	5,257,929
5,105,806	5,182,430	5,209,317	5,225,061	5,234,931	5,241,565	5,248,193	5,257,953
5,107,318	5,183,355	5,209,701	5,225,229	5,235,118	5,241,630	5,248,411	5,258,630
5,109,169	5,183,405	5,210,047	5,225,230	5,235,348	5,241,804	5,248,443	5,258,876
5,110,934	5,185,097	5,210,617	5,225,304	5,235,405	5,241,842	5,248,835	5,258,877
5,111,434	5,185,194	5,210,817	5,225,406	5,235,469	5,242,191	5,249,111	5,258,888
5,114,783	5,185,800	5,210,830	5,225,426	5,235,474	5,242,298	5,249,360	5,259,954
5,114,816	5,185,906	5,211,255	5,225,571	5,235,532	5,242,416	5,249,389	5,261,306
5,117,924	5,186,858	5,211,330	5,225,793	5,235,611	5,242,729	5,249,629	5,263,577
5,118,222	5,188,299	5,211,456	5,225,825	5,235,628	5,242,764	5,249,720	5,266,634
5,118,447	5,188,463	5,211,787	5,225,906				
5,119,777	5,188,468	5,212,060	5,226,000				
5,121,667	5,188,713	5,212,062	5,226,378				
5,122,248	5,189,653	5,212,085	5,226,809				
5,124,966	5,189,995	5,212,319	5,227,507				
5,129,895	5,190,301	5,212,370	5,227,564				
5,130,095	5,190,644	5,212,473	5,227,811				
5,130,662	5,190,982	5,212,575	5,227,900				
5,133,437	5,190,994	5,212,949	5,228,064				
5,133,767	5,191,434	5,213,139	5,228,138				
5,134,129	5,192,463	5,213,276	5,228,351				
5,134,394	5,192,942	5,213,322	5,228,451				
5,136,362	5,192,977	5,213,449	5,228,525				
5,136,740	5,193,089	5,213,653	5,228,701				
5,137,206	5,193,222	5,213,929	5,228,702				
5,137,882	5,193,501	5,214,373	5,228,797				
5,139,707	5,193,923	5,214,480	5,228,882				
5,141,547	5,194,048	5,215,384	5,228,979				
5,141,984	5,194,490	5,215,566	5,229,182				
5,142,205	5,195,067	5,215,593	5,229,316				
5,142,207	5,195,151	5,215,864	5,229,379				
5,146,176	5,195,571	5,216,329	5,229,435				
5,147,527	5,196,561	5,216,340	5,229,481				
5,147,957	5,196,742	5,216,350	5,229,655				
5,148,747	5,197,183	5,216,385	5,229,677				

YEARLY PATENTS WHICH EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEES

The following is a compilation of the NOTICE OF EXPIRATION OF PATENTS DUE TO FAILURE TO PAY MAINTENANCE FEES which have been published in the Official Gazette from Dec. 22, 1981 through Dec. 26, 1989.

The patents have issue dates in the range of Jan. 1, 1985 through Dec. 31, 1985 and Jan. 3, 1989 through Dec. 26, 1989.

Patent Number	Serial Number	Issue Date
Re. 32,254	06/499,969	9/30/86
(4,307,053)	(06/179,373)	(12/22/81)
Re. 32,579	06/828,613	1/19/88
(4,491,775)	(06/315,052)	(1/01/85)
Re. 32,753	06/937,211	9/20/88
(4,493,417)	(06/565,120)	(1/15/85)
Re. 32,523	06/894,578	10/20/87
(4,494,527)	(06/448,923)	(1/22/85)

Patent Number	Serial Number	Issue Date	Re. 32,324	06/796,694	1/06/87
			(4,536,092)	(06/610,835)	(8/20/85)
Re. 32,614	06/930,683	3/01/88	Re. 32,442	06/832,546	6/23/87
(4,499,797)	(06/443,135)	(2/19/85)	(4,537,267)	(06/563,719)	8/27/85)
Re. 32,184	06/727/929	6/17/86	Re. 32,095	06/924,852	4/04/89
(4,504,000)	(06/465,791)	(3/12/85)	(4,538,095)	(06/500,841)	(8/27/85)
Re. 32,955	07/023,973	6/20/89	Re. 32,602	06/846,734	2/16/88
(4,510,899)	(06/605,842)	(4/16/85)	(4,538,724)	(06/643,269)	(09/0385)
Re. 32.510	06/925,692	9/29/87	Re. 32,902	07/087,262	4/11/89
(4,512,361)	(06/445,100)	(04/23/85)	(4,538,732)	(06/489,131)	(09/03/85)
Re. 32,700	06/897,559	6/21/88	Re. 32,842	07/099,163	1/24/89
(4,512,505)	(06/631,289)	(04/23/85)	(4,538,811)	(06/457,933)	(09/0385)
Re. 32.826	07/011,606	1/10/89	Re. 32,448	06/826,352	6/30/87
(4,512,967)	(06/404,372)	(4/23/85)	(4,538,832)	(06/466,066)	(09/03/85)
Re. 32,665	06/760,244	5/17/88	Re. 32,948	07/089,330	6/13/89
(4,513,463)	(06/475,332)	(04/30/85)	(4,538,847)	(06/629,375)	(09/03/85)
Re. 32.641	06/903,268	4/12/88	Re. 32,810	07/053,657	12/27/88
(4,513,632)	(06/570,766)	(04/30/85)	(4,538,872)	(06/549109)	(09/03/85)
Re. 32,495	06/832,312	9/08/87	Re. 32,714	06/854,125	7/19/88
(4,513,829)	(06/569,060)	(4/30/85)	(4,541,877)	(06/654,655)	(9/17/85)
Re. 32.713	06/835.628	7/12/88	Re. 33,074	07/100,239	10/03/89
(4,514,461)	(06/291,443)	(4/30/85)	(4,542,557)	(06/627,899)	(09/24/85)
Re. 33,156	07/055,508	1/30/90	Re. 32,903	06/939,512	4/11/89
(4,514,552)	(06/643,370)	(4/30/85)	(4,544,209)	(06/575,011)	(10/01/85)
Re. 33,089	07/042,351	10/10/89	Re. 32,845	07/013,060	1/24/89
(4,514,817)	(06/233,000)	(4/30/85)	(4,544,884)	(06/531,711)	(10/01/85)
Re. 32.670	06/856,028	5/24/88	Re. 32,692	06/904,675	6/07/88
(4,514,973)	(06/583,392)	(5/07/85)	(4,546,128)	(06/608,359)	(10/08/85)
Re. 32.567	06/765.689	12/29/87	Re. 32,610	06/924,920	2/23/88
(4,515,388)	(06/407,098)	(5/07/85)	(4,546,296)	(06/607,632)	(10/08/85)
Re. 32,532	06/941,686	10/27/87	Re. 32,622	06/880,721	3/15/88
(4,515,522)	(06/459,118)	(5/07/85)	(4,546,810)	(06/531,827)	(10/15/85)
Re. 32,395	06/766,247	4/14/87	Re. 32,873	07/008,597	2/21/89
(4,517,180)	(06/344,732)	(5/14/85)	(4,549,373)	(06/705,869)	(10/29/85)
Re. 32,534	06/816,071	10/27/87	Re. 33,053	07/194,547	9/12/89
(4,517,180)	(06/545,994)	(5/14/85)	(4,549,718)	(06/607,521)	(10/29/85)
Re. 33,065	07/053,091	9/19/89	Re. 32,644	06/914,769	4/12/88
(4,518,860)	(06/435,197)	(5/21/85)	(4,553,732)	(06/579,571)	(11/19/85)
Re. 33,040	07/055,186	8/29/89	Re. 32,934	07/063,683	5/30/89
(4,519,930)	(06,456,787)	(5/28/85)	(4,553,739)	(06/600,147)	(11/19/85)
Re. 32,990	07/115,082	7/18/89	Re. 33,133	07/123,592	12/19/89
(4,520,132)	(06/423,753)	(5/28/85)	(4,554,228)	(06/597,668)	(11/19/85)
Re. 32,487	06/886,030	9/01/87	Re. 32,629	06/929,618	3/29/88
(4,521,074)	(06/457,515)	(6/04/85)	(4,557,052)	(06/577,709)	(12/10/85)
Re. 32,788	07/016,647	11/22/88	Re. 32,458	06/859,507	7/14/87
(4,523,936)	(06/634,048)	(6/18/85)	(4,557,395)	(06/717,439)	(12/10/85)
Re. 32,900	07/059,713	4/04/89	Re. 32,616	06/892,305	3/01/88
(4,524,440)	(06/558,630)	(6/18/85)	(4,559,442)	(06/500,524)	(12/17/85)
Re. 32,931	07/148,168	5/30/89	Re. 33,840	07/571,869	3/10/92
(4,524,619)	(06/572,783)	(6/25/85)	(4,889,169)	(07/312,941)	(12/26/89)
Re. 32,651	06/808,631	4/26/88	Re. 34,331	07/761,171	8/03/93
(4,524,806)	(06/576,733)	(6/25/85)	(4,889,988)	(07/215,729)	(12/26/89)
Re. 32,449	06/821,650	6/30/87	Re. 34,188	07/564,836	3/02/93
(4,525,464)	(06/619,939)	(6/25/85)	(4,890,131)	(07/316,772)	(12/26/89)
Re. 32,976	07/063,210	7/04/89	Re. 34,561	07/816,028	3/15/94
(4,525,585)	(06/537,903)	(6/25/85)	(4,890,573)	(07/223,630)	(1/02/90)
Re. 32,544	06/880,376	11/10/87	Re. 34,240	07/686,513	5/04/93
(4,525,736)	(06/417,345)	(6/25/85)	(4,890,871)	(07/272,383)	(1/02/90)
Re. 32,591	06/864,388	2/09/88	Re. 34,333	07/805,092	8/03/93
(4,527,447)	(06/446,918)	(7/09/85)	(4,890,883)	(07/276,917)	(1/02/90)
Re. 32,601	06/927,817	2/16/88	Re. 33,960	07/706,012	6/16/92
(4,527,578)	(06/535,647)	(7/09/85)	(4,891,626)	(07/298,031)	(1/02/90)
Re. 32,891	06/876,320	3/21/89	4,503,910	06/447,731	3/12/85
(4,527,732)	(06/608,771)	(7/09/85)	4,822,584	07/153,496	4/18/89
Re. 32,898	07/055,088	4/04/89	4,823,094	07/162,112	4/18/89
(4,527,852)	(06/521,769)	(7/09/85)	4,809,692	07/058,683	3/07/89
Re. 32,340	06/772,110	1/27/87	4,292,069	06/227,825	9/29/81
(4,528,429)	(06/583,631)	(7/09/85)	4,292,069	06/227,825	9/29/81
Re. 32,547	06/911,882	11/24/87	4,292,142	06/224,175	9/29/81
(4,528,944)	(06/624,698)	(7/16/85)	4,292,142	06/224,175	9/29/81
Re. 33,013	07/060,988	8/08/89	4,293,693	06/219,018	10/06/81
(4,533,584)	(06/596,103)	(8/06/85)	4,296,211	06/228,083	10/20/81
Re. 32,837	07/082,093	1/17/89	4,296,936	06/133,784	10/27/81
(4,533,827)	(06/457,277)	(8/06/85)	4,297,619	06/222,205	10/27/81
Re. 33,171	07/084,205	2/27/90	4,298,531	06/215,711	11/03/81
(4,534,452)	(06/607,651)	(8/13/85)	4,298,540	06/216,418	11/03/81
Re. 32,739	07/055,662	8/30/88	4,298,714	06/217,144	11/03/81
(4,535,889)	(06/578,016)	(8/20/85)	4,299,668	06/236,998	11/10/81

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4,299,982	06/217,940	11/10/81
4,299,985	06/217,287	11/10/81
4,300,474	06/221,513	11/17/81
4,300,477	06/232,922	11/17/81
4,300,675	06/218,130	11/17/81
4,300,849	06/264,877	11/17/81
4,301,015	06/216,638	11/17/81
4,301,077	06/218,856	11/17/81
4,301,172	06/216,101	11/17/81
4,301,254	06/235,041	11/17/81
4,302,365	06/120,290	11/24/81
4,302,442	06/217,623	11/24/81
4,303,114	06/217,910	12/01/81
4,303,513	06/226,623	12/01/81
4,303,573	06/223,212	12/01/81
4,303,623	06/225,915	12/01/81
4,303,768	06/233,151	12/01/81
4,304,704	06/225,663	12/08/81
4,304,796	06/234,527	12/08/81
4,304,797	06/235,351	12/08/81
4,304,934	06/221,523	12/08/81
4,304,951	06/225,061	12/08/81
4,305,446	06/216,697	12/15/81
4,305,729	06/237,224	12/15/81
4,305,910	06/223,237	12/15/81
4,305,941	06/222,618	12/15/81
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4,306,060	06/216,735	12/15/81
4,306,067	06/217,863	12/15/81
4,306,160	06/226,325	12/15/81
4,306,293	06/071,044	12/15/81
4,306,495	06/236,777	12/22/81
4,306,881	06/237,223	12/22/81
4,306,882	06/237,225	12/22/81
4,307,065	06/223,666	12/22/81
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4,307,134	06/219,066	12/22/81
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4,307,174	06/229,619	12/22/81
4,307,192	06/223,110	12/22/81
4,307,567	06/092,184	12/29/81
4,307,818	06/235,509	12/29/81
4,307,819	06/235,772	12/29/81
4,307,868	06/235,230	12/29/81
4,307,955	06/216,266	12/29/81
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4,308,050	06/239,287	12/29/81
4,308,051	06/216,609	12/29/81
4,308,159	06/220,351	12/29/81
4,308,209	06/216,124	12/29/81
4,308,211	06/220,885	12/29/81
4,308,246	06/226,592	12/29/81
4,308,302	06/238,863	12/29/81
4,308,389	06/221,954	12/29/81
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4,309,169	06/219,712	1/05/82
4,309,301	06/221,945	1/05/82
4,309,390	06/218,060	1/05/82
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4,490,864	06/466,045	1/01/85
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4,490,871	06/528,623	1/01/85
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4,490,908	06/634,660	1/01/85
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4,490,942	06/456,139	1/01/85
4,490,943	06/490,171	1/01/85
4,490,945	06/478,096	1/01/85
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4,490,951	06/448,893	1/01/85
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4,490,956	06/456,342	1/01/85
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4,490,968	06/535,383	1/01/85
4,490,970	06/286,657	1/01/85
4,490,973	06/484,329	1/01/85
4,490,975	06/474,931	1/01/85
4,490,976	06/535,908	1/01/85
4,490,978	06/406,111	1/01/85
4,490,979	06/413,074	1/01/85
4,490,980	06/473,273	1/01/85
4,490,985	06/509,138	1/01/85
4,490,987	06/557,757	1/01/85
4,490,989	06/348,841	1/01/85
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4,490,993	06/427,868	1/01/85
4,490,995	06/461,049	1/01/85
4,490,996	06/305,113	1/01/85
4,490,997	06/488,259	1/01/85
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4,490,999	06/424,223	1/01/85
4,491,003	06/276,697	1/01/85
4,491,011	06/387,357	1/01/85
4,491,013	06/485,231	1/01/85
4,491,015	06/474,101	1/01/85
4,491,022	06/467,352	1/01/85
4,491,026	06/432,997	1/01/85
4,491,027	06/462,721	1/01/85
4,491,029	06/376,202	1/01/85
4,491,030	06/361,335	1/01/85
4,491,031	06/376,392	1/01/85
4,491,037	06/465,624	1/01/85

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4,491,038	06/408,421	1/01/85
4,491,040	06/376,426	1/01/85
4,491,041	06/481,992	1/01/85
4,491,042	06/465,603	1/01/85
4,491,043	06/242,314	1/01/85
4,491,048	06/330,840	1/01/85
4,491,050	06/545,126	1/01/85
4,491,051	06/455,249	1/01/85
4,491,052	06/332,044	1/01/85
4,491,053	06/383,213	1/01/85
4,491,055	06/317,429	1/01/85
4,491,057	06/404,797	1/01/85
4,491,059	06/362,644	1/01/85
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4,491,062	06/563,034	1/01/85
4,491,063	06/437,743	1/01/85
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4,491,067	06/380,022	1/01/85
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4,491,072	06/518,019	1/01/85
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4,491,098	06/427,980	1/01/85
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4,491,106	06/617,144	1/01/85
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4,491,171	06/287,629	1/01/85
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4,491,216	06/417,782	1/01/85
4,491,219	06/357,165	1/01/85
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4,491,233	06/460,764	1/01/85
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4,491,247	06/363,511	1/01/85
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4,491,261	06/338,791	1/01/85
4,491,263	06/478,261	1/01/85
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4,491,268	06/525,014	1/01/85
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4,491,272	06/461,407	1/01/85
4,491,275	06/392,761	1/01/85
4,491,278	06/575,306	1/01/85
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4,491,286	06/486,042	1/01/85
4,491,288	06/503,135	1/01/85
4,491,291	06/344,619	1/01/85
4,491,292	06/521,022	1/01/85
4,491,293	06/419,905	1/01/85
4,491,296	06/519,900	1/01/85
4,491,303	06/534,867	1/01/85
4,491,307	06/412,933	1/01/85
4,491,308	06/438,911	1/01/85
4,491,309	06/490,140	1/01/85
4,491,314	06/457,671	1/01/85
4,491,315	06/421,254	1/01/85
4,491,316	06/450,670	1/01/85
4,491,317	06/388,750	1/01/85
4,491,319	06/541,977	1/01/85
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4,500,378	06/482,990	2/19/85
4,500,387	06/492,316	2/19/85
4,500,397	06/478,556	2/19/85

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4,503,926	06/443,870	3/12/85
4,503,934	06/483,582	3/12/85
4,503,936	06/432,584	3/12/85
4,503,937	06/445,897	3/12/85
4,503,942	06/435,783	3/12/85
4,503,955	06/474,264	3/12/85
4,503,957	06/468,367	3/12/85
4,503,966	06/500,844	3/12/85
4,503,975	06/488,431	3/12/85
4,503,979	06/425,958	3/12/85
4,503,980	06/433,717	3/12/85
4,503,987	06/614,520	3/12/85
4,504,001	06/519,049	3/12/85
4,504,006	06/488,978	3/12/85
4,504,010	06/494,894	3/12/85
4,504,015	06/420,131	3/12/85
4,504,021	06/476,852	3/12/85
4,504,023	06/612,955	3/12/85
4,504,031	06/353,828	3/12/85
4,504,036	06/429,368	3/12/85
4,504,038	06/488,064	3/12/85
4,504,042	06/519,705	3/12/85
4,504,047	06/378,316	3/12/85
4,504,049	06/497,844	3/12/85
4,504,057	06/452,711	3/12/85
4,504,059	06/430,236	3/12/85
4,504,061	06/451,731	3/12/85
4,504,064	06/414,980	3/12/85
4,504,066	06/619,095	3/12/85
4,504,070	06/386,685	3/12/85
4,504,071	06/423,791	3/12/85
4,504,072	06/455,103	3/12/85
4,504,073	06/258,056	3/12/85

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4,504,082	06/499,464	3/12/85
4,504,084	06/575,377	3/12/85
4,504,086	06/456,892	3/12/85
4,504,094	06/418,686	3/12/85
4,504,098	06/548,624	3/12/85
4,504,099	06/616,779	3/12/85
4,504,111	06/394,993	3/12/85
4,504,114	06/618,314	3/12/85
4,504,115	06/341,256	3/12/85
4,504,116	06/275,681	3/12/85
4,504,120	06/462,470	3/12/85
4,504,125	06/439,294	3/12/85
4,504,132	06/463,105	3/12/85
4,504,134	06/538,967	3/12/85
4,504,147	06/287,676	3/12/85
4,504,150	06/511,320	3/12/85
4,504,152	06/263,338	3/12/85
4,504,162	06/608,921	3/12/85
4,504,164	06/637,989	3/12/85
4,504,168	06/248,645	3/12/85
4,504,172	06/512,803	3/12/85
4,504,173	06/421,090	3/12/85
4,504,174	06/455,518	3/12/85
4,504,175	06/534,270	3/12/85
4,504,176	06/384,440	3/12/85
4,504,177	06/457,649	3/12/85
4,504,179	06/387,036	3/12/85
4,504,184	06/435,488	3/12/85
4,504,187	06/376,492	3/12/85
4,504,205	06/426,423	3/12/85
4,504,207	06/378,280	3/12/85
4,504,211	06/403,983	3/12/85
4,504,212	06/562,140	3/12/85
4,504,214	06/335,386	3/12/85
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4,504,223	06/524,757	3/12/85
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4,504,320	06/535,479	3/12/85
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4,504,362	06/416,383	3/12/85
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4,504,409	06/443,611	3/12/85
4,504,412	06/464,533	3/12/85
4,504,415	06/482,114	3/12/85
4,504,424	06/409,409	3/12/85
4,504,430	06/495,118	3/12/85
4,504,431	06/547,965	3/12/85
4,504,438	06/327,751	3/12/85
4,504,439	06/292,801	3/12/85
4,504,445	06/529,507	3/12/85
4,504,447	06/546,260	3/12/85
4,504,449	06/503,487	3/12/85
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4,504,452	06/532,893	3/12/85
4,504,455	06/577,695	3/12/85
4,504,468	06/514,936	3/12/85
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4,504,497	06/523,010	3/12/85
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4,504,532	06/463,366	3/12/85
4,504,535	06/440,620	3/12/85
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4,504,574	06/496,702	3/12/85
4,504,582	06/464,376	3/12/85
4,504,589	06/593,061	3/12/85
4,504,590	06/453,474	3/12/85
4,504,595	06/378,192	3/12/85
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4,504,603	06/535,058	3/12/85
4,504,606	06/565,800	3/12/85
4,504,611	06/519,277	3/12/85
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4,504,622	06/413,574	3/12/85
4,504,623	06/559,767	3/12/85
4,504,624	06/559,778	3/12/85
4,504,628	06/484,793	3/12/85
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4,504,633	06/499,956	3/12/85
4,504,635	06/545,684	3/12/85
4,504,642	06/416,161	3/12/85
4,504,643	06/474,562	3/12/85
4,504,646	06/550,200	3/12/85
4,504,649	06/562,273	3/12/85
4,504,653	06/498,874	3/12/85
4,504,661	06/273,057	3/12/85
4,504,666	06/385,000	3/12/85
4,504,668	06/242,605	3/12/85
4,504,671	06/434,448	3/12/85
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4,504,674	06/485,943	3/12/85
4,504,682	06/455,898	3/12/85
4,504,683	06/265,312	3/12/85

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4,504,689	06/509,062	3/12/85
4,504,690	06/614,195	3/12/85
4,504,692	06/588,085	3/12/85
4,504,694	06/536,819	3/12/85
4,504,695	06/517,350	3/12/85
4,504,698	06/365,887	3/12/85
4,504,700	06/510,369	3/12/85
4,504,701	06/551,486	3/12/85
4,504,712	06/549,399	3/12/85
4,504,714	06/317,560	3/12/85
4,504,715	06/236,170	3/12/85
4,504,726	06/327,627	3/12/85
4,504,731	06/506,539	3/12/85
4,504,732	06/570,441	3/12/85
4,504,737	06/435,795	3/12/85
4,504,743	06/326,125	3/12/85
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4,504,759	06/558,407	3/12/85
4,504,762	06/392,197	3/12/85
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4,504,794	06/463,914	3/12/85
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4,504,801	06/410,858	3/12/85
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4,504,815	06/446,157	3/12/85
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4,504,822	06/335,380	3/12/85
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4,504,900	06/346,248	3/12/85
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4,505,085	06/446,682	3/19/85
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4,506,151	06/402,394	3/19/85
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4,506,273	06/502,519	3/19/85
4,506,318	06/487,817	3/19/85
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4,506,396	06/480,843	3/26/85
4,506,397	06/481,248	3/26/85
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4,506,406	06/382,580	3/26/85
4,506,408	06/523,950	3/26/85
4,506,410	06/358,837	3/26/85
4,506,411	06/565,372	3/26/85
4,506,418	06/450,873	3/26/85
4,506,419	06/515,719	3/26/85
4,506,421	06/392,765	3/26/85
4,506,425	06/283,203	3/26/85
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4,506,446	06/468,327	3/26/85
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4,506,477	06/283,234	3/26/85
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4,506,480	06/474,050	3/26/85
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4,506,489	06/523,075	3/26/85
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4,506,493	06/514,521	3/26/85
4,506,498	06/587,396	3/26/85
4,506,501	06/471,863	3/26/85
4,506,502	06/544,803	3/26/85
4,506,505	06/438,985	3/26/85
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4,506,512	06/569,587	3/26/85
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4,506,522	06/562,536	3/26/85
4,506,525	06/554,455	3/26/85
4,506,530	06/501,229	3/26/85
4,506,533	06/572,056	3/26/85
4,506,541	06/438,882	3/26/85
4,506,542	06/487,768	3/26/85
4,506,543	06/506,072	3/26/85

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4,506,545	06/379,436	3/26/85
4,506,548	06/531,872	3/26/85
4,506,550	06/399,997	3/26/85
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4,506,635	06/588,783	3/26/85
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4,506,739	06/564,571	3/26/85
4,506,742	06/490,137	3/26/85
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4,506,752	06/430,607	3/26/85
4,506,756	06/497,728	3/26/85
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4,506,770	06/376,622	3/26/85
4,506,772	06/403,299	3/26/85
4,506,774	06/321,010	3/26/85
4,506,778	06/383,828	3/26/85
4,506,780	06/440,281	3/26/85
4,506,781	06/501,836	3/26/85
4,506,791	06/528,633	3/26/85
4,506,793	06/519,202	3/26/85
4,506,794	06/488,943	3/26/85
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4,510,875	06/528,120	4/16/85
4,510,876	06/571,721	4/16/85
4,510,887	06/522,433	4/16/85

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4,510,899	06/605,842	4/16/85
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4,510,915	06/428,229	4/16/85
4,510,922	06/456,936	4/16/85
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4,523,212	06/357,441	6/11/85
4,523,223	06/383,265	6/11/85
4,523,241	06/391,069	6/11/85
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4,523,250	06/479,867	6/11/85
4,523,251	06/425,217	6/11/85
4,523,254	06/566,470	6/11/85
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4,523,259	06/565,163	6/11/85
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4,523,262	06/428,193	6/11/85
4,523,263	06/623,319	6/11/85
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4,523,273	06/452,438	6/11/85
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4,523,282	06/355,502	6/11/85
4,523,292	06/429,328	6/11/85
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4,523,294	06/382,630	6/11/85
4,523,295	06/415,309	6/11/85
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4,523,303	06/395,897	6/11/85
4,523,305	06/562,853	6/11/85
4,523,315	06/367,093	6/11/85
4,523,320	06/457,985	6/11/85
4,523,325	06/382,069	6/11/85
4,523,331	06/424,731	6/11/85
4,523,342	06/492,898	6/18/85
4,523,343	06/535,619	6/18/85
4,523,350	06/508,876	6/18/85
4,523,352	06/531,929	6/18/85

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4,523,368	06/602,280	6/18/85
4,523,373	06/399,539	6/18/85
4,523,377	06/554,426	6/18/85
4,523,378	06/475,778	6/18/85
4,523,379	06/606,317	6/18/85
4,523,392	06/461,020	6/18/85
4,523,394	06/394,925	6/18/85
4,523,396	06/523,790	6/18/85
4,523,399	06/563,625	6/18/85
4,523,407	06/537,052	6/18/85
4,523,408	06/516,162	6/18/85
4,523,409	06/495,982	6/18/85
4,523,413	06/476,592	6/18/85
4,523,416	06/594,293	6/18/85
4,523,418	06/523,096	6/18/85
4,523,421	06/381,308	6/18/85
4,523,425	06/488,774	6/18/85
4,523,433	06/620,156	6/18/85
4,523,437	06/341,239	6/18/85
4,523,439	06/561,203	6/18/85
4,523,440	06/536,770	6/18/85
4,523,441	06/554,304	6/18/85
4,523,444	06/449,561	6/18/85
4,523,452	06/602,711	6/18/85
4,523,458	06/522,167	6/18/85
4,523,459	06/588,023	6/18/85
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4,523,793	06/431,357	6/18/85
4,523,796	06/568,755	6/18/85
4,523,809	06/520,356	6/18/85
4,523,813	06/568,144	6/18/85
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4,523,861	06/621,783	6/18/85
4,523,864	06/604,755	6/18/85
4,523,866	06/516,463	6/18/85
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4,524,222	06/574,134	6/18/85
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4,524,232	06/568,015	6/18/85
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4,524,334	06/491,276	6/18/85
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4,524,393	06/467,835	6/18/85
4,524,395	06/487,636	6/18/85
4,524,396	06/524,684	6/18/85

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4,524,399	06/384,428	6/18/85
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4,524,527	06/419,236	6/25/85
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4,524,536	06/542,753	6/25/85
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4,524,569	06/619,140	6/25/85
4,524,570	06/494,716	6/25/85
4,524,571	06/523,046	6/25/85
4,524,573	06/579,356	6/25/85
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4,524,579	06/605,805	6/25/85
4,524,582	06/480,720	6/25/85
4,524,583	06/547,114	6/25/85
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4,524,594	06/473,748	6/25/85
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4,524,597	06/617,342	6/25/85
4,524,599	06/423,676	6/25/85
4,524,604	06/469,831	6/25/85
4,524,607	06/365,369	6/25/85
4,524,614	06/539,081	6/25/85
4,524,622	06/514,864	6/25/85
4,524,624	06/436,274	6/25/85
4,524,628	06/665,814	6/25/85
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4,524,654	06/399,446	6/25/85
4,524,655	06/458,612	6/25/85
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4,524,661	06/414,590	6/25/85
4,524,663	06/533,922	6/25/85
4,524,671	06/447,506	6/25/85
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4,525,387	06/630,561	6/25/85
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4,527,618	06/427,465	7/09/85
4,527,621	06/291,145	7/09/85
4,527,622	06/405,386	7/09/85

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4,527,623	06/332,924	7/09/85
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4,528,742	06/665,515	7/16/85
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4,532,837	06/417,670	8/06/85
4,532,849	06/561,686	8/06/85
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4,533,870	06/444,904	8/06/85
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4,537,531	06/387,814	8/27/85
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4,541,738	06/522,096	9/17/85
4,541,745	06/553,827	9/17/85
4,541,749	06/605,200	9/17/85
4,541,750	06/305,167	9/17/85
4,541,755	06/503,331	9/17/85
4,541,761	06/535,436	9/17/85
4,541,762	06/452,288	9/17/85
4,541,763	06/518,015	9/17/85
4,541,767	06/451,519	9/17/85
4,541,769	06/514,513	9/17/85
4,541,771	06/480,826	9/17/85
4,541,776	06/526,918	9/17/85
4,541,778	06/611,652	9/17/85
4,541,779	06/455,509	9/17/85
4,541,781	06/570,023	9/17/85
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4,541,790	06/573,564	9/17/85
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4,541,813	06/515,953	9/17/85
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4,542,166	06/693,307	9/17/85
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4,542,256	06/604,786	9/17/85
4,542,258	06/383,221	9/17/85
4,542,259	06/651,985	9/17/85

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4,559,466	06/563,459	12/17/85
4,559,471	06/478,923	12/17/85
4,559,474	06/523,624	12/17/85
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4,559,626	06/482,127	12/17/85
4,559,627	06/621,676	12/17/85
4,559,637	06/531,417	12/17/85

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4,559,650	06/550,129	12/24/85
4,559,652	06/521,009	12/24/85
4,559,653	06/468,174	12/24/85
4,559,656	06/454,000	12/24/85
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4,559,662	06/610,098	12/24/85
4,559,664	06/493,136	12/24/85
4,559,668	06/701,443	12/24/85
4,559,670	06/551,663	12/24/85
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4,559,697	06/683,314	12/24/85
4,559,702	06/551,621	12/24/85
4,559,703	06/603,526	12/24/85
4,559,704	06/667,076	12/24/85
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4,560,113	06/624,892	12/24/85
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4,560,193	06/610,524	12/24/85
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4,560,661	06/488,174	12/24/85
4,560,663	06/507,428	12/24/85
4,560,664	06/566,949	12/24/85

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4,802,511	06/641,136	2/07/89
4,802,513	06/364,322	2/07/89
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4,802,516	07/084,488	2/07/89
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4,802,522	07/015,268	2/07/89
4,802,527	07/121,634	2/07/89
4,802,531	06/875,151	2/07/89
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4,802,572	07/115,383	2/07/89
4,802,573	07/012,580	2/07/89
4,802,574	07/127,165	2/07/89
4,802,576	06/935,327	2/07/89
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4,802,592	07/156,365	2/07/89
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4,802,594	07/146,852	2/07/89
4,802,595	07/093,224	2/07/89
4,802,596	06/929,992	2/07/89
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4,802,629	06/436,006	2/07/89
4,802,634	07/042,414	2/07/89
4,802,641	06/781,657	2/07/89
4,802,644	07/150,574	2/07/89
4,802,647	07/058,033	2/07/89
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4,802,667	07/153,314	2/07/89
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4,802,670	07/016,017	2/07/89
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4,802,783	07/091,291	2/07/89
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4,803,183	07/017,776	2/07/89
4,803,186	06/938,095	2/07/89
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4,803,313	07/132,349	2/07/89
4,803,314	07/083,939	2/07/89
4,803,318	07/141,552	2/07/89
4,803,323	07/008,823	2/07/89
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4,803,370	07/050,878	2/07/89
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4,803,391	07/039,382	2/07/89
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4,803,917	07/141,093	2/14/89
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4,804,131	07/120,535	2/14/89
4,804,135	07/163,979	2/14/89
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4,804,137	07/131,737	2/14/89
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4,804,163	07/192,747	2/14/89
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4,804,216	07/150,869	2/14/89
4,804,217	07/049,695	2/14/89
4,804,218	07/063,812	2/14/89
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layers in which all lengths share a common helix direction, including:

(a) rotating said support member in a given direction while repetitively and alternatingly moving the feed-on point axially from end to end of the bundle;

(b) reversing the direction of rotation of said support member whenever the axial direction of the feed-on point is reversed until a first number of lengths have been laid down, said first number selected to create a first layer of filament lengths enwrapping the bundle;

(c) after laying down said first selected number of lengths, the direction of rotation is not reversed one time when there is a reversal of the direction of the axial movement of the feed-on point, so that the next length of filament is laid down in a helix direction opposite to that of the lengths of filament forming said first layer;

(d) thereafter continuing to alternate the axial movement of the feed-on point and direction of rotation of the support member until a second number of lengths have been laid down in said opposite helix direction, the said number of lengths selected to create a second layer of filament lengths enwrapping the bundle; and

(e) repeating steps (c) and (d) to effect accumulation of successive layers of filament lengths all lying in a common helix direction but in the opposite direction from filament lengths in adjacent layers until a desired bundle diameter is reached.

5,299,750

DOFFING METHOD AND PAPER TUBE SUPPLY SYSTEM FOR AN AUTOMATIC WINDER

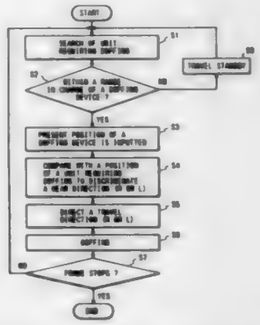
Osamu Nakagawa, Kyoto; Tomonari Ikemoto, and Hideyuki Oe, both of Uji, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 889,183, May 27, 1992. This application Feb. 11, 1993, Ser. No. 16,298

Claims priority, application Japan, May 28, 1991, 3-123909; Jul. 1, 1991, 3-188164; Jul. 1, 1991, 3-188165

Int. Cl.[5] B65H *67/04*

U.S. Cl. 242—35.5 A **2 Claims**



1. In a spinning machine comprising a plurality of units arranged in a row and a doffing device capable of reciprocally travelling along the row of units, a method of controlling the doffing device to move to a unit requiring doffing, comprising:

providing the doffing device with means for identifying the position of the doffing device along the row of units,

identifying the position of a unit requiring doffing,

inputting to a central control device information identifying the position of the unit requiring doffing,

identifying the position of the doffing device along the row of units,

inputting to the central control device information identifying the position of the doffing device along the row of units,

comparing the information identifying the position of the unit requiring doffing and the information identifying the position of the doffing device along the row of units, and

providing the doffing device with instructions for moving the doffing device to the unit requiring doffing based upon the comparison of the information identifying the position of the unit requiring doffing and the information identifying the position of the doffing device along the row of units.

5,299,751

CLAMPING MANDREL-ENGAGEMENT SENSOR COMBINATION, PARTICULARLY FOR CLAMPING PRINTING SUBSTRATE WEB ROLLS IN A ROLL CHANGER

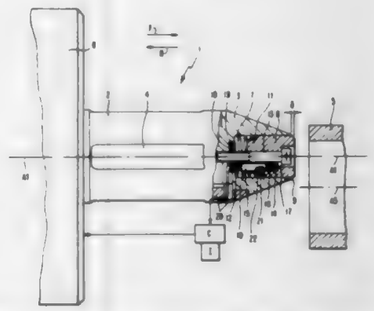
Gerhard Pichlmair, Neusäss, and Josef Hammer, Augsburg, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,977

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137484

Int. Cl.[5] B65H *18/04, 63/00*

U.S. Cl. 242—57 **8 Claims**



1. Clamping mandrel-engagement sensor combination for clamping a roll of web material, particularly a printing substrate web roll, and especially newsprint, rolled on a carrier sleeve or tube (5) having

an axially slidable mandrel body (1, 2), having a conically tapering tip portion (3);

clamping means (4) on the mandrel body, fitting into the carrier sleeve or tube (5) and being radially expandible for engagement with the carrier sleeve; and

control means (C, 6) controlling axial advance or forward movement (F) and axial retraction or reverse movement (R) of the mandrel body with respect to the sleeve or tube (5),

comprising, in accordance with the invention,

a sensing head (8, 10, 11, 14) located at said tip portion (3) of the mandrel (1, 2) and sensing the relative radial position of the mandrel with respect to the carrier sleeve or tube to determine if the axial alignment of the mandrel and of the carrier sleeve or tube permits insertion of the mandrel into the carrier sleeve or tube without damage thereto,

said sensing head including

an electrical switch (15, 16, 18, 19) integrated therewith, and a change-of-state of the switch between an open and closed state upon sensing an obstruction at said tip portion due to axial misalignment of said mandrel body (1, 2) and said sleeve or tube (5), said switch being coupled to said control means; and

the control means being responsive to sensing said change-of-state and controlling axial movement of the mandrel body for reverse or retracting movement (R) of the mandrel and providing an output signal (I) representative of misalignment between the mandrel and the sleeve or tube.

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4,808,102	07/122,929	2/28/89	4,808,544	07/174,494	2/28/89
4,808,103	07/168,771	2/28/89	4,808,559	07/151,194	2/28/89
4,808,106	07/122,752	2/28/89	4,808,563	07/087,534	2/28/89
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4,808,131	07/078,734	2/28/89	4,808,604	07/058,699	2/28/89
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4,813,694	07/215,853	3/21/89
4,813,697	06/637,198	3/21/89

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4,815,637	07/184,574	3/28/89
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4,816,777	07/190,732	3/28/89
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4,816,787	07/152,206	3/28/89
4,816,803	07/161,153	3/28/89
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4,816,807	07/157,810	3/28/89
4,816,810	07/090,815	3/28/89
4,816,829	07/044,238	3/28/89

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4,816,830	07/095,683	3/28/89
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4,819,761	07/141,779	4/11/89
4,819,764	07/064,876	4/11/89
4,819,774	07/140,466	4/11/89
4,819,779	07/036,016	4/11/89
4,819,783	06/890,298	4/11/89
4,819,787	06/749,118	4/11/89
4,819,791	07/220,903	4/11/89
4,819,793	07/108,072	4/11/89
4,819,794	07/156,211	4/11/89
4,819,795	07/144,480	4/11/89
4,819,800	07/179,207	4/11/89
4,819,801	07/141,720	4/11/89
4,819,812	07/215,343	4/11/89
4,819,814	07/114,597	4/11/89
4,819,816	07/156,764	4/11/89
4,819,817	07/129,590	4/11/89
4,819,819	07/173,805	4/11/89
4,819,826	07/109,153	4/11/89
4,819,833	07/148,032	4/11/89
4,819,840	07/072,088	4/11/89
4,819,844	07/018,742	4/11/89
4,819,846	07/051,408	4/11/89
4,819,847	07/037,989	4/11/89
4,819,849	07/137,260	4/11/89
4,819,851	07/066,215	4/11/89
4,819,854	06/937,561	4/11/89

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4,819,882	07/141,438	4/11/89
4,819,883	07/076,310	4/11/89
4,819,888	07/008,552	4/11/89
4,819,893	07/109,438	4/11/89
4,819,896	06/823,612	4/11/89
4,819,900	07/241,490	4/11/89
4,819,903	07/217,954	4/11/89
4,819,904	07/113,164	4/11/89
4,819,917	07/183,150	4/11/89
4,819,918	07/144,568	4/11/89
4,819,924	07/133,658	4/11/89
4,819,928	07/099,275	4/11/89
4,819,936	07/152,468	4/11/89
4,819,937	07/217,944	4/11/89
4,819,938	07/079,041	4/11/89
4,819,940	07/179,072	4/11/89
4,819,942	07/104,978	4/11/89
4,819,947	07/151,497	4/11/89
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4,819,962	07/129,215	4/11/89
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4,819,966	07/119,242	4/11/89
4,819,972	07/045,206	4/11/89
4,819,977	07/088,660	4/11/89
4,819,979	07/129,523	4/11/89
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4,820,060	07/218,664	4/11/89
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4,820,701	07/112,103	4/11/89
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4,820,771	06/856,164	4/11/89
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4,820,917	07/135,056	4/11/89
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4,821,117	07/119,905	4/11/89
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4,821,274	06/887,084	4/11/89
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4,821,422	07/146,606	4/18/89
4,821,423	07/089,105	4/18/89
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4,821,446	07/099,303	4/18/89
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4,821,477	07/143,279	4/18/89
4,821,483	07/215,401	4/18/89
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4,821,520	07/222,743	4/18/89
4,821,524	07/195,382	4/18/89
4,821,529	07/125,386	4/18/89
4,821,538	07/093,788	4/18/89
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4,821,547	07/138,967	4/18/89
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4,821,564	07/113,782	4/18/89
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4,821,584	07/168,367	4/18/89
4,821,587	07/017,737	4/18/89
4,821,591	07/028,765	4/18/89
4,821,595	07/130,057	4/18/89
4,821,600	06/696,120	4/18/89
4,821,603	07/071,227	4/18/89
4,821,607	07/134,192	4/18/89
4,821,610	07/087,370	4/18/89
4,821,617	07/091,296	4/18/89
4,821,621	06/932,564	4/18/89

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4,821,655	07/044,594	4/18/89
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4,821,660	07/076,381	4/18/89
4,821,661	07/168,843	4/18/89
4,821,663	07/051,763	4/18/89
4,821,665	07/163,171	4/18/89
4,821,668	07/082,219	4/18/89
4,821,672	07/064,676	4/18/89
4,821,679	07/123,768	4/18/89
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4,821,773	07/164,562	4/18/89
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4,821,797	07/175,408	4/18/89
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4,821,862	07/053,265	4/18/89
4,821,874	06/681,393	4/18/89
4,821,877	07/035,626	4/18/89
4,821,878	07/162,236	4/18/89
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4,821,889	07/186,407	4/18/89
4,821,890	07/085,891	4/18/89
4,821,891	07/154,363	4/18/89
4,821,892	07/228,197	4/18/89
4,821,893	07/076,117	4/18/89
4,821,895	07/001,483	4/18/89
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4,826,018	07/189,474	5/02/89
4,826,019	06/565,036	5/02/89
4,826,029	07/199,597	5/02/89
4,826,032	07/233,917	5/02/89
4,826,034	07/092,164	5/02/89
4,826,037	07/127,177	5/02/89
4,826,045	06/905,839	5/02/89
4,826,052	07/070,330	5/02/89
4,826,067	07/041,096	5/02/89
4,826,069	07/170,542	5/02/89
4,826,071	07/185,866	5/02/89
4,826,072	07/148,605	5/02/89
4,826,075	07/252,555	5/02/89
4,826,085	07/154,311	5/02/89
4,826,086	07/182,849	5/02/89
4,826,089	06/777,963	5/02/89
4,826,098	07/096,198	5/02/89
4,826,099	07/172,740	5/02/89
4,826,100	07/142,492	5/02/89
4,826,111	07/089,321	5/02/89
4,826,115	07/177,141	5/02/89
4,826,120	07/085,915	5/02/89
4,826,140	07/014,865	5/02/89
4,826,143	07/232,550	5/02/89
4,826,154	07/219,876	5/02/89
4,826,156	07/146,136	5/02/89
4,826,157	07/125,442	5/02/89
4,826,159	07/080,632	5/02/89
4,826,160	07/129,824	5/02/89
4,826,161	07/080,000	5/02/89
4,826,162	06/915,805	5/02/89
4,826,164	07/034,688	5/02/89
4,826,171	07/181,176	5/02/89
4,826,173	07/111,204	5/02/89
4,826,174	07/091,526	5/02/89
4,826,176	07/129,823	5/02/89
4,826,177	07/175,515	5/02/89
4,826,180	07/178,644	5/02/89
4,826,187	07/112,112	5/02/89
4,826,188	07/215,122	5/02/89
4,826,189	07/218,454	5/02/89
4,826,190	07/157,578	5/02/89
4,826,192	07/079,973	5/02/89
4,826,193	07/081,338	5/02/89
4,826,195	07/174,275	5/02/89
4,826,197	07/059,045	5/02/89
4,826,198	07/174,763	5/02/89
4,826,200	07/133,668	5/02/89

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4,826,212	07/095,175	5/02/89
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4,826,219	07/165,019	5/02/89
4,826,221	07/034,325	5/02/89
4,826,225	07/063,501	5/02/89
4,826,227	06/693,586	5/02/89
4,826,228	07/120,912	5/02/89
4,826,229	07/033,826	5/02/89
4,826,232	07/131,410	5/02/89
4,826,237	07/157,747	5/02/89
4,826,240	06/821,819	5/02/89
4,826,242	07/233,504	5/02/89
4,826,244	07/078,420	5/02/89
4,826,247	07/203,945	5/02/89
4,826,251	07/097,454	5/02/89
4,826,252	07/190,958	5/02/89
4,826,254	06/938,709	5/02/89
4,826,259	07/196,446	5/02/89
4,826,260	07/118,617	5/02/89
4,826,261	07/189,716	5/02/89
4,826,264	07/068,660	5/02/89
4,826,286	07/191,971	5/02/89
4,826,298	06/900,097	5/02/89
4,826,303	07/176,600	5/02/89
4,826,306	07/121,235	5/02/89
4,826,307	07/156,310	5/02/89
4,826,313	07/201,262	5/02/89
4,826,314	06/392,912	5/02/89
4,826,317	07/148,778	5/02/89
4,826,325	07/111,742	5/02/89
4,826,326	07/095,079	5/02/89
4,826,327	07/145,604	5/02/89
4,826,328	06/585,093	5/02/89
4,826,338	07/011,623	5/02/89
4,826,341	07/101,976	5/02/89
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4,826,353	07/097,811	5/02/89
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4,826,362	06/562,051	5/02/89
4,826,369	07/241,824	5/02/89
4,826,374	07/119,051	5/02/89
4,826,377	06/258,221	5/02/89
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4,826,386	06/681,913	5/02/89
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4,826,390	07/185,417	5/02/89
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4,826,396	07/149,830	5/02/89
4,826,400	06/947,457	5/02/89
4,826,402	07/132,797	5/02/89
4,826,420	07/132,903	5/02/89
4,826,428	07/149,709	5/02/89
4,826,432	07/070,547	5/02/89
4,826,443	07/062,296	5/02/89
4,826,458	07/154,967	5/02/89
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4,826,469	07/135,690	5/02/89
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4,826,475	07/078,179	5/02/89
4,826,478	07/087,802	5/02/89
4,826,479	07/071,989	5/02/89
4,826,481	07/178,835	5/02/89
4,826,483	07/190,557	5/02/89
4,826,486	07/086,894	5/02/89
4,826,502	07/072,364	5/02/89
4,826,503	06/917,348	5/02/89
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4,826,510	07/143,325	5/02/89
4,826,514	07/065,729	5/02/89
4,826,516	07/097,885	5/02/89
4,826,520	07/186,658	5/02/89
4,826,526	07/242,860	5/02/89
4,826,527	07/118,101	5/02/89
4,826,534	07/111,352	5/02/89
4,826,539	07/063,465	5/02/89
4,826,541	07/165,269	5/02/89
4,826,542	07/080,605	5/02/89
4,826,549	06/605,361	5/02/89
4,826,552	07/043,964	5/02/89
4,826,557	07/158,266	5/02/89
4,826,560	07/057,375	5/02/89
4,826,562	07/196,959	5/02/89
4,826,563	07/181,741	5/02/89
4,826,589	07/214,033	5/02/89
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4,826,592	07/109,572	5/02/89
4,826,595	07/100,586	5/02/89
4,826,596	07/215,989	5/02/89
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4,826,611	07/107,949	5/02/89
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4,826,613	06/910,042	5/02/89
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4,826,636	07/100,916	5/02/89
4,826,638	07/073,243	5/02/89
4,826,677	07/033,248	5/02/89
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4,826,682	07/033,837	5/02/89
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4,826,707	07/156,722	5/02/89
4,826,718	07/151,798	5/02/89
4,826,727	07/038,697	5/02/89
4,826,740	07/096,034	5/02/89
4,826,745	07/134,305	5/02/89
4,826,754	07/042,932	5/02/89
4,826,760	06/922,243	5/02/89
4,826,762	07/112,893	5/02/89
4,826,770	07/100,398	5/02/89
4,826,772	07/033,587	5/02/89
4,826,792	07/193,151	5/02/89
4,826,805	07/105,239	5/02/89
4,826,813	07/052,809	5/02/89
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4,826,817	06/827,992	5/02/89
4,826,820	06/900,364	5/02/89
4,826,829	07/169,110	5/02/89
4,826,836	07/118,143	5/02/89
4,826,840	07/064,017	5/02/89
4,826,841	06/836,658	5/02/89
4,826,847	06/948,422	5/02/89
4,826,849	07/117,273	5/02/89
4,826,851	06/915,356	5/02/89
4,826,855	07/199,121	5/02/89
4,826,857	07/176,479	5/02/89
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4,826,866	07/115,918	5/02/89
4,826,867	07/089,474	5/02/89
4,826,869	07/158,197	5/02/89
4,826,887	07/235,756	5/02/89
4,826,890	07/059,343	5/02/89
4,826,891	07/059,348	5/02/89
4,826,898	07/174,867	5/02/89
4,826,922	07/064,367	5/02/89
4,826,923	07/049,752	5/02/89
4,826,930	07/184,733	5/02/89
4,826,935	07/069,513	5/02/89
4,826,950	07/156,051	5/02/89
4,826,952	07/197,379	5/02/89
4,826,953	07/235,755	5/02/89
4,826,958	07/218,512	5/02/89
4,826,960	06/850,656	5/02/89
4,826,968	06/727,508	5/02/89
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4,826,975	06/940,089	5/02/89
4,826,980	07/217,805	5/02/89

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4,826,991	07/016,771	5/02/89
4,826,996	06/806,680	5/02/89
4,827,002	06/739,909	5/02/89
4,827,004	07/088,315	5/02/89
4,827,008	07/165,493	5/02/89
4,827,010	07/089,301	5/02/89
4,827,027	06/924,424	5/02/89
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4,827,049	07/173,853	5/02/89
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4,827,051	07/037,344	5/02/89
4,827,061	07/229,116	5/02/89
4,827,068	07/138,974	5/02/89
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4,827,081	07/235,703	5/02/89
4,827,089	07/205,894	5/02/89
4,827,093	07/176,270	5/02/89
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4,827,114	07/071,272	5/02/89
4,827,125	07/044,021	5/02/89
4,827,130	07/111,832	5/02/89
4,827,131	07/224,196	5/02/89
4,827,133	06/920,383	5/02/89
4,827,135	07/027,651	5/02/89
4,827,145	07/005,080	5/02/89
4,827,169	07/135,821	5/02/89
4,827,173	07/033,083	5/02/89
4,827,195	07/144,570	5/02/89
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4,827,218	07/145,720	5/02/89
4,827,227	07/219,496	5/02/89
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4,827,237	07/237,056	5/02/89
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4,827,243	07/124,487	5/02/89
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4,827,257	07/096,627	5/02/89
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4,827,319	07/178,867	5/02/89
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4,827,325	07/046,523	5/02/89
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4,827,386	07/219,199	5/02/89
4,827,387	07/201,486	5/02/89
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4,827,460	07/247,816	5/02/89
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4,827,498	06/642,187	5/02/89
4,827,506	06/914,409	5/02/89
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4,827,515	07/220,144	5/02/89
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4,827,566	07/163,726	5/09/89
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4,827,625	07/134,495	5/09/89
4,827,629	07/041,847	5/09/89
4,827,632	07/138,488	5/09/89
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4,827,639	07/038,616	5/09/89
4,827,640	07/042,919	5/09/89
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4,827,658	07/118,539	5/09/89
4,827,661	07/188,443	5/09/89
4,827,663	07/136,016	5/09/89
4,827,664	07/186,900	5/09/89
4,827,672	07/042,934	5/09/89
4,827,673	07/180,112	5/09/89
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4,827,690	07/119,959	5/09/89
4,827,695	07/158,451	5/09/89
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4,827,705	07/035,884	5/09/89
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4,827,711	07/114,221	5/09/89
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4,827,719	06/551,349	5/09/89
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4,827,732	07/185,161	5/09/89
4,827,735	07/178,576	5/09/89
4,827,738	06/777,272	5/09/89
4,827,743	07/222,624	5/09/89
4,827,744	07/232,527	5/09/89
4,827,745	07/138,432	5/09/89
4,827,759	07/185,427	5/09/89
4,827,764	07/149,550	5/09/89
4,827,767	07/148,547	5/09/89
4,827,768	07/200,942	5/09/89
4,827,769	07/245,249	5/09/89
4,827,771	07/172,293	5/09/89
4,827,772	07/109,565	5/09/89
4,827,773	07/166,579	5/09/89
4,827,776	06/894,645	5/09/89
4,827,777	07/253,349	5/09/89
4,827,784	07/069,326	5/09/89
4,827,786	07/013,409	5/09/89

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4,827,791	07/110,220	5/09/89
4,827,794	07/126,463	5/09/89
4,827,797	06/696,646	5/09/89
4,827,799	07/204,630	5/09/89
4,827,801	07/047,910	5/09/89
4,827,803	07/086,105	5/09/89
4,827,808	06/912,442	5/09/89
4,827,809	07/083,030	5/09/89
4,827,814	07/130,567	5/09/89
4,827,820	07/017,700	5/09/89
4,827,824	07/207,319	5/09/89
4,827,833	06/680,884	5/09/89
4,827,837	07/216,706	5/09/89
4,827,841	06/718,496	5/09/89
4,827,846	07/111,599	5/09/89
4,827,848	06/931,400	5/09/89
4,827,852	07/056,962	5/09/89
4,827,854	07/194,203	5/09/89
4,827,859	07/221,725	5/09/89
4,827,860	07/148,375	5/09/89
4,827,861	07/153,955	5/09/89
4,827,864	07/087,671	5/09/89
4,827,866	07/186,765	5/09/89
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4,827,873	07/061,658	5/09/89
4,827,874	07/131,570	5/09/89
4,827,876	06/532,284	5/09/89
4,827,886	07/132,276	5/09/89
4,827,892	07/200,238	5/09/89
4,827,893	07/012,364	5/09/89
4,827,896	07/114,046	5/09/89
4,827,898	07/195,823	5/09/89
4,827,903	07/080,170	5/09/89
4,827,904	07/182,844	5/09/89
4,827,909	07/175,285	5/09/89
4,827,910	07/122,327	5/09/89
4,827,913	07/245,024	5/09/89
4,827,916	07/075,558	5/09/89
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4,830,118	07/137,619	5/16/89
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4,834,211	07/151,504	5/30/89
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4,842,167	07/134,149	6/27/89
4,842,172	07/038,824	6/27/89
4,842,173	07/159,785	6/27/89
4,842,174	07/035,396	6/27/89
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4,842,223	07/165,956	6/27/89
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4,842,925	07/162,807	6/27/89
4,842,929	07/162,556	6/27/89
4,842,939	06/925,704	6/27/89

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4,842,948	06/746,858	6/27/89
4,842,949	06/746,867	6/27/89
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4,843,102	06/777,114	6/27/89
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4,843,115	07/154,439	6/27/89
4,843,122	07/043,568	6/27/89
4,843,129	06/835,211	6/27/89
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4,844,126	07/150,949	7/04/89
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4,848,757	07/148,001	7/18/89
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4,850,343	07/149,522	7/25/89
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4,851,946	07/261,885	7/25/89
4,851,949	07/205,695	7/25/89
4,851,961	07/270,773	7/25/89
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4,862,338	07/098,563	8/29/89
4,862,346	06/751,304	8/29/89
4,862,364	07/126,513	8/29/89
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4,862,462	07/132,842	8/29/89
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4,862,500	07/194,105	8/29/89
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4,862,542	07/314,890	9/05/89
4,862,543	07/156,249	9/05/89
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4,867,874	07/140,244	9/19/89
4,867,875	07/080,673	9/19/89
4,867,880	07/257,878	9/19/89
4,867,884	07/315,239	9/19/89
4,867,888	07/137,646	9/19/89
4,867,892	07/138,217	9/19/89
4,867,900	07/251,001	9/19/89
4,867,904	07/046,815	9/19/89
4,867,907	07/078,200	9/19/89
4,867,915	06/866,037	9/19/89
4,867,957	07/287,600	9/19/89
4,867,961	07/160,699	9/19/89
4,867,968	07/138,867	9/19/89
4,867,976	07/069,695	9/19/89
4,867,977	07/067,311	9/19/89
4,867,989	06/905,732	9/19/89
4,867,991	07/094,946	9/19/89
4,867,993	07/153,698	9/19/89
4,867,994	07/001,696	9/19/89
4,868,009	07/231,591	9/19/89
4,868,018	07/186,608	9/19/89
4,868,019	07/189,421	9/19/89
4,868,022	07/086,109	9/19/89
4,868,023	07/104,716	9/19/89
4,868,039	07/291,616	9/19/89
4,868,049	07/053,066	9/19/89
4,868,061	07/195,934	9/19/89
4,868,064	07/146,735	9/19/89
4,868,071	07/155,897	9/19/89
4,868,075	07/171,962	9/19/89

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4,868,089	07/183,432	9/19/89
4,868,094	07/232,771	9/19/89
4,868,096	07/092,485	9/19/89
4,868,098	07/171,917	9/19/89
4,868,103	06/831,250	9/19/89
4,868,108	06/807,930	9/19/89
4,868,120	03/335,406	9/19/89
4,868,121	06/773,459	9/19/89
4,868,152	07/170,345	9/19/89
4,868,155	07/105,055	9/19/89
4,868,157	07/105,051	9/19/89
4,868,160	07/140,003	9/19/89
4,868,165	06/868,741	9/19/89
4,868,167	07/196,415	9/19/89
4,868,168	07/120,276	9/19/89
4,868,175	07/192,060	9/19/89
4,868,178	07/153,680	9/19/89
4,868,188	06/439,098	9/19/89
4,868,189	07/140,503	9/19/89
4,868,192	07/167,343	9/19/89
4,868,194	07/248,768	9/19/89
4,868,195	07/165,045	9/19/89
4,868,198	07/177,561	9/19/89
4,868,199	07/167,264	9/19/89
4,868,200	07/166,146	9/19/89
4,868,201	07/042,924	9/19/89
4,868,202	07/136,687	9/19/89
4,868,203	07/053,021	9/19/89
4,868,205	07/167,272	9/19/89
4,868,206	06/933,801	9/19/89
4,868,220	06/898,739	9/19/89
4,868,237	06/887,157	9/19/89
4,868,250	06/822,093	9/19/89
4,868,264	07/050,032	9/19/89
4,868,266	07/253,210	9/19/89
4,868,269	06/937,720	9/19/89
4,868,272	07/250,610	9/19/89
4,868,273	07/231,479	9/19/89
4,868,280	07/231,558	9/19/89
4,868,281	07/063,953	9/19/89
4,868,283	07/055,504	9/19/89
4,868,285	07/003,948	9/19/89
4,868,299	07/106,665	9/19/89
4,868,300	07/102,083	9/19/89
4,868,306	07/260,529	9/19/89
4,868,309	07/213,969	9/19/89
4,868,311	06/847,422	9/19/89
4,868,312	07/199,023	9/19/89
4,868,314	07/181,435	9/19/89
4,868,319	07/136,893	9/19/89
4,868,320	07/259,596	9/19/89
4,868,321	07/224,274	9/19/89
4,868,323	07/136,343	9/19/89
4,868,326	07/227,780	9/19/89
4,868,331	07/068,002	9/19/89
4,868,332	07/123,748	9/19/89
4,868,338	07/165,704	9/19/89
4,868,352	07/181,293	9/19/89
4,868,353	07/175,259	9/19/89
4,868,366	07/132,028	9/19/89
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4,868,378	07/197,078	9/19/89
4,868,390	07/156,395	9/19/89
4,868,392	07/190,614	9/19/89
4,868,398	07/164,056	9/19/89
4,868,399	07/012,665	9/19/89
4,868,406	07/215,720	9/19/89
4,868,408	07/243,829	9/19/89
4,868,412	07/264,232	9/19/89
4,868,429	07/325,095	9/19/89
4,868,433	06/885,375	9/19/89
4,868,437	07/220,050	9/19/89
4,868,445	07/208,776	9/19/89
4,868,450	07/314,295	9/19/89
4,868,455	07/168,848	9/19/89
4,868,461	07/111,685	9/19/89
4,868,462	07/148,843	9/19/89
4,868,471	07/189,279	9/19/89
4,868,480	07/068,330	9/19/89
4,868,481	07/184,113	9/19/89
4,868,493	07/250,999	9/19/89
4,868,497	07/301,557	9/19/89
4,868,511	07/158,428	9/19/89
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4,868,521	07/232,731	9/19/89
4,868,528	07/211,046	9/19/89
4,868,530	07/246,943	9/19/89
4,868,535	07/267,045	9/19/89
4,868,543	06/940,549	9/19/89
4,868,544	07/212,578	9/19/89
4,868,550	07/140,886	9/19/89
4,868,551	07/018,731	9/19/89
4,868,552	06/899,939	9/19/89
4,868,558	07/158,937	9/19/89
4,868,562	07/158,984	9/19/89
4,868,567	07/088,165	9/19/89
4,868,571	07/110,824	9/19/89
4,868,582	07/230,432	9/19/89
4,868,583	07/230,426	9/19/89
4,868,588	07/309,686	9/19/89
4,868,589	07/286,886	9/19/89
4,868,595	07/273,724	9/19/89
4,868,597	07/243,129	9/19/89
4,868,602	07/223,568	9/19/89
4,868,605	07/269,990	9/19/89
4,868,606	07/269,988	9/19/89
4,868,613	07/134,603	9/19/89
4,868,624	06/841,012	9/19/89
4,868,636	07/211,157	9/19/89
4,868,652	06/292,744	9/19/89
4,868,657	07/129,756	9/19/89
4,868,658	06/808,908	9/19/89
4,868,665	07/183,869	9/19/89
4,868,672	07/101,481	9/19/89
4,868,677	07/143,495	9/19/89
4,868,693	07/153,338	9/19/89
4,868,710	07/183,584	9/19/89
4,868,715	07/200,584	9/19/89
4,868,724	07/316,851	9/19/89
4,868,727	07/294,286	9/19/89
4,868,738	06/766,024	9/19/89
4,868,756	07/012,319	9/19/89
4,868,764	07/035,104	9/19/89
4,868,767	07/079,641	9/19/89
4,868,772	07/182,438	9/19/89
4,868,773	07/111,112	9/19/89
4,868,774	07/291,199	9/19/89
4,868,789	07/098,623	9/19/89
4,868,800	07/275,270	9/19/89
4,868,801	07/112,385	9/19/89
4,868,805	07/085,071	9/19/89
4,868,833	07/083,342	9/19/89
4,868,841	07/205,963	9/19/89
4,868,845	07/043,017	9/19/89
4,868,855	06/615,843	9/19/89
4,868,860	07/158,983	9/19/89
4,868,864	07/177,534	9/19/89
4,868,876	07/052,657	9/19/89
4,868,881	07/239,783	9/19/89
4,868,883	07/195,424	9/19/89
4,868,887	07/244,596	9/19/89
4,868,893	07/192,845	9/19/89
4,868,897	07/138,367	9/19/89
4,868,898	07/231,480	9/19/89
4,868,899	07/156,181	9/19/89
4,868,900	07/125,130	9/26/89
4,868,902	07/151,845	9/19/89
4,868,903	07/181,900	9/19/89
4,868,906	07/119,176	9/19/89
4,868,909	07/162,224	9/19/89
4,868,916	06/610,013	9/19/89
4,868,918	06/871,543	9/19/89
4,868,927	07/160,323	9/26/89
4,868,929	07/191,361	9/26/89

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4,868,931	07/177,041	9/26/89
4,868,933	07/191,126	9/26/89
4,868,934	07/108,835	9/26/89
4,868,935	06/720,515	9/26/89
4,868,941	07/262,702	9/26/89
4,868,948	07/198,617	9/26/89
4,868,960	07/308,453	9/26/89
4,868,971	07/160,019	9/26/89
4,868,973	07/230,079	9/26/89
4,868,976	07/165,071	9/26/89
4,868,981	07/229,683	9/26/89
4,868,982	07/182,132	9/26/89
4,868,986	07/166,646	9/26/89
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4,868,988	07/261,761	9/26/89
4,868,990	07/192,771	9/26/89
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4,869,010	07/143,970	9/26/89
4,869,012	07/288,768	9/26/89
4,869,017	07/055,339	9/26/89
4,869,021	07/305,918	9/26/89
4,869,022	07/201,876	9/26/89
4,869,026	07/167,022	9/26/89
4,869,027	07/142,617	9/26/89
4,869,030	07/186,039	9/26/89
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4,869,039	07/232,138	9/26/89
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4,869,056	07/167,135	9/26/89
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4,869,068	07/162,270	9/26/89
4,869,077	07/088,400	9/26/89
4,869,084	07/283,579	9/26/89
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4,869,105	07/236,007	9/26/89
4,869,106	07/239,985	9/26/89
4,869,115	07/205,744	9/26/89
4,869,116	07/136,888	9/26/89
4,869,122	07/234,152	9/26/89
4,869,125	07/253,683	9/26/89
4,869,129	07/136,298	9/26/89
4,869,130	07/024,011	9/26/89
4,869,131	07/154,027	9/26/89
4,869,132	07/074,782	9/26/89
4,869,151	07/087,672	9/26/89
4,869,156	07/125,966	9/26/89
4,869,157	07/258,708	9/26/89
4,869,159	07/234,127	9/26/89
4,869,161	07/031,689	9/26/89
4,869,165	07/068,135	9/26/89
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4,869,177	07/174,396	9/26/89
4,869,178	07/031,602	9/26/89
4,869,187	07/212,912	9/26/89
4,869,190	07/213,033	9/26/89
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4,869,197	07/159,334	9/26/89
4,869,198	07/252,426	9/26/89
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4,869,226	07/231,268	9/26/89
4,869,227	07/064,302	9/26/89
4,869,228	07/264,043	9/26/89
4,869,243	07/161,081	9/26/89
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4,869,273	07/891,540	9/26/89
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4,869,297	07/168,419	9/26/89
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4,869,306	07/162,031	9/26/89
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4,869,339	07/255,313	9/26/89
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4,869,351	07/238,671	9/26/89
4,869,354	07/026,960	9/26/89
4,869,361	07/251,779	9/26/89
4,869,362	07/040,417	9/26/89
4,869,364	07/219,913	9/26/89
4,869,365	07/217,435	9/26/89
4,869,371	07/183,663	9/26/89
4,869,375	07/186,000	9/26/89
4,869,377	07/197,504	9/26/89
4,869,379	07/102,560	9/26/89
4,869,381	07/190,957	9/26/89
4,869,385	07/234,607	9/26/89
4,869,387	07/160,419	9/26/89
4,869,389	07/182,420	9/26/89
4,869,391	07/178,290	9/26/89
4,869,407	07/182,129	9/26/89
4,869,409	07/278,186	9/26/89
4,869,413	07/209,921	9/26/89
4,869,425	07/230,566	9/26/89
4,869,426	07/186,009	9/26/89
4,869,428	07/229,478	9/26/89
4,869,430	07/181,046	9/26/89
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4,869,438	07/255,739	9/26/89
4,869,440	07/175,524	9/26/89
4,869,442	07/239,805	9/26/89
4,869,447	07/154,890	9/26/89
4,869,448	07/273,694	9/26/89
4,869,452	07/216,038	9/26/89
4,869,453	07/254,031	9/26/89
4,869,454	07/098,625	9/26/89
4,869,455	07/256,359	9/26/89
4,869,457	07/319,079	9/26/89
4,869,460	07/105,304	9/26/89
4,869,463	07/229,504	9/26/89
4,869,473	07/210,481	9/26/89
4,869,479	07/217,769	9/26/89
4,869,495	07/286,241	9/26/89
4,869,499	07/296,973	9/26/89
4,869,500	07/158,282	9/26/89
4,869,506	07/225,697	9/26/89
4,869,508	07/217,715	9/26/89
4,869,509	07/235,060	9/26/89
4,869,511	07/206,284	9/26/89
4,869,514	07/091,709	9/26/89
4,869,517	07/227,819	9/26/89
4,869,519	07/215,781	9/26/89
4,869,520	07/235,320	9/26/89
4,869,524	07/063,867	9/26/89
4,869,526	07/145,401	9/26/89
4,869,530	07/216,329	9/26/89
4,869,538	07/283,420	9/26/89
4,869,539	07/207,515	9/26/89
4,869,542	07/275,003	9/26/89

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4,869,544	07/248,403	9/26/89
4,869,545	07/243,495	9/26/89
4,869,545	07/243,495	9/26/89
4,869,547	07/168,879	9/26/89
4,869,563	07/267,268	9/26/89
4,869,578	07/201,601	9/26/89
4,869,586	07/157,288	9/26/89
4,869,588	07/190,149	9/26/89
4,869,591	07/217,859	9/26/89
4,869,597	07/206,439	9/26/89
4,869,601	07/217,678	9/26/89
4,869,609	07/252,552	9/26/89
4,869,617	07/242,151	9/26/89
4,869,618	07/221,114	9/26/89
4,869,627	07/163,832	9/26/89
4,869,630	07/167,219	9/26/89
4,869,632	07/163,349	9/26/89
4,869,636	07/066,080	9/26/89
4,869,639	07/192,663	9/26/89
4,869,641	07/101,690	9/26/89
4,869,649	07/200,675	9/26/89
4,869,660	07/202,201	9/26/89
4,869,662	07/003,802	9/26/89
4,869,674	07/198,286	9/26/89
4,869,680	07/194,390	9/26/89
4,869,683	07/301,482	9/26/89
4,869,689	07/205,170	9/26/89
4,869,695	07/295,256	9/26/89
4,869,696	07/284,606	9/26/89
4,869,699	07/302,377	9/26/89
4,869,703	07/140,692	9/26/89
4,869,709	07/196,066	9/26/89
4,869,716	07/261,572	9/26/89
4,869,722	07/146,289	9/26/89
4,869,723	07/083,642	9/26/89
4,869,726	07/159,897	9/26/89
4,869,729	07/054,529	9/26/89
4,869,732	07/289,104	9/26/89
4,869,738	07/089,578	9/26/89
4,869,750	07/187,270	9/26/89
4,869,756	07/163,629	9/26/89
4,869,765	07/239,311	9/26/89
4,869,766	06/679,997	9/26/89
4,869,769	07/055,164	9/26/89
4,869,769	07/055 164	9/26/89
4,869,771	07/110,672	9/26/89
4,869,775	07/186,444	9/26/89
4,869,779	07/078,370	9/26/89
4,869,782	07/155,360	9/26/89
4,869,783	07/214,784	9/26/89
4,869,787	07/183,292	9/26/89
4,869,787	07/183,292	9/26/89
4,869,791	07/211,210	9/26/89
4,869,804	07/125,261	9/26/89
4,869,806	07/320,814	9/26/89
4,869,814	07/238,388	9/26/89
4,869,826	07/091,728	9/26/89
4,869,827	07/197,069	9/26/89
4,869,839	07/205,290	9/26/89
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4,873,943	07/138,219	10/17/89
4,873,946	07/230,141	10/17/89
4,873,947	07/158,317	10/17/89
4,873,954	07/224,719	10/17/89
4,873,955	07/245,651	10/17/89
4,873,956	07/134,265	10/17/89
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4,873,967	07/042,807	10/17/89
4,873,969	07/232,506	10/17/89
4,873,973	07/184,460	10/17/89
4,873,974	07/184,461	10/17/89
4,873,979	07/128,074	10/17/89
4,873,993	07/069,505	10/17/89
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4,873,999	07/272,798	10/17/89
4,874,007	07/296,114	10/17/89
4,874,013	07/269,294	10/17/89
4,874,026	07/177,061	10/17/89
4,874,031	07/006,987	10/17/89
4,874,038	07/309,866	10/17/89
4,874,042	07/199,525	10/17/89
4,874,044	07/256,014	10/17/89

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4,874,046	07/177,357	10/17/89
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4,874,055	07/134,039	10/17/89
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4,874,075	07/273,108	10/17/89
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4,874,098	07/177,214	10/17/89
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4,874,108	07/266,647	10/17/89
4,874,109	07/263,544	10/17/89
4,874,111	07/303,716	10/17/89
4,874,112	07/029,088	10/17/89
4,874,117	07/194,840	10/17/89
4,874,118	06/864,261	10/17/89
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4,874,124	07/149,979	10/17/89
4,874,126	07/329,966	10/17/89
4,874,130	07/065,588	10/17/89
4,874,138	07/182,933	10/17/89
4,874,140	07/262,706	10/17/89
4,874,141	07/277,202	10/17/89
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4,874,799	07/071,849	10/17/89

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4,875,571	07/134,799	10/24/89
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4,888,704	07/134,854	12/19/89
4,888,710	07/131,984	12/19/89
4,888,712	07/117,112	12/19/89
4,888,718	07/148,526	12/19/89
4,888,719	07/222,480	12/19/89
4,888,747	07/297,656	12/19/89
4,888,764	07/131,802	12/19/89
4,888,776	07/283,663	12/19/89
4,888,777	07/307,427	12/19/89
4,888,787	07/249,511	12/19/89
4,888,807	07/298,068	12/19/89
4,888,810	07/299,726	12/19/89
4,888,827	07/288,628	12/26/89
4,888,830	07/281,803	12/26/89

Patent Number	Serial Number	Issue Date
4,888,837	07/084,234	12/26/89
4,888,842	07/271,720	12/26/89
4,888,844	07/238,483	12/26/89
4,888,846	07/144,530	12/26/89
4,888,848	07/260,564	12/26/89
4,888,862	07/128,733	12/26/89
4,888,863	07/171,081	12/26/89
4,888,867	06/795,281	12/26/89
4,888,868	07/146,732	12/26/89
4,888,871	07/295,669	12/26/89
4,888,873	07/238,743	12/26/89
4,888,879	07/170,840	12/26/89
4,888,893	07/112,483	12/26/89
4,888,904	07/180,136	12/26/89
4,888,905	07/107,846	12/26/89
4,888,907	07/282,022	12/26/89
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4,888,910	07/131,848	12/26/89
4,888,911	07/183,003	12/26/89
4,888,920	07/235,479	12/26/89
4,888,928	07/165,917	12/26/89
4,888,933	06/252,935	12/26/89
4,888,937	06/572,538	12/26/89
4,888,941	07/306,080	12/26/89
4,888,949	07/182,541	12/26/89
4,888,952	07/192,095	12/26/89
4,888,960	07/251,105	12/26/89
4,888,964	07/158,611	12/26/89
4,888,966	07/230,174	12/26/89
4,888,967	07/288,219	12/26/89
4,888,968	07/290,297	12/26/89
4,888,969	07/231,347	12/26/89
4,888,970	07/110,450	12/26/89
4,888,972	07/214,321	12/26/89
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4,888,982	07/241,619	12/26/89
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4,888,995	07/269,357	12/26/89
4,888,999	07/254,590	12/26/89
4,889,010	07/090,434	12/26/89
4,889,013	07/161,958	12/26/89
4,889,018	07/265,506	12/26/89
4,889,019	07/162,029	12/26/89
4,889,021	07/294,361	12/26/89
4,889,030	07/254,680	12/26/89
4,889,032	07/265,603	12/26/89
4,889,037	07/280,100	12/26/89
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4,889,044	07/317,117	12/26/89
4,889,049	07/237,721	12/26/89
4,889,053	07/272,777	12/26/89
4,889,057	07/177,538	12/26/89
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4,889,097	07/162,197	12/26/89
4,889,103	07/345,406	12/26/89
4,889,110	07/187,085	12/26/89
4,889,111	07/110,613	12/26/89
4,889,112	07/067,631	12/26/89
4,889,115	07/117,830	12/26/89
4,889,117	07/312,951	12/26/89
4,889,121	07/006,177	12/26/89
4,889,124	07/130,026	12/26/89
4,889,139	07/195,105	12/26/89
4,889,141	07/272,767	12/26/89
4,889,146	07/275,715	12/26/89
4,889,147	07/253,770	12/26/89
4,889,152	07/302,912	12/26/89
4,889,162	07/241,106	12/26/89
4,889,165	07/241,107	12/26/89
4,889,168	07/238,041	12/26/89
4,889,171	07/077,114	12/26/89
4,889,172	07/216,283	12/26/89
4,889,180	07/338,189	12/26/89
4,889,189	07/194,697	12/26/89
4,889,193	07/204,703	12/26/89
4,889,195	07/172,589	12/26/89
4,889,199	07/054,713	12/26/89
4,889,207	07/157,954	12/26/89
4,889,211	07/244,025	12/26/89
4,889,214	07/191,572	12/26/89
4,889,215	07/262,011	12/26/89
4,889,216	07/186,957	12/26/89
4,889,219	07/233,842	12/26/89
4,889,225	07/133,803	12/26/89
4,889,226	07/216,322	12/26/89
4,889,227	07/076,018	12/26/89
4,889,234	07/244,723	12/26/89
4,889,243	07/205,934	12/26/89
4,889,245	07/286,615	12/26/89
4,889,248	07/152,174	12/26/89
4,889,253	07/156,623	12/26/89
4,889,254	07/262,716	12/26/89
4,889,255	07/252,529	12/26/89
4,889,264	07/247,158	12/26/89
4,889,267	07/189,393	12/26/89
4,889,279	07/235,937	12/26/89
4,889,281	07/234,801	12/26/89
4,889,286	07/245,693	12/26/89
4,889,287	07/175,042	12/26/89
4,889,288	07/185,833	12/26/89
4,889,290	07/316,088	12/26/89
4,889,293	07/156,495	12/26/89
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4,889,298	07/231,884	12/26/89
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4,889,307	07/309,405	12/26/89
4,889,309	07/217,425	12/26/89
4,889,313	07/170,772	12/26/89
4,889,323	07/079,673	12/26/89
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4,889,334	07/113,498	12/26/89
4,889,335	07/264,094	12/26/89
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4,889,377	07/085,138	12/26/89
4,889,378	07/215,028	12/26/89
4,889,380	07/191,700	12/26/89
4,889,383	07/351,481	12/26/89
4,889,384	07/205,383	12/26/89
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4,889,418	06/846,377	12/26/89
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4,889,443	07/278,968	12/26/89
4,889,445	07/231,729	12/26/89
4,889,451	07/114,115	12/26/89
4,889,459	07/230,039	12/26/89
4,889,464	07/262,323	12/26/89
4,889,467	07/136,807	12/26/89

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Patent Number	Serial Number	Issue Date
4,889,474	07/263,826	12/26/89
4,889,480	07/278,855	12/26/89
4,889,484	07/137,968	12/26/89
4,889,491	07/196,533	12/26/89
4,889,497	07/234,923	12/26/89
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4,889,513	07/255,366	12/26/89
4,889,516	07/122,253	12/26/89
4,889,519	07/230,469	12/26/89
4,889,520	07/321,907	12/26/89
4,889,535	07/025,318	12/26/89
4,889,537	06/861,971	12/26/89
4,889,539	07/349,526	12/26/89
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4,889,544	07/294,672	12/26/89
4,889,549	07/337,510	12/26/89
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4,889,559	06/616,954	12/26/89
4,889,563	06/881,147	12/26/89
4,889,570	07/327,842	12/26/89
4,889,573	07/197,484	12/26/89
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4,889,622	07/239,230	12/26/89
4,889,624	07/294,287	12/26/89
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4,889,659	06/909,322	12/26/89
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4,889,760	07/224,755	12/26/89
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4,889,807	06/807,253	12/26/89
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4,889,836	07/158,491	12/26/89
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4,889,854	07/198,535	12/26/89
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4,889,860	07/035,034	12/26/89
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4,889,866	07/061,752	12/26/89
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4,889,944	07/126,218	12/26/89
4,889,945	07/334,645	12/26/89
4,889,946	06/404,948	12/26/89
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4,889,957	07/213,149	12/26/89
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4,889,992	07/119,544	12/26/89
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4,890,027	07/274,248	12/26/89
4,890,034	07/063,421	12/26/89
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4,890,037	07/281,895	12/26/89
4,890,047	06/878,257	12/26/89
4,890,049	07/218,703	12/26/89
4,890,050	07/105,095	12/26/89
4,890,056	07/295,340	12/26/89
4,890,058	07/252,761	12/26/89
4,890,059	07/255,978	12/26/89
4,890,065	07/031,108	12/26/89
4,890,070	07/238,760	12/26/89
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4,890,092	07/255,942	12/26/89
4,890,116	06/849,884	12/26/89
4,890,118	07/289,881	12/26/89
4,890,122	06/902,050	12/26/89
4,890,123	07/226,489	12/26/89
4,890,136	07/194,205	12/26/89
4,890,139	07/267,296	12/26/89
4,890,182	07/239,075	12/26/89
4,890,186	07/310,673	12/26/89
4,890,191	07/304,421	12/26/89
4,890,196	07/130,309	12/26/89
4,890,201	07/288,129	12/26/89
4,890,202	07/338,833	12/26/89
4,890,204	07/158,503	12/26/89
4,890,206	07/361,215	12/26/89
4,890,209	06/728,240	12/26/89
4,890,217	07/312,404	12/26/89
4,890,218	07/231,646	12/26/89
4,890,229	07/158,193	12/26/89
4,890,239	07/110,905	12/26/89
4,890,248	07/056,195	12/26/89
4,890,249	07/168,768	12/26/89
4,890,252	07/113,954	12/26/89
4,890,295	07/192,650	12/26/89
4,890,306	07/167,918	12/26/89
4,890,326	07/163,658	12/26/89
4,890,327	07/057,474	12/26/89
4,890,329	07/202,829	12/26/89
4,890,330	07/227,291	12/26/89

Notification of Acceptance of Delayed Payment of Maintenance Fee
(35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
(4,626,118)	(06/712,536)	(12/02/86)	(3/18/85)	
Re. 32,656	07/084,554	4/26/88	8/12/87	1/13/93
4.793,287	06/851,075	12/27/88	4/14/86	3/22/93
4,347,665	06/262,457	9/07/82	5/11/81	11/29/93
4,363,791	06/260,308	12/14/92	5/04/81	2/24/93
4,364,754	06/253,311	12/21/82	4/13/81	7/30/92
4,365,553	06/308,363	12/18/82	10/05/81	2/11/93
4,369,475	06/253,316	1/18/83	4/13/81	2/24/93
4,375,480	06/275,633	3/01/83	6/22/81	1/13/93
4,377,477	06/283,034	3/22/83	7/13/81	9/30/93
4,382,427	06/307,744	5/10/83	10/02/81	6/04/93
4,382,638	06/269,621	5/10/83	6/02/81	4/19/93
4,383,161	06/261,055	5/10/83	5/06/81	1/13/93
4,386,834	06/280,621	6/07/83	7/06/81	1/13/93
4,387,931	06/253,703	6/14/83	4/13/81	5/26/93
4,387,936	06/305,364	6/14/83	9/24/81	4/26/93
4,390,371	06/289,986	6/28/83	8/04/81	3/31/93
4,392,519	06/231,872	7/12/83	2/05/81	7/27/93
4,394,252	06/335,447	7/19/83	12/29/81	6/04/93
4,394,370	06/304,367	7/19/83	9/21/81	5/28/93
4,394,370	06/304,367	7/19/88	9/21/81	5/28/93
4,395,042	06/356,776	7/26/83	3/10/82	8/18/93
4,395,162	07/277,343	7/26/83	6/25/81	6/30/93
4,395,233	06/276,182	7/26/83	6/22/81	5/24/93
4,396,148	06/314,238	8/02/83	10/23/81	1/29/93
4,398,545	06/274,302	8/16/83	6/16/81	9/13/93
4,402,986	06/286,088	9/06/83	7/23/81	1/13/93
4,403,900	06/225,713	9/13/83	1/16/81	3/31/93
4,405,422	06/420,253	9/20/83	9/14/82	6/23/93
4,409,172	06/234,120	10/11/83	2/13/81	10/30/92
4,409,172	06/234,120	10/11/83	2/13/81	2/26/93
4,411,751	06/420,252	10/25/83	9/14/82	5/26/93
4,412,651	06/371,824	11/01/83	4/26/82	3/12/93
4,413,015	06/262,088	11/01/83	5/11/81	11/15/93
4,413,029	06/356,251	11/01/83	3/08/82	1/29/93
4,413,690	06/357,460	11/08/83	3/12/82	2/11/93
4,415,780	06/267,787	11/15/83	5/28/81	4/29/93
4,416,077	06/388,272	11/22/83	6/14/82	10/26/93
4,421,003	06/324,848	12/20/83	11/25/81	2/17/93
4,421,148	06/316,138	12/20/83	10/29/81	11/15/93
4,422,278	06/270,891	12/27/83	6/05/81	2/17/93
4,422,875	06/237,906	12/27/83	2/25/81	2/24/93
4,422,976	06/364,894	12/27/83	4/02/82	2/17/93
4,427,296	06/299,209	1/24/84	9/03/81	2/25/93
4,427,773	06/255,169	1/24/84	4/17/91	10/21/93
4,428,315	06/319,671	1/31/84	11/09/81	9/10/93
4,432,374	06/325,012	2/21/84	11/25/81	3/30/93
4,432,591	06/257,703	2/21/84	4/27/81	11/29/93
4,435,060	06/346,768	3/06/84	2/08/82	3/22/93
4,437,497	06/305,002	3/20/84	9/23/81	3/31/93
4,439,249	06/506,863	3/27/84	6/22/83	8/24/93
4,442,661	06/412,642	4/17/84	8/30/8	12/30/92
4,442,751	06/392,899	4/17/84	6/28/82	4/06/93
4,443,401	06/331,738	4/17/84	12/17/81	1/29/93
4,444,465	06/333,818	4/24/84	6/23/81	2/24/93
4,444,507	06/392,759	4/24/84	6/28/82	1/13/93
4,445,184	06/283,117	4/24/84	7/13/81	1/28/93
4,445,730	06/288,306	5/01/84	7/30/81	9/13/93
4,446,258	06/454,818	5/01/84	12/30/82	10/05/93
4,447,031	06/253,438	5/08/84	4/13/81	4/29/93
4,447,209	06/319,080	5/08/84	11/06/81	5/11/93
4,448,357	06/355,794	5/15/84	3/08/82	6/08/93
4,448,553	06/418,534	5/15/84	9/15/82	4/29/93
4,448,638	06/426,973	5/15/84	9/29/82	5/20/92
4,448,676	06/514,603	5/15/84	7/18/83	5/12/93
4,448,735	06/431,893	5/15/84	9/30/82	10/21/93
4,449,073	06/388,120	5/15/84	6/14/82	4/29/93

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4,449,407	06/417,849	5/22/84	9/14/82	11/15/93
4,450,838	06/233,244	5/29/84	2/10/81	2/24/93
4,451,901	06/341,530	5/29/84	1/21/82	9/15/93
4,453,598	06/420,140	6/12/84	9/20/82	4/25/93
4,454,019	06/338,590	6/12/84	1/11/82	5/12/93
4,454,020	06/467,618	6/12/84	2/17/83	5/12/93
4,454,105	06/432,630	6/12/84	10/05/82	2/11/93
4,454,662	06/347,419	6/19/84	2/10/82	9/29/92
4,454,889	06/534,161	6/19/84	9/21/83	4/30/93
4,455,543	06/278,393	6/19/84	6/29/81	7/27/93
4,455,764	06/386,220	6/26/84	6/08/82	3/30/93
4,457,381	06/529,525	7/03/84	9/06/83	5/12/93
4,457,585	06/297,980	7/03/84	8/31/81	4/21/93
4,461,277	06/466,663	7/24/84	2/15/83	5/28/93
4,461,277	06/466,663	7/24/84	2/15/83	5/28/93
4,461,423	06/276,185	7/24/84	6/22/81	8/19/92
4,462,822	06/549,845	7/13/84	11/08/83	2/11/93
4,464,326	06/423,154	8/07/84	9/24/82	11/15/93
4,464,562	06/379,159	8/07/84	5/17/82	2/11/93
4,464,596	06/536,607	8/07/84	9/28/83	11/23/93
4,468,079	06/517,649	8/28/84	7/27/83	3/03/93
4,468,183	06/413,513	8/28/84	8/31/82	2/24/93
4,468,986	06/250,429	9/04/84	4/02/81	8/31/93
4,469,002	06/380,357	9/04/84	5/21/82	3/22/93
4,469,002	06/380,357	9/04/84	5/21/82	3/22/93
4,469,815	06/283,793	9/04/84	7/16/81	2/25/93
4,469,971	06/508,176	9/04/84	6/27/83	11/15/93
4,469,976	06/395,546	9/04/84	7/06/82	4/25/93
4,469,994	06/483,813	9/04/84	4/11/83	11/23/93
4,474,012	06/513,468	10/02/84	7/13/83	11/15/93
4,474,240	06/460,130	10/02/84	1/24/83	4/25/93
4,475,273	06/529,657	10/09/84	9/06/83	3/22/93
4,475,312	06/535,208	10/09/84	9/23/83	2/25/93
4,475,577	06/567,134	10/09/84	12/30/83	12/30/92
4,475,766	06/497,147	10/09/84	5/23/83	9/22/93
4,476,140	06/494,652	10/09/84	5/16/83	3/22/93
4,476,140	06/494,652	10/09/84	5/16/83	7/27/93
4,476,262	06/454,771	10/09/84	12/30/82	11/15/93
4,478,260	06/515,687	10/23/84	7/21/83	5/28/93
4,478,299	06/362,282	10/23/84	3/26/82	10/28/93
4,478,744	06/342,418	10/23/84	1/25/82	2/25/93
4,479,130	06/383,627	10/23/84	6/01/82	9/13/93
4,479,655	06/564,471	10/30/84	12/21/83	3/22/93
4,480,207	06/453,666	10/30/82	12/27/82	11/15/93
4,480,957	06/484,882	11/06/84	4/14/83	11/15/93
4,481,057	06/278,955	11/06/84	6/30/81	6/23/93
4,481,751	06/288,140	11/13/84	7/29/81	5/17/93
4,482,358	06/476,099	11/13/84	3/17/83	11/23/93
4,482,577	06/216,889	11/13/84	12/16/80	9/13/93
4,483,397	06/453,050	11/20/84	12/27/82	12/10/93
4,485,467	06/350,096	11/27/84	2/18/82	6/14/93
4,486,287	06/577,016	12/04/84	2/06/84	2/26/93
4,488,096	06/296,861	12/11/84	8/27/81	3/22/93
4,488,386	06/437,898	12/18/84	11/01/82	3/26/93
4,490,529	06/529,214	12/25/84	9/06/83	4/05/93
4,563,617	06/456,817	1/07/86	1/10/83	9/03/93
4,563,663	06/496,024	1/07/86	5/19/83	5/11/93
4,566,602	06/686,302	1/28/86	12/26/84	6/22/93
4,566,602	06/686,302	1/28/86	12/26/84	6/22/93
4,577,625	06/600,555	3/25/86	3/06/84	4/26/93
4,583,190	06/370,484	4/15/86	4/21/82	2/25/93
4,585,795	06/726,299	4/29/86	4/24/85	4/29/93
4,597,500	06/705,664	7/01/86	2/26/85	6/23/93
4,597,500	06/705,664	7/01/86	2/26/85	6/23/93
4,605,047	06/557,146	8/12/86	3/17/83	6/30/93
4,615,686	06/752,292	10/07/86	7/03/85	6/08/93
4,616,512	06/674,165	10/14/86	11/23/84	2/17/93
4,619,047	06/698,826	10/28/86	1/31/85	8/25/93
4,619,610	06/754,944	10/28/86	7/15/85	1/13/93
4,625,071	06/668,131	11/25/86	11/05/84	1/13/93
4,626,142	06/712,668	12/02/86	3/18/85	1/29/93
4,626,742	06/593,578	12/02/86	3/26/84	2/10/93
4,631,715	06/731,049	12/23/86	5/06/85	1/13/93
4,635,151	06/694,704	1/06/87	1/25/85	4/26/93
4,636,651	06/697,162	1/13/87	2/01/85	2/17/93

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4,637,731	06/700,701	1/20/87	1/16/85	1/28/93
4,640,075	06/818,204	2/03/87	1/13/86	3/31/93
4,640,898	06/518,965	2/03/87	8/01/83	3/31/93
4,641,012	06/778,908	2/03/87	9/23/85	12/08/93
4,641,514	06/553,168	2/03/87	11/18/83	2/11/93
4,641,910	06/641,674	2/03/87	8/17/84	2/11/93
4,643,158	06/715,206	2/17/87	3/25/85	1/06/92
4,643,272	06/739,551	2/17/87	5/30/85	3/31/93
4,646,972	06/663,303	3/03/87	10/22/84	2/24/93
4,648,001	06/726,602	3/03/87	4/23/85	2/24/93
4,648,700	06/738,093	3/10/87	5/24/85	4/16/93
4,650,306	06/726,017	3/17/87	4/22/85	4/19/93
4,651,185	06/723,509	3/17/87	4/15/85	1/13/93
4,652,245	06/822,937	3/24/87	1/27/86	5/26/93
4,654,623	06/680,904	3/31/87	12/12/84	4/23/93
4,655,000	06/727,051	4/07/87	4/25/85	2/26/93
4,655,120	06/812,848	4/07/87	12/23/85	1/15/93
4,655,126	06/730,673	4/07/87	5/03/85	5/28/93
4,655,530	06/819,367	4/07/87	1/16/86	4/02/93
4,658,144	06/756,392	4/14/87	7/17/85	2/23/93
4,658,917	06/775,106	4/21/87	9/09/85	1/13/93
4,661,071	06/622,997	4/28/87	6/21/84	9/13/93
4,662,006	06/772,381	5/05/87	9/05/85	1/15/93
4,662,130	06/884,455	5/05/87	7/11/86	2/11/93
4,662,429	06/896,155	5/05/87	8/13/86	2/11/93
4,664,751	06/762,813	5/12/87	8/05/85	4/14/92
4,666,154	06/698,431	5/19/87	2/05/85	8/25/93
4,667,155	06/816,896	5/19/87	1/06/86	6/08/93
4,667,773	06/879,817	5/26/87	6/27/86	6/25/93
4,667,773	06/879,817	5/26/87	6/27/86	6/25/93
4,667,840	06/914,941	5/26/87	10/03/86	3/31/93
4,668,841	06/872,202	5/26/87	6/09/86	4/27/93
4,670,890	06/585,330	6/02/87	3/01/84	4/29/93
4,670,890	06/585,330	6/02/87	3/01/84	4/29/93
4,671,016	06/852,153	6/09/87	4/15/86	8/24/93
4,671,770	06/674,966	6/09/87	11/26/84	7/27/93
4,673,549	06/836,978	6/16/87	3/06/86	3/31/93
4,674,503	06/240,728	6/23/87	3/05/81	1/13/93
4,674,692	06/869,086	6/23/87	5/30/86	2/25/93
4,674,849	06/731,366	6/23/87	5/07/85	7/27/93
4,675,466	06/859,504	6/23/87	4/05/86	8/23/93
4,675,467	06/859,505	6/23/87	4/05/86	9/22/93
4,676,240	06/773,991	6/30/87	9/09/85	1/13/93
4,676,311	06/668,515	6/30/87	11/05/84	1/28/93
4,678,219	06/863,059	7/07/87	5/14/86	8/24/93
4,679,236	06/684,918	7/07/87	12/21/84	7/15/93
4,679,330	06/808,037	7/14/87	12/12/85	8/30/93
4,679,882	06/777,055	7/14/87	9/17/85	2/11/93
4,679,995	06/784,512	7/14/87	10/04/85	4/21/93
4,680,837	06/816,101	7/21/87	12/23/85	6/21/93
4,680,837	06/816,101	7/21/87	12/23/85	6/21/93
4,681,038	06/825,122	7/21/87	2/03/86	9/14/93
4,681,055	06/804,870	7/21/87	12/05/85	10/26/93
4,681,247	06/843,837	7/21/87	3/26/86	11/15/93
4,681,928	06/616,329	7/21/87	6/01/84	9/30/93
4,683,719	06/813,967	8/04/87	12/27/85	4/30/93
4,685,047	06/886,138	8/04/87	7/16/86	5/17/93
4,685,133	06/776,611	8/04/87	9/16/85	6/09/93
4,685,568	06/898,648	8/11/87	8/21/86	2/24/93
4,685,837	06/871,788	8/11/87	6/09/86	7/15/93
4,685,837	06/871,788	8/11/87	6/09/86	7/15/93
4,687,362	06/902,422	8/18/87	8/29/86	1/13/93
4,689,551	06/772,798	8/25/87	9/05/885	4/27/93
4,689,891	06/925,240	9/01/87	10/31/86	4/29/93
4,691,441	07/008,278	9/08/87	1/28/87	9/30/93
4,693,282	06/854,845	9/15/87	4/22/86	2/26/93
4,693,318	06/786,050	9/15/87	10/10/85	10/26/93
4,693,329	06/676,243	9/15/87	11/29/84	2/26/93
4,693,355	06/796,742	9/15/87	11/12/85	2/26/93
4,694,601	06/799,302	9/22/87	11/18/85	9/22/93
4,695,385	06/728,204	9/22/87	4/29/85	3/19/93
4,696,315	06/777,614	9/29/87	9/19/85	3/11/93
4,696,315	06/777,614	9/29/87	9/19/85	3/11/93
4,696,832	06/876,082	9/29/87	6/19/86	2/22/93
4,696,837	06/797,364	9/29/87	11/12/85	2/17/93

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4,697,908	06/706,505	10/06/87	2/28/85	5/26/93
4,700,619	06/925,282	10/20/87	10/30/86	3/11/93
4,702,094	06/802,424	10/27/87	11/27/85	9/30/93
4,702,696	06/923,844	10/27/87	10/28/86	7/30/93
4,703,766	06/871,888	11/03/87	6/06/86	2/10/93
4,704,725	06/829,531	11/03/87	2/14/86	3/03/93
4,705,106	06/879,619	11/10/87	6/27/86	2/24/93
4,705,175	07/015,147	11/10/87	2/17/87	2/11/93
4,705,698	06/923,350	11/10/87	10/27/86	8/27/93
4,707,361	06/761,988	11/17/87	8/02/85	1/15/93
4,708,160	06/899,721	11/24/87	8/25/86	5/26/93
4,708,516	06/623,559	11/24/87	6/22/84	4/26/93
4,709,400	06/865,753	11/24/87	5/22/86	3/31/93
4,710,751	06/855,400	12/01/87	4/24/86	4/09/93
4,711,058	06/864,999	12/08/87	2/06/86	2/11/93
4,711,161	06/318,683	12/08/87	11/05/81	2/11/93
4,712,533	06/866,391	12/15/87	5/22/86	7/15/93
4,712,629	06/903,279	12/15/87	9/03/86	2/17/93
4,713,086	06/585,661	12/15/87	3/02/84	2/11/93
4,713,111	06/894,548	12/15/87	8/08/86	2/11/93
4,713,315	06/939,909	12/15/87	12/09/86	6/11/93
4,713,972	06/876,225	12/22/87	6/19/86	2/26/93
4,714,231	06/850,909	12/22/87	4/08/86	2/24/93
4,715,658	07/020,131	12/29/87	2/26/87	2/26/93
4,715,922	06/846,601	12/29/87	3/31/86	2/24/93
4,716,087	06/940,246	12/28/87	12/10/86	3/11/93
4,718,051	06/686,218	1/05/88	12/26/84	8/11/93
4,719,612	06/745,017	1/12/88	6/14/89	9/13/93
4,719,937	06/802,997	1/19/88	11/29/85	1/13/93
4,721,165	06/860,017	1/26/88	5/06/86	9/30/92
4,721,877	06/778,001	1/26/88	9/20/85	2/24/93
4,722,098	07/043,261	2/02/88	4/01/87	11/09/93
4,724,491	06/645,117	2/09/88	8/28/84	2/24/93
4,724,637	06/864,664	2/16/88	5/19/86	7/28/93
4,724,837	06/804,818	2/16/88	12/04/85	2/24/93
4,724,962	06/928,581	2/16/88	11/13/86	9/13/93
4,725,126	06/841,326	2/16/88	3/19/86	10/26/93
4,725,234	06/766,050	2/16/88	8/15/85	3/03/93
4,725,977	06/834,665	2/16/88	2/28/86	8/24/93
4,726,627	06/799,081	2/23/88	11/18/85	7/09/93
4,726,685	06/875,508	2/23/88	6/18/86	9/15/93
4,726,846	06/856,031	2/23/88	4/25/86	1/13/93
4,726,929	07/041,650	2/23/88	4/21/87	1/13/93
4,728,613	06/890,620	3/01/88	8/05/86	2/24/93
4,729,575	06/829,105	3/08/88	2/14/86	3/31/93
4,731,189	06/912,413	3/15/88	9/29/86	10/21/93
4,731,540	06/844,303	3/15/88	3/26/86	4/30/93
4,731,828	06/742,352	3/15/88	6/07/85	3/31/93
4,731,828	06/742,352	3/15/88	6/07/85	1/29/93
4,731,828	06/742,352	3/15/88	6/07/85	3/31/93
4,731,980	06/942,849	3/22/88	12/17/86	1/14/93
4,732,755	06/489,590	3/22/88	4/28/83	1/14/93
4,733,436	07/040,370	3/29/88	4/16/87	9/28/93
4,733,749	06/834,403	3/29/88	2/26/86	1/14/93
4,735,094	07/007,926	4/05/88	1/28/87	4/29/93
4,735,454	06/687,948	4/05/88	12/31/84	3/31/93
4,736,240	06/856,660	4/05/88	4/28/86	9/21/93
4,738,414	06/837,730	4/19/88	3/10/86	10/29/92
4,738,486	06/940,939	4/19/88	12/12/86	1/13/93
4,738,519	07/056,608	4/19/88	6/01/87	6/25/93
4,738,519	07/056,608	4/19/88	6/01/87	6/25/93
4,738,836	06/923,249	4/19/88	10/27/86	12/23/92
4,739,223	06/919,504	4/19/88	10/16/86	2/24/93
4,739,626	07/034,541	4/26/88	4/06/87	5/17/93
4,739,626	07/034,541	4/26/88	4/06/87	5/17/93
4,739,960	06/422,825	4/26/88	9/24/82	6/21/93
4,739,960	06/422,825	4/26/88	9/24/82	6/21/93
4,740,663	07/000,075	4/26/88	1/02/87	3/22/93
4,740,777	06/944,216	4/26/88	12/22/86	2/24/93
4,741,229	07/014,817	5/03/88	2/13/87	6/10/93
4,741,351	06/709,079	5/03/88	3/07/85	11/15/93
4,741,434	07/061,723	5/03/88	6/15/87	1/13/93
4,743,011	06/882,785	5/10/88	7/07/86	6/23/93
4,743,011	06/882,785	5/10/88	7/07/86	6/23/93
4,743,597	06/822,878	5/10/88	1/27/86	9/28/93

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4,743,688	06/902,380	5/10/88	9/02/86	9/14/93
4,743,884	06/936,518	5/10/88	12/01/86	6/09/93
4,743,884	06/936,518	5/10/88	12/01/86	6/09/93
4,744,083	06/650,493	5/10/88	9/14/84	2/03/93
4,744,116	06/940,054	5/17/88	12/10/86	3/22/93
4,744,186	07/021,400	5/17/88	3/04/87	3/01/93
4,744,382	07/043,955	5/18/88	4/29/87	6/23/93
4,745,033	07/029,691	5/17/88	3/24/87	2/11/93
4,745,056	06/663,842	5/17/88	10/23/84	1//13/93
4,745,472	06/248,824	5/17/88	3/30/81	6/09/93
4,745,661	07/034,738	5/24/88	4/06/87	9/20/93
4,746,336	07/017,699	5/24/88	2/23/87	2/22/93
4,746,854	06/925,832	5/24/88	10/29/86	5/17/93
4,747,172	06/667,889	5/31/88	11/02/84	5/04/93
4,748,929	07/029,054	6/07/88	3/23/87	2/11/93
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Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
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4,784,908	07/084,803	11/15/88	8/13/87	3/18/93
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4,785,473	06/675,419	11/15/88	11/27/84	4/30/93
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4,788,024	06/833,128	11/29/88	2/24/86	7/23/93
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4,789,286	07/058,673	12/06/88	5/27/87	4/06/93
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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
February 14-18, 1994

Date Issued	Type of Proceeding[1]	Proceeding ■ App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
2-16	EX	74/095,923	Upsher-Smith Laboratories, In■	2(e)(1); whether the matter asserted for registration functions as a trademark	Refusal Reversed (on both grounds)		"THE NATURAL SOLUTION TO VAGINAL DRYNESS" [vaginal lubricating inserts]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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	Sacramento: California State Library	(916) 654-0069
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Columbus: Ohio State University Libraries	(614) 292-6175
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Clemson University Libraries	(803) 656-3024
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	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
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	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Naprona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	3/27/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/21/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	11/20/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	11/20/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	6/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	9/01/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	8/14/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	3/30/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	7/29/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	7/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	8/08/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	11/03/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	2/08/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	11/06/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/29/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/06/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	5/13/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during March 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,009,494 to 4,015,293 inclusive
Plant Patents ..... 4,019 to 4,031

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of March 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/93	01/13/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	11/03/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/22/93	11/12/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/20/93	10/20/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	11/12/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/05/93	01/26/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments- Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	01/01/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering- Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/24/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 , Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/03/93	09/13/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	01/07/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/93	01/24/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/06/93	01/07/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	10/06/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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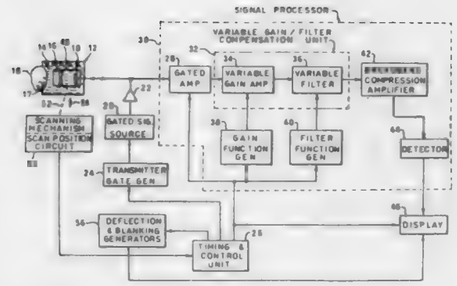
UMI

REEXAMINATIONS

APRIL 5, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,016,750 (2264th)
ULTRASONIC IMAGING METHOD AND APPARATUS
Philip S. Green, Atherton, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Reexamination Request Nos. 90/002,917, Dec. 16, 1992 and 90/002,936, Jan. 26, 1993 and 90/002,959, Jan. 29, 1993 and 90/003,133, Jul. 20, 1993.
Reexamination Certificate for Patent No. 4,016,750, issued Apr. 12, 1977, Ser. No. 629,594, Nov. 6, 1975.
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—629



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

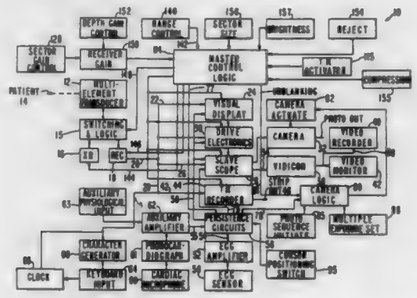
The patentability of claims **17** and **18** is confirmed.

Claims **1**, **3**, **5**, **9–16** and **20** are determined to be patentable as amended.

Claims **2**, **4**, **6–8** and **19**, dependent on an amended claim, are determined to be patentable.

1. In an ultrasonic system for the examination of the interior of objects, [such as body parts,] the combination comprising,
means for insonification of an object under examination with a broadband ultrasonic wave signal,
means for receiving echo signals from discontinuities over a range of depths within the insonified object and for converting the same to electrical signals,
means for filtering said electrical signals by bandpass filter means having a continuously variable, unitary, passband, and
means for compensating for depth dependent changes in the spectral distribution of the echo signals by time varying said unitary passband of the bandpass filter means in accordance with the depth of the discontinuity from which the echo signal is reflected while receiving the echo signals.

B1 4,413,630 (2257th)
SECTOR SCANNER DISPLAY AND RECORDING SYSTEM FOR ULTRASONIC DIAGNOSIS
Weston A. Anderson; Lloyd D. Clark, both of Palo Alto, and William L. Beaver, Los Altos Hills, all of Calif., assignors to Diasonics Delaware, Inc.
Reexamination Request No. 90/002,716, May 4, 1992.
Reexamination Certificate for Patent No. 4,413,630, issued Nov. 8, 1983, Ser. No. 239,251, Mar. 2, 1981.
Division of Ser. No. 914,323, Jun. 12, 1978, Pat. No. 4,274,422, which is a continuation of Ser. No. 673,500, Apr. 5, 1976, abandoned
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.04



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–2** and **7–8** is confirmed.

Claims **3–6**, **9–11**, **13** and **15–17** are cancelled.

Claims **12** and **14** are determined to be patentable as amended.

New claim **18** is added and determined to be patentable.

1. An ultrasonic system of the type utilized in patient cardio and cardiovascular diagnosis comprising:
first means including a multi-element transducer for generating and displaying a fan shaped two-dimensional real-time operator-viewable image of a patient region being examined from ultrasonic energy directed into said patient by said transducer and reflected out of said region into said transducer, whereby said two dimensional real-time image is generated by said first means;
ECG recording means operatively associated with said first means, and adapted for connection to said patient being examined, for generating an ECG output from said patient;
means for displaying in real time said ECG output simultaneously with said fan shaped two-dimensional operator viewable image of said patient region being examined on an operator viewable display; and
means responsive to said means for generating said image, for effecting simultaneously with said fan shaped real time two-dimensional image and said ECG output, a TM recording corresponding to a preselected region of said fan shaped real time two-dimensional image viewable during patient examination.

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B1 4,565,647 (2258th)

FOAMING SURFACTANT COMPOSITIONS

Ramon A. Lleando, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Reexamination Request Nos. 90/002,719, May 7, 1992 and 90/002,945, Feb. 1, 1993.
Reexamination Certificate for Patent No. 4,565,647, issued Jul. 12, 1982, Ser. No. 395,751, Jan. 21, 1986.
Int. Cl.[5] B01F *17/02, 17/12, 17/56;* B01J *13/00*
U.S. Cl. 252—354

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** and **10** are cancelled.

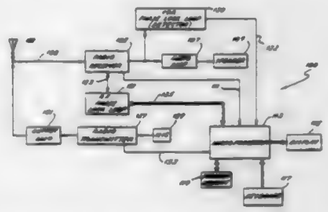
New claims **11–22** and **23** are added and determined to be patentable.

B1 4,843,399 (2259th)

PORTABLE NAVIGATIONAL COMMUNICATIONS TRANSCEIVER

Robert A. Bongiorno, Glenside, and John F. Smith, Warminster, both of Pa., assignors to Narco Avionics, Inc., Fort Washington, Pa.

Reexamination Request No. 90/002,857, Oct. 13, 1992.
Reexamination Certificate for Patent No. 4,843,399, issued Jun. 27, 1989, Ser. No. 892,065, Jul. 30, 1986.
Int. Cl.[5] G01S *1/44*
U.S. Cl. 342—404



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

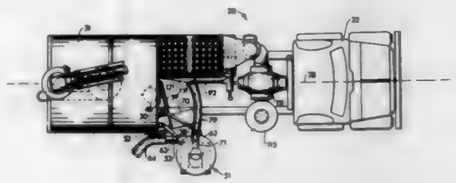
1. A navigational communications transceiver for providing radio communication, bearing information and a localizer signal indicator, comprising:
antenna connection;
a radio receiver circuit connected to said antenna connection;
an audio amplifier circuit connected to said radio receiver circuit;
a speaker connected to said audio amplifier circuit;
a RF phase lock loop circuit connected to said radio receiver circuit;
a microprocessor connected to said phase lock loop circuit and to said radio receiver circuit;
a display connected to said microprocessor;
a keyboard connected to said microprocessor;
a radio transmitter circuit connected to said microprocessor;
a microphone connected to said radio transmitter circuit;
an output amplifier circuit connected to the output of said radio transmitter circuit, the output of said output amplifier circuit being connected to said antenna connection;
a VOR phase lock loop circuit connected between said radio receiver and said microprocessor; and
a programmable memory connected to said microprocessor and containing instructions:
wherein said memory and the instructions thereof operate in conjunction with said microprocessor to calculate bearing information and to provide the bearing decoder function whereby the phase difference between two signals establishes an electronic counter period wherein pulses received are counted and converted into bearing information by said microprocessor under stored program instructions, this calculation, being performed entirely within the microprocessor and memory structure.

B1 5,030,259 (2260th)

PORTABLE VACUUM CLEANING SYSTEM

Earl R. Bryant; Jerry W. Richards, both of Birmingham; James N. Carnathan, Heuytown; William M. Franklin, Birmingham; Earnest N. Hutcheson, Birmingham, and Elie A. Boukhier, Birmingham, all of Ala., assignors to Guzzler Manufacturing, Inc., Birmingham, Ala.

Reexamination Request No. 90/002,915, Dec. 16, 1992.
Reexamination Certificate for Patent No. 5,030,259, issued Jul. 9, 1991, Ser. No. 452,118, Dec. 18, 1989.
Int. Cl.[5] A47L *5/00;* B01D *50/00*
U.S. Cl. 55—302



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16**, and **23–33** is confirmed.

Claim **21** is cancelled.

Claims **17** and **18** are determined to be patentable as amended.

Claims **19**, **20**, and **22**, dependent on an amended claim, are determined to be patentable.

New claims **34–41** and added and determined to be patentable.

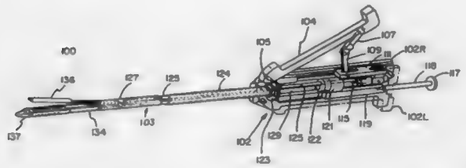
17. A portable vacuum cleaning system for separating particles from *a* particle-laden airstream, said system comprising:
a portable frame having a longitudinal axis;
a large collection tank mounted on said portable frame for collecting and transporting particles separated from the airstream;
a filter bag house mounted on said portable frame;
a *cyclone* particle separator mounted on said portable frame with said *particle* separator [means] having a lower portion, an air stream inlet, and an airstream outlet;
blower means for urging an airstream to pass *through said bag house and said collection tank and* sequentially through said airstream inlet, through said particle separator [means] and to exit through said airstream outlet;
the improvement therein comprising:
movable support means for supporting said particle separator and moving [it] *said particle separator independently with respect to said collection tank and said filter bag house* between a first position adjacent said portable frame longitudinal axis and a second position located further laterally of said longitudinal axis; [and]
a conduit for connection at one of its ends to said air stream inlet of said particle separator and with its other end movable for receiving particles from about said system; and
particle release means mounted to said lower portion of said particle separator for releasing accumulated particles from said particle separator when said particle separator is in said second position *to facilitate discharge of particles collected in the particle separator.*

B1 5,040,715 (2261st)

APPARATUS AND METHOD FOR PLACING STAPLES IN LAPAROSCOPIC OR ENDOSCOPIC PROCEDURES

David T. Green, Westport; Henry Bolanos, East Norwalk; Daniel E. Alesi, New Fairfield; Keith Ratcliff, Sandy Hook, and Charles R. Sherts, Southport, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Reexamination Request No. 90/003,014, Apr. 5, 1993.
Reexamination Certificate for Patent No. 5,040,715, issued Aug. 20, 1991, Ser. No. 358,646, May 26, 1989.
Int. Cl.[5] A61B *17/072*
U.S. Cl. 227—176



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **3**, **4**, **6**, **8**, **9**, **10**, **11**, **12**, **13**, **16**, **17**, **18**, **20**, **22**, **27**, **28**, **29**, **30**, **31**, **32**, **33**, **34**, **36**, **39**, and **40** are determined to be patentable as amended.

Claims **5**, **7**, **14**, **15**, **19**, **21**, **23**, **24**, **25**, **26**, **35**, **37** and **38**, dependent on an amended claim, are determined to be patentable.

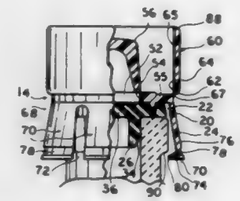
1. A surgical apparatus for driving surgical fasteners into body tissue comprising:
a) a frame;
b) an endoscopic portion defining a longitudinal axis and extending distally from said frame, said endoscopic portion including:
i) an elongated housing having a distal member for mounting a cartridge assembly, said cartridge assembly including a plurality of surgical fasteners slidably mounted therein, and having a tissue engaging surface;
ii) an anvil member having a fastener forming surface, and a proximal end mounted to said elongated housing such that said anvil member is movable between an open position and a closed position wherein said fastener forming surface is in close cooperative alignment with said tissue engaging surface of said cartridge assembly;
iii) means for moving said anvil member between said open position and said closed position comprising:
a) a tubular collar disposed around at least a portion of said housing and said anvil member, said tubular collar having a distal camming edge [and being movable] *which moves* between a first position in which said camming edge is located proximally to the proximal end of said anvil member, and a second position in which said camming edge is located distally to the proximal end of said anvil member, said tubular collar [cooperating with] *engaging* said anvil member such that when said collar is moved from said first position to said second position, said anvil member is urged to said closed position; and,
b) means for moving said collar between said first position and said second position; [and,]
iv) means for ejecting said surgical fasteners from said cartridge assembly, whereby said fasteners engage said fastener forming surface[.] *; and*
v) *means which translates with respect to said elongated housing independent of said tubular collar for actuating said ejecting means.*

B1 5,085,332 (2262nd)

CLOSURE ASSEMBLY

William A. Gettig, and Larry E. Shook, both of Millheim, Pa., assignors to Gettig Technologies Incorporated, Spring Mills, Pa.

Reexamination Request No. 90/002,946, Jan. 25, 1993.
Reexamination Certificate for Patent No. 5,085,332, issued Feb. 4, 1992, Ser. No. 683,814, Apr. 11, 1991.
Int. Cl.[5] B65D *41/62*
U.S. Cl. 215—249



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5**, **8** and **10** is confirmed.

Claims **1–4**, **6**, **7**, **9** and **11** are cancelled.

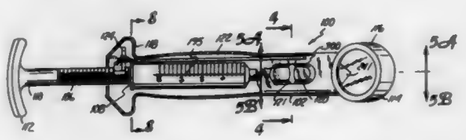
5. A closure assembly according to claim **1** including, an annular ring depending from said cap top wall, an upwardly facing circular slot within said stopper rim, and
said annular ring disposed within said circular slot.

B1 5,147,300 (2263rd)

BALLOON CATHETER INFLATION DEVICE

David B. Robinson, Chanhassen; Daniel O. Adams, Blaine; William H. Penny, St. Anthony, and Gerald G. Voegele, St. Bonifacius, all of Minn., assignors to SciMed Life Systems, Inc., Minneapolis, Minn.

Reexamination Request No. 90/002,951, Feb. 10, 1993.
Reexamination Certificate for Patent No. 5,147,300, issued Sep. 15, 1992, Ser. No. 482,828, Feb. 21, 1990.
Int. Cl.[5] A61M *79/00*
U.S. Cl. 604—97



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **22–28** is confirmed.

Claims **1**, **11**, **29**, **32**, **40** and **41** are determined to be patentable as amended.

Claims **2–10**, **12–21**, **30–31**, **33–39**, dependent on an amended claim, are determined to be patentable.

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1. A pressure controller for use with a balloon-type angioplasty catheter, the pressure controller comprising:

a housing;

a syringe body mounted in the housing, with the syringe body having an open proximal end and a distal end in fluid communication with an angioplasty catheter;

a syringe plunger having a distal portion longitudinally and sealably received within the open proximal end of the syringe body and a proximal end extending out of the housing, with the plunger being movable longitudinally relative to the syringe body for pressurizing the syringe body and angioplasty catheter connected thereto;

a pressure measurement gauge in fluid communication with the syringe body; and

a plunger lock assembly mounted in the housing for selectively limiting longitudinal movement of the syringe plunger, the lock assembly including:

a latch movable *only* laterally between a first position engaged with the plunger and a second position spaced from the plunger;

a longitudinally movable control button on the housing for moving the latch between the first position and the second position; and

a linkage assembly connecting the control button to the latch for coupled movement therebetween.

STATUTORY INVENTION REGISTRATIONS

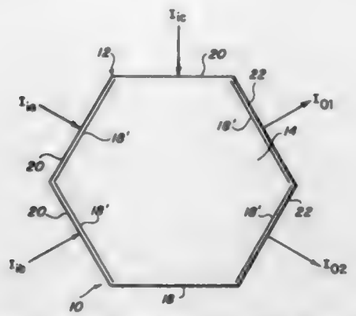
PUBLISHED APRIL 5, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1296
OPTICAL SWITCHING DEVICE AND PARALLEL PROCESSING ARCHITECTURE

Joseph H. Simmons, Gainesville, Fla., and Henry D. Dardy, Upper Marlboro, Md., assignors to United States of America, Washington, D.C.

Filed Apr. 30, 1992, Ser. No. 878,182
Int. Cl.[5] G02F *3/00*
U.S. Cl. 385—16 **7 Claims**



4. Optical switch apparatus for providing storage or time delay transmission of an optical data signal comprising:

a plurality of optical devices each comprising a light-responsive element having multiple faces, and being further configured to have first and second portions possessing substantially equal light sensitive non-linearly variable refractive indices, such that each portion switches from a first value to a second substantially different value in response to transversely propagated light signals within the portion having a total intensity equal to or greater than a threshold intensity; two of said faces respectively constituting a data signal input face and a first data signal output face for said first portion; said first and second portions being arranged to form an interface extending obliquely with respect to said data signal input face and said first data signal output face, such that a data signal having an intensity at least equal to said threshold intensity which is applied to the data signal input face of one of said optical devices will be reflected from the associated interface of the switch and outputted from the associated first data signal output face;

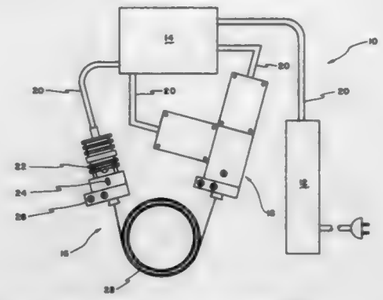
said plurality of optical devices being arranged to form a continuous loop data signal path whereby a data signal output from the first data output face of each optical device is received by the data signal input face of the next optical device in succession; and

at least one of said optical devices having a program signal input face and a second data signal output face, opposite said data signal input face, forming a part of the second portion thereof, such that a program signal having an intensity at least equal to said threshold intensity applied to said program signal input face causes a data signal applied to the associated data signal input face of said at least one of said optical devices to pass through the switch without substantial reflection at the associated interface thereof and to exit from the associated second data output signal face, rather than continuing to follow said continuous loop data signal path.

H1297
DETECTION DEVICE FOR HAZARDOUS MATERIALS

Judy K. Partin, and Alan E. Grey, both of Idaho Falls, Id., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 4, 1990, Ser. No. 504,218
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—82.05 **7 Claims**



1. A hydrazine detection device comprising:

a. a power supply interconnected to a light source;

b. sensor means interconnected with the light source and having an optical fiber coated with a material comprising polyethylene oxide and 4-nitrobenzaldehyde capable of reacting to the presence of hydrazine;

c. light detecting means; and

d. alarm means to indicate a change in light transmitted by the optical fiber responsive to the presence of a predetermined level of hydrazine.

H1298
FIBROUS SUPERABSORBENT CORE HAVING INTEGRALLY ATTACHED HYDROPHOBIC FACING LAYER

Nicholas A. Ahr, and David M. Ooten, both of 6100 Center Hill Rd., Cincinnati, Ohio 45224

Continuation of Ser. No. 608,083, Nov. 1, 1990, abandoned. This application Jun. 4, 1992, Ser. No. 893,963
Int. Cl.[5] D04H *1/04*
U.S. Cl. 428—296 **6 Claims**

1. A disposable absorbent pad for the absorption of vaginal discharges comprising a fibrous superabsorbent core, an integrally attached hydrophobic facing layer and an integrally attached impervious backsheet, wherein the hydrophobic facing layer consists of essentially synthetic hydrophobic thermoplastic fibers, the absorbent core comprises from about 5% to about 95% of superabsorbent fibers and from about 5% to about 95% of synthetic thermoplastic fibers, and the impervious backsheet is formed by heat fusing a web consisting essentially of heat fusible fibers.

H1299
ACID PAINT REMOVER

Harry R. Charles, Mt. Clemens, Mich., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1991, Ser. No. 673,994
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—331 **13 Claims**

1. An aqueous acidic developing solution for a photoresist comprising an acid or mixture of acids each having from about

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1 to 8 carbon atoms, in an effective combination with a solubilizing solvent for the photoresist.

H1300
SILVER HALIDE LIGHT SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Toshiya Kondou, Hino; Toshihiko Yagi, Shiroyama; Hiroyuki Hoshino, Hino, and Katsuhiko Heki, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 577,745, Sep. 5, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 851,280
Claims priority, application Japan, Sep. 6, 1989, 1-232369
Int. Cl.[5] G03C *1/035*
U.S. Cl. 430—567 **17 Claims**

1. A silver halide light-sensitive color photographic material comprising a support and provided thereon at least one silver halide emulsion layer, wherein at least one of the emulsion layers contains core/shell type tabular silver halide grains having hexagonal major faces wherein the ration of a major length to a minor length of the hexagonal major faces is 2 or less, comprising:
a. a numerical ratio of monodispersed grains to all grains of 70% or more;
b. an average aspect ratio greater than 1 and less than 5; and
c. a portion having a silver iodide content of 15.3 mol % or more in the core.

H1301
METHOD FOR CONTROLLING POLYMER SHRINKAGE

Robert W. Lee; Cesar O. Castro, and Jennifer L. Engle, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 29, 1992, Ser. No. 875,498
Int. Cl.[5] C08K *5/15*
U.S. Cl. 524—108 **6 Claims**

1. A method for controlling the shrinkage of parts formed from nucleated semi-crystalline polyolefins comprising adding from about 0.0001 to 5 weight percent of at least one nucleant to said semicrystalline polyolefin during processing.

H1302
POLYKETONE POLYMER BLENDS

Eric R. George, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 15, 1991, Ser. No. 775,388
Int. Cl.[5] C08G *67/02;* **C08L** *23/16*
U.S. Cl. 525—185 **20 Claims**

1. A polymer composition comprising a major proportion of a linear alternating polyketone polymer and a lesser proportion of an ethylene/propylene/non-conjugated diene terpolymer.

H1303
REMOVAL OF NICKEL CATALYST FROM POLYMER SOLUTIONS BY WATER ADDITION AND CENTRIFUGATION

James H. Miller, Katy; Zaida Diaz, and Carma J. Gibler, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 24, 1990, Ser. No. 527,970
Int. Cl.[5] C08F *6/08*
U.S. Cl. 528—495 **13 Claims**

1. A process to remove a Group VIII metal hydrogenation catalyst residue from a hydrogenated conjugated diolefin polymer solution comprising the steps of:
a) contacting the polymer solution with from about 2 to about 50 parts by weight of water based on 100 parts by weight of the polymer, said water ha ving a PH of between about 5 and about 9 and containing less than about t 0.3% by weight of solutes based on 100 parts by weight of water;
b) separating the polymer solution from he catalyst residue by centrifugation with a centrifugal force such that the centrifugal force times the time of centrifugation divided by the viscosity of the polymer solution at centrifugation temperature equals or exceeds about 50 G-minutes/cp; and
c) recovering a polymer solution comprising less than 10 ppm by weight, based on the polymer, of the Group VIII metals.

H1304
SYNTHESIS OF 5,7-DIAMINO-4,6-DINITROBENZOFUROXAN

William P. Norris; David J. Vanderah, and Michael P. Kramer, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 519,625, May 7, 1990, Pat. No. H001078. This application May 11, 1992, Ser. No. 880,854
Int. Cl.[5] C07D *271/12*
U.S. Cl. 548—126 **11 Claims**

1. A method of synthesizing 5,7-diamino-4,6-dinitrobenzofuroxan comprising the steps of:
aminating 7-amino-4,6-dinitrobenzofuroxan with a salt of hydroxylamine in the presence of a Group 1 metal hydroxide in a concentration from 0.5 N to 5 N to form a salt:
acidifying the salt with a strong acid to precipitate 5,7-diamino-4,6-dinitrobenzofuroxan as a fine powder; and,
extracting the fine powder with solvent and recrystallizing the powder to form crystals having a size above 1 m.

H1295
FISHERMAN'S PLIERS

Gerald E. Kingsley, P.O. Box 158, Lebanon, Oreg. 97355

Filed Feb. 26, 1993, Ser. No. 9,541
U.S. Cl. D8—52

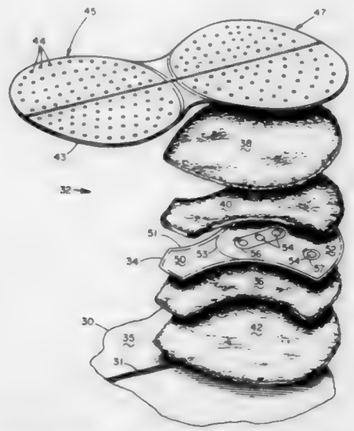


Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,573
LIQUID-CUSHIONED OUTERWEAR

Nathaniel Calvert, Rochester, Minn., assignor to InMotion, Inc., Minneapolis, Minn.

Original No. 4,945,571, dated Aug. 7, 1990, Ser. No. 249,334, Sep. 26, 1988. Application for reissue Jul. 31, 1992, Ser. No. 924,337
Int. Cl.[5] A41D *1/08, 19/00*
U.S. Cl. 2—2 **29 Claims**



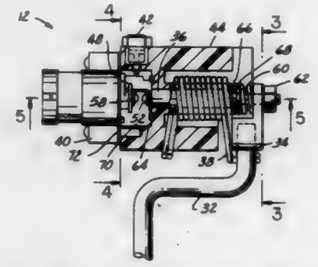
11. A cushion for a clothing article comprising:
(a) first and second liquid impermeable layers [heat] sealed to one another and filled with a viscous liquid to define at least one liquid-filled chamber said chamber including at least one island whereat said first and second layers contact one another and include a vent hole;
(b) a moisture absorbent layer;
(c) a wicking layer; and
(d) wherein said wicking layer is secured interiorly to said clothing article in covering relation to said liquid-filled chamber and said moisture absorbent layer, whereby moisture is transmitted via said wicking layer and said vent hole to said moisture absorbent layer and an outer surface of the clothing article for evaporation.

Re. 34,574
ACCELERATOR CONTROL APPARATUS

William J. Imoehl, Williamsburg, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Original No. 4,869,220, dated Sep. 26, 1989, Ser. No. 157,766, Feb. 18, 1988. Application for reissue Sep. 10, 1991, Ser. No. 758,983
Int. Cl.[5] F22B *37/50*
U.S. Cl. 123—399 **18 Claims**

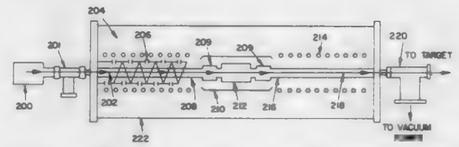
9. In an accelerator pedal control apparatus that remotely controls a motor that powers an automotive vehicle via electrical signals wherein the apparatus comprises a housing mounted on the vehicle, a shaft journaled on the housing for rotary motion, a foot pedal for imparting rotary motion to the shaft, at least one spring causing the shaft to be rotary biased toward a first position corresponding to the absence of foot actuation of the pedal, and an electrical sensor that is operated by the rotary motion of the shaft to positions away from said first position to signal the amount of rotary motion imparted to the shaft away from said first position by the pedal, the improvement which comprises a friction mechanism that acts on the shaft to dampen rotary motion of the shaft, said friction mechanism including a member that rotates with said shaft and has a planar surface that both faces axially of said shaft and also faces a planar surface of said apparatus that does not rotate with said shaft, and resilient means for imparting to said member in a direction axial of said shaft a force that urges said surfaces together, one of said surfaces being a friction surface, thereby developing a desired damping characteristic.



Re. 34,575
ELECTROSTATIC ION ACCELERATOR

Robert E. Klinkowstein, Winchester, and Ruth Shefer, Newton, both of Mass., assignors to Science Research Corporation, Somerville, Mass.

Original No. 4,812,775, dated Mar. 14, 1989, Ser. No. 72,883, Jul. 20, 1987. Continuation-in-part of Ser. No. 857,765, Apr. 30, 1986, abandoned. Application for reissue Jan. 18, 1991, Ser. No. 643,855
Int. Cl.[5] H05H *1/03*
U.S. Cl. 328—233 **20 Claims**



8. Apparatus for producing [medically active] *clinically significant quantities of* radioisotopes by bombarding targets maintained at substantially ground potential with accelerated ions, said apparatus comprising
a negative ion source adapted for generating a [minimum] *predetermined* ion current [of approximately 0.2 milliamperes],
a high voltage terminal,
a stripping cell located in said terminal,
a first accelerating column connected between said ion source and said stripping cell,
a second accelerating column connected between said stripping cell and said target,
means connected to said first and said second accelerator columns for maintaining a high-vacuum therein, and
means connected to said ion source and said terminal for supplying a positive potential of less than 2 MV to said terminal;
said predetermined current being high enough so that a clinically significant isotope yield is produced at the final beam energy for the beam.

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Re. 34,576

CASTING OF STRUCTURAL WALLS

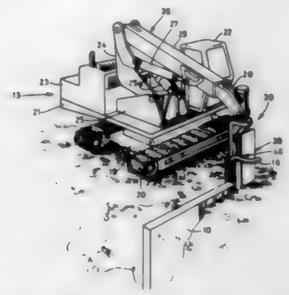
Paul Camilleri, Bellevue Park, Australia, assignor to S.W.R. (Australia) Pty., Limited, Nerang, Australia

Original No. 4,681,483, dated Jul. 21, 1987, Ser. No. 802,009, Nov. 12, 1985. Continuation of Ser. No. 381,900, Jul. 19, 1989, abandoned. Application for reissue Nov. 13, 1991, Ser. No. 794,362

Claims priority, application Australia, Mar. 13, 1984, PG4019

Int. Cl.[5] **E02D** *5/20*

U.S. Cl. 405—267 **11 Claims**



1. A method for the continuous casting of a structural concrete wall including the steps of:

mounting a work head on the distal end of an extendible boom mounted on the chassis of a moving vehicle, said work head being mounted for [movement about] *rotation in* three axes relative to the boom,

providing an excavator mounted on said work head,

[excavating] *operating said excavator to commence* a trench [using an excavator mounted on said work head] *by digging substantially vertically downward to one side of the chassis,*

further operating said excavator to excavate said trench,

temporarily supporting the sides of the trench with moving formwork immediately following the excavator,

pumping concrete under pressure into the formwork to fill the trench and stabilize the sides of the trench, and

allowing the concrete to set to form the structural wall.

Re. 34,577

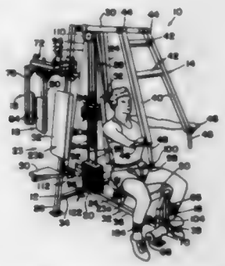
EXERCISE APPARATUS

Theodore G. Habing, Long Beach, and Norman M. Richards, Orange, both of Calif., assignors to Pacific Fitness Corporation, Cypress, Calif.

Original No. 4,844,456, dated Jul. 4, 1989, Ser. No. 96,854, Sep. 14, 1987. Application for reissue Jun. 22, 1992, Ser. No. 901,819

Int. Cl.[5] **A63B** *21/00*

U.S. Cl. 482—138 **7 Claims**



4. Exercise apparatus for performing chest and shoulder press exercises comprising:

a frame,

a seat member mounted on said frame having front and rear ends,

a backrest at the rear end of said seat member,

means mounted said backrest on said frame for adjustment between a generally upright position and a forwardly inclined position relative to said seat member,

a press arm having a lower end situated forwardly of said backrest, an upper end pivotally mounted on said frame above said seat member for swinging of said lower arm end in the fore and aft direction of said seat member, and means on said lower arm end engagable by a user positioned on said seat member and against said backrest for moving said press arm back and forth,

an exercise member different from said press arm,

means for resisting [said press arm] movement, *of said press arm and said exercise member,*

cable means for selectively connecting said press arm and said exercise member to said resisting means, said cable means including a pulley selectively mounted on said frame in a first position offset to one side of said seat member to support said cable means in a position for attachment to said press arm, and a second position displaced laterally from said first position to support said cable means in a position for attachment to said exercise member, and wherein:

said backrest is adjustable to said upright position to perform a chest pressure exercise and to said inclined position to perform a shoulder press exercise.

Re. 34,578

DRUGS FOR TOPICAL APPLICATION OF SEX STEROIDS IN THE TREATMENT OF DRY EYE SYNDROME, AND METHODS OF PREPARATION AND APPLICATION

Virginia Lubkin, One Blackstone Pl., New York, N.Y. 10471

Original No. 5,041,434, dated Aug. 20, 1991, Ser. No. 520,077, May 7, 1990. Application for reissue Jul. 16, 1992, Ser. No. 914,297

Int. Cl.[5] **A61K** *31/565, 31/57*

U.S. Cl. 514—182 **7 Claims**

1. The method of treating Dry Eye Syndrome in postmenopausal or oophorectomized [females] *women* which comprises topically applying to the [lacrimal] *ocular surface and conjunctival* tissue to alleviate Dry Eye Syndrome in said [females] *women* the drug comprising a water soluble ester of 17 beta-Estradiol or its derivatives having a concentration of at least 0.1% weight percent dissolved or suspended in a vehicle.

Re. 34,579

METHOD OF TREATING DEPRESSION

Donald A. Buyske, deceased, late of Lake Worth, Fla., and by Susan G. Buyske, administratrix, New York, N.Y., assignors to Somerset Pharmaceuticals, Inc., Tampa, Fla.

Original No. 4,868,218, dated Sep. 19, 1989, Ser. No. 339,712, Apr. 18, 1989. Division of Ser. No. 86,795, Aug. 18, 1987, Pat. No. 4,861,800. Application for reissue Aug. 27, 1991, Ser. No. 750,292

Int. Cl.[5] **A61K** *31/135*

U.S. Cl. 514—646 **12 Claims**

7. A topical composition for the transdermal administration of L-deprenyl or a salt thereof, comprising a quality of L-deprenyl or a salt thereof as a sole therapeutically active agent effective upon transdermal migration into the bloodstream to inhibit monoamine oxidase B, in combination with at least one pharmaceutical carrier operable to permit transdermal absorption of L-deprenyl or a salt thereof.

Re. 34,580

PROCESS FOR THE PREPARATION OF A STABLE MODIFICATION OF TORASEMIDE

Fritz Topfmeier, Heidelberg, and Gustav Lettenbauer, Lampertheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Original No. 4,743,693, dated May 10, 1988, Ser. No. 895,355, Aug. 11, 1986. Application for reissue Dec. 3, 1992, Ser. No. 985,053

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 3529529

Int. Cl.[5] **C07D** *213/70, 213/74;* **A61K** *31/44*

U.S. Cl. 546—291 **6 Claims**

1. A process for the preparation of torasemide in the pure modification I (monoclinic, space group P2/c, [metling point 162° C.)] *in prism form*) from torasemide of modification II (monoclinic, space group P2/n, [melting point 169° C.)] *in leaflet form*) comprising stirring a suspension of torasemide of modification II in water with at least a catalytic amount of modification I, to rearrange the torasemide in modification II into *stable* torasemide of modification I.

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PLANT PATENTS

GRANTED APRIL 5, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,670

ROSE PLANT 'AUSPRIMA'

David C. H. Austin, Wolverhampton, England, assignor to David Austin Roses Limited, Wolverhampton, England

Filed Sep. 30, 1992, Ser. No. 954,883
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of shrub rose plant of the *Rosa hybrida* class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact bushy growth, deep pink flowers, very regular flat flowers, and its being very floriferous.

8,671

ROSE PLANT AUSGLISTEN

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,884
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 1 Claim

1. A new and distinct shrub rose plant of the *Rosa hybrida* class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its small flowers, repeat flowering very well, and very bushy growth.

8,672

HYBRID TEA ROSE PLANT NAMED EDITOR TOMMY CAIRNS

Joseph F. Winchel, Harbor City, Calif., assignor to Coiner Nursery, La Verne, Calif.

Filed Nov. 4, 1991, Ser. No. 787,418
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinctive variety of rose plant of the hybrid tea class, substantially as herein shown and described.

8,673

APPLE TREE WALISER GALA

H. Kent Waliser, Milton-Freewater, Oreg., assignor to H. K. Waliser, Milton-Freewater, Oreg.

Filed Jan. 3, 1992, Ser. No. 816,656
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—34.1 1 Claim

1. A new and distinct variety of apple tree which is a mutation of the Royal Gala (Tenroy cultivar, U.S. Plant Pat. No. 4,121) substantially as herein shown and described, characterized particularly by a bright red color interspired with small, fine, light red pinstripes which color pattern develops very early in the Gala season and completely covers the fruits.

8,674

APRICOT TREE NJA54

Joseph C. Goffreda, Kendall Park, N.J., assignor to Rutgers University, New Brunswick, N.J.

Filed Nov. 18, 1992, Ser. No. 978,430
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—39 1 Claim

1. A new and distinct apricot tree cultivar, substantially as herein shown and described, characterized particularly as to novelty by the moderately vigorous, upright growth habit of the tree, on peach rootstock, excellent dessert and canning quality of the fruit which matures early, and is globose, slightly compressed in shape.

8,675

WHITE DOGWOOD TSUKUBA-NO-MINE

Nobuo Yamashita, 930-1, Fujimagari, Oyama-machi, Sunto-gun, Shizuoka; Hisao Ishikawa, 3451, Kamiyamakawa, Oaza, Yuki-shi, Ibaragi, and Toshihiro Hagiwara, 334, Kaminoda, Oaza, Urawa-shi, Saitama, all of Japan

Filed Jul. 27, 1992, Ser. No. 919,269
Claims priority, application Japan, Aug. 1, 1991, 3-4659
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—53.2 1 Claim

1. A new and distinct variety of white dogwood plant substantially as herein shown and described, characterized particularly as to novelty by the unique combination of (1) upright growth habit with thin branches and high branching characteristics; (2) small leaves; (3) flowering in a period from early to late June, over approximately 20 days; (4) blossoms being yellowish white; and (5) blossoms having thin patulous of narrow substantially lanceolate-shape of approximately 0.9 to 1.2 cm in width, and small diameter of approximately 6 to 7 cm.

8,676

PINK DOGWOOD "BENIFUJI"

Nobuo Yamashita, 930-1, Fujimagari, Oyama-machi, Sunto-gun, Shizuoka; Hisao Ishikawa, 3451, Kamiyamakawa, Oaza, Yuki-shi, Ibaragi, and Toshihiro Hagiwara, 334, Kaminoda, Oaza, Urawa-shi, Saitama, all of Japan

Filed Jul. 27, 1992, Ser. No. 920,618
Claims priority, application Japan, Aug. 1, 1991, 4658
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—53.2 1 Claim

1. A new and distinct variety of pink dogwood plant substantially as herein shown and described, characterized particularly as to novelty by the unique combination of appearance of (1) a large number of branches and upright limb growth habit, (2) as tall as known variety "Miss Satomi", (3) medium size leaves equivalent to wild varieties, (4) a flower diameter of approximately 8–9 cm, (5) the color of the flower being deep purplish pink and (6) distance between branches is small and hardly becomes unbalanced as a result of pruning.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
191-057	5,299,343
052-745	5,299,445
607-045	5,299,569
194-310	5,299,671
194-318	5,299,672
194-345	5,299,673
198-303	5,299,674
198-392	5,299,675
266-207	5,299,724
296-219	5,299,791
474-160	5,299,925
114-346	5,299,964
602-016	5,300,016
601-026	5,300,090
601-021	5,300,095
162-181	5,300,147
534-014	5,300,278
521-079	5,300,543
502-152	5,300,599
558-078	5,300,617
548-162	5,300,637
141-141	5,300,646
548-556	5,300,659
548-566	5,300,660
345-157	5,300,926
345-157	5,300,927
345-088	5,300,928
345-140	5,300,968
346-001	5,300,969
355-067	5,300,971
355-071	5,300,972
355-091	5,300,973

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ERRATA—CONTINUED

348-493	5,301,015
348-586	5,301,016
348-645	5,301,017
348-420	5,301,018
348-416	5,301,019
348-415	5,301,020
348-564	5,301,021
348-476	5,301,022
348-476	5,301,023
348-690	5,301,024
348-704	5,301,025
348-584	5,301,026
348-589	5,301,027
348-570	5,301,028
348-097	5,301,029
348-762	5,301,030
348-792	5,301,031
395-800	5,301,104
368-010	5,301,154
348-162	5,301,220
380-010	5,301,245
380-023	5,301,246
380-043	5,301,247

PATENTS

GRANTED APRIL 5, 1994

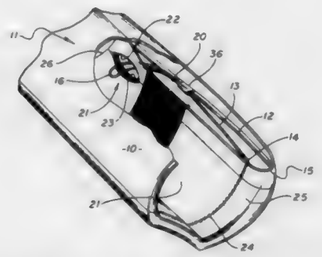
GENERAL AND MECHANICAL

5,299,323

INTEGRAL ADJUSTMENT SYSTEM FOR GARMENTS

Aaron Schaefer, 1415 N. Brand Blvd. No H., Glendale, Calif. 91202, and James Ranney, 2900 Jolley Dr., Burbank, Calif. 91504

Continuation-in-part of Ser. No. 831,355, Feb. 5, 1992, Pat. No. 5,208,920. This application Feb. 4, 1993, Ser. No. 13,303
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] A41D *1/00, 27/10*
U.S. Cl. 2—93 **22 Claims**



1. A garment adjustment mechanism for securing within a lined or partially lined garment for adjusting the length of a portion of the garment comprising:

an elongated flexible member including a first end for connection to the garment near the position to be adjusted in length, a second end for connection to the lining of the garment at a position remote from the first end and generally along a seam of the garment and having an intermediate flexible portion extending a length of at least as great as the amount of adjustment sought for the garment;

friction means comprising an elongated tube encircling said flexible member engaging the intermediate portion of the flexible member for restricting the movement of the flexible member through the engagement of the friction means; and

means for securing said elongated tube to said garment;

whereby grasping the lining adjacent to said second end of said flexible means and pulling a length of said flexible means through said friction means changes the length of said flexible means on each side of said friction means and thereby to change the length of the garment portion connected to the first end of said flexible means.

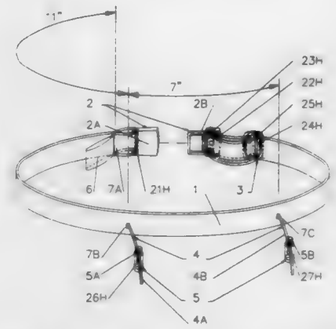
5,299,324

RACE NUMBER BELT WITH RACE NUMBER ATTACHMENT SYSTEM

Leonard C. Zinna, 1651 S. Juniper St. #20, Escondido, Calif. 92025

Filed Jul. 13, 1992, Ser. No. 912,303
Int. Cl.[5] A41F *9/00*
U.S. Cl. 2—312 **1 Claim**

1. An elastic belt for attachment around a waist of a wearer comprised of an elongated elastic strip having two ends and a central portion wherein a male buckle component is attached at one end and a female buckle component is attached at the other end for attachment to said male buckle component; a length adjustment slide device on said elastic strip for waist size adjustment of the belt; and a race number indicator sign attachment means attached to said central portion consisting of two elongated elastic pieces of material having two opposite ends wherein one end is stitched to an outer surface of the central portion of said belt, wherein each elastic piece is of a width and length adapted to be fed through holes in a race number indicator sign in order to attach the sign to said belt and wherein said attachment means also includes a cord lock fastener on each elastic piece for encompassing said elastic pieces after said elastic pieces are threaded through the holes in



the indicator sign and wherein the cord locks are adjustable along the length of the elastic pieces and thereby provide a secure attachment of various sizes of indicator signals to said belt.

5,299,325

BELT WITH POUCH AND SLITS FOR RETAINING A SCARF

Christine L. Kamber, 5409 Braninburg Ct., Carmichael, Calif. 95608, and Leuenda A. O'Neill, Sacramento, Calif., assignors to Christine Louise Kamber, Carmichael, Calif.

Filed Oct. 1, 1991, Ser. No. 770,094
Int. Cl.[5] A41F *9/00*
U.S. Cl. 2—338 **1 Claim**



1. An ensemble formed from a scarf and a belt, comprising in combination:

said belt having a top and bottom seam at upper and lower extremities thereof and including scarf receiving means, said belt configured as an elongate strap having termini including complemental fastening means to convert said elongate strap to a closed loop by enabling said fastening means, thereby circumscribing a torso of a person,

said scarf removably attached to said belt at said scarf receiving means so that one of a multiplicity of different scarves are operatively associated with said belt.

said scarf receiving means located along a central portion of said belt so that portions of said belt adjacent said termini connect said termini and said complemental fastening means to said central portion while neither receiving nor supporting said scarf,

said portions of said belt adjacent said termini extending from said central portion to said termini and being non-foraminous,

said scarf formed from fabric substantially thinner in a thinnest dimension than a thinnest dimension of said belt and said scarf formed from fabric more compressible than said

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belt, and said scarf having a total surface area greater than said belt, whereby said scarf is initially compressed to be engaged by said scarf receiving means and thereafter expanded, and

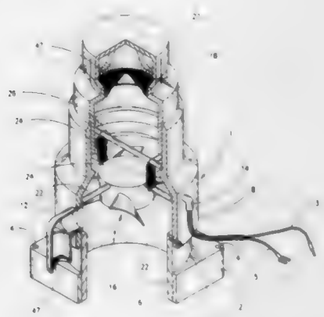
pouch means formed on said belt to receive articles therewithin, said pouch means formed from a pair of pouch walls within said belt and having a closed bottom and an open top, said open top closeable with a zipper at said top seam of said belt.

5,299,326

VEHICLE TOILET VENT APPARATUS

Alton L. Alexander, 502 Majestic Blvd., Lafayette, La. 70508

Filed Jul. 28, 1992, Ser. No. 920,654
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—209 R **8 Claims**



1. A sealed toilet waste tank ventilation apparatus for mounting over an existing recreational vehicle black water tank vent, said apparatus comprising;

a) an exhaust fan housing, having at least one exhaust port;

b) a mixing chamber, located inside said exhaust fan housing;

c) an electrical fan, located within said mixing chamber, and causing air flow upwardly in said tank vent;

d) said at least one exhaust port communicating said fan with the ambient above said fan;

e) a further exhaust port exiting said mixing chamber, perpendicular to said upward flow produced by said fan,

f) wherein when said fan draws a vacuum in said tank, ambient air will be drawn into said mixing chamber through said at least one port and expelled through said further exhaust port.

5,299,327

SEWER VENTILATOR SYSTEM FOR RECREATIONAL VEHICLES, BOATS AND THE LIKE

Edward M. Wilkerson, 3105 W. Main, Russellville, Ark. 72801

Filed Jun. 15, 1992, Ser. No. 898,724
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—213 **5 Claims**

1. A ventilator system for exhausting gases from sewage storage tanks of the type employed upon recreational vehicles, boats or the like that have bathrooms equipped with flushable commodes, a bathroom light electrical switch, and a water demand pump, said system comprising:

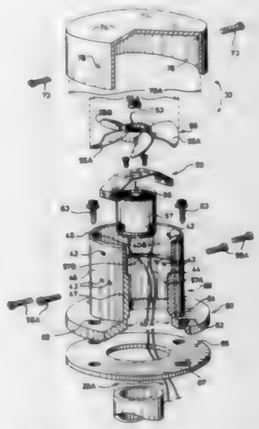
an elongated vent pipe of variable length having one end attached to said sewage storage tank in fluid flow communication with the interior thereof and an opposite external end passing through a roof of said vehicle, boat or the like to exhaust gas exteriorly thereof;

fan means for suctioning said vent pipe and thus said tank, said fan means comprising a rotatable fan and a motor for driving said fan;

circuit means adapted to be electrically interconnected with a source of electrical power supplied by said vehicle, boat or the like for selectively supplying current to said fan motor to operate said system, said circuit means comprising:

relay means for activating said fan motor, said relay means comprising electrical contacts that normally isolate said fan motor from said electrical power but that selectively switch operating current to said fan motor, said relay means comprising a field for closing said contacts;

a plurality of electrically isolated activating inputs for energizing said relay means without interfering with one another, said isolated activating inputs comprising a first diode for powering said field when said bathroom light electrical switch in said vehicle, boat or the like is



activated, and a second diode for powering said field without turning on said bathroom light, said second diode being interconnected with said water demand pump in said vehicle, boat or the like for activation by same;

capacitive means electrically connected to said field for temporarily latching said relay means to make said system stay on only a preselected time interval after said bathroom light switch or said water demand pump are turned off; and,

whereby sewer gases are automatically exhausted from said vehicle boat or the like whenever said circuit means is activated without forcing the user to separately turn on or turn off the system.

5,299,328

WATER CLOSET WITH RETRACTABLE URINAL

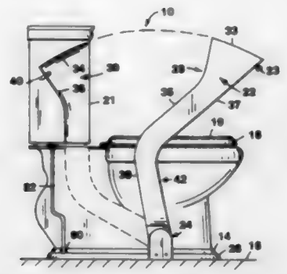
Wayne Walega, 10 Jane La., Mattapoisett, Mass. 02739

Filed Mar. 25, 1992, Ser. No. 857,330
Int. Cl.[5] E03D *9/06, 13/00*
U.S. Cl. 4—341 **34 Claims**

1. A water closet of the kind that includes a stationary bowl for receiving liquid and solid waste and constructed to flush said liquid and solid waste to a waste outflow pipe with water from a supply, said water closet comprising

a urinal disposed adjacent to said bowl, said urinal being movable between a retracted position and a used position in which said urinal is arranged to receive said liquid waste, said bowl and urinal being constructed to flush said

liquid waste from an interior of said urinal with water from said supply, and



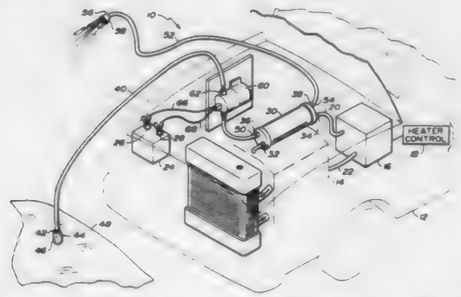
a device engaged by said urinal for selectively applying the water to flush said urinal in response to movement of said urinal to its retracted position.

5,299,329

HOT WATER CAMPING SHOWER

Mark Constantini, 7911 Fox Hollow Pl., Windsor, Calif. 95492

Filed Dec. 4, 1992, Ser. No. 985,294
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—597 **3 Claims**



1. A hot water outdoor shower for use with a motor vehicle having an internal combustion engine with an engine block, a heater core with heater controls, an engine block/heater core circulation hose, and a battery with a pair of electrical terminals; said hot water camping shower comprising:

a heat exchanger member adapted to be releasably mounted proximate said engine block and having a pair of primary ports and a pair of secondary ports, said heat exchanger primary ports adapted to be interposed into said engine block/heater core circulation hose;

a water source hose having a first end for immersion in an external water source, and a second end releasably connected to one of said heat exchanger secondary ports;

a shower hose having a first end releasably connected to the other of said heat exchanger secondary ports, and a second end terminating in a shower head; and

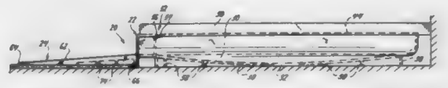
an electric water pump having an intake port and a discharge port interposed into said water source hose between said water source and said heat exchanger, said water pump having a pair of electrical leads adapted to be releasably connected to said vehicle battery terminals; wherein when said water source first end is immersed in said external water source and said electric water pump is activated, water flows through said heat exchanger member secondary ports and out through said shower head.

5,299,330

EASY-ACCESS SHOWER BASE ASSEMBLY

John W. Moore, St. Louis, Mo., and Anthony Buonaura, Bluford, Ill., assignors to The Swan Corporation, St. Louis, Mo.

Filed Oct. 29, 1992, Ser. No. 968,372
Int. Cl.[5] A47K *3/16*
U.S. Cl. 4—604 **14 Claims**



1. An easy-access shower base assembly adapted to replace an existing bath tub, comprising:

a shower base comprising:

a rectangular basin substantially the same size as a conventional bath tub, the basin having a bottom surface, a front, a back, vertical sides extending from said bottom surface, and drain opening adjacent one end, the bottom surface of the basin sloping gradually toward the drain opening;

a generally horizontal front ledge at the front of the basin, with a lip depending downwardly from the front edge of the ledge; and

a generally horizontal boundary ledge, vertically higher than the front ledge, surrounding the basin at the sides and the back;

a ramp, substantially the same length as the front ledge, for providing access to the basin over the front ledge, the ramp having a thin front edge and a thicker back edge, the thickness of the back edge being less than the height of the lip; and

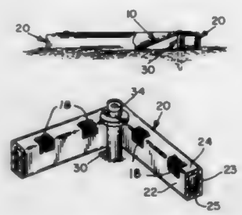
means for securing the ramp to the shower base and for supporting the back edge of the ramp in an elevated position so that the top of the back edge of the ramp is generally even with the front ledge, with a space below the back edge of the ramp and in front of the lip to accommodate the thickness of a floor covering.

5,299,331

BEACH BLANKET ASSEMBLY WITH RAISED BORDER

Nilsa E. Badillo, 26 Winston Dr., Brentwood, N.Y. 11717

Filed Dec. 4, 1992, Ser. No. 985,315
Int. Cl.[5] A47G *9/06*
U.S. Cl. 5—417 **11 Claims**



1. A beach blanket assembly having a raised border for use on a beach surface, comprising:

a beach blanket having a central portion surrounded by a peripheral border, said peripheral border being supportable in a raised generally upright position;

an inflatable beach blanket bumper surrounding and abutting said blanket peripheral border when said border is in said raised upright position thereof;

anchor means for releasably anchoring said assembly to the beach surface, said anchor means including a multiplicity of stakes having upper and lower end portions, said lower end portions of which are intended for embedment below the beach surface of said upper end portions of which are

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intended to be disposed above the beach surface so as to abut and support at least one of said beach blanket peripheral border and said beach blanket bumper, said stakes being disposed inwardly of said bumper; and

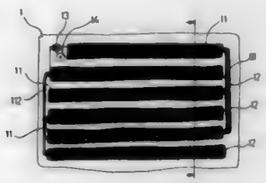
releasable attachment means for releasably attaching said peripheral border of said blanket to at least one of said anchor means and said beach blanket bumper so as to support the same in a raised generally upright position.

5,299,332

ALARM APPARATUS FOR A QUILT SLIPPING OFF

Gin S. Perng, 32, Lane 455, Sec. 3, Yean Pin Road, Hsinchu, Taiwan

Filed May 10, 1993, Ser. No. 58,353
Int. Cl.[5] A47G *9/00, 9/02*
U.S. Cl. 5—494 **2 Claims**





1. An alarm apparatus for indicating a condition where a quilt has slipped off a user, comprising:

a quilt (**1**) having (a) a plurality of first conductors (**11**) interposed between a plurality of second conductors (**12**) on a bottom surface thereof, each of said first conductors (**11**) being electrically coupled one to the others, each of said second conductors (**12**) being electrically coupled one to the others, (b) a battery power source (**131**), (c) a detection circuit (**13**) coupled to said battery power source (**131**) and said first and second conductors for providing an enabling output signal responsive to detection of an open circuit condition between said first and second conductors, and (d) signal means (**14**) coupled to said detection circuit (**13**) for indicating said open circuit condition responsive to receipt of said enabling output signal from said detection circuit (**13**); and,

means (**2, 21**) for electrically connecting at least one of said plurality of first conductors to at least one of said plurality of second conductors coupled to a user, said coupling means being defined by and elongated band member (**2**) circumferentially disposed about a user's body, said band member (**2**) having a third conductor (**21**) extending longitudinally on an upper surface of said band member for contiguous contact with at least one of each of said first and second conductors when said quilt overlays the user, whereby said signal means provides an alarm indication responsive to said quilt being sufficiently displaced from said user to separate said third conductor from contact with said first and second conductors.

5,299,333

RANDOM FLOW DOWN COMFORTER WITH A RESTRICTED BORDER REGION

Samuel B. Pedersen, 1117 17th Ave. E., Seattle, Wash. 98112, and Nicolas J. Hanauer, 108 Lake Dell Ave., Seattle, Wash. 98122

Filed Oct. 9, 1992, Ser. No. 959,080
Int. Cl.[5] A47G *9/02*
U.S. Cl. 5—502 **4 Claims**



1. A random flow down comforter for use with a mattress having side and end edges, comprising:

a random flow down comforter body having a center region with two side edges and foot and head end edges and an edge border region, wherein the border region extends around the two side edges and the foot end edge, but not the head end edge, of the center region, wherein the border region is continuous, approximately on the order of ten inches wide, and contains less down per unit volume than the center region; and

means separating the border region from the center region for preventing movement of down between the center region and the border region, wherein the separating means along the respective side edges of the comforter body is located approximately on the order of three inches outboard from the side edges of the mattress when the comforter is positioned thereon.

5,299,334

HYDRAULIC OSCILLATING TREATMENT TABLE AND METHOD

Felipe J. Gonzalez, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.

Filed Jan. 21, 1992, Ser. No. 824,816
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—607 **23 Claims**

1. A therapeutic bed comprising, in combination:

an elongated base frame structure having floor engaging means formed thereon in horizontally spaced, depending relation;

a generally rectangular patient support table having a length and width exceeding the height and width of a patient's body laying thereon;

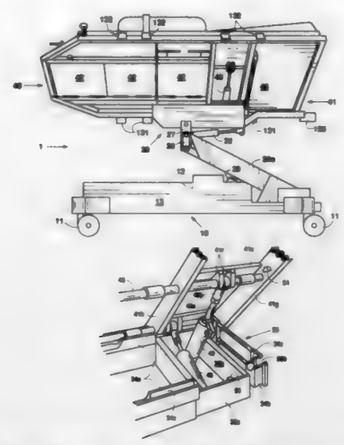
a pair of laterally spaced parallel rods secured to the underside of the central portion of said patient support table and extending parallel to the length of said patient support table;

a horizontally elongated subframe;

means for adjusting the height of said subframe relative to said base frame structure;

means for adjusting the vertical angle of said subframe in both directions from the horizontal;

two rows of longitudinally aligned, upwardly open socket means on said subframe respectively engagable with said laterally spaced, parallel rods; and



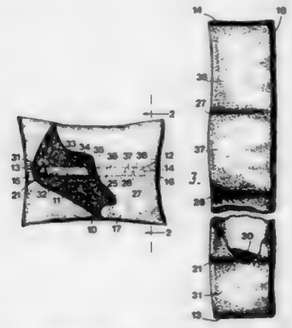
a pair of fluid pressure actuated means for selectively pivoting said patient support table about one or the other of said parallel rods.

5,299,335

FRAGRANCE-RELEASING PILLOW AND THE LIKE

Philip K. Ivester, 317 E. 8th St., Rome, Ga. 30161, and Edgar L. Watson, 105 Pine Valley Rd., Rome, Ga. 30165-4339

Filed Aug. 23, 1993, Ser. No. 110,702
Int. Cl.[5] A47G *9/00*; A47C *27/00*
U.S. Cl. 5—641 **4 Claims**



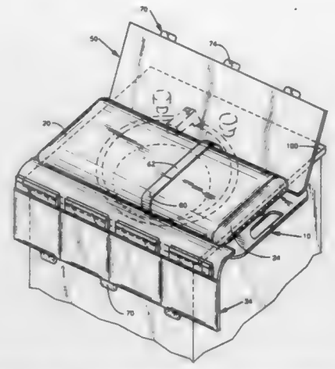
1. An article stuffed with a fibrous filling material, comprising a ticking enclosing and surrounding said fibrous filling, a plurality of capsules impregnated with a volatile substance, and holding means adapted to contain said capsules, said holding means defined by a breathable fabric, said holding means having a plurality of individual compartments, each of said compartments containing a plurality of said capsules, said holding means being located in a generally central region of the article, spaced apart from said ticking, and being surrounded by the fibrous material, whereby upon use of the article, the capsules are retained in the individual compartments of the holding means, in said generally central region of the article.

5,299,336

PORTABLE DIAPER CHANGING STATION AND METHOD FOR USE THEREOF

Jean Marteeny, R.D. #3, Box 325, Somerset, Pa. 15501

Continuation of Ser. No. 983,395, Nov. 30, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,812
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—655 **18 Claims**



1. A portable diaper changing station for enabling changing of a baby's diaper on a surface having a protruding portion, said station comprising:

a nonbendable rigid member having a handle portion formed therein and having an upper surface;

a cushioning pad;

a nonporous wipable case attached to said upper surface, said case defining an enclosure having at least one opening for receiving said cushioning pad within said enclosure;

a first foldable flap member releasably secured to one edge of said rigid member, said first flap member having pockets formed therein;

a second, foldable cushioned flap member releasably secured to an opposite edge of said rigid member for cushioning the protruding portion of the surface; and

connecting means attached to said rigid member for releasably connecting said rigid member to the protruding portion of the surface.

5,299,337

PORTABLE BEACH LOUNGE AND METHOD

Lynelle Venza, 10295 Collins Ave., Apartment 1010-N, Bal Harbor, Fla. 33154

Filed Nov. 6, 1992, Ser. No. 972,438
Int. Cl.[5] A47C *16/00*
U.S. Cl. 5—656 **12 Claims**

7. A portable lounge, comprising:

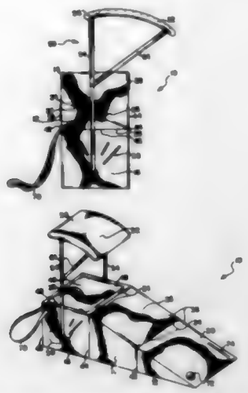
a first container for retaining items, said container comprising an inclined top wall for use as a back rest,

a second container for retaining items, said second container comprising an inclined top wall and being hingedly connected to said first container such that said first container can pivot onto said inclined top wall of said second container, said inclined top wall of said second container being alignable with said inclined top wall of said first container for use together as a back rest,

a third container for retaining items, said third container comprising a substantially horizontal top wall and being

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connected to said second container such that said second container can pivot together with said first container onto



said substantially horizontal top wall of said third container.

5,299,338

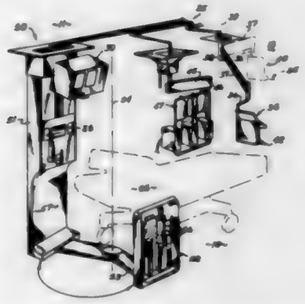
HOSPITAL BED WITH PIVOTING HEADBOARD

L. Dale Foster, Brookville, Ind., assignor to Hill-Rom Company, Inc., Batesville, Ind.

Division of Ser. No. 33,958, Mar. 19, 1993, which is a continuation of Ser. No. 525,044, May 18, 1990, which is a division of Ser. No. 309,886, Feb. 14, 1989, Pat. No. 5,072,906, which is a continuation-in-part of Ser. No. 144,188, Jan. 15, 1988, Pat. No. 4,811,435. This application May 21, 1993, Ser. No. 65,880

Int. Cl.[5] A61B *19/02*; F16M *13/00*

U.S. Cl. 5—658 3 Claims



1. Apparatus for a hospital room having a floor comprising:

an elongated, generally rectangular hospital bed having a head end and a foot end,

a power column having electrical outlets, gas outlets, a monitor for the display of patient data, and other patient-treating accessories, said power column being mounted adjacent said bed,

an arm having one end pivotally mounted on said floor on an axis which is under the head end of the bed,

the other end of said arm being connected to a patient care section forming a part of said power column to permit said patient care section to swing through an arc that passes from one side of said bed past the end of said bed to the other side of said bed.

5,299,339

JET DYEING APPARATUS AND METHOD

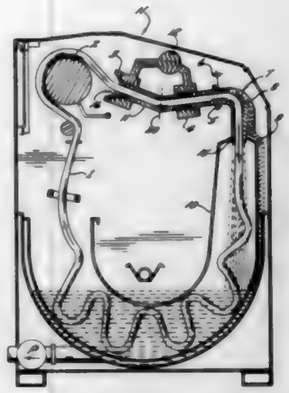
Aristides Georgantas, Athens, Greece, assignor to S. Sclavos S.A., Athens, Greece

PCT No. PCT/EP91/00896, § 371 Date Feb. 13, 1992, § 102(e) Date Feb. 13, 1992, PCT Pub. No. WO91/18141, PCT Pub. Date Nov. 28, 1991

PCT Filed May 11, 1991, Ser. No. 793,403

Int. Cl.[5] D06B *3/28*

U.S. Cl. 8—152 9 Claims



8. A method of dyeing a length of textile material which is in rope form, and comprising the steps of

guiding a length of textile material through a generally horizontally directed transport tube, while

applying at least one jet of liquid dye onto the textile material in said transport tube so as to dye the fabric and advance the same therethrough, while

directing the advancing textile material downwardly from the exit end of said transport tube and into a liquid treatment chamber, and including reciprocating the advancing textile material along a linear path of travel which is transverse to the direction of advance through the transport tube and so as to form overlying, relatively straight folds of the textile material in said treatment chamber.

5,299,340

WATER FEEDING CONTROL METHOD OF A BOILING CLOTHES WASHING MACHINE

Kyung H. Moon, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 23, 1992, Ser. No. 980,216

Claims priority, application Rep. of Korea, Nov. 23, 1991, 91-21018

Int. Cl.[5] D06F *33/02*

U.S. Cl. 8—158 11 Claims

5. A water feed control method for use in a washing machine comprising the steps of:

determining whether any one of a first special fabric washing mode and a second special fabric washing mode is selected;

turning on a first valve connected to a first water supply source;

determining whether or not said first valve is operable according to whether a predetermined water level has been reached within a predetermined time;

sensing and storing the temperature of the fed water if said first valve is determined to be operable;

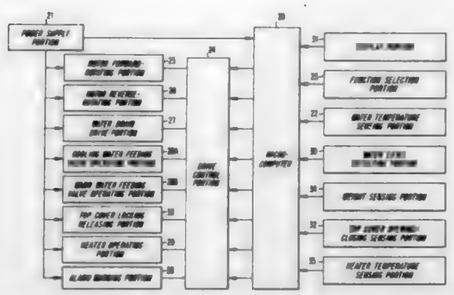
turning off said first valve;

turning on a second valve connected to a second water supply source;

determining whether or not said second valve is operable according to whether a predetermined water level has been reached within a predetermined time;

sensing and storing the temperature of the fed water if said second valve is determined to be operable;

turning off said second valve; and



selecting/operating said first or said second valve determined to be operable and having a sensed temperature suitable for the selected wash mode and performing the selected wash mode.

5,299,341

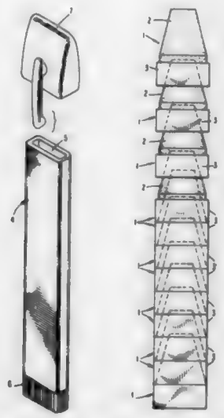
ROTATING KEYBOARD CLEANER

Hiroshi Wakao, 3-151 Onada Cho, Tajimi-shi, Gifu-ken, Japan 507

Filed Dec. 15, 1992, Ser. No. 991,863

Int. Cl.[5] A47L *25/00*

U.S. Cl. 15—210.1 7 Claims



1. A keyboard cleaner comprising a container having a first end, a second end and a top opening at said first end, and a removable cap for said first end; inside said container, a plurality of units, each unit comprising a hallow capsule, and fixedly joined to each of said capsules, a hollow, tapered cleaning head member having a size and shape sufficient to fit between keys in said keyboard, said units being adapted to fit atop one another in a nesting relationship with the cleaning head member of one unit fitting inside the capsule and inside the hollow, tapered cleaning head member of another adjacent capsule inside said container; at a second end of said container opposite said opening, a bottom opening adapted to receive said units in said nesting relationship, wherein any one capsule is adapted to cover the cleaning head member projecting from any other adjacent capsule when said any other capsule is frictionally fit into said any one capsule.

5,299,342

WINDSCREEN WIPER CONNECTING ELEMENT

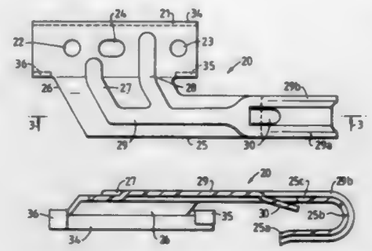
Cedric S. K. Charng, Taipei City, Taiwan, assignor to China Wiper Special Rubber Co. Ltd., Taipei, Taiwan

Filed Jun. 4, 1992, Ser. No. 893,390

Claims priority, application United Kingdom, Feb. 19, 1992, 9203644.1

Int. Cl.[5] B60S *1/40*

U.S. Cl. 15—250.32 11 Claims



1. A metallic windscreen wiper connecting element for connecting a straight wiper arm end portion to a wiper adaptor pivotally connectible to a wiper yoke assembly, the connecting element comprising a first part of elongate form having means for securing said first part, by screw connecting means, to the straight wiper arm end portion, a second part of elongate form spaced from, and disposed generally parallel to, the first part and having connecting means for detachably connecting the second part to the wiper adaptor, and a connecting web connecting said first and second parts together, the connecting web having at least one reinforcing rib raised from the web and extending continuously across the web, from said first part of the connecting element to said second part, and into each of said first and second parts for increasing the rigidity of said web.

5,299,343

CREEL DEVICE FOR A MACHINE FOR HANDLING SLIVERS

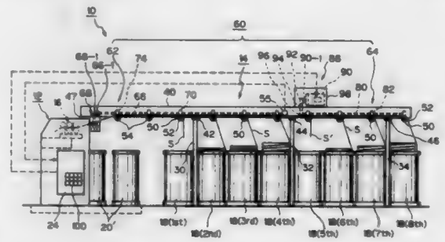
Yoshiharu Tomoto, Gifu, and Hiroshi Nagaosa, Inazawa, both of Japan, assignors to Howa Machinery, Ltd., Aichi, Japan

Filed Nov. 9, 1992, Ser. No. 973,411

Claims priority, application Japan, Nov. 12, 1991, 3-325158

Int. Cl.[5] D04H *11/00*

U.S. Cl. 19—157 8 Claims



1. A machine for treatment of slivers from a plurality of cans for storing respective slivers, comprising:

a main part comprising a set of rollers through which slivers are drafted, and a main part source for generating rotational movement of said rollers;

a creel device including a frame structure and lifting rollers supported thereby and spaced substantially along a

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straight line that extends rearwardly from the main part, for taking out slivers from respective cans and directly supplying the slivers to the main part from respective cans that are also arranged substantially along said line;

said cans on said line

forming two groups, each of said groups constructed by consecutively located cans along the line;

a separate drive train provided for each of the groups of the cans for obtaining independent rotational movement of lifting rollers of each of said groups;

a first one of said separate drive trains being driven by said main part source;

rotational movement means, connected to a second one of said drive trains separately for obtaining independent rotational movement of said second one of said drive trains, said rotational movement means being constructed as a variable speed control device capable of obtaining a varied rotational speed of lifting rollers of said second group, and;

means for controlling said rotational movement means to obtain a desired tension of slivers taken out from cans by the lifting rollers driven by the second one of said drive trains.

5,299,344

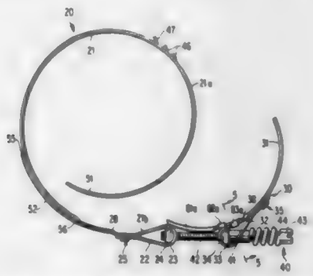
REINFORCING ARRANGEMENT FOR OPEN HOSE CLAMPS, ESPECIALLY SCREW-TYPE HOSE CLAMPS

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Horgen, Switzerland

Continuation-in-part of Ser. No. 730,071, Jul. 15, 1991, Pat. No. 5,170,540. This application Aug. 3, 1992, Ser. No. 923,555

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—284 **41 Claims**



1. An open clamp structure, comprising clamping band means including overlapping inner and outer band portions adapted to be mechanically connected, means for tightening the clamp structure about an object to be fastened thereby, a gap in the outer band portion, said inner band portion extending underneath said gap to cover the same, and means for minimizing the danger of leakage within the area of the gap which results when the inner band portion is displaced outwardly into the gap including a reinforcing part within the area of said gap, and said reinforcing part extending in the circumferential direction beyond said gap on both sides thereof within the radial space formed between the overlapping inner and outer band portions.

5,299,345

METHOD AND APPARATUS FOR PRODUCTNG UNTWISTED YARN FROM AT LEAST TWO FIBRIL BUNDLES

Werner Flachmueller, Rickenbach, and Hans-Joach Weiss, Ulisbach, both of Switzerland, assignors to Rieter Machine Works, Ltd, Winterthur, Switzerland

Division of Ser. No. 902,536, Jun. 22, 1992, Pat. No. 5,220,778, which is a continuation of Ser. No. 619,754, Nov. 28, 1990, abandoned. This application May 12, 1993, Ser. No. 60,814

Claims priority, application Switzerland, Dec. 18, 1989, 4531/89

Int. Cl.[5] D02G *1/04;* **D01H** *13/30*

U.S. Cl. 28—220 **9 Claims**



1. An apparatus comprising

a first oiling head for oiling a plurality of travelling fibril bundles disposed in juxtaposed relation;

a thread guide for guiding the oiled fibril bundles in juxtaposed relation;

a second oiling head for oiling the fibril bundles downstream of said thread guide relative to the direction of travel of the fibril bundles;

a false twister downstream of said second oiling head for imparting a false twist to each respective fibril bundle passing therethrough, said false twister including a plurality of openings for passage of a respective fibril bundle therethrough; and

a second thread guide downstream of said false twister for bringing the false twisted fibril bundles together in juxtaposed relation without forming a yarn.

5,299,346

FUEL INJECTOR UPPER NEEDLE GUIDE BURNISHING AND ALIGNMENT TOOL

David C. Kilgore, Yorktown, and Thomas F. Gosnell, Sr., Seaford, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Feb. 24, 1993, Ser. No. 21,930

Int. Cl.[5] B23P *11/00*

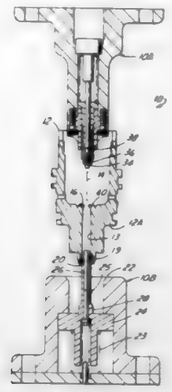
U.S. Cl. 29—33 K **6 Claims**

1. Apparatus for aligning one needle guide of a fuel injector valve body member with a counterbore in such a valve body member that is to receive another needle guide, said apparatus comprising:

upper and lower portions that are relatively openable and closeable;

one of said portions comprising fixture means for fixturing such a valve body member, including a gauging surface for such a counterbore of such a valve body member to center such a valve body member on the apparatus, and centering means for receiving and centering such a one needle guide relative to such a valve body member preparatory to assembling the latter and former together; and

the other of said portions comprising tool means for burnishing an inside diameter of such a one needle guide and for



crimping such a one needle guide and such a valve body member together.

5,299,347

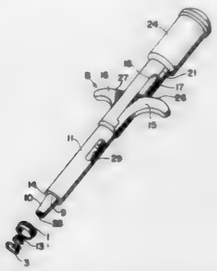
TOOL FOR REMOVING AND INSERTING A PLUMBING FIXTURE SEAL STRUCTURE

Joseph Decker, 9093 Lockwood Hill, Cincinnati, Ohio 45247

Continuation-in-part of Ser. No. 880,523, May 8, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 22,680

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—235 **20 Claims**



1. A tool for remotely removing and inserting a plumbing fixture seal structure having a hole therethrough, comprising:

(a) an outer housing having first and second ends, said first end having an outer width greater than the inner diameter of said hole;

(b) an inner member, having primary and secondary ends, said primary end tapering from a width greater than the inner diameter of said hole to a width less than the inner diameter of said hole, said inner member being reciprocably disposed at least partially within said outer housing so that upon reciprocation said primary end will extend beyond said first end of said outer housing; and

(c) means for retracting at least part of said primary end of said inner member into said outer housing, wherein said retracting means comprises a grip carried by said inner member.

5,299,348

APPARATUS FOR RECYCLING WASTE CARTRIDGE FILTER

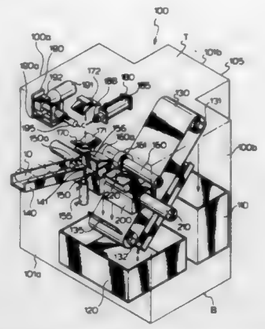
Ray Slack; Sal G. M. Gualtieri, and Michael Krywenky, all of Mississauga, Canada, assignors to Lasekim International Corporation, Mississauga, Canada

Filed May 17, 1991, Ser. No. 702,000

Claims priority, application Canada, May 9, 1991, 2042151

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—403.3 **3 Claims**



1. A method of dismembering and segregating the components of a disposable cartridge filter the cartridge filters having a top and bottom, the top including a baseplate having an outlet and at least one inlet, the baseplate being adapted to mount with a machine, the filter including a casing extending from proximate the top to the bottom of the cartridge filter and affixed to the baseplate proximate the top of the cartridge filter, the cartridge filter including a disposable filter media included inside the casing;

the method comprising

1) orienting the filter with the baseplate at one end

2) holding the filter

3) separating any outer gasket if present from the baseplate and segregating said gasket

4) separating the baseplate of the filter from the canister

5) segregating the baseplate of the filter

6) segregating the canister of the filter

7) separating if present the inner rubber gasket located adjacent the baseplate and spool in use

8) segregating the second gasket if present

9) segregating the filter media and if present the spool carrying the filter media

10) segregating any filtrate contained in the cartridge prior to dismembering.

5,299,349

METHOD OF MAKING A SHAPED PART COMPRISING A METALLIC MEMBER AND A CERAMIC MEMBER

Bernd Seibig, Geesthacht, Fed. Rep. of Germany, assignor to D.O.R.N.E.Y. Technologie GmbH, Lübeck, Fed. Rep. of Germany

Division of Ser. No. 777,703, Oct. 16, 1991, Pat. No. 5,174,660. This application Nov. 13, 1992, Ser. No. 975,773

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 4032803

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—447 **8 Claims**

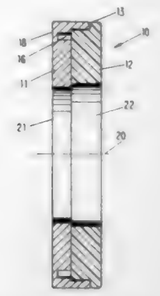
1. A method of forming a shaped part having members that are positively interconnected via thermal treatment, said method including the steps of:

providing a ceramic member;

providing a metallic member having a first flange that is delimited by an outer contour of said metallic member and projects essentially at right angles from said metallic mem-

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ber so that said first flange defines a recess-like opening for receiving said ceramic member, said recess-like opening having a base in which is provided a circumferential groove that extends essentially parallel to said first flange, with a second flange being formed between a base of said groove and a contiguous surface of said metallic member;



heating at least said metallic member; and

introducing said ceramic member into said recess-like opening of said metallic member to create a positive interconnection between said metallic member and said ceramic member.

5,299,350

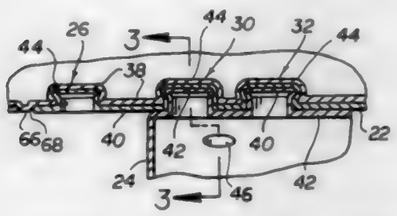
METHOD FOR JOINING A MOTOR SHELL AND BASE

David M. Lyle; Richard D. Meyer, both of El Paso, and Jack N. Peck, Waco, all of Tex., assignors to MagneTek Century Electric, Inc., St. Louis, Mo.

Filed Jun. 11, 1992, Ser. No. 897,292

Int. Cl.[5] H02K *15/14*

U.S. Cl. 29—596 **10 Claims**



1. A method for fabricating a cylindrical shell for an electrodynamic machine comprising the steps of:

preparing a blank of sheet metal having longitudinal edges,

rolling the blank into a cylinder so that the edges are overlapping,

joining said overlapping edges by pinching one edge into the other so that the edges are interlocked, and

fastening a base onto said shell be punching said shell into said base so that said base and said shell are interlocked.

5,299,351

CONTINUOUS PARTS FEEDER

Takao Takahashi, and Hiroshi Takehara, both of Tokyo, Japan, assignors to Multifastener Corporation, Detroit, Mich.

Filed Oct. 9, 1992, Ser. No. 958,984

Claims priority, application Japan, Oct. 11, 1991, 3-292182

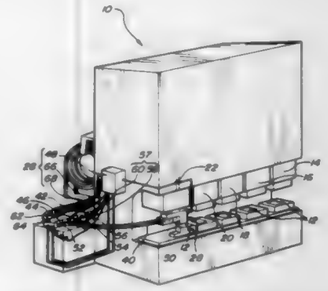
Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—798 **9 Claims**

1. An installation apparatus for installing fasteners having a continuous feed system, said installation apparatus including a fastener installation head having an inlet receiving said fasteners for installation by said head, a feed tube having an inlet and an outlet in communication with said installation head inlet, a source of fasteners and a continuous feed system feeding said fasteners from said source of fasteners to said feed tube inlet, said continuous feed system comprising:

a feed selector valve having an outlet communicating with said feed tube inlet, at least two sources of said fasteners, each source including a transfer tube having an outlet communicating with said feed selector valve, with an outlet of one of said transfer tubes in communication with said feed tube inlet, said feed and transfer tubes each having an enclosed internal passage configured to receive and transfer said fasteners;

a sensor means adapted to sense the presence or absence of



fasteners in said feed tube, said feed selector valve having a transfer means adapted to alternatively provide communication between one of said transfer tube outlets and said feed tube when said sensor means senses an absence of fasteners in said feed tube;

a source of pneumatic pressure communicating with each of said transfer tubes and said feed tube to direct said fasteners through said tubes toward said installation head; and

a control means sequentially directing pneumatic pressure into one of said transfer tubes, then into said feed tube when said sensor means senses the absence of fasteners in said feed tube, and finally into a second feed tube following operation of said transfer means.

5,299,352

APPARATUS FOR DISMANTLING FILTER INSERTS

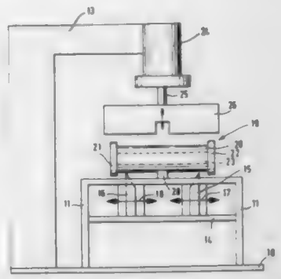
Manfred Klenk, Rienharzer Strasse 14, D-7077 Alfdorf 2, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 937,820

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1991, 4129464

Int. Cl.[5] B23P *19/00;* **B23Q** *41/00;* **B02C** *11/04*

U.S. Cl. 29—801 **7 Claims**



1. Apparatus for dismantling filter inserts which comprise a filter paper element, an internal support tube, and metal end plates, said apparatus comprising a frame;

a pair of spaced support rails having upper edges formed as cutting edges; said support rails being movable mounted on said frame for transverse movement toward and away from each other to selectively adjust the spacing between them;

chock means for holding a filter insert placed on said support rails in a desired position;

a reciprocable platen movable perpendicular to said cutting edges of said support rails; and

drive means operatively connected to said platen to selectively move said platen toward and away from the cutting edges of said support rails;

whereby when a filter insert is placed on said support rails and said platen is moved toward said cutting edges, said filter paper element is compressed and said end plates are severed from said filter paper element.

5,299,353

TURBINE BLADE AND PROCESS FOR PRODUCING THIS TURBINE BLADE

Mohamed Nazmy, Fislisbach, and Markus Staubli, Dottikon, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

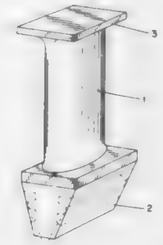
Filed May 8, 1992, Ser. No. 880,036

Claims priority, application European Pat. Off., May 13, 1991, 91107707.1

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—889.7 **14 Claims**



1. A process for producing a cast turbine blade having a blade leaf, blade foot and optionally a blade cover strip and composed of an alloy based on a dopant-containing γ-titanium aluminide, the alloy in the blade leaf having a coarse-grained structure which provides high tensile and creep strength and the alloy in the blade foot and/or the blade cover strip having a fine-grained structure which provides increased ductility in relation to the material contained in the blade leaf, the process comprising steps of:

melting the alloy;

pouring the melt and forming a casting in the form of the turbine blade;

hot-isostatic pressing the casting;

isothermal hot forming part of the hotisostatically pressed casting corresponding to the blade foot and/or the blade cover strip to form the fine-grained structure;

performing a heat treatment of part of the hot-isostatically pressed casting corresponding to the blade leaf before or after the isothermal hot forming to form the coarse-grained structure; and

machining the hot-isostatically pressed, hot-formed and heat-treated casting to form the turbine blade.

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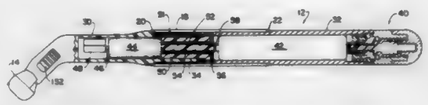
OSCILLATING SHAVER

Stephen C. Metcalf, West Newton; Robert A. Trotta, Pembroke; Donald R. Chaulk, Needham, all of Mass., and Hiroshi Harigai, Tokyo, Japan, assignors to The Gillette Company, Boston, Mass.

Filed Oct. 11, 1990, Ser. No. 596,143

Int. Cl.[5] B26B *19/28, 19/12, 19/38*

U.S. Cl. 30—45 **9 Claims**



1. A wet shave razor comprising:

a handle having a hollow body and a hollow head; wherein said handle includes,

a hollow tube portion open at its proximal end to provide a battery compartment to permit the insertion of a battery therein;

plug means removably mounted in the proximal end of said handle body; and,

sealing means cooperatively disposed with respect to said plug and said handle body to provide a liquid seal for said battery compartment,

a cartridge having a body, said body having a surface for engaging the skin of the user and said body having at least one blade resiliently mounted therein and biased relative to said skin engaging surface;

means for pivotably mounting said cartridge to said heads so that said cartridge may rotate about an axis generally parallel to the surface of said cartridge body which engages the skin of the user;

a motor fixedly mounted in the head portion of said handle close to said cartridge mounting means, said motor having a shaft extending therefrom;

an eccentric element fixedly connected to said shaft and disposed for rotation within said hollow head;

a battery operatively connected to said motor; and

switch means on said handle for turning said motor on and off, said switch means incorporated into said plug means and further including,

a generally annular axially extending member having a distal end and a proximal end and a central lumen,

cooperating threads on the distal end of said annular member for securing said annular member to the proximal end of said handle body,

an end cap rotatably affixed to said proximal end of said annular member having a closed end, a circumferential wall and a central boss projecting axially from said end cap,

a switch actuator affixed to said end cap and rotatable therewith and having at least one cam follower,

a switch cam mounted to slide axially within said annular member and having a cam surface mating with said cam follower,

switch contact means mounted on said switch cam, and

biasing means for biasing said switch cam against said cam follower and providing an electrical contact with said battery whereby said end cap rotates with respect to said annular member, said switch actuator similarly rotates to place said switch cam in a first position wherein said switch contacts are opened and whereby in a second position said switch actuator moves said switch cam to a second position whereby said switch contacts are closed causing said battery to energize said motor and rotate said eccentric member,

said eccentric element rotated from about 5,000 rpm to about 6,500 rpm by said motor to provide a vibration signal, said vibration signal transmitted through said motor mounting

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to said head, through said cartridge mounting means and then to said cartridge body, causing said cartridge body to vibrate with an amplitude of about 0.002 inches to about 0.007 inches;

said resilient mounting of said blades in said cartridge body substantially damping the vibration transmitted to said blades and thereby reducing the motion of said blades in the direction generally perpendicular to the surface of the cartridge body which engages the face of the user so as to reduce chopping action of the blades against the hairs of the beard to be shaved;

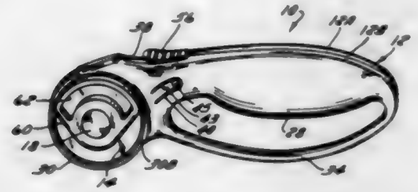
said vibration imparting a motion to said cartridge body so as to reduce the coefficient of friction between said cartridge body and the face of the user to facilitate shaving comfort.

5,299,355

ROTARY BLADE ACTUATOR FOR A HAND HELD CUTTER

James C. Boda, Winneconne, and Stephen A. Peterson, Eland, both of Wis., assignors to Fiskars Oy Ab, Helsinki, Finland

Filed Nov. 16, 1992, Ser. No. 977,502
Int. Cl.[5] B26B *3/06, 29/00*
U.S. Cl. 30—162 **11 Claims**



1. A rotary cutter comprising a handle, a cylindrical head formed on one end of said handle, said head having an internal cavity and a planar surface on each side thereof, a unitary actuating member mounted in said cavity, a circular blade, means for securing said blade to said actuating member on one side of said planar surfaces, a button integrally formed on said actuating member for moving said blade to an operative position with a portion of said blade projecting outwardly from said cylindrical head, and a spring integrally and unitarily formed on said actuating member for biasing said blade to a storage position.

5,299,356

DIET EATING UTENSIL

Ralph Maxwell, III, P.O. Box 3028, Hammond, La. 70404

Filed Apr. 12, 1993, Ser. No. 44,753
Int. Cl.[5] A47J *43/28;* **H03K** *21/18*
U.S. Cl. 30—322 **12 Claims**

1. An eating utensil, comprising:

a first portion for conveying food to the mouth;

a second substantially hollow portion detachably secured to the first portion, said second portion adapted for engagement by a hand of a user;

a first display means for displaying a total number of bites allowed to be consumed by the user of a particular type of food item, depending on the fat content of the food item, said first display means being mounted on the second portion;

a second display means for displaying the specific number of the bites being consumed in sequence of the total number of bites, said second display means being positioned on the second portion; and



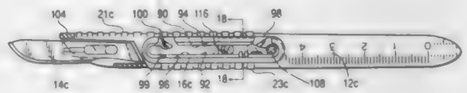
a means for programming the first and second display means mounted on the second portion.

5,299,357

DISPOSABLE SURGICAL SCALPEL WITH SAFETY GUARD

Jeff W. Wonderley, Ft. Defiance, and Donald G. Strickland, Charlottesville, both of Va., assignors to American Safety Razor Company, Verona, Va.

Filed Dec. 18, 1991, Ser. No. 808,891
Int. Cl.[5] B26B *1/00, 1/04, 3/00*
U.S. Cl. 30—339 **58 Claims**



1. A surgical scalpel blade, comprising:

an elongated scalpel handle comprising an upper and a lower edge, and a slot opening through and between opposite sides of the handle wherein at least one of said upper and lower edges is exposed so as to facilitate gripping the handle during use;

a scalpel blade carried by said handle adjacent one end thereof;

a guard movably mounted to said handle for sliding movement relative to said handle between a protective position covering said blade and a retracted position exposing said blade for use;

said guard including side members located adjacent said opposite sides of said handle, said side members each having an inwardly extending flange which is positioned in said slot wherein said flanges are secured to one another so as to form an element, said element being movable along said slot in response to sliding movement of said guard relative to said handle between said protective and retracted positions;

a locking member carried by said handle in said slot for engaging said element in said protective position of said guard relative to said handle for releasably maintaining said guard in said protective position thereof and movable to enable said guard to move from said protective position toward said retracted position; and

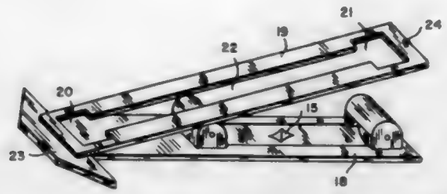
means carried by said handle and cooperable with said element in the retracted position of said guard to releasably maintain said guard in said retracted position relative to said handle.

5,299,358

MEASUREMENT DEVICE

David Y. Reuter, 32 Wellington Heights, Avon, Conn. 06001

Continuation of Ser. No. 916,543, Jul. 20, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 105,484
Int. Cl.[5] G01B *3/08*
U.S. Cl. 33—494 **10 Claims**



1. A measurement device comprising a band of flexible transparent material having a zero reference marked substantially at the center thereon and having further measurement indicia marked thereon and having further measurement indicia marked thereon on either side of said zero reference;

means for positioning said band on a surface on which a measurement is to be made said positioning means including

a pair of containers within which the ends of said bank of material are mounted, said containers being movable relative to each other; and

means associated with said containers for permitting said containers to be positioned on said surface relative to each so that at least a portion of said band having said zero reference and at least portions of said further measurement indicia thereon are exposed;

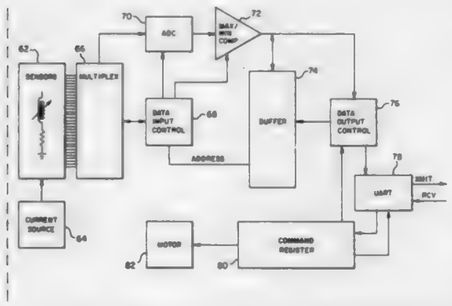
gripping means attached to said band at said zero reference for moving said band on said surface so that said zero reference can be positioned to correspond to a measurement reference point on said surface from which a measurement can be made from either side of said zero reference.

5,299,359

METHOD AND SYSTEM FOR MEASUREMENT OF INTERNAL TUBE DIMENSIONS WITHIN A WELLBORE

James D. Estes, Arlington, and Bruce E. Dennis, Fort Worth, both of Tex., assignors to Computalog Research, Inc., Fort Worth, Tex.

Continuation of Ser. No. 877,540, May 1, 1992, abandoned. This application Jun. 18, 1993, Ser. No. 79,706
Int. Cl.[5] G01B *7/12*
U.S. Cl. 33—544 **14 Claims**



1. An apparatus for measuring the internal dimensions of a tube within a wellbore, said apparatus comprising:

an elongate sonde adapted to be suspended within said wellbore by an electrical conductor and movable within a tube to be measured within said wellbore;

a plurality of sensing fingers mounted on said elongate sonde and movable with respect to said elongate sonde in response to variations in said internal dimensions of said tube, during movement of said elongate sonde within said tube;

detection means disposed within said elongate sonde for producing an electrical signal in response to the position of each of said plurality of sensing fingers at each of a plurality of time instants;

comparator means coupled to said detection means for comparing each electrical signal produced in response to the position of each of said plurality of sensing fingers with all other electrical signals produced during each of a plurality of time intervals, each of said plurality of time intervals comprising a said plurality of time instants, in order to determine a maximum electrical signal and a minimum electrical signal for each of said plurality of sensing fingers which occurs during each of said plurality of time intervals;

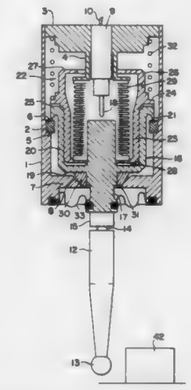
buffer means coupled to said detector means for temporarily storing said maximum electrical signal and said minimum electrical signal for each of said plurality of sensing fingers during each of said plurality of time intervals.

5,299,360

PROBE FOR CHECKING LINEAR DIMENSIONS

Mario Possati, deceased, late of Bologna; by Gabriella Manfredi, heir; by Alberto Possati, heir, both of Bologna, all of Italy; by Edoardo Possati, heir, Geneva, Switzerland; by Marco Possati, heir, New York, N.Y.; by Stefano Possati, heir, Bologna, Italy; Carlo Dall'Aglio, Volta Reno di Argelato, Italy, and Franco Danielli, Zola Predosa, Italy, assignors to Marposs Societa' Per Azioni, S. Marino di Bentivoglio, Italy

PCT No. PCT/EP91/00336, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO91/14149, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 22, 1991, Ser. No. 768,746
Claims priority, application Italy, Mar. 6, 1990, 3373 A/90
Int. Cl.[5] G01B *5/03, 7/03*
U.S. Cl. 33—559 **16 Claims**



1. A probe for checking linear dimensions of workpieces on machine tools or measuring machines, comprising:

a support casing, substantially defining a geometrical axis;

a movable structure including an arm and a feeler, carried at an end of said arm, for touching said workpiece to be checked;

detecting means carried by said support casing for providing a signal depending on the position of said movable structure with respect to said support casing; and

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reference means for movably positioning said movable structure with respect to said support casing, said reference means including a seat fixed with respect to said support casing; said seat and said reference element being adapted to define, substantially, a determined point lying on said geometrical axis for rotational displacement of the movable structure about said point; a first reference surface, fixed with respect to said support casing and having circular symmetry about said geometrical axis; a second reference surface, fixed with respect to said movable structure and having circular symmetry, said geometrical axis; a second reference surface, fixed with respect to said movable structure and having circular symmetry, said second reference surface being adapted to enter into contact with said first reference surface, substantially with single point-to-point contact, the possible contact points on said first reference surface defining a circumference concentric with said geometrical axis; and thrust means arranged between said support casing and said movable structure for urging said movable structure into contact with said support casing, wherein in the absence of external forces on said arm and feeler said movable structure is supported by said support casing due, basically, to contact between said reference element and said seat, and wherein, upon applying external forces on said feeler, the possible displacements of said movable structure with respect to said support casing include, substantially, mutual rotations about said determined point and mutual rotations about any point of said circumference.

5,299,361

MULTI-COORDINATE PROBE

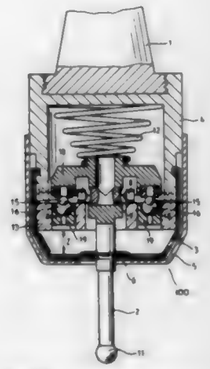
Karl Fiedler, Surberg, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jul. 24, 1992, Ser. No. 919,514

Claims priority, application European Pat. Off., Jul. 26, 1991, 91112552.4

Int. Cl.[5] G01B *5/03*

U.S. Cl. 33—559 **24 Claims**



1. A multi-coordinate probe comprising:

at least one probing pin which is deflectable in several coordinate directions; and

a support system for supporting said probing pin, wherein said support system has a plurality of support points, wherein each support point is formed by the cooperation of surface regions of a support member and a counter member, and further wherein each support point includes a spherical member which supports said support member and is rotatable to provide for both an axial adjustment and a radial adjustment of said support member and said counter member to each other, and a seat for supporting said spherical member.

5,299,362

METHOD OF, AND APPARATUS FOR, HEAT TREATING A MATERIAL WEB PROVIDED WITH A LIQUID OR PASTE-LIKE PREPARATION

Hansjorg Baldinger, Niederlenz, Switzerland, assignor to Van Brandwijk Systems Programming B. V., Gravenhage, Netherlands

Filed Apr. 16, 1991, Ser. No. 685,407

Claims priority, application Switzerland, Apr. 18, 1990, 01314/90

Int. Cl.[5] F26B *3/28*

U.S. Cl. 34—4 **30 Claims**



1. A method of heat treating a material web, selectively provided with a liquid having viscosity selected from low viscosity and high viscosity, in a treatment chamber by means of thermal radiation and hot air, comprising the steps of:

impinging the material web by means of radiant heat a first time in one predetermined zone of said chamber;

thereafter subjecting the material web to blowing with preheated air directed toward said material web in at least one other predetermined zone of the same chamber thereby holding and guiding the material web by the preheated air floatingly in the form of a sinusoid throughout the treatment chamber; and

thereafter impinging the material web by means of radiant heat a second time in a further predetermined zone of the same chamber.

5,299,363

DRYER GROUP WEB TRANSFER REGION FOR PAPER MAKING MACHINE

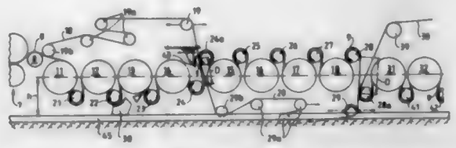
Wilfried Kraft, and Hans-Peter Sollinger, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 825,395

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 9100762

Int. Cl.[5] F26B *11/02*

U.S. Cl. 34—117 **19 Claims**



19. A method for drying a moving web of paper having first and second surfaces on opposite sides thereof; said method including the steps of:

guiding said web along a serpentine path through a first dryer section and a second dryer section disposed downstream of said first dryer section, with said first surface contacting a first plurality of heated cylinders in said first dryer section and said second surface contacting a second plurality of heated cylinders in said second sections;

utilizing a moving closed loop first support belt having a first side in engagement with said second surface to support said web as it moves through said first second with said web being disposed between said first support belt and said first plurality of heated cylinders;

utilizing a moving closed loop second support belt having a first side in engagement with said second surface to support said web as it moves through said second section with said web being disposed between said second support belt and said second plurality of heated cylinders;

guiding said first belt through said first section along a path that is partially defined by a guide roller disposed at the downstream end of said first section with said first belt being interposed between said web and said guide roller and the latter guiding said web as it exits said first section;

guiding said second belt through said second section along a path that is partially defined by a removal roller disposed at the upstream end of said second section with said second belt being interposed between said web and said removal roller and the latter guiding said web as it enters said second section;

said serpentine path being partially defined by said guide and removal rollers with said removal roller being downstream of the guide roller, and said web being transferred from said first support belt to said second support belt in a transfer region where said guide and removal rollers are disposed;

arranging said first and second support belts to be spaced from one another in said transfer region, there being a relatively small space between said belts in a portion of said transfer region where said first belt runs past said removal roller, which space is substantially greater than the thickness of said web, whereby there is an open draw for said web as it transfers from said first belt to said second belt; and arranging an air boundary layer deflection device along the free travel path at the opposite side of the first support belt from the side thereof supporting the web, the deflection device being operatively positioned and shaped so that a boundary layer of air transported by the first support belt at the side of the first support belt toward the deflection device is deflected by the air boundary layer deflection device through the first support belt to impinge upon said web and thereby urge same to separate from said first support belt.

5,299,364

ARRANGEMENT AND METHOD FOR TREATMENT OF WEBS USING NOZZLES WITH NEGATIVE PRESSURE

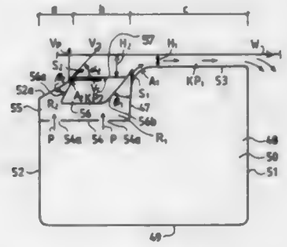
Pertti Heikkilä, Raisio, and Jaakko Rintanen, Turku, both of Finland, assignors to Valmet Paper Machinery Inc., Finland

Filed Sep. 1, 1992, Ser. No. 938,952

Claims priority, application Finland, Sep. 5, 1991, 914194

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—23 **22 Claims**



1. An arrangement of nozzles for the treatment of a web, comprising

a nozzle which directs a drying and supporting gas flow at a web running above said nozzle, said nozzle having a box construction with a top face, and

a first carrier face arranged on a side of said top face of said nozzle,

said nozzle having a first and a second nozzle slot on an opposite side of said top face,

said first nozzle slot being defined by first nozzle walls structured and arranged to pass a first gas flow out of said first nozzle slot, one of said first nozzle walls comprising a curved guide face structured and arranged to guide the first gas flow out of said first nozzle slot due to a Coanda effect and to cause the first gas flow to become parallel to said first carrier face,

said second nozzle slot located at a distance from and before said first nozzle slot in the running direction of the web, said second nozzle slot being defined by second nozzle walls structured and arranged to pass a second gas flow out of said second nozzle slot and toward the web, and

means to direct the second gas flow toward the web such that it has a velocity component perpendicular to the running direction of the web which is substantially equal to or greater than a velocity component parallel to the running direction of the web, said parallel velocity component being larger than zero.

5,299,365

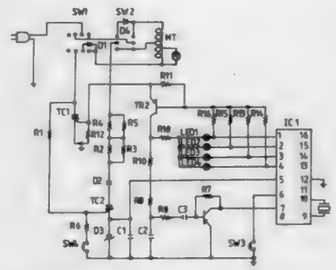
ELECTRIC DRYER CIRCUIT SYSTEM

Yun H. Lee, No. 42, Chiao Ai 6th Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed Dec. 29, 1992, Ser. No. 997,813

Int. Cl.[5] F26B *19/00*

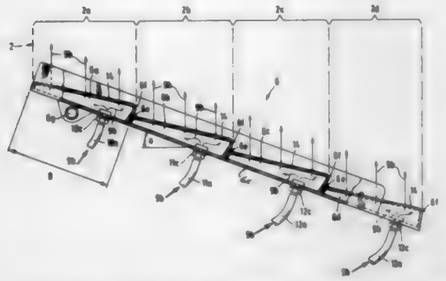
U.S. Cl. 34—48 **1 Claim**



1. In an electric dryer circuit system including a power voltage selection switch, a low/high/off power switch, a DC power converter, a timer and display system, a driver means system, an automatic conducting device, and a dryer load consisted of an electric heating coil, a motor and a fan said driver system means being coupled between said timer and display system and said automatic conducting device and dryer load for driving said dryer load through said automatic conducting device; said DC power converter including a rectifier diode and said power voltage selector switch including a zener diode and said driver system means is controlled by said timer and display system the improvement comprising: automatic breaker circuit means controlled by said automatic conducting circuit and coupled between said rectifier diode and zener diode for cutting off the power supply therebetween responsive to a signal from said automatic conducting circuit indicating no work from the dryer load.

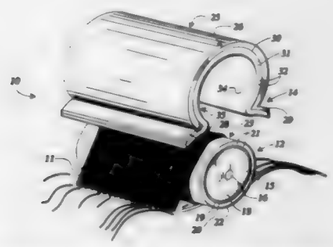
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,366
FLUIDIZED BED TRANSPORT APPARATUS FOR COATING SMALL HARDWARE ITEMS
Elmar Maier, Felkirch-Tisis, and Eckart Drössler, Thüringen, both of Austria, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein
Filed May 13, 1992, Ser. No. 882,602
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116214
Int. Cl.[5] F26B *17/00*
U.S. Cl. 34—57 C **4 Claims**



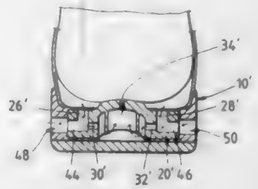
1. Transport apparatus for small sized hardware items comprising an enclosure (**4**) containing a fluidized bed, a downwardly sloping gas permeable base (**6**) over which the hardware items move from a first end of the base to a second end and including feed chambers (**6***a*, **6***b*, **6***c*, **6***d*) subjacent to the base (**6**) and disposed one following the other from the first end to the second end, wherein the improvement comprises that the gas feed chambers (**6***a*, **6***b*, **6***c*, **6***d*) have a common bottom plate (**6***x*) located downwardly below the base (**6**) and are sealed relative to one another in a gas-tight manner, means for individually regulating the gas pressure in each of said gas feed chambers (**6***a*, **6***b*, **6***c*, **6***d*), the base (**6**) between the first end and the second end being shaped in a step-like manner at respective transitions between each of said gas feed chambers (**6***a*, **6***b*, **6***c*, **6***d*) and the height of the base (**6**) above the bottom plate (**6***x*) increasing in a downwardly sloping direction of the bottom plate (**6***x*) toward each of said transitions.

5,299,367
HAIR DRYING CURLER APPARATUS
Lonnie G. Johnson, 4030 Ridgeburst Dr., Smyrna, Ga. 30080, and Francis LeVert, 1725 Magnolia Ave., Knoxville, Tenn. 37917
Filed Oct. 7, 1992, Ser. No. 957,675
Int. Cl.[5] F26B *13/26*
U.S. Cl. 34—95 **20 Claims**



1. A hair drying curler apparatus for use in the treatment of drying and curling locks of damp hair, said apparatus comprising:
a curler body having a shape and configuration onto which a lock of damp hair can be coiled;
a layer of high-surface area material extending about said curler body;
hair drying expediting material bonded to the surface of said high-surface area material for absorbing moisture from the hair; and
a water permeable cover enveloped about said hair drying expediting material for allowing moisture from the hair to contact said hair drying expediting material;
whereby when the lock of hair is coiled about the curler apparatus, the hair drying material dries the hair in the general shape and configuration of the curler body.

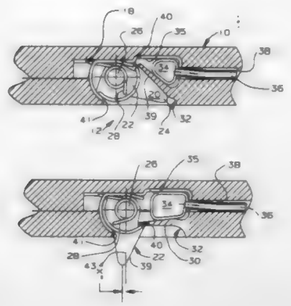
5,299,368
SHOE MIDSOLE WITH VENTILATION DEVICES
Su-Man H. Liu, 7F-4, No. 18, Lane 19, Sec. 1, Shuang Shyr Rd., Taichung, Taiwan
Filed Aug. 26, 1993, Ser. No. 111,866
Int. Cl.[5] A43B *7/06*
U.S. Cl. 36—3 B **6 Claims**



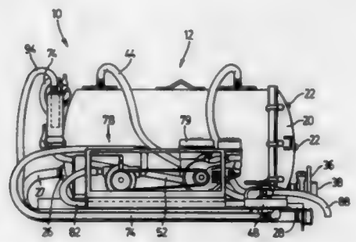
1. A shoe midsole comprising a sole portion, a heel portion, a shank portion connecting said sole portion and said heel portion, and an elastic shock-absorbing member embedded in said heel portion; wherein said elastic shock-absorbing member has an arcuate projection, an air chamber, a plurality of cavities having an open end situated in a top surface of said elastic shock-absorbing member, a plurality of first air ducts through which said cavities are in communication with said air chamber, and a plurality of first through holes extending from a top surface of said arcuate projection to communicate with said air chamber; and wherein said heel portion is provided in a top surface thereof with an opening corresponding in location to said arcuate projection, and with a plurality of second through holes corresponding in location to said cavities.

5,299,369
SHOE WITH RETRACTABLE SPIKE ASSEMBLY
Neil M. Goldman, 13 Sunset Dr., Randolph, Mass. 02368
Filed Jan. 21, 1993, Ser. No. 7,162
Int. Cl.[5] A43C *15/00*
U.S. Cl. 36—61 **13 Claims**

1. A sport shoe having an upper and a sole, said sport shoe comprising:
(a) a plurality of open-ended chambers formed in the sole of the shoe, each said chamber opened at a bottom of the sole;
(b) a spike rotatably mounted in each said chamber, said spike rotatable between a retracted position and an extended position, each said spike retracted into its chamber when in said retracted position, each said spike projecting outwardly and downwardly from the sole when in said extended position; and
(c) actuator means for moving said spikes between said retracted positions and said extended positions, each said spike rotating beyond a vertical centerline passing through the axis of rotation of that said spike when moved from said retracted position to said extended position by said actuator means.



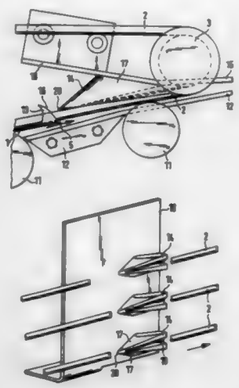
5,299,370
EXCAVATION APPARATUS
Wesley Gyori; Ronald Gyori; Wendel Gyori, all of Rimbey, and Brian Pacey, Calgary, all of Canada, assignors to Badger Daylighting Inc., Calgary, Canada
Filed Nov. 25, 1992, Ser. No. 981,663
Int. Cl.[5] E02F *3/88*
U.S. Cl. 37—347 **12 Claims**



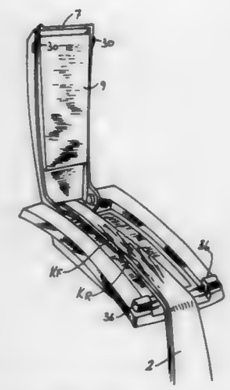
1. An excavation apparatus comprising:
a tank partitioned into at least two isolated chambers, one of said chambers being adapted to hold fluid to be sprayed and the other of said chambers being adapted to receive excavated material;
conduit means in the fluid communication with said one and other chambers;
pump means to force fluid from said one chamber through said conduit means and onto an area to be excavated at a pressure sufficient to dislodge earth; and
vacuum means to draw excavated material and/or sprayed fluid into said other chamber via said conduit means, wherein said pump means and vacuum means are constituted by a single pump.

5,299,371
BELT TRANSPORT SYSTEM INCLUDING DOG-EAR REMOVING ELEMENTS
Markus Haberstroh, Landsberg/L., Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany
Filed Apr. 3, 1992, Ser. No. 863,046
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4110931
Int. Cl.[5] D06C *3/00;* **B65H** *5/38*
U.S. Cl. 38—9 **4 Claims**

1. A belt transport system for conveying thin sheet material in a predetermined direction, comprising a clamping area in which at least one transport belt is driven in said direction by means of conveyor rollers with the sheet material clamped between a side of a conveyor belt and at least one baffle plate; and at least one smoothing element disposed upstream of said clamping area relative to said direction; wherein said at least one smoothing element includes a groove situated in a first surface of the smoothing element through which the belt passes before being driven in the clamping area, and wherein said smoothing element includes a second surface, the second surface comprising a smoothing surface positioned so as to engage a dog-ear on the sheet material as the sheet material is conveyed by the belt past the smoothing element, the smoothing surface facing away from said side of the belt and thereby urging said dog-ear away from said clamping area.



5,299,372
PRESS FOR SMOOTHING CREASES ON TIES
Thomas Kelly, Dunlaoghaire, and Andrew Bradley, Dublin, both of Ireland, assignors to Arrowhead T.P. Limited, Dublin, Ireland
Filed Apr. 3, 1992, Ser. No. 863,192
Claims priority, application Ireland, Apr. 3, 1991, 1092/91
Int. Cl.[5] D06F *71/28;* **A47G** *25/72*
U.S. Cl. 38—36 **16 Claims**



1. A tie press for pressing and removing creases from at least a portion of a tie, comprising:
a tie receiving member for receiving said portion of the tie;
a tie pressing member comprising a cover and a tie-engaging

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resilient mat mounted on the cover, said tie pressing member being movable relative to the tie receiving member from an open position for insertion and removal of the tie to a pressing closed position wherein the tie is pressed between the members; and

closure means for retaining the tie pressing member in the closed position in pressing engagement with the tie receiving member;

the closure means being mounted on the cover and the receiving member and including

i) cooperating engagement means for releasably holding the tie pressing member in the closed position, and comprising a projection on at least one of the members for engagement in a recess in at least one of the member, the projection being releasably engaged in the recess on closure of the tie press, and

ii) release means for releasing the tie pressing member form the closed position, and comprising a spring release member, said spring release member being movable by an actuating means from a clamping position in which the recess is engaged with the projection to a release position for moving the tie pressing member to the open position;

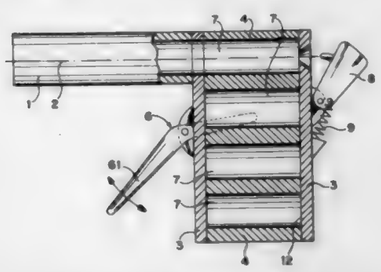
wherein at least one of said members includes a receiving recess to receive said portion of the tie, and said receiving recess is defined between a pair of spaced-apart side walls, the side walls being inclined in a longitudinal direction to substantially follow the shape of the tie.

5,299,373

HAND-GUN WITH MOVING CARTRIDGE CHAMBER MAGAZINE

Sandor Breiner, Szentendrei ut 12.I.2, Budapest, Hungary H-1035

Continuation-in-part of Ser. No. 858,984, Nov. 23, 1990, abandoned. This application May 21, 1992, Ser. No. 887,910
Claims priority, application Hungary, Nov. 24, 1989, 6161/89
Int. Cl.[5] F41A *9/20, 9/23*
U.S. Cl. 42—39.5 **13 Claims**



1. A hand-gun with moving cartridge chamber magazine, comprising a grip, a barrel connected to the front upper part of the grip, a cartridge magazine pushable into a slide inside the grip to receive cartridges, and a firing device at the rear part of the grip,

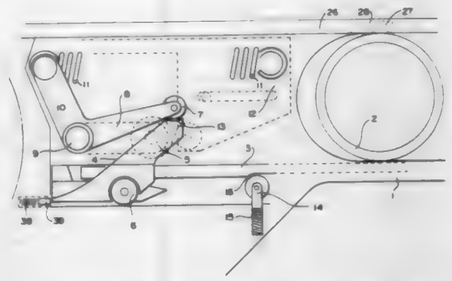
characterized in that the cartridge magazine is a moving cartridge chamber magazine (4) comprising at least two cartridge chambers (7) joined rigidly together, and a magazine lifting device (6) connected to the grip (3), by means of which the cartridge chamber magazine (4) can be moved step-by-step upwards along the slide inside the grip (3).

5,299,374

MULTIFUNCTION FIRE ARM CONTROL DEVICE

Georges Mathys, Moulin de l'Estrille, 3320 Tizac De Curton, France

Filed Aug. 3, 1992, Ser. No. 923,455
Claims priority, application France, Aug. 7, 1991, 91 10251
Int. Cl.[5] F41A *19/35*
U.S. Cl. 42—69.01 **27 Claims**



27. A multifunctional firearm control device for a firearm, comprising:

a trigger slidably-mounted on a casing of the firearm, said trigger being capable of occupying a first position, a second position, a third position, and a fourth position, wherein:

said first position comprises a rest or uncocked position;

said second position comprises an armed position located behind said rest position;

said third position comprises a firing position located behind said armed position; and

said fourth position comprises an opening position;

a triggering device comprising two meeting roller bearings and a percussion spring which, when freed, activates a hammer or striking pin; and

a firing plate comprising an armament ramp on a mobile piece moved by an activation of said trigger, in a non-reversible movement after arming, by means of an armament bearing on an armament lever on said percussion spring, and a device for freeing said triggering device with meeting roller bearings; and

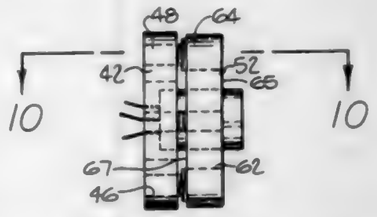
a control rod moved by said trigger as said trigger moves into said opening position.

5,299,375

LASER DIODE ALIGNMENT MECHANISM

Heinz H. Thummel, Salinas; Dave E. Doggett, Bolder Creek, and Gary G. Love, Monterey, all of Calif., assignors to Laser Devices, Inc., Monterey, Calif.

Continuation of Ser. No. 645,466, Jan. 24, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 50,976
Int. Cl.[5] F41G *1/35*
U.S. Cl. 42—103 **51 Claims**



1. A laser alignment apparatus for aligning an angle of a laser relative to a laser mount which attaches to a firearm, said laser alignment apparatus comprising:

a laser element;

a housing for the alignment apparatus;

a base plate, coupled to said housing, having an inner opening with an annular configuration for allowing movement of said laser element within said base plate;

a platform having an inner opening with an annular configuration substantially coextensive with the inner opening of said base plate and means for attaching said laser element to said platform;

a spacer attachment means for holding said base plate and platform together and for facilitating relative spacing therebetween; and

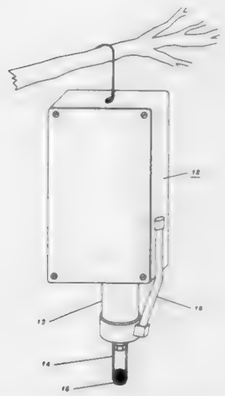
a first adjustment means and a second adjustment for adjusting said platform relative to said base plate, said spacer means is located in said base plate such that an angel between a line between said spacer means and said first adjustment means and a line between said spacer means and said second adjustment means is a right angle.

5,299,376

ELECTRONIC SCRAPE DRIP

Benton A. Roberts, Rte. 2, Box 1660, Kyle, Tex. 78640

Filed Oct. 29, 1992, Ser. No. 968,282
Int. Cl.[5] A01M *31/06*
U.S. Cl. 43—2 **6 Claims**



1. A buck lure dispensing device for periodically dispensing a fluid animal scent, said device comprising:

a hollow housing, means for supporting said housing in an elevated position above the ground, said means for supporting connected to said housing, a reservoir contained at least partially within said housing for containing said animal scent, a valve means for controlling flow of said animal scent out of said reservoir, and a timer within said housing, said timer for controlling said valve means;

said valve means comprising a needle, said needle including a first end and a second end, said fist end positioned above said reservoir and said second end including a seal and positioned adjacent an aperture at the bottom of said reservoir, said valve means further comprising a control means for intermittently raising and lowering said needle, said control means acting in response to said timer, said control means connected to said first end,

said device further comprising a tube extending from the bottom of said reservoir, and an absorbent wick mounted adjacent a lowermost distal end of said tube,

whereby said timer activates said control means, and said control means positions said needle so as to allow said animal scent to flow from said reservoir into said tube to said wick, so as to allow gradual emission of said animal scent into the surrounding air and upon the ground below said device.

5,299,377

INTER-LINE FISHING ROD

Masaru Akiba, Saitama, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 756,281, Sep. 6, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,410
Claims priority, application Japan, Sep. 7, 1990, 2-235689
Int. Cl.[5] A01K *87/04, 87/00*
U.S. Cl. 43—18.1 **4 Claims**



1. An inter-line fishing rod in which a fishline is to be inserted into and passed through the inside of the rod, comprising:

a hollow cylindrical body having an internal cylindrical surface and an external cylindrical surface radially spaced therefrom;

a fishline guide sleeve having an interior surface engaged with said external cylindrical surface, wherein said fishline guide sleeve is shaped as a funnel such that the interior surface diameter of the fishline guide sleeve gradually increases from a terminus of the hollow body; and

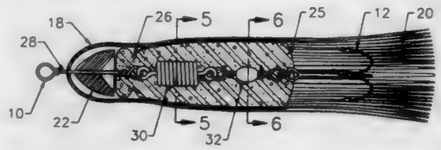
a fishline guide ring engaged with said interior surface and formed with a fishline guide surface adapted to contact the fishline, said fishline guide surface is located radially inside said interior surface and has an axial cross section with a radius of curvature not less than one half of the diameter of said internal cylindrical surface, and the interior surface of the fishline guide sleeve is positioned radially outside an imaginary straight line which connects said fishline guide surface of said fishline guide ring and said internal cylindrical surface of said body, wherein an annular space is defined which is radially bounded by said imaginary line and said interior surface as well as longitudinally bounded by said terminus of said hollow body and said fishline guide ring.

5,299,378

FISHING LURE

Trevor J. Ballard, 5831 N. Ava St., Kansas City, Mo. 64151

Filed Jun. 10, 1993, Ser. No. 40,914
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.06 **7 Claims**



1. A fishing lure having a length and shape to provide an appearance resembling that of a bait fish having a head portion and a tail portion and including a fish hook for attachment to a fish line comprising:

a shaped weight at a leading end of the lure which corresponds to the head portion of the bait fish and a fish hook at a trailing end of the lure which corresponds to the tail portion of the bait fish, said hook being attached through an interior portion of the lure to a fish line attaching loop by way of a plurality of parts which include a structure for allowing the hook to swivel with respect to the fish line

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attaching loop and a tension spring member for absorbing a shock load after a fish is hooked;

a unitary sheath of a soft non-porous synthetic plastics material serving a an outer lure surface which provides a feel similar to that of bait fish flesh, said sheath extending along the length of the lure to surround and obscure the shaped weight, all of said plurality of parts and at least part of the hook; and

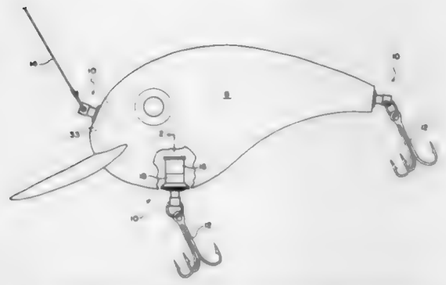
a layer of porous and resiliently compressible material surrounding said plurality of parts and underlying the sheath, said porous material having an exposed portion accessible at the trailing end of the lure to permit the addition of a fluid fish attractant at a position near the hook, and said porous material together with said sheath forming an outer lure surface which has the feel of a bait fish flesh.

5,299,379

QUICK RELEASE FISHING LURE CONNECTION APPARATUS AND METHOD

Thomas E. Hawk, P.O. Box 354, Salado, Tex. 76571

Filed Aug. 6, 1992, Ser. No. 926,336
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.49 **20 Claims**



1. A quick release fishing lure connection comprising:

(a) a base member secured to a lure body and having a base member receptacle therein with an outwardly facing receptacle opening;

(b) a retaining feature formed on a side wall of the base member receptacle;

(c) a connector member having a connecting portion adapted to be received in the base member receptacle through the receptacle opening;

(d) a locking member movably mounted on the connecting portion and capable of alternatively residing in an extended position and a retracted position, the locking member for contacting the retaining feature when in the extended position while the connecting portion is received in the base member receptacle thereby preventing the connecting portion from being withdrawn, and for allowing the connecting portion to be withdrawn from the base member receptacle when in the retracted position;

(e) a control member movably mounted on the connector member adapted to move between a lock position in which it holds the locking member in the extended position and a release position in which it allows the locking member to move to the retracted position;

(f) means for retaining the control member in the lock position; and

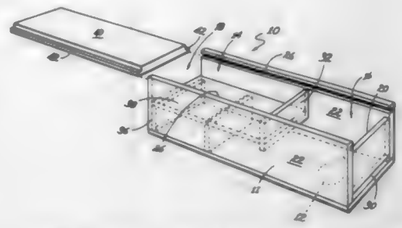
(g) means associated with the connector member fore receiving an article to be connected to the lure body.

5,299,380

RODENT ENCLOSURE

Robert W. Fornal, Sr., P.O. Box 2083, Sandwich, Mass. 02563

Continuation-in-part of Ser. No. 614,859, Jul. 3, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 986,452
Int. Cl.[5] A01K *69/06*
U.S. Cl. 43—66 **8 Claims**



1. A rodent enclosure adapted for capturing and retaining alive a rodent comprising:

a) a plexiglas housing having an entrance end and an enclosed end and including openings at said entrance end and said enclosed end, said plexiglas housing comprising a plurality of sidewalls, a top wall and a floor all constructed of transparent plexiglas material comprising;

i) a portal chamber adjacent the entrance end having a normally fully opened portal;

ii) a normally enclosed bait chamber having a substantially closed end,

b) a tilting ramp normally positioned in a horizontal plane, parallel to the floor, mounted on a pair of pivots having an outer portal portion and a tilting ramp portion adapted to move between a normally level position providing for access to the portal chamber and a tilting position providing access to the bait chamber wherein the outer portal portion is relatively heavier than the tilting portion for automatically returning the tilting ramp to the level position for providing alternatively an access means or a barrier means enabling a rodent to enter the bait enclosure via the tilting ramp and be retained in said bait chamber by a barrier system including the tilting ramp when in level position;

c) controlled egress means for selectively releasing the entrapped rodent unharmed;

d) ventilation means provided in the bait chamber for providing circulation of air through the chamber which comprises a slotted opening to facilitate scenting and to permit ventilation and the source of air for the trapped rodent;

e) barrier means comprising a series of interrelated partial barrier walls configured to operate in association with the tilting ramp and constructed of transparent plexiglas material, including an upper intermediate wall providing a partial barrier at the inner end of the portal chamber, a lower intermediate barrier wall and an end portal lower partial barrier wall for providing an entrance path when the tilting ramp is in the tilting position and for providing a barrier preventing escape when the tilting ramp is in the level position;

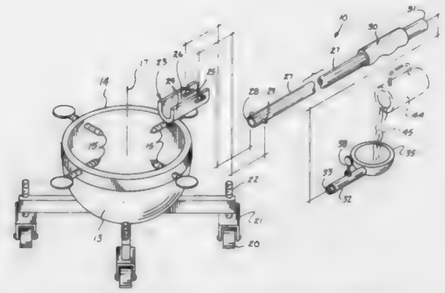
f) bait means for luring a rodent into the bait chamber for enclosure therewith in and for providing a food source for sustaining life of a trapped rodent for a period of at least eight hours comprising a ball of peanut butter of at least ½" in diameter adapted to be positioned in the bait chamber by access through the controlled egress means; wherein a rodent on being attracted to the bait enters the portal chamber by stepping on the generally horizontal tilting ramp, the rodent being lured by sensing the bait, there being openings for scenting at the entrance and in the enclosed end of the housing and which bait is visible from outside the enclosure, and, upon entering the open portal and proceeding inwardly along the horizontal plane of the tilting ramp toward the bait, passes the pivot point of the tilting ramp defined by the pivots, whereupon the weight of the rodent is operative to depress the tilting end of the ramp downwardly, thereby forming an entrance way between the upper partial barrier wall and the floor to provide access for the rodent to exit the ramp and enter the bait chamber, whereupon due to the slightly greater weight of the outer portal portion of the tilting ramp, said tilting ramp automatically returns to its normal level position, closing the access to the bait chamber to enclosure the rodent within the bait chamber with no means of egress.

5,299,381

CHRISTMAS TREE STAND APPARATUS

Gaylon E. Oldenburg, Jr., RR #1, Box 92AA, Parkhurst Rd., Oswego, N.Y. 13126

Filed Feb. 8, 1993, Ser. No. 14,734
Int. Cl.[5] A47G *7/02*
U.S. Cl. 47—40.5 **4 Claims**



1. A Christmas tree stand apparatus, comprising,

a container, the container having a floor and a continuous side wall, with the side wall including a continuous entrance end, and the container symmetrically oriented about a container axis, and

a plurality of fastener rods orthogonally oriented relative to the container axis radially and threadedly directed through the side wall, and

a plurality of support legs fixedly mounted exteriorly of the container to the container floor, with the support legs each having a plurality of leg distal ends, and each of said leg distal ends includes an externally threaded support rod threadedly directed through said leg distal end, with each support rod oriented parallel and an equal distance relative to the axis, and each support rod including a wheel member rotatably mounted relative to the support rod oriented below the support rod, and

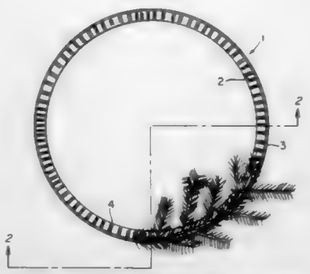
a U-shaped support fixedly mounted to the container entrance end, and the U-shaped support including spaced parallel support side walls and a support floor, with the support floor and the support side walls defining a support channel, and the support channel directed into the container, and the support channel oriented at an oblique angle relative to the container axis, and the support side walls each including a T-shaped slot, and each T-shaped slot oriented parallel and coextensive relative to one another, and a first conduit, the first conduit having a first conduit exit end and a first conduit entrance end, with the first conduit having a plurality of guide lugs fixedly mounted to the first conduit in adjacency to the first conduit exit end, and the guide lugs diametrically directed through the first conduit, and the guide lugs arranged for reception with the T-shaped slots.

5,299,382

SUPPORT FRAME FOR WREATHS

Thomas Carmichael, P.O. Box 195, Tracyton, Wash. 98393

Filed Feb. 20, 1991, Ser. No. 658,325
Int. Cl.[5] A01G *5/00*
U.S. Cl. 47—41.01 **11 Claims**



1. A unitary, ring-like member forming a frame for use in the fabrication of a wreath defined by material such as boughs and greens or the like;

said unitary member defining an inner and outer periphery and having a first substantially planar portion whose maximum dimension parallel to the plane of said member is substantially greater than its maximum dimension transverse to the plane of said member, said substantially planar portion including a plurality of circumferentially spaced means for impeding movement of said wreath material in the plane of said frame after being secured thereon;

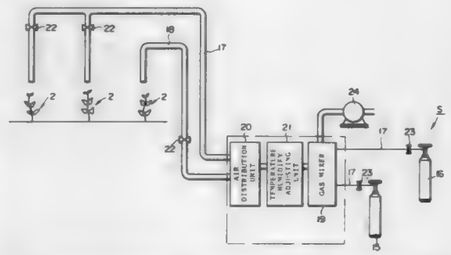
said member also having at least one second upstanding portion which is integral with one of the inner and the outer periphery of said first portion and extends transversely to the plane of said first portion, said upstanding portion having a sufficient height transversely to the plane of said member to thereby resist deformation of said unitary member transversely to said plane of said member and to prevent the wreath material from rolling off the face of said member.

5,299,383

PLANT CULTIVATION METHOD AND APPARATUS THEREFOR

Tadashi Takakura; Eiji Goto; Seiji Takishima; Hiromitsu Takada; Einosuke Mifune; Yoshio Takahashi; Fumito Takagi, and Yuji Hirosawa, all of Tokyo, Japan, assignors to Tadashi Takakura and Shimizu Construction Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 536,117, Jun. 11, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 13,533
Claims priority, application Japan, Aug. 2, 1989, 1-200801
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—58 **8 Claims**



1. A plant cultivation method comprising the steps of, in cultivation of a plurality of plants within a cultivation bed

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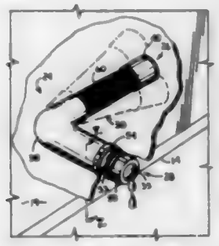
which includes nutritive elements required for the growth of the plants, selecting a location of a terminal bud of each plant, and blowing gas individually against the terminal bud of each of the plants directly above each plant through an air tube which is provided immediately above each of the plants.

5,299,384

SELF-DRAINING PLANTER

Dean D. Andrews, 11817 W. 149th St., Olathe, Kans. 66062

Continuation-in-part of Ser. No. 785,514, Oct. 31, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,693
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—66 **11 Claims**



1. A self-draining planter, comprising:

(a) structure having walls defining an upwardly open soil, plant, and water-holding receptacle, at least one of said walls defining a water-flow aperture;

(b) drain means coupled with said aperture and extending inwardly therefrom into said compartment for conducting water outwardly through said aperture;

(c) filter means coupled with said drain means for selective removal of water from said receptacle; and

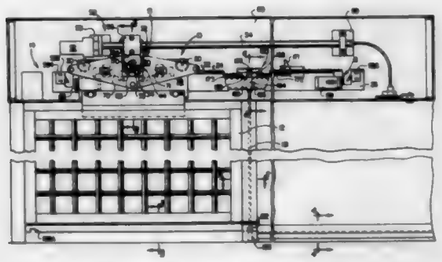
(d) means adjustably supporting said drain means within said receptacle in disposition such that water is drained to a preselected level within the receptacle.

5,299,385

DETENTION CELL LOCKING SYSTEM

Lloyd McConnell, Addison, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Filed Oct. 9, 1992, Ser. No. 959,062
Int. Cl.[5] E05B *47/06*
U.S. Cl. 49—18 **26 Claims**



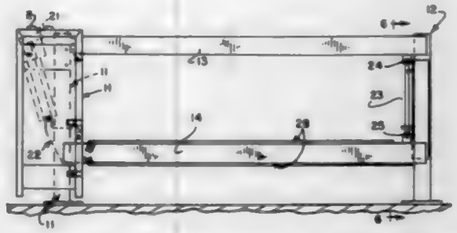
1. An improved detention cell looking system of the type utilizing a detention cell door having an upper supporting drive carriage for the movement thereof and mechanical linkage for locking said cell door in both the open and closed positions, said drive carriage being actuated by an electric drive assembly and imparting locking actuation to at least one vertical locking bar and a second carriage locking member, the improvement comprising first and second toggle plates mounted to said drive carriage and adapted for pivotal engagement one with the other and lost motion actuation in association therewith for both locking and unlocking said first mechanical linkage and said vertical locking bar.

5,299,386

SAFETY GATE ASSEMBLY

Robert W. Naegelli, Edmond, Okla., and Norbert Hahn, Franklin, Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Nov. 27, 1991, Ser. No. 799,032
Int. Cl.[5] E05F *15/02*
U.S. Cl. 49—28 **19 Claims**



1. A safety gate assembly mountable for use as an impact barrier at a loading dock station provided with an access passageway, said assembly comprising a pair of stationary, laterally spaced, upright support members positionable on opposite sides of the passageway; shield means selectively mounted on one of the support members; hingedly mounted gate means proximate said one support member and shield means and including at least one hingedly mounted elongate segment selectively movable between an operative passage-blocking mode and an inoperative non-blocking mode, the movement of said one segment being in a path defining a substantially vertical plane, when in the operative mode, said elongate segment being substantially horizontally disposed and spanning the distance between said support members; drive means disposed proximate said one support member and shield means and having an actuatable element drivable between a retracted position and an extended position and operatively connected to said one segment for effecting controlled movement of said one segment between said modes; drive-assist means operatively connected to said actuatable element and continually biasing said actuatable element toward a position such that the drive-assist means enhances the force applied by the actuable element to the one segment to effect movement of the one segment from the operative mode to the inoperative mode; and stop means mounted for engaging said one segment only when said one segment assumes the operative mode.

5,299,387

SENSING EDGE FOR A GATE

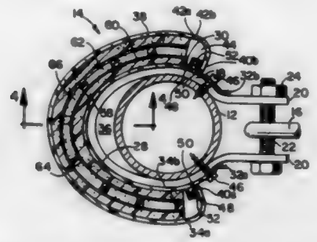
Bearge D. Miller, Concordville, and Anatoly Galperin, Philadelphia, both of Pa., assignors to Miller Edge, Inc., Concordville, Pa.

Filed Feb. 14, 1992, Ser. No. 837,300
Int. Cl.[5] E05F *15/02*
U.S. Cl. 49—28 **12 Claims**

1. A sensing edge for a gate to protect persons, equipment and the gate from impact damage, the gate including a leading member having an external surface and a maximum lateral width, said sensing edge comprising:

a mounting member for securing the sensing edge to the leading member of the gate, said mounting member including first and second lateral edge spaced apart a distance less than the maximum lateral width of the leading member, said mounting member further including an outer surface and an inner surface defining a first area for receiving in facing engagement a portion of the leading member, said inner surface being sized and shaped to extend around a portion of the external surface of the leading member having the maximum lateral width, said mounting member being constructed of a material having a sufficient degree of flexibility to allow said first and second lateral edges of said mounting member to move toward and away from each other such that the maximum lateral width portion of the leading member can be snap fit within the first area to thereby secure the sensing edge to the leading member;

an elongated outer sheath having a first lateral edge, a second lateral edge, an interior edge and an exterior surface,



said first and second lateral edges of said sheath being spaced apart and secured to said mounting member proximate said first and second lateral edges of said mounting member, said interior surface of said sheath being spaced from said outer surface of said mounting member to thereby define a second area for receiving a switch means; and

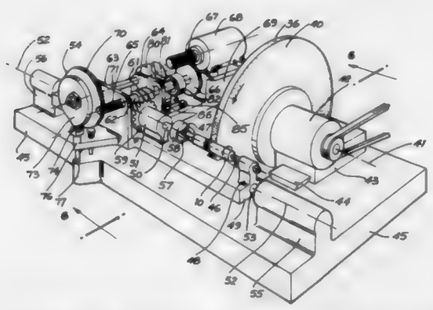
a switch means complementarily positioned within the second area for actuation of the device upon application of pressure substantially anywhere along the exterior surface of the sheath.

5,299,388

MACHINE FOR USE IN THE MANUFACTURE OF VEHICLE POWER STEERING GEARS

Arthur E. Bishop, Sydney, Australia, assignor to A. E. Bishop & Associates Pty. Limited, North Ryde, Australia

PCT No. PCT/AU91/00494, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/10333, PCT Pub. Date Jun. 25, 1992
PCT Filed Oct. 28, 1991, Ser. No. 50,328
Claims priority, application Australia, Dec. 10, 1990, PK3787
Int. Cl.[5] B24B *19/02, 5/36*
U.S. Cl. 51—97 R **4 Claims**



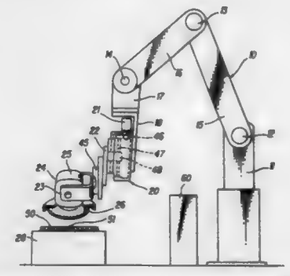
1. A machine for grinding the outer metering edge contours on the edges of the axially extending grooves of a power steering gear input-shaft, having means for supporting said input shaft for rotation, a substantially cylindrical grinding wheel whose working surface is dressed parallel to the axis of said input-shaft, drive means to rotate said input-shaft, means to cyclically increase and decrease the distance between said input-shaft and said grinding wheel several times during each revolution of said input-shaft in such a manner that each said outer metering edge contour so ground has a form which is a mirror image of the form of at least one other outer metering edge contour around the outside periphery of said input-shaft, so defining symmetrical sets of clockwise and anticlockwise metering edge contours, characterized in that said drive means is arranged to vary cyclically the angular velocity of said input-shaft in a manner co-ordinated with said cyclic increase and decrease of said distance between said input-shaft and said grinding wheel, thereby substantially reducing the peak rate of stock removal per unit time compared with the peak rate that would occur if said angular velocity were constant and equal to the mean value of said cyclically varying angular velocity.

5,299,389

AUTOMATIC GRINDING APPARATUS

Seishu Yonaha; Meitoku Chin, and Kenichi Yatsuda, all of Tokyo, Japan, assignors to Aiko Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 631,421, Dec. 21, 1990, abandoned. This application Oct. 2, 1992, Ser. No. 956,932
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165 R **5 Claims**



1. An automatic grinding apparatus comprising:

a constant rotating grinder comprising a grinding motor and a grinding disk actuated by said grinding motor, said grinding motor having substantially no variation in RPM due to variation of load on said grinding disk, and a load current of said motor which increases or decreases due to metal removal rate;

an industrial robot having a wrist means thereon;

a robot controller;

a travelling device attached to said write means of said industrial robot and supporting said grinder for three-dimensional movement of said constant rotating grinder along a surface of a workpiece to be ground;

a sliding device on said robot comprising an elevation motor for adjusting the distance between said grinding disk and said surface of the work piece to be ground and a slider actuated by said elevation motor and supporting said constant rotating grinder at the front surface thereof for raising and lowering said grinder, said sliding device being capable of independently actuating said travelling device;

a programmable controller for controlling said grinder and sliding device to start and stop the control thereof, to recover to the initial start point, and to stop by receiving respective signals from said robot controller;

timer means for generating a signal for actuating said sliding device to move said grinding disk towards the workpiece after slip current of said grinding motor becomes stable at initiation of grinding;

detecting means outputting a driving signal to said travelling device simultaneously with or after a time delay after detecting that said disk contacts said surface to be ground due to the variation of the load current of said grinding motor; and

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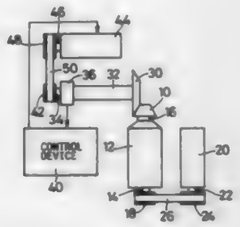
means for recovering the relative location of said disk and said sliding device to a certain condition by regulating an actuating time of said elevation motor before and after the grinding.

5,299,390

METHOD AND APPARATUS FOR LAPPING A PAIR OF GEARS

Shogo Kato, Nagoya, and Naotoshi Sato, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi and Yutaka Seimitsu Kogyo, Ltd., Saitama, both of Japan

Continuation of Ser. No. 855,560, Mar. 23, 1992, abandoned.
This application Jul. 16, 1993, Ser. No. 92,561
Claims priority, application Japan, Apr. 11, 1991, 3-106769
Int. Cl.[5] B24B *49/10, 51/00*
U.S. Cl. 51—165.76 13 Claims



1. A method of lapping teeth of a pair of gears by positively rotating one of said pair of gears in mesh with the other gear in the presence of a lapping powder, while applying a braking torque to said other gear, said method comprising the steps of:
obtaining an angular acceleration value of said other gear while said one gear is rotated at a predetermined constant speed; and
controlling said braking torque such that said braking torque is smaller when said angular acceleration value obtained from said other gear is at a maximum, than when said angular acceleration value obtained from said other gear is at a minimum.

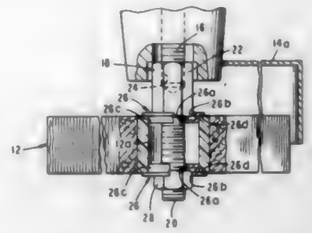
11. An apparatus for lapping teeth of a pair of gears, comprising:
a lapping device including (i) support means for rotatably supporting said pair of gears in mesh with each other, (ii) drive means for positively rotating one of said pair of gears at a predetermined constant speed, (iii) braking means for applying a braking torque to the other of said pair of gears, and (iv) supply means for supplying a lapping powder between the teeth of said pair of gears;
an acceleration sensor provided on said lapping machine to obtain a signal relating to an angular acceleration value of said other gear while said one gear is rotated at said predetermined constant speed, and to determine said angular acceleration value on the basis of said signal; and
a controller connected to said acceleration sensor and said braking means of said lapping device, said controller including (a) determining means for determining said braking torque on the basis of said angular acceleration value determined by said acceleration sensor, such that said braking torque is smaller at times when said angular acceleration value is at a maximum than at times when said angular acceleration value is at a minimum, and (b) control means for controlling said braking means of said lapping device to control said braking torque in accordance with the braking torque determined by said controller.

5,299,391

FLAPPER WHEEL ADAPTER

Wilson E. Williams, 1117 W. Carpenter, Jerseyville, Ill. 62052

Filed Aug. 11, 1992, Ser. No. 928,500
Int. Cl.[5] B24B *41/00*
U.S. Cl. 51—168 9 Claims



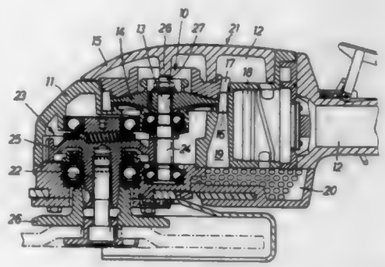
1. An adapter assembly for use in interconnecting a flapper sanding wheel of the type normally used with a bench grinder with a hand held portable grinder of the character having an externally threaded drive shaft, comprising:
(a) a first member having:
(i) an elongated externally threaded shaft, having a first length; and
(ii) a head portion interconnected with said externally threaded shaft, said head portion having an internally threaded bore of a first diameter co-axially aligned with said shaft for threadably receiving the drive shaft and at least two wrench engaging flats;
(b) first and second compression washers, each said washer having a circumferentially extending flange for engaging the sides of the flapper sanding wheel and a central aperture for receiving said externally threaded shaft of said first member; and
(c) a nut for threadable engagement with said externally threaded shaft.

5,299,392

PORTABLE POWER GRINDER

Rolf A. Jacobsson, Saltsjö-Boo, and Jan K. J. Edling, Älvsjö, both of Sweden, assignors to Atlas Copco Tools AB, Nacka, Sweden

Filed Jun. 23, 1993, Ser. No. 82,021
Claims priority, application Sweden, Jun. 29, 1992, 9201991-8
Int. Cl.[5] B24B *23/00*
U.S. Cl. 51—170 R 4 Claims



1. In a portable power grinder, comprising a housing (11), a rotation motor (10) with a rotor shaft (13) having a rear end portion (27) extending out of said motor (10), an output shaft (22) drivingly coupled to said rotor shaft (13) and intended to carry a grinding tool, and a speed governor (18)for providing a constant motor speed,
the improvement wherein:
said rotor shaft (13) is drivingly coupled to said output (22)

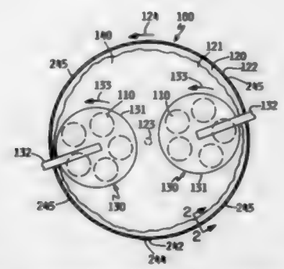
by a reduction gearing (23) which comprises a gear (24) on said rotor shaft (13) and another gear (25) on said output shaft (22),
said gear (24) on said rotor shaft (13) is integral with said rotor shaft (13),
said rotor shaft (13) is replaceable by another one of a number of alternative rotor shafts having integral gears (24) of different sizes for providing different speed levels on said output shaft (22),
all of said alternative rotor shafts (13) have differently shaped rear end portions (27),
said housing (11) includes a lid (15) covering the rear end portion (27) of said rotor shaft (13), which lid (15) is replaceable by one of a number of alternative lids carrying individual markings stating the maximum speed level of the output shaft (22), and
each of said alternative lids (15) is individually shaped to fit those tools only which have a rotor shaft (13) end portion shape and an integral gear (24) that correspond to an output shaft (22) speed level which is equal to or lower than that stated by marking on that particular lid (15).

5,299,393

SLURRY CONTAINMENT DEVICE FOR POLISHING SEMICONDUCTOR WAFERS

Willard F. Chandler, Byron; LaVerne B. Jacobson, Owatonna; Robert D. Johnson, and Steven E. Monahan, both of Rochester, all of Minn., assignors to Internation Business Machines Corporation, Armonk, N.Y.

Filed Jul. 21, 1992, Ser. No. 918,332
Int. Cl.[5] B24B *55/04, 29/02*
U.S. Cl. 51—272 8 Claims



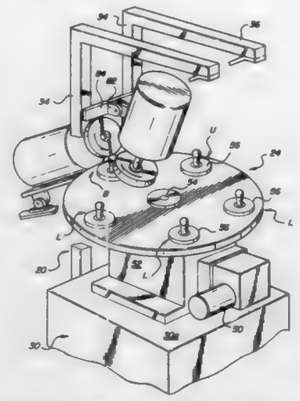
1. A slurry containment device for a polishing apparatus having a flat table with a substantially circular periphery, comprising:
a circular continuous first band of relatively rigid material having a shape and size approximating said table periphery, said first band having an inside surface and an outside surface, each having an upper area and a lower area;
a circular continuous second band of flexible material capable of conforming closely to said table periphery, said second band having an inside surface and an outside surface, each of said last-named two surfaces having an upper area and a lower area;
a circular, continuous, impermeable bond sealing said lower area of one of said surfaces of said first band and said upper area of one of said surfaces of said second band;
clamp means completely encircling said lower area of said outside surface of said second band so as to force said lower area of said inside surface of said second band tightly against said circular periphery of said table;
release means included in said clamp means for loosening said second band sufficiently to allow removal from said table periphery.

5,299,394

METHOD AND APPARATUS FOR BUFFING SPHERICAL PARTS

Richard G. Surdacki, 24480 S. Cromwell, Franklin Village, Mich. 48025

Filed Mar. 16, 1992, Ser. No. 852,383
Int. Cl.[5] B24B *1/00, 9/00, 5/02*
U.S. Cl. 51—289 S 10 Claims



2. Apparatus for buffing a part having a spherical portion defining a spherical surface, said apparatus comprising:
means mounting the part for rotation with the spherical portion exposed;
a first rotating buffing wheel arranged to engage a first portion of the spherical surface of the spherical portion;
a second rotating buffing wheel arranged to engage a second opposite portion of the spherical surface of the spherical portion; and
means for driving said wheels in opposite directions so as to rotate said spherical portion therebetween and buff the spherical surface;
the buffing wheels being urged by gravity against the respective portions of the spherical surface.

5,299,395

CANOPY STRUCTURE AND METHOD OF ASSEMBLY

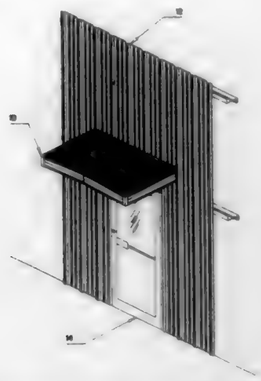
Eugene P. Smith, N3791 N. U.S. 2, and Lawrence P. Smith, N3610 Moon Lake Dr., both of Iron Mountain, Mich. 49801

Filed Jun. 24, 1992, Ser. No. 903,992
Int. Cl.[5] E04B *7/16*
U.S. Cl. 52—74 7 Claims

1. A horizontally supported canopy for overhanging a doorway in a wall, an opening in the wall above the doorway and a pair of girts horizontally spaced behind the wall, said canopy comprising:
a pair of vertically adjustable channel assemblies mounted between the girts behind the wall;
a frame assembly having an angle member on each side

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extending through the opening and mounted on the channel assemblies; and



a roof-trim assembly slidably mounted on said frame assembly.

5,299,396

SUNROOF AND METHOD OF INSTALLING SAME

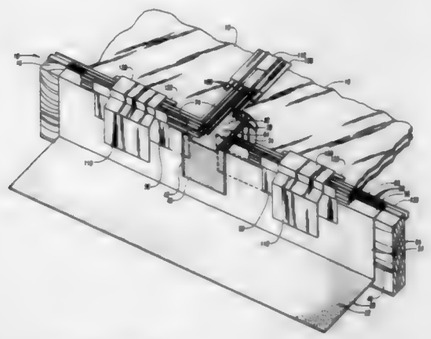
Daniel L. Raap, New Sharon, and Mearl Minter, Oskaloosa, both of Iowa, assignors to Pella Corporation, Pella, Iowa

Continuation-in-part of Ser. No. 342,094, Apr. 24, 1989, Pat. No. 5,007,215. This application Apr. 9, 1991, Ser. No. 682,910

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] E04B *7/18*; E04D *3/38*

U.S. Cl. 52—90.1 **28 Claims**



1. A sunroof comprising,

a frame assembly including top, bottom and opposite side frame members, and at least one support frame member between said opposite side frame members, extending between said top and bottom frame members,

said support frame member having upper and lower ends and top and bottom sides with a channel formed in the top side extending longitudinally of said support frame member for receiving water, said channel having opposite ends and being open at the end adjacent said bottom frame member for water to drain from said channel when said sunroof is disposed on an incline in a roof,

glazing panels having adjacent side edges supported on the top side of said support frame member and overlaying said channel, and

said glazing panels including horizontal, laterally extending drainage means positioned to empty into said channel for delivery of water to the lower end of said support frame member.

5,299,397

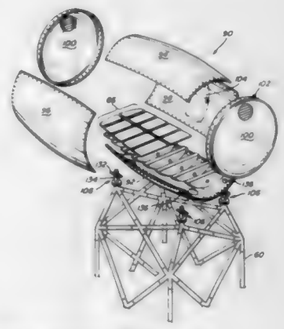
FRANGIBLE ENCLOSURE WITH LOW RESISTANCE TO IMPACT

William W. Ahern, Belmont, Mass., assignor to Electronic Space Systems Corporation, Concord, Mass.

Filed Apr. 5, 1991, Ser. No. 681,572

Int. Cl.[5] E04B *1/00*

U.S. Cl. 52—98 **13 Claims**



1. A frangible enclosure comprising:

a plurality of panels,

means for interconnecting said panels to form a housing,

said housing having a curvature whereby distributed loads primarily are resisted by axial stresses in the housing,

at least one of said panels having means forming a weakened portion therein, for reducing resistance thereat to flexural loads,

whereby said enclosure, when subjected to a large impact load, breaks apart proximate said at least one means forming a weakened portion into a plurality of pieces, each piece having a maximum dimension less than a predetermined fixed size;

wherein at least one of said plurality of panels comprises:

a first layer of material;

said at least one means forming a weakened portion being formed in the first layer;

said first layer of material formed into a laminate having a curvature according to the curvature of the housing;

wherein said at least one means forming a weakened portion comprises at least one perforated portion formed in the first layer of the panel;

wherein said at least one means forming a weakened portion defines a plurality of breakage sections in the panel, each section having a dimension of at most the fixed size;

wherein the panel further comprises at least one second layer of material having low bending strength;

wherein the first layer of material comprises at least one layer of fiber-reinforced material;

wherein said at least one second layer of material comprises at least one layer of foam core; and

wherein at least one panel further comprises means for preventing the formation of ice upon the panel including an electrical heating grid having a plurality of flat heating wires, said wires being constructed of a copper-nickel alloy.

5,299,398

METHOD AND KIT FOR ASSEMBLY OF BLIND WINDOW FRAMES

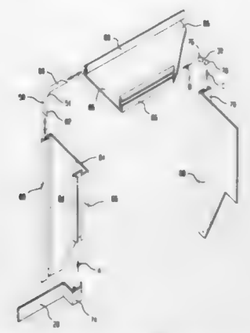
Avner Goldstein, 6 Hápalmach St., Azor, Israel

Filed May 14, 1992, Ser. No. 882,963

Claims priority, application Israel, May 16, 1991, 98171

Int. Cl.[5] E06B *1/04*

U.S. Cl. 52—204.1 **13 Claims**



1. A blind window frame for installation in a wall opening, said blind window frame comprising:

a multiplicity of substantially planar frame members each having a generally flattened U-shaped profile and end portions, with at least one leg configured to provide a dovetail-shaped external railing being open and facing away from said U-shaped profile, wherein the end portion of one of said frame members adjoins the end portion of another of said frame members; and

fastening means for fastening said end portions of said adjoining members to one another;

wherein said fastening means comprises a generally L-shaped planar fastener having a vertex at an interior right angle whereat there is formed a rectangular corner tab protruding from said vertex, said rectangular corner tab defining an engagement position, said fastener having arms received by said adjoining window frame member railings aligned in a plane defined by said planar fastener such that said adjoining window frame members are fastened in said engagement position at substantially right angles to one another.

5,299,399

WINDOW PANEL WITH BREATHER SYSTEM

Bruce A. Baier; Bruce A. Hagemeyer; Merlan J. Rolffs, and John W. Scharff, all of Pella, Iowa, assignors to Pella Corporation, Pella, Iowa

Filed Nov. 18, 1991, Ser. No. 793,475

Int. Cl.[5] E06B *7/12*

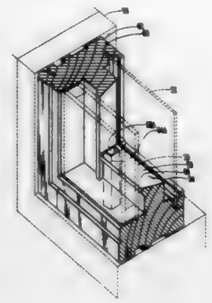
U.S. Cl. 52—204.52 **28 Claims**

1. A window panel comprising,

a perimeter frame having oppositely disposed stile frame members and oppositely disposed rail frame members defining a glazing opening,

a pair of spaced apart glazing panels having an air chamber therebetween positioned in said glazing opening, and

at least one of said rail members having a face in abutting engagement with one of said stile members, said face having a channel formed in it extending from said air chamber to the exterior of said perimeter frame whereby



said air chamber is in communication with outside ambient air.

5,299,400

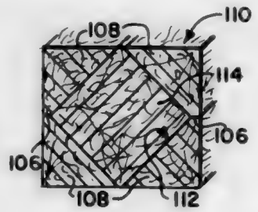
CONVERTED LOG STRUCTURAL PRODUCTS AND METHOD

Peter Sing, P.O. Box 11532, Winslow, Wash. 98110

Filed Sep. 24, 1992, Ser. No. 949,983

Int. Cl.[5] B27C *9/00*; E04C *1/00*

U.S. Cl. 52—309.9 **16 Claims**



1. Converted log product, which comprises:

four equally sized parts cut longitudinally from at least one log, said log parts having been cut each to have a three-sided cross-section with two of said three sides being flat and meeting at a right angle, the third of said three sides being selected from the group consisting of: having an arcuate contour, each of said log parts thereby being a right-angled sector in cross-section, and having a flat contour, each of said log parts thereby being a right triangle in cross-section; and

means for securing said four equal right-angled log parts together, said right-angled log parts being positioned when assembled so that said third side of each said log part faces inwardly toward each other, said two of said three sides facing outwardly and oriented to form a rectangular cross-sectional outline for the assembled converted log product.

5,299,401

ATHLETIC FLOORING SYSTEM

Floyd Shelton, 803 Jefferson St., Wausau, Wis. 54401

Filed Feb. 3, 1993, Ser. No. 12,943

Int. Cl.[5] E04F *15/02*

U.S. Cl. 52—393 **5 Claims**

1. An athletic flooring system comprising;

a) a multiplicity of elements, each element having a sizing and a positioning in the flooring system,

b) a base,

c) a resilient pad which rests upon said base, and said pad

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underlays a first subfloor, and said first subfloor rests upon the pad, and said first subfloor underlays a second subfloor which rests upon said first subfloor, and said pad is of a thickness greater than ¼ inch and less than the combined thickness of the two subfloors with which the pad is associated,

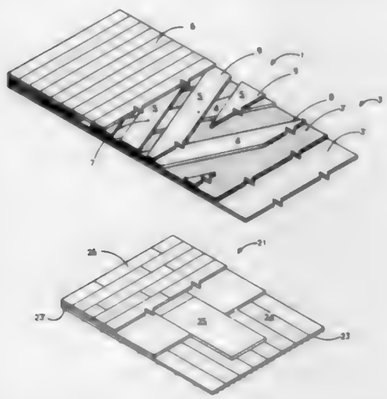
d) said first subfloor has a thickness greater than ¼ inch and less than ½ inch,

e) said second subfloor has a thickness greater than ¼ inch and less than ½ inch, and the sizing and positioning of the elements of said first subfloor and said second subfloor are such that the first subfloor is rendered more flexible than the second subfloor, and the base, the pad, the first subfloor and the second subfloor combine to form a substructure for said flooring system,

f) and, the substructure has a lower portion and an upper portion and the lower portion comprises the pad, and the first subfloor and the upper portion comprises the second subfloor, and the substructure has void volumes distributed within the substructure and the total volume of the void volumes in the lower portion of the subfloor is greater than the total volume of the void volumes in the upper subfloor,

g) an outer floor that rests upon the second subfloor, and

h) the flooring system is DIN certifiable under DIN 18032, Part 2 (March 1991) standards.

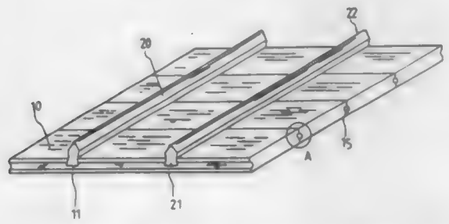


5,299,402

STRUCTURES OF FLOORBOARD

Cheng-Tsung Lee, No. 360-15, Sec. 3, Fuhsing Rd., Taichung, Taiwan

Filed Nov. 18, 1992, Ser. No. 978,321
Int. Cl.[5] E04F *15/18*
U.S. Cl. 52—480 **8 Claims**



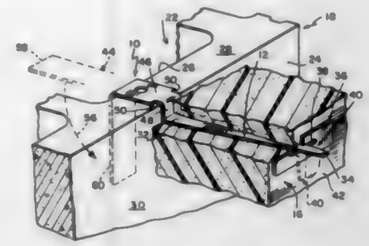
1. An improved floorboard structure comprising a floorboard and a fixing block, said floorboard having a groove located in underside thereof, said groove having a predetermined size and shape, and said fixing block having a flange with a size and a shape which are corresponding to the size and shape of said groove so as to allow said flange to be inserted into said groove, said fixing block further having a tapered portion by which said fixing block can be securely anchored in a cement foundation.

5,299,403

INSULATION FASTENER

Ronald E. Fentz, Greenwood, Ind., assignor to Lisco Products, Inc., Greenwood, Ind.

Filed Apr. 17, 1992, Ser. No. 870,678
Int. Cl.[5] E04B *2/30*
U.S. Cl. 52—404 **22 Claims**



1. An insulation fastener system for supporting insulation, the insulation fastener system comprising

a block having a top and a hollow inner core,

means for piercing the insulation, and

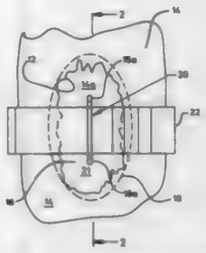
means for anchoring the fastener to the block, wherein the anchoring means is attached to the piercing means and includes first segment means for engaging the block and lying inside the hollow inner core of the block and second segment means for engaging the top of the block, the second segment means being disposed between the first segment means and the piercing means.

5,299,404

PATCHING KIT FOR HOLLOW DOORS AND WALLS

Bahjat S. Jabro, 2112 Greenwick Rd., El Cajon, Calif. 92020

Filed Apr. 26, 1993, Ser. No. 51,515
Int. Cl.[5] E04G *23/02*
U.S. Cl. 52—514 **6 Claims**



1. A kit for patching a hole in hollow building components, such as doors and walls comprising:

a substantially stiff backing plate dimensioned to fit through the hole and adapted to be supported in position snugly flat against a backside of the front surface of the building component: said backing plate capable of blocking (a major portion) substantially the entire area of the hole to form a recessed area:

adhesive means for securing the backing plate to the backside:

means for temporarily supporting said backing plate in position including a U-shape pin having legs readily detachable from said backing plate with the loop of said pin extending through the hole to the front side of said building component:

a wedge member capable of extending through said pin and engaging the front side of said component to clamp the backing plate against the backside of the component:

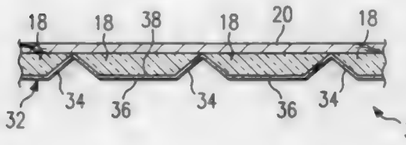
whereby when the adhesive is applied around the backing plate adjacent the hole prior to insertion of the backing plate, application of the wedge means through the pin will maintain the backing plate in position until the adhesive sets at which time the wedge means and the pin can be removed from the backing plate to enable the application of a suitable patching material in the recessed area.

5,299,405

WALL ASSEMBLY

James E. Thompson, Garland, Tex., assignor to Trinity Industries, Inc., Dallas, Tex.

Filed Aug. 6, 1992, Ser. No. 926,238
Int. Cl.[5] E04C *2/32*
U.S. Cl. 52—795 **19 Claims**



1. A method for constructing a passenger boarding bridge with a plurality of wall assemblies comprising:

forming from one sheet of material an exterior panel for each wall assembly with V-shaped corrugations, each corrugation having a pointed vertex and an open end, each of the open ends connected by a flat portion of the panel;

permanently attaching exterior panels of adjacent wall assemblies to each other; and

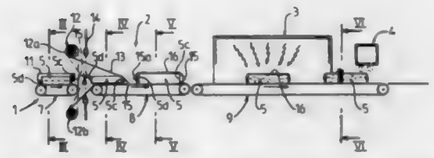
placing an interior panel next to the exterior panel of each wall assembly.

5,299,406

PROCESS AND MACHINE FOR WRAPPING LUGGAGE OF USERS OF DIFFERENT TRANSPORT MEANS

Daniel J. Laury, Neuilly, France, assignor to Probag, Neuilly-sur-Seine, France

Filed Aug. 4, 1992, Ser. No. 925,398
Claims priority, application France, Aug. 7, 1991, 91 10075
Int. Cl.[5] B65B *9/02*
U.S. Cl. 53—397 **14 Claims**



9. A process for wrapping individual pieces of luggage which have different shapes and sizes and are used in different transportation and in particular for airborne passengers and wherein each said piece of luggage is provided with a carrying handle on one of its lateral surfaces, and forming around each piece of luggage a protective envelope of plastic material in contact with the external surface of the luggage with the exception of an area left open in order to provide access to the carrying handle, once the protective envelope is positioned around the luggage, comprising:

providing three endless carriers positioned horizontally and longitudinally and driving the endless carriers in the same direction, the endless carriers including an upstream entrance carrier, an intermediate wrapping carrier and a downstream carrier, a vertical and longitudinal plate extending above the upstream entrance carrier, on one side thereof, defining a vertical and longitudinal reference plane, and constituting a lateral stop for the lateral surface, provided with the handle, of each piece of luggage placed flat on said upstream carrier;

forming, in the space between the upstream entrance carrier and the intermediate wrapping carrier, a vertical transverse curtain formed by at least one sheet of heat-shrinkable wrapping material with one edge of said sheet curtain being in close proximity to said plate;

positioning said luggage with said lateral surface provided with the handle against said plate so that said lateral surface is in close proximity to said one edge of said curtain and with the lateral surface opposite the handle is at a greater distance from the other edge of the curtain;

passing said luggage through said curtain to form from the one sheet of heat shrinkable material, a protective tubular envelope around each luggage, open at its two extremities with a short portion extending laterally on said handle containing surface and a longer portion extending laterally on said opposite surface;

passing successive pieces of luggage surrounded by its respective tubular protective envelope through a shrinking oven tunnel upon the downstream carrier to shrink the envelope and to overlap it slightly externally relative to the surface of the luggage to which the carrying handle is attached while leaving the handle exposed and completely shrinking and overlapping said opposite surface for obtaining, at the exit tunnel oven, after shrinkage of the plastic material, a luggage totally wrapped with the exception of an opening which is formed, during the shrinkage of the heat-shrinkable envelope, on the side on which the carrying handle is located and in front thereof.

5,299,407

PROCESS AND DEVICE FOR AVOIDING STRAPPING-CAUSED DOWNTIME ON MACHINE FOR STRAPPING PACKAGES

Karl H. Schuttler, and Karl Schurig, both of Remscheid, Fed. Rep. of Germany, assignors to Signode Bernpak GmbH, Remscheid-Lennep, Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 928,586
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138800
Int. Cl.[5] B65B *13/04*
U.S. Cl. 53—399 **15 Claims**

1. A method for avoiding downtime interruptions of strapping operations upon strapping machines for strapping package elements, comprising the steps of:

providing a first supply coil of strapping material;

providing a second supply coil of strapping material;

providing a first flow path for a first strapping material wound upon said first supply coil and leading from said first supply coil to a strapping sealing unit;

providing a second flow path for a second strapping material wound upon said second supply coil and leading from said second supply coil to said strapping sealing unit;

driving one of said first and second strapping materials, by a first drive means which is selectively engageable with said first and second strapping materials, in a forward direction along a respective one of said first and second flow paths from a respective one of said first and second supply coils to said strapping sealing unit;

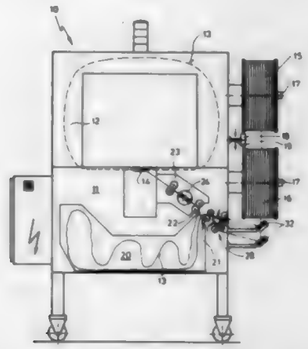
driving said respective one of said first and second supply coils, by a second drive means which is selectively engageable with said first and second supply coils, in a re-

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verse direction so as to retract said one of said first and second strapping materials out from said respective one of said first and second flow paths when a flow disturbance occurs along said respective one of said first and second flow paths during forward driving of said one of said first and second strapping materials along said respective one of said first and second flow paths; and

sensing a leading end portion of said one of said first and second strapping materials, by a sensing switch means, as said one of said first and second strapping materials is withdrawn from said respective one of said first and second flow paths as a result of said driving of said selected one of said first and second supply coils in said reverse



direction by said second drive means in consequence of said occurrence of said flow disturbance along said respective one of said first and second flow paths, and actuating said first drive means such that said first drive means engages the other one of said first and second strapping materials so as to drive said other one of said first and second strapping materials in said forward direction along the other one of said first and second flow paths when said sensing switch means senses said withdrawal of said one of said first and second strapping materials from said respective one of said first and second flow paths,

whereby downtime interruption of said strapping operation, due to said disturbance occurring along said respective one of said first and second flow paths, is minimized.

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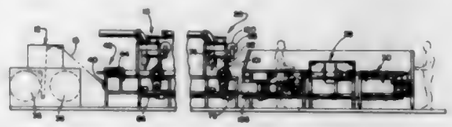
AUTOMATED LINE AND METHOD FOR PREPARING PREMADE FOOD SET-UPS

Larry E. Daane, Horicon; John A. Jonovic, Fitchburg, and James A. Rattmann, Sun Prairie, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Oct. 1, 1992, Ser. No. 955,092

Int. Cl.[5] B65B *25/08*

U.S. Cl. 53—435 **29 Claims**



1. A mechanized system for the automated preparation of food set-ups, comprising:

a paper supply means for supplying a continuous sheet of paper;

a conveyor assembly for conveying said sheet of paper thereon, said conveyor assembly having a feed end and a discharge end thereon, said conveyor assembly having a feed end and a discharge end thereon, said feed and including feeder means to feed said paper from said paper supply and onto said conveyor assembly;

first and second slicer means sequentially positioned along said conveyor assembly for sequentially providing food slices, said first slicer means configured to deposit a first layer of sliced food onto said sheet of paper substantially within a first horizontal plane, said second slicer means positioned downstream of said first slicer means and configured to deposit a second layer of sliced food substantially within a second horizontal plane, said first and second slicer means each capable of holding a food item above said sheet of paper, and each said slicer means also including a slicer blade in an operative position to slice said food onto said sheet of paper;

drive means for supplying operating power to said conveyor assembly and said slicer means; and

timing means for synchronizing said first and second slicer means so that said second layer of sliced food slices is deposited over said first layer of sliced food;

whereby said layers of food slices form a set-up including a plurality of stacked layers wherein each layer includes food slices arranged substantially within a single horizontal plane.

5,299,408

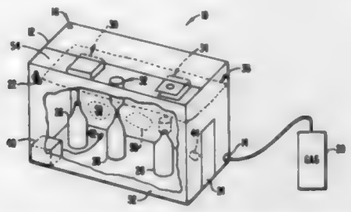
WINE RECORKING APPARATUS AND METHOD

Albert Dupont, Novato, Calif., assignor to Wine Recorker, Inc., Novato, Calif.

Continuation of Ser. No. 522,347, May 11, 1990, abandoned. This application Sep. 4, 1991, Ser. No. 754,332

Int. Cl.[5] B65B *31/06*

U.S. Cl. 53—432 **18 Claims**



7. A method of recorking an aged wine in a bottle sealed with a first cork, comprising the steps of:

providing a wine bottle, sealed with a first cork and containing an aged wine, within a closable compartment which segregates a first volume within said compartment from a second volume outside said compartment;

sealing said sealed wine bottle within said closable compartment;

displacing oxygen from said first volume to a predetermined level by use of an inert gas that is heavier than air;

extracting said first cork from said wine bottle, sealed within said closable compartment, while said oxygen is displaced; and

inserting a second cork into said wine bottle, sealed within said closable compartment, while said oxygen is displaced.

5,299,410

PACKAGING MECHANISM AND METHOD

Jon Freeman, Norwich, Conn., assignor to Gunther International, Ltd., Norwich, Conn.

Filed Nov. 5, 1992, Ser. No. 972,302

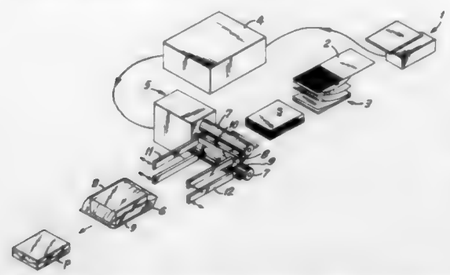
Int. Cl.[5] B65B *11/08, 53/02, 59/02*

U.S. Cl. 53—442 **17 Claims**

9. A method of enclosing variable size packages individually in a shrink wrap, each package having generally rectangular top and bottom surfaces with a pair of end surfaces and a pair of side surfaces extending therebetween so as to define a length, width and height as external dimensions of the package, the mechanism comprising the steps of:

(a) providing a package to be wrapped;

(b) sensing the package to be wrapped to determine the external dimensions of the package;



(c) providing means for feeding a shrink wrap with which to enclose the package;

(d) automatically adjusting said feeding means to feed a desired amount of shrink wrap responsive to the sensed external dimensions of the package; and

(e) enclosing the package in said shrink wrap.

5,299,411

WRAPPING SHEET WINDING APPARATUS

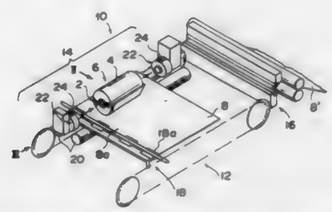
Kiyohumi Yamamoto; Hiroshi Maeda, and Susumu Suzuki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 750,170, Aug. 26, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 982,035

Claims priority, application Japan, Aug. 27, 1990, 2-224788; Feb. 28, 1991, 3-34180

Int. Cl.[5] B65B *11/04*

U.S. Cl. 53—465 **7 Claims**



1. A method for wrapping a continuous sheet of wrapping material around a cylinder roll with a core, said method comprising the steps of:

(a) feeding a continuous sheet of wrapping material to a wrapping station,

(b) cutting said continuous sheet of wrapping material into a wrapping sheet of a predetermined length longer than a width of a cylinder roll with a core around which said wrapping sheet is to be wrapped,

(c) conveying said wrapping sheet to a winding position,

(d) placing a leading edge portion of said wrapping sheet at a predetermined position on a pair of support rollers,

(e) placing said cylinder roll on said leading edge portion of said wrapping sheet placed on said support rollers,

(f) providing a pair of chuck members each having an outer diameter smaller than an outer diameter of said cylinder roll and a first portion having a plurality of suction holes on an outer peripheral surface thereof, said first portions being movable away from each other,

(g) moving said pair of chuck members to drivingly and rotatably engage said core of said cylinder roll,

(h) blowing air against said leading edge portion of said wrapping sheet while simultaneously applying a vacuum to said suction holes on said chuck members and moving said first portions of said chuck members having said suction holes away from each other so that marginal portions of said wrapping sheet which extend beyond respective ends of said cylinder roll are pulled taut against said outer peripheral surface of said first portion of said chuck members, and

(i) rotating said chuck members so that said cylinder roll is rotated and said wrapping sheet is wound around said cylinder roll.

5,299,412

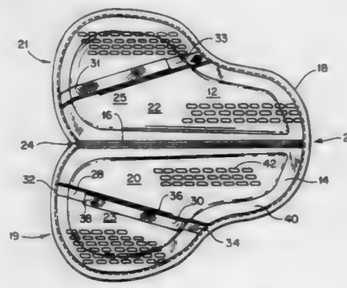
IMPACT ABSORBING EQUESTRIAN SADDLE PAD

Douglas J. Cudney, and Karen E. Breitbach, both of Orangeville, Canada, assignors to Tipperary Sport Products, Inc., Orangeville, Canada

Filed May 25, 1993, Ser. No. 66,253

Int. Cl.[5] B68C *1/12*

U.S. Cl. 54—66 **15 Claims**



1. An energy absorbing equestrian saddle pad conformed to span a horse's back and comprising:

a. a pair of side flaps hinged along a common axially extending top edge alignable with the vertebra of a horse, such that each side flap extends over a top side of the horse, each flap having a top forward end converging in a raised pommel and each flap further including:

i. a forward rider knee portion defined beneath said pommel and a rearwardly extending seat portion terminating in a cantle;

ii. an inner liner and a flexible exterior, defining an inner pocket in each said flap, and

iii. an energy absorbing foam core supported within said inner pocket, said foam core including a center of open cell foam enclosed by outer and inner layers of closed cell foam, abutting said inner liner and flexible exterior.

5,299,413

CROP SENSING APPARATUS

Gerald E. Gale, Wilstead, England, assignor to British Technology Group Limited, London, England

Filed Jun. 12, 1992, Ser. No. 859,731

Claims priority, application United Kingdom, Oct. 12, 1990, 9022192; May 15, 1991, 9110649

Int. Cl.[5] A01D *23/00*

U.S. Cl. 56—10.2 **31 Claims**

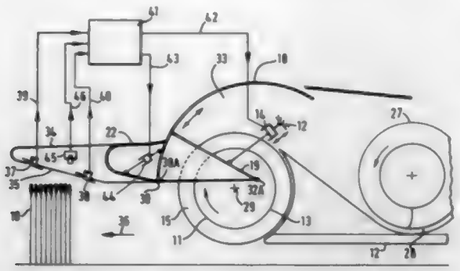
1. Apparatus for sensing the position of the top of a crop comprising

a support structure adapted to be attached to a mobile machine, and

a pair of sensors mounted on the support structure in such a manner as to be spaced apart vertically from each other in use for sensing the position of the top of a crop by contact of different combinations of the two sensors of said pair with the crop during forward movement of the machine relative to the crop, the contact of different combinations of the two sensors with the crop including contact of both

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sensors of the pair of sensors with the top of the crop, contact of one sensor of the pair of sensors with the top of the crop, and no sensor of the pair of sensors contacting the top of the crop,



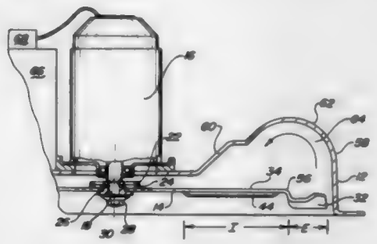
the support structure having an undersurface adapted to be presented to the top of the crop with the undersurface facing downwardly and sloping upwardly in the forward direction of intended movement of the support structure with the machine, the sensors being spaced apart along the undersurface in the direction of intended movement.

5,299,414

MULCHING LAWN MOWER BLADE AND HOUSING ASSEMBLY

Charles K. Long, Seneca, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.

Filed Jul. 24, 1992, Ser. No. 920,140
Int. Cl.[5] A01D *34/08, 34/73, 34/78, 67/00*
U.S. Cl. 56—17.4 **31 Claims**



1. A cutting blade for use in a rotary mulching lawn mower wherein the blade is adapted for rotation about an axis of rotation generally perpendicular to the lawn for cutting grass or the like such blade comprising:

a plurality of blade portions extending radially from said axis, each blade portion having an end portion, said end portion having means for cutting grass and means for generating an upward air flow directing the cut grass in a direction away from the lawn upon rotation of the blade; and

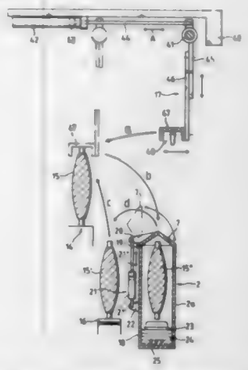
an intermediate portion between the axis of rotation of said blade and said end portion, said intermediate portion lying in a plane of rotation generally perpendicular to the axis of rotation of said cutting blade, said intermediate portion having a leading edge and a trailing edge substantially in said plane of rotation and a radially extending rib projecting downwardly out of said plane of rotation intermediate said leading and trailing edges, said rib forming a deflector directing the cut grass in a direction towards said lawn upon rotation of the blade.

5,299,415

HEAT TREATMENT AND/OR HUMIDIFICATION OF COPS

Freddy Wanger, Oberrohrdorf, Switzerland, assignor to Xorella AG, Wettingen, Switzerland

PCT No. PCT/CH90/00288, § 371 Date Aug. 2, 1991, § 102(e) Date Aug. 2, 1991, PCT Pub. No. WO91/10001, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 741,470
Claims priority, application Switzerland, Dec. 22, 1989, 04631/89
Int. Cl.[5] D01H *9/02*
U.S. Cl. 57—281 **13 Claims**



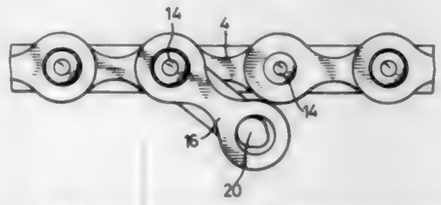
1. An apparatus for spinning and treatment of yarns, comprising a spinning machine comprising a plurality of spinning stations arranged in a row for the production of spun cops, each of said stations having a cop; a conveyor for the removal of the spun cops from said spinning station; a handling device for delivering empty cops to the spinning machine and for transfer of the spun cops from the spinning machine to the conveyor; a steamer for treatment of the fully spun cops by at least one treatment step chosen from the group consisting of heat and humidification, said steamer comprising a plurality of steaming stations mounted parallel to the spinning machine whereby each spinning station is associated with an adjacent steaming station; said handling device comprising a gripping member associated with each spinning station adapted for removal of the spun cop from the spinning station and for inserting said spun cops into the associated steaming station.

5,299,416

CHAIN CONNECTOR

Chia-Long Wu, No. 734, Chung Shan Rd., Kuei Ren Hsiang, Tainan Hsien, Taiwan

Filed Jan. 12, 1993, Ser. No. 3,452
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] F16G *13/00*
U.S. Cl. 59—85 **5 Claims**



1. A link for connecting two terminal links of a chain, comprising:

a first outer chain plate having a first circular hole and a second circular hole;

a second outer chain plate having a circular hole and a figure-eight hole consisting of a relatively large semicircular hole partially overlapping with a relatively small semicircular hole distal from the circular hole;

a first pin being inserted through the first circular hole of the first outer chain plate, holes of two inner chain plates of a first terminal link of the chain, and the circular hole of the second outer chain plate and riveted at both ends thereof, thereby combining said first outer chain plate, the inner chain plates of the first terminal link of the chain, and the second outer chain plate; and

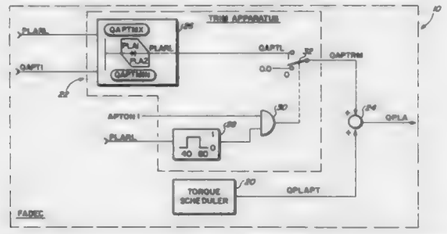
a second pin having, at a first end, an enlarged flat head and, at a second end, a dome head near which a groove extends to thereby form a neck, said dome head of said second pin being insertable through said second hole of said first outer chain plate, holes of two inner chain plates of a second terminal link of the chain, and said relatively large semicircular hole of said second outer chain plate, thereby permitting the neck to be received in the relatively small semicircular hole of said second outer chain plate.

5,299,417

APPARATUS FOR TRIMMING AUTOPILOT COMMANDS

George W. Page, Gilbert; Glen T. High; Larry C. Prevallet, both of Phoenix, and Joseph W. Free, Mesa, all of Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 18, 1991, Ser. No. 762,678
Int. Cl.[5] F02C *9/28*
U.S. Cl. 60—39.282 **16 Claims**



1. Apparatus for providing torque commands to at least one engine of an aircraft, comprising:

engine control means for generating torque requests for said engines;

autopilot means for generating delta torque commands for adjusting said torque requests; and

trimming means, responsive to outputs of said engine control means and said autopilot means, for trimming said delta torque commands to keep said aircraft within a range of airspeeds.

5,299,418

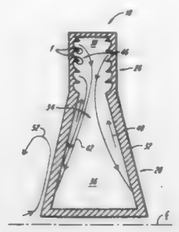
EVAPORATIVELY COOLED INTERNAL COMBUSTION ENGINE

Jack L. Kerrebrock, 108 Tower Rd., Lincoln, Mass. 01773, assignor to Jack L. Kerrebrock, Lincoln, Mass.

Filed Jun. 9, 1992, Ser. No. 895,946
Int. Cl.[5] F02C *3/00*
U.S. Cl. 60—39.75 **9 Claims**

1. An evaporatively cooled rotor adapted for rotation about a rotational axis and having an internal cavity including a vaporization section disposed radially outwardly with respect to the rotational axis from a condensing section, the rotor further comprising

at least one capture means in the vaporization section disposed at a substantially constant radius from the rotational axis for capturing cooling fluid contained within the internal cavity and flowing radially outwardly in a centrifugal field generated during rotation of the rotor, the capture



means restricting the flow of the cooling fluid to distribute cooling fluid over the inner surface of the rotor in the vaporization section.

5,299,419

GAS FLOW HEADERS FOR INTERNAL COMBUSTION ENGINES

James J. Bittle, 4420 Jutland Dr., San Diego, Calif. 92117, and Michael A. Salyer, 8713 Hebrides Dr., San Diego, Calif. 92126

Filed Nov. 2, 1992, Ser. No. 970,007
Int. Cl.[5] F01N *7/10*
U.S. Cl. 60—313 **8 Claims**



1. An exhaust system for an internal combustion engine which comprises:

a flange adapted to be secured to exhaust ports of an internal combustion engine;

a plurality of openings through said flange, each adapted to align with an engine exhaust port;

primary pipes secured at their first ends to said flange at said openings;

a collector pipe surrounding the second ends of said primary pipes;

a second ends of said primary pipes lying substantially parallel and in contact with each other, substantially equally spaced around the collector pipe centerline and having end surfaces substantially in a single plane;

a transition piece having an essentially pyramidal shape, the base of said pyramid covering the area between the primary pipe ends and secured to said primary pipe end surfaces, said transition piece having a generally ball-shaped protuberance at the apex of said pyramidal shape;

said collector pipe having an entrance internal cross section at said primary pipe ends substantially equal to the combined internal cross sections of said primary pipe ends;

said collector pipe gradually reducing in internal cross section over its length; and

means at the exit of said collector pipe for connection to an exhaust pipe.

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5,299,420

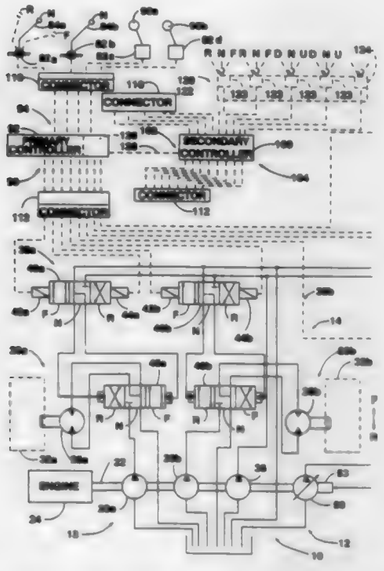
REDUNDANT CONTROL SYSTEM FOR A WORK VEHICLE

Lonnie J. Devier, Dunlap; Stephen V. Lunzman, Chillicothe; John J. Krone, Dunlap, and Howard A. Marsden, Pekin, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 821,104, Jan. 15, 1992, abandoned. This application May 26, 1993, Ser. No. 66,634

Int. Cl.[5] F16D *31/02*; F15B *13/044*

U.S. Cl. 60—403 25 Claims



1. A control system for use in a vehicle having a hydraulic system which includes a source of pressurized fluid, a plurality of flow regulator means, and a plurality of fluidly powered components, each flow regulator means being adapted to receive the pressurized fluid and being responsive to a respective control signal for regulating the flow of pressurized fluid to respective fluidly powered components, comprising:

a plurality of control members, each being movable to a plurality of locations for indicating a desired fluid output for a respective flow regulator means;

a plurality of sensors, each sensor being adapted to sense the position of a respective control member and responsively produce a position signal;

a primary controller having a input and an output, the input being connectable to the sensors and adapted to receive the position signals, the primary controller being adapted to process the position signals to responsively produce the control signals, and the output being connectable to the flow regulator means and adapted to deliver the control signals to the flow regulator means;

a secondary controller having an input and an output, the input being connectable to the sensors and adapted to receive the position signals, the secondary controller being adapted to process the position signals to responsively produce the control signals, the output being connectable to the flow regulator means and adapted to deliver the control signals to the flow regulator means, and wherein the second controller is normally disabled; and

first means for controllably disabling the primary controller and enabling the secondary controller, said first means being free from addressing circuitry.

5,299,421

DEVICE FOR CONTROLLING VARIABLE CAPACITY MOTOR OF HYDRAULIC DRIVE VEHICLE

Masanori Ikari, Kawagoe, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho and Komatsu Mec Kabushiki Kaisha, both of Tokyo, Japan

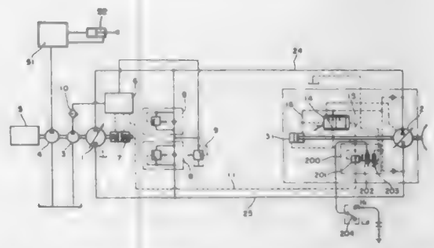
PCT No. PCT/JP90/00747, § 371 Date Dec. 4, 1991, § 102(e) Date Dec. 4, 1991, PCT Pub. No. WO90/15270, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 8, 1990, Ser. No. 778,922

Claims priority, application Japan, Jun. 9, 1989, 1-145057; Oct. 16, 1989, 1-119729

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—444 4 Claims



1. In a vehicle hydraulic drive device having a variable capacity hydraulic drive pump driven from an engine, a variable capacity hydraulic motor driven from the hydraulic drive pump, a main fluid supply circuit connected between the drive pump and the motor for supplying pressure fluid to the motor to effect driving thereof, pump control valve means for controlling the capacity of the drive pump, a control pump driven from the engine and having a fluid pressure outlet communicating with said pump control valve means, fluid pressure cylinder means coupled to said motor for varying the capacity thereof, motor control valve means for controlling flow of pressure fluid from said main circuit to said cylinder means to control activation thereof, and a pilot pressure conduit connected to said motor control valve means for supplying pilot pressure fluid from said control pump to a pilot of said motor control valve means to control shifting thereof, the improvement comprising fluid flow cut-off valve means connected in series with said pilot pressure conduit to open and close said pilot pressure conduit for controlling flow of pilot pressure fluid to a pilot of said motor control valve means, and a pilot control conduit connected between a first pilot of said cut-off valve means and said main circuit for supplying pressure fluid therethrough for controlling said cut-off valve means.

5,299,422

ENERGY CONVERTER

Katsumi Nakagawa, Tsuchiura; Koji Nishida, Anjo, and Yasuo Kuwabara, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 24, 1992, Ser. No. 917,964

Claims priority, application Japan, Jul. 26, 1991, 3-187781; Dec. 26, 1991, 3-345030

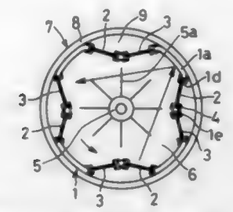
Int. Cl.[5] F15B *21/12*

U.S. Cl. 60—532 26 Claims

1. An energy converter, comprising:

a resonator adapter to operate at a range of frequencies at which the resonator generates a sound wave progressing like a beam in a medium; and

a rotatable member disposed in a progressive direction of a sound wave generated by said resonator, and adapted for



being rotated directly by an acoustic radiation pressure resulting from the progression of said sound wave.

5,299,423

AIR SUPPLY SYSTEM FOR SUPERCHARGED INTERNAL COMBUSTION ENGINE

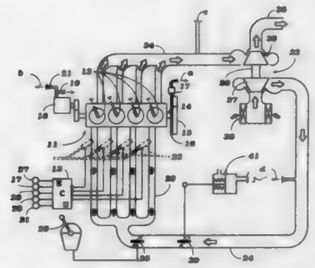
Shigeki Shiozawa, and Yoshikazu Yamaoka, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 7, 1992, Ser. No. 862,992

Claims priority, application Japan, Apr. 8, 1991, 3-101781

Int. Cl.[5] F02B *33/44*

U.S. Cl. 60—611 8 Claims



1. A supercharged internal combustion engine comprising at least one cylinder, an induction system for supplying an air charge to said cylinder, a compressor for compressing an air charge supplied to said cylinder through said induction system, said compressor supplying air at a pressure that does not vary linearly with engine speed, throttle means in said induction system for varying the restriction to air flowing therethrough, and means comprising a pressure responsive motor and a positive displacement pump driven by the engine for operating said throttle means to provide a substantial linear boost pressure in relation to engine speed from said compressor to said cylinder in relation to variations in engine speed.

5,299,424

AQUARIUM HEATER AND COOLER

Dennis W. Woodson, 5819 Cliffmont, San Antonio, Tex. 78250, and Richard L. Miller, 12 Parkside Dr., Dix Hills, N.Y. 11746-4879

Filed Dec. 21, 1992, Ser. No. 993,435

Int. Cl.[5] F25B *21/02*

U.S. Cl. 62—3.7 6 Claims

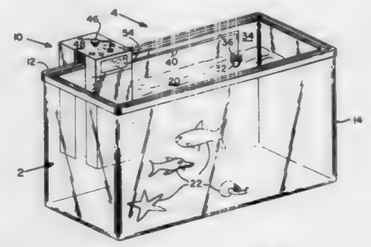
1. A combination aquarium heater and cooler apparatus which comprises:

a) a first heat exchanger for immersion in a fluid of an ecosystem contained in said aquarium;

b) a second heat exchanger for location in an ambient air outside said aquarium;

c) a heat pump component having thermal input and output ports each in intimate contact with a surface of the first heat exchanger and the second heat exchanger said heat pump component comprises a thermo-electric device which produces a cooling effect when an operating current flows there in one direction and a heating effect when the operating current flows therein in an opposite direction, thereby supplying heat or absorbing heat from said fluid in order to maintain the temperature of said ecosystem nearly constant; and

d) automatic circuit means responsive to the temperature difference between the fluid of the ecosystem and a desired operator set temperature connected to the thermoelectric device for determining the direction of the operating current supplied thereto according to said temperature difference, whereby heat is appropriately pumped into or



out of said fluid to maintain said fluid at a temperature which is substantially the same as the desired operator set temperature

e) wherein said first and second heat exchangers comprise elongated bodies extending spaced apart, in side by side relation and joined at adjacent upper longitudinal ends by the heat pump component thereby forming an inverted U-shaped structure conforming approximately to the dimensions of a perimeter wall of said aquarium, with the heat pump resting on an upper edge of said perimeter wall which extends between the two heat exchangers which consequently are located respectively within and without said aquarium.

5,299,425

COOLING APPARATUS

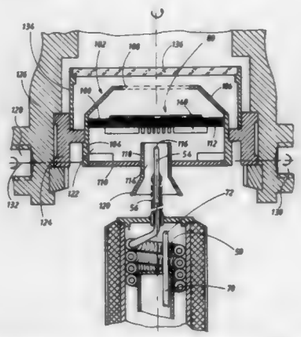
Uwe Hingst, Oberteuringen, Fed. Rep. of Germany, assignor to Bodenseewerk Gerätetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Oct. 22, 1992, Ser. No. 964,804

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135764

Int. Cl.[5] F25B *19/02*

U.S. Cl. 62—51.1 9 Claims



1. A cooling apparatus for cooling an object to be cooled, comprising:

primary cooling means arranged to receive a first pressur-

VOL 1161 ISS 1 AP 5 1994

ized gaseous coolant having an inversion temperature, said cooling means comprising a high-pressure conduit having an end which defines an expansion outlet for expanding said pressurized gaseous coolant and for forming a jet of said coolant;

an additional Joule-Thomson cooler as precooling means arranged to receive a second pressurized gaseous coolant and comprising expansion outlet means for expanding said second pressurized gaseous coolant and counter-current heat exchanger means for cooling said second pressurized gaseous coolant by said expanded second pressurized coolant;

and additional heat exchanger means for precooling said first pressurized gaseous coolant by said expanded second pressurized coolant to a temperature below said inversion temperature, whereby said first coolant, when emerging as said jet from said expansion outlet means, is cooled further and forms an aerosol composed of coolant droplets and a gaseous coolant component;

mounting means for pivotally mounting said object to be cooled relative to said primary cooling means;

said object to be cooled defining a cavity with a first internal, substantially planar surface and a second internal surface opposite said first internal surface and spaced therefrom, said second internal surface defining a central aperture therethrough, said first internal surface including an impingement area opposite said aperture, said first and second internal surfaces being connected by a circumferential jacket;

said high-pressure conduit extending into said cavity through said aperture and being arranged to direct said jet onto said impingement area;

said object to be cooled having a collar around said aperture and coaxial with said high-pressure conduit, said collar and said high-pressure conduit permitting said pivotal movement and forming a gas exit therebetween;

a plurality of spiral shaped ribs projecting into said cavity from said first surface around said impingement area and extending outwardly from said impingement area, thereby defining spiral channels therebetween, which are axially open towards said cavity; and

whereby said aerosol is radially outwardly deflected by said internal surface and guided by said spiral channels, a spin being imparted to said aerosol to form a cyclone within said cavity, said droplets of said aerosol being deposited on said jacket and only said gaseous coolant component of said aerosol flowing inward and emerging from said cavity through said central aperture.

5,299,426

FREEZING PROCESS AND APPARATUS

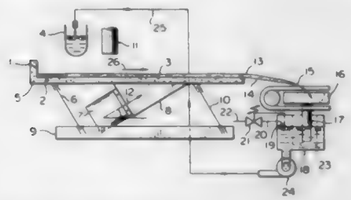
André Lermuzeaux, Sucy en Brie, France, assignor to L'Air Liquide, Societe pour l'Etude et l'Exploitation des Proocedes Georges Claude, Paris, France

Filed Nov. 23, 1992, Ser. No. 949,248

Claims priority, application France, Mar. 21, 1991, 91 03430

Int. Cl.[5] F25D *13/06*

U.S. Cl. 62—63 **16 Claims**



1. A process for freezing products, comprising:

providing a transfer structure having at least one upper elongated transfer surface and having a discharge end and an opposite end, the discharge end being at a level not higher than the opposite end;

forming a film of liquefied gas on the transfer surface;

imparting vibration to the transfer structure;

positioning products on the transfer surface adjacent the opposite end so as to contact a surface portion of the products with the film of liquefied gas;

moving the products along the transfer surface towards the discharge end as a result of the vibration imparted to the transfer structure while partially freezing the products; and

collecting the thus partially frozen products at the discharge end for further processing.

5,299,427

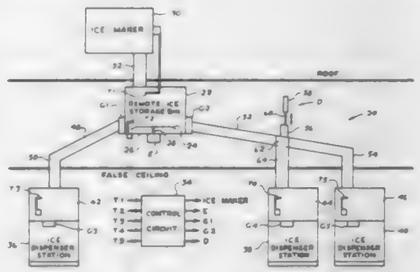
ICE TRANSPORT AND DISPENSING SYSTEM

Benjamin D. Miller, Des Plaines; Thaddeus M. Jablonski, Palatine, and Peter S. Tinucci, Elmhurst, all of Ill., assignors to Remcor Products Company, Glendale Hts, Ill.

Continuation of Ser. No. 887,170, May 21, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 29,293

Int. Cl.[5] F25C *5/18*

U.S. Cl. 62—66 **23 Claims**



1. An ice transport and dispensing system, comprising:

a source of particles of ice;

at least two remote ice stations located below said source of ice, each said ice station having a hopper for storing a mass of particles of ice;

downwardly sloping path means extending from said ice source to each of said at least two ice stations and defining a path for delivery of ice from said ice source to said ice stations;

an ice diverting apparatus;

means for introducing particles of ice from said source onto said downwardly sloping path means for movement of the ice particles along said path means solely under the influence of gravity; and

ice level sensing means at each of said ice stations for sensing the quantity of ice in said hoppers of said stations and for providing a control signal to said ice diverting apparatus, said ice diverting apparatus being actuable in a first mode to cause ice particles moving along said path means to bypass one of said ice stations and to flow to said hopper of the other of said ice stations, said ice diverting apparatus being actuable in a second mode in response to said control signal to cause ice particles moving along said path means to be diverted into said hopper of said one ice station.

5,299,428

ENVIRONMENTAL CONTROL SYSTEM AND METHOD

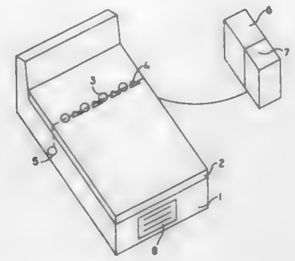
Mariko Kawaguri, Moriguchi; Nobuyuki Yoshiike, Ikoma; Koji Arita; Susumu Kobayashi, both of Osaka, and Katsuya Morinaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 30, 1993, Ser. No. 39,832

Claims priority, application Japan, Apr. 2, 1992, 4-080617

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—176.6 **12 Claims**



1. An environmental control system, for use with a bed comprising:

means for measuring room temperature;

a plurality of thermal sensors fixed on the bed,

air conditioning means for varying room temperature; and

control means for controlling the air conditioning means to supply air to a vicinity of the bed whose temperature is different from room temperature by an amount which is prescribed by a combination of a room temperature value and a thermal sensation value which is obtained from at least one measured value from the plurality of thermal sensors.

5,299,429

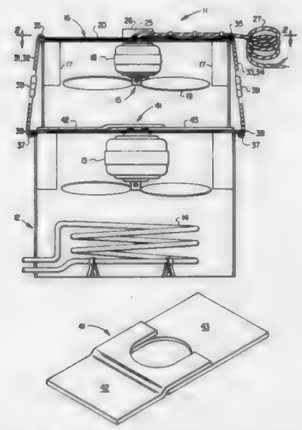
PORTABLE CONDENSING FAN

David Swink, 1016 Illinois, Borger, Tex. 79007

Filed Mar. 18, 1993, Ser. No. 33,039

Int. Cl.[5] F25D *17/06*

U.S. Cl. 62—89 **16 Claims**



9. A method of temporarily cooling a condenser of an air conditioning unit having an air exhaust side with an exterior surface, and a unit condenser fan, said method comprising the steps of:

motioning a portable condensing fan on said exterior surface of said air exhaust side of said air conditioning unit; and

passing a flow of air over said condenser of said air conditioning unit by energizing said portable condensing fan in lieu of said unit condenser fan.

5,299,430

AIR CONDITIONER

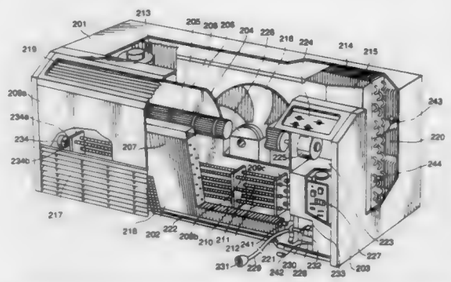
Yuji Tsuchiyama, Nittamachi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 4, 1993, Ser. No. 26,531

Claims priority, application Japan, Mar. 13, 1992, 4-055215; Jun. 4, 1992, 4-144326

Int. Cl.[5] F25D *17/00*

U.S. Cl. 62—180 **7 Claims**



1. An air conditioner being possessed of a refrigerating cycle using a compressor, a condenser, a expansion device and an evaporator comprising:

a first temperature sensing means for detecting the temperature of a room to be air conditioned,

a first temperature setting means for setting a desired temperature, and

a controlling means for controlling the operation of said compressor in order to make a detected temperature by said first temperature sensing means approach to said desired temperature set by said first temperature setting means;

said control means comprising:

a changeover switch, and

a means for controlling said compressor based on a signal from a remote controller when said changeover switch is in a valid state;

said remote controller being disposed in a detached place from said air conditioner, being constituted to be able to transmit a signal to said control means, and further comprising:

a second temperature sensing means for detecting said room temperature,

a second temperature setting means for setting a desired temperature, and

a means for transmitting a signal for controlling said compressor to said control means to make the temperature detected by said second temperature sensing means approach to said desired temperature set by said second temperature setting means.

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5,299,431

AUTOMOTIVE AIR CONDITIONER HAVING CONDENSER AND EVAPORATOR PROVIDED WITHIN AIR DUCT

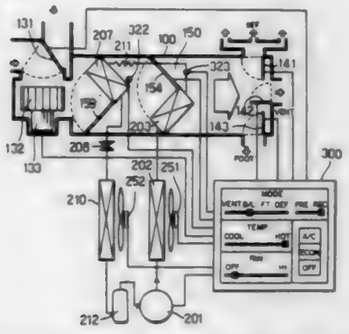
Kunio Iritani, Anjo; Shigeo Numazawa, Nagoya; Kenichi Fujiwara, Kariya; Yasushi Yamanaka, Nakashima; Akira Isaji, Nishio, and Nobunao Suzuki, Toyohashi all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 24, 1992, Ser. No. 873,430

Claims priority, application Japan, Apr. 26, 1991, 3-97290; Oct. 1, 1991, 3-253947; Dec. 3, 1991, 3-319417; Dec. 27, 1991, 3-347130; Mar. 17, 1992, 4-60616

Int. Cl.[5] **B60H** *1/32*; **F25B** *9/00*

U.S. Cl. 62—243 **8 Claims**



1. An automotive air conditioner for providing a plurality of conditioning modes including a heating mode, a cooling mode and a dehumidifying mode, said air conditioner comprising:

a duct defining a passageway for guiding conditioned air for discharge into a passenger compartment of an automobile;

a blower for causing air passing through said duct to blow into said passenger compartment;

an evaporator disposed in said duct for evaporating refrigerant to cool the air guided therethrough;

a compressor for compressing refrigerant to increase a temperature thereof and for discharging high temperature refrigerant compressed therein;

a heater disposed downstream of said evaporator in said duct for exchanging heat between the air passing therethrough and the high temperature refrigerant discharged from said compressor to heat the air;

an outside heat exchange means disposed outside said duct for exchanging heat between air passing therethrough and refrigerant flowing thereinto; and

expansion means for expanding refrigerant to decrease a temperature thereof;

wherein a heat exchanging function of said evaporator, said heater, and said outside heat exchanger is varied in accordance with conditioning mode so that in said heating mode, said heater exchanges heat between the air passing through said duct and the refrigerant passing therethrough for heating the air to be discharged into the passenger compartment and said outside heat exchanger exchanges heat between the air and the refrigerant for evaporating the refrigerant; in the cooling mode, said evaporator exchanges heat between the air passing through said duct and the refrigerant passing therethrough for cooling the air to be discharged into the passenger compartment and said outside heat exchanger exchanges heat between the air and the refrigerant for condensing the refrigerant; and in the dehumidifying mode, said evaporator exchanges heat between the air passing through said duct and the refrigerant passing therethrough for cooling the air and said heater exchanges heat between the air passing through said evaporator and the refrigerant passing therethrough for dehumidifying the air discharged into the passenger compartment.

5,299,432

CONTROL DEVICE FOR AIR CONDITIONER

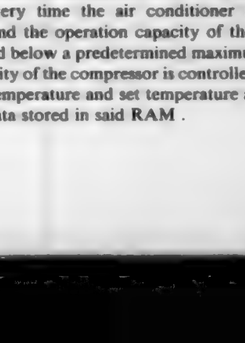
Tsugio Nakae; Tomonori Isobe, both of Gunma, and Manabu Ishihara, Isesaki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 922,470

Claims priority, application Japan, Dec. 19, 1991, 3-354577

Int. Cl.[5] **F25D** *19/00*

U.S. Cl. 62—298 **19 Claims**



1. In an air conditioner having a refrigeration cycle in which a compressor, an outdoor heat exchanger, an expansion valve, and an indoor heat exchanger are connected by a refrigerant pipe, for supplying air which is temperature-controlled by said indoor heat exchanger to a room to be air-conditioned by controlling components, such as said compressor and a blower, a control device for controlling said components of said air conditioner,

a controlling means for controlling the operation capacity of said compressor so as not to exceed a predetermined maximum capacity for the compressor on the basis of a signal from said control device;

said outdoor heat exchanger and said indoor heat exchanger having such capacities as to continue operation at the time of operation of said compressor even with a maximum capacity,

said control device comprising,

a microcomputer housing in one package a first ROM for storing a program controlling the operation of said components and said controlling means, a RAM for storing present data and various data associated with operation, and a CPU for executing said program; and

a second ROM for storing specific data representing at least the maximum capacity of said compressor and the capacity of said outdoor or indoor heat exchanger and for sequentially outputting said stored specific data to said microcomputer in response to an output from said microcomputer, said second ROM being electrically connected to said microcomputer;

wherein said CPU stores said specific data output from said second ROM in accordance with said program into said RAM every time the air conditioner stops operation thereof and the operation capacity of the compressor is controlled below a predetermined maximum capacity and the capacity of the compressor is controlled on the basis of a room temperature and set temperature and on the basis of said data stored in said RAM .

5,299,433

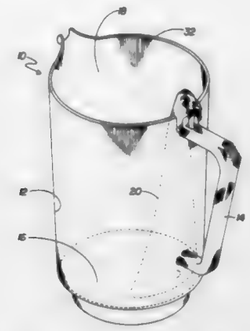
PITCHER HAVING MEANS FOR KEEPING BEVERAGE COLD

Jerry E. Harms, 280 Langford Dr., Chuluota, Fla. 32766; Thomas C. Harms, Sr., 6 Oak Tree Dr., and Thomas C. Harms, Jr., 22935 Somerset Dr., both of Sorrento, Fla. 32776

Filed Jan. 15, 1993, Ser. No. 5,241

Int. Cl.[5] **F25D** *3/08*

U.S. Cl. 62—457.2 **5 Claims**



1. A beverage container having means for keeping a beverage cold over a protracted period of time, said container having sidewalls and a bottom, said sidewalls and said bottom defining a volume in which a beverage can be contained, cooling means operatively associated with a lower interior portion of said container, said cooling means involving a closed receptacle of a refreezable, non-toxic substance, said cooling means, when it has become relatively warm, being readily removable from contact with said lower interior portion of the container, so that it may be replaced by a freshly chilled cooling means, said cooling means having an upper portion with which a spring latch means is operatively associated, said spring latch means serving to normally hold said cooling means relatively close to the inner sidewall of said beverage container, even when said container has been tipped, whereby a beverage placed in said container and coming into contact with said cooling means can be chilled over a protracted length of time.

5,299,434

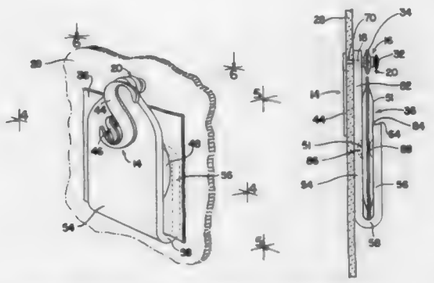
SAFE-SEX BROOCH WITH PROPHYLACTIC HOLDER

Judith L. Kaufman, 20 E. 9th St., New York, N.Y. 10003

Filed Jun. 29, 1992, Ser. No. 905,382

Int. Cl.[5] **A44C** *13/00, 25/00, 15/00*

U.S. Cl. 63—20 **5 Claims**



1. A safe-sex device, comprising, in combination,

an ornamental brooch,

said brooch including an emblem,

said brooch further including securing means for removably attaching said emblem to clothing of a user, said securing means including a pin having opposed connecting and pointed ends, said connecting end being attached to said emblem, and further including a pin grip releasably connected to said pin at said pointed end, and

holding means for supporting a prophylactic, said holding means being removably mounted to said brooch, whereby said holding means can be positioned either inside or outside the clothing,

said holding means being a holding member having opposed front and rear walls and a bottom wall connected to said inner and outer walls, said front and rear walls and said bottom wall defining a holding space, the prophylactic being positioned in said holding space,

said front wall of said holding member defining a hole, said pin extending through said hole, said holding member being positioned between said emblem and said pin grip,

said holding member being made of a resilient material and said rear wall being rotatable relative to said front wall at said bottom wall between biased and unbiased modes, said unbiased mode being when said rear wall is spaced from said front wall at a first distance, and said biased mode being when said rear wall is spaced from said front wall at a second distance greater than said first distance, wherein the prophylactic is gripped between said front and rear walls in said unbiased mode,

said inner and outer walls of said holding member having opposed inner and outer wall surfaces, respectively, one of said inner and outer wall surfaces defining a cavity and the other of said inner and outer wall surfaces having a raised portion positioned opposed to said cavity, said cavity and raised portion being centrally located relative to said inner and outer wall surfaces, respectively, the prophylactic being contained in a packet made of a flexible material, the prophylactic being a condom having coiled augmented borders configured as a closed plane curve, said raised portion and said cavity being positioned within the closed plane curve when the packet is mounted to said holding member, a portion of the packet being located in said cavity and held in a gripping relationship with said raised portion when said holding member is in the unbiased mode.

5,299,435

LOCKED INLAY KNIT FABRICS

Sylvan A. Whalley, Chaddesden, United Kingdom, assignor to Courtaulds PLC, United Kingdom

PCT No. PCT/GB90/01060, § 371 Date Jun. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/00936, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 10, 1990, Ser. No. 778,903

Claims priority, application United Kingdom, Jul. 11, 1989, 8915888

Int. Cl.[5] **D04B** *1/00*

U.S. Cl. 66—61 **13 Claims**

1. In a method of knitting an inlaid fabric on a knitting machine having first and second needle beds over a predetermined knitting cycle comprising the steps of creating a ground structure of loops extending between the first and second beds of needles, laying inlay material onto the said loops between the needles of both beds of needles at at least one selected stage in the knitting cycle, and trapping inlay material into the ground structure by transferring stitches from one bed to another,

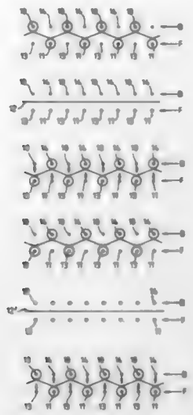
the improvement which comprises

knitting the fabric on both beds of needles during the knitting cycle

interlacing inlay material into the ground structure at one location by transferring stitches at least from the first of the beds to the second of the beds

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and interlacing inlay material into the ground structure at a further location spaced apart from said one location in the



direction of knitting by transferring stitches at least from the second bed to the first bed.

5,299,436

FAST ACCESS ELECTRONIC LOCKING SYSTEM

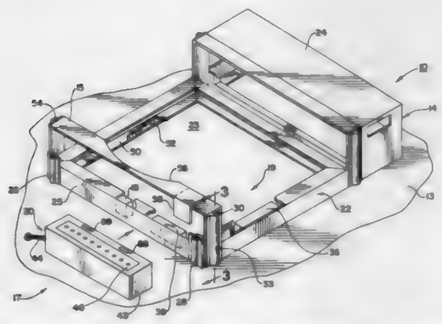
Joseph C. Spitzer, San Diego, Calif., assignor to Mardesich Enterprises, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 492,737, Mar. 13, 1990, Pat. No. 5,085,395. This application Oct. 18, 1991, Ser. No. 781,011

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] E05B *73/00*

U.S. Cl. 70—58 **5 Claims**



1. Security apparatus for attaching a unit to be protected to a supporting surface, comprising:

securing means for attaching the unit to be supporting surface, said securing means having openable means for permitting the unit to be received therin or removed therefrom by an authorized user;

a fast access locking system for controlling the opening or closing of said openable means;

said fast access locking system including locking means for securing releasably said openable means in its locked position;

passive receiving means responsive to a magnetic signal connected to said securing means for activating electrically said locking means under the control of an authorized user;

active energizing key means for supplying a magnetic signal to said passive receiving means to activate it;

means for housing said key means for enabling said key means to be moved manually by an authorized user to a position adjacent to said receiving means to facilitate the activation of said locking means; and

means for coupling electromagnetically said key means and said receiving means to transmit electromagnetic power therebetween, said coupling means including transformer means having a primary winding and a secondary winding for producing said magnetic signal to facilitate coupling between said active energizing key means and said passive receiving means, wherein one of said winding is electrically connected to said passive receiving means and the other said winding is electrically connected to said active energizing key means.

5,299,437

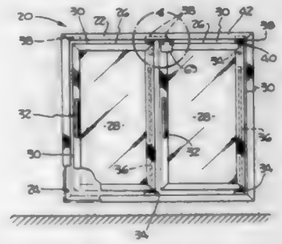
KEYED DOOR LOCK ASSEMBLY

Gary Paugh, Long Beach, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Aug. 8, 1991, Ser. No. 743,492

Int. Cl.[5] E05B *65/06*

U.S. Cl. 70—101 **20 Claims**



1. A lock assembly for a door structure wherein the door structure includes a door frame and a door mounted in the door frame for movement so that part of the door moves toward and away from a wall in the door frame, the assembly comprising:

a mount fixed relative to the door frame wall and having a first engagement member;

a locking unit having a second engagement member for slidingly engaging the first engagement member on the mount, such that the locking unit is supported by the mount before the locking unit is locked into engagement with the mount, and a blocking wall extending from the second engagement member in a direction substantially non-parallel to the second engagement member of the locking unit to keep the door closed when the locking unit engages the mount; and

a locking element in the locking unit movable between an unlocked position in the locking unit and a locked position engaging a surface fixed relative to the frame such that the locking element locks the locking unit in engagement with the mount when in the locked position to keep the door closed.

5,299,438

AUTOMOBILE STEERING LOCK

Shih-Yu Chen, Tainan Hsien, Taiwan, assignor to All Ship Enterprise Co., Ltd., Tainan Hsien, Taiwan

Filed Nov. 24, 1992, Ser. No. 980,692

Int. Cl.[5] B60R *25/02*

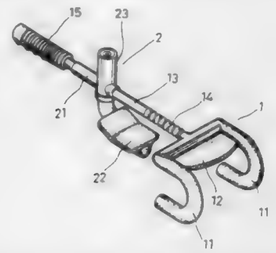
U.S. Cl. 70—209 **1 Claim**

1. An automobile steering lock for attachment to an arcuately contoured steering wheel having radially extending rib members secured on one end to a rim portion of said steering wheel, comprising:

(a) a longitudinally extending rod member having a plurality of annularly formed grooves formed within a peripheral surface and a grip member secured to a first end thereof;

(b) a double hook member formed on a second end of said rod member, said double hook member defining in plan cross-section a U-shaped contour having a hook base member secured to a pair of transversely displaced hook leg members, each of said hook leg members having an arcuately contoured end section for contiguous positional placement partially surrounding an outer surface of said rim portion of said steering wheel;

(c) a stop plate member attached to a portion of said hook base member and said hook leg members for contiguous interface with an upper surface of said rim portion of said steering wheel whereby said fixedly secured stop plate member extends substantially co-planar with said hook base member and an adjacent section of said hook leg



members for releasably capturing said rim portion between said stop plate member and said hook leg members end sections;

(d) a displaceable tubular member slidably mounted on said longitudinally extending rod member, said displaceable tubular member having an L-shaped plate member secured to a lower surface of said displaceable tubular member for contiguous interface with a lower surface of said rim portion of said steering wheel, a portion of said rim being captured between said stop plate member, said L-shaped member, and said end sections of said hook leg members; and,

(e) a lock housing formed on said displaceable tubular member for insert therein of a key actuated lock, said lock being actuated for lockingly engaging said displaceable tubular member at a predetermined location on said longitudinally extending rod member for lockingly engaging said steering lock to said steering wheel.

5,299,439

KEY HOLDER

Linden D. Nelson, 31535 Southfield Rd., Birmingham, Mich. 48009, and Robert A. Scungio, West Warwick, R.I., assignors to Linden D. Nelson, Birmingham, Mich.

Continuation-in-part of Ser. No. 675,724, Mar. 27, 1991, abandoned, which is a continuation of Ser. No. 470,765, Jan. 26, 1990, Pat. No. 5,031,430. This application Feb. 6, 1992, Ser. No. 830,584

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] A47G *29/10*

U.S. Cl. 70—456 R **12 Claims**

1. A key holder comprising:

a first body portion;

a second body portion;

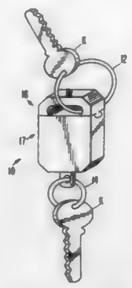
said key holder having opposed first and second ends;

said first body portion and said second body portion having an engaged position and an open position;

said first and second body portions being secured together for relative sliding movement transversely of said first and second ends, between said engaged position and said open position;

said first body portion having an opening therethrough for retaining a key ring at said first end, and an access to said opening;

said access being closed when said body portions are in said engaged position to prevent removal of a key ring, the



relative sliding movement of said first and second body portions into said open position for exposing said access to permit removal of key ring; and

means for biasing said first and second body portions into said engaged position.

5,299,440

ROLLING MILLS

Keith S. Barraclough, Old Court Barn, West Mudford, Yeovil, Somerset BA21 5TJ, and Ian Carey, The Dairy House, Charlton Horethorne, Sherborne, Dorset DT9 4NX, both of United Kingdom

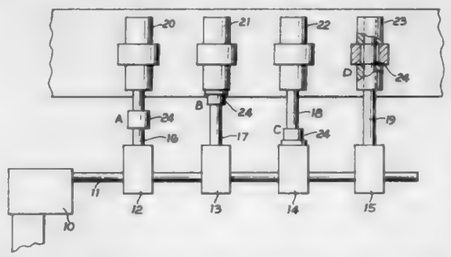
PCT No. PCT/GB90/01148, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992

PCT Filed Jul. 25, 1990, Ser. No. 809,556

Claims priority, application United Kingdom, Aug. 9, 1989, 8918228; Jan. 4, 1990, 9000174

Int. Cl.[5] B21B *35/14;* **B21D** *5/12*

U.S. Cl. 72—181 **6 Claims**



1. A roll-forming mill form forming an initially flat strip into a tube or profile as the strip passes lengthwise in one direction along the mill, the mill having a plurality of pairs of opposed forming rolls spaced apart along said direction, drive means for rotating said rolls of a plurality of said pairs to advance a strip in said direction between the rolls of each said pair, and free wheel means between the forming surface of each roll of one said pair and said drive means of said one pair and free wheel means between another pair of rolls in said mill and said drive means, said free wheel means transmitting drive from said drive means to said forming surface when the rolls of said one pair rotate at a peripheral speed at least as great as the speed of movement of said strip in said direction but permitting said rolls of said one pair to free wheel relative to the other said pairs and relative to each other when said peripheral speed is less than said speed of said strip in said direction.

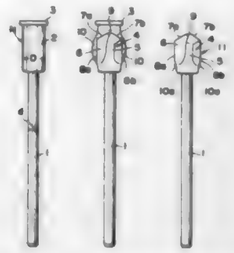
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5,299,441

METHOD OF MAKING A MANDREL COMPRISING A DRILL SECTION FOR A SELF-DRILLING BLIND RIVET

Katsumi Shinjo, Osaka, Japan, assignor to Yugenkaisha Shinjo Seisakusho, Osaka, Japan

Filed Feb. 18, 1993, Ser. No. 18,137
Int. Cl.[5] B21K 1/44
U.S. Cl. 72—356 8 Claims



1. A method of making an elongated mandrel having an end integral with a drill section, the method comprising the steps of:

subjecting a single columnar piece of material to a heading process so as to form a blank comprising the elongated mandrel having a diameter, a short stem integral with an end of the mandrel and having a diameter greater than the diameter of the mandrel, and a flange integral with the short stem and extending from one end thereof opposite to the mandrel;

then cold forging the stem to produce the drill section in such a manner that end edges of the drill section face the flange; and

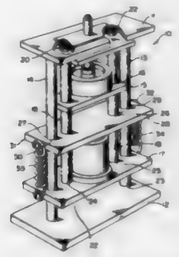
subsequently trimming the drill section so as to remove the flange together with a scrap resulting form the cold forging of the short stem.

5,299,442

RIVNUT (TM) INSTALLATION APPARATUS

Gary A. Graham, Box 2000, Glacier, Wash. 98244

Continuation-in-part of Ser. No. 2,049, Jan. 8, 1993. This application Aug. 23, 1993, Ser. No. 110,225
Int. Cl.[5] B21J 15/10
U.S. Cl. 72—391.8 1 Claim



1. Apparatus for installing a RIVNUT (TM) in a hole in a work piece, said RIVNUT (TM) having a flange, said apparatus comprising:

a frame having a work support surface, a hole in said work support surface and at least one part attached to said frame,

carriage slidably mounted on said frame,

a shaft, a flywheel mounted on said shaft and a rotatably mounted threaded fastener, all mounted on said carriage with said fastener rotatable by said shaft and said flywheel,

a jack mounted between said carriage and said at least one part attached to said frame,

at least one spring mounted between said frame and said carriage such that the force applied by said at least one spring opposes extension of said jack,

said threaded fastener extending through said hole in said work support part,

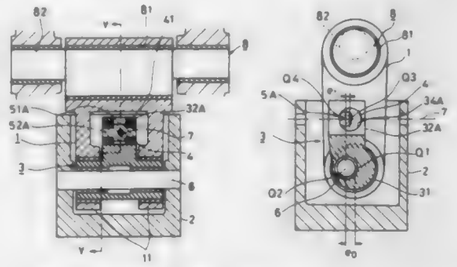
whereby said RIVNUT (TM) is installed in said work part threading said RIVNUT (TM) onto said fastener with said flange against said work support part, inserting said RIVNUT (TM) through said hole in said work part and extending said jack to move said carriage, thus applying tension force to said fastener to collapse said RIVNUT (TM) to fasten it to said work piece and whereby said fastener is then removed from said RIVNUT (TM) by spinning said flywheel to rotate said fastener.

5,299,443

SLIDE ADJUSTING DEVICE FOR USE IN FORGING PRESS

Masatoshi Nakamura, Osaka, Japan, assignor to Kurimoto, Ltd., Osaka, Japan

Filed Jul. 31, 1992, Ser. No. 922,223
Claims priority, application Japan, Apr. 28, 1992, 4-135856
Int. Cl.[5] B21J 9/18
U.S. Cl. 72—446 4 Claims



1. A slide adjusting device, comprising:

a connecting rod having at one end means for eccentrically mounting the connecting rod to a crankshaft and at the other end a branched portion forming two parts;

a wrist pin defining a center of rotation;

a slide mounted to said connecting rod at said branched portion by said wrist pin so that it is suspended from said connecting rod;

an adjusting lever mounted by said wrist pin to said connecting rod, said adjusting lever defining a center of rotation, with the center of rotation of said adjusting lever being eccentrically located relative to the center of rotation of said wrist pin, said adjusting lever having an eccentric shaft section and a receiving section located approximately at the center of and extending outwardly from said eccentric shaft section;

a nut fitted within said receiving section, said nut including a pair of turning shafts in axial alignment and a bore extending at a right angle to the alignment of said turning shafts, said bore defining a female screw thread;

a pair of discs, each rotatably mounted in the receiving section and eccentrically on a respective one of said pair of turning shaft;

a screw defining a male screw thread on its outer surface which engages the female screw thread, said screw being rotatably mounted to said slide; and

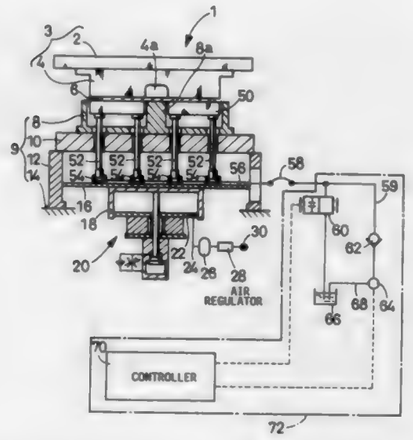
means for rotating said screw, whereby said screw when rotated effects a movement of the nut along the screw and thereby movement of said adjusting lever for adjusting said slide.

5,299,444

HYDRAULIC CUSHIONING SYSTEM FOR PRESS, HAVING HYDRAULIC POWER SUPPLY INCLUDING MEANS FOR ADJUSTING INITIAL PRESSURE TO BE APPLIED TO PRESSURE-PIN CYLINDERS

Kazunari Kiril, Aichi; Tsutomu Ono, and Masahiro Shinabe, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 3, 1992, Ser. No. 940,354
Claims priority, application Japan, Sep. 4, 1991, 3-254822; Sep. 6, 1991, 3-255744
Int. Cl.[5] B21J 7/28
U.S. Cl. 72—453.13 10 Claims



1. A hydraulic cushioning apparatus for a press having an upper and a lower die assembly for forming a workpiece in the form of a strip, including a plurality of hydraulic cylinders incorporated in one of said upper and lower die assemblies, and a plurality of pressure pins which are linked with said hydraulic cylinders, respectively, and which are reciprocable to apply a cushioning force to said workpiece, during a pressing action of said die assemblies on said workpiece, so as to force said workpiece against the other of said upper and lower die assemblies, said apparatus comprising:

a cushion pad supported by all of said pressure pins and on which said workpiece is placed;

a die cushioning device including a cushioning cylinder for producing said cushioning force during said pressing action, and a cushion platen receiving said cushioning force and being reciprocable during said pressing action;

said plurality of hydraulic cylinders fixedly disposed on said cushion platen such that said cushioning force produced by said cushioning cylinders is transmitted to said cushion pad through said hydraulic cylinders and said pressure pins;

connecting means through which said hydraulic cylinders communicate with each other; and

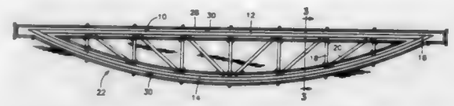
a hydraulic power supply device for delivering a pressurized fluid to all of said hydraulic cylinders through said connecting means, said hydraulic power supply device including pressure changing means for changing an initial hydraulic pressure of said fluid applied to said hydraulic cylinders before said pressing action of said die assemblies, so that the hydraulic pressure in said hydraulic cylinders during said pressing action, performed with said workpiece being forced by said cushion pad, is controlled such that substantially the same force acts on all of said plurality of pressure pins.

5,299,445

METHOD OF POST-TENSIONING STEEL/CONCRETE TRUSS BEFORE INSTALLATION

Alfred A. Yee, 1441 Kapiolani Bl., Honolulu, Hi. 96814

Continuation-in-part of Ser. No. 708,712, May 31, 1991. This application May 12, 1992, Ser. No. 881,766
Int. Cl.[5] E04G 21/00
U.S. Cl. 52—745.19 5 Claims



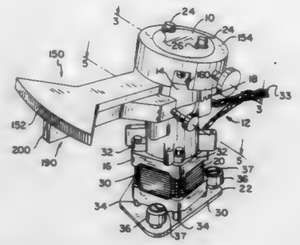
1. The method of forming a steel/reinforced concrete cladded truss, said truss being formed in a fabrication yard at ground level and comprising an elongated bottom chord, an elongated top chord spaced from the bottom chord, a plurality of braces interconnecting the top and bottom chords to form a rigid truss, said chords and braces being constructed of steel, said method consisting of steps of encasing said top and bottom chords with concrete cladding with the concrete cladding completely enclosing the top chord and bottom chord, said concrete cladding including steel reinforcement and steel tendons embedded in the concrete cladding enclosing the chords prior to the concrete cladding hardening, said step of encasing the top and bottom chords with concrete consisting of the step of associating formwork with the top and bottom chords of the truss, said step of including steel reinforcement and steel tendons in the concrete cladding consisting of the steps of placing steel reinforcement and steel tendons in said formwork, pouring concrete in said formwork, allowing the concrete to harden and post-tensioning and steel tendons.

5,299,446

METHOD AND APPARATUS FOR CALIBRATING A MULTIPLE PORT PUMP

Guillermo P. Pardinas, Miami, Fla., and Robert E. Ennesser, III, Winthrop Harbor, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 28, 1991, Ser. No. 722,994
Int. Cl.[5] G01F 25/00
U.S. Cl. 73—3 11 Claims



1. A calibrator for balancing a plurality of output ports in a metering pump of the type having a head including a plurality of radially extending, sequentially spaced ports, a body for supporting the head, a central work chamber in the head and in communication with the ports and a working piston carried in the body and in communication with the work chamber, the head and body having a common axis and the head rotatable about the axis relative to the body, the calibrator comprising:

a. a first assembly adapted to be mounted on said head outer end and extending radially outward therefrom and terminating in an outer end having an enlarged fan shaped plate terminating in an arcuate edge, the center of the arc coincidental with the cylindrical axis of said head when installed thereon, said arcuate edge further including a

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graduated scale corresponding to the angular position of the head relative to the body; and

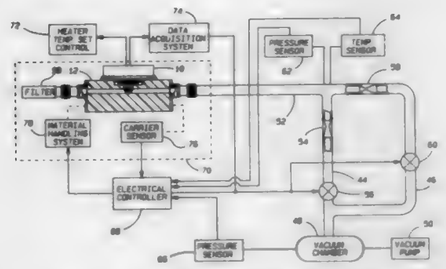
b. a second assembly adapted to be mounted on said body and extending radially outward therefrom and terminating in an outer end in substantial alignment with the graduated scale, whereby the angular relationship between the head and body is in direct correspondence with the angular relationship between said graduated scale and said outer end.

5,299,447

AIR FLOW MANIFOLD SYSTEM FOR PROVIDING TWO DIFFERENT MASS AIR FLOW RATES TO A MASS AIR FLOW SENSOR PRODUCTION CALIBRATION STATION

Richard W. Caron, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 13, 1992, Ser. No. 912,940
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 **13 Claims**



1. An air flow system for sequentially providing a first and a second mass air flow rate to a production calibration station, said production calibration system setting the operating temperature of a heater of a mass air flow sensor mounted in said calibration station during said first mass air flow rate and sequentially setting the response time of said mass air flow sensor during said second mass air flow rate, said air flow system comprising:

a vacuum source;

a first air flow conduit connected between said vacuum source and the production calibration station;

a second air flow conduit connected in parallel with said first air flow conduit between said vacuum source and the prodution calibration station;

a first shut-off valve connected to said first air flow conduit, said first shut-off valve having an open state permitting an air flow through said first air flow conduit and a closed state inhibiting an air flow through said first air flow conduit;

a first sonic nozzle for controlling the mass air flow rate through said first air flow conduit when said first shut-off valve is in said open state, said mass air flow rate through said first sonic nozzle selected to have a value predetermined to permit the operating temperature of said heater of said mass air flow sensor to be set;

a second shut-off valve attached to said second air flow conduit, said second shut-off valve having an open state permitting an air flow through said second air flow conduit and a closed state prohibiting an air flow through said second air flow conduit;

a second sonic nozzle for controlling the mass air flow rate through said second air flow conduit when said second shut-off valve is in said open state, said second sonic nozzle controlling the mass air flow rate through said second air flow conduit to have a value predetermined to permit the response time of said mass air flow sensor to be set; and

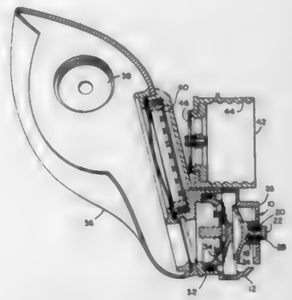
an electrical control responsive to a signal indicating a mass air flow sensor has entered said calibration station to sequentially activate said first shut-off valve to said open state, said electrical control further responsive to said calibration station completing the setting of the operating temperature of the heater of the mass air flow sensor, to deactivate said first valve and to activate said second shut-off valve, and to generate a signal to the calibration station to measure the response time.

5,299,448

POSITIVE PRESSURE TEST APPARATUS FOR FACEPIECE RESPIRATOR

Richard D. Maryyanek, Northbridge; Joseph Z. Zdrok, Webster, both of Mass., and Keith Simpson, Farnham, England, assignors to Cabot Safety Corporation, Southbridge, Mass.

Filed Mar. 5, 1993, Ser. No. 27,218
Int. Cl.[5] G01M *3/36*
U.S. Cl. 73—40 **14 Claims**



1. A positive pressure test apparatus for a facepiece respirator having an exhalation valve, comprising:

a cover portion comprising a central bore having an inwardly directed shoulder at the base of said bore;

a plunger, comprising a stem having a button portion on one end and a flange portion on the opposite end, said button and flange portions having diameters greater than said stem, said flange portion being sized and shaped to cover the effective area of said exhalation valve,

wherein said stem is situated within said central bore, said button portion extends above the surface of said cover portion in a rest position, and said flange portion extends below said inwardly directed shoulder;

bias means located in engagement with said button portion and said shoulder for biasing said plunger from said rest position to a depressed position wherein said button is flush with the surface of said cover portion and said flange portion seals said exhalation valve; and

mounting means for attaching said positive pressure test apparatus to said respirator.

5,299,449

LIQUID FLOW REACTOR AND METHOD OF USING

Dennis R. Hardy, Alexandria, Va.; Erna J. Beal, Fort Washington, and Jack C. Burnett, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

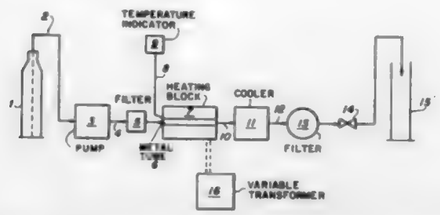
Filed Apr. 30, 1992, Ser. No. 875,955
Int. Cl.[5] G01N *5/00*
U.S. Cl. 73—61.62 **9 Claims**

1. Apparatus for the rapid determination of the tendency of liquid hydrocarbon-based fuels to form fuel-insoluble solids, comprising:

a test section comprising a metal tube having included therein an insert for holding a metal test strip, said insert having upper and lower parts, which sandwich said metal test strip therebetween, and a heating means to heat said test section;

means of introducing a sample of liquid distillate fuel to said test section;

a metal test strip; and



means for removing said liquid distillate fuel from said heated test section after making contact with said metal test strip.

5,299,450

METHOD FOR EVALUATING PERFORMANCE OF ALUMINUM ALLOY WIRING FILM

Toshiaki Nakagawa, Tenri, and Hisakazu Miyatake, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1992, Ser. No. 871,757
Claims priority, application Japan, Apr. 24, 1991, 3-094353
Int. Cl.[5] G01N *3/40, 33/20*
U.S. Cl. 73—78 **8 Claims**



1. A method for evaluating performances of an aluminum alloy wiring film comprising the steps of:

forming a first aluminum alloy film on a first substrate;

forming a second aluminum alloy film on a second substrate;

measuring hardness of both of said first and second films;

comparing the hardness between the first and second films to determine which one is superior; and

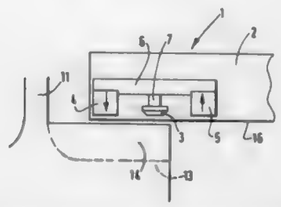
subjecting the film superior in hardness to a test for measuring and evaluating a stressmigration of the film.

5,299,451

FIRST CYLINDER DETECTOR FOR A GASOLINE INTERNAL COMBUSTION ENGINE

Gérard Brosse, Creteil, France, assignor to Sagem Allumage, Paris, France

Filed Apr. 30, 1992, Ser. No. 876,025
Claims priority, application France, Apr. 30, 1991, 91 05310
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **6 Claims**



1. A first cylinder detector for an internal combustion engine arranged relative to the rim of a rotating pulley comprising:

a target of soft magnetic material formed on the rim of the pulley,

a unipolor Hall effect pickup defining a sensitive zone,

a first and a second permanent magnet arranged symmetrically with respect to the pickup so that the magnetic field in the sensitive zone is substantially zero when the target is not in the sensitive zone and said pickup generates no output signal, but when the target is in the sensitive zone, the target provides a loop for the lines of flux of said first magnet to the sensitive zone causing the pickup to generate a square wave output signal.

5,299,452

METHOD AND APPARATUS FOR ESTIMATING VEHICLE BRAKING SYSTEM EFFECTIVENESS

LaVerne A. Caron, Kalamazoo, and Richard J. Youngblood, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 8, 1992, Ser. No. 986,797
Int. Cl.[5] G01L *5/28*
U.S. Cl. 73—129 **16 Claims**



1. Apparatus for estimating the effectiveness of a braking system in a wheeled vehicle including an engine, a brake treadle, and fluid-actuated brakes having normally operable and automatically operable braking modes, the apparatus comprising:

means for determining engine torque and generating a torque signal representative thereof;

means for determining vehicle acceleration and deceleration and generating respective acceleration and deceleration signals representative thereof;

means for determining brake treadle pressure during vehicle deceleration in the normally operable braking mode and generating a brake pressure signal representative thereof; and

calculating means for calculating, from data represented by the torque signal and the acceleration signal, vehicle load and for calculating, from data represented by the brake pressure signal and the deceleration signal, braking system effectiveness by comparing the determined deceleration with a deceleration predicted for the calculated vehicle load and the determined brake treadle pressure, the calculating means generating an effective brake signal if the determined deceleration is within a predetermined range of the predicted deceleration and generating an ineffective brake signal if the determined deceleration is not within the range.

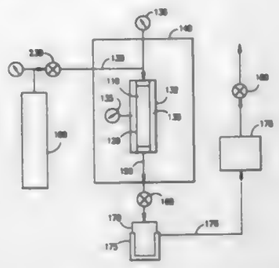
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5,299,453

METHOD FOR DETERMINING OIL AND WATER SATURATION OF CORE SAMPLES AT OVERBURDEN PRESSURE

Eve S. Sprunt, Farmers Branch, and Nizar F. Djabbarah, Richardson, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 28, 1993, Ser. No. 10,250
Int. Cl.[5] E21B 49/00; G01N 15/08
U.S. Cl. 73—153 8 Claims



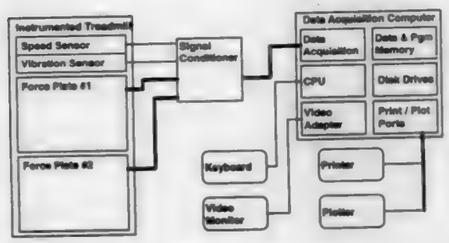
1. A method for determining the amount of fluids in a porous sample, comprising:
(a) providing a representative specimen of porous sample,
(b) surrounding said sample within an elastic jacket in a confining pressure cell,
(c) supplying pressure to said cell to pressure said jacket into contact with said sample,
(d) extracting both aqueous and hydrocarbon fluids from said sample with a solvent capable of dissolving both aqueous and hydrocarbon fluids,
(e) separating said aqueous and hydrocarbon fluids, and
(f) determining the amount of aqueous and hydrocarbon fluid from said separated fluids.

5,299,454

CONTINUOUS FOOT-STRIKE MEASURING SYSTEM AND METHOD

Daniel P. Fuglewicz, Depew; David A. Schieb, and Conrad Sonderegger, both of Tonawanda, all of N.Y., assignors to K.K. Holding AG, Winterthur, Switzerland

Filed Dec. 10, 1992, Ser. No. 988,699
Int. Cl.[5] A61B 5/11; G01L 5/16
U.S. Cl. 73—172 12 Claims



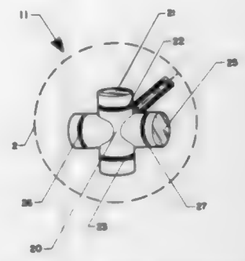
1. A foot-strike measuring system comprising:
a first and a second plate arranged in tandem with respect to the direction of travel of a subject on said system;
first and second sensor means for sensing forces on a respective plate;
means for determining from said first and second sensor means whether a single foot is on both plates or one foot is on each plate; and
processing means for combining signals from said first and second sensor means when one foot on both plates is determined and segregating said signals from said first and second sensor means when one foot on each plate is determined to measure individual foot-strikes.

5,299,455

METHOD AND INSTRUMENTATION SYSTEM FOR MEASURING AIRSPEED AND FLOW ANGLE

Siva M. Mangalam, 17 Mile Course, Kingsmill on the James, Williamsburg, Va. 23185

Filed Mar. 27, 1992, Ser. No. 860,780
Int. Cl.[5] G01C 21/00; G01F 1/68
U.S. Cl. 73—180 15 Claims



1. An aircraft instrument system for measuring airspeed and angle-of-attack comprising;
a solid state sensor assembly formed with a pair of intersecting orthogonal miniature cylinders having a plurality of embedded micro-thin hot film elements on each cylinder;
a constant voltage anemometer for detecting cylinder stagnation points and low frequency boundary layer flow oscillations connected to said solid state sensor assembly;
a spectrum analyzer connected to and receiving signal inputs from said constant voltage anemometer;
a microprocessor assembly connected to and providing control inputs to said constant voltage anemometer and receiving flow frequency and phase signals from said spectrum analyzer;
a software program operating said microprocessor assembly to provide instrument system control and to calculate velocity and angle-of-attack based on frequency and phase data from said spectrum analyzer;
an airspeed indicator driven by said microprocessor assembly; and
an angle-of-attack indicator driven by said microprocessor assembly.

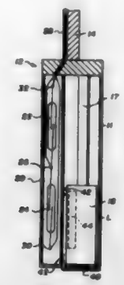
5,299,456

ELECTRONIC DIPSTICK FOR INDICATING THE OIL LEVEL OF AN ENGINE

Steiner George A., 4425 Harvard Avenue, Montreal, Quebec, Canada H4A 2W9

Filed Jun. 30, 1992, Ser. No. 906,810
Int. Cl.[5] G01F 23/72, 23/76
U.S. Cl. 73—308 8 Claims

1. A dipstick for an engine sump comprising:
an elongated member for insertion into an appropriate aperture to the engine sump, the elongated member having high and low marks indicating a high oil level and a low oil level in the engine sump, respectively;
float means mounted for restricted movement between the high oil level mark and the low oil level mark within a cage means integral with the elongated member, the cage means having an integral circular segment shaped portion at one side thereof and being closed at a top end and a bottom end, the float means having a substantially D-shaped cross section with a flat surface adjacent a flat surface of the circular segment shaped portion of the cage means, the float means having at least one permanent magnet therein as a switch activating means;
a first reed switch associated with the high oil level mark, sealed within the circular segment shaped portion of the cage means, the first reed switch activated by the permanent magnet when the float means is at or above the high oil level mark;



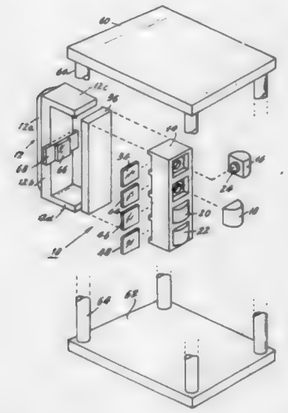
a second reed switch associated with the low oil level mark, sealed within the circular segment shaped portion of the cage means, the second reed switch activated by the permanent magnet when the float means is at or below the low oil level mark; and
indicating means to indicate when the permanent magnet activates the first reed switch or the second reed switch.

5,299,457

PRECISION GRIP METER

Donald Pang, 2648 Forrest Ct., Fremont, Calif. 94536, and David K. Pang, 3624 Nichole Ave., Pleasanton, Calif. 94588

Filed Jul. 13, 1992, Ser. No. 912,311
Int. Cl.[5] G01L 15/00
U.S. Cl. 73—379.02 10 Claims



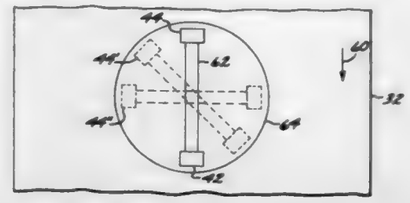
1. A device for measuring and recording the strength of a person's hand that includes:
a frame;
a base on the frame sized and shaped to engage the heel of the hand; .
a plurality of plungers on the frame opposite the base and located for being depressed by corresponding fingers of the hand; and
a device associated with the base and the plungers for simultaneously and independently measuring and recording both finger strength and overall hand strength.

5,299,458

NONDESTRUCTIVE ULTRASONIC EVALUATION OF FORMABILITY OF METALLIC SHEETS

Alfred V. Clark, Jr., 2590 Vassar Dr., Boulder, Colo. 80303, and R. Bruce Thompson, 3212 Kingman Ave., Ames, Iowa 50010

Continuation of Ser. No. 485,038, Feb. 26, 1990, abandoned.
This application Dec. 11, 1992, Ser. No. 989,914
Int. Cl.[5] G01N 29/18
U.S. Cl. 73—597 1 Claim



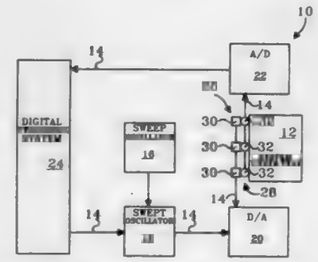
1. A process for nondestructively evaluating the formability of rolled metallic sheet, comprising the steps of:
measuring the ultrasonic velocities of sound in the plane of the sheet parallel to a rolling direction V_0, perpendicular to the rolling direction V_{90}, and at 45 degrees to the rolling direction V_{45}, each of said measurements being conducted without excising a sample from the sheet, and including the substeps of
sending an ultrasonic wave through the sheet with a sending electromagnetic acoustic transducer,
receiving the ultrasonic wave with a receiving electromagnetic acoustic transducer, the sending and receiving transducers having a fixed distance therebetween,
measuring the time for a selected zero crossing of the ultrasonic wave to propagate from the sending transducer to the receiving transducer, and
determining the ultrasonic velocity using an effective path length distance previously determined for the array of sending and receiving transducers;
calculating an ultrasonic correlation parameter dependent upon the measured ultrasonic velocities; and
determining a formability index of the sheet from the calculated correlation parameter and a previously prepared calibration between the correlation parameter and the formability index.

5,299,459

ADAPTIVE CONTROL METHOD FOR MULTIEXCITER SINE TESTS

Marcos A. Underwood, 21850 Byrne Ct., Cupertino, Calif. 95014

PCT No. PCT/US90/02761, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991
PCT Filed May 21, 1990, Ser. No. 576,416
Int. Cl.[5] G01M 7/00
U.S. Cl. 73—664 20 Claims



1. A method for controlling a plurality of analog sinewave

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drive signals in a multiexciter vibration test, comprising the steps of:

a. stimulating a system under test with a plurality of exciters, each of said exciters being a transducer physically attached to an system under test, for converting said analog sinewave drive signals into mechanical motion;

b. monitoring a response from said system under test using a plurality of sensors, each of said sensors being a transducer physically attached to said system under test, for converting said response into an analog response signal;

c. converting said analog response signal into a first digital signal;

d. modifying said first digital signal as a function of a reference spectrum vector and a measured system response matrix, said reference spectrum vector being a digital equivalent of a desired system motion, said measured system response matrix being a digital equivalent of a previously calculated system response, such that an updated digital signal is produced which is a digital equivalent of the analog sinewave drive signals required to cause said first digital signal to approach agreement with the reference spectrum vector;

e. converting said updated digital signal into a yet another plurality of analog sinewave drive signals for again driving said exciters; and

f. continuously repeating steps a. through e. while updating values of said measuring system response matrix as a function of values obtained during previous repetitions, such that a series of said measured system response matrices is produced which are used in the calculation of a series of said updated digital signals for producing a series of said pluralities of said analog sinewave drive signals, such that values for use in calculating a next subsequent of said updated digital signals are being obtained while each of said analog sinewave drive signals is being used to excite the system under test.

5,299,460

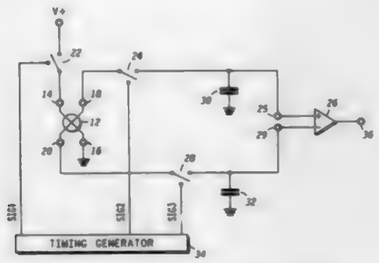
PRESSURE SENSOR

Warren J. Schultz, and Denise M. Williams, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1992, Ser. No. 840,472

Int. Cl.[5] G01L *9/00*

U.S. Cl. 73—753 **6 Claims**



5. A circuit for pulse width modulating a sensor, the sensor having first, second, third and fourth terminals, the second terminal of the switch being coupled to a first supply voltage terminal, the circuit comprising:

a timing circuit for providing first, second and third control signals;

a first switch having first, second and control terminals, said first terminal of said first switch being coupled to the first terminal of the sensor, said second terminal of said first switch being coupled to a second supply voltage terminal, and said control terminal of said first switch being coupled to receive said first control signal of said timing circuit;

a second switch having first, second and control terminals, said first terminal of said second switch being coupled to the third terminal of the sensor, said control terminal of said second switch being coupled to receive said second control signal of said timing circuit;

a third switch having first, second and control terminals, said first terminal of said third switch being coupled to the fourth terminal of the sensor, said control terminal of said third switch being coupled to receive said third control signal of said timing circuit;

a first capacitor having first and second terminals, said first terminal of said first capacitor being coupled to said second terminal of said second switch, said second terminal of said first capacitor being coupled to the first supply voltage terminal; and

a second capacitor having first and second terminal, said first terminal of said second capacitor being coupled to said second terminal of said third switch, said second terminal of said capacitor being coupled to the first supply voltage terminal, said first terminals of said first and second capacitors being respectively coupled to first and second output terminals of the circuit for providing a differential signal corresponding to a pressure sensed by the sensor.

5,299,461

FLUID FLOWRATE MEASURING APPARATUS

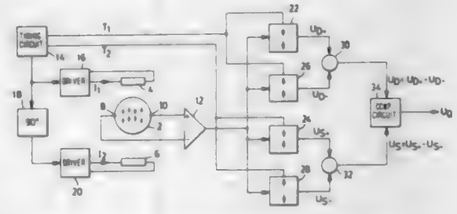
Klaus Schäfer, Mundea, and Peter Nissen, Rosdorf, both of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Filed Jun. 9, 1992, Ser. No. 895,612

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1991, 4119372

Int. Cl.[5] G01F *1/60*

U.S. Cl. 73—861.16 **5 Claims**



1. Fluid flowrate measuring apparatus comprising:

a pipe having an axis;

first and second magnet coils positioned symmetrically on opposite sides of said pipe and having a common axis for generating magnetic fields extending through said pipe;

means for exciting said first and said second magnet coils to generate over an excitation cycle:

(a) first and second magnetic fields by said first and said second magnet coils, respectively, which are aiding during a first period of said excitation cycle,

(b) third and fourth magnetic fields by said first and said second magnet coils, respectively, which are opposing during a second period of said excitation cycle,

(c) fifth and sixth magnetic fields by said first and said second magnet coils, respectively, which are opposite to said first and said second magnetic fields, respectively, and aiding during a third period of said excitation cycle, and

(d) seventh and eighth magnetic fields by said first and said second magnet coils, respectively, which are opposite to said third and said fourth magnetic fields, respectively, and opposing during a fourth period of said excitation cycle;

first and second electrodes positioned symmetrically to a plane defined by said axis of said pipe and said common axis of said magnet coils for developing signals representative of fluid flow through said magnetic fields;

a first holding circuit for holding said signals developed during said first period of said excitation cycle;

a second holding circuit for holding said signals developed during said second period of said excitation cycle;

a third holding circuit for holding said signals developed during said third period of said excitation cycle;

a fourth holding circuit for holding said signals developed during said fourth period of said excitation cycle;

a first summing circuit for summing said signals held in said first and said third holding circuits;

a second summing circuit for summing said signals held in said second and said fourth summing circuits;

and means for comparing the sum developed by said first summing circuit with the sum developed by said second summing circuit to develop a flowrate measurement signal proportional to the flowrate of fluid flowing through said pipe.

5,299,462

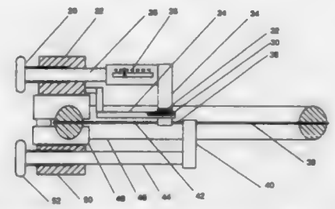
RACQUET STRING ACTUAL TENSION MEASURING DEVICE

David L. Key, 10031 Carmona Ct., Cupertino, Calif. 95014

Filed Dec. 8, 1992, Ser. No. 987,380

Int. Cl.[5] G01L *5/04*

U.S. Cl. 73—862.391 **17 Claims**



1. A method for measuring the actual tension in an elastic string such as in a strung racquet, comprising holding a first length of a string substantially a constant length, reducing the tension in a directly adjacent second length of string to zero, and measuring the force required to maintain said first length of string at a constant length whereby the force required to maintain said first length of string at a constant length is an indication of the actual string tension.

5,299,463

DEVICE FOR DETECTING FORCE DURING PRESSING OF CABLE SOCKETS

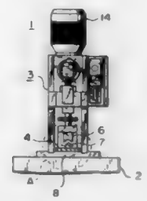
Herman Gross, Furth/Bayern, Fed. Rep. of Germany, assignor to AAT Aston GmbH Gerate fur Elektroaikfertingung und Kabelbearbeitung, Nuremberg, Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 776,441

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 9014442[U]

Int. Cl.[5] G01L *5/00*

U.S. Cl. 73—862.542 **15 Claims**



1. A device for detecting the force during crimping of cable sockets with cable strands, using a mechanically, pneumatically or hydraulically-driven crimping press, comprising:

an intermediate plate (**4**), on which a crimping tool (**3**) can be mounted, and that said intermediate plate (**4**) has a sensor for detecting a crimping force and producing signals, said signals of which is processed via a measuring value processor and can be displayed, and

wherein said crimping tool includes a lower piston (**7**) fastened on a retaining plate (**26**), and that said intermediate plate (**4**) is disposed between said retaining plate (**26**) and a base plate (**8**) or a lower frame (**2**), whereby with an identical intermediate plate (**4**) and thus an identical sensor, said crimping tool can be replaced.

5,299,464

HOT STICK TRANSFORMER SAMPLER

James A. Bennett, 1025 Dodson Rd. NW, Ephrata, Wash. 98823

Filed Nov. 22, 1991, Ser. No. 796,593

Int. Cl.[5] G01N *1/10*

U.S. Cl. 73—864.74 **7 Claims**



7. A hot-stick with detachable selective transformer-penetrating tool for electrically-isolating an operator from an energized, high voltage utility transformer while sampling oil from the transformer, comprising the combination of

an elongate, electrically-insulating member, commonly known as a hot-stick, having first and second opposite ends,

a detachable selective transformer-penetrating tool for facilitating the remote sampling of oil from an energized high-voltage utility transformer comprising an impact block in face-to-face contact with the hot-stick when attached for transmitting impulse propagated through the hot-stock, the impact block further comprising an impalement spike extruding coaxially with the hot-stick from the impact block, and

means for attaching the detachable transformer-penetrating tool to the hot-stick.

5,299,465

BALL SCREW INTEGRATED TYPE LINEAR MOVEMENT GUIDING UNIT

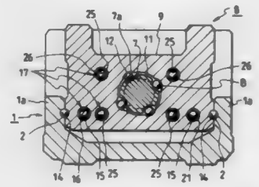
Shinichi Kasuga, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,010

Claims priority, application Japan, Sep. 25, 1991, 3-77337[U]

Int. Cl.[5] F16H *1/18*

U.S. Cl. 74—424.8 R **10 Claims**



1. A linear movement guiding unit comprising:

a guide rail having ball-rolling grooves axially formed respectively in side surfaces thereof;

a screw shaft which is disposed parallel to said guide rail and has a ball screw groove in its outer surface;

a nut having a ball screw groove opposed to said ball screw groove of said screw shaft through a number of balls rolling in said two opposed ball screw grooves, said nut having ball-rolling grooves formed respectively in opposed side surfaces thereof and opposed respectively to

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said ball-rolling grooves of said guide rail, and said nut being movable in an axial direction through a number of balls received in each pair of said opposed ball-rolling grooves, said nut being provided with at least two first through holes serving as return passages for said balls in said opposed ball rolling grooves, respectively, said first through holes being provided in a thickened portion of said nut in parallel relation to said screw shaft;

first communicating means for communicating said first through holes with said opposed ball rolling grooves so as to circulate said balls among said first through holes, said ball rolling grooves and said first communicating means, respectively;

first ball guiding means inserted in said first through holes for guiding the balls therein smoothly;

said nut having a second through hole serving as a return passage for said balls in said ball screw groove, said second through hole being provided in a thickened portion of said nut in parallel relation to said screw shaft;

a second communicating means for communicating said second through hole and said ball screw grooves so as to circulate said balls among said second through hole, said ball screw grooves and said communicating means; and

a second ball guiding means inserted in said second through hole for guiding said balls therein smoothly.

5,299,466

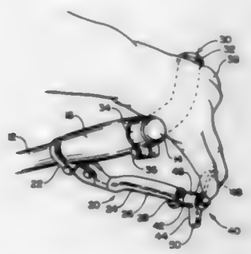
BRAKE LEVER EXTENSION

Jacob H. Hellbron, North Vancouver, and Daniel K. Gerhard, Vancouver, both of Canada, assignors to Kona U.S.A., Inc., Blaine, Wash.

Filed Aug. 10, 1992, Ser. No. 927,840

Int. Cl.[5] B62K *23/06*

U.S. Cl. 74—502.2 **16 Claims**



1. An extension attachment for a bicycle brake lever, said brake lever extending generally parallel and adjacent to a grip portion of a primary handlebar member, and said primary handlebar member having a secondary handlebar member mounted thereto so as to extend at an angle to said grip portion, said extension attachment comprising: a lever member having a relatively straight operating portion which extends generally along a single axis and which is configured to be gripped by the fingers of a rider's hand; and

means for mounting said lever member to an outer end of said brake lever so that said axis of said operating portion extends transversely across said outer end of said lever, and so that said operating portion of said lever member extends generally perpendicularly from said end of said brake lever and generally parallel to said secondary handlebar member, so as to permit said fingers of said hand to reach said operating portion of lever member to actuate said brake lever without said hand having to release a grip on said secondary handlebar member.

5,299,467

APPARATUS FOR BINDING POST MEMBERS IN A BICYCLE

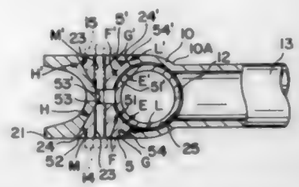
Kohei Marui, Kobe, Japan, assignor to Marui Co., Ltd., Kobe, Japan

Filed Nov. 17, 1992, Ser. No. 977,854

Claims priority, application Japan, Nov. 20, 1991, 3-095269[U]

Int. Cl.[5] B62K *21/14*

U.S. Cl. 74—551.1 **17 Claims**



1. A binding apparatus of a bicycle comprising:

a post member having a surface and being able to be coupled;

a binding cylinder, said binding cylinder having an opening, the post member being inserts and fixed in the opening of the binding cylinder;

an extension formed on a side of the binding cylinder;

two slanting holes perforating the extension in a slanting direction toward the opening of the binding cylinder;

two skew blocks, each skew block with a slanting cylindrical surface, a partial cylindrical surface which contacts the surface of the post member, an outer flat surface, an inner flat surface and a bolt bore, the bolt bore extending in a direction normal to the outer flat surface, the skew blocks being inserted into the slanting holes with a clearance between ends of the skew blocks;

a bolt penetrating the bolt bores; and

a nut fitted to the bolt and being tightened to fix the skew blocks in the slanting holes, the nut and bolt pushing the skew blocks against the surface of the post member.

5,299,468

ELASTOMERIC VIBRATIONAL DAMPERS

Graham R. Withers, 1297 Nepean Highway, Cheltenham, Victoria 3192, Australia

PCT No. PCT/AU90/00334, § 371 Date May 1, 1992, § 102(e) Date May 1, 1992, PCT Pub. No. WO91/02176, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 6, 1990, Ser. No. 671,912

Claims priority, application Australia, Aug. 4, 1989, PJ 5617; Oct. 6, 1989, PJ 6760

Int. Cl.[5] F16F *15/12*

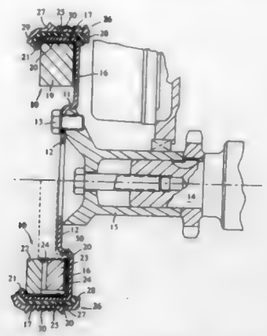
U.S. Cl. 74—574 **10 Claims**

1. An elastomeric damper comprising:

a hub section configured for connection to a rotational shaft requiring damping in an internal combustion engine, said hub section including a central region, an annular radially extending section extending radially outwardly from said central region of said hub section, and an annular axially extending section extending axially with respect to said radially extending section, said axially extending section having an inner circumferential surface and an annular, radially inwardly directed portion projecting radially inwardly;

an annular inertia ring located inwardly of said axially extending section, said inertia ring having an outer circumferential surface; and

an elastomeric material located between said outer circumferential surface of said inertia ring and said inner circumferential surface of said axially extending section, said radially inwardly directed portion of said axially extending portion having a length terminating radially inwardly of said outer circumferential surface of said inertia ring,



said inertia ring between retained between said radially inwardly directed portion and said radially extending section.

5,299,469

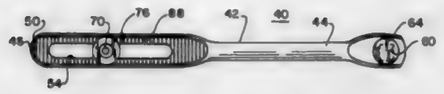
ADJUSTABLE LINKAGE ASSEMBLY

Morris A. Meyer, Dublin, and Wilbur L. Darst, Stoutsville, both of Ohio, assignors to Amanda Bent Bolt Co., Logan, Ohio

Filed Feb. 22, 1993, Ser. No. 20,350

Int. Cl.[5] G05G *1/00*; F16B *9/00*

U.S. Cl. 74—586 **9 Claims**



1. An adjustable linkage assembly which comprises:

a rigid longitudinally extending body member having a central section and a spaced pair of flattened portions each having a top surface and a bottom surface one at each end thereof;

a first opening extending between said top and bottom surfaces formed in said flattened portion at one end of said body member;

an elongated second opening extending between said top and bottom surfaces formed in said flattened portion at the opposite end of said body member;

a first trunnion assembly having a first trunnion and a first mounting element;

wherein said first mounting element projects through said first opening to fixedly attach said first trunnion assembly to the flattened portion at said one end of said body member such that said first trunnion projects laterally from said body member;

a second trunnion assembly having a second trunnion and a second mounting element;

wherein said second mounting element projects through said elongated second opening to attach said second trunnion assembly to the flattened portion at said opposite end of said body member such that said second trunnion projects laterally from said body member; and

wherein said second mounting element is movable in said second opening to adjust the distance between said first and said second trunnions.

5,299,470

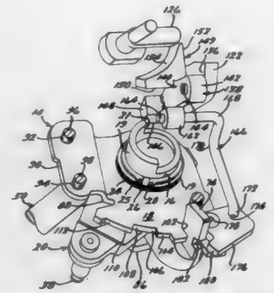
IGNITION INTERLOCK MECHANISM FOR A COLUMN-MOUNTED SHIFT CONTROL ASSEMBLY

William M. Snell, Grand Blanc; David E. Thomas, Rochester Hills, and Michael F. Halacka, Bloomfield Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 21, 1992, Ser. No. 993,550

Int. Cl.[5] B60K *41/04*; G05G *5/08*

U.S. Cl. 74—850 **10 Claims**



1. In a transmission shift control assembly mounted on a vehicle steering column and including a detent plate having a plurality of detents formed thereon including a Park detent, a shift lever having an end thereof pivotable into and out of the Park detent and rotatable to selected detents, a key cylinder rotatable by a key, an ignition interlock mechanism comprising a pivotally mounted actuator member adapted to being pivoted upon rotation of said key cylinder by said key, a blocker member pivotally mounted on said detent plate, linkage means operatively connected between said actuator member and said blocker member to position said blocker member so as to prevent said end of said shift lever from being pivoted out of said Park detent until said key cylinder is rotated by said key.

5,299,471

CUTTING INSERT FOR A ROTARY CUTTING TOOL

Klaus Tank, 9 Warbleton Avenue, Essexwold, Johannesburg, Transvaal, and Andrew I. Lloyd, 52 15th Street, Parkhurst, Johannesburg, Transvaal, both of South Africa

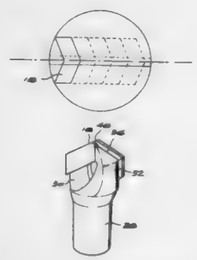
Division of Ser. No. 798,590, Nov. 26, 1991, Pat. No. 5,232,320.

This application May 27, 1993, Ser. No. 68,622

Claims priority, application South Africa, Nov. 26, 1990, 90/9475

Int. Cl.[5] B21K *5/02*

U.S. Cl. 76—108.1 **4 Claims**



1. A method of manufacturing a cutting insert for a rotary cutting tool including providing a blank which comprises a body of relatively soft material and which has first and second opposed major surfaces, with first and second layers of relatively hard material on opposite sides of the body which define portions of the respective major surfaces; and cutting the blank to define a cutting insert having a body with first and second

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sides corresponding to the opposed major surfaces of the blank, so that the first and second sides of the insert include offset cutting edges formed from the respective first and second layers of relatively hard material.

5,299,472

SAW BLADE TIPPING APPARATUS

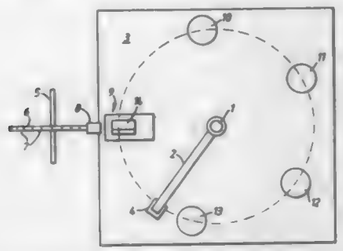
Glynn A. Ellis, Long Eaton, United Kingdom, assignor to Razedge Limited, United Kingdom

Filed Sep. 25, 1991, Ser. No. 765,534

Claims priority, application United Kingdom, Sep. 25, 1990, 9020788

Int. Cl.[5] B32D 65/00

U.S. Cl. 76—112 5 Claims



1. A method of mounting a hard material cutting edge tip forming element to a cutter tool, comprising the steps of

positioning a plurality of tip forming elements at a defined location along a circular track set at a predetermined radius about a pillar,

circularly moving an arm attached to the pillar, the arm being connected to a gripper/pick-up member configured for handling at least one of the plurality of tip forming elements,

transferring with the gripper/pick-up member said at least one of the tip forming elements from its first position to engagement with a tip transfer unit positioned adjacent to the cutter tool, and

mounting said at least one of the tip forming elements to the cutter tool.

5,299,473

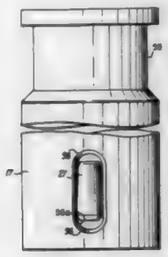
STUD DRIVER AND REMOVER FOR LARGE DIAMETER STUDS

Edward J. Weber, Girard, and Jerry L. Rounds, Erie, both of Pa., assignors to Titan Tool Company, Fairview, Pa.

Continuation-in-part of Ser. No. 966,324, Oct. 26, 1992. This application Mar. 1, 1993, Ser. No. 24,296

Int. Cl.[5] B25B 13/50

U.S. Cl. 81—53.2 4 Claims



1. A tool driven by a driving adaptor for driving and removing a stud relative to a workpiece, the stud having a longitudinal axis and a diameter measured in a transverse direction perpendicular to the longitudinal axis of the stud, the tool comprising:

a main ring with an axial bore, one end of the bore being located adjacent the driving adaptor and the opposite end having an outwardly tapering section;

a core member mounted within the bore for limited axial and rotary movement relative to the main ring;

a plurality of tapered rolls each having a longitudinal axis and being carried by the core member, each of said plurality of rolls cooperating with the outwardly tapering section of the bore for frictionally engaging the stud upon axial movement of the core toward the one end of the bore and for releasing the stud upon axial movement of the core toward the opposite end of the bore; and

a plurality of axially extending cam surfaces formed on the outwardly tapering section of the bore, wherein each of said plurality of cam surfaces is provided for one of said plurality of rolls to lock the main ring and the stud upon rotation of the core member relative to the main ring, wherein

each of said cam surfaces having a radius formed in the outwardly tapering section of the bore and sized as a function of an inside diameter of the main ring, a diameter of one of the rolls and a radius of the stud to be driven and removed.

5,299,474

TAMPER RESISTANT DEVICE FOR THE APPLICATION OF PRESELECTED TORQUE TO SCREWS AND THE LIKE

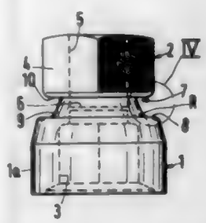
Ralf Hohmann; Ralf Spors, both of Bruchköbel; Gerhard Winterstein, Bad Vilbel, and Heinz Sauer, Ronneburg, all of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 35,745

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211132

Int. Cl.[5] B25B 23/153

U.S. Cl. 81—471 11 Claims



1. A device for applying a preselected torque to a rotary part having an end portion with a surface engageable by a torque transmitting tool, comprising an adapter including a tubular first section non-rotatably surrounding the end portion and having an external surface devoid of any disengaging tool accommodating means; a second section adjacent said first section and having a surface engageable by a torque transmitting tool; a joint connecting said sections and permitting separation of said sections from each other in response to the application of said preselected torque to said second section; and a destructible barrier provided in said first section between the end portion and said joint, wherein said barrier includes a diaphragm which is penetrable by an implement to afford access to the surface of the end portion.

5,299,475

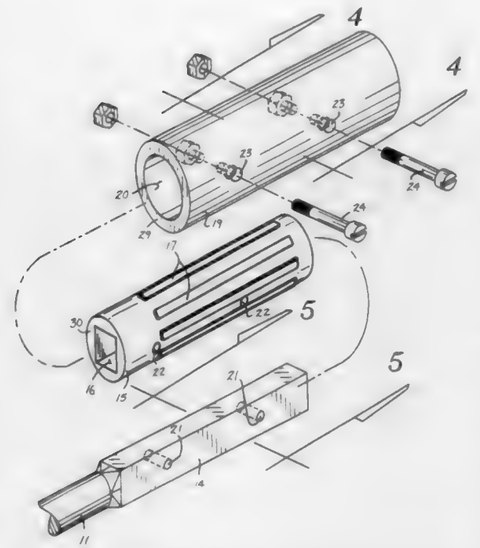
TOOL AND ADJUSTABLE HANDGRIP

Jeffrey A. Stroop, 1914 Saddlebrook Dr., Murfreesboro, Tenn. 37129

Filed Jan. 26, 1993, Ser. No. 9,148

Int. Cl.[5] B25G 1/01

U.S. Cl. 81—489 4 Claims



1. A tool and adjustable handgrip arrangement comprising,

a tool shank, the tool shank having a shank first end, with a tool head mounted to the first end, and

the shank having a shank second end, with a handle assembly extending along the tool shank symmetrically oriented about the tool shank from the second end in a spaced relationship relative to the tool head, and

the handle assembly includes an elongate handle member of rigid construction fixedly mounted to the handle shank, and

at least a first handle sleeve, with the handle member having a predetermined length and the first handle sleeve having a length equal to said predetermined length, and

the handle member is of a parallelepiped configuration, and the first handle sleeve includes a first handle sleeve cavity of said parallelepiped configuration to complementarily receive the handle member therewithin, and the first handle sleeve formed of a resilient material, and

the handle sleeve includes a plurality of parallel resilient ribs of compressible construction in an annular array about the first handle sleeve, and a second handle sleeve, the second handle sleeve having a second sleeve length equal to said predetermined length, and including a second sleeve cavity to complementarily receive the first handle sleeve therewithin, and at least a first bore directed through the handle member, a second bore directed through the first handle sleeve, and a third bore directed through the second handle sleeve, with the first bore, the second bore, and the third bore coaxially aligned, and a fastener directed through the first bore, the second bore, and the third bore to secure the handle member, the first handle sleeve and the second handle sleeve together.

5,299,476

VERTICAL LATHE

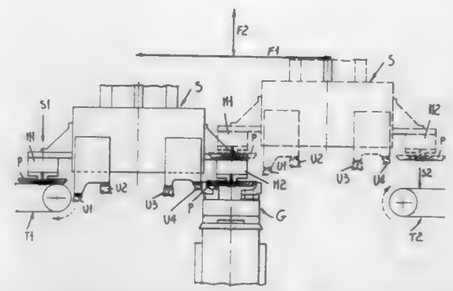
Luigino G. Tommasini, Bologna, and Roberto Sammartin, Selvazzano Dentro, both of Italy, assignors to Minganti S.p.A., Bologna, Italy

Filed Oct. 21, 1992, Ser. No. 964,053

Claims priority, application Italy, Oct. 31, 1991, BO 91 A 000404

Int. Cl.[5] B23B 7/16, 15/00

U.S. Cl. 82—122 3 Claims



1. A vertical lathe for machining a series of unmachined workpieces comprising:

a chuck for receiving an unmachined workpiece and for rotating the unmachined workpiece about a vertical axis for machining;

a feed means for feeding unmachined workpieces sequentially to a pickup station, said pickup station being horizontally spaced from said chuck by a certain distance;

a removing means for removing machined workpieces from a delivery station after the workpieces are machined on said chuck, said delivery station being horizontally spaced from chuck the certain distance and located on a diametrically opposite side of said chuck from said pickup station such that a straight horizontal travel axis is defined by said pickup station, said chuck and said delivery station with said chuck equidistantly from said pickup station and said delivery station along said travel axis; and

an elongate slide having a pickup end and a delivery end spaced from said pickup end, said slide being horizontally disposed and movable parallel to the travel axis between a) a first position where said pickup end is vertically adjacent said pickup station and said delivery end is vertically adjacent said chuck and b) a second position where said delivery end is vertically adjacent said delivery station and said pickup end is vertically adjacent said chuck, said slide also being vertically movable and including

a) a pickup manipulator located at said pickup end of said slide and a delivery manipulator located at said delivery end of said slide with said pickup manipulator and said delivery manipulator being horizontally separated by the certain distance whereby (i) when said slide is in the first position, said slide is moved vertically down and up so that the unmachined workpiece at said pickup station is picked up by said pickup manipulator and at the same time the finished workpiece at said chuck is picked up by said delivery manipulator, and (ii) when said slide is in the second position, said slide is moved vertically down and up so that the finished workpiece picked up from said chuck by said delivery manipulator when in the first position is now deposited by said delivery manipulator to said delivery station and at the same time the unmachined workpiece picked up by said pickup manipulator at said pickup station when in the first position is now delivered by said pickup manipulator to said chuck, and

b) at least one toolholder provided on said slide between

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said pickup manipulator and said delivery manipulator, said toolholder receiving a tool by which the unmachined workpiece rotating on said chuck is machined while said slide is stopped at an intermediate position during movement of said slide between the second and first positions.

5,299,477

METHOD OF SELECTING A TOOL IN A PUNCHING PRESS MACHINE

Keiichiro Miyajima, Yamanashi, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

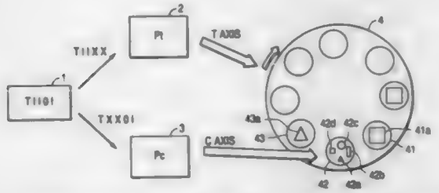
PCT No. PCT/JP91/00994, § 371 Date Mar. 26, 1992, § 102(e) Date Mar. 26, 1992, PCT Pub. No. WO92/01522, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 24, 1991, Ser. No. 842,333

Claims priority, application Japan, Jul. 26, 1990, 2-198142

Int. Cl.[5] B21D *28/02*

U.S. Cl. 83—13 **5 Claims**



1. A method of selecting a tool in a punching press machine which is provided with a plurality of tool holders including at least one multi-tool holder for a plurality of punch tools, comprising the steps of:

(a) reading machining programs including tool selection commands each including at least a holder designation code for designating one of the plurality of tool holders and capable of including a tool designation code for designating one of the punch tools mounted in the one of the tool holders; and

(b) indexing a magazine and the one of the tool holders in accordance with the holder and tool designation codes in each tool selection command every time one of the tool selection commands is read from the machining programs.

5,299,478

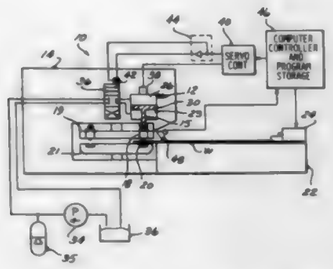
METHOD FOR CONTROLLING PUNCH PRESS NOISE

Gerard J. Schorn, Southampton, and James R. Hunter, Chadds Ford, both of Pa., assignors to Murata Machinery, Ltd., Aichi, Japan

Continuation of Ser. No. 819,322, Jan. 14, 1992, abandoned. This application Jun. 15, 1993, Ser. No. 77,706

Int. Cl.[5] B26D *5/12*; G06F *15/46*

U.S. Cl. 83—13 **1 Claim**



1. A method of controlling the sound levels produced by the operations of a program controlled punch press having a ram driven through workpiece at a work station to punch a hole therein, a program control causing a series of punching operation to be carried out in said punch press over a timer period of operation thereof with a programmed ram velocity, the method comprising the steps of:

positioning a sound detector adjacent the punch station, and monitoring therewith the actual sound level at said sound detector produced by a sampled punching operation in said programmed operation, in real time; and

projecting a time weighted average sound level which will be produced over said time period of operation of said punch press from said sound levels detected in said monitoring step, and reprogramming said control program in real time to vary the programmed ram velocity for subsequent programmed punching operations during said time period of operation so as to maintain said time weighted average sound level within preset limits.

5,299,479

METHOD AND APPARATUS FOR PROVIDING EDGE-SIDE TRACKS OF HOLES AT A PRINTING BELT FOR ROTARY PRINTING MACHINES

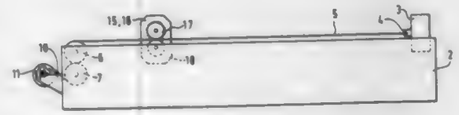
Wilfried Wallmann, Lengerich, and Günter Rogge, Lienen, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jun. 10, 1991, Ser. No. 712,755

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1990, 4018467

Int. Cl.[5] B26F *1/12*

U.S. Cl. 83—18 **6 Claims**



2. Apparatus for providing tracks of holes at side edges of a printing belt for a rotary printing machine which has at least one counter pressure cylinder and at least two printing belt cylinders around which the printing belt is to be led, with one cylinder thereof being provided with a radial ring of pins in the regions of reach of its ends, to mesh with the holes of the printing belt,

the apparatus comprising a machine frame with holding means at one end of the frame for clamping one end of the printing belt and stretching means at an opposite end of the frame for elastically stretching the belt to a predetermined tension, elongate tracks extending along opposite sides of the frame and punching means movably mounted on said tracks for movement parallel to side edges of a printing belt clamped in the frame for punching spaced circular holes along the side edges of the belt whereby the circular holes punched in the stretched printing belt are spaced at a distance substantially equal to the spacing of the radial ring of pins on the printing belt cylinders at the tension of the belt during printing.

5,299,480

METHOD FOR CUTTING WORKPIECES USING A SHUTTLE VISE

Gerald R. Harris, and Mark P. Richards, both of Chouteau, Okla., assignors to Hem, Inc., Pryor, Okla.

Filed Nov. 10, 1992, Ser. No. 974,112

Int. Cl.[5] B23D *51/04*; B26D *7/06*

U.S. Cl. 83—27 **9 Claims**

1. A method of cutting at least one workpiece with a saw assembly having a cutting blade defining a cutting stretch, said method comprising the steps of:

positioning said workpiece for cutting by said blade along a cutting line;

cutting said workpiece by moving at least one of said cutting blade and said workpiece in a manner advancing said cutting blade relative said workpiece along said cutting line from a starting position on one side of said workpiece to a parked position on an opposite side of said workpiece with the entire cutting stretch of said cutting blade being positioned beyond said workpiece to cut through said workpiece and form a cut portion independent of said workpiece;

while said cutting blade is in said parked position, displacing said workpiece and said cut portion away from said cutting line by displacing said workpiece toward said cut portion until said workpiece contacts and moves said cut portion away from said cutting line by a distance sufficient for said cutting blade to be returned along said cutting line without touching said cut portion, and thereafter displacing said workpiece away from said cutting line by a distance sufficient for said cutting blade to be returned along said cutting line without touching said workpiece; and

after said displacing step, returning at least one of said workpiece and said cutting blade in a manner retracting said cutting blade relative said workpiece from said parked position to said starting position.

5,299,481

CARRIER ARM SEAL FOR A MICROTOME OF ULTRAMICROTOME

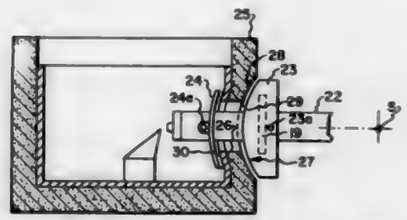
Reinhard Lihl, and Anton Lang, both of Vienna, Austria, assignors to Leica Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 755,056, Sep. 5, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 954,392

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028806

Int. Cl.[5] G01N *1/28*

U.S. Cl. 83—170 **18 Claims**



1. In combination, a microtome and cryogen freezing chamber: said microtome comprising: a frame, an elongated specimen arm, pivot means connecting one end of said specimen arm to said frame for limited vertical movement of said arm about a pivot axis, a specimen holder at the other end of said arm, and a baffle mounted on said specimen arm, said baffle having a baffle surface extending away from said specimen arm, said baffle surface being convex with a center of curvature on said pivot axis; and said freezing chamber comprising: at least one upwardly extending wall, an elongated slot extending through said wall and defining two vertically-aligned, opposing wall surfaces, each of said wall surfaces being in close proximity to said arm, and said baffle surface being in close proximity to said wall and of a size to effectively close said slot, whereby the escape of cryogen is reduced.

5,299,482

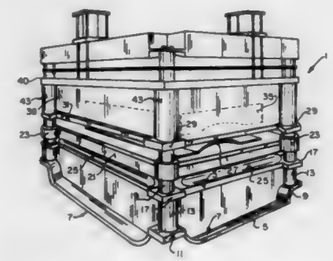
VERTICAL DIE CUTTER

Thomas E. Schmitt, Dauphin, Pa., assignor to Progressive Service Die Company, St. Louis, Mo.

Filed Nov. 23, 1992, Ser. No. 980,352

Int. Cl.[5] B26D *1/02*

U.S. Cl. 83—566 **5 Claims**



1. An apparatus for cutting a three-dimensionally shaped work-piece comprising:

a frame;

a first member movably mounted onto said frame;

a mold mounted on said first member for receiving said work-piece, the mold having a shape which conforms to a final desired shape of the work-piece;

a second member mounted on said frame above said first member, said first member being vertically movable with respect to said second member;

cutting means carried by said second member, said cutting means being pre-positioned to cut the work-piece in the desired shape when said first member is moved to a position immediately beneath said second member;

means for vertically moving said first member to said position immediately beneath said second member to cut said work-piece, said moving means includes at least one inflatable bladder positioned beneath said first member and arranged around its perimeter, said bladder being inflatable to raise said first member to bring said work-piece to said position immediately beneath said second member and being deflatable to lower said first member;

a third member mounted on said frame and disposed beneath said first member, said bladder being supported by said third member.

5,299,483

CUTTING APPARATUS FOR FOAM SPONGES HAVING IRREGULAR CONTOURS

Huang Ber-Fong, Taipei, Taiwan, assignor to Sunkist Chemical Machinery Ltd., Taipei, Taiwan

Filed Feb. 26, 1993, Ser. No. 23,917

Int. Cl.[5] B26D *3/10*

U.S. Cl. 83—870 **1 Claim**

1. An apparatus for cutting foam sponges with irregular contours comprising:

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a) a main frame with a base having slide rails formed on two sides, a vertical frame mounted on a central portion of the main frame, said vertical frame having a separator plate fixed thereto and two upright locating posts installed between a top of the vertical frame and the base;

b) a generally U-shaped cutter table defining a groove on one side thereof, said cutter table being pivotally supported generally at its center of gravity on pins on support columns slidably mounted on the slide rails;

c) a foam sponge clamping mechanism comprising: upper and lower clamping plates; upper and lower clamping plate driving motors fixed on the base; said upper clamping plate driving motor further having a first drive shaft attached to an output shaft thereof which extends to the top of the vertical frame; a chain wheel attached to the first drive shaft by which the output of the upper clamping plate motor is transmitted to a first lead screw operatively attached to the upper clamping plate via a chain; said lower clamping driving motor having a reversing device attached to an output shaft thereof and drivingly connected to a second lead screw operatively attached to the lower clamping plate and said upper and lower clamping plates being mounted on the two upright locating posts, wherein the first and second lead screws are respectively located over and under the separator plate;

d) a cutter driving mechanism comprising: a cutter driving motor mounted on a central rear portion of the cutter

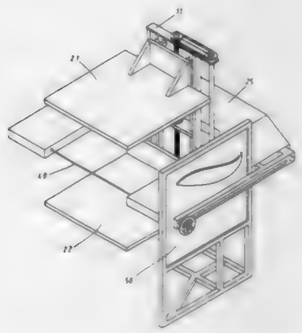


table having an output shaft equipped with a gear and a timing belt drivingly connected to two first cutter drive shafts to rotate the shafts simultaneously in the same direction, said two first cutter drive shafts having gears mounted thereon which are drivingly connected to two second cutter drive shafts located on opposite sides of the cutter table via two timing belts; and the two second cutter drive shafts each having a housing with an eccentric shaft attached thereto the eccentric shafts each attached to a respective rocker arm connected to a cutting blade for moving the blade to and fro;

e) a cutter rotating mechanism incorporated into said cutter table comprising: a hand wheel located on the side of the cutter table defining the groove, duplicating needle linked to the handwheel and extending into the groove; a chain drivingly connecting said hand wheel and a cutter rotating shaft, plurality of first chain wheels arranged on said cutter rotating shaft which are further connected via two chains to two second chain wheels each located on a respective rotary cutter support base on said cutter table, each of said rotary cutter support bases defining a central hole and having a vertical block and a horizontal block on which are respectively provided rotary wheels for holding the cutting blade; and

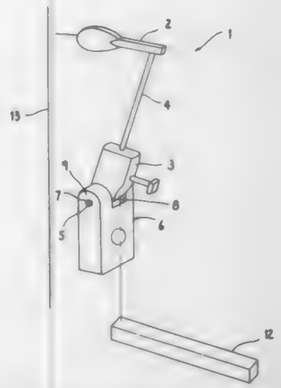
f) a template on which is preset an irregular curve pattern plate inserted into said groove defined by the cutter table such that the pattern will contact the duplicating needle to form a cutting apparatus for foam sponges with irregular outlines.

5,299,484

BEARING STRUCTURE AND TRANSMISSION STRUCTURE IN PIANO

Muneo Ishida; Mitsuo Yamashita, both of Shizuoka; Masanari Onishi, and Masahiro Tanaka, both of Hyogo, all of Japan, assignors to Kawai Musical Instrument Manufacturing Co., Ltd., Shizuoka, Japan

Filed Mar. 12, 1993, Ser. No. 30,840
Claims priority, application Japan, Mar. 27, 1992, 4-071209
Int. Cl.[5] G10C *3/18, 3/00*
U.S. Cl. 84—251 **2 Claims**



1. A bearing structure in a piano action part characterized in that the bearing structure comprises a pin shaft fixed to a hammer member, a support member having through-holes through which the pin shaft passes and cloth members with which the spaces between the through-holes and the pin shaft inserted through the through-hole are packed, and that the support member is made of a cellulose derivative resin composition containing silica having a number of silanol groups of 3.0 or less per 100 square Å and a BET specific surface area of 100 to 210 m^2/g.

5,299,485

STRINGED INSTRUMENT PICK AND SLIDE HOLDER

Dean M. Denton, 164 A Kingston Rd., Danville, N.H. 03819

Filed May 12, 1993, Ser. No. 60,854
Int. Cl.[5] G10D *3/18*
U.S. Cl. 84—329 **10 Claims**

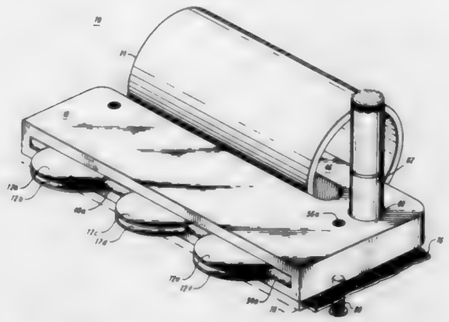
1. A combined pick and slide holder for attaching to a support strap coupled to a stringed musical instrument, comprising:

a pick and slide holder body having first and second parallel major planer surfaces separated a predetermined distance, said predetermined distance forming a pick and slide holder body thickness, said first and second parallel major planer surfaces and said pick and slide holder body thickness defining a first pair of parallel edges having a first predetermined edge length, and a second pair of parallel edges having a second predetermined edge length, said second pair of parallel edges perpendicular to said first pair of parallel edges, each of said first and second pair of parallel edges including first and second parallel sides;

one of said first and second parallel sides of said first pair of parallel edges including a pick holder compartment disposed inwardly from said one of said first and second parallel sides of said first pair of parallel edges, and extending between said first and second major planer surfaces, said pick holder compartment including first and second pick holder compartment walls;

a resilient pick holder member, disposed in said pick holder compartment, for frictionally engaging said plurality of stringed musical instrument picks and holding said plurality of stringed musical instrument picks in said pick holder compartment until forcibly removed by a user; and

a stringed musical instrument slide holder member proximate the other of said first and second parallel sides of said first pair of parallel edges, said other of said first and second parallel sides disposed opposite and diametrically opposed from said one of said first and second parallel sides including said pick holder compartment, said stringed musical instrument slide holder member including a first region uncoupled to the remainder of said pick



and slide holder body, and a second region coupled to said pick and slide holder body, said first region formed by a cutout region in said pick and slide holder body, said cutout region extending from one of said first and second parallel sides of said second pair of parallel edges toward, but not completely to the other of said first and second parallel sides of said first and second parallel edges, said slide holder member adapted for being inserted through a central region of an annular shaped stringed musical instrument slide, and for frictionally engaging said stringed musical instrument slide with said support strap to which said pick and slide holder is attached and with said slide holder member, for retaining said musical instrument slide until forcibly removed by a user; and

means for facilitating an attachment of said combined pick and slide body to said musical instrument support strap.

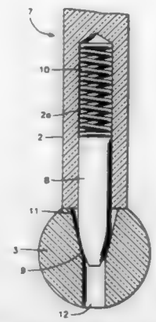
5,299,486

MOUNTING ARRANGEMENT FOR A KEY SHAFT IN A MUSICAL INSTRUMENT

Roberto Weingrill, Sao Paulo, Brazil, assignor to Weril Instrumentos Musicais Ltd., Franco da Rocha, Brazil

Continuation of Ser. No. 670,936, Mar. 18, 1991, abandoned. This application Jun. 15, 1992, Ser. No. 899,027
Int. Cl.[5] G10D *7/00, 7/08*
U.S. Cl. 84—380 R **2 Claims**

1. A mounting arrangement for a key shaft of a musical instrument, said shaft having a finger pad and a key attached thereto for operating a valve on the instrument when the finger pad is moved, the mounting arrangement comprising bearings on the instrument in which opposite ends of the shaft are journalled, the arrangement including a blind bore in one end of the shaft, an elongate tapered pin in the blind bore, a spring



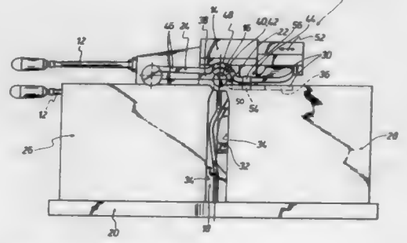
in the blind bore urging the pin outwardly, and a tapered bore in one of said bearings receiving the pin.

5,299,487

WEAPONS SYSTEM WITH AT LEAST ONE BARREL

Roland Bertiller, Schramberg; Helmut Reudelsterz, Oberndorf, and Friedhelm Kersting, Brakel, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Oberndorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 807,073, Dec. 13, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,601
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 4040327
Int. Cl.[5] F41A *9/29, 9/35, 9/56*
U.S. Cl. 89—33.14 **8 Claims**



1. A weapon system comprising:

a gun carriage;

two cradle supports mounted on said gun carriage, a weapon carrier pivotally mounted on said two cradle supports by trunnion means, said trunnion means including two lateral trunnions rotatable on said two cradle supports, said trunnion means adjusting elevation positions of said weapon carrier by pivoting said weapon carrier about said two lateral trunnions;

a barrel mounted on said weapon carrier and movable with said weapon carrier into said elevation positions;

first feed means for feeding ammunition to said barrel, said first feed means including a feed section opening into said barrel, said first feed means also having a first feed means connection end section spaced from said feed section, said first feed means connection end section being positioned adjacent one of said two lateral trunnions, said first feed means connection end section having a substantially arc-shape which is substantially concentric with said one of said two lateral trunnions, and said first feed means has means for variably extending longitudinally over a longitudinal path oriented in parallel to the barrel, within pre-

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determined movement limits corresponding to a possible recoil movement of the barrel relative to the weapon carrier; and

second feed means for feeding ammunition into said first feed means connection end section, said second feed means including a second feed means connection end section positioned adjacent said one of said two lateral trunnions, said second feed means connection end section having a substantially arc-shape which is substantially concentric with said one of said two lateral trunnions, said substantially arc-shape of said second feed means connection end section positioned adjacent to said substantially arc-shape of said first feed means connection end.

5,299,488

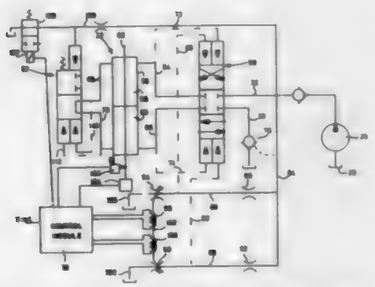
ACTIVE SUSPENSION SYSTEM

George Kadlicko, Mississauga, and Will Halina, Toronto, both of Canada, assignors to Microhydraulics Inc., Ontario, Canada

Continuation-in-part of Ser. No. 741,542, Aug. 7, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 929,242

Int. Cl.[5] **F15B** *9/09*

U.S. Cl. 91—363 A **40 Claims**



1. An actuator for an active suspension system comprising a hydraulic actuator having a cylinder and a piston moveable within the cylinder to define a pair of chambers within the cylinder, a control valve to control the flow of fluid between respective chambers and one of a source of pressurized fluid and a reservoir, and a control system to control said valve and thereby movement of said piston within said cylinder, said control system including pressure sensing means to determine the pressure differential across said piston and provide a control signal to said valve to allow flow through said valve to reduce said pressure differential, a load sensing means to sense loads imposed on said actuator and operable upon said control valve to regulate flow to maintain a sensed load at a predetermined magnitude and a position sensing means operable upon said control valve to regulate flow to maintain said piston at a predetermined location within said cylinder.

5,299,489

PRESSURE CYLINDER WITH LOW TOLERANCE FIT CAPABLE OF SUPPORTING LARGE TRANSVERSE LOADS

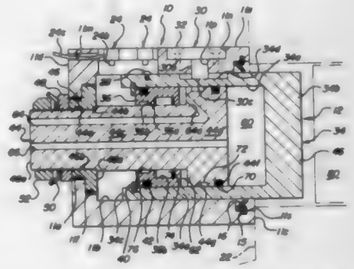
Robert E. Obrecht, Bloomfield Hills, and Edward J. Waltonen, Southfield, both of Mich., assignors to REO Hydraulic Pierce & Form, Detroit, Mich.

Continuation of Ser. No. 701,763, May 17, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,451

Int. Cl.[5] **F16J** *15/18;* **F01B** *25/26, 15/02*

U.S. Cl. 92—5 R **15 Claims**

1. A pressure cylinder comprising a housing including a rear wall and defining a blind bore having a central axis and extending forwardly from the rear wall and opening at a front end of the housing; and a piston having a cross-sectional configuration corresponding to the cross-sectional configuration of the cylinder bore and mounted for axial sliding movement in the cylinder bore along said axis in response to introduction of pressurized fluid between a retracted position and an extended position in which a front end of the piston extends beyond a front end of the cylinder bore, characterized in that the cylinder bore has a constant diameter throughout its length, the piston defines a hollow defining a piston bore, the cylinder includes a core member including a central rod portion extending through a wall of the piston and into the piston bore, and a piston portion slidably mounted in the piston bore and dividing the piston bore in a forward pressure chamber and a rearward pressure chamber, a first passage extends axially through the core rod portion and opens at its rear end externally of the cylinder housing and at its forward end in the forward pressure chamber, a second passage extends axially through the core



rod portion and opens at its rear end externally of the cylinder housing and opens at its forward end in the rearward pressure chamber, the pressurized fluid is introduced into the forward pressure chamber through the first passage and introduced into the second pressure chamber through the second passage, the housing is configured such that there are no points on the housing along said axis forwardly of the piston, the piston has a constant diameter throughout its length corresponding to the diameter of the cylinder bore, the piston defines a sliding and contiguous interface with the cylinder bore over substantially the entire peripheral surface of the piston, the area between the rear wall of the piston and the rear wall of the cylinder housing is maintained at atmospheric pressure at all times, and the contiguous interface between the piston and the cylinder bore is devoid of fluid seals.

5,299,490

PISTON WITH FLUSH CONNECTING WALL SECTIONS AT PIN BOSS SURFACE

Josef Harrer, Allersberg; Klaus Kofahl, Weinstadt-Beutelsbach, and Peter Stocker, Sulzbach a.d. Murr, all of Fed. Rep. of Germany, assignors to Alcan Deutschland GmbH, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,652

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4109160

Int. Cl.[5] **F16J** *1/04;* **F01M** *1/00*

U.S. Cl. 92—208 **13 Claims**

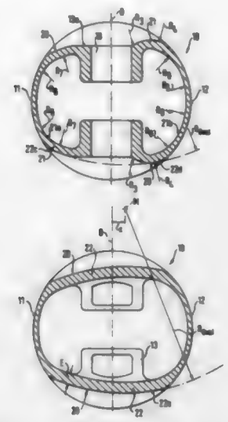
1. In a piston for internal combustion engines having substantially circular sleeves,

a piston skirt having a diameter, thrust and counter-thrust sides and being substantially closed along its periphery,

pin bosses set back with respect to the piston skirt diameter in the direction towards the piston axis to an extent that the spacing between the outer pin boss surfaces corresponds to 60 to 80% of a piston diameter,

two supporting skirt wall sections on the piston skirt on the thrust and counter-thrust sides to receive transverse forces,

the supporting skirt wall section on the thrust side being larger at least in the peripheral direction of the skirt than the supporting skirt wall on the counter-thrust side, and two wall sections connecting the supporting skirt wall sections which are respectively continuously convexly curved outwards along the periphery of the piston skirt at least at the open ends of the skirt, the improvement comprising



the connecting wall sections bordering in a circumferential direction from the pin bosses being positioned with their outer surfaces passing flush into the outer surfaces of the pin bosses, and extending convexly from the respective supporting skirt wall to the outer pin boss surface.

5,299,491

BEVERAGE EXTRACTING APPARATUS FOR VENDING MACHINES

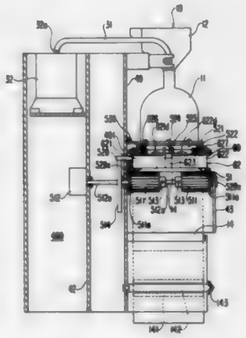
Kazuki Kawada, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed May 11, 1993, Ser. No. 59,272

Claims priority, application Japan, May 11, 1992, 4-030598[U]

Int. Cl.[5] **A47J** *31/32*

U.S. Cl. 99—289 T **6 Claims**



1. A beverage extracting apparatus for vending machines comprising:

a cylinder having an inflow port and an open bottom, water and a raw material of a beverage introduced into said cylinder through said inflow port and mixed in said cylinder;

a continuous filter member disposed below said bottom of said cylinder;

filter support means for supporting and filter member and for vertically moving said filter member into and out of contact with said cylinder to open and close said bottom of said cylinder;

advancing means for advancing said filter member onto said filter support means, said advancing means including, a pair of first roller elements, driving means for rotating said first roller elements, a pair of second roller elements, a supporting member for rotatably supporting said pair of second roller elements above said pair of first roller elements with each roller element of said second pair disposed above a corresponding roller element of said first pair, said driving means for causing said supporting member to pivot, said pair of said second roller elements pivoted into or out of contact with said pair of first roller elements by pivoting of said supporting member, the improvement comprising:

said supporting member comprising a first supporting element rotatably supporting one of the pair of second roller elements, a second supporting element separated from said first supporting element and rotatably supporting the other of said pair of second roller elements, and a bridging element fixed to one of said first and second supporting elements and removably in contact with the other of said first and second elements, and first and second supporting elements independently acted upon so as to be pivoted to a position in which the second pair of roller elements are in contact with the first pair of roller elements.

5,299,492

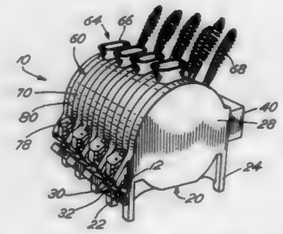
MULTIPLE VERTICAL BAKER FOR WAFFLES AND PANCAKES

Donald A. Carbon, 4047 Wildon Ct., Buchanan, Mich. 49107, and Richard F. Green, 5115 Lake LeClare, Lutz, Fla. 33549

Filed Oct. 5, 1992, Ser. No. 956,381

Int. Cl.[5] **A21B** *5/02;* **A47J** *37/00*

U.S. Cl. 99—373 **20 Claims**



1. A baker for waffles, pancakes and similar food items, said baker comprising:

a base, a baking member having components pivotally separatable about a first axis supported upon said base and including inlet means for accepting a liquid food item mix poured therethrough into said baking member, pivot means connecting said baking member to said base for pivotally supporting said baking member between a baking position overlying said base and an off-set position relative to said base whereby said food item mix may be removed in a baked form from said baking member when its said components are separated, said inlet means being located in an upward orientation relative to said base and baking member when said baking member being in its said baking position to allow said food item mix to be poured therethrough into the baking member, said pivot means being shiftable in a vertical plane about a second axis.

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5,299,493

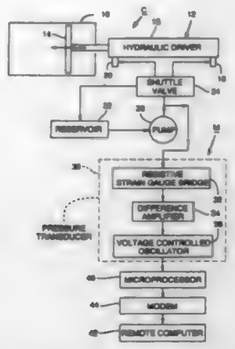
SYSTEM FOR MONITORING TRASH COMPACTORS

Martin J. Durbin, Oak Forest, and Morris Simon, Northbrook, both of Ill., assignors to One Plus Corp., Northbrook, Ill.

Filed Oct. 13, 1992, Ser. No. 959,709

Int. Cl.[5] B30B *15/16*

U.S. Cl. 100—50 **15 Claims**



1. A unit for monitoring a trash compactor of a type comprising a container, a ram operative in compacting strokes for compacting trash within the container, and means for applying force to drive the ram, the unit comprising

(a) means for sensing force applied to the ram at successive times during each compacting stroke and

(b) means for determining fullness of the container of the trash compactor by

(1) generating a series of signals having values representative of the sensed force at successive times during such compacting stroke,

(2) determining which generated signal value is the maximum generated value, and

(3) comparing the maximum generated signal value to a threshold value indicative of fullness of the container of the trash compactor.

5,299,494

STENCIL DRIVE WITH MAIN AND AUXILIARY DRIVE MEANS

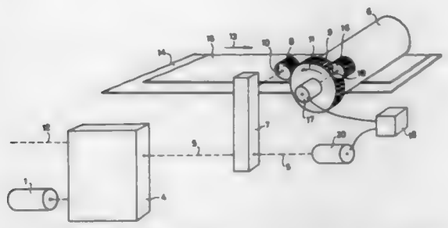
Henricus J. Peters, Cuijk, Netherlands, assignor to Stork Brabant B.V., Netherlands

Continuation of Ser. No. 540,217, Jun. 19, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 999,660

Claims priority, application Netherlands, Jun. 26, 1989, 8901608

Int. Cl.[5] B41L *13/04*

U.S. Cl. 101—116 **4 Claims**



1. In a device for driving at least one rotary screen printing stencil, the device of the type having first main drive means having a first gear wheel and a stencil gear wheel which generally is a circular toothed element which is fixedly connected to the stencil and the axis of the stencil gear wheel coinciding with the axis of the stencil, the first gear wheel meshing with the stencil gear wheel, and the second main drive means for moving a web to be printed at right angles to the axis of the stencil and against the stencil, the first and second main drive means being synchronized with each other, the improvement therein comprising:

first auxiliary drive means for preventing skips or jumps in printing with the stencil and comprising a second gear wheel which meshes with the stencil gear wheel, the first auxiliary drive means further comprising an auxiliary motor adapted for driving said second gear wheel with a constant torque such that one of the first or said second gear wheels drives the stencil and the other of the first or said second gear wheels tends to brake the stencil, whereby skips or jumps in printing with the stencil, which normally can result from play between the first gear wheel and the stencil gear wheel, are prevented.

5,299,495

CYLINDER MOISTENING ASSEMBLY

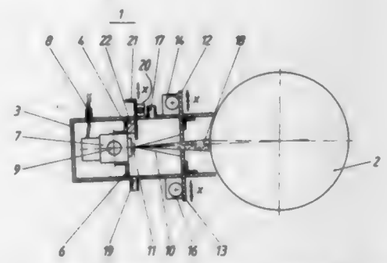
Martin H. Schoeps; Georg Schneider, both of Würzburg, and Kurt J. Weschenfelder, Zell a. Main, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 914,575

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, 4125012

Int. Cl.[5] B41L *25/00*

U.S. Cl. 101—147 **9 Claims**



1. A cylinder moistening assembly useable to moisten a cylinder of an offset rotary printing press, said cylinder moistening assembly comprising:

a printing press including a cylinder to be moistened;

a housing secured to said printing press and adjacent said cylinder to be moistened;

a plurality of fan spray nozzle devices positioned in said housing and disposed axially adjacent each other, said plurality of fan spray nozzle devices being usable to direct a moistening fluid toward said cylinder;

a spray nozzle in each of said fan spray nozzle devices, each of said spray nozzles producing a spray of said moistening fluid directed in a spray path toward said cylinder and having a spray area, portions of said moistening fluid spray areas for adjacent ones of said spray nozzles overlapping and forming an uneven, non-smoothed moistening fluid spray; and

a screen assembly interposed in said housing in said spray path between said spray nozzles and said cylinder to be moistened, said screen assembly including movable upper and lower spaced screen plates having adjacent upper and lower edges shaped to form a shaped spray outline in said spray areas of said spray nozzles, said spray of moistening fluid contacting said screen assembly and passing through said shaped spray outline to form a smooth, even shaped spray of said moistening fluid for even distribution over a surface of said cylinder being moistened.

5,299,496

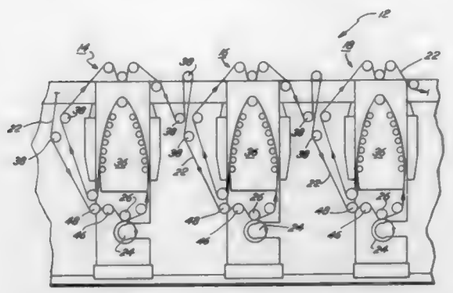
WEN HANDLING APPARATUS HAVING IMPROVED IMAGE REGISTRATION SYSTEM AND METHOD

John R. Martin, 5635 Nebeshonce Dr., Rockford, Ill. 61103, and Roger Cederholm, 10959 Hamborg Rd., Roscoe, Ill. 61073

Continuation of Ser. No. 849,829, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 515,576, Apr. 27, 1990, abandoned. This application Dec. 2, 1992, Ser. No. 985,363

Int. Cl.[5] B41F *5/06, 13/02*

U.S. Cl. 101—181 **19 Claims**



1. In a web handling apparatus for a moving web that travels along a predetermined path of travel in the web handling apparatus and that is adapted to have high quality, multi-color images printed thereon at relatively high speeds in the web handling apparatus; and where the web handling apparatus includes: a first upstream station having a first pair of nip rolls that are driven at a preselected, constant speed and that print a series of regularly spaced, repeated images on the moving web as the moving web passes between the nip of the first pair of nip rolls, with at least one of the rolls of the first pair of nip rolls having a cylindrical surface which deforms when the first pair of nip rolls are forced against each other as the moving web passes therebetween; and a second station positioned downstream, along the path of travel of the moving web, from the first station and having a second pair of nip rolls that are driven at the preselected, constant speed and that perform a second, selectively one of a printing operation and a cutting operation with respect to the images, which were printed on the moving web upstream from the second station, as the moving web passes between the nip of the second pair of nip rolls of the second station, with at least one of the rolls of the second pair of nip rolls having a cylindrical surface which deforms when the second pair of nip rolls are forced against each other as the moving web passes therebetween, with the second pair of nip rolls of the second station being positioned so that the moving web passes over a relatively long span, along its path of travel, between the nip of the first pair of nip rolls of the first station and the nip of the second pair of nip rolls of the second station, and with the successful performance of the second operation being dependent on the images being positioned, along the moving web, at evenly spaced intervals, with respect to their adjacent images, as the images pass between the nip of the second pair of nip rolls of the second station, the improvement comprising a system that controls the print-to-print or print-to-cut registration of the images printed on the moving web and that functions, independently of any sensing of the tension condition of the moving web and of any attempt to change the web tension condition of the moving web in response to sensed web tension conditions, this improved registration system comprising:

a driven nip roll that is disposed adjacent to and upstream of the nip of the second pair of nip rolls of the second station so that the driven nip roll is adapted to drive the moving web as the moving web passes about the driven nip roll and so that the length of the span of the moving web between the driven nip roll and the nip of the second pair of nip rolls of the second station is short, as compared to the length of the span of the moving web between the nip of the first pair of nip rolls of the first station and the nip of the second pair of nip rolls of the second station; and

means for driving the driven nip roll so that the driven nip roll continuously drives the moving web, as the moving web passes about the driven nip roll, at a speed that is the same as the preselected speed at which the first and second pairs of nip rolls are being driven, with the operation of the driving means being independent of any sensing of the tension condition of the moving web and of any attempt to correct variations of the tension condition of the moving web.

5,299,497

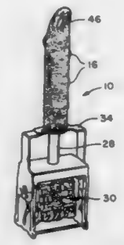
HANDLE STRUCTURE FOR A STAMPING DEVICE

Ken Dias, Concord, Calif., assignor to GB Products International Corp., Concord, Calif.

Continuation-in-part of Ser. No. 881,225, May 11, 1992, abandoned. This application Jan. 26, 1993, Ser. No. 9,033

Int. Cl.[5] B41K *1/46*

U.S. Cl. 101—405 **2 Claims**



1. A stamping device for imprinting sheet material with indicia comprising: a frame, a pad having an imprinting surface mounted to and carried by said frame, and a handle secured to said frame for moving said frame and pad into contact with sheet material, said handle comprising a fingers-palm engageable portion and a thumb engageable portion, said fingers-palm engageable portion comprising a rigid cylindrical core secured to said frame on an axis perpendicular to the imprinting surface of the pad and a resilient outer contact member, said thumb engageable portion being flexible and having a thumb contact surface inclined relative to the axis of said cylindrical core; whereby manual engagement of said handle and movement of said pad into contact with sheet material compresses the finger-palm engageable portion and flexes the thumb engageable portion.

5,299,498

MAGAZINE ASSEMBLY FOR AUTOMATICALLY CHANGING PRINTING PLATES

Nikolaus Spiegel, Walldorf; Hans-Georg Jahn, Wiesenbach; Hermann Beisel, Walldorf, and Helmut F. Jäger, Königsbach-Stein, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 938,897

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1991, 4129022

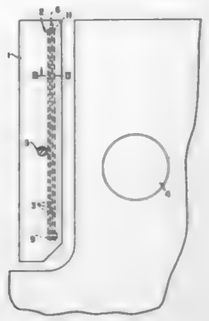
Int. Cl.[5] B41L *47/14*

U.S. Cl. 101—477 **8 Claims**

1. In an apparatus for automatically changing printing plates, a magazine assembly comprising a magazine having means for receiving a cassette therein, a cassette receivable in said magazine and having means for receiving a plurality of printing plates therein, and means for aiding removal of the printing plates from said cassette upon demand for feeding the printing plates to a printing cylinder of a printing unit, said receiving

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means of said magazine being vertical guides, as viewed in an upright position of said magazine, and said cassette having



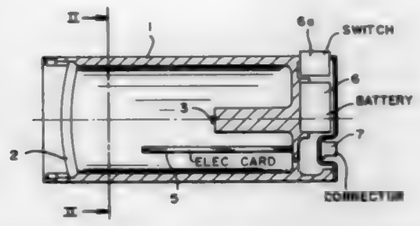
laterally spaced guides sliding vertically on said vertical guides.

5,299,499

INFRARED DETECTION DEVICE

Bernard M. E. Christophe, Paris, and Roger Muller, Deuil-la-Barre, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Continuation of Ser. No. 271,785, Jun. 3, 1981, abandoned. This application Dec. 30, 1992, Ser. No. 999,671
Claims priority, application France, Aug. 8, 1980, 80 17555
Int. Cl.[5] F42C *13/02*
U.S. Cl. 102—213 3 Claims



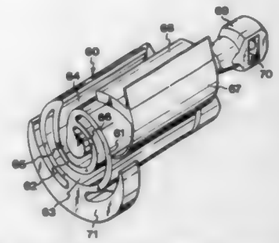
1. Infrared detection device carried by a missile falling to earth and rotating about its axis with a given inclination, said device being intended to trigger off firing of the missile when it detects a source of infrared emission of predetermined type, the device comprising at least one infrared detector sensitive to the infrared emission of said source and an amplifier device connected to the output of the detector, characterized in that said detection device further comprises a threshold device which stops the signal issuing from the amplifier device if said signal is lower than a threshold which varies substantially as $1/d^2$, d being the distance of the missile to the ground, and a means for inhibiting firing in the case of saturation of the amplifier device.

5,299,500

CONNECTING BLOCK FOR IGNITION DEVICES

Vidon Lindquist; Lars-Gunnar Löfgren, both of Nora; Tord Olsson, Gyttorp; Allan Sälåker, and Bengt Wahlqvist, both of Vikmanshyttan, all of Sweden, assignors to Nitro Nobel AB, Nora, Sweden

Filed Feb. 14, 1992, Ser. No. 835,384
Claims priority, application Sweden, Feb. 18, 1991, 9100475; May 31, 1991, 9101684
Int. Cl.[5] C06C *5/04*; F42B *3/10*
U.S. Cl. 102—275.12 42 Claims



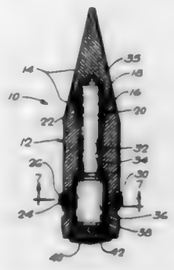
1. A block for holding an exploding pyrotechnic ignition device, comprising:
an ignition device;
an inner wall for substantially surrounding at least an axial part of the ignition device,
a space substantially surrounding the inner wall,
an outer wall substantially surrounding the inner wall and the space, and
fixation means for keeping the ignition device, the walls and the space in relative positions.

5,299,501

FRANGIBLE ARMOR PIERCING INCENDIARY PROJECTILE

Richard V. Anderson, Arlington, Tex., assignor to BEI Electronics, Inc., San Francisco, Calif.

Division of Ser. No. 590,473, Sep. 28, 1990, Pat. No. 5,198,616. This application Feb. 16, 1993, Ser. No. 18,084
Int. Cl.[5] F42B *12/04, 12/44*
U.S. Cl. 102—364 7 Claims



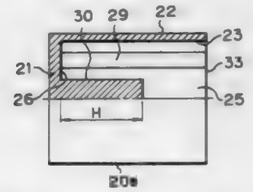
1. An ordnance projectile, comprising
a frangible porous generally cylindrical body made of a frangible molded sintered powder material consisting substantially of metal powder,
said body having a tapered substantially conical nose portion thereon,
said body being frangible into a multitude of granules upon impact of the body with a target,
said body having an internal axial guide opening therein disposed behind said nose portion,
a penetrator rod snugly received in said axial opening,
said penetrator rod being made of a hard heavy metal comprising a tungsten alloy,
said penetrator rod having a front end portion and a rear end portion,
said front end portion being tapered and substantially conical,
said rear end portion being substantially cylindrical,
said penetrator rod being slidable in said axial opening,
said penetrator rod being movable from a rear position to a front position and being effective to punch a hole in the target upon impact of the penetrator rod with the target,
said axial guide opening in said body having an enlarged rear portion,
an incendiary pellet snugly and directly received in said enlarged portion of said axial opening and engaging the rear end of said penetrator rod,
said pellet having a larger diameter than said penetrator rod,
and a massive metal closure plug securely mounted in said enlarged rear portion of said axial opening for securely retaining said incendiary pellet therein and for causing rapid ignition of said incendiary pellet by compression of said pellet and by forcing said pellet through the hole following impact of the projectile with the target whereby ignited particles of said incendiary pellet are energetically propelled through the hole.

5,299,502

CONTAINER FOR SHOT OF SHOTSHELL

Nagatoshi Maki, 2-48-4, Kamiishihara, Chofu-shi, Tokyo, Japan

Division of Ser. No. 694,135, May 1, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 943,109
Claims priority, application Japan, Nov. 29, 1989, 1-307525; Apr. 10, 1991, 3-103590
Int. Cl.[5] F42B *7/02*
U.S. Cl. 102—457 1 Claim



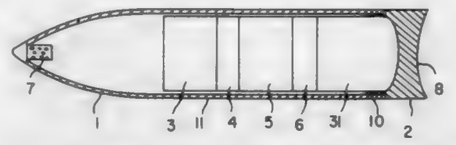
1. In a shotshell for a shotgun, including a case in which powder, a wad, a container, and shot pellets contained in the container are charged in this order, the case being crimped at an open end thereof, wherein the container for containing the shot pellets comprises;
a container body comprised of a cylindrical tube and a disc integral therewith at a rear end of the tube and in contact with the wad, said disc being coaxial to the tube, said tube defining a completely closed circular loop at a front end as viewed from the front thereof, said disc and said tube having a diameter slightly smaller than a bore of an associated shotgun to be used,
said container body being provided with an open hollow portion defined by an inner peripheral surface of the tube and an end face of the disc,
said cylindrical tube being provided on an inner peripheral portion thereof with a plurality of ribs integral therewith which extend in parallel with a longitudinal axis of the container body,
said container body being provided with a post coaxial thereto and integral therewith, which projects from the disc in the open hollow portion of the container body,
said container body being made of plastics capable of being deformed when pressed by the shot pellets upon firing to automatically form a large number of depressions on the inner peripheral portion of the cylindrical tube, the ribs and the post, and,
said shot pellets being interconnected and held to the container body due to the cooperation of the depressions and frictional force of the shot pellets acting therebetween to retard the time of separation of the shot pellets from the container.

5,299,503

SHELL WHOSE BASE SERVES AS THE PARACHUTE CAN OF A SUBMUNITION

Jean-Pierre Frehaut, Versailles, and Pascal Laurend, Jouy le Potier, both of France, assignors to Thomson-Brandt Armements, La Ferte Saint Aubin, France

Filed Nov. 9, 1992, Ser. No. 973,732
Claims priority, application France, Dec. 10, 1991, 91 15268
Int. Cl.[5] F42B *12/58, 10/56*
U.S. Cl. 102—489 5 Claims



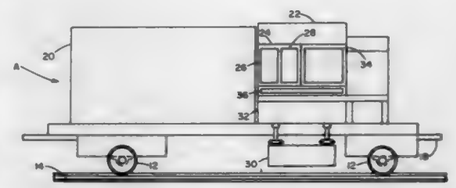
1. Shell containing sub-munitions stacked one behind the other and closed at the rear by a base, each sub-munitions being equipped at its rear with a parachute and a can containing the folded parachute, the separation of each sub-munition from its can permitting the deployment of the parachute, wherein the can of the sub-munition situated at the rear of the shell consists of the shell base, attached to the aforementioned sub-munition after its ejection from the shell.

5,299,504

SELF-PROPELLED RAIL HEATER CAR WITH MOVABLE INDUCTION HEATING COILS

Alan C. Abele, Zelienople, Pa., assignor to Technical Rail Products, Incorporated, Cleveland, Ohio

Filed Jun. 30, 1992, Ser. No. 906,503
Int. Cl.[5] E01B *29/00*
U.S. Cl. 104—2 21 Claims



17. A rail heater car comprising:
a power generation means for generating power required for operation of the car;
induction heater means connected to an extending from the car for operational engagement with a set of rails to induce heat into the set of rails; and,
drive means for propelling the car along the set of rails, the drive means including a creep drive transmission for driving the car in a creep mode during operation of the induction heater means and a transportation drive transmission for driving the car in a transportation mode at other times, the drive means receiving its power requirements from the power generation means.

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5,299,505

BALLAST TAMPING MACHINE HAVING PIVOTABLE AND EXTENDABLE AUXILIARY LIFTING AND LINING UNIT FOR BRANCH TRACK

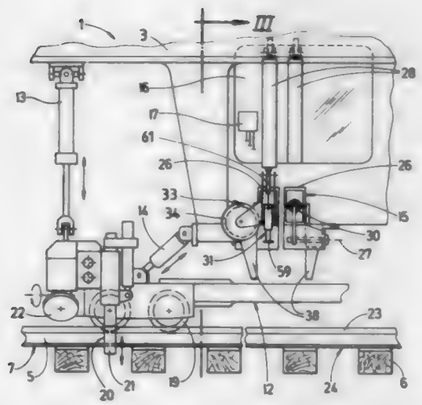
Josef Theurer, Vienna, and Friedrich Peitl, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 18, 1993, Ser. No. 19,092

Claims priority, application Austria, Mar. 25, 1992, 613/92; Nov. 13, 1992, 2242/92

Int. Cl.[5] E01B *29/04*

U.S. Cl. 104—7.2 9 Claims



1. A ballast tamping machine for leveling, lining and tamping a track switch comprising a main track and a branch track comprising a rail laterally adjacent the main track and having a rail head defining a running surface, which comprises

(a) a machine frame extending in a longitudinal direction and supported on undercarriages,

(b) a tamping unit vertically adjustably mounted on the machine frame and comprising

(1) reciprocable vibratory tamping tools,

(c) a track lifting and lining unit mounted on the machine frame and comprising

(1) lifting and lining drive means,

(2) a flanged roller and

(3) a lifting tool, and

(d) an auxiliary track lifting device associated with the track lifting and lining unit, the auxiliary track lifting device comprising

(1) a carrier frame extending perpendicularly to the longitudinal direction and having a free end,

(2) a tool for gripping the branch track rail mounted on the free carrier frame end, the carrier frame being pivoted to a side of the machine frame remote from the branch track rail gripping tool for pivoting about an axis extending in the longitudinal direction of the machine frame,

(3) an auxiliary lifting drive means,

(4) a displacement drive for adjusting the branch track rail gripping tool on the carrier frame relative to the machine frame, and

(5) a part for contacting and resting on the running surface of the branch track rail head, said part being mounted adjacent the branch track rail gripping tool.

5,299,506

GUIDE APPARATUS FOR TRANSPORTATION SYSTEM HAVING DIFFERING IN HEIGHT RAIL JOINTS TO REDUCE NOISE AND VIBRATION DURING VERTICAL TRAVEL

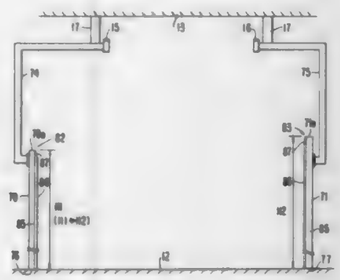
Takuya Kakida, Kurashiki; Noriyuki Inoue, Asakuchi; Shoichi Okada, Kurashiki; Akira Mikami, Kurashiki; Akiyoshi Kimura, Kurashiki, and Yuji Watanabe, Kojima, all of Japan, assignors to Mitsuishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 953,464

Claims priority, application Japan, Oct. 4, 1991, 3-80923[U]

Int. Cl.[5] B61B *3/00*

U.S. Cl. 104—98 6 Claims



1. In a guide apparatus for a transportation system of the type including a horizontal traversal guide rail supported on a ceilling member of a building, a traversal unit movable along said traversal guide rail, and a pair of vertical guide rails for guiding vertical movement of a vertically moving body carried by said traversal unit;

said vertical guide rails each comprising an upper rail portion secured to said traversal unit and extending beneath said traversal unit, and a lower rail portion separated by a gap from said upper rail portion and having an upper end disposed beneath a lower end of said upper rail portion when said traversal unit is in a selected position of traverse, said lower rail portion continuing into said upper rail portion when said traversal unit stops at said selected position, the improvement comprising:

said respective lower rail portions each are supported from said ceiling member of said building; and

a joint portion between said said upper rail portion and a said lower rail portion of one said guide rail being located at a height different from that of a corresponding joint portion of the other said guide rail, wherein said traversal unit passes over only a single said joint portion during any vertical movement.

5,299,507

RING GUIDEWAY FOR RAPID RAIL TRANSIT SYSTEM

Edward E. Maynard, Sr., 3247-A Cofer Rd., Richmond, Va. 23234

Filed Feb. 17, 1993, Ser. No. 18,526

Int. Cl.[5] B61B *5/00*

U.S. Cl. 104—138.1 9 Claims

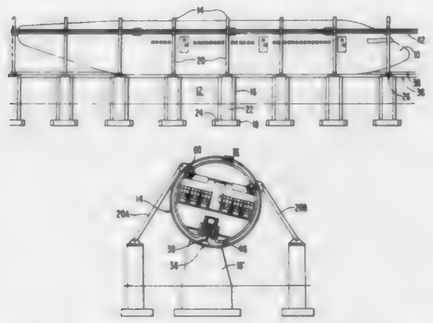
9. A guideway for a vehicle, comprising:

plural steel reinforced support bases each having a subterranean concrete footing;

a plurality of circular support rings, each ring being partially embedded within a respective steel reinforced support base, said plurality of rings being spaced apart along a desired path of travel of the vehicle;

plural support braces for bracing each said ring against movement, each said brace being in a form of a steel beam having one end attached to the earth and a second end attached to the exterior of said ring, with each said ring being attached to two said braces, one on each side of said ring with respect to vertical plane coincident with the center of the ring and aligned with the direction of travel of the vehicle;

a load bearing surface extending through the rings for accommodating a major load of the vehicle and comprising a steel reinforced concrete track base extending longitudinally through said rings and mounted on said support bases, and a monorail for rolling engagement with in-line wheels on the vehicle and being parallel to and mounted on said track base in a lower region of said rings, such that



the load of the vehicle is directly born by said support base; and

two guide wheel running plates extending longitudinally through said rings, said two guide wheel running plates being parallel to said monorail and being spaced apart from one another and from said monorail by an angle of about 120° and mounted on an inner circumference in an upper region of said rings for guiding the vehicle through rolling engagement with corresponding guide wheels mounted on the vehicle.

5,299,508

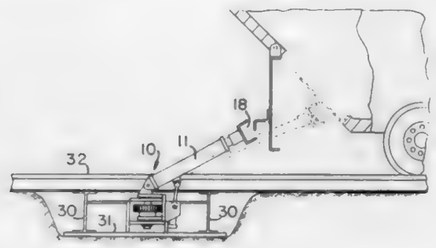
RAILROAD CAR DOOR CLOSURE HAVING TRACKSIDE MOUNTED PLURAL ACTUATING ARMS

Jerry Connelly, Bluefield, W. Va., assignor to Clinch River Corporation, Tazewell, Va.

Filed Dec. 28, 1992, Ser. No. 997,581

Int. Cl.[5] B61D *7/30*

U.S. Cl. 105—241.2 14 Claims



13. A door closer for closing doors of railroad cars in a stationary train, comprising:

first and second closer means positioned adjacent first and second rails, respectively, of a railroad track for exerting a force in a first closing direction on a door of a first railroad car in the train;

first and second swing means for rotating the first and second closer means, respectively, such that each closer means can contact a door of a second railroad car in the train and exert a force in a second closing direction opposite to the first closing direction, and;

means for simultaneously operating the first and second closer means to close at least one of the doors.

5,299,509

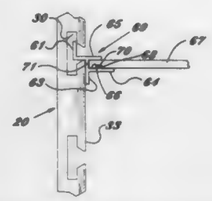
CONNECTORS FOR SHELVES AND BINS

Donald M. Ballard, 16700 Tinker Pl., Huntersville, N.C. 28078

Continuation-in-part of Ser. No. 737,249, Jul. 29, 1991, Pat. No. 5,085,155. This application Jan. 29, 1992, Ser. No. 827,408

Int. Cl.[5] A47B *3/00*

U.S. Cl. 108—182 4 Claims



1. In combination with a slot board and a storage receptacle; a connector for supporting the storage receptacle from a selected slot in the slot board, said connector comprising:

(a) a first leg extending vertically in use and engaging a first portion of the slot board adjoining the selected slot,

(b) a second leg extending horizontally in use from the first leg and engaging a second portion of the slot board adjoining the selected slot,

(c) an axial extension of the second leg extending away from the slot board,

(d) a load supporting leg,

(e) a rib extending longitudinally along the load supporting leg,

(f) means connecting the load supporting leg to the second leg for support by the slot board,

(g) the load supporting leg and the axial extension of the second leg defining two sides of a channel in the connector,

(h) the storage receptacle including a portion that fits within the channel in the connector, and

(i) said portion of the storage receptacle having a groove within which the rib on the load supporting leg fits when the storage receptacle is operatively received in said channel.

5,299,510

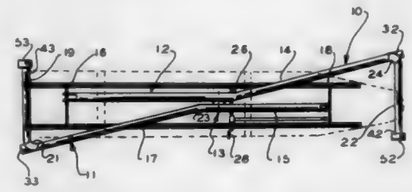
COLLAPSIBLE, HEIGHT ADJUSTABLE IRONING BOARDS

Henry Mattesky, Cedar Grove, N.J., assignor to Herbert Glatt, Morristown, N.J.

Continuation of Ser. No. 818,847, Jan. 10, 1992, abandoned. This application Jan. 15, 1993, Ser. No. 5,142

Int. Cl.[5] A47B *3/02*

U.S. Cl. 108—117 5 Claims



1. An ironing table of adjustable height and adapted to be collapsed during storage comprising:

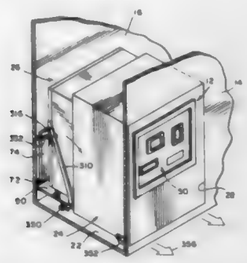
VOL 1161 ISS 1 AP 5 1994 UMI

a table member of predetermined width having an upper and a lower surface and a longitudinal axis;
an adjustable support junction attached to said lower surface; and
front and rear support means for supporting said table member, each comprising:
(a) an upper and lower leg member joined at a leg junction, said upper leg member being supportively coupled to said table member, and (b) a transverse foot member attached to said lower leg member as an integral part thereof,
said lower surface being pivotally connected to said upper leg member of a predetermined one of said support means, the upper leg member of another one of said support means, other than said predetermined one, being pivotally attached to said adjustable support junction, said front and rear support means being laterally displaced from the longitudinal axis of said table member, said upper leg member, said lower leg member and said foot member of the rear support means lying in a common plane, said front and said rear support means being pivotally attached together at one joint close to the leg junction of said upper and said lower leg members,
said upper leg member and said lower leg member subtending an obtuse angle between about 130° and about 170°, said lower leg member and said foot member subtending an acute angle between about 40° and about 80°, provided said obtuse angle shall always be 90° greater than said acute angle, the lower leg of said front and rear support means extending from said one joint in opposite lateral directions.

5,299,511
BELLCRANK ASSEMBLY FOR MOVING AN ATM MODULE

Ernest R. Dallman, Zionsville, and Franklin W. Wehr, Indianapolis, both of Ind., assignors to Dallman Industrial Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 892,758, Jun. 3, 1992. This application Sep. 29, 1992, Ser. No. 954,001
Int. Cl.[5] G07G *5/00*
U.S. Cl. 109—24.1 **14 Claims**

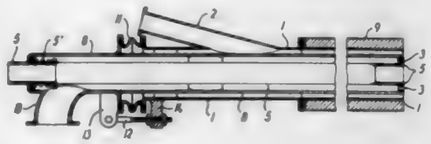


1. A modular transport system for moving an automatic teller machine through an aperture in a wall between a retracted position and an extended position, the system comprising:
a base; and
means for moving the automatic teller machine relative to the base, the moving means including a movable floor coupled to the automatic teller machine, bearing means for slidably coupling the moveable floor to the base, a first interference block mounted to the base, a second interference block mounted to the base spaced apart from the first interference block, and a bellcrank rotatably mounted to the movable floor for moving the automatic teller machine, the bellcrank cooperating the first interference block to overcome a resting inertia force of the automatic teller machine and to impart movement to the automatic teller machine, the bellcrank cooperating with the second interference block to stop movement of the automatic teller machine.

5,299,512
BURNER FOR A ROTARY KILN

Ib Olsen, Valby, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Apr. 14, 1992, Ser. No. 868,470
Claims priority, application Denmark, Apr. 19, 1991, 709/91
Int. Cl.[5] F23C *1/10, 1/12*
U.S. Cl. 110—261 **8 Claims**



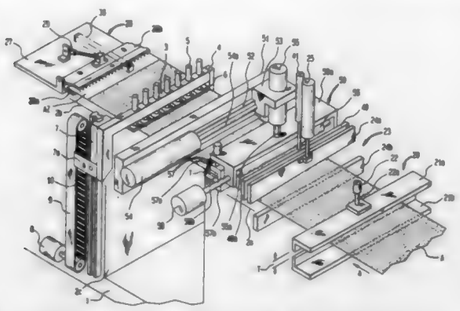
1. A burner for feeding a solid and a liquid or gaseous fuel into a burning zone of a kiln the burner comprising a central fuel supply pipe (5) for liquid and/or gaseous fuel, a first concentric pipe (8) surrounding the central pipe so as to form between the concentric pipe and the central pipe an annular channel for feeding primary air supplied to the burner through an inlet (10) into the burning zone, and a second concentric pipe (1) surrounding the first concentric pipe so as to form another annular channel between the first and the second concentric pipes for pneumatic feeding of solid fuel into the burning zone supplied to the burner together with a carrier air through an inlet (2), characterized in that the end of the pipe (8) facing the burning zone is closed by a plate-formed ring (6) fixedly mounted on said end of the pipe and provided with a number of nozzles (3), the axes of the nozzles being parallel to the axis of the burner, that the surface of the ring (6) facing the pipe end (5) is provided with a helical toothing (4''), whereas the surface of the ring facing the burning zone forms an divergent opening for the pipe (5), that furthermore a bush (7) provided with slots and which surrounds the pipe (5) is welded to the inner side of the ring (6), that the pipe (5) at its end facing the ring is likewise provided with a helical toothing (4') which is complementary to the toothing (4'') on the ring (6), that the pipe (5) is rotatably mounted and due to an axial spring load (5') working in the direction towards the burning zone is caused to bear against the surface of the ring (6) facing away from the burning zone, and that a turning of the pipe (5) causes the toothings to provide slot-formed, tangentially directed openings (4) for passage of primary air from the primary air channel into the central pipe (5).

5,299,513
DRAWING DEVICE FOR TOWEL CLOTH

Tetsuo Kambara, and Hideyuki Kobayashi, all of Utsunomiya, Japan, assignors to The Singer Company, NV, Caracus, Netherlands Antilles

Filed Sep. 4, 1992, Ser. No. 941,020
Claims priority, application Japan, Sep. 27, 1991, 3-274894
Int. Cl.[5] B26D *5/42*
U.S. Cl. 112—121.26 **3 Claims**

2. The device of claim 1 wherein said means positions the roller in a first raised position after a length of fabric cloth has been cut and positions the roller in a second lowered position

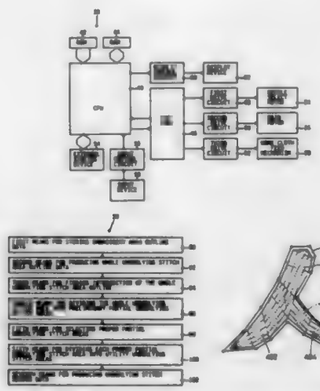


for engaging the next adjacent length of fabric cloth prior to cutting.

5,299,514
PROCESS AND APPARATUS FOR PRODUCING UNDERLYING STITCH SEWING DATA

Atsuya Hayakawa, and Kyoji Komuro, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 6, 1992, Ser. No. 868,333
Claims priority, application Japan, Apr. 12, 1991, 3-108490
Int. Cl.[5] D05B *21/00;* **D05C** *5/04*
U.S. Cl. 112—121.12 **29 Claims**

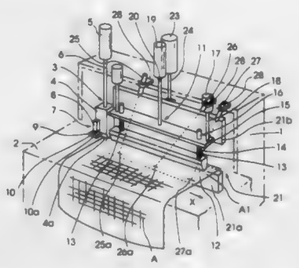


7. An apparatus for producing underlying stitch sewing data and utilizing the underlying stitch sewing data for controlling a sewing machine for forming underlying stitches, over which the sewing machine forms embroidery stitches to provide an embroidery, the apparatus comprising:
first producing means for producing, based on a set of embroidery area outline data representing an outline of an embroidery area to be filled with said embroidery stitches, a set of whole underlying stitch area outline data representing an outline of a whole underlying stitch area which outline is inward apart a pre-determined distance from the embroidery area outline,
dividing means for dividing, if different portions of the whole underlying stitch area outline intersect each other, said whole underlying stitch area into a plurality of preliminary partial underlying stitch areas, based on said set of whole underlying stitch area outline data, such that an outline of each of said preliminary partial underlying stitch areas does not intersect,
selecting means for selecting at least one proper partial underlying stitch area from said preliminary partial underlying stitch areas,
second producing means for producing said underlying stitch sewing data from forming said underlying stitches in said at least one proper partial underlying stitch area; and
underling stitch sewing data utilization means for utilizing said underlying stitch sewing data produced by said second production means, to form said underlying stitches in said at least one proper partial underlying stitch area.

5,299,515
TOWEL CLOTH POSITIONING DEVICE

Nobuo Baba; Toshiyuki Kaneto, and Yasuhiro Nagayama, all of Tochigi, Japan, assignors to The Singer Co N.V., Curacao, Netherlands

Filed Dec. 28, 1992, Ser. No. 997,001
Claims priority, application Japan, Mar. 17, 1992, 4-022489[U]
Int. Cl.[5] D05B *35/02*
U.S. Cl. 112—141 **1 Claim**



1. In combination with a system wherein a towel cloth cut off piece by piece to a predetermined length from a towel cloth of long size by a first cutter unit has an edge with fiber ends which display frays or curved or deformed edges and wherein this edge must be accurately hemmed, the towel cloth being placed upon a work table with said edge exposed, a towel cloth positioning device comprising:
a second cutter unit at the work table for again cutting the previously cut edge of the cloth to remove said fiber ends;
a plurality of projectors disposed above the cloth at the work table to project indication marks constituting positioning patterns onto the cloth adjacent the again cut edge;
means to successively position, fold and press the cloth in accordance with said patterns to produce a towel having a portion to be hemmed; and
means to hem said portion of the cloth.

5,299,516
LOOPER DRIVE MECHANISM OF A SEWING MACHINE

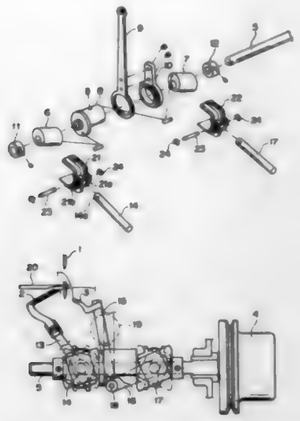
Kouichi Sakuma, Yamagata, Japan, assignor to Suzuki Manufacturing Co., Ltd., Japan

Filed Jul. 1, 1992, Ser. No. 906,291
Claims priority, application Japan, Jul. 15, 1991, 3-174009
Int. Cl.[5] D05B *1/20, 1/10*
U.S. Cl. 112—162 **8 Claims**

1. A looper drive mechanism for a sewing machine having a main shaft rotatable about a central axis, said mechanism comprising at least one looper, a looper drive shaft driving said looper, and transmitting means for transmitting rotation of the main shaft to said looper drive shaft, said transmitting means including at least one cylindrical inclined cam on the main shaft, said inclined cam having a central axis inclined with respect to the central axis of said main shaft and a cam face

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inclined with respect to the central axis of the main shaft, and an U-shaped follower which is carried by said looper drive



shaft and has upper and lower surfaces linearly contacting the cam face of said inclined cam.

5,299,517

THREAD TENSION ADJUSTING APPARATUS FOR A SEWING MACHINE

Naoya Ikawa, Hyogo, Japan, assignor to Pegasus Sewing Machine Mfg. Co., Ltd., Osaka, Japan

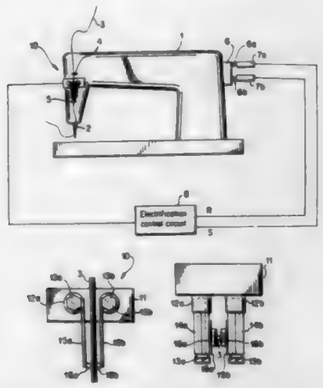
Division of Ser. No. 686,518, Apr. 17, 1991. This application Nov. 3, 1992, Ser. No. 970,076

Claims priority, application Japan, Apr. 20, 1990, 2-105660

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] D05B *47/00*

U.S. Cl. 112—254 **4 Claims**



1. A thread tension adjusting apparatus, used in a sewing machine, for adjusting tension of a supplied thread by adjusting a thread holding force, the apparatus being provided on a thread supply path running from a thread source to a thread processing section such as a needle and a looper, said thread tension adjusting apparatus comprising:

a pair of members respectively having portions opposed to each other with the thread located therebetween, at least one of the members comprising a piezoelectric actuator, the movement of which directly acts on the thread, said piezoelectric actuator allowing a distance between the portions to be changed when being driven, whereby to adjust a thread holding force;

supporting means for supporting each of the members; and

control means for allowing said supporting means to move so that the distance between the portions will be controlled in accordance with a diameter of the thread.

5,299,518

LOWER FEED DOG LIFTING, LOWERING, AND HORIZONTAL COUPLING

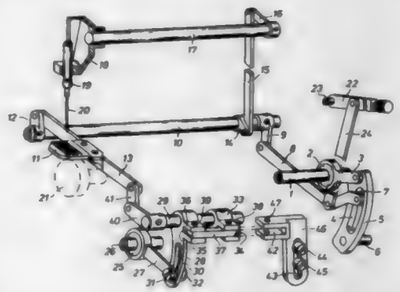
Albert Dusch, Kaiserlautern, and Karl-Heinz Walther, Weilerbach, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserlautern, Fed. Rep. of Germany

Filed Jan. 2, 1991, Ser. No. 623,371

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1988, 3819061

Int. Cl.[5] D05B *27/24*

U.S. Cl. 112—323 **9 Claims**



1. An apparatus for moving a feed dog in a sewing machine having drive means for driving said sewing machine, the apparatus comprising:

a feed dog holder having a feed dog attached thereto, and having first and second ends;

horizontal oscillating means connected to said drive means and to said first end of said feed dog holder for providing horizontal oscillating movements in the feed dog;

vertical oscillating means connected to said drive means and connected to said second end of said feed dog holder for providing vertical oscillating movements in the feed dog, said vertical oscillating means including a lifting shaft and driving cam; and

a detachable coupling means arranged between said lifting shaft and said driving cam for connecting and disconnecting said drive means from said feed dog holder while maintaining said feed dog holder with said feed in a horizontal plane.

5,299,519

EXTERNAL MEMORY FOR ELECTRONICALLY CONTROLLED SEWING MACHINE

Shintaro Hirabayashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 21, 1992, Ser. No. 886,109

Claims priority, application Japan, Aug. 31, 1991, 3-246973

Int. Cl.[5] D05B *3/02*

U.S. Cl. 112—456 **10 Claims**

1. An electronically controlled sewing machine and external memory, wherein the sewing machine comprises:

driving means for generating relative movement of a needle and a work fabric in an X direction and a Y direction perpendicular to the X direction in a plane intersecting a longitudinal axis of the needle;

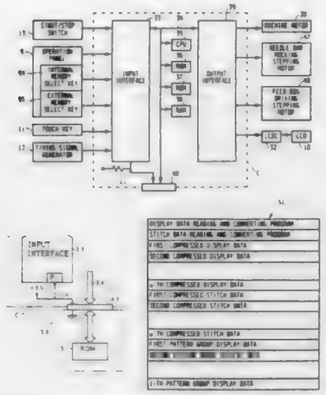
control manes for controlling said driving means; and

a connector for removably connecting said external memory to said sewing machine; and

wherein the external memory comprises:

memory means for storing stitch data of at least one stitch pattern and for storing a read-and-convert control program for reading the stored stitch data;

converting means for converting said read stitch data into driving data; and



outputting means for supplying the driving data to said control means of said sewing machine for controlling said driving means for relative movement in the X and Y directions,

wherein said external memory is a ROM card.

5,299,520

SHIP, IN PARTICULAR MERCHANT SHIP

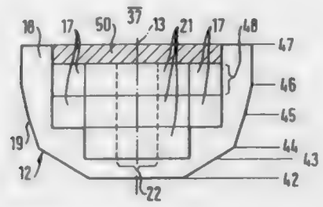
Johann Wilts, Emden, Fed. Rep. of Germany, assignor to Thyssen Nordseewerke GmbH, Emden, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 982,283

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139542

Int. Cl.[5] B63B *1/00*

U.S. Cl. 114—56 **12 Claims**



7. A ship comprising:

a longitudinal direction, a vertical direction and a transverse direction perpendicular to both the vertical direction and the longitudinal direction;

a hull, said hull having a varying width defined in the transverse direction of said ship;

a main power plant being disposed within said hull;

a nacelle compartment being disposed within said hull;

said nacelle compartment being open at an upper portion of said ship;

said nacelle compartment having a varying width which varies as a function of at least one of:

the vertical direction of said ship; and

the longitudinal direction of said ship;

the width of said nacelle compartment increasing, stepwise, from a lower portion of said ship to an upper portion of said ship;

the width of said nacelle compartment varying generally in proportion to the varying width of said ship;

said nacelle compartment comprising stepped walls, said stepped walls defining the stepwise increase of the width of said nacelle compartment from said lower portion of said ship to said upper portion of said ship;

said stepped walls of said nacelle compartment having a single predetermined modular dimension, in each of at least two orthogonally distinct directions, in the vicinity of said main power plant;

a plurality of containers being disposed in said hull in at least one of the following positions;

transversely adjacent said main power plant;

forwardly of said main power plant;

rearwardly of said main power plant; and

on at least one of said stepped walls;

each of said containers comprising auxiliary space; and

said auxiliary spaces provided by said containers being outfitted.

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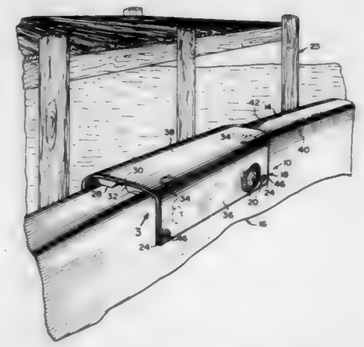
BUMPER PROTECTOR FOR A WATERCRAFT

Jerry T. Loucks, R.D. #1, Box 45, Knoxville, Pa. 16928

Filed Dec. 4, 1992, Ser. No. 985,322

Int. Cl.[5] B63B *59/02*

U.S. Cl. 114—219 **17 Claims**



1. An improved bumper protector for a watercraft having a gunwale and a hull, which comprises:

a) a flexible resilient sheet, said sheet further including six ribs integrally formed in spaced apart parallel longitudinal relationships on a rear surface thereof while a front surface thereof being free of said ribs, said ribs including opposite long sides being 45 degrees tapered inwardly while running horizontally; and

b) means for securing said sheet to said gunwale, so that said sheet can hand down an outer side of said hull of said watercraft, so as to prevent damage to said gunwale and said outer side of said hull during docking said securing means including four suction cups integrally formed on said rear surface of said sheet between upper corners and an uppermost rib, so as to retain an upper portion and a middle portion of said sheet to an inner surface and a top surface of said gunwale.

5,299,522

INFLATABLE ACOUSTIC BUFFER FOR BOAT HULLS

Henry R. Dixon, Jr., 1537 Via Romero, Alamo, Calif. 94507

Filed Mar. 9, 1993, Ser. No. 28,350

Int. Cl.[5] B63B *59/02*

U.S. Cl. 114—220 **12 Claims**

1. A buffer for damping the sound of water lapping against the hull of a boat, said buffer being adapted for mounting on

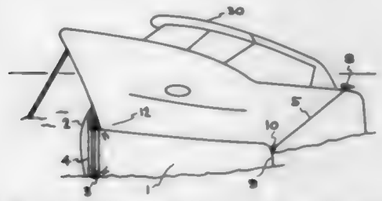
VOL 1161 ISS 1 AP 5 1994 UMI

the hull exterior when the boat is anchored, said buffer comprising:

a first elongated inflatable buffer member made from flexible material, adapted to be inflated and to float in the water adjacent to the port side of the hull from the bow toward the stern along the length of said first member;

a second elongated inflatable buffer member made from flexible material, adapted to be inflated and to float in the water adjacent to the starboard side of the hull from the bow toward the stern along the length of said second member;

said first elongated member and said second elongated member having joining means at one end of each member such that said ends may be removably and flexibly joined, and such that when said members are disposed in the water said joined ends are adapted to float adjacent to the bow of the boat;



said first member having first valve means for enabling said first member to be inflated and deflated;

said second member having second valve means for enabling said second member to be inflated and deflated; and

securing means for securing said first and second members to the boat when said members are disposed in the water adjacent to the hull, and for holding said members in position along the hull;

wherein said joining means comprises:

a first adhering material attached to one end of said first member; and

a second adhering material attached to one end of said second member;

such that said first and second adhering materials will adhere when pressed together.

5,299,523

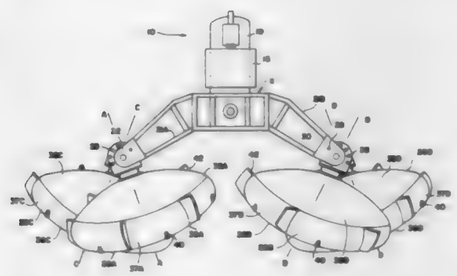
AMPHIBIOUS LAND RECLAMATION VEHICLE

Mihaly Kovacs; Peter Kovacs, and Endro Kovacs, all of Plant City, Fla., assignors to Kempco, Inc., Ft. Meade, Fla.

Filed Dec. 8, 1992, Ser. No. 986,961

Int. Cl.[5] B63B *38/00*

U.S. Cl. 114—270 **17 Claims**



1. An amphibious lightweight land reclamation vehicle comprising, a main frame having first and second ends, a pair of outrigger members extending outwardly from opposite sides of and adjacent said first and second ends and having outer end portions extending below said main frame, a plurality of hollow drive pod means, means for mounting said drive pod means to said outer ends portions of said outrigger members, each of said drive pod means having upper surfaces, generally convex lower surfaces and generally circular outer peripheral portions, each of said drive pod means being rotatable about an axis extending centrally between said upper and lower surfaces thereof over a range from a first position at which said axis is substantially parallel to a travel surface to at least a second position at which said axis is substantially perpendicular to the travel surface, a plurality of cleat means extending outwardly from said lower surfaces of each of said drive pod means, a plurality of cutter elements extending outwardly from the outer peripheral portions of each of said drive pod means, said cutter elements being mounted in spaced relationship with respect to one another, means for rotating each of said drive pod means, and said drive pod means being of a size to provide sufficient buoyancy to allow the vehicle to float on water.

5,299,524

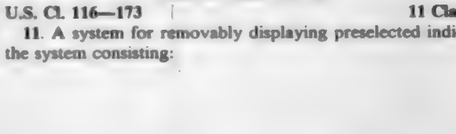
INFLATABLE KAYAK

Attila D. Szilagyi, P.O. Box 80, Albright, W. Va. 26519

Filed Dec. 6, 1991, Ser. No. 802,784

Int. Cl.[5] B63B *35/00*

U.S. Cl. 114—345 **6 Claims**



1. A kayak for floating on the surface of a body of water comprising:

a pair of parallel cylindrical buoyant tubes, each said tube consisting essentially of a middle part with a constant diameter and two end parts which gradually taper to a point, said end parts of each said tube bending slightly towards each other so that each said tube forms a shallow arc, said tubes oriented so that said points on corresponding end parts of said tubes meet;

a floor, said floor interconnecting said pair of tubes to form a hull, said hull having a smooth continuous surface without any corners or edges contacting the surface of the body of water, said hull surface consisting essentially of a flat middle section and two curved end sections, wherein said curved end sections represent a segment taken from an ellipse starting at the point where the minor axis of the ellipse intersects the ellipse and extending to the point where the major axis of the ellipse intersects the ellipse without including the highly curved portion of the ellipse nearest the intersection of the major axis and the ellipse whereby said inflatable kayak has minimal drag and improved tracking when moving across the surface of the body of water;

a buoyant stiffener board attached to said floor between said buoyant tubes; and

a plurality of bailing holes located in said floor with corresponding bailing channels located in said buoyant stiffener board which are effective for quickly draining water from said kayak.

5,299,525

APPARATUS FOR SUPPORTING FLAGS ON AUTOMOBILE ANTENNAS

Daniel R. Romesburg, 1816 Rebecca Rd., Lutz, Fla. 33549

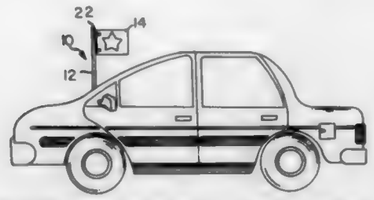
Filed Apr. 5, 1993, Ser. No. 42,734

Int. Cl.[5] G09F *17/00*

U.S. Cl. 116—173 **11 Claims**

11. A system for removably displaying preselected indicia, the system consisting:

a tubular support, the tubular support having an upper edge and a lower edge and an interior diameter and an exterior and a length such that when positioned over an antenna, the upper edge of the support is located immediately beneath an enlargement at the upper end of an antenna for minimizing the chance of inadvertent lifting of the support from an antenna; and a pair of clips, each clip having an exterior portion and an interior portion coupled with respect to the support, the exterior portion including two components, one component being resiliently urged into contact with the other component to form a closed loop



but movably away to create an opening therebetween, the clips being located in the upper half of the support; and

a plurality of flags individually removably coupleable to the clips, each flag including a sheet having indicia thereon and a periphery, an essentially rigid support structure secured within at least a portion of the periphery adapted to maintain the sheet in a predetermined orientation, and a pair of rigid grommets coupled with respect to the support structure to create an integral support assembly therewith, the grommets being formed with apertures and located whereby any flag of the plurality of flags may be removably attached to the clips.

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INDICATORS

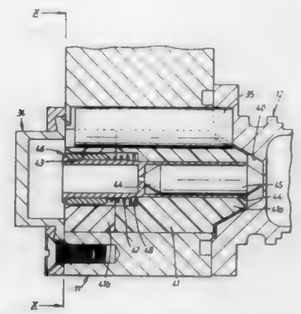
Ronald F. Cassidy, Hampshire, United Kingdom, assignor to Pall Corporation, Glen Cove, N.Y.

Filed May 12, 1992, Ser. No. 881,802

Claims priority, application United Kingdom, May 13, 1991, 9110332

Int. Cl.[5] G01L *19/12*

U.S. Cl. 116—267 **17 Claims**



1. A differential pressure indicator comprising:

a housing;

an elongated passage formed in the housing;

an indicator member slidable in the passage between a retracted position and an extended position in which the indicator member projects from the housing;

a first magnet carried by the indicator member;

a spring acting on the indicator member and urging the indicator member towards the extended position;

a second magnet carried by the housing to hold the first magnet and the indicator member in the retracted position against the action of the spring;

a sensor device sensing the pressure difference between two fluids and acting on the second magnet when the pressure difference reaches a predetermined value to break the magnetic attraction between the first and second magnets whereby the indicator member moves to the extended position under the action of the spring; and

restraining means acting between the indicator member and the passage in the housing to prevent rotation of the indicator member relative to the housing.

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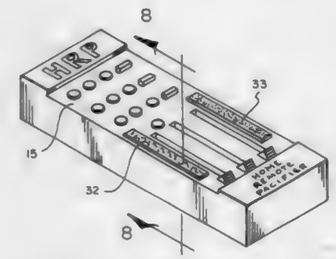
REMOTE CONTROL PACIFIER NOVELTY DEVICE

Mark Grossman, 6623 26th St. W., Bradenton, Fla. 34207

Filed Jun. 9, 1992, Ser. No. 895,643

Int. Cl.[5] G09F *11/30*; **A63H** *33/30*

U.S. Cl. 116—323 **1 Claim**



1. A remote control pacifier novelty device, comprising,

a housing, the housing having spaced side walls, a first end wall, a second end wall spaced from the first end wall, a top wall, the top wall positioned above and in cooperation with a bottom wall, with the housing defining a housing cavity within the housing, and the top wall including a plurality of top wall slots, wherein the top wall slots are oriented in a parallel relationship between the side walls and orthogonally between the first end wall and the second end wall positioned in adjacency relative to the first end wall, with the top wall slots including a first slot and a second slot, and

the first slot and the second slot including a respective first slide projection and a second slide projection projecting exteriorly and above the housing top wall, with the first slide projection mounted within the first slot, and the second slide projection mounted within the second slot, and

the second end wall including a plurality of second end wall slots, wherein the second end wall slots include a second end wall first slot and a second end wall second slot, wherein a first pictorial plate is slidably mounted within the first end wall slot, and a second pictorial plate is slidably mounted within the second end wall second slot, and

first linkage means mounting the first slide projection to the first pictorial plate, and second linkage means mounting the second slide projection to the second pictorial plate, wherein the first linkage means and the second linkage means are arranged for fixed securement of the first slide projection to the first pictorial plate, and the second slide projection to the second pictorial plate respectively, and

the first linkage means includes a first projection link orthogonally and fixedly mounted to the first pictorial plate and fixedly secured to the first slide projection, and the second linkage means includes a second projection link orthogonally and fixedly secured to the second pictorial plate and mounted to the second slide projection, and

each pictorial plate includes a removable pictorial layer mounted to each respective pictorial plate, and

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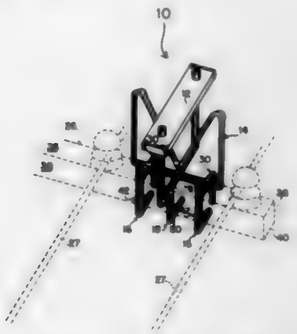
the top wall includes a sponge plate, the sponge plate mounted in adjacency to the top wall slots adjacent one of said side walls, and the sponge plate includes a fluid lotion contained therewithin, and an abrasive plate mounted to a further of said side walls in adjacency to the top wall slots, wherein the abrasive plate is fixedly mounted to the top wall spaced from the sponge plate.

5,299,528

RAPTOR PROTECTION UNIT FOR USE ON A POWER POLE

Buck M. Blankenship, 3127 E. 3200 N., Twin Falls, Id. 83301

Filed Apr. 19, 1993, Ser. No. 49,166
Int. Cl.[5] A01K *45/00, 31/12*
U.S. Cl. 119—26 **14 Claims**



11. A raptor protection unit, for installation on a power-line pole crossbar having a top surface, a bottom surface, and two opposing side surfaces, the raptor protection unit comprising:

two side-lock clamps for being clamped around the crossbar to secure the raptor protection unit onto the crossbar, each side-lock clamp comprising:

a C-shaped brace for receiving the crossbar, having a top leg for extending across the top surface of the crossbar, a side portion for extending down along a side surface of the crossbar, and a bottom leg for extending across the bottom surface of the crossbar,

an L-shaped side-lock, opposing the C-shaped brace, having a horizontal leg for extending across the top surface of the crossbar and a vertical leg for extending down along a side surface of the crossbar, the horizontal leg being slidably and rotatably connected to the top leg of the C-shaped brace, so that the L-shaped side-lock may be pulled out to distance the vertical leg from the C-shaped brace and may be rotated to swing the vertical leg away from the bottom leg of the C-shaped brace for allowing insertion and removal of the crossbar into and out of the C-shaped brace,

a cocking means for temporarily holding the L-shaped side-lock in the pulled out and swung away position, and

a lock means for holding the vertical leg of the L-shaped side-lock against the crossbar to secure the side-lock clamp around the crossbar, the lock means comprising:

a biasing means for pulling the L-shaped side-lock toward the C-shaped brace to force the vertical leg against the side surface of the crossbar, and

a latch means for holding the vertical leg of the L-shaped side-lock down along the second side surface of the crossbar,

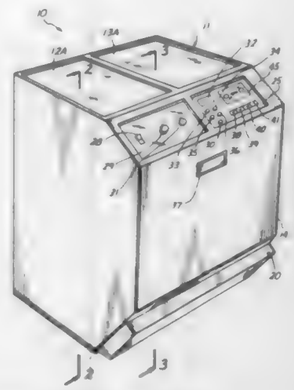
a roost guard attached to and upending from the side-lock clamps, for extending above and along the crossbar between the power lines for discouraging raptors from alighting and roosting on the crossbar between the power lines, and the roost guard having vertical outside edges for discouraging raptors from alighting and roosting on the roost guard.

5,299,529

AUTOMATIC FEEDER FOR DOGS AND OTHER ANIMALS

Peter Ramirez, P.O. Box 1344, Idyllwild, Calif. 92549

Continuation-in-part of Ser. No. 36,065, Mar. 23, 1993, abandoned. This application Jun. 4, 1993, Ser. No. 72,534
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—51.11 **8 Claims**



1. An automatic feeder, comprising:

means in the form of a computerized dispenser for dispensing different programmed quantities of food for each meal to an animal at up to ten programmed times;

the computerized dispenser including programmable food-dispensing means for dispensing food;

the computerized dispenser also including means in the form of a microcomputer and integrated control circuitry operatively coupled to the food-dispensing means for automatically controlling the food-dispensing means in order to dispense different programmed quantities of food for each meal at up to ten programmed times; and

the integrated control circuitry including digital means for recording and playing audio in order to enable an owner to record a 30-second message for automatic playback at preprogrammed times;

wherein the integrated control circuitry includes at least one of the following selected from the group consisting of means in the form of a telephone interface for enabling remote control with a conventional telephone, means in the form of a video telephone arrangement for enabling an owner to view a space adjacent to the automatic feeder by video telephone and be able to talk to his pet, and means in the form of a computer interface for enabling remote control with a personal computer.

5,299,530

SUBMERGIBLE FISH CAGE

Hasham Mukadam, Northridge, and John W. Morgan, Pacific Palisades, both of Calif., assignors to Occidental Research Corporation, Los Angeles, Calif.

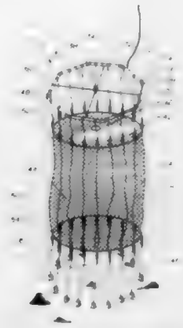
Filed Jul. 17, 1992, Ser. No. 917,853
Int. Cl.[5] A01K *63/00, 61/02*
U.S. Cl. 119—223 **23 Claims**

1. A submergible fish cage comprising:

an enclosed net cage having a side wall, a contiguous top wall and a contiguous bottom wall;

a hollow ring having at least one central chamber within the length of the ring, a plurality of water openings on the bottom of the ring for fluid communication between each central chamber and the exterior of the ring, and a plurality of inlets on the ring in fluid communication with each central chamber for introducing air into or evacuating air out of each chamber;

at least one floatation element positioned within one of the central chambers, each flotation element having positive buoyancy in water, the at least one floatation element giving the ring sufficient buoyancy when each central chamber of the ring is fully flooded with water to support the ring and the enclosed net cage;



a plurality of anchor weights, sufficient anchor weights being employed so that anchor weights will submerge the ring and enclosed net cage when each central chamber of the ring is flooded with water; and

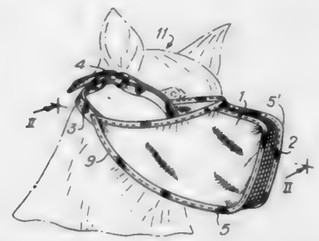
a plurality of cables attached at their upper ends to the ring, the middle portion of each cable attached to the enclosed net cage and the bottom end of each cable below the bottom wall of the enclosed net cage attached to the anchor weights, the ring having sufficient buoyancy when water is expelled from the central chambers to rise to the surface of the water supporting the enclosed net cage, anchor weights and cables.

5,299,531

MUZZLE

David Dietz, 2084 Flatbush Ave., Brooklyn, N.Y. 11234

Filed Nov. 16, 1992, Ser. No. 976,959
Int. Cl.[5] A01K *25/00*
U.S. Cl. 119—832 **13 Claims**



1. A muzzle, worn on the snout of an animal to prevent the animal from biting, said muzzle comprising:

a pair of flexible sheets of continuous, imperforate material for operative positioning at the respective sides of an animal's snout, said flexible sheets being predeterminately configured and dimensioned so that when said flexible sheets are operatively positioned, said flexible sheets substantially cover the sides of the animal's snout;

a pliant, air permeable sheet of material spanningly connected to and between said flexible sheets such that when said flexible sheets are operatively positioned at the respective sides of an animal's snout, said air permeable sheet covers a portion of the top of the animal's snout proximate the animal's nose, the front of the animal's snout, and a portion of the bottom of the animal's snout;

said flexible sheets and said air permeable sheet forming an enclosure which operatively envelopes the animal's snout so as to prevent the animal from biting while simultaneously permitting the animal to open and close its mouth and to easily breathe through the enclosure; and

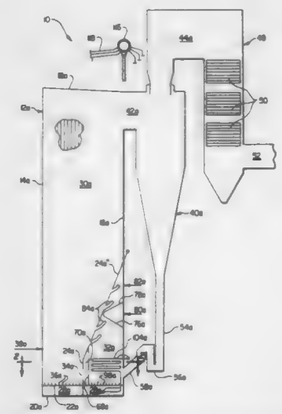
means for removably fastening the enclosure about the head of the animal to prevent removal by the animal while permitting selective fastening and removal by an animal handler.

5,299,532

FLUIDIZED BED COMBUSTION SYSTEM AND METHOD HAVING MULTIPLE FURNACE AND RECYCLE SECTIONS

David H. Dietz, Hampton, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Nov. 13, 1992, Ser. No. 976,026
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D **29 Claims**



1. A fluidized bed combustion system comprising:

an enclosure having a front wall, a rear wall, a first side wall and a second side wall;

a partition extending between said side walls and dividing said enclosure into a furnace section and a recycle section;

means for introducing particulate material including fuel into said furnace section;

means for introducing particulate material into said recycle section;

means for passing particulate material from said recycle section to said furnace section;

a grate disposed in a lower portion of said enclosure for supporting said particulate material in said furnace section and said recycle section; and

means for introducing an oxygen-containing gas through said grate and into said furnace section for fluidizing said particulate material in said furnace section; and

said first side wall having at least one aperture in a lower portion of said side wall and registering with said recycle section so that said particulate material in said recycle section may pass through said aperture.

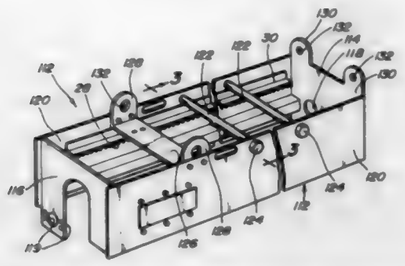
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,533

OPEN BEAM SOOTBLOWER

Jesse C. Johnston, Jr., Carroll; James S. Kulig; Steven F. Lewis, both of Lancaster, and Eric C. Collet, Columbus, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 22, 1993, Ser. No. 34,251
Int. Cl.[5] F23J *3/02*
U.S. Cl. 122—379 **20 Claims**



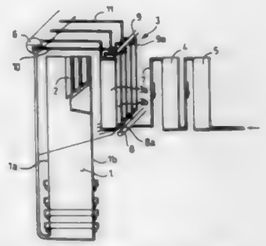
1. In a retractable sootblower for cleaning interior surfaces of a boiler, said sootblower having a carriage, a feed tube and a lance tube generally enclosed by a frame, said frame comprising:
an inboard end wall adapted for positioning adjacent to an exterior wall of the boiler;
an outboard end wall located substantially opposite from said inboard end wall;
a pair of opposingly positioned side panels each having a seamless construction, each of said side panels being a continuous and substantially planar structures mounted to and interconnecting said inboard end wall with said outboard end wall, said side panels cooperating with said inboard and outboard end walls to generally define a rectangularly shaped box for enclosing the carriage and the lance tube, said box having a generally open top and bottom providing substantially unobstructed access from above and below to the carriage and lance tubs; and
at least one truss mounted to and transversely extending between said side panels to enhance the structural rigidity of said side panels.

5,299,534

SINGLE-DRUM RECOVERY BOILER

Pentti Janka, Tampere, Finland, assignor to Tampella Power Oy of Lipintie, Tampere, Finland

Filed Jan. 21, 1993, Ser. No. 6,516
Int. Cl.[5] F22D *1/00*; **F22G** *7/14*
U.S. Cl. 122—477 **6 Claims**



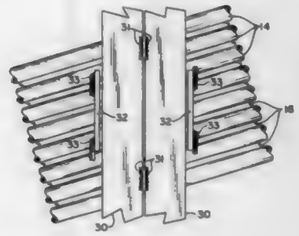
1. Single-drum recovery boiler comprising:
a superheater disposed in the flue gas stream; and
a boiler bank and an economizer disposed in the flue gas stream after the superheater, the boiler bank comprising boiler bank elements disposed in parallel with the flue gas stream and side by side with each other in a direction transverse to the flue gas stream, and the economizer comprising economizer elements similarly disposed in parallel with the flue gas stream and side by side with each other in a direction transverse to the flue gas stream, wherein a plurality of boiler bank elements and a plurality of economizer elements are mounted side by side with each other in a direction transverse to the flue gas steam so that the flue gas stream heats the boiler bank elements and the economizer elements simultaneously within this particular flue gas duct section.

5,299,535

FURNACE BUCKSTAY STIRRUP

Ronald G. Payne, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1992, Ser. No. 998,170
Int. Cl.[5] F22B *37/24*
U.S. Cl. 122—510 **17 Claims**



1. A vapor generation apparatus which comprises:
a furnace, having a tube wall and at least one vertical buckstay member disposed proximate to the outer face of said spiral tube wall;
a stirrup for transmitting forces between said spiral tube wall and said vertical buckstay member, said stirrup including a U-shaped plate and a cylindrical member, means for mounting said cylindrical member on said vertical buckstay member including first and second lugs fixed to said vertical buckstay member in spaced relationship, said cylindrical member being fixed between said first and second lugs in spaced relation to said vertical buckstay member; and
means for mounting said U-shaped plate on said tube wall.

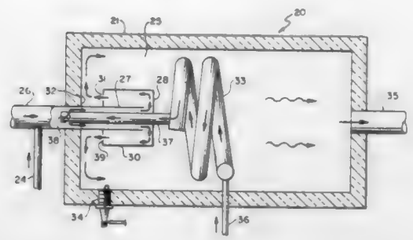
5,299,536

APPARATUS AND METHOD FOR DECREASING NITROGEN OXIDE EMISSIONS FROM INTERNAL COMBUSTION POWER SOURCES

David Moard, 1545 S. El Molino Ave., Pasadena, Calif. 91106, and Leonard Greiner, 1310 Logan Ave., Suite E, Costa Mesa, Calif. 92626-4023

Continuation of Ser. No. 858,840, Mar. 27, 1992, Pat. No. 5,207,185. This application Dec. 28, 1992, Ser. No. 997,450
Int. Cl.[5] F02B *43/08*
U.S. Cl. 123—3 **7 Claims**

1. In an internal combustion apparatus, the improvement which comprises:
a burner means for combusting air and hydrocarbons to provide air/fuel vapors at fuel-rich air/fuel ratios 0.3 to 1.0 times the stoichiometric ratio;
said burner means includes a mixer means intimately combining said air/fuel vapors for injection into said internal combustion apparatus;
said burner includes a combustion chamber having an inlet means for receiving a supply of fuel and air;
a pre-heater means for heating the supply of fuel and air;
said mixer means includes a baffle wall disposed in said burner means combustion chamber for receiving said pre-heated and combined air/fuel supply in forced impingement relationship to create a mixed vapor;
said baffle wall receiving and re-directing said pre-heated and combined air/fuel mixture within said combustion chamber to further blend said air/fuel mixture;
said mixer means includes a tubular coil for receiving and mixing said air/fuel supply; and



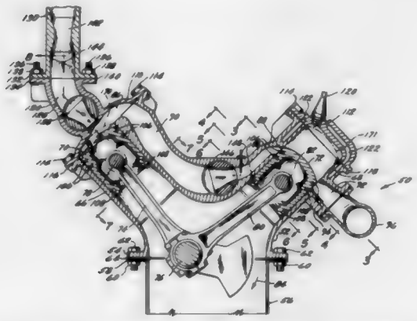
said pre-heater means constitutes a heat exchanger employing combusted gases in said combustion chamber to be conducted adjacent said tubular coil to raise the temperature of said air/fuel mixture preparatory to entering said combustion chamber.

5,299,537

METERED INDUCTION TWO CYCLE ENGINE

Ransom S. Thompson, 116 N. Erie Dr., Ft. Pierce, Fla. 34946

Filed Mar. 11, 1992, Ser. No. 849,474
Int. Cl.[5] F02B *75/02*
U.S. Cl. 123—72 **46 Claims**



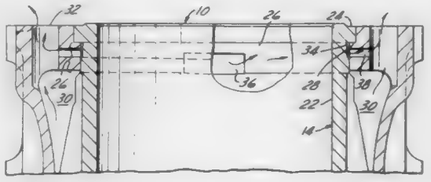
1. A metered induction two cycle engine, comprising:
a first cylinder;
a first cylinder head being disposed on said first cylinder and defining a first outlet port, said first cylinder head having a first inlet port therein;
a second cylinder having a second inlet port and a second outlet port therein;
a second cylinder head being disposed on said second cylinder, said second cylinder head having an opening therethrough;
a duct extending from said first outlet port to said second inlet port for providing a continuous connection therebetween;
first piston means reciprocally mounted in said first cylinder;
second piston means reciprocally mounted in said second cylinder, said first piston means being at a predetermined lead angle from said second piston means;
intake means being disposed at said first inlet port of said first cylinder head;
first valve means being disposed in said intake means at said first inlet port, said first valve means for permitting flow from said intake means to said first cylinder and for prohibiting flow from said first cylinder to said intake means, said first valve means being actuated when the pressure in said intake means exceeds the pressure in said first cylinder;
second valve means being disposed in said duct near said second inlet port, said second valve means for permitting flow from said duct and said first cylinder to said second cylinder and for prohibiting flow from said second cylinder to said duct, said second valve means being actuated when the pressure in said duct exceeds the pressure in said second cylinder; and
spark ignition means being disposed in said opening of said second cylinder head.

5,299,538

INTERNAL COMBUSTION ENGINE BLOCK HAVING A CYLINDER LINER SHUNT FLOW COOLING SYSTEM AND METHOD OF COOLING SAME

Lawrence C. Kennedy, Bingham Farms, Mich., assignor to Detroit Diesel Corporation, Detroit, Mich.

Continuation of Ser. No. 905,268, Jun. 26, 1992, abandoned. This application May 5, 1993, Ser. No. 57,451
Int. Cl.[5] F01P *3/20*
U.S. Cl. 123—41.79 **15 Claims**



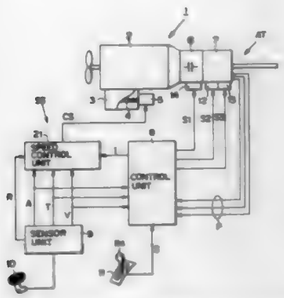
1. In combination, in an internal combustion engine, a cylinder block, having at least one cylinder bore;
a cylinder inner concentrically located within said cylinder bore and secured to said cylinder block;
a main cooling chamber surrounding said cylinder liner and having an inlet port and at least one outlet port for circulating a coolant fluid about a main portion of said cylinder liner;
a secondary cooling chamber located about the uppermost portion of said cylinder liner and directly adjacent to said main coolant passage, said secondary cooling chamber having at least one inlet port and at least one output port whereby said fluid coolant may be circulated simultaneously about said main cooling chamber and said secondary coolant chamber;
said outlet port of said secondary cooling chamber being in fluid communication with the outlet port of said main cooling chamber and comprising a venturi whereby, as coolant from the main cooling chamber flows through the outlet port of said main cooling chamber, there will be created across said venturi a pressure drop which in turn will induce the flow of coolant fluid through said secondary cooling chamber at a flow velocity relative to that flowing through said outlet port sufficient to provide a significantly increased rate of removal of thermal energy per unit area of said cylinder inner at the uppermost portion of said cylinder liner.

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5,299,539
METHOD FOR CONTROLLING ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

Kazumasa Kurihara, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 35,391
Claims priority, application Japan, Mar. 23, 1992, 4-094876
Int. Cl.[5] F02M *31/00*
U.S. Cl. 123—357 **5 Claims**



1. A method for controlling a rotational speed of an internal combustion engine in which a target position of a fuel regulating member for regulating a fuel quantity to be supplied to the engine is calculated in response to a given target engine speed and an actual engine speed of the internal combustion engine, said target position being necessary for making the actual engine speed equal to the target engine speed by a PI isochronous control, said method comprising:

a first discriminating step for discriminating whether or not a difference is more than a prescribed value;

an initial value determining step for determining an initial value of an integral term for the PI isochronous control on the basis of the difference between the target engine speed and the actual engine speed when it is discriminated that the difference between the target engine speed and the actual engine speed has changed by more than the prescribed value in response to said first discriminating step;

a second discriminating step for discriminating whether or not the actual engine speed is made substantially equal to the target engine speed by the PI isochronous control carried out by the use of the initial value determined in said initial value determining step; and

a step for changing a value of the integral term to a value substantially equal to a value of a no-load rack position of the fuel regulating member at which a fuel quantity necessary for maintaining the rotational speed of the engine with no-load at the target engine speed is supplied to the engine, when it is discriminated in said second discriminating step that the actual engine speed is made substantially equal to the target engine speed.

5,299,540
ARRANGEMENT FOR A FUEL LINE IN AN INTERNAL COMBUSTION ENGINE

Håkan Fransson, Björnlunda, and Peter Sperle, Nykvarn, both of Sweden, assignors to Saab Scania Aktiebolag, Sweden

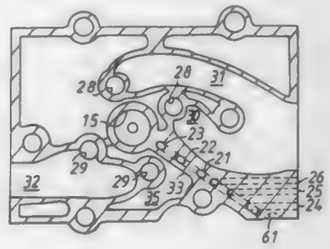
PCT No. PCT/SE92/00498, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO93/01409, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 2, 1992, Ser. No. 975,551
Claims priority, application Sweden, Jul. 2, 1991, 9102059-4
Int. Cl.[5] F02M *55/02;* **F02F** *1/24*
U.S. Cl. 123—468 **22 Claims**

1. An arrangement for supplying fuel to fuel injectors in a multiple cylinder internal combustion engine, the engine having a cylinder block, the cylinder block having a plurality of cylinder heads arrayed therealong, the cylinder block having first and second opposite lateral sides at the opposite sides of the array of cylinder heads; each cylinder head having first and second lateral surfaces toward the respective one of the first and second lateral sides of the block, and having a transverse surface which is transverse to the longitudinal direction of the engine and to the lateral surfaces;

a respective fuel injector for each of the cylinders, the fuel injector for each cylinder being in the cylinder head for that cylinder; the cylinder head for each injector having a space therein for housing the respective injectors;

the fuel supply arrangement comprising:

a respective set of fuel passages in at least one cylinder head for serving each fuel injector, all of the fuel passages of the



set extending from the first lateral surface of the cylinder head to the injector in the cylinder head;

at least one of the fuel passages in the cylinder head being comprised of a first and a second interconnecting passage section;

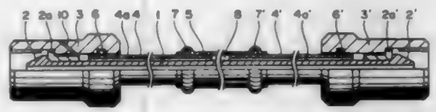
the first passage section opening on and extending between the transverse surface of the cylinder head and the space within the cylinder head for housing the injector; the first passage section being sealed at its opening on the transverse surface of the cylinder head;

the second passage section intersecting the first passage section at an angle, and the second passage section extending to the first lateral surface of the cylinder head.

5,299,541
HIGH-PRESSURE FUEL INJECTION TUBE FOR DIESEL ENGINE

Isao Yamaguchi, Mishima, and Yasushi Sakamoto, Tagata, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Apr. 16, 1993, Ser. No. 48,770
Claims priority, application Japan, Apr. 17, 1992, 4-124196
Int. Cl.[5] F02M *55/02;* **F16L** *11/12*
U.S. Cl. 123—468 **10 Claims**



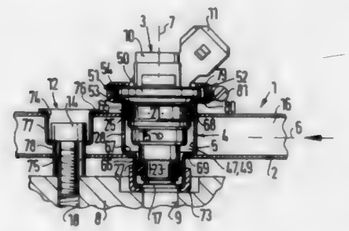
1. A high-pressure fuel injection tube for a diesel engine, comprising: a tube body having opposed end portions and connecting heads at the two end portions; fastening nuts assembled on said connecting heads; a pair of separate outer tubes fitted on the outer circumference of said tube body, said outer tubes having oppositely directed outer end portions and opposed facing inner end portions spaced from each other to define a gap between the opposed inner end portions said outer tubes being moveable in the axial direction; seal ring members so fitted on the outer circumferences of said outer tubes in the vicinity of the outer end portions of said outer tubes as to engage with said fasteninq nuts respectively; and a relatively short joint cylinder fitted on the outer circumferences of said outer tubes across the inner end portions of said outer tubes,

wherein the improvement comprises a seal ring member fitted between at least one fitted end portion of said joint cylinder and the outer circumference of the corresponding one of said outer tubes.

5,299,542
FUEL DISTRIBUTOR

Udo Hafner, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00619, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO93/04276, PCT Pub. Date Mar. 4, 1993
PCT Filed Jul. 29, 1992, Ser. No. 39,192
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 4128086
Int. Cl.[5] F02M *55/02, 61/14, 69/46*
U.S. Cl. 123—470 **15 Claims**



1. A fuel distributor of fuel injection systems of internal combustion engines for a fuel supply of at least two fuel injection valves, having a number of stepped valve acceptance features corresponding to the number of fuel injection valves, each valve acceptance feature having a valve acceptance opening which is in connection with a flow passage of a fuel supply passage via at least one fuel supply opening provided in each valve acceptance feature and into which valve acceptance openings fuel injection valves are insertable in such a way that the valve acceptance features at least partially surround the fuel injection valves, fuel flowing through a flow cross-section (**16**) flows around each valve acceptance feature (**4**) on all sides in a section penetrating the fuel supply passage (**2**) and at least one fuel supply opening (**28**) of each valve acceptance feature (**4**) is arranged on a side of the valve acceptance feature (**4**) at right angles to the flow direction or facing away from the flow direction.

5,299,543
IGNITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaaki Taruya, and Mitsuru Koiwa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

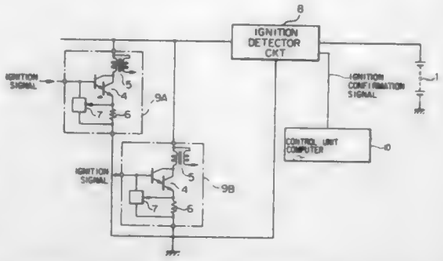
Filed May 5, 1992, Ser. No. 878,690
Claims priority, application Japan, May 8, 1991, 3-102295
Int. Cl.[5] F02P *17/00*
U.S. Cl. 123—479 **4 Claims**

1. An ignition device for a multi-cylinder internal combustion engine, comprising:

a current source;

a plurality of integrally assembled ignition device units each including an ignition coil coupled to said current source and a power transistor for turning on and off a current flowing from said current source and through a primary coil of said ignition coil, wherein each of said ignition coils is coupled to said current source via a common current supply line; and

a single ignition detector circuit, inserted in said common current supply line between said current source and said ignition coils for detecting malfunctions in said ignition coils by detecting said current flowing through each of said ignition coils from said current source, said ignition

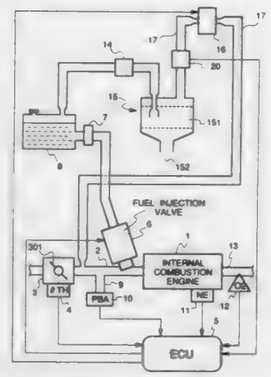


detector circuit identifying a malfunction by generating an ignition confirmation signal when a detected current exceeds a predetermined level.

5,299,544
EVAPORATIVE FUEL-PURGING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masakazu Kitamoto; Fumio Hosoda; Hideo Moriwaki; Kojiro Tsutsumi; Teruo Wakashiro; Toshikastu Takanohashi, and Hiroshi Kitagawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1992, Ser. No. 899,686
Claims priority, application Japan, Jun. 17, 1991, 3-171761; Dec. 9, 1991, 3-324755; May 26, 1992, 4-158645
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **26 Claims**



1. In an evaporative fuel-purging control system for an internal combustion engine having a fuel tank, and an intake passage, said evaporative fuel-purging control system including a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting between said canister and said intake passage for purging a gaseous mixture containing said evaporative fuel therethrough into said intake passage, at least one flowmeter arranged across said purging passage for outputting a detection parameter indicative of a flow rate of said gaseous mixture being purged through said purging passage, and a purge control valve arranged across said purging passage for controlling said flow rate of said gaseous mixture supplied to said intake passage, based on a control parameter indicative of a control amount for said purge control valve,

the improvement comprising correcting means for correcting one of said detection parameter and said control pa-

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rameter, based on a value of said one of said detection parameter and said control parameter assumed and stored when the other of said detection parameter and said control parameter assumes a value corresponding to a state in which said flow rate of said gaseous mixture is equal to the minimum value.

5,299,545

EVAPORATIVE FUEL-PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINES

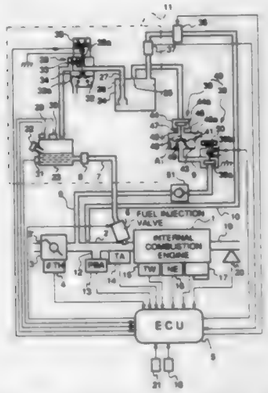
Shigetaka Kuroda; Kazutomo Sawamura; Masayoshi Yamanaka; Hiroshi Maruyama; Masataka Chikamatsu; Shoichi Nemoto, and Takeshi Suzuki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,875

Claims priority, application Japan, Sep. 13, 1991, 3-262857; Dec. 27, 1991, 3-360629; Dec. 27, 1991, 3-360630; Jan. 10, 1992, 4-021711

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **22 Claims**



1. An evaporative fuel-processing system for an internal combustion engine having an intake system, including an evaporative emission control system having a fuel tank, a canister containing an adsorbent, said canister having an air inlet port communicatable with the atmosphere, an evaporative fuel-guiding passage extending between said canister and said fuel tank, a first control valve arranged across said evaporative fuel-guiding passage, an evaporative fuel-purging passage extending between said canister and said intake system, and a second control valve arranged across said evaporative fuel-purging passage,

said evaporative fuel-processing system having an abnormality-determining system which comprises:

pressure-detecting means for detecting pressure within said evaporative emission control system;

negatively-pressurizing means for negatively pressurizing said evaporative emission control system; and

abnormality-determining means for determining abnormality of said evaporative emission control system based on the pressure within said fuel tank detected after said evaporative emission control system has been negatively pressurized by said negatively-pressurizing means.

5,299,546

AIR-FUEL RATIO CONTROL APPARATUS OF INTERNAL COMBUSTION ENGINE

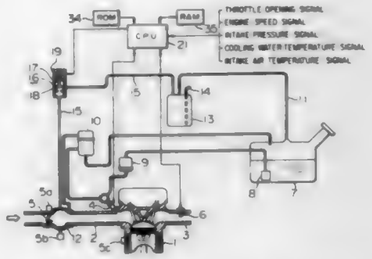
Tatsunori Kato, Nagoya; Katsuhiko Kodama, Toyota; Masahiko Tajima, Takahama, and Junya Morikawa, Kasugai, all of Japan, assignors to Nippondenso, Co., Ltd., Kariya, Japan

Filed Apr. 27, 1993, Ser. No. 52,926

Claims priority, application Japan, Apr. 28, 1992, 4-109592; Nov. 10, 1992, 4-299925

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **10 Claims**



1. An air-fuel ratio control apparatus of an internal combustion engine for storing evaporated fuel generated in a fuel tank in a canister and blowing off the evaporated fuel stored in the canister to an intake side of the internal combustion engine through a blow-off passage together with air, comprising:

air-fuel ratio detecting means for detecting an air-fuel ratio of said internal combustion engine;

air-fuel ratio feedback control means for making feedback control of the air-fuel ratio of the air-fuel mixture supplied to the internal combustion engine in accordance with the air-fuel ratio detected by the air-fuel ratio detecting means;

a flow rate control valve for changing a purge rate of air containing the evaporated fuel blown off to the intake side of said internal combustion engine from said canister through said blow-off passage;

purge rate control means for controlling the purge rate by said flow rate control valve in accordance with the state of the engine;

learning value storage means for storing air-fuel learning values;

learning value renewal means for renewing said air-fuel ratio learning values based on the air-fuel ratio feedback value by said feedback control means;

concentration detecting means for detecting the concentration of said evaporated fuel;

purge reacting fuel quantity correcting means for correcting the fuel quantity so that the air-fuel ratio shows a predetermined value in accordance with the evaporated fuel concentration detected by said concentration detecting means and the purge rate by said purge rate control means; and

learning inhibiting means for inhibiting renewal of said learning values once purge is started by said flow rate control valve until a predetermined period has elapsed.

5,299,547

INTAKE AIR FLOW INCREASING DEVICE FOR COMBUSTION ENGINE

Sandou Michimasa, 2-2682-5, Hishi-Machi, Kiryu-Shi Gunma-Ken 376, Japan

Filed Apr. 15, 1992, Ser. No. 868,944

Int. Cl.[5] F02B *33/00*

U.S. Cl. 123—559.1 **9 Claims**

1. An intake air flow increasing device for a combustion engine, comprising:

a main compressed air conducting path linked to a compressed air discharge opening of a compressed air tank via a main control valve wherein said main control valve is opened and closed according to operation of a speed change mechanism;

an auxiliary compressed air conducting path linked to said compressed air discharge opening via an auxiliary control valve wherein said auxiliary control valve operates independently of opening and closing operations of said main control valve;



a pressure regulator means for adjusting pressure of compressed air being provided in said main compressed air conducting path and said auxiliary compressed air conducting path; and

air exhausting body connected to a discharge side of each said compressed air conducting path and being provided forward of an intake air opening connected to an air cleaner, and said air exhausting body having air exhaust nozzles facing said intake air opening.

5,299,548

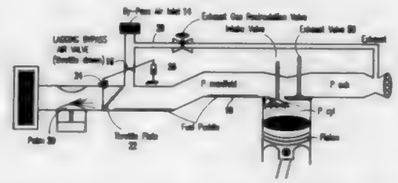
CARBURETOR WITH LAGGING BYPASS AIR VALVE

Jeffery Beall, Blacksburg, Va., assignor to The Center for Innovative Technology, Herndon, Va.

Filed Dec. 18, 1992, Ser. No. 992,592

Int. Cl.[5] F02M *9/08*

U.S. Cl. 123—586 **15 Claims**



1. An emission reduction device for a small gasoline engine, comprising:

a bypass air inlet positioned to provide air to lean a fuel/air mixture prior to combustion;

a valve positioned in said bypass air inlet to control the quantity of said air passing through said bypass air inlet; and

damping means, connected to said valve, for damping response of said valve with respect to an engine load condition, said damping means causing said valve to gradually open in response to an increased engine load condition and to gradually close in response to a decreased engine load, wherein said damping means links said valve and a throttle valve position in an intake manifold, said throttle valve opening and closing according to said engine load condition.

5,299,549

METHOD OF CONTROLLING THE FUEL-AIR RATIO OF AN INTERNAL COMBUSTION ENGINE

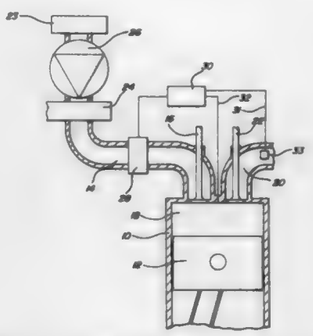
Oskar Schatz, Waldpromenade 16, D-8035 Gauting, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 990,902

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141481

Int. Cl.[5] F02D *41/06, 41/14*

U.S. Cl. 123—672 **2 Claims**



1. A method of controlling air-fuel ratio in an internal combustion engine comprising:

providing an internal combustion engine including a combustion chamber with a piston, intake means enabling fuel and air to enter into said combustion chamber and exhaust means for enabling exit of exhaust gases, valve means for controlling air-fuel into said piston in said intake means;

preheating said combustion chamber to a desired temperature;

injecting a desired amount of an air-fuel ratio mixture into said combustion chamber, said air-fuel ratio mixture injected in two partial streams by opening and closing said valve means the amount of fuel may vary from zero to a desired amount;

controlling the amount of the air-fuel ratio mixture entering into said combustion chamber; and

sensing the exhaust gases for enabling adjustment of said air-fuel ratio entering said combustion chamber.

5,299,550

DETECTING DEVICE AND METHOD OF AN ABNORMALITY IN AN AIR-FUEL RATIO CONTROL SYSTEM

Norikazu Inoue, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,311

Claims priority, application Japan, Mar. 30, 1992, 4-074215

Int. Cl.[5] F02M *7/00, 51/00*

U.S. Cl. 123—674 **4 Claims**

1. A device for detecting an abnormality in an air-fuel control system mounted on an engine having, an intake air measurement system mounted in an intake pipe for measuring an amount of induced air into said engine, a fuel injection system for injecting a fuel into a cylinder, an air-fuel ratio sensor inserted in an exhaust pipe for detecting an air-fuel ratio near a catalyst, various sensors for detecting an engine operating condition and for generating an engine operating condition signal, and control means responsive to said engine operation signal for controlling said engine with data stored in a memory by a learning control, an improvement of the device which comprises:

judging means responsive to said engine operating condition signal for deciding whether said various sensors operate normally and for generating a normal signal if each output

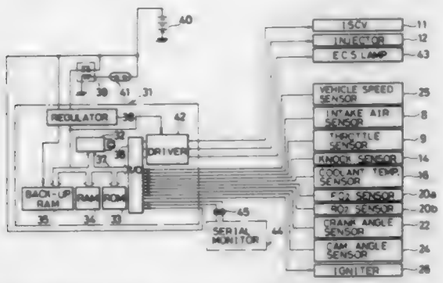
VOL 1161 ISS 1 AP 5 1994 UMI

of said various sensors is in each predetermined normal range;

deciding means responsive to said normal signal for judging whether said engine operating condition is satisfied with every condition for diagnosis and for producing a diagnosis signal;

determining means responsive to said diagnosis signal for judging whether said engine is controlled in a closed-loop operation and for outputting a closed-loop signal;

learning control means responsive to said closed-loop signal for comparing a number of grids being renewed said data in said memory with a predetermined number and for generating a number signal when said number is larger than said predetermined number;



calculating means responsive to said a number signal for computing a difference between corrected values in said memory and for producing a difference signal;

comparing means responsive to said difference signal for comparing said difference signal with a predetermined difference and for generating an abnormal signal if said difference signal is larger than said both predetermined difference; and

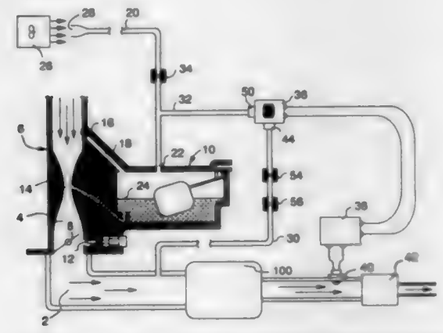
warning means responsive to said abnormal signal for indicating an abnormality of said intake air measurement system and for storing said abnormality in a backup RAM in said memory so as to precisely and promptly identify said abnormality from that of deterioration of said sensors.

5,299,551

CARBURETOR KIT FOR IMPROVED AIR-FUEL MIXTURE

Richard M. Tofel, 6221 North Cadena de Montanas, Tucson, Ariz. 85718, and Jon A. Petty, 2767-B W. Anklam, Tucson, Ariz. 85745

Filed Feb. 10, 1993, Ser. No. 16,047
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—701 **14 Claims**



1. Apparatus for improving the emissions of internal-combustion engines having a radiator fan generating a first air stream and a carburetor wherein an air-fuel mixture is produced by drawing fuel from a fuel float chamber into a second air stream flowing through a venturi tube as a result of a vacuum provided at an intake manifold, comprising:

(a) first pneumatic passage means for connecting the float chamber of the carburetor and the first air stream, so that a positive pressure differential is available for application to the float chamber;

(b) second pneumatic passage means for connecting the float chamber and intake manifold, so that a negative pressure differential is available for application to the float chamber;

(c) valve means for controlling the flow rate through said second pneumatic passage means;

(d) sensor means for measuring the oxygen content of the exhaust gases of the engine and for generating a signal corresponding to said oxygen content; and

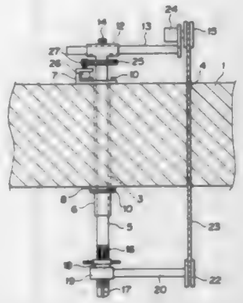
(e) electronic control means for actuating said valve means in response to the signal generated by said sensor means, such that the flow rate through said valve means is progressively reduced as the oxygen content in the exhaust gases increases and is progressively increased as the oxygen content in the exhaust gas decreases.

5,299,552

METHOD AND APPARATUS FOR CUTTING CIRCULAR OPENING IN STRUCTURE

Setsuo Kubo, Kyoto, Japan, assignor to Kabushiki Kaisha Dymosha, Kyoto, Japan

Filed Jan. 8, 1993, Ser. No. 2,264
Claims priority, application Japan, Jan. 16, 1992, 4-024386
Int. Cl.[5] B28D *1/08*
U.S. Cl. 125—21 **2 Claims**



1. A method of cutting a circular opening in a structure comprising the steps of:

forming through-holes in the structure to be cut on a circular cutting line and at the center of the circular cutting line;

inserting a shaft through the center through-hole with opposite ends of shaft extending outwardly from upper and lower surfaces of the structures;

securing support arms to both ends of the shaft with each of the support arms having a longitudinal axis extending radially from the longitudinal axis of said shaft;

passing an endless wire saw through the through-hole on the cutting line and passing the endless wire saw around pulleys mounted on the support arms, such that the rotational axis of each pulley is parallel to the longitudinal axis of the respective support arm; and

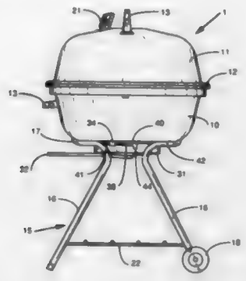
driving the wire saw by a drive unit while rotating the support arms about the shaft.

5,299,553

KETTLE GRILL AND ASH-CATCHER ASSEMBLY THEREFOR

Michael Giebel; David Landis, both of Joplin; Tienchai Puangnak, and Randy Love, both of Neosho, all of Mo., assignors to Sunbeam Corporation, Providence, R.I.

Filed Dec. 1, 1992, Ser. No. 983,440
Int. Cl.[5] F24B *3/00*
U.S. Cl. 126—25 R **9 Claims**



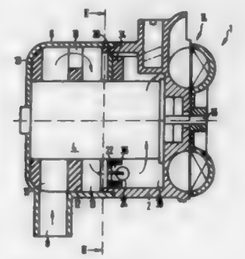
1. A barbecue grill assembly comprising a grill base for containing a heat source, a plurality of legs supporting the base, and a grilling surface positioned on the base above the heat source, an ash-catcher assembly comprising an ash-catcher pan positioned below an opening in the grill base, said opening being sized and positioned to allow ashes from said heat source to fall through said opening and into said ash-catcher pan, means for adjusting said ash-catcher pan in a vertical direction to vary the size of an opening formed between said ash-catcher pan and said grill base, said ash catcher tray including a handle for moving said ash-catcher pan to a closed air draft positioned and an open air draft position with respect to the opening in said grill base.

5,299,554

BURNER FOR A MOTOR VEHICLE HEATER

Fritz Mohring, Ostfildern, Fed. Rep. of Germany, assignor to J. Eberspacher, Esslingen, Fed. Rep. of Germany

PCT No. PCT/DE90/00957, § 371 Date May 12, 1992, § 102(e) Date May 12, 1992, PCT Pub. No. WO91/10068, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 12, 1990, Ser. No. 849,440
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942647
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 D **9 Claims**



1. A variable burner comprising:

an air fan;

motor means, connected to said air fan, and for driving said air fan;

a substantially cylindrical housing surrounding said motor means and having a center substantially aligned with a center of said motor means;

a printed circuit board is positioned inside said substantially cylindrical housing and radially surrounding said motor means, said printed circuit board defines an air passage opening; and

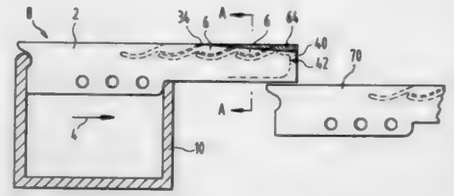
an electrical resistor positioned downstream of said air passage opening.

5,299,555

FRAME ELEMENT FOR FORMING A GRATE

Jean-Claude Claes, Olne, Belgium, assignor to Abrasion Engineering Company Limited, Channel Islands, United Kingdom

Filed Sep. 8, 1992, Ser. No. 940,940
Claims priority, application Belgium, Sep. 9, 1991, 91115207.2
Int. Cl.[5] F23H *13/00*
U.S. Cl. 126—152 B **13 Claims**



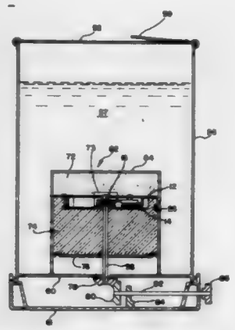
1. A grate element for forming a grate, comprising a frame means having two spaced-apart and elongated side members which include opposing surfaces, several plate members arranged one next to the other in a longitudinal direction of said side members, said plate members being supported on and extending transversely between said opposing surfaces of said side members, means defining a gas-venting slot between said plate members, and said plate members each being constructed as individual structural parts releasably connectable to said opposing surfaces of said side members.

5,299,556

SELF-HEATING CONTAINER

Koki Ando, Tokyo, Japan, assignor to Nissin Shokuhin Kabushiki Kaisha, Japan

Filed May 18, 1990, Ser. No. 525,464
Claims priority, application Japan, May 25, 1989, 1-61019[U]
Int. Cl.[5] F24J *1/00*
U.S. Cl. 126—263 R **4 Claims**



1. A self-heating container comprising an outer casing (56) having a bottom wall (60), an inner casing (64) secured within sad outer casing and including a wall (12), an ignition agent (73) mounted in said inner casing (64) adjacent said wall (12), a heat-generating material (72) contained in said inner casing

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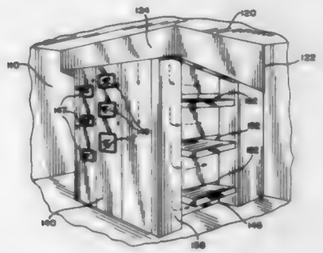
adjacent said ignition agent (73), a vertical shaft (38) journalled within the inner casing and having a lower end extending out of said bottom wall of said outer casing, a sparking wheel (36) having an abrasive surface and secured to said vertical shaft adjacent said heat-generating material, and a flint (40) supported by said wall of said inner casing and pressed against said abrasive surface to generate sparks when said wheel is caused to rotate, characterized by a horizontal shaft (82, 88) journalled to said outer casing and adapted to be rotated, and gear means (78, 80) for coupling said vertical shaft (38) and said horizontal shaft (82, 88).

5,299,557

OVEN ENCLOSURE AND VENTILATION SYSTEM

Steven D. Braithwaite, Wichita; Jerome R. Henke, Rose Hill, both of Kans., and Pete Neitzel, Rothschild, Wis., assignors to Pizza Hut, Inc., Wichita, Kans.

Filed Feb. 4, 1991, Ser. No. 650,815
Int. Cl.[5] F23J *11/00*; F24C *15/20*
U.S. Cl. 126—299 R 37 Claims



1. An enclosure and ventilation system for a conveyor oven, said oven having a front, and rear oven wall, and a first and second oven end wall; said oven having at least one oven entry opening for inserting food products onto a conveyor in one of said oven walls, and at least one oven exit opening for removing food products from the conveyor in one of said oven walls; said enclosure system comprising:

hood means for supplying intake air and exhausting heated air, said hood means extending over said conveyor oven;

front enclosure and rear enclosure walls parallel to and spaced apart from the front and rear oven walls of the oven respectively;

a first enclosure end wall parallel to and spaced apart from the first oven end wall; and

a second enclosure end wall parallel to and spaced apart from the second oven end wall;

an enclosure entry opening in at least one of said enclosure walls corresponding to each oven entry opening, each of said enclosure entry openings being formed of a plurality of panels which are spaced apart vertically;

an enclosure exit opening in at least one of said enclosure walls corresponding to each oven exit opening;

wherein the hood means, front enclosure wall, rear enclosure wall, first enclosure end wall, and second enclosure end wall are configured such that at least a portion of the intake air passes over the front oven wall, rear oven wall, first oven end wall, and second oven end wall before being exhausted by the hood means.

5,299,558

MODULAR FIREPLACE INSERT

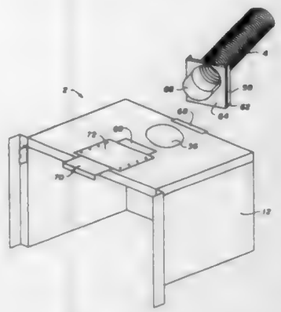
Lothar Binzer, 5721 124th Street, Surrey, British Columbia, Canada

Filed Sep. 16, 1992, Ser. No. 945,530
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—512 16 Claims

1. A fireplace insert for a fireplace cavity formed within a building, the building further defining a venting passage that includes a flexible duct section, the fireplace insert comprising:

an enclosure dimensioned to be insertable within the fireplace cavity filling substantially the entire cavity to define a combustion chamber for generating heat, the combustion chamber having a combustion chamber outlet;

an adapter plate connected to an end of the flexible duct section for sealably connecting the duct section and the combustion chamber outlet;



a fixed retaining flange adjacent the combustion chamber outlet to engage an edge of the adapter plate prior to insertion of the enclosure within the fireplace cavity; and

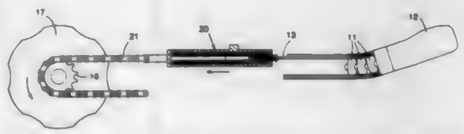
a slidable retaining flange extending outwardly from the enclosure and positioned to be accessible when the enclosure is in place in the fireplace cavity and moveable between a released position and an engaged position in which the fixed and slidable retaining flanges co-operate to retain the adapter plate in position in the combustion chamber outlet.

5,299,559

ENDOSCOPE WITH OVERLOAD PROTECTIVE DEVICE

Douglas M. Bruce, Santa Cruz; Thomas G. Cooper, Menlo Park, both of Calif.; James E. Phetteplace, Westfield, and Joseph F. Rosewarne, Turners Falls, both of Mass., assignors to Acuson Corporation, Mountain View, Calif.

Filed Mar. 13, 1992, Ser. No. 850,933
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 6 Claims



4. An overload protection device for use in an endoscope having a probe and means for articulating the probe, including a pair of wires connected to a rotatable operating member, and means for interconnecting a wire to the operating member to provide controlled resiliency that inhibits the application of excess tension in said wire, said overload protection device comprising:

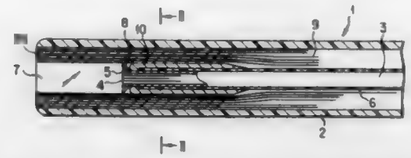
a cylinder adapted for connection to the operating member, a piston adapted for connection to the wire and slidably received within said cylinder, a spring engaged with said piston and resiliently biasing said piston into said cylinder, and a spring retainer capturing said spring within said cylinder and applying a preset biasing force to said piston.

5,299,560

ENDOSCOPE IN WHICH A BEND REMAINING IN THE INSERTION PORTION UPON REMOVAL FROM STORAGE IS REDUCED

Tsuruo Hatori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,991
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 10 Claims



1. An endoscope having an elastic insertion portion with an axis, comprising:

an internal structural element extending along the axis of the insertion portion, the internal structural element being made of a non-viscoelastic material and having a flexibility; and

a sheath element covering the internal structural element, the sheath element being made of a viscoelastic material; and

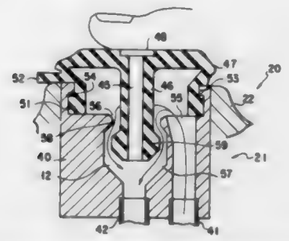
said sheath element having a flexibility higher than the flexibility of the internal structural element, thereby preventing a remaining bend of the insertion portion.

5,299,561

SUCTION CONTROL APPARATUS FOR AN ENDOSCOPE

Yosuke Yoshimoto, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 916,913
Claims priority, application Japan, Aug. 21, 1991, 3-209299
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 22 Claims



1. An endoscope including a suction control unit for controlling communication between a fluid channel leading to a suction source and fluid channel extending in an insertion section, the insertion section being insertable into a cavity of an object, the endoscope comprising:

the insertion section;

a control section for operating the insertion section, the control section being adapted to be positioned outside of the object;

a first fluid channel extending from the insertion section to the control section;

a second fluid channel provided in the control section, the second fluid channel being connectable to the suction source;

a control body provided at the control section, the control body having:

an outer surface;

a first hole having two end portions and an axis, with one end portion being coupled in fluid communication with the first fluid channel; and

at its other end portion, a first opening which is opened outwardly of the control body; and

a second hole having two end portions and an axis, with one end portion being coupled to the second fluid channel; and at its other end portion, a second opening which is opened outwardly of the control body;

and wherein the first and second openings are adjacent to each other at the outer surface of the control body;

a cap member detachably mounted on the control section, the cap member covering the outer surface of the control body so that a given space is formed therebetween;

control means for selectively placing the first and second holes in fluid communication with each other via said given space, the control means including a piston member inserted to be movable with a stroke-like motion in a given direction into the second hole to selectively open and close the second hole in cooperation with walls defining the second hole;

the piston member having:

a leak hole that is in fluid communication with an outer atmosphere; and

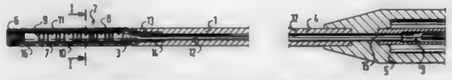
wherein the leak hole extends substantially along the given direction of the stroke-like motion of the piston member into the second hole.

5,299,562

ENDOSCOPE HAVING A CONTROLLABLE DISTAL END PIECE

Helmut Heckele, Knittlingen, and Rudolf Heimberger, Oberderdingen, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,576
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, 4201280
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—4 5 Claims



1. In an endoscope, an instrument shaft having a controllable distal end piece which is bendable relative to the instrument shaft, a guide tube fixed at both ends relative to the instrument shaft and at least one tension wire guided through said tube and being actuable proximally of the instrument shaft to bend the distal end piece, one side of the distal end piece being bendable about a larger radius of curvature than the opposite side of the distal end piece, the one side being adapted to act as a return spring and the opposite side being pliable to facilitate bending of the distal end piece, the distal end piece comprising a braided hose, ends of which are reinforced to provide respective distal and proximal annular bodies, said one side of the distal end piece having a reinforcement means adapted to act as a return spring and to connect said annular bodies, said at least one tension wire being engaged with the distal annular body and the proximal annular body being fixed with respect to the instrument shaft.

5,299,563

METHOD OF USING A SURGICAL RETRACTOR

Joseph Z. Seton, Trinity Pass, Pound Ridge, N.Y. 10518

Filed Jul. 31, 1992, Ser. No. 922,832
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 2 Claims

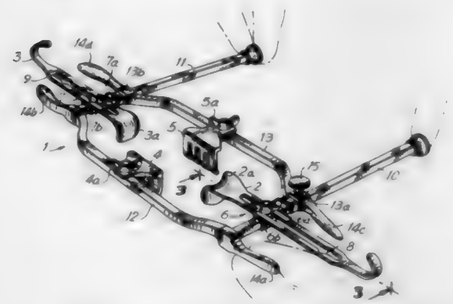
1. A method of surgical repair at a shallow surgical site using a retractor device wherein the retractor device comprises a) a frame including first and second substantially parallel, spaced

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strut bars, each having first and second ends, said first strut bar having a first rounded holding element attached thereto and said second strut bar having a second rounded holding element attached thereto, b) a first main bar disposed generally perpendicular to said first and second strut bars, and connected to said first ends of said first and second strut bars, said first main bar having a first hooked holding element being attached thereto at a position between said first and second strut bars, and c) a second main bar disposed generally parallel to said first main bar and generally perpendicular to said first and second strut bars, said second main bar being slidably attached to said first and second strut bars for movement toward and away from said first main bar, and having a second hooked holding element attached thereto at a position between said first and second strut bars, wherein the method comprises the steps of:

forming a surgical incision at the shallow surgical site, the incision having a first end, a second end, a first side, and a second side;

placing the first and second hooked holding elements into



the incision in engagement with the first and second sides, respectively, of the incision;

anchoring the first and second rounded holding elements in place against the first and second ends, respectively, of the incision;

spreading open the incision to expose the surgical site by sliding the second main bar along the first and second strut bars in a direction away from the first main bar, thereby causing the first and second hooked holding elements to spread the first and second sides of the incision apart;

performing the necessary surgical repair at the surgical site;

incrementally reducing an opening of the incision while suturing the incision by gradually sliding the second main bar along the first and second strut bars and toward the first main bar so that the second hooked holding element gradually moves closer toward the first hooked holding element, until the first and second sides of the incision are adjacent to each other; and

removing the retractor device and completing suturing of the incision.

5,299,564

EXPANDABLE DILATOR AND METHOD FOR INTRAOCULAR SURGERY

Robert C. Sabatino, Newtown Square, Pa., assignor to Kabi Pharmacia Ophthalmics Inc., Monrovia, Calif.

Filed Sep. 23, 1992, Ser. No. 949,702

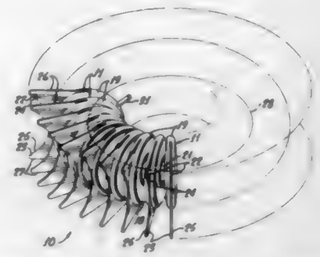
Int. Cl.[5] A61B *17/02*

U.S. Cl. 128—20 **6 Claims**

1. A device for dilating the pupillary space defined by the marginal edge of an iris in an eye during intraocular surgery, said device comprising:

a hollow torus formed of fluid-impervious flexible resilient material and dimensioned to fit in said pupillary space, said torus having a corrugated or undulating wall constructed so that the diameter of said torus will increase in response to injection of fluid into said torus;

injection means through which fluid may be injected into said torus, effecting said increase in diameter of said torus and consequent dilation of said pupillary space; and



iris-engaging means including rib means provided on the outer side of said torus and shaped generally to receive said marginal edge of said iris, said rib means mating with said marginal edge and effecting said dilation of said pupillary space in response to injection of fluid into said hollow torus.

5,299,565

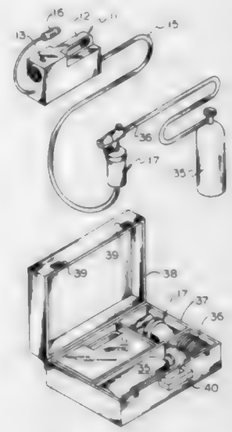
PORTABLE NEBULIZER APPARATUS

James N. Brown, 513 Magnolia Dr., Tupelo, Miss. 38801

Filed Oct. 19, 1992, Ser. No. 962,930

Int. Cl.[5] A62B *7/06;* **A61M** *16/00;* **F16K** *11/00;* **G05D** *11/02*

U.S. Cl. 128—200.21 **2 Claims**



1. A portable breathing apparatus, comprising,

an air compressor, the air compressor having an air inlet and an air outlet, the air outlet having a flexible outlet conduit extending therefrom, and

the air compressor including an electrical conduit directed therein for directing electrical energy into the air compressor, and

an electrical plug arranged for reception within a vehicular cigarette lighter mounted to a free distal end of the electrical conduit, and

the flexible outlet conduit directed into a reservoir container and directed therethrough, and the reservoir container having a container cap, with the first conduit directed into the reservoir cap through the container in pneumatic isolation relative to the reservoir container, and

a second conduit extending from the first conduit from within the container cap extending into the reservoir container, with the reservoir container having a container floor and the second conduit arranged in adjacency relative to the container floor, and

a head member mounted to the container cap, the head member having an outlet nozzle, and a mixing chamber mounted within the head member in pneumatic communication with the first conduit, with a fluid medicant arranged for reception with the reservoir container for projection through the second conduit into communication with the first conduit when compressed air is directed through the first conduit from the outlet conduit and the air compresor, and

the outlet nozzle includes a flexible respirator conduit mounted to the outlet nozzle and a respirator mask mounted to the respirator conduit, and

first control means directed into the second conduit for adjusting fluid flow through the second conduit from the reservoir container, wherein the first control means includes a first control valve rod reciprocatably mounted into the second conduit, and the first control valve rod includes a first shank threadedly received within the container cap, and a first handle mounted to the first shank, wherein the first handle is positioned exteriorly of the container cap, whereupon rotation of the first handle effects reciprocation of the first control valve rod relative to the first conduit, and

a third conduit directed into the head member into communication with the mixing chamber, and the third conduit including a third conduit nipple projecting exteriorly of the head member, and an oxygen canister, and an oxygen canister hose in pneumatic communication between the oxygen canister and the third conduit in surrounding relationship relative to the nipple.

5,299,566

METHOD OF ADMINISTERING PHOSPHOLIPID DISPERSIONS

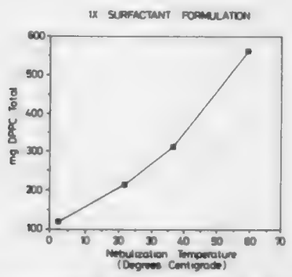
Craig W. Davis, and Rodney G. Snyder, both of Greenville, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C. and The Wellcome Foundation LTD, London, United Kingdom

Filed Sep. 18, 1992, Ser. No. 948,144

Claims priority, application United Kingdom, Sep. 19, 1991, 912000

Int. Cl.[5] A61K *37/02;* **A61M** *11/00*

U.S. Cl. 128—200.24 **36 Claims**



1. A method of administering a surfactant dispersion to the lungs of a patient in need of such treatment, comprising:

providing a dispersion comprised of a phospholipid dispersed in an aqueous carrier; wherein said phospholipid is dipalmitoylphosphatidylcholine (DPPC); and wherein said DPPC is included in an amount from about 10 to 90 milligrams per milliliter of aqueous carrier; then

heating the dispersion to a temperature between about 25° C. and 90° C.; then

nebulizing the dispersion to respirable surfactant particles; and then

delivering the respirable surfactant particles to the lungs of a patient.

5,299,567

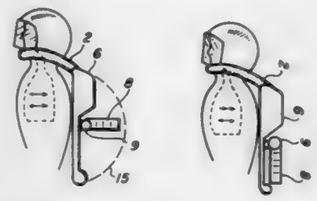
MINIMAL ELASTANCE, CLOSED-CIRCUIT UNDERWATER BREATHING APPARATUS

Donald D. Joye, Exton, Pa., and Neal A. Carlson, Germantown, Md., assignors to The United States of America as represented by The Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1992, Ser. No. 953,155

Int. Cl.[5] A61M *16/00;* **A62B** *7/04*

U.S. Cl. 128—204.28 **7 Claims**



7. In an underwater breathing apparatus (UBA) of the type adapted to recirculate breathing gas to a diver, absorb CO_2, add make-up oxygen and provide capacitance through a breathing bag, a method of substantially eliminating elastic component of impedance by (a) adapting said breathing bag to change volume without substantial vertical component and (b) maintaining said breathing bag in a horizontal position regardless of the orientation of the diver.

5,299,568

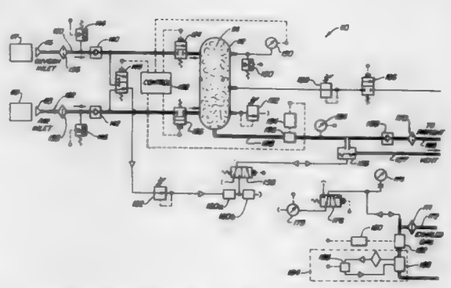
METHOD FOR CONTROLLING MIXING AND DELIVERY OF RESPIRATORY GAS

Lester Forare, San Diego; Paul Fennema, Fallbrook, and Roger Gagne, Carlsbad, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 793,242, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 370,018, Jun. 22, 1989, abandoned. This application Jan. 11, 1993, Ser. No. 2,690

Int. Cl.[5] A62B *9/02;* **G05B** *1/00*

U.S. Cl. 128—205.11 **4 Claims**



1. A method for delivering respiratory gas to a patient from a respirator providing a rigid, fixed wall pressure containment vessel having first and second inlet ports, each of said inlet ports connecting the vessel in fluid communication with first and second separate sources of respective first and second component gases to be combined in said vessel in a desired ratio to form said respiratory gas, said respiratory gas in said vessel having an initial known ratio of said component gases; said respirator providing outlet means to connect the vessel in fluid communication with the patient; said respirator providing

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sensor means to sense the pressure of said respiratory gas in the containment vessel; said respirator providing means to sequentially control the flow of said component gases through said inlet ports; and said respirator providing output flow control means to control the flow of said respiratory gas through said outlet means, the method further comprising the steps of:

a) measuring the pressure of gas within said vessel following inhalation by the patient;

b) determining pressure increase values for said first and second component gases in said vessel corresponding to the number of molecules of each said component gas required to fill said vessel with said desired ratio of said component gases to a desired fill pressure based upon the total pressure and said initial known ratio of component gases in said vessel;

c) sequentially filling said vessel with said component gases to said corresponding pressure increase values while measuring pressure in said containment vessel, by introducing said first component gas into said vessel through said first inlet port while said second inlet port is closed, and said second component gas through said second inlet port while said first inlet is closed according to said pressure change values until said fill pressure of gas in said vessel is reached;

d) measuring an actual pressure increase in said containment vessel for each said component gas introduced into said vessel;

e) determining the ratio of said component gases in said containment vessel based upon said initial known ratio of component gases in said vessel, said total pressure and said actual pressure changes for each said component gas introduced into said vessel;

f) withdrawing said respiratory gas from said vessel for a predetermined period of time according to a withdrawal flow command;

g) measuring an outflow change in the pressure of gas in the vessel over time;

(h) subtracting said measured outflow change in pressure from a desired pressure change to obtain a gas pressure change error in the amount of gas delivered in a gas delivery;

(i) integrating said gas pressure change error for each said delivery to determine an integral error in the amount of gas delivered;

(j) setting said withdrawal flow command for the next withdrawal to said desired pressure change plus an amount proportional to the above integral error;

(k) controlling said withdrawing of gas from said vessel in a predetermined manner responsive to changes in the pressure of gas sensed in said containment vessel; and

(l) repeating steps h)–j) for a subsequent delivery of a volume of gas.

5,299,569

TREATMENT OF NEUROPSYCHIATRIC DISORDERS BY NERVE STIMULATION

Joachim F. Wernicke, League City; Reese S. Terry, Jr., Houston, both of Tex., and Jacob Zabara, Philadelphia, Pa., assignors to Cyberonics, Inc., Webster, Tex.

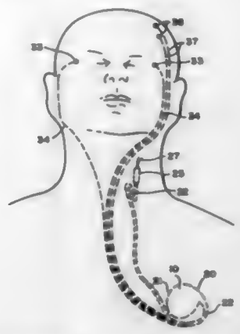
Filed May 3, 1991, Ser. No. 695,420
Int. Cl.[5] A61N *1/18*
U.S. Cl. 607—45 **19 Claims**

1. A method of treating patients with neuopsychiatric disorders, which includes

selecting a patient suffering form a neuropsychiatric disorder,

determining the type of neuropsychiatric disorder exhibited by the patient, and

selectively applying a predetermined electrical stimulus to the patient's vagus nerve for modulating the electrical activity thereof in a manner to alleviate the symptoms of



the neuropsychiatric disorder exhibited by the patient being treated.

5,299,570

SYSTEM FOR MEASURING THE SATURATION OF AT LEAST ONE GAS, PARTICULARLY THE OXYGEN SATURATION OF BLOOD

Rudolf A. Hatschek, Fribourg, Switzerland, assignor to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Aug. 12, 1992, Ser. No. 928,120
Claims priority, application Switzerland, Aug. 12, 1991, 2372/91-6
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **20 Claims**

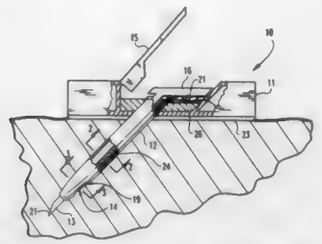
1. A system for measuring a saturation of at least one gas in blood present in a living body, comprising: light radiating means for generating light having various wavelengths; a sensor intended to rest on the body, the sensor having a light radiating zone where the light having various wavelengths is emitted from the sensor into the body, and light receiving zones located at various distances from the light radiating zone; light receiving means for detecting the intensity of light which is scattered back by the body and which reaches each light receiving zone; and circuit means, connected to the light receiving means, for detecting the at least one gas saturation from light intensities detected for the various wavelengths, the circuit means including selection and evaluation means for selecting one evaluation zone among the light receiving zones on the basis of a predetermined criterion, and for evaluating light reaching the light receiving means only in the selected evaluation zone in order to detect the at least one gas saturation.

5,299,571

APPARATUS AND METHOD FOR IMPLANTATION OF SENSORS

John J. Mastrototaro, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 22, 1993, Ser. No. 8,611
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—634 **21 Claims**



1. An apparatus for implantation of a sensor beneath the skin surface which comprises:

a housing;

a dual-lumen tube having a proximal end attached to said housing and having a distal end projecting from said housing, said tube, including the distal end, defining a first lumen and a second lumen;

a needle received within the first lumen of said tube, said needle including a proximal end and a pointed distal end extending outwardly of the distal end of said tube; and

a sensor received within the second lumen of said tube, said sensor including a sensing element positioned within the second lumen adjacent the distal end of said tube and outside of said housing, said sensor further including means for communicating information sensed by the sensing element to a location spaced from the sensing element, whereby implantation of said sensor is accomplished by forcing said needle and said tube into a desired location beneath the skin surface,

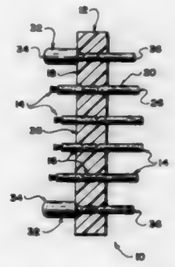
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5,299,572

BIOLOGICAL ELECTRODE ARRAY

Yunquan Chen; Charles A. Laszlo, and Cecil Hershler, all of Vancouver, Canada, assignors to University of British Columbia, Vancouver, Canada

Filed Oct. 30, 1992, Ser. No. 969,458
Int. Cl.[5] A61B *5/0492*
U.S. Cl. 128—639 **13 Claims**



1. A biological electrode array for connecting electrode apparatuses to the skin surface of a living body having a shape, the electrode array comprising:

an insulating mount having a central area with a center therein;

a plurality of spaced-apart brush-tip electrodes extending from the central area of the mount, the electrodes extending outwardly further from the mount as their distance from the center increases; and

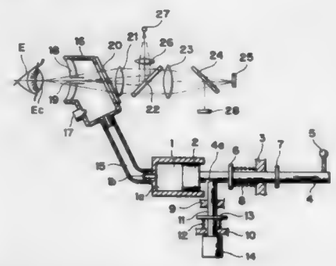
a plurality of protrusions extending from the mount further than the electrodes, the protrusions being spaced-apart about the brush-tip electrodes so the electrodes and the protrusions form a concave-shaped depression to conform to the shape of the living body, and each of the protrusions having a larger are than the brush-tip electrodes, whereby the protrusions prevent the brush-tip electrodes from penetrating the skin too far.

5,299,573

TONOMETER

Kazunobu Kobayashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 998,052
Claims priority, application Japan, Jan. 8, 1992, 4-020420
Int. Cl.[5] A61B *3/16*
U.S. Cl. 128—645 **7 Claims**



1. A tonometer comprising:

a cylinder having a spray port at a position opposing an eye to be examined;

a piston means for compressing a fluid in said cylinder, the fluid compressed by said piston means being sprayed on a cornea of the eye from the spray port;

a deformation detection system means for detecting deformation of the cornea sprayed with the fluid from the spray port, an intraocular pressure of the eye being measured by using a detection result of said deformation detection system means; and

a driving system means for driving said piston means and including a piston driving spring and a spring operation mechanism means for accumulating a force in said piston driving spring and releasing said piston driving spring which has accumulated the force upon driving of said piston means.

5,299,574

METHOD AND APPARATUS FOR SELECTIVE CORONARY ARTERIOGRAPHY

P. Jeffery Bower, 199 Suave Rd., River Ridge, La. 70123

Filed Aug. 29, 1986, Ser. No. 901,833
Int. Cl.[5] A61M *25/00*
U.S. Cl. 128—658 **12 Claims**

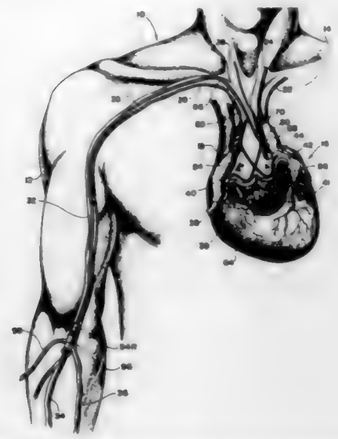
1. A catheter for selective coronary arteriography of a coronary artery, the catheter comprising:

an elongated, tubular member having an interior channel therein extending the length of the catheter, the catheter having a shank and an end part;

the end part being curved to provide a means for seating a

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portion of said end part while resting against a wall of the aorta and for seating a portion of said end part in a coronary cusp while resting against the coronary cusp when the catheter is in place.



5,299,575

SHORT EXCHANGE GUIDING CATHETER APPARATUS AND METHOD

James B. Sandridge, 2044 Eagle Nest, Lewisville, Tex. 75067

Filed Jul. 23, 1992, Ser. No. 919,048
Int. Cl.[5] A61B 6/00
U.S. Cl. 128—658 10 Claims



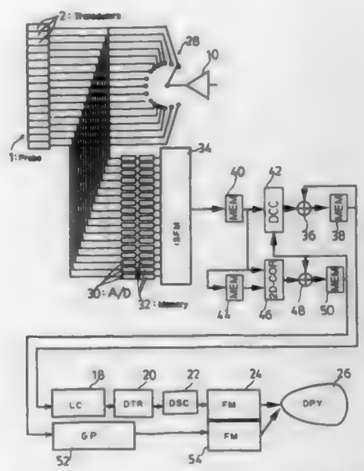
1. A short exchange guiding catheter, comprising:
(a) a guide catheter hub,
(b) an elongated guide catheter connected to the guide hub and forming a guide lumen therein for directing a guide wire extending from the hub through the guide lumen,
(c) a hypotube running along the guide catheter substantially the length of the guide catheter and forming an inflation lumen,
(d) an inflatable balloon within the guide lumen in communication with the inflation lumen, and
(e) inflation means in communication with the inflation lumen for inflating and deflating the balloon.

5,299,576

ULTRASONIC SYNTHETIC APERTURE DIAGNOSTIC APPARATUS

Akira Shiba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1992, Ser. No. 978,404
Claims priority, application Japan, Nov. 29, 1991, 3-316679
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.07 10 Claims



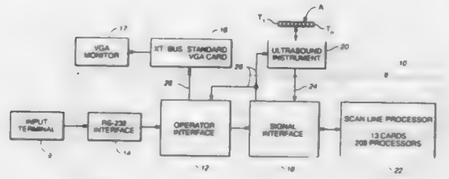
1. An ultrasonic synthetic aperture diagnostic apparatus, which detects information concerning an internal structure of an object to be examined by making each of a plurality of arranged transducers sequentially emits an ultrasonic pulse signal into the object in turn, receiving each ultrasonic echo reflected by the internal structure of the object by the plurality of transducers in each ultrasonic scanning cycle, and obtaining information concerning the internal structure of the object on the basis of input signals provided by the plurality of transducers, comprising:
an input signal focusing means which forms a focused input picture of the entire area of a desired field of view within the object on the basis of the input signals provided by the transducers in each ultrasonic scanning cycle;
a displacement measuring means which determines displacement vectors indicating the displacements of the picture elements between two focused input pictures obtained in two ultrasonic scanning cycles for a plurality of focused input pictures;
a displacement integrating means which determines integrated displacement vectors indicating the displacements of the picture elements of a focused input picture from those of a predetermined reference focused input picture by integrating displacement vectors of the corresponding picture elements in a plurality of focused input pictures;
a displacement correcting means which corrects the displacements of the picture elements of each focused input picture with reference to the corresponding picture elements of the predetermined reference focused input picture to obtain displacement-corrected focused input pictures;
a picture integrating means which obtains an integrated picture by integrating the displacement-corrected focused input pictures; and
an integrated picture displaying means which displays the integrated picture.

5,299,577

APPARATUS AND METHOD FOR IMAGE PROCESSING INCLUDING ONE-DIMENSIONAL CLEAN APPROXIMATION

Fredrick B. Brown, Reno, Nev., and Nathan Cohen, Belmont, Mass., assignors to National Fertility Institute, Greenbrae, Calif.

Continuation-in-part of Ser. No. 815,509, Jan. 2, 1992, which is a continuation-in-part of Ser. No. 508,131, Apr. 16, 1990, Pat. No. 5,111,823, which is a continuation-in-part of Ser. No. 341,047, Apr. 20, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 993,684
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.07 71 Claims



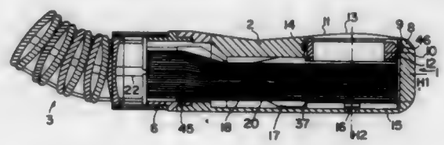
1. An apparatus for the reduction of noise components from an echographic image frame formed from a plurality of adjacent image signal rows each having a plurality of side-by-side image signals therein, said apparatus comprising:
a plurality of scan line processor circuits each connected to said echographic imaging apparatus for receipt and parallel processing of a row of said image signals therefrom, each of said scan line processor circuits further being responsive to receipt of a row of said image signals to produce a row of noise-reduced image signals by deconvolving noise components from said image signals only along said row; and
an image frame formation means connected to each of said scan line processor circuits for receipt of noise-reduced image signals therefrom and for arrangement of rows of said noise-reduced image signals in an image frame for display, said image frame formation means being formed for connection to an image display device.

5,299,578

ENDOSCOPIC PROBE

Bart J. Rotteveel, Delft, Netherlands, and Pieter D. Brommersma, Hamburg, Fed. Rep. of Germany, assignors to B.V. Optische Industrie "De Oude Delft" , Delft, Netherlands

PCT No. PCT/NL91/00143, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/02180, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 31, 1991, Ser. No. 969,209
Claims priority, application Netherlands, Aug. 2, 1990, 9001755
Int. Cl.[5] A61B 8/12
U.S. Cl. 128—662.06 19 Claims



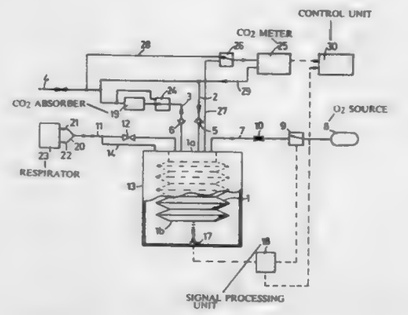
1. An endoscopic probe particularly suitable for use as a TEE probe, comprising a flexible tube having at one end a probe heat comprising an ultrasonic transducer means of the phased array type including a number of elongated transducer elements individually electrically controlled by cables connected to said individual controlled transducer elements extending through said flexible tube, said ultrasonic transducer means being mounted in an essentially cylindrical transducer housing placed in a cavity in said probe head and rotatable about a longitudinal axis of said probe head by drive means interacting with said transducer housing said elongated transducer elements being connected by flexible conductors to said cables extending through said flexible tube, a convex acoustic lens is fixed on said ultrasonic transducer means with a peripheral edge of said lens interacting in a sealing manner with an edge of said cavity in said probe head, said convex acoustic lens rotatable together with said ultrasonic transducer means relative to said probe head.

5,299,579

APPARATUS FOR EXAMINING A PATIENT'S PULMONARY FUNCTION

Andras Gedeon, Täby, and Claes Mebius, Djursholm, both of Sweden, assignors to MINCO AB, Taby, Sweden

PCT No. PCT/SE90/00770, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO91/07912, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 23, 1990, Ser. No. 859,362
Claims priority, application Sweden, Nov. 24, 1989, 8903964
Int. Cl.[5] A61B 5/08
U.S. Cl. 128—719 20 Claims



1. Apparatus for examining and measuring the pulmonary function of a patient, comprising
(a) a sealed reservoir (1) having an interior of variable volume,
(b) an inhalation conduit (3) and an exhalation conduit (2), which are connected with the reservoir (1) and include one-way valve means (5,6) permitting flow of gas through the inhalation conduit only in the direction from the reservoir and permitting flow of gas through the exhalation conduit only in the direction toward the reservoir,
(c) first connecting means (4) for connecting the inhalation conduit (3) and the exhalation conduit (2) with the respiratory tract of a patient to be examined, such that the patient can inhale from the reservoir (1) through the inhalation conduit and exhale into the reservoir through the exhalation conduit,
(d) carbon dioxide adsorbing means (19) for removing carbon dioxide from a stream of gas flowing through the inhalation conduit (3),
(e) monitoring means (17,18) for monitoring volumetric variations of the reservoir (1) resulting from the inhalation and exhalation of the patient and for determining the patient's total ventilatory rate,
characterized by
means (24) for selectively switching the carbon dioxide absorbing means (19) into the inhalation conduit (3),
concentration measuring means (25) for measuring the carbon dioxide concentration of a gas mixture,
second connecting means (26) for connecting the concentra-

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tion measuring means (25) with the interior of the reservoir (1) and with the first connecting means (4), and a computing unit (3) which is connected with the concentration measuring means (25) and with the monitoring means (17,18) and which comprises computing means for computing the pulmonary blood flow Q_p of the patient essentially in accordance with the equation

$$Q_p = \frac{P_{etCO2} \times MV}{S_c \times (P_{AstCO2} - P_{etCO2})} \quad (4)$$

wherein

MV is the patient's total ventilatory rate,

P_{aCO2} is the carbon dioxide concentration in the reservoir (1) at equilibrium, when the patient inhales from and exhales into the reservoir (10 with the carbon dioxide absorbing means (19) switched into the inhalation conduit (3),

P_{etCO2} is the carbon dioxide concentration of the gas exhaled by the patient at the end of an exhalation with the carbon dioxide absorbing means (19) switched into the inhalation conduit (3),

P_{AstCO2} is the asymptotic value which the carbon dioxide concentration of the gas exhaled by the patient approaches at the end of each exhalation when the patient inhales from and exhales into the reservoir (1) with the carbon dioxide absorbing means (19) disconnected from the inhalation conduit (3), and

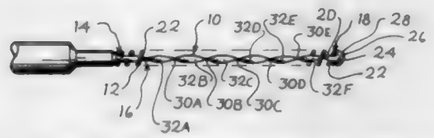
S_c is a known constant.

5,299,580

GUIDEWIRE WITH SAFETY RIBBON WITH SUBSTANTIALLY AXIALLY SYMMETRIC FLEXIBILITY

Robert E. Atkinson, New Brighton, and Peter T. Keith, Fridley, both of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Filed Oct. 9, 1992, Ser. No. 958,953
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **20 Claims**



1. An intravascular guidewire having a flexible distal portion comprising:

a coil; and

a flat ribbon extending through at least a portion of said coil and connected thereto;

said flat ribbon having a twisted geometry such that a flat side of a first section of said flat ribbon is oriented orthogonally to the flat side of a section of said flat ribbon longitudinally adjacent thereto.

5,299,581

INTRAVAGINAL DEVICE

John T. Donnell, 7100 Pershing, St. Louis, Mo. 63130, and J. W. Brown, 6 Briarcliffe Dr., Collinsville, Ill. 62234

Continuation of Ser. No. 548,575, Jul. 5, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,443
Int. Cl.[5] A61F *6/06*; A61M *25/00*
U.S. Cl. 128—830 **27 Claims**

1. In an intravaginal device, a flexible member insertable into a vagina and formed of a thin, sheet-like material impervious to passage of vaginal fluid therethrough whereby to adapt itself to the shape of the vagina walls, means to cause the member to engage the walls of the vagina, means to conduct a medicament to the outside thereof after the member has been inserted into the vagina and is engaged with the vagina walls thereby to



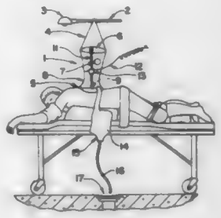
apply the medicament to the vagina walls, and means to restrict the escape of the excess fluids from the vagina.

5,299,582

SURGICAL ISOLATION APPARATUS

William E. Potts, Tallahassee, Fla., assignor to Little Rapids Corporation, Green Bay, Wis.

Filed Sep. 16, 1991, Ser. No. 760,754
Int. Cl.[5] A61B *19/12*
U.S. Cl. 128—846 **45 Claims**



1. A surgical isolation apparatus providing substantially complete isolation of all operating fluids from the operating personnel, comprising:

a. a liquid-impermeable work enclosure having sides, a top and a bottom, defining an interior working space;

b. means for attaching said bottom of said work enclosure to the patient surrounding the area of the patient upon which the operation is to be performed;

c. means for supporting said top of said work enclosure above the area of the patient upon which the operation is to be performed;

d. a plurality of first sealable apertures in said sides of said work enclosure permitting access to said interior working space for the hands of the operating personnel, and

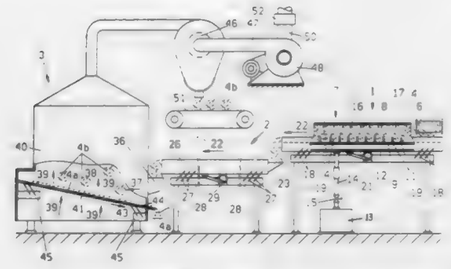
e. fully enclosed means for draining operating fluids from said bottom of said work enclosure.

5,299,583

METHOD OF AND APPARATUS FOR SEPARATING FRAGMENTS OF TOBACCO RIBS FROM SHREDDED TOBACCO

Manfred Lasch, Hamburg; Reinhard Liebe, Bornsen, and Klaus-Georg Hackmack, Hamburg, all of Fed. Rep. of Germany, assignors to Korber AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 993,312
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142631
Int. Cl.[5] A24B *3/06*
U.S. Cl. 131—312 **48 Claims**



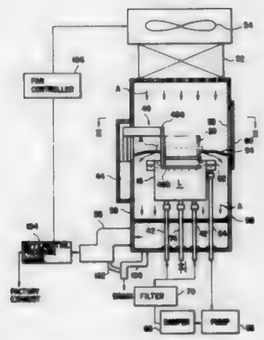
1. A method of treating a mixture which is composed of a first fraction consisting primarily of fragments of tobacco ribs and a second fraction consisting primarily of shreds of tobacco ribs and tobacco leaf laminae and including coherent, clumped together and/or crimped shreds, comprising the steps of heating the mixture, including contacting the mixture with steam, to thus at least substantially loosen and/or uncrimp the coherent, clumped together and/or crimped shreds; and thereupon separating the fractions from each other.

5,299,584

CLEANING DEVICE

Takanori Miyazaki, and Sinitirou Izumi, both of Kumamoto, Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Saga Limited, Tosu, both of Japan

Filed Apr. 23, 1992, Ser. No. 872,360
Claims priority, application Japan, Apr. 23, 1991, 3-117819
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—56 R **9 Claims**



1. A cleaning device comprising:

at least one cleaning tub storing a cleaning liquid;

a chamber housing said cleaning tub;

take-in/take-out means for taking an article to be cleaned in/out of the cleaning liquid in said cleaning tub;

a shutter for shutting out the inside of said chamber from the outside thereof, said shutter opening at the time of conveying said article in/out of said chamber, thereby passing said article therethrough;

clean air supplying means for supplying clean air in said chamber and forming downflow of the clean air around said cleaning tub; and

exhausting means for sucking the clean air passing around said cleaning tub and exhausting it out of said chamber;

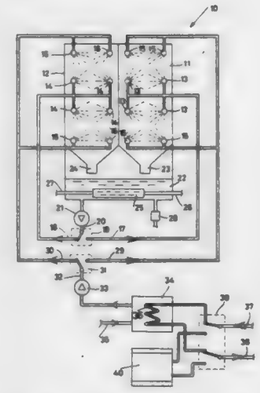
the cleaning device further comprising means for increasing the speed of the downflow passing around the peripheral portion of an upper surface of said cleaning tub.

5,299,585

WASHING MACHINE INTEGRATED WITH A TRANSPORTING VEHICLE

Erminio Dall'Oglio, Venegono Superiore, Italy, assignor to Wamash Hoonved Italia S.r.l., Varese, Italy

Filed Mar. 17, 1993, Ser. No. 32,801
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—105 **11 Claims**



1. Washing machine integrated with a vehicle for transportation thereby, comprising means defining at least one chamber in which objects to be washed are placed, said one chamber containing a plurality of nozzles for spraying water on the objects in said chamber, means for connecting said nozzles to different water sources at least one of which sources comprises a first water accumulation container connectable to an external water source to be filled thereby, the water in said first container being heated by heat exchanger means including a first element emitting heat produced by operation of an internal combustion engine used for effecting movement of the vehicle, said first heat emitting element comprising an exchanger element traversed by the engine combustion fumes, and characterized in that a washing tank partially filled with water is interposed in the path of said fumes between said engine and said exchanger element, whereby before passing into said exchanger element said fumes are passed through said washing tank.

5,299,586

DISHWASHER TUB BOTTOM WALL CONSTRUCTION

Lawrence J. Jordan; Barry E. Tuller; Dennis L. Purtilo; Stephen D. Schober, all of Newton, Iowa, and Lawrence L. Quayle, Harpers Ferry, W. Va., assignors to Maytag Corporation, Newton, Iowa

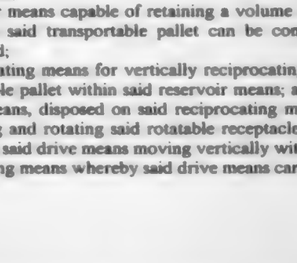
Continuation-in-part of Ser. No. 708,213, May 31, 1991, Pat. No. 5,118,254. This application Apr. 27, 1992, Ser. No. 874,753
Claims priority, application Canada, Nov. 7, 1991, 2055110
Int. Cl.[5] B08B *13/00*
U.S. Cl. 134—111 **18 Claims**

1. An improvement in a dishwasher having a tub comprising

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a bottom wall, a top wall, a front wall, a rear wall, and two sidewalls, said front wall having a door opening therein, a door being hinged to said tub for hinged movement from a closed position in covering relation over said front opening of said tub to an open position providing access to the interior of said tub through said front opening, pump means mounted to said bottom wall and having an inlet for taking washing fluid into said pump means, and spray means connected to said pump means for receiving washing fluid therefrom and for spraying said washing fluid into said tub to effect the washing of dishes within said tub, said bottom wall comprising a front edge, a rear edge, and two opposite side edges, said improvement comprising:

said bottom wall being formed into a sump basin having an upper rim extending around the perimeter thereof, said upper rim having a rear portion spaced inwardly from said rear edge of said bottom wall, opposite side portions



spaced inwardly from said opposite side edges of said bottom wall, and a front portion spaced inwardly from said front edge of said bottom wall;

said upper rim of said sump basin forming two spaced apart leg portions of said basin, said leg portions extending forwardly into close proximity to said front wall of said tub;

said pump means being mounted to said bottom wall within said sump basin with said inlet of said pump means positioned to communicate with washing fluid within said sump basin;

said bottom wall having front, rear, and opposite side margins sloping from said upper rim upwardly and outwardly to join said front wall, said rear wall, and said opposite sidewalls respectively whereby washing fluid sprayed from said spray means will drain by gravity down said sloping front, rear, and opposite side margins of said bottom wall into said sump basin.

5,299,587

ROTATING AND RECIPROCATING IMMERSION CLEANING APPARATUS AND METHOD

Frederick Randall, Montclair, and Albert J. Raven, III, Morganville, both of N.J., assignors to Randall Manufacturing Company, Inc., Hillside, N.J.

Filed Dec. 31, 1992, Ser. No. 999,013
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—111 **19 Claims**

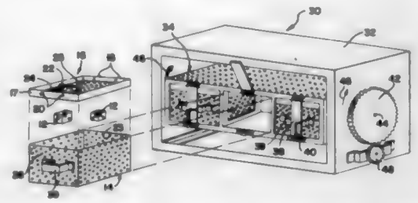
1. An apparatus for immersing at least one object in a fluid, comprising:

a transportable pallet having at least one rotatable receptacle disposed therein, in which said at least one object can be retained;

reservoir means capable of retaining a volume of fluid into which said transportable pallet can be completely immersed;

reciprocating means for vertically reciprocating said transportable pallet within said reservoir means; and

drive means, disposed on said reciprocating means for engaging and rotating said rotatable receptacle within said pallet, said drive means moving vertically with said reciprocating means whereby said drive means can engage and rotate said rotatable receptacle in said transportable pallet, while on said reciprocating means, regardless to the vertical position of said reciprocating means in said reservoir means.



5,299,588

FLOATABLE SUNSHADE ASSEMBLY

Donna R. MacLeod, P.O. Box 1926, Wimberly, Tex. 78676

Filed Jun. 17, 1992, Ser. No. 899,893
Int. Cl.[5] A45B *23/00*
U.S. Cl. 135—16 **2 Claims**



1. A floatable sunshade assembly comprising in combination:

a floatable sunshade assembly comprising in combination:

a sunshade mounted on a pole, and

a support member, said support member being floatable in water, said pole and said sunshade mounted thereon being carried by said support member in an upright manner,

wherein said support member is styrofoam plastic,

wherein said floatable support member is circular in shape and has a convex peripheral edge, said support member having an upper surface and a lower surface, said pole being fixed to said support member on said upper surface, and a central recess disposed in said lower surface having a diameter less than the diameter of said support member,

wherein said sunshade pole has a hollow interior, said support member further having a conduit extending between the periphery of said support member and the bottom of said pole, a water carrying hose coupled to said conduit at the periphery of said support member for supplying water under pressure to said hollow interior of said pole,

further comprising at least one stringer extending radially outwardly from said support member, said stringer terminating in an outrigger having buoyancy characteristics whereby said stringer and said outrigger enhances the floatability of said support member, and

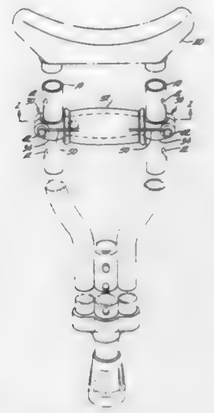
wherein said water carrying hose extends through an opening provided in said at least one stringer.

5,299,589

ORTHOPEDIC CRUTCH WITH ADJUSTABLE HAND GRIP

Leo Zatulovsky, Northridge, Calif., assignor to Guardian Products, Inc., Simi Valley, Calif.

Filed May 12, 1992, Ser. No. 881,531
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—68 **6 Claims**



1. An orthopedic crutch comprising:

a pair of spaced apart, generally parallel vertical supports rigidly attached to one another, an arm support attached to the upper ends of said vertical supports and a vertically adjustable hand grip fixable to said vertical supports;

each of said vertical supports having a plurality of spaced apart detents along a longitudinal surface;

said hand grip comprising an annular sleeve surrounding each vertical support and a bracket extending between said vertical supports rigidly connecting said sleeves, said hand grip being adapted to engage and be supported by said vertical supports;

each of said sleeves having an aperture generally tangential to the vertical supports;

a rotatable locking member with a detent engaging surface to firmly engage a detent in said vertical supports and another surface which does not engage said detents disposed in said aperture and fixed to said sleeve;

means to rotate the locking member so that said hand grip may be vertically adjusted by rotatably disengaging and engaging said detents in said vertical supports to place said hand grip at an adjustable distance from said arm support.

5,299,590

SUN SHADE STRUCTURE

Linden K. Deibert, 22316 Caminito Arroyo Seco, Laguna Hills, Calif. 92653, and Reginald P. Whittingham, 2291 Silktree, Tustin, Calif. 92680

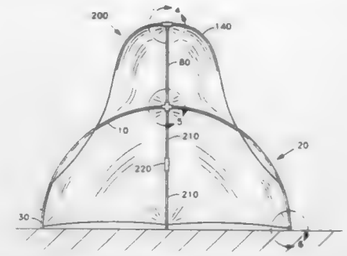
Filed Oct. 2, 1991, Ser. No. 771,060
Int. Cl.[5] E04H *15/40*
U.S. Cl. 135—104 **4 Claims**

1. A sun shade structure for covering a surface having a first axis and a second axis which bisects the first axis, said shade comprising:

a first planar, concave rod having first and second ends on said first axis and an apogee substantially midway between said ends, the plane of said concave rod extending at an acute angle with said surface,

a second planar, concave rod having first and second ends with said first end contacting said surface on said second axis and said second end being spaced above said second axis on said surface, said second rod contacting and being supported by said first rod at a point intermediate it's first and second ends,

a third concave rod having first and second ends spaced



above said surface, said third rod contacting and being supported by said second rod at a point intermediate it's ends, and a fabric cover supported by said first, second, and third rods.

5,299,591

DEVICE FOR CONTAINING LEAKS ABOVE SUSPENDED CEILINGS

Harry P. Duncan, 74 Valleybrook Dr., Hendersonville, Tenn. 37075

Filed Jan. 7, 1993, Ser. No. 1,283
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—15 **20 Claims**

1. A method of collecting and redirecting fluid collected above a suspended ceiling structure having a grid for supporting removable ceiling panels, comprising the steps of:

selecting a receptacle means sized to be inserted an opening in a suspended ceiling after a ceiling panel is removed therefrom for collecting fluid,

said receptacle means having a contiguous side wall portion, a well portion having a rim defined by said side wall portion, a drain contained within said well portion, and a flange means for supporting said receptacle in an operable position,

installing said receptacle means into operative engagement with said grid structure of said suspended ceiling at a position enabling the fluid to enter said well portion of said receptacle means and exit said drain.

5,299,592

HIGH PRESSURE RELIEF SYSTEM

Wesley S. Swanson, Elk Grove Village, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 8, 1993, Ser. No. 2,436
Int. Cl.[5] F16K *17/168, 31/365, 31/40*
U.S. Cl. 137—59 **4 Claims**

1. An electrically operated valve assembly comprising:

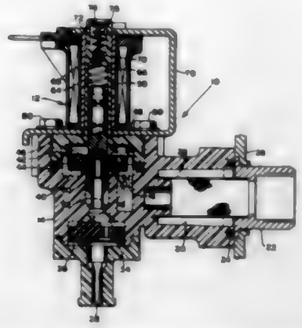
(a) body means including means defining a valving chamber with an inlet and an outlet, and valve means movable therein for between a position blocking and a position permitting flow between said inlet and outlet upon connection of said inlet to a source of fluid under pressure;

(b) said means defining a valving chamber including a hollow guide member with an armature movably disposed in said hollow guide member and operable to effect said movement of said valve means upon magnetomotive energization;

(c) pressure relief valve means provided in said hollow guide member and located distal said above means and operable to discharge fluid therefrom at pressures in excess of a

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predetermined level or value substantially greater than the normal pressures of said supply and,



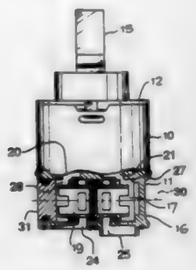
(d) electromagnetically operated means for effecting movement of said valve means.

5,299,593

MIXER VALVE FOR HOT AND COLD WATER INCORPORATING A PRESSURE BALANCER

Giordano Ottelli, Lumezzane S.S., Italy, assignor to SOL S.p.A., Brescia, Italy

Filed Jul. 31, 1992, Ser. No. 922,811
Int. Cl.[5] F16K *11/065*
U.S. Cl. 137—100 **9 Claims**



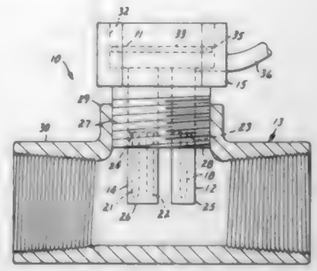
1. A mixer valve comprising:
a body;
a fixed plate rigidly mounted in said body, said fixed plate defining first and second inlet holes and defining an outlet hole;
a movable plate mounted in said body and having means for moving with respect to said fixed plate, said movable plate defining a mixing chamber in communication with said outlet hole and movable into communication with said first and second inlet holes; and
a base integrally connected to said body and on a side of said fixed plate substantially opposite said movable plate, said base including a rise integrally formed with said base and defining a slot means for receiving and containing a balancer, said rise defining inlet passages leading to said slot means and also defining outlet passages leading from said slot means to said fixed plate.

5,299,594

LIQUID FLOW RATE DETECTOR

John J. Lord, Springfield; Wesley J. Bachman, Auburn, both of Ill., and David M. Beams, Fort Atkinson, Wis., assignors to C.A.P., Inc., Benson, Minn.

Filed Aug. 27, 1992, Ser. No. 937,215
Int. Cl.[5] G05D *11/13*
U.S. Cl. 137—101.19 **12 Claims**



1. A liquid flow rate detector adapted for detecting whether a rate of flow for liquid within a conduit is above or below a generally predetermined liquid flow rate, and for developing different control signals in response to detecting flow rates above and below said generally predetermined liquid flow rate, said detector comprising:
first and second thermally conductive liquid contact members;
means adapted for supporting said liquid contact members for contact with the liquid within the conduit; and
electric circuitry including:
ambient liquid temperature sensing means coupled to said first liquid contact member for detecting the ambient temperature of liquid with which the first liquid contact member is in contact;
temperature sensing means for detecting the temperature at a portion of said second liquid contact member;
heating means including an electric heater in said second liquid contact member for supplying a limited amount of heat in an attempt to heat said portion of said second liquid contact member to a threshold temperature at least a predetermined number of degrees above the ambient temperature determined by said ambient liquid temperature sensing means; and
first and second signal generating means for generating a first control signal when the temperature of said portion of said second liquid contact member is at least at said threshold temperature to detect a liquid flow rate below the predetermined liquid flow rate at which the liquid is not capable of cooling said portion of said second liquid contact member below said threshold temperature, and for generating a second signal when the temperature of said portion of said second liquid contact member is maintained below said threshold temperature to detect a liquid flow rate above the predetermined liquid flow rate at which the flowing liquid is capable of cooling said portion of said second liquid contact member below said threshold temperature.

5,299,595

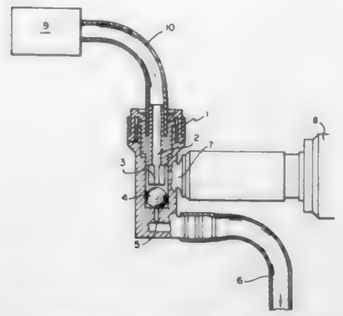
TWO-WAY DRAINING VALVE FOR COFFEE MAKING MACHINES

Valdemar M. Ribeiro, Matoshinhos, Portugal, assignor to Briel - Industria de Electrodomesticos, S.A., Portugal

Filed Jan. 16, 1993, Ser. No. 77,030
Claims priority, application Portugal, Dec. 9, 1992, 8668
Int. Cl.[5] F16K *15/04*
U.S. Cl. 137—107 **10 Claims**

1. A two-way draining valve for coffee making machines, comprising

(a) an L-shaped housing containing a chamber, an inlet opening for delivering water to said chamber from a pump, an outlet bore arranged in an upper leg of said housing for delivering water from said chamber to a boiler inlet, and a draining bore arranged in a lower leg of said housing and communicating with said chamber; and



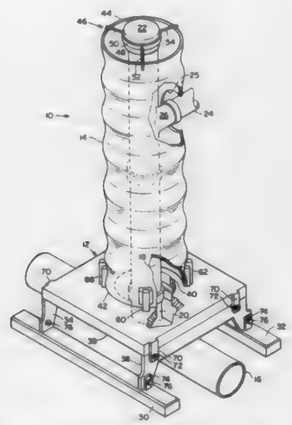
(b) a spherical valve ball arranged within said chamber, said valve ball being movable with respect to said draining bore in response to changes in pressure within said chamber to enable excess steam from the boiler, water from the pump, and air to exit said chamber via said draining bore, thereby to control the pressure within the boiler and prevent dripping of the coffee making machine.

5,299,596

SEWER CHIMNEY SYSTEM

Nicholas D'Alessandro, 1183 Washington St., Canton, Mass. 02021

Filed Aug. 17, 1993, Ser. No. 107,955
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—363 **12 Claims**



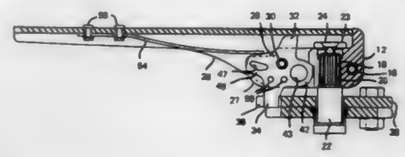
1. A sewer chimney system for stabilizing and protecting a chimney pipe interconnecting a service pipe and a main sewer line, comprising:
a base for bridging a main sewer line, said base having a hole for accommodating the chimney pipe rising from the main sewer line;
a hollow casing vertically mounted on said base and having a lower open end aligned with said hole in said base for receiving the chimney pipe and having an upper open end for receiving fill about the chimney pipe; said casing including a lateral hole for receiving a service pipe for interconnection with said chimney pipe; and
means for attaching said hollow casing to said base for securing it during filling of the casing and during backfilling around the casing.

5,299,597

VALVE OPERATING HANDLE

Edward S. Fort, Clitheroe, and Alan G. Smithson, Wetheral, both of England, assignors to Fort Vale Engineering Limited, England

Filed Sep. 3, 1991, Ser. No. 754,506
Claims priority, application United Kingdom, Aug. 31, 1991, 9019076
Int. Cl.[5] F16K *35/02, 35/06*
U.S. Cl. 137—385 **19 Claims**



1. A handle assembly for operating a valve of the type having a valve body and a pivotally mounted actuating spindle extending from said valve body along a first pivotal axis, the handle assembly comprising:
mounting means to secure said assembly to said spindle;
a handle portion connected to said mounting means;
a locking member with a locking portion, the locking member being disposed entirely under at least a portion of the handle portion adjacent to said spindle and pivotally mounted on said handle portion about a second pivotal axis, positioned at an angle to said first pivotal axis, spring means mounted to said handle portion engaging and biassing said locking member into a locked position with said spindle and said valve body; and
means for pivoting said locking member between a first, locked position in which, said locking portion is engaged with an associated locking portion of said valve body, and a second, unlocked position in which said locking portion is displaced from said associated locking portion of said valve body to enable said spindle to be rotated by said handle portion, said locking member and said handle portion each being provided with an aperture, said aperture in said locking member being positioned under said handle portion and aligned with said handle portion aperture when said locking portion is engaged with said associated portion and configured to receive securing means.

5,299,598

CHECK VALVE

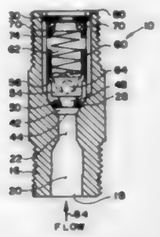
Anthony J. Quartana, III, New Orleans, and Ray A. Guccione, Sr., Marrero, both of La., assignors to Cross Pump International, Belle Chasse, La.

Filed Jul. 2, 1992, Ser. No. 909,986
Int. Cl.[5] F16K *15/02*
U.S. Cl. 137—540 **28 Claims**

1. A check valve, comprising:
a housing having a central fluid flow passageway extending therethrough, said housing having an interior wall which is provided with a plurality of longitudinal grooves extending in a substantially parallel relationship to a central longitudinal axis of the housing;
a valve member movable in a limited manner inside the housing between a position sealing fluid communication through the central passageway and a position permitting

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a fluid flow through the central passageway, said valve member comprising a tapered stem, the exterior surface of



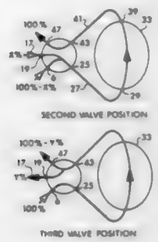
which defines a conically-shaped groove adapted for receiving a sealing means therein.

5,299,599

VALVING ARRANGEMENT FOR A NEGATIVE PRESSURE VENTILATOR

Robert B. Farmer, Boulder, and John T. Shackelford, Longmont, both of Colo., assignors to Lifecare International, Inc., Lafayette, Colo.

Filed Sep. 17, 1992, Ser. No. 946,897
Int. Cl.[5] F16K *11/085*; A61H *31/02*
U.S. Cl. 137—625.22 **39 Claims**



1. A valving arrangement primarily intended for use with an air blower means to selectively draw air through and drive air through a primary flow channel, said valving arrangement including:

air blower means having a main body with an inlet and outlet and means for moving air through said main body from said inlet to said outlet, said air at said inlet being at a negative pressure less than ambient air pressure and said air at said outlet being at a positive pressure greater than ambient air pressure,

a primary flow channel, and

valve means operably positioned between said air blower means and said primary flow channel, said valve means having a valve housing with at least first and second separate inlets, at least first and second separate outlets, and at least one passageway in fluid communication with said primary flow channel,

said valving arrangement further including a first flow path for said negative pressure air extending between said first outlet of said valving housing and the inlet of said air blower means, a second flow path for said positive pressure air extending between the outlet of said air blower means and the first inlet of said valve housing, said second outlet of said valve housing and said second inlet of said valve housing being respectively in fluid communication with ambient air, and

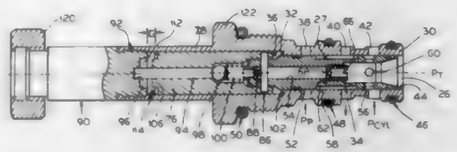
said valve means further including a single, one-piece valve member and means for moving said single valve member between at least two positions, said valve member in one position placing said first flow path in fluid communication through said passageway with said primary flow channel and through said second inlet of said valve housing in fluid communication with ambient air while placing said second flow path in fluid communication through the second outlet of said valve housing with ambient air to vent substantially all of said positive pressure air from said air blower means to ambient air and said valve member in another position placing said second flow path in fluid communication through said passageway with said primary flow channel and through said second outlet of said valve housing in fluid communication with ambient air while placing said first flow path in fluid communication through said second inlet to said valve housing with ambient air to draw ambient air through said second inlet in said valve housing into said air blower means through said first flow path.

5,299,600

ANALOG PROPORTIONAL PRESSURE CONTROL THREE-WAY VALVE

Felix Aronovich, Buffalo Grove, Ill., assignor to Sterling Hydraulics, Inc., Schaumburg, Ill.

Filed Sep. 14, 1992, Ser. No. 944,417
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 **15 Claims**



1. A proportional solenoid operated fluid pressure control valve comprising:

an elongate cylindrical valve housing having an axial through bore defining an interior chamber, one end of said chamber comprising an end port opening, a plurality of axially space side port openings defining an inlet and an outlet, and an axial opposite end comprising a sleeve end receivable in a solenoid, in use;

a valve member movable in said chamber at the port end for selectively controlling fluid flow through said interior chamber between said end port opening and said outlet in a neutral position or between said inlet and said outlet in a regulated position;

a solenoid plunger movable in said interior chamber at the sleeve end operatively associated with the valve member for positioning the valve member; and

pressure dividing means for dividing regulated pressure between the outlet and the end port opening in the regulated position of the valve member to create an intermediate pressure to balance a force from the solenoid.

5,299,601

GAS FLOW DIVERTER

William F. Koch, Auburn, Me., assignor to Wahlco Engineered Products, Inc., Lewiston, Me.

Filed Jun. 29, 1993, Ser. No. 84,892
Int. Cl.[5] F16K *1/00*
U.S. Cl. 137—875 **9 Claims**

1. A gas flow diverter for directing gas flow through ductwork at a junction between a first passageway and a diverging passageway, comprising

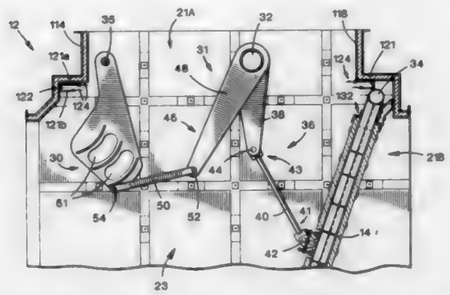
a housing, defining a first port through which gas flows to the first passageway, a second port through which gas flows to the diverging passageway, and a junction space between said first and second ports,

a diverter blade, rotatably mounted in the housing to pivot through the junction space,

a turning vane assembly, rotatably mounted in the housing to pivot through the junction space and into said diverging passageway,

a drive shaft adapted for receiving torque from a drive mechanism, and

a toggle assembly, comprising a turning vane toggle joint, fixedly mounted on the drive shaft and pivotally linked to the turning vane assembly, and a diverter toggle joint, fixedly mounted on the drive shaft and pivotally linked to



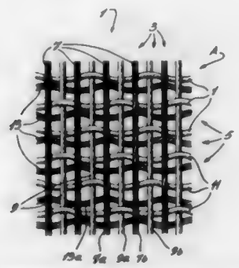
the diverter blade, said toggle assembly adapted to transmit torque from the drive shaft to the diverter blade and the turning vane assembly so that the diverter blade and the turning vane assembly are rotated synchronously between a first position, in which the diverter blade closes the second port and the turning vane assembly is positioned in the diverging passageway, and a second position, in which the diverter blade closes the first port and the turning vane assembly is positioned in the junction space.

5,299,602

TEXTILE MATERIAL FOR OUTER SHELL OF FIREFIGHTER GARMENT

Claude Barbeau, 177A de Navarre, St-Lambert, Quebec, Canada J4S 1R5 , and Ross Cochran, 215 St-Laurent, Apt. 34, Montreal, Quebec, Canada H2Y 3T9

Filed Mar. 12, 1993, Ser. No. 31,112
Int. Cl.[5] D03D *15/12*
U.S. Cl. 139—420 A **5 Claims**



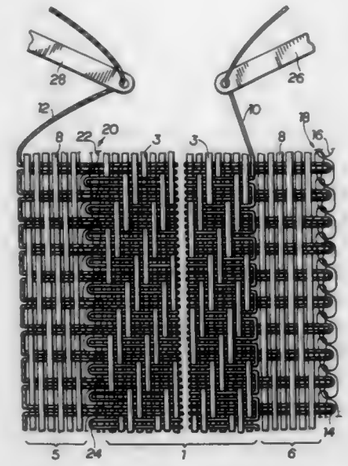
1. A textile material to constitute an outer shell fabric for firefighter garments, said textile material consisting of a weave including warps and wefts, said warps comprising multifilamentry aramid yarns, said wefts comprising alternate multifilamentary aramid yarns and spun aramid yarns.

5,299,603

METHOD OF WEAVING BELT MATERIAL ON A NEEDLE BELT LOOM

Erich Reiter, Mutlangen, Fed. Rep. of Germany, assignor to Johann Berger, Alfdorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00439, § 371 Date Aug. 31, 1992, § 102(e) Date Aug. 31, 1992, PCT Pub. No. WO91/14814, PCT Pub. Date Oct. 3, 1991
PCT Filed Aug. 3, 1991, Ser. No. 927,664
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1990, 4009455
Int. Cl.[5] D03D *13/00, 35/00*
U.S. Cl. 139—431 **5 Claims**



1. A method of weaving belt material on a needle belt loom comprising a reed and sheds; further comprising two oppositely moving weft needles supplying weft threads, characterized by the following steps:

beating up with the reed and changing over the sheds by forming a fully open main shed for both weft needles of warp threads of a center part of the belt material, the center part having two sides, the two sides having outer border positions;

jointly weaving the center of the belt material by both weft needles;

weaving by only one of the two weft needles two border portions on the two sides of the center part of the belt material, the border portions having an inner edge forming a partly open shed on both sides of the center part by border portion warp threads;

moving one of the weft needles for each weft insertion through the fully open shed and the two partly open sheds;

moving the other weft needle through the fully open shed only, weaving only with the warp threads of the center part;

weaving weft loops with the warp threads of a first border portion, forming first heads,

securing the heads by forming a fist row of stitches arranged externally on the first border portion by an auxiliary thread;

weaving weft loops with the center part warp threads, forming second heads; and

securing the second heads by forming a second row of stitches formed by an auxiliary thread arranged at one of the outer borders of the center part and an inner edge of the adjacent second border portion.

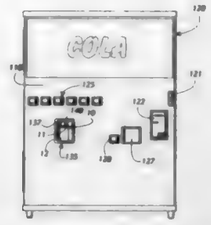
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,604

RESEALABLE, REFILLABLE CONTAINER SYSTEM

Thomas W. Pierce, 3045 New Castle Dr., Marietta, Ga. 30064

Filed Jun. 16, 1992, Ser. No. 899,491
Int. Cl.[5] B65B *1/04*
U.S. Cl. 141—18 1 Claim



1. A refillable container system comprising:
a refillable container including, at least,
a container body including, at least, a first edge and a second edge and defining a hollow interior extending between said first edge and said second edge,
a solid panel connected to said first edge of said container body, and
a resealable closure apparatus connected to said second edge of said container body defining an access aperture communicating with the hollow interior of said container body,
a dispenser means for refilling said refillable container, said dispenser means including at least,
a case structure,
a storage means located within said case structure for storing dispensable material, and
a nozzle means connected to said storage means for delivering dispensable material through the access aperture and into the hollow interior of said refillable container, iml
an alignment means for aligning said access aperture with said nozzle means including, at least, an alignment recess defined by said resealable closure apparatus.

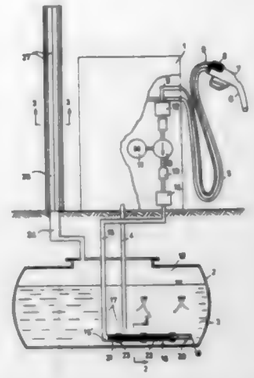
5,299,605

VAPOUR RECOVERY SYSTEM FOR A FUEL FILLING INSTALLATION

Giorgio Bergamini, and Ernesto Paris, both of Bari, Italy, assignors to Nuovopignone-Industrie Meccaniche e Fonderia SpA, Florence, Italy

Filed May 22, 1992, Ser. No. 888,560
Claims priority, application Italy, May 24, 1991, MI91 A 001440
Int. Cl.[5] B67D *5/04*; B65B *3/18*
U.S. Cl. 141—59 10 Claims

1. A vapor recovery system for recovering vapor from an air-vapor mixture for an automotive fuel filling installation having an underground fuel storage tank, comprising a delivery gun for insertion into the filler pipe of the automotive fuel tank, a discharge pipe, an end of which extends to the bottom of the underground tank for returning the air-vapor mixture from the tank to the underground fuel storage tank, an electric motor-driven variable speed positive displacement pump having a pump speed adequate to draw in all of the vapor present at the filler pipe, a vent pipe for the underground tank having a large cross-section and interior baffles, and a closed tube connected to said discharge pipe end, said closed tube extending along the bottom of the underground tank and said closed tube having a porosity for producing very small bubbles in order to recover vapor from the air-vapor mixture, said closed tube being connected to said discharge pipe end, said closed tube extending along the bottom of the underground tank and having a porosity for generating very small bubbles, said closed tube having holes in its surface, very densely woven



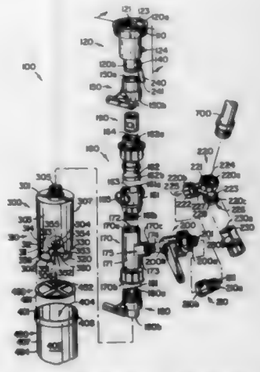
netting covering said closed tube and large-mesh fabric interposed between said closed tube and said netting.

5,299,606

SYSTEM FOR HERMETICALLY DISPENSING AND DILUTING A CONCENTRATED CHEMICAL

Earl H. Schrupp, 7611 36th Ave. North, New Hope, Minn. 55428

Continuation of Ser. No. 529,921, May 29, 1990, abandoned.
This application May 27, 1992, Ser. No. 892,690
Int. Cl.[5] B67C *9/00*
U.S. Cl. 141—91 16 Claims



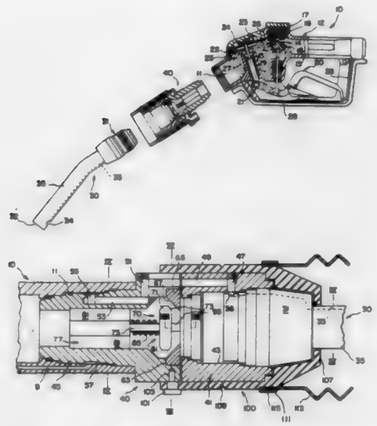
1. An assembly for hermetically dispensing a concentrated chemical from a container to a dilution tank, comprising:
a means for hermetically coupling a sealed opening in a container to an opening into a dilution tank,
a means for unsealing the sealed opening in the container after the container has been hermetically coupled to the dilution tank,
an extensible nozzle connected to the coupling means and having a spray head wherein the nozzle is operable for extending the spray head when pressurized fluid is supplied to the spray head into the container through said unsealed opening,
a means for hermetically providing fluid flow from a source of a liquid solvent into the dilution tank, and
a means for hermetically directing fluid flow from the solvent source into the container through the extensible nozzle for rinsing residual chemical from the container which is then directed into the dilution tank through the unsealed opening in the container.

5,299,607

GASOLINE NOZZLE WITH RETROFITTED EMERGENCY SHUT-OFF VALVE

Anthony T. Monticup, Jr., 3 Martin Ct., Clifton Park, N.Y. 12065

Filed Nov. 25, 1992, Ser. No. 981,213
Int. Cl.[5] B67D *5/373*; F16K *17/14, 13/04*
U.S. Cl. 141—208 15 Claims



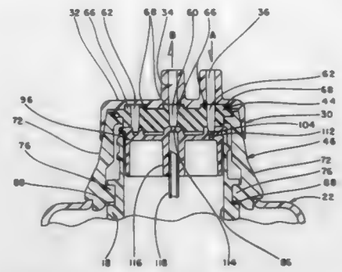
1. In an existing fuel dispensing nozzle device having an existing handle assembly with a distally located coupling portion and an existing nozzle assembly with a proximally located coupling portion complementary to said distally located coupling portion of said handle assembly and normally coupled thereto, the improvement comprising an emergency shut-off valve retrofitted and interposed between said existing handle assembly and said existing nozzle assembly and comprising:
a) a valve housing having a proximal end and a distal end, said proximal end having a first coupling complementary to said handle assembly coupling portion and configured to be coupled thereto and said distal end having a second coupling complementary to said nozzle assembly coupling portion and configured to be coupled thereto;
b) said valve housing having a flow passageway therethrough including a valve chamber having a valve seat, and a valve head resiliently biased by biasing means toward said valve seat in a direction of fluid flow;
c) means for holding said valve head spaced from said seat against force of said biasing means so long as said nozzle assembly is coupled to said valve housing second coupling;
d) means for retaining said nozzle assembly coupled to said valve housing, including a sleeve for overlying a portion of said valve housing and said nozzle assembly coupling portion, said retaining means including a region deigned to fail when force above a threshold is placed thereon;
e) whereby, with said valve coupled between said existing handle assembly and existing nozzle assembly, when said force is placed on said region, said region fails causing said retaining means to release said nozzle assembly from said valve housing, said holding means concurrently releasing causing said biasing means to close said valve head against said valve seat.

5,299,608

SEALED COUPLING FOR A FLUID CONTAINER

Nick M. Bosyj, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Continuation of Ser. No. 851,318, Mar. 16, 1992, abandoned.
This application Jun. 28, 1993, Ser. No. 84,354
Int. Cl.[5] B67C *9/00*
U.S. Cl. 141—285 10 Claims



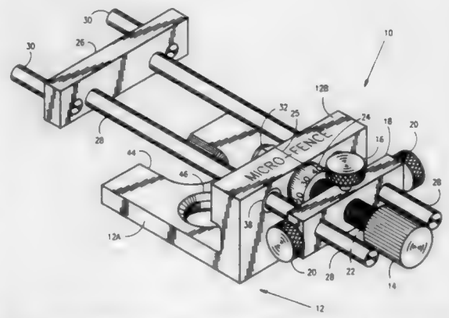
1. A coupling arrangement comprising:
a) a housing having a sealing surface,
b) first and second ports in the sealing surface of the housing,
c) a fluid container having a cylindrical neck with an open end,
d) a cylindrical plug disposed in the open end of the neck of the container, an end wall of the plug having a central port aligned with the central axis of the plug and a radial port spaced from the central port a distance equal to the distance between the first and second ports in the housing, the radial port also being disposed within an annular groove in the end wall, and
e) means for engaging and advancing the container within the housing when the container is placed in the housing and rotated, such that the end wall of the plug rotates as it moves into an abutting relationship with the sealing surface where the first and second ports are aligned with the central port and annular groove in the plug, establishing paths for fluid communication between the housing and the container.

5,299,609

PRECISION ADJUSTABLE ROUTER FENCE

Richard L. Wedler, 16,650 Pineridge Dr., Granada Hills, Calif. 91344

Filed Sep. 10, 1993, Ser. No. 118,604
Int. Cl.[5] B27C *5/10*
U.S. Cl. 144—1 F 20 Claims



1. A positioning device configured for locating and guiding an actual cutting tool for a portable machine tool such as a router with respect to a workpiece for the purpose of machining said workpiece, comprising:

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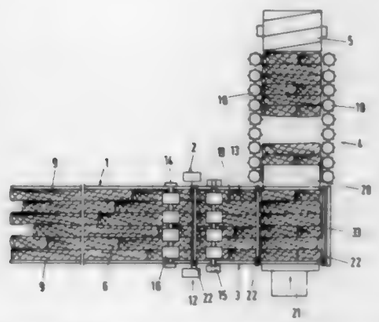
a main body having a substantially flat horizontal baseplate portion and an integral upwardly extending flange block;
a lead screw having a first end rotatably engaged with the flange block;
thrust means for constraining said lead screw axially relative to the flange block;
a transverse yoke bar threadedly engaging said lead screw;
a plurality of guide shafts, parallel to said lead screw, passing through corresponding apertures in said yoke bar in sliding engagement therewith;
vernier adjustment clamping means for retaining vernier position adjustment settings of said lead screw relative to the flange block;
coarse adjustment clamping means for retaining coarse position adjustment settings of said guide shafts relative to said yoke bar; and
means for holding the machine tool, attached to each of said guide shafts.

5,299,610

PROCESS AND DEVICE FOR THE CONTINUOUS CHIPPING OF LONG TIMBERS

Dominique Sentagnes, Bordeaux; Rony Callens, Merignac, both of France, and Karl Schaefer, Lechbruck am See, Fed. Rep. of Germany, assignors to Inter-Wood-Maschinen GmbH & Co. KG, Lechbruck am See, Fed. Rep. of Germany

Filed Apr. 20, 1993, Ser. No. 49,406
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1992, 4224970
Int. Cl.[5] B27B *1/00*
U.S. Cl. 144—370 **18 Claims**



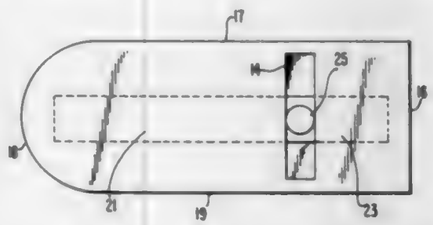
1. A process for the continuous chipping of timbers of different lengths and shapes, comprising the steps of:
piling the timbers in essentially longitudinal alignment one on top of the other and side by side in an at least approximately grain-parallel arrangement to form a long timber pack;
advancing the long timber pack, in cycles, in the longitudinal direction;
compressing the long timber pack with perpendicular compression forces on both sides of a sawing plane;
cross-cutting after each advancement cycle by a pack length corresponding to an advancement distance and to a usable chipping length to form equal-length short timber packs;
inserting at least one supporting element for supporting a leading end face of the long timber pack and a posterior end face of a just sawn-off short timber pack into the sawing plane;then
conveying the long timber pack, together with the just sawn-off short timber pack and the supporting element enclosed between them, forward by one advancement cycle in the same direction;
returning a second supporting element to an insertion area of the sawing plane;
supporting the short timber packs, at least on their undersides and two end sides;
conveying the short timber packs thus formed in continuous succession transversely to their grain alignment; and
chipping the short timber packs parallel to the grain.

5,299,611

PROTECTIVE PUTTER COVERS

Dominick Cirone, 1410 Brett Pl., Apt. #136, San Pedro, Calif. 90732

Filed Jan. 28, 1992, Ser. No. 826,977
Int. Cl.[5] A63B *57/00*
U.S. Cl. 150—160 **11 Claims**



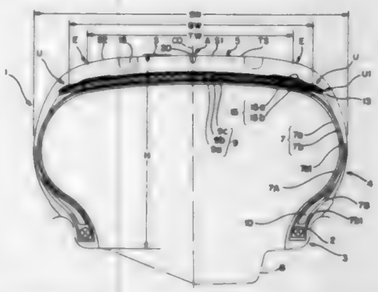
1. A cover for the head of a golf putter comprising a shaft and a head, said head having a striking face, said cover comprising:
a single piece of elongated, substantially elastic material having a preformed opening disposed completely through said material, said material being folded substantially across its middle to form a first edge and to define an upper material portion having the preformed opening and a lower material portion; and
joining means for continuously joining said upper and lower material portions, said joining means extending from a first side of said first edge to an opposite side of said first edge to form a substantially elongated casing which is continuously closed along its sides for covering said putter head.

5,299,612

PNEUMATIC RADIAL TIRE WITH HIGH CORNERING AND STEERING STABILITY

Kenji Saito; Akira Kajikawa, and Kazuo Asano, all of Kobe, Japan, assignors to Sumitomo Rubber Industries, Inc., Kobe, Japan

Continuation-in-part of Ser. No. 598,390, Oct. 18, 1990, Pat. No. 5,222,537. This application Nov. 27, 1992, Ser. No. 982,501
Claims priority, application Japan, Oct. 19, 1989, 1-272460; Dec. 29, 1989, 1-341264
Int. Cl.[5] B60C *3/00, 3/04*
U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire comprising a carcass in radial structure

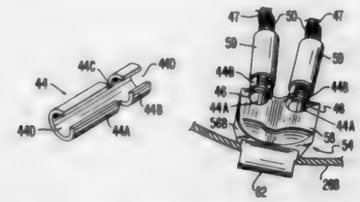
extending from a tread part through side wall parts and folded at each edge around a bead core of a bead part, and a belt layer composed of more than two belt plies disposed radially outside said carcass, said belt layer having a pair of axial outer edges, each of said pair of axial outer edges being defined where the two widest belt plies overlap, wherein;
a tread surface is formed along a specific curvature plane which includes a first arc with the curvature radius R1 having a center on the tire's equatorial plane and passing through the tire's equatorial point, a second arc with the curvature radius R2 having a center on the tire's equatorial plane and intersecting with said first arc at an intersection distance from the tire's equatorial plane by 0.2 to 0.25 times the tire width SW, and a third arc with the curvature radius R3 passing through a ground contact outer edge point of the ground contact surface in the axial direction of a tire when a standard load is applied and a belt intermediate height point on the tread surface,
said belt intermediate height point on the tread surface being defined as a point at which a tire axial direction line crosses the tread surface extending in parallel with the tire's axis from a thickness center of one of said pair of axial outer edges; and
the tread surface is provided with a pair of main circumferential grooves, one of said main circumferential grooves extending on each side of the tire's equatorial plane at said intersection of the first arc and the second arc in the tire circumferential direction for dividing the tread surface into a crown part and an outer shoulder part, each said main circumferential groove having a groove width of 0.06 to 0.10 times the tire width SW, and with a plurality of narrow lateral grooves crossing the tire circumferential direction for dividing the crown part and the shoulder parts into a plurality of blocks, wherein
the specific curvature plane has a curvature radius ratio R2/R3 in a range from 4 to 12, and a curvature radius ratio R1/R2 in a range from 2.6 to 4.6 when the aspect ratio H/SW of the tire sectional height H to the tire width SW is 0.55 or less.

5,299,613

TIRE CHAIN CROSS MEMBER ASSEMBLIES AND TIRE CHAINS USING THE SAME

Joseph D. Maresh, Dundee, Oreg., assignor to Burns Bros., Inc., Portland, Oreg.

Filed Feb. 2, 1993, Ser. No. 12,471
Int. Cl.[5] B60C *27/06*
U.S. Cl. 152—221 **13 Claims**



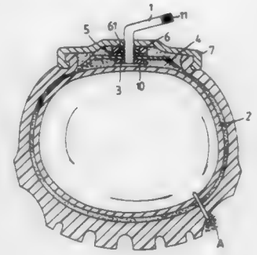
1. A cross member assembly for a tire chain, comprising a flexible cable having a double bushing at least at one end of the cable, the double bushing including an outer bushing located at a distal end of the cable and an inner bushing spaced inward longitudinally along the cable and joined to the outer bushing by a bridge, the outer bushing securely gripping the cable end therein, and the inner bushing embracing the cable without gripping the cable, and a connector adjacent to the end of the cable for connecting the cable to a side member of a tire chain, the connector including a plate having an opening therein through which the outer bushing is inserted, the plate having a bent-over tab extending from a body of the plate and trapping the inserted outer bushing between the tab and the plate body, with the inner bushing located exteriorly of the opening and with the bridge located in the opening.

5,299,614

TIRE STEM ASSEMBLY

Ching-Jong Lee, No. 24, Alley 46, Lane 32, Sec. 2, Charng Rong Road, Tainan, Taiwan

Filed Mar. 19, 1993, Ser. No. 33,922
Int. Cl.[5] B60C *29/02*
U.S. Cl. 152—427 **2 Claims**



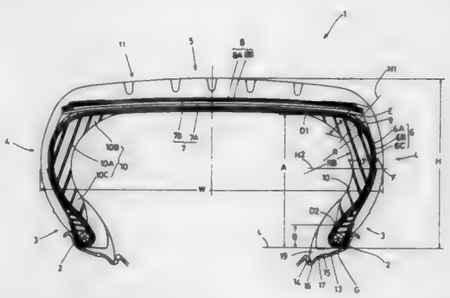
1. An improved tire stem assembly comprising:
a stem secured by a base thereof to an inner tube wherein a rubber packing piece, a protective packing sleeve, a washer and a securing nut-containing rubber packing piece are placed on top of said base in the order stated, said stem then being inserted through a hub.

5,299,615

SAFETY TIRE

Hiroshi Ataka, Miki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Apr. 29, 1991, Ser. No. 692,552
Claims priority, application Japan, May 7, 1990, 2-117935
Int. Cl.[5] B60C *3/00, 17/00*
U.S. Cl. 152—454 **2 Claims**



1. A run-flat tire comprising
a tread portion having a tread and a pair of tread edges,
a pair of axially spaced bead portions, each said bead portion having with a bead core therein,
a pair of sidewall portions, one of said pair of sidewall portions extending between each of said tread edges and one of said bead portions,
a carcass extending between said bead portions and turned up around the bead cores to be secured thereto,
belt reinforcements including at least two plies of cords disposed radially outside the carcass and inside the tread,
an inner sidewall disposed on an axially inner curved face of the carcass in each sidewall portion,
said inner sidewall having an axially inner surface and being

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tapered at its radially outer and inner edges to have a crescent cross-sectional shape,

the total thickness of each said sidewall portion satisfying the following conditions:

$$0.18 \leq x/H \leq 0.34$$

$$y < x$$

$$300 \leq (x+y)^{x/y} \leq 450$$

wherein

x=the total thickness (mm) measured along a straight line N1 drawn normal to the carcass from the axially outer edge of the radially innermost belt ply,

y=the total thickness (mm) measured at the maximum section width point at which the cross section width of the tire is maximum along an axial line N2 drawn through the maximum width point,

H=the section height of the tire,

said inner sidewall made of rubber consisting of

100 parts by weight of a rubber compound

40 to 60 parts by weight of carbon black whose particle diameter is 70 to 50 nano-meters, and

3 to 8 parts by weight sulfur,

wherein said rubber compound consists of

50 to 80 parts by weight of polybutadiene which includes 1,2-polybutadiene at not less than 75 weight % and whose crystallization is in a range from greater than 0% to 10%, and 20 to 50 parts by weight of at least one kind of rubber selected from polyisoprene rubber, styrene—butadiene rubber, cis 1, 4-polybutadiene rubber and halogenated butyl rubber.

5,299,616

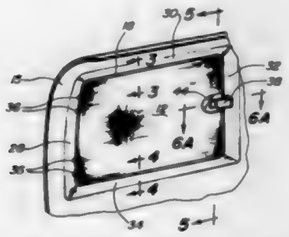
SCREEN FOR USE WITH A VEHICLE WINDOW

Steve J. Sholtz, 347 Laird, Mt. Morris, Mich. 48458

Filed Jul. 21, 1993, Ser. No. 94,263

Int. Cl.[5] E06B *3/32*

U.S. Cl. 160—89 **5 Claims**



1. A screen for use with a vehicle window, said vehicle window being pivoted from a closed position to an open position by an engaging arm mechanism, said screen comprising:

a screen portion;

a frame surrounding said screen portion, said frame being secured by securing means adjacent to and interiorly of said vehicle window;

an aperture formed in said screen portion at a location in which said arm mechanism pivotally opens said window; and

a flexible material secured to the screen to cover said aperture;

wherein said flexible material is secured between said arm mechanism and said window and permits said arm mechanism to actuate said window to said open position while at the same time covering the open space defined by said aperture.

5,299,617

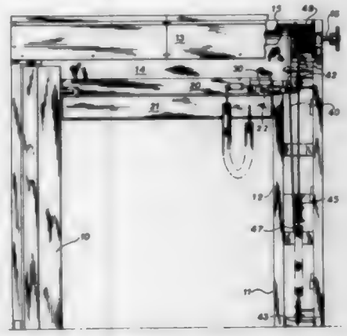
BREAKAWAY ROLL-UP DOOR

Clement F. Hying, Germantown, and Randy R. Schickert, Kewaskum, both of Wis., assignors to ASI Technologies, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 646,532, Jan. 25, 1991, Pat. No. 5,141,044. This application Aug. 24, 1992, Ser. No. 934,586

Int. Cl.[5] E06B *9/17*

U.S. Cl. 160—271 **23 Claims**



1. A tensioning mechanism for a roll-up door having a flexible door panel that is rolled and unrolled from about a rotatable drum, comprising:

a sheave mounted to rotate with the drum;

a counterweight line anchored at one end and having its other end wound about the sheave in a spiral and in a direction opposite to the winding of the panel about the drum;

a counterweight suspended from the counterweight line intermediate its ends;

a tensioning line anchored at one end and attached to the bottom of the door panel at its other end; and

a spring connected between the counterweight and the tensioning line intermediate its ends.

5,299,618

METHOD FOR RECOVERING FOUNDRY SAND BY ROASTING

Pio Fumagalli, Via Umberto, 24 - 13030, Verrone, Italy

PCT No. PCT/IT90/00096, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO91/08068, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 23, 1990, Ser. No. 859,316

Claims priority, application Italy, Nov. 28, 1989, 68050-A

Int. Cl.[5] B22C *5/00*

U.S. Cl. 164—5 **9 Claims**

1. A method of recovering foundry sand by roasting a mass of spent foundry sand containing organic and carbon combustible substances comprising the steps of:

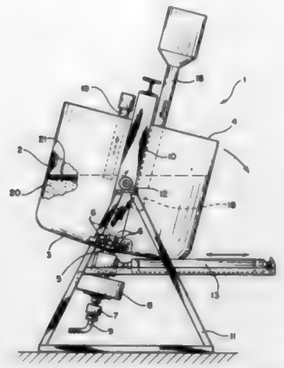
introducing said mass of spent foundry sand into a container;

blowing a stream of a gas having an oxygen content greater than that of ambient air into said container at the bottom thereof in a manner causing the gas to permeate substantially uniformly through the entirety of said mass of spent foundry sand;

creating a flame front at the top of said mass of spent foundry sand in the container by directing a live flame onto an upper surface of said mass;

removing said live flame from the surface of the sand mass; and

producing a gradual progressive motion of the flame front through portions of the sand mass as the combustible substances present in the mass of spent foundry sand are consumed while continuing to blow said stream of gas



through the sand mass until complete combustion of the organic and carbon substances has taken place.

5,299,619

METHOD AND APPARATUS FOR MAKING INTERMETALLIC CASTINGS

George D. Chandley, Amherst, N.H., and Merton C. Flemings, Cambridge, Mass., assignors to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Dec. 30, 1992, Ser. No. 997,726

Int. Cl.[5] B22D *18/06, 23/00, 27/04*

U.S. Cl. 164—53 **21 Claims**

1. A method of making an intermetallic casting, comprising the steps of:

a) disposing a first charge comprising a solid first metal in a vessel,

b) melting a second charge comprising a second metal that reacts exothermically with said first metal,

c) introducing the molten charge comprising said second metal to said vessel so as to contact said charge of said first metal,

d) heating the charges comprising said first and second metals in contact in said vessel to exothermically react said first and second metals and form a melt for casting whereby the exothermic reaction reduces the time required to achieve said melt and the residence time of said melt in said vessel to reduce contamination of said melt by reaction with said vessel, and

e) casting said melt from said vessel into a mold to form said casting upon solidification of said melt.

5,299,620

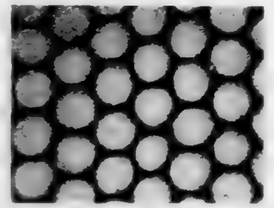
METAL CASTING SURFACE MODIFICATION BY POWDER IMPREGNATION

Gopal S. Revankar, Moline, and Daniel L. DeRoo, Colona, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jan. 21, 1992, Ser. No. 822,903

Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—97 **12 Claims**



1. A method for impregnating a metal product with a hard wear-resistant surface layer comprising:

(a) providing a partially dense wear-resistant layer comprising a partially sintered sheet having a pattern including a plurality of pegs formed on a surface thereof;

(b) attaching the wear-resistant layer to a mold surface; and

(c) casting a metal melt so as to produce a metal product having a wear-resistant material surface layer.

5,299,621

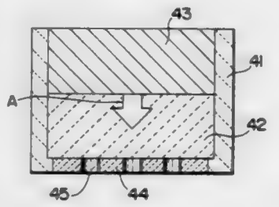
METHOD OF PRODUCING CERAMIC COMPOSITE BODIES

Terry D. Claar, Newark; Gerhard H. Schiroky, Hockessin, both of Del.; Donald P. Ripa, North East, Md., and William B. Johnson, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 296,770, Jan. 13, 1989, abandoned. This application Sep. 19, 1991, Ser. No. 762,163

Int. Cl.[5] B22D *19/00*

U.S. Cl. 164—98 **22 Claims**



1. A method of producing a self-supporting body, comprising:

contacting with a mold having raised edges at least one material in slurry form, such that said at least one material contacts at least two of said edges, said at least one material comprising a material selected from the group consisting of boron carbide, a mixture of boron carbide and a carbon donor material, a mixture of boron carbide and a boron donor material, and a mixture of a boron donor material and a carbon donor material, said contacting comprising at least one process selected from the group consisting of sedimentation casting and slip casting to form a permeable preform;

heating a parent metal in a substantially inert atmosphere to a temperature above its melting point to form a body of molten parent metal;

communicating said body of molten parent metal with said preform;

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maintaining said temperature for a time sufficient to permit infiltration of said molten parent metal into said preform and to permit reaction of said molten parent metal with at least a portion of said preform to form at least one boron-containing compound;

maintaining sufficient contact of said preform with said mold during said infiltration so as to prevent seepage of said parent metal between said preform and said mold surface; and

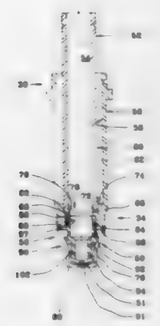
continuing said infiltration reaction for a time sufficient to produce said self-supporting body comprising at least one parent metal boron-containing compound.

5,299,622

SAND INJECTOR RETAINER INSERT

Wendell Doolin, Rochester, Mich., assignor to Tooling & Equipment International, Inc., Livonia, Mich.

Filed Dec. 4, 1992, Ser. No. 985,420
Int. Cl.[5] B22C *15/24*
U.S. Cl. 164—200 **17 Claims**



1. A retainer insert assembly adapted to be secured to a lower end of a blow tube unit, said blow tube unit having a hollow central portion adapted for communicating a source of shell sand to an associated mold under the application of pressure, said insert assembly comprising a restrictor having a central body including a passageway formed therein for communicating said shell sand from said central portion and restricting means coupled to said restrictor to inhibit the communication of said shell sand, including a downstream portion of said passageway being inclined along a direction have a component in a direction opposite to a direction of flow in said passageway.

5,299,623

MAGNESIUM DIE CASTING MACHINE

Stephen Yaffe, Westmount; Pierre Lamy, Laval, and Maurice Doucet, deceased, late of St. Leonard, all of Canada by Ginette Lefevre, heiress , assignors to Techmire Ltee./Ltd., Quebec, Canada

PCT No. PCT/CA91/00259, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/04147, PCT Pub. Date Mar. 19, 1992
PCT Filed Jul. 26, 1991, Ser. No. 969,250
Claims priority, application Canada, Aug. 30, 1990, 2024327
Int. Cl.[5] B22D *17/04, 17/30*
U.S. Cl. 164—316 **15 Claims**

1. Apparatus for producing metal die castings comprising:

(a) a crucible (**10**) for containing molten casting metal;

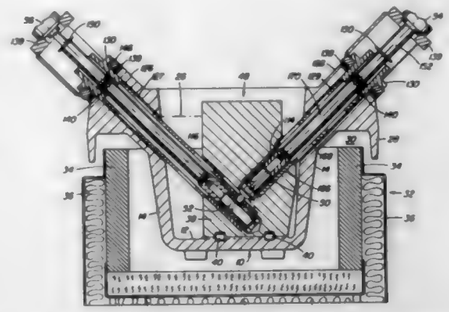
(b) means (**62**) mounting said crucible (**10**) on the base of a die casting machine for linear, reciprocal movement of said crucible (**10**) toward and away from said machine base;

(c) a metal injection pump assembly (**48**) mounted in said crucible (**10**):

(i) characterized in that said metal injection assembly comprises a pump body (**38**) secured in said crucible,

(ii) a pair of plunger units (**50, 52**) having their lower ends located in said pump body (**38**) and extending upwardly and outwardly of said body in a "V" configuration whereby the upper ends of said units (**50, 52**) are clear of the upper surface of said crucible (**10**),

(iii) an injection barrel (**44**) in communication with the lower ends of said plunger units (**50, 52**) and extending angularly upwardly and outwardly from said pump



body (**38**) to terminate in an injection nozzle (**46**) located outside of said crucible (**10**),

(iv) one of said plunger units (**50**) comprising an injection chamber (**118**) and an injection plunger (**170**) to provide injection pressure in said chamber (**118**) to inject molten metal from said chamber, through said barrel (**44**) into a mold and the other of said plunger units comprising a spool valve (**52**) to open and close passage from said chamber (**118**) into said injection barrel (**44**),

(d) cover means (**18**) sealing the top of said crucible (**10**) from the atmosphere; and

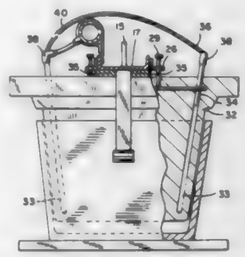
(e) furnace means (**32**) enclosing said crucible and incorporating means (**36**) for heating the same.

5,299,624

FLUID ASSISTED CASTING APPARATUS

Larry G. McKinney, Sr., Brownwood, Tex., assignor to Kohler Co., Kohler, Wis.

Continuation of Ser. No. 926,248, Aug. 6, 1992, abandoned. This application May 27, 1993, Ser. No. 68,805
Int. Cl.[5] B22D *17/22, 29/00*
U.S. Cl. 164—344 **14 Claims**



1. An apparatus for casting and releasing a desired item, comprising:

a female mold portion;

a male mold portion for spaced positioning in said female mold portion along a given axis such that the desired item can be formed therebetween, one of said mold portions being composed of a porous material and having essentially linear and elongated side walls extending along said given axis; and

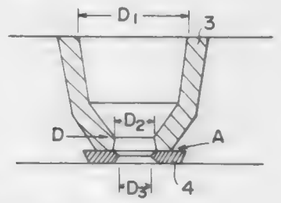
driving means operatively associated with said porous mold portion to force fluid into the porous mold portion and then against said formed desired item to assist in separating said formed desired item from said porous mold portion, said driving means defined in part by a plurality of essentially linear channel members formed integrally in and as a portion of said porous mold portion, said channel members being essentially aligned with said given axis and essentially aligned with and adjacent the side walls as of said porous mold portion with said channel members extending from one end of the mold portion to essentially an opposing end and terminating in said mold portion and not at its lower peripheral surface, said channel members positioned sufficiently adjacent to the side walls to assist in release along the side walls by radial transverse diffusion of the fluid along the length of and from the channel members through the porous mold portion to a side wall of the formed desired item.

5,299,625

RISER SLEEVE WITH BREAKER CORE

Masamitsu Miki, No. 1-25-15, Nakahara, Mitakashi, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 956,064
Claims priority, application Japan, Oct. 3, 1991, 3-80602
Int. Cl.[5] B22C *9/00*
U.S. Cl. 164—359 **10 Claims**



1. An apparatus, comprising:

a riser sleeve having a vertical axis, a bottom with an outer diameter D_4, a bottom opening having an inner diameter D_2, and a V shape, as viewed in a section taken along the vertical axis, that tapers toward said bottom opening; and

a breaker core attached to said bottom of said riser sleeve, said breaker core having a central opening with an inner diameter D_3 that is substantially the same as same inner diameter D_2 of said bottom opening of said riser sleeve, and said breaker core having an outer diameter D_5 that is larger than said outer diameter D_4 of said bottom of said riser sleeve.

5,299,626

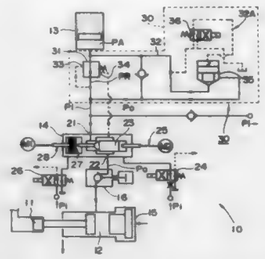
METHOD OF AND APPARATUS FOR INJECTION SPEED CONTROL IN DIE-CASTING MACHINE

Norihiro Iwamoto, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,186
Claims priority, application Japan, Mar. 12, 1992, 4-53505
Int. Cl.[5] B22D *17/32*
U.S. Cl. 164—457 **8 Claims**

1. A method of injection speed control for a die-casting machine by providing an injection speed control valve, which controls the speed of flow of operating fluid from an operating fluid source of the die-casting machine to an injection cylinder, and differential valve pressure control means, which switches a differential valve pressure coupled to said injection speed control valve, and switching said differential valve pressure control means while maintaining a predetermined opening degree of said injection speed control valve, thereby controlling the speed of injection by said injection cylinder.

4. An apparatus for injection speed control in a die-casting machine comprising an injection speed control valve for con-



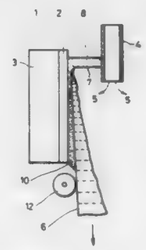
trolling the speed of flow of operating fluid from an operating fluid source of the die-casting machine to an injection cylinder, and differential valve pressure control means for switching a differential valve pressure coupled to said injection speed control valve.

5,299,627

CONTINUOUS CASTING METHOD

Kenichi Sorimachi; Hirokazu Tozawa; Seiji Itoyama; Shuji Takeuchi, and Akira Yamauchi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 3, 1992, Ser. No. 845,232
Int. Cl.[5] B22D *11/04, 11/07*
U.S. Cl. 164—472 **4 Claims**



1. In a continuous casting method of continuously casting steel while adding a mold powder using a vertical continuous casting mold having two pairs of mold surfaces which form a casting cavity, the improvement comprising maintaining a surface temperature of said mold at 700° C. or more by forming said mold surfaces of a Ni-Cr alloy having low thermal conductivity, and maintaining said mold powder in a liquid-phase state by using a mold powder having a solidifying point lower than said surface temperature.

5,299,628

METHOD AND APPARATUS FOR THE CASTING OF MOLTEN METAL

Sankaranarayanan Ashok, Bethany, Conn., assignor to Olin Corporation, Va.

Filed Jul. 3, 1991, Ser. No. 725,867
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—479 **7 Claims**

1. A process for the casting of metal strip comprising:

providing a source of molten metal;

providing a moving unheated substrate for receiving said molten metal thereon and upon which said metal solidifies as it moves away from said source, said substrate being selected from a material having a thermal coefficient

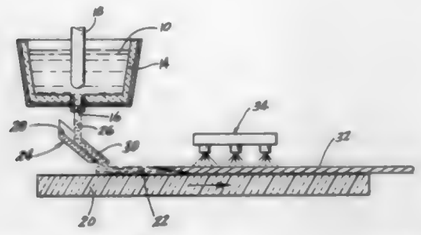
VOL 1161 ISS 1 AP 5 1994 UMI

sufficiently low that at least 80% of the solidification occurs progressively in a downward direction starting from the top of the strip.

4. An apparatus for the casting of metal strip comprising:

a source of molten metal;

a moving unheated substrate for receiving the molten metal thereon; and



means for depositing the molten metal on the substrate and moving said deposited molten metal away from said source to cause the solidification thereof, said substrate having a thermal coefficient of 10 or less watts/meter° Kelvin so that at least 80% of the strip is progressively solidified in a downward direction.

5,299,629

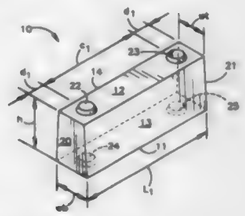
INTERLOCKING CHECKER BRICKS

Jack Hyde, Pittsburgh, Pa., assignor to North American Refractories Company, Cleveland, Ohio

Filed Jun. 12, 1992, Ser. No. 899,873

Int. Cl.[5] F23D *17/02*

U.S. Cl. 165—9.1 **24 Claims**



1. A checker brick comprising:

a. a substantially rectangular top surface;

b. a substantially rectangular base surface parallel to said top surface;

c. two side walls respectively spanning between and joining the surfaces;

d. two end walls each having a generally trapezoidal shape and extending between and joining the surfaces and the side walls;

e. one of the surfaces including at least two projections and the other of the surfaces including a like number of mounting recesses, said recesses and projections mating with projections and recesses of other bricks having like projections and recesses when multiple bricks are stacked atop one another in an interlocking relationship, the total longitudinal center-to-center distance between at least certain of projections and the recesses, respectively being at least equal to twice the distance from each projection and each recess to its nearest end wall; and,

f. said walls and surfaces together defining the perimeter of the brick with the brick being substantially rectangular in longitudinal planes of cross-section and generally trapezoidal in transverse planes of cross-section.

5,299,630

METHOD OF RAPIDLY HEATING A MASS TO AN OPERATIVE TEMPERATURE, IN PARTICULAR A VEHICLE ENGINE DURING COLD STARTING

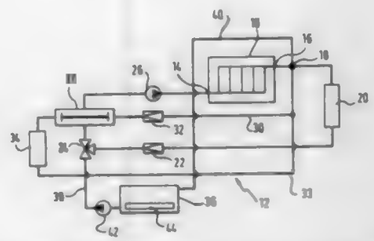
Oskar Schatz, Waldpromenade 16, D-8035 Gauting, Fed. Rep. of Germany

Filed Nov. 6, 1992, Ser. No. 972,972

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1991, 4136910

Int. Cl.[5] F28D *20/00*

U.S. Cl. 165—10 **4 Claims**



1. A method of rapidly heating a mass to an operative temperature, which mass is in heat exchange relationship with a section of a heat carrier system containing a flowable heat carrier and including a sensible heat storage means, in particular for rapidly heating a motor vehicle engine during cold starting, comprising:

providing a valve means in said heat carrier system for controlling flow of said flowable heat carrier;

feeding the heat carrier via said valve means into said heat storage means at the beginning of an inoperative period;

feeding said heat carrier via said valve means into said section of the carrier system no later than at the beginning of an operative period; and

controlling air flow into said heat storage means via a conduit means coupled between said heat storage means and said carrier system.

5,299,631

HEATING AND VENTILATING APPARATUS FOR THE CABIN OF A MOTOR VEHICLE HAVING A LOW HEAT LOSS MOTOR

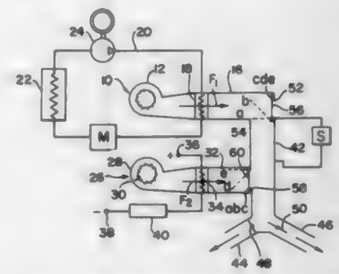
Jean Dauvergne, Posses, France, assignor to Valeo Thermique Habitacle, Le Mesnil-Saint-Denis, France

Filed Jan. 27, 1993, Ser. No. 9,814

Claims priority, application France, Jan. 31, 1992, 92 01107

Int. Cl.[5] F25B *29/00*

U.S. Cl. 165—29 **11 Claims**



1. Heating and ventilating apparatus for the cabin of a motor vehicle having a low heat loss motor, wherein said apparatus comprises: delivery duct for delivering air into the cabin of the vehicle; first heating and ventilating means connected with said delivery duct; and second heating and ventilating means connected with said delivery duct, the first heating and ventilating means comprising: a first duct connected with the delivery duct; a first blower connected with said first duct for delivering an air stream into said first duct; an first heating radiator disposed between the first blower and said first duct; and means connecting the first heating radiator in a fluid circuit so that the first radiator can receive a fluid heated by the motor of the vehicle, the second heating an ventilating means comprising: a second duct connected with the delivery duct; a second blower connected with the second duct for delivery of an air stream to the second duct; an electrical second heating radiator arranged between the second blower and said second duct; and mean for connecting said second radiator electrically with a voltage source, the apparatus further including control means for selectively distributing the air streams delivered respectively through the first and second ducts to the delivery duct.

5,299,632

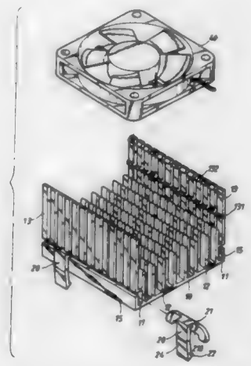
FIN DEVICE FOR AN INTEGRATED CIRCUIT

Lien-Jung Lee, No. 254, Chung Cheng Rd., Lo Jou Hsiang, Taipei Hsien, Taiwan

Filed Feb. 19, 1993, Ser. No. 19,967

Int. Cl.[5] H01L *23/40*

U.S. Cl. 165—80.3 **3 Claims**



1. A fin device for dissipating heat generated by an integrated circuit comprising:

a plate (**10**) having a bottom surface for contacting an upper surface of an integrated circuit (**30**) and an upper surface, two opposite end walls (**15**) extending upward from said upper surface;

a plurality of rows of fins (**12**) extending between said end walls (**15**) and extending upward from said upper surface of said plate;

a substantially L-shaped member (**13**) extending outward and upward from each said fin (**12**) of first and last rows which are adjacent to and extend parallel to the end walls (**15**), each said L-shaped member (**13**) extending to a height above said fins, said fins (**12**) of said first and last rows respectively defining a groove (**11**) with associated adjacent said end walls (**15**) for receiving at least one snapping fastener (**20**), said snapping fastener (**20**) being substantially T-shaped, comprising a substantially inverted L-shaped portion (**24**) with a distal snapping head (**22**) at an end thereof and two arms (**21**) extending laterally from the other end thereof, said arms (**21**) having a recessed portion (**210**) at an underside thereof, said distal snapping head (**22**) releasably engaging with a bottom surface of said integrated circuit to reliably retain a heat transfer contact relationship of said bottom surface of said plate (**10**) and said upper surface of said integrated circuit;

a fan means (**40**); and

means (**131** and **132**) for securely retaining said fan means on said L-shaped members, defining a space between said fins and said fan means.

5,299,633

HEAT EXCHANGER DEVICE FOR REFRIGERATION DRIERS IN COMPRESSED-AIR INSTALLATIONS AND TUBE/PLATE HEAT EXCHANGERS FOR USE IN THE LATTER

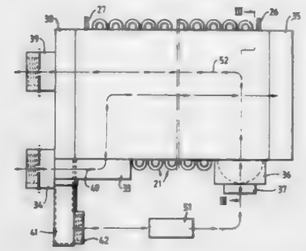
Werner Brüggemann, Grebenstein, and Josef Gievers, Borgentreich, both of Fed. Rep. of Germany, assignors to Autokühler GmbH & Co. KG., Hofgeismar, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 891,766

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1991, 4118289; Apr. 9, 1992, 9204952

Int. Cl.[5] F25D *17/06*

U.S. Cl. 165—113 **17 Claims**



1. Heat exchanger device for refrigeration driers in compressed-air installations, comprising: an air/air plate heat exchanger (**1, 56**) having at least a first and a second passage (**5, 65; 4, 72**) being in heat exchanging contact; and a refrigerant-/air heat exchanger designed as a combined tube/plate heat exchanger and having at least a third and a fourth passage (**22, 65; 21, 76**) being in heat exchanging contact, wherein said passages are formed by flat stacked plates and spacer elements mounted therebetween, and wherein said fourth passage (**21, 76**) is constructed between two of said plates (**23, 61**) in the form of a continuous tube-like element extending in a serpentine or meandering manner.

5,299,634

INDOOR UNIT OF A VENTILATION SYSTEM, VENTILATION AND AIR CONDITIONER

Akinori Toyoda; Akio Fukushima; Yasuo Sone; Hiroyuki Oohara; Yasuyuki Arai, and Akihiro Matsushita, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,570

Claims priority, application Japan, Sep. 26, 1991, 3-247679; Apr. 21, 1992, 4-101121

Int. Cl.[5] F01N *7/00*

U.S. Cl. 165—135 **1 Claim**

1. A ventilation system comprising:

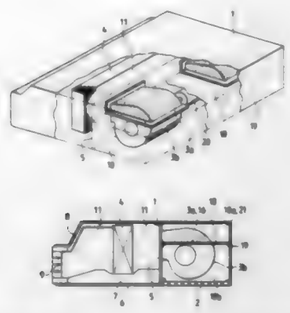
a ventilator positioned in a housing which defines an air inlet chamber, said housing including an air suction port, said ventilator comprising a first casing portion formed from a closed structure, and a second casing portion attached to said first casing portion, said second casing portion being formed from an air permeable porous structure; and

a partition plate position ed between said first and second casing portions so as to divide said air inlet chamber into a first chamber in which said first casing portion is positioned, and a second chamber in which said second casing portion is positioned;

wherein the air permeable porous structure of the second casing permits a passage of air from said ventilator to said

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second chamber, and permits said air, reflected by a portion of said housing which defines said second chamber, to



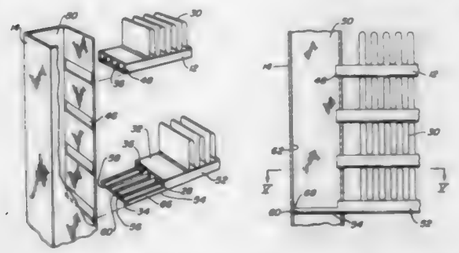
pass back through said permeable porous structure of said second casing.

5,299,635

PARALLEL FLOW CONDENSER BAFFLE

Anthony W. Abraham, Arlington, Tex., assignor to Wynn's Climate Systems, Inc., Ft. Worth, Tex.

Filed Mar. 5, 1993, Ser. No. 27,200
Int. Cl.[5] F28F *9/22*
U.S. Cl. 165—173 **6 Claims**



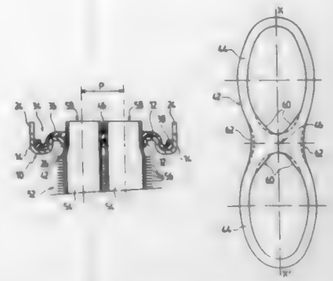
1. An air conditioner condenser, comprising in combination:
a set of generally parallel tubes, each of the tubes being substantially flat and having opposite ends and parallel upper and lower walls separated by longitudinally extending webs which define separate flow passages;
a pair of oppositely disposed header pipes, the ends of the tubes being connected to the header pipes for providing fluid communication between the header pipes, the header pipes each having interior walls that define a hollow interior; and
at least one of the ends of the tubes in each header pipe having an extended portion in which one of the upper and lower walls has been removed while the other of the upper and lower walls remain, the extended portion sealingly engaging the interior walls of the header pipe in which the extended portion locates for diverting fluid flow through said one of the header pipes; and wherein
a portion of the webs are also located on each of the extended portions of the tubes for strengthening the extended portions of the tubes.

5,299,636

HEAT EXCHANGER HAVING MORE THAN ONE SET OF TUBES, IN PARTICULAR FOR A MOTOR VEHICLE

Michel Potier, Rambouillet, France, assignor to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed Jul. 6, 1993, Ser. No. 88,212
Claims priority, application France, Jul. 8, 1992, 92 08481
Int. Cl.[5] F28F *9/04*
U.S. Cl. 165—173 **8 Claims**



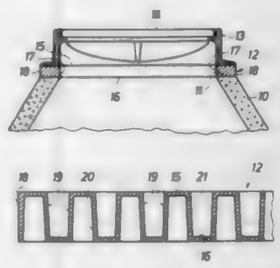
1. A heat exchanger comprising: a plurality of sets of parallel tubes constituting a tube bundle, with each tube having an end portion; a header plate formed with a plurality of holes, each hole defining an edge with the end portion of each of a plurality of adjacent said tubes of different sets being received in each hole; and a compressible sealing gasket having a plurality of collar portions, with each collar portion being placed in a respective said hole in the header plate, each collar portion comprising annular portions surrounding respective said end portions of tubes received in the hole, wherein each collar portion defines an intersection region joining the annular portions of the collar portion the gasket having thickened zones relative to the size of the hole at each said intersection region, adapted to be compressed between the edge of the associated said hole and the tube end portions received in said associated hole.

5,299,637

CONCRETE WELL

Tage Skönvall, Ekudden, S-520 15 Hökerum, Sweden

Filed Aug. 25, 1992, Ser. No. 935,491
Int. Cl.[5] E21B *33/03, 43/00*
U.S. Cl. 166—75.1 **12 Claims**



1. A raiser for supporting a cover for a well, comprising:
an annular main body having a predetermined thickness, a top surface of predetermined radial extent, and a bottom surface of equal radial extent;
a plurality of radially disposed spoke members formed in said main body, each of said spoke members having a thickness equal to said predetermined thickness and a predetermined radial extent equal to the common radial extent of said top and bottom surfaces;

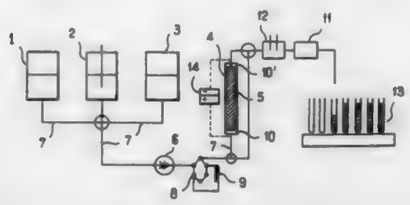
a plurality of circumferentially extending, radially spaced apart depressions formed in said main body between each of said spoke members, each of said depressions extending downwardly from said top surface toward said bottom surface, said downwardly extending depressions collectively forming a plurality of concentrically disposed, radially spaced apart, downwardly extending depressions, each of which is bounded at its opposite ends by said spoke members;
a plurality of circumferentially extending, radially spaced apart projections formed in said main body between each spoke member of said plurality of spoke members, each of said projections extending upwardly, from said bottom surface toward said top surface, said upwardly extending projections collectively forming a plurality of concentrically disposed, radially spaced apart, upwardly extending projections, each of which is bounded at its opposite ends by said spoke members;
said downwardly and upwardly extending depressions and projections being disposed in radially spaced apart, alternating relation to one another so that a downwardly extending depression, as viewed from the top surface of said raiser, forms an upwardly extending projection as viewed from the bottom surface of the raiser and so that a downwardly extending depression, as viewed from the bottom surface of said raiser, forms an upwardly extending projection as viewed from the top surface of the raiser;
whereby said alternating downwardly and upwardly extending depressions and projections and said spoke members collectively provide a light in weight but strong raiser.

5,299,638

PROCESS FOR TRANSPORTING PARTICLES IN A POROUS MEDIUM

Pascal Cheneviere, Nancy; Jacques-Philippe De Farcy De Malnoe, Auzielle; Antide Putz, Pau, and Michel Sardin, Laxou, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR90/00802, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO91/07570, PCT Pub. Date May 30, 1991
PCT Filed Jul. 9, 1990, Ser. No. 849,367
Claims priority, application France, Nov. 9, 1989, 89 14706
Int. Cl.[5] E21B *43/20, 43/22*
U.S. Cl. 166—246 **14 Claims**



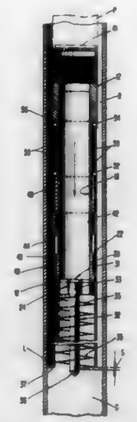
1. Process for injecting and propagating small, solid bacterial or mineral micron particles in a porous natural medium by promoting their transit through the porous natural medium, wherein in a first stage, the said medium is conditioned by flushing with a balanced aqueous solution containing at least one hydrocarbon compound selected from the group consisting of water-soluble polymers, water-dispersible polymers and anionic surfactants and then, in a second stage, a plug of solid particles, suspended in a balanced aqueous medium and containing, in addition, at least one hydrocarbon compound selected from the group consisting of water-soluble polymers, water-dispersible polymers and an anionic surfactant is injected into the said medium, wherein the anionic surfactant in the aqueous medium is present in an amount of between 10^{-5} and 10^{-1} M/l, and, in a third stage, the said plug of particles is thrust by an appropriate aqueous medium.

5,299,639

METHODS AND APPARATUS FOR REMOVING DEBRIS FROM A WELL BORE

Robert M. Williams, and Bob Davis, both of Hobbs, N. Mex., assignors to WADA Ventures, A Partnership, Hobbs, N. Mex.

Division of Ser. No. 849,981, Mar. 12, 1992, Pat. No. 5,251,701.
This application Mar. 30, 1993, Ser. No. 40,360
Int. Cl.[5] E21B *37/00*
U.S. Cl. 166—311 **12 Claims**



1. A method of removing debris from a well bore, comprising the steps of:
A) suspending a well clean-cut tool from a hollow tubing such that said tool and tubing are in substantially vertical alignment;
B) lowering said tool completely into a pre-formed well bore, until said tool engages the debris with said tubing extending upwardly to the ground surface; and
C) causing a helical conveyor screw disposed within a cylindrical member to rotate relative to said cylindrical member about a vertical axis so that a lower end of said conveyor screw which projects slightly downwardly below a lower end of said cylindrical member contacts the debris and conveys the debris upwardly into the cylindrical member, then upwardly past an upper end of said screw, and then into said tubing through a lower end thereof.

5,299,640

KNIFE GATE VALVE STAGE CEMENTER

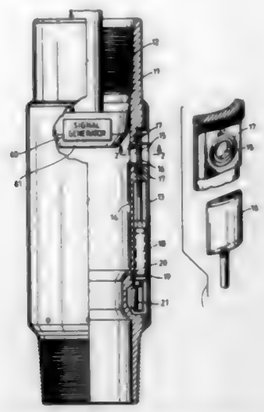
Steven G. Streich; John T. Brandell, and Charles F. VanBerg, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 19, 1992, Ser. No. 963,952
Int. Cl.[5] E21B *34/00*
U.S. Cl. 166—327 **20 Claims**

1. A well tool for use in stage cementing a well bore, comprising:
a. a generally cylindrical housing having a central passageway therethrough and an outer cylindrical wall and inner cylindrical wall;
b. a cementing port within said housing adapted to permit fluid communication through said housing;
c. a knife gate valve within said housing, said knife gate valve located between said outer and inner cylindrical walls and being slidable therein between an open position,

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wherein the cementing port is open, and a closed position, wherein the cementing port is closed.



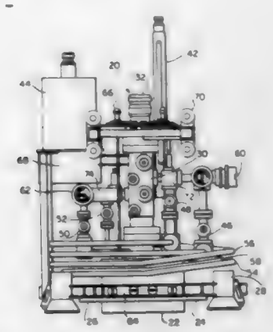
d. a driver assembly operationally associated with said knife gate valve and which may be actuated to move said knife gate valve between an open position and a closed position.

5,299,641

CHRISTMAS TREE FOR SUBSEA PRODUCTION

Cezar A. S. Paulo, and José Eduardo M. Silva, both of Rio de Janeiro, Brazil, assignors to Petróleo Brasileiro S.A.-Petrobrás, Rio de Janeiro, Brazil

Filed Aug. 7, 1992, Ser. No. 925,640
Claims priority, application Brazil, Aug. 9, 1991, PI 9103428
Int. Cl.[5] E21B *43/013*
U.S. Cl. 166—341 **10 Claims**



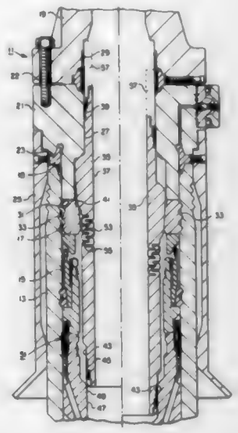
1. CHRISTMAS tree for subsea production comprising: a connector (**22**) for locking said Christmas tree to a wellhead; a guide structure (**24**) consisting of a central ring attached to said connector (**22**), supporting arms (**26**) and guide funnels (**28**) carried by said guide structure; a valve block (**30**) coupled at a top thereof, to a reentry mandrel (**32**), and including at a bottom thereof, means for coupling said valve block to said connector (**22**) or to a spacing spool; a protection cap (**34**); first two and second two gate-type lateral access valves (**46, 48, 50, 52**) having metal/metal sealing means and means for hydraulic driving said lateral valves and, spring-type return means; flow lines including loops (**54, 56, 58**) coupled to said first two gate-type lateral access valves (**46, 48**) and piping forming a crossover line; hydraulically adjustable chokes (**60, 62**) coupled to said valve block (**36**); a flow line terminal (**36**) coupled to said flow lines; a reentry pole (**42**): and a control module (**44**), of an electrohydraulic multiplexed type mounted above said guide structure.

5,299,642

SUBSEA WELLHEAD TIEBACK CONNECTOR

John E. Nelson; Lionel J. Milberger, both of Houston, Tex., and Egil Rebne, Stavanger, Norway, assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Jul. 15, 1992, Ser. No. 914,690
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—368 **23 Claims**



1. An internal tieback connector for a subsea well having a subsea wellhead housing having a seal groove and a wellhead housing bore containing a grooved profile, the subsea well having a casing hanger secured to the upper end of a string of casing and supported in the wellhead housing, the casing hanger having a casing hanger bore, the tieback connector comprising in combination:

a body having an upper end which secures to a conduit for lowering the body onto the wellhead housing;

a seal carried by the body which lands on the seal groove of the wellhead housing;

a connector element moveably carried by the body for radial movement relative to the body;

a connector actuator carried by the body for axial movement relative to the body between an upper and a lower position, the connector actuator having a cam surface which engages the connector element to move the connector element radially outward into the grooved profile when the connector actuator is moved downward to the lower position;

a tube extending downward from the connector actuator, the tube having a lower end which enters the casing hanger bore when the connector actuator moves to the lower position; and

seal means on the lower end of the tube for sealing the exterior of the tube to the casing hanger bore.

5,299,643

DUAL RADIALLY LOCKED SUBSEA HOUSING

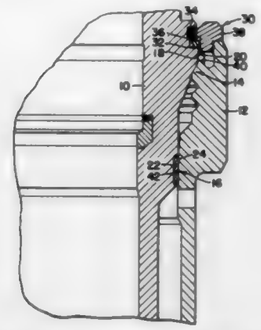
Vincent H. Vetter, Spring; Shiva P. Singeetham, Houston; William A. Valka, Spring, and Michael R. Williams, Houston, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 30, 1992, Ser. No. 968,755
Int. Cl.[5] E21B *33/035*
U.S. Cl. 166—368 **24 Claims**

1. A radially locked subsea housing comprising;

(a) a low pressure housing having upper and lower radial lock regions, each of which regions includes a radial interference surface that is substantially vertical in orientation

(b) a high pressure housing having upper and lower radial lock regions, each of which regions includes a radial interference surface that is slightly greater in radial diameter than the corresponding interference surface of the low pressure housing, and wherein the interference surfaces of the upper and lower radial lock regions form upper and lower interference fits, respectively, between the high



pressure and low pressure housings when the housings are assembled subsea; and

(c) wherein the low pressure housing further includes a landing shoulder defining a landing surface that is substantially more tapered in orientation than are the interference surfaces of the upper and lower radial lock regions, and the high pressure housing includes a landing shoulder defining a landing surface formed to land on the landing surface of the low pressure housing when the housings are assembled subsea.

5,299,644

WELL STARTER HEAD

Lawrence A. Eckert, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Division of Ser. No. 772,827, Oct. 7, 1991, Pat. No. 5,205,356, which is a continuation-in-part of Ser. No. 634,465, Dec. 27, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 988,061
Int. Cl.[5] E21B *33/03*
U.S. Cl. 166—379 **6 Claims**

1. A connector for a tubular member having a rim on its upper end, comprising in combination:

a tubular head having an axial passage therethrough, a lower end and an annular recess located in the passage and extending upward from the lower end, defining a load bearing shoulder at an upper end of the recess, the head adapted to be placed over the tubular member, with the recess encircling the tubular member and the load bearing shoulder landed on the rim;

an annular seal ring located at the upper end of the recess;

a slips actuating ring carried below the lower end of the head, the slips actuating ring having an upper side;

a spacer member removable carried on the upper side of the slips actuating ring;

a seal actuating ring located on the spacer member and extending upward into the recess for engagement with the seal ring;

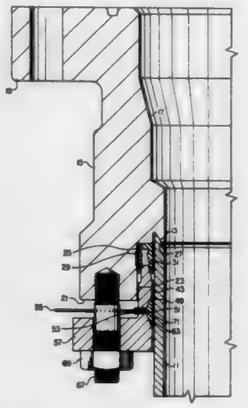
means connected between the slips actuating ring and the head for moving the slips actuating ring upward toward the lower end of the head and for causing the slips actuating ring to push the seal actuating ring upward against the seal ring, pushing the seal ring against the upper end of the recess to seal against the tubular member;

slip means carried between the slips actuating ring and the seal actuating ring and actuated by the upward movement of the slips actuating ring for gripping the tubular member; and

means for removing the spacer member after the seal has sealed against the tubular member, so that continued upward movement of the slips actuating ring will cause the slips actuating ring to move upward relative to the seal actuating ring to close the space previously occupied by the spacer member.

5. A method of connecting a tubular head to an upper end of a tubular member, comprising:

providing the head with an annular recess extending upward from a lower end of the head, and placing the head over the tubular member;



placing an annular seal ring in the recess;

mounting a slips actuating ring to the lower end of the head;

placing a seal actuating ring on the slips actuating ring and extending the seal actuating ring upward into the recess;

mounting slips on the slips actuating ring;

moving the slips actuating ring upward toward the lower end of the head and thereby pushing the seal actuating ring upward in unison with the slips actuating ring against the seal ring to fully seal the seal ring against the tubular member while delaying setting of the slips; then

moving the slips actuating ring upward relative to the seal actuating ring, causing the slips to contract and grip the tubular member after the seal ring has fully sealed against the tubular member.

5,299,645

FIRE EXTINGUISHER SPRINKLER CONSTRUCTION

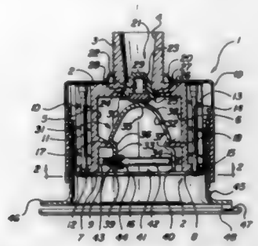
Brian T. Hoening, Standish, and Kim P. Gordon, Sterling, both of Mich., assignors to Globe Fire Sprinkler Corporation, Standish, Mich.

Filed Jan. 6, 1993, Ser. No. 1,062
Int. Cl.[5] A62C *37/14*
U.S. Cl. 169—39 **11 Claims**

1. Fire extinguishing sprinkler apparatus comprising frame means adapted for connection to a source of fire extinguishing fluid, said frame means having a passage through which said fluid may flow along a path; closure means of poor thermal conductivity normally occupying a position in which said passage is sealed and in contact with said fluid; retaining means of good thermal conductivity reacting between said frame means and said closure means for maintaining said closure means in passage-sealing position, said retaining means comprising a bowed member having a pair of spaced apart limbs joined at corresponding ends by a bight, said retaining means being movable from a first position in which said bight bears upon said closure means to another position in which said

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retaining means is free of said closure means; and strut means acting on said retaining means and normally maintaining said retaining means in said first position, said strut means being collapsible in response to an increase to a predetermined level



of the temperature of said strut means to enable said retaining means to disengage said closure means and permit said closure means to move from its passage-sealing position, thereby enabling fluid to flow through said passage along said path.

5,299,646

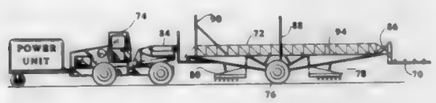
METHOD AND MEANS OF EXTINGUISHING FIRES IN OIL WELLS

Leonard O. Courtney, Ottumwa, Iowa, assignor to Courtney's Fire Crusher, Inc., Ottumwa, Iowa

Continuation of Ser. No. 729,646, Jul. 15, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 72,870

Int. Cl.[5] A62C *3/06*

U.S. Cl. 169—52 **4 Claims**



1. An apparatus for extinguishing a fire in an oil well comprising:

a. a pipe ring containing a plurality of spray nozzles;

b. a boom connected to the pipe ring;

c. a loader connected to the boom to control placement of the boom and hence of the pipe ring so as to surround the fire; and

d. means for pumping liquid carbon dioxide through the spray nozzles in a pattern that excludes air from the fire.

5,299,647

TINED ROTARY BLADE FOR CULTIVATORS

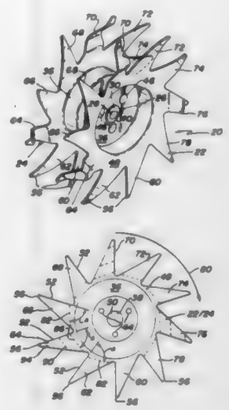
George W. Mudd, Baltimore, Md., and Thomas R. Lambrix, Wichita, Kans., assignors to Schiller-Pfeiffer, Inc., Southampton, Pa.

Filed Oct. 16, 1992, Ser. No. 961,756

Int. Cl.[5] A01B *21/02*

U.S. Cl. 172—555 **6 Claims**

1. A rotary blade for use on a cultivator or rototiller to roll along and engage the soil, said rotary blade comprising a pair of disk-like members and an intermediate hub having a central axis to which said members are fixedly secured, said hub serving to mount said blade on said cultivator or rototiller so that it may be rotated about said central axis, each of said disk-like members comprising a central portion to which said hub is connected and three first tines, three second tines, three third tines, and a fourth tine, each of said tines projecting generally radially outward from said central axis, each of said tines having a free end portion, each of said first tines comprising a simple curve whose free end portion is bent in a direction parallel to a first bend line, whereupon said free end portion of each of said first tines is directed generally inward towards a common plane located between said disk-like members and perpendicular to the hub, each of said second tines comprising a compound curve having a first portion and a second portion, said first portion of each of said second tines being bent in a direction parallel to a second bend line, whereupon said first portion of each of said second tines is directed generally outward away from said plane, said second portion of each of said second tines being bent in a direction parallel to a third bend line, whereupon said second portion of each of said second tines is directed generally inward towards said plane, each of said third tines comprising a simple curve whose free end



portion is bent in a direction parallel to a fourth bend line, whereupon said free end portion of each of said third tines is directed generally outward away from said plane, each of said bend lines extending at an angle of less than ninety degrees to a radius from said central axis to the tip of said tine, said fourth tine being planar and disposed parallel to said common plane, said tines of each of said disk-like members being disposed in the sequence of said fourth tine, a first one of said first tines, a first one of said second tines, a first one of said third tines, a second one of said first tines, a second one of said second tines, a second one of said third tines, a third one of said first tines, a third one of said second tines, and a third one of said third tines.

5,299,648

DRIVER CURRENT LIMITING METHOD IN ELECTRIC POWER STEERING APPARATUS

Masaki Watanabe; Shinobu Kamono, both of Saitama, and Ryuji Lizuwa, Kanagawa, all of Japan, assignors to Jidosha Kiki Co., Ltd. and Fujitsu Limited, Japan

Filed Jul. 20, 1992, Ser. No. 916,892

Claims priority, application Japan, Jul. 22, 1991, 3-204606

Int. Cl.[5] B62D *5/04*

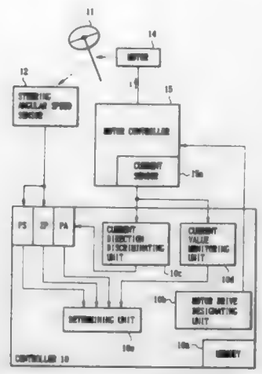
U.S. Cl. 180—79.1 **2 Claims**

1. A drive current limiting method in an electric power steering apparatus, which monitors a magnitude of a drive current supplied to a motor for generating an auxiliary steering torque and limits a current value of an excessively flowing drive current, comprising the steps of:

monitoring a steering angular speed and a direction of the drive current;

discriminating a condition in which a steering wheel is locked from a condition in which the steering wheel is

turned on the basis of combinations of the steering angular speed and the drive current direction; and



executing processing of limiting a current value of an excessive drive current only when the condition in which the steering wheel is locked is determined.

5,299,649

STEERING DEVICE AND SPEED REDUCTION DEVICE

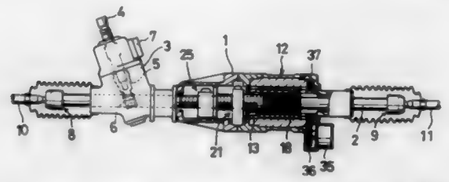
Osamu Sano, Kashihara, and Toshihiko Daido, Temmadainishi, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jul. 24, 1992, Ser. No. 917,717

Claims priority, application Japan, Jul. 24, 1991, 3-184654; Nov. 14, 1991, 3-298908; May 21, 1992, 4-129064

Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—79.1 **6 Claims**



1. A speed reduction device for steering devices, the speed reduction device comprising a tubular first rotary shaft supported by a housing and rotatable by an external force, a tubular second rotary shaft whereby the second rotary shaft is axially moveable and nonrotatable relative, to the first rotary shaft a movable member attached to the housing whereby the moveable member is axially moveable and nonrotatable relative to the housing, said moveable member further being fitted to an inner side of the second rotary shaft whereby the moveable member is axially movable and rotatable relative, to the second rotary shaft first thread coupling means connecting the second rotary shaft to the housing, and second thread coupling means connecting the movable member to the second rotary shaft, whereby the rotation of the first rotary shaft is transmitted to the movable member as an axial movement thereof upon speed reduction.

5,299,650

MOTOR-DRIVEN POWER STEERING APPARATUS AND METHOD

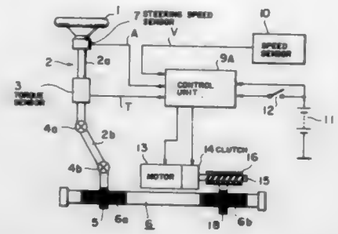
Shunichi Wada, and Yasuo Naito, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,405

Claims priority, application Japan, Sep. 18, 1991, 3-238236

Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—79.1 **6 Claims**



1. A motor-driven power steering apparatus for a vehicle comprising:

a steering system transmitting a steering force applied to a steering wheel by a driver of the vehicle to steerable road wheels of the vehicle;

a vehicle speed sensor for sensing the speed of the vehicle at which the vehicle is travelling;

a torque sensor for sensing a steering torque applied to said steering system;

a steering speed sensor for sensing a steering speed at which said steering wheel is turned by the driver;

a motor coupled via a clutch to said steering system for generating an assisting torque which assists a driver's induced steering motion of said steering system;

motor current sensing means for sensing a motor current flowing through said motor;

motor voltage sensing means for sensing a motor voltage across said motor;

motor control means for controlling a current supplied to said motor based on the vehicle speed and the steering torque in such a manner that the current supplied to said motor is zero when the vehicle speed is equal to or greater than a predetermined vehicle speed;

clutch control means for turning said clutch on and off based on the steering torque, the vehicle speed, the steering speed and the motor voltage in such a manner that said clutch is turned off to disconnect said motor from said steering system when a system failure is determined during high speed travel of the vehicle at which the vehicle is travelling at a speed equal to or higher than the predetermined vehicle speed.

5,299,651

TRUCK CAB SUSPENSION SYSTEM

B. Lee Wilson, Ft. Wayne, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Jul. 2, 1992, Ser. No. 918,110

Int. Cl.[5] B62D *33/06*

U.S. Cl. 180—89.12 **19 Claims**

1. A cab suspension system for vibrationally isolating a truck cab, said cab having a front portion and a rear portion, from a frame of a truck, said suspension system including:

an active damping mechanism at the rear of the cab which is operated under computer control in response to an algorithm programmed into the computer;

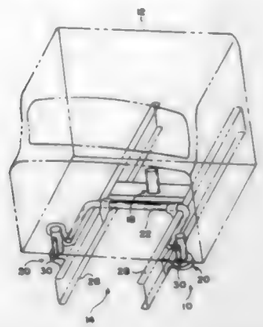
sensors associated with the computer for sensing cab position;

a feedback circuit for sensing actuation of the active damping mechanism; and,

at least one passive damping mechanism at the front of the

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cab including a primary low level damping device and a secondary high level damping device, said secondary high



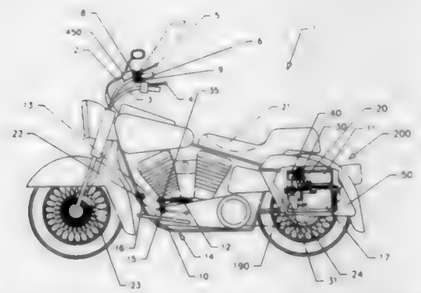
level damping device at the front of said cab comprising a shock absorber incorporating a lost motion connection therein.

5,299,652

MOTORCYCLE CONTROLS FOR PHYSICALLY CHALLENGED RIDER

John P. Bevins, 9170 Nelson Rd., Longmont, Colo. 80501

Filed Nov. 17, 1992, Ser. No. 977,593
Int. Cl.[5] B62M *25/08*
U.S. Cl. 180—219 9 Claims



1. In a motorcycle having a frame, a front and rear wheel, front and rear brakes, an engine, a manual foot actuated transmission having a gear shifting lever arm, a clutch, a clutch lever, handlebars, and means for brake actuation, the improvement comprising:

a pneumatic shifting assembly;

said pneumatic shifting assembly further comprising a compressor, an air tank, a pressure controller, an output pressure regulator, an actuator having a linkage means connected to said gear shifting lever arm, and release means for releasing air from said tank to said actuator, thereby moving said linkage means to shift said transmission;

said release means further comprising a handlebar mounted upshift and downshift switch, an upshift solenoid, and a downshift solenoid, wherein first activating said clutch lever and then activating said upshift switch causes said upshift solenoid to open thereby causing said release means to release air from said tank through said pressure regulator, thereby upshifting said transmission and further causing said pressure controller to maintain a fixed pressure range in said tank by activating said compressor; and wherein activating said clutch lever and then activating said downshift switch causes said downshift solenoid to open and cause said release means to release air from said tank through said pressure regulator, thereby downshifting said transmission and further causing said pressure controller to maintain a fixed pressure range in said tank by activating said compressor; and

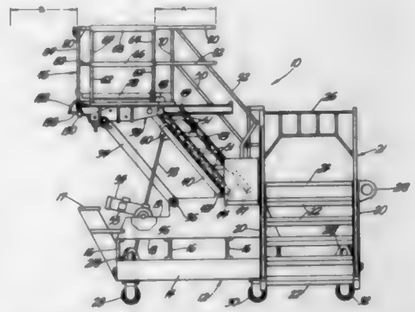
said means for brake actuation further comprising a proportioning valve, and a single brake lever on said handlebars, thereby simultaneously operating said front and rear brakes in an adjustable ratio by depressing said brake lever.

5,299,653

WORK STATION WITH MOBILE ELEVATABLE WORK PLATFORM

Kyle J. Nebel, 31053 Shawn Dr., Warren, Mich. 48093

Filed Jan. 19, 1993, Ser. No. 5,696
Int. Cl.[5] B66F *11/00*
U.S. Cl. 182—63 13 Claims



1. An apparatus having a raisable, expandable basket assembly for use as a mobile work platform, the apparatus comprising:

a base;

a relatively fixed basket subassembly of the basket assembly;

a relatively mobile basket subassembly telescopingly translatable from the fixed basket subassembly to expand the basket assembly, the relatively mobile basket subassembly having one position where it is fully retracted with respect to the relatively fixed basket subassembly, the relatively mobile basket subassembly having another position where it is fully extended with respect to the relatively fixed basket subassembly;

an underframe upon which the relatively fixed subassembly is stationarily mounted;

a first arm pivotally connected to the base and pivotally connected to the underframe, the first arm pivotable about a first axis on the base;

a second arm pivotally connected to the base and pivotally connected to the underframe, the second arm pivotable about a second axis on the base;

a raising means for swinging the basket assembly up and down, the raising means pivotable about a third axis on the base;

a translation drive means for translating the relatively mobile basket subassembly from the relatively fixed basket subassembly, the translation drive means connected to the underframe and the relatively mobile basket subassembly;

a first fence on the relatively fixed basket subassembly;

a second fence on the relatively mobile basket subassembly;

a tube on one of the fences, the tube disposed parallel to a translational path of the relatively mobile basket subassembly;

a fence rail on another of the fences, the fence rail closely and slidably fit within the tube;

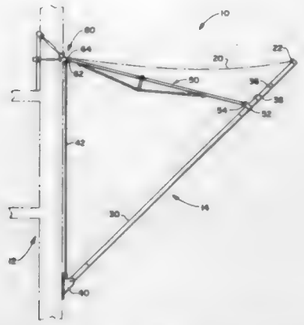
wherein during the fully retracted position, one end of the fence rail extends from the tube by a distance at least as long as the translational path.

5,299,654

SAFETY NET SUPPORT SYSTEM

Charles W. Duncan, Costa Mesa, Calif., assignor to Sinco Incorporated, East Hampton, Conn.

Filed Feb. 28, 1992, Ser. No. 843,582
Int. Cl.[5] E04G *21/00*
U.S. Cl. 182—138 22 Claims



1. A support system for a safety net comprising:

support arm means comprising a support arm and mounting means for pivotally supporting said arm at one end and allowing said arm to extend at an angle to the vertical;

brace means comprising first and second sections pivotally joined at ends thereof, said second section connected to said support arm at a distal end, said brace means comprising a strut extending from the joined ends of said sections; and

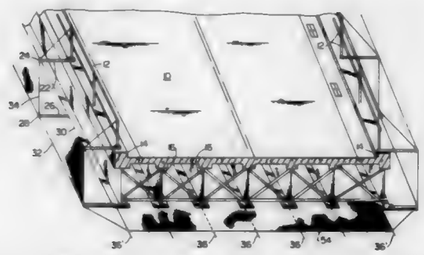
spring means comprising a pair of springs mounted to said brace means and disposed between said strut and intermediate spaced locations of said sections for biasing said sections in a generally linear configuration wherein said sections are pivotally collapsible from said linear configuration when an upward force above a pre-established threshold is exerted on said support arm.

5,299,655

WORKPLACE SUPPORT AND ENCLOSURE

Nicholas Margaritis, RD. #3, 3278 Main St., Kirkwood, N.Y. 13795

Filed May 20, 1993, Ser. No. 63,764
Int. Cl.[5] E04G *21/30*
U.S. Cl. 182—138 20 Claims



1. A workplace support and containment system for temporary installation in a fixed position upon an existing bridge, or the like, to provide an enclosed workplace beneath the substructure extending laterally the full width of the bridge and longitudinally between underlying transverse bridge supports at two span-terminating locations, said system comprising:

a) a plurality of first cables, each fixedly connected at opposite ends to said underlying bridge supports to lie in a substantially common, first horizontal plane spaced a predetermined distance below said substructure, two outermost of said cables being spaced from one another by a distance at least substantially as great as the width of said bridge;

b) an open-link, load-bearing flooring supported by said cables and extending substantially fully between said outermost cables and said transverse bridge supports;

c) a layer of flexible material covering substantially all of said flooring and having opposite ends substantially sealed with respect to said underlying bridge supports and opposite sides substantially sealed with respect to portions of said bridge adjacent opposite longitudinal sides thereof, whereby said flexible material and portions of said bridge define an essentially fully enclosed space; and

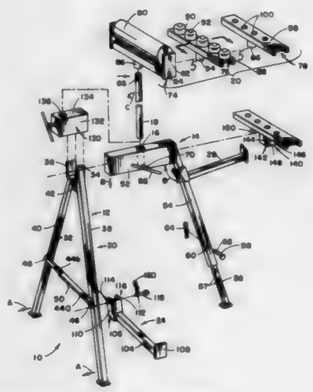
d) means for maintaining said enclosed space at a subatmospheric pressure.

5,299,656

JAW HORSE ASSEMBLY AND METHOD

Thomas W. Grill, P.O. Box 4282, Enterprise, Fla. 32725

Filed Jun. 2, 1992, Ser. No. 893,145
Int. Cl.[5] F16M *11/00*
U.S. Cl. 182—181 20 Claims



1. A jaw horse apparatus comprising:

a bi-leg assembly having a first and second locking member, said locking members being a leg portion and a jaw portion, said first locking member being pivotally connected to said second member between jaw portion and said leg portion;

a uni-leg assembly having a main portion adopted to removably engage between said jaw portion adjacent one end of said main portion, and having a main leg integrally connected to the main portion and extending at an obtuse angle away from said main portion;

an elongated rod having an axis extending longitudinally therethrough;

an aperture extending through said main portion and operating to receive said rod to support said rod in a substantially vertical orientation;

a removable head supported adjacent one end of said rod when said rod extends through said main portion, said head and rod rotatable about said axis when said rod extends through said main portion;

a clamp attached to said main portion and engaging with said rod when said rod extends through said aperture, said clamp securely holding said rod in place to prevent said head from rotating and to prevent said rod from sliding in said aperture;

a telescope leg portion slidably inserted into said main leg; and

means for setting the length that said telescope leg extends

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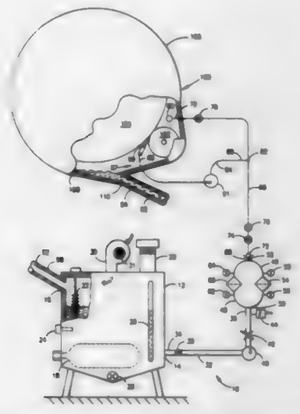
out of said main portion to change the angle of said rod with respect to vertical.

5,299,657

RECIRCULATORY LUBRICATION SYSTEM FOR AN OPEN GEAR SET

Dale J. Hikes, Gettysburg, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 797,845, Nov. 26, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 90,979
Int. Cl.[5] F01M *5/00*
U.S. Cl. 184—6.22 12 Claims



1. A recirculatory lubrication system for applying a film of lubricant to an open gear set having a pinion gear and a bull gear in meshing engagement with the pinion gear, the open gear set enclosed by a gear set cover having a lower portion for collecting lubricant therein, comprising:

(a) a first lubricant reservoir having one lubricant supply port and a lubricant return port;

(b) a first lubricant supply line, said first supply line having a first end in fluid communication with said supply port of said first reservoir and a second end;

(c) a filter assembly, said filter assembly including a filter housing having an inlet and an outlet, said inlet of said filter housing in fluid communication with said second end of said first lubricant supply line, said filter housing having at least one filter element positioned therein for removing particles entrained in the lubricant;

(d) a second lubricant supply line, said second supply line having a first end in fluid communication with said outlet of said filter housing and a second end;

(e) a hollow elongated lubricant distribution header having a first end and a second end, said first end of said header in fluid communication with said second end of said second supply line, said header having a plurality of lubricant feed orifices positioned along the length of said header, said feed orifices effective in applying the film of lubricant onto the gear set;

(f) a lubricant return line having a first end and a second end, said first end in fluid communication with the lower portion of the gear set cover and said second end in fluid communication with said lubricant return port of said first reservoir; and

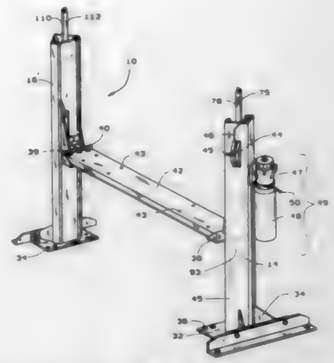
(g) a heater positioned within said reservoir to heat the lubricant within said reservoir.

5,299,658

AUTOMATIC HYDRAULIC LIFT CIRCUIT

Joseph H. Cox, Chesterfield; Richard A. Killeen, St. Charles; Brian K. Hierholzer, Hazelwood; Paul W. Roloff, St. Charles, and Michael A. Olsen, Lake St. Louis, all of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Jun. 17, 1993, Ser. No. 79,130
Int. Cl.[5] B60S *13/00*
U.S. Cl. 187—8.41 10 Claims



1. A fluid driven two-post lift assembly comprising:

a master cylinder having a rod end and a piston end;

a slave cylinder having a rod end and a piston end hydraulically connected to said master cylinder, each said cylinder sized so fluid displaced at said rod end of said master cylinder is equal to the fluid displaced at said piston end of said slave cylinder, thereby synchronizing movement of said cylinders;

at least one load bearing member operatively connected to said cylinders;

a hydraulic circuit to actuate said cylinders;

a pilot operated check valve means disposed within said circuit to close and stop said cylinders in an aligned position when an obstruction is encountered under said load bearing member when said load bearing member is being lowered;

a plurality of velocity sensor fuse means within said circuit disposed to close and lock said cylinders in place when said velocity sensor fuse means detects an excessive fluid flow rate or excessive velocity of cylinder movement; and

a sequence valve disposed to pre-pressurize said slave cylinder to compensate for air and fluid compressibility in said circuit.

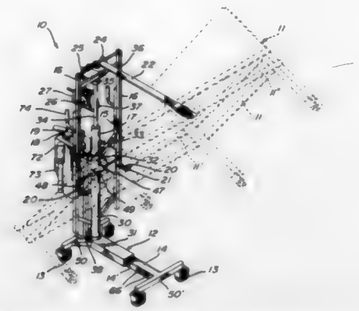
5,299,659

BED TRANSPORTING APPARATUS

Roger Imbeault, 560 Grant Street, and Yves Lacoursiére, 133 Briggs Street, both of Longueuil, Quebec, Canada J4H 3J4

Filed Mar. 15, 1993, Ser. No. 31,333
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—9 R 20 Claims

1. A bed transporting apparatus comprising a lower movable frame supported on unidirectional casters, said movable frame having an adjustable extendible section, a vertical frame secured to said lower movable frame, bed supporting displaceable means displaceably connected with said vertical frame, means to displace said bed supporting displaceable means along a vertical plane, control means to control the position of said bed supperting displaceable means along said vertical plane, said bed supporting displaceable means having lower bed support means for supporting a side member of a bed and an upper retractable flexible connecting element having attachment means for securement to an opposed side member of said bed, and retracting means secured to said flexible connecting element to retract same and cause said bed to be pivoted on



said lower bed support means and be held sideways by said transporting apparatus, and means to displace said apparatus along a floor surface.

5,299,660

STATIONARY LIFT STRUCTURE WITH STERILE-TYPE ENCLOSURE FOR PHARMACEUTICAL AND MEDICAL APPLICATIONS

Ervin H. Farmer, P.O. Box 185, Sharpsburg, N.C. 27878

Filed Jun. 1, 1993, Ser. No. 68,782
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—9 R 12 Claims

1. A stationary lift device for raising and stationing articles at a selected elevation above a supporting surface

a) a mainframe adapted to rest on the supporting surface and including a base frame structure and a pair of upstanding guide rails;

b) a carriage movably mounted on the guide rails and movable up and down between a lower position and an upper position;

c) a horizontal bed structure fixed to the carriage and extending outwardly therefrom and including a pair of laterally spaced arms fixed to the carriage and a bed extending between the arms;

d) a fluid drive system for driving the carriage and the bed structure from the lower position to the upper position; and

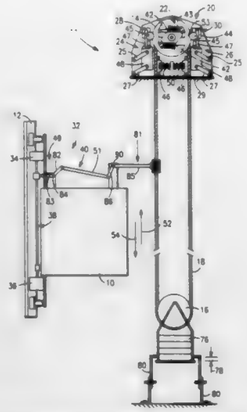
e) a coupler for coupling the mainframe to the bed structure such that the mainframe and bed structure are tied together and wherein the entire stationary lift device can be raised upwardly off the supporting surface by engaging and raising the bed structure.

5,299,661

MECHANICAL OVERSPEED SAFETY DEVICE

Mukunda B. Pramanik, Burlington, Conn.; Rajendra V. Mistry, Cincinnati, Ohio, and Sib S. Ray, Newington, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 3, 1992, Ser. No. 971,005
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—89 8 Claims



1. A bidirectional overspeed device for an elevator system, having an elevator car for travel in a hoistway along a guiderail, and a governor rope passing over a governor sheave at the top of the hoistway and a tension sheave at the bottom of the hoistway comprising:

a bidirectional governor, attached to the governor sheave;

a first safety brake;

a second safety brake; and

a bidirectional linkage means, connecting said safety brakes and the governor rope, wherein an overspeed condition will cause said bidirectional governor to clutch the governor rope, thereby implementing said bidirectional linkage means which in turn operates one of said first and second safety brakes.

5,299,662

LINEAR MOTOR ELEVATOR HAVING HYBRID ROPING AND STATIONARY PRIMARY

K. Narasimha Reddy, Bolton, and John K. Salmon, South Windsor, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 919,440, Jul. 27, 1992. This application Dec. 22, 1992, Ser. No. 995,220
Int. Cl.[5] B66B *17/12*
U.S. Cl. 187—94 22 Claims

1. An elevator system, comprising:

a car;

a counterweight assembly including a motor secondary;

a roping arrangement coupling said car to said counterweight assembly, said roping arrangement determining a car roping ratio and a counterweight assembly roping ratio, said car roping ratio being less than said counterweight assembly roping ratio so that a total travel distance of said counterweight assembly is less than a total travel distance of said car during normal operation of the elevator system;

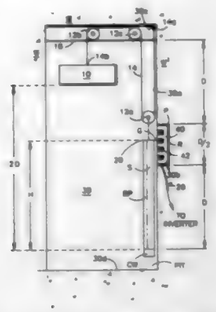
guide rails, said counterweight assembly being mounted on said guide rails;

a platform for a motor primary, said platform being attached to said guide rails;

at least one wall associated with said counterweight assem-

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bly, said wall forming a recess which opens in a direction generally towards said counterweight assembly; and



a motor primary mounted on said platform, at least portions of said platform and said motor primary being disposed in said recess, said motor secondary being spaced from said motor primary by a substantially constant air gap.

5,299,663

DISK BRAKE

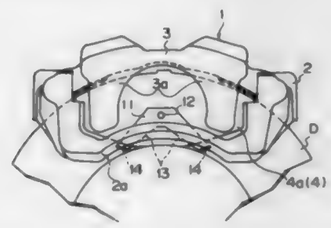
Kinzo Kobayashi, Kanagawa, and Shinichi Nakayama, Yamanashi, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jun. 9, 1992, Ser. No. 895,734

Claims priority, application Japan, Jun. 10, 1991, 3-043157[U]

Int. Cl.[5] F16D *55/224*

U.S. Cl. 188—1.11 **5 Claims**



1. A disk brake for a vehicle including a rotary disk having opposite sides, said disk brake comprising:

a carrier mounted on a non-rotating part of the vehicle on one of the opposite sides of the disk, said carrier including side portions spaced from each other along the circumference of the disk and extending across the disk, and an outer beam located at the other of said opposite sides of the disk and connecting said side portions;

a caliper supported by said carrier for sliding movement in the axial direction of the disk and including a cylinder portion on said one of the opposite sides of the disk, a piston received in the cylinder portion, a disk-pass portion extending from the cylinder portion across the disk, and two claw portions extending from the disk-pass portion on said other of the sides of the disk, said claw portions being spaced from each other in the circumferential direction of the disk;

a pair of brake pads disposed on the opposite sides of the disk and supported so as to be slidable in the axial direction of the disk, at least the pad disposed on said other of the sides of the disk being supported by said carrier;

a wear alarm member comprising a plate fixed relative to the pad on said other of the sides of the disk, said alarm member having a mounting portion at which the alarm member is fixed relative to said pad at a location between said claw portions, and at least one vibrating piece extending from the mounting portion and having a distal end remote from said mounting portion, said vibrating piece extending from said mounting portion in a direction intersecting a line extending radially of the disk along said pad and located in an area between said pad and said outer beam of the carrier, said vibrating piece remaining spaced from said claw portions when the brake is actuated so that the vibrating piece does not interfere with said claw portions when the brake is actuated, said distal end of the vibrating piece being a bent portion of the vibrating piece extending toward the disk at the periphery of said pad so as to contact said disk when the pad wears a certain amount, the entire said bent portion constituting the distal end of said vibrating piece being located between said disk and a plane passing through said mounting portion parallel to said disk.

5,299,664

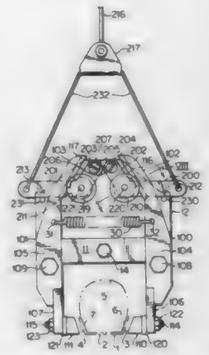
BICYCLE BRAKE ASSEMBLY INCLUDING CRANK ARM LEVERS WHICH FUNCTION AS SECOND CLASS LEVERS

Jack Peters, 806 Eastwood Dr., Prescott, Ariz. 86303

Filed Aug. 11, 1992, Ser. No. 928,016

Int. Cl.[5] B62L *1/00*

U.S. Cl. 188—24.21 **19 Claims**



1. A caliper-type brake assembly for a bicycle, comprising:

at least one pair of opposed, generally complementarily configured elongate brake arm levers;

each said brake arm lever supporting adjacent a first end thereof a bearing surface;

each said brake arm lever supporting adjacent a second opposite end a friction braking pad adapted to be urged with a controllable force against a respective sidewall of the wheel rim to be braked;

pivotal support means for each said brake arm lever for supporting the brake arm lever on said bicycle adjacent a respective wheel rim to be braked, each said pivotal support means being disposed between said first and second ends of the respective brake arm lever to thereby cause each said brake arm lever to function as a first class lever;

at least one pair of complementarily configured crank arm levers each having a first arm and a second arm and a pivotal support means adjacent an end of said first arm;

brake actuating means secured adjacent the end of said second arm of each said crank arm lever for pivoting said crank arm levers simultaneously about their respective pivotal support means;

means supported on each said crank arm lever intermediate its opposite ends for engaging said bearing surface of an associated brake arm lever to thereby cause each said crank arm lever to function as a second class lever;

whereby rotation of said crank arm levers about their respective pivots causes said brake actuating means on each said crank arm lever to act on the bearing surface of the associated brake arm lever to thereby rotate said brake arm lever in a direction to urge its associated friction braking pad into wheel braking engagement with the respective sidewall of the wheel rim to be braked.

5,299,665

DAMPING BUSHING

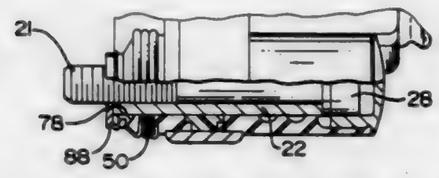
Rolf Weiler, Eppstein, and Uwe Bach, Niedernhausen, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 585,150, Oct. 9, 1990, Pat. No. 5,161,651. This application Sep. 1, 1992, Ser. No. 938,702

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1989, 3903744; Dec. 6, 1989, 3940276

Int. Cl.[5] F16J *3/04*

U.S. Cl. 188—73.44 **9 Claims**



1. A pin guide and damping bushing for the caliper of a floating caliper spot-type disc brake provided with a brake carrier and with a caliper being axially slidable in respect to the brake carrier and straddling a brake disc and brake shoes, said brake carrier and caliper having at least one pin, guided within a bore in a portion of said caliper, said pin having a threaded end adapted to be threadably received in a brake mounting structure and a drive head on the other end, a bushing sleeve received over said pin with said drive head positioned against one end of said bushing to be adapted to force the other end of said bushing to abut against said brake mounting structure when said pin threaded one end is advanced into said brake mounting structure, at least one elongated hollow tubular elastic damping guide element having a portion positioned in said bore in said portion of said caliper and received over said bushing, a rigid stop element carried by said damping guide element and also receiving said bushing limiting radial movements of said pin and bushing within said bore, said stop element having a basic body portion which has a tubular-shaped cross section, and also having radially outwardly directed extensions which form stop surfaces, one section of said damping and guide element having interstices receiving said stop element extensions; said damping guide element having on one end an axial extension extending from said portion of said damping guide element within said bore in said caliper portion and surrounding said pin and bushing, said damping guide element also having formed on the other end an integral pleated cup surrounding said pin and bushing, said axial extension having an end located axially past said drive head of said pin; a dust cover cap fit to said end of said axial extension to completely enclose said drive head; and, said pleated cup engaged with said bushing adjacent said other end, abutting said brake mounting structure whereby said damping guide element encloses said pin and bushing.

5,299,666

RESETTABLE PILOT OPERATED TORQUE LIMITER

David J. Lang; Eric Stoutenborough, both of Rockford, and Gary Gillingham, Cherry Valley, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 24, 1992, Ser. No. 950,794

Int. Cl.[5] F16H *57/10*

U.S. Cl. 188—134 **4 Claims**

1. A torque limiter comprising:

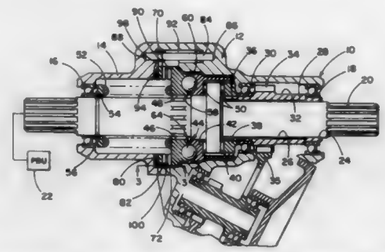
a housing;

a shaft journalled in said housing and adapted to be connected to a source of rotary power;

a rotary output journalled in said housing;

a ball ramp coupling within said housing including an axially movable drive element coupled to said shaft, a driven element coupled to said output and facing said drive element, a spring biasing said elements toward each other, facing ramps in said elements at the interface of said elements and balls in said ramps;

a first set of teeth carried by said drive element;



a second set of teeth carried by said housing and aligned with said first set;

whereby, when a predetermined resistance to rotation of said output is encountered, relative movement between said elements will occur, which in turn will cause said balls to move said drive element axially relative to said driven element, said relative axial movement causing the teeth of said first set to engage with the teeth of said second set; and means mounting said second set of teeth for limited axial/rotational movement within said housing.

5,299,667

CARBON COMPOSITE LAMINATED STRUCTURE

Charles P. Hammond, Leicester, Great Britain, assignor to Dunlop Limited, a British Company, United Kingdom

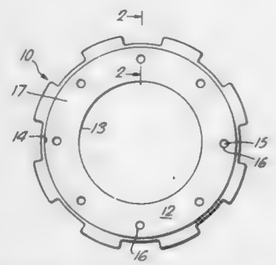
PCT No. PCT/GB90/01113, § 371 Date Jan. 22, 1992, § 102(e) Date Jan. 22, 1992, PCT Pub. No. WO91/01456, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 19, 1990, Ser. No. 807,832

Claims priority, application United Kingdom, Jul. 22, 1989, 8916822

Int. Cl.[5] F16D *65/12, 69/04, 13/64*

U.S. Cl. 188—218 **12 Claims**



10. A laminated friction disk fabricated from a refurbished pair of worn brake discs comprising a first layer of carbon composite material which provides a first wear surface and a second layer of carbon composite material which provides a second wear surface and a plurality of holes extending therethrough with each said layer having an annular wear surface and wherein the second layer is held securely in contact with and against a surface of the first layer of carbon composite material opposite said first wear surface by fastening means extending through aligned pairs of said holes which, as viewed

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in a direction perpendicular to the wear surfaces, lies within the area of said wear surfaces at radial positions equal to the inner diameter of the wear area plus more than 50% of the difference between the inner and outer radii of the annular wear area at a position wholly below the said wear surfaces and each said layer having torque and transmitting key formations whereby the disc may slide axially but remain rationally fixed relative to a support structure, with the fastening means comprising rivets of a kind inherently adapted to withstand and in use be subject to tensile loads.

5,299,668

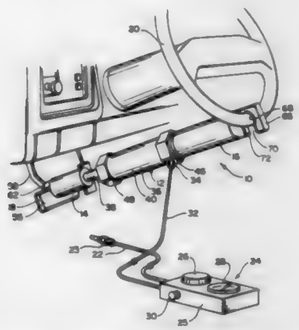
ASSEMBLY FOR DEPRESSING A VEHICLE PEDAL FOR BLEEDING BRAKES

William L. Youngers, P.O. Box 164, and Delbert J. Youngers, P.O. Box 1205, both of Ephrata, Wash. 98823

Continuation of Ser. No. 833,882, Feb. 11, 1992, abandoned. This application Jun. 29, 1993, Ser. No. 84,773

Int. Cl.[5] B60T *7/00*

U.S. Cl. 188—352 **9 Claims**



1. A remotely controlled actuator for selectively depressing the pedal of a hydraulic brake system of a vehicle so as to permit said brake system to be bled by a single operator, said actuator comprising:

a pedal actuator assembly comprising:

a longitudinally extensible cylinder member having first and second ends, said cylinder member being configured to extend longitudinally between said brake pedal and a lower portion of a steering wheel rim;

a first one-piece hook portion mounted to said first end of said cylinder member, said first hook portion having a receiving area for engaging said brake pedal and a laterally extending entrance opening having a width sized to permit passage of said pedal therethrough into said receiving area; and

a second one-piece hook portion mounted to said second end of said cylinder member, said second hook portion having a generally circular receiving area for engaging said steering wheel rim and a laterally extending entrance opening having a width sized to permit passage of said rim therethrough into said receiving area; and

a portable control assembly for selectively extending and retracting said cylinder member of said actuator assembly so that said first hook portion alternately depresses and raises said brake pedal as said second hook portion reacts against said steering wheel rim;

said openings into said receiving areas in said first and second hook portions extending generally parallel to one another and to one side of said actuator assembly so as to permit said hook portions to be set over said brake pedal and steering wheel rim so that said hook portions are retained on said pedal and rim by the weight of said actuator assembly, and said circular receiving area in said second hook portion having a fixed diameter sized larger than a cross-sectional diameter of said steering wheel rim, and also larger than said width of said entrance opening in said second hook portion so that said circular receiving area has first and second extremities which extend longitudinally on either side of said entrance opening, so that as said cylinder member is alternately extended and retracted with said steering wheel rim in said receiving area of said second hook portion, said second hook portion shifts longitudinally on said steering wheel rim so that said rim is positioned alternately within said first and second extremities of said circular receiving area and out of register with said entrance opening, so as to prevent accidental displacement of said rim through said entrance opening of said second hook portion as said first hook portion of said actuator assembly alternately depresses and raises said pedal of said brake system.

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VIBRATION ELIMINATOR

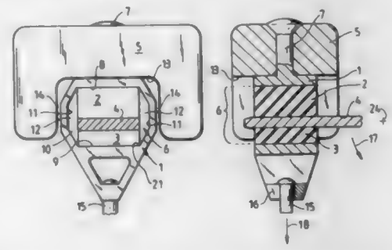
Karl-Heinz Pepping, Schleiden; Hubert Hausmann, Mercherich; Michael Engel, Neuendorf, and Gunther Gebhardt, Stadtkyll, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 797,433, Nov. 22, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,907

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, 4037786

Int. Cl.[5] F16F *15/08;* **G05G** *25/00*

U.S. Cl. 188—379 **11 Claims**



1. A vibration suppression assembly for an actuating element of an aggregate, said vibration suppression assembly being operatively interposed between a linkage means and a shift lever of said aggregate, the vibration suppression assembly comprising:

a cage operatively connected to the linkage means and forming upper, lower, left, and right inside surfaces;

a prestressed rubber spring captured in said cage and fixedly connected to the shift lever, the rubber spring including

i) a first prestressed compressible element compressed between the shift lever and the upper inside surface of the cage, and

ii) a second prestressed compressible element compressed between the shift lever and the lower inside surface of the cage,

wherein the cage holds the rubber spring spaced from the left and right inside surfaces of the cage over substantially the lengths of said inside surfaces; and

a weight mounted on the cage to help dampen vibrations.

5,299,670

TELEPHONE CORD REEL

Warren L. Willard, R.R. 4, Box 85, Charleston, Ill. 61920

Filed Jun. 11, 1993, Ser. No. 76,552

Int. Cl.[5] H02G *11/02*

U.S. Cl. 191—12.2 R **5 Claims**

1. A telephone cord reel comprising:

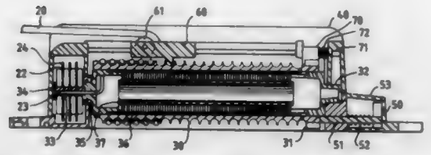
(a) a first section of telephone cord having at least one conductor, which section unwinds from the reel and is adapted for connection to a telephone handset;

(b) a second section of telephone cord which is adapted for connection to a telephone outlet;

(c) a hollow cylindrical spool around which the cord winds and unwinds as the spool rotates, the spool having helical channels on its outer surface, the channels being of a size such that the cord fits into the channels;

(d) a housing for the spool having a slot running substantially the length of the spool and having supports for the ends of the spool;

(e) a cord guide assembly for guiding the cord into the channels as it is wound, the assembly comprising: (i) a track running substantially the length of the spool and mounted in a fixed position a uniform distance from the spool; and (ii) a cord guide adapted to ride along the track, having an opening through which the cord passes, and having a protrusion which engages the helical channels of the spool, such that the cord guide moves along the track as the spool rotates;



(f) a helical torsional spring inside the spool, one end of which is engaged to the spool and rotates with it, the other end of which is not engaged to the spool and does not rotate with it, such that the spring provides a force to rotate the spool and rewind the cord when the cord is unwound;

(g) a means for releasably holding the cord in a fixed position when it is unwound; and

(h) an electrical contact assembly for transmitting electricity from the outlet end of the cord to the portion of the cord wound on the spool, the assembly comprising a coil spring for each separate conductor in the cord, the inner end of each coil spring connected to a conductor of the portion of the cord wound on the spool, the outer end of each spring connected to a conductor of the outlet end of the cord, such that the coil spring uncoils and recoils as the spool rotates.

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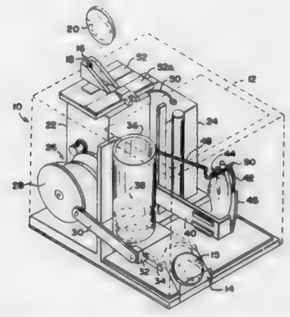
COIN EXCHANGER

Clifford Garland, 149 Van Brunt St., Brooklyn, N.Y. 11231

Filed Apr. 11, 1991, Ser. No. 683,612

Int. Cl.[5] G07D *5/08;* **A45C** *1/12*

U.S. Cl. 194—310 **9 Claims**



1. A coin exchanger and amusement device comprising:

a) a box having a receptacle on the top thereof into which a coin or the like may be inserted, and also having an opening in one side wall thereof;

b) a motor means including a source of power within said box;

c) contact means connected with said source of power responsive to insertion of a coin into said receptacle for actuating said motor means;

d) coin grasping means contained within said box;

e) a lid on the top of said box normally closing the top of the box;

f) gear means connected with said motor means and actuable in response thereto;

g) means responsive to said gear means for rotating said coin grasping means upwardly to open said lid, reach out from said box into grasping engagement with said coin, and return grasping said coin into said box, said lid closing upon return of said coin grasping means into said box;

h) storage means holding a plurality of coins or the like different from said coin located within said box; and

i) ejection means responsive to said gear means for ejecting one of said plurality of coins into said sidewall opening upon retraction of said coin grasping means into said box.

5,299,672

COIN SELECTOR WITH COIN SLIT SHUTTER

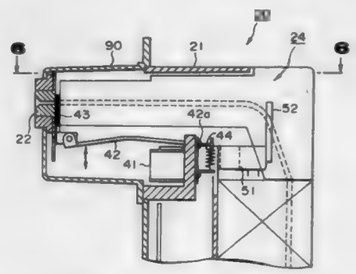
Kenji Nishiumi, Hannou, and Takeshi Ishida, Sakado, both of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Tokyo, Japan

Division of Ser. No. 741,912, Aug. 8, 1991, Pat. No. 5,236,339. This application Apr. 27, 1993, Ser. No. 52,683

Claims priority, application Japan, Apr. 5, 1991, 3-73276

Int. Cl.[5] G07D *5/08*

U.S. Cl. 194—318 **12 Claims**



1. A coin selector comprising;

horizontal coin conveying means slidably arranged in a housing of the coin selector, said horizontal coin conveying means serving to forcibly convey a coin inserted through a coin insert slit in the horizontal direction by recirculatively driving an opposing pair of endless belts while said coin is held between said opposing pair of endless belts,

detecting means for detecting whether said horizontal coin conveying means is arranged at a normal position in said housing or not,

a shutter arranged peripheral to said coin insert slit to open or close said coin insert slit,

shutter driving means for displaceably driving said shutter, and

shutter controlling means for enabling said shutter driving means to be displaceably driven under a condition that an output from said detecting means for detecting that said horizontal coin conveying means has been arranged at said normal position in said housing is detected.

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5,299,673

COIN RECEIVING MECHANISM HAVING A FOREIGN OBJECT RELEASE DEVICE

Edward S. Wu, Freemont, Calif., assignor to Tatung Telecom Corporation, Mountain View, Calif.

Filed Jun. 13, 1991, Ser. No. 714,932
Int. Cl.[5] G07F 1/04
U.S. Cl. 194—345 21 Claims



1. A coin receiving mechanism having a foreign object release device for use with a coin receiving machine, said mechanism comprising:

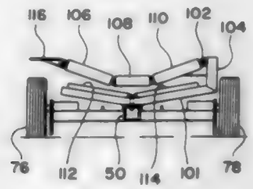
first and second hinged coin chute walls, each having an inner surface and an upper and lower portion, said coin chute walls having a plurality of planar sections, said planar sections lying in different planes to define a zig-zagged coin chute path through which a coin travels, said coin chute walls being pivoted to swing open wider at their lower portion than at their upper portion, each of said coin chute walls further having a lower planar section which has a coin path which is angled with respect to a coin path defined by said planar sections arranged in different planes.

5,299,674

CONVEYOR SYSTEM AND METHOD EMPLOYING A MOBILE BELT SUPPORT STRUCTURE

Wayne S. Casitar, Saskatchewan, Canada, assignor to Westfalia Mining Progress, Inc., Charleston, W. Va.

Filed Dec. 20, 1991, Ser. No. 810,407
Int. Cl.[5] B65G 41/00
U.S. Cl. 198—303 12 Claims



1. A mobile belt support car for an extensible conveyor belt having an upper troughing strand and a lower return strand, the car comprising:

a frame carried by wheels and being movable from a tangential direction to a position under the lower return strand; and

troughing strand support means, movable to a position under the upper troughing strand when the frame is moved under the return strand,

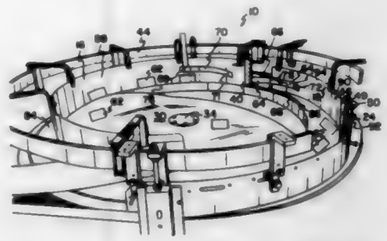
wherein the troughing strand support means comprises a first idler assembly mounted on the frame and including an upper horizontally disposed cantilevered beam, the upper cantilevered beam having a distal end which passes between the upper troughing strand and the return strand.

5,299,675

POUCH FEEDER METHOD AND DEVICE WITH ANGLED RIM

Benny C. Schumann, Coon Rapids, and Donald E. Giorgio, Fridley, both of Minn., assignors to T L Feeding Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 612,065, Nov. 9, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,032
Int. Cl.[5] B65G 47/24
U.S. Cl. 198—392 7 Claims



1. An apparatus for precision feeding and alignment of product packets for subsequent packaging comprising:

a) a bowl-like rotatable vessel having walls comprising an inner surface, a top surface, and an outer surface, the inner surface forming a vessel cavity suitable for receipt of a plate, a flexible disc, and product packets therein:

b) an angled rim positioned on the top surface of the vessel walls, the rim being angled sot hat a rim inner surface is proximate the all inner surface and is positioned higher than a rim outer surface;

c) a plate positioned within the vessel cavity between the inner surfaces of the vessel walls, the plate having an upper surface and a lower surface;

d) a rotatable and flexible disc positioned substantially entirely on the plate upper surface, the disc being suitable for receiving product packets thereon, wherein the flexible disc and the vessel rotate to move the product packets from positions on the disc to the angled rim top surface; and

e) ring means extending vertically from placement on the angled rim so that product packages are uniformly aligned by the angled rim and the ring means;

wherein the ring means comprises an inner positioning ring and an outer orienting ring, the inner positioning ring comprising an interrupted ring having first and second ends.

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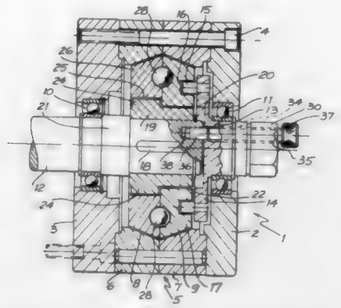
ROTATION CHECK MECHANISM

Malcolm V. Wade, Meadowbank, Australia, assignor to IVG Australia Pty. Limited, Lidcombe, Australia

Filed Aug. 11, 1992, Ser. No. 929,897
Claims priority, application Australia, Aug. 15, 1991, PK-7791; Aug. 15, 1991, PK-7792; Jun. 3, 1992, PL-2761
Int. Cl.[5] B60K 41/26; F16D 55/48
U.S. Cl. 192—8 R 18 Claims

1. A mechanism for abruptly checking the motion of a rotating input shaft comprising: an oil-filled casing; two rings which are axially and angularly displaceable with respect to one another mounted coaxially within said casing; braking surfaces provided on respective rims of said rings and lying on respective frusto-conical surfaces; opposed braking surfaces provided on the casing and facing those of the rings, the braking surfaces of the casing also lying on frusto-conical surfaces which are complementary and parallel to those of the rings; resilient means acting to urge the two rings apart; a thrust-transmitting assembly positioned between the rings and composed of balls located in a circle of spaced pockets providing respective camming surfaces; and a series of circumferentially-spaced

recesses provided on at least one of said braking surfaces and dividing it into circumferentially spaced arcuate braking zones,



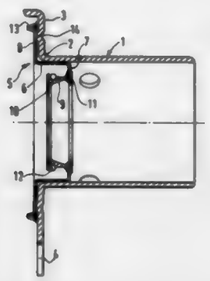
each of said recesses converges towards at least one of said braking zones flanking it.

5,299,677

GUIDE-TUBE WITH INTEGRAL SEALING FOR MOTOR VEHICLE GEARBOX CLUTCH RELEASE BEARING

Claude Caillaud, La cote, 52200, Jorquenay, and Louis-Claude Garcia, Les Roises, 52200, Langres, both of France

Filed Oct. 14, 1992, Ser. No. 960,864
Claims priority, application France, Oct. 15, 1991, 91 12672
Int. Cl.[5] F16D 23/12, 13/58; B60K 17/00
U.S. Cl. 192—115 7 Claims



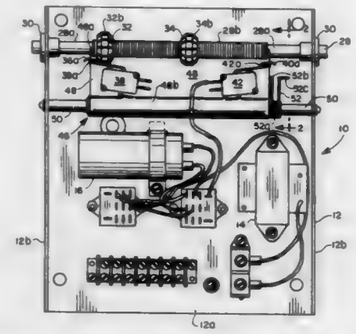
1. Guide-tube with integral sealing for motor vehicle gearbox clutch release bearing, comprising a tubular sleeve able to be engaged axially around the input shaft of the gearbox and having a radial bearing surface made from one part, forming a plate for fixing the guide-tube to the outer face of the wall of the casing of the gearbox, and a sealing ring with a lip engaged inside the sleeve, characterized in that the sealing ring with a lip comprises a reinforcing member (5) comprising a tubular bearing surface (6) able to be engaged by force in the tubular sleeve (1) of the guide-tube, the said tubular bearing surface (6) being extended at each of its ends by a radial bearing surface, one (7) directed towards the inside and at the end of which a sealing gasket with a lip (9) is made and the other (8) directed towards the outside and on which an annular sealing bead (13) is made, able to come into contact with the external face of the wall of the casing.

5,299,678

LIMIT SWITCH MECHANISM FOR GARAGE DOOR OPENER

James S. Chang, Arlington Heights; Mark D. Siegler, Brookfield, and Douglas R. Turner, Arlington Heights, all of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.

Continuation of Ser. No. 702,776, May 17, 1991, abandoned. This application Aug. 12, 1993, Ser. No. 105,780
Int. Cl.[5] H02P 3/00; E05F 15/00; F16D 71/00
U.S. Cl. 192—141 9 Claims



1. A limit switch mechanism for controlling a motor over a selected range of movement comprising:

a support frame;

a shaft journaled at ends on said support frame for rotational movement about a first axis, said shaft being threaded between said journaled ends;

a first switch actuator and a second switch actuator threadedly received on said shaft, each switch actuator being generally cylindrical with an axially extending threaded bore and being formed with a plurality of radially extending slots equally spaced around the periphery and with at least one slot extending radially of said first axis, said slot having an outwardly facing mouth portion and being in a plane through said first axis;

a first limit switch and a second limit switch mounted on said support frame at opposite ends of said shaft, each said limit switch having control means operating one of said limit switches, said control means for said first limit switch being positioned in the path of said first switch actuator to operate said first limit switch upon axial movement of said first switch actuator toward one of said shaft ends, said control means for said second limit switch being positioned in the path of said second switch actuator to operate said second limit switch upon axial movement of said second switch actuator toward the other of said shaft ends;

latch means biased into engagement with said first switch actuator and said second switch actuator for engaging said slots to restrain rotation of said switch actuators while permitting axial movement of said switch actuators along said shaft upon shaft rotation; and

manual actuation means connected to said latch means for permitting an operator of said limit switch mechanism to readily disengage said latch means from said first switch actuator and said second switch actuator, said manual actuation means comprising an operator accessible plate pivotally mounted about a second axis parallel with and spaced from said first axial and said latch means comprises a restraining portion affixed to said operator accessible plate which extends parallel to said first axis and is engageable with one of said slots in each of said first switch actuator and said second switch actuator to restrain rotary movement and permit axial movement along said shaft.

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APPARATUS FOR PILING AND TRANSFERRING CIGARETTES

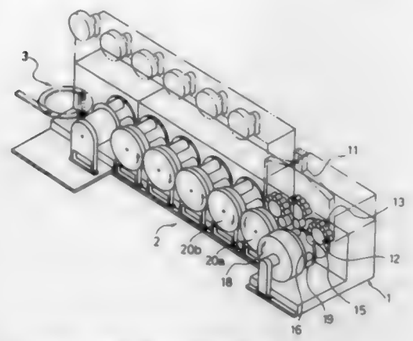
Koichiro Obara; Tadao Etani, and Hiromitsu Obara, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,643

Claims priority, application Japan, Dec. 25, 1991, 3-356638; Dec. 25, 1991, 3-356642

Int. Cl.[5] B65G *57/00*

U.S. Cl. 198—418.3 **3 Claims**



1. A packing apparatus comprising:

a plurality of packing drums arranged side by side in the order of the first packing drum to the last packing drum and operated synchronously with each other, each of said packing drums being provided with a number of packing heads each head carrying the number of cigarettes in a cigarette package, said packing heads at a point of transfer swinging synchronously with each other so that said packing heads of the adjacent packing drums face each other and the same number of cigarettes as said number of cigarettes in said cigarette package are transferred and packed between said adjacent packing drums when said heads of said adjacent packing drums pass regions of said adjacent packing drums which are the closest to each other;

a rotatable cigarette piling drum provided with a plurality of cigarette piling heads, on each of which said number of cigarettes are piled, said cigarette piling drum having one axial end and the other axial end;

an intermediate drum provided adjacent to and coaxially with said cigarette piling drum at said one axial end of said cigarette piling drum and at a side of said first packing drum, said intermediate drum being rotated synchronously with said cigarette piling drum, said intermediate drum having the same number of cigarette holding heads as the number of said cigarette piling heads, for holding said number of cigarettes in said one cigarette package;

a pushing-out drum provided adjacent to and coaxially with said other axial end of said cigarette piling drum and rotated synchronously with said cigarette piling drum, said pushing-out drum being provided with the same number of pushers as said number of said cigarette piling heads, for pushing said number of said cigarettes out of said cigarette piling heads and transferring said cigarettes to said intermediate drum;

means for swinging said cigarette holding heads of said intermediate drum synchronously with said packing heads of said first packing drum; and

means for swinging said cigarette piling heads synchronously with said cigarette holding heads of said intermediate drum at least in regions of said cigarette piling drum and said intermediate drum which are closest to each other.

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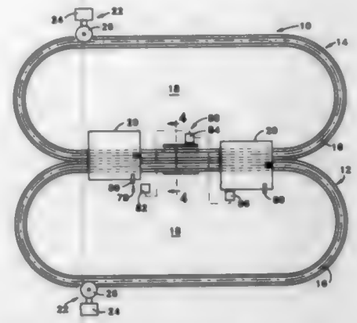
CONVEYOR SYSTEM WITH TRANSVERSE PUSHER TO TRANSFER LOAD CARRYING UNITS BETWEEN SEPARATE CONVEYING PATHS

Arthur B. Rhodes, 4111 Waterford Cir., Apt. 7, Louisville, Ky. 40207

Filed Dec. 4, 1992, Ser. No. 987,464

Int. Cl.[5] B65G *17/32*

U.S. Cl. 198—465.2 **6 Claims**



1. A conveyor system comprising:

a first conveyor track defining a first conveyor path;

a second conveyor track defining a second conveyor path;

a portion of a length of said second conveyor track being in close proximity to a portion of a length of said first conveyor track;

at least one load carrying unit moveable with said first conveyor track and said second conveyor track,

said load carrying unit including a vertically moveable track engaging pin;

conveyor track load carrying unit transfer means including means to raise said engaging pin from engagement with one of said first or second conveyor track, means to push said pin from alignment with one of said first or second conveyor tracks to alignment with the other of said first or second conveyor tracks, and means to lower said pin into contact with said other of said first or second conveyor track, said means to push said pin includes a piston having a pin pushing member in cooperating relationship therewith, said pin pushing member including an outwardly extending member adapted to engage a downwardly extending sleeve attached to said load carrying unit, said pin movable within said sleeve, said piston and said means to push said pin being positioned so that in a first position said pin pushing member engages said sleeve and in a second position pushes said sleeve including said pin and said load carrying unit a preselected distance; and

means to activate and deactivate said transfer means.

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CONVEYOR EQUIPMENT

Nobuaki Kadono; Daisaku Kugo; Masatoshi Kajiwara, and Ryuji Yamakawa, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 29, 1992, Ser. No. 875,378

Claims priority, application Japan, Apr. 30, 1991, 3-126598; Sep. 21, 1991, 3-270400

Int. Cl.[5] B65G *15/58*

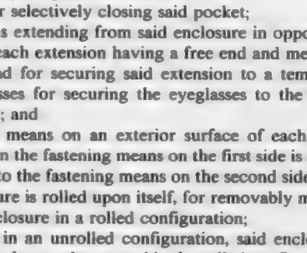
U.S. Cl. 198—690.1 **11 Claims**

1. Apparatus for conveying a workpiece having a magnetic portion, said apparatus comprising:

an endless belt having internal teeth at a constant pitch on an internal surface thereof;

workpiece retaining means provided at a constant pitch on said belt, said workpiece retaining means being for retaining thereon said magnetic portion of said workpiece and positioning said workpiece in a feed direction of said belt;

drive means for driving said belt at a constant pitch, said drive means comprising a drive pulley having teeth to be engaged with said internal teeth of said belt; and



a guide rail for slidably guiding said belt, said guide rail comprising a magnet which attracts said magnetic portion of said workpiece toward said workpiece retaining means.

2. A storage and protection device for eyeglasses comprising:

an enclosure having first and second sides secured to each other to define a pocket which is sized and shaped for receiving eyeglasses therein;

means for selectively closing said pocket;

extensions extending from said enclosure in opposite directions, each extension having a free end and means at said free end for securing the extension to a temple of the eyeglasses for securing the eyeglasses to the head of a wearer;

means for removably fastening the enclosure in a rolled configuration so that said enclosure may operate as a portion of a strap defined by said enclosure and said extensions for securing the eyeglasses to the head of the wearer; and

fastening means on said extensions and on said first side of said enclosure for fastening said extensions against the exterior of said first side when the pocket is used for storing the eyeglasses therein.

5,299,682

EYEGLASS STORAGE AND PROTECTION DEVICE THAT CAN FUNCTION TO SECURE EYEGLASSES WHILE EYEGLASSES ARE WORN

Eric L. Tatar, 339 Cumberland, San Francisco, Calif. 94114

Filed Jul. 26, 1993, Ser. No. 96,444

Int. Cl.[5] B65D *85/38*; G02C *3/02*

U.S. Cl. 206—5 **2 Claims**

1. A storage and protection device for eyeglasses, convertible to a securing device for eyeglasses, comprising:

an enclosure having first and second sides secured to each other to define a pocket which is sized and shaped for receiving eyeglasses therein;

means for selectively closing said pocket;

extensions extending from said enclosure in opposite directions, each extension having a free end and means at said free end for securing said extension to a temple of the eyeglasses for securing the eyeglasses to the head of a wearer; and

fastening means on an exterior surface of each said side, wherein the fastening means on the first side is adapted to fasten to the fastening means on the second side when the enclosure is rolled upon itself, for removably maintaining the enclosure in a rolled configuration;

whereby in an unrolled configuration, said enclosure may receive the eyeglasses, and in the rolled configuration said enclosure may operate as a portion of a strap defined by said enclosure and said extensions for securing the eyeglasses to the head of the wearer.

5,299,683

SHOWER CADDY

Ronald E. Poole, 208 Bloomingdale Rd., Kitchener, Ontario, Canada N2K 1B1

Filed Jul. 14, 1993, Ser. No. 91,771

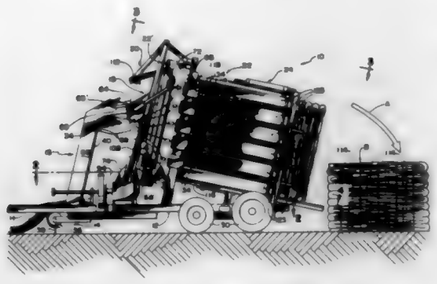
Int. Cl.[5] A47K *5/06*

U.S. Cl. 206—77.1 **2 Claims**

1. A new and improved shower caddy comprising: a rigid, two-part external case the two parts hinged to each other; a plurality of holders for toilet articles disposed within and fastened to said case; means for dispensing fluids arranged within and fastened to said case, and means within said case for removably supporting a plastic fluid container within said fluid dispensing means whereby fluid from said plastic container is dispensed through said dispensing means; a plurality of hook members hingedly attached to one part of said case and extendable therefrom by means of said hinged attachment to engage with a shower curtain support rod to permit hanging such case therefrom, each of said hook members comprising an upper portion and a lower portion connected thereto at a mid section of each of said hook members, said upper and lower portions at each said mid section being generally rod shaped and connected to each other in end to end fashion along a longitudinal axis therethrough by a pivotal connector, wherein said upper portion is pivotable relative to said lower portion about said longitudinal axis.

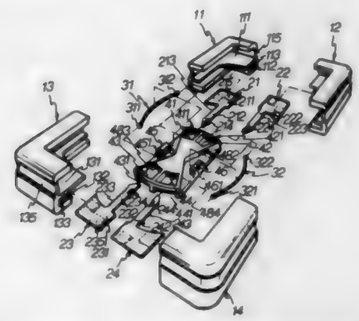
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5,299,684
HAY BALER
Woodbury S. Ransom, 14 Elm Rd., Bolinas, Calif. 94924
Division of Ser. No. 616,545, Nov. 21, 1990, Pat. No. 5,193,449. This application Mar. 12, 1993, Ser. No. 30,993
Int. Cl.[5] B65D *71/00*
U.S. Cl. 206—83.5 **2 Claims**



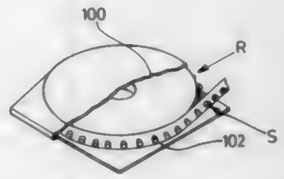
1. A vented bale of crop material comprising:
a mat of crop material folded and compressed in a zig-zag pattern into a plurality of successive parallel layers forming a rectangular bale;
banding means extending around the bale and being substantially perpendicular to the parallel layers for securing the bale together and for preventing the layers from separating; and
a plurality of spaced apart vent apertures extending through the parallel layers of crop material for forming a vent through the bale that permits air venting and water drainage from the bale.

5,299,685
TENSION AND FREELY ADJUSTABLE PROTECTIVE CASE FOR REMOTE CONTROL UNIT
C. H. Chin, 3rd Fl., No. 38, Jin-Nan St., Taichung City, Taiwan
Filed May 11, 1993, Ser. No. 59,304
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—320 **15 Claims**



1. A protective case for a remote control unit comprising:
a plurality of housings, each of said housings having a space for receipt of a portion of the remote control unit;
a plurality of embedding arms, each of said embedding arms having an end received within one of said plurality of housings;
a base positioned within an area defined by said plurality of housings, said base receiving an opposite end of said embedding arms, said embedding arms movable outwardly relative to said base; and
a spring received by said base, said spring having ends in resilient pressured contact with a surface of said embedding arms.

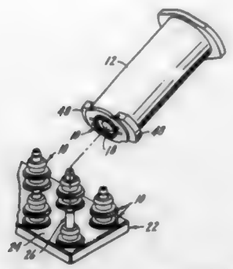
5,299,686
ROLLED STRIP OF TEE-NUT FASTENERS FOR TEE-NUT FASTENER SETTING APPARATUS
Keith G. Bromley, Brownlee Dr., Bradford, Ontario, and Walter H. Leistner, 97 Alamosa Dr., Toronto, Ontario, both of Canada
Continuation-in-part of Ser. No. 687,167, Apr. 18, 1991, Pat. No. 5,214,843. This application Apr. 9, 1993, Ser. No. 44,494
Int. Cl.[5] B65D *85/24, 85/671, 85/677;* **B65H** *5/28*
U.S. Cl. 206—338 **9 Claims**



1. A rolled strip of a plurality of separate Tee-nuts, said rolled strip of Tee-nuts comprising;
Tee-nut sleeve portions defining an interior with threads therein, and an exterior adapted to be embedded in a workpiece and said sleeve portions each defining a central sleeve axis;
Tee-nut face flanges adapted to lie on the surface of a workpiece and formed integrally with said sleeve portions, said sleeve portions defining a longitudinal axis, and said face flanges lying in a plane transverse to said longitudinal axis and defining first and second faces on opposite sides, said first faces surrounding said sleeve portions and said second faces being opposed thereto;
continuous breakable means secured to the exterior of said second faces of said separate Tee-nuts and joining respective said Tee-nuts, forming said Tee-nuts into a strip, and defining spacing between adjacent Tee-nuts whereby said continuous breakable means is adapted to flex between adjacent said Tee-nuts and said breakable means defining a median axis;
said strip of Tee-nuts being rolled into a roll of Tee-nuts, and,
said median axis of said breakable means being offset to one side of the central axis of each sleeve portion of each Tee-nut.

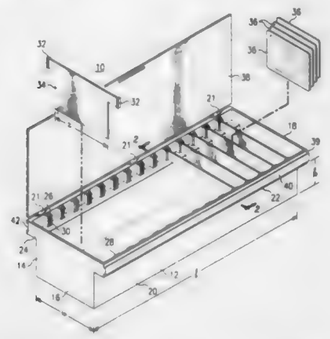
5,299,687
CANNULA ADAPTOR DELIVERY SYSTEM
Paul H. Hasifl, Barrington Hills; Lawrence G. Ponsi, Wheeling, and David A. Bates, Libertyville, all of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.
Filed Dec. 22, 1992, Ser. No. 995,152
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—370 **14 Claims**

1. A system for holding and delivering a plurality of disposable cannula adaptors, comprising
a. a dispenser having a dispensing surface,
b. at least one disposable cannula adaptor, said adaptor having an internal aperture therethrough, and
c. means on said dispensing surface for removably retaining a plurality of said disposable cannula adaptors in a spaced relationship, said retaining means comprising a series of spaced posts extending from and perpendicular to said dispensing surface, each post comprising a shaft having one end secured to said dispensing surface and an opposite end shaped to pass through said internal aperture when said adaptor is passed said opposite end, and each post



having a length sufficient to accommodate at least two cannula adaptors stacked axially on said post.

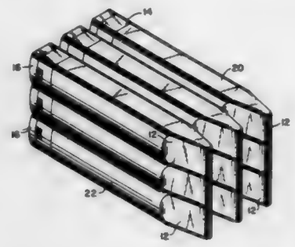
5,299,688
STORAGE DEVICE AND SYSTEM FOR CARD COLLECTIONS
John W. McKay, and Brian W. McKay, both of Keller, Tex., assignors to Pro Box, Fort Worth, Tex.
Filed Mar. 20, 1992, Ser. No. 855,230
Int. Cl.[5] B65D *25/06*
U.S. Cl. 206—425 **15 Claims**



1. A box comprising:
two opposing end portions, each having width "w";
two opposing side portions, each having length "l"; and each extending from one edge of one of said end portions to one edge of said opposing end portion so as to form a parallelogram;
a bottom portion having width "w" and length "l" and extending interiorly from said opposing end portions and said opposing side portions;
at least one shelf portion extending in a direction away from said interiorly extending bottom along its entire length along at least one of said side portions, said shelf portion overhanging said side portion in a direction away from said interiorly extending bottom, said shelf portion connected to an extension of said end portions, said end portion extension being outside said width "w", wherein said shelf portion includes means for positionally removing partitions between said side portions at selected positions along said length "l" of said side portions, wherein said partitions have a first portion which is supported on said shelf portion and a second portion which hangs down between said side portions.

4. A box for storing card collections, said box having two sides, two ends, a bottom and an open top portion comprising:
opposing guides disposed in each side of said box, said guides adapted for removably placing one or more dividers between said opposing guides in said sides, wherein said card collections can be stored between said dividers within said box, and wherein each of said guides are a pair of L-shaped members extending from said sides for capturing each end of said dividers for preventing ends of said dividers from being displaced away from said opposing guides towards a center of said box, wherein said sides include recessed portions directed away from said center of said box, said recessed portions positioned towards a top of said sides, each of said recessed portions comprising:
a first wall coupled to one of said sides in a substantially perpendicular manner, and
a second wall coupled in a substantially perpendicular manner to said first wall,
wherein said guides are inset within said recessed portions so as to prevent contact between said guides and stored ones of said card collections, each of said guides coupled to said second wall.

5,299,689
STACKABLE TOOTHPASTE TUBE
William Ledewitz, 31 Brookwood Dr., Woodbridge, Conn. 06525
Filed Feb. 11, 1993, Ser. No. 16,543
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—503 **4 Claims**

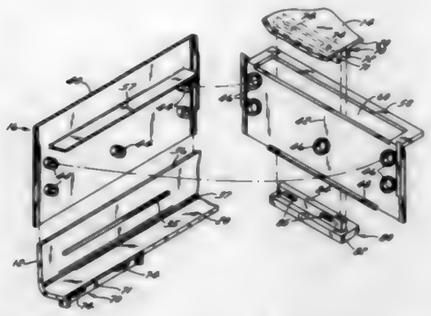


1. A blow-molded stackable toothpaste tube having a wedge-shaped bottom, opposite flat and parallel side panels, front and back panels each having a larger surface area than either of the side panels, wherein said front and back panels connect at a bottom narrow ends of the wedge-shaped bottom, a relatively large top opening for filling the tube with product, said flat and parallel side panels each having a flat linear surface extending from the top opening to said bottom narrow end of said wedge-shaped bottom wherein the tube is vertically stackable along its respective side panels, with the side panels of identical tubes engageable along their entire flat linear surfaces, said tube being provided with a multi-layered wall having a thickness in the range of 0.006 to 0.010 inches, wherein said tube being laterally stackable with another tube horizontally on a shelf.

5,299,690
CASCADING STACKABLE TRAYS
John W. Mund, Fox Lake, Wis.; Cari Burns; Robert Chieda, both of Wheaton, Ill.; Leon C. Clouser, Jr., Lombard, Ill., and Robert A. O'Neil, Glen Ellyn, Ill., assignors to Sterling Plastics Co., Madison, Wis.
Filed Jun. 22, 1993, Ser. No. 81,017
Int. Cl.[5] A47F *3/14*
U.S. Cl. 206—503 **4 Claims**

1. A stackable tray system including two or more generally rectangular, horizontal trays spaced above one another, said trays having opposed sides, each pair of trays being separated by support elements attached to said opposed sides of the lower one of the pair of trays, the support elements each including a ledge for holding the upper tray of each pair, the upper tray of a pair being arranged for sliding horizontal movement with respect to the lower tray in its pair each ledge

includes a slot and a tray retainer is inserted in each slot, the retainer including a lower portion wider than the slot, an upper



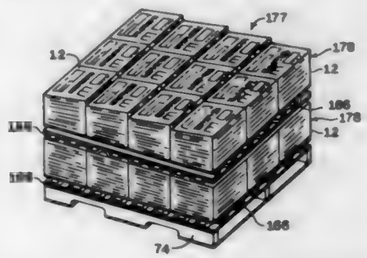
portion penetrating the slot and a coupling portion attached to the upper portion, the bottom of the upper tray in each pair being arranged to receive the coupling portion of the retainer.

5,299,691

SPACING SHEET FOR HANDLING MATERIAL

Ernest P. Winski, Oshkosh, Wis., assignor to Kinetic Robotics, Inc., Menasha, Wis.

Continuation-in-part of Ser. No. 449,235, Dec. 6, 1989, which is a continuation of Ser. No. 102,396, Sep. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 888,511, Jul. 23, 1986, abandoned. This application Mar. 20, 1991, Ser. No. 672,314
Int. Cl.[5] B65D *19/38*
U.S. Cl. 206—527 **30 Claims**



4. A spacing sheet for supporting a layer of material thereon, said spacing sheet comprising:

(a) a plurality of spaced apart top surface ridges adapted to contact and support the layer of material, and a top surface comprising the totality of said top surface ridges;

(b) a bottom surface adapted to contact and interface with an underlying support;

said top and bottom surfaces defining opposing extremities, and thereby a thickness, of said spacing sheet, said thickness being between 0.25 inch and 2 inches;

(c) edges; and

(d) a plurality of spaced apart, upwardly open channels disposed between said top surface ridges;

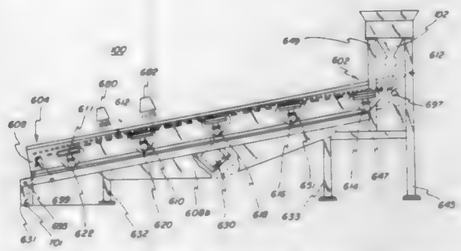
said channels extending downwardly from said top surface, each said channel extending from one of said edges along a straight line across said top surface, said channels extending from said top surface downwardly a distance comprising at least 25% of the height of said thickness of said spacing sheet, said top surface ridges, in combination, being operatively continuous and effective to resist bonding of said spacing sheet.

5,299,692

METHOD AND APPARATUS FOR REDUCING CARBON CONTENT IN PARTICULATE MIXTURES

Robert D. Nelson, Kennesaw; Jerry L. Heavilon; Robert W. Styron, both of Marietta, and Bill G. Fletcher, Marietta, all of Ga., assignors to JTM Industries, Inc., Kennesaw, Ga.

Filed Feb. 3, 1993, Ser. No. 12,999
Int. Cl.[5] B03B *9/00*
U.S. Cl. 209—2 **32 Claims**



1. Method of reducing the carbon content of particulate matter selected from the group consisting of fly ash and wood ash, comprising:

a) providing an inclined surface having an elevated distal end and a lower proximal end;

b) positioning said particulate matter at said distal end;

c) subjecting said inclined surface to a first source of vibration to transport said particulate matter from said distal end toward said lower proximal end;

d) subjecting said inclined surface to a second source of vibration during said particulate matter transport to separate said particulate matter into a high carbon content fraction and a heavier, enhanced particle fraction;

e) removing said high carbon content fraction from said inclined surface; and

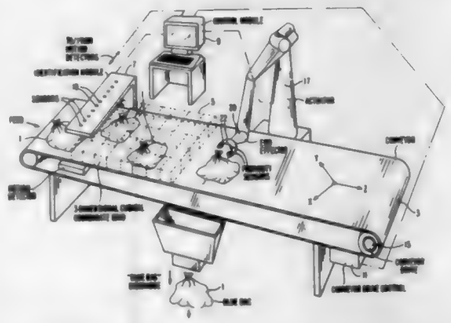
f) recovering said heavier, enhanced particle fraction.

5,299,693

METHOD AND APPARATUS FOR EXTRACTING SELECTED MATERIALS

Richard A. Ubaldi, 12 Agatha La., Wayne, N.J. 07470; Garrett A. Smith, R.R. #1, Box 282, Pickle Rd., Califon, N.J. 07830; Mark W. Hrehovcik, 115 Cedar Grove Rd., Little Falls, N.J. 07424, and Douglas P. Rauen, 1809 SW. Parkview Ct., Portland, Oreg. 97212

Continuation-in-part of Ser. No. 684,673, Apr. 12, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 928,914
Int. Cl.[5] B07C *5/344*
U.S. Cl. 209—3.3 **6 Claims**



1. An apparatus for locating and separating recyclable items from a quantity of mixed trash comprising a number of recyclable items disposed within a quantity of non-recyclable items, said apparatus comprising in combination:

a) identifying means coupled to each of said recyclable items, for providing respective non-visual identifying signals;

b) first locating means for locating the position of a selected recyclable item within said quantity of mixed trash by detecting its respective non-visual identifying signal thereby providing a first location signal;

c) extracting means for removing said selected recyclable item from said mixed trash;

d) means for effecting relative motion between said quantity of mixed trash, said first locating means and said extracting means in response to said first location signal;

e) second locating means for providing a second location signal in response to said non-visual identifying signal; and

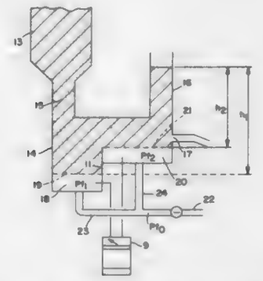
f) means for effecting further relative motion between said extracting means and said selected recyclable item in response to said second location signal.

5,299,694

APPARATUS AND PROCESS FOR SEPARATING A MATERIAL IN FLUIDIZED BED FORM AND THE DETECTION OF CLOGGING

René C. Rambaud, Bergues, France, assignor to Aluminum Pechiney, France

Continuation of Ser. No. 813,519, Dec. 26, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 78,065
Claims priority, application France, Dec. 26, 1990, 90 16572
Int. Cl.[5] B07B *4/00*
U.S. Cl. 209—135 **5 Claims**



1. Apparatus for handling pulverulent material in a fluidized bed mixed with non-fluidizable products and equipped with a clogging detection system comprising:

(a) pulverulant material storage means (13);

(b) fluidization means constituted by a two-part container (14) comprising an upper part having a first end connected to said storage means by a supply column (15) and a second end connected to a balancing column (16), and comprising a lower fluidization gas supply part separated from said upper part by first and second porous walls (19, 21); and

(c) means for discharging pulverulent material located in said upper part of said container, at the end opposite to said supply column;

(d) said first porous wall (19) being located below said supply column and in an area adjacent thereto, and said second porous wall (21) being located below said balancing column and in an area adjacent thereto, said first porous wall (19) being located at a horizontal level below that of said second porous wall (21);

(e) said lower part of said container being subdivided into first and second independent volumes (18, 20) respectively located below each of said porous wall, said first independent volume (18) and said first porous wall (19) being separated from said second independent volume (20) and said second porous wall (21) by a vertical non-porous wall (11);

(f) each of said independent volumes being supplied with fluidization gas by a common pipe (22) subdivided into two branches (23, 24); and

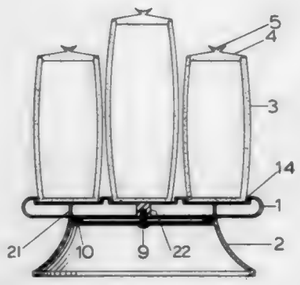
(g) in order to detect pressure increases in said first volume (18) caused by clogging above said first porous wall (19), said apparatus comprises means for measuring and recording, as a function of time, a difference in pressure between said first and second independent volumes.

5,299,695

CAROUSEL FOR SUPPORTING OIL CONTAINERS

Robert Taylor, Jr., 1678 Rotary Dr., Los Angeles, Calif. 90026

Filed Jul. 27, 1992, Ser. No. 919,901
Int. Cl.[5] A47B *73/00*
U.S. Cl. 211—77 **1 Claim**



1. In combination;

a carousel for supporting a plurality of cooking oil containers comprising;

a base;

a turntable;

rotation means interconnecting said turntable on saide base;

said turntable being hollow having a top member and a bottom member separated by a cavity and joined by a peripheral edge;

reinforcement means disposed between said top and said bottom means consisting of a central post and a circular rib integrally carried on said top member coaxially disposed with respect to said central post;

said top member having a plurality of receptacles arranged in a predetermined pattern between said peripheral edge thereof and said central post;

said predetermined pattern of said receptacles includes at least five receptacles having a center receptacle disposed over central post and said other receptacles disposed over said rib and between said center receptacle and said peripheral edge;

a plurality of containers each container having a spout and a handle outwardly projecting from a hollow body;

each of said container being supported in its respective receptacle such that said handles and spouts are in non-interfering relationship with respect to adjacent containers and said handles and spouts being within said peripheral edge.

5,299,696

STRUCTURE OF CLOTHES POLE

Wu M. Sheng, 2 Fl., No. 24, Ming Chuan 1 St., Chu-Wei Li, Taipei Hsien, Taiwan

Filed May 19, 1992, Ser. No. 885,594
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—123 **2 Claims**

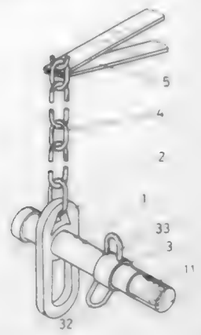
1. A clothes pole comprising:

a plurality of elongated hollow clothes pole bodies, each body having a neck at one end adjusted to be received in

VOL 1161 ISS 1 AP 5 1994 UMI

the corresponding opposite end of another body to assemble a pole of said bodies in end-to-end configuration;

a pair of locating blocks, one disposed at each end of said pole, each having a central hole there-through for slidably receiving an end of said pole and a hook portion for mounting on a support;



a plurality of fixing rings slidably received on said pole, each ring having a U-shaped, long ear and a short ear mutually spaced on the periphery thereof for receiving a hanger hook and for securing the same to said pole.

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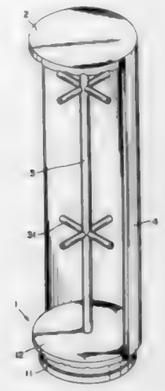
CONCEALABLE ROTARY STAND FOR HANGING CLOTHES

Chin C. Ho; Lin F. Cheng, and Lin T. Fu, all of No. 48, Tafeng st., Panchiao City, Taipei Hsien, Taiwan

Filed Oct. 23, 1992, Ser. No. 965,348

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—163 **6 Claims**



1. A rotary stand comprising only:

a circular base having a rotary table revolvably supported on a bottom plate;

an upright post extending from said base and comprised of hanging means extending from the length of said post;

a circular top supported on said post opposite said base; and

a shield extending between said base and said top to partially encircle said upright post and thereby define an opening for accessing said post, said shield being connected at least to said base such that upon rotation of said base, said shield also rotates thereby making possible the repositioning of said opening.

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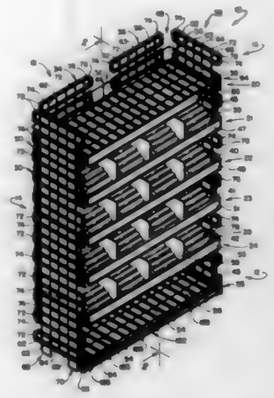
OPEN FRAME RACK ASSEMBLY

Kenneth F. Gay, 241 Apache St., Westerville, Ohio 43081

Filed Dec. 21, 1992, Ser. No. 994,524

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—181 **20 Claims**



1. A rack assembly positionable upon a floor surface for supporting load carrying shelves, comprising:

two, spaced, parallel open frame load receiving components, each having two, parallel, spaced apart, loading rods of first widthwise cross sectional dimension having a floor surface engaging load transfer lower portion and extending vertically upwardly a select height, each further having a plurality of receiving connector assemblies formed of horizontally disposed mutually parallel connector rods connected to an outwardly disposed said loading rod and extending outwardly therefrom a predetermined distance to define a receptor gap, said connector assemblies being positioned at spaced levels extending upwardly substantially from said load transfer lower portion;

at least one cross member having a shelf support front portion of predetermined bay length extending between first and second end links disposed normally to said front portion, each said first and second end link including two, parallel, spaced horizontal end link rods extending from said front portion and supporting respective first and second vertically disposed tab rods of second widthwise cross sectional dimension selected to promote engagement with said connector rods, said first and second tab rods being slidably insertable within oppositely disposed said receptor gaps of receiving connector assemblies located at a common level to a position of substantial parallel adjacency with a said loading rod to position said two load receiving components in vertical, spaced apart relationship corresponding with said bay length;

a back structure coupled with said two, load receiving components and oppositely disposed in parallel relationship with said cross member front portion; and

shelf means supported between said cross member and said back structure for providing said shelves.

5,299,699

DEVICE AND METHOD FOR TEMPORARY STORAGE AND TRANSPORT OF FINISHED PARTS

Joseph Cole, 810 Garfield Ave., Bridgewater, N.J. 08870

Continuation of Ser. No. 610,214, Nov. 6, 1990. This application Apr. 20, 1992, Ser. No. 870,810

Int. Cl.[5] A47F *5/08*

U.S. Cl. 211—187 **7 Claims**

1. A device for receiving, positioning, retaining and protecting the surface of parts, said device comprising:

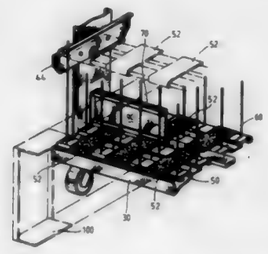
a substantially rectangular base member having a width and a lenght;

two substantially vertical support members projecting upwardly from and rigidly attached to opposing ends of said substantially rectangular base member;

a plurality of substantially horizontal shelf support members adjustably positioned with respect to each of said substantially vertical support members;

means for fastening said substantially horizontal shelf support members to said substantially vertical support members;

a plurality of substantially horizontal, substantially rectangular shelf members having a width dimension, a lenght dimension, an upper surface and a lower surface, said plurality of substantially horizontal, substantially rectangular shelf members constructed and arranged to rest upon said substantially horizontal shelf support members so as to form a vertical space between the upper surface of one substantially horizontal, substantially rectangular shelf member and the lower surface of the next higher of said substantially horizontal, substantially rectngular shelf members;



said vertical space between said substantially horizontal, substantially rectangular shelf members being slightly larger than a dimension of the parts to be received, positioned, retained and protected;

a plurality of strips of compresssible padding positioned across the width and along said upper and lower surfaces of said substantially horizontal, substantially rectangular shelf members, said compressible padding having a thickness dimension sufficient to extend into said vertical space between said substantially horizontal, substantially rectangular shelf members and to make said vertical sapce slightly smaller than a dimension of the parts to be received, positioned, retained and protected;

flexible strap members projecting substantially vertically between said substantially horizontal, substantially rectangular shelf members and between said strips of compressible padding;

whereby the parts of be received, positioned, retained and protected are inserted between said subsantially horizontal, substantially rectangular shelf members and retained in positioned by compression of the srips of compressible padding which extend across the width and over the upper and lower surfaces of said substantially horizontal, substantially rectangular shelf members.

5,299,700

CONTAINER WITH COMPOSITE STRUCTURE

Giacomo Beniacar, Via C. Troya, 22-20144, Milan, Italy

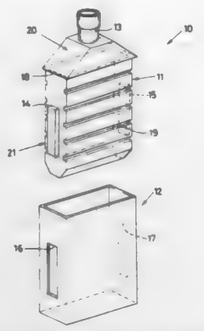
Filed Jul. 27, 1992, Ser. No. 920,040

Claims priority, application Italy, Aug. 2, 1991, 002165 A/91

Int. Cl.[5] B65D *23/08*

U.S. Cl. 215—12.1 **12 Claims**

1. A bottle (**10, 110**) comprising in combination, an elongate containment receptacle (**11, 11', 111**) made of a yielding plastic material and a generally box-like rigid supporting shell (**12, 12', 112**), said receptacle having a lower portion thereof inserted in said shell, and an upper portion (**20, 20'**) comprising a pouring neck (**13**) projecting above said shell, and characterized in that said lower portion of said receptacle has a generally rectangular configuration thus to form two pairs of spaced, confronting side walls of a different breadth, whereby one of the said pairs



of walls is narrower than the other pair thereof, and the narrower side wall pair of said receptacle (**11, 11', 111**) having thereon projection (**14, 15, 22, 114**) received in corresponding registering openings (**16, 16', 17, 116**) formed in said shell (**12, 12', 112**).

5,299,701

INDICATOR CAP

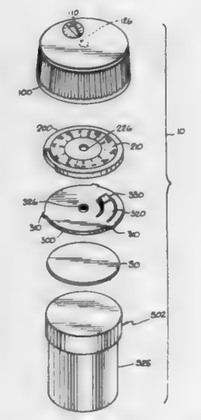
Allen Barker, and Gage Garby, both of Boulder, Colo., assignors to Senetics, Inc., Boulder, Colo.

Continuation of Ser. No. 641,759, Jan. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 306,485, Feb. 3, 1989, Pat. No. 5,009,338. This application Aug. 19, 1993, Ser. No. 109,401

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] B65D *55/02*

U.S. Cl. 215—230 **10 Claims**



1. An indicator device for mounting to a closure for a container, to indicate the opening or closing of the container, comprising:

(a) an outer cover comprising a top piece with an indicator window therein and a depending skirt extending axially downward from the top piece;

(b) a retainer rotatably attached to the outer cover whereby

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the outer cover can rotate a predetermined number of degrees before causing rotation of the retainer;

(c) an indicator device mount for mounting the indicator device to said closure;

(d) an indicator wheel disposed between said outer cover top piece and said retainer, having indicating symbols visible through the indicator window;

(e) a rotation mechanism engaging said indicator wheel to said outer cover for causing rotation of the indicator wheel with the outer cover upon rotation of the outer cover in a first direction; and

(f) an antirotation mechanism engaging said retainer to said indicator wheel for preventing rotation of the indicator wheel with outer cover upon rotation of the outer cover in a second direction opposite said first direction.

5,299,702

STOPPER FOR A RECEPTACLE

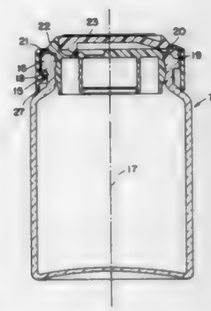
Roland Kneer, Farchant, and Christoph Heiland, Saulgrub, both of Fed. Rep. of Germany, assignors to GAPLAST GmbH, Fed. Rep. of Germany

Filed Oct. 23, 1992, Ser. No. 965,211

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134082

Int. Cl.[5] B65D *17/40*

U.S. Cl. 215—256 **13 Claims**



1. An improved stopper and receptacle wherein the receptacle has an upper edge defining an opening and an annular projection around said receptacle, and wherein said stopper compresses a lower portion engageable in said receptacle opening, an upper portion, and a slide in said upper portion, said slide being movable laterally outwardly on a path beyond the edge of the stopper to provide a means for removing the stopper, and a tear-off sealing ring surrounding said stopper and having an annular inner bead gripping below said annular projection of said receptacle, wherein the improvement comprises said sealing ring having an outer diameter greater than the upper portion of the stopper and connected to said stopper, a break seam between the stopper and sealing ring, and a segment on said sealing ring projecting into the path of said slide and preventing outward movement of the slide until removal of the sealing ring.

5,299,703

DEVICE FOR SECURING A DISPENSER TO A GLASS CONTAINER

Miro S. Cater, Newtown, Conn., assignor to American Dispensing Systems Inc., Newtown, Conn.

Filed Jun. 30, 1993, Ser. No. 83,480

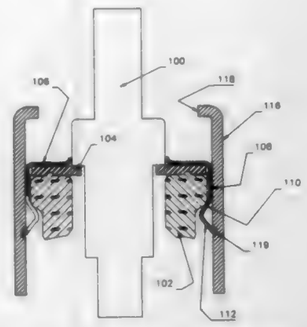
Int. Cl.[5] B65D *47/00*

U.S. Cl. 215—274 **6 Claims**

1. A device for connecting a dispenser having a circular outer periphery with a first diameter to a glass container having a flanged open neck, the flange having an inner periphery with a second and larger diameter and an outer periphery, the thickness of the flange being subject to minor dimensional variations, said device comprising:

a flat circular non metallic ring shaped gasket engaging the upper surface of the flange;

a metal ferrule having a flat circular top with an opening through which the dispenser extends, the top overlying and engaging the upper surface of the gasket, and a vertical hollow cylinder having an upper end coincident with the top, the cylinder extending downward along the outer



vertical surface of the flange and having a lower end terminating in a plurality of spaced fingers; and

a second vertical cylinder having a central opening through which the dispenser extends, the second cylinder extending vertically downward along the outside surface of the first cylinder past the spaced fingers, the inner surface of the second cylinder engaging the fingers and forcing them into locking engagement with the outer surface of the flange.

5,299,704

COLLAPSIBLE LOCKER BOX

Donald F. Thorby, Burrawong Park, Binnaway, New South Wales 2395, Australia

Filed Jul. 17, 1992, Ser. No. 916,205

Claims priority, application Australia, Jul. 18, 1991, PK7314

Int. Cl.[5] B65D *6/12*

U.S. Cl. 220—6 **7 Claims**



1. A locker for securing by a side wall to a structure and being movable whilst so secured between an operating configuration and a contracted configuration, the locker comprising a box having a base, two side walls, two end walls and a lid, wherein said end walls are foldable and said two side walls are movable between an operating position in which they are spaced apart by said end walls and a storage position in which said side walls are closely spaced together, and wherein said lid is pivotably joined adjacent to one top edge of one of said side walls, said lid being pivotable in said operating configuration to close said locker and pivotable in said storage configuration to lie co-planar with another one of said side walls to form a cover for said other one of said side walls when said locker is in said storage configuration.

5,299,705

CUP FOR A CONTAINER AND AN ASSEMBLY OF CUP AND CONTAINER

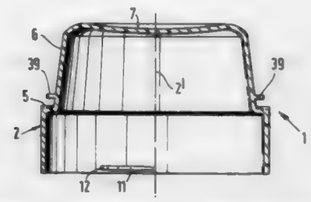
Gary Dettmar, Braintree, Great Britain, assignor to Thermos Limited, Essex, United Kingdom

Filed May 21, 1993, Ser. No. 65,921

Claims priority, application United Kingdom, May 22, 1992, 9210923

Int. Cl.[5] B65D *21/00*

U.S. Cl. 220—23.83 **35 Claims**



1. A cup for a container comprising a bowl having a substantially central axis, first retaining means located within the bowl and extending from an internal face thereof, second retaining means located externally of the bowl and extending from an external face thereof, said first and second retaining means being arranged so that two said cups can be disposed and fitted together with the bowl of a first cup partly received axially within the bowl of the second cup and relative rotation between the two cups about said axis moves the first retaining means of the second cup into co-operation with the second retaining means of the first cup to firmly engage the two cups together and retain them against being separated axially.

5,299,706

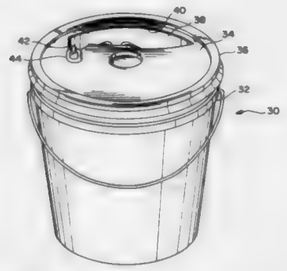
PAIL LID

Myron H. Wardell, Jr., Lititz, Pa., assignor to Cooper Industries, Inc., Houston, Tex.

Filed May 26, 1992, Ser. No. 889,030

Int. Cl.[5] B65D *41/46*

U.S. Cl. 220—266 **8 Claims**



1. A lid for a pail, comprising:

a cover with an upstanding rim,

an area of said cover defined by a periphery of reduced thickness to facilitate removal of said area,

said removable area including a notched portion for holding the end of a chain or cordage in a readily accessible position in the lid wherein removal of said removable area allows access to said chain or cordage within said pail without removal of said lid from said pail, and

said removable area is substantially in the shape of a pair of arcuate segments with concave sides facing each other, one of said segments being shorter in length than said other segment, each segment having a pair of ends, an end of each segment intersecting, and the other end of each respective segment being spaced apart and interconected by said notched portion.

5,299,707

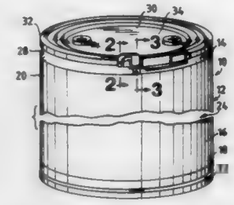
WELDED COVER LOCK

Michael D. Stolzman, 1188 Old Colony Rd., Lake Forest, Ill. 60045

Filed Sep. 29, 1992, Ser. No. 953,648

Int. Cl.[5] B65D *45/34*

U.S. Cl. 220—321 **16 Claims**



13. For use with a container having an annular end portion defining a top opening and a top wall defining a removable cover overlying said opening, a locking belt comprising:

an elongate band of a first synthetic resin, in use, for surrounding said annular end portion of the container and including means for retaining said cover on said annular end portion with opposite ends of the band spaced apart

a locking structure of a second synthetic resin of higher strength than said first synthetic resin; and

said locking structure mounted to the end portions of the band, so that, in use, said locking structure constricts the spaced ends of the band to secure the cover to the container.

5,299,708

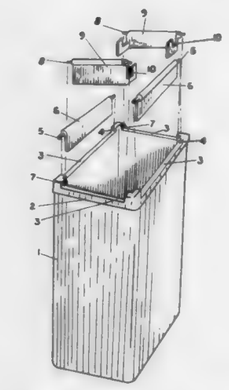
GARBAGE PAIL

Orrin S. Hallock, III, 33 Roberts Rd., Cambridge, Mass. 02138

Filed Jul. 29, 1993, Ser. No. 99,124

Int. Cl.[5] B65B *67/04*; B65D *1/24*

U.S. Cl. 220—404 **1 Claim**



1. A garbage pail comprised of a base supporting upwardly extending walls, the upper portions of said walls defining a mouth, rearward portions of said walls having a lid support structure, said lid support structure having a lid pivotly secured thereto, said lid support structure holding said lid stationary in either a closed position covering said mouth or in an

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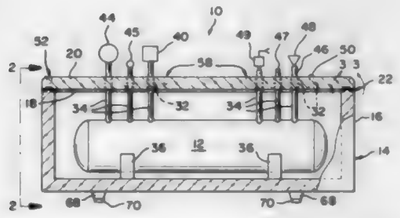
open position above said mouth, said lid support structure having at least one liner slot formed therein, open to the top and sides, extending downward significantly below the upper portions of said walls, said lid support structure having wall standoff means extending rearward beyond said lid, thereby providing a garbage pail where a liner can be folded over said mouth and the upper portions of said walls without becoming obstructed by said lid support structure or said lid, or pinched between said lid and said lid support structure, wherein the lid can freely pivot on the lid support structure with out obstruction by a rearward wall contacting the garbage pail, said standoff means further providing protection for retaining the lid operably on the garbage pail inevent the garbage pail is jostled into a rearward wall.

5,299,709

ABOVE GROUND FUEL STORAGE TANK

James N. Beerbower, Tipp City; Charles L. Allen, Jr., Vandalia; Lowell R. Klaber, Dayton, and John F. Kuhl, Cincinnati, all of Ohio, assignors to Flexicore Systems, Inc., Huber Heights, Ohio

Filed Jan. 14, 1993, Ser. No. 4,464
Int. Cl.[5] B65D *25/18*
U.S. Cl. 220—445 **18 Claims**



1. An above ground storage tank which is sealed to inhibit fire and explosion hazards comprising:
an inner tank for primary storage; and
an outer casing surrounding said inner tank, including:
a concrete casing body made of six inch thick precast reinforced concrete defining an opening;
a sealant on the inner surfaces of said concrete casing body for secondary containment of material stored in said inner tank, wherein said sealant comprises a thermosetting resin mixed with a graded aggregate;
a removable lid positioned over said opening;
said concrete casing body and said removable lid including opposing first and second surfaces, respectively; and
means for sealing said removable lid to said concrete casing body which includes a fire-resistant sealant material disposed between said opposing first and second surfaces.

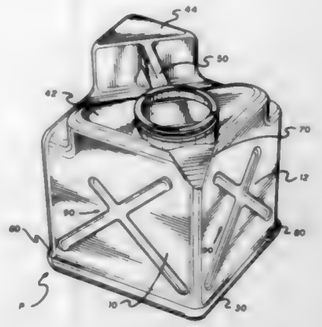
5,299,710

DRINK CONTAINER

Penny Welsch, Hawaiian Gardens; Salvador Roxas, Rancho Santa Margarita; Phillip Buck, Aliso Viejo; Carol J. Conner, Irvine, and Gregory A. Marko, Costa Mesa, all of Calif., assignors to Strottman International, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 819, Oct. 26, 1992. This application Jan. 27, 1993, Ser. No. 9,742
Int. Cl.[5] B65D *23/10*
U.S. Cl. 220—675 **14 Claims**

1. A container for liquids comprising:
planar side wall means for defining a container main body;
a planar bottom wall means integrally and perpendicularly connected to said side wall means, for defining a container bottom for said container main body;
a top wall means parallel to said bottom wall means, integrally and perpendicularly connected to said side wall means, for defining a container top for said container main body;
an open, hollow raised neck means for defining an offset fill and pour spout opening therethrough and communicating with the interior of said container main body, said raised neck means and spout being located on and perpendicular to said container top, proximate said container main body side wall means; and



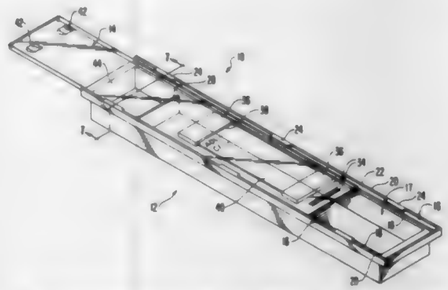
means defining a chamfered, bevelled nose section on said side wall means, adjacent to and intersecting with said hollow raised neck means and said spout, said nose section being dimensioned and configured to engage an activation means for dispensing liquid from an otherwise conventional liquid drink dispenser into said open, hollow raised neck means; whereby
said container may be filled at said drink dispenser by pressing said chamfered, bevelled nose section against the liquid dispensing activation means of said dispenser.

5,299,711

MEDICATION DISPENSING CONTAINER

Jerome M. Romick, Artromick International, Inc., 4800 Hilton Corp. Dr., Columbus, Ohio 43232

Filed Nov. 3, 1992, Ser. No. 970,863
Int. Cl.[5] G07F *11/00*
U.S. Cl. 221—2 **9 Claims**



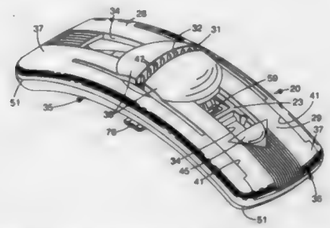
1. A dispenser for storing and dispensing medical preparations; said dispenser comprising:
a container formed by a generally parallelpiped tray having an open top portion, and guide means formed at least along opposing marginal longitudinal sides adjacent said open top; and,
a slidable cover having edge means for slidably cooperating with said guide means;
said cover includes a pair of generally longitudinally spaced apart and opposed projection means on a top surface thereof, said projection means are generally facing each other and defining recesses into which opposed cooperating ends of pliable indicia bearing member may be conveniently inserted, secured and replaced when desired with another such indicia bearing member and;
a pliable indicia bearing member removably secured within and by said recesses formed in said projection means.

5,299,712

SHEET DISPENSER WITH OPTIONAL SUPPORT OR ATTACHMENT MEANS

Casey L. Carlson, Edina; Thomas L. Connolly, St. Paul; Elmer Blackwell, Woodbury; Bruce E. Sumuelson, West Lakeland Township, Washington County, and Gerald E. Mueller, Eagan, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 18, 1993, Ser. No. 64,403
Int. Cl.[5] A47K *10/24*
U.S. Cl. 221—45 **14 Claims**



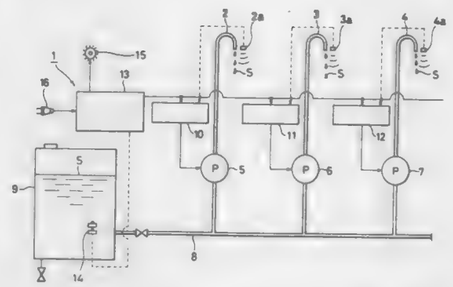
1. A dispenser for flexible sheets from a stack of sheets disposed one on top of another, each sheet comprising a backing having first and second opposite major side surfaces and first and second opposite ends with the first end of each sheet being in alignment with the second end of an adjacent sheet in said stack, and a layer of adhesive permanently adhered to the first side surface of said sheet backing, the layer of adhesive of each sheet being releasably adhered along the second surface of the adjacent sheet in said stack, said sheets comprising release means for providing a first adhesion level along a first end portion of each of said sheets adjacent said first end of said backing between said first side surface and the second side surface of the adjacent sheet in the stack to which said layer of adhesive is releasably adhered, which first adhesion level provides a sufficiently low or no release force between said first side surface and the adjacent sheet to which the adhesive along that first side surface is releasable adhered to afford sliding movement between the side surfaces of the adjacent sheets along said first end portion, and attachment means for providing a second adhesion level along a second end portion of each of said sheets adjacent said second end of said backing between said layer of adhesive and the second side surface of the adjacent sheet in the stack to which said layer of adhesive is releasably adhered, which second adhesion level provides a release force that is higher than said sufficiently low release force along said first end portion and firmly adheres the sheet to the adjacent sheet in the stack during sliding movement of the sheet relative to the adjacent sheet along said first end portion while affording peeling away of the sheet from the stack along said second end portion, said dispenser comprising:
walls having surfaces defining a cavity adapted to receive the stack, said walls including
a generally arcuate bottom wall defining a bottom surface for said cavity and an opposite generally cylindrically convex outer surface,
end walls defining end surfaces for said cavity at opposite ends of said bottom surface,
first and second arcuate top wall portions normally both in normal positions extending generally toward each other from said end walls and defining arcuate top surface portions for said cavity spaced from said bottom surface, said top wall portions in said normal positions having spaced adjacent end surfaces defining an outlet opening for said cavity between said top wall portions, and
opposite side walls defining opposing side surfaces for said cavity extending between said top surface portions and said bottom surface,
said surfaces defining said cavity being shaped to afford reciprocating movement of the stack of sheets within the cavity in response to a force manually applied to the second end portion of the uppermost sheet in the stack projecting through the opening so that the uppermost sheet in the stack can be manually pulled through the opening and will carry with it the second end portion of the sheet beneath it in the stack to which the uppermost sheet is adhered by the adhesive coating, placing that second end portion in a position where it also may be grasped and pulled to withdraw that sheet from the stack, and
said dispenser comprises a first housing portion including said bottom wall, said end walls, said side walls and said first top wall portion; a second housing portion comprising said second top wall portion, means mounting said second housing portion on said first housing portion for relative movement of said housing portions between said normal position and an open position with said second top wall portion spaced from said first wall portion to afford inserting a said stack of sheets into said cavity, and means for releasably retaining said second housing portion in said normal position.

5,299,713

AUTOMATIC LIQUID SOAP SUPPLY DEVICE

Shiro Saitoh, Aichi, Japan, assignor to Inax Corporation, Tokoname, Japan

Filed Sep. 17, 1992, Ser. No. 945,910
Claims priority, application Japan, Sep. 24, 1991, 3-085823
Int. Cl.[5] B67D *5/22*
U.S. Cl. 222—51 **5 Claims**



1. An automatic liquid soap supply device comprising:
a plurality of liquid soap supply taps to eject liquid soap,
a plurality of sub-units associated with the respective liquid soap supply taps, each sub-unit having a sensor for sensing presence of a hand located under the liquid soap supply tap, a use detection circuit connected to the sensor and a pump driving circuit connected to and activated by said use detection circuit,
a reservoir for storing the liquid soap to supply the liquid soap to the respective liquid soap supply taps,
pumps disposed to the respective sub-units, each pump being connected to each pump driving circuit for supplying the liquid soap in the reservoir to each supply tap, and
a main unit having a single power source circuit connected with each of said use detection circuits
so that each pump is driven to supply the liquid soap to the liquid soap supply tap when the sensor detects the hand.

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5,299,714

OIL FILTER PUNCTURING, DRAINING, AND SOCKET EXTENSION DEVICE

Gary H. Kilgore, 206 Laurel Heights Pl., San Antonio, Tex. 78212

Filed May 21, 1993, Ser. No. 64,660
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—81 1 Claim



1. An oil filter puncturing and draining tool comprising in combination;

a hollow metal shaft to internally accommodate oil drainage from a vehicular oil filter and to control the flow therefrom,

said hollow metal shaft being sharpened at one end to penetrate said oil filters and including a resilient washer at the base of the sharpened end to form a seal with the oil filter around where it has been penetrated to minimize the leaching of oil exterior of the filter and shaft;

a male oil filter socket wrench component formed on the shaft below the washer and sharpened end to allow the oil filter to be rotated by engaging the socket with an oil filter wrench and then rotating the tool;

a valve adjacent the other end of the shaft to regulate the flow of oil through the shaft,

said valve having an external hand manipulatable actuator, and;

a female socket wrench component formed in said other end of said shaft to allow the tool, oil filter socket wrench, and oil filter to be driven, and thus to remove said filter from it's engine mounting fixture.

5,299,715

SYRUP DOSING VALVE FOR USE IN INSTALLATION FOR THE PREPARATION OF FLAVORED CARBONATED BEVERAGES

Joseph Feldman, 8 A.D. Gordon Street, Tel Aviv, Israel

Filed May 22, 1992, Ser. No. 887,313
Claims priority, application Israel, May 26, 1991, 98266
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.1 10 Claims

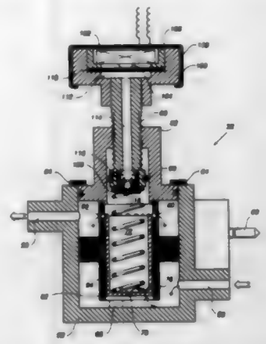
1. A syrup flow control valve for regulating the flow of syrup in a carbonated soft drink dispensing installation which includes a water and CO_2 supply source, a syrup supply source, a control valve for regulating the flow of carbonated water, a mixing head, wherein the carbonated water and the syrup become admixed and dispensed through a dispensing spout, and an electrically controlled shut-off valve normally closing the dispensing spout, the syrup flow control valve comprising:

a housing having an inlet and outlet for the syrup;

a fixed cylinder having a plurality of peripheral openings in communication with the outlet;

a floating cup-shaped plunger, having a bottom, disposed within the cylinder, for partly closing said openings as a function of the syrup pressure applied to the bottom of the plunger through said inlet, and an orifice in the bottom of the plunger, through which the syrup is admitted into the plunger to be discharged through said peripheral openings of the cylinder;

a counter-force compression spring disposed within the



plunger, said spring being biased against the plunger by a screw-threaded adjusting pin, said adjusting pin having a head portion accessible for rotating the pin and thereby adjusting the quantity of syrup supplied to the mixing head; and

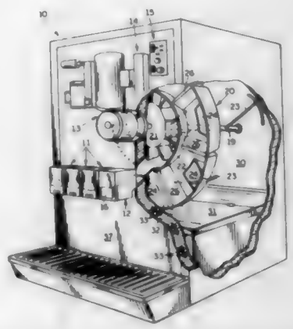
pressure sensing means disposed within said head portion of said adjusting pin in communication with and responsive to the syrup inlet pressure prevailing within the plunger, operatively coupled to means for disabling the shut-off valve for preventing use of the installation when a pressure drop is sensed by said pressure sensing means.

5,299,716

ICE DISPENSER WITH AN ICE FLOW REGULATOR

John T. Hawkins, and Weldon E. Griffin, both of San Antonio, Tex., assignors to Lancer Corporation, San Antonio, Tex.

Filed Oct. 19, 1992, Ser. No. 963,423
Int. Cl.[5] F25C *1/00*; G01F *11/28*
U.S. Cl. 222—146.6 13 Claims



1. A combination ice and beverage dispenser comprising:

ice storage means;

ice discharge means communicating between the interior and exterior of said ice storage means;

ice lifting means positioned within said ice storage means;

a paddle wheel positioned within said ice lifting means; and

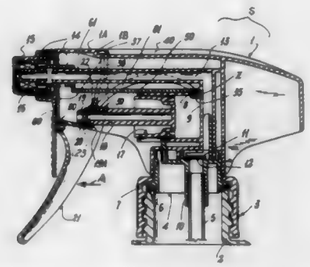
rotating means for rotating said ice lifting means to deposit ice in said ice lifting means and to elevate said ice from a lowermost portion of said ice storage means for discharge onto said paddle wheel, wherein said paddle wheel rotates to deliver said ice to said ice discharge means in a consistent flow.

5,299,717

MANUAL SPRAYER DEVICES COMPRISING A TRIGGER LEVER

Adalberto Geier, Villazzano, Italy, assignor to Coster Tecnologie Speciali S.p.A., Italy

Filed Jul. 14, 1992, Ser. No. 915,412
Claims priority, application Italy, Aug. 30, 1991, MI91 A 002331
Int. Cl.[5] B05B *11/02*
U.S. Cl. 222—340 14 Claims



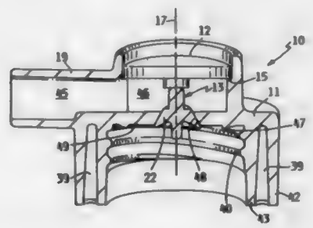
1. Improvements in manual sprayer devices comprising a body (1) fixable to a container (2), a cylinder (8) in said body (1), a piston (17) movable within said cylinder (8), and a trigger-type operating lever (21) which is rotatably mounted in said body (1) and connected to said piston (17) in such a manner as to move it in two directions and on which there act elastic return means (81) which react against the body (1) and are out of contact with the liquid to be sprayed, characterised in that the trigger lever (21) comprises a forked end with two heads (37) arranged to pass through apertures (41) within the body which are bounded partly by elastically deformable lugs (42), and further comprises in an intermediate position a toothed aperture (20, 23) for unidirectional engagement with a narrowed terminal part (19) of the piston (17), and a reaction surface (22) cooperating with an abutment (19A) on the piston (17) for unidirectional engagement in the opposite direction to the preceding engagement.

5,299,718

BOTTLE CLOSURES

Roy P. Shwery, 502 Crestview La., De Pere, Wis. 54115

Filed Jun. 1, 1993, Ser. No. 69,362
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—518 8 Claims



1. A reusable closure with only two moving parts for temporarily sealing a container to prevent escape of fluids from the container comprising:

a housing, said housing having threads for securing said housing to a surface, said housing having a spout for discharging fluids therefrom, said housing having an integral, tapered sealing ring to prevent fluid from escaping therepast, said housing having an opening with a frusto-conical seal located therearound;

a resilient push top, said resilient push top having an extension with a socket housing;

a valve stem extending through said opening, said valve stem having a ball on one end for mating engagement of said socket housing to permit displacement of said push top and said valve stem as a unit; and

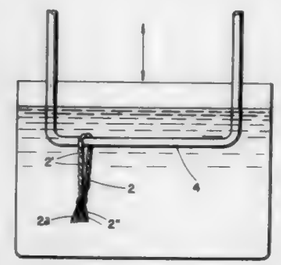
a flared skirt located on said valve stem for sealing against said frusto-conical seat to prevent fluid from flowing therepast, said flared skirt having a first substantially rigid sealing region to prevent said flared skirt from being forced through the opening by fluid pressure and a second more flexible region to permit fluid pressure forces to force said flared radially outward and into a sealing condition around the opening.

5,299,719

TASSELS AND THEIR PRODUCTION

John R. Newgas, London, England, assignor to Albion Manufacturing Co. Ltd., London, England

Filed Jan. 22, 1992, Ser. No. 823,885
Claims priority, application United Kingdom, Jan. 25, 1991, 9101647
Int. Cl.[5] D04D *7/08*
U.S. Cl. 223—46 12 Claims



1. A method of producing a tassel comprising the steps of forming a knot in a cord which comprises a plurality of strands twisted together, each said strand comprising yarns or filaments, an end portion of the cord and a main length of the cord being separated by said knot, and immersing at least said end portion in liquid so as to cause the yarns or filaments of said end portion to at least partially untwist and form a tuft of loose yarns or filaments.

5,299,720

COMBINED HANDLE AND FRICTION CONNECTOR FOR CONTAINERS AND THE LIKE

Henry W. Koch, III, 52 Van Sicklen Rd., Williston, Vt. 05495

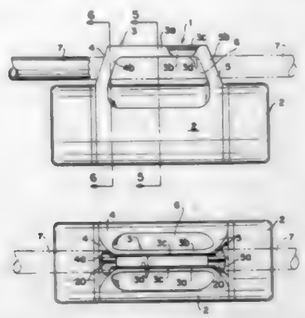
Filed Aug. 17, 1992, Ser. No. 930,782
Int. Cl.[5] B60R *11/00*; B62J *9/00, 11/00*
U.S. Cl. 224—35 17 Claims

1. A combined handle and friction connector for a body member comprising, a longitudinally extending member spaced radially outwardly from the body member and extending parallel to the longitudinal axis of said body member, said longitudinally extending member including a pair of oppositely spaced, resilient arms that are coextensively parallel and together form a handle portion, at least one bridge member operatively connected between the body member and the longitudinally extending member for holding the longitudi-

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nally extending member in spaced relationship to said body member, the space between said longitudinally extending member and the body member providing an opening for receiving the hand of a user when gripping the longitudinally extending member including the pair of spaced parallel resilient arms as a handle portion, and resilient arms provided in the bridge member, the pair of spaced parallel, resilient arms and the resilient arms of the bridge member adapted to receive a selected tubular support member, whereby the handle and associate body member can be snapped onto the tubular support member.

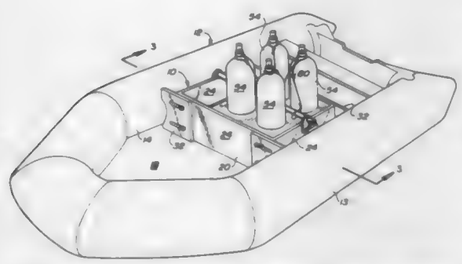


5,299,721

APPARATUS FOR HOLDING SCUBA TANKS

James L. Cummings, 8041 Stone Canyon Cir., Citrus Heights, Calif. 95610

Filed Jan. 22, 1993, Ser. No. 7,714
Int. Cl.[5] B60R *11/00*
U.S. Cl. 224—42.42 13 Claims



1. Apparatus selectively positionable in a boat for holding at least one scuba tank, said apparatus comprising, in combination:

a receptacle including a bottom and a plurality of interconnected side walls extending upwardly from said bottom and defining a receptacle interior therewith, said side walls having upper ends;

a cover for positioning on said receptacle, said cover defining at least one hole therein in communication with said receptacle interior when said cover is positioned on said receptacle, said at least one hole for receiving a scuba tank supported by and extending upwardly from said receptacle bottom, and said cover cooperable with said scuba tank to maintain said scuba tank in a stable, upright condition relative to said receptacle when said scuba tank extends upwardly through said hole; and

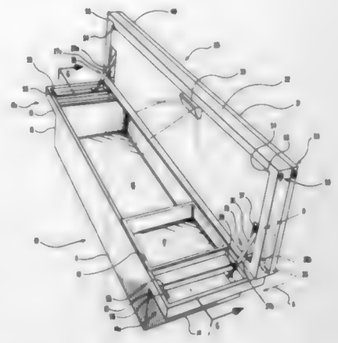
attachment means operatively associated with said receptacle to attach said receptacle to a boat.

5,299,722

DOUBLE LID TRUCK STORAGE BOX

Dale S. Cheney, 2679 W. 1700 South, Syracuse, Utah 84075

Filed Jan. 21, 1993, Ser. No. 7,274
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—273 11 Claims



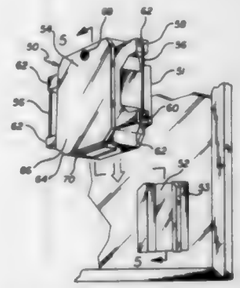
1. A double lid truck storage box comprising, a rectangular box for fitting in a pickup truck bed having sidewalls, said rectangular box including a bottom with upstanding front, rear and side walls and an open top wherein said rectangular box is formed to fit across the pickup truck bed and said rectangular box having a pair of wing sections projecting from opposite ends of said rectangular box being adapted to extend across top edges of said pickup truck bed side walls; a double lid having a top lid and a lower lid for fitting over said open top, said top lid for closing over said lower lid, said lower lid having a narrow rectangular shape with a flat bottom and upstanding front, rear and side walls and an open top; hinge means for pivotally connecting said top lid and said lower lid along a far edge of top lid and a top edge of said lower lid rear wall; a second hinge means for pivotally connecting a lower edge of said lower lid to a top edge of said rectangular box rear wall; and a pair of lock means for individually locking said top lid to cover over said lower lid and said lower to bed cover over said rectangular box.

5,299,723

CONTAMINATION-FREE DENTAL FLOSS DISPENSER

Jeffrey D. Hempel, 33710 Santiago Rd., Acton, Calif. 93510

Filed Sep. 16, 1992, Ser. No. 945,532
Int. Cl.[5] A61C *15/00*
U.S. Cl. 225—38 7 Claims



1. A contamination-free dental floss dispenser assembly comprising:

a housing;

at least one roll of dental floss mounted for rotation within said housing;

said housing having at least one dental floss dispensing orifice and cut-off means for cutting off pieces of said dental floss;

said floss being free from engagement with said housing and spaced away by at least one-half inch from said housing when said floss extends from said orifice to said cut-off means;

means for securely holding said assembly against movement without engagement of said housing by either hand during the dispensing and cutting off said floss;

means for permitting free dispensing of said floss from said orifice without engagement of any locking mechanism so that the floss may be gripped by the fingers and dispensed without any touching or contaminating of any part of said housing;

said dispenser assembly including at least two thin spaced elongated fingers protruding linearly along a predetermined axis longitudinally directly outwardly from said dispenser at two spaced points, one of said fingers having a dispensing orifice extending through it, and the other having said cut off means attached thereto, said fingers extending separately at least one half inch outwardly from said housing, the maximum cross-sectional dimension through each of said thin, elongated fingers taken transverse to the longitudinal axis thereof, being substantially less than the extent of said fingers away from said housing; and

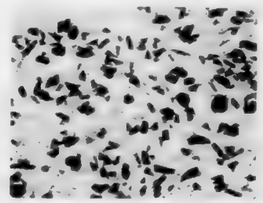
a first pair of said thin, elongated fingers extending in one direction from said housing, and second pair of said fingers extending in another direction from said housing.

5,299,724

APPARATUS AND PROCESS FOR CASTING METAL MATRIX COMPOSITE MATERIALS

Richard S. Bruski, Encinitas, Calif.; Larry G. Hudson, Pulaski, N.Y.; Iljoon Jin; David J. Lloyd, both of Kingston, Canada, and Michael D. Skibo, Leucadia, Calif., assignors to Alcan International Limited, Montreal, Canada

Filed Jul. 13, 1990, Ser. No. 553,111
Int. Cl.[5] C22C *1/10;* B22D *11/00, 19/14*
U.S. Cl. 266—207 16 Claims



1. A process for preparing a solid cast composite material, comprising the steps of:

furnishing a mixture of molten metal and solid, free flowing reinforcement particles occupying from about 5 to about 35 percent of the volume of the mixture, the step of furnishing including a step of mixing the molten metal and the particles in a mixing apparatus to wet the molten metal to the particles;

conveying the mixture of molten metal and particles from the mixing apparatus to a solidification apparatus;

agitating the mixture after the mixture has left the mixing apparatus and prior to solidification to prevent segregation of the particles, the agitation being accomplished in a manner that substantially prevents the introduction of gas into the mixture; and

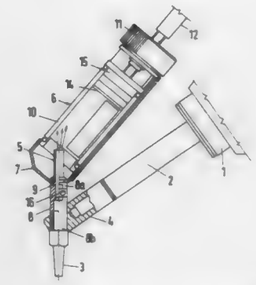
solidifying the mixture at a cooling rate of at least about 15° C. per second between the liquidus and the solidus temperatures of the molten metal.

5,299,725

DESOLDERING TOOL

Ernst Eisele, Walheim, and Fritz Eisele, Hessigheim, both of Fed. Rep. of Germany, assignors to Cooper Industries, Inc., Houston, Tex.

PCT No. PCT/EP89/01260, § 371 Date Apr. 11, 1991, § 102(e) Date Apr. 11, 1991, PCT Pub. No. WO90/04481, PCT Pub. Date May 3, 1990
PCT Filed Oct. 20, 1989, Ser. No. 674,374
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 8813263[U]
Int. Cl.[5] B23K *1/00*
U.S. Cl. 228—20.1 14 Claims



1. Desoldering tool for melting and collecting solder comprising:

a heated desoldering tip;

a suction tube connected to said tip; said tip and tube forming a bore having a flow axis for the flow of solder;

an elongated tin collecting container having an interior wall and a front end and a rear end forming a central axis;

a vacuum tube connected to a vacuum source and to said rear end of said container;

said suction tube having a portion thereof projecting into said front end of said tin collecting container;

said flow axis of said suction tube traversing said central axis of said container causing the solder flowing from said suction tube to be directed towards said interior wall; and

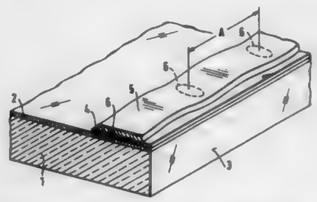
a tin collecting space being formed around said projecting portion of said suction tube projecting into said container.

5,299,726

CONNECTION FOR GLAZINGS HAVING AN ELECTROCONDUCTIVE LAYER

Gerd Sauer, Stolberg-Venwegen, Fed. Rep. of Germany, assignor to Saint-Gobain Vitrage International "Les Miroirs" , Courbevoie, France

Filed Aug. 10, 1992, Ser. No. 926,287
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1991, 4126533
Int. Cl.[5] B23K *20/10, 1/06*
U.S. Cl. 228—111.5 16 Claims



1. A process for connecting a thin transparent electroconductive layer deposited on a sheet of silicate glass, serving as a

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heating resistor on a glazing having electric heating, the process including:

providing a thin transparent electroconductive layer;

providing a coating of a brazing having a low melting point upon said thin transparent electroconductive layer; and

connecting the coating of a brazing to said thin transparent electroconductive layer using a soldering machine having a heated bit subjected to an ultrasonic vibration;

the process further including providing a lead-in metal electrode such that the thin transparent electroconductive layer is soldered by way of said brazing coating to the lead-in metal electrode.

5,299,727

METHOD OF MANUFACTURE OF AN OPTOELECTRONIC COUPLING ELEMENT

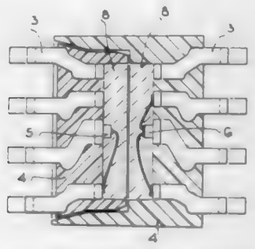
Albin Kofler, Burgkirchen, Austria, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 45,665

Claims priority, application Fed. Rep. of Germany, May 5, 1992, 4214792

Int. Cl.[5] H01L *21/60*

U.S. Cl. 228—177 **11 Claims**



1. A method for manufacture of an optoelectronic coupling element having a multi-part housing, with a first housing section (1) being designed as a plug and a second housing section (2) as the receptacle receiving said plug, and with at least one optoelectronic element (5, 6) each being mounted on a contact strip (3) in said first and second housing sections, wherein said first and second housing sections (1, 2) are initially shaped around one contact strip (3) each, wherein in a further process step said optoelectronic elements (5, 6) are mounted in cutouts (8) in the insides of said plug (1) and said receptacle (2), and wherein said plug (1) and said receptacle (2) are joined together after manufacture of the electrical connections of said optoelectronic elements using their respective contact strips (3).

5,299,728

METHOD AND APPARATUS FOR LAMINATING FOILS INTO A SUPERCONDUCTING TAPE FOR USE IN A SUPERCONDUCTING MAGNET

Christopher G. King, Florence; Gerhard S. Kobus; Anthony Mantone, both of Effingham; Malvin L. Dennis, Lake City; Frank D. Shaffer, Quimby; Richard A. Stephens, Pamplico, and Neil G. Fiddes, Columbia, all of S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 28, 1992, Ser. No. 967,316

Int. Cl.[5] H01B *12/00*

U.S. Cl. 228—179.1 **20 Claims**

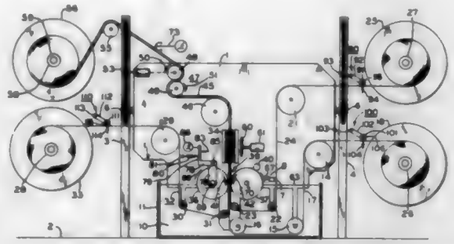
1. A method of forming long lengths of a stabilized superconducting tape comprising:

a pair of contiguous rotatable pinch rollers forming a pinch area therebetween;

spooling a first foil around at least one idler pulley and between said pinch area between said pinch rollers;

spooling a second foil around at least one second idler pulley to pass contiguously to one side of said first foil at said pinch area;

spooling a third foil around at least one third idler pulley to pass contiguously to the opposite side of said first foil at said pinch area, sandwiching said first foil between said second and third foil;



immersing portions of said pinch rollers in a molten solder bath with portions of said pinch rollers extending out of said molten solder bath;

forming a laminated three-layer tape at said pinch area by pressure exerted by said pinch rollers; and

selectively cleaning said pinch rollers at the portions of said pinch rollers extending out of said molten solder bath.

5,299,729

METHOD OF FORMING A BUMP ELECTRODE AND MANUFACTURING A RESIN-ENCAPSULATED SEMICONDUCTOR DEVICE

Akira Matsushita, Zyouyou, and Hidekazu Konishi, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

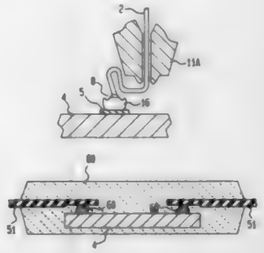
Division of Ser. No. 761,717, Sep. 17, 1991, Pat. No. 5,172,851. This application Aug. 28, 1992, Ser. No. 937,466

Claims priority, application Japan, Sep. 20, 1990, 2-252316; Oct. 9, 1990, 2-271346

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—180.22 **3 Claims**



1. A resin-encapsulated semiconductor device comprising:

a semiconductor chip having a plurality of pad electrodes on a surface thereof;

a plurality of bump electrodes formed on said pad electrode, each of said bump electrodes comprising a base part and a protrusive part, wherein a cavity is formed on a top surface of said base part, said protrusive part comprising a folded wire extending from said base part, an end of said folded wire being bonded to said base part at said cavity;

a plurality of lead members, each of said lead members being physically joined at an inner end thereof to said protrusive part of a respective bump electrode;

a resin body from which an outer end of each of said lead members is drawn out, said resin body covering at least said semiconductor chip and said physically joined parts.

5,299,730

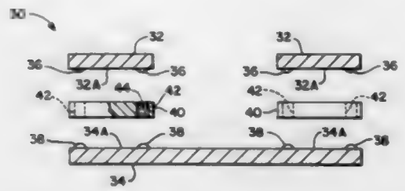
METHOD AND APPARATUS FOR ISOLATION OF FLUX MATERIALS IN FLIP-CHIP MANUFACTURING

Nicholas F. Pasch, Redwood City; Vahak K. Sahakian, Los Altos Hills, and Conrad J. Dell'Oca, Palo Alto, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 775,009, Oct. 11, 1991, Pat. No. 5,168,346, which is a division of Ser. No. 576,182, Aug. 30, 1990, Pat. No. 5,111,279, which is a continuation of Ser. No. 400,572, Aug. 28, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 981,096

Int. Cl.[5] H05K *1/11*

U.S. Cl. 228—180.22 **17 Claims**



1. A method of joining a chip to a substrate, comprising:

providing a substantially planar structure between a chip and a substrate;

providing the planar structure with through holes;

providing a flowable conductive material; and

causing the flowable conductive material to flow into the through holes and make an electrical connection between the chip and the substrate.

5,299,731

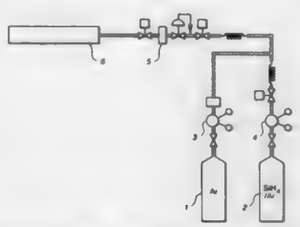
CORROSION RESISTANT WELDING OF STAINLESS STEEL

A. Nimal Liyanage, Chiyoda; Henri Chevrel, Tsukuba; Alain Boireau, Minato, and Jean-Marie Friedt, Tokyo, all of Japan, assignors to L'Air Liquide, Paris, France

Filed Feb. 22, 1993, Ser. No. 47,554

Int. Cl.[5] B23K *9/16, 35/365, 35/38*

U.S. Cl. 228—219 **16 Claims**



1. A process of welding stainless steel under a gaseous atmosphere comprising a silicon containing gas or gas mixture, the process comprising forming a coating comprising silicon in an area at and substantially surrounding the weld by using said gaseous atmosphere during welding in the region where welding occurs.

5,299,732

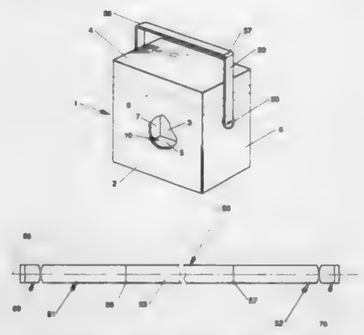
PACKAGE AND A HANDLE FOR THE PACKAGE BOTH OF WHICH ARE MADE FROM PAPERBOARD TO FACILITATE EASY RECYCLING

Patrick D. Armor, Cincinnati, Ohio, and Charles L. Gunn, Lawrenceburg, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 5, 1993, Ser. No. 57,593

Int. Cl.[5] B65D *5/46*

U.S. Cl. 229—117.25 **11 Claims**



1. In combination, a package and a handle for said package, said handle and said package both being made from paperboard so that said handle does not need to be separated from said package for recycling purposes, said combination comprising:

(a) said package comprising opposing front and back walls, opposing top and bottom walls and opposing side walls all of which are connected together so as to define an interior chamber for containing a product, each side wall having an aperture disposed therein; and

(b) said handle comprising an elongated body section extending along a longitudinal axis between two ends, said handle further including one anchor adjacent to each end in substantially juxtaposed relation, each of said ends being inserted into one of said apertures of said package so that said anchors are substantially disposed within said interior chamber of said package, each anchor comprising a securing tab and a barb, each securing tab comprising a first predetermined length of said anchor which is secured to said end, each barb comprising a second predetermined length of said anchor above said securing tab which is left unsecured to said end, said first and second predetermined lengths of each securing and each barb being such that when said package is lifted by said handle, each barb extends above an aperture and each securing tab extends below an aperture.

5,299,733

DETACHABLE MULTI-UNIT PACKAGE WITH FLAP

Elmer D. Werth, Arvada, Colo., assignor to Container Systems, Inc., Arvada, Colo.

Continuation-in-part of Ser. No. 708,984, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 629,251, Dec. 18, 1990, Pat. No. 5,249,738, which is a continuation-in-part of Ser. No. 538,834, Jun. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 510,173, Apr. 17, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 919,170

Int. Cl.[5] B65D *25/04*

U.S. Cl. 229—120.011 **11 Claims**

1. A package for holding a plurality of containers as a single unit, comprising:

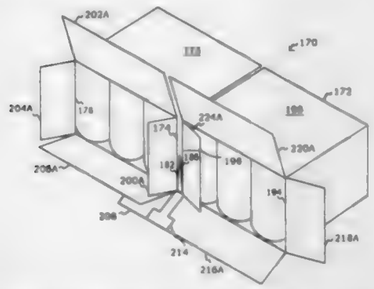
a wrapper having a first divider half, a first package top connected to said first divider half, a first package side

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connected to said first package top, a first bottom half connected to said first package side, a first center flap connected to said first bottom half, a second center flap connected to said first center flap, a second bottom half connected to said second center flap, a second package side connected to said second bottom half, a second package top connected to said second package side, a second divider half connected to said second package top, and a wrap-around dimension extending from said first divider half around said sides, top, and bottom halves to said second divider half;

a first end flap connected to a first end of said first bottom half, said first end flap having a long dimension oriented parallel to said first package top;

a second end flap connected to a first end of said second bottom half, said flap having a long dimension oriented parallel to said first package top and having a length



sufficient to allow said second end flap to overlap said first end flap;

a third end flap connected to a second end of said first bottom half, said third end flap having a long dimension oriented parallel to said first package top;

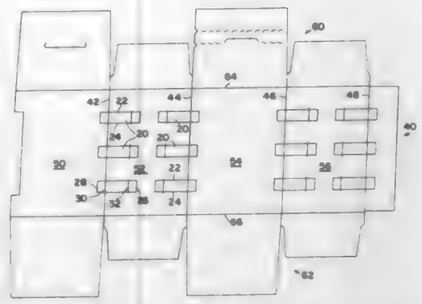
a fourth end flap connected to a second end of said second bottom half, said flap having a long dimension oriented parallel to said first package top and having a length sufficient to allow said fourth end flap to overlap said third end flap;

means for separation between said first and second center flaps; and

a first tear strip located within said second end flap and a second tear strip located within said fourth end flap, said first and second tear strips oriented in a direction perpendicular to said wrap-around dimension and said first and second tear strips being located substantially at each end of said separation means.

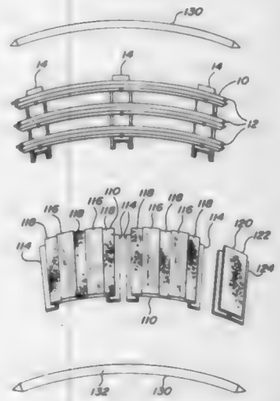
5,299,734
FOLDABLE CARTONS
Gordon S. Lane, Baldwinsville, N.Y., assignor to Nestec S.A., Vevey, Switzerland
Continuation-in-part of Ser. No. 807,459, Dec. 13, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 74,074
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.32 **14 Claims**

1. A carton comprising a longitudinally extending sidewall portion which circumscribes and defines a carton cross-section interior and at least two tiers or integral support ledges for positioning a product in the carton which extend into the carton interior, each of the support ledges being formed from a pair of slits in the sidewall portion which extend integrally from and between end spot creases formed in the sidewall



portion and each of the support ledges having at least two interior spot creases positioned between the end spot creases.

5,299,735
TRACK-BED SYSTEM FOR MODEL RAILROAD
Herbert Y. Thomas, 110 S. 7th St., North Wales, Pa. 19454
Filed May 24, 1993, Ser. No. 66,502
Int. Cl.[5] E01B *23/00*
U.S. Cl. 238—10 B **25 Claims**



1. A system for providing a track-bed for a model railroad track having a plurality of spaced-apart electrified track rails separated by a plurality of track bases capable of holding said rails raised above a platform surface, and supporting said track rails and any model railroad equipment using said track, said track-bed having a real-life appearance, said system comprising:

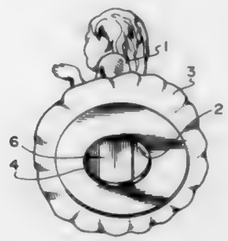
a first component having a top surface adapted to provide the appearance of a real-life railroad track bed, said first component having a width at least equal to the largest width of said railroad track, a height slightly less than the distance which the track base raises the track rails, and a length approximately equal to the spacing between the track bases;

a second component having a top surface adapted to provide the appearance of a real-life railroad track bed, said second component having a width at least equal to the largest width of said railroad track, a height slightly less than the distance which the track base raises the track rails, and a length approximately equal to the spacing between two joined track sections; and,

a third component of preselected length and comprising a regular right triangle in cross-section with two sides approximately equal to the height of the first and second components, and the surface of the hypotenuse being adapted to provide the appearance of a real-life track bed,

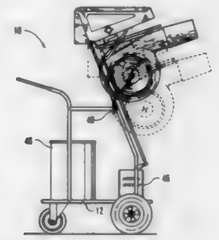
and wherein a section of model railroad track may be adapted to appear life-like by providing at least one said first component between the track bases of each section of track, providing a said second component between the track bases of each joined section of track, and providing a portion of said third component along the sides of said track section.

5,299,736
AIR FRESHENER DEVICE WITH A CERAMIC CONTAINER AND AN ABSORBENT PAD
John Greene, 36 Arran Drive, Suite 220, St. Catharines, Ontario, Canada L2N 6S5
Filed May 17, 1993, Ser. No. 70,114
Int. Cl.[5] A61L *9/12*
U.S. Cl. 239—56 **5 Claims**



1. An air freshener device, comprising a container with porous ceramic walls defining a closed internal space, a closure member for selectively permitting access to and sealing said internal space, and a replaceable absorbent pad, said absorbent pad being impregnated with a fragrant substance adapted for insertion into said internal space so as to occupy only a portion thereof and release fragrant vapors into said internal space at a controlled rate, whereby said released fragrant vapors first build up within said internal space and then diffuse through the porous walls of the container for release into the atmosphere.

5,299,737
SPRAYING DEVICE WITH INTERMITTENT FLUSHING SYSTEM
Conrad D. McGinnis, Carmel, and Dennis A. Roudebush, Fortville, both of Ind., assignors to Curtis Dyna-Fog Ltd., Westfield, Ind.
Filed Apr. 30, 1992, Ser. No. 876,574
Int. Cl.[5] B05B *15/02, 7/00*
U.S. Cl. 239—77 **9 Claims**



1. A spraying device to spray material and having a flushing system comprising:

frame means;

a first container mounted on said frame means for holding the material to be sprayed;

nozzle means mounted on said frame means;

a second container mounted on said frame means for holding a flushing medium;

fan means mounted on said frame means operable to force air past said nozzle means carrying said material emitted by said nozzle means;

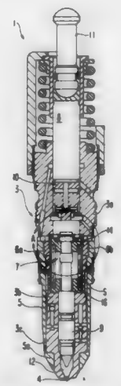
valve means connecting said nozzle means with said first container and said second container and operable to selectable direct said material and said flushing medium to said nozzle means;

pressure means in communication with said second container and operable to force said flushing medium through said nozzle means when said valve means directs flow of said flushing medium rather than said material to said nozzle means;

detection means operable to determine when said material is not flowing from said first container to said nozzle means; and,

control means connected to said detection means and operable to switch said valve means to direct flow of said flushing medium to said nozzle means when said detection means detects absence of material flow from said first container to said nozzle means.

5,299,738
HIGH PRESSURE FUEL INJECTOR WITH CUSHIONED PLUNGER STOP
David P. Genter, and Lester L. Peters, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Sep. 16, 1992, Ser. No. 945,390
Int. Cl.[5] F02M *61/20*
U.S. Cl. 239—91 **21 Claims**



1. In a fuel injector of the open nozzle type having an injector body containing a central bore with an injection nozzle having a valveless open nozzle orifice at a lower end thereof, a plunger assembly having an upper plunger and a lower plunger mounted for reciprocal motion within the central bore with an injection travel toward said injection nozzle for producing injection of fuel from the nozzle orifice and a return travel away from said injection nozzle, and a variable volume injection chamber in said lower end of the central bore and defined between the open nozzle orifice of said injection nozzle and a bottom end of the lower plunger, the improvement comprising cushioning means for limiting return travel of the lower plunger to less than that of said upper plunger in an impact absorbing manner.

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5,299,739

ULTRASONIC WAVE NEBULIZER

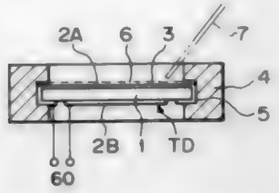
Minoru Takahashi, and Makoto Ono, both of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 26, 1992, Ser. No. 889,067

Claims priority, application Japan, May 27, 1991, 3-149252; Jul. 26, 1991, 3-210101; Oct. 14, 1991, 3-091382[U]; Oct. 21, 1991, 3-094132[U]; Nov. 16, 1991, 3-102285[U]; Dec. 5, 1991, 3-108593[U]

Int. Cl.[5] B05B *3/14*

U.S. Cl. 239—102.2 20 Claims



1. An ultrasonic wave nebulizer comprising;

a piezoelectric vibrator (1) having first and second surfaces, a pair of electrodes (2A, 2B), one of said electrodes being mounted on each of said surfaces of the vibrator, and one of said surfaces defining an operation surface (2A),

a holder (4, 5) for holding said vibrator (1),

a mesh (3) having at least a portion located close to said operation surface so that an essential gap space (G) is provided between said portion of the mesh and the operation surface of the vibrator, and a thin liquid film being provided in said gap space through capillarity,

means (7) for supplying liquid to said gap space to provide said thin liquid film,

a high frequency generator (FIG. 5),

connecting means (6) for connecting said generator to said electrodes of the vibrator,

said vibrator vibrating in thickness direction of the vibrator upon being excited with high frequency power between said electrodes to convert said thin liquid film to mist.

5,299,740

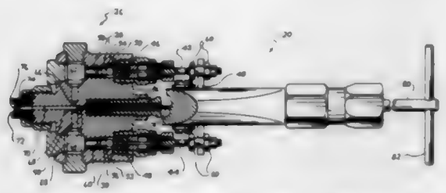
PLURAL COMPONENT AIRLESS SPRAY GUN WITH MECHANICAL PURGE

Jeffrey D. Bert, Denver, Colo., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Mar. 17, 1992, Ser. No. 852,573

Int. Cl.[5] B05B *15/02*

U.S. Cl. 239—117 4 Claims



1. A plural component mixing and dispensing spray gun, comprising a gun body; a head secured to the body, said head including a mixing chamber having an outlet at its forward end and inlet openings communicating with said mixing chamber; an airless tip carried by said head at said mixing chamber outlet, said airless tip having an elongate orifice and a passage extending between said orifice and said outlet; means for intermittently feeding streams of reactant liquids through said inlet openings into said mixing chamber for mixing of the liquids in said chamber and flow of the reactive mixture through said chamber and said outlet into and through said airless tip passage to and through said airless tip orifice; a purging rod received in an opening in said head, said opening being axially aligned with and rearwardly of said mixing chamber, said purging rod having a probe at its forward end; and means for moving said purging rod from a normally retracted position rearwardly of said inlet openings, forwardly through said mixing chamber until said probe extends through said airless tip orifice, to purge said mixing chamber and said airless tip passage and orifice of residual reactive mixture, wherein said mixing chamber and said airless tip passage are cylindrical and axially aligned, said airless tip orifice has major and minor axes that are generally perpendicular to said airless tip passage axis, and said purging rod has a cylindrical main body portion of a first diameter that is slightly less than the diameter of said mixing chamber, a cylindrical airless tip passage cleaning portion at a forward end of and axially aligned with said main body portion and of a second diameter that is smaller than said first diameter and slightly smaller than the diameter of said airless tip passage, and said probe is cylindrical and is at the forward end of and axially aligned with said airless tip passage cleaning portion and is of a third diameter that is smaller than said second diameter and slightly smaller than the dimension of said airless tip orifice minor axis, whereby upon forward movement of said purging rod through said mixing chamber, said main body portion moves into and through said mixing chamber, said airless tip passage cleaning portion moves into and through said airless tip passage, and said probe moves into and through said airless tip orifice to purge said mixing chamber and said airless tip passage and orifice of residual mixed reactants by pushing the residual mixed reactants from and through the mixing chamber and the airless tip passage to and through the airless tip orifice.

5,299,741

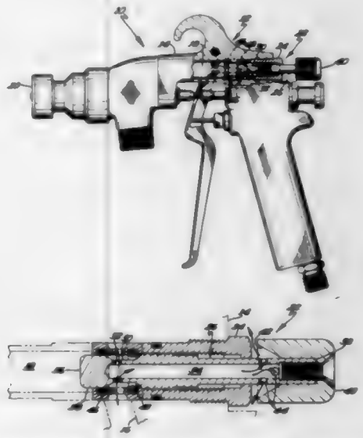
TEXTURE SPRAY GUN BLEED VALVE

Edward P. Murphy, Blaine, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Jan. 6, 1993, Ser. No. 983

Int. Cl.[5] B05B *7/04*

U.S. Cl. 239—124 1 Claim



1. A spray gun for connection to a source of compressed air, said spray gun having a tip and further comprising:

a housing comprising a first passage connected to said compressed air source and a second passage connected to said tip; and

a valve member in said housing, said valve member comprising:

first and second ends;

an axial passage extending from adjacent said first end to said second end;

a first diameter adjacent said first end;

a second diameter less than said first diameter and located intermediate said first diameter and said second end, said second diameter having inlets communicating with said axial passage and wherein said valve member is movable between first and second positions whereby said first position allows compressed air to pass from said first passage to said second passage and wherein said second position, said first end blocks said second passage thereby connecting said first passage with said axial passage to vent said compressed air.

5,299,742

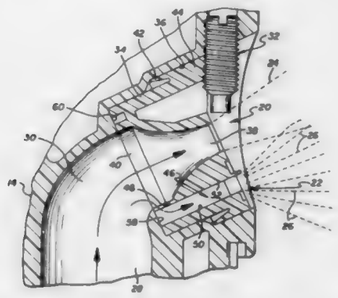
IRRIGATION SPRINKLER NOZZLE

Joseph U. Han, Rancho Cucamonga, Calif., assignor to Anthony Manufacturing Corp., Azusa, Calif.

Filed Jun. 1, 1993, Ser. No. 69,443

Int. Cl.[5] B05B *3/10*

U.S. Cl. 239—206 10 Claims



1. An irrigation sprinkler nozzle of the type including a nozzle housing having a range nozzle portion formed by a generally cylindrical converging passageway adapted to project a columnated water stream outwardly over a relatively long distance, and a spreader nozzle portion disposed vertically below said range nozzle portion and adapted to project a water spray outwardly over a relatively short distance, said spreader nozzle portion comprising:

an elongated chamber formed in said housing below said range nozzle passageway, said chamber having a generally rectangular cross-section defined by spaced top and bottom generally horizontally disposed walls, and laterally spaced generally vertical side walls;

water inlet means formed in said housing upstream of said range nozzle passageway for directing water into one end of said chamber; and

water outlet means at an end of said chamber remote from said one end for producing a generally vertically oriented fan shaped spray of relatively narrow lateral width, said water outlet means being oriented such that an upper portion of said fan shaped spray intercepts said stream from said range nozzle.

5,299,743

BODY SPRAY NOZZLE

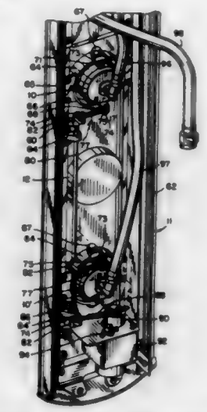
Kenneth J. Sieth, Cedarburg; Michael D. Steinhardt, Kiel; Kathleen S. DeKeyser, Hingham; and David K. Rische, Sheboygan, all of Wis., assignors to Kohler Co., Kohler, Wis.

Division of Ser. No. 790,274, Nov. 8, 1991, Pat. No. 5,205,490.

This application Jan. 19, 1993, Ser. No. 6,360

Int. Cl.[5] B05B *3/14*

U.S. Cl. 239—248 8 Claims



1. An oscillating shower apparatus comprising:

a housing support member with openings therein;

first and second nozzle members pivotally attached to said housing support member in a spaced manner in said openings with a pivotal axis of rotation in a vertical plane;

first and second linkage members connected to said first and second nozzle members at one point;

a third common link member connected to said first and second link members at another point;

oscillating means; and

linkage means connecting said oscillating means and said third common link member;

said first and second linkage members and said third common link members being contained in said housing support member.

5,299,744

GRANULATING, SEPARATING AND CLASSIFYING RUBBER TIRE MATERIALS

Robert A. Garmater, P.O. Box 186, Harlan, Ind. 46743

Filed Aug. 21, 1992, Ser. No. 933,173

Int. Cl.[5] B07B *4/02*; B02C *23/10*

U.S. Cl. 241—19 13 Claims

1. The method of separating rubber from other components of castaway tires comprising the steps of:

debeading the tires to remove any steel tire bead; granulating the tires to form tire fragments including lighter-than-rubber components and ferromagnetic components;

separating the lighter-than-rubber components from the tire fragments as those fragments emanate from the granulating step and prior to the tire fragments coming to rest on any fixed surfaces by causing the tire fragments to free fall downwardly after granulating and simultaneously providing an upwardly directed air flow into the falling tire fragments;

subsequently separating the ferromagnetic components from the tire fragments; and

classifying the remaining tire fragments by segregating them into at least three groups according to size.

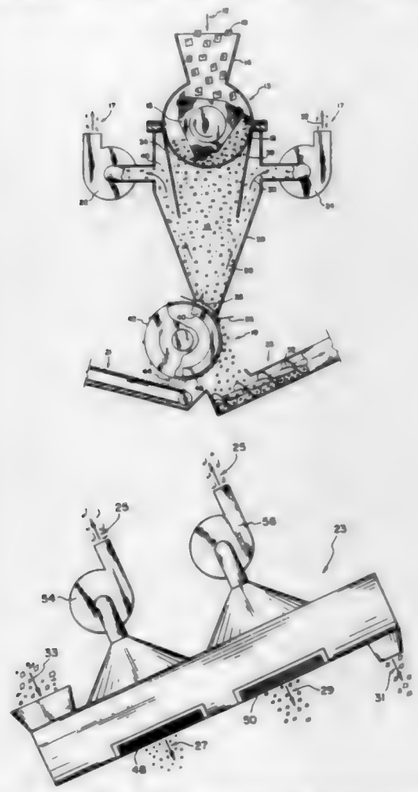
11. Apparatus for rubber tire component reclamation comprising:

a feed hopper for receiving pieces of discarded tires;

a granulating chamber coupled to the feed hopper for cutting the received pieces into smaller tire fragments;

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an exit chute coupled to said granulating chamber for providing an output from the granulating chamber through which the tire fragments fall, said exit chute comprising a tapered housing having a relatively wide mouth at an upper end thereof adjacent the granulating chamber for receiving the tire fragments from the granulating chamber and a relatively small opening at a bottom end thereof through which tire fragments fall, and a tapered baffle



within the housing, said tapered baffle extending from the upper end of the housing and extending said mouth separating the mouth from an upper exit portion of the chute including at least one opening in the upper portion of the housing through which less dense components exit;

means for inducing an air flow upwardly from said small opening through the exit chute to urge the less dense components upwardly against gravity and out of the upper exit portion of the chute, the air flow being of sufficient force to prevent commingling and compaction of the less dense components with remaining components of the tire fragments.

5,299,745

PROCESS FOR THE PREPARATION OF A DRY AGGREGATE FOR THE PRODUCTION OF ELECTRODES

Werner Fischer, Venthône, Switzerland, assignor to R + D Carbon Ltd., Sierre, Switzerland

Filed Jun. 29, 1992, Ser. No. 905,790

Claims priority, application Switzerland, Jul. 3, 1991, 01961/91

Int. Cl.[5] **B02C** *23/10, 23/14*

U.S. Cl. 241—24 **23 Claims**

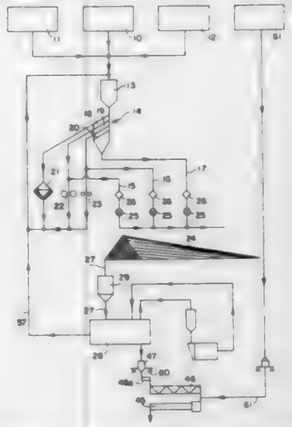
1. A process for the preparation of a dry aggregate for the production of electrodes, in particular anodes for aluminum fusion electrolysis, comprising:

individually processing petroleum coke and baked and green electrode scrap to provide feeds of these materials having a predetermined grain size;

dividing said feeds into at least two grain size fractions;

feeding said grain size fractions to mixing equipment which forms a mixture therefrom of grain size fractions of petroleum coke and baked and green electrode scrap;

feeding the mixture from the mixing equipment and dividing same by means of a grading apparatus into at least two mixture grain size fractions; and



mixing said mixture grain size fractions to provide a dry aggregate.

5,299,746

APPARATUS AND METHOD FOR DIRECT SOLID-FORTIFICATION OF FUELS WITH FERROCENE

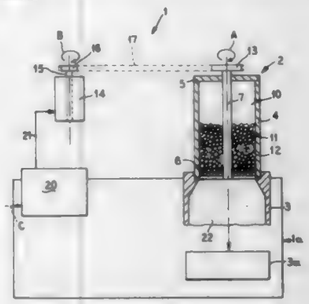
Walther Thuenker, Bottrop; Gabriele Lohmann, Luenen, and Arnim Marchewski, Gelsenkirchen, all of Fed. Rep. of Germany, assignors to Chemische Betriebe Pluto GmbH, Fed. Rep. of Germany

Filed Aug. 26, 1992, Ser. No. 935,282

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129408

Int. Cl.[5] **F02M** *23/00;* **F02D** *19/12;* **F23K** *5/08;* **C10L** *1/30*

U.S. Cl. 241—36 **20 Claims**



1. An apparatus for adding solid ferrocene to fuels, said apparatus comprising the following:

grinder means, adapted to be connected to a fuel-containing element and adapted to be supplied with solid ferrocene, for delivering ground ferrocene to said fuel-containing element;

step motor means mounted in driving connection with said grinder means for operating said grinder means at variable RPMs; and

control means for selectively actuating said step motor means for varying the amount of said ground ferrocene delivered to said fuel-containing element by selectively limiting the number of revolutions during which said step motor means operates.

5,299,747

PAPER MATERIAL SCREENING/REFINING APPARATUS

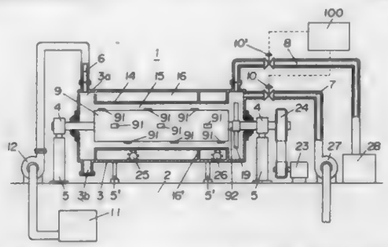
Hitoshi Satomi, Shizuoka, Japan, assignor to Satomi Seisakusho Co., Ltd., Shizuoka, Japan

Filed Apr. 27, 1992, Ser. No. 874,027

Claims priority, application Japan, Nov. 26, 1991, 311099

Int. Cl.[5] **B02C** *25/00*

U.S. Cl. 241—46.17 **9 Claims**



1. A paper material screening and refining apparatus, comprising:

an elongated tank having first and second side portions located away from each other in a longitudinal direction of the tank,

an inlet formed at the first side portion for supplying a paper material into the tank, said paper material containing foreign components and paper components,

a cylindrical screen situated inside the tank to divide the tank into a primary chamber and a secondary chamber, said paper material being supplied to the primary chamber to be separated into the foreign components and the paper components, said paper components being removed from the primary chamber through the secondary chamber,

a cylindrical rotary member disposed inside the primary chamber of the tank to oppose to the screen and having a shaft,

a rotational member attached to the shaft near the second side portion, said rotational member being rotated together with the rotary member when the shaft is rotated,

a water supply pipe disposed at the second side portion for supplying water to the tank from the second side portion and having a water supply valve, and

a controller for controlling the water supply valve, said water supply valve being opened intermittently by the controller to supply water into the tank from the second side portion through said water supply pipe so that the paper material, which is gradually transferred from the first side portion to the second side portion as the rotary member is rotated when water is not supplied through the water supply pipe, is pushed back to the first side portion by water supplied from the water supply pipe while colliding with the paper material transferred from the first side portion to thereby substantially completely separate the paper components from the foreign components and to discharge the paper components through the secondary chamber.

5,299,748

APPARATUS AND METHOD FOR REDUCING VEHICLE TIRES TO PARTICLES

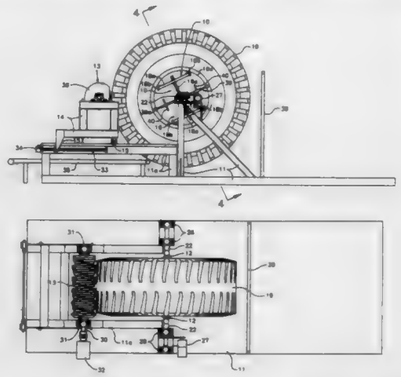
John C. Brewer, Salt Lake City, Utah, assignor to Garb Oil & Power Corporation, Salt Lake City, Utah

Filed Jul. 6, 1992, Ser. No. 909,038

Int. Cl.[5] **B02C** *19/12*

U.S. Cl. 241—279 **22 Claims**

1. Apparatus for slicing particles from a discarded vehicle tire for either disposing of such tire or preparing it for recapping, comprising supporting structure provided with rotatable shaft members formed to matingly receive interposed shaft means and spaced apart for receiving a tire holder assembly; mounting structure for means operative on a vehicle tire, said supporting structure and said mounting structure being operationally positionable relative to each other for operating on a vehicle tire held by the received tire holder assembly; and a tire holder assembly for mounting in said supporting structure, said tire holder assembly comprising a paired set of dual, radial, tire-holding jacks; jack operating mechanism including elongate arbor structure arranged so that each of the corresponding jacks of the dual jacks of said set operates on a corresponding one of the side wall beads of a received tire, corresponding



jacks of said dual jacks of said paired set having mutually spaced, elongate, tire side wall bead clamping means arranged oppositely with respect to said jack operating mechanism, and both of those paired dual jacks making up said set of same being mounted in common by and spaced apart along said arbor structure which has opposite shaft ends configurated for mating with said spaced apart rotatable shaft members of said supporting structure, so that said tire holder assembly and said arbor structure may be conveniently and quickly replaced in the apparatus.

5,299,749

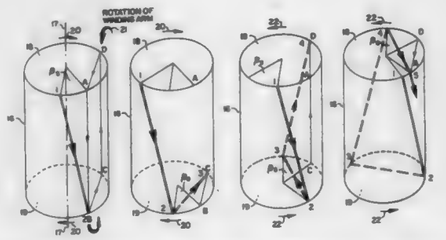
METHOD OF WINDING HOLLOW FIBER MEMBRANES

Robert M. Thorogood, Macungie; Robin J. Maliszewskyj, Hatfield, both of Pa.; Myron J. Coplan, Natick, Mass., and Pushpinder S. Puri, Chesterfield, Mo., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 24, 1992, Ser. No. 856,602

Int. Cl.[5] **B65H** *81/08*

U.S. Cl. 242—7.02 **8 Claims**



1. A method of forming a hollow filament membrane bundle from continuous strands of filament by laying down lengths thereof onto an axially extensive rotatable support member along paths determined by moving a feed-on point so that filament lengths follow helical paths and build enwrapping

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layers in which all lengths share a common helix direction, including:

(a) rotating said support member in a given direction while repetitively and alternatingly moving the feed-on point axially from end to end of the bundle;

(b) reversing the direction of rotation of said support member whenever the axial direction of the feed-on point is reversed until a first number of lengths have been laid down, said first number selected to create a first layer of filament lengths enwrapping the bundle;

(c) after laying down said first selected number of lengths, the direction of rotation is not reversed one time when there is a reversal of the direction of the axial movement of the feed-on point, so that the next length of filament is laid down in a helix direction opposite to that of the lengths of filament forming said first layer;

(d) thereafter continuing to alternate the axial movement of the feed-on point and direction of rotation of the support member until a second number of lengths have been laid down in said opposite helix direction, the said number of lengths selected to create a second layer of filament lengths enwrapping the bundle; and

(e) repeating steps (c) and (d) to effect accumulation of successive layers of filament lengths all lying in a common helix direction but in the opposite direction from filament lengths in adjacent layers until a desired bundle diameter is reached.

5,299,750

DOFFING METHOD AND PAPER TUBE SUPPLY SYSTEM FOR AN AUTOMATIC WINDER

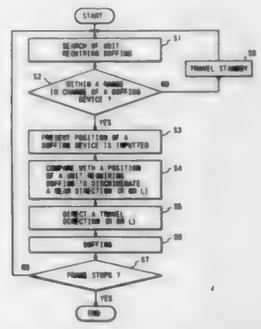
Osamu Nakagawa, Kyoto; Tomonari Ikemoto, and Hideyuki Oe, both of Uji, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 889,183, May 27, 1992. This application Feb. 11, 1993, Ser. No. 16,298

Claims priority, application Japan, May 28, 1991, 3-123809; Jul. 1, 1991, 3-188164; Jul. 1, 1991, 3-188165

Int. Cl.[5] B65H *67/04*

U.S. Cl. 242—35.5 A **2 Claims**



1. In a spinning machine comprising a plurality of units arranged in a row and a doffing device capable of reciprocally travelling along the row of units, a method of controlling the doffing device to move to a unit requiring doffing, comprising:

providing the doffing device with means for identifying the position of the doffing device along the row of units,

identifying the position of a unit requiring doffing,

inputting to a central control device information identifying the position of the unit requiring doffing,

identifying the position of the doffing device along the row of units,

inputting to the central control device information identifying the position of the doffing device along the row of units,

comparing the information identifying the position of the unit requiring doffing and the information identifying the position of the doffing device along the row of units, and

providing the doffing device with instructions for moving the doffing device to the unit requiring doffing based upon the comparison of the information identifying the position of the unit requiring doffing and the information identifying the position of the doffing device along the row of units.

5,299,751

CLAMPING MANDREL-ENGAGEMENT SENSOR COMBINATION, PARTICULARLY FOR CLAMPING PRINTING SUBSTRATE WEB ROLLS IN A ROLL CHANGER

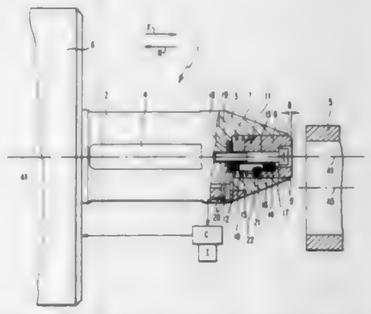
Gerhard Pichlmair, Neusiss, and Josef Hammer, Augsburg, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,977

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137484

Int. Cl.[5] B65H *18/04, 63/00*

U.S. Cl. 242—57 **8 Claims**



1. Clamping mandrel-engagement sensor combination for clamping a roll of web material, particularly a printing substrate web roll, and especially newsprint, rolled on a carrier sleeve or tube (5) having

an axially slidable mandrel body (1, 2), having a conically tapering tip portion (3);

clamping means (4) on the mandrel body, fitting into the carrier sleeve or tube (5) and being radially expandible for engagement with the carrier sleeve; and

control means (C, 6) controlling axial advance or forward movement (F) and axial retraction or reverse movement (R) of the mandrel body with respect to the sleeve or tube (5),

comprising, in accordance with the invention,

a sensing head (8, 10, 11, 14) located at said tip portion (3) of the mandrel (1, 2) and sensing the relative radial position of the mandrel with respect to the carrier sleeve or tube to determine if the axial alignment of the mandrel and of the carrier sleeve or tube permits insertion of the mandrel into the carrier sleeve or tube without damage thereto,

said sensing head including

an electrical switch (15, 16, 18, 19) integrated therewith, and a change-of-state of the switch between an open and closed state upon sensing an obstruction at said tip portion due to axial misalignment of said mandrel body (1, 2) and said sleeve or tube (5), said switch being coupled to said control means; and

the control means being responsive to sensing said change-of-state and controlling axial movement of the mandrel body for reverse or retracting movement (R) of the mandrel and providing an output signal (I) representative of misalignment between the mandrel and the sleeve or tube.

5,299,752

CASSETTE DELIVERY SYSTEM

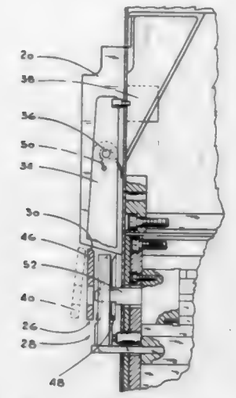
Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A. Inc., Orlando, Fla.

Division of Ser. No. 543,227, Jun. 25, 1990, Pat. No. 5,152,473. This application Jul. 20, 1992, Ser. No. 916,413

Claims priority, application Italy, Jun. 28, 1989, 21022 A/89

Int. Cl.[5] B65H *18/10, 19/30*

U.S. Cl. 242—67.1 R **3 Claims**



1. A cassette delivery system comprising:

cassette storage means;

cassette receiving means for receiving cassettes from said storage means;

cassette support means for supporting cassettes received form said receiving means, in a staging position, wherein said supported cassettes are tilted away, at an angle, from a vertical position; and

movable pocket means, integral with said support means, for transporting cassettes from said staging position to a loading station, wherein said pocket means is movable between a first, cassette receiving position and a second, cassette loading position, in an arc in a substantially vertical plane such that said pocket means moves to an angle substantially equal to the angle of cassettes in said staging position to allow cassettes to enter said pocket means from said staging position.

5,299,753

CLOTH TAKEUP AND METHOD

William J. Alexander, III, Mauldin, S.C., assignor to Alexander Machinery, Inc., Mauldin, S.C.

Filed Sep. 28, 1992, Ser. No. 952,309

Int. Cl.[5] B65H *18/10, 23/14*

U.S. Cl. 242—75.2 **10 Claims**

2. A tension control for a cloth takeup having a center wound core roll receiving cloth from a loom building a cloth roll thereon comprising:

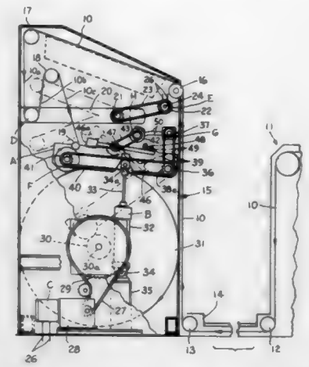
pivotally mounted hold down arms carrying a friction roll engaging said cloth as it is wound on said center wound core roll;

power operated means exerting a force against said hold down arm urging said friction roll into a position adjacent the cloth roll in engagement with said cloth as it is being wound;

a first motor driving said center wound core roll;

a second motor driving said friction roll applying tension to said cloth as it is wound on said cloth roll; and

a control means operable in response to pivotal movement of said hold down arms during building of the cloth roll



varying the tension applied by said friction roll to said cloth.

5,299,754

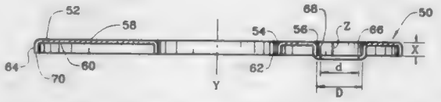
FERROMAGNETIC INSERT FOR USE WITH A MAGNETIC TAPE CARTRIDGE AND METHOD OF MANUFACTURING THE SAME

Robert Lackowski, Mt. Prospect, Ill., assignor to Overland Bolling Company, Franklin Park, Ill.

Filed Mar. 25, 1992, Ser. No. 857,505

Int. Cl.[5] B65H *75/18*

U.S. Cl. 242—197 **23 Claims**



6. An insert that is to be attached to a hub of a spool positioned in a magnetic tape cartridge for permitting the spool to be attracted to a magnetic element of a computer drive mechanism, comprising:

a circular disk having oppositely positioned first and second planar surfaces, said disk being provided with a centrally positioned through hole and a plurality of securing through holes positioned radially outwardly of said centrally positioned through hole for permitting said ferromagnetic disk to be secured to the hub of the spool, said disk having an outer periphery and an annular flange extending around said outer periphery, said annular flange extending away from said first planar surface, aid disk being made of a ferromagnetic material having a maximum thickness that is less than 1.35 mm.

5,299,755

LID LOCKING MECHANISM FOR A TAPE CASSETTE

Hiroshi Fujii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,784

Claims priority, application Japan, May 27, 1991, 3-149236

Int. Cl.[5] G11B *23/02*

U.S. Cl. 242—199 **2 Claims**

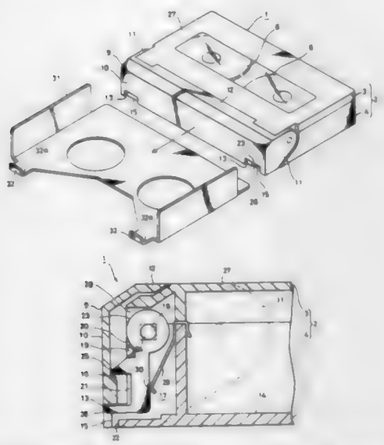
1. A lid locking mechanism for a tape cassette wherein tape reels for winding a tape-shaped recording medium are rotatably accommodated n a box-shaped cassette casing formed by combining upper and lower cassette halves, the recording medium extending outward along a front wall of the cassette casing between tape outlets formed at both end portions of the

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front wall of the cassette casing, and a lid for opening and closing a front surface of the recording medium which extends along the front wall of the cassette casing, the lid being rotatably supported at a front portion of the cassette casing so as to be rotatable upward and downward, said mechanism comprising:

an engagement formed on an inner surface of the id for releasably locking the lid in a closed position;

a lid locking member having a projection and rotatably supported at its upper end between the cassette halves, the lid locking member having a resilient bias force exerted thereon in a manner that its lower end turns forwardly so that the projection is adjacent to the engagement formed on the inner surface of the lid to lock the lid;



a stopper formed on one of the cassette halves, the stopper being adjacent to an upper surface of the projection when the lid is closed and the projection is adjacent to the engagement;

a forwardly projecting portion formed at a bottom portion of the lid locking member such that is projects from an abutment formed at a front end of the cassette casing when the lid is closed; and

a recess formed at a portion of the abutment in the vicinity of the forwardly projecting portion, wherein when the tape cassette is loaded in a recording and/or reproducing apparatus having a cassette holder stopper, the cassette holder stopper abuts against the abutment and presses the forwardly projecting portion to turn the lid locking member rearwardly against the resilient bias force to thereby allow said lid to open.

5,299,756

FOIL WRAPPED FLEXIBLE WEB GUIDE

Paul Y. Hu, and James L. Overacker, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

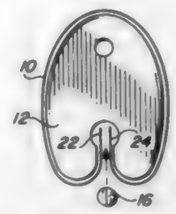
Filed Oct. 26, 1992, Ser. No. 966,632
Int. Cl.[5] G11B *23/04;* **B65H** *27/00*
U.S. Cl. 242—199 **21 Claims**

1. A flexible web guide comprising:

a substrate having an endless surface of arcuate contour with a groove therein, the groove having a first width at a first depth into the substrate and a second width at a second depth into the substrate, the first width less than the second width, the first depth less than the second depth;

a metal foil having first and second ends, the foil wrapped about the surface and conforming to the contour of the substrate, the first and second ends extending further into the groove than the first depth; and

a pin extending further into the groove than the first depth and having a thickness greater than the first width and less



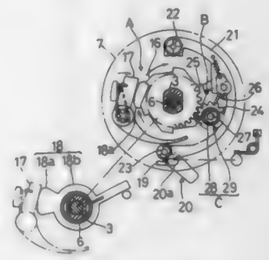
than the second width, the pin retaining the first and second ends in the groove.

5,299,757

STOPPER APPARATUS FOR A SPINNING REEL

Kenichi Sugawara, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed May 11, 1992, Ser. No. 881,500
Claims priority, application Japan, May 16, 1991, 3-34442[U]
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—248 **8 Claims**



1. A stopper apparatus for a spinning reel comprising:

a stopper mechanism for preventing a rotary frame from rotating in a line unwinding direction, and allowing said rotary frame to rotate in a line winding direction;

a switching mechanism for switching said stopper mechanism between an operative position to prevent said rotary frame from rotating in said line unwinding direction and allow said rotary frame to rotate in said line winding direction, and an inoperative position to allow said rotary frame to rotate in said line unwinding direction as well as said line winding direction; and

a resistor for acting on an engaging rotary member disposed in a transmission line for driving said rotary frame to resist backward rotation of said engaging rotary member;

wherein said resistor is switchable between an operative state to act on said engageable rotary member, and an inoperative state away from said engageable rotary member; and

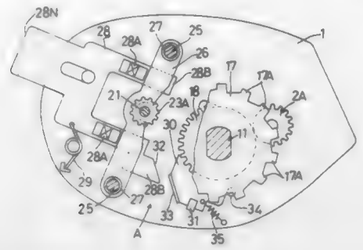
said switching mechanism is operatively connected to said resistor such that, when said switching mechanism is operated to switch said stopper mechanism to said operative position, said resistor is switched to said operative state, and when said switching mechanism is operated to switch said stopper mechanism to said inoperative position, said resistor is switched to said inoperative state.

5,299,758

BAITCASTING REEL HAVING A CLUTCH CONTROL MECHANISM

Jun Sato, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Sep. 8, 1992, Ser. No. 941,943
Claims priority, application Japan, Sep. 17, 1991, 3-235827
Int. Cl.[5] A01K *89/02*
U.S. Cl. 242—261 **10 Claims**



1. A baitcasting reel comprising:

a reel body;

a clutch mechanism mounted in a transmission line between a handle and a spool;

a rotary member mounted in a transmission line interlocked to said handle, said rotary member including projections;

support means movable radially and circumferentially of said rotary member;

a return piece provided on said support means and capable of effecting an engaging/disengaging operation by moving radially of said rotary member and a transporting operation by moving circumferentially of said rotary member;

a clutch control mechanism supported by said reel body, said control mechanism having an inclined surface;

switching means including said inclined surface and a guide member formed on said reel body for guiding said support means; and

restoring means interposed between said reel body and said support means;

said baitcasting reel being arranged such that when said control mechanism is moved to a clutch disengaging position, said inclined surface and said support means are placed in contact with each other and said return piece is caused to move radially of said rotary member to enter a locus of revolution of said projections to reach an interference condition, and then when said handle is turned in a line winding direction, said projections pres against said return piece such that said return piece actuates said control mechanism to engage said clutch mechanism, and then said return piece is moved radially out of said locus of revolution of said projections.

5,299,759

HELICOPTER TURN COORDINATION AND HEADING HOLD MODE CONTROL

Porter D. Sherman, Fairfield, Conn.; David H. Hetzler, Media, Pa.; Paul Weisser, Jr., South Windsor, and Stuart C. Wright, Woodbridge, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 1, 1992, Ser. No. 891,624
Int. Cl.[5] B64C *11/34;* **G05D** *1/04*
U.S. Cl. 244—17.13 **13 Claims**

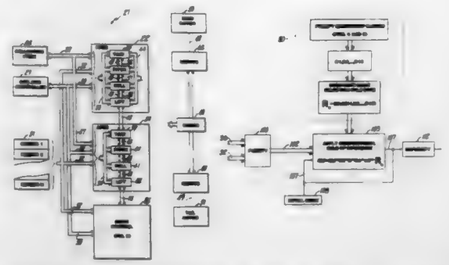
1. Apparatus for controlling an aircraft flight control system between a turn coordination mode and a heading hold mode, wherein the flight control system provides control surface command signal to the aircraft control surfaces to control the yaw, pitch, roll and lift axes of the aircraft in flight, the apparatus comprising:

control means operable by a pilot to provide axis command signals for controlling a given axis of the aircraft;

sensing means for sensing a plurality of aircraft operating parameters and for providing operating parameter signals indicative thereof;

fuzzification means responsive to some of said axis command signals and some of said operating parameter signals for providing fuzzy input signals indicative thereof;

composite mode selection rule base means for providing a composite mode selection signal for each possible combination of said fuzzy input signals;



processing means responsive to said composite mode selection rule base means and said fuzzy input signals for providing a new mode fuzzy output signal;

defuzzification means responsive to said new mode fuzzy output signal for providing a crisp output signal indicative thereof; and

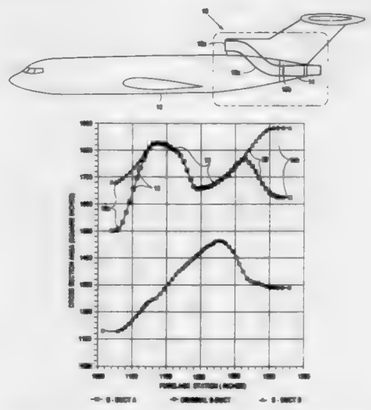
mode selection means responsive to said crisp output signal for selecting either the turn coordination mode or the heading hold mode and for placing the flight control system in said selected mode.

5,299,760

S-DUCT FOR A TURBO-JET AIRCRAFT ENGINE

Thomas E. Finch, Spring Branch; Enrico Cavatorta, San Antonio, and William Paschal, Schertz, all of Tex., assignors to The Dee Howard Company, San Antonio, Tex.

Filed Jul. 7, 1992, Ser. No. 909,771
Int. Cl.[5] B64D *33/02*
U.S. Cl. 244—53 B **8 Claims**



1. A replacement duct to direct air to a turbo jet type aircraft engine disposed within the aft body portion of an existing aircraft fuselage at a position rearwardly of a rear pressure bulkhead and below and behind a vertical tail fin spar having an aperture therethrough for receiving the original S-duct of the drawings comprising;

a forward duct portion having an air entering circular open

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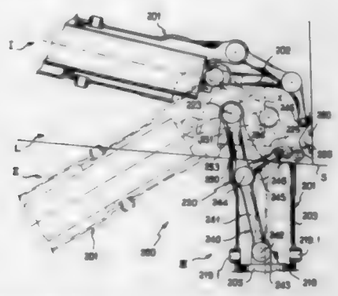
inlet end disposed forwardly of said vertical tail fin spar and disposed above said aft body portion and said rear pressure bulkhead of the aircraft fuselage;
a rear duct portion having a circular end sealingly connectable to the air input end of said turbo jet aircraft engine;
an S-shaped intermediate duct portion interconnecting said forward duct portion and said rear duct portion and passing above said rear pressure bulkhead and traversing said aperture in said tail vertical fin spar; said intermediate duct portion having an elliptical cross-section of varying area through out its length;
said forward end portion having a cross-section transitioning from a circular cross-section of substantially greater area than that of the original S-duct of the drawings, to the elliptical cross-section of said intermediate duct portion;
said rear duct portion having a cross-section transitioning from the elliptical cross-section of said intermediate duct portion to a circular cross-section of substantially greater area than the original S-duct, thereby permitting installation of a turbo jet engine with a substantially larger air intake diameter;
said intermediate S-shaped duct portion having a medial elliptical portion traversing and constricted by said aperture of said tail vertical fin spar, the remaining portions of said intermediate duct portion having elliptical cross-sections of substantially greater area than the medial elliptical portion and the original S-duct of the drawings;
the radius of curvature of the forward curved portion of said S-shaped intermediate duct portion being greater than the corresponding radius of the original S-duct of the drawings; and
the axis of said circular open end of said forward duct portion being vertically displaced upwardly relative to the axis of the turbo jet engine, whereby a greater volume of air per unit of time is supplied to the turbo jet engine without creating low total pressure regions in the air stream at the engine inlet fan than was possible with the original S-duct of the drawings.

5,299,761

RAISABLE LANDING GEAR HAVING A SHORTENABLE LEG

Daniel Robin, Montrouge; Alain Poiret, Paris, and Pierre Woerner, Fontenay Aux Roses, all of France, assignors to Messier-Bugatti, Velizy Villacoublay, France

Filed Feb. 25, 1993, Ser. No. 22,272
Claims priority, application France, Mar. 11, 1992, 92 02921
Int. Cl.[5] B64C *25/10*
U.S. Cl. 244—102 SS 8 Claims



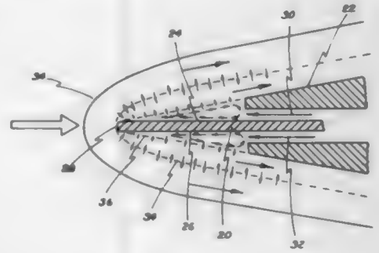
1. Raisable landing gear having a shortenable leg, including a leg hinged to the structure of an airplane, the leg being constituted by a strut housing a shock absorber mainly constituted by a sliding rod and by a shock absorber plunger rod, together with a linkage connecting said plunger rod to the strut and under the control of a resilient connecting rod having a threshold and fixed to the structure of the airplane, in such a manner as to pull the block absorber while the leg is being raised and to push said shock absorber while said leg is being lowered, wherein the linkage includes two arms forming an alignment, with a first arm hinged on the plunger rod of the shock absorber and having a lateral appendix whose free end is capable of co-operating with a stationary cam integral with the structure of the airplane, and a second arm hinged to the strut, together with a lever constrained to rotate with said second arm and connected to the threshold connecting rod, said lateral appendix and said stationary cam being organized to act in an emergency to ensure that the shock absorber is extended and that said shock absorber is locked in the undercarriage-down position.

5,299,762

INJECTION-COOLED HYPERSONIC LEADING EDGE CONSTRUCTION AND METHOD

Robert L. Kosson, Massapequa, and Herbert J. Schneider, Plainview, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 15, 1991, Ser. No. 776,660
Int. Cl.[5] B64C *1/00*
U.S. Cl. 244—117 A 6 Claims



1. A leading edge construction for reducing drag on an air foil, the construction comprising:
a relatively thin solid plate extending forwardly from the air foil; the plate having an exposed top surface and an exposed bottom surface wherein said plate is at least partially detached from said airfoil, and said plate having a relatively sharply radiused forward edge forming the leading edge of the air foil; and means for injecting coolant over the top and bottom surfaces of the plate, toward the leading edge, with the coolant being entrained over said surfaces to provide active cooling of the plate for removing stagnant heat load.

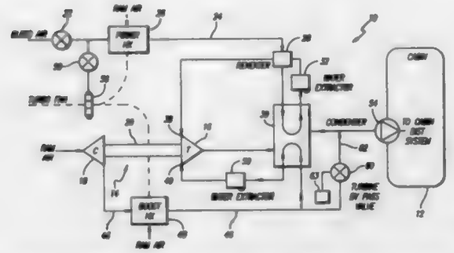
5,299,763

AIRCRAFT CABIN AIR CONDITIONING SYSTEM WITH IMPROVED FRESH AIR SUPPLY

Frank A. Bescoby, Rancho Palos Verdes, and Roy T. Araki, Redondo Beach, both of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 23, 1991, Ser. No. 813,312
Int. Cl.[5] B64D *13/08*
U.S. Cl. 244—118.5 14 Claims

1. In an aircraft having a cabin and a pressurized bleed air flow, a cabin air conditioning system, comprising:
a turbine having a rotatable turbine wheel mounted within a turbine housing with a full circle turbine scroll for admission of airflow into driving relation with said turbine wheel defining a pair of housing inlets which are generally diametrically opposed to each other, and further including a turbine scroll valve mounted within said turbine scroll at a position generally opposite said one inlet and upstream from said other inlet, said turbine scroll valve being closed during said first mode whereby the bleed and supplemental air flows each flow into and fill a generally semi-annular half of the turbine scroll, said turbine scroll valve being open during said second mode whereby the bleed air flow fills substantially the entire full circle turbine scroll;
a compressor mounted for rotation with said turbine to draw in and compress a supplemental air flow;
means for supplying the bleed air flow to one of said turbine housing inlets for rotatably driving said turbine wheel and said compressor;
means for supplying the bleed air flow to one of said turbine housing inlets for rotatably driving said turbine wheel and said compressor;
means for supplying the supplemental air flow to the other of said turbine housing inlets to supplementally drive said turbine wheel during a first mode of operation, and for mixing the supplemental airflow with the bleed air flow at



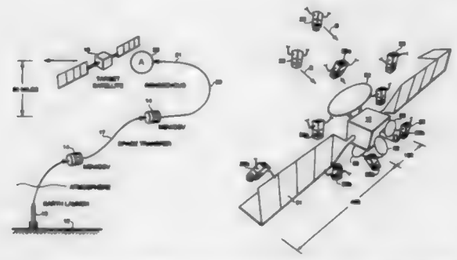
a downstream side of said turbine during a second mode of operation wherein said supplemental air flow supply means comprises a flow conduit for normally supplying the supplemental air flow from said compressor to said other turbine housing inlet, a bypass conduit connected between said flow conduit and the discharge side of said turbine, and a bypass valve for preventing passage of the supplemental air flow through said bypass conduit during said first mode, and for permitting supplemental air flow passage through said bypass conduit during said second mode; and
means for supplying the bleed and supplemental air flow from the downstream side of said turbine to the aircraft cabin.

5,299,764

IN-SPACE SERVICING OF SPACECRAFT EMPLOYING ARTIFICIAL LIFE ROBOTICS

David R. Scott, 1300-B Manhattan Ave., Manhattan Beach, Calif. 90266

Continuation of Ser. No. 981,417, Oct. 23, 1991, abandoned.
This application Jun. 18, 1993, Ser. No. 79,707
Int. Cl.[5] B64G *1/10*
U.S. Cl. 244—159 1 Claim



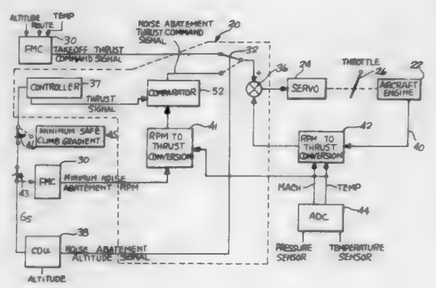
1. A system for in-space service of a spacecraft, said system comprising:
(A) an earth launch vehicle (ELV);
(B) an exoatmospheric mothership vehicle (MSV), adapted to (1) be carried into a first space trajectory by said ELV, (2) separate from said ELV, (3) transit to a second space trajectory higher than low earth orbit (LEO), and (4) station keep with said spacecraft;
(C) a plurality of Operational Service Vehicles (OSV), adapted to (1) be carried into said second higher space trajectory by said MSV, (2) separate from said MSV at said station keeping distance and (3) operatively approach said spacecraft,
each said OSV including
(a) propulsion means, and
(b) spacecraft servicing means, and
(c) behavior control artificial life computer means for autonomously controlling said propulsion means and said servicing means.

5,299,765

APPARATUS AND METHODS FOR CONTROLLING AIRCRAFT THRUST DURING A CLIMB

Frederick C. Blechen, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 23, 1991, Ser. No. 811,724
Int. Cl.[5] G05D *1/08*
U.S. Cl. 244—182 9 Claims



1. Method for adjusting aircraft engine thrust, the method comprising the steps of:
a. selecting a climb gradient for climbing the aircraft;
b. flying the aircraft at a first climb attitude during a first climb segment;
c. reducing a climb attitude of the aircraft at an end of the first climb segment from the first climb attitude;
d. flying the aircraft at a selected airspeed during a second climb segment;
e. measuring a climb gradient of the aircraft;
f. determining a reference thrust level by (1) determining a first value which is a function of the selected climb gradient. (2) determining a second value which is independent of aircraft airspeed changes by determining an acceleration value of the aircraft and combining the acceleration value and the measured climb gradient, (3) determining a difference between the first value and the second value to generate and error value, and (4) converting the error value to a reference thrust level;
g. sensing an actual thrust level of the engine; and
h. adjusting the actual thrust level of the engine so that the actual thrust level approaches the reference thrust level during the climb attitude reduction so that the aircraft climbs at the selected climb gradient during the second climb segment.

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5,299,766

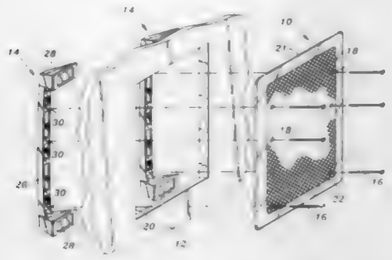
RETROFIT BRACKET FOR WALL MOUNT SPEAKERS

Jerry Curtis, Laguna Niquel; William J. Kindel, San Clementa; Geoffrey L. Spencer, Laguna Niguel; Scott Struthers, San Clemeate; F. Hendrik Huebscher; Walter Maizahn, both of Mission Viejo, and Ronald Maurer, El Cajon, all of Calif., assignors to Dana Innovations, San Clemente, Calif.

Continuation of Ser. No. 54,082, Apr. 26, 1993. This application Nov. 5, 1993, Ser. No. 148,653

Int. Cl.[5] G12B *9/00*

U.S. Cl. 248—27.1 7 Claims



1. A retrofit bracket for wall mount speakers comprising:
(a) a support surface configured for mounting at least one speaker thereto;
(b) a least one elongate bar attached to said support surface and abutting a wall covering such that the wall covering is clampably capturable intermediate said support surface and said bar; and
(c) adjustment means for varying the distance between said support surface and said bar;
(d) wherein said adjustment means facilitates the accommodation of various wall covering thicknesses.

5,299,767

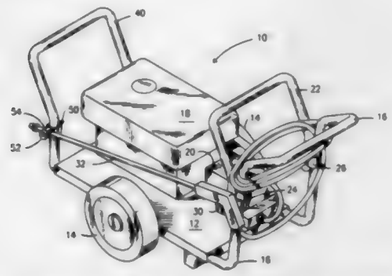
PRESSURE WASHER FRAME HAVING GUNVALVE AND HOSE RACK

John A. Simpson, deceased, late of Clearwater, Fla. by Betty L. Simpson, Executrix , assignor to Simpson Cleaning Systems, Inc., Clearwater, Fla.

Filed Dec. 14, 1992, Ser. No. 990,150

Int. Cl.[5] A47K *1/04*

U.S. Cl. 248—129 9 Claims



1. An improvement in pressure washer frames, comprising:
a frame for supporting an engine and a pump;
a handle secured to a proximal end of said frame;
a stop member;
a first and a second bracket member for securing said stop member to said handle;
each of said bracket members including a first part and a second part;
said first and second parts adapted to simultaneously engage said handle and said stop member;
interconnecting means for joining together said first and second parts in sandwiching relation to said handle and stop members;
a first cradle secured to a preselected part of a preselected bracket of said first and second brackets;
a guard secured to a distal end of said frame;
a third bracket secured to said guard;
said third bracket including a first part and a second part; and
a second cradle secured to said third bracket;
whereby an elongate hose coiled about said handle is held against slippage by said stop member; and
whereby opposite ends of a gunvalve are supported by said first and second cradles.

5,299,768

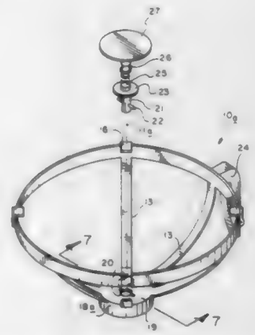
MIXING BOWL SUPPORT APPARATUS

Dallas W. Berry, 706 15th Ave. S., North Myrtle Beach, S.C. 29582

Filed Jun. 19, 1992, Ser. No. 900,672

Int. Cl.[5] A47J *47/16*

U.S. Cl. 248—145.6 3 Claims



1. A mixing bowl support apparatus, comprising,
a cylindrical band, the cylindrical band defined about a band axis,
and
a positioning cup positioned below the cylindrical band orthogonally oriented relative to the band axis,
and
a plurality of support bands extending from the positioning cup to the cylindrical band, with each of the support bands having a top surface, and each top surface of a concave configuration, and
the cylindrical band includes a plurality of pairs of pivot flanges, each pair of pivot flanges includes a first flange and a second flange arranged in a parallel relationship relative to one another, with the pairs of pivot flanges spaced equally about the cylindrical band fixedly mounted thereto, and an L-shaped lock flange pivotally mounted within each pair of pivot flanges, each L-shaped lock flange including a hinge tube mounted at a lower distal end of the lock flange, and a flange pivot axle directed through the hinge tube and into each pair of pivot flanges, and
the positioning cup includes a cylindrical side wall and a top wall, with the cylindrical side wall directed below the top wall, and the top wall including a top wall slot, the top wall slot including a central bore coaxially oriented relative to the band axis, and a plurality of bore leg openings communicating with the central bore diametrically aligned on opposed sides of the central bore and a support rod, the support rod slidably received through the central bore, and the support rod including support rod legs fixedly and orthogonally mounted to the support rod adjacent a lower distal end of the support rod, the legs received through the bore leg openings, and a flange plate fixedly mounted to an upper distal end of the support rod, the flange plate including a cylindrical boss member mounted medially of the flange plate coaxially aligned with the band axis, and a spring member having a spring member lower distal end secured tot he spring boss and a spring upper distal end, and a base plate, with the spring upper distal end secured to the base plate and the base plate orthogonally oriented to the band axis, the band axis medially intersecting the base plate to secure a bowl member between the base plate and the lock flanges.

5,299,769

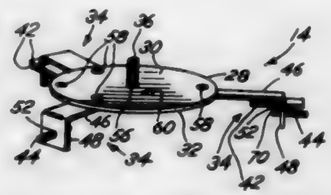
ADJUSTABLE MOUNTING ASSEMBLY

Thomas K. Reusche, Wayne; Donald W. Reusche, St. Charles, and Donald B. Owen, Villa Park, all of Ill., assignors to Allied Precision Industries, Inc., Geneva, Ill.

Filed Jan. 21, 1992, Ser. No. 823,125

Int. Cl.[5] F16M *11/00*

U.S. Cl. 248—219.2 7 Claims



1. An adjustable mounting assembly to be used in mounting an object to a selected base, the adjustable mounting assembly comprising a plate having apertures on a uniform radius from a substantially center point of the plate, means for affixing an object to be mounted to the plate at the substantially center point of the plate, at least two adjustable bracket members, each adjustable bracket member having a slot centrally located along a longitudinal axis of the adjustable bracket member and extending for a distance that is at least substantially equal in length to the uniform aperture radius, means for adjustably securing each adjustable bracket members to the plate, and means for affixing at least one of the adjustable bracket members to a base.

5,299,770

SAFETY SHIELD USABLE AT MULTIPLE WORK STATIONS

Philip W. Sayles, 172 Sycamore St., Watertown, Mass. 02172

Filed Mar. 29, 1993, Ser. No. 38,822

Int. Cl.[5] A47F *5/00*

U.S. Cl. 248—281.1 3 Claims

1. An improved face-protective safety shield for utilization by a worker at a work station, said safety shield of the type supported by an upper arm having first and second ends and a lower arm having first and second ends, said first end of said upper arm attached to the second end of said lower arm and said first end of said lower arm attached to a base, said second end of said upper arm attached to an arm support bracket, said arms having a linear direction, comprising:
a transparent panel having an upper portion;
affixation means to affix said arm support bracket to said transparent panel including tilting means to tilt said transparent panel up and down and rotation means to angularly rotate said transparent panel to be positioned at an angle to the linear direction of said arms and in a parallel plane to the face of said worker for said safety shield to be utilized at multiple work stations including work stations that are not disposed directly in front of the base of said safety shield, said rotation means to angularly rotate said transparent panel including:
a receipt member having a circular aperture defined therein, said receipt member retained by said arm support bracket;
an L-shaped brace having first and second legs being cylindrical in shape, said first leg inserted into the circular aperture of said receipt member and rotatably retained



therein and said second leg of said L-shaped brace engaged to said upper portion of said transparent panel and held thereto; and
wherein said receipt member further includes tightening means to adjustably and rotatably retain said first leg of said L-shaped brace in said receipt member aperture.

5,299,771

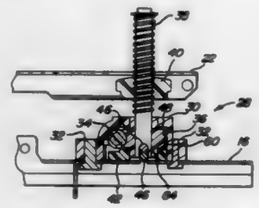
VERTICAL SEAT POSITION ADJUSTER

Mark D. White, Bracebridge; Bartholomew J. Boelryk, Waubaushene, and Roger Freund, Bracebridge, all of Canada, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 755,278, Sep. 5, 1991, Pat. No. 5,222,710. This application Jun. 28, 1993, Ser. No. 83,410

Int. Cl.[5] F16M *11/00*

U.S. Cl. 248—422 1 Claim



1. A low vertical profile vertical seat height adjustment mechanism to be used to provide selectable vertical height adjustment of a vehicle seat with respect to a base, comprising;
a housing defining a cavity;
a horizontally oriented worm gear disposed in said cavity;
a vertically oriented helical gear disposed in said cavity and maintained meshingly engaged to said worm gear;
a vertically extending member having a circumferentially extending thread defined thereon drivingly connected to said helical gear;
said member threadingly engaging cooperating threads defined in a bore defined in a nut affixed to said seat facilitating a translatable relationship between said member and said nut upon rotation of said helical gear; and
said vehicle seat including a seat attachment bracket including a channel member having a central opening and said nut is disposed in said central opening and defines a slid-

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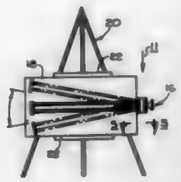
ably interfitting relationship therewith which restrains rotation of said nut about said bore.

5,299,772

MULTIFUNCTIONAL TOOLS FOR ARTISTS

Michael S. Weber, 510 W. Belmont, Chicago, Ill. 60657

Filed Nov. 23, 1992, Ser. No. 979,882
Int. Cl.[5] A47B *19/00*
U.S. Cl. 248—441.1 19 Claims



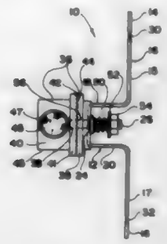
1. An artist's hand bridge for use with an art surface in a supporting structure,
the hand bridge being oriented according to a longitudinal axis therethrough, comprising,
bridging means having an inner end and an outer end, and
inner and outer end mounting elements respectively on the inner and outer ends of the bridging means and being greater in transverse dimension than the bridging means, whereby the hand bridge can be placed over a horizontal art surface with the mounting elements engaging the supporting structure, and the mounting elements spacing the bridging means from the art surface to enable the user to place his hand on the hand bridge and it is thereby held off the art surface.

5,299,773

MOUNTING ASSEMBLY FOR A POLE

Ruston Bertrand, P.O. Box 133, Baldwin, La. 70514-0133

Filed Jul. 16, 1992, Ser. No. 913,801
Int. Cl.[5] B63B *45/04*
U.S. Cl. 248—514 8 Claims



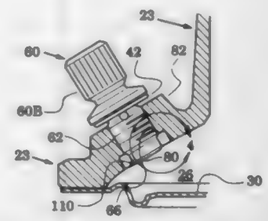
1. A mounting assembly for a pole, comprising:
a mounting bracket means comprising means for attaching the bracket means to a stable body;
a means for positioning the pole in any of a plurality of selected positions in relation to the stable body, while allowing rotation of the pole in relation to the bracket means, said positioning means comprising a ratchet mechanism comprising a first member securely attached to the bracket means and a second member frictionally engageable with the first member, said second member being adapted for rotational movement about a central axis thereof, said second member carrying one end of the pole in a fixed engagement therewith; and
means for preventing disengagement of the second member from the first member, while allowing a limited lateral movement of the second member in relation to the first member, wherein said means for preventing disengagement comprise an elongated stud extending through central openings of said first member, said second member and said bracket means, one end of said stud being fixedly attached to said second member, and an opposite end of the stud carrying a nut.

5,299,774

DIAPHRAGM CONTROLLED IRRIGATION VALVE WITH CAPTIVATED BLEED SCREW

Creel M. Arneson, Duarte, and David Flores, Rowland Heights, both of Calif., assignors to Champion Brass Manufacturing dba Champion Irrigation Products, Los Angeles, Calif.

Filed Jan. 27, 1993, Ser. No. 9,683
Int. Cl.[5] F16K *31/145, 31/165, 31/40*
U.S. Cl. 251—26 5 Claims



1. An irrigation valve assembly comprising:
a housing defining a fluid inlet and a fluid outlet and having an exterior wall enclosing an internal chamber;
means for pressurizing said chamber;
a diaphragm mounted in said housing configured to assume a first orientation when said chamber is pressurized and a second orientation when said chamber is vented;
valve means responsive to said diaphragm assuming said first and second orientations for respectively closing and opening a path from said fluid inlet to said fluid outlet;
a cylindrical opening extending through said housing exterior wall to said chamber; and
a manually operable pressure relief member mounted in said opening for movement between a first position sealing said chamber and a second position venting said chamber,
said pressure relief member comprising a bleed screw mounted in said opening for reciprocal axial movement between said first and second positions, said bleed screw having axially displaced inner and outer ends;
an enlarged manually rotatable head extending from said bleed screw outer end disposed exteriorly of said housing wall, said head defining a radially oriented sealing surface located to abut said housing wall when said bleed screw is in said first position;
an internal passage formed in said bleed screw including an axial bore having an entrance opening at said inner end and a radial bore having an exit opening located between said inner end and said sealing surface, said exit opening being located exteriorly of said housing wall when said bleed screw is in said second position; and
a stop member on said bleed screw proximate to said inner end extending radially outward for engaging said housing wall in said chamber to prevent removal of said bleed screw from said opening.

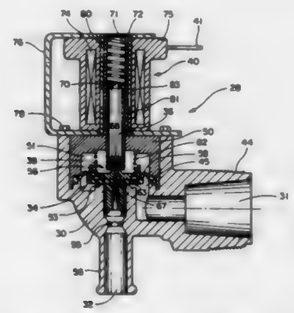
5,299,775

FLOW MODULATING CONTROL VALVE ASSEMBLY

Lawrence A. Kolze, Seneca, S.C., assignor to Kolze, Inc., Seneca, S.C.

Filed Oct. 15, 1991, Ser. No. 775,493
Int. Cl.[5] F16K *31/385*
U.S. Cl. 251—30.03 6 Claims

1. A fluid flow modulating control valve assembly, comprising: a valve body having an inlet and an outlet and a valve seat between the inlet and the outlet, a control valve in the valve body engageable with the valve seat and defining an intermediate chamber in the valve body, a bleed passage in the control valve communicating the inlet with the intermediate chamber to provide a valve closing force, a pilot passage in the control valve communicating the intermediate chamber and the outlet, a pair of spaced stationary pole pieces, an armature slidably mounted in the pole pieces adjacent the control valve having an end seal for controlling the pilot passage, spring means biasing the armature toward the pilot passage, said armature end seal and the pilot passage providing both an on-off function of the control valve and a flow modulation function thereof, said armature being mechanically uncoupled to the control valve, said armature being also biased toward the pilot passage by a fluid pressure force in the intermediate chamber,



an electromagnetic device for positioning the armature away from the control valve against the biasing force of the spring means, and modulation means providing infinite flow modulation for the control valve assembly without the use of a valve secondary to the armature seal and pilot passage including means for modulating the armature seal very close to the pilot passage throughout the range of movement of the armature by selecting a spring constant for the spring means sufficiently high so the slope of the force vs. displacement curve for the combined fluid pressure forces and spring means force is substantially different from the voltage-displacement curve for the electromagnetic device acting on the armature so the opening force curves and the total closing force curve intersect throughout the range of movement of the armature, said electromagnetic device and armature being constructed to produce negatively sloped force vs. displacement curves for the opening forces acting on the armature.

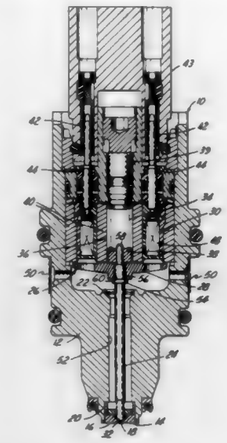
5,299,776

IMPACT DAMPENED ARMATURE AND NEEDLE VALVE ASSEMBLY

Benjamin F. Brinn, Jr., Williamsburg, and Gyula A. Huszar, Newport News, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Mar. 26, 1993, Ser. No. 37,801
Int. Cl.[5] F16K *31/44*
U.S. Cl. 251—77 5 Claims

1. A valve comprising a housing having an inlet at which fluid enters the valve and an outlet at which fluid leaves the valve, a valve seat member that is disposed at said outlet and that comprises a valve seat circumscribing an aperture through which fluid passes as it leaves said outlet, an armature and needle valve assembly that comprises a needle valve and an armature and that is axially reciprocated by an electrically operated actuator mechanism to seat and unseat a tip end of said needle valve on and from said valve seat to thereby close and open said aperture to flow characterized in that said needle valve comprises a flange and in that an axial lost motion connection is provided between said armature and said needle valve such that when said needle valve impacts said valve seat to close said aperture to flow, said armature moves axially relative to said needle valve and after a certain amount of axial movement axially impacts said needle valve flange by direct



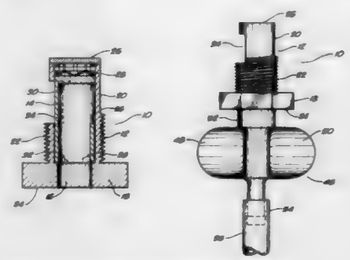
contact therewith substantially at the incipiency of said needle valve bouncing away from said valve seat to thereby substantially snub such bounce.

5,299,777

VALVED DRAIN PLUG APPARATUS

Brown W. Milstead, 2343 North Blvd., Houston, Tex. 77098

Filed Mar. 19, 1993, Ser. No. 34,474
Int. Cl.[5] F16K *5/04, 31/44*
U.S. Cl. 251—144 16 Claims



1. A valved drain plug apparatus comprising:
a valve body having a bore extending therethrough, said valve body having an opening along a surface, said opening extending into said bore; and
an insert element rotatably mounted within said bore of said valve body, said insert element having a hole along one surface, said insert element movable between a first position in which said hole is aligned with said opening and a second position in which said insert element closes said bore of said valve body, said insert element supported on a shoulder formed in said bore of said valve body, said insert element having a stop formed on a bottom edge thereof, said stop for abutment with a surface in said bore of said valve body, said insert element having at least one key slot extending upwardly from said bottom edge, said key slot for receiving a portion of a key element.

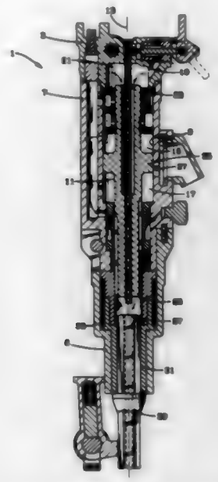
VOL 1161 ISS 1 APR 5 1994 UMI

5,299,778

THROTTLE VALVE SYSTEM FOR A PERCUSSIVE FLUID-ACTIVATED APPARATUS

Robert R. Kimberlin, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 1, 1992, Ser. No. 955,174
Int. Cl.[5] F16K *31/524*
U.S. Cl. 251—263 7 Claims



1. A throttle valve system for a percussive, fluid-activated apparatus, said apparatus having a backhead at a top end, a fronthead at a bottom end, a housing therebetween forming a central bore and a piston reciprocal along a longitudinal axis through said central bore between a drive chamber and a return chamber, said throttle valve system comprising:

a. a percussive fluid inlet port in said backhead, for admitting percussive fluid into said backhead, for activating said piston;

b. percussive fluid passageway means in said backhead for fluid communication between said inlet port and said drive chamber and said return chamber;

c. seal means elastically mounted in said backhead for opening said closing said percussive fluid passageway means;

d. throttle actuating means on said backhead for opening and closing said seal means;

e. said seal means further comprising:

i. a backhead bore in said backhead in fluid communication with said percussive fluid inlet port;

ii. a valve cartridge housing in fluid sealing contact in said backhead bore;

iii. said percussive fluid passageway means in said backhead further comprising a valve cartridge passageway means actuating through said valve cartridge housing, for fluid communication between said percussive fluid inlet port and said drive chamber and said return chamber; and

iv. valve stem means in said valve cartridge housing for opening and closing said valve cartridge passageway means, in response to said throttle means; and

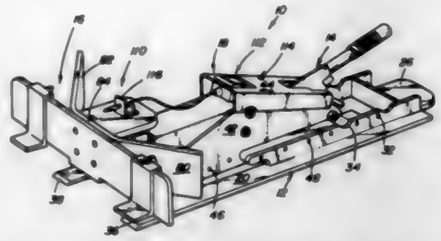
f. said throttle actuating means comprising a first contact surface in sliding contact with said valve cartridge housing for retaining said valve cartridge housing within said backhead bore and a second contact surface thereon in siliding contact with said valve stem for moving said valve stem means between a valve open and a valve close position.

5,299,779

FLOOR COVERING INSTALLATION METHOD

Harvey C. Collins, 7143 S. River Rd., Marine City, Mich. 48039

Filed Mar. 1, 1993, Ser. No. 24,632
Int. Cl.[5] B66F *13/00*
U.S. Cl. 254—1 5 Claims



1. A method for lifting furniture partitions or the like comprising:

providing a convertible lifting mechanism including means for raising and lowering a lifting member, said raising and lowering means coupled with a frame and lifting assembly;

connecting means coupled with said raising and lowering means, said connecting means having a planar connecting surface,

said convertible lifting mechanism including a first removable member having an abutment contact surface in a single plane for raising and lowering an object to be lifted,

said first member having a first connecting portion in said single plane for connecting with said planar connecting surface,

a second member having an abutment contact surface for raising and lowering the object to be lifted,

said second member having a second connecting portion in a plane parallel to said single plane and connecting with aid planar connecting surface, said second connecting portion being at an angle to said second member abutment contact surface, and

said lifting assembly connectable to either of said first or second members for lifting said object, wherein said first member is removed to convert said tool from a first to a second lifting tool;

positioning said lifting mechanism with respect to an object to be lifted such that either said first or second member is in contact with said object to be lifted;

actuating said raising and lowering means to raise said object to be lifted;

actuating said raising and lowering means to return said object to be lifted to its original position.

5,299,780

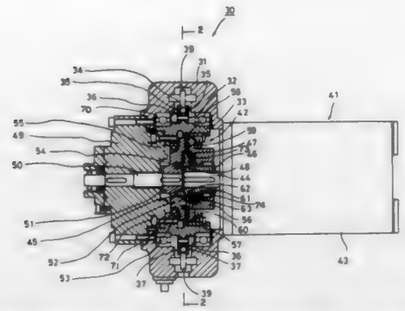
ROPE TRACTION DEVICE

Yutaka Sugiyama, Tokyo, Japan, assignor to Nihon Biso Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 373,904, Jun. 29, 1989, abandoned. This application Jun. 1, 1992, Ser. No. 892,414
Claims priority, application Japan, Dec. 9, 1988, 63-311447
Int. Cl.[5] B66D *1/30*
U.S. Cl. 254—333 2 Claims

1. A rope traction device including a sheave which is rotated by a drive source through a speed reduction device and around which a part of a rope is wound, and being movable along the rope by rotating the sheave, said rope traction device comprising:

rope groove forming means, comprising, a pair of plate springs having a generally annular configuration provided substantially along the circumference of the sheave for forming a rope groove for receiving a part of the rope therein and resiliently pressing the rope on its side portions, said pair of plate springs containing circumferential elongated slots which allow the resiliently pressed rope to bulge in the slots when pressed by the rope groove forming means; and



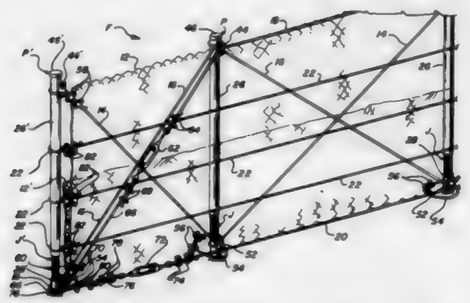
guide rollers provided along the outer periphery of the pair of plate springs for guiding the rope along the groove, the width of the rollers, at the end portions of the rope groove forming means, being slightly larger than the diameter of the rope.

5,299,781

FLEX POST FENCE

Robert K. Barrett, Grand Junction; George Hearn, Boulder, and Michael L. McMullen, Denver, all of Colo., assignors to State Department of Highways, State of Colorado, Denver, Colo.

Filed Jul. 10, 1991, Ser. No. 727,863
Int. Cl.[5] E01F *7/04*
U.S. Cl. 256—12.5 11 Claims



3. A fence for serving as a barrier for dissipating the kinetic energy of boulders rolling down a slope, said barrier comprising:

at least one pair of posts mountable in upright spaced positions on the side of the slope wherein said posts serve as single anchor points for securing said barrier to said slope, and each has a lower tubular section anchorable in the ground and an upper tubular section spaced from said lower section and connected thereto;

a flexible barrier, having upper and lower edges, extendable between said upper tubular sections and normally supported in upright position thereby, said barrier being continuous between said pair of posts;

a resilient flexible joint interconnecting said lower tubular section and said upper tubular section, said joint having a lower end extendable into the entire length of said lower section and an upper end extendable into said upper section;

means for securing said ends of said joint in said respective post sections, said posts being bendable about said joints upon impact by a boulder against said barrier as the boulder moves down the slope to tip said barrier in a downslope direction changing the direction of movement of the boulder so that it impacts the ground causing its kinetic energy to be dissipated, said joints springing back after the kinetic energy of the boulder has been dissipated to return said posts to a substantially upright position such that said barrier when impacted by the boulder bends as one unitary whole anchored only at said posts and to reposition said barrier to intercept additional boulders which may roll down the slope, said joint comprises a bundle of cables;

a first cable wrappable around the top of said lower section of one of said pair of posts and the top of said upper section of the other of said pair of posts; and

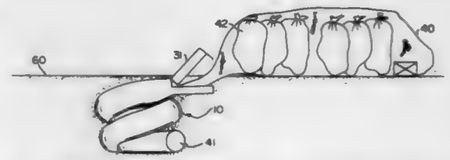
a second cable wrappable around the top of said upper section of said one of said pair of posts and the top of said lower section of the other of said pair of posts so that said cables criss-cross over said flexible barrier.

5,299,782

RETRACTABLE PROTECTION NET ASSEMBLY

William S. Lambert, 52 Tokalon, Metaire, La. 70001

Continuation-in-part of Ser. No. 681,160, Apr. 5, 1991, abandoned. This application Aug. 12, 1992, Ser. No. 928,995
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—45 2 Claims



1. An apparatus for covering an article positioned at a road curb-side comprising:

a hollow plastic housing having an opening adjacent ground level and also adjacent the curb-side, with the remainder of the housing disposed at a position below ground level;

the housing having a cover which is pivotably attached to the housing opening; and

a mesh netting extendably contained within the housing, the mesh netting having two ends, with the first end being attached to the housing, and the second end extendable out, over, then positionable underneath the weight of the article to be covered, to be held fast there that such extension of the mesh netting covers the article to prevent tampering therewith.

5,299,783

ROD COOLING APPARATUS

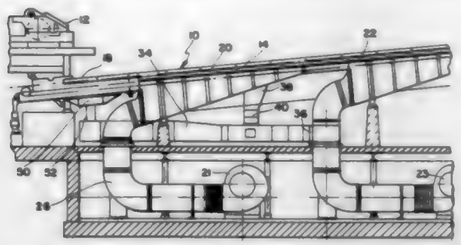
Alfred R. Ledger, North Grafton, and Charles H. Gage, Westborough, both of Mass., assignors to Engineered Production Increase, Inc., North Grafton, Mass.

Continuation-in-part of Ser. No. 693,720, Apr. 30, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 947,934
Int. Cl.[5] C21D *9/56*
U.S. Cl. 266—106 8 Claims

1. Rod cooling system for use in a rod rolling mill having a laying head for receiving and coiling the rod, comprising (a) a longitudinal conveyor for receiving the rod from the laying head and carrying it to a remote disposal position, the conveyor including an entry portion underlying the laying head and followed by first and second sequential cooling zone portions, the conveyor having longitudinally-extending parallel bars of substantial depth for receiving and supporting the rings on their upper edges, (b) air supply means underlying the conveyor for supplying cooling air to the entry portion and to the zone portions, and (c) a grid underlying the bars and having nozzle-shaped slots extending transversely of the bars and

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at a small angle to the grid for directing the cooling air into a space defined by the sides of the bars and the undersides of the rings, each slot being defined by two spaced, parallel surfaces



to provide a throat and by an arcuate convex surface located at the exit of the slot into the space to produce substantial low pressure high velocity flow of air along the undersides of the rings whereby ambient air is drawn through the rings.

5,299,784

DEGASSING VESSEL FOR THE VACUMM TREATMENT OF LIQUID STEEL

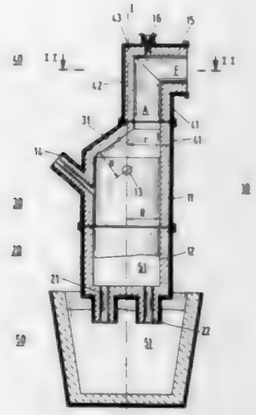
Horst-Dieter Schöler, Duisburg; Hans-Peter Golloch, Quirnbach, and Auke Braaksma, Moers, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 944,213

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130590

Int. Cl.[5] C21C *7/10*

U.S. Cl. 266—210 20 Claims



1. Degassing vessel for the vacuum treatment of liquid steel, wherein the liquid steel is contained in ladle means and said degassing vessel is configured for being connectingly interfaced with the ladle means, said degassing vessel comprising:

a lower portion for being interfaced with the ladle means;

a central portion being disposed adjacent to and in an overlying relationship with said lower portion;

an upper portion being disposed adjacent to and in an overlying relationship with said central portion;

said upper portion comprising exhaust means for venting exhaust gas away from said degassing vessel;

each of said lower portion and said upper portion having a general cross-sectional area, the general cross-sectional area of said lower portion being substantially greater than the general cross-sectional area of said upper portion;

said central portion being configured for directing exhaust gas to said upper portion from said lower portion;

a vertical axis being defined through said degassing vessel;

said central portion comprising a generally flat, planar wall portion being inclined with respect to the vertical axis of said degassing vessel, said generally flat, planar wall portion being configured for directing exhaust gas from said lower portion to said upper portion;

a heater for providing heat to said degassing vessel;

said heater comprising a heater rod disposed in said central portion of said degassing vessel; and

said heater rod being spaced from said planar wall portion at a distance to minimize formation of deposits on said planar wall portion.

5,299,785

GAS PURGING PLUG FOR ELECTRIC-ARC FURNACES AND THE CORRESPONDING ELECTRIC-ARC FURNACE

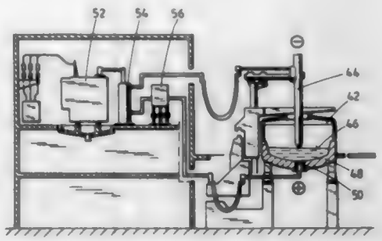
Georgio Cappelli, Milan, Italy; Helmut Vacek, Weissenstein, Austria, and Ing. Pericle Boai, Milan, Italy, assignors to Radex-Heraklith Industriebeteiligungs Aktiengesellschaft, Vienna, Austria and Ing. Leone Tagliaferri & C. S.p.A., Milan, Italy

Filed Aug. 4, 1992, Ser. No. 925,602

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126237

Int. Cl.[5] C21C *5/52*

U.S. Cl. 266—218 23 Claims



1. A gas purging plug and electrode assembly for an electric-arc furnace, comprising

a gas purging plug comprised at least in part of a refractory matrix material, and having a bottom end portion forming a gas inlet-side end of the gas purging plug and having an upper end portion forming a gas outlet-side end of the gas purging plug,

a electrode positioned inside the gas purging plug and extending in a direction from the bottom end portion of the gas purging plug to the upper end portion of the gas purging plug, and

means connected to the electrode for connecting the electrode to a power source.

5,299,786

NOISE SUPPRESSION MEMBER

Roger R. Godin, Manchester, N.H., assignor to Freudenberg-NOK General Partnership, Plymouth, Mich.

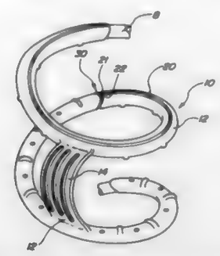
Filed Mar. 17, 1993, Ser. No. 32,307

Int. Cl.[5] B60G *11/52*

U.S. Cl. 267—33 13 Claims

1. A noise suppression apparatus for use with a spring comprising:

a plurality of tubular ring members, each of said ring members severed along a radial axis and each of said ring



members including a tube wall, said tube wall having a slit therein forming adjacent side walls; and

a web member connecting said ring members.

5,299,787

GAS-SPRING WITH AN ADJUSTABLE DEVICE TO BRAKE AND/OR FIX THE GAS SPRING STROKE

Rolf B. B. Svensson, Vimmerby, Sweden, assignor to Ultra Tan International AB, Vimmerby, Sweden

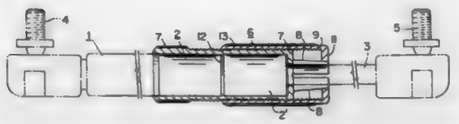
PCT No. PCT/SE89/00344, § 371 Date Aug. 12, 1991, § 102(e) Date Aug. 12, 1991, PCT Pub. No. WO90/07070, PCT Pub. Date Jun. 28, 1990

PCT Filed Jun. 16, 1989, Ser. No. 689,870

Claims priority, application Sweden, Dec. 12, 1988, 8804492

Int. Cl.[5] F16F *9/02, 11/00;* A61N *5/06*

U.S. Cl. 267—64.12 11 Claims



1. A gas-spring arrangement comprising a substantially tubular, outer casing, a rod which is guided for axial movement in the casing between two terminal positions and dampened through the action of gas constrictions, and further including attachment means on said rod and on said casing for attaching the gas-spring between mutually movable devices, said gas-spring arrangement further including an adjustable friction clamp device (6) which is secured on said gas spring and engages both of said rod and said casing and is operative to brake the relative axial movement between the casing (2) and the rod (3) and also can be adjusted to fix the casing (2) and the rod (3) relative to one another in any of a multiplicity of desired selected positions, at and between said terminal positions.

5,299,788

FLUID-FILLED CYLINDRICAL ELASTIC MOUNT HAVING ORIFICE PASSAGES AND VOIDS FORMED IN ELASTIC BODY

Ryouji Kanda, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Filed Dec. 11, 1991, Ser. No. 804,732

Claims priority, application Japan, Dec. 13, 1990, 2-410498; Nov. 13, 1991, 3-325327

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.12 10 Claims

1. A fluid-filled cylindrical elastic mount for flexibly connecting two members, comprising:

an inner sleeve fixed to one of the two members;

an outer sleeve disposed radially outwardly of said inner sleeve and fixed to the other of the two members;

a generally annular elastic body disposed between said inner and outer sleeves for flexible connection therebetween,

said elastic body partially defining two fluid chambers filled with a non-compressible fluid, said two fluid chambers being formed in diametrically opposite circumferential portions of said elastic body between said inner and outer sleeves; and

said elastic body having at least one orifice passage defined directly and entirely surrounded by said elastic body and formed therethrough for fluid communication between



said two fluid chambers, said at least one orifice passage extending through said elastic body adjacent one of said inner and outer sleeves, said elastic body further having at least one void, each of which (i) is formed between the corresponding one of said at least one orifice passage and the other of said inner and outer sleeves, (ii) has a circumferential length which is at least one-half that of the corresponding one of said at least one orifice passage, and (iii) opens to atmosphere.

5,299,789

VARIABLE-RESILIENCE ENGINE MOUNT HAVING A RUBBER SPRING ELEMENT WITH A CAVITY FOR RECEIVING A CONTROL FLUID

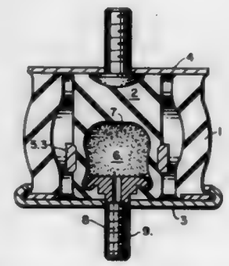
Gerold Winkler, Birkenau; Gerd-Heinz Ticks, Waldmichelbach, and Ludwig Schmitt, Birkenau, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed May 12, 1992, Ser. No. 881,920

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4120840

Int. Cl.[5] F16F *9/08*

U.S. Cl. 267—140.14 7 Claims



1. In a variable-resilience engine mount having atop member supported in substantially parallel relationship on a base member by first and second rubber spring elements, and an ancillary component for selectively changing the resilience of one of the spring elements, said first and second spring elements being connected mechanically in parallel and each of said first and second spring elements being connected between and to each of said top member and said base member, the improvement wherein the first spring element is annular shaped and disposed around the second spring element, wherein the first spring element extends axially at least part-way up the second spring

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element, wherein the second spring element has a cavity at its center, wherein an opening is provided for injecting a fluid into the cavity to inflate and expand the second spring element, and wherein a reinforcement is provided for limiting the expansion of the second spring element,

whereby the resilience of the second spring element may be reduced by injecting fluid into the cavity.

5,299,790

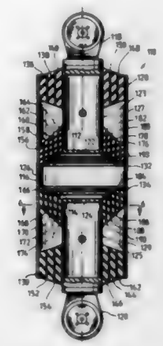
ELASTOMERIC STRUT FOR AN ELASTOMERIC RISER TENSIONER

Gary L. Whightsil, Sr., Keanedale, Tex., assignor to LTV Energy Products Co., Garland, Tex.

Continuation of Ser. No. 760,940, Sep. 17, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 17,332

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—292 **33 Claims**



1. An elastomeric strut comprising:

a cylindrical housing having an elongated inner surface forming a cavity therein, having a first end portion and a second end portion, and having a longitudinal axis extending from said first end portion to said second end portion;

a first piston being adapted to move between an extended position and a retracted position along said longitudinal axis within said first end portion of said housing, said first piston having a longitudinally outer end portion and a longitudinally inner end portion, said longitudinally outer end portion defining a first end of said elastomeric strut;

a second piston being adapted to move between an extended position and a retracted position along said longitudinal axis within said second end portion of said housing, said second piston having a longitudinally outer end portion and a longitudinally inner end portion, said longitudinally outer end portion of said second piston defining a second end of said elastomeric strut;

a gas cavity formed within said housing between said longitudinally inner end portion of said first piston and said longitudinally inner end portion of said second piston;

a first main spring, said first main spring being generally annular in shape and having a radially inward surface and a radially outward surface, said radially inward surface of said first main spring being coupled to said longitudinally outer end portion of said first piston and said radially outward surface of said first main spring being coupled to said inner surface within said first end portion of said housing such that said first main spring is biased longitudinally inwardly when said first piston is in its extended position and is biased longitudinally outwardly when said first piston is in its retracted position;

a second main spring, said second main spring being generally annular in shape and having a radially inward surface and a radially outward surface, said radially inward surface of said second main spring being coupled to said longitudinally outer end portion of said second piston and said radially outward surface of said second main spring being coupled to said inner surface within said second end portion of said housing such that said second main spring is biased longitudinally inwardly when said second piston is in its extended position and is biased longitudinally outwardly when said second piston is in its retracted position;

a first secondary spring, said first secondary spring being generally annular in shape and having a radially inward surface and a radially outward surface, said radially inward surface of said first secondary spring being coupled to said longitudinally inner end portion of said first piston and said radially outward surface of said first secondary spring being coupled to said inner surface within said first end portion of said housing such that said first secondary spring is biased longitudinally inwardly when said first piston is in its extended position and exhibits no longitudinal bias when said first piston is in its retracted position; and

a second secondary spring, said second secondary spring being generally annular in shape and having a radially inward surface and a radially outward surface, said radially inward surface of said second secondary spring being coupled to said longitudinally inner end portion of said second piston and said radially outward surface of said second secondary spring being coupled to said inner surface within said second end portion of said housing such that said second secondary spring is biased longitudinally inwardly when said second piston is in its extended position and exhibits no longitudinal bias when said second piston is in its retracted position.

5,299,791

ROOF CONSTRUCTION FOR VEHICLES

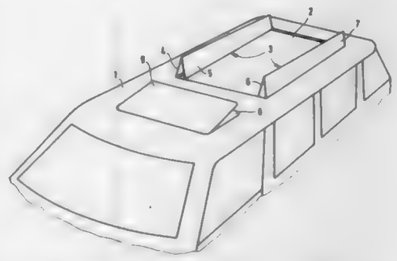
Albert Schlapp, Dreieich, Fed. Rep. of Germany, assignor to Rockwell Golde GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 869,261, Apr. 15, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 97,933

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1991, 4112246

Int. Cl.[5] B60J *7/12*

U.S. Cl. 296—219 **12 Claims**



1. A roof construction for a vehicle, comprising:

a main body having an elongated rectangular roof aperture which is defined by short edges and long edges;

a multipart lid assigned to the roof aperture, having pairs of inner and outer lid parts which are movable between a closed position that completely fills the roof aperture and an open position that exposes the roof aperture by pivoting the lid parts outwardly;

each pair of inner and outer lid parts being essentially configured as a pair of elongated rectangles, each inner lid part being hinged to one of the outer lid parts such that when folded together upwardly each inner lid is located next to a respective one of the outer lid parts, the pair of inner lid parts being coplanar when the inner and outer lid parts are moved to the closed position;

the inner and outer lid parts being displaceably guided on guide rails by means of guide sockets articulated with the inner lid part, which guide rails are oriented parallel to the oppositely located short edges of the roof aperture, while being positioned beneath the inner and outer lid parts and being fastened to the main body of the vehicle roof, long sides of the inner and outer lid parts being oriented parallel to a vehicle longitudinal axis of the vehicle; and

drive means for displacing each guide socket on its guide rail, said drive means engaging at least one of the guide sockets, the inner and outer lid parts being connected together in a sealed manner over their entire length at their hinged together edges with a flexible sealing member that bridges a gap between the inner and outer lid parts;

an edge of one of the inner lid parts that is closest to a central roof longitudinal axis is bent off downwardly and fixably connected with a receiving strip into which a profiled sealing member is slid; and

the profiled sealing member comprises a slot continuous in length, into which, when the inner and outer lids are in a closed position, the inner lid part lying opposite to the profiled sealing member engages with an edge bent off first downwardly and then toward and into the slot of the profiled sealing member.

12. A roof construction for a vehicle, comprising:

a main body having an elongated rectangular roof aperture which is defined by short edges and long edges;

a multipart lid assigned to the roof aperture, having pairs of inner and outer lid parts which are movable between a closed position that completely fills the roof aperture and an open position that exposes the roof aperture by pivoting the lid parts outwardly;

each pair of inner and outer lid parts being essentially configured as a pair of elongated rectangles, each inner lid part being hinged to one of the outer lid parts such that when folded together upwardly each inner lid is located next to the respective one of the outer lid parts, the pair of inner lid parts being coplanar when the inner and outer lid parts are moved to the closed position;

the inner and outer lid parts being displaceably guided on guide rails by means of guide sockets articulated with the inner lid part, which guide rails are oriented parallel to the oppositely located short edges of the roof aperture, while being positioned beneath the lid parts and being fastened to the main body of the vehicle roof, long sides of the inner and outer lid parts being oriented parallel to a vehicle longitudinal axis of the vehicle; and

drive means for displacing each guide socket on its guide rail, said drive means engaging at least one of the guide sockets, the inner and outer lid parts being connected together in a sealed manner over their entire length at their hinged together edges with a flexible sealing member that bridges a gap between the inner and outer lid parts;

an edge of one of the inner lid parts that is closest to a central roof longitudinal axis is bent off downwardly and fixedly connected with a receiving strip into which a profiled sealing member is slid; and

the profiled sealing member comprises a slot continuous in length, into which, when the inner and outer lids are in a closed position, the inner lid part lying opposite to the profiled sealing member engages with an edge bent off first downwardly and then toward and into the slot of the profiled sealing member;

two pairs of inner and outer lid parts are provided, each pair of inner and outer lid parts being a mirror-image of the other, each of the pairs having the outer lid part respectively articulated to a stationary swivel bearing attached in the vicinity of an adjacent edge of the roof aperture, and in the closed position of the lid adjacent edges of the inner lid parts being located next to each other;

the roof aperture is elongated in the direction of the vehicle longitudinal axis and is located in a rear region of the main body of the vehicle roof, an additional rectangular roof aperture, aligned with its edges transversely to the vehicle longitudinal axis is provided in a front region of the main body of the vehicle roof, a raisable ventilation flap being arranged in the additional roof aperture so as to act as a wind barrier for the rear roof aperture, and in each pair of inner and outer lid parts, the inner part, which is not articulated in the vicinity of the edge of the roof aperture, is connected in the vicinity of its outer edge at least at one of its ends in an articulated manner with one of the guide sockets;

the drive means includes first and second flexible actuation cables with a helical thread and drivable in opposite directions and guided by the guide rails in a positive action push-pull manner, the drive means further including a drive unit having a pinion that engages the helical thread of the cables in a positive, force-transmitting manner, the first and second actuation cables engaging respectively with different guide sockets (**44**); and

the guide sockets are assigned to the inner lid parts adjacent to one another, each of the first and second actuation cables respectively engages at one end with a guide socket of one inner lid part and at the other end with a diagonally opposite guide socket of the other inner lid part.

5,299,792

APPARATUS FOR INSERTING A MARKER STRIP IN A STACK OF SHEETS DURING THE STACKING THEREOF

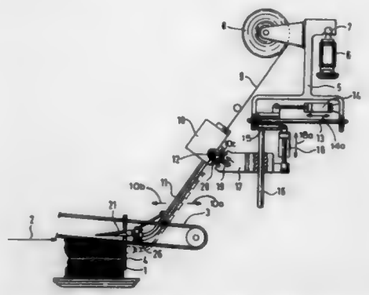
Rolf Kollann, Herten; Hans-Georg Sippel, Düsseldorf; Peter Vose, Jüchen, and Ralf Zehl, Erkrath, all of Fed. Rep. of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 908,710

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122111

Int. Cl.[5] B65H *33/04;* **B65G** *57/00*

U.S. Cl. 270—95 **7 Claims**



1. An apparatus for inserting a marker strip into a stack of sheets during the stacking thereof by the advance of said sheets in succession in a sheet-feed direction to a stack having a front side opposite a side from which the sheets are fed to the stack, said apparatus comprising:

a guide channel mounted at the front side of said stack and extending downwardly and toward said stack, said guide channel having an outlet for a strip adapted to be inserted into said stack;

a wedge-shaped tongue rigidly fixed to said channel adjacent said outlet and having a substantially horizontal underside adapted to rest on said stack and form a gap therein to receive said strip and positioned so that subsequently deposited sheets on said stack while said tongue is in said stack engage said strip and retain it in said stack;

a supply roll feeding said strip into said channel;

a cutter mounted on said channel for severing a marker tab from said strip whereby said marker tab is retained in said stack; and

means connected to said channel for displacing same in

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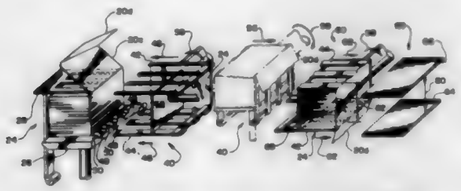
substantially vertical and horizontal directions whereby the underside of said tongue is withdrawable from said stack substantially horizontally without alteration of an angle of said underside to the horizontal and without shifting the strip held in place by the subsequently deposited sheets.

5,299,793

MULTI-PANEL REFOLDING TRANSFER SYSTEM WITH ROTATING TRANSFER CLAMP

Dennis P. Couturier, Washburn, Wis., assignor to C. G. Bretting Manufacturing Company, Inc., Ashland, Wis.

Filed Nov. 23, 1992, Ser. No. 980,493
Int. Cl.[5] B41L *1/32*; B31B *1/00*
U.S. Cl. 270—39 20 Claims



1. A method of refolding adjoining proximal and distal loose end panels extending from a clip of paper products interfolded in a plurality of parallel planes and initially held between a pair of first opposing surfaces, the method comprising the steps of:
a) urging the loose end panel proximal the clip towards a plane parallel to the planes of the interfolded products;
b) trapping the proximal loose end panel by moving a clamping finger adjacent the proximal loose end panel and exterior of the clip;
c) moving the clip away from the pair of first opposing surfaces;
d) trapping the distal loose end panel by moving the clip and the clamping finger past one of a pair of second opposing surfaces; and
e) retracting the clamping finger from between the distal loose end panel and the clip
such that the proximal and distal loose end panels are refolded into the clip and the clip is subsequently held between the pair of second opposing surfaces.

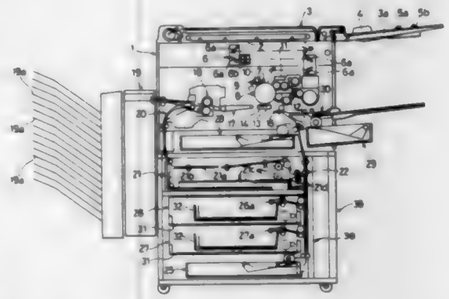
3. Apparatus for transferring a clip formed of a predetermined number of interfolded paper products away from a stacking interfolder and refolding a plurality of loose end panels of the clip comprising:
a) a stack building table positioned to receive a continuously building interfolded stack of paper products in a longitudinally oriented stack building path wherein adjacent products have a plurality of end panels interfolded in an overlapping relationship;
b) a first count finger assembly selectively positionable into the stack building path to separate a clip of a predetermined number of interfolded paper products from the stack while allowing a plurality of loose end panels to extend away from one end of the clip exteriorly of the first count finger assembly;
c) a transfer clamp located adjacent the stack building path, the transfer clamp having first and second longitudinally spaced apart clamping fingers projecting transversely towards and reciprocally movable transversely into and out of the stack building path such that the clip is retained by the first and second clamping fingers when the transfer clamp is moved transversely into the stack building path and the stack building table is retracted away from the first count fingers;
d) clamp displacement means for moving the transfer clamp out of the stack building path and for rotating the transfer clamp such that the clamping fingers are positioned to project away from the stack building path; and
e) a clip destination station located away from the stack building path and having first and second opposed end plates positioned apart a distance slightly greater than the distance between the first and second clamping fingers for receiving the clip from the transfer clamp and for retaining the clip as the clamp moves away from the clip destination station
wherein the loose end panels are refolded into the clip by the first clamping finger moving transversely adjacently past:
i) the first count finger prior to rotation of the transfer clamp, and
ii) the first end plate subsequent to rotation of the transfer clamp.

5,299,794

IMAGE FORMING DEVICE HAVING A PLURALITY OF COPY MATERIAL FEEDING MEMBERS

Yoshikado Yamada, Kashihara; Yoshiteru Mori, Nara, and Toshihisa Matsuo, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 518,651, May 3, 1990, abandoned. This application Oct. 3, 1991, Ser. No. 769,753
Claims priority, application Japan, May 9, 1989, 1-116438
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 3 Claims



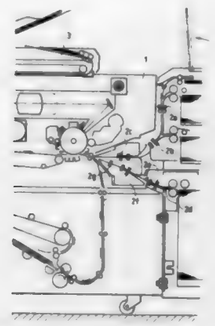
1. An image forming device comprising:
a copying apparatus for copying original sheets;
means for detecting a size and orientation of said original sheets;
a plurality of fixed and rotatable copy material feeding members for supplying copy material to said copying apparatus;
means for storing a most frequently used copy material, said means including a rotatable one of said plurality of fixed and rotatable copy material feeding members;
a plurality of transport paths operatively connecting said copying apparatus to said plurality of copy material feeding members, respectively;
said rotatable copy material feeding member storing the most frequently used copy material being connected immediately adjacent to said copying apparatus by a shortest one of said plurality of transport paths; and
control means for selecting one of said plurality of copy material feeding members in response to said means for detecting;
said control means further detecting a supply orientation of the selected rotatable copy material feeding member and selectively changing the supply orientation thereof to correspond to an orientation of said original sheets.

5,299,795

SHEET FEEDING APPARATUS

Norifumi Miyake, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,931
Claims priority, application Japan, Oct. 15, 1991, 3-266188; Oct. 8, 1992, 4-270201
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—9 9 Claims



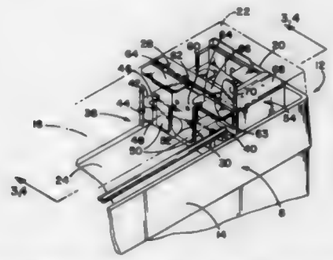
1. A sheet feeding apparatus comprising:
sheet stacking means for stacking a plurality of sheets and accommodating said sheets;
separation means for separating said sheets stacked on said stacking means one sheet after another;
sheet detecting means mounted at the downstream of said separation means for detecting said sheet separated by said separation means; and
control means for activating again, if said sheet detecting means does not detect said sheet after the start of the operation of said separation means, said separation means at a lower operation speed, and if said sheet detecting means detects said sheet thereafter, setting the operation speed of said separation means to an original speed.

5,299,796

EXCEPTION CARD INSERT APPARATUS AND METHOD

Cory D. Wooldridge, Brooklyn Park, Minn., assignor to Datacard Corporation, Minneapolis, Minn.

Filed Apr. 13, 1993, Ser. No. 47,112
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 9 Claims



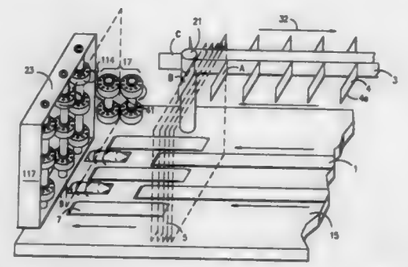
1. An exception card insert apparatus for a generally rectangular box-like input card hopper for a card processing machine, the hopper having two oppositely disposed sides, two oppositely disposed ends, a bottom, and an oppositely disposed cover, the exception card insert apparatus comprising:
a carriage slideably mounted within the hopper proximate one end and movable between a first position proximate driving means for removing cards from the hopper to the processing machine, and a second position proximate a slot through the hopper , an exception card being insertable into the hopper through the slot; and
a compartment in the carriage receiving the exception card inserted through the slot when the carriage is in the second position and the compartment configured to place the exception card in a position proximate the driving means to allow removal of the exception card by the driving means from the carriage and the hopper to the processing machine when the carriage is in an intermediate position between the first position and the second position.

5,299,797

SEGMENTED DOCUMENT TRANSPORT SECTION HAVING ACCELERATED TAKE-AWAY BELTS

Mario Ricciardi, Glenview, Ill., assignor to Bell & Howell Phillipsburg Company, Evanston, Ill.

Filed Aug. 28, 1992, Ser. No. 935,778
Int. Cl.[5] B65H *1/02*
U.S. Cl. 271—150 6 Claims



1. An input transport section for a document handling machine, comprising:
a first transport means movable in a first feeding direction and having a plurality of segments along its length for conveying in a series of groups of documents a plurality of documents placed in contact with said first transport means, said first transport means comprising an endless conveyor having two lengths which lie parallel in a first plane; and
a second transport means movable in said first feeding direction at an accelerated speed with respect to said first transport means and disposed at an end portion of said first transport means for removably conveying said groups of documents from said first transport means, said second transport means comprising an endless conveyor having two lengths which lie parallel in a second plane, said second plane being substantially orthogonal to said first plane.

5,299,798

SHEET FEEDING DEVICE FOR AN IMAGE FORMING APPARATUS

Toshio Shida, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,898
Claims priority, application Japan, Sep. 24, 1991, 3-243387
Int. Cl.[5] B65H *9/04*
U.S. Cl. 271—245 3 Claims

1. A sheet feeding device for feeding a transfer sheet to a transfer region of an image forming apparatus, comprising
a driving roller for driving an idle roller so that said transfer sheet is nipped between said driving roller and said idle roller and conveyed to said transfer region;
said idle roller for rotation by movement of said driving roller, wherein the hardness of said idle roller is more than 0° and not more than 60° in Asuka C Scale; and

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a shutter for suspending and allowing conveyance of said transfer sheet by moving said shutter between a closed position, wherein said transfer sheet is nipped between said driving roller and said idle roller, and an open position, wherein said transfer sheet is not nipped between said driving roller and said idle roller;

wherein said driving roller rotates while said shutter suspends conveyance of said transfer sheet by moving said shutter to said closed position.

5,299,799

FEED TABLE IN THE VICINITY OF A SIDE LAY

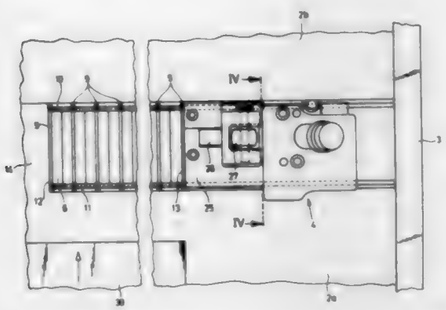
Karl-Heinz Filsinger, Wiesloch, and Peter Thoma, Mannheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Apr. 7, 1993, Ser. No. 45,326

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 4211927

Int. Cl.[5] B65H *9/00*

U.S. Cl. 271—250 14 Claims



1. Feed table in the vicinity of a side lay of a sheet-fed printing press, comprising a table cover having a continuous surface between a table surf ace covering a center of a feed table and a side lay, said table cover having said continuous surface being formed with regions having at least one characteristic of being compressible and expandable in a direction of lateral displacement of said side lay, support elements defining a uniform sheet guiding plane and being adjustable in position in said direction of lateral displacement of said side lay, and means for adjusting the position of said support elements in accordance with an extent of compression and expansion, respectively, of said compressible and expandable regions.

5,299,800

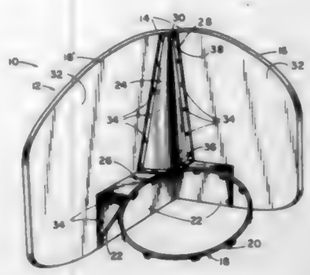
BASKETBALL SHOT MAKING-SYSTEM

Mark T. Daniels, 2447 49th St., Sarasota, Fla. 34234

Filed Jun. 25, 1993, Ser. No. 81,113

Int. Cl.[5] A63B *63/08*

U.S. Cl. 273—1.5 R 12 Claims



1. A basketball shot-making system for increasing the number of possible locations for installation and for increasing the number of methods of making a shot for use indoors or outdoors comprising in combination;

A backboard having paired members vertically disposed, each member being at a right angle with respect to the other member for forming an inside corner each member further having an edge being in threadable communication with an edge of the other member;

A goal having an arcuate hoop for urging shot-making and being horizontally disposed and offset from the backboard;

A goal support bracket therebetween being horizontally disposed and being in threadable communication with the backboard and rigid communication with the goal;

A rebound action device having a vertical orientation and being in threadable communication with each member of the backboard adjacent the inside corner, the rebound action device further being in rigid communication with a top surface of the goal support bracket for increasing the number of shot-making possibilities;

A vertically disposed support pole and an offset frame, the offset frame having a sleeve adjacent the vertical support pole, a pularity of horizontal bars being in rigid communication with a rear non-playing surface of the backboard, and paired offset rods therebetween for maintaining the backboard at a desired offset from the support pole ;

A base adapted to receive a lower end of the support pole for urging the support pole to remain stable and immovable when the system is in use and operation as in a dunk shot or the like; and

Adjustment means to move the backboard up and down the support pole for changing the elevation of the goal for urging variations in the shot-making system.

5,299,801

TENNIS RACKET

Hugo Sol, Grimbergen; Isabelle Koeckelberg, Marcinelle, and Jacques Meertens, Mominghies, all of Belgium, assignors to Donnay International S.A., Couvin, Belgium

Filed May 5, 1992, Ser. No. 878,685

Claims priority, application Fed. Rep. of Germany, May 23, 1991, 4116901; European Pat. Off., Nov. 11, 1991, 91119160

Int. Cl.[5] A63B *49/02*

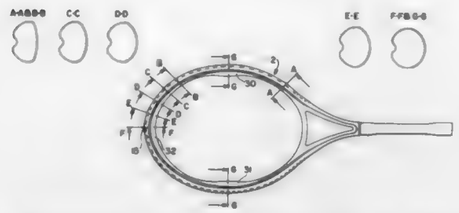
U.S. Cl. 273—73 C 9 Claims

1. A tennis racket having a longitudinal axis of symmetry, which comprises a handle extending substantially along the longitudinal axis, a head potion having a free end through which the longitudinal axis extends and being defined by a frame having an oval-shaped opening, stringing mounted on said frame and tensioned across said opening substantially along a plane, two connecting arms extending between the head portion and the handle, and a reinforcement member extending between two connecting arms, wherein

a), the cross-section of the frame comprises locally widened zones opposite to each other in the region of greatest width of the head portion, measured perpendicular to the longitudinal axis and in the plane of the stringing;

b), the width of the cross-section of the frame, measured in the plane of the stringing, decreases from the the region of greatest width of the head portion to about one-half the way to the free end of the head portion and, thereafter, the cross-section of the frame, measured in the plane of the stringing remains constant up to the free end of the head portion; and

c), the height of the cross-section of the frame, measured perpendicular to the plane of the stringing, remains substantially constant from the connecting arms to a region beyond the region of greatest width of the head portion.



5,299,802

REMOVABLE GOLF CLUB GRIP

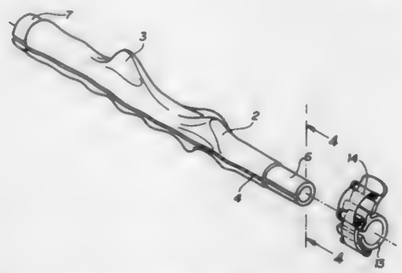
Jean Bouchet-Lassale, 4, avenue Calas, 1206 Geneva, Switzerland

Filed Jul. 31, 1992, Ser. No. 922,932

Claims priority, application Switzerland, Sep. 9, 1991, 02638/91

Int. Cl.[5] A63B *53/14*

U.S. Cl. 273—81.4 15 Claims



1. A removable grip for use on a golf club grip to facilitate proper positioning of the hands, said removable grip being provided with means for converting said gold club grip into a grip having hollows and ribs corresponding to a correct position of the hands, and with means for releasably fastening said removable grip to said golf club grip, said fastening means being provided with a longitudinal slit enabling said removable grip to be opened in order to place said removable grip in position and to detach it, said fastening means fastening said removable grip to said golf club grip to prevent any relative movement in relation to said golf club grip.

5,299,803

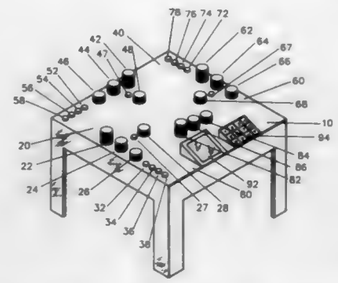
APPARATUS FOR USING EMBEDDED CHIPS IN A GAMING TABLE

Josef E. Halaby, 201 W. California Ave., No. 405, Sunnyvale, Calif. 94086

Filed Mar. 4, 1993, Ser. No. 38,332

Int. Cl.[5] A63F *1/06*

U.S. Cl. 273—148 R 23 Claims



1. A gaming table for playing games thereon comprising:

a playing surface having a plurality of apertures thereon;

a plurality of elongated one-piece columns, each column graphically divided into sections to represent a stack of betting chips, each elongated column sized and shaped to fit into a corresponding aperture;

a mounting means adjacent each aperture for mounting each elongated column in each corresponding aperture, each of said mounting means including an adjusting means for adjusting the position of each elongated column relative to its aperture to display a particular number of sections, wherein an elongated column is moved in or out through its aperture in order to simulate the increasing or decreasing number of chips in a stack.

5,299,804

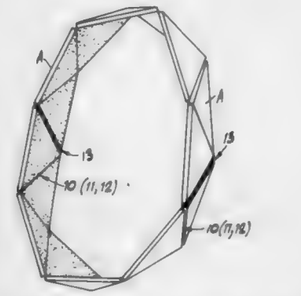
FOLDING PUZZLE USING TRIANGULAR BLOCKS

Kenneth V. Stevens, 728 Carroll St., Brooklyn, N.Y. 11215

Continuation of Ser. No. 801,272, Dec. 2, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,672

Int. Cl.[5] A63F *9/08*

U.S. Cl. 273—155 14 Claims



1. A folding puzzle comprising a plurality of substantially identical triangular block elements, each of said block elements being in three-dimensional right triangular form defined by first and second right-angle legs and a third hypotenuse leg defining each of its opposing first and second triangular plane surfaces separated by a given uniform block thickness, wherein each first right-angle leg at one of said plane surfaces of each block element is connected by a hinge element to a correspondingly matching first right-angle leg at a same one of said plane surfaces of a preceeding adjacent block element, and

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each second right-angle leg at said one plane surface of each said block element is connected by a hinge element to a correspondingly matching second right-angle leg at the same said plane surface of a succeeding adjacent block element, such that said plurality of block elements are connected together in a series oriented in alternating right-angle-leg directions with all of the hinge elements positioned at a same one of said triangular plane surfaces of the block elements and all of said one triangular plane surfaces and hinge elements of the block elements defining a substantially continuously connected loop surface for said series of block elements, and said hinge elements are arranged and positioned so as to allow any two hinged adjacent block elements to be unfolded coplanar with each other and folded together so that one block element overlies the other,

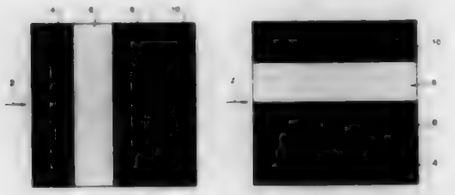
wherein said arrangement of said series of block elements all hinged on the same plane surface side thereof forming a continuously connected loop surface allows said blocks to be manipulated as a folding puzzle for forming different quadrangular polyomino shapes.

5,299,805

MULTILAYER PUZZLE

Dror Green, 37 Ben-Maimon Avenue, Jerusalem, Israel

Filed Jan. 23, 1992, Ser. No. 824,324
Claims priority, application Israel, Jan. 24, 1991, 97029
Int. Cl.[5] A63F *1/02*
U.S. Cl. 273—157 A **7 Claims**



1. A multilayer puzzle comprising a plurality of superposable card units each in the form of regular polygons of identical shape and size consisting of a transparent material, said card units, when superposed, forming a stack having an upper, fist, face and an opposite, second face, surfaces of which card units carry a plurality of distinct markings in the form of layers of various, opaque colors perceived on at least portions of each of the surfaces of each of said card units, leaving transparent other surface portions thereof, through which transparent surface portions there can be perceived surface portions of at least the next-lower card unit of said stack, whereby rotation and/or face reversal and/or change of location, within said stack, of at least one of said card units in said stack, a large number of pattern-forming combinations of said markings can be obtained on both of said stack faces, differing in colors, shapes and relative positions, at least one of which combinations on at least one of said stack faces may be defined as target combination to be achieved by the handler of said puzzle.

5,299,806

EDUCATIONAL DEVICE

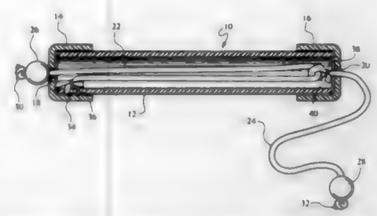
Fred L. Fifer, Jr., Dallas, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jul. 22, 1993, Ser. No. 96,510
Int. Cl.[5] A61F *9/08;* **G06C** *1/00;* **G09B** *19/02*
U.S. Cl. 273—159 **20 Claims**

1. An educational device for a user comprising:

a chamber having a first end and a second end, said chamber having a plurality of holes extending therethrough;

a plurality of ropes extending through said holes and slideably engageable with each other; and



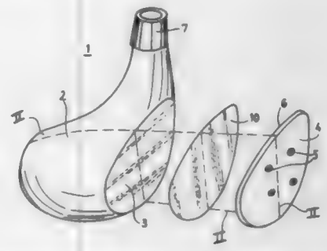
a plurality of knobs connected to said ropes for permitting user to pull said knob to move one said rope such that another said rope correspondingly moves.

5,299,807

GOLF CLUB HEAD

Patrice Hutin, Annecy Le Vieux, France, assignor to Skis Rossignol S.A., France

Filed Aug. 21, 1992, Ser. No. 933,302
Claims priority, application France, Aug. 28, 1991, 91 10848
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—173 **10 Claims**



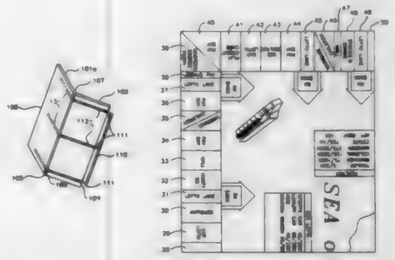
1. A golf club head comprising a body having a substantially planar clubface surface, a grooved striking plate affixed to the clubface surface, and an elastic layer between the clubface surface and the striking plate, said elastic layer being a viscoelastic sheet having a thickness in the range of 0.1 to 0.5 mm and an ambient temperature damping factor in the range of 0.4 to 1.2.

5,299,808

BOARD GAME APPARATUS

Ethel M. Wood, 9724 Springfield Woods Cir., Glen Allen, Va. 23060

Filed Nov. 30, 1992, Ser. No. 983,032
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **1 Claim**



1. A board game apparatus, comprising,

a game board, the game board having a continuous game path, having the game path formed of a plurality of contiguous spaces, some of the spaces include instructions to direct players to obtain or lose various predetermined quantities of dollar denominations, the game including a dice pair for directing movement about the path and the spaces, and,

the spaces including a real estate category for obtaining real estate, a vehicular category for attaining automobiles, an education category for directing attainment of various levels of education, a marriage category for attaining a marriage partner and children, a pay category for attaining systematic awards of monetary value, and a credit category for providing a player of a plurality of players a predetermined level of monetary credit, and a plurality of tokens, wherein one of said tokens is awarded each player of a plurality of players for positioning the tokens along the path, and,

the game board includes a first board and a second board, with the first board including a first board top surface and a second board including a second board top surface, wherein the first board top surface and the second board top surface are pivotal relative to one another, and a hinge web mounted between the first board and the second board permitting pivoting of the first board relative to the second board from a first position orienting the first board top surface in a coplanar relationship relative to the second board top surface, to a second position orienting the first board relative to the second board at an oblique angle, and the first board having a first board interior side and the second board having a second board interior side, wherein the first board interior side and the second board interior side are each arranged adjacent relative to one another, with the hinge web overlapping the first board interior side and the second board interior side, and,

the first board includes a first board exterior side spaced from and parallel the first board interior side, and the first board includes a slide bar mounted to reciprocate relative to the first board exterior side, the slide bar having a plurality of lock rods, the lock rods orthogonally oriented relative to the slide bar and the first board having a plurality of lock bar first conduits, wherein each of the first conduits receives one of said lock rods, and the first board having a predetermined width and each of the lock rods having a lock rod length greater than the predetermined width, and the second board having a plurality of second conduits, with each of said second conduits arranged for receiving one of said lock rods, and the second conduits are coaxially aligned with the first conduits in the first position to receive the lock rods in the second conduits to secure the first board relative to the second board.

5,299,809

NAVAL BATTLE TOY APPARATUS

Louis J. Evangelista, 51 Rivington Ave.; Louis J. Evangelista, Sr., 235 Hilman Ave., both of Staten Island, N.Y. 10314, and Michael Evangelista, 17 Silvia St., Staten Island, N.Y. 10312

Filed Jan. 26, 1993, Ser. No. 9,030
Int. Cl.[5] F41J *5/00*
U.S. Cl. 273—380 **3 Claims**

1. A naval battle toy apparatus, comprising,

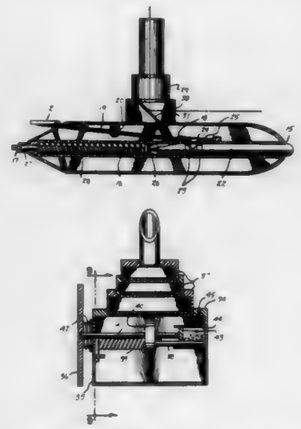
a first boat member in cooperation with a second boat member, wherein the first boat member includes an elongate first hull, the second boat member having an elongate second hull, the first hull having a first hull top wall, and

the first hull further including a first end opening and a second end opening, wherein the first end opening and the second end opening are coaxially aligned, and a guide tube directed coextensively between the first end opening and the second end opening, and

the guide tube having a guide tube slot directed into the guide tube, and a guide tube lever, the lever having a lever axle, the lever axle positioned within the first hull between the guide tube and the first hull top wall, the first lever axle having a first end plate positioned exteriorly of the first hull, and the lever having a second end lug mounted to the lever positioned within the hull, wherein the second end lug is arranged for reception within the guide tube slot, and

a projectile received within the guide tube, the projectile including an annular recess, wherein the second end lug is received within the annular recess, wherein the lever is arranged for pivoting about the lever axle to permit displacement of the second end lug relative to the annular recess, and

spring plate means mounted within the guide tube for effecting projection of the projectile from the guide tube upon displacement of the second end lug relative to the annular recess, and the spring plate means includes an ejector plate mounted within the guide tube, the ejector plate including an ejector plate rod slidably directed through the guide tube coaxially aligned therewith, and slidably directed through the second end wall opening, and an ejector spring wound about the ejector plate rod between the ejector plate and the hull within the guide tube, and the apparatus further including a spring plate fixedly mounted to the guide tube biasing the second end lug into engagement with the guide tube slot and the annular recess, and



a first boat member housing mounted to the first hull top wall, with the first boat member housing including a first window orthogonally oriented relative to the first hull top wall, and the first boat member housing including a second window orthogonally oriented relative to the first window, and a mirror positioned within the first boat member housing permitting viewing through the first window upon an individual peering into the second window, and

the second boat member includes a second hull, the second hull having a second hull top wall, and the second hull having second hull side walls, with a target plate mounted in adjacency to one of the second hull side walls, the target plate having a piston shaft projected through the second hull side walls, with a target plate spring interposed between the target plate and an adjacent one of said second hull side walls, and the target plate mounted to a first end of the piston shaft, and a piston mounted to a second end of the piston shaft, and a piston chamber positioned within the second hull, with the piston directed into the piston chamber, a powder positioned within the piston chamber, and a chamber chimney conduit directed from the piston chamber through the second hull top wall, whereupon compression of the powder within the piston

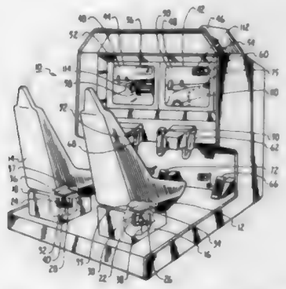
VOL 1161 ISS 1 AP 5 1994 UMI

chamber effects projection of the powder through the chimney conduit.

5,299,810
VEHICLE SIMULATOR INCLUDING CROSS-NETWORK FEEDBACK

Mark S. Pierce, Palo Alto; Milton H. Loper, III, Mountain View; Dennis D. Harper, Campbell; David S. Akers, Fremont, and Samuel Lee, San Jose, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Continuation of Ser. No. 674,684, Mar. 21, 1991, abandoned.
This application Jun. 23, 1992, Ser. No. 902,482
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—434 **21 Claims**



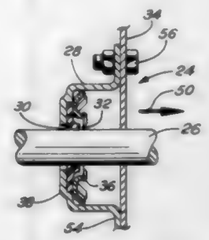
1. A vehicle simulator for modelling motion of a first simulated vehicle through a simulated space having simulated objects therein, which comprises:
- a first surface positionable in physical contact with a first user of said simulator for supporting the first user;
- a first solenoid having a plunger movable between a spaced position, wherein said plunger is distanced from said first surface, and an impact position, wherein said plunger contacts said first surface;
- a first video monitor; and
- a first computer for modelling motion of said vehicle through said space, wherein said first computer is electrically connected to said video monitor to cause said monitor to display a changing video image of said simulated space, said image corresponding to a view from said vehicle, said computer being electrically connected to said solenoid to cause said plunger to move from said spaced position to said impact position to contact said first surface and communicate an impact sensation to said first user when the position of a portion of one of said simulated objects coincides with the position of a portion of said simulated vehicle in said simulated space.

5,299,811
SEAL MEMBER MOUNTED IN HOUSING POCKET BY RESILIENT RETAINING MEMBER

Peter A. Kershaw, London, Canada, assignor to Siemens Automotive Limited, Chatham, Canada

Filed Dec. 23, 1992, Ser. No. 995,483
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—1 **3 Claims**

1. A seal member for sealing a shaft extending through a frame and having a negligible to a small pressure difference across the seal, the seal member comprising:
- a tubular housing member enclosed at one end with a central aperture having a diameter larger than the diameter of the shaft in said one end and having mounting flange means at the other end for mounting said member to a frame;
- a flexible elastomer sealing member having a predetermined thickness and outside diameter, said elastomer sealing member having a central aperture with a diameter smaller than the diameter of the shaft;
- a pocket in said housing member surrounding said central aperture for receiving said flexible elastomer sealing member, said pocket having a depth slightly less than the thickness of said elastomer sealing member and a diameter that is at least equal to the diameter of said elastomer sealing member so that said elastomer washer member locates in said pocket without being biased against the diameter of said pocket; and
- a resilient retaining member having an outside diameter which is greater than the inside tubular diameter of said

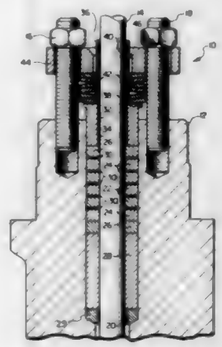


housing and a central aperture that has a diameter larger than the shaft diameter said retaining member having a plurality of tang members spaced around the periphery thereof for compressing said elastomer sealing member against the bottom of said pocket and forming an interference fit with the inner walls of said tubular housing member for securing and sealing said elastomer sealing member in said housing and around the shaft extending therethrough.

5,299,812
GRAPHITE PACKING

Ronald R. Brestel; Ronnald J. Funk; William C. Scheffert; Wilbur D. Hutchens; Virgil W. Pepper, and Frank E. Jensen, all of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Clayton, Mo.

Continuation of Ser. No. 791,431, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 632,097, Dec. 21, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 991,086
Int. Cl.[5] F16J *15/30*
U.S. Cl. 277—125 **20 Claims**



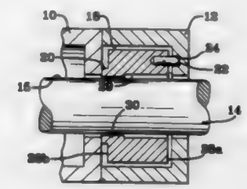
1. In a fluid valve, a packing system for reliably sealing a sliding stem operatively moving through the packing system in said fluid valve, said packing system reliably providing said seal over extended valve operating conditions, comprising:
- a packing box within said valve;
- packing follower mounting means for slidably supporting said sliding stem in said packing box;

- a packing assembly including a plurality of packing rings mounted around said sliding stem in said packing box for providing a fluid seal around the sliding stem to restrict fluid leakage from said packing box and to maintain said sliding stem centered in the packing box;
- live loading means including a spring for applying a spring loading on said packing assembly to establish and maintain said fluid seal;
- said plurality of packing rings including at least one flexible graphite ring (a), at least one graphite composite packing end ring (b) at each opposite end of said packing assembly and adjacent said flexible graphite ring along said sliding stem, at least one carbon bushing ring (c) on each opposite outer end of said packing assembly and adjacent said graphite composite packing end ring along said sliding stem, and a respective thin PTFE disc ring (d) formed on PTFE packing material and mounted between at least each of said adjacent (a) and (b) rings in said packing assembly, said respective thin PTFE disc ring (d) having a ring thickness substantially less than either of said rings (a), (b) or (c); and
- said spring maintaining a sufficient spring loading of substantial packing stress on said packing assembly to enable said thin PTFE discs to partially extrude PTFE packing material on said sliding stem and to lubricate said sliding stem in slidable movements through said sliding stem packing assembly over said extended valve operating conditions.

5,299,813
FLOATING SEAL RING

John M. McKenna, Port Murray, N.J., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Continuation of Ser. No. 811,134, Dec. 20, 1991, abandoned.
This application Oct. 23, 1992, Ser. No. 965,557
Int. Cl.[5] F16J *15/38*
U.S. Cl. 277—174 **4 Claims**

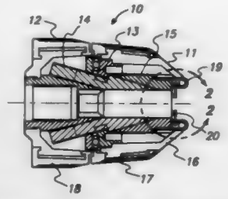


1. In combination:
- a retainer ring;
- a rotating shaft extending through the retainer ring;
- a seal ring, having a length, disposed in the retainer ring encircling the rotating shaft, the seal ring being permitted to float radially with respect to the rotating shaft while being retained axially with respect to the rotating shaft, the inner diameter of the seal ring being greater than the diameter of the rotating shaft, thereby forming an annular clearance between the shaft and the seal ring along the entire length of the seal ring;
- means for preventing hydraulic locking of the seal ring against the rotating shaft, the means for preventing hydraulic locking comprising the annular clearance being greater at one end of the seal ring than at the other end of the seal ring, wherein the seal ring has an annular inner surface which contains a stepped portion, the stepped portion having a smaller inner diameter than the portion of the annular inner surface adjacent the stepped portion; and
- means for preventing the seal ring from rotating.

5,299,814
TOOL CHUCK HAVING DUST SEAL

Glenn L. Salpaka, Salem, S.C., assignor to Jacobs Chuck Technology Corporation, Wilmington, Del.

Filed Apr. 9, 1993, Ser. No. 45,557
Int. Cl.[5] B23B *31/02*
U.S. Cl. 279—157 **9 Claims**

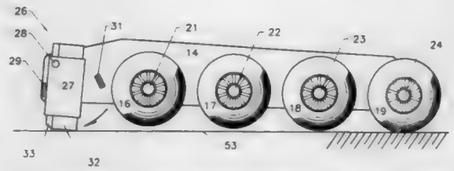


1. A tool chuck for holding a bit having a shank and a longitudinal axis on a rotary power tool, the tool chuck comprising:
- a chuck body having a first endface and a central bore, the central bore having a longitudinal axis;
- means for engaging the bit in the central bore of the chuck body so that the longitudinal axis of the bit coincides with the longitudinal axis of the chuck body;
- a circular brush comprised of a multiplicity of radially inward extending bristles, the multiplicity of inward extending bristles having free ends that define a circular aperture having a center; and
- means for engaging the circular brush to the tool chuck comprising a tube having an inverted end portion, the inverted end portion defining a flange that captures the circular brush against the first endface so that the center of the aperture is collinear with the longitudinal axis of the central bore and the free ends of the multiplicity of radially inward extending bristles contact the shank of the bit.

5,299,815
ROLLER SKATE BRAKING DEVICE

Kelly M. Brosnan, 3030 Regent St. #17; Paul S. Turin, 2418 Grant St., both of Berkeley, Calif. 94703; Robert G. Ullrich, 2262 Clinton Ave., Alameda, Calif. 94501, and Robert D. Wilkes, Jr., 2420 Grant St., Berkeley, Calif. 94703

Filed Feb. 18, 1992, Ser. No. 839,543
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 **19 Claims**



1. In a brake for a roller device bound to a skater's foot for skating on a surface, said device having at least one wheel forward of an aft wheel, the improvement comprising a friction means movable in relation to the plane of the lowermost points of said wheels between a stowed position above said plane and a braking position below said plane, means for deploying the friction means relative to the plane from the stowed position into the braking position, and return means for moving the friction means relative to the plane into the stowed position.

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5,299,816

WHEELED PLATFORM CARRIAGE WITH AN UPRIGHT HANDLE

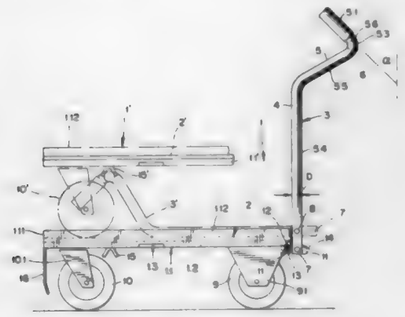
Manfred Vom Braucke, Bielefeld, and Hans Vom Braucke, Vlotho, both of Fed. Rep. of Germany, assignors to Bielefelder Küchenmaschinen- und Transportgeräte-Fabrik vom Braucke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 974,720

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 9114069[U]

Int. Cl.[5] B62B *5/06, 3/02*

U.S. Cl. 280—33.998 **16 Claims**



16. A platform carriage comprising:

load supporting means including a horizontal platform surface and a mating element mounted on an underside of said load supporting means;

support wheels attached to and projecting downwardly from said load supporting means;

a push/steering handle mounted at one end of said load supporting means, said handle being pivotably mounted adjacent a lower end on a horizontal axis to be able to be folded over onto said load supporting means, said handle including a projection connected thereto which extends upwardly when said handle is folded over for mating with said mating element of a carriage stacked thereon, said mating element forming a downwardly open recess for receiving said projection of a carriage stacked therebelow.

5,299,817

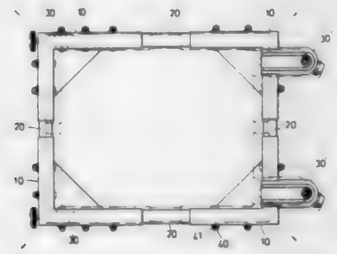
ADJUSTABLE MOBILE BASE

Seth Chang, No. 334, Tung-Jung Rd., Hsi-Jung Tsun, Ta-Li Hsiang, Taichung Hsien, Taiwan

Filed Jun. 9, 1992, Ser. No. 920,227

Int. Cl.[5] B62B *3/02*

U.S. Cl. 280—35 **3 Claims**



1. In an adjustable mobile base including a closed loop frame having a plurality of angled members and a plurality of tubular connectors interconnecting said angled members, the improvement comprising:

each of said angled members having two tube sections connected together to define a corner of said frame, each of said tube sections being formed with a plurality of spaced first engaging through holes which extends along a longitudinal axis of said tube section, each of said angled members further having a support plate secured to said tube sections at said corner;

each of said tubular connectors having two ends slidably and respectively relatively interfitting with a respective one of said tube sections of said angled members, each of said tubular connectors being formed with a plurality of spaced second engaging through holed at least one of which is aligned with at least one of said first engaging through holes; and

wherein said mobile base further includes a plurality of locking bolt units respectively extending through said first and second aligned through holes so as to join said tubular connectors and said angled members,

wherein said first through holes are rectangular in shape and have longer edges which are parallel to the longitudinal axis of the respective said tube section, and

said second through holes are square in shape and have edges shorter than said longer edges of said first through holes.

5,299,818

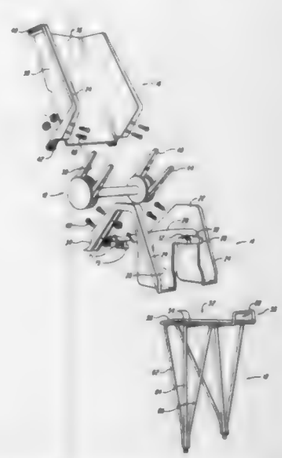
CHILD'S BICYCLE SEAT AND RACK ASSEMBLY

Dixon Newbold, Glocester, R.I., assignor to Bell Sports, Inc., Providence, R.I.

Filed Sep. 29, 1989, Ser. No. 415,174

Int. Cl.[5] B62J *11/00*

U.S. Cl. 280—202 **22 Claims**



1. A child's bicycle seat for attachment to a bicycle rack including a substantially rectangular frame having two side struts, a front end strut and a rear end strut, the seat comprising,

a seat for carrying a child,

means integral with the seat for slideably engaging the side struts as the seat is being assembled onto the rack and securing the seat against lateral and vertical movement relative to the rectangular frame,

means integral with the seat and projecting from a forward end of the seat for locking engagement with the front end strut, and

means integral with the seat and projecting from a rearward end of the seat for engaging the rear end strut and including an integral latch adapted to releasably engage the rear end strut so as to lock the seat against rearward movement relative to the rack.

5,299,819

COMBINATION CHAINLESS DRIVING DEVICE OF BICYCLE

Jiunn-Horng Leu, 208 guang-tsae lane, Jiayi city, Taiwan

Filed Dec. 2, 1992, Ser. No. 984,365

Int. Cl.[5] B62M *1/06*

U.S. Cl. 280—260 **7 Claims**



1. A chainless driving device of a bicycle, comprising:

a crank hanger housing a crank axle and having a connecting portion provided therein with a gear cell in communication with said crank hanger, with said connecting portion fastened with a front connecting mount in which a front auxiliary gear fastened to a drive shaft is mounted in a manner that said front auxiliary gear meshes with a front main gear fastened to said crank axle such that the crank axle is in communication with a rear wheel axle via said drive shaft;

a rear connecting mount fitted over a rear end of a fork tube and provided with a rear main gear mounted therein in a manner that said rear main gear meshes with a rear auxiliary gear in a gear box fastened to said rear connecting mount, said rear auxiliary gear having a shaft portion provided with a one-way ratchet sleeve and with an axial hole receiving therein said rear wheel axle, said rear wheel axle including a nave, said nave including a drive frame on its rear surface to receive said rear auxiliary gear, said drive frame having a one-way ratchet fastened to said shaft portion of said rear auxiliary gear in a manner that said one-way ratchet engages said one-way ratchet sleeve; and

an axle locking mount arranged in said gear box in a manner that said axle locking mount is mounted in a position perpendicular to said rear wheel axle, said axle locking mount having an axle receiving slot for receiving and locking therein an end portion of said rear wheel axle, a nut being secured to the end portion of the rear axle after the axle passes through the axle receiving slot.

5,299,820

BICYCLE FRONT SUSPENSION

Mert Lawwill, 148 Rockhill Dr., Tiburon, Calif. 94929

Filed Sep. 19, 1991, Ser. No. 762,600

Int. Cl.[5] B62K *3/00*

U.S. Cl. 280—277 **7 Claims**

1. A front suspension for a bicycle having

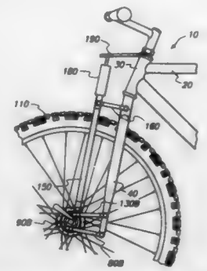
a front wheel with a hub,

hub plate means wherein the hub of the front wheel is rotatably affixed to the hub plate at a wheel connecting point, the hub plate means additionally having upper and lower connecting points B1,

a fork rotatably connected to a bicycle frame,

lower swing arm means having forward and rearward ends thereof, the forward ends thereof having a first connecting means and the rearward ends thereof having a second connecting means, the first connecting means being pivotably connected to the lower connecting points on the hub plate and the second connecting means being pivotably connected to the front fork,

upper swing arm means having forward and rearward ends thereof, and shorter than the lower swing arm means, the forward ends thereof being pivotably connected to the upper connecting points on the hub plate means and the rearward ends thereof being pivotably connected to the front fork above the lower swing arm means,



shock absorber means fixedly supported at an upper end thereof, and

stabilizer tube means having upper and lower ends and pivotably connected to the hub plate means at the lower end and a lower end of the shock absorber means at the upper end.

5,299,821

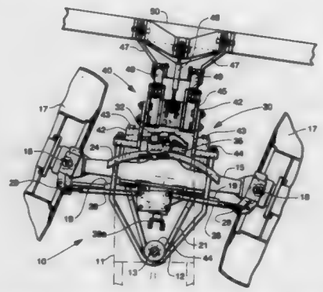
COMPOUND STEERING MECHANISM WITH FRONT MOUNTED IMPLEMENT ATTACHMENT APPARATUS

Joseph C. Hurlburt, Lancaster, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed May 17, 1993, Ser. No. 61,542

Int. Cl.[5] B60D *3/00*

U.S. Cl. 280—503 **9 Claims**



1. In a tractor having a chassis; a transverse front axle connected by a pivot assembly to a forward portion of said chassis and having pivotally mounted thereon a pair of laterally spaced steerable wheels, said front axle being pivotally connected to said chassis for lateral movement relative thereto; and steering means operably connected to said steerable wheels and to said front axle to control the pivotal movement of said steerable wheels relative to said front axle and to effect a corresponding lateral movement of said front axle in response to the pivotal movement of said steerable wheels, the improvement comprising:

an implement attachment mechanism detachably mounted to said front axle for lateral movement therewith relative to said chassis, said implement attachment mechanism being operable to attach an implement forwardly of said tractor to be pushed by said tractor when moving in a forward direction.

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5,299,822

PLASTIC SHELL SKI

Bernhard Mayr, Hard, and Lampl Heinz, Hohenems, both of Austria, assignors to Head Sport Aktiengesellschaft, Austria

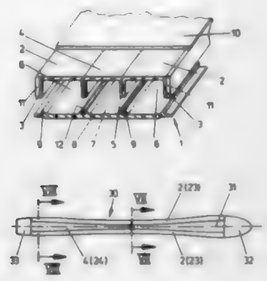
PCT No. PCT/AT91/00025, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO91/12057, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 11, 1991, Ser. No. 768,410

Claims priority, application Austria, Feb. 9, 1990, A295/90

Int. Cl.[5] A63C *5/14*

U.S. Cl. 280—610 **16 Claims**



1. A ski comprising:

a body portion formed by at least three elongated and adjacent U-shaped member including one inside U-shaped member and two outside U-shaped members each having a base portion and a pair of laterally spaced webs extending in a height dimension away from said base portion and in a length dimension along the base portion in a longitudinal direction of the ski; and

a substantially planar base plate provided with laterally spaced connecting sections having elongated grooves extending in the longitudinal direction of the ski, including means for securing free ends of said webs within said grooves of said connecting sections;

and further wherein said outside members have substantially constant widths over said length dimension and said inside member has a width which varies over said length dimension.

5,299,823

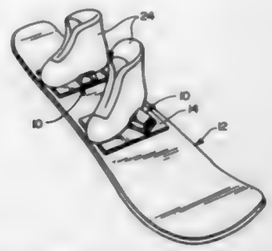
SNOW BOARD BINDING AND METHOD

John Glaser, 13404 SE. 32nd St., Bellevue, Wash. 98005

Continuation-in-part of Ser. No. 10,638, Jan. 28, 1993, abandoned. This application Jun. 25, 1993, Ser. No. 82,883

Int. Cl.[5] A63C *9/20*

U.S. Cl. 280—625 **34 Claims**



1. A binding assembly adapted to hold a person's boot in an operating location on a snow board or the like and to permit release of said boot, said binding assembly having a retaining position and a release position, said binding assembly having three operating modes, namely:

a. a first locking operating mode where said boot is fixedly held in said operating location by the binding in its retaining position;

b. a second intermediate operating mode where movement of said assembly from the retaining position to the release position is yieldingly resisted in a manner to permit movement of said boot into the operating location of the binding assembly and into retaining engagement therewith;

c. a third release operating mode where said assembly is either at, or easily movable to, said release position to permit easy removal of said boot from said operating location,

said binding assembly comprising:

a. a base mounting means;

b. a jaw means that is mounted to said base mounting assembly so as to be movable between a boot retaining position engaging said boot at said operating location and a boot release position spaced from said boot retaining position;

c. a locking means having a locking position where said locking means is in operative locking engagement between said jaw means and said base mounting means to prevent movement of said jaw means from said boot retaining position to said boot release position and a lock release position where said locking means is out of said operative locking engagement;

d. spring means to urge said jaw means toward said retaining position; and

e. selectively operable positioning and control means operably engaging said locking means and movable between first, second and third control mode positions to place said assembly in said first, second and third operating modes, respectively, as follows:

i. in said first control mode position to place said locking means in said locking position to prevent movement of said jaw means from said boot retaining position;

ii. in said second control mode position to place said locking means in said lock release position and to permit said spring means to urge said jaw means to said boot retaining position;

iii. in said third control mode position to limit the effect of the spring means to either move said jaw means to the boot release position or to at least partly limit effect of said spring means so that said jaw means can, with less resisting force from said spring means, move to said boot release position.

5,299,824

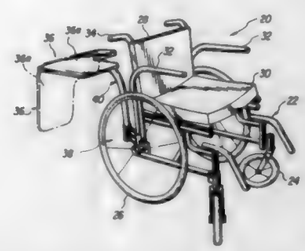
WHEEL CHAIR WITH ROTATABLE TRAY

Richard D. Roberts, 545 Whitman Blvd., Elyria, Ohio 44035, and Matthew J. Murphy, 3766 Lynne Dr., Sheffield Lake, Ohio 44054

Filed Oct. 21, 1992, Ser. No. 964,100

Int. Cl.[5] B60R *9/00*

U.S. Cl. 280—304.1 **6 Claims**



1. In a wheel chair construction of the type which is provided with a frame construction for attaching front and rear wheel members, generally vertical rear and generally horizonal bottom seat members, arm supports having generally horizontal top surfaces and rear push means, the improvement which comprises:

a. a pivotal tray means, said tray means having a planar surface;

b. rotatable means for holding said pivotal tray means and for rotating said pivotal tray means from a first position in which said planar surface is generally horizontal and generally parallel to said top surfaces of said arm supports to a second position in which said planar surface is generally vertical and generally parallel to and behind said rear seat member.

5,299,825

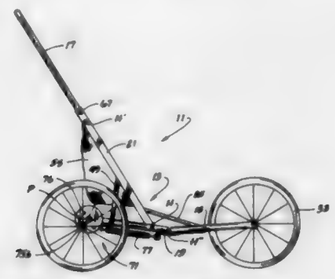
COLLAPSIBLE STROLLER

Clark D. Smith, 7154 Pershing, St. Louis, Mo. 63130

Filed Sep. 2, 1992, Ser. No. 939,114

Int. Cl.[5] B62B *7/06*

U.S. Cl. 280—644 **16 Claims**



1. A collapsible stroller comprising:

a central frame having a front portion, and a rear portion;

rear wheels mounted for rotation on the central frame; p1 a forward frame member hingedly connected to the central frame for swinging movement between a use position in which the forward frame member extends forwardly of said front portion of the central frame and a stowed position in which the forward frame member is superposed with and substantially flat on the central frame;

a front wheel mounted for rotation on the forward frame member;

a rearward frame member hingedly connected to the central frame for swinging movement between a use position in which the rearward frame member extends upwardly and rearwardly from said rear portion of the central frame and a stowed position in which the rearward frame member is superposed with and is substantially flat on the central frame;

the stroller being selectively configurable between the use position in which the forward frame member extends forwardly of the central frame and the rearward frame member extends upwardly and rearwardly from the central frame and the stowed position in which the forward frame member and rearward frame member are superposed with the central frame;

the central frame having peripheral edges, and the forward frame member and the rearward frame member being constructed and arranged relative to the central frame such that in the stowed position the forward frame member and the rearward frame member are disposed substantially within the peripheral edges of the central frame;

the forward frame member being connected to the front portion of the central frame for swinging rearwardly and downwardly from its use position to its stowed position under the central frame and the rearward frame member is connected to the rear portion of the central frame for swinging forwardly and downwardly from its use position to its stowed position over the central frame, the front wheel projecting above and below the central frame when the forward frame member is in the stowed position;

the rear portion of the central frame being pivotally mounted to the front portion of the central frame for swinging motion between the use position in which the rear portion extends generally upwardly from the front portion and lies generally in a plane oblique to a plane including the front portion, and the stowed position in which the rear portion is substantially coplanar with the front portion.

5,299,826

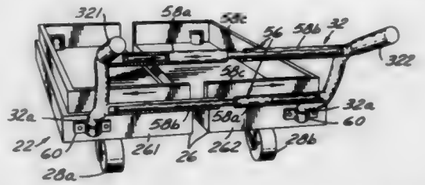
MULTI-FUNCTION CART

Henry C. Flowers, 19032 W. Davison, Detroit, Mich. 48223

Division of Ser. No. 854,228, Mar. 20, 1992, Pat. No. 5,186,479. This application Nov. 4, 1992, Ser. No. 971,893

Int. Cl.[5] B62B *3/02*

U.S. Cl. 280—651 **14 Claims**



1. A cart comprising a cart body, said cart body comprising:

a substantially planar bed having a front end, a rear end, a left end, a right end, an upper side and an underside, said front, rear, left and right ends defining a perimeter of said bed, said bed being divided longitudinally from said front end to said rear end into a first bed member and a second bed member, said second bed member being in planar alignment with said first bed member;

bed extension member means located at said underside of said bed and connected with said first and second bed members for holding said first bed member in parallel alignment with said second bed member while simultaneously guiding said first and second bed members between a first mutual position in which said first and second bed members are mutually adjacent and a second mutual position in which said first and second bed members are separated a predetermined distance;

a rail connected with said bed, said rail running along said perimeter at said upper side of said bed;

a first set of wheels located on said underside of said bed and connected with said first bed member at a position substantially adjacent said right end;

a second set of wheels located on said underside of said bed and connected with said second bed member at a position substantially adjacent said left end;

handle means connected with said front end of said bed for providing a hand hold for a user to move the cart, said handle means comprises a first handle connected with said first bed member, a second handle connected with said second bed member, and reinforcement member means connected with said first and second handles, said reinforcement member means comprising first and second telescoping members attached to said first and second handles respectively and being extensible so as to accommodate said mutual movement of said first and second bed members; and

a bed insert structured for being placed between said first and second bed members when said first and second bed members are separated said predetermined distance, said bed insert having a front end and a rear end, said bed insert having a bed rail along said front and rear ends thereof, and said bed insert being restable upon said bed extension member means so that an upper side of said bed insert is in planar alignment with said upper side of said bed and so that said bed rail of said bed insert aligns with said rail of said bed.

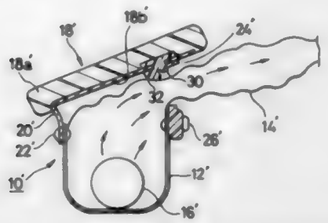
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,827

AIR BAG SYSTEM WITH A JOINING STRUCTURE BETWEEN A CASING AND A DOOR

Tadahiro Igawa, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,052
Claims priority, application Japan, Jan. 31, 1992, 4-16358
Int. Cl.[5] B60R 21/16
U.S. Cl. 280—732 9 Claims



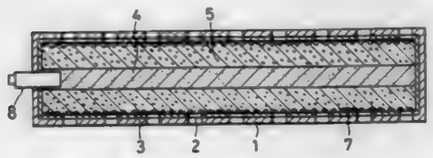
1. An air bag system having a jointing structure between a casing and a door comprising:
- a casing having an opening at a front face thereof opened toward a cabin of a vehicle;
- a door covering said opening and having opposed sides, one side being connected with said casing near said opening so that the other side of said door can turn out in an opening direction;
- a breakable joint for jointing the other side of said door to said casing and capable of being broken to disconnect said casing and said door; and
- a projection formed on a back of said door near said breakable joint, said projection being located closer to a center of the back of said door than said breakable joint and having a smooth outer face, said projection projecting higher than a portion at which said breakable joint is broken when an air bag is extended.

5,299,828

AIR BAG INFLATOR HAVING CIRCUMFERENTIALLY DISPOSED AUTO IGNITION MATERIAL

Hideo Nakajima, and Akira Kokeguchi, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,619
Claims priority, application Japan, Jan. 10, 1992, 4-003072
Int. Cl.[5] B60R 21/26
U.S. Cl. 280—741 5 Claims



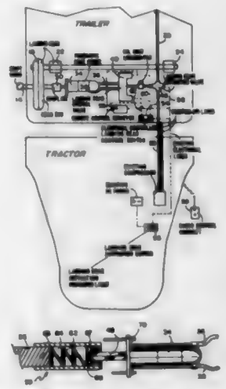
1. An inflator of an air bag device comprising:
- a cylindrical vessel having an inner surface and gas releasing openings disposed in said inner surface about the circumference thereof,
- a gas generating agent disposed in said vessel for inflating an air bag,
- a boosting agent for starting a gas generating reaction of said gas generating agent, said boosting agent being located in a middle of said gas generating agent,
- an igniting agent having a pyrolytic temperature lower than that of said boosting agent, said igniting agent being disposed outside the gas generating agent and distributed over almost the entire inner surface of the cylindrical vessel so that the igniting agent reacts first when the vessel is heated, and
- means for igniting said boosting agent actuated only when said air bag is to be inflated for protecting a user.

5,299,829

PNEUMATIC SYSTEM FOR THE AUTOMATIC OPERATION OF SEMI-TRAILER LANDING GEAR

Bernard A. Rivers, Jr.; Darrell D. Amidon, both of 20891 Sailmaker Cir., Huntington Beach, Calif. 92648; Bernard A. Rivers, III, 8741 B. Hoffman St., Buena Park, Calif. 90620, and Donald P. Rivers, 79 Ocean Ave. Extension, York Beach, Me. 03910

Filed Oct. 9, 1992, Ser. No. 958,685
Int. Cl.[5] B60S 9/10
U.S. Cl. 280—766.1 2 Claims



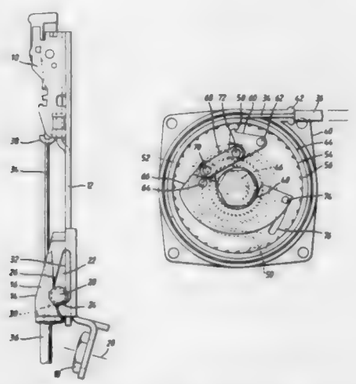
1. A device for the automatic raising and lowering of a tractor-trailer's landing gear on a trailer having a brake line, said landing gear having a gear reduction box assembly mounted to a shaft driving landing legs alternately upwards or downwards, such gear reduction box assembly having an outboard crank shaft for the rotation of the gears thereof and an inboard shaft extension of said crank shaft which outboard shaft in a manually maneuverable outward mode position engages a high gear and in a manually maneuverable inward mode position engages a low gear within said gear reduction box assembly for the raising and lowering of said landing legs of the trailer to support, raise or lower loaded or unloaded trailers, comprising:
- a pneumatic gear vane-type motor providing smooth, non-pulsating rotary motion, said motor having an output shaft having an end, said motor having first and second air inlets, each allowing air to drive said pneumatic gear motor in opposite directions, said motor mounted on the inboard side of said gear reduction box assembly;
- a coupling member coupling said output shaft of said pneumatic gear motor to said inboard shaft;
- means within said coupling to allow for an axial sliding movement of said inboard shaft during a shifting between high gear and low gear of said gear reduction assembly;
- said gear motor output shaft being square and having an end;
- a receipt member with a square aperture defined therein, said gear motor output shaft being slideably engaged in said square aperture;
- a housing having a first end and a second end, said second end having an aperture defined therein, said first end of said housing having said receipt member affixed thereto allowing said housing and receipt member to laterally slide on said gear motor output shaft, said aperture at said second end of said housing receiving said inboard shaft;
- means to affix said inboard shaft to said housing;
- a plate disposed within said housing at the end of said gear motor output shaft; and
- a spring member disposed in said housing between said inboard shaft and said plate to urge said inboard shaft outward to engage said outward mode position of gearing modes of said gear reduction box assembly such that when said manually maneuverable outboard shaft is manually maneuvered to said inward mode, said inboard shaft moves toward said motor, compressing said spring member and moving said housing and receipt member toward said motor while said gear motor output shaft slides laterally within said receipt member while still engaging said housing to rotate said inboard shaft to raise or lower said landing gear in a selected one of said high gear or low gear mode positions
- a knob member connected to said outboard shaft for a manual inward and outward axial movement as desired of the outboard shaft of said gear reduction box assembly;
- a landing gear activation valve disposed on said brake line of said trailer adapted to direct air from said brake line;
- a landing gear control valve adapted to receive air directed from said landing gear activation valve, said landing gear control valve having a first and second output alternately directable;
- a first air line interconnected from the first output of said landing gear control valve to said first air inlet of said pneumatic gear motor;
- a second air line attached from said second output of said landing gear control valve to said second air inlet on said pneumatic gear motor, said pneumatic gear motor drivable in a first direction by air coming from said first air line and in the opposite direction by air coming in said second air line;
- means to control said landing gear control valve's selection of said first and second air output; and
- means to control said landing gear activation valve to direct air when desired from said brake line to said landing gear control valve.

5,299,830

SAFETY BELT PRE-TENSION ASSEMBLY

Harry Hanna, Armagh, and William E. Heaney, Bangor, both of Ireland, assignors to European Components Corporation, Wilmington, Del.

Filed Mar. 25, 1992, Ser. No. 857,382
Claims priority, application United Kingdom, Mar. 26, 1991, 9106450
Int. Cl.[5] B60R 22/46
U.S. Cl. 280—806 6 Claims



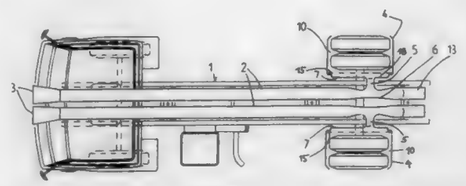
1. In a safety belt assembly comprising a buckle, a belt wound on a retractable reel and a tongue connected to said belt and engageable with said buckle, a safety belt pre-tension assembly comprising a locking mechanism support, a safety belt buckle mounted on said support for axial displacement relative to said support, a housing, a winding reel rotatable in said housing, a helical power spring associated with said reel to cause rotation of said winding reel, a flexible element having one end connected to said winding reel, so that said flexible element will be wound thereon upon operation of said power spring, the other end of said flexible element being connected to said buckle, to move said buckle axially of said support in a first direction, effective to tension a safety belt held by said buckle, actuation means to trigger actuation of said helical spring upon the actuation means being subjected to a deceleration greater than a predetermined value and locking means allowing said buckle to move in said first direction, but not in a direction opposite thereto, said actuation means comprising an annular internal ratchet, inwardly directed ratchet teeth on said annular ratchet and a pawl pivotally mounted on said housing and cooperable with said ratchet teeth to prevent rotation of said winding reel when said pawl is engaged with the ratchet teeth, a toggle mechanism to disengage said pawl from the ratchet teeth upon deceleration greater than said predetermined value, said toggle mechanism including a sensing lever pivotally mounted at a first pivot point to said housing and a toggle link pivotally mounted at a second pivot point to said sensing lever and at a third pivot point to said pawl, said first, second and third pivot points being substantially aligned when said pawl is engaged with one of said ratchet teeth, deceleration above said predetermined value being effective to cause said sensing lever to pivot with respect to the winding reel, effective to cause said toggle link and said pawl to pivot, whereby the pawl is disengaged from the associated ratchet tooth.

5,299,831

DEVICE FOR REDUCING ROAD SPRAY FROM MOTOR VEHICLE WHEELS

Alfred Schmidt, Dorf 35, D-8130 Bernau, Fed. Rep. of Germany

PCT No. PCT/EP91/00461, § 371 Date Jan. 11, 1992, § 102(e) Date Jan. 11, 1992, PCT Pub. No. WO91/13792, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 12, 1991, Ser. No. 773,638
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1990, 4007771
Int. Cl.[5] B62D 25/16
U.S. Cl. 280—851 6 Claims



1. An apparatus for suppression of spray-mist escaping from the wheel area of vehicles having laterally spaced wheels comprising an exhaust suction apparatus located on each side of the vehicle, each suction apparatus including a fender surrounding a respective one of the laterally spaced wheels, said fender having a circumferential upper portion and a suction hood formed on an inner portion of the fender, an inner wall located within said fender and laterally spaced from said suction hood, said inner wall having a plurality of suction intake openings extending therethrough, a suction tube connected at one end to an outlet formed in said suction hood and connected at an opposite end to an exhaust conduit, said exhaust conduit having an exhaust outlet located at a rear end of the vehicle, and means for creating a suction force in said suction tube for directing spray-mist from the fender to the exhaust outlet.

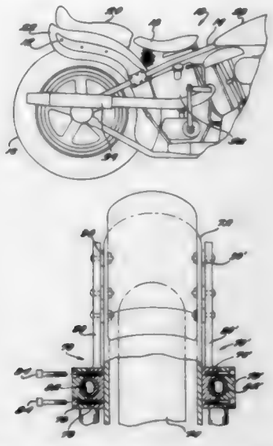
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,832

REAR FENDER SUPPORT FOR MOTORCYCLE

Ted L. Price, Sr., Columbia, S.C., assignor to Ted L. Price and Mike Garvey

Filed Sep. 24, 1991, Ser. No. 764,895
Int. Cl.[5] B62D *25/18*
U.S. Cl. 280—854 19 Claims



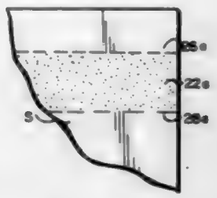
1. An article for supporting a rear fender of a motorcycle, said rear fender having a contour and said motorcycle having a rigid frame, said article comprising:
a clamp having a first portion and a second portion;
a curved member attached to and extending from said first portion of said clamp, said curved member formed to follow said contour of said rear fender;
first means for attaching said first portion to said second portion with said rigid frame therebetween; and
second means for attaching said curved member to said fender so that said article, with said rigid frame between said first and said second portions, supports said fender.

5,299,833

PAPER SHEETS WITH PRESSURE SENSITIVE ADHESIVE FORMING AN EASEL PAD

Richard F. Madole, Jr., Stillwater, Okla., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Apr. 26, 1993, Ser. No. 51,872
Int. Cl.[5] B42D *1/00*
U.S. Cl. 281—2 14 Claims



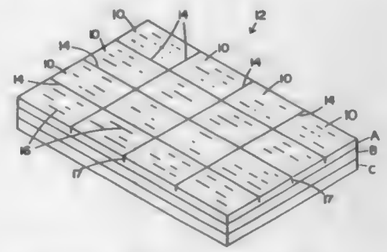
1. A pad comprising:
a plurality of discrete paper sheets in registration with and overlying one another;
means along registering margins of said sheets for securing said sheets to one another to form a generally rectilinear pad containing said sheets;
a first separation line extending generally parallel to and inwardly of the registering margins of said sheets;
a second separation line extending generally parallel to said first separation line and spaced inwardly therefrom; and
repositional adhesive disposed on a face portion of each sheet between said separation lines whereby each said sheet may be removed from the pad along said first separation line, adhesively secured to a surface and subsequently removed from the surface along the second separation line.

5,299,834

COUPON CARD SYSTEM

Spensar Kraige, 2686 Johnson Dr., Suite B, Ventura, Calif. 93003

Filed May 1, 1992, Ser. No. 877,101
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—51 10 Claims



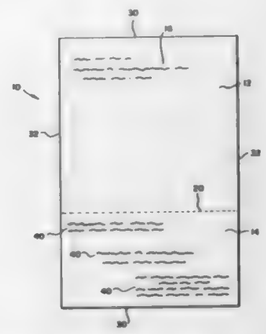
1. A collection of coupons physically grouped or ease of use and transport on a durable, compact, credit-card sized card comprising:
a support layer comprising a central thickening layer, said support layer having top and bottom surfaces;
a reinforcing layer comprising a plastic material attached to the bottom surface of said support layer;
a top layer comprising an array of adjacent coupons;
means for adhesively attaching the top layer to the top surface of the support layer so that the coupons can be individually removed from said card and subsequently readhered to another object.

5,299,835

BUSINESS CARD NOTE PAPER

William H. Sonnenberg, 1801 S. Federal Hwy. #215, Delray Beach, Fla. 33483-3333

Continuation-in-part of Ser. No. 762,336, Sep. 19, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,827
Int. Cl.[5] B42D *15/00*
U.S. Cl. 253—56 11 Claims



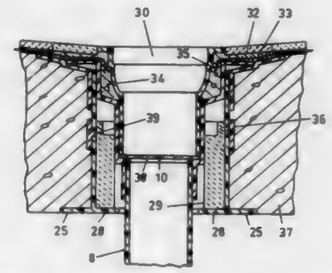
1. A promotional note page comprising:
a rectangular sheet having a first page edge essentially equivalent in length to the length of a conventional business card, and having two opposing side edges intersecting said first edge,
separation means parallel to said first edge and extending from one said side edge to the other said side edge, thereby dividing said rectangular sheet into a first page portion and a second page portion,
said separation means being spaced from said first edge a distance essentially equivalent to the width of a conventional business card,
said first page portion having a writing space comprising at least half of the area of one side of said sheet and providing space for writing notes,
said second page portion defining a business card.

5,299,836

FLOOR WASTE FITTING SUPPORT

Robert J. Woods, 28 Hawdon Close, Camden, New South Wales, 2570, Australia

PCT No. PCT/AU91/00070, § 371 Date Nov. 14, 1991, § 102(e) Date Nov. 14, 1991, PCT Pub. No. WO91/14838, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 1, 1991, Ser. No. 773,624
Claims priority, application Australia, Mar. 21, 1990, PK5135; Jun. 19, 1990, PK0682
Int. Cl.[5] E03C *1/12;* F16L *5/02*
U.S. Cl. 285—42 5 Claims



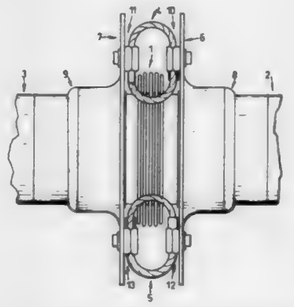
1. A waste water fitting support assembly for allowing seepage water entering said support externally of a waste water fitting mounted in said support to merge with waste water passing through the waste water fitting, said waste water fitting support comprising:
a support member having a body, an imperforate body wall circumscribing a stepped bore extending through said body, an outlet end for said stepped bore, an inlet end for said stepped bore with a continuous flange extending radially outwardly from said inlet end, a first bore portion extending into the bore from said inlet end for receiving seepage water from said continuous flange for defining an outer surface of an annular seepage water receiving zone, an inner surface of which is defined by a waste water fitting when mounted in said support member, a second bore portion extending into said bore from said outlet end, a transition bore portion separating the first bore portion and the second bore portion and including water leakage paths;
means for positioning including means for axially positioning and means for centrally positioning a waste water fitting in a support bore;
a bore size reducing shoulder in said transition bore portion adjacent the second bore portion and facing said inlet end;
abutment means adjacent said reducing shoulder at an elevation above said shoulder and facing said inlet end to axially position a waste water fitting in said support member by limiting the penetration of the waste water fitting into said bore for maintaining a discharge end of the waste water fitting clear of said shoulder, said means for centrally positioning the waste water fitting in said stepped bore of said support member extending away from said abutment means towards said inlet end of said bore being for axial sliding frictional engagement by a waste water fitting, said seepage water leakage paths extending through said abutment means for connecting said first bore portion to said bore downstream of said shoulder;
a fall and cap member having an elongated body, an axial opening through the elongated body with two ends, one end of said axial opening being dimensioned for receiving said support member, a positioning flange extending radially outwardly from said one end of said axial opening, an annular depression in said positioning flange extending outwardly from said one end of the axial opening wherein said continuous flange of said support member is housed.

5,299,837

DEVICE FOR ARTICULATELY INTERCONNECTING MEMBERS OF AN EXHAUST LINE, IN PARTICULAR OF AN AUTOMOBILE VEHICLE

Jean Lagier, Arcey, France, assignor to ECIA-Equipements et Composants Pour L'Industrie Automobile, Audincourt, France

Filed Nov. 19, 1992, Ser. No. 978,832
Claims priority, application France, Nov. 22, 1991, 91 14432
Int. Cl.[5] F16L *55/02*
U.S. Cl. 285—49 13 Claims



1. Device for articulately interconnecting members of an exhaust line, in particular of an automobile vehicle, said device comprising: at least one axially extending flexible conduit element interposed between said members of said line for interconnecting said members; fastening elements, fixed to opposite ends of said at least one flexible conduit element, for fastening together said members; and means for damping relative displacement of said ends of said at least one flexible conduit element and therefore of said members of said line; said damping means being evenly arranged about said at least one flexible conduit element and interposed between said fastening elements, each of said damping means comprising at least one deformable coil of metallic cable for damping relative displacements of said fastening elements and for avoiding the transmission of vibrations along the exhaust line, said coil being fixed to said fastening elements.

5,299,838

PIPE CONNECTION WITH CLIP ASSEMBLY HAVING PIVOTING PLATES

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Panchino, Taipei Hsien, Taiwan

Filed Jun. 25, 1992, Ser. No. 903,747
Int. Cl.[5] F16L *21/08*
U.S. Cl. 285—88 4 Claims

1. A pipe connection comprising:
a connection slot located at an open end of a first pipe, said connection slot including an internally threaded portion

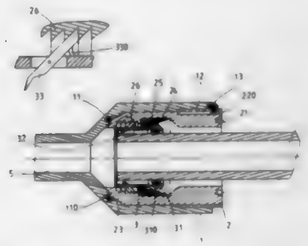
VOL 1161 ISS 1 APR 5 1994 UMI

adjacent said open end and a ring-shaped groove formed therein at a position remote from said open end;

a gasket positioned within said ring-shaped groove;

a sleeve defined by a hollow cylinder having axially spaced first and second ends, said sleeve including an externally threaded portion adjacent said first end and a bulging ring extending axially from said second end, said sleeve further including an internal groove and a plurality of axially spaced, one-way teeth formed between said first and second ends, said sleeve being adapted to be received within said connection slot with the externally threaded portion of said sleeve threadably engaging the internally threaded portion of said connection slot and said bulging ring extending into said ring-shaped groove;

a conically shaped stopper ring positioned within the internal groove of said sleeve, said conically shaped stopper ring increasing in size toward the second end of said sleeve;



a clip assembly including a short pipe member sized to match the internal diameter of said sleeve, said clip assembly having one end thereof formed with a radially extending flange ring and a second end thereof formed with a plurality of stretching clips that are adapted to deflect upon engagement with said sleeve and to engage said conically shaped stopper ring when said clip assembly is positioned within said sleeve, said clip assembly further including circumferentially spaced anti-skiing plates, each of said anti-skiing plates being pivotally mounted to said short pipe member intermediate a first end of the anti-skiing plate which is adapted to engage at least one of said plurality of axially spaced, one-way teeth and a second end thereof; and

a sealing ring positioned within said clip assembly at said stretching clips, said sealing ring being adapted to engage, along with the second end of each of said anti-skiing plates, a second pipe that is to be connected to said first pipe by being inserted into said short pipe member.

5,299,839

CONNECTION AND/OR T-JOINT FOR FLEXIBLE TUBES

Cesare Mogavero, Cirie' , Italy, assignor to Saiag Industria S.p.A., Cirie, Italy

Filed Feb. 26, 1993, Ser. No. 23,621

Claims priority, application Italy, Apr. 7, 1992, T092A000319

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] F16L *17/02*

U.S. Cl. 285—110 **4 Claims**

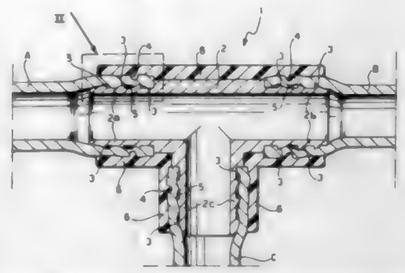
1. A connection for flexible tubes, comprising:

a rigid tubular insert with at least two ends,

at least two flexible tubes, the ends of which are force-fitted onto the ends of the tubular insert, and

a cover of plastic material moulded over the tubular insert and over the ends of the tubes which are fitted onto the insert,

wherein at least one respective integral, flexible, circular sealing lip projects from the internal surface of the end of each



tube and engages the external surface of the corresponding end of the insert.

5,299,840

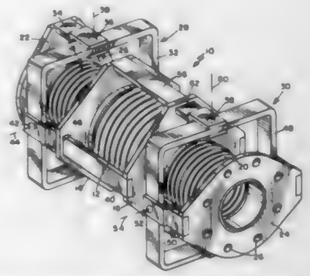
IN-LINE PRESSURE BALANCED UNIVERSAL EXPANSION JOINT

Donald R. Heye, San Diego, Calif., assignor to Hyspan Precision Products, Inc., Chula Vista, Calif.

Filed May 20, 1993, Ser. No. 65,542

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—114 **6 Claims**



1. An expansion joint for a piping system, comprising:

a central bellows having opposite first and second ends;

a first end bellows connected in line with the central bellows at the first end of the central bellows;

a second end bellows connected in line with the central bellows at the second end of the central bellows;

each end bellows having an outer end adapted for connection to a section of piping in the piping system;

a first gimbal assembly pivotally linking the outer end of the first end bellows to the second end of the central bellows;

a second gimbal assembly pivotally linking the outer end of the second end bellows to the first end of the central bellows; and

each gimbal assembly comprising a gimbal ring surrounding the respective first and second end bellows, a first linkage means pivotally linking the gimbal ring to the outer end of the respective first and second end bellows, and a second linkage means pivotally linking the gimbal ring to the respective second and first end of the central bellows, the first and second linkage means having pivot axes perpendicular to each other.

5,299,841

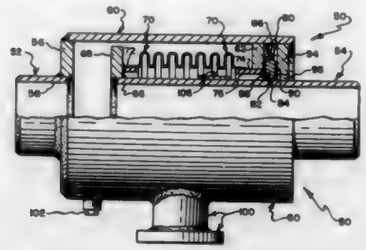
SAFETY FLOW RESTRICTOR FOR EXPANSION JOINTS

David A. Schaefer, Grand Island, N.Y., assignor to Adsco Manufacturing Corp., Buffalo, N.Y.

Filed Feb. 8, 1993, Ser. No. 18,855

Int. Cl.[5] F16L *27/02*

U.S. Cl. 285—299 **9 Claims**



1. In an expansion joint for coupling two conduits in a manner accommodating relative axial movement between said conduits and including a housing having a longitudinal axis for receiving the ends of said conduits wherein at least one of said conduits has an end movable within said housing said flexible coupling means in said housing connected to relative axial movement between said conduits and for providing a fluid seal between the interiors of the conduits and the end of said expansion joint which receives the end of said one conduit:

flow restrictor means operatively associated with said housing and said with one conduit for restricting fluid flow out the end of said expansion joint which receives the end of said one conduit in the event that said flexible coupling means fails to maintain the fluid seal between the interiors of the conduits and said end of said expansion joint, said flow restrictor means comprising a member surrounding said one conduit in closely-fitting axially movable relation; and retainer means for holding said member against axial movement relative to said housing; so that said member and said retainer means co-operate to provide a greatly restricted passage for flow of any fluid tending to escape out the end of said expansion joint, said retainer means defining a peripheral region radially outwardly of said member to allow movement of said one conduit relative to the other conduit in a radial direction toward and away from said housing and to allowing canting movement of said one conduit about the longitudinal axis of said housing.

5,299,842

FLUID LINE CLAMP

Ernest E. Marks; Willard L. Hofer, and Nathan P. Lee, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 24, 1992, Ser. No. 919,465

Int. Cl.[5] F16L *19/02*

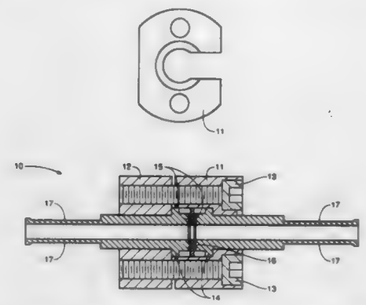
U.S. Cl. 285—325 **3 Claims**

1. A removable, torque free, clamping device to firmly join fluid transmission lines at their respective termination points, said device comprising:

a) a first one piece end plate having a defined surface bound and a first axis and a second bisecting axis normal thereto, with a larger annular opening and a proximate and successive smaller annular opening concentric with and extending along said first axis and with a narrow slot having sides parallel to each other and equidistant from said second axis, traversing said first axis and extending along said second axis from the outer surface on one side of said plate and intersecting the two concentric and successive annular openings;

b) a second one piece end plate having a defined surface boundary having a third axis and a fourth bisecting axis normal thereto, with an annular opening concentric with and extending along said third axis, said second plate having a narrow slot having sides parallel to each other and equidistant from said fourth axis, transversing said third axis and extending along said fourth axis from the outer surface on one side and intersecting said annular opening of said second plate;

c) said first end plate and second end plate each having a plurality of matching annular bores extending therethrough, parallel to and located radially from said first axis, with the annular bores in said first end plate having a smooth bore and the matching bores in the second end plate being threaded to hold and contain a plurality of standard threaded bolts connecting and evenly axially drawing together said first end plate and second end plate during the use of said torque free clamping device;



d) two fluid line termination adapters, having matching, concentric annular openings extending therethrough, each with a radially outwardly extending flange integral thereto, which circumscribes one end and is concentric with the longitudinal axes of said adapters, which, on their respective opposing ends, are each fixedly and fluidly attachable to a termination point of a fluid transmission line being connected to another fluid line; and

e) said line termination adapter flanges having on the end surfaces which proximately face each other on a common longitudinal axis when the line termination points are to be joined, suitable sealing surfaces opposing each other, which seal against opposing sides of a suitable removable gasket to sealably and fluidly connect said fluid lines.

5,299,843

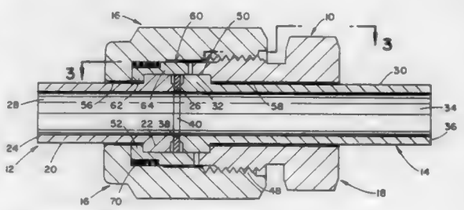
ANTI-TWIST COUPLING ASSEMBLY

Jeffrey L. Weigl, Northfield Center, and Gerald A. Babuder, Mentor, both of Ohio, assignors to Cajon Company, Macedonia, Ohio

Continuation of Ser. No. 468,691, Jan. 23, 1990, Pat. No. 5,066,051. This application Jun. 27, 1991, Ser. No. 721,933

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—328 **29 Claims**



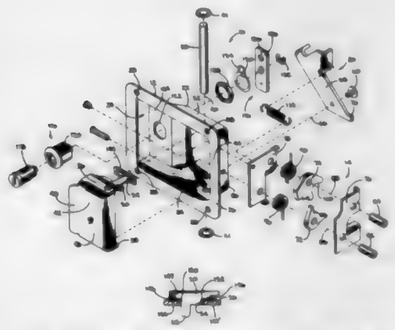
1. A tube coupling comprising:

first and second coupling components respectively having first and second radially extending flanges and flow passages terminating in openings formed in transversely ex-

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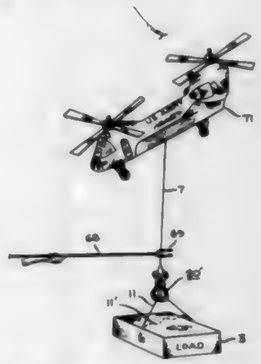
tending end faces, the end faces being provided with sealing means in axial alignment therewith;
said first and second coupling components being positioned with said end faces in aligned face-to-face relationship;
first and second nut members associated respectively with said first and second coupling components and cooperating to define a chamber about the end faces of said first and second coupling components, said first and second nut members being joined by threaded portions arranged such that rotation of said first nut member in a first direction relative to said second nut member produces movement of said first nut member axially toward said second nut member; and,
an anti-twist member located between said first nut member and said first coupling component including means for conducting axial forces from said first nut member to said first flange, said anti-twist member and said second nut member including axially extending portions including means for preventing relative rotation therebetween during rotation of said first nut member in said first direction.

5,299,844
SEALED LATCH ASSEMBLY
Stephen J. Gleason, Charles City, Iowa, assignor to Tri/Mark Corporation, New Hampton, Iowa
Filed Oct. 30, 1992, Ser. No. 969,440
Int. Cl.[5] E05C *3/02*
U.S. Cl. 292—240 **20 Claims**



1. A latch assembly for releasably holding a strike element, said latch assembly comprising:
a release lever;
a housing having a body defining a receptacle for the release lever and having a wall bounding the receptacle,
there being an opening in the wall;
means for mounting the release lever to the housing for movement relative to the housing between a) a normal position and b) a release position;
latch means on the housing for cooperating with a strike element and movable selectively relative to the housing between a) a latched position wherein the latch means will hold a strike element and b) an unlatched position wherein a strike element held by the latch means with the latch means in its locked position can be released from the latch means;
means operatively connecting between the release lever and the latch means for moving the latch means from its latched position into its unlatched position as an incident of the release lever moving from its normal position into its release position,
said connecting means including a leg extending through the opening in the body wall,
said leg being defined at least in part from a flat material having a first thickness,
said leg having an associated shoulder including at least first and second parts projecting oppositely away from the leg,
said opening having a width that is only slightly wider than the first thickness and a length sufficient to accommodate movement of the leg as the release lever moves between its normal and release positions; and
means for at least partially sealing the opening to avoid the passage of foreign matter through the body opening,
said sealing means having at least a portion that is located between each of the first and second parts of the shoulder and the body with the release lever in at least one of its normal and release positions.

5,299,845
AUTOMATICALLY-ACTUATED CARGO-HOOK DEVICE AND MANUAL GUIDANCE SYSTEM FOR SUSPENDED LOADS
Edwin Z. Gabriel, 91 Mt. Tabor Way, Ocean Grove, N.J. 07756
Filed Jul. 27, 1992, Ser. No. 919,881
Int. Cl.[5] B66C *1/38*
U.S. Cl. 294—2 **13 Claims**



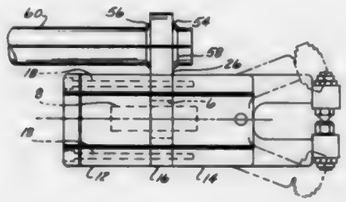
1. A tongs-like cargo-hook device for quickly scooping up and releasing suspended cargo automatically from a platform having a rigid surface, comprising a tongs-like part for use with a hoisting mechanism, said tongs-like part having two elongated members, two hubs and a pivot pin for pivoting each of said elongated members approximately midway, and having an inner surface said hoisting mechanism having hoist cables and a steel load cable, each hoist cable being adapted for attachment to said tongs-like part, said elongated members having two upper portions each having an inner surface and two lower portions, each of said upper portions having weight on top to assist in forcing the separation of said portions upon touchdown of said cargo upon said platform; said lower portions, including main jaws, having complementary-shaped, beveled jaw-ends which close against each other, end-to-end, to form a smooth continuous contour when supporting said cargo, because of the tension on said hoist cables; each of said upper portions having an inside surface with a bar fastened horizontally to each said inner surface, each bar having a hammerhead at one end, and each said hammerhead extending inward toward the other, said hammerheads when abutting sharing the structural stresses imposed on said complementary-shaped ends when supporting said cargo; wherein the improvement comprises the addition of a bar magnet of predetermined strength, attached vertically to the underside of a first of said hubs, whereby when said jaws are completely separated from each other, such as at touchdown, said magnet's lower end, when said jaws straddle said load cable, attracting and making contact with said load cable and holding onto said load cable until said jaws close upon liftoff of said device, thus said jaws lifting up said load cable prior to said jaws closing making the task of scooping up a cable much easier.

5,299,846
GOLF CLUB BALL EXTRACTORS
Robert M. Rush, 1559 Breese St., NE., Palm Bay, Fla. 32905
Continuation of Ser. No. 878,929, May 6, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 69,190
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **8 Claims**



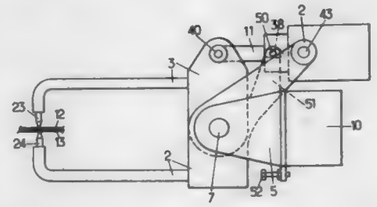
1. A device for extracting a gold ball from holes and other places which is attachable to the grip-handle end of golf club comprising:
a cylindrically-shaped module having side walls and an opening facing outwardly on the top end for receiving a gold ball, said opening having a diameter slightly less than that of the ball and having a continuous bevel at the top of said side walls, said bevel being slanted outwardly and downwardly from said openings was inserted after the word to an outer diameter slightly more than a diameter of a golf ball, said module having an internal cavity between the walls which is sufficiently large enough to completely encompass and hold a golf ball, said module having at least one hole through its walls so that fingers can be inserted to push outward on the ball to remove the ball from the module as desired; and
means for attaching the module to a golf club, said means being situated at the bottom of said module.

5,299,847
GRIPPER ASSEMBLY
John A. Blatt, 22 Stratton Pl., Grosse Pointe Shores, Mich. 48236, and David C. Tomlin, Mt. Clemens, Mich., assignors to John A. Blatt, Grosse Pointe Woods, Mich.
Continuation-in-part of Ser. No. 563,253, Aug. 6, 1990. This application Jan. 24, 1991, Ser. No. 645,140
Int. Cl.[5] B25J *15/00*
U.S. Cl. 294—88 **19 Claims**



1. A gripper assembly for gripping a workpiece for use with a support member comprising:
a fluid operated actuator portion having a moveable driven member with a longitudinal axis;
a workpiece gripper portion openable in response to movement of said driven member;
removable means connectable to at least one of said actuator portion and said gripper portion, said removable means including a member having an aperture disposed therethrough for passage of said driven member from said actuator portion to said gripper portion, wherein said member is angularly orientatable in any one of a plurality of positions with respect to said actuator portion and said gripper portion about said longitudinal axis of said driven member; and
means for mounting said gripper assembly to said support member, said mounting means fixedly attached directly to said removable means and including a radially extending member with respect to said longitudinal axis for connecting with said support member.

5,299,848
TOOLING COMPRISING TONGS WITH TWO PIVOTED ARMS, WITH A RELEASE SYSTEM
Jean-Noël Boyer, Luceau, France, assignor to ARO S.A., France
Continuation of Ser. No. 585,318, Sep. 20, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,722
Claims priority, application France, Sep. 20, 1989, 89 12344
Int. Cl.[5] B66C *1/28;* **B25J** *15/00*
U.S. Cl. 294—106 **6 Claims**



1. A tool comprising:
tongs having two pivoted arms mounted for pivotable movement towards and away from each other, each arm bearing a pressure member at the end thereof, the two arms being pivotally movable between a closed position, whereat the two pressure members grip a workpiece between them and an opened position at which the two pressure members are separated from each other to disengage a workpiece,
drive means for causing said arms to pivot with respect to one another about a common pivot axis between said opened and closed position,
and a coupling means comprising a direct, non-resilient positive, mechanical connection operatively connecting the drive means and both arms for directly, positively, non-resiliently and mechanically moving both arms both in the closing direction for gripping of the workpiece and in the opening directions to ensure that both of the pressure members and arms are well separated for disengagement from the workpiece,
said coupling means comprising a controllable clutch adapted to generate a release force, said controllable clutch being electrically controlled and coupled with a drive means which comprises a slaved electric motor adapted to generate a force required for the treatment of the part.

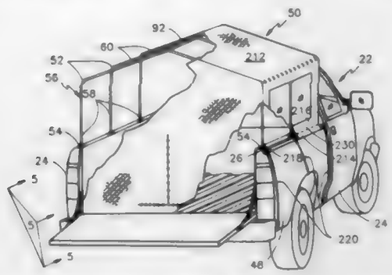
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,849

COVER ASSEMBLY FOR USE ON A VEHICLE BED TO FORM AN ENCLOSURE

Jeffrey W. Cook, and Lawrence D. Ignelzi, both of 341 Wright St., Lakewood, Colo. 80228

Filed Sep. 4, 1992, Ser. No. 940,645
Int. Cl.[5] B60P *3/32*
U.S. Cl. 296—100 **22 Claims**



1. A covering assembly adapted for use with a vehicle having a bed defined by a longitudinally extending deck and a pair of opposed side walls respectively located on opposite lateral sides of said deck, said side walls extending upwardly from said deck and terminating at upper side wall edges so that said bed has an interior, said cover assembly operative in use to enclose the interior to form a protected space and comprising:

(a) a cover formed of a flexible material and having a central cover portion adapted to be positioned over said bed so that said central cover portion extends in spaced relation across said deck between said side wall edges of said pair of opposed side walls and, said cover having a pair of retaining edge portions on opposite lateral sides of said central cover portion, each of said retaining edge portions adapted to extend downwardly alongside a respective one of said side walls exteriorly of said bed to terminate in a retaining edge;

(b) a pair of tensioning rod members each extending along and supported by a respective one of said retaining edge portions; and

(c) a fastening device associated with each said tensioning rod member and operative in use to interconnect the tensioning rod member to a respective anchor portion of said vehicle whereby a tensioning force may be applied to said tensioning rod members and thereby to the opposite lateral sides of said central cover portion in order to maintain said cover in a taut condition when said cover is in a secured state on said bed.

5,299,850

AUTOMOBILE WITH CANVAS

Takashi Kaneko; Tatsuo Suzuki; Yoshihisa Inoue, and Tetsuya Kato, all of Hamamatsu, Japan, assignors to Suzuki Motor Corporation and Ohta Sheet Company, both of Shizuoko, Japan

Filed Aug. 27, 1992, Ser. No. 936,932
Claims priority, application Japan, Aug. 28, 1991, 3-242566; Aug. 28, 1991, 3-242567; Aug. 28, 1991, 3-242568; Aug. 28, 1991, 3-242569
Int. Cl.[5] B60J *7/08*
U.S. Cl. 296—107 **10 Claims**

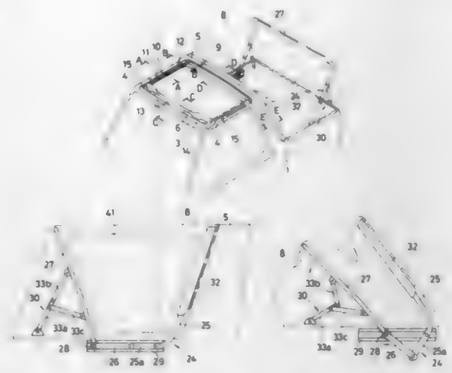
1. An automobile with a removable top at an upper part adjacent to rear seats, the upper part being bounded by a car body center pillar, longitudinally extending side body portions, extending longitudinally from said center pillar and a rear body portion, comprising:

a canvas;

an arch-shaped front frame;

an arch-shaped rear frame having lower end portions, said arch-shaped front frame and said arch-shaped rear frame being link-coupled with each other on both sides of the automobile;

longitudinal support and guide means connected to the automobile and receiving said lower end portions of said rear frame for sliding said lower end portions of said rear frame along a longitudinal direction of the automobile for



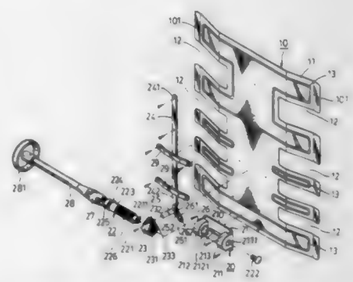
axially rotatably supporting said lower end portions whereby said arch-shaped front frame, said arch-rear frame and said link-coupling form a canvas rib with said canvas attached thereto whereby pivoting said canvas rib to an upper position unfolds said canvas and pivoting said canvas rib to a lower position folds said canvas.

5,299,851

ADJUSTABLE CUSHION ASSEMBLY FOR A CHAIR

Kuen-Yuan Lin, No. 4, Sec. 3, Tan-Hsing Rd., Tan-Tzu Hsiang, Taichung Hsien, Taiwan

Filed May 19, 1993, Ser. No. 67,045
Int. Cl.[5] A47C *7/46*
U.S. Cl. 297—284.5 **5 Claims**



1. An adjustable cushion assembly for a chair, comprising:

a cushion adapted to be placed on the chair;

a covering enclosing said cushion therein;

an upright flexible metal plate disposed on said covering and located behind said cushion, said metal plate having several pairs of horizontal notches formed in a periphery thereof, said notches of each of said pairs being aligned with each other and being formed in two opposite side portions of said metal plate; and

an adjustment device including:

a generally vertical flexible pull rod abutting against said metal plate and having an upper end portion secured to said metal plate,

a bearing unit,

a threaded horizontal rod journalled on a lower end portion of said metal plate by means of said bearing unit,

a movable nut engaged threadably with said horizontal rod,

an inclined first connecting rod having a lower end connected pivotally to said nut, and an upper end connected pivotally to the lower end of said pull rod, and

an inclined second connecting rod having a lower end mounted pivotally on said metal plate and an upper end mounted pivotally on a lower end of said pull rod,

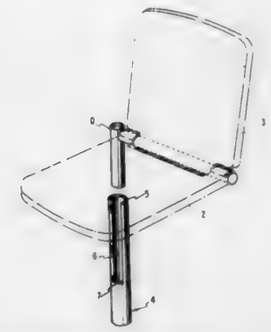
whereby, when said horizontal rod is rotated, said nut moves on said horizontal rod so as to increase an angle between said first and second connecting rods, thereby moving said pull rod downward, downward movement of said pull rod flexing said metal plate and said cushion.

5,299,852

STORABLE SEATING UNIT

Kim A. Beasley, Alexandria, Va., assignor to Paralyzed Veterans of America, Washington, D.C.

Continuation of Ser. No. 815,520, Jan. 2, 1992, Pat. No. 5,201,567, which is a continuation of Ser. No. 579,548, Sep. 10, 1990, Pat. No. 5,083,836. This application Apr. 9, 1993, Ser. No. 45,230
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] A47C *1/121*
U.S. Cl. 297—335 **2 Claims**



1. A storable seating unit comprising:

(a) an at least approximately vertical cylindrical pedestal member having a central axis;

(b) a cylindrical slide that slides telescopically with respect to said least approximately vertical cylindrical pedestal member and that is capable of pivoting about said central axis of said at least approximately vertical cylindrical pedestal member back and forth between a first position and a second position;

(c) a seat mounted on said cylindrical slide, said seat comprising a seat back and a seat bottom that are pivotable relative to one another;

(d) one of said at least approximately vertical cylindrical pedestal member and said cylindrical slide having a first upwardly facing abutment surface and a second upwardly facing abutment surface angularly spaced about said central axis from said first upwardly facing abutment surface; and

(e) the other of said at least approximately vertical cylindrical pedestal member and said cylindrical slide having a downwardly facing abutment surface that can be brought into engagement with either said first upwardly facing abutment surface or said second upwardly facing abutment surface, depending on the angular position of said cylindrical slide relative to said at least approximately vertical cylindrical pedestal member, said downwardly facing abutment surface not being in contact with said second upwardly facing abutment surface when it is in contact with said first upwardly facing abutment surface and vice versa,

whereby said storable seating unit can be manipulated back and forth between:

(f) a first position in which:

(i) said the other of said at least approximately vertical cylindrical pedestal member and said cylindrical slide is supported solely by said first upwardly facing abutment surface and

(ii) said seat bottom and said seat back are pivoted away from each other, allowing a person to sit in said storable seating unit, and

(g) a second position in which:

(i) said the other of said at least approximately vertical cylindrical pedestal member and said cylindrical slide is supported solely by said second upwardly facing abutment surface and

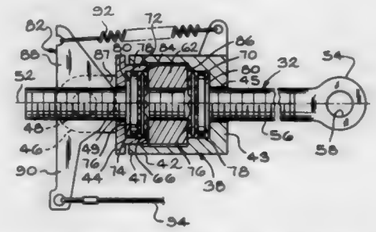
(ii) said seat bottom and said seat back are juxtaposed against each other.

5,299,853

VEHICLE SEAT ASSEMBLY WITH LINEAR ACTUATOR

Les Griswold, Ann Arbor; William H. Jones, Rochester; Marc D. Hewko, Canton, and Joanne H. Cole, Ann Arbor, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Feb. 2, 1993, Ser. No. 12,344
Int. Cl.[5] B60N *2/02;* **F16N** *27/02*
U.S. Cl. 297—362.12 **17 Claims**



1. An actuator for a motor vehicle seat assembly, said seat assembly having a base member for attachment to a motor vehicle, a seat member mounted to said base member for translational movement relative to said base member and a back member mounted to said seat member for rotation relative to said seat member, said actuator holding one of said seat member or back member in position relative to said base member or said seat member respectively, said actuator comprising:

an elongated lead screw having a pair of ends and defining central linear axis of said actuator, said screw being attached to one of said base member, seat member and back member, said screw having a threaded portion comprising a plurality of threads which extend in a helical fashion around the outside of said screw;

a spin nut having a central bore with a complementary threaded portion, said nut being threadably coupled to said screw and being axially movable along said screw in response to rotation of said spin nut about said axis, and said nut having axial end walls disposed in planes at a right angle to said central axis;

a housing having two ends mounted to another of said base member, seat member and back member, and containing said spin nut therein, said housing having an end wall at one end with an inner face in confronting juxtaposition with one end wall of said nut and said housing being open at the other end;

an end cap slidably disposed in said housing open end having an inner face in confronting juxtaposition to the other end wall of said spin nut to axially capture said nut between said inner faces, said cap further having an outer face

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opposite said inner face, said end cap being axially slidable in said open end between a lock position in which said inner faces forcefully engage said end walls of said spin nut to prevent rotation of said spin nut about said central axis and a release position in which said inner faces do not engage said end wall thereby permitting said nut to rotate about said axis;

bearing means within said housing to promote free rotation of said nut with respect to said screw;

yieldable resilient means within said housing to urge said end cap to said release position and to urge said nut away from said inner faces whereby said nut is free to rotate;

a cam rotatably mounted to said housing having a cam surface engaging said outer face of said cap, said cam having a first position in which said cam holds said end cap in opposition to said yieldable resilient means in said lock position of said end cap and said cam having a second position in which said end cap is allowed to be moved to said release position by said yieldable resilient means;

bias means for urging said cam to said first position whereby said nut is frictionally held from rotation; and

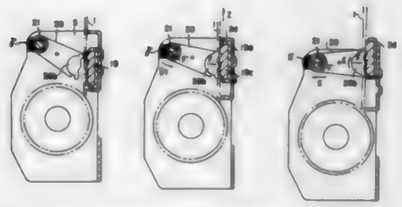
release means for rotating said cam in opposition to said bias means to said second position whereby said nut is permitted to rotate about said screw.

5,299,854

SEAT BELT RETRACTOR LOCKING MECHANISM USING DEFORMABLE FORCE REDUCING PORTION

Yoshiichi Fujimura, Shiga, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 826,048
Claims priority, application Japan, Jan. 28, 1991, 3-008765
Int. Cl.[5] B60R *22/28*
U.S. Cl. 297—472 **7 Claims**



1. A seat belt retractor, comprising:

a first emergency locking means for locking a reel shaft, on which a seat belt is to be wound up;

a second emergency locking means for squeezing and locking the seat belt pulled out from the reel shaft;

said second emergency locking means including a rotating-squeezing member and a sliding squeezing member;

said rotating-squeezing member including a main body;

a fixed case having at least one mounting wall;

one end of said main body being rotatably supported on said at least one mounting wall via a supporting shaft;

said at least one mounting wall being provided with a fragile portion;

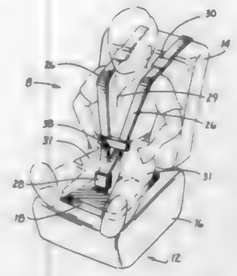
said fragile portion including a portion of said at least one mounting wall on a side of said supporting shaft opposite said sliding squeezing member which is deformed or ruptured to reduce squeezing force on said seat belt by said rotating-squeezing member when a load higher than a predetermined value is applied to said sliding squeezing member by said rotating-squeezing member.

5,299,855

CHILD SEAT RESTRAINT APPARATUS

Michael J. Zubeck, P.O. Box 1667, Pinetop, Ariz. 85935

Filed Nov. 25, 1992, Ser. No. 981,546
Int. Cl.[5] A44B *11/25*
U.S. Cl. 297—485 **19 Claims**



1. A child restraint apparatus comprising:

a planar seat member;

at least one strap, having first and second ends thereof, said first and second ends of said at least one strap being connected to said planar seat member; and

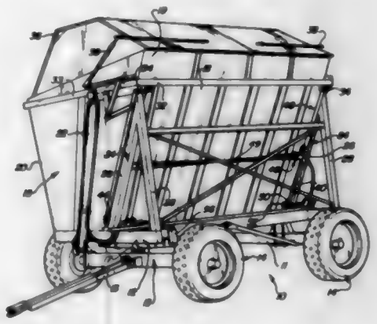
means for attaching a middle portion of said at least one strap to said planar seat member such that said at least one strap forms a pair of shoulder harnesses which encircle the back of an adult seat used during transportation.

5,299,856

DUMP VEHICLE WITH HYDRAULIC LOCK FOR MATERIAL HOLDING CONTAINER

William R. Grosz, Richardton, N. Dak., assignor to Richardton Manufacturing Compan (Div. of Core), Richardton, N. Dak.

Filed May 17, 1991, Ser. No. 702,602
Int. Cl.[5] B60D *1/34*
U.S. Cl. 298—11 **14 Claims**



4. A dump vehicle comprising:

support means comprising a movable support member and a fixed guide structure for supporting and guiding said support member for translational movement along a preselected angle of inclination,

a container pivotally mounted to a pivot structure on said support member,

actuator means operatively connected with said container and being actuable to lift said container and said support member in translation along said preselected angle of inclination from an original lowered position to a substantially final predetermined raised position and subsequently to tilt said container at said pivot structure on said support member when in said predetermined raised position to a preselected tilted position to permit discharge of the contents of said container,

said support means operatively connected with said container for guiding said container in the translational movement along said preselected angle of inclination as it is raised by said actuator means from said original lowered position to said predetermined raised position, lock means comprising a lock piston and cylinder assembly being operatively connected with said support means and said container,

said lock piston and cylinder assembly being operative in response to fluid pressure during lifting of said container to said predetermined raised position whereby said lock piston is moved upwardly along with said support member and in load bearing relationship with said support member and said container,

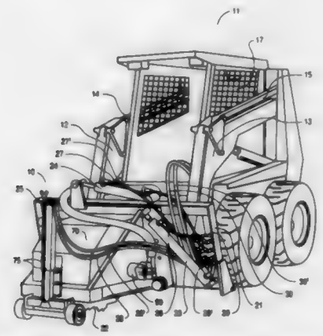
said lock means actuable in response to tilting of said container towards said tilted position by said actuator means to lock fluid under pressure in said lock cylinder whereby said lock piston and said support member are locked from downward movement whereby said container is locked in said predetermined final raised position to preclude downward sliding translational movement of said container from said predetermined raised position during tilting and discharging of said container and being responsive to said container returning to its pretilted position while at said predetermined raised position to release the fluid pressure in said lock cylinder to unlock said lock piston and said support member to permit return of said container to said original lowered position.

5,299,857

REMOVABLE HYDRAULIC APPARATUS WITH ELECTRIC CONTROL FOR MULTIPLE POSITIONING HYDRAULIC CYLINDERS

C. Christopher Zanetis, Brownsburg, Ind., assignor to Alitec Corporation, Brownsburg, Ind.

Continuation of Ser. No. 781,700, Oct. 21, 1991, abandoned.
This application Jun. 10, 1993, Ser. No. 75,340
Int. Cl.[5] E01C *23/12*; A01G *23/06*
U.S. Cl. 299—39 **10 Claims**



1. An attachment apparatus detachably mountable to a self-propelled vehicle, the vehicle comprising an electrical power source, a hydraulic pressure source, a pair of opposing lift arms each outwardly adjacent to one of a pair of opposite sides of the vehicle, said arms being swingable up and down in unison, and each of the lift arms comprising attachment means providing for removable mounting of the apparatus to the arms, the apparatus comprising:

a frame,

means for attaching the apparatus to the lift arms,

an axially revolvable work implement positionable in at least two dimensions with respect to the frame, said work implement continuously revolving during performance of work operations,

means for hydraulically powering the revolution of the work implement, said powering means comprising at least one hydraulic motor and motor input and motor output hydraulic fluid lines,

a plurality of hydraulic means for moving the work implement, each hydraulic means for moving the work implement providing movement of the revolvable work implement in one of the different dimensions with respect to the frame, and

each hydraulic means for moving the work implement having at least one secondary hydraulic line extending therefrom,

at least one primary hydraulic line, each primary hydraulic line comprising connection means to the hydraulic pressure source of the self-propelled vehicle,

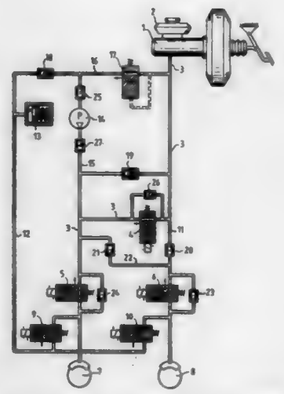
and electrically actuated valve means connected to the at least one primary hydraulic line and each of the at least one secondary hydraulic lines, the valve means selectively providing communication between the at least one primary hydraulic line and one of the at least one secondary hydraulic lines, the valve means comprising means for providing an electrical connection to the electrical power source of the self-propelled vehicle.

5,299,858

BRAKE SYSTEM WITH A DEVICE FOR CONTROLLING BOTH THE BRAKE SLIP AND THE TRACTION SLIP

Erhard Beck, Weilburg, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP92/00357, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO92/18363, PCT Pub. Date Oct. 29, 1992
PCT Filed Feb. 20, 1992, Ser. No. 960,411
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112821
Int. Cl.[5] B60T *8/32, 8/48*; B60K *28/16*
U.S. Cl. 303—113.2 **8 Claims**



1. A brake system with a device for controlling both the brake slip and the traction slip, essentially consisting of a master cylinder, of a first wheel brake connected with the master cylinder via a brake line and belonging to a driven wheel, of a self-priming pump whose suction side communicates with a low-pressure accumulator and with a pressure medium storage reservoir via the master cylinder through a suction line connected to the brake line and whose delivery side is connected to the brake line via a pressure line, of at least one suction valve arranged between the first brake and the suction side of the pump and opening towards the pump and having a pre-pres-

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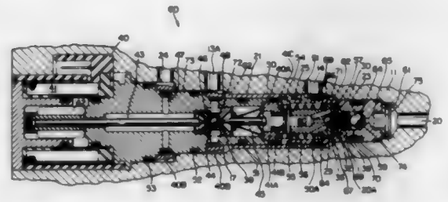
sure of at least one bar, of a first inlet valve in the brake line between the point where the pressure line ends in the brake line and the first wheel brake, of an outlet valve via which the first wheel brake is connectible to a return line leading to the low-pressure accumulator, of a shut-off valve in the brake line between the point where the pressure line ends in the brake line and the master cylinder, of a lockable suction control valve in the suction line, characterized in that, by means of a branch line, a second wheel brake belonging to a non-driven wheel is connected to the brake line between the connection of the suction line and the shut-off valve; in that a second inlet valve is provided in the branch line and a first non-return valve opening towards the second wheel brake is arranged between the second inlet valve and the connection of the branch line to the brake line; and in that an auxiliary line runs from the branch line between the first non-return valve and the second inlet valve of the second wheel brake to the rake line between the shut-off valve and the first inlet valve of the first wheel brake, in the auxiliary line a second non-return valve being arranged which opens from the side of the second wheel brake towards the side of the first wheel brake.

5,299,859

COMBINATION SOLENOID VALVE AND SHUTTLE VALVE

Wendell D. Tackett, South Bend, Ind.; Larry G. Lohraff, Berrien Springs, Mich.; Jay A. Hendershot, South Bend, Ind.; Gamil M. Rizk, South Bend, Ind.; Thomas A Grana, South Bend, Ind.; George E. Brown, and Timothy J. Albert, both of Niles, Mich., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 15, 1991, Ser. No. 792,550
Int. Cl.[5] F15B *13/044*; B60T *8/36*
U.S. Cl. 303—119.2 **34 Claims**



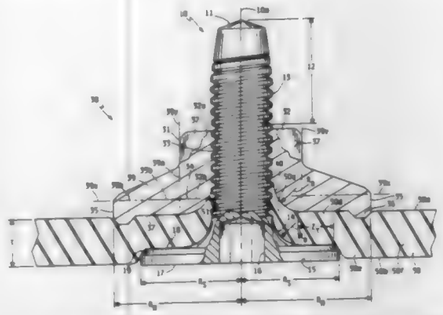
1. A combination solenoid valve and shuttle valve, comprising a body having therein a bore comprising a first bore section, second bore section, and third bore section sealingly isolated from one another at the perimeter of the bore, the solenoid valve disposed within the bore and operable to open a valve therein in order to communicate said second bore section with said third bore section, and the shuttle valve disposed sealingly and slidably within said first and second bore sections, the shuttle valve having an interior opening which is received sealingly and slidably at an end of said solenoid valve, said solenoid valve including a seal member engaging a surface of the interior opening of said shuttle valve, the bore communicating at one end with a pressure source and the shuttle valve slidable to cooperate with said end of the solenoid valve in order to direct fluid from the pressure source primarily to the valve of the solenoid valve, a portion of the shuttle valve engageable with a valve seat of the solenoid valve so that fluid from said pressure source flows primarily through the shuttle valve and to the valve of the solenoid valve.

5,299,860

SNOWMOBILE STUD FASTENER

Lynn J. Anderson, 13365 Newlander Ave., Lindstrom, Minn. 55045

Filed May 7, 1992, Ser. No. 879,412
Int. Cl.[5] B62D *55/28*
U.S. Cl. 305—54 **36 Claims**



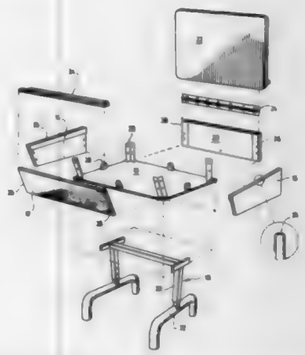
1. A one-piece, lightweight snowmobile fastener comprising:
a collar having a first end and a second end, said collar having a central bore for receiving and lockingly engaging a male thread;
a flange integrally attached to said second end of said collar, said flange having an annular track-engaging face for engaging a first track surface, said flange integrally attached to said collar by a radiused shoulder to permit tear-free engagement with the first track surface; and
an annular reinforcing shoulder integrally connected to said collar and to said flange, said annular reinforcing shoulder sufficiently massive so as to prevent flexing or bending of said flange when a force is applied to the end of a member extending through said collar, to distribute the force applied to the end of the member over an extended region of the first track surface to prevent tearing of the first track surface by said flange.

5,299,861

SCHOOL DESK HAVING METAL BASE AND WOOD TOP

Daniel Foliot, 36, rue Filion, Saint-Sauveur-des-Monts, Québec, Canada J0R 1R0 , and James Anglehart, Montréal, Canada, assignors to Daniel Foliot, Saint-Sauveur-des-Monts, Canada

Filed Jan. 4, 1992, Ser. No. 893,792
Int. Cl.[5] A47B *17/00*
U.S. Cl. 312—194 **8 Claims**



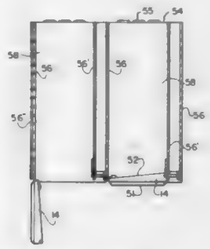
1. A desk comprising:
a metal base including leg attachment means and a metal sheet, the sheet providing a bottom of a storage compartment of the desk;
two particle board side panel members having upper, lower, rear and front edges, the lower edge resting on and being protected by said sheet;
a front particle board panel member having a lower edge resting on and being protected by said sheet;
a rear panel member connected to said base and said two side members;
bracket means formed on the metal base for connecting inner sides of said side panel members and said front panel member to said sheet; and
a top cover member hingedly connected to said rear member for covering the upper edges of the two side panels and said storage compartment formed by said sheet and said side, front and rear panels.

5,299,862

STORAGE DEVICES

Gordon Rankine, Sherwood, 578 Queens Ferry Road, Edinburgh, Scotland

Filed Feb. 5, 1991, Ser. No. 650,774
Claims priority, application United Kingdom, Feb. 6, 1990, 9002605
Int. Cl.[5] E05G *1/026*
U.S. Cl. 312—329 **11 Claims**



1. A storage system for controlling energy resulting form an explosion occurring herein, the storage system comprising a plurality of containers, at least some of the containers having:
1) a rear, each rear having a louvered rear panel;
2) a front, each front having a lockable access means in the form of a door, the door having:
i) a frontward wall; and
ii) means, disposed rearwardly of the frontward wall, for protecting the frontward wall form effects of an explosion within the respective storage container, the means for protecting including means for deflecting the explosion's force substantially rearwardly away from the frontward wall and toward the rear of the container so as to be substantially dissipated through the rear, the means for deflecting being a rearward wall of the means for protecting; and
3) at least one locking mechanism incorporated in at least one corresponding side of the storage container adjacent to the door.

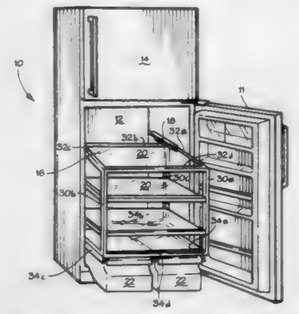
5,299,863

REFRIGERATOR WITH SLIDING INTERIOR FRAME

Harold D. Albright, Jr., P.O. Box 221294, Charlotte, N.C. 28222

Filed Nov. 14, 1991, Ser. No. 791,890
Int. Cl.[5] F25D *11/00*
U.S. Cl. 312—404 **4 Claims**

2. A refrigerator having a pair of spaced vertical side walls, a back wall, a top wall, a bottom wall and an open front wall defining an inner compartment and a door for sealingly closing the open front wall of the inner compartment, further comprising:
a frame having four vertical posts, an upper set of support bars interconnecting the four vertical posts to one another, and a lower set of support bars spaced from the said upper set of support bars and interconnecting said four vertical posts to one another;
a pair of frame guide rails each mounted to a respective one of the spaced vertical side walls of the refrigerator;
means for supporting said frame on said frame guide rails for horizontal movement of said frame between a non-extended position in which said frame is disposed interiorly of the inner compartment of the refrigerator so as to permit the door to sealingly close the inner compartment and an extended position in which said frame extends



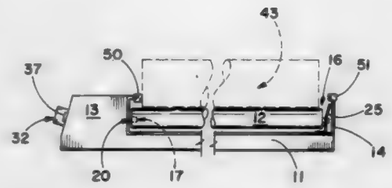
outwardly through the one open front wall of the inner compartment of the refrigerator;
a frame shelf for support of articles on said frame;
a plurality of individual post support elements each mounted on a respective one of said four vertical posts of said frame, said individual post support elements collectively supporting said frame shelf on all four vertical posts at a predetermined height; and
means for selectively adjusting the mounted positions of said individual post support elements on their respective associated vertical posts to thereby reposition said frame shelf at a plurality of different heights on said frame.

5,299,864

LABORATORY CONTAINER ROLLING DEVICE

Cedric S. Reynolds, and Donald A. Boschker, both of Greensboro, N.C., assignors to Stovall Life Science, Inc., Greensboro, N.C.

Continuation of Ser. No. 857,479, Mar. 25, 1992, abandoned. This application Nov. 3, 1992, Ser. No. 970,912
Int. Cl.[5] B01F *9/02*
U.S. Cl. 366—233 **14 Claims**



1. A device for rolling containers comprising: a frame, a plurality of removable horizontally aligned rollers for supporting a container, said rollers each having a drive end and an idle end, a means to drive said rollers, said drive means mounted on said frame, each of said drive ends connected to said drive means, a means to mount said idle roller ends, each of said idle ends engaging said mounting means, said mounting means extending above said engaged rollers, said mounting means comprising individual resilient members having a friction re-

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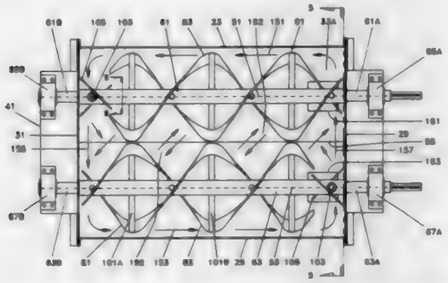
ducing surface, said friction reducing surface to assist container rotation in the event of contact therewith, said mounting means being manually bendable, and each of said resilient members having a roller axle aperture.

5,299,865

COUNTERPOISE HELICAL RIBBON MIXER

Dale Presnell, Fort Worth, Tex., assignor to Hayes & Stolz Industrial Manufacturing Company Inc., Fort Worth, Tex.

Filed May 3, 1993, Ser. No. 56,481
Int. Cl.[5] B01F *7/08*
U.S. Cl. 366—300 **23 Claims**



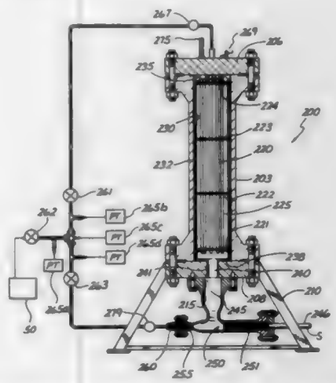
1. An apparatus for mixing particulate materials, comprising:
a chamber having a given length, width, and height, for receiving particulate materials to be mixed,
said chamber having first and second spaced apart side walls, a bottom wall, and first and second spaced apart end walls, with the distance between said first and second end walls defining said length,
said bottom wall comprising first and second arcuate shaped bottom wall portions having outer portions which extend to said first and second side walls respectively and inner portions which are coupled together at an intermediate position between said side walls along the length of said chamber forming first and second arcuate shaped cavities having first and second central axes respectively generally parallel to each other and which extend between said first and second end walls,
said first and second axes being located in a plane adapted to be located horizontally which extends between said first and second side walls,
said first and second bottom wall portions having the same radius from said first and second central axes with the lowest portions of said first and second bottom wall portions being located at a level below said intermediate position,
first and second shafts supported for rotation along said first and second axes respectively and which extend between said first and second end walls,
two ribbon members coupled to said first shaft such that they are located about 180 degrees apart and extend helically around said first shaft along a substantial portion of the length of said first shaft,
two ribbon members coupled to said second shaft such that they are located about 180 degrees apart and extend helically around said second shaft along a substantial portion of the length of said second shaft,
drive means for rotating said first and second shafts in opposite directions relative to each other to cause said ribbon members of said first and second shafts to move toward each other below said plane, upward, and away from each other above said plane for mixing the particulate materials together,
said ribbon members of said first shaft extending around said first shaft in a manner to cause the particulate material in said first cavity to move from said first end wall toward said second end wall upon rotation of said first shaft by said drive means,
said ribbon members of said second shaft extending around said second shaft in a manner to cause the particulate material in said second cavity to move from said second end wall toward said first end wall upon rotation of said second shaft by said drive means,
first pitched paddle means coupled to said first shaft only adjacent said second end wall for equalizing the pressure in the vicinity of said second end wall and for causing the particulate material in said first cavity near said second end wall to move to said second cavity upon rotation of said first shaft, and
second pitched paddle means coupled to said second shaft only adjacent said first end wall for equalizing the pressure in the vicinity of said first end wall and for causing the particulate material in said second cavity near said first end wall to move to said first cavity upon rotation of said second shaft.

5,299,866

PEBBLE-BED HEATER AND SHOCK TUBE ASSEMBLY

Irving B. Osofsky, Rancho Palos Verdes, Calif., assignor to Sparta, Inc., Torrance, Calif.

Division of Ser. No. 552,862, Jul. 13, 1990, Pat. No. 5,197,323.
This application Jul. 22, 1992, Ser. No. 918,585
Int. Cl.[5] B01F *5/06, 15/06*
U.S. Cl. 366—336 **2 Claims**



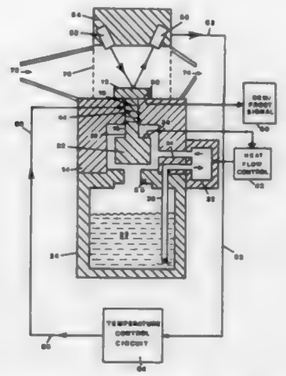
1. A mixer device for mixing a cryogenic gas with a heated gas for producing an output mixed gas stream having a predetermined temperature which is greater than the temperature of said cryogenic gas and less than the temperature of said heated gas, comprising:
a mixing chamber,
inlet means in said mixing chamber for receiving the cryogenic gas,
second inlet means in said mixing chamber for receiving said heated gas,
said mixing chamber having an outlet through which said mixed gases exit,
means to monitor the temperature of the mixed gases exiting the mixing chamber, and
means to control and vary the flow of the cryogenic gas into said mixing chamber whereby two flowing streams of gas are converged and mixed, with each stream being at a different temperature and the combined stream exiting the mixing chamber is at a uniform temperature that is at a level between the temperatures of the incoming gas streams.

5,299,867

LOW MOISTURE CRYOGENIC HYGROMETER

Arden L. Buck, 5995 McSorley La., Boulder, Colo. 80303

Filed Jun. 30, 1992, Ser. No. 906,892
Int. Cl.[5] G01N *25/02*
U.S. Cl. 374—20 **18 Claims**



1. A hygrometer system for detecting and monitoring moisture in a gas as a function of the dew or frost point of the moisture in the gas throughout a wide range of temperatures, comprising in combination:
a detector surface;
means for cooling said detector surface to its dew or frost point, said cooling means normally being out of contact with said detector surface and any thermally conductive element which is in thermally conductive contact with said detector surface;
means for controllably bringing said cooling means into contact with said detector surface or into contact with any thermally conductive element which is in thermally conductive contact with said detector surface;
means for heating said detector surface when it is below its dew or frost point;
means for monitoring the formation of dew or frost at said detector surface;
means for monitoring the temperature of said detector surface to indicate when the dew or frost point of the gas which is being monitored is reached; and
means for continuously controlling the thermal flow characteristics between the cooling means and the heating means and the detector surface; whereby moisture in a gas is detected and monitored as a function of the dew or frost point of the gas.

5,299,868

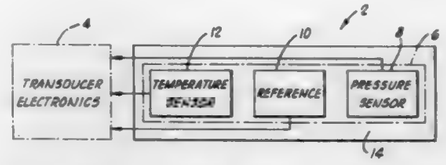
CRYSTALLINE TRANSDUCER WITH AC-CUT TEMPERATURE CRYSTAL

John R. Dennis, and Charles D. Totty, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 3, 1993, Ser. No. 12,820
Int. Cl.[5] G01K *11/22;* **G01L** *19/04;* **H01L** *41/04*
U.S. Cl. 374—117 **12 Claims**

1. In a pressure and temperature transducer of the type including a crystalline housing subjected to pressure and temperature in an oil or gas well, the improvement comprising a temperature resonator including means for sensing temperature in an oil or gas well within a range of temperatures extending beyond a range of temperatures sensible by a torsional mode tuning fork crystal, wherein said means includes an AC-cut crystal mounted in said crystalline housing to a Z-cut crystalline member thereof.

9. A method of sensing temperature in an oil or gas well, comprising:
lowering a crystalline housing into the well, the crystalline housing having an AC-cut crystal connected therein to a Z-cut crystalline member of the housing;
exposing the crystalline housing to pressure and temperature in the well; and



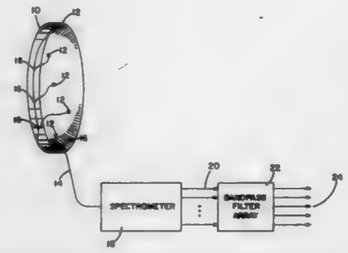
sensing the temperature in the oil or gas well with the AC-cut crystal, wherein the temperature sensed is within a range of temperatures extending beyond a range of temperatures sensible by a torsional mode tuning fork crystal.

5,299,869

LASER DIODE TEMPERATURE SENSING SYSTEM

Alan B. Wissinger, Wilton, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 19, 1992, Ser. No. 932,103
Int. Cl.[5] G01K *3/00, 11/00*
U.S. Cl. 374—137 **26 Claims**



1. A laser diode temperature sensing system comprising:
a plurality of laser diode devices disposable at a like plurality of locations where temperature is desired to be sensed, each said laser diode device having a sensitivity characteristic wherein a single-mode wavelength output of each said laser diode device varies over temperature;
means for modulating each said laser diode device at a unique frequency or at a unique temporal code, said modulation resulting in each said laser diode device producing a uniquely modulated single-mode wavelength output;
means for collecting each said uniquely modulated single-mode wavelength output and for forming a composite beam of multi-modulated radiation from all of said collected uniquely modulated single-mode wavelength outputs; and
means for processing said formed composite beam of multi-modulated radiation by separating said composite beam of multi-modulated radiation according to wavelength, converting said wavelength separated multi-modulated radiation into multi-modulated electrical signals, and demodulating said multi-modulated electrical signals, so as to provide a plurality of electrical signals that correspondingly indicate the temperature at each of said plurality of temperature sensed locations.

25. A method for sensing temperature, wherein a laser diode device is employed as a temperature sensing element, said method comprising the steps of:
disposing a laser diode device at each of a plurality of locations where temperature is desired to be sensed, each said

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laser diode device having a sensitivity characteristic wherein a single-mode wavelength output of each said laser diode device varies over temperature;

modulating each said laser diode device at a unique frequency or at a unique temporal code, said modulation resulting in each said laser diode device producing a uniquely modulated single-mode wavelength output;

collecting each said uniquely modulated single-mode wavelength output and forming a composite beam of multi-modulated radiation from all of said collected uniquely modulated single-mode wavelength outputs; and

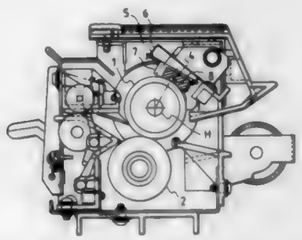
processing said composite beam of multi-modulated radiation, so as to provide a plurality of electrical signals that correspondingly indicate the temperature at each of said plurality of temperature sensed locations.

5,299,870

TEMPERATURE DETECTING DEVICE FOR HEATED ROTARY MEMBER

Toshifumi Moritani, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,973
Claims priority, application Japan, Feb. 21, 1991, 3-047297
Int. Cl.[5] G01K *13/08*
U.S. Cl. 374—153 **9 Claims**



1. A temperature detecting device for use with a heated rotary member, said temperature detecting device comprising:

a resilient support member;

a temperature detecting element embedded in and supported by said resilient support member; and

an electrically insulating tape for covering said resilient support member and temperature detecting element ,

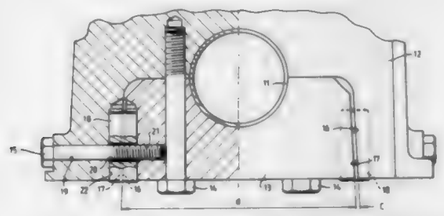
wherein said electrically insulating tape is wound in the direction along the rotating axial direction of said heated rotary member.

5,299,871

BEARING HOUSING ASSEMBLY

Roland J. Hancock, Northampton, England, assignor to Vickers PLC, London, United Kingdom

Filed Apr. 26, 1993, Ser. No. 30,137
Claims priority, application United Kingdom, Feb. 21, 1991, 9103596
Int. Cl.[5] F16C *9/02;* **F02F** *7/00*
U.S. Cl. 384—432 **11 Claims**



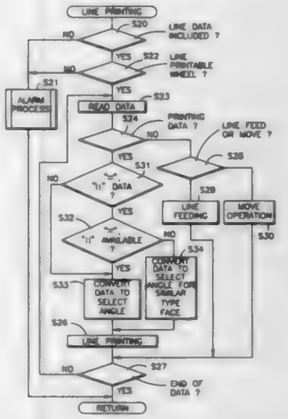
1. A bearing housing assembly comprising a substantially U-shaped casing (12) ; a cap (13) which fits into and cooperates with the casing to define a bearing housing; and fastening means (15) to hold the casing and the cap together characterised in that the cap (13) is a clearance fit in the casing (12); and in that a location and load transferring member (18) extends through a bore (22) whose cross-section extends partly into the casing and partly into the cap and which straddles the clearance (c), the location and load transferring member (18) being stressed to locate the cap within the casing.

5,299,872

PRINTING MACHINE WITH SINGLE LINE TYPE FACE

Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 612,811, Nov. 14, 1990, abandoned.
This application Dec. 23, 1992, Ser. No. 997,132
Claims priority, application Japan, Nov. 20, 1989, 1-301398; Nov. 20, 1989, 1-301399
Int. Cl.[5] B41J *1/30, 3/01*
U.S. Cl. 400—17 **7 Claims**



1. A printing machine for printing characters and lines on paper using any one of a plurality of replaceable printing heads, each printing head having a plurality of type faces including at least one line type face, the printing machine comprising:

a print drive means for replaceably holding a selected printing head and selectively positioning one of the type faces of the selected printing head relative to a sheet of paper at a predetermined position and printing a character of that type face on the paper;

a mode setting means for setting a mode corresponding to the selected printing head;

a data supplying means having printing data including line data, stored therein;

a data converting means for receiving the line data from the data supplying means and determining whether the selected printing head has a type face corresponding to the line data, based on the line data and the mode setting, and converting the line data to alternative line data, when the selected printing head does not have a type face corresponding to the line data, the alternative line corresponds to type faces that the selected printing head does have; and

a control means for controlling the print drive means based on the alternative line data and the mode setting when the printing head does not have a type face corresponding to the original line data, wherein:

the selected printing head has single vertical and horizontal line type faces but does not have double vertical and horizontal line type faces; and

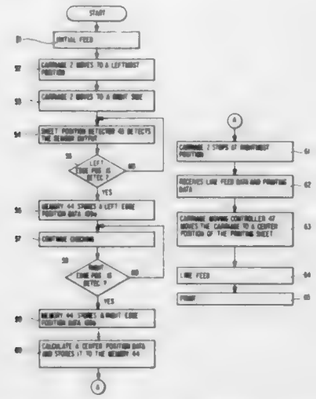
when the data converting means converts line data representing vertical double lines to alternative single vertical line data and line data representing horizontal double lines to alternative horizontal single line data.

5,299,873

CARRIAGE POSITION CONTROL CIRCUIT FOR A SERIAL PRINTER

Takao Miebori, Niigata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 77,038
Claims priority, application Japan, Jun. 16, 1992, 4-156623
Int. Cl.[5] B41J *21/16*
U.S. Cl. 400—279 **10 Claims**



1. A carriage position control circuit for use in a serial printer which includes a platen for feeding a printing sheet and a printing head carriage movable in a direction parallel to a longitudinal axis of said platen, for positioning said carriage before performing a line feed operation, said control circuit comprising:

sensing means, which moves with said carriage for sensing the presence of the printing sheet set in an initial position on said platen and for outputting a sensed signal based on the sensed result;

detecting means for detecting a left edge position and a right edge position of the printing sheet responsive to said sensed signal, and generating left edge position data and right edge position data associated with said detected positions;

means for calculating a center position of the printing sheet based on said left and right edge position data and generating a center position data associated with the center position;

carriage moving control means for moving said carriage to the center position of the printing sheet based on said center position data; and

feed control means for performing said line feed after the movement of said carriage to the center position.

5,299,874

AUXILIARY WEB FEEDER ATTACHMENT FOR PRINTER

John M. DeVoe, 4012 Idlewild Rd., Austin, Tex. 78731

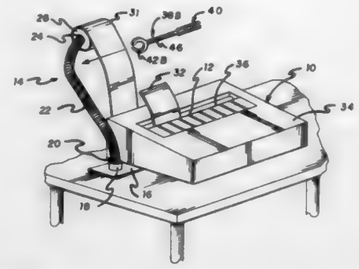
Filed Sep. 24, 1992, Ser. No. 950,133
Int. Cl.[5] B41J *11/26*
U.S. Cl. 400—613 **8 Claims**

1. An auxiliary web feeder for a printer comprising:

a base plate means for supporting the web feeder attachment adjacent said printer, said base plate means having a non-planar configuration disposed beneath and held in position by said printer;

a flexible arm means connected at one end to said base plate means; and

a support shaft means connected to a second end of said arm means for receiving an auxiliary paper web roll; whereby



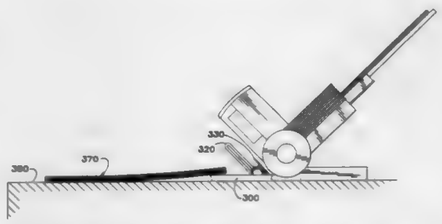
said auxiliary paper web roll may be selectively moved into position to feed an auxiliary paper web to said printer to enable said printer to print short messages while conserving paper.

5,299,875

METHOD AND APPARATUS FOR SEPARATING SHEETS EMERGING FROM A PRINTER

Ng L. Hock, Singapore, Singapore; James J. Girard, Boise, Id.; Lee G. Keen, Singapore, Singapore; James L. K. Chan, Singapore, Singapore, and Chuin K. Lim, Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 887,517, May 19, 1992. This application Oct. 7, 1992, Ser. No. 957,586
Int. Cl.[5] B41J *13/10*
U.S. Cl. 400—625 **24 Claims**



14. A passive method of handling paper output from a liquid-ink printer having an elongate paper exit slot defining a paper path and an output platform positioned for receiving printed paper from the printer, the method comprising:

driving a current media out of the printer through the paper exit slot, a leading edge first;

while driving the current media out of the printer, deflecting the leading edge of the media upward away from the output platform; and

while driving the current media further out of the printer, deflecting both lateral edges of the media upward so as to impart a transverse bow-shape to the media, thereby stiffening the media so as to maintain the leading edge spaced above the output platform.

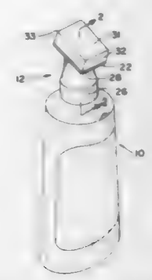
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,876
SURFACE CLEANING DEVICE
Christopher F. Singarella, 56 Middle Rd., Ellington, Conn. 06279
Filed Feb. 11, 1991, Ser. No. 653,694
Int. Cl.[5] A47L *1/08, 1/06*
U.S. Cl. 401—139 14 Claims



1. A device for cleaning a surface, comprising:
an elastomeric sleeve, said sleeve comprising:
a tubular wall, said tubular wall extending along a longitudinal axis and having an inner surface and an outer surface, and
wiper means, extending longitudinally along the outer surface of the tubular wall and integrally formed with said tubular wall, for wiping the surface to be cleaned;
container means, secured within said tubular wall, for containing a liquid;
means for discharging liquid from the container means;
porous means, extending longitudinally along the outer surface of the tubular wall, for scrubbing the surface to be cleaned.

5,299,877
LIQUID APPLICATOR
Donald Birden, 444 N. Lamon, Chicago, Ill. 60644-2027
Continuation-in-part of Ser. No. 798,148, Nov. 26, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 12,920
Int. Cl.[5] B05C *17/00*
U.S. Cl. 401—206 20 Claims



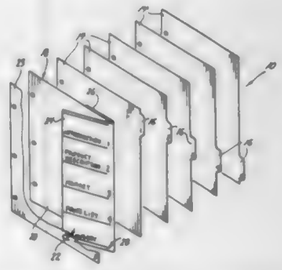
1. An applicator for a fluid coating material comprising:
a coating pad for metering said coating material onto a surface;
a support for said coating pad;
a passageway within said support for conducting said coating material to said coating pad;
said coating pad being an open pore foam having an average number of pores from 12 to 25 per linear centimeter with the average pore size being from 0.4 to 2 microns and with a pad rigidity such that a 400 gm/cm^2 causes a compression of less than 20%.

5,299,878
BINDER FOR RESERVOIR TUBES
Idea Liu, and Chen Hiang, both of P.O. Box 82-144, Taipei, Taiwan
Filed Mar. 11, 1992, Ser. No. 850,982
Int. Cl.[5] B43K *27/12, 7/00*
U.S. Cl. 401—209 1 Claim



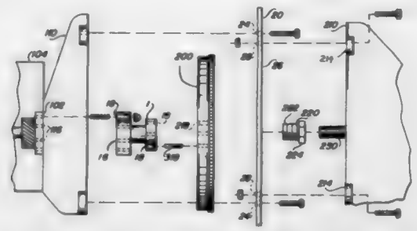
1. A binder for reservoir tubes comprising:
a conical head formed with a longitudinal through hole at a center and a plurality of longitudinal blind holes around the said longitudinal through hole at the center, said longitudinal through hole being composed of a lower passage and an upper passage between which there is a flange adapted to support a shoulder of a reservoir tube; and
an end piece provided with a center positioning tubular member and a plurality of circular protuberances around the center positioning tubular member, said center positioning tubular member being adapted to be inserted into a top end of a reservoir tube and having a through hole designed for enabling ink in the reservoir tube to flow out of a tip thereof, each of said circular protuberances being adapted to bear against a top end of a reservoir tube.

5,299,879
INDEX SHEET ASSEMBLY
Jimmie D. Burrow, Ballwin, Mo., assignor to American Trading and Production Corporation, Baltimore, Md.
Filed Sep. 21, 1992, Ser. No. 947,743
Int. Cl.[5] B42F *21/00*
U.S. Cl. 402—79 8 Claims



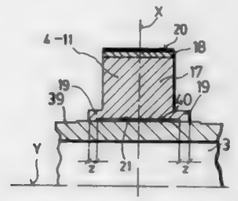
1. An indexing system for a binder, comprising:
a plurality of section divider sheets each having a tab with index indicia thereon, and
an index sheet means including a carrier sheet and a foldable index sheet having first and second portions defined by a longitudinal fold line, said first portion having a sequence of index indicia corresponding to the index indicia on said tabs of said section divider sheets, and placeable in register with said index indicia on said tabs, and attachment means attaching said second portion to said carrier sheet so that said first portion is foldable out for review.

5,299,880
ENGINE COUPLER AND ADAPTER
Daurent J. Bouchard, 303 Popular, College Station, Tex. 77840
Filed Oct. 13, 1992, Ser. No. 959,352
Int. Cl.[5] F16D *1/06*
U.S. Cl. 403—3 2 Claims



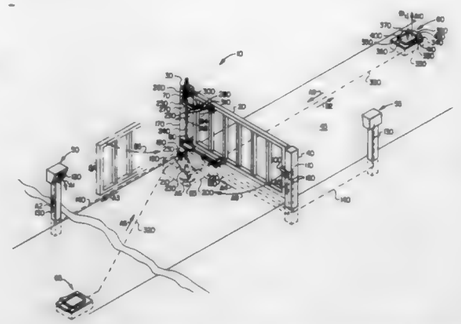
2. A combination according to claim 1 in which the automobile transaxle comprises a transaxle as installed on VOLKSWAGEN automobiles of the following models: VOLKSWAGEN BEETLES, VOLKSWAGEN SUPER BEETLES, VOLKSWAGEN KARMIN GHIAS, VOLKSWAGEN BUSES, VOLKSWAGEN DUNE BUGGIES, and VOLKSWAGEN THINGS for the model years 1965 and later;
and the automobile engine comprises a SUBARU engine of the following class of models: Model No. EA-81, Model No. EA-82, and Model No. EJ-22.

5,299,881
ASSEMBLY OF A CYLINDRICAL BODY MADE TO FINISHED DIMENSIONS
Karl Mettler-Friedli, Oberfeld 693, Triesen, Liechtenstein
PCT No. PCT/EP91/01340, § 371 Date May 7, 1992, § 102(e) Date May 7, 1992, PCT Pub. No. WO92/02739, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 17, 1991, Ser. No. 842,125
Claims priority, application Switzerland, Jul. 27, 1990, 2493/90
Int. Cl.[5] F16H *53/00*
U.S. Cl. 403—274 23 Claims



22. Process for machining a small mismatch tolerance on the inner bore of a plurality of cams for a camshaft manufactured to final dimensions, said cams surrounding said camshaft in an annular manner and manufactured to final dimensions, comprising placing said plurality of cams with the same orientation on a hydraulic spindle, and machining said plurality of cams together by grinding.

5,299,882
MECHANICALLY ACTUATED BARRIER SYSTEM
Donald L. Sayers, Rte. 3, Box 357A, Big Sandy, Tex. 75755
Filed Jun. 2, 1992, Ser. No. 892,170
Int. Cl.[5] E06B *11/02*
U.S. Cl. 404—6 21 Claims



17. A openable barrier for use with a horizontal surface comprising:
a first support structure fixedly mounted to said horizontal surface at a first location, said first support structure having at least one exterior sidewall and an interior opening defined by said exterior sidewall;
a second support structure fixedly mounted to said horizontal surface at a second location, said second support structure having at least one exterior sidewall having an aperture formed therein, an interior opening defined by said exterior sidewall and an interior sidewall supportably mounted by said exterior sidewall;
latch means mounted to said interior sidewall and pivotable between first and second positions;
a barrier mounted to said first support structure and pivotable between a first position in which said barrier impedes travel between said first and second support structures and in which a projection of said barrier engages said latch means to fixedly secure said barrier in said first position and a second position in which said barrier permits travel between said first and second support structures;
a third support structure fixedly mounted to said horizontal surface at a third location, said third support structure having at least one exterior sidewall and an interior opening defined by said exterior sidewall;
a lever pivotable between first and second positions, said lever having one end extending into said interior of said third support structure;
first linkage means mechanically associating said lever end and said latch means, said first linkage means driving said latch means into said first position whereby said barrier is unlatched in response to pivoting said lever into said second position;
a rotating member positioned in said interior opening of said first support structure, said rotating member having first and second ends;
means, connected to said rotating member and said barrier, for pivoting said unlatched barrier into said second position in response to rotation of said rotating member in a first direction;
spring means connected between said rotating member and said exterior sidewall of said first support structure, said spring means storing spring energy sufficient to pivot said barrier from said first position into said second position when said barrier is latched in said first position and releasing said stored energy when said barrier is unlatched, thereby rotating said rotating member in said first direction and pivoting said barrier into said second position;
a fourth support structure supported beneath said horizontal

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surface, said fourth support structure having at least one sidewall defining an interior opening therein and a top wall pivotable between a first position generally planar with said horizontal surface and a second position projecting therefrom;

second linkage means mechanically associating said top surface of said fourth support structure and said rotating member, said second linkage means driving said top surface into said second position in response to said rotation of said rotating member in said first direction and driving said rotating member in said second direction in response to an external force depressing said projecting top surface into said first position, said rotation of said rotating member in said second direction pivoting said barrier from said second position into said first position and storing sufficient spring energy in said spring means to pivot said barrier from said first position to said second position, said barrier pivoting into said first position pivoting said latch means into engagement with said barrier.

5,299,883

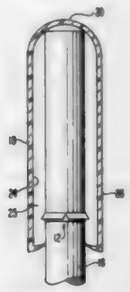
PROTECTIVE COVERING ASSEMBLAGE

Gerard J. Arth, Jr., 5750 Bradford Way, Hudson, Ohio 44236

Filed May 26, 1992, Ser. No. 888,156

Int. Cl.[5] E01F *15/00*

U.S. Cl. 404—10 **8 Claims**



1. A protective covering assemblage releasably securable to a post of the type extending from the ground and used for vehicle traffic control, said assemblage comprising:

protection means mountable on and supported by a top portion of the post so as to cover a preselected portion of the top portion, said protection means constructed so as to be rotatable about an axis of the post upon grazing engagement of said protection means by a passing vehicle body said protection means being made of a material which when impacted by the passing vehicle body minimizes or avoids damage to the vehicle body.

5,299,884

WATER LOCK METHOD AND APPARATUS

James A. Westhoff, Langhorne, and James A. Kelly, Warrington, both of Pa., assignors to Poly-Tec Products, Inc., Tullytown, Pa.

Filed Sep. 10, 1991, Ser. No. 757,665

Int. Cl.[5] E02D *29/14*

U.S. Cl. 404—25 **45 Claims**

1. An assembly for providing a watertight seal between a manhole assembly and a manhole cover support frame, wherein said manhole assembly includes a top member having an access opening for service personnel provided therein and surrounded by a substantially flat top mounting surface, said cover support frame comprising a central opening for receiving and supporting a cover, said cover support frame having an integral flange supportable on said mounting surface, said assembly comprising:

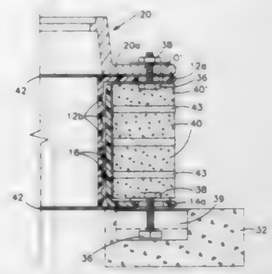
a pair of sleeves each having a hollow cylindrical portion and an integral mounting flange provided at one end of said cylindrical portion;

each of said flanges having openings for receiving mounting bolts;

the diameters of said sleeves being different to enable the sleeve of smaller diameter to be telescopingly received within the sleeve of larger diameter;

the smaller diameter sleeve having an annular seating groove about its outer periphery;

an annular sealing gasket being mounted within said groove and slidingly engaging the interior periphery of the larger diameter sleeve to create a watertight seal therebetween;



the flanges of said first and second sleeves being arranged between said mounting surface and said cover support frame integral flange;

the flange of one of said first and second sleeves engaging the integral flange of said cover support frame; and

the openings in said flanges being aligned to receive fastening means for securement to said cover frame and said top member and for compressing both sleeve flanges between said top mounting surface and the integral flange of said cover support frame.

5,299,885

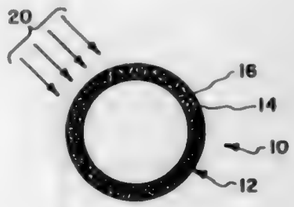
STABILIZED POROUS PIPE

Thomas N. Prassas, Glendale, and Shannon Bard, Scottsdale, both of Ariz., assignors to Aquapore Moisture Systems, Inc., Phoenix, Ariz.

Filed Aug. 14, 1992, Ser. No. 930,345

Int. Cl.[5] E02B *13/00*

U.S. Cl. 405—45 **17 Claims**



1. Porous pipe comprising a hollow pipe having a pipe wall containing pores, said pipe wall being formed of a thermoplastic binder resin selected from a polyolefin resin or a vinyl resin containing a dispersion of 60% to 80% by weight of vulcanized elastomer particles and said binder resin containing 0.1% to 10% by weight of an ultraviolet stabilizer based on the weight of the pipe in an amount effective to substantially reduce degradation of the binder resin due to ultraviolet radiation.

5,299,886

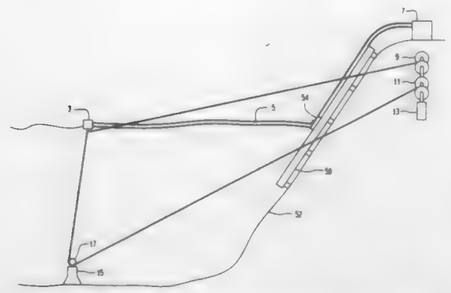
SPILL CONTAINMENT SYSTEM

Jack L. Whitaker, Cincinnati, Ohio, assignor to Chem Serv Environmental, Columbus, Ohio

Filed Mar. 10, 1993, Ser. No. 29,005

Int. Cl.[5] E02B *15/06*

U.S. Cl. 405—66 **21 Claims**



1. A spill containment system to be used in a moving body of water having a bottom, a water level, and a bank, comprising:

a) a deployment cable;

b) a floating boom, having a first end and a second end, attached to the deployment cable at the first end and attached to a storage means at the second end;

c) an attachment means for attaching the deployment cable to the floating boom;

d) a supply reel, located on the bank, on which a portion of the deployment cable is stored;

e) a take up reel, located near the supply reel on the bank, on which a portion of the deployment cable is stored;

f) a subsurface anchor affixed to the bottom of the moving body of water some distance from the bank;

g) a guide means affixed to the subsurface anchor, the deployment cable being slidably attached to the guide means;

h) a first drive motor connected to the supply reel;

i) a second drive motor connected to the take up reel; and

j) actuation means to start the first drive motor and the second drive motor;

k) the first drive motor and the second drive motor functioning so as to cause more of the deployment cable to be stored on the take up reel and less of the deployment cable to be stored on the supply reel, moving the floating boom toward a point on the water level above the subsurface anchor.

5,299,887

IN-SITU PROCESS FOR REMEDIATING OR ENHANCING PERMEABILITY OF CONTAMINATED SOIL

Donald L. Ensley, P.O. Box 955, Bodega Bay, Calif. 94923

Filed Oct. 21, 1992, Ser. No. 964,452

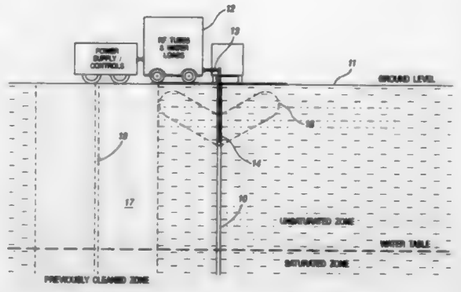
Int. Cl.[5] B09B *1/00*

U.S. Cl. 405—128 **15 Claims**

1. A method of removing an undesired contaminant from a sub-surface soil matrix, said method comprising the steps of

forming a bore hole in the soil,

moving a source of microwave energy through said bore hole while radiating electromagnetic energy laterally into the soil at a frequency and power density which selectively heat said contaminant in the soil by resonance absorption of said electromagnetic energy,



collecting fluids which enter the bore hole, and

removing the collected fluids from the bore hole.

5,299,888

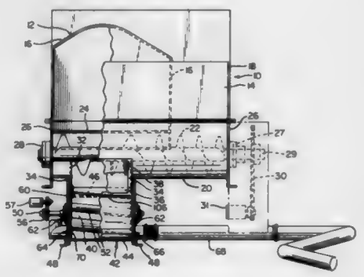
APPARATUS FOR CONVEYING AND DISCHARGING BULK MATERIALS

Douglas E. Wysong, Middletown, and Joseph A. Bedel, Cincinnati, both of Ohio, assignors to Finn Corporation, Fairfield, Ohio

Continuation-in-part of Ser. No. 800,167, Nov. 27, 1991, Pat. No. 5,181,804. This application Nov. 5, 1992, Ser. No. 972,133

Int. Cl.[5] B65G *53/08*

U.S. Cl. 406—67 **18 Claims**



1. An apparatus for conveying and discharging bulk material comprising

a hopper feeder assembly having a diverter mounted at one end of said hopper;

a trough mounted generally below said hopper assembly;

a converging screw conveyor mounted within said trough;

a means for driving said screw conveyor;

an opening in the bottom of said trough;

a transition area located beneath said opening;

a rotary air valve located beneath said transition area and mounted at one end of said hopper assembly;

a means for driving said rotary air valve;

said rotary air valve having a material inlet, a central shaft with multiple vanes mounted at a five to ten degree angle to the axis of said shaft defining pockets between said vanes;

at least one cutting means positioned on a mounting shelf along the longitudinal axis of said material inlet;

said rotary air valve having an air inlet and an air outlet, said outlet offset from said inlet by the angle of said vane so that air fed through said inlet is channeled through said pocket to said outlet;

a means for conveying bulk material from said outlet of said rotary valve;

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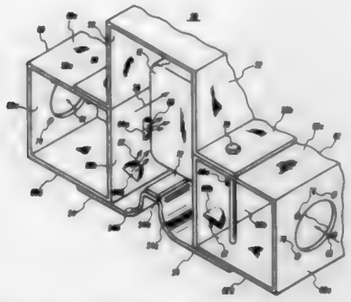
and a means for supplying pressurized air to said air inlet.

5,299,889

PNEUMATIC CONVEYOR APPARATUS

Keith A. Langenbeck, Dallas, Tex., assignor to Langenbeck Grandchildren's Irrevocable Trust, San Antonio, Tex.

Filed Dec. 29, 1992, Ser. No. 999,770
Int. Cl.[5] B65G *51/03*
U.S. Cl. 406—88 **8 Claims**



2. Apparatus for pneumatically conveying an article along a predetermined path, said apparatus comprising:

first and second pneumatic means positionable on respective opposite sides of the predetermined path for applying a pneumatic force to move the article along the predetermined path, said pneumatic force including a component for lifting the article as the article is moved along the predetermined path, said first pneumatic means including a first air duct communicating with an air supply and a first plurality of vents in a laterally facing surface of said first air duct for directing a flow of air on the article when the article is retained in a relatively upright position, said second pneumatic means including a second air duct communicating with an air supply and having a second plurality of vents in a laterally facing surface of said second air duct for directing a flow of air on the article when the article is retained in the relatively upright position, selected ones of said first and second plurality of vents being located below a bottom portion of the article when the article is retained in the relatively upright position for directing a flow of air on the bottom portion of the article to lift the article as the article is moved along the predetermined path; and

retaining means for retaining the article in the relatively upright position as the article is moved along the predetermined path.

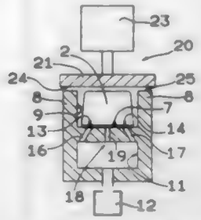
5,299,890

UNIT FOR SUPPLYING PRODUCTS TO A MANUFACTURING MACHINE

Mario Spatafora, and Antonio Gamberini, both of Bologna, Italy, assignors to G. D Societa' per Azioni, Bologna, Italy

Filed Apr. 30, 1991, Ser. No. 693,361
Claims priority, application Italy, May 11, 1990, 3500 A/90
Int. Cl.[5] B65G *51/03*
U.S. Cl. 406—88 **7 Claims**

1. A pneumatic supply unit (4), for supplying compact, relatively heavy products (2), to a manufacturing machine (6), said unit (4) having an output end, and comprising lateral guide means (8) defining a route along which said products (2) are fed and travel in a single file, in orderly succession and in a traveling direction (10) towards said output end; a bottom plate (7) located along said route; a number of nozzles (16, 17) formed through said bottom plate (7); and means (12) for supplying said nozzles (16, 17) with pressurized pneumatic fluid; said nozzles (16, 17) being arranged in at least two rows (13, 14) along and symmetrically in relation to said route; and each said nozzle (16, 17) in each said row (13, 14) being so designed as to emit a jet of pneumatic fluid having a first component directed parallel to said route and in said traveling direction (10) and a second component directed transversely in relation to said traveling direction (10) and towards the other row (14, 13) of nozzles (16, 17); wherein said lateral guide means (8) comprise two lateral walls extending along said



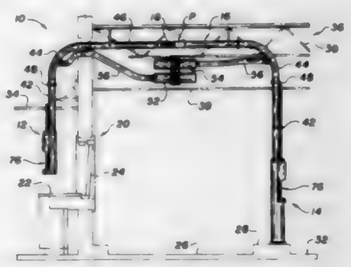
route and defining, with said bottom plate (7), a channel (9) along which to feed an orderly row of said products (2); with accelerating means (20) being associated with said lateral walls (8) for varying, within a given range, the forward thrust exerted on said products (2) in said traveling direction (10); and wherein said accelerating means (20) comprise a cover for said channel (9), and actuating means (23) for moving said cover to and from said bottom plate (7).

5,299,891

PNEUMATIC TUBE SYSTEM

Leo Grosswiller, East Canton; Walter G. Anders, and Lawrence F. Mannella, both of North Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Continuation of Ser. No. 715,295, Jun. 14, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 956,431
Int. Cl.[5] B65G *51/32*
U.S. Cl. 406—112 **16 Claims**



5. A system for pneumatically transferring articles between two spaced-apart locations having first and second terminals which receive and dispatch the articles, each terminal including:

a carrier receiver defining and having an internal cavity dimensioned to receive an article carrier therein and position said carrier in operable alignment with a transfer tube, said carrier receiver including a first opening communicating said cavity with said transfer tube and a second opening for insertion and removal of said carrier into and from said cavity;

a generally planar gate slidably movable over said second opening between a first position wherein said gate covers said second opening and a second position wherein said gate is removed from said second opening; and

means for moving said planar gate to said first position wherein it is maintained until said carrier is received by said carrier receiver, and for moving said planar gate to said second position wherein it is maintained until said carrier is dispatched from said carrier receiver to said transfer tube.

5,299,892

BORONNITRIDE COATED MICROCUTTING DEVICE

Werner Pickert, Coburg, Fed. Rep. of Germany, assignor to Kapp & Co. Werkzeugmaschinenfabrik, Coburg, Fed. Rep. of Germany

Filed Jun. 17, 1992, Ser. No. 900,016
Claims priority, application Fed. Rep. of Germany, Jun. 17, 1991, 4119872
Int. Cl.[5] B26D *1/12*
U.S. Cl. 407—32 **10 Claims**



1. A rotating tool for the cutting of hardened workpieces, comprising:

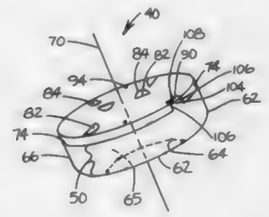
a base body made of steel having a working surface, said working surface being coated with a homogeneous layer of a uniform thickness of an extremely hard material and having a plurality of micro cutting grooves that extend parallel to one another and at an acute angle relative to a tangent of said working surface, each said micro cutting groove having a cross-sectional profile with a cutting edge and a chip space.

5,299,893

DISPOSABLE SURGICAL CUTTERS

Paul E. Salyer, and Brian D. Salyer, both of Warsaw, Ind., assignors to Othy, Inc., Warsaw, Ind.

Continuation-in-part of Ser. No. 668,926, Mar. 13, 1991, Pat. No. 5,100,267. This application Mar. 27, 1992, Ser. No. 858,934
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/16*
U.S. Cl. 407—54 **19 Claims**



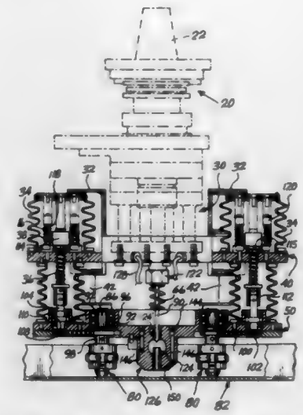
1. A disposable cutter comprising a cutting lid having a plurality of cutting edges, said cutting lid having perforations adjoining said cutting edges, said cutting lid defining an axis of rotation, said cutting lid being joined to the top of a transparent bowl, said bowl having a bottom with a tool driver opening therein, said opening being coaxial with said bowl and said cutting lid.

5,299,894

WORKPIECE POSITIONING AND DRILLING END EFFECTOR

Peter D. McCowin, Enumclaw, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 23, 1992, Ser. No. 996,806
Int. Cl.[5] B23B *35/00*
U.S. Cl. 408—1 R **20 Claims**



1. An end effector for positioning a channel-shaped workpiece and drilling a hole at a predetermined position in the workpiece, comprising:

a top plate having structure for connecting a drill driver to said top plate, and an opening through which a drill mounted in said drill driver can extend along a drill axis to drill a hole in said workpiece;

a base plate mounted beneath said top plate on guides for self-parallel movement toward and away from said top plate;

a lead screw having one end rotatably mounted in an axially fixed position relative to said base plate, and threadedly engaged with a nut mounted on said top plate such that said lead screw rotates when said base plate moves toward and away from said top plate;

a cam roller assembly rotatably mounted on said base plate and projecting from the bottom surface thereof in a position to enter said channel in said workpiece when said end effector is located over said workpiece;

a gear reduction drive train connected between said lead screw and said cam roller assembly whereby said lead screw drives said cam roller assembly to rotate in said workpiece channel and move said workpiece to the desired position under said drill when said base plate approaches said top plate under influence of a robot pressing said end effector against said workpiece.

5,299,895

RATCHETING THREADING TOOL

Wesley H. Greenhill, PO Box 111, Meadview, Ariz. 86444

Filed Sep. 3, 1992, Ser. No. 939,659
Int. Cl.[5] B23G *5/02;* **B25B** *13/46*
U.S. Cl. 408—56 **5 Claims**

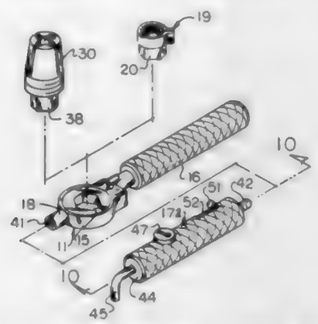
1. A ratcheting threading tool, comprising,

a ratcheting head, the ratchet head including a cylindrical rotary disc rotatably mounted within the ratcheting head arranged for ratcheting engagement relative to the ratcheting head, with the rotary disc and the ratcheting head coaxially aligned along a predetermined axle, and,

the rotary disc including a central polygonal aperture directed through the rotary disc coaxially aligned relative to the predetermined axis, and,

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a first handle fixedly mounted to the ratcheting head, and,
a threaded socket mounted to the ratcheting head longitudinally aligned with the first handle, and a second handle arranged for selective securement relative to the threaded socket, and,
a die holder member, with the die holder member arranged for mounting within the polygonal aperture, and,
a collet assembly, with the collet assembly arranged for mounting within the polygonal aperture, wherein the collet assembly is arranged for securement of a threading tap, and,
the die holder member includes a die holder polygonal shank, and the die holder polygonal shank arranged for complementary reception within the polygonal aperture, and the die holder member further including a split collar



mounted to the polygonal shank coaxially aligned therewith, with the split collar including a first flange and a second flange, with the first flange and second flange arranged in coextensive relationship relative to one another biased in a spaced relationship relative to one another projecting laterally beyond the die holder polygonal shank, and a threaded lock rod orthogonally directed through the first flange and the second flange for directing the first flange towards the second flange, with the split collar having a split collar bore directed therethrough, with the split collar bore further directed through the die holder polygonal shank, and the bore having a toothed interior bore wall, and a thread cutting die, wherein the thread cutting die includes a toothed exterior side wall arranged for complementary engagement with the toothed interior bore wall.

5,299,896

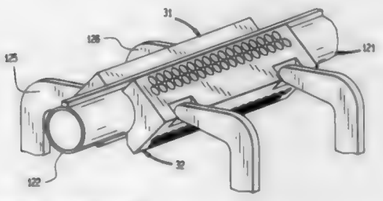
GUN JIG

Bernard L. Ferri, 141 Arizona Ave., Trinidad, Colo. 81082

Filed Feb. 18, 1993, Ser. No. 19,536

Int. Cl.[5] B23B *49/02*

U.S. Cl. 408—72 R **21 Claims**



1. A gun jig comprising:
a first template defining first and second end surfaces, a first substantially planar surface extending between said first and second end surfaces, a second substantially planar surface oriented substantially perpendicular to said first planar surface and extending between said first and second end surfaces, a first recessed surface extending between said first and second end surfaces, a first plurality of guide holes extending between said first planar surface and said first recessed surface, a second plurality of guide holes extending between said second planar surface and said first recessed surface, a first connecting surface extending between said first and second end surfaces and joining said first planar surface and said first recessed surface,and a second connecting surface extending between said first and second end surfaces and joining said second planar surface and said first recessed surface; and
a second template defining one and another end surfaces, one substantially planar surface extending between said one and another end surfaces, another substantially planar surface extending between said one and another end surfaces, a second recessed surface extending between said one and another end surfaces, a first plurality of guide apertures extending between said one planar surface and said second recessed surface, a second plurality of guide apertures extending between said another planar surface and said second recessed surface, and another connecting surface extending between said one and another end surfaces and joining said another planar surface and said second recessed surface.

5,299,897

MASONRY FASTENER

Herman Marquardt, Pinckney, Mich., assignor to Great Lakes Tool and Machine, Milford, Mich.

Continuation of Ser. No. 918,663, Jul. 22, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,718

Int. Cl.[5] F16B *15/08*

U.S. Cl. 411—454 **4 Claims**



1. A fastener for installing in a pre-drilled hole in masonry material, comprising:
an elongated shank having an enlarged head for forcibly driving said fastener into said hole, said shank in the region between said head and a terminal end thereof formed of uniform diameter round stock and having a diameter being less than said hole diameter, at least a portion of said shank being deformed to form a helix wherein said deformed portion of said shank occupies a cylinder in a free state having a diameter greater than said hole diameter, said fastener being adapted such that said shank turns upon being driven into said hole and is radially compressed through bending deflection and deformed by said hole such that a continuous helical contact line is defined between said hole and said deformed portion of said shank along which said radial compressive force acts between said shank and said hole which retains said fastener within said hole, said helical contract line making at least one full turn along the length of said hole, said deformed portion being adapted to abrade and causing said pre-formed hole to be abraded upon driving of said shank into said hole to form a helical groove in said hole thereby increasing frictional and surface-to-surface contact between said shank and said hole, whereby said fastener is secured within said hole through cooperation of the bending deflection of said shank, the increased frictional contract between said fastener and said hole as induced by the abrading of said hole, and the turning of said fastener during attempted withdrawal from said hole.

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METHOD OF AND APPARATUS FOR BINDING STACKS OF SUPERIMPOSED SHEETS

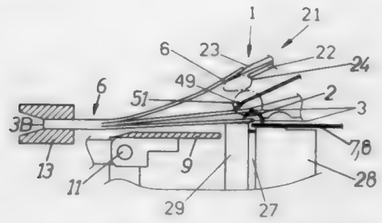
Rudolf Kaufmann, Neuffen, and Jürgen Scholz, Oberboihingen, both of Fed. Rep. of Germany, assignors to Womako Maschinenkonstruktionen GmbH, Nurtingen, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 64,710

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1992, 4219792

Int. Cl.[5] B42B *5/08*

U.S. Cl. 412—7 **30 Claims**



1. A method of assembling stacks of overlapping sheets, each having a plurality of marginal recesses and deformable sheet portions at the recesses, with binders having profiles substantially complementary to and receivable in the recesses, comprising the steps of positioning a series of spaced apart and aligned binders at an assembling station; and moving the deformable sheet portions against the positioned binders so that each binder deforms a discrete portion of each sheet and enters the respective recess.

5,299,899

CAN SEAMER

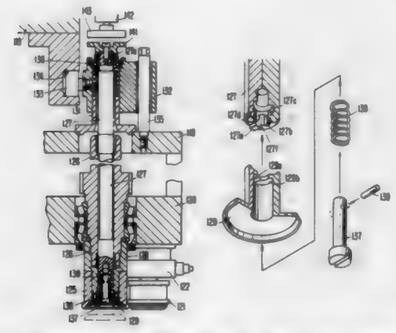
Naoyoshi Katou; Hirofumi Itoh; Seiki Tamiya, and Masateru Takahara, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Churyo Engineering Kabushiki Kaisha, Aichi, both of Japan

Division of Ser. No. 953,788, Sep. 20, 1992. This application May 7, 1993, Ser. No. 57,640

Claims priority, application Japan, Oct. 30, 1991, 3-310200; Oct. 30, 1991, 3-310201; Oct. 30, 1991, 3-310202

Int. Cl.[5] B21D *51/26*

U.S. Cl. 413—27 **1 Claim**



1. A knock-out pad mounting/dismounting mechanism in a can seamer which includes a plurality of seaming mechanisms for performing a seaming operation on a can wherein said mechanism comprises:
a knock-out rod comprising an anti-rotational protrusion located on the bottom end of the knock-out rod and a knock-out rod bore located on the end of the knock-out rod having a ring shaped groove on the sidewall of the knock-out rod bore;
a knock-out pad that is detachably mounted to said knock-out rod comprising a knock-out pad bore for receiving a headed shaft and a groove portion for engaging said protrusion of the knock-out rod to prevent relative rotation between the knock-out pad and rod;
a headed shaft to be received in a vertically slidable manner in the knock-out pad bore, said headed shaft having pin mounted thereto to be supported by the ring shaped groove in the knock-out rod bore; and
a braking mechanism for stopping rotation of the knock-out rod;
so that by inserting the headed shaft and pin into the knock-out rod bore and rotating the headed shaft so that the pin mounted to the shaft is supported by the ring shaped groove, the knock-out pad is interlocked with the knock-out rod.

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INSTALLATION FOR CHARGING A SHAFT FURNACE

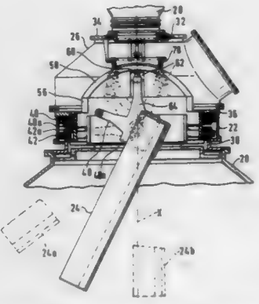
Pierre Mailliet, Luxembourg, and Emile Lonardi, Bascharage, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed May 14, 1992, Ser. No. 883,007

Claims priority, application Luxembourg, May 15, 1991, 87938

Int. Cl.[5] F23K *3/18*

U.S. Cl. 414—206 **6 Claims**



1. An installation device for charging a shaft furnace, comprising
a distribution chute suspended from a top of the furnace, said distribution chute being rotatable about a vertical x axis of the furnace and pivotable about a horizontal y axis of suspension of said chute;
means for driving said chute, said means for driving said chute comprising first and second independently actuated rolling rings for rotating said chute about the x axis and for modifying an angle of tilt of said chute relative to the x axis by pivoting about the y axis, said first rolling ring includes a curved element having a center of curvature O being located at the intersection of the x axis and the Y axis, said first rolling ring having an elongated groove with generally parallel edges extending along a meridian of said curved element;
two generally horizontal crosspieces extending generally parallel on one side of said chute, said crosspieces being securely fastened to said second rolling ring; each of said crosspieces including a bearing;
a U-shaped stirrup member extending transversely to said

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chute, said stirrup member having two lateral side plates which form legs of said U-shape, said chute being supported in a removable manner by said two lateral side plates, each of said lateral side plates including a support journal housed in said corresponding bearing of each of said crosspieces;

an arm extending from one of said lateral side plates in a direction of said curved element; and

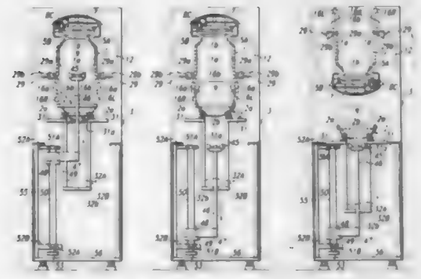
a runner block wherein one end of said arm pivots, said runner block sliding in said groove, wherein a pivoting axis A defined between said arm and said runner block passes the center of curvature O of said curved element.

5,299,901

WAFER TRANSFER MACHINE

Michio Takayama, Omiya, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1992, Ser. No. 869,428
Int. Cl.[5] B65G *49/07*
U.S. Cl. 414—404 **9 Claims**



1. A wafer transfer machine comprising:

a first fixture having a horizontally disposed longitudinal axis for receiving wafers arranged in parallel relation with respect to each other along the longitudinal axis of the first fixture;

a second fixture having a longitudinal axis disposed in vertically spaced parallel relationship with respect to said first fixture for receiving wafers;

first supporting means engageable with said first fixture for temporarily supporting said first fixture and movable in relation to said first fixture in a direction for detaching from said first fixture;

a turntable on which said first fixture is disposed;

means for rotating said turntable about an axis coincident with the center of said turntable and through an arc for moving said first fixture and said first supporting means in a manner such that the position of said first fixture is reversed relative to said second fixture;

second supporting means mounted on said turntable and engageable with a wafer received in said first fixture for temporarily supporting the wafer in said first fixture and movable with said turntable to respectively release the wafer in a first position and to guide the wafer in a second position; and

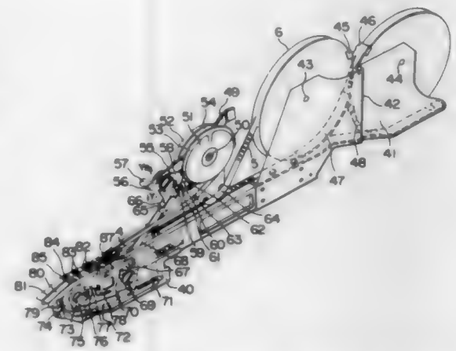
third supporting means reciprocally movable between said first fixture and said second fixture for transferring at least one wafer from a first support position in said first fixture as determined by said second supporting means, and following the rotation of said turntable to reposition said second supporting means and said at least one wafer releasably supported thereby, to a second support position in said second fixture.

5,299,902

CHIP-TYPE ELECTRONIC ELEMENT SUPPLYING APPARATUS

Hiroyuki Fujiwara, Osaka; Takayuki Fujita, Hirakata; Shigetoshi Negishi, Suita; Kunio Tanaka, Kadoma; Hiroaki Terazawa, Osaka; Hidekazu Nakamura, Ibaraki, and Takayoshi Kado, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 21, 1992, Ser. No. 823,570
Claims priority, application Japan, Jan. 22, 1991, 3-005692
Int. Cl.[5] B65H *5/28*; H05K *13/04*
U.S. Cl. 414—416 **3 Claims**



1. A chip-type electronic element supplying apparatus for supplying chip-type electronic elements from taped electronic element groups, each of said groups including a carrier tape provided with accommodating portions which accommodate said chip-type elements and a cover tape applied on said carrier tape, said chip-type electronic element supplying apparatus comprising:

a body frame, having a recessed portion formed at a first end portion;

a plurality of reels, each of said reels having one of said taped electronic element groups wound thereon;

reel side plates, disposed at a second end portion of said body frame, for rotatively fastening said plurality of said reels;

tape feeding mechanisms, disposed in said recessed portion, each of said tape feeding mechanisms including a feeding means which is engaged to a carrier tape of one of said taped electronic groups, said feeding means for intermittently coveying said carrier tape; wherein a number of said feeding mechanisms corresponds to a number of said plurality of reels;

tape retainers disposed above said feeding mechanisms;

a cut portion for separating cover tape from carrier tape of said taped electronic groups;

a cover tape take-up portion, disposed in an intermediate portion of said body frame, for receiving said cover tape separated from said carrier tape and providing said separated cover tape to a portion of said tape retainers for taking up said separated cover tape, said cover tape-up portion comprising tape-up reels each having flanges and each being arranged such that an outer portion of at least one of its flanges has a gear shape take-up ratchet, each of said take-up ratchets including said at least one flange;

a drive mechanism, for said tape-up ratchets, disposed to be in alignment with said take-up reels of said cover tape take-up portion; and

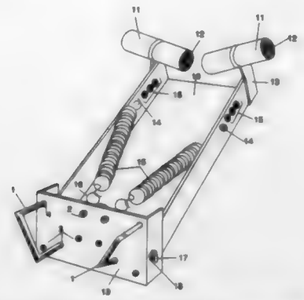
an element taking-out portion, disposed in a front portion of said tape retainers, through which said chip-type electronic elements are taken out from said carrier tape.

5,299,903

RETRIEVAL GUIDE FOR BOAT TRAILERS

Harry N. Kesselring, W. Hill Rd., R.D. 3, Box 61, Elmira, N.Y. 14903

Filed Sep. 1, 1993, Ser. No. 115,911
Int. Cl.[5] B60P *1/52*
U.S. Cl. 414—534 **13 Claims**



1. A retrieval guide for a boat trailer comprising:

a) mounting means for mounting the guide to a frame of the trailer, comprising plate means for supporting the guide and clamp means for attaching the plate means to a cross-member of the trailer;

b) a guide arm having upper and lower ends and a length therebetween, having a generally flat rectangular bottom with two ends and two side edges, with two side panels extending upward from the side edges of the bottom, forming a U-shaped channel, with open ends;

c) pivot means for pivotally mounting the lower end of the guide arm to the plate means of the mounting means, whereby the guide arm may pivot from a lowered position in which the guide arm is generally horizontal and parallel to the trailer frame to a raised position in which the guide arm extends above the trailer frame on an angle;

d) two cylindrical rollers for guiding the bottom of a boat onto the trailer, one attached to each side panel of the guide arm at the upper end thereof by means of a roller arm means extending above said guide arm side panels a sufficient distance that the rollers may rotate freely about its axis on the roller arm means without contacting the guide arm;

e) the axes of the two cylindrical rollers being inclined toward a center of the guide arm, such that the axes of the two cylindrical rollers meet at a point lower than the point of attachment of the rollers with their roller arm means, forming a shallow "V"; and

f) spring means for biasing the guide arm toward its raised position, attached to the guide arm and to the plate means of the mounting means.

5,299,904

VEHICLE LIFT WITH CONTACT SENSOR

Curtis J. Simon, Pine Grove, and Dale Kempf, Clovis, both of Calif., assignors to Hogan Mfg., Inc., Escalon, Calif.

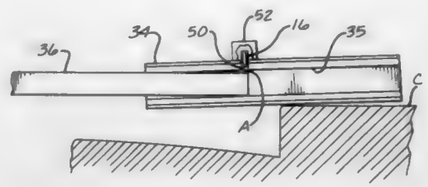
Filed Mar. 26, 1992, Ser. No. 858,994
Int. Cl.[5] B60P *1/44*
U.S. Cl. 414—541 **26 Claims**

17. A lift designed to be installed in the entryway of a vehicle, the lift comprising:

a carriage movable between a vehicle floor-level position and a curb-level position, and including a first member and a second member;

a platform carried by the carriage, wherein the second member is connected to the platform such that the second member moves concurrently with the platform and is movable relative to the first member, wherein the first member is in a first relative position with respect to the second member when the platform is in the vehicle floor-level position and the first member is in a second relative position with respect to the second member when the platform is in the curb-level position;

a raise/lower mechanism for moving the carriage and the platform between the vehicle floor-level position and the curb-level position; and



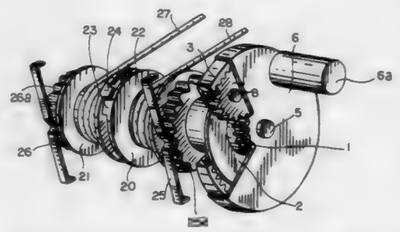
a sensor that generates a control signal corresponding to the curb-level position when the sensor detects that the first member is in the second relative position with respect to the second member, the sensor being configured to detect the relative position of the first member with respect to the second member at a location shielded from the outside environment.

5,299,905

ROPE DRUM DRIVING GEAR FOR A MOBILE MULTI-PURPOSE CHILD'S TOY

Albert Rademacher, München, Fed. Rep. of Germany, assignor to BIG-Spielwarenfabrik Dipl.-Ing. E.A.Bettag, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 889,675
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 9107674[U]
Int. Cl.[5] A63H *29/00, 17/26*
U.S. Cl. 414—624 **4 Claims**



1. A rope drum driving mechanism for a child's toy crane having a grab spade which can be operated to change the elevation of the spade as well as to open and close the spade, said driving mechanism comprising

a gear mechanism, the gear mechanism comprising a rotatable crank case having a crank handle extending therefrom for rotating the crank case, a hollow wheel fixed against rotation to a body of the crane, the hollow wheel being housed coaxially within the crank case and having gear teeth about its inner circumference, the crank case housing a coaxial sun wheel gear attached thereto, the rotation of which sun wheel gear is actuated by rotation of the crank case, a planetary wheel gear situated between the sun wheel gear and the hollow wheel, the planetary wheel gear being connected to a rotatable drum connecting means coaxial with the sun wheel gear, such that upon rotation of the crank case, the sun wheel gear rotates and causes the planetary wheel gear to rotate and orbit about the sun wheel gear,

a rope drum being connected to and rotated by the rotation

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drum connecting means, the rope drum being coaxial with the sun wheel gear the rope drum comprising a first drum adjacent the gear mechanism and a second drum adjacent the first drum, the first drum being connected by way of a first rope wound therearound to an opening and closing mechanism of the grab spade, and the second drum being connected by way of a second rope wound therearound to an elevating mechanism of the grab spade, the first drum being connected to the gear mechanism by way of the rotatable drum connecting means such that upon rotation of the crank case by way of the crank handle, the first drum rotates to thereby effect operation of the opening and closing mechanism, the first drum and second drum being connected by a clutch mechanism which allows for an almost complete rotation of the first drum before the second drum is thereafter engaged, whereby the grab spade is first opened or closed before being lowered or raised by way of the second drum,

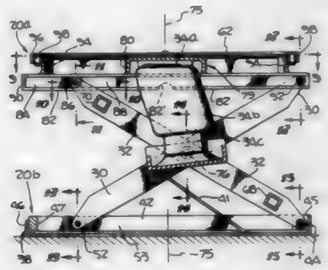
wherein both the opening and closing mechanisms and the elevating mechanism are operated by a single crank handle, and the rope drum is rotated at a rate lower than that of the crank case such that operation of both the opening and closing mechanism and the elevating mechanism of the crane is rendered more easily controllable for a child operator.

5,299,906

SELF-ADJUSTING PNEUMATIC LOAD ELEVATOR

Robert M. Stone, 9356 19th St. #E, Alta Loma, Calif. 91701

Filed May 3, 1991, Ser. No. 695,692
Int. Cl.[5] B65G *57/22*
U.S. Cl. 414—792.3 **29 Claims**



1. A self-adjusting load elevator comprising:

a base;

a load platform;

a vertically expandable scissors linkage mechanically coupled between the load platform and base;

an air actuator chamber comprising

a compressible bellows,

means for mechanically coupling said compressible bellows to said scissors linkage such that the bellows is adapted to actuate the scissors linkage, and

an air reservoir of fixed volume isobarically air-coupled to said compressible bellows to provide air to the bellows when the bellows expands and to receive back air from the bellows when the bellows contracts, whereby said air reservoir and said bellows have substantially the same air pressure at all times; and

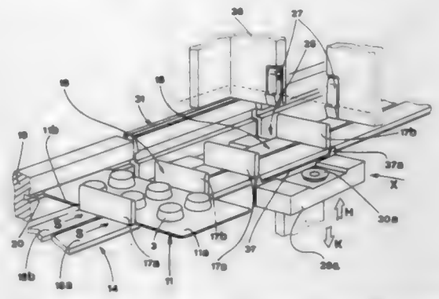
a normally closed air inlet/outlet valve air-coupled to the air actuator chamber.

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DEVICE FOR TRANSFERRING FLAT ARTICLES, IN PARTICULAR BLISTER PACKS, FROM A CONVEYOR OF TABLETS TO A MAGAZINE AND VICE-VERSA

Corrado Dal Pozzo, Imola, Italy, assignor to I.M.A. Industria Macchine Automatiche S.p.A., Ozzano Emilia, Italy

Filed May 30, 1991, Ser. No. 707,590
Claims priority, application Italy, Jun. 7, 1990, 3545 A/90
Int. Cl.[5] B65G *59/06*
U.S. Cl. 414—797.8 **4 Claims**



3. A device for transferring flat articles, in particular blister packs, from a conveyor to a magazine and vice versa comprising:

a conveyor having at least one conveyor belt of said conveyor being narrower than said flat article is long, a step motor to move said conveyor in steps in a closed loop,

an upper surface at said conveyor provided externally with crosspieces forming on said upper surface a plurality of seats located at a distance one from the other corresponding to a distance covered by said upper surface at each stepping movement of said motor,

a feed means for inserting said flat articles in said seats at the beginning of said upper surface crosswise with respect to said upper surface to protrude over both longitudinal edges of said upper surface;

a vertical magazine having an open bottom placed above said upper surface in a centered position with respect to a dwell station where said seats stop by the operation of said step-motor drive,

spring-operated means at a lower part of said magazine for retaining a stack of flat articles within said magazine, said magazine having a rectangular cross-section no smaller than the plan section of said flat articles;

at least two arms attached to a vertical rod and respectively situated on each side of said upper surface, below said magazine, with gripping means fastened to upper ends of said arms, each of said arms having an internal longitudinal edge,

means for moving said rod vertically and synchronously with a stepping movement of said conveyor between two positions for said gripping means, a lowered position in which said gripping means are below a longitudinal plane occupied by portions of said flat articles protruding from said seats, and a raised position, in which said gripping means are situated at least at a level of a horizontal supporting plane provided by said retaining means of said stack,

means for activation of said gripping means when said rod moves upward and when said gripping means meet with said portions positioned above a flat article protruding from one of said seats situated in said swell station, and for deactivation of said gripping means when at said raised position, causing said flat article to be transferred from said seat to said magazine and to become a lowermost flat article of said stack;

means for activation of said gripping means, when at said raised position, causing said gripping means to release said lowermost flat article of said stack in said magazine, thus transferring said flat article to a vacant seat positioned below and on said belt, said vacant seat being situated at said dwell station and receiving said flat article because said gripping means are deactivated,

two longitudinal fixed sidepieces situated upstream of said dwell station and symmetrically with respect to said upper surface, each of said fixed sidepieces having on an inside face a longitudinal groove designed to receive and guide ends of said flat articles,

two movable sidepieces downstream of said fixed sidepieces and beneath said magazine, each of said movable sidepieces having a longitudinal groove on an inside face and being joined to a fixed support by means of a pin located parallel to said upper surface,

a spring-operated means which opposes movement of said movable sidepieces in an outwards direction, and

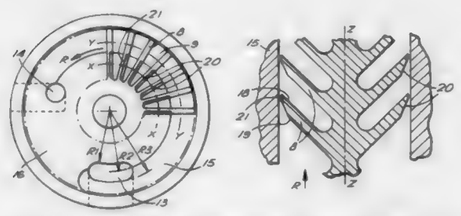
blocking means for blocking movement in an inwards direction of said movable sidepieces, said blocking means and said spring-operated means forming a rest position for a relative movable sidepiece, said groove of said relative movable sidepieces in said rest position being aligned with a groove of a corresponding fixed sidepiece.

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REGENERATIVE PUMP HAVING ROTOR WITH BLADES WHOSE INCLINATION VARIES RADIALLY OF THE ROTOR

Mark J. Robbie, Stirling, Great Britain, assignor to Dowty Defence and Air Systems Limited, Gloucestershire, United Kingdom

PCT No. PCT/GB91/02242, § 371 Date Sep. 9, 1992, § 102(e) Date Sep. 9, 1992, PCT Pub. No. WO92/10680, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 16, 1991, Ser. No. 917,053
Claims priority, application United Kingdom, Dec. 15, 1990, 9027230.3
Int. Cl.[5] F04D *5/00, 29/18*
U.S. Cl. 415—55.1 **10 Claims**



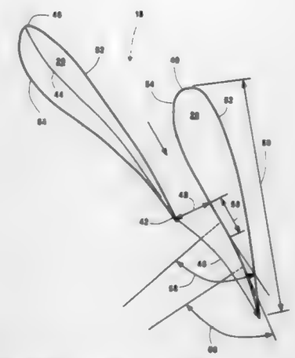
1. A regenerative pump comprising a housing with a pump inlet and a pump outlet, an impeller rotatably mounted within the housing and having a plurality of blades forming a series of cells spaced angularly around the axis of rotation of the impeller, and a flow channel within the housing extending between the pump inlet and pump outlet and including a guide channel in the housing located alongside the impeller so that the cells open laterally of the plane of rotation of the impeller into said guide channel and cooperate therewith to induce a spiral or helical flow of fluid through the guide channel and cells along the length of said flow channel as the impeller is rotated, each blade (**8**) extending radially over a first radial portion (**20**) thereof adjacent to at least a part of the pump inlet (**13**), and over a second radial portion thereof adjacent to at least a part of the guide channel (**15**) spaced radially from the pump inlet, and having a trailing surface (**19**) with a profile that varies radially, the trailing surface of the blade over said first radial portion (**20**) being inclined forwardly in the direction of rotation (**R**) towards its outer edge (**17**) as compared with the trailing surface (**19**) of the blade over said second radial portion.

5,299,909

RADIAL TURBINE NOZZLE VANE

James B. Wulf, Williamsville, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Mar. 25, 1993, Ser. No. 37,135
Int. Cl.[5] F01D *1/02, 9/00*
U.S. Cl. 415—186 **13 Claims**



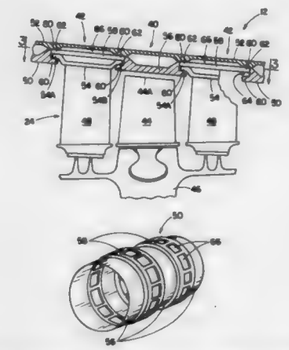
1. A radial turbine having an impeller mounted for rotation about an axis and encircled by a radial nozzle comprising a plurality of nozzle vanes having trailing edges arranged with a circumferential spacing around a circle and a nozzle throat defined by a minimum width between adjacent vanes wherein at least one vane for approximately one throat width downstream of the throat has a suction surface, which relative to a radius of the circle, has an angle of about 2° to about 7° less than an angle whose cosine is equal to the throat width divided by the spacing; and downstream of the throat to the trailing edge has an angle of not greater than about 1.5° greater than the angle whose cosine is equal to the throat width divided by the spacing.

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FULL-ROUND COMPRESSOR CASING ASSEMBLY IN A GAS TURBINE ENGINE

Alan R. Gilchrist, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 824,274, Jan. 23, 1992, abandoned. This application Mar. 4, 1993, Ser. No. 28,923
Int. Cl.[5] F01D *9/02*
U.S. Cl. 415—209.3 **3 Claims**



1. In a gas turbine engine having alternating axially-arranged stages of movable blades and stationary vanes, each stage of movable blades including a row of rotor blades attached to and

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extending radially outwardly from a rotor, each stage of stationary vanes including a row of stator vanes, a full-round casing assembly comprising;

(a) a plurality of vane sectors with said vanes projecting therefrom defining each stage of stationary vanes;

(b) an inner casing inserted over said rotor and blades; and

(c) an outer casing inserted over said inner casing and spaced radially outwardly therefrom;

(d) said inner casing including alternating axially-arranged full-round bands, said bands including at least one shroud band encircling outer ends of said rotor blades and at least one mounting band having means on an interior side thereof for mounting said vane sectors circumferentially in side-by-side relation around said mounting band such that said vanes extend radially inwardly therefrom;

(e) wherein said mounting means is a circumferential guide track defined on said interior side of said mounting band and extending around said mounting band; and

(f) wherein said mounting band has at least one opening to allow inserting said vane sectors one at a time from an exterior side of said mounting band through said opening to said guide track and indexing said vane sectors around the interior of said mounting band in order to assemble said vane sectors and vanes to said inner casing after rotor blades have been assembled to said rotor and said inner casing has been inserted over said rotor blades.

5,299,911

ELECTRIC PITCH CONTROL APPARATUS FOR VARIABLE-PITCH PROPELLER

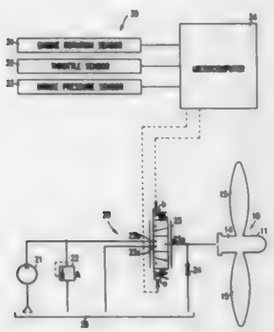
Yoshihito Moriya, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 24, 1992, Ser. No. 919,652

Claims priority, application Japan, Jul. 25, 1991, 3-208654

Int. Cl.[5] B64C *11/30*

U.S. Cl. 416—35 **5 Claims**



1. An electric pitch control apparatus for a variable pitch propeller of an aircraft equipped with a pitch control mechanism having an electrically controlled actuator for controlling a pitch angle of a blade of the propeller in accordance with a control current applied thereto, comprising:

an engine rotation sensor for detecting an actual rotational number of a prime engine of the aircraft;

a throttle sensor for detecting an opening degree of a throttle of the prime engine;

first means for determining a target rotational number of the prime engine in relation to the opening degree of said throttle;

second means for calculating a difference between the target and actual rotational numbers of the prime engine;

third means for determining a standard control value in relation to the calculated difference between the target rotational number and the actual rotational number; and

fourth means for controlling the control current based on the standard control value and for applying the control current to said pitch control mechanism so that the pitch angle of the propeller blade is varied by operation of said actuator to coincide the actual rotational number of the prime engine with the target rotational number;

wherein said electric control apparatus further comprises means for determining a flight condition of the aircraft, and means for correcting the standard control value in accordance with the calculated difference in rotational number when the aircraft has been in a constant flight condition for a predetermined time.

5,299,912

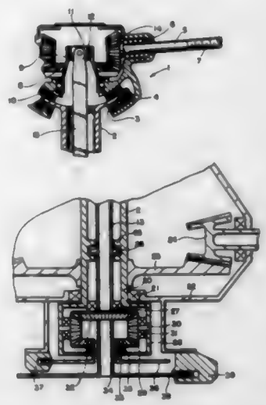
DRIVE SYSTEM FOR CHANGING THE DIAMETER OF A VARIABLE DIAMETER ROTOR

Evan A. Fradenburgh, Fairfield, and Gordon G. Miller, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 28, 1992, Ser. No. 920,861

Int. Cl.[5] B64C *27/54*

U.S. Cl. 416—87 **13 Claims**



1. A gear drive system for a variable diameter rotor having a hub, one or more variable length blades extending from the hub, the hub incorporating means for extending and retracting the one or more blades, a rotor drive shaft attached to the hub for rotating the hub and the one or more blades, the drive system comprising:

a single central shaft, extending coaxially within the rotor drive shaft and connected to the hub for extending and retracting the one or more blades;

first brake means engagable with the central shaft for varying the speed of rotation of the central shaft relative to the rotor drive shaft;

gear means engaged with the central shaft for varying the speed of rotation of the central shaft relative to the rotor drive shaft, the gear means located at a lower end of the central shaft, the gear means having a stub shaft coaxial with the central shaft, bevel gear means fixed to the stub shaft, pinion gear means engaged to the bevel gear means, the central shaft having a bevel gear engaged to the pinion gear means, second brake means associated with the sub shaft such that applying the second brake means on the stub shaft causes the pinion gear means to rotate the central shaft at a speed different from the rotor drive shaft.

5,299,913

WIND POWER PLANT

Götz Heidelberg, Am Hügel 16, W-8136 Starnberg-Percha, Fed. Rep. of Germany

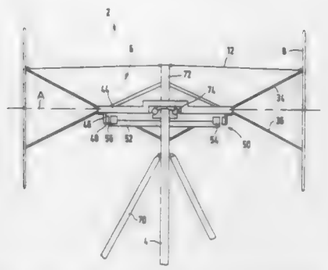
PCT No. PCT/EP90/02060, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO91/08394, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 30, 1990, Ser. No. 867,236

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939862

Int. Cl.[5] F03D *3/00*

U.S. Cl. 416—197 A **24 Claims**



1. A wind power plant for harnessing wind power, comprising

(a) a tower;

(b) an upright shaft supported by said tower;

(c) a supporting structure disposed on the shaft for rotation about an upright rotary axis; said supporting structure including a rotary supporting ring;

(d) a plurality of upright elongate rotor blades mounted on said supporting structure; said rotor blades being spaced circumferentially from one another and radially from said upright rotary axis;

(e) a bearing mounted on said shaft and having a bearing axis coinciding with said upright rotary axis; said supporting structure surrounding said bearing and being supported thereby on said shaft; said bearing being situated at a height level which substantially corresponds to a height level of a horizontal plane halving the rotor blades;

(f) a stationary supporting ring generally coaxially surrounding said upright rotary axis; and

(g) energy conversion means for converting a rotary motion of said rotor blades into electric energy; said energy conversion means being situated at a height level which substantially corresponds to the height level of said horizontal plane halving the rotor blades; said energy conversion means including

(1) a first, stationary functional part mounted on said stationary supporting ring;

(2) a second, rotary functional part mounted on said rotary supporting ring;

(3) an air gap defined between said first and second functional parts;

(4) an exciter system carried by one of said first and second functional parts; and

(5) a conductor system carried by another of said first and second functional parts.

5,299,914

STAGGERED FAN BLADE ASSEMBLY FOR A TURBOFAN ENGINE

Jan C. Schilling, Middletown, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 11, 1991, Ser. No. 757,854

Int. Cl.[5] F01D *5/14*

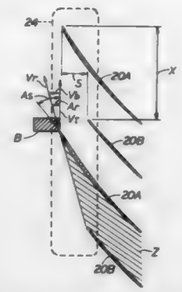
U.S. Cl. 416—203 **7 Claims**

1. A fan blade assembly for a turbofan engine fan stage circumscribed by a fan casing, said fan blade assembly comprising:

a plurality of rugged FOD resistant fan blades circumferentially disposed on a fan rotor in the fan stage and in rotational sealing engagement with the fan casing,

a plurality of less rugged fan blades made of a lighter weight material than said rugged blades are circumferentially disposed on said fan rotor in the fan stage and in rotational sealing engagement with the fan casing, and

said less rugged blades are staggered with respect to said rugged blades such that leading edges of said rugged blades are axially displaced on said fan rotor forward of the leading edges of said less rugged blades.



5,299,915

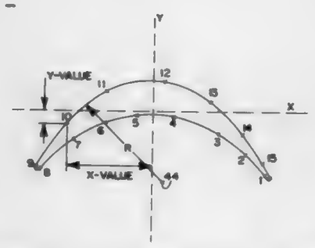
BUCKET FOR THE LAST STAGE OF A STEAM TURBINE

Cuong V. Dinh, Schenectady, and Steven G. Ruggles, Scotia, both of N.Y., assignors to General Electric Corporation, Schenectady, N.Y.

Filed Jul. 15, 1992, Ser. No. 913,352

Int. Cl.[5] F01D *5/14*

U.S. Cl. 416—223 A **9 Claims**



1. A bucket for a steam turbine having a profile in accordance with Charts I-XIX; XXI-XXXIX; and XLI inclusive of Table I.

5,299,916

LIQUID-RING PUMP HAVING AN OUTLET MEANS INCLUDING A NOISE REDUCING FLEXIBLE MEMBRANE

Norbert Schmid, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 991,834

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 4141674

Int. Cl.[5] F04B *39/00*

U.S. Cl. 417—68 **7 Claims**

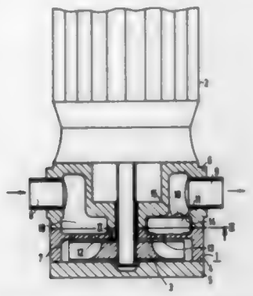
3. A liquid-ring pump for delivering a medium comprising:

a) a pump housing,

b) a housing cover, said housing cover being fixed over said pump housing and, with said pump housing, defining a

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compression chamber, said compression chamber having an outlet opening;
c) an impeller rotatably supported by said pump housing;
d) a control member, said control member defining
i) an input port, and
ii) an output port, said output port defining a passage to said compression chamber;
e) a discharge connection, said discharge connection defining a passage from said compression chamber to an area outside said liquid-ring pump;
f) a blocking element, said blocking element



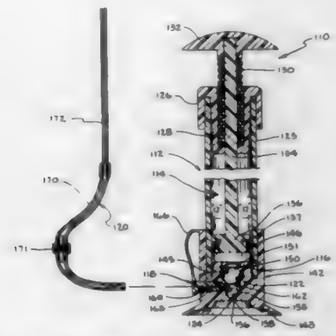
i) being arranged in said compression space in a flow path between said output port and an inlet opening of said discharge connection,
ii) covering said inlet opening, and
iii) having a flow-through opening, said flow-through opening having a cross-section, said cross-section being automatically adjustable based on a quantity of the medium delivered by the pump at any given time; and
g) at least one flexible flap, said flexible flap being configured in an area of said outlet opening, being capable of being forced apart by the discharging medium and being defined by a separating cut in said blocking element,
wherein said blocking element is a flexible membrane.

5,299,917

EVACUATION PUMP SYSTEM WITH CHECK VALVES FOR BOTH RIGID AND FLEXIBLE CONTAINERS

Glen R. Schultz, Yorkville, Ill., assignor to Pioneering Concepts Incorporated, Yorkville, Ill.

Filed Feb. 16, 1993, Ser. No. 18,202
Int. Cl.[5] F04B *39/10*; **B65B** *31/00*
U.S. Cl. 417—238 **8 Claims**



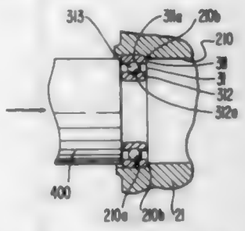
1. An evacuation system for both lidded rigid containers and sealable flexible containers, comprising: a reciprocating piston pump having a reciprocating piston in a pumping chamber movable in a suction stroke and a discharge stroke, said pump including a check valve that closes during the suction stroke of the piston and opens during the return stroke, said pump having an actuator for the piston at one end and a sealable lid engaging cup at the other end, said pump having a rigid container evacuation mode and a flexible container evacuation mode, a first inlet port communicating with the interior of the cup, a second inlet port adapted to receive a flexible tube for evacuating flexible containers, means for selectively blocking the second inlet port in the rigid container evacuation mode, an inlet passage communicating with the pumping chamber and the first and second inlet ports, and a second check valve separate from the piston between the inlet passage and the first inlet port responsive to a vacuum within the cup for maintaining suction in the interior of the cup in the flexible container evacuation mode with the second inlet port unblocked, said second check valve being responsive to pressure in the inlet passage to open the first inlet port during the suction stroke of the piston in the rigid container evacuation mode.

5,299,918

BEARING FOR COMPRESSOR DRIVE SHAFT

Higuchi Teruo, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 868,423, Apr. 15, 1992, abandoned. This application May 19, 1993, Ser. No. 63,062
Claims priority, application Japan, Apr. 15, 1991, 3-108122
Int. Cl.[5] F04B *27/08*
U.S. Cl. 417—269 **19 Claims**



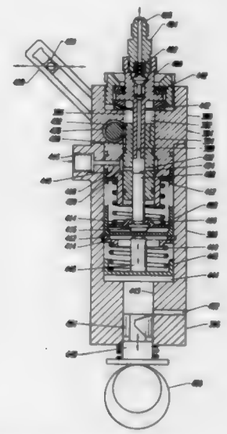
1. In a slant plate type compressor including a compressor housing enclosing a crank chamber, a suction chamber and a discharge chamber therein, said compressor housing comprising a cylinder block having a plurality of cylinders, a piston slidably fitted within each of said cylinders and drive means coupled to said pistons for reciprocating said pistons within said cylinders, said drive means including a drive shaft rotatably supported in said housing and coupling means for drivingly coupling said pistons with said drive shaft and for converting rotary motion of said drive shaft into reciprocating motion of said pistons, said coupling means including a slant plate having a surface disposed at an inclined angle relative to a plane perpendicular to an axis of said drive shaft, the inclined angle changing in response to a change in pressure in said crank chamber to thereby change the capacity of said compressor, a communication path linking said crank chamber with said suction chamber, a valve control mechanism controlling the opening and closing of said communication path to cause a change in pressure in said crank chamber, said drive shaft including a small diameter portion extending from one end thereof so that an annular ridge is formed at said one end of said drive shaft, said small diameter portion of said drive shaft rotatably supported by bearing means in a bore formed through said cylinder block, the improvement comprising:
said bore in said cylinder block comprising a large diameter portion having a first longitudinal axis and a small diameter portion having a second longitudinal axis, wherein said small diameter portion is spaced from said large diameter portion and the longitudinal axis of said small diameter portion is concentric with the longitudinal axis of said large diameter portion;
said bearing means including an outer annular ring, an inner annular ring and a plurality of rolling elements rollingly disposed between said outer and inner annular rings, said bearing means receiving both the axial and radial forces acting on said drive shaft through said outer and inner annular rings and said rolling elements; and
an outer peripheral surface of said outer annular ring of said bearing means frictionally engaging an inner peripheral wall of said bore, said inner ring slidably receiving said small diameter portion of said drive shaft therewithin while one end of said inner annular ring is in contact with a side wall of said annular ridge of said drive shaft.

5,299,919

FUEL INJECTOR SYSTEM

Marius A. Paul, and Ana Paul, both of 1120 E. Elm Ave., Fullerton, Calif. 92631

Continuation-in-part of Ser. No. 840,839, Feb. 24, 1992, which is a continuation-in-part of Ser. No. 786,286, Nov. 1, 1991. This application May 18, 1992, Ser. No. 885,304
Int. Cl.[5] F04B *7/08*
U.S. Cl. 417—387 **7 Claims**



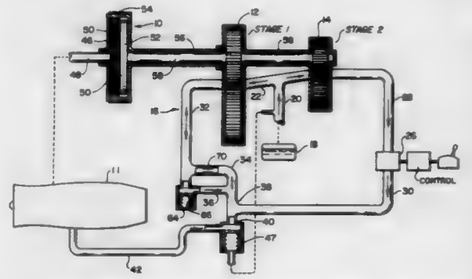
1. A fuel injector system comprising:
a) a high pressure fuel pump, the high pressure fuel pump having,
a pump housing having an internal, cylindrical slider sleeve with first and second ends, the slider sleeve having a discharge passage assembly in the first end for discharging fuel at high pressure from the pump, and a slidable piston in the second end wherein the piston has an end, and a fuel chamber is formed between the end of the piston and the discharge assembly;
a fuel passage means for supplying fuel to the pump, the fuel passage means including at least one side entry passage to the fuel chamber;
actuator means for reciprocating the piston in the sleeve, wherein fuel is supplied to the chamber through the side entry passage and the piston eclipses the side entry passage on displacement by the actuator means, pumping the fuel in the chamber through the discharge passage assembly, the discharge passage assembly including a check valve means for preventing discharged fuel from reentering the fuel chamber, wherein the fuel passage assembly has a stationary discharge tube mounted to the pump housing with an internal passage, the tube being inserted into the first end of the slider sleeve, wherein the housing has an internal cylinder and the slider sleeve is displaceable in the cylinder, the pump having actuating means engaging the slider sleeve for displacing the slider sleeve in the internal cylinder, wherein the volume of fuel displaced by the piston is varied according to the position of the slider sleeve in the housing cylinder; and,
b) a booster pump, the booster pump having,
a housing connected to the pump housing,
a booster cylinder with a slidable booster piston in the cylinder, the cylinder in part forming a booster hydraulic chamber,
a booster actuator means for reciprocating the booster piston in the booster cylinder,
a displaceable end member in engagement with the slidable piston of the fuel pump, the end member being in hydraulic communication with the hydraulic chamber, wherein the end member and the fuel pump piston have different diameters and the diameter of the end member of the booster pump substantially exceeds the diameter of the fuel pump piston, wherein on reciprocation of the booster piston with hydraulic fluid in the booster chamber the fuel pump piston is displaced, said booster pump comprising the actuator means of the fuel pump.

5,299,920

FIXED GEOMETRY VARIABLE DISPLACEMENT PUMP SYSTEM

Charles F. Stearns, 60 Fernwood Dr., E. Longmeadow, Mass. 01028

Division of Ser. No. 917,765, Jul. 21, 1992, Pat. No. 5,241,826. This application Apr. 19, 1993, Ser. No. 47,532
Int. Cl.[5] F04B *23/04*
U.S. Cl. 417—426 **16 Claims**



1. A fluid pumping system for minimizing the temperature rise of fluid being pumped by the pumping system having a pair of positive displacement pumps, each having different flow capacities at a given speed,
a fluid flow circuit including a first fluid connection means interconnecting one of said pumps and a receiver for receiving fluid from said pump and a second fluid connection means interconnecting said other pump, said receiver and said first fluid connection means,
restrictor means in said second fluid connection means affording one level of resistance to the flow therein in one direction and affording a different level of resistance to the flow therein when the flow is in a reverse direction,
a differential gear train operatively driven by a single source, a portion of said differential gear train operatively connected to one of said pumps and another portion of said gear train operatively connected to the other of said pumps, the rotational speed of each of said portions of said gear train being dependent on the flow, direction and pressure of the fluid in said first and said second fluid connection means,
valve means in said first fluid connection means for regulating the flow of fluid therein and control means for controlling said valve means, said valve means adapted to cause said flow in said second fluid connection means to reverse and flow from said first fluid connection means to the second fluid connection means to the output of one of said pumps,

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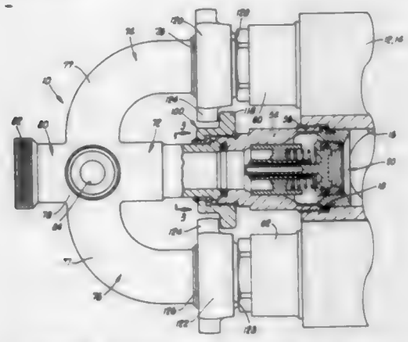
whereby the horsepower for driving said pumps is reduced during a given operating condition of said pumping system for lowering temperature rise of the fluid in said first and said second fluid connections means.

5,299,921

MANIFOLD FOR A FRONT-DISCHARGE FLUID END RECIPROCATING PUMP

Travis L. Richter, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 10, 1992, Ser. No. 943,342
Int. Cl.[5] F04B *11/00*
U.S. Cl. 417—539 **13 Claims**



1. A manifold apparatus for a front-discharge pump having a plurality of ports, said apparatus comprising:
- a first tubular portion having an end adapted for engagement and communication with a first port of the pump;
- a second tubular portion having an end adapted for engagement and communication with a second port of the pump, said second tubular portion being in communication with said first tubular portion;
- another tubular portion having a ported end and in communication with said first and second tubular portions;
- a first nut disposed around the end of the first tubular portion and adapted for locking engagement with said pump adjacent to the first port, the first nut further having an outer side facing generally away from the pump and an inner side facing generally toward the pump and having plurality of lugs extending therefrom adjacent to one of the outer and inner sides; and
- a second nut disposed around the end of the second tubular portion and adapted for locking engagement with said pump adjacent to said second port, the second nut further having an outer side facing generally away from the pump and an inner side facing generally towards the pump, and the second nut having a plurality of lugs extending there from opposite of the outer and inner sides as the lugs on the first nut, such that the lugs on the first nut do not interfere with the lugs on the second nut.

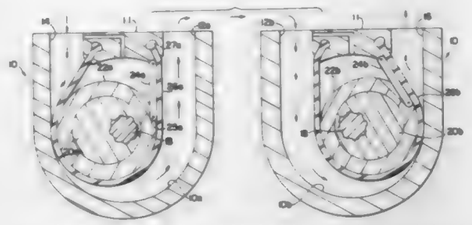
5,299,922

POSITIVE DISPLACEMENT ROTARY PUMP

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1992, Ser. No. 983,951
Int. Cl.[5] F01C *5/00*
U.S. Cl. 418—45 **5 Claims**

1. A fluid pump comprising:
- a housing defining at least one chamber, and defining inlet and outlet ports communicating with said chamber, said chamber having an arcuate wall defined at least in part by a body of revolution;
- a driven shaft rotatably supported on an axis that is fixed in said housing and located at the center of rotation defined by said arcuate wall;
- a generally cylindrical rotor mounted on said shaft, said rotor having a central axis that is offset from the axis of said shaft;
- an elastomeric curtain having one end secured to said housing and wrapped around said cylindrical rotor, said curtain providing a line of tangency between itself and said arcuate wall, said line of tangency providing a moving line of contact as said shaft rotates such that fluid admitted to said one chamber through said inlet port is positively displaced toward said outlet port;
- said elastomeric curtain having a segment adjacent said line of tangency and adjacent the outlet port; and
- means supporting said segment of elastomeric curtain to accommodate for high pressure fluid at the outlet port.

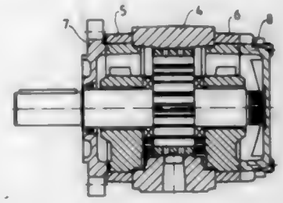


5,299,923

INTERNAL GEAR PUMP

Franz Arbogast, and Peter Peiz, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 993,351
Claims priority, application Fed. Rep. of Germany, Dec. 26, 1991, 4142799
Int. Cl.[5] F01C *1/10*
U.S. Cl. 418—169 **5 Claims**



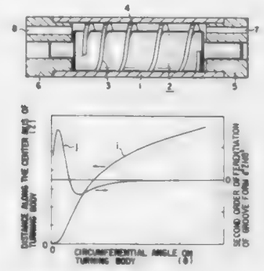
1. An internal gear pump, comprising:
- an internal gear;
- a pinion meshing with said internal gear and mounted eccentrically with regard to said gear;
- a shaft supporting said pinion;
- a central ring-shaped housing part encompassing the internal gear and pinion, said central housing part including a suction socket and a pressure socket;
- respective ring-shaped housing intermediate parts axially disposed on each side of said central housing part for supporting said shaft;
- a cutout portion in each of said intermediate parts, said cutout portion extending bow-shaped in peripheral direction; and
- a web disposed in at least one of said housing intermediate parts for bridging said cutout, said web being positioned at least partially in an area of said pinion diametrically opposite from said pressure socket.

5,299,924

COMPRESSOR HAVING A BLADE SHAPE FOR MINIMAL STRAIN

Haruhiko Hirata, and Masayuki Okuda, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 8, 1993, Ser. No. 27,947
Claims priority, application Japan, Mar. 9, 1992, 4-050088; Aug. 31, 1992, 4-230743
Int. Cl.[5] F01C *21/08*
U.S. Cl. 418—220 **25 Claims**



2. A fluid compressor comprising:
- a cylinder provided with a suction port at an axial end thereof and a discharge port at the other axial end thereof;
- a turning body rotatably disposed in said cylinder and provided with a helical groove formed on an outer peripheral surface of said cylinder, an axis of said turning body being eccentrically displaced from the axis of said cylinder by a given distance;
- a blade held and perpendicularly movable in said groove in a direction of a depth of said groove;
- said compressor drawing operating fluid into said cylinder through said suction port, transferring a drawn-in fluid toward said discharge port and eventually discharging said fluid through said discharge port by a rotary movement of said turning body;
- wherein said helical groove has such a helical form that a strain generated in said blade when said blade is held in contact with and moved relative to said helical groove during an operation of said compressor is kept below a predetermined level; and
- wherein said helical groove has such a helical form that, when a two-dimensional spread helical groove is expressed by a given formula in terms of a circumferential coordinate and an axial coordinate of said turning body, the values obtained as a result of a second order differentiation of said axial coordinate by a peripheral coordinate in said given formula show an approximately continuous distribution.

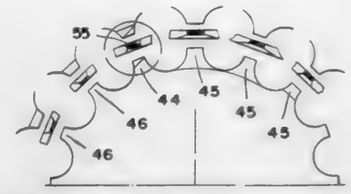
5,299,925

BICYCLE REAR-WHEEL HUB ASSEMBLY

David Chang, Taichung Shien, Taiwan, assignor to Taiwan Bicycle Industrial Development Co., Ltd., Taichung Shien, Taiwan

Filed Nov. 21, 1991, Ser. No. 795,744
Int. Cl.[5] F16H *55/12, 55/30*
U.S. Cl. 474—160 **4 Claims**

1. A bicycle rear-wheel hub assembly comprising: a hub, an inner casing fastened in said hub at one side, an outer casing mounted on said inner casing, an axle inserted through said hub, a set of flywheels mounted on said outer casing, a plurality of fastening elements to fasten said axle and set of flywheels in place, said hub including an inner thread and a wheel shoulder at one end, and a rubber ring set inside said wheel shoulder in front of said inner thread; said inner casing having an outer thread at one end for engaging with said inner thread in said hub with said rubber ring firmly squeezed in therebetween, and a tool hole at an opposite end for inserting a tool during the process of dismounting, said set of flywheels including a first flywheel having teeth in regular angle of lead, a second flywheel and a third flywheel, said second and third flywheels each having at least one guide tooth, said at least one guide tooth each having an angular interval at the top at an inner side, three outward teeth in front of each of said at least one guide tooth respectively inclined outward and two inward teeth at the back of each of said at least one guide tooth respectively inclined inward, a fourth flywheel a fifth flywheel and a sixth flywheel, said fourth, fifth and sixth flywheels each having at least one lead tooth, said at least one lead tooth each having an angular interval at the top at an outer side and two slant angles at two opposite sides in reverse directions, three outward teeth in front of each of said at least one lead tooth being respectively inclined outward, and two inward teeth at the back of each of said at least one lead tooth respectively inclined inward.

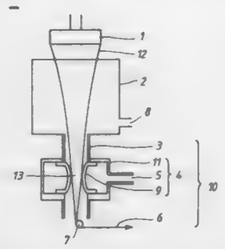


5,299,926

SPINNING APPARATUS HAVING A TUBULAR ELASTOMERIC FLOW CONTROL VALVE BODY

Shigeru Nakajima, Okayama, and Tadao Marui, Kobe, both of Japan, assignors to Sumika-Hercules Co., Ltd., Osaka, Japan

Filed Oct. 23, 1992, Ser. No. 965,784
Claims priority, application Japan, Oct. 24, 1991, 3-306994
Int. Cl.[5] D01D *5/08;* **D01F** *6/18*
U.S. Cl. 425—71 **3 Claims**



1. A spinning apparatus for making man-made fibers, said apparatus comprising:
- a spinneret;
- a container in which a liquid coagulant is contained, said container being disposed beneath said spinneret and having a permanently open bottom through which the liquid coagulant and chemical solution forced through the spinneret are free to flow vertically from the container; and
- a flow control unit communicating with the permanently open bottom of said container, said flow control unit including a tubular flow control valve body disposed at a level below the bottom of said container and located at such a position that material flowing from the permanently open bottom of the container passes through the interior of the tubular flow control valve body, and a casing forming a chamber around said tubular flow control valve body and which chamber is closed from the interior of the tubular flow control valve body, said tubular flow control valve body being made of an elastomeric

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material such that the inner diameter of the valve body can be changed by varying the pressure in said chamber.

5,299,927

VACUUM PRESS FOR CONTINUOUS PRODUCTION OF PLASTIC EXTRUDED MASSES

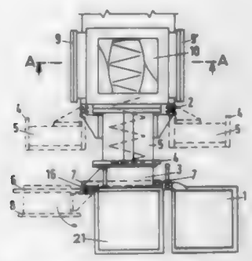
Eberhard Steffens; Wolfram Kunze, both of Görlitz; Klaus Lorenz, Markersdorf, and Holger KieBling, Görlitz, all of Fed. Rep. of Germany, assignors to Kema-Keramikmaschinenbau GmbH Gorlitz, Gorlitz, Fed. Rep. of Germany

Filed Mar. 13, 1992, Ser. No. 851,483

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108342

Int. Cl.[5] B29C *47/08*

U.S. Cl. 425—188 **10 Claims**



1. A vacuum press comprising:
an upper press;
an upper press housing;
a lower press;
a lower press housing;
detachable housing elements forming a part of said upper press housing and said lower press housing;
a sieve plate holder connected to said detachable housing elements;
said sieve plate holder arranged to be pivotally movable with respect to a press frame;
a vacuum chamber interposed between said upper press and said lower press;
said vacuum chamber being arranged so that it is movable horizontally via hinge means;
said vacuum chamber being secured to a feed opening of said lower press;
second housing elements comprising mixing troughs of the upper press and the lower press;
said second housing elements conforming to the contour of receiving spaces of said upper and said lower press and also to screw presses of said upper press and said lower press; and
said second housing elements being pivotally attached to the press frame.

5,299,928

TWO-PIECE INJECTION MOLDING NOZZLE SEAL

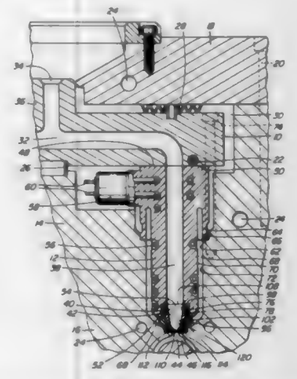
Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Jul. 26, 1993, Ser. No. 95,538

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—190 **6 Claims**

1. In an injection molding apparatus having at least one heated nozzle and at least one nozzle seal, the at least one heated nozzle having a rear end, a front end, and a central melt bore extending therethrough from the rear end to the front end, the at least one heated nozzle being seated in a surrounding cooled mold with an insulative air space extending between the at least one heated nozzle and the surrounding cooled mold and the central melt bore of the nozzle extending in alignment with a gate to a cavity, the at least one nozzle seal having a rear end, a front end, and a central melt duct extending therethrough from the rear end to the front end, the rear end of the at least one nozzle seal being mounted in a threaded seat in the front end of the at least one nozzle and the front end of the at least one nozzle seal in sealing contact in an opening in the mold around the gate to bridge the insulative air space with the melt duct through the at least one nozzle seal extending in alignment with the melt bore through the at least one nozzle, the improvement wherein:
the at least one nozzle seal comprises a hollow inner piece formed of a highly thermally conductive material extending coaxially in a hollow outer retaining piece, said hollow outer retaining piece being formed of a material which is substantially less conductive than the material forming the inner piece, the inner piece having an outer surface, a rear end, and a front end, with the central melt duct extending therethrough from the rear end to the front end, the outer retaining piece bridging the insulative air space and having a rear end, a front end, an outer surface, and an inner surface to fit around at least a first portion of the outer surface of the inner piece, the outer surface of the outer retaining piece having a front portion to be in sealing contact in the opening in the mold around the gate and a threaded rear portion to be received in the threaded seat in the front end of the at least one nozzle to securely retain the inner piece in place with the rear end of the inner piece received in the seat in the front end of the at least one nozzle and the central melt duct extending in alignment with the melt bore through the at least one nozzle.



5,299,929

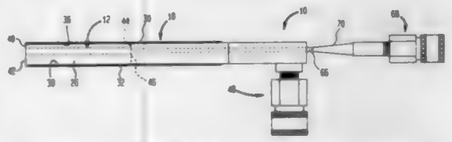
FUEL BURNER APPARATUS AND METHOD EMPLOYING DIVERGENT FLOW NOZZLE

Loo T. Yap, Princeton, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Feb. 26, 1993, Ser. No. 23,511

Int. Cl.[5] F23C *5/00*

U.S. Cl. 431—8 **10 Claims**



8. A method of burning fuel in an oxidant comprising:
producing a fuel jet of outwardly divergent, fan-shaped configuration so that the fuel jet will burn within the oxidant with an outwardly extending and divergent flame; and
producing upper and lower oxidant jets separate and distinct from one another and from the fuel jet at locations above and below the fuel jet, respectively, and so as to have a lower velocity than the fuel jet such that the oxidant is aspirated into the fuel;

5,299,930

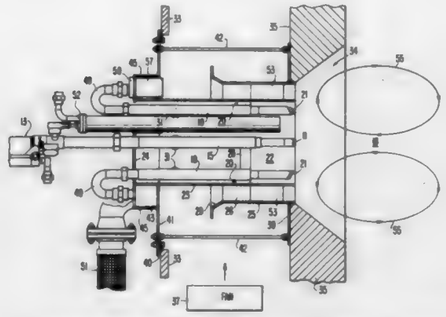
LOW NOX BURNER

George Weidman, Carrolton, Tex., assignor to Forney International, Inc., Addison, Tex.

Filed Nov. 9, 1992, Ser. No. 973,701

Int. Cl.[5] F23M *3/04*

U.S. Cl. 431—10 **12 Claims**



1. A low NOx burner comprising means defining a combustion zone, means to distribute fuel in fluid form into said combustion zone to be burned in said combustion zone, a central tube having an open end at said combustion zone, means defining an annular channel around said central tube, and having an open end at said combustion zone, means to cause air to flow axially through said central tube and through said annular channel with no angular flow component and with the velocity of flow in said annular channel being substantially greater than the velocity of flow in said central tube to generate axial recirculation in said combustion zone with no angular flow component, said central tube containing no obstructions affecting axial flow through said central tube and causing turbulence in said combustion zone, said annular channel containing no obstruction affecting axial flow through said annular channel and causing turbulence in said combustion zone.

5,299,931

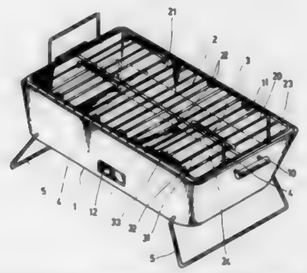
BARBECUE STOVE WITH EASILY OPERATING CHARCOAL-ACCESSIBLE GRILL

Ping-Chang Lee, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Apr. 26, 1993, Ser. No. 51,871

Int. Cl.[5] F24B *3/00*

U.S. Cl. 431—25 **3 Claims**



1. A barbecue stove comprising: a grill having a plurality of transverse grill rods and longitudinal grill rods juxtapositionally mounted on a rim placed on an upper portion of a stove body for barbecuing use, and a slide grating member slidable engageable with respective grill rods on said grill for normally shielding a charcoal-accessible opening cut out in the grill rods of said grill, whereby upon a sliding movement of the slide grating member to uncover the charcoal-accessible opening, new charcoal can be charged into the stove body through said opening;
said grill including: a plurality of said transverse grill rods juxtapositionally secured to a plurality of said longitudinal grill rods confined within said rim which is mounted on an upper portion of the stove body, and the charcoal-accessible opening formed in the grill to be covered by the slide grating member by cutting out a plurality of transverse grill rods between two adjacent longitudinal grill rods to thereby define the charcoal-accessible opening within two said adjacent separated longitudinal grill rods and two adjacent transverse grill rods parallel each other and separated with a width therebetween;
said slide grating member including: a plurality of transverse grating rods juxtapositionally secured to two longitudinal grating rods longitudinally disposed on two opposite sides of the slide grating member to be parallel to the longitudinal grill rods of the grill and slidably engageable with two adjacent transverse grill rods of the charcoal-accessible opening, and a slide handle secured to one said longitudinal grating rod for manipulating the slide grating member for uncovering or closing the charcoal-accessible opening; and
each said longitudinal grating rod of the slide grating member formed with two opposite arcuate rod ends respectively bent inwardly to face each other to define a distance between the two said arcuate rod ends, said distance being slightly shorter than a width of the charcoal-accessible opening confined between two adjacent transverse grill rods of said grill for resilient coupling of the longitudinal grating rod of the slide grating member on the transverse grill rods of said grill for stably slidably mounting the slide grating member on the grill.

5,299,932

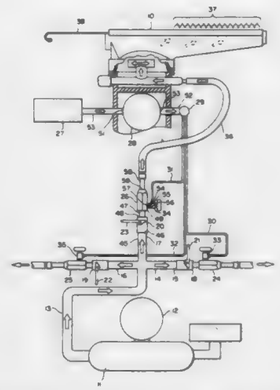
FUEL AND AIR SUPPLY CONTROL APPARATUS FOR GAS BURNERS

F. James Piver, 26608 188th Ave. SE., Kent, Wash. 98042

Filed Nov. 24, 1992, Ser. No. 980,703

Int. Cl.[5] F23D *14/62*

U.S. Cl. 431—354 **1 Claim**



1. Apparatus for controlling the flow rates and mixing of air and gaseous fuel supplied to a gas burner from an air source and a gaseous fuel source, said apparatus comprising:

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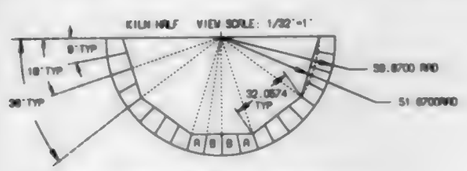
an air flow rate control valve having a first air input port and a first air output port,
a venturi having a second air input port, a first fuel input port and a fuel/air mixture output port,
a fuel flow rate control valve having a second fuel input port and a first fuel output port,
a zero regulator having a third fuel input port and a second fuel output port,
a first passage connecting said first air input port to said air supply,
a second passage connecting said first air output port to said second air input port,
a third passage connecting said third fuel input port to said fuel supply,
a fourth passage connecting said second fuel output port to said second fuel input port,
a fifth passage connecting said first fuel output port to said first fuel input port, and
a sixth passage from said fuel/air mixture output port to said burner,
whereby, with characteristics of said zero regulator being delivery of output only on demand and in direct proportion to the amount of demand and with a characteristic of said venturi being induction of fuel in direct proportion to the rate of flow through it, the ratio of fuel to air in the outflow from said venturi is adjustable by adjustment of said fuel flow rate control valve and is constant independent of air flow rate as adjusted by said airflow rate control valve.

5,299,933

ROTARY KILN WITH A POLYGONAL LINING

Ricardo A. Mosci, Butler, Pa., assignor to Quigley Company, Inc., New York, N.Y.

Filed Dec. 24, 1991, Ser. No. 815,102
Int. Cl.[5] F27B *7/00*
U.S. Cl. 432—103 **22 Claims**



1. A kiln for processing material comprising:
a shell having an inner wall and a longitudinal axis, and
a lining disposed within and adjacent at least a portion of said wall and comprising N planar sides, with a selected width of each side being made from between two and six bricks of different size and shape disposed against said shell in a predetermined manner, for defining an open processing zone having a generally polygonal cross sectional configuration generally aligned along the longitudinal axis of said shell.

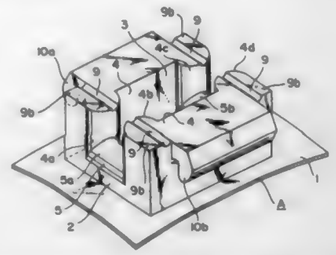
5,299,934

TEETH STRAIGHTENING BRACKET

Hajime Suyama, 6-1, Wachigawara, 2-Chone Miyazaki 880, Miyazaki-Shi, Japan

PCT No. PCT/JP90/01575, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO91/07925, PCT Pub. Date Jun. 13, 1991
PCT Filed Dec. 4, 1990, Ser. No. 852,244
Claims priority, application Japan, Dec. 5, 1989, 1-316796
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—8 **22 Claims**

1. An orthodontic bracket comprising:
a wire support;
an archwire passage groove formed in said wire support to define a pair of side portions of said wire support standing apart and opposite each other, each side portion having an outer side wall and two ends;
said archwire passage groove including a pair of protruding base portions perpendicular to its axis at both ends thereof, each one having an outwardly curved surface;
two first engaging fingers for receiving a bonding wire thereunder and each having two free ends, said first engaging fingers provided to the outer side walls of each of



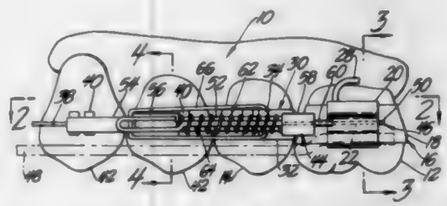
said side portions of said wire support in such a manner that both ends of each of said side portions protrude beyond extension lines between opposing free ends of opposing first engaging fingers;
an upper surface of each of said protruding ends having a width sufficient to permit a bonding wire to be passed thereon and a height sufficient to permit the bonding wire not to press an archwire down.

5,299,935

ORTHODONTIC APPLIANCE

Robert R. Lokar, 22110 Orchard Way Ct., Birmingham, Mich. 48010

Filed Dec. 1, 1992, Ser. No. 983,811
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—18 **28 Claims**



1. An orthodontic appliance (**10**) for distalizing a primary tooth (**12**) such as an upper molar, said appliance comprising: primary brace means (**16**) for fixed attachment to a primary tooth (**12**) and including a central archwire receptacle (**22**) having an interior wall configuration; secondary brace means (**30**) for fixed attachment to a secondary tooth (**14**) adjacent the primary tooth (**12**); distalizer means (**44**) operatively disposed between said primary brace means (**16**) and said secondary brace means (**30**) for forcibly distalizing said primary brace means (**16**) relative to said secondary brace means (**30**); and primary support means (**46**) extending between said distalizer means (**44**) and said primary brace means (**16**) for engaging said primary brace means (**16**) exclusively within said archwire receptacle (**22**) thereby unencumbering any additional receptacles (**24**, **26**) in said primary brace means (**16**) to attach further orthodontic appliances (**48**), said primary support means (**46**) having a cross-sectional shape irrotatably engaging said interior wall configuration of said archwire receptacle (**22**).

5,299,936

SPACER AND MOUTHPIECE FOR ADJUSTING OCCULSION

Masato Ueno, Hiroshima, Japan, assignor to Molten Corporation and Chugoku Shiken Kabushiki Kaisha, both of Hiroshima, Japan

Filed Sep. 9, 1992, Ser. No. 942,454
Claims priority, application Japan, Sep. 20, 1991, 3-084939[U]; Dec. 11, 1991, 3-109858[U]; Jan. 18, 1992, 4-005731[U]
Int. Cl.[5] A61C *9/00, 19/00, 5/14*
U.S. Cl. 433—71 **8 Claims**



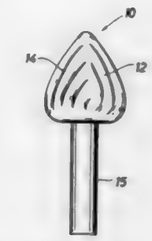
1. A spacer for elevating occlusion position comprising: a plastic material which can be deformed by occlusion pressure; and a plurality of ball members having a predetermined diameter; said ball members being made of a material which cannot be deformed by applying occlusion pressure, and said ball members being embedded in the plastic material so as to be in a plane.

5,299,937

DENTAL INSTRUMENTS HAVING DIAMOND-LIKE WORKING SURFACE

Robert H. Gow, Houston, Tex., assignor to SI Diamond Technology, Inc., Houston, Tex.

Filed Jul. 29, 1992, Ser. No. 921,529
Int. Cl.[5] A61C *3/06*
U.S. Cl. 433—165 **20 Claims**



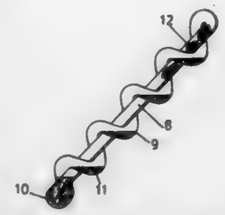
1. An improved dental cutting instrument wherein the improvement comprises a tooth or dental workpiece contact surface, the contact surface having a plurality of grooves formed therein, comprising said surface further a coating of dehydrogenated diamond-like film having both amorphous and microcrystalline atomic structures.

5,299,938

DISPLAY APPARATUS

Barry S. Walton, 14 Primrose Cottages, Altrincham WA14 3EL, England

PCT No. PCT/GB91/00145, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/11793, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 31, 1991, Ser. No. 941,033
Claims priority, application United Kingdom, Feb. 1, 1990, 9002232; May 31, 1990, 9012140
Int. Cl.[5] G09B *9/00*
U.S. Cl. 434—126 **11 Claims**



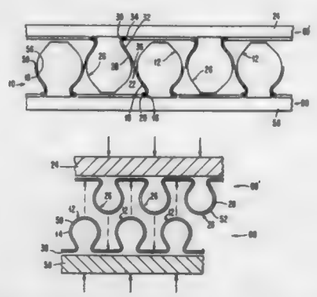
1. A display apparatus defining a passageway within which a body of fluid may be retained, wherein the passageway comprises a closed loop including an elongate first passage and a helical second passage which is connected to and extends between the ends of the first passage, the walls of at least the second passage being transparent, and the second passage being formed such that if the first passage is positioned with a predetermined inclination to the vertical, fluid can be transferred through the second helical passage from the lower to the upper end of the first passage by rotating the apparatus about an axis extending parallel to the length of the first passage.

5,299,939

SPRING ARRAY CONNECTOR

George F. Walker, New York, and Arthur Zingher, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1992, Ser. No. 847,970
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—74 **18 Claims**



1. A two-dimensional array spring connector comprising:
unitary resilient member means comprising a unitary two-dimensional array of independently bendable springs, at least some of said springs having means for horizontally moving in at least one direction upon being vertically deflected;
a plurality of first electrical contacts electrically isolated form one another and mechanically coupled to said unitary resilient member means; complementary unitary resilient member means having a shape for engaging with said unitary resilient member means; and

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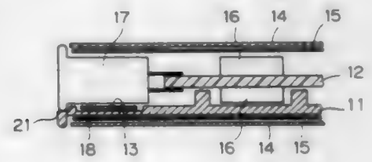
a further plurality of electrical contacts electrically isolated from one another and mechanically coupled to said complementary unitary resilient member means disposed for electrical contact with said plurality of first electrical contacts when said unitary resilient member means is engaged with said complementary unitary resilient member means, said further plurality of electrical contacts being located adjacent said springs such that during engagement of said unitary and complementary unitary resilient member means said springs are vertically deflected to horizontally move said first electrical contacts into electrical contact with said further plurality of electrical contacts.

5,299,940

IC CARD

Takeshi Uenaka, Sandra City; Hajime Maeda, Itami; Yasumori Ikeda, Itami; Toru Tachikawa, Itami, and Shigeo Onoda, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,042
Int. Cl.[5] H01R *7/10*
U.S. Cl. 439—76 **6 Claims**



1. An IC card, comprising:
(a) a substrate for mounting ICs:
(b) a frame for housing said substrate, said frame comprising an open-side portion and a closed-side portion;
(c) two panels for protecting said substrate from two sides, said two panels being fixed to said frame by first adhesive material layers;
(d) a connector disposed inside said open-side portion and between said two panels, a front end of said connector being exposed outside of said IC card, a rear end of said connector being connected to said substrate within said IC card; and
(e) a second adhesive material layer which is separated from said first adhesive material layers, for fixing said connector to said frame.

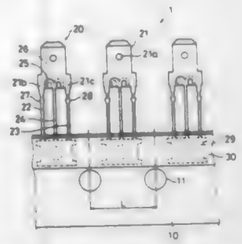
5,299,941

CONNECTING TERMINAL AND A CONNECTING TERMINAL ASSEMBLY

Koji Ohashi, Kawagoe, Japan, assignor to Kyoshin Kogyo Co, Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 924,912
Claims priority, application Japan, Jul. 10, 1992, 4-183437
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—78 **17 Claims**

1. A connecting terminal for establishing electrical connection between a conduction path on a circuit board and an external electric circuit, comprising:
a body;
first, second, and third legs integrally formed on said body and inserted individually in separate through holes formed in the circuit board, said first and second legs being arranged on opposite sides of said body, respectively, in a width direction of said body, said third leg being located halfway between said first and second legs;
first supporting means for supporting said body on the circuit board, said first supporting means protruding from a first major surface of said body, in a first edge region ranging from said first leg to said third leg; and
second supporting means for supporting said body on the circuit board, said second supporting means protruding from a second major surface of said body, in a second edge



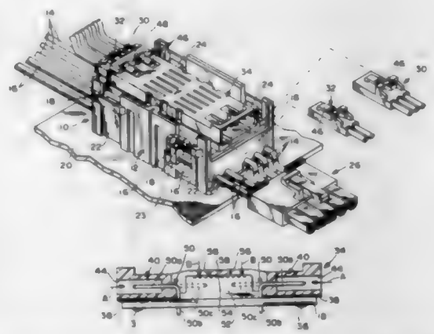
region ranging from said second leg to said third leg, said first and second supporting means balancing a load applied to two of said first, second and third legs as a result of an external force, such that said connecting terminal withstands the applied load.

5,299,942

INPUT-OUTPUT ELECTRICAL CONNECTOR

Rodger W. Burke, Lisle; Philip J. Dambach, Naperville, and Paul A. Reisdorf, LaGrange, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 18, 1993, Ser. No. 18,970
Int. Cl.[5] H01R *27/02*
U.S. Cl. 439—79 **5 Claims**



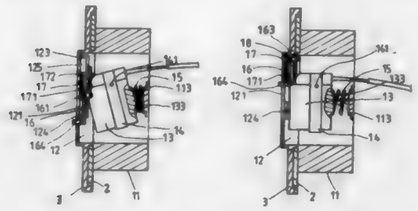
1. In an electrical connector system for electrically coupling a plurality of conductors with a printed circuit board, including a main housing having first interface means for mounting one side of the printed circuit board on the housing and second interface means for receiving the conductors, the board having an IC chip on the outside thereof, and terminal means on the housing for coupling the conductors to circuits of the printed circuit board, wherein the improvement comprises a unitary secondary housing adapted for mounting on the opposite side of the printed circuit board and including
an integral header portion defining a receptacle for receiving a complementary electrical connector,
terminal means having contacts means located in the receptacle for interengagement with contact means of the complementary electrical connector and tail means for interengagement with circuit traces on the printed circuit board,
an integral shield portion for covering the IC chip and providing electrostatic discharge protection thereof, and
wherein said terminal means are deformable to operative configurations after the terminal means are mounted on the secondary housing, and including aperture means in the secondary housing for allowing access therethrough to the terminal means for deforming the terminal means.

5,299,943

CLOSED TYPE BUILT-UP RECEPTACLE ASSEMBLY

Jen-Huei Shieh, 4F, No. 23, Lane 326, Yung Ji Road, Taipei, Taiwan

Filed Jun. 23, 1992, Ser. No. 903,211
Int. Cl.[5] H01R *13/447*; **H01H** *9/02*
U.S. Cl. 439—136 **3 Claims**



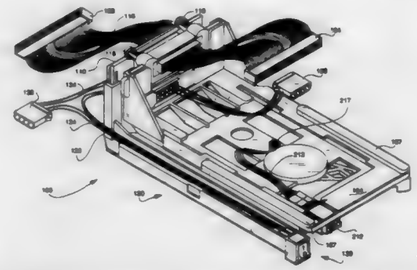
1. A closed type built-up receptacle assembly comprised of at least one receptacle retained inside a hole on a wall by a mounting plate, and a face panel covering said mounting plate wherein: each of said at least one receptacle comprising: a hollow casing, said casing including internal side walls having two recessed retaining holes and two retaining grooves on two opposite of said side walls an internal back wall having a circular projection thereon, and two front horizontal walls having opposed horizontal grooves thereon; a receptacle body received inside said casing, said receptacle body having two elongated grooves vertically disposed on two opposite side wall thereof, a plug hole therethrough into which a plug may be inserted, and a circular projection on a back wall thereof; U-shaped holder fitted into the two elongated grooves on said receptacle body for holding said receptacle body within said casing, said U-shaped holder having two opposite side pins thereon, respectively inserted in the two retaining grooves on said casing; bias means retained between said casing and said receptacle body, said bias means being connected between the circular projection on said casing and the circular projection on said receptacle body; a covering on said casing over said receptacle body, said covering defining an opening through which a plug may be inserted into the plug hole on said receptacle body, two hooks respectively hooked in recessed retaining holes on said casing, two elongated, L-shaped plates on two opposite side walls thereof on the inside with two vertical sliding ways respectively defined therebetween, two elongated strips and two pins on said L-shaped plates; a first movable plate inserted to slide in the sliding ways on said covering and controlled to close or open the opening of said covering, said first movable plate comprising two projecting blocks spaced on an outside surface thereof, a key projected into the opening of said covering for lifting control, two opposite notches on two opposite top corners thereof, and a lug on an inside surface thereof; two torsional springs respectively mounted on the pins on the L-shaped plates of said covering for urging said first movable plate to close the opening on said covering, said torsional springs having each one end connected to the lug on said first movable plate and an opposite end stopped against an inside surface on said covering; a second movable plate movably inserted to slide in the sliding ways on said covering and bridged over the two elongated strips on the L-shaped plates of said covering, said second movable plate having two sliding grooves in which the two projecting blocks of said first movable plate may slide, and two projecting rods at two opposite top corners thereof;
said mounting plate comprises two symmetrical rows of projecting strips respectively inserted into the two opposite horizontal grooves on each receptacle body, and a plurality of retaining holes; and
said face panel including a plurality of hooks respectively hooked in the retaining holes on said mounting plate.

5,299,944

UNIVERSAL BRACKET AND ASSEMBLY SLIDE FOR STORAGE DEVICES

Henri J. Larabell, 10241 Rancho Pl., #A, Cupertino, Calif. 95104, and Thomas Knoll, 3075 Hillview Court, R55 Surry, BC, Canada V4B 4Z5

Filed Nov. 16, 1992, Ser. No. 976,416
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—157 **23 Claims**



1. A bracket assembly for installing and removing electrical devices to and from electrical equipment, comprising:
a slide mounted in the electrical equipment, the slide having first electrical interconnect means for electrically connecting the slide to the electrical equipment; and
a carrier compatible for sliding and mating connection with the slide, the carrier including lock and release means for locking and releasing the connection of the carrier with the slide, the carrier having a platform suitable for compatible connection of the electrical device with the carrier, the carrier having second electrical interconnect means for electrically connecting the carrier to the electrical device and third electrical interconnect means for electrically connecting the carrier to the slide, the second electrical interconnect means including electrical configuration adjustment means for establishing a compatible connection between the electrical device and the electrical equipment, the carrier further including configuration identification means for providing device identification signals to the electrical device,
whereby the electrical device mounted on the carrier may be conveniently removed, installed or reinstalled and properly configured for operation with the electrical equipment.

5,299,945

ELECTRICAL APPARATUS

Alexander R. Norden, Boca Raton, Fla., assignor to Connectron, Inc., Laurence Harbor, N.J.

Filed Dec. 28, 1992, Ser. No. 997,515
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—157 **21 Claims**

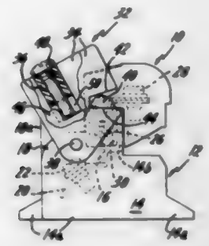
1. Electrical apparatus including
I.) an enclosure having an access opening,
II.) a terminal block assembly in said enclosure including
i.) a plug-in block having plug-in contacts and a first insulating unit carrying said plug-in contacts,
ii.) a receptacle having receptacle contacts for mating engagement with said plug-in contacts when the plug-in block has been driven into the receptacle, said receptacle having a second insulating unit carrying said receptacle contacts,
iii.) a pivot on said second insulating unit,
iv.) an actuator supported by said pivot, said actuator having an integral forward-driving cam and an integral

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reverse-driving cam, said actuator including said cams constituting a unitary member operable in arcuate forward and reverse driving strokes about said pivot,

v.) said first insulating unit of the plug-in block having integral driven portions engaged, respectively, by said forward-driving cam and said reverse-driving cam in the forward and reverse arcuate strokes of the actuator between an initial position and an end position, thereby to drive the plug-in block from an insertion position opposite to the receptacle to a plugged-in position in the receptacle, and reversely from said plugged-in position to said insertion position,

vi.) said terminal block assembly being adapted for placement of said plug-in block in said insertion position or removal therefrom when the forward-driving cam is at the start of its forward-driving stroke,



vii.) said forward-driving cam when in its position at the end of said forward-driving stroke (a) blocking the plug-in block, when in the receptacle, against being removed and (b) when the receptacle in empty, blocking the plug-in block against being plugged into the receptacle,

III.) Said electrical apparatus additionally including a releasable locking device for locking said actuator in its end position where it blocks the plug-in block against being plugged into the receptacle and against being removed therefrom, said actuator being operable in said forward and reverse strokes when the locking device is released, and

IV.) a door for closing said access opening, said actuator being accessible within the enclosure and being operable via said access opening in forward and reverse strokes while the door is open, said door while closed blocking access to said actuator.

5,299,946

MULTIPOLAR ELECTRICAL CONNECTOR

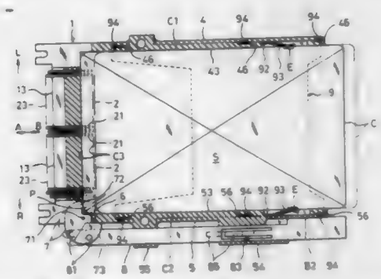
Toshihito Kusakabe, Ibaraki, Japan, assignor to Hosiden Corporation, Yao, Japan

Filed May 24, 1993, Ser. No. 65,066

Claims priority, application Japan, Jul. 31, 1992, 4-53910[U]

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—159 **12 Claims**



1. In a multipolar electrical connector having: a connector body; a contact-piece group disposed in said connector body; left- and right-hand guide members respectively projecting from the left- and right-hand ends of said connector body in the rearward direction of said connector; guide grooves formed in said left- and right-hand guide members and adapted to guide, in the back and forth direction of said connector, a card with the lateral edges thereof fitted in said guide grooves, said card being provided at the front end thereof with a contact-piece group corresponding to said contact-piece group of said connector; and a frame disposed as extending between said left- and right-hand guide members at the undersides thereof, said multipolar electrical connector comprising:

a cam swingably pin-connected to said connector body;

a card pushing portion formed at a part of said cam and adapted to go in and out from a position of the front end side of a card setting space formed between said left- and right-hand guide members when said cam is swung;

a lever disposed along one of said left- and right-hand guide members and having the front end relatively rotatably connected to said cam at other part thereof than said first-mentioned part;

a lever holding portion formed at said one guide member along which said lever extends, the intermediate portion of said lever being slidably fitted in said lever holding portion;

a resiliently displaceable engaging portion disposed at the side of said lever; and

a portion to be engaged disposed at the side of said lever holding portion, said portion to be engaged being adapted such that, when said lever is pushed out in the rearward direction, said portion to be engaged overlaps said engaging portion, causing said engaging portion to be resiliently displaced and that, when said lever is pushed in the forward direction, the overlaping state of said portion to be engaged on said engaging portion is released to allow said engaging portion to be resiliently reset.

5,299,947

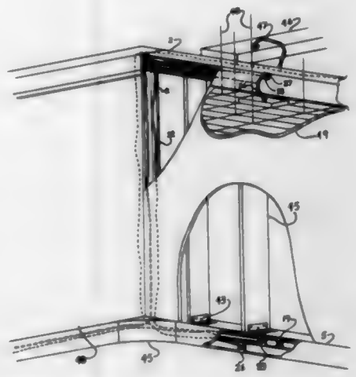
UTILITY RACEWAY

Rachael Barnard, 129 Silver Springs Rd., Bailey, Colo. 80421, assignor to Rachael Barnard, Bailey, Colo.

Filed Apr. 18, 1990, Ser. No. 511,353

Int. Cl.[5] H01R *25/00*

U.S. Cl. 439—215 **9 Claims**



1. A Utility raceway comprising

a. compartment means for holding electrical power, data and communication conductor means;

b. holecut means that allows said electrical power, data and communication conductor means to enter and exit said compartment means;

c. bolt or screw means to anchor said Utility Raceway to floor means;

d. flange means to cover rough cuts of drywall means;

e. stud attachment means to support metallic or non-metallic stud means;

f. sweep elbow means to increase bending radius space for said electrical power, data and communication conductor means.

5,299,948

SOCKET FOR CIRCUIT ELEMENT

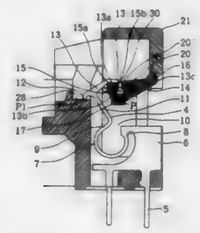
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,406

Claims priority, application Japan, Jul. 7, 1992, 4-204380

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—266 **2 Claims**



1. A circuit element receiving device for receiving a circuit element having a plurality of leads, said circuit receiving device comprising:

a plurality of contacts having elasticity and each having a contacting portion and movable between a contact position in which said contacting portion is normally urged by said elasticity for bringing said contacting portion into contact with a corresponding lead of a circuit element received in said device, and an out-of-contact position;

a hook portion on each of said contacts and having a portion extending laterally of a line perpendicular to a contact surface of a corresponding lead with a first pressure bearing portion on an inside surface of said laterally extending portion, and having a bent over portion on a free end of said laterally extending portion with a second pressure bearing portion on an inside surface of said bent over portion; and

an operating member movably mounted on said circuit element receiving device for shifting said contacts away from the leads against said elasticity to the out-of-contact position, said operating member having an engaging portion with a first cam portion thereon engageable with said first pressure bearing portion for, when said operating member is started to be moved for shifting said contacts, moving said contacting portions of said contacts away from said leads against the elasticity of said contacts substantially in the direction of said line perpendicular to the contact surfaces of corresponding leads, and a having second cam portion thereon engageable with said second pressure bearing portion for, when said operating member is continued to be moved for shifting said contacts, moving said contacting portions laterally of said perpendicular line away from said leads, said second cam portion and said second pressure bearing portion being spaced from each other when said contacts are in said contact position, whereby said first cam portion acts on said contacts prior to said second cam portion acting on said eontacts.

5,299,949

ELECTRICAL CONNECTOR WITH SEALING GROMMET

Hugues Fortin, Wintzenheim, France, assignor to Francelco, Suresnes, France

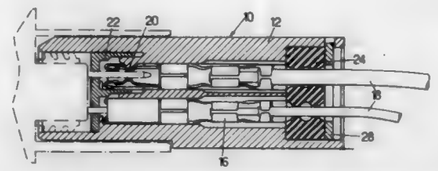
PCT No. PCT/FR92/00139, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/15133, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 13, 1992, Ser. No. 940,893

Claims priority, application France, Feb. 15, 1991, 91 01821; Feb. 15, 1991, 91 01822

Int. Cl.[5] H01R *13/52*

U.S. Cl. 439—275 **11 Claims**



1. An electrical connector comprising an insulating body formed with a plurality of mutually parallel passages for receiving contacts each provided with a connection wire,

a rear grommet of elastomer material formed with at least two rows of individual passages for the wires of said contacts, located in alignment with said passages in said insulating body, and

a plate removably connected to said body and arranged for forcing said grommet into tight contact with said body,

wherein each said individual passage in said grommet includes at least one sealing lip having a shape so dimensioned that it closes the respective individual passage of said grommet, even in the absence of one said wire in the respective passage, when said grommet is held under compression against said body by said plate, the sealing lips when undeformed by said plate leaving said passages open, and

wherein voids are formed in said grommet to receive elastomer material forced from zones surrounding said lips when said lips are pressed against a wire by said plate.

5,299,950

SOCKET CONTACT

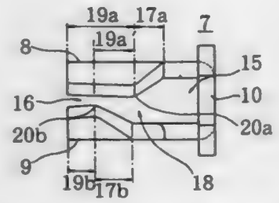
Tetsuya Kaneko, Tokyo, Japan, assignor to Yamaichi Electronics, Co., Ltd., Tokyo, Japan

Filed May 5, 1993, Ser. No. 56,534

Claims priority, application Japan, May 21, 1992, 4-155801

Int. Cl.[5] H01R *4/50*

U.S. Cl. 439—342 **4 Claims**



1. A contact socket having a first and a second elastic contact elements extending in an insertion direction (vertical direction) of a lead pin of an electric part, a lead pin loose insertion portion formed between and along opposite surfaces of said first and second elastic contact elements, and a narrowly-spaced lead pin clamping portion formed between said opposite surfaces, said lead pin inserted into said lead pin loose insertion portion being brought into said narrowly-spaced lead

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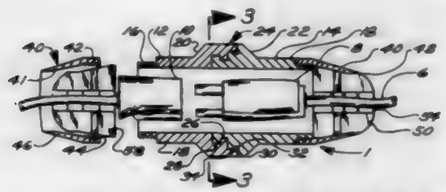
pin clamping portion by moving said lead pin in a horizontal direction, thereby assuring a reliable electrical contact, wherein a pair of normally-inclining slant sides for guiding said lead pin into said narrowly-spaced lead pin clamping portion from said lead pin loose insertion portion are said narrowly-spaced lead pin clamping portion, a pair of clamping sides forming said narrowly-spaced lead pin clamping portion are formed as reversely-inclining slant sides connected respectively at one ends thereof to one ends of the normally-inclining slant sides and gradually enlarging toward the other ends thereof, and positions of connecting areas between said pair of reversely-inclining slant sides forming said narrowly-spaced lead pin clamping portion and said pair of normally-inclining slant sides forming said lead pin guide portion are arranged in such a manner as being displaced in a horizontal direction from each other.

5,299,951

HOUSING FOR AN ELECTRICAL CONNECTION

Ewald Blaetz, R.D. 1 Box 267, Canajoharie, N.Y. 13317

Filed Aug. 12, 1992, Ser. No. 928,972
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—367 **15 Claims**



1. A housing assembly for protecting the coupling area between two power cords, said assembly comprising:
a hollow tubular housing having a first end and a second end and formed from first and second portions joined together by a quick-release type coupling means that includes a gasket means;
first and second hollow tubular end caps, said end caps each having a first end and a second end;
first and second compressible bushings, each of said bushings having a central thru-bore and located in a different one of said end caps; and
connecting means for connecting the first end of the first end cap to the first end of the housing and the second end of the second end cap to the second end of the housing wherein the connection between the housing and the end caps functions to compress the bushings.

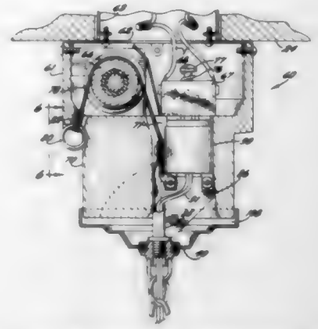
5,299,952

OVERHEAD ELECTRICAL FIXTURE AND PORTABLE LOWERING TOOL THEREFOR

Richard A. Hinds, Jr., #7 Deer Tract Dr., Little Mountain, S.C. 29075

Filed Jul. 27, 1992, Ser. No. 902,698
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—376 **14 Claims**

1. An overhead electrical fixture comprising:
a mounting base adapted to be fixedly secured relatively high above ground level;
a serviceable fixture portion movable between an operating position in engagement with said mounting base and a servicing position adjacent ground level and below said mounting base; and
latching means releasably connected between said mounting base and said serviceable fixture portion for releasably securing said serviceable fixture portion in the operating position, said latching means including an exteriorly exposed cable connector means for permitting connection and attachment to a detachable supply of cable payed out from adjacent ground level to lower said serviceable



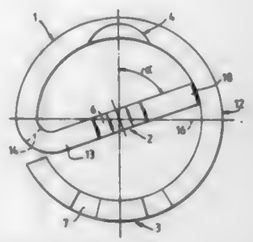
fixture portion from the operating position to the servicing position upon release of said latching means.

5,299,953

CUTTING AND CLAMPING SLEEVE CONTACT

Dieter Gerke, and Andrzey Janczak, both of Berlin, Fed. Rep. of Germany, assignors to Krone Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 940,201
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130940
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—395 **15 Claims**



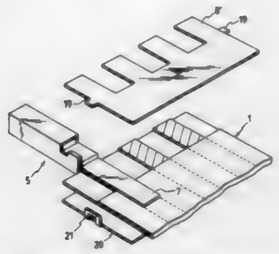
1. A sleeve contact comprising:
a metal strip including a circular portion and a diametrical portion, said diametrical portion being bent off of said circular portion and extending radially across an interior of said circular portion, said diametrical portion defining a cutting/clamping contact slot means for stripless termination of cable cores, said cutting/clamping contact slot means defining a cutting/clamping slot extending from a first axial side of said metal strip and stopping at a point between said first axial side and a second axial side, said circular portion defining a clamping slot positioned substantially opposite said cutting/clamping contact slot means, said diametrical portion having a section continuously extending across said cutting/clamping slot.

5,299,954

TERMINAL CONNECTING STRUCTURE FOR A FLAT CIRCUIT BODY

Takashi Ishii, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,296
Claims priority, application Japan, Oct. 22, 1991, 3-086006[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—422 **16 Claims**



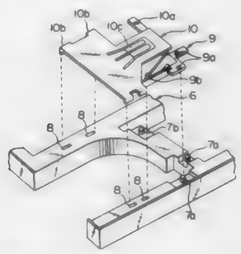
1. A terminal connecting structure conductors arranged in parallel;
a plurality of terminals comprising first and second holding members for respectively holding said conductors of said flat circuit body therebetween so as to electrically connect said conductors to said terminals; and
a covering plate including a base portion and a plurality of engaging portions, said base portion abutting against a portion of said first holding members of said terminals and said engaging portions being respectively interlocked between adjacent first holding members, thereby provisionally retaining said terminal onto said first circuit body.

5,299,955

BATTERY TERMINAL MOUNTING MEANS FOR A PORTABLE ELECTRICAL DEVICE

Hajime Maeda; Toru Tachikawa, both of Itami, and Hitoshi Yoshikawa, Sanda, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,031
Claims priority, application Japan, Apr. 23, 1991, 3-092137
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—500 **7 Claims**



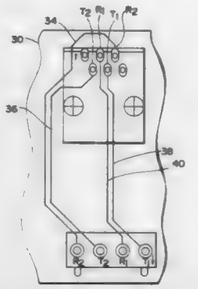
1. A battery terminal mounting arrangement for a portable electrical device comprising:
a circuit board on which electronic parts are mounted;
first and second connecting terminals for electrical connection to a plus electrode and a minus electrode of an electric cell, respectively; and
a frame on which said circuit board and said first and second connecting terminals are mounted, wherein said frame has a plurality of engaging portions all of which are directed in the same direction, said first and second connecting terminals having engaging portions which engage said engaging portions of said frame, said first and second connecting terminals being mounted on said frame from the same direction.

5,299,956

LOW CROSS TALK ELECTRICAL CONNECTOR SYSTEM

Kenneth W. Brownell, and Sterling A. Vaden, both of Marion, N.C., assignors to Superior Modular Products, Inc., Swannanoa, N.C.

Filed Mar. 23, 1992, Ser. No. 855,893
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—638 **20 Claims**



1. A low cross talk electrical signal transmission system comprising:
an electrical connection apparatus; said electrical connection apparatus including an intermatable connector and a substrate; said intermatable connector including a plug and a jack; said jack attached to said substrate; said intermatable connector and said substrate having at least first, second, third and fourth conductors; said first and second conductors forming a first signal pair; said third and fourth conductors forming a second signal pair; said first and second conductors being adjacent to and parallel to one another through at least a major portion of said electrical intermatable connector; said third conductor being adjacent to and parallel to said first conductor, and said fourth conductor being adjacent to and parallel to said second conductor through at least a portion of said intermatable connector thereby forming a first group of signal paths thus inducing cross talk from one signal pair to another signal pair in said intermatable connector when signals are applied to either of said signal pairs; said third conductor being adjacent to and parallel to said second conductor and said fourth conductor being adjacent to and parallel to said first conductor for at least a portion of said substrate forming a second group of signal paths, thereby cancelling a substantial amount of said cross talk.

5,299,957

ELECTRICAL DEVICE

Maurice Schaeffer, Strasbourg, France, assignor to Baco Constructions Electriques-Anct. Baumgarten-SA, Strasbourg, France

Filed Dec. 23, 1992, Ser. No. 995,832
Claims priority, application France, Dec. 23, 1991, 91 16153
Int. Cl.[5] H01R *9/22*
U.S. Cl. 439—712 **11 Claims**

1. An electrical device comprising:
an enclosure having a front surface, a rear surface, and a lateral side extending between the front and rear surfaces, said enclosure being mountable on one of the front and rear surfaces;
electrical connection contacts extending from the lateral side of said enclosure;
a connection block located along the lateral side into which said contacts extend; and
a mounting means for permanently mounting said connec-

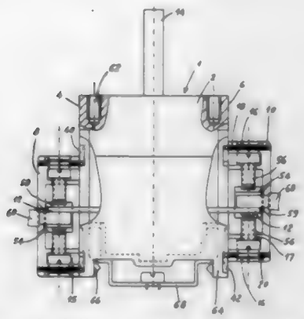
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tion block to the lateral side of said enclosure for an axial sliding movement therealong between a forwardmost position and a rearmost position;

said connection block including

front and rear faces,

respective terminal frames into which respective said contacts extend, each said terminal frame having opposed front and rear terminal sides which are alternately disposed adjacent the respective said contact while the other is spaced therefrom when said connection block is in a respective rearmost or forwardmost position, and



respective sets of axially opposed clamping screws, said clamping screws of said sets being located adjacent opposite said terminal sides of respective said terminal frames, each said clamping screw being fixedly mounted axially in said connection block and having a respective end for threadably engaging an associated said terminal side and a head accessible through a respective said face of said connection block such that when one said clamping screw of an associated said terminal frame is threadably engaged in the associated said terminal side and advanced, the other said terminal side which was spaced from the associated said contact is drawn toward the associated said contact to clamp a wire therebetween.

5,299,958

CONNECTOR

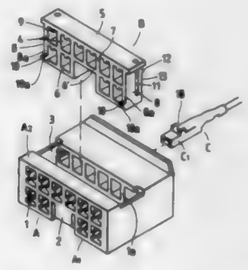
Hideki Ohsumi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,423

Claims priority, application Japan, Apr. 30, 1991, 3-30134[U]

Int. Cl.[5] H01R *13/436*

U.S. Cl. 439—752 **6 Claims**



1. A connector comprising:

a housing having a plurality of terminal accommodating chambers arranged therein, and a cavity formed in one outer wall thereof in such a manner that said cavity is extended vertically across partition walls of said terminal accommodating chambers;

a terminal lock member including a plurality of vertical plates which combine to define a plurality of openings in correspondence to said plurality of terminal accommodating chambers and terminal lock portions in said openings which are engageable with terminals, a pair of said vertical plates being side plates respectively disposed at opposite ends of said terminal lock member; and

terminal lock means for locking said housing and said terminal lock member by inserting said terminal lock member into said housing through said cavity to position said terminal lock member from a temporary locking position to a real locking position, wherein said terminal lock means includes:

at least one of said side plates;

a first terminal lock protrusion formed on one end face of said one side plate of said terminal lock member;

a flexible arm formed on the other end face of said one side plate of said terminal lock member with a slit being formed between said first terminal lock protrusion and said flexible arm, said flexible arm having a second terminal lock protrusion protruded from said flexible arm; and wherein said housing includes:

a first engaging portion, formed on said housing, engageable with said first terminal lock protrusions when said terminal lock member is inserted into said housing to said temporary locking position where said openings thereof are substantially aligned with said terminal accommodating chambers; and

a second engaging portion, formed on said housing, engageable with said second terminal lock protrusion when said terminal lock member is moved from said temporary locking position to said real locking position where said terminal locking portions engage with said terminals to prevent said terminals from moving in backwardly.

5,299,959

ELECTRICAL CONNECTOR

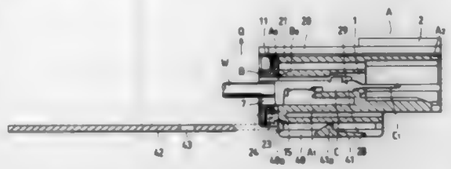
Masayuki Yamamoto; Kazuaki Sakurai, and Toshiro Maejima, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,054

Claims priority, application Japan, Jun. 13, 1991, 3-141591; Apr. 8, 1992, 4-087316; Apr. 13, 1992, 4-092702

Int. Cl.[5] H01R *13/514*

U.S. Cl. 439—752 **10 Claims**



1. An electrical connector, comprising:

a housing having at least one terminal chamber;

a terminal inserted into each said terminal chamber;

a terminal engagement holder mounted onto said housing for preventing each said terminal from disengaging from said housing;

first means for tentatively engaging said terminal engagement holder with said housing in response to movement of said terminal engagement holder in a first direction relative to said housing;

second means for completely engaging said engagement holder with said housing in response to movement of said terminal engagement holder, tentatively engaged with said housing, in a second direction; and

third means for urging said terminal engagement holder toward said housing when said terminal engagement holder is completely engaged with said housing.

5,299,960

AUXILIARY WATER PROJECTOR FOR JET PROPELLED WATERCRAFT

John B. Day, 4308 Pennington Ave., and Larry Krack, 704 S. Werner Ave., both of Evansville, Ind. 47712-4321

Filed Jun. 11, 1992, Ser. No. 900,824

Int. Cl.[5] B63H *11/00*

U.S. Cl. 440—39 **4 Claims**



1. An auxiliary water projector for watercraft having at least one waterjet propulsion system, said auxiliary water projection comprising:

a Y pipe means having a first mounting means for mounting said Y pipe means to said waterjet propulsion system so water flows from said waterjet propulsion system into said Y pipe means before entering any steering nozzle means;

a thrust control valve means mounted at a first outlet of said Y pipe means to permit or stop water flow through said outlet;

a pipe connected to a second outlet of said Y pipe means, said pipe having an outlet means; and,

a hand line outlet means connected to said pipe.

5,299,961

VALVE ARRANGEMENT FOR AN EXHAUST PASSAGE IN A MARINE PROPULSION UNIT

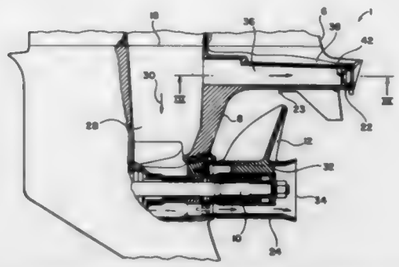
Yutaka Okamoto, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 19, 1992, Ser. No. 962,672

Claims priority, application Japan, Oct. 19, 1991, 3-299705

Int. Cl.[5] B63H *21/32*

U.S. Cl. 440—89 **5 Claims**



1. In a marine propulsion unit adapted to be secured to and project rearwardly from a transom of a watercraft and having an exhaust assembly including a rearwardly extending exhaust passage formed within a casing above a propeller of the propulsion unit and terminating in an exhaust outlet port defined by upper, lower and lateral sidewalls, the improvement wherein said exhaust assembly comprises a normally closed flapper valve member having a fixed portion secured to one of said lateral sidewalls and a cantilevered portion extending across said exhaust outlet port with said cantilevered portion being adapted to elastically flex relative to said fixed portion so as to open and close said exhaust outlet port in response to dynamic forces acting on said valve member during operation of the watercraft and means for limiting the degree to which said cantilevered portion can flex relative to said fixed portion of said valve member, said limiting means comprising a stopper member secured to said casing through a fastener means.

5,299,962

BUOY FOR STORING LINE CONNECTED TO UNDERWATER OBJECT

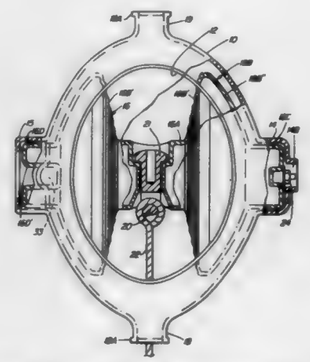
Kenneth Saulnier, R.R. #2, South Ohio, Yarmouth County, Nova Scotia, Canada B0W 3E0, and Hubert J. Van Leeuwen, 11 Princess Street, Amherst, Nova Scotia, Canada B4H 1W5

Filed Mar. 11, 1993, Ser. No. 29,578

Claims priority, application Canada, Mar. 19, 1992, 2063544

Int. Cl.[5] B63B *22/18*

U.S. Cl. 441—26 **6 Claims**



1. A buoy for storing a line connected to an underwater object, of the type having two spaced side portions each with a bearing means and a reel for carrying the line which has shaft portions rotatable in said bearing means, wherein said reel is a buoyant hollow body formed of flexible material and is provided with a fluid inlet for inflation from a relatively axially collapsed state, wherein the reel and its shaft portions can be fitted between the side portions, to an inflated state wherein the reel is axially expanded so that its shaft portions are rotatably held in the bearing means.

5,299,963

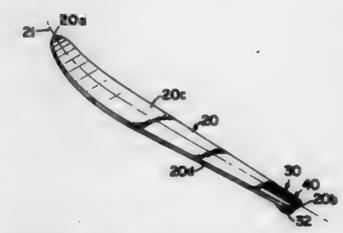
WATER SKI APPARATUS AND METHOD

Paul D. Isensee, P.O. Box 23180, Richfield, Minn. 55423

Filed Oct. 29, 1992, Ser. No. 968,425

Int. Cl.[5] A63C *15/00*

U.S. Cl. 441—79 **25 Claims**



1. An improved water ski, comprising:

a. an elongated water ski body having top and bottom surfaces and longitudinally extending from a front end to a back end;

b. a rudder fin member operatively mounted to said ski body adjacent said back end thereof and projecting outwardly from said bottom surface of said ski body, and generally symmetrically disposed about a plane of symmetry; and

c. means for selectively adjusting the operative position of

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said rudder fin member relative to said ski body in calibrated manner, wherein said adjusting means enables independent calibrated adjustable movement of said rudder fin member in each of at least two degree of freedom directions within said plane.

5,299,964

AMUSEMENT RAFT RIDE

Ogden D. Hopkins, Contoocook, N.H., assignor to O. D. Hopkins Associates, Inc., Contoocook, N.H.

Filed May 20, 1991, Ser. No. 702,476
Int. Cl.[5] B63B *3/00*
U.S. Cl. 114—346 **48 Claims**



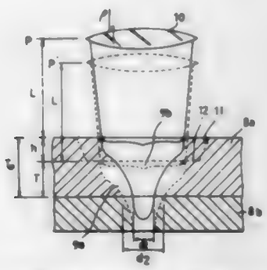
1. A raft for an amusement ride, said raft having:
A. at least one passenger support having accommodations thereon sufficient to accommodate at least one passenger,
B. at least a first link positioned on said raft, said first link being matingly compatible with a second link on another raft of said ride,
C. at least one buoyant member and
D. at least one connection between the buoyant member(s) and at least one connected portion of said raft,
1. said connected portion being at least one portion of said raft other than said buoyant member(s) and being connected with said buoyant member(s) through said connection(s), and
2. said connection(s) comprising at least one rotary connector which provides rotation of the buoyant member(s) about a generally upright axis, including rotation relative to said connected portion(s) and relative to said first link.

5,299,965

LASER WELDING METHOD FOR PREPARATION OF ELECTRON GUN OF COLOR CATHODE-RAY TUBE

Hee S. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 21, 1992, Ser. No. 993,631
Claims priority, application Rep. of Korea, Dec. 28, 1991, 24901/1991
Int. Cl.[5] H01J *9/02;* **B23K** *26/02*
U.S. Cl. 445—36 **3 Claims**



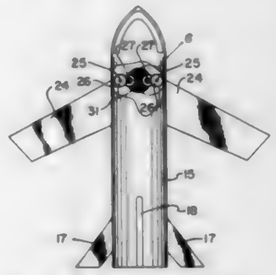
1. A laser welding method for preparation of an electron gun of a color cathode-ray tube comprising the steps of:
forming a coining part of a predetermined depth and uniform thickness on an evaporation section of a weld zone of an upper part, said coining part having a diameter larger than a diameter of said evaporation section, said predetermined thickness of said coining part being related to the thickness of a lower part to be welded therewith such that a weld nugget formed thereat extends through the thickness of said lower part;
locating a focusing lens at a predetermined fixed position above said coining part; and
focusing a laser beam on a bottom surface of said coining part for welding said upper part to said lower part and forming a weld nugget thereat,
whereby said weld nugget which is formed at the juncture between said upper and lower parts by said laser welding is of a relatively large diameter at the mutually contacting surfaces of said upper and lower parts so as to provide a weld of relatively increased weld strength.

5,299,966

PROJECTILE TOY APPARATUS

Thuman M. Rose, III, 335 Oak Rd., Gibsonia, Pa. 15044

Filed Feb. 22, 1993, Ser. No. 20,358
Int. Cl.[5] A63H *27/00, 27/26, 29/00*
U.S. Cl. 446—62 **2 Claims**



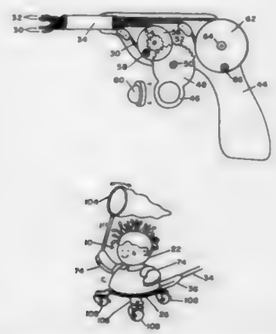
1. A projectile toy apparatus, comprising,
a projectile toy member having a cylindrical body, with the cylindrical body including a first end and a conical second end, with the conical second end and the first end coaxially aligned, and
a plurality of stabilizer fins arranged in a coextensive relationship relative to one another mounted to the cylindrical body adjacent the first end in a diametrically opposed relationship, with a rudder fin mounted adjacent the first end on the cylindrical body medially of the stabilizer fins, and
a hook member fixedly mounted to the cylindrical body medially of the stabilizer fins adjacent the second end, with a slingshot member having spaced slingshot legs, including an elastomeric band mounted to the slingshot legs, wherein the elastomeric band is arranged for securement to the hook member, and
a plurality of parallel slots, with each of said slots arranged in alignment with one of said stabilizer fins, and the slots positioned intermediate the stabilizer fins and the second end, with each of the slots including a wing plate, and each wing plate includes a wing plate pivot axle, with each wing plate pivot axle positioned within one of said slots adjacent the second end, and the cylindrical body includes a body cavity, and the wing plates are pivotal from a first position defining an acute angle between the wing plates, wherein the wing plates are directed into the cavity, with the wing plates pivotal to a second position about each wing plate pivot axle, wherein the wing plates extend exteriorly of the cavity, and including an obtuse included angle between the wing plates, and
each wing plate pivot axle includes a wing plate pivot axle gear, and each wing plate pivot axle includes an intermediate gear axle positioned within the cavity adjacent one of said wing plate pivot axles, and each intermediate gear axle includes an intermediate gear in operative engagement with one of said wing plate pivot axle gears, and a central axle intermediate the intermediate gear axles, with the central axle including a central axle gear, the central axle gear in engagement with each intermediate gear, and the central axle including a main spring arranged to bias the wing plates from the first position to the second position.

5,299,967

MOVABLE FIGURE

John M. Gilbert, 4797 Highway, West Vancouver, British Columbia, Canada V7W 1J6

Filed Nov. 16, 1992, Ser. No. 976,852
Int. Cl.[5] A63H *7/02, 3/00*
U.S. Cl. 446—288 **9 Claims**



1. A model figure connected to a remote pistol grip handle having at last two activity motions, comprising:
a model figure having a middle torso portion with a substantially horizontal pin means therein;
a base beneath the figure with the figure mounted for rotation thereon;
at least one model limb for the figure, the limb mounted to pivot on the pin means;
pivot means to pivot the limb on the pin means to perform a first activity motion;
remote pistol grip handle connected to the base beneath the figure by a hinged elongated member, the pistol grip handle having a trigger mechanism;
first linkage means between the trigger mechanism on the pistol grip handle and the pivot means to pivot the limb so that movement of the trigger mechanism performs the first activity motion;
rotational means to rotate the figure on the base to perform a second activity motion;
thumb movement means on the remote pistol grip, and
second linkage means between the thumb movement means and the rotational means to rotate the figure on the base, so that movement of the thumb movement means performs the second activity motion.

5,299,968

PRIMARY AND SECONDARY TOY FIGURE PAIR WITH INTERCHANGEABLE HAIR SEGMENTS

Linda K. Bennett, Marina del Rey, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Jan. 29, 1992, Ser. No. 10,739
Int. Cl.[5] A63H *3/44, 3/16, 3/00*
U.S. Cl. 446—394 **10 Claims**

1. A toy figure playset comprising:
a primary toy figure having a head and a first plurality of simulated hair fibers secured thereto;
a secondary toy figure, substantially smaller than said primary toy figure having a head portion;
a hair lock having a second plurality of simulated removable hair fibers with cooperating attachment means forming a base for said hair lock;
a headband featuring a second cooperating attachment means for attaching said hair lock to said primary figure by said base and



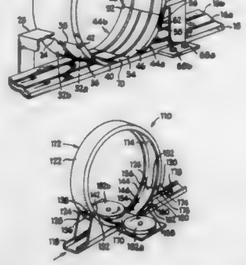
additional second cooperating attachment means attached to said secondary toy figure head portion for removably securing said hair lock to either of said head portion of said secondary toy figure and said primary toy figure.

5,299,969

LOOP FEATURE FOR PROPELLED TOY VEHICLES

John V. Zaruba, Oak Park, Ill., assignor to Breslow, Morrison, Terzian & Associates, Inc., Chicago, Ill.

Filed Jan. 28, 1993, Ser. No. 10,642
Int. Cl.[5] A63H *18/14*
U.S. Cl. 446—429 **15 Claims**



1. A generally vertically oriented loop feature for a propelled toy vehicle comprising in combination:
a single complete loop having an inner surface upon which the propelled toy vehicle may go around the entirety of the loop for as many revolutions as the propelled toy vehicle has sufficient power;
a substantially fixed, curved portion of the complete loop;
the fixed portion having opposed ends;
a curved ingress portion adjacent one of the opposed ends and a curved egress portion adjacent the other of the opposed ends;
the ingress portion being movable between a closed position in which the ingress portion forms part of the complete loop and a open position in which the ingress portion is displaced from and interrupts the complete loop to permit the propelled toy vehicle to enter the loop;

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the egress portion being movable between a closed position in which the egress portion forms part of the complete loop and a open position in which the egress portion is displaced from and interrupts the loop to permit the propelled toy vehicle to exit the loop.

5,299,970

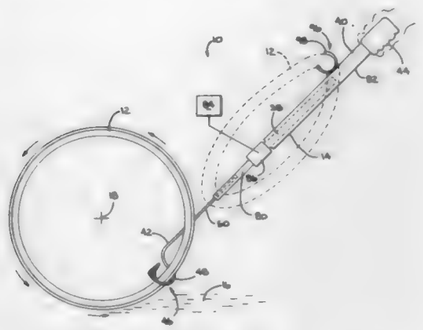
GUIDED ROLLING CIRCLE GAME

Serge Fontaine, P.O. Box 476646, Chicago, Ill. 60647

Filed Jan. 6, 1993, Ser. No. 969

Int. Cl.[5] A63H *33/02*

U.S. Cl. 446—453 **17 Claims**



1. A rolling ring game comprising:

a ring having a peripheral outer surface to be engaged with and rolled over a subjacent surface supporting the ring; and

a pusher for propelling the ring by rolling thereof,

said pusher comprising a rod having a proximal end and a distal end,

there being means on the proximal end to be gripped by a user,

there being means cooperating between the ring and distal end of the rod for allowing a user to selectively pull and push the ring through the pusher to accelerate and decelerate rolling thereof over a subjacent surface,

wherein the cooperating means includes a hook that surrounds at least a portion of the ring and the hook defines a curved seat for the ring and an entry way into the curved seat,

said cooperating means further including a closure means for releasably blocking the entryway to prevent separation of the ring and pusher from their operative relationship with the closure means in a closed state.

5,299,971

INTERACTIVE TRACKING DEVICE

Frank J. Hart, 2811 Mark Ave., Santa Clara, Calif. 95051

Continuation-in-part of Ser. No. 525,698, May 21, 1990, Pat. No. 5,083,968, which is a continuation-in-part of Ser. No. 277,203, Nov. 29, 1988, Pat. No. 4,930,236. This application Dec. 24, 1991, Ser. No. 813,089

Int. Cl.[5] G08B *19/00*

U.S. Cl. 446—484 **16 Claims**

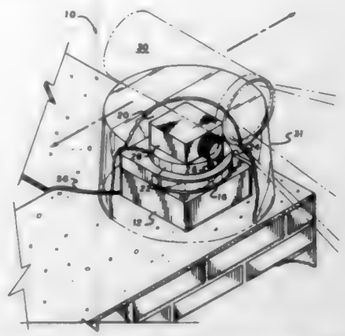
1. An automatically activated and operated passive infrared tracking device for the detection and continual tracking of an intruder, comprising;

a stationary portion including passive detectors for the detection of radiation emission by said intruder and a stepper motor,

a rotatable portion mounted to said stepper motor and including passive detectors for the detection of radiation emission by said intruder and video monitoring means,

control means including circuitry for determination of the general direction and range of said intruder by said stationary portion passive detectors, operation of said stepper motor to cause said rotatable portion to rotate to align at least one of said rotatable portion passive detectors with said intruder and to continually track said intruder, verification of said intruder by said rotatable portion passive detectors, and activation of said video monitoring means, and

one or more of said tracking devices linked with one another to provide coverage to a remote security post.



5,299,972

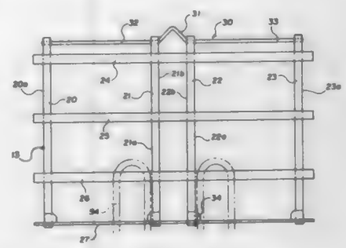
SYSTEM AND APPARATUS FOR PROCESSING CRAB SECTIONS

John T. Heffernan, Bellevue, and James D. Orr, Everett, both of Wash., assignors to Northwest Wire Works, Inc., Seattle, Wash.

Filed Dec. 22, 1992, Ser. No. 995,195

Int. Cl.[5] A22C *29/00*

U.S. Cl. 452—1 **26 Claims**



1. A system for processing comestibles such as crab sections, said system comprising:

a tree having a top lift element,

a basket-to-tree loading station,

a basket-from-tree unloading station,

processing stations between said loading and unloading stations,

an overhead track extending above each of said stations,

an overhead hoist arranged to travel along said track and having a lifting element adapted to engage said lift element on the tree and be selectively raised and lowered over said stations;

means independent of said hoist for selectively holding said tree in upright position at said loading station and unloading station and permitting the tree to be released by raising the tree relative to said loading and unloading stations;

stacks of like baskets for holding comestibles to be processed at said processing stations, said stacks being detachable mounted on two opposite sides of said tree such that the baskets in each stack can be mounted one at a time on the tree by downward movement while the tree is held upright at said loading station, and such that the baskets in each stack can be removed one at a time from the tree by upward movement while the tree is held upright at said unloading station.

5,299,973

Patent Not Issued For This Number

5,299,974

METHOD AND APPARATUS FOR PRODUCING A WHOLE FISH PRODUCT

Joachim Jahnke, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co KG, Lubeck, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,560

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130291

Int. Cl.[5] A22C *25/16*

U.S. Cl. 452—106 **30 Claims**

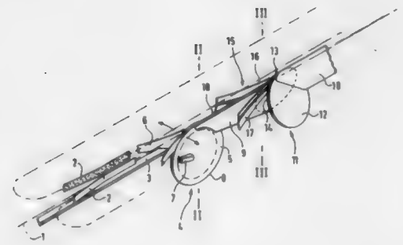
1. A method for producing a fish product including head, body and tail from a non-decapitated fish defining a ventral and a back side as well as a plane of symmetry between both sides, and having intestines, gills, back fins with fin holders and a skeleton essentially including a vertebral column, ribs, back spokes and belly spokes, which method comprises:

a sequence of processing steps performed by machinery for removing essentially completely said skeleton and at least the largest portion of said gills, wherein said processing steps comprise

a) performing two first incisions in a direction starting from said tail and proceeding towards said head, each of said first incisions starting from said ventral side and extending over the whole length of said fish at respective sides of said plane of symmetry at least up to said vertebral column;

b) removing said intestines and said at least largest portion of said gills; and

c) cutting out said skeleton with two second incisions in a direction starting from said tail towards said head, each of said second incisions starting from the ventral side, extending over the whole length of the fish at respective sides of said plane of symmetry, inclined with regard to the plane of symmetry, passing outwardly of said ribs, and extending into and meeting at the proximity of said back fin holders.



5,299,975

APPARATUS FOR CONVEYING ENTRAILS PACKAGES WHICH HAVE BEEN REMOVED FROM BIRDS

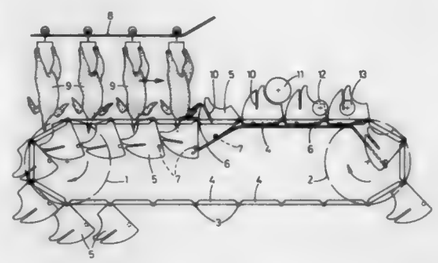
Cornelis Meyn, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands

Filed Mar. 25, 1993, Ser. No. 36,676

Claims priority, application Netherlands, Mar. 31, 1992, 9200599

Int. Cl.[5] A22C *21/00*

U.S. Cl. 452—177 **12 Claims**



1. A conveying apparatus for conveying entrails packages which have been removed from poultry, wherein along a first section of said apparatus the entrails packages are unobstructed from view and along a second section of said apparatus the entrails packages can be readily separated, said apparatus comprising:

a conveyor means for receiving the entrails packages from birds conveyed thereabove and maintaining the entrails packages for individual birds separate, said conveyor means conveying the entrails package along a predetermined conveying length;

a plurality of pivotal entrails carrier members operably associated with said conveying means, said carrier members being movable between a lower position generally below the conveying level of said conveying means, and an upper position generally above the conveying level of said conveying means; and

means for raising and lowering said carrier members relative said conveying means at predetermined positions along said conveying length.

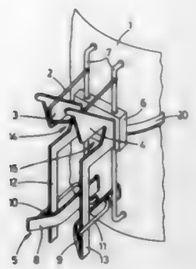
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5,299,976

APPARATUS FOR RETAINING POULTRY

Cornelis Meyn, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands

Filed Mar. 15, 1993, Ser. No. 31,806
Claims priority, application Netherlands, Mar. 24, 1992, 9200538
Int. Cl.[5] A22C 21/00
U.S. Cl. 452—188 12 Claims



1. An apparatus for retaining poultry suspended from a suspension conveyor in position while submitting the poultry to a processing operation, said apparatus comprising:

two horizontally spaced apart retaining plates, said plates for receiving the poultry therebetween, said plates defining an upper engaging position and a lower engaging position; and

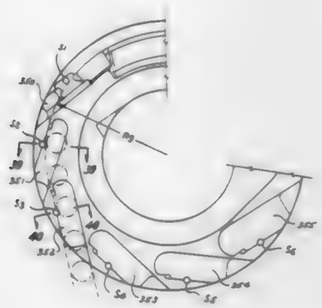
means for moving said plates between said upper engaging position and said lower engaging position so that at said upper engaging position said plates engage a first body part of the poultry to prevent downward movement of the poultry, and at said lower engaging position said plates engage a second body part of the poultry to prevent upward movement of the poultry.

5,299,977

COIN HANDLING SYSTEM

Richard A. Mazur, Naperville; Joseph J. Geib, Mt. Prospect; Gary Watts, Buffalo Grove; John P. Gibbons, Mt. Prospect; James M. Rasmussen, Chicago, and Stephen G. Rudisill, Kildeer, all of Ill., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Continuation-in-part of Ser. No. 904,161, Aug. 21, 1992, which is a continuation of Ser. No. 524,134, May 14, 1990, Pat. No. 5,141,443. This application Sep. 25, 1992, Ser. No. 951,731
Int. Cl.[5] G07D 3/16
U.S. Cl. 453—10 32 Claims



1. A coin sorter for sorting mixed coins by denomination, said apparatus comprising:

a rotatable disc having a resilient surface for receiving said coins and imparting rotational movement to said coins;

a stationary sorting head having a contoured surface spaced slightly away from and generally parallel to said resilient surface of said rotatable disc, said stationary sorting head including means for sorting and discharging said coins of different denominations at different exits around the periphery of said stationary sorting head, said sorting and discharging means including a separate exit channel for each denomination of coin;

means for sensing each coin denomination at a fixed sensing station located within the exit channel for that denomination, and inboard of the outer periphery of said rotatable disc, and

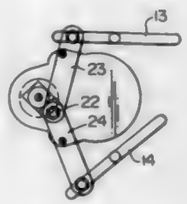
means for monitoring the movement of a sensed coin on the rotating disc downstream of said sensing station by monitoring the angular movement of said disc, to determine when the sensed coin has been moved to a predetermined location spaced downstream from said sensing station in the direction of coin movement.

5,299,978

AIR SWEEP MECHANISM

Richard D. Dennis, Bridgeport, and Jon D. Rittle, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 4, 1992, Ser. No. 878,068
Int. Cl.[5] F24F 13/14
U.S. Cl. 454—285 4 Claims



1. An improved air sweep mechanism of the type having a pair of adjacent louver blades mounted on parallel shafts in a rotatable manner to allow the blade angles to be varied to thereby change the direction of air flowing between the blades, wherein the improvement comprises:

a drive motor disposed near the louver blades for driving a crank pin in an orbiting pattern around an axes; and

a pair of drive arms rotatable attached to said crank pin at their one ends and each having its other end attached to a respective one of the louver blades at a point distal from the louver blade shaft;

whereby, during a complete orbit of said crank pin, the louver blade angles are respectively varied by the movement of said drive arms such that the blades jointly function to vary both the direction and the throw of the air flowing therebetween.

5,299,979

SHIPPING FORM WITH LABEL

Patricia A. Ballard, Manchester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed May 11, 1993, Ser. No. 59,312
Int. Cl.[5] B42D 15/00
U.S. Cl. 462—18 20 Claims

1. A shipping form, comprising;

a first ply having a top face and a bottom face, with indicia on said top face;

a second ply having a top face and a bottom face, with indicia on said top face;

means for readily releasably attaching a small part of said first ply bottom face to a small part of said second ply top face;

a label assembly comprising a label ply having top and bottom faces, with pressure sensitive adhesive substantially covering said label bottom face;

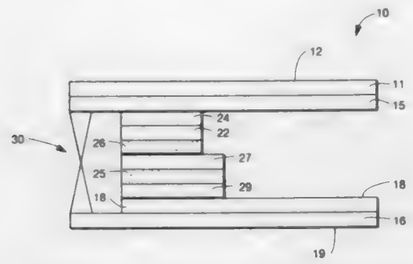
said label having dimensions significantly less than the dimensions of said first and second plies;

said label disposed on said second ply beneath said first ply, said top face of said label operatively associated with said bottom face of said second ply, and said label covering a first portion of said top face of said second ply, and said second ply top face having a second portion not covered by said label;

first image transfer means for transferring indicia impressed on said first ply top face to said label ply top face and to said second portion of said second ply top face;

adhesive release means provided beneath said label pressure sensitive adhesive in operative association with said second ply top face, for allowing removal of said label therefrom; and

self-contained second image transfer means disposed on said first portion of said top face of said second ply, beneath said label pressure sensitive adhesive and said adhesive release means, for transferring indicia impressed on said first ply top face through said label to said second ply top face.

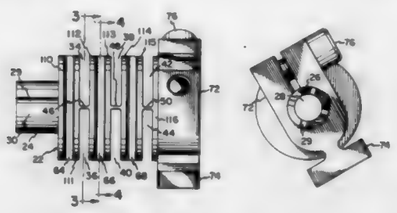


5,299,980

CONSTANT VELOCITY FLEXIBLE COUPLING AND CONNECTION WITH THE DRIVE AND DRIVEN MEMBERS

Jerome G. Agius, Ridgefield, Conn., assignor to Nordex Inc., Danbury, Conn.

Filed Jun. 24, 1992, Ser. No. 903,982
Int. Cl.[5] F16D 3/16
U.S. Cl. 464—99 12 Claims



1. A flexible coupling for joining two shafts comprising:

a unitary solid cylindrical body have a first end, a second end and a means for flexing disposed between said first end and said second end;

a first cylindrical hub, protruding coaxially from said first end of said cylindrical body, for connecting said coupling to a first shaft, said first cylindrical hub having a first end, a second end and a plurality of equally spaced slots extending lengthwise from a point adjacent to said first end of said first cylindrical hub through said second end of said first cylindrical hub, and wherein said first end of said first cylindrical hub is joined to said first end of said cylindrical body;

a second cylindrical hub, protruding coaxially from said second end of said cylindrical body, for connecting said coupling to a second shaft, said second cylindrical hub having a first end, a second end and a plurality of equally spaced slots extending lengthwise from a point adjacent to said first end of said second cylindrical hub through said second end of said second cylindrical hub, and wherein said first end of said second cylindrical hub is joined to said second end of said cylindrical body;

a first counterbalanced clamp for securing said first cylindrical hub to said first shaft, said first counterbalanced clamp having a single radial slot, a clamping screw and a counterweight, whereby said clamping screw draws said single radial slot together and said counterweight is positioned on said first counterbalanced clamp so as to counterbalance the weight of said clamping screw when said first counterbalanced clamp is positioned over said first cylindrical hub; and

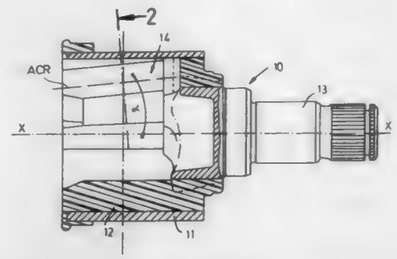
a second counterbalanced clamp for securing said second cylindrical hub to said second shaft, said second counterbalanced clamp having a single radial slot, a clamping screw and a counterweight, whereby said clamping screw draws said single radial slot together and said counterweight is positioned on said second counterbalanced clamp so as to counterbalance the weight of said clamping screw when said clamp is positioned over said second hub.

5,299,981

TRANSMISSION JOINT BODY STRUCTURE AND A METHOD OF MANUFACTURE THEREOF

Bernard Poulin, Conflans Ste Honorine, and Michel Margerie, Vetheuil, both of France, assignors to Glaenzer Spicer, Poissy, France

Filed Nov. 18, 1991, Ser. No. 794,412
Claims priority, application France, Dec. 3, 1990, 90 15112
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] F16C 3/00; F16D 3/202
U.S. Cl. 464—111 8 Claims



1. A transmission joint body comprising:

a joint body having a longitudinal geometric axis; and

a plurality of bearing paths, said bearing paths being distributed about said longitudinal geometric axis of said joint body, each said bearing path comprising two tracks;

wherein each said track is defined by a first surface of a metal part, and wherein each said metal part has a second surface;

wherein said joint body comprises a joint body portion made of a composite material which comprises a reinforced matrix of one of a thermosetting and a thermoplastic material;

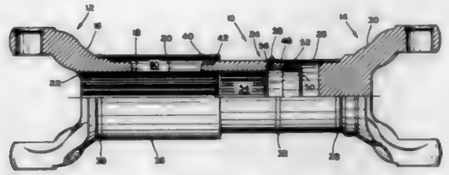
wherein each said second surface has a complementary surface in said joint body portion associated therewith; and

wherein each said bearing path has a central longitudinal axis that lies in a plane with said longitudinal geometric

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axis and that forms an angle greater than 0° with said longitudinal geometric axis.

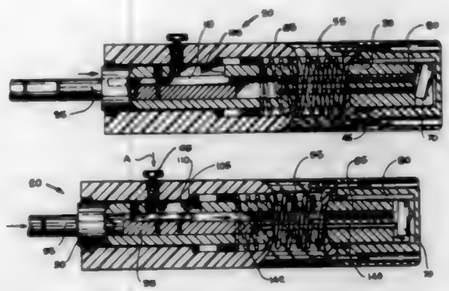
5,299,982
SLIP JOINT SEAL FOR A DRIVESHAFT
Robert A. Burton, 3426 Bay Highland Dr., Green Bay, Wis. 54311
Filed Aug. 15, 1991, Ser. No. 745,552
Int. Cl.[5] F16D *3/06*
U.S. Cl. 464—133 **6 Claims**



1. A driveshaft comprising a first universal joint yoke, a second universal joint yoke spaced at a varying distance from said first universal joint yoke when said driveshaft is in operation, a first shaft extending rearwardly of said first universal joint yoke and rotatable therewith, a second shaft extending rearwardly of said second universal joint yoke and rotatable therewith, said first shaft having external splines and said second shaft having internal splines which are in mechanical engagement for all operating positions of said first and said second universal joint yokes to enable slidable but nonrotatable movement between said shafts, said second shaft having a smooth cylindrical recess at the end toward said second universal joint yoke, means closing off an end portion of said second shaft closer to said second universal joint yoke, said means being affixed in said recess, a sleeve extending rearwardly of said first universal joint yoke and extending over at least a substantial portion of said first shaft, and having a diameter greater than an outer diameter of said second shaft, said sleeve extending around said first shaft and around an end portion of said second shaft away from said second universal joint yoke and having an open end away from said first universal joint yoke, a single, resilient seal carried by the end portion of said second shaft away from said second yoke, said seal having an annular lip facing outwardly and slanted toward said second universal joint yoke, said lip engaging an inner surface of said sleeve for all operating positions of said first and said second universal joint yokes, said lip enabling grease in an annular chamber formed between said first shaft and said sleeve to pass by said seal toward the open end of said sleeve, said lip serving to wipe contaminants off the inner surface of said sleeve when said first and said second universal joint yokes move away from one another, and a grease fitting in said second shaft spaced toward said second universal joint yoke from said seal, said grease fitting communicating with said recess.

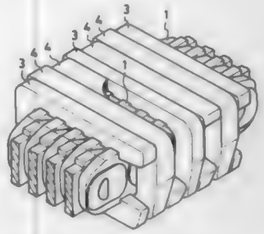
5,299,983
DOUBLE ACTION VARIABLE FORCE POOL CUE
R. Fred Pfost, 1090 Eastwood Ct., Los Altos, Calif. 94022, and Dale R. Pfost, 31 Main Road Fyfield, Abbingdon, Oxon, England OX13 5LU
Filed Jul. 12, 1993, Ser. No. 90,764
Int. Cl.[5] A63D *15/08*
U.S. Cl. 473—43 **23 Claims**

1. A telescoping cue stick for striking a ball comprising,
an elongated body having front and back ends and having a longitudinal bore open at the front end,
a plunger means slidably disposed in the bore having a tip for striking a ball,
double action spring means for imparting bidirectional rearward and forward motion to the plunger means from stored spring energy, wherein the tip may be positioned against a ball at a desired impact point and said spring



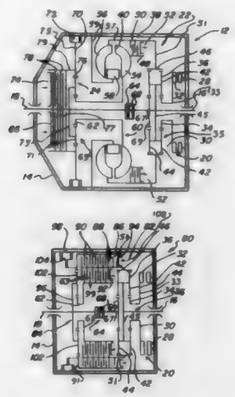
means draws the tip rearward and forward to the impact point.

5,299,984
FRICTIONAL TRANSMISSION CHAIN
Hiroki Ishida, Tokorozawa; Masao Maruyama, Hanno; Masaru Morimoto, Hanno, and Nobuyuki Fujimoto, Hanno, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan
Filed Sep. 10, 1992, Ser. No. 943,048
Claims priority, application Japan, Sep. 10, 1991, 3-80764
Int. Cl.[5] F16G *5/18*
U.S. Cl. 474—244 **1 Claim**



1. A frictional transmission chain for transmission of power between a pair of V-groove pulleys comprising: a transmission chain having a series of interconnected and interleaved link plates having upper and lower sides; and a plurality of struts superposed on one another in the longitudinal direction of the transmission chain; wherein said plurality of struts comprises first transmission struts directly engaged with the link plates, and second transmission struts for frictional engagement with V-groove pulleys, each of said struts having a channel-like configuration with an a opening on one side thereof; wherein each of said first transmission struts is fitted in cutout grooves provided at the central part of the upper and lower sides of link plates of said transmission chain, with successive first transmission struts having their openings provided alternately on opposite sides of the transmission chain; and wherein a plurality of said second transmission struts are installed, in abutting relationship with one another, between successive first struts, with the openings of abutting second struts being provided alternately on opposite sides of the transmission chain, each of said second struts having a cutout concave section for fitting and holding the upper and lower sides of the outermost link plates of the transmission chain, and wide frictional transmission surfaces on said second struts for pressing against V-groove transmission surfaces of V-groove pulleys.

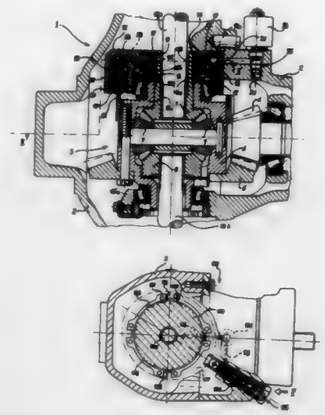
5,299,985
CONTINUOUSLY VARIABLE TRANSMISSION APPARATUS
Thomas A. Johnston, 745 Palomar La., Colorado Springs, Colo. 80906
Filed Apr. 10, 1992, Ser. No. 866,559
Int. Cl.[5] F16H *47/08, 3/72*
U.S. Cl. 475—53 **20 Claims**



1. A continuously variable transmission apparatus usable with a power supply system to transfer power from an input shaft to an output shaft, comprising:
a) a torque converter and splitter means connected to an input shaft to achieve rotation therefrom;
b) said torque converter and splitter means engaging to a planetary torque means and variably rotatable therewith;
c) said torque converter and splitter means includes a power splitter means having 1) a planet carrier assembly connected to the input shaft; and 2) a torque converter clutch assembly driven by said planet carrier assembly; and said planetary torque means driven by said torque converter clutch assembly; and
d) said planetary torque means connected to an output shaft whereby said power splitter means is operable to achieve a variable output from said input shaft to an output shaft on operation of said torque converter clutch assembly.

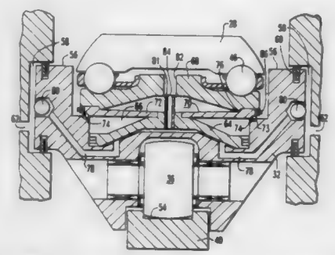
5,299,986
DIFFERENTIAL LOCK DEVICE
Armando Fabris, Campodarsego; Ivano Visentini, Caltana S. Maria di Sala, and Antonietto Raniero, S. Andrea di Vigonza, all of Italy, assignors to Carraro S.p.A., Campodarsego, Italy
Filed Jan. 17, 1992, Ser. No. 822,099
Claims priority, application Italy, Jan. 21, 1991, FD91A000014
Int. Cl.[5] F16H *1/45*
U.S. Cl. 475—88 **11 Claims**

1. A transmission for vehicles, comprising:
a housing having a differential mechanism therein;
a motion input shaft and at least two motion output shafts interconnected by said differential mechanism in said housing, said differential mechanism including a differential case rotatably mounted in said housing on first and second support means,
a storage reservoir in said housing for a differential mechanism lubricant,
locking means for locking said differential mechanism,
a hydraulically operated actuator for selectively operating said locking device, and
pump means in communication with said reservoir for supplying said lubricant under pressure to said actuator,
wherein said pump means is operatively driven off the motion input shaft and said pump means and said actuator are



disposed in one of said first and second support means for said differential case.

5,299,987
INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION
Daniel J. Dawe, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.
Continuation-in-part of Ser. No. 44,154, Apr. 8, 1993, abandoned. This application Aug. 10, 1993, Ser. No. 104,002
Int. Cl.[5] F16H *15/08*
U.S. Cl. 476—10 **17 Claims**



1. An infinitely variable traction roller transmission comprising: a transmission support structure two toric traction discs rotatably supported by said support structure, one for rotation with an input shaft and the other for rotation with an output shaft, said toric discs having opposite traction surfaces defining therebetween a toric cavity of circular cross-section, at least two motion transmitting traction rollers arranged in said toric cavity in radial symmetry and in engagement with said toric discs for the transmission of motion therebetween, each Of said traction rollers being rotatably supported by a pivot trunnion supported by said support structure for pivoting about a control axis which is essentially tangential to the center circle of said toric cavity, each pivot trunnion having a cylindrical cavity, a support Piston disposed in said cavity in axial alignment with said traction roller, a plurality of radial lever members arranged around the axis of said support piston in radial symmetry, said lever members resting at their radially outer ends on a fulcrum structure disposed around said cylindrical cavity and, at their radially inner end, on said support piston, a bearing disc rotatably supporting said traction roller and being supported on said radial lever members at a location spaced

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inwardly from said fulcrum structure, and means for supplying pressurized fluid to said cylinder cavity for moving said support piston toward said toric discs and said traction rollers into engagement with said toric discs with a force which is amplified by said radial lever members.

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CONTINUOUSLY VARIABLE TRACTION ROLLER TRANSMISSION

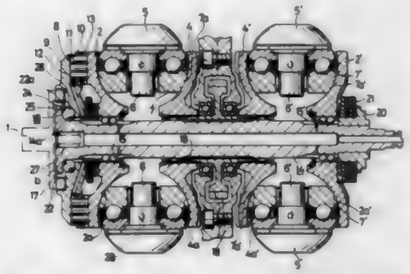
Hiroshi Fukushima, Yokohama, and Masaki Nakano, Kawasaki, both of Japan, assignors to NSK Ltd, Tokyo and Nissan Motor Co., Ltd, Kanagawa, both of Japan

Filed Apr. 21, 1992, Ser. No. 871,793

Claims priority, application Japan, Apr. 23, 1991, 3-036504[U]

Int. Cl.[5] F16H *15/38*

U.S. Cl. 476—42 1 Claim



1. In a continuously variable traction roller transmission comprising:

an input shaft;

a torque transmission shaft arranged concentrically with the input shaft and rotatable independently of the input shaft;

first and second input disks disposed in a pair along the torque transmission shaft with an interval between the first and second input disks, each of said first and second input disks being incapable of rotation relative to the torque transmission shaft, at least one of said first and second input disks being rotatable relative to the torque transmission shaft and displaceable along an axis of the torque transmission shaft, and said first and second input disks having inner walls in the form of concave walls of a circular arc shape in cross-section;

first and second output disks supported in a pair between both the first and second input disks rotatably relative to the torque transmission shaft and displaceably along the axis of the torque transmission shaft and having inner walls in the form of concave walls of a circular arc shape in cross-section;

a cam plate rotatably supported on one end of the torque transmission shaft via a thrust ball bearing and rotatable together with the input shaft;

a pressure mechanism disposed between the cam plate and one of the first and second input disks for urging said one input disk in a direction away from the cam plate along the axis of the torque transmission shaft;

a stopper means for preventing the other input disk from moving in a direction away from the cam plate;

trunnions rockable about their corresponding pivots located respectively at positions skewed relative to the torque transmission shaft;

power rollers having peripheral walls in the form of spherical convex walls, supported rotatably on displaceable pins supported on the respective trunnions, and held between the input disks and the output disks associated therewith;

an output means for combining and outputting rotations of the paired output disks;

the thrust ball bearing having a pair of raceway tracks, one of which is formed directly on a connecting part between an inner wall of a flange portion formed at the one end of the torque transmission shaft and an outer peripheral wall of the torque transmission shaft, and the other raceway track of the thrust ball bearing is formed directly on an inner peripheral edge portion of an outer wall of the cam plate; and

wherein balls of the thrust ball bearing are disposed radially inside the pressure mechanism so that the balls and the pressure mechanism overlap at least partially in the direction of the axis of the torque transmission shaft.

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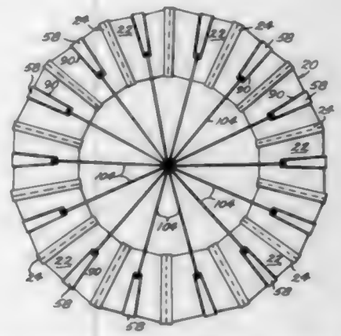
ALL SURFACE TRAMPOLINE

Peter D. Boyd, and Diane J. Boyd, both of Maui, Hi., assignors to WaterTramps, U.S.A., Inc., Honolulu, Hi.

Filed Nov. 1, 1991, Ser. No. 786,589

Int. Cl.[5] A63B *5/11*

U.S. Cl. 482—27 20 Claims



1. An all surface trampoline comprising a hollow inflatable support means having an inner periphery and an outer periphery, said inner periphery defining a space therewithin, means for inflating said support means with air, an elastic trampoline mat having an outer edge, suspension means for suspending the mat in operative position over said space, said suspension means having an upper portion and a lower portion and an inner surface, said suspension means including two layers of material, said two layers being spaced from one another at said upper portion of the suspension means and having said outer edge of the trampoline mat sandwiched therebetween, means for fixedly securing said outer edge to said two layers at said upper portion, said two layers extending around the outer periphery of said support means, and securing means for securing the lower portion of said suspension means in operative position.

5,299,990

TILTING UNIVERSAL GYM APPARATUS

Tracy R. Mehlhoff, 1412 W. 400 North, Orem, Utah 84057

Filed Dec. 24, 1992, Ser. No. 996,579

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—38 12 Claims

1. A tilting universal gym apparatus compriaing:

a. a three point tilting base having at least two pivoting second ends, an elevated apex first end to shift weight onto the pivoting second ends which are pivotable against a support surface, said apex first end and said at least two pivoting second ends defining a triangle, and a pair of side members, each said side member connecting one of said at least two pivoting second ends to said apex first end, segments of said side members lying within the triangle defined by said apex first end and said at least two pivoting second ends, said side members spaced sufficiently apart to allow a user to position himself therebetween, and the base structured to lie substantially flat against the support surface in a first mode, and pivot to lift the apex first end as the base is tilted on the pivoting second ends in a second mode;

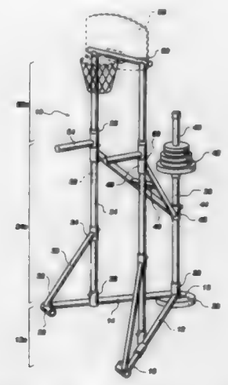
b. a tiltable support frame having at least two parallel support members with first ends attached at approximately right angles to the tilting base and second ends,

c. an extendable chinning bar with extension means extendably attached to the second ends of the support frame to extend the point of attachment of the chinning bar to the frame to a desired length, said frame and chinning bar structured and sized to

i. support a user when hanging between the parallel support members from the chinning bar when the frame is held in a vertical position by the base in the first mode; and

ii. form a bent arm lever with the triangular base to enable the user to lift and pivot the apparatus by the frame and chinning bar when the frame is held in a tilted position by the base in the second mode, and

d. force resistance means located at or in the line extending vertically from at least one of said apex first end or at least one of said at least two pivoting second ends to provide the desired leverage exercise resistance to the chinning bar and support frame when the universal gym apparatus is tilted and pivoted by a user.



5,299,991

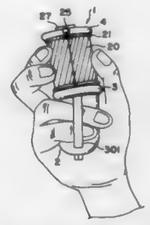
FINGER TRAINING DEVICE

Atuhiko Sato, 5-10-20, Matsubara, Soka-Shi, Saitama-Ken, Japan

Continuation-in-part of Ser. No. 638,071, Dec. 14, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 997,595

Int. Cl.[5] A63B *21/30*

U.S. Cl. 382—44 16 Claims



1. A finger training device comprising:

(a) a grip that includes a longitudinal handle that can be gripped by one hand;

(b) a roller-supporting frame connected to said grip; and

(c) a pair of lateral arms in said roller-supporting frame containing a pair of rollers juxtaposed therebetween and mounted in a position substantially parallel to said grip, each of said rollers having a gear at one end thereof, and said gears meshing with each other so that they can rotate in opposite directions;

wherein said roller-supporting frame includes hinge means rotatably coupling said roller supporting means and said grip so that the roller-supporting frame can be rotated to plurality of predetermined angular positions with respect to the grip.

5,299,992

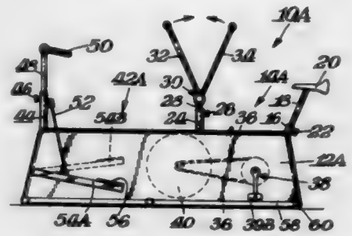
COMBINATION STATIONARY BICYCLE AND STEP/STAIR CLIMBER EXERCISE DEVICE

William T. Wilkinson, P.O. Box 378, Chesapeak City, Md. 21915

Filed Jan. 21, 1992, Ser. No. 822,895

Int. Cl.[5] A63B *22/00, 22/06*

U.S. Cl. 482—52 21 Claims



1. A combination stationary bicycle and step/stair climber exercise device comprising:

a) a support surface having a front portion and a back portion,

b) at least one exercise biking mechanism mounted to said support surface at either said front portion or said back portion

c) at least one stepping mechanism mounted to said support surface at the other of said front portion or said back portion and thereby at the opposite portion of said support surface where the biking mechanism is mounted,

d) at least one pair of pedals connected to said biking mechanism,

e) at least one pair of steps, said steps each having first and second ends, said first ends of said one pair of steps being pivotally connected to said stepping mechanism and said second ends of said steps having a stepping surface, said stepping mechanism and said one pair of steps being configured so as to be:

(1) extended inwardly toward the support surface whereby a user exercising on said steps can face away from the biking mechanism when said steps are in said inward orientation;

(2) in a second direction wherein the stepping surface of the pair of steps are extended in a direction outwardly away from said support surface whereby the user exercising on said steps can face towards the biking mechanism when said steps are in said outward orientation; or

(3) wherein said one pair of steps are extended inwardly toward the support surface whereby a user exercising on said steps can face away from the biking mechanism when said steps are in said inward orientation and are capable of being extended in a direction outwardly away from said support surface whereby the user exercising on said steps can face towards the biking mechanism when said steps are in said outward orientation,

f) a resistance means configured so as to support said steps when extended inwardly toward said support surface and

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when extended outwardly away from said support surface,

g) at least one seat connected to the top of said support surface over said biking mechanism,

h) at least one pair of handle bars mounted to said support surface for use with at least one of said biking mechanism and said stepping mechanism, and

i) a position means for said handle bars whereby said handle bars can be positioned above the stepping mechanism and above the biking mechanism.

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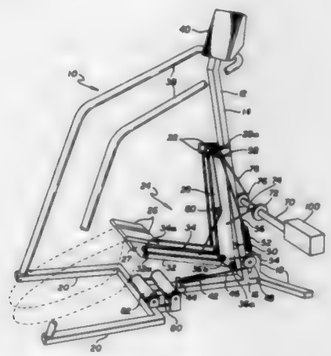
ARTICULATED LOWER BODY EXERCISER

Theodore G. Habing, Long Beach, Calif., assignor to Pacific Fitness Corporation, Cypress, Calif.

Filed Dec. 1, 1992, Ser. No. 984,301

Int. Cl.[5] A63B *22/00, 23/10*

U.S. Cl. 482—52 **13 Claims**



1. An exercise machine comprising:

(a) a frame;

(b) a pair of laterally spaced apart foot pedals, each pedal independently coupled to the frame by a respective articulated linkage comprising a generally vertical first linkage pivotally coupled to the frame and a generally horizontal second linkage pivotally coupled to both the first linkage and the respective foot pedal such that each foot pedal is free to travel within a two-dimensional generally ovate envelope of motion lying in a vertical plane "pedal";

(c) means coupled to the articulated linkage of each foot pedal for regulating movement thereof.

5,299,994

RETARDING DEVICE FOR AN EXERCISER

Ping Chen, No. 20, Nan-Mei St., Taichung City, Taiwan

Filed May 3, 1993, Ser. No. 58,007

Int. Cl.[5] A63B *22/04, 21/012*

U.S. Cl. 482—52 **3 Claims**

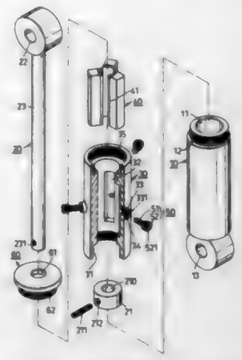
1. A retarding device for an exerciser, comprising:

a tubular housing having an inner wall surface that is formed with a plurality of axially extending and angularly spaced retaining grooves, said tubular housing being formed with a plurality of radial openings, each of which corresponds to one of said retaining grooves;

a drive shaft extending axially into said tubular housing and being movable axially therein;

a friction unit secured in said tubular housing and in contact with said drive shaft so as to resist axial movement of said drive shaft in said tubular housing, said friction unit including a plurality of friction pieces, each of which is installed in a respective one of said retaining grooves and has a rearward projection that extends through a respective one of said radial openings such that a distal end face of said rearward projection projects outwardly relative to an outer wall surface of said tubular housing; and

an adjustment means for altering tightness of contact between said friction unit and said drive shaft so as to vary correspondingly resistance to axial movement of said drive shaft, said adjustment means including a C-shaped



clamping ring which has two spaced ends respectively formed with an outward flange and is provided around said tubular housing such that an inner wall surface of said clamping ring presses against said friction pieces at said distal end face of said rearward projection thereof and a screw fastener which extends between said outward flanges.

5,299,995

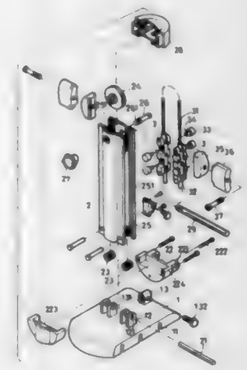
FOOT EXERCISING APPARATUS

Ching-Ho Ko, Chang Hua Hsien, Taiwan, assignor to Yow Li Feng Industrial Co. Ltd., Chang Hua Hsien, Taiwan

Filed May 10, 1993, Ser. No. 58,352

Int. Cl.[5] A63B *22/04, 69/16*

U.S. Cl. 482—52 **8 Claims**



1. A foot exercising apparatus comprising:

a base plate having at least one upright pivot holder at the top;

a main support pivotably connected to said at least one pivot holder by a pivot pin and disposed in a sloping position above said base plate, said main support comprising two sliding tracks on two opposite sides thereof through the length of said main support, a top opening and a bottom opening disposed on two opposite ends thereof and communicated with said sliding tracks respectively, at least one top pulley respectively fastened in said top opening, at least one bottom pulley respectively fastened in said bottom opening, a stop wall abutting said tracks at their bottoms, a damping device for providing a damping force to said top pulley;

two sliding blocks respectively fastened with a respective roller by a respective axle and guided by the respective roller to slide in said sliding tracks, each sliding block having a top end linked to each other by a steel rope and a bottom end linked to each other by an elastic linkage, said steel rope passing over each of said at least one top pulley, said elastic linkage passing over each of said bottom pulley; and

two pedals respectively fastened to said sliding blocks at an outer side by spindles for moving said sliding blocks in said tracks wherein the user's legs move down alternatively.

5,299,996

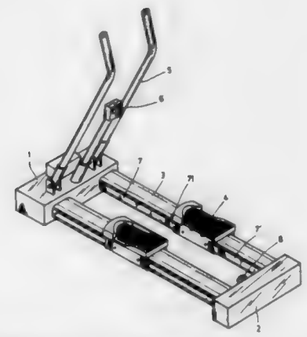
SKIING SIMULATOR

Wu H. Chi, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan

Filed Jan. 8, 1993, Ser. No. 2,022

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—70 **1 Claim**



1. A skiing simulator comprising:

(a) front and rear housings;

(b) a pair of parallel spaced apart guide tracks disposed between said front and rear housings;

(c) a pair of foot pedals slidably mounted on each of said guide tracks;

(d) belt means disposed about said guide tracks for moving each of said foot pedals in a reciprocating movement, said belt means having front and rear portions interconnected with front and rear ends of each of said foot pedals, respectively;

(e) tension adjusting means mounted on said rear housing for adjusting a tension load of said belt means;

(f) first guide means mounted on said rear housing for guiding said rear portion of said belt means;

(g) handle means pivotally mounted on said front housing for guiding and supporting a pair of arms of a user;

(h) load adjusting means mounted in said front housing for providing a resistive force to said belt means, said load adjusting means including a bracket mounted to a support member of said front housing, a support plate mounted to said bracket, a pair of linearly aligned first and second openings formed in said bracket and said support plate, respectively, a pair of guide rollers mounted on said bracket on opposite sides of said first opening for guiding said front portion of said belt means, a cam member rotatably mounted on said bracket by a hollow pin member which extends through said first opening in said bracket, a ring member rotatably disposed about said cam member, a motor mounted on said support plate and connected to said hollow pin member for rotating said cam member, a decoder member mounted to an underside of said bracket and connected to said hollow pin member for rotation with said cam member, a circuit board printed on said decoder member, a pick-up member connected to said hollow pin member for rotation with said cam member, and a pair of prong members extending from said pick-up member and contacting said circuit board on said decoder member for determining a position of said cam member with respect to said decoder member to provide a value of said resistive force exerted by said load adjusting means on said belt means; and,

(i) a control console extending upwardly from said housing for adjusting said resistive force exerted by said load adjusting means on said belt means.

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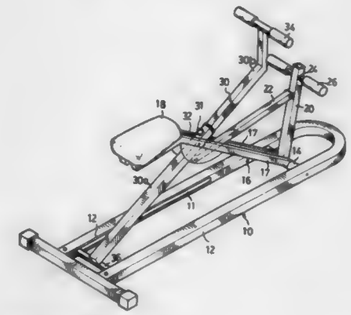
HORSE-RIDING TYPE EXERCISER

Paul Chen, No. 3-6, Ching Yang Rd., Liu Pao Village, Ta Ya Hsiang, Taichung Hsien, Taiwan

Filed Aug. 24, 1993, Ser. No. 111,101

Int. Cl.[5] A63B *69/06, 21/068*

U.S. Cl. 482—96 **4 Claims**



1. An exerciser comprising:

a base frame having first and second ends and including two parallel beams, an axle being rotationally mounted to said first end of said base frame between said parallel beams, each said beam including a track adjacent to said second end of said base frame;

a foot post means having a lower end securely mounted to said axle to pivot therewith and an upper end, a pair of foot rests being provided to said upper end of said foot post means, a pivotably fixed beam extending outwardly from the foot post means toward said second end of said base frame and having a distal end;

a seat post means including a lower end securely attached to said axle to pivot therewith and an upper end for mounting a seat thereon; and

a supporting means for supporting the seat post means and the user, a mediate section of the supporting means being pivoted at an underside thereof to said distal end of said fixed beam, an upper side of said mediate section of said supporting means being in pivotal connection with said seat post means to allow pivotal movements therebetween, a pair of handgrips being mounted on a top section of said supporting means, a rod being mounted to a bottom section of said supporting means and having two ends, a roller being rotationally mounted to each said ends thereof and being movably received in associated said track in each said beam.

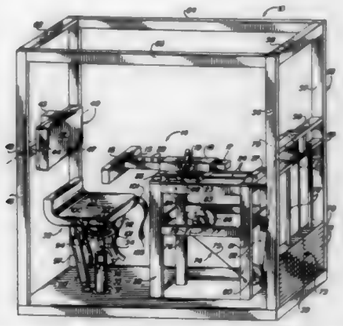
VOL 1161 ISS 1 AP 5 1994 UMI

5,299,998

LINEAR MOVEMENT, TRUNK MUSCLE EXERCISE MACHINE

Kenneth M. Hutchins, 350 Hidden Pines Cir., Casselberry, Fla. 32707

Continuation-in-part of Ser. No. 598,131, Oct. 16, 1990, Pat. No. 5,147,259. This application May 1, 1992, Ser. No. 877,619
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—101 **18 Claims**



1. An exercise machine for strengthening the trunk muscles of a user, said machine comprising:
a base having a front and a rear;
a seat;
means mounting said seat on said base;
a framework attached to said base adjacent said seat mounting means;
a header attached to said base at said front;
an elongated plunger having a free end dimensioned, configured and positioned for contacting the abdominal region of the trunk of the user seated on said seat;
means mounting said plunger on said framework, for horizontal movement of said plunger relative to said framework away from said seat in response to movement of the seated user's abdominal region applied to said free end;
a weight stack;
means mounting said weight stack on said header for vertical movement of said weight stack relative to said header; and
means connecting said weight to said plunger for causing said weight stack to move vertically in response to said plunger horizontal movement away from said seat, so that said weight stack applies a force on said plunger to resist said movement by said user.

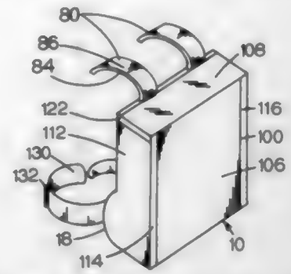
5,299,999

WEIGHT PACK

William G. Brine, 2133 A Alfred Ave., St. Louis, Mo. 63110

Filed Mar. 7, 1991, Ser. No. 665,672
Int. Cl.[5] A63B *21/18*; A45F *3/04*
U.S. Cl. 482—105 **16 Claims**

1. A weight support for supporting and carrying one or more weights during exercise, the enclosure comprising:
support means for supporting a weight, the support means including a contour portion located proximate a lower portion of the weight support so as to be proximate and generally complementary to the natural lumbar curve of the back of the wearer as the weight support is worn in its intended fashion;
attachment means for attaching and supporting the enclosure with respect to the body size of a wearer, the attachment means supporting the enclosure generally on the upper body of the wearer and at or above the center of gravity of the wearer;
the weight received by the support means;
enclosure means for receiving and enclosing the support means and the weight, the enclosure means integrated with the attachment means;
a generally rigid insert forming the support means, wherein



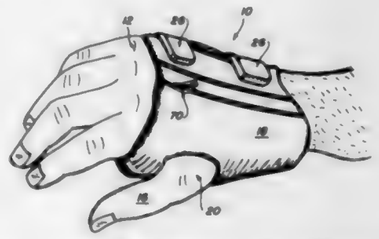
the generally rigid insert includes a body portion and a weight shelf portion generally projecting from the body portion; and
weight securing rods received by the weight shelf, the weight securing rods stabilizing the weight on the weight shelf.

5,300,000

EXERCISE SLEEVE

Leonard Schwartz, 5526 Northumberland St., Pittsburgh, Pa. 15217

Filed Sep. 23, 1991, Ser. No. 763,981
Int. Cl.[5] A63B *21/065*
U.S. Cl. 482—105 **14 Claims**



1. An exercise sleeve that fits on a hand comprising:
a flexible weighted layer that conforms with the hand in a continuous manner across the palm and the back of the hand and having a curved indentation which fits about the thumb; and
a skin disposed about the weighted layer and which adjustably and removably conforms with the hand, said skin having a hole through which the thumb extends when the skin is on the hand.

5,300,001

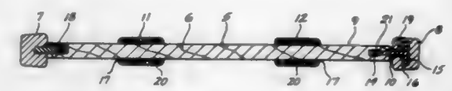
PORTABLE DUMBBELL APPARATUS

Anthony J. Sealy, 1512 S. 26th St., Philadelphia, Pa. 19146

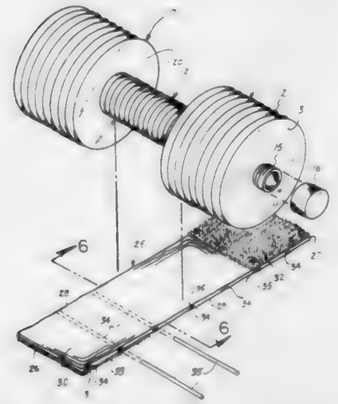
Filed May 3, 1993, Ser. No. 55,290
Int. Cl.[5] A63B *11/00*
U.S. Cl. 482—108 **3 Claims**

1. A portable dumbbell apparatus, comprising,
at least one dumbbell, wherein said at least one dumbbell includes a first cylindrical housing having a flexible, accordion pleated first housing side wall,
and
a second cylindrical housing having a flexible accordion pleated second housing side wall,

and
a tubular housing, having a tubular housing flexible accordion pleated side wall extending between the first cylindrical housing and the second cylindrical housing and the first cylindrical housing including fill means for introducing fluid or granular material into said dumbbell, and a support web, the support web including a web first end spaced from a web second end, a web first side spaced from a web second side, a web top wall spaced from a web bottom wall, wherein the support web is formed of a flexible material having an enclosed web cavity, including a resilient sponge member coextensive with the web cavity, and the support web includes a first hook and loop fastener patch mounted to the web wall extending along the web top wall from the web second end, and a second hook and loop fastener patch mounted to the web bottom wall extending along the web bottom wall extending from



twisted and pushed in a direction toward the second end of the pole with an increasing force.



the web first end and the first hook and loop fastener patch and the second hook and loop fastener patch extend between the web first side and the web second side, wherein the first hook and loop fastener patch is arranged for securement to the second hook and loop fastener patch when the support web is furled about the tubular housing, and the support web includes a predetermined width between the web first side web second side, and the tubular housing includes a predetermined length extending between the first cylindrical housing and the second cylindrical housing, wherein the predetermined length is equal to the predetermined width, and
a plurality of spaced parallel tubular bores directed into the web first side extending from the web first side through the web second side, with each of the tubular bores arranged to include a rigid rod to impart rigidity to the tubular housing when the support web is furled about the tubular housing.

5,300,002

UPPER AND LOWER BODY FRICTIONAL RESISTANT-TYPE EXERCISING DEVICE

Allen E. Freye, 1013 Butternut Ct., SE, Olympia, Wash. 98503

Filed Jun. 18, 1992, Ser. No. 900,833
Int. Cl.[5] A63B *21/30, 5/00*
U.S. Cl. 482—116 **19 Claims**

1. An exercising device comprising:
(a) a straight pole;
(b) a knob rigidly attached to a first end of the pole; and
(c) a rotatable knob attached to a second end of the pole, the rotatable knob including first resistance means for providing an increasing force so as to oppose rotation of the rotatable knob as the rotatable knob is twisted and pulled in a direction away from the second end of the pole or

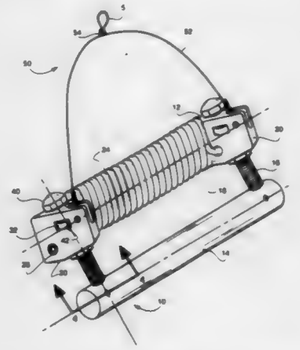
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5,300,003

HANDLE DEVICE FOR EXERCISING EQUIPMENT

Martin P. Hull, 630 Olive St., Menlo Park, Calif. 94025

Filed Feb. 9, 1993, Ser. No. 15,148
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—139 **16 Claims**



1. A device for exercising equipment, comprising:
elongated handles means for gripping by a user having a longitudinal axis extending therethrough;
elongated support means having a generally flat surface for providing support and having a longitudinal axis extending therethrough and a longitudinal plane extending from the longitudinal axis across the flat surface, the handle means being spaced apart from the support means and the longitudinal axis of the support means being generally parallel to the longitudinal axis of the support means and the support means having shoulders at either end; and
adjustment means for adjustable connecting the support means to the handle, and for fixing the support means at the desired relationship to the handle means, the adjustment means including first and second adjustment means attached at one end of the shoulders of the support means and at the other end to the handle means, the first and second adjustment means, each includes a first and a second threaded rod member, respectively, each of the rod members are threaded into the shoulders and each of the shoulders has an opening, each of the first and second rod members has a knob threaded onto each of the rods and positioned in the opening of the shoulder for adjusting the spaced apart distance between the support means and the handle means and for adjusting the relative angle of each axis.

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5,300,004
ABDOMEN EXERCISER AND METHOD OF USING SAME
James A. Muehlenbein, Rockton, Ill., assignor to Novel Products, Inc., Rockton, Ill.
Filed Oct. 30, 1992, Ser. No. 969,442
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—140 12 Claims



1. A device for limiting lengthwise movement of the arms of a user during execution of a sit-up of the type performed by a user lying on his back with his arms extended lengthwise of and parallel to his body, and the user then elevating his head and shoulders, thereby causing lengthwise movement of his arms, the device comprising:
- a base plate including a midsection adapted to support a user thereon, said base plate having a length and a width and a pair of substantially parallel elongated channels disposed along the base plate length on opposite sides of the midsection, each of said channels having spaced apart ends; and
- slide plates slidably disposed in each channel, said slide plates each having an upper surface engagable with the hands of a user and being independently movable a selected distance between the ends of the channels while a user supported on said midsection executes an exercise involving a situp motion.

5,300,005
STRUCTURE OF ABDOMEN EXERCISER
Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corporation, Taichung Hsien, Taiwan
Filed Feb. 25, 1993, Ser. No. 22,458
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—142 2 Claims



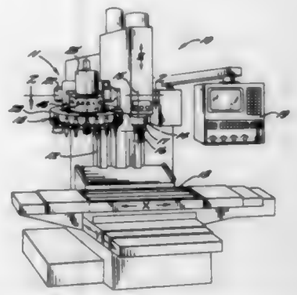
1. An abdomen exerciser comprising: a front frame and a rear frame joined by an intermediate frame, a seat cushion mounted on said intermediate frame at the top, two curved supports bilaterally welded to a transverse bar on said intermediate frame, two three-end links respectively pivoted to said curved supports to hold a back cushion in a first position longitudinally disposed in line with said seat cushion or a second position perpendicularly disposed above said seat cushion, and two sets of weights symmetrically mounted on said three-end links to automatically turned said back cushion to said second position, wherein:

said intermediate frame has hollow front end, which receives a rear extension rod on said front frame, and a rear end terminated to a semi-circular mounting block pivotally fastened to two parallel lugs on said rear frame by a pin and a clamping retainer;

each three-end link comprises a first terminal fitted over the transverse bar on said intermediate frame and either curved support to hold said back cushion, a bushing on one end of said first terminal pivotally connected to a bushing on either curved support by a pin and a set of washers and a clamping retainer and disposed at an elevation above said seat cushion, a handlebar on an opposite end of said first terminal, a second terminal having one end connected to the bushing on said first terminal and an opposite end terminated to a projecting rod to hold either set of weights by a respective spring clamp, and a third terminal having a through hole, to which either leg press is pivotally connected, a pin hole, and a side projection with a pin hole;

each leg press is respectively made in the shape of an angle bar, having a free end coupled with a soft covering disposed in horizontal, a fixed end pivotally connected to the through hole on the third terminal of either three-end link by a pin and a clamping retainer, and a spring-controlled lock bolt alternatively locked in the pin hole on the third terminal of either three-end link or the pin hole on the side projection for permitting the soft covering of the respective leg press to be disposed in horizontal above said seat cushion or turned sideways.

5,300,006
AUTOMATIC TOOL CHANGER
Norio Tanaka; Sanae Hattori, and Hiroyuki Suzuki, all of Charlotte, N.C., assignors to Okuma Machine Tools Inc., Charlotte, N.C.
Filed Jul. 2, 1993, Ser. No. 86,936
Int. Cl.[5] B23Q *3/157*
U.S. Cl. 483—56 13 Claims



1. A machine tool having an automatic tool changing capability and comprising

a machine frame,

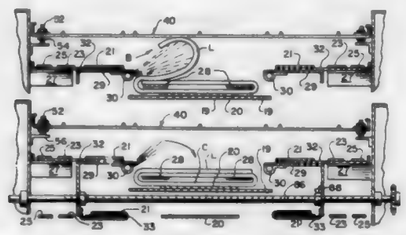
a spindle rotatably mounted to said machine frame for rotation about a central axis and for axial movement along said central axis, and including a tool engaging fixture,

a tool storage magazine for supporting a plurality of tools and including a plurality of tool holders disposed in a generally arcuate arrangement which defines a magazine axis which extends through said arcuate arrangement,

means mounting said tool storage magazine to said machine frame for movement about said magazine axis and for movement between a storage position withdrawn from said central axis and an advanced position proximate to said central axis, with said magazine axis being parallel to said central axis when said magazine is in said advanced position, and such that in said advanced position any one of said tool holders may be aligned with said central axis, and

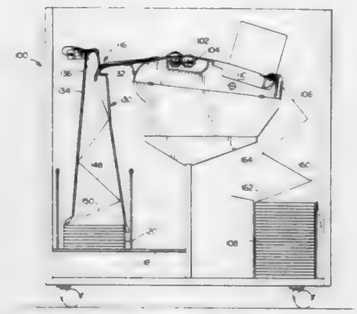
drive means comprising a single drive motor for selectively moving said magazine between said withdrawn and advanced positions and moving said magazine about said magazine axis, so that when said magazine is in said advanced position a selected tool holder may be brought into alignment with said central axis and said spindle may be axially moved so that a tool may be transferred between the selected tool holder and said tool engaging fixture of said spindle.

5,300,007
FOLDER CONSTRUCTION
Kasimir Kober, Niles, Ill., assignor to Chicago Dryer Company, Chicago, Ill.
Continuation of Ser. No. 676,299, Mar. 27, 1991, abandoned.
This application Aug. 4, 1992, Ser. No. 925,283
Int. Cl.[5] B65H *45/04*
U.S. Cl. 493—23 24 Claims



14. Folding apparatus comprising conveyor means for moving a foldable article along a path of movement; spaced edge-defining means disposed adjacent said conveyor means; air discharge means associated with each of said edge-defining means for discharging air to substantially instantaneously fold lateral portions of such foldable article about said edge-defining means; means for controlling the discharge of air in sequence through said air discharge means; barrier means for controlling the folding of each lateral portion of such foldable article and located adjacent the foldable article path of movement and said edge-defining means; said air discharge means urging lateral portions of such foldable article over said edge-defining means, into slidable engagement with the fold controlling means as air is progressively exhausted from beneath each lateral portion from said edge-defining means about which folded to a lateral portion distal end; said foldable article lateral portions being rolled into engagement with underlying support surfaces provided by said edge-defining means and such foldable article in surface-to-surface relationship while slidably engaging said fold controlling means; underlying conveyor means disposed beneath the first conveyor means and moving in a direction generally opposed to that of the direction of movement of said first conveyor means; said first and underlying conveyor means comprising continuous ribbons moving about opposed rolls; superposed rolls of said first and underlying conveyor means disposed at the end of said first conveyor means defining counter-rotating pinch rolls; second air discharge means oppositely disposed to said counter-rotating pinch rolls for urging a desired transverse portion of a foldable article dropping from the end of said first conveyor means into the bite of said counter-rotating pinch rolls; means for measuring the length of a foldable article while moving on said first conveyor means operatively connected to said second air discharge means; means for sensing the leading edge of a foldable article upon moving from said first conveyor means, and means for activating the second air discharge means responsive to said measuring means and sensing means.

5,300,008
PRINTER AND FOLDER WITH CHAINS HAVING LIGHT WEIGHT PENDANTS HANGING THEREFROM
Ho C. Lee, Endicott; Larry T. Sehringer, Vestal, and Gary D. VanBurger, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 31, 1992, Ser. No. 938,183
Int. Cl.[5] B65H *45/20, 45/101*
U.S. Cl. 493—320 20 Claims



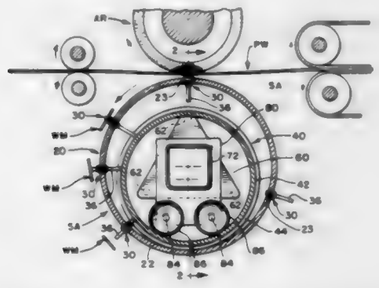
1. A printer comprising in combination:
- means for supplying a length of continuous form paper which is prefolded laterally along linear perforations which connect between sheets;
- printing means for producing images on the surface of the length of paper;
- tractor means for moving the length of paper longitudinally through the printing means and downward onto a fanfold stack after printing;
- surface means for stacking the perforation connected paper sheets thereon in a fanfold arrangement;
- frame means for positioning and supporting chain means along each major side of the descending length of paper;
- chain means including chains hanging from said frame means on each major side of the length of paper to interact with the folding paper to sweep the chains against the paper for minimizing misfolding and which have a lower end and which are of a length for the lower ends to lay on the top of the stack at times during stacking; and
- means for preventing the lower ends of the chains which lay on the stack from becoming trapped in the folding paper including long, stiff, light weight pendants, each pendant attached to the lower end of one chain for hanging from the end of the chain to prevent the chain from being caught in the refolding stack of paper to prevent misfolding, output jumbling, and eventual jamming of paper movement through tractor means.

5,300,009
PAPERBOARD WASTE STRIPPING APPARATUS
Dan L. Bittenbender, 18560 Ridge La., Marengo, Ill. 60152
Filed Jun. 15, 1993, Ser. No. 76,762
Int. Cl.[5] B26F *3/02*; B31B *49/00, 3/74*
U.S. Cl. 493—373 20 Claims

1. Apparatus for stripping waste material from a paperboard web that has been cut to define at least one blank, comprising:
- (a) a frame having a pair of opposed, vertically extending, inboard and outboard side walls spaced transversely from each other;
- (b) an outer pin cylinder secured to a drive shaft carried by said frame adjacent an inboard side wall of said frame and supported between said side walls for rotation about a horizontal axis;
- (c) said pin cylinder including a hollow tubular body and a pair of detachable, circular, inboard and outboard end

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plates, each of said end plates including journal bearing means;
(d) an anvil roll mounted adjacent said pin cylinder for rotation about an axis parallel to said pin cylinder axis;
(e) means for passing a precut web of paperboard between said pin cylinder and anvil roll;
(f) said pin cylinder body having a plurality of threaded openings extending therethrough;
(g) stripper pin mechanisms mounted in certain of said pin cylinder body openings, each of said stripper mechanisms including:
(i) a threaded bushing having a stripper pin that projects outwardly from said bushing beyond an outer surface of said pin cylinder for contact with said paperboard web to push waste material out of the plane of said web;
(ii) an ejector sleeve positioned in said bushing and mounted over said pin for axial movement between a retracted position, where said pin is exposed for contact with said web, and an extended position, where waste material is forced off said pin;
(h) an inner ejection cylinder mounted eccentrically within



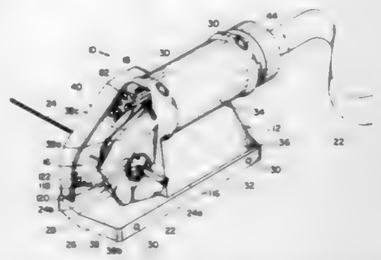
said outer pin cylinder for engagement with said ejector sleeves, when the latter are in predetermined locations, to move said sleeves from a retracted position to an extended position and thereby force waste material off related stripper pins;
(i) means for detachably mounting said ejection cylinder eccentrically within said pin cylinder, comprising:
(i) an elongated, stationary mounting beam, rectilinear in cross section, positioned within said ejection cylinder and having, extending from opposite ends thereof, shaft means supported in said end plate journal bearing means to accommodate relative rotational movement between said pin cylinder and said mounting beam;
(ii) a pair of trolleys non-rotatably secured to and depending from said mounting beam;
(iii) said trolleys carrying, at lower ends thereof, roller means engagably with an inside surface of said ejection cylinder and operable to maintain said ejection cylinder in a predetermined position in contact with said pin cylinder whereby, when said ejection cylinder engages said ejector sleeves, the sleeves are moved radially outward to force waste material from said stripper pins.

5,300,010
METHOD AND APPARATUS FOR MAKING ARTIFICIAL FLOWERS

Fred D. Eddins, Mapleville, R.I., assignor to Hasbro, Inc., Pawtucket, R.I.

Filed Oct. 19, 1992, Ser. No. 962,741
Int. Cl.[5] A41G *1/02*; B31D *5/04*; B65H *45/04, 45/06*
U.S. Cl. 493—379 **10 Claims**

1. An apparatus for forming a folded paper flower comprising:
a housing including a paper folding member;
means for longitudinally advancing an elongated paper strip to said paper folding member, said paper strip having a width and a longitudinal centerline;
means cooperating with said paper folding member for sequentially folding said paper strip over on itself in a predetermined direction substantially perpendicular to said longitudinal centerline, said paper strip being sequentially folded at intervals corresponding approximately to said width;

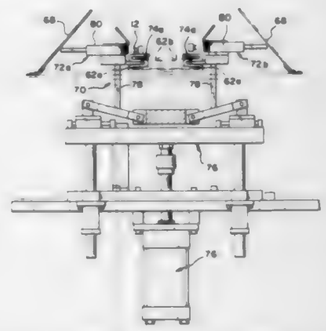


means for rotating a stem adjacent said paper folding member, said paper strip being securable to said stem adjacent one end of said stem;
means on said paper folding member for guiding said strip onto said rotating stem so that said folded portions are assembled around said stem in a continuous spiral configuration, said folded portions being retainable on said stem adjacent said one end of said stem so that said folded portions simulate the appearance of a flower.

5,300,011
AUTOMATIC AIRBAG FOLDING APPARATUS AND METHOD

William J. Budde; Louis A. Fanty, both of Dayton; Scott F. Mason, New Carlisle, and James E. Murphy, Bellbrook, all of Ohio, assignors to The Omega Company, Inc., Dayton, Ohio

Filed Oct. 14, 1992, Ser. No. 960,944
Int. Cl.[5] B60R *21/16*
U.S. Cl. 493—405 **14 Claims**



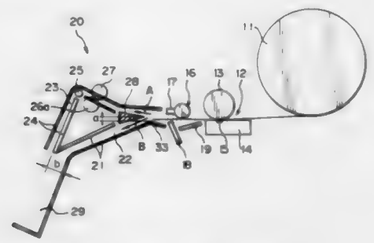
1. A method for folding an airbag comprising the steps of:
positioning an airbag securely over a means for receiving;
automatically manipulating a plurality of portions of said airbag in a plurality of directions, respectively, to produce an airbag in folded conditions, by:
automatically fanfolding first and second portions of said airbag inward in first and second directions, respectively, generally towards said means for receiving, and
automatically folding over third and fourth portions of said airbag towards said means for receiving in third and fourth directions, respectively, by automatically performing steps comprising:

positioning a center hold-down mechanism having a plurality of hold-down fingers extending in at least one direction therefrom over said airbag generally over said means for receiving and in contact with a stationary portion of the airbag on one surface of the airbag such that said third and fourth portions are positioned on opposite sides of said center hold-down mechanism;
folding over said third portion towards said center hold-down mechanism by pivoting a fold finger assembly having at least one fixed fold finger and at least one extendable fold finger into contact with the opposite surface of the airbag to coact with the center hold-down fingers;
engaging a part of the said third portion in said center hold-down mechanism to maintain with said fixed fold finger and engaging a second part of the third portion by extending the extendable fold finger to coact with the center hold-down finger mechanism said third portion in a folded position;
folding over said fourth portion towards said center hold-down mechanism
engaging said fourth portion, at least in part, in said center hold-down mechanism to maintain said fourth portion in folded position; and
removing said airbag in folded condition from said means for receiving.

5,300,012
UNCURLING DEVICE

Takeshi Kamada, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 942,032
Claims priority, application Japan, Sep. 6, 1991, 3-226262
Int. Cl.[5] B65H *23/34*
U.S. Cl. 493—459 **9 Claims**

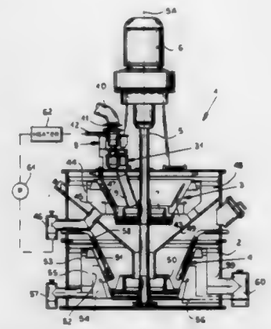


8. A device for uncurling paper comprising:
means defining a first transport path including uncurling means therealong;
means defining a second transport path for transporting paper without uncurling said paper;
a fixed separator for directing paper to one of said first and second transport paths;
said means defining a first transport path and said means defining a second transport path including respective first and second exits;
a stacking tray located immediately downstream of said first and second exists; and
wherein said first and second exits are disposed adjacent to said stacking tray such that paper is stacked upon said stacking tray as it is discharged from said first and second exits, and further wherein as paper is stacked upon a stacking surface of said tray a stack increases in size in a first direction perpendicular to said stacking surface, and said first exit is spaced from said stacking surface in said first direction by an amount greater than a spacing between said second exit and said stacking surface, whereby paper is discharged from said first exit at a greater distance from said stacking surface than paper discharged from said second exit.

5,300,013
DOUBLE CENTRIFUGE FOR HIGHLY VISCOUS MATERIAL

Dieter Frässdorf, and Paul H. Franzen, both of Grevenbroich, Fed. Rep. of Germany, assignors to Dorr-Oliver Deutschland GmbH, Grevenbroich, Fed. Rep. of Germany

Filed Oct. 4, 1990, Ser. No. 592,045
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1989, 3933136
Int. Cl.[5] B04B *3/00*
U.S. Cl. 494—34 **5 Claims**



1. An apparatus for processing a highly viscous material, the apparatus comprising:
a centrifuge housing;
means including a homogenizer on the housing for spinning the material to reduce its viscosity to a creamy fluent consistency, the homogenizer including
a homogenizer housing fixed on the centrifuge housing,
a rotor rotatably about an upright axis in the homogenizer housing and including
a horizontal bottom wall perpendicular to the rotor axis,
an upright side wall having an upper edge, forming a downwardly open groove, and projecting upward from the bottom wall,
a top wall fixed to the side wall above the upper edge thereof and forming with the upper edge a radially open slot, and
mixing formations in the rotor within the side wall, and
a drive motor beneath the rotor and operable to rotate the rotor about its axis, the homogenizer housing having
a floor beneath the upper edge,
an outer annular side wall projecting upward from the floor around the rotor, and
an inner annular side wall projecting upward from the floor within the outer wall into the groove, the walls and floor together forming an annular collection compartment;
first conduit means for flowing the creamy material wholly by gravity down into an upper centrifuge stage;
means including an upper centrifuge in the centrifuge housing for separating the creamy material into a solids fraction and a liquid fraction;
second conduit means for flowing the solids fraction wholly by gravity down into a lower centrifuge stage; and
means including a lower centrifuge below the upper centrifuge for centrifuging the solids fraction,
a drive motor atop the housing having a downwardly projecting shaft, the upper and lower centrifuges having respective upper and lower drums fixed on the shaft.

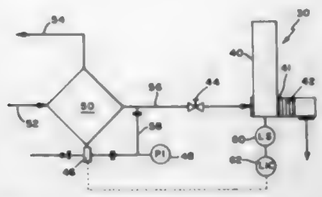
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5,300,014

UNDERFLOW CONTROL FOR NOZZLE CENTRIFUGES

Milton Chin, Trumbull; Chie-Ying Lee, Milford, both of Conn., and Robert D. Mensinger, Freeland, Pa., assignors to Dorr-Oliver Corporation, Milford, Conn.

Filed Oct. 16, 1992, Ser. No. 962,380
Int. Cl.[5] B04B 7/00
U.S. Cl. 494—35 24 Claims



1. An apparatus for controlling the amount of underflow recycled in a disk-nozzle type centrifugal separator so as to control the level of solids in a liquid effluent overflow of the separator, comprising:

a chamber having an inlet and an outlet, said inlet of said chamber being fluidly connected to a withdraw line of the separator;

a flow interference means fluidly connected to the outlet of said chamber so as to produce an accumulation of underflow within said chamber wherein a variation in the underflow suspended solids content varies the level of the underflow accumulated within said chamber;

a level indicating means for indicating the level of the underflow in said chamber, said level indicating means outputting a control signal representative of the level of the underflow in said chamber;

a recycle conduit having a first and second opening, said first opening being fluidly connected to the withdraw line for receiving the underflow; and

a valve means having an inlet and an outlet, said inlet of said valve means being fluidly connected to said second opening of said recycle conduit, said outlet of said valve means being fluidly connected to a centrifuge bowl of the disk-nozzle type centrifuge separator, said valve means being responsive to said control signal outputted by said level indicating means so as to regulate the amount of underflow in said recycle conduit that is returned to the centrifuge bowl thereby adjusting the level of solids in the liquid effluent overflow.

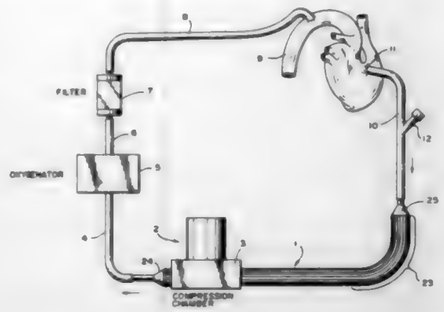
5,300,015

BLOOD CONDUIT FOR PULSATILE CARDIOPULMONARY BYPASS PUMP

Thomas M. Runge, 2630 Exposition Blvd., Austin, Tex. 78703

Filed Mar. 3, 1992, Ser. No. 845,017
Int. Cl.[5] A61M 1/03
U.S. Cl. 600—16 2 Claims

1. In combination, a blood conduit and a pulsatile cardiopulmonary bypass pump, said conduit comprising a tube of biocompatible polymer having a surge chamber portion, a pumping chamber portion and a reservoir portion, a pre-load responsive pulsatile pump having an inlet end, and outlet end and a compression chamber between said inlet and said outlet end, said conduit extending through the compression chamber of said pump, the surge chamber portion of said tube being positioned at the outlet end of said pump and the reservoir portion of said tube being positioned at the inlet end of said pump, an oxygenator, a first tube connected between said oxygenator and said surge chamber portion of said tube, an arterial filter, a second tube connected between said oxygenator and said arterial filter, a third tube connected to the arterial filter and adapted to be connected between said arterial filter and to the aorta of a patient's heart and a forth tube connected to said reservoir portion of said conduit and adapted to be connected



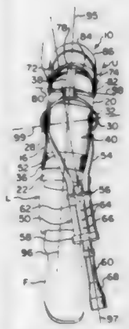
to an atrium of a patient's heart said reservoir portion extending.

5,300,016

LOWER LEG SHELF WITH FOLDABLE WEIGHT-BEARING STRUT AND STABILIZER FRAME

William W. Marlatt, 11261 N. 75th St., Longmont, Colo. 80503

Filed Apr. 14, 1992, Ser. No. 868,463
Int. Cl.[5] A61F 5/01, 2/60
U.S. Cl. 602—16 27 Claims



1. A prosthetic device for attaching to and supporting a person's body utilizing the person's knee, upper leg or thigh, and hips for stability and for supporting the person's lower leg in a nonuse or nonweight-bearing position, comprising:

shelf means with a proximal end portion for supporting the person's knee and upper leg in a weight-bearing position and a distal end portion for supporting the person's lower leg in a nonweight-bearing position and having a shelf longitudinal axis that extends substantially parallel to the person's lower leg when the lower leg is supported by said shelf means;

strut means connected to and extending from said shelf means for supporting said shelf means and for supporting the person's body weight while the person is standing or walking, wherein said strut means has a proximal end and a distal end with a strut longitudinal axis that extends between said proximal end and said distal end;

stabilizing means connected to and extending from said shelf means in substantially an opposite direction from said strut means for stabilizing said shelf means and said strut means by bearing against and transferring lateral forces on said strut means and said shelf means to the person's upper leg and hips, wherein said stabilizing means has a proximal end adapted for positioning adjacent and securing to the person's upper leg and a distal end connected to said proximal end of said shelf means with a stabilizer longitudinal axis that extends between said proximal and distal ends of said stabilizing means and which is approximately parallel to the person's upper leg when the stabilizing means is positioned adjacent and secured to the upper leg;

a stabilizer hinge connecting said proximal end of said shelf means to said distal end of said stabilizing means in such a manner that said shelf means pivots in relation to said stabilizing means about a first pivot axis that is substantially co-axial with the person's knee and perpendicular to both said stabilizer longitudinal axis and said shelf longitudinal axis such that said stabilizer longitudinal axis and said shelf longitudinal axis remain in a common first plane and are pivotal between a first position where the shelf longitudinal axis is approximately perpendicular to the stabilizer longitudinal axis and a second position where the shelf longitudinal axis is approximately collinear with the stabilizer longitudinal axis; and

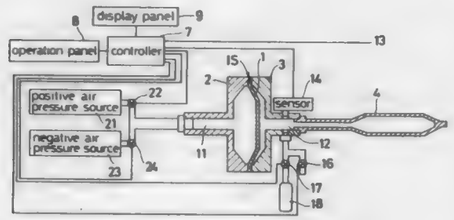
a strut hinge connecting said proximal end of said strut means to said shelf means in such a manner that said strut means pivots in relation to said shelf means about a second pivot axis that is skewed and not in parallel relation to said first pivot axis and not in perpendicular relation to said shelf longitudinal axis such that said strut longitudinal axis pivots in a second plane that is skewed in relation to said first plane from a folded position where the strut longitudinal axis is skewed and neither parallel nor perpendicular to said shelf longitudinal axis to an extended position where said strut longitudinal axis is substantially perpendicular to said shelf longitudinal axis.

5,300,017

APPARATUS FOR DRIVING INTRA-AORTA BALLOON PUMP

Takashi Isoyama, Tokyo, and Sadahiko Mushika, Ichinomiya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 29, 1992, Ser. No. 889,976
Claims priority, application Japan, May 29, 1991, 3-155273
Int. Cl.[5] A61M 1/10
U.S. Cl. 600—18 4 Claims



1. An apparatus for driving an intra-aorta balloon pump comprising:

an isolator having a housing in which a first chamber and a second chamber are defined by a membrane, said second chamber being in communication with an intra-aorta balloon pump;

a positive pressure source which is in fluid communication with the first chamber via a first timing valve;

a negative pressure source which is in fluid communication with the first chamber via a second timing valve;

a space defined between the second chamber and the intra-aorta balloon pump and containing an amount of operating fluid;

a tank for storing therein the operating fluid;

an inlet valve interposed between the tank and the space;

an exhaust valve interposed between the space and atmosphere;

sensor means for measuring pressure in the space; and

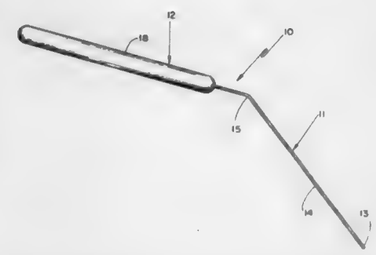
controller means for controlling the first timing valve and the second timing valve to be opened and closed alternately in order to establish an alternating supply of the positive and negative pressures to the first chamber so that a time-duration during which the first timing valve is opened is decreased gradually upon passage of time.

5,300,018

APPLICATOR MEANS FOR THE APPLICATION OF ANESTHETIZING FLUIDS AND THE LIKE TO THE TYMPANIC MEMBRANE

Michael W. Walsh, St. Paul, and John J. Walsh, Red Wing, both of Minn., assignors to Apdyne Medical Company, Minneapolis, Minn.

Continuation of Ser. No. 571,771, Aug. 24, 1990, abandoned.
This application Jun. 23, 1992, Ser. No. 902,771
Int. Cl.[5] A61M 35/00
U.S. Cl. 604—1 7 Claims



1. A tympanic membrane applicator for application of anesthetizing fluid to a tympanic membrane of a patient, the applicator comprising:

an articulating member including:

a first elongated segment having a distal end, a proximal end, and a proximally located finger gripping portion having a gripping means secured thereto,

a second elongated segment having a first end and a second end, the first end of the second segment angularly connected to the distal end of the first segment and the second end having a cross-sectional surface defining a swab pad receiving surface; and

a cylindrical fluid retaining applicator swab pad adhesively secured by an end of the pad to the swab pad receiving surface, and wherein the cylindrical pad and the second elongated segment have equivalent diameters and are co-aligned and wherein the applicator is sized to fit within a human ear canal such that a user has an unobstructed view of the tympanic membrane around the applicator during use.

5,300,019

SYSTEMS AND METHODS FOR ERADICATING CONTAMINANTS USING PHOTOACTIVE MATERIALS IN FLUIDS LIKE BLOOD

Daniel F. Bischof, McHenry; Ludwig Wolf, Jr., Inverness; John T. Foley, Wheeling, and William R. Bratten, Lake Villa, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 630,840, Dec. 20, 1990, abandoned.
This application Dec. 17, 1992, Ser. No. 991,758
Int. Cl.[5] A61F 2/38
U.S. Cl. 604—4 25 Claims

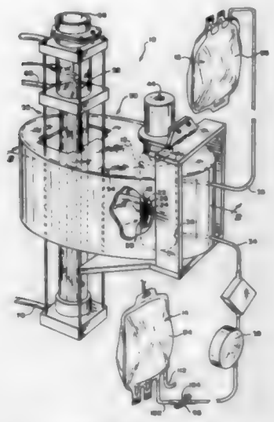
1. A device for treating a fluid carrying a contaminant to which a photoactive material has been bound, the material being activated by exposure to radiation within a prescribed wavelenght range to eradicate the contaminant, the device comprising

an outer wall defining an interior area, the outer wall being essentially transparent to radiation within the prescribed wavelenght to pass the radiation into the interior area,

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an inner wall located within the interior area spaced from the outer wall,

a treatment chamber formed in the interior area between the outer wall and the inner wall for receiving the fluid to be treated, the treatment chamber having an outer region adjacent the outer wall and an inner region adjacent the inner wall, and



circulation means rotating the inner and outer walls relative to each other to create vortices in the fluid present within the treatment chamber that circulate the contaminant within the treatment chamber from the inner region toward the outer region for exposure to the radiation passing through the outer wall.

5,300,020

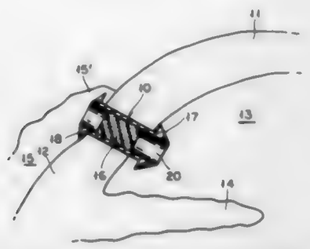
SURGICALLY IMPLANTABLE DEVICE FOR GLAUCOMA RELIEF

Francis A. L'Esperance, Jr., Englewood, N.J., assignor to Medflex Corporation, Durham, N.C.

Continuation of Ser. No. 708,764, May 31, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,653

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—9 **17 Claims**



1. An aqueous-drainage device for surgical implantation for the relief of aqueous fluid and intraocular pressure in a glaucomatous eye, comprising tubular means with longitudinally spaced retaining formations for retaining engagement to inner and outer limits of a local surgical bore to the anterior chamber of the eye and through a scleral part of the eye, and flow-restricting means associated with said tubular means and operative for at least a predetermined initial period of fluid exposure to substantially reduce the capacity of said tubular means to accommodate fluid flow, said flow-restricting means including a plug of liquid-absorbing material that is porous to the extent of permitting a substantially lesser flow than would be permitted by the tubular bore of said device in the absence of said plug, and a flexible filamentary element connected at one end to said plug, said filamentary element extending through said tubular means and beyond the open outer-limit end thereof.

5,300,021

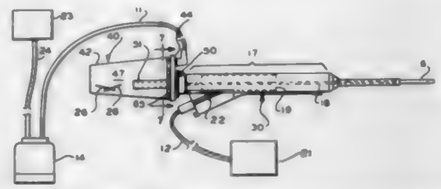
APPARATUS FOR REMOVING CORES OF THERMOPLASTIC AND ELASTOMERIC MATERIAL

David G. Wuchinich, New York, N.Y., assignor to SonoKinetics Group, Hoboken, N.J.

Filed Aug. 20, 1992, Ser. No. 932,786

Int. Cl.[5] A61B *17/20*

U.S. Cl. 604—22 **25 Claims**



1. Apparatus for removing cores of thermoplastic and elastomeric material, comprising:

a hand piece provided with a longitudinally extending tube of acoustically conductive material and an ultrasonic transducer acoustically coupled to said tube for causing said tube to vibrate at an ultrasonic frequency whereby upon engagement of at least an end portion of said tube with said material, cores thereof are removed and inserted into said tube; and

receptacle means mounted on said handpiece in linear alignment with said tube and in fluid communication with said tube, and said receptacle means for being connected to a vacuum source to cause said cores inserted into said tube to be aspirated along a substantially linear path through said tube and into said receptacle means.

5,300,022

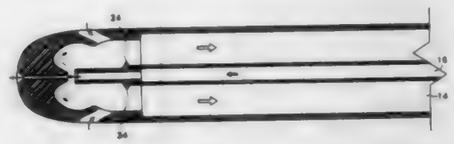
URINARY CATHETER AND BLADDER IRRIGATION SYSTEM

Martin Klapper, 333 Silver Lake Scotchtown Rd., Middletown, N.Y. 10940, and Rudy Wunner, Foggintown Rd., Brewster, N.Y. 10509

Filed Nov. 12, 1992, Ser. No. 974,791

Int. Cl.[5] A61M *1/00, 3/02, 31/00, 37/00*

U.S. Cl. 604—35 **10 Claims**



1. A catheter adaptable for insertion into a body cavity and capable of delivering an irrigating solution thereto and of providing a mild suction to assist in the removal of waste materials such as blood clots, bacteria, fluids and tissue debris therefrom, said catheter comprising:

a substantially flexible tube means having a proximal end and a distal end;

first and second lumina extending substantially the length of said tube, said first lumen for drainage of the waste materials from the body cavity and said second lumen for delivery of the irrigating solution to the body cavity;

tip means integral with the distal end of said tube;

delivery means defining an aperture centrally disposed in said tip, said aperture being fluidly connected to said second lumen for administering the irrigating solution into the body cavity;

drainage means defining at least two drainage ports laterally disposed in said tip, said drainage ports being fluidly connected to said first lumen for removal of the waste materials from the body cavity;

oriface means within said tip defining a passage for entry of said irrigating solution from said second lumen into said first lumen such that the irrigating solution cleanses the length of the first lumen;

deflection means within said tip to deflect said irrigating solution downward and past said drainage ports such that the downward flow creates the suction to assist removal of the waste materials from the body cavity; and

separate external means at the proximal end of the tube for communication with said first and second lumina.

5,300,023

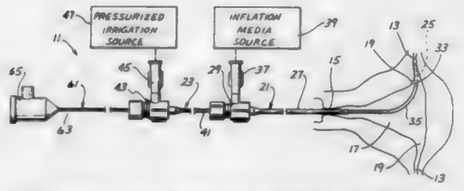
APPARATUS AND METHOD FOR INDEPENDENT MOVEMENT OF AN INSTRUMENT WITHIN A LINEAR CATHETER

Guy R. Lowery, Mission Viejo; Steven R. Bacich, Laguna Niguel, and Keith Tholin, Irvine, all of Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

Continuation of Ser. No. 780,871, Oct. 18, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 84,005

Int. Cl.[5] A61M *31/00, 5/00*

U.S. Cl. 604—51 **30 Claims**



1. In a method of positioning an elongated instrument in an everting catheter wherein the everting catheter includes an inflatable everting element which circumscribes a region of the instrument and which is inflated to grip the instrument and the everting catheter and instrument extend into a patient, the improvement comprising:

introducing a flush solution between the everting element and the instrument where the everting element grips the instrument; and

moving the instrument relative to the everting element while the flush solution is between the everting element and the instrument.

5,300,024

BI-FUNCTIONAL COMFORT NIPPLE

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuen Street, Taipei Hsien, Taiwan

Filed Oct. 14, 1992, Ser. No. 960,802

Int. Cl.[5] A61J *7/00*

U.S. Cl. 604—73 **6 Claims**

1. A comfort nipple for delivering liquid medicine to a baby and for pacifying a baby in times of distress, the comfort nipple comprising:

a hollow nipple having a feeding outlet means located at a distal end and a barrel-shaped receptacle for holding liquid medicine;

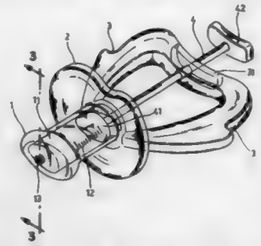
a dosage scale on said nipple for measuring a dosage of medicine to be delivered to the baby;

a shield on a proximal end of the nipple having an opening in communication with the receptacle in said nipple;

a ring attached to the shield at a position adjacent the shield opening, said ring defining a mortise and a guide hole located opposite to the shield opening;

a shank inserted through the guide hole and said mortise, said shank having a first end attached to a tenon handle and a second end attached to a plunger disposed in said receptacle, said plunger being advanced through the receptacle by the shank when pressure is applied to the tenon handle for delivering the dosage of medicine to the baby's mouth through said feeding outlet means; and

wherein said tenon handle fits into the mortise upon delivery to enable the plunger to fully extend into the receptacle to ensure that no medicine is left in the receptacle.



5,300,025

DILATATION CATHETER HAVING A COIL SUPPORTED INFLATION LUMEN

Kenneth L. Wantink, Murrieta, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Sep. 30, 1992, Ser. No. 954,477

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **8 Claims**



1. An intravascular catheter having an elongated shaft with proximal and distal portions, an inflatable member on the distal portion of the shaft and an inflation lumen extending within the shaft which is in fluid communication with the interior of the inflatable member, the distal portion of the elongated shaft comprising:

a) an inner tubular member having an exterior surface, proximal and distal ends and a guidewire receiving lumen extending from a guidewire port in the distal end thereof to a guidewire port spaced proximally from the inflatable member, with a distal end of the inflatable member sealingly secured about the distal end of the inner tubular member;

b) an outer tubular member disposed about the inner tubular member and defining at least in part the inflation lumen extending within the distal portion of the elongated shaft separate and offset from the inner tubular member; and

c) a support coil, having an exterior surface, which is disposed within the the inflation lumen in the distal portion of the elongated shaft and which is separate and completely offset from the inner tubular member such that the exterior surface of the coil is adjacent to the exterior surface of the inner tubular member.

5,300,026

Patent Not Issued For This Number

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5,300,027

SYSTEM AND METHOD FOR MONITORING AND DISPLAYING BALLOON CATHETER INFLATION AND DEFLATION DATA

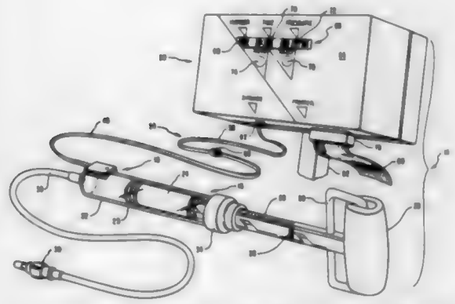
Jerrold L. Foote; Darin R. Gill, and Fred P. Lampropoulos, all of Salt Lake City, Utah, assignors to Merit Medical Systems, Inc., Salt Lake City, Utah

Continuation of Ser. No. 324,938, Mar. 17, 1989, Pat. No. 5,135,488. This application Mar. 18, 1992, Ser. No. 853,522

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—100 23 Claims

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 27 Pages)



1. A system for monitoring a balloon-type member that is selectively inflated and deflated and for displaying the condition of the balloon-type member, comprising:

a syringe connected to said balloon-type member through tubing, said syringe comprising a barrel and a plunger selectively operable to inflate said balloon-type member by sliding the plunger into the barrel to apply fluid pressure, and by withdrawing the plunger from the barrel to essentially totally deflate the balloon-type member;

transducer means for sensing whether the balloon-type member is inflated due to applied fluid pressure or is deflated due to removal of applied fluid pressure and for outputting an electrical signal proportional to said sensed fluid pressure, said transducer means being placed in fluid communication with said syringe and the tubing connected thereto;

electronic circuit means, operatively connected to said transducer means and said display means, for processing said electrical signal, whereby said electronic circuit means electronically derives both a status of pressure applied to said balloon-type member during a first condition of inflation and the corresponding duration thereof, and a status of the removal of applied pressure during a second condition of essentially total deflation of the balloon-type member and the corresponding duration thereof; and

display means operatively connected to the electronic circuit means for outputting a visual display of the sensed pressure and the corresponding duration thereof.

5,300,028

METHOD AND APPARATUS FOR PREVENTING IMPROPER USE AND DISPOSAL OF HYPODERMIC NEEDLES

Jack S. Welcheck, R.D. 3, Conneautville, Pa. 16406

Continuation of Ser. No. 685,274, Apr. 15, 1991, abandoned. This application Oct. 17, 1991, Ser. No. 779,133

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 8 Claims

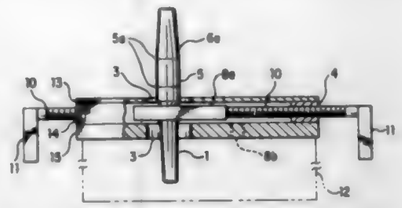
1. A disposal unit having an opening, a casing received in said opening containing a sterile needle sealed in the casing by a seal,

means for locking said casing in said opening while

a) the seal is opened to expose the needle,

b) a syringe is connected to the needle,

c) the needle is removed by the syringe from the casing and used by the syringe one or more times on a single patient,



d) the used needle is returned by the syringe to the casing,

e) the syringe is disconnected from the needle,

f) and then unlocking the casing and causing the casing and its needle to be delivered to disposal means.

5,300,029

ELECTROMECHANICAL INJECTION APPARATUS FOR MEDICAL AND VETERINARY USE ACTUATED BY A TRIGGER

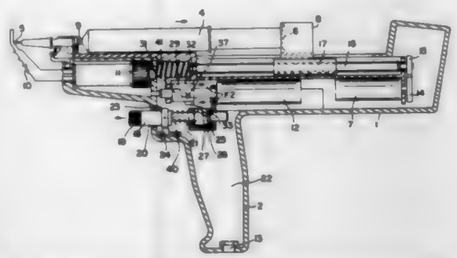
Raymond Denance, Le Commodore H41, Marina Baie des Anges, 06270 Villeneuve Loubet, France

Filed Jun. 29, 1993, Ser. No. 83,293

Claims priority, application France, Jul. 1, 1992, 92 08339

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—117 6 Claims



1. In an electromechanical injection device for medical and veterinary use comprising a frame (1) having the shape of a pistol provided with a stock and along a longitudinal axis of said frame (2) and bearing a movable carriage (3) that supports a removable syringe (4) having a needle (5) and a piston (6), a first motor (7) actuating a pusher (8) which acts against the piston (6) of the syringe (4), a cradle (9) carried by the frame (1) and supporting the syringe (4) on the movable carriage (3), a second motor (12) actuating the movable carriage (3), the forward portion of the frame having a stabilizing sight (10) for application to the skin which guides and predetermines the degree of penetration of the needle (5), an adjustment wheel (11) which permits adjusting the position of the sight (10) to adjust the depth of penetration of the needle (5), and a trigger (18) to actuate said motors (7, 12); the improvement wherein said second motor (12) is fixed to the frame (1) and has a rotatable axle (30), a first cam (29) on said axle, said second motor (12) driving, via said axle (30) and said first cam (29) said movable carriage (3) in movement along said longitudinal axis of said frame (1), a second cam (26) on said trigger (18), said first and second cams (29, 26) coacting with each other according to the translated position of the trigger (18) to control advancement of said piston (6).

5,300,030

INJECTION DEVICES

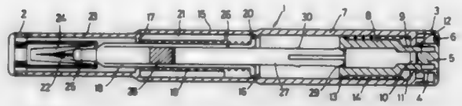
David D. Crossman, Watlington; Jeremy Marshall, Jericho, and Ernest J. Mumford, Witney, all of England, assignors to Owen Mumford Limited, Oxford, United Kingdom

Filed May 29, 1992, Ser. No. 890,131

Claims priority, application United Kingdom, May 30, 1991, 911600

Int. Cl.[5] A61M *5/20*

U.S. Cl. 604—136 7 Claims



1. An injection device comprising a barrel, a drive member therein, a first spring means for urging the drive member towards a forward end of the barrel, a retaining mechanism for retaining the drive member at a rearward position in the barrel that can release the drive member and allow the member to move forwardly in the barrel under the first spring means urging said member forwardly within the barrel, a capsule within the barrel containing a liquid charge, second spring means for urging the capsule rearwardly, the second spring means being in opposition to but weaker in spring force than the first spring means, a needle connected with the capsule initially in a retracted position at the forward end of the barrel, a plunger with which said drive member co-operates to urge the plunger forwardly upon release of the drive member, a first phase of such forward movement driving the capsule and the needle to a position in which the needle projects beyond the barrel, and a second phase of such movement causing the plunger to eject the capsule charge through the needle, and means for decoupling the plunger from said drive member at the end of the second phase whereby the second spring means returns the capsule and needle to the needle retracted position, characterized in that for said first phase said drive member acts through the plunger and the liquid charge in the capsule to urge the capsule and needle forward, and in that the decoupling means is provided by the rear end of said plunger which is abutted by said drive member and which is adapted to be deformed when it comes into co-operation with the capsule to disengage from said drive member.

5,300,031

APPARATUS FOR INJECTING FLUID INTO ANIMALS AND DISPOSABLE FRONT LOADABLE SYRINGE THEREFOR

Charles Neer, Milford; Frank M. Fago, Mason, both of Ohio; Paul E. Dieterlen, Covington, Ky., and James H. Goethel, Cincinnati, Ohio, assignors to Liebel-Flarsheim Company, Cincinnati, Ohio

Filed Jun. 7, 1991, Ser. No. 712,110

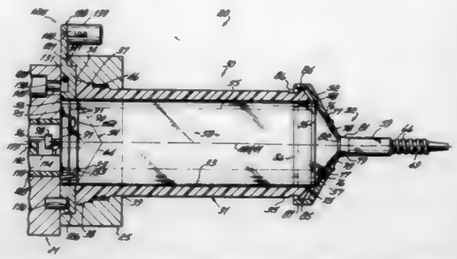
Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—154 28 Claims

1. A disposable replacement syringe for a front loadable injector for injecting liquid into an animal, the disposable syringe comprising:

a hollow elongated tube having a uniform cross-section exterior surface along substantially its entire length to facilitate sliding contact over substantially its entire length with the interior surface of an injector pressure jacket when inserted therein, said tube having a longitudinal axis, a front end containing a front wall having a discharge outlet therein, and a rear end terminating in a rear peripheral edge defining a plunger drive receiving opening, the tube being significantly outwardly deformable, unless additionally restrained on the outside thereof, when fluid pressurized to angiographic injection pressure is contained within the tube;

a plunger snugly slidable within said tube and having a rearwardly facing coupling thereon engageable with said plunger drive; and



front end locking means permanently fixed to and exposed exteriorly of said tube proximate said front end thereof to facilitate locking of said tube against longitudinal movement with respect to the front of an injector pressure jacket when inserted therein.

5,300,032

CATHETER INTRODUCER WITH FLEXIBLE TIP

Lee Hibbs, St. Louis, Mo.; Yue-teh Jang, Houston, Tex.; Vern Liebmann, Sugar Land, Tex., and Dennis Spinks, Angleton, Tex., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 244,290, Sep. 15, 1988, Pat. No. 4,950,257. This application Jun. 12, 1990, Ser. No. 536,851

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—164 6 Claims



1. A catheter introducer comprising

a thin-walled flexible tube for being forced through tissue stretched by a dilator around an opening through which a guide wire extends, so as to extend the tube into a body cavity or blood vessel, the tube being sized to receive a catheter therein and permit the catheter to pass therethrough, the tube having an interior surface for guiding the catheter during insertion and placement of the catheter in the cavity or vessel,

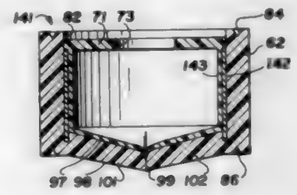
said tube having a body portion and a distal tip portion, wherein a substantial part of said distal tip portion has an outer diameter equal to that of the body portion,

said tube having sufficient rigidity and columnar strength to

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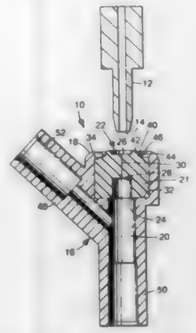
withstand forces applied by a physician to drive the tube through the dilator-atretched tissue,
said tube forming the tip portion being substantially more flexible than the tube forming the body portion, and
a coating of lubricous hydrogel covering the interior catheter-guiding surface of the tube for contacting the catheter so as to promote ease of catheter insertion.

5,300,033
INTRODUCER ASSEMBLY AND VALVE CONSTRUCTION FOR USE THEREIN
Gary H. Miller, Milpitas, Calif., assignor to Unisurge, Inc., Cupertino, Calif.
Filed Jul. 9, 1992, Ser. No. 911,158
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **23 Claims**



1. A valve construction for use with an introducer assembly having a tubular member with a valve housing at one end thereof for receiving the valve construction to permit a medical instrument to be introduced therethrough, the valve construction comprising a body formed of an elastic material, said body having a cylindrical wall with an axially-extending bore which has first and second ends, a first wall formed integral with the cylindrical wall and extending across the first end of the axially-extending bore, said first wall having a centrally-disposed opening therein aligned with said axially-extending bore, a second wall formed integral with the cylindrical wall and extending across the second end of the axially-extending bore, said second wall having a single slit therein extending therethrough diametrically of said axially-extending bore to provide first and second semicircular leaflets, said axially-extending bore, said opening in said first wall and said slit in the second wall when seated in said housing permitting a medical instrument to be introduced therethrough and through the tubular member with at least one seal being formed between the valve construction and the medical instrument, said second wall having inner and outer surfaces with at least the inner surface being inclined outwardly from a plane extending perpendicular to the axis of the axially-extending bore in a direction towards the axially-extending bore, each of said leaflets having an acruate base portion and a straight distal portion, said distal portion having a thickness which is less than the thickness of said base portion so as to permit the leaflets to flex and allow the instrument to pass therethrough, said distal portions of said leaflets having a substantial thickness and butting each other to provide a keystone-like seal so as to avoid prolapse of the leaflets during removal of the instrument from the valve construction and also to provide a more positive seal as pressure is applied to the outer surface of the second wall.

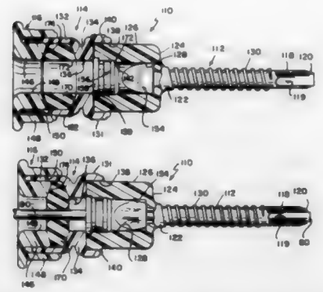
5,300,034
IV INJECTION SITE FOR THE RECEPTION OF A BLUNT CANNULA
Brett A. Behnke, Hastings, and Gary A. Thill, White Bear, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 29, 1992, Ser. No. 921,908
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **27 Claims**



1. An IV injection site adapted to receive a blunt cannula, the injection site comprising:
a housing having an outside end and a passageway extending inwardly from the outside end, the passageway defining an axial direction, the housing being formed of synthetic resin material;
an elastomeric septum closely received in the passageway of the housing, the septum having inside and outside ends relative to the outside end of the housing, a bore extending into the septum from the inside end of the septum generally in the axial direction but not through the septum, and a slit extending generally in the axial direction into the septum from the outside end of the septum to the bore;
the housing including opposed inner and outer annular ledges defining a septum-receiving portion of the passageway, the inner ledge engaging the inside end of the septum adjacent the periphery thereof and the outer ledge engaging the outside end of the septum adjacent the periphery thereof, the arrangement being such that when a cannula is introduced through the slit of the septum the cannula displaces elastomeric material of the septum such that the elastomeric material of the septum expands into the bore of the septum to sealingly engage the cannula along the bore of the septum.

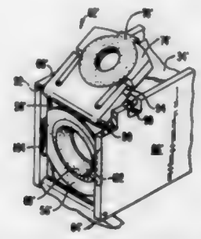
5,300,035
THREADED SCREW TROCAR WITH SEALING MECHANISM
Thomas P. Clement, Bloomington, Ind., assignor to Mectra Labs, Inc., Bloomfield, Ind.
Continuation-in-part of Ser. No. 967,400, Oct. 21, 1992, Pat. No.
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—167 **21 Claims**

1. A trocar for use in endoscopy surgery comprising:
cannula means for providing a longitudinal passage into a patient's body for the insertion of a medical instrument, said cannula means having an external wall and means for engaging the body wall of a patient to retain the trocar in the patient, said engaging means being disposed on said external wall;
adjustable sealing means for restricting fluid flow through the cannula when a medical instrument is inserted in the cannula;
housing means for retaining the adjustable sealing means, said housing means being attached to the cannula means; and



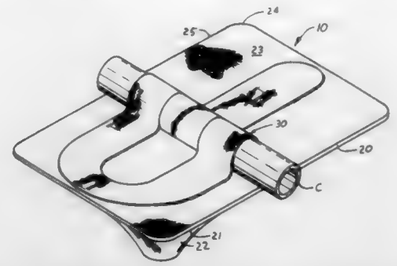
actuating means coupled to the housing means for manually adjusting the sealing means to fit the medical instrument.

5,300,036
TROCAR WITH MULTIPLE CONVERTERS AND DETACHABLE OBTURATOR
Richard L. Mueller, Byron; Edwin J. Hlavka, Palo Alto; Tim Kovac, Los Gatos, and Albert K. Chin, Palo Alto, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.
Continuation of Ser. No. 753,326, Aug. 30, 1991, abandoned.
This application Apr. 2, 1993, Ser. No. 41,914
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **29 Claims**



1. In a trocar having body subassembly including an elongated trocar obturator having a piercing tip at its distal end projecting from said body subassembly, a trocar tube subassembly engaged with said trocar body subassembly, said trocar tube subassembly having a hollow tube defining a distal open end through which said tip may project, and a trocar tube body having a main seal in a proximal end wall thereof, said seal having an aperture therein of a first diameter for admitting a stated largest size surgical tool in sealing relation, wherein the improvement comprises integral converter means, said integral converter means comprising a door member having a first seal having an aperture therein of a different diameter from that of said main seal, and further including means whereby said door member may be positioned from an inoperative position to an operative position over said main seal whereby said trocar tube subassembly may accommodate obturators of different diameters.

5,300,037
MEDICAL CONDUIT HOLDER
Robert E. Delk, Dallas; Michael L. Bowen, Arlington, and Sharon D. Cheatwood, Dallas, all of Tex., assignors to Ansley Medical Products, Inc., Dallas, Tex.
Filed Jan. 13, 1993, Ser. No. 3,735
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—180 **13 Claims**



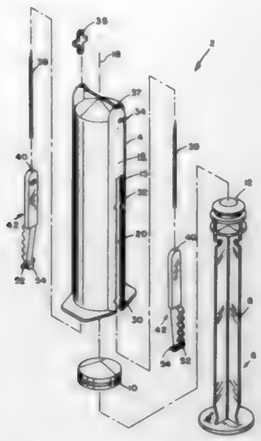
1. A conduit holder for releasably securing medical conduit to the external skin surface of a patient comprising:
base plate means having a substantial area and comprising;
a pliable support substrate easily contourable to a skin surface,
a generally smooth upper attachment area, and
a lower surface coated with medical grade adhesive for semi-permanent attachment to the skin of the patient, and
strap means having a substantial length for folding over said conduit and adjustably but firmly securing said conduit generally parallel to the skin surface and orthogonal to said strap length, said strap means having wide and narrow ends and a central transition zone between said ends, there further being a cutout centrally located in said wide end, said cutout having a width just sufficient to allow unimpeded passage of said narrow end through said cutout and at the same time urging said narrow end to remain axially aligned with said wide end after folding over said conduit;
said strap means being firmly secured to said base plate means along said central transition zone; and
pressure sensitive attachment means for holding said strap means to said upper attachment area on opposite sides of said conduit.

5,300,038
SAFETY SYRINGE WITH OFF-AXIS NEEDLE CANNULA
Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.
Filed Apr. 30, 1993, Ser. No. 56,850
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—187 **13 Claims**

1. A dual needle safety syringe comprising:
a barrel including a variable volume region;
first and second needles each mounted to the barrel for movement between extended, use positions and retracted, non-use positions, the first and second needles also having first and second inlets and outlets, respectively;
a first fluid path formed between the variable volume region and the first inlet when the first needle is in the extended, use position;
a second fluid path formed between the variable volume region and the second inlet when the second needle is in the extended, use position; and
means for reducing the volume of the variable volume region so that a fluid contained in the variable volume re-

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gion is forced through at least one of said first and second flow paths, said first and second inlets, and said first and



second outlets when at least one of the first and second needles is in the extended, use position.

5,300,039

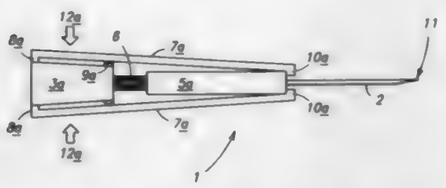
SAFETY HYPODERMIC NEEDLE

Thomas E. Poulsen, Box 19, Jiggs, Nev. 89827

Continuation of Ser. No. 322,081, Mar. 10, 1989, abandoned. This application Oct. 9, 1991, Ser. No. 773,989

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **34 Claims**



1. A safety hypodermic needle comprising:

a) a needle provided with a passageway there through for the transmission of fluids, said needle being sharpened at its distal end to form a piercing end;

b) a hub connected with the proximal end of said needle, said hub being engagable with a syringe so that fluid may be transmitted between said syringe and said needle, passing through said needle;

c) a hollow member including a hole or a groove therein, said hollow member being positioned over a portion of said needle so that said needle passes into or through said hole or said groove;

d) a spring positioned between said hollow member and said hub;

e) at least one supporting member connected with said hollow member, said supporting member including a rearward extending portion adapted to engage said hub;

f) a releasable securement means for holding said hollow member away from the piercing end of said needle, against tension from said spring, so that after said hollow member is released by said securement means, said hollow member will move forward along said needle, by force of said spring, and at least partially cover said piercing end of said needle, with support means being provided for said rearward extending portion of said supporting member to engage said hub to support said hollow member against movement back toward said hub that would reexpose said piercing end of said needle.

5,300,040

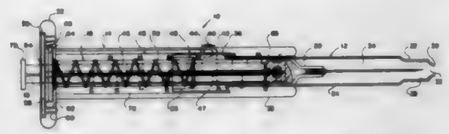
SELF-LOCKING SAFETY SYRINGE

Robin Martin, McAllen, Tex., assignor to Timothy A. Kershenstine, New Orleans, La.

Division of Ser. No. 870,641, Apr. 16, 1992, Pat. No. 5,242,420, which is a continuation-in-part of Ser. No. 829,708, Feb. 3, 1992, Pat. No. 5,201,708. This application Jul. 2, 1993, Ser. No. 85,095

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **5 Claims**



1. A self-locking safety syringe device, comprising:

an elongated tubular casing having a distant end and a hook-shaped securing member formed on the interior of the casing adjacent said distant end;

a syringe barrel having a needle assembly affixed thereto said syringe barrel being securely attached to one end of the casing;

an elongated hollow needle guard telescopically co-axially engaged with the casing, the needle guard being movable between a first position, substantially covering the needle assembly and a second, retracted position;

a resilient depressible means for locking the needle guard in the first position, said locking means being carried by an exterior of the needle guard; and

an elastic means for continuously urging the needle guard into the first position, to thereby prevent accidental movement of the needle guard into the second position even after the locking means has been depressed.

5,300,041

DOSE SETTING AND REPEATING SYRINGE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Jun. 1, 1992, Ser. No. 893,417

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—207 **12 Claims**

1. A dose setting and repeating syringe comprising:

a barrel having a needle end, a proximal end and a hollow interior;

a piston within the interior for movement therein;

a variable volume chamber defined within the interior of the barrel between the piston and the needle end for containing a liquid pharmaceutical therein; and

a dose programming assembly including:

a dose setting element adjustably mounted to the barrel at a chosen dose setting; and

means for driving the piston towards the needle end equal distances during a series of injections without adjusting the dose setting element so to drive the same amount of the liquid pharmaceutical through the needle end during each injection, said amount being programmed for subsequent injections by the chosen dose setting of the



dose setting element until the dose setting element is adjusted to an alternative dose setting.

5,300,042

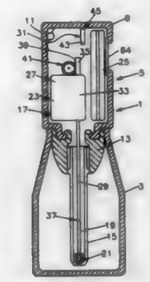
MEDICATION DISPENSING APPARATUS

Sheila Kossoff; Carole Sukel, both of Wayne; James Howard, Dover, and Christopher Gieda, Stanhope, all of N.J., assignors to Kossoff-Sukel, Inc., Wayne, N.J.

Filed Mar. 2, 1992, Ser. No. 844,718

Int. Cl.[5] A61M *5/00, 5/315, 37/00;* **B67D** *5/22*

U.S. Cl. 604—210 **9 Claims**



1. A medication dispensing apparatus comprising:

a liquid container having an open end;

a cap assembly engagably removable from the open end of said container comprising:

an external cap having a lower end;

an inner fixing means adapted to be fitted into the open end of said liquid container and connected to the lower end of said external cap;

a dropper means, for dispensing liquid, connected through said inner fixing means and having a fluid passageway;

activation means for aspirating liquid from the container into the dropper means comprising:

a piston mounted in sliding relationship within said fluid passageway of said dropper means and having a first position at the lower end of said fluid passageway and a second position at the upper end of said fluid passageway; and

actuating means disposed within said external cap and connected to said piston means for advancing and retracting said piston within said fluid passageway thereby aspirating liquid from said container when said piston is retracted from its first position to its second position; said apparatus further comprising an automatic counter means disposed within said external cap and engaging a portion of said container for counting the number of times the cap assembly is disengaged from the liquid container.

5,300,043

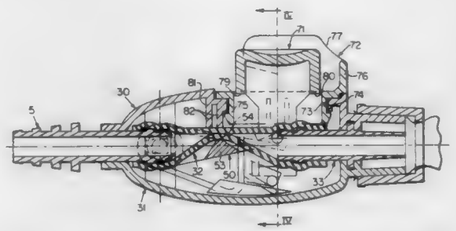
SUCTION CATHETER VALVE

Thomas Devlin, Cambridge; Victor Cheung, Arlington, and Karl Ulrich, Belmont, all of Mass., assignors to Smiths Industries Medical Systems, Inc., Keene, N.H.

Filed Oct. 23, 1992, Ser. No. 965,998

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—250 **8 Claims**



1. A suction catheter assembly comprising a suction catheter and a valve connected to the catheter to control flow of fluid along the catheter, the valve comprising: a housing, a length of resilient tube, means coupling the tube with the catheter, means securing the tube length of resilient tube, means coupling the tube with the catheter, means securing the tube with the housing at two spaced locations, first and second occluder members located directly opposite one another on opposite sides of the resilient tube between the spaced locations, resilient means that urges at least the first occluder member towards the second occluder member so that the resilient tube is squeezed closed between the two occluder members, and manually-engageable means coupled with said first occluder member such that by engaging the manually-engageable means, the first occluder member can be displaced away from the second occluder member and the resilient tube is allowed to open to permit fluid flow through the catheter, wherein the first occluder member is in the form of a lever, and wherein the lever has a pivot close to one end, means coupling the lever close to its other end to the manually-engageable means, and engagement means between its ends which engages the resilient tube.

5,300,044

INTRAVENOUS TUBE SAFETY APPARATUS

Donald J. Classey, Waukegan; Theresa Grajo, Round Lake Beach; Kenneth Lynn, McHenry; John McVey, Lake Zurich; Eric Myren, Barrington, and Gabriel Vehovsky, McHenry, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 884,498, May 15, 1992, which is a continuation-in-part of Ser. No. 826,273, Jan. 17, 1992, which is a continuation of Ser. No. 765,755, Sep. 26, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 45,291

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—250 **15 Claims**

1. A clamp for controlling the flow of fluid through a flow lumen of an I.V. tube, the clamp comprising:

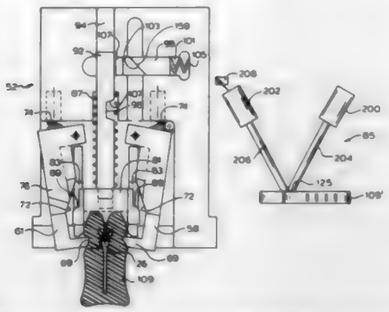
a body;

means on the body for captively receiving an outer surface of an I.V. tube in an operative position, the I.V. tube having a flow lumen;

means on the body for collapsing an outer surface of an I.V.

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tube in an operative position in the captively receiving means to thereby selectively occlude and not occlude a flow lumen of the I.V. tube; and



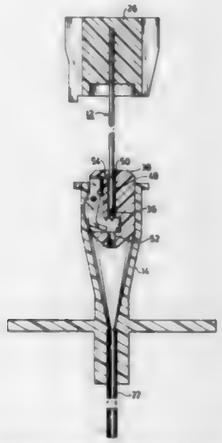
means on the body for facilitating automated identification of the clamp.

5,300,045

INTERVENTIONAL NEEDLE HAVING AN AUTOMATICALLY CAPPING STYLET

Walter M. Plassche, Jr., 1209 Clover St., Rochester, N.Y. 14610

Filed Apr. 14, 1993, Ser. No. 48,403
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 **18 Claims**



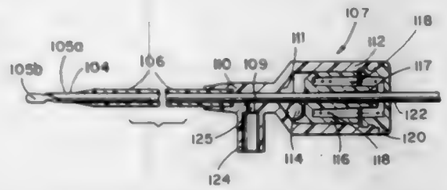
1. An interventional needle apparatus for accessing an internal anatomical region and having a cannula with a tubular shaft and a hub having an opening leading to the shaft thereof and also having a stylet having a shaft and a penetrating tip which, when in working relationship, is disposed inside the tubular shaft and the opening of the hub of the cannula with the point of the tip extending from the tubular shaft and which said stylet is withdrawn from said cannula in the course of a procedure for accessing of said internal anatomical region, the improvement for capping said tip when said stylet is withdrawn which comprises a guard body having a hole, said guard body being slidably disposed on said stylet shaft with said stylet shaft extending through said hole, said guard body having a first surface within said hole engageable with a shoulder surface of said stylet shaft and spaced inwardly in said guard body by a distance sufficient to locate said tip within said guard body when said first and said shoulder surfaces are engaged with each other, said guard body being receivable at least in part in said hub opening, said hub having hub surface and said guard body having a second surface which are engageable with each other and limit the extent to which said guard body is disposed in said hub opening when received therein, a slot in said guard body crossing said hole in said guard body in which said stylet shaft is slidably disposed, an arm in said slot connected to said guard body and having a first portion moveable from a first position in interfering relationship with the movement of said stylet with respect to said cannula and a second position out of said interfering relationship, said hub of said cannula having a cam surface engageable with a cam follower surface on said arm when said guard body enters said hub opening to be received at least in part therein and when said guard body leaves said hub opening for moving said arm between said second and first positions, respectively, thereby automatically capping said stylet tip when said stylet is withdrawn from said cannula.

5,300,046

THORACENTESIS SHEATH CATHETER ASSEMBLY

Frank A. Scarfone, Boca Raton, and David H. Turkel, Miami, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 860,447, Mar. 30, 1992. This application Sep. 23, 1992, Ser. No. 949,736
Int. Cl.[5] A61M *5/00, 25/00, 5/178, 5/14*
U.S. Cl. 604—264 **17 Claims**



1. A thoracentesis sheath catheter assembly adapted for use with a thoracentesis needle assembly having a needle, comprising:

a) a hollow catheter means having a proximal end, a distal end, and a longitudinal axis; and

b) a valve means having a valve body and a flow control means,

said valve body having a distal end coupled to said proximal end of said hollow catheter means, a first throughbore substantially parallel to said longitudinal axis and in fluid communication with said hollow catheter means, said first throughbore sized to receive the needle therein and to allow the needle to pass through said first throughbore and through said hollow catheter means to form a first flow path through the needle in said first throughbore,

said valve body having a second bore in fluid communication with said first throughbore, said second bore being located distally relative to said flow control means,

said valve body having a hollow portion proximal said second bore, said hollow portion having a tapered inner wall section which tapers as it extends distally, and with said hollow portion terminating in said first throughbore, and

said flow control means including a ball and biasing means for biasing said ball towards said distal end of said catheter means, wherein said ball and biasing means are held in said hollow portion of said valve body,

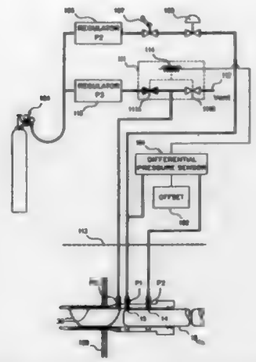
wherein as the needle is removed from said first throughbore, said biasing means automatically biases said ball along said tapered wall and blocks said first throughbore, thereby preventing a flow path from forming through and out said first throughbore, and causing a second flow path to be formed from said hollow catheter, into said first throughbore, and into and out said second bore.

5,300,047

TROCAR CANNULA AND CATHETER

Henry R. Beurrier, 817 Old Chester Rd., Far Hills, Chester Township, Morris County, N.J. 07931

Filed Sep. 29, 1992, Ser. No. 952,685
Int. Cl.[5] A61M *25/00, 5/14, 1/00*
U.S. Cl. 604—264 **11 Claims**



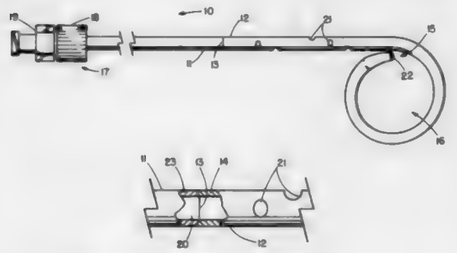
1. A catheter assembly comprising a sleeve having an inner and an outer surface, said sleeve having at least first and second annular grooves formed in said wall and being open to said inner surface and means connected to said grooves for providing a pressure differential therebetween wherein said means comprises a tube to each of said grooves and said tubes are connected to a source of gas.

5,300,048

FLEXIBLE, HIGHLY RADIOPAQUE PLASTIC MATERIAL CATHETER

David A. Drewes, Jr., Bloomington, and Fred T. Parker, Unionville, both of Ind., assignors to Sabin Corporation and Cook Incorporated, both of Bloomington, Ind.

Filed May 12, 1993, Ser. No. 60,746
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 **20 Claims**



1. A flexible plastic catheter comprising:

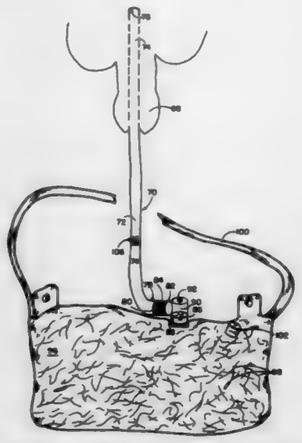
an elongated member having a passage therein and including a proximal portion of a second, flexible, radiopaque plastic material and a distal end portion of a first, flexible, radiopaque plastic material having a durometer lower than said second, flexible, radiopaque plastic material, said first, flexible, radiopaque plastic material of said distal end portion comprising a homogeneous composition containing by weight greater than 75 percent of a radiopaque agent.

5,300,049

CLOSED, FLUID-MODULATING RECEIVING SYSTEM FOR THE CONVEYANCE, MODULATION, AND COLLECTION OF FLUID MATTER

John D. Hogan, Gloucester, Mass., assignor to Beth Israel Hospital Assoc. Inc., Boston, Mass.

Division of Ser. No. 662,639, Feb. 28, 1991, Pat. No. 5,139,493, which is a continuation-in-part of Ser. No. 529,566, May 25, 1990, Pat. No. 5,135,792, which is a continuation-in-part of Ser. No. 445,008, Dec. 4, 1989, Pat. No. 5,061,235, which is a continuation-in-part of Ser. No. 142,077, Jan. 11, 1988, Pat. No. 4,885,000, which is a continuation-in-part of Ser. No. 1,648, Jan. 9, 1987, abandoned. This application May 21, 1992, Ser. No. 886,149
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—317 **7 Claims**



1. A closed system for receiving urinary fluid from the urinary tract in a living subject, said urinary fluid receiving system comprising:

an exposed catheter having a closed body, an internal lumen, and two discrete ends for the closed conveyance of urinary fluid from the urinary tract of a living subject, wherein one end of said catheter is to be positioned internally within and lie in closed fluid flow communication with the urinary tract of the living subject while the other end of said catheter is to extend externally from the living subject and lie in the ambient environment, said urinary fluid comprising gaseous, liquid and solid matter;

a one-way, flow-through coupling positioned away from the urinary tract and being in closed fluid flow communication with said externalized end of said catheter such that said coupling prevents the ambient environment from passing there through into the internal lumen of said catheter, said coupling comprising

a porous matrix layer which occludes said internal lumen at said external end of said catheter from the ambient environment such that all urinary fluid conveyed from the living subject by said catheter flows through and is acted upon by said matrix layer without concomitant exposure to the ambient environment, said porous matrix layer having a plurality of external and internal matrix surfaces through which urinary fluid can be acted upon and pass as a resulting urinary fluid product but through which the ambient environment cannot pass, and

means for maintaining closed fluid flow communication between said porous matrix layer and said catheter;

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connector means in closed fluid flow communication with said coupling; and

a collection vessel which is removable and replaceable at will and which is to be positioned in closed fluid flow communication with said coupling via said connector means, said collection vessel comprising

container means for receiving and collecting said resulting urinary fluid product in closed fluid flow communication from said coupling via said connector means, and

at least one superabsorbent fibrous material within said container means and comprising absorbing fibers which absorb at least 15 times their own weight of liquid, such resulting urinary fluid product as flows into said container means being at least partially absorbed by said superabsorbent fibrous material.

5,300,050

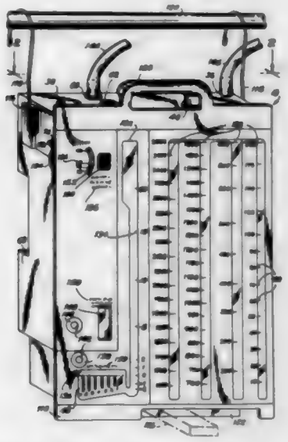
DRAINAGE DEVICE

Frederick A. Everett, Jr., Bloomfield, and Quinton J. Farrar, Wyckoff, both of N.J., assignors to Deknatel Technology Corporation

Continuation of Ser. No. 953,317, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 720,083, Jun. 24, 1991, abandoned, which is a division of Ser. No. 464,820, Jan. 16, 1990, Pat. No. 5,026,358, which is a division of Ser. No. 215,693, Jul. 6, 1988, abandoned, which is a division of Ser. No. 916,342, Oct. 7, 1986, Pat. No. 4,784,642. This application May 7, 1993, Ser. No. 59,426

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—320 **15 Claims**



1. Apparatus for draining fluids comprising:

a. collection chamber for collecting fluids including an inlet for entry of the fluids;

b. suction control chamber in direct fluid communication with said collection chamber without a seal chamber for meterlessly regulating the degree of vacuum imposed in the collection chamber and including:

1) first inlet for coupling to a suction source;

2) second inlet communicating with the ambient;

3) discrete dry meterless means for regulating the degree of suction imposed in said collection chamber at a plurality of predetermined preset levels of suction such that said regulation is substantially insensitive to pressure variations due to patient air leaks or suction source levels, said dry regulating means disposed between said suction inlet and said ambient inlet, said dry regulating means dimensioned and configured so as to provide suction control at said predetermined preset level of suction independently of any liquid within said suction control chamber; and

4) indicator means disposed between said regulating means and said suction inlet for providing immediate confirmation of proper operation of suction in said collection chamber.

5,300,051

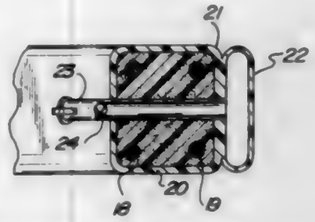
URINARY CATHETER DEVICE

Catherine J. Lageson, 2140 N. 72nd St., Wauwatosa, Wis. 53213-1806

Filed Mar. 8, 1993, Ser. No. 27,651

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—330 **3 Claims**



1. A urinary catheter device, comprising,

a pentagonal ring, the pentagonal ring including a base leg, having spaced V-shaped side legs extending from the base leg fixedly mounted to the base leg, with the V-shaped side legs merging together at an apex defining an acute angle therebetween for positioning and in communication with a labia majora apex of an individual, and

the pentagonal ring includes a polymeric foam core of rectilinear cross-sectional configuration, and a plurality of reinforcing rods, wherein one of said reinforcing rods is positioned in adjacency to each corner of the rectilinear cross-sectional configuration of the pentagonal ring, and

the polymeric foam core includes a polymeric fluid impermeable skin coextensively mounted in surrounding relationship relative to the foam core, and

the pentagonal ring includes an inner wall spaced from an outer wall, the outer wall having a pneumatic chamber coextensive with the outer wall, and an inflation tube directed into the pneumatic chamber directed through the foam core, with the inflation tube having a valve therewithin permitting selective inflation of the pneumatic chamber.

5,300,052

URINARY COLLECTOR FOR MEN

Yoshinori Kubo, Oumeo, Japan, assignor to Alcare Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,021

Claims priority, application Japan, Nov. 1, 1991, 3-313471

Int. Cl.[5] A61F *5/44*; A47K *11/00*

U.S. Cl. 604—349 **12 Claims**

1. A urinary collector for men comprising a urinary collector body made of a waterproof, soft material, formed into a bag shape, said urinary collector body having first and second opposite end portions and defining an internal cavity which forms a penis receiving chamber located adjacent the first opposite end portion and a urinary flow chamber located adjacent the second opposite end portion, a water permeable membrane separating said penis receiving chamber and said urinary flow chamber, said urinary collector body having a penis receiving opening located adjacent the first opposite end portion thereof communicating with said penis receiving chamber enabling insertion of a penis into said penis receiving chamber, means adjacent said penis receiving opening for forming a seal around a penis inserted therein, said urinary collector body further including an outlet opening located adjacent the second opposite end portion thereof, said outlet opening communicating with the urinary flow chamber, hydrophobic material located in said urinary flow chamber, said



hydrophobic material having interstices forming passages therethrough enabling urine to pass through said hydrophobic material, and means covering said outlet opening enabling urine to pass through the outlet opening yet preventing said hydrophobic material from passing therethrough.

5,300,053

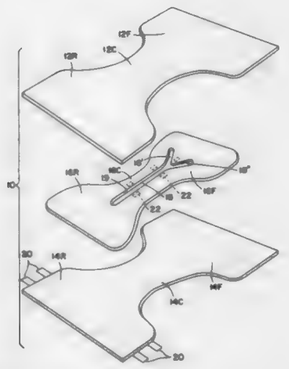
ABSORBENT BRIEF

Donald M. Genaro, Haworth, N.J., assignor to Henry Dreyfuss Associates, New York, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,251

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—378 **31 Claims**



1. An absorbent brief, comprising:

a layer formed of a substantially liquid-impervious material, and

a liquid-absorbent layer disposed adjacent the liquid-impervious material layer, the liquid-absorbent layer having an absorbent-free dispersion channel which extends completely through the liquid-absorbent layer from a top surface of the liquid-absorbent layer through a bottom surface of the liquid-absorbent layer to said liquid-impervious material layer, the dispersion channel having a length and a width and providing for liquid flow along the length of the dispersion channel from a first through area of absorption of the liquid-absorbent layer to a second through area of absorption of the liquid-absorbent layer remote from the first through area, and the dispersion channel being in at least a front panel of the brief.

5,300,054

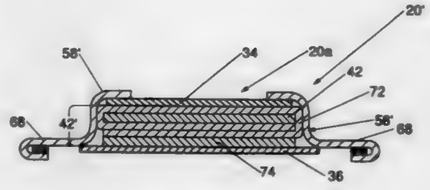
ABSORBENT ARTICLE HAVING RAPID ACQUIRING, WRAPPED MULTIPLE LAYER ABSORBENT BODY

Barry R. Feist, and Joyce M. Benjamin, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 926,183, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 637,571, Jan. 3, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 911

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—378 **16 Claims**



1. An absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

an absorbent core positioned between said topsheet and said backsheet, said absorbent core comprising

a multiple layer absorbent body having two sides, two spaced apart longitudinal side edges, to spaced apart end edges, said absorbent body comprising at least two pairs of layers, wherein each said pair of layers comprises an acquisition/distribution layer and a storage layer, each said pair of layers being arranged so that the storage layer in each said pair of layers is positioned subjacent the acquisition/distribution layer in each said pair of layers, wherein

the acquisition/distribution layer in at least one of said pairs of layers has a fluid acquisition/distribution rate of at least about 2 cubic centimeters of synthetic urine per second under a pressure of about 28 grams per square centimeter;

the storage layer in at least said one pair of layers at least partially comprises an absorbent gelling material which is capable of absorbing synthetic urine at such a rate that said absorbent gelling material reaches at least about 40% of its absorptive capacity in less than or equal to about 10 seconds; and

each acquisition/distribution and storage pair of layers is in fluid communication with each adjacent acquisition/distribution and storage pair of layers;

a fluid transporting wrapping wrapped at least partially around at least one of the sides of said multiple layer absorbent body and around at least part of the longitudinal side edges of said absorbent body to form a wrapped multiple layer absorbent body; and

an additional storage layer positioned subjacent said wrapped multiple layer absorbent body.

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5,300,055

ABSORBENT ARTICLE HAVING A THERMOPLASTIC DEFORMABLE ELEMENT

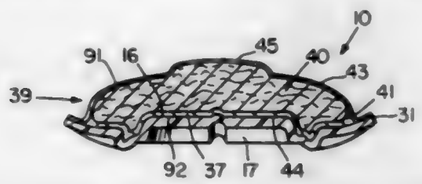
Kenneth B. Buell, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 825,456, Jan. 21, 1992, Pat. No. 5,171,302, which is a continuation of Ser. No. 175,817, Mar. 31, 1988, abandoned. This application Dec. 11, 1992, Ser. No. 989,276

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.1 **11 Claims**



1. An externally worn disposable absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined with said topsheet;

an absorbent element disposed between said topsheet and said backsheet; and

a moisture stable, flexure-resistant deformation element, said deformation element comprising a thermomoldable substance, said deformation element having a flexure means for inducing bending of said deformation element in a preconceived way into a preconceived convex upward cross section when the absorbent article is subjected to lateral compressive forces, said flexure means comprising a flexure hinge creating a different bend-resistance across the width of said deformation element, said hinge being thermomolded into said deformation element, said deformation element being joined to and vertically registered with said absorbent element.

5,300,056

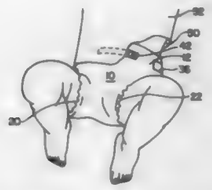
DIAPER WITH SHIRT ATTACHMENT DEVICE

Sharon C. Webb, 1846 Laramie Dr., Powell, Ohio 43065

Filed Dec. 18, 1992, Ser. No. 992,801

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—389 **3 Claims**



1. A disposable diaper having two sides and two ends with a central section between the two ends configured to cover the crotch area of an infant which comprises:

a first layer of absorptive material;

a thin, flexible second layer of moisture proof material having an outer surface and an inner surface which overlies said first layer;

securement means for securing said first layer of absorptive material to said inner surface of said second layer of moisture proof material;

attachment means comprising a single pressure sensitive adhesive engagement surface attached to said outer surface of said second layer at one end of said diaper;

wherein said adhesive engagement surface will adhesively engage an inside surface of an upper body garment worn by said infant;

wherein said adhesive engagement surface is the sole means of engagement with said garment; and

wherein said pressure sensitive adhesive surface faces away from said second layer of material.

5,300,057

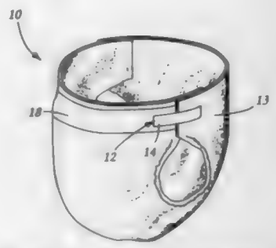
FRONTAL TAPE-BASED DIAPER CLOSURE SYSTEM

John A. Miller, Woodbury, Minn.; Earl Tate, Jr., Bedford Park, Ill.; Ruben E. Velasquez Urey, St. Paul, Minn.; Yasuhiro Kono; Yoshihiro Akiyama, both of Tokyo, Japan, and Robert S. Mulder, Shoreview, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 808,044, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 616,226, Nov. 20, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 950,204

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—390 **15 Claims**



1. A diaper tape closure system comprising a disposable diaper having a first closure surface comprising a reinforcement film substrate, the reinforcement film substrate having a first inner face having an adhesive layer and a second outer face having a low adhesion backsize (LAB) layer, a second closure surface comprising a fastening tab having a backing substrate and an adhesive layer on said backing substrate, for removable attachment to said first closure surface LAB layer second outer face, said fastening tab adhesive layer consisting essentially of:

(a) 30 to 60 weight percent of an elastomer component comprised of a block copolymer with A blocks derived primarily from styrene and B blocks derived primarily from isoprene wherein at least 25 percent of the block copolymer is in the form of an AB diblock copolymer,

(b) 40 to 70 weight percent of a solid B block compatible tackifying resin admixed when necessary with a liquid tackifying resin or a processing oil so as to provide an adhesive composition having a CMTg of from 244 to 265 Kelvin which adhesive layer on said fastening tape exhibits a shear adhesion of at least about 200 minutes to the first closure surface LAB layer second outer face and substantially non-shocky peel at 135 degrees of at least about 300 grams per inch tested against a LAB coated BOPP film and wherein the tape adhesive composition falls within one of regions I to III of FIG. 1, wherein the diaper is closed by attaching said fastening tab to said first closure surface LAB layer second outer face.

5,300,058

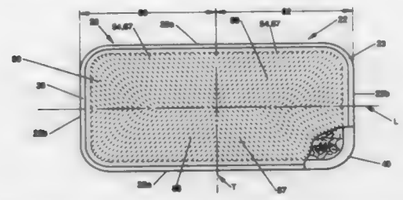
DISPOSABLE ABSORBENT ARTICLE HAVING AN IMPROVED MECHANICAL FASTENING SYSTEM

David J. K. Goulait; Dennis A. Thomas, and Maureen E. Stanley, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 10, 1992, Ser. No. 988,541

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—391 **38 Claims**



1. An absorbent article for positioning in an undergarment to absorb body exudates, the absorbent article comprising:

a main body portion comprising an absorbent assembly capable of absorbing body fluids, said main body portion having a body side, a garment side opposite of said body side, longitudinal edges, transverse edges, a first transverse end, a second transverse end, a transverse center disposed between said first transverse end and said second transverse end, a principal longitudinal centerline, and a principal transverse centerline which divides said main body portion into a first half and a second half; and

a pad securement member joined to said garment side of said main body portion for securing said main body portion to the undergarment, said pad securement member comprising

a first hook fastening material positioned in said first half of said main body portion, and

a second hook fastening material positioned in said second half of said main body portion,

said first hook fastening material and said second hook fastening material each comprising an oriented hook fastening material comprising

(i) a substrate, and

(ii) a plurality of engaging elements joined to said substrate, at least a majority of said engaging elements being generally oriented in a direction which determines the direction of orientation each hook fastening material,

wherein said first hook fastening material and said second fastening material are generally oriented in a direction having a vector component perpendicular to said principal transverse centerline.

5,300,059

BLOODBAG AND METHOD OF MAKING SAME

Arye Rubinstein, Monsey, N.Y.; Albert Goldstein, Trenton Falls, N.J., and Howard I. Podell, New Rochelle, N.Y., assignors to Hydro Slip Technologies Inc., Howell, N.J. and Albert Einstein College of Medicine, New York, N.Y.

Filed Nov. 19, 1991, Ser. No. 794,381

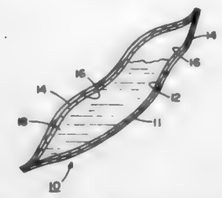
Int. Cl.[5] A61J *1/00*

U.S. Cl. 604—408 **41 Claims**

1. A method of preparing a viricide-coated container capable of time-release of such viricide upon contact with liquid contained in said container, which method comprises the steps of

(a) priming at least a portion of a substrate film of which the container is made;

(b) coating the primed portion of the substrate film with a liquid solution of hydrogel polymer and absorbing a viricide into the hydrogel polymer; and



(c) forming the substrate film having the primed coated portion into a container having at least one closed end.

5,300,060

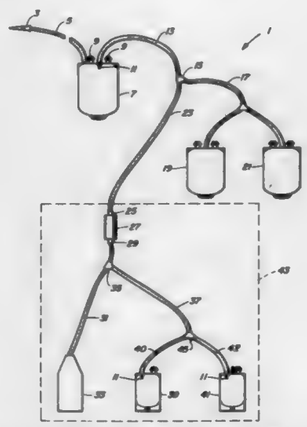
BLOOD BAG SYSTEM FOR SEPARATION AND ISOLATION OF NEOCYTES AND GEROCYTES

Edward J. Nelson, San Rafael, Calif., assignor to Miles Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 364,756, Jun. 12, 1989. This application Oct. 7, 1991, Ser. No. 772,402

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—410 **4 Claims**



1. A method of preparing both neocytes and gerocytes from a blood cell mixture containing some from the group consisting essentially of neocytes, gerocytes, and supernatant including plasma and preservative solution, the method comprising the steps of:

a) obtaining the blood cell mixture in an elongated bag having a length to width ratio of at least about 2 to about 1,

b) centrifuging the elongated bag containing the blood cell mixture to form a supernatant portion, a neocyte portion, and a gerocyte portion,

c) expressing at least part of the supernatant portion from the elongated bag into a first auxiliary blood bag in closed communication with the elongated bag,

d) expressing a predetermined fraction of the neocyte portion, from the elongated bag into a second auxiliary blood bag in closed communication with the elongated bag,

e) transferring the expressed supernatant from the first auxiliary blood bag into the elongated blood bag to provide a suspension of the gerocytes; and

f) transferring the gerocyte suspension from the elongated bag into the first auxiliary bag.

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5,300,061

LASER DELIVERY PROBE HAVING A MECHANICALLY FREE FLOATING SHEATH

James C. Easley, St. Charles, and Gregg D. Scheller, St. Louis, both of Mo., assignors to Surgical Technologies, Inc., St. Louis, Mo.

Filed Aug. 29, 1991, Ser. No. 752,083
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—2 **5 Claims**



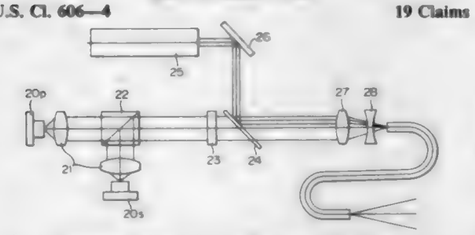
1. A laser delivery probe comprising:
a silica optical fiber extending generally from a distal end of the probe to a proximal end of the probe;
a laser connector adapted to be secured to a laser source, said laser connector forming the proximal end of the probe, said silica optical fiber extending substantially through the laser connector so that the optical fiber provides an optical path through the laser connector;
a handpiece disposed at the distal end of the probe, said silica optical fiber extending substantially through the handpiece to provide an optical path through the handpiece;
means for fixedly securing the optical fiber to the laser connector to hold the optical fiber fixedly in place with respect to the laser connector;
means for fixedly securing the optical fiber to the handpiece to hold the optical fiber fixedly in place with respect to the handpiece;
a sheath having a lumen in which the silica optical fiber is disposed, said sheath terminating proximally inside the laser connector and terminating distally inside the handpiece, said sheath being mechanically free-floating with respect to the optical fiber so that torque applied to the optical fiber is not directly applied to the sheath;
wherein the sheath is longitudinally free to move with respect to the handpiece over at least a predetermined axial distance.

5,300,062

PHOTOCOAGULATOR

Tokio Ueno, Gamagori, Japan, assignor to Hidek Co., Ltd., Aichi, Japan

Filed Nov. 14, 1991, Ser. No. 791,692
Claims priority, application Japan, Nov. 16, 1990, 2-312006
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—4 **19 Claims**



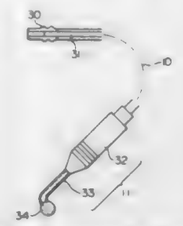
1. A photocoagulator for guiding a semiconductor laser beam to an eye to be treated for a photocoagulation operation, comprising:
a main layer unit comprising a first plurality of semiconductor laser light sources producing output beams;
an auxiliary laser unit separate from said main laser unit comprising at least one second semiconductor laser light source producing an output beam;
an optical fiber detachably provided between said main laser unit and said auxiliary laser unit, said optical fiber guiding said output beams from said first plurality of semiconductor laser light sources of said main laser unit to said auxiliary laser unit;
a combining optical means, disposed in said auxiliary laser unit, for combining a) the output beams, guided by said optical fiber from said first plurality of semiconductor laser light sources, and b) the output beam from said at least one second semiconductor laser light source into a combination beam; and
a beam guide optical means for guiding said combination beam combined by said combining optical means to said eye to be treated.

5,300,063

OPHTHALMIC LASER APPARATUS

Yasuo Tano, Kobe; Masanori Enomoto, Nishio, and Yasuo Ota, Gamagori, all of Japan, assignors to Nidek Co., Ltd., Gamagori, Japan

Filed May 7, 1992, Ser. No. 879,386
Claims priority, application Japan, May 11, 1991, 3-135548
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—4 **9 Claims**



1. An ophthalmic laser apparatus for generating and directing a laser beam for performing ocular procedures, said apparatus comprising:
laser oscillator means for creating laser light;
connecting means coupled to said laser oscillator means for transmitting said laser light from the apparatus;
light cable means having a light cable receptacle connector at one end thereof, said light cable receptacle connector for connecting to said connecting means, and transmitting said laser light therethrough; and
probe means coupled to a distal end of the light cable means for manipulating the laser light,
wherein said connecting means comprises an optical member for controlling an exit divergence angle of said laser beam.

5,300,064

Patent Not Issued For This Number

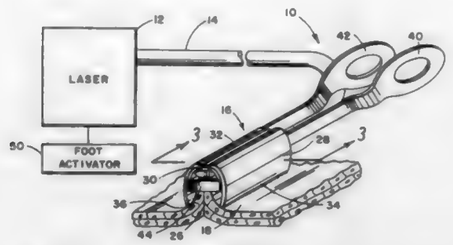
5,300,065

METHOD AND APPARATUS FOR SIMULTANEOUSLY HOLDING AND SEALING TISSUE

Dallas W. Anderson, The Woodlands, Tex., assignor to Proclosure Inc., Winter Park, Fla.

Filed Nov. 6, 1992, Ser. No. 972,531
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—13 **15 Claims**

1. An apparatus for sealing approximated edges of tissue comprising:
a first elongated member pivotally engaging a second elongated member to form a clamp that opens and closes, said members having an edge with a surface adapted to grasp tissue and pull the edges of the tissue into tight approximation to form a seam when said clamp closes;
an energy source for providing energy which is capable of heating the tissue to form an adhesive proteinaceous substance; and
a layer of material supported by at least one of said members and transmissive to energy that heats tissue.
means for directing energy from said source through said layer of material at said tissue seam when said edges are pulled into tight approximation; and



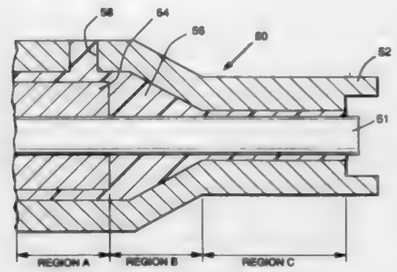
said layer of material having a thickness that maintains a predetermined distance between said directing means and said tissue seam when energy from said source is directed at the tissue.

5,300,066

CONTACT LASER DELIVERY SYSTEM

Nubar Manoukian, Cupertino; James L. Hobart, Los Altos Hills, and Kenneth Witte, San Jose, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Continuation of Ser. No. 584,287, Sep. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 577,866, Sep. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 477,256, Feb. 7, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 905,125
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—15 **6 Claims**



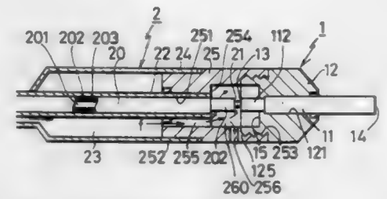
1. A fiber optic probe comprising:
an optical fiber having a delivery end, said optical fiber having an outer coating of a buffer material to facilitate bending, with a region of said fiber extending from said delivery end being uncoated with said buffer material;
a tubular member surrounding and supporting said fiber while leaving said delivery end exposed, with the outer surface of the tubular member defining the outer surface of the probe and with the inner diameter of the tubular member being reduced in a portion of the area surrounding the uncoated region of said fiber to provide added support for the fiber and minimize the exposure of the fiber to debris and vapor; and
an adhesive completely filling the area between said fiber and the reduced diameter region of said tubular member, said adhesive for prohibiting the flexing of the probe and reducing damage to the fiber from debris and vapor.

5,300,067

LASER TREATMENT DEVICE

Sadahiro Nakajima; Naoshi Endoh, both of Tokyo; Kenzo Kataoka, Kyoto; Masaki Odaka, Kyoto, and Yoshihide Okagami, Kyoto, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,083
Claims priority, application Japan, Aug. 23, 1991, 3-211837; Nov. 27, 1991, 3-339761
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—16 **11 Claims**



1. A laser treatment device, comprising:
a laser light source;
a laser-light transmitting optical fiber coupled to the laser light source; and
a probe coupled to the laser-light transmitting optical fiber wherein the probe comprises a laser-light guiding optical fiber separated from the laser-light transmitting optical fiber, said probe comprising a cooling chamber for cooling optical fibers, a refrigerant supply path for supplying a refrigerant to the cooling chamber, and a refrigerant discharge path for discharging a refrigerant from the cooling chamber, said cooling chamber, refrigerant supply path and refrigerant discharge path disposed in the vicinity of an output end of the laser-light transmitting optical fiber and an input end of the laser-light guiding optical fiber, the transmitted laser light being output from said laser-light transmitting optical fiber and input to the laser-light guiding optical fiber, the output end of the laser-light guiding optical fiber, the output end of the laser-light transmitting optical fiber and the input end of the probe being cooled by the refrigerant supplied to the cooling chamber through the refrigerant supply path, wherein the input end of the laser-light guiding optical fiber is protruded from an inner surface of the cooling chamber, and wherein the outer diameter of the input end of the probe is set equal to or less than that of the output end of the laser-light transmitting optical fiber.

5,300,068

ELECTROSURGICAL APPARATUS

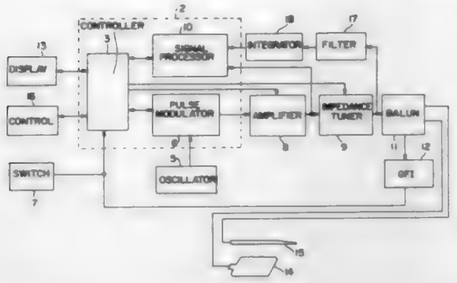
George C. Rosar, Brooklyn Park; Ken W. Bachofer, Brooklyn Center; James L. Pokorney, Shoreview, and James E. Graf, New Brighton, all of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn.

Filed Apr. 21, 1992, Ser. No. 871,742
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—34 **22 Claims**

1. An electrosurgical apparatus for cutting tissue and for ablating occlusions comprising:
means for selectively generating a train of relatively high energy pulses and a train of relatively low energy pulses of electrical energy for application to a wire having an attached electrode, the means for selectively generating having a variable output impedance, a load impedance of the means for selectively generating comprising an impedance of the wire having an attached electrode;
means for sensing the load impedance relative to the output impedance in response to the train of low energy pulses applied to the wire and for adjusting the output impedance

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to match the load impedance in response to the sensed load impedance relative to the output impedance; and means for controlling the means for selectively generating and the means for sensing and for adjusting to generate the



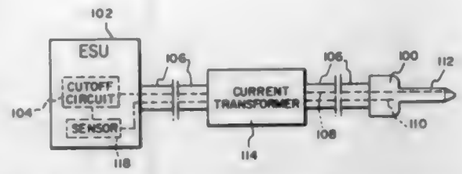
train of low energy pulses and to match the output impedance to the load impedance and for subsequently generating the train of high energy pulses for producing an arc at the electrode to ablate an occlusion.

5,300,069
ELECTROSURGICAL APPARATUS FOR LAPAROSCOPIC PROCEDURES AND METHOD OF USE
Daniel Hunsberger, 728 Ridge Rd.; Lloyd Detwiler, 37 Daniels Rd., both of Sellersville, Pa. 18960, and Robert Pflug, 40 N. 5th St., Souderton, Pa. 18964
Filed Aug. 12, 1992, Ser. No. 929,642
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—37 **23 Claims**



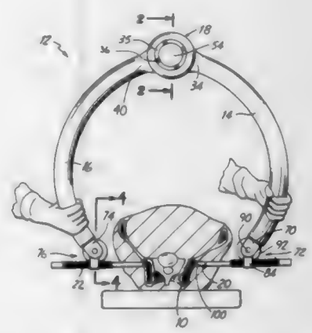
1. Apparatus for performing a medical procedure through a small percutaneous incision or puncture in the body of a patient comprising an elongated outer tube, an elongated inner tube, an electrode, vacuum means, and irrigation means, each of said tubes being formed of an electrically insulating material and having a distal end arranged to be inserted through a small opening within the body of the patient to a desired situs therein, said inner tube having a first lumen therein, said first lumen having a first port communicating with the interior of the body of said patient adjacent said situs when said distal end of said inner tube is at said desired situs, said inner tube being located within said outer tube to form a second lumen therebetween, said second lumen having a second port communicating with the interior of the body of said patient being adjacent said situs when said distal end of said outer tube is at said desired situs, one said lumens being coupled to said vacuum means, and the other of said lumens being coupled to said irrigation means, said electrode being mounted adjacent said distal end of said inner tube and having an electrical conductor connected thereto and extending through said inner tube for connection to one pole of electrosurgical generation means.

5,300,070
ELECTROSURGICAL TROCAR ASSEMBLY WITH BI-POLAR ELECTRODE
John S. Gentelia, Madison; Frank R. Williams, Frankfort; William C. Wheatley, Utica; Ernesto G. Sevilla, Herkimer; Sharyn E. Longo, Frankfort, and Deborah E. Forbey, Smyrna, all of N.Y., assignors to Conmed Corporation, Utica, N.Y.
Continuation-in-part of Ser. No. 853,149, Mar. 17, 1992. This application Jun. 19, 1992, Ser. No. 901,024
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—45 **8 Claims**



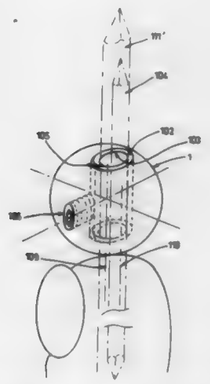
1. An electrosurgical system comprising a radio frequency power source, an electrosurgical trocar device connected to said power source and including a cutting element having a cutting tip and a cut-off circuit for sensing the load impedance at the cutting tip of said trocar device and for interrupting the connection between the trocar device and the power source responsive to a change in said load impedance, said cutting element being connected to said power source through a current carrying conductor of a scale presenting a leakage impedance at the operating frequencies of said power source and said system further including means for counteracting the effect of the leakage impedance presented by the cable so that the load impedance sensed by said cut-off circuit is substantially free of the effect of said leakage impedance.

5,300,071
PELVIC STABILIZER
Bruce D. Browner, West Hartford, Conn., and Richard H. Clewett, Los Angeles, Calif., assignors to Ace Medical Company, Los Angeles, Calif.
Filed Nov. 17, 1992, Ser. No. 977,490
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—57 **10 Claims**



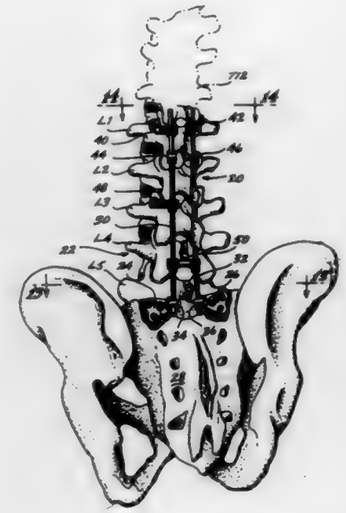
1. A pelvic stabilizer for compressing and stabilizing fractures of a human pelvic bone, the stabilizer comprising:
a first arm having a first end and a second end;
a second arm having a first end and a second end;
adjustable locking means attaching the first end of the first arm to the first end of the second arm and permitting relative rotational movement of the first and second arms, the adjustable locking means including a first ratchet face supported at the first end of the first arm, a second ratchet face supported at the first end of the second arm and bias means for biasing the first and second ratchet faces together when in a first position and allowing the first and second ratchet faces to be spaced from each other when in a second position, the first and second ratchet faces being so disposed and arranged to each other to permit relative rotational movement of the first and second arms in a first direction while substantially preventing relative rotational movement of the first and second arms in an opposite direction when the bias means is in the first position; and
a first adjustable pin assembly mounted on the second end of the first arm and a second adjustable pin assembly mounted on the second end of the second arm, the first and second adjustable pin assemblies being operable to engage the pelvic bone so that relative rotational movement of the first and second arms permits compression of the pelvic bone fracture.

5,300,072
DEVICE FOR SECURING THE DISTAL END OF A SURGICAL PIN
Michael Aghion, 44, rue de l'Alma, F-92400 Courbevoie, France
PCT No. PCT/FR91/00367, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/16860, PCT Pub. Date Nov. 14, 1991
PCT Filed May 3, 1991, Ser. No. 945,642
Claims priority, application France, May 4, 1990, 90 05635
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—59 **4 Claims**



1. In a universal distal securement element for surgical pins of all utilized diameters, comprising a protective sphere provided with a bore for a pin and a clamping screw disposed in a tapped hole which opens into said bore; the improvement comprising a crescent-shaped elastically deformable insert disposed in the bore and against which the clamping screw bears, and means deflecting the deformable insert so that the insert has an internal cavity of progressively smaller cross section the deeper the screw is screwed into said tapped hole thereby to permit clamping by said insert within said sphere of surgical pins of various diameters.

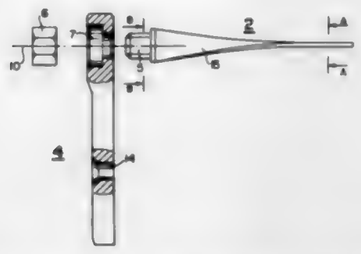
5,300,073
SACRAL IMPLANT SYSTEM
R. Charles Ray, Tacoma, Wash., and Richard B. Ashman, Dallas, Tex., assignors to Salut, Ltd., Tacoma, Wash.
Continuation-in-part of Ser. No. 593,196, Oct. 5, 1990, Pat. No. 5,127,912. This application Jan. 28, 1992, Ser. No. 826,839
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—61 **4 Claims**



1. A sacral implant system comprising:
first and second discrete sacral plates for mounting on opposite sides of said sacrum adjacent the lumbosacral junction, each of said sacral plates having at least a pedicle and oblique mounting means for rigidly fixing each of said sacral plates independently to opposite lateral portions of said sacrum,
first and second rods extending in a superior direction in a generally parallel relationship from respective ones of said sacral plates on opposite sides of the centerline of said lumbar spine, and means rigidly fixing said rods to said sacral plates,
at least one connecting member rigidly interconnecting said rod superior to said sacral plates, and
a superior offset fixation plate rigidly affixed to at least one of said rods, a pedicle screw fixed to and through the pedicle of a vertebra, and means rigidly affixing said pedicle screw to said offset fixation plate,
each of said pedicle and oblique mounting means including a fixation screw having a lower threaded portion, a head and a cylindrical section adjacent said head, said sacral plate including cylindrical bores corresponding to each of said pedicle and oblique mounting means, each of said bores having a diameter slightly greater than a respective cylindrical section on a respective fixation screw enabling said screw to rotate and reciprocate in said bore while substantially eliminating angular movement of said relative to said plate, said cylindrical bore of said pedicle mounting means having an axis that extends in a medial and anterior direction from said sacral plate, said cylindrical bore of said pedicle mounting means being located medially from the cylindrical bore of said oblique mounting means.

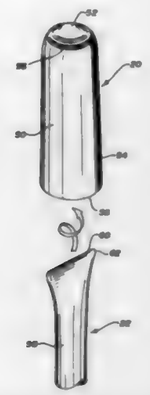
VOL 1161 ISS 1 AP 5 1994 UMI

5,300,074
TWO-PART ANGLE PLATE
Robert Frigg, Davos, Switzerland, assignor to Synthes (U.S.A.), Paoli, Pa.
Filed Dec. 6, 1991, Ser. No. 803,437
Claims priority, application Switzerland, Dec. 17, 1990, 989/90
The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.
Int. Cl.[5] A61B *17/56*
U.S. Cl. 128—67 **13 Claims**



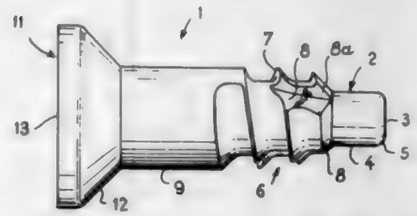
1. A device for setting broken bones in an area where a tubular bone terminates at a joint, comprising a helically twisted plate blade for implantation in a bone fragment near the joint, a separate side plate for attachment to the shaft of the tubular bone remote from the joint, and means for separably connecting the plate blade and the side plate.

5,300,075
COVER FOR ORTHOPEDIC SPLINTING RODS AND METHOD OF INSTALLATION
Donn M. Gordon, 230 Craig Rd., Neshanic Station, N.J. 08853
Filed Sep. 18, 1991, Ser. No. 762,314
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—72 **22 Claims**



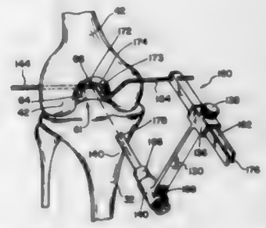
21. A cover for orthopedic splinting rods comprising:
an inner cover comprising a sheet of metal;
said sheet of metal formed into a cylindrical body having walls;
the sheet having a top edge and a bottom edge and opposed extent edges;
the sheet bent to position the opposed extent edges to closely abut along their entire length to form a slit along the length of the cylindrical body;
the bottom edge formed to define a circle in a plane perpendicular to the longitudinal axis of the cover;
the sheet also having a top portion formed in a spherical segment enfolded down over the cylindrical body to form a rounded top surface;
an outer cover having an internal cylindrical bore housing said inner cover, the external cover having a top surface and a bottom surface and having wall surfaces;
said outer cover providing a resilient force against expansion of said cylindrical body; and
said wall surfaces having a plurality of lobes thereon to provide a gripping means.

5,300,076
PERCUTANEOUS BONE SCREW FOR SUPPORTING A STEREOTAXY FRAME
Bertrand Leriche, Paris, France, assignor to Societe de Fabrication de Materiel Orthopedique-Sofamore, Paris, France
Filed Oct. 9, 1992, Ser. No. 959,129
Claims priority, application France, Oct. 11, 1991, 91 12571
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—73 **6 Claims**



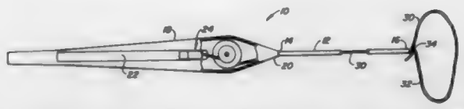
1. A percutaneous bone screw (1) for supporting a stereotaxy frame (10) on the cranium of a patient comprising:
a threaded part (6) having a self-tapping zone which is constituted by at least one groove formed by a flat (8) bordered by sharp edges (8*a*) which terminates adjacent one end of said threaded part, and a non-threaded dog point (2) contiguous with said one end, said dog point (2) having a plane transverse surface (3) and a cylindrical lateral surface (4) connected to said plane surface by a rounded annular radius (5), said transverse surface having a diameter substantially equal to the diameter of said cylindrical lateral surface.

5,300,077
METHOD AND INSTRUMENTS FOR ACL RECONSTRUCTION
Stephen M. Howell, Elk Grove, Calif., assignor to Arthrotek, Ontario, Calif.
Continuation of Ser. No. 552,815, Jul. 16, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 20,901
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—96 **14 Claims**



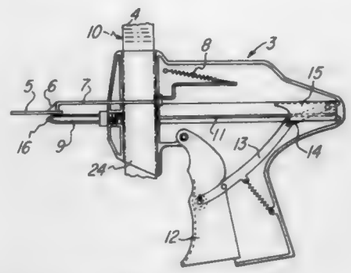
11. A drilling system for accurately determining the site of the positioning for a tibial tunnel for use in replacing an anterior cruciate ligament with a substitute graft member, said graft member being adapted to be securely positioned in the knee joint in tunnels in the femur and tibia, said system comprising:
a) a first drill guide for positioning and placing a first pin member transversely in the femur, said drill guide having a first aimer member attached to said first bar member having a tip having a notched convexly curved and flattened upper surface shaped to nest with the cartilaginous roof surface of the femoral intercondylar notch;
b) a second drill guide for positioning and placing a second pin member in the tibia, said second drill guide having a second elongated bar member and a second aimer member attached to said second bar member having an elongated shaft and a curved tip shaped to contact said first pin member in said femoral intercondylar notch and having a notched convexly curved and flattened upper surface shaped to be positioned against the anterior aspect of the intercondylar notch and a concave lower surface adapted to receive and nest with said first pin member; and
c) a positioning member for drilling holes, said positioning member sized and configured to be positioned either on said first bar member for using said first drill guide or on said second bar member for using said second drill guide;
whereby when said positioning member is positioned on said first bar member, said first drill guide is used to position and place said first pin member transversely in said femur, and when said positioning member is positioned on said second bar member, said second drill guide is used to determine the site for the drilling of the tibial tunnel.

5,300,078
DEVICE AND METHOD FOR APPLYING LARGE-DIAMETER LIGATING LOOP
Terry Buelna, Long Beach, Calif., assignor to Laparomed Corporation, Irvine, Calif.
Filed Oct. 9, 1992, Ser. No. 958,909
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—113 **7 Claims**



1. Apparatus for applying and tightening a suture loop, said apparatus comprising:
a hollow shaft having a proximal end and a distal end;
a length of suture having a free end and a loop at another end, wherein the loop is held at the distal end of the shaft and the free end of the suture extends through the hollow shaft to the proximal end;
a handle assembly attached to the proximal end of the shaft, said handle assembly including a slidably mounted actuator, and means within the handle assembly for coupling the actuator to the free end of the suture so that the free end is drawn proximally by the actuator at a faster rate than the actuator, whereby drawing proximally on the actuator will tighten the suture loop; and
wherein the actuator is a puller and the coupling means includes a pulley system rotatably mounted in the handle assembly comprising a small pulley wheel and a large pulley wheel, a connector line between the puller and the small pulley wheel, wherein the free end of the suture is connected to the large pulley wheel.

5,300,079
INJECTOR
Herman Niezink, Wierden, and Jeroen J. M. Bolscher, Ootmarsum, both of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 827,133, Jan. 28, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,555
Claims priority, application Netherlands, Jan. 30, 1991, 9100160
Int. Cl.[5] A61M *36/12*
U.S. Cl. 606—117 **12 Claims**



1. An injector comprising:
a body having a front end and a back end;
a grip extending downward from said body;
a needle which protrudes from said front end of said body and provides a vehicle for the transport of objects;
a means for conveying and placing objects via the needle in a mass, located within said grip and body of said injector; and
positioning means, protruding from the front end of said body, for fixing the position of the needle relative to said mass, said positioning means comprising;
a retractable pin-shaped member, fitted substantially parallel to the needle and having a connected end, connected to said front end of said body, and a free end characterized in that at the moment of insertion of the needle into the mass, the free end extends substantially beyond the end of the needle and retracts into the body of the injector upon inserting the needle further, and that a shank part of the pin-shaped member is adapted near the free end of said pin-shaped member to rest against the mass.

5,300,080
STEREOTACTIC INSTRUMENT GUIDED PLACEMENT
David Clayman, and Tai Q. Nguyen, both c/o University Medical Ctr., 655 W. 8th St., Jacksonville, Fla. 32209
Filed Nov. 1, 1991, Ser. No. 786,278
Int. Cl.[5] A61B *5/103*
U.S. Cl. 606—130 **18 Claims**



1. A ventriculostomy procedure for a human patient, utilizing a catheter guide having opposed point members disposed on a common linear axis, comprising the steps of substantially sequentially:

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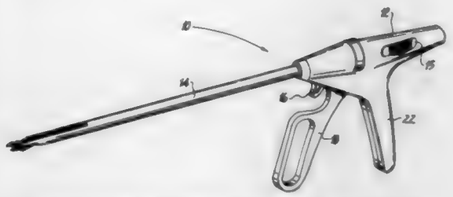
(a) marking the proposed position of a burr hole on the patient's skull;
(b) deciding upon the location of a ventricle, desired to be drained, within the patient's skull, to define an intraventricular target point;
(c) effecting coordinate multiplanar tomographic imaging of the patient's skull and brain;
(d) utilizing data from step (c), calculating a coordinate line between said burr hole proposed position and said intraventricular target point;
(e) utilizing the calculated coordinate line, determining a fixing point on the patient's skull opposite the proposed position of the burr hole, and marking that fixing point on the patient's skull;
(f) forming a burr hole in the patient's skull at the marked proposed burr hole position;
(g) placing the catheter guide into operative association with the patient's skull so that the opposed point members engage the burr hole and the fixing point;
(h) passing a catheter into the burr hole, positively guided by the catheter guide, along the common linear axis of the opposed point members, until the catheter tip reaches the intraventricular target point; and
(i) draining fluid from the area of the patient's brain around the intraventricular target point.

5,300,081

SURGICAL CLIP APPLIER HAVING CLIP ADVANCEMENT CONTROL

Wayne P. Young, Brewster, N.Y.; Dominick L. Mastri, Bridgeport, and Henry Bolanos, East Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,190
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—143 **12 Claims**



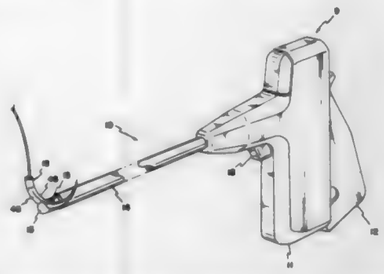
1. An apparatus for applying surgical clips comprising:
a) a handle portion;
b) a body portion extending distally from said handle portion;
c) jaw members positioned adjacent the distal end of the body portion and movable between an open position for receiving a clip and a closed position for forming the clip;
d) camming means operable from the handle portion and cooperative with the jaw members for camming the jaw members closed to form the clip;
e) storage means disposed within said body portion proximate the jaw members for storing a plurality of clips in a position for individual advancement to the jaw members;
f) clip advancement means for individually advancing clips from the storage means into the jaw members; and
g) control means operatively associated with said handle portion for selecting between a first mode in which advancement of a clip from said storage means to said jaw members is effectuated by manually releasing said clip advancement means from a preadvancement position and a second mode in which said clip advancement means is automatically released from said pre-advancement position as said jaw members move from said closed position to said open position.

5,300,082

ENDONEEDLE HOLDER SURGICAL INSTRUMENT

Leslie A. Sharpe, Edina, Minn., and Francis C. Peterson, Prescott, Wis., assignors to Sharpe Endosurgical Corporation, Minneapolis, Minn.

Filed Jan. 8, 1992, Ser. No. 818,072
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—147 **8 Claims**



1. A surgical instrument for grasping an object comprising:
a control handle having a fixed grip and having a movable grip;
an elongate sheath having a lumen, connected to said fixed grip;
a fixed jaw coupled to said sheath, said fixed jaw not extending radially beyond said sheath;
a movable jaw located within said sheath proximate said fixed jaw, said movable jaw not extending radially beyond said sheath;
said movable jaw and said fixed jaw together defining a variable jaw space, said jaw space having a cross section which does not substantially exceed the cross section area of said lumen;
clamping spring means coupled to said movable grip and coupled to said moveable jaw for transferring clamping force from said moveable grip to said object located within said variable jaw space;
whereby motion of said movable grip reduces said variable jaw space and causes said object to abut said movable jaw and said fixed jaw and whereby the force imparted by said moveable grip is imparted to said object and wherein continued motion of said moveable grip deflects said clamping spring means which applies a clamping force to said object proportional to the size of said object in said jaw space, and said clamping force increases with deflection of said clamping spring means;
lock means for preventing motion of said movable grip when said lock means is in a first locked position and for permitting motion of said movable grip when said lock means is in a second unlocked position.

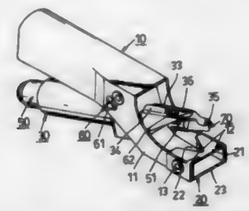
5,300,083

COMBINED LIGHTER AND CUTTING DEVICE

Li-Jan Lin, No. 146, Wen-Hua Rd., Hou-Li Hsiang, Taichung Hsien, and Hsien-Yao Chiu, No. 406, Yung-Ho Rd., Chung-Ho City, Taipei Hsien, both of Taiwan

Filed May 24, 1993, Ser. No. 64,977
Int. Cl.[5] A61D *1/04*
U.S. Cl. 606—165 **3 Claims**

1. A combined lighter and cutting device, comprising:
a fixed handle having a pair of arms extending downwardly and frontwardly from one end thereof, said arms confining a space therebetween;
a cutting seat mounted between distal ends of said arms of said fixed handle;
a movable handle having an elongated hollow member with one end connected pivotally to said one end of said fixed handle, said movable handle further having a horizontal support plate extending forwardly from said one end of said hollow member to said space between said two arms of said fixed handle above said cutting seat and having a hole formed therein, said movable handle being moved toward said fixed handle so as to move said support plate toward said cutting seat;
a spring unit disposed between said fixed and movable handles so as to bias said movable handle away from said fixed handle;
a lighter device including a gas cylinder received in said hollow member and operable so as to release gas from an outlet thereof, a tubular ignition rod communicated with said outlet of said gas cylinder and having a perforated end extending adjacent to said hole in said support plate under said support plate, and an ignition device including an ignition electrode secured on said support plate and extending along said hole, and a push-button operable so as to generate a spark at said ignition electrode to ignite said gas released by said gas cylinder; and
a blade unit connected to said perforated end of said ignition rod under said support plate.



5,300,085

ANGIOPLASTY APPARATUS FACILITATING RAPID EXCHANGES AND METHOD

Paul G. Yock, Menlo Park, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 774,479, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 548,200, Jul. 5, 1990, Pat. No. 5,061,273, which is a continuation of Ser. No. 361,676, Jun. 1, 1989, abandoned, which is a continuation of Ser. No. 117,357, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 852,197, Apr. 15, 1986, abandoned. This application Jan. 27, 1993, Ser. No. 10,458
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—191 **3 Claims**



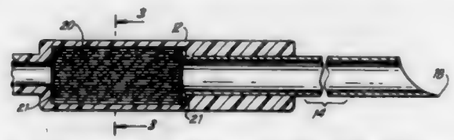
2. An elongated catheter which has proximal and distal ends and which is provided with means to perfuse blood distally through a distal portion of the catheter across an occlusion in a patient's coronary artery to minimize ischemic conditions distal to the catheter, the catheter including:
a guidewire receiving lumen which extends from a first port in the distal end of the catheter located distal to the means to perfuse blood to a second port in the catheter spaced proximally a relatively short distance from the distal end of the catheter and the means to perfuse blood and spaced distally a relatively long distance from the proximal end of the catheter shaft which allows the catheter to be rapidly mounted onto a guidewire disposed within a patient with a distal portion of the guidewire within the patient's coronary artery and to be slidably advanced over the guidewire to a desired location within the patient's coronary artery to facilitate the perfusion of blood through the distal portion of the catheter across the occlusion.

5,300,084

PNEUMOPERITONEUM NEEDLE

David S. Johnson, Stamford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 23, 1992, Ser. No. 980,502
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—185 **28 Claims**



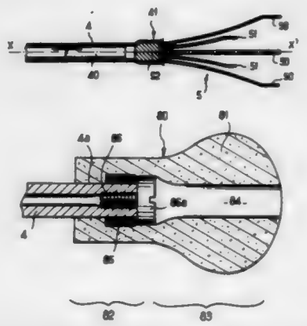
1. A needle for introduction of gaseous media into a body cavity, which comprises:
elongated means defining passageway means to direct gaseous media to the body cavity;
holding means attached to a proximal end portion of said elongated means; and
filter means associated with at least one of said holding means and elongated means for filtering the gaseous media prior to introduction into said passageway means.

5,300,086

DEVICE WITH A LOCATING MEMBER FOR REMOVABLY IMPLANTING A BLOOD FILTER IN A VEIN OF THE HUMAN BODY

Pierre Gory, 02, Boulevard Clemenceau, and Gilles Bovyn, 03, rue Monseigneur Morelle, both of, 22000 Saint-Brieuc, France

Continuation-in-part of Ser. No. 731,536, Jul. 17, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 985,178
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—200 **5 Claims**



1. Apparatus to be removably implanted in a human body for filtering blood, which comprises;
a filter adapted for filtering blood in a blood vessel;

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a divisible catheter adapted for implanting in said human body;
said catheter having a proximal and a distal end;
said filter being permanently fixed to said distal end of said catheter;
a locating member adapted to be disposed subcutaneously for localizing said catheter through a skin surface of said human body after said catheter is implanted;
said locating member being fixed to said proximal end of said catheter;
said locating member comprising a sleeve enclosing an internal closing means;
said internal closing means being disposed at said proximal end of said catheter for closing thereof;
said sleeve having a central opening therethrough; and said internal closing means comprising a plug engaged within said proximal end of said catheter through said central opening.

5,300,087

MULTIPLE PURPOSE FORCEPS

Dennis J. Knoepfler, 1283 Whitaker La., Amelia, Ohio 45102

Continuation-in-part of Ser. No. 673,659, Mar. 22, 1991, Pat. No. 5,217,460. This application Jan. 26, 1993, Ser. No. 9,541
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—207 **1 Claim**



1. A surgical device comprising a jaw pair attached to means for actuating said jaw pair, said jaw pair comprising a first fixed jaw element and a second movable jaw element, said second movable jaw element being pivotally connected to said first fixed jaw element, one of said jaw elements having an irrigation and suction catheter passing partially therethrough, said one of said jaw elements further including at least two serrated teeth with a void therebetween communicating with a cavity beneath said teeth and within said one of said jaw elements, wherein said catheter is operable to irrigate and suction through said cavity and between said teeth, said one of said jaw elements further including a passage which hits said one of said jaw elements at a forward tip thereof and which communicates with said cavity, wherein said catheter is operable to irrigate and suction through said cavity and said passage.

5,300,088

Patent Not Issued For This Number

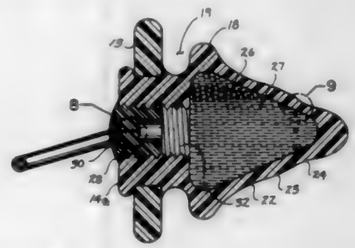
5,300,089

INFANT PACIFIER CONSTRUCTION

Susan J. Sassin, 21601 Poinciana, Southfield, Mich. 48034

Filed Mar. 15, 1993, Ser. No. 31,708
Int. Cl.[5] A61M *31/00*; **A61J** *7/00*
U.S. Cl. 606—236 **4 Claims**

1. An infant pacifier construction, comprising,
a resilient base disc, having a front wall spaced from, parallel to, and coextensive with a rear wall, and
a base plug directed through the base disc, with the base plug projecting beyond the front wall, and
a nipple head fixedly mounted to the base plug, with the head arranged in a spaced relationship relative to the base disc, wherein the base disc, the base plug, and the nipple head are coaxially aligned along a central axis, and
the base plug including an annular groove between the nipple head and the front wall, and
the nipple head includes an annular base, and a nipple head tip, wherein the nipple head is undulating from the annular base to the nipple head tip, and wherein a first inwardly tapered head portion extends from the annular base towards the central axis, and a second outwardly tapered head portion extending from the first inwardly tapered head portion exteriorly of the central axis, and a third inwardly tapered head portion extends from the second outwardly tapered head portion towards the central axis and the nipple head tip, and
a fluid cavity positioned within the nipple head between the base plug and the nipple head tip, with a fluid contained within the fluid cavity, and
the base plug includes a base plug internally threaded bore, and an externally threaded access plug threadedly received within the base plug internally threaded bore, and a slot directed into the access plug, with a vent conduit directed from the slot through the access plug.

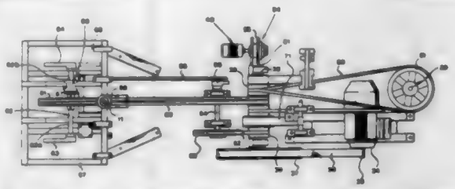


5,300,090

EXERCISE MACHINE

Heinrich L. Primic, Port Elizabeth, South Africa, assignor to Challenge Machinery (Proprietary) Ltd., Cape Province, South Africa

Filed Sep. 3, 1992, Ser. No. 940,311
Int. Cl.[5] A61F *5/00*
U.S. Cl. 601—26 **10 Claims**



1. A multiple movement powered exercising machine comprising: a frame, an electric drive motor mounted on the frame, a drive shaft mounted for rotation on the frame and adapted to be rotationally driven by the motor, a plurality of drive pulleys mounted on the drive shaft each of which is capable of either being rotationally driven by the shaft during shaft rotation or having the shaft rotate relative thereto, and selector means for interconnecting the shaft and a selected drive pulley to cause the selected drive pulley to rotate with the shaft, said drive pulleys each being connected by a respective drive belt to a respective slave pulley coupled to an exercise component on the machine, the selector means being automatically operable in order to select each of said plurality of drive pulleys in a predetermined sequence, the selector means further including a micro-processor, a selector motor operable by said micro-processor, and a selector key movable by said selector motor and selectively engageable with each of said drive pulleys to cause the drive motor to connect to any one of said slave pulleys through said drive shaft, the drive shaft comprising a hollow tubular wall defining a central passage within which the selector key is axially movable, said wall having one or more openings therethrough through which the selector key projects to engage a respective one of said drive pulleys, said selector key being movable within said central passage by a laterally flexible member connected to and driven by said selector motor, said selector key being rotatable with said drive shaft relative to said laterally flexible member.

5,300,091

Patent Not Issued For This Number

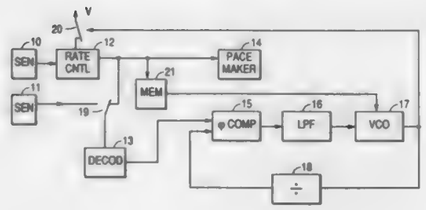
5,300,092

REST/ACTIVITY PHASE-RESPONSIVE RATE CONTROLLED CARDIAC PACER

Max Schaldach, Erlangen, Fed. Rep. of Germany, assignor to Biotronik Mess-und Therapiegerate GmbH & Co., Ingenieurbüro Berlin, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE90/00929, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/08020, PCT Pub. Date Jun. 13, 1991
Continuation of Ser. No. 859,448, May 29, 1992, abandoned.
This PCT application Nov. 29, 1990, Ser. No. 31,920
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1989, 3939899
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—18 **18 Claims**

1. A rate controlled cardiac pacemaker comprising:
stimulating means for stimulating the heart of a patient at a stimulation rate;
a stress sensor for sensing actual physical stress of the patient;
logic control means coupled with the stimulating means and the stress sensor, for adapting the stimulation rate to the actual physical stress of the patient;
determining means coupled with the logic control means, for determining the activity of the patient, said determining means including an activity sensor for sensing the activity state of the patient, said activity sensor having an output, and a rate control circuit having an input connected with the output of the activity sensor; and
timer means coupled with the determining means, for generating a timer output signal based on a 24-hour rhythm indicating a rest phase or an activity phase, synchronized by said activity sensor in a 24-hour rhythm with patient activity and rest phases that occur in continuous alternation, said activity sensor, in the case of the absence of activity or low activity of the patient over a long period of time, or in the case of activity which exceeds a predetermined level, respectively, emitting an output signal to an input of said timer means for synchronizing the timer means, said timer means generating the timer output signal based on the 24-hour rhythm indicating a rest phase or an activity phase, respectively, independently of the signal from said activity sensor, with a change between an activity and a rest phase, on the average, following a change of the output signals of the activity sensor picked up during a preceding time period.

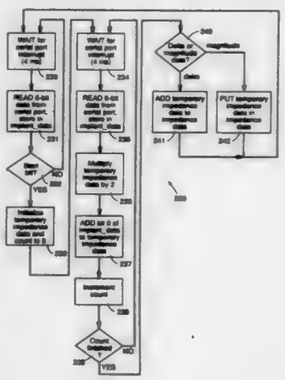


5,300,093

APPARATUS AND METHOD FOR MEASURING, FORMATTING AND TRANSMITTING COMBINED INTRACARDIAC IMPEDANCE DATA AND ELECTROGRAMS

Ken Koestner, Englewood; Bruce M. Steinhaus, Parker, and Randy T. Wells, Littleton, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Sep. 14, 1992, Ser. No. 944,466
Int. Cl.[5] A61N *1/37*
U.S. Cl. 607—32 **18 Claims**



1. A cardiac apparatus, comprising:
means for measuring impedance within a patient's body;
means for deriving at least one time-varying physiological parameter a function of the measured impedance;
means for selecting samples of said at least one time-varying physiological parameter;

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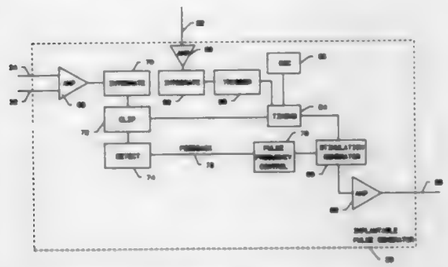
means for formatting the selected samples into a time sequence of digital samples representing the amplitude of said at least one time-varying physiological parameter;
an external monitoring device;
means for transmitting said formatted samples to said external monitoring device;
means for measuring cardiac electrical signals within the patient's body;
means for selecting samples of said cardiac electrical signals;
means for formatting the selected electrical signals into a time sequence of digital samples representing the amplitude of said cardiac electrical signals; and
means for combining said at least one physiological parameter time sequence with said cardiac electrical signal time sequences into a combined sequence of digital samples, wherein said transmitting means transmits said combined sequence of digital samples to said external monitoring device, including:
means for encoding said at least one physiological parameter time sequence into a serial data stream of signal bits,
means for encoding said cardiac electrical signal time sequence into a time sequence of multiple-bit digital samples wherein the value of each multiple-bit sample corresponds to an instantaneous amplitude of the cardiac electrical signal, and
means for truncating the multiple-bit digital samples by one bit for each of said at least one physiological parameter sequence and replacing each truncated bit with the single bit of said at least one time varying physiological parameter serial data stream of single bits.

5,300,094

SERVO MUSCLE CONTROL

Michael J. Kallok, New Brighton, and Brian B. Lee, Golden Valley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 639,192, Jan. 9, 1991, abandoned. This application Mar. 19, 1992, Ser. No. 854,542
Int. Cl.[5] A61N *1/08*
U.S. Cl. 607—042 **4 Claims**



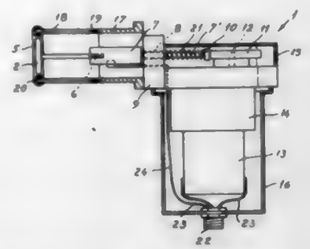
1. An apparatus comprising:
a. a pulse generator for generating a sequence of stimulation pulses at a pulse frequency;
b. an electrode for electrically coupling said sequence of stimulation pulses from said pulse generator to a muscle to be stimulated;
c. a pressure sensor means for monitoring tension of said muscle in response to said sequence of stimulation pulses; and
d. means coupled to said pulse generator and said pressure sensor for adjusting said pulse frequency of said generator in response to said monitoring by said pressure sensor.

5,300,095

ELECTRO-MECHANICAL APPARATUS FOR TREATING PAIN

Angel Z. Salazar, 151-161 Avda. Hospital Militar, E-08034 Barcelona, Spain

Filed Jul. 27, 1992, Ser. No. 919,933
Claims priority, application Spain, Aug. 8, 1991, P 9101924
Int. Cl.[5] A61N *1/02*
U.S. Cl. 601—21 **10 Claims**



1. An electro-mechanical apparatus for the treatment of an area of pain comprising:
a metal active electrode having a first end and second end, said first end of said electrode being electrically insulated and being structured and arranged to be applied to an area of pain, said second end of said electrode being threaded,
a mechanical device having a housing arranged to form a grip, said grip allowing manual manipulation of said electrode on the area of pain,
an electrode holder stem arranged in said housing and having a first and second end, said first end of said stem contacting said second end of said electrode,
a cam arranged in said housing and being contacted by said second end of said stem,
spring means arranged to maintain the contact between said cam and said second end of said stem,
drive means arranged in said housing of said mechanical device for driving said cam and thus said electrode,
electronic circuit means having an electronic circuit housing and including a control potentiometer and connecting leads for connecting said electronic circuit means to said drive means, said electronic circuit means being coupled to said drive means to drive said electrode at a desired percussion rate of axial reciprocation, said control potentiometer having adjusting means coupled to said electronic circuit housing for adjusting the percussion rate of axial reciprocation of said electrode, and
a high frequency circuit having a high frequency circuit housing and including a connector and a cable for connecting said high frequency circuit to said electronic circuit means, said high frequency circuit transmitting capacitively formed current of high frequency to said electrode via said electronic circuit means to provide percussion to the area of pain.

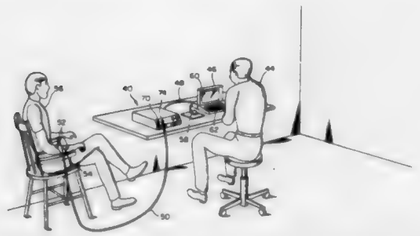
5,300,096

ELECTROMYOGRAPHIC TREATMENT DEVICE

H. Eugene Hall, 10029 NE. 27th St., Bellevue, Wash. 98004; William A. Munday, 6503 57th Ave. NE., Seattle, Wash. 98115; R. Wayne Fields, 6490 Chessington La., Gladstone, Oreg. 97027, and James E. Tillman, 1462 38th Ave., Seattle, Wash. 98122

Filed Jun. 3, 1992, Ser. No. 892,942
Int. Cl.[5] A61N *1/18*
U.S. Cl. 607—48 **16 Claims**

1. An electromyographic treatment system having a treatment device and including and operated by a computer having an interactive graphic display, the treatment device comprising:
a reference electrode and a pair of active electrodes for sensing electromyographic signals from a patient and for delivering an electrical stimulation signal to the patient;
an electromyographic sensing circuit connected to the electrodes, having input signal conditioning means for converting the sensed signals to digital electromyographic words representative of the sensed signals and having an automatic nulling means for establishing a null signal level representative of a background electromyographic signal generated by the patient at rest;
an electrical stimulation circuit connected to the active electrodes, having output signal conditioning means for converting a series of digital stimulation words into a plurality of complex, bipolar voltage pulses forming a series of preselected therapeutic pulse trains defining a stimulation signal;



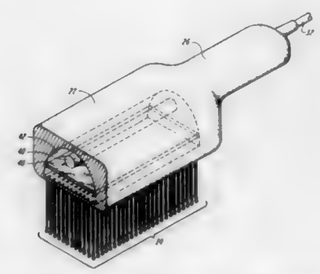
electronic interconnecting means for interconnecting the sensing and stimulation circuits and for interconnecting the sensing and stimulation circuits with the computer; and
software means for use in conjunction with the personal computer for accepting the electromyographic words and generating a normalized image of the sensed signals for display on the interactive graphical display, enabling a therapist to view the sensed signals, enter a plurality of therapeutic parameters into the display, view a graphic representation of a resulting therapeutic pulse train, and for sending digital stimulation words representative of the therapeutic parameters to the stimulation circuit.

5,300,097

FIBER OPTIC PSORIASIS TREATMENT DEVICE

Ethan A. Lerner, 20 St. Paul St., Brookline, Mass. 02146; R. Rox Anderson, 7 Campbell Park, Somerville, Mass. 02144, and Michael R. Lerner, 27 Jayne La., Hamden, Conn. 06514

Continuation of Ser. No. 654,829, Feb. 13, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,893
Int. Cl.[5] A61M *5/06*
U.S. Cl. 607—93 **11 Claims**



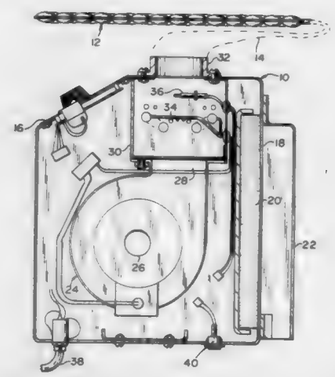
1. A kit for the treatment of psoriasis comprising:
A. a therapeutic device including:
an optical source including means for generating ultraviolet (UV) radiation; and
a light delivery apparatus including a body member and a plurality of optical fibers extending therefrom, each of said fibers including:
a proximal tip affixed to said body member;
a distal tip at the end of said fiber opposite said proximal tip, wherein the butt end of substantially all of said distal tips are characterized by a radius of curvature in the range of 0.25 to 2.0 mm;
means for coupling said generated radiation from said proximal tips of said optical fibers through said fibers, and to said distal tips, said coupling means including a flexible central core disposed within a flexible outer cladding, said central core having a diameter in the range of 0.1 mm to 1.0 mm, and said cladding having a refraction less than the index of refraction of said core, and
B. a lubricant having an index of refraction intermediate of the index of refraction of said core and a predetermined reference value wherein said lubricant has an index of refraction intermediate of the index of refraction of said core and a reference value of about 1.55.

5,300,098

PATIENT WARMER HEATER BLOWER CONTROL

Thomas H. Philipot, Jackson, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed May 14, 1992, Ser. No. 883,942
Int. Cl.[5] A61F *7/00*; H05B *1/02*
U.S. Cl. 607—96 **12 Claims**



1. A hypothermic therapy control system for supplying heated pressurized air to a patient associated distributor comprising, in combination, a housing having a control panel, a fan within said housing having an air inlet and an air outlet, a plenum within said housing in communication with said fan outlet, an air inlet defined in said housing in communication with said fan inlet, an electric heater element within said plenum, a heated air outlet in communication with said plenum receiving heated air therefrom, an electronic control circuit within said housing operatively connected to said heater element adapted to selectively energize and de-energize said element, an adjustable rotary temperature control switch mounted on said housing control panel included in said control circuit adapted to preselect the air temperature within said plenum by rotation thereof to predetermined settings, and a plenum air temperature indicator comprising a plurality of light emitting diodes arranged in a linear pattern defining a light bar indicator mounted upon said control panel indicating the temperature of the air within said plenum and a plurality of reference indicia lines extending between said control switch and subsets of light emitting diodes along said light bar indicator to define temperature ranges which facilitate visual comparison between the temperature selected by said switch and the actual air temperature within said plenum.

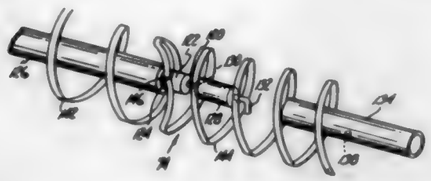
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5,300,099

GAMMA MATCHED, HELICAL DIPOLE MICROWAVE ANTENNA

Eric N. Rudie, Plymouth, Minn., assignor to Urologix, Inc., Minneapolis, Minn.

Filed Mar. 6, 1992, Ser. No. 847,915
Int. Cl.[5] A61B *17/39*
U.S. Cl. 607—101 **25 Claims**



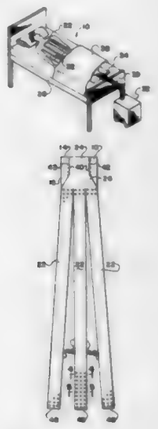
1. A device for interstitial microwave thermal therapy, the device comprising:
- a catheter;
- a coaxial cable carried by the catheter having a first end, a second end, an outer insulator, an outer conductor, an inner insulator and an inner conductor;
- an antenna having a first helically wound section, a second helically wound section of equal length to the first section and a point intermediate to the first and second sections, the intermediate point electrically connected to the outer conductor,; and
- impedance matching means connected to the inner conductor and to the second helically wound section for matching impedances of the antenna and the coaxial cable.

5,300,100

BODY WARMER

Randall S. Hickle, and Patrick J. Griffin, boh of Lubbock, Tex., assignors to Advanced Warming Systems, Inc., Lubbock, Tex.

Filed Aug. 22, 1990, Ser. No. 570,908
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—107 **22 Claims**



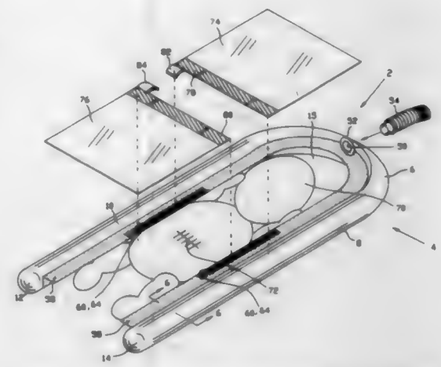
1. A body warmer comprising:
- a. a top panel having
  - i. ends, and the distance across the ends being the width of the panel, and
  - ii. sides, and the distance along the sides being the length of the panel,
- b. a bottom panel having the same size and shape as the top panel,
- c. said panels each being a thin sheet of lightweight, permeable, and pliant material,
- d. said top panel face-to-face with and contacting the bottom panel,
- e. said panels joined together to form a plurality of tubular branches connected to a tubular trunk by a manifold,
- ee. the manifold providing fluid communication between the trunk and the tubular branches.
- f. all the branches closed at one end of the panels,
- g. said trunk being open at the end of the panels opposite the end where the trunks are closed,
- hh. each tubular branch separated by a separation from adjacent tubular branches.
- jj. adjacent branches remain proximate to each other at the ends of said branches joined to the manifold, and
- kk. the separation between the tubular branches extends from the closed ends of said branches toward the manifold so that said branches may be oriented farther apart from each other at the closed ends than at the ends joining the manifold.

5,300,101

METHOD AND APPARATUS FOR TREATMENT OF PEDIATRIC HYPOTHERMIA

Scott D. Augustine, Bloomington; Randall C. Arnold, Minnetonka, and Thomas P. Anderson, Savage, all of Minn., assignors to Augustine Medical, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 227,189, Aug. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 104,682, Oct. 5, 1987, abandoned. This application Jul. 12, 1991, Ser. No. 729,051
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—107 **22 Claims**



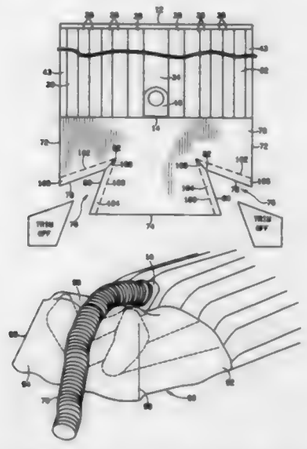
1. A pediatric thermal treatment apparatus for covering and bathing a small child or infant in a thermally-controlled inflating medium, comprising:
- a single inflatable chamber arrangeable in a generally U-shaped configuration defined by a base portion and a pair of side portions extending to a pair of terminal end portions, said configuration defining a thermal care zone for receiving a patent;
- said base portion having a substantially continuous curvature and said U-shaped configuration including a substantially continuously curved transition between said base portion and each of said side portions;
- an air inlet disposed in said inflatable chamber for receiving a thermally-controlled inflating medium into said inflatable chamber;
- a plurality of exhaust ports formed in said inflatable chamber for exhausting an inflating medium from said inflatable chamber toward said thermal care zone; and
- means on each of said side portions for positionally retaining said apparatus laterally adjacent a patent by acting between said each of said side portions and said patient.

5,300,102

THERMAL BLANKET

Scott D. Augustine, Bloomington, and Randall C. Arnold, Maplewood, both of Minn., assignors to Augustine Medical, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 550,757, Jul. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 227,189, Aug. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 104,682, Oct. 5, 1987, abandoned. This application May 19, 1992, Ser. No. 887,233
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—107 **18 Claims**



1. A thermal blanket for covering and bathing a person in a thermally-controlled inflating medium, comprising:
- a flexible base sheet having a head end, a foot end, two edges, and a plurality of apertures;
- an overlaying flexible material sheet attached to a first surface of said base sheet by a plurality of discontinuous seams which form said overlaying material sheet into a plurality of communicating, inflatable chambers, said apertures opening through said base sheet into said chambers;
- a continuous seam between said overlaying material sheet and said base sheet at said head end which forms a non-inflatable viewing area in said blanket at said head end, said non-inflatable viewing area being substantially coplanar with, or parallel to said base sheet; and
- a non-inflatable erectable foot drape formed by an extension of the base sheet beyond the foot end of the thermal blanket.

5,300,103

THERMAL BLANKET AND ABSORBENT INTERFACING PAD THEREFOR

Emil Stempel, Northbrook, and Kenneth E. Riedel, Naperville, both of Ill., assignors to Hollister Incorporated, Libertyville, Ill.

Filed Sep. 24, 1992, Ser. No. 950,391
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—108 **21 Claims**

1. In combination, a flexible thermal blanket for therapeutic hot/cold treatment of a patient; said blanket having flow passages therethrough for the circulation of heated or cooled liquid and having a patient-facing wall of smooth, flexible, polymeric material; and an interfacing pad having a backing layer, a porous absorbent liquid-transmitting patient-facing layer, and an intermediate layer between said backing layer and said patient-facing layer of said pad of an adhesive hydrocolloid-containing liquid-absorbing skin barrier composition with both wet and dry tack; all of said layers being highly



flexible and being secured together, said layers providing a body-conformable pad having an outline generally corresponding with that of said blanket and a surface area no smaller than that of said blanket; and adhesive attachment means releasably securing said backing layer of said pad to said patient-facing wall of said blanket.

5,300,104

THERMOTHERAPEUTIC PAD

Yvon Gaudreault, 58 des Pins, St-Charles Borromée, Joliette (Québec), Canada J6E 1X7 ; Monique Lebeau, 30, rue Ste-Adèle, St-Charles Borromée (Québec), Canada J6E 1K5 , and Rita Robitaille, 79, des Ormeaux, app 1, St-Charles Borromée, (Québec), Canada J6E 7J8

Filed Jan. 26, 1993, Ser. No. 9,028
Claims priority, application United Kingdom, Oct. 20, 1992, 9222037
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—114 **4 Claims**

1. A thermotherapeutic pad for use in soothing mammal body limbs, comprising an envelope, made from a flexible, smooth, porous, thermally conductive sheet material, and a granular material exclusively of any free liquid, said granular material being enclosed within and retained by said envelope; wherein said granular material consists of grains of cereals, said grains of cereal being unsaturated and unbound to one another and having a water content ranging between 10 and 11% by weight of the cereal grains, said grain cereal being oat; whereby free distributive flow thereof within said envelope during pad flexing conformingly against a body limb is enabled, said grains of cereal being characterized by a high moisture inertia as well as by a high thermal inertia; wherein said envelope sheet material is cotton, the cotton sheet defining a peripheral stitch line circumscribing the enclosure defined by said envelope.

5,300,105

THERAPEUTIC PAD AND METHOD

Byron C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Randleman, N.C.

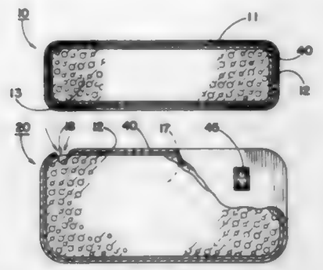
Continuation of Ser. No. 871,826, Apr. 21, 1992, which is a continuation of Ser. No. 643,344, Jan. 22, 1991, which is a continuation-in-part of Ser. No. 486,806, Feb. 26, 1990. This application Jun. 30, 1993, Ser. No. 85,570
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—114 **6 Claims**

1. A method of applying therapy to the body of an animal comprising the steps of:
- (a) forming a microwavable pad having a liquid and a liquid absorbing means sealed within an envelope in which the

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absorbing means is compressed to at least 50% of its non-compressed size;

(b) subjecting the pad to microwave radiation; and



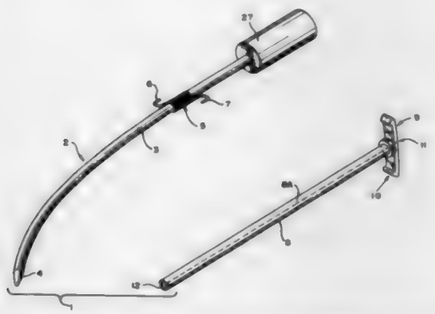
(c) placing the irradiated pad against the body of an animal to therapeutically heat the animal body.

5,300,106

INSERTION AND TUNNELING TOOL FOR A SUBCUTANEOUS WIRE PATCH ELECTRODE

Roger W. Dahl, Andover; James D. Kadera, St. Paul; Robert W. Wickham, Harris; J. Michael Hoch, Plymouth, and John Heil, St. Paul, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Jun. 7, 1991, Ser. No. 710,716
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—119 **31 Claims**



1. A tunneling tool for subcutaneously implanting electrode segments, said tunneling tool comprising:

at least one peel-away sheath for providing a subcutaneous tunnel into which an electrode segment is inserted for purposes of implantation in a patient, said peel-away sheath being removable after electrode segment implantation;

a stylet for inserting said at least one peel-away sheath subcutaneously into a patient, said stylet fitting snugly within said at least one peel-away sheath, and comprising a slightly pointed distal tip for tunneling through tissue, and a rigid body for providing structural support while the tunneling tool is inserted through said tissue; and

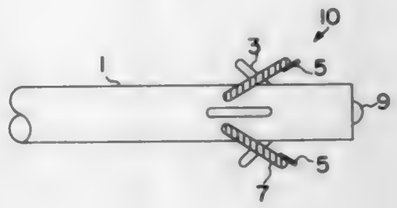
means for maintaining a predetermined rotational orientation of said peel-away sheath with respect to the stylet and the patient.

5,300,107

UNIVERSAL TINED MYOCARDIAL PACING LEAD

Kenneth B. Stokes, Brooklyn Park; Keith J. Proctor, Lino Lakes; Tommy D. Bennett, Shoreview, and Rick D. McVenes, Ham Lake, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 22, 1992, Ser. No. 964,737
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—126 **21 Claims**



1. A myocardial pacing lead comprising:

an electrical conductor for supplying electrical stimulus to a patient's heart, said electrical conductor having a proximal end and a distal end;

insulating sheath means for covering said conductor between said proximal and distal end of said conductor thereof;

electrical connector means for electrically coupling said proximal end of said conductor to a pacemaker;

electrode means electrically coupled to said distal end of said electrical conductor for conducting electrical energy to and from body tissue cells;

first tine means extending from said insulating sheath means proximal said electrode means, said first tine means forming an acute angle with said proximal end of said conductor, said first tine means preventing dislodgement of said electrode means; and

second tine means extending from said insulating sheath means proximal said first tine means and located between said first tine means and said proximal end of said conductor, said second tine means forming an acute angle with said distal end of said conductor, said second tine means preventing lead migration and excessive penetration of said electrode means.

5,300,108

ACTIVE FIXATION LEAD WITH A DUAL-PITCH, FREE SPINNING COMPOUND SCREW

Allan K. Rebell, North Miami, and Demetrios I. Doumenis, Miami, both of Fla., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

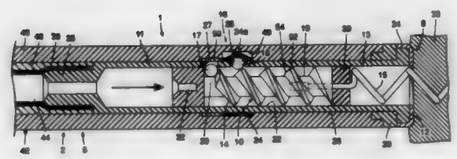
Filed Jan. 5, 1993, Ser. No. 1,126
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—127 **16 Claims**

1. An active fixation cardiac lead for implantation into a patient's heart, comprising:

an elongated flexible lead body having at least one insulated conductor and having a proximal end and a distal end;

an electrode housing positioned at the distal end of said lead body and having a generally centrally located conduit therein, said housing including at least one electrode electrically coupled to said at least one insulated conductor;

a dual-pitch rotatable screw positioned within said electrode housing conduit, said screw including a proximal screw portion having a first thread pitch therein and being adapted to move axially with respect to said electrode housing from a retracted position to an extended position when rotated in a first direction, and from said extended position to said retracted position when rotated in an opposite second direction, said screw including a distal coil portion having a second thread pitch greater than said first thread pitch, said distal coil portion being adapted to engage tissue in the patient's heart;



means for rotating said dual-pitch screw with respect to said electrode housing; and

a free spinning mechanism coupled to said proximal screw portion and responsive to the arrival of said dual-pitch screw at its extended position for limiting said axial movement of said screw while allowing continued first direction rotation of said dual-pitch screw with respect to said electrode housing, whereby said distal coil portion is adapted to draw heart tissue into firm contact with said electrode at the distal end of said lead with continued rotation of the screw after it has reached its extended position.

5,300,109

Patent Not Issued For This Number

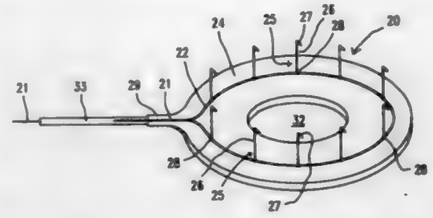
5,300,110

DIRK-BASED EPICARDIAL DEFIBRILLATION ELECTRODE

Scott T. Latterell, Minneapolis; Mark W. Kroll, Minnetonka, and Theodore P. Adams, Edina, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Oct. 15, 1992, Ser. No. 961,463
Int. Cl.[5] A61N *1/04*
U.S. Cl. 607—130 **20 Claims**

1. An epicardial defibrillation electrode comprising a flexible base member having a peripheral edge, a conductive member supported by said base member and extending inward from and adjacent said peripheral edge, said conductive member having a plurality of outwardly extending and generally parallel dirk



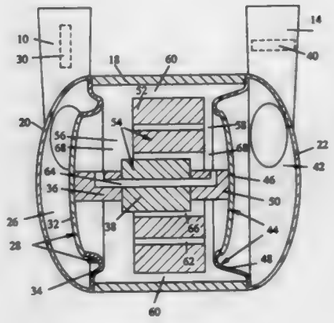
members connected thereto, each said dirk member further having a terminal end portion constructed and arranged for penetrating the myocardium and for delivering a defibrillation current.

5,300,111

TOTAL ARTIFICIAL HEART

Ronald L. Panton, Austin, and William V. Healey, Boerne, both of Tex., assignors to Pyxis, Inc., San Antonio, Tex.

Filed Feb. 3, 1992, Ser. No. 830,051
Int. Cl.[5] A61M *1/10*
U.S. Cl. 623—3 **15 Claims**



1. A totally implantable artificial heart comprising:

(a) a central housing;

(b) a linear electric motor enclosed within the central housing, comprising:

(i) a stationary stator;

(ii) an armature including a first armature end and a second armature end, the armature linearly movable along a longitudinal axis of the armature in response to an electric current provided to the motor, a linear operation of the electric motor producing thermal energy;

(c) a right ventricle cavity forming a selectively variable right ventricle cavity volume for receiving and expelling blood, the right ventricle cavity comprising:

(i) a right ventricle housing attached to the central housing;

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(ii) a first movable wall comprising a first pusher plate attached to the central housing by a first flexible seal and attached to the first armature end such that a linear motion of the armature causes the right ventricle cavity volume to change;

(d) a first inlet port including a first inlet valve for allowing blood to enter the right ventricle cavity when the right ventricle cavity volume increases;

(e) a first outlet port including a first outlet valve for allowing blood to exit the right ventricle cavity when the right ventricle cavity volume decreases;

(f) a left ventricle cavity forming a selectively variable left ventricle cavity volume for receiving and expelling blood, the left ventricle cavity comprising:

(i) a left ventricle housing attached to the central housing;

(ii) a second movable wall comprising a second pusher plate attached to the central housing by a second flexible seal and attached to the second armature end such that the linear motion of the armature causes the left ventricle cavity volume to change;

(g) a second inlet port including a second inlet valve for allowing blood to enter the left ventricle cavity when the left ventricle cavity volume increases;

(h) a second outlet port including a second outlet valve for allowing blood to exit the left ventricle cavity when the left ventricle cavity volume decreases; and

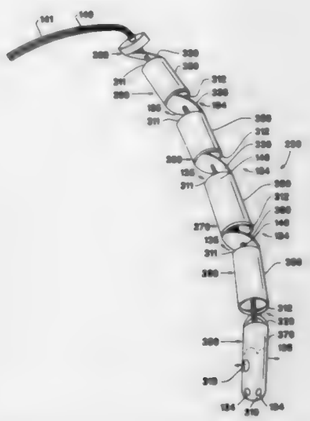
(i) heat transfer means for simultaneously conducting thermal energy from the electric motor to the first and second pusher plates, to the left and right ventricle housings, to the central housing, to blood that is being pumped through the artificial heart, and to body tissues surrounding the artificial heart.

5,300,112

ARTICULATED HEART PUMP

Irwin R. Barr, Sparks, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Jul. 14, 1992, Ser. No. 914,381
Int. Cl.[5] A61F *2/22*
U.S. Cl. 623—3 **7 Claims**



1. An intravascular blood pump for pumping blood in a vascular system comprising:

a. A first pump section including:

i. a first housing having an inlet and an outlet; and

ii. a first impeller rotatably mounted within said first housing;

b. a second pump section including:

i. a second housing having an inlet and an outlet; and

ii. a second impeller rotatably mounted within said second housing;

c. a flexible drive member coupled to said first impeller and said second impeller for rotating said impellers; and,

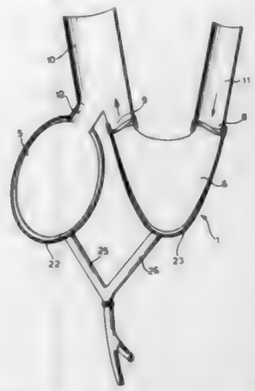
d. a first link member coupled to said first pump section and to said second pump section and permitting relative movement of said first and second pump sections to permit said pump to negotiate bends in said vascular system.

5,300,113

CARDIAC VENTRICULAR ASSISTANCE DEVICE PARTICULARLY FOR COMPENSATING FOR WEAKENED HEART MUSCLE FUNCTION AND FOR MAINTAINING THE VITAL BODY FUNCTIONS

Giorgio Arpesella, Bologna; Bruno Mambrito, Frascati, and Maurizio Zagara, Rome, all of Italy, assignors to Ministero dell'Universita e della Ricerca Scientifica e Tecnologica, Rome, Italy

Continuation of Ser. No. 659,997, Feb. 22, 1991, abandoned.
This application Nov. 12, 1992, Ser. No. 975,133
Int. Cl.[5] A61M *1/10*; A61N *1/362*
U.S. Cl. 623—3 **11 Claims**



1. A cardiac ventricular assistance device configured for use in a blood stream, comprising:

(a) a first selectively contractible artificial chamber for filling with a quantity of blood;

(b) a first valve means operatively connected with said first chamber for admitting a quantity of blood into said first chamber;

(c) a second valve means operatively connected with said first chamber for discharging a quantity of blood from said first chamber;

(d) an outlet tube connected to said second valve means;

(e) a second selectively contractible artificial valveless chamber having an unimpeded opening connected to said outlet tube downstream of said second valve means whereby said second chamber functions by varying a volume of said second chamber in order to selectively vary post-loading of the heart; and

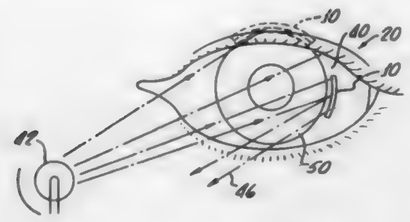
(f) an operating means for synchronistically contracting said first and second chambers in a substantially pulsed manner.

5,300,114

SUBCONJUNCTIVAL IMPLANTS FOR OCULAR DRUG DELIVERY

Arlene E. Gwon, Newport Beach, and David Meadows, Mission Viejo, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 878,034, May 4, 1992, Pat. No. 5,178,635.
This application Aug. 10, 1992, Ser. No. 926,402
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—4 **15 Claims**



1. A subconjunctival ocular implant comprising:

a supply of an active agent

means for supporting said active agent and enabling diffusion of the active agent out of the implant at a selected rate;

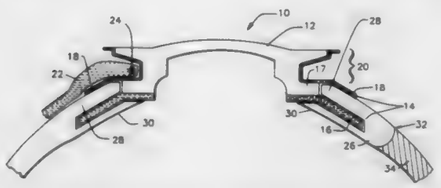
means for providing visual indication of the amount of active agent in said ocular implant when said ocular implant is disposed under a conjunctiva of an eye.

5,300,115

INTRAOCULAR PROSTHESIS

Daniel Py, Wellesley, Mass., assignor to Keratos, Inc., Wellesley, Mass.

Filed Nov. 19, 1992, Ser. No. 978,645
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—4 **14 Claims**



1. A prosthesis suitable for implantation in an eye, comprising:

a lens having a peripheral edge, the peripheral edge being configured with a groove therein; and

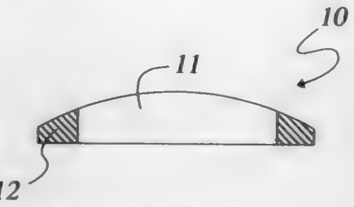
an eye interface member coupled to the lens along the peripheral edge, the interface member having a portion which is configured in a shape which corresponds to said groove and which lines at least an arc of the groove along the peripheral edge for receiving conjunctiva eye tissue, and the interface member having an upper layer and a lower layer which project outwardly from the lens peripheral edge, the upper layer and the lower layer defining a gap therebetween for receiving corneal stroma tissue of an eye.

5,300,116

KERATOPROSTHESIS

Traian V. Chirila, Hillarys; Ian J. Constable, Mosman Park; Geoffrey J. Crawford, Floreat Park, and Albert V. Russo, Yokine, all of Australia, assignors to Lions Eye Institute of Western Australia, Australia

Filed Aug. 14, 1992, Ser. No. 931,027
Claims priority, application Australia, Aug. 5, 1992, 20824/92
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—5 **21 Claims**



1. A keratoprosthesis comprising:

a central transparent portion which is a hydrogel composed essentially of a biocompatible hydrophilic polymer; and

a peripheral portion composed of a porous material which is a hydrogel sponge composed essentially of a biocompatible hydrophilic polymer,

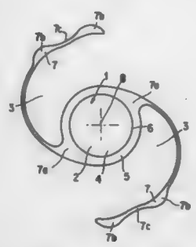
said central portion and said peripheral portion being intimately attached.

5,300,117

INTRAOCULAR IMPLANT FOR CORRECTION OF MYOPIA

Georges Baikoff, Marseille, and Philippe Subrin, Domarin, both of France, assignors to Laboratories Domilens, Lyons, France

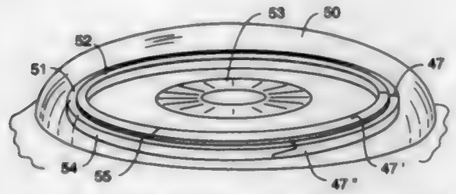
Filed Aug. 23, 1991, Ser. No. 749,167
Claims priority, application France, Sep. 4, 1990, 90 11236
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **3 Claims**



1. An intraocular implant, comprising an optic part consisting essentially of a central diverging lens of minus optical power, whose thickness increases radially from its optical center, and a peripheral edge shaped in the manner of a converging lens, and a haptic part for supporting said optic part, on each side of the optic part, wherein said implant has the function of correcting myopia and is designed to be arranged in the anterior chamber of the eye, without ablation of the crystalline lens, the central diverging lens being a corrective lens, and the peripheral converging lens being a lens for focusing peripheral light in front of the retina, wherein, in combination, radial extension of the central diverging lens is limited by a circle with a radius of between 3.5 and 4.5 mm, radial extension of the peripheral converging lens is increased to a circle with a radius of between 4.8 and 6.5 mm, in order to cover the retina in dim light, and said peripheral converging lens has a plus power in a range between 20 and 60 diopters.

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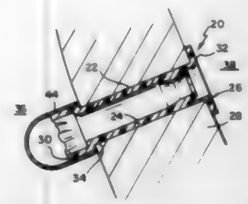
5,300,118
ADJUSTABLE DEVICES FOR CORNEAL CURVATURE ADJUSTMENT
Thomas Silvestrini, Alamo; Mark Mathis, Fremont, and Bryan Loomas, Santa Clara, all of Calif., assignors to Keravision, Santa Clara, Calif.
Filed Sep. 21, 1992, Ser. No. 948,079
Int. Cl.[5] A61M *31/00*
U.S. Cl. 623—5 **8 Claims**



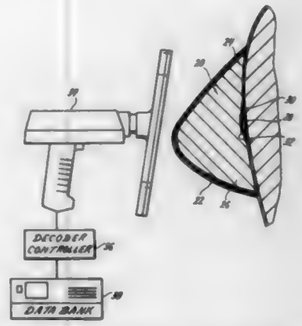
1. An intrastromal corneal ring sized and configured for insertion into a human cornea for refractive correction of a human eye to improve the vision of the eye, comprising:
a first elongated, circular flexible body member made from a biocompatible material and having two ends of; and
a second elongated, circular flexible body member made from a biocompatible material and having two ends wherein the first and second bodies are adjustably interconnected in a manner such that the thickness dimension of the two bodies when interconnected can be changed.

5,300,119
DELIVERY SYSTEM
Eric D. Blom, Indianapolis, Ind., assignor to Hansa Medical Products, Inc., Indianapolis, Ind.
Filed Jan. 10, 1992, Ser. No. 818,853
Int. Cl.[5] A61F *2/02*
U.S. Cl. 623—11 **20 Claims**

1. In combination, a device for insertion into a puncture in a tracheoesophageal wall, the device including a cylindrical body having a longitudinal axis and a flexible first flange provided on an outside surface of the body, the flange having a use orientation in which it projects generally outwardly from the outside surface of the body and an insertion orientation in which it is resiliently folded toward the axis of the body, and means for retaining the flange in its resiliently folded orientation, the retaining means being constructed of a material soluble in fluids present in the tracheoesophageal wall and an esophagus partially bounded by the tracheoesophageal wall.



5,300,120
IMPLANT WITH ELECTRICAL TRANSPONDER MARKER
Terry R. Knapp, Redding, Calif.; Thomas L. Monsees, St. Louis, Mo., and Winston A. Andrews, Danville, Calif., assignors to LipoMatrix Incorporated, Palo Alto, Calif.
Filed Aug. 24, 1992, Ser. No. 934,785
Int. Cl.[5] A61F *2/02, 2/28, 2/30*
U.S. Cl. 623—11 **27 Claims**



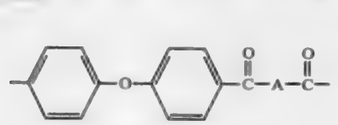
1. In an implantable prosthesis adapted for implantation in a human, the improvement comprising a transponder mounted thereto so that said transponder is implanted as said prosthesis is implanted, said transponder having means for being encoded with a unique tag so that said transponder may be readily identified after implantation by reading said unique tag.

5,300,121
PROCESS FOR THE TREATMENT OF WOOL SKINS
Peter G. Gordon, and Udo Adminis, both of Melbourne, Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia
Continuation of Ser. No. 423,493, Oct. 12, 1989, abandoned, which is a continuation of Ser. No. 165,271, Feb. 1, 1988, abandoned. This application Jan. 14, 1992, Ser. No. 823,064
Claims priority, application Australia, Apr. 28, 1987, PH5631
Int. Cl.[5] C14C *1/00*
U.S. Cl. 8—94.14 **27 Claims**

1. A process for tanning unscoured wool skins with wool fibers attached thereto; said process comprising the steps of:
(a) providing an unscoured wool skin with wool fibers attached thereto, and with a holding agent thereon in sufficient quantity to hold the wool fibers together during said process; said holding agent being selected from the group consisting of: industrial oil; industrial wax, industrial grease; natural oil, natural wax; natural grease, and mixtures thereof;
(b) pickling said unscoured wool skins containing said holding agent in an acid solution;
(c) following said step of pickling, tanning said wool skins by agitating them in a solution containing at least one tanning agent, wherein the float ratio of tanning solution volume to wool skins is no greater than about 25 liters per skin; and
(d) following said steps of pickling and tanning, scouring said wool skins to remove said holding agent therefrom.

5,300,122
COLORATION OF PEKK FIBERS
David J. Rodini, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 1, 1992, Ser. No. 955,274
Int. Cl.[5] C09B *67/00, 67/38*
U.S. Cl. 8—607 **1 Claim**

1. A process for dyeing and reducing the shrinkage of a fiber of a polyetherketoneketone having the following repeating structural unit

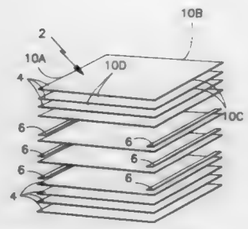


where A is m-phenylene, p-phenylene or both m-phenylene and p-phenylene present in different repeating units, comprising treating the fiber for at least about one-half hour at a temperature of about 120° C. to 140° C. in an aqueous bath of a carrier containing a disperse dye, said carrier being selected from the group consisting of diphenyl ether and acetophenone and being present in an amount of at least 40% based on the weight of the fiber to be treated and said dye being present in an amount of at least 0.5% based on the weight of the fiber.

5,300,123
METHOD OF REFORMING SOLUBLE SALTS TO EFFECT PURIFICATION AND INCREASE CRYSTAL SIZE THEREOF
Gerald J. Grott, 665 Val Verde Cir., P.O. Box 262, Litchfield Park, Ariz. 85340
Continuation of Ser. No. 309,316, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 106,174, Oct. 7, 1989, abandoned. This application Oct. 3, 1989, Ser. No. 416,823
Int. Cl.[5] C01D *3/16, 3/06*
U.S. Cl. 23—303 **6 Claims**

1. A method for the purification and reformation of crystals of a soluble salt selected from the group consisting of NaCl and KCl to reduce the soluble and insoluble impurity content thereof which comprises the following steps:
a) fine grinding said soluble salt crystals to form a finely ground crystal mass having 90 weight percent of salt crystals therein at least as fine as 200 mesh, soluble and insoluble impurities being liberated from the salt crystals during the fine grinding;
b) contacting the crystal mass with an agueous solution of said soluble salt to form a two phase suspension of the salt crystals in a saturated solution and to promote crystal growth by reformation of the crystals from dissolved salt atoms, said contact being maintained for an interval sufficient to provide reformed salt crystals of increased size, said reformed crystals undergoing purification during continued contact with the solution; and
c) removing the reformed salt crystals from the solution, said crystals being characterized by reduced levels of soluble and insoluble impurities.

5,300,124
METHOD FOR FORMING A LAMINATED ELECTROLYTE RESERVOIR PLATE
Richard D. Breault, Coventry, and Michael E. Gorman, Glastonbury, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.
Filed Mar. 31, 1993, Ser. No. 40,955
Int. Cl.[5] H01M *2/00*
U.S. Cl. 29—623.3 **20 Claims**



1. A method for forming a laminated electrolyte reservoir plate, comprising the steps of:
a. mixing graphite powder, reinforcing fibers, cellulosic fibers, and thermosetting resin with a liquid to form a slurry;
b. forming said slurry into a planar sheet;
c. removing said liquid from said planar sheet;
d. cutting said planar sheet into a plurality of main sheets having at least two opposing edges and a plurality of edge strips;
e. laying-up said main sheets and said edge strips such that said edge strips are located along the perimeter of said main sheets adjacent to said opposing edges; and
f. laminating, carbonizing, and graphitizing said lay-up to form the laminated electrolyte reservoir plate.

5,300,125
METHOD OF BONDING A BATTERY PACKAGE
Venus D. Desai, and Robert D. Kreisinger, both of Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 19, 1993, Ser. No. 33,524
Int. Cl.[5] H01M *2/02*
U.S. Cl. 29—623.4 **10 Claims**

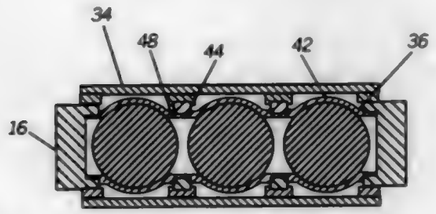
1. A method of fabricating a battery package, comprising the steps of:
A) providing a partially assembled battery package comprising;
a plastic housing having a first portion and a second portion having an exterior surface with one or more apertures;
a plurality of cylindrical-shaped batteries electrically connected to each other and disposed in the housing so that the cylinder wall of each battery is co-located with

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the aperture and is substantially tangent to the housing second portion exterior surface;

positive and negative terminals situated in the housing, a first portion of each terminal connected to the plurality of cylindrical-shaped batteries and a second portion providing an electrical connection on the housing; and

a cover disposed on the second portion exterior surface, comprising a film and an adhesive material, and;



B) ultrasonically welding the housing first portion to the housing second portion, and adhesively bonding a first portion of the cover to the co-located battery cylinder walls and a second portion of the cover to the housing second portion exterior surface by heating and deforming the adhesive material, to form a unitized battery package.

5,300,126

PROCESS FOR IMPROVING OLEFIN ETHERIFICATION CATALYST LIFE

Stephen H. Brown, Princeton; Quang N. Le, Cherry Hill, and Lawrence B. Alemany, Swedesboro, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 19, 1992, Ser. No. 963,955

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—449 **34 Claims**

1. A process for improving catalyst life in olefinic hydrocarbon feedstream conversion processes carried out in contact with solid acid etherification catalyst particles, wherein said hydrocarbon feedstream contains catalyst deactivating amounts of diene, comprising:

treating said feedstream with at least one dienophile under reaction conditions sufficient to form an adduct of said diene and dienophile whereby a reaction product is produced comprising said olefinic hydrocarbon feedstream containing a substantially lower amount of said diene and catalyst life in said conversion processes is enhanced.

5,300,127

SEED COATINGS

Paul M. Williams, Luton, England, assignor to Agricultural Genetics Company Limited, Cambridge, England

Division of Ser. No. 759,624, Sep. 16, 1991, Pat. No. 5,106,648, which is a continuation of Ser. No. 459,313, Dec. 29, 1989, abandoned. This application Feb. 4, 1992, Ser. No. 830,920

Claims priority, application United Kingdom, Jan. 6, 1989, 8900313

Int. Cl.[5] A01C *1/06, 21/00*; **C05F** *11/08*; **C05G** *5/00*

U.S. Cl. 47—57.6 **24 Claims**

1. A soybean seed coated with an inoculant composition comprising a carrier medium, a microorganism having a beneficial effect on the seed or resulting plant, and an adhesive polymeric material, said seed having an average loading of at least 10^5 viable organisms per seed, which loading is maintained under conditions of storage in a sealed irradiated polythene bag at room temperature for at least five months, and wherein:

said carrier is selected from the group consisting of peat, vermiculite, clay, silt, graphite, talc, filter mud, coir dust, bagasse, composted corn cobs, and coal dust;

said adhesive polymer is selected from the group consisting of copolymers of vinyl pyrrolidone, and vinyl acetate, poly (methyl vinyl ether), maleic anhydride copolymers, free acids of the copolymer of methyl vinyl ether and maleic anhydride, vinyl pyrrolidone/styrene copolymers, partially hydrolyzed polyvinyl alcohols, vinyl acetate/butyl acrylate copolymers, vinyl acetate homopolymers, acrylic copolymers, styrene/acrylic ester copolymers, vinyl acetate/ethylene copolymers and polyvinyl acetate; and

said microorganism is selected from the group consisting of bacteria of the genera Rhizobium, Pseudomonas, Serratia, Bacillus, Pasteuria, Azotobacter, Enterobacter, Azospirillum, Cyanobacteria, fungi of the genera Gliocladium, Trichoderma, Coniotherium, Verticillium, Paecilomyces, Metarhizium, mycorrhizal fungi and entomophilic nematodes.

9. A lucerne seed coated with an inoculant composition comprising a carrier medium, a microorganism having a beneficial effect on the seed or resulting plant, and an adhesive polymeric material, said seed having an average loading of at least 10 viable organisms per seed, which loading is maintained under conditions of storage in a sealed irradiated polythene bag at room temperature for at least six months, and

wherein said carrier is selected from the group consisting of peat, vermiculite, clay, silt, graphite, talc, filter mud, coir dust, bagasse, composted corn cobs, and coal dust;

said adhesive polymer is selected from the group consisting of copolymers of vinyl pyrrolidone, and vinyl acetate, poly (methyl vinyl ether), maleic anhydride copolymers, free acids of the copolymer of methyl vinyl ether and maleic anhydride, vinyl pyrrolidone/styrene copolymers, partially hydrolyzed polyvinyl alcohols, vinyl acetate/butyl acrylate copolymers, vinyl acetate homopolymers, acrylic copolymers, styrene/acrylic ester copolymers, vinyl acetate/ethylene copolymers and polyvinyl acetate; and

said microorganism is selected from the group consisting of bacteria of the genera Rhizobium, Pseudomonas, Serratia, Bacillus, Pasteuria, Azotobacter, Enterobacter, Azospirillum, Cyanobacteria, fungi of the genera Gliocladium, Trichoderma, Coniotherium, Verticillium, Paecilomyces, Metarhizium, mycorrhizal fungi and entomophilic nematodes.

17. A clover seed coated with an inoculant composition comprising a carrier medium, a microorganism having a beneficial effect on the seed or resulting plant, and an adhesive polymeric material, said seed having an average loading of at least 10 viable organisms per seed, which loading is maintained under conditions of storage in a sealed irradiated polythene bag at room temperature for at least three months, and wherein:

said carrier is selected from the group consisting of peat, vermiculite, clay, silt, graphite, talc, filter mud, coir dust, bagasse, composted corn cobs, and coal dust,

said adhesive polymer is selected from the group consisting of copolymers of vinyl pyrrolidone and vinyl acetate, poly (methyl vinyl ether), maleic anhydride copolymers, free acids of the copolymer of methyl vinyl ether and maleic anhydride, vinyl pyrrolidone/styrene copolymers, partially hydrolysed polyvinyl alcohols, vinyl acetate/butyl acrylate copolymers, vinyl acetate homopolymers, acrylic copolymers, styrene/acrylic ester copolymers, vinyl acetate/ethylene copolymers and polyvinyl acetate; and

said microorganism is selected from the group consisting of bacteria of the genera Rhizobium, Pseudomonas, Serratia, Bacillus, Pasteuria, Azotobacter, Enterobacter, Azospirillum, Cyanobacteria, fungi of the genera Gliocladium, Trichoderma, Coniotherium, Verticillium, Paecilomyces, Metarhizium, mycorrhizal fungi and entomophilic nematodes.

5,300,128

METHOD OF PLANT TISSUE CULTURE

Tadashi Matsunaga, 2-304 Fuchu-Daisan-Jutaku, 2-41-13, Saiwai-cho, Fuchu-shi, Tokyo 183; Hitoshi Wake, Koshigaya; Mayumi Ono, Matsudo; Kiyoshi Hishinuma, Yashio, and Hironori Umetsu, Tokorozawa, all of Japan, assignors to Pentel Kabushiki Kaisha and Tadashi Matsunaga, both of Tokyo, Japan

Division of Ser. No. 908,894, Jul. 8, 1992, Pat. No. 5,217,892. This application Feb. 25, 1993, Ser. No. 22,124

Claims priority, application Japan, Jul. 27, 1988, 63-187889; Jul. 30, 1988, 63-191284; Jul. 30, 1988, 63-191285

Int. Cl.[5] C10L *1/08, 1/10*

U.S. Cl. 47—57.6 **15 Claims**

1. A synthetic seed comprising a plant regenerating tissue embedded and enclosed in a synthetic albumen and a synthetic membrane, characterized in that said synthetic albumen contains one or more members selected from the group consisting of a culture filtrate from a photosynthetic procaryotic microorganism, an extract from said microorganism, a high molecular weight fraction dialyzed from said culture filtrate, a high molecular weight fraction dialyzed from said extract, a low molecular weight fraction dialyzed from said culture filtrate and a low molecular weight fraction dialyzed from said extract, wherein said plant regenerating tissue is not an intact seed.

5,300,129

COATING FOR IMPROVED RETENTION OF CBN IN VITREOUS BOND MATRICES

Thomas J. Clark, Powell, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Jan. 19, 1993, Ser. No. 5,951

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—295 **19 Claims**

1. An abrasive coated particle comprising a cubic boron nitride particle coated with a thin inner layer formed by the chemical reaction of the cubic boron nitride with a borate glass and an outer layer of a vitreous material.

5,300,130

POLISHING MATERIAL

David Rostoker, Sturbridge, Mass., assignor to Saint Gobain/-Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Jul. 26, 1993, Ser. No. 96,804

Int. Cl.[5] C09C *1/68*

U.S. Cl. 51—309 **10 Claims**

1. A polishing slurry comprising diamond particles having a particle size less than 5 microns, alpha alumina particles with an average particle size of from 20 to 200 nanometers and an amount of a suspending agent effective to maintain the diamond particles in suspension; the slurry having a diamond to alumina weight ratio of from about 1:30 to about 1:90.

5,300,131

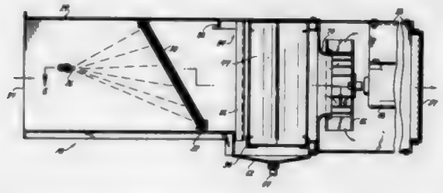
COMPACT SCRUBBER

Donald E. Richard, Rte. 3, Box 205A, Rockport, Ind. 47635

Filed Apr. 13, 1992, Ser. No. 867,360

Int. Cl.[5] B01D *47/00*

U.S. Cl. 55—233 **5 Claims**



1. A portable modular flooded bed scrubber for removing dust particles from the surrounding air, the scrubber comprising:

(a) a housing forming a pathway for dust-containing air through the housing including an inlet means for dust-containing air and outlet means for scrubbed air,

(b) a filter positioned in the scrubber downstream of the inlet means,

(c) water spray means for applying water to the filter for scrubbing dust-containing air,

(d) disentrainment baffle means downstream of the filter means for demisting the scrubbed air,

(e) means for propelling air through the scrubber and out the outlet for scrubbed air permitting the scrubbed air to exit from the housing,

(f) a sump means for collecting and discharging scrubbed dust particles and water from the housing,

(g) means for forming the scrubber in a plurality of modular units which may be easily assembled and disassembled and easily transported and installed in a confined location,

(h) collector means for preventing the bypass of entrained droplets through the unsealed joinery of adjacent modules of the scrubber without complex sealing means, and

(i) the collector means including a gutter and a plurality of channels upstream of the disentrainment baffle means to collect droplets of water impinging the walls and top of the scrubber housing, the gutter and channels having means for directing the collected droplets into the sump, the gutter extending horizontally across the interior of the scrubber upper wall and the channels extending vertically along the interior of the scrubber and walls and communicating with the sump, the channels being adjacent to the disentrainment baffle and the gutter being spaced from the disentrainment baffle in the upstream direction.

5,300,132

CONTACTING DEVICE

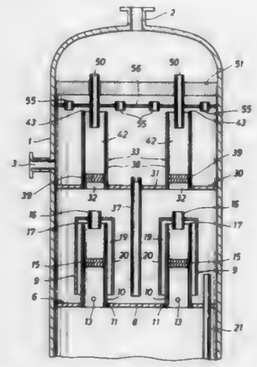
Gerrit Kooijn, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 23, 1993, Ser. No. 21,386

Claims priority, application European Pat. Off., Mar. 25, 1992, 92200854.5

Int. Cl.[5] B01D *45/08, 47/06*

U.S. Cl. 55—257.4 **2 Claims**



1. A device for counter-currently contacting gas and liquid comprising a normally vertical column having a gas inlet and a liquid outlet at the lower end thereof and a gas outlet and a liquid inlet at the upper end thereof, which column is provided with gas/liquid contacting means arranged in the column between the gas inlet and the liquid inlet and with a gas/liquid contacting means arranged above the gas/liquid separation means and below the liquid inlet means, which separation means comprises a horizontal collection tray provided with

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passages communicating with a separation device and with at least one vertical distribution tube extending through the horizontal collection tray to the gas/liquid contacting means, wherein the separation device has a gas outlet which, together with the liquid inlet, discharges onto the horizontal collection tray.

5,300,133

SOOT PARTICLE EXHAUST-GAS FILTER

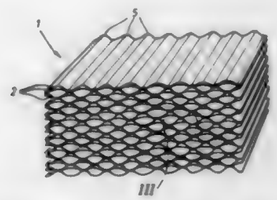
Hans-Dieter Schuster, Schorndorf; Wolfgang Zahn, Ludwigsburg; Hans-Joachim Langer, Remseck, and Bernhard Jokl, Neuhausen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 15, 1993, Ser. No. 5,075

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201111

Int. Cl.[5] B01D *25/26, 29/46*

U.S. Cl. 55—489 **2 Claims**



1. An exhaust-gas soot-particle filter, comprising a right parallelepiped filter element configured as wave-shaped layers of filter plates transverse to a flow direction of exhaust gas and, in a continuous layer sequence, are arranged alternately in parallel to the flow direction to form with one another inlet passages for raw gas and outlet passages for clean gas, wherein the inlet passages have a larger cross-section than a cross-section of the outlet passages and, in the flow direction, are joined gas-tight with an outflow side of the filter whereas the outlet passages are joined gas-tight at an inflow side of the filter, the inlet passages and the outlet passages being formed by the filter plates and extending parallel to each other with uniform cross-section, and respective pairs of mutually neighboring filter plates having an identical phase and periodically, but different amplitude and forming a plate group with a layer structure arranged phase-shifted by 180° with respect to neighboring plate groups.

5,300,134

DEVICE AND PROCESS FOR DEFORMATION OF THE HEAT-SOFTENED END OF A GLASS TUBE

Reinhard Männl, Mitterteich; Alfons Wolfrum, Tirschenreuth, and Franz Neumeier, Arzberg, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 756,861, Sep. 11, 1991, abandoned. This application May 17, 1993, Ser. No. 62,029

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028824

Int. Cl.[5] C03B *23/09*

U.S. Cl. 65—109 **16 Claims**

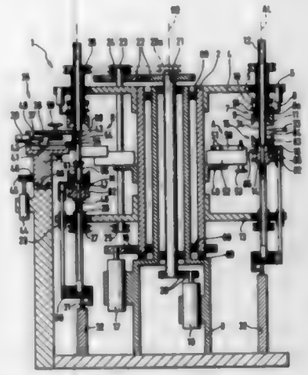
1. A process for forming vials from glass tubes wherein each vial is formed from one end of a glass tube comprising the steps of:

conveying a number of glass tubes at equal spacing distances continuously along a feed path,

heating one end of each glass tube to form a heat softened glass tube end,

forming a mouth on each glass tube by rolling the heat-softened glass tube end with a forming roller against a forming finger as the glass tube rotates around its longitudinal axis,

wherein the step for forming the mouth includes moving the forming roller back and forth relative tot he feed path in coordination with the frequency at which the glass tubes move past the forming roller, reducing the distance of a peripheral point of the forming roller closest to a longitudinal axis of the glass tube as the glass tube moves therepast in a curved manner, and moving the forming roller with eh approach of a subsequent glass tube back from the feed path of the glass tube moving away form the forming roller and then again moving the forming roller forward



toward the feed path into the space between the departing glass tube and subsequent glass tube,

separating a glass tube section from each glass tube having opposite ends with the mouth at one end of the glass tube section, and

forming a vial bottom at the other end of the glass tube section.

5,300,135

ABRASION RESISTANT COATINGS FOR FERTILIZERS

Alice P. Hudson, Lake Park, and Fred E. Woodward, W. Palm Beach, both of Fla., assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Continuation of Ser. No. 655,157, Feb. 14, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,141

Int. Cl.[5] C05C *9/00*

U.S. Cl. 71—28 **5 Claims**

1. An attrition resistant, free-flowing non-smearing essentially dustless slow release fertilizer composition consisting essentially of:

a particulate water soluble urea core having a sulfur coating layer applied directly onto the surface of said fertilizer core,

said sulfur coating layer being coated with from about 0.75 to about 10 percent (by weight of the fertilizer composition) of a topcoating composition which is essentially non-flowable at ambient temperature and has a melting point of from about 60° C. to about 105° C.;

said topcoating composition providing a hard outer coating over said sulfur coating layer and being non-smearing at ambient temperature whereby said sulfur coated fertilizer composition is rendered essentially dust-free on handling,

said top-coating composition comprising a mixture of about 5 to about 50 percent (by weight of the topcoating composition) of a polymer and about 95 to about 50 percent (by weight of the topcoating composition) of a hydrocarbon wax;

said polymer being selected from the group consisting of ethylene-vinyl acetate copolymers in which the weight ratio of ethylene to vinyl acetate is from about 20 to about 2 and the number molecular weight is from about 2000 to 20,000; and ethylene-acrylic acid copolymers in which the ratio of ethyleae to acrylic acid is from about 50 to about 10 and the number molecular weight is from about 2000 to 20,000 and mixtures thereof; and

said hydrocarbon wax being selected from the group consisting of natural petroleum waxes having drop melting points between about 60° C. and 80° C., containing less than about 5% oil as determined by ASTM method D721, and being essentially free of aromatic or cyclic structures; synthetic hydrocarbon waxes melting between about 60° C. and 105° C., and having molecular weights between about 400 and 600 and mixtures thereof.

5,300,136

POTASSIUM FERTILIZER FROM ALUMINUM RECLAMATION BY-PRODUCTS

William O. Stauffer, Moraga, Calif., and F. Robert Hubbard, Knoxville, Tenn., assignors to Imco Recycling, Inc., Irving, Tex.

Continuation-in-part of Ser. No. 744,592, Aug. 13, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 908,714

Int. Cl.[5] C05D *1/02;* **C22B** *21/00*

U.S. Cl. 71—31 **23 Claims**

1. A method of fertilizing soil comprising applying to said soil a potassium-containing mixture formed by a process consisting essentially of:

(a) contacting aluminum-bearing waste material with a molten flux having a salt content of at least about 90% potassium chloride, at a temperature of from about 1300° F. to about 1500° F., to cause aluminum from said aluminum-bearing waste material to separate into a molten aluminum phase substantially free of species other than metallic aluminum, leaving a salt phase containing species from said aluminum-bearing waste material other than metallic aluminum; and

(b) recovering said salt phase as a solid residue free of said molten aluminum phase.

5,300,137

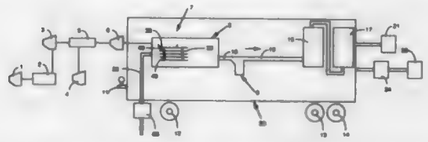
METHOD FOR REMOVING MERCURY FROM CONTAMINATED SOILS AND INDUSTRIAL WASTES AND RELATED APPARATUS

Thomas E. Weyand, Beaver Falls, and Casimir J. Koshinski, New Brighton, both of Pa., assignors to Pittsburgh Mineral and Environmental Technology, Inc., New Brighton, Pa.

Filed Sep. 18, 1992, Ser. No. 947,811

Int. Cl.[5] C22B *43/00*

U.S. Cl. 75—670 **40 Claims**



1. A method of purifying contaminated material comprising

heating said contaminated material to a first temperature to vaporize moisture contained therein without substantially vaporizing the mercury portion thereof,

discharging said vaporized moisture to the atmosphere without substantial condensation thereof,

subsequently heating said contaminated material to a higher temperature to vaporize the mercury portion thereof,

condensing said vaporized mercury portion to obtain at least one of elemental mercury and mercury compounds, and

effecting said purification at essentially atmospheric pressure.

5,300,138

LANGMUIR MODERATE TYPE 1 DESICCANT MIXTURE FOR AIR TREATMENT

John C. Fischer, Marietta, and Tudor L. Thomas, Roswell, both of Ga., assignors to Semco Incorporated, Columbia, Mo.

Filed Jan. 21, 1993, Ser. No. 7,238

Int. Cl.[5] B01D *53/04*

U.S. Cl. 96—125 **56 Claims**

1. A desiccant composition having a Type 1M moisture adsorption isotherm comprising (a) silica gel and (b) modified 13× molecular sieve in which at least 20 percent of the sodium cations have been replaced by one or more metallic cations.

5,300,139

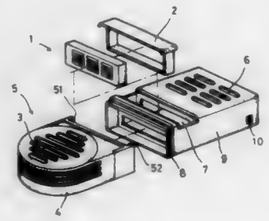
AIR CLEANER WITH A BUILD-IN ASHTRAY

Shih-Chiang Lin, No. 106, Tung-Ho West Street Sec. 2, Shih Lin, Taipei, Taiwan

Filed Sep. 13, 1993, Ser. No. 120,250

Int. Cl.[5] B01D *53/04;* **A24F** *19/10*

U.S. Cl. 96—135 **3 Claims**



1. An air cleaner with a build-in ashtray for refreshing air, comprising:

a cleaner housing having an open end and an air outlet, said open end being provided with a surrounding U-shaped slot thereon;

a fan mounted under the air outlet of the cleaner housing for blowing an air flow from said open end to the air outlet of the cleaner housing;

a removable ashtray mounted on the open end of the cleaner housing, the removable ashtray having two L-shaped wings for hooking the U-shaped slot of the open end of the cleaner housing and being removable from the cleaner housing;

an ashtray cover for covering the removable ashtray, the cover being provided with open holes acting as an air inlet; and

a filter means mounted between the removable ashtray and the cleaner housing for filtering the air flow from the open end of the cleaner housing to the air outlet of the cleaner housing.

5,300,140

HYDROPRIMER FOR METALLISING SUBSTRATE SURFACES

Gerhard-Dieter Wolf, Dormagen; Ulrich von Gizycki; Wolfgang Cohnen, both of Leverkusen; Günther Reichert, Cologne, and Gert Jabs, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 27, 1992, Ser. No. 842,715

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107644

Int. Cl.[5] C23C *18/28*

U.S. Cl. 106—1.11 **14 Claims**

1. A hydroprimer for the deposition of firmly adhering metal coatings onto substrate surfaces by application of a thin layer of the hydroprimer to the substrate surface, if appropriate sensitisation and subsequent currentless wet-chemical metallisation, wherein the hydroprimer contains, as the essential constituents,

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a) a water-dispersible polymer selected from the group consisting of water-dispersible polyacrylates, polybutadienes, polyesters, melamine resins, polyurethanes, and polyurethane-ureas,
b) as metallisation catalyst an ionic noble metal, a colloidal noble metal or both or a covalent or complex compound of a noble metal with organic ligands,
c) a filler selected from the group consisting of organic and inorganic fillers, in an amount of 5 to 35% by weight, and
d) water.

5,300,141

ANTI-STATIC COMPOSITIONS FOR MOLDS, MOLDED PARTS AND PAINTED SURFACES

Floyd Meguiar, 376 Palm Dr., Arcadia, Calif. 91007

Filed May 11, 1992, Ser. No. 881,418

Int. Cl.[5] C09G *1/08*

U.S. Cl. 106—10 **31 Claims**

1. Wax-based composition for protecting and polishing paint, plastic and metal surfaces to remain free of clinging dust, comprising a first hydrocarbon wax having a relatively higher HLB value above about 15, a second hydrocarbon wax having a relatively lower HLB value of about 8, said first and second waxes being combined into a wax blend having an intermediate HLB value based on the proportions of each wax, a solvent for said blend having an HLB value above 12, said solvent and wax combination having a combined HLB value, and a small but anti-static-effective amount of a quaternary compound having an anti-static persistence at said combined HLB value to maintain said surfaces protected, polished and free of clinging dust.

5,300,142

COMPOSITIONS AND PROCESS FOR HIGHLIGHTING SURFACE DEFECTS IN, AND PREVENTION OF ADHESION OF HOT METAL TO, METAL SURFACES

Gerald J. Cormier, Troy, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 928,927, Aug. 11, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 49,695

Int. Cl.[5] C09D *5/00, 129/02*

U.S. Cl. 106—14.14 **15 Claims**

1. A liquid composition which comprises water and:
(A) from about 1.0 to about 60% by weight of polyethylene glycol having a weight average molecular weight in the range from 200 to 500:
(B) from about 0.5 to about 15.0% by weight total of low foaming nonionic and non-staining anionic surfactant;
(C) a corrosion inhibiting amount of corrosion inhibitor; and, optionally, at least one of:
(D) from about 0.3 to about 10% by weight total of low foaming amphoteric surfactant;
(E) from about 0.001 to about 2% by weight of a low or moderate foaming fluorosurfactant;
(F) up to about 1% by weight of a rheology modifying agent; and
(G) up to about 59% by weight, subject to the constraint that the total of components (A) and (G) does not exceed about 60% by weight, of polyethylene glycol having a weight average molecular weight of 600 or higher wherein low of moderate foaming is determined by the method wherein a glass stoppered 250 milliliter measuring cylinder, about 30 milliliters in diameter, is filled to the 150 milliliter mark with a 0.1% by weight solution in water at room temperature of the surfactant to be tested, the measuring cylinder is stoppered and then vigorously shaken for 30 seconds, the foam height immediately after shaking is measured, and the foam height is measured again 30 seconds after shaking is completed, a foam height of 60 milliliters or less after shaking of 30 milliliters of less after 30 seconds after shaking indicates a low foam surfactant, a foam height that does not indicate a low foam surfactant but is not more than 100 milliliters immediately after shaking of not more than 60 milliliters 30 seconds after shaking indicates a moderate foaming surfactant.

5,300,143

INK COMPOSITIONS FOR INK JET PRINTING

William M. Schwarz, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 738,024, Jul. 30, 1991, Pat. No. 5,223,026. This application Dec. 17, 1992, Ser. No. 991,928

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 H **37 Claims**

1. An ink composition which comprises water, a water soluble dye, a first component selected from the group consisting of diphenyl sulfone, methyl phenyl sulfone, ethyl phenyl sulfone, propyl phenyl sulfone, butyl phenyl sulfone, pentyl phenyl sulfone, hexyl phenyl sulfone, heptyl phenyl sulfone, octyl phenyl sulfone, nonyl phenyl sulfone, decyl phenyl sulfone, phenyl benzyl sulfone, phenyl polyoxyethylene sulfone, phenyl ethanol sulfone, phenyl propanol sulfone, phenyl polyoxypropylene sulfone, and mixtures thereof, and a second component selected from the group consisting of (a) cyclic amines having at least one hydrogen atom bonded to a nitrogen atom; (b) cyclic amides having at least one hydrogen atom bonded to a nitrogen atom; (c) diamides having at least one hydrogen atom bonded to a nitrogen atom; (d) polyalkoxy-substituted amides having at least one hydrogen atom bonded to a nitrogen atom; (e) polyimine-substituted amides having at least one hydrogen atom bonded to a nitrogen atom; and (f) mixtures thereof, wherein at least one of the first and second components is a solid at 25° C., and wherein the ink is a liquid.

5,300,144

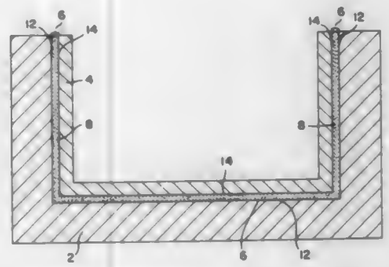
BINDER COMPOSITION

Thomas E. Adams, Baltimore, Md., assignor to Martin Marietta Magnesia Specialties, Inc., Hunt Valley, Md.

Filed Nov. 2, 1992, Ser. No. 970,207

Int. Cl.[5] C08L *5/00*

U.S. Cl. 106—162 **11 Claims**



2. A composition comprising:
at least 1%, by weight, a substantially dry binder selected from the group consisting of mono saccharides, di saccharides, tri saccharides and mixtures thereof, and up to 99%, by weight, aggregate.

5,300,145

LOW AMYLOPECTIN STARCH

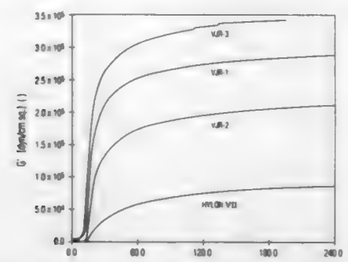
Virgil Fergason, Decatur, Ill.; Roger Jeffcoat, Bridgewater, N.J.; John E. Fannon, Somerville, N.J., and Teresa Capitani, Clark, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Aug. 28, 1992, Ser. No. 937,794

Int. Cl.[5] C08L *3/02;* **C09D** *103/02*

U.S. Cl. 106—213 **20 Claims**

16. A gel comprising water and an effective amount of a substantially pure starch extracted from the grain of a plant having a recessive amylose extendrer genotype that is associated with amylose extender modifier genes, the starch comprising less than 10% amylopectin determined by butanol fractionation/exclusion chromatography measurement, characterized in that the gel is stable, and is formed at a faster rate and to a higher gel strength and stiffness than a gel comprising water and the same amount of a 70% amylose starch.



5,300,146

THERMOSTABLE IRON OXIDE PIGMENTS, PROCESSES FOR THEIR PRODUCTION, AS WELL AS THEIR USE

Friedrich Jonas, Aachen; Andreas Frankenau, and Gunter Buxbaum, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

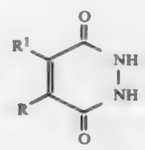
Filed Nov. 16, 1992, Ser. No. 977,063

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 4139052

Int. Cl.[5] C09C *1/22*

U.S. Cl. 106—456 **12 Claims**

1. Iron oxide pigments with an iron(II) content of at least 5%, calculated as FeO, containing an additive for raising the stability towards air oxidation consisting of at least one compound of the formula (I)



(I)

in which
R and R^1, which are the same or different, represent hydrogen or an alkyl group with 1–2 carbon atoms or halogen or an aryl group with 6–10 carbon atoms or together represent an optionally substituted C_{3-6} alkylene group or ring-forming —CH=CH—CH=CH—.

5,300,147

LOW BRIGHTNESS MAGNESIUM SILICATE SLR FILLER, LOW-BRIGHTNESS PAPER CONTAINING THE FILLER AND METHODS TO PRODUCE THE FILLER AND USE IT IN LOW BRIGHTNESS PAPERS

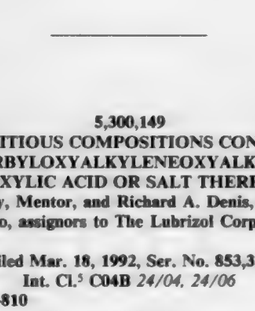
Leif B. Martensson, and Kaarina Heikkila, both of Hamina, Finland, assignors to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 674,293, Mar. 22, 1991, Pat. No. 5,201,950, which is a continuation of Ser. No. 262,930, Oct. 26, 1988, abandoned. This application Apr. 12, 1993, Ser. No. 45,146

Int. Cl.[5] D21H *17/69, 17/01*

U.S. Cl. 162—181.6 **8 Claims**

1. A paper product comprising paper, and a brightness lowering amount of a filler comprising:
about 50 to 75 wt. % SiO_2;
about 5 to 12 wt. % MgO;
about 10 to 50 wt. % silica leach residue (SLR)
about 0 to 6 wt. % Fe_2O_3; and



about 0 to 7 wt. % Al_2O_3, wherein the proportion MgO:SiO_2 is about 1:2.0–4.0.

5,300,148

PIGMENTS, THEIR PRODUCTION AND USE

Manuel J. Domingo, Barcelona, Spain; Rolf Hasler, Riehen, Switzerland; Tibor Robinson, Basel, Switzerland, and Viktor Sanahuja, Reinach, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Apr. 16, 1992, Ser. No. 869,681

Claims priority, application United Kingdom, Apr. 17, 1991, 9108135

Int. Cl.[5] C08K *5/45*

U.S. Cl. 106—498 **38 Claims**

36. A process for producing a pigment (P) which comprises reacting a colored leuco sulfur dye (L) with at least one cationizing compound (A) which is suitable for the introduction of at least one desolubilizing cation to produce a desolubilized reaction product containing a reactive primary or secondary amino group and either standardizing said desolubilized reaction product and then reacting the standardized product with (B) a mono- or polyfunctional aldehyde and/or (C) a methylol compound or further reacting said desolubilized reaction product with (B) and/or (C) and then standardizing the product of the further reaction.

5,300,149

CEMENTITIOUS COMPOSITIONS CONTAINING HYDROCARBYLOXYALKYLENEOXYALKYLENECARBOXYLIC ACID OR SALT THEREOF

Scott T. Jolley, Mentor, and Richard A. Denis, Chagrin Falls, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 18, 1992, Ser. No. 853,380

Int. Cl.[5] C04B *24/04, 24/06*

U.S. Cl. 106—810 **24 Claims**

1. A composition, comprising (A) a cementitious material, (B) water and (C) a hydrocarbyloxyalkyleneoxyalkylenecarboxylic acid or a salt thereof wherein (B) is present at from 5% to 70% and component (C) is present at from 0.01% to about 5% by weight of the composition.

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5,300,150

PROCESS FOR THE IONIC EXCHANGE OF IONIZED STARCHES AND THE IONIZED STARCHES THUS OBTAINED

Patrick Fuertes, Lambersart, and Jean-Louis Druex, Estaires, both of France, assignors to Roquette Freres, France

Filed Jul. 10, 1991, Ser. No. 727,956
Claims priority, application France, Jul. 10, 1990, 90 08767
Int. Cl.[5] C13J *1/06;* **C08B** *30/00, 31/02*
U.S. Cl. 127—70 **14 Claims**

1. Process for the ionic exchange of ionized starch comprising:

selecting a naturally or chemically ionized cereal or tuber granular starch containing ionic substituents associated with counter-ions selected from the group consisting of organic and inorganic cations and anions, the anions being selected from the group consisting of halide, nitrate, nitrite, sulphate, sulphite, thiosulphate, acetate, adipate, citrate, gluconate, p-tosylate, formate, pripionate, phosphate, borate, thiocyanate, sulphonate ions and the cations being selected from the group consisting of sodium, potassium, magnesium, calcium, barium, manganese, iron, nickel, lead ions,

preparing a solution comprising one or more exchange ions different from said counter-ions of said ionized granular starch and capable of replacing said counter-ions of said ionized granular starch, these exchange ions being selected from the group consisting of organic and inorganic cations and anions, the anions being selected from the group consisting of halide, nitrate, nitrite, sulphate, sulphite, thiosulphate, acetate, adipate, citrate, gluconate, p-tosylate, formate, propionate, phosphate, borate, thiocyanate, sulphonate ions and the cations being selected from the group consisting of sodium, potassium, magnesium, calcium, barium, manganese, iron, nickel, lead ions,

washing said granular ionized cereal or tuber starch with said solution, thus replacing said counter-ions of said starch with exchange ions present in said solution,

recovering the resulting exchanged ionized starch and solution containing the counter-ions initially combined to the starch.

5,300,151

METHOD OF CLEANING A TUBULAR WITH HARDENED LAYER GELATIN PIG

Frank E. Lowther, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 10, 1992, Ser. No. 896,634
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—8 **10 Claims**

1. A method for cleaning a tubular comprising:

passing a gelled, cleaning pig through said tubular wherein said pig contacts the interior wall of said tubular to remove scale and push said scale and other debris ahead through said tubular, said cleaning pig comprising:

a body of gelled gelatin having an hardened layer on its outer surface and having a size sufficient for the periphery of said body to contact the interior wall of said tubular when said pig is positioned in and passes through said tubular; wherein said body of gelled gelatin is formed from a mixture of (a) common gelatin of the type derived from collagen and (2) a heated liquid which is then allowed to cool to ambient temperature.

5,300,152

METHOD OF CLEANING TUBULAR WITH FROZEN LAYERED GELATIN PIG

Frank E. Lowther, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 27, 1992, Ser. No. 919,323
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—8 **9 Claims**

1. A method for cleaning a tubular comprising:

passing a gelled, cleaning pig through said tubular wherein said pig contacts the interior wall of said tubular to remove scale and push said scale and other debris ahead through said tubular, said cleaning pig comprising:

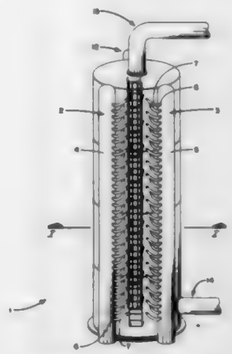
a body of gelled material having an frozen layer on its outer surface and having a size sufficient for the periphery of said body to contact the interior wall of said tubular when said pig is positioned in and passes through said tubular; wherein said body of gelled material is formed from a mixture of (a) common gelatin of the type derived from collagen and (b) a heated liquid which is then allowed to cool ambient temperature.

5,300,153

PROCESS FOR CLEANING A NITRIC ACID ABSORPTION COLUMN

Gerald G. Burtner, P.O. Box 80786, Baton Rouge, La. 70898

Continuation of Ser. No. 682,102, Apr. 5, 1991, Pat. No. 5,213,623. This application Feb. 9, 1993, Ser. No. 16,070
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—8 **10 Claims**



1. A method of cleaning a nitric acid absorption column having a coil which has multiple 180° bends and is provided with an access port and an exit port, having a cooling fluid supply manifold header and header hose, and having a cooling fluid return manifold header and header hose, which comprises:

(a) cleaning the coil by:

(i) inserting a pig through the access port and into the coil,

(ii) maintaining pressure by a fluid pump on the pig sufficient to force the pig through said coil, and

(iii) capturing the pig after it passes through the exit port; and

(b) cleaning the cooling fluid supply manifold headers and header hoses and the cooling fluid return manifold headers and header hoses of an absorption column by:

(i) operatively connecting a valve means to a high pressure fluid supply to control the amount of fluid flowing through the valve means and into a flexible hose which has been operatively connected to the valve means to receive the high pressure water,

(ii) operatively attaching a hollow tube having a nozzle provided with reverse direction orifices and of a length greater than the length of the manifold header and the header hose, to the opposite end of the flexible hose to receive the high pressure water from the flexible hose and to allow the high pressure water to exit from the reverse direction orifices,

(iii) inserting the nozzle into the header nipple of the header hose until it emerges into the manifold,

(iv) opening the valve means to allow high pressure water to flow out the reverse direction orifices, and

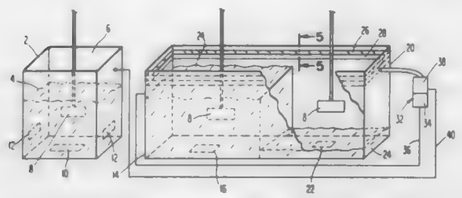
(v) pulling the nozzle out of the header or header hose.

5,300,154

METHODS FOR CLEANING ARTICLES

Gerald J. Ferber, Northwich, and Graham J. Smith, Chester, both of England, assignors to Bush Boake Allen Limited, United Kingdom

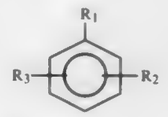
Continuation-in-part of Ser. No. 567,206, Aug. 14, 1990, abandoned, and Ser. No. 600,372, Oct. 17, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 872,210
Int. Cl.[5] B08B *3/00, 3/08;* **C11D** *1/00, 7/50*
U.S. Cl. 134—26 **49 Claims**



1. A process for cleaning dirty articles comprising the steps of:

(a) contacting the dirty articles with a solvent composition consisting essentially of:

(i) C_9–C_{12} aromatic hydrocarbon selected from the group consisting of



and mixture thereof, wherein R_1 is CH_3, R_2 is a straight-chained or branched lower alkyl, and R_3 is selected from a group consisting of hydrogen and straight-chained alkyl having 1 to 5 carbon atoms; and

(ii) an organic polar component having from 7 to 10 carbon atoms selected from the group consisting of alcohols, esters, amines and ketones;

wherein the weight ratio of the aromatic hydrocarbon to organic polar component is from about 95:5 to about 5:95, and

wherein the contacting of the dirty article with the solvent composition results in a solvent residue being deposited on a surface of the article; and

(b) evaporating the solvent residue from the surface of the article by contacting the article with an aqueous medium at a temperature of at least about 60° C., thereby producing a distillate comprising solvent and aqueous medium,

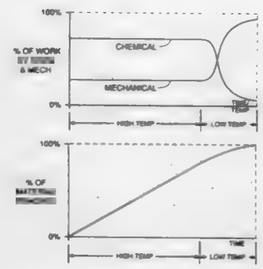
wherein the composition of the solvent in the distillate is substantially uniform throughout the evaporation step.

5,300,155

IC CHEMICAL MECHANICAL PLANARIZATION PROCESS INCORPORATING SLURRY TEMPERATURE CONTROL

Gurtej S. Sandhu, Boise, Id., and Chris C. Yu, Austin, Tex., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 23, 1992, Ser. No. 996,985
Int. Cl.[5] H01L *29/00*
U.S. Cl. 148—33 **6 Claims**



1. A semiconductor made by a process, comprising the following steps:

a) providing a semiconductor wafer having:

a substrate;

at least two sections of a first material (22), located upon the substrate;

a second material covering the first material and substrate;

b) removing the second material portion that is located on top of the first material by a temperature regulated chemical mechanical planarization (cmp) process;

c) a first time period where the CMP process removing chemical has an elevated temperature to increase the rate of the second material removal;

d) a second time period where the CMP process removing chemical has a lowered temperature than the elevated temperature, thus decreasing the rate of the second material removal;

e) a majority of the second material being removed by the first time period, and a smaller percentage of the second material being removed by the second time period; and

f) a majority of the second material being removed during the first time period chemical component of the CMP process, and a smaller percentage of the second material being removed during the first time period by the mechanical component of the CMP process.

5,300,156

BONDED RARE EARTH MAGNET AND A PROCESS FOR MANUFACTURING THE SAME

Fumihito Mohri; Takuji Nomura, and Shougo Miki, all of Otsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 748,769, Aug. 22, 1991, Pat. No. 5,240,627, which is a continuation-in-part of Ser. No. 733,749, Jul. 24, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,402
Claims priority, application Japan, Jul. 24, 1990, 2-195958; Aug. 11, 1990, 2-213110; Nov. 14, 1990, 2-309199
Int. Cl.[5] H01F *1/02*
U.S. Cl. 148—104 **10 Claims**

1. A process for manufacturing a bonded rare earth magnet comprising coating the particles of a powder of a magnetic material containing at least 50 atom % of iron with a compound produced by reacting with an epoxy resin one or more of a polyhydric phenol having adjacent hydroxyls, a polyhydric phenolic carboxylic acid having adjacent hydroxyls, an ester of a polyhydric phenol and a polyhydric alcohol having adjacent hydroxyls, and a polycyclic and polyhydric phenol having adjacent hydroxyls, or coating said particles with a mixture of said compound and another resin, or coating said

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particles with said compound and then with another resin to form a double resin coating on the surfaces of said particles; and molding said coated powder by using another synthetic resin as a binder.

5,300,157

ALUMINUM-BASED INTERMETALLIC COMPOUND WITH HIGH TOUGHNESS AND HIGH WEAR RESISTANCE

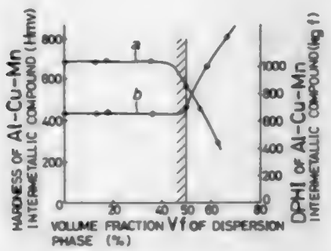
Sinji Okabe; Takashi Iwasa, and Naoya Watanabe, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,632

Claims priority, application Japan, Apr. 26, 1991, 3-122928; Apr. 30, 1991, 3-124513

Int. Cl.[5] C22C *21/00*

U.S. Cl. 148—437 **14 Claims**



1. An Al-based intermetallic compound having a high toughness and a high wear resistance, which contains an Al-based intermetallic compound matrix phase and a eutectic crystal-forming element capable of eutectic reaction with Al in an amount of from 5% by weight (inclusive) to 30% by weight (inclusive), said eutectic crystal-forming element being in at least one form selected from the forms of (1) a solid solution incorporated into the Al-based intermetallic compound matrix phase and (2) a eutectic crystal Al-based intermetallic compound dispersion phase dispersed in the Al-based intermetallic compound matrix phase, wherein:

said Al-based intermetallic compound matrix phase contains at least one element selected from a group consisting of Ni, Cu, Co, Fe and Mn as a matrix phase-forming element;

said eutectic crystal-forming element is at least one element selected from a group consisting of Ni, Cu, Co, Fe, Mn, Ag, Pd, Pt, La, Ce, Li and Mg, and said eutectic crystal-forming element is different than the matrix phase-forming element; and

when said eutectic crystal Al-based intermetallic compound dispersion phase is at least one of the selected forms, the volume fraction Vf of said eutectic crystal Al-based intermetallic compound dispersion phase is present in a measurable amount less than or equal to 50%.

5,300,158

PROTECTIVE COATING HAVING ADHESION IMPROVING CHARACTERISTICS

Szuchain Chen, and Nina Yukov, both of Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

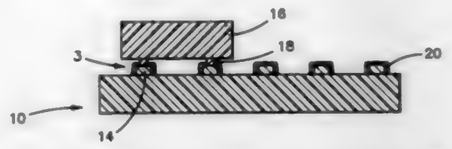
Filed May 26, 1992, Ser. No. 889,036

Int. Cl.[5] C25D *7/06*

U.S. Cl. 148—258 **14 Claims**

1. A method of treating a copper or copper alloy substrate to provide improved oxidation resistance and chemical resistance, comprising:

treating said substrate with an aqueous solution containing from about 0.1 to about 10 g/l of chromium (VI) ions and from about 1.5 to about 10 g/l of phosphate ions, said phosphate ions being provided from a source selected from the group consisting of phosphoric acid, a mixture of sulfuric acid and sodium phosphate, a mixture of sulfuric acid and potassium phosphate, and a mixture of sulfuric acid and lithium phosphate.



5,300,159

METHOD FOR MANUFACTURING SUPERPLASTIC FORMING/DIFFUSION BONDING TOOLS FROM TITANIUM

Michael D. Petzoldt, Chesterfield, and Steven M. Sullivan, St. Peters, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Dec. 23, 1987, Ser. No. 137,094

Int. Cl.[5] C22F *3/00;* **B32B** *15/20*

U.S. Cl. 148—525 **8 Claims**

1. A method for manufacturing superplastic forming/diffusion bonding tooling, comprising;

a) forming said tools from metal selected from the group consisting of titanium and titanium alloys;

b) coating said tools by ion vapor deposition with a thin conformal layer of a material selected from the group consisting of aluminum and aluminum alloys;

c) heating said coated tool sufficiently to cause an eutectic reaction interdiffusing the aluminum and the titanium layers, resulting in a titanium aluminide interface between the aluminum and the titanium; whereby, said tools may be exposed to elevated temperatures and oxidative atmospheres without exhibiting oxidation-degradative scaling, and whereby said tool will exhibit improved diffusion bonding.

5,300,160

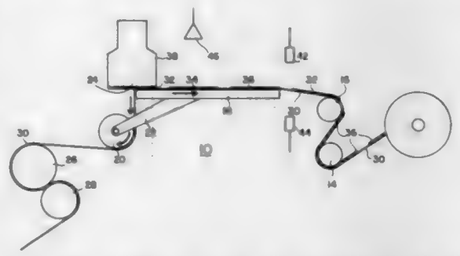
LABEL TRANSFER DEVICE AND METHOD

Richard M. Wilson, Caldwell, and Alton W. Hezeltine, Idaho City, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 17, 1992, Ser. No. 978,017

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—64 **14 Claims**



1. A label transfer device for transferring labels having printed information on one surface and an adhesive on the other surface, from a label tape ribbon having a having a leading end, a trailing end and, a plurality of labels adhered seriatim thereto, to a transfer device for repositioning and placement of a label on a product or package, which comprises:

a frame;

a stripping plate having a first surface and a longitudinal axis slidably attached to said frame and capable of being slid along said longitudinal axis from a first position to a second position, said stripping plate further having a transverse stripping edge at one end of said plate;

means for positioning a label tape having a label attached thereto adjacent to the first surface of the stripping plate;

means for drawing and holding the leading end of the label tape over and around the stripping edge;

means for advancing the label tape across the first surface of the stripping plate;

means for positioning a label attached to the label tape in a stripping position adjacent to the stripping edge of the stripping plate when the stripping plate is in the first position;

means for holding both the leading end and the trailing end of the label tape fixed when a label attached to the label tape is positioned in the stripping position and when the stripping plate is slid from the first position to the second position;

attachment and transfer means for selectable attachment to the label when it is held fixed in its stripping position;

means for sliding the stripping plate from the first position to the second position so as to strip from the label tape a label held fixed in its stripping position and selectably attached to the attachment and transfer means.

5,300,161

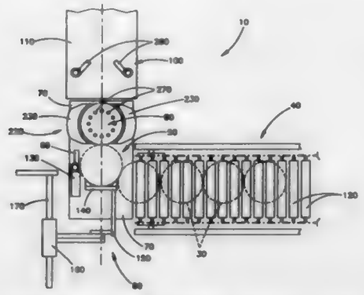
METHOD FOR REGISTERING BOTTLES

Eric Gifford, Chargin Falls, Ohio, assignor to Automated Label Systems Company, Twinsburg, Ohio

Division of Ser. No. 708,509, May 31, 1991, Pat. No. 5,232,541. This application Jul. 30, 1993, Ser. No. 99,871

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—64 **10 Claims**



1. A method for labeling tubular product containers with tubular sleeves, comprising the steps of:

(a) advancing a container to be labeled to a product presenting position;

(b) engaging said container at the presenting position with an advancing conveyor and driving said engaged container toward a labeling station;

(c) pushing a predecessor container out of said labeling station with said driven container;

(d) halting said predecessor container with a downstream gate;

(e) registering said driven container at said labeling station by stopping it with said predecessor container;

(f) conveying said predecessor container further downstream; and

(g) applying one of said tubular sleeves to said registered container.

5,300,162

PROCESS FOR THE PRODUCTION OF AN OPTICAL COUPLER FOR POLYMERIC OPTICAL FIBERS

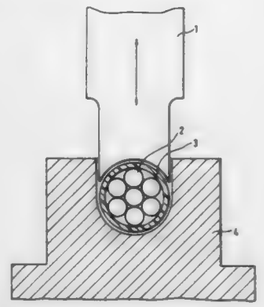
Andreas Brockmeyer, Liederbach; Hans Vowinkel, Flörsheim; Werner Groh, Lich; Thomas Stehlin, Hofheim am Taunus, and Jürgen Theis, Oberursel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 27, 1991, Ser. No. 799,372

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4038018

Int. Cl.[5] B65H *69/02;* **B32B** *31/16*

U.S. Cl. 156—73.2 **9 Claims**



1. A process for the production of an optical coupler for polymeric optical fibers by arranging and bundling fibers in the same direction and connecting them, which comprises warming only the core material of the fibers over the region to be welded to a temperature of from 50° to 250° C. for a period of from 0.2 to 3 hours and subsequently welding the fibers with the aid of ultrasound.

5,300,163

PROCESS FOR FABRICATING A MULTILAYER CERAMIC CIRCUIT BOARD

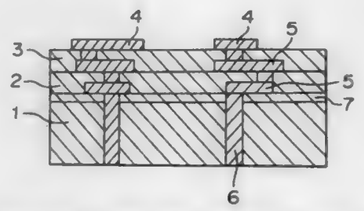
Shiro Ohtaki, Yokohama, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 589,215, Sep. 28, 1990, Pat. No. 5,176,772. This application Jul. 14, 1992, Ser. No. 913,049

Claims priority, application Japan, Oct. 5, 1989, 1-258676; Oct. 5, 1989, 1-258677

Int. Cl.[5] B32B *31/26*

U.S. Cl. 156—89 **9 Claims**



1. A process for fabricating a multilayer ceramic circuit board which comprises the steps of:

(i) providing a sintered ceramic substrate having optionally formed via holes already filled with a conductive paste or a conductive substance;

(ii) printing an insulating paste layer in a prescribed pattern on one side or each side of the ceramic substrate;

(iii) applying a conductive paste in a prescribed pattern on the insulating paste layer on the ceramic substrate;

(iv) then, providing a ceramic green tape and forming via holes in the green tape;

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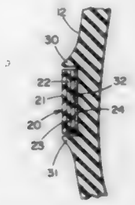
(v) laminating the green tape to the insulating paste layer having a conductive paste in a prescribed pattern thereon;
(vi) optionally pressing and heating the laminate from step (v);
(vii) applying a conductive paste to the green tape to form a conductive pattern and filling the via holes of the green tape with a conductive paste, before or after step (v);
(viii) laminating to the green tape on the ceramic substrate a ceramic green tape having via holes formed, and optionally pressing and heating the laminate;
(ix) applying a conductive paste to the green tape laminated in sep (viii) to form a conductive pattern and to fill the via holes of the same green tape;
(x) optionally repeating steps (viii) and (ix) until the desired number of circuit layers has been obtained; and
(xi) finally pressing and sintering the assembly of the ceramic substrate and the green tapes.

5,300,164

PNEUMATIC TIRE HAVING A DECORATIVE APPLIQUE AND A METHOD FOR APPLYING A DECORATIVE APPLIQUE TO A TIRE

Mario N. DeTrano, Massillon; James H. C. Yang, Cleveland; George G. A. Bohm, Akron; Arthur E. Oberster, North Canton, and Russell W. Koch, Hartville, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,455
Int. Cl.[5] B60C *13/04*; B29D *30/72*
U.S. Cl. 156—116 **9 Claims**



1. A pneumatic tire comprising:
a cured tread area and an outer bead, and an outer sidewall area extending therebetween, the bead defining an opening for receiving a wheel;
a pre-cured, elastomeric, decorative applique on said outer sidewall of the tire; said applique comprising a visible layer and a rubber barrier layer; and,
an adhesive layer positioned between said outer sidewall and said applique; said adhesive layer comprising a first and a second adhesive section each comprising an adhesive composition; each of said first and second adhesive sections each being in adhesive contact with the tire and said applique; wherein said first adhesive section has a cure rate which is faster than said second adhesive section; said applique being bonded to the tire with a peel strength of at least 25 pounds per linear inch.

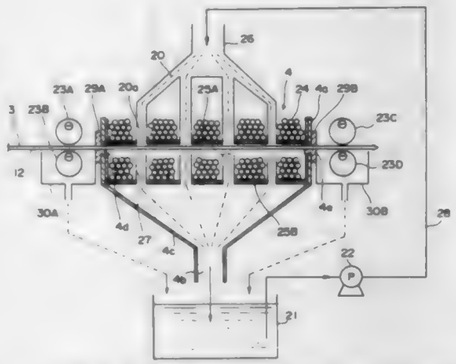
6. A method of providing a cured pneumatic tire with a decorative outer sidewall, comprising the step of:
bonding to the outer sidewall of the cured pneumatic tire a pre-cured, elastomeric, decorative applique with an adhesive; said adhesive comprising a first and a second adhesive section each comprising an adhesive composition; each of said first and second adhesive sections each being in adhesive contact with the tire and said applique; wherein said first adhesive section has a cure rate which is faster than said second adhesive section; and wherein said applique is bonded to the tire with a peel strength of at least 25 pounds per linear inch; said applique comprising a visible layer and a rubber barrier layer.

5,300,165

METHOD FOR MANUFACTURING A METALLIC POROUS SHEET

Hirofumi Sugikawa, Toyonaka, Japan, assignor to Katayama Special Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 437,437, Nov. 16, 1989, abandoned. This application Sep. 19, 1991, Ser. No. 762,251
Claims priority, application Japan, Apr. 14, 1989, 1-96085; Oct. 16, 1989, 1-270034; Oct. 16, 1989, 1-270035; Oct. 16, 1989, 1-270036
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—150 **6 Claims**



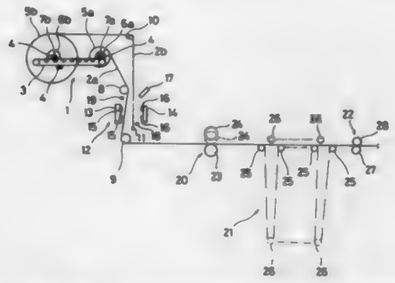
1. A method for continuously manufacturing a metallic porous sheet consisting essentially of the steps of:
a. uncoiling a coil of nonwoven porous sheet and a coil of mesh porous sheet, adhering said nonwoven and mesh porous sheets to each other by melting or with an adhesive, or layering said sheets on one another, and coiling the resultant layered sheet around a roller, said layered sheet consisting essentially of said of said nonwoven sheet and said mesh porous sheet;
b. continuously uncoiling said layered sheet from said roller and making said layered sheet conductive;
c. supplying said layered sheet horizontally into a plating tank through an opening therein;
d. jetting plating liquid, at a flow rate of 50 to 200 m/min from a plating liquid supply nozzle positioned in an upper portion of said plating tank to a plating liquid receiving pipe positioned in a lower portion of said plating tank;
e. forcibly applying the plating liquid onto said layered sheet in a direction substantially perpendicular thereto while said layered sheet is being fed horizontally between said plating liquid supply nozzle and said plating liquid receiving pipe;
f. plating said layered sheet at a current density ranging from 100 to 400 A/m^2; and
g. coiling said layered sheet on which the metal has been deposited around a roller and
wherein said plating liquid passes through at least one case inside said plating tank, said case containing ball shaped anodes, said case communicating with said plating liquid supply nozzle, and said layered sheet being made negatively conductive by passing it through conductive rollers disposed outside the opening of said plating tank.

5,300,166

APPARATUS FOR MANUFACTURING A WEB AND METHOD

Kintaro Aihara, Chiba; Tadashi Honda, Tokyo; Masashi Kobayashi, Kisarazu; Hideyo Rohyama, Yokohama; Kazuhiko Kurihara, Tokyo; Hiroshi Yazawa, Kunitachi, and Toshikazu Ohishi, Kawaguchi, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Institute, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 746,778, Aug. 16, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 33,418
Claims priority, application Japan, Aug. 17, 1990, 2-215818
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—160 **13 Claims**



1. An apparatus for manufacturing a web, the apparatus comprising:
delivery means for delivering first and second long sheet-like members having a plurality of slits along the length, the first and second sheet-like members comprising first and second films, respectively;
the delivery means comprising first guide means for feeding the first film in a substantially vertical direction, and second guide means for suspending the second film along the first film;
the first guide means comprising upper guide means for guiding the first film downwardly and lower guide means for forming a vertical feeding portion of the first film between the upper guide means;
the second guide means comprising a weight which is attached to the front end of the second film and support means for supporting the second film so that the front end of the second film is vertically suspended along the vertical feeding portion of the first film;
bonding means for overlapping and bonding the rear end of the first film with the front end of the second film;
the bonding means comprising heating means and receiving means which face each other and are accessible to each other, the first and second films passing between the heating and the receiving means, each comprising one or more heating and receiving portions respectively;
said first and second films each being comprised of a net-like material;
said bonding means forming a continuous sheet which comprises a first portion of a single layer of the first film, a second portion of two layers in which the first film is bonded to the second film, and a third portion of a single layer off the second film;
the bonding means further comprising an air spray duct for cooling and solidifying the film, a first wire heater for cutting the rear end of the first film with fusing and a second wire heater for cutting the front end of the second film with fusing, said first and second films having bonded portions in overlapped condition adjacent the front end of the second film and adjacent the rear end of the first film, respectively, said first wire heater adapted for cutting off the front end of the second film from said bonded portion of said second film, and said second wire heater adapted for cutting off the rear end of the first film from said bonded portion of said first film; and
spreading means for continuously spreading the sheet which comprised said first, second and third portions to form a web.

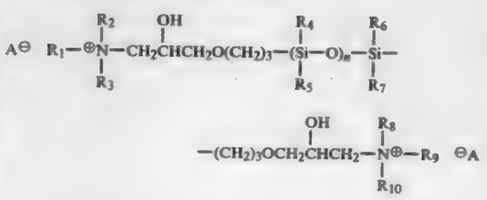
5,300,167

METHOD OF PREPARING A NONWOVEN WEB HAVING DELAYED ANTIMICROBIAL ACTIVITY

Ronald S. Nohr, Roswell, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark, Neenah, Wis.

Continuation-in-part of Ser. No. 817,271, Jan. 3, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 76,528
Int. Cl.[5] D04H *3/16*
U.S. Cl. 156—167 **12 Claims**

1. A method of forming a nonwoven web having delayed antimicrobial activity, in that said web does not exhibit antimicrobial activity upon its formation but develops such activity within from about three hours to about 30 days thereafter without any post-formation treatment, which method comprises the steps of:
(A) melting a mixture which comprises a thermoplastic polyolefin, an additive, and a retardant coadditive;
(B) forming fibers by extruding the resulting melt through a die at a shear rate of from about 50 to about 30,000 sec^{-1} and a throughput of no more than about 5.4 kg/cm/hour;
(C) drawing said fibers; and
(D) collecting said fibers on a moving foraminous surface as a web of entangled fibers;
in which:
(1) said additive has the general formula,



in which:
(a) R_2–R_8 and R_{10} are independently selected monovalent C_1–C_3 alkyl groups;
(b) R_1 and R_9 are independently selected monovalent C_6–C_{25} alkyl groups;
(c) A represents a monovalent anion;
(d) n represents an integer of from 1 to about 20;
(e) said additive has a weight average molecular weight of from about 800 to about 2,000;
(f) said additive has a polydispersity of up to about 3.0; and
(g) said additive is present in an amount of from about 0.5 to about 2 percent by weight, based on the amount of thermoplastic polyolefin; and
(2) said retardant coadditive is a high surface area particulate inorganic or organic material, which retardant coadditive:
(a) is insoluble in the polymer at both ambient and melt-extrusion temperatures;
(b) is present in an amount of from about one-half to about two times the amount on a weight basis of said additive;
(c) has a surface area of from about 50 to about 1,000 m^2; and
(d) is capable of being at least partially coated by said additive.

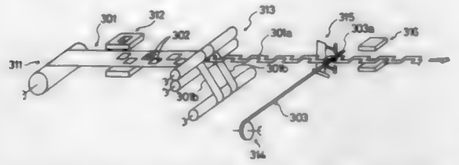
VOL 1161 ISS 1 AP 5 1994 UMI

5,300,168

APPARATUS AND METHOD FOR FOLDING SHEET-FORM MATERIAL

Akira Nakao, Nara; Toyofusa Endo, Takarazuka, and Takeshi Ikeda, Tokyo, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 978,208
Claims priority, application Japan, Dec. 12, 1991, 3-327890; Jan. 13, 1992, 4-003429; Jan. 13, 1992, 4-003430
Int. Cl.[5] B32B *31/00*; B44C *1/22*; C23F *1/00*
U.S. Cl. 156—204 5 Claims



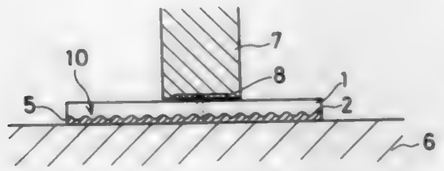
5. A method of manufacturing a conductor foil of a rectangular toothed-edge configuration, which comprises:
forming rectangular holes in a conductor foil tape at a predetermined pitch and at different positions alternate widthwise of the tape, and in plural rows, and
then cutting the conductor foil tape along the length thereof and at positions containing portions of respective rows of rectangular holes.

5,300,169

TRANSFER FOIL HAVING REFLECTING LAYER WITH FINE DIMPLE PATTERN RECORDED THEREON

Shigehiko Tahara, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1992, Ser. No. 826,063
Claims priority, application Japan, Jan. 28, 1991, 3-008384; Feb. 1, 1991, 3-012183; Mar. 11, 1991, 3-043932
Int. Cl.[5] B44C *1/165*
U.S. Cl. 156—230 4 Claims



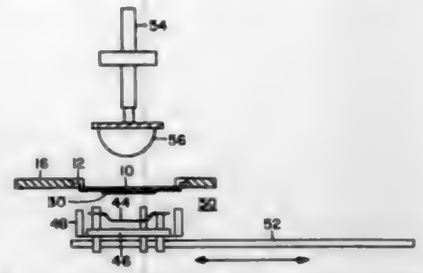
1. An information recording method comprising the steps of:
preparing a transfer foil having a reflection relief hologram comprising at least a resin layer having a fine dimple pattern formed on the surface thereof, and a reflecting layer formed on the dimpled surface of said resin layer, at least a part of said reflection relief hologram being formed as a transferable region;
transferring a predetermined portion of said transferable region to the surface of an object to which information is to be transferred; and
heating at least a part of the transferred portion with a heating means, thereby destroying said reflecting layer.

5,300,170

DECAL TRANSFER PROCESS

John Donohoe, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 783,863, Oct. 28, 1991, abandoned.
This application Mar. 1, 1993, Ser. No. 2,058
Int. Cl.[5] B32B *31/00*; B30B *5/02*; B44C *3/00*
U.S. Cl. 156—235 16 Claims



11. A method of applying an offset, heat release decal to an article surface which includes the steps of
supporting a thin, deformable, silicone membrane at the membrane periphery,
successively indexing the supported membrane through at least three separate work positions,
heating the membrane to a predetermined temperature at the first separate work position,
presenting a decal for pickup by the heated membrane at the second separate work position,
heating the decal to a predetermined temperature,
applying pressure through the membrane at the second work position by a member that is separate and distinct from the membrane, thereby deforming the membrane against the decal,
releasing the pressure on the membrane thereby picking the decal up on the membrane,
bringing the membrane, and the decal on the membrane, into close proximity with the article surface at the third separate work position,
applying pressure through the membrane by a member that is separate and distinct from the membrane, thereby deforming the membrane to bring the decal on the membrane into contact with the article surface, and
releasing the pressure on the membrane, thereby releasing the membrane from the decal and leaving the decal on the article surface.

5,300,171

CURABLE SILICONE PRESSURE SENSITIVE ADHESIVE TAPE AND BONDING METHOD EMPLOYING SAME

Joseph T. Braun, Midland; Joseph N. Clark, Freeland; Virgil J. Johnson, Bay City; Shawn K. Mealey, and William J. Schoenherr, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 748,584, Aug. 22, 1991, abandoned.
This application Feb. 16, 1993, Ser. No. 26,221
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—249 15 Claims

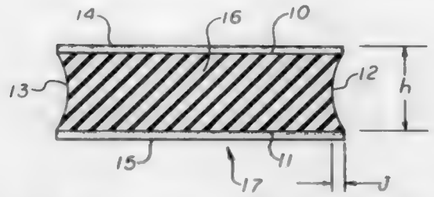
1. A pressure sensitive adhesive tape comprising a tape substrate having at least a portion of one or more sides coated with a silicone pressure sensitive adhesive which is curable to a permanent adhesive in the presence of moisture, the silicone pressure sensitive adhesive comprising a homogeneous mixture of
(A) a silanol-free silicone pressure sensitive adhesive component bearing curing radicals having the formula

$R_a(OR')_{3-a}SiZ$—

and capping radicals having the formula

R_3SiO—

wherein Z denotes a divalent radical linking the silicon atom of the curing radical to a silicon atom of the silicone pressure sensitive adhesive component, R denotes a monovalent hydrocarbon radical, R' denotes an alkyl or alkoxyalkyl radical, and the subscript b has a value of 0 or 1;
(B) an effective amount of a catalyst component to accelerate the reaction of the curing radicals with moisture to form siloxane bonds; and optionally,



(C) an effective amount of a silicon compound bearing a plurality of silicon-bonded alkoxy radicals to improve the shelf life of the adhesive.

11. A method of bonding two articles together with the pressure sensitive adhesive tape of claim 1, the method comprising:
(A) placing the adhesive tape in contact with the two articles so that a surface of each of the two articles is in contact with a portion of the silicone pressure sensitive adhesive,
(B) exposing the silicone pressure sensitive adhesive in contact with the articles to moisture until the silicone pressure sensitive adhesive cures to a permanent adhesive.

5,300,172

SURFACE-PROTECTION METHOD DURING ETCHING

Shinichi Ishiwata; Kazushige Iwamoto, both of Hiratsuka; Michio Ueyama, Yokohama, and Isamu Noguchi, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,353
Claims priority, application Japan, Nov. 1, 1991, 3-313075
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—275.5 9 Claims

1. A surface-protection method when a plate material is chemically etched, which comprises sticking a radiation-curable pressure sensitive adhesive tape onto the area of chemically etchable plate material where etching should not be effected, and after the radiation-curable adhesive layer is cured with irradiation of light or ionizing radiation, subjecting said plate material and adhesive to a chemical etching treatment, wherein said radiation step reduces the adhesive force to such an extent that it is not brought below 20 g/25 mm.

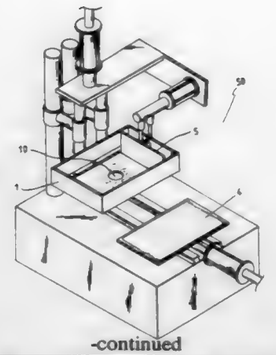
5,300,173

METHOD FOR PRINTING SOFT RESIN

Jenq Y. Lin, No. 1, Lane 35, Feng Ren Road, Feng Shan City, Kaoh Shng County, Taiwan

Filed Apr. 6, 1993, Ser. No. 43,548
Int. Cl.[5] B32B *31/00*; B41F *15/04*
U.S. Cl. 156—277 1 Claim

1. A method for printing soft resin onto an article, comprising:
preparing a composite printing material of said soft resin containing the following compositions:



-continued

PVAC-paste resin	about 25% by weight
Plasticizer	about 30% by weight
Epoxy oil	about 5% by weight
Titan Dioxide BC Complex	about 5% by weight
Stabilizer	about 5% by weight
Hi-Sil 244	about 10% by weight
Pigment, depending on shades of colors to be printed;	
PVC-paste resin	about 20% by weight

making matrices in the same number as that of colors contained in a pattern to be printed with a press for use at different stages of printing;
using a first of said matrices that has a removed first portion corresponding to a first color of a desired pattern to be printed on said article, applying a first printing material in said first color to said article through said first portion of said first matrix beneath which said article is positioned; electrically heating and drying said first printing material which is now printed on said article at 150°–160° C. for 3–5 minutes; and cooling said printing material on said article with a fan for 2–3 minutes;
using a second of said matrices that has a removed second portion having a configuration and position corresponding to said first portion of said first matrix, and a removed third portion corresponding to a second color of said pattern;
using a first sheet of aluminium foil to cover said second portion from a top of said second matrix; putting said article having been printed with said first printing material beneath said second matrix such that a partially printed pattern formed from said first printing material is fitly positioned within said removed second portion of said second matrix and beneath said first sheet of aluminium foil without being crushed by said second matrix; applying a second printing material in said second color to said second matrix without overlaying said second portion; electrically drying said second printing material which is now printed on said article at 150°–160° C. for 3–5 minutes and air cooling said second printing material for 2–3 minutes; and
using a third of said matrices that has a removed fourth portion having a configuration and position corresponding to said first portion of said first matrix and to said second portion of said second matrix, a removed fifth portion having a configuration and position corresponding to said third portion of said second matrix, and a removed six portion corresponding to a third color on said pattern; using a second sheet of aluminium foil to cover said fourth and said fifth portions from a top of said third matrix; putting said article having been printed with said first and said second printing material beneath said third matrix such that a partially printed pattern formed from said first and said second printing material is fitly posi-

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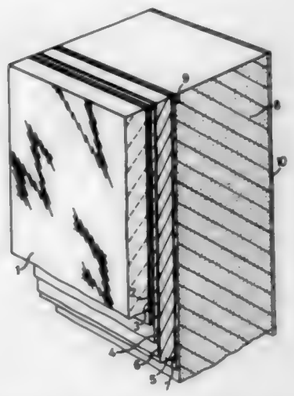
tioned within said removed fourth and fifth portions of said third matrix and beneath said second sheet of aluminium foil without being crushed by said third matrix; applying a third printing material in said third color to said sixth portion of said third matrix without overlaying said fourth and said fifth portions; electrically drying and then air cooling said third printing material which is now printed on said article.

5,300,174

ARTICLES INCLUDING THERMOSETTING-POWDER SURFACE-COATINGS

Roger J. Leach, Cobham, and James F. Lindsay, Tamworth, both of England, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 217,230, Jul. 11, 1988, Pat. No. 5,089,076. This application Aug. 28, 1991, Ser. No. 751,310
Claims priority, application United Kingdom, Jul. 10, 1987, 8716242; Jun. 30, 1988, 8815638
The portion of the term of this patent subsequent to Feb. 10, 2009, has been disclaimed.
Int. Cl.[5] B29C *65/02*
U.S. Cl. 156—283 **17 Claims**



1. In a method of manufacturing a panel for architectural purposes, in which a thermosetting organic powder-coating material applied to surface of a facing sheet of the panel in the form of powder, is heated to melt and cure the powder and thereby form a coating bonded to the surface, the improvement wherein the facing sheet is a sheet consisting of glass having planar front and back surface, the powder is applied to the back surface of the glass sheet, contact is established between the melted powder and a surface of a metal sheet prior to curing and while the powder is in the melted condition, and such contact is maintained during curing so that said metal sheet is thereby bonded, as a thermally-conductive backing, by the cured powder coating to said back surface of the glass sheet.

5,300,175

METHOD FOR MOUNTING A WAFER TO A SUBMOUNT

Lawrence R. Gardner; Michael P. Norman, both of Chandler, and Robert W. Griffith, Jr., Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1993, Ser. No. 82
Int. Cl.[5] B32B *31/20*; **H01L** *21/447*
U.S. Cl. 156—285 **13 Claims**

8. A method for bonding a first wafer to a second wafer, comprising the steps of:

providing a first cavity, the first cavity having a wafer mount;

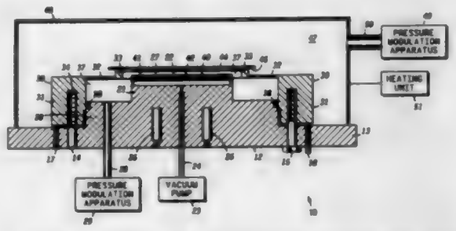
providing the first wafer wherein the first wafer has a first major surface and a second major surface, the second major surface covered by an adhesive material;

placing the first major surface of the first wafer on the wafer mount;

providing the second wafer wherein the second wafer has a major surface;

providing means for supporting the second wafer;

placing the major surface of the second wafer on the means for supporting the second wafer such that the second



wafer rests freely on the means for supporting the second wafer;

providing a second cavity wherein the second cavity encloses the means for supporting the second wafer and the second wafer;

bowing the second wafer and forming a curvature therein until the major surface of the second wafer contacts the adhesive material covering the second major surface of the first wafer; and

modulating the curvature of the major surface of the second wafer after the second wafer has contacted the adhesive material.

5,300,176

PROCESS OF PRODUCING SUBSTANTIALLY VOID-FREE POLYIMIDE COMPOSITES

Murty S. Tanikella, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1992, Ser. No. 883,945
Int. Cl.[5] B29C *65/00*; **B32B** *31/00, 31/26*
U.S. Cl. 156—286 **3 Claims**

1. A process for preparing a substantially void-free cured polyimide composite reinforced with a fibrous substrate comprising:

a. impregnating a fibrous subatrate with a polyimide precursor solution comprising a substantially balanced stoichiometric mixture of an aromatic tetracarboxylic acid, the dianhydride or diester thereof and at least one aromatic diamine in a solvent therefor, said solvent constituting from 40 to 60% by weight of the precursor-solvent solution, and with a strongly basic tertiary or sterically hindered secondary amine having a pKb of between 2.8 and 5 in an amount of from 2.5 to 10.0 mol % based on the diamine component;

b. preparing prepreg from the impregnated fibrous substrate;

c. forming a multi-ply laminate of prepregs and heating the laminate under vacuum to reduce solvent and water to a volatiles content of from about 4 to 6% by weight; and

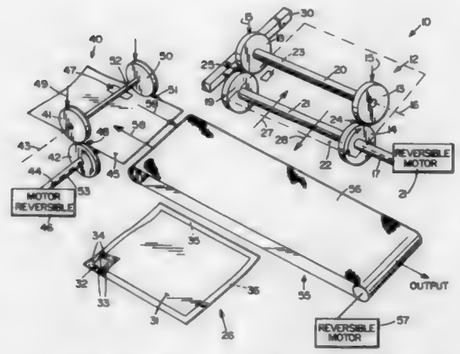
d. consolidating the laminate by hot-pressing under vacuum and curing the consolidated laminate.

5,300,177

METHOD OF PRESSURE SEALING BUSINESS FORMS

Richard S. Downing, Grand Island, and Daniel F. Pustelnik, West Seneca, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 857,277, Mar. 25, 1992, abandoned. This application Sep. 1, 1993, Ser. No. 115,131
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—290 **12 Claims**



1. A method of handling business forms each having at least first and second perpendicular strips of pressure sensitive adhesive of a predetermined width for fixing one part of each business form to another part, utilizing a machine having a first set of rollers rotatable about parallel first and second axes, and a second set of rollers rotatable about parallel third and fourth axes substantially perpendicular to the first and second axes, which rollers apply a sealing force at a nip, comprising the steps of:

(a) feeding a business form into operative association with the nip of the first set of rollers, with the first strip of adhesive aligned with the nip;

(b) rotating the first set of rollers so that the business form is driven through the nip in a first direction, a sealing force being applied by the first set of rollers to the predetermined width of adhesive of the first strip;

(c) just prior to the form being driven completely through the nip, stopping rotation of the first set of rollers, and reversing the direction of rotation thereof, so that the business form is driven through the nip in a second direction, opposite the first direction; and then rotating the form 90 degrees about an axis parallel to the first and second axes; and then

(d) after the business form has been driven through the nip of the first set of rollers in the second direction, passing the form into operative association with the nip of the second set of rollers with the second strip of adhesive aligned with the nip;

(e) rotating the second set of rollers so that the business form is driven through the nip in a third direction, substantially perpendicular to the first and second directions, a sealing force being applied by the second set of rollers to the predetermined width of adhesive of the second strip;

(f) just prior to the form being driven completely through the nip, stopping the second set of rollers, and reversing the direction of rotation thereof so that the form is driven through the nip in a fourth direction, opposite the third direction; and

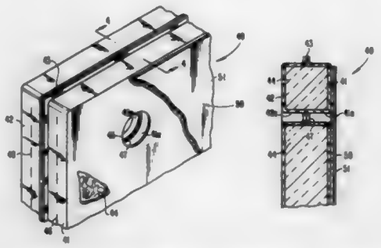
(g) after step (f), removing the form from association with the rollers.

5,300,178

INSULATION ARRANGEMENT FOR MACHINERY

Thomas E. Nelson, and Daniel J. Eigel, both of Anchorage, Ky., assignors to Soltech Inc., Shelbyville, Ky.

Continuation of Ser. No. 693,436, Apr. 29, 1991, abandoned, which is a division of Ser. No. 475,810, Feb. 6, 1990, abandoned. This application Sep. 3, 1992, Ser. No. 939,417
Int. Cl.[5] B32B *31/26*
U.S. Cl. 156—292 **1 Claim**



1. A method of fabricating an acoustical panel for use in sound reduction comprising the following steps:

providing an intermediate layer of acoustical insulation material;

providing a first a vacuum formed, shaped outer layer of a synthetic film material;

providing a second vacuum formed, shaped outer layer of a synthetic film material, whereby the first and second outer layers are vacuum formed so as to closely conform to the size, shape and contour of the insulation material and whereby upon placing the two film layers on opposite sides of the insulation, their peripheral edges abut completely around the insulation;

laminating said first and second outer layer to opposite sides of said intermediate layer of acoustical insulation material by heat metal a portion of said first and second outer layers into said intermediate layer of acoustical insulation material; and,

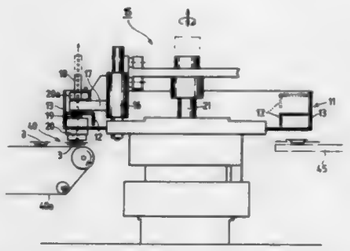
heat-sealing together outer peripheral edges of said first and second outer layers so as to encase said intermediate layer.

5,300,179

MAGNETIC DISK MANUFACTURING APPARATUS

Mitsunobu Usui, and Toshihiro Matsushita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 7, 1992, Ser. No. 864,620
Claims priority, application Japan, Apr. 19, 1991, 3-115585
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—381 **15 Claims**



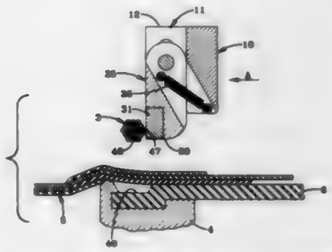
14. An apparatus for manufacturing a magnetic disk wherein a center core having an adhesive substance previously applied thereto is adhered to a magnetic sheet, comprising:

a holder having a plurality of arms extending therefrom, each of said arms having a center core retaining member

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for receiving and retaining said center core, said holder being rotatable such that said retaining members rotate about a 36 degree orbital path;
an annular housing substantially surrounding said orbital path;
means for circulating hot air through said orbital path defined by said housing to partially dry said adhesive applied to said center core;
a plurality of processing stations disposed along said orbital path, wherein the number of said processing stations corresponds to the number of said arms and said processing stations simultaneously process a plurality of center cores, said processing stations comprising at least:
a core feed station, to which said center core having said adhesive applied thereto is fed, said center core being received by said retaining member at said core feed station; and
an adhering station at a position downstream of said core feed station for adhering said center core to said sheet.

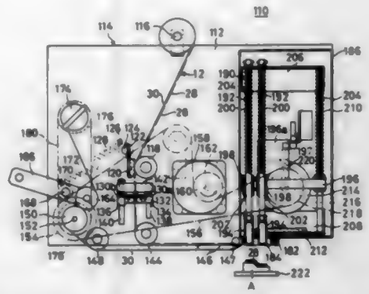
5,300,180
MAGNETIC TIRE BEAD SETTER
Stephen T. Griebling, Akron, Ohio, assignor to Bridgestone/-Firestone, Inc., Akron, Ohio
Filed Jun. 10, 1993, Ser. No. 75,194
Int. Cl.[5] B29D *30/32*
U.S. Cl. 156—403 **16 Claims**



13. A bead setter ring for mounting on a tire building drum; said ring having a plurality of individual bead setters mounted in a spaced circular arrangement on said ring, each of said setters including a holder secured to the setter ring; a finger having a magnetized area thereon for releasably gripping a metallic bead; and means for slidably pivotally mounting the finger on the holder whereby said finger is free to move in a generally radially outward direction upon radial outward movement of bead locks of a tire building drum to grip the bead, and then pivot in a generally axial direction upon axial movement of the setter ring toward a bead load position.

5,300,181
LABEL STICKING APPARATUS
Yasuhiro Yamaguchi, Osaka, Japan, assignor to Osaka Sealing Printing Co., Ltd., Osaka, Japan
Filed Oct. 5, 1992, Ser. No. 956,533
Claims priority, application Japan, Oct. 9, 1991, 3-290621; Dec. 2, 1991, 3-347854; Dec. 2, 1991, 3-347855; Sep. 9, 1992, 4-268036
Int. Cl.[5] B44C *1/00*
U.S. Cl. 156—542 **8 Claims**

1. A label sticking apparatus comprising:
a plurality of pressing means for pressing a label onto an object to be labeled;
a holding means for holding said plurality of pressing means with a first elastic body individually and free to advance or retreat;
a pushing-out means for pushing out said holding means along the advancing direction; and
a stopping means for suddenly stopping said holding means having been pushed out along the advancing direction by said pushing-out means, wherein



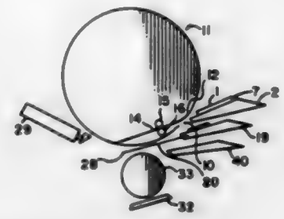
said plurality of pressing means are stopped by said stopping means and thereafter move by inertia along the advancing direction of said pressing means against the elasticity of said first elastic body.

5,300,182
LAMINATOR APPARATUS FOR MAKING IMAGE PROOFS
Bradley C. DeCook, Rochester; Kevin S. Reitter, Hamlin; David A. Smith, Hilton; Mark A. Pietraszewski, and Roger A. Brooks, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 23, 1991, Ser. No. 749,061
Int. Cl.[5] B32B *31/04;* **B65H** *29/00*
U.S. Cl. 156—555 **9 Claims**



1. In a laminating system comprising:
a. a housing for containing the laminating system,
b. feeding means for feeding a material to be laminated and a laminating material to the laminating system,
c. retaining means for retaining the material to be laminated, the retaining means including an entrance slot means for guiding a leading edge of the material to be laminated to a rotary feeding means, the rotary feeding means includes means for feeding the leading edge of the material to be laminated into the rotary feeding means and locking the leading edge of the material to be laminated in the rotary feeding means,
d. releasing means for releasing a laminated material,
e. transport means for transporting the material to be laminated and the laminating material,
f. guide means for guiding the material to be laminated and the laminating material along respective paths to bring said materials together for lamination, and
g. laminating means for laminating said materials together.

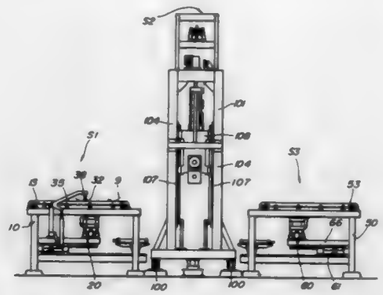
5,300,183
FLEXURE PLATE FOR A LAMINATOR APPARATUS
Bradley C. DeCook, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 23, 1991, Ser. No. 749,065
Int. Cl.[5] B32B *31/04;* **B65H** *29/00*
U.S. Cl. 156—555 **8 Claims**



1. In a laminating system comprising:
a. a housing for containing the laminating system,
b. feeding means for feeding a material to be laminated and a laminating material to the laminating system,
c. retaining means for retaining the material to be laminated,
d. releasing means for releasing a laminated material,
e. transport means for transporting the material to be laminated and the laminating material,
f. guide means for guiding the material to be laminated and the laminating material along respective paths to bring said materials together for lamination,
g. laminating means for laminating said materials together, and
h. conforming means for holding the material to be laminated against a backing portion of the laminating means for preventing creases and wrinkles in the material to be laminated, the conforming means including;
a curved entrance slot means, in the backing portion of the laminating means, for guiding a leading edge of the material to be laminated to a rotary feeding means and for preventing creasing and wrinkling of the material to be laminated,
a flexible plate, in cooperation with the rotary feeding means, for making contact and urging the material to be laminated against the backing portion of the laminating means as the material to be laminated begins its travel with the backing portion of the laminating means.

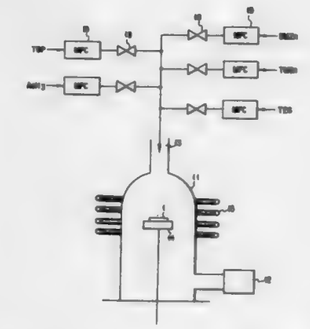
5,300,184
PRESS ROLL APPARATUS FOR MANUFACTURING LAMINATED GLASS
Hiroaki Masunaga, Kyoto, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan
Filed Jun. 24, 1992, Ser. No. 903,985
Claims priority, application Japan, Jun. 24, 1991, 3-178691
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—582 **10 Claims**

1. A press roll apparatus for temporarily or finally bonding two glass sheets with an adhesive intermediate film sandwiched therebetween to manufacture a laminated glass, said press roll apparatus comprising:
a drive source:
a plurality of drive roll units each having a pair of upper and lower presser rolls operatively coupled to said drive source and rotatable by said drive source for pressing the glass sheets therebetween;
a plurality of free roll units each having a pair of upper and lower presser rolls freely rotatable for pressing the glass sheets therebetween;
a first frame housing said drive roll units and said free roll units therein, said drive roll units and said free roll units being vertically positionally adjustably supported by said first frame, said first frame having a pair of horizontal shafts projecting outwardly;
a second frame, said first frame being supported on said second frame by said horizontal shafts for angular movement about the horizontal shafts, said second frame having a pair of horizontally spaced vertical support columns; and



a pair of vertically movable members vertically movably supported by said support columns, respectively, said horizontal shafts being tiltably supported by said vertically movable members for angular movement within a vertical plane containing axes of said horizontal shafts.

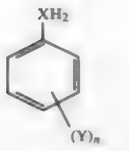
5,300,185
METHOD OF MANUFACTURING III-V GROUP COMPOUND SEMICONDUCTOR
Hisao Hori, Tokyo; Yoshito Kawakyu, Kawasaki; Hironori Ishikawa, Tokyo, and Masao Mashita, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 27, 1992, Ser. No. 858,690
Claims priority, application Japan, Mar. 29, 1991, 3-122002; Apr. 5, 1991, 3-073270; May 7, 1991, 3-101156; Aug. 30, 1991, 3-219101
Int. Cl.[5] C30B *25/02*
U.S. Cl. 156—610 **8 Claims**



1. A method of manufacturing a III-V group compound semiconductor in which a III group source and a V group source are decomposed to grow the III-V group compound semiconductor on a substrate, wherein said V group source is a compound represented by formula (1) given below:

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Formula (1)



(1)

where X represents a V group element, n represents an integer from 1 to 3, and Y represents a group selected from the group consisting of a non-substituted amino group and an alkyl-substituted amino group bonded to the benzene ring at a position selected from the 2-, 4-, and 6-positions.

5,300,186

HETERO-EPITAXIALLY GROWN COMPOUND SEMICONDUCTOR SUBSTRATE AND A METHOD OF GROWING THE SAME

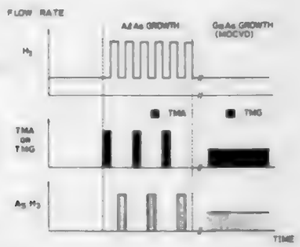
Kuninori Kitahara, Zama; Nobuyuki Ohtsuka, Atsugi, and Masashi Ozeki, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 342,785, Apr. 25, 1989, Pat. No. 5,130,269. This application Apr. 7, 1992, Ser. No. 864,552

Claims priority, application Japan, Apr. 27, 1988, 63-105036; Oct. 20, 1988, 63-264618

Int. Cl.[5] C30B *25/16*

U.S. Cl. 156—613 **6 Claims**



1. A method of growing a gallium arsenide single crystal layer on a silicon substrate, comprising the steps of:

growing a buffer layer of aluminum arsenide on the silicon substrate by atomic layer epitaxy using metal organic chemical vapor deposition wherein pyrolysis of a first source gas for aluminum and a source gas for arsenic are alternately pyrolyzed;

and growing the gallium arsenide single crystal layer on the buffer layer epitaxially.

5,300,187

METHOD OF REMOVING CONTAMINANTS

Israel A. Lesk, Phoenix, Ariz.; Young Limb, Austin, Tex.; Philip J. Tobin, Austin, Tex.; John Franks, Austin, Tex.; Paul T. Lin, Austin, Tex.; Jonathan C. Dahm, Austin, Tex.; Gary L. Huffman, Austin, Tex., and Bich-Yen Nguyen, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1992, Ser. No. 940,108

Int. Cl.[5] B44C *1/22;* **H01L** *21/306*

U.S. Cl. 156—628 **22 Claims**

1. A method of removing contaminants, comprising the steps of:

providing a semiconductor material; and

heating the semiconductor material without the use of ultraviolet irradiation in an ambient comprised of a nonreactive gas and a halogen compound and at a temperature within the range of a minimum temperature where the halogen compound decomposes to halogen atoms, without the use of ultraviolet irradiation, which react with the contaminants present on the semiconductor material to form contaminant-halides and where the contaminant-halides are volatile and a maximum temperature less than or equal to approximately 800° C., wherein an oxide layer of less than or equal to approximately 50 Angstroms is formed on the semiconductor material during the heating, and further wherein a partial pressure of the halogen compound in the ambient is at least sufficient to remove a substantial amount of contaminants and wherein the semiconductor material is heated for at least a time sufficient to remove a substantial amount of the contaminants.

5,300,188

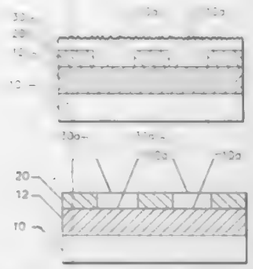
PROCESS FOR MAKING SUBSTANTIALLY SMOOTH DIAMOND

Alison J. Tessmer, and David L. Dreifus, both of Cary, N.C., assignors to Kobe Development Corp., Research Triangle Park, N.C.

Filed Nov. 13, 1992, Ser. No. 975,817

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—636 **29 Claims**



1. A process of making a substantially smooth diamond layer having a thickness on a substrate comprising the steps of:

depositing a patterned polish stopping layer on a substrate to a thickness while leaving portions of the substrate exposed;

depositing a diamond layer on the polish stopping layer and on the portions of the substrate left exposed; and

polishing the diamond layer down to the polish stopping layer by a method including the mechanical or chemical consumption or both of the diamond layer wherein the polish stopping layer is capable of stopping the consumption of the diamond layer to form a diamond layer on the substrate having a smooth upper surface and having a thickness equal to the thickness of the polish stopping layer.

5,300,189

PLASMA SURFACE TREATMENT METHOD AND APPARATUS

Yuichi Kokaku; Makoto Kitoh, both of Yokohama, and Yoshinori Honda, Fujisawa, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed May 20, 1987, Ser. No. 51,701

Claims priority, application Japan, May 21, 1986, 61-114562

Int. Cl.[5] B05D *5/00;* **B01J** *15/00*

U.S. Cl. 156—643 **33 Claims**

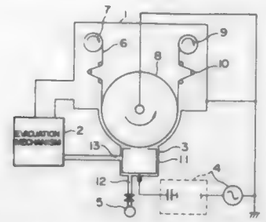
1. A method for depositing a film of carbon on a surface of a film with plasma comprising the steps of:

advancing a film together with a grounded electrode in a first direction;

providing a hollow counter electrode having an opening disposed in a facing relationship to the grounded electrode and having an inner surface, the inner surface and a portion of the grounded electrode facing the opening defining a space between the counter electrode and the grounded electrode in which a plasma is to be enclosed;

applying a high frequency voltage to said counter electrode; and

introducing gas containing hydrocarbons in the space between said grounded electrode and said counter electrode



to produce said plasma at a treatment portion, the area of the counter electrode that is in contact with said plasma being sufficiently larger than the area of the grounded electrode that is in contact with the plasma to enhance plasma density in the neighborhood of the treatment portion.

5,300,190

PROCESS OF PRODUCING DIFFRACTION GRATING

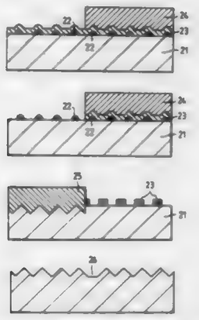
Hiroshi Sugimoto; Teruhito Matsui; Ken-ichi Ohtsuka; Yuji Abe, and Toshiyuki Ohishi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 701,009, May 13, 1991, abandoned, which is a continuation of Ser. No. 209,738, Jun. 22, 1988, abandoned. This application Sep. 21, 1992, Ser. No. 947,981

Claims priority, application Japan, Jun. 24, 1987, 62-158280; Aug. 28, 1987, 62-215582; Oct. 1, 1987, 62-248450; Oct. 5, 1987, 62-249687

Int. Cl.[5] G02B *5/18;* **H01L** *21/308*

U.S. Cl. 156—653 **12 Claims**



1. A process of producing a diffraction grating, comprising the steps of:

forming in a first pattern defining a first phase a first diffraction grating layer of resin material on at least a first portion of a substrate surface and leaving the reminder of said first portion of said substrate surface exposed so as to expose spaces between resin portions in said first diffraction grating layer;

forming a coating layer at least on said first diffraction grating layer and said exposed surface of said first portion of said substrate, said coating layer comprising a second material that is not dissolved by a solvent which is capable of dissolving said resin;

forming in a second pattern defining a second phase opposite said first phase a second diffraction grating layer comprising said second material by removing at least that portion of said coating layer positioned on said first diffraction grating by etching, and then removing said resin material by using said solvent so as to remove said first diffraction grating layer;

etching, without planarization, said substrate using said second diffraction grating layer as a mask; and

removing said second diffraction grating layer to thereby form said diffraction grating in said substrate; wherein said first diffraction grating layer covers at least said first portion and a second portion of said substrate and said coating layer covers said first diffraction grating layer and, following said coating etching step, a portion of said first diffraction grating layer covering said second portion of said substrate is left, said second diffraction grating layer is formed in said first portion where said portion of said first diffraction grating layer has been removed and said substrate etching step comprises etching said substrate using respective independent etching masks of said first and second diffraction grating layers so as to provide said diffraction grating having different phases on said substrate.

5,300,191

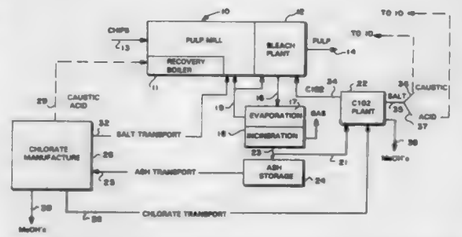
CHLORINE DIOXIDE GENERATION FOR A ZERO DISCHARGE PULP MILL

Hans G. Lindberg, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 922,334, Jul. 30, 1992. This application Dec. 23, 1992, Ser. No. 997,306

Int. Cl.[5] D21C *11/12*

U.S. Cl. 162—31 **22 Claims**



20. A method of producing chlorine dioxide for a cellulose pulp mill having a bleach plant including at least one chlorine containing chemical treatment stage, black liquor evaporator, and a recovery boiler, comprising the steps of automatically, continuously and sequentially:

(a) concentrating liquid effluents from the bleach plant to a concentration level high enough for incineration;

(b) incinerating the concentrated bleach plant independent of the black liquor evaporator and recovery boiler to produce an ash; and

(c) using at least a part of the ash directly in the manufacture of chlorine dioxide, which chlorine dioxide in turn is used in the bleach plant to bleach pulp.

5,300,192

WET LAID FIBER SHEET MANUFACTURING WITH REACTIVATABLE BINDERS FOR BINDING PARTICLES TO FIBERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Federal Way, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Filed Aug. 17, 1992, Ser. No. 931,213

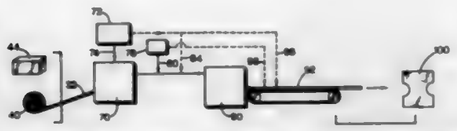
Int. Cl.[5] D21H *23/22*

U.S. Cl. 162—184 **45 Claims**

1. A method of producing fibers with adhered particles comprising:

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providing fibers that have hydrogen bonding functional sites in a wet laid fiber sheet or web manufacturing line in which the fibers are formed into a web;
applying a binder to the fibers while the fibers are on the wet laid sheet manufacturing line, the binder having a volatility less than water, the binder also having a functional group that forms a hydrogen bond with the fibers and that



is capable of forming a hydrogen bond or a coordinate covalent bond with particles;
adding particles having a hydrogen bonding or a coordinate covalent bonding functionality to the fibers; and
activating the binder from an inactive state by mechanical agitation, heat, or addition of an activating liquid, to bond the particles to the fibers.

5,300,193

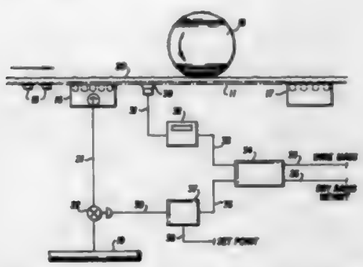
METHOD FOR PAPER MACHINE STOCK POND CONSISTENCY CONTROL

James A. Rule, Jr., Clifton Forge, Va.; Jeffery S. Sanford, Charleston, and Allen C. Wall, Goose Creek, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 641,539, Jan. 15, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 13,495

Int. Cl.[5] D21C *1/08, 7/06*

U.S. Cl. 162—198 **5 Claims**



1. A method of improving an effectiveness of a top forming roll disposed transversely across and above a paper machine web forming section length such that said roll engages a traveling top surface of an aqueous stock pond carried along a machine direction by a forming wire at a point on said forming section length downstream of a suction box disposed transversely across and below said forming wire, said method comprising the steps of:
measuring a total combined mass flow rate of said aqueous stock pond and said forming wire at a point along said forming section length between said suction box and said top forming roll;
generating a first signal which is proportional to said combined mass flow rate;
generating a second signal which is proportional to a mass flow rate of only said forming wire;
combining said first and second signals to yield a third signal which is indicative of only a mass flow rate of said stock pond;
generating a fourth signal which is proportional to a mass flow rate of a dry fiber constituent within said stock pond;
combining said third signal with said fourth signal to yield a fifth signal which is proportional to a consistency of said stock pond at said point along substantially along said forming section length between said suction box and said top forming roll where said combined mass flow rate is measured;
generating a reference signal from said suction box;
combining said fifth signal with said reference signal to yield a vacuum regulation signal; and,
adjusting, when necessary, a vacuum within said suction box in response to said vacuum regulation signal in order to control said consistency of said stock pond to a desired consistency, as said stock pond is carried into top surface contact with said top forming roll.

5,300,194

PITCH CONTROL

Ulrich Welkener, Antwerpen, Belgium, and Thord Hassler, Rydeback, Sweden, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,746

Claims priority, application United Kingdom, Dec. 24, 1990, 9028010

Int. Cl.[5] D21F *1/32*

U.S. Cl. 162—199 **10 Claims**

1. A method for controlling pitch or stickies deposits on pulp or papermaking equipment surfaces which comprises applying to the equipment surfaces which are not in continuous contact with water a water soluble cationic polymer and a water soluble anionic polymer wherein the cationic polymer and the anionic polymer are applied separately.

5,300,195

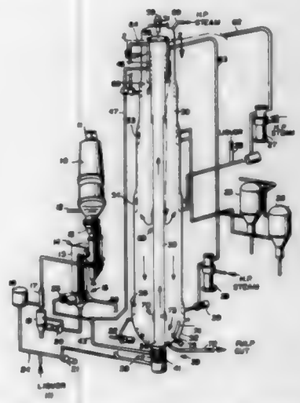
CONTINUOUS VERTICAL DIGESTER APPARATUS

Johan C. F. C. Richter, Oslo, Norway, and Ole J. Richter, Karlstad, Sweden, assignors to Kamyr AB, Karlstad, Sweden

Filed May 31, 1988, Ser. No. 200,204

Int. Cl.[5] D21C *7/06, 7/14*

U.S. Cl. 162—246 **20 Claims**



1. Apparatus for continuous cooking of cellulosic fibrous material to produce paper pulp, comprising:
(a) a generally vertically disposed elongated impregnation vessel without a vertical screw so as to minimize mechanical action on the cellulosic fibrous material having a top and a bottom, and solid side walls;
(b) means for feeding a liquid slurry of cellulosic fibrous material to the bottom of the impregnation vessel;
(c) a mechanical separating means disposed at the bottom of the impregnation vessel for separating cellulosic fibrous material from liquid, so as to decrease the liquid to material ratio of the slurry;
(d) a generally vertically disposed digesting vessel having a top and a bottom, and an inlet at the top thereof;
(e) the top of the impregnation vessel located adjacent the top of the digesting vessel;
(f) means for transferring the material from the top of the impregnation vessel to the top of the digesting vessel with a minimum of mechanical action on the material;
(g) the length of the path of movement in the impregnation vessel from means (c) to (f) is about equal to the height of the digesting vessel;
(h) extraction screen means disposed in the digesting vessel for withdrawing liquid therefrom; and
(i) pulp discharge means disposed adjacent the bottom of the digesting vessel and wherein the impregnation vessel is disposed within said digesting vessel, generally concentric therewith and conduit means being provided and disposed on the exterior of the impregnation vessel for distributing treatment liquid into the column of material in the digesting vessel at a plurality of different levels within the digesting vessel.

5,300,196

TWIN-WIRE FORMER WITH FRAME FOR A PAPER MAKING MACHINE

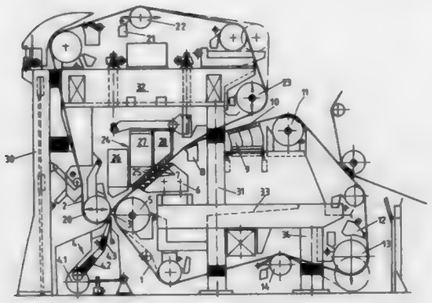
Wilfried Kraft, Heidenheim, Fed. Rep. of Germany, assignor to Voith GmbH, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 889,677

Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117597

Int. Cl.[5] D21F *1/00*

U.S. Cl. 162—300 **9 Claims**



1. A twin wire former for a paper making machine comprising:
a support frame;
first lower wire support means supported on the frame; an endless loop lower wire supported on the first support means, and the first support means supporting the lower wire in a loop;
second upper wire support means supported on the frame; an endless loop upper wire supported on the second support means and the second support means supporting the upper wire in a loop;
the first support means including a forming roll in the loop of the lower wire; the second support means including a breast roll in the loop of the upper wire; the first and second support means being so placed and the forming roll and the breast roll being so placed as to form a generally wedge shape entrance slot for pulp suspension between the first and second wires near to the breast and forming rolls;
the first and second support means positioned aid define a forming zone between the first and second wires beginning at the entrance slot and extending downstream therefrom along the path of the wires; and the support means directing the wires to separate along the path of the wires downstream of the forming zone;
the support means supporting the wires so that the forming zone rises from the entrance slot inclined to the horizontal at an angle of 30° to 50°;
a pulp suspension supply headbox having a front and a rear side and an outlet nozzle which directs a pulp stream into the entrance slot;
the support frame including means supporting the first and the second support means for the lower and upper wires;
the frame comprising a front support to the front side of the headbox, the front side being upstream from the inclined forming zone, a rear support to the rear side of the headbox, said rear support having a front and a rear side, an upper beam connecting the front and rear supports giving the frame generally the shape of an inverted U; a lower beam of a size and length and located so as to be within the loop of the lower wire as defined by the first support means; the lower beam extending both to the front and the rear sides of the rear support, wherein the lower beam has a front end extending to the area as defined inside the U-shaped frame, and the lower beam has a rear end which extends near to an end of the loop of the lower wire furthest from and remote from the headbox;
water removal means in each of the upper and lower wire loops at the wires along the forming zone; at least one of the water removal means of the upper wire being suspended from the upper beam; and at least one of the water removal means of the lower wire supported on the lower beam.

5,300,197

DISTILLATION APPARATUS WITH POROUS MEMBRANE AND HEAT PUMP

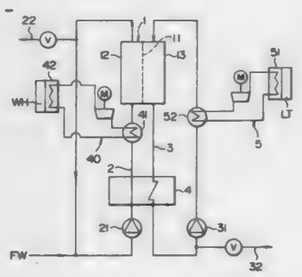
Kenji Mitani; Akira Ashida, both of Yokohama; Katsuya Ebara, Mito, and Hideaki Kurokawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1990, Ser. No. 625,106

Claims priority, application Japan, Dec. 12, 1989, 1-320466

Int. Cl.[5] B01D *3/00, 61/36*

U.S. Cl. 202—177 **40 Claims**



1. A distillation apparatus comprising:
a feed water flow passage through which feed water to be distilled flows;
a distillate flow passage through which distillate produced by distillation of said feed water flows;
a distillation unit for distilling said feed water, said distillation unit comprising an evaporation part provided in said feed water flow passage, a condensation part provided in said distillate flow passage, and a hydrophobic porous membrane interposed between said evaporation part and said condensation part, said distillate flow passage introducing at least a portion of the distillate into contact with steam that passes through said hydrophobic porous membrane from said evaporation part, wherein said evaporation part, said condensation part and said hydrophobic porous membrane are integrated with one another;
a heating unit provided apart from said distillation unit and having a heat pump for heating said feed water in said feed water flow passage; and
a cooling unit for cooling said distillate in said distillate flow

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passage, said cooling unit being provided apart from said distillation unit;

wherein a heat radiating side of said heat pump of said heating unit is disposed in said feed water flow passage whereas a heat absorption side of said heat pump is connected to a waste heat source.

5,300,198

PROCESS FOR THE SEPARATION OF ETHYLIDENE DIACETATE FROM ACETIC ANHYDRIDE

Donald W. Lane, and Ronnie D. Lilly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 5, 1993, Ser. No. 43,077

Int. Cl.[5] B01D *3/34*

U.S. Cl. 203—6 **2 Claims**

1. Process for the separation of acetic anhydride from ethylidene diacetate which comprises feed (1) a mixture comprising about 50 to 95 weight percent acetic anhydride and 5 to 50 weight percent ethylidene diacetate to the mid-section of a distillation column and (2) acetic acid to the base of the column; and removing (A) a top product comprising acetic anhydride containing less than 2 weight percent ethylidene diacetate from the top of the column and (B) a bottom product comprising bout 70 to 95 weight percent ethylidene diacetate, 5 to 30 weight percent acetic anhydride, and up to about 2 weight percent acetic acid from the base of the column; wherein the distillation is carried out at a column top temperature in the range of about 75° to 140° C. and at a pressure of about 100 torr to atmospheric pressure and the amount of acetic acid fed is about 1 to 10 weight percent based on the weight of mixture of acetic anhydride an ethylidene diacetate fed whereby tar formation is decreased.

2. Process for the separation of acetic anhydride from ethylidene diacetate which comprises feeding (1) a mixture comprising about 80 to 95 weight percent acetic anhydride and 5 to 20 weight percent ethylidene diacetate to the mid-section of a distillation column and (2) acetic acid tot he base of the column; and removing (A) a top produce comprising acetic anhydride containing less than 2 weight percent ethylidene diacetate from the top of the column and (B) a bottom product comprising about 70 to 95 weight percent ethylidene diacetate, 5 to 30 weight percent acetic anhydride, and up to about 2 weight percent acetic acid from the base of the column; wherein the distillation is carried out at a column top temperature in the range of about 75° to 140° C. and at a pressure of about 100 torr to atmospheric pressure and the amount of acetic acid fed is about 1 to 10 weight percent based on the weight of the mixture of acetic anhydride/ethylidene diacetate fed whereby tar formation is decreased.

5,300,199

METHOD FOR RECOVERING SILVER FROM A PHOTOGRAPHIC FIXING SOLUTION

John R. Fyson, London, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP90/02110, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/09159, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 4, 1990, Ser. No. 859,693

Claims priority, application United Kingdom, Dec. 11, 1989, 8927964

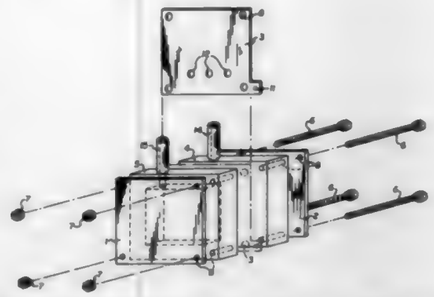
Int. Cl.[5] C25C *1/20*

U.S. Cl. 204—109 **9 Claims**

1. A method of recovering silver from a photographic fixing solution comprising:

circulating the solution through electrolytic apparatus having inlet means and outlet means and including a pair of anodic electrodes situated on either side of a cathodic electrode and separated therefrom by insulating means, the solution passing the electrodes from the inlet means to the outlet means in a circulatory manner so as constantly to present fresh solution to the electrolytic effect of the electrodes,

applying a current and a voltage to the electrodes using a voltage regulator to optimize recovery of silver from the solution, and



first automatically adjusting the voltage for a fixed current until the voltage reaches a value not exceeding 1.4 V and then fixing the voltage at this value and varying the current to maintain a current density at the cathodic electrode not exceeding 100 Am^{-2}.

5,300,200

METHOD FOR STABILIZING THE EFFECTIVE DISSOLUTION VALENCE OF SILICON DURING ELECTROCHEMICAL DEPTH PROFILING

Tamás S. Horányi, Budapest, Hungary, assignor to Semiconductor Physics Laboratory RT, Budapest, Hungary

Filed Oct. 21, 1992, Ser. No. 964,356

Int. Cl.[5] C25F *3/12, 3/30*

U.S. Cl. 204—129.2 **24 Claims**

13. A method for enhancing measurement accuracy of a depth dependent characteristic in a semiconductor having an effective dissolution valence, the method comprising the following steps:

(a) causing a surface of the semiconductor to contact a buffered electrolyte associated with an electrochemical profiler and form a semiconductor working electrode, wherein said profiler includes at least a reference electrode and an auxiliary electrode, said buffered electrolyte being suitable for anodic dissilution of said semiconductor surface;

(b) anodically dissolving said semiconductor surface by applying an anodic potential between said auxiliary electrode and said semiconductor working electrode; said anodic potential, as measured between said reference electrode and said semiconductor working electrode, having a magnitude selected from the group consisting of (i) a magnitude associated with quadrivalent dissolution of the semiconductor specimen dominating any divalent dissolution thereof, (ii) a magnitude associated with an electropolishing region of the semiconductor specimen, (iii) a magnitude at least exceeding a magnitude associated with a second current density peak of the semiconductor specimen, and (iv) a magnitude causing electrochemical oxidation at the semiconductor specimen surface to occur at a rate exceeding chemical dissolution; and

(c) measuring a depth dependent parameter of said semiconductor specimen;

wherein consistency of the effective dissolution valence of said semiconductor specimen is improved, and said step of measuring provides a more accurate value of said depth dependent parameter.

5,300,201

PHOTOCHLORINATION OF PHTHALIC ANHYDRIDE

Karl W. Seper, Youngstown, and John R. Molinaro, Kenmore, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 22, 1991, Ser. No. 689,207

Int. Cl.[5] C07D *307/00*

U.S. Cl. 204—157.6 **20 Claims**

17. A method of making 4-chlorophthalic anhydride comprising

(A) preparing a mixture of chlorine and phthalic anhydride in a molar ratio of about 1.1:1 to about 4:1 in a vapor phase at a temperature of 250° to 400° C.;

(B) exposing said mixture to light in the absence of a catalyst; and

(C) separating said 4-chlorophthalic anhydride from said mixture.

5,300,202

PROCESS AND DEVICE FOR DISPOSING OF ORGANIC VAPORS, IN PARTICULAR SOLVENT VAPORS

Helmut Moegel, Eduard-Pfeiffer-Strasse 30, W-7000 Stuttgart, Fed. Rep. of Germany

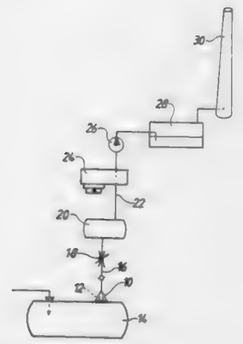
PCT No. PCT/EP90/01417, § 371 Date Feb. 25, 1992, § 102(e) Date Feb. 25, 1992, PCT Pub. No. WO91/02580, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 24, 1990, Ser. No. 835,463

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1989, 3928293; Sep. 6, 1989, 3929542

Int. Cl.[5] B01D *53/00*

U.S. Cl. 204—157.3 **42 Claims**



1. A process for disposing of organic vapors, comprising the steps of guiding the organic vapors through an electromagnetic alternating field, controlling the electromagnetic alternating field so that a standing wave pattern extends transversely or at an angle with respect to the direction of expansion in the area of a maximum amplitude of the electric field vector causing the organic vapors passing therethrough to be ionized and/or dissociated thereat.

5,300,203

PROCESS FOR MAKING FULLERENES BY THE LASER EVAPORATION OF CARBON

Richard E. Smalley, Houston, Tex., assignor to William Marsh Rice University, Houston, Tex.

Filed Nov. 27, 1991, Ser. No. 799,404

Int. Cl.[5] C01B *31/00*

U.S. Cl. 204—157.41 **2 Claims**

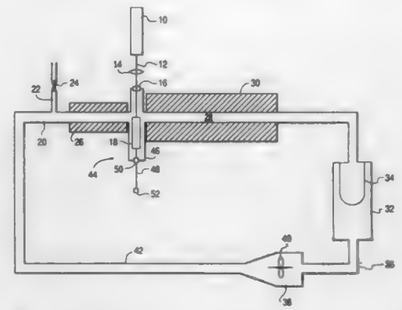
1. A process for making fullerenes comprising:

(a) providing a carbon source comprising carbon to a carbon vaporization zone,

(b) passing an inert gas stream through the carbon vaporization zone,

(c) vaporizing carbon from the carbon source with a laser beam to produce a carbon vapor that is carried away from the carbon vaporization zone by the inert gas stream,

(d) passing the inert gas stream and carbon vapor through a



fullerene growth and formation zone wherein the temperature is between 1,000° and 2,000° C. and the residence time of the carbon vapor in the fullerene growth and formation zone ranges from 0.1 millisecond to 100 seconds, and

(e) withdrawing fullerenes from the fullerene growth and formation zone.

5,300,204

METHOD FOR HYDROGEN ION-SELECTIVE ELECTRODIALYSIS

Yoshio Sugaya; Misaki Tada, and Haruhisa Miyake, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,384

Claims priority, application Japan, Feb. 19, 1992, 4-69534

Int. Cl.[5] C25B *7/00;* **B01D** *61/44, 61/46*

U.S. Cl. 204—182.4 **5 Claims**

1. A method for hydrogen ion-selective electrodialysis, comprising selectively permeating on an anode side hydrogen ions from an aqueous solution containing hydrogen ions through a membrane to a cathode side, wherein the membrane is a double layer ion exchange membrane comprising an anion exchanger layer on the anode side and a cation exchanger layer on the cathode side, and the anion exchanger layer has an ion exchange capacity of from 0.5 to 4 meq/g dry resin, a fixed ion concentration of from 1 to 10 meq/g H_2O, a thickness of from 0.1 to 150 μm and an electrical resistance of at most 1 $\Omega \cdot cm^2$ as measured in a 0.5 mol/l sulfuric acid solution, wherein a current density of not more than the critical current density is applied for the electrodialysis.

5,300,205

METHOD AND DEVICE FOR TREATING SUBSTRATES

Wolf-Eckart Fritsche, Kleinostheim, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 766,435, Sep. 25, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,420

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127317

Int. Cl.[5] C23C *14/54, 14/56*

U.S. Cl. 204—192.12 **7 Claims**

7. A sputtering method for providing substrates with thin layers of desired thickness, said substrates being movably arranged at a distance from at least one target, said target being temporarily connected to a D.C. source, said method comprising the following steps:

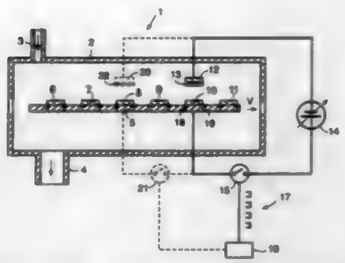
a) moving the substrates with a speed $V << S/T_s - T_e$

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wherein S is the path which is travelled by the substrate during a non-coating time interval $T_s - T_d$;

b) connecting the D.C. source to said target with a time interval of at least $t_s + t_p$ wherein t_s is the time after connecting the D.C. source to said target for firing a plasma and t_p is a constant, and when $t_s + t_p$ is approximately 1 μs to 12 μs;

c) regulating a time interval t_{del} being defined by $(T_s - T_d) - (t_s + t_p)$.

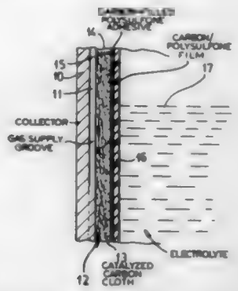


5,300,206

ANTIPERCOLATION GAS-DIFFUSION ELECTRODE AND METHOD OF MAKING SAME

Robert J. Allen, Saugus; Ravindra J. Vora, Framingham, and Michael De Marinis, Milford, all of Mass., assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 3, 1992, Ser. No. 924,094
Int. Cl.[5] C25B *11/04*; C09J *5/10*
U.S. Cl. 204—284 **22 Claims**



1. A gas-diffusion electrode in contact with an electrolyte on one side of said electrode, comprising:

a gas-permeable body;

a catalyst layer on said gas-permeable body at said one side;

a preformed microporous film on said catalyst layer at said one side and forming an antipercolation barrier preventing gas leakage under pressure and thus flooding of said body by an electrolyte in contact with said electrode, said film being selected from the group which consists of polyethylene, polypropylene, polyphenylene sulfide, polyamide, polyester, polysulfone and polyvinylidene fluoride films;

a microporous polysulfone or polysulfone derivative adhesive layer at said one side bonding said film to said catalyst layer over the area of said film juxtaposed with said catalyst layer; and

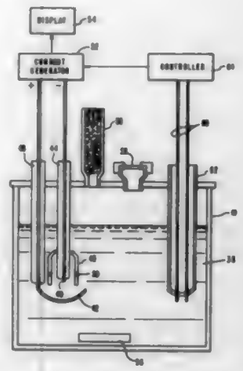
means for feeding a gas to said body on a side of said electrode opposite said one side.

5,300,207

HIGH CURRENT COULOMETRIC KF TITRATOR

Harald Dahms, 472 Madison Ave., Toms River, N.J. 08753

Filed Jan. 14, 1993, Ser. No. 4,462
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—405 **24 Claims**



1. A diaphragm-free coulometric titrator for high current Karl Fishcer water determinations, comprising:

electrode means for producing iodine including a non-consumable anode and a cathode which are immersed in a Karl Fischer solution when said titrator is in use, said cathode and said anode being separated by only said Karl Fischer solution during titration,

electrical means for producing an electrical current in excess of about 500 mA between said cathode and said anode to generate iodine at said anode and

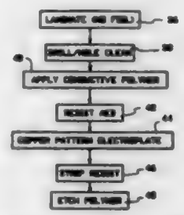
indicator electrodes for providing a measure of the iodine content of said Karl Fischer solution, said indicator electrodes being located away from the electrical current paths between said anode and said cathode.

5,300,208

FABRICATION OF PRINTED CIRCUIT BOARDS USING CONDUCTING POLYMER

Marie Angelopoulos, Briarcliff Manor; Wu-Song Huang, Poughkeepsie; Jae M. Park, Binghamton, and James R. White, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1989, Ser. No. 393,605
Int. Cl.[5] C25D *5/02*; C23C *28/00*
U.S. Cl. 205—50 **30 Claims**



1. A process for fabricating a printed circuit board comprising the steps of:

providing a substrate;

applying an inherently electrically conducting polymer containing a partially conjugated π system which polymer is capable of being applied from a non-aqueous or aqueous solvent and is capable of being applied by casting, painting, spin-coating or dip-coating, to a predetermined portion of said substrate, and

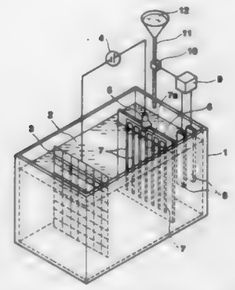
electroplating a metal film from a conventional aqueous electroplating solution onto said conducting polymer.

5,300,209

ANODIZING METHOD AND APPARATUS

Hisatoshi Mori, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,605
Claims priority, application Japan, Dec. 24, 1991, 3-355632
Int. Cl.[5] C25D *11/04*
U.S. Cl. 205—325 **24 Claims**



1. An anodizing method comprising the steps of:

forming a to-be-anodized film on a substrate;

soaking the substrate on which the to-be-anodized film is formed, in an electrolytic solution in which a cathode is soaked;

applying a voltage between the cathode and the to-be-anodized film, said to-be-anodized film functioning as an anode;

detecting a resistivity of the electrolytic solution; and controlling the resistivity of the electrolytic solution during said applying so that the resistivity of the electrolytic solution falls within a range, by adding a solution including an additive consisting of ammonia water and hydrogen ions to be electrolytic solution, in response to the detected resistivity of the electrolytic solution as detected in the detecting step, whereby a density of defects in the to-be-anodized film, as the to-be-anodized film is anodized, is substantially stabilized.

5,300,210

HYDROCARBON CONVERSION PROCESS USING ZEOLITE SSZ-32 AS CATALYST

Stacey I. Zones, San Francisco; James N. Ziemer, Hercules; Donald S. Santilli, Larkspur; Robert A. Innes, San Rafael, and Dennis L. Holtermann, Crockett, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 723,236, Jun. 28, 1991, Pat. No. 5,252,527, which is a continuation of Ser. No. 433,382, Oct. 24, 1989, Pat. No. 5,053,373, which is a continuation of Ser. No. 172,730, Mar. 23, 1988, abandoned. This application Jun. 7, 1993, Ser. No. 72,821
Int. Cl.[5] C10G *11/05*; C07C *1/04, 5/22*
U.S. Cl. 208—46 **16 Claims**

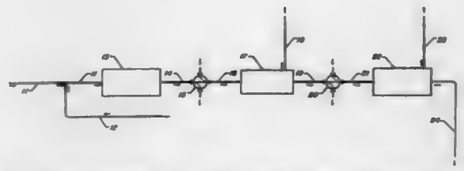
1. A process for converting hydrocarbons comprising contacting a hydrocarbonaceous feed at hydrocarbon converting conditions with a zeolite having a mole ratio of silicon oxide to aluminum oxide greater than about 20:1 to less than 40:1, and having the X-ray diffraction lines of Table 1.

5,300,211

CATALYTIC REFORMING PROCESS WITH SULFUR PRECLUSION

Michael B. Russ, Villa Park; Roger L. Peer, LaGrange; Joseph Zmich, Hanover Park, and Chi-Chu D. Low, Lisle, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 842,835, Feb. 27, 1992, Pat. No. 5,211,837, which is a continuation-in-part of Ser. No. 555,962, Jul. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 408,577, Sep. 18, 1989, abandoned. This application Dec. 29, 1992, Ser. No. 998,108
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C10G *35/06, 25/00*
U.S. Cl. 208—65 **20 Claims**



1. A process for the catalytic reforming of a contaminated feedstock comprising a combination of:

(a) contacting the contaminated feedstock in a sorbent pretreating step with a nickel sorbent at a pressure of from atmospheric to 50 atmospheres, a temperature of from about 70° to 200° C., and a liquid hourly space velocity of from about 2 to 50 hr^{-1} to produce a low-sulfur hydrocarbon feedstock;

(b) contacting a combined feed comprising the hydrocarbon feedstock and free hydrogen in the absence of added halogen in a first reforming zone at first reforming conditions comprising a pressure of from atmospheric to 20 atmospheres, a temperature of from 260° to 560° C., a liquid hourly space velocity of from about 1 to 40 hr^{-1}, and a hydrogen to hydrocarbon ratio of from about 0.1 to 10 moles of hydrogen per mole of hydrocarbon with a first reforming catalyst comprising platinum and alumina to convert sulfur compounds in the hydrocarbon feedstock to hydrogen sulfide and produce a halogen-free first effluent;

(c) contacting the first effluent in a sulfur-removal zone at sulfur-removal conditions comprising a pressure of from atmospheric to 20 atmospheres, a temperature of from 260° to 560° C., a liquid hourly space velocity of from about 1 to 40 hr^{-1}, and a hydrocarbon ratio of from about 0.1 to 10 moles of hydrogen per mole of hydrocarbon with a solid sulfur sorbent comprising a manganese component to remove hydrogen sulfide and produce a halogen-free second effluent containing less than 20 parts per billion sulfur; and,

(d) contacting the second effluent in a second reforming zone in the presence of free hydrogen and in the absence of added halogen at second reforming conditions comprising a pressure of from atmospheric to 20 atmospheres, a temperature of from 425° to 560° C., a liquid hourly space velocity of from about 1 to 10 hr^{-1}, and a hydrogen to hydrocarbon ratio of from about 0.1 to 10 moles of hydrogen per mole of hydrocarbon with a second reforming catalyst comprising a non-acidic L-zeolite, an alkali-metal component and a platinum-group metal component to produce a halogen-free aromaticsrich effluent.

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5,300,212

HYDROCONVERSION PROCESS WITH SLURRY HYDROTREATING

William E. Winter, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 22, 1992, Ser. No. 965,107
Int. Cl.[5] C10G *45/04, 1/00, 45.00*; C10L *1/18*
U.S. Cl. 208—67 **4 Claims**

1. A process wherein a two-stage hydroconversion process for converting a heavy hydrocarbonaceous feedstock to lower boiling products which process consists essentially of:

(a) reacting the feedstock in a first reaction stage which is a hydroconversion stage, at temperatures from about 650° F. to 900° F., and hydrogen partial pressure ranging from about 50 to 5000 psig in the presence of a phosphomolybdic acid;

(b) passing the resulting product stream to a second reaction stage which is a slurry hydrotreating stage where it is reacted at: (i) temperatures in the range of 650° F. to 750° F., with the proviso that this slurry hydrotreating stage be operated at a temperature at least 25° F. less than the temperature of said first stage, and (ii) hydrogen partial pressures in the range of 800 to 4000 psig, and in the presence of hydrogen and a hydrotreating catalyst comprised of at least one group VI metal and at least one Group VIII catalyst, on an inorganic oxide support; and

(c) passing the product stream of said hydrotreating stage to a separation zone wherein a 975° F.+ stream and one more or more streams having an average boiling point less than 975° F. are produced; and

(d) collecting said one or more streams boiling less than about 975° F. and any portion of the 975° F.+ stream is not recycled to the hydrotreating stage; and

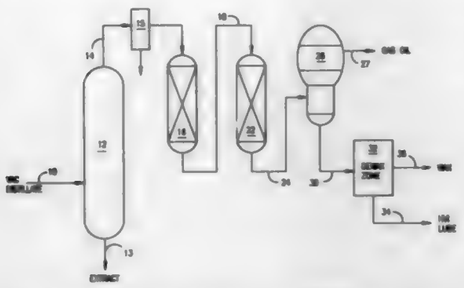
(e) recycling at least a portion of said 975° F.+ stream to said hydrotreating stage of step (b).

5,300,213

PROCESS FOR MAKING BASESTOCKS FOR AUTOMATIC TRANSMISSION FLUIDS

Mark P. Bartilucci, West Chester; John T. Fogarty, Bristol, both of Pa.; Angela S. Galiano-Roth, Mullica Hill, N.J., and Francis X. Kelly, Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 30, 1992, Ser. No. 983,340
Int. Cl.[5] C10G *1/04, 21/00*
U.S. Cl. 208—87 **15 Claims**



1. A process for the production of a lubricant oil from a neutral distillate petroleum fraction boiling between about 650° F. and about 1,100° F., comprising the steps of:

contacting the petroleum fraction with a solvent selective for the aromatics under extraction conditions of about 1.5 to 3 volumes of solvent per volume of fraction and a temperature of about 230° F. to about 260° F. to produce an aromatics reduced raffinate

conveying the aromatics-reduced raffinate to a catalytic hydrocracking zone in the presence of hydrogen and a hydrocracking catalyst;

maintaining the hydrocracking zone at conditions of temperature of at least about 650° F., reactor pressure of at least about 1,500 p.s.i.g. and hydrogen circulation rate of at least about 2,000 SCFB to produce a hydrocracked product;

recovering, by fractionation of the hydrocracked product, a lubricant oil boiling above about 650° F.; and

subjecting the lubricant oil to dewaxing under dewaxing conditions sufficient to achieve a maximum pour point temperature of about 20° F. and a kinematic viscosity of at least about 20 cSt at 40° C. and at least about 4 cSt, at 100° C.

5,300,214

METHOD FOR THE HYDROPROCESSING OF HYDROCARBONS

John E. Creighton, Columbia, and Leo Rheaume, Hyattsville, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 783,067, Oct. 25, 1991, Pat. No. 5,192,734.
This application Oct. 26, 1992, Ser. No. 967,087
Int. Cl.[5] C10G *45/08*
U.S. Cl. 208—112 **6 Claims**

1. A method for the hydroprocessing of hydrocarbons which comprises reacting a hydrocarbon feedstock and hydrogen at a temperature of 350° to 500° C. in the presence of a catalyst comprising alumina and catalytically effective amounts of a metal selected from the group consisting of a Group VIB metal and a Group VIII metal and a mixture thereof, said catalyst having a surface area of greater than 330 m^2/g, a total pore volume above about 0.5 cc/g as determined by mercury porosimetry, and less than 0.25 cc/g pore volume in pores greater than 250 Å diameter.

5,300,215

CATALYTIC CRACKING WITH A CATALYST COMPRISING A BORON PHOSPHATE MATRIX

Girish K. Chitnis, Chadds Fords, Pa., and Joseph A. Herbst, Turnersville, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 645,761, Jan. 25, 1991, Pat. No. 5,151,394. This application Jul. 15, 1992, Ser. No. 914,252
Int. Cl.[5] C10G *11/02, 11/05*
U.S. Cl. 208—114 **21 Claims**

1. A process for catalytic cracking of feedstock hydrocarbon compounds to product hydrocarbon compounds having a lower molecular weight than the feedstock hydrocarbon compounds which comprises contacting said feedstock at catalytic cracking conditions with a catalyst composition comprising a catalytic molecular sieve material and a matrix material comprising boron phosphate compound.

5,300,216

METHOD FOR INITIATING PYROLYSIS USING A SHOCK WAVE

Abraham Hertzberg, Bellevue; Arthur T. Mattick, Seattle, and David A. Russell, Kirkland, all of Wash., assignors to Board of Regents of the University of Washington, Seattle, Wash.

Division of Ser. No. 656,289, Feb. 15, 1991, Pat. No. 5,219,530.
This application Feb. 29, 1993, Ser. No. 21,152
Int. Cl.[5] C10G *9/36*
U.S. Cl. 208—130 **12 Claims**

1. A method for initiating pyrolysis of a feedstock mixed with a carrier fluid and of controlling the duration of the pyrolysis, to produce a desired product, comprising the steps of

a. pressurizing the feedstock;

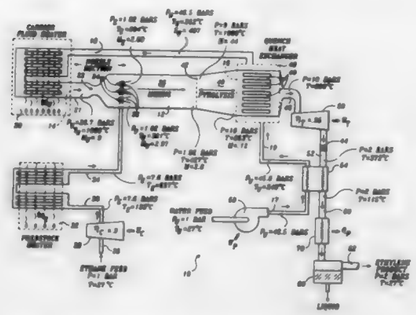
b. heating the carrier fluid with an externally applied source of heat, to increase its enthalpy to a level sufficient to initiate pyrolysis of the feedstock when the carrier fluid is subsequently stagnated, but not before;

c. pressurizing the carrier fluid;

d. creating a supersonic stream of the carrier fluid;

e. creating a supersonic stream of the feedstock that turbulently mixes with the supersonic stream of the carrier fluid, producing a mixture flowing at a supersonic velocity; and

f. stagnating the flow of the mixture, by creating a continuous, standing shock wave in the mixture, the shock wave



very rapidly heating the mixture above a pyrolysis temperature so that the desired product is produced by pyrolysis of the feedstock downstream of the shock wave, pyrolysis of the feedstock first occurring only after the supersonic stream of the carrier fluid and supersonic stream of the feedstock have turbulently mixed and been stagnated by the standing shock wave.

5,300,217

HYDROPROCESS UTILIZING A DELTA ALUMINA-SUPPORTED NICKEL AND MOLYBDENUM CATALYST

Howard D. Simpson, Irvine, and Milan Skripek, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 868,775, Apr. 14, 1992, Pat. No. 5,223,472.
This application Mar. 2, 1993, Ser. No. 25,057
Int. Cl.[5] C10G *45/08*
U.S. Cl. 208—216 PP **21 Claims**

1. A hydroprocess of a hydrocarbon-containing feedstock catalyzed under conditions including a hydrogen partial pressure form about 100 to about 4,000 p.s.i.g., an elevated temperature, and a LHSV from about 0.05 to 10, by the catalyst composition comprising nickel and molybdenum hydrogenation metal components on a porous, amorphous refractory oxide support containing delta alumina, said composition further comprising a median pore diameter in the range of about 185 to about 230 angstroms.

5,300,218

REDUCTION OF DIESEL ENGINE PARTICULATE EMISSIONS BY CONTACTING DIESEL FUEL WITH A CARBON MOLECULAR SIEVE ADSORBENT

Leonard B. Graiff; Peter B. Van Benthuysen; Danny Y. Ngan; Zaida Diaz, all of Houston, and David M. Austgen, Jr., Missouri City, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 23, 1992, Ser. No. 902,604
Int. Cl.[5] C10G *25/00*
U.S. Cl. 208—299 **9 Claims**

1. A process for reducing the particulate emissions tendency of a diesel fuel from a diesel engine consisting essentially of:

(1) contacting a diesel fuel containing particulate-emission-causing impurities with at least one carbon molecular sieve adsorbent at a liquid hourly space, velocity between about 0.5 and 30, ambient pressure, and at a temperature between 30° F. and 800° F. in at least one adsorbent bed under effective adsorption conditions such that said impurities content is reduced; and

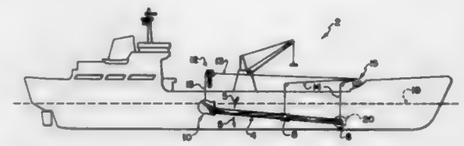
(2) recovering the diesel fuel having a lower content of said impurities.

5,300,219

APPARATUS FOR SALVAGING AND REMOVING MARINE OIL SPILLS

Thomas C. Braid, 3146 Marion Way, Nanaimo, B.C., Canada V9T 1J1

Continuation-in-part of Ser. No. 522,988, May 14, 1990, Pat. No. 5,126,040. This application Jun. 23, 1992, Ser. No. 902,975
Claims priority, application Canada, Jun. 27, 1989, 603973
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] E02B *15/04*
U.S. Cl. 210—122 **8 Claims**



1. A water-going vessel riding in part above water level and adapted for use in either sand dredging or oil spill cleanup comprising:

(a) a hollow hull with a deck;

(b) at least one suction tube connected to a pump, the suction tube being mount to an exterior of the hull, a suction inlet at a free end of the suction tube being located below the water level about the hull, the suction tube being pivotally connected with the hull so that the suction tube can pivot upwardly or downwardly relative to the hull;

(c) at least one draghead connected to the free suction inlet end of the suction tube removed from the pivoting end, the draghead being adapted to ride in part above the water level;

(d) at least one float secured to the draghead or the suction tube to buoyantly absorb at least a portion of the weight of the draghead and the suction tube; and

(e) at least one swell compensator which is connected between the hull above the water line and the draghead, float or suction tube, the swell compensator comprising a winch, a cable wound in part around the winch, and an extensible cylinder means which together control the length of the cable, the swell compensator absorbing at least a portion of the weight of the draghead, float and suction tube and thereby maintaining a portion of the draghead above the water level.

5,300,220

TROUGH SYSTEM FOR MACHINE TOOL COOLANT COLLECTION FLUMES

Stephen N. McEwen, Bowling Green, Ohio, assignor to Henry Filters, Inc., Bowling Green, Ohio

Filed Jun. 29, 1992, Ser. No. 905,444
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—154 **5 Claims**

1. A flume system for communicating machine tool coolant carrying suspended contaminants, the flume system comprising:

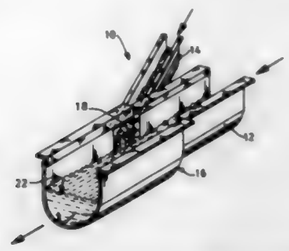
a main trough having upstream and downstream end portions;

a single source means for introducing forced coolant flow in the upstream end portion of said main trough, said means for introduction of flow providing sufficient volume and low velocity to substantially prevent the formation of misting and foaming of the coolant at said source;

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at least one tributary trough means intersecting the main trough between the upstream and downstream end portions for providing an additional flow of coolant;

said main trough having means for creating a greater cross-sectional area at the downstream side of its intersection with the tributary trough to smoothly accommodate the additional flow of coolant from the tributary trough



whereby the surface of the tool coolant is maintained at a generally constant slope throughout the main trough providing means for the flow to be of sufficient velocity so that the suspended contaminants remain continuously suspended in the coolant without the need for flush nozzles intermediate of the upstream and downstream end portions.

5,300,221

FILTER ARRANGEMENT

Oystein Austevoll, Rottingen, N-5228 Lepsoy, Norway

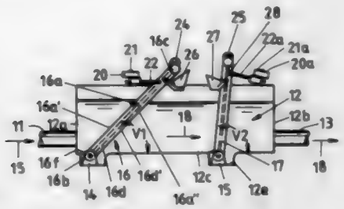
PCT No. PCT/NO90/00182, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO91/08819, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 5, 1990, Ser. No. 859,722

Claims priority, application Norway, Dec. 8, 1989, 894927; Jun. 1, 1990, 902434

Int. Cl.[5] B01D *33/04*

U.S. Cl. 210—155 **11 Claims**



1. A filter arrangement comprising

a transport chute for conveying a flow of liquid therethrough, said chute having a pair of side walls and a bottom;

at least one filter disposed in said chute transversely of the flow of liquid, said filter including a lower roller mounted on a horizontal axis connected to said bottom of said chute, an upper roller disposed above said chute, at least one rigid support member extending between said rollers and being pivotally mounted about said axis of said lower roller to permit adjustment of said filter angularly of said chute, and an endless filter fabric disposed over said rollers for filtering a flow of liquid therethrough; and

sealing means between said filter and each said side wall of said chute to prevent passage of liquid therebetween.

5,300,222

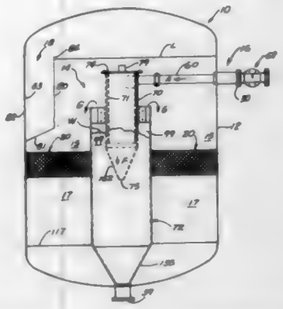
WATER CLARIFICATION METHOD AND APPARATUS

Paul C. Broussard, Sr., 209 Constitution Dr., Maurice, La. 70555

Continuation-in-part of Ser. No. 965,888, Oct. 23, 1992, which is a continuation of Ser. No. 589,471, Sep. 28, 1990, Pat. No. 5,158,678. This application Mar. 8, 1993, Ser. No. 26,877

Int. Cl.[5] B04C *5/14, 9/00;* **B01D** *50/00, 17/035*

U.S. Cl. 210—202 **6 Claims**



1. An apparatus for clarifying a contaminated fluid comprising:

(a) a separator vessel having provided therein a cyclonic flow chamber means, said cyclonic flow chamber means including:

(i) a first vertical cylindrical shell having an outlet at the bottom and being closed at the top; and,

(ii) a second cylindrical shell concentrically positioned within said first shell, thereby providing an annular space therebetween, and having an outlet port at the top which extends outside of said first cylindrical shell and being open at the bottom;

(b) means for tangentially introducing said contaminated fluid to be separated into said annular space between said first and second shells so as to establish a swirling body of fluid therein;

(c) a third cylindrical shell annularly surrounding a lower portion of said first shell and extending below the outlet of the first shell, the upper portion of said third shell being positioned below said tangential introducing means;

(d) means for discharging a first separated fluid of said contaminated fluid into a first fluid flow zone in said separator vessel, said means for discharging comprising the upper portion of said third cylindrical shell and the lower portion of said first cylindrical shell, said first fluid flow zone being formed by the outer wall of said first shell and said separator vessel; and,

(d) means for discharging a second separated fluid from said outlet port at the upper portion of said second shell to a second fluid flow zone located in the upper portion of the vessel.

5,300,223

QUICK CONNECT/DISCONNECT OIL FILTER

Allen B. Wright, Coventry, R.I., assignor to Allied-Signal Inc., Morristown, N.J.

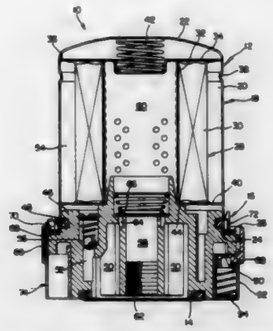
Filed Jan. 27, 1992, Ser. No. 825,693

Int. Cl.[5] B01D *27/08, 27/10*

U.S. Cl. 210—232 **4 Claims**

1. Filter assembly comprising a base and a filter cartridge for installation on said base, said filter cartridge including a filter element mounted within a cup-shaped housing having a circumferentially extending wall and an open end, said element being installed in said housing through said open end, said base having an axially projecting portion slidably received within said open end of the housing, said axially projecting portion

carrying a circumferentially extending seal sealingly engaging said circumferentially extending wall, an element engaging surface defined on said projecting portion for sealingly engaging said element, and manually actuated retaining means for retaining the cartridge on said base, said retaining means including means for disengaging the sealing connection between the cartridge and the base to permit the sealing connection between the seal and the cartridge to be broken while retaining the cartridge on the base and thereafter permitting removal of the cartridge from the base, said manually actuated retaining means including a manually actuated member movable from a retaining position in which the cartridge is sealingly retained on said base to an intermediate position in which the cartridge is retained on said base but the sealing connection between



cartridge and base is broken and from said intermediate position to a fully released position in which the cartridge may be removed from the base, said retaining means include circumferentially spaced deflectable latch members engaging said filter cartridge, and a camming means for deflecting said latch members, said latch members including a first set of latch members maintaining said cartridge housing in sealing engagement with said base and a second set of latch members retaining said cartridge on said base but without sealing engagement with the base, said camming means including first releasing means for releasing said first set of latch members from said cartridge when the manually actuated member is moved to the intermediate position and second releasing means for releasing said second set of latch members when the manually actuated member is moved to the fully released position.

5,300,224

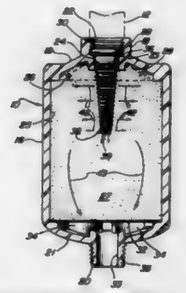
FLUID TREATMENT DEVICE

Frederick A. Farley, 2363 Blackfoot, Placentia, Calif. 92670

Filed Nov. 21, 1991, Ser. No. 796,433

Int. Cl.[5] B01D *24/14*

U.S. Cl. 210—266 **11 Claims**



1. A unitary filter assembly comprising

a hollow body having an internal chamber formed therein between inlet and outlet means integrally formed with said body to allow the flow of fluid into and out of said chamber;

said hollow body being cylindrical with a pair of domed end walls having exterior and interior surfaces integrally formed thereto, and a plurality of vanes fixed within said internal chamber to said interior surfaces of said domed end walls for strengthening and fluid flow control purposes;

a diverter/screen means removably mounted within said inlet means and extending into said internal chamber a predetermined distance from said inlet means;

said diverter/screen means being captured in position within said inlet means and said internal chamber to control the flow of water from said inlet means into said internal chamber;

a filter media substantially filling said internal chamber; and

said diverter/screen means in said inlet means being removable therefrom and from said internal chamber to allow said filter media to be inserted into or removed from said internal chamber.

5,300,225

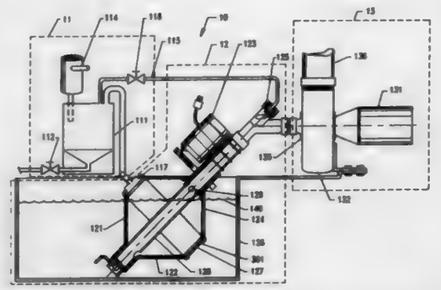
VACUUM CLEANED MICRO-STRAINER SYSTEM

Harry C. Fischer, Box 14, Moon, Va. 23119

Filed Oct. 15, 1992, Ser. No. 961,107

Int. Cl.[5] B01D *33/00, 33/044*

U.S. Cl. 210—391 **14 Claims**



1. An apparatus for continuous removal of particulate matter from liquids comprising:

a canted rotating drum assembly, formed by a one-piece rotomolded plastic body having a first conical end, a cylindrical center section having a plurality of openings therein, and a second conical end partially submerged in a particulate-laden liquid;

means for filtering attached to said rotating drum, said filtering means admitting a particle laden liquid to said inside of the rotating drum assembly and collecting particulate matter on the outside of the filtering means;

means for removing particulate matter from said means for filtering, said means for removing particulate matter comprising a means for gene vacuum-induced air flow through said filtering means; and

means for extracting the filtered liquid from the interior of said rotating drum assembly.

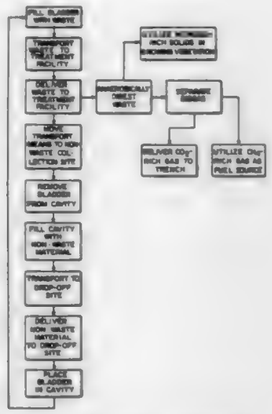
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5,300,226

WASTE HANDLING METHOD

Stewart E. Erickson, Ketchum, Id., assignor to Stewart E. Erickson Construction, Inc., Marietta, Pa.

Continuation-in-part of Ser. No. 601,873, Oct. 23, 1990, Pat. No. 5,261,929. This application Jan. 28, 1991, Ser. No. 647,592
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] C02F *3/28*
U.S. Cl. 210—603 **6 Claims**



1. A method of handling waste, comprising:
a) providing transport means have a material-receiving cavity and a waste-receiving bladder carried within a portion of the cavity;
b) loading a flowable waste material into the bladder at a waste collection site;
c) transporting the waste material to a treatment facility, the treatment facility being located remotely of the collection site;
d) unloading the waste material from the bladder and delivering the waste to the treatment facility;
e) filling a portion of the material-receiving cavity of the transport means with a non-waste material; and
f) transporting the non-waste material to a drop-off site located remotely of the treatment facility.

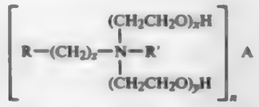
5,300,227

BIOREMEDIATION OF HYDROCARBON CONTAMINATED SOILS AND WATER

Ramesh Varadaraj, Flemington, and Cornelius H. Brons, Washington, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

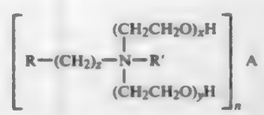
Filed Apr. 28, 1993, Ser. No. 54,372
Int. Cl.[5] E02B *15/04*; A23L *1/202*; B01J *13/00*; C02F *3/02*
U.S. Cl. 210—610 **12 Claims**

1. A surfactant system for enhancing the biodegradation of hydrocarbons in soil or water comprising a mixture selected from the group consisting of (i) an aqueous solution of microbial nutrients and at least one surfactant having the formula



wherein R is hydrogen or an alkyloxide of from about 5 to about 20 carbon atoms; x and y are integers, the sum of which is from 2 to about 20; z is an integer of from about 8 to 22 when R is hydrogen and from about 2 to 5 when R is an alkyloxide; R′ is H or —CH_3; A is an anion selected from NO_3—, oxy anions of phosphorus and organo carboxylic acid anions and n is an integer equal to the valance charge of A; and (ii) a microbial assimilable phosphorus-containing organic compound and at least one surfactant having the above formula in which A is NO_3— and n is 1.

9. In the method for depolluting petroleum-contaminated soil and water bodies by spreading onto the bodies a composition containing a surfactant, the improvement comprising using at least one surfactant having the formula



wherein R is hydrogen or an alkyloxide of from about 5 to about 20 carbon atoms; x and y are integers, the sum of which is from 2 to about 20; z is an integer of from about 8 to 22 when R is hydrogen and from about 2 to 5 when R is an alkyloxide; R′ is H or —CH_3; A is an anion selected from NO_3—, oxy anions of phosphorus and organo carboxylic acid anions and n is an integer equal to the valance charge of A.

5,300,228

METHOD FOR SEPARATING AND RECOVERING AN ACID

Yoshio Sugaya; Misaki Kanazawa, and Haruhisa Miyake, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,642
Claims priority, application Japan, Jun. 7, 1991, 3-163719; Jul. 12, 1991, 3-198651
Int. Cl.[5] B01D *61/24*
U.S. Cl. 210—638 **9 Claims**

1. A method for separating and recovering an acid, which comprises contacting to one side of a diffusion dialysis membrane an acid solution containing an acid having an acid radical with a formula weight of at most 200 and impurities and to the other side of the membrane water or a dilute acid solution, to separate and recover the acid in the solution, wherein a cation exchange membrane containing sulfonic acid groups in an amount of from 0.5 to 4.5 meq/g dry resin and having an electrical resistance of at most 0.5 Ω/cm^2 as measured in the acid solution containing the acid to be recovered at a concentration of 0.5 mol/l, is used as the diffusion dialysis membrane and

wherein the impurities are anions and acid radicals of an acid of a metal of Group 1B, 2B, 3, 4A, 4B, 5A, 6, 7A or 8 or the Periodic Table or metallic complex anions thereof.

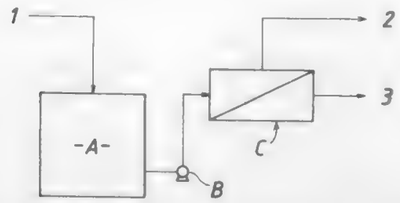
5,300,229

PROCESS FOR REMOVING COLORED COMPONENTS FROM SOLVENT FOR POLYACRYLONITRILE

Shiro Kawasaki, and Noriyuki Kohara, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 9,940
Claims priority, application Japan, Feb. 14, 1992, 4-061253
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—651 **2 Claims**

1. A process for removing colored components from a recovered and recycled inorganic solvent for polyacrylonitrile, the solvent containing active components, said process comprising filtering the solvent through a reverse osmosis membrane to produce a permeate, the membrane having a NaCl rejection in the range of 10 to 97%, so that the colored components are retained by the membrane while keeping the concentration of active components in the permeate substantially same as that in the recovered inorganic solvent.

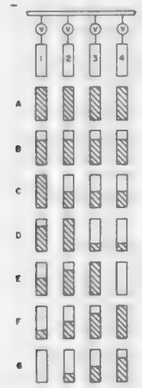


5,300,230

COMPREHENSIVE WATER TREATMENT SYSTEM

Earl P. Brane, Hide Away Hills, and David L. Tucker, Pickerington, both of Ohio, assignors to Wm. R. Hague, Inc., Groveport, Ohio

Continuation of Ser. No. 782,338, Oct. 24, 1991, abandoned, which is a division of Ser. No. 493,896, Mar. 15, 1990, Pat. No. 5,089,140. This application Jan. 4, 1993, Ser. No. 791
Int. Cl.[5] B01D *15/04*
U.S. Cl. 210—662 **4 Claims**



1. A method for operating a system comprising a number of water treatment units, N, connected in parallel for the treatment of water flowing therethrough, each of said units containing a water softening treatment bed having a total treatment capacity which requires periodic regeneration in order to re-establish said treatment capacity, which comprises the following steps in sequence:
(a) calculating the volume of water to be treated per unit, V_b, by dividing the capacity of the one of said units having the smallest capacity by N;
(b) treating water with all of said units unit said volume of water, V_b, has been treated by any one of said units;
(c) subjecting an arbitrary first one of said units to regeneration while treating water with all of the remaining said units;
(d) treating water with all of said units unit another said volume of water, Y_b, has been treated by any one of said units;
(e) subjecting the next sequential one of said units to regeneration while treating water with all of the remaining said units; and
(f) returning to step (d) of the method to sequentially regenerate each of said units.

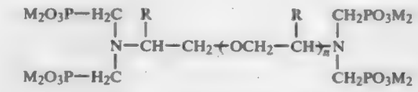
5,300,231

CONTROLLING SILICA/SILICATE DEPOSITION USING PHOSPHONATE COMBINATIONS

Charles Y. Chu, Bethel Park, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Aug. 5, 1992, Ser. No. 926,111
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—700 **4 Claims**

1. A method of inhibiting the deposition of silica and/or silicate salt scale including magnesium silicate in an aqueous system having a pH of at least 8.5 and a calcite saturation level of at least 150 times its solubility limit of calcium as calcite, comprising the step of treating said system with an effective scale-inhibiting amount of a composition comprising THE COMBINATION OF:
(A) a polyether polyamino methylene phosphonate of the following formula:



and optionally the N-oxides thereof; where n is an integer or fractional integer which is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a suitable cation; and each R may be the same or different and is independently selected from hydrogen and methyl; AND
(B) hydroxyphosphonoacetic acid (HPA) or amino tris methylene phosphonate (AMP); TOGETHER WITH
(C) a polymer additive comprising: one or more members selected from the group consisting of: homo- and copolymers including terpolymers comprising one or more of acrylamide (AM), acrylic acid (AA), 2-acrylamide-methyl propane sulfonic acid (AMPSA), methacrylic acid (MAA), itaconic acid (IA), polyethylene glycol monomethacrylate (PGM), maleic anhydride (MA), maleic acid (MA), t-butyl acrylamide (TBAM), sodium styrene sulfonate (SSS), sodium vinyl sulfonate, hydroxy propyl acrylate, hydroxy propyl methacrylate, 3-allyloxy-2-hydroxy propane sulfonic acid, sodium salt (AHPS), and vinyl phosphonic acid, wherein the weight average molecular weight for such polymer additives is in the range of from about 500 to 250,000 and, wherein (A) and (C) are each added to said aqueous system in amounts of from about 1 to 100 mg/L, and (B) is added to said aqueous system in an amount between about 0.1 and 20 mg/L.

5,300,232

APPARATUS AND PROCESS FOR TREATMENT OF LIQUIDS

James W. Barrington, 10337 Birchdale Ave., Downey, Calif. 90241, and Randy W. Masters, 1720 Carver St., Redondo Beach, Calif. 90278

Filed Aug. 28, 1992, Ser. No. 937,367
Int. Cl.[5] C02F *1/76*; B01F *5/04, 15/02*
U.S. Cl. 210—742 **19 Claims**

1. A process for the treatment of liquids, comprising:
(a) placing a plurality of injection wands about a circumference and through openings in a wall of a tank containing a liquid to be treated, said wall defining said circumference, wherein each injection wand has a tangential arm and a radial arm that are connected by a joint that allows for an angle between said arms to be altered, and

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(b) injecting a treating solution through at least one location on each of said tangential arms and radial arms of said



injection wands to promote reaction mixing between the injected treating solution and the liquid being treated.

5,300,233

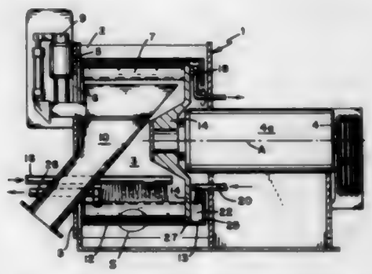
PROCESS OF DISPLACEMENT WASHING IN A CENTRIFUGE FILTER

Chie-Ying Lee, Milford, and Win-Chin Chiang, Orange, both of Conn., assignors to Dorr-Oliver Incorporated, Milford, Conn.

Filed Feb. 9, 1993, Ser. No. 15,018

Int. Cl.[5] B01D *33/11, 33/60*

U.S. Cl. 210—772 **5 Claims**



1. A process for displacement washing of slurry present in the drum of a centrifuge filter, said slurry comprising particulate solids suspended in a liquid phase or mother liquor, said drum having a rotational axis, a reservoir chamber co-axial and rotatable with said drum for containing wash liquid, filter means within said drum, said reservoir chamber having flow connection with the slurry in said drum through said filter means, the steps of the process comprising, rotating the centrifuge filter so that the slurry in said drum is held against the filter means by centrifugal force as an annular body having an outer surface contacting the filter means and an inner surface spaced from the rotational axis of the drum, the rotation of the centrifuge filter producing incipient cake formation, passing wash liquid from said reservoir chamber through said filter means and the slurry body thereby displacing said liquid phase through said slurry body toward said rotational axis of said drum and removing said displaced liquid phase from said drum without traversing said filter means.

5,300,234

METHOD OF FILTERING BEVERAGES AND CHEMICAL, PHARMACEUTICAL, OR SIMILAR LIQUIDS

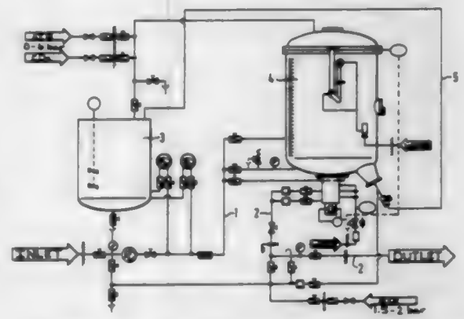
Dietmar Oechsle, Schwäbisch Gmünd; Wolfgang Baur, Waldstetten, and Ludger Gottkehaskamp, Schwäbisch Gmünd, all of Fed. Rep. of Germany, assignors to Schenk-Filterbau gesellschaft mit beschränkter, Waldstetten, Fed. Rep. of Germany

Continuation of Ser. No. 708,481, May 31, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 900,506

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1990, 4017855; Mar. 28, 1991, 4110252

Int. Cl.[5] B01D *37/02*

U.S. Cl. 210—778 **23 Claims**



1. In a method of filtering beverages and liquids by separating insoluble particles, including the steps of dosing various filter aid components to the untreated or unfiltered, sludge-containing liquid to form a filter cake via deposition, thereafter rinsing out the solid material retained in the filter cake after the deposition, and regenerating the filter side, as well as stabilizers that may have been added, for reuse, the improvement comprising the steps of:

for said deposition of said filter cake, using a mixture of filter aid components that have different morphological and physical properties and are resistant, i.e. inert, to those concentrations of solvents necessary for cleaning to thereby maintain their filtering properties during said regeneration, with said mixture containing at least the following components:

a) a first component that causes said deposition of said filter cake and increases the density thereof, with said first component comprising at least one specifically heavy, chemically stable particle selected from the group consisting of metal particles, metal oxide particles, and carbon particles, with said particles having structures selected from the group consisting of fibrous and granular structures; and

b) a second component comprising at least one fiber selected from the group consisting of synthetic and cellulose fibers, and having a fiber length of from 1 to 5000 μm and a fiber thickness of from 0.5 to 100 μm; and

with said filter cake formed from said mixture physically-mechanically filtering the insoluble particles from the beverages and liquids.

5,300,235

CORROSION INHIBITORS

Paul J. Clewlow, Faringdon; John A. Haselgrave; Niall Carruthers, both of Abingdon, and Terence M. O'Brien, Oxfordshire, all of England, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 14, 1992, Ser. No. 882,833

Claims priority, application United Kingdom, Feb. 8, 1991, 9116684

Int. Cl.[5] C23F *11/14*

U.S. Cl. 252—8.555 **13 Claims**

1. A method of inhibiting corrosion of a ferrous metal by a fluid encountered in petroleum operations, which comprises:

(a) introducing into the fluid inhibiting amounts of an amine corrosion inhibitor comprising a compound having the formula of



in which n is an integer of 1 to 6; R is a C_{6-20} hydrocarbon group;

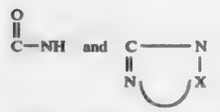
R_1 is selected from the group consisting of (i) $(CH_2)_{1-4}COOH$, (ii) a C_{6-20} hydrocarbon group, and (iii) a C_{6-20} hydrocarbon-carbonyl group having the formula of



where R_3 is a C_{5-19} hydrocarbon group; R_2 is selected from the group consisting of $(CH_2)_{1-4}$ COOH, and C_{6-20} hydrocarbon carbonyl group having the formula of



where R_3 is a C_5–C_{19} hydrocarbon group; and Y is selected from the group consisting of

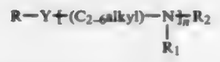


in which X is an alkylene group of 2 to 6 carbon atoms, the compound containing at least one $(CH_2)_{1-4}COOH$ or a salt of an alkali metal, an alkaline earth metal or ammonium thereof; and

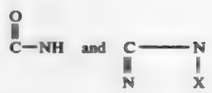
(b) contacting metal with the fluid containing the corrosion inhibitor.

13. A method of inhibiting corrosion of ferrous metal by oil field fluids which comprises:

(a) introducing into the fluids inhibiting amounts of an amine corrosion inhibitor ranging from 1 to 1000 ppm, the corrosion inhibitor being substantially free of primary or secondary nitrogen and having the following formula:



in which n is 1 to 6; R is a C_{6-20} hydrocarbon group; Y is selected from the group consisting of



in which X is an alkylene group of 2 to 6 carbon atoms;

R_1 is selected from the group consisting of $(CH_2)_{1-4}COOH$, a C_{6-20} hydrocarbon group, and a C_{6-20} hydrocarbon carbonyl group having the formula of



where R_3 is a C_5–C_{19} hydrocarbon;

R_2 is selected from the group consisting of $(CH_2)_{1-4}$ COOOH and a C_{6-20} hydrocarbon-carbonyl group having the formula of



where R_3 is a C_5–C_{19} hydrocarbon, the compound containing at least one $(CH_2)_{1-4}$ COOH group or an alkali metal salt, or alkaline earth metal salt, or ammonium salt thereof;

(b) contacting metal with the fluids containing the corrosion inhibitor;

(c) separating water from produced fluids; and

(d) disposing of a portion at least of the separated water into a marine or fresh water environment.

5,300,236

COMPOSITION FOR SOFTENING FABRICS

Fabrizio Bortolotti, Piacenza, Italy; David G. Evans, Oxton, and Ian R. Kenyon, Gayton, both of England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Sep. 29, 1989, Ser. No. 414,976

Claims priority, application United Kingdom, Sep. 30, 1988, 8823008

Int. Cl.[5] D06M *10/06, 10/08;* **C11D** *3/02*

U.S. Cl. 252—8.6 **9 Claims**

1. A particulate composition useful in the softening of fabrics from a wash liquor, the composition comprising a fabric softening clay material and a nonionic surfactant system which consists of one or more nonionic surfactants, wherein the nonionic surfactant system has a cloud point of not more than 48° C. at 1% concentration in distilled water, the clay serves as a carrier for the nonionic surfactant system, the clay and the nonionic surfactant system form a major proportion of the particulate composition, the weight ratio of the clay to the nonionic surfactant system is from 2:3 to 20:1, and the moisture content of the composition, as measured by the water loss at 135° C., is from 7.5% to 12% by weight.

5,300,237

FIBER TREATMENT AGENT

Isao Ona, and Masaru Ozaki, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,250

Claims priority, application Japan, Sep. 10, 1990, 239377

Int. Cl.[5] D06M *15/00*

U.S. Cl. 252—8.6 **2 Claims**

1. A fiber treatment agent composition which is an addition reaction product consisting essentially of:

(A) an organopolysiloxane which is liquid at room tempera-

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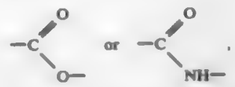
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ture, which is essentially linear, and which has the following general formula

$$AR_2SiO(R_2SiO)_p(RSiO)_gSiR_2A$$
$$\quad\quad\quad

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or an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 5 to 12 ring C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl-C_1–C_4alkyl group, an unsubstituted or C_1–C_8alkyl-substituted C_3–C_{12}cycloalkyl-C_1–C_4alkyl group which is interrupted by one or more groups from the series comprising —O—, —S—, —NH—,



or phenyl, naphthyl, C_7–C_{18}alkaryl or C_7–C_{18}aralkyl.

5. A composition according to claim 1 wherein

R^1 is alkyl having 1 to 18 C atoms, cycloalkyl having 5 to 8 ring C atoms, phenyl or C_7–C_{18}aralkyl, R^4 and R^5 are identical or different and are —H, alkyl having 1 to 18 C atoms, cycloalkyl having 5 to 12 ring C atoms or phenyl, and R^6 and R^7 are alkyl having 1 to 18 C atoms, a cycloalkyl group having 5 to 8 ring C atoms or alkyl having 2 to 20 C atoms and interrupted by one group



or phenyl or C_7–C_{18}aralkyl.

5,300,244

METHOD OF PREPARING MAGNETIC COATING COMPOSITION

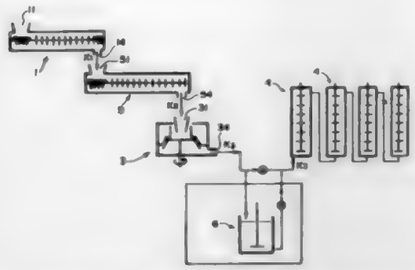
Chiaki Mizuno; Masatoshi Kiyama; Takao Komi; Hiroshi Ogawa; Masaaki Fujiyama, and Shinichi Funaboshi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami, Japan

Continuation of Ser. No. 247,014, Sep. 21, 1988, abandoned. This application Sep. 28, 1992, Ser. No. 952,197

Claims priority, application Japan, Sep. 21, 1987, 62-236872

Int. Cl.[5] H01F *1/00*

U.S. Cl. 252—62.54 **10 Claims**



1. A method of preparing a dispersion mixture K4 for use in a magnetic coating, said method comprising the process steps of:

i) a first process step of kneading ferromagnetic grains, a first binder, and a binder solution Y1 containing a second binder and an organic solvent under shearing force in a two-shaft continuous kneading and mixing machine having a pair of shafts with a paddle member and a barrel for rotatably housing the shafts, thereby to obtain a kneaded mixture K1 having a solid content within the range of 65 wt % to 95 wt %,

ii) a second process step of adding at least a binder solution Y2, which may be identical or different in composition from said binder solution Y1, to said kneaded mixture K1, and kneading the thus obtained mixture and thus diluting said kneaded mixture K1 under high shearing force in said two-shaft continuous kneading and mixing machine, thereby to obtain a primary diluted mixture K2 having a solid content within the range of 50 wt % to 70 wt %,

iii) a third process step of diluting and dispersing said primary diluted mixture K2 by adding at least an organic solvent thereto, thereby to obtain a secondary diluted mixture K3 having a solid content within the range of 25 wt % to 50 wt %, and

iv) a fourth process step of carrying out fine dispersion processing of said secondary diluted mixture K3 directly or by the addition of an organic solvent thereto, thereby to obtain said dispersion mixture K4 having a solid content within the range of 25 wt % to 45 wt %, wherein said method further comprises adding at least one of a dispersant and a lubricant in only one of the third process step and said fourth process step.

5,300,245

WORKING FLUID COMPOSITION HAVING KETONE-CONTAINING COMPOUND FOR USE IN REFRIGERATION SYSTEM

Hiroki Sawada, Wakayama; Toshiya Hagihara, Izumisano; Yuichiro Kobayashi, Wakayama; Akimitsu Sakai, Wakayama; Hideo Suzuki, Wakayama; Toshihiro Tanaka, Wakayama; Hiroshi Nagumo, Wakayama, and Yukinaga Yokota, Hannan, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 906,449

Claims priority, application Japan, Jul. 1, 1991, 3-160297; Dec. 13, 1991, 3-352451

Int. Cl.[5] C09K *5/04;* **C10M** *105/20*

U.S. Cl. 252—68 **5 Claims**

1. A working fluid composition for use in a refrigeration system which comprises a refrigerating oil comprising a compound having one or more ketone groups in the molecular structure as a base oil and a hydrofluorocarbon;

wherein said compound is represented by Formula (II):



(II)

wherein Q represents a monocyclic or dicyclic compound which may contain an oxygen atom in the ring thereof, R_5 represents a substituent having one or more ketone groups in the molecular structure and is selected from the group consisting of aliphatic acyl groups having a linear or branched structure, aromatic acyl groups, ketoacyl groups, acylalkyl groups, acylalkyloxy groups or acylaryloxy groups, alkyloxyacyl groups, and aryloxyacyl groups, R_6 represents a substituent having one or more ether groups in the molecular structure and is selected from the group consisting of alkyloxy groups, aryloxy groups, and alkyloxyalkyl groups or aryloxyalkyl groups, and x represents an integer of 1 to 20, and y represents an integer of 0 to 20, with the proviso that when x is two or more, each R_5 may be identical or different, and that when y is two or more, each R_6 may be identical or different.

5,300,246

SALTY WATER ABSORBING COMPOSITION, SALTY WATER ICE PACK, AND SALTY WATER ABSORBING PACK

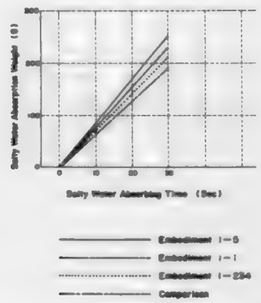
Masayuki Yamamoto, c/o Limited Company Ichihuji Suisan, 97-1, Tsurugaoka, Tsurugashimacho, Irumagun, Saitama-Pre.; Etsuro Sakagami, c/o Bylo Industrial Co. Ltd., 2-7-10, Shonandai, Hujisawa-City, Kanagawa-Pre., and Iko Ito, 1-7-12-201, Tsukahara, Takatsuki-City, Osaka-Pre., all of Japan

Filed Mar. 18, 1992, Ser. No. 853,252

Claims priority, application Japan, Jun. 6, 1991, 3-162096

Int. Cl.[5] C09K *3/18*

U.S. Cl. 252—70 **3 Claims**



1. A salty water absorbing pack for preserving food comprising

(A) a granular or powder-like water absorptive resin;

(B) a granular or powdered ceramic having food preservation or antibacterial properties; and

(C) an antibiotically treated package material enveloping a blend of (A) and (B), said package material comprising at least one member selected from the group consisting of a sheet of paper, a non-woven cloth, a porous plastic film, or a perforated plastic film;

wherein the weight ratio of said blend is (A)/(B)=99.1 to 1/99 and said pack is freezable.

5,300,247

IMPROVED CORROSION INHIBITOR SYSTEM FOR AN INTERMEDIATE HEAT TRANSFER MEDIUM

Dwight E. Emerich, Lincoln Park, and Kathleen A. Fix, Landing, both of N.J., assignors to Ashchem IP, Dublin, Ohio

Filed Sep. 2, 1992, Ser. No. 939,056

Int. Cl.[5] C09K *5/00*

U.S. Cl. 252—77 **12 Claims**

1. A corrosion inhibitor system for an intermediate heat transfer medium, which comprises an oxazoline in admixture with organic corrosion inhibitors and said oxazoline being present in the amount of from about 0.01 to about 5.0 wt. %, and said oxazoline being selected from the group consisting of 2,2'-[(2-heptadecyl)-4 (5H)-oxazolylidine-bis (methyleneoxy-2, 1-ethanediyloxy)]-bis-ethanol, 2,2'-(2-heptadecyl)-4 (5H)-oxazolylidine bis methanol and 2,2'-(2-heptadecyl)-4 (5H)-oxazolylidine ethane methanol.

5,300,248

RUBBER COATINGS FOR CLEANING CLOTHS INCLUDING CELLULOSE MICROFIBERS

Michael Pässler, Neusäss, and Hans Riepold, Aindling, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 21,819

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1992, 4205547

Int. Cl.[5] D04H *1/58*

U.S. Cl. 252—90 **17 Claims**

1. A cleaning cloth comprising a base material coated with (a) rubber, wherein the rubber is selected from the group consisting of natural rubber, styrenebutadiene rubber, nitrilebutadiene rubber, mixed polymers of butadiene and isoprene and mixtures thereof; and (b) 20 to 100% by weight cellulose microfibers based on the solid rubber content in the coating wherein the cellulose microfibers have a staple fiber length of about 15 to 200 micrometers.

5,300,249

MILD PERSONAL CLEANSING BAR COMPOSITION WITH BALANCED SURFACTANTS, FATTY ACIDS, AND PARAFFIN WAX

James R. Schwartz; Richard D. Farris, both of West Chester; Theresa A. Bakken, Cincinnati; Lawrence A. Gilbert, West Chester; Wayne E. Eccard, Cleves, and James C. Dunbar, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 23, 1991, Ser. No. 763,794

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] C11D *9/00*

U.S. Cl. 252—108 **13 Claims**

1. A personal cleansing bar comprising:

A. from about 4% to about 32% of essentially saturated long chain (C_{15}–C_{22}) synthetic surfactant selected from the group consisting of: alkyl sulfate, alkyl sarcosinate, alkyl glyceryl ether sulfonate, and mixtures thereof;

B. from about 4% to about 30% of paraffin wax having a melting point of from about 130° F./54° C. to about 180° F./82° C;

C. from about 20% to about 70% lathering mild synthetic surfactant selected from C_{12}–C_{14} acyl isethionate, C_{12}–C_{14} alkyl glyceryl ether sulfonate, C_{12}–C_{14} sodium acyl sarcosinate, and mixtures thereof; and wherein at least about 10% of said bar is said mild lathering C_{12}–C_{14} alkyl isethionate;

D. from about 2% to about 30% free fatty acid; wherein said fatty acid is selected from the group consisting of stearic and lauric acids; said stearic and lauric acids having a ratio of from about 0:1 to about 2:1, and mixtures thereof;

E. from about 2% to about 15% soap;

F. from about 2% to about 8% sodium isethionate;

G. from 0% to about 2% sodium chloride;

H. from about 1.5% to about 10% water; and

wherein said bar has a pH of from about 4.0 to about 9.0.

5,300,250

GRANULAR LAUNDRY COMPOSITIONS HAVING IMPROVED SOLUBILITY

Ronald D. Morgan, Cincinnati, Ohio, and Gary R. Cutter, Dillsboro, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 820,184, Jan. 14, 1992, abandoned. This application Nov. 20, 1992, Ser. No. 974,001

Int. Cl.[5] C11D *3/08, 3/10*

U.S. Cl. 252—135 **13 Claims**

1. A granular laundry detergent, bleach or additive composition comprising, by weight:

(a) from 0 to 70 weight % detergent surfactant selected from

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the group consisting of anionics, nonionics, zwitterionics, ampholytics, cationics, and mixtures thereof;
(b) from about 5 to 99.95% of admixed sodium carbonate; and
(c) from about 0.05% to 5% of admixed hydrophobic amorphous silicate material;
wherein the weight ratio of (b):(c) is from about 5:1 to about 500:1.

5,300,251
CLATHRATE COMPOUNDS

Tetsuo Osu; Akihiko Ueno, both of Sendai; Atsushi Osakada, Nagoya, and Masatern Nakoji, Okazaki, all of Japan, assignors to A-ICS Corporation, Aichi, Japan

Continuation of Ser. No. 562,589, Aug. 3, 1990, abandoned. This application May 27, 1993, Ser. No. 68,607
Claims priority, application Japan, Aug. 4, 1989, 1-201219
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—182.13 **2 Claims**

1. A clathrate compound consisting of dicumyl peroxide as a guest compound and a host compound selected from the group consisting of β-cyclodextrin, monomethyl-β-cyclodextrin, dimethyl-β-cyclodextrin, trimethyl-β-cyclodextrin and partially methylated β-cyclodextrin, said dicumyl peroxide being used as a crosslinking agent, the molar ratio of the guest compound: the host compound being in the range of from 1:1 to 1:2 inclusive.

5,300,252
ETHER FREE ORGANOMETALLIC AMIDE COMPOSITIONS

Robert C. Morrison, Gastonia, N.C., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 496,556, Mar. 19, 1990, abandoned, which is a division of Ser. No. 160,229, Feb. 25, 1988, Pat. No. 4,944,894, and a continuation-in-part of Ser. No. 25,412, Mar. 13, 1987, abandoned. This application Aug. 7, 1992, Ser. No. 927,689
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—182.3 **2 Claims**

1. An ether free, hydrocarbon soluble, thermally stable, low viscosity organolithium-lithium organoamide composition consisting of ingredients represented by the formula

$$(LiR^1)_x\{Li(N\ R^3R^4)\}y$$

wherein R^1, R^3 and R^4 are independently selected from the group consisting of primary, secondary and tertiary alkyl groups containing 2 to 8 carbon atoms, cycloalkyl groups containing 3 to 8 carbon atoms and aryl groups containing 6 to 10 carbon atoms, the mole ratio of x to y varies from 1 to 1 to 1 to 2.03, in a hydrocarbon solvent.

5,300,253
1-CHLORO-2,2,2-TRIFLUOROETHYL DIFLUOROMETHYL ETHER COMPOSITIONS FOR REMOVING WATER FROM SURFACES

Hans Buchwald, Ronnenberg; Joachim Hellmann, Hanover; Boleslaus Raszkowski, Wiedensahl, all of Fed. Rep. of Germany; Pierre Barthelemy, Jodoigne, and Mireille Paulus, Brussels, both of Belgium, assignors to Solvay Fluor und Derivate GmbH, Hanover, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,528
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125274
Int. Cl.[5] C09K *3/18*
U.S. Cl. 252—194 **11 Claims**

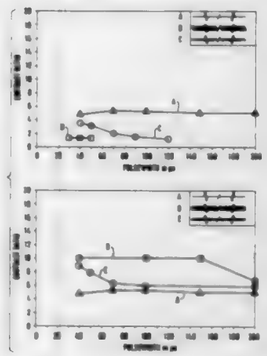
1. A drying composition consisting essentially of
99.99 to 90% by weight of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether and
0.01 to 10% by weight of at lest one surface-active agent dissolved in said ether,
the sum of the constituents being 100% by weight.

11. A process for removing water from a surface of an object, said process comprising treating said surface with a drying composition consisting esaentially of
99.99 to 90% by weight of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether and
0.01 to 10% by weight of at least one surface-active agent dissolved in said ether,
the sum of the constituents being 100% by weight.

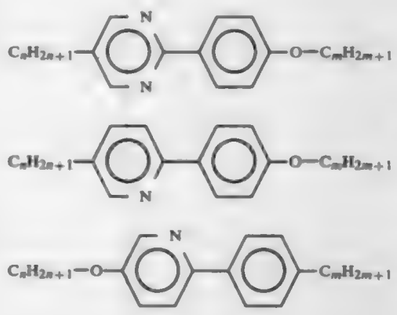
5,300,254
FERROELECTRIC LIQUID-CRYSTAL DISPLAY

Thomas Geelhaar, Mainz; Axel Pausch, Seeheim; Michael Kompter, Riedstadt-Erfelden, and Bernhard Scheuble, Seeheim-Jugenheim, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

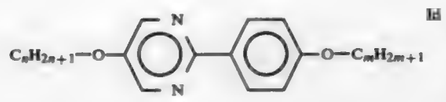
Filed Jul. 26, 1991, Ser. No. 736,325
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 4023867
Int. Cl.[5] C09K *19/34*
U.S. Cl. 252—299.61 **12 Claims**



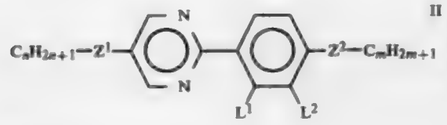
1. A ferroelectric liquid-crystal display having improved multiplexing capability comprising:
a ferroelectric liquid-crystal medium between two plane-parallel plates provided with an electrode matrix of sampling electrodes and data electrodes arranged perpendicular thereto;
said medium containing a chiral component comprising one or more chiral dopants and an achiral base component comprising one or more achiral compounds;
said medium having a dielectric anisotropy of −0.01 to −1.2 and a spontaneous polarization of less than 8 nC/cm^2;
wherein said achiral base component contains at least 35 wt. % of one or more compounds of formulae Ia, Ib, Ic and Id:



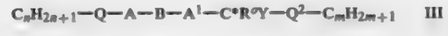
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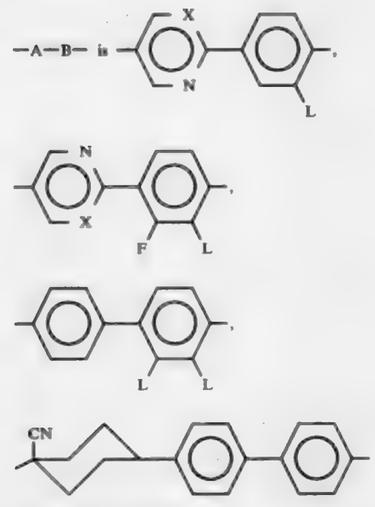
wherein n and m are each, independently, 5–12, and
said achiral base component contains 8–50 wt. % of at least one compound of formula II:



wherein
n and m are each, independently, 5–12;
L^1 and L^2 are each, independently, H or F, with at least one ligand L^1 and L^2 being different from H; and
Z^1 and Z^2 are each, independently, —O— or a single bond; and
said chiral component contains 1–25 wt. % of one or more compounds of formula III



wherein
n and m are each, independently, 2–12;
Q is —O— or a single bond;



each L is, independently of one another, H or F;
X is CH or N;
Q^1 is —O—, —CH_2CH_2— or —OCH_2—;
Q^2 is —COO— or a single bond;
Y is F; and
R^o is H.

5,300,255
SURFACTANT PRODUCTS OF POLY(HYDROXYALKANECARBOXYLIC ACID) PHOSPHATE ESTERS

Frederick Campbell, Failsworth; John D. Schofield, Bury, and Alan S. Baker, Slough, all of England, assignors to Imperial Chemical Industries, PLC., Great Britain

Continuation of Ser. No. 707,473, Mar. 1, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 70,676
Claims priority, application United Kingdom, Mar. 21, 1984, 8407301; Apr. 26, 1984, 8410664; Oct. 25, 1984, 8426995; Dec. 13, 1984, 8431459
Int. Cl.[5] B01F *17/14;* **C07F** *9/11*
U.S. Cl. 252—351 **15 Claims**

1. The product of the reaction between a phosphating agent and a hydroxy terminated polyester obtained by the polymerization of a hydroxycarboxylic acid or a lactone to a degree of esterification from 1 to 100 in the presence of a monohydric alcohol.

5,300,256
SOLID-FORM ADDITIVE SYSTEMS DISPERSIBLE IN AQUEOUS MEDIA

Mahendra K. Sharma, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 513,389, Apr. 23, 1990, Pat. No. 5,153,024, and a continuation-in-part of Ser. No. 392,759, Aug. 11, 1989, Pat. No. 5,204,022. This application Oct. 5, 1992, Ser. No. 956,532
Int. Cl.[5] B01F *3/12;* **B01J** *13/04;* **C08J** *3/205;* **C08K** *9/10*
U.S. Cl. 252—363.5 **15 Claims**

1. An encapsulated composition of matter dispersible in aqueous medium, said composition comprising:
i) one or more water insoluble, meltable polymer additives and, optionally, one or more higher melting, water insoluble polymer additives, wherein substantially all of said polymer additives have a particle size of less than about 40 μm,
ii) at least one low hydrophobic-lipophobic balance value surfactant, wherein said surfactant is adsorbed on the surface of said water insoluble polymer additive particles, and
iii) at least one high hydrophobic-lipophobic balance value surfactant,
wherein said composition is in powder form having a particle size of about 5.0 to about 1000.0 μm and contains about 2.0 to about 40.0 weight % of encapsulated water.

5,300,257
4,4'-BIPHENYLENEDIPHOSPHONITE COMPOUND AND USE THEREOF

Hiroyuki Akashi; Takeshi Inoue; Tetsuji Ike, all of Fukuoka; Hidaka Yasuhiro, and Shoichi Horie, both of Osaka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed May 27, 1992, Ser. No. 888,925
Claims priority, application Japan, May 27, 1991, 3-152618; Sep. 27, 1991, 3-277309
Int. Cl.[5] C07F *9/02;* **C09K** *15/32, 15/08*
U.S. Cl. 252—400.24 **5 Claims**

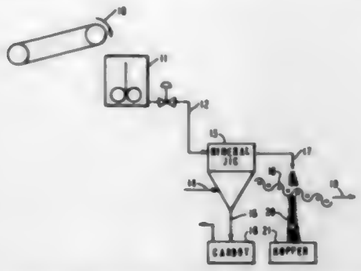
3. A stabilizer composition for organic materials, which comprises tetrakis(2,4-di-tert-butyl-5-methylphenyl)-4,4'-biphenylenediphosphonite, and at least one member selected from the group consisting of a phenolic antioxidant, a sulfuric antioxidant, an ultraviolet absorber, a light stabilizer and a phosphorus antioxidant.

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5,300,258
METHOD FOR DECONTAMINATING SOIL CONTAINING RESINS

David C. Grant, Gibsonia; Edward J. Laboda, Edgewood Borough; Leland L. Learn, Pittsburgh; Arthur W. Ott, Wilkins Township, Allegheny County, and Albert J. Dietrich, North Huntingdon Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1991, Ser. No. 722,458
Int. Cl.[5] G21F *9/00*
U.S. Cl. 252—626 **18 Claims**



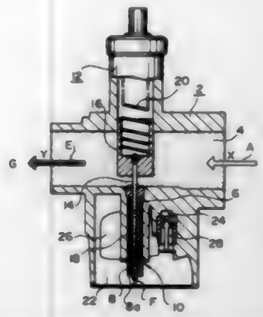
1. A method of separating a mixture of contaminated resin particles from soil particles comprising;
a) fluidizing said mixture at a fluid velocity sufficient to entrain substantially all of said resin particles and a first portion of said soil particles, said entrained first portion of said soil particles being of an average particle size smaller than the average particle size of said contaminated resin particles;
b) separating and collecting a second portion of said soil particles from said entrained contaminated resin particles and said entrained first portion of said soil particles, said second portion not being entrained in said fluidized mixture; and
c) separating said entrained first portion of said soil particles from said entrained contaminated resin particles with particle separation means adapted to collect particles corresponding to the average particle size of said contaminated resin particles.

5,300,259
CARBURETOR AND FUEL FEEDING SYSTEM HAVING THE SAME

Shinichi Tashiro, 10-12, Honkaneda 1-chome, Ohta-ku, Tokyo, Japan, assignor to Shinichi Tashiro and Akira Ohshima, both of Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,407
Claims priority, application Japan, May 20, 1991, 3-115024; May 20, 1992, 4-151218
Int. Cl.[5] F02M *9/06*
U.S. Cl. 261—44.3 **15 Claims**

1. A carburetor for generating air-fuel mixture in a suitable air-fuel ratio and feeding the mixture to an engine for combustion, comprising:
an air suction passageway through which air is fed; and
a fuel feeding passageway which is disposed so as to be intersected to said air suction passageway and through which fuel is fed, said air suction passageway and said fuel feeding passageway being intercommunicated to each other, wherein said fuel feeding passageway comprises a needle jet intercommunicated to said air suction passageway for guiding the fuel into said air suction passageway and a jet needle which has a side surface with a tapered portion and is movably inserted into said needle jet to form a clearance between said jet needle and said needle jet, said clearance being adjustable by moving said jet needle in an axial direction thereof to control an amount of fuel to be fed into said air suction passageway in accordance with an opening degree of the clearance, said jet needle having a substantially flat surface portion at a tip portion of said tapered portion said side portion of the jet

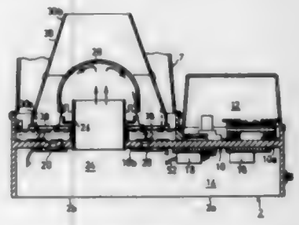


needle and said substantially flat surface of the tip portion being roughed to have roughened surface portions.

5,300,260
FOG GENERATOR

Amiram Keshet, Rehovot, and Yaacov Shoham, Doar Beer Yaacov, both of Israel, assignors to Shira Aeroponics (1984) Ltd., Rehovot, Israel

Filed Apr. 21, 1993, Ser. No. 49,381
Claims priority, application Israel, May 22, 1992, 101967; Dec. 25, 1992, 104231
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—81 **19 Claims**



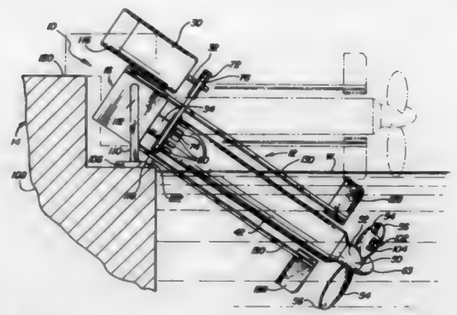
1. A fog generator, comprising:
a housing including a reservoir for a liquid to be atomized;
a plurality of ultrasonic transducers disposed in spaced relation to each other in said reservoir so as to be submerged within the liquid therein;
and gas directing means for directing a flow of gas across the liquid in the reservoir;
said gas directing means including a gas inlet duct extending through said reservoir, and a dome-shaped deflector overlying, and of larger diameter than, said gas inlet duct to deflect the gas flowing through said duct back towards the reservor to pick up liquid atomized by said transducers.

5,300,261
LIQUID AERATING APPARATUS

Richard Von Berg, 4403 Alvin St., Saginaw, Mich. 48603

Filed Nov. 12, 1992, Ser. No. 974,948
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—87 **12 Claims**

1. Apparatus for aerating liquids comprising a drive shaft having an aerating fluid passage therein; means journaling said shaft for rotation about an axis; motor means coupled to said drive shaft for rotating said shaft about said axis; a propeller connected to said drive shaft for rotation therewith, said propeller having a plurality of blades each of which has an outlet port in communication with said passage and through which said fluid may be discharged in response to rotation of said propeller in said liquid; means mounting said shaft for movements between an operational position in which said blades and

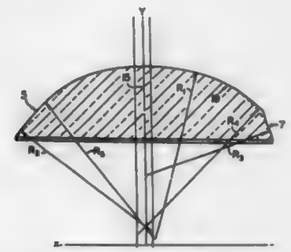


said outlet ports are immersed in the liquid and an inactive position in which said passage is above the level of the liquid; and means responsive to rotation of said propeller for automatically moving said shaft to said operational position and responsive to termination of rotation of said propeller to move said shaft to said inactive position.

5,300,262
PROCESS OF SPINCASTING A COMPOUND CONTACT LENS

Robert E. Glick, Huntington Station, N.Y., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 776,797, Oct. 15, 1991, abandoned, which is a division of Ser. No. 244,436, Sep. 14, 1988, Pat. No. 5,076,683. This application Oct. 29, 1992, Ser. No. 970,587
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—2.1 **1 Claim**

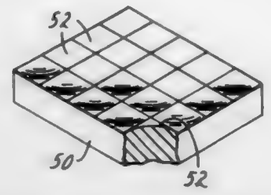


1. The process of reproducibly making a wholly spuncasted, non-truncated, ballasted soft contact lens containing a compound anterior surface which comprises spincasting a polymer-forming, lens-forming monomeric mixture in a cavity mold having a surface that is offset to allow for generation of a prismatic ballast, a compound curvature and a central axis that is symmetrical to the peripheral edge of the lens being formed, by rotating the monomer mixture in the mold whereby the mixture replicates the mold's surface while at the same time undergoes polymerization and forms a prismatic lens with the central axis of its posterior surface symmetrical to its peripheral edge, a corneal bowl free of the compound curvature and possessing a thickness profile that is asymmetrical with respect to its geometric center.

5,300,263
METHOD OF MAKING A MICROLENS ARRAY AND MOLD

Timothy L. Hoopman, River Falls, Wis., and David J. W. Aastuen, Farmington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 28, 1992, Ser. No. 967,453
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—2.5 **27 Claims**



1. A method of making a microlens array mold, comprising:
(a) forming an array of pyramid-shaped receptacles having parallelogram-shaped apertures;
(b) applying a hardenable liquid to the array of pyramid-shaped receptacles so that the receptacles are partially filled with the liquid, whereby a plurality of menisci are formed in the receptacles; and
(c) hardening the liquid to form a plurality of concave lens mold surfaces in the pyramid-shaped receptacles, thereby forming a mold capable of forming an array of generally spherical microlenses.

5,300,264
PROCESS FOR THE PRODUCTION OF COMPOSITE BODIES

Christian Wolfrum, Köln; Ulrich Knipp, Bergisch Gladbach; Peter Schuster, Mannheim; Martin Brock, Neulussheim, and Ronald Boot, Bensheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1992, Ser. No. 943,266
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131207
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—46.4 **6 Claims**

1. A process for the production of composite bodies consisting of a polyurethane core and a polyurethane covering, comprising positioning said core inside a mold so that an average gap of at least 0.5 mm exists between the surface of the core and the internal wall of the mold and introducing a reaction mixture into the gap between said core and said internal wall, said reaction mixture comprising:
a) a polyisocyanate component having an isocyanate content of from 5 to 50% by weight, and
b) a polyol component having an average hydroxyl number of from 50 to 800 and consisting of at least 30% by weight of polyhydroxyl compounds in which the carbon to oxygen weight ratio of the total quantity of component b), is at least 2.5:1.

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5,300,265

CONTROLLED ATMOSPHERE GENERATING EQUIPMENT

Henry J. Banks, Pialligo; Keith A. Norris, Frankston; Robert J. Symons, Wheelers Hill, and Robert C. Whitlock, Frankston, all of Australia, assignors to Fluid Dynamics Pty Ltd., Frankston, Australia

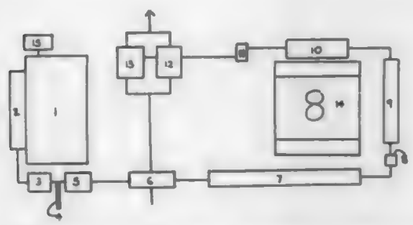
PCT No. PCT/AU90/00273, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/00018, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 26, 1990, Ser. No. 835,992

Claims priority, application Australia, Jun. 26, 1989, AU4910

Int. Cl.[5] B01D *50/00*

U.S. Cl. 422—172 **33 Claims**



1. An apparatus for producing an exhaust gas having a low oxygen content comprising:

(i) means to combust a mixture of air and fuel to produce an exhaust gas containing N_2, CO, NOX and small amounts of uncombusted O_2;

(ii) at least one catalytic converter means to substantially reduce the NOX and/or CO content in the exhaust gas;

(iii) at least one heat exchange means to substantially reduce the temperature of the exhaust gas issuing from the at least one catalytic converter means;

(iv) an absorption system through which the exhaust gas passes to substantially reduce moisture content of the exhaust gas, said absorption system comprising a regenerable desiccant; and

(v) means for subjecting the desiccant to heat energy from a stream of air to regenerate the desiccant to reduce the moisture content of the desiccant, the heat energy from the stream of air being the sole form of energy employed for regenerating the desiccant, and

wherein following combustion of the air and fuel mixture, the exhaust gas passes through, in turn, the catalytic converter means, the heat exchange means and the absorption system.

5,300,266

ELECTRICAL APPARATUS AND METHOD FOR GENERATING ANTIBIOTIC

James W. Gibbooney, Jr., Conyers, Ga., assignor to Scientific Products Corporation, Conyers, Ga.

Filed May 27, 1992, Ser. No. 889,167

Int. Cl.[5] B01J *19/12*

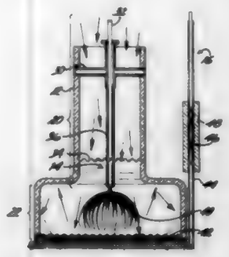
U.S. Cl. 422—186.07 **14 Claims**

1. Apparatus for use with a source of direct electrical current and a source of oxygen, said apparatus comprising:

a housing made of a non-electrically conducting material, said housing having a first opening for oxygen from said source of oxygen to enter said housing and a second, opposing opening;

a cathode positioned in said housing near said first opening, said cathode having a plurality of throughholes through which said oxygen can pass; and

an anode positioned in said housing and spaced apart from said cathode so as to define a gap therebetween, said anode having a first portion near said second opening and an adjacent second portion, said first portion formed to accelerate ions electromagnetically from said housing through said second opening when said source of direct electrical current is applied across said anode and cathode, said second portion being in the form of a plurality of electrodes flaring outwardly and toward said cathode so as to form a plasma between said second portion and said



cathode when said electrical current is applied to said cathode and said anode,

said plasma ionizing said oxygen entering said housing through said first opening and producing a charged molecule that is accelerated by said first portion of said anode through and from said housing.

5,300,267

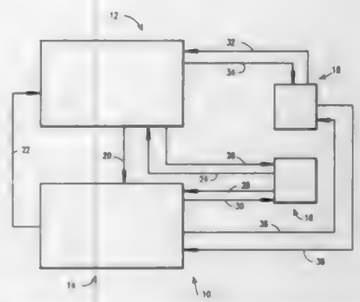
RECLAIMER APPARATUS

Lawrence A. Moore, Lakeland, Fla., assignor to Resource Recovery Technologies, Inc., Clearwater, Fla.

Continuation of Ser. No. 597,400, Oct. 15, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 950,729

Int. Cl.[5] B01D *11/02*

U.S. Cl. 422—286 **11 Claims**



1. A reclaimer apparatus comprising a dissolving section and a recovery section operatively coupled together by a first and second fluid conduit to transfer fluid therebetween in combination with a heating source and a cooling source, said heating source is operatively coupled to said dissolving section by a first and second dissolving heating fluid conduit and to said recovery section by a first and second recovery heating fluid conduit to selectively transfer heating fluid to and from said dissolving section and said recovery section, said cooling source is operatively coupled to said dissolving section by a first and second dissolving cooling fluid conduit and to said recovery section by a first and second recovery cooling fluid conduit to selectively transfer cooling fluid to and from said dissolving section and said recovery section, said dissolving section comprises a dissolving tank to receive solvent from a solvent reservoir through a solvent supply conduit and solid polystyrene-type polymer material through a centrally disposed inlet formed in the top of said dissolving tank from an external source, a first heat exchange operatively coupled to said heating source through said first and second dissolving heating fluid conduits to receive heating fluid from said heating source to heat solution circulated through said dissolving tank to at least 190 degrees F. and a first condensing unit disposed in the upper portion of said dissolving tank operatively coupled to said cooling source through said first and second dissolving cooling conduits to circulate cooling fluid from said cooling source through said first condensing unit to condense vapor within said dissolving tank, said dissolving tank including an upper and lower fluid inlet to supply heated solution from said first heat exchange to said dissolving tank through a first and second solution supply conduit, said first solution supply conduit includes a nozzle extending into the interior of said dissolving tank above the material disposed therein to dissolve the material and said lower fluid inlet comprises an elongated aperture disposed tangentially relative to a frustrum conical lower portion of said dissolving tank to circulate solution therein, said dissolving tank further includes a split cone having a perforated basket adjacent an outlet formed on the bottom thereof to collect solid foreign objects therein, said dissolving section further includes a dissolving section control means to selectively control fluid through said dissolving section and to said recovery section, said dissolving section control means includes a first pump operatively coupled to a heater inlet through a pump outlet conduit and an outlet fluid flow control valve movable between a first and second position to said recovery section through said pump outlet conduit, a fluid flow control valve movable between a first and second position and said first fluid conduit, and to said outlet of the dissolving tank through a pump inlet conduit, said dissolving section control means further includes a first heat exchange control means comprising a pressure reducing valve to control the pressure of fluid flow from said heating source to said first heat exchange, a flow control valve movable between a first and second position to selectively control the flow of fluid between said first heat exchange and said heating source, said dissolving section control means also includes a solvent supply control means comprising a first solvent flow control valve movable between a first and second position to selectively control the flow of solvent from said solvent reservoir through the solvent supply conduit to said dissolving tank and a second solvent flow control valve movable between a first and second position to selectively control the flow of solvent to said solvent reservoir from an external source or from said recovery section through said second fluid conduit, said recovery section comprises a recovery tank to receive solution from said dissolving section through said first fluid conduit, a second heat exchange operatively coupled to said heat source through said first and second recovery heating fluid conduits to heat or reheat solution circulated through said recovery tank, a separator means coupled to the second heat exchange to receive solution therefrom and to separate the dissolved polystyrene-type polymer material in solid form from the solvent and a solid material processing unit to draw the solid polystyrene-type polymer material from the separator means, to reduce the solid material to particulate form and to collect the particulate material for packing and shipping.

5,300,268

PROCESS FOR THE MANUFACTURE OF AQUEOUS SOLUTIONS OF FERRIC CHLORIDE

Jacques Van Diest, Rhode-Saint-Genese, and Jacques Brahm, Grimbergen, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed May 29, 1992, Ser. No. 889,919

Claims priority, application Belgium, Jun. 6, 1991, 09100550

Int. Cl.[5] C01G *49/10*

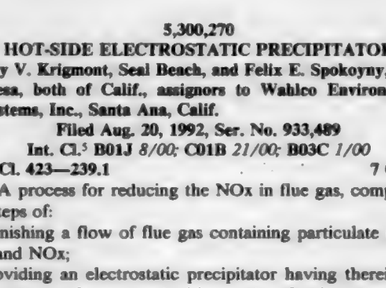
U.S. Cl. 423—150.1 **6 Claims**

1. A process for the manufacture of an aqueous solution of ferric chloride, comprising:

a. introducing an aqueous solution of hydrochloric acid into a reactor containing a bed of fragments of an oxide-containing iron ore so that the aqueous solution of hydrochloric acid travels upwardly through the bed;

b. collecting a suspension of ore particles in an aqueous solution of ferric chloride from the bed;

c. mechanically separating the ore particles from the aqueous solution of ferric chloride of the suspension; and



d. recycling the ore particles by adding the ore particles to the aqueous solution of hydrochloric acid upstream of the bed.

5,300,269

CATALYTIC DECOMPOSITION OF DINITROGEN MONOXIDE WHICH IS PURE OR PRESENT IN GAS MIXTURES

Heinrich Aichinger, Mannheim; Karl-Heinz Boehning; Klaus Herzog, both of Ludwigshafen; Hermann Wistuba; Gert Buerger, both of Mannheim; Matthias Schwarzmann, Limburgerhof, and Guenter Herrmann, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 10, 1991, Ser. No. 757,387

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1990, 4029061

Int. Cl.[5] B01J *8/00*; **G01B** *17/00*

U.S. Cl. 423—239.1 **2 Claims**

1. In a process for decomposing dinitrogen monoxide at temperatures about 200°–600° C. into nitrogen and oxygen in the presence of a silver containing catalyst, the improvement which comprises the silver being applied to an alumina carrier which has a BET surface area of from 5 to 25 m 2/g, and wherein the catalyst has a silver content of from 5 to 25% by weight.

5,300,270

HOT-SIDE ELECTROSTATIC PRECIPITATOR

Henry V. Krigmont, Seal Beach, and Felix E. Spokoyny, Costa Mesa, both of Calif., assignors to Wahlco Environmental Systems, Inc., Santa Ana, Calif.

Filed Aug. 20, 1992, Ser. No. 933,489

Int. Cl.[5] B01J *8/00*; **C01B** *21/00*; **B03C** *1/00*

U.S. Cl. 423—239.1 **7 Claims**

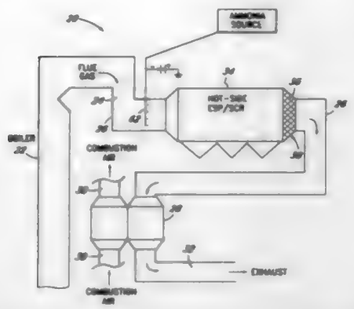
1. A process for reducing the NOx in flue gas, comprising the steps of:

furnishing a flow of flue gas containing particulate matter and NOx;

providing an electrostatic precipitator having therein collecting surfaces coated with a catalyst for the reduction of NOx in the flue gas by reaction with a nitrogeneous compound, the electrostatic precipitator being positioned in the flue gas flow at a location such that the temperature of the flue gas is no less than about 450 F. at the point of flue gas exit from the electrostatic precipitator; and

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operating the electrostatic precipitator to remove particulate from the flue gas, the NOx in the flue gas reacting with the



nitrogeneous compound in the presence of the catalyst to reduce the NOx content of the flue gas.

5,300,271

METHOD FOR SEPARATION OF CARBON MONOXIDE BY HIGHLY DISPERSED CUPROUS COMPOSITIONS

Timothy C. Golden, Allentown; Wilbur C. Kratz, Macungie, and Frederick C. Wilhelm, Zionsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 572,067, Aug. 23, 1990, Pat. No. 5,126,310. This application Apr. 14, 1992, Ser. No. 868,743

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] **C01B** *31/18;* **B01D** *53/02*

U.S. Cl. 423—247 **5 Claims**

1. The process of selectively separating carbon monoxide from a gas mixture containing carbon monoxide and at least one other gas selected from the group consisting of carbon dioxide, methane, nitrogen, hydrogen, argon, helium, ethane and propane, comprising: (a) contacting the gas mixture with a copper halide-containing absorbent comprising a support of amorphous oxide or carbon and a dispersed cuprious halide prepared by impregnating the support with a cupric compound in an aqueous solvent having an ammonium salt of di- or poly-carboxylic acid dispersant, removing the solvent and reducing the cupric compound to a cuprous halide on the support by heating to an elevated temperature, (b) selectively adsorbing carbon monoxide on the absorbent, and (c) separately desorbing the carbon monoxide from the absorbent to recover the carbon monoxide.

5,300,272

MICROCELLULAR CARBON FOAM AND METHOD

Ronald F. Simandl, Farragut, and John D. Brown, Harriman, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 17,562, Feb. 16, 1993, Pat. No. 5,268,395, which is a division of Ser. No. 960,600, Oct. 13, 1992, Pat. No. 5,208,003. This application Sep. 13, 1993, Ser. No. 120,705

Int. Cl.[5] **C01B** *31/00, 31/02;* **C08J** *9/36*

U.S. Cl. 423—445 R **3 Claims**

1. A microcellular carbon foam characterized by a density in the range of about 30 to 1000 mg/cm^3, substantially uniform distribution of cell sizes of diameters less than 100 μm with a majority of the cells being of diameter of less than about 10 μm, well interconnected strut morphology providing open porosity, and an expanded d(002) X-ray turbostatic spacing greater than 3.5 angstroms.

5,300,273

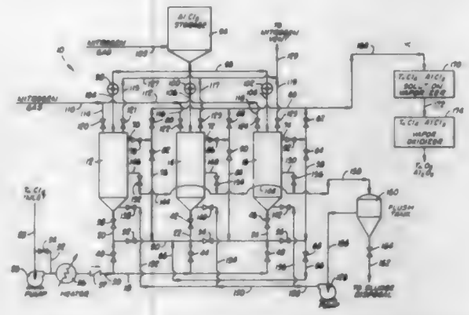
PROCESS FOR PRODUCING A VAPOR MIXTURE OF TITANIUM TETRACHLORIDE AND ALUMINUM THICHLORIDE

Robert E. Leonard, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 745,680, Aug. 16, 1991, abandoned. This application Dec. 3, 1992, Ser. No. 985,526

Int. Cl.[5] **C01G** *23/02;* **C01F** *7/48*

U.S. Cl. 423—492 **22 Claims**



1. A process for producing a stream of titanium tetrachloride solution containing a ratio of aluminum trichloride to titanium tetrachloride dissolved therein and maintained sufficiently constant to obtain a titanium dioxide product of uniform quality and which retains said ratio of aluminum trichloride to titanium tetrachloride when said stream is vaporized comprising the steps of:

(a) heating a stream consisting essentially of liquid titanium tetrachloride to a temperature sufficient to dissolve said aluminum trichloride to form a saturated solution thereof to yield a solution characterized by said ratio of aluminum trichloride to titanium tetrachloride when said stream consisting essentially of liquid titanium tetrachloride is subsequently contacted with said aluminum trichloride;

(b) flowing said heated stream of titanium tetrachloride through a pump to bring said heated stream of titanium tetrachloride into contact with at least one bed of granular aluminum trichloride whereby aluminum trichloride is dissolved in said titanium tetrachloride to saturation and a stream of titanium tetrachloride solution containing said ratio of aluminum trichloride to titanium tetrachloride is produced so that said titanium tetrachloride solution containing said ratio of aluminum trichloride to titanium tetrachloride is not flowed through said pump to avoid corrosion of said pump;

(c) recharging a depleted bed of solid aluminum trichloride from which a major portion of aluminum trichloride has previously been removed by dissolution in said heated stream of liquid titanium tetrachloride and which is no longer in contact with said stream by draining liquid titanium tetrachloride from said bed, filling said bed with fresh granular aluminum trichloride, refilling said bed with liquid titanium tetrachloride and preheating said bed;

(d) changing a flow pattern of said heated stream of titanium tetrachloride when said bed of granular aluminum trichloride in contact with said heated stream of titanium tetrachloride is depleted by the removal of a major portion of said bed by dissolution in said heated stream of liquid titanium tetrachloride so that said heated stream of liquid titanium tetrachloride flows into contact with said recharged bed of granular aluminum trichloride and said depleted bed is no longer in contact with said stream and is recharged; and

(e) thereafter changing the flow pattern of said heated stream of liquid titanium tetrachloride so that said stream flows into contact with the bed of granular aluminum trichloride just recharged, and so that the depleted bed from which a major portion of said granular aluminum trichloride has just been removed by dissolution is no longer in contact with said stream and is recharged.

5,300,274

METHOD FOR MAKING MOLYBDENUM AND SULFUR CONTAINING COMPOUNDS

Liwen Wei, Somerville; Catherine L. Coyle, Mendham, both of N.J.; Thomas R. Halbert, Baton Rouge, La., and Edward I. Stiefel, Bridgewater, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 25, 1990, Ser. No. 603,064

Int. Cl.[5] **C01G** *39/06*

U.S. Cl. 423—511 **9 Claims**

1. A method for preparing molybdenum and sulfur containing compounds of the general formula $X_2Mo_2S_{12}.yh_2O$, where X is a cation selected from the group consisting of Na+, K+, R_4N+, R_3NH+, R_2NH_2+, RNH_3+, NH_4+, R_4P+, R_4As+, $(R_3P)_2N$+, R is a C_1–C_{30} alkyl, C_6–C_{30} aryl, C_7–C_{30} aralkyl or C_2–C_{30} alkoxyalkyl group, and mixtures thereof, and y is from 0 to 2, comprising:

(a) preparing an ammonium sulfide solution containing from about 9 wt. % to about 13 wt. % sulfur;

(b) contacting the sulfide solution of step (a) with an appropriate amount of elemental sulfur and a hydroxide to form a polysulfide solution;

(c) adding a molybdenum compound selected from the group consisting of molybdic acid, a molybdate and molybdenum trioxide to the polysulfide solution for a time and a temperature sufficient to form a precipitate in the solution;

(d) separating the precipitate from the solution to obtain a precipitate-free solution;

(e) contacting the precipitate-free solution with additional ammonium sulfide solution, containing from about 9 wt. % to about 13 wt. % sulfide sulfur, in an amount and for a time and at a temperature sufficient to form $(NH_4)_2Mo_2S_{12}.yH_2O$; and,

(f) when X is to be other than NH_4+, the $(NH_4)_2Mo_2S_{12}.yH_2O$ formed in step (e) is separated, dried and then contacted with a solution of cation exchange compound containing a cation selected from group consisting of Na+, K+, R_4N+, R_3NH+, R_2NH_2+, RNH_3+, R_4P+, R_4As+, $(R_3P)_2N$+, where R is a C_1–C_{30} alkyl, C_6–C_{30} aryl, C_7–C_{30} aralkyl or C_2–C_{30} alkoxyalkyl group, and mixtures thereof, and an anion selected from the group consisting of Cl−, Br−, F−, I−, BF_4−, PF_6−, OH−, Br_4−, where R is a C_1–C_{30} alkyl, C_6–C_{30} aryl, C_7–C_{30} aralkyl; C_2–C_{30} alkoxyalkyl group, and mixtures thereof, and for a time sufficient to form a precipitate of the general formula $X_2Mo_2S_{12}.YH_2O$, where X is not NH_4+.

5,300,275

STEAM REFORMING

Warwick J. Lywood, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, United Kingdom

Continuation of Ser. No. 637,194, Jan. 3, 1991, abandoned. This application Aug. 12, 1992, Ser. No. 928,628

Claims priority, application United Kingdom, Jan. 8, 1990, 9000389

Int. Cl.[5] **C01B** *3/12*

U.S. Cl. 423—655 **9 Claims**

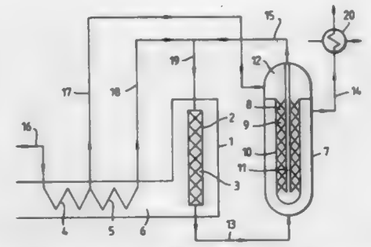
1. A process for the production of a hydrogen containing gas stream consisting essentially of:

a) passing a first feed stream containing hydrocarbon feedstock to be reformed together with at least one reforming gas selected from the group consisting of steam and carbon dioxide over a steam reforming catalyst disposed in heated auxiliary tubes, thereby forming a heated partially reformed gas stream;

b) combusting a fuel in a furnace to heat furnace reformer tubes disposed therein and then passing the combustion products, after heating said furnace reformer tubes, to a flue gas duct;

c) heating a second feed stream containing hydrocarbon feedstock to be reformed together with at least one reforming gas selected from the group consisting of steam and carbon dioxide by heat exchange with the flue gas in said flue gas duct, thereby forming a heated second feed stream;

d) mixing all of said heated partially reformed gas stream with the heated second feed stream, thereby forming a heated furnace reformer feed mixture;



e) subjecting the heated furnace reformer feed mixture to reforming in the furnace reformer, wherein the feed mixture is passed over a steam reforming catalyst disposed in said furnace reformer tubes, thereby forming a heated reformed product gas stream; and

f) passing the reformed product gas stream from the furnace reformer tubes directly to and past the exterior of the auxiliary tubes, thereby supplying heat to said auxiliary tubes and cooling the reformed product gas stream.

5,300,276

PROCESSES FOR PREPARING HYDROGEN GAS AND DETERMINING RATIO OF MASSES BETWEEN HYDROGEN ISOTOPES THEREIN

Akira Ueda; Yasuhiro Kubota, both of Omiya, and Tsutomu Araki, Kagawa, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,717

Claims priority, application Japan, Apr. 4, 1991, 3-71918; Apr. 12, 1991, 3-80206

Int. Cl.[5] **C01B** *3/08*

U.S. Cl. 423—657 **7 Claims**



1. A process of preparing hydrogen gas comprising the steps of:

granulating zinc metal so that it consists of zinc metal crystals having a mean size of 5 μm or less including the step of adding nickel in the amount of 10 to 10,000 ppm per part of zinc to obtain zinc metal particles having a size of 1–2 mm which are used as a reducing agent; and

reacting water with said reducing agent at a selected reaction temperature to reduce said water chemically into hydrogen gas.

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5,300,277

SYNTHESIS OF MESOPOROUS CRYSTALLINE MATERIAL

Charles T. Kresge, West Chester, Pa., and Wieslaw J. Roth, Sewell, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 734,825, Jul. 24, 1991, Pat. No. 5,198,203, which is a continuation-in-part of Ser. No. 470,008, Jan. 25, 1990, Pat. No. 5,102,643. This application Oct. 21, 1992, Ser. No. 964,235

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] **C01B** *33/20, 33/26*

U.S. Cl. 423—703 **21 Claims**

1. In a method for synthesizing a composition of matter comprising an inorganic, porous crystalline phase material having, after calcination, an X-ray diffraction pattern including values substantially as shown in Table 1 which comprises the steps of

(1) combining a primary organic directing agent (R'), optional additional organic directing agent (R''), optional source of alkali or alkaline earth metal (M) ions, and a solvent or solvent mixture such that the mole ratio

$$\text{Solvent}/(R'_2O+M_2O)$$

is from about 45 to less than about 100,

(2) adding one or a combination of oxides of tetravalent element Y, and optionally one or a combination of oxides of elements selected from the group consisting of divalent element W, trivalent element X and pentavalent element Z to the mixture of step (1), such that the mole ratio

$$R_2O/(YO_2+X_2O_3+Z_2O_5+WO)$$

is from about 0.3 to about 1, where R is the total of R'+R'',

(3) agitating the mixture resulting from step (2) at a temperature of from about 0° C. to about 50° C. and a pH of from about 7 to about 14, and

(4) crystallizing the product from step (3) at a temperature of from about 50° C. to about 200° C.,

the improvement wherein Y comprises silicon and the oxide of Y is added as a colloidal dispersion of SiO_2 or a precipitated SiO_2, ethanol is added to the mixture prior to crystallizing step (4), and wherein the Solvent/(R'_2O+M_2O) mole ratio of step (1) is from about 45 to less than about 110.

5,300,278

PROCESS FOR THE PREPARATION OF ^{99m}TC, ^{186}RE OR ^{188}RE NITRIDE COMPLEXES USABLE AS RADIOPHARMACEUTICAL PRODUCTS

Roberto Pasqualini, Clasart, France; Luciano Magon, Padova, Italy; André Bardy, Morangis, France; Adriano Duatti, Del Fosso, Italy, and Andrea Marchi, Ferrara, Italy, assignors to Cis Bio International, Saclay, France

PCT No. PCT/FR89/00094, § 371 Date Sep. 7, 1990, § 102(e) Date Sep. 7, 1990, PCT Pub. No. WO89/08657, PCT Pub. Date Sep. 21, 1989

PCT Filed Mar. 8, 1989, Ser. No. 571,570

Claims priority, application France, Mar. 9, 1988, 88 03044; Nov. 25, 1988, 88 15414

Int. Cl.[5] **A61K** *49/02, 43/00*

U.S. Cl. 534—14 **22 Claims**

1. A process for the preparation of a radiopharmaceutical product incorporating a nitride complex of a transition metal selected from the group consisting of ^{99m}Tc, ^{186}Re and ^{188}Re, having a portion M≡N with M representing the transition metal, characterized in that about 10^9-10^{11} moles of an oxidized compound, MO_4^-, of the transition metal M is reacted with a first ligand selected from the group consisting of substituted or unsubstituted aliphatic and aromatic phosphines and polyphosphines, and a second nitrogenous ligand consisting of either an ammonium nitride or a pharmaceutically acceptable metal nitride, or of a nitrogenous compound having a >N—N< unit, in which the Ns are linked with the hydrogen atoms and/or monovalent organic groups via a carbon atom, or in which one of the ends is linked with the carbon atom of a divalent organic group via a double bond and the other N is linked with the hydrogen atoms and/or monovalent organic groups via a carbon atom.

5,300,279

ORGANIC AMINE PHOSPHONIC ACID COMPLEXES FOR THE TREATMENT OF CALCIFIC TUMORS

Jaime Simon, Angleton; Joseph R. Garlich, Lake Jackson, both of Tex.; William F. Goeckeler, Midland, Mich.; Davis A. Wilson, Richwood, Tex.; Wynn A. Volkert, Columbia, Mo., and David E. Troutner, Phoenixville, Pa., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 472,506, Nov. 30, 1990, Pat. No. 5,066,478, which is a division of Ser. No. 50,263, May 14, 1987, Pat. No. 4,898,724, which is a continuation-in-part of Ser. No. 803,376, Dec. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 738,010, May 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 616,985, Jun. 4, 1984, abandoned. This application Dec. 19, 1990, Ser. No. 629,804

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] **A61K** *43/00*

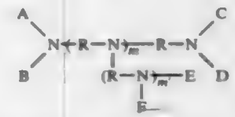
U.S. Cl. 424—1.77 **42 Claims**

1. A therapeutically effective composition comprising (1) an aminophosphonic acid of the formula



(I)

or



(II)

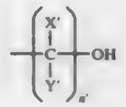
wherein substituents A, B, C, D, E and F are independently selected from hydrogen, methyl, ethyl, isopropyl, benzyl



(A)



(B)



(C)

and physiologically acceptable salts of the acid radicals and wherein X' and Y' are independently hydrogen, methyl or ethyl radicals; n' is 2 or 3; and m and m' each is independently 0–10; with the proviso that at least one of said nitrogen substituents is the phosphorus-containing group of Formula (B); and wherein R is



wherein X and Y are independently selected from hydrogen, hydroxyl, carboxyl, phosphonic, and hydrocarbon radicals having from 1–8 carbon atoms and physiologically acceptable salts of the acid radicals and n is 1–3, with the proviso that when n>1, each X and Y may be the same as or different from the X and Y of any other carbon atoms; with the further proviso that when m or m'≧1 the E and F substituents may be same as or different from any other substituent of any other nitrogen atom and each R can be the same as or different from any other R and (2) at least one radionuclide selected from G-159, Ho-166, Lu-177 and Yb-175.

5,300,280

STABILIZED RADIOPHARMACEUTICAL KITS

Mark A. DeRosch, St. Louis; Edward A. Deutsch; Mary M. Dyszlewski, both of Maryland Heights, and Dennis L. Nosco, Florissant, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Feb. 14, 1992, Ser. No. 836,644

Int. Cl.[5] **A61K** *43/00, 49/02, 31/715*

U.S. Cl. 424—1.53 **33 Claims**

1. A method of stabilizing components of a radiopharmaceutical kit, said method comprising:

including in said kit at least one ligand capable of bonding to a radioisotope during radiopharmaceutical solution formulation;

wherein said ligand is selected from the group consisting of phosphines, arsines, thiols, thioethers, and isonitriles; and

including in said kit, a cyclic oligosaccharide in an amount suitable to inhibit oxidation and/or volatilization of said components.

5,300,281

RADIOLABELED COMPOSITIONS CONTAINING A CALCIFIC MATRIX AND THEIR USE FOR TREATMENT OF ARTHRITIS

Kenneth McMillan, Richwood, and Jaime Simon, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 656,397, Feb. 15, 1991, Pat. No. 5,137,709. This application Jul. 1, 1992, Ser. No. 906,998

Int. Cl.[5] **A61K** *43/00;* **A61M** *36/14;* **A61N** *5/00*

U.S. Cl. 424—1.29 **46 Claims**

1. A therapeutic radiation ablation treatment method comprising:

injecting into the synovium of a patient a therapeutically effective amount of a pharmaceutical composition consisting essentially of a radionuclide sorbed to a calcific matrix, wherein the calcific matrix is particulate, the particles being spherical or irregular in form and having an average diameter of between about 1 and about 90 microns.

5,300,282

AGENTS FOR POTENTIATING THE EFFECTS OF ANTITUMOR AGENTS AND COMBATING MULTIPLE DRUG RESISTANCE

Ann C. King, Chapel Hill, N.C., assignor to Burroughs-Wellcome Company, Research Triangle Park, N.C.

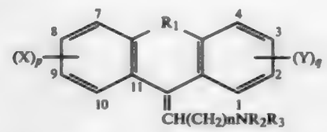
Filed Jun. 18, 1990, Ser. No. 539,838

Claims priority, application United Kingdom, Jun. 19, 1989, 8914061

Int. Cl.[5] **A61K** *49/00, 31/40, 31/335;* **A01N** *43/46*

U.S. Cl. 424—10 **4 Claims**

1. A method of combating multiple drug resistance of susceptible tumor cells resistant to vinca alkaloids in a subject in need of such treatment, comprising administering to the subject a compound, in an amount effective to combat multiple drug resistance of tumor cells sensitive to said compound, wherein said compound is of the formula:



(I)

wherein:

R_1 is selected from the class consisting of —CH_2CH_2—, —CH_2O—, —OCH_2—, —$NHCH_2$—, and —CH_2NH—;

X is selected from the class consisting of hydrogen and halogen;

Y is selected from the class consisting of hydrogen and halogen;

n is from 0 to 3;

each of p and q is from 1 to 4; and

R_2 and R_3 are each independently selected from the class consisting of hydrogen and C_{1-4} alkyl, or together with the nitrogen atom form a nitrogen-containing heterocyclic ring having four to six ring members;

or a pharmaceutically acceptable salt thereof.

5,300,283

VISCOELASTIC DENTIFRICE COMPOSITION

Michael Prencipe, East Windsor, and Gary A. Durga, Edison, both of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Division of Ser. No. 738,766, Aug. 1, 1991, Pat. No. 5,202,112. This application Oct. 22, 1992, Ser. No. 51,319

Int. Cl.[5] **A61K** *7/16, 7/18*

U.S. Cl. 424—49 **14 Claims**

1. A linear viscoelastic dentifrice composition in the form of a toothpaste or dental gel with a pH of about 4 to about 9 comprising an orally acceptable water/humectant vehicle, an orally acceptable dental polishing agent and, in an amount effective to render the composition linearly viscoelastic, a synthetic linearly viscoelastic cross-linked polymeric thickening agent derived from a polymer containing repeating units in which one or more phosphonic acid groups are bonded to one or more carbon atoms in the polymer chain and having in a 1 wt. % aqueous solution an elastic or storage modulus G' and a viscous or loss modulus G'' substantially independent of frequency in an applied frequency range of 0.1 to 100 radians/sec, a G' minimum value of 1,000 dynes/sq.cm which varies less than 1 order of magnitude of its original value, and a ratio of G''/G' ranging from more than 0.05 to less than 1.

5,300,284

GLYCOSAMINOGLYCANASE INHIBITOR ANDETHANE DIOL COMPOSITION FOR MAINTENANCE OF HAIR GROWTH

Johann W. Wiechers, Sharnbrook; Michael R. Lowry, Mickle Trafford; John Wollers, Bebington, and Stuart K. Pratley, West Kirby, all of England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Aug. 28, 1992, Ser. No. 936,968

Claims priority, application United Kingdom, Sep. 4, 1991, 9118979

Int. Cl.[5] **A61K** *7/06, 7/00*

U.S. Cl. 424—70 **15 Claims**

1. A composition for topical application to mammalian skin of hair, comprising:

(i) from 0.5 to 50% by weight of a glycosaminoglycanase inhibitor selected from the group consisting of glucarolac-

tone, glucosaccharic acid, salts of glucosaccharic acid and mixtures thereof;
(ii) from 10 to 25% by weight of ethane diol; and
(iii) up to 99% by weight of a cosmetically acceptable vehicle for the glycosaminoglycanase inhibitor.

5,300,285

PERMANENT WAVING WITH SILICONES

Daniel J. Halloran, Midland, Mich., and Gail J. Dehli, Louisville, Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 13, 1992, Ser. No. 959,828
Int. Cl.[5] A61K *7/09*; A45D *7/04*
U.S. Cl. 424—71 **1 Claim**

1. In a process for permanent waving of hair by a reaction in which cystine bridges are reduced to cysteine, the hair reshaped, and the reaction reversed, the improvement comprising reversing the reaction by applying to hair a composition comprising (i) a vinyl functional silicone; (ii) a solvent selected from the group consisting of ethanol, isopropyl alcohol, mineral spirits, trichloroethane, dichloroethane, hexamethyldisiloxane, octamethylcyclotetrasiloxane, and decamethylcyclopentasiloxane; and (iii) a free radical photoinitiator selected from the group consisting of dimethoxyphenylacetophenone, diethoxyacetophenone, hydroxydimethylacetophenone, 1-benzoylcyclohexanol, 1-phenyl-1,2-propanedione-2-O-benzoyl oxime, and 2-hydroxy-2-methyl-1-phenylpropan-1-one; the vinyl functional silicone having the formula:

wherein n is an integer having a value of three to about thirty, and R is an alkyl group of one to six carbon atoms or phenyl.

5,300,286

SILICONE EMULSION FOR PERSONAL CARE APPLICATION

Ronald P. Gee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 14, 1992, Ser. No. 913,554
Int. Cl.[5] A61K *9/107*
U.S. Cl. 424—78.03 **7 Claims**

1. A silicone oil-in-water emulsion composition comprising 1-70 percent by weight of a mixture of a plurality of silicone oils, and at least two nonionic emulsifiers, each nonionic emulsifier being a solid at room temperature, one of said nonionic emulsifiers having a lower HLB value less than 6.0, the lower HLB value emulsifier being present in the amount of 5–50 parts by weight per 100 parts of silicone oils in the mixture, and the other of said nonionic emulsifiers having a higher HLB value greater than 17.0, the higher HLB value emulsifier being present in the amount of 20–150 parts by weight per 100 parts of the lower HLB value emulsifier, the balance of the composition being water, the particle size of the silicone oils in the emulsion being between 140–300 nanometers, all of the silicone oils in the emulsion being non-volatile silicones having a viscosity between 50–2000 centistokes.

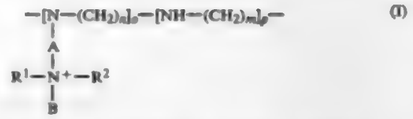
5,300,287

POLYMERIC ANTIMICROBIALS AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Joonsup Park, Arlington, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 4, 1992, Ser. No. 971,424
Int. Cl.[5] A61K *31/785*
U.S. Cl. 424—78.04 **22 Claims**

1. A random co-polymer of formula:



(I)

and pharmaceutically acceptable salts thereof, wherein:
n and m can be the same or different and are: integers between 1 and 10;
o+p=z, wherein z is the total number of structural units and z is a number between 3 and 10,000, and wherein o is a fraction of z between 0 and 100% and p is a fraction of z between 100 and 0%;
R^1 and R^2 can be the same or different and are selected from the group consisting of C_1–C_5 alkyl;
B can be substituted or unsubstituted, branched or unbranched and is selected from the group consisting of: C_1–C_{30} alkyl, C_1–C_{24} alkyl-substituted benzyl, C_3–C_{15} alkyl silane, and C_6–C_{15} cycloalkyl or arylalkyl; and
A can be substituted or unsubstituted, branched or unbranched and is selected from the group consisting of: C_1–C_{20} alkyleneoxy.

2. The random co-polymer of claim 1, wherein: n=m=2; z is a number between 3 and 100; $R^1=R^2=C_1$–C_2 alkyl; and B=substituted or unsubstituted, branched or unbranched C_{12}–C_{18} alkyl.

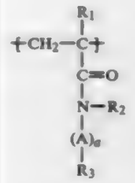
5,300,288

COMPOSITION AND METHOD FOR CONTROLLING CHOLESTEROL

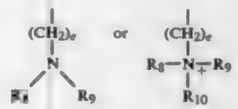
Robert L. Albright, Churchville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 5, 1991, Ser. No. 681,032
Int. Cl.[5] A61K *31/765*
U.S. Cl. 424—78.08 **45 Claims**

1. A polymeric composition comprising polymers having units of the structure



wherein
A is an aminoalkyl group $-(CHR_6)_d-NR_7-$, the alkyl being attached to the amide nitrogen;
a is an integer between 0 and about 10;
d is independently integers between 1 and about 10;
R_1 is hydrogen or a C_1–C_8 hydrocarbon group,
R_2, R_6 and R_7 are independently hydrogen, hydrocarbon groups or heteroatom-containing hydrocarbon groups; and



R_3 is
e is an integer from 1 to 6, and
R_8, R_9 and R_{10} are independently hydrogen, hydrocarbon groups or heteroatom-containing hydrocarbon groups,
the composition being nontoxic and the polymers having a

molecular size distribution with a mode of about 80,000 daltons or greater and from 0 to about 0.5 percent crosslinking.

5,300,289

PHYTATE ANTIMICROBIAL COMPOSITIONS IN ORAL CARE PRODUCTS

Joseph R. Garlich; Tipton T. Masterson, and R. Keith Frank, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1991, Ser. No. 806,070
Int. Cl.[5] A61K *7/16, 7/22*
U.S. Cl. 424—54 **32 Claims**

1. An oral composition consisting essentially of: (1) from about 0.001 to about 10 percent by weight of one or more compounds having C-O-P bonds wherein the compound having C-O-P bonds is myo-inositol hexakis(dihydrogen phosphate), myo-inositol pentakis(dihydrogen phosphate), myo-inositol tetrakis(dihydrogen phosphate) or physiologically acceptable salts thereof; (2) from about 0.001 to about 10 percent by weight of one or more cationic antimicrobial compounds with the proviso that the cationic antimicrobial compounds are other than the chlorhexidine, alexidine or a cationic bisbiguanide compound; (3) from about 0.1 to about 20 percent by weight of a compatibilizing agent and (4) the remaining percent by weight is an orally acceptable vehicle having a pH in the range of about 4.5 to about 9 wherein the compatibilizing agent prevents the phytic acid and antimicrobial compound from forming a precipitate when in an aqueous environment.

5,300,290

POLYMERIC PARTICLES FOR DENTAL APPLICATIONS

Jean L. Spencer, Boston, Mass., assignor to Gillette Canada, Inc., Kirkland, Canada

Continuation of Ser. No. 759,535, Sep. 13, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 13,557
Int. Cl.[5] A61K *7/16, 7/11, 9/14*
U.S. Cl. 424—54 **21 Claims**

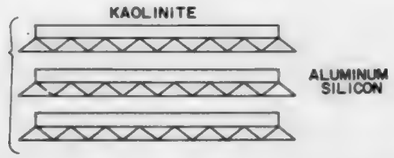
1. An anti-microbial composition for oral hygiene, comprising a toothpaste or a mouthwash including solid particles having an ionically charged outer surface onto which an anti-microbial agent having an ionic charge that is the opposite of the ionic charge of said outer surface has been adsorbed, wherein said anti-microbial agent is present in said composition only on said outer surface.

5,300,291

METHOD AND DEVICE FOR THE RELEASE OF DRUGS TO THE SKIN

Steven Sablotsky, Miami, and Joseph A. Gentile, Plantation, both of Fla., assignors to Noven Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 295,847, Jan. 11, 1989, Pat. No. 4,994,267, which is a continuation-in-part of Ser. No. 164,482, Mar. 4, 1988, Pat. No. 4,814,168. This application Apr. 2, 1991, Ser. No. 671,709
Int. Cl.[5] A61K *31/74*
U.S. Cl. 424—78.18 **36 Claims**



1. A method of increasing the adhesiveness of a pressure sensitive adhesive composition comprising an admixture of a natural or synthetic rubber and a multipolymer comprising a ethylene/vinyl acetate polymer and an acrylic polymer, in which the ratio by weight of the ethylene/vinyl acetate polymer to the acrylic polymer is about 1:20 to about 20:1 and the ratio by weight of the multipolymer to the rubber is about 1:10 to about 30:1.
said method comprising the step of admixing said rubber, said acrylic polymer, said ethylene/vinyl acetate polymer, a drug, and at least one clay, wherein the resulting composition comprises an adhesiveness increasing amount of clay, said amount of clay being from about 0.1 to about 20% by weight of said resulting composition, wherein the clay is a natural or synthetic clay selected from the group consisting of hydrated aluminum silicate, kaolinite, montmorillonite, atapulgite, illite, bentonite, and halloysite.

5,300,292

COMPOSITION AND METHOD FOR TREATING INFLAMMATION

Thomas R. Ulich, Wildomar, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 695,548, May 3, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,959
Int. Cl.[5] C07G *7/00*; A61K *37/02*
U.S. Cl. 424—85.2 **13 Claims**

1. A method for reducing migration of neutrophils into sites of inflammation in a patient, comprising the step of administering to a patient in need thereof an effective, neutrophil-migration-inhibiting amount of a composition comprising as active ingredients IL-6 in combination with TGFβ.

5,300,293

POISON BAIT FOR CONTROL OF NOXIOUS INSECTS

Fumiyasu Minagawa, Toyonaka; Takuji Kohama, Osaka; Hitoshi Kawada, Ibaraki; Toshiro Ohtsubo, Sanda; Goro Shinjo, Toyonaka, and Kazuyuki Maeda, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed May 24, 1990, Ser. No. 528,096
Claims priority, application Japan, May 27, 1989, 1-133324
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—405 **15 Claims**

1. A poisonous tablet bait composition, which comprises as the essential components (a) at least one insect-growth controlling agent selected from the group consisting of an (a-1) insect juvenile hormone-like compound and (a-2) an insect chitin-synthesis inhibitor in a microencapsulated form in an amount of 0.01 to 2% by weight, and (b) dextrin in an amount of 10 to 99% by weight of the total composition.

5,300,294

METHOD OF TREATING PROSTATIC ADENOCARCINOMA

Randall K. Johnson, Ardmore, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jun. 27, 1990, Ser. No. 544,709
Int. Cl.[5] A61K *9/20, 9/48, 31/56, 31/58*
U.S. Cl. 424—423 **20 Claims**

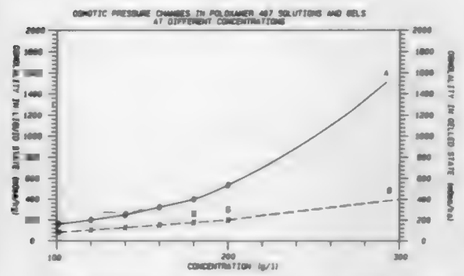
1. A method of treating human prostatic adenocarcinoma which comprises administering orally, by injection or infusion to a subject in need thereof a dosage unit of from about 0.1 mg/kg to about 1000 mg/kg of a steroid 5-α-reductase inhibiting compound from one to six times daily.

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5,300,295
OPHTHALMIC DRUG DELIVERY WITH THERMOREVERSIBLE POLYOXYALKYLENE GELS ADJUSTABLE FOR PH

Tacey X. Viegas; Lorraine E. Reeve, both of Ann Arbor, and Robert S. Levinson, Saline, all of Mich., assignors to Mediventures, Inc., Grosse Pointe Park, Mich.

Continuation-in-part of Ser. No. 517,273, May 1, 1990, abandoned. This application Sep. 13, 1991, Ser. No. 759,234
Int. Cl.[5] A61K *9/10, 47/34*
U.S. Cl. 424—427 **23 Claims**



1. A hyperosmotic, iso-osmotic, or hypo-osmotic aqueous composition for use as a vehicle for drug delivery, a drug delivery composition, or a medical device for treating an eye condition, where said composition is a liquid at room temperature or below and a gel with a desired osmolality at mammalian body temperature, said aqueous composition containing:

(A) about 10 to about 50% by weight of a polyoxyalkylene block copolymer of formula

$$Y[(A)_n—E—H]_x \quad (I)$$

wherein A is a polyoxyalkylene moiety having an oxygen/carbon atom ratio of less than 0.5, x is at least 1, Y is derived from water or an organic compound containing x reactive hydrogen atoms, E is a polyoxyethylene moiety, n has a value such that the average molecular weight of A is at least about 500, as determined by the hydroxyl number of an intermediate of formula

$$Y[(A)_n—H]_x \quad (II)$$

and the total average molecular weight of the polyoxyalkylene block copolymer is at least about 5000 and

(B) about 80% to about 20% by weight of water; wherein the osmolality of the aqueous composition in the liquid state is adjusted to achieve the desired value of the osmolality of the gel by assuming that the polyoxyalkylene block copolymer does not contribute to the osmolality in the gel.

5,300,296
ANTIMICROBIAL AGENT FOR OPTHALMIC FORMULATIONS

Frank J. Holly, 301 York Ave., Lubbock, Tex. 79416, and Stephen R. Tonge, Birmingham, England, assignors to Frank J. Holly, Lubbock, Tex.

Continuation-in-part of Ser. No. 432,171, Nov. 6, 1989, abandoned. This application May 29, 1992, Ser. No. 891,425
Int. Cl.[5] A01N *33/12*
U.S. Cl. 424—427 **20 Claims**

1. A preparation for treating contact lenses which comprises:

an ophthalmically acceptable aqueous medium;

an effective antimicrobial amount of a hydrophilic dihalogenated copolymer of ethylene oxide and dimethyl ethylene-imine in a 1:2 molecular ratio;

a metal ion chelating agent; and

an effective pH stabilizing amount of buffer.

5,300,297
FEED ADDITIVE FOR RUMINANTS

Satoshi Ueda; Takashi Iizuka; Haruo Heima; Makoto Ozawa; Takeshi Nagai, and Hiroyuki Sato, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

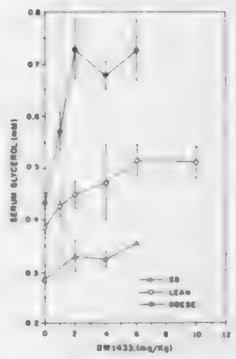
Continuation-in-part of Ser. No. 820,379, Jan. 14, 1992, Pat. No. 5,227,166. This application Apr. 12, 1993, Ser. No. 45,099
Claims priority, application Japan, Jan. 14, 1991, 3-070265; Dec. 18, 1991, 3-335073
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] A23K *1/18*
U.S. Cl. 424—438 **8 Claims**

1. A feed additive for ruminants comprising a core containing a biologically active substance and a coating composition placed on the surface of said core, said coating composition comprising from 0.1 to 20% lecithin, 0.1 to 10% of at least one inorganic substance which is a member selected from the group consisting of calcium hydrogen phosphate hydrate; calcium dihydrogen pyrophosphate; magnesium pyrophosphate; magnesium hydrogen phosphate hydrate; aluminum phosphate; magnesium hydroxide; aluminum hydroxide; ferrous oxide; ferric oxide, manganese oxide; zinc oxide; and sodium hydrogen carbonate, and at least one substance selected from the group consisting of straight-chain or branched-chain saturated or unsaturated monocarboxylic acid having 14 to 22 carbon atoms, salts thereof, hardened vegetable oils, hardened animal oils, and waxes.

5,300,298
METHODS OF TREATING OBESITY WITH PURINE RELATED COMPOUNDS

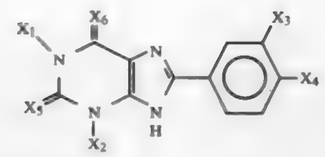
Kathryn F. LaNoue, Hershey, Pa., assignor to The Pennsylvania Research Corporation, University Park, Pa.

Filed May 6, 1992, Ser. No. 879,668
Int. Cl.[5] A23K *1/165, 1/17*
U.S. Cl. 424—442 **20 Claims**



1. A method of treating obesity in a warm-blooded animal, the method comprising administering to said animal:

an effective anti-obesity amount of a compound of Formula I



(I)

wherein:

X_1 and X_2 are the same or different and are hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl or C_{7-12} aralkyl optionally substituted in the aryl ring by C_{1-6} alkyl, C_{1-6} alkoxy, hydroxy, halo, nitro, amino, azido or cyano, provided that both X_1 and X_2 are not hydrogen;

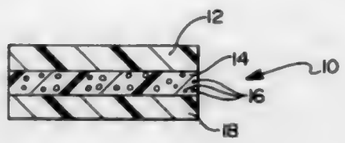
one of X_3 and X_4 is hydrogen, C_{1-6} alkyl, trifluoromethyl, C_{1-6} alkoxy, halo, nitro, amino, C_{1-6} alkoxycarbonyl or carboxy and the other is a group—Y—Z where Y is C_{2-6} alkenylene, or C_{3-6} alkenyleneoxy, C_{2-6} alkynylene or C_{3-6} alkynyleneoxy and Z is carboxy, sulphonyl or phosphonyl or a C_{1-9} alkyl ester, a C_{7-12} aralkyl ester or a C_{6-12} aryl ester thereof, or a 5-tetrazolyl; and

X_5 and X_6 are the same or different and are oxygen or sulphur; or a pharmaceutically acceptable salt thereof; or pharmaceutically acceptable solvate thereof.

5,300,299
SILICONE PRESSURE SENSITIVE ADHESIVE CONTAINING ALKYLMETHYLSILOXANE WAX AND RELATED METHODS AND DEVICES

Randall P. Sweet; Loren D. Durfee, both of Midland, and Katherine L. Ulman, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 22, 1991, Ser. No. 733,573
Int. Cl.[5] A61K *9/70*
U.S. Cl. 424—448 **21 Claims**



1. A matrix transdermal drug delivery device for a bioactive agent, comprising:

(a) a backing substrate;

(b) a matrix atop at least portions of said backing substrate, said matrix containing a hot-melt, silicone pressure sensitive adhesive composition containing a mixture of (i) a silicate resin, (ii) a silicone fluid, and (iii) an alkylmethylsiloxane wax which decreases dynamic viscosity of the adhesive composition at temperatures ranging from 50° C. to about 200° C. and said adhesive including compositions selected from the group consisting of drugs, excipients, co-solvents, enhancers, and mixtures thereof where the adhesive is compatible with said drugs, excipients and co-solvents and enhancers, said hot-melt, silicone pressure sensitive adhesive being disposed within said matrix; and

(c) a release liner contacted on the matrix.

5,300,300
CONTROLLED RELEASE GASTRORESISTANT PHARMACEUTICAL FORMULATIONS FOR ORAL ADMINISTRATION CONTAINING BILE ACIDS AND THEIR SALTS

Marchi Egidio, and Tamagnone Gianfranco, both of Casalecchio di Reno, Italy, assignors to Alfa Wassermann S.p.A., Alanno Scalo, Italy

Filed Apr. 1, 1992, Ser. No. 861,462
Claims priority, application Italy, Apr. 12, 1991, 000114 A/91
Int. Cl.[5] A61K *9/64*
U.S. Cl. 424—456 **6 Claims**

1. A controlled release pharmaceutical formulation for oral use consisting of a non-coated portion and an outer coating, said non-coated portion containing a mixture of ursodeoxycholic acid and a salt thereof with an alkali metal or an organic base, in the amount of said 50–750 mgs, said outer coating is insoluble in the acidic gastric juice but is soluble at a pH higher than 5 and said formulation contains between said non-coated portion and said outer coating a non-protective coating in the amount of 1–5% by weight with respect to said non-coated portion, said non-protective coating consisting of at least one member selected from the group consisting of hydroxypropylmethylcellulose, polyethylene glycol 6000, titanium dioxide and talc.

5,300,301
ISOLATION OF IBUPROFEN FROM TABLETS

Michael B. Lakin; Thomas H. Shockley, and Edward G. Zey, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 2, 1992, Ser. No. 984,606
Int. Cl.[5] A61K *9/14, 9/20*
U.S. Cl. 424—464 **8 Claims**

1. A process for isolating ibuprofen from an ibuprofen-containing solid, said solid containing an excipient, filler, binder, lubricant or disintegrant, said process comprising:

combining said solid with a solvent chosen from alkanes and cycloalkanes having 5–7 carbon atoms at a temperature of at least about 35° C. to dissolve said ibuprofen in said solvent and form an ibuprofen-containing solution;

filtering said solution to remove undissolved solid; and,

separating said ibuprofen from said solvent,

wherein said process isolates at least about 95% of the ibuprofen contained in said solid.

5,300,302
PHARMACEUTICAL COMPOSITION IN GEL FORM IN A DISPENSING PACKAGE

Pierre Tachon, Cugy, Switzerland; Beatrice Vagneur, Angers, France, and Jean-Louis Viret, Brent, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Sep. 9, 1991, Ser. No. 756,357
Claims priority, application European Pat. Off., Oct. 4, 1990, 90118920.9
Int. Cl.[5] A61K *9/50, 9/10, 47/38, 47/40*
U.S. Cl. 424—488 **21 Claims**

1. A pharmaceutical delivery system comprising:

a pharmaceutical composition comprising an active pharmaceutical principle homogeneously distributed in a water-dispersible gel excipient containing a gelling agent selected from the group consisting of xanthan gums, cellulose, methyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose, and carboxymethyl cellulose, the gelling agent being present in the composition in an amount of from 0.2% to 5% by weight based upon the weight of the composition; and

a dispenser pack which contains the composition in an amount sufficient for at least 5 days of therapeutic treatment and which has an internal volume of from 20 ml to 150 ml, a metering compartment not exceeding 5 ml in volume and a metering pump suitable for dispensing, in up to two depressions, a therapeutic dose of the composition.

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5,300,303

SPRAY GRANULES OR MICROGRANULES OF PURE RIBOFLAVIN WHICH CONTAIN NO BINDER ARE NON-DUSTING AND FREE-FLOWING, AND THE PREPARATION THEREOF

Johannes Grimmer, Ludwigshafen; Hans Kiefer, Wachenheim, and Christoph Martin, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 692,854, Apr. 29, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 920,539

Claims priority, application Fed. Rep. of Germany, May 4, 1990, 4014262

Int. Cl.[5] A61K *9/14, 31/525*

U.S. Cl. 424—489 **10 Claims**

1. A process for preparing spray granules having a particle size range from about 50 to 450 μm which contain no binder, are non-dusting and free-flowing, from finely divided riboflavin having a purity of 98 to 100%, an average maximum particle diameter of about 0.1 to 50 μm and a bulk density of less than 0.2 g/ml, which comprises: subjecting an aqueous binder-free suspension containing from 5 to 30% by weight of said finely divided riboflavin to fluidized bed spray drying at a temperature of from 20° to 100° C.

5,300,304

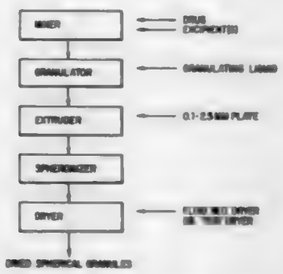
PULSATILE ONCE-A-DAY DELIVERY SYSTEMS FOR MINOCYCLINE

Nitin V. Sheth, Middletown; Joseph J. Valoroso, Jr., Montgomery; Keith A. Ellway, Washingtonville; Madurai G. Ganesan, Suffern; Kieran G. Mooney, Warwick, all of N.Y., and Jerry B. Johnson, Upper River Saddle, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 410,708, Sep. 21, 1989, abandoned. This application May 27, 1992, Ser. No. 892,383

Int. Cl.[5] A61K *9/14, 9/16, 9/54, 9/58*

U.S. Cl. 424—490 **34 Claims**



1. A pharmaceutical delivery system adapted to provide a therapeutically effective blood concentration level of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof for a sustained period of time of up to about twenty-four hours comprising:

(I) a multiple delivery vehicle system comprising

(A) an initial loading therapeutically effective number of quick release granules which comprise

(a)

(i) an effective amount of at least one pharmaceutically acceptable excipient; and

(ii) an effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof, on or in said quick release granules; and optionally

(b) a substantially uniform polymer coating, on said quick release granules and which is rapidly and substantially completely erodible in a medium having a pH of less than about 3.9; said quick release granules being adapted to release substantially completely said minocycline in a medium having a pH of less than about 3.9;

(A-1) an initial loading therapeutically effective amount of finely divided powder comprising

(a) an effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof;

(b) an independent effective amount of at least one pharmaceutically acceptable excipient which may be the same as or different than (I)(A)(a)(i); or

(A-2) an initial loading therapeutically effective combination of (A) and (A-1); and

(B) a secondary loading therapeutically effective number of pH sensitive polymer coated spherical granules which comprise

(a)

(i) an independent effective amount of at least one pharmaceutically acceptable excipient which may be the same as or different than (I)(A)(a)(i) or (I)(A-1)(b); and

(ii) an independent effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof, on or in said coated spherical granules; and

(b) a substantially uniform pH sensitive polymer coating, the polymer of which may be the same as or different than (I)(A)(b), on said coated spherical granules and which is rapidly and substantially completely erodible in a medium having a pH in the range of from about 4.0 to about 7.5; said coated spherical granules thereby being adapted to release substantially completely said minocycline in a medium having pH in the range of from about 4.0 to about 7.5; or

(II) one or more multi-coated spheronized pharmaceutical single delivery vehicle compositions comprising:

(A) a core comprised of

(a) a full or partial secondary loading therapeutically effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof; or

(b) at least one granule comprised of

(i) an effective amount of at least one pharmaceutically acceptable excipient; and

(ii) a full or a partial secondary loading therapeutically effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof, on or in said granule; having applied thereon

(B) a substantially uniform pH sensitive polymer coating which is rapidly and substantially completely erodible in a medium having a pH in the range of from about 4.0 to about 7.5; said core thereby being adapted to release substantially completely said minocycline in a medium having a pH in the range of from about 4.0 to about 7.5; having applied thereon

(C) a quick release coating comprising a full or partial initial loading therapeutically effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof; and optionally having applied thereon

(D)

(a) a substantially uniform polymer coating, the polymer of which may be the same as or different than (B), and which is rapidly and substantially completely erodible in a medium having a pH of less than about 3.9;

(b) a polymer overcoat, the polymer of which may be the same of different than (B) or (D)(a), or

(c) a combination of (a) and thereon (b) wherein the ratio of quick release granules to pH sensitive polymer granules is 30:70 to 70:30.

5,300,305

BREATH PROTECTION MICROCAPSULES

Judith H. Stapler, Wilmington, and Mary A. Hunter, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 762,530, Sep. 12, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,944

Int. Cl.[5] A61K *9/50, 9/16, 9/68*

U.S. Cl. 424—490 **9 Claims**

1. Microcapsules adapted to be placed and retained in the mouth, and which are suitable for providing breath protection comprising a core, or center fill, into which it may not be possible to easily incorporate breath control actives, which core or center fill includes from about 20% to about 80% of the total capsule weight of oil or triglyceride core diluent, said core containing from about 0.1% to about 25% of the total capsule weight of flavoring agents providing additional efficacy and/or sensory perceptions, and a shell material, surrounding said core or center fill, suitable for retention in the oral cavity as well as for ingestion, and disposed within said shell material, from about 0.001% to about 2% of the total weight of the capsule, one or more breath control actives whose solubility may present problems in said oil or triglyceride core diluent, said microcapsules not being incorporated into breath mints, mouthwashes, chewing gums, or other breath control or oral hygiene compositions.

5,300,306

TISSUE-EQUIVALENT MEMBRANE FROM BOVINE ESOPHAGEAL TISSUE

Carlos A. Alvarado, 2da. Calle, 3-31, Zona 1; Cesar A. Letona, 28 Calle, 11-14, Zona 11, Colonia Granai Townson II, and Arturo A. Perez, 2da. Calle E, 8-81, Zona 15, Colonia Trinidad, all of Guatemala

Filed Sep. 29, 1992, Ser. No. 953,099

Int. Cl.[5] A61K *35/37;* **A01N** *1/00*

U.S. Cl. 424—550 **4 Claims**

1. A method of treating a skin wound with a sterile bovine esophageal tissue dressing comprising:

treating a surface area encompassing said skin wound with an antiseptic to produce a cleansed graft zone;

cutting the sterile bovine esophageal tissue into a planar shape having a size substantially corresponding with said cleansed graft zone; and

layering said sterile bovine tissue dressing onto said cleansed zone area to produce a dressed zone.

5,300,307

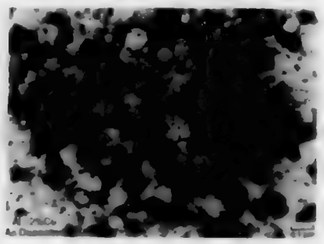
MICROSTRUCTURE CONTROL OF AL-CU FILMS FOR IMPROVED ELECTROMIGRATION RESISTANCE

Darrel R. Frear; Joseph R. Michael, and Alton D. Romig, Jr., all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 14, 1992, Ser. No. 944,865

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—96 **18 Claims**



1. A process for producing a thin layer conductive aluminum film having reduced electromigration failures, comprising:

depositing an aluminum-copper alloy thin film on a substrate;

heating said thin film to a first temperature and maintaining said film at said first temperature for a first length of time; and

heating said thin film to a second temperature, said second temperature being lower than said first temperature, and maintaining said thin film at said second temperature for a second time period sufficient for copper enrichment to occur at grain boundaries of said thin film.

5,300,308

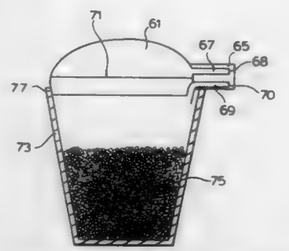
PREPARED PACKAGE FOR HOT LIQUID CONTAINING PRODUCTS

Panagiotis Louridas, 2101 Islington Ave., Unit #2006, Weston, Ontario, Canada M9P 3R2

Continuation-in-part of Ser. No. 878,961, May 6, 1992, Pat. No. 5,240,722. This application Aug. 18, 1993, Ser. No. 107,586

Int. Cl.[5] B65D *85/00, 81/32, 81/34*

U.S. Cl. 426—112 **3 Claims**



1. A prepared sealed package for use with a water heating device having a water inlet and a water outlet for making a hot liquid containing consumable product, said sealed package comprising an upper water containing chamber and a lower edible ingredients containing chamber said edible ingredients requiring reconstitution with water to make the consumable product, said water in said upper chamber and said edible ingredients in said lower chamber being completely separated within the package by a permanent liquid impervious membrane, said sealed package further comprising a water outlet from and attached to said upper chamber and a water inlet attached to said lower chamber, said water inlet and said water outlet of said package having openable seals, said water outlet from said upper chamber and said water inlet to said lower chamber being sized and oriented to fit with said water inlet and said water outlet respectively of the water heating device to provide fluid communication between said package and the water heating device such that upon opening said seals, water flows from the upper chamber out of the package through the water heating device and heated water then flows into the lower chamber of said package enabling the heated water to mix with said edible ingredients to make the consumable product, said upper and lower chambers being secured to one another by a releasable connection and said membrane remaining with said upper chamber upon releasing said connection thereby exposing said consumable product in said lower chamber.

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5,300,309
BODY AND MOUTHFEEL POTENTIATED FOOD AND BEVERAGES CONTAINING NEOHESPERIDIN DIHYDROCHALCONE

Rafael Foguet; Antonio Cistero, both of Barcelona, and Francisco Borrego, Murcia, all of Spain, assignors to Zoster, S.A., Murcia, Spain

Continuation of Ser. No. 841,548, Feb. 26, 1992, abandoned. This application Mar. 18, 1993, Ser. No. 33,429
Claims priority, application European Pat. Off., Feb. 26, 1991, 91102846.1
Int. Cl.[5] A23L *1/48*
U.S. Cl. 426—5.31 **5 Claims**

1. A method of enhancing the body and mouthfeel properties of a food or beverage composition comprising incorporating an amount of from 0.1 to 4.0 ppm of neohesperidin dihydrochalcone to enhance said body and mouthfeel properties, in said food or beverage composition.

5,300,310
PURPLE COLORED BEVERAGES BRIGHTENED WITH CLOUDING AGENTS

Kathleen M. Elsea, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 23, 1993, Ser. No. 35,820
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—540 **8 Claims**

1. A purple colored beverage product comprising:
a) a liquid beverage component having a light transmittance of not less than about 30%,
b) from about 3.5 to 11.5 ppm of FD&C Blue Dye No. 1,
c) from about 10.5 to 34.5 ppm of FD&C Red Dye No.40 wherein the weight ratio of said Red Dye to said Blue Dye is from about 2.1:1 to 5.6:1, and
d) from about 500 to 1200 ppm of a clouding agent;
wherein the purple colored beverage product has a Hunter L-color of from about 23.9 to 10.0, a Hunter a-color of from about 12.7 to 7.4, and a Hunter-b color of from about −2.1 to 2.0.

5,300,311
METHODS OF PREPARING A MODIFIED WHEAT FLOUR

Makoto Watanabe, Yamanashi, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,552
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] A21D *2/16*
U.S. Cl. 426—622 **19 Claims**

1. A method of preparing a modified wheat flour comprising contacting 100 parts by weight of wheat flour and 2 to 50 parts by weight of an edible amphiphilic fatty acid compound with each other at a temperature of 0° to 40° C. in the presence of water to let the fatty acid compound bind starch in the wheat flour.

5,300,312
A METHOD OF PREPARING READY-TO-EAT INTERMEDIATE MOISTURE FOODSTUFFS

Edmund W. Lusas, Bryan; Gabriel J. Guzman, College Station, and Steven C. Doty, Caldwell, all of Tex., assignors to Texas A&M University, College Station, Tex.

Continuation of Ser. No. 732,664, Jul. 19, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 999,562
Int. Cl.[5] A23L *1/20*
U.S. Cl. 426—634 **10 Claims**

1. A method of preparing a ready to eat, intermediate moisture, texturized foodstuff for human consumption, comprising:
admixing ingredients consisting essentially of i) a dehulled, oilseed protein in a form selected from the group consisting of meal, flour, concentrate and isolate, and ii) a first source of water selected from a group consisting of water, slid meat products, a liquid meat digest, a liquid meat extract, liquid milk products, cheese whey, diluted cereal grain extract, and fermented beer to obtain a first mixture having a moisture content of about 25 to 50 wt. %.
cooking, working and extruding said first mixture at a temperature of about 212° to 350° F. and an exit pressure of about 200 to 2000 psi to produce a first texturized foodstuff having a fibrous meat-like texture;
grinding said first texturized foodstuff to produce shreds;
admixing said shredded first texturized foodstuff and a second source of water to obtain a second mixture;
extrusion cooking and pasteurizing said second mixture at a temperature above about 190° F.;
decreasing the temperature of said pasteurized second mixture to about ambient temperature to produce a second texturized foodstuff; and
shaping and cutting said second texturized foodstuff to a desired shape and size.

5,300,313
METHOD FOR DETERMINING THICKNESS OF CHEMICAL VAPOR DEPOSITED LAYERS

Thomas R. Anthony, Schenectady; James F. Fleischer, Scotia, and David W. Woodruff, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,798
Int. Cl.[5] C23C *16/00, 16/26*
U.S. Cl. 427—9 **7 Claims**

1. A method for depositing a layer of material of a specific desired thickness on the surface of at least one substrate by chemical vapor deposition which comprises:
mounting said substrate or substrates in chemical vapor deposition apparatus so that at least one perforation exists in the plane of said substrate or substrates,
depositing said layer on said substrate by chemical vapor deposition,
monitoring the thickness of the layer formed in said perforation,
determining the relationship between the thickness of the layer formed in said perforation and the thickness of the layer formed on the substrate surface, and
stopping deposition when the thickness of the layer formed on said perforation is consistent with the formation of a layer of said desired thickness on said surface.

5,300,314
PROCESS FOR PREPARING A MAGNETIC RECORDING MEDIUM

Satoru Hayakawa; Kazuhiro Niitsuma, and Toshio Kawamata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1992, Ser. No. 993,616
Claims priority, application Japan, Dec. 19, 1991, 3-337161
Int. Cl.[5] H01F *10/02*
U.S. Cl. 427—58 **10 Claims**

1. A process for preparing a magnetic recording medium, which comprises the steps of:
(a) coating a nonmagnetic layer coating solution comprising nonmagnetic particles dispersed in a binder resin solution on a nonmagnetic support to form a nonmagnetic coating layer,
(b) coating a magnetic layer coating solution comprising ferromagnetic particles dispersed in a binder resin solution on said nonmagnetic coating layer while said nonmagnetic coating layer is wet, and
(c) drying to form a nonmagnetic layer and a magnetic layer on said nonmagnetic support;
wherein the boiling point of the solvent used for said nonmagnetic layer coating solution is higher than the boiling point of the solvent used in said magnetic layer coating solution.

5,300,315
ANTISTATIC COATING FOR CATHODE RAY TUBES

Gregory T. Prando, Chicago, and Hua S. Tong, Arlington Heights, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 23, 1992, Ser. No. 995,870
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—64 **18 Claims**

1. A method for improving the antistatic and antiglare properties of the surface of a cathode ray tube comprising:
(a) providing a solution of a mixture of a silane and an epoxyalkylsilane ester in a solvent system comprising an alcohol, an acid and water, said silane being selected from the group consisting of tetralkyl silanes, tetraaryl silanes and halogenated silanes,
(b) applying said solution onto the surface of a cathode ray tube, and
(c) curing said silane on said cathode ray tube in a curing step for a period of time sufficient to convert said silane to a siloxane on the surface of said cathode ray tube.

5,300,316
METHOD OF FORMING THIN OXYSULFIDE FILM

Koutoku Ohmi, and Takashi Nire, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Hiratsuka, Japan

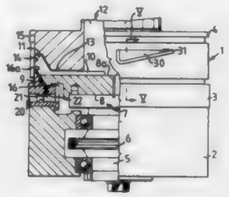
Filed Dec. 10, 1992, Ser. No. 988,786
Claims priority, application Japan, Dec. 11, 1991, 3-327813
Int. Cl.[5] B05D *5/12, 3/06*
U.S. Cl. 427—66 **7 Claims**

1. A method of forming a thin metal oxysulfide film on a substrate comprising the steps of:
introducing oxygen gas and sulfur gas into a chamber; and
evaporating a metal element from a crucible as an evaporation source provided within the chamber to combine the metal with oxygen and sulfur chemically on a substrate disposed in the chamber so as to form a thin metal oxysulfide film on a surface of the substrate.

5,300,317
PROCESS FOR COVERING SOLID PARTICLES IN POWDER FORM WITH A MATERIAL WHICH IS SOLID OR OF HIGH VISCOSITY AT ROOM TEMPERATURE

Nemo S. M. Ivarson, Enskede, Sweden, assignor to Nemo Ivarson AB, Enskeda, Sweden

Filed Mar. 12, 1992, Ser. No. 850,269
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—195 **1 Claim**



1. A process for coating solid particles in powder form with a material which is solid or highly viscous at room temperature, comprising supplying said solid particles in powder form to a central area of a rotating mixing wheel, slinging the particles radially outwardly against a stationary surrounding annular wall of a mixing housing by centrifugal force imparted to the particles by said rotating mixing wheel, said wall widening in one axial direction, supplying said material in powder form to said mixing housing, and kneading said particles and said material against said wall by vanes on said mixing wheel whereby a mixture of said particles and said material is formed and said mixture is impelled along said wall in a direction which has a component in said one axial direction.

5,300,318
PROCESS FOR POLISHING GRANULATES OF ACTIVE PRINCIPLES

Autant Pierre, and André Cartillier, both of Commentry, France, assignors to Rhone-Poulenc Nutrition Animale, Commentry, France

PCT No. PCT/FR91/00523, § 371 Date Apr. 17, 1992, § 102(e) Date Apr. 17, 1992, PCT Pub. No. WO92/00063, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 28, 1991, Ser. No. 835,428
Claims priority, application France, Jun. 29, 1990, 90 08279
Int. Cl.[5] B05D *7/00;* **A23L** *1/216;* **A23B** *5/00*
U.S. Cl. 427—212 **17 Claims**

1. A process for polishing a granulate for feeding or treating ruminants, said granulate containing lysine or a salt of lysine, said process comprising the step of
spraying onto said granulate a solution containing lysine or a salt of lysine at a concentration of 40 g to 150 g per 100 g of water to obtain a polished granulate.

5,300,319
BONDED FIBROUS CASING SUBSTRATES AND METHOD OF MAKING SAME

Diane M. Robertson, West Suffield; Patrick G. Fay, Enfield; Ludmila Byalik, West Hartford, and Ronald H. Pomeroy, Windsor Locks, all of Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Sep. 5, 1991, Ser. No. 755,121
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—243 **23 Claims**

1. A process for producing a non-viscose-bonded porous fibrous sheet material useful in the manufacture of food casings having an elasticity similar to the elasticity of viscose-bonded casings made from paper which has substantially the same basis weight, comprising:
(a) providing an unbonded base web material comprising cellulosic fibers,
(b) compressing the unbonded base web material to a pressed thickness greater than a final thickness of the sheet material,
(c) treating the compressed base web material with a solution of a non-viscose bonding agent characterized by its ability to impart less shrinkage to the bonded sheet material upon drying than the shrinkage imparted by a viscose bonding agent, the non-viscose bonding agent comprising a film forming material selected from the group consisting of poly(vinyl alcohol), de-acetylated chitins, polyacrylamides, alginates, cellulose based materials including carboxymethyl cellulose, methyl cellulose, hydroxy ethyl cellulose, hydroxypropyl methyl cellulose, hydroxypropyl cellulose, cationic starches, anionic starches, acrylic latexes, modified proteins including casein and soy, vinyl acetate ethylene emulsions, and vinyl acrylic emulsions, and
(d) drying the compressed and treated base web material.

5,300,320
CHEMICAL VAPOR DEPOSITION FROM SINGLE ORGANOMETALLIC PRECURSORS

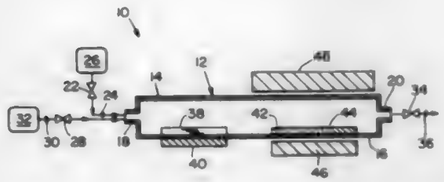
Andrew R. Barron, Cambridge; Michael B. Power, Quincy; Andrew N. MacInnes, Dorchester, all of Mass.; Aloysius F. Hepp, Bay Village, and Phillip P. Jenkins, Cleveland Heights, both of Ohio, assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jun. 23, 1992, Ser. No. 903,256
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—249 **23 Claims**

1. A method of forming a passivating/buffer film on a substrate, comprising the steps of:

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a) heating the substrate to a temperature sufficient to cause a precursor to pyrolyze and be deposited on the substrate;
b) volatilizing the precursor, which consists essentially of a single cubane or cubane-forming organometallic compound, at a precursor source; and



c) directing a carrier gas from a carrier gas source across the precursor source to conduct the volatilized precursor from the precursor source to the substrate, whereby the volatilized precursor is pyrolyzed and is deposited onto the substrate, thereby forming the passivating/buffer film on said substrate.

5,300,321

PROCESS FOR DEPOSITING TITANIUM NITRIDE FILM BY CVD

Tadashi Nakano, and Tomohiro Ohta, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed May 4, 1993, Ser. No. 56,768
Claims priority, application Japan, May 12, 1992, 4-118705
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—248.1 **3 Claims**

1. A process for depositing a titanium nitride film comprising subjecting a substrate to chemical vapor deposition using a gas source comprising a compound of the general formula:

$$A_nB_mTi$$

wherein n and m are independently selected from integers of from 1 to 3, inclusive, provided that sum of n and m is equal to or smaller than 4; A is a cyclic hydrocarbon group which is bonded to the titanium by π electron and selected from the group consisting of cyclopentadienyl, alkylcyclopentadienyl, cycloheptatrienyl, cyclooctatetraenyl, and azulenyl groups; and B is an alkylamine derivative group containing one nitrogen atom which is directly bonded to the titanium.

5,300,322

MOLYBDENUM ENHANCED LOW-TEMPERATURE DEPOSITION OF CRYSTALLINE SILICON NITRIDE

Richard A. Lowden, Powell, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 10, 1992, Ser. No. 849,542
Int. Cl.[5] C23C *16/34, 16/42*
U.S. Cl. 427—255 **10 Claims**

1. A method for chemical vapor deposition of crystalline silicon nitride comprising the steps of:
introducing into a vessel a substrate;
introducing into said vessel a thermally decomposable gaseous mixture comprising a silicon source, a molybdenum source, a nitrogen source, and hydrogen; and,
thermally decomposing said gaseous mixture to deposit onto said substrate a coating comprising crystalline silicon nitride having a molybdenum silicide dispersed therein.

5,300,323

REDUCING OR AVOIDING PINHOLE FORMATION IN AUTODEPOSITION ON ZINCIFEROUS SURFACES

Bashir M. Ahmed, Utica, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Oct. 21, 1992, Ser. No. 964,331
Int. Cl.[5] B05D *3/00*
U.S. Cl. 427—327 **18 Claims**

1. A process comprising steps of:
(A) contacting a solid zinciferous surface with a liquid pinhole inhibiting treatment composition consisting essentially of:
(1) water;
(2) a source of acidity; and
(3) a pinhole inhibiting effective amount of at least one inhibiting additive selected from the group consisting of 2-, 3-, and 4-aminobenzoic acids, boric acid, polyethyleneimine, 1-hydroxyethylidene-1,1-diphosphonic acid, aminotri(methylenephosphonic acid), diethylenetriaminepenta(methylenephosphonic acid), 2-thiophene carboxylic acid, sodium benzoate, poly(vinylpyrrolidone), potassium acetylacetonate, and acetohydroximic acid;
(B) removing the zinciferous surface from contact with the pinhole inhibiting treatment composition contacted in step (A); and subsequently
(C) autodepositing an organic protective coating on the zinciferous surface from step (B) by contacting the surface with an autodeposition bath including a source of acidity, so as to form an uncured coating on the surface.

5,300,324

PROCESS TO INCREASE THE DRYING RATE OF A GLAZE FOR CERAMICS

Alan P. Croft, Lake Jackson, and Byford D. Sheffield, Brazoria, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 29, 1992, Ser. No. 891,330
Int. Cl.[5] C03C *8/14, 8/16*
U.S. Cl. 427—376.2 **12 Claims**

1. In a glazing process wherein a glaze mixture comprising water and glass frit is applied to a ceramic article, the improvement comprising adding to the glaze mixture an additive selected from the group consisting of aminoethylethanolamine, one or more polyalkylene polyamines with or without a latex, and mixtures thereof wherein the additive is added in an amount effective to increase the drying rate of the glaze mixture.

5,300,325

METHOD OF FINISHING A GOLF BALL OR THE LIKE

John L. Nealon, Springfield, and Thomas J. Kennedy, Chicopee, both of Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Jul. 2, 1993, Ser. No. 87,424
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—379 **3 Claims**

1. A method of making a golf ball comprising the steps of:
A. providing a golf ball having an ionomer cover;
B. priming said ionomer cover with a composition consisting essentially of from about 90% by weight to about 96% by weight of a water-borne dispersion of a resin selected from the group consisting of acrylic resin, polyurethane resin, and combinations thereof, and from about 4% to about 10% by weight of a polyfunctional aziridine, thereby forming a primed surface of said core;
C. applying a polyurethane top coat to said primed surface; and
D. curing said top coat in adherent relation to said primed cover; thereby adhering said golf ball top coat to said primed cover.

5,300,326

METHOD OF COATING A PLASTIC SUBSTRATE WITH AN AQUEOUS COATING COMPOSITION FOR PLASTIC SUBSTRATES

Edward W. Zezinka, Allison Park, Pa.; Susan K. Vicha, Cleveland, Ohio, and Charles M. Kania, Natrona Heights, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 8,110, Jan. 22, 1993, Pat. No. 5,258,444.
This application Aug. 9, 1993, Ser. No. 103,386
Int. Cl.[5] B32B *27/08, 27/32, 27/40*
U.S. Cl. 427—385.5 **25 Claims**

1. A method of coating a plastic substrate which comprises:
(a) applying an aqueous coating composition to the surface of the substrate, wherein the aqueous coating composition comprises an aqueous chlorinated polyolefin dispersion and an aqueous polyurethane dispersion and
(b) allowing the aqueous coating composition to at least partially dry.

5,300,327

WATER REPELLENT ORGANOSILICON COMPOSITIONS

Lori A. Stark-Kasley; Donna R. Gray, both of Midland; James S. Tonge, Sanford, and Dipak Narula, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 22, 1993, Ser. No. 35,025
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—387 **16 Claims**

1. A method of treating a surface in order to render the surface water repellent comprising applying to the surface a composition in the form of effective film forming amounts of a mixture of (i) a blend of petroleum and synthetic hydrocarbon waxes; and (ii) an aqueous silicone resin emulsion prepared by (A) hydrolyzing at least one organochlorosilane in the presence of an organic solvent to form a silicone resin hydrolyzate solution whereby said silicone resin hydrolyzate has a residual hydrolyzable chloride content of fifteen to one hundred parts per million by weight, (B) stripping said hydrolyzate solution to reduce the organic solvent content thereof, and (C) emulsifying the solution resulting from step (B) in water with the aid of at least one anionic surfactant to form a uniform emulsion, with the proviso that the solvent content reduction according to step (B) provides an emulsion which will form a continuous film when applied to a substrate and dried thereon.

5,300,328

PARTIALLY-DEFUNCTIONALIZED AMINOPLAST CURING FOR POLYMER COMPOSITIONS

John W. Rehfuss, West Bloomfield, Mich., assignor to BASF Corporation, Southfield, Mich.

Filed Oct. 23, 1992, Ser. No. 965,510
Int. Cl.[5] B05D *7/14*
U.S. Cl. 427—388.3 **16 Claims**

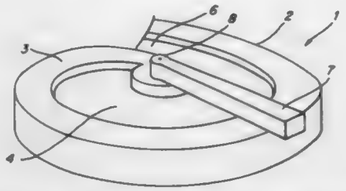
1. A method of producing a cured coating comprising the steps of:
(A) applying a coating composition on a substrate, wherein the coating composition is a curable coating composition comprising:
(1) a polymer comprising functional groups that are reactive with methylol and/or methylalkoxy substituents on the amino nitrogens of an aminoplast curing agent,
(2) an aminoplast curing agent that includes, as substituents on the amino nitrogens:
(a) a plurality of methylol and/or methylalkoxy substituents, and
(b) one or more substituents that are either non-reactive with the functional groups on the polymer or are reactive with the functional groups at a higher temperature than the temperature at which the methylol and/or methylalkoxy substituents are reactive with the functional groups, and
(B) curing the coating at a cure temperature sufficient to react the functional groups on the polymer with said methylol and/or methylalkoxy substituents, but below the temperature for reaction, if any, between the functional groups and said (b) substituents.

5,300,329

METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING A MONOMOLECULAR FILM AT A LIQUID GAS INTERFACE IN A TROUGH BY MEANS OF A ROTATING BARRIER ELEMENT

Kinnunen, Paavo K. J., Punarinnantie 4,, SF-02660 Espoo, Finland

PCT No. PCT/FI90/00298, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/08841, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 14, 1990, Ser. No. 861,961
Claims priority, application Finland, Dec. 19, 1989, 896068
Int. Cl.[5] B05D *1/20*
U.S. Cl. 427—430.1 **10 Claims**



1. Method for continuously producing a monomolecular film on a liquid surface in a trough for the deposition thereof onto a substrate, a surface area of the film being defined by a barrier element and side walls of the trough, the method comprising the steps of: pivoting the barrier element at one end to perform a horizontally rotating movement along the surface in a film formation compartment of the trough, gradually transferring the film by means of the barrier element, at a surface pressure suitable for deposition, to a deposition compartment of the trough connected to the film formation compartment over a connection zone, for the deposition of the film onto the substrate, and introducing additional film forming substance to the surface of the liquid in the film formation compartment, on the opposite side of the barrier element with respect to its rotational direction, for the formation of a new film, which new film, when the radially outer end of the barrier element, due to the further rotational movement thereof, has reached the connection zone and surface contact has been established between the film formation and deposition compartments, at the suitable surface pressure is transferred by the barrier element to join the first mentioned film already transferred to the deposition compartment.

5,300,330

STABILIZED COMPOSITE ELECTROLESS PLATING COMPOSITIONS

Nathan Feldstein, Princeton, N.J., and Deborah Lindsay, Leeds, England, assignors to Surface Technology, Inc., Trenton, N.J.

Continuation of Ser. No. 844,800, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 701,291, Mar. 11, 1991, Pat. No. 5,145,517, which is a continuation of Ser. No. 510,770, Apr. 16, 1990, abandoned, which is a division of Ser. No. 139,270, Dec. 23, 1987, Pat. No. 4,873,760, which is a division of Ser. No. 822,335, Jan. 27, 1986, abandoned, which is a continuation of Ser. No. 598,483, May 21, 1984, abandoned, which is a continuation of Ser. No. 408,433, Aug. 16, 1982, abandoned, which is a division of Ser. No. 249,773, Apr. 1, 1981, abandoned. This application Aug. 27, 1993, Ser. No. 112,273
Int. Cl.[5] B05D *1/18;* **C23C** *18/31, 18/32*
U.S. Cl. 427—443.1 **5 Claims**

1. An improved electroless plating process including the step of contacting a substrate with a composition comprising a

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source of metal salt, an electroless reducing agent, a complexing agent, an electroless plating stabilizer, and a particulate matter stabilizer, said particulate matter stabilizer comprising an admixture of a nonionic compound along with a member selected from the group of an anionic compound, a cationic compound, and an amphoteric compound and mixtures thereof.

5,300,331

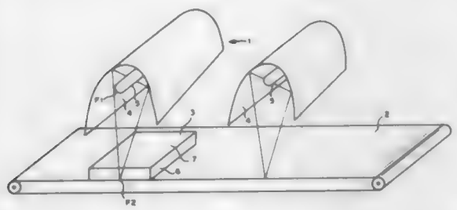
METHOD AND APPARATUS FOR UV CURING THICK PIGMENTED COATINGS

William R. Schaeffer, Mt. Airy, Md., assignor to Fusion Systems Corporation, Rockville, Md.

Continuation of Ser. No. 766,279, Sep. 27, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 19,824

Int. Cl.[5] B05D *3/06, 3/02*

U.S. Cl. 427—493 **19 Claims**



1. A process of curing an ultraviolet radiation curable pigmented coating of a coated substrate with a coated surface and an opposing surface, said coating having a thickness of at least about 1 mil, said process comprising the steps of:

linearly focusing radiation on said coated substrate from a first source of ultraviolet energy comprising a linear lamp having a first spectral energy distribution wherein at least about 50% of its spectral energy is in the range from about 300 to about 450 nanometers, and which is powered at an energy level of at least about 300 watts per inch of lamp length;

linearly focusing radiation on the resulting irradiated coated substrate from a second source of ultraviolet energy comprising a linear lamp having a second spectral energy distribution which differs from said first spectral energy distribution and has its spectral energy distributed in discrete regions throughout the range of about 200 to about 450 nanometers, said second source of ultraviolet energy being provided with an input power of at least about 300 watts per inch of lamp length; and,

conveying the coated substrate past said first and second sources of ultraviolet energy during the steps of irradiation.

5,300,332

MELT-STABLE COPOLYESTER RESINS AND MOLDED ARTICLES THEREOF

Kuniaki Kawaguchi; Toshio Nakane, and Kenji Hijikata, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Feb. 11, 1993, Ser. No. 15,181

Claims priority, application Japan, Feb. 12, 1992, 4-025200

Int. Cl.[5] B32B *1/00*

U.S. Cl. 428—34.1 **10 Claims**

1. A modified polyester resin which is the reaction product of:

(A) an acid component comprised of terephthalic acid, 2,6-naphthalene dicarboxylic acid or a dimethyl ester thereof,

(B) a diol component comprising an alkylene glycol having 2 to 8 carbon atoms, and

(C) an aromatic sulfonic acid compound of the following general formula (1):

$$HO(RO)_n—Ar—SO_3M \quad (1)$$

wherein Ar represents a benzene or naphthale ring, n represents an integer from 1 to 10, R represents a group selected from among alkylenes having 2 or 3 carbon atoms and when n is 2 or more, R may be the same as or different from one another, and M represents an alkali metal selected from lithium, sodium and potassium, and wherein the modified polyester satisfies the following formulas and:

$$(2)\ 0.25 \leqq x \leqq 100\ (meq/kg) \quad (2)$$

$$(3) 2 \leqq (x/CEG) \times 100 \leqq 150\ (\%) \quad (3)$$

where x represents the amount of the aromatic sulfonic acid compound represented by the above general formula (1) introduced thereinto and CEG represents the amount of the carboxy end groups, and x and CEG are each expressed in milliequivalent per kilogram (meq/kg) of the polymer.

5,300,333

BIODEGRADABLE INSULATED FOOD CONTAINER

C. William Wilkerson, New Bern, and William G. Head, III, Wrightsville Beach, both of N.C., assignors to The Enbiomass Group, Inc., Wilmington, N.C.

Filed Mar. 29, 1993, Ser. No. 38,801

Int. Cl.[5] B27N *5/02*

U.S. Cl. 428—35.6 **27 Claims**



1. A biodegradable food container comprising: a food container having a formed wall structure made up of a plurality of heat-expanded popcorn grains with respective heat-expanded popcorn grains being spaced apart and bound together by a biodegradable bonding agent so as to form a biodegradable wall structure, the biodegradable wall structure having a plurality of heat-expanded popcorn grains extending across the cross-section of the wall structure as well as longitudinally along the wall structure.

5,300,334

PRESSURIZABLE THERMOPLASTIC CONTAINER HAVING AN EXTERIOR POLYURETHANE LAYER AND ITS METHOD OF MAKING

Ken W. Niederst, Allison Park; John R. Zern, Cheswick, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 691,660, Apr. 26, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,484

Int. Cl.[5] B65D *23/08*

U.S. Cl. 428—35.7 **9 Claims**

1. In a thermoplastic container for carbonated beverages which is prepared by a blow molding technique and has a rigid structure such that the container can be pressurized; the container having a thick wall construction such that the container can be reused; the thermoplastic container having a tendency to stress crack after reuse and subsequent hot caustic washings

and refillings with carbonated beverages; said thermoplastic container being further characterized as having a polyurethane layer derived from an organic polyisocyanate and a polymeric polyol which is cured thermally on the exterior surface thereof; said polyurethane layer having a dry film thickness of 0.2 to 1.5 mils to provide resistance to the formation of microcracks.

5,300,335

LAMINATED DRAW-FORMED CONTAINER HAVING EXCELLENT SHOCK RESISTANCE AND PROCESS FOR PRODUCING THE SAME

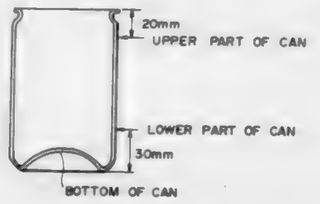
Tetsuo Miyazawa, Ayase; Masashi Ichishima, Yokohama; Masanori Aizawa, Yokohama; Katsuhiro Imazu, Yokohama, and Yasufumi Tadaki, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Nov. 27, 1992, Ser. No. 982,625

Claims priority, application Japan, Nov. 27, 1991, 3-312731

Int. Cl.[5] B32B *15/08;* **C08L** *67/02*

U.S. Cl. 428—35.8 **7 Claims**



1. In a draw-formed container obtained by draw-forming a laminated material of a metal plate on which a resin film is laminated into a cup with a bottom, a laminated draw-formed container having excellent shock resistance, wherein said resin film comprises a polyester composition film heat-treated at a temperature of the melting point of the polyester composition ±20° C., which film contains 60–97% by weight of a polyethylene terephthalate component, 1 to 39% by weight of a polyethylene isophthalate component and 1 to 39% by weight of a polybutylene terephthalate component, and said resin film has a density of from 1.32 to 1.39 g/cc at any part of the container and has, at the top 20 mm of container height, a trans ratio of ethylene glycol residue of from 0.1 to 1.5 as found by the ATR method.

5,300,336

HIGH PERFORMANCE COMPOSITE COATING

Dennis Wong, Toronto; Jiri Holub, Rexdale, and Joseph G. Mordarski, Brampton, all of Canada, assignors to Shaw Industries Ltd., Ontario, Canada

Division of Ser. No. 741,598, Aug. 7, 1991, Pat. No. 5,178,902, which is a continuation-in-part of Ser. No. 631,454, Dec. 21, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 959,970

Int. Cl.[5] F17L *9/14*

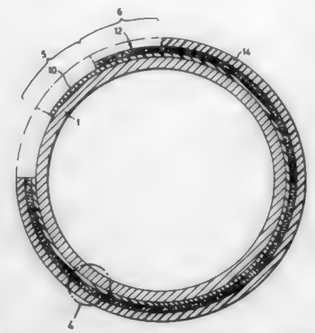
U.S. Cl. 428—35.9 **1 Claim**

1. A steel pipe having a composite protective coating consisting of:

an epoxy resin primer coating of even thickness between 100μ and about 400μ heat bonded to the outer surface of the pipe;

a polyolefin outer sheath of between 200μ and 1000μ in thickness encasing the primer coated surface of the pipe; and

an interlayer of even thickness between 100μ and 400μ bonding the polyolefin sheath to the primer coating, said interlayer comprising a mixture of epoxy resin and polyolefin, the composition of said interlayer being graded through the thickness of the interlayer from all epoxy



resin adjacent to the primer coating to all polyolefin adjacent to the sheath.

5,300,337

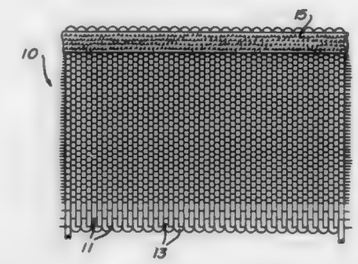
WRAPAROUND CLOSURE DEVICE

Hubert Andrieu; Daniel G. Caudron, both of Crepy-en-Valois, France; Harry F. Gladfelter, Phoenixville; Marie C. Tresslar, Jeffersonville, both of Pa.; Denis H. T. Van Wassenhove, Crepy-en-Valois, France, and Michael A. Ford, West Chester, Pa., assignors to The Bentley-Harris Manufacturing Company, Lionville, Pa.

Continuation-in-part of Ser. No. 819,068, Jan. 9, 1992, Pat. No. 5,178,923. This application Aug. 3, 1992, Ser. No. 923,866

Int. Cl.[5] B32B *23/02*

U.S. Cl. 428—36.1 **10 Claims**



1. A web for the formation of a wraparound sleeve for protecting elongated articles, said web being comprised of interlaced filamentary material and having monofilaments extending in the warp direction;

said web having a first marginal edge having an array of individual hook type fastener means extending lengthwise thereof;

a second marginal edge extending parallel to the first, marginal edge bulky multifilament yarn interlaced with said monofilaments;

said bulky multifilament warp yarns being exposed along said second marginal edge;

said hook type fastener elements being interengageable with the filaments of said bulky multifilaments to secure said marginal edges with the web in surrounding relationship to said elongated articles.

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5,300,338
COEXTRUDED LAMINATES CONTAINING POLYKETONE POLYMERS

Paul S. Byrd, Jr., and Dixie G. Waters, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 8, 1992, Ser. No. 880,948
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.6 **18 Claims**

1. A coextruded multi-ply laminate consisting essentially of:
a first polymer layer comprising a linear alternating polyketone polymer of carbon monoxide and at least one α-olefin, and
a second polymer layer of polyhexamethyleneadipamide wherein the second polymer layer is superimposed on and exhibits an interactive adhesion to the first polymer layer such that the adhesion is too great to allow separation without destroying one or both layers of polymer.

5,300,339
DEVELOPMENT SYSTEM COATINGS

Dan A. Hays, Fairport; Joseph Mammino, Penfield; Damodar M. Pai, Fairport; Donald S. Sypula, Penfield; William H. Wayman, Ontario; John F. Yanus, Webster, and Paul J. DeFeo, Sodus Point, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1993, Ser. No. 37,700
Int. Cl.[5] B32B *1/08*
U.S. Cl. 428—36.9 **9 Claims**



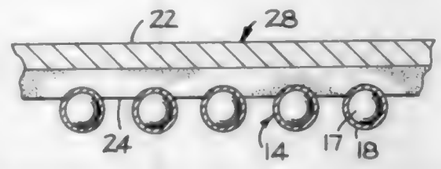
1. A coated toner transport roll consisting essentially of a core with a coating thereover of charge transporting monomers dispersed in a binder and an oxidizing agent selected from the group consisting of ferric chloride and trifluoroacetic acid, which oxidizing agent is present in an amount of from about 1 to about 50 weight percent, and wherein said coating possesses a relaxation time of from about 0.0099 millisecond to about 3.5 milliseconds, and a residual voltage of from about 1 to about 10 volts.

5,300,340
ELECTRICALLY CONDUCTIVE PRESSURE-SENSITIVE ADHESIVE TAPE

Clyde D. Calhoun, Grant Township, Washington County; Maurice J. Fleming, Cottage Grove, both of Minn.; George D. Foss, Amery, and Richard L. Renstrom, Luck, both of Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 160,773, Feb. 26, 1988, abandoned. This application Apr. 22, 1992, Ser. No. 874,553
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 **19 Claims**

1. Adhesive tape comprising a backing carrying an adhesive layer of substantially uniform thickness in which are individually positioned in a predetermined pattern of laterally spaced, electrically conductive, equiax particles of substantially uniform diameter about equal to or somewhat larger than the adhesive thickness, thus making the adhesive layer electrically conductive through its thickness and electrically insulating laterally, wherein the improvement comprises:
said particles having a hardness relative to the hardness of an electrically conductive element to which the tape is to be bonded so that when two of said elements are adhered together with a piece of the tape, the particles penetrate those elements upon application of pressure, form a crater in said elements and remove oxides, and

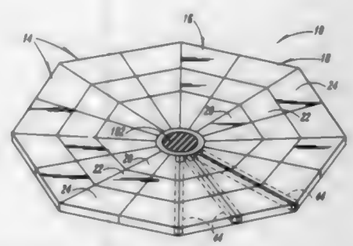


substantially all of said particles have a diameter about equal to or larger than the adhesive thickness.

5,300,341
PORTABLE RINSE DECK

Terrance R. Gross, 408 S. Main, Timber Lake, S. Dak. 57656

Filed Aug. 20, 1992, Ser. No. 932,650
Int. Cl.[5] B32B *3/06, 3/10*
U.S. Cl. 428—44 **20 Claims**

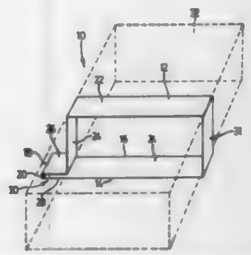


1. A portable rinse deck comprising,
a plurality of interconnected deck sections radiating outwardly of a centrally positioned sump pit, said deck sections being sloped inwardly towards said sump pit to drain liquid on the deck into the sump pit, and
seal means between adjacent sections to prevent liquid leakage therebetween.

5,300,342
PRODUCT BAND

John D. Long, Scarborough, Canada, assignor to Longford Equipment International Limited, Scarborough, Canada

Filed May 28, 1992, Ser. No. 889,245
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—57 **5 Claims**



1. A band for a product comprising a single strip having side and end edges and inner and outer faces, the inner face of portions of said strip proximate said end edges being joined together by an activated adhesive which coats said portions such that said strip forms a loop and joined end portions which project outwardly from said loop, the inner face of said paper strip interior of said joined end portions being at least substantially free of activated adhesive.

5,300,343
MAGNETIC RECORDING MEDIUM IN THE FORM OF A FLOPPY DISC HAVING A MAGNETIC LAYER WITH A SPECIFIED SURFACE FEATURE

Yasushi Endo; Kunihiko Sano, both of Kanagawa, Japan, and Mikihiko Kato, Brookline, Mass., assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

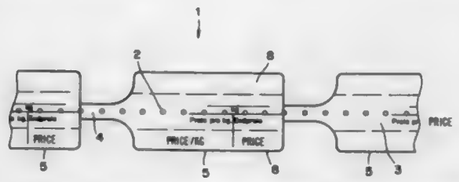
Filed Nov. 29, 1990, Ser. No. 619,531
Claims priority, application Japan, Nov. 29, 1989, 1-309913
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—64 **11 Claims**

1. A floppy disc comprising a magnetic disc and a jacket having a liner therein for housing the magnetic disc, the magnetic disc comprising a nonmagnetic support having thereon a magnetic layer comprising ferromagnetic metal particles containing at least a substantial amount of Fe and a binder resin having a weight-average molecular weight of from 20,000 to 100,000 and containing at least a vinyl chloride copolymer in an amount of at least 10 parts by weight per 100 parts by weight of the ferromagnetic metal particles, wherein the crystallite size of the ferromagnetic metal particles as determined by X-ray diffraction method is 300 Å or less, and the surface of the magnetic layer is polished with polishing means for a period of time and applied pressure such that the ratio α at the surface of the magnetic layer of the integrated intensity of the Cl-2P spectrum as determined by X-ray photoelectron spectroscopy to that of the Fe-2P(3/2) spectrum is in the range of from 0.50 to 0.90.

5,300,344
TAG STRIP WITH PERFORATIONS AND STAPLE ENGAGING MEANS

Herbert Niedecker, Am Ellerhang 6, 6240 Königstein 2, Fed. Rep. of Germany

PCT No. PCT/DE89/00782, § 371 Date Jun. 21, 1991, § 102(e) Date Jun. 21, 1991, PCT Pub. No. WO90/07726, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 21, 1989, Ser. No. 720,486
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1988, 3844051; Aug. 5, 1989, 3925980
Int. Cl.[5] G09F *3/14;* **B32B** *3/24*
U.S. Cl. 428—131 **4 Claims**



1. A strip of connected tag portions from which individual tags can be severed, the strip including a line of substantially equi-spaced perforations, each tag portion having a body and a narrowed neck by which it is connected to the body of the next tag, the perforations extending through the body and the narrowed neck of the tags successively.

5,300,345
NONWOVEN FABRIC MADE OF LAMINATED SLIT SHEET

Kintaro Aihara, Chiba, and Tadashi Honda, Tokyo, both of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

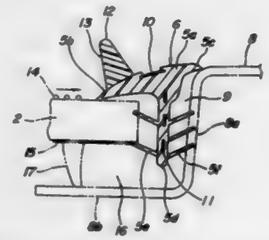
Filed Oct. 1, 1991, Ser. No. 769,252
Claims priority, application Japan, Oct. 4, 1990, 2-265081
Int. Cl.[5] B26D *3/08;* **B32B** *3/10;* **B65H** *18/00*
U.S. Cl. 428—137 **4 Claims**

1. A laminated nonwoven fabric comprising a first web having a longitudinal direction and a network structure having generally laterally extending and longitudinally spaced ribbons and nodes interconnecting longitudinally adjacent ribbons, and a second web laminated to the first web, said first web being comprised of a first slit sheet that is stretched in a direction transverse to the longitudinal direction, said first slit sheet including longitudinally arranged first and third rows of slits separated by a second row of slits, the slits in each row being separated by material portions of the sheet that correspond to said nodes when the first slit sheet is transversely stretched, the slits in the first and third rows of slits being laterally offset with respect to one another so that the material portions between slits in the first and third rows are positioned along lines that extend oblique to the longitudinal direction, the nodes of said first web being uniformly distributed in the first web, the nodes in the first web which correspond to the material portions in the first and third rows of the first slit sheet being arranged along lines that extend oblique to the longitudinal direction.

5,300,346
ELONGATE PLASTIC ARTICLES

Tatsuya Tamura, and Tetsuo Hotta, both of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Japan

Division of Ser. No. 729,344, Jul. 12, 1991, Pat. No. 5,203,946, which is a division of Ser. No. 411,887, Sep. 25, 1989, Pat. No. 5,061,335. This application Oct. 16, 1992, Ser. No. 963,412
Int. Cl.[5] B32B *3/00;* **E06B** *7/16*
U.S. Cl. 428—156 **8 Claims**



1. A windshield molding member (**4**) for automobiles or the like, comprising:
an elongate main body (**5***a*) for covering a gap (**9**) between an automobile body panel (**8**, **8***a*) and upper and side edges of a windshield plate (**2**), said main body (**5***a*) comprising a synthetic resin material extruded into a cross-section which is substantially constant in a longitudinal direction of the main body (**5***a*), said main body (**5***a*) having an outer surface and a rear side; and
means (**5***d*, **5***e*, **5***f*) provided on the rear side of the main body (**5***a*) for engaging with at least one of the windshield plate (**2**) and the automobile body panel (**8**, **8***a*) to thereby retain the molding member (**4**) in place;
said main body (**5***a*) having an upper segment (**5**) to extend along the upper edge of the windshield plate (**2**), a side segment (**6**) to extend along the side edge of the windshield plate (**2**), and a corner segment (**7**) integrally and continuously connecting said upper and side segments (**5**, **6**) with each other;
said outer surface of the main body (**5***a*) being integrally

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provided with a ridge (12) along said side segment (6), said ridge (12) projecting in a direction intersecting the outer surface of the main body (5a) so that said molding member (4) has a first cross-section along said upper segment (5) and a second cross-section along said side segment (6), said second cross-section being different from said first cross-section; said ridge (12) forming a weir (13) along said side segment (6) of the main body (5a) when the molding member (4) is mounted in place, such that water on the windshield plate (2) is collected by, and guided to flow along the weir (13) while being prevented from flowing across the molding member (4);

said ridge (12) comprising a synthetic resin material extruded synchronously with the synthetic resin material forming the main body (5a) and integrally welded thereto.

5,300,347

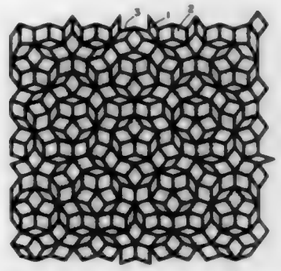
EMBOSSED FACIAL TISSUE

Kimberly K. Underhill, and Mark A. Burazin, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 662,888, Mar. 1, 1991, and a continuation-in-part of Ser. No. 771,966, Oct. 2, 1991, abandoned, and a continuation-in-part of Ser. No. 773,397, Oct. 2, 1991, Pat. No. D. 331,665. This application Feb. 26, 1992, Ser. No. 841,952

Int. Cl.[5] B31F *1/07*; D21H *27/02*

U.S. Cl. 428—171 **23 Claims**



1. An embossed facial tissue having an average of from about 1 to about 40 distinct individual unembossed areas per square inch of embossed surface of the tissue, said unembossed areas being provided by an embossing roll having a seamless simulated Penrose embossing pattern.

5,300,348

FRAME-SUPPORTED PELLICLE FOR PHOTOLITHOGRAPHY, COMPRISING A FLUOROCARBON CONTAINING ORGANOPOLYSILOXANE BASED ADHESIVE

Yoshihiro Kubota; Meguru Kashida; Yoshihiko Nagata; Hitoshi Noguchi; Yuichi Hamada; Shinichi Sato, and Hiroshi Inomata, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 959,032

Claims priority, application Japan, Oct. 15, 1991, 3-295124

Int. Cl.[5] B32B *9/60*

U.S. Cl. 428—194 **3 Claims**

1. In a frame-supported pellicle used for protection of a photolithographic photomask in the manufacture of electronic devices consisting of a frame member and a transparent membrane of a polymeric material flatly supported by the frame member by adhesively bonding the frame member and the polymeric membrane using an adhesive, the improvement which comprises:

adhesively bonding the frame member and the polymeric membrane by use of an adhesive which is a fluorocarbon group-containing organopolysiloxane-based composition and which is a uniform blend which comprises:

(A) a fluorocarbon group-containing organosiloxane polymer represented by the general formula

$$XO\text{-}\!\left[SiR^1Me\text{—}CH_2CH_2\text{—}Rf^1\text{—}CH_2CH_2\text{—}SiR^1Me\text{—}O\right]_a\text{-}\!\left[SiR^2Me\text{—}CH_2CH_2\text{—}(CF_2)_d\text{—}CH_2CH_2\text{—}SiR^2Me\text{—}O\right]_b\text{-}\!\left[SiR^3Me\text{—}O\right]_c\text{-}X,$$

in which Me is a methyl group, R^1, R^2 and R^3 are each an unsubstituted or substituted monovalent hydrocarbon group free from aliphatic unsaturation, Rf^1 is a divalent group having 1 to 30 carbon atoms selected from the class consisting of perfluoroalkylene groups and perfluoropolyether groups, X is a triorganosilyl group of which at least one of the three organic groups is an aliphatically unsaturated hydrocarbon group, the subscript a is a positive integer in the range from 1 to 300, the subscript b is zero or a positive integer not exceeding 300, the subscript c is zero or a positive integer not exceeding 5000 and the subscript d is a positive integer in the range from 2 to 8;

(B) either one or a combination of

(B1) an organohydrogenpolysiloxane having at least two hydrogen atoms directly bonded to the silicon atoms in a molecule, of which the organic groups are each an alkyl group or a halogen-substituted alkyl group, the amount thereof being sufficient to provide from 0.5 to 5 moles of the silicon-bonded hydrogen atoms per mole of the aliphatically unsaturated groups in the component (A) and

(B2) an organohydrogenpolysiloxane having at least two hydrogen atoms directly bonded to the silicon atoms in a molecule and containing a fluorine-substituted hydrocarbon group and an epoxy group, the amount thereof being sufficient to provide from 0.1 to 3 moles of the silicon-bonded hydrogen atoms per mole of the aliphatically unsaturated groups in the component (A); and

(C) a catalytic amount of a compound of a noble metal belonging to the VIIIth Group of the Periodic Table.

5,300,349

FORMED BODIES CONSISTING OF GLASS AND PROVIDED WITH ELECTRIC CIRCUITS AND METHOD OF THEIR PRODUCTION

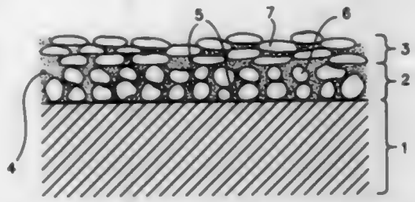
Guy Roche, Isle, and Brigitte Delmon, Eyjeaux, both of France, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 8, 1992, Ser. No. 987,727

Claims priority, application France, Dec. 9, 1991, 91 15219

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 **12 Claims**



1. A formed body provided with electrically conductive circuits on glass consisting essentially of a formed body of glass which is optionally enamelled or glazed, a layer formed essentially of inorganic pigment which is located on the surface of said formed body of glass, and a layer of conductive material which is connected via adhesive bridges of a vitrifying material to said formed body of glass to thereby form an electrically conductive layer on said formed body of glass which has colored appearance when viewed through the glass; wherein said inorganic pigment layer contains more than 60% by weight of inorganic pigment and less than 40% by weight of said vitrifying material.

5,300,350

BLACK-COLORED, LASER-WRITABLE BLENDS OF CARBONATE POLYMER AND POLYESTER

Brian K. Grosser, and Thomas L. Miller, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1993, Ser. No. 21,034

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—195 **7 Claims**

1. A black colored resin blend comprising (a) a carbonate polymer blend which consists essentially of a carbonate polymer and a polyester resin, and (b) a black colorant formulation characterized in that the black colorant formulation comprises from about 0.05 to about 0.03 percent by weight based upon the total black colored resin blend composition weight of carbon black and from about 0.05 to about 0.5 percent by weight based upon the total black colored resin blend composition weight of a fatty acid metal salt effective to permit laser inscription of articles molded from such resin blend wherein the fatty acid is a C_8 to C_{30} fatty acid, and the metal of the fatty acid metal salt is a group IA, IIA, or IIB metal.

5,300,351

HEAT-SENSITIVE HOT-MELT IMAGE TRANSFER SHEET

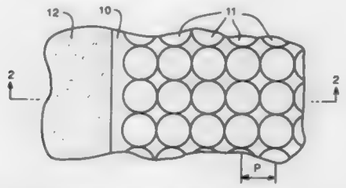
Toshinori Takahashi, Kawasaki; Itsuo Takanashi, Kamakura; Hideshi Tanaka, Yokohama; Hiroki Kitamura, Tokyo; Toru Nibe, Yokosuka; Tadao Shinya; Yutaka Mizoguchi, both of Yokohama; Katsuhiko Terada, Yokosuka, all of Japan; Toshinori Takahashi, Kawasaki, and Itsuo Takanashi, Kamakura, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 700,879, May 10, 1991, abandoned, which is a continuation of Ser. No. 409,184, Sep. 19, 1989, abandoned. This application Aug. 21, 1992, Ser. No. 931,457

Claims priority, application Japan, Sep. 20, 1988, 63-235406

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—207 **4 Claims**



1. A heat-sensitive hot-melt image transfer sheet having hot-melt ink thereon, for transferring a colored image to a recording sheet with an array of heating elements of a thermal head in a thermal printer, comprising:

a base; and

a plurality of matrices of hot-melt ink dots of different ink colors coated on a surface of said base, said plurality of matrices being composed of a plurality of arrays of hot-melt ink dots with a constant center-to-center pitch between adjacent dots which is smaller than the pitch of the heating elements of the thermal head, said hot-melt ink dots being selectively meltable with heat applied by said array of heating element through said base for transferring a color image to the recording sheet held against said matrix of hot-melt ink dots, said hot-melt ink dots having a total area ranging from 50% to 90% of the total area of the surface of said base, each dot array of said plurality of arrays of hot-melt ink dots being inclined at respective different angles to the direction of the array of the heating elements of the thermal printer.

5,300,352

LAMINATE

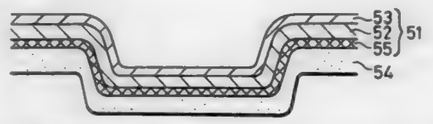
Shiro Honma, Waki, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,091

Claims priority, application Japan, Jun. 14, 1991, 3-143299

Int. Cl.[5] B32B *15/08, 27/36*

U.S. Cl. 428—212 **9 Claims**



1. A laminate comprising a substrate having a surface and a resin surface layer having a glossiness of not less than 60% when measured at an incidence angle of 60° which is laminated on said surface of the substrate, wherein

the substrate consists of a cycloolefin resin composition (B) containing at least one cycloolefin copolymer (A) selected from the group consisting of

a random copolymer (a-1) of ethylene and a cycloolefin represented by the following formula (I),

a ring opening polymer (a-2) of a cycloolefin represented by the following formula (I),

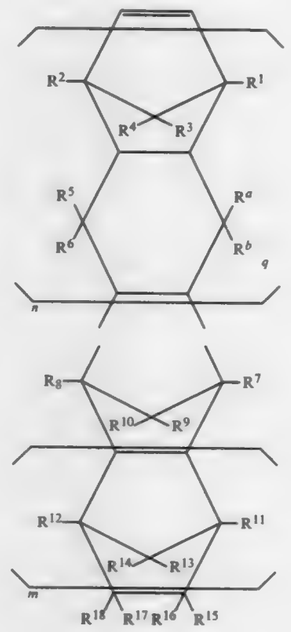
a ring opening copolymer (a-3) of cycloolefins represented by the following formula (I),

a hydrogenation product (a-4) of the ring opening polymer (a-2) or the ring opening copolymer (a-3),

an unsaturated carboxylic acid graft-modified product (a-5) of the above (a-1), (a-2), (a-3) or (a-4), and

a crosslinked produce (a-6) of the above (a-5), and a crystalline polyolefin having a crystallinity of more than 50%

(I)



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wherein n is 0 or 1; m is 0 or a positive integer; q is 0 or 1; R^1 to R^{18}, R^a and R^b independently represent a hydrogen atom, a halogen atom or a hydrocarbon group; R^{15} to R^{18} may be bonded together to form a monocyclic group or a polycyclic group which may have double bond(s); and R^{15} and R^{16}, or R^{17} and R^{18} may form an alkylidene group; and

the resin surface layer is formed from at least one resin selected from the group consisting of a polystyrene, an acrylonitrile/butadiene/sytrene copolymer, a polycarbonate, a polyalkylene terephthalate, a polyvinyl chloride, the cycloolefin polymer (A), a polyamide, and a cycloolefin resin composition (C) containing the cycloolefin polymer (A) and an α-olefin elastomeric copolymer having a crystallinity of not more than 25%.

5,300,353

SHRINKABLE, STRETCHABLE MULTI-LAYERED FILM

Isao Yoshimura, Fujisawa, and Shin Kahata, Tsu, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/01551, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/08611, PCT Pub. Date May 29, 1992

PCT Filed Nov. 13, 1991, Ser. No. 863,307

Claims priority, application Japan, Nov. 14, 1990, 2-306301

Int. Cl.[5] B32B *7/02*

U.S. Cl. 428—213 **15 Claims**

1. A high-strength multi-layered film excellent in heat resistance, shrinkability and stretchability which comprises at least five layers comprising a surface layer (S layer) mainly composed of at least one polymer selected from (A), (B), crystalline 1,2-polybutadiene and soft ethylenic polymer ionomer resin and as inner layers at least one base layer (SBC layer) containing mainly a mixed composition selected from (A)+(B)+(C), (A)+(B) and (B)+(C), at least one core layer (H layer) containing mainly a polymer selected from (C), and at least one auxiliary layer (R layer) containing mainly an ethylene-α-olefin copolymer soft elastomer selected from component (B) and having a melt index of 0.1 to 10, a density of 0.905 to 0.870 g/cm^3 and an ethylene content of 95 to 85 mol % or an ethylene-α-olefin copolymer selected from component (A) and having a melt index of 0.1 to 10, a density of 0.905 to 0.935 g/cm^3,

an ethylene content of 99 to 90 mol % and whose α-olefin has 4 to 12 carbon atoms, with a proviso that when R layer is adjacent to the S layer, the R layer comprises a resin different from that of the S layer, and said (A) being an ethylene-α-olefin copolymer selected from component (A) and having a density of 0.905 to 0.935 g/cm^{3}and the Vicat softening point of this resin is 1.05 times or more the Vicat softening point of a resin of the surface layer (S layer), and said (C) being selected from a crystalline polypropylene, a crystalline polybutene-1, a crystalline poly-4-methylpentene-1and a mixture thereof.

5,300,354

MULTI-LAYER CONSTRUCTION FILM

Shigeyuki Harita; Susumu Fukutome, and Satoshi Hirofuji, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 20, 1992, Ser. No. 854,894

Claims priority, application Japan, Mar. 20, 1991, 3-82000

Int. Cl.[5] B32B *17/10, 15/08, 27/30;* **B65D** *65/40*

U.S. Cl. 428—215 **7 Claims**

1. A multi-layer construction film comprising at least one layer (A) of ethylene-vinyl alcohol copolymer and having an ethylene content of 20–60 mol %, and a melt index of ηEg/10 min., at least one adhesive resin layer (B) of ethylene polymer and having a melt index of ηAg/10 min. and density of not more than 0.90 g/cm^3, and a plastic film (C) wherein the layer (B) is laminated adjacent to the plastic film (C), which satisfies the following formulas:

$$0.5\ \mu m \leq a \leq 20\ \mu m \quad (1)$$

$$0.5\ \mu m \leq b' \leq 20\ \mu m \quad (2)$$

$$1\ \mu m \leq a+b \leq 30\ \mu m \quad (3)$$

$$0.08 \leq \eta E/\eta A \leq 8 \quad (4)$$

wherein a is the thickness of the entire layer (A), b is the thickness of the entire layer (B), and b' is the thickness of one layer of layer (B).

5,300,355

VIBRATION DAMPING MATERIAL

Naoto Mifune, Tokyo; Yasutaka Nagai, Kanagawa; Masaaki Ashizawa, Kanagawa; Kazuo Nishimoto, Kanagawa; Takahiro Niwa, Kanagawa; Shuji Ito, Saitama, and Masanori Hansaka, Tokyo, all of Japan, assignors to Nichias Corporation and Railway Technical Research Institute, both of Tokyo, Japan

Filed May 20, 1992, Ser. No. 886,424

Claims priority, application Japan, May 31, 1991, 3-155101; Mar. 13, 1992, 4-089898

Int. Cl.[5] B32B *15/18*

U.S. Cl. 428—215 **5 Claims**



1. In a magnetic composite damping material made by bonding an adhesive elastic sheet to a constraining plate by using an adhesive, the improvement comprising said elastic sheet is a magnetic composite material having one side multiple pole magnetization and a pitch between S and N poles of from 1 to 20 mm, said composite material comprising 100 parts by weight of an elastomer, 30 to 90 parts by weight of an adhesive resin, 5 to 100 parts by weight of a plasticizer and 50 to 95 wt. % of magnetic powder, said wt. % of magnetic powder being based on the total weight of the sheet, the elastic modulus of said adhesive after hardening being equal to or greater than the elastic modulus of the adhesive elastic sheet.

5,300,356

TAPE COATING

William Dempster, Nashua, N.H.; Jordan D. Kellner, Wayland, Mass.; Jerry M. Serra, Chelmsford, Mass., and Leonard D. DeCoste, Stoneham, Mass., assignors to The Kendall Company, Mansfield, Mass.

Continuation-in-part of Ser. No. 699,052, May 13, 1991, abandoned, and a continuation-in-part of Ser. No. 546,471, Jun. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 403,416, Sep. 6, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 921,670

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—220 **9 Claims**

1. A three-component tape wrap system adapted for protecting metal pipes intended for inground implantation where they are subjected to cathodic protection comprising: (1) a primer coating for adhering the tape wrap to the outer surface of the pipe and which contains a cathodic disbondment inhibitor; (2) an inner wrap to be spirally wound over the primer coating whereby to provide a marginal overlap; and (3) an outer wrap to be spirally wound over the inner wrap whereby also to provide a marginal overlap,

the inner wrap comprising a layer comprising a polyolefinic material having inner and outer opposed surfaces, the inner surface carrying an adhesive layer for adhering the inner wrap to the primer coating, the outer surface carrying a layer comprising a heat-fusible material, and

the outer wrap having a layer comprising an impact-resistant polyolefinic material having opposed inner and outer surfaces, and a layer comprising a heat-fusible material carried on each of the inner and outer surfaces of the outer wrap.

5,300,357

DURABLY HYDROPHILIC, THERMOPLASTIC FIBER AND FABRIC MADE FROM SAID FIBER

Robert A. Gardiner, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 694,541, May 2, 1991, Pat. No. 5,244,951. This application Jul. 15, 1993, Ser. No. 92,210

Int. Cl.[5] D03D *3/00*

U.S. Cl. 428—224 **16 Claims**

1. A fabric comprising durably hydrophilic, thermoplastic fiber comprising thermoplastic polymer and fluoroaliphatic group-containing non-ionic compound dispersed within said fiber and present at the surface of the fiber.

5,300,358

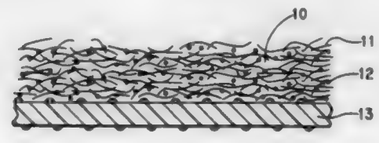
DEGRADABLE ABSORBANT STRUCTURES

Glenn R. Evers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Co., Wilmington, Del.

Filed Nov. 24, 1992, Ser. No. 956,325

Int. Cl.[5] A61F *13/46, 13/52;* **B32B** *5/26, 33/00*

U.S. Cl. 428—286 **23 Claims**



1. A structure absorbent to aqueous fluids comprising a non-rigid core and a backsheet, said core comprising an absorbent, degradable fibrous material; and said backsheet comprising sheet material that is cold-water soluble, which backsheet has a external discontinuous repellent surface; said surface comprising a hydrophobic material that;

(i) is substantially discontinuous on the surface of the backsheet, said material covering at least about 80% of the total backsheet surface area that will be contacted by said fluids; and

(ii) has a critical surface tension less than about 54 dynes/cm and sufficiently lower than the surface tension of said fluids to give an advancing contact angle between the surface layer and said fluid of at least 70°, thereby preventing said fluid from physically contacting the backsheet.

5,300,359

NON WOVEN MATERIAL CONTAINING AQUEOUS POLYMER DISPERSIONS

Franz Matejcek, Lambsheim; Maximilian Angel, Mutterstadt, and Rudolf Schuhmacher, Boehl-Iggelheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 928,768, Aug. 17, 1992, Pat. No. 5,270,376, which is a continuation of Ser. No. 655,826, Feb. 15, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,544

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004915

Int. Cl.[5] B32B *27/00;* **D04H** *1/64*

U.S. Cl. 428—290 **4 Claims**

1. A nonwoven material which contains, as binder, a polymer of an aqueous polymer dispersion obtained by incorporating into an aqueous starting dispersion containing

A) from 25 to 50% by weight, based on the starting dispersion, of a polymer A as the disperse phase, built up from

a) form 3 to 55% by weight of one or more α, β-monoethylenically unsaturated mono- or dicarboxylic acids containing from 3 to 5 carbon atoms, of an anhydride of these acids or of a mixture of these monomers (monomers a), and

b) from 45 to 97% by weight of one or more other copolymerizable monomers (monomer b),

in polymerized form and having, in disperse form, a mean particle size of from 20 to 400 nm,

B) an effective amount of an emulsifier, and

C) water as the remainder,

at a temperature below the boiling point of pure water and above the glass transition point of the polymer A, from 5 to 60 mol-%, based on the number of moles of acid functions of the polymer A copolymerized in the form of the monomers a, of one or more of the divalent metals magnesium, calcium and zinc in the form of an oxide, hydroxide, carbonate or bicarbonate or in the form of a mixture of these basic salts.

5,300,360

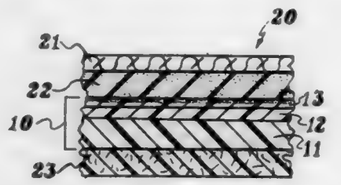
THERMOPLASTIC COMPOSITE ADHESIVE FILM

Michael J. Kocsis, Newark, and Richard H. Brandon, Pickerington, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 7, 1992, Ser. No. 817,567

Int. Cl.[5] B32B *3/26, 27/08*

U.S. Cl. 428—304.4 **13 Claims**



1. A multi-layer, multicomponent thermoplastic composite adhesive film consisting essentially of:

(a) at least one first layer of a blend of at least two different acrylic acid resins, wherein one of the resins has a melt index of from about 10 g/10 minutes to about 30 g/10 minutes and is present in the blend in an amount of from about 40 weight percent to about 90 weight percent and one of the resins has a melt index of from less than about 5 g/10 minutes and is present in the blend in an amount of from about 40 weight percent to about 90 weight percent; and

(b) at least one second layer of a blend of at least two different polyethylene resins selected from the group consisting essentially of ultra linear low density polyethylene, linear low density polyethylene, and low density polyethylene, said second layer adjacent and contiguous to the first layer.

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5,300,361
PROCESS FOR THE PRODUCTION OF A POLYPROPYLENE COMPOSITE

Hans Vowinkel, Flörsheim am Main; Franz Gübitz, Kelkheim/-Taunus, and Rolf Orth, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00884, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/17882, PCT Pub. Date Nov. 28, 1991
PCT Filed May 13, 1991, Ser. No. 938,042
Claims priority, application Fed. Rep. of Germany, May 16, 1990, 4015739
Int. Cl.[5] B32B *31/26*
U.S. Cl. 428—304.4 2 Claims

1. A process for the production of a composite comprising a solid base layer produced by injection molding form a propylene polymer and a foam layer made form a propylene polymer, by bonding the two layers, which comprises softening exclusively the surface of the base layer facing the foam layer, said surface having relief structures thereon, by warming down to a melt layer depth of from 2 to 3 mm and then joining the base layer and the foam layer under a pressure of from 0.1 to 0.4 N/mm^2.

5,300,362
POLYARYLENE SULFIDE COATED WIRE

Andrew Auerbach, Essex; Joseph Tajar, Somerset, and Marvin Wilson, Morris, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 615,860, Nov. 20, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,302
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—375 19 Claims

1. A wire coated with a substantially concentric polyarylene sulfide resin coating, said coating comprising a blend of polyarylene sulfide and at least 5 wt. % based on the weight of the blend of a hydrogenated, conjugated diene/vinyl aromatic block copolymer having a total molecular weight of at least about 40,000, said coating having an elongation of at least 40%.

5,300,363
AQUEOUS COATING COMPOSITION

Alger E. Laura, New Boston; Ronald J. Easton, Clio; Kurt C. Frisch, Grosse Ile, and Han X. Xiao, Farmington Hills, all of Mich., assignors to A-LIne Products Corporation, Detroit, Mich.

Continuation of Ser. No. 599,664, Oct. 18, 1990, Pat. No. 5,227,198, which is a continuation-in-part of Ser. No. 340,845, Apr. 20, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 20,654
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] B32B *27/38*
U.S. Cl. 428—413 20 Claims



1. A multi-layer article, comprising:
(a) a first layer including a thermoplastic polyolefin material;
(b) a second layer including a material selected from the group consisting of a thermoplastic polyolefin, an acrylic, a styrene-butadiene rubber, a polyurethane, an epoxy, a nitrile butadiene rubber, a natural rubber, a polyvinyl butyryl and mixtures thereof; and
(c) an intermediate layer disposed at least partially between said first layer and said second layer, said intermediate layer being a prepared from an aqueous coating composition, comprising:
(i) up to about 40 percent of a polyol having a molecular weight of at least about 62 to about 500;
(ii) about 0.5 percent to about 40 percent of a resin selected from halogenated polyolefinic resin materials, halogenated vinyl resins, epihydrin resins, halogenated epoxy resins, and mixtures thereof, said resin having a molecular weight of about 10,000 to about 30,000, or a softening point of about 150° to about 350° F.;
(iii) about 0.05 to about 15 percent of a surfactant;
(iv) an amine selected from primary, secondary and tertiary aliphatic amines having an amine functionality of 1 to 3, and mixtures thereof; and
(v) about 30 to about 95% water, wherein the total nonvolatiles content in said composition is less than about 5% by weight, and wherein said composition is substantially free of aromatic organic solvents.

5,300,364
METAL-CLAD LAMINATES AND METHOD FOR PRODUCING SAME

Hiroaki Hase; Kazutsune Kikuta; Atsushi Takahashi, all of Chiba, and Shiro Konotsune, Kanagawa, all of Japan, assignors to Chisso Corporation, Osaka, Japan

PCT No. PCT/JP91/01176, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO92/04811, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 3, 1991, Ser. No. 849,416
Claims priority, application Japan, Sep. 4, 1990, 2-232575; Aug. 29, 1991, 3-242489
Int. Cl.[5] B32B *15/08*; H05K *1/03, 3/30, 3/38*
U.S. Cl. 428—458 16 Claims

1. A flexible metal-clad laminate obtained by directly applying a polyimide precursor to a metallic conductive foil, and then drying, heating and curing the precursor to form a polyimide film in direct contact with and adhered to the metallic conductive foil, said flexible metal-clad laminate being characterized in that the polyimide film is composed of two or more polyimide layers, the each being at least 0.1 μm thick, linear thermal expansion coefficient of at least one of the second and later polyimide layers being larger than that of the first layer brought into contact with the metallic conductive foil with the linear thermal expansion coefficient of the second layer being about 1.05 to about 5 times greater than that of the first layer, and the requirements of the following formulae are met:

$$3.0 < Q_{n-1} \times t_n < 50,$$

$$t_{n-1} > t_n \text{ and}$$

$$0.01 < \frac{Rz}{t_{n-1} \times t_n} < 0.10$$

wherein t_n is the thickness (μm) of the outermost layer (the nth layer) of the polyimide layers, t_{n-1} is the thickness (μm) of the film comprising the first layer to the (n−1)th layer of the polyimide layers, Q_{n-1} is double the value (cm) of the radius of curvature of the curl of the film comprising the first layer to the (n−1)th layer of the polyimide layers and Rz is the average surface roughness (μm) of the metallic conductive foil.

5,300,365
OLEFIN POLYMER FILMS

Kumar Ogale, Hockessin, Del., assignor to Himont Incorporated, Wilmington, Del.

Division of Ser. No. 749,055, Aug. 27, 1991, Pat. No. 5,212,246, which is a continuation-in-part of Ser. No. 589,857, Sep. 28, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 17,896
Int. Cl.[5] B32B *15/08, 27/32*
U.S. Cl. 428—461 6 Claims

1. A film or sheet article comprising a base film or sheet of a crystalline homopolymer of a C_{2-10} alpha-olefin monomer or of a copolymer selected from the group consisting of (i) propylene with ethylene, (ii) propylene with ethylene and a C_{4-10} alpha-olefin monomer, and (iii) propylene with a C_{4-10} alpha-olefin monomer, provided that, when the comonomer is ethylene, the maximum polymerized ethylene content is about 10%, when the comonomer is a C_{4-10} olefin, the maximum polymerized content thereof is about 20%, and when both ethyelen and a C_{4-10} olefin are used the maximum polymerized content is about 30%; and applied to at least one surface of the base film or sheet, a layer of a film or sheet material comprising an olefin polymer composition which is prepared by polymerization in at least two stages, has a flexural modulus of less than 150 MPa, and is comprised of

(a) from about 10 to 50 parts of a propylene homopolymer having an isotactic index greater than 80, or a copolymer selected from the group consisting of (i) propylene and ethylene, (ii) propylene, ethylene and a CH_2—CHR alpha-olefin, where R is a C_{2-8} straight or branched alkyl, and (iii) propylene and an alpha-olefin as defined in (a) (ii), said copolymer containing over 80% propylene and having an isotactic index greater than 80;

(b) from about 5 to 20 parts of a semi-crystalline, essentially linear copolymer fraction having a crystallinity of about 20 to 60% wherein the copolymer is selected from the group consisting of (i) ethylene and propylene containing over 55% ethylene, (ii) ethylene, propylene, and an alpha-olefin as defined in (a) (ii) containing from 1 to 10% of the alpha-olefin and over 55% of both ethylene and alpha-olefin, and (iii) ethylene and an alpha-olefin as defined in (a) (ii) containing over 55% of said alpha-olefin, which copolymer is insoluble in xylene at room or ambient temperature; and

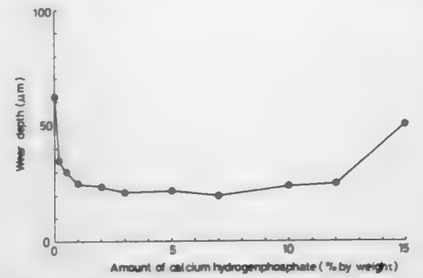
(c) from about 40 to 80 parts of a copolymer fraction wherein the copolymer is selected from the group consisting of (i) ethylene and propylene containing from 20% to less than 40% ethylene, (ii) ethylene, propylene, and an alpha-olefin as defined in (a) (ii) wherein the alpha-olefin is present in an amount of 1 to 10% and the amount of ethylene and alpha-olefin present is from 20% to less than 40%, and (iii) ethylene and an alpha-olefin as defined in (a) (ii) containing from 20% to less than 40% of said alpha-olefin, and optionally with 0.5 to 10% of a diene, said copolymer fraction being soluble in xylene at ambient temperature, and having an intrinsic viscosity of from 1.5 to 4.0 dl/g;

with the total of the (b) and (c) fractions, based on the total olefin polymer composition, being from about 50% to 90%, and the weight ratio of (b)/(c) being less than 0.4.

5,300,366
FLUORORESIN COMPOSITION FOR A SLIDING MEMBER AND A SLIDING MEMBER

Takashi Nakamaru, Sagamihara; Tadashi Watai, Ayase; Masayuki Rokugawa, Hiratsuka; Kouichi Tsunoda, Yamoto; Tadayoshi Umeki, Kurita; Takayuki Miyaji, and Kenji Yamada, both of Fujisawa, all of Japan, assignors to Oiles Corporation, Tokyo, Japan

Filed Apr. 29, 1991, Ser. No. 693,243
Claims priority, application Japan, May 9, 1990, 2-119591; Jan. 18, 1991, 3-16773
Int. Cl.[5] B22F *7/02*
U.S. Cl. 428—549 19 Claims

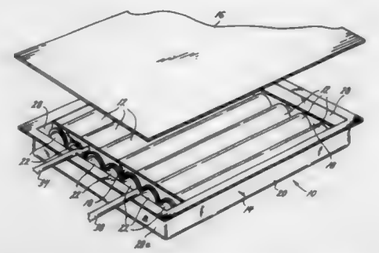


1. A fluororesin composition for a sliding member consisting essentially of a fluororesin, from 1 to 40% by weight of at least one of filler selected from the group consisting of glass fiber, glass powder, carbon fiber and carbon powder, and 0.1 to 15% by weight of a phosphate selected from the group consisting of Li_3PO_4, Li_2HPO_4, $Li_4P_2O_7$, $Ca_3(PO_4)_2$, $Ca_2O_2O_7$, $CaHPO_4(.2H_2O)$ and hydroxyapatite.

5,300,367
METALLIC STRUCTURAL PANEL AND METHOD OF FABRICATION

Edward D. Bodart, Eureka, and Gerald T. Morgenthaler, Florissant, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 12, 1991, Ser. No. 743,706
Int. Cl.[5] B32B *3/20*; B23K *101/02, 101/04*
U.S. Cl. 428—586 16 Claims



7. An assembly for fabricating a metallic structural panel, comprising:
a) a housing defining an internal cavity;
b) a plurality of internal tubes having superplastic properties disposed within said housing, wherein said tubes are comprised of a material selected from the group consisting of titanium alloy and aluminum alloy;
c) a means for segregating said internal cavity into a pressurized section and an evacuation section, wherein said segregating means is a first end plate and a second end plate, said first and second end plates having a plurality of openings therein, wherein said first end plate is affixed to a first

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end of said plurality of internal tubes such that said openings of said first end plate and said plurality of internal tubes are substantially aligned and said second end plate is affixed to a second end of said plurality of internal tubes, and wherein said second end plate is affixed to a second end of said plurality of internal tubes such that said openings of said second end plate and said plurality of internal tubes are substantially aligned;

d) a means for establishing a pressure differential between said pressurized section and said evacuation section; and

e) a plurality of cooling tubes comprised of beryllium and disposed within said internal cavity.

5,300,368

HIGHLY WEAR-RESISTANT OVERLAY WITH IMPROVED SLIP AND A METHOD OF ITS PRODUCTION

Michael Kübert, Klein-Winternheim, and Klaus Müller, Wiesbaden-Naurod, both of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Glyco B.V. & Co. KG, Wiesbaden, Fed. Rep. of Germany

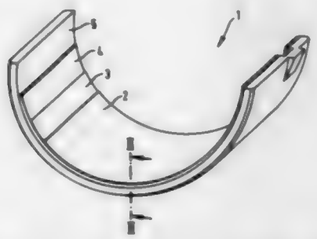
PCT No. PCT/DE91/00079, § 371 Date Sep. 25, 1991, § 102(e) Date Sep. 25, 1991, PCT Pub. No. WO91/11545, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 26, 1991, Ser. No. 768,088

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1990, 4003225

Int. Cl.[5] F16C *33/12, 33/14;* **C22F** *1/00;* **B32B** *15/01*

U.S. Cl. 428—610 **18 Claims**



1. An overlay for a plain bearing, the overlay comprising a layer of a binary or ternary alloy of at least two different elements one of which is selected from the group which consists of copper, lead, tin, antimony, indium and thallium and an other of which is a soft metal selected from the group which consists of tin, antimony, and mixtures thereof, the base layer having a surface against which a member can slide and having a concentration of the soft metal at said surface corresponding to a pure state of the soft metal, said soft metal being present throughout the layer and having a concentration in said layer decreasing in a diffusion gradient from said surface in a direction perpendicular to said surface.

5,300,369

ELECTRIC ENERGY CELL WITH INTERNAL FAILURE COMPENSATION

Fred J. Dietrich, Palo Alto, and John C. Hall, Saratoga, both of Calif., assignors to Space Systems/Loral, Palo Alto, Calif.

Filed Jul. 22, 1992, Ser. No. 918,549

Int. Cl.[5] H01M *10/34*

U.S. Cl. 429—7 **5 Claims**

1. An electric energy cell for use in a satellite comprising

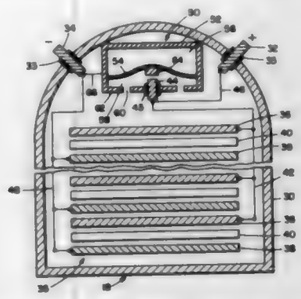
A. a hollow vessel sealed against ambient atmosphere and having an internal pressure substantially greater than atmospheric pressure,

B. electrochemical means contained within said vessel, said electrochemical means being capable of generating an electric current,

C. a first cell terminal mounted on said vessel and extending through the wall thereof to the outside of said vessel, said first cell terminal being connected to a first terminal of said electrochemical means,

D. a second cell terminal mounted on said vessel and extending through the wall thereof to the outside of said vessel, said second cell terminal being connected to a second terminal of said electrochemical means, and

E. pressure sensitive switch means mounted within said vessel and connected to said first and second cell terminals and to one of said terminals for alternately permitting current flow between said cell terminals through said electrochemical means or between said cell terminals



directly through said switch means depending on the extent of pressure in said vessel, depending on the extent of pressure in said vessel,

whereby said pressure sensitive switch means is effective to cause electric current to flow between said cell terminals through said electrochemical means when normal operating pressure is maintained in said vessel, and is effective to by pass said electrochemical means and cause electric current to flow between said cell terminals directly through said switch means when the pressure in said vessel drops below said normal operating pressure.

5,300,370

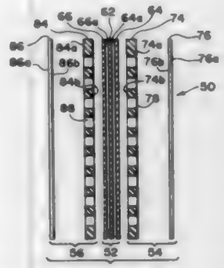
LAMINATED FLUID FLOW FIELD ASSEMBLY FOR ELECTROCHEMICAL FUEL CELLS

Kirk B. Washington, Richmond; David P. Wilkinson, North Vancouver, and Henry H. Voss, West Vancouver, all of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Continuation-in-part of Ser. No. 975,791, Nov. 13, 1992. This application Mar. 1, 1993, Ser. No. 24,660

Int. Cl.[5] H01M *8/04*

U.S. Cl. 429—34 **17 Claims**



1. A laminated fluid flow field assembly for an electrochemical fuel cell, said assembly comprising:

a separator layer formed of electrically conductive, substantially fluid impermeable sheet material, said separator layer having two oppositely facing major surfaces;

a stencil layer formed of electrically conductive sheet material, said stencil layer having two oppositely facing major surfaces, said stencil layer having a fluid inlet formed therein and having at least one opening formed therein extending between the major surfaces thereof, said at least one opening in fluid communication with said fluid inlet;

means for consolidating said separator layer and said stencil layer along one of their respective major surfaces,

whereby said separator layer and said stencil layer cooperate to form at least one open-faced channel for conducting pressurized fluid introduced at said fluid inlet.

5,300,371

MANGANESE DIOXIDE POSITIVE ELECTRODE FOR RECHARGEABLE CELLS, AND CELLS CONTAINING THE SAME

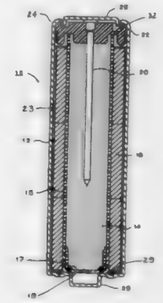
Klaus Tomantschger, and Christopher Michalowski, both of Mississauga, Canada, assignors to Battery Technologies Inc., Richmond Hill, Canada

Continuation-in-part of Ser. No. 824,208, Jan. 22, 1992, Pat. No. 5,204,195, which is a division of Ser. No. 497,908, Mar. 23, 1990, Pat. No. 5,108,852. This application Apr. 20, 1993, Ser. No. 49,405

The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.

Int. Cl.[5] H01M *2/18, 4/62*

U.S. Cl. 429—60 **49 Claims**



1. A rechargeable electrochemical cell, comprising:

a container having an inner peripheral surface and a bottom surface;

a cylindrical zinc negative electrode, centrally disposed within said container;

an ion conductive aqueous electrolyte disposed within said container;

an annular manganese dioxide positive electrode disposed within said container, said positive electrode having an outer peripheral surface, an inner peripheral surface, a bottom surface and a top surface;

a separator disposed within said container between said positive electrode and said negative electrode;

a closure member disposed over the top of said container and sealing the components disposed therein within said container; and

terminal means contacting said negative electrode and said MnO_2 positive electrode to provide respective negative and positive terminals for said cell;

wherein the principal active component of said MnO_2 positive electrode is manganese dioxide which is capable of being charged and discharged, and wherein the first discharge capacity of said MnO_2 electrode, when obtained at a low discharge rate, is essentially the theoretical one electron discharge capacity of said MnO_2;

wherein the principal component of said aqueous electrolyte is chosen from the group consisting of alkaline metal hydroxides, an acid chosen from the group consisting of H_2SO_4, H_3BO_3, H_3PO_4, and mixtures thereof, and a solution of a salt chosen from the group consisting of $ZnCl_2$, NH_4Cl, NaCl, KCl, and mixtures thereof;

wherein said negative electrode is a rechargeable electrode;

wherein the electrode balance, namely the ratio of the theoretical discharge capacity of said zinc negative electrode with respect to the theoretical one electron discharge capacity of said MnO_2 positive electrode, is in the range of from about 60% to about 120%; and

wherein said positive electrode is restricted from significantly changing its dimensions during cycling by interference at least at its outer periphery with said inner periphery of said container, and further by at least one of interference at its bottom with said container, interference at its inner periphery with said separator, and interference at its top with said closure member.

5,300,372

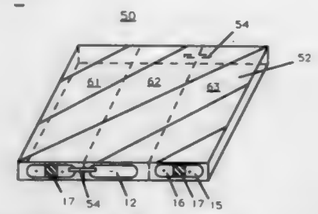
RECHARGEABLE CELL OR CELL PACK CONTACT CONFIGURATION

Adnan Aksoy, Boca Raton, and Mark S. Bresin, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1992, Ser. No. 966,487

Int. Cl.[5] H01M *2/34*

U.S. Cl. 429—65 **15 Claims**



1. A rechargeable battery cell having a contact configuration, comprising:

a substantially prismatic shaped rechargeable cell having a positive terminal and a negative terminal;

said positive and negative terminals each being flat and each substantially covering an end of the cell; and

masking means applied to at least one of the terminals to prevent a portion of the terminal from being able to make electrical contact.

5,300,373

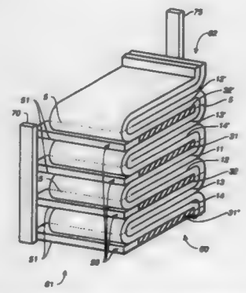
ELECTROCHEMICAL CELL STACK AND METHOD OF MAKING AN ELECTROCHEMICAL CELL STACK

Dale R. Shackle, Morgan Hill, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Sep. 11, 1992, Ser. No. 943,722

Int. Cl.[5] H01M *8/18*

U.S. Cl. 429—152 **31 Claims**



1. An electrochemical cell stack, comprising:

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a continuous laminate web, the continuous laminate web having one continuous first polarity electrode layer, one continuous electrolyte layer, and a plurality of discrete second polarity electrode segments secured on top of the electrolyte layer in predetermined locations, the continuous laminate web being fan-folded at predetermined fold positions such that the second polarity electrode segments contact the electrolyte layer on top and bottom sides of each of the second polarity electrode segments, the fan-folded continuous laminate web forming a stack having first and second sides;

second polarity electrode current collector means for collecting second polarity electrode current; and

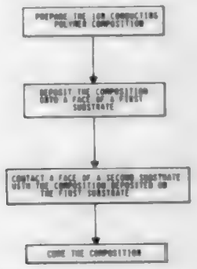
first polarity electrode current collector means for collecting first polarity electrode current.

5,300,374

ION CONDUCTING POLYMERS

Anoop Agrawal; Frederick R. Grimes; Pierre-Marc Allemand, and Michael Trosky, Jr., all of Tucson, Ariz., assignors to Donnelly Corporation, Holland, Mich.

Filed Aug. 31, 1992, Ser. No. 938,858
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 **24 Claims**



1. An ion conducting polymer composition comprising:

a block copolymer of the formula $R'—(CH_2CH_2O)_n—R''$, wherein the molecular weight of said block copolymer is less than about 5000, n is from about 5 to about 34, and R' and R'' are flexible units; and

an effective amount of a dissociable lithium salt.

5,300,375

ACRYLIC ALKOXY SILANE MONOMER AND SOLID ELECTROLYTE DERIVED BY THE POLYMERIZATION THEREOF

Benjamin Chaloner-Gill, Santa Clara, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,490
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 **20 Claims**

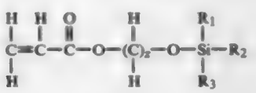
12. An electrolytic cell which comprises:

(i) an anode comprising a compatible anodic material;

(ii) a cathode comprising a compatible cathodic material; and

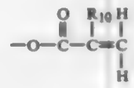
(iii) interposed therebetween a single phase, solid, solvent-containing electrolyte which comprises: a solid polymeric matrix; an inorganic ion salt; and a solvent

wherein said solid polymeric matrix is obtained by polymerizing an organic monomer represented by the Formula I:



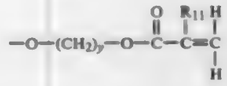
(I)

where z is 3 to 10, and R_1, R_2, and R_3 are independently selected from the group consisting of (a) $-(Y—CH_2CH_2)_x—H$ where x is an integer of 1 to 20, Y is O, S, NH, or NR where R is an alkyl group having 1 to 10 carbon atoms, (b) an alkyl substituent having 1 to 6 carbon atoms, (c) an alkoxy group having 1 to 6 carbon atoms, (d) $—O-(-R_4—O-)_p—R_5$ where R_4 is an alkylene group having 1 to 4 carbon atoms, R_5 is an alkyl substituent having from 1 to 4 carbon atoms, and p is an integer from 1 to 4, (e) $—SR_6$, where R_6 is an alkyl substituent having from 1 to 6 carbon atoms, (f) $—NH_2$, (g) $—NHR_7$, where R_7 is an alkyl substituent having 1 to 6 carbon atoms, (h) $—NR_8R_9$, where R_8 and R_9 are independently chosen from alkyl substituents having 1 to 6 carbon atoms,



(i)

where R_{10} is H or CH_3, and



(j)

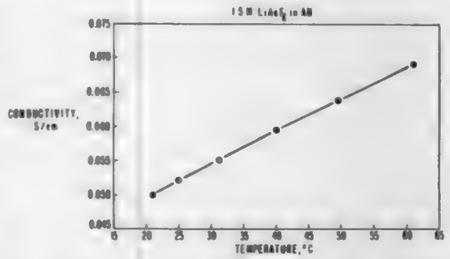
where y is 3 to 10, and R_{11} is H or CH_3.

5,300,376

HIGHLY CONDUCTIVE ELECTROLYTE FOR USE IN AN AMBIENT TEMPERATURE RECHARGEABLE LITHIUM BATTERY AND AMBIENT TEMPERATURE RECHARGEABLE LITHIUM BATTERY INCLUDING SAID ELECTROLYTE

Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 15, 1992, Ser. No. 945,039
Int. Cl.[5] H01M *4/52*
U.S. Cl. 429—197 **13 Claims**



1. A highly conductive electrolyte for use in an ambient temperature rechargeable lithium battery including a lithium intercalcating anode selected from the group consisting of TiS_2, WO_2, MoO_2, VSe_2, Li_2TiS_2, Li_2VSe_2, lithiated graphite, lithiated carbon, and lithiated petroleum coke, and a lithium intercalating cathode selected from the group consisting of $LiCoO_2$ and $LiNiO_2$, said electrolyte having a solution of a lithium salt in acetonitrile, wherein the lithium salt is selected from the group consisting of $LiAsF_2$, $LiAlCl_4$, $LiClO_4$, $LiBF_4$, and $LiPF_6$.

5,300,377

METHOD OF MANUFACTURING A PHASE SHIFT MASK COMPRISING TWO PHASE SHIFT LAYERS AND SLOPING SIDEWALLS

Eun S. Keum, Kyungki-do, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed May 7, 1992, Ser. No. 879,481
Claims priority, application Rep. of Korea, May 9, 1991, 7494/1991
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **5 Claims**



1. A method of manufacturing a phase shift mask comprising:

(a) forming a light shielded film on a light incident substrate;

(b) forming in parallel a plurality of pairs of light shielded pattern films, having a predetermined interval from each other, after having patterned the above light shielded film;

(c) forming a first phase shift film on a whole surface formed by steps (a) and (b);

(d) forming a phase shift film between each pair of light shielded pattern films, and then removing the first phase shift film between each pair;

(e) forming a second phase shift film on a whole surface formed by step (d);

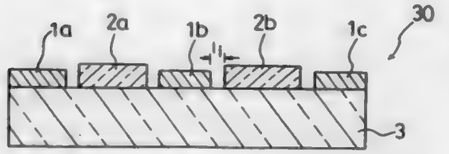
(f) dry-etching the second phase shift film and forming a non-vertically sloping sidewall phase shift film on a sidewall of each phase shift film.

5,300,378

METHOD OF PRODUCING A PHASE SHIFTING MASK

Hiroyuki Minami, Itami, Japan, assignor to Mitsubishi Denki Fabusbhiki Kaisha, Tokyo, Japan

Division of Ser. No. 707,753, May 30, 1991, abandoned. This application Aug. 14, 1992, Ser. No. 928,639
Claims priority, application Japan, Jun. 15, 1990, 2-158420
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **6 Claims**



4. A method of producing a mask for use in an optical exposure apparatus using single wavelength light comprising the steps of:

depositing a light shielding film on the entire surface of a transparent substrate;

producing a photoresist pattern including at least two spaced apart portions on said light shielding film;

over-etching the light shielding film using said photoresist portions as a mask and undercutting said photoresist portions to produce light shielding film portions having a desired width;

depositing a transparent thin film for shifting the phase of light transmitted through said mask on the photoresist portions and the exposed portions of said substrate; and

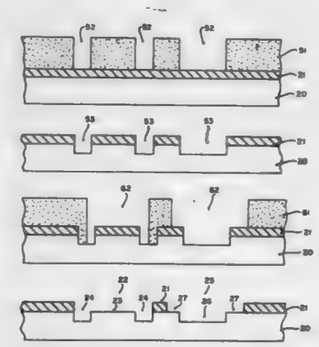
lifting off said portions of said photoresist film and the shifting film overlying said photoresist portions, thereby producing a transparent thin shifting film portion in the aperture between said light shielding film portions and spaced from said light shielding film portions.

5,300,379

METHOD OF FABRICATION OF INVERTED PHASE-SHIFTED RETICLE

Giang T. Dao, Fremont; Eng T. Gaw, San Jose; Nelson N. Tam, San Francisco, and Ruben A. Rodriquez, Fremont, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 21, 1992, Ser. No. 933,341
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **27 Claims**



1. A method of fabricating a phase-shifted reticle for use on a printer having a numerical aperture (NA), an image reduction factor (IRF) and an exposing radiation wavelength (λ), comprising the steps of:

a) providing a substrate with an opaque layer formed thereon, said substrate with said opaque layer having a first region, a second region, a third region and a fourth region, wherein said second region is proximate and between said first and said third regions, and said third region is proximate said fourth region, wherein said second region comprises a phase-shifting element for said first region and said third region comprises a phase-shifting element for said fourth region, and wherein said third region is disposed within approximately 0.55 IRF* λ/NA of said second region;

b) removing said opaque layer from said first and said third regions;

c) removing a thickness of said substrate from said first region, said thickness sufficient to shift the phase of radiation in the range of approximately 160 through 200 degrees;

d) removing said thickness of said substrate from said third region; and,

e) removing said opaque layer from said second and said fourth regions.

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5,300,380

PROCESS FOR THE PRODUCTION OF RELIEF STRUCTURES USING A NEGATIVE PHOTORESIST BASED ON POLYPHENOLS AND EPOXY COMPOUNDS OR VINYL ETHERS

Martin Roth, Giffers, and Kurt Meier, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 766,496, Sep. 26, 1991, abandoned, which is a division of Ser. No. 445,134, Nov. 30, 1989, Pat. No. 5,079,129, which is a continuation of Ser. No. 79,624, Jul. 30, 1987, abandoned. This application Sep. 17, 1992, Ser. No. 947,899

Claims priority, application Switzerland, Aug. 6, 1987, 3157/86

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Int. Cl.[5] G03F *7/30, 7/40*

U.S. Cl. 430—18 **4 Claims**

1. A process for the production of relief structures comprising the following operating steps:

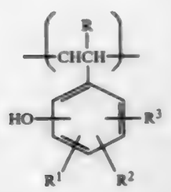
1) coating a substrate with a radiation-sensitive composition consisting essentially of:

a) at least one film forming polyphenol which has such a content of phenolic hydroxyl groups to render the composition soluble or swellable in an aqueous-alkaline developer solution, wherein the polyphenol is selected from the group consisting of:

i) a novolak which is derived from a binuclear or mononuclear substituted or unsubstituted phenol and a C_1–C_6aldehyde,

ii) a copolymer of a vinyl compound with no carboxyl groups and an alkenylphenol which contains the structural element of formula I

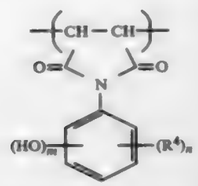
(I)



in which R is hydrogen or metyl and R^1, R^2 and R^3 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or methylol, and

iii) a copolymer of a vinyl compound with no carboxyl groups and a N-hydroxyphenylmaleimide which contains the structural element of formula II

(II)



wherein R^4 independently is C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen, m is 1,2 or 3, n is 0, 1, 2, 3 or 4 and the sum of m and n is at most 5;

b) at least one compound, different from a), which contains at least two epoxide groups or at least two vinyl groups or at least one epoxide and one vinyl ether group in the molecule; and

c) at least one cationic photoinitiator for component b) selected from the group consisting of onium salts with weakly nucleophilic anions and metallocene salts;

2) exposure of the coated substrate with a given pattern of actinic radiation; and

3) removing the non-exposed areas of the radiation-sensitive composite with a developer.

4. A relief structure obtained according to the process of claim 1.

5,300,381

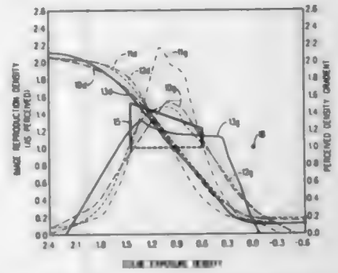
COLOR IMAGE REPRODUCTION OF SCENES WITH PREFERENTIAL TONE MAPPING

John D. Buhr, Webster, and Harry D. Franchino, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 24, 1992, Ser. No. 950,871

Int. Cl.[5] G03C *7/18, 5/40*; G03B *27/52*

U.S. Cl. 430—30 **8 Claims**



1. A method of presenting a reproduction of an original scene in color with a preferential tone mapping, the method comprising the steps of capturing original scene parameters and creating a visual reproduction of the scene from the captured scene parameters; the method characterized by:

performing a transformation on said captured scene parameters, said transformation being such that, taken in conjunction with untransformed characteristics of the capturing and creating steps, results in a reproduced tone mapping having instantaneous gamma values of viewed reproduction density relative to density of the original scene which are greater than a minimum value of 1.0 and less than a maximum value of 1.9 plus 0.35 times scene exposure density over a scene exposure density range of from 0.60 to 1.45 as measured relative to a zero density, 100% diffuse reflector in the original scene and which further lie substantially within a range of values subtended by an angle of 14° measured from a reference point at 0.0 scene exposure density and 1.0 viewed reproduction density gradient.

5,300,382

FULL-COLOR IMAGE FORMING APPARATUS WITH TWO SIDE CAPABILITY AND TWO-SIDE FULL-COLOR IMAGE FORMING METHOD

Kenji Takeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,089

Claims priority, application Japan, Apr. 5, 1991, 3-099760

Int. Cl.[5] G03G *15/01*

U.S. Cl. 430—42 **14 Claims**

1. A two-side image forming method comprising steps of:

forming a multi-color image on one side of a recording material; first heat-fixing the recording material bearing the multi-color image on one side of the recording material;

forming a multi-color image on the other side of the recording material; and

second heat-fixing the recording material bearing the multi-color images on both sides of the recording material,

wherein an amount of heat supplied to said recording material during said first heat-fixing is smaller than that amount of heat supplied for forming a multi-color image on only one side of the recording material.

5,300,383

METHOD AND TONER FOR FULL COLOR DEVELOPMENT

Noriaki Tsubota, Himeji; Masahiko Kubo, Yao; Kazuo Fuji, Higashi-osaka, and Kazuhisa Edahiro, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 970,610, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 615,915, Nov. 20, 1990, abandoned. This application Jul. 22, 1993, Ser. No. 95,697

Claims priority, application Japan, Nov. 20, 1989, 1-299718; Nov. 20, 1989, 1-299719; Nov. 22, 1989, 1-301997; Nov. 22, 1989, 1-301998; Nov. 22, 1989, 1-301999; Nov. 22, 1989, 1-302000

Int. Cl.[5] G03G *13/01, 9/09*

U.S. Cl. 430—45 **13 Claims**

13. A method of full color development, which comprises

(1) exposing a photosensitive layer to a light from a multiple-color original through a color-separating filter to form an electrostatic image,

(2) developing said electrostatic image by a toner,

(3) transferring a toner image to a transfer material, and

(4) repeating steps (1) to (3) using magenta, cyan, and yellow color toners and a black toner to form a multiple-color image in which each of the toner images is overlapped, wherein

(A) said magenta toner is a toner comprising a binder resin and a quinacridone pigment, said pigment is dispersed in the binder resin in the form of fine particles and that when the toner is formed into a layer having a thickness of 0.9 μm, the area occupied by the dispersed pigment in 780,000 μm^2 of the area of the formed surface is such that the number of dispersed quinacridone pigment particles having a size of 10 to 12.5 μm^2 is smaller than 40 and the number of dispersed quinacridone pigment particles having a size of 12.5 to 15.0 μm^2 is smaller than 20, and said binder resin has an electroconductivity of 1.0×10^{-9} to 5.0×10^{-9} (s/cm),

(B) said cyan toner is a toner comprising a binder resin and a copper phthalocyanine pigment, said pigment is dispersed in the binder resin in the form of fine particles and that when the toner is formed into a layer having a thickness of 0.9 μm, the area occupied by the dispersed pigment in 780,000 μm^2 of the area of the formed surface is such that the number of dispersed copper phthalocyanine pigment particles having a size of 10 to 12.5 μm^2 is smaller than 80 and the number of dispersed copper phthalocyanine pigment particles having a size of 12.5 to 15.0 μm^2 is smaller than 50, and said binder resin has an electroconductivity of 1.0×10^{-9} to 5.0×10^{-9} (s/cm), and

(C) said yellow toner is a toner comprising a binder resin and a benzidine pigment, said pigment is dispersed in the binder resin in the form of fine particles and that when the toner is formed into a layer having a thickness of 0.9 μm, the area occupied by the dispersed pigment in 780,000 μm^2 of the area of the formed surface is such that the number of dispersed benzidine pigment particles having a size of 10 to 12.5 μm^2 is smaller than 15 and the number of dispersed benzidine pigment particles having a size of 12.5 to 15.0 μm^2 is smaller than 10, and said binder resin has an electroconductivity of 1.0×10^{-9} to 5.0×10^{-9} (s/cm).

5,300,384

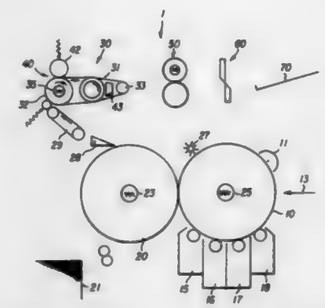
METHOD OF FORMING A TONER IMAGE, A RECEIVING SHEET AND A METHOD OF MAKING THE RECEIVING SHEET

Donald S. Rimai, Webster; Dinesh Tyagi, Fairport; William A. Light, Victor; Peter S. Alexandrovich, and Douglas E. Bugner, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1992, Ser. No. 933,628

Int. Cl.[5] G03G *13/01*

U.S. Cl. 430—47 **14 Claims**



1. In a method of forming a toner image, which method includes a step in which a receiving sheet is heated to a temperature of at least 100°0 C. to assist in either transferring or fixing the toner image to a first side of the receiving sheet, and which first side has an outer heat-softenable layer to which the toner image is transferred or fixed and a second opposite side having a second side layer of a material which is coated in a thickness in which it is substantially gas impermeable, the improvement wherein the second side layer includes holes mechanically formed and sufficiently through said layer to permit escape of steam from said sheet during said step in which said sheet is heated.

5,300,385

AROMATIC HETEROCYCLIC-SUBSTITUTED CYCLIC SULFONE COMPOUNDS AND ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING THEM

Michael R. Detty; John A. Sinicropi, both of Rochester; J. Robin Cowdery, Webster, and Ralph H. Young, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

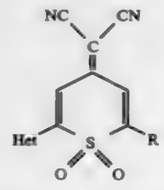
Filed Nov. 16, 1992, Ser. No. 976,911

Int. Cl.[5] G03G *5/047, 5/06*

U.S. Cl. 430—58 **9 Claims**

1. An electrophotographic element comprising an electrically conductive layer, a charge-generation layer, and a charge-transport layer containing an electron-transport agent having the structure

(I)



wherein Het is a substituted or unsubstituted heterocyclic ring system containing at least one 5-membered aromatic heterocyclic ring; and R is an alkyl, aralkyl, or cycloalkyl group of 1 to about 10 carbon atoms, or an aryl group of 6 to about 12 car-

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bon atoms, or a substituted or unsubstituted heterocyclic ring system containing at least one 5-membered aromatic heterocyclic ring.

5,300,386

DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGE, IMAGE FORMING METHOD AND HEAT FIXING METHOD

Makoto Kanbayashi, Kawasaki; Takayuki Nagatsuka, Yokohama; Takashige Kasuya, Kawasaki; Tatsuya Nakamura, and Tatsuhiko Chiba, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,832

Claims priority, application Japan, Mar. 22, 1991, 3-81192; Apr. 4, 1991, 3-97862; Jul. 31, 1991, 3-213056; Mar. 6, 1992, 4-49735

Int. Cl.[5] G03G *9/083*

U.S. Cl. 430—99 **39 Claims**

1. A developer for developing an electrostatic image, comprising a toner, said toner comprising toner particles each containing a polymer, a copolymer or a mixture thereof and from 5 to 30% by weight of a low softening point material having a melting point of from 30° C. to 130° C., each of said toner particles having a plurality of concavities on its surface, and $Ca_3(PO_4)_2$ being present on the surface of said toner particles in an amount of not more than 0.2% by weight based on the weight of said toner; said toner particles being prepared by suspension polymerization.

5,300,387

TONER COMPOSITIONS WITH NEGATIVE CHARGE ENHANCING ADDITIVES

Beng S. Ong, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 5, 1992, Ser. No. 894,690

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **25 Claims**

1. A negatively charged toner composition consisting essentially of a polymer or polymers, a colorant or colorants, optional surface additives, and a tetracoordinated metal complex charge enhancing additive obtained from the reaction of a hydroxybenzoic acid and a base with a mixture of a metal ion and an aromatic dicarboxylic acid; and wherein said metal complex charge additive contains two dissimilar ligands, and which complex is free of water.

5,300,388

TONER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME

Yoshihiro Inaba, and Kazufumi Tomita, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

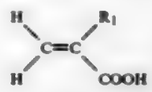
Continuation of Ser. No. 649,005, Jan. 25, 1991, abandoned. This application Jul. 1, 1992, Ser. No. 908,842

Claims priority, application Japan, Jan. 26, 1990, 2-14905

Int. Cl.[5] G03G *9/097*

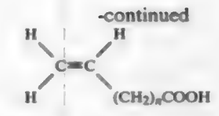
U.S. Cl. 430—110 **4 Claims**

1. A toner for electrophotography which comprises toner particles having a radical-formable substance at least on the surfaces thereof and a copolymer chemically bonded to said surfaces, said copolymer containing as monomer units at least one vinyl group-containing carboxylic acid represented by formulae (I), (II), and (III) and a fluorine-containing vinyl monomer that is not gaseous at room temperature:

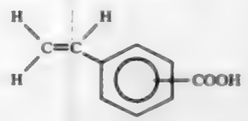


(I)

-continued



(II)



(III)

wherein R_1 represents a hydrogen atom or methyl group and n is an integer of 1 to 8.

5,300,389

TONER COMPOSITIONS WITH HALOGENATED ALUMINUM SALICYLIC ACID COMPLEX CHARGE ENHANCING ADDITIVES

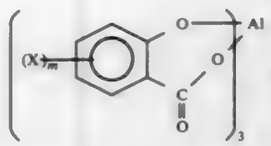
Kock-Yee Law, Penfield, and Ihor W. Tarnawskyj, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1992, Ser. No. 978,571

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **20 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, optional surface additives, and a halogenated aluminum salicylic acid complex charge enhancing additive of the following formula



wherein M is hydrogen, an alkali metal, an alkaline earth metal, NH_4, or NR_4; X is independently selected from the group consisting of iodide, chloride and bromide, and m is the number 1 or 2.

5,300,390

LIQUID TONER COMPOSITION

Benzion Landa, Edmonton, Canada; Yaacov Almog, Rehovot, Israel; Peretz Ben-Avraham, Rehovot, Israel, and Moshe Levanon, Rehovot, Israel, assignors to Spectrum Sciences, B.V., Wassenaar, Netherlands

Filed Feb. 18, 1992, Ser. No. 836,574

Int. Cl.[5] G03G *9/135*

U.S. Cl. 430—115 **15 Claims**

1. A method of preparing a liquid toner composition for development of latent electrostatic images comprising:

adding a polymerized ground gel to a dispersion of toner particles in a liquid dispersant.

5,300,391

FIELD ASSISTED PROCESSES FOR PREPARING IMAGING MEMBERS

Ellis Fabian, North York, Canada; Eugene A. Swain, and John J. Darcy, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1991, Ser. No. 762,812

Int. Cl.[5] B29C *5/04, 39/08*

U.S. Cl. 430—127 **59 Claims**

1. A process for preparing a multilayered cylindrical article which comprises

a. introducing into a cylindrical mold a composition comprising a liquid, uncured resin material and a magnetically attractable filler material;

b. spinning the mold about its axis;

c. applying a magnetic field to the composition within the mold, thereby attracting the magnetically attractable filler material in the direction dictated by the magnetic field and causing the magnetically attractable filler material and the liquid uncured resin material to separate into layers; and

d. subsequently curing the uncured resin to form a cylindrical article having at least two layers.

5,300,392

IMAGING MEMBER WITH POLYCARBONATE OBTAINED FROM CYCLIC OLIGOMERS

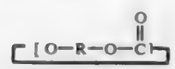
Peter G. Odell; Dasarao K. Murti, both of Mississauga, and Trevor I. Martin, Burlington, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1992, Ser. No. 905,697

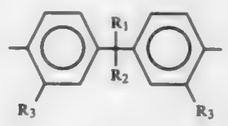
Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—130 **25 Claims**

1. A process for the preparation of photoconductive imaging members which comprises coating a supporting substrate with a photogenerator layer comprised of photogenerating pigments, and subsequently applying to the photogenerating layer a mixture comprised of charge transport molecules and cyclic oligomers, and wherein said mixture is heated to obtain a polycarbonate resin binder from said cyclic oligomers, and wherein said cyclic oligomers are represented by the formula



wherein n represents the degree of polymerization and is a number of from 2 to about 20, and R represents the principle repetition unit of the formula



wherein R_1, R_2, and R_3 are independently selected from the group consisting of halogen, halogenated alkyl, hydrogen, alkyl and aryl.

5,300,393

IMAGING MEMBERS AND PROCESSES FOR THE PREPARATION THEREOF

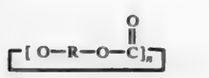
Peter G. Odell, Mississauga; Trevor I. Martin, Burlington, and James D. Mayo, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 14, 1992, Ser. No. 929,227

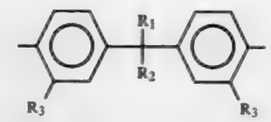
Int. Cl.[5] G03G *5/00*

U.S. Cl. 430—134 **21 Claims**

1. A process for the preparation of photoconductive imaging members consisting essentially of coating a supporting substrate with a photogenerator layer comprised of photogenerating pigments contained in a mixture of cyclic oligomers with degrees of polymerization of from about 2 to about 20 and a catalyst, and wherein said mixture is heated to obtain a polycarbonate resin binder from said cyclic oligomers, and subsequently applying to the photogenerating layer a layer comprised of charge transport molecules; and wherein said cyclic oligomeric mixture is comprised of components represented by the formula



where n represents the degree of polymerization and is from about 2 to about 20, and R represents the principle repetition unit of the formula



wherein R_1, R_2, and R_3 are independently selected from the group consisting of hydrogen, alkyl, aryl, halogen, halogen substituted alkyl and halogen substituted aryl.

5,300,394

DISPERSIONS FOR IMAGING SYSTEMS

David D. Miller, and Mary C. Brick, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,856

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—137 **12 Claims**

1. A process for preparing a solid particle dispersion of a substantially water-insoluble compound useful in imaging, comprising milling an aqueous slurry of said compound in the presence of a fluorinated surfactant.

5,300,395

PARTIALLY TRANSLUCENT WHITE FILM HAVING A METALLIZED SURFACE

Robert J. von Trebra, Flemington, N.J.; Gerald A. Smith, Easton, Pa.; Roy E. Hensel, Cranbury, N.J., and Oliver A. Barton, deceased, late of Florham Park, N.J. by Marjorie Barton, executrix , assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 497,227, Mar. 22, 1990, Pat. No. 5,246,812. This application Jul. 6, 1993, Ser. No. 87,953

Int. Cl.[5] G03F *7/30;* **G03C** *1/785*

U.S. Cl. 430—143 **10 Claims**

1. An improved method for forming a colored image having reduced dot gain which comprises:

A. providing a receiver sheet which is a white, partially translucent, metallized film article which comprises a flexible, heat resistant, polymeric film material having first and second opposite sides, said film material having deposited on a first side thereof a metal coating which is spectrally reflective and partially light transmissive in the visible region of the spectrum, said coating having a thickness of from about 10 angstroms to about 200 angstroms, a specular gloss of from about 90 or more; and being capable of transmitting from about 1% to about 70% of incident visible light cast thereon; the second side having a white outermost surface, said second side having a visible light opacity of from about 0.5 to about 0.98; and

B. providing a photosensitive element which comprises in order:

i) a substrate having a release surface; and

ii) a photosensitive layer on said release surface, which photosensitive layer comprises a light sensitive component selected from the group consisting of negative working, polymeric diazonium compounds or positive working quinone diazide compounds or photopolymerizable compositions in an amount sufficient to photosensitize the layer; and a resinous binder composition in an amount sufficient to bind the layer components into a uniform

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film; and at least one colorant in an amount sufficient to uniformly color the layer; and

iii) an optional, nonphotosensitive, colorless adhesive layer directly adhered to said colored photosensitive layer, which adhesive layer has a softening point in the range of from about 60° C. to about 180° C; and

C. either

i) laminating said photosensitive element with heat and pressure via said photosensitive or adhesive layer of the photosensitive element to one side of said receiver sheet composite; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation; or

ii) imagewise exposing said photosensitive layer to actinic radiation; and laminating said photosensitive element with heat and pressure via said photosensitive or adhesive layer of the photosensitive element to one side of said receiver sheet composite; and removing said substrate by the application of peeling forces; or

iii) laminating said photosensitive element with heat and pressure via said photosensitive or adhesive layer of the photosensitive element to one side of said receiver sheet composite; and imagewise exposing said photosensitive layer to actinic radiation; and removing said substrate by the application of peeling forces; and thereafter

D. removing the nonimage areas of said photosensitive layer with a liquid developer, which removing is conducted at a temperature at which said photosensitive element is substantially nontacky; and thereafter

E. optionally repeating steps (A) through (D) at least once whereby another photosensitive element having at least one different colorant is laminated onto the nonremoved portions of the previously processed photosensitive layer or layers on the receiver sheet composite.

5,300,396

PROCESS OF MAKING NAPHTHOQUINONE DIAZIDE ESTERS USING LACTONE SOLVENTS

Dinesh N. Khanna, and Robert E. Potvin, both of Kent, R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 28, 1990, Ser. No. 619,154

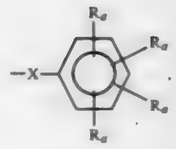
Int. Cl.[5] G03F *7/022*

U.S. Cl. 430—169 **8 Claims**

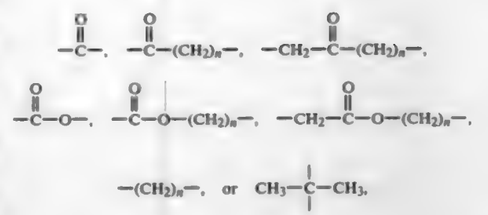
1. A method of preparing a photosensitizer condensate comprising: condensing a phenolic compound represented by the general formulae (A):



where in R is



R_a is H, —OH, halogen or lower alkyl, with at least two and not greater than six R_a radicals being —OH, X is a single C—C bond, —O—, —S—, —SO_2—,



n is 1 or 2; with a diazo sulfonyl chloride, wherein from about 50 to 100 mole percent of the diazo moiety is 2,1,4-diazo and from 0 to about 50 mole percent of said diazo moiety is 2,1,5 diazo; said phenolic compound having, on average, from about 60 mole percent to about 100 mole percent of its hydroxy groups esterified by said diazo sulfonyl chloride; wherein said condensing is conducted in a lactone solvent in the presence of an acid scavenger; and then subsequently isolating said photosensitizer condensate.

5,300,397

LIGHT-SENSITIVE COMPOSITION COMPRISING A DIAZONIUM COMPOUND AND A MACROMER AS THE POLYMERIC BINDER

Keitaro Aoshima, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Jun. 15, 1992, Ser. No. 898,330

Claims priority, application Japan, Jun. 19, 1991, 3-147603

Int. Cl.[5] G03F *7/016, 7/021;* **G03C** *1/77*

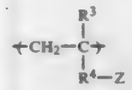
U.S. Cl. 430—176 **20 Claims**

1. A light-sensitive composition comprising, in admixture, a diazonium compound and a polymer binder, wherein the polymer binder comprises structural units represented by the following formula (I);



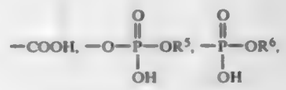
(I)

wherein R^1 represents a hydrogen atom or methyl group; X represents a single bond, an ester bond or an amide bond; R^2 represents a single bond or a divalent bridging group comprised of two or more kinds of atoms selected from the group consisting of C, H, N, O and S; and Y represents a polymer group having a weight average molecular weight of not less than 500 and comprising structural units represented by the following formula (II);



(II)

where R^3 represents a hydrogen atom or methyl group; R^4 represents a single bond or a divalent bridging group comprised of two or more kinds of atoms selected from the group consisting of C, H, N, O and S; and Z represents



—SO_3H or —$CONHSO_2R^7$,

where R^5 and R^6 independently represent a hydrogen atom or a hydrocarbon group having 1 to 15 carbon atoms; and R^7 represents a hydrocarbon group having 1 to 15 carbon atoms.

5,300,398

INTERMEDIATE RECEIVER CUSHION LAYER

Linda Kaszczuk, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,026

Int. Cl.[5] B41M *5/00;* **G03C** *11/00*

U.S. Cl. 430—200 **16 Claims**

1. In a process for forming a color image comprising:

(a) forming a thermal dye transfer image in a polymeric dye image-receiving layer of an intermediate dye-receiving element comprising a support having thereon said dye image-receiving layer by imagewise-heating a dye-donor element by means of a laser and transferring a dye image to the dye image-receiving layer,

(b) adhering the dye image-receiving layer to a surface of a final receiver element having a given gloss by heat laminating the intermediate dye receiving element to the final receiver element at a selected lamination temperature, and

(c) stripping the intermediate dye receiving element support from the dye image-receiving layer,

the improvement wherein the intermediate dye receiving element further comprises a cushion layer between the support and the dye image-receiving layer, the cushion layer being present at a concentration of from about 5 to about 50 g/m^2, and the shear modulus of the cushion layer being less than the shear modulus of the support and less than ten times the shear modulus of the dye image-receiving layer at the temperature of lamination in step (b), and wherein the cushion layer is stripped from the dye image-receiving layer along with the support in step (c), thereby providing a color image on the final receiver element which has a gloss which approximates said given gloss.

5,300,399

NEGATIVE WORKING, PEEL DEVELOPABLE, SINGLE SHEET COLOR PROOFING SYSTEM HAVING A CROSSLINKED LAYER CONTAINING A POLYMER WITH PHENOLIC MOIETIES

Wojciech A. Wilczak, Jersey City, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jan. 21, 1993, Ser. No. 6,879

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—253 **31 Claims**

1. A method for producing a negative image which comprises:

A) providing a photosensitive element which comprises, in order from top to bottom:

(i) a strippable, transparent cover sheet;

(ii) a crosslinked layer, which comprises a polymer having phenolic groups;

(iii) a color layer, which comprises an organic binder, a polymerizable monomer, a colorant, and optionally, a photoinitiator, wherein the binder is present in sufficient amount to bind the color layer components into a uniform film, wherein the optional photoinitiator, when present, is present in sufficient amount to initiate polymerization of the polymerizable monomer, wherein the polymerizable monomer is present in sufficient amount to provide image differentiation when the element is imagewise exposed to actinic radiation and wherein the colorant is present in an amount sufficient to uniformly color the color layer;

(iv) a photoadhering layer, which comprises a photosensitive polymer having ethylenically unsaturated, photocrosslinkable groups and a molecular weight greater than 3,000, a polymerizable monomer having at least one ethylenically unsaturated group, and an optional photoinitiator, wherein the optional photoinitiator, when present, is present in sufficient amount to initiate polymerization of the polymerizable monomer and the crosslinking of the photosensitive polymer and wherein at least one of either the color layer or the photoadhering layer contains a photoinitiator;

(v) a thermoplastic adhesive layer;

(B) laminating the photosensitive element to a receiver sheet;

(C) imagewise exposing the color layer and the photoadhering layer to actinic radiation through the transparent cover and crosslinked phenolic layer;

(D) peeling apart the receiver sheet and the transparent cover sheet, leaving exposed areas of the color layer attached to the receiver sheet via the photoadhering layer and adhesive layer and unexposed areas being removed with the cover sheet and the crosslinked phenolic layer, thereby forming a colored negative image on the receiver sheet; and

(E) optionally repeating steps A) through D) at least once wherein another photosensitive element having at least one different colorant, is transferred via its photoadhering and adhesive layers to the negative image previously produced on the receiver sheet.

5,300,400

PROCESS FOR THE PRODUCTION OF RELIEF PATTERNS AND IMAGES UTILIZING AN ORGANIC COMPOUND HAVING AT LEAST ONE ACID-CLEAVABLE GROUP AND A STORAGE STABILITY IMPROVING AMOUNT OF A SECOND ORGANIC COMPOUND

Reinhold Schwalm, Wachenheim, and Horst Binder, Lampertheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 769,437, Oct. 1, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,089

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1990, 4032162

Int. Cl.[5] G03F *7/30*

U.S. Cl. 430—306 **11 Claims**

1. A process for producing relief patterns and images, which comprises: applying a radiation-sensitive mixture dissolved in an inert solvent to a substrate in a film thickness (measured dry) of 0.2 to 4 μm, drying the film, subjecting it to imagewise irradiation at an energy level such that, following a postbake at from 60° to 120° C., the solubility of the irradiated areas in an aqueous alkali developer is increased and selectively removing these irradiated areas with the alkali developer, wherein said radiation-sensitive mixture is a composition consisting essentially of

(a) a water-insoluble but alkali-soluble polymeric binder,

(b) an organic compound whose solubility in aqueous alkali is increased by the action of an acid and which contains at least one acid-cleavable group and additionally a group which forms a strong acid on irradiation, and

(c) a storage stability improving amount of at least one organic compound which reacts with water or stronger nucleophiles at up to 120° C., even in the presence of an acid catalyst.

5,300,401

PHOTOPOLYMERIZABLE RESIN MATERIAL AND PROCESS FOR PREPARING PRINT CIRCUIT USING THE MATERIAL

Sadao Fujikura, and Masayuki Iwasaki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1993, Ser. No. 73,462

Claims priority, application Japan, Jun. 9, 1992, 4-149395

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—271 **8 Claims**

1. A photopolymerizable resin material which comprises (1) a support, (2) an intermediate layer having a thickness of 0.1 to 50 μm superposed on said support, and (3) a photopolymerizable resin layer comprising at least one carboxyl group-con-

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taining binder in an amount of from 40 to 90% by weight based on the solid content in the photopolymerizable resin layer, superposed on said intermediate layer; wherein said intermediate layer comprises a cellulose derivative having a polymerization degree of from 20 to 1,000 and said cellulose derivative is selected from the group consisting of an aqueous alkali solution soluble hydroxyalkyl cellulose, carboxyalkyl cellulose and cellulose ether.

5,300,402

COMPOSITION FOR PHOTO IMAGING

Norman A. Card, Jr., Lockwood; Richard A. Day, Whitney Point, both of N.Y.; Donald H. Glatzel, New Milford, Pa., and David J. Russell, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 632,032, Dec. 21, 1990, and a continuation-in-part of Ser. No. 632,066, Dec. 21, 1990, which is a division of Ser. No. 318,536, Mar. 3, 1989, Pat. No. 5,026,624, which is a continuation-in-part of Ser. No. 292,173, Dec. 30, 1988, Pat. No. 4,940,651, said Ser. No. 632,032, is a continuation of Ser. No. 318,536, Dec. 30, 1988. This application Jul. 15, 1991, Ser. No. 730,149

The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.

Int. Cl.[5] G03C *1/725*

U.S. Cl. 430—280 **14 Claims**

1. A photosensitive cationically polymerizable epoxy base imaging system comprising:

an epoxy resin system consisting essentially of between about 20% and about 60% by weight of a polyol resin which is a condensation product of epichlorohydrin and bisphenol A having a molecular weight of between about 40,000 and about 130,000;

up to about 35% by weight of a epoxidized octafunctional bisphenol A formaldehyde novolak resin having a molecular weight of between about 4,000 and about 10,000;

between about 35% and about 80% by weight of an epoxidized glycidyl ether of tetrabromo bisphenol A having a softening point of between about 60° C. and about 110° C. and a molecular weight of between about 600 and about 2,500; and

from about 0.1 to about 15 parts by weight of a cationic photoinitiator capable of initiating polymerization in said epoxidized resin system upon exposure to actinic radiation;

said resin system and said photoinitiator being disposed in a solvent;

an effective amount of a thixotropic agent dispersed in a solvent with said resin system and said photoinitiator;

said imaging system when dried to a film being further characterized by having an absorbance of light in the photoactive region of the photoinitiator of less than 2.0 per mil thickness of film.

5,300,403

LINE WIDTH CONTROL IN A RADIATION SENSITIVE POLYIMIDE

Marie Angelopolus, Briarcliff Manor; Daniel G. Berger; Eric D. Perfecto, both of Wappingers Falls, and Peter J. Wilkens, Yorktown, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1992, Ser. No. 900,975

Int. Cl.[5] G03C *5/00*

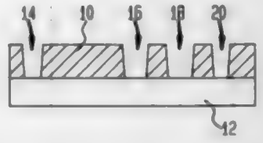
U.S. Cl. 430—325 **16 Claims**

1. A method of retaining the definition of features in a radiation sensitive polyimide film forming composition subsequent to imidization cure, comprising the steps of:

applying a radiation sensitive polyimide film forming composition to a substrate;

patterning said radiation sensitive polyimide film forming composition by imaging and developing to produce a stencil pattern of said radiation sensitive polyimide film forming composition, said stencil pattern having a bottom surface adjacent said substrate and a top surface spaced from said substrate by a first thickness of said radiation sensitive polyimide film forming composition, said stencil pattern having features formed therein by said imaging and developing of said patterning step wherein portions of said stencil pattern cover portions of said substrate and wherein portions of said substrate are not covered by said stencil pattern, said features being defined by sidewalls of said radiation sensitive polyimide film forming composition which extend between said bottom surface and said top surface of said radiation sensitive polyimide film forming composition;

post development exposing said stencil pattern to radiation



at an energy level and for a time sufficient to crosslink and harden said radiation sensitive polyimide film forming composition at said sidewalls of said features of said stencil pattern to a point which will reduce the tendency of said sidewalls of said features in said radiation sensitive polyimide film forming composition to retract at said top surface during thermal curing; and

thermally curing said radiation sensitive polyimide film forming composition in said stencil pattern to create a patterned polyimide film having a bottom surface adjacent said substrate and a top surface spaced from said substrate by a second thickness which is smaller than said first thickness of said radiation sensitive polyimide film forming composition.

5,300,404

PROCESS FOR FORMING A POSITIVE PATTERN THROUGH DEEP ULTRAVIOLET EXPOSURE, HEAT TREATMENT AND DEVELOPMENT WITH TMAH SOLUTION CONTAINING AN ALCOHOL TO IMPROVE ADHESION

Yoshiyuki Tani, Neyagawa, and Masaru Sasago, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 646,025, Jan. 28, 1991, abandoned. This application Apr. 6, 1992, Ser. No. 864,131

Claims priority, application Japan, Jan. 30, 1990, 2-019532

Int. Cl.[5] G03F *7/30, 7/32*

U.S. Cl. 430—326 **3 Claims**

1. A process for forming a positive pattern which comprises forming on a substrate a film of pattern forming material comprising (a) a resin having functional groups capable of becoming alkali-soluble under an acid atmosphere, (b) a photosensitive compound being able to generate an acid by exposure to light, and (c) a solvent for dissolving both the components (a) and (b),

exposing the film selectively to deep ultraviolet light,

subjecting the resulting film to heat treatment, and

developing the resulting film with a mixed solvent comprising tetramethylammonium hydroxide and an amount, sufficient to improve the adhesion of said positive pattern to said substrate of an alcohol to form the desired positive pattern.

5,300,405

PROCESSING OF PHOTOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIAL AND PROCESSOR USED THEREIN

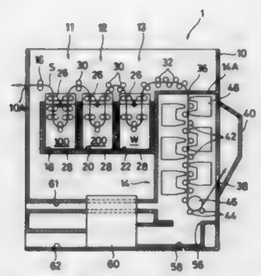
Minoru Yamada; Junichi Kose; Shinichi Matsuda, and Yasuhiro Kawai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 35,399

Claims priority, application Japan, Mar. 23, 1992, 4-095813

Int. Cl.[5] G03C *5/26*

U.S. Cl. 430—363 **11 Claims**



1. A method for processing a photographic silver halide photosensitive material after exposure through an automatic processor comprising a developing section for developing the material with an alkaline developer, a fixing section for fixing the material with a fixer at pH 4.6 or higher, a washing section for washing the material with water and/or a stabilizing section for stabilizing the material, and a drying section for drying the material,

said processor drying section includes a plurality of conveyor rollers for defining a path, a drive shaft operatively coupled to the rollers to rotate the rollers for feeding the photosensitive material forward along the path, and a plurality of air injectors for injecting hot air against the surfaces of the photosensitive material traveling along the path,

the plurality of conveyor rollers and/or the plurality of air injectors are arranged in said drying section so as to satisfy at least one of the relationships represented by the following formulae (1) and (2):

$$k_1M+0.5<L<(k_1+1)M-0.5 \quad (1)$$

$$k_2M+0.5<P<(k_2+1)M-0.5 \quad (2)$$

wherein L is the distance (in mm) between two adjacent conveyor rollers,

P is the distance (in mm) between two adjacent air injectors,

M is the distance (in mm) over which the photosensitive material is fed per revolution of the drive shaft,

k_1 is equal to 0 or an integer of 1 to 8, and

k_2 is equal to 0 or an integer of 1 to 8.

5,300,406

PHOTOGRAPHIC ELEMENT COMPRISING A COMBINATION OF A DEVELOPMENT INHIBITING RELEASING COUPLER AND A BLEACH ACCELERATOR RELEASING COMPOUND

William J. Begley, Webster; Stephen P. Singer, Spencerport; David T. Southby, Rochester, and Donald, Jr. Singleton, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 906,251

Int. Cl.[5] G03C *7/34, 7/32*

U.S. Cl. 430—382 **16 Claims**

1. A color photographic element comprising a support bearing at least one photographic silver halide emulsion layer, an image dye-forming coupler, and a combination of a development inhibitor releasing coupler and a wash-out coupler, the washout coupler (A) being distinct from the development inhibitor coupler and

(i) capable of forming a compound upon reaction with oxidized developer that is washed out of the photographic element upon processing or forms a compound which washes out after further reaction and

(ii) capable of releasing a bleach accelerator group, and

(iii) is represented by the formula:

$$(SOL)_x—COUP—(R^1)_y—(R^2)_z—BLEACH$$

wherein:

SOL is a water solubilizing group having the structure —$CONH_2$; COUP is a naphtholic coupler moiety having SOL in its 2-position;

R^1 is selected from a timing group and a releasing group;

R^2 is selected from —OC(O)—, —OC(S)—, —SC(O)— and —SC(S)—;

BLEACH is a bleach accelerator group;

x is 1, 2, or 3;

y is 1 or 2;

z is 1 or 2; and the development inhibitor releasing coupler selected from a timed and non-timed development inhibitor releasing coupler.

5,300,407

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING IMIDAZOPYRAZOLE TYPE COUPLER AND IMAGE FORMING METHOD USING SAID COUPLER

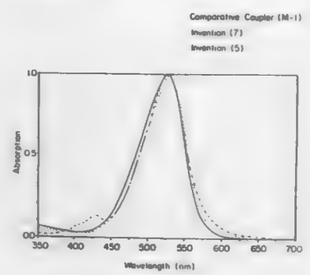
Koshin Matsuoka, and Tadahisa Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 2, 1991, Ser. No. 801,396

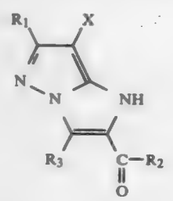
Claims priority, application Japan, Dec. 7, 1990, 2-400948

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—386 **18 Claims**



1. A magenta image forming method which comprises developing a silver halide photographic material with a developing solution containing an aromatic primary amine developing agent in the presence of an imidazo(1,2-b)-pyrazole type coupler represented by the following general formula (I):



(I)

wherein R_1 represents a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group or an aryl group; R_2 represents an alkoxy group, an aryloxy group or a substituted or unsubstituted amino group represented by the following formula:

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wherein R′ and R″, which may be the same or different, each represents a hydrogen atom, or an aryl group, or R′ and R″ may combine with each other to form a ring; R_3 represents an alkyl group or an aryl group; and X represents a halogen atom or a group bonded to the coupling position through a sulfur atom.

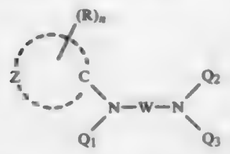
5,300,408

METHOD OF BLEACHING OR BLEACH-FIXING A COLOR SILVER HALIDE PHOTOGRAPHIC MATERIAL

Hisashi Okada, and Tadashi Inaba, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1992, Ser. No. 990,251
Claims priority, application Japan, Dec. 12, 1991, 3-350665
Int. Cl.[5] G03C *7/00, 5/44, 5/38, 5/42*
U.S. Cl. 430—393 **17 Claims**

1. A method for processing a silver halide color photographic material which has been imagewise exposed and developed in a developing solution, which method comprises processing the material with a processing solution containing at least one chelate compound of a metal salt selected from the group consisting of salts of Fe(III), Mn(III), Co(III), Rh(II), Rh(III), Au(II), Au(III) and Ce(IV) with an organic acid or a salt thereof, wherein said organic acid is represented by the following general formula (I):



(I)

wherein Z represents a nonmetallic atom group required to form a heterocyclic group; R represents a substituent; n represents 0 or an integer of from 1 to 10; Q_1, Q_2, and Q_3 each represents a hydrogen atom, an aliphatic hydrocarbon group substituted by a carboxyl group, an aromatic hydrocarbon group substituted by a carboxyl group or a heterocyclic group substituted by a carboxyl group; and W represents a divalent linkage group containing at least one of an alkylene group, or an arylene group.

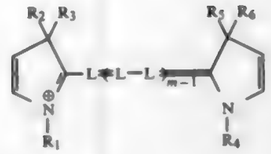
5,300,409

METHOD FOR PROCESSING A DYE CONTAINING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

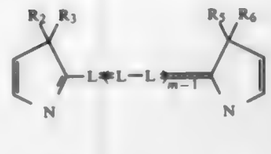
Hiroyuki Ushiroyama, and Kazuhiro Yoshida, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 9, 1990, Ser. No. 611,285
Claims priority, application Japan, Nov. 13, 1989, 1-294430
Int. Cl.[5] G03C *1/76, 1/825, 1/83*
U.S. Cl. 430—428 **1 Claim**

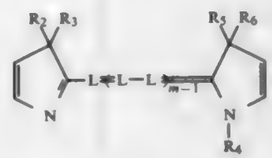
1. A method for processing a light-sensitive silver halide photographic material comprising: developing, fixing and washing or stabilizing the light-sensitive material, wherein the washing or stabilizing time is not longer than 15 seconds and wherein a replenishing solution for the washing or stabilizing is in an amount of not more than 3 liters per square meter of the light-sensitive material, which photographic material comprises a support, and a hydrophilic colloidal layer on each side of the support, wherein either one of the hydrophilic colloidal layers contains a dye represented by the following formulas Ia, Ib or Ic



Ia



Ib



Ic

wherein R_1, R_2, R_3, R_4, R_5 and R_6 each represent an alkyl group; Y_1 and Y_2 each represent a group consisting of nonmetal atoms necessary to form a pyrrolopyridine ring, with the proviso that in the formulas Ib and Ic Y_1 and Y_2 contain a bond of



respectively L is a methine group; X- is an anion; m is an integer of 4 or 5; n is an integer of 1 or 2, provided that n is 1 when the dye forms an intramolecular salt; wherein at least two of R_1, R_2, R_3, R_4, R_5, R_6, Y_1 and Y_2 are acid groups or at least two of R_1, R_2, R_3, R_4, R_5, R_6, Y_1 and Y_2 are substituents having at least one of group of the formula $—CH_2CH_2OR$ in which R is a hydrogen atom or an alkyl group; and

wherein the side of the light sensitive material having the hydrophilic colloidal layer containing the dye has a gelatin content of not more than 3.0 g/m2.

5,300,410

DEVELOPER FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

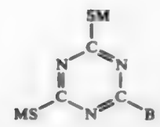
Sukeaki Date; Eiichi Terashima; Toshiro Kondo; Eiji Matsubara; Masao Okushima, and Seiichi Sumi, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 798,995, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 554,523, Jul. 20, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,458
Claims priority, application Japan, Jul. 21, 1989, 1-186265; Mar. 30, 1990, 2-083106
Int. Cl.[5] G03C *5/305*
U.S. Cl. 430—488 **8 Claims**

1. A developer for silver halide photographic light-sensitive material which contains at least one of the compounds represented by

Formulas I, II and III as follows:

Formula I:



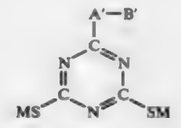
I

wherein M represents a hydrogen atom, an alkali metal or NH_4, and B represents a hydroxyalkyl group, or



R_1 and R_2 each representing a hydrogen atom or —X—Y group in which X represents a divalent group and Y represents a carboxyl group or a hydroxyl group;

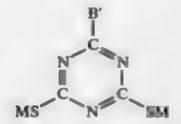
Formula II:



II

wherein M represents a hydrogen atom, an alkali metal or NH_4, A′ represents an organic divalent group, and B′ represents $—SO_3M'$, —COOM′, $—SO_2NHR_3$, $—CONHR_3$, or —OH wherein M′ represents a hydrogen atom, an alkali metal atom or NH_4, and R_3 represents a hydrogen atom or an alkyl group of 1–3 carbon atoms; and

Formula III:



III

wherein M and B′ are the same as defined in the above Formula II;

wherein content of the compound is about 0.005 g–about 5 g per 1 liter of the developer;

and wherein said developer further contains an antifoggant selected from the group consisting of 5-nitroindazole, 5-nitrobenzimidazole, 5-methyl-benzotriazole, 5-nitrobenzotriazole, benzothiazole, and 1-phenyl-5-mercaptotetrazole.

5,300,411

PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS

Melvin D. Sterman, Pittsford; Alfred B. Fant, Rochester; Melvin M. Kestner, Hilton; Dennis E. Smith, and Gary W. Visconte, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,714
Int. Cl.[5] G03C *1/00*
U.S. Cl. 430—496 **12 Claims**

1. A photographic element comprising at least one light-sensitive layer on a support said element containing in at least one layer, a first particulate matte material and a second particulate material, said first particulate material being polymeric particles bonded to gelatin and the second particulate material being colloidal silica having a particle size of less than 50 nm, said first particulate size of less than 50 nm, said first particulate matte material having a means particle size of from 1 to 5 micrometers.

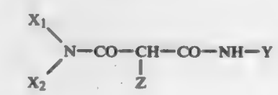
5,300,412

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

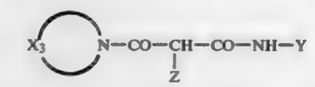
Keiji Mihayashi, and Naoki Saito, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 28, 1992, Ser. No. 843,161
Claims priority, application Japan, Mar. 1, 1991, 3-57697
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—503 **21 Claims**

1. A silver halide color photographic material having at least one light-sensitive silver halide emulsion layer or light-insensitive layer on a support, wherein the light-sensitive silver halide emulsion layer or a light-insensitive layer contains a yellow coupler selected from the group consisting of a yellow coupler represented by the following formula (I), a yellow coupler represented by the following formula (II) and combinations thereof, and a cyan coupler selected from the group consisting of a phenolic cyan coupler having a phenylureido group at the 2-position and a carbonamido group at the 5-position, a naphtholic cyan coupler having an amino group at the 5-position and combinations thereof;



(I)



(II)

wherein X_1 and X_2 each represents an alkyl group, an aryl group, or a heterocyclic group; X_3 represents an organic group capable of forming a nitrogen-containing heterocyclic group with >N—; Y represents an aryl group or a heterocyclic group; and Z represents a group capable of being released at the reaction of the coupler shown by the foregoing formula and an oxidation product of a developing agent.

5,300,413

PHOTOELECTRIC ELEMENTS FOR PRODUCING SPECTRAL IMAGE RECORDS RETRIEVABLE BY SCANNING

James E. Sutton, Rochester; John Gasper, Hilton; Allen K.-C. Tsaur, Fairport, and Ann Tarn, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1992, Ser. No. 982,358
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—503 **16 Claims**

1. A multicolor photographic element comprised of

a support and, coated on the support,

a plurality of emulsions for individually recording imagewise exposure in one of at least two different regions of the visible spectrum, each of the emulsions for recording imagewise exposure being tabular grain emulsions having an average aspect ratio of at least 2,

wherein

in each of the tabular grain emulsions tabular grains exhibiting a mean equivalent circular diameter of greater than 0.4 micrometer and a mean thickness of less than 0.2 micrometer account for greater than 90 percent of total grain projected area,

no more than one of the tabular grain emulsions exhibits a mean tabular grain thickness of less than 0.07 micrometer,

each of the remaining tabular grain emulsions exhibits a coefficient of variation of tabular grain thickness of less than 15 percent, and

the mean tabular grain thicknesses of emulsions for recording imagewise exposure to different regions of the visible spectrum differs by at least 0.02 micrometer.

VOL 1161 ISS 1 AP 5 1994 UMI

5,300,414

PHOTOGRAPHIC MATERIAL CONTAINING UV ABSORBER

David G. Leppard, Marly; Vien V. Toan, Lentigny, and Mario Slongo, Tafers, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

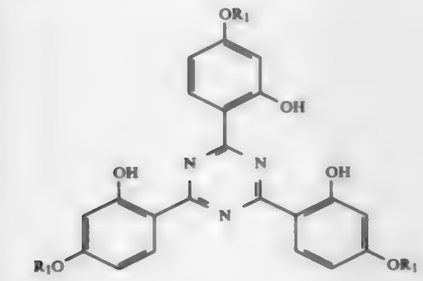
Filed Sep. 1, 1992, Ser. No. 939,507

Claims priority, application Switzerland, Sep. 5, 1991, 2607/91

Int. Cl.[5] G03C 1/46

U.S. Cl. 430—507 22 Claims

1. A photographic material comprising, on a base, blue-sensitive, green-sensitive and/or red-sensitive silver-halide emulsion layers and, if desired, a protection layer, a layer containing a UV absorber being arranged between the uppermost silver-halide emulsion layer and the protection layer, or on top of the uppermost silver-halide layer, wherein the UV absorber conforms to the formula



(I)

in which

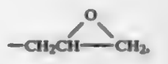
the radicals E_1, E_2 and E_3, independently of one another, are alkyl having 1 to 18 carbon atoms substituted by $—CO_2R_2$,

where R_2 is alkyl having 1 to 18 carbon atoms, or oxygen-, sulfur- or nitrogen-interrupted alkyl or hydroxyalkyl having 3 to 30 carbon atoms, hydroxyalkyl having 2 to 18 carbon atoms, alkenyl having 3 to 18 carbon atoms, glycidyl, cycloalkyl having 5 to 8 carbon atoms, benzyl, alkylphenyl having 1 to 12 carbon atoms in the alkyl moiety, phenyl, furfuryl or a radical of the formula $—CH_2CH(OH)R_7$,

R_7 is phenylalkyl having 1 to 6 carbon atoms in the alkyl moiety or a radical of the formula $—CH_2OR_8$, and

R_8 is cyclohexyl, benzyl, phenyl or tolyl; or

the radicals E_1, E_2 and E_3, independently of one another, are radicals of the formula $—CH_2—CH(OR_x)R_y$, $—CH_2CH(OR_x)CH_2OR_y$,



$—CH_2COR_y$ or $—CH_2COCH_2OR_y$, where

R_x is H, $—COR_v$, $—COOR_w$ or $—SiR_pR_qR_r$,

R_y is C_1–C_{18}alkyl or phenyl-C_1–C_4alkyl,

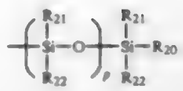
R_v is C_1–C_{18}alkyl, C_2–C_{18}alkenyl, phenyl-C_1–C_4alkyl, $—COR_v$ or oxygen-interrupted C_2–C_{24}alkyl or C_2–C_4hydroxyalkyl,

R_w is C_1–C_{18}alkyl, C_2–C_{18}alkenyl or phenyl,

R_w is C_1–C_4alkyl, and

R_p, R_q and R_r, independently of one another, are C_1–C_6alkyl or phenyl; or

the radicals E_1, E_2 and E_3, independently of one another, are G-II groups, where II is a group of the formula



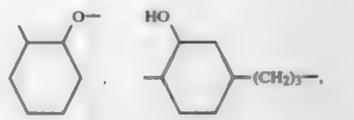
(II)

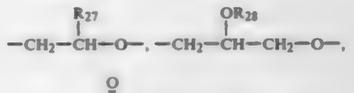
and G is a direct bond or a divalent group of one of the following formulae:

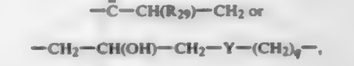
$—(CH_2)_q—$, $—(CH_2)_q—O—$, $—(CH_2)_q—O—R_{26}—$,

$—(CH_2)_q—CO—X—(CH_2)_r—$,

$—(CH_2)_q—CO—X—(CH_2)_r—O—$,







$—C(=O)—CH(R_{29})—CH_2$ or

$—CH_2—CH(OH)—CH_2—Y—(CH_2)_q—$,

in which q and r, independently of one another, are 1–4 and p is 0–50.

R_{26} is C_1–C_{12}alkylene, cyclohexylene or phenylene,

R_{27} is C_1–C_{12}alkyl, C_5–C_8cycloalkyl, phenyl, C_2–C_{13}alkoxymethyl, C_6–C_9cycloalkoxymethyl or phenoxymethyl,

R_{28} is a group of the formula G-II,

R_{29} is hydrogen or methyl,

X is —O— or $—NR_{23}—$, in which R_{23} is hydrogen, C_1–C_{12}alkyl or a $—(CH_2)_3—$G-II or $—(CH_2)_3—O—$G-II group,

Y is —O— or —NH—, and

R_{20}, R_{21} and R_{22}, independently of one another, are C_1–C_{18}alkyl, cyclohexyl, phenyl or C_1–C_{18}alkoxy.

5,300,415

PHOTOGRAPHIC PAPER

Erika M. Sato, Rochester, N.Y., and Peter D. Marsden, North Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 941,333, Sep. 4, 1992, Pat. No. 5,252,424.

This application Jul. 15, 1993, Ser. No. 92,292

Int. Cl.[5] G03C 1/84

U.S. Cl. 430—513 15 Claims

1. A photographic element comprising a paper substrate with a polyolefin coating provided on at least one surface, a hydrophilic colloid layer on the polyolefin coating, and at least one light sensitive silver halide emulsion above the hydrophilic colloid layer, wherein said hydrophilic colloid layer comprises a removable antihalation material and about 20 to 85 percent by weight white pigment.

5,300,416

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Junichi Yamanouchi; Satoru Toda; Nobuaki Ohmori, and Yuichi Ohashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1992, Ser. No. 910,394

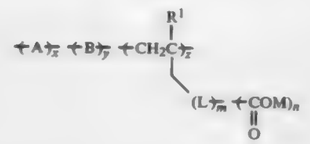
Claims priority, application Japan, Jul. 9, 1991, 3-193596

Int. Cl.[5] G03C 1/85

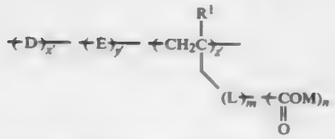
U.S. Cl. 430—529 10 Claims

1. A silver halide photographic light-sensitive material comprising a support having provided thereon at least one light-sensitive silver halide emulsion layer, wherein the material contains an anionic crosslinked polymer dispersion containing a polymer represented by Formula (I), and the material further contains an anionic water soluble polymer represented by Formula (II):

Formula (I)



Formula (II)



wherein A represents a repetitive unit formed by copolymerizing a crosslinking monomer having at least two copolymerizable ethylenically unsaturated groups; B and E each represent a monomer unit formed by copolymerizing copolymerizable ethylenically unsaturated monomers; R^1 represents a hydrogen atom, a substituted or unsubstituted lower alkyl group, or a halogen atom; L represents a di- to tetravalent linkage group; M represents a hydrogen atom or a cation; m represents 0 or 1; n represents 1, 2 or 3; D represents a monomer unit formed by copolymerizing at least one monomer selected from the group consisting of N,N-dimethylacrylamide, N-acryloylmorpholine, and N-acryloylpiperidine; x, y, z, x', y' and z' each represent a percentage of a monomer component, provided that x is from 1 to 70, y is from 0 to 50, and z is from 25 to 90, x' is from 1 to 99, y' is from 0 to 50, and z' is from 1 to 99, wherein $x+y+z=100$ and $x'+y'+z'=100$;

wherein the polymers represents by Formula (I) and Formula (II) are present in a ratio of from 60 to 99% by weight for the polymer of Formula (I), based on the sum of the weights of the polymers represented by Formula (I) and Formula (II); and

wherein the polymers represented by Formula (I) and Formula (II) are present in a total amount of from 0.1 to 20 g per m^2 of the light-sensitive material.

5,300,417

PHOTOGRAPHIC ELEMENT CONTAINING STRESS ABSORBING PROTECTIVE LAYER

Kenneth J. Lushington, Rochester; Richard P. Szajewski, both of Rochester, and Kevin M. O'Connor, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 720,360, Jun. 25, 1991, abandoned.

This application Dec. 10, 1992, Ser. No. 989,750

Int. Cl.[5] G03C 1/76

U.S. Cl. 430—536 9 Claims

1. A light sensitive photographic element comprising a support bearing at least one light sensitive silver halide emulsion layer, a non-light sensitive overcoat layer, and at least one non-light sensitive stress absorbing layer between the emulsion layer and the overcoat layer, wherein the stress absorbing layer comprises a polymer latex and hydrophilic colloid in a mass ratio greater than or equal to about 1:1, the polymer latex having a glass transition temperature of less than about 5° C.

5,300,418

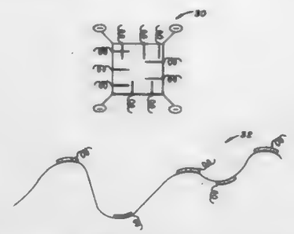
VISCOSITY CONTROL OF PHOTOGRAPHIC MELTS

Gary W. Visconte, Rochester; Pranab Bagchi, Webster; James A. Friday; Michael W. Orem, both of Rochester, all of N.Y., and Alan R. Pitt, Hertfordshire, United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,978

Int. Cl.[5] G03C 1/08

U.S. Cl. 430—546 29 Claims



1. A melt for the coating of a layer in a photographic element comprising a solution of water, gelatin and in solution an anionically charged, hydrophobic group containing compound that is water soluble or soluble in a solution of 5 to 20 percent of water miscible organic solvent,

said melt being further characterized by containing an amount of an amphiphilic compound which is sufficient to reduce the viscosity of said melt, said compound selected from the class consisting of:

Type A: Sugar (saccharidic) compounds, characterized by having one to three hydrophobic groups, each group containing from about 6 to about 22 carbon atoms, and having one or more attached hydrophilic mono- or oligosaccharidic hydrophilic chains; and

Type B: Compounds comprising a hydrophobic group having from about 6 to about 22 carbon atoms and having one or two attached hydrophilic chains comprising at least 4 oxyethylene and/or glycidyl ether groups and mixtures thereof.

5,300,419

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Nobuo Seto; Hiroyuki Yoneyama; Masakazu Morigaki; Hidekazu Sakai; Hidetoshi Kobayashi, and Shigeru Yamazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

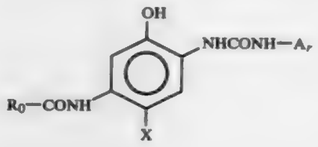
Filed May 27, 1992, Ser. No. 888,858

Claims priority, application Japan, May 28, 1991, 3-150897; Jan. 22, 1992, 4-29904

Int. Cl.[5] G03C 7/34, 7/392

U.S. Cl. 430—551 26 Claims

1. A silver halide color photographic material containing at least one cyan dye forming coupler of formula (C-1) and at least one compound of formula (I) in the same layer of the material:



(C-1)

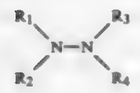
VOL 1161 ISS 1 AP 5 1994 UMI

wherein

R_0 represents an alkyl group, an alkenyl group, an aryl group, or a heterocyclic group;

X represents a hydrogen atom, or a group capable of being split off by a coupling reaction with the oxidation product of an aromatic primary amine color developing agent; and

Ar represents an aromatic group;



(I)

wherein

R_1, R_2, R_3 and R_4 represents an alkyl group;

R_1 and R_2, or R_3 and R_4 may be directly bonded to each other to form a 5-membered to 8-membered ring along with the nitrogen atom in the formula;

provided that R_1 and R_3, or R_2 and R_4 are not bonded to each other to form a ring, and that the sum of the carbon atoms of R_1, R_2, R_3 and R_4 is 6 or more.

5,300,420

STABILIZERS FOR PHOTOTHERMOGRAPHY WITH NITRILE BLOCKING GROUPS

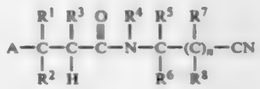
Raymond J. Kenney, Woodbury, and Larry R. Krepski, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 1, 1993, Ser. No. 69,517

Int. Cl.[5] G03C *1/06, 1/00*

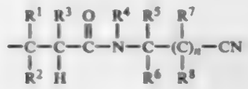
U.S. Cl. 430—615 **17 Claims**

1. A photothermographic composition comprising a photographic silver halide, an organic silver salt, a reducing agent for the organic silver salt, and a stabilizer having a nucleus of the formula:



wherein

A represents a post-processing stabilizer in which a hydrogen atom of the post-processing stabilizer (AH) has been replaced by



R^1, R^2, and R^3, are independently hydrogen or methyl and with the proviso that R^1 can represent aryl group when R^2 and R^3 are hydrogen;

R^4 is hydrogen or a lower alkyl group of from 1 to 4 carbon atoms;

R^5 and R^6 independently represent hydrogen, an alkyl group, a cycloalkyl group or, an aryl group;

R^7 and R^8 are independently hydrogen or lower alkyl groups of 1 to 4 carbon atoms; and

n is 0 or 1.

5,300,421

METHOD FOR QUANTITATIVE MEASUREMENT OF TRACE ENZYME AND SUBSTRATE USED THEREIN

Nobuhito Masuda; Nobuo Suzuki; Shoji Ishiguro, and Mitsunori Ono, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 368,615, Jun. 20, 1989, abandoned. This application Jul. 8, 1991, Ser. No. 727,347

Claims priority, application Japan, Jun. 20, 1988, 63-151802

Int. Cl.[5] C12Q *1/00*; G01N *33/53*

U.S. Cl. 435—4 **21 Claims**

1. A substrate for use in a quantitative measurement of an enzyme, characterized in that said substrate has a molecular structure comprising:

at least one structure (A) having a contact site and a recognition or binding site for reaction with the enzyme to be assayed;

at least one labelling structure (B) capable of forming photographically developable nuclei upon contact with silver halide grains after contacting the substrate with the enzyme to be assayed; and

at least one structure (C) cable of being specifically adsorbed by an absorbent.

wherein said at least one labelling structure (B) is linked through said at least one structure (A) with at least one structure (C) in a manner that does not destroy the reactivity of the at least one structure (A) with the enzyme to be assayed, and wherein said at least one structure (C) is capable of being released from the substrate upon reaction of the substrate with the enzyme to be assayed.

5,300,422

SCREENING METHOD FOR CONTROLLING AGRANULOCYTOSIS

Stanton L. Gerson, Pepper Pike, and Herbert Meltzer, Shaker Heights, both of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Dec. 4, 1991, Ser. No. 802,162

Int. Cl.[5] C12Q *1/00*; G01N *33/48*

U.S. Cl. 435—4 **14 Claims**

1. A method of detecting vulnerability to agranulocytosis complications in a patient on clozapine therapy before the onset of agranulocytosis which comprises establishing the concentration of N-desmethylclozapine in the blood serum or bone marrow of said patient, comparing the concentration of N-desmethylclozapine in the blood serum or bone marrow of said patient to a pre-set vulnerability level which is a concentration range of between 1.0 to 2.0 μg/ml of N-desmethylclozapine, and correlating the concentration of N-desmethylclozapine in the blood serum or bone marrow of said patient to a condition of vulnerability to agranulocytosis complications.

5,300,423

SPECIFIC BINDING ASSAY INVOLVING SEPARATION OF LIGHT EMISSIONS

Steven J. Zoha, Jarrettsville, Md.; James E. Davis; Alan R. Craig, both of Wilmington, Del., and Alan M. Hochberg, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 648,005, Jan. 30, 1991, Pat. No. 5,192,510. This application Sep. 3, 1992, Ser. No. 940,371

Int. Cl.[5] G01N *21/43, 21/03, 33/533, 33/543*

U.S. Cl. 435—7.1 **2 Claims**

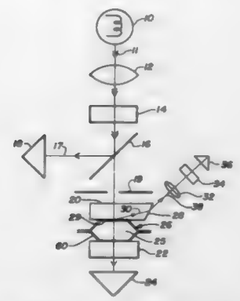
1. A method for determining an analyte in a sample involving a tagged reagent which is either a specific binding partner for said analyte or an analyte analog conjugated to the tag, the tag capable of producing inelastic scattering of excitation radiation, said method employing an apparatus comprising:

a sample holder formed of a transparent film having a higher refractive index than said sample,

a prism contacting a wall of the sample holder, said prism having an exit surface at an angle such that radiation from uncomplexed tag reaches the exit surface at an angle of incidence beyond the critical angle, whereby the uncomplexed tag radiation is totally internally reflected by the exit surface and the evanescent radiation passes through the exit surface;

said method comprising:

immobilizing either analyte analog or specific binding partner for the analyte on the inner surface of said wall of the sample holder such that said prism contacts the outer surface of said wall of the sample holder forming an optical interface with the sample,



placing a sample in said sample holder with said tagged reagent and allowing complexes containing said tag to form at the inner surface of said wall of the sample holder adjacent the optical interface between the sample holder and prism.

exciting said sample with excitation radiation to excite said tag, thereby producing bulk radiation from the uncomplexed tag and evanescent radiation from the complexed tag passing through said wall of the sample holder into the prism at the optical interface, and

measuring the evanescent radiation which passes through said exit surface as an indication of the amount of analyte in the sample.

5,300,424

COMPOSITION FOR PRESERVATION OF DIAGNOSTIC TEST REAGENTS

Gerhard Hoss, Weilheim; Gunter Pappert, Tutzing, and Axel Schmidt, München, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 12, 1991, Ser. No. 729,332

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1990, 4022878

Int. Cl.[5] G01N *33/53*

U.S. Cl. 435—7.1 **5 Claims**

1. In a diagnostic test kit containing diagnostic test reagents for determination of an analyte the improvement comprising a preservation reagent in said diagnostic test reagents or in a buffer solution, wherein said preservation reagent consists of 2-hydroxypyridine-N-oxide in an active concentration of from 0.1 to 0.5% and at least one other reagent selected from the group consisting of 2-methyl-4-isothiazoline-3-one hydrochloride, chloroacetamide, (N,N-methylene-bis-(N-1-hydroxymethyl)-2,5-dioxo-4-imidazolidinyl))-urea and 5-bromo-5-nitro-1,3-dioxane.

5,300,425

METHOD TO PRODUCE IMMUNODIAGNOSTIC REAGENTS

Lawrence M. Kauvar, San Francisco, Calif., assignor to Terrapin Technologies, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 255,906, Oct. 11, 1988, Pat. No. 5,217,869, which is a continuation-in-part of Ser. No. 108,130, Oct. 13, 1987, abandoned. This application Dec. 6, 1989, Ser. No. 447,009

Int. Cl.[5] G01N *33/53, 33/543, 33/557*

U.S. Cl. 435—7.9 **2 Claims**

1. A method to select a successful member from a panel of candidate drugs, said successful member being capable of binding to a known receptor, which method comprises:

(a) providing a profile of reactivity of said receptor against a panel of maximally diverse mimotopes;

(b) providing a panel of antibodies which is an inverse image of said maximally diverse panel of mimotopes in that each antibody binds to one of said mimotopes with a binding constant at least twenty times greater than that with any of the other mimotopes in the panel;

(c) preparing a profile of the binding of the candidate drug to the members of the inverse image antibody panel;

(d) matching the mimotype-binding profile of the receptor with the inverse image profile of the candidate drug, and

(e) selecting as said successful member a candidate drug which has an inverse image profile which is similar to the mimotype-binding profile of the receptor.

5,300,426

Patent Not Issued For This Number

5,300,427

BUFFER SOLUTIONS CONTAINING COLLAGENASE, THEIR PREPARATION AND USE FOR DILUTING HUMAN SERA

Paolo Fabrizi, Monteriggioni, and Francesco Donnini, Arezzo, both of Italy, assignors to Sclavo S.p.A., Siena, Italy

Filed Jun. 11, 1991, Ser. No. 713,072

Claims priority, application Italy, Jun. 13, 1990, 20630A/90

Int. Cl.[5] C12Q *1/37, 1/34*; C12N *9/50*

U.S. Cl. 435—7.92 **5 Claims**

1. A pH 7.0–7.5 phosphate buffer solution for diluting human sera for immunoassays containing type IV collagenase in a concentration of 1000–3000 U/l, sodium chloride, bovine serum albumin, Brij-35, aggregate human IgG and sodium azide.

5,300,428

ELECTROCHEMICAL DETECTION OF GROWTH OF MICRO-ORGANISMS

Martin R. Ackland; John K. Blundell, both of Wantage; William M. Hedges, Winchester, and James F. Walpole, Oxfordshire, all of United Kingdom, assignors to CMB Packaging (UK) Limited, Worcester, United Kingdom

Continuation of Ser. No. 520,442, May 8, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 905,220

Claims priority, application United Kingdom, May 8, 1989, 8910539; Sep. 18, 1989, 8921068

Int. Cl.[5] C12Q *1/04, 1/10*; C12M *1/34, 1/18*

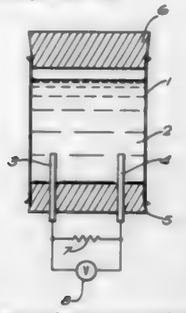
U.S. Cl. 435—34 **14 Claims**

1. A method for detecting anaerobic growth of a bacterial micro-organism in a sterile nutrient medium, wherein said bacterial micro-organism is capable of interaction with an indicator species as specified hereafter, said method consisting essentially of:

(a) forming a solution of said nutrient medium and an indicator species selected from the group consisting of riboflavin, riboflavin phosphate, naphthoquinone, 2-hydroxy-

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1,4-naphthoquinone, nitrobenzaldehyde, and 7,8-dimethylalloxazine, with said indicator species being capable of accepting electrons from a cathode and of interacting with said bacterial micro-organism during anerobic growth thereof so that the ability of the indicator species to accept electrons is altered in dependence on the growth of said bacterial micro-organism, and



(b) sensing the change of one or more electrical properties of said solution while in direct contact with two electrodes, one of which is a cathode.

5,300,429

PHB-FREE GELLAN GUM BROTH

John K. Baird, and Joseph M. Cleary, both of San Diego, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 839,723, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 571,397, Aug. 23, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 21,635

Int. Cl.[5] C12P *19/04*

U.S. Cl. 435—101 **3 Claims**

1. A biologically pure culture of Pseudomonas elodea strain LPG-2 having all of the identifying characteristics of ATCC 53967, said culture which produces broth containing recoverable amounts of gellan gum by submerged, aerobic fermentation of an assimilable carbon source wherein said gellan gum broth contains no more than 0.019% (w/v) of poly-β-hydroxybutyrate, wherein the width of ATCC 53967 is between about 0.4–0.5 μm and the length is between about 1.5–2.5 μm.

5,300,430

BIOCATALYTIC PROCESS FOR THE PRODUCTION OF L-(−)-CARNITINE FROM CROTONOBETAINE AND STRAINS OF PROTEUS FOR USE IN SAID PROCESS

Stuart Shapiro, Zürich, Switzerland; Manrico Bernardini, Rome, Italy, and Charles J. Sih, Madison, Wis., assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Continuation of Ser. No. 699,599, May 14, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,403

Claims priority, application Italy, May 14, 1990, 47953 A/90

Int. Cl.[5] C12P *13/00;* **C12N** *1/20*

U.S. Cl. 435—128 **9 Claims**

1. A microbiological process for producing L-(−)-carnitine that comprises:

(a) preparing a surface culture on a solid medium of a microorganism capable of steroselectively hydrating crotonobetaine to L-(−)-carnitine;

(b) preparing a catalytically-active biomass by inoculating a liquid medium containing crotonobetaine with the culture obtained in step (a);

(c) separating the biomass from the liquid medium;

(d) incubating the separated biomass in a biotransformation fluid containing at least 10% (w/v) of crotonobetaine inner salt for a time and under conditions sufficient for the production of L-(−)-carnitine, and

(e) recovering L-(−)-carnitine from the biotransformation fluid, wherein said microorganism is selected from the group consisting of *Proteus mirabilis* NRRL B-18480, *Proteus mirabilis* NRRL B-18481, *Proteus mirabilis* NRRL B-18482, and *Proteus mirabilis* NRRL B-18483.

5,300,431

POSITIVE SELECTION VECTOR FOR THE BACTERIOPHAGE P1 CLONING SYSTEM

James C. Pierce, Wilmington, Del., and Nat L. Sternberg, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 26, 1991, Ser. No. 662,224

Int. Cl.[5] C12N *15/00, 1/21, 15/70, 15/11*

U.S. Cl. 435—172.3 **5 Claims**



1. A vector comprising a positive selection cassette for use in an *Escherichia coli* host, said cassette comprising,

(a) a SacB gene from *Bacillus amyloliquifaciens*, the expression of which is lethal to a *Escheriehia coli* host;

(b) SfiI and SalI restriction sites upstream of the SacB gene;

(c) Sp6 and T7 RNA polymerase promoters bordering a BamHI restriction site between them and located upstream of the SalI restriction site;

(d) a NotI restriction site upstream of the T7 promoter;

(e) a consensus *Escherichia coli* promoter which controls expression of the SacB gene and which is upstream of the NotI restriction site;

(f) a PlcI repressor protein binding site overlapping said consensus *Escherichia coli* promoter for the binding of a PlcI protein and the control of said consensus promoter;

(g) a P1 lytic replicon for the amplification of the vector under derepression; and

(h) a P1 plasmid replicon for maintaining single copy number of the vector under conditions of lytic replicon repression, wherein lethal expression of the SacB gene in the *Escherichia coli* host can be blocked either by expression of a PlcI repressor gene or by cloning a large molecular weight DNA fragment into the GamHI site between the Sp6 and T7 RNA polymerase promoters.

5,300,432

OCTANUCLEOTIDE RESTRICTION ENDONUCLEASE, SRF I, AND METHOD FOR PRODUCING THE SAME

Timothy G. Simcox, and Mary E. Simcox, both of Del Mar, Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 778,772, Oct. 18, 1991. This application May 20, 1993, Ser. No. 65,078

Int. Cl.[5] C12N *9/22*

U.S. Cl. 435—199 **7 Claims**

1. An isolated restriction endonuclease Srf I having endonuclease specificity for, and a cleavage site in, a double stranded nucleotide sequence represented by the formula:

5' GCCC•GGGC 3'

3' CGGG•CCCG 5'

wherein G and C respectively represent the nucleotides guanine and cytosine and • represents the Srf I cleavage site in each strand of said sequence.

5,300,433

METHODS FOR THE INACTIVATION OF VIRUSES IN VIRAL-CONTAMINATED PHARMACEUTICAL COMPOSITIONS

Michael E. Hrinda, Gwynedd Valley; Rose D'Alisa, Warrington, and George C. Tarr, Jeffersonville, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation of Ser. No. 366,855, Jun. 15, 1989. This application Sep. 25, 1991, Ser. No. 765,479

Int. Cl.[5] C12N *7/06, 7/04;* **A61K** *35/14;* **C07K** *15/04*

U.S. Cl. 435—238 **11 Claims**

1. A redundant process for rendering a blood product selected from the group consisting of prothrombin, Factor II, Factor VII, Factor IX, Factor X, Protein C and Protein S containing labile blood proteins and HIV viruses, free of active HIV viruses, which comprises:

(a) chromatographing said blood product on a monoclonal antibody affinity matrix to purify it;

(b) eluting the chromatographed blood product from the monoclonal antibody affinity matrix with an effective amount of sodium thiocyanate which does not denature said blood product;

(c) allowing the eluted mixture to sand for a period of time and at a temperature sufficient to inactivate substantially all of said HIV viruses;

(d) dialyzing said eluted mixture to remove said sodium thiocyanate; and

(e) removing said inactivated and residual active HIV viruses from said eluted mixture.

5,300,434

HYBRIDOMA CELL LINE PRODUCING AN ANTIBODY TO TYPE-I COLLAGEN AMINO-TERMINAL TELOPEPTIDE

David R. Eyre, Mercer Island, Wash., assignor to Washington Research Foundation, Seattle, Wash.

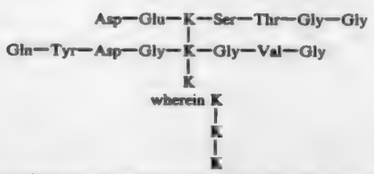
Continuation-in-part of Ser. No. 444,881, Dec. 1, 1989, Pat. No. 5,140,103, which is a continuation-in-part of Ser. No. 118,234, Nov. 6, 1987, Pat. No. 4,973,666. This application Nov. 21, 1990, Ser. No. 614,719

The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.

Int. Cl.[5] C12N *5/20;* **C07K** *15/28*

U.S. Cl. 435—240.2 **2 Claims**

1. A cell line that produces a specific binding partner that binds to first and second peptides consisting essentially of the structure



is hydroxylysyl pyridinoline or lysyl pyridinoline, and Gln is glutamine or pyrrolidine carboxylic acid, and wherein the pyridinium ring of the cross-linking amino acid in the first and second peptides is closed and open, respectively, the cell line having the identifying characteristics of ATCC HB 10611.

5,300,435

TRICHOPLUSIA NI CELL LINE WHICH SUPPORTS REPLICATION OF BACULOVIRUSES

Robert R. Granados, Ithaca, N.Y., assignor to Boyce Thompson Institute for Plant Research, Inc., Ithaca, N.Y.

Division of Ser. No. 839,918, Feb. 21, 1992, which is a continuation-in-part of Ser. No. 760,697, Sep. 16, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 938,821

Int. Cl.[5] C12N *5/00, 1/36*

U.S. Cl. 435—240.2 **4 Claims**

1. An isolated homogeneous cell line from the eggs of *Trichoplusia ni*, having all the identifying characteristics of BTI-TN-5-B1-4, ATCC CRL 10859.

5,300,436

GENETICALLY MODIFIED TYROSINE HYDROXYLASE AND USES THEREOF

Menek Goldstein; Jing Wu; David Filer, and Arnold J. Friedhoff, all of New York, N.Y., assignors to New York University, New York, N.Y.

Division of Ser. No. 669,446, Mar. 13, 1991, Pat. No. 5,212,082. This application Jan. 26, 1993, Ser. No. 9,075

Int. Cl.[5] C12N *15/00, 9/04*

U.S. Cl. 435—252.3 **14 Claims**

1. A DNA molecular encoding a variant tyrosine hydroxylase protein molecule having at least one amino acid substitution in the N-terminal fifty five amino acid residues of the wild-type protein sequence, said at least one substitution corresponding to an amino acid selected from Ser-8, Ser-31, Arg-37, Arg-38, Gln-39, Ser-40, Leu-41, Ile-42, Glue-43, Asp-44, Ala-45, Arg-46 or Lys-47 of a rat or human tyrosine hydroxylase, wherein the tyrosine hydroxylase enzymatic activity of said variant protein is substantially greater than the enzymatic activity of the wild-type protein and wherein said substitution is selected from a larger amino acid for a smaller amino acid, a smaller amino acid for a larger amino acid, a hydrophilic amino acid for a hydrophobic amino acid, or a hydrophobic amino acid for a hydrophilic amino acid.

5,300,437

ENANTIOMERIC ENRICHMENT AND STEREOSELECTIVE SYNTHESIS OF CHIRAL AMINES

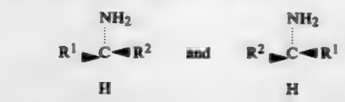
David I. Stirling, Branchburg; George W. Matcham, Bridgewater, and Andrew L. Zeitlin, Millington, all of N.J., assignors to Celgene Corporation, Warren, N.J.

Continuation-in-part of Ser. No. 549,830, Jul. 9, 1990, Pat. No. 5,169,780, which is a continuation-in-part of Ser. No. 430,433, Nov. 1, 1989, abandoned, and Ser. No. 369,723, Jun. 22, 1989, Pat. No. 4,950,606. This application Oct. 9, 1992, Ser. No. 959,147

Int. Cl.[5] C12P *13/02, 7/26, 7/38*

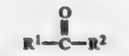
U.S. Cl. 435—280 **16 Claims**

1. A process for the enantiomeric enrichment of a mixture of two enantiomeric chiral amines of the formula:



in which R^1 and R^2 together are a tetramethylene or pentamethylene chain, at least one hydrogen atom of which is replaced by an enzymatically non-inhibiting group which imparts chirality to said amine,

which comprises bringing said mixture of chiral amines, in an aqueous medium and in the presence of an amino acceptor, into contact with an omega-amino acid transaminase which is enzymatically active with respect to the depicted amino group of one of said chiral amines, at least until a substantial amount of one of said chiral amines is converted to a ketone of the formula:



in which R^1 and R^2 are as defined for said amine.

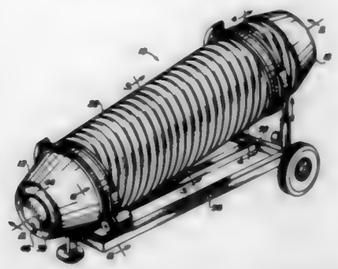
VOL 1161 ISS 1 AP 5 1994 UMI

5,300,438

COMPOSTING APPARATUS

Quent Augspurger, and Charles H. Bartlett, both of Phoenix, Ariz., assignors to Augspurger Engineering, Phoenix, Ariz.

Filed Jul. 6, 1992, Ser. No. 908,367
Int. Cl.[5] C12M *1/10, 1/02*
U.S. Cl. 435—312 **11 Claims**



1. An apparatus for receiving and decomposing organic materials and discharging a compost, said apparatus comprising:

(a) a body having a wall with exterior and interior surfaces defining a decomposition chamber, said body being fabricated from a section of corrugated metal pipe of the type having helical corrugations extending around the exterior and interior wall surfaces of the pipe, said body having an inlet at one end and an outlet at the opposite end;

(b) a frame having support means for rotatively supporting said body thereon;

(c) drive means including motor means for rotating said body in a predetermined rotational direction and at a predetermined rotational speed;

(d) elevation means for selectively positioning said body in a predetermined position to control residence time within the decomposition chamber and to accommodate loading and unloading; and

(e) baffles extending axially along the internal wall of the decomposition chamber which baffles, along with the interior helical corrugations, will mix the organic material and move the material between the inlet to the outlet as the body rotates at a predetermined speed and rotational direction as decomposition occurs.

5,300,439

METHOD, DEVICE, AND COMPOSITION FOR THE ASSAY OF IONS

Steven C. Charlton, Osceola, Ind., assignor to Miles Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 564,050, Aug. 6, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 919,250
Int. Cl.[5] G01N *21/78, 33/52*
U.S. Cl. 436—74 **37 Claims**

2. A method of determining the presence or concentration of a predetermined ion in a test sample comprising:

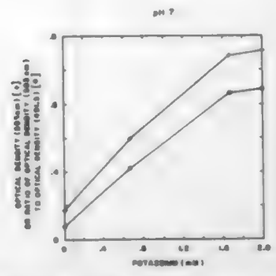
(a) contacting the test sample with an analyte detection device, wherein said analyte detection device includes a hydrophilic test pad impregnated with a homogeneous hydrophilic indicator reagent composition consisting essentially of:

(i) a hydrophobic ion-specific ionophore capable of forming a complex with the predetermined ion;

(ii) a hydrophobic reporter substance capable of interacting with said complex formed by the ionophore and the predetermined ion to provide a detectable response; and

(iii) a hydrophilic polymer compound;

(b) examining the analyte detection device for a detectable response; and



(c) correlating the detectable response to the concentration of the predetermined ion in the test sample.

5,300,440

PROTEIN ASSAY METHOD

Aftab Alam, 731 Leland Ave., St. Louis, Mo. 63130

PCT No. PCT/GB90/00859, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/19198, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 4, 1990, Ser. No. 862,755
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—86 **10 Claims**

1. A method of assaying protein which comprises the following steps:

(a) contacting together a protein-containing solution and an alkaline copper solution, the alkali concentration in the alkaline copper solution being from 0.2N to 2N;

(b) contacting the product of Step (a) with Folin reagent to form an intermediate solution, the amount of Folin reagent being such that the initial pH of the intermediate solution, immediately on formation, is from 11 to 12;

(c) allowing the intermediate solution to incubate at ambient temperature until the optical density of the intermediate solution reaches a maximum value; and

(d) reading this maximum optical density in order to determine the amount of protein in said protein-containing solution.

5,300,441

METHOD FOR MEASURING AND DETERMINING NITROGEN CONTENT IN A SAMPLE AND PROVIDING AN OUTPUT DATA OF TOTAL NITROGEN AND SELECTED CONSTITUENT NITROGEN COMPOUNDS INCLUDING NITRATE AND NITRITE

Eugene M. Fujinari, Spring, Tex., and Allen J. Britten, Sydney, Canada, assignors to Antek Instruments, Inc., Houston, Tex.

Continuation of Ser. No. 654,080, Feb. 11, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 16,172
Int. Cl.[5] G01N *21/62, 21/76*
U.S. Cl. 436—110 **15 Claims**

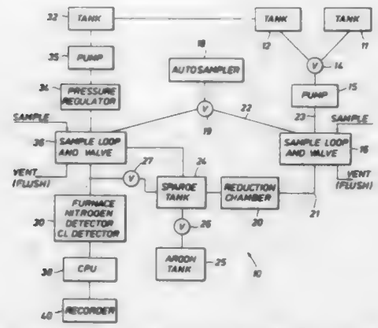
1. A method of treating an aqueous test sample in a test system having a test sample receiving means connected to deliver a test sample for testing in a chemiluminescent test chamber forming a light emission observed and measured by a light responsive output means to analyze for chemically bound nitrogen contained in said test sample comprising the steps of:

(a) forming from said test sample three (3) smaller samples having essentially equal volume and chemical composition;

(b) submitting a first smaller sample in the test system to oxidizing conditions sufficient to convert the total chemically bound nitrogen in said first small sample to form NO_x;

(c) converting said NO_x to NO and subsequently to NO_2^* which decays to be ground state accompanied by emission of quanta of light thereby performing a chemiluminescent measurement of said emission of light and determining total chemically bound nitrogen in said first smaller sample;

(d) carrying a second smaller sample through a selective reduction step in aqueous solution to reduce any NO_2- therein to NO gas, and thereafter converting said NO to NO_2^* thereby performing a chemiluminescent measurement and determining total NO_2- in said second smaller sample;



(e) carrying a third smaller sample through a selective reduction step in aqueous solution to reduce any NO_3- therein to NO_2- and thereafter treating said third smaller sample to convert said NO_2- to NO gas and subsequently to convert said NO gas to NO_2^* performing a chemiluminescent measurement and determining total NO_3- in said third smaller sample; and

(f) forming measurement data outputs representing total bound nitrogen, total NO_2-, total NO_3-, and other nitrogen compounds in the original test sample.

5,300,442

METHOD AND DEVICE FOR MEASURING CHLORINE CONCENTRATIONS WITH ENHANCED SENSITIVITY

Martin Frant, Newton, Mass., assignor to Orion Research, Inc., Cambridge, Mass.

Filed May 9, 1991, Ser. No. 697,880
Int. Cl.[5] G01N *27/00, 27/76*
U.S. Cl. 436—125 **9 Claims**

5. A method of enhancing the electrochemical measurement accuracy of a neutral test solution containing iodide ion, comprising the step of introducing therein a sufficient amount of zinc to react with stray iodine and thereby render it unable to interfere with a desired electrochemical measurement.

5,300,443

METHOD FOR FABRICATING COMPLEMENTARY ENHANCEMENT AND DEPLETION MODE FIELD EFFECT TRANSISTORS ON A SINGLE SUBSTRATE

Randy L. Shimabukuro; Michael E. Wood, and Oswald I. Csanadi, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1993, Ser. No. 94,541
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **34 Claims**

1. A method for fabricating complementary enhancement and depletion mode field effect transistor on a single substrate, comprising the steps of:

a) patterning a structure of a layer of silicon formed on an insulating substrate to form first, second, third, and fourth silicon islands to form a wafer;

b) doping said second island with a p-type dopant;

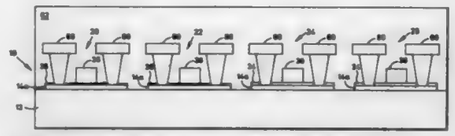
c) doping said third island with a p-type dopant;

d) doping said fourth island with an n-type dopant;

e) forming a first electrically insulating gate layer on said third and fourth islands;

f) forming a second electrically insulating gate layer on said first and second island;

g) forming an electrically conductive gate over said first and second electrically insulating gate layers;



h) doping said second island with an n-type dopant;

i) doping said fourth island with an n-type dopant;

j) doping said first and third islands with a first p-type dopant; and

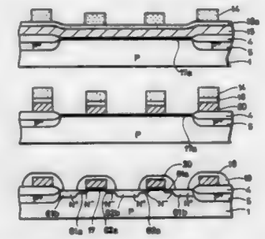
k) doping said first and third islands with a second p-type dopant.

5,300,444

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A STACKED STRUCTURE FORMED OF POLYCRYSTALLINE SILICON FILM AND SILICON OXIDE FILM

Atsushi Hachisuka; Masao Nagatomo; Ikuo Ogoh; Hideki Genjou; Yoshinori Okumura, and Takayuki Matsukawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 405,167, Sep. 11, 1989. This application Apr. 30, 1991, Ser. No. 693,505
Claims priority, application Japan, Sep. 14, 1988, 63-230818
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—29 **20 Claims**



1. In a method for manufacturing a semiconductor device including the steps of:

forming a polycrystalline silicon film on the major surface of a semiconductor substrate,

forming a silicon oxide film on said polycrystalline silicon film,

forming a resist film on said silicon oxide film, and

using said resist film as a mask for selectively removing both said silicon oxide film and said polycrystalline silicon film, the improvement comprising:

preventing formation of notches at a lower surface of the polycrystalline silicon film in the step of using said resist film as a mask,

said step of preventing notches including executing the step of forming said silicon oxide film on said polycrystalline silicon at a temperature not more than 800° C. whereby the silicon oxide film has a residual stress not more than 10^9 dyn/cm^2.

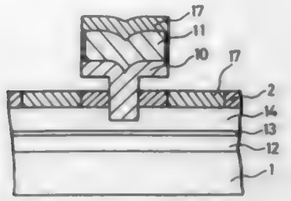
VOL 1161 ISS 1 AP 5 1994 UMI

5,300,445

PRODUCTION METHOD OF AN HEMT SEMICONDUCTOR DEVICE

Tomoki Oku, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 687,294, Apr. 18, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 950,762
Claims priority, application Japan, Sep. 20, 1990, 2-252709
Int. Cl.[5] H01L *21/338*
U.S. Cl. 437—40 **2 Claims**



1. A method of producing an HEMT comprising:
depositing a thermohardening resin on a compound semiconductor substrate including an active region;
covering regions of said semiconductor substrate corresponding to gate electrode, drain electrode, and source electrode production regions on said thermohardening resin with photoresist;
irradiating said thermohardening resin with a particle beam using said photoresist as a mask to harden the thermohardening resin where irradiated by said particle beam;
removing said photoresist;
removing said thermohardening resin at said gate electrode production region not hardened by said particle beam to expose said compound semiconductor substrate at said gate electrode production region;
etching said exposed compound semiconductor substrate to produce a recess groove reaching said active region;
depositing a metal in said recess groove forming a Schottky barrier with said active region;
removing said thermohardening resin at said source and drain electrode producing regions not hardened by said particle beam to expose said compound semiconductor substrate at said source and drain production regions; and
depositing a metal producing ohmic electrodes on the exposed semiconductor substrate at the source and drain production regions.

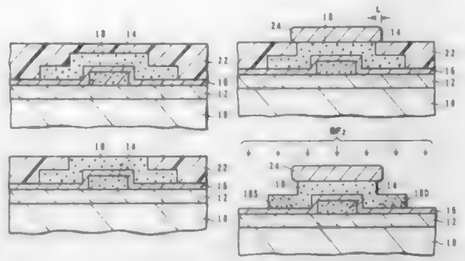
5,300,446

METHOD OF MAKING STAGGERED GATE MOSTFT

Toshio Fujioka, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed May 5, 1993, Ser. No. 57,747
Claims priority, application Japan, May 8, 1992, 4-143306
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **6 Claims**

1. A method of manufacturing an under-gated semiconductor device comprising the steps of:
forming a gate electrode layer on an insulating surface of a substrate;
forming a gate insulating film covering said gate electrode layer;
forming a semiconductor layer on said gate insulating film to overlie said gate electrode layer;
forming a flat coating film covering said semiconductor layer;
etching back said coating film to partially expose a surface of said semiconductor layer at an area overlying said gate electrode layer and to leave said coating film at two side areas of the exposed surface;
selectively growing a mask material layer on the exposed surface of said semiconductor layer with a side-projection, by using said left coating film as a mask; and
removing said left coating film and selectively injecting



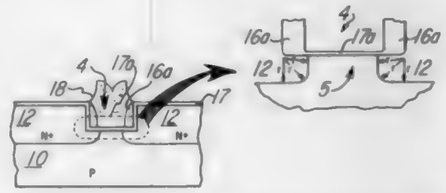
impurity ions in said semiconductor layer to form an impurity doped source region and an impurity doped drain region at opposite sides of said gate electrode region, by using said mask material layer as an ion injection mask.

5,300,447

METHOD OF MANUFACTURING A MINIMUM SCALED TRANSISTOR

Dirk N. Anderson, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 29, 1992, Ser. No. 953,632
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—41 **8 Claims**



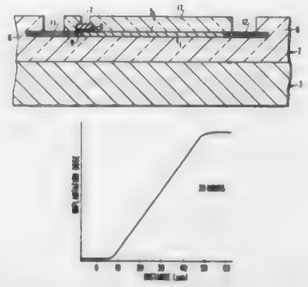
7. A method of making a self aligned recessed channel MOS transistor, comprising the steps of:
forming a recess in a face of a semiconductor wafer, the recess having a bottom;
forming sidewall insulators in the recess;
forming a thin gate dielectric in the recess;
forming a transistor gate in the recess between the sidewall insulators;
forming transistor source and drain diffusions in the face of the semiconductor wafer on sides of the recess; and
annealing the source and drain diffusions, the annealing causing the source and drain diffusions to outdiffuse around the bottom of the recess, thereby creating a transistor channel below the bottom of the recess, self aligned to the transistor gate within the trench.

5,300,448

HIGH VOLTAGE THIN FILM TRANSISTOR HAVING A LINEAR DOPING PROFILE AND METHOD FOR MAKING

Steven L. Merchant, Yorktown Heights, and Emil Arnold, Chappaqua, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 650,391, Feb. 1, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,061
Int. Cl.[5] H01C *21/266*
U.S. Cl. 437—41 **11 Claims**



1. In a method of manufacturing high voltage thin film transistors the steps comprising
(a) providing a thin layer of monocrystalline silicon over an oxide layer on a silicon substrate,
(b) decreasing resistivity of said thin layer of silicon by uniformly introducing impurities into said thin layer of silicon,
(c) forming a mask over said thin layer of silicon, said mask having a plurality of openings, each of said openings laterally increasing in dimension from that of a proceeding opening,
(d) introducing impurities into said thin layer of silicon through said plurality of openings to form a plurality of doped regions of different width,
(e) removing said mask, capping said thin layer of silicon with silicon nitride, and annealing to form a linear doping profile from said plurality of doped regions over a lateral distance of said thin layer of silicon, wherein said linear doping profile is formed with a minimum doping concentration at one end of said lateral distance and a maximum doping concentration at a second opposite end of said lateral distance,
(f) removing said silicon nitride at regions beyond edges of said lateral distance, thermally oxidizing exposed areas of said thin layer of silicon, and thereafter removing remaining portions of said silicon nitride, and
(g) forming a structure with said thin layer of silicon having said linear doping profile.

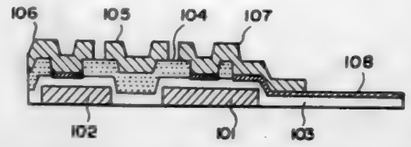
5,300,449

ACTIVE MATRIX SUBSTRATE FOR LIQUID-CRYSTAL DISPLAY AND METHOD OF FABRICATING THE ACTIVE MATRIX SUBSTRATE

Fujio Okumura, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 570,382, Aug. 21, 1990, Pat. No. 5,191,453. This application Oct. 16, 1992, Ser. No. 963,387
Claims priority, application Japan, Aug. 23, 1989, 1-217913
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—48 **2 Claims**

1. A method of fabricating an active matrix substrate for a liquid-crystal display having a plurality of individual transparent electrodes and a plurality of thin-film transistors both arranged in a matrix form, said method comprising the steps of:
forming a first silicon thin film in which impurities high in concentration are doped onto a transparent substrate, and patterning said first silicon thin film into source and drain regions;
forming a second silicon thin film on said source and drain regions, and patterning said second silicon thin film into a first island region which covers said source and drain regions and a second island region which is contiguous to said first island region and is slightly larger than the configuration of said transparent electrode;
forming an insulating film on said second silicon thin film;



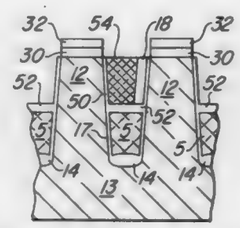
forming in said insulating film at least a pair of contact holes over said source and drain regions, and a hole identical with the configuration of said individual transparent electrode on said second island region of said second silicon thin film;
forming a metal silicide by heat-treating said metal; and
patterning said metal to form a gate, a source, and a drain line.

5,300,450

HIGH PERFORMANCE COMPOSED PILLAR DRAM CELL

Bing W. Shen; William F. Richardson, both of Richardson, and Robert R. Doering, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 700,726, May 15, 1991, abandoned, which is a continuation of Ser. No. 200,823, Jun. 1, 1988, Pat. No. 5,103,276. This application Sep. 25, 1992, Ser. No. 951,639
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **14 Claims**



1. A method of forming a memory array at a surface of a silicon body of a first conductivity type, comprising:
etching a trench grid at selected locations of said surface to leave a plurality of pillars arranged in rows and columns;
forming an isolation structure at the bottom of said trench grid;
forming a storage dielectric on the sides of said pillars;
forming a field plate grid disposed over said isolation structure and separated form said pillars by said storage dielectric;
forming a gate dielectric on a side of each pillar in a first row of pillars;
forming a thick dielectric on a side of each pillar in a second row of pillars, said second row of pillars being adjacent said first row of pillars on the side of said gate dielectric;
forming a polysilicon gate over said gate dielectric of each pillar in said first row of pillars;
forming a metal word line for said first row of pillars disposed over said field plate grid and between the polysili-

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con gate for the pillars in said first row and the thick dielectric for the pillars in said second row;

forming a diffusion at the tops of said pillars in said first row; and

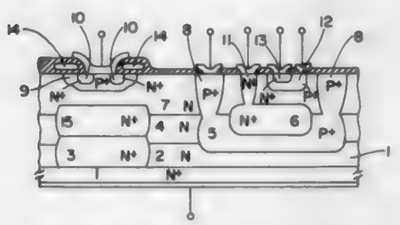
forming a bit line for with each column of pillars, each said bit line contacting the diffusion at the top of the pillar in said first row associated with its column.

5,300,451

PROCESS FOR FORMING A BURIED DRAIN OR COLLECTOR REGION IN MONOLITHIC SEMICONDUCTOR DEVICES

Raffaele Zambrano, Catania CT, Italy, assignor to SGS Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 685,541, Apr. 15, 1991, abandoned.
This application Oct. 27, 1992, Ser. No. 967,553
Claims priority, application Italy, Apr. 20, 1990, 6609 A/90
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—59 **18 Claims**



9. A process for forming a buried drain or collector region in monolithic, integrated, semiconductor devices containing an integrated control circuit and a power transistor with vertical current flow comprising the following steps:

growing a first epitaxial layer having a second type of conductivity on a substrate having a first type of conductivity,

introducing through the surface of said first epitaxial layer opposite of said substrate a high concentration of a dopant of a first type of conductivity having a high diffusion coefficient, whereby such introduction creates a first region which joins with said substrate to form a buried drain or collector region of said power transistor,

introducing through the surface of said first epitaxial layer opposite of said substrate a concentration of dopant of a first type of conductivity whereby such introduction creates at least one second and one third region in said first epitaxial layer where one second region is located on top of said first region and separated from said third region,

growing a second epitaxial layer over said first epitaxial layer possessing a first type of conductivity,

introducing through the surface of said second epitaxial layer opposite of said first epitaxial layer a concentration of dopant possessing a second type of conductivity whereby such introduction forms separated regions constituting at least one fifth region which is a portion of said power transistor and at least on sixth region which is connected to said first epitaxial layer; and,

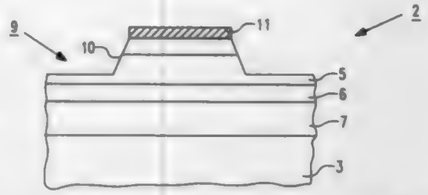
introducing through the surface of said second epitaxial layer opposite of said first epitaxial layer a concentration of dopant possessing a first type of conductivity whereby such introduction forms separated regions constituting at least one seventh region which is a portion of said power transistor located within said fifth region and at least one eighth region which is connected to said third region.

5,300,452

METHOD OF MANUFACTURING AN OPTOELECTRONIC SEMICONDUCTOR DEVICE

Chang V. J. M. Chang, and Johannes C. N. Rijpers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 27, 1992, Ser. No. 966,797
Claims priority, application European Pat. Off., Dec. 18, 1991, 91203349.5
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—126 **8 Claims**



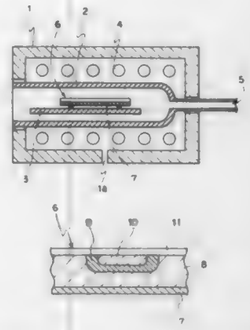
1. A method of manufacturing an optoelectronic semiconductor device whereby a surface of a semiconductor body, which is built up from a number of semiconductor material layers epitaxially grown on a semiconductor substrate with a top layer of GaAs adjoining the surface and a subjacent layer comprising InP, is provided with an etching mask, after which the top layer and the subjacent layer are locally etched away in a plasma which is generated in a gas mixture comprising $SiCl_4$ and Ar, characterized in that CH_4 is added to the gas mixture in which the plasma is generated.

5,300,453

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

Yuji Okamura; Koichi Kudo, and Yasuo Aki, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 10, 1993, Ser. No. 29,226
Claims priority, application Japan, Mar. 27, 1992, 4-071441
Int. Cl.[5] H01L *21/225*
U.S. Cl. 437—142 **11 Claims**



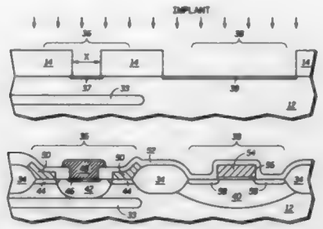
1. A method for producing a semiconductor device, which comprises steps of: covering a lower side of a semiconductor wafer with a heavy metal and disposing the semiconductor wafer in a chamber; causing the heavy metal to diffuse into the semiconductor wafer by heating the semiconductor wafer with a heat source having a small thermal capacity; and thereafter, ceasing to heat with the heat source, then charging the chamber with a cooling gas.

5,300,454

METHOD FOR FORMING DOPED REGIONS WITHIN A SEMICONDUCTOR SUBSTRATE

Robert C. Taft, and Ravi Subrahmanyan, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 24, 1992, Ser. No. 982,164
Int. Cl.[5] H01L *21/22*
U.S. Cl. 437—154 **24 Claims**



1. A method for forming a first doped region and a second doped region of a semiconductor integrated circuit, the method comprising the steps of:

providing a substrate;

forming a masking layer overlying the substrate, the masking layer having a first region and a second region wherein the first region of the masking layer has a feature defined by a first geometry and the second region of the masking layer has a feature defined by a second geometry;

using a single doping step to form both the first doped region and the second doped region within the substrate, the first doped region having a first doping concentration and being formed under the first region of the masking layer, and the second doped region having a second doping concentration and being formed under the second region of the masking layer, the first doping concentration being different from the second doping concentration;

forming a first semiconductor device within the first doped region; and

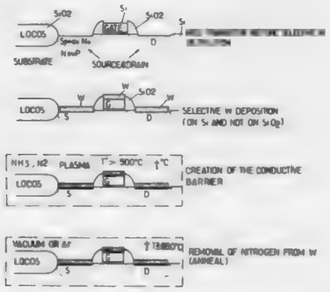
forming a second semiconductor device from the second doped region, the first semiconductor device being physically separated from the second semiconductor device.

5,300,455

PROCESS FOR PRODUCING AN ELECTRICALLY CONDUCTIVE DIFFUSION BARRIER AT THE METAL/SILICON INTERFACE OF A MOS TRANSISTOR

Bernard Vuillermoz, Grenoble; Mouloud Bakli, Meylan, and Alain Straboni, Eybens, all of France, assignors to France Telecom, Paris, France

Filed Dec. 13, 1991, Ser. No. 805,839
Claims priority, application France, Dec. 13, 1990, 90 15615
Int. Cl.[5] H01L *21/441, 21/324*
U.S. Cl. 437—190 **5 Claims**



1. A method for producing an electrically conductive diffusion barrier at a metal/silicon interface of an integrated circuit in which, following a selective deposition of metal onto silicon to form the metal/silicon interface, the method comprises the steps of:

subjecting the interface to a nitrogen-based plasma during a period of at least five minutes;

adjusting the temperature of the interface to greater than 500° C. during said step of subjecting to form a diffusion barrier comprising a silicon nitride layer at the interface; and

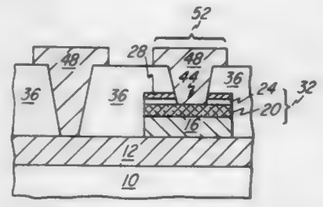
annealing the interface and the diffusion barrier under a neutral atmosphere to remove nitrogen introduced into the metal during the steps of subjecting and adjusting.

5,300,456

METAL-TO-METAL ANTIFUSE STRUCTURE

Howard L. Tigelaar, Allen, and George Misium, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 17, 1993, Ser. No. 79,194
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **18 Claims**



1. A method of forming an antifuse structure on a semiconductor device comprising the steps of:

a. depositing a first layer of conducting material on said semiconductor device;

b. depositing a dielectric layer over said first conducting layer;

c. depositing an etchstop layer over said dielectric layer;

d. etching said etchstop layer, said dielectric layer, and said first metal layer to form an antifuse stack;

e. depositing a layer of interlevel oxide over said antifuse stack and said semiconductor device;

f. etching an antifuse via in said interlevel dielectric layer to expose a portion of said antifuse stack, wherein said antifuse via extends through said interlevel dielectric layer to said antifuse stack;

g. removing a portion of said etchstop layer located at said antifuse via to expose a portion of said dielectric layer;

h. depositing a second layer of conducting material over said interlevel dielectric layer, and said exposed portion of said dielectric layer such that said second conducting layer fills said antifuse via; and

i. etching said second conducting layer.

5,300,457

METHOD AND DEVICE FOR THE INSERTION OF CHIPS INTO HOUSINGS IN A SUBSTRATE BY AN INTERMEDIATE FILM

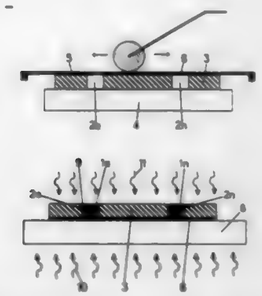
Andre Schiltz, Saint Ismier; Louis Thevenot, Meylan, and Aime Vareille, Echirolles, all of France, assignors to France Telecom, Paris, France

Filed Feb. 4, 1992, Ser. No. 830,636
Claims priority, application France, Feb. 4, 1991, 91 01232
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **12 Claims**

1. Method for the insertion of chips having a front face equipped with connection pads, into transverse housings formed in a plate substrate, having an interconnection network on a front face, comprising:

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bonding an intermediate adhesive film to the front face of the substrate;
introducing the chips respectively into the housing;
holding the chips on the intermediate adhesive film, the front faces of the chips being applied on the intermediate adhesive film, thereby fixing the chips in the housing;
providing a space between the wall of the housings of the substrate and the chips, said space extending around each



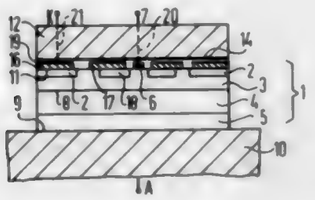
chip and having a thickness of from about 20 to 100 microns; and
injecting in the spaces a fluid sealing material that penetrates into the spaces by capillary action and which, after hardening, holds the chips fixed in the housing of the substrate independently of the intermediate film, said injection occurring after bonding the chips to the intermediate holding film but prior to producing pads-network connections.

5,300,458

SEMICONDUCTOR COMPONENT AND METHOD FOR THE MANUFACTURE THEREOF

Reinhold Kuhnert, Munich, and Peter Tuerkes, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 884,152, May 18, 1992, abandoned. This application Feb. 25, 1993, Ser. No. 22,878
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4120827
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **9 Claims**



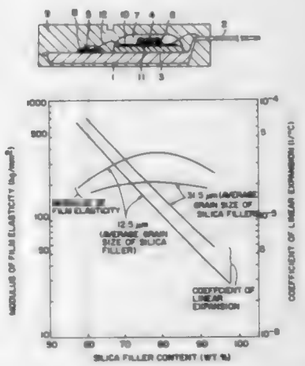
1. A method for manufacturing a semiconductor component, comprising the steps of:
providing a semiconductor body and an auxiliary member to be joined to the semiconductor body using pressure sintering;
applying a contacting layer on an upper side of the semiconductor body;
applying a paste formed of a metal powder and a solvent on at least one of said contacting layer at said upper side of said semiconductor body or an underside of said auxiliary member;
drying the applied paste; and
placing the auxiliary member with its underside on said contacting layer at said upper side of said semiconductor body and pressing the semiconductor body and auxiliary member together to pressure sinter at a sintering temperature with a pressure of at least 900 N/cm^2.

5,300,459

METHOD FOR REDUCING THERMAL STRESS IN AN ENCAPSULATED INTEGRATED CIRCUIT PACKAGE

Takao Ushikubo, Kawagoe, and Naoyuki Kuroe, Niiza, both of Japan, assignors to Sanken Electric Co., Ltd., Saitama, Japan

Continuation of Ser. No. 633,969, Dec. 26, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,329
Claims priority, application Japan, Dec. 28, 1989, 1-338246
Int. Cl.[5] H01L *21/56, 21/58, 21/60*
U.S. Cl. 437—211 **9 Claims**



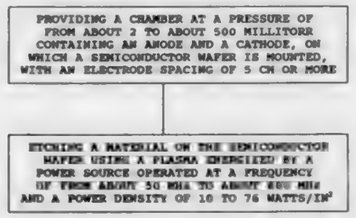
1. A method for manufacturing a circuit substrate device comprising the steps of:
preparing a circuit substrate with a semiconductor element wherein a conductive pattern is formed on a main surface of the substrate and wherein said semiconductor element is electrically connected via electrode lugs to said conductive pattern, main surfaces of said semiconductor element and said circuit substrate being placed in an opposite and spaced relation to each other;
filling an area defined between said circuit substrate and said semiconductor element with a first protective resin which contains granular silica of 85.5 to 96.5 by weight percent, a volatile solvent and a first resin selected from the group consisting of polyimide and polyamide, to produce a smaller coefficient of linear expansion of said first protective resin than that of said circuit substrate and a greater coefficient of linear expansion of said first protective resin than that of said semiconductor element;
applying a second protective resin over said semiconductor element and said first protective resin, said second protective resin containing granular silica, volatile solvent and a second resin selected from the group consisting of polyimide and polyamide, wherein the content of said granular silica in said second protective resin is smaller by 2 weight percent or more than that in said first protective resin to produce a greater coefficient of linear expansion of said second protective resin than that of said first protective resin; and
removing the volatile solvent substantially by volatilization from said first and second protective resins.

5,300,460

UHF/VHF PLASMA FOR USE IN FORMING INTEGRATED CIRCUIT STRUCTURES ON SEMICONDUCTOR WAFERS

Kenneth S. Collins, Morgan Hill; Craig A. Roderick, San Jose; Chan-Lon Yang, Los Gatos; David N. K. Wang, Saratoga, and Dan Maydan, Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 973,199, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 902,757, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 560,530, Jul. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 416,750, Oct. 3, 1989, abandoned. This application Mar. 16, 1993, Ser. No. 32,744
Int. Cl.[5] H01L *21/00, 21/02, 21/22, 21/265*
U.S. Cl. 437—225 **26 Claims**



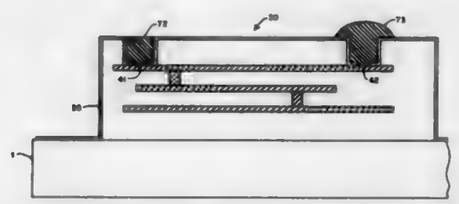
1. A low presure plasma-assisted RIE process for anisotropically etching silicon oxide in the fabrication of integrated circuit devices on semiconductor wafers characterized by the generation, in a vacuum etching chamber, of a plasma using a power source having a frequency range of from about 100 MHz up to about 250 MHz to provide a sheath voltage low enough to avoid risk of damage to devices on said wafer during said etching and maintained at a power density level ranging from about 30 to about 76 watts/inch^2 of wafer area, while flowing one or more fluorine-containing gases and one or more carbon-containing gases into said vacuum etching chamber containing an anode and a wafer mounted on a cathode and maintained at a pressure within a range of from about 2 to about 500 milliTorr to provide a silicon oxide etch rate of from about 0.3 to 0.75 microns/minute.

5,300,461

PROCESS FOR FABRICATING SEALED SEMICONDUCTOR CHIP USING SILICON NITRIDE PASSIVATION FILM

Chiu H. Ting, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 25, 1993, Ser. No. 8,469
Int. Cl.[5] H01L *21/80*
U.S. Cl. 437—227 **11 Claims**



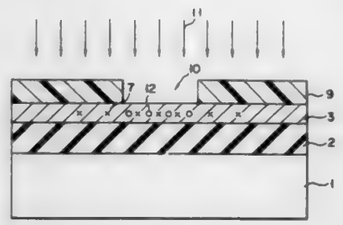
1. A process for forming a sealed computer chip comprising the steps of:
forming a plurality of electrical circuit devices on a silicon wafer having a silicon surface by the deposition of a plurality of device layers upon said silicon surface;
performing an etch step on said plurality of device layers, said etch step etching said device layers so as to expose a portion of said silicon surface, said etch step isolating said electrical circuit devices, each of said isolated electrical circuit devices forming a computer chip;
depositing a layer of passivation material over said silicon surface and over said computer chips, said layer of passivation material forming a seal over said silicon surface and said computer chips; and
selectively sawing portions of said silicon wafer so as to separate said computer chips.

5,300,462

METHOD FOR FORMING A SPUTTERED METAL FILM

Masakazu Kakumu, Mountain View, Calif., assignor to Kabushiki Kaisha Toshiba, Japan

Division of Ser. No. 480,919, Feb. 16, 1990. This application Jul. 8, 1992, Ser. No. 910,458
Claims priority, application Japan, Feb. 20, 1989, 1-39820
Int. Cl.[5] H01L *21/465, 21/324;* **C23C** *14/34*
U.S. Cl. 437—245 **18 Claims**



1. A method for alloying a sputtered metal film used in a semiconductor device comprising the steps of:
(a) forming a sputtered metal film over a major surface of a semiconductor substrate, said sputtered film substantially comprising first metal atoms of a first type;
(b) forming a first mask having at least one window, before said sputtered film is patterned, on said sputtered film;
(c) implanting using said first mask a first impurity including second metal atoms of a second type different from said first type into said sputtered film, thereby retaining at least said second metal atoms in said sputtered film;
(d) removing said first mask and forming a second mask having at least one window on said sputtered film;
(e) implanting using said second mask a second impurity including third metal atoms of a third type different from said first and second types into said sputtered film, thereby retaining at least said third metal atoms in said sputtered film; and
(f) forming a first alloy area in which at least said first metal atoms and said second metal atoms are mixed and a second alloy area in which at least said first metal atoms and said third metal atoms are mixed.

5,300,463

METHOD OF SELECTIVELY ETCHING SILICON DIOXIDE DIELECTRIC LAYERS ON SEMICONDUCTOR WAFERS

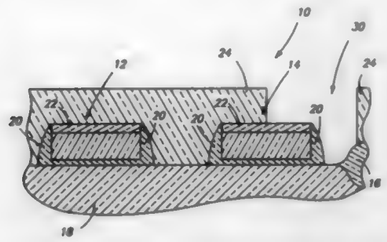
David A. Cathey, and J. Brett Rolfson, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 6, 1992, Ser. No. 847,368
Int. Cl.[5] H01L *21/00, 21/02, 21/465*
U.S. Cl. 437—228 **20 Claims**

1. A method of utilizing and etching SiO_2 in the processing of semiconductor wafers, the method comprising the following steps:
providing a layer of undoped SiO_2 atop a wafer;
providing a layer of doped SiO_2 atop the layer of undoped SiO_2; and

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wet etching the layer of doped SiO_2 selectively relative to the undoped layer of SiO_2 utilizing an acid solution, the acid solution comprising a mixture of at least two different mineral acids provided in a selected ratio relative to one



another, one of the mineral acids being HF, the other of the mineral acids being selected from the group consisting of H_2SO_4, H_3PO_4, HBr, HI, $HClO_4$, and HIO_4, or mixtures thereof.

5,300,464

NANOCRYSTALLINE MATERIALS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 818,347, Jan. 9, 1992, Pat. No. 5,173,454. This application Dec. 16, 1992, Ser. No. 991,098

Int. Cl.[5] C03C *10/04, 14/00*

U.S. Cl. 501—5 **12 Claims**

1. A method of producing a sintered, composite body having an oriented crystal structure, and a toughness of at least 18,000 ergs/cm^2 which comprises mixing a high aspect ratio phyllosilicate with a lithium disilicate or alkaline earth silicate prescursor glass for a glass-ceramic having crystals with an acicular or bladed morphology, extruding the mixture and sintering the extruded mixture to densify the material and to crystallize the glass-ceramic precursor glass.

5,300,465

PHOTOCHROMIC GLASSES WHICH DARKEN TO A PINK HUE

Luc Grateau, Paris, and Michel Prassas, Valaines, both of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 26, 1993, Ser. No. 96,226

Claims priority, application France, Feb. 1, 1993, 93 01034

Int. Cl.[5] C03C *4/06, 3/076, 3/093, 3/11*

U.S. Cl. 501—13 **3 Claims**

1. A transparent photochromic glass displaying a pink hue in the darkened state which, in bodies of 2 mm cross section, will exhibit the following optical properties:

(a) a clear (undarkened) luminous transmittance greater than 82%;

(b) a darkened luminous transmittance after 15 minutes' exposure to actinic radiation at 25° C. between about 20–32%;

(c) a darkened luminous transmittance after 15 minutes, exposure to actinic radiation at 40° C. between about 35–55%;

(d) a rate of fading such that the luminous transmittance after 5 minutes' removal from actinic radiation at 25° C. will be at least 30 percentage units higher and will exhibit a luminous transmittance greater than 50%;

(e) a x trichromatic coordinate between 0.3500 and 0.3700; and

(f) a y trichromatic coordinate between 0.3250 and 0.3450;

said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of

SiO_2	52–58	ZrO_2	1.5–2.8	K_2O	4–8

-continued

B_2O_3	16–21	Li_2O	2–3.5	CaO	2–3.5
Al_2O_3	6–9	Na_2O	0–2.5	TiO_2	1.2–2.5

with photochromic elements consisting essentially, as analyzed in weight percent, of

Ag	0.15–0.25	CaO	0.25–0.40
Br	0.06–0.13	CuO	0.003–0.007

and containing at least 2 ppm, but less than 10 ppm, Au and up to 0.9% Er_2O_3.

5,300,466

YELLOW HIGH SILICA GLASS

Thomas H. Elmer, and Sheryl L. Hultman, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 863,002, Apr. 6, 1992, Pat. No. 5,248,638. This application Jun. 28, 1993, Ser. No. 82,888

Int. Cl.[5] C03C *3/06, 1/10*

U.S. Cl. 501—54 **9 Claims**

1. A method of using a high silica glass to exhibit a yellow color by transmitted light, the glass having a peak transmittance at a wavelength at or greater than 560 nm, and wherein a porous, high silica glass is impregnated with a solution of additive oxide precursors and the impregnated, porous glass is thermally consolidated to a solid non-porous glass, the method being characterized by impregnating the porous glass with a solution containing oxide precursors in amounts equivalent to at least 0.095% Cr_2O_3, 0.136% ZnO and 0.136% Al_2O_3 by weight in the solution and consolidating the glass under conditions that are sufficiently oxidizing to maintain the chromium predominantly in the hexavalent state.

5,300,467

OPTICAL GLASS

Futoshi Ishizaki; Muneo Nakahara; Hiroshi Shishido, and Katsuhiko Yamaguchi, all of Sagamihara, Japan, assignors to Kabushiki Kaisha Ohara, Kanagawa, Japan

Filed Dec. 24, 1992, Ser. No. 996,666

Int. Cl.[5] C03C *3/064, 3/093*

U.S. Cl. 501—67 **11 Claims**

1. An optical glass which consists essentially of in weight percent:

	SiO_2	20–50%
	$B_2O_3 + Al_2O_3$	8–14%
in which	B_2O_3	8–14%
	Al_2O_3	0–6%
	$TiO_2 + ZrO_2$	5–20%
in which	TiO_2	0.5–15%
	ZrO_2	0.5–8%
	$MgO + CaO + SrO + BaO$	25–53%
in which	MgO	0–4%
	CaO	0–15%
	SrO	0.5–20%
	BaO	15–45%
	ZnO	0–15%
	$Li_2O + Na_2O + K_2O$	0.1–10%

and having a refractive index (Nd) of 1.57–1.75 and Abbe number (νd) of 30–55.

5,300,468

CARBONACEOUS ADSORBENT REGENERATION AND HALOCARBON DISPLACEMENT BY HYDROCARBON GASES

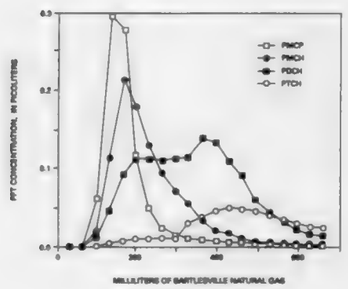
Gunnar I. Senum, and Russell N. Dietz, both of Patchogue, N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Jun. 30, 1992, Ser. No. 906,946

Int. Cl.[5] B01J *20/34;* **C07C** *17/38*

U.S. Cl. 502—34 **7 Claims**

1. A process for regeneration of a halocarbon-bearing carbon adsorbent comprising contacting said adsorbent with a hydrocarbon gas stream from the group consisting of propane, butane, pentane, natural gas and mixtures thereof at about



room temperature and atmospheric pressure whereby said halocarbons, which have been adsorbed on the carbon adsorbent, are displaced by said hydrocarbons.

5,300,469

COMPOSITION FOR PASSIVATING VANADIUM IN CATALYTIC CRACKING AND PREPARATION THEREOF

Michel Deeba, North Brunswick; John M. Macaoay, Linden, both of N.J.; Paul R. Suitch, Milledgeville, Ga., and Roland von Ballmoos, Belle Mead, N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Dec. 8, 1992, Ser. No. 987,519

Int. Cl.[5] B01J *20/12, 21/16*

U.S. Cl. 502—63 **17 Claims**

1. A spray drying process for manufacturing microspheres useful in fluid cracking of vanadium containing oil feedstock with separate fluidable microspheres containing a zeolitic cracking component, said process comprising mixing kaolin clay, magnesium oxide or magnesium hydroxide, and sodium silicate with water to form a slurry, aging said slurry to react a portion of the magnesium oxide or hydroxide with silica to form a magnesium silicate, spray drying the aged slurry to form microspheres comprising magnesium oxide, kaolin clay and in situ formed magnesium silicate, and calcining said microspheres for a time and temperature sufficient to dehydrate the kaolin clay but insufficient to form a significant amount of crystalline magnesium silicates or aluminates.

12. Attrition-resistant microspheres useful as a vanadium trap in fluid catalytic cracking, said microspheres comprising particles of free MgO in amount of at least 2% by weight, determined by X-ray, in admixture with particles of fine particle size anhydrous, X-ray amorphous kaolin clay, and a small amount of a magnesium silicate cement, the anhydrous kaolin being the predominating component of said microspheres, said microspheres having a BET surf ace area below 15 m^2/g, being free from substantial amounts of crystalline magnesium silicate and crystalline magnesium aluminate phases, and having an EAI below 2% by weight before and after steaming at 1480° F. for 4 hours with 100% steam, and a total pore volume in the range of 0.1 to 0.4 cc/g.

5,300,470

COMPONENTS AND CATALYSTS FOR THE POLYMERIZATION OF ETHYLENE

Illaro Cuffiani, and Umberto Zucchini, both of Ferrara, Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Jul. 15, 1992, Ser. No. 914,245

Claims priority, application Italy, Jul. 15, 1991, MI 91 A 001961

Int. Cl.[5] C09F *4/60*

U.S. Cl. 502—110 **15 Claims**

1. A solid catalyst component useful for the preparation of catalysts for the polymerization of ethylene and the copolymerization of ethylene with a small quantity of comonomer consisting of one or more C_3–C_{10} alpha olefins to very high molecular weight polymers, said component comprising the reaction product of:

(1) a liquid obtained by reacting:

(A) a titanium compound containing at least one Ti—OR bond, where R is C_1–C_{20} alkyl, C_3–C_{20} cycloalkyl or C_6–C_{20} aryl; with

(B) a magnesium compound selected from the group consisting of: (a) magnesium halides; (b) compounds comprising at least one —OR or —OCOR bonded to magnesium, where R is C_1–C_{20} alkyl, C_3–C_{20} cycloalkyl or C_6–C_{20} aryl; (c) organometallic compounds; and (d) the product produced by reacting or complexing the (a), (b) or (c) compound with electron-donor compounds; and

(2) a compound or composition capable of substituting in compound (A) at least one —OR with a halogen atom, and optionally reducing the titanium of compound (A) to a lower valence;

said catalyst component being in the form of particles having an average diameter smaller than 10 micrometers, and being capable of producing in the HMT standard test for the polymerization of ehtylene a polymer in particle form having an average diameter smaller than 150 micrometers.

5,300,471

Patent Not Issued For This Number

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5,300,472

CATALYST FOR SELECTIVE REDUCTION OF NITROUS OXIDES WITH AMMONIA

Reinhold Brand; Bernd Engler, both of Hanau; Wolfgang Honnen, Bruchkoebel; Edgar Koberstein, Alzenau, and Johannes Ohmer, Homburg, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 787,746, Nov. 5, 1991, Pat. No. 5,198,403, which is a continuation of Ser. No. 484,405, Feb. 26, 1990, abandoned. This application Dec. 31, 1992, Ser. No. 999,618

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906136

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] B01J *37/04, 21/06, 21/02, 21/04*

U.S. Cl. 502—309 16 Claims

1. A catalyst for selective reduction of nitrous oxide with ammonia, comprising the following components:

(A) titanium oxide;

(B_1) at least one oxide of tungsten, silicon, boron, aluminum, phosphorus, zirconium, barium, yttrium, lanthanum, and cerium, and

(B_2) at least one oxide of vanadium, niobium, molybdenum, iron, and copper, with an atomic ration between the elements of components (A) and (B_1 and B_2) ranging from about 1:0.001 to 1:1, produced by a process comprising:

intensively pre-kneading together component (A), in the form of a reactive, high-surface titanium oxide, with a BET surface of about 40–500 m^2/g, which consists essentially of the anatase modification, together with at least one precursor of component (B_1), and after pre-kneading, adding at least one precursor of component (B_2) and kneading, thereby forming a homogeneous kneaded mass,

extruding said kneaded mass to form a molded body;

drying said molded body while slowly raising the temperature up to a maximum of about 60° C., and

calcining said body by gradually raising the temperature, in ambient air, to a final temperature in the range of about 300°–800° C.

5,300,473

RECORDING MATERIAL COMPRISING CRYSTAL OF FLUORAN COMPOUND

Masakatsu Nakatsuka; Atsuo Otsuji; Kiyoharu Hasegawa, all of Yokohama; Kazuyoshi Kikkawa, and Akihiro Yamaguchi, both of Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

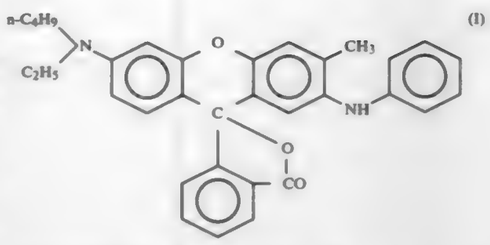
Division of Ser. No. 757,160, Sep. 10, 1991, Pat. No. 5,210,221. This application Mar. 8, 1993, Ser. No. 28,911

Claims priority, application Japan, Sep. 17, 1990, 2-243713; Nov. 8, 1990, 2-301073

Int. Cl.[5] B41M *5/30, 5/32*

U.S. Cl. 503—221 4 Claims

1. A recording material comprising a support having at least one layer thereon containing a color forming compound and at least one same or different layer thereon containing a developer, wherein said color forming compound is the crystalline form of a fluoran compound having the formula (I):



(I)

and exhibiting high peaks at diffraction angle (2θ) of 7.5° and 17.0° and relatively high peaks at diffraction angle (2θ) of 15.1°, 19.1°, 21.5° and 25.3° in an X-ray diffraction diagram by the Cu-Kα beam.

5,300,474

THERMAL TRANSFER DYESHEET

Kazuhiko Sakata, Tsukuba, Japan; Warren T. Smith, Sydney, Australia; Richard A. Hann, and Barry Pack, both of Ipswich, England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 24, 1991, Ser. No. 704,977

Claims priority, application United Kingdom, May 25, 1990, 9011525

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 6 Claims

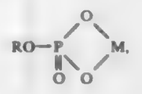
1. A dyesheet for thermal transfer printing, which comprises a base sheet having a thermal transfer dye layer on one surface and heat resistant backcoat on the other, wherein the backcoat comprises the reaction product of radically copolymerising in a layer of coating composition, the following constituents:

a) at least one organic compound having a plurality of radically polymerisable acrylic or methacrylic groups per molecule, and

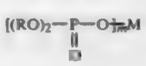
b) at least one organic compound having a single radically polymerisable acrylic or methacrylic group;

the backcoat also containing an effective amount as slip agent of:

c) a metallic salt of a phosphate ester, which is expressed by the following general formula (A) or (B):



(A)



(B)

in which R is an alkyl group of C_{8-30} or an alkylphenyl group, m is an integral number of 2 or 3, and M a metal atom.

5,300,475

SUBLIMATION THERMAL TRANSFER PRINTING SHEET COMPRISING NOVEL MAGENTA DYESTUFFS

Keisuke Takuma; Tsukasa Ohyama; Tamio Mikoda, all of Ohmuta; Isamu Ghoda, Kobe; Hitoshi Koshida, Nishinomiya, and Akitoshi Igata, Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 550,745, Jul. 10, 1990, Pat. No. 5,168,092, which is a continuation-in-part of Ser. No. 291,896, Dec. 29, 1988, abandoned. This application Aug. 31, 1992, Ser. No. 937,029

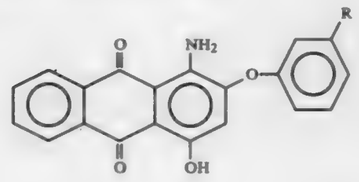
Claims priority, application Japan, Dec. 29, 1987, 62-333167; Dec. 29, 1987, 62-333168; Jan. 13, 1988, 63-003686

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

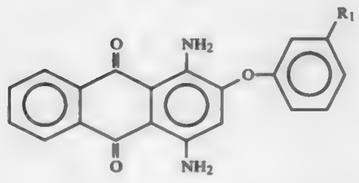
Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 3 Claims

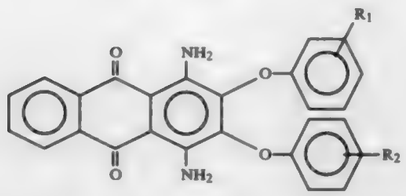
1. A sublimation thermaltransfer printing sheet comprising a substrate having applied thereto an ink comprising a dyestuff, a binder resin and a solvent, wherein said dyestuff comprises a compound of one of the formulas:



(1)



(2)



(3)

wherein R is a halogen atom, methyl or methoxy; wherein R_1 is a hydrogen atom, hydroxyl, a halogen atom, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; and wherein R_2 is a hydrogen atom, a halogen atom, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, with the proviso that in formula (3) either R_1 or R_2 is not a hydrogen atom.

5,300,476

THERMAL TRANSFER RECORDING MATERIAL

Seiiti Kubodera; Mitsugu Tanaka, and Tetsu Kamosaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

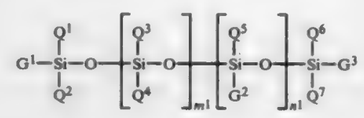
Filed Oct. 14, 1992, Ser. No. 960,871

Claims priority, application Japan, Oct. 17, 1991, 3-296624; Mar. 27, 1992, 4-100217

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 12 Claims

1. A thermal transfer recording material comprising a dye-providing element comprising a support having thereon a dye-providing layer containing a thermal transferring dye and a binder resin, and an image-receiving element comprising a support having thereon a dye-receiving layer containing a dye-receiving polymer compound, the dye-providing layer and the dye-receiving layer being kept in contact with each other and heatable in accordance with image signals so as to transfer the dye from the dye-providing layer to the dye-receiving layer to attain recording, wherein at least one of the dye-providing layer and the dye-receiving layer contains at least one polysiloxane compound of formula (1):



I

where

Q^1 to Q^7 each represents an alkyl group, an alkoxy group or an aryl group;

G^1 to G^3 each represents $—Y^1—Y^2$, $—Y^3—NR—Y^4—N(R^0)—Y^5$, an alkyl group, an aryl group or an alkoxy group;

Y^1 represents an alkylene group, an arylene group or an aralkylene group;

Y^2 represents $—Z^1—Z^2$ or $—CO—Z^3$;

Z^1 represents $—NR^x—$ (where R^x is a hydrogen atom or an alkyl group), —S— or —O—;

Z^2 represents $—CO—R^1$, $—CS—R^2$, $—SO_2—R^3$, or $—CR^4(R^5)R^6$;

Z^3 represents $—NR^7(R^8)$, $—OR^9$ or $—SR^{10}$;

Y^3 and Y^4 each has the same meaning as Y^1;

Y^5 has the same meaning as Z^2;

R^0 represents a hydrogen atom or an alkyl group:

R represents a hydrogen atom, an alkyl group or Y^5;

R^1, R^2 and R^3 each represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylamino group or an arylamino group;

R^4, R^5, R^6, R^7 and R^8 each represents a hydrogen atom, an alkyl group or an aryl group;

R^9 and R^{10} each represents an alkyl group or an aryl group;

provided that at least one of G^1, G^2 and G^3 must be $—Y^1—Y^2$ or $—Y^3—NR—Y^4—N(R^0)—Y^5$; and

m^1 represents an integer of from 0 to 1000, and n^1 represents an integer of from 1 to 1000.

5,300,477

2-ARYLPYRIMIDINES AND HERBICIDAL USE THEREOF

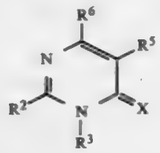
Colin M. Tice, Melrose Park, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 916,247, Jul. 17, 1992, abandoned. This application May 20, 1993, Ser. No. 62,802

Int. Cl.[5] C07D *239/36, 401/04;* A01N *43/54*

U.S. Cl. 504—242 13 Claims

1. A compound of the formula:



wherein

(a) R^2 is a furyl, phenyl, naphthyl, pyridyl, or thienyl group, each of said group is optionally substituted with up to three substituents independently selected from a bromo, chloro, fluoro, $(C_1–C_{12})$alkyl, cyclo$(C_3–C_8)$alkyl, $(C_2–C_{12})$alkenyl, cyclo$(C_3–C_8)$alkenyl, $(C_2–C_{12})$alkynyl, halo$(C_1–C_{12})$alkyl, polyhalo$(C_1–C_{12})$alkyl, halo$(C_2–C_{12})$alkenyl, polyhalo$(C_2–C_{12})$alkenyl, halo$(C_2–C_6)$alkynyl, polyhalo$(C_2–C_6)$alkynyl, $(C_1–C_{12})$alkoxy, $(C_1–C_{12})$alkylthio,

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(C_1–C_{12})alkylsulfonyl, (C_1–C_{12})alkylsulfinyl, phenyl, phen(C_1–C_{12})alkyl, phen(C_2–C_{12})alkenyl, phen(C_2–C_{12})alkynyl, cyano, halo(C_1–C_{12})alkoxy, 1,3-dioxolan-2-yl, hydroxyimino, or nitro group; and when R^2 is pyridyl, such pyridyl group is optionally substituted with oxygen on the nitrogen of the pyridyl group; or R^2 is a furyl, phenyl, naphthyl, pyridyl or thienyl group having a fused ring moiety composed of an oxymethyleneoxy or an oxoethyleneoxy link bonds to adjacent carbon atoms or said group;

(b) R^3 is a (C_1–C_3)alkyl, halo(C_1–C_3)alkyl, polyhalo(C_1–C_3)alkyl, (C_3–C_4)alkenyl, (C_5–C_6)alkenynyl, (C_3–C_6)alkynyl, (C_1–C_6)alkoxy(C_1–C_6)alkyl, di(C_1–C_6)alkoxy(C_1–C_6)alkyl, halo(C_1–C_6)alkoxy(C_1–C_6)alkyl, or 2-oxo(C_2–C_3)alkyl, trimethylsilyl(C_3–C_4)alkynyl or cyano(C_1–C_6)alkyl group, each of said (C_3–C_4)alkenyl, or (C_3–C_6)alkynyl group is optionally substituted with up to five halogens; and

(c) R^5 is a hydrogen, (C_1–C_5)alkyl, (C_3–C_6)alkenyl, (C_2–C_6)alkynyl, halo(C_1–C_6)alkyl, polyhalo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, polyhalo(C_2–C_6)alkenyl, halo(C_2–C_6)alkynyl, polyhalo(C_2–C_6)alkynyl, halo(C_1–C_6)alkoxy, polyhalo(C_1–C_6)alkoxy, trimethylsilyl(C_2–C_3)alkynyl, (C_1–C_6)alkoxy, (C_1–C_6)alkylthio, (C_1–C_3)alkoxycarbonyl(C_1–C_3)alkyl, halo, or cyano group; and

(d) R^6 is a hydrogen, halo, (C_1–C_8)alkyl, (C_2–C_6)alkenyl, (C_2–C_6)alkynyl, halo(C_1–C_6)alkyl, polyhalo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, polyhalo(C_2–C_6)alkenyl, halo(C_2–C_6)alkynyl, polyhalo(C_2–C_6)alkynyl, (C_1–C_6)alkoxy, (C_1–C_6)alkoxy(C_1–C_4)alkyl, (C_1–C_6)alkylthio, (C_1–C_3)alkoxycarbonyl, . (C_1–C_3)alkoxycarbonyl(C_1–C_3)alkyl, (C_6–C_{10})aryl, ar(C_1–C_4)alkyl, cyclo(C_3–C_7)alkyl, (C_4–C_5)heterocyclyl selected from a group consisting of furyl, pyridyl and thienyl, (C_1–C_3)alkylamino, di(C_1–C_3)alkylamino, di(C_1–C_3)alkylaminocarbonyl, halo(C_1–C_6)alkylthio, polyhalo(C_1–C_6)alkythio, halo(C_1–C_6)alkoxy, polyhalo(C_1–C_6)alkoxy, (C_6–C_{10})aryloxy or cyano group; said (C_6–C_{10})aryl, ar(C_1–C_4)alkyl and (C_6–C_{10})aryloxy groups being optionally substituted with up to three substituents independently selected from bromo; chloro; fluoro; (C_1–C_{12})alkyl, cyclo(C_3–C_8)alkyl, (C_2–C_{12})alkenyl, cyclo(C_3–C_8)alkenyl, (C_2–C_{12})alkynyl, halo(C_1–C_{12})alkyl, polyhalo(C_1–C_{12})alkyl, halo(C_2–C_{12})alkenyl, polyhalo(C_2–C_{12})alkenyl, halo(C_2–C_6)alkynyl, polyhalo(C_2–C_6)alkynyl; (C_1–C_{12})alkoxy, (C_1–C_{12})alkylthio, (C_1–$_{12}$)alkylsulfonyl, (C_1–C_{12})alkylsulfinyl, phenyl, phen(C_1–C_{12})alkyl, phen(C_2–C_{12})alkenyl, phen(C_2–C_{12})alkynyl, cyano, halo(C_1–C_{12})alkoxy, 1,3-dioxalan-2-yl, hydroxyimino, and nitro; and

(e) X is oxygen or sulfur;

provided that

(1) when R^2 and R^6 are phenyl, then R^5 is neither alkyl nor cyano;

(2) when R^2 is phenyl, then R^6 is neither alkyl nor haloalkyl; and

(3) when X is sulfur and R^2 is phenyl, then R^3 is not alkyl.

5,300,478

SUBSTITUTED FUSED PYRAZOLO COMPOUNDS

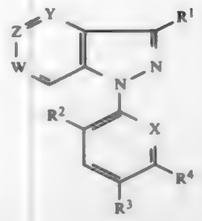
William J. Michaely, El Cerrito; Jeff K. Curtis, San Anselmo, and Christopher G. Knudsen, Berkeley, all of Calif., assignors to Zeneca Limited, Millbank, England

Filed Jan. 28, 1993, Ser. No. 10,204

Int. Cl.[5] A01N *43/90*; C07D *471/04*

U.S. Cl. 504—246 **22 Claims**

1. A substituted pyrazolopyridine having the formula



in which one of Y, Z or W is N or N—O and the remainder of Y, Z and W are both C—R wherein

R is hydrogen; halogen; nitro; cyano; alkyl; alkoxyalkyl; acetoxymethyl; hydroxymethyl; haloalky; formyl; alkylcarbonyl; carboxy and its salts; COO alkyl; azido (N_3); amino; substituted amino wherein the substituents are alkyl, alkoxy, hydroxy, formyl, alkylcarbonyl, alkoxycarbonylalkyloxy, alkoxycarbonylalkylthio, alkoxycarbonylalkylidenecarbonyl, hydroxycarbonylalkoxy, hydroxycarbonylthio, cyanoalkoxy, hydroxycarbonylalkylidenecarbonyl alkylsulfonyl, haloalkylsulfonyl, aminocarbonyl, (di)alkylaminocarbonyl, alkoxycarbonyl, alkoxyalkyl, hydroxycarbonylalkyl, alkoxycarbonylalkyl, and amino; carboxyamido; substituted carboxyamido wherein said substituents can be selected from alkyl, alkylsulfonyl, and haloalkylsulfonyl; sulfonamido wherein the N is substituted with hydrogen and/or alkyl; YR^6 where Y is O and $S(O)_m$ and R^6 is selected from the group hydrogen, alkyl, haloalkyl, cyanoalkyl, alkoxycarbonylalkyl, hydroxycarbonylalkyl and aminocarbonylalkyl wherein the N is substituted with hydrogen and/or alkyl;

m is 0 to 2;

R^1 is hydrogen and halogen;

R^2 is hydrogen, nitro, halogen, cyano, alkylthio, alkylsulfinyl, alkylsulfonyl, or alkoxy;

R^3 is halogen, haloalkyl, cyano, alkylthio, alkylsulfinyl, and alkylsulfonyl;

R^4 is hydrogen and halogen;

X is N or C—R^5;

wherein R^5 is hydrogen, haloalkyl, halogen, cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, or alkoxy; and

agriculturally acceptable salts thereof.

5,300,479

HERBICIDAL

2-(2-IMIDAZOLIN-2-YL)-BENZTRIAZOLES

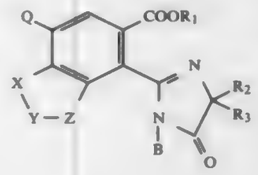
Robert F. Doehner, Jr., East Windsor, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 576,621, Aug. 31, 1990, Pat. No. 5,108,485. This application Apr. 27, 1992, Ser. No. 874,446

Int. Cl.[5] C07D *249/18*

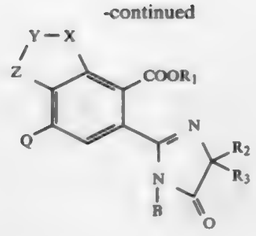
U.S. Cl. 504—261 **11 Claims**

1. A compound having the structure



a.

-continued



b.

wherein

R_1 is hydrogen, di(C_1–C_4) alkylimino;

C_1–C_{12} alkyl optionally substituted with one or more of the following: C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogen, hydroxy, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, halophenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, carboxy, C_1–C_4 alkoxycarbonyl, cyano or tri(C_1–C_4)alkylammonium halide;

C_3–C_{12} alkenyl optionally substituted with one or more of the following groups: C_1–C_4 alkoxy, phenyl, halogen or C_1–C_4 alkoxycarbonyl,

C_3–C_6 cycloalkyl optionally substituted with one or more C_1–C_4 alkyl groups,

C_3–C_{16} alkynyl optionally substituted with one or more C_1–C_4 alkyl groups; or a cation;

R_2 is C_1–C_4 alkyl;

R_3 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R_2 and R_3 are taken together with the carbon to which they are attached they may represent C_3–C_6 cycloalkyl optionally substituted with methyl;

B is hydrogen, COR_4 or SO_2R_5 with the proviso that when B is COR_4 or SO_2R_5, R_1 is other than hydrogen or a cation and R_9 is other than hydrogen;

R_4 is C_1–C_{11} alkyl, chloromethyl or phenyl optionally substituted with halogen, nitro or C_1–C_4 alkyl;

R_5 is C_1–C_4 alkyl or phenyl optionally substituted with C_1–C_4 alkyl;

X, Y and Z are each independently N, or NR_9;

the configuration represents either a single bond or a double bond with the proviso that when any of X, Y or Z is CR_7R_8 or NR_9, then the configuration represents a single bond and with the further proviso that at least one of the configurations represents a single bond;

R_6, R_7 and R_8 are independently hydrogen, halogen, C_1–C_4 alkoxy or C_1–C_4 alkyl optionally substituted with one hydroxy or one to three halogens, C_1–C_4 alkoxy groups or C_1–C_4 alkylthio groups;

R_9 is hydrogen or C_1–C_4 alkyl optionally substituted with one hydroxy or one to three halogens, C_1–C_4 alkoxy groups or C_1–C_4 alkylthio groups;

Q is hydrogen, halogen C_1–C_4 alkoxy or C_1–C_4 alkyl optionally substituted with one to three of the following: halogen, C_1–C_4 alkoxy, C_1–C_4 alkylthio, or C_2–C_4 alkenyl;

the optical isomers thereof when R_2 and R_3 are not the same or when R_6 and R_7 are not the same;

the tautomers and geometric isomers thereof are the agriculturally acceptable acid addition salts thereof except when R_1 is a salt-forming cation.

5,300,480

HERBICIDAL

SULPHONYLAMINOCARBONYLTRIAZOLINONES HAVING TWO SUBSTITUENTS BONDED VIA OXYGEN

Wilhelm Haas, Kerpen; Klaus-Helmut Müller, Duesseldorf; Klaus König, Odenthal; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

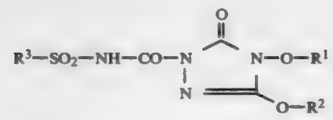
Continuation-in-part of Ser. No. 31,426, Mar. 15, 1993, and a continuation-in-part of Ser. No. 816,365, Dec. 30, 1991, Pat. No. 5,241,074, which is a division of Ser. No. 692,439, Apr. 29, 1991, Pat. No. 5,094,683, which is a division of Ser. No. 556,052, Jul. 20, 1990, Pat. No. 5,057,144, which is a continuation-in-part of Ser. No. 337,775, Apr. 13, 1989, abandoned. This application Sep. 15, 1992, Ser. No. 945,194

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] A01N *43/653*; C07D *249/12*

U.S. Cl. 504—273 **6 Claims**

1. A sylphonylaminocarbonyltriazolinone having two substituents bonded via oxygen of the formula



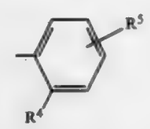
(I)

in which

R^1 represents C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl or C_1–C_4-alkoxycarbonyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, each of which is optionally substituted by fluorine, chlorine and/or bromine, or represents C_3–C_7-cycloalkyl or C_6–C_7-cycloalkenyl, each of which is optionally substituted by fluorine, chlorine, bromine and/or C_1–C_6-alkyl, or represents phenyl-C_1–C_3-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxy-carbonyl,

R^2 represents C_1–C_4-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxycarbonyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, each of which is optionally substituted by fluorine, chlorine and/or bromine, or represents C_3–C_6-cycloalkyl which is optionally substituted by fluorine, chlorine, bromine and/or C_1–C_4-alkyl, or represents cyclohexenyl, or represents phenyl-C_1–C_3-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxy-carbonyl, and

R^3 represents the group



where

R^4 and R^5 are identical or different and represent hydrogen, fluorine, chlorine, bromine, iodine, nitro, C_1–C_6-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylamino-carbonyl, di-(C_1–C_4-alkyl)amino-carbonyl, hydroxyl, C_1–C_4-alkoxy, formyloxy, C_1–C_4-alkylcarbonyloxy, C_1–C_4-alkoxy-carbonyloxy, C_1–C_4-alkylamino-carbonyloxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulfonyl, di-(C_1–C_4-alkyl)-aminosulphonyl, C_3–C_6-cycloalkyl or phenyl), or repre-

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sents C_2–C_6-alkenyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy-carbonyl, carboxyl or phenyl), or represents C_2–C_6-alkinyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxycarbonyl, carboxyl or phenyl), or represents C_1–C_4-alkoxy (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl), or represents C_1–C_4-alkylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl), or represents C_3–C_6-alkenyloxy (which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxy-carbonyl), or represents C_3–C_6-alkenylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_3-alkylthio or C_1–C_4-alkoxycarbonyl), C_3–C_6-alkinyloxy, C_3–C_6-alkinylthio, or the radical $—S(O)_p—R^6$ where

p represents the numbers 1 or 2 and

R^6 represents C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxy-carbonyl), C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkylamino, C_1–C_4-alkylamino, di-(C_1–C_4-alkyl)-amino, phenyl, or the radical —$NHOR^7$, where

R^7 represents C_1–C_{12}-alkyl (which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl), or represents C_3–C_6-alkenyl (which is optionally substituted by fluorine, chlorine or bromine), C_3–C_6-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1–C_2-alkyl, phenyl-C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl), or represents benzhydryl, or represents phenyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, C_1–C_2-fluoroalkoxy, C_3–C_4-alkylthio, trifluoromethylthio or C_1–C_4-alkoxy-carbonyl),

R^4 and/or R^5 furthermore represent phenyl or phenoxy, or represent C_1–C_4-alkylcarbonylamino, C_1–C_4-alkoxy-carbonylamino, C_1–C_4-alkylamino-carbonyl-amino, di-(C_1–C_4-alkyl)-amino-carbonyl amino, or represent the radical —CO—R^8, where

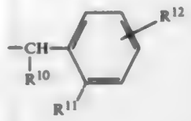
R^8 represents C_1–C_6-alkyl, C_1–C_6-alkoxy, C_3–C_6-cycloalkyl, C_3–C_6-alkenyloxy, C_1–C_4-alkylthio, C_1–C_6-alkylamino, C_1–C_4-alkoxyamino, C_1–C_4-alkoxy-C_1–C_4-alkyl-amino or di-(C_1–C_4-alkyl)-amino (each of which is optionally substituted by fluorine and/or chlorine),

R^4 and R^5 furthermore, represent trimethylsilyl, C_1–C_4-alkylsulphonyloxy, di-(C_1–C_4-alkyl)-aminosulphonylamino or represent the radical —CH=N—R', where

R^9 represents C_1–C_4-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl, or represents benzyl which is optionally substituted by fluorine or chlorine, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, each of which is optionally substituted by fluorine or chlorine, or represents phenyl which is optionally substituted by fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, or represents C_1–C_6-alkoxy, C_3–C_6-alkenoxy, C_3–C_6-alkinoxy or benzyloxy, each of which is optionally substituted by fluorine and/or chlorine, or represents amino, C_1–C_4-alkylamino, di-(C_1–C_4-alkyl)-amino, phenylamino, C_1–C_4-alkyl-carbonyl-amino, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkyl-sulphonylamino, or represents phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,

furthermore

R^3 represents the radical



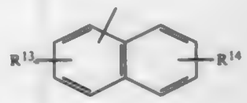
where

R^{10} represents hydrogen or C_1–C_4-alkyl,

R^{11} and R^{12} are identical or different and represent hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), carboxyl, C_1–C_4-alkoxy-carbonyl, dimethylaminocarbonyl, C_1–C_4-alkylsulphonyl or di-(C_1—C_4-alkyl)-aminosulphonyl)

furthermore

R^3 represents the radical



where

R^{13} and R^{14} are identical or different and represent hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine) or C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine).

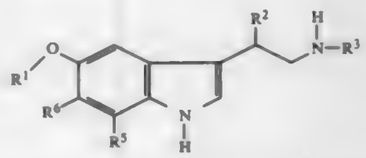
5,300,481

METHODS FOR CONTROLLING FLOWERING IN PLANTS

Sharman D. O'Neill, and David L. Van Tassel, both of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 5, 1993, Ser. No. 58,735
Int. Cl.[5] A01N *43/38*
U.S. Cl. 504—284 **28 Claims**

1. A method for regulating the flowering of a plant by applying a compound of the formula I in an amount sufficient to induce flowering



(I)

wherein R^1 is selected from the group consisting of hydrogen and lower alkyl of 1 to 4 carbon atoms;

R^2 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms;

R^3 is selected from the group consisting of hydrogen and —COR^4 wherein R^4 is a alkyl of 1 to 4 carbon atoms; and

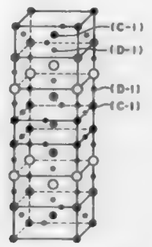
R^5 and R^6 are independently selected from the group consisting of hydrogen, chloro, fluoro, bromo and iodo.

5,300,482

OXIDE SUPERCONDUCTORS

Toshiya Doi, Hitachi; Takaaki Suzuki, Katsuta; Yutaka Yoshida, Hitachi; Atsuko Soeta, Mito; Tomoichi Kamo, Ibaraki, and Seizi Takeuchi, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 663,326
Int. Cl.[5] H01B *12/00*; H01L *39/12*; C04B *35/00*
U.S. Cl. 505—120 **1 Claim**



1. An oxide superconductor having a composition of the following formula:

$$Tl_aBi_bPb_c(Sr_dBa_e)_2(Ca_fL_g)_{n-1}Cu_nO_{2n+3+\delta}$$

wherein

L is at least one element selected from the group consisting of Y and rare earth elements, n is 2, 3 or 4, and $-1<\delta<1$,

$0.1 \leqq a \leqq 0.8$,

$0.1 \leqq b \leqq 0.5$,

$0.1 \leqq c \leqq 0.6$, $\quad a+b+c=1$

$0.3 \leqq d \leqq 1.0$,

$0 \leqq e \leqq 0.7$, $\quad d+e=1$

$0.7 \leqq f \leqq 0.95$

$0.05 \leqq g \leqq 0.3$ $\quad f+g=1$.

5,300,483

PROCESS FOR PREPARING SHAPED SUPERCONDUCTOR MATERIALS VIA NONEQUILIBRIUM PRECURSORS

Shome N. Sinha, 220 N. Lombard Ave., Oak Park, Ill. 60302

Filed Jan. 16, 1992, Ser. No. 821,692
Int. Cl.[5] C01F *11/02, 17/00*; C01G *3/02*; H01L *39/24*
U.S. Cl. 505—510 **31 Claims**

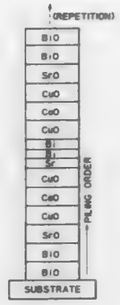
1. The process for preparing a precursor of a superconductor containing atoms of oxygen, atoms of copper and atoms of at least two other metals and sufficient atoms of oxygen so that up to, but not more than, one atom of copper is in the trivalent state which comprises blending together, in finely divided particulate state, components containing atoms of the desired metals in the desired proportion, at least one, but not all, of said components being a compound containing oxygen with the total level of oxygen being above that which would put more than one atom of copper into the trivalent state and thereafter milling said components together in a high energy system to a maximum particle size of about 5 microns for at least 99 weight percent of said blend.

5,300,484

MBE OR MO-MBE PROCESS FOR FORMING BI-SR-CA-CU-O SUPERCONDUCTING THIN FILMS

Seigen Otani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,200
Claims priority, application Japan, Mar. 15, 1991, 3-051049
Int. Cl.[5] B05D *5/12*; C30B *23/00*; H01L *39/24*
U.S. Cl. 505—473 **2 Claims**



1. A method of forming a Bi-Sr-Ca-Cu-O system superconducting thin film, in which first and second half-unit cells constitute a Perovskite structure layer, by using an MBE process or an MO-MBE process with an atomic layer level control capability, comprising the steps of:

depositing oxide atomic layers of the first Bi-Sr-Ca-Cu-O system half-unit cell on a substrate by sequentially feeding respective metal beams of the metals constituting the Bi-Sr-Ca-Cu-O superconducting thin film and simultaneously oxidizing the metals;

depositing a Sr atomic layer by feeding a Sr beam without oxidation on the half-unit cell;

depositing at least one Bi atomic layer by feeding a Bi beam without oxidation on the Sr atomic layer; and

depositing oxide atomic layers of the second Bi-Sr-Ca-Cu-O system half-unit cell on the Bi atomic layer by sequentially feeding the respective metal beams of the metals constituting the Bi-Sr-Ca-Cu-O superconducting thin film and simultaneously oxidizing the metals.

5,300,485

METHOD OF PREPARING OXIDE SUPERCONDUCTING FILMS BY LASER ABLATION

Noriyuki Yoshida; Satoshi Takano; Shigeru Okuda; Noriki Hayashi, all of Osaka; Tsukoshi Hara, Chofu; Kiyoshi Okaniwa, Chofu, and Takahiko Yamamoto, Chofu, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 662,874, Mar. 1, 1991, Pat. No. 5,187,148. This application Sep. 25, 1992, Ser. No. 951,967
Claims priority, application Japan, Mar. 2, 1990, 2-52522; Mar. 2, 1990, 2-52523; Mar. 2, 1990, 2-52524; Feb. 15, 1991, 3-30403
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 505—474 **4 Claims**

1. A method of preparing an oxide superconducting film, comprising the steps of:

preparing a target containing components of an oxide superconductive material;

arranging a substrate to be opposite to said target;

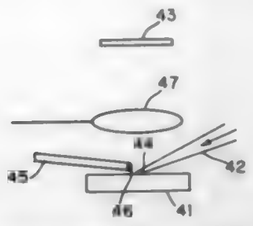
applying a laser beam to said target, thereby generating a laser plume and scattering particles from said target;

supplying gaseous oxygen toward said laser plume and to a portion of the target irradiated with said laser beam; and

depositing said scattered particles on said substrate, thereby

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forming said oxide superconducting film on said substrate wherein the critical current density of said superconducting film is at least about 10^5 A/cm^2 at 77.3K with a film forming rate of at least 2,000 Å/min.



5,300,486

SYNTHESIS OF BIPBSRCACUO SUPERCONDUCTOR

William L. Hults, Los Alamos; Kimberly A. Kubat-Martin; Kenneth V. Salazar, both of Espanola; David S. Phillips, and Dean E. Peterson, both of Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 27, 1993, Ser. No. 67,911

Int. Cl.^{5} C01F *11/02, 3/02, 29/00;* **H01L** *39/12*

U.S. Cl. 505—501 **7 Claims**

1. A composition of matter useful as a precursor mixture for subsequent processing into a high temperature superconductive product comprising a mixture of $Bi_4Sr_3Ca_3Cu_4O_{16\pm z}$ powder, an alkaline earth metal cuprate powder, and an alkaline earth metal plumbate powder, said mixture in amounts calculated to yield a lead-doped bismuth-atrontium-calcium-cooper oxide superconductor of the formula $Bi_aPb_bSr_cCa_d.Cu_eO_f$ wherein a is from about 1.7 to about 1.9, b is from about 0.3 to about 0.45, c is from about 1.6 to about 2.2, d is from about 1.6 to about 2.2, e is from about 2.97 to about 3.2 and f is $10\pm z$ upon subsequent thermal processing.

5,300,487

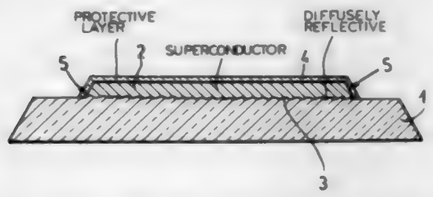
NONSPECULAR REFLECTOR WITH DIFFUSELY REFLECTING SUPERCONDUCTOR AND PROTECTION COATING

Aharon Z. Hed, Nashua, N.H., assignor to Troy Investments Inc., Nashua, N.H.

Filed Dec. 30, 1988, Ser. No. 292,469

Int. Cl.^{5} H01L *39/00;* **B32B** *3/00;* **G02B** *5/08*

U.S. Cl. 505—182 **8 Claims**



1. A reflector comprising a body of a ceramic oxide superconductive material which is superconductive at a temperature below a critical temperature and which is semiconductive or insulating at a temperature above said critical temperature, said critical temperature being a temperature above which said body is not superconducting and below which said body is superconducting, said body having a surface of said ceramic oxide superconductive material treated to be diffusely reflective and adapted to be disposed in a path of electromagnetic radiation to be reflected and of a wavelength longer than an optical binding energy of paired charge carriers of the superconductive ceramic oxide material and a protective coating of diamond-like carbon or magnesium fluoride on said body in said path.

5,300,488

P-METHYLENEDIOXYPHENYL PROPIONITRILE DERIVATIVES, PROCESS FOR PRODUCING SAME, INTERMEDIATES USED IN SAID PROCESS AND ORGANOLEPTIC USES OF SAID DERIVATIVES AND INTERMEDIATES

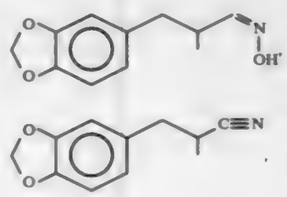
Anubhav P. S. Narula, Hazlet; John J. De Virgilio, Red Bank; Charles E. J. Beck, Summit; Marie R. Hanna, Keyport, all of N.J., and Jan T. Van Elst, Hm Bilthoven, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 6,605, Jan. 21, 1993, Pat. No. 5,274,133. This application Jul. 16, 1993, Ser. No. 92,464

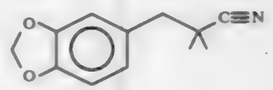
Int. Cl.^{5} A61K *7/46*

U.S. Cl. 512—6 **11 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, perfumed articles and perfumed polymers comprising the step of intimately admixing with said consumable material an aroma augmenting, imparting or enhancing quantity of at least one compound defined according to a structure selected from the group consisting of:



and



5,300,489

FRAGRANCE USE OF DIHYDROMETHYL JASMONIC ACID

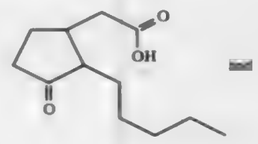
Richard M. Boden, Ocean; Futoshi Fujioka, Oakhurst, and Marie R. Hanna, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 11, 1993, Ser. No. 74,606

Int. Cl.^{5} A61K *7/46*

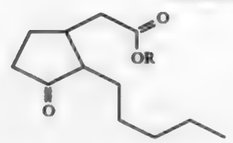
U.S. Cl. 512—8 **10 Claims**

1. A perfume composition comprising a perfume base and intimately admixed therewith an aroma imparting, augmenting or enhancing quantity of a mixture of compounds having the structures:

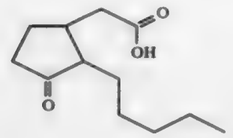


and

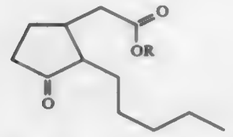
-continued



wherein R represents C_1–C_4 lower alkyl; wherein the compound having the structure:



is present in an amount of from 90% up to 99.9% and the compounds having the structure:



are present in an amount of from 0.1% up to 10% by weight of the mixture.

5,300,490

ANTICOAGULANT SUBSTANCE OBTAINED FROM URINE

Yasuyuki Kunihiro; Ryo Tanaka; Michio Ichimura, all of Fujieda; Akio Uemura, Numazu; Nobuo Ohzawa, Shizuoka, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 456,178, Dec. 26, 1989, Pat. No. 5,202,421. This application Aug. 20, 1992, Ser. No. 932,559

Claims priority, application Japan, Dec. 27, 1988, 63-330413; Nov. 1, 1989, 1-285240

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.^{5} C07K *15/14*

U.S. Cl. 514—8 **3 Claims**

1. A substantially purified glycoprotein having anticoagulant activity and obtained from human urine, which is characterized by having affinity to thrombin, ability to stimulate thrombin-catalyzed protein C activation, and

an amino acid composition (mol %) of

Aspartic acid	9.5 ± 2.0,
Threonine	4.0 ± 1.5,
Serine	5.1 ± 1.5,
Glutamic acid	10.9 ± 2.5,
Proline	9.3 ± 1.5,
Glycine	11.3 ± 3.0,
Alanine	11.7 ± 3.0,
Cysteine	8.0 ± 4.0,
Valine	5.9 ± 1.5,
Methionine	1.1 ± 0.5,
Isoleucine	2.8 ± 1.5,
Leucine	7.5 ± 2.0,
Tryosine	1.6 ± 1.5,
Phenylaline	3.7 ± 1.5,
Histidine	2.5 ± 1.0,
Lysine	0.8 ± 0.5

and

-continued

Arginine	4.6 ± 1.5,

as measured after complete acid-hydrolyzation according to the method of Moore et al.;

wherein the amino terminus of the glycoprotein is as follows:

Ala—Pro—Ala—Glu—Pro—Gln—Pro—Gly—Gly—Ser—Gln—Cys—Val—Glu—His—Asp—Cys—Phe—Ala—Leu—Tyr—Pro—Gly—Pro—Ala—Thr—Phe—Leu—

wherein the carboxyl terminal is

-Leu-Val-Arg or -Leu-Ala-Arg; and

having stability at pH 2 to 10,

at 60° C. for 300 min.,

in 1% (W/V) SDS,

in 6M guanidine hydrochloride, and

in 8M urea;

a molecular weight of

79,000±3,000 as measured by SDS-polyacrylamide gel electrophoresis under non-reduced conditions;

a sugar composition (% W/W) of

neutral sugar: 6.2±1.0 as measured by Phenol-Sulfuric acid method,

amino sugar: 3.1±1.0 as measured by Elson-Morgan's method (Blix's modification) and

sialic acid: 3.8±1.5 as measured by Warren's method;

an absorbance at 280 nm of

6.7±1.0 (in 1% aqueous solution, 1 cm light path);

an isoelectric point of

pH 3.8±0.2; and

is water soluble.

5,300,491

TREATMENT OF PROTOZOAL INFECTION

Barry J. Andrews, Oslo; Bjarne Bjorvatn, Paradis; Steinar Pedersen, Asker; Jörgen R. Rönnevig, Oslo, all of Norway, and Alexander Yule, Harrow, England, assignors to Apothekernes Laboratorium A.S., Oslo, Norway

Continuation-in-part of Ser. No. 785,666, Oct. 31, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 967,471

Int. Cl.^{5} A61K *37/00*

U.S. Cl. 514—10 **18 Claims**

1. A method of treating infection by a protozoan comprising administering an effective amount a divalent metal salt of bacitracin to an animal or human in need of such treatment.

5,300,492

LHRH ANALOGS

Fortuna Haviv, Deerfield, and Jonathan Greer, Chicago, both of Ill., assignors to Tap Pharmaceuticals, Deerfield, Ill.

Division of Ser. No. 548,512, Jul. 10, 1990, Pat. No. 5,110,904, which is a continuation-in-part of Ser. No. 390,572, Aug. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 154,681, Feb. 10, 1988, abandoned. This application Oct. 28, 1991, Ser. No. 784,204

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.^{5} C07K *7/20;* **A61K** *37/24*

U.S. Cl. 514—15 **5 Claims**

1. A compound having LHRH antagonist activity of the formula:



(I)

wherein

A is an amino acyl residue selected from the group consisting of

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N-acetyl-alpha-aza-3-(4-chlorophenyl)alanyl,
N-acetyl-alpha-aza-3-(4-fluorophenyl)alanyl,
N-acetyl-alpha-aza-3-(2-naphthyl)alanyl,
N-acetyl-alpha-aza-3-(1-naphthyl)alanyl,
N-acetyl-alpha-aza-alanyl,
N-acetyl-alpha-aza-glycyl,
N-acetyl-alpha-aza-sarcosyl,
N-acetyl-alpha-aza-3-(4-methylphenyl)alanyl,
N-acetyl-alpha-aza-cyclohexylalanyl,
N-acetyl-alpha-aza-3-(1-adamantyl)alanyl,
N-acetyl-alpha-aza-tyrosyl(O-methyl),
N-acetyl-alpha-aza-3-(3-benzothienyl)alanyl,
N-acetyl-alpha-aza-phenylalanyl,
N-methylalpha-aza-pyroglutamyl,
N-acetyl-alpha-aza-3-(2-thienyl)alanyl,
N-acetyl-alpha-aza-3-(3-benzoxazolyl)alanyl,
N-acetyl-alpha-aza-3-(3,4,5-trimethyl henyl)alanyl,
N-acetyl-alph-aza-3-(pentamethylphenyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(2-naphthyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(1-naphthyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(4-chlorophenyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(4-fluorophenyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(4-methylphenyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(4-methoxyphenyl-)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-(1-adamantyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(phenyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(cyclohexyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(benzthienyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(benzoxazolyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(3,4,5-trimethyl-phenyl)alanyl,
N-acetyl-N-alpha-methyl-alpha-aza-3-(pentamethylphenyl-)alanyl, and
N-acetyl-N-alpha-methyl-alpha-aza-3-(2-thienyl)alanyl;

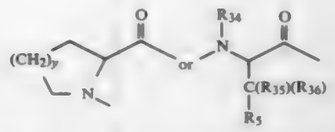
B is absent or an amino acyl residue selected from the group consisting of
D-phenylalanyl,
D-3-(4-chlorophenyl)alanyl,
D-3-(4-fluorophenyl)alanyl,
alpha-aza-3-(4-chlorophenyl)alanyl,
alpha-aza-3-(4-fluorophenyl)alanyl, and
alpha-aza-3-(2-naphthyl)alanyl;

C is an amino acyl residue selected form the group consisting of
L-tryptyl,
D-tryptyl,
D-phenylalanyl,
D-3-(3-pyridyl)alanyl,
D-3-(1-naphthyl)alanyl,
D-3-(3-benzthienyl)alanyl,
D-cyclohexylalanyl,
D-3-(4-chlorophenyl)alanyl,
alpha-aza-3-(1-naphthyl)alanyl,
alpha-aza-tryptyl,
alpha-aza-phenylalanyl,
alpha-aza-3-(3-benzthienyl)alanyl,
alpha-aza-3-(4-chlorophenyl)alanyl, and
alpha-aza-3-(3-pyridyl)alanyl;

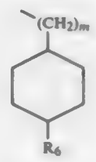
D is an amino acyl residue selected from the group consisting of
L-seryl,
L-alpha,beta-diaminopropyl,
L-alanyl, and
N-(R_0)-L-seryl;

E is an amino acyl residue selected form the group consisting of
L-tyrosyl,
L-tyrosyl(O-methyl),
N-(R_{33})-L-tyrosyl,
N-(R_{33})-L-tyrosyl(O-methyl),
N-(R_{33})-L-phenylalanyl,
L-histidyl,
N-(R_{33})-L-histidyl,
wherein R_{33} is methyl, ethyl, propyl or isopropyl;

F is a D-amino acyl residue of the formula:

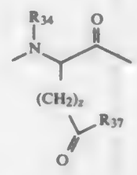


wherein
y is 1 to 3; R_5 is C_1 to C_6 straight or branched chain alkyl, C_3 to C_7 cycloalkyl, hydroxy, alkoxy, thioalkoxy, aryl or a heterocyclic aromatic ring; or
R_5 is $—(CH_2)_mR_6$ or



wherein
m is 0 to 4 and R_6 is amino, alkylamino, cycloalkylamino or alkanoylamino; or R_6 is —NH—C(NH(R'))==NR" or $—N(R')C(O)CH_2)_{gg}R_{65}$ wherein R' is hydrogen, loweralkyl or cycloalkyl; R' is hydrogen, loweralkyl, cycloalkyl, amino or cyano; gg is 0 to 6; and R_{65} is loweralkyl, dialkylamino, cycloalkyl, aryl, arylalkyl, heterocyclic, (heterocyclic)alkyl or $—NHR_{66}$ wherein R_{66} is hydrogen, loweralkyl, cycloalkyl, aryl, arylalkyl, heterocyclic, (heterocyclic)alkyl, amino, alkanoylamino or $—NHR_{67}$ wherein R_{67} is hydrogen, loweralkyl, cycloalkyl, aryl, arylalkyl, heterocyclic, (heterocyclic)alkyl or $—C(O)R_{68}$ wherein R_{68} is loweralkyl, cycloalkyl, aryl, arylalkyl, heterocyclic, or (heterocyclic)alkyl;
R_{34} is hydrogen, methyl, ethyl, propyl or isopropyl; and
R_{35} and R_{36} are independently selected from hydrogen and loweralkyl; or

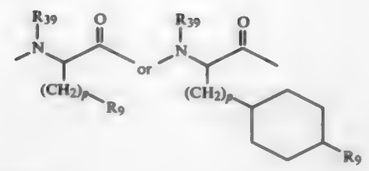
F is a D-aminoacyl residue having the formula:



wherein z is 0 to 3 and R_{37} is hydroxy, alkoxy, phenoxy, amino or p-methoxyphenyl and R_{34} is hydrogen, methyl, ethyl, propyl or isopropyl;

G is an amino acyl residue selected from the group consisting of
L-leucyl,
L-isoleucyl,
L-N-(R_{38})leucyl, and
valyl;

H is an amino acyl residue of the formula:



wherein
p is 1 to 4;
R_{39} is hydrogen, methyl, ethyl, propyl or isopropyl; and
R_9 —NH—C(NH(R_{11}))==NR_{12} wherein R_{11} is hydrogen; R_{12} is hydrogen;

I is an imino acyl or aliphatic amino acyl residue selected from the group consisting of
L-prolyl,
L-pipecolyl, and
N-methyl-L-alanyl; and

J is an amino acyl residue selected from
D-alanylamide,
sarcosylamide,
N-(R_{40})-L-alanylamide,
D-serylamide, and
alpha-aza-alanylamide,
wherein R_{40} is methyl, ethyl, propyl or isopropyl; with the proviso that the amide bond between at least one of the pairs of residues A-B, B-C, C-D, D-E, E-F, F-G, G-H, H-I, or I-J is alkylated on the nitrogen atom of the amide bond linking the two residues.

5,300,493

ULCER TREATMENT USING CHOLINE ESTERS OF POLYSACCHARIDES

Aurelio Romeo, Rome; Gino Toffano, and Lanfranco Callegaro, both of Padova, all of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Filed Sep. 16, 1992, Ser. No. 945,495
Claims priority, application Italy, Sep. 16, 1991, PD91A000163
Int. Cl.[5] A61K *31/715, 31/73, 31/045*
U.S. Cl. 514—54 **30 Claims**

1. A method for preventing or treating gastric ulcers, which comprises orally administering to a patient in need thereof an effective gastroprotective and anti-ulcer amount of a pharmaceutical composition comprising a choline ester of an acidic polysaccharide selected from the group consisting of hyaluronic acid, alginic acid, gellan, oxidized cellulose, oxidized chitin, carboxy-hydrocarbyl-cellulose, carboxy-hydrocarbyl-starch and carboxy-hydrocarbyl-chitin, in which the hydrocarbyl is the residue of an alkyl, aralkyl or cycloalkyl group, or a metal or organic base salt thereof, and a pharmaceutically acceptable excipient or carrier.

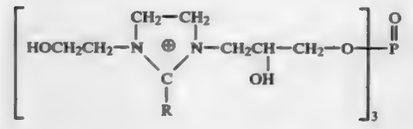
5,300,494

DELIVERY SYSTEMS FOR QUATERNARY AND RELATED COMPOUNDS

George L. Brode, II, Bridgewater, and George A. Salensky, White House Station, both of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 268,871, Nov. 8, 1988, Pat. No. 4,946,870, which is a continuation-in-part of Ser. No. 189,312, Feb. 3, 1988, Pat. No. 4,929,722, which is a continuation-in-part of Ser. No. 871,381, Jun. 6, 1986, abandoned. This application Jul. 12, 1989, Ser. No. 378,837
Int. Cl.[5] A01N *25/24, 33/00, 57/16;* **A61K** *31/73*
U.S. Cl. 514—55 **1 Claim**

1. A biocompatible, substantive, film-forming system for the delivery of pharmaceutically or therapeutically active agents to a desired topical site of a subject or host consisting essentially of
(a) at least one aminopolysaccharide derivative selected from the group consisting of chitosonium polymers and covalent chitosan derivatives, and
(b) a pharmaceutically or therapeutically active ingredient selected from the group consisting of compounds of of the formula:



wherein R has between 5 and 11 carbon atoms.

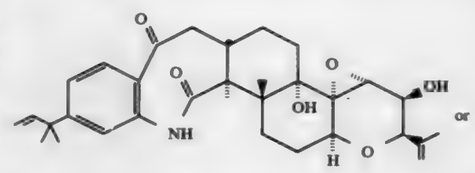
5,300,495

INDOLE ANTIINSECTAN METABOLITES

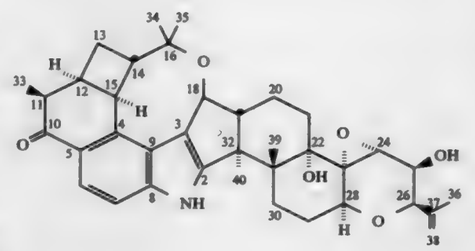
Jodi A. Laakso, Iowa City, Iowa; Patrick F. Dowd, Peoria, Ill.; James B. Gloer, Iowa City, Iowa, and Donald T. Wicklow, Peoria, Ill., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.; University of Iowa Research Foundation, Iowa City, Iowa and Biotechnology Research & Development Corporation, Peoria, Ill.

Division of Ser. No. 875,360, Apr. 29, 1992, Pat. No. 5,227,396, which is a continuation-in-part of Ser. No. 732,786, Jul. 19, 1991, Pat. No. 5,130,326. This application Jan. 22, 1993, Ser. No. 8,616
Int. Cl.[5] A01N *43/70;* **C07D** *491/18, 491/22*
U.S. Cl. 514—183 **11 Claims**

1. A substantially pure indole designated sulpinine C having the formula:



designated 10-oxo-11,33-dihydropenitrem B having the formula:



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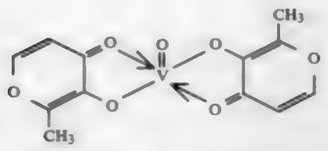
5,300,496

COMPLEXED VANADIUM FOR THE TREATMENT OF DIABETES MELLITUS

John H. McNeill, Delta; Hamid R. Hoveyda, and Chris Orvig, both of Vancouver, all of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Sep. 30, 1991, Ser. No. 767,510
Int. Cl.[5] A61K *31/555, 31/28*
U.S. Cl. 514—186 **6 Claims**

1. A pharmaceutical composition comprising an effective amount of bis(maltolato)oxovanadium(IV) having the formula:



II

in combination with a pharmaceuticaly acceptable carrier.

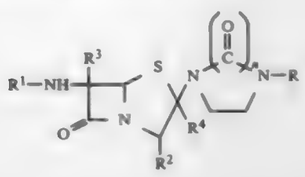
5,300,497

PENAM DERIVATIVES AND SALTS THEREOF, PROCESS FOR PRODUCING THE SAME AND ANTIBACTERIAL AGENT COMPRISING THE SAME

Hirokazu Ochiai; Yasuo Watanabe; Yoshiharu Murotani; Hirohiko Fukuda; Osamu Yoshino; Shinzaburo Minami, all of Toyama; Toshio Hayashi, Takaoka, and Kaishu Momonoi, Shinminato, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

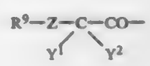
Division of Ser. No. 540,697, Jun. 20, 1990. This application Oct. 7, 1992, Ser. No. 957,372
Claims priority, application Japan, Jun. 22, 1989, 1-159899; Jun. 8, 1990, 2-150514
Int. Cl.[5] A61K *31/425;* **C07D** *499/00*
U.S. Cl. 514—192 **8 Claims**

1. A penam derivative represented by the following formula or a pharmaceutically acceptable salt thereof:



wherein

R^1 represents a hydrogen atom, an amino-protecting group or a formyl, 2,6-dimethyloxyphenylcarbonyl or 5-methyl-3-phenylisoxazol-4-ylcarbonyl group or an acyl group represented by the formula:



wherein

R^9 represents an unsubstituted or substituted lower alkyl, lower alkenyl, aryl or heterocyclic group;

Z represents an oxygen or sulfur atom or a linkage;

Y^1 represents a hydrogen atom;

Y^2 represents a hydrogen atom, a halogen atom, a protected or unprotected hydroxyl group, a protected or unprotected carboxyl group, a sulfo group, a sulfoamino group, a protected or unprotected amino group or a group of the formula $R^{10}CONH$—, in which

R^{10} is an unsubstituted or substituted aryl, arylcarbonylamino, heterocyclic amino or heterocyclic group; and

Y^1 and Y^2 may form, when taken together, an unsubstituted or substituted lower alkoxyimino, cycloalkyloxyimino, aralkyloxyimino, lower alkylidene, lower alkenylidene, lower alkoxymethylene, halomethylene or heterocyclic oxyimino group;

R^2 represents a hydrogen atom or a lower alkyl group;

R^3 represents a hydrogen atom, a lower alkoxy group, a lower alkylthio group or a formamido group;

R^4 represents a protected or unprotected carboxyl group or a carboxylato group;

R represents a group of the formula —NHR^5 or —NR^5R^6, in which

R^5 and R^6, which may be the same or different, represent protected or unprotected hydroxyl groups, cyano groups, sulfo groups or unsubstituted or substituted lower alkyl, aryl, acyl, carbamoyl, sulfamoyl, lower alkylsulfonyl or heterocyclic groups; and

n represents 1 or 2;

each of the substituted lower alkyl, lower alkenyl, aryl, and heterocyclic groups in the definition of R^9 having at least one substituted selected from the group consisting of halogen atoms, protected or unprotected hydroxyl group, protected or unprotected amino group, protected or unprotected amino-lower alkyl groups, protected or unprotected carboxyl group, lower alkoxy groups, ureido group, acylamino groups, cyano group, sulfo group, carbamoyloxy group, sulfamoyl group, nitro group, oxo group and heterocyclic groups;

each of the substituted aryl, arylcarbonylamino, heterocyclic amino and heterocyclic groups in the definition of R^{10} having at least one substituent selected from the group consisting of halogen atoms, protected or unprotected hydroxyl group, oxo group, lower alkyl groups, halo-lower alkyl groups, protected or unprotected hydroxyl-lower alkyl groups, lower alkylthio groups, lower alkylthio-lower alkyl groups, aryl groups, haloaryl groups, cycloalkyl groups, arylamino groups, lower alkylsulfonyl groups and sulfamoylarylamino groups;

each of the substituted lower alkoxyimino, cycloalkyloxyimino, aralkyloxyimino, lower alkylidene, lower alkenylidene, lower alkoxymethylene, halomethylene and heterocyclic oxyimino group in the definition of the group which Y^1 and Y^2 may form having at least one substituent selected from the group consisting of halogen atoms, acyloxy groups and protected or unprotected carboxyl groups;

each of the substituted lower alkyl, lower alkenyl, lower alkynyl, aryl, amino, acyl, acyloxy, carbamoyl, carbamoyloxy, sulfamoyl, lower alkylsulfonyl or heterocyclic groups in the definition of R^5 and R^6 having at least one substituent selected from the group consisting of halogen atoms, haló-lower alkyl groups, lower alkyl groups, lower alkoxy groups, protected or unprotected carboxyl-lower alkoxy groups, lower alkylthio groups, protected or unprotected carboxyl-lower alkylthio groups, lower alkanoyloxy groups, lower alkoxycarbonyl groups, diphenylmethoxycarbonyl group, aryloxycarbonyl groups, protected or unprotected hydroxyl-lower alkoxy groups, lower alkoxyimino groups, imino group, protected or unprotected amino-lower alkyl groups, protected or unprotected carboxyl-lower alkyl groups, lower alkoxycarbonyl-lower alkyl groups, lower alkoxycarbonylamino groups, nitrobenzyloxycarbonylamino group, cyano-lower alkylamino-lower alkyl groups, N,N-di-lower alkylamino groups, lower alkylsulfonyl groups, sulfamoyl-lower alkyl groups, aryl groups, aralkyl groups, carbamoyl group, sulfo group, acyl groups, oxo group, protected or unprotected carboxyl group, nitro group, cyano group, protected or unprotected amino group, protected or unprotected hydroxyl group, ureido group, aralkyloxy groups, sulfamoyl group, thioxo group, methylenedioxy group, heterocyclic groups and heterocyclicthio groups,

which may have at least one further substituent selected from the group consisting of lower alkyl groups, protected or unprotected amino group, oxo group, protected or unprotected hydroxyl group, carbamoyl group, protected or unprotected hydroxyl-lower alkyl groups, protected or unprotected carboxyl-lower alkyl groups, N,N-di-lower alkylamino groups, acylamino groups, heterocyclic groups, ureido group, trimethylammonioacetyl group, and guanidino group, and

one of R^5 and R^6 represents a protected hydroxyl group or a lower alkyl, lower alkenyl, lower alkynyl, aryl, amino, acyl, acyloxy, carbamoyl, carbamoyloxy, sulfamoyl, lower alkylsulfonyl or heterocyclic group having a substituent selected from the group consisting of a protected carboxyl-lower alkoxy group, a protected carboxyl-lower alkylthio group, a protected hydroxyl-lower alkoxy group, a protected amino-lower alkyl group, a protected carboxyl-lower alkyl group, a protected amino group and a protected hydroxyl group;

wherein

the term "acyl" in "acyl group", "acyloxy group" and "acylamino group" means formyl, C_{2-5}alkanoyl, C_{3-5}alkenoyl, benzoyl, naphthoyl, thenoyl, furoyl, isonicotinoyl, nicotinoyl, 1,4-dihydropyridin-2-ylcarbonyl or 4-ethyl-2,3-dioxopiperazin-1-ylcarbonyl;

the term "aryl" in "aryl group", "N,N'-di-lower alkylaminoaryl group", "arylamino group", "arylcarbonylamino group", "sulfamoylarylamino group", "aryloxycarbonyl group" and "haloaryl group" means phenyl, naphthyl or indanyl;

the term "aralkyl" in "aralkyl group", "aralkyloxy group" and "aralkyloxyimino group" means benzyl, phenethyl, 4-methylbenzyl or naphthylmethyl;

the term "heterocyclic" in "heterocyclic group", "heterocyclic amino group", "heterocyclic oxyimino group" or "heterocyclicthio group" means azetidinyl, thienyl, furyl, pyrrolyl, 1,2,4-triazolyl, 1,2,3-triazolyl, oxazolyl, thiazolyl, tetrazolyl, 1,3-dithiolanyl, pyridyl, 1-hydroxy-4-oxo-1,4-dihydropyridyl, 1,4-dihydropyridyl, thiazolidinyl, oxazolidinyl, imidazolidinyl, pyrazolinyl, pyrrolidinyl, 2-oxazolinyl, imidazolinyl, furazanyl, isothiazolyl, 4,5-dihydrothiazolyl, 2,3-dihydrofuryl, 2,5-dihydrofuryl, tetrahydrofuryl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,5-thiadiazolyl, imidazolyl, pyrazolyl, 3-pyrrolinyl, 4,5-dihydropyrazolyl, isoxazolyl, isoxazolidinyl, 1,2,3-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,4-oxadiazolyl, piperidinyl, piperazinyl, tetrahydropyrazinyl, morpholinyl, pyrimidinyl, pyrazinyl, 1,2,4-triazinyl, 1,3,5-triazinyl, 2H-3,4-dihydropyranyl, 2H-5,6-dihydropyranyl, 1,4-oxazinyl, pyridazinyl, 2H-thiazinyl, perhydrooxazinyl, dihydrooxazinyl, chromenyl, benzothienyl, benzoisothiazolidinyl, imidazo[1,2-b][1,2,4]triazinyl, thieno[3,2-b]thienyl, benzotriazolyl, 1,2,3-benzothiadiazolyl, tetrazolo[5,1-b]pyridazinyl, 2,1,3-benzoxadiazolyl, imidazo[1,2-a]pyridyl, imidazo[1,2-a]pyrimidinyl, imidazo[1,2-b][1,3]thiazolyl, 5,6,7,8-tetrahydroimidazo[1,2-a]pyridyl, imidazo[1,2-a]pyrazinyl, 1,4-benzomorpholinyl, benzothiazolyl, isoindolinyl, benzofuranyl, 1,4-benzothiomorpholinyl, 1,3-benzoxazolidinyl, triazolo[1,5-a]pyrimidinyl, indolinyl, indazolyl, benzoxazolyl, benzoisoxazolyl, purinyl, isoquinolyl, quinolyl, 1,8-naphthyridinyl, 1,5-naphthyridinyl, 1,1-dioxo-1,2-benzoisothiazolidinyl, 1,2-dihydro-4H-3,1-benzoxazinyl, 1,2-benzoxazinyl, quinoxalinyl, quinazolinyl, cinnolinyl, indolyl, quinuclidinyl, perhydroazaepinyl or 3-pyrrolin-2-yl, and

said heterocyclic group, when containing a nitrogen atom as the heteroatom, may be quaternized; and

the term "heterocyclic ring" means azetidine, 1,3-dithiolane, 1,4-dihydropyridine, thiazolidine, oxazolidine, imidazolidine, pyrazoline, pyrrolidine, 2-oxazoline, imidazoline, 4,5-dihydrothiazole, 2,3-dihydrofuran, 2,5-dihydrofuran, tetrahydrofuran, 3-pyrroline, 4,5-dihydropyrazole, isoxazolidine, piperidine, piperazine, tetrahydropyrazine, morpholine, tetrahydropyrimidine, 2H-3,4-dihydropyran, 2H-5,6-dihydropyran, 2H-thiazine, dihydrooxazine, chromene, benzoisothiazolidine, 5,6,7,8-tetrahydroimidazo[1,2-a]pyridine, 1,4-benzomorpholine, isoindoline, 1,4-benzothiomorpholine, 1,3-benzoxazolidine, indoline, 1,1-dioxo-1,2-benzoisothiazolidine, 1,2-dihydro-4H-3,1-benzoxazine or quinuclidine.

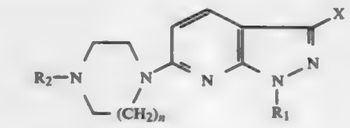
5,300,498

6-PIPERAZINYL-1H-PYRAZOLO[3,4-B]PYRIDINE-3-CARBOXYLIC ACIDS, ESTERS, AMIDES AND RELATED COMPOUNDS

Gregory M. Shutske, Flemington, N.J., assignor to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Jun. 4, 1993, Ser. No. 71,088
Int. Cl.[5] A61K *31/55, 31/495;* **C07D** *471/04*
U.S. Cl. 514—218 **26 Claims**

1. A compound of the formula



where

n is an integer of 1 or 2;

R_1 is hydrogen, loweralkyl or arylloweralkyl;

R_2 is hydrogen, loweralkyl or hydroxy-substituted loweralkyl; and

X is —H, —CN, —COOH, —$COOR_3$ or —$CONR_4R_5$,

R_3 being loweralkyl; R_4 being hydrogen, loweralkyl or arylloweralkyl; and

R_5 being hydrogen or loweralkyl;

or a pharmaceutically acceptable acid addition salt thereof.

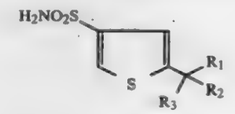
5,300,499

5-SUBSTITUTED 3-THIOPHENE SULFONAMIDES AS ANTIGLAUCOMA AGENTS

Ken Chow, Irvine, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Sep. 2, 1992, Ser. No. 939,189
Int. Cl.[5] A61K *31/38;* **C07D** *333/32*
U.S. Cl. 514—231.5 **40 Claims**

1. Compounds represented by the structural formula:



wherein R_1 and R_2 are independently

(a) hydrogen

(b) OR_4, wherein R_4 is hydrogen or C_{1-7} alkyl or C_{1-3} alkylcarbonyl or phenylcarbonyl or phenyl; or

(c) NR_5R_6, wherein R_5 and R_6 are independently hydrogen, or C_{1-7} alkyl, or C_{1-7} alkyl substituted with one or more halogen or OR_4; or

(d) —COR_7, wherein R_7 is hydrogen, C_{1-7} alkyl, or NR_5R_6; or

(e) —SR_8, wherein R_8 is hydrogen, or C_{1-7} alkyl, or C_{1-7} alkyl substituted with one or more halogen or OR4; or

(f) C_{1-7} alkyl, or C_{1-7} alkyl substituted with one or more halogen or OR_4 or NR_5R_6; or

(g) R_1 and R_2 are together

(i) =O, or

(ii) =NOR_8, or

(iii) =S;

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and R_3 is

(h) C_{1-7} alkyl, or C_{1-7} alkyl substituted with one or more halogen or OR_4 or NR_5R_6; or

(i) aryl, wherein said aryl comprises up to 10 carbon atoms and is an unsubstituted carbocyclic aryl or heterocyclic aryl radical, or said carbocyclic aryl or heterocyclic aryl radical is substituted with one or more halogen, or OR_4 or NR_5R_6, or carboxylic acid or lower alkyl esters thereof, or carboxaldehyde or C_{1-7} alkyl, or C_{1-7} alkyl substituted with one or more halogen or OR_4 or NR_5R_6, or carboxylic acid or lower alkyl esters thereof; or

(j) —COR_9, wherein R_9 is R_7 or an unsubstituted carbocyclic or heterocyclic radical, wherein said unsubstituted carbocyclic or heterocyclic radical comprises up to 10 carbon atoms, or said carbocyclic or heterocyclic radical is substituted with one or more halogen, or OR_4 or NR_5R_6, or C_{1-7} alkyl, or C_{1-7} alkyl substituted with one or more halogen or OR_4 or NR_5R_6.

5,300,500

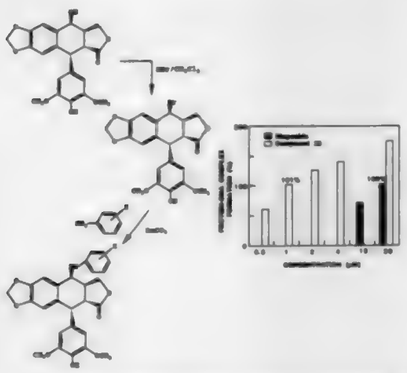
4 BETA-AMINO PODOPHYLLOTOXIN ANALOG COMPOUNDS AND METHODS

Kuo-Hsiung Lee, Chapel Hill, N.C.; Yung-Chi Cheng, Woodbridge, Conn., and Yi-Lin Zhang, Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C. and Yale University, New Haven, Conn.

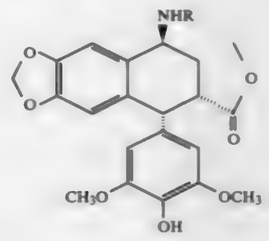
Continuation-in-part of Ser. No. 874,345, Apr. 24, 1992, which is a continuation of Ser. No. 406,330, Sep. 12, 1989, Pat. No. 5,132,322, which is a continuation of Ser. No. 313,826, Feb. 23, 1989, abandoned. This application Dec. 8, 1992, Ser. No. 987,765

Int. Cl.[5] **A61K** *31/535, 31/365;* **C07D** *413/02*

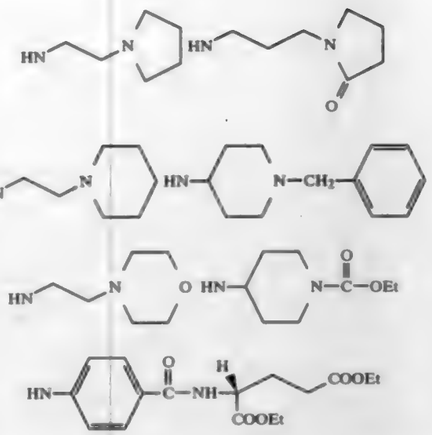
U.S. Cl. 514—232.5 **10 Claims**



1. A 4β-amino podophyllotoxin analog compound of the formula:



wherein NH—R is selected from the group consisting of:



including physiologically acceptable ammonium salts thereof.

5,300,501

PEPTIDYL DERIVATIVES

John R. Porter, Slough; Thomas A. Millican; John R. Morphy, both of Maidenhead, and Nigel R. A. Beeley, Thame, all of United Kingdom, assignors to Celltech Limited, Berkshire, United Kingdom

PCT No. PCT/GB91/02143, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO90/05719, PCT Pub. Date May 31, 1990

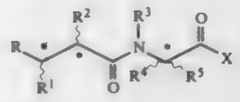
PCT Filed Dec. 3, 1991, Ser. No. 916,108

Claims priority, application United Kingdom, Dec. 3, 1990, 9026251; May 13, 1991, 9110338; May 13, 1991, 9110339; Jun. 14, 1991, 9112888; Jun. 14, 1991, 9112901; Jul. 11, 1991, 9115038; Jul. 11, 1991, 9115039; Jul. 23, 1991, 9115916

Int. Cl.[5] **A61K** *31/185, 31/535;* **C07C** *259/06;* **C07D** *295/15*

U.S. Cl. 514—238.2 **12 Claims**

1. A compound of formula (I):



(I)

wherein R represents a —CONHOH,

R^1 represents a hydrogen atom or an unsubstituted or substituted alkyl, alkenyl, aryl, aralkyl, heteroaralkyl or heteroarylthioalkyl group;

R^2 represents an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, aryl, aralkyl, aralkoxy, or aralkylthio group, or an amino ($—NH_2$), substituted amino, carboxyl ($—CO_2H$) or esterified carboxyl group;

R^3 represents a hydrogen atom or an alkyl group;

R^4 represents a hydrogen atom or an alkyl group;

R^5 represents a group $—[Alk]_nR^6$ where Alk is an alkyl or alkenyl group optionally interrupted by one or more —O— or —S— atoms or $—N(R^7)—$ groups, n is zero or an integer 1, and R^6 is an unsubstituted or substituted cycloalkyl or cycloalkenyl group;

X represents an amino ($—NH_2$), or substituted amino,

and a salt, solvate or hydrates thereof.

5,300,502

PHENOXYALKYL-SUBSTITUTED HETEROAROMATICS AND THEIR USE FOR CONTROLLING PESTS

Joachim Leyendecker, Ladenburg; Hans-Juergen Neubauer, Muenster-Hiltruo; Uwe Kardorff, Mannheim; Christoph Kuenast, Otterstadt; Peter Hofmeister, Neustadt, and Wolfgang Krieg, Weingarten, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

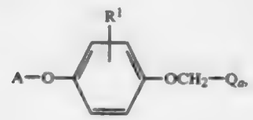
Division of Ser. No. 932,061, Aug. 19, 1992, Pat. No. 5,264,434, which is a division of Ser. No. 834,839, Feb. 13, 1992, Pat. No. 5,180,727, which is a division of Ser. No. 606,813, Oct. 31, 1990, Pat. No. 5,132,308, which is a division of Ser. No. 389,815, Aug. 4, 1989, Pat. No. 4,996,216. This application Jul. 8, 1993, Ser. No. 87,482

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1988, 3826681; Aug. 5, 1988, 3826682

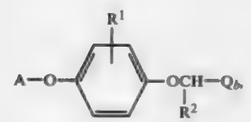
Int. Cl.[5] **A01N** *43/66;* **C07D** *417/12, 413/12, 409/12*

U.S. Cl. 514—241 **6 Claims**

1. A compound of the formula Ia or Ib

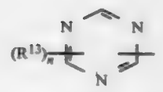


(Ia)

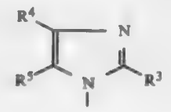


(Ib)

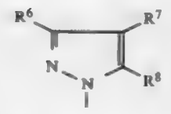
where A is



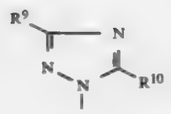
where the radicals R^{13} are identical or different and are each hydrogen, halogen, C_1–C_4-alkyl, C_1–C_3-haloalkyl, C_1–C_4-alkoxy, C_1–C_3-haloalkoxy, C_3–C_6-cycloalkyl, cyano or nitro, and n is from 1 to 4, R^1 is hydrogen, halogen or C_1–C_3-alkyl; R^2 is hydrogen or C_1–C_4-alkyl; Q_a is an unsubstituted or substituted azole radical of the formulae IIa to IIe



(IIa)

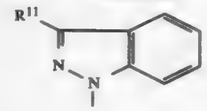


(IIb)

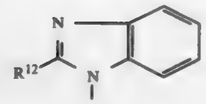


(IIc)

-continued



(IId)



(IIe)

where R^3 to R^{12} are hydrogen, halogen, C_1–C_8-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_3–C_{10}-cycloalkyl or are phenyl or naphthyl which is unsubstituted or mono- to trisubstituted by halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl or C_1–C_3-haloalkoxy, and Q_b is a heteroaromatic radical selected from the group consisting of thiophen-2-yl; thiophen-3-yl; thiazol-2-yl; thiazol-4-yl; thiazol-5-yl; oxazol-2-yl; oxazol-4-yl; oxazol-5-yl; imidazol-2-yl; imidazol-4-yl; imidazol-5-yl; isothiazol-3-yl; isothiazol-4-yl; isothiazol-5-yl; pyrazol-3-yl; pyrazol-4-yl; isoxazol-3-yl; isoxazol-5-yl; 1,3,4-thiadiazol-2-yl; 1,3,4-oxadiazol-2-yl; 1,2,4-oxadiazol-3-yl; 1,3,4-triazol-2-yl; and 1,2,4-thiadiazol-3-yl and is unsubstituted or mono- or polysubstituted by halogen, C_1–C_8-alkyl, C_2–C_8-alkenyl, C_1–C_4-haloalkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_2–C_8-alkoxyalkyl or C_3–C_{10}-cycloalkyl.

5,300,503

INSECTICIDAL 4,6-DIAMINO-1,2-DIHYDRO-1,3,5-TRIAZINE DERIVATIVES

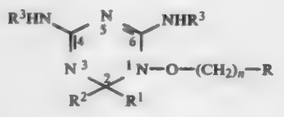
Clinton J. Peake, Trenton; Thomas G. Cullen, Milltown, and Albert C. Lew, Princeton Junction, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 1, 1991, Ser. No. 786,498

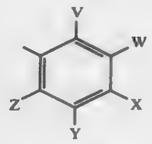
Int. Cl.[5] **C07D** *251/18, 401/12, 403/12;* **A01N** *43/68*

U.S. Cl. 514—245 **40 Claims**

1. An insecticidal composition comprising an insecticidal amount of the compound



wherein R is selected from the group consisting of hydrogen, straight or branched chain alkyl, haloalkyl, (substituted aryl)-haloalkyl, arylakyl, (substituted aryl)alkyl, (α-cycloalkyl)arylalkyl, cycloalkyl, arylcycloalkyl, (substituted aryl)cycloalkyl, alkenyl, cycloalkenyl, arylalkenyl, (substituted aryl)alkenyl, alkynyl, arylalkynyl, (substituted aryl)alkynyl, alkoxy, (substituted aryl)alkoxy, aryl, aryloxy, (substituted aryl)oxy, arylthio, (substituted aryl)thio, heterocyclclyl, alkoxycarbonyl, and substituted phenyl of the structure



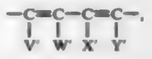
wherein

V, W, X, Y, and Z are independently selected from the

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group consisting of hydrogen, halogen, lower alkyl, haloalkyl, cycloalkyl, arylalkyl, alkoxy, haloalkoxy, arylalkoxy, aryl, substituted aryl, aryloxy, (substituted aryl)oxy, alkylthio, alkylsulfoxy, alkylsulfonyl, cyano, and nitro;

or V and W, or W and X, when taken together, comprise the ring-forming group



wherein V', W', X' and Y' have the same definition as V, W, X, and Y;

n is 1 to 5;

R^1 is selected from the group consisting of lower alkyl, arylalkyl, arylalkenyl, and alkoxyaryl;

or R^2 is selected from the group consisting of hydrogen and lower alkyl,

R^1 and R^2 taken together form a spirocycloalkane ring of 3 to 9 carbon atoms;

R^3 is selected from the group consisting of hydrogen, lower alkylcarbonyl, cyclopropylcarbonyl, methoxymethylcarbonyl, and 2-furanylcarbonyl;

and agriculturally acceptable salts thereof, in admixture with a compatible agricultural vehicle, wherein each alkyl, alkenyl, and alkynyl group independently contains up to 13 carbon atoms; the cycloalkyl groups contain 3 to 7 carbon atoms; and each aryl group is independently selected from the group consisting of phenyl, naphthyl, or phenanthryl which optionally substituted by one or more alkyl, halo, alkoxy, cycloalkyl, aryl, haloalkyl, haloalkoxy, cyano, nitro, dialkylamino or thioalkyl groups, and

wherein the heterocyclyl groups are selected from the group consisting of thienyl, furyl, pyranyl, triazinyl, pyrrlyl, imidazolyl, pyridyl, pyridazinyl, isoxazolyl, benzothienyl, isobenzofuranyl, indolyl, quinolyl, phthalimido, benzodioxolyl, benzodioxanyl, benzofuranyl, and benzopyranyl.

5,300,504

(2-IMIDAZOLIN-2-YLAMINO) TETRAHYDROQUINOXALINES AND METHODS FOR USING SAME

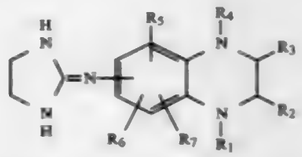
Charles Gluchowski, Mission Viejo, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 758,696, Sep. 12, 1991, Pat. No. 5,204,347, which is a division of Ser. No. 420,817, Oct. 12, 1989, Pat. No. 5,077,292. This application Dec. 22, 1992, Ser. No. 995,218

Int. Cl.[5] A61K *31/495, 31/50*

U.S. Cl. 514—249 **14 Claims**

1. A method of providing a therapeutic effect in a mammal comprising administering to a mammal an effective amount to provide a desired therapeutic effect in said mammal of a compound selected from the group consisting of those having the formula,



pharmaceutically acceptable acid addition salts thereof and mixtures thereof, wherein R_1 and R_4 are independently selected from the group consisting of H and alkyl radicals having 1 to 4 carbon atoms, R_2 and R_3 are independently selected from the group consisting of H, oxo, and alkyl radicals having 1 to 4 carbon atoms, the 2-imidazolin-2-ylamino group may be in any of the 5-, 6-, 7- or 8- positions of the quinoxaline nucleus, and R_5, R_6 and R_7 each is located in one of the remaining 5-, 6-, 7- or 8- positions of the quinoxaline nucleus and is selected from the group consisting of Cl, Br, H and alkyl radicals having 1 to 3 carbon atoms, said desired therapeutic effect being an increase in the renal fluid flow in at least one kidney of said mammal.

5,300,505

STABLE SALTS OF 5,10-METHYLENETETRAHYDROFOLIC ACID

Hans R. Müller, Schaffhausen; Martin Ulmann, Dachsen, and Josef Conti, Schaffhausen, all of Switzerland, assignors to Eprova Aktiengesellschaft, Schaffhausen, Switzerland

Filed Oct. 15, 1992, Ser. No. 957,764

Claims priority, application Switzerland, Oct. 15, 1991, 03 019/91-6

Int. Cl.[5] C07D *475/04*

U.S. Cl. 514—250 **10 Claims**

1. A methane-sulfonic acid, ethanesulfonic acid, phenylmethanesulfonic acid, camphor-10-sulfonic acid, naphthalene-1-sulfonic acid, naphthalene-2-sulfonic acid, naphthalene-1,5-disulfonic acid, or sulfuric acid addition salt of 5,10-methylene-(6R)-, (6R,S)- or (6S)-tetrahydrofolic acid.

5,300,506

INDOLYLALKYL DERIVATIVES OF PYRIMIDINYLPIPERAZINE FOR TREATING VASCULAR HEADACHE

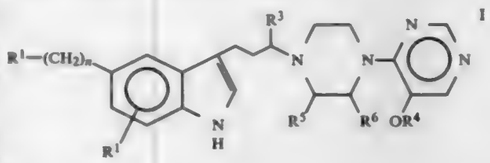
David W. Smith, Clinton; Frank D. Yocca, Killingworth; Joseph P. Yevich, Southington; Ronald J. Mattson, Meriden; Andrew Williams, Middletown, all of Conn., and Edward H. Ruediger, Greenfield Park, Canada, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 680,208, Apr. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,122, Jun. 29, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,063

Int. Cl.[5] A61K *31/505;* **C07D** *403/00*

U.S. Cl. 514—253 **18 Claims**

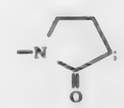
1. A compound of Formula I or a pharmaceutically acceptable acid addition salt and/or solvate thereof



I

wherein

R^1 is a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, R^7-substituted phenyl-lower alkoxy, amino, cyano, hydroxy, nitro, $—OCH_2CN$, $—OCH_2CONR^7R^8$, $—SO_2NR^7R^8$, $—O_2CR^9$, $—SO_2R^9$, $—O_2CNR^7R^8$, $—COR^8$, $—CO_2R^9$, $—CONR^7R^8$, $—NR^7CO_2R^9$, $—NR^7COR^8$, $—NR^7SO_2R^9$ and



R^2 is selected from hydrogen, lower alkyl, lower alkoxy, $—CO_2R^9$ and halogen;

R^3 is independently selected from hydrogen and lower alkyl, with the proviso that R^3 cannot be hydrogen when the $R^1—(CH_2)_n$ moiety is hydrogen, lower alkyl, lower alkoxy, halogen or $—CONH_2$ and R^2 is hydrogen, lower alkyl and halogen;

R^5, R^6 and R^7 are independently selected from hydrogen and lower alkyl;

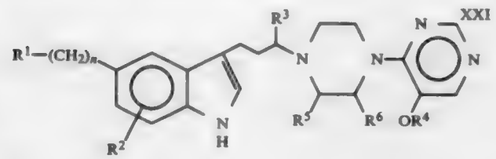
R^4 is lower alkyl;

R^8 is selected from hydrogen, lower alkyl, R^7-phenyl-lower alkyl and trifluoromethyl;

R^9 is selected from lower alkyl and R^7-phenyl-lower alkyl; and

n is zero or the integers 1 or 2.

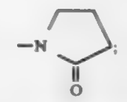
18. A pharmaceutical composition in unit dosage form suitable for systemic administration to a person at risk of or suffering a vascular headache, the composition comprising a pharmaceutical carrier and from about 1 to 500 mg of a Formula XXI compound or a pharmaceutically acceptable salt and/or solvate thereof, which Formula XXI compound is:



XXI

wherein

R^1 is a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, R^7-substituted phenyl-lower alkoxy, amino, cyano, hydroxy, nitro, $—OCH_2CN$, $—OCH_2CONR^7R^8$, $—SO_2NR^7R^8$, $—O_2CR^9$, $—SO_2R^9$, $—O_2CNR^7R^8$, $—COR^8$, $—CO_2R^9$, $—CONR^7R^8$, $—NR^7CO_2R^9$, $—NR^7COR^8$, $—NR^7SO_2R^9$ and



R^2 is selected from hydrogen, halogen, lower alkyl, lower alkoxy and $—CO_2R^9$.

R^3, R^5, R^6 and R^7 are independently selected from hydrogen and lower alkyl;

R^4 is lower alkyl;

R^8 is selected from hydrogen, lower alkyl, R^7-phenyl-lower alkyl and trifluoromethyl;

R^9 is selected from lower alkyl and R^7-phenyl-lower alkyl; and

n is zero or the integers 1 or 2.

5,300,507

NEW HETEROCYCLE-SUBSTITUTED ALKYLAMIDES

Said Yous, Lille; Isabelle Lesieur, Gondecourt; Patrick Depreux, Armentieres; Daniel H. Caignard, Paris; Béatrice Guardiola, Neuilly Sur Seine; Gérard Adam, Le Mesnil Le Roi, and Pierre Renard, Versailles, all of France, assignors to Adir et Compagnie, Courbevoie, France

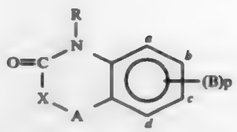
Division of Ser. No. 848,373, Mar. 9, 1992, Pat. No. 5,240,919. This application Apr. 28, 1993, Ser. No. 55,665

Claims priority, application France, Mar. 25, 1991, 91 03538

Int. Cl.[5] A61K *31/495;* **C07D** *413/06, 417/06*

U.S. Cl. 514—253 **7 Claims**

1. A compound of selected from those formula (I):



(I)

in which:

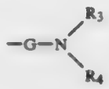
A represents an oxygen or sulfur,

X represents a single bond,

R represents:

hydrogen or lower alkyl, and in this case p=1 and B represents $—CH_2—CH_2—NR_1—CO—R_2$ where R_1 represents hydrogen or linear or branched lower alkyl, and R_2 represents:

a group of the formula:



G representing linear or branched lower alkyl and R_3 and R_4, together with the nitrogen atom to which they are attached, form a piperazino group optionally substituted with one or more lower alkyl, oxo, phenyl or pheny (lower alkyl), or substituted phenyl or substituted phenyl (lower alkyl), in the definitions of R_3 and R_4, the term "substituted" qualifying phenyl and phenyl (lower alkyl) meaning that these groups are substituted with one or more radicals chosen from lower alkyl, lower alkoxy, trifluoromethyl and halogen,

or R represents $(CH_2)_2—NR_1—CO—R_2$ with R_1 and R_2 having the same definition as given above, and in which case p equals 0 or 1 and B represents lower alkoxy, and its isomers, epimers and diastereoisomers as well as, its addition salts with a pharmaceutically-acceptable acid or base, lower alkyl and lower alkoxy having 1 to 6 carbon atoms inclusive and cycloalkyl having 3 to 8 carbon atoms inclusive.

5,300,508

METHOD FOR INTERCEPTING ACTIVATED SPECIES OF DIOXYGEN

Alain Valla, Drancy; Michel Giraud, Etampes; Marc Bazin, Le Mee, and René Santus, Crepy en Valois, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

PCT No. PCT/FR90/00395, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO90/15051, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 5, 1990, Ser. No. 809,515

Claims priority, application France, Jun. 6, 1989, 89 07475

Int. Cl.[5] A61K *31/40, 7/00;* **C07D** *207/327, 403/04, 473/34*

U.S. Cl. 514—258 **12 Claims**

1. A method for treating an animal having an illness in which activated species of dioxygen are involved, comprising the step of:

administering to to said animal a pharmaceutically acceptable amount of an N-substitute pyrrole derivative having the formula:



in which:

R is an amino acid derivative, a non-protein peptide, a purine base which is substituted at position 9 by an alkyl group or

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a pyrimidine base possessing a free primary amino group wherein the pyrimidine base is substituted by at least one SH group; R_1 represents one or more substituents, identical or different, selected from the group consisting of a hydrogen and an alkyl radical containing 1 to 6 carbon atoms, or their complexes with physiologically acceptable metals wherein said N-substituted pyrrole derivative are racemates or optically active isomers with the proviso that R_1 is not a hydrogen when R is a derivative selected from the group consisting of glycine, leucine, phenylalanine, tyrosine, serine and glutamic acid.

5,300,509

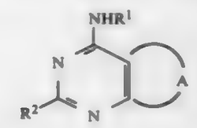
2-FURYL-OXAZOLO[5,4-D]-PYRIMIDINES

Michael H. Block, Congleton; Alison Harrison, Broken Cross, and Rodney B. Hargreaves, Poynton, all of England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Filed Nov. 20, 1992, Ser. No. 979,019
Claims priority, application United Kingdom, Nov. 25, 1991, 9125001
Int. Cl.[5] A61K *31/505;* C07D *491/048*
U.S. Cl. 514—258 8 Claims

1. A compound of the formula I wherein:

(I)



R^1 is hydrogen, (1–6C)alkyl, or (1–4C)alkanoyl;
R^2 is hydrogen, cyano or a group of formula R^3X;
R^3 (when not as hereinbelow defined together with X) is (3–12C)cycloalkyl, (3–6C)alkenyl, phenyl(3–6C)alkenyl, 5- or 6-membered heteroaryl, optionally substituted (1–6C)alkyl or optionally substituted phenyl,
said optionally substituted alkyl being unsubstituted or substituted by one of (3–6C)cycloalkyl, optionally substituted 5-or 6-membered heteroaryl, optionally substituted phenyl and a group of formula $R^4(CO)_nX_a(CO)_m$ in which R^4 is (1–6C)alkyl, (3–6C)cycloalkyl, optionally substituted phenyl or optionally substituted phenyl(1–4C)alkyl, n and m are each 0 or 1, provided that n+m is 0 or 1, and that when m is 0, X and X_a are separated by at least two carbon atoms, X_a is oxy, thio, sulphinyl, sulphonyl or an imino group of formula —NRb in which Rb is hydrogen, (1–6C)alkyl or together with R^4 and the adjacent nitrogen atom forms a 4 to 6-membered saturated heterocyclic ring,
said optionally substituted 5- or 6-membered heteroaryl being unsubstituted or substituted by 1 or 2 of (1–4C)alkyl, (1–4C)alkoxy and halogeno,
and any of said optionally substituted phenyl being unsubstituted or substituted by (1–4C)alkylenedioxy or by 1, 2 or 3 of halogeno, cyano, trifluoromethyl, (1–4C)alkoxycarbonyl, hydroxy, hydroxymethyl, amino, (1–4C)alkanoylamino, (1–4C)alkoxymethyl, (1–4C)alkanoyloxy, benzyloxy, halogenobenzyloxy, (1–4C)alkylsulphonylamino, (1–4C)haloalkylsulphonylamino, nitro, and (1–4C)alkyl or alkoxy optionally bearing a group of formula R^5CO in which R^5 is (1–4C)alkoxy, (3–6C)alkylamino, (3–6C)cycloalkylamino or (N-(1–4C)alkyl)(N-(1–4C)dialkylamino(1–4C)alkyl)amino, and sulphamoyl of formula $—SO_2.NR^6R^7$ in which R^6 and R^7 are independently hydrogen or (1–4C)alkyl, or R^6 is hydrogen and R^7 is ((2–5C)alkoxycarbonyl)$(CH_2)q$-, carbamoyl$(CH_2)q$ or (N-(1–4C)alkylcarbamoyl)$(CH_2)q$, in which q is 0 or an integer from 1 to 4, or R^6 is (1–4C)alkyl and R^7 is di(1–4C)alkylamino(1–4C)alkyl; and
X is a direct bond or oxy, thio, sulphinyl, sulphonyl or an imino group of formula —NRa— in which Ra is hydrogen, (1–6C)alkyl or together with R^3 and the adjacent nitrogen atom forms a 4 to 6-membered saturated heterocyclic ring;
A is —N=CQ—O—;
Q is 2-furyl;
or a pharmaceutically acceptable salt thereof.

5,300,510

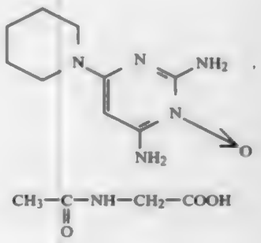
SALT OF 6-PIPERIDINO-2,4-DIAMINOPYRIMIDINE 3-OXIDE AND ACETURIC ACID, ITS PREPARATION AND ITS DERMATO-COSMETOLOGICAL APPLICATION

Jean-Pierre Allaigre, Ezanville, and Jacques Desbois, Persan, both of France, assignors to Norchim, Saint Leu D'Esserent

Continuation of Ser. No. 779,152, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 410,660, Sep. 21, 1989, abandoned. This application Jan. 29, 1993, Ser. No. 11,122
Claims priority, application France, Sep. 23, 1988, 88 12442
Int. Cl.[5] A61K *31/505;* C07D *401/04*
U.S. Cl. 514—272 2 Claims

1. Minoxidil aceturate corresponding to formula I

(I)



5,300,511

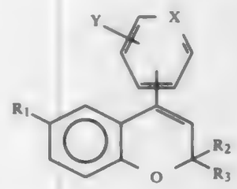
SPIRO-BENZOPYRAN DERIVATIVES AND USEFUL FOR TREATING ASTHMA AND HYPERTENSION

Sung-Eun Yoo; Kyu Y. Yi; Nak C. Jeong; Jee H. Suh; Seon-Ju Kim; Hwa-Sup Shin; Byung H. Lee, and Kyu S. Jung, all of Daejeon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

Filed May 21, 1992, Ser. No. 887,189
Claims priority, application Rep. of Korea, May 22, 1991, 91-8244; May 30, 1991, 91-8915; Dec. 26, 1991, 91-24353
Int. Cl.[5] C07D *471/10, 405/04;* A61K *31/44*
U.S. Cl. 514—278 5 Claims

1. A novel benzopyran compound of formula(I)

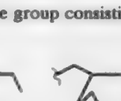
(I)



wherein:
R_1 is —CN, $—NO_2$, $—OCX_1X_2X_3$, $—NH_2$, 'NHSO$_2$R^A,



$—SO_2R^C$ or $—SO_2NR^CR^D$ wherein X_1, X_2 and X_3 are, each independently, F, Cl or H, except that X_1, X_2 and X_3 may not be a hydrogen atom, simultaneously; R^A and R^B are, each independently, a hydrogen atom, a C_{1-6} alkyl group, an optionally substituted phenyl group with a halogen atom, or a straight or branched C_{1-3} alkyl group; and R^C and R^D are, each independently, a hydrogen atom, a C_{1-6} alkyl group, an optionally substituted phenyl group with a halogen atom, or a straight or branched C alkyl group;
R_2 is a C_{1-4} straight or branched alkyl group;
R_3 is



(Z)

wherein A and B are, each independently, S or O; and Z is a C_{1-3} straight or branched alkyl group;
X is N or N→O; and
Y is a hydrogen or halogen atom, or an amino, hydroxy, lower alkoxy or lower alkyl group.

5,300,513

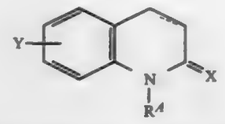
CARBOSTYRIL DERIVATIVES AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Hidenori Ogawa, Tokushima; Hisashi Miyamoto, Uji; Kazumi Kondo, Tokushima; Hiroshi Yamashita, Tokushima; Kenji Nakaya, Tokushima; Hajime Komatsu, Tokushima; Michinori Tanaka, Tokushima; Kazuyoshi Kitano, Tokushima; Takafumi Fujiioka, Tokushima; Shuji Teramoto, Tokushima; Michiaki Tominaga, Tokushima, and Yoichi Yabuuchi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

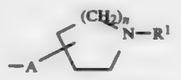
Filed Aug. 6, 1991, Ser. No. 740,676
Claims priority, application Japan, Aug. 7, 1990, 2-210025
Int. Cl.[5] A61K *31/47;* C07D *401/12*
U.S. Cl. 514—312 31 Claims

1. A carbostyril derivative of the following formula:

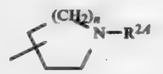
(1)



wherein X is an oxygen atom or a sulfur atom, Y is a hydrogen atom or a lower alkyl, R^A is a group of the formula:



wherein n is 1 or 2, A is a lower alkylene, and R^1 is a benzoyl in which the phenyl ring may optionally have one to three substituents selected from a lower alkoxy and an amino having optionally a lower alkyl substituent,
or R^A is a group of the formula:



wherein n is as defined above, and R^{2A} is a group of the formula:



wherein m is an integer of 1 to 3, and R^{3A} is:
i) a lower alkoxy,
ii) a pyridyl, or imidazolyl, which may optionally have a substituent selected from a lower alkyl, an oxo, a phenyl having optionally a substituent selected from a halogen atom and a lower alkoxy on the phenyl ring, and a phenylthio having optionally a substituent selected from nitro and amino,
iii) a lower alkenylthio,
iv) a pyrrolidinyl-substituted lower alkylthio,
v) a pyrrolidinyl-substituted lower alkylsulfinyl,
vi) a pyrrolidinyl-substituted lower alkylsulfonyl,
vii) a group of the formula:

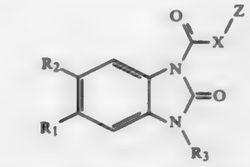
5,300,512

BENZIMIDAZOLE COMPOUNDS

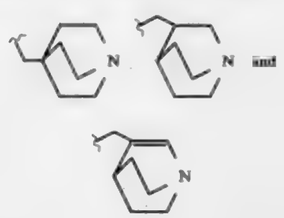
Daniel L. Flynn, Mundelein, and Alan E. Moormann, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 24, 1992, Ser. No. 903,833
Int. Cl.[5] C07D *453/02;* A61K *31/44*
U.S. Cl. 514—305 12 Claims

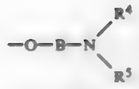
1. A compound of the formula



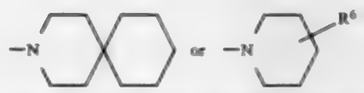
or a pharmaceutically acceptable salt thereof
wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, alkoxy, halogen, amino, monoalkylamino, dialkylamino, acylamino and alkylsulfonylamino;
R_3 is selected from the group consisting of H, alkyl and cycloalkyl;
X is NH or O; and
Z is selected from the group consisting of



VOL 1161 ISS 1 AP 5 1994 UMI

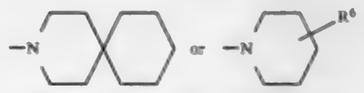


wherein B is a lower alkylene having optionally a hydroxy substituent, R^4 is hydrogen atom and R^5 is, a tricyclo{3.3.1.1}decanyl, a tricyclo{3.3.1.1}decanyl-lower alkyl, a halogen-substituted lower alkyl, a lower alkoxycarbonyl-lower alkanoyloxy-lower alkyl, a lower alkanoyl, or a lower alkenyl, or R^4 or R^5 may bind together with the nitrogen atom to which they bond to form a group of the formula:



wherein R^6 is an amino which may optionally be substituted by a lower alkanoyl having optionally one to three halogen substituents, or

viii) a lower alkoxy having two substituents selected from an aminocarbonyloxy having optionally a lower alkyl substituent and a group of the formula:



wherein R^7 and R^8 are the same or different and are each hydrogen atom or a lower alkyl,

and wherein the bond between 3- and 4-positions of the carbostyril ring is single bond or double bond, provided that when all of $R^{3,4}$ are lower alkoxy or when R^5 is a lower alkanoyl, X is a sulfur atom, and that when R^5 is a lower alkenyl and X is an oxygen atom, B is a lower alkylene having a hydroxy substituent, and further that when $R^{3,4}$ is a heterocyclic group having a lower alkyl or oxo substituent, the heterocyclic group is bound to the phenyl ring at the position other than the hetero atom, or a salt thereof.

5,300,514

PYRAZOLIDINONE CCK AND GASTRIN ANTAGONISTS AND PHARMACEUTICAL FORMULATIONS THEREOF

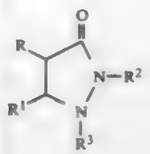
Raymond F. Brown; J. Jeffry Howbert; Karen L. Lobb, all of Indianapolis; David A. Neel, Zionsville; Jon K. Reel, Carmel, and Beverley Greenwood, Fishers, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 982,257, Nov. 25, 1992, abandoned, which is a continuation of Ser. No. 737,624, Jul. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,489, Jul. 17, 1990, abandoned. This application Mar. 18, 1993, Ser. No. 33,737

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—314 **13 Claims**

1. A pharmaceutical formulation comprising as an active ingredient an effective amount of a compound of A compound of the formula

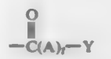


I

wherein

R and R^1 are independently hydrogen, C_1–C_6 alkyl, phenyl, benzyl, naphthyl, pyridyl or substituted phenyl having 1, 2, or 3 substituents selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, halo, trifluoromethyl, phenyl, phenoxy, phenyl (C_1–C_4 alkyl), phenyl(C_1–C_4 alkoxy), phenylacetyl C_1–C_6 alkanoyl, cyano, carbamyl, nitro, C_1–C_6 alkoxycarbonyl, methylenedioxy, C_3–C_6 alkylene, amino, —NH(C_1–C_4 alkyl or benzyl), and N(C_1–C_4 alkyl)$_2$;

R_2 is hydrogen, C_1–C_6 alkyl, carboxymethyl, C_1–C_4 alkoxycarbonylmethyl or a group of the formula



wherein

t is 1 or 0; A is —CH_2—, —O—, —NH— or —N(C_1–C_6 alkyl)—; and Y is phenyl or substituted phenyl as defined above;

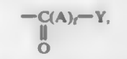
R_3 is hydrogen or a group of the formula



wherein B is O or S; n is 0 or 1; Q is —NH—, —N(C_1–C_6 alkyl)—, —S—, or —O—; and R^5 is a group of the formula —[CH(R^6)]$_q$—$(CH_2)_r$—R^7 wherein R^6 is hydrogen or C_1–C_6 alkyl; q is 0 or 1; r is 0, 1 or 2; and R^7 is hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl, pentafluorophenyl, pyridyl, tetrahydro-naphthyl, indolyl, quinolinyl, phenyl, naphthyl, or phenyl or naphthyl substituted with 1, 2, or 3 substituents as defined above for phenyl; or the group —$(Q)_nR^5$ is 2-tetrahydroisoquinolinyl; and the pharmaceutically acceptable salts thereof; provided that at least one of the groups R or R^1 is other than hydrogen or C_1–C_6 alkyl, and R or R^1 is hydrogen only when the other of R and R^1 is substituted phenyl in which the substituent is phenyl; and provided further that at least one of the groups R_2 and R_3 is other than hydrogen, and when R^3 is a group of the formula



R^2 is other than a group of the formula



and a pharmaceutically acceptable carrier, excipient or diluent therefor.

5,300,515

CARBAMIC ACID DERIVATIVES AND METHOD FOR PREPARING THE SAME

Yasuo Takano, Kazo; Masanori Takadoi, Kuki; Takashi Hirayama, Washimiya, and Atsuhiro Yamanishi, Nogi, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

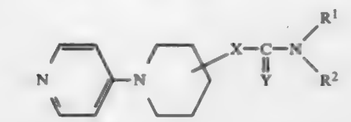
Filed Jan. 24, 1992, Ser. No. 824,983

Claims priority, application Japan, Jan. 31, 1991, 3-031922

Int. Cl.[5] C07D *211/68*

U.S. Cl. 514—318 **2 Claims**

1. A carbamic acid represented by formula (I)



(I)

wherein R^1 denotes hydrogen atom or lower alkyl group, R^2 denotes lower alkyl group which may be substituted with halogen atom, phenyl group which may have at least one substituent, naphthyl group, or five- or six-membered heterocyclic ring or its benzene-condensed ring, and X and Y, being same or different, denote sulfur atom or oxygen atom or their acid addition salts.

5,300,516

MUSCARINIC RECEPTOR ANTAGONISTS

Alexander R. Mackenzie, Deal, and Peter E. Cross, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP90/02040, § 371 Date Jun. 11, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/09014, PCT Pub. Date Jun. 27, 1991

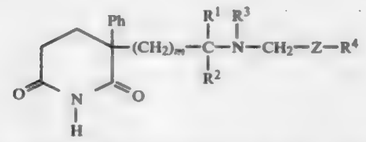
PCT Filed Nov. 28, 1990, Ser. No. 859,728

Claims priority, application United Kingdom, Dec. 12, 1989, 8928043

Int. Cl.[5] A61K *31/445;* **C07D** *211/88, 401/04, 405/14*

U.S. Cl. 514—320 **8 Claims**

1. A compound of the formula:



(I)

or a pharmaceutically acceptable salts thereof, where

m is 1 or 2;

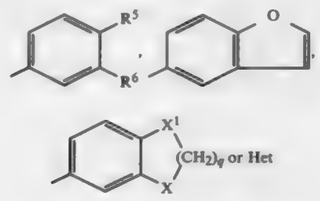
R^1 and R^2 are each independently H or C_1–C_4 alkyl or together represent —$(CH_2)_p$— where p is an integer of from 2 to 5;

R^3 is H or C_1–C_4 alkyl;

wherein

Z is a direct link; —CH_2—, —CH_2O— or —CH_2S—; and

R^4 is a group of the formula:



where

R^5 and R^6 are each independently H, C_1–C_4 alkyl, C_1–C_4 alkoxy, —$(CH_2)_nOH$, halo, trifluoromethyl, cyano, —$(CH_2)_nNR^7R^8$, —CO(C_1–C_4 alkyl), —OCO(C_1–C_4 alkyl), —CH(OH)(C_1–C_4 alkyl), —C(OH)(C_1–C_4 alkyl)$_2$, —SO_2NH_2, —$(CH_2)_nCONR^7R^8$ or —$(CH_2)_nCOO$(C_1–C_4 alkyl);

R^7 and R^8 are each independently H or C_1–C_4 alkyl;

n is 0, 1 or 2;

X and X^1 are each independently O or CH_2;

q is 1, 2 or 3; and

"Het" is pyridyl, pyrazinyl or thienyl.

5,300,517

PIPERIDINE COMPOUNDS HAVING ANTI-ACETYLCHOLINESTERASE ACTIVITY

Hiroshi Hasegawa, Sakura; Kazuo Isomae; Takeshi Kotsugai, both of Narita; Noriaki Shioiri, Chiba; Kumiko Sekine, Narita; Naokata Taido, Funabashi; Susumu Sato, and Tadayuki Kuraishi, both of Chiba, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

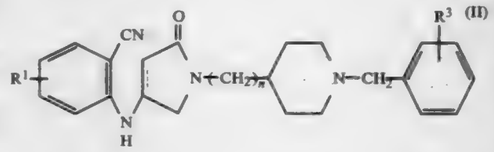
Division of Ser. No. 946,620, Sep. 18, 1992, Pat. No. 5,240,934, which is a division of Ser. No. 773,432, Oct. 9, 1991, Pat. No. 5,190,951. This application Apr. 28, 1993, Ser. No. 53,202

Claims priority, application Japan, Oct. 19, 1990, 2-281093; Oct. 19, 1990, 2-281094

Int. Cl.[5] A61K *31/445;* **C07D** *401/04, 401/06*

U.S. Cl. 514—326 **3 Claims**

1. A piperidine compound represented by the following formula (II):



(II)

wherein R^1 is a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, or an alkylthio group, R^3 is a hydrogen atom, a halogen atom, an alkyl group, or an alkoxy group, n is an integer of 0–7, and the dotted line may optionally be present and when present indicates a double bond; or a salt thereof.

5,300,518

PYRIDYL SUBSTITUTED BENZOTHIAZOLE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL UTILITY

Yasushi Okamoto; Katsuya Tagami; Shigeki Hibi; Hirotoshi Numata; Naoki Kobayashi; Masanobu Shinoda; Tetsuya Kawahara; Manabu Murakami; Kiyoshi Oketani; Takashi Inoue; Takashi Yamanaka, and Isao Yamatsu, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

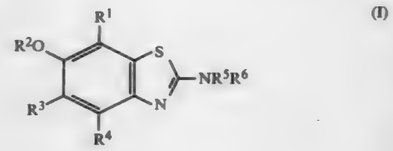
Filed Mar. 31, 1992, Ser. No. 861,379

Claims priority, application Japan, Apr. 4, 1991, 3-71480; Oct. 28, 1991, 3-281366

Int. Cl.[5] C07D *277/62;* **A61K** *31/41*

U.S. Cl. 514—338 **25 Claims**

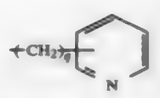
1. A benzothiazole derivative represented by the following formula (I):



(I)

wherein R^1 and R^3 are either the same or different and each represents a hydrogen atom, a lower alkyl group or a lower alkoxy group;

R^4 represents a group represented by the formula



wherein q is a integer of from 1 to 4;

R^2 represents a hydrogen atom and;

R^5 and R^6 are the same or different and each represent a hydrogen atom or a lower alkyl group; or a pharmacologically acceptable salt thereof.

5,300,519

IMMUNOSUPPRESSIVE AGENTS

David N. Jones, and John L. Maddocks, both of Sheffield, United Kingdom, assignors to The University of Sheffield, Sheffield, United Kingdom

PCT No. PCT/GB89/00771, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO90/00549, PCT Pub. Date Jan. 25, 1990

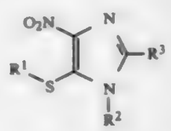
Continuation of Ser. No. 915,784, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 663,873, Mar. 6, 1991, abandoned. This PCT application Jul. 6, 1989, Ser. No. 20,162

Claims priority, application United Kingdom, Jun. 12, 1991, 8816123

Int. Cl.[5] A61K *31/415, 31/41*

U.S. Cl. 514—363 **4 Claims**

1. A method of suppressing the immune system of a human comprising administering to a person requiring same an effective amount of a compound of the formula



in which R^1 is a five member heterocyclic ring system having 2, 3, or 4 nitrogens, or 2 nitrogens and 1 sulfur or 1 nitrogen and 1 sulfur, which may be optionally substituted or unsustituted; R^2 is hydrogen, lower alkyl or aryl; and R^3 is hydrogen, lower alkyl, aryl and nitroaryl, wherein aryl is phenyl or napthyl.

5,300,520

WOOD PRESERVATIVE COMPOSITION

Akira Igarashi; Koh Ogura; Masayuki Asai; Kazuya Okubo, all of Hyogo, and Yosei Kuwazuru, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 24, 1991, Ser. No. 690,668

Claims priority, application Japan, Apr. 25, 1990, 1-09015

Int. Cl.[5] A01N *37/00, 43/64, 43/78, 47/10*

U.S. Cl. 514—367 **3 Claims**

1. A wood preservative composition which comprises a wood preservative in an amount of 0.05–2% by weight and phenylxylylethane in an amount of not less than 1% by weight and in an amount of 5–500 parts by weight in relation to one part by weight of the wood preservative, said wood preservative being at least one member selected from the group consisting of 3-iodo-2-propynylbutylcarbamate, 3-bromo-2,3-diiodo-2-propenylethylcarbonate, p-chlorophenyl-3-iodopropargylformal, 2-thiocyanomethylthiobenzothiazole, 1-((2-(2',4'-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl)methyl)-1H-1,2,4-triazole and N,N-dimethyl-N'-phenyl-(N'-fluorodichloromethylthio)sulfamide.

5,300,521

PYRAZOLES, FUNGICIDAL COMPOSITIONS AND USE

Martin Eberle, Allschwil, and Fritz Schaub, Aesch, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

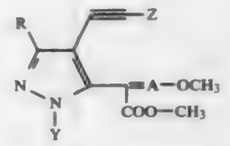
Continuation of Ser. No. 60,769, May 10, 1993, abandoned. This application Sep. 1, 1993, Ser. No. 116,234

Claims priority, application United Kingdom, May 13, 1992, 9210224; Mar. 2, 1993, 9304198

Int. Cl.[5] A01N *43/56, 43/78;* **C07D** *231/12, 417/06*

U.S. Cl. 514—406 **8 Claims**

1. Compounds of formula I



(I)

wherein

R is H, C_{1-4}alkyl; optionally substituted aryl or CF_3;

Y is C_{1-4}alkyl or optionally substituted aryl;

A is nitrogen or CH; and

Z is optionally substituted hydrocarbyl or optionally substituted heteroaryl.

5,300,522

CONDENSED HETEROCYCLIC COMPOUNDS AND PHARMACEUTICAL USE THEREOF

Michael Klaus, Weil/Rhein, Fed. Rep. of Germany; Peter Mohr, Basel, Switzerland, and Ekkehard Weiss, Inzlingen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

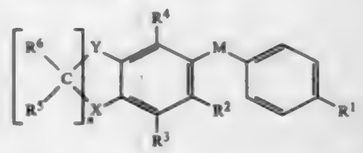
Division of Ser. No. 696,812, May 28, 1991, Pat. No. 5,164,387, which is a division of Ser. No. 377,510, Jul. 10, 1989, Pat. No. 5,037,825. This application Aug. 18, 1992, Ser. No. 931,612

Claims priority, application Switzerland, Jul. 14, 1988, 2694/88; May 26, 1989, 1994/89

Int. Cl.[5] A61K *31/34, 31/35;* **C07D** *307/80, 311/58*

U.S. Cl. 514—450 **20 Claims**

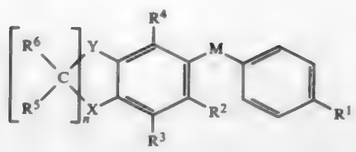
1. A compound of the formula



I

wherein R^1 is hydrogen, acyl, lower-alkyl, —CHO, —CH_2OR^{10}, —COR^7 or OR^{13}; R^2, R^3 and R^4 are, independently hydrogen, lower-alkyl, lower-alkoxy or halogen; R^5 and R^6 are, independently, hydrogen or lower-alkyl; R^7 is hydroxy, lower-alkoxy or NR^8R^9; R^8 and R^9 are, independently, hydrogen or lower-alkyl; one of X and Y is $>CR^{14}R^{15}$, and the other is —O—; R^{10} is hydrogen, lower-alkyl or acyl; M is —$C(R^{11})$=$C(R^{12})$—, —CONH— or —NH—CO—; R^{11}, R^{12}, R^{14} and R^{15} are, independently, hydrogen or lower-alkyl, R^{13} is hydrogen, lower-alkoxycarbonyl or lower-alkyl, which can be substituted by amino, mono-alkylamino, di-alkylamino, morpholino, thiomorpholino or piperazino, and n is 1, 2, 3 or 4 provided that R^1 is OR^{13} when M is —$C(R^{11})$=$C(R^{12})$— and R^1 is hydrogen, acyl, lower-alkyl, —CH_2OR^{10}, or OR^{13} when M is —CONH— or a salt of a compound of formula I, when R^1 is carboxy.

15. A method of treating inflammatory, allergic, rheumatic and immunological disorders which comprises administering to a host requiring such treatment an effective amount of a compound of the formula



I

wherein R^1 is hydrogen, acyl, lower-alkyl, —CHO, —CH_2OR^{10}, —COR^7 or OR^{13}; R^2, R^3 and R^4 are, independently, hydrogen, lower-alkyl, lower-alkoxy or halogen; R^5 and R^6 are, independently, hydrogen or lower-alkyl; R^7 is hydroxy, lower-alkoxy or NR^8R^9; R^8 and R^9 are, independently, hydrogen or lower-alkyl; one of X and Y is $>CR^{14}R^{15}$, and the other is —O— R^{10} is hydrogen, lower-alkyl or acyl; M is —$C(R^{11})$=$C(R^{12})$—, —CONH— or —NH—CO—; R^{11}, R^{12}, R^{14} and R^{15} are, independently, hydrogen or lower-alkyl, R^{13} is hydrogen, lower-alkoxycarbonyl or lower-alkyl, which can be substituted by amino, mono-alkylamino, di-alkylamino, morpholino, thiomorpholino or piperazino, and n is 1, 2, 3 or 4 provided that R^1 is OR^{13} when M is —$C(R^{11})$=$C(R^{12})$— and R^1 is hydrogen, acyl, lower-alkyl, —CH_2OR^{10}, or OR^{13} when M is —CONH— or a salt of a compound of formula I, when R^1 is carboxy.

5,300,523

SUBSTITUTED AMINOMETHYLTETRALINS AND THEIR HETEROCYCLIC ANALOGUES

Bodo Junge; Rudolf Schohe, both of Wuppertal; Peter-Rudolf Seidel, Cologne; Thomas Glaser, Roesrath; Jörg Traber, Lohmar; Ulrich Benz, Bergisch-Gladbach; Teunis Schuurman, Lohmar, and Jean-Marie Viktor De Vry, Roesrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

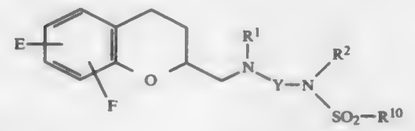
Division of Ser. No. 412,694, Sep. 26, 1989, Pat. No. 5,137,901, which is a continuation-in-part of Ser. No. 378,732, Jul. 12, 1989, abandoned. This application Apr. 7, 1992, Ser. No. 864,953

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825609; Jan. 23, 1989, 3901814

Int. Cl.[5] C07D *409/06;* **A61K** *31/38*

U.S. Cl. 514—456 **8 Claims**

1. A substituted aminomethylchroman of the formula



in which

E and F each independently is alkyl, alkoxy, halogen, nitro, cyano, trifluoromethyl, trifluoromethoxy or a group of the formula —$CONR^2R^3$,

R^1, R^2 and R^3 each independently is hydrogen, alkyl or benzyl,

R^{10} is alkyl, or phenyl or naphthyl each optionally substituted by halogen or alkyl, and

Y is an alkylene chain,

or a salt thereof.

5,300,524

SPIROCYCLIC PAF ANTAGONISTS

Alan H. Davidson, Witney; Mark Whittaker, Old Marston, and Zoe M. Spavold, Witney, all of England, assignors to British Bio-Technology Limited, Oxford, England

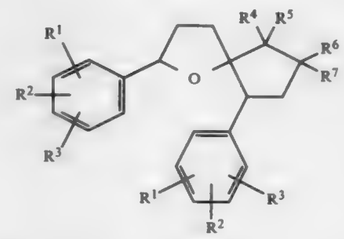
Filed Sep. 16, 1991, Ser. No. 760,726

Claims priority, application United Kingdom, Mar. 6, 1991, 9104746

Int. Cl.[5] A61K *31/34;* **C07D** *311/96*

U.S. Cl. 514—462 **18 Claims**

1. A compound of general formula I:

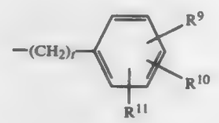


I

wherein:

each of R^1, R^2, and R^3 independently represents hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_1–C_6 alkoxy, C_1–C_6 thioalkyl, halo, CN, NO_2, SOC_1–C_6 alkyl, SO_2C_1–C_6 alkyl, SO_2NH_2, COC_1–C_6 alkyl, CHO, $COOC_1$–C_6 alkyl, CH_2OH, benzyl, benzoyl, CF_3, $CONH_2$, $NHCOC_1$–C_6 alkyl;

each of R^4 and R^5 independently represents hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_1–C_6 alkoxy, C_1–C_6 thioalkyl, halo, CN, NO_2, SOC_1–C_6 alkyl, SO_2C_1–C_6 alkyl, SO_2NH_2, COOH, COC_1–C_6 alkyl, CHO, $COOC_1$–C_6 alkyl, CH_2OH, OH, benzyl, benzoyl, CF_3, $CONH_2$, $NHCOC_1$–C_6 alkyl or a $OC(=O)R^8$ group wherein R^8 represents C_1–C_6 alkyl, C_2–C_6 alkenyl, C_1–C_6 alkoxy, C_1–C_6 thioalkyl, COC_1–C_6 alkyl, $COOC_1$–C_6 alkyl, benzyl, benzoyl, nitrile, CF_3 or a V group wherein V represents a group



wherein t is an integer from 0 to 3 and each of R^9, R^{10} and R^{11} is independently hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_1–C_6 alkoxy, C_1–C_6 thioalkyl, halo, CN, NO_2, SOC_1–C_6 alkyl, SO_2C_1–C_6 alkoxy, SO_2NH_2, COOH, COC_1–C_6 alkyl, CHO, $COOC_1$–C_6 alkyl, CH_2OH, OH, benzyl, benzoyl, CF_3, $CONH_2$, $NHCOC_1$–C_6 alkyl;

or R^4 together with R^5 forms a =O, =N–OH, —NHR^8 or =CHR^8 group, wherein R^8 is as defined above;

each of R^6 and R^7 independently represents hydrogen, C_1–C_6 alkyl, COC_1–C_6 alkyl, benzyl, a group V as defined above or a COV group wherein V is as defined above;

or R^6 together with R^7 form a =$CR^{12}R^{13}$ group wherein each of R^{12} and R^{13} independently represent a hydrogen atom, a C_1–C_{18} alkyl, a C_2–C_6 alkenyl or a group V as defined above;

or a pharmaceutically or veterinarily acceptable acid addition salt or hydrate thereof.

VOL 1161 ISS 1 AP 5 1994 UMI

5,300,525
ANTI-SOLID TUMOR AGENTS

Yoshiharu Morita, Yokohama, and Koichiro Hirayama, Sagamihara, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 688,694, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 461,671, Jan. 8, 1990, abandoned, which is a division of Ser. No. 72,141, Jul. 10, 1987, Pat. No. 4,916,160. This application Mar. 2, 1992, Ser. No. 841,785

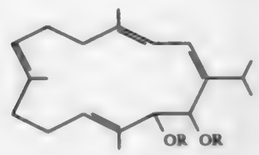
Claims priority, application 07101986, Jul. 10, 1986, 162783

Int. Cl.[5] A61K *31/225*

U.S. Cl. 514—548 **6 Claims**

1. A method of treating solid tumors in a mammal, which comprises administering to said mammal an effective amount of a pharmaceutical composition, which comprises:

a) an effective amount for treating solid tumors of a compound of the formula:



wherein R is selected from the group consisting of butyryl and benzoyl, and

b) a pharmaceutically acceptable carrier, and wherein said solid tumors treated are sensitive to treatment with said composition containing said compound.

5,300,526
PORPHYRIC INSECTICIDES

Constantin A. Rebeiz, Urbana; John A. Juvik, Champaign, and Carole C. Rebeiz, Urbana, all of Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Division of Ser. No. 294,132, Jan. 9, 1989, Pat. No. 5,200,427, which is a continuation-in-part of Ser. No. 144,883, Jan. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 895,529, Aug. 11, 1986, Pat. No. 5,127,938, which is a continuation of Ser. No. 754,092, Jul. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 634,932, Jul. 27, 1984, abandoned. This application Nov. 20, 1991, Ser. No. 795,367

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] A01N *37/44*

U.S. Cl. 514—561 **19 Claims**

1. A method for inducing the accumulation of tetrapyrroles in living insects, said method comprising contacting an insect with a composition comprising δ-aminolevulinic acid and at least one compound selected from the group consisting of inducers of δ-aminolevulinic acid, and enhancers of conversion of δ-aminolevulinic acid to tetrapyrroles.

5,300,527
ALKYLAMINO-AND ALKYLAMINO ALKYL DIARYLKETONES

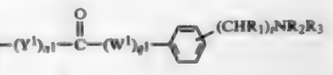
R. Richard L. Hamer, Lebanon; Brian Freed, Somerset, and Richard C. Allen, Flemington, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 643,631, Jan. 22, 1991, Pat. No. 5,177,111, which is a division of Ser. No. 561,202, Jul. 31, 1990, Pat. No. 5,006,563, which is a continuation of Ser. No. 450,502, Dec. 14, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,336

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—648 **2 Claims**

1. A method of alleviating in a mammal a memory dysfunction characterized by decreased cholinergic function which comprises administering to a patient an effective amount of a compound of the formula



wherein

(a) R_1 is H or loweralkyl;
(b) R_2 and R_3 are loweralkyl;
(c) Y^1 is $—CH_2—$, $—CHF—$, $—CF_2—$, $—OCH_2—$, $—CHOHCF_2—$, or $—CHFCF_2$;
(d) W^1 is $—CH_2—$, $—CH_2O—$, or $—CF_2CHOH—$;
(e) V is H, halogen, loweralkyl, loweralkoxy, CF_3, or NO_2;
(f) u is 1,2, or 3;
(g) n^1 is 0 or 1;
(g) q^1 is 0 or 1; and
(i) t is 0 or 1, with the proviso that when q^1 is 0 and t is 0 or 1, n^1 is 1 and Y^1 is $—CHF—$, $—CF_2—$, $—OCH_2—$, $—CHOHCF_2—$, or $—CHFCF_2—$; the pharmaceutically acceptable acid addition salts thereof and where applicable the geometric isomers, or optical isomers and racemic mixtures thereof.

5,300,528
USE OF PERFLUOROETHYLDIMETHYL CYCLOHEXANE FOR OXYGEN TRANSPORT

John K. Graybill, Macungie, Pa., and Gregory B. George, Largo, Fla., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 724,613, Jul. 2, 1991, Pat. No. 5,146,014. This application Aug. 20, 1992, Ser. No. 932,520

Int. Cl.[5] A61K *47/06*

U.S. Cl. 514—772 **15 Claims**

1. A method of transporting gases in a fluid system, the improvement comprising using as the gas transport agent a perfluorinated compound having the following structure wherein the ring carbons are fully fluorinated:



5,300,529
STABLE, CLEAR, EFFICACIOUS AQUEOUS MICROEMULSION COMPOSITIONS CONTAINING A HIGH LOADING OF A WATER-INSOLUBLE, AGRICULTURALLY ACTIVE CHEMICAL

Kolazi S. Narayanan, Palisades Park, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 978,860, Nov. 19, 1992, which is a continuation-in-part of Ser. No. 964,245, Oct. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 654,250, Feb. 12, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 8,946

Int. Cl.[5] A01N *25/00*

U.S. Cl. 514—788 **10 Claims**

1. An inert matrix composition suitable for forming a clear, efficacious, microemulsion concentrate including about 2–30% of a water-insoluble, agriculturally active chemical and, upon dilution of said concentrate with water, an aqueous microemulsion, both of which are stable for an extended period of time, consisting essentially of:

(a) a C_6–C_{18} alkyl pyrrolidone in an amount of about 2–90% by weight of the composition less (c) and (d) if present, sufficient to form solvated micelles of the agriculturally active chemical;

(b) a C_1–C_4 alkyl pyrrolidone in an amount of about 1–90% by weight of the composition sufficient to complex with said C_6–C_{18} alkyl pyrrolidone and to solubilize said chemical in said micelles;

(c) a nonionic surfactant having an HLB of ≧6 in an amount of about 2–90% by weight of the composition less (a) and (d) if present, sufficient to also complex with said C_6–C_{18} pyrrolidone to reduce said micelle size to about 0.005–0.5 microns thereby precluding disadvantageous leakage of said solvated chemical through said micelles; and

(d) optionally, an anionic surfactant in an amount of 2–90% by weight of the composition less (a) and (c) to enhance the close-packing of the micelles thereby rendering the compositions more stable as evidenced by the presence of a clear, homogeneous liquid phase.

5,300,530
PROCESS FOR MODIFYING THE GLYCOLYSIS REACTION PRODUCT OF POLYURETHANE SCRAP

Reinaldo M. Machado, Allentown, and Brian E. Farrell, Fogelsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 11, 1992, Ser. No. 988,994

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—49 **15 Claims**

1. In a process for converting polyurethane foam into a reusable polyol composition by the glycolysis of the polyurethane foam to yield a glycolysis polyol product containing primary and secondary amines, the improvement which comprises reacting the glycolysis polyol product with a sufficient amount of an alkylene oxide to convert substantially all the primary amines to secondary amines, which amount of alkylene oxide is insufficient to convert a substantial amount of secondary amines to tertiary amines.

5,300,531
PLASTIC SKIN CLADDED POLYURETHANES HAVING IMPROVED SURFACE APPEARANCE

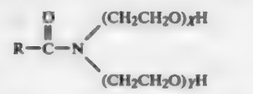
Laura B. Weaver, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 30, 1992, Ser. No. 998,338

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—51 **20 Claims**

1. A plastic skin cladded polyurethane polymer comprising a plastic skin and, adherent thereto, a polyurethane prepared from a formulation including a polyisocyanate, a polyfunctional active hydrogen containing material and an adhesion improver having the general formula:



wherein R is an aliphatic group having from about 6 to about 24 carbons and X and Y are integers such that $0<X+Y\leqq15$ and wherein the adhesion improver is present in an amount effective to prevent blistering.

5,300,532
INTEGRAL SKIN-FOAM MOLDED ARTICLE

Masahiro Takimoto; Hisashi Mizuno, and Junichi Hirano, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 870,892, Apr. 20, 1992, abandoned. This application May 12, 1993, Ser. No. 60,505

Claims priority, application Japan, Apr. 25, 1991, 3-095093

Int. Cl.[5] C08J *9/34*

U.S. Cl. 521—51 **5 Claims**

1. An integral skin-foam molded article obtained by reaction-injection molding a polyurethane foam material comprising a polyether polyol component, an polyisocyanate component having a NCO content of 20 to 35%, a catalyst, and a blowing agent, wherein said catalyst comprises a tin salt of an organic acid present in an amount of from 0.1 to 1.5 parts by weight per 100 parts by weight of the polyol component; and said blowing agent consisting essentially of water present in an amount of from 0.1 to 1.5 parts by weight per 100 parts by weight of the polyol components wherein said catalyst further comprises an amine catalyst having at least one blocked amine nitrogen, said amine catalyst is contained in an amount from 0.1 to 1.5 parts by weight per 100 parts by weight of the polyol component.

5,300,533
METHOD FOR PRODUCTION OF CROSSLINKED PLASTIC FOAM

Roger Dahl, Stenungsund, Sweden; Steinar Pedersen, Skien, and Raymond Boreng, Stavanger, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO90/00177, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO91/09076, PCT Pub. Date Jun. 27, 1991

PCT Filed Nov. 29, 1990, Ser. No. 859,719

Claims priority, application Norway, Dec. 8, 1989, 894955

Int. Cl.[5] C08J *9/10, 9/30*

U.S. Cl. 521—76 **13 Claims**

1. A method for production of a crosslinked, foamed vinyl chloride containing polymer, which comprises adding a blowing agent to a copolymer produced by a copolymerisation of a monomer composition comprising vinyl chloride and glycidyl containing monomer, foaming the copolymer, where the decomposition products of the blowing agent or decomposition products of reaction products from the blowing agent, are chemically reactive with epoxy groups of the copolymer or its reaction products, an crosslinking the copolymer when the blowing agent or the reaction product of the blowing agent is decomposed.

5,300,534
PRODUCTION OF PLASTIC FOAMS, PREFERABLY RIGID FOAMS CONTAINING URETHANE GROUPS OR URETHANE AND ISOCYANURATE GROUPS, AND BLOWING AGENT-CONTAINING EMULSIONS FOR THIS PURPOSE

Otto Volkert, Weisenheim, Fed. Rep. of Germany, and Corinne A. Meynard, Clichy, France, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 904,919, Jun. 26, 1992, Pat. No. 5,205,956. This application Dec. 8, 1992, Ser. No. 986,747

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121161

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—98 **2 Claims**

1. A blown, closed-celled plastic foam containing in its cells a gaseous mixture comprising at least one vinylfluoroalkane of the formula

$$CH_2{=}CH{-}C_nF_{2n+1}$$

in which $—C_nF_{2n+1}$ is linear or branched perfluoroalkyl and n is an integer from 1 to 6, as blowing agent and/or insulating gas, with the proviso that, if the vinylfluoroalkane is vinylperfluoro-n-butane, it is not employed in admixture with dichloroethylene or in admixture with more than 90% of 1,1-dichloro-1-fluoroethane.

5,300,535
METHOD FOR PRODUCING POLYURETHANE FLEXIBLE FOAM
Hiromitsu Takeyasu, Tokyo, and Sigeyuki Kozawa, Yokohama, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 499,346, Oct. 18, 1989, Pat. No. 5,093,380. This application Feb. 22, 1991, Ser. No. 659,259
Claims priority, application Japan, Oct. 25, 1988, 63-267297; Feb. 10, 1989, 1-29644; Feb. 23, 1990, 2-40959
Int. Cl.[5] C08J *9/04;* **C08L** *75/08*
U.S. Cl. 521—137 **11 Claims**

1. A method for producing a polyurethane flexible foam, which comprises reacting at least one high molecular weight polyol selected from the group consisting of a polyoxyalkylene polyol having a hydroxyl value of from 5 to 38 mgKOH/g, from 2 to 8 hydroxyl groups and a total unsaturation degree of not more than 0.7 meq/g and a polymer dispersed polyol containing said polyoxyalkylene polyol as the matrix, an optional cross-linking agent and a polyisocyanate compound in the presence of from 1 to 40 parts by weight, to 100 parts by weight of said high molecular weight polyol, of a low viscosity compound having a viscosity not higher than 300 cP at 25° C. and lower than the viscosity of said polyoxyalkylene polyol and having an addition-polymerizable unsaturated group but not an active hydrogen reactive with an isocyanate group, a catalyst, a foaming agent and a foam stabilizer.

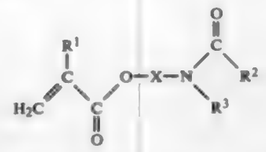
5,300,536
CATALYTIC COMPOSITION FOR PHOTOPOLYMERIZATION AND A PHOTOPOLYMERIZABLE COMPOSITION CONTAINING THE SAME
Shin Takahashi, and Yoshiaki Fujimoto, both of Aichi, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 592,192, Oct. 3, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 952,463
Claims priority, application Japan, Oct. 6, 1989, 1-260198; Oct. 31, 1989, 1-284289
Int. Cl.[5] C08F *4/32, 4/16*
U.S. Cl. 522—8 **8 Claims**

1. A catalytic composition for photopolymerization, which comprises an alpha-diketone and a hydrazone, said hydrazone being obtained by dehydration-condensation of a carbonyl compound and an arylsulfonyl hydrazide represented by the formula Z—$NHNH_2$ wherein Z is an arylsulfonyl group containing up to 20 carbon atoms.

5. A photopolymerizable composition which comprises a vinyl compound capable of radical polymerization and a catalytic composition which comprises an alpha-diketone and a hydrazone, said hydrazone being obtained by dehydration-condensation of a carbonyl compound and an arylsulfonyl hydrazide represented by the formula Z—$NHNH_2$ wherein Z is an arylsulfonyl group containing up to 20 carbon atoms.

5,300,537
CARBOXAMIDO (METH) ACRYLIC ACID ESTERS FOR TREATMENT OF COLLAGEN
Michael Müller, Bergisch-Gladbach; Wolfgang Podszun, Cologne, and Bernd Alker, Bergisch-Galdbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 509,008, Apr. 12, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 962,994
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1989, 3913939
Int. Cl.[5] A61F *2/00;* **C08K** *5/20;* **A61K** *6/00*
U.S. Cl. 523—115 **11 Claims**

1. A method of using an adhesive to adhere a substance to a collagen-containing material selected from the group consisting of tooth and bone, wherein said adhesive comprising carboxamide group-containing (meth) acrylic acid ester of the formula



R^1 denotes hydrogen or methyl,
R^2 denotes alkyl (C_1–C_4) or alkenyl (C_2–C_4), optionally substituted by hydroxyl, carboxyl, halogen or amino of the formula



in which
R^4 and R^5 are identical or different and denote hydrogen or lower alkyl,
R^3 denotes hydrogen or has one of the abovementioned meanings of R^2 and
X is a divalent aliphatic (C_1–C_6) or cycloaliphatic radical (C_3–C_6), which can optionally contain one or more oxygen, sulphur and/or —NR^4-bridges,
where
R^4 has the abovementioned meaning,
and which is optionally substituted by hydroxyl, carboxyl, halogen or amino of the formula



in which R^4 and R^5 have the abovementioned meaning, with the proviso that
a) the sum of the carbon atoms in the radicals R^2, R^3 and X is not greater than six if these radicals contain no heteroatoms, or
b) the sum of the carbon atoms in the radicals R^2, R^3, R^4, R^5 and X is not greater than ten if at least one of these radicals contains at least one hetero atom.

5,300,538
SOLID MARKING COMPOSITIONS
Rachel M. Loftin, Halifax, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jun. 2, 1992, Ser. No. 892,181
Int. Cl.[5] C09D *13/00;* **C08L** *53/02, 91/06*
U.S. Cl. 523—161 **26 Claims**

1. A method of making a solid, erasable marking composition comprising the steps of (a. mixing a pigment into an oil; (b) heating a wax with a block copolymer until both are melted, forming a clear molten liquid; and (c) adding the mixture of step (a) to the mixture of step (b) and mixing until homogeneous.

5,300,539
POST-POLYMERIZATION ADDITIVE INCORPORATION PROCESS
Ananda M. Chatterjee, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 28, 1992, Ser. No. 996,944
Int. Cl.[5] C08K *7/06;* **B05D** *7/02, 1/02;* **B32B** *5/16*
U.S. Cl. 523—204 **9 Claims**

1. In a continuous process for incorporation additives onto thermoplastic polymer granules comprising:
mixing in a continuous feed high-speed/high intensity mixer having rotor speeds sufficient to homogeneously incorporate additive particles onto the thermoplastic polymer granules, a blend consisting essentially of thermoplastic polymer granules and additive particles, wherein the improvement comprises introducing the additive in the form of an aqueous dispersion to the high-speed/high intensity mixer at an intensity high enough and, at a paddle velocity of 15 to 150 feed per second, at an average residence time sufficient to incorporate said additive particles onto said polymer particles, while said polymer granules and additive particles are entrained in a gaseous medium and are swept around the mixer during mixing.

5,300,540
PRESERVED CELLULAR STRUCTURES
Thomas R. Masters, 2105 "C" St., Lincoln, Nebr. 68502
Continuation-in-part of Ser. No. 578,806, Sep. 4, 1990, abandoned. This application Jun. 24, 1992, Ser. No. 904,171
Int. Cl.[5] A01N *3/00;* **C08L** *23/34*
U.S. Cl. 523—309 **13 Claims**

1. A process for preserving the natural colors and structural integrity of flowers, plants, fruits, vegetables and other natural cellular material, comprising the steps of:
applying an aqueous polymeric solution to the entire surface of said cellular material;
freeze-drying the cellular material to eliminate the water in the cellular material; and
applying an organic solution consisting essentially of a non-aqueous solution of water resistant, film-forming polymeric resins to the entire surface of said dried cellular material;
said film-forming polymers being selected from the group of elastomeric resins; and
said elastomeric resins being selected from the group of chlorinated sulfonated polyethylene resins.

5,300,541
POLYAMINE-POLYEPOXIDE GAS BARRIER COATINGS
Richard M. Nugent, Jr.; Ken W. Niederst, both of Allison Park, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 656,662, Feb. 19, 1991, abandoned, which is a division of Ser. No. 367,992, Jun. 19, 1989, Pat. No. 5,008,137, which is a continuation of Ser. No. 152,176, Feb. 4, 1988, abandoned. This application Sep. 30, 1991, Ser. No. 767,458
The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.
Int. Cl.[5] C08K *3/20, 5/06;* **C08G** *59/50;* **C08L** *63/02*
U.S. Cl. 523—414 **21 Claims**

1. A polymeric gas barrier material comprising a cured polymeric resin which is a reaction product of polyamine and polyepoxide, the reaction product containing at least seven percent by weight of amine nitrogen based on the total weight of the polyamine-polyepoxide reaction product.

5,300,542
ADDITIVE COMPOSITION FOR OIL WELL CEMENTING FORMULATIONS HAVING NONIONIC AND ANIONIC SURFACTANT STABLIZERS TO IMPROVE THE FLUID LOSS PROPERTIES THEREOF
Sridhar Gopalkrishnan, Woodhaven, Mich., assignor to BASF Corp., Parsippany, N.J.
Continuation of Ser. No. 940,429, Sep. 4, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,773
Int. Cl.[5] C08J *5/10;* **C08K** *3/00;* **C08L** *9/08*
U.S. Cl. 524—8 **19 Claims**

1. An oil and gas well cementing composition, comprising:
a) cement;
b) styrene/butadiene latex in an amount of from about 5% to about 30% by weight of said cement;
c) from about 0.05% to about 2% by weight of the nonionic surfactant stabilizer additive alkylphenol ethoxylate of the following formula:

R—C_6H_5—[CH_2—CH_2—O]$_n$—H

wherein R is butyl, pentyl, hexyl, heptyl, octyl, nonyl or decyl, said alkylphenol ethoxylate having a molecular weight of from about 1000 to about 3000 such that n equals from about 25 to about 50;
d) from about 0.01% to about 2% by weight of at least one anionic surfactant stabilizer additive selected from the group consisting of polyacrylic acid homopolymers having a molecular weight of from about 500 to about 10,000;
e) water in an amount such that the total quantity of water is from about 30% to about 60% by weight of said cement; said composition having a fluid loss value of less than or equal to about 50 mL/30 minutes.

5,300,543
RECYCLABLE THERMOPLASTICS FOAM OF HIGH GLASS TEMPERATURE
Wolfgang Ebert, Krefeld; Jürgen Kirsch, Leverkusen; Burkhard Köhler; Wolfgang Beer, both of Krefeld; Siegfried Anders, Koeln, and Rolf Dhein, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 965,592, Oct. 23, 1992. This application Sep. 28, 1993, Ser. No. 127,724
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135743; Apr. 23, 1992, 4213326
Int. Cl.[5] C08J *9/12*
U.S. Cl. 521—79 **10 Claims**

1. A thermoplastic molding composition comprising a thermoplastic resinous component selected from the group consisting of polycarbonate, polyester carbonate, polysulfone, polyethersulfone and ABS polymers and a foaming agent, said foaming agent consisting of either
A) a mixture of (i) and (ii) where
(i) is 0.01 to 4.8% alumina hydrate conforming to

Al_2O_3·$(H_2O)_3$

and where
(ii) is 0.01 to 4.8% of an acidic additive selected from the group consisting of organic acids, inorganic acids and the corresponding salts of said acids, or
B) which is 0.01 to 4.8% of the reaction products of said (i) and said (ii), said percentages being relative to the weight of said composition.

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5,300,544

NON-MIGRATING 1-HYDROCARBYLOXY-2,2,6,6-TETRAMETHYLPIPERIDINE 1,3,5-TRIAZINE DERIVATIVES AS POLYMER STABILIZERS

James P. Galbo, Wingdale; Ramanathan Ravichandran, Nanuet, and Mark S. Holt, West Nyack, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 878,678, May 5, 1992, Pat. No. 5,216,156. This application Mar. 12, 1993, Ser. No. 30,999

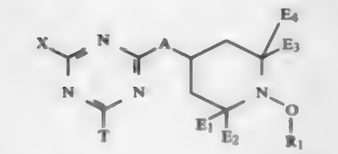
Int. Cl.[5] C08K *5/3492*

U.S. Cl. 524—00 **11 Claims**

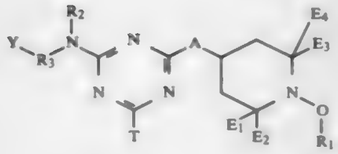
1. A composition stabilized against the deleterious effects of heat, oxygen and actinic light which comprises

(a) a synthetic polymer, and

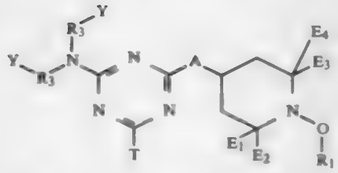
(b) an effective stabilizing amount of a compound of the formula I, II, III, IV, V, VI, VII, VIII, IX, X or XI



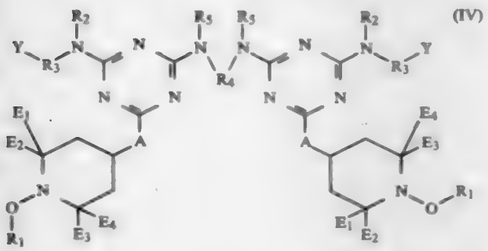
(I)



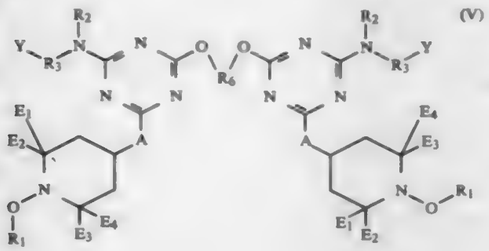
(II)



(III)

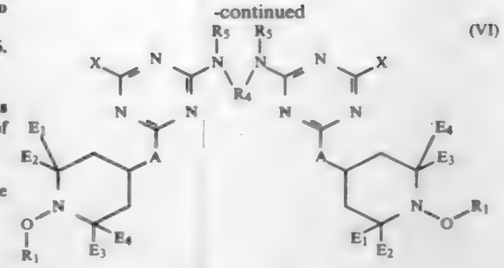


(IV)

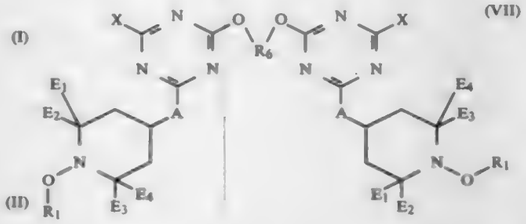


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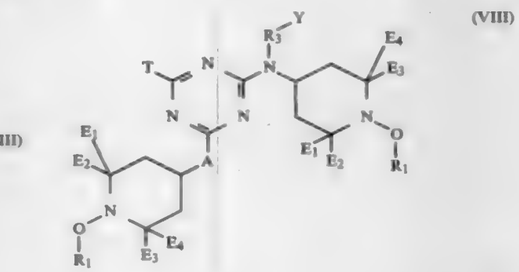
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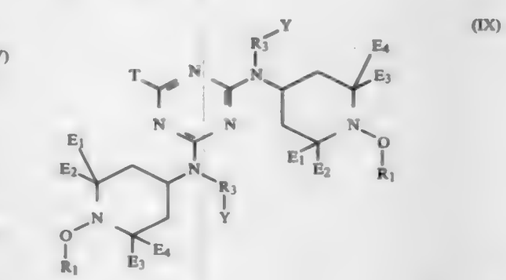
(VI)



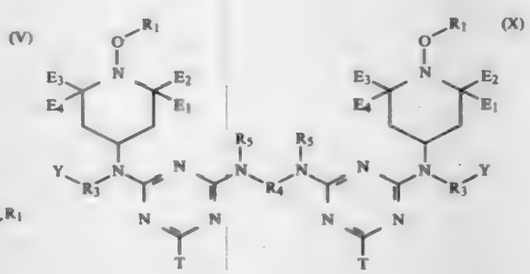
(VII)



(VIII)

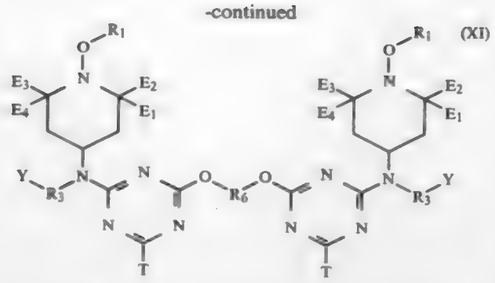


(IX)



(X)

-continued



(XI)

wherein

E_1, E_2, E_3 and E_4 are independently alkyl of 1 to 4 carbon atoms, or E_1 and E_2 are independently alkyl of 1 to 4 carbon atoms and E_3 and E_4 taken together are pentamethylene, or E_1 and E_2; E_3 and E_4 each taken together are pentamethylene,

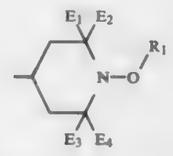
R_1 is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, a bicyclic or tricyclic hydrocarbon radical of 7 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, aryl of 6 to 10 carbon atoms or said aryl substituted by one to three alkyl of 1 to 8 carbon atoms,

R_2 is hydrogen or a linear or branched chain alkyl of 1 to 12 carbon atoms,

R_3 is alkylene of 1 to 8 carbon atoms, or R_3 is —CO—, —CO—R_4—, —$CONR_2$—, or —CO—NR_2—R_4—,

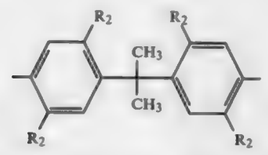
R_4 is alkylene of 1 to 8 carbon atoms,

R_5 is hydrogen, a linear or branched chain alkyl of 1 to 12 carbon atoms, or



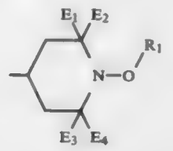
or when R_4 is ethylene, two R_5 methyl substituents can be linked by a direct bond so that the triazine bridging group —$N(R_5)$—R_4—$N(R_5)$— is a piperazin-1,4-diyl moiety,

R_6 is alkylene of 2 to 8 carbon atoms or R_6 is

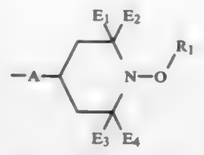


with the proviso that Y is not —OH when R_6 is the structure depicted above,

A is —O— or —NR_7— where R_7 is hydrogen, a straight or branched chain alkyl of 1 to 12 carbon atoms, or R_7 is



T is phenoxy, phenoxy substituted by one or two alkyl groups of 1 to 4 carbon atoms, alkoxy of 1 to 8 carbon atoms or —$N(R_2)_2$ with the stipulation that R_2 is not hydrogen, or T is



X is —NCO, —OH, —O—glycidyl, or —$NHNH_2$, and

Y is —OH, —NH_2, —NHR_2 where R_2 is not hydrogen; or Y is —NCO, —COOH, oxiranyl, —O—glycidyl, or —Si-$(OR_2)_3$; or the combination R_3—Y— is —$CH_2CH(OH)R_2$ where R_2 is alkyl or said alkyl interrupted by one to four oxygen atoms, or R_3—Y— is —CH_2OR_2.

5,300,545

PROCESS FOR STABILIZING POLYMER COMPOSITIONS AGAINST HEAT OR LIGHT EFFECTS

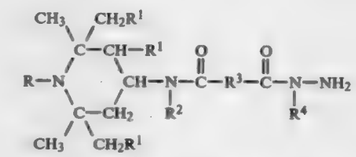
Robert T. Kazmierczak, and Ronald E. Mac Leay, both of Williamsville, N.Y., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 805,719, Dec. 6, 1991, Pat. No. 5,214,147, which is a division of Ser. No. 619,287, Nov. 27, 1990, Pat. No. 5,101,033, which is a division of Ser. No. 310,408, Feb. 13, 1989, Pat. No. 4,983,738, which is a continuation-in-part of Ser. No. 84,602, Aug. 12, 1987, abandoned. This application Mar. 1, 1993, Ser. No. 24,567

Int. Cl.[5] C08K *5/3477, 5/10*

U.S. Cl. 524—102 **16 Claims**

1. A process of stabilizing a synthetic or natural polymer composition against the degradative effects of heat or light comprising combining with the polymer composition a compound of the formula



I

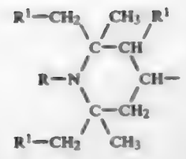
in an amount effective to stabilize the polymer composition against the degradative effects of heat or light, wherein

R is hydrogen, oxy, hydroxy, unsubstituted aliphatic of 1 to 20 carbons, unsubstituted araliphatic of 7 to 12 carbons, unsubstituted aliphatic acyl of 2 to 10 carbons, unsubstituted aryl acyl of 7 to 13 carbons, alkoxycarbonyl of 2 to 9 carbons, unsubstituted aryloxycarbonyl of 7 to 15 carbons, unsubstituted aliphatic, unsubstituted aryl, unsubstituted alicyclic or unsubstituted araliphatic substituted carbamoyl of 2 to 13 carbons, 2-cyanoethyl, unsubstituted hydroxyaliphatic of 1 to 6 carbons, unsubstituted epoxyaliphatic of 3 to 10 carbons or a polyalkylene oxide group of 4 to 30 carbons;

R^1 is hydrogen or lower alkyl of 1 to 4 carbons;

R^2 is hydrogen, unsubstituted aliphatic of 1 to 10 carbons, unsubstituted alicyclic of 5 to 12 carbons, unsubstituted araliphatic of 7 to 12 carbons, unsubstituted aryl of 6 to 12 carbons, 2-cyanoethyl or a radical of the formula

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R^3 is a direct bond, an alkylene diradical of 1 to 14 carbons, an alkenylene diradical of 2 to 10 carbons, an oxydialkylene or thiodialkylene diradical of 4 to 10 carbons or a substituted or unsubstituted o-, m- or p-phenylene diradical where the substituents may be lower alkyl, lower alkoxy, hydroxy, bromo, chloro, mercapto or lower alkylmercapto;

R^2 and R^3 may be linked together to form a 5-membered lactam ring; and

R^4 is hydrogen, a primary or secondary aliphatic of 1 to 8 carbons, unsubstituted araliphatic of 7 to 12 carbons or unsubstituted alicyclic of 5 to 12 carbons.

5,300,546

STABILIZATION OF MINERAL FILLED POLYESTERS USING EPOXY COMPOUND

Linda H. Nelson, and Eileen B. Walsh, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 732,222, Jul. 18, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,219

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—114 **40 Claims**

1. A thermoplastic polyester/epoxide composition having improved hydrolytic and melt viscosity stability and comprising:

(a) from about 15 to about 80 percent by weight of a polyester resin;

(b) from about 0.1 to about 3.5 percent by weight based on the total weight of the composition of an epoxy compound selected from the group consisting of bis(3,4-epoxycyclohexylmethyl)adipate; vinylcyclohexene diepoxide; 3,4-epoxycyclohexyl-3,4-epoxycyclohexylcarboxylate; bisphenol diglycidyl ethers; diglycidyl adducts of carboxylic acids; triglycidyl isocyanurate and mixtures of any of the foregoing;

(c) from about 20 to about 85 parts by weight of a mineral filler selected from the group consisting of barium sulfate, zinc oxide, calcium carbonate, mica, talc, asbestos, wollastonite, clay, carbon, ceramic, titanate and mixtures of any of the foregoing; and

(d) from about 0.1 to about 1 weight percent of a catalyst compound comprising a salt free from direct carbon-phosphorous bonds and containing at least one of alkali metal cations and alkaline earth metal cations and halide anions; wherein the composition is prepared by first compound the polyester, the epoxide compound, and the catalyst to form a compounded mixture, and then compounding the compounded mixture with the filler.

5,300,547

REINFORCED POLYPROPYLENE COMPOUNDS WITH IMPROVED PROPERTIES

Mary J. Hagenson, and William H. Beever, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1992, Ser. No. 968,779

Int. Cl.[5] C08K *5/17, 3/46*

U.S. Cl. 524—188 **18 Claims**

1. A composition comprising:

(a) at least one polymer of propylene;

(b) glass;

(c) at least one amino-functional silane; and

(d) at least one polyurethane;

wherein said at least one polymer of propylene is present in an amount within the range of about 30 to about 95 weight percent, based on total weight of said composition;

wherein said glass is present in an amount within the range of about 5 weight percent to about 70 weight percent, based on total weight of said composition;

wherein said at least one amino-functional silane is present in an amount within the range from a finite amount to about 2 weight percent, based on total weight of said composition; and

wherein said at least one polyurethane is present in an amount within the range from a finite amount to about 5 weight percent, based on total weight of said composition.

5,300,548

PROCESS FOR THE PREPARATION OF A GRAFT COPOLYMER INCLUDING A MONOMER OF ESTERS OF UNSATURATED CARBOXYLIC ACIDS OR VINYL ESTERS AND POLYAMIDE OLIGOMERS

Hideo Akimoto; Shiro Narasaki, and Reiji Miyamoto, all of Ichihara, Japan, assignors to Du Pont-Mitsui Polychemicals Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 718,235, Jun. 20, 1991, abandoned, which is a division of Ser. No. 403,659, Sep. 6, 1989, Pat. No. 5,049,626. This application Oct. 27, 1992, Ser. No. 967,560

Claims priority, application Japan, Sep. 8, 1988, 63-225730; Aug. 17, 1989, 1-65423

Int. Cl.[5] C08G *67/02;* **C08L** *33/06, 93/04*

U.S. Cl. 524—271 **2 Claims**

1. A process for the preparation of a graft copolymer which comprises graft polymerizing:

1 to 40% by weight, based on the weight of said graft copolymer, of a polyamide oligomer (B) having a primary amino group at one end of its molecule and a carboxyl group at another end of its molecule, said carboxyl group being encapsulated with a primary amine having from 1 to 20 carbon atoms, said polyamide oligomer having a number average molecular weight of from 600 to 10,000; onto a stock copolymer (A) including at least one monomer selected form esters of unsaturated carboxylic acids (a), ethylene (b) and carbon monoxide (c), said stock copolymer (A) having a weight average molecular weight of from 10^4 to 10^6,

wherein said polyamide oligomer is graft polymerized onto said stock copolymer is the presence of a carboxyl group containing compound being selected from the group consisting of rosin, hydrogenated rosin, a low molecular weight copolymer of ethylene and and acrylic acid and a low molecular weight copolymer of ethylene and methacrylic acid, said compound having a number average molecular weight of from 200 to 10,000 and an acid value of from 15 to 300.

5,300,549

POLYOLEFIN COMPOSITIONS AND METHOD AND COMPOSITIONS FOR THEIR PREPARATION

James J. Ward, Collierville, and Thomas E. Breuer, Cordova, both of Tenn., assignors to Witco Corporation, New York, N.Y.

Filed Apr. 11, 1991, Ser. No. 683,996

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—321 **7 Claims**

1. A composition useful for nucleating polyolefins consisting essentially of at least one aliphatic dicarboxylic acid containing from about 4 to about 21 carbon atoms and at least one aliphatic monocarboxylic acid containing from about 8 to about 24 carbon atoms in a weight ratio between about 4:1 and about 1:4.

5,300,550

THERMOPLASTIC MOLDING COMPOSITIONS

Thomas Eckel, Dormagen; Dieter Wittmann, Köln; Karl-Heinz Ott, Leverkusen; Claus H. Wulff, and Dieter Freitag, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 23, 1993, Ser. No. 21,379

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208108

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—444 **11 Claims**

1. A thermoplastic molding composition comprising

(i) a thermoplastic resin selected from the group consisting of homopolymers of ethylenically unsaturated monomers, copolymers of ethylenically unsaturated monomers, and polycondensation polymers of bifunctional reactive compounds

(ii) a functional additive having a molecular weight of less than 2000 g/mol selected from the group consisting of a stabilizer, pigment, mold release agent, antistatic agent and flame retarding agent, and

(iii) a carrier material which includes a magnesium-aluminum silicate having a bulk density of less than 1 g/cm^3, a particle diameter of 1 to 5000 μm and a content of transition metal compounds of less than 5 percent relative to the weight of said magnesium-aluminum silicate, said (ii) being present in an amount of 0.1 to 40 percent and said (iii) being present in an amount of about 0.1 to 50 percent relative to the weight of said (i).

5,300,551

PROCESS FOR THE PRODUCTION FOR MULTIMODAL LATICES OF VINYL CHLORIDE POLYMERS

Paul Candries, Grimbergen, Belgium, and Haimo Zekoll, Hallein, Austria, assignors to Solvay, Brussels, Belgium

Filed Sep. 17, 1991, Ser. No. 760,456

Claims priority, application Belgium, Sep. 17, 1990, 09000884

Int. Cl.[5] C08F *2/16*

U.S. Cl. 524—458 **9 Claims**

1. A process for the production of a multimodal latex of vinyl chloride polymers comprising: initiating nonmicellar aqueous emulsion polymerization of vinyl chloride in the presence of a seed consisting of a multimodal latex originating from a preceding polymerization cycle to produce a multimodal latex having an identical number of classes of particles as said seed, said classes of particles having an identical mean grain size distribution as said seed.

5,300,552

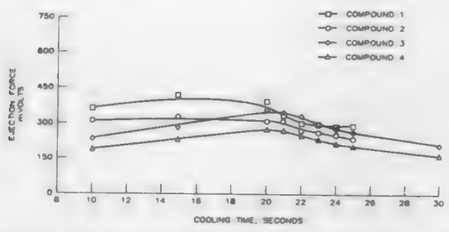
POLY(ARYLENE SULFIDE) COMPOSITION

Majid H. Hindi; Mark W. Woods, both of Bartlesville, Okla.; Nathaniel Harry, Southfield, Mich., and Tomoe Wakida, Ginowan, Japan, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 7, 1991, Ser. No. 772,732

Int. Cl.[5] C08K *3/40*

U.S. Cl. 524—494 **30 Claims**



1. A poly(arylene sulfide) composition suitable for injection molding which comprises a poly(arylene sulfide) polymer and about 5 to 60 weight percent of a fibrous reinforcing material and about 0.1 to about 3 weight percent of a polyolefin prepared from at least one branched olefin monomer having from 4 to 12 carbons, wherein said weight percentages are based on the total weight of said composition.

5,300,553

METHOD OF PRODUCING ELECTRICALLY CONDUCTIVE COMPOSITE

Hidenori Yamanashi; Makoto Katsumata, and Toshiaki Kanno, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,646

Claims priority, application Japan, Oct. 15, 1991, 3-266060

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—496 **20 Claims**

1. A method for manufacturing an electrically conductive solid composite, comprising the steps of:

dry-mixing a powdery graphite intercalation compound and a powder thermosetting plastic to produce a composition consisting essentially of dry mixed powder; and

hot-pressing said composition to mold such into an electrically conductive solid composite of a desired shape having improved electrical conductivity.

5,300,554

AQUEOUS CONTACT ADHESIVE DISPERSIONS, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Manfred Krell, Muhldorf am Inn; Wilfried Huster, and Joachim Fischer, both of Emmerting, all of Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,673

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141168

Int. Cl.[5] C09J *129/02*

U.S. Cl. 524—547 **9 Claims**

1. An aqueous contact adhesive dispersion which contains, based on the total weight of the dispersion, from 40 to 70% by weight of a copolymer which has been prepared by emulsion polymerization, whose glass transition temperature is in the range from −20 to +20° C. and whose Fikentscher K value is between 50 and 180, wherein the copolymer comprises the following components;

a) from 40 to 70% by weight of vinyl esters of aliphatic carboxylic acids having 2 to 12 carbon atoms,

b) from 10 to 40% by weight of acrylic acid esters of aliphatic alcohols having 4 to 12 carbon atoms,

c) from 8 to 15% by weight of methacrylic acid esters of aliphatic alcohols having 4 to 12 carbon atoms,

d) from 0.1 to 3% by weight of ethylenically unsaturated compounds which cause cross-linking,

e) from 0.1 to 5% by weight of ethylenically unsaturated carboxylic acids,

f) from 0.1 to 2% by weight of substituted or unsubstituted (meth)acrylamides,

g) from 0.5 to 3% by weight of ethylenically unsaturated hydroxyalkyl-functional compounds, and

h) from 0.5 to 3% by weight of ethylenically unsaturated sulfates and/or sulfonates, where the amount for each component is based

on the total weight of the copolymer, and the total amount of the components is 100% by weight.

5,300,555

STABLE BUTADIENE HOMOPOLYMERS LATICES

Mark A. Weih, Cambridge Springs, and Gregory J. Czarnecki, Erie, both of Pa., assignors to Lord Corporation, Erie, Pa.

Filed May 31, 1991, Ser. No. 708,972

Int. Cl.[5] C08K *9/00*

U.S. Cl. 524—571 **23 Claims**

1. A butadiene homopolymer latex prepared by an emulsion

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polymerization in the presence of polyvinyl alcohol and a water-miscible organic solvent.

5,300,556

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSIONS CONTAINING BOTH BLOCKED POLYISOCYANATES AND POLYHYDROXYL COMPOUNDS

Robin E. Tirpak, Wheeling, and James W. Rosthauser, Glendale, both of W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Continuation of Ser. No. 733,560, Jul. 23, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 977,330

Int. Cl.[5] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08G** *18/00*

U.S. Cl. 524—591 **12 Claims**

1. A process for the preparation of an aqueous dispersion containing both a blocked polyisocyanate and a polyhydroxyl compound which comprises reacting an aqueously dispersed polyisocyanate having an isocyanate content of at least 12% by weight, based on the weight of the polyisocyanate, with a monofunctional blocking agent which is more reactive with isocyanate groups than water at an equivalent ratio of monofunctional blocking groups to isocyanate groups of 0.5:1 to 2:1 in the presence of a polyhydroxyl compound which is either water soluble or water dispersible, wherein the polyhydroxyl compound is present in an amount which is sufficient to provide an equivalent ratio of hydroxyl groups to blocked isocyanate groups of 0.6:1 to 1.25:1.

5,300,557

MOLDING COMPOSITIONS WHICH ARE STABLE TO ALCOHOLS AND BOILING WATER

Martin Bartmann, Recklinghausen; Jürgen Finke, Marl; Hans-Joachim Panoch, Haltern, and Markus Wenzel, Recklinghausen, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 599,941, Oct. 19, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 904,898

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1989, 3934926

Int. Cl.[5] C08J *3/20;* **C08K** *3/00;* **C08L** *77/00;* **C08G** *69/26*

U.S. Cl. 524—606 **20 Claims**

1. A molding composition which is stable with respect to alcohols and boiling water, comprising an amorphous copolyamide obtained by polycondensation of:

(A) terephthalic acid, isophthalic acid or mixtures thereof; and

(B) about 10–70 mol % of decamethylenediamine, about 10–80 mol % of trimethylhexamethylenediamine, and about 10–50 mol % of bis(4-aminocyclohexyl)-methane;

and an additive acceptable for use in molding compositions.

5,300,558

CURABLE RESIN COATING COMPOSITION

Masayoshi Kurisu, Chiba; Koji Utaka, Tokyo; Hajime Inagaki; Suguru Tokita, both of Yamaguchi; Kazuyuki Miyamoto; Yukari Hattori, both of Chiba; Noriyuki Murakoshi, and Tsutomu Saito, both of Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,715

Claims priority, application Japan, Apr. 5, 1991, 3-73059; Sep. 13, 1991, 3-234725; Sep. 24, 1991, 3-243787

Int. Cl.[5] C08K *5/04, 5/05, 5/32, 5/52*

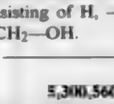
U.S. Cl. 524—707 **4 Claims**

1. A curable resin coating composition consisting essentially of:

(A) at least one urethane meth(acrylate);

(B) 5 to 1,500 parts by weight per 100 parts by weight component (A) of an organic solvent comprising an alcoholic organic solvent, said alcoholic organic solvent comprising at least 40% by weight of said organic solvent;

(C) 0.005 to 25 parts by weight per 100 parts by weight component (A) of a compound having at least one pentavalent phosphor-containing phosphoryl group represented by the formula:



(I)

(D) 0.01 to 20 parts by weight per 100 parts by weight component (A) of a polymerization initiator.

5,300,559

POLYAMINES DERIVED FROM THPB AND PROCESSES FOR PREPARING THE SAME

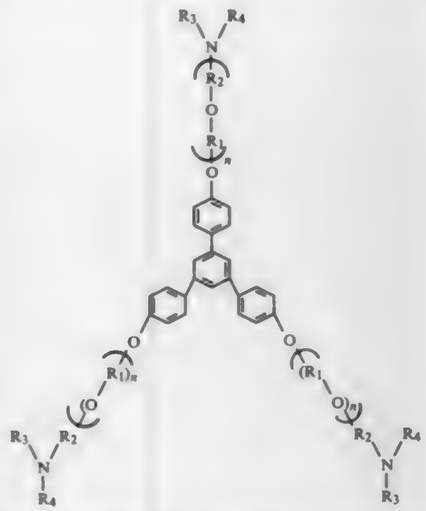
Michael T. Sheehan, and James R. Sounik, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 28, 1993, Ser. No. 69,966

Int. Cl.[5] C08G *18/30*

U.S. Cl. 524—714 **21 Claims**

1. Polyamino compounds having the structural formula (I):



wherein n is 0–1000; and $R_1 = R_2$, and R_1 and R_2 are from the group $—CH_2—CH_2—$; $—CH_2—C(CH_3)H—$; and $—C(CH_3)H—CH_2—$; and R_3 and R_4 are each independently selected from the group consisting of H, $—CH_3$, $—CH_2CH_3$; $—CH_2OH$; and $—CH_2—CH_2—OH$.

5,300,560

SLOWER REACTING RIM SYSTEMS BASED UPON ALIPHATIC AMINE TERMINATED POLYETHERS

Stephen J. Harasin, Morgan, and Renee M. Hunkele, Allison Park, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 733,551, Jul. 22, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 36,570

Int. Cl.[5] C08K *5/20;* **C08G** *18/50;* **C08L** *75/02, 75/08*

U.S. Cl. 524—724 **6 Claims**

1. In a process for producing a molded product by reacting a reaction mixture in a closed mold, the improvement wherein said reaction mixture comprises:

A) an organic polyisocyanate having an isocyanate group content of from about 15 to about 40% by weight,

B) one or more organic hydroxyl group containing compounds having molecular weights of from about 100 to about 6000 and having hydroxyl functionalities of from 2 to 4,

C) one or more aliphatic amine terminated polyethers having molecular weights of from about 1400 to about 5000, and having amine functionalities of from 2 to 6, and

D) from more than 3 to about 9% by weight based upon the combined weight of components B) and C) of an additive containing at least 25 aliphatic carbon atoms, said additive being a salt of an aliphatic carboxylic acid with an amine containing amide groups, said amine containing amide groups being the reaction product of an aliphatic carboxylic acid and a di- or polyamine such that the amine contains at least one free primary, secondary, or tertiary amino group,

with the weight ratio of component B) to component C) being from about 0.6:1 to about 1.5:1, and wherein the isocyanate index is from about 1.0 to about 1.5.

5,300,561

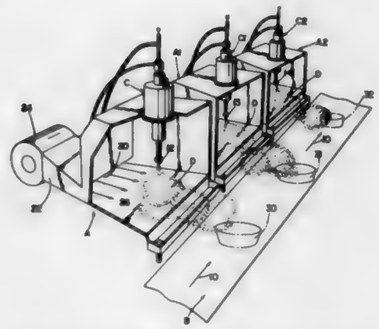
SOLUTION CONTAINING AMPHIPHILIC MOLECULES

Brij P. Singh, North Royalton; Raj Subramaniam, Parma, and Scott E. Rickert, Lakewood, all of Ohio, assignors to Nano-Film Corporation, Valley View, Ohio

Division of Ser. No. 774,456, Oct. 10, 1991, Pat. No. 5,166,000. This application Aug. 5, 1992, Ser. No. 924,921

Int. Cl.[5] C08K *5/05*

U.S. Cl. 524—765 **7 Claims**



1. A solution consisting essentially of 0.1–1.0% by volume film forming amphiphilic molecules, 1–10% by volume solvent miscible in water, 0.01–1% by volume catalyst, and the remainder deionized water.

5,300,562

PROCESS FOR PREPARING PHENOLIC BINDER

Kathleen H. Coventry, Exton, Pa., and David A. Segal, Hot Springs, Ark., assignors to CertainTeed Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 740,599, Aug. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 697,765, May 9, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 74,037

Int. Cl.[5] C08L *61/10;* **C08K** *5/21, 3/28;* **C08G** *8/10*

U.S. Cl. 524—841 **15 Claims**

1. A process for preparing a phenolic binder for glass fibers, the process comprising:

a) preparing a water-soluble phenol-formaldehyde resole resin in a single stage process by:

1) preparing an initial aqueous mixture including formaldehyde and phenol;

2) maintaining the aqueous mixture at a first temperature of from about 40° C. to 50° C. while adding a basic polymerization catalyst;

3) permitting the temperature of the aqueous mixture to rise to a second temperature between from about 60° C. and 80° C.;

4) maintaining the aqueous mixture at the second temperature during reaction of the phenol and formaldehyde to form the water-soluble phenol-formaldehyde resole resin until the free formaldehyde content of the aqueous mixture drops to a predefined level;

5) cooling the aqueous mixture to a third temperature between 20° C. and 30° C.; and,

6) neutralizing the aqueous mixture;

b) preparing an aqueous reaction mixture including the phenol-formaldehyde resole resin, urea, and ammonia, the phenol-formaldehyde resole resin being prepared by a basic process not including an acid-catalyzed step;

c) permitting the urea to react with the phenol-formaldehyde resole resin in the presence of the ammonia by waiting at least about 30 minutes after mixing the urea and the resole resin to form a modified resin; and,

d) subsequently completing preparation of the binder by adding a catalyst for curing the modified resole resin.

5,300,563

POLYESTER-BASED ADHESIVES AND COMPOSITE STRUCTURES

Webster W. Kiang, Lisle, and Peter D. Becker, Roselle, both of Ill., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Continuation of Ser. No. 559,716, Jul. 30, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 951,022

Int. Cl.[5] C08F *283/01*

U.S. Cl. 525—42 **19 Claims**

1. An adhesive composition comprising a graft copolymer of:

(a) an elastomeric ethylenically unsaturated polyester copolymer including recurring ester units along the chain thereof, grafted with

(b) a grafting monomer consisting essentially of an acid or anhydride selected from the group consisting of crotonic acid and ethylenically unsaturated dicarboxylic acids and anhydrides, said grafting monomer comprising up to about 10 wt. % of said graft copolymer.

5,300,564

DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS

David Avnir; Michael Ottolenghi; Sergei Braun, and Rivka Zusman, all of Jerusalem, Israel, assignors to YISSUM, Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Jan. 8, 1991, Ser. No. 637,873

Claims priority, application Israel, Jan. 23, 1990, 93134

Int. Cl.[5] C08G *63/48;* **B01D** *53/00;* **G01N** *21/00, 33/00*

U.S. Cl. 525—54.1 **26 Claims**

1. A method for obtaining an interaction between a reagent and a component, comprising (a) trapping a reagent in an inorganic sol-gel porous glass formed by polymerization of at least one metal alkoxide, semi-metal alkoxide, metal ester or semi-metal ester, the reagent being trapped in the sol-gel glass by conducting the polymerization in the presence of the reagent, the reagent being reactive after preparation of the sol-gel glass, and the sol-gel glass providing a solid support for the reagent, the polymerization including a gelling step conducted at not greater than room temperature and a drying step conducted at not greater than 45° C.; and (b) interacting the reagent trapped in the sol-gel glass with a component which is in a liquid or gas phase in pores of the sol-gel glass and which is reactive with the reagent in the pores of the sol-gel glass.

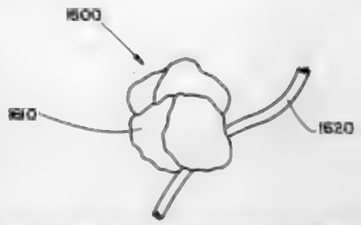
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5,300,565

PARTICULATE, ABSORBENT, POLYMERIC COMPOSITIONS CONTAINING INTERPARTICLE CROSSLINKED AGGREGATES

Charles J. Berg; Frank H. Lahrman, and Donald C. Roe, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 2, 1990, Ser. No. 503,506
Int. Cl.[5] C08G *63/48*
U.S. Cl. 525—54.2 **29 Claims**



1. A particulate, absorbent, polymeric composition comprising interparticle crosslinked aggregates, said interparticle crosslinked aggregates comprising (i) precursor particles of substantially water-insoluble, absorbent, hydrogel-forming, polymer material, and (ii) an interparticle crosslinking agent reacted with said polymer material of said precursor particles to form covalent crosslink bonds between said precursor particles, said interparticle crosslinked aggregates being present in the polymeric composition in an amount such that the polymeric composition has a mass average particle size at least about 25% greater than the mass average particle size of said precursor particles.

5,300,566

METHOD FOR PREPARING POLY(VINYL ALCOHOL)-CO-POLY(VINYLAMINE) VIA A TWO-PHASE PROCESS

Robert K. Pinschmidt, Jr., and Ta-Wang Lai, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 15, 1988, Ser. No. 181,887
Int. Cl.[5] C08F *16/06*
U.S. Cl. 525—60 **8 Claims**

1. A method for preparing poly(vinyl alcohol)-co-poly(-vinylamine) which comprises slurrying particles of poly(vinyl alcohol)-co-poly(N-vinyl formamide) in methanol and hydrolyzing the slurried copolymer particles under acid or base conditions to particles of the vinylamine copolymer.

5,300,567

LOW TEMPERATURE TOUGHENING OF POLYESTERS WITH A MODIFIED BLOCK COPOLYMER

Michael J. Modic, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 30, 1992, Ser. No. 998,206
Int. Cl.[5] C08L *51/00, 51/04, 53/00;* **C08G** *63/127*
U.S. Cl. 525—64 **8 Claims**

1. A toughened polyester composition comprising:
from 10% to 40% by weight of a modified block copolymer comprising at least 95% by weight of a hydrogenated conjugated diene and a star structure; and
from 60% to 90% by weight of a polybutylene terephthalate polyester;
wherein the modified block copolymer comprises an effective amount of a grafted compound having alpha-beta ethylenic unsaturation and at least one epoxy group to give the polyester composition a ¼" notched Izod impact strength of at least 10 ft-lb/in as determined by ASTM-D256 at −20° C.

5,300,568

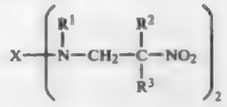
THERMOPLASTIC RESIN COMPOSITION

Hiroomi Abe; Takeshi Fujii; Masashi Yamamoto, all of Chiba; Shinichi Yachigo; Hideo Nagasaki, both of Osaka, and Naoki Inui, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP90/00759, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO91/19762, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1990, Ser. No. 667,408
Int. Cl.[5] C08K *5/32;* **C08L** *53/00, 71/12*
U.S. Cl. 525—68 **17 Claims**

1. A thermoplastic resin composition consisting essentially of:
95–5% by weight of a polyolefin-resin (A);
5–95% by weight of a polyphenylene-ether-resin (B); and
0.001–10 parts by weight of a dinitrodiamine (D) per 100 parts by weight of (A)+(B), wherein (A) is at least one member selected from the group consisting of polyolefins selected from homopolymers of one of ethylene and α-olefin and copolymers of two or more of ethylene and α-olefin, and modified polyolefins obtained by modifying said polyolefins with a modifier,
said modifier being at least one member selected from the group consisting of polyfunctional compounds (E) having at least one of a carboxylic acid group, an acid anhydride group, an acid amide group, an imide group, a carboxylic acid ester group, an epoxy group, an amino group and a hydroxyl group and unsaturated monomers (L) other than the polyfunctional compounds (E),
(B) is at least one member selected from the group consisting of polyphenylene ethers, modified polyphenylene ethers obtained by modifying said polyphenylene ethers with said modifier, compositions comprising a polyphenylene ether and at least one aromatic vinyl polymer resin (M) selected from the group consisting of an aromatic vinyl polymer, a copolymer of an aromatic vinyl compound with another monomer and a rubber-modified aromatic vinyl polymer and compositions comprising said modified polyphenylene ethers and at least one aromatic vinyl polymer resin (M), and
(D) is a dinitrodiamine represented by the formula (I):

(I)



wherein X represents one of a divalent chain aliphatic group, a cyclic aliphatic group, an aromatic group, and an aromatic group containing one of a halogen and oxygen, R^1 represents one of a hydrogen atom, a chain aliphatic group, a cyclic aliphatic group and an aromatic group, with the proviso that when both X and R^1 are chain aliphatic groups, the nitrogen atoms may further bond to each other to form a heterocyclic ring through X and R^1, R^2 and R^3 are independently one of a hydrogen atom and an alkyl group of 1–12 carbon atoms, and R^2 and R^3 may bond to form a ring.

5,300,569

ADHESIVE RUBBER COMPOUNDS

Ronald E. Drake, and John M. Labriola, both of Grand Junction, Colo., assignors to Ricon Resins, Inc., Grand Junction, Colo.

Continuation of Ser. No. 575,990, Aug. 31, 1990, abandoned, which is a continuation of Ser. No. 571,459, Aug. 21, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 16,487
Int. Cl.[5] C08L *33/02*
U.S. Cl. 525—78 **17 Claims**

1. An uncured, curable elastomeric composition comprising:
(a) an uncured unsaturated polymeric adduct, formed by C—C bonds in the presence of a free radical polymerization inhibitor, by reacting a polymer having unsaturation in the backbone of the polymer chain with an unsaturated dicarboxylic acid or dicarboxylic acid derivative wherein the acid or derivative moiety comprises at least about three weight percent of said adduct;
(b) an uncured elastomer different from the adduct of paragraph (a) consisting essentially of synthetic elastomer;
wherein said adduct of paragraph (a) is present in an amount sufficient such that said composition upon curing exhibits increased adhesive properties compared to a standard upon curing, which standard consists of said elastomer of paragraph (b) without the adduct of paragraph (a), based on the ASTM D 816-70 lap shear test on steel.

5,300,570

PLASTIC ARTICLES WITH COMPATIBILIZED BARRIER RESIN

Casmir S. Ilenda, Hulmeville, Pa.; Thomas M. Frantz, Claymont, Del., and William T. Freed, Stockton, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 687,642, Apr. 19, 1991, abandoned, which is a division of Ser. No. 413,943, Sep. 28, 1989, Pat. No. 5,035,933, which is a continuation-in-part of Ser. No. 315,501, Mar. 1, 1989, Pat. No. 4,957,974. This application Jul. 8, 1992, Ser. No. 912,080
Int. Cl.[5] B65D *25/00;* **B32B** *27/08;* **C08L** *31/02*
U.S. Cl. 525—80 **1 Claim**

1. A monolayer film with low permeability to gases, comprising a blend of:
(A) a melt-processible polyolefin;
(B) a gas barrier resin; and
(C) a polyolefin-acrylic graft copolymer compatibilizer for the barrier resin and polyolefin;
in which the graft copolymer compatibilizer comprises:
(a) a non-polar polyolefin trunk selected from the group consisting of polyethylene, polypropylene, polybutylene, poly(4- methylpentene), copolymers of said olefins with each other, and one or more copolymers of said olefins with minor amounts of 1-alkenes, vinyl esters, vinyl chloride, methacrylic ester, and methacrylic acid, said trunk having a molecular weight of between about 50,000 and about 1,000,000; and
(b) at least one methacrylate chain grafted with a covalent bond to said trunk, having a weight ratio with said trunk of from about 1:9 to 4:1, said chain being a polymer derived from at least about 80% of a monomer of methacrylic ester of the formula $CH_2{=}C(CH_3)COOR$, which R is alkyl, aryl, substituted alkyl, substituted aryl, or substituted alkaryl, and less than about 20% of an acrylic or styrenic monomer copolymerizable with the methacrylic ester, said chain having a molecular weight of from about 20,000 to about 200,000.

5,300,571

HARDENABLE COMPOSITION BASED ON A MICHAEL ADDITION PRODUCT, PROCESS FOR ITS PREPARATION AND ITS USE

Werner A. Jung, Ascheberg, and Peter Hoffmann, Münster, both of Fed. Rep. of Germany, assignors to BASF Lacke+-Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP89/00950, § 371 Date Mar. 26, 1991, § 102(e) Date Mar. 26, 1991, PCT Pub. No. WO90/03404, PCT Pub. Date Apr. 5, 1990
PCT Filed Aug. 11, 1989, Ser. No. 663,826
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1988, 3832958
Int. Cl.[5] C08L *61/00*
U.S. Cl. 525—153 **20 Claims**

1. A hardenable composition containing
A) compounds having at least two activated double bonds (I) based on α,β-unsaturated carbonyl compounds or α,β-unsaturated nitrile groups, and
B) compounds containing either at least one primary amino group (II) which is blocked by an aldehyde or ketone having not more than 10 C atoms or at least 2 groups which can be hydrolyzed to NH groups,
wherein either component A or component B or components A and B are obtained by the reaction of a compound (1) having at least one activated double bond (I) or compound (2) having at least one primary amino group (II) which is blocked by an aldehyde or ketone having not more than 10 C atoms or at least 2 groups which can be hydrolyzed to NH groups, or both compounds (1) and (2), respectively, with a branched acrylate copolymer P obtained by copolymerization of
a) 5 to 30% by weight of monomers having at least two ethylenically unsaturated polymerizable double bonds,
b) 5 to 60% by weight of monomers having a functional group reactive with compound (1) or compound (2) or both and
c) 5 to 90% by weight of other ethylenically unsaturated monomers, different from a) or b),
the sum of a, b, and c being 100% by weight.

5,300,572

MOLDABLE POLYESTER RESIN COMPOSITIONS AND MOLDED ARTICLES FORMED OF THE SAME

Yoshihisa Tajima; Kuniaki Kawaguchi, and Toshio Nakane, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Jun. 12, 1992, Ser. No. 897,673
Claims priority, application Japan, Jun. 14, 1991, 3-169229; Jun. 24, 1991, 3-180152
Int. Cl.[5] C08L *67/02*
U.S. Cl. 525—167 **3 Claims**

1. A moldable polyester resin composition comprising, based on the total weight of all resin components:
(A) between 2 to 98% by weight of a compatibilizing metal sulfonate group-containing aromatic polyester copolymer which is the polycondensation reaction product of (a) an aromatic dicarboxylic acid or a lower alkyl ester of an aromatic dicarboxylic acid, (b) a diol compound, and (c) an ester-forming compound containing a metal sulfonate group;
(B) between 2 to 98% by weight of an olefin copolymer additive resin which is the copolymerization reaction product between an olefin with at least one of an α,β-unsaturated carboxylic acid or its derivative and/or a vinyl alcohol or its ester; and optionally
(C) between 0 to 96% by weight of a non-compatibilizing aromatic polyester resin which is the polycondensation reaction product of (a) an aromatic dicarboxylic acid and (b) a diol compound or its ester-forming derivative, and wherein
the ester-forming compound containing a metal sulfonate group is represented by the formulas (I) and/or (II):

$$(XOCO)_m{-}Ar{-}(SO_3)M)_n \quad \text{(I)}$$
$$(HORO)_m{-}Ar{-}(SO_3)M)_n \quad \text{(II)}$$

wherein -Ar- represents a benzene ring or a naphthalene ring; X represents a hydrogen atom or a lower alkyl group; m and n are each 1 or 2; M represents an alkali metal selected from the group consisting of lithium, sodium and potassium, with the proviso that when n is 2, the M moieties may be the same or different; and R represents a divalent group selected from among $-CH_2CH_2-$, $-CH(CH_3)CH_3-$, $-CH_2CH(CH_3)-$, and $-CH_2CH_2OCH_2CH_2-$.

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5,300,573

HIGH TEMPERATURE STABLE, LOW SOLVENT SWELLING THERMOPLASTIC ELASTOMER COMPOSITIONS

Raman Patel, Akron, Ohio, assignor to Advanced Elastomer Systems, L.P., St. Louis, Mo.

Continuation-in-part of Ser. No. 662,157, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 382,372, Jul. 20, 1989, abandoned, which is a division of Ser. No. 179,814, Apr. 11, 1988, abandoned. This application Jan. 21, 1993, Ser. No. 6,551

Int. Cl.[5] C08L *13/00, 15/02, 19/00, 33/08*

U.S. Cl. 525—109 **15 Claims**

1. A thermoplastic elastomer composition comprising a blend of

(a) a thermoplastic non-segmented polyester resin having a melting point of from 160° to 280° C.,

(b) a covalently-crosslinked acrylate rubber which in its uncured state is sufficiently polar so as to form a co-continuous phase with said polyester, and

(c) a polyfunctional covalent crosslinking agent, wherein said polyester comprises 10 to 45 parts per hundred of polyester and rubber, said polyester is not significantly crosslinked, and wherein said rubber is crosslinked by dynamic vulcanization of the blend of (a), (b) and (c), and is in the form of small particles dispersed in a polyester matrix or in a co-continuous phase with the polyester.

5,300,574

SUBSTANTIALLY NON-CROSSLINKED MALEIC ANHYDRIDE-MODIFIED ETHYLENE POLYMERS AND PROCESS FOR PREPARING SAME

Robert Bacskai, Kensington, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation of Ser. No. 669,140, Mar. 14, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,526

Int. Cl.[5] C08F *8/30;* **C08L** *77/00*

U.S. Cl. 525—181 **21 Claims**

1. A process for preparing an anhydride-modified, saturated ethylene polymer having decreased crosslinking comprising mixing together in the absence of solvent:

(a) maleic anhydride;

(b) a free radical initiator;

(c) a saturated ethylene polymer; and

(d) a polyamide

at a temperature at which the saturated ethylene polymer and polyamide undergo deformation and are converted to a molten or fluid state.

5,300,575

POLYTHIOPHENE DISPERSIONS, THEIR PRODUCTION AND THEIR USE

Friedrich Jonas, Aachen, and Werner Krafft, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

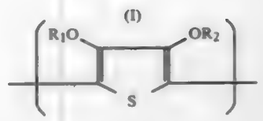
Continuation of Ser. No. 647,093, Jan. 29, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,731

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1990, 4003720

Int. Cl.[5] C08L *37/00*

U.S. Cl. 525—186 **3 Claims**

1. A solution of a polythiophene comprising water or a mixture of water with a water-miscible organic solvent as the dispersing medium, a polythiophene made up of structural units of the formula



in which

R_1 and R_2 each independently is hydrogen or a C_{1-4} alkyl group or, together, form an optionally substituted C_{1-4} alkylene group, and a polyanion derived from polystyrene sulfonic acid having a molecular weight in the range from 2,000 to 500,000, the polythiophene having been polymerized in the presence of a polyanion of polystyrene sulfonic acid having a molecular weight in the range from 2,000 to 500,000 by oxidative chemical polymerization.

5,300,576

HIGHER HEAT DEGRADABLE POLYMER ALLOYS

Speros P. Nemphos, Clinton, and Gregory B. Kharas, Chelmsford, both of Mass., assignors to Camelot Technologies, Inc., Leominster, Mass.

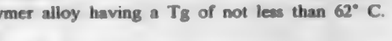
Filed Oct. 3, 1991, Ser. No. 770,320

Int. Cl.[5] C08L *67/04;* **C08G** *63/08*

U.S. Cl. 525—190 **10 Claims**

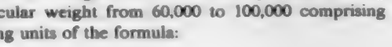
1. A polymer alloy having a Tg of not less than 62° C. comprising:

(i) from 50 to 75 weight % of one or more polymers having a molecular weight from 60,000 to 100,000 comprising repeating units of the formula:



I

and



II

wherein Formula I, R_1, R_2, R_3, and R_4 are independently selected from the group consisting of a hydrogen atom and a C_{1-4} alkyl radical, and n is 0 or an integer from 1 to 5, provided that when n is 1 and R_2, R_3, and R_4 are hydrogen, R_1 can not be a methyl radical; and

(ii) from 50 to 25 weight % of one or more polymers having a Tg from 75° C. to 175° C. and a difference in the range of Hildebrand parameters (σ) from those of for the polymers of component (i) of not more than 2 $MPA^{\frac{1}{2}}$ selected from the group of polymers consisting of:

(a) polycarbonates;

(b) polymers comprising:

(i) from 40 to 95 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical;

(ii) from 5 to 40 weight % of an anhydride of a C_{4-6} ethylenically unsaturated dicarboxylic acid; and

(iii) from 0 to 50 weight % of one or more C_{1-4} alkyl or hydroxy alkyl acrylates or methacrylates; and

(c) acrylate polymers comprising:

(i) from 100 to 50 weight % of one or more C_{1-6} alkyl or hydroxy alkyl acrylates or methacrylates; and

(ii) from 0 to 50 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical,

which acrylate polymers have been imidized to from 10% to 95%.

5,300,577

RUBBER BLEND AND TIRE WITH TREAD THEREOF

Raymond R. DiRossi, Akron; Gregory M. Holtzapple, Kent; Joseph K. Hubbell, Akron; Mark H. Seloover, Clinton, and John J. A. Verthe, Kent, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 698,007, May 9, 1991, Pat. No. 5,087,668, which is a continuation of Ser. No. 600,381, Oct. 19, 1990, abandoned. This application Feb. 6, 1992, Ser. No. 832,113

The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

Int. Cl.[5] C08L *9/06, 9/00, 7/00;* **B60C** *1/00*

U.S. Cl. 525—237 **12 Claims**

1. A sulfur cured rubber composition comprising, based on 100 parts by weight rubber (phr);

(A) 5 to about 35 parts by weight 1,3-polyisoprene rubber;

(B) about 5 to about 50 parts by weight cis 1,4-polybutadiene having 95% or more cis 1,4 structure or at least 90% cis and trans 1,4 structure; and

(C) about 20 to about 90 parts by weight terpolymer of styrene/isoprene/butadiene (SIBR);

wherein said 3,4-polyisoprene rubber, in its uncured state, is characterized by having a glass transition temperature (Tg) in the range of about −15° C. to about −20° C., a Mooney (ML1+4) value in the range of about 70 to about 90, and a polymer structure containing about 40 to about 70 percent 3,4-vinyl isoprene units, about 28 to about 50 percent 1,4-cis and trans units and about 2 to about 10 percent 1,2-isoprene units with the total of its 3,4- and 1,2-units being in the range of about 56 to about 63 percent;

wherein said SIBR is comprised of

(a) about 5 to about 70 weight percent bound styrene;

(b) about 20 to about 70 weight percent bound isoprene, and

(c) about 10 to about 60 weight percent bound butadiene and is characterized by having a glass transition temperature (Tg) in the range of about −70° C. to about −5° C. and, further, the said bound butadiene structure contains about 10 to about 50 weight percent 1,2-vinyl units, the said bound isoprene structure contains about 10 to about 40 weight percent 3,4 units, and the sum of the weight percent 1,2-vinyl units of the bound butadiene and the weight percent 3,4 units of the bound isoprene is in the range of about 20 to about 90 percent.

5,300,578

METHOD FOR PREPARING A VINYL POLYMER-POLYOLEFINE COMPOSITE

Torvald Vestberg, and Ismo Lehtiniemi, both of Porvoo, Finland, assignors to Neste Oy, Finland

Filed Jan. 27, 1993, Ser. No. 9,772

Claims priority, application Finland, Jan. 27, 1992, 920359

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] C08F *2/20, 255/02, 255/04*

U.S. Cl. 525—252 **19 Claims**

1. A method for preparing a polyolefine-vinyl polymer composite, comprising:

impregnating vinyl monomer and a free radical polymerization initiator into polyolefine particles by slowly blending from about 10 to about 200 parts by weight vinyl monomer, from about 0.01 to about 4 parts by weight free radical polymerization initiator, based upon 100 parts by weight vinyl monomer, and 100 parts by weight polyolefine particles at a temperature from about 20° to about 130° C. in the absence of water and while maintaining the particle structure of the polyolefine,

adding a suspending agent and from about 80 to about 1000 parts by weight water based on 100 parts by weight of polyolefine and vinyl monomer, when from about 50 to about 99% of the amount of the vinyl monomer has been absorbed in the polyolefine particles, and thereafter polymerizing the vinyl monomer by increasing the temperature of the suspension.

5,300,579

VULCANIZABLE RUBBER COMPOSITION AND VULCANIZED RUBBER PRODUCT

Masashi Aoshima; Hironobu Shigematsu; Takeru Wadaki, all of Ibaraki, and Mitsuji Tsuji, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 14, 1992, Ser. No. 868,189

Claims priority, application Japan, Apr. 18, 1991, 3-086569

Int. Cl.[5] C08F *255/04, 255/06*

U.S. Cl. 525—290 **25 Claims**

1. A vulcanizable rubber composition comprising an ethylene-α-olefin copolymer having a 30–90 wt% of ethylene content which is graft-modified with an alkenyl aromatic compound and a vulcanizing agent, wherein the modified ethylene-α-olefin copolymer has a bound alkenyl aromatic compound content of 5–60 wt% of the graft-modified copolymer.

5,300,580

MODIFIED ETHYLENE/N-BUTYL ACRYLATE COPOLYMERS HAVING IMPROVED ADHESION

Leslie Wild, Wyoming, and Karl Koch, deceased, late of Cincinnati, both of Ohio by Audrey M. Koch, administratrix , assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed May 22, 1991, Ser. No. 703,972

Int. Cl.[5] C08F *265/04*

U.S. Cl. 525—301 **7 Claims**

1. A modified ethylene/n-butyl acrylate copolymer having a melt index greater than 0.5 and acid number from 4 to 15 consisting of a random ethylene/n-butyl acrylate copolymer backbone grafted with a C_{1-8} alkyl monoester of maleic acid.

5,300,581

PROCESS FOR PRODUCING THERMOPLASTIC ELASTOMER

Yasuhiko Otawa, Ichihara; Katsuo Okamoto, Funabashi; Manoru Kioka, and Takashi Ueda, both of Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP91/00194, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO91/12283, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 18, 1991, Ser. No. 773,650

Claims priority, application Japan, Feb. 19, 1990, 2-38037

Int. Cl.[5] C08F *265/02, 269/00*

U.S. Cl. 525—301 **18 Claims**

1. A process for producing a graft-modified and crosslinked thermoplastic elastomer, which comprises melting and kneading a material mixture containing

(A) polymer particles comprising a crystalline olefin polymer portion and a noncrystalline olefin polymer portion, said polymer particles having a sea-islands structure with said islands comprised of said noncrystalline olefin polymer portion, said islands having an average diameter of not more than 0.5 μm,

(B) a graft-modifier, and

(C) a radical initiator to form a graft-modified and crosslinked thermoplastic elastomer having a cyclohexane-insoluble content of at least 40% by weight.

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5,300,582

COUPLED ELASTOMERIC BLOCK COPOLYMERS

Eric R. S. Debier, and Martine J. Dupont, both of Ottignies Louvain-la-Neuve, Belgium, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 4, 1993, Ser. No. 72,211

Claims priority, application European Pat. Off., Jun. 4, 1992, 92201623.3

Int. Cl.[5] C08F *297/04;* **C08L** *53/02*

U.S. Cl. 525—314 **7 Claims**

1. A block copolymer of the formula

$$(AB)_p\,(B)_q\,X$$

wherein A is a block of polymerized styrene, B is a block of polybutadiene, X is the residue of a tetrafunctional coupling agent, each of p and q have a number average value from about 1.5 to about 2.5 inclusive and the sum of p and q is 4, the polymer having a styrene content from about 7% by weight to about 35% by weight based on total polymer, a total apparent molecular weight of from about 50,000 to about 1,500,000 and a vinyl content in the polybutadiene blocks of from about 35% to about 70%.

5,300,583

POLYMER COMPOUNDS CONTAINING STERICALLY HINDERED AMINO GROUPS, SUITABLE TO BE USED AS STABILIZERS AND POLYMER COMPOSITIONS COMPRISING THEM

Marco Fos'; Francesco Casagrande, both of Novara; Umberto Giannini, Milan, and Giancarlo Caselli, Ferrara, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Jun. 17, 1992, Ser. No. 899,790

Claims priority, application Italy, Jun. 17, 1991, MI91A001659

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—333.2 **8 Claims**

1. Polymer compounds containing sterically hindered amino groups, suitable to be used as stabilizers, having the general formula:

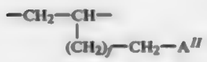
$$P(ZA)_n$$

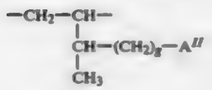
where:

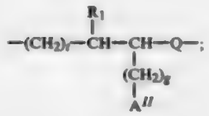
P is a polymer chain deriving from a polymer selected from: polymers or copolymers of olefins having a terminal double bond and from 2 to 10 carbon atoms, or polymers of conjugated di-olefins having 4 or 5 carbon atoms, or their copolymers with the olefins defined above;

n is a number from 1 to 20; and

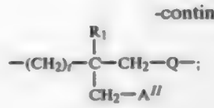
the ZA groups, equal or different, directly bonded to the polymer chain, can be present in the terminal position, inserted in the polymer chain or in one of its branches, and are selected from the group consisting of:

a)


b)


c)


-continued

d)


where:

f is 1 or 2;

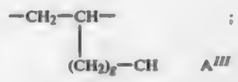
g is 0 or 1;

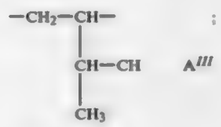
t is 0 or 1;

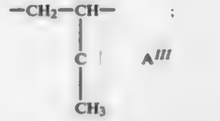
R_1 is selected from H or a C_1–C_8 alkyl or phenyl radical;

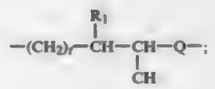
Q is H or $-(CH_2)_t-$ depending on whether the ZA group is terminal, inside the chain or lateral; and

A^{II} is a radical containing the structure of a polyalkyl piperidine, always bonded to the carbon of the polymer chain through an N atom;

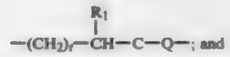
e)


f)


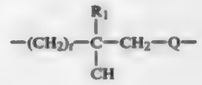
g)


h)


A^{III}

i)


A^{III}

l)


A^{III}

where: A^{III} is a bivalent radical, containing the structure of a polyalkyl piperidine and it forms a cyclic structure with the carbon atom of the polymer chain to which it is bonded, since it is bonded to this carbon through two N or O atoms, or it forms a double bond with the carbon atom of the polymer chain to which it is bonded.

5,300,594

LOW VISCOSITY DIPRIMARY AMINE REACTIVE MODIFIERS FOR EPOXY RESINS

Julius Farkas, Westlake, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 649,274, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 304,434, Jan. 31, 1989, abandoned. This application Sep. 17, 1992, Ser. No. 947,078

Int. Cl.[5] C08F *36/00, 236/00*

U.S. Cl. 525—329.3 **6 Claims**

1. A low viscosity, diprimary amine-terminated reactive liquid polymer having a low residual amine content, comprising;

the reaction product of about 4 moles of a diprimary amine and about one mole of a carboxyl-terminated or an ester-terminated reactive liquid polymer, said polymer comprising one or more of polyethylene, polyisobutylene, polybutadiene, polyisoprene, poly(vinyl ethyl ether), poly(ethyl acrylate), copolymers of butadiene and acrylonitrile, copolymers of butadiene and styrene, or copolymers of vinyl ethyl ether and α-methyl styrene, wherein said diprimary amine has the formula

$$H_2N—R—NH_2$$

wherein NH_2 is a primary terminal amine group and wherein R is a C4-C12 aliphatic chain having alkyl branches containing 1 to 4 carbons wherein the positions of said alkyl branches within the C4-C12 aliphatic chain are such that they impart relatively different rates of reactivity resulting from steric hindrance of the terminal primary amine groups, and wherein the amine-terminated reactive liquid polymer has a viscosity of from about 73,000 to about 555,000 centipoise at 27° C. and a residual amine content of from about 4.0 percent to about 17.0 percent by weight.

5,300,585

METHYLOL MODIFIED BISMALEIMIDES FOR RUBBER COMPOSITION

Lawson G. Wideman, Tallmadge, and Richard M. D'Sidocky, Ravenna, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1993, Ser. No. 37,160

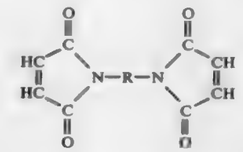
Int. Cl.[5] C08C *19/20*

U.S. Cl. 525—332.7 **14 Claims**

1. A composition comprising (a) a sulfur vulcanizable rubber; (b) a sulfur vulcanizing agent; and (c) 0.25 to 5.0 phr of a methylol modified bismaleimide which is prepared by reacting under condensation conditions:

(1) an aldehyde selected from the group consisting of formaldehyde, acetaldehyde or mixtures thereof; with

(2) a bismaleimide of the formula:



wherein R is a divalent radical selected from the group consisting of an acyclic aliphatic group, a cyclic aliphatic group, an aromatic group, and one to three alkylaromatic groups and wherein these groups may contain a hetero atom selected from O, N and S.

5,300,586

HYDROXYL FUNCTIONAL DERIVATIVES OF EPOXIDIZED DIENE BLOCK COPOLYMERS AND PROCESS FOR MAKING THEM (II)

Robert C. Bening; James R. Erickson, both of Katy; David J. St. Clair; Carma J. Gibler, both of Houston, and Joe J. Flores, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 3, 1992, Ser. No. 863,648

Int. Cl.[5] C08F *8/00*

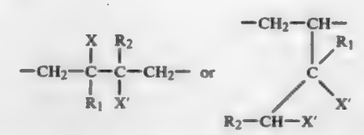
U.S. Cl. 525—332.8 **3 Claims**

1. A conjugated diene block polymer containing hydroxyl groups and having the formula

$$(A_n—B)_q—Y_p—(A—B—A)_r$$

where B is a block comprising hydrogenated conjugated diene monomer, said block having a molecular weight of from 3000 to 7000, and

where A is a polymer block having a molecular weight of from 600 to 1200 and containing alcohol units of the formula



wherein R_1 and R_2 are hydrogen or alkyl radicals and X and X' are either —OH or —Cl and at least one of them is —OH, and

wherein Y is a coupling agent or coupling monomers or initiator, and

wherein less than 1 Meq/g polymer of hydroxyl groups is present in the polymer, r>0, q≧0, r+q is from 1 to 100 and n and p are 0 or 1.

5,300,587

OIL REPELLENT POLYMERIC COMPOSITION AND USE THEREOF, FOR PREPARING FORMED ARTICLES HAVING SURFACES ENDOWED WITH A HIGH STABILITY FORMED ARTICLES HAVING SURFACES ENDOWED WITH A HIGH STABILITY TO SOLVENTS AND A HIGH RESISTANCE TO SOILING

Francesco Mascia, Como; Lucio Pinetti, and Corrado Brichta, both of Milan, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Milan, Italy

Filed Oct. 18, 1991, Ser. No. 781,995

Claims priority, application Italy, Oct. 24, 1990, 21865 A/90

Int. Cl.[5] C08F *8/18*

U.S. Cl. 525—359.3 **8 Claims**

1. Oil-repellent polymeric compositions prepared by a process comprising the following steps:

(a) adding a perfluoropolyether having a molecular weight greater than 500 and a radical initiator to a thermoplastic molten polymer selected from the group consisting of polystyrene, impact-resistant polystyrene, polyolefins, ethylene-vinylacetate copolymers, styrene-acrylonitrile copolymers, ethylene-propylene copolymers, acrylonitrile-butadiene-styrene terpolymers, and ethylene-propylene-diene terpolymers,

(b) mixing said perfluoropolyether, radical initiator, and thermoplastic molten polymer for a time which is sufficient to form macroradicals from said thermoplastic molten polymer, and

(c) subsequently cooling the mixture of step (b) to room temperature.

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5,300,588

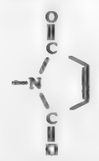
THERMOSETTING RESIN COMPOSITIONS

Toshio Shiobara, Annaka; Kazutoshi Tomiyoshi, Takasaki; Hisashi Shimizu, and Manabu Marumi, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,271
Claims priority, application Japan, Apr. 4, 1991, 3-99554
Int. Cl.[5] C08L *63/04, 63/10*
U.S. Cl. 525—422 **8 Claims**

1. A thermosetting resin composition comprising

(A) an imide compound having a maleimide group of the formula (I):



(I)

(B) a resin having at least two epoxy groups in a molecule, and

(C) a resin having a phenolic hydroxyl group in a molecule, wherein at least one of components (B) and (C) has a double bond conjugated with a naphthalene ring, components (B) and (C) are present in a total amount of about 20 to about 400 parts by weight per 100 parts by weight of component (A), the naphthalene ring is present in an amount of at least about 10% by weight, based on the total weight of components (B) and (C), and the functional group ratio B′/A′ is from 0.1 to 2, wherein component (A) contains A′ mol of the unsaturated bond in the maleimide group and components (B) and (C) together contain B′ mol of a vinyl group as a double bond conjugated with a naphthalene ring.

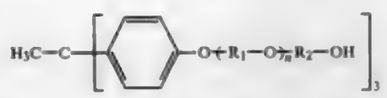
5,300,589

SUBSTITUTED TRIPHENYL COMPOUNDS & PROCESSES FOR PREPARING THE SAME

Michael T. Sheehan; James R. Sounik, both of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 28, 1993, Ser. No. 69,965
Int. Cl.[5] C08G *18/30*
U.S. Cl. 525—437 **10 Claims**

1. Substituted triphenyl compounds having the structural formula (I):



wherein n is 0–1000; R_1=R_2, and R_1 and R_2 are from the group consisting of —CH_2—CH_2—; —CH_2—$C(CH_3)H$—; and —$C(CH_3)H$—CH_2—.

5,300,590

MACROCYCLIC POLYESTER COMPOSITIONS CONVERTIBLE TO LINEAR POLYESTERS OF IMPROVED INTEGRITY

Todd D. Cook, Hilliard, Ohio; Thomas L. Evans, Clifton Park, N.Y.; Kevin P. McAlea, Clifton Park, N.Y., and Eric J. Pearce, Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1992, Ser. No. 983,200
Int. Cl.[5] C08F *20/00*
U.S. Cl. 525—444 **20 Claims**

1. A composition comprising (A) at least one macrocyclic poly(1,4-butylene terephthalate) oligomer in combination with (B) at least one macrocyclic or linear second poly(alkylene dicarboxylate), reagent B being present in an amount effective to reduce the heat of melting of a linear polyester composition formed by polymerization of said macrocyclic oligomers to a value no higher than 60 J/g.

5,300,591

BLENDS CONTAINING CYANATE-SILOXANES

Zeng K. Liao, Lake Jackson, Tex., and Chun S. Wang, Tainan, Taiwan, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 837,464, Feb. 14, 1992, Pat. No. 5,260,398, which is a continuation-in-part of Ser. No. 505,310, Apr. 5, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 93,497
Int. Cl.[5] C08F *283/00, 283/12;* C08G *77/00;* C08L *83/00*
U.S. Cl. 525—474 **5 Claims**

1. A blend comprising (1) from about 1 to about 99 percent by weight based upon the combined weight of components (1) and (2) of at least one compound containing an average of more than one cyanate group and at least one organosiloxane moiety per molecule; and (2) from about 99 to about 1 percent by weight based upon the combined weight of components (1) and (2) of at least one compound containing an average of more than one cyanate group per molecule which is substantially free of organosiloxane moieties.

5,300,592

THERMOSETTING RESIN COMPOSITION AND A COMPOSITE MATERIAL COMPRISING CURED PRODUCT AND SAID RESIN COMPOSITION AND ITS MATRIX

Shuichi Kanagawa, Osaka; Kunimasa Kamio, Suita; Shigeo Hozumi, Minoo; Hiroshi Nakamura, and Masao Yamagiwa, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 711,016, Jun. 6, 1991, abandoned, which is a division of Ser. No. 360,589, Jun. 2, 1989, Pat. No. 5,041,507, which is a continuation of Ser. No. 933,893, Nov. 24, 1986, abandoned. This application Nov. 4, 1992, Ser. No. 971,263
Claims priority, application Japan, Nov. 26, 1985, 60-265613; May 29, 1986, 61-125382; Jun. 20, 1986, 61-145565; Jun. 27, 1986, 61-152579
Int. Cl.[5] C08L *63/04, 79/08;* C08G *59/40*
U.S. Cl. 525—488 **14 Claims**

1. A thermosetting resin composition comprising a polymaleimide compound having two or more maleimide groups in its molecule, a phenol novolac resin of which some of the phenolic hydroxyl groups have been allyl-etherified and the residual phenolic hydroxyl groups have been converted to an epoxide moiety and the ratio of the allyl-etherified hydroxyl groups to the epoxidized hydroxyl groups is in the range of 0.5 to 9.0 and, as an optional ingredient, a curing agent.

5,300,593

LIGNIN MODIFIED BINDING AGENTS

Arno Gardziella, Witten-Rüdinghausen; Achim Hansen, Iserlohn-Letmathe; Stephan Schröter, Essen, and Josef Suren, Wünnenberg Haaren, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Fed. Rep. of Germany

Division of Ser. No. 966,298, Oct. 26, 1992, Pat. No. 5,260,405. This application Aug. 17, 1993, Ser. No. 108,111
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136563
Int. Cl.[5] C08G *8/34*
U.S. Cl. 525—489 **8 Claims**

1. A process for the preparation of a binding agent mixture comprising reacting a low molecular weight lignin from the Organosolv process with phenol in a weight ratio of 1:20 to 3:1 at 100° to 180° C., adjusting the pH to an acidic value and condensing the mixture with 0.2 to 0.9 moles of formaldehyde per mole of phenol at 60° to 120° C. to form the binding agent, intensively mixing the resulting lignin-phenol novalac with a phenol novolac in a weight ratio of 10:90 to 90:10 at 100° to 200° C., cooling and optionally drying the homogeneous mixture and granulating or finely grinding the mixture to form a powdered binding agent.

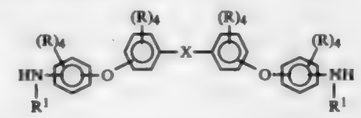
5,300,594

BIS(AMINOPHENOXY)-ALPHA-SUBSTITUTED STILBENES, CURABLE MIXTURES WITH EPOXY RESINS AND CURED PRODUCTS

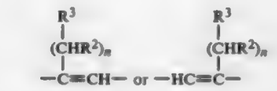
V. Rao Durvasula; Robert E. Hefner, Jr., and Jimmy D. Earls, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 6, 1993, Ser. No. 58,100
Int. Cl.[5] C08G *59/00, 65/08, 65/14*
U.S. Cl. 525—502 **12 Claims**

1. A curable composition comprising (A) a curing amount or more bis(aminophenoxy)-alpha-substituted stilbenes represented by the following Formula I



wherein each R is independently hydrogen or a hydrocarbyl or hydrocarbyloxy group having from one to about 10 carbon atoms, a halogen atom, a nitro group, a nitrile group or a —CO—R^2 group; each R^1 is independently hydrogen or a hydrocarbyl group having from one to about 10 carbon atoms; X is a



group, each R^2 is independently hydrogen or a hydrocarbyl group having from one to about 10 carbon atoms; R^3 is a hydrocarbyl group having from one to about 10 carbon atoms and may be chlorine or a nitrile group when n has a value of zero; and n has a value of zero or one; and (B) one or more epoxy resins.

5,300,595

EPOXY RESIN POWDER COATING COMPOSITION CONTAINING PHYSICAL BLEND OF 2-PHENYLIMIDAZOLINE AND ISOCYANURIC ACID

Christian J. C. De Cock; Marianne N. M. Godts, both of Ottignies Louvain-la-Neuve, Belgium; Willem Karzijn, The Hague, and Wouter W. Jongepier, Rotterdam/Pernis, both of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 3, 1992, Ser. No. 892,864
Claims priority, application United Kingdom, Jun. 5, 1991, 9112051
Int. Cl.[5] C08G *59/50*
U.S. Cl. 525—523 **4 Claims**

1. A powder coating composition comprising:

(a) an epoxy resin having at least one 1,2-epoxy group per molecule and (b) from about 2 to about 10 weight percent, based on the weight of component (a), of a physical blend of isocyanuric acid and 2-phenylimidazoline wherein the blend comprises about 5 to about 55 weight percent 2-phenylimidazoline, based on the weight of the blend.

5,300,596

REDUCTION OF α-OLEFIN-CARBON MONOXIDE COPOLYMERS TO POLYALCOHOLS WITH BOROHYDRIDE SALT

Gregory G. Hlatky, 1114 Indian Autumn, Houston, Tex. 77062

Filed Jul. 8, 1991, Ser. No. 726,615
Int. Cl.[5] C08G *67/02*
U.S. Cl. 525—539 **9 Claims**

1. A process for the reduction of alpha-olefin/carbon monoxide copolymers to polyalcohols consisting essentially of:

1) suspending an alpha-olefin/carbon monoxide copolymer in water,

2) adding a borohydride salt to the suspension, and

3) recovering the polyalcohol product.

5,300,597

OLEFIN POLYMERIZATION CATALYST AND PROCESS

Nemesio D. Miro, League City, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 366,720, Jun. 15, 1989, Pat. No. 5,238,891. This application Feb. 12, 1993, Ser. No. 17,163
Int. Cl.[5] C08F *4/656*
U.S. Cl. 526—114 **16 Claims**

1. A method for polymerizing an olefin comprising contacting said olefin under suitable reaction conditions with a catalyst and a cocatalyst, wherein said catalyst is a particulate olefin polymerization catalyst produced by forming a solution from components comprising a magnesium-containing component and a transition metal-containing component and then contacting the solution with the product resulting from the combination of an organoaluminum halide compound with a silicon compound, to obtain a particulate catalyst component, wherein said magnesium-containing component is selected from the groups consisting of:

(1) oxygen-containing organomagnesium compounds,

(2) compounds having the formula

RMgX

wherein X is a halogen atom, and R is an alkyl, aryl, or cycloalkyl radical containing 1–20 carbon atoms, and

(3) inorganic Mg halides, Mg oxide, Mg hydroxide, Mg hydroxyhalide, and Mg salts of inorganic oxygen-containing acids,

wherein said transition metal-containing component is selected from the group consisting of Ti, V, or Zr compounds having at least one OR″ group wherein R″ is a hydrocarbyl radical selected from straight or branched chain alkyl radicals, cycloalkyl radicals, arylalkyl radicals, aryl radicals, and alkylaryl radicals having 1 to 20 carbon atoms,

wherein said organoaluminum halide is selected from compounds having the general formula AlR_nX_{3-n} wherein each R is individually selected from saturated and unsaturated hydrocarbyl radicals containing 1 to 20 carbon atoms per radical, X is a halogen and n is any number in the range of 1 to 2,

and wherein said silicon compound is selected from hydrocarbyloxy silane compounds having at least one Si—O—R group wherein R is a hydrocarbyl radical containing 1–20 carbon atoms and polysiloxane polymers having repeating units of the formula



wherein each R is individually selected from alkyl radicals having 1–12 carbon atoms and alkoxy radicals having 1–12 carbon atoms; and

wherein said cocatalyst is selected from the group consisting

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of the hydrides and organometallic compounds of metals of Group IA, II, and IIIA of the Periodic Table.

5,300,598

METHOD OF POLYMERIZING EXO-METHYLENE CYCLIC ORGANIC COMPOUNDS USING HOMOGENEOUS RING-OPENING CATALYSTS

Tobin J. Marks, Evanston; Xinmin Yang, Chicago, and Li Jia, Evanston, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Oct. 16, 1992, Ser. No. 962,390
Int. Cl.[5] C03G 61/06; C08F 4/64
U.S. Cl. 526—134 **10 Claims**

1. A method for the ring-opening copolymerization of an exomethylene substituted cyclic organic compound with one or more α-olefin comprising the steps of adding a solvent and an exo-methylene cyclic organic compound at a temperature of about −78° C. to a flask containing a catalyst, said catalyst including an electrophilic methallocene cation, adding an α-olefin, stirring, quenching and recovering the polymer product.

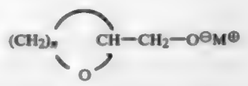
5,300,599

MODIFIER FOR ANIONIC POLYMERIZATION OF DIENE MONOMERS

Wen-Liang Hsu, Copley, and Adel F. Halasa, Bath, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 864,264, Apr. 6, 1992, Pat. No. 5,231,153. This application Apr. 8, 1993, Ser. No. 43,712
Int. Cl.[5] C08F 4/48
U.S. Cl. 502—154 **10 Claims**

1. A catalyst system which is particularly useful in the anionic polymerization of conjugated diene monomers into polydiene polymers having high vinyl contents which consists essentially of (a) an initiator which is selected from the group consisting of organolithium compounds, organosodium compounds, organopotassium compounds, and oranomagnesium compounds, and (b) a modifier having the structural formula:



wherein n represents the integer 3 and wherein M represents a metal selected from the group consisting of lithium, potassium, rubidium, and cesium.

5,300,600

AQUEOUS DISPERSIONS OF PEROXIDES

Lawrence A. Bock, Walnut Creek; Ronald L. Pastorino, San Anselmo, both of Calif., and Douglas Nordhaus, Houstin, Tex., assignors to Witco Corporation, New York, N.Y.

Continuation of Ser. No. 420,568, Oct. 12, 1989, abandoned. This application May 7, 1992, Ser. No. 881,304
Int. Cl.[5] C08F 4/34, 2/00; C09K 3/00
U.S. Cl. 526—202 **22 Claims**

1. An aqueous dispersion consisting of about 10 to about 65 percent by weight of an organic peroxide which is solid at about 20° C.; an effective dispersing amount of a dispersing agent consisting essentially of an alkyl aryl polyether alcohol; an oxylated phenolic resin; from 0 to about 5 percent by weight of a partial ester of a carboxylated acid copolyer; from 0 to about 1 percent by weight of a thickening agent; from 0 to about 1.5 percent by weight of anionic emulsifier and the remainder water.

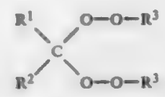
5,300,601

SUSPENSION POLYMERS BASED ON METHYL METHACRYLATE

Siegmund Besecke, Seeheim-Jugenheim; Wilfried Schoen, Ingelheim, and Karl-Ludwig Endlich, Mainz, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 2, 1991, Ser. No. 801,293
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1990, 4038625
Int. Cl.[5] C08F 4/38, 20/14, 4/36
U.S. Cl. 526—228 **2 Claims**

1. A process for the preparation of a suspension polymer of
a) from 80 to 100% by weight of methyl methacrylate and
b) from 0 to 20% by weight of further monomers capable of undergoing free radical polymerization,
by polymerization by means of an initiator system consisting of two or more initiators I having different decomposition temperatures T of from 60° to 140° C., at which in each case half the initiator has decomposed after 1 hour, wherein
the initiator I_{min} having the lowest decomposition temperature possesses a decomposition temperature T_{min} of from 60° to 100° C.,
the initiator I_{max} having the highest decomposition temperature possesses a decomposition temperature T_{max} of from 100° to 140° C., the difference between T_{max} and T_{min} is greater than 10° C. and I_{max} is a perketal of the formula (1)



(1)

where R^1 and R^2 are identical or different alkyl radicals of 1 to 5 carbon atoms and R^1 and R^2 may be bonded to form a 5-membered or 6-membered ring and R^3 is tert-butyl or tert-amyl, and
further initiators I_n which, if desired, may be concomitantly used have a decomposition temperature T_n of from T_{min} to T_{max} and
the polymerization temperature is from 100° to 140° C. and is kept virtually constant over the major part of the polymerization time.

5,300,602

PROCESS FOR PRODUCING WATER-SOLUBLE POLYMER AND WATER-SOLUBLE POLYMER

Yoshihiro Arita, Osaka; Kiyoshi Kawamura, Hyogo, and Kenta Kanaida, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Mar. 26, 1993, Ser. No. 38,199
Claims priority, application Japan, Mar. 30, 1992, 4-074720; Apr. 22, 1992, 4-103273; May 18, 1992, 4-125117
Int. Cl.[5] C08F 226/06
U.S. Cl. 526—260 **3 Claims**

1. A process for producing a water-soluble polymer containing a 2-oxazoline group, comprising polymerizing a monomer component containing an addition-polymerizable oxazoline;
the process being characterized by that said monomer component further contains an acrylic ester and said monomer component is polymerized in an aqueous medium, said monomer component comprising a monomer mixture comprising 5 to 95.25% by weight of a an addition-polymerizable oxazoline (a); 0.25 to 95.0% by weight of an acrylic ester (b); 0 to 94.75% by weight of a monomer (c) which is not an addition-polymerizable oxazoline or an acrylic ester; and said monomer mixture containing a hydrophilic monomer in an amount of 50% by weight or more.

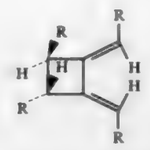
5,300,603

DIALKYLIDENECYCLOBUTANE/ACRYLATE/BIS-MALEIMIDE COMPOSITION

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 890,059, May 28, 1992, Pat. No. 5,250,643, which is a continuation-in-part of Ser. No. 733,947, Jul. 22, 1991, Pat. No. 5,147,953. This application May 19, 1993, Ser. No. 64,561
Int. Cl.[5] C08F 22/40
U.S. Cl. 526—262 **16 Claims**

1. A composition comprising
(a) a difunctional bisimide of an unsaturated dicarboxylic acid;
(b) a polyacrylate monomer; and
(c) a 1,2-dialkylidenecyclobutane represented by the structural formula



in which each R is selected independently from the group consisting of hydrogen, $C_{1\text{-}10}$ alkyl, halo, aryl, alkoxy, aryloxy, alkylthio, arylthio and dialkylamino.

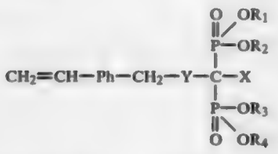
5,300,604

PROCESS FOR MAKING A MACROPOROUS STYRENE POLYMER

Jan-Anders H. Näsman, Rakuunatie 58 a C 48, SF-20720 Turku; Osmo Hormi, Kaitoväylä 32 A 14, SF-90570 Oulu; Esko Pajunen, YO-kylä 18 A 4, SF-20540 Turku, and Mats J. Sundell, Kuppisgatan 89 b 8, SF-20510 Turku, all of Finland

Continuation-in-part of Ser. No. 823,326, Jan. 21, 1992, Pat. No. 5,200,554. This application Dec. 11, 1992, Ser. No. 989,155
Int. Cl.[5] C08F 30/02
U.S. Cl. 526—278 **16 Claims**

1. In a process for making a surface functionalized macroporous styrene polymer wherein styrene monomer units are polymerized in the presence of a divinyl cross linking agent and a surfactant in a water in-monomer microemulsion, the improvement comprising admixing with the microemulsion as a functionalizing agent a bisphosphonic acid derivative having the formula:



(I)

wherein each one of the groups R_1, R_2, R_3 and R_4 is independently selected from the group consisting of hydrogen, lower alkyl, $—CH_2CH_2OH$ or R_1 and R_2 are together $—CH_2CH_2—$, or R_3 and R_4 are together $—CH_2CH_2—$;
X is selected from the group consisting of hydrogen, methyl, ethyl and COOH;
Y is selected from the group consisting of an optionally unsaturated alkylene group $(CH_2)_n$—where n has the value 0 to 12, $—OCH_2CH_2O$, $—OCH_2C^*H(OH)CH_2—$, wherein the carbon atom marked with * is chiral and is in a form selected from the group consisting of the R-form, S form, and a racemate; and
Ph is a phenyl group which carries the vinyl group in metaor para position to the methylene group; and,
reacting the mixture to form a macroporous styrene polymer functionally modified with the bisphosphonic acid derivative.

5,300,605

CROSS-LINKABLE POLY(UNSATURATED CARBOSILANE) HOMOPOLYMERS AND COPOLYMERS AND METHOD OF MAKING SAME

William P. Weber, Los Angeles, and Xiugao Liao, Almonte, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 838,068, Feb. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,638, Sep. 12, 1991, Pat. No. 5,171,810, which is a continuation-in-part of Ser. No. 636,639, Dec. 31, 1990, Pat. No. 5,169,916. This application Mar. 19, 1993, Ser. No. 34,545
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] C08F 230/08
U.S. Cl. 526—279 **17 Claims**

1. A poly(unsaturated carbosilane) comprising repeating units of the general formula



where R is hydrogen, an alkyl radical containing from one to four carbon atoms or phenyl, R_1 and R_2 are hydrogen, an alkyl radical containing from one to four carbon atoms, phenyl or a halogen, and n is from about 10 to about 10,000, and wherein both cis and trans double bonds are present in the main chain of the polymer.

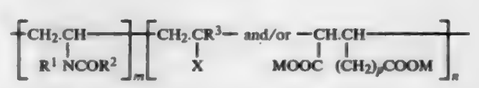
5,300,606

LIQUID ABSORPTION AGENT

Toshiyuki Aizawa; Hitoshi Nakamura, both of Oita, and Yoshikazu Hosoda, Kawasaki, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation of Ser. No. 701,911, May 17, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 31,022
Claims priority, application Japan, Sep. 3, 1990, 2-230550
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] C08F 236/02, 236/02, 226/02
U.S. Cl. 526—307.6 **8 Claims**

1. A liquid absorption agent for water or organic solvents comprising a crosslinked N-vinylcarboxylic acid amide resin comprising repeating units of the formula shown below, crosslinked with a crosslinking agent:



wherein R^1, R^2, and R^3 independently represent a hydrogen atom or methyl;
X represents a group —COOY, where Y represents a hydrogen atom, an alkali metal, a C_1–C_6 alkyl, or a lower alkyl substituted with a hydroxyl, a dialkylamino or a quaternary ammonium group; a group —CONHZ, where Z represents a hydrogen atom or a lower alkyl substituted with a dialkylamino group, a quaternary ammonium group, a sulfonic acid or an alkali metal salt thereof; a cyano, a 2-ketopyrrolidinyl, a lower alkoxy, a lower acyl, a lower acyloxy or a lower alkyl substituted with sulfonic acid or an alkali metal salt thereof, with a proviso that when R^3 is a methyl, X is not a cyano, a 2-ketopyrrolidinyl, a lower alkoxy, a lower acyl, a lower acyloxy and a lower alkyl substituted with sulfonic acid or a salt thereof;
M represents a hydrogen atom or an alkali metal;
p represents 0 or 1; and the molar ratio of m:n is 50–100:50–0, said crosslinking agent comprising, as an essential constitu-

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ent, at least one compound selected from the group consisting of N,N'-α,ω-lower alkylenebis (N-vinylcarboxylic acid amides), N,N'-(diacetyl)-N,N'-(divinyl)-α,ω-diaminopolyethers and xylylene bis (N-vinylcarboxylic acid amides), the amount of the crosslinking agent being 2×10^{-4} mol % to 0.2 mol %, based on the (co)polymerized component.

5,300,607

METHOD FOR PREPARING SILICONE RESINS

Junji Nakanishi; Toshio Saruyama, and Atsushi Togashi, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 944,141
Claims priority, application Japan, Sep. 30, 1991, 3-278226
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—14 **3 Claims**

1. A method for preparing an organosiloxane resin, said method consisting essentially of the sequential steps of

(1) cohydrolyzing (a) an organotrihalosilane of the general formula

$$R^1SiX_3$$

and a diorganodihalosilane of the general formula

$$R^2_2SiX_2$$

in an aqueous medium,

(2) subjecting the resulting hydrolysis product to a condensation reaction,

(3) subsequently adjusting the solids concentration in the reaction mixture within the range from 0.1 to 90 weight percent, based on the weight of said mixture, and

(4) subjecting the resultant mixture to an alkali metal-catalyzed re-equilibration reaction,

where R^1 and R^2 are individually selected from the group consisting of substituted and unsubstituted monovalent hydrocarbon radicals and X represents a halogen atom.

5,300,608

PROCESS FOR PREPARING ALKOXY-TERMINATED ORGANOSILOXANE FLUIDS USING ORGANO-LITHIUM REAGENTS

Hsien-Kun Chu, Wethersfield; Robert P. Cross, Rocky Hill; Patrick J. Courtney, Newington, and David L. Crossan, Hebron, all of Conn., assignors to Loctite Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 861,143, Mar. 31, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 14,143
Int. Cl.[5] C08G 77/08
U.S. Cl. 528—14 **20 Claims**

1. A process for preparing an alkoxy silyl-terminated material from a material having at least one end terminating in a silanol group comprising, reacting said material having at least one end terminating with a silanol group with a silane containing at least two alkoxy groups, said reacting occurring in the presence of a catalytically effective amount of an organolithium reagent in the absence of added polar or aprotic solvent.

5,300,609

FLUOROSILICONE BLOCK COPOLYMERS

Hideki Kobayashi, Chiba, Japan, assignor to Dow Corning Toray Silicon Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,846
Claims priority, application Japan, Mar. 31, 1992, 4-108961
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—14 **3 Claims**

1. A fluorosilicone block copolymer comprised of

(a) a siloxane unit described by formula

$$(Me_2SiO)_x(MeQSiO)_z,$$

where Me represents a methyl group, Q represents an alkenyl group, x is an integer with a value of at least 40, and z is an integer with a value of zero or greater and

(b) one or two siloxane units described by formula

$$\Delta F(CF_2)_aC_2H_4SiMeO\}_y(MeQSiO)_v,$$

where a is an integer with a value of at least 1, y is an integer with a value of at least 40, and v is an integer with a value of zero or greater.

5,300,610

MANUFACTURED METHOD OF ALKOXY RADICAL-CONTAINING SILICONE RESIN

Junji Nakanishi, and Toshio Saruyama, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 13,901
Claims priority, application Japan, Feb. 25, 1992, 4-073537
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—14 **12 Claims**

1. A method for manufacturing an alkoxy radical-containing silicone resin wherein the method comprises, combining, under anhydrous conditions,

(A) an alkoxysilane represented by the formula $R^4_aSi(OR^5)_{4-a}$ or its partial hydrolysis product, wherein R^4 is selected from the group consisting of a monovalent hydrocarbon radical and a monovalent halogenated hydrocarbon radical, R^5 is selected from an alkyl radical containing 1 to 6 carbon atoms, and a has the value of 0 to 3; and

(B) an organopolysiloxane or a mixture of organopolysiloxanes selected from the group consisting of

(1) an organopolysiloxane (a) made of siloxane units represented by the formula $R^1SiO_{3/2}$ wherein R^1 is selected from the group consisting of a monovalent hydrocarbon radical and a monovalent halogenated hydrocarbon radical;

(2) a mixture of said organopolysiloxane (a) and an organopolysiloxane (b) made of siloxane units represented by R^2R^3SiO wherein R^2 and R^3 are independently selected from the group consisting of monovalent hydrocarbon radicals and monovalent halogenated hydrocarbon radicals;

(3) an organopolysiloxane (c) made of the siloxane units represented by the formula $R^1SiO_{3/2}$ and the siloxane units represented by R^2R^3SiO wherein R^1,R^2 and R^3 are as defined above;

(4) a mixture of said organopolysiloxane (a) and said organopolysiloxane (c);

(5) a mixture of said organopolysiloxane (b) and said organopolysiloxane (c); and

(6) a mixture of said organopolysiloxane (a), said organopolysiloxane (b) and said organopolysiloxane (c);

wherein said organopolysiloxane or mixture of organopolysiloxanes is essentially free of silanol, alkoxy or other hydrolytic radicals; followed by heating the mixture of (A) and (B) in the presence of a basic catalyst under anhydrous conditions to perform a reequilibration reaction for said components (A) and (B).

5,300,611

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Kazutoshi Fujioka, Annaka; Tokuo Satou, Usui, and Masatoshi Arai, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 963,471
Claims priority, application Japan, Oct. 21, 1991, 3-302290
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—15 **20 Claims**

1. A room temperature curable organopolysiloxane composition comprising:

(A) a diorganopolysiloxane of formula (1):

$$HO-(SiO)_n-H \quad (1)$$

wherein each R^1 independently is an unsubstituted or a substituted monovalent hydrocarbon group, and n is an integer of at least 10,

(B) a quaternary functional silane of formula (2):

$$Si(OR^2)_4 \quad (2)$$

wherein each R^2 independently is an unsubstituted or a substituted monovalent hydrocarbon group, or a partially hydrolyzed product of said silane;

(C) a curing catalyst;

(D) a filler;

(E) a tertiary functional silane of formula (3):

$$R^3Si(OR^4)_3 \quad (3)$$

wherein R^3 is an unsubstituted or a substituted monovalent hydrocarbon group with from 1 to 8 carbon atoms, and each R^4, independently, is an unsubstituted or a substituted monovalent hydrocarbon group or a partially hydrolyzed product of said silane, and

(F) (i) a silane with a functional amine group of formula (4):

$$(R^5O)_3Si-R^6-NH-R^7 \quad (4)$$

wherein each R^5, independently, is an unsubstituted or a substituted monovalent hydrocarbon group; R^6 is an unsubstituted or a substituted divalent organic group; and R^7 is a hydrogen atom, an unsubstituted or a substituted monovalent hydrocarbon group, or an aminoalkyl group, or

(ii) an addition product of a silane of formula (4) with an acrylic acid or methacrylic acid ester.

5,300,612

MODULUS CONTROLLABLE ROOM-TEMPERATURE-CURABLE SILICONE ELASTOMER COMPOSITION

Toshio Saruyama, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 78,535
Claims priority, application Japan, Jun. 22, 1992, 4-187661
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—17 **12 Claims**

1. A modulus controllable room-temperature-curable silicone elastomer composition consisting essentially of

(a) 100 parts by weight silanol-terminated polydiorganosiloxane that has a viscosity at 25° C of 0.0005 to 0.3 m^2/s,

(b) 0.5 to 20 parts by weight siloxane with the formula

$$R^1_{3-n}SiO-\underset{\displaystyle OR^2}{\overset{\displaystyle OR^2}{\underset{|}{\overset{|}{Si}}}}-OSiR^1_3$$

in which R^1 represents monovalent hydrocarbon groups and R^2 represents monovalent hydrocarbon groups having 1 to 8 carbon atoms,

(c) 0.5 to 20 parts by weight organosilane with the formula

$$R^1_{4-n}Si(OR^2)_n$$

in which R^1 and R^2 are defined as above and n is 3 or 4 or partial hydrolyzate thereof, and

(d) 0.01 to 20 parts by weight curing catalyst.

5,300,613

FLUORINE-CONTAINING ORGANOSILICON COMPOUNDS

Hirofumi Kishita; Shinichi Sato, and Takashi Matsuda, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,847
Claims priority, application Japan, Jun. 2, 1992, 4-167025; Jun. 17, 1992, 4-183167
Int. Cl.[5] C08G 77/24, 77/26; C07F 7/16
U.S. Cl. 528—26 **3 Claims**

1. A fluorine-containing organosilicon compound which has the following general formula (1):

$$CH_2=CHCH_2NHCO-[Rf-CONH(CH_2)_3-Q-(CH_2)_3NHCO]_a-R-f-CONHCH_2CH=CH_2 \quad (1)$$

wherein a is an integer of 1 or above, Rf is a divalent fluorine-containing organic group having the following general formula (2):

$$+CF_2CFOCF_2)_j(CFOCF_2)_k(CF_2)_l(CF_2OCF)_m(CF_2OCFCF_2)_n \quad (2)$$

wherein X is a fluorine atom or CF_3 group, l is an integer from 0 to 8, k and m are each an integer from 1 to 20, and j and n are each an integer of 0 or 1; and Q is a siloxane group having one of the following general formulas (3), (4) and (5):

$$-Si(R^1_2)-O-Si(R^1_2)- \quad (3)$$

$$-Si(R^1_2)-O-Si(R^1_2)-R^2-Si(R^1_2)-O-Si(R^1_2)- \quad (4)$$

$$-Si(R^1_2)-O-Si(R^1_2)-R^2-Si(R^1_2)-O-Si(R^1_2)- \quad (5)$$

wherein R^1 and R^2 are each an unsubstituted or substituted

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monovalent hydrocarbon group without an aliphatically unsaturated group.

5,300,614

SILICON CARBIDE PRECURSORS

Michael J. Michalczyk, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 751,520, Aug. 29, 1991, Pat. No. 5,202,405, which is a continuation-in-part of Ser. No. 573,419, Aug. 27, 1990, abandoned. This application Dec. 22, 1992, Ser. No. 994,867

Int. Cl.[5] C08G *77/24*

U.S. Cl. 528—42 **13 Claims**

1. A process for making polycarbosilane comprising reacting chloromethyltrichlorosilane with magnesium in a non cyclic aliphatic ether at temperatures from 20° C. to reflux of said non cyclic aliphatic ether and reacting the polychlorocarbosilane with a reduction agent at −10° C. to 25° C.

5,300,615

POLYURETHANES CONTAINING ACRYLOYL GROUPS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS BINDERS FOR COATING COMPOSITIONS

Jürgen Meixner, Krefeld, and Wolfgang Fischer, Meerbusch, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 20, 1993, Ser. No. 123,630

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1992, 4232013

Int. Cl.[5] C08G *18/68, 18/73;* C08F *2/46;* C08J *3/28*

U.S. Cl. 528—49 **4 Claims**

1. A polyurethane which contains acryloyl groups, has a viscosity at 23°°C. of 800 to 100,000 mPa.s, and is prepared by reacting at an NCO/OH equivalent ratio of 0.7:1 to 1:1,

I) an organic isocyanate component comprising

a) 20 to 50 mole % of one or more organic diisocyanates, other than hexamethylene diisocyanate, which have aliphatically and/or cycloaliphatically bound isocyanate groups and a molecular weight of less than 300 and

b) 50 to 80 mole % of hexamethylene diisocyanate with

II) a hydroxyl component comprising

c) 43 to 93 hydroxyl equivalent % of an alcohol component which has an average hydroxyl functionality of 0.8 to 1.5 and contains one or more alcohols having acryloyl groups and a molecular weight of 116 to 1000, provided that at least 50 mole % of component c) is made up of ether group-containing esterification products of acrylic acid with ether group-containing alcohols which are at least trihydric, wherein the esterification products have an average molecular weight of 300 to 1000 and an average hydroxyl functionality of 0.8 to 1.5,

d) 7 to 50 hydroxyl equivalent % of one or more monohydric or dihydric branched alcohols having a molecular weight of 130 to 300 and

e) 0 to 50 hydroxyl equivalent % of one or more monohydric or polyhydric alcohols having a molecular weight of less than 130.

5,300,616

PROCESS FOR ISOLATING POLYISOCYANATE ISOMERS FROM POLYISOCYANATE MIXTURES

Wolfgang Friedericha, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 30, 1992, Ser. No. 998,306

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1992, 4200236

Int. Cl.[5] C08G *18/70*

U.S. Cl. 528—67 **15 Claims**

1. A process for isolating mixtures of polyisocyanate isomers or carbamic acid halides of polyisocyanate isomers in more pure or concentrated form from a mixture of at least two different polyisocyanate isomers or carbamic acid halides of polyisocyanate isomers in an aprotic organic solvent comprising

a) mixing a two-phase system composed of

1) a non-polar solvent and

2) a polar solution of an anhydrous halide in which the isomer mixture to be isolated in more pure or concentrated form is present in at least one of 1) and 2) until the system is homogeneous,

b) allowing the distinct phases to form, and

c) separating the phases formed in b).

5,300,617

POTASSIUM PARA-DIPHENYL PHOSPHINO BENZENE SULFONATE LIGAND

Elena N. Suciu, Bridgewood; Joel R. Livingston, Jr., Basking Ridge, and Edmund J. Mozeleski, Califon, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jan. 21, 1993, Ser. No. 6,910

Int. Cl.[5] C07F *9/14;* C07C *45/50*

U.S. Cl. 558—78 **15 Claims**

1. A method for producing potassium para-diphenyl phosphino sulfonate ligands which comprises reacting potassium diphenyl phosphide with lithium salt of para-chloro benzenesulfonic acid.

5,300,618

RESORCINOL-BASED EPOXY RESINS

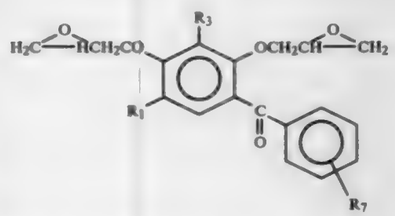
Raj B. Durairaj, Monroeville, Pa., assignor to Indspec Chemical Corporation, Pittsburgh, Pa.

Filed Jan. 15, 1993, Ser. No. 3,987

Int. Cl.[5] C07D *303/12, 303/34*

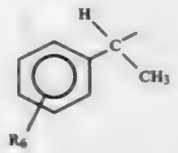
U.S. Cl. 528—101 **3 Claims**

1. A curable epoxy resin having the general structural formula (V)



(V)

wherein R_1 and R_3 may be the same or different and selected from the group consisting of (a) hydrogen, (b) the general structural formula (VI)



(VI)

and (c) an allyl group, and wherein R_6 and R_7 may be the same or different and selected from the group consisting of hydrogen and an alkyl group having 1 to about 4 carbon atoms.

5,300,619

POLYIMIDE RESIN FILM AND METHOD OF MAKING SAID FILM

Koji Okada; Yoshihide Ohnari; Toshinori Mizuguchi, and Junichi Hazama, all of Otsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

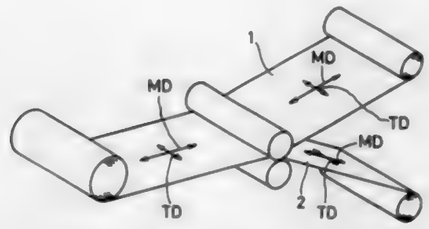
PCT No. PCT/JP91/00673, § 371 Date Mar. 18, 1992, § 102(e) Date Mar. 18, 1992, PCT Pub. No. WO91/17880, PCT Pub. Date Nov. 28, 1991

PCT Filed May 20, 1991, Ser. No. 820,864

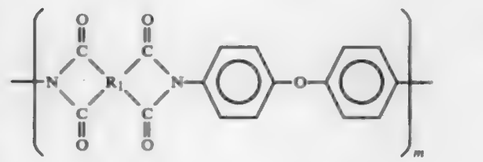
Claims priority, application Japan, May 21, 1990, 2-132068

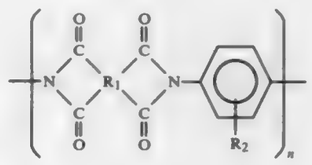
Int. Cl.[5] C08G *73/00;* B32B *27/00*

U.S. Cl. 528—170 **2 Claims**

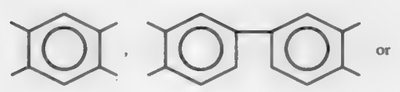


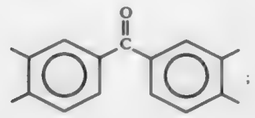
1. A polyimide resin film containing more than 90 mol % of a recurring unit expressed by the general formula:





where, R_1 represents





R_2 represents a hydrogen atom or a monovalent substituent; and m,n represent integral numbers, m/n assuming a value of from 0.1 to 100, and the film is characterized in that the ratio (a/b) of the linear expansion coefficient (a) of the film in the machine direction to the linear expansion coefficient (b) in the transverse direction is more than 0.2 but less than 1.0, and the linear expansion coefficient in the machine direction is $0.4\times10^{31\,5}-2.0\times10^{-5}$ °C.$^{-1}$.

5,300,620

HEAT-RESISTANT ADHESIVE AND METHOD OF ADHESION BY USING ADHESIVE

Hideaki Okikawa; Shoji Tamai, both of Kanagawa; Katsuaki Iiyama, Kanagawa; Saburo Kawashima, Kanagawa; Akihiro Yamaguchi, Kanagawa, and Tadashi Asanuma, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 871,517, Apr. 21, 1992, Pat. No. 5,252,700. This application Jun. 22, 1993, Ser. No. 79,753

Claims priority, application Japan, Apr. 30, 1991, 3-98647; Mar. 3, 1992, 4-45248

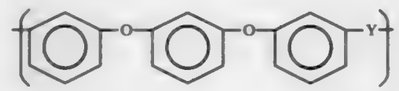
Int. Cl.[5] C08G *73/10, 69/26;* C08L *79/08*

U.S. Cl. 528—172 **6 Claims**

1. A heat-resistant adhesive comprising polyamic acid and-/or polyimide which are blocked at the polymer chain end with an aromatic monoamine represented by the formula (3):

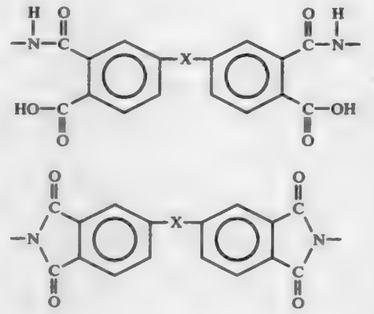
$$Q—NH_2 \quad (3)$$

wherein Q is a monovalent radical selected from the group consisting of a monoaromatic radical, condensed polyaromatic radical and noncondensed aromatic radical connected to each other with a direct bond or a bridge member, and essentially consist of recurring structural units represented by the formula (2):



(2)

wherein Y is:



or

wherein X is a direct bond or a divalent radical of —CO— or —O—.

5,300,621

SEMICRYSTALLINE AROMATIC POLYESTER, PROCESS FOR ITS PRODUCTION AND RESIN COMPOSITION CONTAINING IT

Hiroo Inata; Shunichi Matsumura; Nobuaki Kido, all of Iwakuni, and Toshio Hatayama, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 3, 1993, Ser. No. 12,631

Claims priority, application Japan, Feb. 13, 1992, 4-026643; Jul. 20, 1992, 4-192089

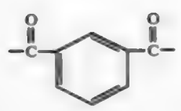
Int. Cl.[5] C08G *63/00, 63/02*

U.S. Cl. 528—195 **27 Claims**

1. An aromatic polyester:

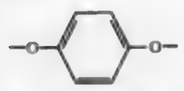
(1) consisting essentially of a polymer unit A of the formula (1),

VOL 1161 ISS 1 AP 5 1994 UMI



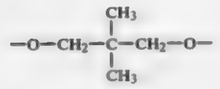
(1)

a polymer unit B of the formula (2),



(2)

and a polymer unit C of the formula (3),



(3)

the above polymer units being bonded together forming ester linkages in a polymer chain,

(2) the amount of the polymer unit C is 10 to 35 mol % based on the total amount of the polymer units B and C,

(3) the polyester being semicrystalline,

(4) the polyester having an inherent viscosity, measured in a phenol/1,1,2,2-tetrachloroethane mixed solvent (weight ratio=60/40) at 35° C., of at least 0.3.

5,300,622

POLYCARBONATE FROM HETEROCYCLIC BIS(4-HYDROXYPHENYL)CYCLOALKANE

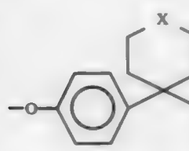
John C. Schmidhauser, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,316

Int. Cl.[5] C08G *64/06, 64/08, 64/12*

U.S. Cl. 528—196 **13 Claims**

1. A polycarbonate comprising structural units of the formula



(II)

wherein X is S, SO or SO_2.

5,300,623

METHOD FOR MAKING POLYCARBONATE SUBSTANTIALLY FREE OF DIARYL CARBONATE

Eugene P. Boden, Scotia, and Peter D. Phelps, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1993, Ser. No. 66,380

Int. Cl.[5] C08G *64/24*

U.S. Cl. 528—199 **6 Claims**

1. A method for making polycarbonate having a predetermined molecular weight which is substantially free of diarylcarbonate, which comprises,

(1) adding phosgene to a bisphenol under interfacial reaction conditions at a pH in the range of about 10 to 12 in the presence of an amount of a phase transfer catalyst which is effective for catalyzing reaction between phosgene and the bisphenol until about 1 to 70 mole % of phosgene has been added, based on the total moles of available arylhydroxy of the bisphenol,

(2) lowering the pH of the mixture of (1), to a value in the range of about 8.0 to 9.0, and while maintaining such pH range, continuing to add phosgene to the mixture until up to about a 2 mole % excess of phosgene has been introduced which is at least adequate to generate sufficient chloroformate end groups capable of reacting with available bisphenol hydroxy groups and the calculated moles of hydroxy in phenolic chain-stopper hydroxy groups sufficient to provide polycarbonate having the predetermined molecular weight,

(3) introducing into the resulting mixture, the calculated moles of phenolic chain-stopper sufficient to achieve the desired predetermined polycarbonate molecular weight range,

(4) raising the pH of the resulting mixture to a value in the range of 10 to 12, and

(5) eliminating any excess chloroformate groups in the resulting mixture.

5,300,624

METHOD FOR MAKING FLAME RETARDANT POLYCARBONATE

Eugene P. Boden, Scotia, and Peter D. Phelps, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

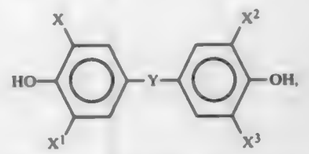
Filed May 24, 1993, Ser. No. 66,381

Int. Cl.[5] C08G *64/24*

U.S. Cl. 528—199 **4 Claims**

1. A method for making flame retardant polycarbonates which comprises,

(1) adding phosgene to a tetrahalobisphenol mixture comprising up to about 50 mole % of a bisphenol of the formula,



(1)

where X–X^3 are halogen atoms, and Y is a member selected from the group consisting of —O—, —S—,



and R is a $C_{(1-4)}$ alkyl group, under interfacial reaction conditions at a pH in the range of about 9 to about 11 and in the presence of an effective amount of a condensation catalyst mixture comprising a tertiary organic amine and a phase transfer catalyst until up to about 90 mole % of the phosgene required to react with the available phenolic hydroxy groups in the mixture has been introduced,

(2) altering the pH of the mixture to a range of about 10.5 to 12 to effect the substantial elimination of chloroformate groups in the resulting reaction mixture of (1), and

(3) further introducing into the mixture of (2), at least a stoichiometric amount, and up to about a 3 mole % excess of phosgene based on the total moles of phenolic hydroxy groups in the bisphenol mixture of (1).

5,300,625

HETEROAROMATIC POLYETHER

Brigitte Helmreich, Garching; Klaus Burger, Kranzberg; Gerhard Maier; Reinhold Hecht, both of Bayreuth, and Oskar Nuyken, München, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

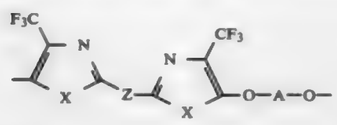
Filed Jan. 10, 1992, Ser. No. 819,061

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1991, 4100802

Int. Cl.[5] C08G *65/00*

U.S. Cl. 528—211 **8 Claims**

1. A polyether containing recurring units of the formula I



(I)

in which

A is a divalent arylene or heteroarylene radical,

X is O, S or NR,

Z is a divalent aryl or heteroaryl radical or the ethinylene, azo or $(CF_2)_n$ group, wherein n is an integer from 1 to 4, and

R is aryl.

5,300,626

PROCESS FOR OBTAINING MODIFIED POLYETHYLENE TEREPHTHALATE PILLING-FREE FIBRES ORIGINATING FROM THE POLYMER THUS MODIFIED

Denis Jehl, Gauchy; Bernard Millaud, Beaurains, and Jean Staron, Saint Chamond, all of France, assignors to Rhone-Poulenc Fibres, Lyons, France

Filed Apr. 3, 1991, Ser. No. 678,844

Claims priority, application France, Apr. 5, 1990, 90 04621

Int. Cl.[5] C08G *63/695*

U.S. Cl. 528—274 **6 Claims**

1. A pilling-free fiber capable of being employed in a mixture with at least one cotton fiber for weaving applications, based on polyethylene terephthalate modified with —SiO— groups bonded chemically to the macromolecular chains in an amount of 300 to 700 ppm of silicon and having:

an elongation at break greater than zero and less than 25%;

a tenacity greater than or equal to 40 cN/tex;

a boiling water shrinkage of between 1.5 and 6%; and

a flex abrasion index after dyeing greater than zero and less than or equal to 6,500 at 130° C. and under pressure;

said modified polyethylene terephthalate being obtained by the process comprising the continuous reaction of direct esterification between terephthalic acid and ethylene glycol and modified by the introduction of methoxyethyl or propyl silicate in an amount of 300–700 ppm of silicon at a time when the prepolymer has a molecular mass of between 9,000 and 16,000, a polydispersity index of between 1.5 and 2, and when the temperature of the reaction is between 260° and 290° C. and at a pressure of between 1.5 and 2.5 bars, the silicate/prepolymer reaction time being at least 5 min,

wherein after polycondensation, the polyester is drawn in the presence of steam.

5,300,627

ADHESIVE POLYIMIDE FILM

Kouichi Kunimune, Ichiharashi; Yoshihiro Soeda, Yokohamashi; Setsuo Itami, and Kazutsune Kikuta, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

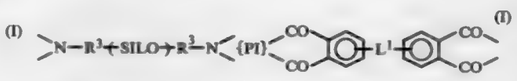
Filed Sep. 15, 1992, Ser. No. 944,968

Claims priority, application Japan, Oct. 17, 1991, 3-298333; May 11, 1992, 4-144890

Int. Cl.[5] C08G *69/26, 73/10*

U.S. Cl. 528—353 **3 Claims**

1. A silicon-modified, adhesive polyimide film composed mainly of the repetition units expressed by the formula (I):

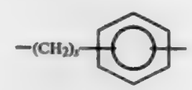


(I)

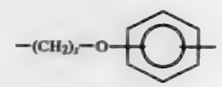
wherein

L^1 independently represents —O— or —CO—;

R^3 independently represents either one of the groups expressed by the formulas (II) to (V):



(II)

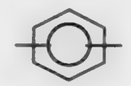


(III)



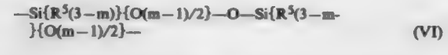
(IV)

(V)



wherein s represents an integer of 1 to 4;

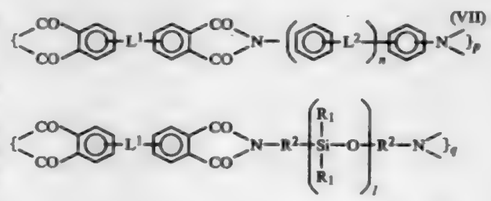
(SILO) is expressed by the formula (VI)



(VI)

wherein R^5 independently represents an alkyl group of 1 to 6 carbon atoms, phenyl group or an alkylsubstituted phenyl group of 7 to 12 carbon atoms, and m falls in a range of $1<m\leqq3$;

(PI) is expressed by the formulas (VII)



(VII)

wherein L^2 independently represents —O—, or $—CH_3—$, R^1 independently represents an alkyl group of 1 to 6 carbon atoms, phenyl group or an alkylsubstituted phenyl group of 7 to 12 carbon atoms, R^2 independently represents either one of groups expressed by the formulas (II) to (V), l falls in a range of $1\leqq l\leqq100$, n falls in a range of $1\leqq n\leqq3$, and p and q each fall in the ranges expressed by the formulas (VIII) and (IX):

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$$0.1 \leq \frac{q}{p+q} \geq 1$$

$$0.01 \leq \frac{2}{p+q+2} \geq 0.5$$

(VIII) Val-Thr-His-Pro-Gly-Tyr,

(IX) having NeuAcα2→3-Galβ1→3-GalNAc, Galβ1→3GalNAc, or GalNAc linked at the threonine residue, the peptide capable of binding to antibody FDC-6.

5,300,628

SELECTED CHELATE RESINS AND THEIR USE TO REMOVE MULTIVALENT METAL IMPURITIES FROM RESIST COMPONENTS

Kenji Honda, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Filed Jun. 29, 1992, Ser. No. 906,183

Int. Cl.[5] C08F *12/36, 6/08*

U.S. Cl. 528—482 **11 Claims**

1. A method for removing multivalent metal impurities from a resist component, comprising the steps of:

(1) dissolving a resist component containing multivalent metal impurities in a solvent;

(2) contacting said resist component solution with a chemically modified chelate resin for a sufficient amount of time to attach at least a portion of said metal impurities onto said chelate resin, wherein said chemically modified resin is the reaction product of a cross-linked polymer bead chelate resin containing amine reaction sites with an aromatic aldehyde selected from the group consisting of 4-Formyl-benzo-15-Crown-5; 4-Formyl-benzo-18-Crown-6; 3,4-dihydroxybenzaldehyde; 3-ethoxy salicylaldehyde; salicylaldehyde; 2-pyridine carboxaldehyde; 3-pyridine carboxaldehyde; 4-pyridine carboxaldehyde; and pyrrole-2-carboxaldehyde; and

(3) separating said chemically modified chelate resin bearing said multivalent metal impurities from said resist component solution.

5,300,629

BACTERICIDAL AND/OR BACTERIOSTATIC PEPTIDES ISOLATED FROM HEMOLYMPH OF HONEYBEES

Peter Casteels, Erpe-Mere, Belgium; Paul Tempst, Boston, Mass.; Frans Jacobs, Scheldewindeke, and Mark Vaeck, Elewijt, both of Belgium, assignors to Plant Genetic Systems, N.V., Belgium

Continuation of Ser. No. 214,659, Jul. 1, 1988, abandoned. This application Nov. 14, 1991, Ser. No. 794,369

Claims priority, application United Kingdom, Jul. 1, 1987, 87401530

Int. Cl.[5] C07K *7/08*

U.S. Cl. 530—326 **5 Claims**

1. An apidaecin of 12 to 18 amino acid residues having the following formula:

H_2N-Gly-Asn-Asn-Arg-Pro-X-Tyr-Ile-Pro-Gln-Pro-Arg-Pro-Pro-His-Pro-Arg-Z-OH

wherein

X is a valyl or isoleucyl residue and

Z is a leucyl or isoleucyl residue, said apidaecin being truncated by up to 6 amino acid residues at its N-terminus.

5,300,630

ONCOFETAL FIBRONECTIN EPITOPE

Hidemitsu Matsuura; Sen-itiroh Hakomori, both of Seattle, Wash., and Koiti Titani, Aichi, Japan, assignors to Fred Hutchinson Cancer Research Institute; The Biomembrane Institute and The Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 825,308, Jan. 22, 1992, Pat. No. 5,177,015, which is a continuation of Ser. No. 231,576, Aug. 12, 1988, abandoned. This application Oct. 2, 1992, Ser. No. 955,488

Int. Cl.[5] A61K *37/02;* **C07K** *7/06*

U.S. Cl. 530—329 **1 Claim**

1. A peptide consisting essentially of:

5,300,631

ANTIBODIES SPECIFIC FOR EITHER RAS PHOTO-ONCOGENE ENCODED P21 PROTEINS OR RAS ONCOGENE ENCODED PROTEINS P21 BUT NOT FOR BOTH AND METHOD OF PRODUCING SAME

Robert A. Weinberg, Brookline; Clifford J. Tabin, Cambridge, both of Mass., and Scott M. Bradley, McLean, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 327,362, Mar. 22, 1989, abandoned, which is a continuation of Ser. No. 763,631, Aug. 8, 1985, abandoned, which is a division of Ser. No. 432,337, Oct. 1, 1982, Pat. No. 4,535,058. This application Jan. 27, 1992, Ser. No. 826,254

The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.

Int. Cl.[5] C07K *15/28;* **C12N** *5/12, 15/02;* **C12P** *21/08*

U.S. Cl. 530—387.7F **9 Claims**

5. An antibody which is specific for a p21 protein encoded by a human ras oncogene but which is not specific for a p21 protein encoded by the corresponding human ras p21 proto-oncogene, wherein said p21 protein encoded by the human ras oncogene and said protein encoded by the human ras proto-oncogene differ from each other by a single amino acid difference.

7. The antibody of claim 5, wherein the human ras oncogene differs from the human ras proto-oncogene at codon 12.

5,300,632

METHOD FOR PURIFYING AN OUTER MEMBRANE PROTEIN OF *HAEMOPHILUS INFLUENZAE*

Timothy F. Murphy, East Amherst, and Michael A. Apicella, Pendleton, both of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 330,229, Mar. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 92,948, Oct. 8, 1987, Pat. No. 5,173,294, and a continuation-in-part of Ser. No. 932,872, Nov. 18, 1986, abandoned. This application Dec. 12, 1991, Ser. No. 807,049

Int. Cl.[5] C07K *3/24;* **A23J** *3/20*

U.S. Cl. 530—420 **15 Claims**

1. A method for purifying an immunogenic outer membrane protein of *Haemophilus influenzas* consisting essentially of:

a) suspending *H. influenzas* micro-organisms by incubating the organisms in a detergent buffer solution to form an insoluble fraction comprising the outer membrane protein and peptidoglycan component and a soluble fraction comprising the remainder of the cellular components;

b) separating the insoluble fraction of step a) from the soluble fraction;

c) suspending the insoluble fraction of step b) in detergent buffer containing RNase and allowing for RNA digestion;

d) separating the insoluble fraction of step c) from the soluble fraction comprising the RNase and digested RNA;

e) solubilizing the insoluble fraction of step d) by heat-treating in a detergent-free buffer; and

f) separating the soluble fraction containing the purified outer membrane protein from the insoluble fraction of step e) containing the peptidoglycan component.

5,300,633

WATER-SOLUBLE, FIBER-REACTIVE AZO COMPOUNDS HAVING SUBSTITUTED ISOPROPYL-OR ISOPROPYLENE-SULFONYL GROUP AS WELL AS TRIAZINYL GROUP

Jörg Dannheim, Frankfurt am Main, and Werner H. Russ, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellshaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 8, 1992, Ser. No. 880,958

Claims priority, application Fed. Rep. of Germany, May 11, 1991, 4115470; Jan. 27, 1992, 4202162

Int. Cl.[5] C09B *62/028, 62/085, 62/825;* **D06P** *1/38, 3/66*

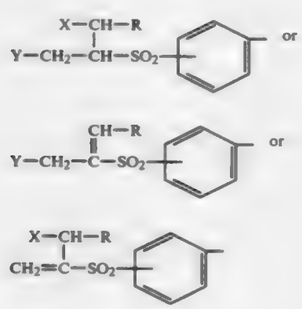
U.S. Cl. 534—638 **15 Claims**

1. An azo compound of the formula

$$D^o—N=N—K^o$$

in which

D^o is a group of the formula



or

or

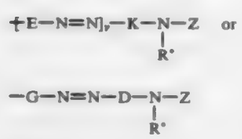
in which

Y is a substituent which is eliminated by alkali to form the vinyl group,

X is chlorine or bromine and

R is hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or halogen; and

K^o is a group of the formula

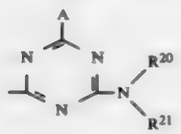


or

in which

R^o is hydrogen or alkyl having 1 to 4 carbon atoms,

Z is a group of the formula



in which

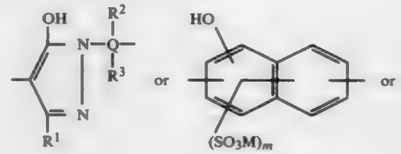
A is halogen or cyanoamido,

R^{20} is hydrogen or alkyl having 1 to 4 carbon atoms, or is alkyl having 1 to 4 carbon atoms, which is substituted by sulfo, carboxy, sulfato, phosphato, hydroxy, methoxy, ethoxy, phenyl, monosulfophenyl or disulfophenyl, or is alkyl having 1 to 6 carbon atoms, which is substituted by a group of the formula —SO-2—CH=CH_2 or —SO_2—CH_2—CH_2—Y^1, in which Y^1 has one of the meanings given above for Y or is the hydroxy group, or is alkyl having 2 to 8 carbon atoms, which is interrupted by 1 or 2 hetero groups chosen from the group consisting of the formulae —O—, —NH— and —N(R^o)—, where R^o has the abovementioned meaning, and which is unsubstituted or substituted by a group of the formula —SO-2—CH=CH_2 or —SO_2—CH_2—CH_2—Y^1 where Y^1 has the abovementioned meaning, and

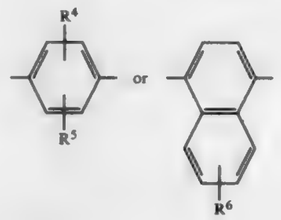
R^{21} is hydrogen or alkyl having 1 to 4 carbon atoms, or is alkyl having 1 to 4 carbon atoms, which is substituted by sulfo, carboxy, sulfator phosphato, hydroxy, methoxy, ethoxy, phenyl, monosulfophenyl or disulfophenyl, or is cycloalkylene having 5 or 6 carbon atoms, which is unsubstituted or substituted by 1, 2 or 3 methyl groups, or is phenyl, which is unsubstituted or substituted by substituents selected from the group consisting of methyl, ethyl, methoxy, ethoxy, chlorine, sulfo and carboxy, or by 1 or 2 of these substituents and by 1 or 2 groups of the formula —SO-2—CH=CH_2 or —SO_2—CH_2—CH_2—Y^1 or by both, where Y^1 has the abovementioned meaning, or by 1 or 2 groups —SO_2—CH=CH_2, or —SO_2—CH-2—CH_2—Y^1or by both, or is alkyl having 1 to 6 carbon atoms, which is substituted by a group of the formula —SO_2—CH=CH_2 or —SO_2—CH_2—CH-2—Y^1, where Y^1 has the abovementioned meaning, or is alkyl having 2 to 8 carbon atoms, which is interrupted by 1 or 2 hetero groups chosen from the group consisting of the formulae —O—, —NH— and —N(R^o)—, where R^o has the abovementioned meaning, and which is unsubstituted or substituted by a group of the formula —SO_2—CH=CH_2 or —SO_2—CH_2—CH_2—Y^1, where Y^1 has the abovementioned meaning, or

R^{20} and R^{21}, together with the nitrogen atom, form an N-piperidino, N-piperazino or N-morpholino 5- or 6-membered heterocyclic radical,

E is a group of the formula



or



in which

R^1 is hydrogen, alkyl having 1 to 4 carbon atoms, cyano, carboxy, carbalkoxy having 2 to 5 carbon atoms, carbamoyl or phenyl,

Q is a benzene or naphthalene ring,

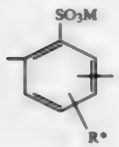
R^2 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having I to 4 carbon atoms, fluorine, bromine, chlorine, sulfo, carboxy, carbalkoxy having 2 to 5 carbon atoms, trifluoromethyl, carbamoyl or N-(C_1–C_4-alkyl)-carbamoyl, if Q is a benzene ring, or

R^2 is hydrogen or sulfo, if Q is a naphthalene ring,

R^3 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chlorine or sulfo, if Q is a

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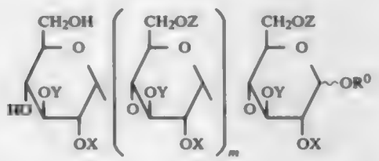
benzene ring, or is hydrogen or sulfo, if Q is a naphthalene ring,
R^4 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, bromine, chlorine, trifluoromethyl, sulfo, carboxy or cyano,
R^5 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chlorine, amino, alkylamino having 1 to 4 carbon atoms, alkanoylamino having 2 to 5 carbon atoms, benzoylamino, ureido, N'-phenylureido, N'-(C_1–C_4-alkyl) -ureido. phenylsulfonyl or alkylsulfonyl having 1 to 4 carbon atoms,
R^6 is hydrogen or sulfo,
M is hydrogen or an alkali metal,
m is the number 1 or 2,
v is the number zero or 1 and
—K—N(R^a)— is the bivalent radical of a water-soluble coupling component,
G is 1-amino-8-hydroxy-3,6- or -4,6-disulfonaphth-2,7-ylene or 1,3-phenylene, which is substituted by one hydroxy or by one amino and is not substituted by additional substituents or is additionally substituted by substituents selected from the group consisting of sulfo, alkyl having 1 to 4 carbon atoms, hydroxy and amino, or is 1,8-dihydroxy-3,6-or-4,6-dioulfo-naphth-2,7-ylene, and
D is a group of the formula



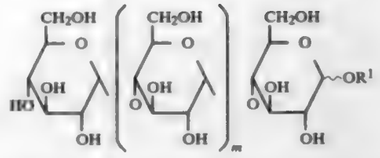
in which
M has one of the abovementioned meanings.

5,300,634
PROCESS FOR PRODUCING MALTOOLIGOSACCHARIDE DERIVATIVE
Atsunori Sano, Kawagoe, and Naoki Teno, Amagasaki, both of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan
Filed May 4, 1992, Ser. No. 878,266
Claims priority, application Japan, May 7, 1991, 3-131880
Int. Cl.[5] C07H *15/00*
U.S. Cl. 536—17.1 **2 Claims**

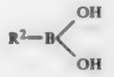
1. A process for producing a maltooligosaccharide derivative of the formula:



wherein R^0 is a hydrolyzable group, which after hydrolysis absorbs visible or ultraviolet light, or is fluorescent, or when coupled to a coupler by the action of an oxidase or by an oxidizing agent forms a dye, or is an acyl group; X, Y and Z are independently the same or different acyl groups or hydrogen, provided that X, Y and Z cannot all be hydrogen at the same time; and m is an integer of 1 to 5;
which comprises reacting an oligosaccharide compound of the formula:



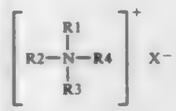
wherein R^1 is a hydrolyzable group as defined above or hydrogen; and m is an integer of 1 to 5,
with a compound of the formula:



wherein R^2 is an alkyl, hydroxyl, alkenyl or aralkyl group, or an aryl group optionally substituted by one or more substituents selected from the group consisting of lower alkyl, lower alkoxy, nitro, amino and halogen; to convert at least the hydroxyl groups at the 4-position and the 6-position of the non-reducing end glucose residue of said oligosaccharide compound into a cyclic boric acid ester; acylating the cyclic boric acid ester; and then treating the acylated product with water.

5,300,635
QUATERNARY AMINE SURFACTANTS AND METHODS OF USING SAME IN ISOLATION OF NUCLEIC ACIDS
Donald E. Macfarlane, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa
Filed Feb. 1, 1993, Ser. No. 13,419
Int. Cl.[5] C07H *21/00*
U.S. Cl. 536—25.4 **15 Claims**

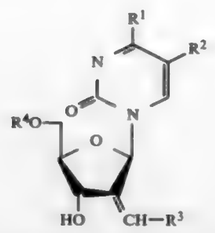
1. A method for isolating nucleic acids from a biological sample comprising the step of contacting the sample with an aqueous quaternary amine surfactant, wherein said quaternary amine has the formula



wherein R1 through R4 are independently selected from an alkyl chain containing from the 1 to 20 carbons, and an aryl group containing from 6 to 26 carbons and X^- is selected from the group consisting of phosphate, sulfate, formate, acetate, propionate, oxalate, malonate, succinate and citrate.

5,300,636
2'-ALKYLINDENEPYRIMIDINE NUCLEOSIDE COMPOUNDS AND A PROCESS FOR PRODUCTION OF SAME
Akira Matsuda; Tohru Ueda; Kenji Takenuki, all of Sapporo, and Haruhiko Machida, Choshi, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi, Japan
Division of Ser. No. 295,948, Nov. 18, 1988, Pat. No. 5,047,520. This application Jun. 26, 1991, Ser. No. 721,828
Claims priority, application Japan, Mar. 19, 1987, 62-65405; Jan. 30, 1988, 63-20032
Int. Cl.[5] C07H *19/06*
U.S. Cl. 536—28.5 **5 Claims**

1. A process for producing a 2'-alkylidenepyrimidine nucleoside compound represented by formula [I]:

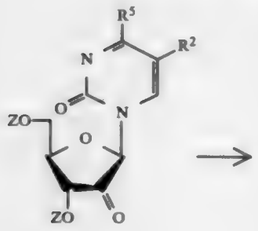


[I]

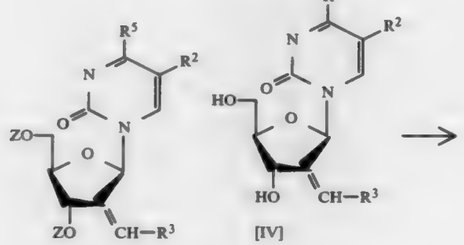
wherein R^1 is a member selected from the group consisting of an amino group and a hydroxy group, R^2 is a member selected from the group consisting of a hydrogen atom, a halogen atom and a lower alkyl group, R^3 is a member selected from the group consisting of a hydrogen atom and a lower alkyl group, and R^4 is a member selected from the group consisting of a hydrogen atom and a phosphate moiety,
which process comprises
(1) alkylidenating the 2'-position in the sugar moiety of a compound of formula [II] with Wittig's reagent represented by the formula:

$(C_6H_5)_3P=CH-R^3$

wherein R^3 is a member selected from the group consisting of a hydrogen atom and a lower alkyl group, to obtain a compound of formula [III]:

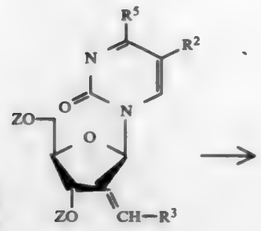


[II]

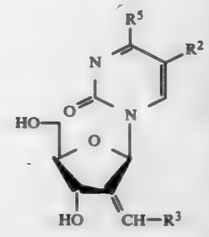


[III]

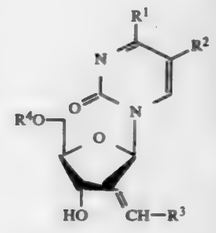
wherein R^2 and R^3 are as defined above, R^5 is a member selected from the group consisting of alkoxy of 1 to 3 carbon atoms, hydroxy, amino and acylamino of the formula —NHR^6 where R^6 is a member selected from the group consisting of acetyl, chloroacetyl, dichloroacetyl, trichloroacetyl, trifluoroacetyl, methoxyacetyl, propionyl, n-butyryl, isobutyryl, (E)-2-methyl-2-butenoyl, pentanoyl, pivaloyl, benzoyl, o-(dibromomethyl)benzoyl, p-phenylbenzoyl, 2,4,6-trimethylbenzoyl, p-toluoyl, p-anisoyl, p-halobenzoyl, p-nitrobenzoyl and p-methoxybenzoyl, and Z is a hydroxy protecting group in the sugar moiety;
(2) removing the hydroxy protecting groups in the sugar moiety of the compound of formula [III] to obtain a compound of formula [IV]:



[IV]



wherein R^2, R^3, R^4, R^5 and Z are as defined above; and
(3) hydrolyzing or aminating the 4-position in the base moiety of the compound of formula [IV] when R^5 is an alkoxy group of 1 to 3 carbon atoms, or removing the acyl protecting group when R^5 is an acylamino group of the formula —NHR^6, and then phosphorylating the 5'-position in the sugar moiety when R^4 is a phosphate moiety, to obtain the compound of formula [I]:



[I]

wherein R^1, R^2, R^3, R^4 and R^5 are as defined above.

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5,300,637

2-BENZOTHIAZOLYL TETRAZOLIUM SALT INDICATORS

Robert P. Hatch, Elkhart, Ind.; Nan-Horng Lin, Mundelein, Ill., and Scott Ruetten, Granger, Ind., assignors to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 883,892, May 12, 1992, abandoned, which is a continuation of Ser. No. 584,902, Sep. 19, 1990, abandoned. This application Jun. 18, 1993, Ser. No. 77,796

Int. Cl.[5] **C07D** *417/04*

U.S. Cl. 518—162 **2 Claims**

1. 2-Benzothiazol tetrazolium salts which are selected from the group consisting of 2-(benzothiazol-2-yl)-3-(4-nitrophenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(benzothiazol-2-yl)-3-(4-methoxyphenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(4-nitrophenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(4-nitro-1-naphthyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(8-quinolyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(1-naphthyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(1-naphthyl)-5-(4-nitrophenyl) tetrazolium salt; 2-yl)-3-(2-methyl-4-carboxyphenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(4-carboxyphenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-ethoxybenzothiazol-2-yl)-3-(4-chloro-1-naphthyl)-5-(4-acetamidophenyl) ietrazolium salt; 2-[(5,6,7,8)-tetrahydronaphtho (2,3-d) thiazolyl-2-yl]-3-(4-nitronaphthyl)-5-(4-methoxyphenyl) tetrazolium salt; 2[(5,6,7,8)-tetrahydronaphtho(2,3-d)thiazol-2-yl]-3-(4-nitronaphthyl)-5-(3,4-methylenedioxy-phenyl) tetrazolium salt; 2-[(5,6,7,8)-tetrahydronaphtho[2-3-d]thiazol-2-yl]-3-(4-nitronaphthyl)-5-(4-fluorophenyl) tetrazolium salt; 2[(5,6,7,8)-tetrahydronaphtho(2,3-d)-thiazolyl-2-yl]-3-(4-nitrophenyl)-5-(4-methoxyphenyl) tetrazolium salt; 2-(6-methylbenzothiazol-2-yl)-3-(3,4,5-trimethoxyphenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-methylbenzothiazol-2-yl)-3-(3,4,5-trimethoxyphenyl)-5-(3,4,5-trimethoxyphenyl) tetrazolium salt; 2-(6-methylbenzothiazol-2-yl)-3-(4-methoxyphenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-(6-carboxybenzothiazol-2-yl)-3-(3,4,5-trimethoxyphenyl)-5-(3,4-methylenedioxyphenyl) tetrazolium salt; 2-[naphtho(1,2-d)-thiazol-2-yl]-3-(2-methoxy-4-carboxyphenyl-5-[4-(2-(2-hydroxyethoxy)-ethoxy)-ethoxy)-ethoxy-phenyl]tetrazolium salt; 2-[naphtho(1,2-d)-thiazol-2-yl]-3-(4-acetamidophenyl)-5-(methylenedioxyphenyl) tetrazolium salt; 2-[naphtho-(1,2-d)-thiazol-2-yl]-3-(8-quinolyl)-5-(3,4,5-trimethoxyphenyl) tetrazolium salt; 2[naphtho-(1,2-d)-thiazol-2-yl]-3-(2-methoxyphenyl)-5-(3,4-methylenedioxyphenyl) tetrazolium salt; 2-[naphtho(1,2-d)-thiazol-2-yl]-3-(4-nitronaphthyl)-5-(3,4-methylenedioxyphenyl) tetrazolium salt; 2-[naphtho(1,2-d)-thiazol-2-yl]-3-(4-nitronaphthyl)-5-phenyl tetrazolium salt; 2-[naphtho-(1,2-d)-thiazol-2-yl]-3-(4-nitrophenyl)-5-[4-(2',3'-dihydroxypropylthio)phenyl] tetrazolium salt; 2-[naphtho-(1,2-d)-thiazol-2-yl]-3-(4-carboxyphenyl)-5-(4-acetamidophenyl) tetrazolium salt; 2-[naphtho-(1,2-d)-thiazol-2-yl]-3-(4-carboxy phenyl)-5-[4-(2-(2-(2-hydroxyethoxy)ethoxy)ethoxy)phenyl] tetrazolium salt; 2-[naphtho-(1,2-d)-thiazol-2-yl]-3-(2-methyl-4-carboxyphenyl)-5-(3,4-methylenedioxyphenyl) tetrazolium salt; 2-[naphtho(1,2-d)-thiazol-2-yl]-3-(2-methyl-4-nitrophenyl)-5-(3,4-methylenedioxyphenyl) tetrazolium salt; and 2-[naphtho(1,2-d)-thiazol-2-yl]-3-(4-cyanophenyl)-5-(3-methoxyphenyl) tetrazolium salt.

5,300,638

ASYMMETRIC SYNTHESIS OF TAXOL SIDE CHAIN

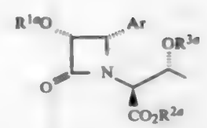
Vittorio Farina, West Hartford, and Sheila I. Hauck, West Haven, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 739,018, Jul. 31, 1991, abandoned. This application Jul. 16, 1992, Ser. No. 914,909

Int. Cl.[5] **C07D** *205/08;* **C07B** *53/00*

U.S. Cl. 540—357 **6 Claims**

1. A process for the preparation of an (3R,4S)-2-azetidinone derivative having the formula



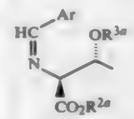
wherein

Ar is phenyl;

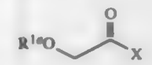
R^{1a} is an acyl radical of a carboxylic acid or a carbonic acid ester radical;

R^{2a} is a carboxy protecting group; and

R^{3a} is a hydroxy protecting group selected from the group consisting of t-butyldiphenylsilyl and t-butoxydiphenylsilyl; which comprises the steps of (a) reacting an imine derivative of (L)-threonine having the formula

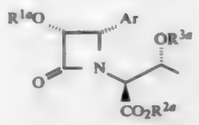


wherein Ar, R^{2a} and R^{3a} are as defined above; with an acetyl halide having the formula



wherein R^{1a} is as defined above and X is a halogen; in an inert organic solvent and in the presence of a base, to provide a diastereomeric product mixture in which the ratio of (3R,4S) to (4S,3R) of the azetinone derivative is at least 10:1; and (b) separating the desired diastereomer.

2. A process for the preparation of an (3R,4S)-2-azetidinone derivative having the formula



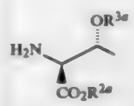
wherein

Ar is phenyl;

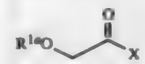
R^{1a} is an acyl radical of a carboxylic acid or a carbonic acid ester radical;

R^{2a} is a carboxy protecting group; and

R^{3a} is a hydroxy protecting group selected from the group consisting of t-butyldiphenylsilyl and t-butoxydiphenylsilyl; which comprises the steps of (a) reacting a (L)-threonine derivative having the formula



with an aldehyde ArC(O)H, wherein Ar, R^{2a} and R^{3a} are as defined above; (b) treating the resulting imine of step (a) with an acetyl halide having the formula



wherein R^{1a} is as defined above and X is a halogen; in an inert organic solvent and in the presence of a base, to provide a diastereomeric product mixture in which the ratio of (3R,4S) to (4S,3R) of the azetinone derivative is at least 10:1; and (c) separating the desired diastereomer.

5,300,639

THIAZOLO [5,4-B]AZEPINE COMPOUNDS

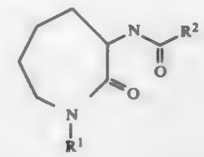
Tetsuya Aono, Nagaokakyo; Masahiro Suno, Kobe, and Go Kito, Yao, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 558,507, Jul. 27, 1990, Pat. No. 5,118,806, which is a division of Ser. No. 383,071, Jul. 21, 1989, Pat. No. 4,956,360. This application Mar. 17, 1992, Ser. No. 852,657

Int. Cl.[5] **C07D** *223/12*

U.S. Cl. 540—527 **11 Claims**

1. A compound of the formula



wherein R^1 is

(1) a straight, branched or cyclic C_{1-6} alkyl or a straight or branched C_{2-6} alkenyl or alkynyl, each of which is unsubstituted or substituted by one to three substituents selected from the group A1 consisting of hydroxy, C_{1-3} alkoxy, phenoxy, naphthoxy, phenyl-C_{1-2}-alkoxy, mercapto, C_{1-3} alkylthio, phenylthio, naphthylthio, phenyl-C_{1-2}-alkylthio, amino, mono or di-C_{1-3} alklyamino, halogen, C_{2-4} alkoxycarbonyl, benzyloxycarbonyl, C_{2-4} alkoxycarbonyloxy, formyl, C_{2-3} alkanoyl, benzoyl, C_{2-5} alkanoyloxy, bonylamino, phenyl-lower-alkoxycarbonylamino, pyrrolidino, morpholino, carboxyl, and carbamoyl;

(2) a group of the formula R3CO— wherein R3 is

(i) a straight, branched or cyclic C_{1-18} alkyl or a straight or branched C_{2-6} alkenyl or alkynyl, each of which is unsubstituted or substituted by one to three substituents selected from the group A1 as defined above:

(ii) phenyl or naphthyl, each of which is unsubstituted or substituted by one to three substituents selected from the group A2 consisting of halogen; nitro; amino which is unsubstituted or substituted by one or two substituents selected from the group consisting of C_{1-3} alkyl, C_{2-4} alkenyl, C_{3-8} cycloalkyl and phenyl; sulfo; mercapto; hydroxy; sulfoxy; sulfamoyl; C_{1-6} alkyl which is unsubstituted or substituted by amino, di C_{1-3} alkylamino, mono C_{1-3} alkylamino, halogen, hydroxy, cyano or carboxy; C_{1-6} alkoxy which is unsubstituted or substituted by a C_{1-3} alkylthio, benzyloxy, C_{1-3} alkylsulfonamido, or amidino which is unsubstituted or substituted by C_{1-3} alkyl or benzyl; methylenedioxy; alkoxy forminidoyl; C_{1-3} alkylsulfonyl; C_{1-3} alkylsulfonylamino; C_{2-4} alkoxycarbonyl; benzyloxycarbonyl; formyl; C_{2-3} alkanoyl; benzoyl; alkanoyloxy; cyano; phthalimido; alkanoylamino; benzamido; C_{2-4} alkoxycarbonylamino; phenyl lower alkoxycarbonylamino; pyrrolidino; morpholino; carboxy; carbamoyl; and phenyl which is unsubstituted or substituted by a halogen or a methoxy-C_{1-3} alkyl; or

(iii) a 5- or 6-membered heterocyclic group B1 containing one to four heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur atoms, or a condensed group D1 selected from the group consisting of indolyl, quinolyl, benzimidazolyl, imidazopyridyl, and thiazolopyridyl, wherein the heterocyclic group B1 and the condensed group D1 are unsubstituted or substituted by one to three substituents selected from the group A3 consisting of amino optionally substituted with C_{2-10} alkanoyl, benzoyl, halogen-substituted C_{2-4} alkanoyl, phenyl or C_{1-3} alkyl; halogen; nitro; sulfo; cyano; hydroxy; carboxy; oxy; C_{1-10} alkyl which may be substituted by phenyl, halogen, amino, hydroxy, carboxy, C_{1-3} alkoxy, C_{1-3} alkylsulfonyl or C_{1-3} dialkylamino; C_{3-6} cycloalkyl; C_{1-3} alkoxy; C_{2-10} alkanoyl; benzoyl; phenyl which may be substituted by halogen, nitro, lower alkyl, lower alkoxy, amino, sulfo, hydroxy or cyano; and C_{1-10} alkylthio which may be substituted by phenyl, halogen, amino, hydroxy, carboxy, C_{1-3} alkoxy, C_{1-3} alkylsulfonyl and di-C1-3 alkylamino; or

(3) a C_{1-3} alkylsulfonyl which is unsubstituted or substituted by one to three substituents selected from the group A1 as defined above or a phenylsulfonyl which is unsubstituted or substituted by one to three substituents selected from the group A2 as defined above;

and R^2 is

(1) a hydrogen atom;

(2) a straight, branched or cyclic C_{1-6} alkyl which is unsubstituted or substituted by one to three substituents selected from the group A1 as defined above;

(3) a straight or branched C_{2-10} alkenyl or alkynyl, each of which is unsubstituted or substituted by one to three substituents selected from the group consisting of:

(i) the group A1 as defined above;

(ii) an oxo group;

(iii) a phenyl which is unsubstituted or substituted by one to three substituents selected from the group A2 as defined above; and

(iv) a heterocyclic group B1 or a condensed group D1 as defined above, each of which is unsubstituted or substituted by one to three substituents selected from the group A3 as defined above;

(4) a phenyl or a naphthyl, each of which is unsubstituted or substituted by one to three substituents selected from the group A2 as defined above; or

(5) a heterocylic group B1 or a condensed group D1 as defined above, each of which is unsubstituted or substituted by one to three substituents selected from the group A3 as defined above; or

a pharmaceutically acceptable salt thereof.

5,300,640

PYRIMIDINE DERIVATIVES, THEIR PRODUCTION AND USE

Mitsumori Hiratsuka, Takarazuka; Naonori Hirata, Sanda; Kazuo Saito, and Hideyuki Shibata, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

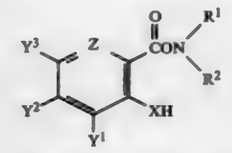
Division of Ser. No. 602,689, Oct. 24, 1990, Pat. No. 5,125,957. This application Dec. 19, 1991, Ser. No. 810,166

Claims priority, application Japan, Nov. 1, 1989, 1-287133; May 30, 1990, 2-142390; Aug. 10, 1990, 2-213934

Int. Cl.[5] **A01N** *43/54;* **C07D** *239/34, 239/52, 401/12*

U.S. Cl. 544—58.2 **1 Claim**

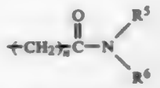
1. A compound represented by the formula,



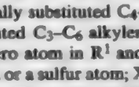
wherein each of R^1 and R^2, which may be the same or different, represents a hydrogen atom, a C_1–C_6 alkyl group, a C_3–C_6 alkenyl group, a C_3–C_6 alkynyl group, a halo C_1–C_6 alkyl group, a C_1–C_6 alkoxy C_1–C_6 alkyl group, a C_3–C_6 alkenyloxy C_1–C_6 alkyl group, a C_3–C_6 alkynyloxy C_1–C_6 alkyl group, a

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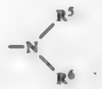
C_1–C_6 alkoxycarbonyl C_1–C_6 alkyl group, a C_3–C_6 alkenyloxycarbonyl C_1–C_6 alkyl group, a C_3–C_6 alkynyloxycarbonyl C_1–C_6 alkyl group, a cyano C_1–C_6 alkyl group, a group represented by the formula,



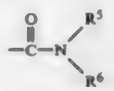
(in which each of R^5 and R^6, which may be the same or different, represents a hydrogen atom, a C_1–C_6 alkyl group, a C_3–C_6 alkenyl group or a C_3–C_6 alkynyl group, and n represents an integer of 1, 2, 3, or 4), a group represented by the formula,



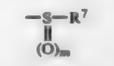
(in which n is as defined above, R^7 represents a C_1–C_6 alkyl group, a C_3–C_6 alkenyl group or a C_3–C_6 alkynyl group, and m represents an integer of 0, 1 or 2), a cyclo C_3–C_8 alkyl group, or an optionally substituted phenyl group, an optionally substituted benzyl group, or R^1 and R^2, bonded together at their ends, form an optionally substituted C_4–C_7 alkylene group or an optionally substituted C_3–C_6 alkylene group containing a hetero atom; the hetero atom in R^1 and R^2 means a nitrogen atom, an oxygen atom or a sulfur atom; X represents an oxygen atom or a sulfur atom; Z represents CY^4; each of Y^1, Y^2, Y^3, which may be the same or different, represents a hydrogen atom, a halogen atom, a C_1–C_6 alkyl group, or a C_1–C_6 alkoxy group; and Y^4 represents a hydrogen atom, a hydroxyl group, a mercapto group, a nitro group, a halogen atom, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_1–C_6 alkoxy group, a C_3–C_6 alkenyloxy group, a C_3–C_6 alkynyloxy group, a halo C_1–C_6 alkyl group, a halo C_2–C_6 alkenyl group, a halo C_2–C_6 alkynyl group, a halo C_1–C_6 alkoxy group, a halo C_3–C_6 alkenyloxy group, a halo C_3–C_6 alkynyloxy group, a C_1–C_6 alkoxy C_1–C_6 alkyl group, a C_3–C_6 alkenyloxy C_1–C_6 alkyl group, a C_3–C_6 alkynyloxy C_1–C_6 group, a cyano group, a formyl group, a carboxyl group, a C_1–C_6 alkoxycarbonyl group, a C_3–C_6 alkenyloxycarbonyl group, a C_3–C_6 alkynyloxycarbonyl group; an optionally substituted phenyl group, an optionally substituted phenoxy group, an optionally substituted phenylthio group, an optionally substituted benzyloxy group, an optionally substituted benzylthio group, a group represented by the formula,



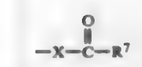
(in which R^5 and R^6 are as defined above), a group represented by the formula,



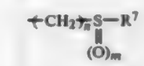
(in which R^5 and R^6 are as defined above),



(in which R^7 and m are as define above), a group represented by the formula,



(in which R^7 and X are as defined above), or a group represented by the formula,



(in which R^7, m and n are as defined above), each optionally substituted group in the above being substituted with a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a halo C_1–C_6 alkyl group, a C_1–C_6 alkoxycarbonyl group or a halogen atom.

5,300,641

PALLADIUM BLACK CATALYZED PROCESS FOR PREPARATION OF (PIPERAZINYLORGANO) SILANES

Paul C. Dinh, and Peter Y. K. Lo, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 8, 1993, Ser. No. 1,964

Int. Cl.[5] C07F 7/10

U.S. Cl. 544—229 **11 Claims**

1. A process for preparation of (piperazinylorgano)silanes, the process comprising:

(A) contacting an (aminoorgano)silane selected from a group consisting of $(CH_3)_3Si(CH_2)_3NH_2$, $(CH_3O)_3Si(CH_2)_3NH_2$, $(CH_3O)_3Si(CH_2)_2NH_2$, $(CH_3O)_2CH_3Si(CH_2)_3NH_2$, $(CH_3O)_3Si(CH_2)_2O(CH_2)_2NH_2$, $(CH_3CH_2O)_3Si(CH_2)_3NH_2$, $(CH_3)_2C_6H_5Si(CH_2)_3NH_2$, and $(CH_3)_2(C_5H_9)Si(CH_2)_3NH_2$, a piperazine compound selected from a group consisting of piperazine and 1-methylpiperazine, and palladium black, at a temperature within a range of about 180° C. to 250° C., where the final mole ratio of the piperazine compound to the (aminoorgano)silane is within a range of about 1.0 to 3.0; and

(B) recovering (piperazinylorgano)silane product.

5,300,642

α, α-DISUBSTITUTED AROMATICS AND HETEROAROMATICS AS COGNITION ENHANCERS

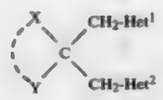
Richard A. Earl; Melvyn J. Myers, both of Wilmington, Del., and Victor J. Nickolson, Hermelijnedreef, Netherlands, assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 234,382, Aug. 23, 1988, Pat. No. 5,173,489, which is a continuation-in-part of Ser. No. 105,156, Oct. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 944,953, Jan. 5, 1987, Pat. No. 4,760,083, which is a continuation-in-part of Ser. No. 850,015, Apr. 10, 1986, abandoned. This application Sep. 30, 1992, Ser. No. 953,274

Int. Cl.[5] C07D 401/08, 403/08

U.S. Cl. 544—238 **1 Claim**

1. A process for preparing a compound of formula:



or a salt thereof, wherein:

X and Y are taken together to form a saturated or unsaturated carbocyclic or heterocyclic first ring and the shown carbon in said ring is α to at least one additional aromatic ring or heteroaromatic ring fused to the first ring, the total number of carbocyclic fused rings being 3-5, the sole heterocyclic substituents on said fused rings being Het^1 and Het^2;

one of Het^1 or Het^2 is 2, 3, or 4-pyridyl or 2, 4, or 5-pyrimidinyl and the other is selected from:

(a) 2, 3, or 4-pyridyl

(b) 2, 4, or 5-pyrimidinyl,

(c) 2-pyrazinyl,

(d) 3 or 4-pyridazinyl,

(e) 3 or 4-pyrazolyl,

(f) 2 or 3-tetrahydrofuranyl, and

(g) 3-thienyl;

which comprises:

(a) contacting a compound of the formula



with a suitable base in an aprotic solvent, said base selected from sodamide, lithium diisopropylamide, sodium hydride, sodium alkoxide, potassium alkoxide, lithium alkoxide, potassium hydride, lithium 2,2,6,6-tetramethylpiper-idide, butyl lithium, and lithium, sodium or potassium hexamethyldisilazide;

(b) contacting the anion product from step (a) with a compound of the formula

$DCH_2—Het^1$

wherein D is halogen, methanesulfonate, or p-toluenesulfonate;

(c) contacting the product from step (b) with a base selected from the group recited in step (a); and

(d) contacting the product from step (c) with a compound of the formula

$DCH_2—Het^2$

wherein D is halogen, methanesulfonate, or p-toluenesulfonate.

5,300,643

QUINOLONECARBOXYLIC ACID DERIVATIVES

Klaus Grohe, Odenthal; Wolfgang Dummer, Cologne; Kai Rossen, Leverkusen, and Arnold Paessens, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

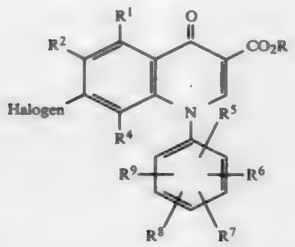
Division of Ser. No. 585,580, Sep. 19, 1990, Pat. No. 5,217,972. This application Aug. 25, 1992, Ser. No. 935,627

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1989, 3934082

Int. Cl.[5] C07D 401/10, 413/10, 417/10

U.S. Cl. 544—363 **4 Claims**

1. A compound of the formula



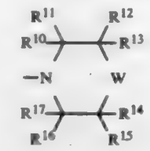
in which

R is hydrogen or alkyl having 1–4 carbon atoms,

R^1 is hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio, halogen, cyano or nitro,

R^2 is hydrogen, nitro or halogen,

R^5 is a group of the formula (II)



(II)

in which

W is O, S, NR^{18} or $CR^{19}R^{20}$ and

R^6, R^7, R^8 and R^9 are identical or different and each is hydrogen,

alkyl having 1 to 5 carbon atoms, nitro, amino, monoalkylamino having 1–3 C atoms, dialkylamino having 1–6 C atoms, O-alkyl having 1–5 carbon atoms, S-alkyl having 1–5 carbon atoms, trifluoromethyl, cyano or halogen,

R^{18} is

H, (C_1–C_{10})-alkyl or (C_3–C_6)-cycloalkyl optionally substituted by one or more substituents selected from the group consisting of Hal, OH, CN, COOAlkyl(C_1–C_7) or OAlkyl,

aryl (C_6–C_{12}) optionally substituted by halogen,

o-alkyl (C_1–C_2) or (C_1–C_4)-alkyl,

CN,

COOalkyl(C_1–C_4),

C_1–C_4-acyl or

Alkyl (C_1–C_4)-sulphonyl,

R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{19} and R^{20} are identical or different and each is

hydrogen,

C_1–C_3 alkyl or C_3–C_6-cycloalkyl optionally substituted by one or more halogens, OH, O-alkyl (C_1–C_6), alkyl (C_1–C_4), CN or COO alkyl (C_1–C_6),

hydroxyl,

or amino, alkylamino having 1–4 carbon atoms, dialkylamino having 1–3 carbon atoms per alkyl group or phenyl which is optionally substituted by halogen, and

R^4 is hydrogen, halogen, methyl, cyano, nitro, methoxy or amine,

or a pharmaceutically acceptable derivative thereof.

5,300,644

PROCESS FOR THE PREPARATION OF QUINOLINE CARBOXYLIC ACIDS

István Hermecz; Géza Kereszturi; Lelle Vasvári; Ágnes Horváth, all of Budapest; Mária Balogh, Dunakeszi; Péter Ritli, Budapest; Judit Sipos, Budapest; Anikó Pajor, Budapest, and Katalin Mármarosi, Biatorbágy, all of Hungary, assignors to Chinoin Gyogyser- es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation of Ser. No. 290,105, Nov. 23, 1988, Pat. No. 5,091,530. This application Sep. 6, 1991, Ser. No. 756,345

Claims priority, application Hungary, Apr. 8, 1987, 1505/87

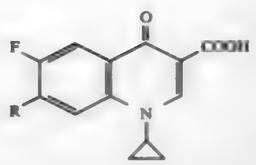
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] C07D 401/04

U.S. Cl. 544—363 **9 Claims**

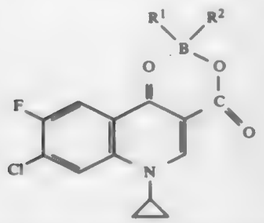
1. A process for the preparation of a compound of the Formula I

VOL 1161 ISS 1 AP 5 1994 UMI



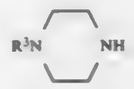
(I)

wherein R stands for a piperazinyl, a 4-methyl-piperazinyl or a 4-ethyl-piperazinyl group and pharmaceutically acceptable salts thereof which comprises reacting a compound of the Formula II



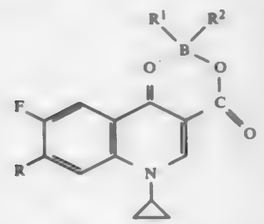
(II)

wherein R^1 and R^2 stand for an aliphatic acyloxy group having 2 to 6 carbon atoms optionally substituted by halogen, or for an aromatic acyloxy group having 7 to 11 carbon atoms with a piperazine derivative of the Formula III



(III)

wherein R^3 stands for hydrogen, methyl or ethyl or a salt thereof and subjecting the compound of the Formula IV



(IV)

thus obtained, wherein R, R^1 and R^2 are as stated above to hydrolysis after or without isolation and optionally converting the compound of the Formula I thus obtained into a salt thereof or setting free the acid from its salt.

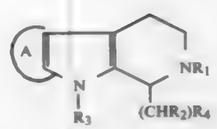
5,300,645

TETRAHYDRO-PYRIDO-INDOLE

James E. Audia; James J. Droste, both of Indianapolis, Ind., and Deborah A. Evrard, Cambridge, Mass., assignors to Eli Lilly and Company, Indianapolis, Ind.

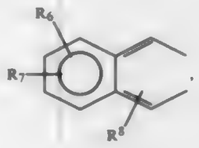
Filed Apr. 14, 1993, Ser. No. 48,392
Int. Cl.[5] C07D *471/04*
U.S. Cl. 546—49 **6 Claims**

1. A process for preparing a compound of formula (VI)

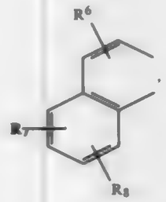


(VI)

wherein:
R_1 is hydrogen or C_1–C_3 alkyl;
R_2 is hydrogen;
R_3 is hydrogen or C_1–C_3 alkyl;
R_4 is bicyclic or substituted bicyclic;
A is selected from the group consisting of

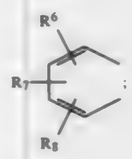


(II)



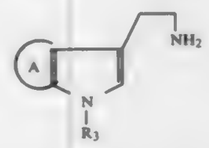
(III)

and



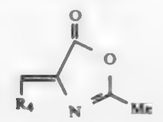
(IV)

wherein
R_6 and R_7 are, independently, hydrogen, C_1–C_6 alkyl, C_2–C_6alkenyl, halo, halo(C_1–C_6)alkyl, halo(C_1–C_6)alkenyl, COR_5, C_1–C_{10} alkanoyl, $CO_2R_{5'}$, $(C_1$–$C_6)_m$ alkylamino, NO_2, —SR_5, or OR_5;
m is 1 or 2;
R_5 is independently hydrogen or C_1–C_4 alkyl;
$R_{5'}$ is C_1–C_4 alkyl;
R_8 is independently selected from the group consisting of an R_6 group, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl, substituted C_5–C_8 cycloalkenyl, C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, C_7–C_{16} arylalkyl; or
R_6 and R_7 together with the carbon atoms of group A form a 5- to 8-member carbon ring; or
a pharmaceutically acceptable salt or solvate thereof;
which process comprises contacting a compound of the formula (VII)



(VII)

with a lactone of formula (VIII)



(VIII)

in the presence of a protic acid.

5,300,647

O-CARBONYL N-HYDROXY HINDERED AMINE STABILIZERS

Roger F. Malherbe, Basel, Switzerland; Roland A. E. Winter, Armonk, and James P. Galbo, Hartsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 988,388, Dec. 8, 1992, abandoned, which is a continuation of Ser. No. 883,810, May 12, 1992, abandoned, which is a continuation of Ser. No. 749,472, Aug. 15, 1991, abandoned, which is a continuation of Ser. No. 595,713, Oct. 9, 1990, abandoned, which is a continuation of Ser. No. 259,956, Oct. 19, 1988, abandoned, and a continuation-in-part of Ser. No. 99,419, Sep. 21, 1987, abandoned. This application May 28, 1993, Ser. No. 68,566
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] C07D *211/36, 211/30, 401/00, 403/00*
U.S. Cl. 546—188 **9 Claims**

1. A compound corresponding to the formulae

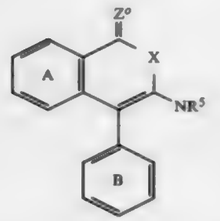
5,300,646

HETEROCYCLIC AMINE DERIVATIVES, THEIR PRODUCTION AND USE

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Division of Ser. No. 777,169, Oct. 16, 1991, Pat. No. 5,198,462. This application Dec. 22, 1992, Ser. No. 995,016
Claims priority, application Japan, Oct. 16, 1990, 2-278038; Sep. 18, 1991, 3-237983
Int. Cl.[5] C07D *217/22, 311/04, 311/78, 335/06*
U.S. Cl. 546—141 **9 Claims**

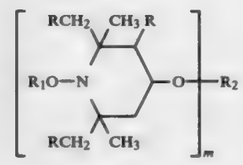
1. A compound of the formula:



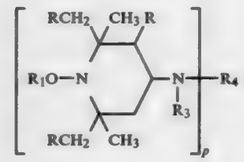
wherein ring A and a ring B stand independently for a benzene ring which may be substituted with 1 to 4 substituents selected from the group consisting of (1) a halogen, (2) a C_{1-6} alkyl group which may be substituted with 1 to 5 halogens (3) a C_{1-6} alkoxy group which may be substituted with 1 to 5 halogens, (4) a C_{1-6} alkylthio group which may be substituted with 1–5 halogens, (5) a C_{1-7} acylamino group, (6) a C_{1-3} acyloxy group and (7) a hydroxyl group, or adjacent carbon atoms on the ring A or B may form a 5- to 7-membered ring together with a group of the formula: $—(CH_2)_r—$ wherein r denotes an integer of 3 to 5, Z^o stands for O or S or



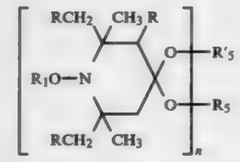
stands for $—CH_2—$, X stands for O, S or NR^1 wherein R^1 stands for a hydrogen atom, a C_{1-6} alkyl group, a C_{3-6} cycloalkyl group or a C_{3-6} cycloalkyl —C_{1-4} alkyl group and R^5 stands for H_2 or =C=O, or a salt thereof.



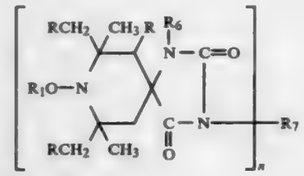
(A)



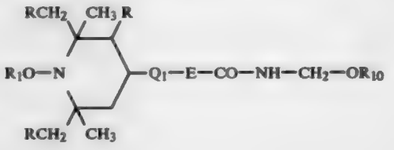
(B)



(C)



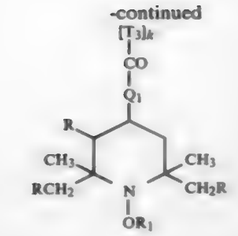
(D)

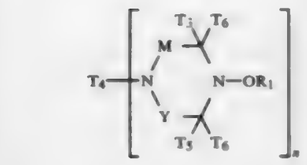


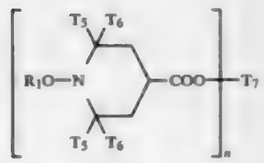
(E)

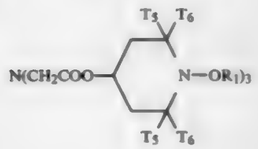
VOL 1161 ISS 1 AP 5 1994 UMI

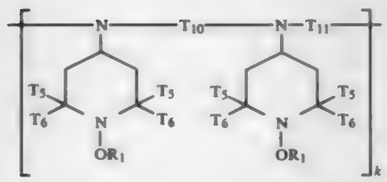
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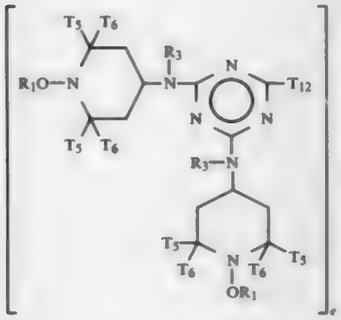


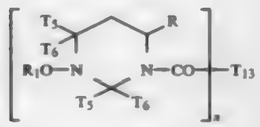






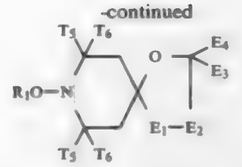




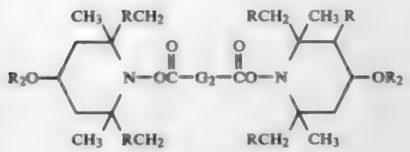


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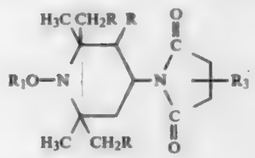
(F)



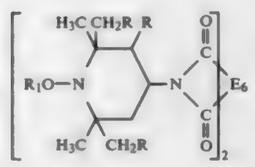
(G)



(H)



(I)



wherein

R is hydrogen or methyl,

R_1 is

(J)



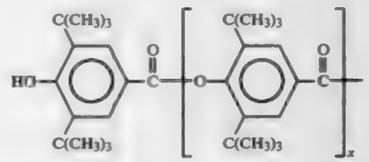
wherein D is C_1–C_{18} alkyl, C_1–C_{18} alkoxy, phenyl, phenyl substituted by hydroxy, alkyl or alkoxy, or amino or amino mono- or disubstituted by alkyl or phenyl;

m is 1–4,

when m is 1,

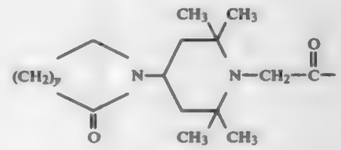
R_2 is

(K)



wherein x is 0 or 1, or

(L)



wherein y is 2–4;

when m is 2 and D is alkyl, phenyl or substituted phenyl,

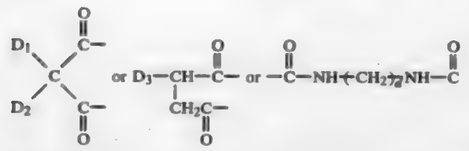
(M)

(N)

(O)

(P)

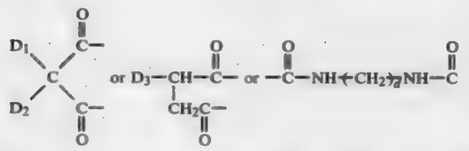
R_2 is C_1–C_{12} alkylene, C_4–C_{12} alkenylene, xylylene, a divalent acyl radical or a cycloaliphatic, araliphatic or aromatic dicarboxylic acid or of a dicarbamic acid,



wherein D_1 is an aryl, aralkyl or 3,5-di-t-butyl-4-hydroxybenzyl radical, D_2 is D_1 or hydrogen, D_3 is an alkenyl radical containing up to 18 carbon atoms, and d is 0–20;

when m is 2 and D is amino, substituted amino or alkoxy,

R_2 is C_1–C_{12} alkenylene, xylylene, a divalent acyl radical of an aliphatic, cycloaliphatic, araliphatic or aromatic dicarboxylic acid or of a dicarbamic acid;



wherein D_4 and D_5 are independently hydrogen, an alkyl radical containing up to 8 carbon atoms, an aryl, aralkyl or 3,5-di-t-butyl-4-hydroxybenzyl radical, D_6 is hydrogen, or an alkyl or alkenyl radical containing up to 18 carbon atoms, and d is 0–20;

when m is 3, R_2 is a trivalent acyl radical of an aliphatic, unsaturated aliphatic, cycloaliphatic, or aromatic tricarboxylic acid;

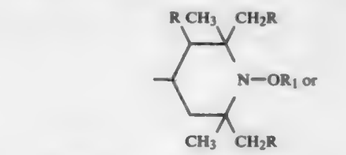
when m is 4, R_2 is a tetravalent acyl radical of a saturated or unsaturated aliphatic or aromatic tetracarboxylic acid;

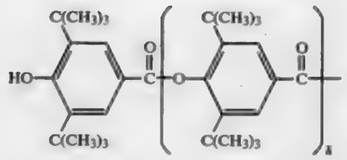
p is 1, 2 or 3,

R_3 is hydrogen, C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, C_7–C_9 aralkyl, C_2–C_{18} alkanoyl, C_3–C_5 alkenoyl or benzoyl;

when p is 1,

R_4 is hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_2–C_8 alkenyl unsubstituted or substituted by a cyano, carbonyl or carbamide group, aryl, aralkyl, or it is glycidyl, a group of the formula $—CH_2—CH(OH)—Z$ or of the formula —CO—Z— or —CONH—Z wherein Z is hydrogen, methyl or phenyl; or a group of the formulae





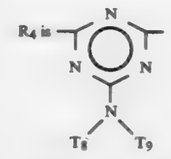
with h as 0 or 1;

or R_3 and R_4 together with p is 1 can be alkylene of 4 to 6 carbon atoms or 2-oxopolyalkylene or the cyclic acyl radical of an aliphatic or aromatic 1,2- or 1,3-dicarboxylic acid,

when p is 2,

R_4 is a direct bond or is C_1–C_{12} alkylene, C_6–C_{12} arylene, xylylene, a $—CH_2CH(OH)—CH_2$ group, or a group $—CH_2—CH(OH)—CH_2—O—X—X—O—CH_2—CH(OH)—CH_2—$ wherein X is C_2–C_{10} alkylene, C_6–C_{15} arylene or C_6–C_{12} cycloalkylene; or, provided that R_3 is not alkanoyl, alkenoyl or benzoyl, R_4 can also be a divalent acyl radical of an aliphatic, cycloaliphatic or aromatic dicarboxylic acid or dicarbamic acid, or can be the group —CO—; or

R_4 is



where T_8 and T_9 are independently hydrogen, alkyl of 1 to 18 carbon atoms, or T_8 and T_9 together are alkylene of 4 to 6 carbon atoms or 3-oxapentamethylene,

when p is 3,

R_4 is 2,4,6-triazinyl,

when n is 1,

R_5 and R'_5 are independently C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_7–C_{12} aralkyl, or R_5 is also hydrogen, or R_5 and R'_5 together are C_2–C_8 alkylene or hydroxyalkylene or C_4–C_{22} acyloxyalkylene;

when n is 2,

R_5 and R'_5 together are $(—CH_2)_2C(CH_2—)_2$;

R_6 is hydrogen, C_1–C_{12} alkyl, allyl, benzyl, glycidyl or C_2–C_6 alkoxyalkyl;

when n is 1,

R_7 is hydrogen, C_1–C_{12} alkyl, C_3–C_5 alkenyl, C_7–C_9 aralkyl, C_5–C_7 cycloalkyl, C_2–C_4 hydroxyalkyl, C_2–C_6 alkoxyalkyl, C_6–C_{10} aryl, glycidyl, a group of the formula $—(CH_2)_m—COO—Q$ or of the formula $—(CH_2)_m—O—CO—Q$ wherein m is 1 or 2, and Q is C_1–C_4 alkyl or phenyl; or

$)_m—COO—Q$ or of the formula $—(CH_2)_m—O—CO—Q$ wherein m is 1 or 2, and Q is C_1–C_4 alkyl or phenyl; or

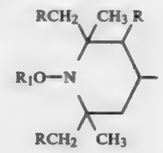
when n is 2,

R_7 is C_2–C_{12} alkylene, C_6–C_{12} arylene, a group $—CH_2CH(OH)—CH_2—O—X—O—CH_2—CH(OH)—CH_2—$ wherein X is C_2–C_{10} alkylene, C_6–C_{15} arylene or C_6–C_{12} cycloalkylene, or a group $—CH_2CH(OZ')CH_2—(OCH_2—CH(OZ')CH_2)_2—$ wherein Z' is hydrogen, C_1–C_{18} alkyl, allyl, benzyl, C_2–C_{12} alkanoyl or benzoyl;

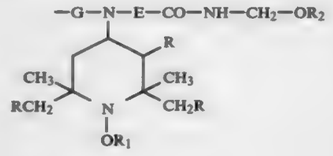
Q_1 is $—N(R_8)—$ or —O—; E is C_1–C_3 alkylene, he group $—CH_2—CH(R_9)—O—$ wherein R_9 is hydrogen, methyl or phenyl the group $—(CH_2)_3—NH—$ or a direct bond;

R_{10} is hydrogen or C_1–C_{18} alkyl;

R_8 is hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_7–C_{12} aralkyl, cyanoethyl, C_6–C_{10} aryl, the group $—CH_2—CH(R_9)—OH$ wherein R_9 has the meaning defined above; a group of the formula



or a group of the formula



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wherein G can be C_2–C_6 alkylene or C_6–C_{12} arylene; or R_3 is a group —E—CO—NH—CH_2—OR_{10};

T_3 is ethylene or 1,2-propylene, or is the repeating structural unit derived from an alpha-olefin copolymer with an alkyl acrylate or methacrylate;

k is 2 to 100;

T_4 has the same meaning as R_4 when p is 1 or 2,

T_5 is methyl,

T_6 is methyl or ethyl, or T_5 and T_6 together are tetramethylene or pentamethylene,

M and Y are independently methylene or carbonyl;

T_7 is the same as R_7,

T_{10} and T_{11} are independently alkylene of 2 to 12 carbon atoms, or T_{11} is

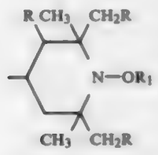


T_{12} is piperazinyl,

$$—NR_{11}—(CH_2)_a—NR_{11}— \text{ or}$$

$$—NH(CH_2)_a—N(CH_2)_b—N[(CH_2)_c—N]_fH$$

where R_{11} is the same as R_3 or is also



a, b and c are independently 2 or 3, and f is 0 or 1,

e is 3 or 4,

T_{13} is the same as R_4 with the proviso that T_{13} cannot be hydrogen when p is 1;

E_1 and E_2, being different, each are —CO— or N(E_5)— wherein E_5 is hydrogen, C_1–C_{12} alkyl or C_4–C_{22} alkoxycarbonylalkyl;

E_3 is hydrogen, alkyl of 1 to 30 carbon atoms, phenyl, naphthyl, said phenyl or said napthyl substituted by chlorine or by alkyl of 1 to 4 carbon atoms, or phenylalkyl of 7 to 12 carbon atoms, or said phenylalkyl substituted by alkyl of 1 to 4 carbon atoms;

E_4 is hydrogen, alkyl of 1 to 30 carbon atoms, phenyl, naphthyl or phenylalkyl of 7 to 12 carbon atoms, or

E_3 and E_4 together are polymethylene of 4 to 17 carbon atoms, or said polymethylene substituted by up to four alkyl groups of 1 to 4 carbon atoms;

R_2 of formula (N) is as previously defined when m is 1;

G_2 is a direct bond, C_1–C_{12} alkylene, phenylene or —N—H—G'—NH wherein G' is C_1–C_{12} alkylene; and

E_6 is an aliphatic or aromatic tetravalent radical.

5,300,648

DIALKYLENEPIPERIDINO COMPOUNDS AND THEIR ENANTIOMERS, PROCESS FOR PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Xavier Emonds-Alt, Combaillaux; Isabelle Grossriether, Uzes; Vincenzo Proietto, St. Georges D'Orques, and Didier Van Broeck, Murviel Les Montpellier, all of France, assignors to Societe Anonyme: Elf Sanofi, Paris, France

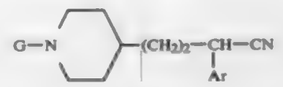
Filed May 4, 1992, Ser. No. 877,779

Claims priority, application France, May 3, 1991, 9105489

Int. Cl.[5] **C07D** *211/8, 211/94*

U.S. Cl. 546—193 **10 Claims**

1. A compound of formula:



in which

G is hydrogen, a protecting group (Pro) or a group of the formula Z'—T', in which Z' represents a hydrogen atom or a group M or OM, wherein M represents hydrogen or a linear or branched C_1–C_6 alkyl; an α-hydroxybenzyl, an α-alkylbenzyl or a phenylalkyl in which the alkyl group contains 1 to 3 carbon atoms, unsubstituted, mono- or poly-substituted on the aromatic ring with a halogen, a hydroxyl, an alkoxy of 1 to 4 carbon atoms, an alkyl of 1 to 4 carbon atoms; a pyridylalkyl in which the alkyl group contains 1 to 3 carbon atoms; a naphthylalkyl in which the alkyl group contains 1 to 3 carbon atoms; a pyridylthioalkyl in which the alkyl group contains 1 to 3 carbon atoms; a styryl; a 1-methyl-2-imidazolylthioalkyl in which the alkyl group contains 1 to 3 carbon atoms; a 1-oxophenyl-3-indan-2-yl; an aromatic or heteroaromatic radical selected from the group consisting of a phenyl which is unsubstituted, mono- or polysubstituted by halogen, a C_1–C_4 alkyl, a C_1–C_4 alkoxy, CN, NO_2, CF_3 or a hydroxyl a naphthyl, said naphthyl being unsubstituted, mono- or polysubstituted by C1 –C4 alkyl or hydroxyl; a pyridyl, a thienyl, an indolyl or a benzothienyl, said pyridyl, thienyl, indolyl and benzothienyl groups being unsubstituted, mono- or polysubstituted by a C_1–C_4 alkyl or a hydroxyl, and T' represents a bond, a —CH_2-group or a —C(O)-group; and

Ar' represents a phenyl, unsubstituted or substituted one or more times with a halogen atom, a C_1–C_3 alkyl, a trifluoromethyl, a C_1–C_3 alkoxy, or a hydroxyl; a thienyl, pyridyl or naphthyl group, the said groups being unsubstituted or substituted with a halogen; an indolyl group or a benzothienyl group;

or a salt thereof.

5,300,649

PROCESS FOR THE PRODUCTION OF LACTAMS

Gareth Griffiths, Visp, and Felix Previdoli, Brig, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

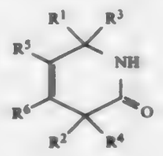
Filed Sep. 3, 1992, Ser. No. 940,388

Claims priority, application Switzerland, Sep. 12, 1991, 2697

Int. Cl.[5] **C07D** *211/36*

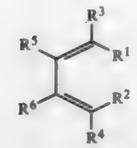
U.S. Cl. 546—290 **19 Claims**

1. Process for theproduction of lactams of the fomrula:



I

wherein R^1 and R^2 are either independent of one another and each is hydrogen, alkyl, aryl, alkoxy, aryloxy, alkylthio, arhlthio or trialkylsiloyloxy or together from a methanediyl or ethanediyl group, R^3 and R^4 are independent of one another and each is hydrogen, alkyl, aryl, alkoxy, aryloxy, alkylthio, arylthio or trialkylsilyloxy and R^5 and R^6 are either independent of one another and each is hydrogen, alkyl, aryl, alkoxy, aryloxy, alkylthio, arylthio or trialkylsilyloxy or together with the two carbon atoms of the lctam ring connctcd by thedfouble bond form a carbocyclic or heterocyclic ring having 5to 8 ring members, comprising subjecting a 1,3-diene of the general formula:



II

wherein R^1 to R^6 have the above-mentioned meanings, in thepresence of water to a cyclo-addition with a sulfonyl cyanide, said sulfonyl cyanide at least partly being formed in situ from a sulfinic acid of the fomrula:

$$R—SO_2H \qquad \text{III}$$

wherein R is a C_1–C_6-alkyl group or an optionally substituted phenyl group, and/or a salt thereof, and cyanogen chloride and in the same process step subjectin the cycloaddition inermediate to hydrolysis with said water.

5,300,650

PROCESS FOR PRODUCING AMINOMETHYLPYRIDINE HAVING A CHLORINE ATOM AT α-POSITION

Toshinari Nabuta, Hyogo, Japan, assignor to Koei Chemical Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00094, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO92/13840, PCT Pub. Date Aug. 20, 1992

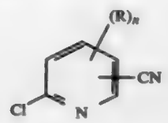
PCT Filed Jan. 31, 1992, Ser. No. 927,425

Claims priority, application Japan, Feb. 4, 1991, 3-035598

Int. Cl.[5] **C07D** *213/61*

U.S. Cl. 546—329 **10 Claims**

1. A process for producing an aminomethylpyridine having a chlorine atom at the α-position by subjecting a 2-chlorocyanopyridine represented by the formula (I)



(I)

(wherein, R represents an alkyl group, an n represents 0, 1 or 2), to a catalytic reduction in the presence of a hydrogenation catalyst, which process is characterized in that said cyanopyridine is subjected to a catalytic reduction in a non-aqueous reaction system.

5,300,651

PROTECTED DERIVATIVES OF TRYPTOPHAN, PROCESSES FOR THEIR PREPARATION AND THEIR USE FOR THE PREPARATION OF DIPEPTIDE, POLYPEPTIDE OR PROTEIN STRUCTURES

Peter D. White, Southwell, United Kingdom, assignor to Calbiochem-Novabiochem AG, Laufelfingen, Switzerland

Filed May 27, 1992, Ser. No. 888,667

Claims priority, application Switzerland, May 31, 1991, 1613/91

Int. Cl.[5] **C07F** *9/06;* **C07D** *209/18*

U.S. Cl. 548—113 **7 Claims**

1. A protected derivative of tryptophan comprising a tryptophan moiety having a protected α-amino group and an optionally modified carboxylic acid group, wherein

the NH-group of the tryptophan indole nucleus is protected with a tert.-butyloxycarbonyl group,

the tryptophan α-amino group is protected with a 9-fluorenyl-methyloxy-carbonyl group, and

the optionally modified carboxylic acid group is

(i) present as a free COOH group,

(ii) modified with a protecting group,

(iii) modified with an activating group, or

(iv) comprises an acyl group bonded to a moiety other than a protecting group or an activating group.

5,300,652

PREPARATION OF MONOCLINIC METAZACHLOR

Michael Keil, Freinsheim; Bjoern Girgensohn, Mannheim; Gotthard Synnatschke, Ludwigshafen; August Wigger, Neubofen; Hans Ziegler, Mutterstadt, and Walter Gueckel, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

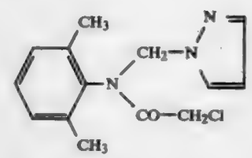
Division of Ser. No. 920,815, Jul. 24, 1992, Pat. No. 5,250,503, which is a continuation of Ser. No. 551,778, Jul. 12, 1990, abandoned. This application Apr. 19, 1993, Ser. No. 47,290

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1989, 3925253

Int. Cl.[5] **C07D** *231/12*

U.S. Cl. 548—375.1 **1 Claim**

1. A process for the preparation of crystalline monoclinic-2-chloro-(2',6'-dimethyl-N-pyrazazol-1-ylmethyl)-acetanilide of the formula I



I

which melts at 76° C., which process comprises: mixing an aqueous solution containing sulfuric acid of modification 1B of the compound I with water and with a water-miscible polar inert organic solvent selected from the group consisting of an alcohol, a ketone, dimethyl sulfoxide and diethylene glycol at from 0° to 50° C. to precipitate the crystalline monoclinic modification 1A of the compound I from the aqueous solution, and thereafter isolating the crystalline product.

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5,300,653

SEPARATION METHOD OF AMINO ACIDS

Shobei Nozaki, Yokohama; Naohiro Murata, Kamakura, and Kiyoo Miyazaki, Yotsukaido, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 612,478, Nov. 14, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 995,959
Claims priority, application Japan, Nov. 20, 1989, 1-299500
Int. Cl.[5] C07D *209/20*; C07C *229/36*
U.S. Cl. 548—497 8 Claims

1. A method for separating at least one aromatic amino acid having a benzene nucleus from an aqueous solution of mixed amino acids including said at least one aromatic amino acid, which comprises:

providing a strongly acidic gel-type cation exchange resin which is a sulfonated product of a styrene-divinylbenzene copolymer and has been converted into a salt with an alkali metal or an alkaline earth metal; and

bringing said aqueous solution into contact with said cation exchange resin, whereby said at least one aromatic amino acid is selectively sorbed by said cation exchange resin and wherein said sorbed amino acid is desorable with water.

5,300,654

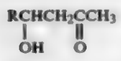
METHOD FOR THE PREPARATION OF UNSATURATED KETONES

Masashi Nakajima; Tadashi Kyotani, and Mikio Sawaki, all of Takaoka, Japan, assignors to Nippon Soda Co., Ltd., Ohtemachi, Japan

PCT No. PCT/JP90/01489, § 371 Date Jul. 15, 1991, § 102(e) Date Jul. 15, 1991, PCT Pub. No. WO91/07368, PCT Pub. Date May 30, 1991
PCT Filed Nov. 15, 1990, Ser. No. 730,844
Claims priority, application Japan, Nov. 17, 1989, 1-297389
Int. Cl.[5] C07C *45/64*, *45/66*; C07D *309/06*, *335/02*
U.S. Cl. 549—13 3 Claims

1. Method for preparing α,β-unsaturated ketone which comprises:

(1) dehydrating a β-hydroxyketone of the formula (I)

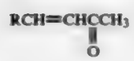


(I)

wherein R is (i) an aliphatic group having a side chain at the 1 position, (ii) an alicyclic group optionally substituted, (iii) a heterocyclic group optionally substituted; or (iv) a phenyl group optionally substituted;

(2) in the presence of an acid catalyst in a solvent mixture comprising water and a water-insoluble organic solvent compound

(3) under conditions sufficient to thereby produce a α,β-unsaturated ketone of the formula (II)



(II)

wherein R is as defined above.

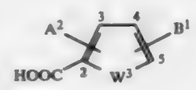
5,300,655

2-CARBOXY-THIOPHENE DERIVATIVES

Frederick J. Ehrgott, Killingworth; Carl J. Goddard, Groton, and Gary R. Schulte, Stonington, all of Conn., assignors to Pfizer Inc., New York, N.Y.

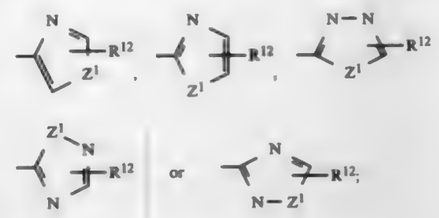
Continuation of Ser. No. 710,419, Jun. 5, 1991, abandoned, which is a division of Ser. No. 473,266, Jan. 31, 1990, Pat. No. 5,047,554, and a continuation of Ser. No. 340,113, Apr. 18, 1989, abandoned. This application Dec. 16, 1992, Ser. No. 993,516
Int. Cl.[5] C07D *333/40*, *285/08*
U.S. Cl. 549—71 1 Claim

1. A compound of the formula



(II')

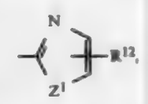
and the salts thereof wherein A^2 is H; B^1 is at the 4 position and is $S(O)_{p'}R^{16}$, $CON(CH_3)_2$, or $COOCH_3$, or B^1 is at the 5 position and is SO_2NHCH_3, or B^1 is at the 4 or 5 position and is



p' is one;

W^3 is S; Z^1 is O or S; R^{12} is H, F, Cl, Br, CF_3 or $(C_1–C_6)$alkyl; and

R^{16} is $(C_1–C_4)$alkyl, provided that when B^1 is at the 5 position and is



R^{12} is not H or $(C_1–C_6)$ alkyl.

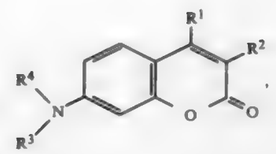
5,300,656

COUMARIN DERIVATIVES, PROCESS FOR THEIR PREPARATION, THEIR USE AND THIAZOLYL ACETIC ACID DERIVATIVES AS INTERMEDIATES

Eberhard Kuckert, West Haven, Conn.; Gunther Beck, Leverkusen, Fed. Rep. of Germany; Floria Seng, Bergisch Gladbach, Fed. Rep. of Germany, and Antonius Löbberding, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 610,864, Nov. 8, 1990, abandoned. This application Jul. 16, 1992, Ser. No. 915,772
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1989, 3938598; Aug. 23, 1990, 4026613
Int. Cl.[5] C07D *405/04*, *405/12*, *311/16*, *11/80*
U.S. Cl. 549—288 3 Claims

1. A coumarin derivative of the formula



(I)

in which

R^1 denotes cyano,

R^2 represents phenyl or thiazolyl bonded in that 2-, 4- or 5-position, where phenyl is substituted by nitro, cyano, amino, —CH—C_1–C_4-alkyl, —C_1–C_4-alkyl-NH_2, —C_1–C_4-alkyl-NH—C_1–C_4-alkyl, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkyl-carbonyloxy, hydroxyl, C_1–C_4-alkylamino-carbonyl or C_1–C_4-alkylcarbonylamino and can additionally be substituted by $C_1$1∝C_4-alkyl, fluorine, chlorine, or bromine, and where thiazolyl is monosubstituted or disubstituted by chlorine, cyano, where, in the case of disubstitution, the two substituents may be different and where the 4- and 5-position can together carry a fused benzene ring which can be substituted by carboxyl, amino or hydroxyl,

R^3 denotes C_1–C_4-alkyl or C_1–C_4-alkoxycarbonyl-C_1–C_4-alkyl and

R^4 represents C_1–C_4-alkyl which is substituted by hydroxyl, amino, carboxyl or C_1–C_4-alkoxy-carbonyl and

provided that one of the radicals R^2, R^3 and R^4 carries a primary or secondary amino group, the hydroxyl group, the carboxyl group or the C_1–C_4-alkoxy-carbonyl group.

5,300,657

PROCESS FOR PREPARING CHELIDONIC ACID

Bijan Harirchian, South Orange, and John L. Gormley, Fair Lawn, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 986,224, Dec. 7, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 46,514
Int. Cl.[5] C07D *309/38*
U.S. Cl. 549—420 8 Claims

1. A process for the manufacture of chelidonic acid comprising the steps of:

(i) mixing metal alkoxide, dialkyl oxalate and an alcohol together in a reaction vessel;

(ii) stirring the mixture of (i) while adding acetone at a rate such that the concentration of unreacted acetone in the reaction mixture is not greater than 30% of the dialkyl oxalate and metal alkoxide together;

(iii) neutralizing the product of (ii) with acid;

(iv) refluxing to form chelidonic acid.

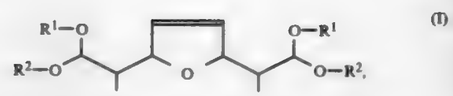
5,300,658

2,5-BIS(1,1-DIALKOXY-2-PROPYL)-2,5-DIHYDROFURANS, THE PREPARATION THEREOF AND THE USE THEREOF FOR THE PREPARATION OF CAROTENOIDS

Juergen Frank, Limburgerhof; Udo Rheude, Heidelberg; Bernhard Schulz, Schwetzingen; Joachim Paust, Neuhofen, and Eckhard Hickmann, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,590
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1991, 4112272
Int. Cl.[5] C07D *307/28*
U.S. Cl. 549—502 2 Claims

1. A 2,5-bis(1,1-dialkoxy-2-propyl)-2,5-dihydrofuran of the formula I



(I)

where R^1 and R^2 are identical or different alkyl groups of 1 to 4 carbons.

5,300,659

HEPTITOLS

George W. J. Fleet, Oxford, and Bryan G. Winchester, London, both of United Kingdom, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 954,199, Sep. 29, 1992, Pat. No. 5,250,703. This application Jun. 14, 1993, Ser. No. 75,940
Int. Cl.[5] C07D *207/12*, *407/06*
U.S. Cl. 548—556 2 Claims

1. A method for the synthesis of 1-Amino-2,5-anhydro-1-deoxy-D-glycero-D-taloheptitol comprising:

a. reacting 3,4:6,7-di-O-isopropylidene-D-glycero-D-galacto-heptono-lactone with mesyl chloride to give the corresponding mesylate,

b. reacting the mesylate with potassium carbonate to produce ring contraction to a tetrahydrofuran ester with inversion of configuration at C-2,

c. reducing the tetrahydrofuran ester with lithium aluminum hydride to give a primary alcohol,

d. esterifying the primary alcohol at C-1 with mesyl chloride to afford a mesylate,

e. displacing the mesylate function in the mesylate with alkali metal azide, to give the corresponding azide,

f. removing the isopropylidene protecting groups from the azide by acid hydrolysis to give the corresponding azido-tetraol, and

subjecting the azidotetraol to palladium catlyzed reductive hydrogenation to form the desired 1-amino-2,5-anhydro-1deoxy-D-glycero-D-talo-heptitol.

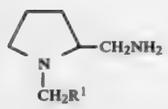
5,300,660

EFFICIENT STEREOCONSERVATIVE SYNTHESIS OF 1-SUBSTITUTED (S)- AND (R)-2-AMINOMETHYLPYRROLIDINES AND INTERMEDIATES THERETO

Hans-Jürgen Federsel, Stockholm; Thomas Hogberg; Sten I. Rämsby, both of Södertälje, and Hans E. P. Ström, Järna, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Continuation of Ser. No. 561,278, Aug. 1, 1990, abandoned, which is a continuation of Ser. No. 364,074, Jun. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 141,605, Dec. 30, 1987, abandoned. This application Nov. 12, 1992, Ser. No. 974,683
Claims priority, application Sweden, May 22, 1986, 8602339
Int. Cl.[5] C07D *207/09*
U.S. Cl. 548—566 7 Claims

1. A stereoconservative method for preparation of the (R)- or (S)-isomer of a compound of the formula I with at least 95% optical purity

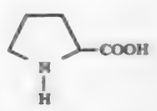


(I)

wherein R^1 is a hydrogen atom, a lower alkyl, alkenyl or alkynyl group, a cycloalkyl group, or a group $(CH_2)_m$ Ph where m is 0–3 and Ph is a substituted or unsubstituted phenyl

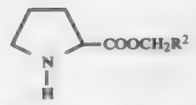
VOL 1161 ISS 1 AP 5 1994 UMI

group, which comprises treating (R)- or (S)-proline of the formula



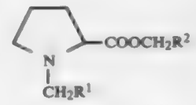
or a salt thereof with retention of the stereochemistry, by o-alkylation with R^2CH_2OH or R^2CH_2X wherein R^2 has the same definition as R^1 above and X is a halogen or a sulfonic acid residue to form the (R)- or (S)-isomer of an ester of the formula V

(V)



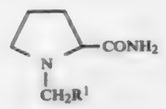
or a salt thereof followed by N-alkylation with R^1CH_2X in the presence of a base in a suitable organic solvent or by reductive alkylation with R^1CHO and a reducing agent, where R^1 and X are as defined above to form an ester of the formula II

(II)



followed by aminolysis at a temperature below 100° C. to form the (R)- or (S)-isomer of an amide with the formula III

(III)



followed by reduction of the amide of formula III to form the (R)- or (S)-isomer of a compound of formula I with at least 95% optical purity.

5,300,661

PROCESS FOR PREPARATION OF A RECORDING MATERIAL COMPRISING A NOVEL CRYSTAL OF A FLUORAN COMPOUND

Masakatsu Nakatsuka; Atsuo Otsuji; Kiyoharu Hasegawa; Kazuyoshi Kikkawa, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 949,932, Sep. 24, 1992, which is a division of Ser. No. 717,568, Jun. 19, 1991, Pat. No. 5,185,453. This application Jul. 21, 1993, Ser. No. 94,727

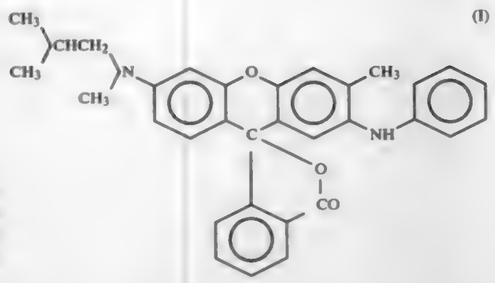
Claims priority, application Japan, Jun. 19, 1990, 2-158763; Oct. 15, 1990, 2-273401

Int. Cl.[5] C07D *311/88*

U.S. Cl. 549—226 **3 Claims**

1. A process for preparing the crystalline form of the fluoran compound having the formula (I):

(I)



which has a melting point of from 159° to 161° C. and an X-ray diffraction diagram by Cu-Kα beams which indicates a high peak at a diffraction angle 2θ of 6.9° and a relatively high peak at 19.4°, comprising precipitating the fluoran compound of the formula I in crystalline form from an organic solvent solution containing said fluoran compound and having a water content of 50% by weight or less, and isolating the thus-precipitated crystalline form.

5,300,662

PROCESS FOR PRODUCING COUMARIN AND DERIVATIVES THEREOF

Yoshitaka Nishida; Kiyomi Sakai, and Tamio Shirafuji, all of Ehime, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 26, 1992, Ser. No. 966,345

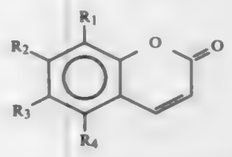
Claims priority, application Japan, Oct. 24, 1991, 3-277688

Int. Cl.[5] C07D *311/14, 311/16*

U.S. Cl. 549—290 **14 Claims**

1. A process for producing coumarin or a derivative thereof represented by formula (2):

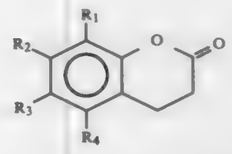
(2)



wherein R_1, R_2, R_3, and R_4 each represents a hydrogen atom, a methyl group, or an ethyl group, provided that at least two of R_1, R_2, R_3, and R_4 are hydrogen atoms,

said process comprising the step of: dehydrogenating 3,4-dihydrocoumarin or a derivative thereof represented by formula (1):

(1)



wherein R_1, R_2, R_3, and R_4 are as defined above, in the presence of a palladium catalyst by heating at a pressure of 300 to 700 Torr.

5,300,663

PHOTOCHROMIC NAPHTHACENEQUINONES, PROCESS FOR THEIR PREPARATION AND THE USE THEREOF

Walter Fischer, Reinach, Switzerland; Evelyn Fischer, Weil am Rhein, Fed. Rep. of Germany; Ernst Minder, Sissach; Manfred Hofmann, Marly, both of Switzerland; Jürgen Finter, Freiburg, Fed. Rep. of Germany, and Heinz Spahni, Frenkendorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 880,458, May 8, 1992, Pat. No. 5,206,395, which is a division of Ser. No. 639,463, Jan. 10, 1991, Pat. No. 5,177,227. This application Jan. 11, 1993, Ser. No. 3,066

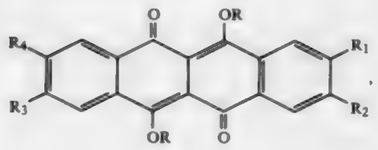
Claims priority, application Switzerland, Jan. 18, 1990, 161/90

Int. Cl.[5] C07C *50/24, 5/30*

U.S. Cl. 552—202 **1 Claim**

1. A compound of formula V

(V)



wherein

R is unsubstituted C_6–C_{14}aryl or C_6–C_{14}aryl which is substituted by C_1–C_{12}alkyl, C_1–C_{12}alkoxy, C_1–C_{12}alkylthiol, phenyl, benzyl, —CN, —CF3, halogen or —$COOR_5$; and R_5 is H, C_1–C_{18}alkyl, cyclohexyl, cyclopentyl, phenyl, C_1–C_{12}alkylphenyl, benzyl or C_1–C_{12}alkylbenzyl; and at least one of the substituents R_1 to R_4 is an organic thiol, sulfoxy or sulfonyl group, and the other members R_1 to R_4 are H, F, Cl or Br.

5,300,664

METHOD FOR PRODUCING (+)-ESTRONE DERIVATIVES

Seiichi Takano, and Kunio Ogasawara, both of Sendai, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Nov. 25, 1992, Ser. No. 981,497

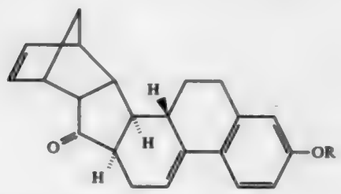
Claims priority, application Japan, Nov. 25, 1991, 3-334554

Int. Cl.[5] C07J *53/00*

U.S. Cl. 552—510 **4 Claims**

1. A compound represented by the formula:

(3)



wherein R is alkyl of 1–20 carbon atoms.

5,300,665

PROCESS FOR PREPARING FATTY ACID ESTERS AND AMIDES OF SULFONIC ACID SALTS

David J. Tracy, Plainsboro, N.J.; Mitchell B. Ferguson, Winder, Ga., and Gordon Wall, Newton, N.J., assignors to Rhone-Poulenc Surfactants and Specialties, L.P., Princeton, N.J.

Filed Sep. 16, 1992, Ser. No. 946,269

Int. Cl.[5] C07C *143/90*

U.S. Cl. 554—49 **20 Claims**

1. A process for preparing a compound of formula (I)

$$RCOXR'SO_3M \quad \text{(I)}$$

wherein:

R represents an aliphatic hydrocarbon residue of a fatty acid or a fatty acid ester containing from 6 to 24 carbon atoms,

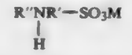
R′ represents a divalent hydrocarbon radical containing from 2 to 4 carbon atoms,

X represents oxygen or N-R″ where R″ represents hydrogen or a C_1–C_7 alkyl, and

M represents an alkali metal cation,

the steps consisting essentially of:

(a) heating a mixture of a molar excess of a fatty acid or fatty acid ester or a mixture thereof with a hydroxyalkyl sulfonate of the formula $HOR'SO_3$ M or aminoalkylsulfonate of the formula



in the presence of a reaction promotor, at a temperature between about 200° to 250° C., in a substantially oxygen-free atmosphere, while removing water or alcohol of condensation formed during the reaction;

(b) rapidly distilling the reaction mixture under conditions sufficient to remove excess fatty acid or excess fatty acid ester while maintaining the fluidity of the reaction mixture;

(c) rapidly cooling the hot product to obtain a solid form of the compound of formula I with minimized color or product degradation.

5,300,666

SILICONE ISETHIONATE POLYMERS

John Imperante, Lebanon, N.J., and Anthony J. O'Lenick, Jr., Lilburn, Ga., assignors to Siltech Inc., Norcross, Ga. and Phoenix Chemical, Somerville, N.J.

Filed Oct. 12, 1993, Ser. No. 134,616

Int. Cl.[5] C07F *7/08, 7/18*

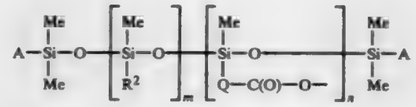
U.S. Cl. 556—428 **18 Claims**

1. A silicone polymer which conforms to the following structure:

$$R—(CH_2)_2—SO_3M$$

wherein:

R is



wherein

Me is methyl;

R^2 is selected from the group consisting of methyl and phenyl;

Q is $(CH_2)_c$;

c is an integer from 3 to 17;

A is selected from the group consisting of methyl and

—Q—C(O)—O—

m is an integer from 0 to 200;

n is an integer from 1 to 10 when A is methyl;

n is an integer from 0 to 10 when A is —Q—C(O)—O—;

M is selected from the group consisting of Na, K, Li, and NH_4.

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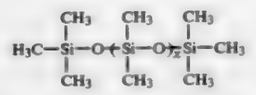
5,300,667

WATER DISPERSIBLE SILICONE COMPOSITION

Kenneth A. Kasprzak, Saginaw, and Linda M. Madore, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 10, 1992, Ser. No. 926,620
Int. Cl.[5] A61K *9/10*; **C07F** *7/04, 7/08*
U.S. Cl. 556—437 **3 Claims**

1. A water dispersible silicone composition consisting of a mixture of 25 to 75 percent by weight of a polydimethylsiloxane polymer having the formula:



where x is an integer having a value of from one to about one hundred thousand, and 75 to 25 percent by weight of a polyoxyalkylene siloxane copolymer having a formula selected from the group consisting of the formulae:

$$RSi[(OSiMe_2)_n(OSiMe_2G)]_4, \quad (1)$$

$$GMe_2Si(OSiMe_2)_n(OSiMeG)_gOSiMe_2G, \quad (2)$$

$$Me_3Si(OSiMe_2)_n(OSiMeG)_cOSiMe_3, \quad (3)$$

$$RSi[(OSiMe_2)_n(OSiMeG)_cOSiMe_3]_4, \quad (4)$$

$$RSi[(OSiMe_2)_n(OSiMeG)_dOSiMe_2G]_3, \quad (5)$$

$$RSi[(OSiMe_2)_n(OSiMeG)_cOSiMe_3]_3, \quad (6)$$

in which formulae R is a hydrocarbon radical free of aliphatic unsaturation and contains from 1 to 10 carbon atoms.
Me is a methyl radical,
G is a radical of the structure $—D(OR'')_mA$ wherein
D is an alkylene radical containing from 1 to 30 carbon atoms,
R'' is composed of ethylene radicals and radicals selected from the group consisting of propylene and butylene radicals, the amount of ethylene radicals relative to the other alkylene radicals being such that the ratio of carbon atoms to oxygen atoms in the total OR'' block ranges from 2.3:1 to 2.8:1,
m has an average value from 7 to 100,
A is a radical selected from the group consisting of the —OR', —OOCR' and



radicals wherein R' is a radical of aliphatic unsaturation selected from the group consisting of hydrocarbon and hydrocarbonoxy radicals, the A radical containing a total of less than eleven atoms,
n has an average value of from 6 to 420,
d has an average value of from 1 to 30,
b has an average value of from 1 to 30 and
c has an average value of from 3 to 30,
said copolymers containing at least 13 percent by weight $OSiMe_2$ units based on the weight of the copolymer.

5,300,668

CERTAIN ESTERS OF 1-(4-X-METHYLPHENYL)CYCLOPENT-3-ENE-1-CARBOXYLIC ACID, WHEREIN X IS A TRIALKYLSILYLOXY, BROMO OR HYDROXY GROUP, AS INTERMEDIATES

Paul A. Dasilva Jardine, Mystic, Conn., assignor to Pfizer Inc, New York, N.Y.

Filed Mar. 10, 1993, Ser. No. 43,959
Int. Cl.[5] C07C *62/32, 61/20*; **C07F** *7/18*
U.S. Cl. 556—441 **6 Claims**

1. (C_1 to C_4 alkyl or halosubstituted C_2 to C_4 alkyl) 1-(4'-t-butyldimethylsilyloxymethylphenyl)cyclopent-3-ene-1-carboxylate.

5,300,669

METHYLPHENETHYL FUNCTIONAL SILICONES

Shoji Akamatsu, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,046
Claims priority, application Japan, Nov. 28, 1991, 3-339875; Nov. 29, 1991, 3-342023
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—453 **6 Claims**

1. An organosilicon compound having the formula



wherein one R is vinyl, and the other one R is 2-methylphenethyl.

5,300,670

FLUOROSILICONE POLYMER AND CURABLE FLUOROSILICONE POLYMER COMPOSITION

Hideki Kobayashi, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,012
Claims priority, application Japan, Apr. 27, 1992, 4-134213
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—454 **20 Claims**

1. A fluorosilicone polymer selected from the group consisting of polymers having the formula

$$T(F(CF_2)_aC_2H_4CH_3SiO)_x(QCH_3SiO)_zT$$

and polymers having the formula

$$T(F(CF_2)_aC_2H_4CH_3SiO)_x(RCH_3SiO)_y(QCH_3SiO)_zT$$

wherein T is a monovalent group selected from the group consisting of a triorganosiloxy radicals and hydroxyl radical, R is a monovalent group selected from the group consisting of hydrocarbon radicals and substituted hydrocarbon radicals, Q is an alkenyl radical having 4 to 8 carbon atoms, a is an integer having a value of at least 4, x, y and z are integers, each having a value of at least 1, the proviso that $(x+y+z)\geqq 50$, $x/(x+y+z)\geqq 0.25$ and $z/(x+y+z)\leqq 0.1$.

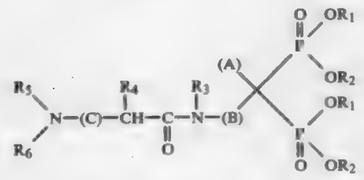
5,300,671

GEM-DIPHOSPHONIC ACIDS, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Sergio Tognella; Valeria Livi; Ernesto Menta, and Silvano Spinelli, all of Milan, Italy, assignors to Boehringer Mannheim Italia S.p.A., Milan, Italy

PCT No. PCT/EP90/01710, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO91/05791, PCT Pub. Date May 2, 1991
PCT Filed Oct. 11, 1990, Ser. No. 847,067
Claims priority, application Italy, Oct. 12, 1989, 22004 A/89
Int. Cl.[5] C07F *9/40, 9/38*
U.S. Cl. 558—159 **11 Claims**

1. Compounds of formula (I)

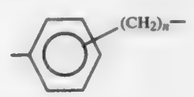


(I)

wherein:
R_1 and R_2, which can be the same or different, are hydrogen or C_1–C_4 alkyl:
(A) is hydrogen or hydroxy,
(B) is a straight or branched C_1–C_8 alkylene or, together with the adjacent nitrogen atom, a group of formula



wherein the groups $N(R_3)$ and $(CH_2)_n$ may be in the 1,1; 1,2; 1,3; or 1,4 position of the ring;
m is the integer 5 or 6;
n is an integer 1 to 5;
R_3 is hydrogen, straight or branched C_1–C_9 alkyl;
(C) is straight or branched C_1–C_5 alkylene, phenylene, an aralkylene chain of formula



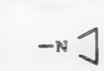
in which n is as above defined;
R_4 is hydrogen or a group of formula



in which R_7 and R_8, which are the same or different, are hydrogen, straight or branched C_1–C_6 alkyl, or one of R_7 and R_8 is as above defined and the other one is a group of formula



in which R_9 is hydrogen, straight or branched C_1–C_4 alkoxy; R_5 and R_6 are 2-haloethyl or R_5 and R_6, together with the nitrogen atom to which they are bound, are a 1-aziridinyl residue of formula



and isomers, diastereoisomers, and pharmaceutically acceptable salts thereof.

5,300,672

S-SUBSTITUTED CARBONYL SUBSTITUTED BETA-THIOACRYLAMIDE BIOCIDES AND FUNGICIDES

Barry Weinstein, Dresher, Pa.; Philip Robinson, Isle of Palms, S.C.; Katherine E. Flynn, Fairfield, Ohio, and Cherylann Schieber, Narberth, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 461,553, Jan. 5, 1990, Pat. No. 5,166,390. This application Feb. 10, 1992, Ser. No. 834,012
Int. Cl.[5] C07C *327/06, 327/08*
U.S. Cl. 558—254 **1 Claim**

1. A compound of the formula



wherein
R_1 is selected from n-octyl, propargyl, and 2,4,4-trimethyl-2-pentyl;
R_2 is selected from 2-chloroethyl, 3-methoxy-4-nitrophenyl, diphenylamino, 4-butylphenyl, and 3,5-dichlorophenyl;
Z_1 and Z_2 are each hydrogen; and
A is carbonyl.

5,300,673

Patent Not Issued For This Number

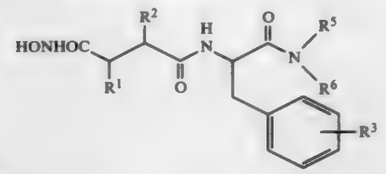
5,300,674

P2'-MODIFIED HYDROXAMIC ACID COLLAGENASE INHIBITORS

M. J. Crimmin, Marlow Bottom; A. H. Davidson, Witney, and R. P. Beckett, Aston, all of England, assignors to British Bio-Technology Limited, Oxford, England

Filed Sep. 16, 1991, Ser. No. 760,741
Claims priority, application United Kingdom, Feb. 7, 1991, 9102635
Int. Cl.[5] C07C *229/34, 259/06*
U.S. Cl. 560—42 **6 Claims**

1. A compound of the formula:



wherein
R^1 is hydrogen, C_1–C_6 alkyl, phenyl, or phenyl (C_1–C_6 alkyl);
wherein
R^2 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, phenyl (C_1–C_6 alkyl) or cycloalkyl (C_1–C_6 alkyl);
wherein
R^5 is hydrogen or C_1–C_6 alkyl, R^6 is hydrogen or methyl, and R^3 represents —O—CH_2—CO—R^8 where R^8 is hydroxyl, C_1–C_6 alkyloxy, amino, amino substituted with 1 or 2 C_1–C_6 alkyl, or benzyl groups,
or salts thereof.

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5,300,675

PROCESS FOR SYNTHESIZING SUBSTITUTED CINNAMIC ACID DERIVATIVES

Varadaraj Elango, Norwood, Mass., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Jun. 29, 1993, Ser. No. 85,262

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—55 **18 Claims**

1. A process for preparing a substituted cinnamic acid derivative of the formula Ar—CH=CH—CO—Z, the process comprising: reacting a diazonium salt of an aromatic amine of the formula Ar—NH_2 with an acrylic acid derivative of the formula CH_2=CH—CO—Z in a suitable organic solvent containing a suitable buffer compound, the reaction being catalyzed by mixture comprising a copper salt and a palladium compound, at a reaction temperature of from about −70° C. to about 75° C., wherein Ar is a phenyl ring substituted in one or more positions, wherein the substituents are branched or unbranched C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxy, halogen or cyano; Z is OR_1 or NR_2R_3, wherein R_1 is branched or unbranched C_1–C_{18} alkyl, unsubstituted or substituted aryl or arylalkyl, and R_2 and R_3 are independently selected from the group consisting of H, unbranched or branched C_1–C_{18} alkyl and unsubstituted or substituted aryl or arylalkyl.

5,300,676

HERBICIDAL FLUORINE-SUBSTITUTED ALPHA-(5-ARYLOXYNAPHTHALEN-1-YL-OXY)-PROPIONIC ACID DERIVATIVES

Roland Andree, Langenfeld; Michael Haug; Klaus Lürsen, both of Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

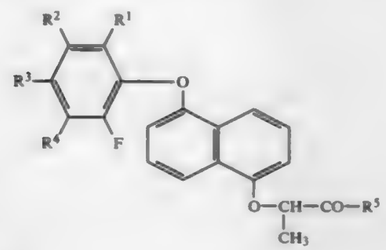
Filed Apr. 11, 1991, Ser. No. 684,545

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1990, 4012711

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—56 **5 Claims**

1. A fluorine-substituted α-(5-aryloxy-naphthalen-1-yl-oxy)-propionic acid derivative of the formula



(I)

in which

R^1 represents hydrogen,

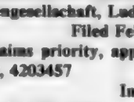
R^2 represents hydrogen, fluorine or chlorine,

R^3 represents fluorine, chlorine, cyano, trifluoromethyl or trifluoromethylsulphonyl,

R^4 represents hydrogen, fluorine or chlorine and

R^5 represents chlorine, hydroxyl, amino, C_1–C_6-alkylamino, C_3–C_4-alkenylamino, C_3–C_4-alkinylamino, phenylamino, benzylamino, C_1–C_4-alkoxycarbonyl-C_1–C_2-alkylamino, cyanoamino, di-(C_1–C_4-alkyl)-amino, di-(C_3–C_4-alkenyl)-amino, C_1–C_4-alkylsulphonylamino, phenylsulphonylamino, tolylsulphonylamino, hydroxylamino, C_1–C_6-alkoxyamino, N-(C_1–C_6-alkoxy)-N-(C_1–C_4-alkyl-)amino, hydrazino, C_1–C_4-alkylsulphonylhydrazino, phenylsulphonylhydrazino, tolylsulphonylhydrazino, C_1–C_4-alkylthio, phenylthio, benzylthio, C_1–C_4-alkoxy-carbonyl-C_1–C_2-alkylthio or the group —O—R^6 where

R^6 represents a radical selected from the group consisting of C_1–C_6-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkinyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, C_1–C_4-alkylsulphinyl-C_1–C_4-alkyl, C_1–C_4-alkylsulphonyl-C_1–C_4-alkyl, phenoxy-C_1–C_3-alkyl, trimethylsilyl-methyl, phenylthio-C_1–C_3-alkyl, benzyloxy-C_1–C_3-alkyl, benzylthio-C_1–C_3-alkyl, C_1–C_4-alkoxy-carbonyl-C_1–C_2-alkyl, C_1–C_4-alkylamino-carbonyl-C_1–C_2-alkyl, benzyl, pyrazolyl-C_1–C_4-alkyl, C_2–C_4-alkylideneaminooxy-C_1–C_4-alkyl and C_2–C_4-alkylideneamino, each of which is optionally substituted by fluorine and/or chlorine, or represents an ammonium, a C_1–C_4-alkylammonium, a sodium, potassium or calcium equivalent, or represents the group



where

R^1 represents hydrogen, C_1–C_4-alkyl, phenyl, furyl, thienyl or pyridyl,

R^8 represents C_1–C_4-alkyl or C_1–C_4-alkoxy,

R^9 represents C_1–C_4-alkoxy and

Q represents oxygen or sulphur, or

R^6 represents the group—$(CH_2)_n$—R^{10} where

n represents the numbers 0, 1 or 2 and

R^{10} represents a heterocyclic radical selected from the group consisting of furyl, tetrahydrofuryl, oxotetrahydrofuryl, thienyl, tetrahydrothienyl, perhydropyranyl, oxazolyl, thiazolyl, thiadiazolyl, dioxolanyl, perhydropyrrolyl, oxoperhydropyrrolyl, isoxazolidinyl, pyridinyl or pyrimidinyl, each of which is optionally substituted by fluorine, chlorine, bromine and/or C_1–C_4-alkyl.

5,300,677

METHOD OF PREPARING INSOLUBLE HYDROLYSABLE TANNIN AND METHOD OF TREATING WASTE LIQUID WITH THE TANNIN

Wataru Shirato, and Yoshinobu Kamei, both of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Company Ltd., Tokyo, Japan

Division of Ser. No. 918,371, Jul. 23, 1992. This application Jan. 22, 1993, Ser. No. 7,615

Claims priority, application Japan, Aug. 7, 1991, 3-222288

Int. Cl.[5] C07L *69/88*

U.S. Cl. 560—68 **1 Claim**

1. Insoluble hydrolysable tannin obtained by

(a) dissolving a hydrolysable tannin powder in aqueous ammonia;

(b) mixing the resulting solution with an aldehyde aqueous solution to form a precipitate;

(c) heating the precipitate at a temperature and for a time sufficient to make the precipitate insoluble in water;

(d) mixing the precipitate from step (c) with a mineral acid to make it insoluble in acid and alkali; and

(e) filtering the resulting mixture to separate the precipitate.

5,300,678

PREPARATION OF (107 -SUBSTITUTED URETHANO ALKYLCARBOXYLATES)

Franz Merger, Frankenthal, and Martin Brudermueller, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,168

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203457

Int. Cl.[5] C07C *261/00*

U.S. Cl. 560—157 **6 Claims**

1. A one-step process for the preparation of a ω-(O-substituted urethano)alkylcarboxylate, wherein a lactam having from 4 to 9 ring members, which can have alkyl, alkenyl, cycloalkyl, or aralkyl groups containing up to 12 carbon atoms as substituents, is reacted with a carbonic diester of an alkanol, alkenol, cycloalkanol, or aralkanol containing up to 16 carbon atoms, at a temperature of from 25° to 300° C. in the presence of from 0.1 to 30 mole %, based on lactam, of a base.

5,300,679

SUBSTITUTED PROPANE-PHOSPHINIC ACID COMPOUNDS

Eric K. Baylis, Offerton, England; Helmut Bittiger, Freiburg, Fed. Rep. of Germany; Wolfgang Fröstl, Basel, Switzerland; Roger G. Hall, Flixton, England; Ludwig Maier, Arlesheim, Switzerland; Stuart J. Mickel, Lausen, Switzerland, and Hans-Rudolf Olpe, Bottmingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

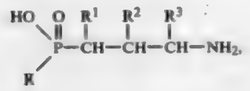
Division of Ser. No. 845,871, Mar. 3, 1992, Pat. No. 5,190,933, which is a continuation of Ser. No. 722,634, Jun. 27, 1991, abandoned, which is a division of Ser. No. 502,399, Mar. 30, 1990, Pat. No. 5,064,819, which is a continuation-in-part of Ser. No. 484,716, Feb. 26, 1990, Pat. No. 5,051,524, which is a continuation-in-part of Ser. No. 378,887, Jul. 12, 1989, Pat. No. 5,013,863, which is a continuation-in-part of Ser. No. 275,882, Nov. 25, 1988, abandoned. This application Oct. 29, 1992, Ser. No. 968,101

Claims priority, application United Kingdom, Dec. 4, 1987, 8728483

Int. Cl.[5] C07F *9/30*; A61K *31/13, 31/185*

U.S. Cl. 562—11 **20 Claims**

1. A compound of the formula I



(I)

wherein R denotes an aliphatic, cycloaliphatic, cycloaliphatic-aliphatic or araliphatic radical having 2 or more carbon atoms, and wherein one of the groups R^1, R^2 and R^3 represents hydrogen, lower alkyl, cycloalkyl, phenyl or naphthyl, phenyl or naphthyl substituted by halogen, lower alkyl, lower alkoxy and/or trifluoromethyl, phenyl-lower alkyl or phenyl lower alkyl substituted in the phenyl moiety by halogen, lower alkyl, lower alkoxy and/or trifluoromethyl, another one of the R^1, R^2, and R^3 is hydrogen or, in the case of R^1 and R^2, is hydroxy, and the remaining one of R^1, R^2 and R^3 is hydrogen, or wherein R denotes methyl, R_1 denotes hydrogen or hydroxy, R_2 denotes an aromatic radical and R_3 represents hydrogen, with the proviso that R is different from 1,1-di(C_1–C_4-alkoxy)-C_1–C_5-alkyl if one of R^1, R^2 and R^3 represents hydrogen, C_1–C_8-alkyl, C_3–C_6-cycloalkyl, phenyl optionally substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy and/or trifluoromethyl or C_1–C_{10}-phenylalkyl optionally substituted in the phenyl moiety by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy and/or trifluoromethyl and the other two of R^1, R^2 and R^3 are hydrogen, and with the additional proviso that R is different from ethyl if R^2 denotes hydroxy and R^1 and R^3 are hydrogen, or a salt thereof, provided that salts of compounds of the formula I, wherein R denotes an unsubstituted aliphatic, cycloaliphatic or araliphatic hydrocarbon radical, R^1 and R^3 denote hydrogen and R^2 is hydrogen or alkyl, with bases are different from alkali metal and ammonium salts.

5,300,680

PROCESS FOR PREPARING SULFONIUM OR SULFOXONIUM SALTS OF N-PHOSPHONOMETHYLGLYCINE

Raymond V. H. Jones, Linlithgow, and Elizabeth S. C. Simpson, Stonehouse, both of Scotland, assignors to Imperial Chemical Industries PLC, London, England

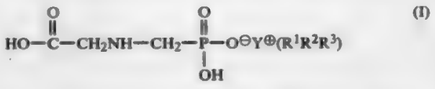
Filed May 15, 1992, Ser. No. 883,087

Claims priority, application United Kingdom, Jul. 4, 1991, 9111974

Int. Cl.[5] C07F *9/28, 9/38*

U.S. Cl. 562—17 **7 Claims**

1. A process for preparing a compound of formula (I):



(I)

where R^1, R^2, and R^3 are independently selected from alkyl or of formula (I):



(II)

where m is 0 or 1 and Y, R^1, R^2, and R^3 are as defined in relation to formula (I);

(a) wherein the reaction takes place in the presence of a base which is an organic amine or

(b) wherein an aqueous solution of a compound of formula (II) is treated in a first stage with an aqueous inorganic base or ammonium hydroxide and the resultant solution is reacted in a second stage with N-phosphonomethyl glycine to form a compound of formula (I).

5,300,681

HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANORUTHENIUM CATALYST

Merrikh Ramezanian, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 774,797, Oct. 10, 1991, Pat. No. 5,254,714. This application Jun. 10, 1993, Ser. No. 74,631

Int. Cl.[5] C07C *53/134, 69/76*; C07F *15/00*

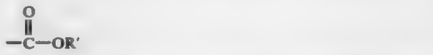
U.S. Cl. 562—496 **6 Claims**

1. A process for the enantioselective hydrogenation of an aromatic-substituted olefin of the formula:



(I)

where R is hydrogen or C_1 to C_6 linear or branched alkyl, Z is

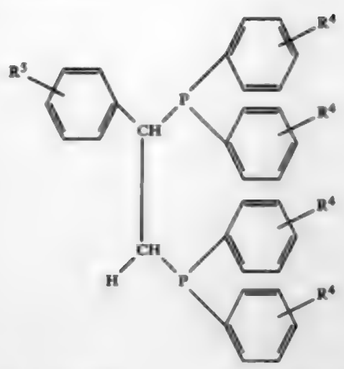


where R′ is hydrogen or C_1 to C_6 linear or branched alkyl, —CN, C(NH)OR″ where R″ is C_1 to C_6 linear or branched alkyl, or —$C(O)NH_2$; and Ar is phenyl or naphthyl unsubstituted or substituted with benzoyl or substituted benzoyl, C_1 to C_6 linear or branched alkyl, C_1 to C_6 linear or branched alkoxy, halo, or carboxylic acid or a C_1 to C_6 linear or branched alkyl ester thereof, which comprises contacting said aromatic-substituted olefin with a catalytically effective amount of a ruthenium phosphite complex of the formula

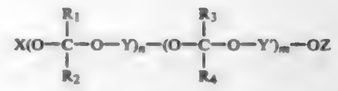
$$Ru_xH_yCl_z(R^4\text{-D-3PE})_2(S)_p \qquad \text{(II)}$$

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where R^4-D-3PE is



(III)



where R^4 is hydrogen, C_1 to C_6 linear or branched alkyl or C_1 to C_6 linear or branched alkoxy; R^5 is C_1 to C_6 linear or branched alkyl or hydrogen; S is a tertiary amine; when y is 0, then x is 2, z is 4 and p is 1; and when y is 1, then x is 1, z is 1 and p is 0 at a temperature and pressure sufficient to hydrogenate said aromatic-substituted olefin.

5,300,682

CATALYTIC OXIDATION OF ETHANE TO ACETIC ACID

Patricia R. Blum, Macedonia, and Marc A. Pepera, Northfield, both of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Continuation-in-part of Ser. No. 712,293, Jun. 10, 1991. This application Apr. 29, 1992, Ser. No. 878,116

Int. Cl.[5] C07C *27/10, 51/16, 53/00*

U.S. Cl. 562—512.2 **8 Claims**

1. A process for making acetic acid which comprises oxidizing ethane with molecular oxygen in a reaction zone at a pressure of at least 100 psig while the reactants are in contact with a solid catalyst having the elements and relative atomic proportions indicated by the empirical formula:

$$VP_aM_bO_x$$

where M is one or more optional element selected from Co, Cu, Re, Fe, Ni, Nb, Cr, W, U, Ta, Ti, Zr, Zn, Hf Mn, Pt, Pd, Sn, Sb, Bi, Ce, As, Ag and Au,

wherein

a is 0.5 to 3, and b is 0 to 1, and

x is a number determined by the valence

requirements of the other elements in the catalyst, and wherein said catalyst contains crystalline vanadyl pyrophosphate, $(VO)_2P_2O_7$.

5,300,683

FLUORINATION OF ACETALS, KETALS AND ORTHOESTERS

Thomas R. Bierschenk; Timothy Juhlke, both of Round Rock; Hajimu Kawa, and Richard J. Lagow, both of Austin, all of Tex., assignors to Exfluor Research Corporation, Austin, Tex.

Continuation of Ser. No. 752,703, Aug. 30, 1991, Pat. No. 5,202,480, which is a continuation of Ser. No. 413,785, Sep. 28, 1989, Pat. No. 5,053,536, which is a continuation-in-part of Ser. No. 250,384, Sep. 28, 1988, abandoned. This application Oct. 26, 1992, Ser. No. 966,681

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] C07C *59/245*

U.S. Cl. 562—582 **3 Claims**

1. A perhalogenated polyether having an average formula:

wherein Y and Y' are the same or different and are selected from the group consisting of linear and branched perfluoroalkylenes having at least 2 carbon atoms; perfluoroalkyleneoxyalkylene and perfluoropoly-(alkyleneoxyalkylene) each having alkylene groups containing at least two carbon atoms wherein Y or Y' one or more of the fluorine atoms may be substitute by a halogen atom other than fluorine; wherein X and Z are the same or different and are selected from the group consisting of $-(CF_2)_rCOF$, $-(CF_2)_rOCF_3$, $-(CF_2)_rCOOH$ and $-C_rF_{2r+1-t}Cl_t$, wherein r is an integer from 1 to 12 and q is an integer from 0 to 25; wherein R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of —F, —Cl, $—CF_2Cl$, $—CFCl_2$, $—CCl_3$, perfluoroalkyl of one to ten carbon atoms and perfluoroalkoxyalkyl of one to ten carbon atoms wherein one or more of the fluorine atoms may be substituted by a halogen atom other than fluorine; wherein n is an integer from 2 to 1,000; and wherein m is an integer from 0 to 1,000; provided that when R_1, R_2, R_3 and R_4 together are F, then Y and Y' cannot be both $—C_2F_4—$.

2. A perhalogenated polyether of claim 1, wherein Y and Y' are selected from the group consisting of $—C_2F_4—$, $—C_3F_6—$, $—C_4F_8—$, $—C_5F_{10}—$, $—C_6F_{12}—$, $—CF_2CF(CF_3)—$, $—CF_2CF(C_2F_5)—$ and $—CF_2CF(CF_2Cl)—$.

5,300,684

PROCESS FOR THE FLUIDIZED BED OXIDATION OF ETHANE TO ACETIC ACID

Nancy C. Benkalowycz, Westlake; Patricia R. Blum, Macedonia, and David R. Wagner, Chesterland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 9, 1991, Ser. No. 803,882

Int. Cl.[5] C07C *51/16*

U.S. Cl. 562—547 **3 Claims**

1. A process for oxidizing ethane to acetic acid which comprises feeding ethane and a recycle gas to a fluidized bed reaction zone containing fluidized particulate solid oxidation catalyst, feeding a molecular oxygen-containing gas separately from said ethane to said reaction zone so that said molecular oxygen-containing gas first mixes with the major portion of the combustible hydrocarbon feed gases within the fluidized bed, said process including the steps of (1) cooling the gaseous effluent from the reaction zone, (2) separating most of the acetic acid in liquid form from the effluent gases, leaving a gaseous stream containing nearly all of the carbon oxides contained in said effluent, (3) purging a small portion of said gaseous stream and recycling most of said gaseous stream as part of the feed to said reaction zone,

wherein said purging serves to prevent build-up of carbon oxides in the reaction zone, and said recycling serves to maintain a high proportion of carbon oxides in said reaction zone gases, thus aiding in moderating the temperature elevating effect of the highly exothermic oxidation reaction in said reaction zone.

5,300,685

REMOVAL OF HALIDE IMPURITIES FROM ORGANIC LIQUIDS

Mark O. Scates, Pearland; R. Jay Warner, and G. Paull Torrence, both of Corpus Christi, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 25, 1991, Ser. No. 799,455

Int. Cl.[5] C07C *51/42*; B01D *15/04*

U.S. Cl. 562—608 **20 Claims**

1. A method of removing halides from halide-containing liquids in liquid or vapor form, comprising (a) contacting a halide-containing liquid or vapor with a polymeric resin having functional groups forming coordination complexes with one or more metal salts capable of reacting with halides to form metal halide precipitates in the halide-containing liquid or vapor, said functional groups having the capability to quaternize or form ionic salts with alkyl halides, and (b) maintaining the contact between the liquid or vapor and the coordinated resin for a time sufficient for metal halide precipitates to form and trapping said precipitates in the matrix of said polymeric resin.

5,300,686

SELECTIVE REACTION OF TRIALKYLALUMINUM WITH ORGANOPHOSPHORUS DIHALIDE

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Akzo nv, Arnhem, Netherlands

Filed Jan. 19, 1990, Ser. No. 467,711

Int. Cl.[5] C07F *9/02*

U.S. Cl. 564—15 **1 Claim**

1. A process for the manufacture of N,N-bis(2-methylpropyl)-2-octylphenyphosphinyl)acetamide which comprises the manufacture of a composition comprising hydrolyzable halodiorganophosphine of the formula RR'PX, where R is phenyl, R' is octyl, and X is halo which comprises the selective reaction of an organophosphorus dihalide of the formula RPX_2 with a trialkylaluminum of the formula $Al(R')_3$, the hydrolysis of the halodiorganophosphine to octylphenylphosphine oxide, and the reaction of the octylphenylphosphine oxide with diisobutylchloroacetamide.

5,300,687

TRIFLUOROMETHYLBENZYLPHOSPHONATES USEFUL IN TREATING OSTEOPOROSIS

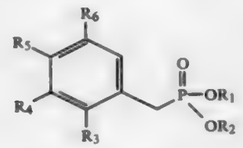
Charles Schwender, Califon; Keith Demarest, Flemington, both of N.J., and David Wustrow, Ann Arbor, Mich., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jul. 18, 1991, Ser. No. 732,267

Int. Cl.[5] C07F *9/02, 9/28*; C07D *279/12, 265/30*

U.S. Cl. 564—15 **2 Claims**

1. A compound represented by the formula I:



I

wherein R_1 and R_2 are the same or different and are selected from any of hydrogen, alkyl, alkenyl, hydroxyalkyl, alkoxyalky, aralkyl, aryl, or aminoalkyl with the proviso that at least one of R_1 and R_2 is aminoalkyl;

wherein aminoalkyl is $—(CH_2)n—N\ R_7\ R_8$ wherein n=2–6 and R_7 and R_8 are the same or different and are selected from any of H, alkyl, aralkyl;

wherein R_3 and R_5 may each be either H of CF_3, with the proviso that only one of R_3 or R_5 may be CF_3 at the same time;

wherein R_4 and R_6 may each be H or CF_3, with the proviso that if either or both of R_4 and R_6 are CF_3, neither R_3 nor R_5 may be CF_3, with the further proviso that R_3–R_6 may not each be H at the same time; or pharmaceutically acceptable salts thereof.

5,300,688

METHOD FOR MAKING HYDRAZIDE OR HYDRAZINE COMPOUNDS

Kenneth A. M. Kremer, Lawrenceville, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Nov. 16, 1992, Ser. No. 976,764

Int. Cl.[5] C07C *241/02, 241/04*

U.S. Cl. 564—149 **15 Claims**

1. A method for the preparation of a t-butyl hydrazide or t-butyl hydrazine from a t-butyl urea starting product comprising the steps of:

(a) halogenating the t-butyl urea starting product;

(b) mixing the halogenated t-butyl urea with a dilute solution of an aqueous base;

(c) adding a concentrated acid to the mixture produced by step (b) to produce a t-butyl hydrazine-containing dilute aqueous solution;

(d) mixing an aqueous base, a first aprotic organic solvent, and an acid halide with the t-butyl hydrazine-containing dilute aqueous solution;

(e) separating out the organic phase from the mixture produced by step (d); and

(f) adding a second solvent to the organic phase of the mixture produced by step (e).

5,300,689

OXIMATION PROCESS

Leroy O. Krbechek, Santa Rosa, Calif., and Mary I. Casey, Bishopstown, Ireland, assignors to Henkel Corporation, Ambler, Pa.

Filed Mar. 20, 1992, Ser. No. 854,522

Int. Cl.[5] C07C *249/08*

U.S. Cl. 564—259 **34 Claims**

1. In a method of preparing aliphatic or aromatic oximes with hydroxylamine the improvement which comprises conducting the reaction in the presence of about 0.001 to about 0.1 moles of an acid phase transfer catalyst; an alkali metal or alkaline earth metal hydroxide, carbonate or bicarbonate in at least a stoichiometric amount to the hydroxylamine; and water in an amount of about 0.1 to about 10 moles of water per mole of carbonyl.

5,300,690

POLYOXIME DERIVED FROM CARBON MONOXIDE-PROPYLENE POLYKETONE

Gurudas D. Sinai-Zingde, Mohegan Lake, N.Y., assignor to Akzo N.V., Arnhem, Netherlands

Filed Oct. 14, 1992, Ser. No. 961,005

Int. Cl.[5] C07C *251/32*; C08G *85/02*

U.S. Cl. 564—268 **3 Claims**

1. A polyoxime, obtained by reacting hydroxylamine with a linear, alternating copolymer of carbon monoxide and propylene, which comprises the recurring unit: $—[H_2C—CH(CH_3)—C(=NOH)]—$.

5,300,691

SUBSTITUTED BENZYL AMINES

Michael T. Sheehan; James R. Sounik; Bret F. Hann, all of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

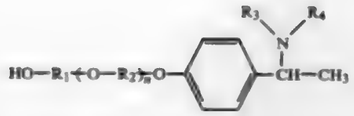
Filed May 28, 1993, Ser. No. 69,949

Int. Cl.[5] C07C *217/54*

U.S. Cl. 564—389 **4 Claims**

1. Amino compounds having the structural formula (I):

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wherein n is 1–1000; and $R_1=R_2$, and R_1 and R_2 are from the group $—CH_2—CH_2—$; $—CH_2—C(CH_3)H—$; and $—C(CH_3)H—CH_2—$; and R_3 and R_4 are each independently selected from the group consisting of H, $—CH_3$, $—CH_2CH_3$; $—CH_2OH$; and $—CH_2—CH_2—OH$; and the diasteromeric salts thereof.

5,300,692

PROCESS FOR PRODUCING 4-AMINO-3-FLUOROBENZOTRIFLUORIDE

Noriyasu Sakamoto, Nishinomiya; Toshiaki Taki, Toyonaka, and Noritada Matsuo, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 978,711

Claims priority, application Japan, Nov. 20, 1991, 3-304608

Int. Cl.[5] C07C *209/10*

U.S. Cl. 564—405 **10 Claims**

1. A process for producing 4-amino-3-fluorobenzotrifluoride which comprises reacting 3,4-difluorobenzotrifluoride with anhydrous ammonia under pressure.

5,300,693

PROCESS FOR THE PREPARATION OF 1,4-BIS(4-FLUOROBENZOYL)-BENZENE

Walter Gilb, Hofheim am Taunus; Georg Grötsch, Bad Soden am Taunus, and Hans Schubert, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00929, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO92/18862, PCT Pub. Date Dec. 12, 1991

PCT Filed May 18, 1991, Ser. No. 949,526

Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016895

Int. Cl.[5] C07C *45/46*

U.S. Cl. 568—323 **8 Claims**

1. A process for the preparation of 1,4-bis(4-fluorobenzoyl)-benzene by reaction of terephthaloyl chloride with fluorobenzene in the presence of aluminum chloride or aluminum bromide, which comprises metering aluminum chloride or aluminum bromide into a mixture of terephthaloyl chloride and fluorobenzene at temperatures from about 25° C. to about 68° C. and allowing the mixture to react at said temperatures.

5,300,694

ALKOXYLATED COMPOUNDS AND THEIR USE IN COSMETIC STICK FORMULATIONS

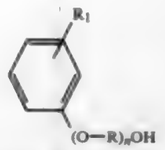
Ronald J. Smith, 72 Fairview Ave., Woodcliff Lake, N.J. 07675, and Stelio J. Elmi, 43 Hawthorne Ave., Hawthorne, N.J. 07506

Division of Ser. No. 845,860, Mar. 4, 1992, Pat. No. 5,258,136. This application Nov. 10, 1992, Ser. No. 974,145

Int. Cl.[5] C07C *43/23*

U.S. Cl. 568—608 **2 Claims**

1. A phenol compound of the formula:



FORMULA A

wherein R_1 is an alkyl substituent of 15 carbon atoms, R is an ethyl substituent, and n is about 200.

5,300,695

PROCESS FOR PREPARING ALCOHOLS

Cecelia A. Radlowski, Riverside, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 7, 1992, Ser. No. 986,384

Int. Cl.[5] C07C *41/06, 29/34*

U.S. Cl. 568—697 **17 Claims**

1. A process for producing a higher molecular weight alcohol from a lower molecular weight feedstock comprising reacting a first linear primary alcohol having X carbon atoms with a second linear primary alcohol having Y carbon atoms over a cation-containing L-type zeolite catalyst at a temperature between 200° and 500° C., at a pressure from subambient to 2,000 psig, and at a weight hourly space velocity between 0.2 and 300 hr^{-1} to produce a product alcohol having X+Y carbon atoms, where X and Y are integers equal to or less than 20.

13. A process for making ether fuel components comprising the steps of:

contacting a first alcohol having X carbon atoms and a second alcohol having Y carbon atoms over a cation-containing L-type zeolite catalyst at a temperature between 200° and 500° C., at a pressure from subambient to 2,000 psig, and at a weight hourly space velocity between 0.2 and 300 hr^{-1} to produce a branched-chain product alcohol having X+Y carbon atoms wherein X+Y is equal to 6 or less;

dehydrating the alcohol to form an olefin by dehydrating the alcohol in a 20 to 95 percent solution of a mineral acid or by dehydrating vaporized alcohol over a catalyst selected from the group consisting of alumina and solid acid catalysts at a temperature from about the boiling point of the alcohol to about 400° C.; and

conducting a vapor phase reaction between the olefin and a third alcohol having Z carbon atoms wherein Z can be 1, 2 or 3 to form a dialkyl ether of the form R_1OR_2 wherein R_1 is an alkyl group having X+Y carbon atoms and wherein R_2 is an alkyl group having Z carbon atoms, said reaction occurring over a catalyst selected from the group consisting of medium pore zeolites and acid catalysts.

5,300,696

C4 REJECTION FOR ETHERIFICATION AND ISOMERIZATION PROCESS

Charles P. Luebke, Mount Prospect; Srikantiah Raghuram, Buffalo Grove, and Joseph E. Zimmermann, Arlington Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 29, 1992, Ser. No. 998,177

Int. Cl.[5] C07C *41/06, 5/22*

U.S. Cl. 568—697 **12 Claims**

1. A process for the production of methyl tertiary butyl ether (MTBE) from a mixed C_4 feedstream comprising butanes, normal butenes, and isobutene, and methanol, said process comprising:

(a) mixing at least a fraction of a feedstream comprising butanes, normal butenes and isobutene with methanol to produce a combined feed and contacting said combined feed with an etherification catalyst in an etherification zone at etherification conditions to react isobutene with said methanol and produce an etherification effluent stream comprising, methanol, MTBE, butanes, and normal butene isomers;

(b) passing a separation zone input stream comprising at least a portion of said etherification effluent stream to a first separation zone, withdrawing a high boiling first fraction comprising said ether from said separation zone, and a second fraction comprising methanol, butanes, normal butene isomers;

(c) recovering methanol from said second fraction and passing an adsorption feed comprising at least a portion of said second fraction to an adsorptive separation zone, contacting said adsorption feed with an adsorbent at adsorption conditions to separate said adsorption feed into a saturate stream comprising butane isomers and an isomerization zone feed comprising normal butenes and butane at a lesser concentration than said normal butenes;

(d) passing said isomerization zone feed to an isomerization reaction zone for the skeletal isomerization of normal butenes and contacting said isomerization zone feed with an isomerization catalyst at isomerization conditions;

(e) withdrawing an isomerization zone effluent stream comprising isobutene from said isomerization zone and passing at least a portion of said isomerization zone effluent to said etherification reaction zone to provide at least a portion of said etherification reaction zone feedstream; and,

(f) passing said feedstream into at least one of said etherification zone, said separation zone and said isomerization zone.

5,300,697

ONE STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING HYDROGEN FLUORIDE-MODIFIED ZEOLITE CATALYSTS

John F. Knifton, Austin, and John R. Sanderson, Leander, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 745,777, Aug. 16, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,193

Int. Cl.[5] C07C *41/09*

U.S. Cl. 568—698 **1 Claim**

1. In a method wherein t-butanol is reacted with methanol in one step in the presence of a catalyst to provide methyl tert-butyl ether (MTBE), the improvement comprising using as a catalyst a rare earth exchanged crystalline aluminosilicate faujasite-type Y-zeolite having a silica to alumina ratio of 1.5 to 3 modified with an aqueous solution of hydrogen fluoride of 1 to 30N, and continuously contacting said t-butanol and methanol in a molar amount of about 0.1 to 10 moles of methanol per mole of t-butanol with said catalyst at temperatures of 160° C. and 180° C. and a pressure of about atmospheric to about 1000 psig to obtain methyl tert-butyl ether product, wherein the product comprises a two-phase mix of an isobutylene-MTBE product-rich phase and a heavier aqueous methanol-rich phase.

5,300,698

PROCESS FOR THE PREPARTION OF 1,3,5-TRIS(4'-HYDROXYARYL)BENZENE

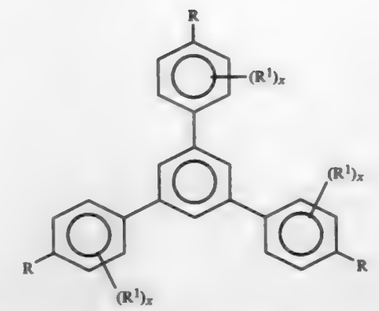
Mohammad Aslam, Corpus Christi, Tex., and William Basinger, Decatur, Ga., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 27, 1993, Ser. No. 68,460

Int. Cl.[5] C07C *39/16*

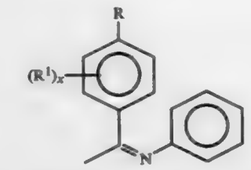
U.S. Cl. 568—720 **24 Claims**

1. A process for preparing a 1,3,5-tris(4'-hydroxyaryl)benzene compound of formula (I):



(I)

wherein R is hydroxy, R^1 is hydrogen, C_1–C_{12} alkyl, C_3–C_6 cycloalkyl, phenyl, halogen, nitro, or alkyl or aromatic sulfonyl, x is an integer from 1 to 4, and when x is greater than 1 each R^1 thereof can be the same or different, said process comprising reacting a substituted 4-hydroxyacetophenone-anil compound of formula (III):



(III)

wherein R, R^1 and x are as defined above, with an acid catalyst at about 150°–220° C. for about 0.25 to about 4 hours with water being continuously removed from the reaction, wherein compound III is present in at least three molar ratio quantities and is kept substantially anhydrous prior to said reaction, wherein said acid catalyst is present in a molar ratio range of about 1:4 to about 1:100 with respect to compound III, and wherein said catalyst is a salt of aniline or naphthylamine with said aniline or naphthylamine being substituted or unsubstituted in its aromatic ring, said substituents being selected from the group consisting of a C_1–C_6 alkyl, C_1–C_6 alkoxy and halo groups.

5,300,699

PROCESS FOR PREPARING BISPHENOL A OF GOOD HEAT STABILITY

Nobuo Moriya; Sachio Asaoka; Nobuyuki Suda; Susumu Yamamoto, all of Yokohama; Toshihiko Furukawa, Kitakyushu; Katsuhiko Sakura, Kitakyushu; Kiyoshi Hashimoto, Kitakyushu, and Nobuaki Egashira, Kitakyushu, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo and Chiyoda Corp., Yokohama, both of Japan

Filed Apr. 13, 1993, Ser. No. 45,206

Claims priority, application Japan, Apr. 20, 1992, 4-126773; Sep. 30, 1992, 4-283477

Int. Cl.[5] C07C *37/70, 39/16*

U.S. Cl. 568—724 **9 Claims**

1. A process for preparing bisphenol A of good heat stability which comprises heat-treating bisphenol A containing a very small amount of impurities in a molten state at 185° to 220° C. for 5 to 60 minutes in an oxygen-free atmosphere.

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5,300,700
PROCESS FOR THE PRODUCTION OF HIGH-PURITY BISPHENOL A
Georg Malamet; Hans-Peter Wirges; Claus Wulff, all of Krefeld, and Alfred Eitel, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Apr. 20, 1993, Ser. No. 48,219
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1992, 4213872
Int. Cl.[5] C07C *37/84, 39/16*
U.S. Cl. 568—724 **8 Claims**

1. A process for purifying bisphenol A from reaction solutions prepared by reacting phenol with acetone in the presence of acid catalysts, which comprises cooling the reaction solution to crystallize bisphenol into its 1:1 adduct with phenol, separating the adduct from the phenol mother liquor, adding to the separated adduct phenol in such quantity that the total phenol content is at least 40% by weight, purifying the resulting mixture by fractional melt crystallization, and separating the resulting adduct by distillation into bisphenol A and phenol.

5,300,701
PROCESS FOR THE PREPARATION OF POLYISOBUTYL HYDROXYAROMATICS
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.
Filed Dec. 28, 1992, Ser. No. 997,982
Int. Cl.[5] C07C *37/00*
U.S. Cl. 568—792 **14 Claims**

1. A process for the preparation of a polyisobutyl hydroxyaromatic compound which comprises alkylating a hydroxyaromatic compound in the presence of an acidic alkylation catalyst with a polyisobutene having a number average molecular weight in the range of about 300 to 5,000 and wherein the polyisobutene contains at least about 70% of a methylvinylidene isomer.

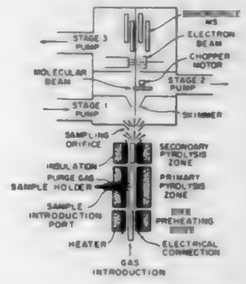
5,300,702
RECOVERING VALUES FROM HEAVY ENDS IN BISPHENOL-A PRODUCTION
David A. Perkins, and John E. Aiken, both of Monroeville, Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.
Filed Mar. 1, 1993, Ser. No. 24,122
Int. Cl.[5] C07C *37/74*
U.S. Cl. 568—724 **9 Claims**

1. Method of recovering values from a waste stream in the production of bisphenol-A by the reaction of phenol and acetone in a reaction zone, said waste stream having a composition comprising about 50–90% by weight p,p-bisphenol-A, about 5% to about 35%-o,p-bisphenol-A, about 0% to about 15% phenol, about 3% to about 15% 2,2,4-trimethyl-4-hydroxyphenyl-chroman and about 5% to about 30% other materials, comprising (a) introducing said waste stream into a thin-film evaporator to separate a heavy stream therefrom and recover at least about 70% of said waste stream in the form of a light stream, (b) introducing said light stream to a distillation tower to separate said light stream into (i) a fraction comprising at least about 70% p,p-BPA, (ii) a fraction comprising at least about 30% 2,2,4-trimethyl-4-hydroxyphenyl-chroman, and (iii) a fraction comprising phenol and at least about 40% o,P-BPA, and recovering the p,p-BPA values from stream (i).

5,300,703
ALKYLPHENOL SYNTHESIS USING HETEROPOLY ACID CATALYSTS
John F. Knifton, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.
Filed Apr. 5, 1993, Ser. No. 43,091
Int. Cl.[5] C07C *37/14*
U.S. Cl. 568—794 **7 Claims**

1. A one-step method for selective synthesis of para-nonylphenol which comprises reacting phenol with mixed nonenes under adiabatic conditions in the presence of a catalyst consisting essentially of a heteropoly acid from the group consisting of 12-tungstophosphoric acid, 12-tungstosilicic acid and 12-molybdosilicic acid, supported on an inert oxide selected from the group consisting of titanium dioxide, alumina and silica, as well as mixtures thereof, at a temperature of from 60° C. to 250° C. and a pressure of near atmospheric to about 500 psi.

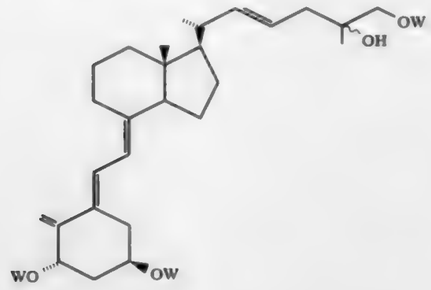
5,300,704
CONTROLLED CATALYTIC AND THERMAL SEQUENTIAL PYROLYSIS AND HYDROLYSIS OF MIXED POLYMER WASTE STREAMS TO SEQUENTIALLY RECOVER MONOMERS OR OTHER HIGH VALUE PRODUCTS
Robert J. Evans, Lakewood, and Helena L. Chum, Arvada, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.
Division of Ser. No. 711,546, Jun. 7, 1991, Pat. No. 5,216,149.
This application Dec. 4, 1992, Ser. No. 943,889
Int. Cl.[5] C07C *37/00, 37/52*
U.S. Cl. 568—806 **4 Claims**



1. A process of using fast pyrolysis in a carrier gas to convert a polystyrene and phenolics containing plastic waste feed stream having a mixed polymeric composition in a manner such that pyrolysis of a given polystyrene and phenolics and its high value monomeric constituent or derived high value products occurs prior to pyrolysis of other plastic components therein comprising:
a) selecting a first temperature program range of from about 250° to about 550° C. to cause pyrolysis of said given polystyrene and phenolics composition and its high value monomeric constituent prior to a temperature range that causes pyrolysis of other plastic component;
b) selecting an acid or base catalysts and an oxide or carbonate support and treating said feed stream with said catalyst to affect acid or base catalyzed reaction pathways to maximize yield or enhance separation of said high value monomeric constituent or high value product of said polystyrene and phenolics composition in said first temperature program range;
c) differentially heating said feed stream at a heat rate within said first temperature program range to provide differential pyrolysis for selective recovery of optimum quantities of said high value monomeric constituent or high value product of said polystyrene and phenolics composition prior to pyrolysis of other plastic components therein;
d) separating said high value monomer constituent or derived high value product from said polystyrene and phenolics;
e) selecting a second higher temperature program range of from about 350° to about 700° C. to cause pyrolysis to a different derived high value product of said plastic waste and differentially heating said feed stream at said second higher temperature program range to cause pyrolysis of said plastic into said different derived high value product; and
f) separating said different derived high value product.

5,300,705
PROCESS FOR THE PREPARATION OF 1α,25,26-TRIHYDROXY-22-ENE-CHOLECALCIFEROL
Masami Okabe, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Mar. 18, 1993, Ser. No. 32,905
Int. Cl.[5] C09J *9/00*; C07C *85/11, 35/08, 401/00*
U.S. Cl. 568—828 **12 Claims**

1. A compound of the formula



wherein W is hydrogen or the same or different oxygen protecting group.

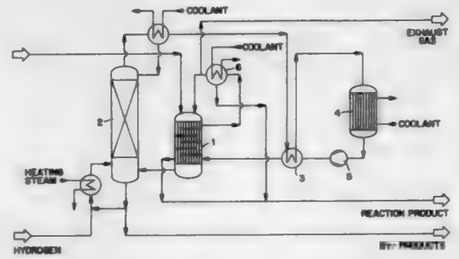
5,300,706
PROCESS FOR THE PREPARATION OF D,1-MENTHOL
Otto Immel; Gerhard Darsow, and Hans-Josef Buysch, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 10, 1993, Ser. No. 28,850
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1992, 4208443
Int. Cl.[5] C07C *29/00, 29/17*
U.S. Cl. 568—830 **20 Claims**

1. A process for the preparation of d,l-menthol by catalytic hydrogenation of aromatic or partly hydrogenated cyclic compounds which have the carbon skeleton of menthol having at least one double bond and are substituted by oxygen in the 3-position relative to the menthyl group, with simultaneous rearrangement of optically active or inactive stereoisomers of menthol, the amount of hydrogen per mol of starting material being at least 5 times the amount required for hydrogenation of a benzene nucleus and the reaction being carried out in the temperature range of 160° to 220° C. under a pressure of at least 25 bar, wherein the hydrogenation is carried out continuously on a fixed bed catalyst which comprises, as the active constituents, palladium, ruthenium, rhodium or a mixture of these elements, and which comprises, as promoters, one or more members of the group consisting of alkali metal hydroxides and alkali metal sulphates, and the support of which comprises one or more rare earth metals and maganese.

5,300,707
CATALYSTS FOR THE GASEOUS PHASE OXIDATION OF OLEFINS INTO α,β-UNSATURATED ALDEHYDES
Jack Caillod, Taverny; Philippe Jaeger, Salindres, and Olivier Legendre, Herblay, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France
Division of Ser. No. 811,128, Dec. 20, 1991, Pat. No. 5,225,389.
This application Mar. 9, 1993, Ser. No. 28,141
Claims priority, application France, Dec. 20, 1990, 90/16388
Int. Cl.[5] C07C *45/35, 45/32*
U.S. Cl. 568—480 **11 Claims**

1. In a process for the catalytic oxidation of an olefin into an α,β-unsaturated aldehyde which process employs an oxidizing agent, the improvement which comprises, as the catalyst therefor, a catalyst composition comprising a particulate support substrate uniformly coated with 15% to 33% by weight of an adherent layer of a catalytically active phase, such support substrate comprising inert and solid spheres having a diameter ranging from 0.5 to 6 mm, said catalytically active phase comprising a catalytically effective amount of bismuth and iron molybdate, and, optionally, at least one catalytically effective metal or non metal, and dopant amounts of phosphorus and potassium, with said phosphorus and said potassium each being present in said catalytically active phase in an atomic quantity ranging from 0.005 to 0.06 per 12 atoms of molybdenum, or of molybdenum plus any tungsten present therein.

5,300,708
PROCESS FOR THE CATALYTIC HYDROGENATION OF ORGANIC COMPOUNDS IN THE GAS PHASE
Wolfgang Hofs, Obeerhausen, and Thomas Muller, Dinslaken, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Jun. 23, 1993, Ser. No. 81,682
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1992, 4220783
Int. Cl.[5] C07C *29/141, 31/20*; F16F *1/34*
U.S. Cl. 568—853 **7 Claims**



1. A process for catalytic hydrogenation of an organic compound in a gas phase, said organic compound being mixed with recycle gas containing hydrogen, said process comprising warming said compound and said recycle gas from their starting temperatures to an intermediate temperature in a first heat exchange zone, introducing additional hydrogen into said compound and said recycle gas to form a starting material, heating said starting material from said intermediate temperature to a reaction temperature in a second heat exchange zone, introducing said starting material into a reaction zone at said reaction temperature, wherein said organic compound is hydrogenated to a reaction product, thereby forming circulating gas which includes said reaction product, said organic compound, and hydrogen, withdrawing said circulating gas from said reaction zone, compression of said circulating gas without prior cooling thereof, passing said circulating gas through said second heat exchange zone, whereby said circulating gas transfers heat to said starting materials, to cool said circulating gas and to cause said heating, passing partially cooled said circulating gas through said first zone whereby said circulating gas causes said warming and is further cooled to cause said circulating gas to form a liquid phase, containing said reaction product, and a gas phase, comprising said recycle gas, and blending said recycle gas with said compound.

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5,300,709

PROCESS FOR WORKING UP A HYDROGEN FLUORIDE PHASE FROM A FLUORINATION REACTION MIXTURE

Johannes Eicher, Garbsen; Werner Rudolph, Hanover, and Bernhard Schulte, Bad Rappenau, all of Fed. Rep. of Germany, assignors to Solvay Fluor and Derivate GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 11, 1993, Ser. No. 3,001

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1992, 4200792

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—164 8 Claims

1. A process for working up a hydrogen fluoride phase recovered from a reaction mixture from a fluorination reaction, said process comprising contacting the hydrogen fluoride phase with oleum at a temperature of from 160° C. to 200° C. in order to separate water, and recycling the resulting hydrogen fluoride to the fluorination reaction.

5,300,710

PROCESS FOR THE MANUFACTURE OF 2-CHLORO-1,1,1,2-TETRAFLUOROETHANE AND PENTAFLUOROETHANE

David R. Corbin, West Chester, Pa., and V. N. Mallikarjuna Rao, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1991, Ser. No. 672,870

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—168 17 Claims

1. A process for producing at least one compound selected from the group consisting of 2-chloro-1,1,1,2-tetrafluoroethane and pentafluoroethane comprising the step of reacting a pentahaloethane starting material of the formula $C_2HCl_{5-x}F_x$ wherein x is an integer from 0 to 3 with HF in the gaseous phase at an elevated temperature in the presence of a supported metal catalyst; wherein said catalyst is a catalyst of metal fluoride on a fluorinated alumina support having an atomic ratio of F to Al at least 2.7:1 and containing β-aluminum fluoride; wherein said supported metal includes zinc and optionally includes one or more other metals selected from Groups VIII, VIIB, VIB, IIIB, IIB and IB of the Periodic Table and elements having atomic numbers between 57 and 71; and wherein zinc is at least about 0.1 percent by weight of the catalyst and is at least about 40 percent by weight of the metal on said support.

5,300,711

PROCESS FOR THE MANUFACTURE OF 2,2-DICHLORO-1,1,1-TRIFLUOROETHANE, 2-CHLORO-1,1,1,2-TETRAFLUOROETHANE AND PENTAFLUOROETHANE

David R. Corbin, West Chester, Pa., and V. N. Mallikarjuna Rao, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1991, Ser. No. 672,874

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—168 12 Claims

1. A process for producing at least one compound selected from the group consisting of 2,2-dichloro-1,1,1-trifluoroethane, 2-chloro-1,1,1,2-tetrafluoroethane and pentafluoroethane comprising the step of reacting a tetrahaloethylene of the formula C_2X_4 wherein each X is chlorine or fluorine, with HF in the gaseous phase at an elevated temperature in the presence of a supported metal catalyst; wherein said catalyst is a catalyst of metal fluoride on a fluorinated alumina support having an atomic ratio of F to Al of at least 2.7:1 and containing β-aluminum fluoride; wherein said supported metal includes zinc and optionally includes one or more other metals selected from Groups VIII, VIIB, VIB, IIIB, IIB and IB of the Periodic Table and elements having atomic numbers between 57 and 71; and wherein zinc is at least about 0.1 percent by weight of the catalyst and is at least about 40 percent by weight of the metal on said support.

5,300,712

HOMOGENEOUS CATALYTIC HYDRODECHLORINATION OF CHLOROCARBONS

Ralph T. Baker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1993, Ser. No. 68,499

Int. Cl.[5] C07C *17/10*

U.S. Cl. 570—176 9 Claims

1. A liquid phase process for the preparation of R_fCHCl_2 by the selective homogeneous catalytic hydrodechlorination of a compound having the formula R_fCCl_3 wherein R_f is F, CF_3, $(CF_2)_nCl$ or $(CF_2)_nCF_3$, and n is 1–4 which comprises reacting the compound with hydrogen while in solution with a Periodic Table Group 8–10 metal complex hydrodechlorination catalyst without added base, to form R_fCHCl_2, wherein the Group 8–10 metal is selected from the group consisting of Fe, Ru, Os, Co, Rh, Ir, Ni, Pd or Pt, with a tertiary Periodic Table Group 15 ligand selected from the group consisting of phosphine, arsine, stibine, and bismuthine.

5,300,713

HYDROGENOLYSIS OF HALOCARBON MIXTURES

William H. Manogue, Newark, and V. N. M. Rao, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 682,764, Apr. 9, 1991, Pat. No. 5,208,397. This application Dec. 29, 1992, Ser. No. 998,005

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] C07C *19/08*

U.S. Cl. 570—176 26 Claims

1. A process for the hydrogenolysis of a mixture of halocarbon starting materials having the formula $C_nH_mF_pX_q$ wherein X is Cl or Br, n is an integer from 2 to 4, m is an integer from 0 to 8, p is an integer from 1 to 9, and q is an integer from 1 to 9 provided that m+p+q equals 2n+2, wherein the distribution of fluorine substituents on the carbon atoms of a first halocarbon starting material in said mixture is different from the distribution of fluorine substituents on the carbon atoms of a second halocarbon starting material in said mixture, comprising the step of: contacting said mixture with at least 0.5 mole of hydrogen per mole of said halocarbon starting materials in said mixture undergoing hydrogenolysis, in a reaction vessel of aluminum, molybdenum, titanium, nickel, iron, cobalt, or their alloys or of silicon carbide, which is either empty or is packed with particles or formed shapes of aluminum, molybdenum, titanium, nickel, iron, cobalt, or their alloys or silicon carbide or low surface area carbon at a pressure within the range of from 0 psig to 1000 psig, at a temperature within the range of from 500° C. to 700° C. and for a time sufficient to produce a product mixture containing hydrogenolysis product of said first halocarbon starting material wherein at least one X of said first halocarbon starting material has been replaced by a hydrogen atom and the distribution of fluorine substituents on the carbon atoms is the same as the distribution of fluorine substituents on the carbon atoms in said first halocarbon starting material, containing hydrogenolysis product of said second halocarbon starting material wherein at least one X of said second halocarbon starting material has been replaced by a hydrogen atom and the distribution of fluorine substituents on the carbon atoms is the same as the distribution of fluorine substituents on the carbon atoms in said second halocarbon starting material, and having a molar ratio of said hydrogenolysis product of the first halocarbon starting material to said hydrogenolysis product of the second halocarbon starting material substantially equal to the molar ratio of said first halocarbon starting material to said second halocarbon starting material in said mixture of halocarbon starting materials; said molar ratio of said first halocarbon starting material to said second halocarbon starting material being between about 1:99 and 99:1.

5,300,714

METHOD OF PURIFYING SATURATED FLUOROPERHALOCARBON LIQUIDS

Venkateswarlu Pothapragada, St. Paul; Donald F. Hagen, Woodbury; Robert B. Fletcher, St. Paul, and Frederick E. Behr, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 525,976, May 18, 1990, abandoned. This application Apr. 15, 1991, Ser. No. 685,813

Int. Cl.[5] B01D *15/00*

U.S. Cl. 570—179 18 Claims



1. A method of removing olefinic impurity, wherein said olefinic impurity comprises perfluoroolefin or perfluorochloroolefin compounds or mixtures thereof, from fluoroperhalocarbon liquid comprising the step of contacting the fluoroperhalocarbon liquid with a body of particles comprising particles selected from the group consisting of alumina, alkali metal oxide, alkali metal hydroxide, alkaline earth oxide, alkaline earth hydroxide, silicon oxide, tin oxide, zinc oxide, alkaline earth basic carbonate, and alkaline earth basic phosphate particles and mixtures thereof.

5,300,715

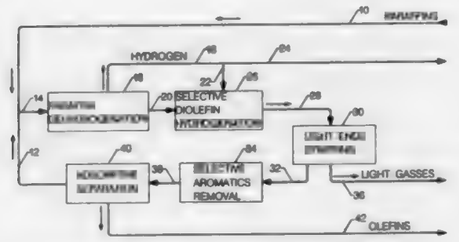
OLEFIN PROCESS WITH REMOVAL OF AROMATIC BY-PRODUCTS

Bipin V. Vora, Darien, Ill., assignor to UOP, Des Plaines, Ill.

Filed Oct. 9, 1992, Ser. No. 958,842

Int. Cl.[5] C07C *5/00*

U.S. Cl. 585—254 23 Claims



1. In a process for the production of monoolefinic hydrocarbons by:

(a) passing a feed stream comprising at least one C_4 to C_{20} feed paraffinic hydrocarbon into a dehydrogenation zone to dehydrogenate the entering feed paraffinic hydrocarbon to a monoolefinic hydrocarbon and recovering therefrom a dehydrogenation zone effluent stream comprising light hydrocarbons, aromatic by-products, feed paraffinic hydrocarbons, and monoolefinic hydrocarbons corresponding in carbon number to said feed paraffinic hydrocarbon;

(b) passing said dehydrogenation zone effluent stream into a stripping zone to strip the entering light hydrocarbons from said dehydrogenation zone effluent stream and recovering therefrom a stripped dehydrogenation zone effluent stream comprising feed paraffinic hydrocarbons and monoolefinic hydrocarbons;

(c) passing said stripped dehydrogenation zone effluent stream into a monoolefinic separation zone to concentrate the entering monoolefinic hydrocarbons and recovering therefrom a product stream having a first concentration of monoolefinic hydrocarbon and a monoolefin separation zone effluent stream having a second concentration of monoolefinic hydrocarbon that is less than said first concentration;

(d) recycling at least a portion of said monoolefin separation zone effluent stream to said dehydrogenation zone; and

(e) withdrawing said product stream from said process;

the improvement comprising selectively removing at least a portion of said aromatic by-products from at least one of said dehydrogenation zone effluent stream, said stripped dehydrogenation zone effluent stream, and said monoolefin separation zone effluent stream in at least one aromatics removal zone and thereby reducing the concentration of aromatic by-products in said stripped dehydrogenation zone effluent stream to a level no more than about 0.5 weight percent.

5,300,716

PROCESS FOR THE PREPARATION OF POLYUNSATURATED OLEFINS

Christian Chapuis, Mies, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Filed Sep. 6, 1991, Ser. No. 755,719

Claims priority, application Switzerland, Oct. 3, 1990, 3181/90

Int. Cl.[5] C07C *5/05, 2/02*

U.S. Cl. 585—277 9 Claims

1. Process for the preparation of undeca-1,3E,5Z-triene, comprising the following consecutive steps:

a. converting deca-1,4-diyne into a N,N-disubstituted undeca-2,5-diynyl-amine by treating said deca-1,4-diyne with formaldehyde and a secondary amine; followed by

b. reducing the thus obtained compound by catalytic hydrogenation to give a N,N-disubstituted undeca-2Z,5Z-dienyl-amine; and

c. quaternarizing the N,N-disubstituted undeca-2Z,5Z-dienyl-amine by an alkyl halide or an alkyl sulfate to form an ammonium salt, followed by treating the ammonium salt with a base to obtain the desired undeca-1,3E,5Z-triene.

5,300,717

PROCESS FOR THE PREPARATION OF DIXYLYLPROPANE

Freimund Röhrscheid, Kelkheim/Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 8, 1993, Ser. No. 44,584

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1992, 4212055

Int. Cl.[5] C07C *2/00, 2/68, 2/70*

U.S. Cl. 585—320 14 Claims

1. A process for the preparation of dixylylpropane from o-xylene and propene, which comprises

a) reacting o-xylene with propene in the presence of a Friedel-Crafts catalyst to give 1,2-dimethyl-4-isopropylbenzene,

b) catalytically dehydrogenating 1,2-dimethyl-4-isopropylbenzene, to give 1,2-dimethyl-4-isopropenylbenzene,

c) reacting a chlorinatable reactant comprising 1,2-dimethyl-4-isopropenylbenzene with hydrogen chloride to give 1,2-dimethyl-4α-chloroisopropyl)benzene and

d) condensing a condensable reactant comprising 1,2-dimethyl-4-(α-chloroisopropyl) benzene with o-xylene to give dixylylpropane.

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5,300,718

OLEFIN CONVERSION PROCESS

Michael W. McCaulley, Houston, Tex., assignor to Lyondell Petrochemical Company, Houston, Tex.

Continuation of Ser. No. 839,656, Feb. 20, 1992, abandoned, which is a division of Ser. No. 750,426, Aug. 19, 1991, Pat. No. 5,120,894, which is a continuation of Ser. No. 246,463, Sep. 19, 1988, abandoned. This application Jan. 29, 1993, Ser. No. 11,126

Int. Cl.[5] C07C *1/00, 2/00, 4/00, 5/00*

U.S. Cl. 585—324 **2 Claims**

1. A process comprising:

providing a mixed C_4 stream comprising butene-1, butene-2, isobutene, butadiene and butanes;

introducing said mixed C_4 stream into an etherification zone;

reacting at least a portion of said isobutene with an alcohol in said etherification zone to form an ether;

separating the thus formed ether from the mixed C_4 stream to form a deisobutenized stream further containing residual alcohol and ether;

contacting the deisobutenized stream with a butadiene selective solvent and forming an extract stream containing butadiene and a debutadienized raffinate stream;

contacting the raffinate stream with an adsorbent material to remove the residual alcohols and ethers and form a deoxygenated stream;

contacting the deoxygenated stream with a catalyst bed consisting essentially of an olefin isomerization catalyst under conditions to increase the concentration of butene-2 in said stream and to decrease the concentration of butene-1 in said stream and form an isomerizate stream; and

contacting the isomerizate stream together with ethylene in the presence of a disproportionation catalyst to form propylene.

5,300,719

DEHYDROCYCLIZATION OF UNSATURATED HYDROCARBONS TO AROMATIC PRODUCTS

Ronald W. Diesen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 9, 1992, Ser. No. 911,239

Int. Cl.[5] C07C *2/76, 5/367*

U.S. Cl. 585—417 **10 Claims**

1. A process to produce ethylbenzene or styrene or mixtures thereof which comprises contacting a moving feedstream containing butadiene or 4-vinylcyclohexene or both with a catalyst in the gas phase under conditions effective to convert at least a portion of the butadiene or 4-vinylcyclohexene or both to ethylbenzene or styrene or mixtures thereof, wherein the catalyst is selected from the group consisting of magnesium oxide and zinc oxide and wherein the products contain less than 5 mole percent of xylene.

5,300,720

ZEOLITE L USE IN DEHYDROCYCLISATION AND ISOMERISATION

Johannes P. Verduijn, Spijkenisse, and Pieter E. Gellings, Oostvoorne, both of Netherlands, assignors to Exxon Research & Engineering, Linden, N.J.

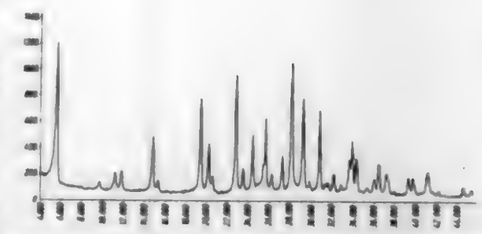
Division of Ser. No. 160,362, Feb. 25, 1988, Pat. No. 4,894,214. This application Nov. 30, 1989, Ser. No. 443,987

Claims priority, application United Kingdom, Feb. 25, 1987, 8704365; Jun. 4, 1988, 8800051

Int. Cl.[5] C07C *5/22*

U.S. Cl. 585—419 **28 Claims**

1. A process for the dehydrocyclisation and/or isomerization of an aliphatic hydrocarbon in which the aliphatic hydrocarbon is contacted at a temperature of from 370° C. to 600° C. with a catalyst substantially free of pollucite, said catalyst comprising a catalytically active metal and a zeolite L containing caesium in which said zeolite L has been crystallized from a synthesis mixture with a molar composition (expressed as oxides) of:



K_2O/SiO_2	0.15 to 0.40
K_2O/Cs_2O	3 to 10
H_2O/K_2O	40 to 100
and	
SiO_2/Al_2O_3	7 to 13

and containing at least 0.5 ppm (by weight) of divalent metal cations in an effective amount to obtain substantially only zeolite L, so as to convert at least part of the aliphatic hydrocarbon into an aromatic hydrocarbon.

5,300,721

METHOD FOR SEPARATING 2,6-DIETHYLNAPHTHALENE

Genki Takeuchi; Kazuyoshi Kariu, and Mitsuru Shiroshita, all of Kitakyushu, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,177

Claims priority, application Japan, Aug. 27, 1990, 2-222574

Int. Cl.[5] C07C *2/64, 7/00, 7/12*

U.S. Cl. 585—451 **6 Claims**

2. A process for preparing 2,6-diethylnaphthalene comprising:

A. ethylating naphthalene with at least one ethylating agent selected from the group consisting of ethylene, ethanol, ethyl halides and polyethylbenzenes, thus forming a reaction mixture;

B. distilling said reaction mixture to obtain a distillate mixture containing mainly diethylnaphthalene, said mixture containing at least 2,6-diethylnaphthalene and 2,7-diethylnaphthalene;

C. contacting said distillate mixture with a Y-zeolite adsorbent, which has been ion-exchanged with one or more cations selected from the group consisting of barium, potassium and sodium;

D. selectively adsorbing at least 2,7-diethylnaphthalene onto said Y-zeolite adsorbent;

E. separating said Y-zeolite adsorbent from an unadsorbed phase;

F. desorbing said 2,7-diethylnaphthalene from said Y-zeolite adsorbent by use of one or more desorbent compounds selected from the group consisting of toluene, p-xylene, ethylbenzene, m-diethylbenzene and p-diethylbenzene; and

G. recovering diethylnaphthalenes rich in 2,6-diethylnaphthalene from said unadsorbed phase.

5,300,722

OXYGEN-FREE AROMATIC ALKYLATION PROCESS

Edward F. Steigelmann; Maribeth B. Amundsen; Ken Tadano, all of Naperville, and Allen I. Feinstein, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Dec. 27, 1990, Ser. No. 634,769

Int. Cl.[5] C07C *2/58*

U.S. Cl. 585—467 **26 Claims**

11. An aromatic alkylation process comprising the steps of:

(a) purging a reactor vessel having a silica-containing molecular sieve catalyst disposed therein with an oxygen-free inert purge gas to reduce oxygen concentration in the reactor to less than about 0.1 ppm;

(b) continuously feeding an aromatic hydrocarbon having an oxygen concentration of less than about 0.1 ppm into said reactor vessel;

(c) continuously feeding an alkylating agent into said reactor vessel;

(d) contacting said aromatic hydrocarbon with said alkylating agent in said reactor vessel in the presence of said silica-containing molecular sieve catalyst under liquid phase alkylation conditions; and

(e) recovering an alkyl-substituted aromatic product from said reactor vessel.

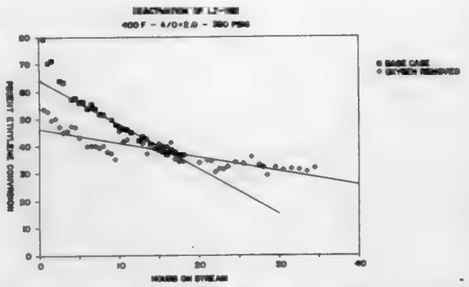
22. An aromatic alkylation process comprising the steps of:

(a) purging a reactor vessel having an alkylation catalyst comprising beta zeolite in an alumina matrix with a purge stream consisting essentially of nitrogen to reduce oxygen concentration in the reactor to less than about 0.1 ppm;

(b) continuously feeding an aromatic hydrocarbon to reduce oxygen concentration in the reactor to less than about 0.1 ppm, said aromatic hydrocarbon having an oxygen concentration of less than about 0.1 ppm, said aromatic hydrocarbon further having at least one member selected from the group consisting of benzene, toluene, xylenes, and C_9 hydrocarbons into said reactor vessel;

(c) continuously feeding an olefinic hydrocarbon having an oxygen concentration of less than about 0.1 ppm and comprising ethylene and propylene into said reactor vessel;

(d) contacting said aromatic hydrocarbon with said olefinic hydrocarbon in said reactor vessel in the presence of said



alkylation catalyst under liquid phase alkylation conditions;

(e) recovering an alkyl-substituted aromatic product from said reactor vessel.

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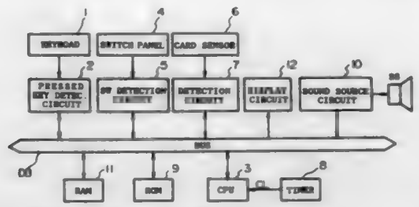
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5,300,723

ELECTRONIC MUSICAL INSTRUMENT

Mikio Ito, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 20, 1991, Ser. No. 811,025
Claims priority, application Japan, Dec. 28, 1990, 2-416357; Jan. 9, 1991, 3-012741; Jan. 9, 1991, 3-012742
Int. Cl.[5] G09B *15/04;* G10H *1/18, 1/36*
U.S. Cl. 84—601 10 Claims



7. A music training apparatus comprising:

detachable memory means for storing a plurality of groups each of which including automatic performance data for automatic performance and specific data corresponding to said automatic performance data;

extraction means for extracting one of the plurality of groups stored in said detachable memory means;

playing means for playing the automatic performance based on the automatic performance data extracted by said extraction means;

a plurality of operation elements each of which outputs operation element data in accordance with a selection operation;

display means for displaying a plurality of visual data corresponding to said plurality of operation elements; and

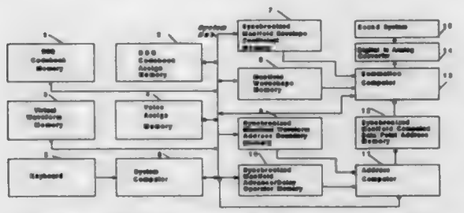
decision means for comparing specific data extracted by said extraction means with operation element data indicated by said operation elements, and for deciding whether or not there is coincidence thereinbetween.

5,300,724

REAL TIME PROGRAMMABLE, TIME VARIANT SYNTHESIZER

Mark Medovich, 4875 Edsal Dr., Lyndhurst, Ohio 44124

Continuation of Ser. No. 742,504, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 390,715, Jul. 28, 1989, abandoned.
This application Dec. 15, 1992, Ser. No. 991,472
Int. Cl.[5] G10H *1/057, 7/02*
U.S. Cl. 84—604 4 Claims



1. A time variant tone generating device; comprising:

virtual memory means for storing unique waveform data, pitch deviation data, amplitude envelope data, and waveform address boundary data;

first processing means for transferring said pitch deviation data and said waveform address boundary data from said virtual memory means to a second processing means, for transferring said unique waveform data from said virtual memory means to a first memory means accessible by said first processing means and a thrid processing means, and for transferring amplitude envelope data to said thrid processig means;

said second processing means including means for determining waveform data points in said first memory means to be accessed by said third processing means based on said waveform address boundary data and said pitch deviation data;

said third processing means including means for accessing said waveform data points in said first memory means, for scaling said waveform data points based on said amplitude envelope data, and for summing scaled waveform data points; and

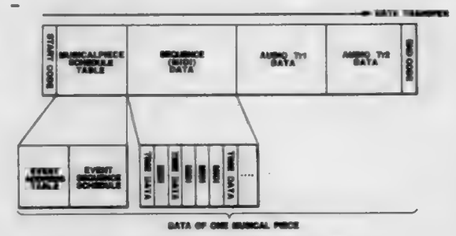
a digital to analog converter for converting said summed waveform data points to a time variant output signal.

5,300,725

AUTOMATIC PLAYING APPARATUS

Hajime Manabe, Higashiyamato, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,411
Claims priority, application Japan, Nov. 21, 1991, 3-306228
Int. Cl.[5] G10H *1/00*
U.S. Cl. 84—609 9 Claims



1. An automatic playing apparatus comprising:

audio data storing means for storing audio data;

sequence data storing means for storing sequence data;

schedule table storing means for storing a schedule table which defines a schedule for reproduction of the audio data stored in said audio data storing means and the sequence data stored in said sequence data storing means;

reading means for reading out the audio data from said audio data storing means and the sequence data from said sequence data storing means in accordance with the schedule table stored in said schedule table storing means;

converting means for converting the audio data read out by said reading means into an audio signal; and

musical tone generating means for generating corresponding musical tones in accordance with the sequence data read out by said reading means.

5,300,726

ELECTRONIC RHYTHM INSTRUMENT WITH TONE PITCH AND TONE VOLUME CONTROL

Hiromu Miyamoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

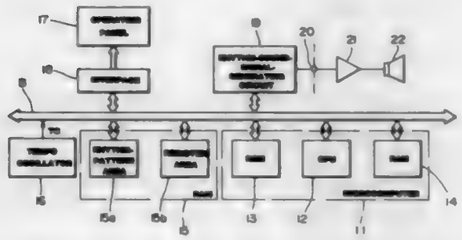
Continuation of Ser. No. 443,463, Nov. 29, 1989, abandoned.
This application Sep. 20, 1991, Ser. No. 762,805
Claims priority, application Japan, Nov. 30, 1988, 63-303552
Int. Cl.[5] G10H *1/40*
U.S. Cl. 84—611 16 Claims

1. An electronic rhythm instrument having a plurality of rhythm switches which correspond to a plurality of rhythmical sounds, said electronic rhythm instrument generating the rhythmical sound corresponding to the rhythm switch operated, siad electronic rhythm instrument comprising:

rhythm-sound-setting means for setting one of said plurality of rhythmical sounds in such a manner that said set rhythmical sound is common to at least two of said plurality of rhythm switches;

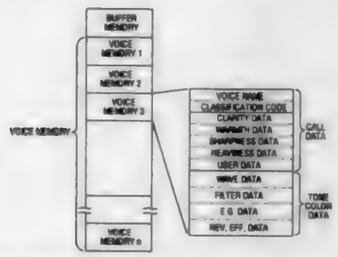
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primary-mode-setting means for setting a primary mode of operation of said electronic rhythm instrument;
secondary-mode-setting means for setting a secondary mode of operation of said electronic rhythm instrument;
assigning means including a tone pitch control data assigning means for assigning a tone pitch of a series of tone pitches to each of said at least two rhythm switches, when said primary mode is detected;
means for shifting equally all of said series of tone pitches an arbitrary pitch amount, so that the assigned tone pitch is shifted by said arbitrary pitch amount;



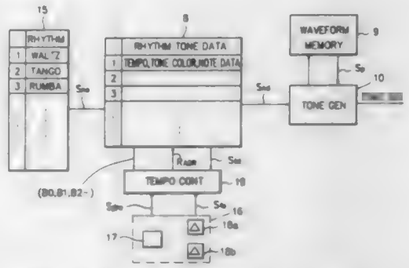
rhythm-sound generating means for generating said set rhythmical sound having said assigned tone pitch corresponding to an operated rhythm switch from among said at least two rhythm switches, when said secondary mode is selected;
means for storing reference data indicative of a specific tone pitch;
means for comparing said stored reference data with said assigned tone pitch; and
means for providing an indication when said assigned tone pitch is greater than said reference data.

5,300,727
ELECTRICAL MUSICAL INSTRUMENT HAVING A TONE COLOR SEARCHING FUNCTION
Ichiro Ouuga, and Masahiro Shimizu, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Aug. 6, 1992, Ser. No. 926,337
Claims priority, application Japan, Aug. 7, 1991, 3-198108
Int. Cl.[5] G09B *15/04;* **G10H** *1/06*
U.S. Cl. 84—622 **11 Claims**



5. An electronic musical instrument capable of reproducing plural musical voices, comprising:
voice memory means for storing plural units of voice data, each of said plural units of voice data corresponding to one of said plural musical voices and including call data and tone color data, said call data representing degrees of one or more voice characteristics and said tone color data for reproducing said corresponding one of said plural musical voices; and
search means for searching said call data to determine one of said plural musical voices having a desired tone color, said search means including means for designating a range of a degree of said one or more voice characteristics and means for comparing said call data with said range to determine said call data having a degree which is included in said range.

5,300,728
METHOD AND APPARATUS FOR ADJUSTING THE TEMPO OF AUTO-ACCOMPANIMENT TONES AT THE END/BEGINNING OF A BAR FOR AN ELECTRONIC MUSICAL INSTRUMENT
Yoshihisa Shimada, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan
Filed Aug. 21, 1992, Ser. No. 933,197
Claims priority, application Japan, Sep. 4, 1991, 3-253061
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—636 **5 Claims**

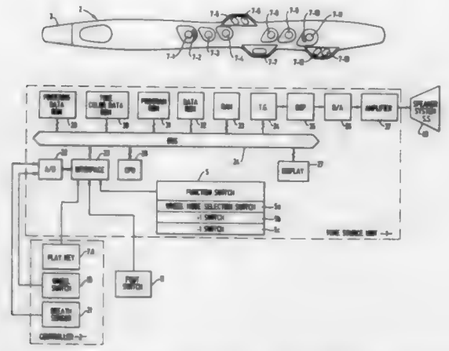


1. An auto-accompaniment apparatus comprising:
an auto-play data memory means for storing auto-accompaniment data in units of bars, the auto-accompaniment data having different tempo data for different kinds of rhythm;
waveform memory means for storing a plurality of tone generating waveform data corresponding to the auto-accompaniment data stored in said auto-play data memory means;
tone generator means for reading out tone generation waveform data from said waveform memory means on the basis of the auto-accompaniment data read out from said auto-play data memory, and outputting the readout waveform data as tone signals;
tempo setting means for setting a replacement tempo for a current tempo to modify or change a reading speed of the auto-accompaniment data from said auto-play data memory means; and
tempo controller means for detecting an end of a bar in the current tempo in response to initiation of said tempo setting means and changing a current tempo to the replacement tempo set by said tempo setting means such that the tempo of the auto-accompaniment data is not changed in the middle of a bar.

5,300,729
ELECTRONIC MUSICAL INSTRUMENT HAVING OPERATOR WITH SELECTIVE CONTROL FUNCTION
Shoji Tokunaga, and Harada Minoru, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Jun. 19, 1990, Ser. No. 540,589
Claims priority, application Japan, Jun. 19, 1989, 1-156481; Jun. 19, 1989, 1-156482; Jun. 19, 1989, 1-156483
Int. Cl.[5] G10H *5/00;* **H02M** *1/00*
U.S. Cl. 84—657 **14 Claims**

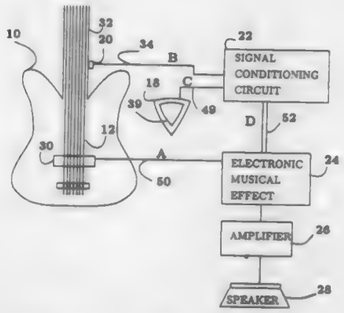
9. The electronic musical instrument according to claim 8, further comprising comparing means for detecting the difference between a reference scale and the scale to be transposed

and, wherein the shifting means shifts a scale to be transposed within a predetermined range to settle the difference between



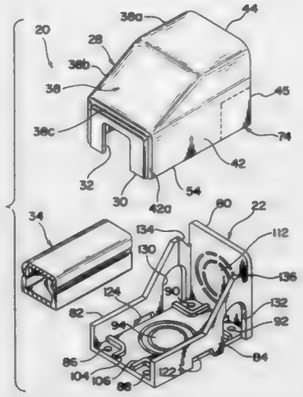
the reference scale and the scale to be transposed as detected by the comparing means.

5,300,730
DEVICE FOR CONTROLLING MUSICAL EFFECTS ON A GUITAR
Ira B. Ekhaus, 9 Cross St., Belmont, Mass. 02115
Filed Dec. 7, 1992, Ser. No. 986,227
Int. Cl.[5] G10D *3/16*
U.S. Cl. 84—734 **7 Claims**



1. A musical device, comprising:
a guitar with a neck and a plurality of strings;
pick-up means for producing an electrical output signal related to the frequency and amplitude of vibration of at least one of said strings;
electronic musical effect generating means receptive of the electronic output signal for altering the frequency and amplitude thereof to produce a musical effect;
first sensing means comprising a strain gauge assembly disposed on the guitar neck for sensing strain on a plurality of axes on the guitar neck, during use of the guitar;
a pick manually actuatable by a user for initiating a note on the guitar;
second sensing means for sensing manual actuation pressure on said pick;
third sensing means comprising a strain gauge assembly for sensing strain on a plurality of axes on said pick and generating a plurality of control signals corresponding to structural deflections generated during use of said pick;
and control means responsive to outputs of said first, second and third sensing means for effecting an alteration in the electronic musical effect generating means in response to actuation pressure and strain.

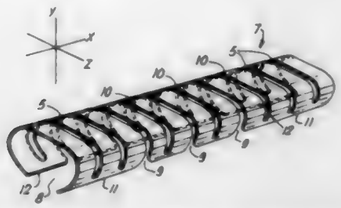
5,300,731
CONDUIT ADAPTER ASSEMBLY
Joseph V. DeBaratolo, Jr., North Stonington, and Gust J. Wuorinen, Ledyard, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed Apr. 2, 1992, Ser. No. 862,063
Int. Cl.[5] H02G *3/04*
U.S. Cl. 174—48 **39 Claims**



1. A conduit adapter assembly adapted to be coupled at an inside corner between a first mounting surface and a second mounting surface, the combination comprising:
a base having a rear wall adapted to be fixedly coupled to a first mounting surface and located adjacent a second mounting surface non-coplanar to the first mounting surface;
a cover adapted to be coupled to said base;
at least two conduits with a first of said conduits having a first mounting portion being adapted to be fixedly coupled to the first mounting surface and a second of said conduits having a second mounting portion being adapted to be coupled to the second mounting surface non-coplanar to the first mounting surface; and
coupling means, associated with said cover and said base, for coupling said cover to said base to form an enclosure having first and second opposite ends with a pair of opposite side walls extending between said first and second opposite ends, said opposite side walls having first end edges extending immediately adjacent and parallel to the second mounting surface,
said first end of said enclosure having an end wall adapted to engage the second mounting surface, said rear wall being coplanar with said first mounting portion of said first conduit and said end wall being coplanar with said second mounting portion of said second conduit,
said second end of said enclosure having means for defining a first opening lying in a plane substantially perpendicular to the first mounting surface, and said first opening being positioned immediately adjacent and communicating with the first mounting surface to receive said first conduit lying substantially flat on the first mounting surface, and
at least one of said pair of opposite side walls having conduit receiving means for defining a second opening lying in a plane substantially perpendicular to the plane of said first opening, said second opening being positioned immediately adjacent the second mounting surface and communicating with one of said first end edges of one of said opposite side walls to receive said second conduit lying substantially flat on the second mounting surface.

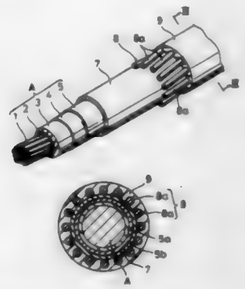
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5,300,732
ENVIRONMENTAL SEAL
Alain Wambeke, Zoutleeuw, and Jean-Marie E. Nolf, Korbeek-Lo, both of Belgium, assignors to Raychem Corporation, Menlo Park, Calif.
PCT No. PCT/GB90/01340, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/03854, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 30, 1990, Ser. No. 836,350
Claims priority, application United Kingdom, Sep. 4, 1989, 8919977
Int. Cl.[5] H02G *3/04*; F16L *11/00*
U.S. Cl. 174—92 **18 Claims**



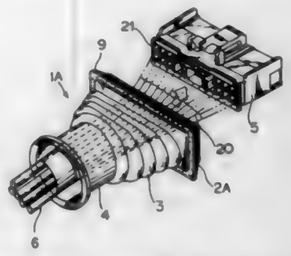
1. An assembly capable of sealing an elongate substrate that is curved or angled along its length, which comprises:
(a) a heat-shrinkable wraparound sleeve having closure rails adjacent opposing longitudinal edges thereof which can be held together by positioning a closure member thereover to maintain the sleeve in the wrapped-around configuration during heat-shrinkage; and
(b) said closure member, which comprises an elongate channel of sheet material substantially C-shaped in transverse cross-section having transverse first and second slits therein that extend substantially entirely across its width, respective first and second slits extending through a respective longitudinal edge, and giving the channel flexibility in two mutually perpendicular planes.

5,300,733
WATER IMPERVIOUS RUBBER OR PLASTIC INSULATED POWER CABLE
Tadayuki Uematsu, Peachtree City, Ga., assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Nov. 30, 1992, Ser. No. 984,201
Int. Cl.[5] H01B *7/18*
U.S. Cl. 174—106 SC **16 Claims**



1. A water impervious insulated power cable comprising:
a cable core including a conductor, an extruded conductor shield over said conductor, a rubber or plastic insulation layer over said conductor shield, and an extruded insulation shield over said rubber or plastic insulation layer;
a water impervious layer provided around said cable core and which includes a laminated tape comprised of a metal foil and a plastic layer laminated on at least one surface of said metal foil;
a jacket layer extruded directly over the plastic layer of said water impervious layer so that said jacket layer becomes integral with the plastic layer of said water impervious layer by heat at the time of the extrusion;
a metal shield layer provided around said extruded jacket layer and which comprises metallic wires; and
a corrosion-protective layer extruded on said metal shield layer and in which said metal shield layer is embedded.

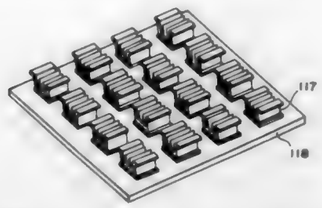
5,300,734
GROMMET
Motoyoshi Suzuki, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed Aug. 26, 1992, Ser. No. 935,433
Claims priority, application Japan, Sep. 2, 1991, 3-070029[U]
Int. Cl.[5] H01R *13/56*
U.S. Cl. 174—152 G **8 Claims**



1. A grommet which is coupled with an end of a connector and coves a wire which is connected to said connector so as to protect said wire, said grommet comprising:
a coupling end having flexibility and being coupled with said connector end, said coupling end having a protruding portion protruding inwardly from an inner periphery of the coupling end to be fitted in a housing groove provided in an outer periphery of the connector end;
a tube-like end having an open end into which said wire is inserted prior to being connected to said connector;
a hollow intermediate having flexibility and being provided between said coupling end and said tube-like end so as to contain said wire;
and a handling member formed on a hard material and arranged around said coupling end, said coupling end including a first portion abutting against an end face in the end portion of the connector, a second portion, and a second groove bounded by said first portion and said second portion into which the handling member is fixedly mounted.

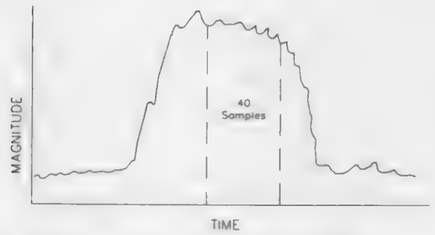
5,300,735
INTERCONNECTED MULTILAYER BOARDS AND FABRICATION PROCESSES THEREOF
Hitoshi Yokono, Toride; Hideo Arima, Yokohama; Takashi Inoue, Yokohama; Naoya Kitamura, Yokohama; Haruhiko Matsuyama, Hiratsuka; Hitoshi Oka, Yokohama; Fumio Katsoka, Yokohama; Fusaji Shoji, Yokohama; Murooka, Hideyasu, Yokohama, and Masayuki Kyooi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 672,117, Mar. 19, 1991. This application Mar. 22, 1993, Ser. No. 37,543
Claims priority, application Japan, Mar. 19, 1990, 2-069259; Nov. 30, 1990, 2-330515
Int. Cl.[5] I05K *1/00*
U.S. Cl. 174—264 **25 Claims**

1. An interconnected multilayer board comprising a group of parallel conductor lines at least one of which overlies a base substrate, and another group of via conductors connected to the conductor lines and arranged perpendicular to the parallel conductor lines to provide a skeleton structure defining spaces between said conductors, the spaces defined by said conductor



lines and said via conductors having been filled with a heat-resistant varnish in a solventless form and said varnish then being cured with said spaces.

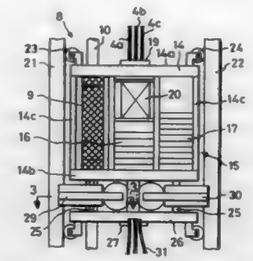
5,300,736
ADAPTIVE TIMING IN-MOTION CHECKWEIGHER
Steven P. Ehrhardt, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed Mar. 12, 1992, Ser. No. 849,743
Int. Cl.[5] G01G *19/00*
U.S. Cl. 177—145 **20 Claims**



1. An in-motion weighing system, comprising:
means for conveying a package; a weight pan;
a package detector positioned along said conveying means and upstream from said weight pan;
means responsive to said package detector for determining a time required for said package to pass by said package detector;
means for dividing a length of said weight pan by a speed of said conveying means for establishing a raw read scale time;
means for subtracting said time for said package to pass said package detector from said raw read scale time for establishing a read scale window; and
means for measuring the weight of said package on said weight pan during said read scale window.

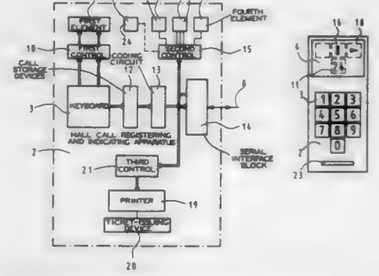
5,300,737
TUBULAR LINEAR MOTOR DRIVEN ELEVATOR
Yoshinori Nakanishi, Kawasaki, Japan, assignor to Otis Elevator Company, Farmington, Conn.
Filed Mar. 24, 1992, Ser. No. 856,777
Claims priority, application Japan, Mar. 25, 1991, 3-17872[U]
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—112 **9 Claims**

1. A tubular linear motor driven elevator comprising:
a cab,
a counterweight having a center of gravity and a top portion,
a linear motor comprising a movable element and a stationary element, said movable element disposed within said counterweight and forming a portion thereof, said movable element disposed out of register with said center of gravity, said stationary element passing through said counterweight and through said moveable element out of register with said center of gravity, and



a rope attaching at a first end thereof to said cab and at a second end thereof attaching to said counterweight at a center of gravity of said top portion.

5,300,738
APPARATUS FOR REGISTERING AND INDICATING HALL CALLS AT AN ELEVATOR ENTRYWAY WITH A TICKET DISPENSER
Miroslav Kostka, Ballwil, Switzerland, and John Chapman, Randolph, N.J., assignors to Inventio AG, Hergiswil, Switzerland
Filed Sep. 28, 1992, Ser. No. 951,896
Claims priority, application Switzerland, Sep. 27, 1991, 02867/91
Int. Cl.[5] B66B *1/14, 3/00*
U.S. Cl. 187—121 **12 Claims**



10. A hall call registering and indicating apparatus located at an elevator entryway at a floor for the immediate allocation of destination calls comprising:
a decade keyboard associated with an elevator entryway for entering calls to select desired destination floors;
call storage devices connected between said decade keyboard and a group control for elevators associated with the entryway;
a first indicating element for signaling a selected destination floor associated with a call entered at said decade keyboard;
a first control circuit connected between said first indicating element and said decade keyboard;
a second indicating element for signaling an elevator allocated by the group control to the call;
a second control circuit connected between said second indicating element and the group control;
a printer for printing tickets;
a ticket-issuing device connected to said printer for issuing the printed tickets; and

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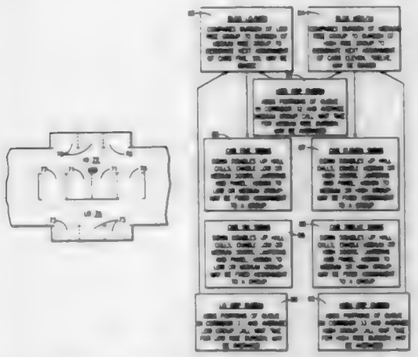
a third control circuit connected between said printer and the group control whereby said printer is actuated in response to a data block generated by the group control after entry of the call at said decade keyboard and upon allocation of the call to an elevator by the group control to print a ticket having an imprint indicating the selected destination floor and the allocated elevator utilizing information in the data block.

5,300,739

CYCLICALLY VARYING AN ELEVATOR CAR'S ASSIGNED GROUP IN A SYSTEM WHERE EACH GROUP HAS A SEPARATE LOBBY CORRIDOR

Joseph Bittar, Avon, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed May 26, 1992, Ser. No. 887,946
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—127 **29 Claims**



3. An elevator system for serving a plurality of groups of floors in a building, each of said groups including at least one floor not included in any other of said groups, each group including the same lobby floor, comprising:

a plurality of elevators, each including a car operating in a hoistway, car motion means for providing and arresting the motion of the car, car call means for registering requests for service initiated by passengers therein and for providing car call signals indicative thereof, door means for providing ingress to and egress from said car, and means for providing operation signals indicative of conditions of said car;

a plurality of risers, each related to one of said groups of floors and including up direction hall call buttons and enunciator lanterns for all of the floors in the related one of said groups except the highest floor and down direction hall call buttons and enunciator lanterns for all the floors in said related group except the lowest floor, said buttons operable to provide corresponding hall call signals indicative of service requested to floors of the related group;

a plurality of lobby service corridors, a first one of said risers including a first one of said lobby service corridors which is identified to prospective passengers as the lobby service corridor from which service can be had exclusively to a first one of said groups of floors, and a second one of said risers including a second lobby service corridor which is identified to prospective passengers as the lobby service corridor from which service can be had exclusively to a second one of said groups of floors;

signal processing means associated with said elevators and responsive to said hall call signals, said car call signals, and said operation signals for assigning each of said hall call requests to a selected car, and for causing each of said car motion means to move the related car to appropriate floors and provide service indicated by corresponding ones of said car call requests and assigned ones of said hall call requests and for operating said enunciator lanterns to indicate a car approaching a floor to provide service;

a first one of said elevators having a hoistway with access to said first lobby service corridor and service corridors on said first group of floors, having car call buttons relating to said first group of floors, and having doors operable to permit passengers to transfer between it and the service corridors of said first group of floors; and

a second one of said elevators having a hoistway with access to said second lobby service corridor and service corridors on said second group of floors, having car call buttons relating to said second group of floors, and having doors operable to permit passengers to transfer between it and the service corridors of said second group of floors;

characterized by

a third one of said elevators having a hoistway with access to said service corridors of both of said groups of floors and having first doors operable to permit passengers to transfer between it and service corridors of said first group, having first car call buttons relating to said first group of floors, having second doors operable to permit passengers to transfer between it and service corridors of said second group, and having second car call buttons related to said second group of floors; and

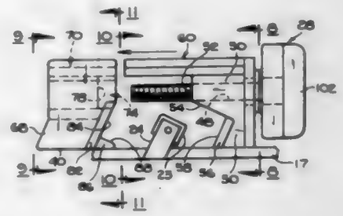
said signal processing means comprising means operable before reaching said lobby floor at the end of each run of said third elevator for assigning said third elevator to alternatively service, in the following run, said first group of floors using said first doors and car call buttons or said second group of floors using said second doors and car call buttons.

5,300,740

CIRCUIT BREAKER LOCK OUT - MULTI-POLE

Steven J. Benda, 13657 10th St. Southwest, Cokato, Minn. 55321

Filed Apr. 27, 1993, Ser. No. 52,993
Int. Cl.[5] H01H *27/10*
U.S. Cl. 200—43.14 **16 Claims**



1. A lock out device for use with ganged switches having individual front panels lying in a common main front panel, the switches having actuating levers exposed through the main front panel, together positioned on a longitudinal line, and swingable on an axis adjacent to the main front panel and parallel with said longitudinal line, between opposite positions spaced apart angularly, and a tie bar secured to the levers for producing conjoint swinging movement of the levers in the manner stated, there being a hole under the tie bar and between the switch levers,

said lock out device comprising,

a body having a longitudinal direction, and including front and rear parts, the parts being separate from each other and being mounted together for longitudinal relative sliding movement,

the parts having opposed transverse upright cavity surfaces which, when the parts are so mounted together, form a cavity opening through the bottom surface of the body,

the body, consisting of the parts so mounted together, being fitted to the switches in locking position in which the bottom surface engages said main panel and at least a portion of the tie bar is received in the cavity, and

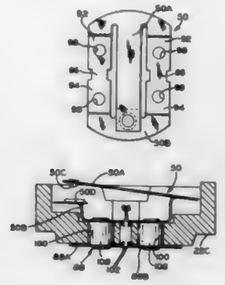
the lock out device including securing means for mechanically adjustably drawing the parts together with the cavity surfaces in locking engagement with the tie bar.

5,300,741

PRESSURE RESPONSIVE CONTROL DEVICE

Ronald L. Hogue, Morrison; James P. Frank, Rock Falls, and Donald E. Nice, Morrison, all of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 757,821, Sep. 11, 1991, Pat. No. 5,198,631.
This application Jan. 4, 1993, Ser. No. 452
Int. Cl.[5] H01H *35/32*
U.S. Cl. 200—83 P **9 Claims**



1. A switch subassembly of the type used in a pressure responsive control device comprising a housing having a cavity therein and a central longitudinal axis, a diaphragm disposed in the cavity and dividing the cavity into a pair of chambers, a control port in one end of the housing opening into one of said chambers, said control port being adapted for the communication of fluid pressure into said one chamber, a snap-action member operable between a first and a second configuration supported by the housing in the cavity, and spanning at least in part across said other chamber, a pair of terminal means mounted in the housing generally adjacent the end of the housing opposite the control port, switch means disposed in the cavity, said switch means being operable between a closed position and an open position, said switch means being biased in a normal operating position selected from one of said closed and open positions, and actuator means interposed between said snap-action member and said switch means and movable generally axially of the housing upon operation of said snap-action member toward said second configuration for operating said switch means between said normal operating position in which said switch means is in one of said open and closed positions and a trip position in which said switch means is in the other of said open and closed positions, said switch subassembly comprising:

a switch lead frame formed as one piece from electrically conductive material, said switch lead frame comprising a switch blade, a stationary contact support portion and a frangible portion connecting the switch blade and said stationary contact support portion upon formation of the switch;

means for electrically connecting said switch lead frame to said terminal means of the control device; and

means for supporting said switch lead frame and said electrical connecting means;

the frangible portion of said switch lead frame being adapted to be broken after assembly of the switch subassembly to break electrical connection between the switch blade and said stationary contact support portion thereby to form said switch means;

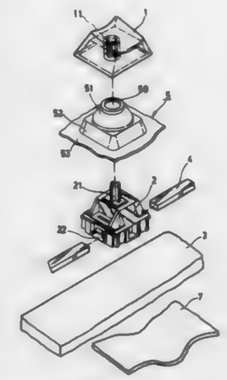
said switch lead frame further comprising a first foot portion connected to the switch blade at a proximal end thereof and extending generally toward the stationary contact support portion from the proximal end of the switch blade and a second foot portion connected to the stationary contact support portion generally along an edge of the stationary contact support portion and extending toward the proximal end of the switch blade from the edge of the stationary contact support portion, the first and second foot portions being interconnected by the frangible portion, the frangible portion being substantially narrower in width than the first and second foot portions thereby facilitating breakage of the frangible portion.

5,300,742

WATERPROOF STRUCTURE FOR COMPUTER KEY SWITCH

Hai-Long Huang, 12 Fl., No. 215, Chung Shan Road, Section 2, Chung Ho City, Taipei Hsien, Taiwan

Filed Sep. 23, 1992, Ser. No. 948,576
Int. Cl.[5] H01H *13/06*
U.S. Cl. 200—302.002 **2 Claims**



1. A waterproof structure for a computer key switch comprising:

(a) a computer key having a cap contour forming a computer key chamber and an internal base surface, said computer key having a computer key post secured to said internal base surface extending therefrom internal said computer key chamber, said computer key post having a cruciform contoured passage extending throughout an extended length thereof;

(b) a printed circuit board;

(c) a computer switch mounted between said printed circuit board and said computer key, said computer switch having a sliding post for sliding mating engagement within said cruciform contoured passage of said computer key post;

(d) an upper protective cap formed of a waterproof and elastic material composition, said upper protective cap defining an upwardly extending arcuately contoured face portion, a bottom portion, and an inclined portion joining said arcuately contoured face portion and said bottom portion, an upper surface of said arcuately contoured face portion having an opening passing therethrough defining an opening inner wall for tightly engaging said computer key post, said inclined portion covering a bottom section of said computer key switch, said arcuately contoured face portion upper surface for deformably contacting said internal base surface when said computer key is displaced thereby providing increased restorative force applied to said computer key subsequent to said displacement;

(e) a lower protective cap formed of a waterproof and elastic material composition for covering a portion of said computer key switch under said printed circuit board;

(f) a first hold-down strip for securing said bottom portion of

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said upper protective cap to said printed circuit board; and,

(g) a second hold-down strip for securing an edge of said lower protective cap to said printed circuit board whereby in combination said upper protective cap and said arcuately contoured face portion in tight engagement with said computer key post covers said computer key switch in watertight relation above said printed circuit board and said lower protective cap covering said portion of said computer key switch under said printed circuit board to form a water and dust proof environment for said computer key switch.

5,300,743

MICROWAVE COFFEE MAKER

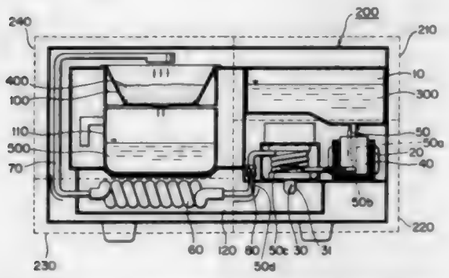
Hwa S. Park, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 9, 1993, Ser. No. 15,357

Claims priority, application Rep. of Korea, Feb. 17, 1992, 92-2264

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—689 14 Claims



1. A microwave water heater for supplying heated water to a coffee-filtering vessel, comprising

a housing forming a water-storing chamber, a mechanism chamber, and a heating chamber,

said water storing chamber adapted for storing water to be used for making coffee;

said mechanism chamber including:

microwave-generating means for generating microwaves and being coupled into said heating chamber, and

cooling means for cooling said microwave-generating means by heat transfer with water circulated from said water storing chamber;

said heating chamber including a heating pipe for receiving water from said cooling means, said heating pipe arranged in a path of microwaves from said microwave-generating means for heating water therein; and a siphon pipe connected to said heating pipe for conducting the heated water to a hot water outlet to be discharged into a coffee-filtering vessel for making coffee.

5,300,744

HIGH-FREQUENCY HEATING DEVICE EMPLOYING SWITCHING TYPE MAGNETRON POWER SOURCE

Naoyoshi Maehara, Shiki; Daisuke Bessyo, Nara; Yuji Nakabayashi, Yamatokoriyama, and Takahiro Matsumoto, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

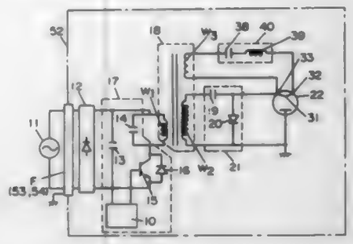
PCT No. PCT/JP91/00891, § 371 Date Mar. 20, 1982, § 102(e) Date Mar. 20, 1992, PCT Pub. No. WO92/02111, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 2, 1992, Ser. No. 842,144

Claims priority, application Japan, Jul. 25, 1990, 2-197249

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—687 6 Claims



1. A high-frequency heating device for heating an object, said high-frequency heating device comprising:

(a) a power converter, having a semiconductor switching element, for converting a received electric power into a high-frequency electric power,

(b) a step-up transformer having a primary winding for receiving an output from said power converter, a secondary winding for yielding a high-voltage electric power output, and a tertiary winding for yielding a low-voltage electric power output,

(c) a magnetron having an anode and a filament which receive respectively said high-voltage electric power and said low-voltage electric power of said step-up transformer,

(d) a resonance circuit including at least an inductance and a capacitance connected to said filament, said resonance circuit suppressing a variation of a current of said filament, wherein at least a part of said resonant circuit is connected to a leakage inductance of said tertiary winding and

(e) a control circuit for controlling an operation frequency of said power converter by controlling a switching frequency of said semiconductor switching element, and for controlling said switching frequency so that said operation frequency of said power converter approximately coincides with a resonance frequency of said resonance circuit upon activating said power converter.

5,300,745

APPARATUS FOR PLACING A MICROWAVE OVEN IN A STANDBY CONDITION

Pierre Chartrain, Soliers Bourgueboe; Michel G. de Matteis, Cambes-en-Plaine, and Bernard M. Bois, Caen, all of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Jan. 24, 1992, Ser. No. 825,120

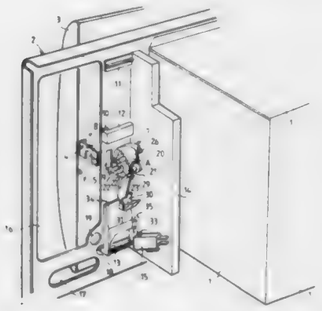
Claims priority, application France, Jan. 25, 1991, 91 00846

Int. Cl.[5] H05B *6/76*

U.S. Cl. 219—722 9 Claims

1. In a device for placing in standby condition a microwave oven comprising a cooking chamber having a movable door (3) pivoted on the forward surface (2) of said oven and adapted to completely close the opening of the chamber by overlying the forward surface (2), said door (3) being maintained closed by means of a hook (4) which enters an opening (9) located on said forward surface (2) and which comprises a nose (5) for

actuating a movable locking element (7), a catch (6) located behind the nose (5), and in which the locking element (7) engages and permits subsequent closing of an operating switch (15) for said oven under the action of an operating button (36) located on a control panel provided on the forward surface of the oven; the improvement wherein the locking element (7) is constituted by a wheel (20) which is located on a plate (14) fixed transversely to the inside of said forward surface (2) of the microwave oven and which is fixed to said plate (14) by a shaft (21) parallel to said forward surface (2) and about which the wheel (20) rotates, said wheel (20) comprising a first surface (A) comprising two abutment lugs (22, 23), a first abutment lug (22) located in a path of the nose (5) and a second abutment lug (23) angularly offset from the first abutment lug and adapted, after rotation of said wheel (20) under the action of the nose (5) on the first lug (22), to come into engagement in the catch (6) of the hook (4), a safety lock comprising a block-



ing finger (25) which is adapted to come into abutment with a stop boss (26) integral with the plate (14) and disposed facing a second surface (B) of the wheel, and which is movably mounted for this purpose under the influence of elastic means (27) secured to the wheel, said blocking finger (25) being controlled by a safety spur (24) which projects through an opening (23') transversely to the first surface (A) of the wheel (20), and which is provided angularly between and below the two abutment lugs (22, 23) to occupy two positions comprising a standby position in which it is actuated by the nose (5) of the hook (4) and in which it withdraws the blocking finger (25) thereby permitting predetermined rotation the wheel (20) to permit subsequent closing of the operating switch (15), and an active position in which, in the absence of action by the nose (5), the blocking finger (25) comes into abutment with the stop boss (26) and prevents rotation of said wheel (20) thereby preventing closure of the switch (15).

5,300,746

METALLIZED MICROWAVE DIFFUSER FILMS

Glenn J. Walters, Duxbury, Mass., and John A. McCormick, Ontario, Canada, assignors to Advanced Deposition Technologies, Inc., Taunton, Mass.

Continuation-in-part of Ser. No. 610,752, Nov. 8, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 756,165

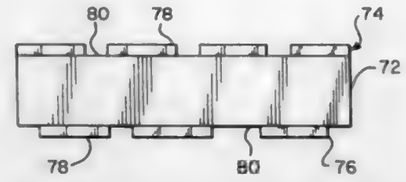
Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—745 27 Claims

1. A microwave diffuser film for use during microwave heating of objects, comprising:

(a) a first substrate that is substantially transparent to microwave energy, the substrate having a first surface for receiving a microwave energy field and at least one second surface across which microwave energy is transferred; and

(b) microwave-interactive elements deposited on the first surface for interacting with microwave energy received thereon to produce a modified microwave energy field and to transfer said microwave energy field across said at least one second surface, said microwave-interactive elements comprising a plurality of discrete metallic elements having a sheet resistance in the range of 2.0 to 0.05 ohms per square arranged in a pattern so that the transferred



microwave energy field is substantially uniform, the metallic elements separated by nonmetallic areas, said metallic elements substantially incapable of converting microwave energy to heat.

5,300,747

COMPOSITE MATERIAL FOR A MICROWAVE HEATING CONTAINER AND CONTAINER FORMED THEREFROM

Frederick E. Simon, Lindenwold, N.J., assignor to Campbell Soup Company, Camden, N.J.

Continuation-in-part of Ser. No. 380,326, Jul. 17, 1989, abandoned. This application Sep. 20, 1991, Ser. No. 763,235

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—729 14 Claims

1. A composite material for use in the construction of a microwave heating container, the composite material comprising a plastic resin and a particulate dielectric material oriented therein, said particulate dielectric material having a dielectric constant within a range of about 5 to about 8, a loss tangent value of less than 8×10^{-4}, and a particle size of 1 μm to about 10 μm in a quantity sufficient to produce a dielectric constant of about 5 to about 8 for said composite.

5,300,748

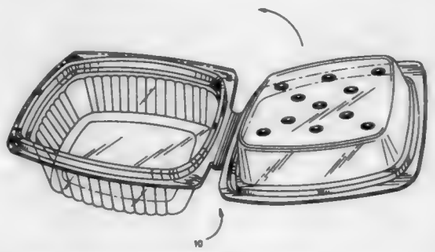
RECYCLABLE MICROWAVABLE CONTAINER WITH A HINGED REMOVABLE OUTER SHELL

Edward A. Colombo, Penfield, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 690,189, Aug. 27, 1987, Pat. No. 4,870,396. This application Jul. 27, 1992, Ser. No. 919,797

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—734 19 Claims



1. A microwavable container comprising:

an outer shell comprising a first microwavable polymeric material;

an inner shell comprising a second microwavable polymeric material different from said first microwavable polymeric material; and

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a flexible connecting means, said flexible connecting means forming a hinge member extending from an outer shelf of said outer shell to an outer shelf of said inner shell, said inner shell rotatably folding about said hinge such that said inner shell is disposed in a substantially spaced relation to said outer shell and is releasably secured to said outer shell.

5,300,749

METHOD AND APPARATUS FOR THE REDUCTION OF DISTANCE-DEPENDENT VOLTAGE INCREASE OF PARALLEL HIGH-FREQUENCY ELECTRODES

Kauko Kotikangas, Helsinki, Finland, assignor to Imatran Voima Oy, Helsinki, Finland

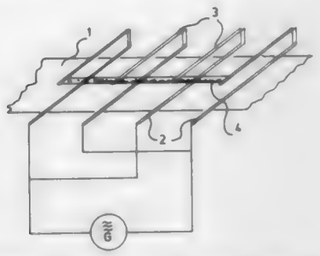
PCT No. PCT/FI92/00112, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO92/19082, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 13, 1992, Ser. No. 952,529

Claims priority, application Finland, Apr. 15, 1991, 911816

Int. Cl.[5] H05B *6/54*

U.S. Cl. 219—779 **15 Claims**



1. A method of compensating voltage increases in a dielectric material processing apparatus having at least two rod-like parallel electrodes connected to opposite ends of a source of radio frequency signals comprising:

forming a return path conductor for each parallel electrode which is connected to the free end of the electrode corresponding to a compensation point and extends parallel to a respective electrode, terminating at a predetermined distance from its connection to said electrode, spaced from said electrodes a distance to avoid electric discharges with said electrodes; and,

connecting each free end of each return path conductor to a free end of a return path conductor of an adjacent electrode, wherein a magnetic field a respective connected electrode.

5,300,750

THERMAL INDUCTION HEATER

Philip S. Carter, Jr.; Michael Hodges; John P. Ekstrand, and Andrew Tomlinson, all of Palo Alto, Calif., assignors to Metcal, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 442,653, Nov. 29, 1989, which is a continuation-in-part of Ser. No. 270,843, Nov. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 169,027, Mar. 16, 1988, abandoned. This application Oct. 10, 1991, Ser. No. 774,243

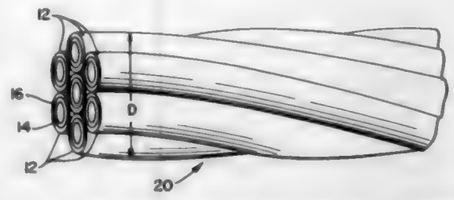
Int. Cl.[5] H05B *6/02*

U.S. Cl. 219—605 **18 Claims**

1. An induction heater adapted to be heated in response to a linking fluctuating magnetic flux comprising

a large cross-sectional feromagnetic core,

said core comprised of a plurality of ferromagnetic members of a cross-sectional area such that at a frequency of fluctu-



ations of the magnetic flux the magnetic flux penetrates approximately to a center of each of said members.

5,300,751

METHOD FOR GAS-SHIELD ARC WELDING OF A PIPE AND WELD WIRE FOR USE IN THE WELDING METHOD

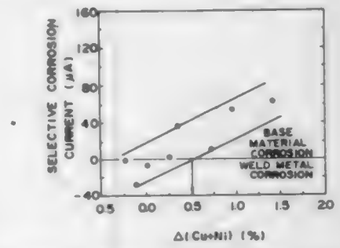
Shigeru Endo; Moriyasu Nagae; Motokiyo Itoh, all of Tokyo; Toshihiko Nakano, and Masato Konishi, both of Kanagawa, all of Japan, assignors to NKK Corporation, Tokyo and Kobe Steel, Ltd., Kobe, both of Japan

Filed Aug. 25, 1992, Ser. No. 935,523

Claims priority, application Japan, Aug. 30, 1991, 3-219955; Sep. 2, 1991, 3-248249

Int. Cl.[5] B23K *9/23*

U.S. Cl. 219—61 **4 Claims**



1. A method for gas-shield arc welding of a pipe characterized in that circumferential welding is carried out to a pipe base material having chemical components listed below as (1), using a weld wire having chemical components listed below as (2), under the conditions listed below as (3), to obtain a zone of a weld metal having chemical components listed below as (4), in a circumferential welding of a pipe:

(1) The chemical components of the pipe base material containing, in % by weight:
C; 0.03 to 0.15%
Si; 0.05 to 0.50%
Mn; 0.50 to 2.00%
Al; 0.005 to 0.10%
and further containing, as the residual part, Fe and inevitable impurities;

(2) The chemical components of the weld wire containing, in % by weight:
C; 0.01 to 0.15%
Si; 0.20 to 1.20%
Mn; 0.60 to 2.50%
Cu; ≦3.00%
Ni; 0.50 to 3.00%
and further containing, as the residual part, Fe and inevitable impurities satisfying the following ranges:
P; ≦0.030%
N; ≦0.01%
Cr; ≦0.05%
B; ≦0.002%
S; ≦0.030%

Nb; ≦0.02%
Zr; ≦0.05%
Al; ≦0.05%
V; ≦0.02%
O; ≦0.02%

(3) The welding conditions being:
shield gas; 100% CO_2 or Ar + (from 5 to 40% of) CO_2
weld wire; wire diameter; 0.8 to 1.6 mm
welding current; 100 to 500 A
arc voltage; 15 to 45 V
welding speed; 5 to 150 cm/min.
welding attitude; all positions;

(4) The chemical components of the weld metal containing, in % by weight:
C; 0.01 to 0.15%
Si; 0.20 to 1.00%
Mn; 0.40 to 2.00%
Cu; ≦2.50%
Ni; 0.50 to 2.50%
ΔCu+ΔNi; ≧0.50%
(Δ; content in weld metal—content in base material)
P_{CM}≦0.25% in which
P_{CM}=C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+5B
and
the residual part is composed of Fe and inevitable impurities satisfying the following ranges:
P; ≦0.030%
N; ≦0.050%
Cr; ≦1.00%
Zr; ≦0.05%
S; ≦0.030%
Nb; ≦0.10%
Ca; ≦0.0025%
B; ≦0.002%
Al; ≦0.05%
V; ≦0.10%
O; ≦0.10%

5,300,752

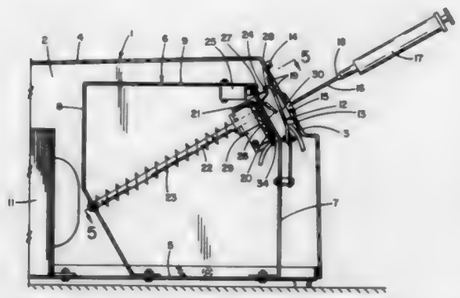
NEEDLE DISINTEGRATION DEVICE METHOD AND APPARATUS

Donald Elmerick, 466 Spring Grove Dr., and Richard Peters, 814 Pennwood Dr., both of Tallmadge, Ohio 44278

Filed May 7, 1993, Ser. No. 57,818

Int. Cl.[5] B23K *11/22*

U.S. Cl. 219—68 **10 Claims**



1. An apparatus for disintegrating syringe needles as a means of needle disposal, comprising:

A) a housing containing a grommet defined opening therein capable of receiving used syringe needles;

B) a flexible first conducive plate substantially "V" shaped as defined by a pair of leg portions so as to accept a vast majority of all diameters and sizes of syringe needles and mounted within said housing and so disposed as to contact the needle immediately upon insertion of the needle into said housing;

C) a second conductive plate mounted within said housing in a spring biased first position immediately adjacent and substantially parallel to said first conductive plate slidably movable within said housing on a plurality of escort rods so as to remain substantially parallel to the first conductive plate through its movement to a second position so as to accommodate variously sized needle shaft lengths;

D) a first electrical contact engaged upon the first conductive plate;

E) a second electrical contact engaged upon the second conductive plate;

F) connection of a power source to the first and second electrical contacts, and;

G) a normally open actuator switch arranged so as to be activated by pressure from said first conductive plate flexing inwardly upon the entire needle shaft being inserted into said housing and the needle hub thereof in contract with the first conductive plate, thereby providing electrical flow as between the first and second electrical contacts of sufficient character to incinerate the entire needle shaft.

5,300,753

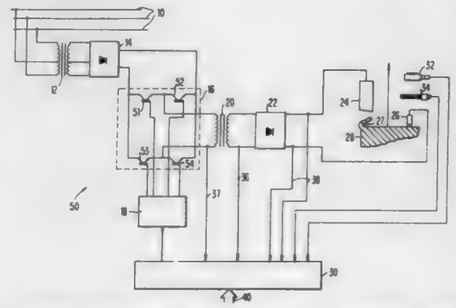
METHODS AND APPARATUS FOR FUSING ELECTRICAL CONDUCTORS

Alessandro Rossi, Florence, Italy, assignor to Axis USA, Incorporated, Marlborough, Mass.

Filed Jun. 25, 1992, Ser. No. 903,910

Int. Cl.[5] B23K *11/24*

U.S. Cl. 219—110 **39 Claims**



1. Apparatus for fusing at least one armature wire and at least one piece of commutator material together, said apparatus, comprising:

a fusing member for applying force and varying heat to soften said commutator material to deform said commutator around said armature wire;

a grounding member;

means for moving said fusing member relative to said armature wire and said commutator material in order to cause said fusing member to contact and apply force to said commutator material thereby deforming said commutator material intimately around said armature wire;

means for controlling said means for moving said fusing member in accordance with a predetermined physical delivery function to control said applied force;

means for regulating a precise flow of current through said armature wire and said commutator material from said fusing member to said grounding member to generate said varying heat in said fusing member in accordance with a predetermined electrical delivery function to regulate said precise flow of current and thereby regulate the level of said varying heat so that said commutator material is softened and therefore, said deforming is precisely controlled, and so that insulation on a portion of said armature

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wire within said softened deformed commutator material is vaporized; and

means for synchronizing said means for controlling and said means for regulating in order to supply a precise varying level and quantity of heat from said fusing member to said armature wire and said commutator material at specific, predetermined time intervals, such that said regulating means is essentially instantaneously responsive to the short timings and different heating requirements which occur during fusing of said armature wire to said commutator material.

5,300,754

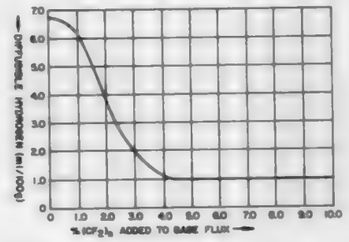
SUBMERGED ARC FLUX AND METHOD OF MAKING SAME

John Gonzalez, Willoughby; Rao N. Kudithipudi, North Royalton, and Ronald F. Young, Willoughby, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 608,300, Nov. 2, 1990, abandoned, which is a division of Ser. No. 405,727, Sep. 11, 1989, Pat. No. 5,003,155, and a continuation-in-part of Ser. No. 501,167, Mar. 29, 1990, Pat. No. 5,118,919, which is a continuation-in-part of Ser. No. 495,696, Mar. 19, 1990, Pat. No. 5,055,655, which is a continuation-in-part of Ser. No. 405,727, Sep. 11, 1989, Pat. No. 5,003,155. This application Jul. 5, 1991, Ser. No. 725,963

Int. Cl.[5] B23K *35/368*

U.S. Cl. 219—146.3 **22 Claims**



1. A self shielding granular flux for arc welding of high strength steel comprising halogenated polymer and particles of composites flux ingredients having a high basicity, said polymer added as a hydrogen reducing agent to maintain the diffusible hydrogen within the weld bead to less than 3.0 ml/100 g, said polymer having a particle size of 0.1–30 microns and consisting of 0.1–5.0 weight percent of the granular flux, and said high basicity flux comprising by weight percent of said granular flux:

MgO	25–37%
Al_2O_3	10–20%
CaF_2	20–32%

5,300,755

STRUCTURE FOR WELDING ELECTRICAL CONNECTING PORTIONS TO EACH OTHER USING LASER LIGHT BEAM

Keizo Nishitani; Masuo Sugiura; Isao Takiguchi, and Tetsuroo Saimoto, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,646

Claims priority, application Japan, Aug. 12, 1991, 3-201737

Int. Cl.[5] B23K *26/00*

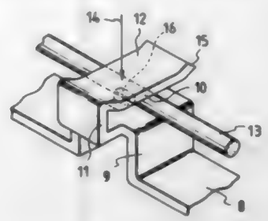
U.S. Cl. 219—121.63 **19 Claims**

1. An arrangement for establishing an electrical and mechanical connection between electrically conductive members, comprising:

an electrically conductive connecting member;

two electrically conductive metallic members disposed opposite each other, flanking said connecting member, and clamping said connecting member therebetween; and

a source of laser energy oriented such that an output beam therefrom is incident on an outer surface of one of said



metallic members and directed towards the underlying connecting member without being directly emitted on said connecting member to establish a weld connection at zones of mutual contact between said connecting member and said respective metallic members, wherein said electrically conductive connecting member is a cable including a plurality of wires surrounded by a sheath.

5,300,756

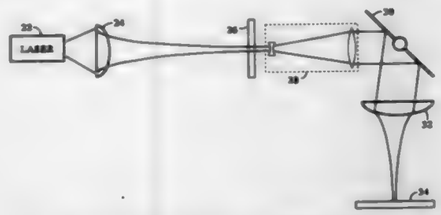
METHOD FOR SEVERING INTEGRATED-CIRCUIT CONNECTION PATHS BY A PHASE-PLATE-ADJUSTED LASER BEAM

James J. Cordingley, Cumberland, R.I., assignor to General Scanning, Inc., Watertown, Mass.

Filed Oct. 22, 1991, Ser. No. 780,763

Int. Cl.[5] B23K *26/06*

U.S. Cl. 219—121.69 **9 Claims**



1. In the method of severing a conductive link in an integrated circuit by employing an imaging optical element to focus on the link a laser beam produced by a laser, the improvement wherein:

A) the method further comprises the step of directing the beam through a substantially transparent phase plate, separate from the laser, that spatially phase-modulates the beam; and

B) the imaging optical element focuses the beam as thus phase modulated onto the conductive link, whereby the resulting image on the integrated circuit has the shape of the phase-modulated beam's spatial-frequency power spectrum.

5,300,757

COOKING APPARATUS PROVIDING ACCURATE CONTROL OF COOKING PROCESS AND CAPABILITY FOR SPECIFYING HARDNESS DEGREE OF COOKED FOOD

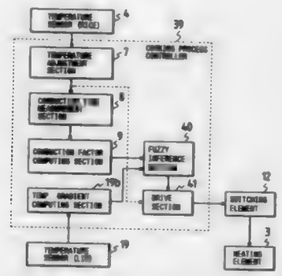
Yumiko Hara; Shinji Kondoh, both of Osaka; Shuji Abe, Kakogawa; Haruo Terai, Osaka, and Machiko Azuma, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 1, 1991, Ser. No. 721,337

Claims priority, application Japan, Jun. 29, 1990, 2-173413; Jul. 24, 1990, 2-196606; Nov. 5, 1990, 2-300825

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—497 **23 Claims**



1. A cooking apparatus for executing cooking processing of a quantity of a food material, comprising:

means for applying power for heating Bald food material;

control means for controlling a level of said heating power;

quantity indication means for producing a value indicative of said quantity of the food material;

fuzzy inference means for deriving a requisite level of said heating power, based upon said quantity indicating value, and for producing an output value indicative of said requisite level and supplying said output value to said control means for thereby determining a subsequent level of said heating power.

5,300,758

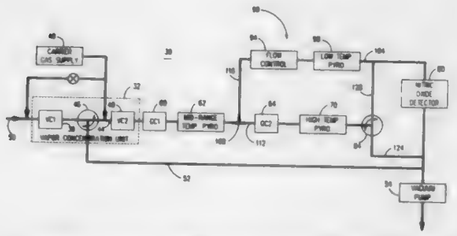
VAPOR DETECTION WITH HIGH SPEED GAS CHROMATOGRAPHY

David P. Rounbehler, Bedford; David P. Lieb; Eugene K. Achter, both of Lexington; David B. Gernes, Watertown, and Abdul Tafreshi, Lowell, all of Mass., assignors to Thermedics Inc., Woburn, Mass.

Division of Ser. No. 594,267, Oct. 3, 1990, Pat. No. 5,108,705, which is a continuation-in-part of Ser. No. 491,994, Mar. 12, 1990, abandoned. This application Jan. 24, 1992, Ser. No. 825,368

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—497 **8 Claims**



1. A method of controlling the temperature of a current-carrying element whose resistance varies with temperature, comprising the steps of:

supplying a current through said element,

deriving a voltage signal representing the voltage across said element,

deriving a current signal representing the current through said element,

inverting said current signal to form an inverted current signal,

storing a plurality of resistance signals each representing the value of resistance of said element at an individual predetermined temperature,

selecting a resistance signal corresponding to a desired temperature,

computing a resistance increment signal as the difference between said resistance signal and a base resistance signal corresponding to a fixed base temperature of said element,

deriving a first product signal by multiplying said resistance increment signal by said inverted current signal,

deriving a second product signal by multiplying said inverted current signal by said base resistance signal,

deriving an error signal by summing (a) said first product signal, (b) said second product signal, and (c) said voltage signal, and amplifying the sum of said signals,

combining said error signal with said current signal to derive a combined signal, and

controlling the current through said element with said combined signal to minimize said error signal.

5,300,759

CONTROL SYSTEM FOR AN APPLIANCE OR THE LIKE, CONTROL DEVICE THEREFOR AND METHODS OF MAKING THE SAME

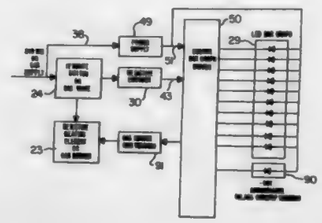
David M. Dodson, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 720,914, Jun. 25, 1991, Pat. No. 5,191,190, which is a continuation of Ser. No. 481,889, Feb. 20, 1990, abandoned. This application May 14, 1992, Ser. No. 882,837

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—506 **6 Claims**



1. In a control system comprising a source of gas fuel energy, an output producing heating unit that uses said energy to produce said output thereof, a control device having control means that comprises an infinitely variable valve means for interconnecting said source of energy to said unit, said control device having a rotatable shaft provided with opposed ends of which one of said opposed ends is mechanically interconnected to said valve means and of which the other of said opposed ends is interconnected to a control knob that sets said valve means in different positions thereof in relation to the rotational set position of said shaft from an "off" position thereof by rotation of said control knob, said valve means having the amount of said energy passing therethrough from said source to said unit being different for each set position thereof, and indicating means operatively associated with said shaft for visually indicating the set position of said shaft and, thus, the amount of energy being fed by said valve means to said unit, the improvement comprising sensing means opera-

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tively associated with said shaft that senses the set position of said shaft and electronically displays that sensed position of said shaft whereby said sensing means comprises said indicating means, said sensing means comprising a potentiometer having a housing means and a movable actuator carried thereby, said actuator having an opening passing therethrough, said shaft having an intermediate part thereof telescopically disposed in said opening of said actuator and being splined thereto whereby said shaft carries said potentiometer and said valve means in coaxially aligned relation so that rotation of said shaft by said control knob mechanically rotates said actuator therewith at the same time said shaft is mechanically setting said valve means.

5,300,760

METHOD OF MAKING AN ELECTRICAL DEVICE COMPRISING A CONDUCTIVE POLYMER

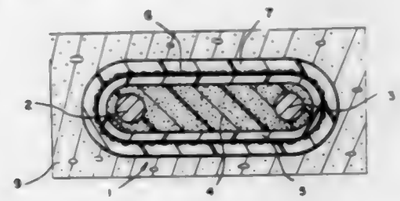
Neville S. Batliwalla, Foster City; Amitkumar N. Dharia, Newark; Randall M. Feldman, Redwood City, and Ashok K. Mehan, Union City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 322,969, Mar. 13, 1989, Pat. No. 5,111,032. This application Jan. 21, 1992, Ser. No. 823,524

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[5] H05B *3/34*

U.S. Cl. 219—549 **18 Claims**



1. An electrical device which comprises

(1) a resistive element which comprises first and second elongate wire electrode which are embedded in a continuous strip of conductive polymer;

(2) an insulating jacket;

(3) an auxiliary member which contains interstices and which is separated from the resistive element by insulating jacket; and

(4) blocking material which (i) fills interstices in the auxiliary member and (ii) contacts the insulating jacket but is not bonded to the insulating jacket,

wherein at least one of the following conditions is present

(a) the blocking material has been applied by a pressure extrusion,

(b) the blocking material has been applied in the form of a liquid, and

(c) the device has a thermal efficiency which is at least 1.05 times that of an identical heater which does not comprise the blocking material.

5,300,761

IMAGE FORMING APPARATUS COUNTING SYSTEM USING INDIVIDUAL AND COLLECTIVE COUNTERS

Seitaro Kasahara; Minoru Asakawa, and Yasunori Ohgo, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 4, 1992, Ser. No. 831,367

Claims priority, application Japan, Feb. 15, 1991, 3-022179

Int. Cl.[5] G03G *15/00*

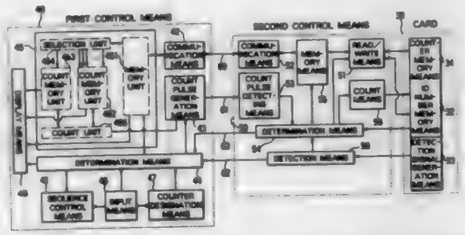
U.S. Cl. 235—375 **3 Claims**

1. A counting device for counting a number of image forming operations of an image forming apparatus, said counting device comprising:

registering means for registering a plurality of identifications codes;

comparing means for comparing an identification code stored in a portable storing means with said plurality of identification codes registered in said registering means;

first memory means for counting a number of image forming operations of said image forming apparatus when said comparing means matches said identification codes stores



in said portable storing means with at least one of said plurality of identification codes registered in said registering means; and

second memory means for counting a number of image forming operations of said image forming apparatus when said comparing means does not match said identification codes stored in said portable storing means with any of said plurality of identification codes registered in said registering means.

5,300,762

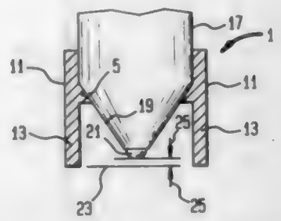
NON-CONTACT SHOE FOR BAR CODE WANDS

Robert L. Rouke, Richland, Wash., assignor to Siemens Power Corporation, Richland, Wash.

Filed Jun. 25, 1992, Ser. No. 904,352

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **6 Claims**



1. A non-contact spacer shoe device for fitting over the scanning head of a handheld bar code wand for spacing a reading tip of the scanning head out of direct contact with a bar code label to be read, said shoe device comprising:

an upper cylindrical housing of short length including:

a centrally located through hole;

a top circular edge surrounding said through hole;

a bottom circular edge portion;

said through hole being dimensioned for providing a frictional fit with side walls of said scanning head upon which said shoe device is mounted;

a lower portion of an interior wall forming the circumference of said through hole converging inward toward the longitudinal axis of said housing, for forming a tapered shoulder serving as a stop mechanism for limiting the extent to which said spacer shoe device can be pushed over said scanning head;

said tapered shoulder portion terminating at said bottom edge portion, and causing said bottom edge portion to be of greater width than said top edge; and

first and second contact arms extending downward from opposite sides of the bottom of said upper cylindrical housing, said contact arms being parallel to one another, with a distance therebetween greater than the width of sensitive bar coded areas of a bar code label to be read, the length of said first and second contact arms being predetermined for providing a desired gap between the reading tip of the associated said bar code wand and a bar code label.

5,300,763

INFORMATION RECORDING/REPRODUCING APPARATUS

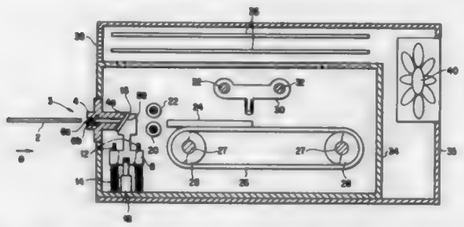
Junichiro Ito, and Yoshiyuki Yamamori, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 800,569

Claims priority, application Japan, Nov. 30, 1990, 2-338628; Nov. 30, 1990, 2-340933

Int. Cl.[5] G06K *13/04*

U.S. Cl. 235—475 **10 Claims**



1. Information recording/reproducing apparatus provided with a shutter mechanism for closing and opening an insertion slot formed on a wall of a housing to insert/eject an information recording medium into/from said housing,

said shutter mechanism comprising:

a first member movable in a first direction perpendicular to a second direction in which said information recording medium is inserted into said slot of said housing, said first member being movable between a slot open position and a slot closed position;

a second member fixed on said housing and having said slot extending completely therethrough, and selectively either contacting said first member in said slot closed position or being spaced away from said first member in said slot open position; and

a slanted surface which is slanted or inclined with respect to said first and second directions, said slanted surface being formed on said first member, and a slanting portion being formed on said second member such that said first and second members contact each other on said slanted surface and slanting portion around a periphery of said slot when said first member is in said slot closed position, to form a seal for preventing entry of dust or foreign objects into said housing when said first member is in said slot closed position.

5,300,764

TRANSPARENT OPTICAL IDENTIFICATION LABEL WITH INFRARED DIRECTIVITY

Hidekazu Hoshino, and Itsuo Takeuchi, both of Kanagawa, Japan, assignors to NHK Spring Company, Ltd., Japan

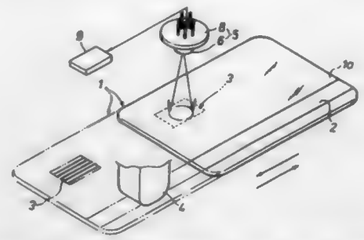
Filed Jan. 27, 1992, Ser. No. 826,337

Claims priority, application Japan, Sep. 11, 1991, 3-259636

Int. Cl.[5] G06K *7/10;* **B42D** *15/00;* **G02B** *27/38*

U.S. Cl. 235—487 **6 Claims**

1. A transparent optical identification label, comprising a reflective layer which transmits visible light but reflects light of a certain wavelength other than visible light with a specific



directivity that can be identified with optical identifying means.

5,300,765

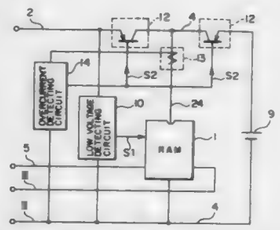
MEMORY CARD WITH LATCH-UP PROTECTION

Masaharu Mizuta, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 495,126, Mar. 19, 1990, abandoned. This application Feb. 28, 1992, Ser. No. 841,288

Int. Cl.[5] H02H *3/08;* **G06K** *19/07*

U.S. Cl. 235—492 **2 Claims**



1. A memory card with a built-in semiconductor memory element which immediately stops an overcurrent when a latch-up phenomenon occurs, said memory card comprising:

memory means including one or more writable RAMs having CMOS type electric field effect transistors;

power source means including an external power source arranged in an external device and an internal power source connected across said memory means;

means for connecting said power source means to said memory means including a power source line connecting the one or more RAMs to the external power source, a ground line, an internal power feed line connecting the one or more RAMs to the internal power source, a common power source line which is connected to the power source line and the internal power feed line at a node and diodes for switching between said internal and external power sources;

input and output means for inputting and outputting data signals between said memory means and said external device;

switch means for connecting and disconnecting said memory means and said power source means, said switch means including two transistor switches connected respectively to the power source line and the internal feed line;

a low voltage detecting circuit connected to the one or more writable RAMs said low voltage detecting circuit transmitting a standby signal to cause the one or more RAMs to enter into a standby state when the voltage of the external power source falls below a predetermined voltage; and

overcurrent detecting means for detecting the current from said power source flowing through said means for con-

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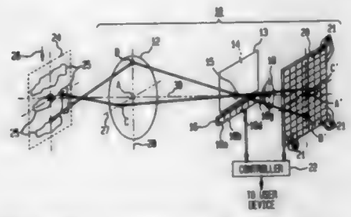
necting and for opening said switch means when the current exceeds a predetermined value, said overcurrent detecting means including a current detector connected in series with the common power source line and an overcurrent detecting circuit for transmitting an open circuit signal to open the transistor switches when the current detector detects an overcurrent.

5,300,766

SCANNING SCENE-BASED WAVEFRONT SENSOR HAVING A LINEAR IMAGE SENSOR ARRAY AND A PUPIL SENSOR ARRAY

Edward M. Granger; Sara T. Wellman, and Peter A. Jones, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1993, Ser. No. 46,673
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.9 **10 Claims**



1. A scene-based wavefront sensor comprising:
an opaque material having a surface and defining a probe hole therethrough;
an imaging system comprising at least one lens forming a predetermined pupil for imaging a remote scene having edges therein disposed in object space onto the surface of opaque material and the probe hole;
a linear image sensor array comprising a plurality of image light detecting sensors disposed adjacent the probe hole and perpendicular to a direction of relative motion occurs between the imaging system and the edges in the remote scene for receiving light from the imaging system imaged at the surface of opaque material, each image light detecting sensor being adapted to generate separate electrical output signals representative of the received light intensity at any instant of time as edges of the remote scene move relative to the imaging system; and
a pupil sensor array disposed at an image plane of the predetermined pupil of the imaging system projected through the probe hole, the pupil sensor array comprising a plurality of pupil light detecting sensors disposed in a two-dimensional array for receiving light imaged thereon as the edges of the remote scene move relative to the imaging system, each pupil light detecting sensor being adapted to generate separate electrical output signals representative of the received light intensity at any instant of time.

5,300,767

COLOR IMAGE SENSING ASSEMBLY WITH MULTIPLE LINEAR SENSORS AND ALIGNED FILTERS

Michael J. Steinle, Fort Collins; Steven L. Webb, Loveland, both of Colo., and Hans D. Neumann, Los Altos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 869,273, Apr. 15, 1992, abandoned.
This application May 19, 1993, Ser. No. 63,838
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **22 Claims**

1. A light sensor assembly comprising:
a) a plurality of parallel, spatially separated, linear photosensor means for generating a plurality of light sensing signals indicative of the intensity of light in predetermined spectral regions impinged thereon;
b) transparent plate means for transmitting light to said photosensor means positioned in adjacent overlying relationship with said photosensor means;
c) a plurality of filter coating means disposed on a surface portion of said transparent plate means in alignment with said plurality of photosensor means for filteringly transmitting said light in each of said predetermined different



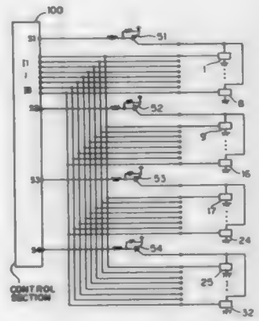
spectral regions to said photosensor means; whereby each of said linear photosensor means receives light from a different one of said predetermined spectral regions;
said plurality of photosensor means being arranged in a first plane, said plurality of filter coating means being arranged in a second plane parallel to said first plane.

5,300,768

INCLUDING A PROCESSING MEANS FOR DRIVING DESIGNATED PHOTOELECTRIC DETECTORS FOR THE CHECKING THEREOF

Takahiro Wakikaido, and Takeshi Sakaguchi, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jan. 7, 1993, Ser. No. 1,765
Claims priority, application Japan, Jan. 17, 1992, 4-027241
Int. Cl.[5] H01J *40/14;* **H02J** *1/00*
U.S. Cl. 250—208.3 **4 Claims**



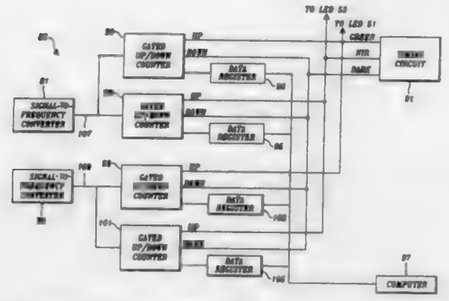
1. An image forming apparatus in which a plurality of photoelectric detectors are divided into a plurality of groups of detectors, and in which said photoelectric detectors in said groups are dynamically driven, whereby detection signals produced by said photoelectric detectors in each group are read according to predetermined timing, said apparatus comprising:
first processing means for executing a normal mode wherein said groups of detectors are dynamically driven according to said timing;
second processing means for executing a photoelectric detector check mode wherein a designated group of said detectors is statically driven, whereby detection signals produced by said detectors of said designated groups are readable so as to check said photoelectric detectors of said designated group; and
switching means for switching between processing by said first processing means and processing by said second processing means to selectively place said apparatus in said normal mode or said photoelectric detector check mode.

5,300,769

METHOD AND SYSTEM OF COMPENSATING FOR SIGNAL ARTIFACTS IN A FIBER-OPTIC SENSING SYSTEM

Jeffrey J. Dahlin, Bothell; John F. Holic, Jr., Seattle; William G. Lundell, Redmond; Steven B. Duke, Bothell, all of Wash., and Jeffrey B. Yim, Honolulu, Hi., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 29, 1992, Ser. No. 999,495
Int. Cl.[5] G01N *33/48;* **A61B** *5/00*
U.S. Cl. 250—227.23 **22 Claims**



1. A method of compensating for signal artifacts in a sensor for monitoring parameters that includes a distal probe, a source of light signals of a first wavelength, a source of light signals of a second wavelength, at least one optical waveguide for transmitting primary light signals from the source of light signals of a first wavelength and the source of light signals of a second wavelength to the distal probe and for transmitting secondary light signals from the distal probe to at least one sensor for detecting the secondary light signals, respective secondary light signals being derived from respective primary light signals transmitted to the distal probe, wherein the signal artifacts result from changes in the transmission characteristics of the optical waveguide caused by displacement of the optical waveguide, the method comprising:
sampling the primary light signal from the source of light signals of a first wavelength over a first interval; and
sampling the primary light signal from the source of light signals of a second wavelength over a second interval, wherein the sum of the first interval and the second interval is less than intervals over which displacement of the optical waveguide occurs.

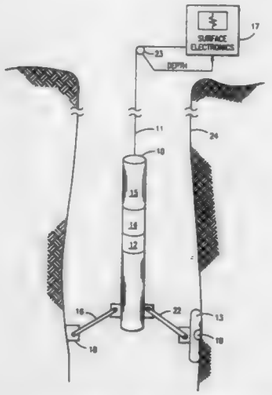
5,300,770

APPARATUS FOR PRODUCING A POROSITY LOG OF A SUBSURFACE FORMATION CORRECTED FOR DETECTOR STANDOFF

L. Scott Allen, Dallas, and William R. Mills, Plano, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 10, 1992, Ser. No. 927,109
Int. Cl.[5] G01V *5/10;* **G01N** *23/204*
U.S. Cl. 250—269 **14 Claims**

1. Apparatus for converting die-away signals representing the die-away of nuclear radiation in a subsurface formation surrounding a borehole into a log representing porosity versus depth within said formation corrected for the effect of detector standoff from the borehole wall, comprising:
a) a borehole logging tool,
b) means for traversing said logging tool along said borehole,
c) a pulsed source of fast neutrons within said logging tool for irradiating the formation surrounding a borehole with fast neutrons,
d) at least one directionally sensitive radiation detector assembly having a neutron detector for measuring the die-away of secondary radiation produced by the fast neutrons which return to the borehole from the irradiated formation,
e) means for positioning said radiation detector assembly so that it contacts the surface of the borehole wall and is oriented to position the neutron detector to maximize directional sensitivity of the neutron detector to the die-away of secondary radiation from the formation at the point of contact of the radiation detector assembly with the borehole wall and to minimize directional sensitivity to the die-away of secondary radiation from the borehole fluid,
f) means for producing intensity signals representative of the die-away of secondary radiation measured by said detector as said logging tool traverses said borehole,
g) a signal processor comprising:
i) a first trained neural network to produce an initial formation decay constant signal from said intensity signals and to produce a ratio of the borehole amplitude to formation amplitude components of said intensity signals,



ii) means for converting the formation decay constant signal to its reciprocal, an epithermal neutron lifetime signal,
iii) a second trained neural network to produce an epithermal neutron lifetime correction signal and apparent standoff signal from said epithermal neutron lifetime signal and said amplitude ratio,
iv) means for producing a standoff-corrected epithermal neutron lifetime signal from said epithermal neutron lifetime signal and said epithermal neutron lifetime correction signal to correct for standoff from the borehole wall encountered by said detector as said logging tool traverses said borehole,
v) means for generating a porosity signal from said standoff-corrected epithermal neutron lifetime signal derived from measurements in borehole models at known porosities and conditions of detector standoff, and
h) means for generating a log of said porosity signal versus depth as said logging tool traverses along said borehole.

5,300,771

METHOD FOR DETERMINING THE MOLECULAR WEIGHTS OF POLYATOMIC MOLECULES BY MASS ANALYSIS OF THEIR MULTIPLY CHARGED IONS

Michael J. Labowsky, Wayne, N.J., assignor to Analytica of Branford, Branford, Conn.

Filed Jun. 2, 1992, Ser. No. 892,113
Int. Cl.[5] B01D *59/44;* **H01J** *49/02*
U.S. Cl. 250—282 **15 Claims**

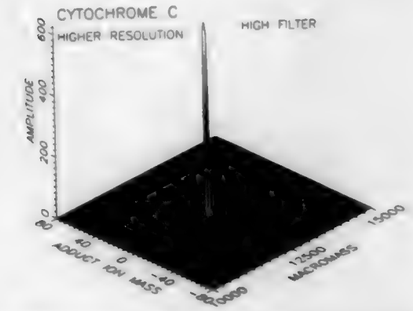
1. An improved method for determining the molecular weight of a distinct polyatomic parent molecular species by

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mass analysis of a population of multiply charged ions each of which is formed by attachment of a plurality of adduct ions to a molecule of said parent molecular species, said improved method avoiding the need to assume a value for the adduct ion mass, as required by previous methods, and comprising the steps of:

(i) Producing a primary population of multiply charged ions of a distinct polyatomic parent molecular species, all molecules of said distinct polyatomic parent molecular species being indistinguishable from each other by said method, each one of said multiply charged ions being characterizable by the symbol xi, the numerical value of xi being the m/z value for said one of said multiply charged ions such that xi=Mr/i+ma wherein Mr is the molecular weight of said distinct parent molecular species, i is an integer equal to the number of charges attached to said distinct parent molecular species to form said multiply charged ion, and ma is the mass of said individual adduct charges, said primary population of ions comprising a plurality of sub-populations, the ions of each sub-population having the same values for i, ma and Mr, and therefore the same value of xi, said plurality of said sub-populations comprising at least one sub-population of each possible integral value of i beginning with a minimum value and extending to and including a maximum value equal to the minimum value plus an integer no smaller than two;

(ii) mass-analyzing the ions of said primary population to obtain a set of experimental values for the relative abun-



dances of ions in each of said sub-populations constituting said primary population of ions, said experimental values for the relative abundances of ions comprising the measured currents due to the ions of each of said sub-populations after said ions of said sub-population have been selected from said primary population by a mass analyzer;

(iii) applying a deconvolution algorithm to said set of experimental values for the relative abundances of ions in each of said sub-populations, said deconvolution algorithm defining for each of said sub-populations the regime of values for ma and Mr that in combination with the value of i for said sub-population will give rise to a calculated value of Xi=Mr/i+ma that coincides with an experimentally determined value of xi at which there is a detectable contribution to said measured current due to ions of one of said sub-populations;

(iv) identifying as the best experimental value for the molecular weight Mr of said distinct parent molecular species, and the best experimental value for the mass ma of the adduct charges on said ions of said distinct parent molecular species, those values of Mr and ma that together, and successively in conjunction with each of all values of i for which there is a sub-population in said primary population, give rise to a set of calculated values of xi for which the associated relative ion abundances in the said set of experimental values for the relative abundances of the ions of each of said sub-populations constituting said primary population of ions, add up to a larger total value than do the relative abundances of ions associated with the set of calculated xi values resulting from any other combination of values for Mr and ma.

5,300,772

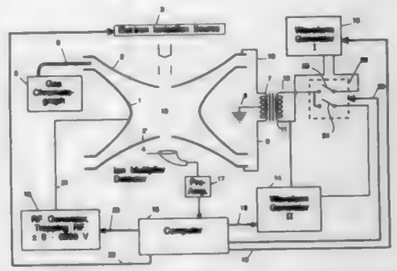
QUADRUPLE ION TRAP METHOD HAVING IMPROVED SENSITIVITY

Sidney E. Buttrill, Jr., Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 31, 1992, Ser. No. 923,093

Int. Cl.[5] B01D *59/44*; H01J *49/40*

U.S. Cl. 250—282 **12 Claims**



1. In a method for selectively trapping and isolating a selected ion or range of ions in a quadrupole ion trap (QIT) system, said QIT system having a ring electrode, a pair of end caps, an RF trapping voltage source having a trapping frequency F, a first supplemental RF waveform connected to said end caps, and a second supplementary RF waveform connected to said end caps, and means for introducing a sample into said QIT, said method for isolating including the steps of:

a. establishing said RF trapping voltage at a first value to enable retention of a large mass range of ions in said ion trap, said value sufficiently low to correspond to the best trapping efficiency;

b. forming ions or injecting ions of a sample in said QIT;

c. applying said first supplementary RF waveform to said end caps to resonantly reject selected ions;

d. resetting said RF trapping voltage to a second value, said second value corresponding to a value of q_z of at least 0.7 wherein q_z is proportional to said RF trapping voltage and inversely proportional to the mass of said ions;

e. applying said second supplementary RF waveform to said end caps to resonantly reject selected ions;

f. simultaneously carrying out steps (b) and (c), wherein the waveform of said first supplementary RF waveform is a composite of the secular frequencies corresponding to the ions from the constituents of the residual gases in said QIT, obtaining said composite by adding together at selected points in time, the amplitude of each said secular frequency waveform.

5,300,773

PULSED IONIZATION ION MOBILITY SENSOR

David K. Davies, Churchill Borough, Pa., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 18, 1993, Ser. No. 18,995

Int. Cl.[5] H01J *49/14*

U.S. Cl. 250—286 **23 Claims**

1. An ion mobility sensor for obtaining quantitative measurements of concentrations of constituents of a multicomponent gaseous sample, the sensor having an ionization region being connected to a drift region, the sensor comprising:

(a) a first electrode provided at and defining one end of the ionization region;

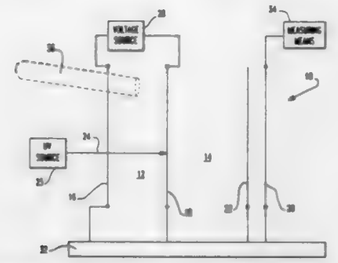
(b) a grid electrode provided at and defining an opposite end of the ionization region and also providing a boundary separating the ionization region from the drift region;

(c) a collector electrode provided at an end of the drift region opposite to the grid electrode;

(d) means for allowing entry of the gaseous sample between the first electrode and the grid electrode;

(e) means for directing a pulse of UV light toward the grid electrode, illuminating the grid electrode;

(f) means for applying DC voltages at the first electrode, the grid electrode and the collector electrode, wherein the voltages applied to the electrodes progressively vary so that a unidirectional drift field is created across the sensor;



(g) means for superimposing a voltage pulse of a selected pulse width at the first electrode wherein the UV pulse is contained within the width of the voltage pulse, and wherein an ionization field is generated between the first electrode and the grid electrode whose magnitude exceeds an electric field value necessary to ionize the gaseous sample; and

(h) means connected to the collector electrode for producing an electrical output in accordance with any ions received at the collector electrode.

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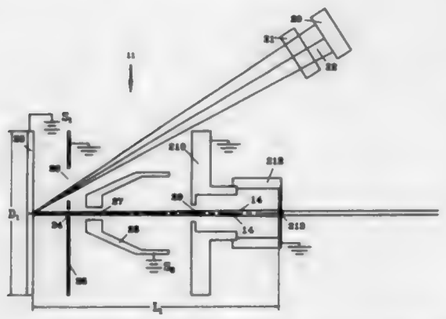
TIME-OF-FLIGHT MASS SPECTROMETER WITH AN APERTURE ENABLING TRADEOFF OF TRANSMISSION EFFICIENCY AND RESOLUTION

S. E. Buttrill, Jr., Palo Alto, Calif., assignor to Applied Biosystems, Inc., Foster City, Calif.

Filed Apr. 25, 1991, Ser. No. 691,272

Int. Cl.[5] B01D *59/44*; H01J *49/00*

U.S. Cl. 250—287 **12 Claims**



1. A time-of-flight mass spectrometer having a controllable resolution, said spectrometer comprising:

a barrier having an aperture;

a detector;

means for producing, from a sample substance, a beam of sample ions, at least part of which passes through said aperture to said detector;

each ion being characterized by a time-of-flight extending from a time of generation of that ion until said ion is detected by said detector; and

said ions exhibiting at said aperture a time-of-flight distribution that is a function of a lateral distance from an axis parallel to said beam and located within said beam; and

means for varying the resolution by varying how much of this beam passes through said aperture.

5,300,775

METHOD OF SELECTING A SPATIAL ENERGY SPREAD WITHIN AN ELECTRON BEAM, AND AN ELECTRON BEAM APPARATUS SUITABLE FOR CARRYING OUT SUCH A METHOD

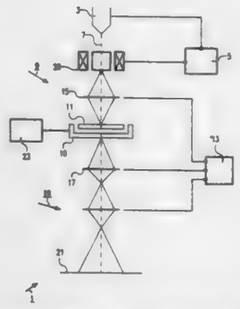
Karel D. Van der Mast, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 9, 1993, Ser. No. 15,694

Claims priority, application European Pat. Off., Feb. 12, 1992, 92200384.3

Int. Cl.[5] H01J *49/44*

U.S. Cl. 250—305 **18 Claims**



1. A method of selecting the spatial energy-spread within an electron beam which produces pixels forming an image of an object in an image plane, said method comprising: arranging an energy-dispersive member in the vicinity of an electron source which generates the electron beam; operating said member to widen the electron beam in a dispersion direction with a dispersivity which is greater than the diameter of the electron source; and selecting a local energy dispersion in the beam by selecting a number of pixels representing such a local energy dispersion in the image plane of the object.

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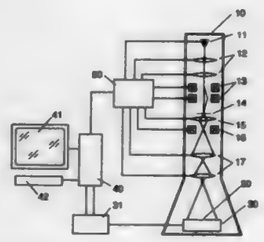
AUTOADJUSTING ELECTRON MICROSCOPE

Ondrej L. Krivanek, Oakland, Calif., assignor to Gatan, Inc., Pleasanton, Calif.

Filed Sep. 16, 1992, Ser. No. 945,603

Int. Cl.[5] H01J *37/295*

U.S. Cl. 250—307 **10 Claims**



1. A method for autoadjusting defocus or astigmatism of a

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transmission electron microscope, said method comprising the steps of:

i) illuminating a thin sample of an amorphous material with a beam of electrons in a transmission electron microscope,

ii) producing a transmission electron image of said sample,

iii) recording said image with an electron camera,

iv) transferring said image captured by said camera to a digital computer,

v) computing a digital diffractogram of said image,

vi) automatically analyzing said diffractogram to determine values of defocus and astigmatism best corresponding to it,

vii) working out needed corrections to defocus or astigmatism circuits of said microscope from said determined values of defocus and astigmatism, using previously determined calibrations of strengths of said circuits, and

viii) applying said corrections to the microscope via a communication link between said computer and said microscope,

whereby said defocus or said astigmatism of said microscope is adjusted automatically from a single recorded image.

5,300,777

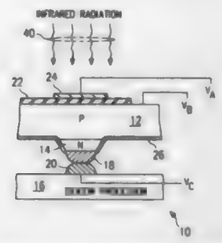
TWO COLOR INFRARED DETECTOR AND METHOD

Michael W. Goodwin, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 26, 1992, Ser. No. 860,733

Int. Cl.[5] H01L *31/0296, 31/0248*

U.S. Cl. 250—338.4 **14 Claims**



11. A two color infrared detector comprising:

a diode having first and second semiconductor regions, the first semiconductor region operable to generate electron-hole pairs when struck by infrared radiation having a first wavelength and the second semiconductor region operable to generate electron-hole pairs when struck by infrared radiation having a second wavelength;

an insulator layer disposed on the first semiconductor region opposite from the second semiconductor region;

a metal gate disposed on the insulator layer opposite from the first semiconductor region to form a metal insulator semiconductor; and

an indium bump formed on the second semiconductor region opposite from the first semiconductor region for use in mating the diode with a silicon processor and for transmitting charges respectively from the first semiconductor region and the second semiconductor region to the signal processor.

5,300,778

MULTISPECTRAL SENSOR

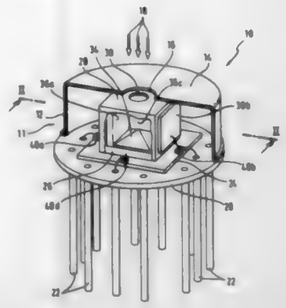
Volkmar Norkus; Christian Schiewe, and Frank Nagel, all of Dresden, Fed. Rep. of Germany, assignors to ULTRAKUST electronic GmbH, Ruhmannsfelden, Fed. Rep. of Germany

Filed Oct. 9, 1992, Ser. No. 958,188

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 4133481

Int. Cl.[5] G01N *21/25*

U.S. Cl. 250—339.01 **19 Claims**



1. A multispectral sensor with a casing (**11**), an entrance port (**16**) for radiation (**18**) to be measured and located in the casing (**11**) and an optical device (**34**) located in the optical path behind the entrance port (**16**) for dividing up the beam (**18**) incident through the entrance port (**16**) into partial beams A, B, a plurality of filters (**36***a* to **36***d*), which surround the optical device (**34**) and have different spectral transmission ranges and outside which they have a reflecting construction, and radiation-sensitive elements (**38***a* to **38***d*) arranged in the optical path of the partial beams A, B behind the filters.

5,300,779

CAPILLARY FLOW DEVICE

Robert S. Hillman, Cupertino; Michael E. Cobb, Sunnyvale; Jimmy D. Allen, Los Altos; Ian Gibbons, Menlo Park; Vladimir E. Ostoich, San Jose, and Laura J. Winfrey, Belmont, all of Calif., assignors to Biotrack, Inc., Fremont, Calif.

Continuation of Ser. No. 651,283, Feb. 5, 1991, Pat. No. 5,164,598, which is a continuation of Ser. No. 472,130, Jan. 30, 1990, Pat. No. 5,004,923, which is a division of Ser. No. 177,625, Apr. 5, 1988, Pat. No. 4,948,961, which is a division of Ser. No. 880,793, Jul. 1, 1986, Pat. No. 4,756,884, which is a continuation-in-part of Ser. No. 762,748, Aug. 5, 1985, abandoned. This application Aug. 18, 1992, Ser. No. 931,719

The portion of the term of this patent subsequent to Oct. 15, 2009, has been disclaimed.

Int. Cl.[5] G01N *21/49, 31/22*

U.S. Cl. 250—341 **13 Claims**



1. A method for carrying out an assay that relies on measurement of coagulation time of a blood sample to determine presence or amount of an analyte in or property of said sample, which comprises:

a. selecting an enclosed capillary device for use in said assay, said device comprising a housing with a capillary passageway in said housing, said capillary passageway terminating at an inlet port at one end of said passageway and a vent at another end of said passageway, said housing

further being adapted to fit into an electronic monitoring device that carries out said measurement, said passageway further containing a measured amount of dry reagent on a surface of said capillary pathway that induces clotting of said blood sample;

b. inserting said capillary device into said monitor;

c. applying said sample to said inlet port of said device, either before or after said capillary device is inserted into said monitor;

d. determining a time of coagulation of said sample using said monitor, wherein said monitor detects coagulation of said sample by detecting interaction of light with particles in said capillary passageway; and

e. relating said time to said presence or amount of said analyte in or property of said sample.

5,300,780

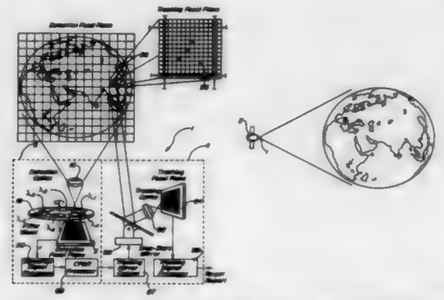
MISSILE SURVEILLANCE METHOD AND APPARATUS

Joseph M. Denney, Palos Verdes Estates, and Eric L. Upton, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 17, 1992, Ser. No. 991,772

Int. Cl.[5] G01S *17/66*

U.S. Cl. 250—342 **14 Claims**



1. A surveillance system for detecting and tracking a missile flying above the earth's surface, said system comprising:

a) detection subsystem means for detecting and coarsely locating the missile, said detection subsystem including:

1) a first focal plane array having a grid of pixels for imaging substantially the entire earth's surface, each pixel having a given ground surface distance;

2) means for generating, from each pixel in the first focal plane array, a multispectral electro-optical signal input spectrum which includes spectra of the missile and background;

3) processor means for processing the multispectral electro-optical signal input spectrum of each pixel to separate the missile from the background, said processor means generating a given output signal when the input spectrum contains a multispectral signature of the missile;

b) tracking subsystem means for tracking a detected missile, said tracking subsystem including:

1) a second focal plane array having a grid of pixels;

2) imaging means, coupled to the output signal of the processor means, for imaging a localized sector of the earth's surface containing the detected missile onto the second focal plane array whereby each pixel on the second focal plane array has a much smaller ground surface distance than pixels in the first focal plane array thereby increasing the resolution thereof;

3) tracking processor means, coupled to the second focal plane array, for tracking the missile; and

whereby the surveillance system provides accurate missile detection and tracking using relatively inexpensive and low weight components.

5,300,781

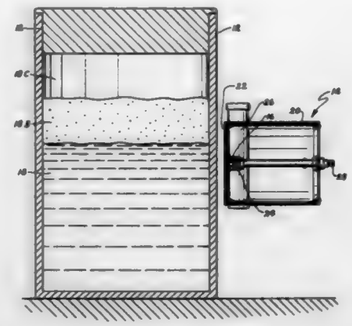
NON-HYDROGENOUS PROCESS LEVEL MEASUREMENT

John M. DiMartino, Chicago, Ill., assignor to Kay-Ray/Sensall, Inc., Mount Prospect, Ill.

Filed Dec. 9, 1991, Ser. No. 804,355

Int. Cl.[5] G01N *23/09;* **G01T** *3/00;* **G01F** *23/00*

U.S. Cl. 250—357.1 **15 Claims**



1. A fast neutron detection system for accurate measurement of parameters of substantially non-hydrogenous material contained in a walled vessel comprising:

a fast neutron source comprising means for directing fast neutrons in a first direction from an exterior of the vessel through the vessel wall to the substantially non-hydrogenous material;

a detector system mounted adjacent to the neutron source to provide detection of neutrons scattered back from the material through the vessel wall in a direction substantially opposite from the first direction; and

an energy degradation shield disposed adjacent the source and in the path of neutrons emerging in a first direction to reduce the energy of the fast neutrons to a desired energy level for detection by the detector system.

5,300,782

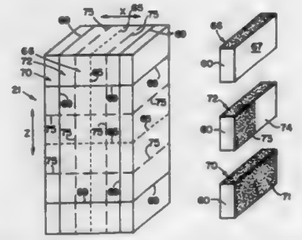
GAMMA RAY DETECTOR FOR PET SCANNER

Brian D. Johnston, Hartland; David L. McDaniel, Dousman, and James G. Colsher, Waukesha, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jun. 26, 1992, Ser. No. 904,791

Int. Cl.[5] G01T *1/20, 1/202*

U.S. Cl. 250—363.03 **6 Claims**



1. A detector unit for a positron emission tomographic scanner, which comprises:

an array of crystals, each crystal having:

a) a front surface through which a gamma ray may pass and produce a scintillation event that emits light from within the crystal;

b) a rear surface through which light emanating from within the crystal may pass;

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c) side surfaces which abut the side surfaces of adjacent crystals in the array and which are treated to have one of at least three different levels of transparency to the passage of light therethrough such that the transparency varies across the array of crystals, wherein the treated side surfaces which do not substantially completely transmit light therethrough are coated with a reflective pain; and

an array of photomultiplier tubes disposed behind the rear surfaces of the crystals in said array of crystals, each photomultiplier tube being operable to produce an electrical signal which indicates by its magnitude the intensity of the light it receives from a scintillation event within the array of crystals.

5,300,783

LAYERED REFLECTING AND LUMINOUS MATERIAL

Andrew B. Spencer, Manchester; Richard J. Guastamachio, Broad Brook, and Bryan D. Marsh, South Windsor, all of Conn., assignors to American Ingenuity, Inc., Manchester, Conn.

Continuation-in-part of Ser. No. 890,392, May 26, 1992, Pat. No. 5,243,457. This application Sep. 30, 1992, Ser. No. 954,387

Int. Cl.[5] G02B *5/124*

U.S. Cl. 250—462.1 **18 Claims**



1. Layered reflecting and luminous material comprising:

a first layer of prismatic light reflective material having an underlying surface formed with a plurality of minute prism-like formations projecting therefrom at regular spaced intervals and an overlying substantially smooth light transmissive surface, said first layer having a first peripheral edge; and

a second layer of phosphorescent material attached to said underlying surface of prism-like formations and generally coextensive therewith, said second layer having a second peripheral edge;

said first and second peripheral edges being proximately disposed, said first layer and said second layer being joined together into a unitary structure along a border of finite width extending continuously along said first and second peripheral edges, said prism-like formations coextensive with said border being thereby substantially destroyed, said border encompassing and defining a central region whereat said first layer and said second layer are physically distinct;

whereby in said central region said material simultaneously radiates phosphorescent light from said second layer through said underlying surface of prism-like formations and through said smooth light transmissive surface and reflected light from said prism-like formations through said smooth light transmissive surface of said first layer; and

whereby only phosphorescent light radiates from said border.

5,300,784

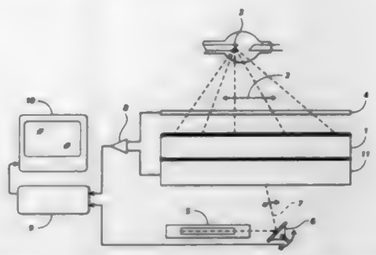
SELENIUM ALLOY X-RAY IMAGING MEMBER ON TRANSPARENT SUBSTRATE

William D. Fender; Eddie M. Zanroso, both of Pasadena; Algird G. Leiga, Claremont, all of Calif.; Lothar S. Jeromin, Newark, Del., and Phillip G. Perry, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1992, Ser. No. 891,109

Int. Cl.[5] G03G *15/00, 5/00*

U.S. Cl. 250—484.2 **2 Claims**



1. Apparatus for producing a digitized x-ray image comprising:

a photoreceptor comprising an upper portion of amorphous selenium 100 to 400 microns in thickness and having an arsenic concentration of 0.1 to 0.6 by weight for receiving an x-ray image originating above said photoreceptor, and a bottom transparent substrate,

a light beam scanner below said photoreceptor for discharging a charge on said selenium by said light beam, and

an x-ray transparent electrode above, but not in contact with, said selenium for sensing the discharge of said selenium by said light beam.

5,300,785

APPARATUS FOR AND METHOD OF PRODUCING ION BEAMS

Derek Aitken, Surbiton, England, assignor to Superion Limited, London, England

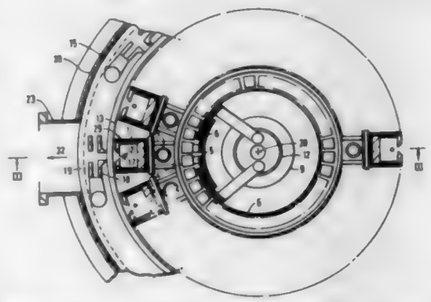
PCT No. PCT/GB91/01696, § 371 Date Jun. 4, 1992, § 102(e) Date Jun. 4, 1992, PCT Pub. No. WO92/06486, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 2, 1991, Ser. No. 852,209

Claims priority, application United Kingdom, Oct. 4, 1990, 9021629

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—492.2 **21 Claims**



1. Apparatus for producing a beam of ions comprising:

a plurality of ion sources;

first moveable support means for supporting the ion sources;

a housing defining an outlet path for an ion beam produced by an ion source;

first drive means for moving the support means so as to bring a selected ion source into an operating position relative to the housing to direct said ion beam along the outlet path;

a plurality of extraction electrodes each for extracting said ions from said ion source to produce said ion beam for ion implantation;

second moveable support means for supporting the extraction electrodes; and

second drive means for moving the second support means so as to bring a selected extraction electrode into an operating position relative to the housing to extract said ion beam directed along the said outlet path.

5,300,786

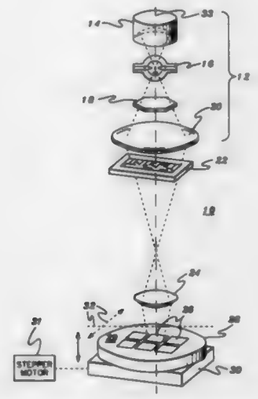
OPTICAL FOCUS PHASE SHIFT TEST PATTERN, MONITORING SYSTEM AND PROCESS

Timothy A. Brunner, Ridgefield, Conn.; Michael S. Hibbs, Westford, Vt.; Barbara B. Peck, Westford, Vt., and Chrisopher A. Spence, Westford, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1992, Ser. No. 967,885

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—548 **30 Claims**



1. A focus test mask for use in a projection imagery system, said focus test mask projecting on an object surface a test pattern which allows quantification of system defocus, said focus test mask comprising:

a substrate which allows light to pass therethrough; and

a phase shift pattern associated with said substrate and shifting light passing therethrough by other than 180° in relation to light passing through said substrate to produce a phase difference between light passing therethrough and light passing through said substrate, wherein when said phase shift pattern is optically projected by said system onto the surface of an object, the direction and magnitude of optical defocus is determinable by measuring dimensions of the projected test pattern.

5,300,787

METHOD FOR SETTING A SENSOR WHICH DETECTS THE EDGE OF A MOVING WEB OF MATERIAL IN A CONTACT-FREE MANNER

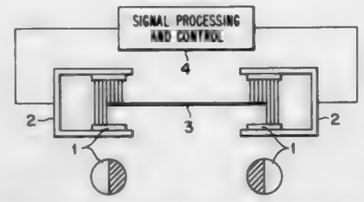
Hans J. Schrauwen, Hiddenhausen; Theodor Nacke, Leopoldshöhe, and Jürgen Bettführ, Vlotho, all of Fed. Rep. of Germany, assignors to BST Servo-Technik GmbH, Bielefeld, Fed. Rep. of Germany

Filed Feb. 10, 1993, Ser. No. 15,828

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1992, 4203947

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—548 **15 Claims**



1. Method for setting a sensor which detects the edge of a moving web of material in a contact-free manner, for a web movement control device, the maximum signal change, which can be achieved by the sensor, between a completely uncovered sensor condition and a completely covered sensor condition being determined in an initial state of the web movement control device and an intermediate value of this maximum signal change being specified as a basic control value for the web movement control, wherein the bright values and dark values are detected by means of an electronic signal processing device by the bright value or dark value being derived from the absence of a signal change during the movement of the web of material into the sensor or out of the sensor since the values determined in this way are stored and the intermediate value is calculated and stored, by the achievable signal change between an uncovered sensor condition and sensor being completely covered by the respective web of material being detected and stored in the same manner under given operating conditions, after which the corresponding intermediate value of the signal change identified in this way is calculated and compared with the originally detected value, and in which the last intermediate value obtained for the further web movement control being adjusted in the electronic signal processing device to the basic control value by means of a correction factor.

5,300,788

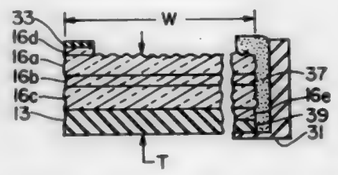
LIGHT EMITTING DIODE BARS AND ARRAYS AND METHOD OF MAKING SAME

John C. C. Fan, Chestnut Hill; Brenda Dingle, Mansfield; Shambhu Shastry, Franklin; Mark B. Spitzer, Sharon, and Robert W. McClelland, Norwell, all of Mass., assignors to Kopin Corporation, Taunton, Mass.

Filed Jan. 18, 1991, Ser. No. 643,552

Int. Cl.[5] H01K *27/10*

U.S. Cl. 257—13 **41 Claims**



1. An LED bar comprising a row of light emitting pixel regions formed in an epitaxial thin film semiconductor struc-

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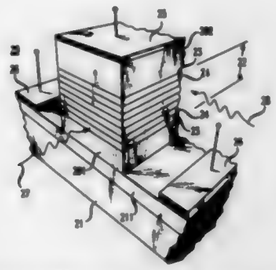
ture comprising a front side cladding layer on an active p-n junction layer, on a back side cladding layer with pixel regions formed in said structure separated from adjacent pixel regions by high lateral resistivity with a thin contact film on the front side of the structure, and wherein only said contact film is removed between pixel regions, said contact film being formed on said front side cladding layer, said cladding layer having a thickness less than bout 0.5 microns thereby enhancing said high lateral resistivity between adjacent pixel regions, with metal pixel contacts formed on the back side cladding layer and remaining front side pixel contact film.

5,300,789

ARTICLE COMPRISING MEANS FOR MODULATING THE OPTICAL TRANSPARENCY OF A SEMICONDUCTOR BODY, AND METHOD OF OPERATING THE ARTICLE

Vera B. Gorfinkel, Saratov, Russian Federation, and Sergey Luryi, Bridgewater, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 24, 1991, Ser. No. 814,745
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—21 **22 Claims**



1. An article comprising a semiconductor body that comprises a multilayer structure comprising at least one quantum well (QW), associated with said QW being a bandgap energy and a subband energy difference; associated with free carriers of a first conductivity type in the QW is a free carrier distribution function, and associated with the body is a lattice temperature; the article further comprising means for providing a modulation signal to the body;

characterized in that the article further comprises

a) means for providing electromagnetic radiation of a first wavelength ("inter-band radiation" or "IBR") to the body, the first wavelength selected to correspond to said bandgap energy;

b) means for providing electromagnetic radiation of a second wavelength ("inter-subband radiation" or "ISBR") to the body, the second wavelength being longer than the first wavelength and being selected such that the free carrier distribution function can be varied by means of the ISBR in accordance with the modulation signal, such that the IBR is modulated in accordance with said modulation signal, the modulated IBR being emitted from the body; and

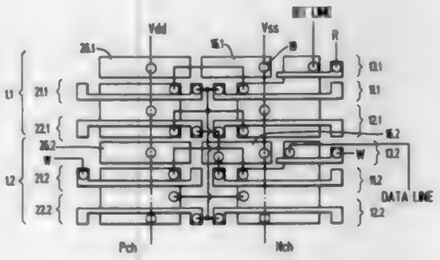
c) modulated IBR utilization means.

5,300,790

SEMICONDUCTOR DEVICE

Yasuhisa Hirabayashi; Takashi Sakuda; Kazuhiko Okawa, and Yasuhiro Oguchi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 829,043, Apr. 15, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 71,348
Claims priority, application Japan, Jun. 15, 1990, 2-157035; Jun. 15, 1990, 2-157036
Int. Cl.[5] H01L *27/02, 27/10, 27/15*
U.S. Cl. 257—202 **11 Claims**



1. A semiconductor device comprising:

a plurality of basic cells formed on a substrate and disposed adjacent to one another, the cells being configurable into a predetermined circuit by intra basic cell connections and inter basic cell connections, wherein:

each of said basic cells occupies a region of said substrate, which region is enclosed by first and second lines extending parallel to one another in a first direction, said basic cells being disposed adjacent one another and being spaced apart from one another in the first direction;

each of said basic cells comprises a first plurality of main MISFETs of a first conductivity type disposed in parallel with one another, a second plurality of main MISFETs of a second conductivity type opposite to the first conductivity type disposed in parallel with one another, said first plurality of main MISFETs occupying a first portion of the region and said second plurality of main MISFETS occupying a second portion of the region, said first and second portions being separated from one another in a second direction which is perpendicular to the first direction, said first portion being disposed adjacent said first line and said second portion being disposed adjacent said second line, and a stopper layer disposed in parallel with said main MISFETs;

each of said basic cells further comprises a sub-MISFET having an area smaller than the area of each said main MISFET of said basic cell and formed in said first portion of the region of said basic cell;

in each of said basic cells, said stopper layer is disposed at least partially in said first portion and extends in the second direction from said sub-MISFET toward said second portion so that said sub-MISFET is located between said stopped layer and said first line; and

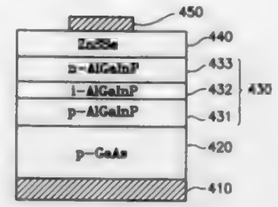
in each of said basic cells, each said main MISFET and said sub-MISFET has a respective gate electrode having a connection end and said connection ends of said gate electrodes of said first plurality of main MISFETs and said sub-MISFET are aligned with one another in the first direction and extend along said first line.

5,300,791

LIGHT EMITTING DIODE

Tzer-Perng Chen; Chin-Yuan Chen; Jyi-Ren Deng; Ming-Jiunn Jou; Bling-Jye Lee, and Jenn-Yu Kao, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 29, 1992, Ser. No. 953,659
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—94 **6 Claims**



1. A light emitting diode comprising:

a) a p-type substrate;

b) a p-type first confining layer formed in junction with said substrate;

c) an active layer formed in junction with said first confining layer;

d) an n-type second confining layer formed in junction with said active layer; and

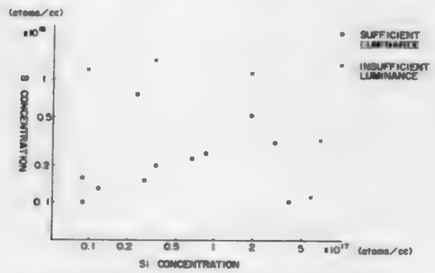
e) a single layer of ZnSSe semiconductor material of an n-type formed in junction with said second confining layer whereby a window layer with current spreading capabilities is formed.

5,300,792

GAP RED LIGHT EMITTING DIODE

Munehisa Yanagisawa, Takasaki; Susumu Arisaka; Yuki Tamura, both of Annaka, and Toshio Otaki, Takasaki, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 960,330
Claims priority, application Japan, Oct. 15, 1991, 3-294998
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—101 **4 Claims**



1. In a GaP red light emitting diode comprising:

an n-type GaP epitaxial layer doped with Te grown on an n-type GaP substrate; and

a p-type GaP epitaxial layer containing red light emitting zn-O pairs grown on said n-type GaP epitaxial layer,

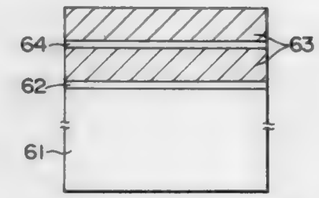
the improvement, whereby said diode has a luminance of at least 0.95, which comprises limiting the silicon concentration of said n-type layer to a red light emitting enhancing amount of not more than 5×10^{17} atoms/cc and limiting the sulfur concentration of said n-type layer to a red light emitting enhancing amount of not more than 1×10^{18} atoms/cc.

5,300,793

HETERO CRYSTALLINE STRUCTURE AND SEMICONDUCTOR DEVICE USING IT

Masahiko Kondow, Kokubunji; Shigekazu Minagawa, and Takashi Kajimura, both of Tokyo, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Continuation of Ser. No. 759,150, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 646,524, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 470,419, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 281,347, Dec. 8, 1988, abandoned. This application May 19, 1993, Ser. No. 63,054
Claims priority, application Japan, Dec. 11, 1987, 62-311915
Int. Cl.[5] H01L *29/04*
U.S. Cl. 257—12 **21 Claims**



1. A hetero crystalline structure comprising:

a semiconductor single crystal substrate, a crystal face of said semiconductor substrate having an atomic arrangement which exists in one crystalline structure selected from the group consisting of a zincblende-crystalline structure and a wurtzite-crystalline structure, and

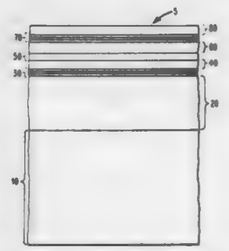
a semiconductor single crystal epitaxial film epitaxially grown on said crystal face semiconductor substrate and having an atomic arrangement which exists in said one crystalline structure throughout its entire thickness, from an interface with said semiconductor substrate to an interface with a material of different composition, and being made of a different material therefrom, the material of said semiconductor single crystal epitaxial film not having said one crystalline structure in its bulk state.

5,300,794

METHOD OF FABRICATING HIGHLY LATTICE MISMATCHED QUANTUM WELL STRUCTURES

Paul Melman; Boris S. Elman, both of Newton; Emil S. Koteles, Lexington, and Chirravuri Jagannath, Medfield, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 412,354, Sep. 25, 1989, Pat. No. 5,021,360. This application Mar. 19, 1991, Ser. No. 671,311
Int. Cl.[5] H01L *29/161, 29/205, 29/225*
U.S. Cl. 257—190 **6 Claims**



1. A semiconductor heterostructure, comprising:

a host substrate;

a buffer layer of uniformly compositioned semiconducting material grown on said substrate wherein said layer is lattice-mismatched relative to said substrate;

a strained superlattice structure grown on said buffer layer

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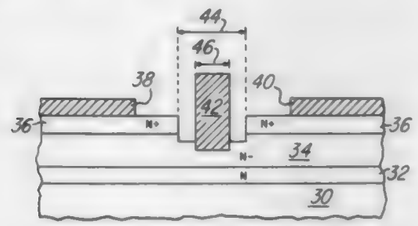
wherein said host substrate, said buffer layer, and said superlattice structure together form an effective substrate;
an unstrained barrier layer grown on said superlattice structure; and
a quantum well structure serving as an active region and grown on said barrier layer;
wherein said uniformly compositioned buffer layer has a thickness greater than a critical thickness such that stress due to a lattice constant mismatch between said quantum well structure and said host substrate is accommodated by the formation of dislocations in said uniformly compositioned buffer layer.

5,300,795

GAAS FET WITH RESISTIVE ALGAAS

Paul Saunier, Garland, and Hua Q. Tserng, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 648,091, Jan. 31, 1991, abandoned. This application Mar. 20, 1992, Ser. No. 854,169
Int. Cl.[5] H01L *29/80, 29/161, 21/265, 21/44*
U.S. Cl. 257—192 **14 Claims**



1. A semiconductor device, said device comprising:
a. a buffer layer;
b. a channel layer of doped narrow bandgap material, having a thickness greater than 250 Å, over said buffer layer;
c. a resistive layer of wide bandgap material, with a dopant concentration of 10^{16} cm^3 or greater, over said channel layer; and
d. a gate in a double stepped recess in said resistive layer.

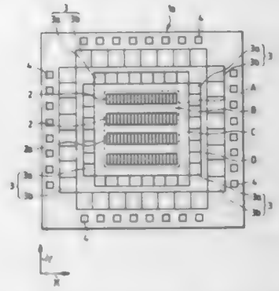
5,300,796

SEMICONDUCTOR DEVICE HAVING AN INTERNAL CELL ARRAY REGION AND A PERIPHERAL REGION SURROUNDING THE INTERNAL CELL ARRAY FOR PROVIDING INPUT/OUTPUT BASIC CELLS

Yoshio Shintani, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 617,795, Nov. 26, 1990, abandoned, which is a continuation of Ser. No. 367,324, Jun. 16, 1989, abandoned. This application Jun. 4, 1992, Ser. No. 898,363
Claims priority, application Japan, Jun. 29, 1988, 63-162155
Int. Cl.[5] H01L *27/02, 27/10*
U.S. Cl. 257—203 **25 Claims**

1. A semiconductor integrated circuit device comprising:
a semiconductor substrate having a main surface with a rectangular shape;
internal cells comprised of basic cells formed in an internal cell region on said main surface;
input/output cells for input/output buffer circuits formed at an outer peripheral region of the rectangular-shaped main surface of said semiconductor substrate in such a manner that, with respect to each one of four end sides of the rectangular-shaped main surface, said input/output cells are continuously arranged in a direction parallel to an adjacent end side of the rectangular-shaped main surface, each of said input/output cells including a first cell and a second cell which is formed more distantly from said internal cells than said first cell,
wherein said first cell is comprised of first MISFETs formed in a first cell forming region of said main surface,
wherein said second cell is comprised of second MISFETs which have a greater ratio of a gate width-to-gate length than said first MISFETs, respectively, and which are formed in a second cell forming region of said main surface,
wherein said first cells and said second cells of each continuous arrangement of input/output cells, adjacent a corresponding end side of the rectangular-shaped main surface, are formed as separate, continuous arrangements of first cells and second cells disposed, respectively, along a direction parallel to the adjacent end side of the rectangular-shaped main memory,
wherein a combined width, corresponding to a distance in said direction of all first cells of a continuous arrangement



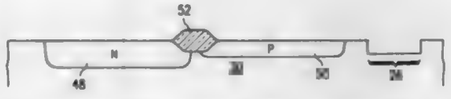
adjacent an end side is less than a width of all second cells of a continuous arrangement corresponding thereto, and
wherein a spacing distance, in said direction, between each one of a pair of other end sides of said rectangular-shaped main surface, joined to said adjacent end side at right angles, and said first cells of input/output cells corresponding to said adjacent end side is greater than a spacing distance between each one of said pair of other end sides and said second cells of input/output cells corresponding to said adjacent end side; and
external terminals on said main surface formed, respectively, near corresponding ones of said input/output cells and more distantly from said internal cell region than said input/output cells.

5,300,797

COPLANAR TWIN-WELL INTEGRATED CIRCUIT STRUCTURE

Frank R. Bryant, Denton; Tsiu C. Chan, Carrollton, and Kuei-Wu Huang, Irving, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 31, 1992, Ser. No. 860,980
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—206 **25 Claims**



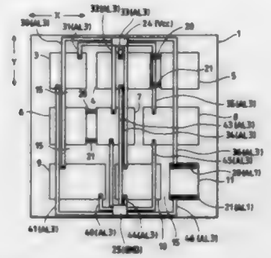
1. A structure in an integrated circuit, comprising:
an N-type well in a semiconductor substrate;
a P-type well in the semiconductor substrate, wherein the upper surface of the N-well and P-well are coplanar.

5,300,798

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Kouichi Yamazaki, Machashi; Setsuo Ogura, Takasaki; Kazuyuki Kamegaki, Sawa; Kenya Yamauchi; Yukinori Kitamura, both of Takasaki, and Tuyoshi Nagase, Machashi, all of Japan, assignors to Hitachi, Ltd.; Hitachi Microcomputer System, Ltd.; Hitachi Tobu Semiconductor, Ltd. and Hitachi Communication Systems, Incorporated, Tokyo, Japan

Continuation of Ser. No. 691,290, Apr. 25, 1991, abandoned.
This application Nov. 17, 1992, Ser. No. 978,293
Claims priority, application Japan, Apr. 27, 1990, 2-113693
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—207 **7 Claims**



1. A semiconductor device comprising:
a plurality of tetragonal functional blocks arranged in a X-direction and a Y-direction on a semiconductor substrate, forming a matrix of said tetragonal functional blocks, wherein said Y-direction is perpendicular to said X-direction, and wherein the widths, as measured along said Y-direction, of said tetragonal functional blocks are substantially equal;
wiring channels each extending in X-direction and being disposed between said functional blocks;
first wirings comprising a first layer of metal and extending mainly in said X-direction, said first wirings being located in said blocks and said wiring channels;
second wirings comprising a second layer of metal formed over said first layer of metal and extending mainly in said Y-direction, said second wirings being located in said blocks and said wiring channels;
third wiring comprising a third layer of metal; and
a first electrode formed of said third layer of metal, said third wirings extending from said first electrode to each of said blocks to supply a first potential to each of said blocks, said third wirings extending over said blocks and wiring channels mainly in said Y-direction,
wherein said blocks arranged in said X-direction are also electrically connected by said first and second wirings located on said wiring channels, and
wherein at least one adjacent pair or blocks in said Y-direction is electrically connected by said second wirings.

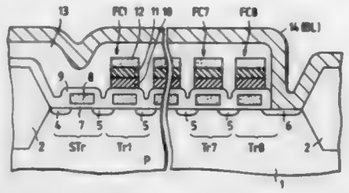
5,300,799

NONVOLATILE SEMICONDUCTOR STORAGE DEVICE WITH FERROELECTRIC CAPACITORS

Takashi Nakamura, and Hironobu Nakao, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 6, 1992, Ser. No. 973,078
Claims priority, application Japan, Nov. 8, 1991, 3-321046
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—295 **2 Claims**

1. A nonvolatile semiconductor storage device which stores information using a residual dielectric polarization of a ferroelectric substance and comprises at least one memory cell, wherein
said memory cell is formed in one element region which is isolated from other regions by an insulating film, said memory cell comprising: at least one select transistor; a plurality of transistors which are connected in series with said select transistor, two neighboring transistors of said plurality of transistors sharing a diffusion region; and a plurality of ferroelectric capacitors which are arranged correspondingly to said plurality of transistors and each of which has one electrode equivalently connected to a gate electrode of each of said plurality of transistors,
the gate electrode of said select transistor is led out as a first word line,



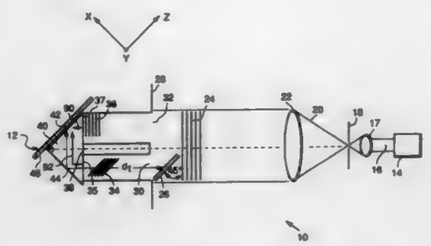
a junction between said gate electrode of each of said plurality of transistors and said one electrode of each of said ferroelectric capacitors is led out as a second word line;
another electrode of each of said ferroelectric capacitors is led out as a third word line, and
a bit line is connected to one of said diffusion region of said select transistor and the end one of said plurality of transistors.

5,300,800

LOW LEAKAGE SUBSTRATE PLATE DRAM CELL

Gary B. Bronner, Mount Kisco; Sang H. Dhong, Mahopac, and Wei Hwang, Armonk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 696,691, May 7, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,893
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—304 **20 Claims**



1. A dynamic random access memory cell comprising:
a substrate of a first conductivity type an upper portion of which is less conductive than a highly conductive lower portion,
a region disposed in said upper portion of said substrate having a conductivity type opposite to that of said substrate,
at least one access device having first and second diffusion regions disposed in said region,
at least one storage means extending from the surface of said region through said region and said upper portion into said highly conductive lower portion of said substrate, said storage means being electrically isolated from said region and said upper and lower portions of said substrate by an insulating layer; and
a buried insulating collar disposed beneath the surface of said region, surrounding an upper portion of said at least one storage means and extending from said region through said region and into said upper portion of said substrate, a

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portion of said insulating collar being disposed below said first diffusion region and in a vertical path extending from said first diffusion region to said upper portion of said substrate, said insulating collar being contiguous with said insulating layer on all sides.

5,300,801

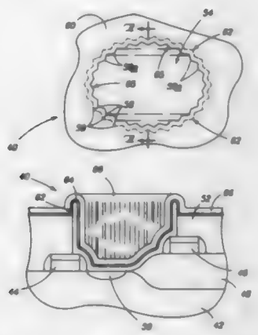
STACKED CAPACITOR CONSTRUCTION

Guy Bialock, and Phillip G. Wald, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 854,435, Mar. 18, 1992, Pat. No. 5,238,862. This application Apr. 28, 1993, Ser. No. 58,778

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—309 **4 Claims**



1. A stacked capacitor construction formed within a semiconductor substrate comprising:

an electrically conductive storage node, the storage node having upwardly rising external sidewalls, the upwardly rising external sidewalls having longitudinally extending striations to maximize surface area and corresponding capacitance;

a striated cell dielectric layer provided over the storage node and its associated longitudinally extending striations; and

an electrically conductive striated cell layer provided over the striated cell dielectric layer.

5,300,802

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING SINGLE-ELEMENT TYPE NON-VOLATILE MEMORY ELEMENTS

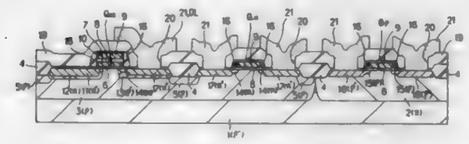
Kazuhiro Komori, Higashikurume; Toshiaki Nishimoto, Tama; Satoshi Meguro, Hinode; Hitoshi Kume, Musashino, and Yoshiaki Kamigaki, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 433,983, Nov. 9, 1989, abandoned. This application May 20, 1991, Ser. No. 704,739

Claims priority, application Japan, Nov. 9, 1988, 63-284587

Int. Cl.[5] H01L *29/788*

U.S. Cl. 257—316 **34 Claims**



1. A semiconductor integrated circuit device having an electrically erasable programmable read only memory (EEPROM) including a plurality of memory cells each of which is constituted by a single field effect transistor, said memory cell comprising:

a control gate coupled to a word line;

a floating gate positioned under said control gate;

a first gate insulation film formed between a main surface of a semiconductor substrate and said floating gate;

a second gate insulation film formed between the two gates;

source and drain regions formed in said semiconductor substrate at said main surface and on opposite sides of a channel forming region positioned beneath the two gates, said source and drain regions being of a first conductivity type and said channel forming region being of a second conductivity type, said source region having a doping concentration which is higher than that of said drain region and which prevents surface depletion when high voltage is applied to said source region during an erasing operation of said memory, the junction depth of said source region into said semiconductor substrate, with respect to said main surface thereof, being greater than that of said drain region, and said first gate insulation film having a predetermined film thickness so as to permit tunneling of electrons from said floating gate, during the erasing operation of said memory, to said semiconductor substrate through said first gate insulation film; and

a semiconductor region of said second conductivity type formed in said semiconductor substrate and having a doping concentration higher than that of said channel forming region, said semiconductor region being brought into contact with said drain region at the channel forming region side thereof,

wherein said drain region operates as the drain of said single field effect transistor in both write and read modes of said EEPROM,

wherein said memory cell stores data when a first predetermined potential is applied to said drain region, and

wherein the data of said memory cell is read when a second predetermined potential is applied to said drain region, said second predetermined potential is lower in magnitude than said first predetermined potential.

5,300,803

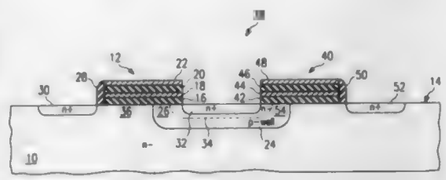
SOURCE SIDE INJECTION NON-VOLATILE MEMORY CELL

David K. Liu, Sunnyvale, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 14, 1992, Ser. No. 992,858

Int. Cl.[5] H01L *29/68, 29/78*

U.S. Cl. 257—322 **12 Claims**



1. A memory cell formed on an outer surface of a semiconductor layer of a predetermined conductivity type, comprising:

a floating gate insulatively disposed adjacent the surface;

a control gate insulatively disposed adjacent said floating gate, said floating gate disposed between the surface and said control gate such that said floating gate and control gate form a control stack insulatively disposed on the surface;

a source region disposed in the layer proximate a first edge of said control stack, said source region comprising a conductivity type the same as said predetermined conductivity type;

a well region formed in said semiconductor layer partially underlying said control stack, said well region comprising a conductivity type opposite said predetrmined conductivity type; and

a drain region disposed in said well region proximate a second edge of said control stack, said drain region comprising a conductivity type the same as said predetermined conductivity type.

5,300,804

MASK ROM DEVICE HAVING HIGHLY INTEGRATED MEMORY CELL STRUCTURE

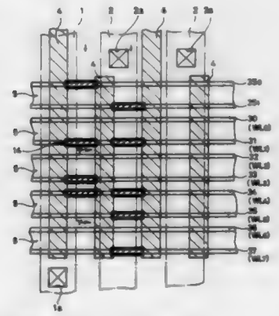
Hajime Arai, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,858

Claims priority, application Japan, May 31, 1991, 3-128066

Int. Cl.[5] H01L *27/02, 27/10, 27/15*

U.S. Cl. 257—332 **4 Claims**



1. A mask ROM device, comprising:

a semiconductor substrate having a main surface;

a plurality of recesses formed on the main surface of said semiconductor substrate, extending parallel to each other;

a first MOS transistor train in which a plurality of MOS transistors connected in series are disposed in a direction crossing the direction in which said recesses extend;

a second MOS transistor train disposed parallel to said first MOS transistor train including a plurality of MOS transistors connected in series;

an isolating and insulating region formed between said first MOS transistor train and said second MOS transistor train for insulating and isolating said MOS transistors of said first MOS transistor train and the MOS transistors of said second MOS transistor train from each other;

a bit line connected to the source/drain of the MOS transistor at one end of said first MOS transistor train and the source/drain of the MOS transistor at one end of said second MOS transistor train; and

a source line connected to the source/drain of the MOS transistor at the other end of said first MOS transistor train and the source/drain of the MOS transistor at the other end of said second MOS transistor train,

said MOS transistors included in said first MOS transistor train and second MOS transistor train including;

a pair of source and drain formed at a bottom of said recess and on the main surface of said semiconductor substrate and aligned with said recess,

a channel region formed in an inner surface of said recess positioned between said pair of source and drain, and a gate electrode formed on the inner surface of said recess with in insulating layer therebetween.

5,300,805

EPITAXIAL TUB BIAS STRUCTURE FOR INTEGRATED CIRCUITS

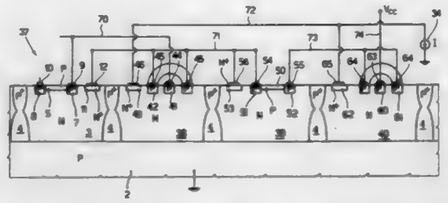
Marco Demicheli, Binago, and Alberto Gola, Broni, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jun. 29, 1993, Ser. No. 85,314

Claims priority, application European Pat. Off., Jun. 30, 1992, 92830338.7

Int. Cl.[5] H01L *27/02, 27/04*

U.S. Cl. 257—546 **22 Claims**



1. An epitaxial tub bias structure for an integrated circuit including at least one epitaxial tub biased to a reference potential and housing at least one region whose potential, in at least one operating mode, exceeds the reference potential, comprising a first and a second transistor, each having a first and second terminal and a control terminal, the first terminal of said first transistor being biased to the reference potential, the first terminal of the second transistor being connected to the at least one region, the control terminals being connected to each other, and the second terminals of the first and second transistors being connected to each other and to the epitaxial tub.

5,300,806

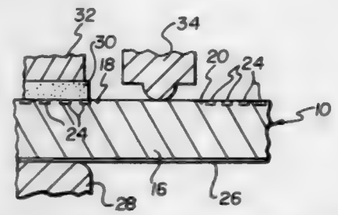
SEPARATION OF DIODE ARRAY CHIPS DURING FABRICATION THEREOF

Scott D. McClurg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 439,919, Nov. 21, 1989, Pat. No. 4,997,792. This application Mar. 1, 1991, Ser. No. 662,865

Int. Cl.[5] H01L *33/00, 29/06, 27/10*

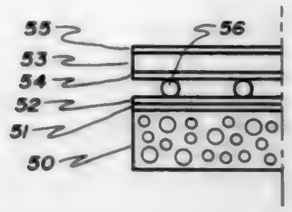
U.S. Cl. 257—594 **10 Claims**



1. A diode array fabrication wafer having a plurality of diode array areas each of which includes a central row of uniformly spaced diode sites extending between its opposite ends, said diode array areas being arranged on said wafer in multiple rows and columns, said columns being spaced apart between the endmost diode sites of the corresponding diode areas by disposable regions at least as wide as the thickness of said wafer, and wherein a disposable region between endmost diode sites is located between two cleavage grooves.

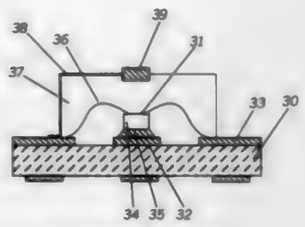
VOL 1161 ISS 1 AP 5 1994 UMI

5,300,807
THIN FILM DETECTOR AND METHOD OF MANUFACTURE
Elizabeth H. Nelson, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 22, 1992, Ser. No. 823,749
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—632 8 Claims



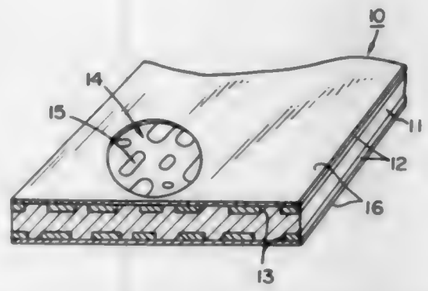
1. A solid state layered electronic device having a thin layer of electronic material deposited over and supported by a substrate of aerogel material with an upper surface too weak and porous to withstand the deposition of said layer; including:
a thin precast layer of organic material attached to said upper surface said electronic material being deposited on said precast layer.

5,300,808
EPROM PACKAGE AND METHOD OF OPTICALLY ERASING
Anthony J. Suppelsa; Lynne J. Giacomino; Anthony B. Suppelsa, and Dale W. Dorinski, all of Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 4, 1992, Ser. No. 878,122
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—680 15 Claims



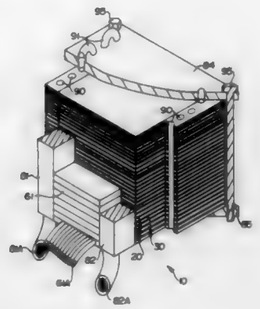
1. An EPROM package comprising:
a circuit carrying substrate having conductive portions;
an EPROM chip having an optically erasable surface, said chip being electrically and mechanically attached to said circuit carrying substrate; and
a cover formed on portions of said circuit carrying substrate and encapsulating said EPROM chip, said cover providing an optical path to said erasable surface, said optical path comprising a fixed PLZT window sealing said EPROM package that is normally opaque to ultraviolet light but transmits said light when appropriately energized.

5,300,809
HEAT-CONDUCTIVE COMPOSITE MATERIAL
Yasuyuki Nakamura; Kenji Hirano, and Makoto Kawakami, all of Suita, Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 759,869, Sep. 16, 1991, abandoned, which is a continuation of Ser. No. 503,997, Apr. 4, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,050
Claims priority, application Japan, Dec. 12, 1989, 1-323283
Int. Cl.[5] H01L *23/14, 23/54;* H05K *3/36*
U.S. Cl. 257—684 35 Claims



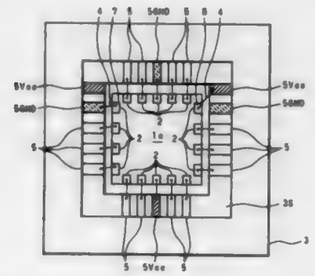
1. A five-layered heat transmitting substrate for semiconductor package comprising:
a three-layered core sheet which is composed of a copper or copper alloy sheet of high thermal expansion sandwiched between two metal sheets of low thermal expansion, said copper or copper alloy sheet of high thermal expansion having a mean thermal expansion coefficient of more than 10×10^{-6}° C. at 30° to 200° C., each metal sheet of low thermal expansion having a plurality of through-holes in the direction of a thickness thereof, the three sheets being laminated and integrated so that a part of the copper or copper alloy sheet of high thermal expansion fills the through-holes in the metal sheets of low thermal expansion and is developed through said through-holes to flush the developed outer surfaces of the copper or copper alloy sheet of high thermal expansion with at least the outer surface of each of the metal sheets of low thermal expansion, and
copper or copper alloy foils of high thermal expansion welded to opposed outermost surfaces of the three-layered core sheet, the copper or copper alloy foils of high thermal expansion being laminated and integrated with the part of the copper or copper alloy sheet which is developed through the through-holes in the metal sheets of low thermal expansion to flush the developed outer surfaces of the copper or copper alloy sheet of high thermal expansion with at least the outer surface of each of the metal sheets of low thermal expansion, wherein a thickness ratio of the copper or copper alloy sheet of high thermal expansion and each of the metal sheets of low thermal expansion and a surface area ratio of the outer surface of each of the metal sheets of low thermal expansion and a part of the copper or copper alloy sheet of high thermal expansion which was developed through the through-holes of the metal sheets of low thermal expansion to be flush with at least the outer surface of each of the metal sheets of low thermal expansion are properly selected, thereby controlling the thermal expansion coefficient and the thermal conductivity to desired values.

5,300,810
ELECTRONIC CIRCUIT AND METHOD WITH THERMAL MANAGEMENT
Richard C. Eden, Thousand Oaks, Calif., assignor to Norton Company, Worcester, Mass.
Continuation of Ser. No. 592,209, Oct. 3, 1990. This application Aug. 14, 1992, Ser. No. 930,482
Int. Cl.[5] H01L *23/16, 25/04*
U.S. Cl. 257—686 40 Claims



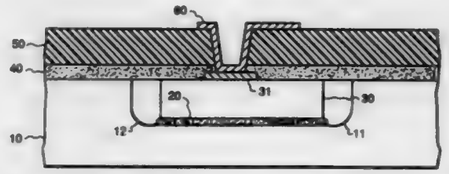
1. A circuit comprising:
a plurality of generally planar diamond substrate layers;
electronic circuit elements mounted on each of said diamond substrate layers;
said diamond substrate layers being disposed in a stack;
electrically conductive horizontal interconnect means for coupling between circuit elements on individual substrate layers, and electrically conductive vertical interconnect means coupled through said substrate layers for coupling between circuit elements on different substrate layers; and
apertures generally along the peripheries of said substrate layers for receiving heat exchange liquid; and
heat exchange liquid passing through said apertures.

5,300,811
INTEGRATED CIRCUIT DEVICE AND MICROPROCESSOR CONSTITUTED THEREBY
Katsunori Suzuki, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1991, Ser. No. 644,808
Claims priority, application Japan, Jan. 22, 1990, 2-12831
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—691 20 Claims



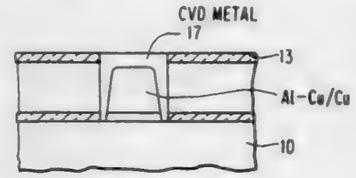
1. An integrated circuit device which is constructed by sealing a semiconductor chip being able to be initialized in plural initial states in a package,
wherein said package is constituted separately from said semiconductor chip and has a plurality of lead wires onto which a first potential and a second potential are applied, and
said semiconductor chip has signal pads for electrically connecting itself and one of said plurality of lead wires of said package, and is initialized in any one of the plural initial states corresponding to connecting states of said signal pads and said plurality of lead wires when said semiconductor chip is sealed in said package.

5,300,812
PLASTICIZED POLYETHERIMIDE ADHESIVE COMPOSITION AND USAGE
John H. Lupinski; Theresa A. Sitnik, both of Scotia; Thomas B. Gorczyca, Schenectady; Steven T. Rice, Scotia, and Herbert S. Cole, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 9, 1992, Ser. No. 987,849
Int. Cl.[5] H01L *23/16*
U.S. Cl. 257—723 11 Claims



1. A plasticized polyetherimide adhesive composition having a melt viscosity capable of providing substantially void free adhesive bonding at temperatures in the range of about 200° to 260° C. between overlay dielectric layer and substrate having at least one IC chip attached thereon, which plasticized polyetherimide composition comprises by weight,
(A) 100 parts of a polyetherimide, and
(B) 5 to 25 parts of a plasticizer.

5,300,813
REFRACTORY METAL CAPPED LOW RESISTIVITY METAL CONDUCTOR LINES AND VIAS
Rajiv V. Joshi, Yorktown Heights; Jerome J. Cuomo, Lincolndale; Hormazdyar M. Daial, Milton, and Louis L. Hsu, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 26, 1992, Ser. No. 841,967
Int. Cl.[5] H01L *29/440, 29/460*
U.S. Cl. 257—752 9 Claims



1. A device, comprising:
a substrate;
at least one dielectric layer positioned on said substrate; and
metalization positioned in an opening in said at least one dielectric layer and extending from a surface which is substantially co-planar with a surface of said at least one dielectric layer towards said substrate,
said metalization comprised of a low resistivity metal or alloy and being encapsulated by at least one refractory metal or alloy,
said low resistivity metal or alloy having side walls which

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taper inwardly towards one another towards said surface of said metalization which is planar with said surface of said at least one dielectric layer,

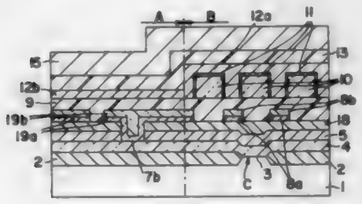
wherein said at least one refractory metal or alloy comprises an alloy containing silicon and has a higher incorporated silicon content at a location near said surface of said metalization present as one of a distinct and graded composition than at a location closer to said substrate.

5,300,814

SEMICONDUCTOR DEVICE HAVING A SEMICONDUCTOR SUBSTRATE WITH REDUCED STEP BETWEEN MEMORY CELLS

Susumu Matsumoto; Shin Hashimoto, both of Hirakata; Toshio Yamada, Kadoma, and Yoshiro Nakata, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 915,898
Claims priority, application Japan, Jul. 18, 1991, 3-178080
Int. Cl.[5] H01L *23/48, 29/46*
U.S. Cl. 257—758 **3 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate,

a plurality of memory cell regions each having a plurality of memory cells disposed on said semiconductor substrate,

a first conductive layer formed in a first level located above said semiconductor substrate;

a second conductive layer formed in a second level located above said first level; and

a third conductive layer formed in a third level located above said second level, said third conductive layer having a lower resistance than said first conductive layer:

wherein said second conductive layer comprises a wiring portion and a dummy portion, said dummy portion being disposed outside said memory cell regions and interconnecting said first conductive layer and said third conductive layer.

5,300,815

TECHNIQUE OF INCREASING BOND PAD DENSITY ON A SEMICONDUCTOR DIE

Michael D. Rostoker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

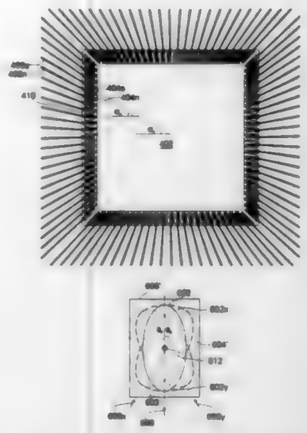
Continuation-in-part of Ser. No. 916,328, Jul. 17, 1992. This application Aug. 25, 1992, Ser. No. 935,449
Int. Cl.[5] H01L *29/400, 21/280*
U.S. Cl. 257—786 **10 Claims**

1. Method of forming non-square bond pad shapes for a semiconductor die, comprising:

defining a contact footprint shape;

defining a pivot point within the contact footprint shape;

defining a swept contact area by sweeping the contact footprint shape through a range of angles about the pivot point;



providing a bond pad shape which encloses the swept contact area.

5,300,816

SEMICONDUCTOR WAFER WITH IMPROVED STEP COVERAGE ALONG SCRIBE LINES

Jeungwoo Lee, Seoul; Myoungseob Shim, Suwon, and Heonjong Shin, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 26, 1992, Ser. No. 904,613
Claims priority, application Rep. of Korea, Jun. 27, 1991, 91-10829
Int. Cl.[5] H01L *23/48, 29/44, 29/46*
U.S. Cl. 257—797 **14 Claims**

1. A semiconductor wafer partitioned into a multiplicity of chip areas defined by a grid-like array of scribe lines inscribed into the surface of the wafer, wherein each scribe line is longitudinally bounded by respective field oxide layers formed in the surface of the wafer, to thereby define a scribe line region between adjacent chip areas, including;

a multiplicity of integrated circuits formed in a corresponding multiplicity of the chip areas, respectively, each of said integrated circuits including a patterned, multilayer structure having a peripheral edge portion which extends into a respective one of the scribe line regions;

wherein said peripheral edge portion of each said multilayer structure has a multi-tiered cross-sectional profile;

wherein each said multilayer structure is comprised of a plurality of individual layers each having a peripheral edge portion which extends into said respective one of the scribe line regions, wherein the length of said peripheral edge portion of each said individual layer is different; and,

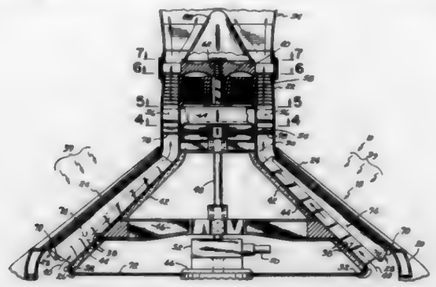
wherein, for each said multilayer structure, the length of said peripheral edge portion of each said individual layer is greater than that of the other ones of said individual layers disposed thereabove.

5,300,817

SOLAR VENTURI TURBINE

William R. Baird, 1101 Monroe St., Sturgis, Ky. 42459

Filed Apr. 16, 1993, Ser. No. 48,481
Int. Cl.[5] F03D *9/00;* **F03G** *6/04*
U.S. Cl. 290—55 **19 Claims**



1. A solar venturi turbine for generating electrical power from sunlight comprising:

an upwardly oriented venturi tube having a sloped thermopane glass surface extending between a larger lower neck and a smaller upper neck of said venturi tube;

a tapered centrifugal fan mounted within said venturi tube adjacent said thermopane glass surface and having a plurality of fan vanes being covered with a thermal absorbent coating, said thermopane glass surface being spaced from said centrifugal fan to define a volume of air being heated by the sunlight projecting through said thermopane glass surface and impinging upon said thermal absorbent coating, said volume of air rising toward said venturi tube upper neck due to said heating thereby rotating said centrifugal fan;

a high velocity fan positioned within said venturi tube upper neck and having a plurality of high velocity fan blades mounted on a rotatable fan shaft, said fan blades rotating in response to and increasing the velocity of said rising volume of air;

a high pressure compressor positioned above said high velocity fan in said venturi tube upper neck, said rising volume of air further increasing in velocity upon passing through said high pressure compressor;

a turbine positioned above said high pressure compressor in said venturi tube upper neck and having a turbine wheel rotatable in response to said rising volume of air;

an electrical generator; and

means for driving said electrical generator from the rotation of said turbine wheel to enable said electrical generator to produce electricity in response to said driving means.

5,300,818

Patent Not Issued For This Number

5,300,819

AUTOMATIC POWER REGULATOR FOR INDUCTION TYPE BIOGAS GENERATOR

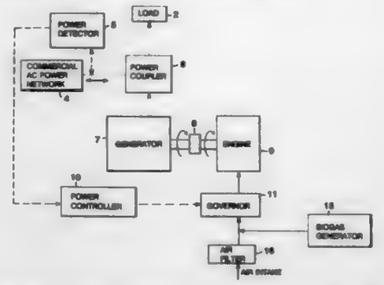
Ching-Ping Lee, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 24, 1992, Ser. No. 856,478
Int. Cl.[5] F02G *3/00*
U.S. Cl. 307—47 **2 Claims**

1. A power regulator for controlling an induction-type generator coupled to a commercial AC power network and a load, the induction-type generator supplying a first output power and the commercial AC power network supplying a second output power, the load consuming an input power, said power regulator comprising:

a power detector adapted to detect a difference between the first output power and the input power, and to generate an indicating signal representative of a difference power drawn from or supplied to the AC power network;

comparing means coupled to said power detector means for comparing said indicating signal with predetermined positive and negative references, said comparing means outputting a positive driving signal when said indicating signal is greater than the positive reference, and outputting a negative driving signal when said indicating signal is smaller than the negative reference; and



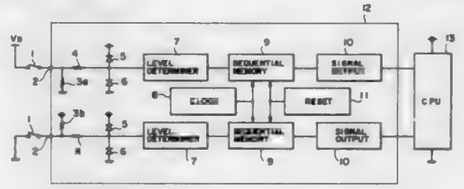
controlling means coupled between said comparing means and the induction-type generator for controlling the induction-type generator, whereby the first output power is increased in magnitude according to said positive driving signal, and the first output power is decreased in magnitude according to said negative driving signal.

5,300,820

INPUT INTERFACE CIRCUIT FOR REMOVING NOISE COMPONENTS OF AN INPUT SIGNAL

Masahiko Sayama, and Toshiro Hara, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 729,676, Jul. 15, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,559
Claims priority, application Japan, Jul. 17, 1990, 2-191659
Int. Cl.[5] H03K *5/22*
U.S. Cl. 307—234 **3 Claims**



1. An input interface circuit for shaping a waveform and removing noise components of an input signal applied to an electronic circuit component, comprising:

a clipping circuit for clipping the input signal above and below predetermined thresholds, respectively;

waveform shaping circuit including a level determining circuit for shaping a waveform of an output of said clipping circuit, said level determining circuit comprising a voltage divider for providing first and second predetermined thresholds, first and second comparators, coupled to said first and second thresholds, respectively, and each coupled to the output of said clipping circuit, and output means coupled to an output of said first and second comparators, said first comparator causing said output means to produce a high output when the output of said clipping circuit exceeds said first predetermined level and said second comparator causing said output means to produce a low output when the output of said clipping circuit is below said second predetermined threshold;

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clock means for generating sampling timing signals at a predetermined sampling period;

sequential memory means, coupled to said clock means, for sampling levels of an output of said waveform shaping circuit in response to said sampling timing signal, said sequential memory means storing at least two successive values of said output of said waveform shaping circuit sampled at two successive sampling timings determined by said sampling timing signals; and

signal output means, coupled to said sequential memory means, for generating a high level output signal to said electronic circuit component when each of the stored values are at a high level and a low level output to said electronic circuit component when each of the stored values are at a low level.

5,300,821

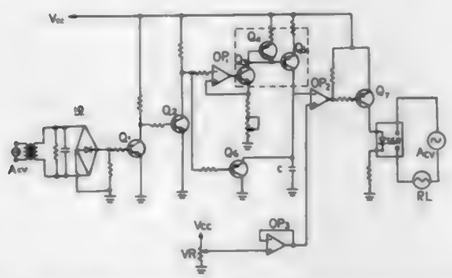
POWER CONTROLLER

Aaron Lin, Taipei, Taiwan, assignor to Lei Chu Enterprise Co., Inc., Taipei, Taiwan

Filed Aug. 4, 1992, Ser. No. 888,180

Int. Cl.[5] H03K *4/08, 5/04*

U.S. Cl. 307—265 **1 Claim**



1. A controller for controlling a power source for an electric load;

said controller comprising a source of ripple current;

a first comparator and a second comparator;

a current mirror circuit connected to an electronic element;

an electronic means connecting said source of ripple current to a square wave;

said first comparator being connected between said electronic means and said mirror circuit;

a source of direct current connected to a non-inverting input of said second comparator through a voltage follower;

a condenser;

a solid state relay for connecting said power source to said load;

an inverting input of said second comparator being connected to said mirror circuit and to said condenser for charging said condenser from said mirror circuit;

said condenser being adapted to discharge to said electronic element (Q6) so as to produce a saw-tooth wave and to input said saw tooth wave to said inverting input of said second comparator;

an output of said second comparator being connected to said solid state relay;

the output of said second comparator being connected to said solid state relay whereby said load is connected to a source of electrical power by said solid state relay in response to the output of said second comparator.

5,300,822

POWER-ON-RESET CIRCUIT

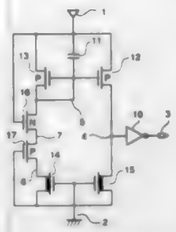
Eiichi Sugahara, and Takashi Fujii, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,191

Claims priority, application Japan, Dec. 25, 1991, 3-343409

Int. Cl.[5] G05F *3/26*

U.S. Cl. 307—272.3 **3 Claims**



1. A power-on-reset circuit comprising:

a current mirror circuit connected to a first voltage supply;

a first depletion type transistor which has its source connected to a second voltage supply, and which operates as a constant current source;

a second depletion type transistor which has its drain connected to an output terminal of said current mirror circuit and its source connected to said second voltage supply, and which operates as a constant current source;

an integrating capacitor connected at its end to an input terminal of said current mirror circuit and at its other end to said first voltage supply;

an N-channel MOS transistor having its gate connected to said first voltage supply and its drain connected to said input terminal of said current mirror circuit; and

a P-channel MOS transistor having its gate connected to said second voltage supply, its source connected to a source of said N-channel MOS transistor, and its drain connected to a drain of said first depletion type transistor;

an output current of said current mirror circuit being larger than a driving current of said second depletion type transistor.

5,300,823

INTERNAL VOLTAGE DROPPING CIRCUIT FOR SEMICONDUCTOR DEVICE

Makoto Ihara, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 14, 1992, Ser. No. 912,997

Claims priority, application Japan, Jul. 17, 1991, 3-177030

Int. Cl.[5] G05F *3/16*

U.S. Cl. 307—296.3 **13 Claims**

1. A control circuit for an internal voltage dropping circuit for a load including a semiconductor device, comprising

pulse signal generating means for generating a pulse signal having a specified duty ratio, and

switch means including an internal voltage dropping circuit connected to said pulse signal generating means and receiving a pulse signal produced by said pulse signal generating means to periodically activate said internal voltage dropping circuit in response to said pulse signal when the semiconductor device included in the load is on standby;

said internal voltage dropping circuit further comprising,

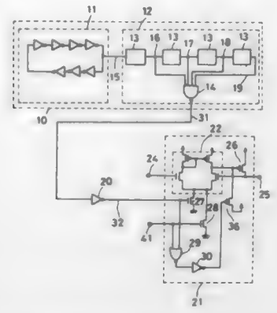
a mirror type differential amplifier having a reference voltage input coupled to one side thereof and a supply voltage output,

a first output transistor having a control electrode coupled to the other side of said differential amplifier and one current conduction electrode coupled between a supply voltage and said supply voltage output,

first circuit means coupling to said pulse signal and including

a relatively low controlled current path coupled between said differential amplifier and ground potential,

second circuit means coupled to an activate/standby signal and including a relatively high controlled current path coupled between said differential amplifier and ground potential, and



a second output transistor having a control electrode coupled to both said pulse signal and to said activate/standby signal and a pair of current conduction electrodes coupled between a supply voltage and the control electrode of said first output transistor.

5,300,824

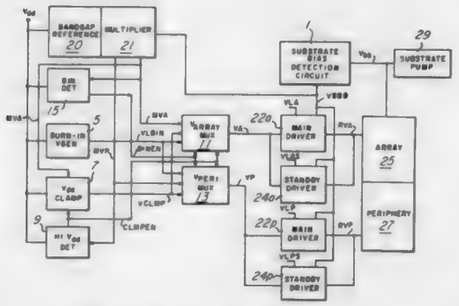
INTEGRATED CIRCUIT WITH IMPROVED ON-CHIP POWER SUPPLY CONTROL

Narasimhan Iyengar, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 919,076, Jul. 23, 1992, abandoned, which is a continuation of Ser. No. 745,775, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 515,977, Apr. 27, 1990, Pat. No. 5,063,304. This application Feb. 26, 1993, Ser. No. 24,924

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—296.3 **7 Claims**



1. A memory device, comprising:

an array of memory cells formed on a semiconductor substrate;

periphery circuits formed on the semiconductor substrate, connected to the array of memory cells;

a main driver formed on the semiconductor substrate, to provide voltage to the array of memory cells and to the periphery circuits when they are active;

a standby driver formed on the semiconductor substrate, to provide voltage to the array of memory cells and to the periphery circuits when they are inactive; and

a voltage generator system formed on the semiconductor substrate to provide a plurality of different voltages that may power the main driver and the standby driver depending upon various operating conditions.

5,300,825

PEAK SIGNAL DETECTING DEVICE

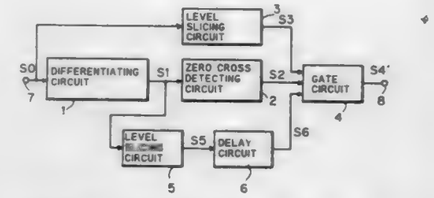
Yoshiji Inoue, and Takehiko Umeyama, both of Itami, Japan, assignors to Mitsubishi Electric Engineering Company Limited and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,713

Claims priority, application Japan, Aug. 30, 1991, 3-220012

Int. Cl.[5] H03K *5/153*

U.S. Cl. 307—351 **10 Claims**



1. A peak signal detecting device, comprising:

differentiating means for receiving and differentiating an input signal to output a differentiated signal;

first level slicing means for receiving said input signal and comparing an absolute value of said input signal with a first reference level, to output a first level slice signal which turns to a first logic level when the former is larger than the latter but turns to a second logic level when the former is smaller than the latter;

second level slicing means for receiving said differentiated signal and comparing an absolute value of said differentiated signal with a second reference level, to output a second level slice signal which turns to said first logic level when the former is larger than the latter but turns to said second logic level when the former is smaller than the latter;

zero cross detecting means for receiving said differentiated signal and detecting a time when said differentiated signal reaches a zero level, to output a zero cross signal;

delay means for receiving said second level slice signal to output a delay signal which is said second level slice signal delayed for a first period of time, said delay means having a function to cancel said first logic level when a period of said first logic level of said second level slice signal is equal to or less than a predetermined valid period; and

peak detecting means for outputting a peak detecting signal indicating a peak of said input signal in accordance with said first level slice signal, zero cross signal and delay signal.

5,300,826

INTERFACE CIRCUIT FOR AUDIO SIGNAL

Taiwa Okanobu, Tokyo, and Hitoshi Tomiyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 21, 1992, Ser. No. 916,377

Claims priority, application Japan, Jul. 29, 1991, 3-211637

Int. Cl.[5] H03F *3/45*

U.S. Cl. 307—358 **4 Claims**

3. An interface circuit for an audio signal provided between an AM detector and an audio amplifier amplifying the audio signal from said AM detector comprising:

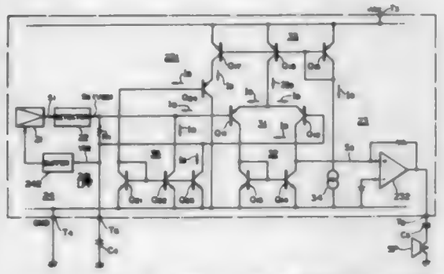
a low-pass filter supplied with a detection output of said AM detector for extracting a DC component included in the detection output; and

a differential-input amplifier having first and second differential inputs supplied respectively with the detection output

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of said AM detector and the DC component extracted by said low-pass filter; wherein

said differential amplifier includes a first transistor and a second transistor, the base of said first transistor forming said first input and the base of said second transistor forming said second input, respective emitters of said first and second transistors being commonly connected to the collector of a third transistor, the emitter of said third transistor being commonly connected to the emitters of a fourth transistor and a fifth transistor and to a terminal pin receiving power, the base of said third transistor being commonly connected to the bases of said fourth transistor and said fifth transistor, the collector of said fourth transistor being commonly connected to the base of said fourth transistor and to a constant current circuit, the collector of said fifth transistor being connected to the emitter of a



sixth transistor, the collector of said sixth transistor being commonly connected to the emitters of a seventh transistor, an eighth transistor, a ninth transistor, and ground, the bases of said seventh, eighth, and ninth transistors being commonly connected together, the collector of said ninth transistor being commonly connected to its base and to the base of said sixth transistor, the collector of said eighth transistor being connected to the base of said first transistor forming said first input and the collector of said seventh transistor being connected to the base of said second transistor forming said second input;

whereby an output of said differential-input amplifier is supplied to said audio amplifier for amplifying the audio signal and the DC component extracted by said low-pass filter is supplied to an AGC circuit for performing an AGC operation on said audio amplifier.

5,300,827

NOISE IMMUNE NTL LOGIC NETWORK

Michel S. Michail, Wappingers Falls, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1992, Ser. No. 920,401
Int. Cl.[5] H03K *19/013*
U.S. Cl. 307—443 **4 Claims**

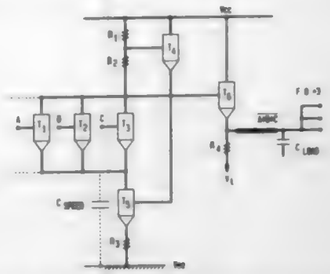
1. A high speed, low power NOR logic circuit having good AC noise tolerance comprising:

a high voltage supply line;

a low voltage supply line;

a voltage divider, a plurality of input logic bipolar gates having emitter, collector and base connection and a current control device, all coupled in series between the high and low voltage supply lines; and

an emitter follower circuit coupled across the voltage divider for effecting a NOR output in the absence of an input to any of the input logic gates, the emitter follower circuit including first and second bipolar devices, each having a base, an emitter and a collector, with the base of the first bipolar device connected to the midpoint of the voltage divider, the collector thereof connected to the high voltage supply line and the emitter connected to said current control device to maintain the device in a state of saturation, with the base of the second bipolar device connected to one end of the voltage divider and the collector connections of the input logic bipolar devices, the collector thereof coupled to the other end of the voltage



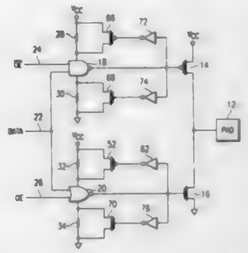
divider and the emitter thereof coupled to an output circuit for effecting an emitter follower output in accordance with the logic input.

5,300,828

SLEW RATE LIMITED OUTPUT BUFFER WITH BYPASS CIRCUITRY

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Aug. 31, 1992, Ser. No. 938,399
Int. Cl.[5] H03K *17/16, 6/04, 19/0948*
U.S. Cl. 307—443 **18 Claims**



1. An output circuit for an integrated circuit device, comprising:

first and second output transistors connected in series across two terminals of a power supply, and having a common node connected to an output pad;

first and second logic gates connected to, respectively, gates of said first and second output transistors for switching them on and off;

a slew rate control circuit between each of the first and second power supply terminals and each of said first and second logic gates; and

feedback means controlled by the outputs of said logic gates for at least partially bypassing at least one of said slew rate control circuits during a selected portion of an output transition of said first and second logic gates.

5,300,829

BICMOS CIRCUIT WITH NEGATIVE V_{BE} PROTECTION

Lavi A. Lev, San Jose, Calif., and Ian A. Young, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 9, 1992, Ser. No. 943,406
Int. Cl.[5] H03K *19/02*
U.S. Cl. 307—446 **13 Claims**

1. A BiCMOS circuit, comprising:

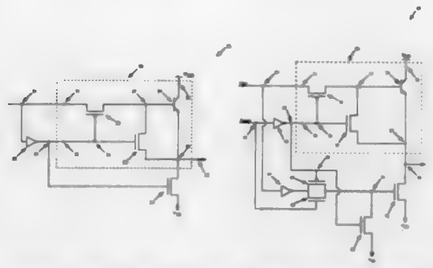
a first input node;

an output node;

an inverter coupled to said first input node;

a bipolar transistor having a base, a collector coupled to a power supply, and an emitter coupled to said output node;

means for electrically coupling said base of said bipolar transistor to said output whenever a low potential is applied to said first input node, said means comprising a pair of CMOS transistors comprising a first and a second transistor, each of said first and second transistors having a gate, a source, and a drain, wherein the gates of said first and second transistors are coupled to an output of said



inverter, said source of said first transistor is coupled to said first input node, said drain of said first transistor is coupled to said base of said bipolar transistor and to said drain of said second transistor, and said source of said second transistor and said emitter of said bipolar transistor are coupled to said output node; and

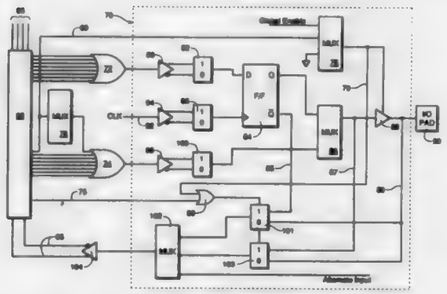
a third transistor having a gate, a source, and a drain, wherein said gate of said third transistor is coupled to said output of said inverter, said drain of said third transistor is coupled to said output node, and said source of said third transistor is coupled to ground.

5,300,830

PROGRAMMABLE LOGIC DEVICE MACROCELL WITH AN EXCLUSIVE FEEDBACK AND EXCLUSIVE EXTERNAL INPUT LINES FOR REGISTERED AND COMBINATORIAL MODES USING A DEDICATED PRODUCT TERM FOR CONTROL

Mark A. Hawes, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed May 15, 1992, Ser. No. 883,078
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **7 Claims**



1. An integrated circuit, comprising:

a) a logic circuitry, containing inputs and outputs, said logic circuitry generating logic signals; and

b) a macrocell, including inputs coupled to said logic circuitry outputs, said macrocell containing:

i) an input-output pad means (90) for receiving said logic signals and outputting them;

ii) a feedback means, responsive to said logic circuitry outputs; for feeding said logic signals back to said logic circuitry; and

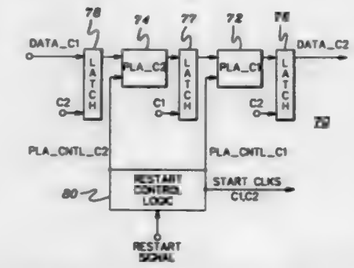
iii) first means for deactivating said pad means and simultaneously activating said feedback means.

5,300,831

LOGIC MACRO AND PROTOCOL FOR REDUCED POWER CONSUMPTION DURING IDLE STATE

Dac C. Pham, 9815 Copper Creek Dr., #922, Austin, Tex. 78729; Sebastian T. Ventrone, 1 Appletree La., Jericho, Vt. 05465, and Jonathan H. Raymond, R.R. #2, Box 623, Underhill, Vt. 05489

Filed Sep. 4, 1992, Ser. No. 940,249
Int. Cl.[5] H03K *19/173, 3/01*
U.S. Cl. 307—465 **23 Claims**



1. A method for reducing power drain within a logic macro during an idle state, said logic macro including a logic array having a plurality of data inputs each of which is coupled to a static latch which holds current data input to the array, said logic array being coupled to a supply voltage VDD and having an output based on the input data thereto, said logic array being clocked by at least one internal clock of the logic macro, said power drain reducing method comprising the steps of:

(a) deactivating said logic macro in response to initiation of an idle state, said deactivating including halting said at least one internal clock and, subsequent thereto, at least partially decoupling said logic array from said supply voltage VDD such that standby power drain through said logic array is reduced;

(b) reactivating said logic array in response to termination of said idle state, said reactivating including recoupling said logic array to said supply voltage VDD to the extent of said array decoupling from said supply voltage VDD in said step (a), and allowing sufficient time for the output of said logic array to stabilize based on the current data input to the array held in said static latch; and

(c) restarting the at least one internal clock to said logic array subsequent stabilization of the output of said logic array.

5,300,832

VOLTAGE INTERFACING BUFFER WITH ISOLATION TRANSISTORS USED FOR OVERVOLTAGE PROTECTION

Alan C. Rogers, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 10, 1992, Ser. No. 974,100
Int. Cl.[5] H03K *19/0185, 19/003*
U.S. Cl. 307—475 **15 Claims**

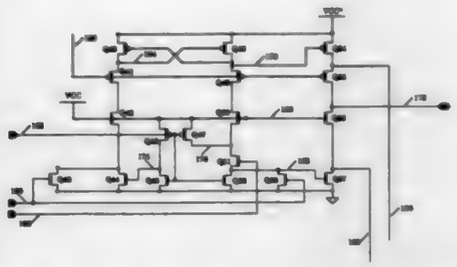
1. A voltage interfacing circuit for interfacing an integrated circuit operating at a first supply voltage (VCC) to a pad node having a voltage swing substantially equal to a second supply voltage (VCC*), where the VCC* is greater than the VCC, the

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integrated circuit having an input data node and an output data node, the voltage interfacing circuit comprising:

bias generator circuit coupled to the VCC and the VCC*, the bias generator circuit generating a bias signal substantially equal to the difference between the VCC* and the VCC;

output circuit coupled to the output data node, the bias signal and the pad node, the output circuit driving the pad node to the VCC* voltage swing in response to an output



voltage on the output data node, the output circuit using the bias signal to protest the output circuit from the VCC* voltage swing of the pad node; and

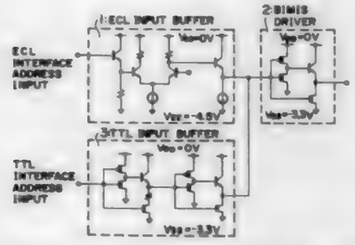
input circuit coupled to the input data node, the bias signal, and the pad node, the input circuit sensing a voltage on the pad node, the input circuit using the bias signal to protect the input circuit from the VCC* voltage swing of the pad node the input circuit setting an input voltage level on the input data node according to the voltage on the pad node.

5,300,833

LOW VOLTAGE BICMOS CIRCUIT HAVING ECL AND TTL INPUT BUFFERS AND NO INTERVENING LEVEL-SHIFT CIRCUITS

Takashi Oguri, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 4,995
Claims priority, application Japan, Jan. 16, 1992, 4-5270
Int. Cl.[5] H03K *19/092*
U.S. Cl. 307—475 **8 Claims**



1. A semiconductor circuit comprising an ECL input buffer receiving a signal amplitude voltage of an ECL interface and a TTL input buffer receiving a signal amplitude voltage of a TTL interface, and an MIS or BiMIS circuit selecting and receiving a signal amplitude voltage supplied from said ECL and TTL input buffers; wherein,

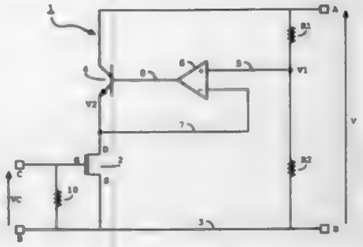
a power voltage applied to said MIS or BiMIS circuit is set at a total voltage of an output signal amplitude voltage of said ECL input buffer and a threshold voltage of an MIS transistor comprising said MIS or BiMIS circuit, and set at a total voltage of an output signal amplitude voltage of the TTL input buffer and a threshold voltage of the MIS transistor comprising said MIS or BiMIS circuit.

5,300,834

CIRCUIT WITH A VOLTAGE-CONTROLLED RESISTANCE

Gérard Bret, Echirolles, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Jan. 30, 1991, Ser. No. 646,945
Claims priority, application France, Jan. 31, 1990, 90 01379
Int. Cl.[5] H03K *17/60*
U.S. Cl. 307—570 **4 Claims**



1. A voltage-controlled variable resistance circuit comprising:

a MOS transistor having main electrodes and a control electrode, one of the main electrodes connected to a common terminal, a control voltage, sufficient to render said MOS transistor conductive, being applied between said control electrode and the common terminal;

a voltage dividing bridge connected between a first terminal and said common terminal and having an output;

a follower circuit, having an input connected to an output of the voltage dividing bridge and an output connected to a second main electrode of the MOS transistor;

whereby the resistance between the first terminal and the common terminal varies as a function of the control voltage; and

wherein said follower circuit comprises:

an operational amplifier having one input connected to the output of the divider and a second input connected to the second main electrode of the MOS transistor; and

a transistor having a control electrode connected to the amplifier output, a first main electrode connected to the first terminal and a second main electrode connected to the second main electrode of the MOS transistor.

5,300,835

CMOS LOW POWER MIXED VOLTAGE BIDIRECTIONAL I/O BUFFER

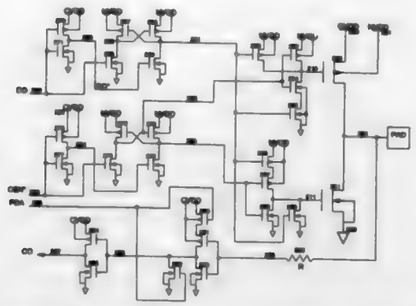
Mahmud Assar, Morgan Hill; Prakash C. Agarwal, San Jose, and Vlad Bril, Campbell, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Feb. 10, 1993, Ser. No. 16,574
Int. Cl.[5] H03K *19/0175*
U.S. Cl. 307—475 **30 Claims**

1. In an output buffer for connecting a CMOS chip having a circuit operating from a power supply at a first voltage to a second device operating from a power supply at a second voltage, wherein said output buffer includes a pair of voltage converters for converting data and output enable signals from the circuit of the CMOS chip to a signal voltage of the second device, and pull-up and pull-down transistors connected between the voltage convertors and a connection pad on the CMOS chip, with the pull-up transistor having a source connected to said second voltage, an improvement comprising:

connecting the voltage converters to a high voltage which is

greater than or equal to the higher of said first and second voltages;



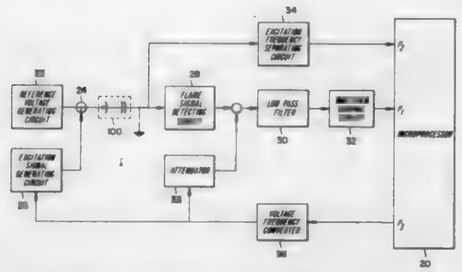
providing a connection from the N-well of the pull-up transistor to said high voltage, said N-well voltage connection being separate from said source voltage connection.

5,300,836

FLAME ROD STRUCTURE, AND A COMPENSATING CIRCUIT AND CONTROL METHOD THEREOF

Soo Y. Cha, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 29, 1992, Ser. No. 905,363
Claims priority, application Rep. of Korea, Jun. 28, 1991, 91-10926
Int. Cl.[5] H03K *5/22;* **G06G** *7/10*
U.S. Cl. 307—491 **15 Claims**



1. A flame rod structure comprised of:

a composition containing a semiconductor material micro-powder of silicon and germanium and a metal micro-powder of iron and nickel, wherein said semiconductor material is 3–5% by its weight ratio, sintered with said metal powder, crushed into micro-particles, melted with an adhesive agent, cooled and pressed/molded at a high pressure.

5,300,837

DELAY COMPENSATION TECHNIQUE FOR BUFFERS

Jonathan H. Fischer, Blandon, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

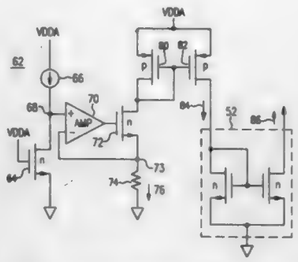
Filed Sep. 17, 1992, Ser. No. 946,990
Int. Cl.[5] H03K *3/01;* **G06G** *7/10*
U.S. Cl. 307—491 **15 Claims**

1. An integrated circuit for processing signals, comprising:

a first circuit introducing a first time delay to at least one of the signals, the duration of the first time delay decreasing as circuit conditions and process speed become faster;

a second circuit including a switching device, the second circuit introducing a second time delay to said at least one of the signals resulting in a delayed signal, the second circuit in series with the first circuit, the duration of the second time delay determined by a control signal, the duration of the second time delay increasing as the net effect of circuit conditions and process speed become faster; and

a third circuit for sensing circuit conditions and process



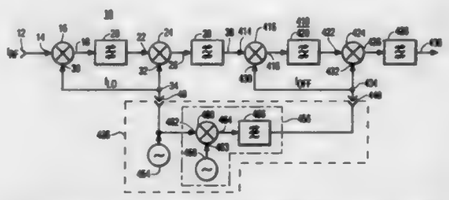
speed of the switching device and for generating said control signal to regulate the duration of the second time delay, whereby the total time delay resulting from the sum of the first and second time delays remains within a predetermined range and is generated without feedback by sensing the dc parameters that affect circuit conditions and process speed.

5,300,838

AGILE BANDPASS FILTER

Eduardo L. Elizondo, East Windsor, N.J., assignor to General Electric Co., East Windsor, N.J.

Filed May 20, 1992, Ser. No. 886,011
Int. Cl.[5] H03K *5/00;* **H04B** *1/26*
U.S. Cl. 307—521 **8 Claims**



1. A variable-bandpass filtering arrangement, comprising:

a first source of control signals at a selectable first frequency;

a first bandpass filter circuit including signal input and output ports, and a control port for receiving control signals at said first frequency, for filtering signals translating between said signal input port and said signal output port of said first bandpass filter circuit with a bandpass characteristic which is responsive to said first frequency, said first bandpass filter circuit comprising first and second mixers, each of which mixers of said first bandpass filter circuit includes input and output ports and a control port, said input port of said first mixer of said first bandpass filter circuit being coupled to receive said signals applied to said signal input port of said first bandpass filter circuit, and said output port of said second mixer of said first bandpass filter circuit being coupled to said signal output port of said first bandpass filter circuit, and said control ports of said first and second mixers of said first bandpass filter circuit being coupled in common, without intermediary frequency-changing means, to said control port of said first bandpass filter circuit, said first bandpass filter circuit further comprising fixed bandpass filter means coupled to said output port of said first mixer of said first bandpass

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filter circuit and to said input port of said second mixer of said first bandpass filter circuit;

means for coupling said control port of said first bandpass filter circuit to said first source, whereby said control signals at said first frequency are applied to said control ports of said first and second mixers of said first bandpass filter circuit, and whereby said signals translating between said signal input and signal output ports of said first bandpass filter circuit are sequentially frequency-converted in a first direction by said first mixer, bandpass filtered by said fixed bandpass filter means, and frequency-converted in a second direction, opposite to said first direction, by said second mixer of said first bandpass filter circuit;

a second bandpass filter circuit including signal input and output ports, and a control port for receiving control signals at a second frequency, for filtering signals translating between said signal input port and said signal output port of said second bandpass filter circuit with a bandpass characteristic responsive to said second frequency, said second bandpass filter circuit comprising first and second mixers, each of which mixers of said second bandpass filter circuit includes input and output ports and a control port, said input port of said first mixer of said second bandpass filter circuit being coupled to receive said signals applied to said signal input port of said second bandpass filter circuit, and said output port of said second mixer of said second bandpass filter circuit being coupled to said signal output port of said second bandpass filter circuit, and said control ports of said first and second mixers of said second bandpass filter circuit being coupled in common, without intermediary frequency-changing means, to said control port of said second bandpass filter circuit, said second bandpass filter circuit further comprising fixed bandpass filter means coupled to said output port of said first mixer of said second bandpass filter circuit and also coupled to said input port of said second mixer of said second bandpass filter circuit;

means for coupling said output port of said first bandpass filter circuit to said input port of said second bandpass filter circuit;

a second source of control signals at a selectable second frequency, which second frequency may equal said first frequency; and

means for coupling said control input port of said second bandpass filter circuit to said second source, whereby said control signals at said second frequency are applied to said control ports of said first and second mixers of said second bandpass filter circuit, and whereby the frequency of said bandpass characteristic of said second bandpass filter circuit is responsive to said second frequency, and whereby said frequencies of said bandpass characteristics of said first and second bandpass filter circuits are cascaded to produce a selectably variable bandwidth.

5,300,839

SEMICONDUCTOR IC DEVICE HAVING SENSE AMPLIFIER CIRCUIT

Takayuki Kawahara; Takesada Akiba, both of Kokubunji; Goro Kitsukawa, Tokyo; Yoshiki Kawajiri, Akishima; Kiyoo Itoh, Higashikurume, and Takeshi Sakata, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Device Engineering Co., Ltd., Mobara, both of Japan

Filed Apr. 9, 1992, Ser. No. 865,852

Claims priority, application Japan, Apr. 15, 1991, 3-082228; Jan. 27, 1992, 4-011727

Int. Cl.[5] **G11C** *7/06*

U.S. Cl. 307—530 **6 Claims**

1. A semiconductor IC device having a sense amplifier circuit amplifying a differential input voltage between a voltage of a first input signal line and a voltage of a second input signal line,

wherein said sense amplifier circuit comprises:

a first n-type channel MOS transistor and a second n-type channel MOS transistor, gates of which are connected to said first input signal line and said second input signal line so as to achieve a differential operation in response to said differential input voltage;

a first switch connected between a drain and said gate of said first n-type channel MOS transistor;

a second switch connected between a drain and said gate of said second n-type channel MOS transistor;

a third switch connected between said drain of said first n-type channel MOS transistor and said second input signal line; and

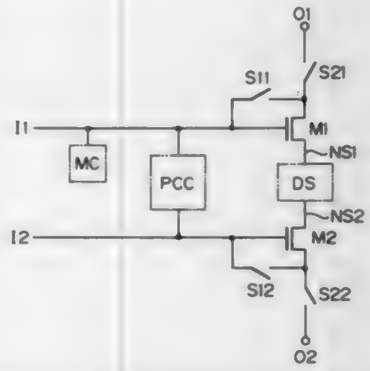
a fourth switch connected between said drain of said second n-type channel MOS transistor and said first input signal line;

wherein either one of said first and second input signal lines is connected to a memory cell;

wherein said first and second input signal lines are connected to a precharge circuit;

wherein said first and second n-type channel MOS transistors have sources commonly connected to each other;

wherein said first and second input signal lines are connected to a first p-type channel MOS transistor and a second p-type channel MOS transistor, said first and second p-type channel MOS transistor having sources commonly connected to each other;



wherein said first input signal line is connected to a drain of said first p-type channel MOS transistor and a gate of said second p-type channel MOS transistor;

wherein said second input signal line is connected to a drain of said second p-type channel MOS transistor and a gate of said first p-type channel MOS transistor;

wherein during a period of time when said first and second switches are turned on, said third and fourth switches are turned off so that said first and second signal lines are precharged to a predetermined voltage in advance by said precharge circuit;

wherein, thereafter, the precharge operation of said precharge circuit is finished and threshold voltages are generated respectively between the gate and the source of said first and second n-type channel MOS transistors;

wherein, thereafter, said first and second switches are turned off and information from said memory call is applied to said one of said first and second input signal lines, thereby obtaining a differential output corresponding to the information from the drains of said first and second n-type channel MOS transistors; and

wherein, thereafter, said third and fourth switches are turned on and the commonly connected sources of said first and second p-type channel MOS transistors are set to a high voltage.

5,300,840

REDUNDANCY FUSE READING CIRCUIT FOR INTEGRATED MEMORY

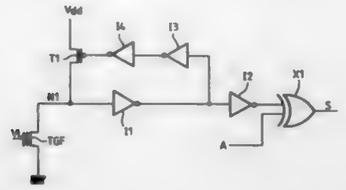
Sylvie Drouot, Le Tholonet, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Nov. 23, 1992, Ser. No. 979,534

Claims priority, application France, Nov. 25, 1991, 91 14506

Int. Cl.[5] **H03K** *19/003*

U.S. Cl. 307—530 **14 Claims**



5. The memory of claim **1**, wherein said first inverter is directly connected to be driven by said reading node.

5,300,841

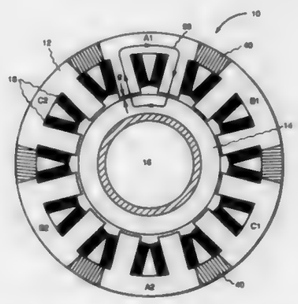
INDUCTIVE AIR GAP ESTIMATION METHOD FOR ACTIVE MAGNETIC BEARINGS

Mark A. Preston, and James P. Lyons, both of Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,194

Int. Cl.[5] **H02K** *7/09;* **G01B** *7/14*

U.S. Cl. 310—90.5 **12 Claims**



1. A method for sensing air gap length in an active magnetic bearing having a rotor and a stator including a plurality of electromagnetic force actuators, comprising:

magnetically separating said force actuators such that each has a substantially isolated flux path;

measuring a voltage applied to at least one of said force actuators;

measuring a change in current in said force actuator resulting from application of said voltage thereto;

determining an average differential inductance of said force actuator from said voltage and said change in current; and

determining the effective air gap length, air gap velocity, and magnetic flux from said change in current and said differential inductance according to predetermined flux versus current characteristics of said magnetic bearing.

7. Apparatus for estimating air gap length in an active magnetic bearing having a rotor mounted for rotation within a stator and for coupling to a shaft, said stator including a plurality of electromagnetic force actuators, comprising:

non-magnetic flux barriers for magnetically separating adjacent force actuators such that each has a substantially isolated flux path;

voltage sensing means for measuring a voltage applied to at least one of said force actuators;

current sensing means for measuring a change in current in said force actuator resulting from application of said voltage thereto;

computer means for determining an average differential inductance of said force actuator from said voltage and said change in current, said computer means determining the effective air gap length, air gap velocity, and magnetic flux from said change in current and said differential inductance according to predetermined flux versus current characteristics of said magnetic bearing.

5,300,842

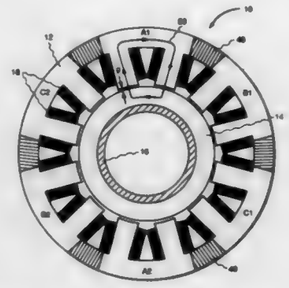
FLUX/CURRENT AIR GAP ESTIMATION METHOD FOR ACTIVE MAGNETIC BEARINGS

James P. Lyons, and Mark A. Preston, both of Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,196

Int. Cl.[5] **H02K** *7/09;* **G01B** *7/14*

U.S. Cl. 310—90.5 **10 Claims**



1. A method for sensing air gap length in an active magnetic bearing having a rotor and a stator including a plurality of pairs of electromagnetic force actuators, comprising:

magnetically separating said force actuators such that each has a substantially isolated flux path;

controlling said pairs of electromagnetic force actuators for mutually exclusive excitation of each actuator of each said pair;

applying a test voltage to the unexcited actuator of each said pair;

measuring the current I in said unexcited actuator a predetermined time after application of said test voltage;

using an integrator to estimate a flux linkage ψ of said unexcited actuator a predetermined time after application of said test voltage according to

$$\psi = \int (V - IR)dt,$$

where V represents the actuator voltage and R represents a actuator resistance;

resetting the integrator at zero current; and

determining an effective air gap length from the estimated flux linkage and the measured current according to predetermined air gap length data as a function of current and flux linkage for said magnetic bearing.

6. Apparatus for estimating air gap length in an active magnetic bearing having a rotor mounted for rotation within a stator and for coupling to a shaft, said stator having a plurality of electromagnetic force actuators configured as opposing pairs, comprising:

non-magnetic flux barriers for magnetically separating adjacent electromagnetic force actuators such that each has a substantially isolated flux path, opposing pairs functioning as a magnetically isolated control axis, such that there are at least two control axes;

control means for controlling said pairs of electromagnetic

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force actuators for mutually exclusive excitation of each actuator of each said pair;
probing means for applying a test voltage to the unexcited actuator of each said pair;
current sensing means for measuring the current I in said unexcited actuator a predetermined time after application of said test voltage;
integrator means for estimating a flux linkage ψ of said unexcited actuator according to

$$\psi = \int (V - IR) dt,$$

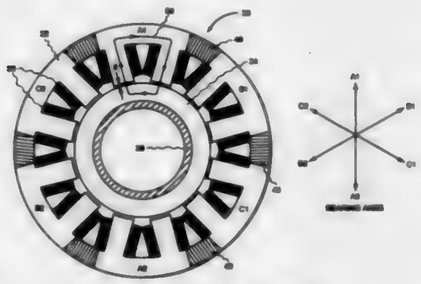
where V represents the actuator voltage and R represents an actuator resistance;
resetting means for resetting said integrator means at zero flux linkage; and
signal processing means for determining an effective air gap length from the estimated flux linkage and the measured current according to predetermined air gap length data as a function of current and flux linkage for said magnetic bearing.

5,300,843

FAULT TOLERANT ACTIVE MAGNETIC BEARING

James P. Lyons; Mark A. Preston, both of Niskayuna, and Gerald B. Kliman, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,197
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 **5 Claims**



1. An active magnetic bearing, comprising:
a rotor mounted for rotation within a stator and for coupling to a shaft, said stator having at least six adjacent electromagnets configured such that each electromagnet is situated opposite from a corresponding electromagnet, adjacent electromagnets being separated by non-magnetic flux barriers, opposite electromagnets functioning as a magnetically isolated control axis, such that there are at least three magnetically isolated control axes, and only two of said control axes are required to be operational in order to maintain operation of said magnetic bearing.

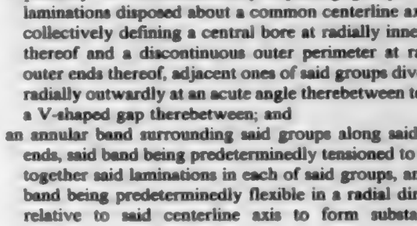
5,300,844

HIGH-VOLTAGE INSULATION FOR STATOR WINDINGS OF ELECTRIC MACHINES

Roland Schuler, Wettingen, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Apr. 27, 1993, Ser. No. 52,991
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1992, 4218927
Int. Cl.[5] H02K *3/34*
U.S. Cl. 310—215 **3 Claims**

1. A high-voltage insulation for stator windings of electric machines in which the stator windings include a plurality of component conductors combined into a rod, and wherein each of said component conductors include component conductor insulation such that a plurality of component conductors each having component conductor insulation form said rod, and further wherein a main insulation is provided about said rod formed of said component conductors and component conductor insulation, said main insulation comprising:
a plurality of strips wound about said rod in multiple layers, each of said strips including a layer of mica, and further wherein said plurality of strips include a first kind of strip and a second kind of strip;
said first kind of strip including a three layer structure having a central mica layer disposed between a pair of textile carrier layers which cover the mica layer;



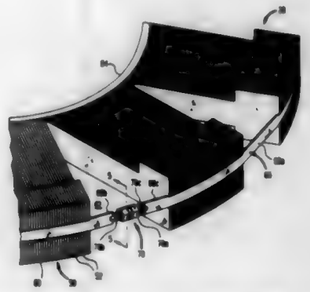
said second kind of strip including a two layer structure including a mica layer having only one side thereof provided with a textile carrier covering only said one side of said mica layer; and
wherein said second kind of strip is disposed in said main insulation such that said one side of said mica layer is directed away from said component conductors, while another side of said mica layer of said second kind of strip which does not include a textile carrier faces toward said component conductors.

5,300,845

BANDED ELECTROMAGNETIC STATOR CORE

Alan W. Fanning; Aaron A. Gonzales; Mahadeo R. Patel, all of San Jose, and Eugene E. Olich, Aptos, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 5, 1993, Ser. No. 43,051
Int. Cl.[5] H02K *1/06*
U.S. Cl. 310—217 **7 Claims**



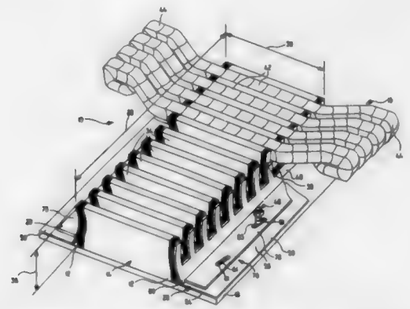
1. A stator core for an electromagnetic pump for supporting an electrical coil comprising:
a plurality of circumferentially adjoining groups of flat laminations disposed about a common centerline axis and collectively defining a central bore at radially inner ends thereof and a discontinuous outer perimeter at radially outer ends thereof, adjacent ones of said groups diverging radially outwardly at an acute angle therebetween to form a V-shaped gap therebetween; and
an annular band surrounding said groups along said outer ends, said band being predeterminedly tensioned to clamp together said laminations in each of said groups, and said band being predeterminedly flexible in a radial direction relative to said centerline axis to form substantially straight bridge sections bridging said gaps between said adjoining groups, said band comprising:
first and second opposing ends; and
a fastener joining together said first and second ends and being adjustable to draw together said first and second ends to generate a predetermined tension in said band.

5,300,846

LAMINATION SUPPORT FOR A LINEAR MOTOR

Robin M. Miller, Ellington, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Oct. 8, 1992, Ser. No. 958,207
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **4 Claims**



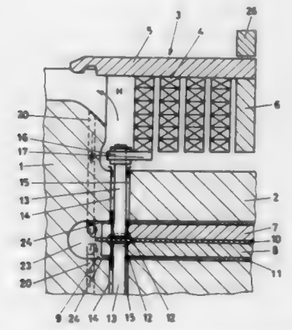
1. A lamination support for a linear motor primary having a plurality of laminations arranged side by side, attached to a backing plate along one edge, comprising:
a biasing means, for biasing the laminations against one another; and
an attachment means, for attaching said biasing means to the backing plate.

5,300,847

ROTOR OF AN ELECTRICAL MACHINE HAVING AN EXCITATION CURRENT SUPPLY LINE

Werner Haditsch, Nussbaumen, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Dec. 9, 1992, Ser. No. 988,192
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141690
Int. Cl.[5] H02K *9/00*
U.S. Cl. 310—61 **10 Claims**



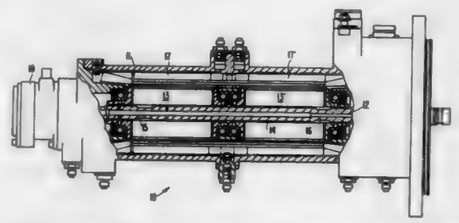
1. A rotor of a gas-cooled electrical machine comprising:
a rotor body;
an excitation winding arranged in longitudinal slots on an outer circumference of the rotor body in a winding overhang of the rotor;
an excitation current supply line which runs centrally in the rotor in an axial shaft hole;
a forced-cooled excitation supply line bolt arranged in a first radial shaft hole, and being electrically connected at its inner end to the excitation current supply line and being electrically connected at its outer end to the excitation winding;
a rotor cap supporting the winding overhang of the rotor;
at least one separating wall for splitting the winding overhang underneath the rotor cap into at least one cold and hot gas chamber through which a cooling gas flows, wherein the first radial shaft hole opens into the at least one hot gas chamber;
a second radial shaft hole connecting the at least one cold gas chamber to the axial shaft hole, so that the cooling gas flows from the at least one cold gas chamber through the second radial shaft hole, through the axial shaft hole and through the first radial shaft hole.

5,300,848

DUAL PERMANENT MAGNET GENERATOR PLANETARY GEAR ACTUATOR AND ROTOR PHASE SHIFTING METHOD

John B. Huss, Rockford; Merle L. Bennett, Cherry Valley, and Richard J. Hoppe, Rockford, all of Ill., assignors to Sunstrand Corporation, Rockford, Ill.

Filed Nov. 14, 1989, Ser. No. 436,034
Int. Cl.[5] H02K *7/06, 16/00;* **F16H** *3/44*
U.S. Cl. 310—83 **25 Claims**



24. A method for actuating rotors of a dual permanent magnet generator into and out of phase as generator load varies comprising the steps:
extracting power from an input shaft of the generator by driving a gear arrangement mounted on a carrier with the input shaft;
applying a load to the gear arrangement from at least one generator associated with the gear arrangement to rotate the rotors into and out of phase via a threaded connection between the gear arrangement and the input shaft.

5,300,849

DEVICE FOR ELIMINATING THE AXIAL AND RADIAL PLAY OF AN AXLE

Axel Elsässer, VS-Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villigen-Schwenningen, Fed. Rep. of Germany

Filed Aug. 11, 1992, Ser. No. 927,229
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1990, 4001257
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 **3 Claims**

1. In a device for eliminating the radial and axial play of a shaft having a circular ferromagnetic plate mounted thereon and which passes through a ferromagnetic stationary fitting, said device also having a permanent magnet for establishing attractive forces in said device an improvement comprising:
a ferromagnetic arcuate part having a radius of curvature

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slightly larger than the radius of curvature of said circular ferromagnetic plate, said arcuate part being arranged in the proximity of the edge of said circular ferromagnetic

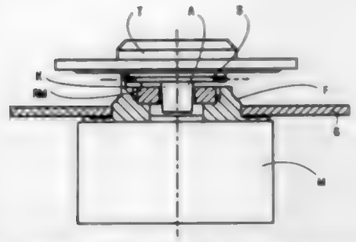


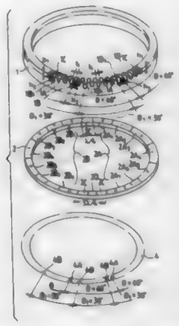
plate whereby a first magnetic force acts between said arcuate part and the edge of said plate to eliminate said radial play and a second magnetic force acts between said shaft and said plate to eliminate said axial play.

5,300,850

VIBRATION WAVE MOTOR

Ichiro Okumura; Hitoshi Mukohjima, both of Yokohama; Takayuki Tsukimoto; Akio Atsuta, both of Kawasaki; Koichi Ueda, Yokohama, and Hajime Kanazawa, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 480,201, Feb. 14, 1990, abandoned.
This application Jan. 30, 1992, Ser. No. 827,866
Claims priority, application Japan, Feb. 14, 1989, 1-35348; Feb. 17, 1989, 1-37420; Apr. 19, 1989, 1-99845; Apr. 20, 1989, 1-101467; Aug. 4, 1989, 1-202361; Oct. 30, 1989, 1-282209; Dec. 29, 1989, 1-343131
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **25 Claims**



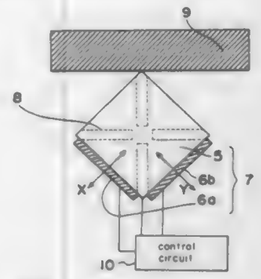
1. A vibration wave driven device, comprising:
a vibration member;
an electro-mechanical energy conversion member provided on said vibration member for generating a travelling vibration wave in the vibration member in response to an applied electrical signal, whereby the travelling vibration wave has a first wavelength and creates a relative movement between the vibration member and a contact member in frictional contact with the vibration member; and
vibration damping means for making a dynamic rigidity of a predetermine done of said vibration member and said contact member non-uniform with respect to a second vibration wave having a wavelength other than said first wavelength, the vibration damping means being located at a portion of the predetermined member substantially corresponding to integer times ½ of the wavelength of the second vibration wave and substantially not corresponding to integer times ½ of the first wavelength of the travelling vibration wave.

5,300,851

LINEAR-TYPE ACTUATOR

Takahiro Nishikura, Ikoma; Katsu Takeda, Osaka; Masanori Sumihara, Higashiosaka, and Osamu Kawasaki, Tsuzuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 969,369
Claims priority, application Japan, Oct. 31, 1991, 3-285919
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **9 Claims**



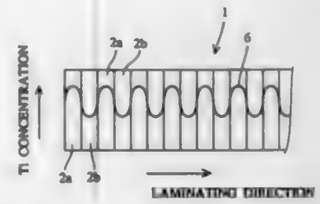
1. A linear actuator comprising: a vibrator including a rod-shaped elastic member having a square sectional shape, and first and second piezoelectric members disposed on at least a set of planar surfaces of the elastic member which surfaces are orthogonal to each other; a moving member in contact with the vibrator at only a ridge of a corner of the vibrator where orthogonal planar surfaces of the elastic member intersect; and a control circuit which selectively applies an alternating current voltage to said first and second piezoelectric members; said moving member being supported so as to be movable in one direction by vibrations excited by the vibrator when an alternating current voltage is applied by said control circuit to said first piezoelectric member, and so as to be movable in another direction opposite to said one direction by vibrations excited by the vibrator when an alternating current voltage is applied by said control circuit to said second piezoelectric member.

5,300,852

PIEZOELECTRIC CERAMIC LAMINATE DEVICE

Yuji Isogai, Niizasshi, and Hiroki Toda, Asakasshi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 956,095
Claims priority, application Japan, Oct. 4, 1991, 3-283749
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—358 **10 Claims**



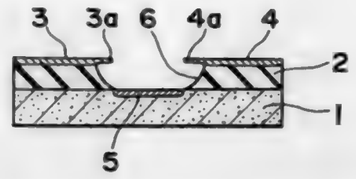
1. A piezoelectric ceramic laminate device comprising a plurality of piezoelectric ceramic sheets, wherein the concentration of at least one metal component constituting said piezoelectric ceramic sheets changes in the laminating direction thereof substantially along a sinusoidal curve.

5,300,853

FIELD-EMISSION TYPE SWITCHING DEVICE

Masanori Watanabe, Katano; Hiroyuki Kado, Kadoma; Takao Chikamura, Osaka, and Nobuyuki Yoshiike, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 836,558, Feb. 18, 1992, Pat. No. 5,217,401, which is a division of Ser. No. 550,097, Jul. 9, 1990, abandoned.
This application Jan. 6, 1993, Ser. No. 1,549
Claims priority, application Japan, Jul. 7, 1989, 1-175900
Int. Cl.[5] H01J *1/16, 19/10*
U.S. Cl. 313—309 **10 Claims**



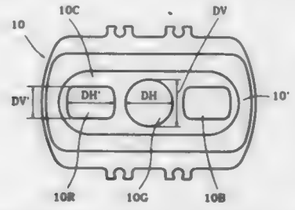
1. A field-emission type switching device comprising:
an insulation layer disposed on a semiconductor substrate layer;
an electrically conductive layer disposed over said insulation layer;
an emitter electrode formed in said electrically conductive layer and having a serrated edge having at least one tip and a collector electrode, formed in said electrically conductive layer, and having a straight edge;
said insulation layer having a recess formed therein such that an emitter overhanging portion is formed overhanging said recess and a collector overhanging portion is formed overhanging said recess;
a gate electrode formed at the bottom of said recess;
wherein said overhanging portions have tapered edges and wherein the at least one tip of the serrated edge of the emitter electrode has a thickness within a range of 0.02–0.04 micrometers and wherein the point of contact of the emitter electrode with the insulation layer is thick.

5,300,854

ELECTRODE STRUCTURE FOR AN ELECTRON GUN FOR A CATHODE RAY TUBE

Yong-geol Kweon, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Dec. 18, 1991, Ser. No. 809,434
Claims priority, application Rep. of Korea, Dec. 18, 1990, 90-20986
Int. Cl.[5] H01J *29/50, 29/51*
U.S. Cl. 313—414 **1 Claim**



1. An electron gun for a color cathode ray tube comprising:
an electron beam generating part including a cathode, a control electrode, and a screen electrode for generating an electron beam having first, second and third components; and
a main lens including a focus electrode and an acceleration electrode for accelerating and focusing the electron beam, wherein a recess, through which the first, second and third components commonly pass, is provided by forming a rim at each of the edges of an electron beam outgoing side plane of the focus electrode and an incoming side plane of the acceleration electrode, and three independent small-aperture electron beam passing holes are formed on the bottom of the recess in the focus electrode and when the vertical and horizontal diameters of the central electron beam passing hole of said three small-aperture electron beam passing holes of said focus electrode are DV and DH, respectively, and the vertical and horizontal diameters of the flanking electron beam passing holes are DV' and DH', respectively, the following expression is satisfied:

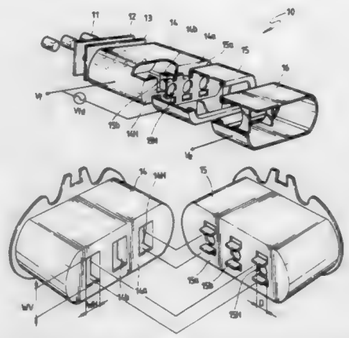
$$\frac{DH'}{DV'} > \frac{DH}{DV} \geq 1.$$

5,300,855

ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

Yong-geol Kweon, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed May 8, 1992, Ser. No. 879,911
Claims priority, application Rep. of Korea, Nov. 26, 1991, 91-21296; Nov. 26, 1991, 91-21297
Int. Cl.[5] H01J *29/50*
U.S. Cl. 313—414 **24 Claims**



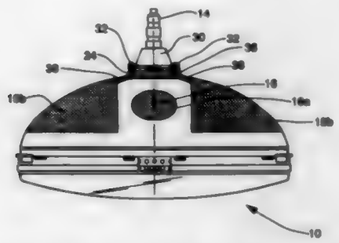
1. An electron gun for a color cathode ray tube comprising:
a triode;
a focus electrode having a first plane and a second plane, the second plane including a plurality of electron beam passing holes;
parallel vertical blades formed along the perimeter of the electron beam passing holes of said focus electrode extending towards said triode;
a dynamic focus electrode having a first plane and a second plane, the first plane including a plurality of electron beam passing holes;
parallel horizontal blades formed along the perimeter of the electron beam passing holes of the first plane of said dynamic focus electrode, said parallel horizontal blades protruding into the electron beam passing holes of the second plane of said focus electrode; and
a final accelerating electrode.

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5,300,856
RESISTIVE, ADHESIVE-PRIMER COATING FOR A DISPLAY APPARATUS AND METHOD OF MAKING SAME

Donald W. Bartch, Wrightsville, and James F. Edwards, Lancaster, both of Pa., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 18, 1992, Ser. No. 853,284
Int. Cl.[5] H01J *29/00*
U.S. Cl. 313—479 **6 Claims**



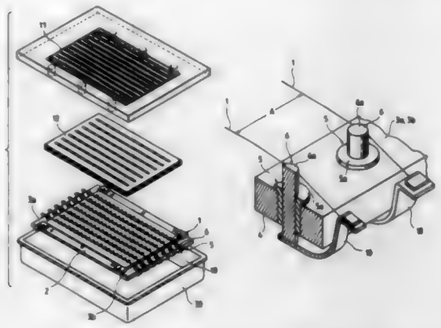
1. A display apparatus comprising a CRT having an evacuated envelope with an interior surface and an exterior surface, said envelope including a faceplate having a luminescent screen on the interior surface thereof, a neck with an electron gun therein for generating and directing at least one electron beam toward said screen, a funnel connecting said neck and said faceplate and a deflection yoke disposed around said envelope at the junction of said neck and said funnel and attached thereto with an adhesive, said envelope further including a first conductive coating on the interior surface of said funnel, a second conductive coating on at least a portion of the exterior surface of said funnel, and a third coating on the exterior surface of said funnel underlying said yoke and connected to said second conductive coating, said third coating being a resistive, adhesive primer coating forming a barrier between said yoke adhesive and said envelope, said resistive, adhesive-primer coating consisting essentially of a polychloroprene latex, a conductive filler material selected from the group consisting of carbon black and graphite, and water.

5,300,857
FLAT IMAGE DISPLAY DEVICE WITH FILAMENTARY CATHODE SUPPORT STRUCTURE

Kanji Imai; Seiichi Taniguchi; Mitsunori Katano; Fumio Yamazaki, and Toshifumi Nakatani, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 11, 1991, Ser. No. 774,818
Claims priority, application Japan, Oct. 11, 1990, 2-273974
Int. Cl.[5] H01J *61/02*
U.S. Cl. 313—491 **11 Claims**

1. An image display device enclosed within an evacuated envelope, comprising:
an array of parallel spaced filamentary cathodes for emitting electrons;
a fluorescent screen panel for displaying an image based on visible fluorescent radiation caused by the electron beams emitted from said filamentary cathodes;
a rectangular substrate having opposite sides;
a pair of support bars extending along and fixed to said opposite sides of the substrate, each of said support bars having an array of through holes defined therein;
electrically conductive pins extending through said through holes, respectively;
electrically insulating bodies disposed around said electrically conductive pins and fitted in said through holes, respectively; and
each of said filamentary cathodes extending over said substrate and having opposite ends secured to said support bars, each of said filamentary cathodes being held against

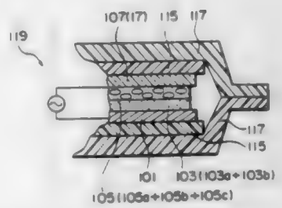


a circumferential surface of a corresponding one of said electrically conductive pins at each of said support bars.

5,300,858
TRANSPARENT ELECTRO-CONDUCTIVE FILM, AND AC POWDER TYPE EL PANEL AND LIQUID CRYSTAL DISPLAY USING THE SAME

Masaru Nikaido, Miura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 501,788, Mar. 28, 1990, Pat. No. 5,140,450.
This application Jun. 8, 1992, Ser. No. 895,132
Claims priority, application Japan, Mar. 31, 1989, 1-81954
Int. Cl.[5] H05B *33/04*
U.S. Cl. 313—503 **6 Claims**

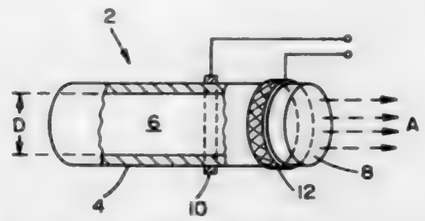


1. A AC powder type EL panel comprising;
a back electrode on which a insulating layer is formed,
a transparent electro-conductive film including an optical transparent polymer film containing 1 to 20% by weight of hydrophobic resin particles having an average particle diameter of from 0.5 to 10 μm therein and a transparent electrode having a transparent electro-conductive thin film formed on a principal surface of said polymer film and being disposed opposite to said back electrode, and
an emitting layer sandwiched between said back electrode and said transparent electro-conductive film.

5,300,859
IR-RADIATION SOURCE AND METHOD FOR PRODUCING SAME

Shaul Yatsiv, Jerusalem, and Amnon Gabay, Mevasseret Zion, both of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 271,218, Nov. 14, 1988, abandoned. This application Mar. 19, 1991, Ser. No. 671,642
Claims priority, application Israel, Nov. 12, 1987, 84463
Int. Cl.[5] H01J *17/20, 61/30;* **H01S** *3/22*
U.S. Cl. 313—573 **13 Claims**



1. A source of IR-radiation comprising;
an enclosure defining between its walls a sealed-off, electrode-less chamber, said walls having at least one portion transparent to IR-radiation, and said sealed-off, electrodeless chamber containing a gas mixture of at least one molecular IR-active gas, of at least one buffer gas and of at least one noble gas, said source of IR-radiation emitting discrete, solely noncoherent, spontaneous emission frequencies in the IR-spectrum characteristic of the decay of said at least one molecular IR-active gas from its rotational-vibrational state to its ground state.

5,300,860
CAPACITIVELY COUPLED RF FLUORESCENT LAMP WITH RF MAGNETIC ENHANCEMENT

Valery A. Godyak, Brookline; Robert B. Piejak, Wayland, and Benjamin M. Alexsandrovich, Brookline, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Oct. 16, 1992, Ser. No. 961,753
Int. Cl.[5] H05B *41/24*
U.S. Cl. 315—39 **9 Claims**

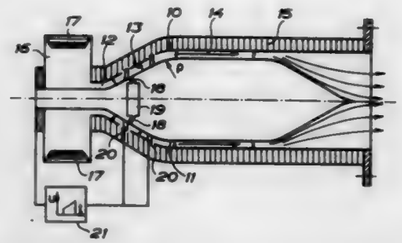


1. A fluorescent light source comprising:
a fluorescent lamp having first and second electrodes disposed at or near the ends thereof for capacitive coupling of RF electrical energy to a low pressure discharge within said fluorescent lamp, each of said first and second electrodes comprising a conductive layer on the outside surface of said fluorescent lamp for capacitive coupling of RF electrical energy to a discharge within said fluorescent lamp and a conductive coil disposed around said conductive layer for inducing an axial RF magnetic field within said fluorescent lamp near said electrodes; and
an RF source having a first output lead electrically coupled to said first electrode and a second output lead electrically coupled to said second electrode.

5,300,861
METHOD IN A PULSED ACCELERATOR FOR ACCELERATING A MAGNETIZED ROTATING PLASMA

Herman Helgesen, Kuhlgränd 2, Lund, S-222 49; Sonja R. Helgesen, Kuhlgranden 2, 222, 49 Lund, both of Sweden; Alfred Sillesen, Strandparken 14, Himmeley 4000, Roskilde, Denmark; Jan Bergström, Idrottsvägen 8, Sollentuna S-191 70, Sweden, and Vladimir M. Kouznetsov, Nepokorennych 16/1-519°, Leningrad 195220, U.S.S.R.

Continuation of Ser. No. 634,863, Jan. 2, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,721
Claims priority, application Sweden, May 5, 1988, 8801705-8
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.41 **5 Claims**



1. A pulsed accelerator system for accelerating a magnetized rotating plasma, comprising magnetic means arranged symmetrically around an axis, two electrodes extending symmetrically along said axis inside said magnetic means, said electrodes being spaced form each other int he transverse direction of said axis, two pulsed power sources connected to the magnetic means and the electrodes, respectively, and openings in the inner electrode in a cross section perpendicular to said axis for the supply of a neutral gas to the space defined by said electrodes, wherein a magnetic field generated by said magnetic means is confined to form a layer which comprises a first cylindrical portion with a minor diameter, a second cylindrical portion with a major diameter, and a transition portion interconnecting said first and second cylindrical portions, said portions being arranged axis-symmetrically around said axis.

5,300,862
ROW ACTIVATING METHOD FOR FED CATHODOLUMINESCENT DISPLAY ASSEMBLY

Norman W. Parker, Wheaton, Ill.; James E. Jaskie, and Robert C. Kane, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 11, 1992, Ser. No. 897,644
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.1 **10 Claims**

1. A method for addressing an image display comprising the steps of:
providing an image display device including a viewing screen whereon a cathodoluminescent material is disposed and an array of field emission devices distally disposed with respect to the viewing screen and further providing a plurality of conductive paths separated into a plurality of conductive paths in rows and a plurality of conductive paths in columns with each field emission device being selectively independently operably connected to one of the conductive paths separated into rows and one of the conductive paths separated into columns so that a plural-

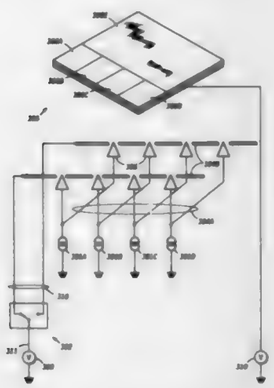
VOL 1161 ISS 1 AP 5 1994 UMI

ity of the array of field emission devices is connected in each row and a plurality of the array of field emission devices is connected in each column;

providing a plurality of controlled constant current sources each operably coupled between a conductive path of the plurality of conductive paths in columns and a reference potential;

providing a switching circuit having an input terminal and a plurality of output terminals wherein each of the plurality of output terminals is operably connected to a different conductive path of the plurality of conductive paths in rows;

providing a first voltage source operably coupled between the switching circuit input terminal and the reference potential and the switching circuit functions to operably



connect the first voltage source to one selected conductive path of the plurality of conductive paths in rows at a given time;

providing a second voltage source operably coupled between the viewing screen and the reference potential; and

switching the switching circuit and controlling the constant current sources so that substantially all of the plurality of field emission devices connected in a selected conductive path of the plurality of conductive paths in rows are selectively simultaneously placed in an ON mode and each of the plurality of field emission devices connected in a selected conductive path of the plurality of conductive paths in rows emits an electron current substantially determined by a controlled constant current source of the plurality of controlled constant current sources.

5,300,863

AUXILIARY LIGHTING CIRCUIT FOR A GASEOUS DISCHARGE LAMP

Thomas J. Mayer, Hoffman Estates, Ill., assignor to Appleton Electric Company, Chicago, Ill.

Filed Aug. 14, 1992, Ser. No. 930,743

Int. Cl.[5] H05B *41//16*

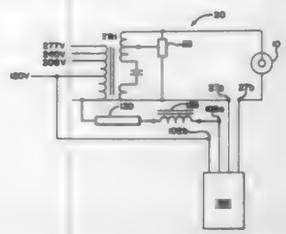
U.S. Cl. 315—276 **11 Claims**

1. A non-arcing electrical switch, comprising:

a current transformer having primary and secondary coils such that a current flowing through the primary coil causes a voltage at the secondary coil;

a first solid-state switch having an input and an output and being coupled to the secondary coil such that a voltage at the secondary coil causes the first switch to electrically close between its input and output, and such that no voltage at the secondary coil causes the first switch to electrically open between its input and output; and

a second solid-state switch coupled to the first solid-state switch, and having an input and output, such that when the first solid-state switch is closed between its input and output, the second solid-state switch is substantially always open between its input and output, and when the



first solid-state switch is open between its input and output, the second solid-state switch is substantially always closed between its input and output.

5,300,864

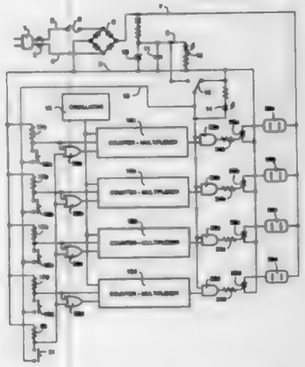
PROGRAMMABLE LIGHTING CONTROL SYSTEM

Franklin J. Allen, Jr., Pasadena, Calif., assignor to Almic Industries, Pasadena, Calif.

Filed Oct. 6, 1992, Ser. No. 955,183

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—314 **5 Claims**



1. A lighting control device for the control of a plurality of sets of series or parallel connected lighting strings providing individual lighting condition selection for individual said lighting strings comprising an AC input means, an AC rectifier, a plurality of outlet means, a plurality of solid-state switching means, a plurality of output select means, an output enable/disable means, a program memory means, an output timing phase synchronization means, power indicator means, an overcurrent protection means, and associated control circuitry; said AC input means comprising an AC plug and electrical conductors applies AC to said AC rectifier means to produce voltages to operate said control circuitry and to power said plurality of outlet means; said control circuitry generates timing pulses and logic levels used to control the on/off time and brightness of said lighting strings connected to said outlet means; said plurality of outlet means each having two contacts one of said contacts of each outlet being bussed to one of said contacts of all other said outlet means and to a common voltage source; said plurality of outlet means each having a second of said contacts that are separately and individually connected to one of two main terminals of one each of said plurality of solid-state switching means; said plurality of solid-state switching means each having a second of said main terminals that are connected in common to a system ground bus; said plurality of solid-state switching means each having a gating element to switch on

and off or vary the current flow through the respective said solid-state switching means in response to selected signals applied respectively to each of said gating elements of each of said plurality of solid-state switching means; said output enable/disable means provides at least one logic level transition to said control circuitry to cease lighting action of all said lighting strings connected to said outlet means; said program memory means provides at least one logic level transition to said control circuitry and in turn to said plurality of output select means and said output timing phase synchronization means in conjunction with said output enable/disable means to temporary disallow subsequent changes to previously selected lighting conditions until an appropriate logic level transition is applied to said control circuitry to allow for the desired lighting changes; said plurality of output select means individually and independently provides at least one logic level transition at user discretion to said control circuitry to advance the available lighting condition signal produced by said control circuitry for a respective said solid-state switching means to apply and/or deny power to the respective said outlet means relative to the said lighting condition signal selected; said output timing phase synchronization means provides at least one logic level transition at user discretion to said control circuitry to simultaneously establish the timing phase for all of said lighting condition signals controlling all said lighting strings connected to the said plurality of outlet means.

5,300,865

SELF ADJUSTING BLANKING SIGNAL GENERATOR

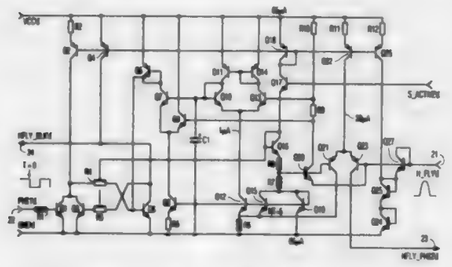
Rudolf Koblitz, Meylon, and Steffen Lehr, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 936,406

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1990, 4004161

Int. Cl.[5] G09G *1/04;* H01J *29/70*

U.S. Cl. 315—384 **9 Claims**



1. In a scanning circuit utilizing blanking pulses between flyback pulses of a flyback signal in a display device, a self-adjusting line blanking circuit for adjusting itself to the flyback pulse automatically and for preventing the generation of spurious blanking pulses by ringing in said flyback pulses, said line blanking circuit comprising:

storage means;

circuit means for deriving a reference voltage from said flyback signal and for storing said reference voltage in said storage means;

comparison means responsive to said stored reference voltage and to said flyback pulses for providing said blanking pulses when said flyback pulses exceed said reference voltage;

first preventing means for preventing resetting of said comparison means for a preselected time period after the falling edge of said blanking pulses; and

second preventing means for preventing a change in the stored reference voltage during a portion of each blanking pulse interval for limiting the stored voltage.

5,300,866

DRIVE APPARATUS AND SPEED CONTROL APPARATUS FOR BRUSHLESS MOTOR

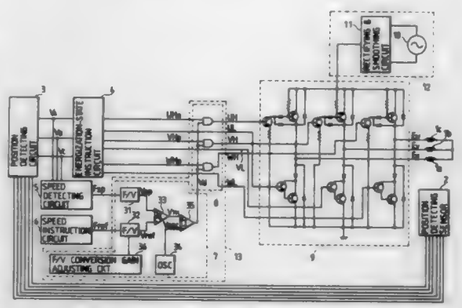
Masahiro Yasohara, Amagasaki; Hiroyuki Oku, Takarazuka; Hiromitsu Nakano; Hiroshi Dohi, both of Osaka, and Muneo Yamamoto, Takefu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 665,126, Mar. 6, 1991, abandoned. This application Jul. 8, 1992, Ser. No. 908,813

Claims priority, application Japan, Mar. 7, 1990, 2-55331; Mar. 30, 1990, 2-86543; May 29, 1990, 2-141070; Jun. 18, 1990, 2-159048; Jul. 17, 1990, 2-188958

Int. Cl.[5] H02P *7/29, 6/02*

U.S. Cl. 318—254 **9 Claims**



1. A drive apparatus for use in a brushless motor with a rotor and a multi-phase drive coil means for driving said rotor, said drive apparatus comprising:

position detecting means for detecting a position of said rotor to be driven by an energization of said drive coil means;

energization-state instruction means for generating an energization-state instruction signal instructing an energization state of said drive coil means on the basis of the position detection signal from said position detecting means;

energization switching means for outputting an energization switching signal to successively switch the energization state of said drive coil means in accordance with the energization-state instruction signal from said energization-state instruction means and a duty control signal;

power circuit means directly coupled to a direct-current voltage source and responsive to said energization switching signal from said energization switching means so as to energize said drive coil means by means of a direct-current voltage from said direct-current voltage source in accordance with said energization switching signal therefrom, wherein said direct-current voltage source produces said direct-current voltage by directly rectifying and smoothing a power supplied from a commercial power source and said power circuit means is directly connected thereto free of intervening switching power means;

speed detecting means for outputting a motor speed signal on the basis of said position detection signal to be outputted from said position detecting means;

speed instruction means for outputting a speed control signal including a speed command to control a speed of said motor;

duty control means responsive to said speed control signal from said speed instruction means and to said motor speed signal from said speed detecting means for outputting said duty control signal to said energization switching means so that said energization switching means controls a duty ratio of said energization-state instruction signal from said energization-state instruction means on the basis of said duty control signal so as to output said energization switching signal to be inputted to said power circuit means; and

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low-speed instruction protection means for preventing motor speed control from becoming unstable by determining whether or not said speed command from said speed instruction means is for a motor speed lower than a predetermined value and stopping said power circuit means from energizing said drive coil means when the speed command from said speed instruction means is for a speed lower than said predetermined value.

5. A drive apparatus for use in a brushless motor having multi-phase drive coil means for driving a rotor, comprising:

power source for applying a voltage to said drive coil means;

circuit means comprising first switching means provided between said drive coil means and one terminal of said power source means, and second switching means provided between said drive coil means and another terminal of said power source means;

energization instruction means for successively supplying an energization instruction signal to said first and second switching means; and

a pulse width modulation (PWM) circuit for superimposing on said energization instruction signal from said energization instruction means a PWM signal whereby a current feed amount to said drive coil means varies in accordance with a pulse width, so that at least one of said first and second switching means is switching-controlled by said PWM signal superimposed on said energization instruction signal to allow variable speed control of said brushless motor;

wherein at least one of said first and second switching means provided at the opposite power source means terminals to be switching-controlled by said PWM signal compriaes a switching element and a diode coupled in series to an output of said switching element in a forward direction.

6. A speed control apparatus for use in a brushless motor comprising:

speed instruction means for outputting a control signal including a speed command indicative of a reference speed of said motor;

torque instruction means for outputting an instruction signal indicative of a power feed amount to said motor so that said motor is driven at a speed corresponding to said control signal from said speed instruction means;

motor drive means for feeding power to said motor on the basis of said instruction signal from said torque instruction means; and

low-speed instruction protection means responsive to said control signal from said speed instruction means for preventing motor speed control from becoming unstable by determining independently of motor speed whether or not said speed command in said control signal instructs a motor speed lower than a predetermined value and stopping the power feed to said motor when the speed command in said control signal from said speed instruction means is for a speed lower than said predetermined value.

7. A speed control apparatus for use in a brushless motor comprising:

speed instruction means for outputting a speed control signal including a speed command indicative of a reference speed of said motor;

motor speed detecting means for detecting a speed of said motor and outputting a motor speed detection signal indicative thereof;

control means responsive to said speed control signal and to said motor speed detection signal for controlling rotation of said motor on the basis of a difference between said speed control signal and said motor speed detection signal; and

protection means coupled to said speed instruction means and said control means for preventing motor speed control from becoming unstable by determining independently of said motor speed whether said speed command in said speed control signal from said speed instruction means command said motor to operate at a speed lower than a predetermined speed and for generating a protection signal and providing said protection signal to said control means when the speed command included in said speed control signal is lower than said predetermined speed, said control means stopping the drive of said motor in response to said protection signal.

5,300,867

ELECTRIC DRIVE ARRANGEMENT FOR A CORD WINDING AND DEWINDING WINCH

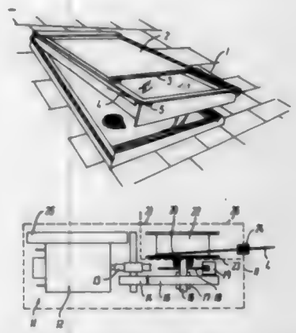
Claus B. Brade; Jesper Darum, both of Copenhagen, and Mads P. Frium, Allerod, all of Denmark, assignors to V. Kann Rasmussen Industri A/S, Soborg, Denmark

Filed Jun. 19, 1992, Ser. No. 901,190

Claims priority, application Denmark, Jun. 25, 1991, 1245/91; Jul. 5, 1991, 1311/91

Int. Cl.[5] **E06B** *9/70, 9/60;* **E05F** *15/10*

U.S. Cl. 318—468 **9 Claims**



1. An electric drive arrangement for a cord winding and dewinding winch for a screening or opening/closing device for a window or a door, which screening or opening/closing device is operated by an operating cord connected between said winch and said screening or opening/closing device, wherein the cord-operated screening or opening/closing device for a window or door is biased in a first direction, comprising said winch being connected with an electric motor through a transmission device, said motor and said transmission device being combined with said winch into a single drive unit, said electric motor being reversible and acting on said winch to turn said winch in one direction of rotation for winding up said cord, thereby moving said screening or opening/closing device in a second direction opposite to the first direction, wherein movement of the cord-operated screening or opening/closing device in the first direction unwinds said cord from said winch upon rotation of said electric motor in a direction of rotation opposite to said one direction, first stop means for stopping the movement of said screening or opening/closing device in said second direction and thereby the turning of said winch in said one direction of rotation, second stop means for stopping the movement of said screening or opening/closing device in said first direction, thereby suspending the tension in said cord caused by said biased screening or opening/closing device, brake means providing a braking force acting on said transmission device for stopping turning of said winch in said direction opposite to said one direction in response to said suspension of the tension in said cord, detector means for sensing said stopping of the turning of said winch in either direction of rotation, and a control circuit for said electric motor, said control circuit being connected with said detector means for disconnecting the motor in response to said stopping of the winch; said brake means, said detector means and said control circuit being incorporated in said single drive unit.

5,300,868

ROBOT TEACHING METHOD

Atsushi Watanabe; Tatsuo Karakama; Taro Arimatsu, and Kazuhiko Akiyama, all of Yamanashi, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

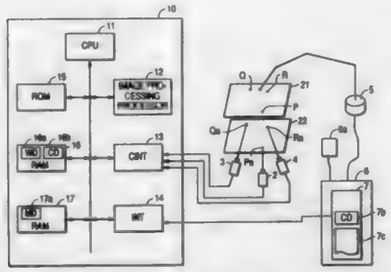
PCT No. PCT/JP92/00065, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO92/12830, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 23, 1992, Ser. No. 923,802

Claims priority, application Japan, Jan. 28, 1991, 3-26820

Int. Cl.[5] **B25J** *9/22*

U.S. Cl. 318—568.13 **3 Claims**



1. A robot teaching method for changing an operation program for a robot, comprising the steps of:

a.) positioning the tool center point (TCP) of said robot to a point to be changed on a workpiece body;

b.) determining first coordinate values of said point to be changed;

c.) converting said first coordinate values to second coordinate values on a master body based on the correction data; and

d.) rewriting a command value of said operation program to said second coordinate values thereby changing said operation program.

5,300,869

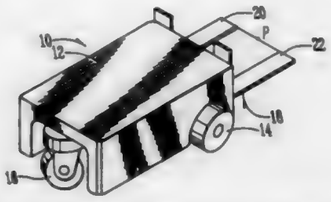
NONHOLONOMIC CAMERA SPACE MANIPULATION

Steven B. Skaar, Granger, Ind.; William H. Brockman, Ames, Iowa; Richard K. Miller, Ames, Iowa, and Issac Yalda-Mooshabod, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 922,183, Jul. 30, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 86,749

Int. Cl.[5] **B62D** *1/00*

U.S. Cl. 318—587 **42 Claims**



1. A camera space manipulation means comprising:

a multiple degree of freedom of movement manipulator means including:

a base means,

an end effector means,

connection means between the base means and the end effector means allowing multiple degrees of freedom of movement of the end effector means with respect to the base means based on known nominal kinematics, and including first sensing means for producing signals correlated to the orientation of the connection means relative to the base means,

motive means associated with the base means for allowing locomotion of the base means in a plurality of degrees of freedom of movement and including second sensing means for producing signals correlated to the distance and direction of movement of the base means along a surface;

first cue means associated with the end effector means;

second cue means associated with a work object;

two or more camera means each having a field of view being positionable to capture at least intermittently both the first and second cue means in a field of view, each camera means without a pre-known positional relationship to the base means, end effector means, connection means or motive means;

camera space means associated with each camera means to convert the field of view of each camera means into a corresponding two dimensional camera space; and

processing means including:

distinguishing means to distinguish the first and second cue means from generally all other contents of the camera spaces,

tracking means to obtain and store information relating to position and movement of the cue means in the camera spaces, monitoring means to obtain and store information relating to holonomic orientation and position of the connection means relative to the base means from the first sensing means, and nonholonomic history of movement of the base means from the second sensing means;

estimation and planning means to repetitively propose a plan of movement for one or both of the connection means and motive means to bring about a desired positional relationship between the first and second cue means in the camera spaces, the plan being based on information in the tracking means and monitoring means taking into consideration both holonomic and nonholonomic relationships,

control means for instructing movements of one or both of the connection and motive means to follow the plan in physical space.

5,300,870

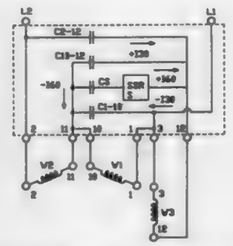
THREE-PHASE MOTOR CONTROL

Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708

Continuation-in-part of Ser. No. 593,795, Oct. 5, 1990. This application Apr. 10, 1992, Ser. No. 867,067

Int. Cl.[5] **H02P** *1/26*

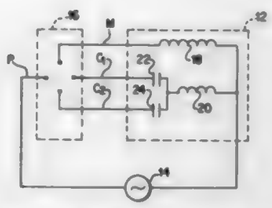
U.S. Cl. 318—768 **69 Claims**



1. A squirrel-cage induction motor having four motor terminals with a first winding connected between a first motor terminal and a second motor terminal, a second winding connected between said second motor terminal and a third motor terminal, a third winding connected between said third motor terminal and a fourth motor terminal, a two-wire single-phase power supply, a first wire of the said power supply connected to said first motor terminal, the second wire of the said power supply connected to said third motor terminal, a first capacitor

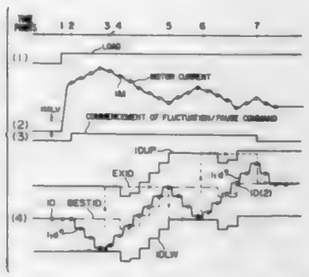
connected between said first motor terminal and said fourth motor terminal, and means for connecting a second capacitor between said second motor terminal and said third motor terminal.

5,300,871
DUAL CAPACITOR SPEED CONTROL APPARATUS AND METHOD FOR ELECTRIC MOTOR
John C. Bucher, Coral Springs; Shih T. Wu, Lighthouse Point, both of Fla., and Ta-Yao Tao, Taipei, Taiwan, assignors to Chien Luen Industries Company, Ltd., Inc., Ft. Lauderdale, Fla.
Filed Aug. 21, 1992, Ser. No. 934,047
Int. Cl.[5] H02P 1/26
U.S. Cl. 318—794 9 Claims



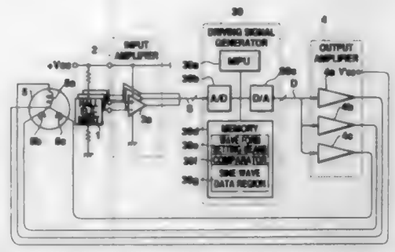
1. A method for providing speed control of an induction motor including a main winding and an auxiliary winding and powered by a power source, comprising the steps of switching a capacitor in series with the auxiliary winding and connecting the power source across the serial connection of the capacitor and the auxiliary winding and across the main winding, and after such switching, disconnecting the power source therefrom and, during such disconnection, connecting the capacitor to the main winding, allowing such capacitor to discharge through the main winding and the auxiliary winding.

5,300,872
METHOD AND APPARATUS FOR CONTROL OF INVERTER
Tsunehiro Endo, Hitachiota; Shizuo Takahashi, Funabashi; Masaya Taniguchi; Hiroshi Maruyama, both of Shimizu, and Seiji Ishida, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 20, 1992, Ser. No. 838,336
Claims priority, application Japan, Feb. 20, 1991, 3-025972
Int. Cl.[5] H02P 5/40
U.S. Cl. 318—802 24 Claims



4. An inverter control method according to claim 2 wherein for movement of said fluctuation region, there are provided a plurality of sets of paired data pieces of said manipulated variable and a corresponding controlled variables which is obtained before movement, a manipulated variable of a set having a corresponding controlled variable which is an extremum is selected from said plurality of sets, and the fluctuation region of manipulated variable is decided sequentially such that the selected manipulated variable falls within the fluctuation region.

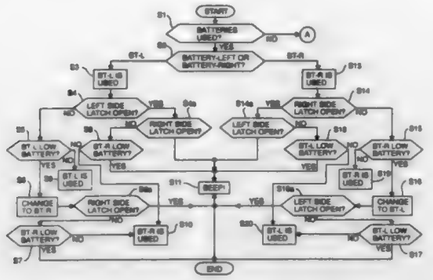
5,300,873
MOTOR CONTROL APPARATUS
Kenji Otani, and Fumihiko Ito, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Nov. 3, 1992, Ser. No. 970,569
Claims priority, application Japan, Nov. 7, 1991, 3-319980
Int. Cl.[5] H02P 5/28
U.S. Cl. 318—807 11 Claims



1. A motor control apparatus for controlling the rotation of a motor by controlling a driving current which is applied to said motor, said apparatus comprising:
an inputting circuit for detecting the rotating state of said motor and outputting a detection signal;
a driving signal generator for generating a driving signal having a predetermined wave form on the basis of said detection signal; and
an output amplifier for outputting a driving current on the basis of said driving signal;
said driving signal generator including:
a wave form storing means for storing a predetermined wave form;
a comparator for comparing a preset period and phase of said driving signal with a period and a phase of said detection signal which are output from said inputting circuit and calculating a correction value; and
a wave form setting means for correcting a period and phase of a stored wave form on the basis of said correction value and generating a predetermined wave form.

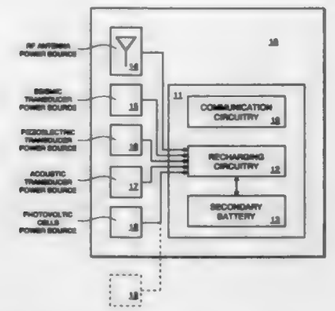
5,300,874
INTELLIGENT POWER SUPPLY SYSTEM FOR A PORTABLE COMPUTER
Hajime Shimamoto, and Yasuhiro Ishida, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Sep. 20, 1990, Ser. No. 585,581
Claims priority, application Japan, Sep. 29, 1989, 1-254963; Sep. 29, 1989, 1-254967
Int. Cl.[5] G06F 1/26; H02J 7/00
U.S. Cl. 320—15 11 Claims

7. A method for controlling a power supply of a portable computer operable in response to power supplied to a power input from at least two rechargeable batteries or an alternating current (AC) adapter, said computer including at least two battery receiving sides of a battery receiving section within said computer for detachably coupling said at least two rechargeable batteries to the computer, the method comprising the steps of:
detecting whether power is supplied to said power input from the AC adapter;
providing selection information to indicate which one of said battery receiving sides has been used to supply driving power to said computer before a power-on time of said computer;
selecting, in the event that power is not supplied from the AC adapter, one of said battery receiving sides indicated by said selection information;
detecting whether the selected battery receiving side is coupled to one of said batteries;
detecting, in the event that said selected battery receiving side is coupled to one of said batteries, whether a charge of the battery coupled to said selected battery receiving side is above a predetermined level;



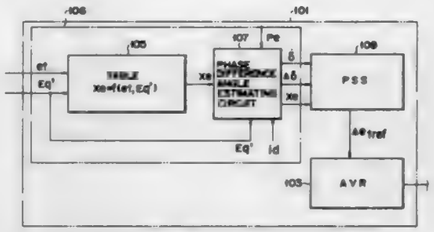
indicating, in the event that the charge of the battery coupled to said selected battery receiving side is above said predetermined level, said selected battery receiving side as a power supplying battery receiving side; and
supplying power to said power input, in the event that power is not supplied to said power input from said AC adapter, from the battery receiving side indicated as the power supplying battery receiving side.

5,300,875
PASSIVE (NON-CONTACT) RECHARGING OF SECONDARY BATTERY CELL(S) POWERING RFID TRANSPONDER TAGS
John R. Tuttle, Corrales, N. Mex., assignor to Micron Technology, Inc., Boise, Id.
Filed Jun. 8, 1992, Ser. No. 894,879
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—20 28 Claims



1. A radio frequency (RF) transceiver system comprising:
a) communication circuitry having control logic and memory;
b) a secondary battery unit for powering said communication circuitry;
c) a secondary battery trickle charging unit for charging said secondary battery unit; and
d) a power unit for supplying voltage and current to said secondary battery trickle charging unit, said power unit is selected from the group including a radio frequency receiving antenna system, a seismic transducer, a piezoelectric transducer, photovoltaic cells and an acoustic transducer;
wherein said communication circuitry, said secondary battery unit, said secondary battery trickle charging unit and said power unit are all combined to form a single radio frequency transceiver package.

5,300,876
POWER SYSTEM STABILIZER ESTIMATING A POWER SYSTEM IMPEDANCE
Yasuo Takagi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 8, 1991, Ser. No. 696,933
Claims priority, application Japan, May 11, 1990, 2-120032
Int. Cl.[5] H02P 9/10
U.S. Cl. 322—58 15 Claims



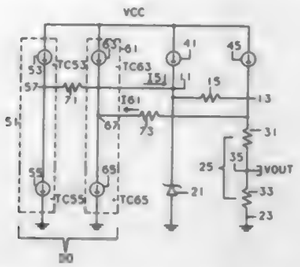
1. A power system control apparatus comprising:
power system impedance estimating means for estimating a power system impedance from an internal voltage and an internal current of a generator, and a terminal voltage of said generator;
power system stabilizing means, coupled to a power system including said power system impedance estimating means and said generator, for suppressing a power fluctuation of said power system in accordance with the estimated power system impedance;
auto voltage regulating means, coupled to said generator, for keeping an output voltage at a constant value during a normal operation of said generator;
phase difference angle estimating means, coupled to said power system impedance estimating means, for estimating a phase difference angle from the power system impedance estimated by said power system impedance estimating means; and
gain schedule means for changing a control parameter of said power system stabilizing means based on one of the power system impedance estimated by said power system impedance estimating means and the phase difference angle estimated by said phase difference angle estimating means.

5,300,877
PRECISION VOLTAGE REFERENCE CIRCUIT
Bruce J. Tesch, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Jun. 26, 1992, Ser. No. 904,848
Int. Cl.[5] G05F 3/16
U.S. Cl. 323—313 23 Claims

1. A voltage reference circuit comprising:
first and second bridge nodes;
a bridge resistor coupled in circuit between said first and second bridge nodes;
a voltage reference device coupled between a first terminal, to which a first supply potential is applied, and said first bridge node;
a first current source coupled between a second terminal, to which a second supply potential is applied, and said first bridge node;
a voltage divider circuit coupled between said first terminal and said bridge second node;
an output terminal coupled to said voltage divider circuit,

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and from which an output voltage is derived as a fraction of the voltage at said second bridge node;
a second current source coupled between said second terminal and said second bridge node; and
a temperature-compensating current supply circuit coupled



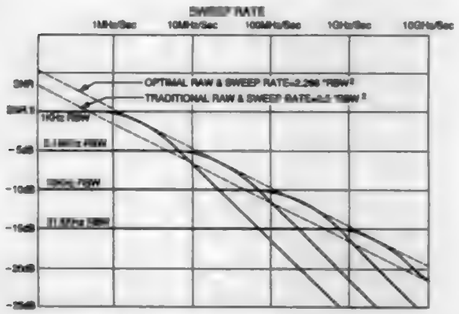
to said first and second bridge nodes, and being operative to control the flow of current through said bridge resistor such that there is no current flow through the bridge resistor at a first temperature, and such that there is current flow through said bridge resistor at a second temperature.

5,300,878

SWEPT SIGNAL ANALYSIS INSTRUMENT AND METHOD

Jay M. Wardle, Seattle; Ronald W. Potter, Snohomish, and John A. Gibbs, Lynnwood, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 819,147, Jan. 9, 1992, Pat. No. 5,168,213, which is a division of Ser. No. 493,590, Mar. 13, 1990, Pat. No. 5,117,179. This application Nov. 19, 1992, Ser. No. 978,551
Int. Cl.[5] G01R *23/16*
U.S. Cl. 324—76.27 **3 Claims**



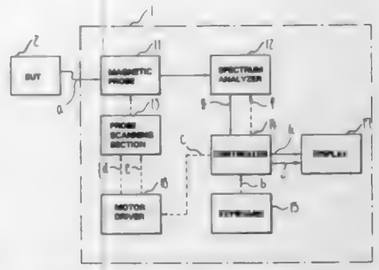
1. In a spectrum analyzer comprising:
a swept frequency local oscillator;
a mixer having a first input for receiving an output signal from the swept frequency local oscillator, a second input for receiving a signal to be analyzed, and an output for providing an intermediate frequency output signal;
a resolution filter having an input coupled to the output of the mixer, the resolution filter producing an output signal; and
amplitude detector means for detecting the amplitude of the resolution filter output signal;
an improvement wherein the resolution filter comprises a digital finite impulse response filter, and in which the amplitude detector means includes means for applying to the output signal provided from the resolution filter a correction factor dependent on the speed at which the local oscillator is swept.

5,300,879

BIDIMENSIONAL ELECTROMAGNETIC EMISSION LEVEL MONITORING EQUIPMENT

Norio Masuda; Noboru Fujihara; Ken-Ichi Hatakeyama; Takashi Harada, all of Tokyo, and Masayuki Inomata, Miyagi, all of Japan, assignors to Nec Corporation, Japan

Filed Jun. 18, 1991, Ser. No. 717,087
Claims priority, application Japan, Jun. 18, 1990, 2-157599
Int. Cl.[5] G01R *21/04*
U.S. Cl. 324—95 **8 Claims**



1. Bidimensional electromagnetic emission level monitoring equipment comprising:
an electromagnetic probe for detecting electromagnetic fields;
selective receiving means for separating components having a designated frequency from said fields and generating emission level signals representative of emission levels of said fields having said designated frequency;
outputting means associated with said selective receiving means for outputting emission level signal data corresponding to said emission level signals;
a probe scanning section for carrying said electromagnetic probe thereon and for moving said electromagnetic probe in bidimensional directions in a bidimensional plane;
inputting means for inputting scanning parameters designating a measuring frequency of said fields to be measured and effective for measuring points where said electromagnetic probe should detect said fields;
controller means for supplying to said selective receiving means a frequency corresponding to said measuring frequency entered on said inputting means as said designated frequency;
means for generating position data representative of said measuring points on the basis of said scanning parameters entered on said inputting means and for feeding to said probe scanning section a scanning control signal produced by converting said position data to a displacement of said electromagnetic probe; and
means for generating electromagnetic emission level data by calculating electromagnetic emission levels in response to said emission level signal data and outputting said electromagnetic emission level data together with said position data as an emission level distribution signal representative of an electromagnetic emission level distribution;
wherein said probe scanning section comprises:
a base in the form of a plate for supporting said probe scanning section;
a plurality of first guidance bars extending vertically from and affixed to opposite end portions of said base at one end thereof;
a cross bar provided between and perpendicular to said plurality of first guidance bars and slidable with opposite ends thereof guided by said first guidance bars;
a first stepping motor to which a shift signal from a motor driver is applied for causing said cross bar to slide;
a first drive transmission mechanism for converting a rotary motion of said first stepping motor to a linear motion for driving said cross bar;

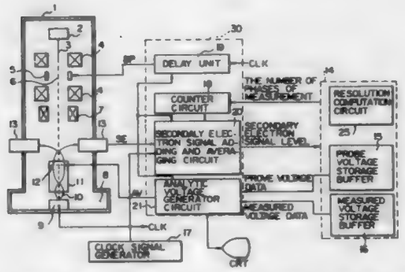
a second guidance bar extending between opposite ends of said cross bar;
a probe holder for holding said electromagnetic probe and for sliding on said cross bar while being guided by said second guidance bar;
a second stepping motor to which said shift signal from said motor driver is applied for causing said probe holder to slide; and
a second drive transmission mechanism for converting a rotary motion of said second stepping motor to a linear motion for driving said probe holder.

5,300,880

METHOD OF MEASURING A VOLTAGE WITH AN ELECTRON BEAM APPARATUS

Kazuo Okubo; Akio Ito; Takayuki Anbe, and Hironori Teguri, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1992, Ser. No. 854,531
Claims priority, application Japan, Mar. 19, 1991, 3-55036
Int. Cl.[5] G01R *31/00*; G01N *23/00*
U.S. Cl. 324—158 R **3 Claims**



1. A method of measuring a voltage with an electron beam apparatus that includes an electron beam pulse generating means for generating a pulse electron beam for irradiating a voltage measuring spot on a sample, an energy analyzer having an analyzer grid to which an analytic voltage is applied to form a decelerating electric field for controlling a passage of secondary electrons produced at the voltage measuring spot on the sample, and a secondary electron detector for detecting secondary electrons passed through the energy analyzer, the method comprising the steps of:
measuring a voltage of the voltage measuring spot on the sample, preparing an analytic voltage by superimposing an alternating voltage having an average of 0 V and no correlation with the measured voltage, on the measured voltage, measuring a secondary electron signal level with the analytic voltage, computing a convergence factor around a slice level set on an analytic-voltage-to-secondary-electron-signal-level-characteristic curve according to a correlation between the secondary electron signal level and the alternating voltage and according to an autocorrelation of the alternating voltage, and updating the analytic voltage according to the convergence factor, thereby updating the measured voltage.

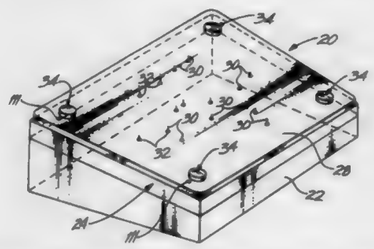
5,300,881

TEST FIXTURE

Mary E. Ferrer, Hannacroix; Gary F. St. Onge, Ballston Lake, both of N.Y.; Charles J. Johnston, Walnut, and Mark A. Swart, Upland, both of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.

Continuation of Ser. No. 896,479, Jun. 9, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 84,755
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 F **30 Claims**

1. A vacuum test fixture for testing of printed circuit boards, comprising a stationary probe plate, a movable top plate spaced above the probe plate for supporting a board under test, the probe plate supporting an array of test probes extending through the top plate for access to the board under test, an annular gasket seal extending around a perimeter of the probe plate for contact with the underside of the top plate, the top plate being movable toward the probe plate under a vacuum applied to a vacuum area formed between the probe plate and the top plate to move the top plate toward the probe plate and thereby compress the gasket seal to retain the vacuum while holding the probes in contact with the board during testing, the gasket seal forming a continuous enclosed airtight seal around an outer peripheral boundary of the vacuum area so that the vacuum is applied to the vacuum area formed inside the gasket seal to move the top plate toward the probe plate, the continuous gasket seal having an inner boundary facing toward the vacuum area and an outer boundary facing away from the vacuum area, a plurality of linear bearing assemblies spaced apart around the perimeter of the probe plate and engaged with the top plate for guiding vertical travel of the top plate toward and away from the probe plate and the gasket seal during vacuum operation of the test fixture, in which the linear bearing assemblies which support the movable top plate for guided vertical movement toward and away from the probe plate are mounted to the probe plate on a side of the gasket seal outer boundary opposite from the vacuum area formed inside the boundary of the seal so that the bearing assemblies are outside the vacuum area and not exposed to the vacuum formed in the vacuum area to move the top plate toward the probe plate.

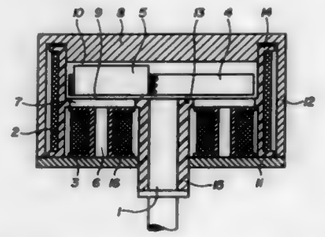


5,300,882

INDUCTIVE POSITION SENSOR FOR DETERMINING THE ANGULAR POSITION OF A ROTATING SHAFT

José Barros, Geneva, Switzerland, assignor to Baumer Electric A.G., Switzerland

PCT No. PCT/CH91/00141, § 371 Date Mar. 16, 1992, § 102(e) Date Mar. 16, 1992, PCT Pub. No. WO92/00505, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 26, 1991, Ser. No. 835,474
Claims priority, application Switzerland, Jun. 27, 1990, 2141/90
Int. Cl.[5] G01B *7/30*; G01D *5/20*; H01F *21/02*
U.S. Cl. 324—207.17 **8 Claims**



1. A position sensor for determining the angular position of

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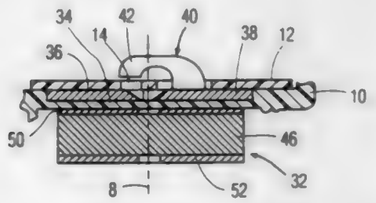
a rotating shaft, comprising a cylindrical field coil for generating a time-variant magnetic field, a magnetically conductive housing structure supporting said field coil, at least one sensor coil arranged inside said field coil and supported by said housing structure, and a rotatable member supported for rotation inside said housing structure, said rotatable member being coupled with said rotating shaft through an aperture in said housing structure and being arranged for modulating the magnetic flux produced by said time-variant magnetic field and passing inside the sensor coil in accordance with its angular position, each sensor coil comprising a winding and a magnetically permeable core with a flat polar part extending outside said winding so as to face the rotatable member, at least one portion of said housing structure coupled with said field coil being arranged to face the rotatable member on the opposite side from said polar part, the arrangement being such that the air-gaps existing between said polar part and said rotatable member on the one hand, and said portion of said housing structure and the rotatable member on the other hand are located substantially within said field coil.

5,300,883

POSITION SENSOR WITH VARIABLY COUPLED MAGNETIC FIELD CONDUCTING MEANS

William E. Richeson, Ft. Wayne, Ind., assignor to North American Philips Corporation, New York, N.Y.

Filed Jun. 30, 1992, Ser. No. 906,973
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.22 **8 Claims**



1. A position sensing apparatus comprising:

a. first magnetic field conducting means including first and second members of magnetically permeable material having respective surfaces extending transversely of a rotational axis, said surfaces having predetermined shapes and being separated by a first gap;

b. second magnetic field conducting means including third and fourth members of magnetically permeable material having respective surfaces extending transversely of the axis, said surfaces having predetermined shapes, being separated from each other by a second gap, facing the surfaces of the first magnetic field conducting means, and being separated from said surfaces by a third gap;

c. third magnetic field conducting means for magnetically coupling the first and second members through a fourth gap;

d. fourth magnetic field conducting means for directly magnetically coupling the third and fourth members;

e. magnetic field producing means magnetically coupled to one of the first and second magnetic field conducting means for effecting the production of a magnetic field having flux lines which pass through the third gap between said first and second magnetic field conducting means in a direction which is substantially parallel to the axis;

f. means for mounting the first and second magnetic field conducting means such that at least one of said field conducting means is rotatable about the axis relative to the other; and

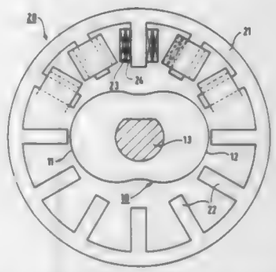
g. sensing means disposed in the fourth gap for sensing the magnetic field magnitude in said gap, said magnitude representing the angular position of the first magnetic field conducting means relative to the other.

5,300,884

POSITION SENSING APPARATUS FOR MEASURING THE ANGULAR POSITION OF A ROTOR RELATIVE TO A STATOR HAVING A PLURALITY OF TEETH WITH EXCITATION WINDINGS AND PLURAL PHASE RECEPTION WINDINGS

Jean-Francois Maestre, Dijon, France, assignor to GEC Alsthom SA, Paris, France

Filed Jul. 10, 1992, Ser. No. 911,638
Claims priority, application France, Jul. 11, 1991, 91 08735
Int. Cl.[5] G01B *7/30*; H02K *24/00*; G01D *5/20*
U.S. Cl. 324—207.25 **4 Claims**



1. A sensor for measuring the angular position of a rotor relative to a stator, comprising a rotor made of a magnetic material and including p lobes, where p is an integer greater than one, a stator disposed around the rotor and made of a magnetic material and including a number of teeth, said number being equal to 2n.p, where n is the number of electrical phases of the sensor and greater than one, each tooth being surrounded both by an excitation first winding and a single reception second winding corresponding to one of said n phases, the excitation windings being connected together in series and disposed on the teeth such that the windings on two circumferentially adjacent teeth produce magnetic flux in opposite directions, the entire set of said excitation windings being powered by an alternating current or voltage, the reception windings relating to a same phase being connected in series and when n is an odd number, the entire set of reception windings relating to the same phase being wound in a same direction and when n is an even number, two reception winding relating to the same phase which are offset by 180 electrical degrees, being wound in opposite directions, each reception winding relating to the same phase being wound on every n^{th} tooth and the windings of each phase being displaced one tooth from the windings of another phase, the envelope of the signal at the terminals of a phase representing the angle of rotation of said rotor relative to said stator to within a scaling factor.

5,300,885

FIELD PROBE FOR MEASURING VECTOR COMPONENTS OF AN ELECTROMAGNETIC FIELD

Jeffrey F. Bull, Chalfont, Pa., assignor to Flam & Russell, Inc., Horsham, Pa.

Filed Jun. 5, 1992, Ser. No. 893,739
Int. Cl.[5] G01R *33/02, 29/06*
U.S. Cl. 324—247 **17 Claims**

1. A vector field probe comprising:

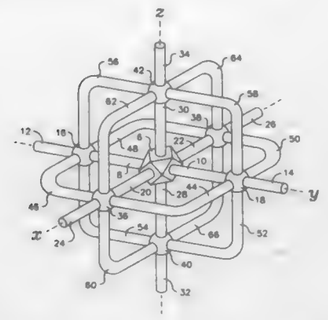
a set of three loops having a common center and situated respectively in three mutually orthogonal planes, each of said planes being defined by a different pair of mutually perpendicular axes extending through said common center;

in which:

each loop comprises four conducting elements each extending from a point adjacent to one of said axes to a point adjacent to another of said axes, and said conducting elements of each loop are separated from one another by gaps;

and having

three magnetic field output ports, there being one such output port corresponding to each loop; and



means, for each loop, connected to the loop at the gaps thereof, and coupling loop to the corresponding output port;

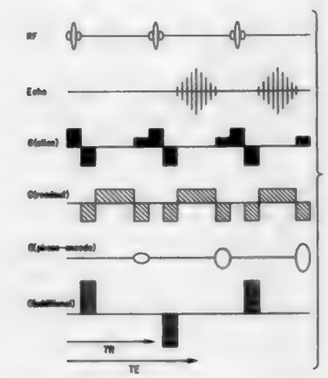
and in which the gaps of the loops are located on said axes, whereby each gap of each loop coincides with a gap of one of the other two loops, the gaps exist at only six locations, and the connections of said coupling means to said loops are made only at the six locations of said gaps.

5,300,886

METHOD TO ENHANCE THE SENSITIVITY OF MRI FOR MAGNETIC SUSCEPTIBILITY EFFECTS

Chrit T. W. Moonen, Silver Spring, Md., assignor to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed Feb. 28, 1992, Ser. No. 841,994
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **20 Claims**



1. A method for performing MRI imaging of an object which comprises:

subjecting an object to a first radio frequency pulse to produce a gradient-recalled echo having an echo time period, said radio frequency having a time of repetition; and

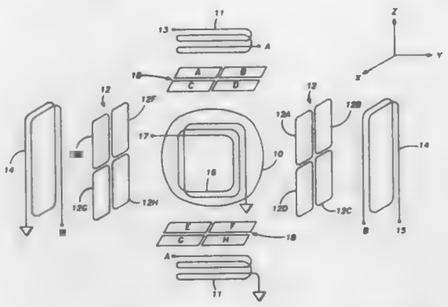
shifting the produced gradient-recalled echo so that the echo time of the gradient-recalled echo is greater than the time of repetition of the radio frequency.

5,300,887

PULSED FIELD MRI SYSTEM WITH SPATIAL SELECTION

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Apr. 27, 1992, Ser. No. 873,998
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **14 Claims**



1. In a method for selectively imaging the magnetic moments in a selected region of an object where the magnetic moments are polarized with a pulsed magnetic field which is turned off prior to the onset of an imaging sequence the steps of:

applying a magnetic gradient field having a null field plane in the selected region prior to the collapse of the pulsed magnetic field; and

controlling the resultant magnetic field such that the magnetic moments are spatially varying in the selected region of the object.

5,300,888

NMR THERMAL ANALYZER

David S. Webster, Dundas, and Leo J. Lynch, Kingsford, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

PCT No. PCT/AU90/00519, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO91/06847, PCT Pub. Date May 16, 1991
PCT Filed Oct. 29, 1990, Ser. No. 849,412
Claims priority, application Australia, Nov. 7, 1989, PJ7264; May 7, 1990, PJ9977
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—315 **14 Claims**

1. A method of carrying out proton magnetic resonance thermal analysis measurements, said method comprising the steps of:

i) locating a sample within a coil forming part of an RF tuned circuit and applying a magnetic field to said sample,

ii) heating said sample in accordance with a predetermined temperature regime,

iii) applying pulsed RF energy to said coil to generate a pulsed RF electromagnetic field which is applied to said sample, and thereafter substantially simultaneously,

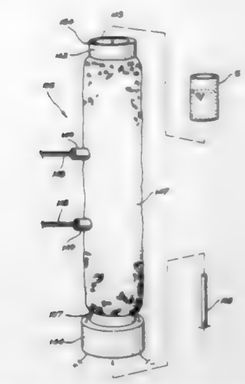
iv) adjusting the magnitude of said magnetic field to ensure that the NMR frequency of said sample is substantially identical to the RF frequency,

v) adjusting the resonant frequency of the tuned circuit, if necessary, to compensate for temperature induced changes in the tuned circuit components and sample,

vi) adjusting the energy of said pulsed RF energy to obtain an optimum output from said RF tuned circuit,

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vii) recording the RF tuned circuit output as a function of either the time or the temperature of said sample, and



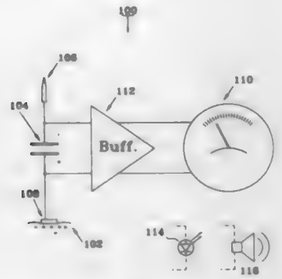
viii) repeating steps (iv) to (vi) as necessary at each desired time or sample temperature to obtain an optimum RF tuned circuit output, and repeating step (vii).

5,300,889

GROUND-FREE ELECTROSTATIC MEASUREMENT DEVICE WITH ELECTRICAL CHARGE STORING CAPACITOR

Ezzat G. Bakhoum, P.O. Box 2818, Durham, N.C. 27715-2818

Division of Ser. No. 945,299, Sep. 15, 1992, Pat. No. 5,247,420.
This application Aug. 11, 1993, Ser. No. 105,502
The portion of the term of this patent subsequent to Jan. 12, 2000, has been disclaimed.
Int. Cl.[5] G01R *29/12, 5/28*
U.S. Cl. 324—457 **8 Claims**



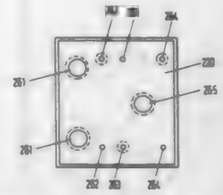
1. A ground-free device for sensing the presence of electrostatic charges on a body, comprising:
- an electrical charge storage capacitor comprising first and second terminals, wherein the second terminal is constructed and arranged for direct exposure to an ambient air environment; and
- a conductive body-contact means for establishing electrical contact with the body, and connected to the storage capacitor at a first terminal thereof via an electrically conductive path; whereby charge flowing from the body through the conductive body-contact means to the electrical charge storage capacitor is dissipated to air of the ambient air environment at the second terminal of the storage capacitor; and
- a voltage indication means mounted across the terminals of the storage capacitor.

5,300,890

HOT-CATHODE IONIZATION PRESSURE GAUGE INCLUDING A SEQUENCE OF ELECTRODES ARRANGED AT A DISTANCE FROM ONE ANOTHER IN SEQUENCE ALONG AN AXIS

Guenter Haas, Garching, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,869
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1991, 4112407
Int. Cl.[5] G01L *21/32;* **H01J** *41/04*
U.S. Cl. 324—462 **3 Claims**



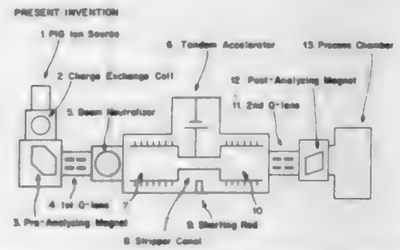
1. A hot cathode ionization pressure gauge comprising in combination:
- a base plate (220) of a ceramic material and having an axis and having a plurality of through holes,
- a thermionic cathode filament which has a central active part and lateral support parts;
- an essentially flat, diaphragm-like control electrode (212),
- an essentially flat apertured acceleration electrode (214) and
- an essentially flat ion collector electrode (216),
- the filament, the control electrode, the acceleration electrode and ion collector electrode being mounted on said base plate at a distance from one another in the sequence a, b, c, d along said axis,
- wherein each of said control, acceleration and ion collector electrodes (212, 214, 216) comprises a support member having essentially a shape of an inverted "U" with first and second legs, one of said legs of each electrode support member extending through a corresponding hole of said base plate and being fixed therein.

5,300,891

ION ACCELERATOR

Nobuhiro Tokoro, West Newbury, Mass., assignor to Genus, Inc., Mountain View, Calif.

Filed May 1, 1992, Ser. No. 877,452
Int. Cl.[5] H05H *3/04*
U.S. Cl. 328—233 **2 Claims**



1. Ion accelerator comprising in combination a high-voltage terminal containing a stripper canal, means for maintaining said terminal at a voltage V of 0–500 kV,
- a low-energy acceleration tube adapted to accelerate negative ions into said terminal,
- a high-energy acceleration tube adapted to accelerate positive ions from said terminal,

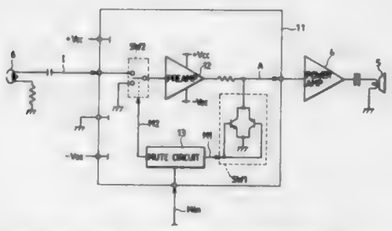
- a source of positive ions, a charge exchange cell, a pre-analyzing magnet, a first Q-lens, and a beam neutralizer, means for extracting positive ions from said source and directing them successively through said charge exchange cell, said pre-analyzing magnet, said first Q-lens, said beam neutralizer, said low-energy acceleration tube, said stripper canal and said high-energy acceleration tube, whereby said directed ions enter said low-energy acceleration tube with an injection energy E keV,
- said charge-exchange cell being settable at either one of two settings: a first setting admitting gas and a second setting excluding gas,
- said pre-analyzing magnet and said first Q-lens being settable at either one of two settings: a first setting deflecting and focusing positive ions and a second setting deflecting and focusing negative ions,
- said beam neutralizer being settable at either one of two settings: a first setting admitting gas and a second setting excluding gas, said stripper canal being settable at either one of two settings:
- a first setting admitting gas and a second setting excluding gas, and a shorting rod being settable at either one of two settings: a first setting shorting said terminal and a second setting not shorting said terminal,
- and means for setting said charge-exchange cell, said pre-analyzing magnet, said first Q-lens, said beam neutralizer, said stripper canal and said shorting rod as follows in order to achieve the respective final energies of ions emerging from said post-acceleration
- tube: namely, (1) to achieve final energies of below E keV, said charge-exchange cell to be set at its said second setting, said pre-analyzing magnet to be set at its said first setting, said first O-lens to be set at its said first setting, said beam neutralizer to be set at its said second setting, said stripper canal to be set at its said second setting, and said shorting rod to be set at its said first setting, (2) to achieve final energies of above E keV and below (V+E)keV, said charge-exchange cell to be set at its said second setting, said pre-analyzing magnet to be set at its said first setting, said first Q-lens to be set at its said first setting, said beam neutralizer to be set at its said first setting, said stripper canal to be set at its said first setting, and said shorting rod to be set at its said second setting, and (3) to achieve final energies of above (V+E)keV, said charge-exchange cell to be set at its said first setting, said pre-analyzing magnet to be set at its said second setting, said first Q-lens to be set at its said second setting, said beam neutralizer to be set at its said second setting, said stripper canal to be set at its said first setting, and said shorting rod to be set at its said second setting.

5,300,892

AUDIO SIGNAL AMPLIFIER CIRCUIT

Jun Hirai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 9, 1992, Ser. No. 942,717
Claims priority, application Japan, Sep. 11, 1991, 3-259606
Int. Cl.[5] H03F *1/26*
U.S. Cl. 330—51 **4 Claims**



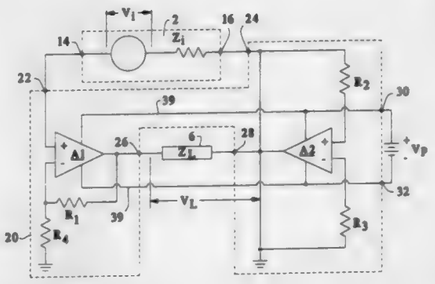
1. An audio signal amplifier circuit comprising:
- an amplifier for amplifying an audio input signal and for outputting an audio output signal with a reference potential as an operating point;
- a mute circuit for generating a mute control signal on receiving and in accordance with a mute input signal;
- a first switch circuit, disposed at output side of said amplifier, for cutting off a signal line of the output side in response to said mute control signal; and
- a second switch circuit, disposed at input side of said amplifier, for cutting off a signal line of the input side in response to said mute control signal
- wherein said amplifier, said mute circuit, said first switch circuit, and said second switch circuit are incorporated in a one-chip integrated circuit.

5,300,893

AMPLIFIER

George H. Freuler, Moreno Valley; Edward J. Collier, Anaheim, and David A. Mazi, Moreno Valley, all of Calif., assignors to Zero Impedance Systems, Inc., Yorba Linda, Calif.

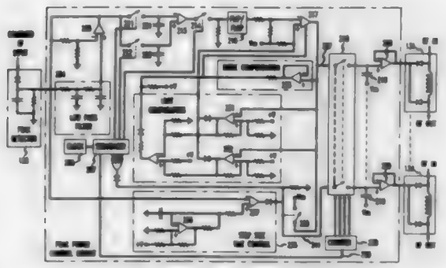
Filed Mar. 16, 1992, Ser. No. 851,334
Int. Cl.[5] H03G *3/00*
U.S. Cl. 330—84 **7 Claims**



1. An amplifier circuit for coupling a voltage source to a load, the load having a frequency domain transfer function g(s), said circuit comprising: coupling means having a frequency domain transfer function f(s); first connecting means for connecting said coupling means between the source and the load; compensating means having a frequency domain transfer function r(s); and second connecting means for connecting said compensating means to both the source and the load; wherein: the voltage source has first and second output terminals and the load has first and second ends; said coupling means comprise differential amplifying means having first and second inputs, an output and means for generating a voltage at said output which is proportional to the difference in potential at said first and second inputs, said first input being connected to said first connecting means for connection to the first output terminal of the source, said output being connected to said first connecting means for connection to the first end of the load, and said second input being connected to said output; and said compensating means comprise second amplifying means having at least one input, an output and means for establishing a high voltage gain between said input and said output, said output of said second amplifying means being connected to said second connecting means for connection to the second output terminal of the source and to the second end of the load, and said input of said second amplifying means being connected to said output of said second amplifying means by a circuit connection which maintains the potential at said input of said second amplifying means substantially equal to the potential at said output of said second amplifying means.

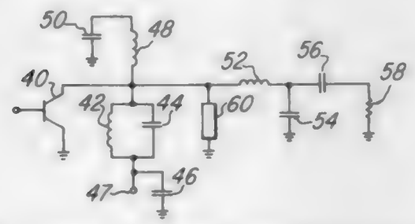
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5,300,894
CIRCUITRY FOR MINIMIZING PEAK POWER IN AN AMPLIFIER CARRYING A PLURALITY OF SIGNALS OF DIFFERING FREQUENCIES
Robert E. Myer, Deaville, and Clifford W. Schaible, Morristown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 20, 1992, Ser. No. 963,784
Int. Cl.[5] H03G *3/20*
U.S. Cl. 330—129 10 Claims



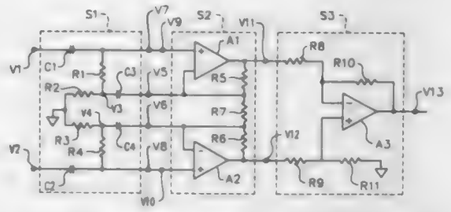
1. In an amplifier system in which a plurality of signals of differing frequency are combined for amplification, apparatus for minimizing a peak power envelope of the plurality of signals;
a peak power detector connected for sensing the peak power envelope of the combined plurality of signals;
a first comparator connected to compare the peak power output of the peak power detector with a reference power level;
circuitry for adjusting a phase of at least one of the plurality of signals in response to the first comparator, including;
a plurality of signal storage elements each associated with one of the plurality of signals and each being selectively responsive to an output of the first comparator, and
a plurality of phase shifters each individually connected in a path of one of the plurality of signals and responsive to a signal storage element associated with that path of one of the plurality of signals.

5,300,895
METHOD FOR TERMINATING HARMONICS OF TRANSISTORS
Martin E. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 1, 1992, Ser. No. 955,527
Int. Cl.[5] H03F *3/193*
U.S. Cl. 330—251 22 Claims



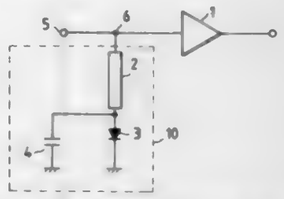
15. A circuit for terminating a third harmonic frequency of a transistor comprising:
a matching circuit connected to an output of said transistor, said matching circuit having a first susceptance at said third harmonic frequency;
a bias circuit connected to said output of said transistor, said bias circuit having a second susceptance at said third harmonic frequency, wherein the sum of said first susceptance and said second susceptance is small at said third harmonic frequency.

5,300,896
BOOTSTRAPPED, AC-COUPLED DIFFERENTIAL AMPLIFIER
Michael F. Suesserman, 2722 NE. Blakeley St., Seattle, Wash. 98105
Filed Oct. 16, 1992, Ser. No. 962,500
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—260 24 Claims



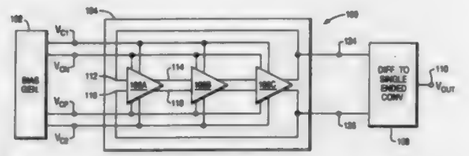
1. An ac-coupled differential amplifier having a high common mode rejection ratio and input impedance and having a bootstrapped input stage, said amplifier comprising:
first and second operational amplifiers each having a first input, a second input, and an output;
first and second RC high-pass input filter means, each comprising capacitor means connected to said first input of one of said first and second operational amplifiers and resistor means connected between ground and said first input of one of said first and second operational amplifiers; and
first and second bootstrap capacitor means, each connecting said resistor means in one of said first and second RC high-pass input filter means to said second input of one of said first and second operational amplifiers.

5,300,897
AMPLIFIER PROTECTION CIRCUIT
Nobuo Shiga, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Nov. 6, 1992, Ser. No. 972,526
Claims priority, application Japan, Nov. 8, 1991, 3-293147
Int. Cl.[5] H03F *1/52*
U.S. Cl. 330—298 19 Claims



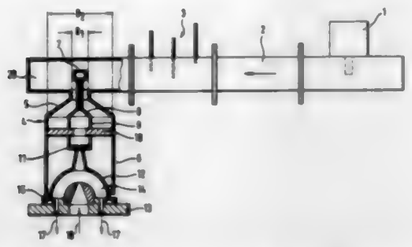
11. A static electricity protection circuit for a microwave frequency low noise amplifier comprising:
a micro strip line having a first and a second end, said micro strip line being one quarter of an amplification signal frequency wave length in length from said first to said second end, said first end being connected to an input of said amplifier;
a first diode means having a first side connected to said second end and a second side connected to a low potential with respect to said amplifier input;
a capacitive means for creating a predetermined low impedance at said amplification frequency, said capacitive means being connected to said second end so that at said amplification frequency the impedance seen by said amplifier input is high.

5,300,898
HIGH SPEED CURRENT/VOLTAGE CONTROLLED RING OSCILLATOR CIRCUIT
Dao-Long Chen, and Robert D. Waldron, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio
Filed Jul. 29, 1992, Ser. No. 921,157
Int. Cl.[5] H03B *5/02, 5/24*
U.S. Cl. 331—57 25 Claims



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(d) the resonator being configured with predetermined losses;
(e) the coaxial waveguide (4) including at least first and second sections (5,8) and (6,9), respectively;
(f) the first section (5,8) being connected to the waveguide (2) and having a diameter defined by an inner conductor



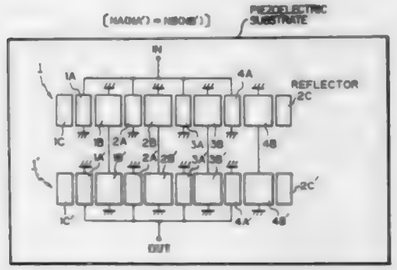
(8) formed by the first section (5,8) of the coaxial waveguide and an outer conductor (5) formed by the first section (5,8) of the coaxial waveguide wherein the diameter increases continuously towards the reaction chamber (14); and
(g) wherein said second section (6,9) has a coaxial waveguide section with a constant diameter (D_2).

5,300,902

SURFACE ACOUSTIC WAVE DEVICE FOR BAND-PASS FILTER HAVING SMALL INSERTION LOSS AND PREDETERMINED PASS-BAND CHARACTERISTICS FOR BROAD BAND

Yoshio Satoh; Tsutomu Miyashita; Osamu Ikata; Mitsuo Takamatsu, and Takashi Matsuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 850,835
Claims priority, application Japan, Mar. 29, 1991, 3-066119; Aug. 28, 1991, 3-217432
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—193 **7 Claims**



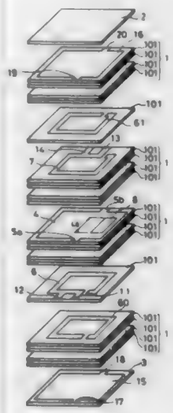
1. A surface acoustic wave device comprising:
an input terminal;
an output terminal;
a first multiple-electrode surface acoustic wave element including a plurality of first inter-digital transducers and second inter-digital transducers arranged in alternation on a piezoelectric substrate, said first inter-digital transducers being connected to said input terminal; and
a second multiple-electrode surface acoustic wave element including a plurality of third inter-digital transducers and fourth inter-digital transducers arranged in alternation, said first and second multiple-electrode surface acoustic wave elements being mirror-symmetrically arranged about an axis of symmetry and disposed on the piezoelectric substrate, said third inter-digital transducers being connected to said output terminal, and said fourth inter-digital transducers being connected to corresponding second inter-digital transducers,
at least one of
a number of said first inter-digital transducers being equal to or smaller by one, than at least one of a number of said second and fourth inter-digital transducers, and
a number of said third inter-digital transducers being equal to or smaller by one, than at least one of the number of said second and fourth inter-digital transducers.

5,300,903

BAND-PASS FILTER

Hisatake Okamura, and Tetsuo Taniguchi, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 24, 1992, Ser. No. 903,614
Claims priority, application Japan, Jun. 27, 1991, 3-156521
Int. Cl.[5] H01P *1/20*
U.S. Cl. 333—204 **28 Claims**



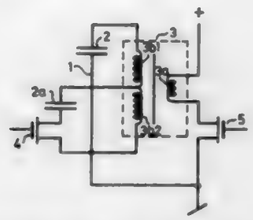
1. A band-pass filter comprising:
a first earth electrode;
first and second coil electrodes each formed in a loop shape and disposed on opposite sides of said first earth electrode, a pair of plates containing a dielectric material disposed respectively between said first earth electrode and said first and second coil electrodes;
two earth terminals drawn out respectively from said first and second coil electrodes toward a periphery of said plates;
two input/output terminals drawn out respectively from said first and second coil electrodes toward said periphery of said plates at a predetermined distance from said earth terminals along said first and second coil electrodes, so as to provide a predetermined input/output impedance; and
a pair of additional earth terminals drawn out from said first earth electrode toward said periphery of said plates, wherein a connecting window located and arranged for providing magnetic coupling between said first and second coil electrodes is formed in said first earth electrode.

5,300,904

CIRCUIT ARRANGEMENT FOR THE TANK CIRCUIT OF A HIGH-FREQUENCY TRANSMITTER OUTPUT STAGE OPERATED WITH FREQUENCY SHIFT KEYING

Henning H. Andersen, Horsholm, Denmark, assignor to Topholm & Westermann ApS, Vaerloese, Denmark

PCT No. PCT/EP91/00391, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/16762, PCT Pub. Date Oct. 31, 1991
PCT Filed Mar. 2, 1991, Ser. No. 923,804
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1990, 4012265
Int. Cl.[5] H03J *5/24*
U.S. Cl. 334—55 **4 Claims**



1. Circuit arrangement for the tank circuit (1) of a high-frequency transmitter output stage operated with frequency shift keying between a first and second frequency (f_1, equipped with a tank circuit capacitor (2) and a circuit inductor (3) and with a first switch (5) for supplying high-frequency energy to the tank circuit, as well as with a second switch (4) for switching the tank circuit to resonance with one of the transmission frequencies (f1, f2) in each case by connecting an additional capacitor to parts of the tank circuit inductor, the latter consisting of a transformer (3) with a primary winding (3*a*) and a secondary winding the number of turns of the primary winding being less than the number of turns of the secondary winding, the output signals of the transmitter being supplied to the primary winding and switch-over-of the tank circuit to the second resonance frequency occurring when the first frequency is not present at the feeder to the primary winding, the secondary winding of the transformer (3) consisting of two winding sections (3b1, 3b2) with an intermediate tap, at which the additional capacitor (2*a*) is connected, and the second switch (4) being connected between the additional capacitor (2*a*) and a common base point of the tank circuit so that the additional capacitor (2*a*) is connected in parallel with only a part (3b2) of the secondary winding when the second switch (4) is closed.

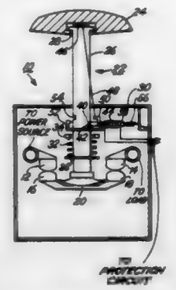
5,300,905

ELECTRICAL POWER DISCONNECT SWITCH WITH BOTH MANUAL AND ELECTRICAL TRIP OPERATION

Richard B. Kolbas, Wayne, and Claude O. Lanciano, III, Brighton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 19, 1992, Ser. No. 963,216
Int. Cl.[5] H01H *9/20*
U.S. Cl. 335—167 **11 Claims**

1. An apparatus for disconnecting a load from an electrical power source having mechanical and electrical tripping operation, comprising:
a) first electrical contacts;
b) a switch body comprising a handle member, a shaft and second electrical contacts interconnected to the shaft, the switch body reciprocable between first and second positions such that the contacts are closed connecting the load to the power source when the switch body is in the first position, the contacts being open disconnecting the load from the power source when the switch body is in the second position;
c) means for biasing the switch body to the second position;
d) latch means operatively associated with the switch body for releasably holding the switch body in the first position against the biasing force of the biasing means;
e) manual disconnect means for releasing the latch means from the switch body, thereby causing disconnection of the load from the power source; and



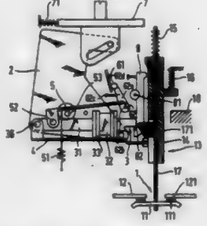
f) electrical disconnect means associated with the latch means for releasing the latch means from the switch body to disconnect the load from the power source;
g) lockout means engaging said switch body for holding said switch body in said second position upon release of said latch means from said switch body.

5,300,906

CURRENT SWITCHING DEVICE

Christian Blanchard, Rueil Malmaison; Michel Lauraire, Courbevoie, and Didier Vigouroux, Jouy-le-Moutier, all of France, assignors to Telemecanique, Rueil Malmaison, France

Filed Jan. 7, 1993, Ser. No. 1,633
Claims priority, application France, Jan. 7, 1992, 92 00147
Int. Cl.[5] H01H *9/20*
U.S. Cl. 335—167 **9 Claims**



1. A current switching device comprising:
stationary contacts;
movable contacts movable between a position in which the movable contacts engage the stationary contacts and a positioning in which the movable contacts separate from the stationary contacts;
a movable contact holder on which said movable contacts are mounted;
a magnetic locking element including a magnet;
an actuation armature connected to said contact holder and movable to move said contact holder, said actuation armature being movable in proximity to said magnetic locking element such that said actuation armature is locked to said magnetic locking element by magnetic attraction, with said movable contacts engaging the stationary contacts;
means for biasing said actuation armature away from said magnetic locking element;
an opening armature movable between a rest position and a position in proximity to said magnetic locking element

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such that said opening armature is locked to said magnetic locking element by magnetic attraction, wherein the opening armature in proximity to said magnetic locking element reduces the magnetic attraction between said actuation armature and said magnetic locking element such that said actuating armature is freed to be moved by said biasing means so as to permit the movable contacts to separate from the stationary contacts; and

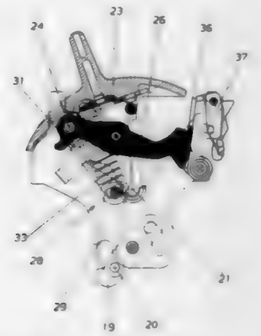
protective means sensitive to a current overload for causing said opening armature to move to the position in proximity to said magnetic locking element.

5,300,907

OPERATING MECHANISM OF A MOLDED CASE CIRCUIT BREAKER

Jean-Pierre Nereau, Seyssinet-Pariset, and Philippe Perrier, Lumbin, both of France, assignors to Merlin Gerin, France

Filed Jan. 21, 1993, Ser. No. 6,795
Claims priority, application France, Feb. 7, 1992, 92 01486
Int. Cl.[5] H01H *9/00*
U.S. Cl. 335—172 **6 Claims**



1. An operating mechanism of a molded case low-voltage electrical circuit breaker, said circuit breaker comprising a handle and at least one movable contact, said operating mechanism controlling manual opening, manual closing and automatic opening of the circuit breaker, said operating mechanism comprising:

a latch articulated on a fixed spindle and having a cam surface;

a toggle comprising a first lever linked to the movable contact of the circuit breaker, and a second lever articulated on the latch via an articulation spindle, the first and second levers being joined to each other via a toggle spindle;

a spring attached to the toggle spindle and to the handle;

a lock designed to cooperate with said latch to hold said latch in a locked position; and

a cam-follower roller actuated by the handle and designed to cooperate with the cam surface of the latch to move the latch to the locked position, said handle being able to move between (i) a closed position wherein the spring urges the toggle toward an extension position, (ii) a reset position wherein the spring urges the toggle to a broken position, the latch being in the locked position and the circuit breaker being open, and (iii) a tripped position wherein the latch is unlocked and the toggle is urged toward the broken position,

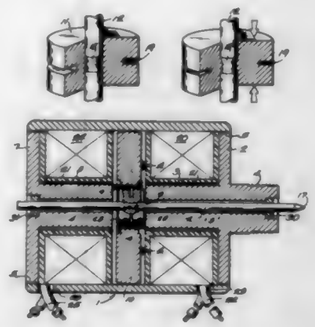
wherein the cam surface comprises a slope change point between a first section corresponding appreciably to the travel of the handle between the tripped position and the reset position, and a second section corresponding to the reset position, the slope of the first section being such that the resultant of the forces derived from the spring and exerted on the handle urges the handle to the tripped position, the slope of the second section being such that the handle is urged to the reset position such that when the handle is in the reset position, the handle is maintained in the reset position upon unlocking of the latch via movement of the lock.

5,300,908

HIGH SPEED SOLENOID

Richard S. Stone, Milwaukee, and George F. Jambor, Cedarburg, both of Wis., assignors to Brady USA, Inc., Milwaukee, Wis. and Deltrol Corp., Bellwood, Ill., a part interest

Filed Oct. 10, 1990, Ser. No. 595,144
Int. Cl.[5] H01F *3/00, 7/08*
U.S. Cl. 335—256 **14 Claims**



6. In a solenoid, the combination of, a plunger having two ends, means housing the plunger including a frame of magnetic material and a coil, said means also supporting the plunger for movement axially in said frame, a first backstop having an end, said end facing one end of the plunger, a second backstop having an end, said end facing the other end of the plunger, said backstops being attached to the frame and at least one of said backstops including magnetic material forming a magnetic flux circuit through the frame and plunger for causing movement of the plunger against said one backstop, and a non-magnetic sleeve surrounding the plunger and engaging both said ends of said backstops to space said backstops.

13. In a solenoid, the combination of a plunger having two ends, means housing the plunger including a frame of magnetic material and a coil, said means also supporting the plunger for movement axially in said frame, a first backstop for one end of the plunger, a second backstop for the other end of the plunger, said backstops being attached to said frame and at least one of said backstops including magnetic material forming a magnetic flux circuit through the frame and plunger for causing movement of the plunger against said one backstop, a plunger rod having a portion inside the plunger and extending to a point outside the solenoid, said rod being formed with a complete circumferential groove inside the plunger into which the plunger material is swaged.

5,300,909

SELECTOR SWITCH SHIELD

James M. Wilson, 421 Perkins Rd., Leesville, La. 71446, assignor to James Matthew Wilson, Leesville, La.

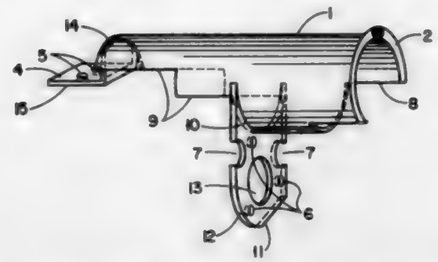
Filed Jun. 8, 1992, Ser. No. 895,989
Int. Cl.[5] H01F *7/00*
U.S. Cl. 335—278 **2 Claims**

1. A shield for preventing damage to a manually operated selector solenoid comprising:

a hollow open-ended cylindrical tube with one end, an opposite end and a longitudinal axis;

at least one curved surface portion removed from an end of said tube;

a first mounting fixture affixed to said tube, said first mounting fixture comprising a flat plate lying in a plane perpendicular to said longitudinal axis, including holes through said first mounting fixture for mounting said tube and giving clearance to the mechanics of the solenoid feeder assembly; and



a second mounting fixture affixed to said one end of said tube, including holes through said second mounting fixture for mounting said tube.

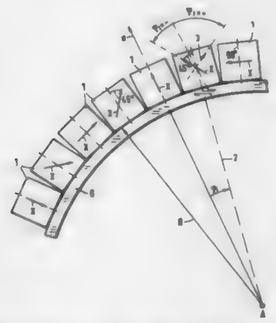
2. The shield of claim 1 including an embossed lip at said opposite end of said tube.

5,300,910

MAGNET SYSTEM

Karl-Heinz Unkelbach, Cologne; Mariene Marinescu, and Nicolae Marinescu, both of Frankfurt, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Dec. 9, 1991, Ser. No. 804,778
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1990, 4039320
Int. Cl.[5] H01F *7/02*
U.S. Cl. 335—306 **3 Claims**



1. A magnet system for a magnetic separator comprising in combination:

a cylindrical foundation;

a plurality of homogeneously magnetized magnet blocks arranged about said cylindrical foundation in at least one annular row;

said magnet blocks being square in cross section and the magnetization directions of said magnet blocks being differently aligned relative to one another and relative to a radial line from the center of said annular row according to a predetermined mathematical formula,

said magnet blocks being aligned according to the mathematical formula $\psi i = -n\phi i$, where ψi is the angle between the radial line and the magnetization direction of the magnet block, ϕi is the angular location of the magnetic block relative to said radial line and n is a positive number,

said magnet blocks having two different magnetization directions relative to their parallel side faces,

each of said magnet blocks in said annular row being positioned with one of its faces in substantially tangential relation to said cylindrical foundation,

those magnetic blocks having the same magnetization direction being positioned in 90° rotated positions relative to one another in said annular row,

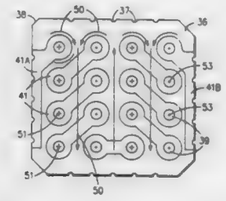
whereby said magnet blocks produce an outwardly directed magnetic field outside of said cylindrical foundation.

5,300,911

MONOLITHIC MAGNETIC DEVICE WITH PRINTED CIRCUIT INTERCONNECTIONS

Michael M. Walters, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 727,675, Jul. 10, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 958,877
Int. Cl.[5] H01F *5/00, 27/28*
U.S. Cl. 336—175 **7 Claims**



1. A magnetic device comprising:

a plate of flux permeable substantially noncurrent conducting material defining a plurality of holes extending therethrough;

a first layer of electrically current conductive material covering the walls of the holes and electrically connecting at least some of the first layer conductive material in the holes to one another;

an electrically insulating layer covering the first layer of conductive material;

a second layer of electrically current conductive material covering the insulating layer on the walls of each of the holes and electrically connecting at least some of the second layer of material in the holes to one another;

at least one termination means for surface mounting said plate and electrically connecting to the first layer of material in at least some of said holes; and

at least one termination means for surface mounting said plate and electrically connecting to the second layer of material in at least some of said holes.

5,300,912

ELECTRICAL CUTOUT FOR HIGH VOLTAGE POWER LINES

Timothy G. Tillery; Eugene H. Wood; Ronny D. Jergenson; Charles E. Rand; Michael G. Nolte, all of Hickory, and Kevin F. Bulson, Charlotte, all of N.C., assignors to Utility Solutions, Inc., Hickory, N.C.

Filed Jun. 9, 1992, Ser. No. 896,008
Int. Cl.[5] H01H *71/10, 71/08, 71/20*
U.S. Cl. 337—180 **48 Claims**

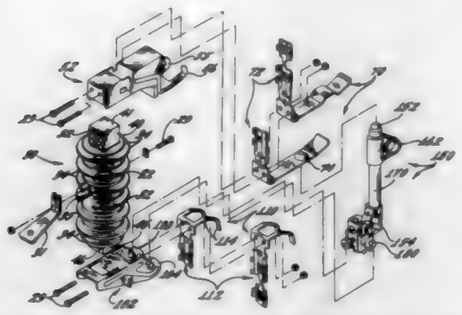
1. An electrical cutout, comprising:

an insulator comprising an elongated central stem portion defining a longitudinal direction, and a plurality of longitudinally spaced apart skirts mounted to said stem portion and so as to lie in respective planes which are transverse to said longitudinal direction, said elongated central stem portion comprising at least one region which is non-solid and non-cylindrical when viewed in a transverse cross-section between said skirts;

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an upper line terminal assembly mounted to one end of said insulator and including means for attaching an electrical cable thereto and an upper electrical contact;

a lower line terminal assembly mounted to the other end of said insulator and including means for attaching an electrical cable thereto and a lower electrical contact; and



a fuse assembly pivotally mounted to said other end of said insulator for pivotal movement between an operative position engaging and electrically closing said upper and lower contacts and an inoperative position wherein said upper and lower contacts are electrically open.

5,300,913

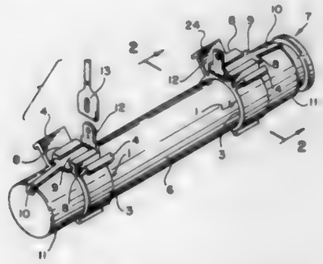
CONTACT SPRING CLIP FOR A CARTRIDGE FUSE BLOWN FUSE LIGHT INDICATOR

John C. Linton, Potomac, Md., assignor to FIC Corporation, Rockville, Md.

Filed May 18, 1993, Ser. No. 63,305

Int. Cl.[5] H01H *85/32*

U.S. Cl. 337—242 **9 Claims**



1. A contact spring clip for a blown fuse light indicator for a cartridge fuse having a barrel and a ferrule at each end thereof, comprising, a resilient member having a planar base portion, depending arcuate leg portions having upper end portions integral with the base portion adapted to be snapped onto the barrel of the cartridge fuse, outwardly extending arm members integral with the upper end portions of the leg portions adjacent the base portion, said arm members being manually squeezable to thereby spread the leg portions to facilitate the installation and removal of the clip on the barrel of the cartridge fuse, inwardly extending flange members integral with and upwardly spaced from the base portion forming a track on the base portion of said clip, electrical contact means mounted in said track, a blown fuse light indicator, and electrical conductor means operatively connected between the electrical contact means and the blown fuse light indicator.

5,300,914

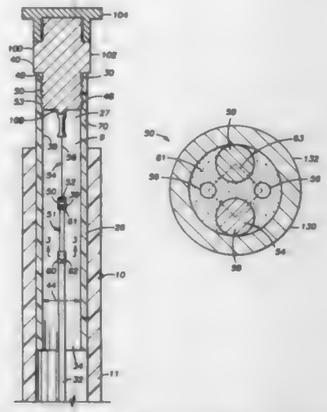
DROPOUT EXPULSION FUSE

Thomas C. Hartman, Allegany; Stephen P. Johnson, Olean; Paul R. Desnoyers, Allegany; William E. Hurlburt; Robert N. Schettler, both of Olean, and Walter R. Materna, Allegany, all of N.Y., assignors to Cooper Power Systems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 645,076, Jan. 23, 1991, Pat. No. 5,119,060. This application Jun. 1, 1992, Ser. No. 891,769

Int. Cl.[5] H01H *85/143, 85/165*

U.S. Cl. 337—249 **19 Claims**



1. A fusing system for interconnection into a circuit in a dropout expulsion fuse, comprising:

a first multi-element fusing wire having a first circuit interconnection end and a second pot end;

a second multi-element fusing wire having a first circuit interconnection end and a second pot end;

said pot end of said first and second fusing wires received within a solder pot;

said pot having an outer annular wall formed from a winding of wire;

said first multi-element fusing wire and said second multi-element fusing wire having multiple elements forming distinct current carrying paths between said interconnection ends and said pot ends.

5,300,915

THERMAL SENSOR

Robert E. Higashi, Bloomington; James O. Holmen, and Robert G. Johnson, both of Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 16, 1986, Ser. No. 887,495

Int. Cl.[5] H01L *27/14, 31/101;* **G01J** *5/20, 5/24*

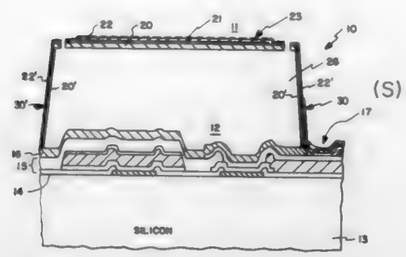
U.S. Cl. 338—22 R **10 Claims**

1. A two-level microbridge bolometer imaging array comprising:

an array of bolometer pixels on a semiconductor substrate, each one of said pixels having a lower section on the surface of the substrate and a microbridge upper detector plane spaced from and immediately above the lower section;

said lower section including a semiconductor diode, x and y bus lines and x and y pads;

said microbridge upper detector plane comprising a bridging dielectric layer having embedded throughout a temperature responsive resistive element having first and second terminals, said microbridge upper detector plane being supported above the lower section by dielectric leg portions which are downward extending continuation of the bridging dielectric layer;



said first and second terminals being continued down said leg portions to said diode and one of said bus lines.

5,300,916

SENSOR ELEMENT FOR A THERMAL TYPE FLOWMETER

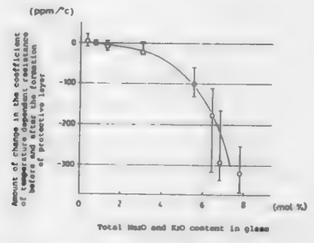
Fujio Ishiguro, and Hiroshi Nakajima, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 30, 1992, Ser. No. 998,672

Claims priority, application Japan, Feb. 18, 1992, 4-30899

Int. Cl.[5] H01C *1/02, 3/00*

U.S. Cl. 338—25 **2 Claims**



1. A sensor element for a thermal flowmeter, comprising a ceramic substrate, a thin film resistor of platinum provided on an outer surface of said ceramic substrate, and an outer protective layer of glass provided for protecting said resistor, wherein said glass has a softening point of 550° C. to 750° C. and comprises ZnO and B_2O_3 as main ingredients, and Na_2O and K_2O in a total amount of up to 3 mol %.

5,300,917

JUNCTION BOX HAVING INTEGRALLY FORMED SHUNT

H. Winston Maue, 21789 Glenwild Dr., Northville, Mich. 48167; Zenon Hotra, 2654 Fox Chase, Troy, Mich. 48098, and Tomoyuki Yamai, 10–28–101 Seri-machi, Hikone, Shiga pref., 522

Filed Jan. 15, 1993, Ser. No. 6,438

Int. Cl.[5] H01C *7/00;* **H02B** *1/20*

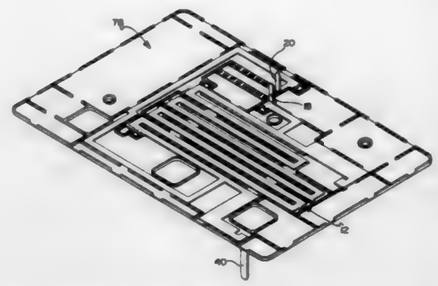
U.S. Cl. 338—49 **10 Claims**

1. An apparatus forming a junction box having an integrally formed shunt for enabling a current within a current loop of a circuit to be accurately calculated by utilizing a voltage measured across said shunt by a voltage measuring device, without said junction box or said shunt affecting said measured voltage, said apparatus comprising:

a junction box;

a shunt integrally formed within said junction box such that said shunt may be coupled in said current loop when said junction box is in use;

said shunt including a pair of terminals connectable to said voltage measuring device such that terminal resistances of said pair of terminals are outside of said current loop and



thereby do not affect voltage measurements taken by said voltage measuring device.

5,300,918

SHAFT ROTARY POSITION SENSOR

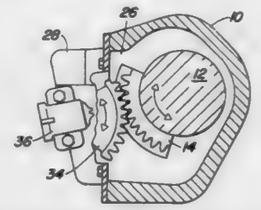
Manfred Becker, Frankenthal, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Feb. 4, 1993, Ser. No. 14,302

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207064

Int. Cl.[5] H01C *10/00, 10/32*

U.S. Cl. 338—196 **8 Claims**



1. In an assembly including a rotatable main shaft enclosed in a main shaft housing, a position sensor assembly for sensing the rotary position of the main shaft, the assembly including a rotary potentiometer coupled to the main shaft, characterized by:

a sensor housing attached to the main shaft housing; and

the potentiometer is attached to an outside surface of the sensor housing, and the potentiometer having a sensor shaft which extends through a portion of the sensor housing and which is rotatably coupled to the main shaft.

5,300,919

VIBRATION AND SHOCK-RESISTANT FILM-TYPE POWER RESISTOR

Richard E. Caddock, Roseburg, Oreg., assignor to Caddock Electronics, Inc., Riverside, Calif.

Filed May 5, 1992, Ser. No. 879,185

Int. Cl.[5] H01C *1/028*

U.S. Cl. 338—250 **9 Claims**

1. A high-power, shock-and-vibration-resistant resistor combination, which comprises:

(a) a metal housing having a chamber therein,

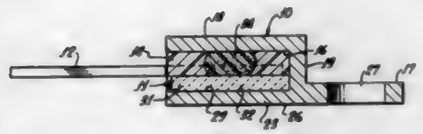
said chamber having a heat-transfer wall,

the interior and exterior surface of said heat-transfer wall being flat,

said housing having opening means therein communicating with said chamber and through which leads may be extended,

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(b) a resistor element sized to fit in said chamber,
said resistor element comprising a substrate,
said substrate being electrically insulating but thermally conductive,
said substrate having upper and lower flat surfaces,
said resistor element further comprising a resistive film provided on said upper surface of said substrate,
said resistor element being disposed in said chamber with said lower flat surface of said substrate in proximity to said interior flat surface of said heat-transfer wall of said housing,
(c) leads connected to spaced-apart portions of said resistive film,



said leads extending through said opening means, and
(d) means including potting material filling said chamber at the portions thereof not occupied by said resistor element and said leads,
said means including potting material consisting of two portions, one such portion having been introduced into said chamber in solid condition and sized to extend between said upper surface of said substrate and a portion of said housing that is opposite said upper surface, the other such portion having been introduced into said chamber in liquid form and then cured.

5,300,920

BASKETBALL GAME HAVING SCORING SLAP-PADS

Rick Caselli, Cupertino; Pat Turo; Michael Cookson, both of San Francisco, and Ake Larsson, Palos Verdes Estates, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Aug. 17, 1992, Ser. No. 930,573
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—323 R **8 Claims**



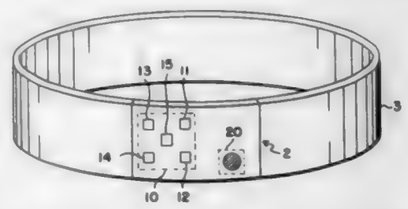
1. A basketball game for use in combination with a ball comprising:
a generally planar backboard;
a generally circular hoop supported by said backboard;
a pair of player score indicators;
a pair of slap-pads each having a touch responsive pad supported by said backboard;
a score sensor proximate said hoop having means responsive to the passage of said ball through said hoop to produce a sensed basket signal in response to said ball passage; and
control means for controlling said pair of player score indicators, said control means being coupled to said score sensor, said pair of slap-pads, and said pair of score indicators increasing the displayed score on a score indicator in response to the actuation of the appropriate one of said slap-pads in response to a sensed basket signal.

5,300,921

ATHLETIC TRAINING SYSTEM

David J. Hoch, Cambridge, and Alexander R. Thomas, Groveland, both of Mass., assignors to Rhys Resources Ins., Groveland, Mass.

Filed Nov. 13, 1992, Ser. No. 976,175
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—573 **9 Claims**



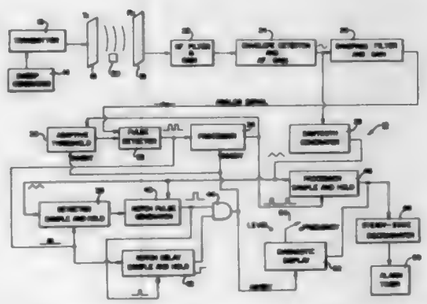
1. An apparatus, for indicating the position of a body part, comprising:
a sensor for sensing a direction and angle of tilt, said sensor including a plurality of ON/OFF switches, each switch, at any one time, having either an ON or an OFF state, said ON and OFF states responsive to tilting of said sensor;
means for mounting said sensor on the body part;
means for sampling said ON and OFF states of said switches;
means, responsive to said means for sampling, for counting said ON and OFF states of each of said switches;
means, responsive to said means for counting, for converting the counts of said ON and OFF states to a sensed direction and angle of tilt;
means, responsive to said means for converting, for signalling said sensed direction and angle of tilt.

5,300,922

SWEPT FREQUENCY ELECTRONIC ARTICLE SURVEILLANCE SYSTEM HAVING ENHANCED FACILITY FOR TAG SIGNAL DETECTION

James F. Stoffer, Miamisburg, Ohio, assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed May 29, 1990, Ser. No. 530,900
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—572 **49 Claims**



1. An electronic article surveillance system capable of detecting the presence of a tag in a predetermined area having periodic interfering signals therein, comprising:

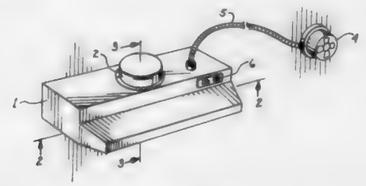
transmitting means including a transmitter for providing a modulated electromagnetic field in said predetermined area, said field being periodically swept at a predetermined sweep frequency over a predetermined range of frequencies, said tag having a resonant frequency within said predetermined range of frequencies;
detecting means receiving as inputs said electromagnetic field and said periodic interfering signals for detecting both tag signals indicative of perturbations in said field caused by said tag present in said field and said periodic interfering signals; and
discriminating means coupled to said detecting means for discriminating between said tag signals and said periodic interfering signals, said discriminating means including means responsive to said modulation in said electromagnetic field and for sensing time persistence of each of said tag signals and said periodic interfering signals and rendering said detecting means non-responsive to said inputs thereto when said sensed time persistence exceeds a predetermined length of time.

5,300,923

APPARATUS AND METHOD FOR DISABLING A SMOKE DETECTOR WHEN USING A SMOKE-EMANATING APPARATUS

Ralph W. Gruber, P.O. Box 1977, Cave Creek, Ariz. 85331

Filed Mar. 23, 1992, Ser. No. 855,779
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—628 **8 Claims**



1. An apparatus for selectively disabling a smoke detector alarm in proximity with a smoke-generating device, the apparatus comprising:
smoke detector means for generating an alarm in response to the detection of smoke; and
switch means electronically coupled to the smoke-generating device and also coupled to the smoke detector means for enabling the smoke detector means when said switch means is engaged in a first position and for disabling the smoke detector means when said switch means is engaged in a second position, the smoke-generating device is a cooking device that includes a fan and the switch means is electronically coupled to the smoke-generating device to turn the fan ON and OFF such that when the fan is ON the smoke detector means is disabled and when the fan is OFF the smoke detector means is enabled.

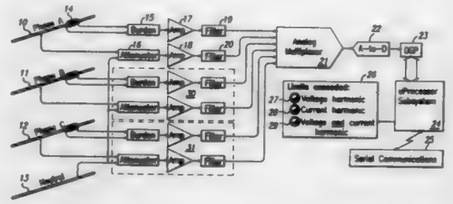
5,300,924

HARMONIC MEASURING INSTRUMENT FOR AC POWER SYSTEMS WITH A TIME-BASED THRESHOLD MEANS

Alexander McEachern, Oakland, and Jamie Nicholson, Foster City, both of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed Aug. 21, 1992, Ser. No. 934,355
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—660 **24 Claims**

1. An apparatus for measuring voltage harmonics and current harmonics on an alternating current power system comprising:
a. means for sensing a predetermined harmonic voltage parameter and a predetermined harmonic current parameter coupled to the alternating current power system;
b. means for comparing the harmonic voltage parameter to a predetermined voltage threshold and for comparing the harmonic current parameter to a predetermined current threshold coupled to the means for sensing;
c. means for calculating a first time parameter during which



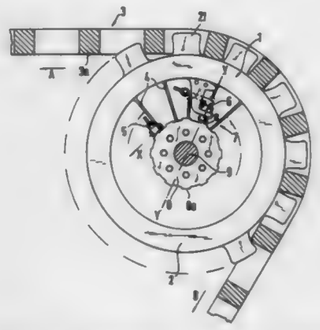
the predetermined voltage threshold was exceeded by the harmonic voltage parameter and a second time parameter during which the predetermined current threshold was exceeded by the harmonic current parameter coupled to the means for comparing; and
d. means for indicating when either the first time parameter or the second time parameter exceed a predetermined time threshold.

5,300,925

PROCESS AND APPARATUS FOR MONITORING OF VEHICLE CRAWLER CHAINS OF A VEHICLE DURING DRIVING

Friedrich Depfenhart, Heimsheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 855,889
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109257
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—676 **9 Claims**



1. A process for monitoring at least one vehicle crawler chain for malfunctions during a driving operation with respect to an unacceptable change of pitch of links of the crawler chain so as to impair the driving operation, comprising the steps of monitoring an actual running sound of said crawler chain, triggering a defect signal for said crawler chain, when said unacceptable change of pitch occurs during the driving operation, due to said defect signal exceeding a median running sound of an intact crawler chain, assigning to the median running sound a threshold pitch of the crawler chain to trigger the defect signal, and emitting a warning signal when a given signal frequency associated with the unacceptable change of pitch is above the threshold pitch, wherein the given signal

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frequency is determined by generating a number of n-pulsed for each tooth of the driving gear which correspond to each pitch of the crawler chain, counting the thus generated pulses to obtain a count, starting the counting again at one, when a value is reached which corresponds to n-times the number of all the pitches of the crawler chain, using the count for determining the rotating position of the pitches of the crawler chain, and adding up separately for each of the links of the crawler chain the number of said defect signals during a given time period.

5,300,926

MEDICAL APPARATUS, HAVING A SINGLE ACTUATING DEVICE

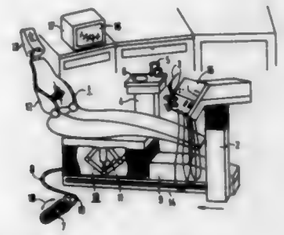
Klaus Stoeckl, Bensheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 2, 1991, Ser. No. 694,634

Claims priority, application European Pat. Off., May 9, 1990, 90108740.3

Int. Cl.[5] G06K *15/18*; A61M *31/00*; A61B *10/00*

U.S. Cl. 345—157 **27 Claims**



1. A medical apparatus comprising:

a plurality of different physically elements, including device, instrument, and auxiliary functions, each having respective, variable operating and positioning parameters associated therewith;

a single, user-manipulatable actuation element moveable in a manipulation range from a standby position successively to at least first and second working positions for selecting said operating parameters;

user-operable control signal generator means connected to said actuation element and to said actuatable elements for supplying respective control signals to said actuatable elements to set said variable operating parameters;

visual display means for displaying a plurality of display elements corresponding to said actuatable elements and said operating parameters, and representing one of said device, instrument, and auxiliary functions to be selected;

optical signal generator means connected to said control signal generator means and connected to said display means causing successive display of each display element corresponding to an actuatable element and the selected operating parameters for that actuatable element, said display elements being arranged on said visual display means along at least one limb on said visual display means and forming at least one information graphic block with said optical generator means on said visual display means; and

electronic control means connected to said actuation element, said actuatable elements, said control signal generator means, said optical signal generator means, and to said display means for driving said optical signal generator means to display said display elements in a succesaion when said actuatable element is in said first position to assist an operator in selecting said operating parameters via said control signal generator means, and for thereafter enabling operation of a selected, displayed actuatable element, at the selected operating parameters, only when said actuation element is moved to said second position.

5,300,927

INPUT DEVICE FOR CAD

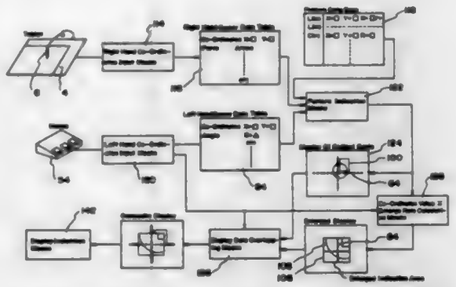
Ryuji Arai, Sapporo, and Tatsuyoshi Ikuta, Tokyo, both of Japan, assignors to Mutoh Industries Ltd., Tokyo, Japan

Filed Sep. 23, 1991, Ser. No. 764,294

Claims priority, application Japan, Oct. 25, 1990, 2-287695

Int. Cl.[5] G09G *1/16*

U.S. Cl. 345—157 **2 Claims**



1. An input device for a CAD system, comprising: a drafting board-like digitizer on which a scene of a display device is shown, and a first cursor device for inputting a position signal to a control apparatus, wherein an indication position of the first cursor device, which is used by an operator to indicate a point on the digitizer, on said digitizer and another indication position on the screen of the display device are made to agree with each other on the digitizer, and drafting is carried out on the screen of the display device after inputting of the position signal, the input device comprising: means for displaying graduated right angle scale lines on the screen of said display device, a second cursor device for controlling the right angle scale lines, said second cursor device being installed separately from said first cursor device, control means for moving said right angle scale lines in parallel and circularly on the screen according to an output signal of the second cursor device, a co-ordinate value multiply enlargement rate counting means for setting an enlarge indication area of a predetermined range in regard to the center of said right angle scale lines on the screen of the display device, setting an area-to-be-enlarged at the enlargement rate of the enlarge indication area, multiplying the co-ordinate value of the pattern in the area-to-be-enlarged by the enlarge rate in order to determine an enlarged co-ordinate system having a line width fixed at its original unenlarged width, display data overlapping means for composing or overlapping the enlarge display data of said co-ordinate value multiply enlargement rate counting means on ordinal display data in order to display the composite data on the screen of the display device, and memory means for temporarily storing pattern data in said enlarge indication area as pattern data of an ordinal co-ordinate system.

5,300,928

LIQUID CRYSTAL COLOR DISPLAY DEVICE

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 457,964, Dec. 27, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 822,914

Claims priority, application Japan, Dec. 27, 1988, 63-335629; Dec. 27, 1988, 63-335630

Int. Cl.[5] G09G *3/36*, *5/02*

U.S. Cl. 345—88 **10 Claims**

1. A liquid crystal light source device comprising:

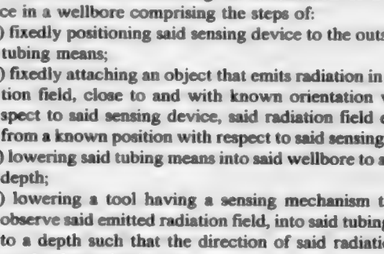
a pair of substrates;

a liquid crystal layer interposed between said substrates where the pair of substrates and the liquid crystal layer comprise a light source cell, said substrates having inside and outside surfaces, said inside surfaces facing said liquid crystal layer and said outside surfaces located on an outer surface of said substrates other than said inside surfaces;

at least one color filter having a primary color formed on an outside surface of one of said substrates;

an electrode arrangement for applying electric fields to said liquid crystal layer,

a light source for projecting a light on an entire surface of said liquid crystal layer through said at least one color



filter, wherein said at least one filter faces away from the liquid crystal layer of the light source cell and towards said light source,

wherein said light source device is used as a shutter device to control on and off states of light having a primary color or total color harmony of primary colors and wherein said liquid crystal layer includes a ferroelectric liquid crystal layer.

5,300,929

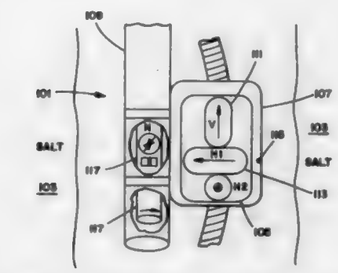
METHOD FOR DELINEATING AN ANOMALOUS GEOLOGIC STRUCTURE

Mark K. MacLeod, Houston, Tex., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Oct. 4, 1991, Ser. No. 771,298

Int. Cl.[5] G01V *1/40*

U.S. Cl. 340—853.8 **4 Claims**



1. A method of determining the orientation of a sensing device in a wellbore comprising the steps of:

(a) fixedly positioning said sensing device to the outside of a tubing means;

(b) fixedly attaching an object that emits radiation in a radiation field, close to and with known orientation with respect to said sensing device, said radiation field emitting from a known position with respect to said sensing device;

(c) lowering said tubing means into said wellbore to a known depth;

(d) lowering a tool having a sensing mechanism that can observe said emitted radiation field, into said tubing means to a depth such that the direction of said radiation field can be determined; and

(e) recording the direction of said radiation field and the inclination of said tubing means at this position, to determine said orientation of said sensing device.

5,300,930

BINARY ENCODING METHOD WITH SUBSTANTIALLY UNIFORM RATE OF CHANGING OF THE BINARY ELEMENTS AND CORRESPONDING METHOD OF INCREMENTATION AND DECREMENTATION

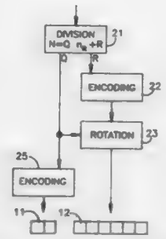
M. Jacques Burger, Bieville Beuville, and M. Marc Girsult, Caen, both of France, assignors to France Telecom, France

Filed Oct. 29, 1991, Ser. No. 784,545

Claims priority, application France, Nov. 2, 1990, 90 13758

Int. Cl.[5] H03M *7/14*

U.S. Cl. 341—96 **24 Claims**



1. A method for prolonging lifetime of a set of binary elements of a memory unit, the set of binary elements being configured for storage of digital data elements, said method comprising a step of defining a reference field and a permutation field in said set of binary elements, and for each of said digital data elements to be stored, said method comprises the steps of:

associating with said digital data element a first and a second sequence of binary elements, according to a reversible mathematical function,

assigning the first sequence of binary elements to the reference field,

conducting a permutation of the binary elements of the second sequence of binary elements as a function of the first sequence of binary elements to form a permuted second sequence of binary elements, and

assigning the permuted second sequence of binary elements to the permutation field.

5,300,931

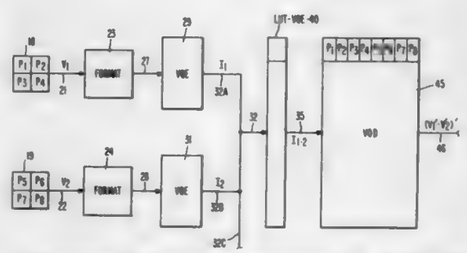
MEMORY BASED VECTOR QUANTIZATION

Robert A. Lindsay, Bountiful; Patrick S. Grant, Orem, and Val D. Vaughn, N. Salt Lake, all of Utah, assignors to UNISYS Corporation, Blue Bell, Pa.

Filed Sep. 4, 1987, Ser. No. 93,331

Int. Cl.[5] H03M *7/30*

U.S. Cl. 341—106 **17 Claims**



1. Apparatus for high-speed compression of vector data inputs comprising:

means for storing groups of scalar data,

means for formatting said groups of scalar data into a plurality of vector dimensional data inputs coupled to said means for storing groups of scalar data,

first encoder means for vector quantizing said plurality of

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vector data inputs to provide a plurality of compressed encoded index data outputs, said compressed encoded index data outputs providing a unique index pointer output, and

means for computing mapping of data on said compressed encoded index data outputs to provide a compressed compressed output coupled to said unique index pointer output.

5,300,932

MOTOR VEHICLE POLICE RADAR DETECTOR FOR DETECTING MULTIPLE RADAR SOURCES

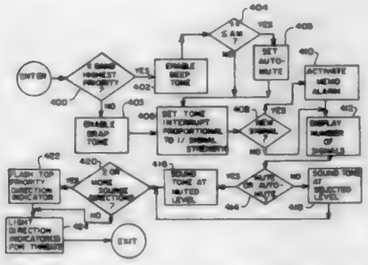
Michael D. Valentine; Stephen R. Scholl, and Clarence R. Groth, all of Cincinnati, Ohio, assignors to Valentine Research, Inc., Cincinnati, Ohio

Continuation of Ser. No. 982,594, Nov. 27, 1992, Pat. No. 5,250,951, which is a division of Ser. No. 891,715, Jun. 1, 1992, Pat. No. 5,206,651, which is a division of Ser. No. 687,282, Apr. 18, 1991, Pat. No. 5,146,226. This application Jul. 20, 1993, Ser. No. 94,759

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—20 **6 Claims**



1. A method of operating a motor vehicle police radar signal detector for alerting an operator of a motor vehicle to incoming radar signals from more than one radar signal source, said method comprising the steps of:

detecting an incoming first radar signal;

identifying said detected first radar signal;

alerting an operator of a motor vehicle using said radar signal detector that said identified first radar signal is incident on the motor vehicle;

detecting an incoming second radar signal while said first radar signal is still incident on the motor vehicle;

identifying said detected second radar signal; and

alerting said operator that said second radar signal is incident on the motor vehicle.

5,300,933

STICK FIGURE RADAR TRACKING PROCESS

Joseph H. Discenza, Poquoson, and C. Allen Butler, Hampton, both of Va., assignors to Daniel H. Wagner Associates, Inc., Hampton, Va.

Filed Feb. 24, 1993, Ser. No. 21,661

Int. Cl.[5] G01S *13/91*

U.S. Cl. 342—36 **7 Claims**

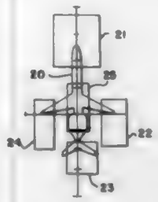
1. An improved method for radar tracking of ground traffic at an airport to reduce the occurrence of runway incursions, comprising the steps of:

employing a radar system to continuously sweep an airport area and detect individual major components of individual fixed and moving objects within the sweep area on and adjacent to a specific runway;

combining and centroiding the images from several individual aircraft components detected to provide an estimate of the true center and orientation of the aircraft and to form a stick-figure tracker for the aircraft being observed;

identifying the aircraft observed by comparing the stick figure tracker obtained with known stick figure trackers for the type aircraft suspected in the area;

measuring the range and bearing of the individual aircraft components; and



tracking each individual component in the stick figure tracker to thereby indicate and predict the precise relative location of critical aircraft physical components and give instantaneous information of any change in aircraft bearing between radar sweeps.

5,300,934

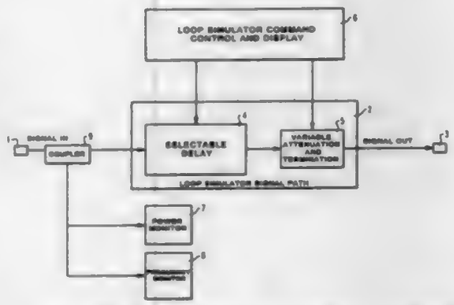
RADAR ALTIMETER LOOP SIMULATOR

Vernon L. Asbell, Haltom City, and Kevin P. Nelms, Fort Worth, both of Tex., assignors to Fieldtech Avionics & Instruments, Inc., Fort Worth, Tex.

Filed Aug. 27, 1992, Ser. No. 937,360

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—172 **16 Claims**



1. A loop simulator for testing radar altimeters, comprising:

a signal path of variable signal delay wherein a signal path attenuation is associated with the level of signal delay;

a mode control to select a simulation altitude;

a microprocessor to produce signal values corresponding to a selected mode;

a control memory to convert the signal values to control signals, wherein the control signals control the signal path delay; and

a display memory which converts the simulated altitude and signal path attenuation to display signals, and further including a means for displaying the display signals.

5,300,935

ANTENNA CONTROLLING APPARATUS AND METHOD THEREOF

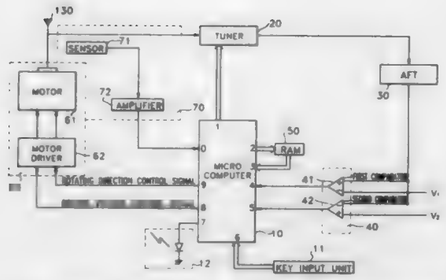
Jae-cheon Yu, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 997,203

Claims priority, application Rep. of Korea, Dec. 26, 1991, 91-24490; Dec. 30, 1991, 91-25464

Int. Cl.[5] H01Q *3/00*

U.S. Cl. 342—359 **5 Claims**



1. An antenna controlling apparatus for automatically fine tuning a broadcasting signal received through an antenna to precisely tune a desired channel, said apparatus comprising:

antenna driving means for controlling the direction of the antenna to an optimum condition, as compared to a plurality of other conditions, for receiving radio waves for the desired channel;

means for detecting a changing degree according to a change of direction of the antenna by said antenna driving means;

means for storing direction information of the antenna according to an output from said detecting means when the direction of the antenna is in the optimum condition for receiving radio waves for the desired channel;

controlling means for reading out from said storing means antenna direction information in the optimum condition during selection of the desired channel, and outputting the antenna direction information to said antenna driving means;

a tuner for converting a high frequency signal of a broadcasting signal received via the antenna to an intermediate frequency signal;

AFT means for automatically fine tuning an output signal of said tuner;

comparing means for receiving an output signal of said AFT means and detecting a tuning condition;

key input means having a preset key and a storage key for assigning and inputting a rotating angle of an antenna output via the detecting means so as to be stored in said storing means when the direction of the antenna is in the optimum condition for receiving radio waves; and

displaying means for displaying a preset mode when said preset key is pressed via said key input means;

wherein said storing means comprises a semiconductor memory for storing the rotating angle of the antenna when said comparing means indicates that the output of said AFT means is within first and second predetermined threshold voltages.

5,300,936

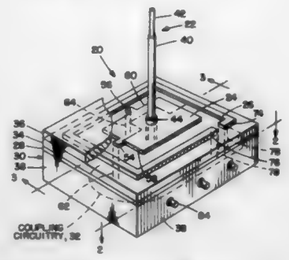
MULTIPLE BAND ANTENNA

Jamaledin Izadian, San Jose, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,274

Int. Cl.[5] H01Q *1/38, 21/28*

U.S. Cl. 343—700 MS **18 Claims**



18. A multiple band antenna comprising:

an electrically conductive plate serving as a ground plane;

a first planar electrically conductive radiator disposed parallel to said ground plane;

an elongated electrically conductive rod radiator extending through a central portion of said planar radiator and oriented normally to said planar radiator;

means for insulating said rod radiator from said planar radiator;

a loop radiator encircling said planar radiator and being electrically insulated from said planar radiator;

a second planar electrically conductive radiator disposed parallel to said first planar radiator and being located on a side of said first planar radiator opposite said ground plane, said second planar radiator being spaced apart from said first planar radiator, said second planar radiator being smaller than said first planar radiator, and said second electromagnetic signal having a smaller wavelength than said first electromagnetic signal;

wherein a diameter of said first planar radiator and of said loop radiator is less than or equal approximately to one-half of a wavelength of radiation to be received respectively by said first planar radiator and said loop radiator; and

said rod radiator has an electrical length greater than a cross-sectional dimension of said loop radiator for reception of radiation having a longer wavelength than radiation for said first planar radiator and for said loop radiator.

5,300,937

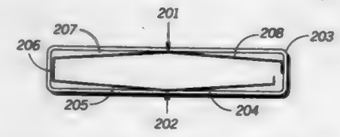
LOOP ANTENNA

John K. Capp, Boca Raton; Keith W. Neutzman, West Palm Beach, and John J. Parkes, Jr., Lantana, all of Fla., assignors to Motorola, Inc, Schaumburg, Ill.

Continuation of Ser. No. 686,851, Apr. 18, 1991, abandoned, which is a continuation of Ser. No. 416,090, Oct. 2, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 948,078

Int. Cl.[5] H01Q *1/22, 7/00*

U.S. Cl. 343—702 **5 Claims**



1. A loop antenna adapted for insertion within a housing, comprising:

a first portion having first and second ends, the first portion including a first bend forming an obtuse angle of less than

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180 degrees as measured between the first and second ends of the first portion; and

a second portion having first and second ends, the second portion including a second bend forming an obtuse angle of less than 180 degrees as measured between the first and second ends of the second portion, the second portion being integrally formed with the first portion, the first and second portions of the loop antenna being compressed when inserted in the housing due to first and second forces exerted in substantially opposite directions against respective first and second interior sides of the housing by the first and second bends, the first and second forces acting to resiliently engage the first and second portions of the loop antenna with the respective first and second interior sides of the housing for maintaining the loop antenna in a position within the housing that maximizes an effective capture area encompassed by the loop antenna.

5,300,938

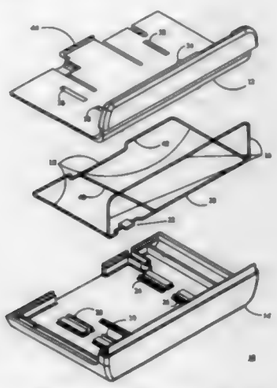
ANTENNA SYSTEM FOR A DATA COMMUNICATION RECEIVER

Tony Y. Maroun, Boynton Beach; William R. Van Dyke, Jr., Lighthouse Point, and Gregory W. Fuller, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1992, Ser. No. 986,314

Int. Cl.[5] H01Q *1/24*

U.S. Cl. 343—702 **19 Claims**



1. A supplementary antenna system for a communication receiver assigned to an operating frequency, and which has an internal antenna which is coupled to a portable computer to deliver received data messages thereto, said supplementary antenna system comprising:

a loop antenna, resonated at the receiver operating frequency and magnetically coupled to the internal antenna of the communication receiver; and

a wireframe shield, resonated at a frequency different than the receiver operating frequency, and electrically coupled to, and physically oriented perpendicular to, said loop antenna, for shielding the communication receiver from an electrical interference signal generated by the portable computer.

5,300,939

METHOD AND APPARATUS FOR MEASURING ANTENNA RADIATION EFFICIENCY

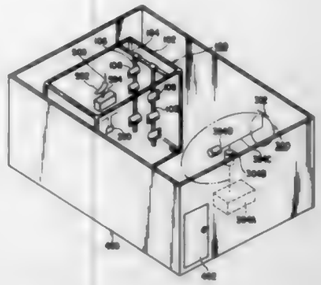
Tadahiko Maeda, Yokohama; Yoshiaki Tsukumo, Tokyo; Satoshi Yasuda, Kawasaki; Syuuichi Sekine, and Shuichi Obayashi, both of Urayasu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,482

Claims priority, application Japan, Mar. 14, 1991, 3-074833

Int. Cl.[5] H01Q *1/12*; G01R *29/08*

U.S. Cl. 343—703 **16 Claims**



1. An apparatus for measuring antenna radiation, efficiency, comprising:

a frame having an inside space;

a random field forming unit, for forming a random field, said random field forming unit comprising at least two parts, said parts each arranged in the inside space of the frame, said parts each having a plurality of radio wave scatterers, and means for setting at random the intervals between the radio wave scatterers and the curvatures of the radio wave scatterers;

a transmitting antenna, having a predetermined antenna radiation efficiency, situated within the random field, for transmitting predetermined radio waves;

a to-be-measured antenna, situated within the random field, for transmitting predetermined radio waves, the antenna radiation efficiency of the to-be-measured antenna being unknown in advance;

a receiving antenna, situated apart from the random field, for receiving radio waves from the transmitting antenna and the to-be-measured antenna;

a field-strength meter for measuring a first cumulative probability of the receiving power corresponding to the transmitting antenna and a second cumulative probability of the receiving power corresponding to the to-be-measured antenna, in accordance with the radio waves received by the receiving antenna; and

computation means for computing the antenna radiation efficiency of the to-be-measured antenna in accordance with the first cumulative probability of the receiving power, the second cumulative probability of the receiving power and the antenna radiation efficiency of the transmitting antenna.

5,300,940

BROADBAND ANTENNA

Kenneth D. Simmons, Lincoln, Nebr., assignor to Centurion International, Inc., Lincoln, Nebr.

Continuation of Ser. No. 728,745, Jul. 12, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,153

Int. Cl.[5] H01Q *1/36, 9/32*

U.S. Cl. 343—749 **2 Claims**

1. A broadband antenna for use with a source of RF energy, comprising:

a connector having first and second ends,

said first end of said connector being adapted for connection to said source of RF energy,

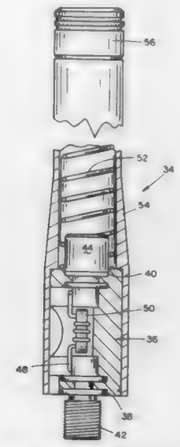
a hollow housing having open first and second ends,

said first end of said housing embracing said second end of said connector,

a conductive insert mounted in said second end of said housing and having a cylindrical end portion protruding therefrom,

an elongated radiator comprising a helical wound coil having one end mounted on said cylindrical end portion of said insert,

an inductor in said housing interconnecting said connector and said insert,



said inductor including a toroid having a conductor wire wrapped therearound a predetermined number of turns, said conductor wire being in direct communication from said toroid to said connector and from said toroid to said insert,

capacitor means connected between said connector and said insert to form a broadband tuned circuit,

and an elongated hollow sheath embracing said housing, said radiator, and at least a portion of said connector.

5,300,941

INTEGRATED MMDS ANTENNA AND DOWN CONVERTER

Dale L. Hemmie, and Marc D. Mills, both of Burlington, Iowa, assignors to Conifer Corporation, Burlington, Iowa

Continuation of Ser. No. 707,918, May 30, 1991, Pat. No. 5,202,699. This application Jan. 5, 1993, Ser. No. 4,968

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] H01Q *19/130, 9/200*

U.S. Cl. 343—840 **8 Claims**

5. An integrated semi-parabolic antenna/down converter MMDS receiving system comprising:

a semi-parabolic antenna,

a pair of driven feed elements,

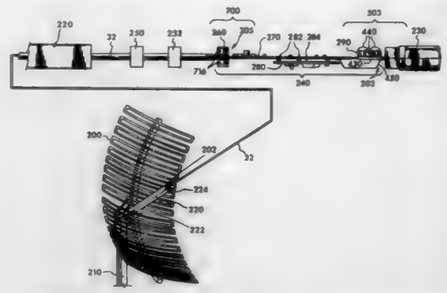
a support boom formed of conductive material connected to said semi-parabolic antenna for holding said driven feed elements in the focal area of said semi-parabolic antenna, said support boom having a formed hollow interior,

a down converter formed in an elongated shape to fit entirely within said formed hollow interior of said support boom, said down converter at least comprising:

(a) a printed circuit board, said printed circuit board having a bottom ground plane, said printed circuit board having an input end,

(b) an RF filter located on said input end of said printed circuit board, said RF filter having an input end, the input end of said RF filter being electrically coupled to said driven feed elements,

(c) an RF filter shield covering said RF filter and electrically connected to at least said bottom ground plane of said printed circuit board, said RF filter shield having a plurality of first RF filter shield grounding means located thereon so as to abut against the formed hollow interior of said conductive material of said support boom in order to (1) establish an electrical ground connection therewith



and (2) position said input end of said printed circuit board within said formed hollow interior, and

(d) said first printed circuit board having a second RF filter shield grounding means connected to said bottom ground plane so as to abut against the formed hollow interior of said support boom in order to (1) establish a ground connection to said conductive material of said formed hollow interior of said support boom and (2) position said first printed circuit board within said hollow formed interior.

5,300,942

HIGH EFFICIENCY LIGHT VALVE PROJECTION SYSTEM WITH DECREASED PERCEPTION OF SPACES BETWEEN PIXELS AND/OR HINES

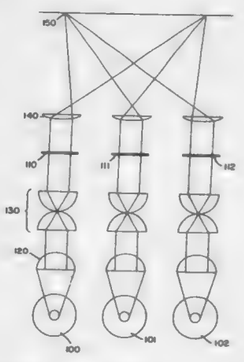
Eugene Dolgoff, Westbury, N.Y., assignor to Projectavision Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 290,040, Dec. 23, 1988, Pat. No. 5,012,274, which is a continuation-in-part of Ser. No. 140,233, Dec. 31, 1987, abandoned. This application Feb. 21, 1991, Ser. No. 659,596

The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.

Int. Cl.[5] G09G *5/00*

U.S. Cl. 345—32 **168 Claims**



1. An electronic image projection system, comprising:

a light source;

a light valve means for forming an image on which informa-

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tion can be present as pixels or lines, said light valve means including one of:

a single light valve having perceived dead spaces caused by presence of relatively darker pixels or lines adjacent to relatively lighter pixels or lines and real dead spaces between pixels, or lines defined by actual non-information bearing spaces between pixels or lines, and

a plurality of light valves having at least one of real dead spaces between pixels or lines defined by actual non-information bearing spaces between pixels or lines and perceived dead spaces caused by presence of relatively darker pixels or lines adjacent to relatively lighter pixels or lines;

means for projecting the image formed by said light valve means onto a viewing area; and

means to substantially eliminate perception of perceived dead spaces and real dead spaces between pixels or lines in the image projected by the single light valve and to substantially eliminate perception of at least one of real dead spaces between pixels or lines and perceived dead spaces in the image projected by the plurality of light valves.

5,300,943

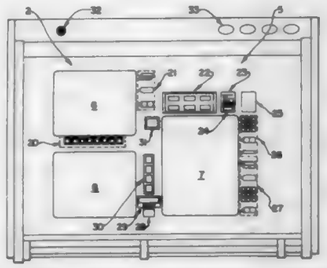
MULTIPLE DISPLAY WORKSTATION WITH CONDUCTIVE SURFACE OVERLAY CONTROL

Thomas Jakobs, Chicago; Wayne D. Jung, Skokie; Richard A. Karlin; Leonard Reiffel, both of Chicago; Raphael K. Tam, Glenview; Timothy T. Tutt, Skokie, and Michael F. Dunk, DesPlaines, all of Ill., assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Continuation of Ser. No. 395,160, Jun. 17, 1989, abandoned, which is a continuation of Ser. No. 914,924, Oct. 3, 1986, abandoned. This application Aug. 21, 1991, Ser. No. 751,605

Int. Cl.[5] G09G *5/00*

U.S. Cl. 345—1 **14 Claims**



1. An interactive video workstation for processing video images comprising:

a plurality of display units for displaying video images, including at least a first display unit for displaying textual information, a second display unit for displaying graphic information and a third display unit for displaying control information, wherein each of the display units has a substantially planar display surface;

a coordinate sensing means having a single transparent energized conductive surface with a front surface and a back surface, a stylus and a coordinate calculation means, wherein the stylus and single conductive surface are each connected to the calculation means and wherein the calculation means calculates the coordinate position of the stylus with respect to the single conductive surface, and wherein the plurality of video display units are positioned in proximity to the back surface of the single conductive surface wherein the single conductive surface substantially overlays the entire surface area of each of the display surfaces of the plurality of display units;

function symbols mechanically affixed to the single conductive surface adjacent to one or more of the video display units, wherein each of the function symbols is associated with a particular video image processing function of the workstation; and

control means connected to each of the display units and to the coordinate sensing means for controlling each of the display units, wherein the control means is responsive to the position of the stylus with respect to the single conductive surface and wherein the control means is further responsive to the coordinate calculation means of the coordinate sensing means when the stylus is positioned near any of the function symbols, wherein the video images displayed on the plurality of display units are controlled by the position of the stylus with respect to one or more of the plurality of display units and/or function symbols, and wherein the textual information displayed on the first display unit corresponds to the graphic information displayed on the second display unit.

5,300,944

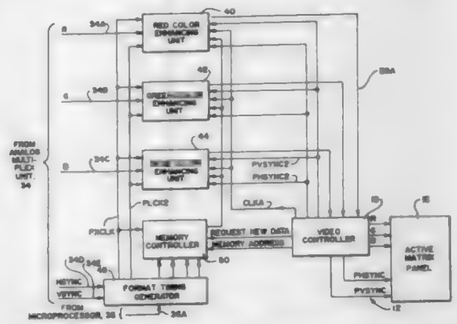
VIDEO DISPLAY SYSTEM AND METHOD OF USING SAME

Leonid Shapiro, Lakeside; Robert W. Shaw, Escondido, and Randall S. Farwell, San Diego, all of Calif., assignors to Proxima Corporation, San Diego, Calif.

Continuation of Ser. No. 690,531, Apr. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,178, Nov. 19, 1990, Pat. No. 5,276,436, which is a continuation-in-part of Ser. No. 586,506, Sep. 21, 1990, Pat. No. 5,225,875, which is a continuation-in-part of Ser. No. 546,238, Jun. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,621, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,429, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,668, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,144, Jul. 21, 1988, abandoned. This application Sep. 24, 1992, Ser. No. 950,451

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—88 **23 Claims**



1. A method for enhancing the number of image color shading levels produced by a display device in response to a video signal, said video signal for driving an X by Y matrix of pixel image producing devices, and said display device having an m by n matrix array of pixel elements, where m and n are substantially smaller than X and Y respectively, comprising:

receiving and reformatting the video signal into a display input signal for driving the m by n matrix of pixel elements, said input signal being indicative of N number of desired shading levels for the pixel elements in them by n matrix of pixel elements;

assigning pairs of gray scale codes to corresponding adjacent pairs of pixel elements in said m by n matrix, where one of the gray scale codes is indicative of one of an M number of shading levels and the other one of the gray scale codes is indicative of one of a P number of shading levels, and where N is substantially equal to M times P;

energizing selectively certain ones of the pixel elements an average number of times over a large number of successive frame time period intervals to produce pixel images having M number of different shading levels of individual ones of a plurality of individual colors;

energizing selectively certain other ones of the pixel elements adjacent to the last mentioned pixel elements an another average number of times over said large number of successive frame time period intervals to produce pixel images having P number of different shading levels of individual ones of said plurality of individual colors; and

controlling the energizing of said pixel elements to cause a composite pixel image to be displayed by the display device every frame period, said composite pixel image having a composite shading level substantially equal to the desired one of the N shading levels.

5,300,945

DUAL OSCILLATING DRIVE CIRCUIT FOR A DISPLAY APPARATUS HAVING IMPROVED PIXEL OFF-STATE OPERATION

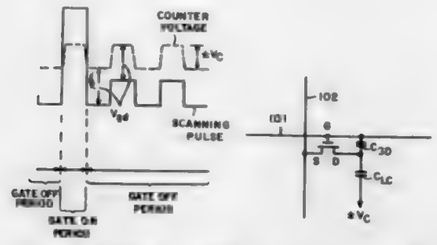
Takaaki Iemoto, Takaichi; Koji Kumada; Takashi Ohnishi, both of Tenri, and Hideki Yakushigawa, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1992, Ser. No. 896,100

Claims priority, application Japan, Jun. 10, 1991, 3-138028

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—92 **7 Claims**



1. A drive circuit for a display apparatus having a display section including a pixel, a switching element connected to said pixel and a scanning electrode connected to said switching element through a gate electrode of the switching element, and a pixel electrode and a counter electrode being provided on opposite sides of said pixel, said drive circuit comprising:

a first means for applying a first oscillating voltage to said counter electrode; and

a second means for applying a second oscillating voltage having the same phase and the same amplitude as said first oscillating voltage to said scanning electrode during a period when said switching element is to be in an off-state;

said second means applying a third voltage to said scanning electrode during a period when said switching element is to be in an on-state, said third voltage being larger than said second oscillating voltage.

5,300,946

METHOD FOR OUTPUTTING TRANSPARENT TEXT

Stuart R. Patrick, Issaquah, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Dec. 8, 1992, Ser. No. 986,793

Int. Cl.[5] G09G *1/28*

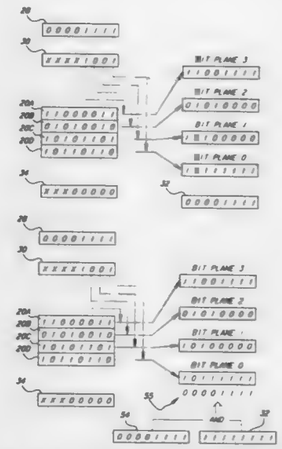
U.S. Cl. 345—153 **7 Claims**

1. In a data processing system having a processor, a video display and a video adapter, wherein said video adapter includes a bit mask register, a method of writing transparent text to the video display comprising the steps of:

a) writing a fixed bit pattern into the bit mask register;

b) providing a bit mask from the processor for the text that indicates which pixels of the video display are to be changed to a new color from a current color and which pixels are not to be changed, wherein the bit mask includes an associated bit for each pixel indicating whether or not the pixel is to be changed to the new color;

c) performing a logical operation with contents of the bit mask register and the bit mask to produce an effective bit mask;



d) changing the color of each pixel, having an associated bit in the effective bit mask that indicates that the pixel is to be changed to the new color; and

e) keeping the current colors of each pixel having an associated bit in the effective bit mask that indicates that the pixel is not to be changed to create transparent text.

5,300,947

GRAPHIC PATTERN PROCESSING APPARATUS

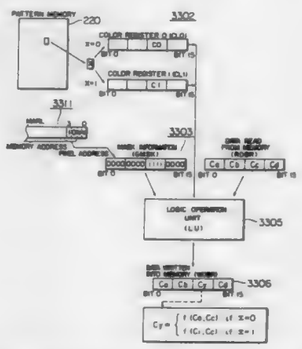
Koyo Katsura; Hideo Maejima, and Hisashi Kajiwara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi, Engineering Co., Ltd., Ibaraki, both of Japan

Division of Ser. No. 350,254, May 11, 1989, Pat. No. 5,043,713, which is a division of Ser. No. 686,039, Dec. 24, 1984, Pat. No. 4,862,150. This application Jul. 29, 1991, Ser. No. 737,398

Claims priority, application Japan, Dec. 26, 1983, 58-246986; Feb. 17, 1984, 59-27155; Jun. 14, 1984, 59-120679

Int. Cl.[5] G09G *5/02*

U.S. Cl. 345—155 **53 Claims**



1. A graphic data generating apparatus comprising:

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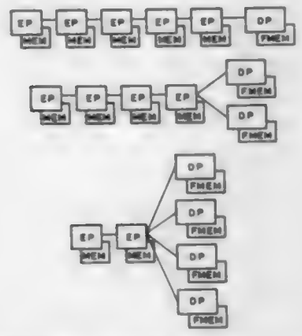
information output means for outputting an image of graphic data;
memory means for storing pixels of graphic data to be provided to said information output means;
a pattern memory for storing pattern data having at least one bit per pixel of said graphic data; and
a graphic data processing apparatus including a plurality of data storage means, each of the data storage means storing pixel data having at least one bit, means for selecting one of said data storage means depending upon a value of said at least one bit per of said graphic data and means for writing the pixel data in said selected storage means as graphic data into an address of said memory means.

5,300,948

DISPLAY CONTROL APPARATUS

Yoshinori Tsujido, and Eriko Tayaoka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1991, Ser. No. 696,058
Claims priority, application Japan, May 11, 1990, 2-122473
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—189 **6 Claims**



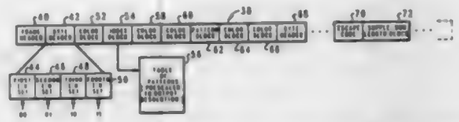
1. A display control apparatus, responsive to a signal which is indicative of display data writing load, said apparatus comprising:
a plurality of frame memories for containing display data for display on a raster-scan display having a plurality of vertically consecutive display lines,
a plurality of display data writing means for writing display data to said frame memories,
an output display logic for receiving the display data from said plurality of frame memories and outputting the received display data to said display, and
a frame switching control means for coupling at least one of said plurality of frame memories to said output display logic and having
a first operational mode in which only one of said plurality of frame memories is coupled to said output display logic,
a double-buffer operational mode in which two of said plurality of frame memories are alternately coupled to said output display logic at the timing of vertical retrace intervals of the raster-scan display, whereby the two frame memories supply display data to the output display logic in an alternating fashion and the output display logic outputs the received display data in alternating fashion, and
a third operational mode in which at least two of the plurality of frame memories are successively coupled to said output display logic, at the timing of horizontal retrace intervals, whereby successive scan lines of the display are supplied display data from the at least two frame memories in successive fashion
and having means for causing the frame switching control means to operate in one of said modes in response to the signal.

5,300,949

SCALABLE DIGITAL VIDEO DECOMPRESSOR

Arturo A. Rodriquez, Belmont, Calif.; Mark A. Pietras, Boynton Beach, Fla.; Steven M. Hancock, Boca Raton, Fla.; Robert F. Kantner, Jr., Boca Raton, Fla.; Charles T. Rutherfoord, Delray Beach, Fla., and Leslie R. Wilson, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1992, Ser. No. 965,129
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—202 **32 Claims**



1. A method of decompressing a compressed video segment including a sequence of frames with selected scaling of frame resolution and color depth for playback on a playback platform, the method comprising the steps of:
generating an output resolution scale for a frame;
retrieving the frame from the compressed video stream in elementary units;
determining a display type for each retrieved elementary unit, the display types including an unchanged type, a homogeneous type, and a pattern type;
for a retrieved elementary unit of the unchanged type, moving an output pointer to a display buffer by an elementary unit scaled by the output resolution scale;
for a retrieved elementary unit of the homogeneous type, applying a color retrieved from the compressed video stream to an area in the display buffer scaled by the output resolution scale; and
for a retrieved elementary unit of the pattern type, retrieving a pattern from the compressed video stream and applying the pattern to an area in the display buffer scaled by the output resolution scale.

5,300,950

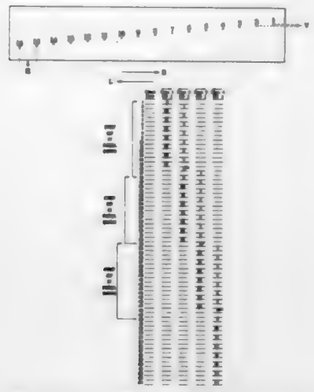
INTERLACED INK JET PRINTER

Juan E. Lopez, Newbury Park, and Dung Do, Burbank, both of Calif., assignors to DataProducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 611,187, Nov. 9, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 876,913
Int. Cl.[5] B41J *2/01, 2/15*
U.S. Cl. 346—1.1 **9 Claims**

1. An improved process for printing onto a print region of a substrate for use in an ink jet printer having a print head comprised of a slanted array of 2n numbered jetting nozzles having a uniform spacing V in a first direction, n being a positive integer and the array including a first nozzle numbered 1 at a first end of the array and a last nozzle numbered 2n at a second end of the array, the nozzles being activated to jet ink droplets onto the substrate during successive passes of the print head over the substrate in a second direction, and the print region having first and second edges which are spaced apart in the first direction; the improved process comprising the steps of:
(a) positioning the substrate opposite the print head so that the nozzle numbered n or n+1 is located substantially opposite the first edge of the print region and the nozzles between n or n+1 and 2n are located opposite the print region and then activating selected ones of only nozzles n to 2n or n+1 to 2n during a first pass of the print head to jet ink droplets; and

(b) moving the substrate in the first direction relative to the print head, so that the first edge moves away from the array of nozzles, in a plurality of increments having increment lengths which alternate between an increment



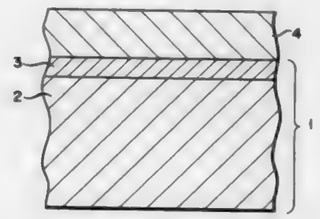
length of about (2n+1)-(V/2) and an increment length of about (2n−1)-(V/2), and effecting a pass of the print head in the second direction while activating selected ones of nozzles 1 to 2n after each increment of movement in the first direction.

5,300,951

MEMBER COATED WITH CERAMIC MATERIAL AND METHOD OF MANUFACTURING THE SAME

Mutsuki Yamazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 718,901, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 240,375, Sep. 1, 1988, abandoned, which is a continuation of Ser. No. 934,792, Nov. 25, 1986, abandoned. This application May 18, 1993, Ser. No. 64,749
Claims priority, application Japan, Nov. 28, 1985, 60-267745; Nov. 28, 1985, 60-267748; Nov. 28, 1985, 60-267749
Int. Cl.[5] C23C *11/00*
U.S. Cl. 346—1.1 **8 Claims**



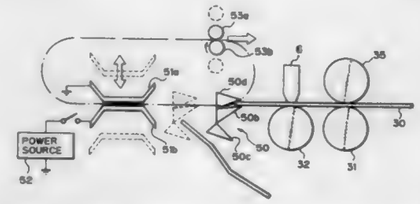
1. In a laser printer, the combination comprising a laser scanner and a sliding shaft member for said laser scanner which slidingly rotates at high speed and comprises (a) an iron-based cylindrical shaft having a main surface with a region containing at least one element selected from the group consisting of oxygen and nitrogen at a concentration higher than that of another region in said main surface, said region being formed by treating the main surface with a plasma of a gas containing at least one element selected from the group consistent of oxygen and nitrogen, and (b) a Si atoms-containing layer formed on said main surface of said cylindrical shaft by a plasma chemical vapor deposition using Si atoms-containing raw gas, said Si atoms-containing layer formed on said main surface of said cylindrical shaft comprising a material selected from the group consisting of silicon nitride, silicon carbonitride and silicon carboxide, and containing at least one element selected from the group consisting of hydrogen and halogen.

5,300,952

THERMAL IMAGE FORMING EQUIPMENT FORMS IMAGE DIRECTLY ON IMAGE CARRIER OR PAPER SHEET

Takeo Wada, Tokyo; Makoto Obu, Yokohama; Toshiyuki Kawanishi, Numazu; Noriyoshi Tarumi, Tokyo; Masato Igarashi, Numazu; Takashi Mori, Tokyo; Katsuaki Miyawaki, Yokohama, and Minoru Suzuki, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 25, 1991, Ser. No. 782,609
Claims priority, application Japan, Oct. 25, 1990, 2-288060; Oct. 25, 1990, 2-288061; Jun. 26, 1991, 3-181757
Int. Cl.[5] G03G *15/00*
U.S. Cl. 346—76 PH **1 Claim**



1. Image forming equipment for applying heat to an image carrier which undergoes discharging in association with an image to attenuate part of the potential of said image carrier to thereby form a latent image on said image carrier and then developing said latent image to produce a visible image, said equipment comprising:
an image carrier;
a fixing device for fixing said visible image;
transfer medium feeding means for feeding a transfer medium to the surface of said image carrier carrying said visible image thereon while said image carrier is transported; and
transporting means for driving, when the transfer medium is not fed from said transfer medium feeding means, said image carrier carrying said visible image to the outside of said equipment via said fixing device or driving, when a transfer medium is fed from said transfer medium feeding means, said transfer medium to the outside of said equipment together with said image carrier via said fixing device, said image carrier being formed of polyethylene terephthalate, or a mixture of polybutylene terephthalate and silicon dioxide,
wherein said fixing device comprises a pair of conductive members facing each other at the intermediary of a transport path along which said image carrier is transported, and a power source for generating an electric field between said pair of conductive members.

5,300,953

THERMAL RIBBON CASSETTE TENSION CONTROL FOR A THERMAL POSTAGE METER

Robert B. Schulte, Springboro, Ohio, assignor to Pitney Bowes Inc., Stamford, Conn.

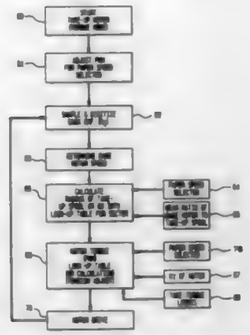
Filed Sep. 24, 1992, Ser. No. 949,942
Int. Cl.[5] B41J *33/36*
U.S. Cl. 346—76 PH **3 Claims**

1. An improved thermal printing postage meter having a base supporting a registration wall and a deck, and having a thermal print head fixably mounted to said registration wall above a portion of said deck to define a print station, a thermal ribbon cassette detachably mounted to said registration wall, said thermal ribbon cassette having a thermal transfer ribbon supply mounted around a supply roller and threaded past said

print head in said printing station to a take-up roller, for printing on an media traversing said print station wherein the improvement comprises:

a platen roller;

a platen roller assembly means for supporting said platen roller and for position said platen roller to assume a second positioned biasing said media against said thermal transfer ribbon and said thermal print head, and a home position ducked below said deck;



first motor drive means for rotatively driving said platen roller, wherein rotation of said platen roller simultaneously drives said media and thermal transfer ribbon past said print head;

second motor drive means for driving said take-up roller during a print cycle;

a microcontroller means in communication with said first motor drive means and said second motor drive means for driving said first and second motor drive means at complementary speeds whereby the web tension of said thermal transfer ribbon remains constant.

5,300,954

OPTICAL PRINTER HEAD

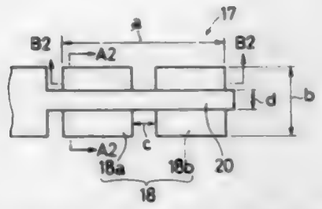
Shunji Murano, Aira, and Yuuji Kurazono, Kokubu, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Nov. 29, 1990, Ser. No. 619,874

Claims priority, application Japan, Nov. 30, 1989, 1-312671

Int. Cl.[5] G01D *15/14*

U.S. Cl. 346—107 R **21 Claims**



1. In an optical printer head having a plurality of light emitting elements arranged in a row and responsive to drive currents for scanning a rotatable photosensitive drum to form a latent electrostatic image thereon, the improvement wherein

each of said light emitting elements has a light emitting region which is elongated a predetermined length extending along a direction of rotational movement of said photosensitive drum, each of said light emitting elements further has electrode means for applying a drive current to each region so that a light intensity profile of a light emitted by each region is substantially uniform both along and transverse to the direction of rotational movement of said photosensitive drum.

5,300,955

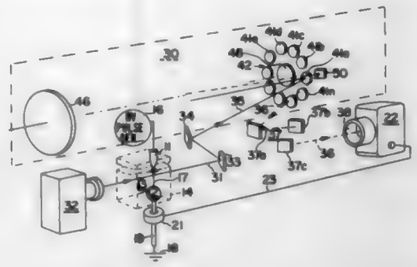
METHODS OF AND APPARATUS FOR RECORDING IMAGES OCCURRING JUST PRIOR TO A RAPID, RANDOM EVENT

Edward F. Kelley, Montpelier, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 373,536, Jun. 30, 1989, abandoned. This application Dec. 5, 1991, Ser. No. 802,589

Int. Cl.[5] H04N *1/21*

U.S. Cl. 346—107 R **12 Claims**



1. An apparatus for recording images of events in a medium, wherein the images that are recorded are of conditions existing just prior to and during the occurrence of a triggering event in the medium and wherein the triggering event triggers recording of these images, comprising:

a lighting means for continuously generating a light beam and passing it through a medium being studied;

a stimulating means for causing random events in said medium, said random events generating an image that is carried by said light beam;

a recording means for recording images carried by said light beam;

a triggering means for enabling said triggering events caused by said stimulating means to activate said recording means upon the occurrence of said random events; and

an optical delay path that receives the imagebearing light beam and presents a focused image to said recording means, wherein:

said optical delay path takes longer for the light beam to traverse than it takes for the triggering means to trigger said recording means so that the images recorded are those generated during a fixed period before and during said triggering event,

the optical delay path has an array of 4n+2 flat mirrors (where n is an integer) in a symmetric circular array around a central flat mirror, all said flat mirrors facing said spherical focusing mirror and are at a distance equal to the focal length of said spherical mirror,

astigmatic effects caused by off-axis reflections from said spherical focusing mirror are minimized by a reflection sequence that provides a symmetric path in which each flat mirror in the symmetric circular array is hit once, from which said light beam passes to said recording means.

5,300,956

MULTIBEAM SEMICONDUCTOR LASER ARRAY AND MULTIBEAM LASER PRINTER

Takeshi Ohta, and Masao Ito, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,712

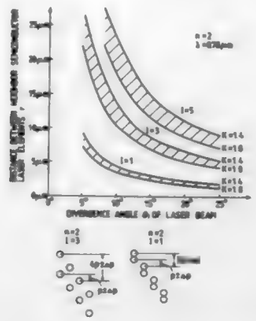
Claims priority, application Japan, Feb. 28, 1991, 3-34374; Jun. 28, 1991, 3-158608

Int. Cl.[5] B41J *2/455*

U.S. Cl. 346—107 R **14 Claims**

1. A multibeam semiconductor laser array comprising n independently addressable semiconductor lasers which are arranged with a distance r between the lasers, wherein laser

beams emitted from centers of respective semiconductor lasers are aligned on a straight line and the distance r is determined according to the following equation when a light emitting



wave length of each of the semiconductor lasers is expressed as λ and a divergence panel of the laser beams in a direction of the straight line is expressed as θ_1:

$$r = I \cdot \frac{2\lambda}{k\pi \sin(\theta_1/2)}$$

such that r>(2* a laser width) and where n is an integer equal to or more than 2, π is a circle ratio, $\Theta_1 > 0$, I is an interlacing period of the lasers which is a natural number mutually prime to n, and k is a spot diameter correction coefficient which is a real number in a range of $1.4 \leqq k \leqq 1.8$.

5,300,957

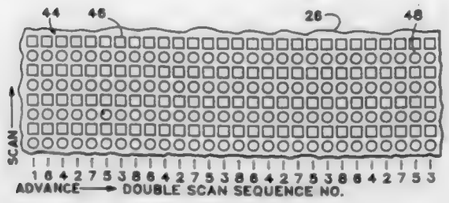
METHOD AND APPARATUS FOR HIGH-SPEED INTERLACED PRINTING IN THE DIRECTION OF PRINT HEAD SCANNING

Edward F. Burke, Lake Oswego, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 649,635, Feb. 1, 1991, abandoned. This application Feb. 12, 1992, Ser. No. 836,172

Int. Cl.[5] B41J *2/01*

U.S. Cl. 346—1.1 **7 Claims**



1. A method for interlaced ink jet printing of an image composed of a plurality of pixels disposed at selected pixel locations in an advance direction and a scan direction over a surface of a print medium, using an ink jet print head having an ink jet printing individual pixels at a predetermined printing rate, comprising the steps of:

(a) positioning the print head at a selected location along the advance direction;

(b) moving the print medium relative to the print head in the scan direction to pass pixel locations distributed along the advance direction past the print head;

(c) while maintaining the print head at the selected location, printing at the predetermined printing rate a first set of pixels alternating in at least the scan direction during a first pass of the print medium past the print head;

(d) subsequently printing at the predetermined printing rate a second set of pixels alternating in at least the scan direction during a second pass of the print medium past the print head while maintaining the print head at the selected location;

(e) repositioning the print head to another selected location along the advance direction; and

(f) repeating steps (c) and (d);

(g) repositioning the print head to additional locations along the advance direction; and

(h) repeating steps (c) and (d) at each of the additional locations.

5,300,958

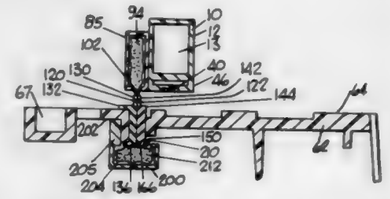
METHOD AND APPARATUS FOR AUTOMATICALLY CLEANING THE PRINTHEAD OF A THERMAL INKJET CARTRIDGE

Peter M. Burke, and Earl L. Barton, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 28, 1992, Ser. No. 843,499

Int. Cl.[5] B41J *2/165*

U.S. Cl. 346—140 R **30 Claims**



15. A self-cleaning thermal inkjet printing system for use in a thermal inkjet printer unit comprising:

an ink cartridge detachably mounted to and movably positioned within said thermal inkjet printer unit, said cartridge comprising a housing having a supply of ink therein and a printhead in fluid communication with said ink, said printhead comprising a plurality of resistors and an outer plate having a plurality of openings therethrough, said ink being expelled from said openings through said plate by heat generated from said resistors during operation of said cartridge, said cartridge further comprising a compartment having a primary absorbent member therein impregnated with a supply of a printhead cleaning solution, said compartment being positioned inside of said housing of said cartridge and comprising at least one opening therethrough in order to provide access to and enable direct contact with said primary absorbent member, said housing of said cartridge further comprising an ink chamber therein, said supply of ink being retained within said ink chamber, said ink chamber being maintained separately from said compartment having said primary absorbent member therein; and

a service station mounted to said printer unit, said cartridge being oriented in a parked position directly above said service station when said cartridge is not in operation, said service station comprising a platform having a plurality of resilient, elongate wiper members secured thereto, said wiper members comprising a first wiper member and a second wiper member, said first wiper member being positioned adjacent to and directly against said second wiper member in order to form a capillary pathway therebetween, said wiper members coming in direct contact with said printhead during movement of said cartridge in order to clean said printhead, said wiper members being secured to said platform at a position thereon so that when said cartridge is in said parked position said wiper members are aligned with said compartment of said cartridge

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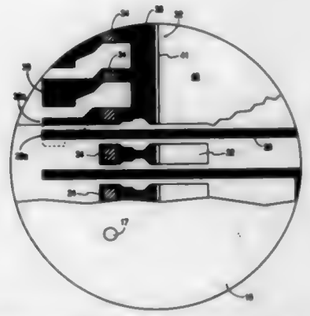
and in direct contact with said primary absorbent member through said opening in said compartment in order to receive said cleaning solution therefrom, said cleaning solution being received and retained within said capillary pathway between said first wiper member and said second wiper member.

5,300,959

EFFICIENT CONDUCTOR ROUTING FOR INKJET PRINTHEAD

Paul H. McClelland, Monmouth; Kenneth E. Trueba, and Neal W. Meyer, both of Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 2, 1992, Ser. No. 862,667
Int. Cl.[5] G01D *15/18*
U.S. Cl. 346—140 R **20 Claims**



1. A printhead for an ink printer comprising:
a unitary piece of flexible tape having a nozzle section and a conductor section,
said nozzle section having an array of ink orifices formed therein for ejection of ink droplets therefrom, said nozzle section having a top insulating surface for facing a recording medium for printing; and
a plurality of ink ejection elements, formed on a substrate attached to a back surface of said nozzle section, each of said ink ejection elements being located proximate to an associated one of said orifices, said ink ejection elements being selectively energized by applying a signal to one or more electrodes on said substrate,
said conductor section including a plurality of conductors affixed directly to said flexible tape, each of said conductors having a first end connected to an associated one of said electrodes on said substrate, said conductors having remote second ends for connection to power supply terminals of an ink printer, said conductors carrying electrical signals for selectively energizing said ink ejection elements.

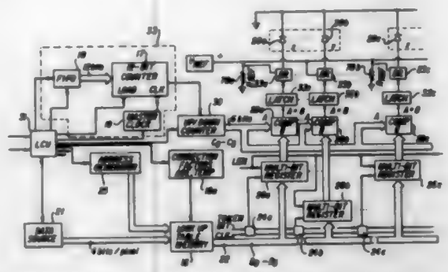
5,300,960

DOT PRINTER AND METHOD FOR GREY LEVEL RECORDING AND CIRCUIT FOR USE IN SAME

Hieu T. Pham, Webster; Eric K. Zeise, Pittsford, and Pin S. Tschang, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,002
Int. Cl.[5] G06K *15/00*
U.S. Cl. 346—154 **32 Claims**

1. In a circuit for generating a set of waveforms, the circuit comprising:
digital counting means having a plurality of output lines representing in digital form a time changing numerical count during a count mode;
clock means coupled to the digital counting means for changing the count represented by the output lines;
comparator means coupled to the output lines and comparing the time changing count with each of several different predetermined counts and generating respective waveform pulses the durations of each of which are related to a respective predetermined count; and characterized by



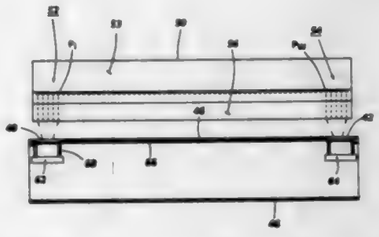
wherein the clock means provides first clock pulses at non-uniform intervals for changing the count at non-uniform intervals during the count mode.

5,300,961

METHOD AND APPARATUS FOR ALIGNING MULTIPLE PRINT BARS IN A SINGLE PASS SYSTEM

Stephen C. Corona, Rochester, and George A. Charnitski, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1991, Ser. No. 807,931
Int. Cl.[5] G01D *15/14, 9, 42*
U.S. Cl. 346—160 **18 Claims**



17. A linear light emitting image print bar having a central group of light emitting elements which produce a light radiation output of a first resolution, and a second and third group of light emitting elements adjacent said central group, said second and third group having light radiation outputs of a second resolution, wherein said light emitting elements comprising said central group emits light having a wavelength different from the light emitted by the light emitting elements comprising said second and third group.

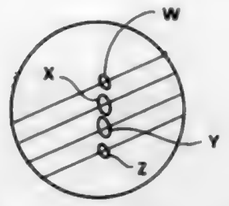
5,300,962

COMPOUND OPTICS FOR A RASTER OUTPUT SCANNER IN AN ELECTROPHOTOGRAPHIC PRINTER

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 17, 1992, Ser. No. 929,859
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 **23 Claims**

1. A system for substantially simultaneously creating a plurality of electrostatic latent images on a photosensitive surface, comprising:
means for creating a plurality of substantially parallel writing beams, each of said writing beams being in a form of a plurality of substantially converging sub-beams, the sub-beams of each of said writing beams being arranged to overlap each other along a line, the overlapping sub-beams forming a centroid on the photosensitive surface, said creating means including means for modulating each of said writing beams independently according to image-wise data, and means for regulating a position of the centroid of each of said writing beams by regulating relative intensity of at least a subset of said sub-beams within each writing of said beams; and
means for directing each of said writing beams toward the photosensitive surface.



5,300,963

STRUCTURE FOR ATTACHING MEMBER FOR PROTECTING EYES FROM WIND AND DUST

Haruka Tanaka, Yao, Japan, assignor to Kanda Optical Co., Ltd., Japan

Filed Feb. 8, 1993, Ser. No. 14,831
Claims priority, application Japan, Feb. 14, 1992, 4-79406
Int. Cl.[5] G02C *7/10*
U.S. Cl. 351—44 **8 Claims**



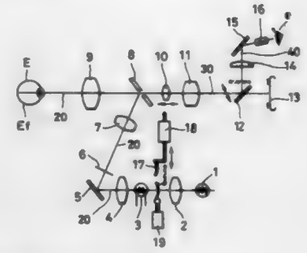
1. A device for protecting the eyes from wind and dust comprising:
a single lens rim or a pair of lens rims made of a rigid material and having an upper side, a lower side and outer lateral sides,
a pair of temples bent and projecting inward from the respective rim outer lateral sides, and
an eye protecting hood member made of a soft flexible material and provided in the form of a fin between the rim upper side and each temple and between each rim outer lateral side and each temple for closing a space between the spectacle frame and the face of the wearer of the device,
the lens rim or rims being formed in the inner face of each of the upper and outer lateral sides with at least one narrow groove so shaped as to enlarge toward its bottom,
each of the temples being formed in its inner face with at least one narrow groove so shaped as to enlarge toward its bottom,
the hood member being firmly joined to the lens rim or rims and the temples in intimate contact therewith by filling the narrow grooves in the lens rim or rims and the temples with the soft material forming the hood member.

5,300,964

FUNDUS CAMERA

Kazunobu Kobayashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 866,770
Claims priority, application Japan, Apr. 16, 1991, 3-110935
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—207 **12 Claims**



1. A fundus camera, comprising:
a light source for observation;
an illuminating optical system having a predetermined illuminating optical axis, said light source for observation illuminating a fundus of an eye via said illuminating optical system;
an observation optical system disposed so as to be able to observe the fundus illuminated by said light source for observation;
a photographing light source for illuminating the fundus during a photographing operation, said photographing light source being disposed on the illuminating optical axis of said illuminating optical system;
a photographing system for photographing the fundus illuminated by said photographing light source; and
a reflecting member disposed between said light source for observation and said photographing light source on the illuminating optical axis so as to reflect light from said photographing light source in the direction of the fundus during illumination by said photographing light source, said reflecting member being retractable from the illuminating optical axis between said light source for observation and said photographing light source.

5,300,965

CORNEAL SHAPE MEASURING APPARATUS

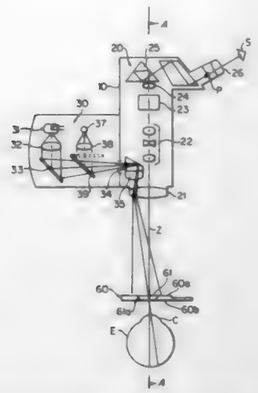
Nobuaki Kitajima, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed May 1, 1992, Ser. No. 876,799
Claims priority, application Japan, May 2, 1991, 3-100761
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—212 **9 Claims**

1. A corneal shape measuring apparatus comprising:
an illuminating optical system for illuminating a cornea of a subject's eye;
a measuring optical system having an objective lens on which light reflected by the cornea of the subject's eye illuminated by said illuminating optical system impinges;
an indicator having a visual target projected onto said cornea by said illuminating light, said indicator being disposed between said objective lens and the subject's eye;
a light guide hole for guiding an image of the target reflected by said cornea to said objective lens;
reflecting surfaces aligned with said guide hole, for reflecting an image of said guide hole to said objective lens;
a photodetector on which said reflected target image is projected and on which the guide hole image from said reflecting surfaces is projected by reflected light;
computing circuit means for calculating a shape of said reflected target image based on a corresponding signal

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from said photodetector, computing an inclination of the indicator with respect to a measuring axis from the shape of said guide hole previously inputted and the shape of said guide hole image, and correcting the shape of said



reflected target image accordingly based on the computed inclination to determine a deformation of the cornea of the subject's eye; and

display means for displaying the shape of the subject's eye obtained by said computing circuit means.

5,300,966

PROJECTOR

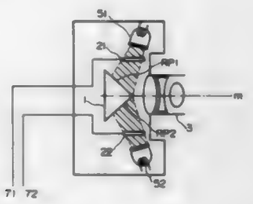
Kazutake Uehira; Noboru Hagiwara; Kiyoshi Masuda, all of Tokorozawa; Tomoyoshi Nomura, and Shigenobu Sakai, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,142

Claims priority, application Japan, May 23, 1991, 3-117773

Int. Cl.[5] G03B *21/28*

U.S. Cl. 353—30 **20 Claims**



15. A projector comprising:

(a) first and second display means for displaying first and second images;

(b) a light source for emitting an incident light to said first and second display means, said incident light passing through said first and second display means thereby forming first and second light beams intensity-modulated in accordance with said first and second images;

(c) a projecting lens means for magnifying and projecting onto a screen said first and second light beams; and

(d) first and second mirrors for reflecting said first and second light beams, said first and second mirrors arranged to introduce said first and second light beams to said projecting lens means;

wherein said light source is located obliquely with respect to the rear of one of said first and second display means.

5,300,967

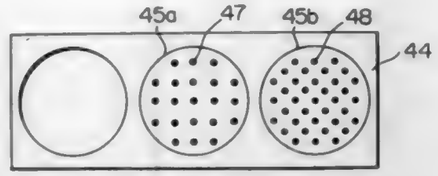
PROJECTION EXPOSURE APPARATUS

Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,242

Int. Cl.[5] G03B *27/72*

U.S. Cl. 353—97 **15 Claims**



1. A projection exposure apparatus comprising:

a light source for emitting light;

an aperture member having a plurality of openings, each opening having a respective area, for shaping light emitted from said light source and a respective light shielding member with a pattern of opaque dots uniformly distributed within the corresponding opening to vary the area of the respective openings transmitting light;

a light condensing lens for irradiating a reticle with light transmitted through one of the openings of said aperture member; and

a projection lens for condensing light transmitted through the reticle onto a wafer.

5,300,968

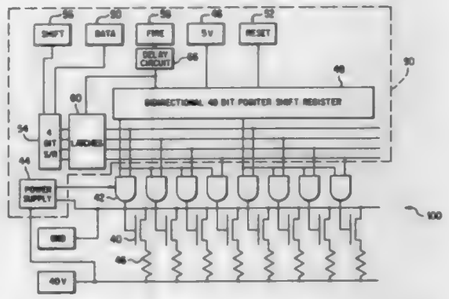
APPARATUS FOR STABILIZING THERMAL INK JET PRINTER SPOT SIZE

William G. Hawkins, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 10, 1992, Ser. No. 943,822

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—140 R **18 Claims**



1. A controller for an ink jet printing apparatus having a printhead which includes a plurality of heater elements responsive to electrical input signals to form an ink droplet of substantially constant size, comprising:

power supply means for varying an amplitude of said input signals in relation to a printhead temperature; and

delay means for varying a duration of said input signals in relation to the printhead temperature, wherein said power supply means comprises:

a temperature sensitive element having a first end and a second end, the first end of said temperature sensitive element being connected to a ground;

a first transistor configured as a current source, the first transistor having a drain, a source and a gate, the first transistor being connected to the second end of the temperature sensitive element; and

a second transistor having a drain, a source and a gate, the drain of said second transistor being connected to the drain of said first transistor, the gate of said second transistor being connected to the source of said first transistor and said source of said second transistor providing an output of said power supply means.

5,300,969

INK JET RECORDING METHOD AND APPARATUS FOR MAINTAINING EFFICIENT INK VISCOSITY

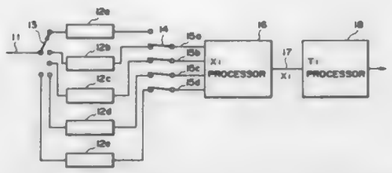
Yasushi Miura, Kawasaki; Hisashi Fukushima, and Haruhiko Moriguchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 649,731, Feb. 1, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,101

Claims priority, application Japan, Feb. 2, 1990, 2-22183

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—1.1 **31 Claims**



20. A recording method using an ink jet recording head having plural ejection outlets for ejecting ink and thermal energy generating elements provided for the respective ejection outlets to apply heat to the ink, the ink being characterized by a viscosity and a viscosity ejection viscosity, said method comprising the steps of:

determining whether each of said thermal energy generating elements will be actuated for a predetermined period on the basis of record signals supplied to said thermal energy generating elements of said recording head;

effecting preliminary heating by actuation of one of said thermal energy generating elements to decrease the viscosity of the ink lower than the critical ejection viscosity, when in said determining step it is determined that the one thermal energy generating element is not actuated to a predetermined degree in the predetermined period; and

effecting main heating after said pre-heating step, for actuating the one thermal energy generating element to effect recording in accordance with the record signal.

5,300,970

CONTROL DEVICE FOR PREVENTING RED-EYE EFFECT ON CAMERA

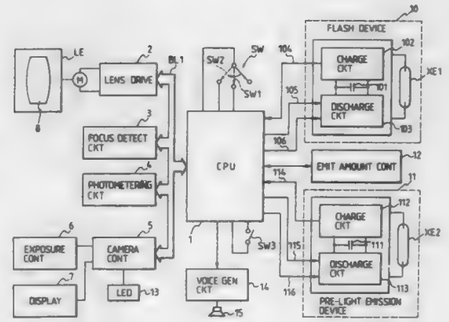
Toru Fukuhara, Isehara; Toshio Sosa, Narashino; Toshio Dobashi, Yokohama; Nobuaki Sasagaki, Kawasaki; Norikazu Yokonuma, Tokyo, all of Japan

Continuation of Ser. No. 930,466, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 785,210, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 632,648, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 445,996, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 323,386, Mar. 14, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 76,498

Claims priority, application Japan, Mar. 16, 1988, 63-64031; Mar. 16, 1988, 63-64032; Mar. 25, 1988, 63-72236; Mar. 25, 1988, 63-72237; Mar. 25, 1988, 63-72238; Apr. 11, 1988, 63-88757; Apr. 12, 1988, 63-49820[U]; Apr. 15, 1988, 63-50771[U]; Dec. 6, 1988, 63-309258

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—415 **7 Claims**



1. A camera comprising:

means for outputting a main irradiation command;

means for foreseeing the occurrence of the red-eye effect on the basis of photographing conditions and outputting a pre-irradiation command;

a flash device for emitting illuminating light by the use of charges accumulated in storage means;

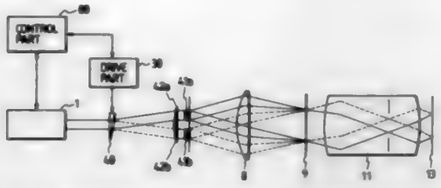
detecting means for detecting a charged state of said storage means and outputting a charging completion signal when the voltage to which said storage means is charged reaches a predetermined value;

release means operable to execute exposure; and

control means responsive to said release means to trigger said flash device, said control means being responsive to said main irradiation command and said pre-irradiation command to trigger said flash device for light emission including the pre-irradiation of an object and subsequent main irradiation of an object when said charging completion signal is being output, and said control means triggering said flash device for the light emission for the main irradiation of said object if said main irradiation command and said pre-irradiation command are output when said charging completion signal is not being output.

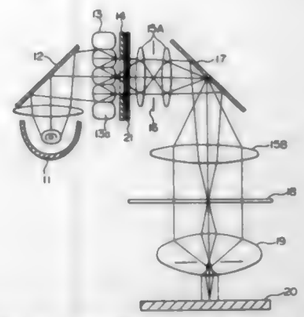
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5,300,971
PROJECTION EXPOSURE APPARATUS
Yuji Kudo, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jan. 25, 1993, Ser. No. 8,547
Claims priority, application Japan, Feb. 17, 1992, 4-61127
Int. Cl.[5] G03B *27/54, 27/42*
U.S. Cl. 355—67 **12 Claims**



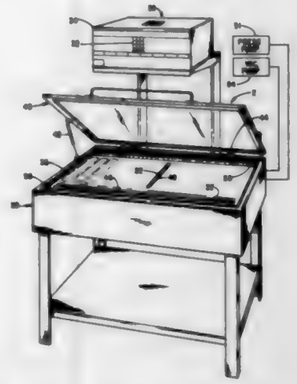
1. A projection exposure apparatus comprising:
an illuminating optical system for illuminating a mask bearing a predetermined pattern; and
a projection optical system for forming the image of said pattern, illuminated by said illuminating optical system, onto a photosensitive substrate;
wherein said illuminating optical system includes:
light source means for generating pulsed light;
surface light source forming means for forming a surface light source by the pulsed light from said light source means;
a condensing optical system for condensing the light from said surface light source forming means thereby illuminating said mask; and
deviation means positioned in an optical path between said light source means and said surface light source forming means and adapted to deviate the pulsed light from said light source means;
wherein said deviation means is adapted to introduce said pulsed light, by every pulse or by every plural number of pulses, into plural positions of said surface light source forming means, deviated from the optical axis of said illuminating optical system; and
wherein said surface light source forming means is adapted to form plural surface light sources which are substantially separated each other and are deviated from said optical axis.

a projection lens for condensing illumination light that has passed through the mask onto a surface of a wafer; and



a polarizer for converting the illumination light into linearly polarized light so that an inclined surface on the surface of the wafer is illuminated only with p-polarized light.

5,300,973
TRACK IMAGE REGISTRATION SYSTEM
James N. Ternes, Roseville; Daniel L. Cooke, Fridley, and Willard J. Harder, Eden Prairie, all of Minn., assignors to Ternes Register System, St. Paul, Minn.
Continuation of Ser. No. 880,010, May 8, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 97,577
Int. Cl.[5] G03B *27/20, 27/60*
U.S. Cl. 355—91 **17 Claims**



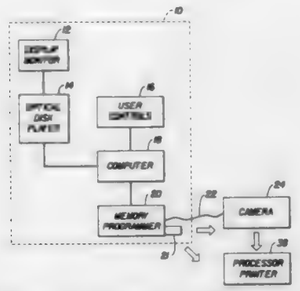
1. Image registration apparatus comprising:
a) means including a table and a transparent cover which mounts to said table for imaging photosensitive media exposed through said cover;
b) means for creating a sealed cavity between said cover and table and wherein said cavity contains the media;
c) vacuum means for evacuating air from said cavity prior to imaging the media; and
d) media support means for supporting said media on said table and including a resilient mat having 1) a plurality of elongated apertures and a plurality of tracks, wherein on of said plurality of tracks is mounted within each of said apertures, wherein each track defines a slideway, and wherein at least one of said tracks includes a registration pin slidably mounted along the slideway to project above said mat to mate with an aperture in the media and 2) a plurality of membrane layers having a plurality of channels defined between ones of said plurality of layers,

5,300,972
PROJECTION EXPOSURE APPARATUS
Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 5, 1993, Ser. No. 14,145
Claims priority, application Japan, Feb. 10, 1992, 4-023744
Int. Cl.[5] G03B *27/72, 27/42*
U.S. Cl. 355—71 **8 Claims**

1. A projection exposure apparatus comprising:
a light source for producing illumination light;
a condenser lens for condensing the illumination light emanating from said light source onto a mask including a circuit pattern;

wherein ones of the channels define airways that communicate with a means for inflating ones of a channels to engage the media with the cover and others of the channels include rigid stays.

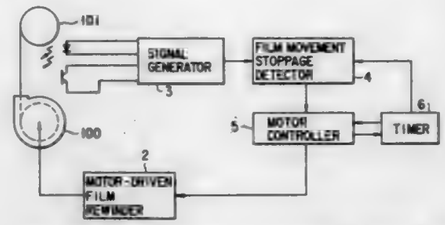
5,300,974
SYSTEM AND APPARATUS FOR ACCOMODATING USER PREFERENCES IN REPRODUCED IMAGES
Stanley W. Stephenson, III, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 8, 1993, Ser. No. 89,162
Int. Cl.[5] G03B *17/24, 29/00*
U.S. Cl. 354—75 **7 Claims**



1. Photographic image preference determining apparatus for operation by a camera user in determining preferences for reproduction of scene images captured on film by the camera user, the apparatus comprising:
display means for presenting a plurality of user-selectable test images of at least one representative scene type, the test images corresponding to a scene type having progressively different color balance characteristics;
means operable by the user for selecting a test image having color balance characteristics that are preferred by the camera user for the scene type being presented in the display means;
means for generating data representing the user's selected image color balance preference; and
means for outputting said data to a storage medium for transfer with the user's exposed film to a photofinishing operation for use in reproducing images from the film in accordance with the color balance preferences of the camera user.

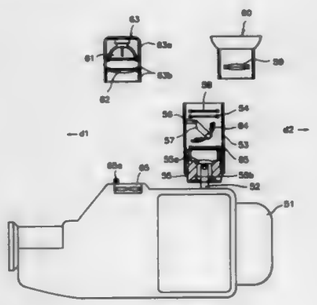
5,300,975
MOTOR-DRIVEN FILM TRANSPORTING DEVICE FOR CAMERAS
Keiji Kunishige, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 27, 1992, Ser. No. 889,448
Claims priority, application Japan, Jun. 5, 1991, 3-134435
Int. Cl.[5] G03B *1/18, 1/00*
U.S. Cl. 354—173.11 **20 Claims**

1. A motor-driven film transporting device in a camera, comprising:
motor-driven film advancing means for advancing a film one frame in response to the termination of a shooting operation;
signal generating means for generating a film movement signal as the film moves;
film end detecting means for beginning counting of a first reference period of time when said motor-driven film advancing means is operated and for outputting a stop signal to said motor-driven film advancing means when a predetermined amount of film movement signal is not generated from said signal generating means within said first reference period of time;
manual operation means for manually instructing a film rewind operation;
motor-driven film rewinding means responsive to either said manual operation means or said film end detecting means for rewinding the film;
timer means for beginning counting of a second reference period of time when said motor-driven film rewinding means operates; and
termination-of-rewinding detecting means for beginning counting of a third reference of time upon termination of



counting of said second reference period of time by said timer means, for resetting and restarting the counting of said third reference period of time when the film movement signal is generated from said signal generating means within said third reference period of time, and for outputting a stop signal to said motor-driven film rewinding means at the point of time at which said third reference period of time elapses when the film movement signal is not generated from said signal generating means within said third reference period of time.

5,300,976
MOVIE CAMERA SYSTEM HAVING VIEW FINDING AND PROJECTING OPERATIONS
Jae C. Lim, Incheon-si; Myung K. Yeo, Kyungki-do; Yong T. Lim, Seoul; Nam S. Lee, Kyungki-do; Jin W. Seo, Seoul, and Dae S. Shim, Incheon-si, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Apr. 16, 1993, Ser. No. 47,442
Claims priority, application Rep. of Korea, Apr. 17, 1992, 6432/1992; Nov. 16, 1992, 21486/1992; Feb. 18, 1993, 2247/1993
Int. Cl.[5] G03B *13/02;* **H04N** *5/30, 9/31*
U.S. Cl. 354—219 **21 Claims**

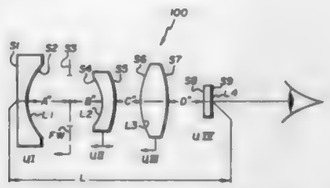


1. A movie camera system comprising:
a system body having an image signal;
a housing mounted on said system body;
a display element disposed within said housing and adapted to display an image corresponding to the image signal received from the system body;
a focusing lens unit mounted to one end of the housing

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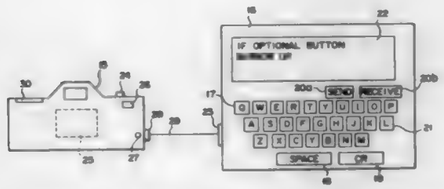
disposed on one side of said display element and adapted to project the displayed image on an external screen;
a back light disposed on the one side of the display element to emit a view finding light;
a polarizing plate disposed on another side of the display element;
a view finder coupling unit selectively attached to the other end of the housing disposed on the another side of the display element, said view finder coupling unit having an eye lens; and
a projector coupling unit selectively attached to the other end of the housing, said projector coupling unit having a light source for emitting a projecting light and a condensing lens for said projecting light,
whereby said movie camera system is capable of both a view finding operation and a projecting operation.

5,300,977
ZOOM VIEWFINDER WITH FIXED SIZE MOVING WINDOW
Alan E. Lewis, Rochester, and Paul L. Ruben, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 1, 1992, Ser. No. 938,798
Int. Cl.[5] B03B *13/10*
U.S. Cl. 354—222 **7 Claims**



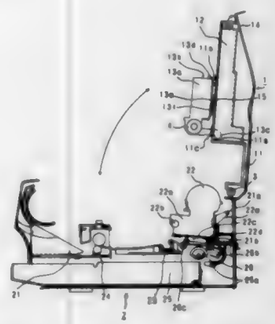
6. A zoom viewfinder having an optical system comprising a plurality of lens elements at least one of which is movable during zooming and a fixed aperture framing window that is movable relative to all lens elements of the viewfinder during zooming.

5,300,978
CAMERA WITH DISPLAY FOR DISPLAYING A CONTROL OPERATION TO BE EXECUTED
Tetsuo Miyasaka, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Division of Ser. No. 775,788, Oct. 11, 1991, Pat. No. 5,187,517. This application Nov. 25, 1992, Ser. No. 982,385
Claims priority, application Japan, Oct. 15, 1990, 2-275970; Dec. 13, 1990, 2-402069
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—412 **8 Claims**



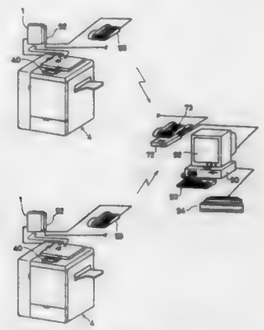
1. A system comprising an external device and a camera which receives data transmitted from said external device and performs a control in accordance with the data received,
(A) said external device including:
(a) display means for displaying a message for indicating one of a control mode and a control parameter used for controlling said camera;
(b) means for changing the message displayed on said display means;
(c) data transmitting means for transmitting data; and
(d) operating means operable for starting transmission of data;
wherein transmission of control data corresponding to the control indicated by the message displayed on said display means is performed when said operating means is operated; and
(B) said camera including:
(a) means for storing a plurality of control programs;
(b) means for receiving control data transmitted from said external device; and
(c) means for executing a control program corresponding to the received control data; and
wherein a control program to be executed can be checked by reference to the message displayed on said display means.

5,300,979
CLAMSHELL TYPE IMAGE FORMING APPARATUS
Yukio Tsukakoshi; Kiyoshi Miyai, both of Ogaki; Satoshi Hirose; Tatsuhito Horiuchi, both of Anpachi, and Minoru Kumida, Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Continuation of Ser. No. 772,697, Oct. 7, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 22,779
Claims priority, application Japan, Oct. 17, 1990, 2-280513; Oct. 18, 1990, 2-280739
Int. Cl.[5] G03G *15/00, 15/06*
U.S. Cl. 355—200 **8 Claims**



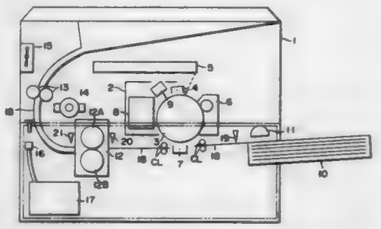
1. A clamshell type image forming apparatus, comprising:
an upper structure having an optical system and a process cartridge including an image holding medium;
a lower structure having a developing unit;
first pivoting means for pivotably supporting said upper structure to said lower structure to have two positions relative to said lower structure, a closed position being an operable state for the apparatus, and an open position being an inoperable state in which a paper conveying path is open; and
supporting means for pivotably supporting said process cartridge to said upper structure in both a fixed position and a dismounting position, said supporting means including,
second pivoting means on one of said upper structure and said process cartridge, and first engaging means acceptable by said second pivoting means on the other of said upper structure and said process cartridge for pivotably supporting said process cartridge to said upper structure,
second engaging means on one of said upper structure and said process cartridge and third engaging means engaging with and disengagable from said second engaging means on the other of said upper structure and said process cartridge,
said third engaging means being accessible when the upper structure is open, disengagement of said third engaging means from said second engaging means permitting said process cartridge to be pivoted by its own weight as it pivots by said second pivoting means and first engaging means from a position fixed to the upper structure to one away from the upper structure in which it can be removed by disengaged of said first engaging means from said second pivoting means.

5,300,980
CONTROL APPARATUS OF COPYING MACHINE WITH IMPROVED COMMUNICATION FUNCTION FOR CENTRALIZED CONTROL UNIT
Kazunobu Maekawa, Toyokawa; Sumiaki Hirata, Aichi; Kenzo Nagata, Okazaki; Yoji Sawada, Gifu; Toru Kirimura, Tsushima, and Seiji Watanabe, Ogaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka and Sanyo Electric Co., Ltd., Moriguchi, both of Japan
Filed Apr. 8, 1991, Ser. No. 682,122
Claims priority, application Japan, Apr. 10, 1990, 2-95263; Apr. 10, 1990, 2-95264
Int. Cl.[5] G03G *21/00*; H04M *11/00*
U.S. Cl. 355—204 **11 Claims**



1. A control apparatus collecting data related to a copying machine and communicating with a centralized control unit on the basis of the collected data, comprising:
communication means for calling said centralized control unit;
first control means for activating said communication means when a predetermined transmission condition is satisfied, said predetermined transmission condition including one with high priority and one with low priority;
determination means for determining that connection with said centralized control unit cannot be made in spite of the fact that said communication means is activated;
differentiating means for differentiating a priority of said predetermined transmission condition in response to an output of said determination means;
setting means for setting retransmission time on the basis of a random number from a predetermined time period when it is differentiated by said differentiating means that the priority of said predetermined transmission condition is low;
timer means for counting the present time; and
second control means for having said communication means call said centralized control unit again when the present time becomes the redialing time.

5,300,981
ELECTROPHOTOGRAPHIC PRINTING APPARATUS WITH FIRE PREVENTION
Setsuo Shioya, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Jul. 23, 1991, Ser. No. 734,514
Claims priority, application Japan, Jul. 27, 1990, 2-197853
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—206 **6 Claims**



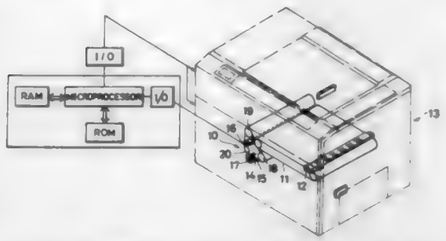
1. An electrographic printing apparatus comprising:
a paper conveyor path;
an image carrier arranged on said paper conveyor path;
conveyor means for conveying paper along said conveyor path;
image forming means including means for forming an electrostatic latent image on an image carrier, means for developing the electrostatic latent image by depositing a developer on the electrostatic latent image, and means for transferring the developer image onto paper;
fixing means, arranged on said paper conveyor path, for fixing the transferred image on the paper by heat and pressure, said fixing means having an entrance and an exit; and
control means including means for detecting overheating of said fixing means, and means for commanding said conveyor means to stop conveyance of paper after confirming that no paper is present in said fixing means;
said control means further including:
a first paper sensor means, arranged at the entrance of said fixing means, and including means for detecting a leading end of paper and for counting the number of times the leading end of paper is detected;
a second paper sensor means, arranged at the exit of said fixing means, and including means for detecting a trailing end of paper and means for counting the number of times the trailing end of paper is detected; and
detecting means responsive to the counts of said first and second paper sensor means for detecting a presence of paper in said fixing means from a difference between the counts of said first and second paper sensor means.

5,300,982
APPARATUS FOR CONTROLLING IMAGE LOCATION ON MEDIUM
Kiyoshi Inamoto, Sakai, and Masato Tokishige, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 4, 1992, Ser. No. 845,926
Claims priority, application Japan, Mar. 5, 1991, 3-038612
Int. Cl.[5] G03G *21/00, 15/16, 15/01*
U.S. Cl. 355—208 **7 Claims**

1. An apparatus for controlling a location of an image on a transfer medium, said transfer medium having an index portion and for transferring a plurality of latent images formed on a photosensitive body, said apparatus comprising;
means for sensing a location of said index portion and for supplying a signal indicating said sensed location; and
means for controlling a relative location of said transfer medium with respect to said photosensitive body, said controlling means being adapted to transfer a plurality of latent images formed on said photosensitive body onto

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different locations on said transfer medium in accordance with said signal, and being further adapted to shift an n-th image of said latent images at a distance of $\Delta p^*(n-1)=Vp^*\Delta t^*(n-1)$ off a first image of said latent images on said transfer medium, with Δp representing a



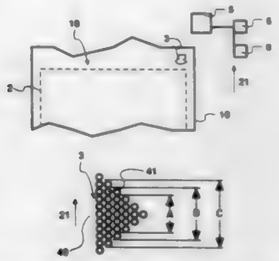
locational difference between an m-th image and an (m+1)th image of said latent images, Δt representing a time difference between the m-th image and the (m+1)th image, m and n being positive integer which satisfy a relation $1 \leqq m \leqq n$, and Vp being a moving speed of said transfer medium at a time when n images are copied.

5,300,983

IMAGE SHIFTING BY CONTROL PATCH

James F. Paxon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1992, Ser. No. 956,210
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **4 Claims**



1. A method for positioning a latent image upon a web moving along a path, the web being subject to lateral movement in a direction transverse to the direction of movement of the web, and the method being usable in an image forming apparatus having means positioned adjacent the path for forming an image on the web, said method comprising the steps of:

forming a control patch having an density capable of being sensed on the web, said control patch having a shape the length of which in the direction of movement of the web varies laterally across the direction of movement,

sensing the accumulated density of the patch as it passes a location that is laterally fixed with respect to the path, and

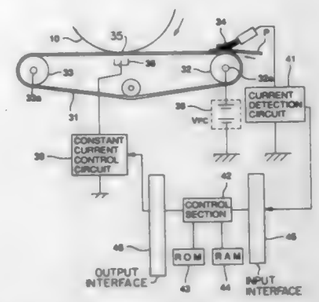
adjusting the image formation means to position an image laterally on the belt according to the sensed accumulated density of the patch.

5,300,984

IMAGE FORMING APPARATUS HAVING CONTROLLED TRANSFER UNIT

Hiroshi Fuma; Hisahiro Saitou, and Mikihiko Takada, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,918
Claims priority, application Japan, Jan. 6, 1992, 4-000390; Mar. 9, 1992, 4-050782; Apr. 21, 1992, 4-101157
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—208 **9 Claims**



1. An apparatus for forming a toner image on a recording sheet, the apparatus comprising:

a photoreceptor having a movable imaging surface on which a toner image may be formed, and

transfer means for transferring the toner image from the imaging surface to the sheet at a transfer portion of the photoreceptor, the transfer means including

a conveying member to convey the sheet to the transfer portion,

means for providing the sheet with an electric charge so that the sheet is attracted onto the conveying member,

means for detecting an electric current passing through the providing means to the sheet.

a shielding member to shield the detecting means from external electromagnetic waves, and

means for controlling a transfer condition of the transfer means for the sheet in accordance with the detected electric current.

5,300,985

MULTI-FUNCTION ERASE LAMP

John C. Demott, Rochester; Charles J. Urso, Jr., Webster; Mary A. Straube, Penfield; Donald E. Wiedrich, Ontario, and Robert W. Corbin, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 29, 1992, Ser. No. 891,326
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—218 **2 Claims**

1. A lamp system for erasing selected areas of an electrically charged photoconductive member including:

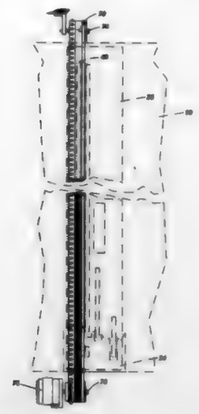
a plasma neon lamp including a continuous electrode and a segmented electrode with a gaseous medium interposed therebetween said segmented electrode having a plurality of light emission segments,

a first segment positioned at one end of the lamp for discharging one edge of the charged area of the photoconductive member, and at least

a second segment positioned at the other end of the lamp for discharging the opposite edge of the charged area of the photoconductive member,

means for selectively energizing said light emission segments so as to selectively illuminate or discharge the charged areas of the photoconductive member, and

a movable shutter member for selectively blocking light emission from said second segment so as to vary the amount of charged area illuminated by said second segment, said movable shutter being a partially transparent,



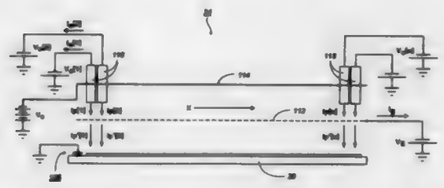
partially opaque strip which is rotated in an endless loop extending around the lamp in its length direction.

5,300,986

ELECTRICALLY TUNABLE CHARGING DEVICE FOR DEPOSITING UNIFORM CHARGE POTENTIAL

Satchidanand Mishra, Webster; Edward A. Domm, and Denis C. Thomas, both of Hilton, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1992, Ser. No. 991,910
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—221 **14 Claims**



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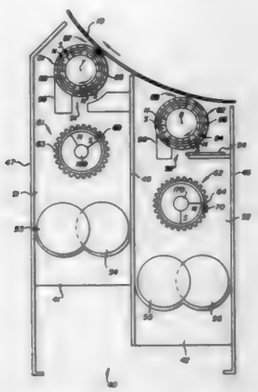
trostatic image carried by an image member, said station including:

an applicator for moving magnetically movable developer of which said toner is at least a component through a toning position associated with an electrostatic image to be toned,

sump means for holding a quantity of such developer,

transport means for transporting developer from said sump means to said applicator,

a magnetic gate associated with said transport means having a first condition in which said magnetic gate is positioned sufficiently close to said sump to magnetically attract



developer from said sump to said transport means to facilitate transport of developer to said applicator and a second condition in which said magnetic gate is sufficiently far from said sump not to attract developer from said sump,

means for mixing two component developer located in said sump, which mixing means is rotatable to raise the level of developer in said sump to a position in which it is available to said transport means when said magnetic gate is in its first condition which level is insufficient when said magnetic gate is in its second condition, the location of said magnetic gate in its second condition preventing the transport of developer by said transport means despite rotation of said mixing means.

5,300,989

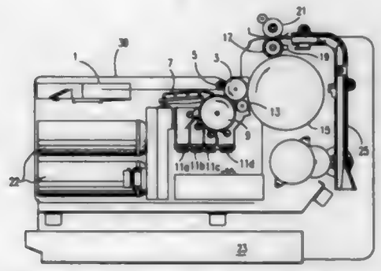
TOP DELIVERY LIQUID TONER IMAGING APPARATUS

Iraj D. Shakib, Lexington, Ky., assignor to Lexmark International, Inc., Greenwich, Conn.

Filed Sep. 15, 1992, Ser. No. 945,193

Int. Cl.[5] G03G *15/10*

U.S. Cl. 355—256 **6 Claims**



1. An electrophotographic printer comprising an endless photoconductive surface moveable in one direction, an output tray located at the top, front of said printer, means for charging said photoconductive surface, a laser printhead located under said output tray and between said photoconductive surface and said front of said printer, for exposing said charged surface to an optical image to at least partially discharge said charged surface in the pattern of said images, a first endless surface forming a first nip with said photoconductive surface moveable at said nip, means to develop said image on said photoconductive surface by applying liquid toner to said first nip from above said first nip, the movement of said photoconductive surface in said one direction at said first nip being with the direction of gravity, and endless first transfer roller to receive said toned image from said photoconductive surface by contact with said photoconductive surface, an endless second transfer roller of diameter one-third or less of the diameter of said first roller positionable above said first transfer roller to receive said toned image from said first transfer roller by contact with said first transfer roller, a third roller positioned to form a second nip with said second transfer roller, and paper feed means to move paper or other image receiving substrate to said second nip where said paper or other substrate receives said image while said paper is moved to exit said apparatus on to said output tray, said output tray being readily accessible to an operator of said printer positioned at said front of said printer.

5,300,990

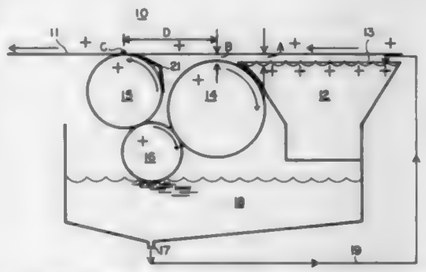
LIQUID ELECTROPHOTOGRAPHIC PRINTER DEVELOPER

John A. Thompson, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 26, 1992, Ser. No. 904,798

Int. Cl.[5] G03G *15/10*

U.S. Cl. 355—256 **20 Claims**



1. A liquid electrophotographic printer developer system comprising:

a moveable, photoconductor surface with an outer bottom surface having a positively charged latent image on it, said outer bottom surface moving in a first direction at a first speed;

a liquid toner bath containing positively charged toner particles dispersed in a liquid carrier material, the liquid toner bath having an open top surface which is beneath and within about 50–75 microns from the outer bottom of the photoconductor surface, for applying toner to the photoconductor surface;

a positively charged developer roller with an outer surface, the said developer roller being slightly downstream of the liquid toner bath in the said first direction of movement of the photoconductor surface, and adjacent to liquid toner bath, the outer surface of said developer roller also being beneath and in close proximity to the outer bottom of the photoconductor surface, said developer roller being rotatable in a second direction opposite the said first direction of movement of the photoconductor surface at a second speed for removing excess toner particles and liquid carrier material from the photoconductor surface;

a positively charged rigidizing/squeegee roller with an outer surface, the said rigidizing/squeegee roller being downstream from the said developer roller and in relatively close spaced-apart relationship from it, the outer surface of the said rigidizing/squeegee roller being beneath and in contact with the outer bottom of the photoconductor surface, said rigidizing/squeegee roller being rotatable in the same said first direction of movement of, and at the same said first speed as, the photoconductor surface, for removing residual liquid carrier material from the photoconductor surface;

a common wiping means, in contact with both the said developer roller and the said rigidizing/squeegee roller to remove residual toner and liquid carrier material from both said developer roller and said rigidizing/squeegee roller; and

a recycle means beneath the photoconductor surface, the said developer roller, the said rigidizing/squeegee roller and the common wiping means for receiving excess toner and liquid carrier material for recycling toner and liquid carrier material to the liquid toner bath.

5,300,991

IMAGE FORMING APPARATUS WITH TONER REPLENISHER

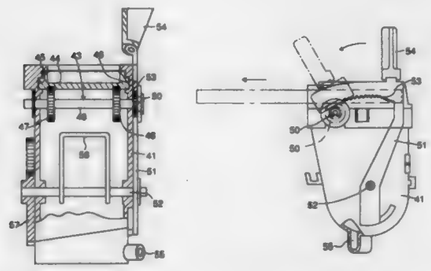
Fumiaki Hiraike, Hachioji, Japan, assignor to Konica Corporation, Japan

Filed Mar. 11, 1993, Ser. No. 29,887

Claims priority, application Japan, Apr. 14, 1992, 4-95536

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **3 Claims**



1. An image forming apparatus including an image carrying member on which an electrostatic latent image is formed, developing means for developing the latent image and a toner replenishment means for replenishing toner to the developing means, the image forming apparatus comprising:

(a) a movable cover provided on an upper opening portion of the toner replenishment means;

(b) a first rotational member in contact with a lower portion of the cover;

(c) a second rotational member for rotating the first rotational member; and

(d) a pivotable member for rotating the second rotational member through a driving operation of the pivotable member.

5,300,992

MOUNTING TAUT WIRES IN GENTLE, SELF-SPACED CONTACT WITH A ROLL

William H. Wayman, Ontario, and Dan A. Hays, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1992, Ser. No. 986,237

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—261 **2 Claims**

1. Apparatus for forming images on an image receiving surface with developer, said apparatus comprising:

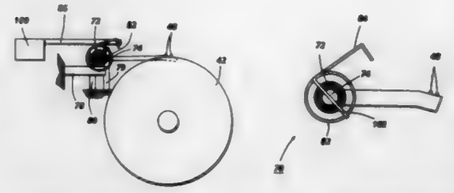
developer material;

a donor member for transporting developer material to a development zone adjacent said image receiving surface;

a plurality of spaced apart electrodes positioned closely adjacent the surface of said donor member;

means operatively associated with said electrodes for forming transported developer into a cloud of marking particles in said development zone;

means for controlling the spacing of said cloud of marking particles relative to said image receiver without strongly interacting with said image receiving surface;



means comprising a pair of electrode mounts having said electrodes attached thereto for pivotally supporting said electrodes;

a tensioned wire attached to said electrode mounts;

torsion means for effecting a force between said donor roll and said electrodes when said electrodes are installed and

means cooperating with said supporting means for urging said electrodes into an operative position relative to said donor member.

5,300,993

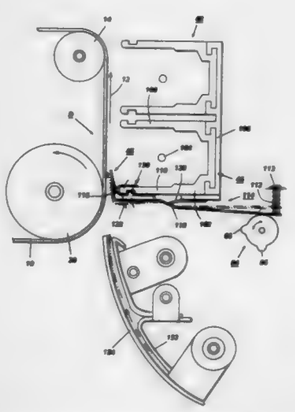
TRANSFER ASSIST APPARATUS

Joseph S. Vetromile, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1993, Ser. No. 55,046

Int. Cl.[5] G03G *15/16*

U.S. Cl. 355—271 **20 Claims**



19. An apparatus for providing substantially uniform contact between a copy sheet and a developed image situated on an imaging surface, comprising:

contact means, adapted to be shifted from a non-operative position spaced from the imaging surface, to an operative position in contact with the copy sheet on the imaging surface, for pressing the copy sheet against the imaging surface;

means for selectively shifting said contact means between the non-operative position and the operative position in a time period no greater than 40 milliseconds.

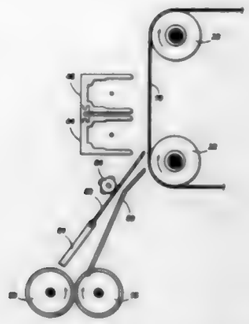
VOL 1161 ISS 1 AP 5 1994 UMI

5,300,994

TRANSFER SYSTEM INCLUDING A CAM ACTUATED SEGMENTED FLEXIBLE TRANSFER ASSIST BLADE

Robert A. Gross, Penfield, and Lisbeth S. Quesnel, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1993, Ser. No. 55,048
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—277 **10 Claims**



1. An apparatus for providing substantially uniform contact between a copy substrate and a developed image located on an imaging member, comprising:

contact means, adapted to move from a non-operative position spaced from the imaging member to an operative position in contact with the copy substrate on the imaging member, for applying pressure against the copy substrate in a direction toward the imaging member, said contact means including a flexible blade member and fixedly mounted means for supporting said blade member; and

means, including an elevated deflecting surface, for applying a load to said contact means to deflect said contact means into said operative position, said flexible blade member includes a plurality of blade segments such that selected blade segments have a cumulative widthwise dimension corresponding to a widthwise dimension of the copy substrate.

5,300,995

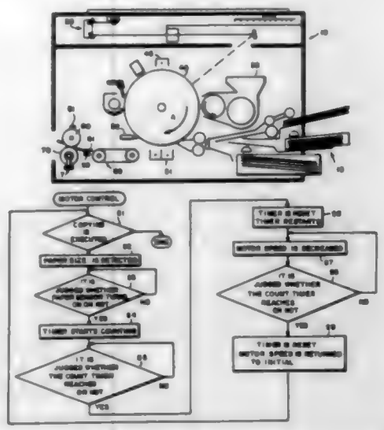
FIXING UNIT FOR CONTROLLING THE MOVING SPEED OF THE FIXING SECTION

Toshiki Ohgita; Masato Tokishige, both of Nara; Takashi Kubo, and Koichi Moriyama, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 893,757
Claims priority, application Japan, Jun. 6, 1991, 3-135135
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—282 **5 Claims**

1. A fixing unit for an image forming apparatus, for fixing a toner image transferred onto a recording sheet, which includes a fixing section having a heat roller and a pressure roller, comprising:

detecting means for detecting the time when the recording sheet reaches between the heat roller and the pressure roller; and



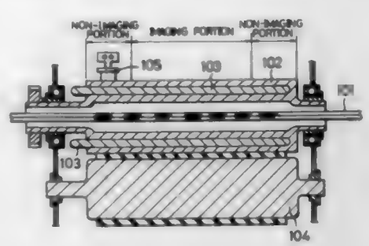
control means for controlling the moving speed of the fixing section to be gradually decreased when the recording sheet reaches the fixing section.

5,300,996

FIXING APPARATUS

Hiroshi Yokoyama, Yokohama; Yutaka Fukuchi, Mitaka; Atsushi Arai, Ichikawa; Masahiko Sato, Tokyo; Toshiaki Higaya, Kawasaki, and Jun Okamoto, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,050
Claims priority, application Japan, Jun. 7, 1991, 3-136478; Jul. 23, 1991, 3-206448
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **13 Claims**



1. A fixing apparatus for fixing an image on a record sheet, comprising:

a tubular fixing roller;

a pressing roller urged against said fixing roller;

a heater received in said fixing roller for heating said fixing roller;

at least one heat pipe embedded in said fixing roller so as to extend in a longitudinal direction of said fixing roller for improving a thermal conductivity; and

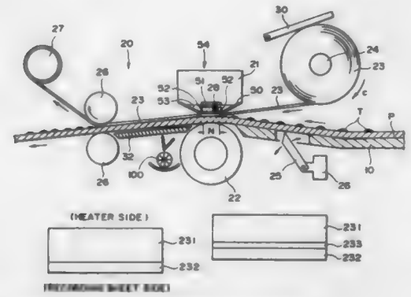
temperature detection/control means for detecting a temperature of said fixing roller and controlling said heater so as to adjust said temperature of said fixing roller based on said detected temperature; 'said fixing roller having an imaging portion at a center thereof and having non-imaging portions at both ends thereof, and said heat pipe being disposed in said fixing roller so as to extend through said imaging portion and said non-imaging portions, said temperature detection/control means comprising temperature detection means for detecting said temperature of said fixing roller at said non-imaging portion, said temperature detection/control means comprising temperature regulating means for interrupting electricity to said heater when said fixing roller exceeds a predetermined temperature, said temperature detecting means and said temperature regulating means being in contact with said fixing roller at different positions which are offset in the longitudinal direction of said fixing roller.

5,300,997

IMAGE FIXING APPARATUS

Hiromitsu Hirabayashi, Yokohama; Kensaku Kusaka, Kawasaki; Atsushi Arai, Kasukabe, and Yoshiaki Takayanagi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 847,323, Mar. 6, 1992, which is a division of Ser. No. 668,333, Mar. 14, 1991, Pat. No. 5,149,941, which is a continuation of Ser. No. 206,767, Jun. 15, 1988, abandoned. This application Dec. 11, 1992, Ser. No. 989,538
Claims priority, application Japan, Jun. 16, 1987, 62-147884; Jan. 22, 1988, 63-012069; Apr. 15, 1988, 63-091267; Apr. 15, 1988, 63-091268; Apr. 15, 1988, 63-091269; Apr. 15, 1988, 63-091270; Apr. 15, 1988, 63-091271; Apr. 15, 1988, 63-091272; Apr. 15, 1988, 63-091274; May 6, 1988, 63-109192; May 6, 1988, 63-109193
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **5 Claims**



1. An image fixing apparatus comprising:

a heater;

a sheet in slidable contact with said heater;

a back-up member cooperative with said heater to form a nip therebetween such that said sheet is interposed in the nip, wherein an unfixed image on a side of a recording material in contact with said sheet is heated and fixed by heat from said heater through said sheet;

wherein said sheet comprises (i) a base resin layer in slidable contact with said heater, and (ii) a surface parting layer disposed on said base resin layer, said surface parting layer being thinner than said base resin layer.

5,300,998

HEATING APPARATUS HAVING A MOVABLE FILM PROTECTION MEMBER AND IMAGE FORMING APPARATUS USING SAME

Yuka Ogisawa, Kawasaki, and Yuji Yamanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 808,584, Dec. 17, 1991, abandoned. This application May 4, 1993, Ser. No. 56,813
Claims priority, application Japan, Dec. 18, 1990, 2-403296; Jul. 23, 1991, 3-182506
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **12 Claims**

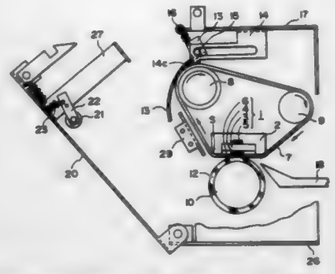
1. A heating apparatus, comprising:

a heater;

an endless film extended around said heater and movable with a recording material;

a pressing member forming a nip with said heater, said film passing through the nip;

access means for providing access to a jammed recording material; and



a film protection member for protecting said film;

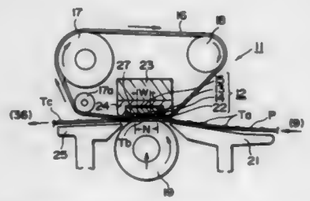
wherein said film protection member is movable between a covering position for covering at least a portion of that part of said film which is otherwise exposed by said access means and not adjacent to said heater, and a retracted position retracted from said covering position.

5,300,999

IMAGE FIXING APPARATUS HAVING A FILM WITH IMPROVED SLIDEABILITY

Shokyo Koh, Yokohama; Yoshiyuki Koshimizu, Abiko; Yoshihiko Suzuki, Tokyo; Satoshi Mori, Yokohama, and Koki Kuroda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 637,120, Jan. 3, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,731
Claims priority, application Japan, Jan. 12, 1990, 2-005068; Jan. 12, 1990, 2-005838
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—289 **26 Claims**



1. An image fixing apparatus, comprising:

a heater which is stationary in use for producing heat upon power supply thereto;

power supply control means for controlling power supply to said heater;

a film movable in sliding contact with said heater, wherein an unfixed toner image on a recording material is fixed by the heat from said heater through said film; and

driving means for driving said film,

wherein said control means starts power supply to said heater while the film is stationary, and said driving means starts driving of said film after the start of power supply to said heater.

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5,301,000

FIXING STATION FOR AN ELECTROPHOTOGRAPHIC PRINTING OR COPYING APPARATUS

Karl Heigl, Buntspechtweg, Fed. Rep. of Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Fed. Rep. of Germany

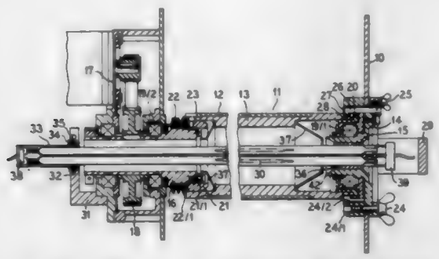
PCT No. PCT/EP90/02027, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/09351, PCT Pub. Date Jun. 27, 1991

PCT Filed Nov. 27, 1990, Ser. No. 861,817

Claims priority, application European Pat. Off., Dec. 13, 1989, 89123033.6

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—290 **17 Claims**



1. A fixing station for an electrophotographic printing or copying apparatus, comprising: an electrically heated fixing roller and a pressure roller swingable up to and away from the fixing roller via fastening mechanism, the fixing roller being a hollow roller having heating elements arranged therein and being mounted in a stand of the fixing station via first and second bearing flanges, the first bearing flange being fixed to the stand and the second bearing flange being releasably attached to the stand; and holding elements that, for extraction of the fixing roller from the fixing station, connect the second bearing flange to the fixing roller and allow a separation of the second bearing flange from the fixing roller after extraction, only said second bearing flange of said first and second bearing flanges having a handle element, said second bearing flange being a holding and removal element for said fixing roller such that both said second bearing flange and said fixing roller are completely separable from said stand.

5,301,001

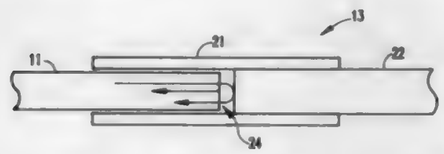
EXTRINSIC FIBER OPTIC DISPLACEMENT SENSORS AND DISPLACEMENT SENSING SYSTEMS

Kent A. Murphy, Roanoke; Michael F. Gunther, Blacksburg, both of Va.; Ashish M. Vengsarkar, Scotch Plains, N.J., and Richard O. Claus, Christiansburg, Va., assignors to Center For Innovative Technology, Herndon, Va.

Filed Feb. 12, 1992, Ser. No. 834,674

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—35.5 **13 Claims**



1. An extrinsic fiber optic sensor for the detection of the amplitude of dynamically varying displacement comprising:

an optical fiber inserted into one end of a hollow silica tube;

a reflector inserted in an opposite end of said hollow silica tube, an end of said optical fiber and said reflector within said at least one hollow silica tube forming an air gap, said optical fiber being axially displaced relative to said reflector by a dynamically varying displacement and said air gap varying in axial length due to the relative displacement of said optical fiber;

a light source supplying light to said optical fiber, said optical fiber being used as an input/output fiber, a Fresnel reflection from a glass/air interface at a front of said air gap serving as a reference reflection and a reflection from an air/glass interface at a far end of each air gap serving as a sensing reflection, said reference and sensing reflections interfering in said optical fiber; and

coupler means connected to said optical fiber for coupling reflections to a detector, changes in said air gap length causing changes in phase differences between said reference reflection and sensing reflection and changes the intensity of light monitored by said detector.

5,301,002

APPARATUS FOR INSPECTING A SEMICONDUCTOR DEVICE

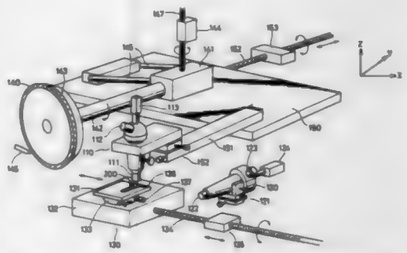
Akihiko Nakano, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1992, Ser. No. 870,872

Claims priority, application Japan, Apr. 22, 1991, 3-119441

Int. Cl.[5] H01L *21/66*

U.S. Cl. 356—36 **18 Claims**



1. An apparatus for inspecting a semiconductor device, comprising:

a first microscope for monitoring a main surface of a semiconductor device along a first direction and specifying a portion of the semiconductor device to be inspected;

a rotary grinder for grinding the specified portion to expose a cross section of the semiconductor device that is substantially perpendicular to the main surface;

a second microscope for monitoring the exposed cross section along a second direction substantially perpendicular to the first direction; and

a stage, movable relative to the first and second microscopes and the rotary grinder, for fixing the semiconductor device.

5,301,003

THREE-DIMENSIONAL DISPLACEMENT MEASUREMENT APPARATUS AND METHOD WITH VERTICAL DISPLACEMENT MEASUREMENT COMPENSATION

Hiroshi Ikeda, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 19, 1992, Ser. No. 854,532

Claims priority, application Japan, Mar. 19, 1991, 3-078263

Int. Cl.[5] G01N *21/01*

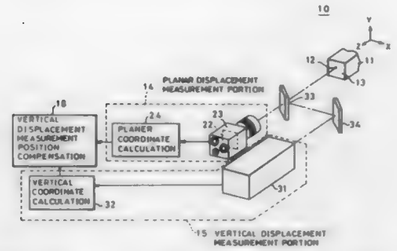
U.S. Cl. 356—73 **7 Claims**

1. A three-dimensional displacement measurement apparatus, comprising:

a planar displacement measurement portion which has a camera for photographing a surface of a measurement object to output image data, and a planar coordinate calculation portion which calculates a planar coordinate of a measurement point inside said surface from said image data, and which measures a displacement of said measurement point in the direction of an X-Y plane,

a vertical displacement measurement portion which has an interferometer, and a vertical coordinate calculation portion which calculates a vertical displacement of a surface of said measurement object according to interference stripes of said interferometer, and which measures a displacement of said surface in a vertical direction with respect to the X-Y plane, and

a vertical displacement measurement position compensation portion that tracks a displacement on a plane of said measurement point measured by said planar displacement measurement portion thereby to move a measurement place of a displacement in a vertical direction by means of said vertical displacement measurement portion.



5,301,004

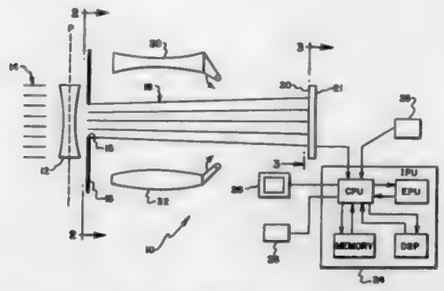
METHOD AND APPARATUS FOR DETERMINING THE OPTICAL PROPERTIES OF A LENS

Christopher J. Percival, Williamsville, and David A. Luce, Clarence Center, both of N.Y., assignors to Leica Inc., Buffalo, N.Y.

Filed Mar. 13, 1992, Ser. No. 850,890

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—125 **56 Claims**



1. A device without a moving part for determining optical properties of a lens comprising, means to project a beam of light along a path having an axis, a test plane located on said path, an occluder having a single shaped opening defined by a single border positioned on said path, area detection means responsive to light received from said shaped opening for providing a signal representative of light distribution on said detection means, evaluation means for converting said signal to values representing the optical properties of a lens located at said test plane, and means to report said values.

5,301,005

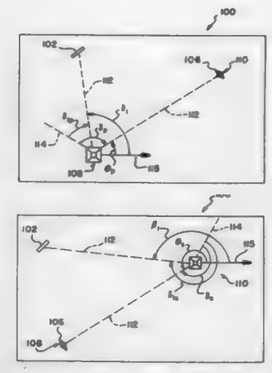
METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A RETROREFLECTIVE ELEMENT

Leon B. C. deVos, Huber Heights, and James A. Schneider, Verona, both of Ohio, assignors to Spectra-Physics Laserplane, Inc., Dayton, Ohio

Filed Feb. 10, 1993, Ser. No. 15,816

Int. Cl.[5] G01B *11/26*; G01C *3/00*

U.S. Cl. 356—141 **23 Claims**



1. A method for determining the position of at least one position retroreflective element located in a predetermined coordinate frame of reference having an X axis, said method comprising the steps of:

(a) providing a light transmitting and detecting means for transmitting a rotating beam of light, detecting reflections of said beam of light, and providing an index position along said rotation of said beam of light;

(b) providing a reference retroreflective element capable of reflecting said beam of light back toward said light transmitting and detecting means;

(c) positioning said light transmitting and detecting means at a primary benchmark position at known first coordinates in said coordinate frame of reference;

(d) positioning said reference retroreflective element at a secondary benchmark position at known second coordinates in said coordinate frame of reference;

(e) transmitting said beam of light to illuminate said at least one position retroreflective element and said reference retroreflective element during a first rotation of said beam of light;

(f) monitoring said first rotation of said beam of light as it travels between said index position, said at least one position retroreflective element and said reference retroreflective element;

(g) repositioning said light transmitting and detecting means at said second benchmark position and said reference retroreflective element at said primary benchmark position;

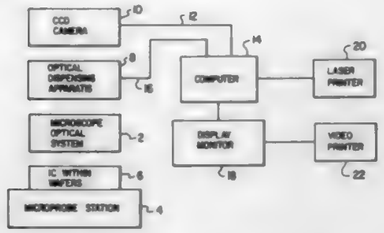
(h) transmitting said beam of light to illuminate said at least one position retroreflective element and said reference retroreflective element during a second rotation of said beam of light;

(i) monitoring said second rotation of said beam of light as it travels between said index position, said at least one position retroreflective element and said reference retroreflective element; and

(j) determining the position of said at least one position retroreflective element in said coordinate system based on said first coordinates, said second coordinates, said first and second rotations of said beam of light and said reference position.

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5,301,006
EMISSION MICROSCOPE
Victoria J. Bruce, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jan. 28, 1992, Ser. No. 826,992
Int. Cl.[5] G01J *3/443;* **G01N** *21/62*
U.S. Cl. 356—311 **9 Claims**



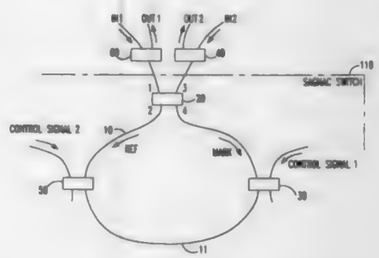
1. An emission microscope system comprising:
an optical subsystem, said optical subsystem comprising a catadioptric optical microscope, said optical subsystem outputting an optical image;
a computer automated optical dispersing subsystem for varying wavelengths during which photons may be counted, said computer automated optical dispersing subsystem positioned relative to said optical subsystem so that said optical image output by said optical subsystem passes through said computer automated optical dispersing subsystem;
a camera subsystem focused upon said optical image output by said optical subsystem and passing through said computer automated optical dispersing subsystem, said camera subsystem converting said optical image to an electronic image signal; and
a processing subsystem operatively coupled to said camera subsystem and to said computer automated optical dispersing subsystem for controlling them and for acquiring and manipulating data obtained therefrom.

5,301,007
MICROSCOPIC SPECTROMETER
Juichiro Ukon, Miyanohigashi, Japan, assignor to Horiba Ltd., Kyoto, Japan
Filed Oct. 31, 1990, Ser. No. 607,313
Claims priority, application Japan, Nov. 3, 1989, 1-286893
Int. Cl.[5] G01J *3/28;* **G01N** *21/00*
U.S. Cl. 356—326 **18 Claims**



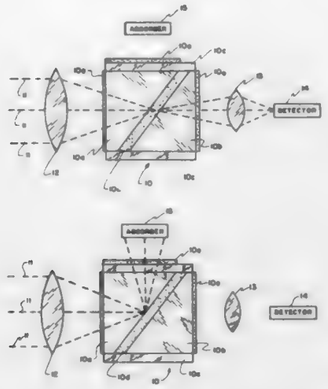
1. A microscopic spectrometer comprising:
(a) a light source for projecting light upon a sample;
(b) means for providing at least two optical paths from the light source, a first optical path including means for masking a portion of light from the sample to define a target area, and a second optical path providing a nonmasked image of the sample;
(c) a spectrometrical measurement system for spectrometrically measuring the target area image passed through the means for masking in the first optical path; and
(d) a visualizing means for producing a composite image of the sample and the target area images for observation by an operator including an eyepiece allowing view of a synthetic image created from a recombination of the first and second optical paths.

5,301,008
OPTICAL CROSSBAR EXCHANGE ARRANGEMENT
Alan Huang, Middletown, and Norman A. Whitaker, Jr., Atlantic Highlands, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 787,989, Nov. 5, 1991, abandoned. This application May 20, 1993, Ser. No. 65,516
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **20 Claims**



1. A crossbar exchange arrangement comprising
a transmission medium including a controllable propagation speed material;
first means for inputting a first signal into said medium, to develop both a first interacting signal that travels in said medium in one direction and a corresponding first reference signal that travels in said medium in the opposite direction;
second means for inputting a second signal into said medium, to develop both a second interacting signal that travels in said medium in one direction and a corresponding second reference signal that travels in said medium in the opposite direction;
means for injecting a control signal into said medium, that travels through said medium in the direction of said first and second interacting signals with the timing of said control signal in relation to said first and second interacting signals, controlled to traverse said first and second interacting signals by said control signal while said first and second interacting signals are traveling through said medium; and
means for combining each reference signal after its travel through said material with its corresponding interacting signal after its travel through said medium, to form first and second combined signals, wherein
when said control signal is absent, said first combined signal appears at a first output means and said second combined signal appears at a second output means and wherein
when said control signal is present, said first combined signal appears at said second output means and said second combined signal appears at said first output means.

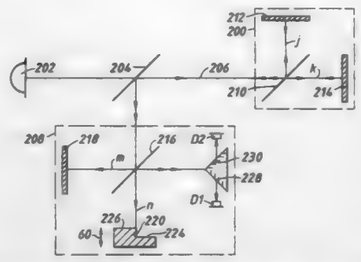
5,301,009
FRUSTRATED TOTAL INTERNAL REFLECTION OPTICAL POWER LIMITER
Richard R. Shurtz, II, Oakton, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 28, 1983, Ser. No. 492,062
Int. Cl.[5] H01S *3/02;* **G02B** *27/28*
U.S. Cl. 359—487 **7 Claims**



1. A device for protecting a photo-detector for relatively low-power light radiation from high-intensity light radiation, wherein the device is positioned on an optical axis between said detector and incident radiation, and the device includes:
a pair of optical prisms having a first pair of parallel sides normal to said optical axis, and a second pair of parallel sides adjacent to each other and skewed with respect to said optical axis; and
an optical material between said second pair of sides responsive to the intensity of the radiation on said optical axis to cause diversion of said axis for high-intensity radiation.

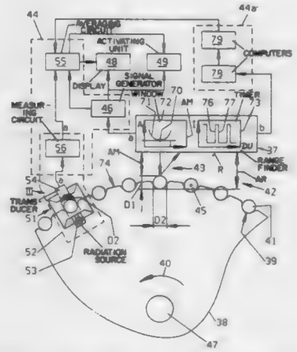
5,301,010
INTERFEROMETER HAVING A SHORT COHERENCE LENGTH LIGHT SOURCE AND MEANS FOR IDENTIFYING INTERFERENCE FRINGES
Robert Jones; Robert J. Welford, and Michael S. Hazell, all of Cambridge, United Kingdom, assignors to Cambridge Consultants Limited, United Kingdom
PCT No. PCT/GB90/00267, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO90/09557, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 19, 1989, Ser. No. 752,612
Claims priority, application United Kingdom, Feb. 18, 1989, 8903725
Int. Cl.[5] G01D *9/02*
U.S. Cl. 356—358 **30 Claims**

1. A measuring device comprising a short coherence length light source, interferometer means arranged to receive light from said source and to produce a sequential series of interference fringes in which the contrast between bright and dark fringes varies along the series, means for detecting said fringes and for providing a signal which is derived from different fringes in said series for different values of a measurand and whose signal-value varies as a function of the brightness of the fringes from which said signal is derived, and means for identifying from said signal-value the identity of the fringes from



which said signal is derived and for providing, on the basis of said identity, an indication of the value of said measurand.

5,301,011
METHOD OF AND APPARATUS FOR ASCERTAINING THE DIAMETERS OF ROD-SHAPED ARTICLES
Reinhard Hoppe, Marschacht, and Rolf Lindemann, Glinde, both of Fed. Rep. of Germany, assignors to Korber AG, Hamburg, Fed. Rep. of Germany
Filed Mar. 26, 1992, Ser. No. 857,733
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4110855; Jul. 11, 1991, 4122936
Int. Cl.[5] G01B *11/10*
U.S. Cl. 356—385 **38 Claims**



1. A method of ascertaining the diameters of normally substantially round rod-shaped articles of the tobacco processing industry, comprising the steps of advancing a succession of articles in a predetermined direction along a predetermined path and past a reference point which is adjacent a predetermined portion of said path and is spaced apart from each successive article advancing along said portion of said path; optically measuring the distance of each successive article in said portion of said path from said reference point and generating first signals denoting the respective measured distances, including directing a beam of radiation from a source into said portion of said path so that the beam impinges upon and is reflected by successive articles advancing along said portion of said path whereby the intensity of reflected beam is indicative of a second diameter of the beam-reflecting article; converting each first signal into a second signal denoting one diameter of the respective article; monitoring the intensity of the reflected beam upon impingement on successive articles and generating third signals denoting the respective intensities; and processing said third signals into fourth signals denoting the second diameters of the respective articles.

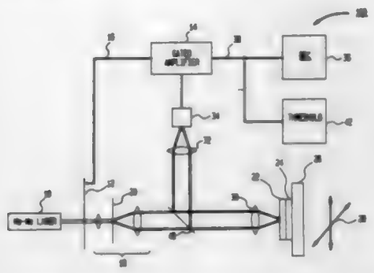
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,012

OPTICAL TECHNIQUE FOR RAPID INSPECTION OF VIA UNDERETCH AND CONTAMINATION

Mark R. King, Milton, N.Y., and Wendell B. Seism, Boise, Id., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,733
Int. Cl.[5] G01N 21/88
U.S. Cl. 356—398 16 Claims



1. A method of inspecting features of a surface of an object comprising the steps of

illuminating an area of said surface corresponding to an area of a feature formed thereon to form an illuminated area by projecting radiation along a beam path,

scanning said illuminated area over said surface, and

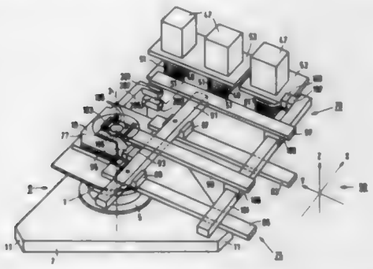
detecting characteristics of the amount of said illumination transmitted through or reflected from said object along said beam path.

5,301,013

POSITIONING DEVICE HAVING TWO MANIPULATORS OPERATING IN PARALLEL, AND OPTICAL LITHOGRAPHIC DEVICE PROVIDED WITH SUCH A POSITIONING DEVICE

Hendricus J. M. Meijer, Veldhoven; Johannes A. Rozenveld, Maarheeze; Adrianus J. Vermeer, Eindhoven; Jan A. Markvoort, Eindhoven; Johan van der Maaden, Eindhoven, and Jan van Eijk, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1992, Ser. No. 871,428
Claims priority, application European Pat. Off., Jul. 30, 1991, 91201970.0
Int. Cl.[5] G01B 11/00
U.S. Cl. 356—400 11 Claims



1. A positioning device, which comprises:

a first and a second transport arm for alternately transferring plate-shaped objects from a storage position into an operational position which extends in a plane transverse to a Z-direction;

means comprising the second transport arm for transferring a first object from the operational position; and

means comprising the first transport arm for subsequently placing a second object in the operational position;

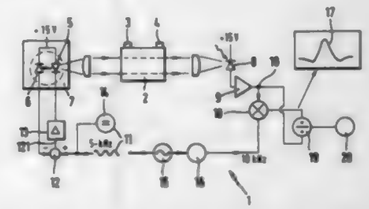
separate manipulator means for displacing each of the first and second transport arms parallel to an X-direction and to a Y-direction perpendicular to the X-direction, the X-direction and the Y-direction being perpendicular to the Z-direction.

5,301,014

METHOD AND ARRANGEMENT FOR SPECTROSCOPICALLY MEASURING THE CONCENTRATION OF A COMPONENT OF A GAS SAMPLE

Edmund Koch, Lübeck, Fed. Rep. of Germany, assignor to Dräger werk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Mar. 26, 1992, Ser. No. 858,119
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 4110095
Int. Cl.[5] G01N 21/31, 21/39
U.S. Cl. 356—437 2 Claims



1. An arrangement for spectroscopically measuring at least one component of a gas sample, the arrangement comprising:

laser means for passing radiation through the gas sample with said radiation being in the region of an absorption line of said component;

monitor means for detecting the actual radiation energy of said laser means and for converting said radiation energy into a measuring signal;

modulation profile means for generating a pregiven modulation profile signal;

said modulation profile means including: direct-voltage means for supplying a direct voltage; and, alternating-voltage generator means for generating a sinusoidally-shaped alternating voltage superposed on said direct voltage thereby defining said pregiven modulation profile signal;

control means receiving said measuring signal as an actual value and said modulation profile signal as a desired value for generating a modulated drive current in dependence upon the difference of said values;

detector means for receiving the radiation passed through said gas sample and for supplying a detector signal in dependence upon the detected radiation; and,

evaluation means for receiving and evaluating said detector signal to determine the concentration of said component.

5,301,015

NTSC AND PAL COMPATIBLE DIGITAL ENCODER

Sung-Hoon Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 23, 1992, Ser. No. 980,276
Claims priority, application Rep. of Korea, Nov. 27, 1991, 1991-21420
Int. Cl.[5] H04N 11/14, 9/45, 9/65, 9/66
U.S. Cl. 348—493 19 Claims

1. A digital encoder, comprising:

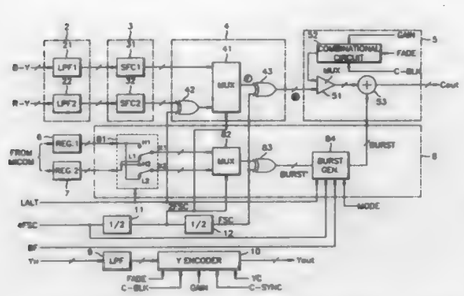
a frequency converter for converting the frequency of color difference signals to a sub-carrier frequency;

a modulator, coupled to said frequency converter and responsive to converted color difference signals, for determining a level and phase of said converted color difference signals in response to a first set of control signals;

a register having phase information corresponding to a burst signal;

a burst generator circuit, coupled to said register and responsive to said phase information, for determining a level and phase of said burst signal in response to a second set of control signals; and

a chroma encoder, responsive to outputs of said modulator and said burst generating circuit, for generating a chrominance signal in response to a third set of control signals.

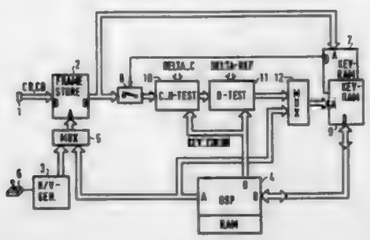


5,301,016

METHOD OF AND ARRANGEMENT FOR DERIVING A CONTROL SIGNAL FOR INSERTING A BACKGROUND SIGNAL INTO PARTS OF A FOREGROUND SIGNAL

Rainer Gehrmann, Alsbach-Hähnlein, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1992, Ser. No. 987,894
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142650
Int. Cl.[5] H04N 9/75
U.S. Cl. 348—586 4 Claims



1. A method of deriving a control signal for inserting a background signal into parts of a foreground signal, these parts being fixed by a key color, in which the control signal assumes a first value when the foreground signal represents a color in the region of the key color and a second value when the foreground signal represents a different color, and in which the control signal has a transition range between the two values, characterized in that the method comprises the steps:

computing the distances between color locations of pixels of the foreground signal and a color location of the key color, for distinguishing color locations of pixels associated with foreground color or with the key color from color locations of pixels to be associated with the transition range;

associating those color locations of pixels whose distance to the key color's color location differs from a distance of a color location of one or a plurality of adjacent pixels to the key color's color location by more than a predetermined distance (not complying with a homogeneity criterion) with the transition range; and

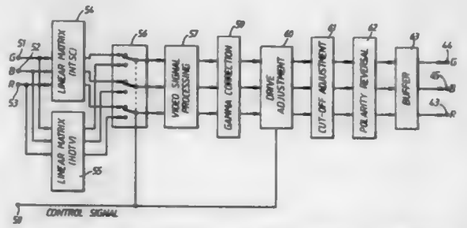
computing intermediate values of the control signal for the color locations of pixels associated with the transition range.

5,301,017

APPARATUS FOR RECEIVING AND DISPLAYING COLOR TELEVISION SIGNALS HAVING DIFFERENT FORMATS

Seiji Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 11, 1993, Ser. No. 104,553
Claims priority, application Japan, Aug. 28, 1992, 4-230367
Int. Cl.[5] H04N 9/69, 9/31, 9/535
U.S. Cl. 348—645 12 Claims



1. Television receiving apparatus for receiving and displaying television signals distributed in a plurality of formats, said television apparatus comprising:

input means for receiving said television signal;

color error correction means coupled to said input means for correcting color reproduction errors associated with the received television signal and providing a corrected television signal;

display means coupled to said color error correction means for receiving said corrected television signal and displaying a television image in accordance with said corrected television signal, said display means having a reproduction chromaticity range sufficiently wide to include essentially all of the transmission chromaticity range in said received television signal; and

control means coupled to said color error correction means for controlling the operation of said color error correction means in accordance with the format of said received television signal.

5,301,018

METHOD AND APPARATUS FOR SHUFFLING IMAGE DATA INTO STATISTICALLY AVERAGED DATA GROUPS AND FOR DESHUFFLING THE DATA

Peter Smidth, Menlo Park; Charles H. Coleman, Redwood City, and Sidney D. Miller, Mt. View, all of Calif., assignors to Ampex Systems Corporation, Redwood City, Calif.

Continuation of Ser. No. 654,710, Feb. 13, 1991, abandoned.
This application Aug. 16, 1993, Ser. No. 106,968
Int. Cl.[5] H04N 7/12
U.S. Cl. 348—420 46 Claims

1. A method of conditioning data representing an image for recording the data onto a recording medium or for transmitting the data over a channel, said method comprising the steps of:

dividing the image data into a multitude of contiguous image blocks, each image block being associated with a corresponding spatial location of a portion of said image and defining one or more characteristics of said portion at the respective spatial location; and,

shuffling said image blocks by selecting image blocks from preselected spatially diverse locations in the image as

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determined by a block selection pattern, wherein combined preselected image blocks in the resulting shuffled

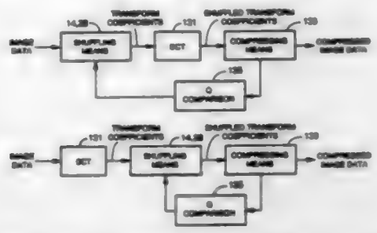


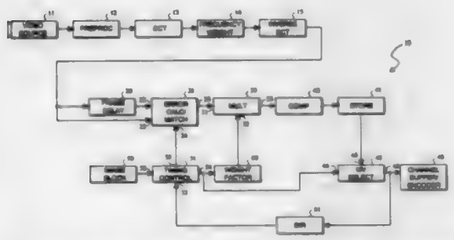
image contain a spatially equalized distribution of the information contained in the image.

5,301,019

DATA COMPRESSION SYSTEM HAVING PERCEPTUALLY WEIGHTED MOTION VECTORS

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Sep. 17, 1992, Ser. No. 947,024
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—416 **26 Claims**



1. A data compression method for compressing a digitally encoded video signal organized in a succession of image frames, said method comprising the steps of:

receiving said digitally encoded video signal;

comparison/matching selected portions of said video signal in a current image frame to portions of said video signal in an image frame preceding said current image frame to produce corresponding error values indicative of the differences therebetween;

generating a motion vector for each comparison in said comparison/matching step in association with each corresponding error value;

weighting each of said error values in accordance with a perceptual factor to produce perceptually weighted error values; and

selecting one of said motion vectors by applying a selection criteria to each of said perceptually weighted error values and selecting the motion vector associated with the one of said perceptually weighted error values which best fits said criteria.

5,301,020

METHOD AND APPARATUS FOR CODING MOTION PICTURES UTILIZING MOTION COMPENSATION

Philippe M. Cassereau, San Mateo, Calif., assignor to Aware, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 786,722, Nov. 1, 1991. This application Feb. 11, 1993, Ser. No. 16,786
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 368—415 **6 Claims**

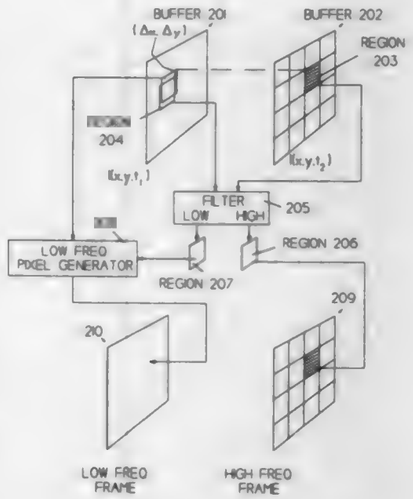
1. An apparatus for generating high and low-frequency component images from first and second input frames of a motion picture, said apparatus comprising:

first and second buffer means for storing first and second input arrays of pixel values respectively, said first array representing the intensity values in said first input frame and said second input array representing the intensity values in said second frame, said second input array being divided into a plurality of regions, each region storing a contiguous block of pixel values;

means for matching each said region in said second input array with a region of the same size in said first input array thereby defining a pixel in said first input array corresponding to each said pixel in said second input array;

means for assigning one of two values to each pixel value in said first input array, said first value being assigned if said pixel was included in a region matched to one and only one of said regions in said second input array by said matching means, and otherwise to said second value;

low-frequency buffer means for storing an array of pixel values representing the intensity values of said low-frequency component image, said low-frequency buffer



means including one location corresponding to each said pixel value in said first input array;

high-frequency buffer means for storing an array of pixel values representing the intensity values of said high-frequency component image, said high-frequency buffer means including one location corresponding to each said pixel value in said second input array;

frame initialization means for causing said low-frequency buffer means to initially store a value related to the pixel value stored in said first input array at each location corresponding to a pixel in said first input array that was assigned said second value; and

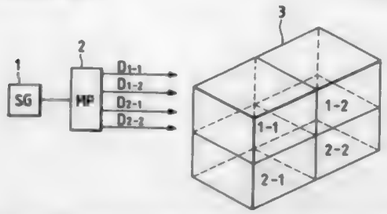
filter means for combining each pixel in said second input array with said corresponding pixel in said first input array to generate high and low-frequency pixels, said high-frequency pixel being stored in said high-frequency buffer means in said location corresponding to said pixel in said second input array and said low-frequency pixel being stored in said low-frequency buffer means in said location corresponding to said pixel in said first input array if said assigning means assigned said first value to said corresponding pixel in said first input array.

5,301,021

DISPLAY WITH VERTICAL SCANNING FORMAT TRANSFORMATION

Masanori Ogino, Yokohama; Tadashi Fukushima, Hitachi; Takeo Yamada, Yokohama, and Shigeyuki Shiotani, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,245
Claims priority, application Japan, Jul. 1, 1991, 3-165858
Int. Cl.[5] H04N *5/00*
U.S. Cl. 348—564 **16 Claims**



15. A liquid crystal multi-screen projection display comprising means for processing signals from at least one signal source and for applying processed signals to at least one of a plurality of display units arranged in at least two rows so as to form the multi-screen display, the processing means including vertical scanning format transformation means for transforming a vertical scanning period of the output signal of the processing means to be a smaller period than that of the input signal of the processing means so that a ratio of the vertical scanning period of the output signal applied to the multi-screen display to the vertical scanning period of the input signal is no greater than 0.5, thereby substantially eliminating discontinuity of a moving pole image displayed on the multi-screen display, the vertical scanning format transformation means including at least one programmable counter for counting a sum of the number of indication scanning lines and the number of non-indication scanning lines in a unit screen of a respective display unit in accordance with horizontal pulse signals and for enabling outputting of vertical synchronous pulse signals.

5,301,022

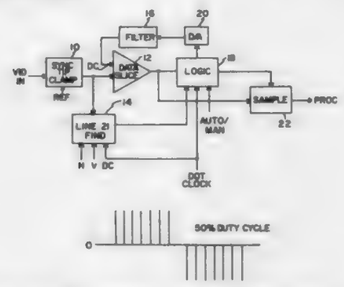
Patent Not Issued For This Number

5,301,023

DATA SLICING SYSTEM

Thomas J. Zato, Palatine, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Continuation of Ser. No. 780,698, Oct. 18, 1991. This application Apr. 7, 1993, Ser. No. 45,275
Int. Cl.[5] H04N *7/087, 7/08*
U.S. Cl. 348—476 **4 Claims**



1. A method of slicing a data signal comprising:

clamping the data signal to a reference level;

applying the clamped data signal to one input of a comparator to produce a sliced output;

sampling the sliced output of the comparator with a high frequency dot clock to produce a series of positive and negative logic levels;

applying the series of positive and negative logic levels to a D/A converter;

filtering the output of the D/A converter to develop a DC voltage; and

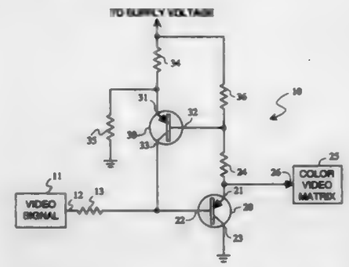
applying the DC voltage to the other input of said comparator to adjust the slice level of the comparator.

5,301,024

VIDEO SIGNAL PEAK COMPRESSOR

Robert E. Mudra, Glenview, Ill., assignor to Zenith Electronics Corp., Gleaview, Ill.

Filed Dec. 30, 1992, Ser. No. 998,275
Int. Cl.[5] H04N *5/14, 5/20*
U.S. Cl. 348—690 **6 Claims**



1. For use in a television receiver having a source of video signal characterized by positive picture polarity, a video signal peak compressor comprising:

a first amplifier having a first PNP transistor having a first input electrode coupled to said source of video signal, a first output electrode; and a first common electrode coupled to ground;

a second amplifier having a second PNP transistor having a second input electrode coupled to said first output electrode, a second output electrode coupled to said first input electrode and a second common electrode; and

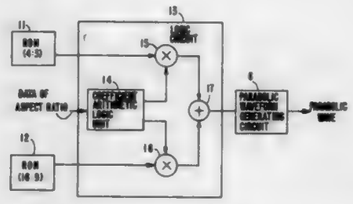
a threshold voltage source including a resistive divider having a resistor junction coupled to said second common electrode.

5,301,025

PARABOLIC WAVEFORM GENERATING APPARATUS

Takahisa Hatano, Settsu, and Yosuke Izawa, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Jan. 27, 1993, Ser. No. 9,894
Claims priority, application Japan, Feb. 3, 1992, 4-047823
Int. Cl.[5] H04N *3/23, 3/22, 3/223, 3/27*
U.S. Cl. 348—704 **1 Claim**



1. A parabolic waveform generating apparatus for generating parabolic waveforms for compensating at least one of horizontal and vertical deflection distortion of images in a television receiver with respect to one of a plurality of aspect

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ratios, said parabolic waveform generating apparatus comprising:

memory means including only a first data value group and a second data value group, said first data value group useable for generating a first parabolic waveform and said second data value group useable for generating a second parabolic waveform;

processing means for processing said first data value group and said second data value group in order to generate a further data value group which corresponds to an arbitrary aspect ratio of said plurality of aspect ratios which is different from a first aspect ratio of said plurality of aspect ratios which corresponds to said first parabolic waveform and which is different from a second aspect ratio of said plurality of aspect ratios which corresponds to said second parabolic waveform; and

parabolic waveform generating means for generating a further parabolic waveform for use by said television receiver, said further parabolic waveform corresponding to said arbitrary aspect ratio from said further data value group.

5,301,026

PICTURE EDITING APPARATUS IN A DIGITAL STILL VIDEO CAMERA SYSTEM

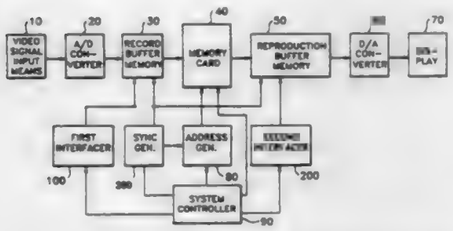
Young-man Lee, Kyunggi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 24, 1991, Ser. No. 812,815

Claims priority, application Rep. of Korea, Jan. 30, 1991, 91-1586

Int. Cl.[5] H04N *5/262*

U.S. Cl. 348—584 **31 Claims**



1. A picture editing apparatus in a digital still video camera system, comprising:

means for storing a plurality of digital signals in frames in a memory card;

means for processing said digital video signals read-out from said memory card;

image data address generator means for generating image data addresses of said memory card;

one frame address generator means for generating a first picture assignment address of said memory card for one picture per each frame;

multi-picture address generator means for generating second picture assignment addresses of a specified number of pictures recorded in said memory card; and

picture mixing address generator means for generating third picture assignment addresses for selected pictures by mutually mixing a plurality of said selected pictures.

5,301,027

METHOD OF SUPERIMPOSING DATA OF CHARACTER ON VIDEO DATA

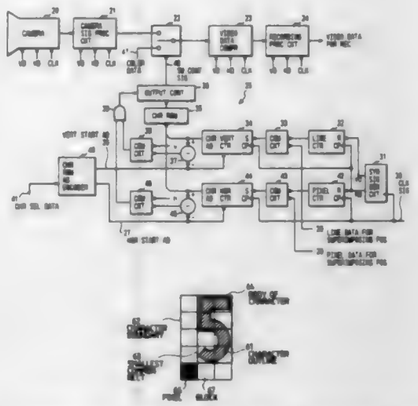
Takashi Kiyofuji, Yokosuka; Hiroshi Yamada, Tokyo; Kohsuke Kinoshita, and Toshihiko Monma, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 23, 1993, Ser. No. 35,776

Claims priority, application Japan, Mar. 24, 1992, 4-97000

Int. Cl.[5] H04N *5/278*

U.S. Cl. 348—589 **15 Claims**



1. A method of superimposing data of a character or a mark on video data, said superimposed video data being subjected to a data compression processing for extracting video data within each of blocks from one frame of said superimposed video data and for data-compressing said extracted video data, said blocks forming said one frame, said each block including a predetermined number of two-dimensionally arranged pixels of said superimposed video data, comprising the step of:

determining a position of said character or mark superimposed on said video data with respect to a lump of said blocks, where said character or mark is to be imposed, such that the number of blocks over which said character spreads is minimized when a size and a shape of said character or said mark are unchanged.

5,301,028

METHOD AND APPARATUS FOR DISPLAYING CHANNEL IDENTIFICATION INFORMATION

Robert O. Banker, Cumming; Kinney C. Bacon, Lawrenceville, and Julius B. Bagley, Marietta, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Nov. 29, 1991, Ser. No. 800,002

Int. Cl.[5] H04N *5/50*

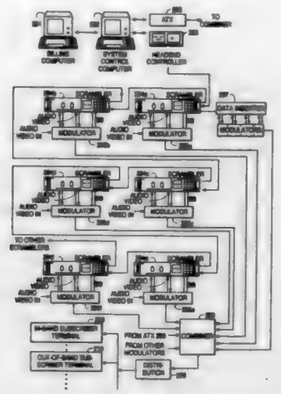
U.S. Cl. 348—570 **32 Claims**

23. Apparatus for use in a system for transmitting signals having picture information corresponding to respective channels and having a terminal device including storing means for storing a first table including a set of channel identification information items and identifier numbers respectively corresponding to each one of the channel identification information items, said apparatus comprising:

map generating means for generating a map for mapping the channel numbers corresponding to the respective channels to the identifier numbers in said first table;

transmitting means for transmitting said map to said terminal device.

25. A method of providing channel information in a system for transmitting signals having picture information corresponding to respective channels to a terminal device, said terminal device including storing means for storing a first table including channel identification information items and identifier numbers respectively corresponding to each one of the channel identification information items, the method comprising the steps of:



generating a map for mapping the channel numbers corresponding to the respective channels to the identifier number s in said first table;

transmitting said map to said terminal device.

5,301,029

DEVICE FOR MAINTAINING THE CLEARANCE BETWEEN A CYCOLOR FILM AND THE HEAD OF FILM EXPOSING CRT

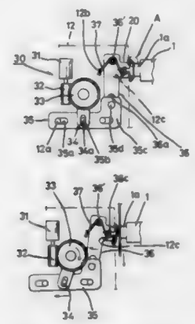
Byung-Mu Huh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 5, 1991, Ser. No. 802,673

Claims priority, application Rep. of Korea, Dec. 7, 1990, 90-20139

Int. Cl.[5] H04N *3/36, 5/253*

U.S. Cl. 348—97 **2 Claims**



1. A device for maintaining the clearance between a head of a film exposing CRT and a film in a color video printer, comprising:

a clearance maintaining means movably mounted in front of the head for maintaining the clearance between said head and a plate supported film constant so as to precisely expose said film to light rays emitted by said CRT; and

a drive means for driving said clearance maintaining means so as to adjust the clearance between said head and said plate supported film to form a constant gap therebetween, wherein said drive means comprises

(a) a motor;

(b) a worm driven by said motor;

(c) a worm gear engaging with said worm;

(d) a function plate for linearly reciprocating to a given distance by rotation of said worm and worm gear; and

(e) a pivot lever mounted on a main plate for adjusting the gap between said clearance maintaining means and the head of said film exposing CRT in response to the reciprocating movement of said function plate.

5,301,030

OPTICAL ILLUMINATION APPARATUS FOR A DISPLAY UNIT WITH EFFICIENT LIGHT SOURCE POLARIZATION

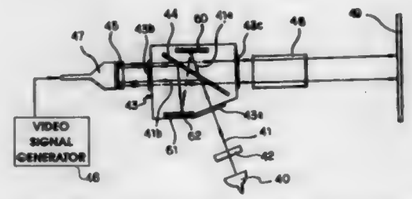
Han I. Ko, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 10, 1992, Ser. No. 926,315

Claims priority, application Rep. of Korea, Aug. 13, 1991, 91-13947; Dec. 27, 1991, 91-24713

Int. Cl.[5] H04N *5/74, 9/31*

U.S. Cl. 348—762 **5 Claims**



4. An illumination system for projecting an image of high luminance displayed on a cathode ray tube through a projecting lens, using a light beam supplied from a light source, said illumination system comprising:

a polarizing beam splitter for splitting the light beam emitted from said light source into a first polarized light and a second polarized light:

a plurality of reflectors for reflecting the light beam supplied from said polarizing beam splitter, said plurality of reflectors having at least one reflector being a one-quarter wave reflector; and

converting means for converting the light beam supplied from said polarizing beam splitter into optical signals representative of an image in response to a brightness of the image displayed on said cathode ray tube.

5,301,031

SCANNING CONVERSION DISPLAY APPARATUS

Masahiro Eto, Fujisawa; Nobuaki Kabuto, and Mitsuo Tanaka, both of Yokohama, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation of Ser. No. 468,912, Jan. 23, 1990. This application Sep. 2, 1992, Ser. No. 938,514

Int. Cl.[5] H04N *5/74, 7/01*

U.S. Cl. 348—792 **4 Claims**

2. A scanning conversion display apparatus comprising:

a video signal processing circuit which processes an input video signal to produce picture signals;

a polarity inversion circuit for periodically changing-over a polarity of said picture signals;

a control circuit which produces control signals in synchronism with the input video signal;

a horizontal scanning circuit and a vertical scanning circuit each including a shift register operated by said control circuit; and

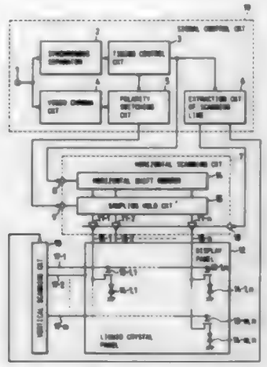
a display panel formed of a matrix arrangement of liquid crystal pixels which are written with the picture signals having polarity changed over in a period of every vertical

shift clock by being selected and driven by said horizontal scanning circuit and vertical scanning circuit;

wherein said apparatus further comprises:

a circuit which intermittently removes vertical shift clocks of said vertical scanning circuit within the effective display period of said picture signals,

a first means for temporarily stopping said polarity inversion operation only for said intermittent period or a period



equal to said intermittent period before some lines of said intermittent period;

a second means for amplifying said video signal at a different rate of amplification and a DC component or either one of them for a period for performing said intermittent operation or for a period equal to said intermittent period before some lines of said period;

wherein at least one of said first means or said second means is operative.

5,301,032

DIGITAL IMAGE COMPRESSION AND DECOMPRESSION METHOD AND APPARATUS USING VARIABLE-LENGTH CODING

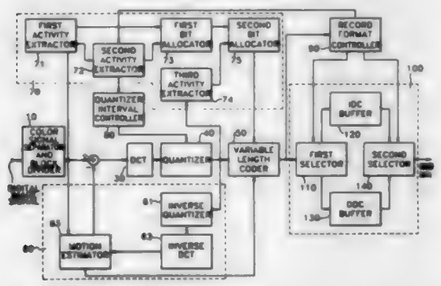
Min-suk Hong, Suwon; Yong-kyu Kim, and Ku-man Park, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 4, 1992, Ser. No. 986,061

Claims priority, application Rep. of Korea, Apr. 7, 1992, 92-5784

Int. Cl.[5] H04N *1/415*

U.S. Cl. 358—261.2 **28 Claims**



11. An image compression coding method for compressing a supplied digital image signal, performing a discrete cosine transform of the signal, linearly quantizing the signal to provide a quantized coefficient, and performing variable length coding, in order to improve recording efficiency, said method comprising the steps of:

first extracting an activity by dividing the digital image signal into subframes and then detecting activities of each of the subframes;

second extracting an activity by accumulatively operating a result extracted in said first activity extracting step and then extracting the activity in units of a frame;

first bit allocating to allocate a number of bits in units of the subframe by the activities extracted in said first and second activity-extracting steps;

third extracting an activity to extract activity of a predetermined block by the quantized coefficient; and

second bit allocating to allocate a number of bits corresponding to the block based on the activity of the block extracted in said third activity-extracting step and on the number of bits assigned in said first bit-allocating step.

5,301,033

CIRCUIT FOR PREVENTING FALSE DETECTION OF VIDEO SYNC PULSES IN A VIDEO SIGNAL WHICH ALSO CONTAINS COPY GUARD SIGNALS

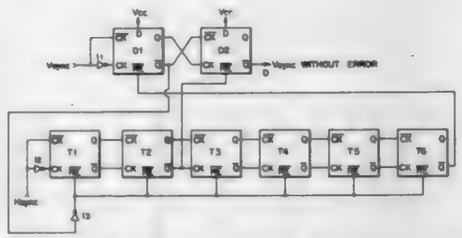
Byung-hoan Chon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 28, 1993, Ser. No. 10,248

Claims priority, application Rep. of Korea, Mar. 23, 1992, 92-4782

Int. Cl.[5] H04N *5/91, 5/04*

U.S. Cl. 358—335 **23 Claims**



16. A circuit for preventing the false detection of vertical sync pulses included in a video signal which also includes copy guard signals inserted in predetermined intervals thereof, comprising:

signal generating circuitry responsive to vertical sync pulses separated from said video signal for generating a correct vertical sync signal at a sync signal output terminal thereof, said signal generating circuitry including a pair of cross-coupled flip-flops; and,

disabling circuitry for rendering said signal generating circuitry non-responsive to said separated vertical sync pulses at least during said predetermined intervals of said video signal.

5,301,034

PRODUCTION OF PROPERLY ORIENTED COPIES OF TRANSPARENT MASTERS

Friedrich Jacob, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

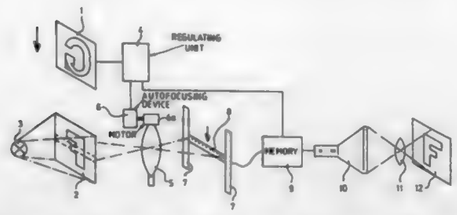
Filed Sep. 13, 1991, Ser. No. 759,892

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1990, 4031107

Int. Cl.[5] H04N *1/04, 1/21, 1/23, 1/387;* **G01B** *5/28*

U.S. Cl. 358—406 **25 Claims**

1. Apparatus for copying a master, particularly a transparent master, having an emulsion, comprising means for automatically detecting the emulsion; means for forming an image of the master on copy material, including means for scanning the master and generating printing signals, means for storing the printing signals, and means for printing the image on the copy material and including means for producing a printing beam which is controlled by printing signals in said storing means; and means for automatically regulating said forming means in response to said detecting means so that the image is correctly



oriented on the copy material regardless of whether the emulsion has a normal or inverted orientation in said forming means, said regulating means regulating said storing means so that the printing signals re entered in said storing means in a first order when the emulsion is in the normal orientation and in a reverse second order when the emulsion is in the inverted orientation.

5,301,035

FACSIMILE APPARATUS HAVING REDIALING FUNCTION

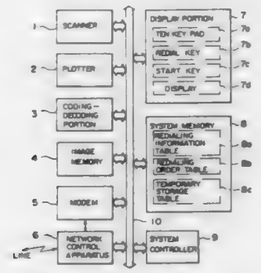
Takeshi Hayafune, Hiratsuka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 6, 1992, Ser. No. 817,324

Claims priority, application Japan, Jan. 11, 1991, 3-012591

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—440 **10 Claims**



1. A facsimile apparatus comprising;

input means for inputting a telephone number of a transmission destination;

transmission means for transmitting a data signal to said transmission destination of said telephone number input by said input means;

receiving means for receiving procedure signals having a discrimination information of said transmission destination through transmission control procedures with said transmission destination;

redialing information storage means for storing, in correspondence with said telephone number, said discrimination information which has been received from said transmission destination each time of transmission;

display means for displaying said discrimination information stored by said redialing information storage means;

redial selecting means for selecting one out of a plurality of said discrimination informations displayed on said display means;

redialing transmission means for transmitting said data signal to said transmission destination corresponding to said discrimination information selected by said redial selecting means.

5,301,036

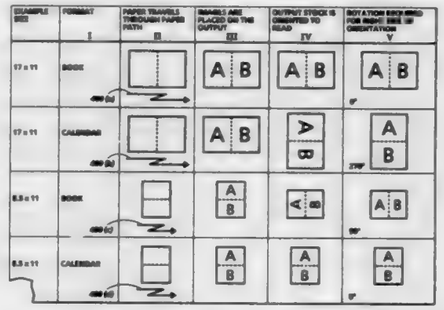
IMAGE ORIENTATION CONTROL

Michael W. Barrett, Rochester; Cynthia A. Smith, Pittsford; Carol P. Darsols Thomas, Webster; Pamela J. Barrett, Rochester, and Timothy J. Kelley, Farmington, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 6, 1992, Ser. No. 862,916

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—448 **9 Claims**



1. In a printing apparatus having a scanner for deriving an electronic image of an input document, means for placing the input document at positions for selectably scanning each side thereof, means for processing electronic images of the input document in accordance with a predetermined image processing arrangement, a printer for producing output prints of processed images selectably printed on each of two sides thereof, means for directing processed images to the printer, and a controller for controlling the orientation of the image and plex of an output print comprising:

means for rotating each image by predetermined increments in response to a request from the controller;

means for directing to the controller information about the original orientation of each image on the input document with respect to a reference, and plex of the input document;

means for directing to the controller information about the desired output orientation of the images on the input document with respect to a reference and, plex of an output document; and

said controller, receiving said original orientation and plex information and said desired output orientation information, and producing a request to said rotation means to rotate each image by the incremental amount between the two orientations.

5,301,037

RESOLUTION CONVERSION WITH SIMULATED MULTI-BIT GRAY

Henry R. Kang, Fairport, and Robert E. Coward, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1992, Ser. No. 981,678

Int. Cl.[5] H04N *1/393*

U.S. Cl. 358—451 **25 Claims**

1. In an electroreprographic machine of the type capable of manipulating an image represented by a plurality of image pixels and outputting the manipulated image at an image output terminal, an image processing apparatus for converting a set of input image pixels having a first resolution and being represented by a set of input image signals to a set of output

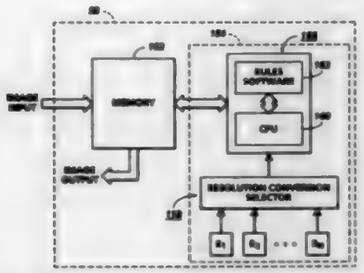
VOL 1161 ISS 1 AP 5 1994 UMI

image pixels having a second resolution and being represented by a set of output image signals, comprising:

a memory for storing the input image signals and the output image signals;

an image manipulation processor communicating with said memory and storing a set of state determination rules, the rules governing the conversion of the set of input image pixels to the set of output image pixels, the image manipulation processor including:

means for designating one of the input image pixels as a target pixel and relating the target pixel with a selected one of the output image pixels,



means for determining respective binary states of selected input image pixels in the set of input image pixels, the selected input image pixels being adjacent the target pixel, and

means for corresponding the selected output image pixel with one of at least three output states by reference to the determined, respective binary states and one of the state determination rules, the output state of the selected output image pixel varying as a direct function of the respective states of the selected input image pixels and said corresponding means outputting the selected output image pixel in a print-ready format.

5,301,038

IMAGE PROCESSOR AND METHOD FOR PROCESSING PIXEL DATA

Stephen J. P. Todd, Winchester, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 613,176, Nov. 13, 1990, abandoned.

This application Jun. 5, 1992, Ser. No. 895,182

Claims priority, application European Pat. Off., Mar. 7, 1990, 90302406.5

Int. Cl.[5] H04N *1/40;* **G06K** *9/40, 9/44*

U.S. Cl. 358—455 **20 Claims**

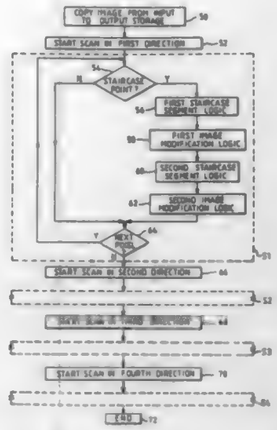
1. An image processor for processing pixel data defining an image, said pixel data defining an intensity for each of a plurality of pixels having a plurality of gradiations between a predetermined minimum and maximum, said image processor including image processing logic comprising:

means for determining the intensity difference between adjacent pixels of said image;

means for comparing said intensity difference with a predetermined nonzero threshold that is less than the difference between said predetermined minimum and said predetermined maximum to detect stepped intensity transitions characteristic of staircase aliasing in the image;

means for determining a stepped intensity range indicating the range of pixels through which said intensity remains essentially constant;

means for determining an antialiased pixel value for each of said range of pixels, said antialiased pixel value being a function of said range and said adjacent pixel intensities; and



means for producing an output image including said antialiased pixel values on the detected stepped transitions.

5,301,039

IMAGE PROCESSING APPARATUS WITH PIXEL TONE DISCRIMINATION

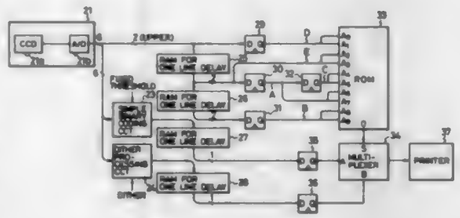
Hiroshi Tanioka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 662,503, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 332,384, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 819,132, Jan. 15, 1986, abandoned. This application Jun. 8, 1993, Ser. No. 73,982

Claims priority, application Japan, Jan. 21, 1985, 60-8915; Jan. 21, 1985, 60-8916

Int. Cl.[5] H04N *1/40;* **G06F** *15/68*

U.S. Cl. 358—457 **22 Claims**



1. An image processing apparatus comprising:

pixel data input means for inputting pixel data quantized by m bits; and

processing means for processing the m-bit pixel data inputted by said input means;

said processing means including discrimination means for discriminating a characteristic of an image represented by said pixel data by using n upper bits of said m-bit pixel data, n being greater than or equal to two, and m being greater than n.

5,301,040

IMAGE PROCESSING APPARATUS AND METHOD

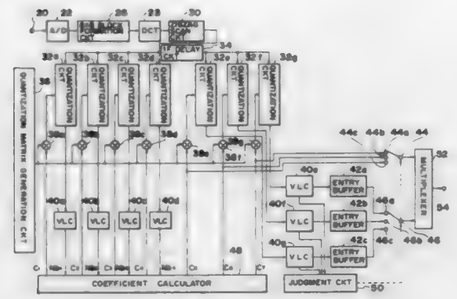
Nobuhiro Hoshi, Yokohama, and Kenichi Nagasawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,144

Claims priority, application Japan, Apr. 23, 1991, 3-092301

Int. Cl.[5] H04N *7/12, 1/419, 1/415, 1/00*

U.S. Cl. 358—465 **8 Claims**



1. An image processing apparatus comprising:

input means for inputting image data;

quantizing means for quantizing the image data and outputting quantized digital data;

first encoding means for encoding the quantized digital data and outputting first information regarding a number of bits of the quantized digital data as encoded;

shifting means for performing a bit shift on the quantized digital data in order to reduce an amount of the quantized digital data and outputting bit shifted quantized digital data;

second encoding means for encoding the bit shifted quantized digital data output from said shifting means and outputting second information regarding a number of bits of the bit shifted quantized digital data as encoded;

calculating means for calculating a suitable quantizing parameter for quantizing the image data in accordance with the first and second information.

5,301,041

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS

Kazuo Noda, Yokohama, and Yasuyuki Kimura, Kawagoe, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,945

Claims priority, application Japan, Dec. 26, 1991, 3-345466

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—480 **2 Claims**

1. An optical information recording and reproducing apparatus, comprising:

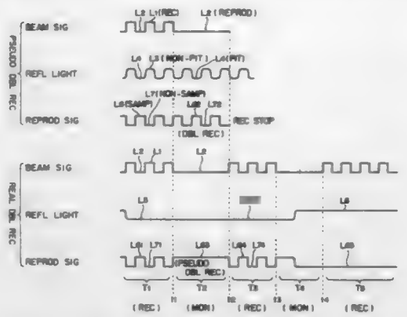
detection means for detecting a pseudo double recording signal generated by a dust, scratch, stain, etc. on an information recording medium and a real double recording signal generated by an information pit at a period of an information recording operation;

interrupt means for interrupting the information recording operation when said detecting means detects the pseudo double recording signal, to switch the recording operation period to a monitor period;

maintain means for maintaining the interruption of the information recording operation when the real double recording signal is detected at the monitor period;

resume means for resuming the information recording operation when the real double recording signal generated an information pit is not detected at the monitor period; and

after the recording operation has been resumed and when the pseudo double recording signal generated by a dust, scratch, stain, etc. still remaining on the medium is detected, the monitor and recording periods being repeated alternately; and after the medium has become free from a



dust, scratch, stain, etc. and therefore the real and pseudo double recording signals are not both generated, the recording operation being kept continued normally.

5,301,042

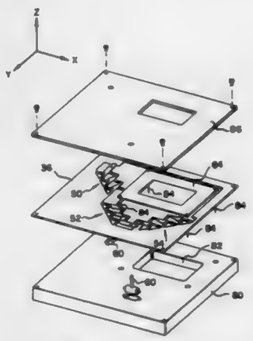
IMAGING PLATFORM SUPPORT TO PERMIT DITHERING MOTION

Douglass L. Blanding, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1993, Ser. No. 354

Int. Cl.[5] H01J *5/02;* **H04N** *3/12, 3/14*

U.S. Cl. 358—474 **1 Claim**



1. A means for mounting an image sensor in an optical path, the axis of said path being perpendicular to the surface of said image sensor, such that every pixel on the image sensor is rigidly positioned with respect to the direction of the optical path but is free to undergo small displacements transverse to the direction of the optical path, comprising:

a platform to which the image sensor is mounted, and at least three wire legs having sufficient rigidity that they support said image sensor without stretching or buckling, each wire leg being attached to said platform at one end and attached to a stationary base plate at the other end, said wire legs being disposed substantially parallel to the optical path whereby said platform and said image sensor are movable transversely of the optical path upon the application of a transverse force to said platform by slightly bending said wire legs without movement along the direction of the optical path.

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5,301,043

IMAGE READING APPARATUS IN WHICH AN ORIGINAL IMAGE IS AUTOMATICALLY FED TO A TURNTABLE

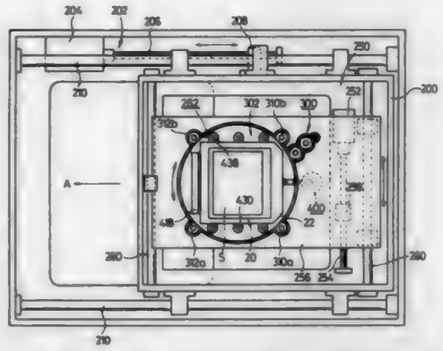
Shin-ichi Ichikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 595,132, Oct. 10, 1990, abandoned. This application Mar. 19, 1993, Ser. No. 34,211

Claims priority, application Japan, Oct. 11, 1989, 1-264179; Oct. 11, 1989, 1-264181; Oct. 11, 1989, 1-264182; Oct. 18, 1989, 1-272264

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—498 **15 Claims**



1. An image reading apparatus which receives an original cassette which stores an original to be read, said original being irradiated with illuminating light from an elongated light source and being read line-by-line by an array of light detecting elements disposed in a main scanning direction while said original is being scanned in an auxiliary scanning direction, said auxiliary scanning direction being perpendicular to said main scanning direction, said image reading apparatus comprising:

a housing having a cassette insertion slot;

an original table positioned in said housing for receiving and supporting the original cassette inserted through said cassette insertion slot;

an auxiliary scanning mechanism attached to said original table for transporting the original cassette held on said original table in the auxiliary scanning direction;

a trimming mechanism provided on said original table for transferring an unnecessary peripheral portion of the original out of sight by moving said original cassette held on said original table in a trimming direction along the main scanning direction;

a rotating mechanism comprising a turntable mounted on said trimming mechanism for adjusting the angular position of the original cassette with respect to said trimming mechanism to a desired reading position;

a positioning mechanism for positioning and fixing the original cassette at a predetermined position on said turntable where the original cassette is held perpendicular to an optical axis of the illuminating light, said positioning mechanism comprising guide means for guiding the original cassette to said predetermined position when said turntable is placed at an angular position where the original cassette can be installed on and removed from said turntable, lock means for locking the original cassette at said predetermined position, and an actuator for actuating said lock means to lock and release the original cassette; and

a feed mechanism for automatically feeding the original cassette from said cassette insertion slot to said original table.

5,301,044

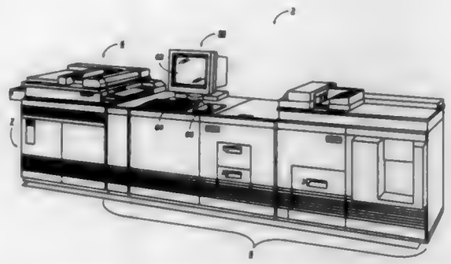
MARKING MATERIAL CONTAINING A TAGGANT, AND METHOD OF PRODUCING AN IMAGE

Joseph D. Wright, Burlington, Canada, assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 636,264, Dec. 31, 1990, Pat. No. 5,225,900. This application Mar. 10, 1993, Ser. No. 28,872

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—500 **20 Claims**



1. A method of producing an image, comprising imagewise applying at least one marking material containing a taggant to a substrate by a mechanical or electromechanical printing process to form said image on said substrate.

5,301,045

HELICAL LIQUID CRYSTALLINE ELEMENT WHICH PRODUCES LINEAR POLARIZED LIGHT

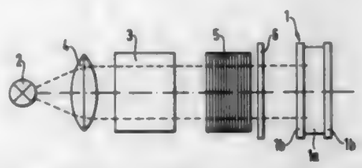
Alfred Miller, Planegg; Franz-Heinrich Kreuzer, Martinsried; Horst Leigeber, Oberhaching; Christoph Brünchle, and Andreas Petri, both of München, all of Fed. Rep. of Germany, assignors to Consortium für elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 961,299

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1991, 4137943

Int. Cl.[5] G02F *1/13, 1/1335*

U.S. Cl. 359—37 **10 Claims**



1. An optical element containing only one optically effective component based on helical liquid-crystalline substances, and said element reflects light incident perpendicular to the surface in a linear-polarized manner parallel to the direction of incidence of the incident light.

5,301,046

ELECTRO-OPTICAL DEVICE HAVING A LAYER COMPRISING AN OBLATE LIQUID CRYSTAL DISPERSED IN A RESIN AND METHOD FOR FORMING THE SAME

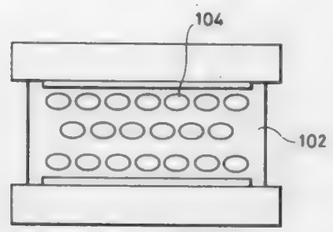
Toshimitsu Konuma; Toshiji Hamatani, both of Kanagawa, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Sep. 21, 1992, Ser. No. 947,456

Claims priority, application Japan, Sep. 21, 1991, 3-270360

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—51 **24 Claims**



1. An electro-optical device comprising:

a pair of substrates at least one of which is transparent, said substrates having at least patterned electrodes formed thereon; and

an electro-optical modulating layer provided between said substrates and comprising a resin and an oblate liquid crystal dispersed in said resin,

wherein said oblate liquid crystal is shaped by pressing said pair of substrates towards one another with said resin having said liquid crystal therein so that a length of said oblate liquid crystal in a direction parallel to said substrates is larger than that in a direction perpendicular to said substrates.

5,301,047

LIQUID CRYSTAL DISPLAY

Minoru Hoshino; Yoshiharu Nagae, both of Hitachi; Masahiro Takasaka; Masaaki Kitajima, both of Hitachiohta, and Kiyoshige Kinugawa, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 922,009, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 523,378, May 15, 1990, abandoned. This application Jul. 29, 1993, Ser. No. 98,248

Claims priority, application Japan, May 17, 1989, 1-123894

Int. Cl.[5] G09G *3/36;* G02F *1/1343, 1/137*

U.S. Cl. 359—55 **14 Claims**

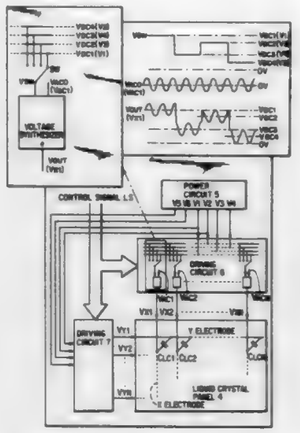
1. A liquid crystal display, comprising:

a liquid crystal matrix panel having a matrix of liquid crystal pixels and X and Y electrodes for selectively applying driving voltages to said pixels to thereby display information;

an X electrode driving circuit applying X driving voltages to said X electrodes;

a Y electrode driving circuit applying Y driving voltages to said Y electrodes;

a compensating voltage superimposing circuit applying voltage signals to said X electrodes, wherein each of said voltage signals is a high-frequency compensating voltage which continuously varies the waveform of the liquid crystal driving voltages to decrease variation in the effective values of said driving voltages in the entire area of a region including pixels having the same brightness data,



wherein a different compensating voltage signal is applied to each of the X electrodes.

5,301,048

ACTIVE MATRIX DISPLAY DEVICE WITH SCHOTTKY CONTACT SWITCHING ELEMENTS

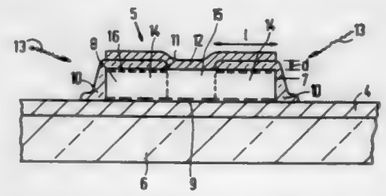
Frederikus R. J. Huisman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 651,180, Feb. 6, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,921

Claims priority, application Netherlands, Feb. 7, 1990, 9000290

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—60 **9 Claims**



1. An active matrix display device comprising

(a) an electro-optical display between two supporting plates having facing surfaces,

(b) a system of pixels defined by picture electrodes arranged in rows and columns on one of said supporting plates,

(c) a system of row and column electrodes for presenting selection and data signals to said picture electrodes,

(d) switching means between each row or column electrode and a corresponding pixel for generating a current-voltage characteristic comparable to a zener diode, said switching means including a light sensitive semiconductor material providing an anti-parallel circuit of both a forward driving Schottky diode and a photodiode providing a back-bias photo-current driven by incident light.

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5,301,049

LIQUID CRYSTAL DEVICE WITH AT LEAST TWO LIQUID CRYSTAL COMPOUNDS, ONE HAVING ONE NOT HAVING A CHOLESTERIC PHASE

Kazuharu Katagiri, Tama; Kazuo Yoshinaga, Machida; Shinjiro Okada, Ischara, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

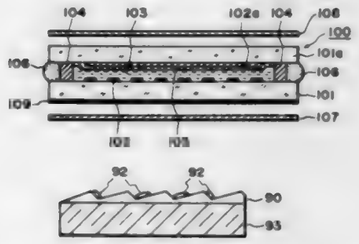
Continuation-in-part of Ser. No. 251,028, Sep. 26, 1988, Pat. No. 5,120,466, which is a continuation of Ser. No. 750,295, Jul. 1, 1985, abandoned. This application Apr. 6, 1992, Ser. No. 863,781

Claims priority, application Japan, Jul. 13, 1984, 59-146211; Jul. 14, 1984, 59-146498; Sep. 12, 1984, 59-190789; Sep. 12, 1984, 59-190790; Sep. 14, 1984, 59-192920

The portion of the term of this patent subsequent to Jun. 9, 2007, has been disclaimed.

Int. Cl.[5] **G02F** *1/137, 1/13;* **C09K** *19/52*

U.S. Cl. 359—90 **2 Claims**



1. A liquid crystal device, comprising: (a) a pair of base plates each having an orientation control film thereon, and (b) a liquid crystal composition interposed between the base plates; said liquid crystal composition comprising at least two liquid crystal compounds including at least one liquid crystal compound which has a temperature range in which it shows cholesteric phase and at least one liquid crystal compound which does not have a temperature range in which it shows a cholesteric phase; said liquid crystal composition having a temperature range in which it shows cholesteric phase and being placed in chiral smectic phase which has been formed through cholesteric phase on temperature decrease; said liquid crystal composition comprising liquid crystal molecules having long axes forming a pre-tilt in the chiral smectic phase.

5,301,050

SUBSCRIBER LOOP TESTING IN A FIBER-TO-THE-CURB COMMUNICATIONS NETWORK

Richard M. Czerwiec, and Joseph E. Sutherland, both of Raleigh, N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Continuation of Ser. No. 738,102, Jul. 30, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 83,787

Int. Cl.[5] **H04B** *10/08, 10/00*

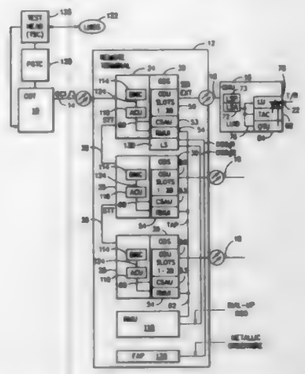
U.S. Cl. 395—110 **6 Claims**

1. An apparatus for performing mechanized loop testing in a optical fiber telecommunications network having optical transmission lines extending from a central office test controller to a remote terminal and from the remote terminal to a network unit located in the neighborhood of the subscribers, said apparatus comprising:

test means in the network unit, responsive to a start test command signal, for performing selected mechanized loop tests on subscriber lines at the network unit and for providing a test results signal;

controller means located in the network unit for starting the selected tests by providing the start test command signal to said test means and responsive to the test results signal from the test means for storing the test result signals, said controller means being responsive to test request signals transmitted from the central office test controller for providing a specific code identifying the stored test results to the remote terminal; and

means located within the remote terminal responsive to the code received from the controller means in the network



unit for providing a specific resistive signature indicative of the stored test results to the central office test controller, where the specific resistive signals is recognized in the central office test controller as a specific test result.

5,301,051

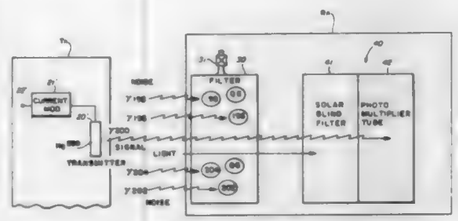
MULTI-CHANNEL, COVERT, NON-LINE-OF-SIGHT UV COMMUNICATION

Myer Geller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 8, 1988, Ser. No. 165,207

Int. Cl.[5] **H04B** *10/10;* **H04V** *14/02*

U.S. Cl. 359—124 **6 Claims**



1. An apparatus for omnidirectionally communicating non-line-of-sight in a frequency channel in the ultraviolet spectrum to provide the capability for simultaneous communications in the solar-blind region of the electromagnetic spectrum comprising:

means consisting of a single isotope of mercury for generating a descrete line in the ultraviolet spectrum and omnidirectionally radiating it;

means coupled to the generating means for modulating the discrete line in the ultraviolet spectrum to enable the omnidirectional radiation of a modulated discrete line; and

means disposed from the omnidirectionally generating means in a non-line-of-sight relationship for receiving and demodulating the omnidirectionally radiated said modulated discrete line in a wide field of view, the receiving demodulating means is provided with isotopes of mercury other than said single isotope and a radiation quenching gas to enable a passing of only said modulated discrete line and a selected communication via said modulated discrete line.

5,301,052

COMMUNICATION METHOD AND NETWORK USING OPTICAL FIBERS WITH FREQUENCY MULTIPLEXING

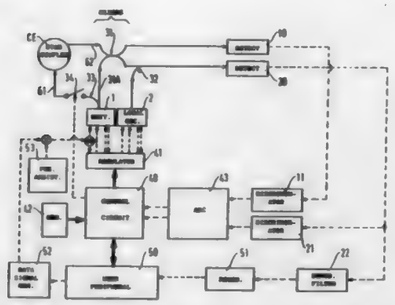
Olivier Audouin, Savigny Sur Orge; Jean-Michel Gabriagues, Le Val Saint-Germain, and Michel Sotom, Villebon Sur Yvette, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jan. 24, 1992, Ser. No. 825,154

Claims priority, application France, Jan. 24, 1991, 9100791

Int. Cl.[5] **H04B** *10/20;* **H04J** *14/02*

U.S. Cl. 359—124 **10 Claims**



1. A method of communicating over optical fibers using frequency multiplexing wherein emission frequencies used as carrier frequencies for simultaneous calls form a stack in which the emission frequencies follow one another from a base frequency up to a top of the stack, and are spaced from one another by respective spectrum distances that are not less than a predetermined frequency increment, the method comprising the steps:

prior to each call, bringing a respective emission frequency that is to be used for the call to the top of the stack;

during the call, servo-controlling said respective emission frequency to a spectrum distance equal to said frequency increment from a respective lower support frequency specific to said respective emission frequency;

continuing said servo-controlling step so long as said respective lower support frequency can be detected; and

shifting said respective emission frequency during a call progressively towards said base frequency whenever no such respective lower support frequency can be detected.

5,301,053

METHOD FOR TRANSMISSION AND RECEIPT OF COHERENT LIGHT SIGNALS

Minoru Shikada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 6, 1991, Ser. No. 803,417

Claims priority, application Japan, Dec. 6, 1990, 2-406331; May 10, 1991, 3-135500

Int. Cl.[5] **H04J** *14/02*

U.S. Cl. 359—125 **7 Claims**

1. A method for transmission and receipt of coherent light signals, comprising the steps of:

providing a station and subscribers connected to each other to transmit and receive coherent light signals of wavelength multiplexing by optical fibers;

providing an oscillation light signal having a first predetermined wavelength in one of said subscribers;

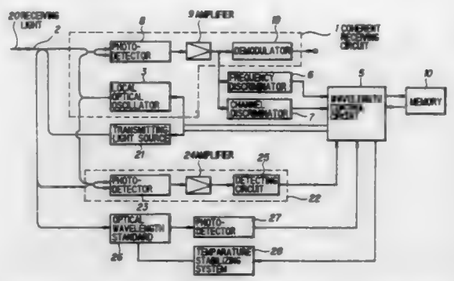
transmitting a first light signal having a second predetermined wavelength from said one of said subscribers to said station;

transmitting a second light signal having a third predetermined wavelength from said station to said one of said subscribers;

combining said second light signal and said oscillation light signal to provide an intermediate light signal;

converting said intermediate light signal to an intermediate electric signal; and

demodulating said intermediate electric signal to provide data transmitted from said station to said one of said subscribers, wherein:



at least one of said oscillation light signal and said first light signal is used to correct a reference wavelength during a non-communication state between said station and said one of said subscribers, and wherein a wavelength of said first light signal is set based on said reference wavelength during a communication state between said station and said one of said subscribers.

5,301,054

TRANSMISSION OF AM-VSB VIDEO SIGNALS OVER AN OPTICAL FIBER

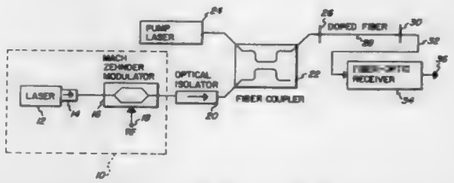
David R. Huber, Warrington, Pa.; Douglas W. Hall, Corning, and Edward F. Murphy, Painted Post, both of N.Y., assignors to General Instrument Corporation, Hatboro, Pa. and Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 454,772, Dec. 22, 1989, Pat. No. 5,210,631. This application Jan. 14, 1993, Ser. No. 4,553

The portion of the term of this patent subsequent to May 11, 2000, has been disclaimed.

Int. Cl.[5] **H04J** *14/02;* **H01S** *3/00*

U.S. Cl. 359—132 **11 Claims**



1. Apparatus for communicating amplitude modulated vestigial-sideband (AM-VSB) signals over an optical communication path comprising:

a light source for providing light at a wavelength λ;

means for modulating light from said source by an AM-VSB signal;

means for optically amplifying the modulated light in an optical amplifier other than a semiconductor optical amplifier, said optical amplifier exhibiting gain at said wavelength λ and producing only minimal distortion that is tolerable for AM-VSB signal distribution; and

means for introducing the amplified modulated light output from said optical amplifier to an optical communication fiber.

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5,301,055

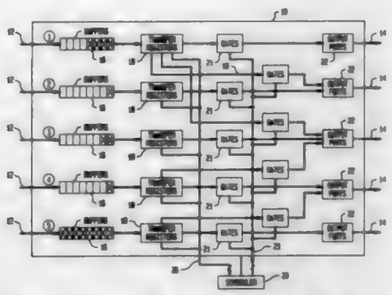
SCHEDULER FOR MULTICAST CELL TRANSMISSION

Anindo Bagchi, Ocean; Tirunell V. Lakshman, Eatontown, and Kasra Rastani, Freehold, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 769,873, Oct. 1, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 39,546

Int. Cl.[5] H04J *14/08, 14/00*

U.S. Cl. 359—139 **19 Claims**



1. A switch including N input ports, M output ports, a switching portion connecting selected ones of said input ports to selected ones of said output ports, and an optical scheduler for assigning said M output ports to said N input ports, said scheduler comprising:

N optical channels;

N light sources inputting light to light input sides of respective ones of said N optical channels;

M×N pairs of an optical detector and an optical gate, M of said pairs being operatively arranged along a respective one of said optical channels from said light input side thereof to a light output side thereof; and

N sub-scheduling circuitries, each:

associated with and receiving a request signal from a respective one of said input ports indicating a request for a connection through said switch to one or more of said output ports,

receiving control signals from respective ones of said detectors arranged along each of said optical channels indicating an availability of requested output ports, and

controlling a switching portion of said switch in response to said request signal and said control signals.

5,301,056

OPTICAL DISTRIBUTION SYSTEM

Frank P. O'Neill, Richland Hills, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 807,317, Dec. 16, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 107,046

Int. Cl.[5] H04B *10/22, 10/10;* **H04J** *14/00*

U.S. Cl. 359—145 **19 Claims**

1. An optical distribution system having a downlink portion and an uplink portion, said downlink portion comprising:

multiplexing means for combining a plurality of RF signals into a combined RF output signal;

first transducer means for converting said combined RF output signal to an optical signal;

a first optical link having a first end coupled to receive said optic signal;

first splitting means for splitting said optic signal into a plurality of optic signals, said first splitting means having an input coupled to a second end of said first optical link and a plurality of outputs;

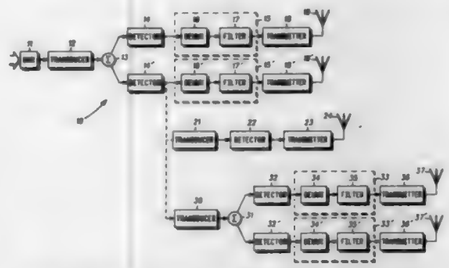
a plurality of second optical links each having a first end coupled to one of said plurality of outputs of said first splitting means and a second end;

a plurality of first detector means for converting one of said plurality of optic signals back into said combined RF signal, each of said plurality of first detector means having an input coupled to a second end of one of said plurality of second optical links and an output;

a plurality of first converting means for isolating a first desired RF signal from said combined RF signal, each of said plurality of first converting means having an input coupled to said output of one of said plurality of first detector means;

a plurality of first transmitting means each coupled to said output of one of said plurality of first converting means for transmitting said desired RF signals;

second transducer means converting said combined RF signal into a second optic signal, said second transducer



means having an input coupled to said output of one of said plurality of detector means;

second detector means for converting said second optic signal back into said combined RF signal, said second detector means having an input coupled to an output of said second transducer means;

second converting means for isolating a second desired RF signal from said combined RF signals, said second converting means having an input coupled to an output of said second detector means; and

second transmitting means for transmitting said second desired RF signal, said second transmitting means having an input coupled to an output of said second converting means.

5,301,057

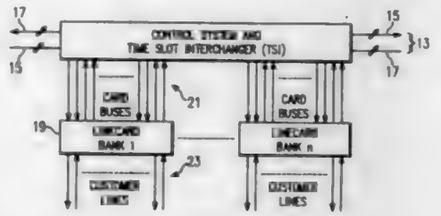
SUBSCRIBER INTERFACE FOR A FIBER OPTIC COMMUNICATIONS TERMINAL

Thomas R. Eames, Santa Rosa, Calif., assignor to DSC Communications Corporation, Plano, Tex.

Filed Oct. 15, 1990, Ser. No. 597,061

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—163 **19 Claims**



1. A communications terminal, comprising:

means for connecting to a fiber optic communications link having a capacity of a first number of communication channels,

means connected with said fiber optic communications link connecting means for selectively connecting various of said communication channels to a plurality of electrical buses that individually have a maximum capacity of a second number of communication channels less than said first number,

a plurality of circuit cards,

a plurality of connectors for individually receiving one of the plurality of circuit cards, each of said plurality of connectors having at least first and second similarly positioned groups of conductors for electrical connection with one of the plurality of circuit cards, the first group of conductors of each of said plurality of connectors being connected with different ones of said plurality of electrical buses, and the second group of conductors of each of said plurality of connectors also being connected with different ones of said plurality of electrical buses, those of the plurality of electrical buses connected to the first group of conductors of one of the plurality of connectors also being connected to the second group of conductors of a different one of the plurality of connectors, and

said plurality of subscriber circuit cards individually having at least a first group of card conductors for connection with said first group of conductors of a connector into which it is received, said circuit cards including means connected to at least said first group of card conductors for interconnecting with subscriber communications equipment.

5,301,058

SINGLE SIDEBAND OPTICAL MODULATOR FOR LIGHTWAVE SYSTEMS

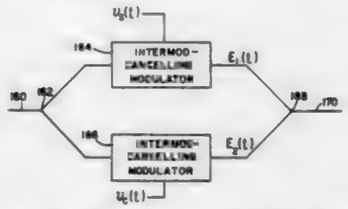
Robert Olshansky, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 31, 1990, Ser. No. 636,644

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] H04B *10/04*

U.S. Cl. 359—188 **25 Claims**



1. A single sideband polarization-maintaining optical phase modulator comprising:

a first intermod-cancelling optical phase modulator having an input for receiving an optical carrier and an output for providing a first modulated optical carrier;

a second intermod-cancelling optical phase modulator having an input for receiving said optical carrier and an output for providing a second modulated optical carrier;

an input optical divider for coherently coupling said optical carrier to said first and second intermod-cancelling optical phase modulators;

an output polarization-maintaining optical combiner for coherently combining said first and second modulated optical carriers and providing an output optical signal; and

modulation means for providing a first modulation signal $v_x(t)$ to said first intermod-cancelling optical phase modulator and for providing a second modulation signal $v_c(t)$ to said second intermod-cancelling optical phase modulator, said first modulation signal and said second modulation signal being selected such that said output optical signal has only a single sideband.

5,301,059

SHORT-WAVELENGTH LIGHT GENERATING APPARATUS

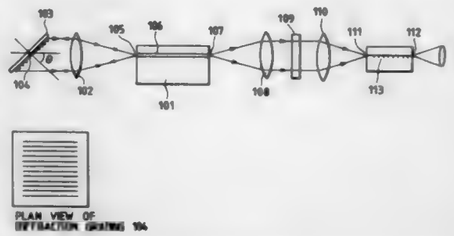
Yasuo Kitaoka; Kazuhisa Yamamoto; Kiminori Mizuuchi, all of Osaka; Makoto Kato, Nishinomiya, and Fumihiro Sogawa, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 20,335

Claims priority, application Japan, Mar. 3, 1992, 4-045319; Jul. 9, 1992, 4-182030

Int. Cl.[5] G02F *1/35*

U.S. Cl. 359—332 **10 Claims**



1. A short-wavelength light generating apparatus, comprising:

laser light generating means for generating a laser light beam having an oscillated wavelength;

external grating mirror means having a reflection type diffraction grating for reflecting a first part of the laser light beam emitted from the laser light generating means to feed back the first part of the laser light beam to the laser light generating means, the oscillated wavelength of the laser light beam being stabilized within a wavelength acceptance;

quasi-phase matching polarization-inverted waveguide means for changing the oscillated wavelength of a second part of the laser light beam which is stabilized by the external grating mirror means and is emitted from the laser light generating means, the quasi-phase matching polarization-inverted waveguide means being arranged to position the laser light generating means between the quasi-phase matching polarization-inverted waveguide means and the external grating mirror means; and

optical coupling means for leading the second part of the laser light beam emitted from the laser light generating means to the quasi-phase matching polarization-inverted waveguide means.

5,301,060

OPTICAL ELEMENT

Tetsuji Niikawa; Hiromu Nakamura; Toshio Naiki, and Jun Kohsaka, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 28, 1990, Ser. No. 619,898

Claims priority, application Japan, Nov. 30, 1989, 1-312951; Nov. 30, 1989, 1-312952

Int. Cl.[5] G02B *5/08, 7/18, 26/08*

U.S. Cl. 359—218 **5 Claims**

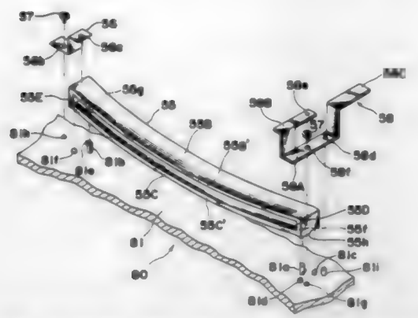
1. A mirror which is incorporated into a light beam scanning device and is made of plastic, comprising:

an effective portion which has a constant thickness (r) and a reflecting surface, the thickness (r) extending in a direction traverse to the reflecting surface; and

a reinforcing portion which is so provided as to enclose said effective portion and reinforces said effective portion from a periphery of said effective portion;

said reinforcing portion extending a width wl greater than the thickness (r) of said effective portion in the traverse direction;

said reinforcing portion being formed integrally with said effective portion; and



said reinforcing portion having a thickness (t) approximately equal to the thickness (r) of said effective portion.

5,301,061

ENDOSCOPE SYSTEM

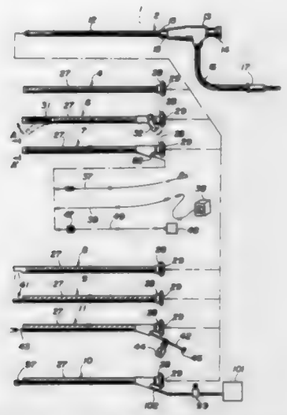
Akio Nakada, Lake Success; Peter G. Lorenz, Massapequa, both of N.Y.; Minoru Okada, Sagamihara, Japan; Nobuyuki Sakamoto, Hachioji, Japan; Yoshikazu Tohjoh, Fussa, Japan, and Katsunori Sakiyama, Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1990, Ser. No. 489,573

Claims priority, application Japan, Jul. 27, 1989, 1-196350; Jan. 31, 1990, 2-23546

Int. Cl.[5] G03B *11/04*; A61B *1/00*; H04N *7/18*

U.S. Cl. 359—362 **15 Claims**



1. An endoscope system comprising:

an endoscope having a tip part, said tip part including an insertable part which has an illuminating window for emitting light for illuminating an object and a receiving window for receiving an image of the object illuminated by said illuminating light emitted from said illuminating window; and

a plurality of sheaths selectively and removably connectable to said endoscope, each of said plurality of sheaths having a hollow interior portion for receiving said insertable part therein when connected to said endoscope, and said plurality of sheaths having respectively different structures for producing respectively different functions; each of said plurality of sheaths including connecting means for connection with said endoscope;

wherein each of said connecting means is formed on an intermediate part of a respective one of said plurality of sheaths between the tip part and a base end part thereof, each of said sheaths being elongate and tubular and having on one end thereof a tip part to be inserted into an object to be inspected and a base end part positioned at said insertable part of said endoscope.

5,301,062

DISPLAY HAVING DIFFRACTION GRATING PATTERN

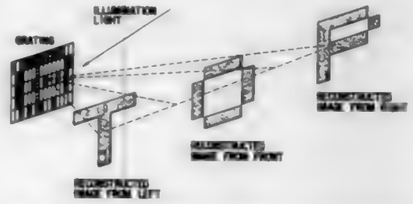
Susumu Takahashi, Matsudo; Toshiki Toda, Satte, and Fujio Iwata, Chiba, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 826,869

Claims priority, application Japan, Jan. 29, 1991, 3-026684; Apr. 11, 1991, 3-079080

Int. Cl.[5] G02B *5/18*

U.S. Cl. 359—567 **12 Claims**



1. A display having a diffraction grating pattern, comprising:

(a) a flat substrate;

(b) at least one dot formed on a surface of said flat substrate, the dot being formed by a diffraction grating pattern as an aggregate of a plurality of curves obtained by translating a curve; and

(c) light-shielding means having a predetermined shape and arranged on an illumination light incident side of the diffraction gratings.

5,301,063

METHOD OF PRODUCING LED LENS ARRAY

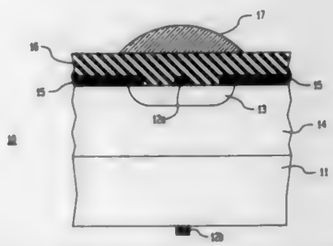
Ryoichi Tohmon, Tokyo, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1992, Ser. No. 818,632

Claims priority, application Japan, Jan. 28, 1991, 3-008750

Int. Cl.[5] G02B *27/10*

U.S. Cl. 359—619 **5 Claims**



1. A method of fabricating a lens array on a light emitting diode array comprising the steps of:

forming a light emitting diode array on a semiconductive substrate

depositing a mask upon the light emitting diode array; and

biasing the light emitting diode array so as to cause light to be emitted therefrom which passes through the mask to form a lens array by optical chemical vapor deposition or by photopolymerization of a polymeric resin.

5,301,064

REAR FOCUSING TYPE ZOOM LENS SYSTEM

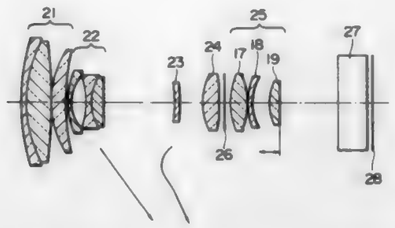
Yasuyuki Sugi, Ibaraki, and Yoshiaki Tachibana, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 4, 1991, Ser. No. 680,703

Claims priority, application Japan, Apr. 6, 1990, 2-90326

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—684 **11 Claims**



1. A rear focusing type zoom lens system, comprising:

a first lens group having a positive refracting power;

second and third lens groups having negative refracting powers, respectively, and serving for zooming function when moved along an optical axis;

a fourth lens group having a positive refracting power and constantly held stationarily; and

a fifth lens group having a positive refracting power and serving for image formation function;

said first to fifth lens groups being arranged in the above-mentioned order as viewed from the object side,

wherein said fifth lens group includes a first lens element having a positive refracting power, a second lens element having a negative refracting power and a third lens element having a positive refracting power, and focusing is performed by moving a single lens element having positive refracting power of said fifth lens group along said optical axis.

5,301,065

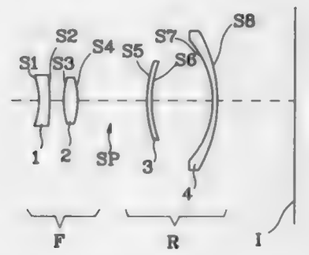
COMPACT ZOOM LENS SYSTEM

Hung-Te Lee, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Chutung, Taiwan

Filed Sep. 4, 1992, Ser. No. 940,678

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—692 **17 Claims**



1. A compact zoom lens system having an object and an image side through which light travels from the object side to the image side, comprising:

(a) a front lens group and a rear lens group, said front lens group being closer to an object side and having a positive power, and said rear lens group being closer to an image side and having a negative power;

(b) an air space between said front lens group and said rear lens group, said air space being made variable to facilitate zooming from wide angle to telephotos;

(c) said front lens group comprising at least first and second lenses wherein said first lens is closer to the object side and said second lens is closer to the image side;

(d) said first lens having a negative power and first and second optical surfaces wherein said first optical surface is closer to the object side and said second optical surface is closer to the image side;

(e) said second lens having a positive power and third and fourth optical surfaces wherein said third optical surface is closer to the object side and said fourth optical surface is closer to the image side;

(f) said rear lens group comprising at least third and fourth lenses wherein said third lens is closer to the object side and said fourth lens is closer to the image side;

(g) said third lens having fifth and sixth optical surfaces wherein said fifth optical surface is closer to the object side and said sixth optical surface is closer to the image side;

(h) said fourth lens having seventh and eighth surfaces wherein said seventh optical surface is closer to the object side and said eighth optical surface is closer to the image side; and

(i) both said third and fourth lenses having negative power;

(i) wherein said compact zoom lens system satisfies the following condition:

$$-0.38 < R_1/f_w < -0.2, \text{ and}$$

$$0.4 < f_2/f_w < 1.0$$

wherein: R_1 is the radius of said first optical surface,

f_w is the focal length of said compact lens at wide angle, and

f_2 is the focal length of said second lens group.

5,301,066

LENS BARREL

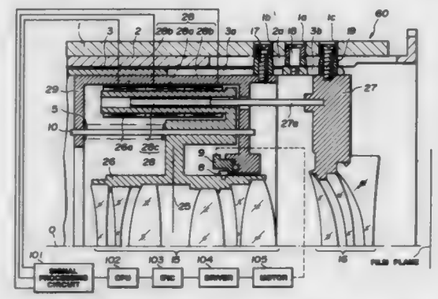
Masayu Higuchi, Hachioji; Yuichi Torikoshi, Shiroyama; Hiroshi Terada, Mitaka, and Takeshi Ito, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 903,919

Claims priority, application Japan, Jun. 28, 1991, 3-158823

Int. Cl.[5] G02B *15/14, 7/02*

U.S. Cl. 359—698 **31 Claims**



1. A lens barrel comprising:

focusing lens means comprising one or more lens groups,

second lens means comprising at least one lens, the positional relationship of said second lens means relative to said focusing lens means exerting the largest influence upon a focused condition,

drive means for selectively moving said focusing lens means back and forth in a direction of an optical axis,

measurement means comprising dielectric means fixed to said second lens means and coil means provided on a frame of said focusing lens means to be spacedly wound

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around said dielectric means, said measurement means detecting a position of said dielectric means relative to said coil means in the form of a differential voltage and measuring a spacing between said focusing lens means and said second lens means, and

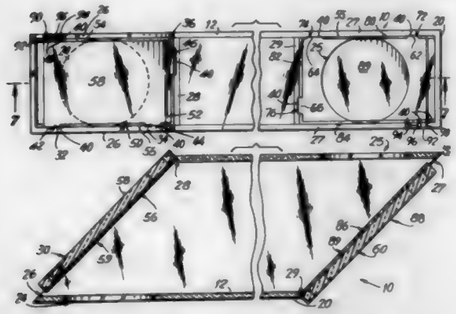
control means for controlling said drive means to move said focusing lens means to a proper in-focus position responsive to said measurement means.

5,301,067

HIGH ACCURACY PERISCOPE ASSEMBLY

Zvi Bleier, Comack, and Morton S. Lipkins, Bayside, both of N.Y., assignors to PLX Inc., Deer Park, N.Y.

Filed May 6, 1992, Ser. No. 880,215
Int. Cl.[5] G02B *23/08*
U.S. Cl. 359—857 **53 Claims**



1. A high accuracy periscope assembly, comprising:

a tubular member having first and third slanting surfaces at a first end thereof, second and fourth slanting surfaces at a second end thereof, a first opening at said first end and a second opening at said second end;

first and second mirror panels having reflective surfaces;

first and second mounting means, said first means for mounting said first mirror panel at said first end of said tubular member to said tubular member and said third slanting surface, and said second means for mounting said second mirror panel at said second end of said tubular member to said tubular member and said fourth slanting surface;

wherein light beams entering said tubular member through said first opening and corresponding light beams exiting said tubular member through said second opening propagate in substantially the same direction.

5,301,068

OSTO-MIRROR

Vincent L. Minisci, Holden, Mass., assignor to Brenda E. Minisci, Hatfield, Mass.

Continuation-in-part of Ser. No. 760,566, Sep. 16, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,518
Int. Cl.[5] G02B *7/18*
U.S. Cl. 359—879 **1 Claim**

1. An aid for users of ostomy appliances in detaching and re-attaching the appliance to the body of said users,

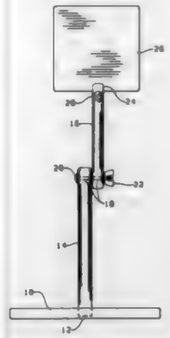
said aid comprising a flat elongated base (**10**), a circular hole midway between the ends of the base,

a cylindrical post (**14**) frictionally receivable in the hole for holding the post upright at a right angle to the base and rotationally adjustable,

an aperture through the post and adjacent the end of the post which is remote from the base, said aperture being diametric of the post and parallel to the base,

an aperture through a dowel at an adjacent end thereof and cooperating with the aperture in the post, a bolt extending through both apertures, a wing-nut on the bolt in position to secure the dowel to the post or selectively to release the post from the dowel and to provide that the dowel is attachable to the post at either of two opposite sides of the post in prolongation thereof,

means at the end of the dowel opposite its aperture to hold a mirror parallel to the base, and a mirror having front and back surfaces detachably held in said means,



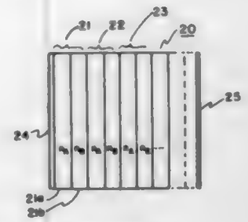
the means holding the mirror comprising a slot, wherein the front and back surfaces of the mirror are positioned between the inner surfaces of said slot, and screw means to apply or relax pressure to the mirror so the mirror can be adjusted laterally in the slot.

5,301,069

NONLINEAR RUGATE OPTICAL LIMITER

Gary L. Wood; Wolfgang Elser, both of Fairfax County, and Edward J. Sharp, Stafford County, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 9, 1989, Ser. No. 336,441
Int. Cl.[5] B05D *3/06, 5/06;* G02B *6/34;* G01B *9/02*
U.S. Cl. 359—890 **9 Claims**



1. An optical limiter comprising:

a first series of thin superposed layers, all having the same first order susceptibility to electric polarization and all being transparent to light over a broad spectrum of wavelengths;

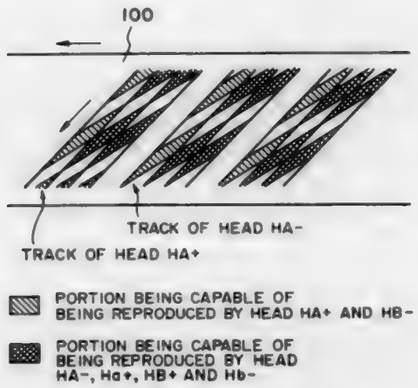
adjacent layers of said series consisting of materials with electric polarizabilities differing only in their intensity dependent third order susceptibilities to define a first narrow band filter, having an intensity threshold, within said broadband spectrum, such that said limiter reacts to any activating light component within said narrow band which has an intensity above said threshold by reflecting all light components within said narrow band and expanding the width of said narrow band in proportion to the intensity of said activating component.

5,301,070

INFORMATION SIGNAL REPRODUCING APPARATUS HAVING THREE REPRODUCING MODES

Yasuyuki Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 625,500, Dec. 11, 1990, abandoned. This application Mar. 22, 1993, Ser. No. 34,590
Claims priority, application Japan, Dec. 14, 1989, 1-324590
Int. Cl.[5] H04N *5/78;* G11B *15/46, 15/14*
U.S. Cl. 360—10.1 **15 Claims**



1. An information signal reproducing apparatus comprising:

(a) reproducing means for reproducing a recorded information signal from a tape-like recording medium on which a plurality of tracks are formed according to one of a plurality of recording modes, said reproducing means including first and second head means for periodically tracing said tape-like recording medium, said plurality of recording modes including a first recording mode in which a first number of tracks are formed per unit time by using both said first and second head means and a second recording mode in which a second number of tracks are formed per unit time by using only the first head means, said second number being less than said first number;

(b) conveying means for conveying the tape-like recording medium; and

(c) head means changing means for changing said first and second head means to be used for reproduction between a plurality of reproducing modes including

a first reproducing mode, wherein the conveying means conveys the tape-like recording medium at substantially the same speed as that in the first recording mode, and the reproducing means reproduces the recorded information signal by causing both of the first and second head means to trace each of tracks formed in said first recording mode,

a second reproducing mode, wherein the conveying means conveys the tape-like recording medium at substantially the same speed as that in the second recording mode, and the reproducing means reproduces the recorded information signal by causing only the first head means to trace each of tracks formed in said second recording mode, and

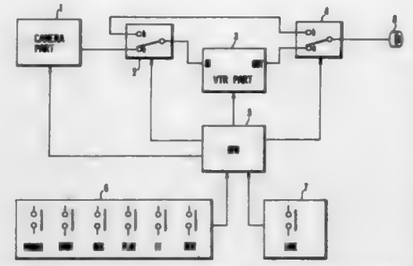
a third reproducing mode, wherein the conveying means conveys the tape-like recording medium at a speed different from that in the second recording mode, and the reproducing means reproduces the recorded information signal by causing both of the first and second head means to trace tracks formed in said second recording mode.

5,301,071

RECORDING AND REPRODUCING APPARATUS USING A BIDIRECTIONAL LINE TO RECEIVE AND TRANSMIT SIGNALS

Hiroyuki Takimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1989, Ser. No. 310,297
Claims priority, application Japan, Feb. 22, 1988, 63-039830
Int. Cl.[5] G11B *15/12*
U.S. Cl. 360—61 **19 Claims**



1. An information signal recording and reproducing apparatus comprising:

a) a common terminal for inputting an external information signal and externally outputting an internal information signal;

b) a connection line arranged to connect with said common terminal and to be able to transmit signals in a bidirectional manner;

c) recording and reproducing means for recording an information signal on a recording medium and for reproducing an information signal from the recording medium;

d) manual operation means for designating one of a plurality of modes of said recording and reproducing means, said plurality of modes including a recording mode in which the information signal is recorded on the recording medium and a reproduction mode in which the information signal is reproduced from the recording medium; and

e) terminal switching means for selectively connecting said connection line to an input side or an output side of said recording and reproducing means in response to an operation of said manual operation means.

5,301,072

SAMPLE DATA POSITION ERROR SIGNAL DETECTION FOR DIGITAL SECTOR SERVO

Rosser S. Wilson, Menlo Park, Calif., assignor to Mastor Corporation, San Jose, Calif.

Continuation of Ser. No. 561,343, Aug. 1, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 788
Int. Cl.[5] G11B *5/58*
U.S. Cl. 360—77.01 **17 Claims**

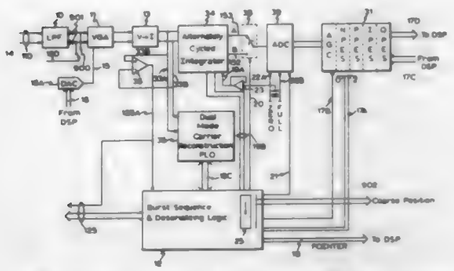
15. A circuit for detection of position error signals comprising:

synchronous detection means for detecting a position error signal and for providing a first output signal;

first and second integrating means selectably coupled to said detection means for integrating said first output signal, said first and second integrating means providing second and third output signals, respectively;

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converting means coupled to said first and second integrating means for converting said second and third output



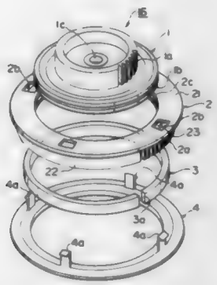
signals from an analog form to a digital form, thereby generating fourth and fifth output signals, respectively.

5,301,073

TAKE-UP PULLEY WITH TORQUE-LIMITING MECHANISM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Noboru Katohno, Mito; Masaki Yono, Kudamatsu, and Yasuhiro Hashiguchi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,659
Claims priority, application Japan, May 29, 1991, 3-152166
Int. Cl.[5] G11B *15/00*; F16D *3/64*; F16H *35/10*
U.S. Cl. 360—96.3 **7 Claims**



1. A magnetic recording and reproducing apparatus comprising

a rotary cylinder with a magnetic head mounted thereon,

means for withdrawing a magnetic tape wound around two tape reels in a cassette so as to wind the magnetic tape around the rotary cylinder for use in carrying out a recording and reproducing operation,

a capstan motor for driving a capstan for transporting the magnetic tape,

a belt pulley provided on said capstan motor,

a take-up side pulley connected to said belt pulley through a toothed belt,

a take-up side reel table for engaging one of the tape reels of said cassette,

a supply side reel table for engaging the other of the tape reels of said cassette, and

an intermediate gear for selectively transmitting rotation of said capstan motor to said take-up side reel table or said supply side reel table,

wherein said take-up pulley includes

a power input member which has a cylinder engaging part and to which rotational force is input from said toothed belt, said cylindrical engaging part of said power input member including at least one elastically deformable portion,

a power output member which has a cylindrical engaging part for coupling with said cylindrical engaging part of said power input member so as to output to said intermediate gear the rotational force input to said power input member, and

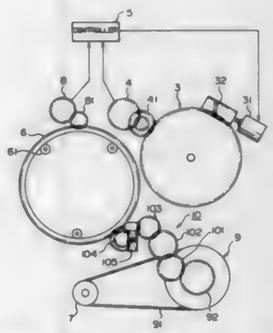
an annular elastic member for uniting said cylindrical engaging part of said power output member and said cylindrical engaging part of said power input member to each other via at least said at least one elastically deformable portion of said cylindrical engaging part of said power input member with a frictional engagement force.

5,301,074

TAPE WRAPPING MECHANISM USED IN MAGNETIC RECORDING/REPRODUCING APPARATUS

Hisao Matsuno, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1991, Ser. No. 719,997
Claims priority, application Japan, Jun. 22, 1990, 2-162915
Int. Cl.[5] G11B *15/665*
U.S. Cl. 360—85 **2 Claims**



1. A method for wrapping a recording medium tape from a cassette onto a rotatable head drum in a magnetic recording-/reproducing apparatus wherein the head drum does not face the cassette in a cassette-loading direction, said method comprising the following steps of:

rotating a cam member to operate an associative cam follower along a cam surface provided on said cam member to drivingly move guide elements for wrapping said tap onto said rotatable head drum;

interrupting the rotation of said cam member to interrupt the movement of said guide elements when said cam member reaches a predetermined angular position;

rotating a loading ring to drive said guide elements, instead of said cam follower, simultaneous with the interruption of the rotation of said cam member;

interrupting the rotation of said loading ring to interrupt the movement of said guide elements when said loading ring reaches a predetermined angular position; and

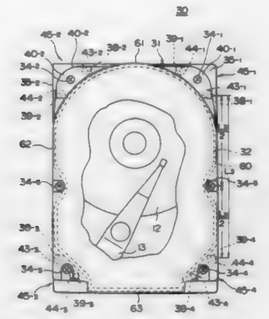
re-rotating said cam member to operate said associative cam follower along a remaining cam surface provided on said cam member to drive said guide elements.

5,301,075

HARD DISK DRIVE HAVING A SHIELDING STRUCTURE AGAINST ELECTROMAGNETIC NOISE

Takashi Takemoto, Sagamihara, Japan, assignor to TEAC Corporation, Japan

Filed May 27, 1992, Ser. No. 889,487
Claims priority, application Japan, May 31, 1991, 3-040665[U]
Int. Cl.[5] G11B *33/14*
U.S. Cl. 360—97.02 **6 Claims**



1. A hard disk drive comprising:

a metal base fitted with a hard disk;

a metal cover which covers said hard disk;

a gasket which is sandwiched between said base and said cover; and

screws for securing said cover onto said base at a plurality of places along the periphery of said cover,

wherein first protuberances (**38.**$_1$ and **39.**$_1$) are provided on said base on both sides of each of screw holes provided for accepting each of said screws, there being one protuberance on one side at a predetermined distance apart from said screw hole and another protuberance being on another side at a predetermined distance apart from said screw hole, along the periphery of said base,

wherein second protuberances (**43.**$_1$ and **44.**$_1$) are provided on said cover at positions so as to face said first protuberances when said cover is fitted on said base, and

wherein said first and second protuberances are, when said cover is fixed on said base by said screws, in pressured contact with each other on both sides of each of said screws, along the periphery of said hard disk drive.

5,301,076

AUTOMATIC DISK SELECTING APPARATUS

Takashi Kobayashi, Tokyo; Sakae Tamachi, Matsudo; Yoshio Ohashi, Matsudo; Kouji Yoshino, Matsudo, and Haruhisa Tobitani, Matsudo, all of Japan, assignors to NKK Corporation, Tokyo and Nikkyo Seisakusho Co., Ltd., Chiba, both of Japan

PCT No. PCT/JP90/01730, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992
PCT Filed Dec. 28, 1990, Ser. No. 923,922
Int. Cl.[5] G11B *17/08*
U.S. Cl. 360—98.06 **4 Claims**

1. An automatic disk selecting apparatus comprising:

a disk supporting mechanism arranged in front of a body case, for keeping a plurality of storage cases for storing disks in a vertical state and supporting the storage cases such that the storage cases are movable in right and left directions;

a disk selecting unit arranged behind said disk supporting mechanism and driven in the right and left directions, said disk selecting unit including;

a fixing mechanism for fixing a selected one of said plurality of storage cases supported by said disk supporting mechanism; and

a pair of select levers for moving the storage cases other than the selected one of said plurality of storage cases in the right and left directions;

a player moving unit arranged behind the body case, for keeping a player having a disk clamp mechanism in a vertical state and moving the player in the right and left directions;

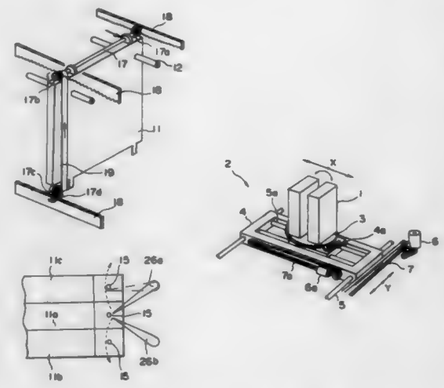
a disk returning mechanism arranged above said disk supporting mechanism and including a pair of returning arms for returning the disk storage cases, which have been moved in the right and left directions by said disk selecting unit, to an initial position;

a pole fixed to an upper end portion of each of said storage cases;

a base on which said disk selecting unit is arranged, said base being driven in the right and left directions;

said fixing mechanism of said disk selecting unit including a forked fixing member for holding said pole and driven back and forth;

said pair of select levers being arranged symmetrically with respect to an axis of said fixing mechanism and being driven in such a manner that said select levers are opened and closed in directions opposite to each other;



wherein said base is movable such that said fixing mechanism is located in front of one of the storage cases to be selected, said fixing mechanism is then advanced, said forked fixing member is engaged with and fixed to a pole of said one of the storage cases to be selected, said pair of select levers is opened and engaged at end portions thereof with poles of right and left storage cases of said one of the storage cases to be selected, and said right and left storage cases are moved in the right and left directions, thereby forming a space for inserting said player on each side of said one of the storage cases to be selected;

a pair of pinions arranged above each of the storage cases;

a pair of racks arranged above the storage cases and extending in the right and left directions of the body case and respectively engaged with said pair of pinions;

a further pinion arranged below each of the storage cases and which is reversely rotated in synchronization with said pair of pinions; and

a further rack arranged below the storage cases and extending in the right and left directions of the body case and engaged with said further pinion,

whereby said racks and pinions maintain said storage cases in a vertical state and permit said storage cases to move in the right and left directions.

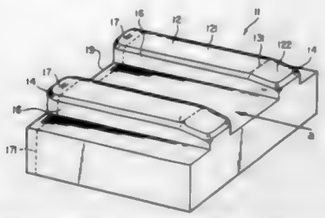
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,077

THIN FILM MAGNETIC HEAD

Masao Yamaguchi; Takamitsu Kamimura, and Kanji Kobayashi, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,679
Int. Cl.[5] G11B 5/60
U.S. Cl. 360—103 34 Claims



1. A thin-film magnetic head having a thin-film transducer element at an air outflow end of a slider,

beveled edge surfaces being formed at edges completely surrounding an air bearing surface,

the air bearing surface having at an air inflow end thereof a tapered inflow end surface continuous with a central flat planar surface, and

$(l_4-l_5)/l_5$ being not more than 0.4, where

l_4 is the bevel width in regions located at the edge surfaces at opposite sides in a direction perpendicular to the air inflow direction and extending ±0.1 mm in the air inflow direction from, as a base point, a ridge portion between the central flat planar surface and the tapered inflow end surface, and

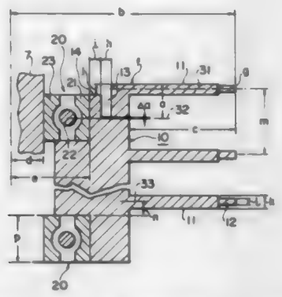
l_5 is the bevel width of an air inflow end edge surface continuous with the tapered inflow end surface.

5,301,078

MAGNETIC DISK UNIT AND MANUFACTURING METHOD OF CARRIAGE STRUCTURE THEREOF

Toshiaki Makino; Marutomo Goto, both of Ibaraki; Hideyuki Kimura; Takashi Yamaguchi, both of Tsuchiura; Hiromu Hirai, Tsukuba; Takashi Kono, Ibaraki; Ryoji Okada, Ibaraki; Toshihiro Yamada, Ibaraki; Yasuhiro Yoshimura, Ibaraki; Hideaki Amano, Odawara; Akio Takatsuka, Hiratsuka; Toshio Matsushita; Satoru Yamaura, both of Odawara, and Yuichi Koizumi, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 12, 1991, Ser. No. 713,994
Claims priority, application Japan, Jun. 15, 1990, 2-155138; Sep. 25, 1990, 2-254712; Nov. 2, 1990, 2-295342
Int. Cl.[5] G11B 21/16
U.S. Cl. 360—106 20 Claims



1. A magnetic disk unit comprising a carriage structure including a rotary shaft, a plurality of guide arms which are supported in one body on a guide-arm retaining portion at their proximal ends and which extend independently with respect to one another in a parallel relationship in an axial direction of said guide-arm retaining portion; bearing retainers formed on both ends of said guide-arm retaining portion; and bearings fixed on said bearing retainers so as to rotatably connect said guide-arm retaining portion around said rotary shaft,

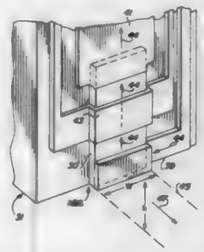
wherein said carriage structure is arranged in such a manner that at least one of the outermost guide arms has a center line in a direction of thickness thereof, the center line being located outside of a center line of the bearing in a direction of height thereof, the bearing being provided on the side corresponding to said at least one of the outermost guide arms, and said carriage structure includes a concave portion which is continuously formed on the outer peripheral portion of said bearing retainer, extending inwardly from the outside surface of the bearing retainer.

5,301,079

CURRENT BIASED MAGNETORESISTIVE SPIN VALVE SENSOR

William C. Cain, San Jose, Calif.; Bernard Dieny, Grenoble Credex, France; Robert E. Fontana, Jr., and Virgil S. Speriosu, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1992, Ser. No. 977,382
Int. Cl.[5] G11B 5/30
U.S. Cl. 360—113 28 Claims



1. A magnetoresistive sensor comprising:

a first and a second layer of ferromagnetic material separated by a layer of non-magnetic metallic material, the magnetic easy axis in said first and second layers of ferromagnetic material being substantially parallel, the direction of magnetization of said first and second layers of ferromagnetic material responsive to a magnetic field generated by a sense current in said magnetoresistive sensor being oriented at equal and opposite angles with respect to said magnetic easy axis, respectively, the change in resistance of said magnetoresistive sensor responsive to an applied magnetic field being a function of the change in the angle between said directions of magnetization in said first and second layers of ferromagnetic material, the magnetization of each of said first and second layers of ferromagnetic material being responsive to said applied magnetic field.

5,301,080

BIAS SERVO LOOP FOR MAGNETO-RESISTIVE READ/WRITE HEAD

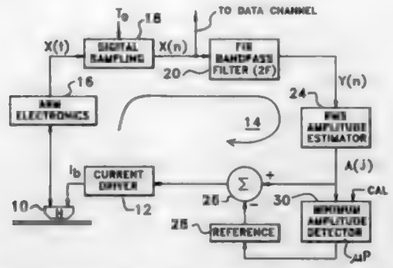
Hal H. Ottesen, and Gordon J. Smith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,628
Int. Cl.[5] G11B 5/127, 5/03
U.S. Cl. 360—113 20 Claims

20. Apparatus for linearizing the magnetic field to output signal transfer characteristic of a magneto-resistive element comprising:

means for biasing the element at an operating point where fluctuations in magnetic field produce a substantially linear fluctuation in resistance of the element;

means for monitoring the amplitude of more than one even harmonic of the digitized signal sensed by the element; and



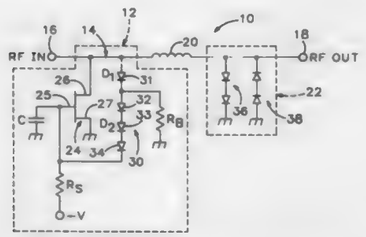
means responsive to the amplitude of more than one even harmonic for adjusting said biasing means to move the operating point until the amplitude of the even harmonics is minimized whereby the element is biased at the optimum operating point for linearizing the transfer characteristic.

5,301,081

INPUT PROTECTION CIRCUIT

Allen F. Podell, Palo Alto, and Edward B. Stoneham, Los Altos, both of Calif., assignors to Pacific Monolithics, Sunnyvale, Calif.

Filed Jul. 16, 1992, Ser. No. 915,348
Int. Cl.[5] H02H 9/00, 9/04, 3/20
U.S. Cl. 361—56 8 Claims



1. An overvoltage protection circuit comprising:

a terminal for receiving an input signal;

a transistor having a control port, a first current conducting port coupled to the terminal, and a second current conducting port coupled to a common reference potential, with a bidirectionally conductive controlled path between the first and second current-conducting ports;

first resistance means coupling the control port to a second reference potential equal to or lower than the common reference potential for rendering the transistor conductive in a first direction in response to a voltage applied to the terminal of a first polarity; and

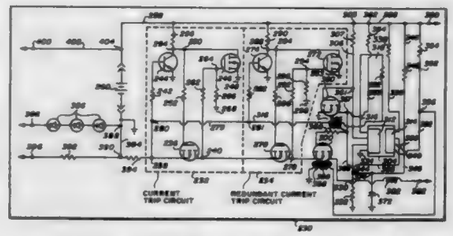
diode means coupled between the terminal and the control port for rendering the transistor conductive in a second direction reverse to the first direction in response to a voltage applied to the terminal of a second polarity opposite to the first polarity.

5,301,082

CURRENT LIMITER CIRCUIT

Larry G. Stolarczyk, Raton; Kurt A. Smoker, Las Cruces; Gerald J. Boese, Raton; William E. Mondt, Albuquerque; Marvin L. Hasenack, Jr., Raton, all of N. Mex.; James L. Zappanti, Trinidad, Colo.; Seth A. Smith, and Edward D. Moore, both of Raton, N. Mex., assignors to Stolar, Inc., Raton, N. Mex.

Division of Ser. No. 686,874, Apr. 16, 1991, Pat. No. 5,093,929, which is a continuation of Ser. No. 389,403, Aug. 4, 1989, abandoned, which is a division of Ser. No. 56,559, May 29, 1987, Pat. No. 4,879,755. This application Nov. 13, 1991, Ser. No. 792,036
Int. Cl.[5] H02H 9/00, 5/04
U.S. Cl. 361—58 7 Claims



1. An intrinsically safe current limiter circuit (230) for limiting a flow of current from a battery (260) to a piece of electronic equipment (380, 382), comprising:

a. a first current trip circuit means connected between a terminal of said battery and said piece of electronic equipment, the current trip circuit means including at least two field effect transistors and one other semiconductor device, one of said field effect transistors being connected in series with said electronic equipment and latched in a low resistance state when current demands at said equipment is below a preset value, said other semiconductor device being connected to said one of said field effect transistors and responsive to said current demand to increase channel resistance of said one of said field effect transistors to a high resistance state when said current demand exceeds said preset value, said other of said field effect transistors being connected to said other semiconductor device and said one of said field effect transistors to latch said one of said other field effect transistors in said high resistance state when said current demand exceeds said preset value;

b. a current limiting means connected in series between the current trip circuit means and said piece of electronic equipment; and

c. a voltage reference means electrically connected to the current limiting means;

whereby, when the voltage reference means senses an increase in voltage due to an electrical fault in said piece of electronic equipment, the current limiting means limits the flow of current to said piece of electronic equipment and the first current trip circuit means activates itself to prevent the flow of current to said piece of electronic equipment.

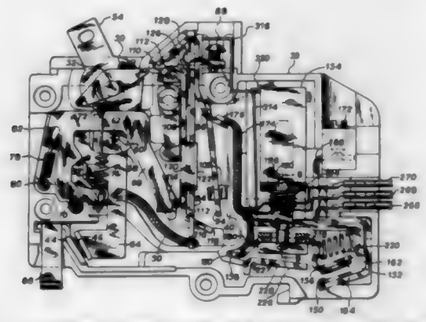
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5,301,083

REMOTE CONTROL RESIDENTIAL CIRCUIT BREAKER

William E. Grass, Milwaukee; Peter K. Moldovan, Cascade; Earl T. Piber, Oconomowoc; Robert J. Clarey, Brookfield; James R. Jaeschke, Waukesha; Robert A. Kihn, Menomonee Falls; Richard G. Smith, Milwaukee, and Herbert R. Streich, Whitefish Bay, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 30, 1991, Ser. No. 768,029
Int. Cl.[5] H01H *73/00*
U.S. Cl. 361—64 36 Claims



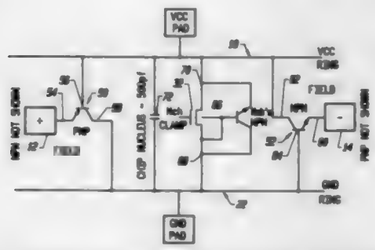
1. A remote control residential and commercial circuit breaker providing overload current protection and load management, comprising in combination a first set of contacts comprising a pair of separable overload breaker contacts, trip structure for causing separation of said overload breaker contacts in response to overload currents therethrough, a second set of contacts comprising a pair of switching relay contacts having open and closed conditions and electrically connected in series with said overload breaker contacts, an actuator energizable to mechanically actuate said switching relay contacts, and feedback means responsive to energization of said actuator and mechanically coupled to said actuator and moved by movement of said actuator to provide status indication of the condition of said switching relay contacts.

5,301,084

ELECTROSTATIC DISCHARGE PROTECTION FOR CMOS INTEGRATED CIRCUITS

William E. Miller, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 21, 1991, Ser. No. 748,119
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—91 19 Claims



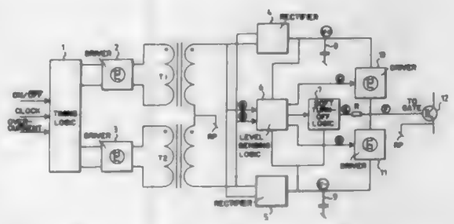
1. In a CMOS semiconductor device, a circuit for preventing damage to said device from electrostatic discharge comprising:
a semiconductor substrate of a first conductivity type;
a first and a second spaced conductive ring disposed on the top surface of said semiconductor substrate; said first and second rings electrically coupled by a capacitor;
first and second signal pads;
a three-terminal NPN transistor for passing electrostatic discharge current to said first pad from said first conductive ring; said NPN transistor having an emitter connected to said first pad, a collector connected to said first conductive ring and a base connected to said second conductive ring;
a three-terminal PNP transistor for passing electrostatic discharge current from said second pad to said second conductive ring; said PNP transistor having an emitter connected to said second pad, a collector connected to said second conductive ring and a base connected to said first conductive ring whereby the base and collector of said NPN and said PNP transistors are connected in parallel with said coupling capacitor; and
a clamp circuit electrically coupling said first and second rings, said clamp circuit including
an electrostatic discharge detector; and
a MOS transistor of a second conductivity type having a drain coupled to said first ring and a source connected to said second ring; said MOS transistor having a parasitic bipolar transistor having a base of said first conductivity type coupling said source and said drain; and
a quick start capacitor for said MOS transistor comprising a first conductive plate overlapping the source diffusion of said MOS transistor; a second conductive plate overlapping said first conductive plate; a first dielectric layer between said first conductive plate and said diffusion; and a second dielectric layer between said first and second conductive plates so as to form a stacked capacitor.

5,301,085

CONTROL CIRCUIT FOR A SEMICONDUCTOR SWITCH

Erkki Miettinen, Helsinki, Finland, assignor to ABB Stromberg Drives Oy, Helsinki, Finland

Filed Dec. 9, 1992, Ser. No. 987,698
Claims priority, application Finland, Dec. 9, 1991, 915781
Int. Cl.[5] H02M *1/08*
U.S. Cl. 361—93 2 Claims



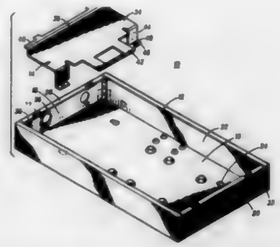
1. A control circuit for a semiconductor switch, comprising
a control unit (1 to 3) and a transformer (T1, T2) connected to it for generating an ac voltage signal (A, B) in the secondary winding of the transformer, the ac voltage signal containing control information and control energy for the semiconductor switch (12);
a rectifier (4, 5) connected to the secondary winding of the transformer (T1, T2) for generating a dc voltage (V+, V−) for controlling the semiconductor switch;
a logic circuit (6) for separating the control information contained in the secondary voltage of the transformer from the secondary voltage, and a driver (10, 11) controlled by the logic circuit (6) for controlling the semiconductor switch (12), the emitter electrode of the semiconductor switch being connected to a reference potential (RP),
characterized in that
the control unit comprises a timing logic unit (1) and a first and a second driver (2, 3) controlled by the timing logic unit (1), and the transformer comprises a first and a second transformer (T1, T2), to which the first and the second driver (2, 3), respectively, applies an unmodulated ac voltage signal (A, B) for bringing the semiconductor switch into a conducting and non-conducting state, respectively, and the secondary windings of which are connected at their opposite ends to said reference potential (RP);
the rectifier comprises a first and a second rectifier (4, 5) for rectifying a positive dc voltage (V+) and a negative dc voltage (V−) with respect to the reference potential, respectively, from the voltage (A, B) acting across the secondary windings of the transformers;
the driver controlled by the logic circuit (6) comprises a first and a second driver (10, 11) for maintaining the semiconductor switch in a conducting and non-conducting state, respectively; and
that the control circuit further comprises capacitor units (8, 9) connected to the outputs of the rectifiers for storing the turn-on and turn-off energy of the semiconductor switch, respectively.

5,301,086

TERMINAL BARRIER FOR ELECTRICAL LOAD CENTERS

Michael R. Harris, Winchester, and William K. Chambers, Lexington, both of Ky., assignors to Square D Company, Palatine, Ill.

Filed Mar. 23, 1993, Ser. No. 36,009
Claims priority, application Canada, Apr. 1, 1992, 2064639
Int. Cl.[5] H02B *1/26*
U.S. Cl. 361—641 21 Claims



10. An electrical distribution load center assembly comprising:
a housing defined by side walls upstanding from a back wall;
input and output terminals mounted within the housing, the input terminals connecting a service line to a main circuit breaker, the output terminals connected to a plurality of branch circuit breakers;
a barrier having a generally flat, thin body being positioned to separate input terminals from the output terminals, the barrier including interlocking means for disengagingly connecting one interlocking end of the barrier to one of the side walls of the housing, the barrier also including means for fastening the opposite end of the body to the back wall of the housing while simultaneously engaging the interlocking means and supporting the barrier in a plane parallel to the back wall of the housing.

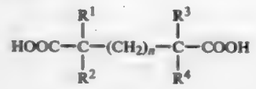
5,301,087

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR AND ELECTROLYTIC CAPACITOR USING THE SAME

Makoto Ue; Masayuki Takeda, and Tomohiro Satoh, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

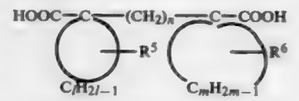
Filed Feb. 27, 1992, Ser. No. 842,472
Claims priority, application Japan, Feb. 28, 1991, 3-55610; Feb. 28, 1991, 3-55742
Int. Cl.[5] H01G *9/02*
U.S. Cl. 361—505 8 Claims

1. An electrolyte solution for an electrolyte capacitor which comprises a diammonium salt of a tertiary dicarboxylic acid represented by the following formula (I) or (II) below dissolved in ethylene glycol:



(I)

wherein n represents an integer of 2 to 5, and R^1 to R^4 each represents an alkyl group having 4 or less carbon atoms,



(II)

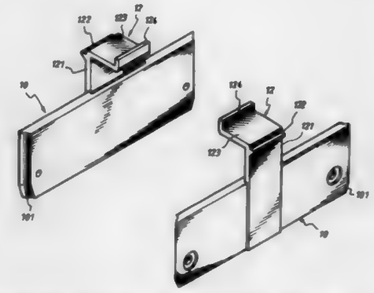
wherein n has the same meaning as defined above, l and m each represents an integer of 4 or 5, and R^5 and R^6 each represents hydrogen atom, methyl group or ethyl group.

5,301,088

DOVETAIL FASTENING STRUCTURE FOR A DISK DRIVE

Morgan C. Liu, Taoyuan, Taiwan, assignor to Enlight Corporation, Taoyuan, Taiwan

Filed Feb. 25, 1993, Ser. No. 22,362
Int. Cl.[5] H05K *7/14*; G06F *1/16*; G12B *9/00*
U.S. Cl. 361—685 4 Claims



1. A fastening structure for a disk drive comprising:
a pair of dovetail seat plates with dovetail ends, said dovetail seat plates respectively mounted to two lateral sides of the disk drive, a center portion of each of said dovetail seat plates being extended upward to form a resilient fastening plate, said fastening plate being provided with a protruded strip on an external surface thereof; and
a disk drive securing support having two lateral sides thereof for the mounting of the disk drive, an inner wall of each of said lateral sides being provided with a dovetail groove corresponding to said dovetail ends of said dovetail seat plates each of said lateral sides further provided with a hole corresponding to said protruded strip.

5,301,089

PARALLEL PROCESSING SYSTEM

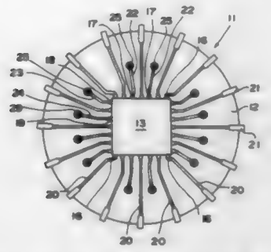
Tokuhei Takashima, Tokyo, Japan, assignor to Graphico Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,669
Claims priority, application Japan, Apr. 19, 1991, 3-115283
Int. Cl.[5] H05K *7/00, 9/00*; H01R *9/09*
U.S. Cl. 361—744 2 Claims

1. A parallel processing system comprising:
a radial bus assembly comprising a stack of disks each having

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an integrated circuit crossbar switch fixed at its center, a plurality of communication lines of equal length radially extending from the communication terminals of said crossbar switch and terminating on the circumference of the disk, a plurality of control lines each being arranged between adjacent communication lines, and radially extending from the control terminals of said crossbar switch and terminating short of the circumference of the disk, and common connector means to electrically connect the



terminations of said control lines of all disks in terms of same angular positions longitudinally in common ;

a plurlaity of boards each having a processing unit and means to electrically connect said processing unit to the termination of each of said communication lines, said boards being arranged radially around said stack of disks; and

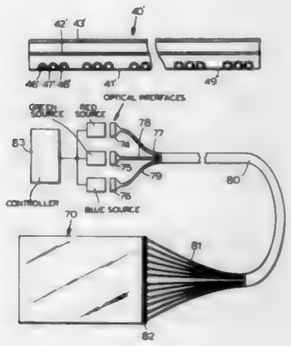
a switching control unit connected to said common connector means for controlling the closing-and-opening of the contacts of all crossbar switches in unison.

5,301,090

LUMINAIRE

Aharon Z. Hed, 12 Wagon Trail, Nashua, N.H. 03062, assignor to Aharon Z. Hed, Nashua, N.H.

Filed Mar. 16, 1992, Ser. No. 851,620
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **16 Claims**



1. A luminaire, comprising:

a housing;

a light-transmissive diffuser extending across said housing for diffusing light impinging upon said diffuser from within said housing;

a multiplicity of spaced apart elongated light guides in said housing emitting light continuously over respective lengths thereof, each of said light guides being cladded optical fiber having a cladding removed over a portion of a periphery thereof and for the entire respective length of light emission therefrom; and

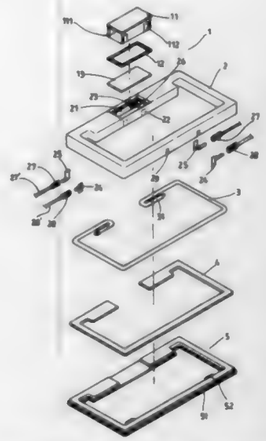
means at an end of said housing or injecting light into corresponding ends of said light guides.

5,301,091

MOTOR VEHICLE NEON LAMP DEVICE

We C. Chen, No. 53, Sec. 1, Min Chuan E. Rd., Taipei, Taiwan

Filed Apr. 14, 1993, Ser. No. 45,749
Int. Cl.[5] B60Q *1/56*
U.S. Cl. 362—83.2 **3 Claims**



1. Motor vehicle neon lamp device comprising a mounting frame fastened to a motor vehicle surrounding a license plate, a transparent plastic covered lamp shade covered on said mounting frame comprising an inner chamber, a neon tube disposed inside said inner chamber and a power transformer disposed outside said inner chamber, wherein:

said transparent plastic covered lamp shade further comprises a recessed chamber, which receives power transformer, said recessed chamber defined by four side walls, and said power transformer being fastened in said recessed chamber with a rubber sheeting disposed between said power transformer and said frame and a rubber ring disposed between said power transformer and said side walls to seal said power transformer against dust and water;

said power transformer comprises two input contacts and two output contacts, said input contacts connected to two input electrodes detachably connecting the positive and negative input terminals to a battery power supply of the motor vehicle and said output contacts connected to two output electrodes detachably connecting the positive and negative output terminals to said neon tube;

said mounting frame comprises an outward peripheral flange fastened to, said transparent plastic covered lamp shade in a flush manner, and a plurality of mounting tabs fastened to the motor vehicle by screws.

5,301,092

DISPLAY CASE WITH LENS LIGHTING SYSTEM

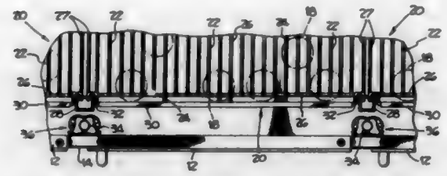
Joseph R. Santosnosso, Chatsworth; Richard J. Richardson, Simi Valley; Walmin Liu, West Covina; Dusan Pope, Santa Clarita; Artak Ter-Oganesian, Glendale, and Andrew Y. A. Chao, Baldwin Park, all of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Continuation of Ser. No. 865,096, Apr. 8, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 32,549
Int. Cl.[5] A47F *11/10*
U.S. Cl. 362—125 **20 Claims**

1. A display case used for displaying items, said display case comprising:

a surrounding frame;

shelves mounted inside said display case, at least one of said shelves having a light mounted near one end thereof; and



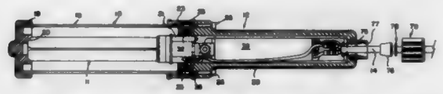
a lens mounted inside said display case and about said light at said one end of said one shelf in order to direct light emitted from said light toward said one shelf in order to provide a more uniform light distribution over the length of said one shelf than would exist without said lens.

5,301,093

FLUORESCENT HANDLAMP

Horacio A. Baggio, Niles, Ill., assignor to Woodhead Industries, Inc., Buffalo Grove, Ill.

Filed Dec. 21, 1992, Ser. No. 993,660
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—223 **7 Claims**



1. In a fluorescent handlamp including a lamp holder; a fluorescent lamp received in said lamp holder; a tube assembly having a transparent lens surrounding said lamp; a collar with a central opening for receiving said lamp; a switch connected in circuit with said lamp; and a cordset having a plurality of wires for coupling electrical power to said handlamp, the improvement comprising: an elastomeric handle having an elongated cavity and coupled to said collar at one end and receiving said cordset at the other end; a ballast having a metal outer casing with first and second ends and received in said cavity of said handle and extending lengthwise thereof, said ballast casing and said handle being sized such that said casing engages and is held by opposing sides of the interior wall of said cavity whereby a person gripping the handle will also grip said casing; a first mounting bracket connecting said lamp holder to said ballast casing at one end thereof; a second mounting bracket connected to said ballast casing at the other end thereof; and a wire terminal mounted to said second mounting bracket for connecting wires from said cordset respectively to said ballast and to said switch.

5,301,094

LAMP CHANGING ASSEMBLY FOR OVERHEAD PROJECTOR

Ernesto M. Rodriguez, Jr., Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 17, 1993, Ser. No. 32,507
Int. Cl.[5] F21V *19/04*
U.S. Cl. 362—254 **3 Claims**

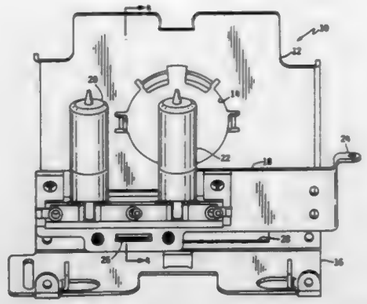
1. A lamp changing assembly comprising:

a reflector mounting bracket;

a lamp support bracket for mounting at least two lamps in spaced, parallel relationship, said lamp support bracket being moveable relative to said reflector mounting bracket to position any of said lamps in predetermined relationship to said reflector mounting bracket;

a slide mounting said lamp support bracket to said reflector mounting bracket, said slide being rigidly attached to said lamp support bracket and including a bearing surface for sliding contact with said reflector mounting bracket;

said reflector mounting bracket further including a slot and



said slide further including an extension extending into said slot to locate said slide with respect to said slot and said brackets with respect to each other; and

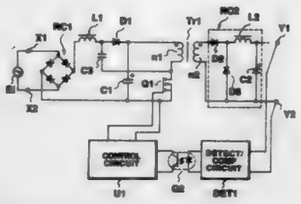
a backing plate attached to said slide extension for retaining said slide extension within said slot.

5,301,095

HIGH POWER FACTOR AC/DC CONVERTER

Susumu Teramoto; Masaoki Sekine, and Ryoji Saito, all of Tokyo, Japan, assignors to Origin Electric Company, Limited, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 951,962
Claims priority, application Japan, Oct. 1, 1991, 3-280454; Feb. 24, 1992, 4-73499; Mar. 10, 1992, 4-86257
Int. Cl.[5] H07M *7/06*
U.S. Cl. 363—21 **23 Claims**



1. An AC/DC converter, comprising;

a) a pair of input terminals to be connected across a commercially available AC power supply;

b) a full wave rectifying circuit having a pair of input terminals connected across the pair of input terminals of the AC power supply and having a pair of rectified output terminals;

c) a first choke coil having one terminal connected to one of the pair of the rectified output terminal of the full wave rectifying circuit;

d) a first capacitor one end connected to the other terminal of the first choke coil;

e) a first diode whose anode terminal is connected to the other end of the first choke coil;

f) a control circuit for generating an on and off drive signal having a relatively high frequency as compared with a frequency of the AC power supply;

g) a second capacitor one end thereof connected to its cathode terminal of the first diode and the other end connected to the other of the pair of the rectified output terminal;

h) switching means having a pair of main electrodes and drive electrode terminals, its drive electrode terminal being driven in response to the one and off drive signal by

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means of the control circuit so that said switching means is turned on and off, one of the main electrodes being connected to the other end of the first capacitor, and the other main electrode being connected to the other end of the second capacitor;

i) a transformer having at least primary winding and secondary winding, one end of its primary winding connected to the cathode of the first diode and the other end of the primary winding being connected to the other end of the first capacitor; and

j) rectifying means connected across the secondary winding of the transformer, the rectifying means having a pair of output terminals of the AC/DC converter.

5,301,096

SUBMERSIBLE CONTACTLESS POWER DELIVERY SYSTEM

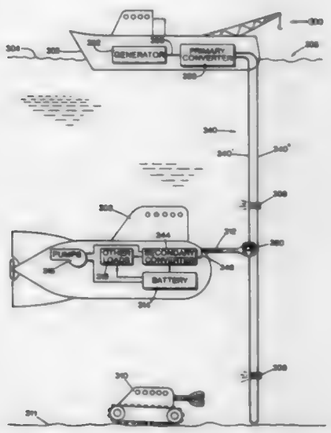
Keith W. Klontz, Sun Prairie; Deepakraj M. Divan, Madison; Donald W. Novotny, Madison, and Robert D. Lorenz, Madison, all of Wis., assignors to Electric Power Research Institute, Palo Alto, Calif.

Continuation-in-part of Ser. No. 767,024, Sep. 27, 1991. This application Oct. 20, 1992, Ser. No. 963,703

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] H02M *5/293;* **H02J** *7/00*

U.S. Cl. 363—37 **20 Claims**



1. A submersible contactless power transfer system for transferring power from a power source to an electric load, comprising:

a first conductor coupled to one of the power source or the electric load;

a core-mounted submersible conductor coupled to the other of the power source or the electric load; and

a submersible magnetic core supporting and surrounding a portion of the core-mounted conductor, with the core-mounted conductor and magnetic core surrounding a portion of the first conductor and submersed in a liquid for transferring power from the source to the load.

5,301,097

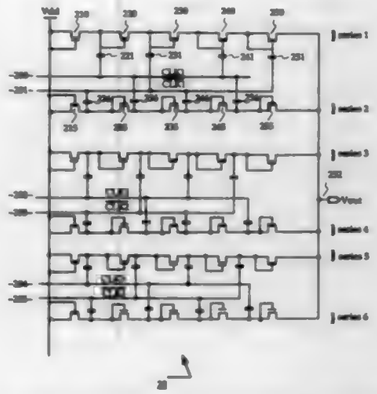
MULTI-STAGED CHARGE-PUMP WITH STAGGERED CLOCK PHASES FOR PROVIDING HIGH CURRENT CAPABILITY

Bart R. McDaniel, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 10, 1992, Ser. No. 896,195

Int. Cl.[5] H02M *7/25*

U.S. Cl. 363—60 **13 Claims**



1. A charge pump network for converting a first voltage to a second voltage with reduced noise distribution and reduced output ripples, said charge pump network comprising:

at least one input clock,

delay means coupled to said input clock, said delay means generating a plurality of non-overlapping staggered delayed clocks from said input clock with a predetermined delay between each of said staggered delay clocks such that a first staggered delayed clock is delayed to form a second staggered delayed clock;

clock divider means coupled to receive said plurality of non-overlapping staggered delayed clocks, said clock driver means generating a switching clock for each of said plurality of staggered delayed clocks, each of said switching clocks having a higher current capability than the corresponding staggered delayed clock from said plurality of staggered delay clocks;

a multiple staged charge pump coupled to receive said plurality of switching clocks from said clock driver means, each stage of said multiple staged charge pump having multiple series connected in parallel, each series having a plurality of diode-connected n-channel MOSFETs, the first n-channel MOSFET in each series being coupled to said first voltage, each of the remainder of said n-channel MOSFETs in each series being coupled to a capacitor at its gate, each series having its adjoining n-channel MOSFETs driven by different switching clocks from said clock driver means such that no two adjoining n-channel MOSFETs are driven at the same time;

second voltage means coupled to the last n-channel MOSFET in each series of said multiple-series charge pumps for generating said second voltage from combining all of said series after said first voltage is switch-regulated through said multiple staged charge pump; and

inverter means coupled to said input clock for generating a complementary input clock from said input clock, said complementary input clock to be driven by said clock driver means to generate complementary phases of switching clocks from said non-overlapping staggered delayed clocks.

5,301,098

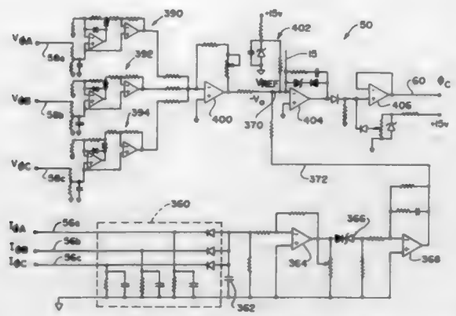
FEEDFORWARD INVERTER PHASE CONTROL

P. John Dhyanchand; Vietson M. Nguyen; Sunil Patel, and Chai-Nam Ng, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 9, 1992, Ser. No. 911,549

Int. Cl.[5] H02M *7/537*

U.S. Cl. 363—97 **20 Claims**



1. An inverter system for receiving input DC and for providing a controlled output AC from said input DC, said inverter system comprising:

inverting means for inverting said input DC to said controlled output AC;

feedforward sensing means for sensing a parameter of said input DC, said feedforward sensing means providing a feedforward signal varying in accordance with said parameter;

feedback AC sensing means for sensing said controlled output AC, said feedback AC sensing means providing a feedback AC signal varying in accordance with said controlled output AC; and,

inverter controlling means connected to said inverting means, to said feedforward sensing means, and to said feedback AC sensing means for controlling said controlled output AC in response to said feedforward signal and to said feedback AC signal, said inverter controlling means including comparing means for comparing said feedforward signal to said feedback signal.

5,301,099

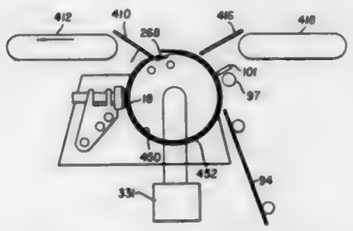
VACUUM IMAGING DRUM WITH A MATERIAL RECEIVING RECESS IN THE PERIPHERY THEREOF

Roger S. Kerr, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,391

Int. Cl.[5] G01D *15/10*

U.S. Cl. 346—138 **4 Claims**



1. An imaging drum for a thermal imaging apparatus comprising a hollow imaging drum member mounted for rotation about its axis and arranged to mount a receiver member and a donor member in superposed relationship thereon, said receiver member having a first width and length and said donor members having a second width and length greater than those of said receiver member, means for providing a vacuum to the interior of said imaging drum, means for projecting a light beam onto said donor member mounted on said drum member to transfer an image onto said receiver member by transfer of a dye from said donor member, means for rotating said drum member, said imaging drum member being provided with a first set of vacuum openings through the surface thereof for adhering a receiver sheet thereto, said imaging drum member being provided with a second set of vacuum openings disposed about said first set of vacuum openings for adhering a donor sheet to said drum member in superposed relation with said receiver sheet adhered thereto, an axially extending planar area disposed in the surface of said imaging drum member which is arranged to accept the leading and trailing edges of said donor member, and a receiver-sheet-receiving circumferential recess in the surface of said imaging drum member, said drum diameter and the width of the planar area being selected so that the leading and the trailing edges of said donor sheet overlie the opposite edges of said planar area without overlapping each other.

5,301,100

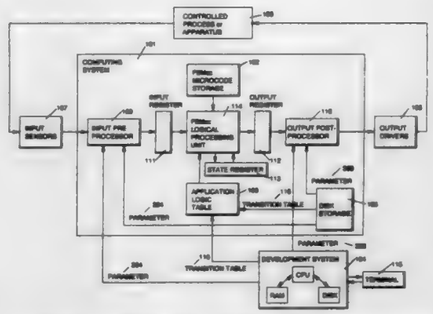
METHOD OF AND APPARATUS FOR CONSTRUCTING A CONTROL SYSTEM AND CONTROL SYSTEM CREATED THEREBY

Ferdinand H. Wagner, 24 Sterling Cir., Apt. 211, Wheaton, Ill. 60187

Filed Apr. 29, 1991, Ser. No. 693,936

Int. Cl.[5] G05B *13/02, 11/01*

U.S. Cl. 364—148 **22 Claims**



1. A method of specifying a control system for a process or an apparatus to be controlled comprising:

a) identifying one or more detectable conditions associated with the controlled process or apparatus;

b) providing a separate input name for each detectable condition wherein the presence of the respective detectable condition is indicated by the respective name having an asserted value;

c) storing the input names;

d) identifying one or more control actions which can be taken to control the process or apparatus;

e) providing a separate output name for each identified control action;

f) storing the output names;

g) automatically producing an application logic table, wherein each input name is represented by a predetermined number of bit positions and combinations of input names are logically coupled together by implied AND and OR operators and wherein such combinations of input names are associated with output names;

h) storing the table; and

i) loading the application logic table into the control system.

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5,301,101

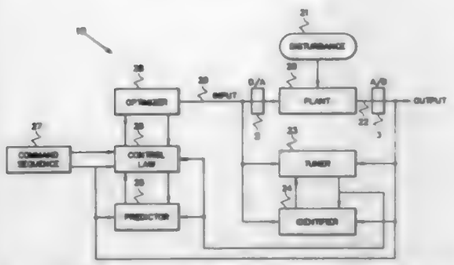
RECEDING HORIZON BASED ADAPTIVE CONTROL HAVING MEANS FOR MINIMIZING OPERATING COSTS

J. Ward MacArthur; David A. Wahlstedt; Michael A. Woesner, and Wendy K. Foslien, all of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 541,558, Jun. 21, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 47,768

Int. Cl.[5] **G05B** *13/04*

U.S. Cl. 364—156 **16 Claims**



1. A controller for controlling manipulated variable inputs to a plant to achieve a desired controlled variable output trajectory which is sensitive to the outputs from said plant wherein said controller receives user input and provides output signals to effect control moves wherein said controller establishes a model indentification based on the manipulated variable inputs and the controlled variable outputs from the plant and comprises:

a tuner for establishing a control sample rate with reference to how long the controlled variable settling time is and on how many controlled and manipulated variable samples are used to identify the model, and for establishing the first m increments of a horizon window which has a total of m+1 increments and

a control law calculator means having a recursive model based predictor to predict the nominal control variable output trajectory that would occur without changes to the manipulated variables, said predictor deriving its model from the indentified model, and having a model based corrector, also based on the same identified model, to specify the changes required of the manipulated variable outputs to satisfy the following criteria:

a) the errors between the controlled variables and their respective setpoints become zero after m control moves,

b) the errors between the controlled variables and their respective setpoints are zero for 1 additional control moves, and

c) the change in the manipulated variables during the last n control moves of the m+1 horizon take on prescribed beta values which are determined by said control law calculator to be those values necessary to smooth the change in manipulated variables after m control moves and reduce the steady state controlled variable errors, and "means for controlling the controlled variable output based on said specified manipulated variable changes."

5,301,102

MULTIVARIABLE CONTROL OF A KAMYR DIGESTER

J. Todd Maras, Columbia, Md., and Peter A. Clark, Groton, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 7, 1991, Ser. No. 772,159

Int. Cl.[5] **G06F** *15/46*

U.S. Cl. 364—164 **1 Claim**

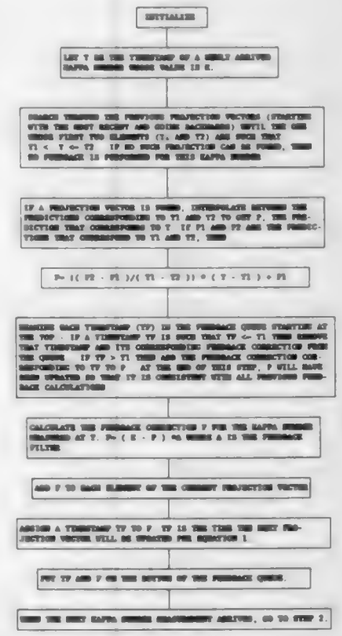
1. A method for controlling the Kappa number of pulp produced in a Kamyr digester process, said method comprising:

(a) estimating the effect of a perturbation in the digester variables consisting of the lower heater temperature and EA/Wood ratio on the Kappa number and expressing the effect as a first step response in a control algorithm;

(b) estimating the effect of a perturbation in the digester variables consisting of the upper heater effective alkali and chip-meter speed on the Kappa number and expressing said effect as a second step response in a control algorithm;

(c) periodically measuring the variables of (a) and (b) and using said measurements in conjunction with the step responses from (a) and (b) to calculate a prediction of the future behavior of the Kappa number expressed as a projection vector in a control algorithm;

(d) correcting the projection vector of step (c) in anticipation of any known future changes in the variables of (a) and (b);



(e) periodically measuring the Kappa number, which measurement involves a significant time delay, and updating the prediction of step (c) based on the difference between the most recent measured value of said Kappa number and a linearly interpolated value of at least two previous predictions for said Kappa number whose timestamps bracket the timestamp of the most recent measured value, and using said comparison to update the most recent prediction of the future behavior of the Kappa number;

(f) using the updated prediction of step (c) to calculate new values of the variables of step (a) to drive the Kappa number to its desired setpoint; and,

(g) comparing the new values of the variables of step (a) obtained in step (f) to their high and low limit constraints and recalculating new values of the variables of step (a) to drive the Kappa number to its desired setpoint while enforcing the constraints on the variables of step (a).

5,301,103

METHOD AND SYSTEM FOR RESTARTING SEQUENTIALLY CONTROLLED EQUIPMENT INSTALLED IN A PRODUCTION LINE

Shunji Sakamoto, Higashi Hiroshima, and Toshihiko Hoshino, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

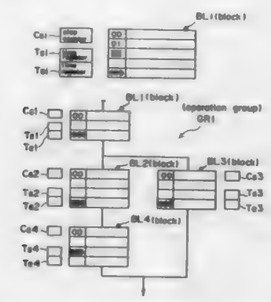
Filed Mar. 26, 1990, Ser. No. 498,742

Claims priority, application Japan, Mar. 25, 1989, 1-72247; Sep. 29, 1989, 1-253989; Sep. 29, 1989, 1-253990; Feb. 9, 1990, 2-30378

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] **G06F** *15/46*

U.S. Cl. 364—184 **11 Claims**



1. A method of restarting sequentially controlled equipment installed in a production line when the equipment is out of order, said method comprising the steps of:

dividing operations of said equipment into a plurality of operation blocks, operations in each operation block being executed independently of operations in any other block;

dividing each of said operation blocks into one or a series of operation steps to be sequentially executed in a predetermined order under a normal condition;

setting in each operation block at least one home position from which the equipment can be restarted;

determining if an abnormality indicating a failure has occurred by calculating an operation period of time from beginning to end of sequential operations of the operations steps in each block and by comparing said operation period of time with a reference period of time, which is updated for each cycle of the sequential operations of the operations steps in each block by being newly calculated for each step; and

restoring an output element, which has caused a failure and is now stopped, to the home position after a cause of the failure is removed.

5,301,104

METHOD FOR ALLOCATING PROCESSING ELEMENTS INTERCONNECTED IN A HYPERCUBE TOPOLOGY

Sudhakar Yalamanchili, Marietta, Ga., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 7, 1990, Ser. No. 563,773

Int. Cl.[5] **G06F** *15/76, 15/16*

U.S. Cl. 395—800 **5 Claims**

1. A method of allocating processing elements interconnected in a hypercube topology comprising the steps of:

providing identifiers for subcubes within the hypercube topology where the identifiers are comprised of constant binary bits and variable binary bits which correspond to numbered vertices in the hypercube topology;

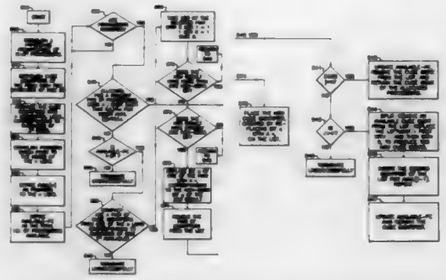
distinguishing between allocated and unallocated processing elements;

creating a plurality of lists of available subcubes with the identifiers where each of the lists contains the available subcubes of a particular size;

receiving a request to allocate a subcube of the size of 2^k (k is a whole integer);

allocating one of the available subcubes of the size of 2^k if one exists; combining a plurality of the available subcubes from the lists to form a subcube of the size of 2^k if the size of all the available subcubes is less than 2^k, and then removing the identifiers of the subcubes used to form the subcube of the size 2^k from the lists;

splitting one of the available subcubes into two smaller subcubes, one of which is the size of 2^k if all of the available subcubes are of a size greater than 2^k, and removing



the identifier of the subcube which has been split from the list;

deallocating the allocated subcubes upon command; and

combining deallocated subcubes with the available subcubes in the lists to create maximal subcubes by identifying a pair of identifiers of subcubes which have the same size, performing an exclusive-OR logic function on the pair of identifiers, analyzing the exclusive-OR result to determine whether exactly one non-zero bit is present in the result, and replacing one non-zero bit of the result with a variable binary bit.

5,301,105

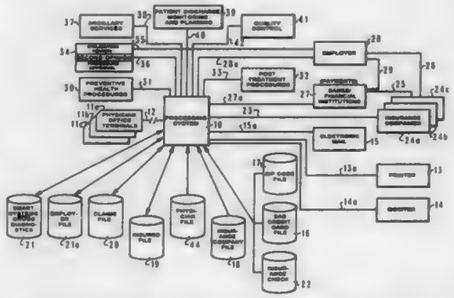
ALL CARE HEALTH MANAGEMENT SYSTEM

Desmond D. Cummings, Jr., 2309 Orchard Dr., Apopka, Fla. 32715, assignor to Desmond D. Cummings

Filed Apr. 8, 1991, Ser. No. 683,032

Int. Cl.[5] **G06F** *7/00*

U.S. Cl. 364—401 **102 Claims**



1. A comprehensive health care management system comprising:

(a) input means for entering data identifying each of a predetermined plurality of persons;

(b) a data bank memory interconnected with said input means, said data bank memory including an identification of predetermined procedures requiring utilization review;

(c) payment means; and

(d) means in communication with said input means respon-

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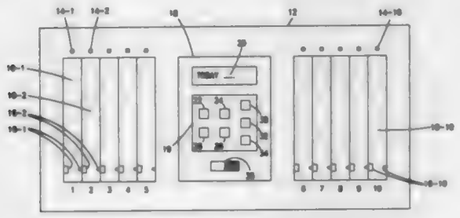
sive to input of data through said input means symbolic of symptoms of one of said predetermined plurality of persons for tentatively identifying a proposed mode of treatment for said one of said predetermined plurality of persons and, when said proposed mode of treatment includes one of said predetermined procedures requiring utilization review, for producing indicia indicative thereof and for preventing payment therefor by said payment means until said utilization review has been obtained and data indicative thereof has been entered in said system.

5,301,106

ACTION ITEM DOCKETING DEVICE

Mark T. Hersum, 99 North Ave., Weston, Mass. 02193

Filed Jan. 28, 1992, Ser. No. 826,882
Int. Cl.[5] G06F *15/22*
U.S. Cl. 364—401 **6 Claims**



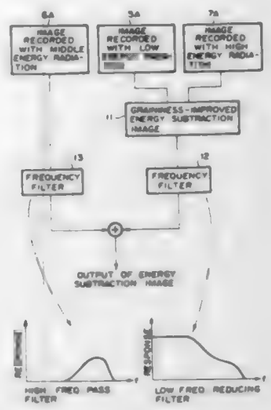
1. An action item docketing device comprising
data signal input means,
data signal storage,
a display,
a clock providing clock signals, and
a plurality of action item receptacles each open to a user,
said device having for each said action item receptacle a corresponding action item detector and a corresponding indicator,
said action item detector providing an action item presence signal responsive to the presence of an action item in the corresponding said receptacle,
said action item detectors, said indicators, said data signal input means, said data signal storage, said display and said clock being connected together for the transfer of information among them; and
said device further comprising
first means for receiving from said data signal input means, and for storing in said data signal storage, for a particular said receptacle, due date signals representative of a future date for action with respect to an action item,
second means responsive to said clock signals for generating and storing a current data signal,
third means for comparing, for each said receptacle in turn, said due date signals stored for said receptacle with said current date signal, and for providing, responsive to coincidence of said current date signal with said due date signals stored for said receptacle, a coincidence signal, and for providing, responsive to said coincidence signal and to said action item presence signal from the corresponding said action item detector, an output first state signal,
said output first state signal causing said indicator corresponding with said receptacle to be in a first indicator state.

5,301,107

METHOD FOR FORMING ENERGY SUBTRACTION IMAGES

Kazuo Shimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1992, Ser. No. 866,469
Claims priority, application Japan, Apr. 18, 1991, 3-086881
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.13 **9 Claims**



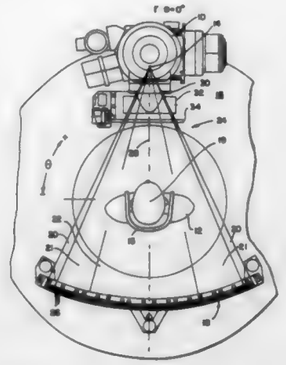
1. An energy subtraction processing method in which:
i) a filter for filtering out radiation having a low energy level is located between a first recording medium and a second recording medium in order to separate radiation having a high energy level and radiation having a low energy level from each other,
ii) radiation, which has passed through an object, is then irradiated to the combination of the first recording medium, the filter, and the second recording medium, from the side of the first recording medium such that only the radiation having a high energy level may impinge upon the second recording medium, radiation images of the object being thereby recorded on the first recording medium and the second recording medium,
iii) the radiation images of the object are read out from the first recording medium and the second recording medium, image signals representing the radiation images of the object being thereby obtained, and
iv) the image signals representing the radiation images of the object are subtracted from each other, an image signal representing an energy subtraction image being thereby obtained,
wherein the subtraction process is not carried out on high frequency components of the image signals representing the radiation images of the object and is carried out only on low frequency components of the image signals representing the radiation images of the object such that an image signal representing an energy subtraction image having improved graininess may be obtained,
a method for forming an energy subtraction image comprising the steps of:
a) utilizing a stimulable phosphor sheet as said filter for filtering out radiation having a low energy level, and
b) adding high frequency components of an image signal, which represents image information stored on said stimulable phosphor sheet, to said image signal representing said energy subtraction image, whereby an image signal representing an energy subtraction image, the graininess of which has been improved even further, is obtained.

5,301,108

COMPUTED TOMOGRAPHY SYSTEM WITH Z-AXIS CORRECTION

Jiang Hsieh, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Feb. 1, 1993, Ser. No. 12,167
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.19 **8 Claims**



1. A method for correcting x-ray data for a computed tomography system having an x-ray source for producing a fan beam of x-rays along a fan beam plane and with a thickness in a direction normal to the fan beam plane, and having a set of detector elements disposed in the fan beam of x-rays to produce a corresponding set of attenuation signals that indicate the x-ray flux density profile of the fan beam, the steps comprising:
acquiring a set of attenuation signals from the detector elements with a reference phantom disposed in the fan beam of x-rays that attenuates the x-rays such that the flux density of the x-rays striking the detector elements has a substantial gradient along the thickness direction;
filtering the acquired set of attenuation signals to produce an error signature vector having elements whose values are indicative of variations in the response of detector elements along the thickness direction;
acquiring sets of attenuation signals from the detector elements with a subject to be imaged disposed in the fan beam of x-rays and correcting each set of attenuation signals prior to reconstructing an image by:
a) producing an error candidate vector from said set of attenuation signals by filtering therefrom variations in the attenuation signals caused substantially by structures in the subject to be imaged;
b) comparing the error signature vector with the error candidate vector to identify specific attenuation signals in the set of attenuation signals that require correction; and
c) correcting the identified attenuation signals.

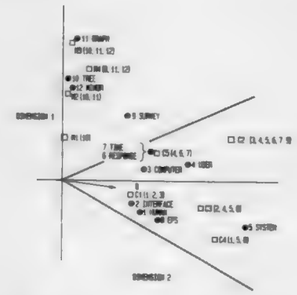
5,301,109

COMPUTERIZED CROSS-LANGUAGE DOCUMENT RETRIEVAL USING LATENT SEMANTIC INDEXING

Thomas K. Landauer, Summit, and Michael L. Littman, Somerset, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 536,029, Jun. 11, 1990, abandoned. This application Jul. 17, 1991, Ser. No. 734,291
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—419.19 **8 Claims**

1. A multi-language information retrieval method for operating a computer system, including an information file of stored data objects, to retrieve selected data objects based on a user query, the method comprising the steps of
selecting a set of training data objects from the stored data objects, said set of training data objects selected to satisfy predetermined retrieval criteria,
translating each of said data objects in said set of training data objects into multiple languages to produce multiple translations and to generate a set of multi-language training data objects corresponding to said set of training data objects, and storing said translations corresponding to each of said multi-language training data objects in the information file,
for each of said multi-language training data objects, merging all of said translations into a single merged data object composed of terms contained in all of said translations, thereby generating a set of merged data objects corresponding to said set of multi-language training data objects,
parsing each said merged data object to extract distinct ones of said terms and generating a lexicon database from said distinct terms,



generating a joint term-by-data object matrix by processing said translations as stored in the information file, wherein said matrix has t rows in correspondence to said distinct terms in said lexicon database and d columns in correspondence to the number of said merged data objects in said set of merged data objects, and wherein each (i,j) cell of said matrix registers a tabulation of the occurrence of the ith distinct term in the jth merged data object,
decomposing said matrix into a reduced singular value representation composed of a distinct term file and a data object file to create a semantic space,
generating a pseudo-object, in response to the user query, by parsing the user query to obtain query terms and applying a given mathematical algorithm to said distinct terms and said query terms, and inserting said pseudo-object into said semantic space,
examining the similarity between said pseudo-object and the stored data objects in said semantic space to generate the selected data objects corresponding to said pseudo-object, and
generating a report of the selected data objects.

5,301,110

IMPROVEMENTS IN THE METHOD AND APPARATUS FOR EVALUATING THE TOOT (TOE OUT ON TURNS) OF STEERABLE WHEELS WHILE SAID STEERABLE WHEELS ARE BEING ALIGNED

Phillip A. Spainhour, and Ying T. Lee, both of Nashville, Tenn., assignors to Ammco Tools Technology, Corp., Wilmington, Del.

Filed Jul. 22, 1991, Ser. No. 734,239
Int. Cl.[5] G01B *7/30, 13/195*
U.S. Cl. 364—424.01 **7 Claims**

1. A method of determining the TOOT of Ackerman type

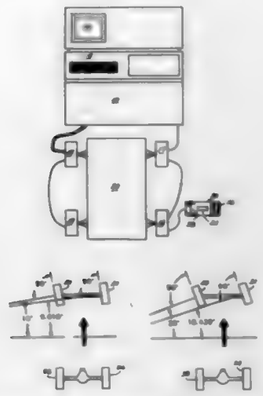
VOL 1161 ISS 1 AP 5 1994 UMI

steerable wheels of a vehicle when the inside one of the steerable wheels of the vehicle is turned through a first predetermined angle, comprising the steps of

positioning said steerable wheels in a straight ahead position,

measuring and recording the difference between the toe of the steerable wheels when said steerable wheels are in the straight ahead positions,

turning the steerable wheels to a second position wherein



one of said steerable wheels is at a second predetermined angle relative to the straight ahead positions of said steerable wheels,

measuring and recording the difference between the toe of the steerable wheels of said vehicle when said steerable wheels are in said second position,

subtracting the first measurement from the second measurement and multiplying the result by a constant to provide the value of TOOT at said first predetermined angle.

5,301,111

SUSPENSION APPARATUS FOR A VEHICLE

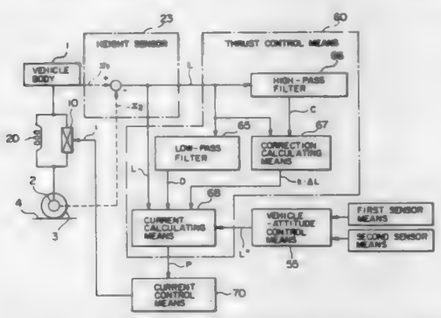
Yoshihiko Utsui; Masahiro Tado; Hidehiko Sugimoto, all of Amagasaki, and Shunichi Wada, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 564,504, Aug. 8, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,814

Claims priority, application Japan, Nov. 29, 1989, 1-307598; Nov. 29, 1989, 1-307599; Nov. 29, 1989, 1-307600; Dec. 6, 1989, 1-315463

Int. Cl.[5] B60G *17/015*

U.S. Cl. 364—424.05 **8 Claims**



1. A support apparatus for dampingly supporting an object on a support member, said support apparatus comprising:

a linear motor disposed between said object and said support member for telescopically supporting said object under magnetic effects, said linear motor having a stator member and a movable member which is movable relative to said stator member, said movable member being magnetically connectable with said stator member, one of said stator member and said movable member being connected to said object, the other of said stator member and said movable member being connected to said support member;

a position sensor for sensing the position of said object relative to a reference position and generating an output signal representative of the sensed relative position of said object;

height control means including a low-pass filter, coupled to said position sensor, for filtering high-frequency components of the output signal of said position sensor that are above a prescribed upper frequency limit;

vibration isolating means including a high-pass filter, coupled to said position sensor, for filtering low-frequency components of the output signal of said position sensor that are below a prescribed lower frequency limit;

sensing means for sensing various conditions of said object;

attitude control means, responsive to said sensing means, for calculating a target object height or attitude; and

current control means, coupled to said height control means, vibration isolating means, and attitude control means, for controlling, based on output signals of said low-pass filter and high-pass filter, the current supply to said linear motor in such a manner as to offset a change in said output signal of said low-pass filter so as to maintain said target object height or attitude, and a change in said output signal of said high-pass filter so as to compensate for non-controlled high-frequency vibrations of said object.

5,301,112

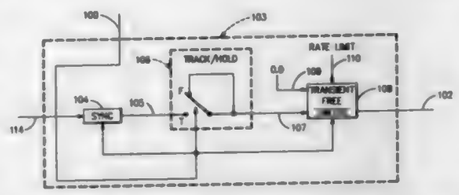
TRANSIENT FREE SYNCHRONIZER FOR AUTOPILOT SYSTEMS

Phillip J. Gold, Shelton; Donald L. Fogler, Jr., Milford, and James L. Richard, Stratford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 518,593, May 3, 1990, Pat. No. 5,195,039. This application Aug. 28, 1991, Ser. No. 751,438

Int. Cl.[5] B64C *13/18*

U.S. Cl. 364—434 **6 Claims**



1. A transient free synchronizer, comprising: synchronizing means, responsive to an input signal value, said input signal value being indicative of the value of a variable parameter, said synchronizing means storing said input signal value when a command signal changes from high to low, said synchronizing means providing an output signal value which is equal to said input signal value when said command signal is high, and setting said output signal value equal to the difference between said stored input signal value and the present value of said input signal value while said command signal is low, said input signal value being synchronized with said stored input signal value when the difference therebetween is zero;

track hold means for providing a track signal whose value tracks said output signal value while said command signal is high, and for holding the value of said track signal constant when said command signal is low; and

switching means, for providing a synchronizer output signal which is set equal to said track signal value while said command signal is high, and which is set equal to a second signal value while said command signal is low, said second signal value being indicative of a constant said switching means smoothing the transitions between said track signal value and said second signal value such that the transition between said track signal value and said second signal value occurs in a smooth, continuous manner.

5,301,113

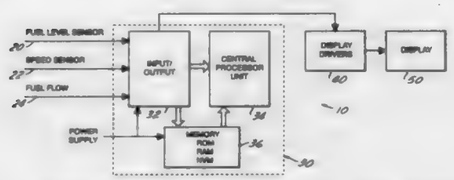
ELECTRONIC SYSTEM AND METHOD FOR CALCULATING DISTANCE TO EMPTY FOR MOTORIZED VEHICLES

Viet Q. To, Sterling Heights; Michael J. Burke, Milford, and Nick Sarafopoulos, Taylor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,597

Int. Cl.[5] G01F *9/00*

U.S. Cl. 364—442 **18 Claims**



1. A method for calculating the distance to empty available from the remaining fuel in a motor driven vehicle, comprising the steps of:

a. calculating a first value equal to an average of the distance traveled per unit of fuel consumed;

b. calculating an intermediate distance to empty value by multiplying said first value by the quantity of field remaining;

c. comparing said intermediate distance to empty value to a stored distance to empty value and developing an error signal therefrom;

d. generating a first type signal indicative of the intended mode of operation and responsive thereto;

correcting said intermediate distance to empty value with said error signal to allow only decrementing of the value if said first type signal is in a first state, and

correcting said intermediate distance to empty value with said error signal to allow both incrementing and decrementing of the value if said first type signal is in a second state;

wherein the corrected value of said distance to empty value is allowed only to decrement when said first type signal is in said first state and is allowed to both increment and decrement in said second state.

5,301,114

INERTIAL NAVIGATION SYSTEM INCLUDING SELF-CONTAINED PERFORMANCE VALIDATING ARRANGEMENT

William J. Mitchell, Upper Montclair, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jun. 11, 1992, Ser. No. 897,137

Int. Cl.[5] H04B *7/185;* **G06F** *15/50*

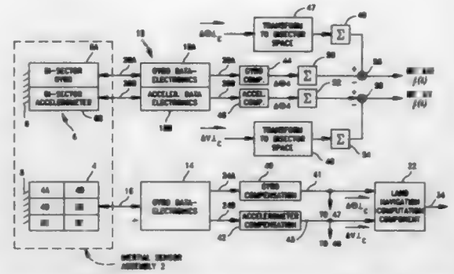
U.S. Cl. 364—453 **10 Claims**

1. An inertial navigation system including a self-contained performance validating arrangement, comprising:

an inertial sensor assembly including a substantially orthogonal triad having three gyros and three accelerometers;

said inertial sensor assembly including a fourth gyro and a fourth accelerometer having input axes which symmetrically bisect the input axes of the orthogonal triad;

means for establishing an analytical equivalent to data from the fourth gyro and the fourth accelerometer from measurements made by the orthogonal triad including means for providing compensated incremental angle vectors, means for providing compensated incremental velocity vectors, and means for transforming the incremental angle vectors and the incremental velocity vectors to an analytical equivalent measurement along the axes of the fourth gyro and the fourth accelerometer, respectively; and



means for comparing data from the fourth gyro and the fourth accelerometer to said analytical equivalent for validating the performance of the inertial navigation system.

5,301,115

APPARATUS FOR DETECTING THE TRAVEL PATH OF A VEHICLE USING IMAGE ANALYSIS

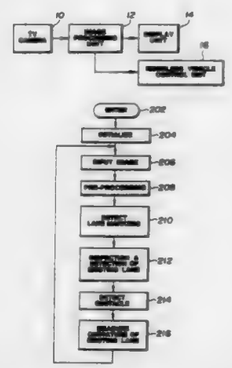
Kazunori Nouso, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 31, 1991, Ser. No. 707,144

Claims priority, application Japan, Jun. 1, 1990, 2-141269

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—460 **9 Claims**



1. An apparatus for detecting a vehicle path along which a vehicle is traveling, comprising:

image input means for inputting an image of a road presented in front of the vehicle at intervals of time;

edge point detecting means for processing the inputted image to detect edge points forming edges in the inputted image and edge gradients at the respective edge points;

means for assuming at least one straight line having a gradient;

means for extracting edge points at which the edge gradients are in a predetermined range determined by the gradient of the assumed straight line;

means for calculating an approximate straight line from the extracted edge points, the approximate straight line having a greatest number of extracted edge points at which the edge gradients are substantially the same; and

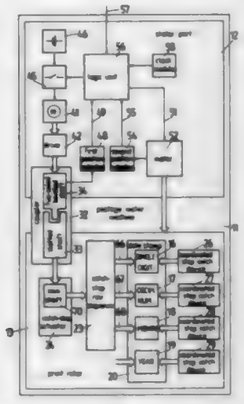
VOL 1161 ISS 1 AP 5 1994 UMI

means for averaging the assumed straight line and the approximate straight line to provide a new straight line representing one of road sides and/or lane markers;
memory means for storing the new straight line;
the assumed straight line being a last straight line stored in the memory means just before the new straight line is stored.

5,301,116
DEVICE FOR SETTING OF DATE STAMPS IN A POSTAGE-METER MACHINE

Rudolf Grünig, Köniz, Switzerland, assignor to Ascom Autelca AG, Bern, Switzerland

Continuation of Ser. No. 591,682, Oct. 1, 1990, abandoned. This application Sep. 29, 1992, Ser. No. 953,062
Claims priority, application Switzerland, Oct. 13, 1989, 03736/89
Int. Cl.[5] G07B *17/00*
U.S. Cl. 364—464.02 **20 Claims**



1. A device for the setting of a date stamp of a postage meter machine, comprising
at least a stator part;
a print rotor, pivotally disposed at the stator part;
counter wheels disposed coaxially and independently in the print rotor, wherein a first counter wheel represents single-digit positions of days of a month, a second counter wheel represents decimal positions of days of a month, a third counter wheel represents months, and a fourth counter wheel represents years of the date stamp;
at least one catch-stop drive comprising an electric drive motor disposed in the stator part, a catch-stop actuator disposed in the print rotor, and a catch-stop row sequence disposed in the print rotor, wherein the catch-stop row sequence is actuable by the catch-stop actuator and comprises at least two catch stops of differing lengths wherein the catch stops are rigidly connected to each other and are disposed parallel to each other;
control means, disposed in the stator part and coordinated to the catch-stop drive for stepwise rotating the counter wheels, and comprising a logic unit for controlling the electric drive motor and a clock module;
a coupler, coordinated to and forming a part of the catch-stop drive, for mechanically coupling the electric drive motor and the catch-stop actuator for a preset position of the print rotor;
catch-stop teeth disposed at the counter wheels, and tooth gaps of two different depths disposed at the counter wheels, wherein the tooth gaps are disposed between the catch-stop teeth, and the counter wheels are individually coordinated to and aligned with the catch stops, and wherein the catch stops springingly engage into the tooth gaps of the counter wheels.

5,301,117
METHOD FOR CREATING A THREE-DIMENSIONAL CORPOREAL MODEL FROM A VERY SMALL ORIGINAL

Giorgio Riga, 40 Somerset Pl., Palo Alto, Calif. 94301

Continuation of Ser. No. 784,772, Oct. 30, 1991, abandoned. This application Nov. 12, 1991, Ser. No. 790,329
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **9 Claims**

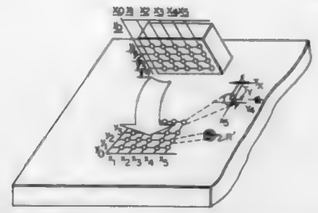


1. A method of fabricating a three-dimensional corporeal model from a very small original object exhibiting differentiated characteristics, undifferentiated characteristics, or a combination of differentiated and undifferentiated characteristics, the undifferentiated characteristics reoccurring at a determinable frequency, said method comprising the steps of:
(a) characterizing the original object;
(b) determining the determinable frequency of selected reoccurring undifferentiated characteristics in the original object;
(c) selecting a reference position from which to dissect the original object;
(d) dissecting the original object at specified locations selected relative to said reference position and at a specified frequency which is generally inversely proportional to the determined frequency of the selected reoccurring undifferentiated characteristics in the original object, thereby creating cross-sections at each of said specified locations;
(e) recording said cross-sections of said reoccurring undifferentiated structures;
(f) obtaining measurements of the differentiated characteristics, undifferentiated characteristics or combination of differentiated and undifferentiated characteristics associated with the original object at said cross-sections; and
(g) scaling said measurements by a predetermined factor to provide data for constructing the three-dimensional corporeal model.

5,301,118
MONTE CARLO SIMULATION DESIGN METHODOLOGY

Howard L. Heck, Endicott, and John S. Kresge, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1991, Ser. No. 793,981
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **2 Claims**



1. A method of fabricating a multi-component assembly having components x, y, and z, to within a pre-set tolerance, F(x,y,z), each of said components, x,y,z, having parameters with a distribution of values thereof, said method comprising:
a. generating by Monte Carlo simulation over the n individual components of each type, x, y, z, in the sample space, for i=1 to the sample size, n,
(1) a mean,
(2) a shifted, time variant mean, chosen from the group consisting of:
i. the dynamic mean shift,

$$\mu_{adj}=(USL-LSL)/6C_{pk},$$

ii. the static mean shift,

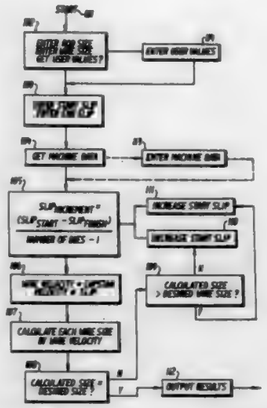
$$\mu_{adj}=Nominal+[V(C_p-C_{pk})(USL-LSL)]/2C_p$$

where
Nominal is the time invariant mean, $C_{pk}=C_p(1-k)$, $C_p=(USL-LSL)/(6\ Sigma)$,
$k=|Nominal-Mean|/[(USL-LSL)/2]$, μ_{adj} is the adjusted standard deviation, and USL and LSL are the upper and lower limits of the distribution, V is a shift vector that indicates the direction of the mean shift; and
(3) a deviation about the shifted, time variant mean, of each of the parameters of the individual components, x,y,z, between a lower limit thereof and an upper limit thereof, to determine the statistical distributions of the parameters of the ith sets of the individual components, x(i), y(i), and z(i); and
b. generating a set of tolerances, F(x, y, z), of the multi-component assemblies by inputting for each individual component in the ith set of individual components, x(i), y(i), z(i), the parameters thereof, and thereafter for the ith assembly determining the fabrication tolerance, F(x(i), y(i), z(n)), of the ith set of individual components, x(i), y(i), and z(i), in the ith individual multi-component assembly based upon combining into the ith assembly said distributed parameters of the ith set of individual components, x(i), y(i), z(i), determined by Monte Carlo simulation,
c. incrementing i and repeating steps (a) and (b) for each set of individual components, x(i), y(i), z(i), and each assembly in the sample space;
d. thereafter determining the fraction of the tolerances of the set of n multi-component assemblies falling between a lower limit thereof and an upper limit thereof to determine the statistical distribution of the tolerances of the set of multi-component assemblies; and
e. redesigning individual components of the multicomponent assembly to increase the fraction of the fabrication fit tolerances of the multi-component assemblies falling between a lower limit thereof and an upper limit thereof; and fabricating the multicomponent assembly.

5,301,119
DIE DRAFT OPTIMIZING SYSTEM

Clinton E. Watkins, Villa Rica, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Dec. 23, 1991, Ser. No. 812,382
Int. Cl.[5] G06F *15/46*; B21C *1/10, 1/06*
U.S. Cl. 364—472 **22 Claims**



1. An optimized die draft schedule expert system for a re drawing machine having a plurality of capstans and dies arranged in sequence and in which a wire may be drawn through the dies, comprising a data storage unit including stored data in a plurality of databases; a computer; a program instruction set; means for entering data relating to input material size and output material size, and starting and finishing slip; and means for outputting said optimized die draft schedule; wherein said program instruction set is adapted for iterative calculation of a plurality of slip increments according to the formula:

$$\text{slip increment} = \frac{(\text{slip start} - \text{slip finish})}{\text{number of dies minus 1}}$$

and for iterative calculation of a plurality die sizes based on the formula:

wire linear velocity = capstan surface velocity × slip.

5,301,120
METHOD OF COLLECTING DATA OF A GROUP OF INJECTION MOLDING MACHINES

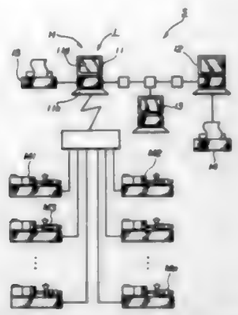
Takashi Magario, Nagano, Japan, assignor to Nissei Plastic Industrial Co., Ltd., Nagano, Japan

Filed Jul. 19, 1992, Ser. No. 913,362
Claims priority, application Japan, Jul. 23, 1991, 3-207355
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—476 **4 Claims**

1. A method of collecting data of a group of injection molding machines for collecting data in connection with operational physical values from a plurality of injection molding machines by means of a direct numerical control computer system incorporated in an LAN system,
a method of collecting data of a group of injection molding machines comprising of steps of,
selectively specifying a collection starting time and a collection terminating time of data for the respective injection

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molding machines by means of a direct numerical control computer system, and



responsive to the specifying step, communicating the data to the direct numerical control computer system from the respective injection molding machines in accordance with a specified condition.

5,301,121

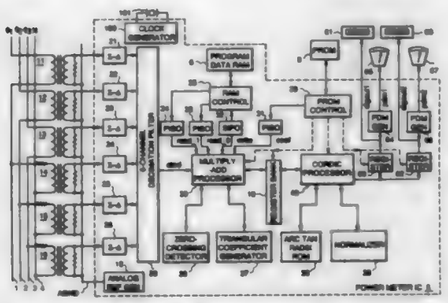
MEASURING ELECTRICAL PARAMETERS OF POWER LINE OPERATION, USING A DIGITAL COMPUTER

Steven L. Garverick, Schenectady, N.Y.; Kenji Fujino, Tokyo, Japan; Masaaki Nishijo, Tokyo, Japan, and Masami Imamoto, Tokyo, Japan, assignors to General Electric Company and Yokogawa Electric Corporation, Schenectady, N.Y.

Filed Jul. 11, 1991, Ser. No. 728,408

Int. Cl.[5] G01R *21/133*

U.S. Cl. 364—483 **60 Claims**



1. A method for measuring at least one electrical parameter of the operation of a p-phase alternating-current power line, p being a positive integer, said method comprising the steps of:

arranging respective sensing apparatus to sense at least one of the voltages and currents associated with each phase of said power line;

using analog-to-digital conversion apparatus to digitize the response of each sensing apparatus, thereby to generate a corresponding digital response;

using a digital computer to correct each digitized response of said analog-to-digital conversion apparatus for non-linearities and gain errors in the responses of said sensing apparatus and said analog-to-digital conversion apparatus;

using the digital computer to high-pass digitally filter each digital response that has been corrected for non-linearities and gain errors, in order to suppress any attendant direct term; and

using the digital computer to calculate each said electrical parameter, proceeding from each digital response that has been corrected for non-linearities and gain errors and has been high-pass digitally filtered.

5,301,122

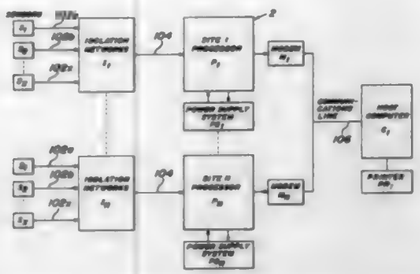
MEASURING AND MONITORING SYSTEM

B. James Halpern, Shrewsbury, N.J., assignor to Measuring and Monitoring, Inc., Red Bank, N.J.

Filed Feb. 12, 1992, Ser. No. 836,049

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—483 **97 Claims**



1. A system for sampling, formatting, storing, processing and communicating to a central location data representing the power usage of a plurality of power consuming devices at a remote site, comprising:

(a) a host computer located at said central location;

(b) a plurality of sensors each with an output representing the on-off condition of a respective one of said plurality of power consuming devices, each of said sensors being located at a respective one of said power consuming devices;

(c) a processor, coupled to said plurality of sensors, at said remote site comprising:

(1) means for storing said data, said data comprising said on-off condition information for each of said power consumer devices, sampled repetitively, at a pre-determined time interval for a predetermined time period;

(2) a real time clock/calendar;

(3) a micro-controller; and

(d) means, coupled to said processor, for communicating said data from said remote site directly to said central location said means for communicating said data comprising ordinary public telephone lines and being independent of any power transmission lines or means; and

said host computer comprising means for controlling the operation and timing of said processor comprising means for communicating status and command information from said host computer directly to said remote site, said means for communicating said status and central information comprising ordinary public telephone lines and being independent of any power transmission lines or means, and means in said processor for storing said status and command information.

5,301,123

ZERO CROSSING BASED SPECTRUM ANALYZER AND METHOD

Steven M. Kay, Middletown, R.I., assignor to Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Continuation-in-part of Ser. No. 472,426, Jan. 30, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 925,459

Int. Cl.[5] G01R *23/15*

U.S. Cl. 364—485 **4 Claims**

1. A zero crossing based spectrum analyzer comprising:

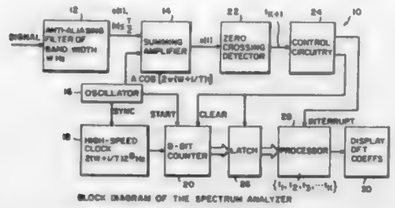
band-limiting means for band-limiting an input signal s(t) to a bandwidth of W Hz where the input signal is present over an interval $-T/2 \leqq t \leqq T/2$ so that WT is an integer, said band-limiting producing a band-limited output signal;

oscillator means for producing an oscillator output signal and having a frequency $f=W+1/T$ and an amplitude A such that $A>\max|s(t)|$ $-T/2 \leqq t \leqq T/2$;

adding means for adding said band-limited output signal and said oscillator output signal, said adding means producing an output signal x(t);

zero crossing detector means for detecting each zero crossing of the output signal x(t) and producing an output pulse in response thereto;

means responsive to the output pulses from said zero crossing detector means for converting the zero crossing into the DFT coefficients.



BLOCK DIAGRAM OF THE SPECTRUM ANALYZER

5,301,124

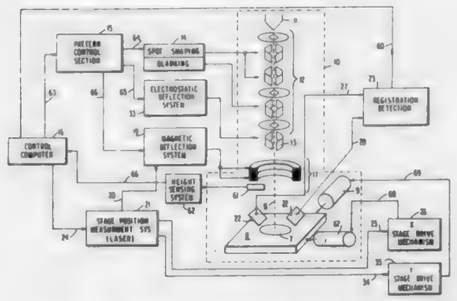
REGISTRATION OF PATTERNS FORMED OF MULTIPLE FIELDS

Ken T. Chan, Wappingers Falls; Donald E. Davis, Poughkeepsie; William A. Enichen, Poughkeepsie; Cecil T. Ho, Poughkeepsie; Edward V. Weber, Poughkeepsie, and Guenther Langner, Glen, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 743,438, Aug. 9, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 118,984

Int. Cl.[5] G06F *15/00;* **G01J** *1/00;* **A61N** *5/00*

U.S. Cl. 364—490 **9 Claims**



1. A method of aligning and exposing a pattern with a lithography system so that chips larger than a deflection field of the lithography system can be formed by exposing M×N fields by correcting the deflection field to compensate for an orientation of a previous pattern on a substrate and to compensate for errors due to height caused by a beam landing non-perpendicular to a target, said method comprising the steps of:

a. calibrating said deflection field to eliminate relative placement errors of points in the deflection field;

b. sequentially positioning said substrate to three or more alignment marks associated with a previous pattern on the substrate;

c. scanning each alignment mark;

d. measuring substrate height at three or more locations in the vicinity of at least one previous pattern;

e. calculating an analytical description of alignment mark positions associated with at least one of said previous pattern;

f. calculating an analytical description of a surface of said previous pattern from substrate height measurements;

g. calculating an analytical description of exposure fields based upon the analytical description determined in step (e);

h. calculating heights of a surface of the previous pattern, relative to a reference grid, at corners of the exposure fields from the analytical expression determined in step (f);

i. modifying an exposure field corner location data from step (g) based on a height difference from step (h) and using said modified location data to form corrections to the exposure field so that all points of the exposure field are laterally positioned so that they are vertically aligned to their related points of the previous pattern on the substrate;

j. positioning said substrate and exposing said fields; and

k. repeating steps (a) through (j) until all M×N fields of the substrate have been exposed.

5,301,125

SPECTROSCOPIC DETERMINATION OF AMOUNT OF ONE CONSTITUENT OF A FLUID MIXTURE IN ANOTHER CONSTITUENT OR IN THE FLUID MIXTURE ITSELF, FOLLOWING SEPARATION OF THE MIXTURE INTO ITS CONSTITUENTS

Robert J. L. Chimenti, Short Hills, and Gerald M. Halpern, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Sep. 26, 1990, Ser. No. 588,649

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—498 **13 Claims**



1. A method of separating a fluid mixture 0 into M constituents 1,...,M and of spectroscopically determining the amount a_{Nn} of the Nth constituent of said fluid mixture 0 in another constituent n (where n, $N \leqq M$) of the mixture where, due to imperfect separation, said amount a_{Nn} of constituent N remains present with separated constituent n, said method comprising the steps of:

(i) performing the separation of the fluid mixture into its M constituents;

(ii) passing light through constituent N;

(iii) producing a first output representing the absorptivity a_N of constituent N at at least one selected wavelength at which constituent N exhibits light absorption;

(iv) passing light through constituent n;

(v) producing a second output representing the absorptivity a_n of said another constituent n with said amount a_{Nn} of constituent N present at the same at least one selected wavelength; and

(vi) generating, from said first and second ouputs, a third output, said third output representing the amount a_{Nn} of said one constituent N present with constituent n, wherein

(vii) the amount a_{Nn} of said one constituent N present with constituent n is determined in step (vi) from a mathematical expression in which the absorptivities a_n and a_N are expressable solely as the ratio a_n/a_N.

5,301,126

METHOD OF PROCESSING A SIGNAL FROM A THERMAL TYPE FLOW SENSOR

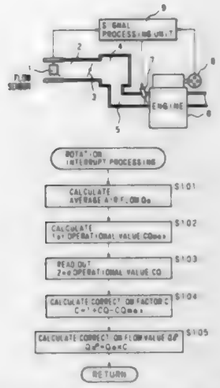
Yukinobu Nishimura; Nobutake Taniguchi; Setsuhiro Shimomura, all of Himeji, and Kouji Tanimoto, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 479,821, Feb. 13, 1990, abandoned. This application Mar. 11, 1992, Ser. No. 849,812

Claims priority, application Japan, Feb. 14, 1989, 1-34391; Mar. 24, 1989, 1-72617; Mar. 24, 1989, 1-72618; Apr. 28, 1989, 1-111109; Apr. 28, 1989, 1-111110

Int. Cl.[5] **G06F** *15/20;* **G01N** *11/04;* **F02D** *41/30*

U.S. Cl. 364—510 **11 Claims**



1. A method of processing a signal from a flow sensor so as to provide an accurate fluid flow reading, the method comprising the steps of:

providing a thermal type flow sensor having a temperature-dependent resistance;

detecting an output of said provided thermal type flow sensor, the output representing fluid flow;

determining, in accordance with the output from the thermal type flow sensor, a first value representing fluid flow;

determining a second value, representing a temperature characteristic of the thermal type flow sensor, in accordance with the determined first value;

reading, as a third value, a value which corresponds to the second value and which was previously stored in memory;

determining a correction factor based on said determined second value and said read third value;

determining a corrected fluid flow value based on said first value and said determined correction factor;

adjusting the fluid flow detected by said thermal type flow sensor in accordance with the determined corrected fluid flow value so as to provide an accurate fluid flow reading for said thermal type flow sensor; and

controlling a fuel injection system of an internal combustion engine in accordance with the provided accurate fluid flow reading.

5,301,127

HIGH SPEED METHOD FOR PREDICTING RADIO-WAVE PROPAGATION

Herbert V. Hitney, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1992, Ser. No. 834,916

Int. Cl.[5] **G02B** *5/18, 27/56*

U.S. Cl. 364—525 **13 Claims**

11. A computer implemented method for predicting radio field strength from a radio transmission through an atmosphere of known radio refractive index, said atmosphere bordering a reflective surface, said method comprising the steps of:

(a) using a ray-optics method to predict radio field strength in a first area of said atmosphere originating from a source of radio transmission and extending to ranges less than, and altitudes greater than, a limiting radio-wave ray caused by the reflection of a transmitted radio-wave with said reflective surface;

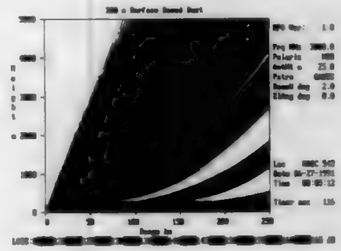
(b) using a parabolic-equation method to predict radio field strength in a second area of said atmosphere below said limiting ray and below a predetermined altitude;

(c) tracing radio-wave rays through said first and second areas of said atmosphere;

(d) using an extended-optics method to predict radio field strength in a third area of said atmosphere below said limiting ray and above said predetermined altitude, said extended optics method including

(1) tracing radio-wave rays through said third area of said atmosphere using initial ray elevation angles that

(a) equal the elevation angles at said predetermined altitude of said radio-wave rays traced through said second area of said atmosphere, and



(b), for ranges where no such elevation angles exist, equal the elevation angle at said predetermined altitude of the radio-wave ray that is traced at the furthest (optical limit) range of those rays traced through said second area of said atmosphere;

(2) selecting a point in said third area of said atmosphere at which a prediction of said radio field strength is desired;

(3) locating two of said rays traced through said third area of said atmosphere on substantially opposite sides of said point;

(4) matching each of said two rays traced through said third aren of said atmosphere with a corresponding propagation factor present at said predetermined altitude, said propagation factor being calculated through said parabolic-equation method;

(5) calculating the propagation factor of said point by interpolating between the propagation factors corresponding to said two rays traced through said third area of said atmosphere; and

(6) determining mathematically the radio field strength at said point from said propagation factor calculated for said point.

5,301,128

SERVOVALVE ANALYZER SYSTEM

Jimmy L. Bybee, Mission Viejo, Calif., assignor to AAI/ACL Technologies, Inc., Cockeysville, Md.

Division of Ser. No. 839,736, Feb. 19, 1992, Pat. No. 5,235,525, which is a continuation of Ser. No. 471,289, Jan. 26, 1990, abandoned, which is a division of Ser. No. 3,958, Jan. 16, 1987, Pat. No. 4,916,641. This application May 17, 1993, Ser. No. 62,190

Int. Cl.[5] **G01D** *18/00;* **G01M** *19/00*

U.S. Cl. 364—551.01 **10 Claims**

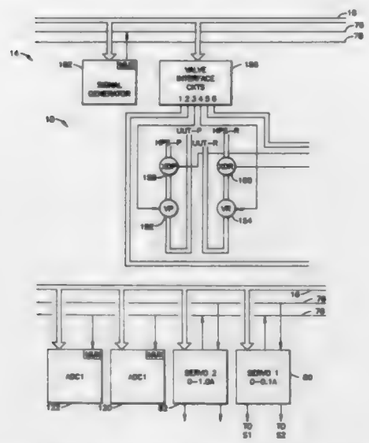
1. A system for driving an excitation means of a hydraulic unit under test with a precise signal in a predetermined sequence, comprising:

digital processor means providing a plurality of command signals for the predetermined sequence on a digital bus;

analog command signal bus means comprising a number of analog command signal lines;

digital to analog converter means coupling the digital bus to the analog command signal bus means;

sensing transducer means comprising a plurality of sensing transducers providing individual signals representative of unit under test operation of different analog input signal lines forming an analog input signal bus;



first analog signal summing means connected to the analog command signal bus and responsive to digital command signals on the digital bus for summing selected analog command signals as controlled by digital command signals;

second analog signal summing means connected to the analog input signal bus and responsive to digital command signals on the digital bus for summing selected analog input signals as controlled by digital command signals; and

means for combining the outputs of the first and second summing means as an excitation signal.

5,301,129

VIDEO WEB INSPECTION SYSTEM EMPLOYING FILTERING AND THRESHOLDING TO DETERMINE SURFACE ANOMALIES

Stephen V. McKaughan, Arlington; Gary F. Nevers, Lynn; Joseph W. Landry, Saugus; John P. Fallon, Andover, all of Mass., and Paul R. Adomaitis, Trafford, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 537,841, Jun. 13, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 875,672

Int. Cl.[5] **G06F** *11/00*

U.S. Cl. 364—552 **11 Claims**

1. In an inspection system for repeatedly and automatically determining the existence of anomalies on a surface of a moving web of non-discrete, homogeneous material, said anomalies existing in the presence of a web surface background that is not anomalous, the system comprising:

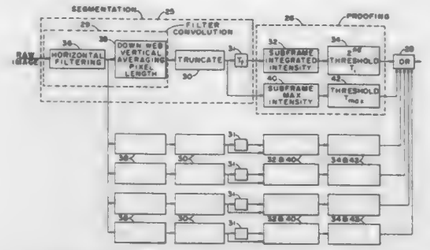
a light source for illuminating the web surface;

a light sensitive device for acquiring data from the web surface, and for producing an image of said surface data in the form of pixel elements, and for providing output data that is representative of the web surface data acquired by the light sensitive device, and surface data being representative of the light reflected from the surface to the light sensitive device, as the light is affected by surface anomalies; and

computational means for receiving the output data from said light sensitive device in response to the data said light sensitive device receives from the web surface, and for processing said output data in a manner that determines the presence of surface anomalies,

said computational means including:

a plurality of multi-directional filters for transforming the web surface data in a manner that effects identification of web surface anomalies of different sizes and shapes and segregates the anomalies of different sizes and shapes from each other and from the web surface background by using edge detection or template matching of an anomaly and integration of anomaly length in the direction of web



movement, said filters producing an output that is representative of said pixel elements;

means for establishing a threshold and applying the threshold to the output of said filters in a manner that separates the web surface background in the pixel elements from the web surface data in the pixel elements representing suspect and known anomalies; and

means for dividing the image of the web surface data provided by the light sensitive device into subframes, the subframes containing pixel elements of varying intensities; and

means for summing the varying intensities of the pixel elements within a subframe boundary in the direction of web travel to provide an integrated intensity value;

said integrated intensity value being indicative of the existence or non-existence of one or more surface anomalies.

5,301,130

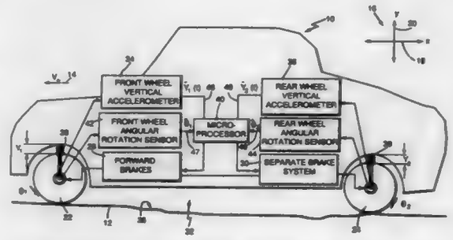
ABSOULTE VELOCITY SENSOR

Jerry M. Alcone, and James W. Jeter, both of Albuquerque, N. Mex., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 22, 1992, Ser. No. 964,732

Int. Cl.[5] **G01P** *9/00*

U.S. Cl. 364—565 **9 Claims**



1. A system for measuring the speed of a vehicle, the system comprising:

means for sensing vertical acceleration of a front portion of the vehicle as a function of time;

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means for sensing vertical acceleration of a rear portion of the vehicle as a function of time;

comparison means for comparing the vertical acceleration of the front portion and the vertical acceleration of the rear portion to determine a time lag between perturbations in the acceleration of the front portion and the rear portion caused by front and rear wheels of the vehicle successively crossing road disturbances; and

means for calculating a true vehicle speed from the time delay and from the length of the wheel base of the vehicle.

5,301,131

APPARATUS AND METHOD FOR CONTROLLING THE ROTATIONAL SPEED OF A MOTOR

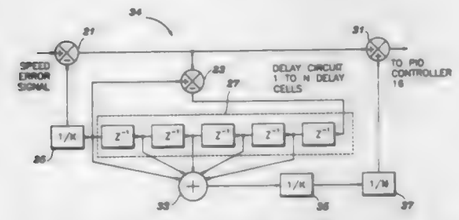
Chang-Gyun Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 12, 1992, Ser. No. 975,476

Claims priority, application Rep. of Korea, Nov. 11, 1991, 91-19985

Int. Cl.[5] G01P *1/04*; G05B *11/06, 13/00*

U.S. Cl. 364—565 **9 Claims**



1. An apparatus for periodically detecting a speed error signal in response to a frequency signal periodically generated by a frequency generator in response to the rotation of a motor by a predetermined angle and repetitively compensating a period deviation between the frequency signal and a predetermined reference frequency signal to produce a motor speed control signal, the apparatus comprising:

a means for subtracting the speed error signal supplied to a first input terminal thereof from a period deviation signal supplied to a second input terminal thereof to produce a primarily compensated speed error signal;

a first means for adding the primarily compensated speed error signal supplied to the first input terminal thereof and the period deviation signal supplied to the second input terminal thereof to produce an added signal;

a means for delaying the output signal from the first adding means, wherein the delaying means comprises a first to an Nth delay cells, wherein each of the delay cells latches the output signal from the first adding means entering the first delay cell and serially shifts the latched signal in each of the delay cells toward the Nth delay cell by one signal at a time whenever the output of the first adding means is supplied to the delaying means and wherein the output from the delaying means is supplied to the second input terminal of the subtracter means and to the second input terminal of the first adding means;

a means for summing up all of the signals being shifted from the respective delay cells to produce a sum period deviation signal;

a means in response to the summing means for averaging the sum period deviation signal to produce an averaged period deviation signal; and

a second means for adding the primarily compensated speed error signal from the subtracter means and the averaged period deviation signal from the averaging means to produce the motor speed control signal.

5,301,132

ASSEMBLY STRUCTURE FOR INFORMATION INPUTTING APPARATUS

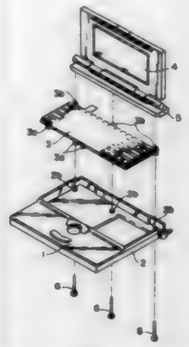
Ryosuke Akabane, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,237

Claims priority, application Japan, Jul. 23, 1991, 3-057006[U]

Int. Cl.[5] G06F *1/00*; H05K *7/20*

U.S. Cl. 364—708.1 **3 Claims**



1. An information inputting apparatus comprising an upper cabinet, a lower cabinet, a keyboard having a plurality of keys arranged thereon, and a cover,

said upper cabinet having tab portions provided thereon for contacting with a lower face of said keyboard to effect positioning and holding of said keyboard,

said lower cabinet having fitting holes and fitting recessed portions for said keyboard and having first mounting holes for placing said keyboard thereon

said keyboard having fitting projected portions provided at an end thereof for fitting with said fitting holes and fitting recessed portions of said lower cabinet and having second mounting holes provided at the other end thereof and having held between said lower cabinet and said cover, and

said cover having female screws provided therein into which male screws having fixed by way of said first mounting holes of said lower cabinet and said second mounting holes of said keyboard.

5,301,133

Patent Not Issued For This Number

5,301,134

DIGITAL FILTER CIRCUIT FOR USE IN OVERSAMPLING TYPE ANALOG/DIGITAL CONVERTER

Yuichi Maruyama, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

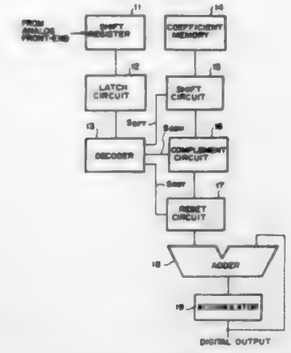
Filed Jan. 30, 1992, Ser. No. 827,795

Claims priority, application Japan, Jan. 30, 1991, 3-029389

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.10 **4 Claims**

1. A digital filter circuit having a first stage conversion means and a second stage conversion means for performing two decimations with respect to a digital data of a predetermined sampling rate, said first stage conversion means having a function of producing a first processing signal for a shift operation, a second processing signal for a complement operation and a third processing signal for a reset operation for a filter coefficient of said second stage conversion means and



providing such processing signals to said second stage conversion means.

5,301,135

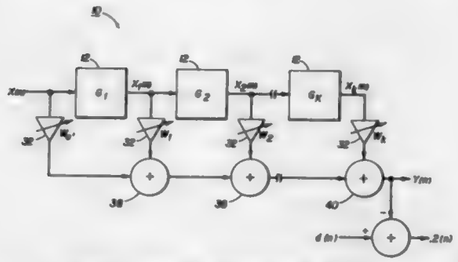
ADAPTIVE FILTER BASED ON A RECURSIVE DELAY LINE

Jose C. Principe, Gainesville, Fla., and Bert de Vries, Princeton, N.J., assignors to University of Florida, Gainesville, Fla.

Filed Sep. 30, 1992, Ser. No. 954,473

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.17 **6 Claims**



1. An adaptive recursive filter for filtering an electronic signal, comprising:

a. a plurality of cells connected sequentially, each cell further comprising:

i) delay means for delaying a signal input to said delay means for a predetermined delay period before the signal is output from said cell;

ii) first means for multiplying the input to said cell by a value equal to an adaptive parameter, thus creating an adaptive input signal;

iii) second means for multiplying the output of said delay element by a value equal to one minus said adaptive parameter, thus creating an adaptive feedback signal; and

iv) summation means for adding said adaptive feedback signal to said adaptive input signal, thus creating an input to said delay means,

wherein the electronic signal is input to the first cell in the sequence of cells and the signal input to each succeeding cell is the output signal from the previous cell in sequence;

b. a plurality of third multiplication means, each associated with one of said cells or with the electronic signal input to said filter, for multiplying the output signal of each associated said cell or electronic signal by a corresponding adaptive multiplication factor; and

c. summation means for adding together the adaptively multiplied output signals of each of said third multiplication means, the sum of which is the output signal of the adaptive recursive filter.

5,301,136

METHOD AND APPARATUS FOR FAST IMPLEMENTATION OF INVERSE DISCRETE COSINE TRANSFORM IN A DIGITAL IMAGE PROCESSING SYSTEM USING LOW COST ACCUMULATORS

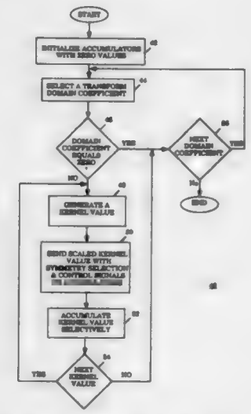
Leonard McMillan, Jr., Apex, and Lee A. Westover, Chapel Hill, both of N.C., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 852,969, Mar. 17, 1992, abandoned.

This application Jul. 27, 1993, Ser. No. 97,584

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—725 **16 Claims**



1. In a digital image processing system, a method for efficiently performing inverse discrete cosine transformation (IDCT) on n×n input vectors that has relatively low implementation cost, where n is a power of 2, said method comprising the steps of:

(a) selecting a non-zero quantized transform domain coefficient by a controller of an IDCT processor of an image signal processing subsystem of said digital image processing system from n^2 quantized transform domain coefficients of an IDCT input vector, said n^2 quantized transform domain coefficients being quantized input values corresponding to a plurality of digitized image signals of an image, said digitized image signals being generated by said image signal processing subsystem using analog image signals received from an image sampling subsystem of said digital image processing system;

(b) generating k kernel values of said selected quantized transform domain coefficient's scaled reconstruction kernel under the control of said controller, where k equals at most $(n^2+2n)/8$;

(c) generating a symmetry selection indicator and an operation configuration selection indicator for each of said generated k kernel values by said controller;

(d) providing each of said generated k kernel values and its corresponding symmetry and operation configuration indicators sequentially to an array of n×n accumulators of said IDCT processor by said controller; and

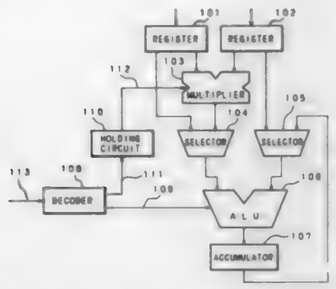
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,137

CIRCUIT FOR FIXED POINT OR FLOATING POINT ARITHMETIC OPERATIONS

Takahiro Matsuo; Toshiki Fujiyama, and Toru Kengaku, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 732,277, Jul. 18, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,757
Claims priority, application Japan, Jul. 23, 1990, 2-197467
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **3 Claims**



1. An operation circuit, comprising:

decoding means for generating a control signal representative of a mode field in an instruction to be executed when said mode field is present in said instruction, said control signal specifying either a fixed point mode or a floating point mode;

holding means, coupled to said decoding means, for storing and outputting an indication of said specified mode when said specified mode is indicated, and outputting an indication of a last specified mode when said mode field is not present in said instruction;

an arithmetic logic unit, coupled to said decoding means and responsive to said control signal, for performing arithmetic operations on a set of input values, wherein said arithmetic logic unit manipulates said set of input values as fixed point numbers when said control signal specifies said fixed point mode and manipulates said set of input values as floating point numbers when said control signal specifies said floating point mode;

a multiplier, coupled to said holding means, which accepts multiplier input values and outputs a multiplier output value at a multiplier output, said multiplier performing a fixed point multiplication on said multiplier input values and outputting a fixed point multiplier output value when said holding means specifies said fixed point mode, and said multiplier performing a floating point multiplication on said multiplier input values and outputting a floating point multiplier output value when said holding means specifies said floating point mode; and

means for coupling said multiplier output to an input of said arithmetic logic unit.

5,301,138

DEVICE AND METHOD FOR EVALUATING LOGARITHMX

Brett L. Lindsley, Highwood, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

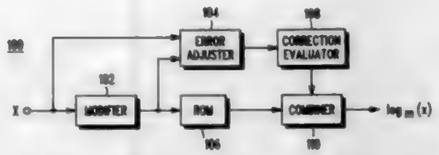
Continuation of Ser. No. 898,393, Jun. 11, 1992, abandoned, which is a continuation of Ser. No. 555,321, Jul. 19, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 19,988
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—748.5 **39 Claims**

1. An electrical apparatus for processing an input value to provide an output logarithm approximation value, having a desired degree of accuracy and being represented by at least one electrical signal, of the input value, such that the output logarithm approximation value has a desired base, comprising:

A) modification means, responsive to the input value, for generating an approximation value represented by at least one electrical signal;

B) read only memory (ROM), responsive to the modification means, for utilizing the approximation value to determine a first intermediate value represented by at least one electrical signal;

C) error generator means, responsive to the input value and the modification means, for utilizing the input value and



the approximation value to generate an error value represented by at least one electrical signal;

D) correction evaluator means, responsive to the error generator means, for utilizing the error value to determine a correction value represented by at least one electrical signal; and

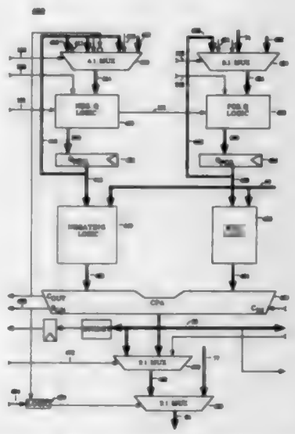
E) combining means, responsive to the read only memory (ROM) and the correction evaluator means, for utilizing the first intermediate value and the correction value to obtain the output logarithm approximation value having the desired degree of accuracy and being represented by at least one electrical signal.

5,301,139

SHIFTER CIRCUIT FOR MULTIPLE PRECISION DIVISION

Ron Zinger, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 31, 1992, Ser. No. 938,871
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—767 **29 Claims**



1. In a divider circuit capable of dividing with a first or second precision, said first precision not equal to said second precision, said divider circuit comprising a quotient predictor circuit and a quotient generator circuit coupled to said quotient predictor circuit, said quotient predictor circuit providing N bit quotient component predictions to said quotient generator circuit, where N is a positive integer, said quotient generator circuit combining said N bit quotient component predictions iteratively to form a redundant running quotient data value, circuitry in said quotient generator circuit for significant bit positioning of said redundant running quotient comprising:

storage means for storing said redundant running quotient data value;

shifting means, coupled to said storage means, for receiving said redundant running quotient data value from said storage means and shifting said redundant running quotient data value N bit positions; and

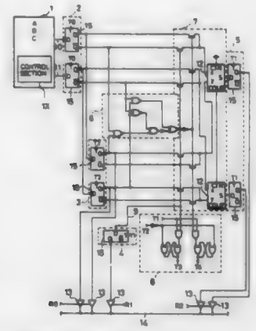
multiplexing means coupled between said storage means and said shifting means and to said quotient predictor circuit, said multiplexing means receiving said redundant running quotient data value from said shifting means and a N bit quotient component prediction of said N bit quotient component predictions from said quotient generator circuit, said multiplexing means selectively providing said N bit quotient component prediction to a first N bit location within said redundant running quotient data value if said divider is dividing with said first precision and providing said N bit quotient component prediction to a second N bit location within said redundant running quotient data value if said divider is dividing with said second precision.

5,301,140

MICROCOMPUTER THAT DETECTS WHETHER THE OUTPUT OF AN ANALOG TO DIGITAL CONVERTOR IS INCREASING OR DECREASING OVERTIME

Nobuskue Abe, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,984
Claims priority, application Japan, Jan. 28, 1992, 4-37267
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—769 **3 Claims**



1. A microcomputer comprising:

A/D conversion means for converting inputted analog values into digital values;

first storage means for storing the result of conversion by said A/D conversion means;

second storage means for storing the contents of said first storage means;

arithmetic means for comparing the contents of said first storage means and the contents of said second storage means;

third storage means for storing the result of comparison by said arithmetic means; and

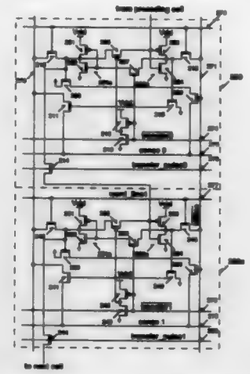
control means responsive to a conversion complete signal or a conversion start signal from said A/D conversion means to generate various timing signals, which enable all of said storage means to perform storage operations.

5,301,141

DATA FLOW COMPUTER WITH AN ARTICULATED FIRST-IN-FIRST-OUT CONTENT ADDRESSABLE MEMORY

Rober L. Traylor, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 1, 1992, Ser. No. 877,471
Int. Cl.[5] G11C *15/00*
U.S. Cl. 365—49 **23 Claims**



16. A data storage cell of a memory, wherein the memory stores data in a first-in first-out order and associatively matches an incoming datum with the stored data, wherein the stored data includes a first datum and a second datum to be stored in the data storage cell following the first datum, wherein the data storage cell comprises:

(a) a memory cell comprising

(i) a first inverter having a first input and a first output;

(ii) a second inverter having a second input and a second output, wherein the first input of the first inverter is coupled to the second output of the second inverter, wherein the second input of the second inverter is coupled to the first output of the first inverter, wherein the memory cell stores the first datum;

(b) a first transistor coupled between the first output and a first bit line and a second transistor coupled between the second output and a second bit line, wherein the first bit line and the second bit line receive complementary signals, wherein the first and second transistors have their gates coupled to a word line, wherein the first and second transistors are turned off to preserve the first datum from being erased by an incoming datum along the first and second bit lines during an associative matching operation;

(c) an exclusive NOR gate circuit coupled to (i) the first output of the first inverter, (ii) the second output of the second inverter, (iii) the first bit line, and (iv) the second bit line, wherein the exclusive NOR gate circuit generates a match signal when the first datum stored in the random access memory cell matches the incoming datum applied on the first and second bit lines during the associative matching operation;

(d) transistor means comprising

(i) a third transistor coupled between the first input of the first inverter and the second output of the second inverter;

(ii) a fourth transistor coupled between the second input of the second inverter and the first output of the first inverter, wherein the third and fourth transistors are turned off by a control signal to disconnect the first inverter from the second inverter such that the first inverter retains the first datum and the second inverter is freed to receive the second datum through a pass transistor, wherein the second input of the second inverter of the memory cell is coupled via the pass transis-

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tor for receiving the second datum when the third transistor disconnects the second output of the second inverter from the first output of the first inverter and the fourth transistor disconnects the first output of the first inverter from the second input of the second inverter, wherein before the third and fourth transistors are turned off to disconnect (1) the first output of the first inverter from the second input of the second inverter and (2) the second output of the second inverter from the first input of the first inverter, the first inverter is electrically connected to the second inverter via the third and fourth transistors, wherein when the third and fourth transistors are turned off to disconnect the first inverter from the second inverter, the first and second inverters are completely electrically disconnected from each other, wherein when the third and fourth transistors are turned back on by the control signal to re-connect the first inverter and the second inverter together to form the memory cell, the memory cell then stores the second datum; and

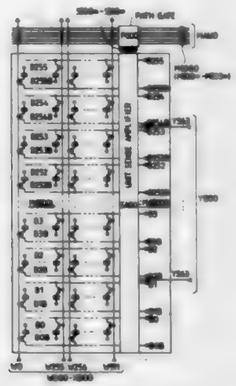
(iii) a fifth transistor coupled to the first output of the first inverter for selectively coupling the first datum to a storage location next to the storage cell under the control of a delayed signal of the control signal when the transistor means disconnects the first inverter from the second inverter, wherein the data storage cell preserves the first-in first-out order of the memory when the first datum is taken out of the data storage cell.

5,301,142

SEMICONDUCTOR MEMORY

Yukihide Suzuki; Masaya Muranaka, both of Akishima; Hiromi Matsuura, Tokorozawa; Yoshinobu Nakagome, Hamura; Hitoshi Tanaka, Tachikawa; Eiji Yamasaki, Fussa, and Toshiyuki Sakuta, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Filed Jun. 8, 1992, Ser. No. 895,598
Claims priority, application Japan, Jun. 8, 1991, 3-163509
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—51 **23 Claims**



1. A semiconductor memory comprising:

a plurality of memory mats each of which includes a plurality of word and bit lines disposed crosswise with respect to one another;

first common data lines each of which is provided to each memory mat so as to be disposed in parallel to corresponding word lines in the corresponding memory mat and each of which is selectively connected to a designated one of bit lines in the corresponding memory mat; and

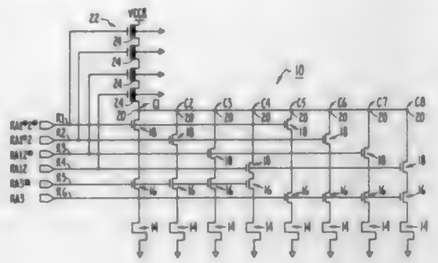
a second common data line disposed in parallel to the bit lines of the memory mats and selectively connected to a designated one of the first common data lines.

5,301,143

METHOD FOR IDENTIFYING A SEMICONDUCTOR DIE USING AN IC WITH PROGRAMMABLE LINKS

Kul Ohri, and Kevin Duesman, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 31, 1992, Ser. No. 999,214
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—96 **19 Claims**



1. A method for identifying a semiconductor die comprising;

forming a programmable integrated circuit on the die including programmable links connected to output nodes and to an FET transistor;

selectively activating the programmable links;

addressing the FET transistor with a predetermined address code to control current flow to each output node such that for a given address code and based on a condition of the programmable links a predetermined identification code can be read at the output nodes; and then

reading the predetermined identification code at the output nodes to identify the semiconductor die.

5,301,144

SEMICONDUCTOR MEMORY DEVICE HAVING A DECODING CIRCUIT FOR REDUCING ELECTRIC FIELD STRESS APPLIED TO MEMORY CELLS

Takaki Kohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,652
Claims priority, application Japan, Jul. 16, 1990, 2-188428
Int. Cl.[5] G11C *17/00*
U.S. Cl. 365—104 **6 Claims**

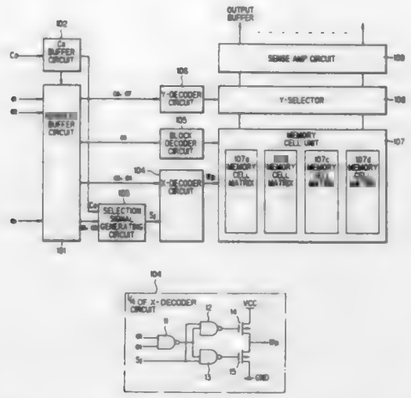
1. A semiconductor memory device comprising:

a memory cell unit comprising a plurality of memory cell groups, each of said memory cell groups comprising a plurality of memory cell blocks, each of said memory cell blocks comprising a predetermined number of memory cells which are respectively connected to a predetermined number of word lines and serially connected between a digit line and a fixed potential, each of said predetermined number of memory cells including a transistor for storing information according to first and second threshold voltages, said first threshold voltage being higher than said second threshold voltage;

first means for selecting one memory cell group from said plurality of memory cell groups according to an address signal;

second means for selecting one memory cell block from said plurality of memory cell blocks in said one memory cell group according to said address signal; and

third means for selecting one memory cell from said predetermined number of memory cells in said one memory cell block according to said address signal wherein, in an active mode, said third means applies a first voltage to said one memory cell and a second voltage to said predetermined number of memory cells excluding said one memory cell in said one memory cell block, said first voltage being lower than said first threshold voltage and higher than said second threshold voltage and said second voltage being higher than said first threshold voltage, and said



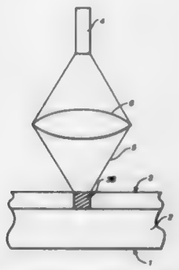
third means applies said first voltage to memory cells in said plurality of memory cell blocks excluding said one memory cell block and in said plurality of memory cell groups excluding said one memory cell group, and, in a standby mode, said third means applies the first voltage to all of said memory cells.

5,301,145

METHOD AND APPARATUS FOR RECORDING AND READING INFORMATION, AND AN INFORMATION RECORDING ELEMENT

Atsuhisa Inoue; Mariko Ishino; Hiroshi Taniguchi, all of Nara; Yoshiro Akagi, Osaka, and Yoshiharu Nakajima, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 728,764, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 218,736, Jul. 13, 1988, abandoned.
This application Aug. 27, 1992, Ser. No. 936,870
Claims priority, application Japan, Jul. 13, 1987, 62-174438
Int. Cl.[5] G11C *7/00, 13/04*
U.S. Cl. 365—106 **6 Claims**



1. An apparatus for recording and reading information, comprising:

a recording medium comprised of a substrate the surface of which has a polymorphic organic compound thereon which compound reversibly changes between a first crystalline form and a second crystalline form wherein the first and second crystalline forms have different amounts of free energy;

a recording means which generates energy at the polymorphic organic compound in an amount such that the energy changes the crystalline form of the polymorphic organic compound between the first crystalline form and the second crystalline form; and

a reading means which (a) generates energy at the polymorphic organic compound without changing the crystalline form of the polymorphic organic compound, and (b) detects the energy after it contacts the polymorphic organic compound and determines changes in the energy caused by contacting the first as opposed to the second crystalline form

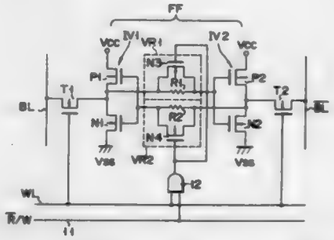
wherein the polymorphic organic compound is selected from the group consisting of naphthalene, anthracene, tetracene, pentacene, pyrene, perylene, ovalene, anthanthrene, coronene, violanthrene, isoviolanthrene, pyranethrene, indanthradine, 1,9,4,10-anthradipyrimidine, stilbene, 4-phenyl-stilbene, m-dinaphthanathrene, p-diphenylbenzene and phthalocyanine.

5,301,146

MEMORY CELL OF SRAM USED IN ENVIRONMENTAL CONDITIONS OF HIGH-ENERGY PARTICLE IRRADIATION

Kaoru Hama, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 10, 1991, Ser. No. 757,273
Claims priority, application Japan, Sep. 11, 1990, 2-238891
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—154 **16 Claims**



1. A static semiconductor memory device comprising:

first inverter means, having input and output terminals, for inverting an input signal;

second inverter means, having input and output terminals, for inverting an input signal;

first variable resistor means, connected between the output terminal of said first inverter means and the input terminal of said second inverter means, said first variable resistor means having a variable resistance;

second variable resistor means, connected between the output terminal of said second inverter means and the input terminal of said first inverter means, said second variable resistor means having a variable resistance;

first transfer means, connected between the output terminal of said first inverter means and a first bit line, said first transfer means having a conduction state controlled according to a potential of a word line;

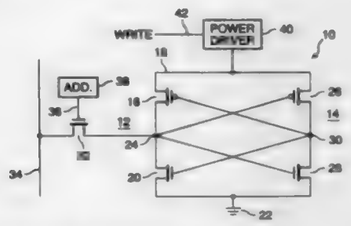
second transfer means, connected between the output terminal of said second inverter means and a second bit line, said second transfer means having a conduction state controlled according to the potential of said word line; and

control means for controlling the resistances of said first and second variable resistor means to reduce the resistances of said first and second variable resistor means when a memory cell is selected in a write-in cycle and for controlling said first and second variable resistor means to increase the resistances of said first and second variable resistor means when the memory cell is not selected for the write-in cycle, said control means including a control signal line supplied with a control signal which is set at an "H" level

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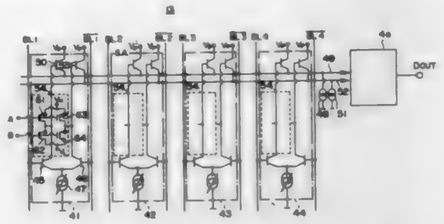
in the write-in cycle and at an "L" level in a readout cycle and a NAND gate having one input terminal connected to said control line and another input terminal connected to said word line.

5,301,147
STATIC RANDOM ACCESS MEMORY CELL WITH SINGLE LOGIC-HIGH VOLTAGE LEVEL BIT-LINE AND ADDRESS-LINE DRIVERS
Ta-Pen Guo, Cupertino, and Adi Srinivasan, Fremont, both of Calif., assignors to Aptix Corporation, San Jose, Calif.
Filed Jan. 8, 1993, Ser. No. 2,776
Int. Cl.[5] G11C *11/00*
U.S. Cl. 365—154 **3 Claims**



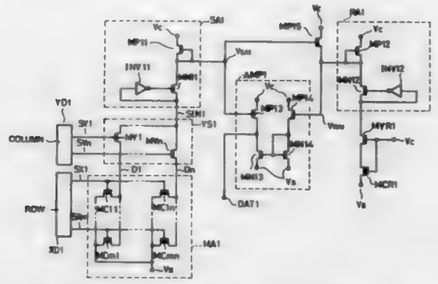
1. A memory cell comprising:
first and second cross-coupled inverters coupled to a bit line through a pass transistor, said first cross-coupled inverter including a first P-Channel MOS transistor having a source connected to a first power supply node, a gate, and a drain, and a first N-Channel MOS transistor having a gate, a drain connected to the drain of said first P-Channel MOS transistor and forming an output node, and a source connected to a second power supply node, said second cross-coupled inverter including a second P-Channel MOS transistor having a source connected to said first power supply node, a gate, and a drain, and a second N-Channel MOS transistor having a drain connected to the drain of said second P-Channel MOS transistor and forming an internal node, a source connected to said second power supply node, and a gate, the gates of said first N-Channel and P-Channel MOS transistors connected to said internal node and the gates of said second N-Channel and P-Channel MOS transistors connected to said output node;
means for providing a first voltage supply potential to said first power supply node during a read operation of the memory cell, and for providing a second voltage supply potential to said first power supply node during a write operation to the memory cell, the second voltage supply potential having a value less than the first voltage supply potential; and
wherein the magnitudes of said first and second voltage supply potentials and wherein said pass transistor and said first N-Channel MOS transistor have channel lengths and widths selected such that the voltage at said output node remains below an N-Channel threshold voltage during a read operation of a logic zero at said output node while said memory cell is powered by said first voltage supply potential, and that the voltage at said output node remains above an N-Channel threshold voltage during a write operation of a logic one at said output node while said memory cell is powered by said second voltage supply potential.

5,301,148
SEMICONDUCTOR MEMORY DEVICE WITH BIPOLAR-FET SENSE AMP
Yoshinori Okajima, Kawasaki, and Yasuhiko Maki, Yokohama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Continuation of Ser. No. 561,635, Aug. 2, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 965,628
Claims priority, application Japan, Aug. 4, 1989, 1-203004
Int. Cl.[5] G11C *11/40, 7/06*
U.S. Cl. 365—777 **5 Claims**



1. A semiconductor memory device, comprising:
a memory cell array includes a plurality of memory cells and a plurality of bit lines connected to the memory cells;
a plurality of sense amplifiers each connected to a corresponding bit line for detecting data stored in a memory cell which is connected to the bit line, each of said sense amplifiers producing an output signal indicative of the detected data;
a common data bus connected commonly to the plurality of sense amplifiers for transferring the data stored in the memory cell;
a plurality of switching devices provided in correspondence to the plurality of sense amplifiers respectively for selectively transferring the data detected by the sense amplifier to the common data bus in response to an address signal supplied thereto, each of the switching devices including a) a bipolar transistor having a collector connected to a power voltage source, an emitter connected to the common data bus, and a base connected to the corresponding sense amplifier for receiving the output signal of the sense amplifier indicative of the data, each of said plurality of switching devices further including b) a first power voltage source for producing a first power voltage having a first voltage level, c) a second power voltage source for producing a second power voltage having a second voltage level, and d) a control circuit supplied with said address signal, said control circuit connected to said corresponding sense amplifier, said control circuit selectively activating the sense amplifier in response to the address signal by supplying said first power voltage from said first power voltage source to said sense amplifier for driving the sense amplifier when the sense amplifier is selected by the address signal, said control circuit deactivating the sense amplifier by supplying said second power voltage from said second power voltage source to said sense amplifier when the sense amplifier is not selected by the address signal, said second voltage level of said second power voltage being set such that no activation of the sense amplifier occurs, said control circuit includes a first MOS transistor having a source connected to said first power voltage source and a drain connected to the base of the first bipolar transistor forming the switching device, and a second MOS transistor having a source connected to the base of the first bipolar transistor commonly with the drain of the first MOS transistor and a drain connected to said second power source, said first and second MOS transistors having respective gates connected to a first and a second input terminals for receiving said address signal and a logic inversion signal of said address signal respectively, wherein said second power voltage is determined such that a base voltage sufficient to turn the first bipolar transistor off is supplied to the base of the first bipolar transistor when there is no address signal applied to the sense amplifier; and
data discrimination means connected to the common data bus for producing an output data signal indicative of the data stored in the addressed memory cell in response to the output signal of the sense amplifier transferred along the common data bus.

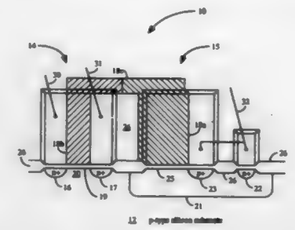
5,301,149
DATA READ-OUT CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE
Toshikatsu Jinbo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 20, 1992, Ser. No. 871,102
Claims priority, application Japan, Apr. 19, 1991, 3-115560
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **7 Claims**



1. A semiconductor memory device comprising:
a power supply node and a ground potential node;
a plurality of memory cells arranged in a matrix form;
an address means for selecting one particular memory cell among said plurality of memory cells which is designated by an address information;
a sense circuit for outputting a sense output voltage of one of a first and a second level corresponding to a logic level of data which has been read-out from said particular memory cell selected by said address means;
a reference voltage generation circuit for producing a reference voltage;
a comparison amplifier of a current-mirror type which compares said sense output voltage from said sense circuit with said reference voltage from said reference voltage generation circuit, and outputs a data output; and
a reference voltage control means for varying said reference voltage from said reference voltage generation circuit in accordance with the changes in said sense output voltage from said sense circuit, said reference voltage being pulled to a predetermined level when said sense output voltage from said sense circuit is at said second level.

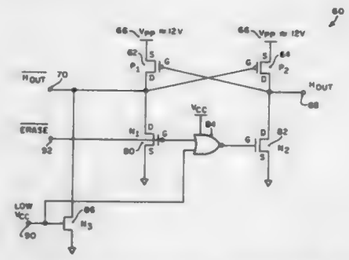
5,301,150
FLASH ERASABLE SINGLE POLY EPROM DEVICE
Stephen F. Sullivan, Rescue, and Neal R. Mielke, Los Altos Hills, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,736
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **46 Claims**

1. An electrically programmable and electrically erasable floating gate memory device formed on a semiconductor substrate of a first conductivity type comprising:
a first region of a second conductivity type;
a second region of said second conductivity type;
a channel region between said first and said second region;
a gate dielectric disposed above said channel region;
a gate disposed above said gate dielectric; and
a first capacitor, said first capacitor comprising a doped well of said second conductivity type and a plate capacitively coupled to said doped well, said plate being electrically coupled to said gate, wherein said memory device comprises means for electrically programming said memory



device and means for electrically erasing said memory device, wherein said means for electrically programming comprise means for applying a first potential to said doped well and means for applying a second potential to said second region, and wherein said means for electrically erasing comprise means for applying a third potential to said first region.

5,301,151
HIGH VOLTAGE LEVEL CONVERTER
Steve Wells, Citrus Heights, and Alan Baker, Fair Oaks, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 696,583, May 7, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 77,326
Int. Cl.[5] G11C *7/00*
U.S. Cl. 305—189.09 **18 Claims**



1. In a non-volatile semiconductor memory, circuitry for locking out a first control signal generated from a first power supply until said first power supply is at or above a first voltage level, comprising:
a. a first P-type transistor P1 having a gate, a drain and a source, said source of said P1 being coupled to a second power supply, said drain of said P1 being coupled to a first node, said gate of said P1 being coupled to a second node, said second node providing an output signal representative of said first control signal;
b. a first N-type transistor N1 having a gate, a drain and a source, said drain of said N1 being coupled to said first node, said source of said N1 being coupled to a third node, said gate of said N1 being coupled to said first control signal and to a fourth node;
c. a second P-type transistor P2 having a gate, a drain and a source, said source of said P2 being coupled to said second power supply, said gate of said P2 being coupled to said first node, said drain of said P2 being coupled to said second node;
d. a second N-type transistor N2 having a gate, a drain and

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a source, said drain of said N2 being coupled to said second node, said source of said N2 being coupled to said third node, said gate of said N2 being coupled to a sixth node;

e. a third N-type transistor N3 having a gate, a drain and a source, said drain of said N3 being coupled to said first node, said source of said N3 being coupled to said third node and said gate of said N3 being coupled to a fifth node; and

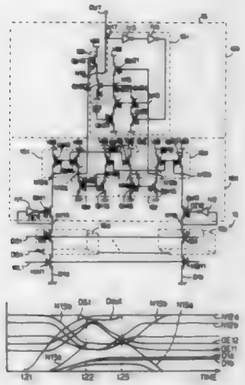
f. means for preventing said transistor N2 from driving said second node until said first power supply is at or above said first voltage level, said means receiving as a first input said first control signal, said means having a second input coupled to said fifth node and a second control signal, said second control signal having a second voltage level indicative of the voltage level of said first power supply, said means generating a third control signal coupled to said sixth node.

5,301,152

SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH SENSE AMPLIFIER CIRCUIT WHICH ELIMINATES A TRANSIENT PULSE AT AN OUTPUT DATA TERMINAL

Shinichi Iwashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,624
Claims priority, application Japan, May 28, 1991, 3-152562
Int. Cl.[5] G11C *7/00, 13/00*
U.S. Cl. 365—190 **8 Claims**



4. An electrically programmable read only memory device fabricated on a single semiconductor chip, comprising:

a) a memory cell array having a-1) a first sub-array implemented by a plurality of first floating gate type field effect transistors arranged in sub-rows and columns, and a-2) a second sub-array implemented by a plurality of second floating gate type field effect transistors arranged in sub-rows and columns, and respectively paired with said plurality of first floating gate type field effect transistors for forming a plurality of memory cells arranged in matrix and respectively storing data bits;

b) a plurality of word lines each coupled with one of said sub-rows of said first sub-array and one of said sub-rows of said second sub-array, and selectively driven to active level for reading out data bits from a row of memory cells;

c) a plurality of first digit lines respectively coupled with the columns of said first sub-array;

d) a plurality of second digit lines respectively coupled with the columns of said second sub-array, and respectively paired with said plurality of first digit lines for forming a plurality of digit line pairs, said data bits read out from the row of memory cells being propagated by said plurality of digit line pairs in the form of differential voltage level;

e) a column selector unit coupled with said plurality of digit line pairs for selectively coupling with a pair of output nodes thereof; and

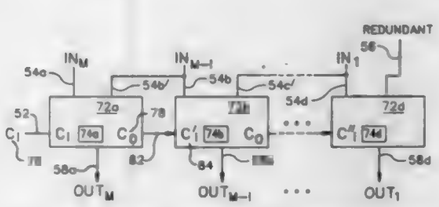
f) a sense amplifier unit comprising f-1) a differential amplification stage including a pair of gate transistors having respective conductive paths respectively coupled with said pair of output nodes of said column selector unit, a pair of input inverters having respective input nodes coupled with said pair of output nodes for controlling resistances of said conductive paths of said pair of gate transistors, a pair of first current mirror circuits respectively coupled with the conductive paths of said pair gate transistors, and second current mirror circuits supplied with currents from said pair of first current mirror circuits for producing a large differential voltage signal, and f-2) an output stage including an output inverter implemented by a series combination of first and second transistors opposite in channel conductivity type to each other and producing an output data signal, and a controller responsive to said output data signal indicative of a previously accessed data bit and varying a voltage level forming a part of said large differential voltage signal for producing modified voltage level, said first transistor being responsive to a voltage level forming the other part of said large differential voltage signal, said second transistor being responsive to said modified voltage level.

5,301,153

REDUNDANT ELEMENT SUBSTITUTION APPARATUS

Larry D. Johnson, San Jose, Calif., assignor to MIPS Computer Systems, Inc., Sunnyvale, Calif.

Filed Jun. 3, 1992, Ser. No. 893,156
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **8 Claims**



4. In a circuit having at least first and second data input lines and at least a first redundant data input line, apparatus for receiving data from said first and second data input lines and said redundant data input line and selectively outputting data, on at least first and second output lines, the apparatus comprising:

at least first and second selection circuits, the first selection circuit having a multiplexor for receiving data from said first data input line and from said first redundant data input line, respectively, under control of a first control signal, and having a first output for outputting data to said first output line, said second circuit having a second multiplexor for receiving third and fourth inputs from said second data input line and said first data input line, respectively, and under control of a second control signal, outputting data to said second data input line;

a first control line for conveying said first control signal from said second selection circuit to said first selection circuit, said first control signal being in a first or second state;

a second control line for receiving a second control signal in said second selection circuit, said second control signal being in a first or second state;

said first selection circuit having said first multiplexor configured to convey data from said first data input line to said first output line when said first control signal is in said first state and to convey data from said first redundant data input line to said first output line when said first control signal is in said second state;

a fuse in said second selection circuit which can be in a blown or unblow state, and

logic circuitry in said second selection circuit for

conveying data from said second data input line to said second output line and for outputting a control signal on said first control line substantially identical to the control signal received on said second control line when said fuse is in said unblown state and for

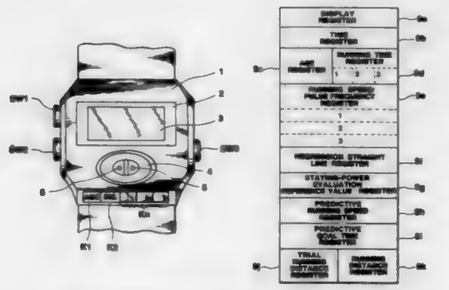
conveying data from said first data input line to said second output line and outputting a control signal on said first control line which is the inverse of said control signal received on said second control line, when said fuse is in said blown state.

5,301,154

TIME CALCULATING DEVICE

Fusao Suga, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1993, Ser. No. 80,226
Claims priority, application Japan, Jul. 16, 1992, 4-212049
Int. Cl.[5] G04B *47/00*; A61B *5/04, 5/02*
U.S. Cl. 368—10 **17 Claims**



1. A time calculating device comprising:

measuring means for measuring data of a living body of a user when the user takes exercise at least twice at different paces;

input means for inputting data of exercise quantity;

storing means for storing data of exercise quantity inputted by said input means;

calculating means for calculating, based on the data of a living body measured by said measuring means, an estimated time required for finishing exercise quantity expressed by the data of exercise quantity stored in said storing means; and

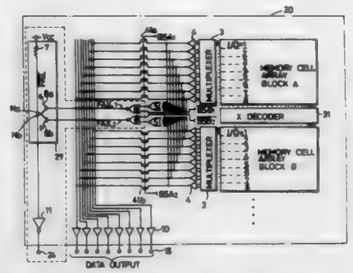
output means for outputting the estimated time calculated by said calculating means.

5,301,155

MULTIBLOCK SEMICONDUCTION STORAGE DEVICE INCLUDING SIMULTANEOUS OPERATION OF A PLURALITY OF BLOCK DEFECT DETERMINATION CIRCUITS

Tomohisa Wada, and Shuji Murakami, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1991, Ser. No. 670,811
Claims priority, application Japan, Mar. 20, 1990, 2-71367
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **8 Claims**



1. A semiconductor storage device, comprising:

a plurality of blocks each including an array of memory cells;

means for writing identical data into a plurality of memory cells in each of at least two blocks;

a plurality of memory cell operation determination means each provided corresponding to a block for simultaneously reading data from the plurality of memory cells in each block in which said identical data was written and making a determination as to whether the read data are all identical; and

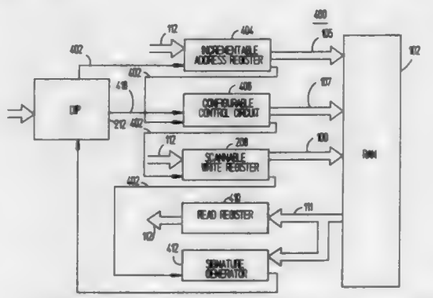
simultaneous determination means for simultaneously operating at least two of said plurality of memory cell operation determination means.

5,301,156

CONFIGURABLE SELF-TEST FOR EMBEDDED RAMS

Harlan A. Talley, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 18, 1991, Ser. No. 732,538
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **12 Claims**



1. A self-test circuit for a RAM embedded in an integrated circuit chip, the self-test circuit adapted to interface with a tester and to receive a test vector therefrom, said self-test circuit comprising:

(a) an address register associated with the RAM, said address register having a normal operation mode and a test mode, said address register being adapted to store a RAM

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address and to automatically increment said RAM address by an address increment upon receiving an increment signal;

(b) a control circuit associated with the RAM, said control circuit having a normal operation mode and a test mode, said control circuit being adapted to coordinate RAM read/write operations and to produce said increment signal;

(c) a write register associated with the RAM for storing test data to be written to the RAM, said test data comprising non-random data sequences designed to detect faults of predetermined types;

(d) a signature generator associated with the RAM and adapted to receive data read from the RAM, and to produce a test signature in response thereto; and

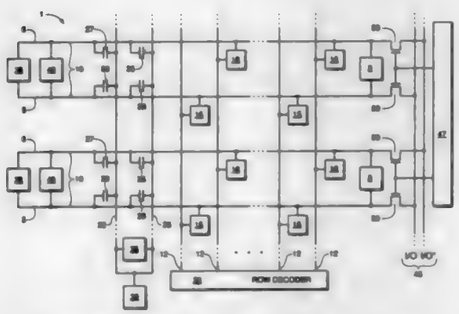
(e) a scanpath allowing access to said incrementable address register, said control circuit, said write register, and said signature generator, said scanpath allowing data to be shifted into and out of said incrementable address register, said control circuit, said write register, and said signature generator.

5,301,157

COUPLING CIRCUIT AND METHOD FOR DISCHARGING A NON-SELECTED BIT LINE DURING ACCESSING OF A MEMORY STORAGE CELL

Gregory N. Roberts, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 1, 1992, Ser. No. 892,539
Int. Cl.[5] G11C *7/00, 11/24*
U.S. Cl. 365—203 **22 Claims**



1. A circuit for storing digital data, comprising:

a) a memory storage cell for storing the digital data;

b) a selected bit line in electrical communication with said memory storage cell;

c) a non-selected bit line, electrically isolated from said memory storage cell, having a first bit line potential;

d) a selected coupling line capable of electrical communication with said non-selected bit line;

e) a non-selected coupling line capable of electrical communication with said selected bit line;

f) a coupling circuit electrically interposed between and capable of providing said electrical communication between said non-selected bit line and said selected coupling line and electrically interposed between and capable of providing said electrical communication between said selected bit line and said non-selected coupling line; and

g) a coupling line selection circuit for driving a potential of said selected coupling line to a reference coupling potential,

said reference coupling potential being substantially different than said first bit line potential, wherein said non-selected bit line is electrically coupled to said selected coupling line through said coupling circuit thereby effecting a second bit line potential on said non-selected bit line,

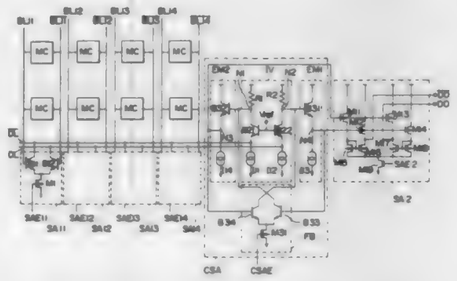
said second bit line potential lying within a range of potentials between said first bit line potential and said reference coupling potential and including said reference coupling potential.

5,301,158

DATA READING CIRCUIT INCLUDING A CURRENT SENSING AMPLIFIER CIRCUIT

Koichi Yokomizo, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 33,234
Claims priority, application Japan, Mar. 16, 1992, 4-058488
Int. Cl.[5] G11C *13/00*; H03K *5/24*
U.S. Cl. 365—205 **11 Claims**



1. A data reading circuit comprising:

a first, a second, a third and a fourth nodes;

a first data line applied to a first current signal having a first current value;

a second data line applied to a second current signal having a second current value;

a current-voltage converter circuit connected between said first and second data lines and said first and second nodes for applying a first voltage potential difference between said first node and said second node according to the difference between said first current value and said second current value;

a level shifting circuit connected between said first and second nodes and said third and fourth nodes for applying a second voltage potential difference, which is substantially equal to said first voltage potential difference between said third node and said fourth node; and

a feedback circuit connected between said first and second nodes and said third and fourth nodes for applying a third voltage potential difference larger than said first voltage potential difference between said first-node and said second node in response to a first control signal.

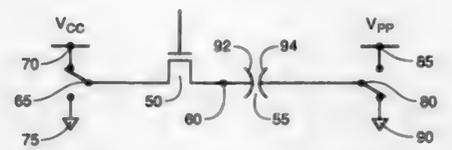
5,301,159

ANTI-FUSE CIRCUIT AND METHOD WHEREIN THE READ OPERATION AND PROGRAMMING OPERATION ARE REVERSED

Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 5, 1993, Ser. No. 13,896
Int. Cl.[5] G11C *17/00*
U.S. Cl. 365—225.7 **20 Claims**

1. A semiconductor memory device having a circuit for minimizing leakage current comprising an anti-fuse element wherein the anti-fuse element is biased for a current to flow in a first direction or the current is flowing in said first direction during a first operation of the memory circuit, and said anti-fuse element is biased for current to flow in a second direction or the current flows in said second direction during a second operation of the memory circuit, said first and second directions being opposite of one another.

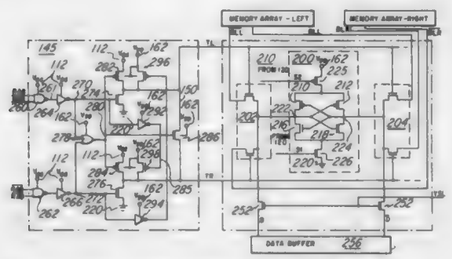


5,301,160

COMPUTER INCLUDING AN INTEGRATED CIRCUIT HAVING A LOW POWER SELECTION CONTROL ARRANGEMENT

Hugh P. McAdams, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 24, 1992, Ser. No. 840,418
Int. Cl.[5] G11C *5/14*
U.S. Cl. 365—226 **13 Claims**



9. An integrated circuit memory comprising:

two partial bit lines;

a sense amplifier with a sense node;

a pair of selectable transfer gates, each interposed between one partial bitline and the sense node;

a selection circuit, responsive to a first address signal, for enabling transmission of data selectively through one of the pair of transfer gates;

an on chip high voltage supply for providing high voltage through the selection circuit and a first one of a pair of transfer control leads to one of the transfer gates during active selection of the one transfer gate;

a supply voltage node for applying precharge voltage through the selection circuit and the pair of transfer control leads to the transfer gates during a precharge state of the transfer gates; and

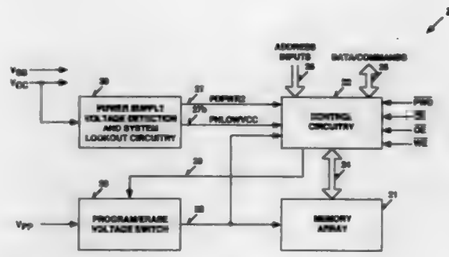
a charge transfer gate, connected between the transfer control leads and enabled in response to a second address signal during the precharge state, for transferring charge from the first transfer control lead to the other transfer control lead.

5,301,161

CIRCUITRY FOR POWER SUPPLY VOLTAGE DETECTION AND SYSTEM LOCKOUT FOR A NONVOLATILE MEMORY

Marc E. Landgraf, Folsom; Jahanshir J. Javanifard, Sacramento, and Mark D. Winston, El Dorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 12, 1993, Ser. No. 3,618
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—229 **22 Claims**



16. A computer system, comprising:

(A) a system bus;

(B) a central processing unit (CPU) coupled to the system bus;

(C) a plurality of peripheral devices, each of which being coupled to the system bus;

(D) a nonvolatile memory coupled to system bus, wherein the nonvolatile memory further comprises

(i) a memory array;

(ii) a control circuitry coupled to the memory array for controlling operations of the memory array; and

(iii) a detection circuit coupled to the control circuitry and coupled to receive a power supply for detecting potential level of the power supply and for generating a reset signal to reset the control circuitry until the potential level of the power supply rises above a predetermined voltage, wherein the detection circuit further comprises

(1) a first transistor having a first end coupled to receive the power supply, a second end coupled to a first node, and a third end coupled to the first node;

(2) a second transistor having a first end coupled to the first node, a second end couple to ground, and a third end coupled to the ground, wherein the first and second transistors function as a voltage divider;

(3) a third transistor having a first end coupled to the power supply, a second end coupled to an output node, a third end coupled to the first node; and

(4) resistor means coupled between the output node and the ground for coupling the output node to the ground when the third transistor is not conducting, and for providing a positive potential at the output node when the third transistor is conducting, wherein when the power supply does not reach the predetermined voltage level, the third transistor is not conducting and the output node outputs the reset signal that is a ground potential, wherein when the power supply rises above the predetermined voltage level, the third transistor starts to conduct and the output node registers the positive potential and ceases to output the reset signal, wherein the first, second, and third transistor are of the same channel type such that the circuitry operates independent of process variation and temperature variation.

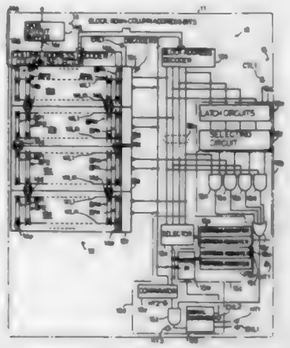
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,162

SEMICONDUCTOR RANDOM ACCESS MEMORY DEVICE HAVING SHARED SENSE AMPLIFIERS SERVING AS A CACHE MEMORY

Tamio Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,238
Claims priority, application Japan, Mar. 26, 1992, 4-100488
Int. Cl.[5] G11C *15/04*
U.S. Cl. 365—230.03 **10 Claims**



1. A random access memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of memory cell blocks each implemented by a plurality of memory cells arranged in rows and columns, block addresses being respectively assigned to said plurality of memory cell blocks, row addresses being respectively assigned to said rows of memory cells of each memory cell block, column addresses being respectively assigned to said columns of memory cells of each memory cell block;

b) a block selecting means responsive to block address bits for producing a block address decoded signal indicative of the block address assigned to one of said plurality of memory cell blocks;

c) a plurality of row selecting means respectively associated with said plurality of memory cell blocks, and selectively enabled in the concurrent presence of a first enable signal and said block address decoded signal for producing a row address decoded signal indicative of a row address assigned to one of the rows of memory cells incorporated in the associated memory cell block;

d) a plurality of sense amplifier circuit arrays having sense amplifier circuits each array shared between two of said plurality of memory cell blocks, and each operative to amplify data signals indicative of data bits read-out from a row of memory cells of one of said plurality of memory cell blocks, said plurality of sense amplifier circuit arrays holding the data signals until data signals are newly supplied thereto;

e) a column selecting means responsive to column address bits for selecting one of said data signals held in said sense amplifier circuit arrays associated with the memory cell block indicated by said block address decoded signal;

f) a plurality of flag means respectively associated with said plurality of memory cell blocks, and operative to produce flag signals each indicative of whether or not the data bits stored in one of said plurality of sense amplifier circuit arrays are read out from the associated memory cell block;

g) a block address discriminating means operative to compare said block address decoded signal with said flag signals for producing a first hit signal when said block address decoded signal is indicative of one of said plurality of memory cell blocks which has already supplied data bits to the associated sense amplifier circuit array;

h) a plurality of address storage means respectively associated with said plurality of memory cell blocks, and each storing the row address assigned to one of said rows of memory cells selected from the associated memory cell block in the latest access;

i) a row address discriminating means operative to compare the row address indicated by said row address bits with said row address stored in each address storage means for producing a second hit signal when said row addresses are consistent with each other;

j) a control means operative to keep said first enable signal in inactive level in the concurrent presence of said first hit signal and said second hit signal for allowing said column selecting means to transfer said one of said data signals without read-out from the memory cell block indicated by said block address decoded signal and to produce said first enable signal and a second enable signal in the absence of at least one of said first hit signal and said second hit signal; and

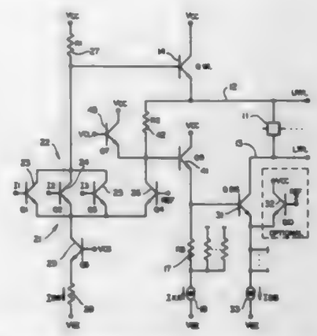
k) a write-in means responsive to said second enable signal for writing the row address indicated by said row address bits into the address storage means associated with the memory cell block designated by said block address decoded signal.

5,301,163

MEMORY SELECTION/DESELECTION CIRCUITRY HAVING A WORDLINE DISCHARGE CIRCUIT

Robert M. Reinschmidt, Los Gatos, and Steven C. Sullivan, Campbell, both of Calif., assignors to Digital Equipment Corp., Maynard, Mass.

Continuation of Ser. No. 531,385, May 31, 1990, abandoned.
This application Feb. 3, 1992, Ser. No. 830,768
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—230.06 **5 Claims**



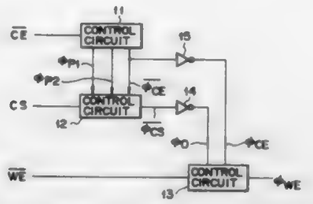
1. In a wordline selection circuit for a bipolar ECL memory having a plurality of memory cells connected between upper and lower wordlines: an ECL input stage having a plurality of transistors forming a NOR gate decoder responsive to an address signal and an additional transistor forming an ECL pair with the transistors in the decoder, a driver transistor having its emitter connected to the upper wordline and its base connected to the decoder, a resistor connected between a voltage source and the base of the driver transistor, a current source, a switching transistor connected between the lower wordline and the current source, an emitter follower transistor connected between the collector of the additional transistor in the ECL pair and the base of the switching transistor, and a resistor connected between the upper wordline and the collector of the additional transistor in the ECL pair.

5,301,164

CONTROL CIRCUIT FOR CONTROLLING AN OPERATION MODE IN A PSEUDO-STATIC RAM

Naokazu Miyawaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 20, 1991, Ser. No. 702,375
Claims priority, application Japan, May 21, 1990, 2-130893
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—233 **4 Claims**



1. A control circuit for controlling an operation mode in a pseudo-static RAM, comprising:

a first control circuit, which receives a chip enable signal, for generating a first group of control signals in synchronism with said chip enable signal, said first group of control signals comprising a first delay signal derived from said chip enable signal, a second delay signal controlled by a fall in timing of said chip enable signal, and a third delay signal generated later in time than said second delay signal;

a second control circuit which receives said first group of control signals and a chip select signal, said second control circuit latching said chip select signal at a predetermined timing of said first group of control signals thereby generating a second control signal corresponding to the latched chip select signal; and

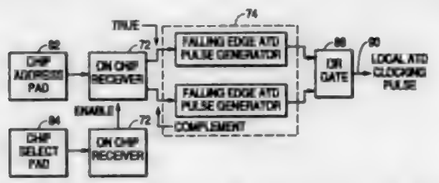
a third control circuit which receives a write enable signal, said second control signal, and a predetermined control signal having a phase which is opposite to the phase of said first delay signal supplied from said first control circuit to said second control circuit earlier in time in response to said chip enable signal, said third control circuit controlling said write enable signal in accordance with the predetermined control signal and said second control signal thereby generating a third control signal for data write-in control.

5,301,165

CHIP SELECT SPEEDUP CIRCUIT FOR A MEMORY

Michael K. Ciraula, Manassas, Va.; Christopher M. Durham, Austin, Tex., and Derwin L. Jallice, Reston, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1992, Ser. No. 967,366
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—233.5 **6 Claims**



2. A memory circuit which, in response to a chip select signal switching from a first logic state to a second logic state, provides data selected by a plurality of address signals, comprising:

a plurality of address input means enabled by the second logic state of the chip select signal and disabled by the first logic state of the chip select signal, each address input means for receiving a corresponding address signal, for providing an output signal representative of the received address signal when enabled by the chip select signal, and for providing the output signal in a predetermined state when disabled by the select signal:

a plurality of transition detection means, each coupled to a corresponding address input means for detecting a transition of the output signal of the corresponding address input means: and

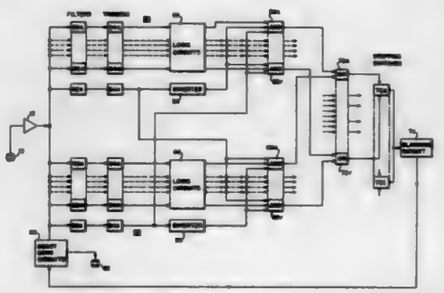
disabling means for disabling all of the transition detection means until a falling edge signal from the address transition detectors is obtained.

5,301,166

REMOTE CONTROL COMMAND SYSTEM

John D. Charlton, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1967, Ser. No. 651,098
Int. Cl.[5] H04K *3/00*
U.S. Cl. 367—1 **16 Claims**



11. In combination with an acoustic decoy, a remote control system comprising:

Transducer means for receiving multi-frequency acoustic command signals and for producing similar multi-frequency electrical command signals;

Echo signal means connected to said transducer means for producing acoustic signals in response to said electrical command signals;

First and second receiving means, said first receiving means being connected to receive and be responsive to frequency components of said multi-frequency electrical command signals which are in a first frequency region and said second receiving means connected to receive and be responsive to frequency components of said multi-frequency electrical command signals which are in a second frequency region which is separated from said first frequency region;

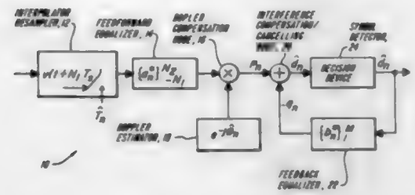
Disabling means in each of said first and second receiving means, said disabling means being connected to receive and be respectively responsive to particular frequency components of said electrical command signals which are in said first and second regions to disable one of said receiving means and enable the other of said receiving means;

Control means for varying the operative characteristics of said echo signal means and of said decoy, said control means being connected to said first and second receiving means and energized by frequency components of said electrical command signals which are in the frequency region to which said enabled one of said receiving means is responsive and

Blanking means connected to said control means and to said echo signal means to prevent said echo signal means from producing an acoustic signal When said control means are energized.

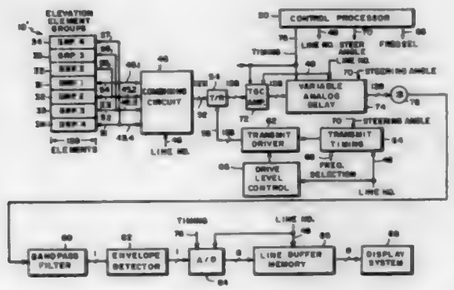
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,167
APPARATUS FOR IMPROVED UNDERWATER ACOUSTIC TELEMETRY UTILIZING PHASE COHERENT COMMUNICATIONS
John G. Proakis, Lexington; Josko Catipovic, Woodshole, and Milica Stojanovic, Boston, all of Mass., assignors to Northeastern University, Boston and Woods Hole Oceanographic Institution, Wood Hole, both of Mass., a part interest
Filed Aug. 5, 1992, Ser. No. 926,223
Int. Cl.[5] H04B *11/00*
U.S. Cl. 367—134 **20 Claims**



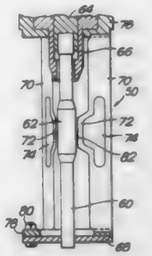
1. Apparatus for high data rate digital underwater communication over an underwater acoustic channel comprising:
means including a transmitter at a first location for horizontally transmitting a carrier modulated by a phase coherent stream of data corresponding to symbols;
means including a receiver at a second location for detecting and demodulating said stream to remove channel induced degradations in said stream, said receiver including means for decision feedback equalization, thereby to recover undegradated data in the form of symbols; and,
means for displaying said received symbols, whereby phase coherent communications is established despite an underwater acoustic channel which changes rapidly and ordinarily restricts the data rate.

5,301,168
ULTRASONIC TRANSDUCER SYSTEM
David G. Miller, Boxford, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 19, 1993, Ser. No. 6,084
Int. Cl.[5] G03B *42/06*
U.S. Cl. 367—138 **24 Claims**



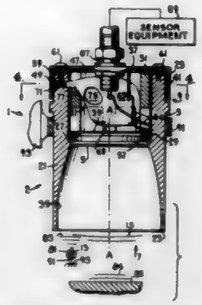
1. An ultrasonic transducer system comprising
an ultrasonic transducer array having M transducer channels in the azimuth direction, with at least selected ones of said transducer channels being divided into N segments in the elevation direction, said segments being grouped to form E elevation apertures M, N and E each being an integer of two or more;
means for providing a selected focal length for each of said elevation apertures at a selected depth, the focal length increasing with the size of the elevation apertures;
means for energizing selected transducer channel segments to transmit scan lines at selected steering angles, said energizing means including means operative for at least selected ones of the steering angles for energizing at different times the segments for at least two different elevation apertures, whereby at least two scan lines are transmitted at each such steering angle, echo signals being received from the transducer array in response to each energization of the transducers; and
means for line splicing the received echo signals for said at least selected steering angles so as to use from each received scan line the portion thereof for which the corresponding elevation aperture is focused.

5,301,169
SEISMIC SOURCE
Roy Baria; Michael Manning, both of Truro, and Michael Allcock, St. Ives, all of United Kingdom, assignors to Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom
PCT No. PCT/GB90/00703, § 371 Date Nov. 15, 1991, § 102(e) Date Nov. 15, 1991, PCT Pub. No. WO90/13830, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 779,002
Claims priority, application United Kingdom, May 8, 1989, 8910574
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—147 **8 Claims**



1. An apparatus for generating seismic waves operable in a borehole, the apparatus comprising a module and a cable to support the module within the borehole, the cable incorporating a conductor to provide electric current to the module, the module incorporating capacitor means, means for charging the capacitor means to a high voltage, a spark gap, and means for connecting the spark gap to the capacitor means, the spark gap comprising two electrodes separated by a gap, which gap in use is occupied by liquid acoustically coupled to the wall of the borehole, such that during operation sparks are created which extend from one electrode to the other, and pressure waves are thereby generated, characterized in that the capacitance and the voltage are such that the stored electrical energy is more than 1 kJ, the connecting means comprises a triggered arc gap, and the electrodes of the spark gap are of such a shape that the gap across which the sparks are to be created is of substantially uniform width, the width having a value between 5 and 20 mm, and such that the spark-creating current is concentrated in said gap, and the surfaces of both the electrodes are covered by an insulating layer except at those positions where the sparks are to be created.

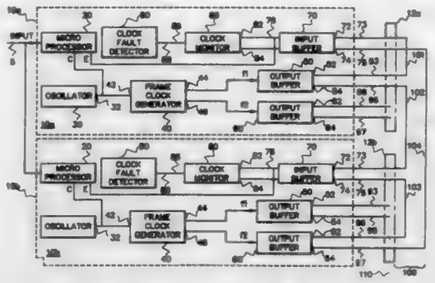
5,301,170
ULTRASONIC SENSOR MOUNTING DEVICE
Richard W. James, Cedar Rapids, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa
Filed Dec. 2, 1992, Ser. No. 984,367
Int. Cl.[5] G01S *15/00*; H04R *17/00*
U.S. Cl. 367—188 **9 Claims**



1. A mounting system for mounting an ultrasonic transducer on user equipment for operation in an ambient environment containing contaminants including moisture and for controlling distance from a target surface, wherein the transducer has a face which emits and receives ultrasonic waves, said mounting system comprising:
(a) mounting means for mounting the transducer;
(b) focusing means for focusing the ultrasonic waves emitted and received by the transducer;
protecting means for protecting the transducer from the contaminants;
(d) pressure equalizing means for dynamically equalizing pressure across the transducer; and
(e) calibrating means for substantially and dynamically eliminating errors caused by temperature dependency of the velocity of propagation of the ultrasonic waves emitted and received by the transducer; said calibrating means include a calibrator spaced such that a reflected portion of the ultrasonic waves emitted by the transducer is echoed back to the transducer; said calibrator spaced apart from said focuser such that the spacing between said calibrator and said focusing means is a substantial fraction of the spacing between said focusing means and the target surface.

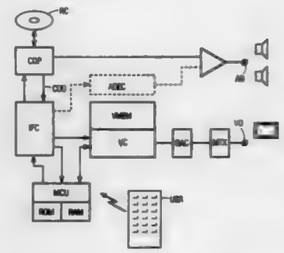
5,301,171
CROSS-MONITORED PAIR OF CLOCKS FOR PROCESSOR FAIL-SAFE OPERATION
Brian A. Blow, Maple Grove, and Mark E. Wright, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jun. 1, 1993, Ser. No. 70,146
Int. Cl.[5] G04C *11/00*; H03K *3/00*
U.S. Cl. 368—46 **2 Claims**

1. A cross monitored clock system comprising:
a first system clock generator for providing a first system clock signal at a first system frequency;
a first frame clock generator responsive to said first system clock signal for deriving therefrom a first frame clock signal at a first frame frequency;
a second system clock generator for providing a second system clock signal at a second system frequency;
a second frame clock generator responsive to said second clock signal for deriving therefrom a first reference clock signal at a first reference frequency;
a first clock monitor having first and second inputs, where said first input receives said first frame clock signal and said second input receives said first reference clock signal, said first clock monitor providing an indication of the value of said first frame clock frequency being either (i) within a first selected value range, or ii) outside said first selected value range;
a second clock monitor having first and second inputs, where said first input receives said first frame clock signal



and said second input receives said first reference clock signal, said second clock monitor providing an indication of the value of said first reference clock frequency being either (i) within said first selected value range, or ii) outside said first selected value range.

5,301,172
METHOD OF STORING USER INFORMATION ITEMS AND APPARATUS FOR REPRODUCING STORED ITEMS
Norman D. Richards, Horsham, England; Jozef M. K. Timmermans, Bilzen; Jos G. Schepers, Peer, both of Belgium, and Harmen D. Voogd, Best, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1992, Ser. No. 976,107
Claims priority, application United Kingdom, Nov. 15, 1991, 9124337
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 **28 Claims**



1. A method of storing a plurality of user information items on a record carrier for subsequent presentation to a user, the method including the steps of:
storing the plurality of user information items at addressable locations on the record carrier;
defining a desired composite reproduction sequence for the user information items, the composite reproduction sequence comprising at least two linear reproduction sequences and at least one selection point at which the desired composite reproduction sequence can branch to one of a plurality of alternative reproduction sequences dependent on a user selection response;
for each said linear reproduction sequence in the desired composite reproduction sequence defining and storing on the record carrier a sequence item comprising an ordered list of references to said user information items stored on the record carrier; and
for each said selection point in the composite reproduction

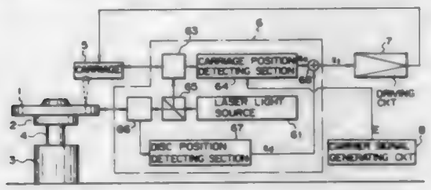
sequence defining and storing a selection item including a selection list comprising for each said user selection response a reference to a stored sequence item or said selection item.

5,301,173

OPTICAL RECORDING APPARATUS WITH TWO TRACKING ERROR SIGNALS

Norio Matsuda, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, tokyo, Japan

Continuation of Ser. No. 782,962, Oct. 25, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,389
Claims priority, application Japan, Mar. 6, 1991, 3-40180
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.250 6 Claims



1. An optical recording apparatus comprising:
rotating driving means for rotating an optical recording disc;
irradiating means for irradiating a light beam carrying an information signal onto the disc and forming a recording track;
position detecting means for detecting a position of said irradiating means in a radial direction of said disc and generating a first detection signal;
first error signal generating means for generating a first error signal having all of its non-zero components existing during a period T1 by comparing said first detection signal with a first predetermined reference value;
deviation detection means for detecting a deviation of the entire disc in the disc radial direction and generating a second detection signal;
second error signal generating means for generating a second error signal having all of its non-zero components existing during said period T1 by comparing said second detection signal with a second predetermined reference value;
adding means for adding the entirety of said first error signal and the entirety of said second error signal to form a composite error signal in such a way that all of said non-zero components of said first error signal are added to time-corresponding non-zero components of said second error signal throughout said period T1; and
driving means for translating the irradiating means in the radial direction of the disc in accordance with said composite error signal.

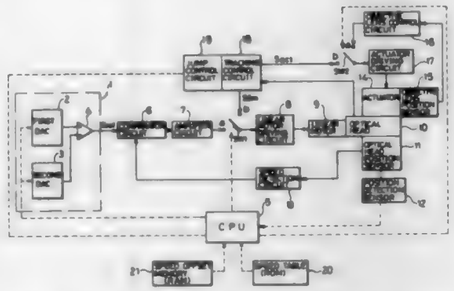
5,301,174

OPTICAL DISK RECORDING AND REPRODUCING APPARATUS

Hirotsugu Matoba, Sakurai; Masaru Nomura, Tenri; Toshihisa Deguchi, Nara, and Shigeo Terashima, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1990, Ser. No. 550,973
Claims priority, application Japan, Jul. 14, 1989, 1-183433; Jul. 14, 1989, 1-183434
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 16 Claims

1. An optical disk recording and reproducing apparatus comprising:
an optical head;
driving means for driving the optical head in a radial direction of an optical disk;
a position detecting means for detecting a present position of the optical head and detecting a switching point;
calculating means for calculating an access distance, based on the present position of the optical head and a position of a target track in response to the position detecting means;
speed generating means for generating a table value in accordance with said access distance;
speed offset value storing means for storing speed offset values for correcting an error in the access distance, the speed offset values being arranged according to a variable access distance and being updated for each coarse access;



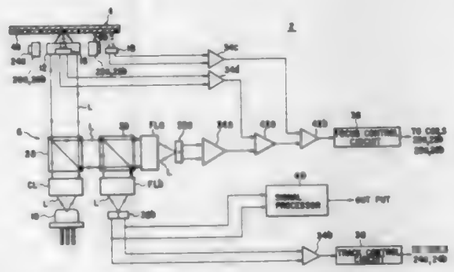
a first control means for (1) controlling the driving means to move the optical head in accordance with the adjustable target speed which is obtained by subtracting the speed offset value from the table value, before the optical head passes the switching point which is located before the target track position in the coarse access and for (2) changing the adjustable target speed to "0" after the optical head passes the switching point; and
a second control means for judging whether the optical head is positioned on the target track upon completion of the coarse access, and for performing a fine access, after an elapse of a predetermined time, if the optical head is not positioned on the target track.

5,301,175

OPTICAL HEAD APPARATUS FOR MAINTAINING A CONSTANT ANGLE BETWEEN AN OPTICAL AXIS OF AN OBJECT LENS AND THE SURFACE OF A STORAGE MEDIUM

Yuichi Nakamura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 12, 1992, Ser. No. 897,480
Claims priority, application Japan, Jun. 14, 1991, 3-143378
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.32 9 Claims



1. An optical head apparatus comprising:

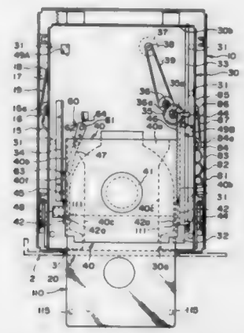
an optical element for focusing a light beam onto a surface of an optical disk;
means for detecting a first bend of said surface of said optical disk in a radial direction of said optical disk;
means for detecting a second bend of said surface of said optical disk in a tangential direction of said optical axis;
means for tilting said optical element in accordance with said first and second bends, said tilting means having at least four coil elements arranged on a plant that is parallel to both said radial and tangential directions of said optical disk and which is perpendicular to said optical axis of said optical element, said at least four coil elements including a first pair of coils for tilting said optical element in said radial direction and a second pair of coils for tilting said optical element in said tangential direction; and
means for independently energizing said two pairs of coils in accordance with said detection results of said first and second detecting means.

5,301,176

APPARATUS FOR CARRYING OUT RECORDING AND/OR REPRODUCING SIGNALS FOR DISK-SHAPED RECORDING MEDIUM

Hideo Kawachi, Tokyo; Katsuichi Sakurai, and Toshiyuki Arai, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 895,603
Claims priority, application Japan, Jun. 10, 1991, 3-137407
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—75.2 14 Claims



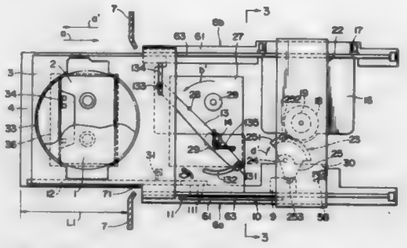
1. An apparatus for carrying out at least one of recording signals in and reproducing signals from one of both a naked disk and a disk encased in a cartridge, the disk being a disk shaped recording medium, the apparatus comprising:
a disk tray for receiving the naked disk at a first position and to carry the naked disk to a second position at which loading of the naked disk is completed;
a cartridge carrier for receiving the cartridge at a third position and carrying the cartridge to the second position at which loading of the cartridge is completed
chucking means for chucking the naked disk at the second position, the chucking means selectively taking a first state and a second state, the naked disk being chucked by the chucking means at the first state;
a turntable for driving one of the naked disk at the second position and the disk in the cartridge at the second position; and
means for controlling the chucking means to selectively take the first state and the second state.

5,301,177

DEVICE FOR SIMULTANEOUSLY LOADING TWO DIFFERENT KINDS OF RECORDING MEDIA

Junzo Kumakura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,974
Claims priority, application Japan, Aug. 2, 1991, 3-216501
Int. Cl.[5] G11B *33/02, 23/00*
U.S. Cl. 369—75.2 5 Claims



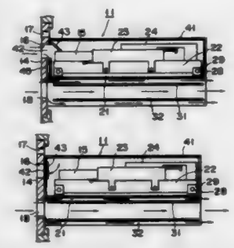
1. A loading device comprising:
a first tray having a disk placing portion for holding a disk;
a second tray having a cassette placing portion for holding a cassette accommodating a recording medium;
carrying means for horizontally carrying said first and second trays between a first position where said first and second trays are pulled out from a main body of said device and a second position where said first and second trays are retracted within said main body of said device; and
a disk recording and reproducing portion for recording and reproducing information contained on said disk placed on said first tray and carried to said second position by said carrying means, and a cassette recording and reproducing portion for recording and reproducing information contained on the medium accommodated in said cassette placed on said second tray and carried to said second position by said carrying means,
wherein said first tray and said second tray vertically overlap relative to each other and are carried in the same direction by said carrying means.

5,301,178

DRIVE UNIT FOR OPTICAL MEMORY DEVICE WITH PORTION OF DRIVE MEANS MOUNTED OUTSIDE A SEALING MEANS

Satoshi Okabe, Hachioji, and Sunao Aoki, Higashimurayama, both of Japan, assignors to Olypus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1991, Ser. No. 657,690
Claims priority, application Japan, Feb. 22, 1990, 2-41833; Apr. 11, 1990, 2-94106; May 23, 1990, 2-131129
Int. Cl.[5] G11B *33/14*
U.S. Cl. 369—77.1 5 Claims



1. In a drive unit for an optical memory device, which in-

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cludes a housing for receiving therein a recording medium, an optical head for reading out data from said recording medium, first drive means for linearly moving said optical head, second drive means for rotatably driving said recording medium, and a drive circuit board for controlling said first and second drive means,

the improvement comprising:

sealing means arranged inside of said housing and defining an area covering in a nearly sealed condition said recording medium, said optical head, said first drive means, and only a part of a rotating shaft of said second drive means, said area covered by said sealing means having an internal space;

first and second apertures in said housing;

at least said drive circuit board is arranged in a space external of the area covered by said sealing means, at least said drive circuit board being arranged in a space between a surface of said sealing means and an inner surface of said housing;

said sealing means having an opening at a section thereof corresponding to a slot in a front panel of said housing; and

means for opening and closing said opening as a recording medium is loaded or unloaded via said slot wherein when said opening is open, air flow via said slot into the internal space of the area covered by said sealing means as well as into said housing external of the area covered by said sealing means are both allowed, and when said opening is closed, only the air flow into the internal space of the area covered by said sealing means is prevented.

5,301,179

OPTICAL DISK DRIVE UNIT WITH A SEALING TYPE BEARING MEMBER

Akihiko Okamoto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 890,539
Claims priority, application Japan, Jun. 3, 1991, 3-157435
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—77.2 **11 Claims**

1. An optical disk drive unit for loading a disk cartridge which houses a disk-shaped recording medium at a predetermined position in the unit and ejecting the loaded disk cartridge from the unit as well, said optical disk drive unit comprising:

a sealing enclosure which sealingly encloses said recording medium and an access mechanism for writing/reading data on and from said recording medium from exterior in a state where said disk cartridge is installed in the unit;

an input means for inputting a command signal to eject said loaded disk cartridge from the unit;

an eject means for ejecting said disk cartridge from the unit;

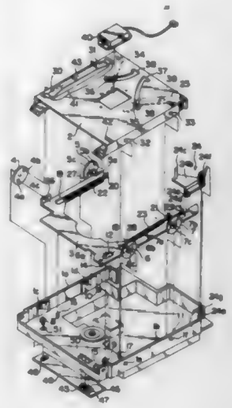
a pin for moving and arranging said eject means to a state for starting its ejecting function;

a cam member which is arranged in such a way that said cam member is disengaged from said pin when said disk cartridge is being unloaded from the unit and that said cam member contacts said pin to start said ejecting function by said eject means when said disk cartridge is being loaded in the unit so that by rotating said cam member, said ejecting function can be conducted;

a cam drive means for driving said cam member to rotate which drive means is disposed outside of said sealing enclosure;

a linkage means for connecting a rotational shaft of said cam drive means to said cam member which linkage means is disposed penetrating through a hole formed in said sealing enclosure; and

a control means for controlling said cam member in such a way that upon receipt of said command signal to eject said disk cartridge transmitted from said input means, said cam



drive means is driven to rotate said cam member until said disk cartridge is ejected;

wherein a sealing type bearing means is disposed between said linkage means and said hole through which said linkage means penetrates said enclosure from outside to inside thereof.

5,301,180

Patent Not Issued For This Number

5,301,181

INFORMATION DUBBING APPARATUS WITH AUTOMATIC EJECTING OF REPRODUCED MEDIUM AND RESTART OF RECORDING

Takahumi Shiba, and Hiroyasu Eguchi, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 556,507, Feb. 24, 1990, abandoned.
This application Jan. 17, 1992, Ser. No. 823,611
Claims priority, application Japan, Sep. 22, 1989, 1-246744
Int. Cl.[5] G11B *7/28*
U.S. Cl. 369—84 **10 Claims**

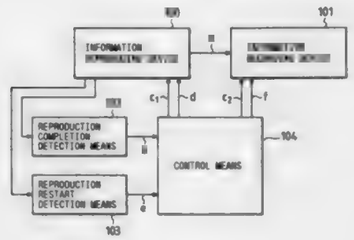
1. An information recording/reproducing apparatus comprising:

an information reproducing device in which a first recording medium is detachably housed, said information reproducing device reproducing and outputting information recorded on said first recording medium;

an information recording device for recording, during a recording operation, said information output by said information reproducing device onto a second recording medium;

reproduction completion detection means for detecting completion of reproduction of said information recorded on said first recording medium;

reproduction restart detection means for detecting restart of reproduction of information output by said information reproducing device; and



control means for automatically outputting a stop command to stop said recording operation of said information recording device in a state where a recordable area of said second recording medium is left blank and for automatically outputting a removal command to eject automatically said first recording medium from said information reproducing device when said completion of reproduction is detected, said control means automatically outputting a start command to restart said recording operation of said information recording device when said restart of said reproduction is detected, after said automatic ejection.

5,301,182

OPTICAL PICKUP HEAD

Yoshiaki Komma, Kyoto; Seiji Nishino, Osaka, and Yoshikazu Hori, Tokyo, all of Japan, assignors to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Filed Apr. 16, 1992, Ser. No. 868,939
Claims priority, application Japan, Apr. 17, 1991, 3-085089
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—103 **10 Claims**

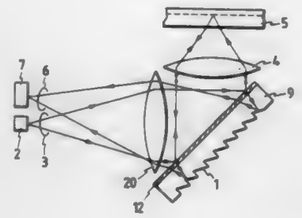
1. An optical pickup head for operating on an information recording medium, comprising:

a light source for emitting a light beam;

a transparent base plate having a semitransparent film formed only on one surface and a hologram formed only on an opposite surface, wherein the semitransparent film is exposed to the light beam emitted from the light source, and reflects a portion of the light beam emitted from the light source, wherein the portion of the light beam which is reflected by the semitransparent film forms a forward light beam;

a condenser optical system for focusing the forward light beam on the information recording medium, wherein the forward light beam is reflected at the information recording medium, and forms a backward light beam;

wherein the backward light beam successively passes through the condenser optical system, the semitransparent film, and the transparent base plate, and then reaches the hologram, and wherein the hologram generates a backward diffraction light beam from the backward light beam; and



a plurality of photodetectors for receiving the diffraction light beam and converting the received diffraction light beam into corresponding electric signals respectively;

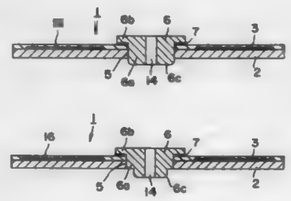
wherein the light source and the photodetectors are located on a same side of the transparent base plate which the semitransparent film faces.

5,301,183

INFORMATION RECORDING DISCS

Takeshi Minoda, and Masayoshi Kurisu, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 278,238, Nov. 30, 1988, abandoned.
This application Dec. 31, 1992, Ser. No. 999,534
Claims priority, application Japan, Dec. 1, 1987, 62-183218
Int. Cl.[5] G11B *23/00*
U.S. Cl. 369—280 **6 Claims**



1. An information recording disc comprising:

one disc substrate having a center hole and a recording layer on one side thereof, and the disc substrate being composed of a thermoplastic resin;

one hub having an insertion portion inserted into the center hole of said disc substrate and a flange portion covering said disc substrate in the vicinity of said center hole, at least a lower portion of said insertion portion opposite the

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flange portion being composed of a magnetic material, and said hub being inserted into said center hole so that said flange portion is positioned on the recording layer side of said disc substrate and the lower portion of the insertion portion of the hub protrudes from the surface opposite to the recording layer side of the disc substrate and the protrusion portion has an outer diameter smaller than that of the insertion portion of the hub, and

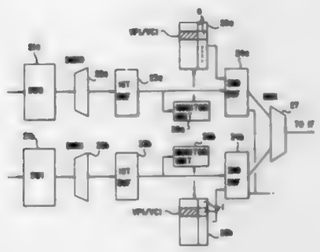
an adhesive layer formed between said flange portion and said disc substrate.

5,301,184

CONTROL SYSTEM FOR SWITCHING DUPLICATED SWITCH UNITS IN ATM EXCHANGE

Shiro Uriu; Satoshi Kakuma, and Yoshihiro Uchida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 6, 1992, Ser. No. 972,025
Claims priority, application Japan, Nov. 8, 1991, 3-292616
Int. Cl.[5] H04L *12/56;* **H04Q** *11/04*
U.S. Cl. 370—16 **10 Claims**



1. A control system for switching between a first system and a second system of a duplicated structure in an Asynchronous Transfer Mode (ATM) exchange, one of the first and second systems operating as an active system, and the other one of the first and second systems operating as a standby system, said control system comprising:

generator means for writing specific bits into ATM cells received via an input transmission line, the specific bits respectively written into ATM cells to be transferred via the active system indicating a first state, said specific bits respectively written into the ATM cells to be transferred via the standby system indicating a second state;

first table means, provided in the first system, for storing the specific bits respectively assigned to VPI/VCI pairs related to the ATM cells transferred via the first system;

second table means, provided in the second system, for storing the specific bits respectively assigned to VPI/VCI pairs related to the ATM cells transferred via the second system; and

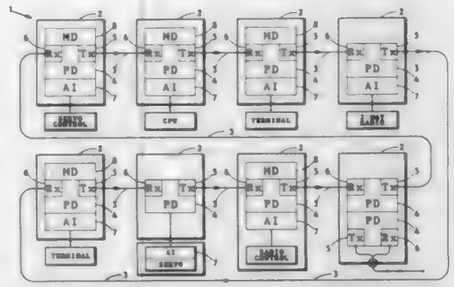
selecting means, coupled to said generator means and said first and second table means, for comparing the specific bits written into the ATM cells with the specific bits stored in the first and second table means by using the VPI/VCI pairs of the ATM cells and for outputting only ATM cells respectively having specific bits respectively indicating the first state to an output transmission line.

5,301,185

RING COMMUNICATION SYSTEM

Michael F. Cherry, 12 Mount Coburn Crescent, Peacehaven, East Sussex BN10 8DW, Great Britain, assignor to Michael Frank Cherry, Peacehaven, Great Britain

Filed Apr. 1, 1991, Ser. No. 678,211
Claims priority, application United Kingdom, Apr. 4, 1990, 9007600
Int. Cl.[5] H04L *12/42*
U.S. Cl. 370—16.1 **4 Claims**



1. A ring transmission system comprising a plurality of access nodes and a data transmission medium on which data is transmitted between access nodes in a series of multi-bit time frame packets;

each access node having a terminal access unit and each terminal access unit having predetermined access to specific time slot channels within the time frame packets;

a plurality of the terminal access units being capable of operating as a system master device and transmitting a priority code sequence to arbitrate which of said plurality of terminal access units is to become the operating system master, all other terminal access units functioning as slaves, the transmission of the code sequence and arbitration occurring on system start up and also in the event of failure of the operating system master;

the operating system master generating said multi-bit time frame packets and providing each with a header with which local clocks in the slave access units synchronize;

and in which information input to the ring by the terminal access units is allocated to specific transmission time slots within the time frame packet in accordance with said predetermined access, the data in the transmission time slots being removed at the operating system master, placed in reception time slots and retransmitted in the time frame packet to be received and decoded by terminal access units having predetermined access to the reception time slots.

5,301,186

HIGH SPEED TRANSMISSION LINE INTERFACE

Robert J. Galuszka, Woodley; Andrew J. Walton, Earley, and Stewart F. Bryant, Redhill, all of United Kingdom, assignors to Digital Equipment Corporation, Maynard, Mass.

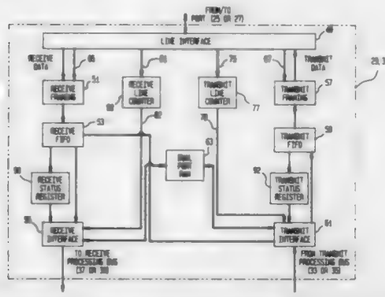
Filed Jun. 28, 1991, Ser. No. 722,684
Int. Cl.[5] H04J *3/14;* **G05B** *23/00;* **H04L** *12/26*
U.S. Cl. 370—24 **7 Claims**

1. A data link interface adapted to be coupled to a full duplex synchronous data transmission line, which comprises:

a receive data line interface device and a transmit data line interface device, each adapted to be coupled to the receive and transmit data paths of the synchronous data transmission line, respectively;

wherein said receive data line interface device comprises a receive data framing device to frame serial data received from the receive data path of the synchronous data transmission line into receive frames, a receive data FIFO buffer coupled to said receive data framing device to store the receive frames and a receive data interface device coupled to said receive data framing device to store the receive frames in the receive data FIFO buffer, the receive data FIFO buffer being adapted to be coupled to a receive data processor for the transmission of the receive frames to the receive data processor;

wherein the receive data line interface device receives serial data via the receive data path of the synchronous data transmission line and the transmit data line interface device transmits serial data to the transmit data path of the synchronous data transmission line;



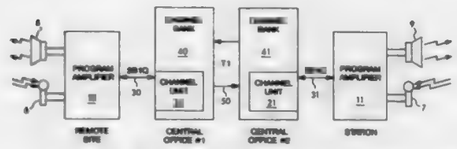
wherein said receive data framing device receives a data set signal from a remote device via the synchronous data transmission line to monitor connectivity between the transmit data line interface device and the remote device over the synchronous data transmission line, the receive data framing device operating to frame and store portions of a frame in said receive data FIFO buffer when the data set signal indicates connectivity and to abort framing and storing portions of a frame and to generate and store an error status message in the receive data FIFO buffer when the data set signal does not indicate connectivity.

5,301,187

SYSTEM FOR IMPLEMENTING BROADBAND AUDIO PROGRAM TELEPHONY CIRCUITS USING 2B1Q TECHNOLOGY

Peter M. Ream, Littleton, Colo., assignor to XEL Communications, Inc., Aurora, Colo.

Filed May 25, 1993, Ser. No. 66,973
Int. Cl.[5] H04B *1/40;* **H04J** *3/00*
U.S. Cl. 370—24 **18 Claims**



1. A system for full-duplex wideband audio telephone communications comprising:

a first program amplifier for two-way communication of analog audio signals at a remote site over a two-wire link, said first program amplifier having:

(a) a codec for two-way conversion of said analog audio signals into and from corresponding digital signals; and

(b) a 2B1Q transceiver for two-way conversion of said digital signals into and from corresponding 2B1Q signals;

a first central office having a channel bank with a plurality of channel units, at least one of said channel units having a 2B1Q transceiver for communicating said 2B1Q signals with said 2B1Q transceiver of said first program amplifier over said two-wire link, said 2B1Q transceiver further providing two-way conversion of said 2B1Q signals into and from corresponding digital signals compatible with said channel bank;

a second central office having a channel bank with a plurality of channel units, at least one of said channel units having a 2B1Q transceiver to provide two-way conversion of digital signals into and from corresponding 2B1Q signals;

a second program amplifier for two-way communication of 2B1Q signals over a two-wire link with said second central office, said second program amplifier having:

(a) a 2B1Q transceiver for communicating with said 2B1Q signals with said 2B1Q transceiver of said second central office over said two-wire link, and for two-way conversion of said 2B1Q signals into and from corresponding digital signals; and

(b) a codec for two-way conversion of said digital signals into and from corresponding analog audio signals; and

a carrier link transmitting digital signals between said channel bank of said first central office and said channel bank of said second central office in a series of frames transmitted at a predetermined rate, each frame containing a predetermined number of channels each containing a predetermined number o data bits, wherein said program amplifiers transmit said 2B1Q signals to said central office channel units at a rate generating said digital data sufficient to fill a plurality of said channels in each frame.

5,301,188

SHARED-CARRIER FREQUENCY HOPPING

Michael D. Kotzin, Buffalo Grove, and Stephen L. Spear, Skokie, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 486,047, Feb. 27, 1990, abandoned.
This application Aug. 10, 1992, Ser. No. 927,792
The portion of the term of this patent subsequent to Oct. 26, 2000, has been disclaimed.
Int. Cl.[5] H04J *4/00*
U.S. Cl. 370—50 **22 Claims**



1. A method of shared-carrier frequency-hopping comprising:

allocating to a first coverage area within a carrier reuse diameter, during a first time interval, a first carrier of a plurality of hopped carriers; and

allocating within said carrier reuse diameter to a second coverage area, during a second time interval, said first carrier.

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TELECOMMUNICATION NETWORK HAVING ATM SWITCHING CENTERS AND STM SWITCHING CENTERS

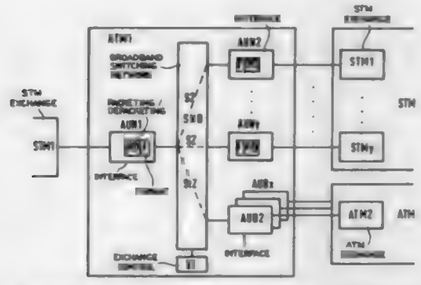
Lothar Schmidt, Fuerstenfeldbruk; Alfred Jugel, Geretsried, both of Fed. Rep. of Germany; Andy Mailinson, Poole, Great Britain, and Peter Rau, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany and GPT Limited Coventry, Great Britain

Filed Aug. 19, 1992, Ser. No. 932,395

Claims priority, application European Pat. Off., Aug. 19, 1991, 91307635.2

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **12 Claims**



1. A telecommunication network having a plurality of switching centers composed of ATM exchanges and STM exchanges, the ATM exchanges of the plurality of switching centers operating on the basis of asynchronous through-connection of messages in message cells of a fixed length via virtual connections and the STM exchanges of the plurality of switching centers operating on the basis of synchronous, circuit-switched through-connection, the ATM exchanges having interfaces for connecting transmission lines that are connected to STM exchanges and that carry circuit-switched messages, comprising: in the interfaces of the ATM exchanges, packeting/depacketing means for packeting received circuit-switched messages into first message cells of a first fixed length, for connections to be set up between an STM exchange via an ATM exchange and a further ATM exchange or ATM terminal equipment equipped for the reception of asynchronously switched messages, said first message cells of said first fixed length being also employable for connections between ATM exchanges or ATM terminal equipment, and means for packeting received circuit-switched messages into second message cells having a second fixed length for connections between STM exchanges set up via an ATM exchange, said second fixed length being less than said first fixed length.

5,301,190

COMMUNICATION DEVICE HAVING RELAYING AND SWITCHING FUNCTION

Hiroyuki Tsukuda, Kawasaki, and Yoshiya Iribe, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/01045, § 371 Date Apr. 6, 1992, § 102(e) Date Apr. 6, 1992, PCT Pub. No. WO92/03023, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 6, 1991, Ser. No. 847,011

Claims priority, application Japan, Aug. 6, 1990, 2-207836

Int. Cl.[5] H04J *3/22*

U.S. Cl. 370—66 **14 Claims**

1. A communication device comprising:

a transmission device connected to first and second transmission paths; and

an exchange connected to said transmission device,

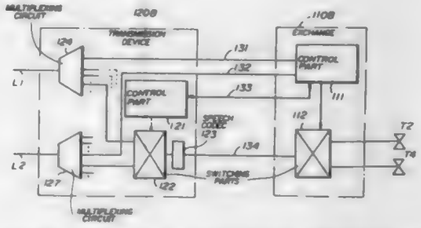
wherein said exchange comprises:

first control means for determining whether an input signal which has a first bit rate and is received by said transmission device via the first transmission path is a first signal, which is to be terminated at one of a plurality of terminals connected to said exchange, or a second signal, which is to be relayed to the second transmission path via said transmission device; and

first switching means for selectively connected said transmission device and said plurality of terminals and transferring a signal having a second bit rate between them, and

wherein said transmission device comprises:

second switching means for selectively connecting said first and second transmission paths and said exchange and transferring a signal having the first bit rate between them;



converting means for converting the input signal having the first bit rate into a signal having the second bit rate which is output to said exchange and for converting a signal which has the second bit rate and is received via said exchange into a signal having the first bit rate which is output to said second switching means; and

second control means for controlling, when said first control means determines that the input signal is the first signal, said second switching means so that the input signal is output to said exchange via said converting means and for controlling, when said first control means determines that the input signal is the second signal, said second switching means so that the input signal is output to the second transmission path without changing a bit rate thereof.

5,301,191

ADAPTIVE SWITCHING OF MULTIMEDIA AUDIO AND VIDEO INFORMATION IN AN ISDN LINE

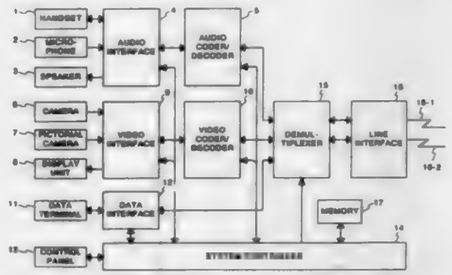
Masatoshi Otani, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 824,182

Claims priority, application Japan, Jan. 22, 1991, 3-005704; Jan. 24, 1991, 3-024129

Int. Cl.[5] H04J *3/22*

U.S. Cl. 370—84 **10 Claims**



1. A multimedia communication apparatus for multiplexed intercommunication of a plurality of items of media information via a communication line, the media information comprising (i) video information and (ii) other information, the other information including (a) audio information, (b) code-data information, and (c) control information, comprising:

means for coding and decoding the audio information at a designated transmission speed;

means for transmitting and receiving the code-data information at a designated transmission speed;

means for coding and decoding the video information at a transmission speed which corresponds to the difference between a maximum transmission speed at which communication is possible via the communication line and a total transmission speed allocated to said other information; and

means for providing an indication that the transmission speed which corresponds to said difference is inadequate for transmission of the video information if this transmission speed is less than a predetermined value.

5,301,192

TEMPORARY INFORMATION STORAGE SYSTEM COMPRISING A BUFFER MEMORY STORING DATA STRUCTURED IN FIXED OR VARIABLE LENGTH DATA BLOCKS

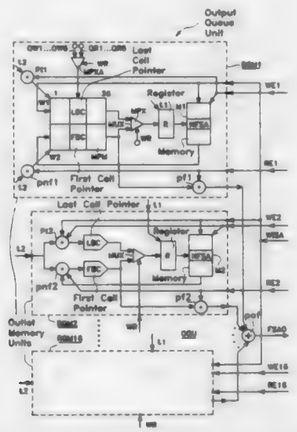
Michel Henrion, Zaventem, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 30, 1991, Ser. No. 756,230

Claims priority, application France, Aug. 31, 1990, 90 10877

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **37 Claims**



1. Temporary information storage system comprising

a buffer memory storing data structured as fixed or variable length blocks of data, each of said data blocks comprising one or more data elements, and

a data block and outlet selection queue management logic comprising

a plurality of queues for interlinking each of the data blocks to a respective destination of a plurality of destinations, such that when a data block is assigned to a destination it is sufficient to write its identity in the respective queue specific to this destination, and

for assigning each of said data blocks to a respective individual outlet of a respective plurality of outlets associated with said respective destination, said data block selection means further comprising

first means for identifying a specific said queue associated with said respective destination with which said respective individual outlet is associated,

second means for obtaining from said specific queue an address of said each data block and

third means for transferring said each data block to said respective individual outlet.

5,301,193

DELAY DISTORTION SUPPRESSING SYSTEM FOR ATM COMMUNICATION SYSTEM

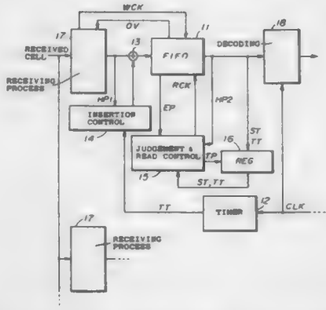
Hidetoshi Toyofuku, Kawasaki; Masanori Kajiwara, Tokyo; Takeshi Tanaka; Hideki Mase, both of Kawasaki; Atsuyuki Mukai, Fukuoka, and Tomonobu Takashima, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 14, 1991, Ser. No. 791,524

Claims priority, application Japan, Nov. 14, 1990, 2-306211; Jan. 31, 1991, 3-031997

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—94.1 **35 Claims**



8. A delay distortion suppressing system for an asynchronous transfer mode communication system, having a transmission path, comprising:

a transmitting end;

first means, provided in the transmitting end, for transmitting information over the transmission path in the form of cells in the asynchronous transfer mode, and for generating a priority cell, the priority cell being transmitted over a transmission path which causes a minimum delay while other cells following the priority cell are transmitted over other transmission paths having normal delays;

second means for delaying each cell transmitted over the transmission path to, and received by, receiving means by a predetermined delay time relative to a selectively variable reference point, and for delaying each cell by the predetermined delay time which is set independently for each cell so that a total delay time of each cell becomes the maximum delay time;

third means, coupled to the second means, for varying the reference point depending on the cell reception time of the received cell, so that delay distortion of the cells is suppressed, and for setting a reception time of the priority cell as the reference point and means for statistically obtaining a maximum delay time of the cells following the priority cell; and

fourth means coupled to the second means, for decoding the cells output from the second means.

5,301,194

PACKET RE-TRANSMITTING SYSTEM FOR SATELLITE COMMUNICATION SYSTEM OF THE SLOTTED-ALOHA TYPE

Mitsuru Seta, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 29, 1992, Ser. No. 890,180

Claims priority, application Japan, May 30, 1991, 3-127791

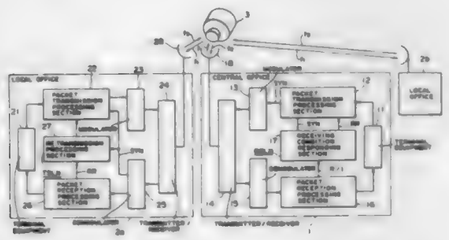
Int. Cl.[5] H04B *7/212*

U.S. Cl. 370—95.1 **11 Claims**

1. A packet re-transmitting system for a slotted-ALOHA type satellite communication system, comprising:

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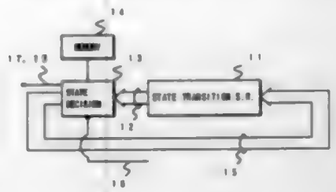
a central office including:
transmission means for transmitting a frame synchronizing signal;
managing means, operatively connected to said transmission means, for managing a reception slot number in a relative phase relationship with the frame synchronizing signal received from said transmission means; and
receiving condition signal outputting means, operatively connected to said managing means, for detecting a condition of each reception signal from any of the local offices, on the basis of error detection in a reception packet and power level detection of a reception signal, and for outputting a receiving condition signal including a reception slot number from said managing means and detection information of a receiving condition at a point in time; and
a plurality of local offices each including:
receiving means for receiving the frame synchronizing signal and receiving condition signal from said central office;



slot number managing means, operatively connected to said receiving means, for managing a transmission slot number in a relative phase relationship with the received frame synchronizing signal;
comparison means, operatively connected to said slot number managing means and said receiving means, for comparing a transmission slot number from said slot number managing means at a point of time when a packet was transmitted from the local office with a reception slot number in the receiving condition signal from said receiving means; and
re-transmission processing means, operatively connected to said comparison means and said receiving means, for re-transmitting the packet when said comparing means determines that the transmission slot number corresponds to the reception slot number in the receiving condition signal and the receiving condition detection information in the receiving condition signal indicates irregularity.

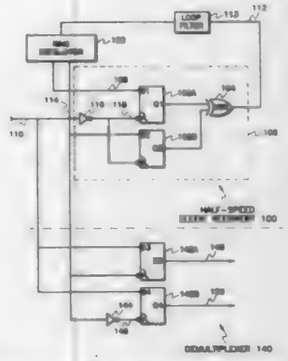
5,301,195
CIRCUIT FOR MULTIFRAME SYNCHRONIZATION
Atsushi Hasegawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 27, 1992, Ser. No. 858,879
Claims priority, application Japan, Mar. 29, 1991, 3-089355
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—105.1 **5 Claims**

2. A multi-point monitoring circuit for synchronizing a multiframe signal based upon a multiframe synchronization pattern of a plurality of frame bits inserted in said multiframe signal comprising:
a shift register to store state data each representing degree of the synchronization up to an establishment of the synchronization;
determining means to determine a next transition state based on a next multiframe synchronization pattern and a past transition state data by one frame for the predetermined period stored in said shift register in response to the input of a new multiframe signal; and



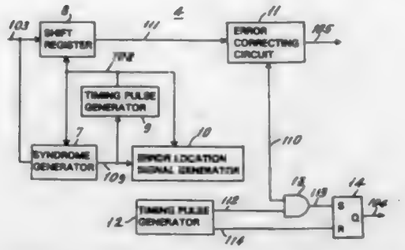
decision means to decide the establishment of the synchronization by comparing the outputs of said shift register and determining means.

5,301,196
HALF-SPEED CLOCK RECOVERY AND DEMULTIPLEXER CIRCUIT
John F. Ewen, Yorktown Heights, and Albert X. Widmer, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 16, 1992, Ser. No. 853,215
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—105.2 **11 Claims**



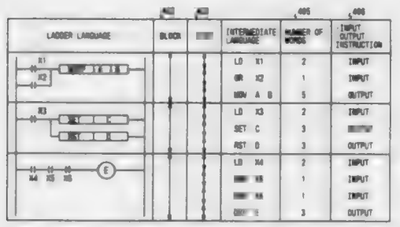
1. A clock recovery and demultiplexer circuit for recovering a clock signal from a received data signal and for demultiplexing the received data signal, and operating at a fraction of the data rate of the received data signal, said circuit comprising:
a. clock signal generating means for generating a reference clock signal having a plurality of phases, said generated reference clock signal having a rate less than the data rate of the received data signal;
b. comparing means for comparing the phase angle between said generated reference clock signal and the received data signal;
c. frequency adjusting means responsive to said phase angle comparing means for adjusting said rate of said generated reference clock signal to synchronize said generated clock signal and the received data signal; and
d. demultiplexing means for demultiplexing the received data signal into parallel signals at data rates lower than the data rate of the received data signal using at least one of each of the phase of said generated reference clock signal and inverted phases of said generated reference clock signal.

5,301,197
BIT ERROR RATIO DETECTOR
Akio Yamada, and Katsuhiro Sasaki, both of Tokyo, Japan, assignors to Nec Corporation, Japan
Filed Aug. 22, 1991, Ser. No. 748,682
Claims priority, application Japan, Aug. 22, 1990, 2-220515
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—5.1 **5 Claims**



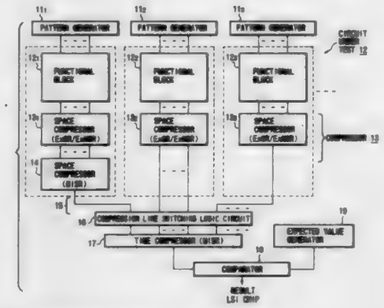
1. An error detector for calculating the error ratio from error correction-coded data, comprising:
syndrome generating means for generating a syndrome by receiving said data;
error location signal generating means for generating from said syndrome an error location signal indicating the bit location where each bit error has occurred;
timing pulse generating means for generating a timing pulse in a predetermined period within each block of data;
error pulse generating means for generating an error pulse if said error location signal is generated in said predetermined period; and
error ratio detecting means for calculating the bit error ratio (BER) according to the number of said error pulses in predetermined blocks.

5,301,198
METHOD FOR DEBUGGING A PROGRAM BY EXECUTING A BLOCK MODE RUN
Hirokazu Kawasaki, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 15, 1991, Ser. No. 656,274
Claims priority, application Japan, Feb. 27, 1990, 2-46539
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—19 **12 Claims**



1. A process of debugging a sequence program run by a programmable controller, having a sequence program memory, comprising of the steps of:
storing in a sequence program memory a sequence program, comprising successive input and output steps, said steps being organized in blocks, each single block defined to begin with an input step and to end with an output step that is next succeeded by an input step of a subsequent block;
reading said sequence program from said sequence program memory;
for debugging a single subject block, executing together all successively occurring input steps within said subject block and then executing together all successively occurring output steps within said subject block; and
temporarily stopping said sequence program at a transition point where an output step of said subject block ends and an input step of said subsequent block begins, when a single operation command for temporarily stopping said sequence program after executing said subject block is entered.

5,301,199
BUILT-IN SELF TEST CIRCUIT
Takeshi Ikenaga, and Jun-ichi Takahashi, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan
Filed Dec. 15, 1992, Ser. No. 991,535
Claims priority, application Japan, Dec. 16, 1991, 3-332300; Mar. 5, 1992, 4-83201
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.5 **10 Claims**



1. A built-in self test circuit comprising:
a pattern generator;
a functional block subjected to a self test on the bases of an output from said pattern generator;
a space compressor for compressing a test result of said functional block; and
a comparator for comparing an output from said space compressor with an expected value and outputting a comparison result,
wherein said functional block includes a plurality of modules having the same function and has a data input bit width O (positive integer) and a data output bit width M (positive integer),
said pattern generator is constituted by a linear feedback shift register, having an output bit width P which is an integer satisfied by the equation $O/N <= P < O/(N+1)$ where N is an integer more than 2, for generating a pseudorandom pattern and an iterative pseudorandom pattern output unit for distributing outputs from said linear feedback shift register in units of N outputs and outputting, to said functional block, an iterative pseudorandom pattern output having an iterative O-bit width ($O=P*N$) of the pseudorandom pattern output from said linear feedback shift register every P bits,
said space compressor has a function of spatially compressing the M outputs from said functional block into L outputs (positive integer and $M>L$), and
said pattern generator, said functional block, said space compressor, and said comparator are built into a semiconductor chip into which other functional elements are built.

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5,301,200

ELECTRONIC SYSTEM FOR AN INDICATOR DEVICE HAVING A MATRIX COMPOSED OF BISTABLE MATRIX POINTS

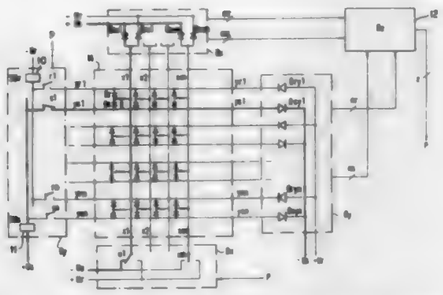
Erich Killinger, Gaggenau, Fed. Rep. of Germany, assignor to Dambach-Werke GmbH, Fed. Rep. of Germany

Filed Aug. 1, 1991, Ser. No. 738,507

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1990, 4024499

Int. Cl.[5] G06F *7/02*

U.S. Cl. 371—67.1 **12 Claims**



1. In an electronic system for an indicator device having a matrix (M) comprising n rows and m columns of bistable matrix points, each having an electromagnet (R), with a first lead connected to a corresponding column line (xl ... xm) and a second lead connected, depending on a direction of current flow, through a plurality of oppositely polarized diodes (Ds, Dr) to a corresponding row setting line (ysl ... ysn) and a corresponding row resetting line (yrl ... yrn), in which the column lines (xl ... xm), the row setting lines (ysl ... ysn) and the row resetting lines (yrl ... yrn) of the matrix (M) are activated during setting and resetting by a processor (P), a column decoder (Dx) and a row decoder (Dy) such that the column lines (xl ... xm) are activated cyclically in sequence with one of a setting counter-potential (−Us) and a resetting counter-potential (+Ur), and wherein during the course of every individual column activation, all row setting lines (ysl ... ysn) are activated cyclically in sequence with one of a setting potential (+Us) and all row resetting lines (yrl ... yrn) with a resetting potential (−ur),

the improvement comprising:

a first optical coupler light-emitting diode (Osxl ... Osxm), connected to the setting potential (+Us) and to each column line (xl ... xm), and emitting a first output signal (to ms) when the setting counter-potential (−Us) is applied,

a second optical coupler light-emitting diode (Orxl ... Orxm), connected to the resetting potential (−Ur) and to each column line (xl ... xm), and emitting a second output signal (to mr) when a resetting counter-potential (+Ur) is applied,

a third optical coupler light-emitting diode (Osyl ... Oxyn), connected to the setting counter-potential (−Us) and to each row setting line (ysl ... ysn), and emitting a third output signal (to ns) when a setting potential (+Us) is applied,

a fourth optical coupler light-emitting diode (Oryl ... Oryn), connected to the resetting counter-potential (+Ur) and to each row resetting line (yrl ... yrn), and emitting a fourth output signal (to nr) when a resetting potential (−Ur) is applied,

a corresponding photodetector in communication with said optical coupler light-emitting diodes,

said optical coupler light-emitting diodes (Oxsl ... Osxm; Orxl ... Orxm; Osyl ... Oxyn; Oryl ... Oryn) sending said output signals (ms, mr, ns, nr) to a code converter (Dz) through said corresponding photodetector, which sends out comparison information to a processor (P), and said processor (P) checking said comparison information for agreement with one of setting and resetting information sent to the column decoder (Dx) and the row decoder (Dy) and generating an error signal if there is less than full agreement.

5,301,201

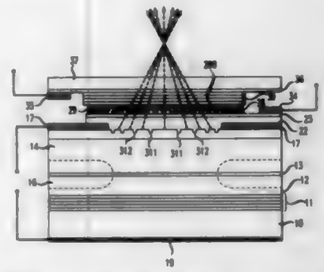
ARTICLE COMPRISING A TUNABLE SEMICONDUCTOR LASER

Niloy K. Dutta, Colonia, and Daryoosh Vakhshoori, Scotch Plains, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 1, 1993, Ser. No. 26,364

Int. Cl.[5] H01S *3/107, 3/101, 3/19*

U.S. Cl. 372—43 **8 Claims**



1. An article comprising tunable laser means comprising

a) a first body having a major surface and comprising a semiconductor layer structure including multilayer semiconductor reflection means and an active region, located between said reflection means and said major surface, with said reflection means and active region being essentially parallel with said major surface, and further comprising first contact means that facilitate flowing an electric current through said semiconductor layer structure such that the laser means has a radiation output;

b) a quantity of electro-optic material; and

c) second contact means that facilitate applying an electric field across said electro-optic material;

Characterized in That

d) the quantity of electro-optic material comprises a layer of electro-optic material in contact with said major surface; and

e) the second contact means comprise a first and a second contact layer, with said first body comprising said first contact layer and a second body comprising said second contact layer, the laser means further comprising means for maintaining said second body in fixed relationship with said first body.

5,301,202

SEMICONDUCTOR RIDGE WAVEGUIDE LASER WITH ASYMMETRICAL CLADDING

Christoph S. Harder, Zurich, Switzerland; Sridhar V. Iyer, Beacon, N.Y.; Heinz P. Meier, Thalwil, Switzerland; Alfred Phillips, Jr., and Abbas Behfar-Rad, both of Wappingers Falls, N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Feb. 25, 1993, Ser. No. 22,212

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 **6 Claims**

1. A semiconductor ridge waveguide laser structure comprising:

a semiconductor substrate;

a first, lower cladding layer disposed on said substrate;

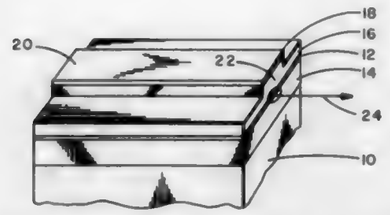
an active layer disposed on said first cladding layer;

a second, upper cladding layer disposed on said active layer,

said second cladding layer including a raised ridge section extending on said second cladding layer;

a contact layer disposed on said second cladding layer;

said raised ridge section of said second cladding layer being formed by selectively etching said contact layer and said second cladding layer with a mask to provide a ridge portion having a thickness greater than the etched, non-ridge portion of said second cladding layer, and wherein said ridge portion has a width for supporting said contact layer;



said first cladding layer being composed of AlGaAs and having a first mole concentration value of aluminum;

said second cladding layer being composed of AlGaAs and having a second mole concentration value of aluminum; and

wherein said first lower cladding layer has an aluminum mole concentration greater than the aluminum mole concentration of said second, upper cladding layer.

5,301,203

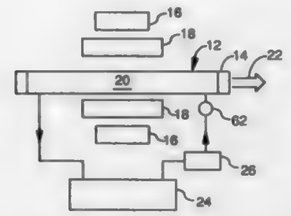
SCALABLE AND STABLE, CW PHOTOLYTIC ATOMIC IODINE LASER

LaVerne A. Schlie, and Robert D. Rathge, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 23, 1992, Ser. No. 949,617

Int. Cl.[5] H01S *3/22, 3/14*

U.S. Cl. 372—55 **33 Claims**



1. A scalable and stable, cw, high power, photolytic atomic iodine laser system, said laser system comprising:

means for providing ultraviolet radiation to a laser gas medium to produce excited atomic iodine for a lasing medium, said means for providing ultraviolet radiation comprising a plurality of RF/microwave sources and a plurality of plasma lamps connected to said RF/microwave sources for outputting ultraviolet energy;

a laser fuel system, said fuel system providing a continuous flow of a laser fuel to form said laser gas medium, said laser fuel system further cleaning undesired material from said laser fuel;

at least one laser gain cell, said laser gain cell having said laser gas medium flowing therethrough, said laser gas medium while therein reacting with said ultraviolet radiation; and

at least one laser resonator, said laser resonator connected to said at least one laser gain cell, said laser resonator outputting a laser beam.

5,301,204

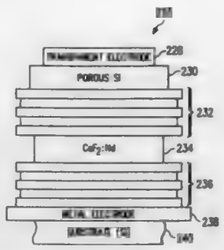
POROUS SILICON AS A LIGHT SOURCE FOR RARE EARTH-DOPED CaF_2 LASER

Chih-Chen Cho, Richardson, and Walter M. Duncan, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 945,991, Sep. 15, 1992. This application Sep. 30, 1992, Ser. No. 953,902

Int. Cl.[5] H01S *3/09*

U.S. Cl. 372—69 **18 Claims**



1. A microcavity structure for generating intense spectral emissions, comprising:

a semiconductor substrate;

a CaF_2 thin film comprising a rare earth-dopant for generating said intense spectral emissions in response to said CaF_2 thin film being optically pumped;

a reflective cavity-forming medium for forming a cavity to reflect said intense spectral emissions;

a porous-Si layer for optically pumping said CaF_2 thin film; and

activating circuitry for pumping said porous silicon layer.

5,301,205

APPARATUS AND METHOD FOR DATA COMPRESSION USING SIGNAL-WEIGHTED QUANTIZING BIT ALLOCATION

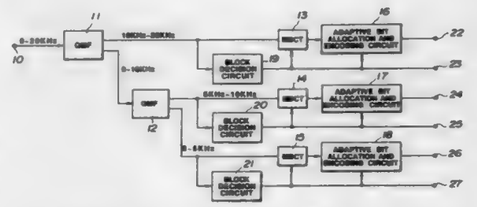
Kyoya Tsutsui, and Kenzo Akagiri, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 11,376

Claims priority, application Japan, Jan. 29, 1992, 4-036952

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **65 Claims**



1. An apparatus for compressing a digital input signal to provide a compressed digital output signal, the apparatus comprising:

a means for deriving plural spectral coefficients from the digital input signal, and for grouping the spectral coefficients into bands, each band having a band magnitude and a band frequency; and

an adaptive bit allocation means for adaptively allocating a number of spectrum-dependent quantizing bits among the bands to allocate to each band a number of spectrum-dependent quantizing bits for quantizing each spectral coefficient in the band, the number of spectrum-dependent quantizing bits allocated to each band being determined according to the band magnitude, weighted depending on the band frequency.

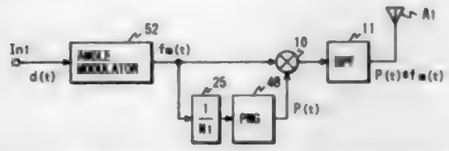
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,206

SPREAD SPECTRUM COMMUNICATION SYSTEM

Yukinobu Ishigaki, Miura, and Takahisa Matsumoto, Yokohama, both of Japan, assignors to Victor Company of Japan, Inc., Yokohama, Japan

Filed Feb. 4, 1993, Ser. No. 13,728
Claims priority, application Japan, Feb. 7, 1992, 4-056923; Mar. 6, 1992, 4-084632; Apr. 28, 1992, 4-136004
Int. Cl.[5] H04B 7/216
U.S. Cl. 375—1 18 Claims



1. A transmitter for a spread spectrum communication system comprising:

an angle modulation means for performing angle modulation of intelligence signals;

a frequency divider for receiving an angle-modulated signal outputted from said angle modulation means and dividing the frequency of this angle-modulated signal by a first dividing number to generate a modulation clock signal;

a spread code generating means for producing a spread code on the basis of said modulation clock signal; and

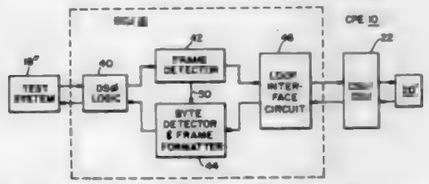
a spread spectrum modulation means for modulating said angle-modulated signal by said spread code to output a spread spectrum modulation signal.

5,301,207

TEST APPARATUS AND PROCESS FOR DIGITAL DATA SERVICE SYSTEM

Earl Emerson, Somerset, and Craig A. Sharper, Bridgewater, both of N.J., assignors to Integrated Network Corporation, Bridgewater, N.J.

Filed Apr. 3, 1992, Ser. No. 863,243
Int. Cl.[5] H04B 3/46
U.S. Cl. 375—10 19 Claims



1. Apparatus for testing loop circuits lacking byte alignment from a network operating at a frequency F1 and using test equipment operating at a frequency of F1/2 comprising:

a) a test unit for transmitting test signals at the rate of F1/2 and wherein said test signals are framed into Y bit frames of X bytes of L bit length and wherein the same X bytes are transmitted X times per frame and wherein a consecutive series of n bits, each n bit occupying an n bit position in a byte are data bits; and

b) a channel unit for receiving said test signals and selecting M successive bytes from each said frame for transmission of said data bits of said successive bytes over the loop circuit for testing the loop circuit and return of said data bits to said channel unit;

c) reformatting means for reformatting the data bits returned from the loop circuit and compensating for any bit rotation caused by lack of byte alignment in the loop, comprising:

(i) selecting means for selecting at least M+1 successive bytes from the returned data bits; and

(ii) comparing means for comparing bits from a predetermined one of said bit positions of each of the M+1 successive bytes and determining which bytes of the M+1 bytes has identical bits in the predetermined bit position;

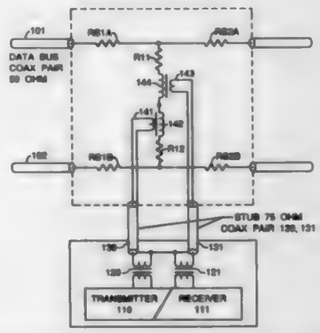
(iii) transmitting means for repeatedly transmitting one of the M+1 bytes with an identical bit in the predetermined bit position and wherein L, Y and M are integer numbers.

5,301,208

TRANSFORMER BUS COUPLER

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 25, 1992, Ser. No. 843,652
Int. Cl.[5] H04B 3/00
U.S. Cl. 375—36 4 Claims



4. A transformer bus coupler for electrically connecting a transceiver to a data bus in which has first and second transmission lines, said transceiver having a transmitter which produces data signals with a data signal voltage and a data signal current and a receiver which receives said data signals, said transformers bus coupler having an electrical admittance which attenuates the data signal current by a first proportion and an adjusted bus coupler impedance which attenuates the data signal voltage by a second proportion that approximately equals the first proportion, said transformer bus coupler therefore maintaining a voltage-to-current ratio in said data signals, said transformer bus coupler comprising:

first and second transformers which have windings on their transceiver side and their coupler side, said first transformer being electrically connected with said transmitter with its windings on its transceiver side and receiving said data signals therefrom, said second transformer being electrically connected with said receiver with its windings on its transceiver side, said first and second transformers being coupled together with their windings on their coupler side;

third and fourth transformers which have windings on their transceiver side and on their coupler side, and said windings on said transceiver side of said third and fourth transformers being respectively connected with the coupler side windings of the first and second transformers, said third and fourth transformers having their windings on their coupler side electrically connected in a series;

first and second isolation resistors which respectively connect the coupler side windings of the third and fourth transformers to said first and second transmission lines of said data bus to enable said third transformer to output said data signals onto said data bus, and to enable said fourth transformer to receive data signals from said data bus for said receiver;

first and second series resistors which are electrically connected in a series circuit with each other in said first transmission line of said data bus, said first and second series resistors collectively providing a first series impednce that attenuates said data signal voltage of said data signals by the same proportion that the data signal current is attenuated by the admittance of the transformer bus coupler; and

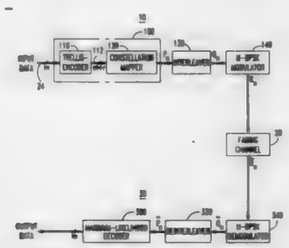
third and fourth series resistors which are electrically connected in a series circuit with each other between said second transmission line of said data bus, said third and fourth series resistors collectively providing a second series impedance which combines with said first series impedance to form said adjusted bus coupler impedance to thereby attenuate said data signal voltage by the same proportion that the data signal current is attenuated by the electrical admittance of the transformer bus coupler.

5,301,209

MULTIDIMENSIONAL TRELLIS-CODED MODULATION FOR FADING CHANNELS

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 9, 1991, Ser. No. 773,828
Int. Cl.[5] H04L 5/12, 23/02
U.S. Cl. 375—39 18 Claims



1. A method comprising

receiving a stream of input data comprising an average of m data bits every T signaling interval, where m>0 and T>0,

using a trellis-encoder to encode the stream of input data into one of a plurality of sequences of 2N-dimensional signal points, where N>1, said 2N-dimensional signal points being taken from a 2N-dimensional constellation, said trellis-encoder having an X-fold time diversity, where X>1, and

transmitting the sequence of 2N-dimensional signal points,

said constellation comprising a first and a second family, each family comprising a number of subsets, each subset comprising at least one 2N-dimensional signal point,

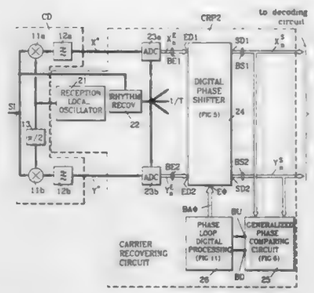
said trellis-encoder comprising a number of states, each state having a plurality of state transitions, said plurality of state transitions being assigned subsets of the same family, where those states with state transitions assigned subsets of the first family are included in a first set and those states with state transitions assigned subsets of the second family are included in a second set, and where those state transitions between a present state and a plurality of next states, said next states being in the same set of states, are assigned subsets which maximize the minimum time diversity between those subsets.

5,301,210

COHERENT DEMODULATING DEVICE WITH CARRIER WAVE RECOVERING DIGITAL CIRCUIT

Patrick Vandamme, Perros Guirec; Joëlle Kervarec, Pleumeur Bodou, and Alain Leclert, Ploulec'h, all of France, assignors to France Telecom, France

Filed Aug. 31, 1992, Ser. No. 937,279
Claims priority, application France, Aug. 30, 1991, 91 10760
Int. Cl.[5] H04L 27/22; H03D 1/00
U.S. Cl. 375—83 6 Claims



1. A coherent demodulating device in a receiver receiving a modulated signal obtained by multi-symbol modulation of two quadrature modulation carrier waves, said coherent demodulating device comprising

demodulating means supplying quadrature demodulation carrier waves for demodulating said modulated signal into two demodulated analog component signals, said quadrature demodulation carrier waves having a frequency belonging to a frequential uncertainty range of said modulation carrier waves,

sampling means operating at a symbol clock frequency of said modulated signal for converting said two demodulated analog component signals into two incoming digital signals forming coupled of samples,

digital phase shifting means for phase shifting said two incoming signals by a digital demodulation phase into two outgoing digital signals,

digital phase comparing means for receiving said two outgoing digital signals and for producing, at said symbol clock frequency, first and second error signal pulses, respectively, corresponding to negative and positive phase differences between said demodulation carrier waves and said modulation carrier waves,

digital frequency comparing means receiving said two outgoing digital signals for producing, at said symbol clock frequency, third and fourth error signal pulses, respectively, corresponding to positive and negative frequency differences between said demodulation carrier waves and said modulation carrier waves,

state detecting means for supplying detection pulses responsive t amplitudes of said outgoing digital signals lying in respective predetermined amplitude intervals during each period of said symbol clock frequency, thereby deriving a logic control signal,

switching means responsive to said logic control signal for activating said frequency comparing means and deactivating said phase comparing means when a count of said detection pulses cumulated during a period multiple of said symbol clock period is greater than a first predetermined threshold, and for deactivating said frequency comparing means and activating said phase comparing means when said count of said detection pulses cumulated during said multiple period is less than said first threshold, and

digital processing means for calculating said digital demodulation phase as a function of said error signal pulses pro-

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duced by one of said digital phase comparing means and digital frequency comparing means which is activated, so as to a posteriori compensate for phase and frequency differences between said modulation carrier waves and said demodulation carrier waves by phase shifting said two incoming signals.

5,301,211

FUEL ASSEMBLY SPUTTERING PROCESS

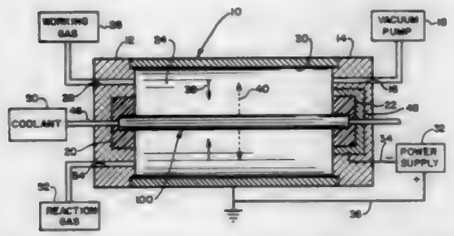
William J. Bryan, Granby, and Patrick A. Perrotti, Newington, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 3, 1992, Ser. No. 924,732

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—260 **20 Claims**



17. A method for coating the inside surface of a zircaloy control rod guide tube with a wear resistant ceramic compound, comprising:

supporting the guide tube in a fixture;

supporting a source tube of metallic material coaxially within the cladding tube, thereby defining a cylindrical annular space between the tubes;

evacuating the annular space and backfilling the annular space with an inert working gas and a reactant gas to a pressure sufficient to sustain a plasma discharge;

connecting a power supply to the guide tube with a positive bias as an anode and to the source tube with a negative bias as a cathode, such that a plasma of the working gas is established in the annular space;

establishing a circumferential magnetic field around the source tube to confine and shape the plasma;

whereby the source tube is bombarded with ions from the plasma and metallic material is thereby sputtered from the source tube so as to react with the reactant gas to form said ceramic compound which is deposited as a coating on the inside surface of the guide tube.

5,301,212

APPARATUS FOR DISMANTLING AN IRRADIATED COMPONENT OF A NUCLEAR REACTOR BY THE CUTTING OF ITS WALL

Paul Jacquier, Tassin-La-Demi-Lune, and Jean-Paul Guigon, Givry, both of France, assignors to Framatome, Courbevoie, France

Division of Ser. No. 721,699, Jun. 26, 1991, Pat. No. 5,239,564. This application Nov. 17, 1992, Ser. No. 977,714

Claims priority, application France, Jun. 27, 1990, 90 08117; Nov. 7, 1990, 90 13816

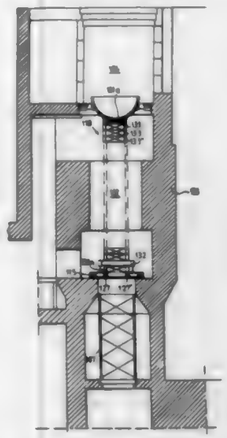
Int. Cl.[5] G21F *9/28*

U.S. Cl. 376—260 **2 Claims**

1. Apparatus for vertical, stepwise displacement of a component, said apparatus comprising

(a) a raising device consisting of metal plates assembled in the form of a frame and fixed to jack boxes, each containing a jack, so as to displace said raising device both ways in a direction perpendicular to a plane of said frame; and

(b) a plurality of modular lifting elements each consisting of metal plates assembled in the form of a frame, the shape and dimensions of said frame constituting the modular lifting element allowing it to be introduced into said frame of said raising device in a direction perpendicular to said frame, the modular element introduced into said frame of said raising device being in an assembly position allowing it to be fastened to said raising device, the frame of said



raising device comprising orifices passing through said metal plates of said frame and each of said modular lifting elements comprising orifices coming into alignment with orifices of said frame of said raising device in the assembly position of a modular lifting element and of the raising device, connecting means consisting of keys being capable of being introduced into the aligned orifices of said frame of said raising device and of said modular lifting element.

5,301,213

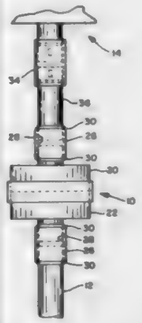
METHOD OF FIELD REPLACEMENT OF AN ELECTRICAL CONNECTOR FOR NUCLEAR REACTOR INSTRUMENTATION

Michael J. Linden, Wethersfield, and Brian D. Williamson, West Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 8, 1993, Ser. No. 74,125

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—260 **5 Claims**



1. The method of repairing a damaged or malfunctioning electrical connector of a safety related nuclear reactor instrument and its associated sheathed mineral insulated cable in

place in the radioactive reactor environment comprising cutting the sheathed cable to the damaged or malfunctioning connector portion and removing said connector portion, providing a new replacement connector portion, wiring the replacement connector portion and the cut sheathed cable as required and insulating the same, securing said connector portion to said cut sheathed cable by means of a shape memory alloy tubular coupling, said coupling having an original inner diameter slightly less than said cut sheathed cable and said replacement connector but having been expanded within the critical limit of the material to a diameter greater than said cable and said replacement connector while at a temperature below its critical temperature, positioning said expanded coupling so that said cable and replacement connector are received within and extending into the coupling from opposite ends, heating said coupling so that the material thereof passes through its critical temperature and returns to its original shape and accordingly to a diameter slightly less than that of said cut sheathed cable and said replacement connector thus securely gripping the same, said coupling having extending inward from its inner surface a circumferential ridge or barb and an axially oriented ridge or barb in engagement with each of the members it is securing together.

5,301,214

ASSEMBLING APPARATUS FOR NUCLEAR FUEL ASSEMBLY

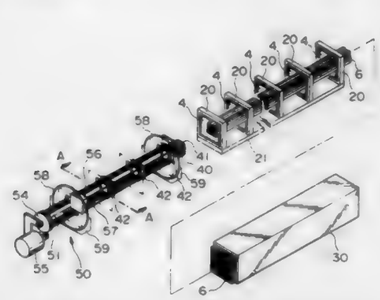
Akihiro Kato; Masashi Yoshida, and Katsunori Ohuchi, all of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,105

Claims priority, application Japan, Oct. 24, 1991, 3-278097; Aug. 28, 1992, 4-230591

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—261 **3 Claims**



1. An assembling apparatus for a fuel assembly comprising a plurality of grids of a latticed structure, aligned about a central axis of said apparatus and containing a plurality of grid cells into which fuel rods and control rod guide pipes are inserted, wherein said plurality of grid cells consist essentially of:

a plurality of pipe-cells disposed in predetermined locations in said grids for inserting control rod pipes passing through said grids;

a plurality of fuel-rod-cells disposed in the remaining locations of said grids for holding a plurality of fuel rods passing through said grids;

said apparatus comprising, in the order from an entry-side end of said apparatus;

(a) a fuel rod magazine aligned about said central axis and situated at said entry-side end, for housing said fuel rods extending longitudinally in parallel alignment;

(b) support frames aligned about said central axis, for supporting said grids so that said grid cells face in the direction of longitudinally extending fuel rods; and

(c) a pull-in loader for loading fuel rods, aligned about said central axis and freely rotatably disposed on an exit-side end of said apparatus opposite to said fuel rod magazine, said pull-in loader having:

a plurality of pull-in rods provided with gripping means attached to the tip end thereof for gripping and loading said fuel rods in said fuel assembly, wherein:

(d) said pipe-cells are situated in said lattice structure so that the locations of said grid cells assigned to pipe-cells in one quadrant of said grids are identical with the locations of pipe-cells in the remaining three quadrants when said one quadrant is rotated in steps of ninety degrees about said central axis of said grids; and

(e) said pull-in loader is provided with:

a plurality of pull-in rods, of a sufficient length to reach the exit-side of said fuel rods by translating longitudinally toward said fuel rod magazine along said central axis, wherein said pull-in rods are aligned and corresponded with the locations of said fuel-rod cells;

(f) said pull-in loader comprising:

(f1) an extended base which supports the pull-in rods in the direction of a longitudinal direction of the fuel rods; and

(f2) a driving means for rotating said extended base to orbit around said central axis.

5,301,215

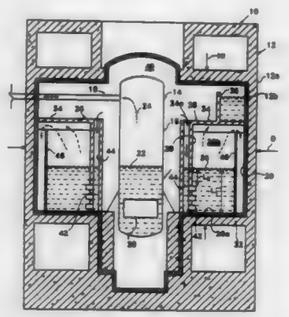
NUCLEAR REACTOR BUILDING

Perng-Fei Gou, Saratoga; Harold E. Townsend, Campbell, both of Calif., and Giancarlo Barbanti, Sirtori, Italy, assignors to General Electric Company, San Jose, Calif.

Filed Nov. 25, 1992, Ser. No. 981,731

Int. Cl.[5] G21C *9/004*

U.S. Cl. 376—283 **16 Claims**



1. A building for enclosing a nuclear reactor comprising:

a containment vessel for surrounding said reactor;

a wetwell disposed inside said containment vessel and including an inner wall, an outer wall, a floor, and a roof defining a wetwell pool, for containing wetwell water at a predetermined level from said wetwell floor, and a suppression chamber disposed above said wetwell pool;

said wetwell and said containment vessel defining a drywell for surrounding said reactor, said drywell including a gas;

a plurality of vents disposed in said wetwell pool and in flow communication with said drywell for channelling steam releasable in said drywell from said reactor for condensing said steam;

a shell disposed inside said wetwell and extending into said wetwell pool to define a dry gap devoid of said wetwell water and disposed in flow communication with said suppression chamber;

said shell being spaced from at least one of said wetwell inner and outer walls to define said dry gap;

said shell extending from said wetwell floor and into said suppression chamber; and

said wetwell roof comprising a slab disposed above a plural-

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ity of spaced apart support beams, said beams defining therebetween an auxiliary chamber disposed in flow communication with said suppression chamber.

5,301,216
METHOD OF OPERATING A NUCLEAR REACTOR WITH EMERGENCY COOLING SYSTEM ECONOMY

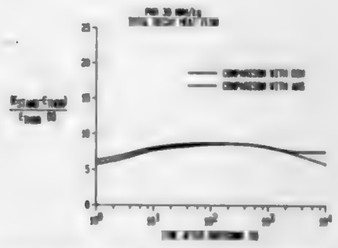
Hans V. Klapdor, Heidelberg, and Josef Metzinger, Eberbach, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettigen, Fed. Rep. of Germany

Continuation of Ser. No. 866,074, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 657,898, Feb. 20, 1991, abandoned, which is a continuation of Ser. No. 376,967, Jul. 6, 1989, abandoned, which is a continuation of Ser. No. 220,364, Jul. 11, 1988, abandoned, which is a continuation of Ser. No. 780,491, Sep. 26, 1985, abandoned. This application Feb. 23, 1993, Ser. No. 21,729

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435541; Jul. 5, 1985, 3524175

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—299 **5 Claims**



1. A method of operating a nuclear reactor which includes an emergency cooling system having a predetermined maximum rated emergency cooling capacity for dissipating reactor heat including decay heat, in which method said nuclear reactor is operated with a maximum rated power output which has a value equal to or less than a value thereof, hereinafter referred to as the highest permissible value thereof, at which a shut-down of the reactor will produce a predicted integral decay heat (E_{THOR}), at some time soon after shut-down, which is protected by said predetermined maximum rated emergency cooling capacity, said predicted integral decay heat being calculable from the data of FIG. 8 hereof by the calculational procedure set forth in the APPENDIX hereof, in which method said maximum rated power output has a value which is equal to or less than said highest permissible value of said maximum rated power output and when it is less than said highest permissible value thereof, said maximum rated power output is greater than 95% of said highest permissible value thereof.

5,301,217
DEVICE FOR THE RECOMBINATION OF HYDROGEN AND OXYGEN AND NUCLEAR POWER PLANT USING THE DEVICE

Reinhard Heck, and Karl-Heinz Schwenk, both of Hanau, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,528

Claims priority, application Fed. Rep. of Germany, May 11, 1990, 4015228

Int. Cl.[5] G21C *9/06*

U.S. Cl. 376—301 **40 Claims**

39. A nuclear power plant, comprising:

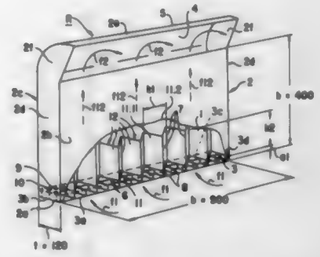
a containment; and

a device for eliminating hydrogen being located in or forming in said containment by the recombination of hydrogen and oxygen, said device including:

catalyst bodies having surfaces and a catalytic coating on said surfaces over which a gas and vapor mixture containing hydrogen to be eliminated is to be conducted;

a casing surrounding and retaining said catalyst bodies, said casing having at least one permanently open gas inlet aperture and one permanently open gas outlet aperture, and a gas flow path in said casing through which said apertures communicate with one another, said catalyst bodies being disposed downstream of said at least one gas inlet aperture in said gas flow path in said casing;

said catalyst bodies being flat bodies formed of multi-layered sheet metal in a multi-channel configuration forming a plurality of gas flow channels connected parallel to one another, said multi-channel configuration having ends,



some of said gas flow channels having channel cross sections being defined by at least an adjacent two of said flat bodies being spaced-apart, and said gas flow channels at the ends of said multi-channel configuration having channel cross sections being defined by at least one of said flat bodies; and

said flat bodies each having:

a metal support sheet,

a porous adhesion-promoting surface structure of said support sheet with a thickness of less than 10 μm.

a porous intermediate layer applied to said adhesion-promoting surface structure for increasing surface area, and

a catalyst being applied to said intermediate layer and being formed of a noble metal selected from the group consisting of platinum and palladium, said catalyst coating being distributed finely enough to preserve porosity of said intermediate layer.

5,301,218
TOLERANT METAL FUEL/CLADDING BARRIER AND RELATED METHOD OF INSTALLATION

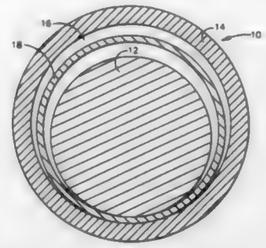
Ira N. Taylor, Jr., Livermore, and Donald C. Wadekamper, Pleasanton, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 22, 1992, Ser. No. 964,995

Int. Cl.[5] G21C *3/00*

U.S. Cl. 376—417 **20 Claims**

1. In a fuel element for a nuclear reactor comprising an elongated body a metal alloy fissionable fuel housed within a sealed elongated cladding, said body of fuel having a smaller cross-sectional area than the cross-sectional of the internal space of said thereby providing an intermediate said body of fuel and said cladding, and a barrier of material arranged in said intermediate space to circumferentially surround said body of fuel, the improvement wherein said barrier comprises a multi-layer rolled foil held in a tubular shape by tack welding and having a section with an innermost layer, an outermost layer and an intermediate layer, said innermost layer lying between said body of fuel and said intermediate layer, said intermediate layer lying between said innermost and said outermost layers, and said outermost layer lying between said intermediate layer and said cladding, said outermost layer and said intermediate layer being tack welded to each other at



points on said outermost layer which are removed from an outer longitudinal edge of said foil.

5,301,219
UNINTERRUPTED, ENHANCED-RATE EVENT SEQUENCER WITH MIXED-SPEED COUNTER MODULES

Willard M. Cronyn, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1991, Ser. No. 809,349

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] G06F *9/00*

U.S. Cl. 377—44 **10 Claims**

1. A counting apparatus for indicating a count in N (a number) bits comprising:

an M bit low-order counter for indicating M (a number less than N) low-order bits of said N bits, said M low-order bits including a most significant bit (MSb) that is low in a first count state and that is high in a second count state;

a first N-M bit high-order counter for use in conjunction with said M bit low-order counter for indicating N-M high-order bits of said N bits, said first N-M bit high-order counter being incremented When said MSb changes from low to high and presenting a stable count during said first count state and presenting an unstable count during at least a portion of said second count state upon being incremented by said MSb;

a second N-M bit high-order counter for use in conjunction with said M bit low-order counter for indicating N-M high-order bits of said N bits, said second N-M bit high-order counter being incremented when said MSb changes from high to low and presenting a stable count during said second count state and presenting an unstable count during at least a portion of said first count state upon being incremented by said MSb; and

a switch operably coupled to said first and second N-M bit high-order counters for selectably switching to said first N-M bit high-order counter when a stable count during said first count state is desired, and for selectably switching to said second N-M bit high-order counter when a stable count during said second count state is desired.

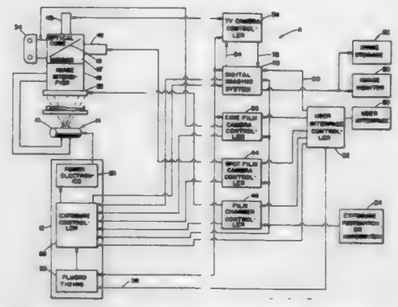
5,301,220
MULTI-MODE ACQUISITION X-RAY IMAGING METHOD AND APPARATUS

Hung Y. Wong, Solon, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Filed Sep. 3, 1992, Ser. No. 940,180

Int. Cl.[5] H05G *1/64*

U.S. Cl. 348—162 **23 Claims**



14. A method of validating a last image acquired during operation of an x-ray system:

projecting x-rays across an examination region;

ending the projection of the x-rays across the examination region;

monitoring a time within a cycle of a reference signal that the projection of x-rays ends;

determining whether x-ray exposure was completed prior to the monitored time in the reference signal cycle; and,

generating a valid frame signal when the x-ray exposure was completed prior to the monitored time in the reference signal cycle.

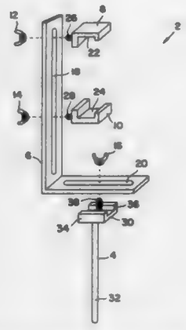
5,301,221
INTRA OPERATIVE X-RAY CASSETTE HOLDER

Stephen Yakubisin, 903 Union St., Taylor, Pa. 18517

Filed Apr. 1, 1993, Ser. No. 41,509

Int. Cl.[5] G03B *42/02*

U.S. Cl. 378—181 **11 Claims**



1. Apparatus for holding and positioning an x-ray grid and a cassette, alone or in combination, relative to a patient on an operating table having a side rail, comprising:

a lower support assembly mountable at a selected location along said side rail;

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an upper support assembly releasably and adjustably attached to said lower support assembly, said upper support assembly including an L-shaped member having a vertical leg with an elongate slot and a horizontal leg with an elongate slot; and

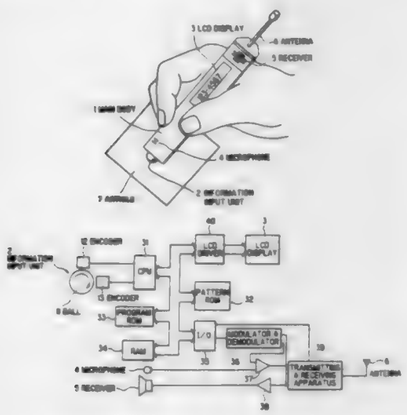
bracket means adjustably attached to said upper support assembly for holding various size x-ray grids and cassettes at various vertical and angular positions relative to said upper support assembly; whereby the attachment of said upper support assembly to said lower support assembly is adjustable to position said x-ray grids and cassettes a desired distance from said operating table, and said upper support assembly is removable from said lower support assembly so that said lower support assembly can remain attached to said side rail.

5,301,222

PORTABLE RADIO TELEPHONE SET FOR GENERATING PATTERN SIGNALS REPRESENTATIVE OF ALPHANUMERIC LETTERS INDICATIVE OF A TELEPHONE NUMBER

Ryuhei Fujiwara, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 23, 1991, Ser. No. 644,915
Claims priority, application Japan, Jan. 24, 1990, 2-14246
Int. Cl.[5] H04M *11/00, 1/00*
U.S. Cl. 379—58 **8 Claims**



1. A portable radio telephone set, comprising:

a ball rotating to be moved on a surface of an article by manipulation of an operator;

first and second encoders for generating first and second signals of ball moving distances in first and second directions orthogonal to each other;

means for generating pattern signals of alphanumeric letters in accordance with said first and second signals;

a first memory for storing patterns of alphanumeric letters;

a second memory having a first region for storing said pattern signals temporarily and a second region for storing said pattern signals transferred from said first region in non-volatile mode;

means for comparing a pattern defined by said pattern signals with a pattern of said first memory to generate a coincidence signal;

means for modulating a telephone number obtained from patterns determined by said coincidence signals; and

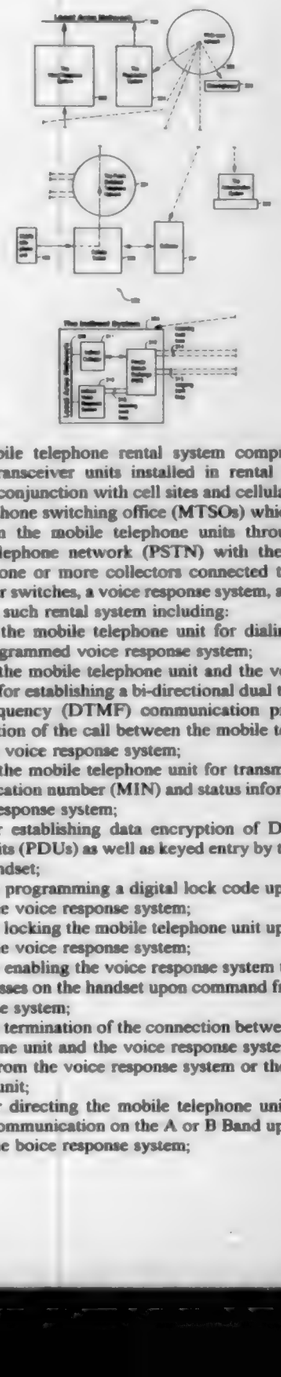
means for transmitting said modulated telephone number to air by an antenna.

5,301,223

CELLULAR TELEPHONE SYSTEM WITH REMOTE PROGRAMMING, VOICE RESPONSIVE REGISTRATION AND REAL TIME BILLING

Charles G. Amadon, Seattle; Rick F. Combest, Winslow; David M. Stanhope, Tacoma, and Cameron S. Elliott, Seattle, all of Wash., assignors to Cellular Technical Services Company, Inc., Seattle, Wash.

Continuation of Ser. No. 603,166, Oct. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 527,136, May 22, 1990, abandoned. This application Aug. 25, 1992, Ser. No. 934,308
Int. Cl.[5] H04M *11/00, 15/00;* **H04Q** *7/00*
U.S. Cl. 379—58 **8 Claims**



1. A mobile telephone rental system comprising mobile telephone transceiver units installed in rental vehicles and operated in conjunction with cell sites and cellular switches in mobile telephone switching office (MTSOs) which route calls to and from the mobile telephone units through a public switched telephone network (PSTN) with the system also comprising one or more collectors connected to the one or more cellular switches, a voice response system, and a registration system, such rental system including:

means in the mobile telephone unit for dialing a specific, pre-programmed voice response system;

means in the mobile telephone unit and the voice response system for establishing a bi-directional dual tone modulating frequency (DTMF) communication protocol upon connection of the call between the mobile telephone unit and the voice response system;

means in the mobile telephone unit for transmitting mobile identification number (MIN) and status information to the voice response system;

means for establishing data encryption of DTMF packet data units (PDUs) as well as keyed entry by the user at the unit handset;

means for programming a digital lock code upon command from the voice response system;

means for locking the mobile telephone unit upon command from the voice response system;

means for enabling the voice response system to detect user key presses on the handset upon command from the voice response system;

means for termination of the connection between the mobile telephone unit and the voice response system upon command from the voice response system or the mobile telephone unit;

means for directing the mobile telephone unit to establish radio communication on the A or B Band upon command from the boice response system;

means for directing the mobile telephone unit to contact the voice response system upon entering a new cellular service area;

means for allowing the mobile telephone unit to make calls; and

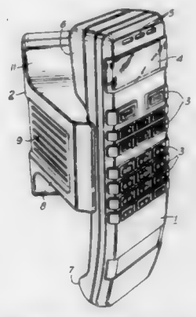
means for unlocking the mobile telephone unit upon entry of a valid digital lock code by user key pressed entry at the handset.

5,301,224

MOBILE TELEPHONE WITH LATERAL LOUDSPEAKER

Ron Major, Coates, United Kingdom, assignor to Nokia Mobile Phones (U.K.) Limited, Surrey, United Kingdom

Continuation of Ser. No. 937,441, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 653,781, Feb. 11, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,697
Claims priority, application United Kingdom, Feb. 20, 1990, 9003798
Int. Cl.[5] H04M *11/00, 1/76*
U.S. Cl. 379—58 **20 Claims**



1. Mobile telephone apparatus for a vehicle comprising a telephone with an elongate handset, and a cradle member having means for mounting to the vehicle in two reversible orientations; said cradle member including means for releasably holding and locating the handset in a generally vertically oriented upright position in both of said reversible mounting orientations, and a loudspeaker grille disposed laterally of the handset when the handset is located on the cradle.

5,301,225

METHOD AND SYSTEM FOR DYNAMICALLY REGULATING A POWER SAVING PERIOD WITHIN A RADIO TELECOMMUNICATION SYSTEM

Kazuhiro Suzuki, Koganei; Tsuneo Furuya, Yokohama; Kenzo Urabe, Sendai; Yoshinobu Yamamoto, Fujisawa, and Hideya Suzuki, Hachioji, all of Japan, assignors to Hitachi, Ltd. and Kokusai Electric Co. Ltd.

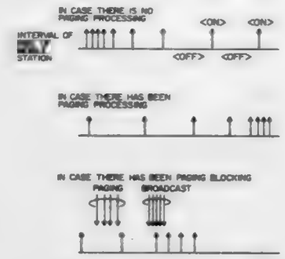
Filed Dec. 23, 1992, Ser. No. 996,150
Claims priority, application Japan, Dec. 27, 1991, 3-345835
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **7 Claims**

6. In a radio telecommunication system including a plurality of cell sites individually taking charge of predetermined areas each site having a cell site memory and mobile stations having a function of intermittently receiving signals each station having a mobile station memory, a radio telecommunication method for holding down blocking to the minimum and reducing the power consumption in the mobile station, comprising the steps of:

storing, in the cell site memory of each cell site, a mobile station identification periodically transmitted from a mobile station existing in each area, battery-saving receiving period information, and battery-saving receiving time, so as to be associated with each other, in a cell site memory by using a cell site internal timer for sensing time;

storing blocking information indicating that blocking has occurred, in case a paging signal is sent to a mobile station in an area in response to a paging request made by a PBX (Private Branch Exchange) or a public switched telephone network control unit and an answer is not returned from the mobile station in response to the paging signal, in said cell site memory so as to be associated with a mobile station ID on said cell site memory;

informing the mobile station of the blocking information according to the information on said cell site memory;



storing, in the mobile station, battery-saving receiving period information to intermittently exercise on /off control over a receiving unit, by using a mobile station internal timer for sensing the time; and

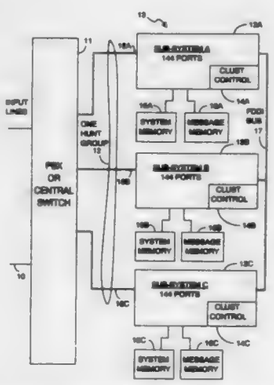
periodically transmitting said battery-saving receiving period information to a cell site and increasing /decreasing the battery-saving receiving period information on said mobile station memory according to presence /absence of blocking information fed from said cell site to control the battery-saving receiving period.

5,301,226

VOICE PROCESSING SYSTEMS CONNECTED IN A CLUSTER

Peter D. Olson, Los Gatos, and Burton N. Kendall, Saratoga, both of Calif., assignors to OCTEL Communications Corporation, Milpitas, Calif.

Filed Feb. 5, 1992, Ser. No. 831,464
Int. Cl.[5] H04M *3/50*
U.S. Cl. 379—67 **7 Claims**



2. An information server system comprising in combination,

a plurality of information server modules for providing mailbox facilities for a plurality of users,

a plurality of input lines arranged in one hunt group, said

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input lines being distributed among said information server modules,

a profile for each of said users, said profiles being distributed among said modules, each profile being stored on at least two of said modules,

a local bus means connecting said information server modules into a cluster and,

profile obtaining means in each of said modules operable in response to an incoming call directed to a particular user, for obtaining the profile of said particular user irrespective of where said profile is stored,

whereby any of said information server modules can handle a call directed to any user.

5,301,227

AUTOMATIC DIAL TELEPHONE

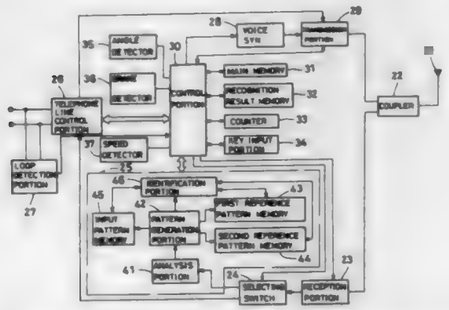
Shoichi Kamei, Hirakata; Masayuki Iida; Shinichi Tsurufuji, both of Yawata; Hiroki Ohnishi, Hirakata, and Kazumi Ohkura, Higashiosaka, all of Japan, assignors to Sanyo Electic Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 510,626, Apr. 17, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,414

Claims priority, application Japan, Apr. 17, 1989, 1-96706; Apr. 20, 1989, 1-100780; May 12, 1989, 1-119103; Jul. 20, 1989, 1-187795

Int. Cl.[5] H04M *1/26, 1/56*

U.S. Cl. 379—88 **13 Claims**



1. An automatic dial telephone by which a user can voice initiate a call to a selected station and/or party, the automatic dial telephone comprising:

first means for storing a plurality of discrete voice reference patterns, each discrete voice reference pattern representing a party to be called;

second means for storing a telephone number for each such party;

third means for storing a user voice reference pattern representing a command for confirmation;

means for comparing a voice input pattern with discrete voice reference patterns similar thereto to obtain a list of discrete voice reference patterns similar to the voice input pattern;

means for outputting audible signals, representing the discrete voice reference patterns from the list of discrete voice reference patterns, in order of descending similarity to the voice input pattern, said outputting means including pause means, to produce a pause period following each audible signal output, for a user to input a user voice signal command for confirmation of the identity of the party to be called;

said command for confirmation operating to stop said outputting means from outputting audible signals representing any discrete voice reference patterns remaining on the list of discrete voice reference patterns following an output of an audible signal, representing a discrete voice reference pattern from the list of discrete voice reference patterns, which is followed by said command for confirmation; and

means for selecting and transmitting, as a signal, the telephone number of the identified party to be called.

5,301,228

COMMUNICATION DEVICE WITH A DETACHABLE RECORDING MEDIUM

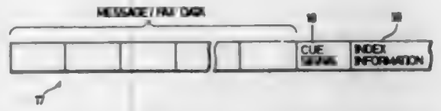
Yoshihiro Kakigi; Masaharu Washizaki, and Takashi Takenaka, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1992, Ser. No. 834,159

Claims priority, application Japan, Feb. 18, 1991, 3-46197; May 31, 1991, 3-129569

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—100 **15 Claims**



1. A communication device for receiving voice signals and image signals via a telephone line, including a detachable recording medium that records the voice signals/image signals sequentially, said communication device comprising:

means for recording said received voice signals/image signals on said detachable recording medium,

means for sequentially reproducing said recorded voice signals/image signals,

means for recording on said detachable recording medium, index information including a voice signal/image signal indicator and a recorded position on said detachable recording medium, and

means for reading and storing the index information in a memory of said communication device when said detachable recording medium is loaded into said communication device and controlling recording to and reproduction from said detachable recording medium according to the index information;

said detachable recording medium including a voice signal-/image signal record region at a top portion, followed by an index information region for the index information.

5,301,229

ADJUSTABLE HEIGHT PEDESTAL FOR PUBLIC AND COIN TELEPHONES

James E. Raynor, Woodstock, Ga., assignor to Phillips & Brooks/Gladwin, Inc., Cumming, Ga.

Filed Feb. 24, 1992, Ser. No. 840,107

Int. Cl.[5] H04M *17/00*

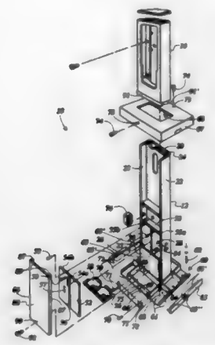
U.S. Cl. 379—143 **18 Claims**

1. An improved adjustable height mounting pedestal for mounting a public or coin telephone, the telephone having a rear portion, said mounting pedestal comprising:

an elongate upright post having a base for mounting to a mounting surface;

an elongate backboard mounting enclosure telescopically mounted to said upright post for supporting the telephone and for enclosing the rear portion of the telephone; and

fastener means located within an interior portion of said backboard mounting enclosure for adjustably mounting said backboard mounting enclosure to said upright post, said fastener means being generally adjacent to the rear portion of the telephone with the telephone mounted to said backboard, wherein said fastener means is concealed by the telephone upon mounting of the telephone to said backboard mounting enclosure.



5,301,230

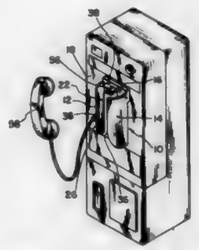
VIEWING SHIELD FOR A TELEPHONE DIALING PAD

Benjamin W. Barry, 4323 Dry Fork Rd., Whites Creek, Tenn. 37189

Filed Aug. 10, 1992, Ser. No. 927,003

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—447 **20 Claims**



1. A viewing shield for a telephone dialing pad, said shield comprising:

a first side wall in close proximity to and on a first side of a dialing pad, said first side wall extending generally away from said dialing pad;

a second side wall in close proximity to and on a second side of said dialing pad, said second side wall extending generally away from said dialing pad;

an access opening between said first and second side walls wherethrough the dialing pad is used, whereby said dialing pad is shielded from view except through said access opening; and, wherein said first and second side walls extend partially over the dialing pad thereby decreasing the size of said access opening and further shielding the dialing pad from view.

5,301,231

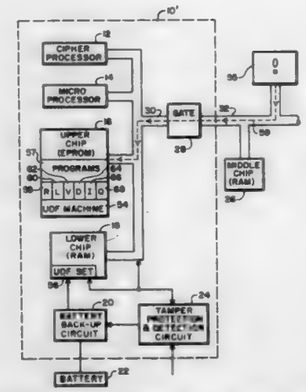
USER DEFINED FUNCTION FACILITY

Dennis G. Abraham, Concord, N.C.; Daniela Henningmeyer, Stuttgart, Fed. Rep. of Germany; John M. Hudson, Manassas, Va.; Donald B. Johnson, Manassas, Va.; An V. Le, Manassas, Va.; Stephen M. Matyas, Manassas, Va., and James V. Stevens, Huntersville, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1992, Ser. No. 834,634

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **43 Claims**



1. A cryptographic module for storing and operating on user defined cryptographic functions, said cryptographic module providing a physically and electrically secure environment, said user defined cryptographic functions including instructions arranged in a particular sequence to implement a desired cryptographic function, said cryptographic module comprising:

memory for storing said user defined cryptographic functions, said memory including:

code for translating said user defined cryptographic functions into a machine-executable form, and

code implementing at least one command for operating on said machine-executable form of said user defined cryptographic functions;

a processing unit connected to said memory for executing said code for translating said user defined cryptographic functions into a machine-executable form and for executing said code implementing at least one command for operating on said machine-executable form of said user defined cryptographic functions;

a physical protection device for protecting said cryptographic module from physical attack; and

an electrical protection device for protecting said cryptographic module from electrical attack.

5,301,232

METHOD AND APPARATUS FOR OVER-THE-AIR PROGRAMMING OF COMMUNICATION DEVICES

Keith I. Mulford, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 5, 1992, Ser. No. 971,737

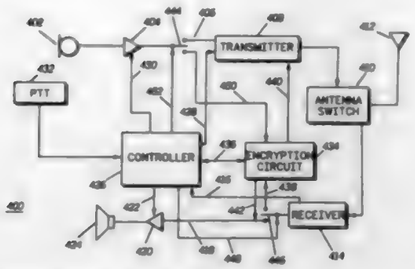
Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—21 **8 Claims**

1. A method for programming a communication device having a first set of encryption information with a second set of encryption information using radio frequency signals, the communication device operating in a communication system having at least one communication channel and a system controller, comprising the steps of:

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transmitting the second set of encryption information to the communication device;
monitoring the at least one communication channel with the system controller in order to determine if the communication device is still using the first set of encryption information; and



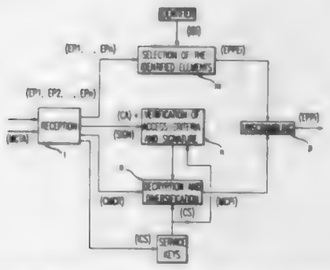
establishing communications between the system controller and the communication device in order to provide the second set of encryption information to the communication device if the communication device is still using the first set of encryption information.

5,301,233

PROCESS FOR THE TRANSMISSION AND RECEPTION OF PERSONALIZED PROGRAMS

Francoise Coutrot, Cesson Sevigne, and Pierre Fevrier, St. Sulpice la Foret, both of France, assignors to France Telecom Etablissement Autonome de Droit Public, Paris and Telediffusion, Montrouge, both of France

Filed Aug. 14, 1992, Ser. No. 929,829
Claims priority, application France, Aug. 19, 1991, 91 10404
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **12 Claims**



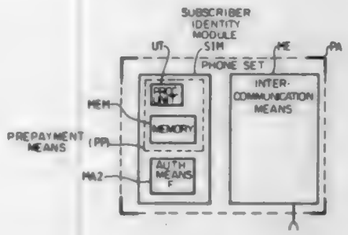
1. Process for the transmission and reception of programs with access control to said programs, wherein:
(A) on transmission:
the programs are scrambled by a control word and access control messages are formed which in particular contain access criteria and a cryptogram of the control word,
(B) on reception:
a check is made to establish whether the access criteria are fulfilled, the control word used for scrambling is reconstituted and the received programs are descrambled,
said process being characterized in that, for addressing personalized programs to different recipients identified by identifiers,
(A) on transmission:
the control word used for scrambling the program intended for the particular recipient is obtained by personalization, with the aid of the identifier of said recipient, of a single control word called the root control word and which applies to all the recipients and only a single access control message is transmitted for all the recipients, said message more particularly containing a cryptogram of the root control word,
(B) on reception:
each recipient, with the aid of the recipient's identifier and the access control message, reconstitutes, on the basis of the root control word, the recipient's own personalized control word, which enables only the intended recipient to descramble the program.

5,301,234

RADIOTELEPHONE INSTALLATION FOR PREPAYMENT OPERATION WITH SECURITY PROTECTION

Gérald Mazziotto, Paris, and Philippe Hiolle, Herouville-Saint-Clair, both of France, assignors to France Telecom, Paris, France

Filed Oct. 10, 1991, Ser. No. 773,315
Claims priority, application France, Oct. 10, 1990, 90 12510
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—23 **14 Claims**



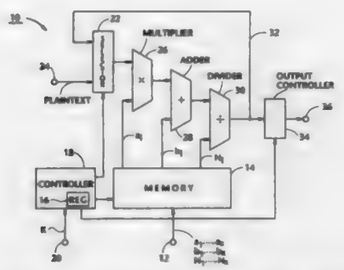
1. A radiotelephone installation for use in communications systems in connection with a switched telephone network, comprising:
(a) an autonomous telephone subscriber access system including
(1) a base station linked to a switched telephone network,
(2) first means of authentication for generating an encryption function F with the aid of a first secret key which is personal to each subscriber, and
(3) means of charging for calculating a call charge for the chargeable services of the switched telephone network;
(b) an autonomous telephone set including
(1) means of establishing radiotelephone intercommunication with the base station,
(2) second means of authentication for generating the encryption function F with the aid of a second secret key which is personal to the autonomous telephone set subscriber, and
(3) means of prepayment for receiving and paying the call charge calculated and transmitted by the charging means,
(c) wherein during the intercommunication between the base station and the autonomous telephone set, the first means of authentication generates a keyword dependent on the call charge for a current service and transmits said keyword to the autonomous telephone set, and wherein the second means of authentication calculates a transform of said keyword by the encryption function F with the aid of one of the secret keys and transmits said transform to the first means of authentication which checks the authenticity of said transform to totally block the intercommunication if the authenticity is not confirmed.

5,301,235

ARRANGEMENT FOR TRANSFORMING PLAINTEXT INTO CIPHERTEXT FOR USE IN A DATA COMMUNICATIONS SYSTEM

Michio Shimada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 21, 1993, Ser. No. 65,862
Claims priority, application Japan, May 21, 1992, 4-128409
Int. Cl.[5] H04K *1/02;* **H04L** *9/18*
U.S. Cl. 380—42 **6 Claims**



1. A hardware arrangement for transforming plaintext into corresponding ciphertext, said plaintext including a plurality of words each having a predetermined bit length, said hardware arrangement sequentially acquiring said words and exhibiting a predetermined number of arithmetic operations on the word acquired, each of said arithmetic operations including a plurality of arithmetic processes, said hardware arrangement outputting an enciphered word therefrom when completing said predetermined number of arithmetic operations, said hardware arrangement comprising:
first means arranged to receive first and second inputs and selectively output one of said first and second inputs, said first input corresponding to the word acquired;
second means coupled to receive the output of said first means, said second means multiplying said output of said first means by a multiplier and outputting a product therefrom;
third means coupled to receive said product, said third means adding said product and an addend and then outputting a sum; and
fourth means coupled to receive said sum, said fourth means dividing said sum by a modulus and outputting a residue therefrom, the value of said modulus being subject to change at each of said arithmetic operations, said residue being applied to said first means as said second input, said residue being outputted from said hardware arrangement as the ciphered word when said predetermined number of arithmetic operations are completed.

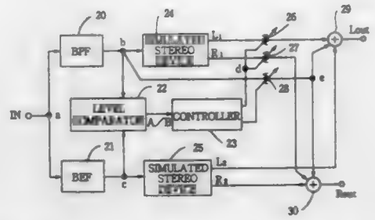
5,301,236

SYSTEM FOR PRODUCING STEREO-SIMULATED SIGNALS FOR SIMULATED-STEREOPHONIC SOUND

Tatsushi Iizuka, and Satoshi Shinohara, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 948,527
Claims priority, application Japan, Jan. 13, 1992, 4-023196
Int. Cl.[5] H04R *5/00*
U.S. Cl. 381—17 **7 Claims**

7. A method of producing right and left stereo-simulated signals from a monophonic input signal comprising the steps of:
transmitting a first monophonic signal which is within a predetermined frequency range in response to the monophonic input signal;
transmitting a second monophonic signal which is outside the predetermined frequency range in response to the monophonic input signal;
dividing the first monophonic signal into right and left first stereo-simulated signals;
dividing the second monophonic signal into right and left second stereo-simulated signals;
detecting either the level of at least one of the first and second monophonic signals or the ratio of the first and second monophonic signals and generating a control signal therefrom.



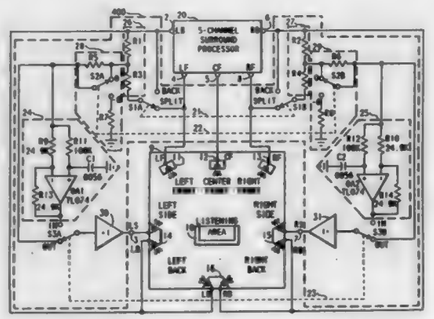
controlling a level of the right and left signals of the first and second stereo-simulated signals based on said control signal; and
adding the right first stereo-simulated signal, the right second stereo-simulated signal and the first monophonic signal to produce an output right stereo-simulated signal, and adding the left first stereo-simulated signal, the left second stereo-simulated signal and the first monophonic signal to produce an output left stereo-simulated signal.

5,301,237

SURROUND SOUND LOUDSPEAKERS

James W. Fosgate, 4750 E. 1200 South, Heber City, Utah 84032

Division of Ser. No. 789,530, Nov. 14, 1991, Pat. No. 5,199,075.
This application Dec. 1, 1992, Ser. No. 983,687
Int. Cl.[5] H04R *1/02*
U.S. Cl. 381—89 **7 Claims**



1. A loudspeaker combination for arrangement in a listening area and for reproducing sound from an audio signal source, said loudspeaker combination comprising:
a first directional loudspeaker driver aimed generally towards the front of the listening area;
a second, independent directional loudspeaker driver aimed generally towards the rear of the listening area;
first and second loudspeaker enclosures for loading said first and second loudspeaker drivers;
a phase shifter circuit for connection between said audio signal source and said first loudspeaker driver, having an all-pass frequency response for providing a phase shift which varies from nearly zero at low frequencies to nearly 180 degrees at higher frequencies; and
said second loudspeaker driver being driven with a signal at

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an equal level to that of said first loudspeaker driver, said signal derived directly from said audio signal source;

such that said first and second loudspeaker drivers are driven in phase at low frequencies and out of phase at high frequencies, resulting in a dipole polar pattern at high frequencies and an omnidirectional pattern at low frequencies, with no loss of bass output.

5,301,238

PROCESS FOR READING A CHAIN OF CODE CHARACTERS FROM A TRANSPARENT BOTTLE

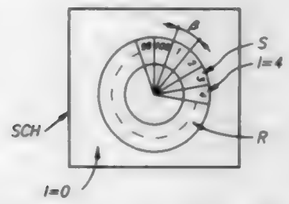
Robert Apter, Rudolfstetten, Switzerland; Nira Schwartz, Torrance, Calif.; George Pleater, Essen, and Hans-Willy Scholl, Oberhausen, both of Fed. Rep. of Germany, assignors to Elpatronic AG, Zug, Switzerland

Filed Apr. 26, 1991, Ser. No. 692,367

Claims priority, application Switzerland, Jul. 13, 1990, 02339/90.1

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—1 **9 Claims**



1. Process for reading a code character chain having code characters which are arranged on an annular surface of a transparent bottle in the bottom area of the same, each code character of the code character chain having a bar-shape and representing a single bit, by directing a camera through the neck of the bottle into the bottom area of the bottle, illuminating the bottom area of the bottle from outside and storing and decoding of the code character chain which is photographed with the camera, characterized in that an instantaneous image of the bottom area of the bottle with the complete code character chain is taken and stored, and the stored image is then processed by a histogram technique for decoding the code character chain, which technique includes the following steps:

(a) selecting a pattern in the form of an annular surface which is larger inwardly and outwardly than the annular surface on which the code character chain is arranged,

(b) dividing the annular surface of the pattern into a number of pattern sectors whose circumferential width is in each case smaller than or equal to that defined by one complete code character;

(c) defining each pattern sector by a different intensity in terms of a number of pixels, which is proportional to the surface area of each pattern sector;

(d) superimposing the annular surface of the pattern and the annular surface of the code character chain;

(e) determining from the step of superimposing the pattern sector or group of adjacent pattern sectors in which the intensity or surface area has been reduced by that of a code character in the chain;

(f) designating the pattern sectors of reduced intensity as containing the code character chain; and

(g) decoding the code character chain from the sector wherein the intensity has been reduced for the first time, to the sector where the intensity has been reduced last.

5,301,239

APPARATUS FOR MEASURING THE DYNAMIC STATE OF TRAFFIC

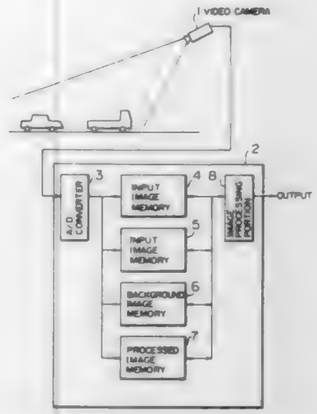
Masakazu Toyama, Tokyo, and Nobuhiro Hamba, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 3, 1992, Ser. No. 829,390

Claims priority, application Japan, Feb. 18, 1991, 3-023157; Apr. 8, 1991, 3-075025; May 15, 1991, 3-110325

Int. Cl.[5] G08G *1/048*; **G06F** *15/66*

U.S. Cl. 382—1 **10 Claims**



1. An apparatus for measuring the dynamic state of traffic, comprising:

video camera means for picking up images of vehicles moving on a road and producing picture data in the form of electrical signals;

an analog to digital (A/D) converter, connected to said video camera means, for converting said picture data from said video camera means into digital picture data;

input image memory means, connected to said A/D converter, for temporarily storing said digital picture data;

background data memory means, connected to said A/D converter, for storing background data indicative of the road without any vehicles on it;

image processing means, connected to said input image memory means and said background data memory means, for processing the data stored in said input image memory means and said background data memory means, said image processing means including means for judging the state of the road to determine whether a running vehicle is present and to determine whether a standing vehicle is present if a running vehicle is not present, said means for judging the state of the road including

means for obtaining an average luminance value of current picture data and a most-frequent luminance value of current picture data from the digital picture data stored in said input image memory means,

means for obtaining an average luminance value and a most-frequent luminance value of the background data from the background data stored in said background data memory means,

means for comparing the average luminance value of the current picture data and the average luminance value of the background data, and

means for comparing the most-frequent luminance value of the current picture data and the most-frequent luminance value of the background data; and

output means, connected to said image processing means, for outputting the result of the judgement.

5,301,240

HIGH-SPEED VIDEO INSTRUMENTATION SYSTEM

Larry A. Stockum, Gahanna, and Ronald L. Gorenflo, London, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

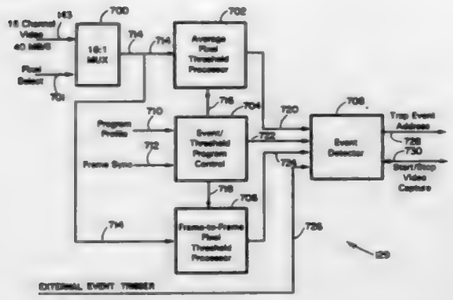
Continuation of Ser. No. 628,320, Dec. 14, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 941,852

Int. Cl.[5] G06K *9/00, 9/20*; **H04N** *7/18*

U.S. Cl. 382—1 **16 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 61 Pages)



1. Video apparatus for providing records of selected types of images of high-speed events comprising:

A. solid state imager means for receiving and converting focused images and providing an ordered series of digital signals representing sequential frames of images of scenes in which high-speed events may take place:

B. solid state memory means for storing, at least temporarily, a portion of the digital signals;

C. first comparative means responsive to the digital signals, for comparing values of individual pixels, in the digital signals being stored, with average preceding values of the individual pixels for a predetermined number of prior frames, and for incrementing an average event counter each time a comparison exceeds a predetermined threshold value, wherein the first comparative means operates on the digital signals from (A) in real time simultaneously with the solid state memory means (B);

D. second comparative means responsive to the digital signals, for comparing values of individual pixels, in the digital signals being stored, with values of the individual pixels in a preceding frame, and for incrementing a frame-to-frame event counter each time a comparison exceeds a predetermined threshold value, wherein the second comparative means operates on the digital signals from (A) in real time simultaneously with the solid state memory means (B) and the first comparative means (C);

E. average event counter means for providing a first output signal indicating when an average pixel threshold within a frame is exceeded a predetermined number of times;

F. frame-to-frame event counter means for providing a second output signal indicating when a frame-to-frame pixel threshold is exceeded a predetermined number of times; and

G. means responsive to the detection of an event by the counter means (E) and (F) when both counter means provide first and second output signals to indicate that their respective thresholds have been exceeded a predetermined number of times within the same frame, providing for retaining a portion or none of pre-event digital signals in solid state memory means (B) and storing additional and post-event digital signals that contain a record of the selected types of images.

5,301,241

IMAGE COMPRESSION METHOD AND APPARATUS EMPLOYING PRINCIPAL COMPONENT ANALYSIS

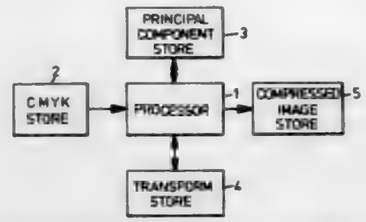
Richard A. Kirk, Hertfordshire, England, assignor to Crosfield Electronics Limited, Hertfordshire, United Kingdom

Filed Mar. 6, 1991, Ser. No. 665,122

Claims priority, application United Kingdom, Mar. 6, 1990, 9004978

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—56 **5 Claims**



1. Apparatus for compressing digital data defining the colour component content of pixels of a coloured image, the apparatus comprising a computer including means for performing a principal component analysis on each of a number of non-overlapping blocks of pixels making up the image to determine the principal component vectors corresponding to the block; a first memory for storing said principal component vectors; said computer further comprising means for rounding the principal component vectors to a fixed set of intervals; a second memory for, together with said computer, transforming the original pixel data into the colour space defined by the rounded principal component vectors and storing transformed pixel data; said computer further comprising means for performing a compression algorithm on the transformed pixel data; and a third memory for, together with said computer, performing a separate compression algorithm on the rounded principal component vector values and storing compressed image data.

5,301,242

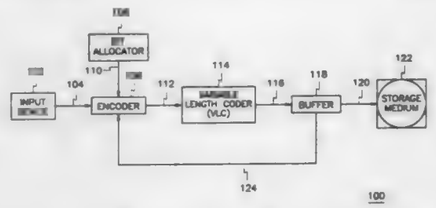
APPARATUS AND METHOD FOR MOTION VIDEO ENCODING EMPLOYING AN ADAPTIVE QUANTIZER

Cesar A. Gonzales, Katonah, N.Y., and Eric Viscito, Danbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 705,234, May 24, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 936,724

Int. Cl.[5] G06K *9/36, 9/46*

U.S. Cl. 382—56 **10 Claims**



1. A video encoding apparatus configured to convert groups of blocks of digital video signals into compressible groups of blocks of digital video signals, comprising:

(a) a transform coefficient device, having an input configured to receive a digital video signal representing a block of a video image, configured to generate a first signal representing a set of transform coefficients C_{ij} in response to said received digital video signal;

(b) an adaptive quantization device, having an input coupled

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to said transform coefficient device, configured to receive said first signal representing a set of transform coefficients C_{ij}, and to provide a second signal representing a quantized transform coefficient Cq_{ij} in response to said first signal representing said set of transform coefficients C_{ij};

(c) a variable length coder, having an input coupled to said adaptive quantization device, configured to receive said second signal representing said quantized transform coefficient Cq_{ij} and to provide a variable-rate signal having a variable bit rate and representing a compressed digital video signal in response to said second signal representing said quantized transform coefficient Cq_{ij}; and

(d) a buffer, having an input coupled to said variable length coder, configured to equalize said variable bit rate of said variable-rate signal representing a compressed digital video signal and to provide a constant rate compressed digital video signal, and further configured to provide a third signal indicating buffer fullness.

5,301,243

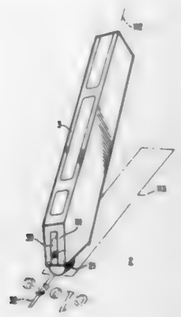
HAND-HELD CHARACTER-ORIENTED SCANNER WITH EXTERNAL VIEW AREA

Francis Olschafskie, 46 Atherton St., Boston, Mass. 02119, and Ailan Chasanoff, 117 E. 36th St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 632,144, Dec. 21, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 901,004

Int. Cl.[5] **G06K** *9/22, 9/20, 7/10;* **H04N** *1/21*

U.S. Cl. 382—59 **20 Claims**



3. A hand-held scanner for reading characters from a string of characters recorded on a substrate, comprising:

a housing, being adapted to be held in the manner of a pen and being further adapted such that the scanner may be conveniently moved, in contact with the substrate, along the string of characters;

movement sensor means, mounted to the housing, for detecting movement of the scanner across the surface of the substrate;

optical means, located within the housing, for viewing an area of view;

optical detector means, located within the housing, for detecting the relative intensity of light reflected from each of a plurality of points in the area of view;

wherein the housing has an elongated shape and a longitudinal axis, and a brow proximate to the substrate and angled with respect to the longitudinal axis, the brow having a window for defining the area of view, such that the area of view may lie substantially outside the projection of the housing on the substrate.

5,301,244

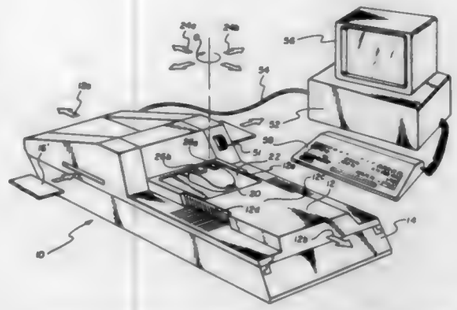
COMPUTER INPUT SCANNER INCORPORATING MULTIPLE SCANNING MODES

Kenneth A. Parulski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 732,253, Jul. 18, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,661

Int. Cl.[5] **G06K** *9/22*

U.S. Cl. 382—59 **16 Claims**



1. A user-manipulated scanner useful as a high resolution input device for a computer, the scanner comprising sensing means for providing an image signal from a fixed image to a display device connected to the computer, said sensing means including a solid state image sensor having a two-dimensional array of picture elements, optical means for directing image light along a light path toward the sensor, and varying means for varying the portion of the fixed image scanned by the sensor in order to compose an image shown on the display device, said scanner being selectively operable in two modes, including a prescan mode in which said varying means is operated by the user to select a portion of the fixed image and in which said portion of the fixed image is rapidly and repeatedly scanned into the computer for substantially real time display of said image signal while operating said means for varying the portion of the fixed image scanned by the sensor, and a high resolution input scan mode in which said portion of the fixed image is scanned for input to the computer, said scanner including hand-activated means for initiating the prescan mode prior to the high resolution scan mode.

5,301,245

SYSTEM FOR TRANSMITTING A COMMERCIAL PROGRAM IN A CATV SYSTEM

Fumio Endoh, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,742

Claims priority, application Japan, Mar. 29, 1991, 3-093358

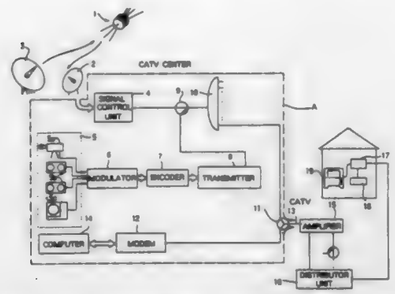
Int. Cl.[5] **H04K** *1/00*

U.S. Cl. 380—10 **8 Claims**

1. In a system for transmitting television signals in a CATV system wherein a television signal of a priority channel is selectively scrambled with an encoding at a broadcasting station to produce in the priority channel 1) a scrambled television signal for terminal devices of subscribers and 2) non-scrambled television signal for non-subscribers used for transmitting a commercial program, the scrambled and non-scrambled television signals are alternately transmitted from the broadcasting station to a local center in the priority channel, and the scrambled television signal is descrambled at the local center, the descrambled television signal is re-scrambled by an encoder with another encoding at the local center, the re-scrambled television signal and the non-scrambled television signal are alternately transmitted to terminal devices wherein the system comprises:

detector means, provided in the local center, for detecting said scrambled television signal and said non-scrambled television signal in the priority channel and said detector means for producing a scrambled signal and a non-scrambled signal in accordance with said detected signals;

switching means, responsive to said scrambled signal, for feeding said descrambled television signal to said encoder for re-scrambling said television signal, and responsive to



said non-scrambled signal for passing said non-scrambled television signal without passing through said encoder; and

transmitting means for alternately transmitting said re-scrambled television signal and said non-scrambled television signal to subscriber and non-subscriber terminal devices.

5,301,246

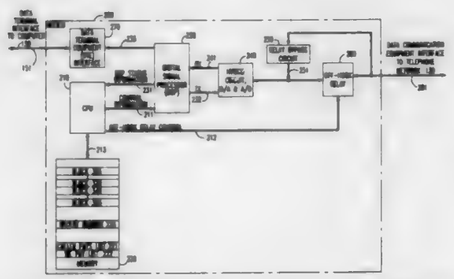
DATA COMMUNICATIONS EQUIPMENT SECURITY DEVICE USING CALLING PARTY DIRECTORY NUMBER

James L. Archibald, Clearwater, Fla.; Steven D. Hunt, Freehold, N.J., and Richard K. Smith, Seminole, Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1992, Ser. No. 921,164

Int. Cl.[5] **H04L** *9/32, 12/22;* **G06F** *13/14;* **H04B** *1/38*

U.S. Cl. 380—23 **16 Claims**



8. Modem for use in a telephone call between a calling party and a called party, comprising:

means for receiving and processing an incoming signal, which represents the telephone call, from a public switched telephone network to provide 1) status information which is representative of a ringing signal included within the incoming signal, and 2) a caller identification number of the calling party, which is included within the incoming signal;

storage means for providing a list of caller identification numbers;

data terminal interface means for coupling to a data terminal of the called party; and

CPU means responsive to the status information indicating that a ringing signal has been received that compares the caller identification number of the calling party to each of the caller identification numbers on the list, and that initiates a modem handshaking and training sequence through the means for receiving and processing to a modem of the calling party to establish a data connection to the coupled data terminal, if the caller identification number of the calling party is on said list.

5,301,247

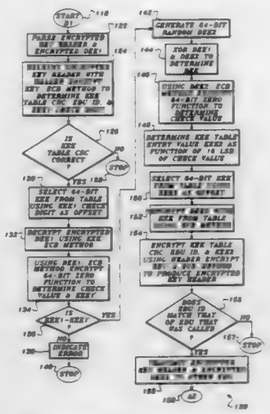
METHOD FOR ENSURING SECURE COMMUNICATIONS

Harry R. Rasmussen, Tacoma; Jack D. LaBounty, Bellevue, and Michael J. Rosenow, Issaquah, all of Wash., assignors to Crest Industries, Inc., Pacific, Wash.

Filed Jul. 23, 1992, Ser. No. 918,364

Int. Cl.[5] **H04K** *1/00*

U.S. Cl. 380—43 **20 Claims**



1. A method for defining an encryption key that is used to encrypt and decrypt transmissions between two stations, comprising the steps of:

(a) randomly selecting a first part encryption key at one of the stations and a second part encryption key at the other station;

(b) encrypting the first part encryption key at said one station;

(c) transmitting the encrypted first part encryption key to the other station;

(d) decrypting the first part encryption key at said other station;

(e) encrypting the second part encryption key at said other station;

(f) transmitting the encrypted second part encryption key to said one station;

(g) decrypting the second part encryption key at said one station; and

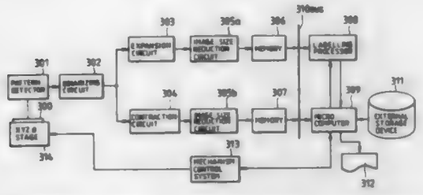
(h) combining the first part and the second part encryption keys at each station to determine the encryption key, which is then used to encrypt and decrypt further communications between the two stations.

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5,301,248
METHOD FOR PATTERN INSPECTION AND APPARATUS THEREFOR

Ninomiya Takanori; Kazushi Yoshimura, and Mineo Nomoto, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 267,554, Nov. 4, 1988, abandoned. This application Jun. 25, 1992, Ser. No. 904,892
Claims priority, application Japan, Nov. 9, 1987, 62-280920; Nov. 30, 1987, 62-300282; Apr. 15, 1988, 63-91309; Jun. 29, 1988, 63-159103; Jul. 19, 1988, 63-178234
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 39 Claims



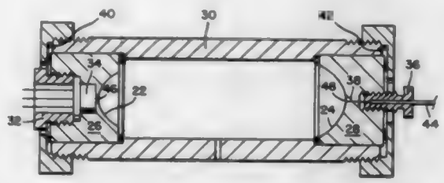
1. A pattern inspecting method capable of detecting at least one defect from a group consisting of a short circuit defect, a semi-short circuit defect, an open circuit defect and a semi-open circuit defect of circuit patterns comprising the steps of:
converting an image of the circuit patterns, which have pads to which pad coordinates are given, into electrical image signals by using an image pickup device;
transforming said electrical image signal into a binary image pattern represented by binary image signals of picture elements so that said binary image pattern is formed corresponding to said circuit patterns and to a background for the circuit patterns;
expanding a space of said circuit patterns in said binary image pattern by eliminating binary image signals showing said circuit patterns at a predetermined point of said binary image pattern in relation to a narrow portion of the space of said circuit patterns, recognized on the basis of an arrangement of said circuit patterns and said background neighboring on the predetermined point of said binary image pattern while preserving the connectivity of said circuit patterns in said binary image pattern;
reducing the size of said circuit patterns of said binary image pattern by a logical processing operation operating on space-expanded circuit patterns represented by the binary image signals of picture elements, while preserving the connectivity of said circuit patterns of said binary image pattern;
examining the connectivity between said pad coordinates on said size-reduced circuit pattern; and
detecting a defective circuit pattern where there is a non-coincidence when comparing the examined connectivities with reference connectivities.

5,301,249
CATOPTRIC COUPLING TO AN OPTICAL FIBER

David P. Hamblen, and David S. Ross, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,325
Int. Cl.[5] G02B *6/24*
U.S. Cl. 385—31 23 Claims

1. A catoptric coupling device for directing radiant energy from a source to an optical fiber, said device comprising:
a first mirrored surface having a first aperture therein;
a second mirrored surface facing said first mirrored surface, said second mirrored surface having a second aperture therein, said second aperture coaxial with said first aperture;
a housing defining an enclosed space having opposed ends spaced along a longitudinal axis coaxial with said first aperture, wherein said first mirrored surface and said second mirrored surface are positioned within said housing; and
an end cap threaded to each of said opposed ends of said housing;
wherein one of said end caps comprises means for positioning a source of radiant energy coaxially with said first aperture and opposite said second mirrored surface and wherein the other of said end caps comprises means for positioning a light receiving end of an optical fiber coaxially with said second aperture,

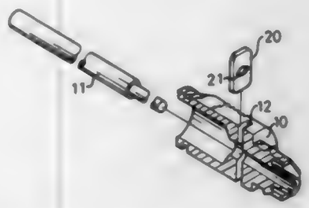


wherein substantially all radiant energy generated by a source of radiant energy so positioned passes through said first aperture and impinges upon said second mirrored surface, said radiant energy thereby being reflected by said second mirrored surface so as to impinge upon said first mirrored surface, wherein said radiant energy impinging upon said first mirrored surface is thereby reflected by said first mirrored surface so as to pass through said second aperture and thereby impinge upon a light receiving end of an optical fiber so positioned.

5,301,250
OPTICAL FIBER TERMINATOR

Yu F. Cheng, No. 7, Fu Hsing St., Tu Cheng Hsiang, Taipei Hsien, Taiwan

Filed Apr. 19, 1993, Ser. No. 49,763
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—76 2 Claims

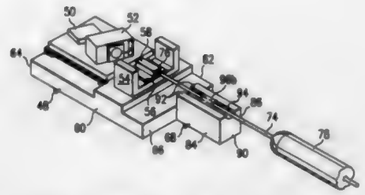


2. An optical fiber connector comprising a tubular housing (10), a slot (12) formed through a corresponding upper periphery and lower periphery of said housing (10), and a securing plate (20) being firmly positioned inside said slot (12) with two distal ends of the plate substantially mating with two ends of said slot (12), a hole (21) being formed at the center of said plate (20) for firmly securing a fiber (11) therethrough.

5,301,251
METHOD AND APPARATUS FOR AFFIXING AN OPTIC FIBER TIP IN POSITION WITH RESPECT TO A FIBER COMMUNICATIONS CIRCUIT

Andrew J. Moore; David L. S. Ma; Robert L. Bontz, and Harry B. Bonham, Jr., all of Plano, Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Dec. 15, 1992, Ser. No. 990,899
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—91 18 Claims



14. A method of affixing a tip of an optic fiber in position with respect to a fiber communications circuit disposed on a carrier, comprising the steps of:
locating a glass positioning member proximate said tip of said optic fiber;
fusing said glass positioning member to said fiber and to a block;
fusing said block to said carrier, and wherein said block has a first surface and said carrier has a second surface, wherein said first surface is contoured in shape to coincide with said second surface;
placing said first surface in contact with said second surface; and
laterally adjusting said block with respect to said carrier before said second-stated step of fusing.

5,301,252
MODE FIELD CONVERSION FIBER COMPONENT

Hisaharu Yanagawa, and Hirokazu Hayakawa, both of Tokyo, Japan, assignors to The Furukawa Electric Company, Ltd., Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 949,727
Claims priority, application Japan, Sep. 26, 1991, 3-277194
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—96 2 Claims



1. A mode field conversion fiber component comprising:
a connection end surface of a first optical fiber, having a mode field that is one of the same and similar to a mode field of an optical device which is connected to the first optical fiber, said connecting end surface of said first optical fiber being fusion connected to a connection end surface of a second optical fiber having a different mode field than the first optical fiber, to form an interface between said first and second optical fibers;
each of said first and second optical fibers having a core surrounded by a cladding; and
the cladding of each optical fiber near said interface containing an amount of dopant therein obtained from a dopant in the respective core, such that said mode fields of said first and second optical fibers are continuously varied by said dopant near said interface so that said mode fields of said first and second optical fibers conform with each other at said interface.

5,301,253
GLASS FIBER WITH SOLDERABILITY ENHANCING HEAT ACTIVATED COATING

Sidney H. Goodman, Calabasas, Calif., assignor to Hughes Aircarft Company, Los Angeles, Calif.

Filed Nov. 9, 1992, Ser. No. 973,348
Int. Cl.[5] G02B *6/22*
U.S. Cl. 385—128 8 Claims

1. A glass fiber structure adapted for forming a solder connection comprising:
a) a glass fiber;
b) a metallic layer surrounding said glass fiber; and
c) a protective layer coating the entirety of said metallic layer, said protective layer comprising a mixture of a dicarboxylic acid fluxing agent and a chose protective material which is unreactive with said dicarboxylic acid and which forms a film with said dicarboxylic acid that alters at a chosen soldering temperature to release said dicarboxylic acid, wherein, prior to exposure to said soldering temperature, said chosen protective material maintains said metallic layer in an oxide-free state and said protective layer protects aid metallic layer from external contamination to thereby enhance the solderability of said metallic layer when exposed to said soldering temperature at which said fluxing agent is released.

5,301,254
TRANSPARENT THERMOPLASTIC MOLDING COMPOUND AND USE THEREOF

Peter Blickle, Kelkheim; Jochen Coutandin, Langenlonsheim; Peter Herbrechtsmeier, Königstein/Taunus; Klaus Hintzer, Burgkirchen, and Gerhard Wieners, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/00585, § 371 Date Nov. 7, 1991, § 102(e) Date Nov. 7, 1991, PCT Pub. No. WO90/12043, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 13, 1990, Ser. No. 768,778
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912148
Int. Cl.[5] C08F *214/26*
U.S. Cl. 385—143 6 Claims

1. A beam waveguide comprising a molding compound wherein said molding compound comprises:
a) 40 to 90% by weight of units derived from tetrafluoroethylene, and
b) 60 to 10% by weight of units derived to the extent of 0 to 100%, based on the sum of the compounds I and II, from compounds of formula I:

$$CF_2=CF-O-(CF_2-CF(CF_3)-O)_m-(CF_2-)_n-CF_3 \quad (I)$$

wherein m is an integer from 0 to 3 and n is an integer from 1 to 5, and derived to the extent of 100 to 0%, based on the sum of the compounds I and II, from compounds of formula II:

$$CF_2=CF-O-(CF_2-CF(CF_3)-O_p-(CF_2-)_q-COO-R \quad (II)$$

wherein p is an integer from 0 to 3, q is an integer from 1 to 4 and R is a hydrogen atom, a C_6–C_{10} aryl radical or a C_1–C_8 alkyl radical and wherein the sum of the compounds I and II is at least 10% by weight and at most 60% by weight.

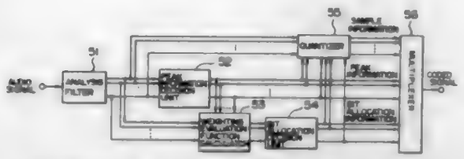
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,255

AUDIO SIGNAL SUBBAND ENCODER

Kiyotaka Nagai, Nishinomiya, and Yasushi Nakajima, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 5, 1991, Ser. No. 786,798
Claims priority, application Japan, Nov. 9, 1990, 2-305114
Int. Cl.[5] G10L *3/02*
U.S. Cl. 395—239 **11 Claims**



1. An audio signal subband encoder comprising:
an analysis filter for dividing an audio signal into a plurality of subbands and dividing a signal of each subband into frames, each frame having a predetermined time;
a peak information decision unit for (i) deciding a peak from absolute values of a signal in said frames for every subband, (ii) quantizing said peak and (iii) outputting said quantized peak as peak information;
a weighting evaluation function calculator for calculating and outputting a weighting evaluation function by subtracting a product of a logarithm of a square root of a masked power of each subband and a weighting coefficient from a logarithm of said peak information supplied from said peak information decision unit for every subband, wherein said masked power of a subband is a raised hearing threshold resulting from a masking effect caused by the hearing threshold in quiet in addition to signals in the subband itself and adjacent subbands;
a bit allocation decision unit for deciding a number of bits to be allocated to each subband by using the weighting evaluation function supplied from said weighting evaluation function calculator and for outputting bit allocation information; and
a quantizer for quantizing the subband signal supplied from said analysis filter on the basis of the peak information supplied from said peak information decision unit and the bit allocation information supplied from said bit allocation decision unit and for outputting sample information for every subband.

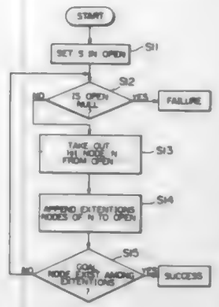
5,301,256

STATE SPACE SEARCH SYSTEM

Shizuka Nakamura, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,105
Claims priority, application Japan, Sep. 20, 1991, 3-268852
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—10 **4 Claims**

1. A state space search method for searching for a goal state within a state space consisting of a plurality of states, said state space search method comprising the steps of:
selecting a state for searching;
determining current neighboring states of state under search according to a transition rule;
determining an evaluation value of the state under search according to an evaluation function;
comparing evaluation value of the current state under search with a predetermined evaluation value of the goal state;
determining evaluation values of the neighboring states according to the evaluation function when the evaluation value of the current state under search is different from the predetermined value; and
designating a neighboring state as a next state under search when the evaluation value of the current state under search is different from the predetermined value, the neighboring state having a minimum evaluation value



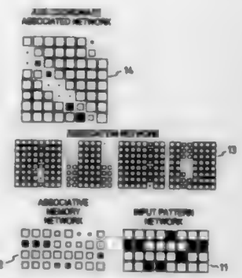
amongst the evaluation values of the neighboring states and the current state under search.

5,301,257

NEURAL NETWORK

Jun Tani, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 915,462
Claims priority, application Japan, Jul. 26, 1991, 3-209790
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—11 **2 Claims**



1. A neural network comprising:
a standard pattern associative memory network for storing at least one standard pattern;
an input pattern network for receiving any given input pattern;
a coordinate associated network for storing a predetermined restriction condition; and
an association network which receives as inputs signals from said standard pattern associative memory network, said input pattern network, and said coordinate associated network, respectively, and which becomes active in accordance with a matching status between the input pattern and the standard pattern.

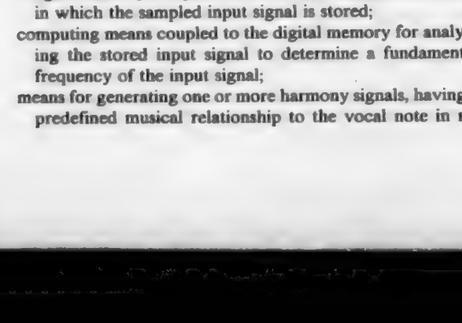
5,301,258

FUZZY BACKWARD REASONING SYSTEM AND EXPERT SYSTEM UTILIZING THE SAME

Yoichi Hayashi, Hitachi, Japan, assignor to Hitachi, Engineering Corp, Ltd., Hitachi, Japan

Division of Ser. No. 666,923, Mar. 11, 1991. This application Jan. 4, 1993, Ser. No. 407
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—52 **14 Claims**

1. A fuzzy backward reasoning system comprising:
memory means for storing a causality table having m×n elements, each of which indicates a membership grade of a corresponding cause to a corresponding effect and is represented by interval data within a predetermined numerical data range;
first generating means for reading out the causality table from said memory means and generating basic and auxiliary matrix tables each having m×n elements from the causality table and an input effect matrix table having n elements which correspond to n effects and are respectively represented by interval data within the predetermined numerical data range;
second generating means for generating a minimum matrix table having m elements, each of which represent a least upper bound value of a corresponding row of the basic matrix table;



third generating means for generating from the basic and auxiliary matrix tables a checking matrix table having m×n elements, each of which has a flag set when representing a possibility of influence to a certainty of a corresponding cause;
modifying means for modifying the checking matrix table to selectively reset each flag in accordance with corresponding elements of the basic and minimum matrix tables; and
fourth generating means for generating from elements having the flags set of the checking matrix table and the basic and minimum matrix tables a cause matrix table having m elements, each of which is represented by interval data within the predetermined numerical data range, the cause matrix table element interval data representing a certainty of a corresponding cause.

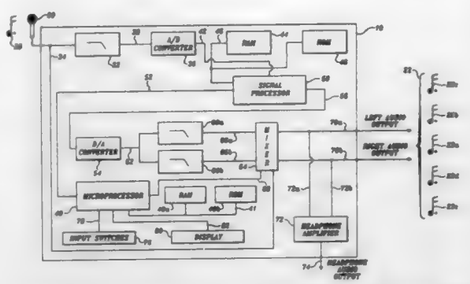
5,301,259

METHOD AND APPARATUS FOR GENERATING VOCAL HARMONIES

Brian C. Gibson, and John P. Bertsch, both of Victoria, Canada, assignors to IVL Technologies Ltd., Victoria, Canada

Continuation of Ser. No. 719,195, Jun. 21, 1991. This application Mar. 22, 1993, Ser. No. 34,526
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] G01L *9/10*
U.S. Cl. 395—2.67 **12 Claims**

1. Apparatus for analyzing an input signal representative of a vocal note and for producing a plurality of harmony signals that are combined with the input signal signal to produce a multivoice output, comprising:
an analog-to-digital converter for sampling the input signal;
a digital memory, coupled to the analog-to-digital converter, in which the sampled input signal is stored;
computing means coupled to the digital memory for analyzing the stored input signal to determine a fundamental frequency of the input signal;
means for generating one or more harmony signals, having a predefined musical relationship to the vocal note in response to the fundamental frequency of the input signal; and



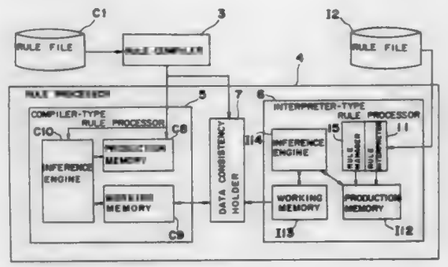
a mixer for combining the one or more harmony signals with the input signal to produce the multivoice output.

5,301,260

INFERENCE PROCESSOR USING DATA CONSISTENCY HOLDER

Kazuo Miyashita, Osaka, Japan, assignor to Matsushita Electric Industrial, Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 563,558, Aug. 6, 1990, abandoned. This application Jul. 7, 1992, Ser. No. 908,884
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—54 **6 Claims**



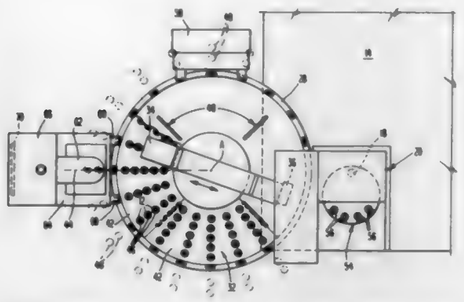
1. An inference processor comprising:
a compiler-type rule processor comprising:
a rule file for storing user-defined rules;
a rule compiler for expanding said rules into a rule network;
a production memory for storing compiled rules;
a working memory for storing intermediate inference processing results; and
an inference engine which makes an inference by using said production memory and said working memory;
an interpreter-type rule processor comprising:
a rule file for storing user-defined rules;
a rule interpreter for successively interpreting said rules;
a production memory for storing interpreted rules;
an inference engine which uses said production memory for inference processing; and
a working memory for storing intermediate inference processing results; and
a data consistency holder for maintaining, based on the rule files of both said compiler-type and interpreter-type rule processors, the consistency of data used in common by said compiler-type rule processor and said interpreter-type rule processor by matching the data when said data consistency holder is started by said compiler-type ruler processor and said interpreter-type rule processor after inference processing is completed by both said compiler-type and interpreter-type rule processors.

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5,301,261
PRE-INJECTION CHROMATOGRAPHIC SAMPLE SEQUENCER

John S. Poole, Landenberg, and L. Thompson Staats, III, Lincoln University, both of Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 324,362, Mar. 15, 1989, abandoned. This application Apr. 16, 1992, Ser. No. 870,488
Int. Cl.[5] G06F *9/00*; G05D *1/00*; B25J *9/00*
U.S. Cl. 395—82 **7 Claims**



1. In a laboratory system having chromatographic means for analyzing a sample contained in a vial, wherein the chromatographic means includes a column, a sample port atop the column, on-column means both for withdrawing the sample from the vial and for injecting the withdrawn sample into the column through the sample port, wherein the system includes a processing means for processing the sample prior to its withdrawal from its vial, a method of sequencing a plurality of samples between the processing means and the withdrawing and injecting means, comprising the steps of:

holding a plurality of samples using a circular tray that is attached to the chromatographic means, said circular tray including a central axis, wherein the tray comprises a plurality of physical locations each of which is adapted for storage of a single vial;

defining a plurality of virtual locations, one of which is adapted to juxtapose a vial with the processing means and one of which is adapted to juxtapose a vial with the sample port;

mounting said tray to the chromatographic means such that one of said plurality of virtual locations is proximate to the sample port;

transferring a vial using a robot means between its respective physical location and selected ones of said plurality of virtual locations including at least the sample port; and

controlling said robot means to optimize movement thereof for transferring a single vial between its respective physical location and said selected ones of said plurality of virtual locations.

5,301,262
IMAGE PROCESSOR

Hideaki Kashiwagi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,601
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—117 **12 Claims**

1. An image processor comprising:

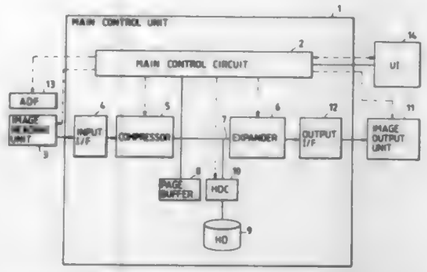
means for reading an image on a document to produce image data thereof:

means for storing on a page basis the image data provided from the image reading means;

means for setting an output page order of the image data read from the image storing means;

means for outputting the image data read from the image storing means as a hard copy of the document; and

means for controlling the image storing means and the image

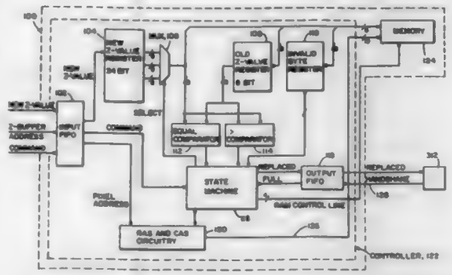


output means so that the image data is output from the image storing means on a page basis according to the output page order and the hard copy is output from the image output means according to the output page order.

5,301,263
HIGH MEMORY BANDWIDTH SYSTEM FOR UPDATING Z-BUFFER VALUES

Charles R. Dowdell, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 18, 1990, Ser. No. 584,066
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—122 **14 Claims**



7. A method of updating the z-values representing depths at pixel locations of a computer graphics screen, comprising:

a) providing a new z-value for a pixel of the graphics screen;

b) partitioning the new z-value into portions;

c) performing an update of z-values by:

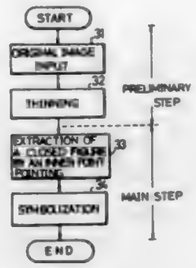
i) comparing a most significant portion of the new z-value with a corresponding portion of a previously stored z-value; and

ii) based on the result of the step of comparing, performing one of the functions of (1) replacing the previously stored z-value by the new z-value, (2) repeating steps (i) and (ii) for a next most significant portion of the z-value, and (3) ending the comparison.

5,301,264
FIGURE ENCODER

Osamu Hori, and Akio Okazaki, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 269,124, Nov. 9, 1988, abandoned. This application Jul. 16, 1992, Ser. No. 913,985
Claims priority, application Japan, Nov. 12, 1987, 62-285902
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—128 **4 Claims**



1. A figure encoder, comprising:

image memory means for recording images;

display means for displaying the images recorded in the image memory means;

pointing means for specifying a point on the images displayed by the display means;

extracting means for extracting an image of a figure which at least roughly encloses the specified point in accordance with a coordinate of the specific point;

means for detecting coordinates of end points of line segments involved in the figure extracted by the extracting means when the figure encloses the specified point incompletely;

means for interpolating between the detected end points on the images recorded in the image memory means to produce a closed figure which completely encloses the specified point; and

means for encoding the image of the closed figure obtained by the interpolating means.

5,301,265
APPARATUS FOR CONVERTING N PICTURE ELEMENTS TO M PICTURE ELEMENTS

Masaharu Itoh, Yamato, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 493,091, Mar. 12, 1990. This application Aug. 4, 1992, Ser. No. 924,701
Claims priority, application Japan, Mar. 15, 1989, 1-60753
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—128 **2 Claims**

1. An apparatus for converting N picture elements (pels) of an image to an M pel scaled representation of said image, where N and M are each integers greater than 0, the combination comprising:

a first register for storing −N;

a second register for storing M;

a third register for storing a sum (S), wherein initially S=M−N;

a discriminator, which is responsive to S, for generating a first signal when S is not negative, and for generating a second signal when S is negative;

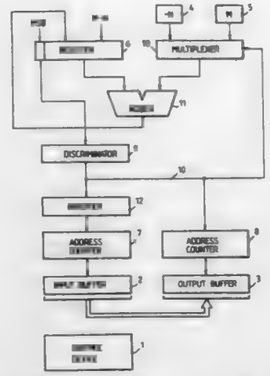
an adder for adding the value of S stored in said third register with −N in response to said first signal, and for adding the value of S stored in said first signal, and for adding the value of S stored in said third register with M in response to said signal, for in each instance providing a new S for storage in said third register;

a first address counter which is incremented by said first signal;

a second address counter which is incremented by said second signal;

an input buffer including N member positions for storing N pels of said image;

an output buffer including M memory positions, with each of said M memory positions initially being set to 0; and

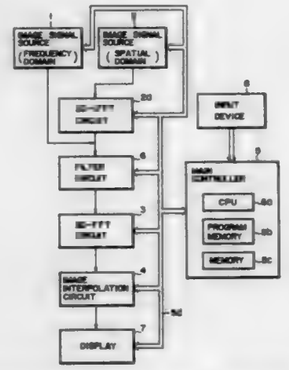


means responsive to said first signal and to incremented count of said first address counter and to incremented count of said second address counter and for transferring at least one of said N pels from said input buffer to at least one of said M pel positions of said output buffer to form said M pel scaled representation of said image.

5,301,266
APPARATUS TO IMPROVE IMAGE ENLARGEMENT OR REDUCTION BY INTERPOLATION

Tokunori Kimura, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1990, Ser. No. 616,228
Claims priority, application Japan, Nov. 20, 1989, 1-301052
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—139 **14 Claims**



1. An image interpolation apparatus comprising:

filter circuit means having a filter function, for receiving an image signal in a frequency domain and for generating a filtered image signal in response thereto, said image signal representing a first image;

Fourier transformation circuit means for receiving said filtered image signal and for performing a Fourier transformation thereof to output a spatial image signal;

interpolation circuit means having a modulation transfer

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function for receiving said spatial image signal and for performing a linear interpolation thereof to generate a transformed image signal, said transformed image signal representing a second image, said second image being an enlargement or a reduction of said first image; and

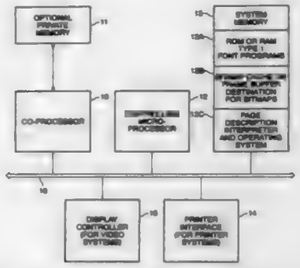
means for controlling the filter function of said filter means such that said filter circuit means compensates for said modulation transfer function.

5,301,267

INTELLIGENT FONT RENDERING CO-PROCESSOR

Christopher R. Hassett; Harry J. Collins, both of Cupertino, and John W. Nogrady, Santa Clara, all of Calif., assignors to Adobe Systems Incorporated, Mountain View, Calif.

Filed Sep. 27, 1991, Ser. No. 767,259
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—150 **9 Claims**



1. A method for displaying rasterized objects comprising:

accessing outline data from a computer memory or storage medium, said outline data representing said object in a first coordinate space,

deriving from said outline data representing said object in a first coordinate space the corresponding data representing said object in a second coordinate space, said outline data in said first coordinate space possessing regional relationship information for each of a plurality of regions, including the steps of:

(a) transforming said regional relationship information into said second coordinate space using a linear transformation;

(b) deriving from the transformed regional relationship information for each of the plurality of regions a non-linear transformation matrix expressed as a plurality of piecewise linear transformation matrices, one for each of the regions;

(c) applying said non-linear transformation matrix to said outline data representing said object in said first coordinate space to derive a second representation of said object in said second coordinate space;

(d) converting said second representation of said object to raster data describing said object in a form to be displayed on a display device; and

(e) displaying said second representation of said object on a raster device.

5,301,268

APPARATUS FOR TRANSFERRING INFORMATION BETWEEN DIFFERENT WINDOW SYSTEMS

Masaru Takeda, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

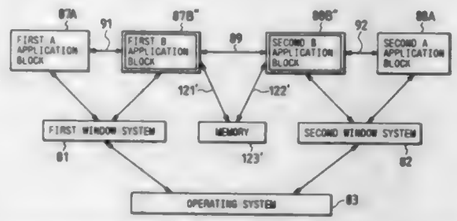
Filed Oct. 10, 1990, Ser. No. 595,878
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—157 **11 Claims**

6. An information transferring system in a data processing system including a display apparatus having a display screen and a central processing unit for performing operations associated with different window system including managing a display of a plurality of windows on the display screen, wherein each of said different window systems uses a different process to manage the display of the plurality of windows on said display screen, the information processing system comprising:

concurrent window system display means for displaying on said display screen a plurality of windows operated by the different window systems;

data identifying means for identifying data displayed in a first window displayed by a first window system of the different window system selected by a second window system which is different from the first window system;

data selecting means, coupled to said data identifying means, for selecting the data identified by said data identifying means for transfer to a first window of the plurality of windows displayed by said second window system;



communicating means for notifying the second window system that selection of the selected data has been completed by said data selecting means;

transfer demanding means, responsive to said notice from said communicating means, for transferring a demand to the first window system having made the selection of the selected data from the second window system having selected the selected data, wherein said demand initiates the transfer of the selected data; and

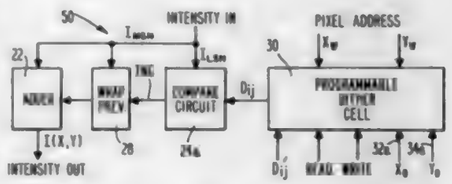
data transferring means for transferring the selected data to the first window of the second window system specified as a destination window system of the selected data transferred in accordance with the demand made by the transfer demanding means.

5,301,269

WINDOW-RELATIVE DITHER CIRCUIT

Byron A. Alcorn, Ft. Collins; Robert W. Cherry, Loveland; Mark D. Coleman, and Brian D. Rauchfuss, both of Ft. Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1991, Ser. No. 670,548
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—158 **12 Claims**



7. A method for dithering a pixel value corresponding to first and second window-relative coordinates (X_W, Y_W), said window-relative coordinates defining a location relative to a predefined point in a window of a display, comprising the steps:

(a) determining first and second transformation values;

(b) programmatically reading a dither value from a row-column address of a dither value storage cell, said row-column address determined as a function of at least said window-relative coordinates (X_W, Y_W) and said first and second transformation values;

(c) comparing said dither value read from said dither cell with a first part of said pixel value and generating a dither signal in accordance with said comparison;

(d) determining whether said second part would wrap if dithered and, if so, overriding or inhibiting said dither signal, thereby preventing the dithering of said second part; and

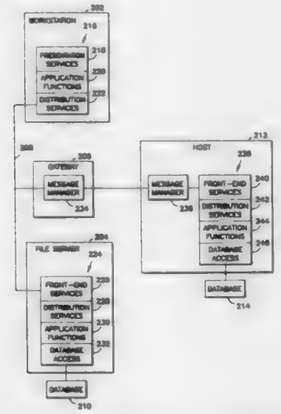
(e) dithering a second part of said pixel value in accordance with said dither signal.

5,301,270

COMPUTER-ASSISTED SOFTWARE ENGINEERING SYSTEM FOR COOPERATIVE PROCESSING ENVIRONMENTS

Steven G. Steinberg; Elizabeth A. Zucker, both of New York, N.Y.; Yannis S. Arvanitis, Chicago, Ill.; Anil R. Bakshi, Bogota, N.J.; Matthew W. Olenich, New York, N.Y.; Thomas G. Werner, Jersey City, N.J.; Carl. G. Longnecker, Jr, Glencoe; Bart Schutte, Chicago, both of Ill., and William D. Reynolds, Medford, N.J., assignors to Anderson Consulting, Chicago, Ill.

Filed Dec. 18, 1989, Ser. No. 452,673
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—161 **15 Claims**



1. A computer-assisted software engineering system for cooperative processing environments, comprising:

(a) design means for creating, storing, retrieving, and editing specifications describing a first user application in an electronic data format;

(b) construction means for generating the first user application from the specifications, the first user application being capable of execution on one of a plurality of computer hardware platforms; and

(c) run-time execution architecture means for executing the first user application on the computer hardware platforms, the run-time execution architecture means comprising:

(i) pre-programmed presentation services means for managing a plurality of user-interface functions for the first user application;

(ii) pre-programmed distribution services means for routing and transferring messages between the first user application and a second user application; and

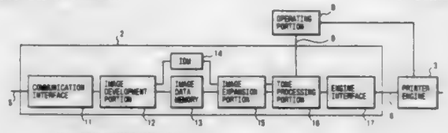
(iii) user-programmed application services means for implementing user-defined functions in the first user application.

5,301,271

IMAGE PROCESSING SEPARATELY PROCESSING TWO-DENSITY-LEVEL IMAGE DATA AND MULTI-LEVEL IMAGE DATA

Seiichiro Hiratsuka; Takanobu Kajikawa; Takunori Tsuji, all of Fukuoka, and Takashi Kitada, Kasuga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1992, Ser. No. 863,972
Claims priority, application Japan, Jul. 11, 1991, 3-170972; Jul. 11, 1991, 3-170973; Jul. 11, 1991, 3-170974; Jul. 22, 1991, 3-180840; Jul. 23, 1991, 3-182198
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **9 Claims**



1. An image processing system comprising:

reception means for receiving image information;

output means for outputting image information at high resolution in case where the received image information is of a two-density-level type, for outputting image information at resolution lower than the high resolution in case where the received image information is of a type other than a two-density-level type and for outputting discrimination information indicating whether or not the image information to be output is of a two-density-level type; and

processing means for performing a first image processing of the image information indicated by the discrimination information sent from the output means as of a two-density-level type, for performing a second image processing of the image information indicated by the discrimination information sent from the output means as of a type other than a two-density-level type, and for outputting a signal representing a result of each of the first and second image processings,

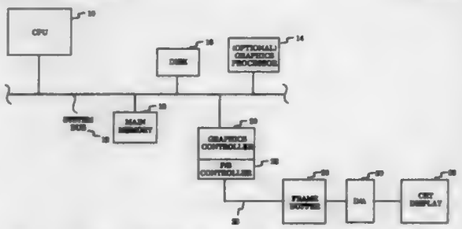
wherein the processing means performs an operation of changing the resolution corresponding to the image information of a two-density-level image type as equal to that corresponding to the image information of a type other than a two-density-level image type.

5,301,272

METHOD AND APPARATUS FOR ADDRESS SPACE ALIASING TO IDENTIFY PIXEL TYPES

Mark D. Atkins, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 25, 1992, Ser. No. 981,836
Int. Cl.[5] H04N *5/92*
U.S. Cl. 395—165 **25 Claims**



15. A computer display system comprising:

a frame buffer for storing a plurality of pixel data at defined addresses in said frame buffer, said frame buffer configured to store pixel data of a predefined pixel type;

at least one processor for providing a pixel data stream, said pixel data stream including pixel data and a pixel type tag said pixel type tag identifying one of a plurality of pixel types said pixel data comprises, said pixel data stream

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further including a pixel address for storing said pixel data in said frame buffer;

a graphics controller coupled to said processor, said graphics controller receiving said pixel data and said pixel type tag, and determining based on said pixel type tag whether said pixel data provided by said processor matches the predefined pixel type for which said frame buffer is configured, such that if said types do not match, a frame buffer controller means coupled to said graphics controller converts said pixel data stream received by said graphics controller into pixel data of said predetermined pixel type for which said frame buffer is configured;

said graphics controller writing said pixel data into said frame buffer at said pixel address;

display means coupled to said frame buffer for reading said pixel data stored in said frame buffer and displaying said data on a display.

5,301,273

METHOD AND APPARATUS FOR MANAGING ADDRESS INFORMATION UTILIZED IN MESSAGE TRANSMISSION AND RECEPTION

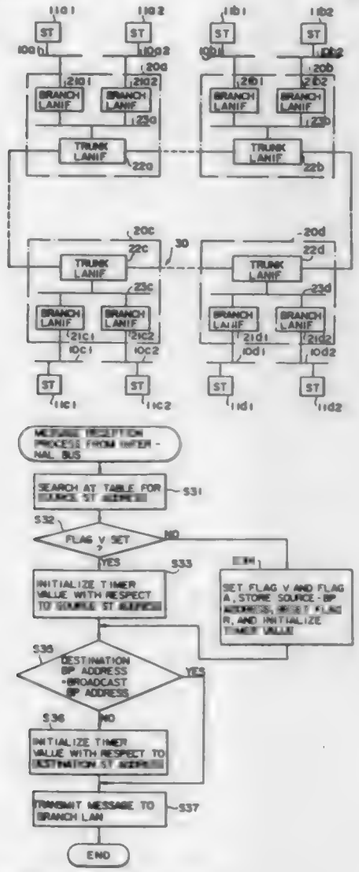
Kaniyoshi Konishi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 18, 1991, Ser. No. 717,063

Claims priority, application Japan, Jun. 18, 1990, 2-157654

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **11 Claims**



1. A network system comprising:

at least one trunk network;

a plurality of branch networks, each having at least one station;

a plurality of trunk interfaces, each of the trunk interfaces being coupled to the trunk network;

a plurality of branch interfaces, each of the branch interfaces being coupled to one of the branch networks; and

a plurality of buses for coupling at least one of the trunk interfaces to at least one of the branch interfaces, and

wherein each of the branch interfaces includes:

a table for registering a plurality of address information;

means for determining address information which designates a station in which at least one of no message transmission and no message reception is executed during a predetermined period;

means for transmitting a message to the station which is designated by the determined address information when the message to be transmitted to the station which is designated by the determined address information is a first message; and

means for deleting the determined address information from the table and transmitting the message in a broadcast manner when no response message to the first message is received.

5,301,274

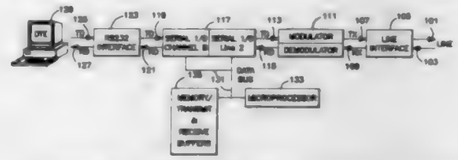
METHOD AND APPARATUS FOR AUTOMATIC BALANCING OF MODEM RESOURCES

Ping Li, New Brighton, Minn., assignor to Multi-Tech Systems, Inc., Minneapolis, Minn.

Filed Aug. 19, 1991, Ser. No. 746,857

Int. Cl.[5] H04B *14/04*; **H04M** *11/06*; **G06F** *3/00, 13/00*

U.S. Cl. 395—250 **2 Claims**



1. A modem for use in transferring data between a communication line and a data terminal, comprising:

a memory containing a transmit buffer and a receive buffer each for storing bytes of data;

modulator means for modulating compressed data and transferring it onto the communication line,

demodulator means coupled to the memory for transferring compressed data from the communication line and for demodulating the compressed data to produce demodulated data and for transferring the demodulated data to the receive buffer;

processing means coupled to the modulator means and the memory and operative in an input mode for retrieving data from the transmit buffer, compressing it, and supplying it to the modulator means, and in an output mode for retrieving data from the receive buffer, decompressing it, and presenting it to the data terminal; and

mode control means coupled with the processing means for controlling the relative amount of time the processing means operates in the input mode and the output mode according to the quantity of data in the transmit and receive buffers, the mode control means including means for operating the processing means in an operating loop, and in a first part of the loop checking the quantity of data in the transmit and receive buffers, and in a second subsequent part of the loop operating the processing means alternately in the input mode and the output mode with each mode active an amount of time responsive to the quantity of data in the transmit and receive buffers, the mode control means including means responsive to the presence of data in the transmit buffer and absence of data in the receive buffer for causing the processing means to

be active in the input mode an amount of time substantially more than in the output mode in the second subsequent part of the loop, the mode control means including means responsive to the absence of data in the transmit buffer and presence of data in the receive buffer to cause the processing means to be active in the output mode an amount of time substantially more than in the input mode in the second subsequent part of the loop, the mode control means including means responsive to the presence of data in the transmit buffer and presence of data in the receive buffer to cause the processing means to be active in the output mode substantially the same amount of time as in the input mode in the second subsequent part of the loop.

5,301,275

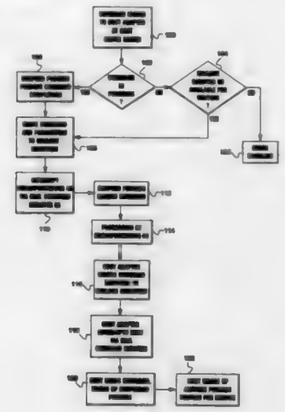
DATA TRANSFER SYSTEM WITH VARIABLE DATA BUFFER SIZE AND PROGRAMMABLE INTERRUPT FREQUENCY

Michael R. Vanbuskirk, Plano, and Jon M. Meinecke, Denton, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 770,600, Oct. 3, 1991. This application Dec. 23, 1992, Ser. No. 996,524

Int. Cl.[5] G06F *13/24*

U.S. Cl. 395—250 **5 Claims**



1. A communication system, comprising:

a host computer, including:

a system bus;

memory connected to said system bus for storing data; and

means coupled to said system bus responding to a first interrupt signal for transferring stored data to and from said memory; and

a host adapter coupled to said host computer system bus, including:

a host adapter bus,

memory connected to said host adapter bus for storing data transferred from and for transferring to said host computer memory,

means connected to said host adapter bus and said computer system bus for providing said first interrupt signal,

a programmable timer coupled to said host adapter bus and providing a second interrupt signal each time said programmable timer times out, and

means connected to said first interrupt signal providing means and said programmable timer for programming said programmable timer to time-out a predetermined number of times per second and for indicating to said first interrupt signal providing means to provide said first interrupt signal each time said programming means receives said second interrupt signal.

5,301,276

METHOD AND DEVICE FOR ASSIGNING I/O ADDRESS IN DATA PROCESSING APPARATUS

Minoru Kimura, Ora, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 17, 1991, Ser. No. 715,998

Claims priority, application Japan, Jun. 29, 1990, 2-171845

Int. Cl.[5] G06F *15/02*

U.S. Cl. 395—275 **14 Claims**

1. An I/O address assigning device in a data processing apparatus comprising:

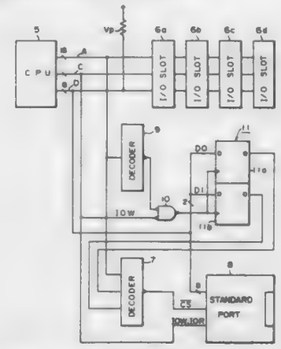
a first I/O port for connecting the data processing apparatus to an I/O port device, said first I/O port having an address assigned from a plurality of predetermined I/O addresses;

an I/O connecting portion for connecting an additional I/O port to the data processing apparatus, the additional I/O port having an address assigned from the plurality of predetermined I/O addresses and a register that stores data;

control means for disabling on operation of the first I/O port;

detecting means for detecting a preset I/O address of the additional I/O port while the first I/O port is disabled, the detecting means including:

reading and writing means for writing and reading data at the predetermined I/O address;



identification detecting means for detecting if the data written by the reading and writing means is identified with data read by the reading and writing means; and

judging means for judging that the predetermined I/O address at which the data is written to and read from is the I/O address of the additional I/O port when identification is detected by the identification detecting means; and

assigning means for assigning to the first I/O port an I/O address different from the preset I/O address of the additional I/O port in response to the detecting means detecting the preset I/O address.

5,301,277

METHOD AND APPARATUS FOR COMMUNICATING PERIPHERAL DATA TO/FROM MINOR OPERATING SYSTEMS RUNNING AS SUBPROCESSES ON A MAIN OPERATING SYSTEM

Hirouki Kanai, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 812,538

Claims priority, application Japan, Apr. 10, 1991, 3-106761

Int. Cl.[5] G06F *13/00*

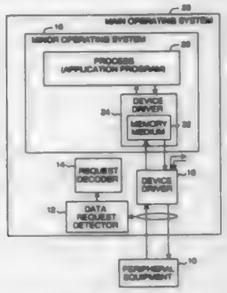
U.S. Cl. 395—275 **22 Claims**

1. A computer system with a minor operating system that runs under a main operating system and where the minor operating system uses the main operating system to do input-/output, the system comprising:

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a minor operating system, having a memory for temporarily storing data for exchange with a plurality of peripherals and a first device driver that shuttles any data I/O between an application program and said peripherals via said memory; and

a main operating system having a detector that responds to data I/O requests with peripherals, a request handler that determines whether or not the request is directed to the minor operating system, and a second device driver for directing data I/O between said memory and said peripherals when said request has been determined to belong to the minor operating system.



5,301,278

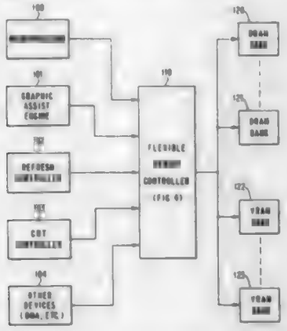
FLEXIBLE DYNAMIC MEMORY CONTROLLER

Ronald J. Bowater, Romsey, England; Steven P. Larky, New York, N.Y.; Joe C. St. Clair, Round Rock, Tex., and Paolo G. Sidoli, Romsey, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 666,553, Mar. 7, 1991, which is a continuation of Ser. No. 187,706, Apr. 29, 1988. This application Apr. 23, 1992, Ser. No. 873,880

Int. Cl.[5] G06F *13/10*

U.S. Cl. 395—275 23 Claims



12. In a data processing system including at least two devices capable of sourcing memory access requests with different timings to a plurality of memory banks, wherein at least one of the memory banks is capable of having an access characteristic that differs from an access characteristic of others of the memory banks, memory controller means responsive to memory access requests for providing control signals to the plurality of memory banks for controlling sequences of operation of the plurality of memory banks, the memory controller means comprising:

means for decoding a memory access request for identifying which one of the plurality of memory banks is to be addressed;

means for storing information that specifies first memory access characteristics for each of the plurality of memory banks, the first memory access characteristics for each of the plurality of memory banks being related to an operating speed of a memory bank for which the information is stored, the storing means further storing information that specifies a second memory access characteristic for each of the plurality of memory banks, the second memory access characteristic for each of the plurality of memory banks being related to an identification of a device that sources a memory access request to the memory bank; and

means, having an input coupled to an output of the decoding means and an input coupled to an output of the storing means, for providing control signals from the memory controller means to the identified memory bank, the providing means including means for determining a duration of a cycle time of the control signals, during a time when the control signals are provided to the identified memory bank, in accordance with the information stored within the storing means for the identified memory bank and also in accordance with an identification of the device that sourced the memory access request to the identified memory bank.

5,301,279

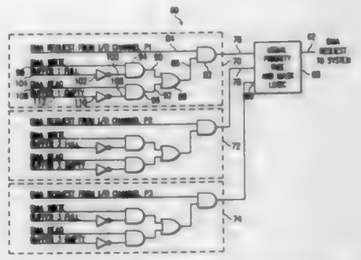
APPARATUS FOR CONDITIONING PRIORITY ARBITRATION

Mack W. Riley, Austin, and John D. Upton, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 451,194, Dec. 15, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 982,133

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 14 Claims



1. An input/output channel control apparatus for regulating data transfer operations, said apparatus comprising:

a data storage device;

at least two peripheral devices, each peripheral device having a predetermined priority ranking;

at least two data buffer means, each for storing data being transferred between said data storage device and at least one of said at least two peripheral devices;

means for indicating a data status of each of said data buffer means, the data status indicating whether the data buffer means are ready to handle a data transfer request;

priority arbitration means for regulating said data transfer operations by granting a data transfer request to one among contending ones of said peripheral devices requesting data transfer, based upon the predetermined priority ranking of each of said peripheral devices; and

priority conditioning means coupled to said priority arbitration means for altering said predetermined priority ranking by disabling the data transfer request of a said peripheral device when the data status indicates that the data buffer means is not ready to handle the data transfer request thereby preventing said peripheral device from contending for data transfer.

5,301,280

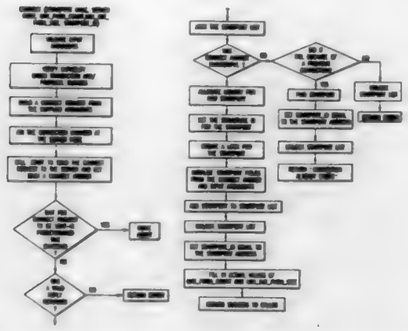
CAPABILITY BASED COMMUNICATION PROTOCOL

Philip L. Schwartz, Framingham; Stuart Warnsman, Southboro; Nicholas Zoda, Jr., Marlboro, and John F. Pilat, Hopkinton, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Oct. 2, 1989, Ser. No. 416,225

Int. Cl.[5] G06F *13/20*

U.S. Cl. 395—325 16 Claims



1. In a channel acting as a server on a system bus, the method of completing a communication connection with a client module on the system bus comprising the steps of:

creating a serveport data structure and assigning it a serveport name;

receiving a connect request from said client module, said request including a client node number identifying said client module and a serveport name;

determining that the serveport data structure whose name was received from said client has been created;

allocating an n-slot TID at said server for the desired connection, said n-slot TID being a capability used in identifying a storage location in said server for receiving start buffer data from said client module, said start buffer data including one or more additional TIDS identifying storage locations in said client module for use in subsequent transfers between said channel and said client module; and

returning a connect answer from said server to said client module, said answer including said n-slot TID so that said client module knows where to send said start buffer data to said server.

5,301,281

METHOD AND APPARATUS FOR EXPANDING A BACKPLANE INTERCONNECTING BUS IN A MULTIPROCESSOR COMPUTER SYSTEM WITHOUT ADDITIONAL BYTE SELECT SIGNALS

Barry Kennedy, Santa Ana, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Jun. 26, 1991, Ser. No. 721,684

Int. Cl.[5] G06F *13/40, 13/14*

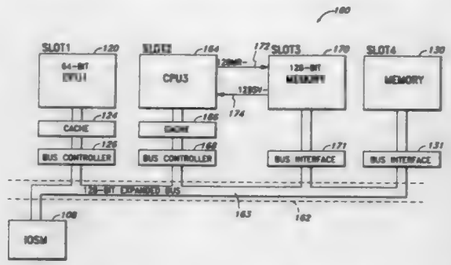
U.S. Cl. 395—325 10 Claims

7. A method of expanding a data bus width of a first multiprocessor interconnection architecture having a number of data lines comprising a first bit-width and a backplane bus with a plurality of byte select lines sufficient to indicate which bytes on the data bus are active during a bus transaction cycle to create a second expanded multiprocessor interconnection architecture with an expanded bit-width and with the same plurality of byte select control lines, said method comprising the steps of:

increasing the number of data lines of said first multiprocessor interconnection architecture to provide a second number of data lines in said second expanded multiprocessor interconnection architecture;

providing a master request interconnection line between master and slave devices designed to utilize the expanded bit-width of the second expanded architecture, said master request line carrying a master request signal activated only by a master device designed to utilize the entire bit-width of the second expanded architecture, said master request signal indicating that the master device is attempting to initiate a transfer utilizing the entire bit-width of the second expanded architecture;

providing a slave response interconnection line between master and slave devices designed to utilize the expanded bit-width of the second expanded architecture, said slave response line carrying a slave response signal activated only by a slave device designed to utilize the entire bit-width of the second expanded architecture in response to an active master request signal on said master request line, said slave response signal indicating that the slave device is designed to utilize the bit-width of the second expanded architecture; and



selectively controlling the bit-width of data transferred by said master to a slave device conforming to either said first architecture or said expanded architecture in accordance with said slave response signal such that said expanded architecture does not require more byte select control lines than said first architecture.

5,301,282

CONTROLLING BUS ALLOCATION USING ARBITRATION HOLD

Nader Amini; Bechara F. Boury, and Terence J. Lohman, all of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 15, 1991, Ser. No. 777,777

Int. Cl.[5] G06F *13/36*

U.S. Cl. 395—325 26 Claims

1. An information handling system comprising

a processor,

a memory,

a bus,

said bus electrically connectable to a controller device, said processor and said memory to allow information transfers via said bus between the controller device, said processor and said memory,

the controller device and the processor being capable of controlling information transfers via said bus, and

means for selectively generating an arbitration hold signal, said arbitration hold signal indicating not to reallocate said bus,

a central arbiter,

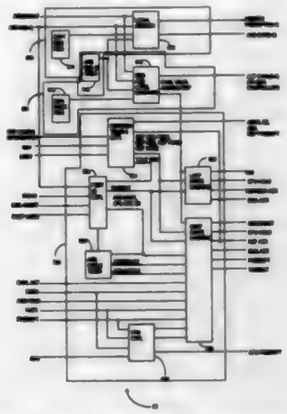
said central arbiter controlling allocation of said bus such that one of the controller device and the processor become a present controller device, the present controller device controlling a present information transfer via said bus,

said central arbiter receiving said arbitration hold signal indicating to said arbiter that the present information transfer is occurring and not to reallocate said bus,

said central arbiter using said arbitration hold signal to

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allow the controller device and said processor to arbitrate for said bus while the present information transfer is occurring, said central arbiter granting



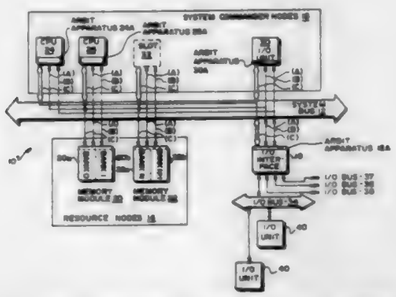
access to said bus when said arbitration hold signal indicates that said central arbiter can reallocate said bus as needed.

5,301,283

DYNAMIC ARBITRATION FOR SYSTEM BUS CONTROL IN MULTIPROCESSOR DATA PROCESSING SYSTEM

Charles P. Thacker, Palo Alto, Calif., and David Hartwell, Boxboro, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 16, 1992, Ser. No. 870,134
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **18 Claims**



1. In a data processing system having a plurality of commander nodes and at least one resource node interconnected by a system bus, one or more of said commander nodes contending for control of said system bus to access the resource node during each of a plurality of arbitrations, a bus arbitration method for determining the one of said contending commander nodes that is to gain control of the system bus to access the resource node during each said arbitration, said method comprising the steps of:

A) assigning priority levels to said commander nodes, such that each said commander node of a first set of said commander nodes is assigned a single priority level for each said arbitration and each commander node of a second set of said commander nodes is assigned more than one priority level for each said arbitration;

B) during each of said arbitrations, each said contending commander node of said first set of commander nodes generating a first arbitration signal during a predetermined bus cycle indicating the priority level assigned to that node, and each contending commander node of said second set of commander nodes generating a second arbitration signal during the same bus cycle during which said contending commander nodes of said first set of commander nodes generates said first arbitration signal, said second arbitration signal generated by said contending commander node of said second set of commander nodes indicating one of the priority levels of that node; and

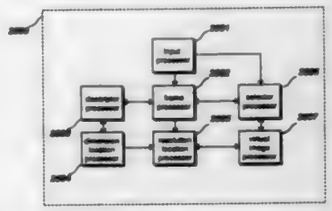
C) during each of said arbitrations, monitoring the arbitration signals to determine the identity of the arbitration signal indicating the highest priority level among those generated during said cycle of each said arbitration, and, thus identifying the contending commander node of said first and second sets of commander nodes that is to gain control of the system bus to access the resource node.

5,301,284

MIXED-RESOLUTION, N-DIMENSIONAL OBJECT SPACE METHOD AND APPARATUS

Mark D. Estes, Austin, Tex., and John P. Walker, Oklahoma City, Okla., assignors to Walker-Estes Corporation, Oklahoma City, Okla.

Filed Jan. 16, 1991, Ser. No. 642,508
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 **14 Claims**



10. An object description system for controlling the logical manipulation of data storage locations of a memory of a digital-computing device configured as at least one mixed-resolution, N-dimensional, object space, wherein the object description system is described as a special purpose computing device having a mixed-radix logical architecture, said digital computing device including processor means for accessing said data storage locations; signal communication means, operatively coupled to said processor means, for communicating control signals, address signals, and data signals to and from said processor means; an input coupled to said processor means by said signal communication means for receiving an object description; and, a memory coupled to said processor means by said signal communication means for storing data; said object description system comprising:

object means, operatively coupled to said processor means by said signal communication means, including frame means operatively coupled to said processor means by said signal communication means for generating said mixed resolution, N-dimensional, object space, said frame means including,

means for interleaving the bits of coded attribute names of an object frame to generate an object descriptor and for interleaving the bits of a particular instance of frame data to generate an object selector; and

at least one register for storing said object frame for controlling the order of the interleaving of bits of said object frame by said interleaving means and for controlling the order of the interleaving of bits of said frame data by said interleaving means;

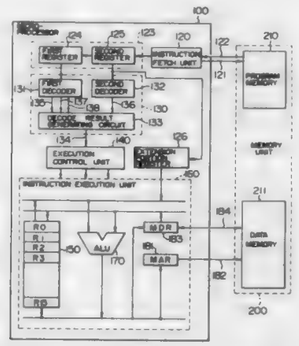
whereby, said data storage locations of said apparatus, when configured as mixed-resolution, N-dimensional, object spaces, are logically addressed and manipulated by fundamental data storage operations without converting mixed-radix expressions to and from unit expressions imposed by the fixed-radix architecture of general purpose computing devices for a mixed-radix mode of operating said computing device.

5,301,285

DATA PROCESSOR HAVING TWO INSTRUCTION REGISTERS CONNECTED IN CASCADE AND TWO INSTRUCTION DECODERS

Makoto Hanawa; Osamu Nishii; Susumu Narita, all of Kokubunji, and Kunio Uchiyama, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 496,448, Mar. 20, 1990, abandoned.
This application Sep. 4, 1992, Ser. No. 940,762
Claims priority, application Japan, Mar. 31, 1989, 1-78221
Int. Cl.[5] G06F *9/30, 9/34*
U.S. Cl. 395—375 **8 Claims**



1. A data processor capable of executing data processing according to a first instruction having a first half word determining the addressing mode of a first operand and a second half word determining the addressing mode of a second operand, in which no address extension portion is inserted between said first half word and said second half word and also executing data processing according to a second instruction, in which an address extension portion is inserted between a first half word thereof and a second half word thereof, said first half word and said second half word of said second instruction determining a first operand and a second operand of said second instruction, respectively, the data processor comprising:

(1) a first store unit;

(2) a second store unit, said fist store unit and said second store unit storing, simultaneously, said first half word and said second half word of said first instruction when said first instruction is to be executed, and storing, simultaneously, said first half word and said address extension portion of said second instruction when said second instruction is to be executed, said second store unit further storing the second half word of the second instruction at a time period subsequent to the storing of the address extension portion;

(3) a first decoder for decoding, the contents of said first store unit and for detecting whether an instruction, the first half word of which is stored in said first store unit, has an address extension portion following the first half word;

(4) a second decoder for decoding, the contents of said second store unit substantially simultaneous with the decoding of the contents of said first store unit, said first decoder unit and said second decoder unit decoding, simultaneously, said first half word and said second half word of said first instruction stored in said first store unit and said second store unit when said first instruction is to be executed and decoding, simultaneously, said first half word and said address extension portion of said second instruction stored in said first store unit and said second store unit, and said second decoder decoding the second half word of the second instruction at a time period subsequent to the decoding of the address extension portion when said second instruction is to be executed;

(5) a decode result generating circuit, arranged to receive a decode result of said first decoder, a simultaneous decoder result of said second decoder and a detection signal of said first decoder, the detection signal indicating whether said instruction, said first half word of which is stored in said first store unit, has said address extension portion following said first half word, the decode result generating circuit further including (i) an invalidating means arranged to invalidate the simultaneous decode result of said second decoder when the detection signal of said first decoder indicates that said instruction, said first half word of which is stored in said first store unit, has said addressing extension portion following said first half word, and (ii) a validating means arranged to validate the simultaneous decode result of said second decoder when the detection signal of said first decoder indicates that the instruction, said first half word of which is stored in said first store unit has no address extension portion, whereby a complete substantially simultaneous decoding of the first half word and the second half word of the first instruction is achieved, producing a final decode result, the decode result generating circuit further arranged to receive the decode result of said second half word of said second instruction subsequent to the decoding of said address extension portion;

(6) an execution control unit coupled to said decode result generating circuit to receive (i) a result of the decoding of the first half word of said second instruction from said first decoder when the simultaneous decode result of said address extension portion of the second decoder is invalidated, to receive (ii) a result of the decoding of the second half word of said second instruction from said second decoder subsequent to the decoding and the invalidation of the simultaneous decode result of said address extension portion, and to receive (iii) the final decode result based upon said complete substantially simultaneous decoding of the first half and the second half word of the first instruction when the simultaneous decode result of the second half word is validated; and

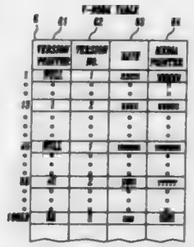
(7) an instruction execution unit whose operation is controlled by the decoding results of the first half word and the second half word of said second instruction and the final decode result of said first instruction received by the execution control unit.

5,301,286

MEMORY ARCHIVING INDEXING ARRANGEMENT

Purshotam Rajani, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 2, 1991, Ser. No. 636,310
Int. Cl.[5] G06F *12/00, 7/00, 15/40*
U.S. Cl. 395—400 **6 Claims**



1. A method of locating a file in a backup memory, said file being one of a group of related files stored in said backup

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memory, said files being identified by a name common to said files, said name common to said files being one component in a sequence of N components identifying a path name associated with said file, where N≧=1, said method comprising the steps of

converting each of said components into a respective identity value, and

determining the location at which said file is stored in said backup memory as a function of each of said identity value beginning with the identity value associated with a first component in said sequence of N components, and wherein said method further comprises the steps of

storing each of said components in an available location of a first table of locations such that the address of said available location defines the unique identity value of the component stored thereat, and

deriving for each of said components an associated hashing number and storing in a second table of locations at a location identified by said hashing number the address of the available location.

5,301,287

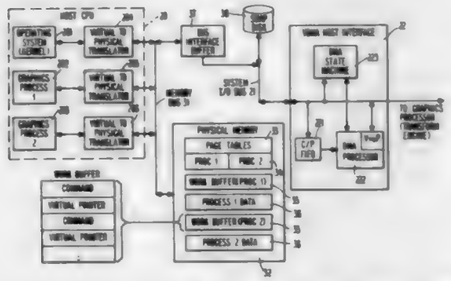
USER SCHEDULED DIRECT MEMORY ACCESS USING VIRTUAL ADDRESSES

Russ W. Herrell, and Thomas P. Morrissey, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 492,518, Mar. 12, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 18,479

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—400 **42 Claims**



1. An interface device for transferring data associated with data processing commands directly between a user's host system having a main memory and an external data processing system in response to user commands without direct host operating system management during individual memory transfer transactions, comprising:

means for representing said data processing commands and associated data as command/pointer packets comprising said data processing commands and virtual pointers to said associated data in virtual memory space of the user's host system;

means on said interface device, coupled to said virtual memory space, for directly translating said virtual pointers of said command/pointer packets to physical pointers which identify physical addresses within said main memory at which said associated data is located; and

means on said interface device for transferring said associated data from and to said main memory at said physical addresses.

5,301,288

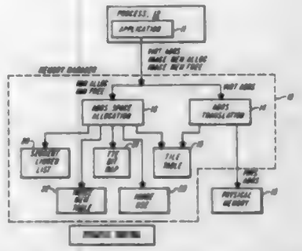
VIRTUAL MEMORY MANAGEMENT AND ALLOCATION ARRANGEMENT FOR DIGITAL DATA PROCESSING SYSTEM

Gary H. Newman, Concord, and James W. Franklin, Pepperell, both of Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 498,007, Mar. 23, 1990, abandoned. This application Apr. 27, 1993, Ser. No. 53,843

Int. Cl.[5] G06F *12/02, 12/06*

U.S. Cl. 395—400 **46 Claims**



1. A system for allocating virtual address space for array data to be stored in a virtual memory, an attribute of said array being a dimension along an array direction, the system comprising:

a table that associates segments of said virtual address space with predetermined dimensions of array data, and

a space allocator for using said table to identify a contiguous portion of said virtual address space for said array data to be stored.

5,301,289

CACHE DEVICE FOR SUPPLYING A FIXED WORD LENGTH OF A VARIABLE INSTRUCTION CODE AND INSTRUCTION FETCH DEVICE

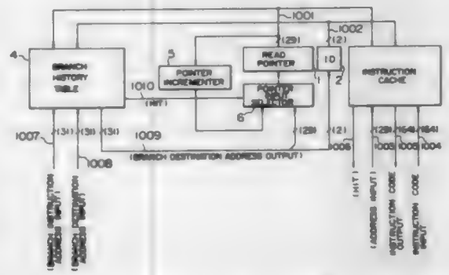
Masato Suzuki, Ikeda; Masashi Deguchi, Nara; Takashi Sakao, Ibaraki, and Toshimichi Matsuzaki, Minoo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 443,390, Nov. 30, 1989, abandoned. This application Jun. 21, 1993, Ser. No. 80,048

Claims priority, application Japan, Dec. 5, 1988, 63-307362

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—400 **7 Claims**



1. An instruction fetching device including a cache device, said cache device comprising:

storage means for storing a plurality of pairs of data, each of said plurality of pairs of data including both an instruction string and an address at which said instruction string is located, said instruction string being divided into minimum lengths of instruction and including a given number of words, said storage means comprising parallel output means for outputting a plurality of said minimum lengths of instruction in parallel;

searching means for selecting from said plurality of pairs of data stored in said storage means at least two pairs of data on the basis of an instruction fetching address designating an instruction to be fetched; and

storage contents selecting means for selecting and causing said storage means to output every minimum length of instruction of one of the instruction strings included in said at least two pairs of data selected by said searching means by way of said parallel output means so that a plurality of minimum lengths of instruction of said one of the instruction strings are individually and simultaneously output in parallel even when at least one of the plurality of minimum lengths of instruction is contained in one of said at least two pairs of data in one register line and the rest of the plurality of minimum lengths of instruction are contained in another of said at least two pairs of data located in a different register line.

5,301,290

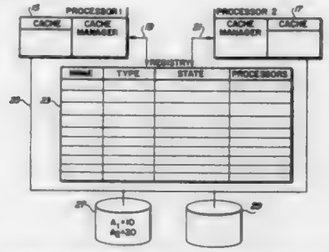
METHOD FOR MINIMIZING LOCK PROCESSING WHILE ENSURING CONSISTENCY AMONG PAGES COMMON TO LOCAL PROCESSOR CACHES AND A SHARED EXTERNAL STORE

William H. Tetzlaff, Mount Kisco, and Jay H. Unger, Mohegan Lake, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1990, Ser. No. 493,562

Int. Cl.[5] G06F *12/14*

U.S. Cl. 395—425 **6 Claims**



1. In a system comprising a first and a second processor, a shared addressable external store (27, 29) of groups of hierarchically related pages, and a lock manager (23), said first and second processors each respectively including an operating system (OS), a page oriented write through cache (15, 17), a cache manager, and means including the cache manager responsive to page access requests from said first processor for obtaining at least one lock from the lock manager through the OS, and if a requisite lock is granted by said lock manager, causing the requested page or pages to be copied from external store to the cache if not otherwise resident therein,

said lock manager regulating access to pages by granting locks to the requesting processor on either an exclusive or shared basis and either on a coarse grained (covering hierarchically related pages) or a fine grained (page) basis, locks granted but unreleased being denominated "outstanding" locks,

a method for minimizing the grant of page locks and the number of outstanding locks while ensuring consistency of the copies of a page or pages resident among the first and second caches with an original page or pages in the shared external store, comprising the steps of:

(a) responsive to an access request by the first processor to a designated page in the absence of an outstanding lock being held by the second processor to that page or a page group including the designated page,

(1) granting either a coarse grained lock to the first processor on the page group if the request is a read access or an exclusive coarse grain lock if the request is a write access,

(2) copying the designated page to the first processor cache from the external store if not otherwise available from the external storage to the first processor cache upon the lock being granted,

(3) operating on the designated page in said first processor cache,

(4) aging said designated page out of the first processor cache, and

(5) processing subsequent read or write accesses from the first processor to any page within the scope of the coarse grain lock without granting fine grain locks as long as the coarse grain lock persists;

(b) responsive to a write access request by the first processor to a designated page in the presence of a concurrent lock on that page held by the second processor,

(1) causing a notice of conflict to be sent to the second processor resulting in the invalidation of any copy of the designated page resident in the second cache,

(2) releasing the lock to the designated page held by the second processor and granting an exclusive fine grained lock on the designated page to the first processor,

(3) copying the designated page if not otherwise available from the external store to the first processor cache upon the lock being granted,

(4) operating on the designated page in the first processor cache, and

(5) demoting the lock held by said first processor from exclusive to shared.

5,301,291

Patent Not Issued For This Number

5,301,292

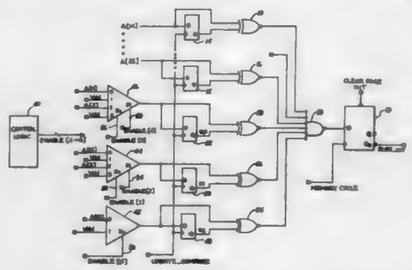
PAGE MODE COMPARATOR DECODE LOGIC FOR VARIABLE SIZE DRAM TYPES AND DIFFERENT INTERLEAVE OPTIONS

William K. Hilton, Phoenix, and Albert J. Weidner, Tempe, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 22, 1991, Ser. No. 659,796

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **12 Claims**



1. In a computer system containing a plurality of dynamic random access memories of different sizes, a page hit mode detection system for providing both two way and four way interleaving and word type and byte type interleaving comprising, in combination:

control logic means containing memory map configuration data and interleaving option data stored therein for providing an output on each of a plurality of enable signal lines;

first latch means couples to a first plurality of address lines of a portion of said plurality of dynamic random access memories for storing a plurality of first address signals that are applied to said first plurality of address lines;

multiplexer means coupled to a second plurality of address lines of another portion of said plurality of dynamic ran-

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dom access memories and to said enable signal lines of said control logic means for providing a plurality of multiplexed address signals in response to said output on each of said plurality of signal lines;

second latch means coupled to outputs of said multiplexer means for storing a plurality of multiplexed signals, said first and second latch means being connected to an input signal line having an update compare signal thereon, said first plurality of address signals and said multiplexed address signals being stored within said first and second latch means, respectively, in response to said update-compare signal;

comparing means coupled to said first and second latch means, said first plurality of address lines, and to said multiplexer means for providing a comparison output signal which is dependent upon inputs to said comparison means; and

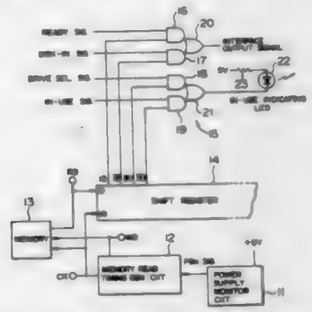
page hit means coupled to said comparing means and a signal line that provides a memory cycle signal for generating an output page hit signal in response to said inputs to said comparing means.

5,301,293

LOGIC CIRCUIT FOR SELECTING SIGNALS INDICATIVE OF OPERATING STATES OF FLOPPY DISK APPARATUS

Ikuo Kano, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 12, 1991, Ser. No. 668,175
Claims priority, application Japan, Mar. 16, 1990, 2-67735
Int. Cl.[5] G11B *33/10*
U.S. Cl. 395—425 **7 Claims**



6. A floppy disk apparatus receiving apparatus operation indicating signals supplied externally and selectively applying said apparatus operation indicating signals to a host computer and to an operation indicating device, said apparatus comprising:

memory means for storing data for controlling times of application of said apparatus operation indicating signals, said memory means comprising means for rewriting at any desired time said data stored in said memory means to change said times of said application;

a memory read signal generation circuit for generating a read signal for reading said memory means in response to an application of power to said apparatus;

a shift register for fetching said data stored in said memory which is read out in response to said read signal and for generating a control signal in accordance with said data; and

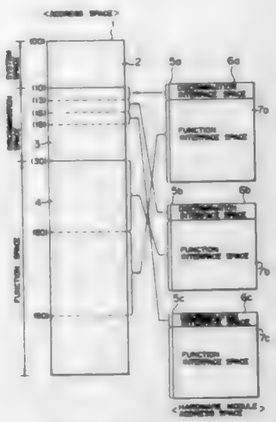
a logic circuit for receiving said control signal from said shift register and for receiving said apparatus operation indicating signals, said logic circuit being adapted to apply selectively said apparatus operation indicating signals to said host computer and to said operation indicating device at times indicated by said control signal and predetermined by said data stored in said memory means.

5,301,294

ADDRESS BUS CONTROL SYSTEM

Takahiro Kawai; Masatsugu Shinozaki, both of Hadano; Hitoshi Sadamitsu, Hiratsuka; Tadashi Kyoda; Katsuya Takanashi, both of Hadano, and Hironori Uchida, Ebina, all of Japan, assignors to Hitachi Ltd. and Hitachi Techno Engineering Co., Ltd., both of Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 689,556
Claims priority, application Japan, Apr. 23, 1990, 2-105396
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 **15 Claims**



1. A bus control system for use in an information processing system, comprising:

a bus including an address bus portion having a predetermined number of address lines which establish a bus address space;

a plurality of hardware modules connected to said bus including said address bus portion, each of said hardware modules requiring a respective amount of bus address space for use by a device to be controlled thereby; and

a bus controller coupled to said bus for periodically assigning portions of bus address space to respective hardware modules on a time-division basis.

5,301,295

DATA PROCESSOR APPARATUS AND METHOD WITH SELECTIVE CACHING OF INSTRUCTIONS

Kevin W. Leary, Walpole, and James D. Donahue, Waltham, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed May 22, 1991, Ser. No. 704,290
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **16 Claims**

8. An instruction cache system for supplying instructions to the instruction latch of a digital signal processor, said instructions having associated external memory addresses, comprising:

an instruction cache for storing selected instructions,

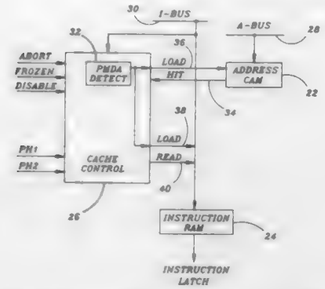
an address memory for storing the addresses associated with the instructions stored in the instruction cache,

a cache control for loading selected instructions into the instruction cache and their respective addresses into the address memory, and for reading out selected instructions from the instruction cache,

means for applying selected bits of an input multibit instruction which identify the instruction as to type to said cache control, said cache control including means responsive to said selected instruction bits for recognizing whether the multi-bit input instruction is an instruction requiring at least two operands (a PMDA instruction), and

means responsive to the recognition of an input PMDA instruction for determining whether the instruction immediately following said PMDA instruction is already stored in the instruction cache,

said cache control responding to the recognition of a PMDA instruction by directing the loading of an instruction immediately following the PMDA instruction into said instruction cache and the loading of the address associated with said instruction following the PMDA instruction



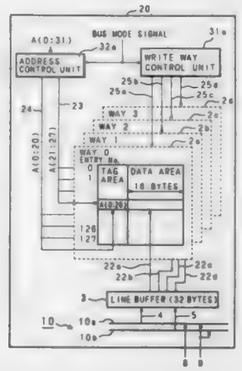
into said address memory if said instruction following the PMDA instruction is not already stored in the instruction cache, and by directing the reading of said instruction following the PMDA instruction from said instruction cache to said instruction latch if said instruction following the PMDA instruction is already stored in said instruction cache, said cache control responding to the recognition of a non-PMDA instruction by not loading the instruction immediately following said non-PMDA instruction into the instruction cache.

5,301,296

MICROPROCESSOR WITH CACHE MEMORY

Atsushi Mohri, and Yuuichi Saito, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1991, Ser. No. 716,411
Claims priority, application Japan, Dec. 18, 1990, 2-403205
Int. Cl.[5] G06F *12/04, 13/00*
U.S. Cl. 395—425 **9 Claims**



1. In a microprocessor having an address bus and a data bus for communicating with an external memory, a cache architecture comprising:

a plurality of configurable cache memory units, coupled to the data bus; and organized to store data fetched from the external memory according to way set-associative mapping including an index field, a tag field and a way set; and

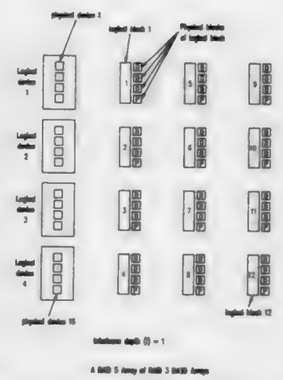
means, coupled to receive from the microprocessor a bus mode signal indicating a data bus width, for varying a number of way sets of said configurable cache memory units associated with the index field according to a value of said bus mode signal.

5,301,297

METHOD AND MEANS FOR MANAGING RAID 5 DASD ARRAYS HAVING RAID DASD ARRAYS AS LOGICAL DEVICES THEREOF

Jaishankar M. Menon, San Jose, and Leighton C. Wood, Jr., Morgan Hill, both of Calif., assignors to IBM Corp. (International Business Machines Corp.), Armonk, N.Y.

Filed Jul. 3, 1991, Ser. No. 725,696
Int. Cl.[5] G06F *12/06*
U.S. Cl. 395—425 **13 Claims**



1. A method for accessing data strings from a plurality of DASDs, comprising the steps of:

(a) configuring the plurality of DASDs into a RAID **5** array of logical devices, each logical device including N data+P parity DASDs in RAID **3** DASD array;

(b) segmenting each data string into K logical records of N data blocks each, coding P parity blocks over each segmented record, and accessing said K logical records in column major order of predetermined interleave depth onto the RAID **5** array logical devices; and

(c) transferring K records at N data+P parity blocks at a time according to the order and depth from the RAID **3** DASD arrays.

5,301,298

PROCESSOR FOR MULTIPLE CACHE COHERENT PROTOCOLS

Michael Kagan; Itamar Kazachinsky; Simcha Gochman, and Tal Gat, all of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 11, 1991, Ser. No. 775,161
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—425 **10 Claims**

1. In a processor having a cache memory, an improvement in said processor comprising:

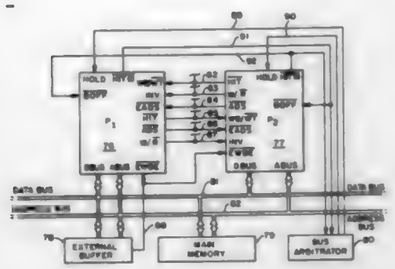
storage means for storing bits indicating if data in said cache memory is in one of the following states: invalid state, shared state, exclusive state and modified state, said storage means being part of said processor and coupled to said cache memory;

selection means for selecting one of a write-back protocol, write-through protocol, and write-once protocol, coupled to said processor and for implementing:

a predetermined first logic for the ones of said bits indicating said invalid state, exclusive state and modified state if said write-back protocol is selected;

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a predetermined second logic for the ones of said bits indicating said invalid state and said shared state if said write-through protocol is selected; and,



a predetermined third logic for said bits indicating said invalid state, said shared state, said exclusive state and said modified state if said write-once protocol is selected.

5,301,299

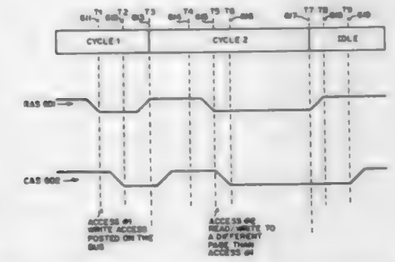
OPTIMIZED WRITE PROTOCOL FOR MEMORY ACCESSES UTILIZING ROW AND COLUMN STROBES

Stephen Pawlowski, and Peter D. MacWilliams, both of Aloha, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 534,754, Jun. 7, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 20,184

Int. Cl.[5] G06F *12/08*

U.S. Cl. 395—425 10 Claims



9. In a computer system including a control means for controlling said computer system, a memory and a communication medium, said communication medium including a first line, a second line and at least one first address line, said at least one first address line for providing row and column addresses to said memory, said communication medium coupled to said control means and said memory, a method of performing an access to said memory comprising the steps of:

(a) said control means providing a first row address for a first access to said memory on said at least one first address line;

(b) said control means activating said first line for said first access, said first line for indicating said first row address is available for said memory;

(c) said control means providing a first column address to said memory on said at least one first address line;

(d) said control means activating said second line for said first access, said second line for indicating said first column address is available for said memory;

(e) said memory means accessing a memory array element at a location identified by said first row address and said first column address;

(f) immediately subsequent to said accessing said memory array element said control means determining if a second access to said memory is pending;

(g) if said control means determines that said second access to said memory is pending, then performing said second access to said memory;

(h) else if said control means determines that said second access to said memory is not pending, then deactivating said first line.

5,301,300

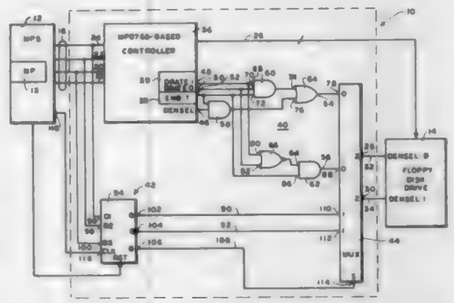
FLOPPY DISK DRIVE CONTROLLER WITH IMPROVED DENSITY SELECT

Terry G. Ritz, New Branfels, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 655,654, Feb. 14, 1991, abandoned. This application May 20, 1993, Ser. No. 64,343

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—425 20 Claims



1. A floppy disk drive controller for interfacing a microprocessor system including a microprocessor with a floppy disk drive of a first type arranged to receive data bits at any one of first, second and third rates and with a floppy disk drive of a second type arranged to receive data bits only at said first and second rates, wherein said first rate is substantially equal to 250 or 300 kilobits per second, said second rate is substantially equal to 500 kilobits per second, and said third rate is substantially equal to 1 megabit per second, wherein said controller is arranged for providing data bits for said floppy disk drive at one rate of said first, second and third data rates, said controller comprising:

control means responsive to a data rate indication provided by said microprocessor system for providing a plurality of data rate control bits indicative of said one data rate and an enable bit; and

decoding means coupled to said control means and including a pair of outputs arranged to be coupled to said floppy disk drive and responsive to said enable bit for decoding said configuration data rate control bits and providing a pair of data rate control signals to said output for conditioning said floppy disk drive to receive said data bits at any one of said first, second, and third data rates.

5,301,301

POLYMORPHIC DATAFLOW BLOCK DIAGRAM SYSTEM AND METHOD FOR PROGRAMMING A COMPUTER

Jeffrey L. Kodosky; James J. Truchard, both of Austin, Tex., and John E. MacCrisken, Palo Alto, Calif., assignors to National Instruments Corporation, Austin, Tex.

Filed Jan. 30, 1991, Ser. No. 647,785

Int. Cl.[5] G06F *15/31, 15/46*

U.S. Cl. 395—500 15 Claims

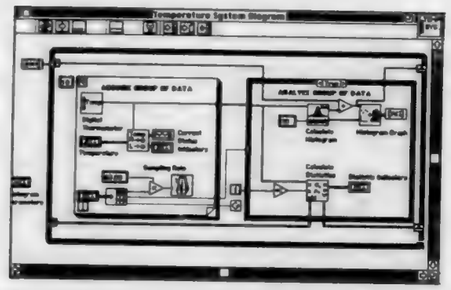
1. In a computer system having a central processing unit, a memory for storing programs and data, and a display; a dataflow programming subsystem, comprising:

a library of function icons, each representing a mathematical operation to be performed on specified input data to generate output data; wherein a first multiplicity of said function icons are polymorphic with respect to numeric representation, and wherein a second multiplicity of said function icons, comprising a subset of said first multiplicity of function icons, are structurally polymorphic with respect to data aggregation;

dataflow diagram generating means for interconnecting a specified plurality of said function icons, and for connecting specified ones of said plurality of function icons to specified input data sources that provide respective input data having a respective specified numeric representation and data structure, to generate a dataflow diagram representing mathematical operations to be performed on said input data so as to generate output data;

said dataflow diagram generating means including polymorphic interpreting means for assigning, prior to execution of said dataflow diagram, specific mathematical operations with respect to numeric representation and data structure to each function icon in said dataflow diagram in accordance with numeric representation and data structure of the input data to said each function icon, such that:

(A) each function icon in said dataflow diagram that is polymorphic with respect to numeric representation is assigned an integer mathematical operation when all input data for said each function icon are integers;



(B) each function icon in said dataflow diagram that is polymorphic with respect to data aggregation is assigned, when said input data to said each function icon in said dataflow diagram comprises arrays of input data, a mathematical operation to be performed on an element by element basis so as to generate an array of output data; and

(C) each function icon in said dataflow diagram that is polymorphic with respect to data aggregation is assigned, when said input data to said each function icon comprises a scalar value and an array of input data, a mathematical operation to be performed on each element of said array of input data in conjunction with said scalar value so as to generate an array of output data; and

dataflow diagram executing means for executing said dataflow diagram by performing said specific mathematical operations assigned to said plurality of icons in said dataflow diagram;

front panel generating means for generating a front panel that is displayed on said computer system's display, said front panel having controls that generate control values to be used as said input data for specified ones of said function icons in said dataflow diagram; and

said dataflow diagram executing means including means for displaying said front panel and for receiving user commands specifying the control values to be generated by said front panel during execution of said dataflow diagram.

5,301,302

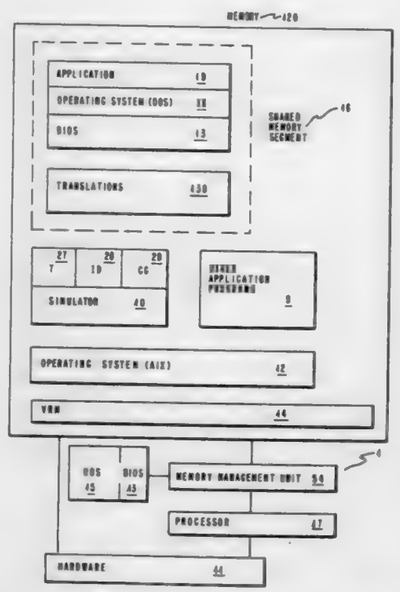
MEMORY MAPPING AND SPECIAL WRITE DETECTION IN A SYSTEM AND METHOD FOR SIMULATING A CPU PROCESSOR

Joe W. Blackard; Richard G. Fogg, Jr., and Arturo M. de Nicolas, all of Austin, Tex., assignors to International Business Machines, Armonk, N.Y.

Continuation of Ser. No. 151,135, Feb. 1, 1988, abandoned. This application Apr. 2, 1991, Ser. No. 680,636

Int. Cl.[5] G06F *9/455*

U.S. Cl. 395—500 12 Claims



1. A method for aiding in simulating a first instruction flow of control of an application, said flow of control having a plurality of first instructions of a first processor instruction set, by a plurality of second instructions of a second processor instruction set of a processing system, said method comprising:

creating a table having a plurality of locations corresponding to a plurality of second processor memory locations, each one of said second processor memory locations having contents the same as a respective first processor memory location, for indicating a type of contents for any one of said second processor memory locations;

storing, during a translation of an instruction of said first processor instruction set contained within any one of said second processor memory locations into an instruction of said second processor instruction set, a first indicator, in a location in said table corresponding to said second processor memory location, indicating that the type of contents of said second processor memory location is an instruction;

determining, during a modification to the contents of any one of said plurality of second processor memory locations, whether an instruction is being modified by checking the corresponding location in the table for said stored first indicator; and

determining whether translation is necessary for the contents in said second processor memory location being modified if said first indicator indicates an instruction is being modified.

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5,301,303

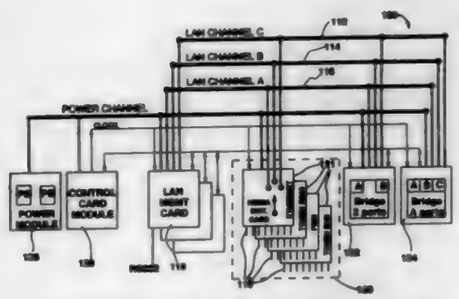
COMMUNICATION SYSTEM CONCENTRATOR CONFIGURABLE TO DIFFERENT ACCESS METHODS

Menachem Abraham, Lexington; David Bartolini, Dudley; Samuel Ben-Meir, Sharon; Ilan Carmi, Framingham; John L. Cook, III, Southborough; Ira Hart, Cambridge; Alex Herman, Sharon; Steven E. Horowitz, Holliston; Yongbum Kim, Brookline; Yoseph Linde, Needham; Brian Ramelson, Brighton; Richard Rehberg, Northboro; Gordon Saussy, Brighton; Yuval Shohet, Acton, and Igor Zhovnirovski, Lexington, all of Mass., assignors to Chipcom Corporation, Southborough, Mass.

Continuation-in-part of Ser. No. 512,849, Apr. 23, 1990, abandoned. This application Apr. 16, 1991, Ser. No. 687,590

Int. Cl.[5] G06F *9/00, 15/00*

U.S. Cl. 395—500 **12 Claims**



1. A communication system concentrator, comprising:

a plurality of media modules having one or more ports, each media module being provided for a physical local area network media type, each media module being provided for a specific network access method, said one or more ports of each media module offering a specific local area network media connection providing for a specific access method on a specific physical LAN media type;

a generic passive backplane with multiple physical circuits which are assigned for data exchange between said plurality of media modules, said media modules plugging into said generic passive backplane for connection to said multiple physical circuits; and

management means, connected to the generic passive backplane, for configuring and reconfiguring said multiple physical circuits to provide independent physical communications paths between said plurality of media modules of a like network access method establishing a physical layer network connection between said plurality of media modules of a like access method on any one of said independent physical communication paths, including means for establishing one or more of an ETHERNET network access method on any one of said independent physical communication paths, a token ring network access method on any one of said independent physical communication paths, a token bus network access method on any one of said independent physical communication paths and a fiber distributed data interface network access method on any one of said independent physical communication paths wherein one or more media access method is established on said generic passive backplane, said backplane providing multiple, simultaneous data transfer on different ones of said independent physical communication paths of said generic passive backplane.

5,301,304

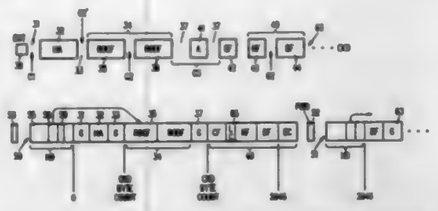
EMULATING RECORDS IN ONE RECORD FORMAT IN ANOTHER RECORD FORMAT

Moothedath J. Menon, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 686,490, Apr. 15, 1991, abandoned, which is a continuation of Ser. No. 197,057, May 20, 1988, abandoned. This application Jul. 15, 1992, Ser. No. 914,485

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **6 Claims**



1. A method of writing, on a recording disk formatted in fixed-block architecture (FBA) in fixed-length blocks, count-key-data (CKD)-formatted binary data records that are separated by interrecord gaps, comprising the steps of:

writing the CKD-formatted records into a buffer;

using an emulator, reorienting the records written into the buffer to create CKD-emulated records in FBA format by eliminating, from each CKD-formatted record before it is written to the disk, intrarecord gaps and bytes not essential for recreating the data in the respective CKD-emulated records in CKD format;

using the emulator, calculating the number and location of fixed-length blocks required to store each CKD-emulated record in a virtual track on the disk, where each virtual track consists of a predetermined number of fixed-length blocks at predetermined consecutive locations; and

using the emulator, writing to the disk the CKD-emulated records from the buffer via an FBA adaptor in fixed-length blocks containing (i) header data indicating whether or not a CKD-emulated record begins in each such block, (ii) a number indicating byte displacement address, and (iii) padding bytes between each set of adjacent CKD-emulated records including bytes corresponding to the interrecord gaps to assure that the beginning of each respective CKD-emulated record has the same byte displacement from a reference location on a virtual track on the disk as each respective corresponding CKD-formatted record would have from an index on a physical track of a CKD-formatted disk so that each CKD-emulated record can be accessed in a single revolution of the FBA-formatted disk by use of its byte displacement from its reference location as an address, without requiring a special directory or map list.

5,301,305

APPARATUS FOR AMPLIFYING SIGNALS IN PING-PONG ARRANGEMENT TO REDUCE THE FREQUENCY OF AMPLIFICATION

Michael J. Brunolli, Escondido, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 315,272, Feb. 24, 1989, abandoned, which is a division of Ser. No. 810,911, Dec. 18, 1985, Pat. No. 4,905,189. This application Nov. 20, 1990, Ser. No. 616,988

Int. Cl.[5] G11C *7/06*

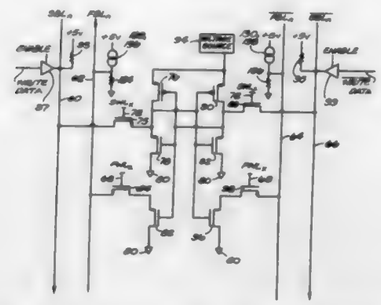
U.S. Cl. 395—550 **33 Claims**

1. In combination,

means for providing at a first particular frequency first signals having first and second logic levels respectively coded for binary values "1" and "0",

means for providing first and second synchronizing signals each having a second particular frequency half of that of the first particular frequency and each having first and second alternating polarities and each displaced in phase by 180° from the other,

first means responsive to the first synchronizing signals and the first signals for producing, in the first polarity of the first synchronizing signals, first voltages representative of the first signals and for producing, in the second polarity of the first synchronizing signals, first output signals representative of the first voltages,



second means responsive to the second synchronizing signals and the first signals for producing, in the first polarity of the second synchronizing signals, second voltages representative of the first signals and for producing, in the second polarity of the second synchronizing signals, second output signals representative of the second voltages, a resultant line, and

means for respectively introducing the first and second output signals to the resultant line.

5,301,306

CIRCUIT FOR SLOWING PORTION OF MICROPROCESSOR OPERATING CYCLE IN ALL SUCCESSIVE OPERATING CYCLES REGARDLESS OF WHETHER A SLOW DEVICE IS ACCESSED IN THE PORTION OF ANY OPERATING CYCLE

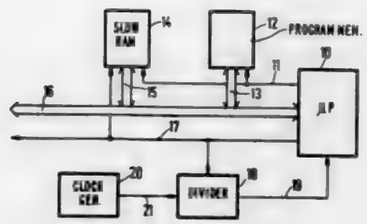
Jürgen Plog, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 9, 1991, Ser. No. 758,980

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1990, 4029598

Int. Cl.[5] G06F *1/08, 1/04*

U.S. Cl. 395—550 **9 Claims**



1. A circuit supplying clock signals to operate a microprocessor having a plurality of successive operating cycles, each of the operating cycles comprising a fixed number of clock pulses to execute an instruction and selectively access a device using a first clock signal and a second clock signal, respectively, the circuit comprising:

(a) a source of clock pulses, and

(b) clock supplying means having an input connected to the source of clock pulses and an output connected to the microprocessor for generating at the output the first and second clock signals having first and second different clock frequencies, respectively, and alternately generating, during each of the successive microprocessor operating cycles a fixed first number of clock pulses of the first clock signal and a fixed second number of clock pulses of the second clock signal, the first and second numbers of clock pulses comprising a sum that is the same for each of the successive microprocessor operating cycles; whereby the clock supplying means supplies the fixed first and fixed second number of clock pulses for all of the successive microprocessor operating cycles regardless of whether the device is actually accessed by the microprocessor using the second clock signal in each of the successive microprocessor operating cycles.

5,301,307

MICROPROCESSOR HAVING WAITING FUNCTION

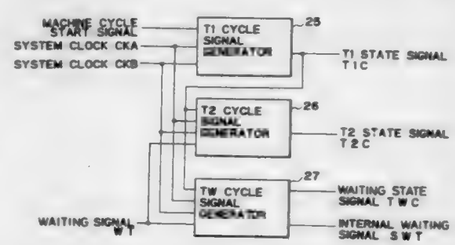
Fumio Murooka, Yamato-Koriyama; Yuusuke Kajikawa; Kazuharu Date, both of Tenri; Hiroshi Mikami; Shigeki Imai, both of Nara, and Katsuhiro Masui, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 30, 1992, Ser. No. 828,214

Claims priority, application Japan, Feb. 6, 1991, 3-015431

Int. Cl.[5] G06F *9/22*

U.S. Cl. 395—550 **3 Claims**



1. A microprocessor capable of executing a micro-instruction output from a micro-memory according to an address which corresponds to an instruction to be executed at a time when each time said microprocessor receives said address, said microprocessor comprising:

control signal generating means for generating a control signal for a period of time corresponding to a period of time of a waiting signal at a time when said waiting signal is received from the outside; and

address holding means connected to said control signal generating means for holding an address supplied to said micro-memory for a period of time corresponding to a period of time of said control signal,

said control signal generating means including a plurality of signal generators,

said plurality of signals generators including a T1 cycle signal generator capable of outputting a high-level T1 state signal indicating that a machine cycle is a T1 cycle during one period starting at a next leading edge of a system clock,

said plurality of signal generators further including a T2 cycle signal generator capable of outputting a high-level T2 state signal indicating that said machine cycle stays at a T2 cycle during one period starting at a next leading edge of said system clock at a time when said high-level T1 state signal is output,

said T2 cycle signal generator failing to output a T2 state signal in the case that a low-level waiting signal is given from an external source to said microprocessor,

said T2 cycle signal generator being further capable of outputting said high-level T2 state signal during one period of said system clock after said waiting signal is returned to a high-level state.

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5,301,308

METHOD FOR SYNCHRONIZING REDUNDANT OPERATION OF COUPLED DATA PROCESSING SYSTEMS FOLLOWING AN INTERRUPT EVENT OR IN RESPONSE TO AN INTERNAL COMMAND

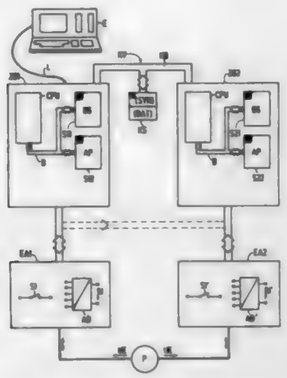
Horst Daar, Erlangen, and Herbert Barthel, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 24, 1990, Ser. No. 513,663

Claims priority, application European Pat. Off., Apr. 25, 1989, 89107476.7

Int. Cl.[5] G06F *11/16, 9/40*

U.S. Cl. 395—575 **15 Claims**



1. A method for synchronizing the operation of at lest two data processing systems coupled via a communications device, wherein the data processing systems include identical control programs for redundant operation, the method comprising the steps of:

a) subdividing the identical control programs into program blocks having predetermined block limits between adjacent ones of the program blocks, the identical control programs including an operating system and a user program;

b) recognizing an interrupt event in the data processing systems during a program run of the identical control programs and requiring a synchronization of the data processing systems when the interrupt event is recognized;

c) servicing a program block currently running in the data processing systems until a next one of said predetermined block limits is reached in the identical control programs for each data processing system recognizing the interrupt event; and

d) subsequently synchronizing each data processing system recognizing the interrupt event with the remaining data processing systems wherein the synchronizing is performed via the communications device.

5,301,309

DISTRIBUTED PROCESSING SYSTEM WITH CHECKPOINT RESTART FACILITIES WHEREIN CHECKPOINT DATA IS UPDATED ONLY IF ALL PROCESSORS WERE ABLE TO COLLECT NEW CHECKPOINT DATA

Hiroshi Sugano, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1990, Ser. No. 514,026

Claims priority, application Japan, Apr. 28, 1989, 1-110544

Int. Cl.[5] G06F *11/00*

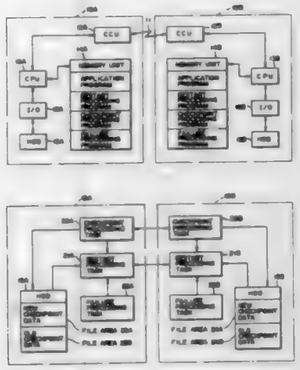
U.S. Cl. 395—575 **6 Claims**

1. A distributed processing system with a restart processing function comprising:

a first data processor and a second data processor, each executing a distributed processing;

communication control means, installed in each said first processor and said second data processor, for allowing transmission and reception of data between said first data processor and said second data processor;

checkpoint processing means, installed in each said first data processor and said second data processor, for determining new checkpoint data as current checkpoint data for executing restart processing when an ACK signal is transmitted from said second data processor to said first data processor in response to a request to collect said new checkpoint data made by said first data processor, and



determining old checkpoint data as said current checkpoint data when no ACK signal is transmitted from said second data processor in response to said request made by said first data processor;

data storage means, installed in each said first data processor and said second data processor, for storing the current checkpoint data determined by said checkpoint processing means; and

restart processing means, installed in each said first data processor and said second data processor, for restarting execution of said distributed processing in accordance with said current checkpoint data stored in said data storage means.

5,301,310

PARALLEL DISK STORAGE ARRAY SYSTEM WITH INDEPENDENT DRIVE OPERATION MODE

Marshall A. Isman, Newton; Craig W. Stanfill, Waltham, and David C. Taylor, Medford, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Feb. 7, 1991, Ser. No. 652,142

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **8 Claims**

1. A mass storage system for connection to a computer comprising:

A. a plurality of independently-controllable data storage modules, each data storage module having a storage medium for storing data in a plurality of addressable storage locations and data storage and retrieval arrangement controllable to store data on and retrieve data from selected ones of the storage locations during storage and retrieval operations, respectively;

B. at least one error detection information storage module including a storage medium for storing error detection information in a plurality of addressable storage locations and data storage and retrieval arrangement controllable to store error detection information on and retrieve error detection information from selected ones of the storage locations during storage and retrieval operations, respectively;

C. a word assembly arrangement for:

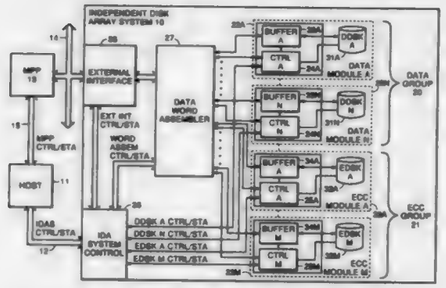
i. during a storage operation, receiving data words from the computer and generating in response thereto data and error detection information for transfer in parallel to the data storage modules and error detection information storage module, respectively; and

ii. during a retrieval operation, receiving data from the data storage modules and generating in response thereto data words for transfer to the computer, said word assembly arrangement further receiving error detection information from said error detection information storage module and selectively using said error detection information in an error detection and correction operation in generating data words for transfer to the computer; and

D. a storage system control module for generating control information to

i. control the word assembly arrangement, said data storage modules and said error detection information storage module during a storage operation; and

ii. selectively during a retrieval operation:



(a) in a parallel retrieval mode, enable the data storage modules and said error detection information storage module to retrieve in parallel data and error detection information from corresponding storage locations of all of the storage media, said control information in said parallel retrieval mode enabling said word assembly arrangement to use the error detection information to perform an error detection and correction operation in connection with the data it receives from the data storage modules, and to use the data from a plurality of the data storage modules in generating data words for transfer to the computer; or

(b) in an independent retrieval mode, enable the data storage modules to retrieve data from diverse storage locations on their respective storage media, said control information in said independent retrieval mode enabling the word assembly arrangement to form data words for transfer to the computer in response to the data it receives from the data storage modules, without performing and error detection and correction operation in connection with error detection information from the error detection information storage module.

5,301,311

CONTROL METHOD FOR PREVENTING INCORRECT RESET OF COMMON RESOURCE AND MULTICOMPUTER SYSTEM EXECUTING THE METHOD

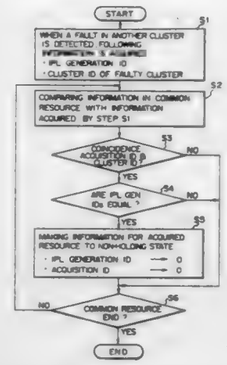
Masato Fushimi, Yokohama, and Toshinori Hiraishi, Mishima, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 17, 1991, Ser. No. 700,869

Claims priority, application Japan, May 18, 1990, 2-128323

Int. Cl.[5] G06F *11/00, 13/00*

U.S. Cl. 395—575 **6 Claims**



1. A control method for preventing incorrect resetting of a common resource in a multicomputer system comprising clusters each including a processor, and a common memory which each cluster can access, said method comprising steps of:

storing in the common memory an initial program load generation identifier which is unique to each initial program load of each cluster;

storing an acquisition identifier, identifying the cluster acquiring access to the common resource, and the initial program load generation identifier in the common resource, when a right to use the common resource in the common memory is acquired; and

comparing the initial program load generation identifier stored int he common memory when a faulty cluster stops, with the initial program load generation identifier stored in the common resource, and only when the initial program load generation identifiers are equal, resetting the right to use the common resource, when the stopped faulty cluster resets the right to use the common resource.

5,301,312

METHOD AND SYSTEM FOR UTILIZING BENIGN FAULT OCCURRENCE TO MEASURE INTERRUPT-BLOCKING TIMES

Kenneth W. Christopher, Jr., Lighthouse Point; Khoa D. Huynh, Miami; Virginia M. Roarabaugh, Boca Raton, and Theodore C. Waldron, III, Sunrise, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1991, Ser. No. 748,149

Int. Cl.[5] G06F *11/30, 11/00*

U.S. Cl. 395—575 **30 Claims**

1. A method in a computer system for monitoring time intervals during which external interrupts are inhibited within said computer system in a selected program being run on said computer system supporting benign faults comprising:

identifying a first plurality of instructions, said first plurality of instructions for blocking external interrupts;

identifying a second plurality of instructions, said second plurality of instructions for unblocking external interrupts;

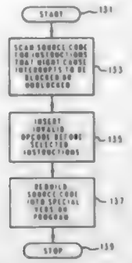
inserting a benign fault proximate to selected ones of said first plurality of instructions and selected ones of said

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second plurality of instructions to produce a special version program;

running said special version program in said computer system;

monitoring faults occurring during running of said special version program; and



in response to said benign fault, monitoring external interrupt-blocking times caused by said selected ones of said first plurality of instructions and said selected ones of said second plurality of instructions.

5,301,313

MANIPULATING DATA IN A RELATIONAL DATA BASE HAVING OPERATIONAL MANIPULATIONS DEFINED IN AN INPUT TABLE AND DISPLAYED RESULTS IN AN OUTPUT TABLE WITH A LINE DISPLAYED DESIGNATING DIRECTION OF DATA FLOW

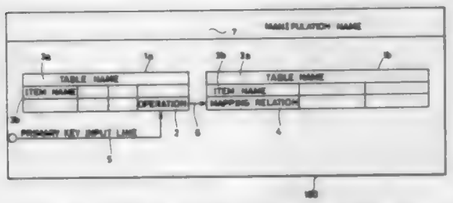
Hiroaki Terada; Hiroaki Nishikawa, both of Osaka; Yoshio Sakuta, Oaka; Yonichiro Nishikawa, Hyogo; Shuji Hara, Osaka; Yoshie Inaoka, Hyogo; Tetsuo Yamasaki, Hyogo; Kenji Shima, Hyogo; Shin-ichi Yoshida, Nara, and Shunji Hine, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka; Mitsubishi Denki Kabushiki Kaisha, Tokyo; Sharp Kabushiki Kaisha and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Filed Jul. 15, 1991, Ser. No. 730,173

Claims priority, application Japan, Jul. 17, 1990, 2-191823

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **12 Claims**



1. A method of manipulating a data base storing data in a table format, said table including an item area for specifying an attribute of data, said method comprising the steps of:

defining input data including first data to be manipulated and second data to be output as a result of manipulation wherein said first data and said second data are both defined in the table format on a display screen, said step of defining including the step of identifying the first data and the second data by an orientation of an oriented connection line;

defining with a non-sentential graphic format having a predetermined syntax, all operational manipulations to be carried out on said first data of said input data defined, the second mentioned step of defining including the step of defining a manipulation in the item area of the table of said first data of said input data to be manipulated, said oriented connection line indicating a direction of flow of manipulations from the first data to said second data;

determining a procedure of manipulating data of said data base according to both the first data of said input data defined in the table format and the operational manipulations defined with the non-sentential graphic format having a predetermined syntax, and

producing visual output data in the table format corresponding to said second data defined on said display screen by referring to said data base in accordance with the determined procedure of manipulating data.

5,301,314

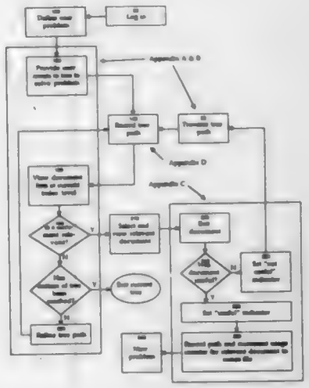
COMPUTER-AIDED CUSTOMER SUPPORT SYSTEM WITH BUBBLE-UP

Rick L. Gifford; Elizabeth Anderson, both of San Jose; Louise Kirkbride, Monte Sereno, and John T. Evans, Jr., Mountain View, all of Calif., assignors to Answer Computer, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1991, Ser. No. 740,578

Int. Cl.[5] G06F *12/00, 12/08*

U.S. Cl. 395—600 **4 Claims**



4. A computer-implemented method for rapidly retrieving response documents from a computer-aided customer support system having an index structure data base having a plurality of levels, the method comprising the computer-implemented steps of:

accepting a problem definition from a user in query form suitable for document retrieval and solution;

accessing the index structure;

accepting a structure path selection from the user based on index data available at each level;

responsive to a response document not existing at the level pointed to by the structure path, performing the repeated step of accepting successive structure path selections from the user based on index data available at the level pointed to by the most-recently selected structure path;

responsive to the response document existing at the level pointed to by the path, performing the steps of:

retrieving the response document;

interrogating the user as to the usefulness of the response document retrieved;

accepting a signal from the user indicating a relative usefulness measurement of the response document to the user;

combining relative usefulness measurements from a plurality of users of each retrieved document; and

responsive to the results of the combining step, repositioning the response document within the index structure to list more useful documents at higher levels in the index structure than less useful documents.

5,301,315

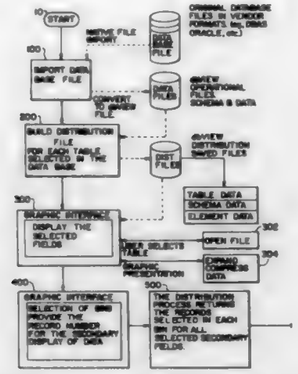
INDEXING/COMPRESSION SCHEME FOR SUPPORTING GRAPHICS AND DATA SELECTION

Russell A. Pellicano, North Bayshore, N.Y., assignor to Computer Concepts Corp., Bohemia, N.Y.

Filed Sep. 27, 1991, Ser. No. 766,860

Int. Cl.[5] G06F *15/401*

U.S. Cl. 395—600 **14 Claims**



1. A method for selecting and displaying a distribution of data in a selected data structure, said selected data structure having a particular file structure associated therewith and comprising at least a plurality of data records, and a plurality of data fields having data therein, said method comprising the steps of:

(a) accessing said selected data structure resident on a host system and reading the data therein to determine selected parameters of the distribution of said data;

(b) building a plurality of distribution matricies from data contained within said selected data structure with each matrix having a field header and an array of data bins and data summeries associated therewith;

(c) generating a display from said plurality of distribution matricies for said selected data structure to provide a graphical representation of the distribution of data contained within said selected data structure.

5,301,316

SYSTEM FOR DETERMINATION OF THE EQUIVALENCE OF TWO OBJECTS WITHOUT COMPROMISING THEN DONE BY A THIRD OBJECT NOMINATED BY ONE AND ACCETPED BY THE OTHER

Graham Hamilton; Michael L. Powell, both of Palo Alto, and John Chapin, East Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 30, 1991, Ser. No. 787,320

Int. Cl.[5] G06F *7/04, 7/20*

U.S. Cl. 395—600 **17 Claims**

1. In a network of computer systems comprising at least one central processing unit (CPU) executing a plurality of client and server processes wherein said processes and data manipulated by said processes are implemented as objects, a computer-implemented method for a client process to securely determine if a first and a second objects supported by a first and a second server processes respectively are equivalent objects with respect to one of the attributes such as contents, functionality, location and size, without compromising said first and second objects and said first and second server processes' security, said method comprising the steps of:

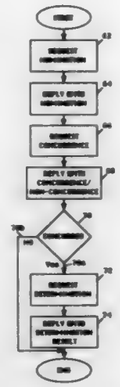
a) requesting said first object to nominate a third object to perform said determination for said client process by said client process;

b) replying to said client process with said nomination by said first object;

c) requesting said second object to concur to said nomination by said client process;

d) replying to said client process one of concurrence and nonconcurrence by said second object:

e) if said reply by said second object is a nonconcurrence, determining said first and second objects to be non-equivalent objects by said client process:



f) if said reply by said second object is a concurrence, requesting said third object to perform said determination for said client process by said client process: and

g) if said reply by said second object is a concurrence, performing said determination for said client process, and returning a determination result to said client process by said third object, said determination result indicating whether said first and second objects are equivalent objects.

5,301,317

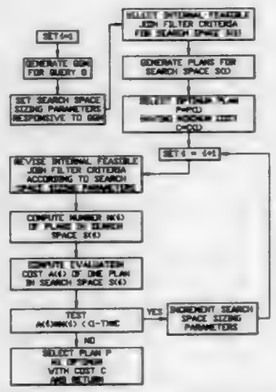
SYSTEM FOR ADAPTING QUERY OPTIMIZATION EFFORT TO EXPECTED EXECUTION TIME

Guy M. Lohman, San Jose, Calif.; Kiyoshi Ono, Yokohama, Japan, and John D. Palmer, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,170

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **7 Claims**



1. A method for selecting an optimum plan for query execu-

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tion in a computer-implemented database system of the type wherein a user query for information is translated into a plurality of primitive database operations selected according to a plurality of database operator selection criteria to form an executable plan having an execution cost related to the selection of compile-time parameters and the execution sequence of said plurality of primitive database operations, said executable plan being within a search space having a plurality of plans defined by said compile-time parameters and said database operator selection criteria for said search space, said method comprising the steps of:

(a) defining a first search space according to a first set of compile-time parameters and a first set of database operator selection criteria;

(b) evaluating the execution cost of a first set of a plurality of plans in said first search space to identify said optimum plan having a first execution cost that is the minimum in said first search space;

(c) performing, for one or more other search spaces, the steps of

(c.1) determining the evaluation cost of evaluating the execution costs of a plurality of plans in another search space,

(c.2) if said evaluation cost is less than a predetermined fraction of said first execution cost, performing the steps of

(c.2.1) evaluating the execution costs of said plurality of plans in said another search space,

(c.2.2) identifying a new plan having a second execution cost that is the minimum in said another search space, and

(c.2.3) replacing said optimum plan with said second plan only if said first execution cost is greater than said second execution cost.

5,301,318

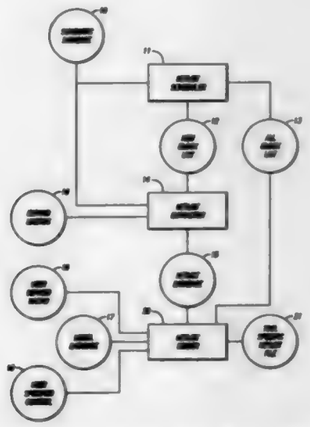
HIERARCHICAL NETLIST EXTRACTION TOOL

Manmohan Mittal, Thousand Oaks, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Division of Ser. No. 194,430, May 13, 1988, abandoned. This application May 21, 1992, Ser. No. 886,297

Int. Cl.[5] **G06F** *15/60*

U.S. Cl. 395—600 **16 Claims**



1. A computer implemented method for providing a netlist extraction tool, comprising a netlist scheduler, netlist extractor, and netlist binder for generating an updated netlist of a first netlist having an associated date of creation of a data base comprised of a plurality of blocks in a hierarchical relationship having a plurality of levels, said method comprising the computer implemented steps of:

at a first level, comparing using said netlist scheduler, said first netlist to said data base to determine when changes have been made to said data base;

repeating the previous step, using said netlist scheduler, for successive levels of said data base until the lowest level at which a change occurs is determined;

generating a block list of said blocks that have been updated;

generating, in response to said block list, using said netlist extractor a sub netlist for said each updated block with said first netlist;

generating an incremental updated netlist by combining, using said netlist binder, said sub netlist for said each updated block with said first netlist;

whereby an incremental updated netlist is provided without reenlisting the entire data base.

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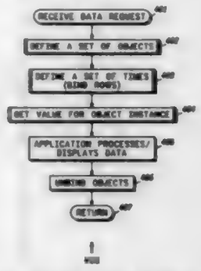
DATA STORAGE AUDIT TRAIL

Audree Thurman, Phoenix; Stanley Person, Mesa; Richard Shelton, Mesa, and Ronald Norden-Paul, Mesa, all of Ariz., assignors to Emtek Health Care Systems, Inc., Tempe, Ariz.

Continuation of Ser. No. 409,230, Sep. 15, 1989, abandoned. This application Nov. 23, 1992, Ser. No. 980,135

Int. Cl.[5] **G06F** *15/40*

U.S. Cl. 395—600 **2 Claims**



1. In a computer system having input means for inputting data and commands into said system by a system user, display means for displaying information to said user, a memory for storing data and instructions, including a database, said database comprising a plurality of data cells, and a transaction engine for performing operations upon said database in response to the entry of data and commands into said system by said user using said input means, a computer-implemented process for creating and providing to the user, at the user's option by entering a request therefor, a data audit trail in said system, wherein some or all of the steps in said process are performed by said transaction engine, said process comprising the steps of:

a) said transaction engine creating a primary linked list of a number N of said data cells, said number N being a positive, non-zero integer which is less than said plurality, said primary linked list linking data in a first of said data cells to data in a second of said data cells, said primary linked list linking data in said second data cell to data in a third of said data cells, and so forth, with data in the (N−1)th data cell being linked to data in the Nth data cell in said N data cells;

b) said transaction engine reading an original data of an original data cell of said N data cells from said database;

c) said user modifying the original data read by said transaction engine and thereby forming a modified data;

d) said transaction engine storing said modified data in a data cell in said database as a modified data cell which is not one of said N data cells;

e) said transaction engine linking said modified data cell into said primary linked list and unlinking said original data cell from said primary linked list;

f) said transaction engine creating a secondary linked list, said secondary linked list linking said modified data in said modified data cell to said original data cell;

g) in response to a request to view modified data entered into said system by said user, said transaction engine using said primary linked list to retrieve and display data stored in at least a portion of said N data cells, including said modified data; and

h) in response to a request to view original data entered into said system by said user, said transaction engine using said secondary linked list to retrieve and display said original data stored in said original data cell;

whereby, upon request of said user to view said N data cells or a portion thereof, either said modified data or said original data is displayed, depending upon said user's request, thereby permitting said user, at his option, to review either said modified data or an audit trail which includes said original data.

5,301,320

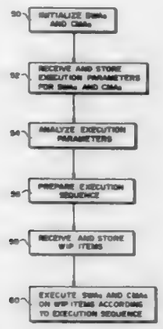
WORKFLOW MANAGEMENT AND CONTROL SYSTEM

John D. McAtee, Shrewsbury; Stephen M. Kennedy, Hudson; Paul J. Piccolomini, Fitchburg, and Paul J. Cerqua, Chelmsford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 722,691

Int. Cl.[5] **G06F** *9/00, 9/40*

U.S. Cl. 395—650 **16 Claims**



11. A method for defining, executing, monitoring and controlling the flow of business operations represented by a plurality of electronically stored execution modules, each of which facilitates the performance of a specified goal representing a business operation, the method comprising:

a. receiving, via an interface means, electronically encoded data, representative of a work item, from a user;

b. electronically storing the work-item data in a first computer memory;

c. creating and electronically storing, in a second computer memory, a list of the execution modules that includes, with respect to each module, data specifying execution parameters associated with each module and importance level associated with each parameter, said execution parameters relating to at least one of (i) previous execution of at least one other specified module, (ii) specified place of module execution, (iii) specified duration of module processing, (iv) a specified time during which module execution may take place, and (v) a priority value associated with the module, wherein such execution parameters may be modified by a user via an interface means without disturbing the execution parameters associated with other modules;

d. analyzing the execution parameters associated with the execution modules and, based on the importance levels, deriving therefrom an execution sequence for the modules; and

e. electronically executing, by means of a computer processor, the instructions contained in each module in the order specified by the execution sequence on the work-item data.

5,301,321

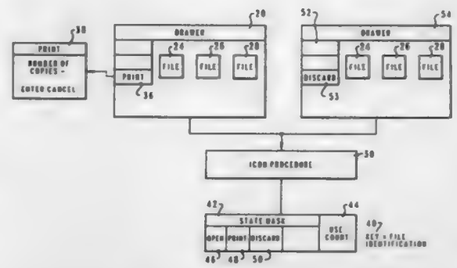
METHOD AND SYSTEM FOR THE MINIMIZATION OF CONFLICTING ACTIVITIES WITH RESPECT TO AN OBJECT STORED WITHIN A DATA PROCESSING SYSTEM

Laura K. Bell, Grand Prairie; Janis D. Jones, Carrollton; Daniel J. Kardell, Keller; Thanh-Nha Nguyen, and Keith A. Varga, both of Irving, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 1992, Ser. No. 839,862

Int. Cl.[5] **G06F** *9/06*

U.S. Cl. 395—650 **24 Claims**



1. A method in a data processing system for minimizing conflicting activities by one or more users within said data processing system with respect to an object stored therein, said method comprising the steps of:

establishing a state mask in association with an object which may be the subject of multiple activities by one or more users within said data processing system;

storing within said state mask a record of all current activities with respect to said object; and,

prior to permitting a proposed activity by a user within said data processing system, automatically determining if said proposed activity represents a conflict with a current activity by accessing said state mask to determine a status for each current activity.

5,301,322

SYSTEM FOR CONVERTING JOB/PROCESS IDENTIFIERS INTO PROCESSOR/PROCESS IDENTIFIERS IN TRANSFERRING DATA BETWEEN PROCESSES IN A MULTIPROCESSOR SYSTEM

Naoki Hamanaka, Tokyo; Teruo Tanaka, Hachioji; Koichiro Omoda, Sagamihara, and Shigeo Nagashima, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 379,230, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 52,871, May 22, 1987, abandoned. This application Jul. 10, 1992, Ser. No. 912,215

Claims priority, application Japan, May 23, 1986, 61-117351

Int. Cl.[5] **G06F** *9/00*

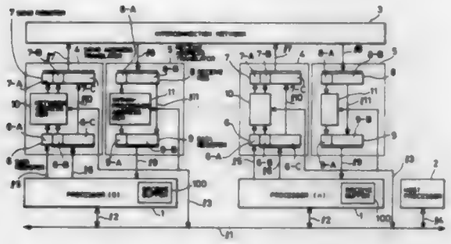
U.S. Cl. 395—650 **26 Claims**

15. A multiple processor system comprising:

a plurality of processors for executing programs which belong to at least one of a plurality of program groups, wherein the program which belong to any one of the program groups are allotted to different ones of the processors, wherein each program group is identified by a unique program group identification code (program group ID), and wherein each program within any one of the

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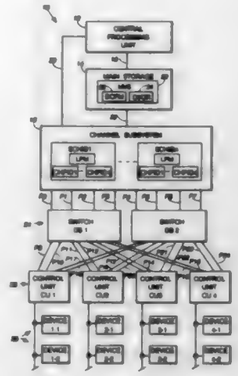
program groups is identified by a unique within-group program identification code (within-group program ID);
each processor including means for providing a combination of the program group ID assigned to the program group of the one program currently being executed by said each processor and the within-group program ID assigned to another one of the programs which belongs to the program group of the one program and which is to receive data outputted from said each processor during execution of the one program;
a plurality of identifying means each coupled to a respective one of said processors and responsive to the program



group ID/within-group program ID combination therefrom for providing a processor identification code (processor ID) which identifies another one of said processors to which said another program is allotted and a within-processor program identification code (within-processor program ID) which identifies said another program among the programs allotted to said another processor; and
transfer means, coupled to said processors and to said plurality of identifying means, for transferring data to said another program identified by the within-processor program ID and allotted to said another processor identified by the processor ID.

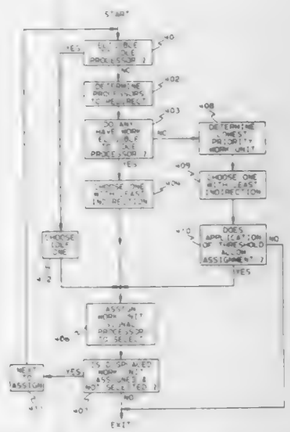
5,301,323
DATA PROCESSING SYSTEM INCLUDING DYNAMIC CHANNEL PATH MANAGEMENT
Theodore R. Maeurer, and Allan S. Meritt, both of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 30, 1992, Ser. No. 968,704
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—650 **23 Claims**

1. A data processing system (DPS) comprising;
a main storage for storing application programs, multitasking operating system programs, and channel programs;
a central processing unit (CPU) connected to said main storage for concurrently executing said application programs and said operating system programs;
a channel subsystem connected to said CPU and to said main storage for executing said channel programs, in response to input/output (I/O) commands from said CPU, and transferring data to and from said main storage;
I/O means connected to said channel subsystem and comprising a plurality of I/O devices, a plurality of control units connected to said I/O devices for controlling operation of said I/O devices, and a plurality of channel paths connected between said channel subsystem and said control units;
configuring means defining a channel path configuration comprising channel paths that are currently configured;
first means automatically operated by said operating system at periodic first intervals for measuring usage of said I/O means and storing measurement data indicative of such usage;
second means automatically operated by said operating system at periodic second intervals for analyzing said measurement data and determining when such usage exceeds a predetermined threshold;
third means selectively operated by said second means, when such usage is determined to exceed said predetermined threshold, for indicating what channel path change



should be made in said channel path configuration to reduce usage in said I/O configuration below said predetermined threshold; and
fourth means for dynamically changing said channel path configuration by altering said configuring means to define said channel path change as being currently configured.

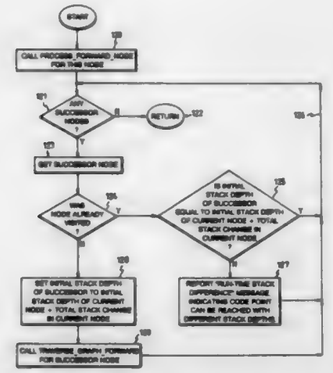
5,301,324
METHOD AND APPARATUS FOR DYNAMIC WORK REASSIGNMENT AMONG ASYMMETRIC, COUPLED PROCESSORS
Pamela H. Dewey; William J. Glynn, both of Poughkeepsie; Roger E. Hough, Highland, and Manohar R. Rao, Poughkeepsie, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Nov. 19, 1992, Ser. No. 978,601
Int. Cl.[5] G06F *15/16, 9/30*
U.S. Cl. 395—650 **14 Claims**



1. An apparatus for dynamic work reassignment comprising:
a. a tightly coupled processor complex comprising two or more processors, at least one of said two or more processors having a feature usable by any work unit executing on said at least one processor;

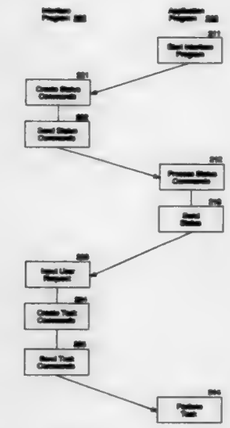
b. one or more ready work units, each of said ready work units capable of execution on one or more of said two or more processors;
c. a control function means for allocating resources among work units, said control function means comprising assignment means for assigning a chosen one of said one or more ready work units to a target one of said two or more processors, said assignment means comprising:
i) processor set identification means for identifying a set of one or more destination processors within said tightly coupled processor complex to which currently running work, displaced directly or indirectly because of said assigning, can be redirected to other one of said two or more processors by one or more work redirection actions;
ii) analysis means for analyzing the work redirection actions that result from different choices of said target from among said two or more processors, and, based on said analyzing, selecting said target so that said work redirection actions are projected, by said analyzing, to satisfy a specific processor complex goal.

5,301,325
USE OF STACK DEPTH TO IDENTIFY ARCHITECHTURE AND CALLING STANDARD DEPENDENCIES IN MACHINE CODE
Thomas R. Benson, Hollis, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 7, 1991, Ser. No. 666,083
Int. Cl.[5] G06F *9/45, 11/00*
U.S. Cl. 395—700 **21 Claims**



1. A method executed on a processor for operating on computer code, said computer code being in a first language and including references to a stack pointer, comprising the steps of:
accessing said computer code and generating therefrom a flow graph in an intermediate language, the flow graph being composed of blocks, and the blocks being composed of intermediate-language elements, where each element represents a single expression in said code, and where each block represents a sequence of at least one element;
tracing through each block of said flow graph to detect any stack-affecting elements which have the effect of modifying said stack pointer, said stack-affecting elements incrementing or decrementing said stack pointer, and recording for each block the difference between the number of stack-affecting elements which increment said stack pointer and the number of said stack-affecting elements which decrement said stack pointer to thereby record the net change in the stack pointer by elements of said block, and also recording the difference between the number of stack-affecting elements which increment said stack pointer and the number of said stack-affecting elements which decrement said stack pointer to thereby record the net change in the total depth of the stack from the beginning of said tracking; and
in response to said recording of said net change in said stack pointer and said net change in stack depth, visually reporting to a user of said processor the identity of selected blocks, said selected blocks having potentially improper stack references.

5,301,326
METHOD AND SYSTEM FOR CONTROLLING THE EXECUTION OF AN APPLICATION PROGRAM
Barry J. Linnett, Seattle, and Ford Martin, Edmonds, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Sep. 24, 1991, Ser. No. 764,706
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—700 **21 Claims**



1. A method in a computer system for performing a desired task in an application computer program, the application computer program having a plurality of functions, the functions for performing tasks, the application computer program having commands, the commands for controlling execution of the functions, the method comprising the steps of:
executing the application computer program wherein the application computer program starts execution of an interface computer program that executes concurrently with the execution of the application computer program;
generating status commands in the interface computer program, the status commands for requesting that status information for the application computer program be sent from the application computer program to the interface computer program;
sending the status commands from the interface computer program to the application computer program;
processing the status commands in the application computer program and sending status information from the application computer program to the interface computer program;
receiving in the interface computer program the status information sent from the application computer program to the interface computer program;
inputting in the interface computer program user requests from a user of the interface computer program to perform the desired task;
generating task commands in the interface computer pro-

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gram to implement the desired task based on the status information and the user request;

sending the task commands from the interface computer program to the application computer program; and

executing the task commands in the application computer program to effect the performing of the desired task.

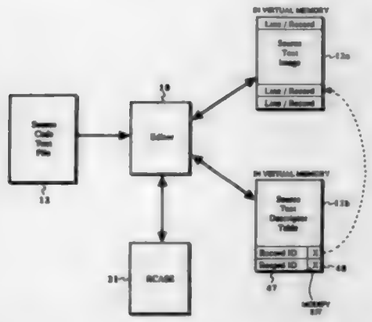
5,301,327

VIRTUAL MEMORY MANAGEMENT FOR SOURCE-CODE DEVELOPMENT SYSTEM

William M. McKeeman, Hollis, and Shota Aki, Weare, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 375,399, Jun. 30, 1989, abandoned. This application Feb. 8, 1993, Ser. No. 15,062
Int. Cl.[5] G06F 9/45
U.S. Cl. 395—700 **15 Claims**

MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 202 Pages)



1. A method of managing a virtual memory system while executing applications code having a plurality of different operating phases, wherein said plurality of different operating phases includes phases of editing, compiling, and linking a plurality of modules of source code; said virtual memory system having a paged virtual memory including a volatile memory and a non-volatile storage, said volatile memory having much faster access than said non-volatile storage, comprising the steps of:

a) storing in said virtual memory a plurality of separate data modules including said modules of source code, said data modules being of variable size, each data module being stored on a separate page or pages of said virtual memory with no interleaved data regardless of the size of the data module;

b) storing, on a page or pages in said virtual memory, said applications code for said plurality of separate operating phases, and executing said applications code for each of said operating phases to perform an operation on one or more of said data modules including writing data to said one or more of said data modules;

c) transferring said page or pages of at least one of said data modules and said page or pages of said applications code for at least one of said plurality of operating phases from said non-volatile storage to said volatile memory for said step of executing said applications code of each of said operating phases;

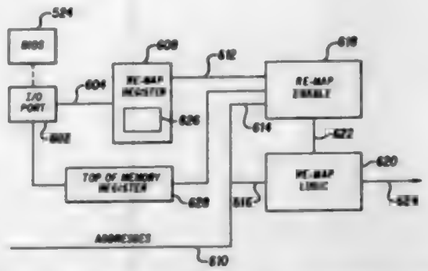
d) and reallocating said data modules after said step of executing each one of said operating phases to maintain each of said data modules in a page or pages with no interleaved data in non-volatile storage and said volatile memory.

5,301,328

SYSTEM AND METHOD FOR SHADOWING AND RE-MAPPING RESERVED MEMORY IN A MICROCOMPUTER

Sridhar Begur, and Irvin R. Jones, Jr., both of San Jose, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 472,057, Jan. 31, 1990, Pat. No. 5,202,994. This application Sep. 25, 1992, Ser. No. 951,650
Int. Cl.[5] G06F 12/02
U.S. Cl. 395—700 **7 Claims**



1. In a system for mapping one or more selected portions from a plurality of portions of an original reserved memory in a microcomputer to a portion of shadow memory, said shadow memory being a part of a new system memory having memory locations that correspond to memory locations in the original reserved memory, a computer-implemented system for re-mapping a free reserved memory portion of the shadow memory to an additional system memory, the new system memory having distinct memory addresses, where there is a highest distinct physical address the additional system memory beginning at the highest distinct physical address, the computer-implemented system for re-mapping comprising:

first means for detecting a free reserved memory portion of the shadow memory to be re-mapped to the highest distinct physical address of the new system memory, and including means for determining the size of the free reserved memory portion of the shadow memory;

second means for detecting the highest distinct physical address of the new system memory;

third means, responsive to said first and second means, for allocating a number of addresses beginning at the highest distinct physical address of the new system memory corresponding to the size of the free reserved memory portion of the shadow memory, thereby forming an additional system memory; and

fourth means, responsive to said third means, for directing to the free reserved memory portion accesses to the additional system memory, wherein the microcomputer when running a program can use the free reserved memory of the shadow memory by accessing the additional system memory.

5,301,329

DOUBLE UNEQUAL BUS TIMEOUT

Robert C. Frame, Westboro, and Fernando A. Zayas, Stow, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 192,631, May 11, 1988, abandoned. This application Jul. 9, 1990, Ser. No. 550,206
Int. Cl.[5] G06F 13/368
U.S. Cl. 395—725 **20 Claims**

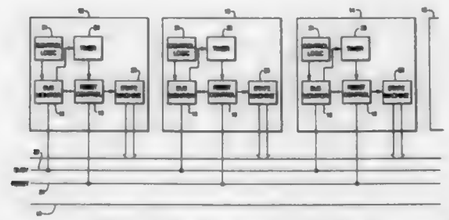
1. In a computer system including a plurality of devices coupled to a system bus, each device of the plurality of devices capable of operating as either an initiator or a target device, each device comprising:

(a) timing means for keeping elapsed time such that:

(i) if the device operates as an initiator, the timing means keeps elapsed time responsive to the device operating as an initiator, and issues a first timeout signal if a first predetermined time period of the timer has elapsed; and

(ii) if the device operates as a target, the timing means keeps elapsed time responsive to the device being operated as a target, and issues a second timeout signal if a second predetermined time period has elapsed;

(b) a bus monitor, coupled to the bus and the timing means, for asserting control of the bus responsive to the device



operating as a target and for de-asserting control if the timing means issues the second timeout signal; and

(c) a reset control, coupled to the timing means and the bus, for receiving a timeout signal and responding to it by issuing a reset signal on the bus if the timeout signal received is the first timeout signal;

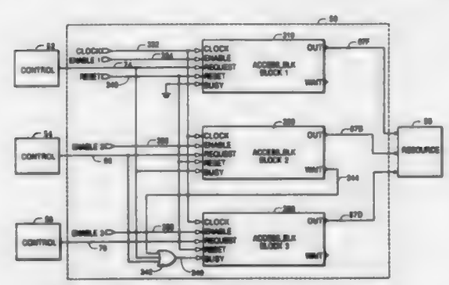
such that, by issuing a reset signal or by de-asserting control of the bus, the bus is placed in condition for one of the plurality of devices to obtain control of the bus.

5,301,330

CONTENTION HANDLING APPARATUS FOR GENERATING USER BUSY SIGNAL BY LOGICALLY SUMMING WAIT OUTPUT OF NEXT HIGHER PRIORITY USER AND ACCESS REQUESTS OF HIGHER PRIORITY USERS

Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 12, 1990, Ser. No. 596,549
Int. Cl.[5] G06F 13/14, 13/00
U.S. Cl. 395—725 **6 Claims**



1. An apparatus, comprising:

a data processing resource to be shared;

a plurality of users for sharing said resource; and associated with each of said users, a contention handling circuit, comprising:

an input line for receiving an access request signal from the associated user;

an output gate for transmitting said access request signal to said resource via a request output signal line;

an input line for receiving a busy signal indicating that access to said resource is unavailable;

means for disabling said output gate in response to said busy signal;

means for latching in said request signal until said busy signal is deasserted;

means for generating a wait output when said busy signal and said access request signal occur at the same time; and

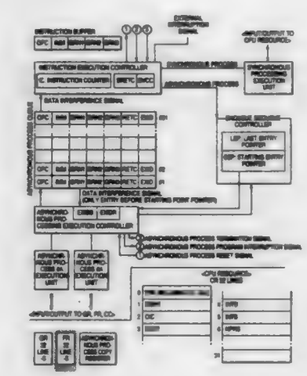
wherein said busy signal input to one said contention handling circuit comprises a logical sum of a wait output signal of a contention handling circuit associated with a next higher priority user and the access request signals of higher priority users.

5,301,331

INTERRUPTION HANDLING SYSTEM

Haruhiko Ueno, Kawasaki, and Yozo Nakayama, Zama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/00370, § 371 Date Nov. 19, 1991, § 102(e) Date Nov. 19, 1991, PCT Pub. No. WO91/14985, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 19, 1991, Ser. No. 776,347
Int. Cl.[5] G06F 9/00
U.S. Cl. 395—725 **21 Claims**



7. An interrupting handling system in a data processing system having a program counter, for handling processes performing at least one of inputting from CPU resources including registers and outputting from the CPU resources, the processes classified into synchronous CPU resource using processes and asynchronous CPU resource using processes, said interrupt handling system comprising:

synchronous instruction/asynchronous instruction processing means for initiating a synchronous CPU resource using process designated by a synchronous instruction, executing the synchronous resource using process synchronously with execution of the synchronous instruction and terminating the synchronous CPU resource using process initiated by the synchronous instruction upon termination of the execution of the synchronous instruction and for initiating an asynchronous CPU resource using process designated by an asynchronous instruction, executing the asynchronous resource using process asynchronously with execution of the asynchronous instruction and terminating the asynchronous CPU resource using process initiated by the asynchronous instruction after termination of the execution of the asynchronous instruction;

data-dependent relationship processing means for detecting a CPU resource using process dependent interruption factor indicating

when a first asynchronous CPU resource using process for performing an outputting operation to a first resource has been initiated by a first instruction to store an output in the first resource and the first resource is used for input by a succeeding process initiated by a second

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instruction issued after the first instruction, thereby forming a data-dependent relationship therebetween, input from the first resource to the succeeding process is to wait until the output is stored in the first resource by the first asynchronous process,

output by the succeeding process to a second resource, is to wait until after access to the first resource by all CPU resource using processes initiated prior to the succeeding process,

when the succeeding process is one of the synchronous CPU resource using processes, termination of the second instruction is to wait until the program counter remains pointing to the second instruction,

when the succeeding process is a second asynchronous CPU resource using process, termination of execution of the second instruction is permitted to be delayed until access to the first resource by the first asynchronous CPU using process is terminated even though execution of the second instruction is completed and the succeeding process is initiated, and

when execution of the first asynchronous CPU resource using process is initiated, output to a second resource used by the succeeding process is to wait until input to the first asynchronous CPU resource using process is terminated;

state waiting means for controlling interruption operations, when one of the CPU resource using process dependent interruption factor is detected in a currently executing CPU resource using process and an interruption is generated without directly depending on a result of the currently executing CPU resource using process, the interruption operations including not initiating execution of a new instruction and continuing execution of the first instruction and the first asynchronous CPU resource using process until the first asynchronous CPU resource using process terminates;

asynchronous CPU resource using process terminating means for terminating, after termination of the first asynchronous CPU resource using process, all asynchronous CPU resource using processes executing at initiation of the interruption operation; and

synchronous CPU resource using process terminating means for terminating synchronous CPU resource using processes upon instruction termination and for terminating all synchronous CPU resource using processes executing when the first instruction terminates.

5,301,332

METHOD AND APPARATUS FOR A DYNAMIC, TIMED-LOOP ARBITRATION

Glenn E. Dukes, Sunnyvale, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 23, 1992, Ser. No. 995,731

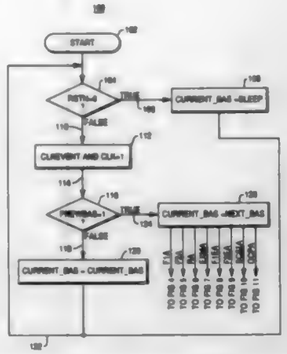
Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—725 **10 Claims**

1. A method of arbitrating for access to a shared resource among a plurality of agents, each having a different priority, comprising the steps of:

providing to a first agent of said plurality of agents access to said shared resource if said first agent has requested access to said shared resource;

starting a timer if there is an unfulfilled request for the shared resource by a second agent; and



after said timer reaches a predetermined value, said access of said first agent is terminated and an access by said second agent is provided.

5,301,333

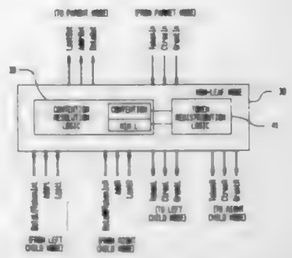
TREE STRUCTURED VARIABLE PRIORITY ARBITRATION IMPLEMENTING A ROUND-ROBIN SCHEDULING POLICY

Kuo-Chu Lee, Franklin, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 537,683, Jun. 14, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 113,588

Int. Cl.[5] G06F *13/37*; H04Q *11/00*

U.S. Cl. 395—725 **13 Claims**



9. An arbiter circuit for controlling access to a resource in an electronic network comprising

a plurality of leaf and non-leaf nodes arranged in a tree structure, each of said non-leaf nodes being connected to two child nodes below it in the tree structure and one parent node above it in the tree structure, said leaf nodes serving a plurality of access requests, of differing priority classes and each request having an associated token bit,

each of said non-leaf nodes including means for receiving two of said access requests from the two child nodes connected below it in the tree structure and means for executing a contention resolution algorithm to determine priority between the two received requests so that a winning request is determined at the uppermost node in said tree, said winning request being chosen from the highest of said priority classes, means for executing a token redistribution algorithm for determining token redistribution information to be transmitted to said leaf nodes, and means for implementing said token distribution information to clear said token bit of said winning request such that the leaf node serving said winning request receives a lower priority than other leaf nodes in the same priority class to

implement a round-robin scheduling policy among the leaf nodes serving said access requests of the highest priority class.

5,301,334

FUNCTION EXPANSION UNIT CAPABLE OF SUPPLYING POWER TO COMPUTER

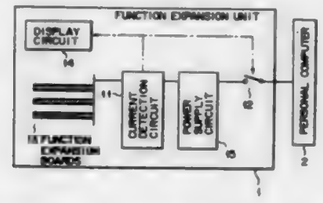
Takayuki Horiuchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 16, 1991, Ser. No. 777,190

Claims priority, application Japan, Oct. 19, 1990, 2-278903

Int. Cl.[5] G06F *1/30*

U.S. Cl. 395—750 **15 Claims**



1. A computer system comprising:

a computer main body and an expansion unit, detachably connected to said computer main body, for supplying a power to said computer main body and expanding a function of said computer,

said expansion unit having internal circuit components and including:

first expansion connector means to which at least one expansion circuit board is arbitrarily detachably connected;

first power connector means for supplying power from said expansion unit to said computer main body;

power supply means connected to said first power connector means and internal circuit components including said expansion circuit board, for supplying the power to said internal circuit components including said expansion circuit board and to said first power connector means; and

switching means, connected to said power supply means, for detecting an amount of an internal power supplied from said power supply means to said internal circuit components and stopping the power supply to said computer main body from said power supply means through said first power connector means when the amount of the internal power exceeds a predetermined value; and

said computer main body including:

a second expansion connector means to which said first expansion connector means is connected;

second power connector means to which said first power connector means is connected, for receiving the power from said expansion unit;

a battery means for storing electrical power;

processing means, connected to said expansion circuit board through said first and second expansion connector means and powered by said battery means and the power supplied from said expansion unit through said first and second power connector means, for performing data-processing operation using said expansion circuit board.

5,301,335

REGISTER WITH SELECTIVE WAIT FEATURE

John A. Langan; Robert J. Amedeo, both of Austin, and Nancy L. Thomas, Dripping Spring, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1992, Ser. No. 907,077

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—775 **16 Claims**

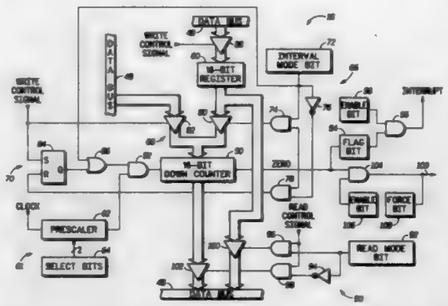
1. A data processing system comprising:

central processing unit means for executing instructions;

register means under control of the central processing unit means for storing a data value and for providing an output signal;

wait control logic, the wait control logic further comprising:

latch means under control of the central processing unit for storing a data value and for providing an output signal; and



logic means coupled to receive the output signal from the latch means, coupled to receive a write control signal from the central processing unit means and coupled to receive an event signal for providing a transfer control signal to the register means upon receipt of the write control signal if the output signal from the latch means is in a first state and upon receipt of the event signal if the output signal from the latch means is in a second state.

5,301,336

GRAPHICAL METHOD FOR PROGRAMMING A VIRTUAL INSTRUMENT

Jeffrey L. Kodosky; James J. Truchard, both of Austin, Tex., and John E. MacCrisken, Palo Alto, Calif., assignors to National Instruments, Inc., Austin, Tex.

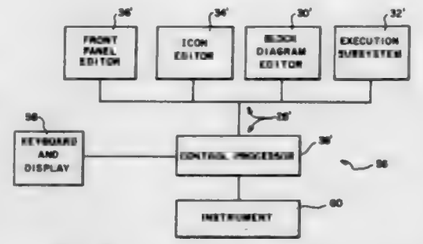
Continuation of Ser. No. 923,127, Oct. 24, 1986, Pat. No. 4,914,568. This application Jul. 12, 1989, Ser. No. 380,329

Int. Cl.[5] G06F *3/14, 3/147, 3/02, 15/403*

U.S. Cl. 395—800 **33 Claims**

MICROFICHE APPENDIX INCLUDED

(11 Microfiche, 753 Pages)



1. A method for programming a computer to execute a procedure, the computer including memory, a display, user input means, and a data processor, the method comprising the steps of:

storing in the memory a plurality of executable functions and a plurality of data types;

assembling a first data flow diagram on the display in response to user input to specify a first process, the first data flow diagram including function-icons corresponding to respective ones of the plurality of executable functions, variable-icons corresponding to respective ones of the plurality of data types, and arcs interconnecting the function-icons and variable-icons;

assembling a second data flow diagram on the display in

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response to user input to specify a second process, the second data flow diagram including function-icons corresponding to respective ones of the plurality of executable functions, variable-icons corresponding to respective ones of the plurality of data types, a procedure-icon corresponding to the first data flow diagram, and arcs interconnecting the function-icons, variable-icons and the procedure-icon;

assembling a panel on the display in response to user input, the panel including input variable-icons and output variable-icons for assigning input values and displaying output values, respectively, to variable-icons in the second data flow diagram; and

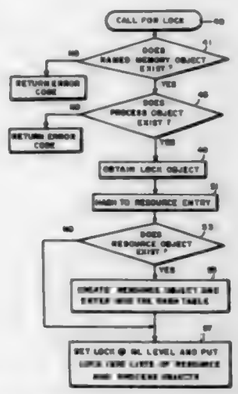
generating an executable program in response to the first and second data flow diagrams and the panel including interconnected executable functions and data types as indicated by the first and second data flow diagrams, for receiving input values indicated in the panel and executing a procedure including the first and second processes to generate output values for display in the panel.

5,301,337

DISTRIBUTED RESOURCE MANAGEMENT SYSTEM USING HASHING OPERATION TO DIRECT RESOURCE REQUEST FROM DIFFERENT PROCESSORS TO THE PROCESSOR CONTROLLING THE REQUESTED RESOURCE

Robert E. Wells, Arlington, and Kenneth A. Sedgwick, Acton, both of Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Apr. 6, 1990, Ser. No. 505,779
Int. Cl.[5] G06F *13/368, 15/76*
U.S. Cl. 395—800 **5 Claims**



1. A computer implemented method for cooperatively managing resources which may be needed by a variety of processes running simultaneously on a group of processors each of which is provided with a respective section of memory which is also accessible by other processors in the group, a resource manager program which is replicated for each said processor in its respective section of memory and which is responsive to calls from processes seeking access to resources or release of resources, and a hash table which is divided into portions, each said portion comprised of a series of entries, which are distributed over respective sections of said memory, said method comprising the computer implemented steps of:

implementing a hashing algorithm by said resource manager program which directs calls form processes seeking access to a designated resource to a unique memory address location for a unique one of said memory sections associated with the designated resource irrespective of which processors originated the calls, said memory address location storing a hash table entry corresponding to the designated resource,

associating, in the unique one of said memory sections, with a corresponding portion of the hash table a plurality of resource data objects,

assigning to the designated resource one of the plurality of resource data objects which records information regarding the processes which have access or are seeking access to the designated resource,

placing said one of the plurality of resource data objects in a list of resource data objects which are assigned to resources which hash to said entry corresponding to the designated resource,

providing said entry corresponding to the designated resource with a pointer which points to said list of resource data objects, and,

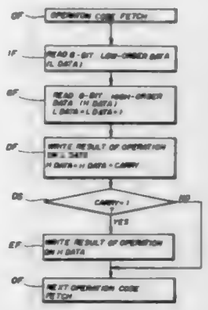
accessing, through said one of the plurality of resource data objects, said designated resource by said processes seeking access.

5,301,338

SYSTEM INCLUDING CENTRAL PROCESSING UNIT

Shinichi Yamaura, Takarazuka; Takashi Yasui, Toyonaka, and Keiichi Yoshioka, Sanda, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 17, 1990, Ser. No. 568,827
Claims priority, application Japan, Aug. 23, 1989, 1-217130
Int. Cl.[5] G06F *12/04*
U.S. Cl. 395—800 **4 Claims**



3. A data processing method comprising the steps of:

(a) reading data from a memory via a data bus, said data having a first data length, said data being composed of low-order data and high-order data, and said data bus having a second data length less than said first data length;

(b) processing said low-order data of data being considered during a first machine cycle;

(c) processing said high-order data of said data being considered during a second machine cycle;

(d) determining whether or not it is necessary to process the high-order data of the data being considered during said second machine cycle on the basis of a result obtained by processing the low-order data of said data being considered during said first machine cycle; and

(e) immediately processing the low-order data of the data subsequent to said data being considered without writing the high-order data of said data being considered when said step (d) determines that it is unnecessary to process the high-order data of said data being considered;

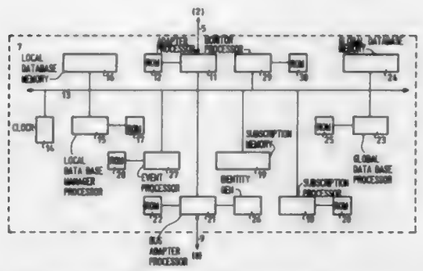
wherein said step (d) further comprises the step of determining whether or not said result obtained by processing the low-order data of said data being considered has a carry, wherein said step (e) immediately processes the low-order data of data subsequent to said data being considered without processing the high-order data of said data being considered when it is determined that said result has the carry.

5,301,339

SYSTEM FOR DYNAMIC COMMUNICATION AMONG SUBSYSTEMS IMPLEMENTING DATA REQUESTS BY DATA TYPE AND LOCATING DATA BY DATA TYPE MATCHING

Maarten Boasson, Borculo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Continuation of Ser. No. 133,679, Dec. 16, 1987, abandoned. This application Oct. 17, 1990, Ser. No. 600,275
Claims priority, application Netherlands, Dec. 16, 1986, 8603193
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 **11 Claims**



1. A communication system comprising:

a plurality of subsystems each of which is for producing and processing one or more types of information; each subsystem comprising means for requesting information by including in such a request an indication of the type of information desired, and means for supplying information produced by said subsystem and including therein an indication of the type of the produced information;

a bus system; and

a plurality of interfaces respectively coupling the respective subsystems to said bus system, the interface for each subsystem comprising:

(a) subscription means including respective means for

(i) receiving from said subsystem an initial request for a desired type of information, storing in first memory means the indication in said request of the desired type of information, and supplying said indication of the desired type of information to said bus system;

(ii) accepting the desired type of information from said bus system each time it is provided therefrom following said initial request, as identified by an information type indication as in such request, and storing said desired type of information so accepted from said bus system in second memory means; and

(iii) supplying said desired type of information from said second memory to said subsystem following said initial request therefor; and further supplying to said subsystem, in response to subsequent requests therefrom for said desired type of information, information of that desired type in said second memory means at the times of such subsequent requests;

(b) means for storing in third memory means information produced by said subsystem, including an indication of the type of the produced information;

(c) means for supplying a type of produced information which is stored in said third memory means to said bus system in response to a request received from said bus system for information of such produced type, and

(d) means for further supplying said type of produced information stored in said third memory to said bus system each time said type of produced information is produced by said subsystem;

(e) means for producing a quality indication for information produced by said subsystem and which signifies the quality of such produced information according to a predetermined definition;

(f) means for including the applicable quality information with produced information supplied by said interface to said bus system;

(g) means for storing and overwriting information received from the bus system with quality indications applicable thereto; and

(h) means for supplying to said subsystem, each time it requests a type of information, the stored information of such type having the highest quality indication;

whereby the subsystems communicate with each other in real time without requiring information about the configuration of said system and without requiring the address of any subsystem;

whereby the subsystems operate independently and continue to produce and process information in the event of partially failure of the system without need for a duplicate system; and

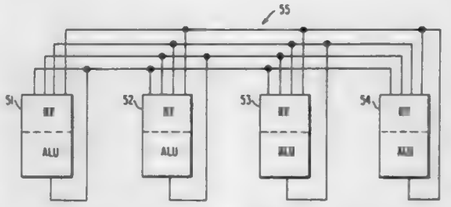
wherein the quality indication comprises instantaneous quality information Q_o, durability information τ, and time information t_o, where the instantaneous quality information Q_o indicates quality of the produced information at a time denoted by the time information t_o according to said predetermined definition and where the durability information τindicates a time interval during which the instantaneous quality information Q_o remains valid.

5,301,340

IC CHIPS INCLUDING ALUS AND IDENTICAL REGISTER FILES WHEREBY A NUMBER OF ALUS DIRECTLY AND CONCURRENTLY WRITE RESULTS TO EVERY REGISTER FILE PER CYCLE

Peter W. Cook, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1990, Ser. No. 607,176
Int. Cl.[5] G06F *15/76*
U.S. Cl. 395—800 **5 Claims**



1. A Very Long Instruction Word (VLIW) computer architecture comprising:

at least three integrated circuit chips, each of said chips including an arithmetic logic unit and a local register file, said local register file having a plurality of on-chip read ports connected to the arithmetic logic unit for supplying two operands to said arithmetic logic unit, and said local register file having a plurality of write ports equal in number to a total number of all said arithmetic logic units of all said integrated circuit chips of said VLIW computer architecture, whereby said local register file is partitioned into a plurality of sections, each said section corresponding to one of said write ports; and

a broadcast bus directly interconnecting each of said arithmetic logic units with a corresponding one of the write ports of each of said local register files, each said arithmetic logic unit when performing a write operation writing to a corresponding one of said sections of all of said local register files via said broadcast bus such that, on a given cycle, a plurality of said arithmetic logic units concur-

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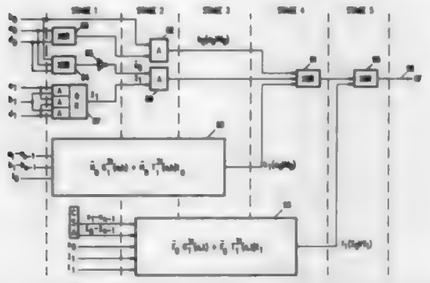
rently write results to all said local register files and any said arithmetic logic unit has access in a next cycle to said results obtained at every said arithmetic logic unit in said given cycle.

5,301,341

OVERFLOW DETERMINATION FOR THREE-OPERAND ALUS IN A SCALABLE COMPOUND INSTRUCTION SET MACHINE WHICH COMPOUNDS TWO ARITHMETIC INSTRUCTIONS

Stamatis Vassiliadis, Vestal, and James E. Phillips, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1990, Ser. No. 619,868
Int. Cl.[5] G06F *7/50*
U.S. Cl. 395—800 3 Claims



1. A mechanism for detecting arithmetic overflow in a computer system that compounds two instructions by grouping instructions in a sequence of instructions for simultaneous execution by the computer system, the mechanism comprising:

carry-save addition means for generating multi-bit sum and carry signals in response to three multi-bit, binary operands, wherein, said three multi-bit binary operands include operands a, b, and d, each of said operands including n bits, the bits of each operand being in order of significance in which significance is given by i, and $0 \leq i \leq n-1$, and in which a_0, b_0, and d_0 denote the most significant bits, and a_{31}, b_{31}, and d_{31} the least significant bits of operands a, b, and d;

carry look-ahead addition means connected to said carry-save addition means for generating a result signal in response to said sum and carry signals, said result signal representing a result produced by a sequence of two binary arithmetic add-type operations performed on said operands; and

logic means connected to said carry-save addition means for producing an overflow signal, OF, representing an overflow condition resulting from the execution of the second binary arithmetic operation of said two binary arithmetic operations, said logic means providing said overflow signal in response to said operands and said sum and carry signals and, wherein said logic means includes:

first means responsive to a_0, b_0, and d_0 for producing a first output corresponding to a first equation term $b_0(a_0 V d_0)$, where the symbol V denotes the exclusive-OR operation;

second means responsive to first and second most significant bits of operand a, operand b, and operand d for producing a second output corresponding to a second equation term $\bar{s}_0 l_1$, s_0 representing a most significant bit of said multi-bit sum signal and l_1 representing a second most significant bit of said multi-bit carry signal;

third means responsive to said multi-bit operands for producing a third output corresponding to a third equation term $k_1(a_0 V d_0)$, wherein k_1 represents a carry into a most significant bit of a result produced by execution of the first binary arithmetic operation of said two binary arithmetic operations;

fourth means responsive to said multi-bit sum and carry signals for producing a fourth output corresponding to a fourth equation term $f_1(s_0 V l_1)$, wherein f_1 represents a carry into a most significant bit of a result produced by execution of said second binary arithmetic operation; and

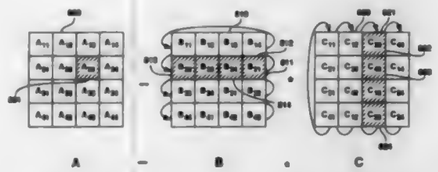
exclusive-OR means connected to said first, second, third, and fourth means for producing said overflow signal by exclusive-OR combination of said first, second, third, and fourth outputs.

5,301,342

PARALLEL PROCESSING COMPUTER FOR SOLVING DENSE SYSTEMS OF LINEAR EQUATIONS BY FACTORING ROWS, COLUMNS, AND DIAGONAL, INVERTING THE DIAGONAL, FORWARD ELIMINATING, AND BACK SUBSTITUTING

David S. Scott, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 20, 1990, Ser. No. 632,462
Int. Cl.[5] G06F *15/347, 15/32*
U.S. Cl. 395—800 11 Claims



1. A method for computing, in a parallel processing system, a solution to a system of linear equations, coefficients of the linear equations being represented in a matrix and right-hand sides of the linear equations being represented in a vector, said matrix and said vector being stored as electromagnetic impulses on a non-volatile medium; the parallel processing system comprising a plurality of compute nodes coupled in parallel, each of the plurality of compute nodes comprising a processor, a memory, and a non-volatile storage medium, a plurality of means for communicating between each of the plurality of compute nodes in the parallel processing system, means for partitioning the matrix into ND disk sections and storing said ND disk sections as electromagnetic impulses on each of the non-volatile storage medium of the plurality of compute nodes, and means for partitioning each of the ND disk sections into a plurality of node sections, each of the node sections being respectively assigned to each of the plurality of compute nodes; said method, performed by the plurality of compute nodes cooperating, through communications with neighboring ones of said plurality of compute nodes on the plurality of communicating means, comprising the steps of:

factoring respectively assigned node sections of first a row, then a column, and then a diagonal of each of the ND disk sections, and communicating results of said factoring to neighboring compute nodes while storing said results as electromagnetic impulses onto the non-volatile storage medium of each of the plurality of compute nodes;

inverting the factored diagonal of each of the ND disk sections stored on each of the non-volatile storage medium of the plurality of compute nodes and storing results of said inversion as electromagnetic impulses on the non-volatile storage medium of each of the plurality of compute nodes;

forward eliminating each of the factored ND disk sections stored as electromagnetic impulses on the non-volatile storage medium of each of the plurality of compute nodes and storing results of said forward elimination as electromagnetic impulses on the non-volatile storage medium of each of the plurality of compute nodes;

back substituting each of the forward eliminated ND disk sections and storing results of said back substitution as electromagnetic impulses on the non-volatile storage medium of each of the plurality of compute nodes; and

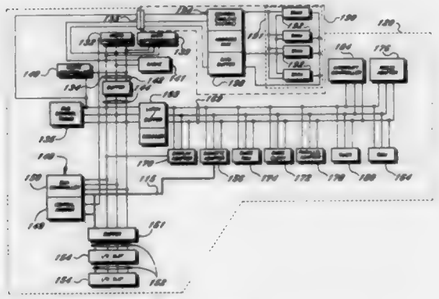
generating said solution to said system of linear equations by sequentially fetching the results of said back substitution and the results of said inversion from the non-volatile storage medium of each of the plurality of compute nodes and multiplying said results of said back substitution by said results of said inversion.

5,301,343

SYSTEM HAVING MICROPROCESSOR LOCAL MEMORY EXPANSION CAPABILITY THROUGH REMOVABLE COUPLING OF LOCAL MEMORY EXPANSION BOARDS DIRECTLY TO THE HIGH SPEED MICROPROCESSOR LOCAL BUS

Richard D. Alvarez, Boca Raton, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 31, 1990, Ser. No. 636,175
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 12 Claims



1. A computer system comprising:

a microprocessor;

a high speed microprocessor local bus directly coupled to said microprocessor;

a system bus;

a bus controller coupled to and providing communication between said local bus and said system bus; and

a local bus memory facility directly coupled to and which can be physically separated from said local bus, said facility comprising:

a substrate for mounting and providing coupling connections among components mounted thereon;

at least one volatile memory component mounted on said substrate; and

a memory controller mounted on said substrate and coupled to said at least one volatile memory component and said local bus and said bus controller, said memory controller being operatively interposed between said at least one volatile memory component and said local bus and regulating communications between said volatile memory component and said microprocessor.

5,301,344

MULTIBUS SEQUENTIAL PROCESSOR TO PERFORM IN PARALLEL A PLURALITY OF RECONFIGURABLE LOGIC OPERATIONS ON A PLURALITY OF DATA SETS

Alexander Kolchinsky, Andover, Mass., assignor to Analogic Corporation, Peabody, Mass.

Filed Jan. 29, 1991, Ser. No. 647,557
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 5 Claims

1. A reconfigurable sequential pipeline processor comprising:

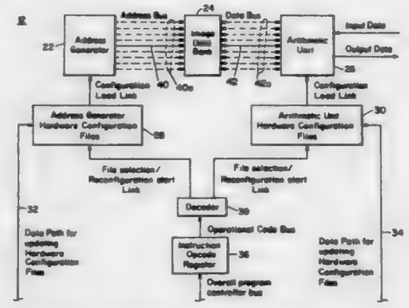
a data bank for storing a plurality of data sets to be processed;

a programmable logic block address generator which includes a plurality of address sets for addressing data sets in said data bank;

a programmable logic block arithmetic unit, which includes a plurality of arithmetic circuit sets, responsive to said data bank, for processing the data sets addressed by said address sets in the programmable logic block address generator;

an address generator hardware configuration file having a plurality of configuration files for configuring each address set in said programmable logic block address generator in one of a plurality of addressing configurations in response to an address operational code;

an arithmetic unit hardware configuration file having a plurality of configuration files for configuring each arith-



metic circuit set in said programmable logic block arithmetic unit in one of a plurality of processing configurations in response to an arithmetic operational code;

a plurality of buses for directly interconnecting in a permanent manner each of said plurality of reconfigurable address sets and arithmetic circuits with a specific one of said data sets;

means for delivering a series of operational codes to each of said address generator hardware configuration file and said arithmetic unit hardware configuration file for configuring said programmable logic block address generator sets and said programmable logic block arithmetic circuit sets to perform in parallel a corresponding series of arithmetic logic operations on said data sets in said data bank; and

wherein said means provides a reconfigurable sequential processor without the need for a hardware multiplexer switching capability.

5,301,345

DATA PROCESSING SYSTEM FOR PERFORMING A SHIFTING OPERATION AND A CONSTANT GENERATION OPERATION AND METHOD THEREFOR

Robert J. Skrubak, and Michael E. Gladden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1991, Ser. No. 695,161
Int. Cl.[5] G06F *5/01, 7/64, 9/30, 9/315*
U.S. Cl. 395—800 11 Claims

1. A data processing system, comprising:

storage means for receiving and storing a first data value;

a decoder for decoding the first data value to provide a plurality of control signals; and

control selection means for performing one of a shifting operation and a constant generation operation, the control section means, comprising:

a first input for receiving the plurality of control signals;

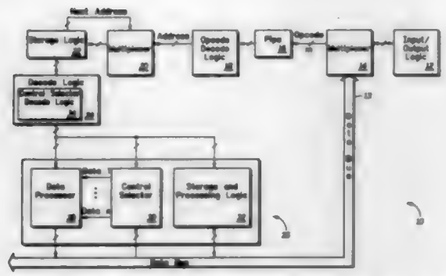
a second input for receiving a second data value;

a plurality of bit stages, each of the plurality of bit stages

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being coupled to the first input for receiving at least one of the plurality of control signals and being coupled to the second input for receiving a bit of the second data value; and

a common conductor for interconnecting the plurality of bit stages, the common conductor being used to transfer



a bit of the second data value from a first one of the plurality of bit stages to a second one of the plurality of bit stages in response to a first one of the plurality of control signals, and the common conductor being used as a control signal for generating a constant data value in response to a second one of the plurality of control signals.

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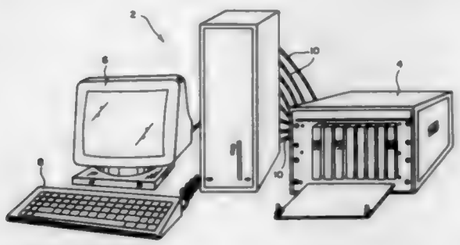
METHOD AND APPARATUS FOR TRANSFERRING DATA BETWEEN A HOST DEVICE AND PLURALITY OF PORTABLE COMPUTERS

John Notarianni, Lake Ronkonkoma; Jerry Cohen, Plainview; John P. D'Ambrosio, Sayville, and Charles Orlowski, Huntington Sta., all of N.Y., assignors to Cad Forms Technology Inc., Farmingdale, N.Y.

Filed Jun. 21, 1991, Ser. No. 718,358

Int. Cl.[5] G06F *11/30*

U.S. Cl. 395—800 **11 Claims**



1. In combination:

a plurality of pen based computers, each pen based computer including a battery, a display and an unlighted pen for handwritten input of information on the display; and

apparatus for transferring data from the plurality of pen based computers, which comprises:

a housing;

a support frame mounted in the housing, the support frame being adapted to support a plurality of pen based computers, the support frame including a plurality of spaced apart parallel divider panels, adjacent divider panels defining between them a slot for receiving a respective pen based computer, the support frame further including a first back panel, the first back panel being mounted on the divider panels and being disposed transversely thereto;

a plurality of guide brackets, each of the guide brackets being mounted on the support frame and disposed within a respective slot defined by adjacent divider panels, the guide brackets directly engaging an edge of the pen based computers to facilitate insertion of the pen based computers into respective receiving slots;

a plurality of data input/output connectors, the data connectors being mounted on the first back panel and positioned between adjacent divider panels so as to be adapted to mate with corresponding data connectors mounted on the pen based computers;

a plurality of power connectors, the power connectors being mounted on the first back panel and positioned between adjacent divider panels so as to be adapted to mate with corresponding power connectors mounted on the pen based computers;

circuit means coupled to the plurality of data input/output connectors for automatically transmitting data concurrently to the plurality of pen based computers for storage of the data therein and for automatically receiving data concurrently from the plurality of pen based computers; and

means coupled to the power connectors for discharging and recharging the batteries of the pen based computers.

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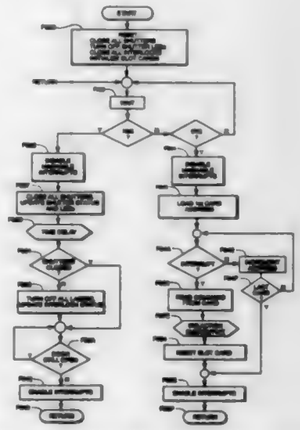
MULTI-SYSTEM LASER SAFETY SHUTTER CONTROLLER

E. Thomas Kensky, Miamisburg, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 30, 1991, Ser. No. 785,594

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—800 **7 Claims**



1. A controller for laser shutters and interlocks comprising a microprocessor, a read only memory in which a program is stored, a plurality of interface units, an address bus (A) having a number of address lines, a first data bus (D), a second data bus (SD), a unit select bus (S), first latch means having outputs coupled to interlock control lines and an input from a first control lines, second latch means having outputs coupled to shutter control lines and an input from a second control line, third latch means having output coupled to display control lines for status indicator means and an input from a third control line, the first, second, and third latch means each having inputs coupled to lines from shutter status detector lines and output to the first data bus, a fourth control line coupled to an input of the status buffer means, an interface interrupt line, a verify line, a clear signal line, an unsafe condition line (DSO);

wherein the microprocessor has a NMI (non-maskable interrupt) input, a IRQ (interrupt request) input coupled to the interface interrupt line, a reset input, outputs coupled to a set of addressing control lines, a set of address terminals coupled to the address bus, and a set of data terminals coupled to the first data bus;

wherein the read only memory includes a set of address inputs coupled to some of said address lines, a set of data outputs coupled to the first data bus, and enable terminal means; a memory address decode means having inputs coupled to some of said address lines and to said set of addressing control lines, the memory address decode means having an output coupled to the enable terminal means, so that the read only memory is addressed for a range of addresses for said program to supply instructions via the first data bus to the microprocessor;

peripheral address decode means having inputs from the address bus and from said set of addressing control lines, and outputs to said unit select bus, to said first, second, third and fourth control lines, to an enable line, to a safety interrupt reset line, and to the clear signal line;

data selector means having outputs to the first data bus, a first set of inputs from the second data bus, a second set of inputs from the verify line and the unsafe condition line, the enable line being coupled to an enable input of said data selector means, one of the address lies being coupled to a select input of the data selector means to select either the first set of inputs or the second set of inputs;

wherein each of said interface units includes data output means having outputs coupled to the second data bus, command means for selecting a command from user input means and for supplying signals encoding a selected command on inputs of the data output means, interrupt means coupled between the command means and the interface interrupt line for responding to the selection of a command to supply an interrupt signal, a verify buffer having an input from the interrupt means and an output coupled to the verify line, a clear signal buffer having an input from the clear signal line and an output to a clear means of the command means, and unit select means coupling the interrupt bus to the data output means to enable supplying the signals encoding a selected command to the second data bus, wherein the unit select means also enables the verify buffer and the clear signal buffer for verifying an interrupt and for clearing the interrupt means when a clear signal is received;

non-maskable interrupt means having interrupt latch means with an output to the NMI output of the microprocessor, an input coupled from a safety switch means to an input of the interrupt latch means and to the unsafe condition line, so that in response to a safety designating an unsafe condition from the safety switch means a signal showing an unsafe condition appears on the unsafe condition line and the interrupt latch means is set, means responsive to the interrupt latch means being set for causing the microprocessor to go to a non-maskable interrupt routine which generates an address to the peripheral address means and a write command to provide a strobe signal on the second control line to load the second latch means for a "close all shutters" condition, then generates an address to the peripheral address means to provide a strobe signal on the third control line and a write command to load the second latch means to update the shutter status, then generates an address to the peripheral address means to provide a strobe signal on the fourth control line and a read command to read the shutter status, which if the shutter status indicates that not all shutters are closed generates an address to the peripheral address means and a write command to provide a strobe signal on the first control line to load the first latch means for a "turn off all lasers" condition, which generates an address to monitor the unsafe condition line to prevent further operation until a signal on that line indicates a safe condition, then enables the microprocessor for further processing;

interrupt request means in the microprocessor responsive to an interrupt signal at the IRQ input to go to an interrupt request routine which addresses each interface unit in turn to determine which one is the interrupting interface unit by testing a bit on the first data bus from the verify line via the data selector means, reading a command sent from the interrupting interface unit via the second data bus and the data selector means, action means using the peripheral address means and data on the data bus to write command data to the first, second or third latch units, or to read data from the status buffer means, and reset means using the peripheral address means for addressing the interrupting interface unit and generating an active signal on the clear signal line, which is passed via the clear signal buffer of the addressed interface unit to reset the interrupt.

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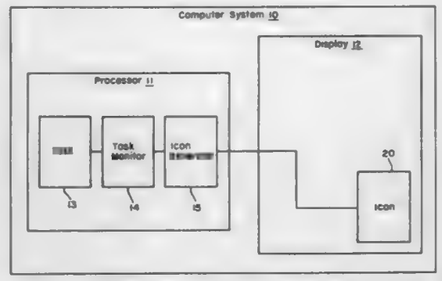
DYNAMIC PROGRESS MARKING ICON

William Jaaskelainen, Oronoco, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 325,600, Mar. 20, 1989, abandoned. This application Jul. 16, 1992, Ser. No. 915,774

Int. Cl.[5] G06F *11/32*

U.S. Cl. 395—800 **13 Claims**



1. A method for using an icon to inform a user of the progress of any task on a computer system, said computer system having a plurality of tasks, said icon having a plurality of symbols, said method comprising the machine-executed steps of:

determining, in response to each request to perform any task of said plurality of tasks whether an amount of work required to complete a particular task can be quantified and if it is determined that said amount of work can be quantified:

quantifying said amount of work required to complete said particular task, said particular task being one of said plurality of tasks;

dividing said quantified work into a plurality of task work units, wherein each of said task work units corresponds to one of said plurality of symbols in said icon;

presenting said icon on a computer display to said user, said icon containing progress information about said particular task, said progress information being represented as a uniform indication of progress that is independent from said particular task's function;

monitoring the progress of said particular task;

replacing one of said plurality of symbols with a replacement character when one task work unit has been completed; and

repeating said replacing step as said particular task progresses until all of said plurality of symbols have been replaced, thereby indicating the completion of said particular task; and

removing said icon from said computer display.

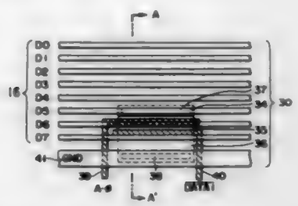
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5,301,349

SINGLE CHIP COMPUTER HAVING GROUND WIRE FORMED IMMEDIATELY PARALLEL A DATA BUS AND DRIVERS FORMED DIRECTLY UNDER THE DATA BUS FOR HIGH SPEED DATA TRANSFER

Shigeharu Nakata, Fujisawa, and Kazumasa Andoh, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 671,139, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 458,436, Dec. 28, 1989, abandoned. This application Aug. 17, 1992, Ser. No. 928,769
Claims priority, application Japan, Dec. 28, 1988, 63-333615
Int. Cl.[5] G06F *11/18*
U.S. Cl. 395—800 **20 Claims**



1. A computer system formed on a silicon chip, comprising:
a CPU formed on the silicon chip;
an input/output port formed on the silicon chip;
a plurality of signal bus line means formed on the silicon chip, for transferring data between the CPU and the input-/output port, the signal bus line means including parallel signal bus lines which correspond in number to data bits processed by the CPU at one time, wherein no other signal lines are formed between the signal bus lines of said signal bus line means;
a ground potential wire formed on the silicon chip and being parallel to the signal bus lines of the plurality of signal bus line means, wherein no other signal lines are formed between the signal bus lines of the bus line means and the ground potential wire; and
a plurality of bus line driving means formed on the silicon chip and directly under the parallel signal bus lines of the signal bus line means and the ground potential wire, and connected to the parallel signal bus lies of the bus line and including at lest one FET, for determining a logical level of the signal bus line means.

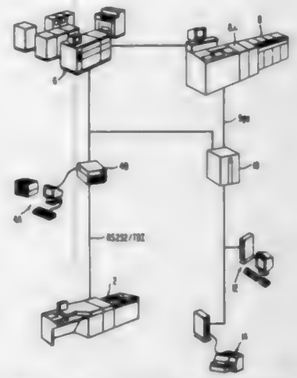
5,301,350

REAL TIME STORAGE/RETRIEVAL SUBSYSTEM FOR DOCUMENT PROCESSING IN BANKING OPERATIONS

James D. Rogan, Grass Lake; Gerhard M. Werner, Jr., Plymouth; Mark A. Stewart, Canton, and Martin J. Danko, Ann Arbor, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 419,566, Oct. 10, 1989, abandoned. This application Jan. 6, 1993, Ser. No. 909
Int. Cl.[5] G06F *9/00, 15/30*
U.S. Cl. 395—800 **16 Claims**

1. In a bank check document handling system for capturing image and information data of negotiated bank checks for bank record processing and which system is managed by a host computer, a storage/retrieval module subsystem for storing said image and information data for retrieval and conveyance to any one of a plurality of image work stations and printers for conversion to human readable format, said storage/retrieval module subsystem comprising:
(a) means for receiving digitized optical signals containing bank check document image packets having (i) image data and (ii) sequential non-image information data related to said image data;
(b) means for converting said digitized optical signals to digitized electrical signals forming said bank check document image packets;
(c) storage operation means for storing, in real time, said bank check document image packets on identified areas of magnetic disk units via a file management system which includes:
(c1) first storage file means for storing non-image bank check document data as a plurality of sequential files made up of a sequence of bytes of data;
(c2) second storage file means for storing, in real time, said bank check document image packets in a structured file system made of a plurality of records where each record has a key field with an index identifying each record;



(d) means for retrieving, in real time, a selected bank check document image packet while simultaneous and concurrent storing operations of bank check document image packets are taking place, said means for retrieving including:
(d1) means for selecting said first storage file means or said second storage file means to effectuate retrieval of either or both non-image information and/or a selected bank check document image packet for transmission to a requesting work station or printer;
(e) means for transmitting retrieved bank check document image packets to a work station or printer for display;
(f) means for communicating with a host computer to receive operational instructions and to transmit retrieved sequential non-image information for use by said host computer.

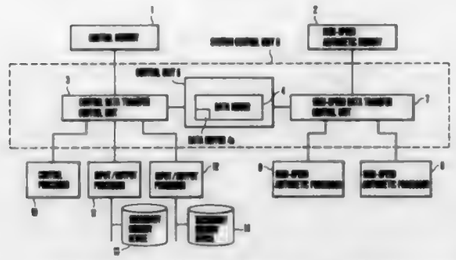
5,301,351

DATA TRANSFER CONTROL SYSTEM BETWEEN HIGH SPEED MAIN MEMORY AND INPUT/OUTPUT PROCESSOR WITH A DATA MOVER

Akira Jippo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 442,530, Nov. 28, 1989, abandoned. This application Jan. 13, 1993, Ser. No. 3,685
Claims priority, application Japan, Nov. 29, 1988, 63-299423
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 **3 Claims**

1. A data processing apparatus comprising:
a high speed arithmetic processor;
a control memory, receiving a channel program from said high speed arithmetic processor and storing said channel program;
a control processor, receiving a signal from said high speed arithmetic processor indicating that said channel program was sent to said control memory, and outputting a start signal;
an input/output processor receiving said start signal from said control processor, reading out said channel program from said control memory and outputting a start data transfer signal;
a memory device receiving said start data transfer signal from said input/output processor and outputting designated data to a first buffer in said control memory at a first transfer rate, wherein when all said designated data are transferred from said memory device to said first buffer, an end of transfer signal is sent from said input/output processor to said control processor, said control processor



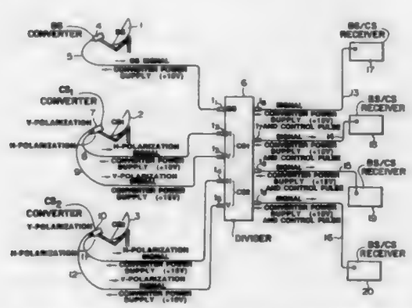
producing transfer control data from said channel program in response to said end of transfer signal;
a data mover receiving said transfer control data from said control processor; and
a second buffer in said data mover receiving said designated data at said first transfer rate from said control memory, under control of said data mover and transferring said received designated data from said second buffer at a second transfer rate, under control of said data mover, higher than said first transfer rate, to a high speed arithmetic memory.

5,301,352

SATELLITE BROADCAST RECEIVING SYSTEM AND CHANGE-OVER DIVIDER FOR USE IN SAME

Yutaka Nakagawa; Tadashi Kajiwara, both of Kanagawa; Keiji Fukuzawa, Chiba, and Keiji Yuzawa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,557
Claims priority, application Japan, Jul. 4, 1991, 3-164103
Int. Cl.[5] H04H *1/04*
U.S. Cl. 455—3.2 **3 Claims**



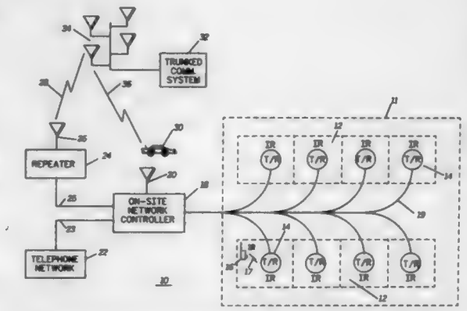
1. A system for receiving broadcast satellite signals and communication satellite signals, comprising:
a plurality of antennas disposed to receive said broadcast satellite and communications satellite signals;
a plurality of converters mounted respectively on said plurality of antennas for respectively converting a frequency of said received broadcast satellite and communication satellite signals into a respective predetermined frequency;
a change-over divider connected to said plurality of converters and having a plurality of output terminals, said change-over divider separately outputting a predetermined one of the frequency converted broadcast satellite and communication signals from said plurality of converters to said plurality of output terminals, respectively and
a plurality of receivers connected to said plurality of output terminals of said change-over divider, said plurality of receivers providing a control pulse fed to said change-over divider for selecting one of said plurality of converters, respectively, said control pulse being combined with a converter power supply voltage supplied by said plurality of receivers to said plurality of converters through said change-over divider and
a plurality of cables for connecting said plurality of output terminals of said change-over divider to said plurality of said receivers, respectively, and
said control pulse, said converter power supply voltage and said predetermined one of the frequency converted broadcast satellite and communication signals transmitted over a single one of said plurality of cables.

5,301,353

COMMUNICATION SYSTEM AND APPARATUS

Jaime A. Borras, Hialeah, and David D. Johnson, Lighthouse Point, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 478,866, Feb. 12, 1990, abandoned. This application Jul. 29, 1993, Ser. No. 99,269
Int. Cl.[5] H04B *1/60, 17/02;* **G08B** *25/00*
U.S. Cl. 455—9 **5 Claims**



1. A communication system comprising:
a first communication device comprising:
first transceiver means for transmitting and receiving signals on a first communication medium selected from the group consisting of infrared waves, electromagnetic waves, ultrasonic waves, and radiation waves, when the first communication device is in an on-site area, the on-site area including a plurality of areas;
second transceiver means for transmitting and receiving signals on a radio frequency communication medium, when the first communication device is in an off-site area; and
determining means for determining when the first communication device is in the on-site area and when the first communication device is in the off-site area, the determining means being coupled to the first and second transceiver means; and
network controller means comprising:
means for determining if the first communication device is located in the on-site area; and
alerting means responsive to the determining means of the network controller for providing an alert if the first communication device has not reached a select one of the plurality of areas in the on-site area.

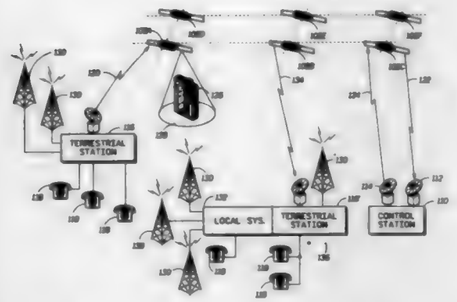
VOL 1161 ISS 1 AP 5 1994 UMI

5,301,354

SATELLITE BASED GLOBAL PAGING SYSTEM

Robert J. Schwendeman, Pompano Beach, and William J. Kuznicki, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 444,187, Nov. 30, 1989, Pat. No. 5,239,670. This application Feb. 8, 1993, Ser. No. 14,593
The portion of the term of this patent subsequent to Aug. 24, 2000, has been disclaimed.
Int. Cl.[5] H04B *7/185, 7/195;* **H04Q** *7/02*
U.S. Cl. 455—13.1 **12 Claims**



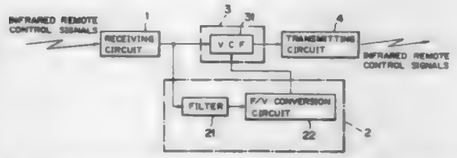
1. A paging communication system, comprising:
a plurality of terrestrial receivers, at least some of which receive paging information from at least one satellite and from at least one of a plurality of terrestrial stations;
the plurality of terrestrial station communicating the paging information with the at least one satellite, and adapting the paging information so as to be compatible with at least one of the plurality of terrestrial receivers;
the at least one satellite communicating the paging information to the at least one of the plurality of terrestrial stations and at least one control station, and further directly transmitting the paging information to the at least one of the plurality of terrestrial receivers; and
the at least one control station determining where to deliver the paging information and operational parameters and operational protocols to deliver the paging information to the plurality of terrestrial receivers.

5,301,355

MODULATED SIGNAL TRANSMITTING APPARATUS

Hiroshi Koinuma, and Hiroshi Terashima, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,355
Claims priority, application Japan, Jul. 14, 1989, 1-82246[U]
Int. Cl.[5] H04B *7/15*
U.S. Cl. 455—21 **10 Claims**



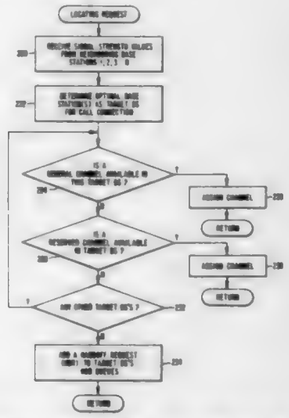
1. A modulated signal receiving and transmitting apparatus comprising:
a receiving circuit for receiving from a distant transmitter a first modulated signal modulated by a first control signal;
a filter coupled to said receiving circuit for passing only a carrier signal of said first modulated signal;
a frequency-voltage conversion circuit coupled to said filter for outputting a DC voltage corresponding to a frequency of the carrier signal from the filter;
a voltage-controlled filter for receiving said first modulated signal from said receiving circuit and for outputting a second modulated signal, said voltage-controlled filter having a pass band characteristics which is changed according to said DC voltage so that at least a fundamental component of said carrier signal of the first modulated signal can be passed therethrough; and
a transmitting circuit for transmitting said second modulated signal to a controlled apparatus.

5,301,356

PRIORITIZATION BETWEEN HANDOFF AND NEW CALL REQUESTS IN A CELLULAR COMMUNICATIONS SYSTEM

Stig R. Bodin, Spanga; Harald Kallin, Sollentuna, and Lotta Voigt, Stockholm, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 10, 1991, Ser. No. 804,604
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—33.2 **12 Claims**



1. A method for ensuring that handoff call requests take priority over new call requests to engage voice channels assigned to at least one geographical target cell in a cellular mobile radiotelephone communications system, comprising:
determining whether any voice channels are available for assignment to call requests for said target cell;
storing said handoff call requests to said target cell in a queue for a predetermined period of time in response to a determination that no voice channels are available;
examining said queue for queued handoff requests when one or more voice channels becomes available in said target cell;
assigning queued handoff requests to voice channels that become available in said target cell during said time period; and
assigning new cell requests to said available voice channels in said target cell only when said queue is empty.

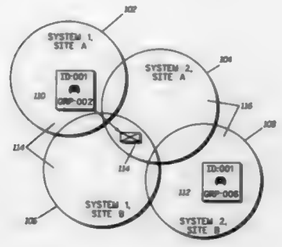
5,301,357

METHOD AND SYSTEM FOR HANDLING IMPROPER REGISTRATIONS

Michael J. Thompson, Davie, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 6, 1991, Ser. No. 741,018
Int. Cl.[5] H04B *7/00*
U.S. Cl. 455—33.4 **11 Claims**

1. A method for deregistering a communication device which has incorrectly registered in a communication system, the communication system having a plurality of communication devices each having device identification information operating within the communication system, the plurality of communication devices having registered with the communication system, the method comprising the steps of:
determining at one of the plurality of communication devices that the communication device has incorrectly registered with the communication system:



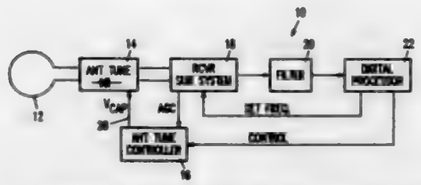
receiving a deregistration message from the communication device which incorrectly registered with the communication system;
deregistering the incorrectly registered communication device from the communication system; and
requesting that any from among the plurality of communication devices operating in the communication system which has the same device identification information as the communication device which incorrectly registered on the system to re-register with the communication system.

5,301,358

AUTOMATIC ANTENNA TUNING METHOD AND APPARATUS

Garold B. Gaskill, Tualatin, and Larry H. Mukai, Aloha, both of Oreg., assignors to Seiko Corp. and Seiko Epson Corp., Japan

Continuation of Ser. No. 279,952, Dec. 5, 1988, Pat. No. 5,136,719. This application Aug. 3, 1992, Ser. No. 924,266
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] H04B *1/00*
U.S. Cl. 455—56.1 **3 Claims**



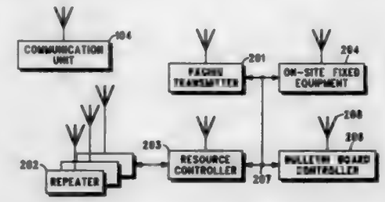
1. A periodically active antenna for periodically receiving packets of information, comprising:
an antenna tuning element coupled to said antenna for tuning said antenna;
means coupled to said antenna for producing a first signal which indicates the strength of a signal received by said antenna;
sweep means for sweeping said antenna tuning element through a range of values,
detection means for detecting when said first signal has a maximum signal value as said sweep means sweeps said antenna tuning element through a range of values,
means responsive to said detection means for setting said tuning element to the value that produces said maximum signal value;
means for automatically activating said tuning means when said antenna is activated and prior to the receipt of said packet of information;
whereby said antenna is automatically tuned to the value that produces the maximum first signal prior to the time that said antenna receives information and whereby said antenna thereby reliably and accurately receives said packets of information.

5,301,359

BULLETIN BOARD RESOURCE FOR COMMUNICATION SYSTEM ACCESS

Anthony P. Van den Heuvel, Parkland, Fla.; Richard A. Comroe, Dundee, Ill.; Arun Sobti, Wheaton, Ill., and Anthony J. Sarli, Jr., Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 344,176, Apr. 27, 1989, abandoned. This application Mar. 9, 1993, Ser. No. 76,924
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 455—56.1 **24 Claims**



1. A method of providing communication system access for a 2-way wireless radio frequency (RF) communication unit as between at least two RF communication systems, wherein the at least two RF communication systems are independent of one another, and wherein each communication supported by the at least two RF communication systems necessarily includes an RF wireless communication link, comprising the steps of:
A) monitoring, by the 2-way wireless RF communication unit, an RF bulletin board resource to obtain information regarding each of the at least two RF communication systems;
B) transmitting to the 2-way wireless RF communication unit on the RF bulletin board resource registration information of at least one of the at least two RF communication systems.

5,301,360

DIGITAL OPTION SELECT SYSTEM

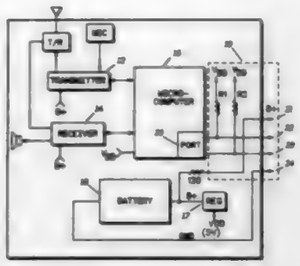
Arthur M. Goldberg, North Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1991, Ser. No. 696,416
Int. Cl.[5] H04B *17/02, 1/40*
U.S. Cl. 455—67.4 **21 Claims**

1. A communication device comprising:
coupler means for coupling an external device to the communication device;
controller means for controlling the communication device, the controller means having at least first and second terminals for receiving digital numbers from the external device, each digital number representing a mode of operation for the communication device, the controller means comprising:
means for transmitting a test pulse to the external device;
means for receiving a response pulse from the external device; and

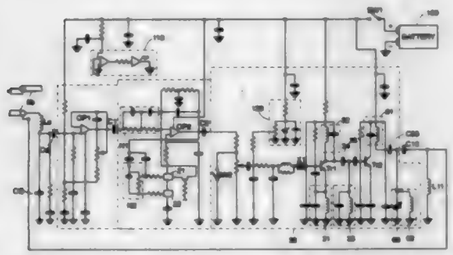
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means for establishing a mode of operation for the communication device in response to the response pulse; and



the response pulse has a predetermined duration, a predetermined polarity and a predetermined direction for identifying the external device.

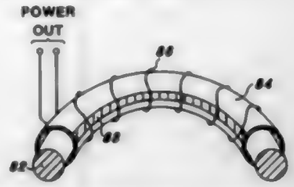
5,301,361
LOW PARTS COUNT TRANSMITTER UNIT
Yukinaga Koike, Matsumoto, Japan, assignor to Samson Technologies, Hicksville, N.Y.
Filed Dec. 28, 1990, Ser. No. 635,926
Int. Cl.[5] H04B *1/04*
U.S. Cl. 455—95 **18 Claims**



1. A transmitter unit of a frequency modulated wireless microphone system using a frequency modulated carrier comprising an audio amplifier exciting a frequency modulation unit, said frequency modulation unit having an input and an output, said output driving a power amplifier, said frequency modulation unit comprising a crystal resonator, having a natural frequency, connected to the base of an amplifying semiconductor transistor element, a first tuned tank circuit connected to the emitter of said transistor, a second tuned tank circuit connected to the collector of said transistor and a third tuned tank circuit connected to said second tuned tank circuit, wherein said frequency modulation unit output is a six-fold multiple of said natural frequency of said crystal resonator.

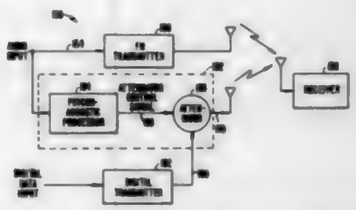
5,301,362
PULSE POWER GENERATION FROM THERMAL QUENCHING OF MAGNETIC MATERIALS
Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomics, San Diego, Calif.
Continuation-in-part of Ser. No. 521,194, May 9, 1990, Pat. No. 5,125,104. This application May 6, 1991, Ser. No. 695,953
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] H04B *1/034*
U.S. Cl. 455—98 **14 Claims**

1. A single-pulse radio frequency (rf) generator comprising:
a permanent magnet having the general shape of a toroid, said permanent magnet having a magnetic flux density that circulates through said toroid;
a coil of at least one turn passing through a center of said toroid such that the magnetic flux density passes through said coil, said magnetic flux density having a constant value for so long as said permanent magnet remains unchanged, an electrical potential being developed across said coil only when said magnetic flux density changes;



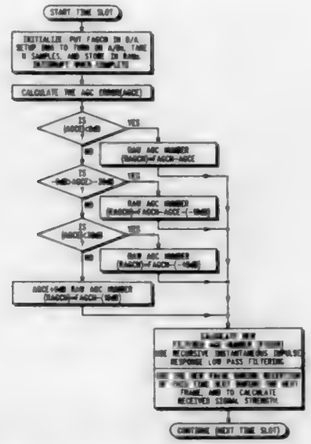
transmitting means coupled to said coil for transmitting an rf pulse in response to a change in said magnetic flux density, said rf pulse being generated by the electrical potential developed across the coil when the magnetic flux density changes; and
means for thermally quenching said permanent magnet, thereby causing the magnetic flux density flowing through said coil to change, thereby causing said rf pulse to be generated.

5,301,363
METHOD AND APPARATUS FOR ADAPTIVE POWER ADJUSTMENT OF MIXED MODULATION RADIO TRANSMISSION
Larry W. Hinderks, Holmdel, N.J., assignor to Corporate Computer Systems, Inc., Holmdel, N.J.
Filed Jun. 29, 1992, Ser. No. 905,945
Int. Cl.[5] H04B *1/02, 1/10*
U.S. Cl. 455—101 **8 Claims**



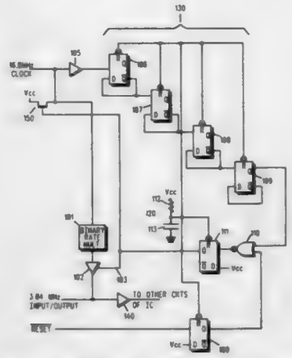
1. A multiple electromagnetic signal source/single receiver system for communicating auditory frequency range signals and digital signals, comprising:
a first electromagnetic signal source for communicating a first audio signal;
a receiver for receiving the first audio signal;
a second electromagnetic signal source for communicating a second signal; and
means coupled to the second signal source and responsive to the first audio signal for adjusting the second signal in relation to the first audio signal over a continuous amplitude range so that noise induced in the receiver by the second signal is made psychoacoustically imperceptible.

5,301,364
METHOD AND APPARATUS FOR DIGITAL AUTOMATIC GAIN CONTROL IN A RECEIVER
John W. Arens, Cary; David E. Borth, Palatine, and James F. M. Kepler, Northbrook, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 515,900, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 278,051, Nov. 30, 1988, abandoned. This application Mar. 4, 1993, Ser. No. 26,616
Int. Cl.[5] H04B *1/06*
U.S. Cl. 455—69 **6 Claims**



1. A method of Automatic Gain Control in a receiver, the receiver having a gain-controlled stage and a known gain-controlled characteristic, the receiver receiving discontinuous signals, the method comprising the steps of:
digitizing a demodulated received signal in one predetermined time slot, the receiver having a previous gain setting set by a previous digital-to-analog converter setting;
determining a power level of said digitized received signal;
calculating an error signal by comparing said determined level to a predetermined desired reference level;
calculating a channel power estimate of the strength of said digitized received signal within a specified predetermined time period and prior to receiving a next predetermined time slot by using the previous digital-to-analog converter setting and previously stored data of the gain-controlled characteristic of said receiver in a lookup table to determine a first channel power estimate of the digitized time slot, adding said calculated error signal to said first channel power estimate, and filtering the resultant sum with a first digital low-pass filter;
passing said error signal through a second digital low-pass filter to provide an average error signal that is averaged over a plurality of time slots;
determining if valid power measurements are available by comparing said average error signal to a predetermined range;
coarsely decreasing said gain in the receiver within the specified predetermined time period and prior to receiving the next predetermined time slot by a predetermined amount if said calculated average error signal is greater than an upper limit of a first predetermined margin;
coarsely increasing said gain in the receiver within the specified predetermined time period and prior to receiving the next predetermined time slot by an amount substantially equal to a second predetermined margin if said calculated average error signal is less than a lower limit of said predetermined margin;
finely adjusting said gain in the receiver within the specified predetermined time period and prior to receiving the next predetermined time slot by an amount that is determined by filtering said average error signal with a third digital low-pass filter and using said lookup table to obtain the desired digital-to-analog converter setting that corresponds to said previous gain setting summed with said filtered average error signal, if said calculated average error signal is less than an upper limit of said first predetermined margin and greater than a lower limit of said second predetermined margin; and
storing said desired digital-to-analog converter setting.

5,301,365
BIDIRECTIONAL CLOCKING APPARATUS WITH AUTOMATIC SENSING
David M. Hess, Elgin; John J. Janssen, Gumee, and Michael W. Houghton, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 16, 1992, Ser. No. 961,959
Int. Cl.[5] H04B *1/40*; H03B *1/00*; H03L *7/02*
U.S. Cl. 455—73 **5 Claims**



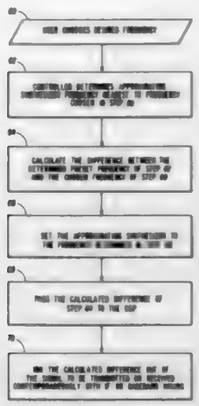
1. A bidirectional clocking apparatus for sourcing at a first time and receiving at a second time a first clocking signal on an input/output terminal, the apparatus comprising:
a clock input for receiving a second clocking signal during the first time;
means for counting pulses of the second clocking signal, the means having an overflow output;
a reset input for receiving a first reset signal having a logical high state and a logical low state;
means for generating the first clocking signal from the second clocking signal, the means for generating having an output enable and an output coupled to the input/output terminal;
means for generating a second reset signal having a logical high state and a logical low state; and
means for generating an enable signal in response to the overflow output, the state of the first reset signal, and the state of the second reset signal, the means for generating being coupled to the output enable.

5,301,366
HIGH PERFORMANCE FREQUENCY TUNING WITH LOW COST SYNTHESIZER
Richard A. Groshong, Cedar Rapids; Thomas R. Hope, Mount Vernon, and Robert A. Newgard, Marion, all of Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Apr. 7, 1992, Ser. No. 864,988
Int. Cl.[5] H04B *1/40, 1/16*
U.S. Cl. 455—76 **11 Claims**

1. A communication system apparatus for transmitting or receiving carrier signals and having appropriate antenna means comprising:

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frequency selection means selecting a desired frequency upon which to transmit or receive signals;
an approximating frequency synthesizer having a plurality of predetermined frequencies;
controller means coupled to the approximating frequency synthesizer that sets all approximating frequency to the predetermined frequency that is determined to be closest



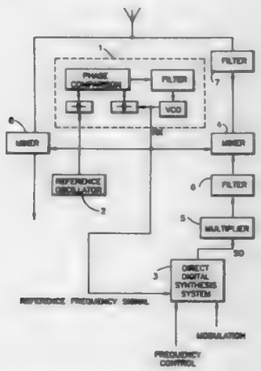
in value to the desired frequency and determines the different in the closest predetermined frequency and the desired frequency; and
a digital signal processor, coupled to the controller means, that receives the difference in the desired frequency and the closest predetermined frequency of the approximating frequency synthesizer and adjusts for such difference during signal mixing.

5,301,367

DIRECT DIGITAL SYNTHESIZER FOR PRODUCING A MODULATED INTERMEDIATE FREQUENCY IN A RADIO APPARATUS

Jarmo J. Heinonen, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Aug. 25, 1992, Ser. No. 934,927
Claims priority, application Finland, Sep. 4, 1991, 914181
Int. Cl.[5] H04B *1/40*
U.S. Cl. 455—76 **4 Claims**



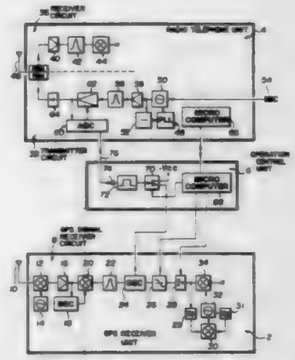
1. A synthesizer for a radio transceiver comprising:
a local oscillator means for providing a local oscillator signal;
a receiver section having a first mixer means coupled to said local oscillator means, for mixing a received radio frequency signal and said local oscillator signal and for generating an intermediate frequency signal; and
a transmitter section comprising a direct digital synthesis means coupled to said local oscillator means for generating a modulated intermediate frequency signal, said local oscillator signal being employed by said direct digital synthesis means as a reference frequency signal, said transmitter section further comprising a second mixer means coupled to said local oscillator means for mixing said modulated intermediate frequency signal and said local oscillator signal and for generating a radio frequency transmission signal.

5,301,368

SYSTEM FOR CONTROLLING OPERATIONS OF GPS RECEIVER UNIT AND RADIO TELEPHONE UNIT FOR AUTOMOTIVE VEHICLE

Toru Hirata, Kanagawa, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Oct. 26, 1990, Ser. No. 603,340
Claims priority, application Japan, Oct. 27, 1989, 1-278552
Int. Cl.[5] H04B *17/02*
U.S. Cl. 455—78 **15 Claims**



1. A system for controlling operations of a GPS receiver unit and a radio telephone unit, said GPS receiver unit including a GPS antenna for receiving a GPS signal and a GPS signal receiver circuit connected to the GPS antenna for processing the received GPS signal, said radio telephone unit including a telephone antenna and a telephone transmitter circuit connected to the telephone antenna for transmitting a call channel signal during a time when the radio telephone unit is in an ON-CALL MODE and a control channel signal during a time when the radio telephone unit is in an OFF-CALL MODE, said system comprising:
monitor means for determining whether said radio telephone unit is in said ON-CALL MODE or said OFF-CALL MODE only when a signal level of the received GPS signal is less than a preselected value; and
operation control means for setting said telephone transmitter circuit operative to transmit said call channel signal through said telephone antenna and for setting said GPS signal receiver circuit inoperative during a time when said radio telephone unit is in the ON-CALL MODE,
wherein said operation control means selectively sets said telephone transmitter circuit operative to transmit said control channel signal through said telephone antenna during a time when said radio telephone unit is in the OFF-CALL MODE.

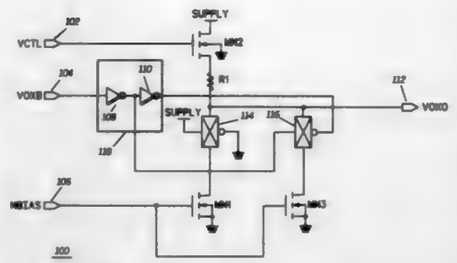
5,301,369

CIRCUIT WITH ADJUSTABLE RELEASE TIME

John W. Simmons, Tamarac; Virgilio A. Fernandez, Sunrise, and Norman T. Rollins, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1992, Ser. No. 862,707
Int. Cl.[5] H04B *1/46*
U.S. Cl. 455—79 **6 Claims**

1. A radio, comprising:
a transmitter; and
a vox circuit coupled to a capacitor and the transmitter, the vox circuit comprising:
a transistor having an input and output terminal, the output terminal coupled to the capacitor, the transistor responsive to an input signal of a predetermined threshold level at its input terminal for sourcing current to the capacitor; and
a current sinking means for sinking current from the capacitor, the current sinking means including a release time control terminal and a plurality of current sink switches each coupled to a corresponding current sink element, the plurality of current sink switches are coupled in parallel to the transistor's output terminal, at least one of the plurality of current sink switches being



operatively responsive to a release time control signal at the release time control terminal for changing the rate at which current is sunk from the capacitor.

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DESIGN PATENTS

GRANTED APR. 5, 1994

ERRATA

For CLASS	See PATENT NO.
012-421	D 345,648
012-423	D 345,650
003-305	D 345,847

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UMI

DESIGNS

APRIL 5, 1994

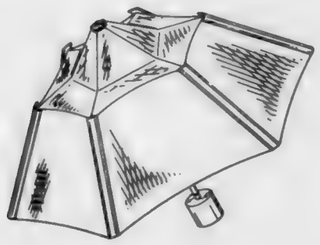
345,643
CHOCOLATE HAVING A COLUMN DESIGN
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S. A. Confiserie Leonidas, Brussels, Belgium
Filed Apr. 20, 1992, Ser. No. 871,220
Claims priority, application Belgium, Nov. 11, 1991, DM/021093
Term of patent 14 years
U.S. Cl. D1—127



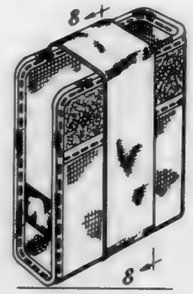
345,644
HAIR WRAP
Philis A. Harvie, 2223 Gerrard Street, Toronto, Ontario, M4E 2C8, Canada
Filed Aug. 31, 1992, Ser. No. 936,544
Term of patent 14 years
U.S. Cl. D2—865



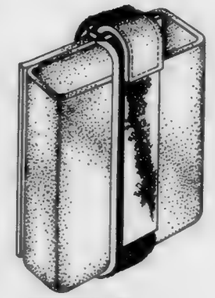
345,645
COMPACT COLLAPSIBLE UMBRELLA
Sidney R. Good, Cleveland, Ohio, assignor to Good Marketing, Inc., Cleveland, Ohio
Filed Mar. 3, 1992, Ser. No. 844,421
Term of patent 14 years
U.S. Cl. D3—5



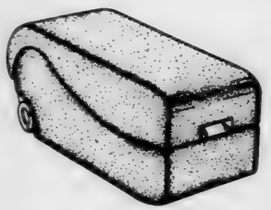
345,646
POUCH FOR A PORTABLE AUDIO UNIT
Ricki J. Knapp, 1300 W. Altgeld, Apt. 112, Chicago, Ill. 60614
Filed Nov. 24, 1992, Ser. No. 1,930
Term of patent 14 years
U.S. Cl. D3—218



345,647
PERSONAL STEREO HAND CARRYING CASE
Kevin N. Luxon, 27892 Mazagon, Mission Viejo, Calif. 92656
Filed Sep. 8, 1992, Ser. No. 939,646
Term of patent 14 years
U.S. Cl. D3—218



345,648
COMBINED MOTOR VEHICLE PHONE CARRIER AND ARM REST
Emilio M. Favilla, Saronno, Italy, assignor to Fiat Auto SpA, Turin, Italy
Filed Jan. 8, 1992, Ser. No. 817,842
Claims priority, application Italy, Jul. 9, 1991, T0910000158
Term of patent 14 years
U.S. Cl. D12—421

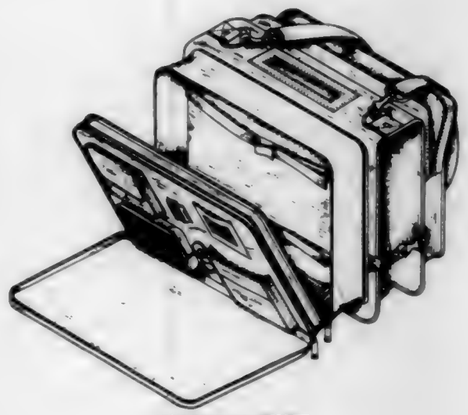


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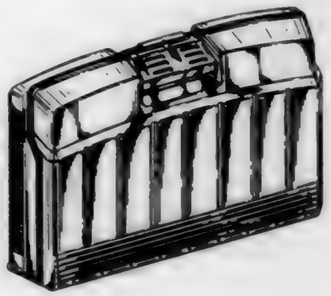
345,649
COMBINED PLUSH ANIMAL AND HANDBAG SET
Maria E. Beltempo, 276 Essex St., Brooklyn, N.Y. 11208
Filed Apr. 27, 1992, Ser. No. 873,735
Term of patent 14 years
U.S. Cl. D3—235



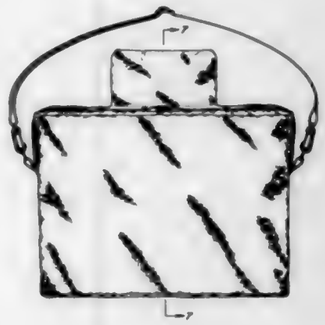
345,651
BAG
Neil B. Copp, Ham, England, assignor to Targus Group plc, London, England
Filed May 14, 1992, Ser. No. 883,612
Claims priority, application United Kingdom, Nov. 14, 1991, 2019032
Term of patent 14 years
U.S. Cl. D3—285



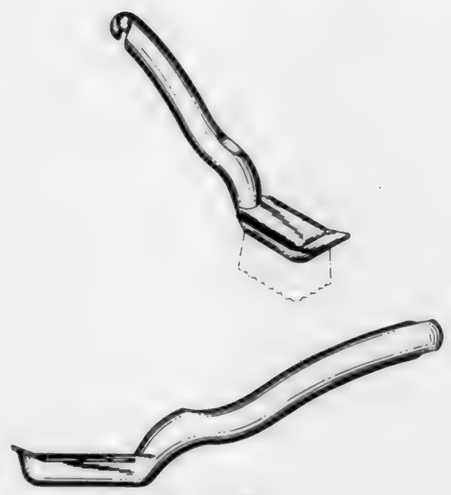
345,650
AUTOMOTIVE TOOLBOX
Edward L. Boyd, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 13, 1992, Ser. No. 929,114
Term of patent 14 years
U.S. Cl. D12—423



345,652
BRIEFCASE RAIN COVER
William A. Teed, II, 6 Langley Dr., Sewell, N.J. 08080
Filed Jul. 13, 1992, Ser. No. 912,619
Term of patent 14 years
U.S. Cl. D3—318



345,653
BRUSH HANDLE
David B. Joyner, Winterville, and Stephen D. West, Washington, both of N.C., assignors to Empire Brushes, Inc., Greenville, N.C.
Filed Jun. 18, 1992, Ser. No. 900,346
Term of patent 14 years
U.S. Cl. D4—138



345,654
DESIGN FOR FRAME
Vincent Bisconti, Malverne, N.Y., assignor to Al Lubinsky, Monsey and Herbert Suesholtz, Harrison, both of N.Y.
Filed Mar. 26, 1992, Ser. No. 857,797
Term of patent 14 years
U.S. Cl. D6—300



345,655
MIRROR FOR MOUNTING ON A COMPUTER
Michael C. Freebairn, Orem, Utah, assignor to Peripheral Visions, Inc., Orem, Utah
Filed Jul. 2, 1991, Ser. No. 724,968
Term of patent 14 years
U.S. Cl. D6—312



345,656
CHAIR
Jeff Theobald, P.O. Box 781, Aspen, Colo. 81612
Filed May 20, 1992, Ser. No. 886,187
Term of patent 14 years
U.S. Cl. D6—370

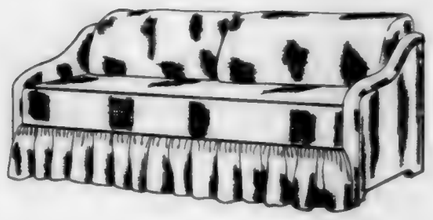


345,657
CHAIR
David A. Pesso, Hartford, Conn., assignor to The Worden Company, Holland, Mich.
Filed Dec. 5, 1991, Ser. No. 802,472
Term of patent 14 years
U.S. Cl. D6—379

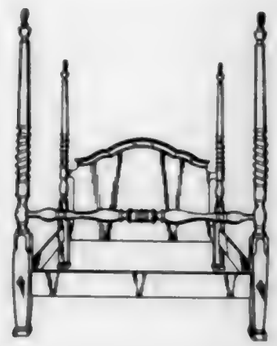


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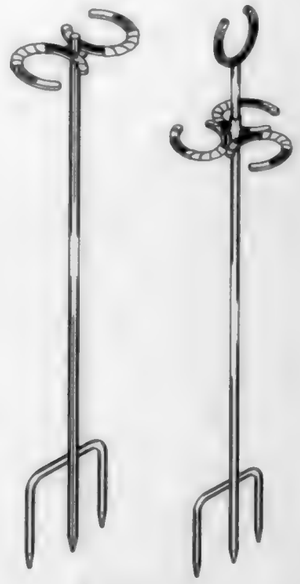
345,658
DAYBED
Thomas A. Jordan, Liberty, N.C., assignor to Michael Thomas Furniture, Inc., Liberty, N.C.
Filed Aug. 21, 1992, Ser. No. 934,010
Term of patent 14 years
U.S. Cl. D6—381



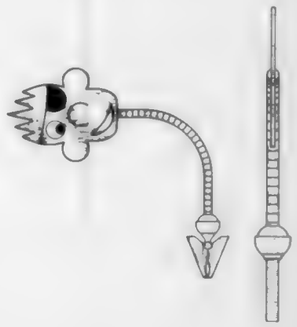
345,659
BED
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 15, 1992, Ser. No. 884,543
Term of patent 14 years
U.S. Cl. D6—393



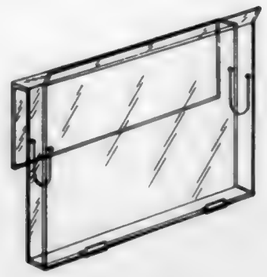
345,660
PORTABLE LONG BARREL FIREARM STAND
David E. Mobley, W. 27414 Cornwall Rd., Cheney, Wash. 99004
Filed Mar. 4, 1992, Ser. No. 846,201
Term of patent 14 years
U.S. Cl. D6—417



345,661
CHAIR ATTACHABLE SUNSHADE
Joseph D. Johnson, Rt. 1 Box 110-C-10, Jacksonville, Ark. 72076
Filed Jun. 8, 1992, Ser. No. 894,189
Term of patent 14 years
U.S. Cl. D6—418



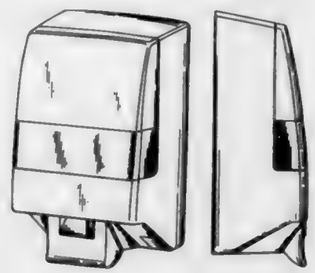
345,662
HOLDER FOR MUSICAL SCORES
A. Richard Golub, 42 E. 64 St., New York, N.Y. 10021
Filed Feb. 13, 1992, Ser. No. 835,269
Term of patent 14 years
U.S. Cl. D6—513



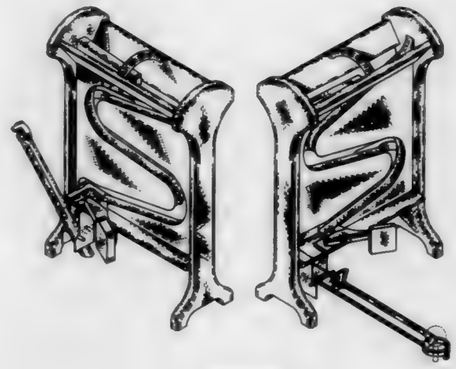
345,663
EARPLUG DISPENSER
John D. Hartman, Chicago, and Walter Herbst, Evanston, both of Ill., assignors to Cabot Safety Corporation, Southbridge, Mass.
Filed Jun. 1, 1992, Ser. No. 892,379
Term of patent 14 years
U.S. Cl. D6—515



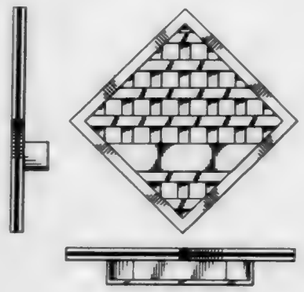
345,664
DUAL CARTRIDGE LIQUID SOAP DISPENSER
Allen E. Brandenburg, Austin, Tex., assignor to Scott Paper Company, Delaware County, Pa.
Filed Apr. 10, 1992, Ser. No. 866,685
Term of patent 14 years
U.S. Cl. D6—545



345,665
RACK FOR STORING, SINGULARIZING AND TEEING GOLF BALLS
Stephen J. Luther, Sacramento, Calif., assignor to Mark L. Tange, Magalia, Calif.
Filed May 22, 1992, Ser. No. 887,255
Term of patent 14 years
U.S. Cl. D6—552



345,666
PLANTER
Eleanore A. Anderson, P.O. Box 190, Grass Valley, Oreg. 97029
Filed Oct. 21, 1992, Ser. No. 696
Term of patent 14 years
U.S. Cl. D6—556

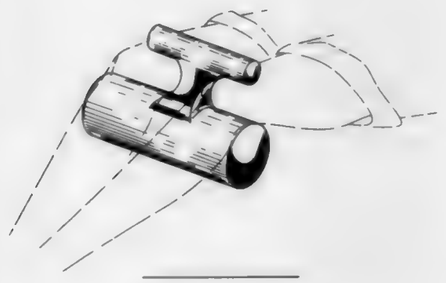


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345,667
BOW RACK
John S. Rhea, 605 E. McKee St., Greeneville, Tenn. 37743
Filed Sep. 23, 1992, Ser. No. 950,039
Term of patent 14 years
U.S. Cl. D6—570



345,668
T-BRACED KNEE SUPPORT PILLOW
Denis L. Braly, 502 Davistown Rd., Midway, Ky. 40347
Filed May 27, 1993, Ser. No. 8,814
Term of patent 14 years
U.S. Cl. D6—601



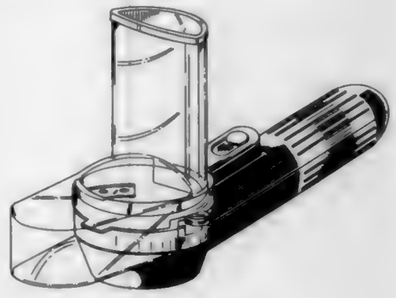
345,669
CONTAINER WITH SPOUT
Philippe Piret, 1876, route de Bretteville, F-14123 Ifs, France
Filed Sep. 23, 1992, Ser. No. 949,111
Claims priority, application France, Mar. 23, 1992, 921783
Term of patent 14 years
U.S. Cl. D7—319



345,670
CONTAINER WITH SPOUT FOR ELECTRICALLY HEATING LIQUIDS
Philippe Piret, 1876, route de Bretteville, F-14123 Ifs, France
Filed Sep. 23, 1992, Ser. No. 949,112
Claims priority, application France, Mar. 23, 1992, 921789
Term of patent 14 years
U.S. Cl. D7—319



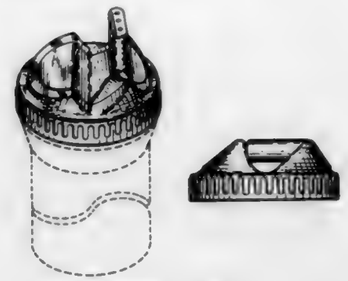
345,671
FOOD SLICER
John C. K. Sham, Rm. 1508 Bock C, 19 Broadwood Rd., Hong Kong, and Yu S. Kwong, Flat H, 13/G, Hoi Ming Mansions, Riviera Garden, Tsuen Wan, N.T. Hong Kong, both of Hong Kong
Filed Jun. 12, 1991, Ser. No. 714,046
Term of patent 14 years
U.S. Cl. D7—381



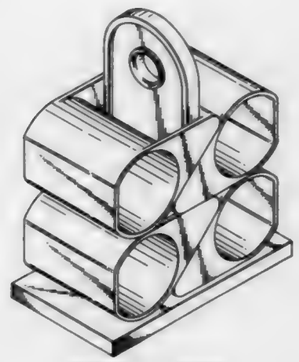
345,672
PIE CRUST PROTECTOR
Norma Silva, 8420 Mountain View Rd., R.R. 5, Bakersfield, Calif. 93307
Continuation-in-part of Ser. No. 104,033, Oct. 2, 1987, abandoned. This application Nov. 9, 1990, Ser. No. 611,156
Term of patent 14 years
U.S. Cl. D7—387



345,673
RESEALABLE DRINKING CUP CAP
Richard C. G. Dark, 8553 Red Hill Country Club Dr., Rancho Cucamonga, Calif. 91730
Filed Mar. 18, 1992, Ser. No. 854,442
Term of patent 14 years
U.S. Cl. D7—392.1



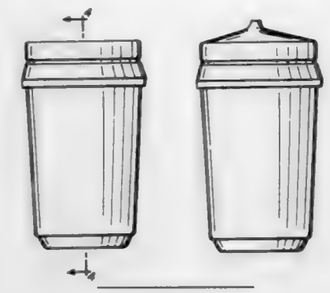
345,674
COMBINED MUGS AND CARRIER
Louis B. Charland, P.O. Box 222, Port Moody, British Columbia, Canada V3H 3V5
Filed Jun. 26, 1992, Ser. No. 904,877
Term of patent 14 years
U.S. Cl. D7—507



345,675
MUG
Louis B. Charland, P.O. Box 222, Port Moody, British Columbia, Canada V3H 3V5
Filed Jun. 26, 1992, Ser. No. 904,876
Term of patent 14 years
U.S. Cl. D7—536



345,676
CUP HOLDER
John M. Biffle, 4332 W. Dengar Ave., Midland, Tex. 79707
Filed Jul. 6, 1992, Ser. No. 909,424
Term of patent 14 years
U.S. Cl. D7—619



345,677
FLATWARE
Jeffry L. Snodgrass, R.R. #1, Box 143, Geneseo, Ill. 61254
Filed Apr. 13, 1992, Ser. No. 867,919
Term of patent 14 years
U.S. Cl. D7—645



345,678
VEGETABLE SPINNER
Edward J. Duquaine, Jr., West Bend, Wis., and William C. Cesaroni, Glenview, Ill., assignors to The West Bend Company, West Bend, Wis.
Filed Aug. 4, 1992, Ser. No. 924,866
Term of patent 14 years
U.S. Cl. D7—665



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345,679
NUTCRACKER
Christian Steinbach, Hohenhameln, Fed. Rep. of Germany, assignor to Holzgalanteriewarenfabrik Steinbach GmbH, Hohenhameln, Fed. Rep. of Germany
Filed Aug. 14, 1992, Ser. No. 930,039
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, M9201358.9
Term of patent 14 years
U.S. Cl. D7—680



345,680
TELESCOPIC RETRIEVER
Mark F. Reynolds; Aaron E. Fader, both of Langley, and Burton L. Lefebvre, Abbotsford, all of Canada, assignors to Carica Enterprises Inc., Surrey, Canada
Filed Mar. 19, 1992, Ser. No. 854,973
Term of patent 14 years
U.S. Cl. D8—14



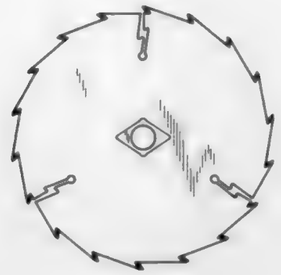
345,681
PORTABLE LIGHT SWITCH EXTENSION TOOL
Scott A. Bruzzi, 1312 Zephyr Rd., Killeen, Tex. 76541
Filed Mar. 30, 1992, Ser. No. 860,693
Term of patent 14 years
U.S. Cl. D8—14



345,682
PORTABLE ELECTRIC SCREWDRIVER
Yuichiro Sasaki, and Toshiaki Uchida, both of Katsuta, Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan
Filed Jan. 7, 1993, Ser. No. 3,348
Term of patent 14 years
U.S. Cl. D8—68



345,683
SAW BLADE
Jed G. Johnston, Leitchfield, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Filed Dec. 20, 1991, Ser. No. 810,914
Term of patent 14 years
U.S. Cl. D8—70



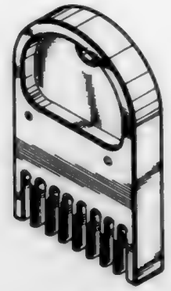
345,684
COMBINED HANDLE AND ESCUTCHEON
Gad Shaanan, Montreal, Canada, assignor to La Compagnie Ideal Security Inc., Quebec, Canada
Filed Jan. 28, 1993, Ser. No. 4,158
Claims priority, application Canada, Jul. 28, 1992, 2807921
Term of patent 14 years
U.S. Cl. D8—301



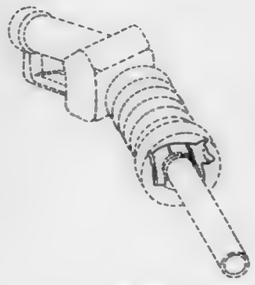
345,685
HANDLEBAR GRIP FOR A MOTORCYCLE
Frank Lin, No. 377, Chang Mei Road, Sec. 1, Changhua, Taiwan
Filed Sep. 23, 1992, Ser. No. 951,690
Term of patent 14 years
U.S. Cl. D8—303



345,686
ELECTRICAL INFORMATION KEY
Michael D. Boehner, Minnetonka, Minn., assignor to Datakey, Inc., Burnsville, Minn.
Filed Feb. 5, 1992, Ser. No. 831,319
Term of patent 14 years
U.S. Cl. D8—347



345,687
BELLOWS CLIP FOR A FUEL RECOERY NOZZLE
Reed R. Bagnes, and Carolyn J. Bagnes, both of 15530 Usher St., San Lorenzo, Calif. 94580
Filed Oct. 19, 1992, Ser. No. 570
Term of patent 14 years
U.S. Cl. D8—349

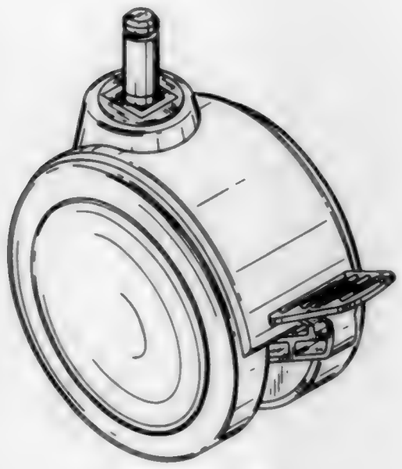


345,688
CARABINER
Andrew McLean, Park City; John Bercaw, Salt Lake City; Charles Brainerd, Salt Lake City, and Jonny Woodward, Salt Lake City, all of Utah, assignors to Black Diamond Equipment, Ltd., Salt Lake City, Utah
Filed Aug. 17, 1992, Ser. No. 930,040
Term of patent 14 years
U.S. Cl. D8—356

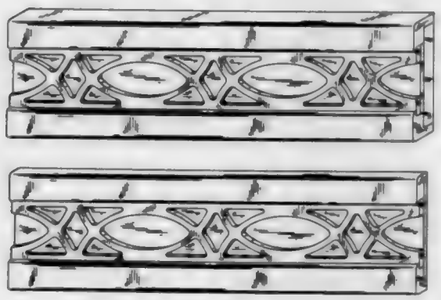


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345,689
DOUBLE WHEEL CASTER
Kozo Morooka, Osaka, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan
Filed Dec. 30, 1991, Ser. No. 814,686
Term of patent 14 years
U.S. Cl. D8—375



345,690
DECORATIVE TRIM FOR A VALANCE
Floyd A. Searer, Elkhart, and Charles W. Tack, Warsaw, both of Ind., assignors to Omega Industries, Inc., Elkhart, Ind.
Filed Nov. 3, 1992, Ser. No. 1,105
Term of patent 14 years
U.S. Cl. D8—377



345,691
CAPPED BOTTLE
Serge Maneau, Boulogne, France, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands
Filed May 8, 1991, Ser. No. 697,274
Claims priority, application France, Nov. 8, 1990, DM018062
Term of patent 14 years
U.S. Cl. D9—300

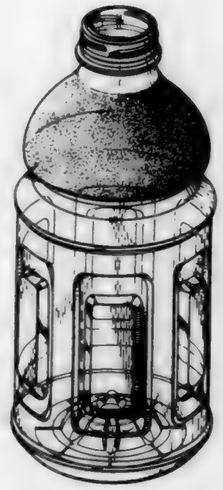


345,692
CONTAINER
Anne M. Franekic, Bethlehem, and Wendy L. Rasmussen, Durham, both of Pa., assignors to Binney & Smith Inc., Easton, Pa.
Filed Dec. 22, 1992, Ser. No. 2,902
Term of patent 14 years
U.S. Cl. D9—307

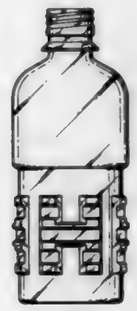




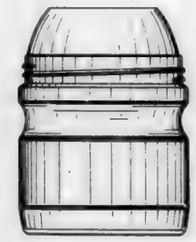
345,693
BOTTLE
Richard C. Edstrom, New York, N.Y., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Mar. 20, 1992, Ser. No. 855,189
Term of patent 14 years
U.S. Cl. D9—332



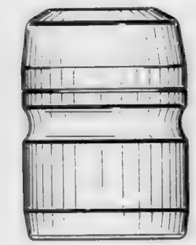
345,694
BOTTLE
Jenna E. Darvish, 12310 First Helena Dr., Los Angeles, Calif. 90049
Filed Aug. 3, 1992, Ser. No. 924,230
Term of patent 14 years
U.S. Cl. D9—332



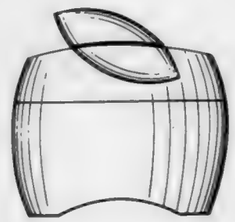
345,695
CONTAINER
John S. Frazer, Long Beach Township, Ocean County, N.J.; Roger D. Wilkinson, New Fairfield, Conn., and Dean R. Lindsay, Winnetka, Ill., assignors to Kraft General Foods, Inc., Northfiled, Ill.
Filed Sep. 11, 1992, Ser. No. 948,701
Term of patent 14 years
U.S. Cl. D9—500



345,696
CONTAINER AND CLOSURE
Roger D. Wilkinson, New Fairfield, Conn., and John S. Frazer, Long Beach Township, Ocean County, N.J., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Sep. 11, 1992, Ser. No. 948,700
Term of patent 14 years
U.S. Cl. D9—504



345,697
COMBINED PERFUME BOTTLE AND CLOSURE
Pierre Dinand, Levallois Perret, France, assignor to Florbath Profumi Di Parma SPA, Parma, Italy
Filed Jun. 20, 1991, Ser. No. 718,104
Claims priority, application France, Dec. 21, 1990, 908033
Term of patent 14 years
U.S. Cl. D9—520

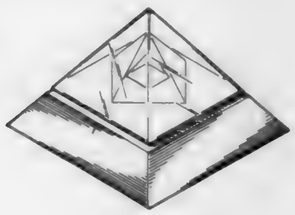


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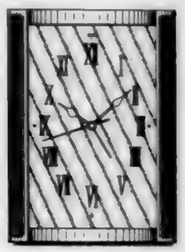
345,698
BOTTLE WITH CAP
Marc Gobe, New York, N.Y., assignor to Victoria's Secret Stores, Inc., Reynoldsburg, Ohio
Filed Sep. 3, 1993, Ser. No. 12,530
Term of patent 14 years
U.S. Cl. D9—571



345,699
CLOCK
Tso-Ching Yang, No. 22, Lane 130, Taping St., Taping Li, Hsihu Chen Changhua Hsien, Taiwan
Filed Nov. 27, 1991, Ser. No. 799,612
Term of patent 14 years
U.S. Cl. D10—21



345,700
CLOCK
Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Sep. 20, 1991, Ser. No. 763,066
Term of patent 14 years
U.S. Cl. D10—24



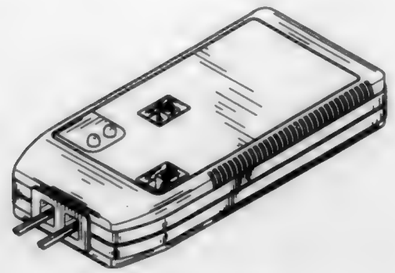
345,701
TRANSMITTER FOR CIRCUIT ENERGIZATION CHECKING SYSTEM
Steven D. Dushane, 17170 Los Alamos St., Granada Hills, Calif. 91344; Kenneth K. Anderson, Simi Valley, and Grant E. Bohm, Redding, both of Calif., assignors to Steven D. Dushane, Granada Hills, Calif.
Filed Nov. 25, 1992, Ser. No. 1,932
Term of patent 14 years
U.S. Cl. D10—50



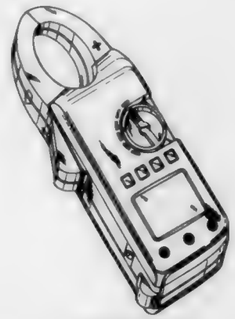
345,702
ADJUSTABLE HEIGHT POLE
Donald K. Hilpmann, 3 Large Ave., Hillsdale, N.J. 07642
Filed May 28, 1992, Ser. No. 889,308
Term of patent 14 years
U.S. Cl. D10—71



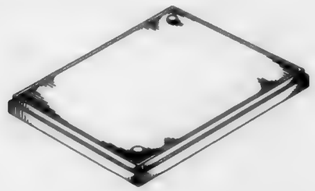
345,703
TESTER FOR ENGINE SENSORS AND IGNITION MODULES
Robert A. Cervas, Highland Heights, Ohio, assignor to Actron Manufacturing Company, Cleveland, Ohio
Filed Jan. 6, 1993, Ser. No. 3,314
Term of patent 14 years
U.S. Cl. D10—78



345,704
MULTIMETER
Etsuo Shirai, Ueda, Japan, assignor to Kaise Kabushiki Kaisha, Nagano, Japan
Filed Jun. 24, 1992, Ser. No. 904,101
Claims priority, application Japan, Jan. 14, 1992, 4-587
Term of patent 14 years
U.S. Cl. D10—79



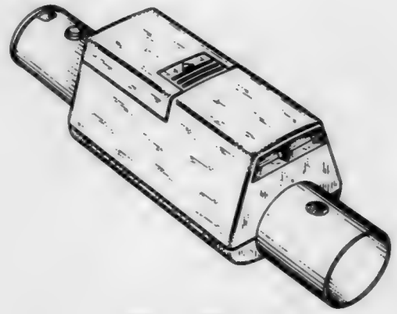
345,705
HEAD ASSEMBLY FOR A PRINTED CIRCUIT BOARD TEST FIXTURE
Robert J. Nesbitt, and Bruce A. Seavey, both of North Attleboro, Mass., assignors to TTI TesTron, Inc., Woonsocket, R.I.
Filed Mar. 9, 1992, Ser. No. 849,316
Term of patent 14 years
U.S. Cl. D10—80



345,706
OXYGEN ANALYZER
Michael D. Martell, Temecula, Calif., assignor to Martell Medical Products, Inc., Temecula, Calif.
Filed Aug. 26, 1992, Ser. No. 936,234
Term of patent 14 years
U.S. Cl. D10—81



345,707
DUST SENSOR DEVICE
Jack Alister, Grijpskerk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 18, 1992, Ser. No. 2,740
Term of patent 14 years
U.S. Cl. D10—81



345,708
AERODYNAMICALLY SHAPED PROBE
Eric A. Hedberg, St. Paul, and Jeffrey M. Setterholm, Lakeville, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Aug. 14, 1992, Ser. No. 930,216
Term of patent 14 years
U.S. Cl. D10—96

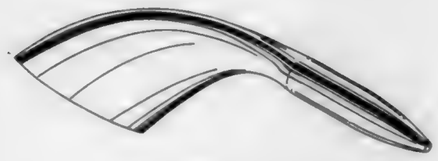


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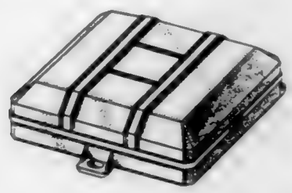
345,709
AERODYNAMICALLY SHAPED SHORT PROBE
Eric A. Hedberg, St. Paul, and Jeffrey M. Setterholm, Lakeville, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Aug. 14, 1992, Ser. No. 930,841
Term of patent 14 years
U.S. Cl. D10—96



345,710
AERODYNAMICALLY SHAPED PROBE AND STRUT
Eric A. Hedberg, St. Paul, and Jeffrey M. Setterholm, Lakeville, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Aug. 14, 1992, Ser. No. 930,845
Term of patent 14 years
U.S. Cl. D10—96



345,711
VEHICLE ALARM CASE MODULE
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Jan. 15, 1993, Ser. No. 3,712
Term of patent 14 years
U.S. Cl. D10—106

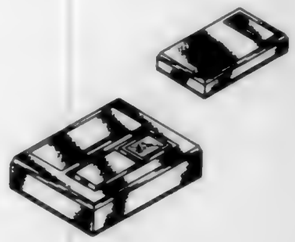


345,712
COMBINED TELEPHONE AND HOME SECURITY MONITOR
John Rounds, Plano, Tex., assignor to Telestate International, Plano, Tex.
Filed Feb. 11, 1993, Ser. No. 4,706
Term of patent 14 years
U.S. Cl. D10—106





345,713
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING A LOST REMOTE CONTROL SWITCH
Gregory L. Pecht, R.R. 4 Box 120, Brenham, Tex. 77833, and Allan Steiter, Rt. 4 Box 467A, Brenham, Tex. 77833
Filed Apr. 2, 1993, Ser. No. 6,618
Term of patent 14 years
U.S. Cl. D10—106



345,714
WATCH DIAL
Sumiko Ono, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,137
Term of patent 14 years
U.S. Cl. D10—126



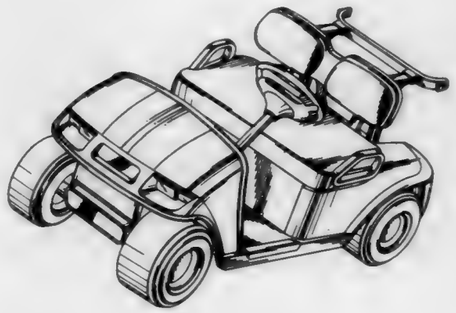
345,715
JEWERLY BAND
Johannes Hundt, Haan, Fed. Rep. of Germany, assignor to Wilhelm KG Hundt, Haan, Fed. Rep. of Germany
Filed Dec. 12, 1991, Ser. No. 806,129
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1991, M9104199.6
Term of patent 14 years
U.S. Cl. D11—4



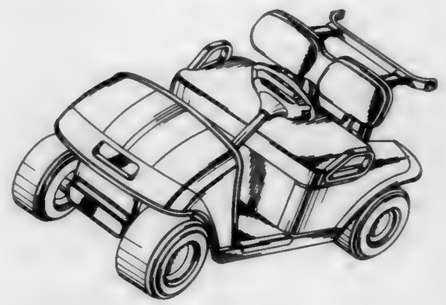
345,716
RECEPTACLE
Joseph Kwiatkowski, Tumwater, Wash., assignor to Siruis Enterprises, Tumwater, Wash.
Filed Jul. 8, 1992, Ser. No. 910,680
Term of patent 14 years
U.S. Cl. D11—152



345,717
GOLF CAR
William R. Moizon, Clarkson, Mich., and James M. Criscuolo, Martinez, Ga., assignors to Textron Inc., Providence, R.I.
Filed May 20, 1992, Ser. No. 886,444
Term of patent 14 years
U.S. Cl. D12—16

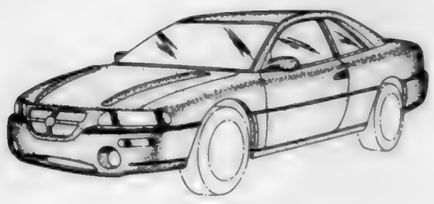


345,718
GOLF CAR
William R. Moizon, Clarkson, Mich., and James M. Criscuolo, Martinez, Ga., assignors to Textron Inc., Providence, R.I.
Filed May 20, 1992, Ser. No. 886,445
Term of patent 14 years
U.S. Cl. D12—16



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345,719
AUTOMOBILE BODY
Timothy W. Anness, San Diego, Calif.; Dennis Myles, W. Bloomfield; Robert J. Janosko, Bloomfield Hills, both of Mich.; Daniel J. Sims, Lake Forest; Richard C. Kong, LaCosta, both of Calif., and Erich O. Kugler, Royal Oak, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 17, 1992, Ser. No. 870,707
Term of patent 14 years
U.S. Cl. D12—92



345,720
CAR SEAT/BABY STROLLER
Nicolas Pohl, P.O. Box 1168, Key Largo, Fla. 33037
Filed Dec. 11, 1992, Ser. No. 2,381
Term of patent 14 years
U.S. Cl. D12—129



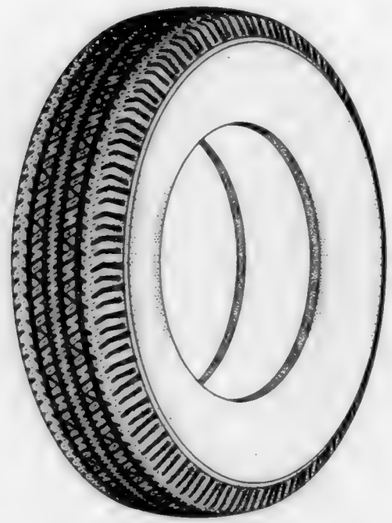
345,721
TIRE TREAD
Andre E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 30, 1992, Ser. No. 3,166
Term of patent 14 years
U.S. Cl. D12—143



345,722
TIRE TREAD
Leo J. Hitzky, Walferdange, Luxembourg, and Claude Lardo, Walzing, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 30, 1992, Ser. No. 3,154
Term of patent 14 years
U.S. Cl. D12—146



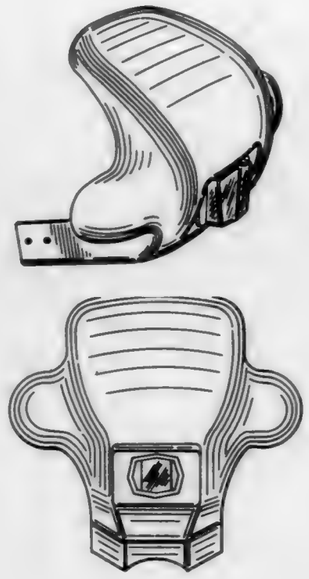
345,723
TIRE
James G. Guspodin, Akron, Ohio, assignor to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jul. 9, 1992, Ser. No. 911,226
Term of patent 14 years
U.S. Cl. D12—147



345,724
TREAD
Mark L. Bonko, Uniontown, and Loran C. Lopp, Jr., Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 19, 1992, Ser. No. 1,648
Term of patent 14 years
U.S. Cl. D12—148



345,725
BICYCLE FAIRING
David K. Camfield, and Daniel G. Hahn, both of Olney, Ill., assignors to Roadmaster Corporation, Olney, Ill.
Filed Jun. 10, 1992, Ser. No. 896,557
Term of patent 14 years
U.S. Cl. D12—182



345,726
4WD HUB COVER
Lether L. Masker, Lords Valley, HC8, Box 8109, Hawley, Pa. 18428
Filed Jul. 29, 1992, Ser. No. 921,283
Term of patent 14 years
U.S. Cl. D12—207

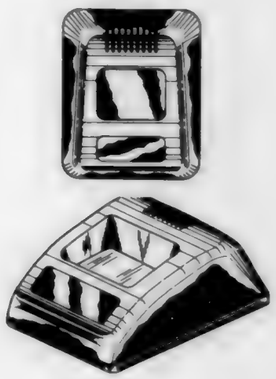


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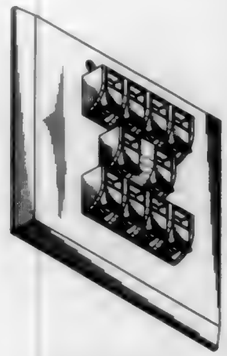
345,727
RECHARGEABLE BATTERY PACK FOR ELECTRIC POWER TOOLS
Dale M. Flowers, Prospect Heights, and P. Sean Gallagher, Park Forest, both of Ill., assignors to Skil and S-B Power Tool Company, Chicago, Ill.
Filed Aug. 9, 1991, Ser. No. 742,938
Term of patent 14 years
U.S. Cl. D13—103



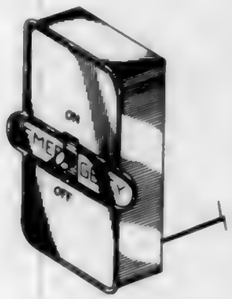
345,728
BATTERY CHARGER FOR A PORTABLE RADIO DEVICE
Frank M. Tyneski, Mentor, Ohio, and Craig F. Siddoway, Davie, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 5, 1991, Ser. No. 802,765
Term of patent 14 years
U.S. Cl. D13—108



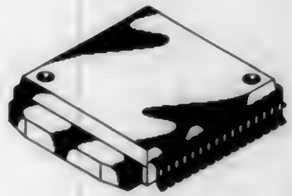
345,729
TERMINAL WALL PLATE
James W. Dickens; Bill R. Unseld, and Robert P. Farinelli, all of Lexington, Ky., assignors to Square D Company
Filed Nov. 22, 1991, Ser. No. 796,138
Term of patent 14 years
U.S. Cl. D13—147



345,730
EMERGENCY LIGHT SWITCH
Ken Barbb, 430 Sherbourn, Inkster, Mich. 48141, and Ronald Mater, 6641 Norborne, Dearborn Heights, Mich. 48127
Filed Nov. 25, 1992, Ser. No. 1,873
Term of patent 14 years
U.S. Cl. D13—169



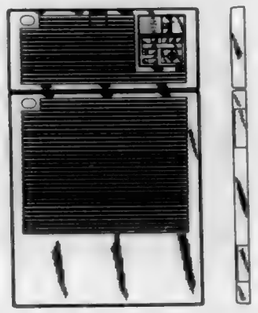
345,731
SEMICONDUCTOR PACKAGE
Norman L. Owens, Chandler, and Timothy L. Olson, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 3, 1992, Ser. No. 2,224
Term of patent 14 years
U.S. Cl. D13—182



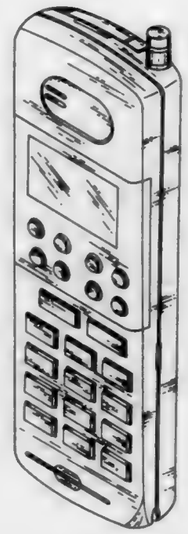
345,732
MEMORANDUM INPUT AND OUTPUT TERMINAL
Hiroshi Sakaguchi, Kyoto; Koji Nishida, Nara; Shinsaku Hino, Nara, and Makiko Yoshimura, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 12, 1992, Ser. No. 928,202
Claims priority, application Japan, Mar. 19, 1992, 4-8034
Term of patent 14 years
U.S. Cl. D14—100



345,733
FRONT PANEL FOR A PROCESSOR CONTROLLER DATA PROCESSING SYSTEM
Wayne L. Aderman, Zumbro Falls, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1990, Ser. No. 546,055
The portion of the term of this patent subsequent to Apr. 6, 1993, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—115



345,734
HAND TELEPHONE
Richard Seymour, Kingston-upon-Thames, and Patrick Hunt, London, both of England, assignors to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Nov. 12, 1992, Ser. No. 1,399
Claims priority, application Finland, May 11, 1992, 332/92
Term of patent 14 years
U.S. Cl. D14—138

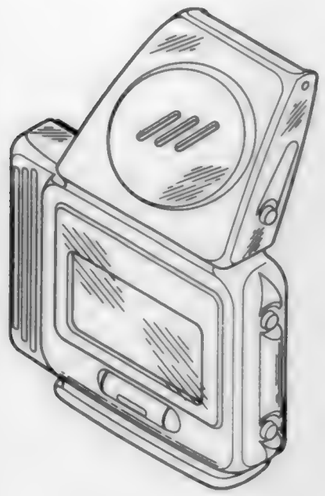


345,735
DIGITAL AUDIO TAPE RECORDER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira, and Katsuhiro Takashima, Urawa, all of Japan, assignors to TEAC Corporation, Japan
Filed Aug. 5, 1992, Ser. No. 925,478
Claims priority, application Japan, Feb. 14, 1992, 4-4071
Term of patent 14 years
U.S. Cl. D14—164

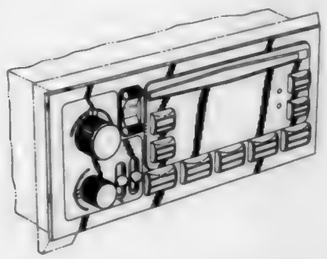


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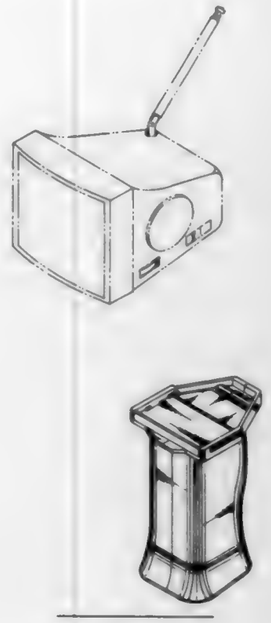
345,736
CASE FOR A WATCH PAGER
William J. Scheid, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 5, 1991, Ser. No. 727,793
Term of patent 14 years
U.S. Cl. D14—191



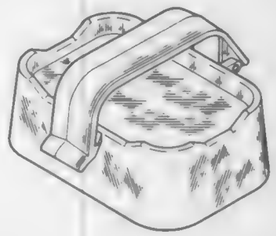
345,737
FRONT PANEL FOR A COMBINED RADIO RECEIVER AND COMPACT DISC PLAYER
James P. Muccioli, Farmington Hills; Mary J. Kluka, Roseville; Lee M. Dziekan, East Detroit, all of Mich.; Steven F. Selby, Huntsville, Ala.; George C. Lew, Clarkston, and Ali Y. Bazoun, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Feb. 20, 1992, Ser. No. 838,084
Term of patent 14 years
U.S. Cl. D14—258



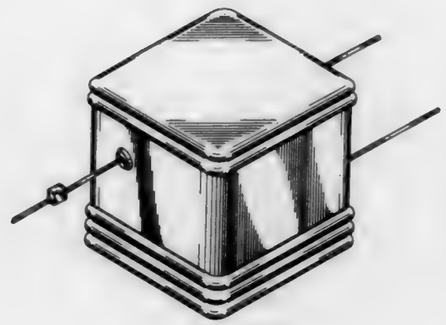
345,738
HAND HELD TELEVISION SET HANDLE
Mike Lee, Hacienda Heights, Calif., assignor to American Action Inc., Pomona, Calif.
Filed Jul. 3, 1991, Ser. No. 725,271
Term of patent 14 years
U.S. Cl. D14—299



345,739
RADIO PAGER CODE PROGRAMMER
Anthony M. Potts, Lauderdale Lakes, and Scott J. Hanlon, Lantana, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 5, 1991, Ser. No. 740,208
Term of patent 14 years
U.S. Cl. D14—299



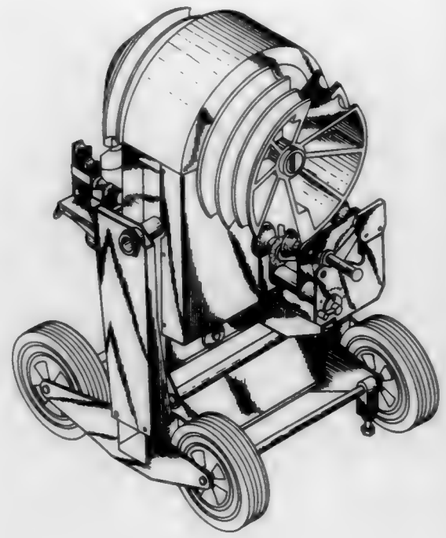
345,740
NATURAL GAS COMPRESSOR HOUSING
Clinton L. Clark, 19837 E. Brown Pl., Aurora, Colo. 80013
Filed Jul. 19, 1991, Ser. No. 732,694
Term of patent 14 years
U.S. Cl. D15—9



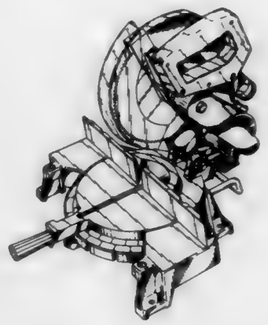
345,741
MULTI-PURPOSE TRACTOR
Paul W. Mullett, Hesston, and Elmer D. Voth, Newton, both of Kans., assignors to Excel Industries, Inc., Hesston, Kans.
Filed May 1, 1992, Ser. No. 877,114
Term of patent 14 years
U.S. Cl. D15—23



345,742
TUBE BENDER
Larry G. Adleman; Jeffrey J. Plummer, both of Rockford, Ill., and Orville Larsen, Lake Geneva, Wis., assignors to Greenlee Textron Inc., Rockford, Ill.
Filed Aug. 7, 1992, Ser. No. 926,899
Term of patent 14 years
U.S. Cl. D15—123

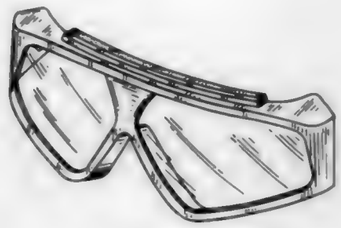


345,743
MOTORIZED MITER BOX
Jaime E. Garcia, Wexford, Pa., assignor to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Mar. 25, 1992, Ser. No. 854,315
Term of patent 14 years
U.S. Cl. D15—133

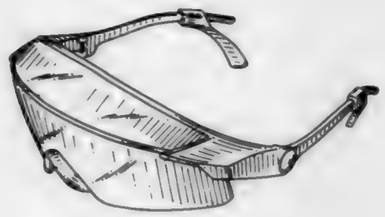


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345,744
SAFETY SPECTACLES WITHOUT TEMPLES
Richard Hirschman, Albertson, N.Y., assignor to Hudson Optical Corporation, Bohemia, N.Y.
Filed Dec. 4, 1992, Ser. No. 2,208
Term of patent 14 years
U.S. Cl. D16—102



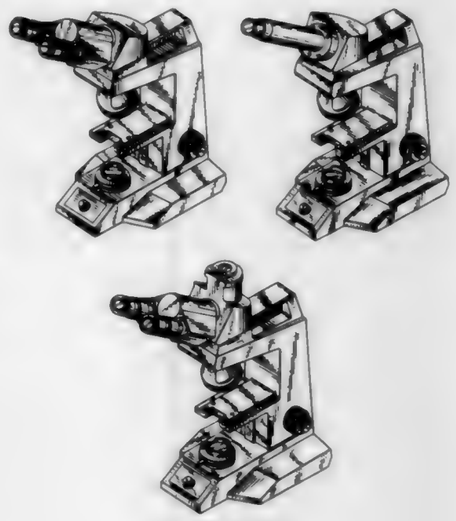
345,745
SUNGLASSES
Yoshiaki Iida, Katano, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Mar. 12, 1993, Ser. No. 5,843
Claims priority, application Japan, Sep. 16, 1992, 4-27346
Term of patent 14 years
U.S. Cl. D16—112



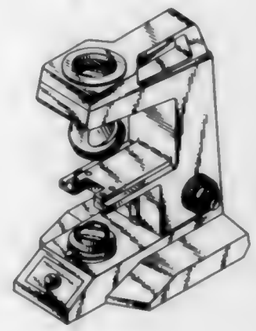
345,746
MICROSCOPE
Werner Hölbl, Vienna, Austria, assignor to Leica Inc., Buffalo, N.Y.
Filed Apr. 23, 1992, Ser. No. 872,667
Term of patent 14 years
U.S. Cl. D16—131



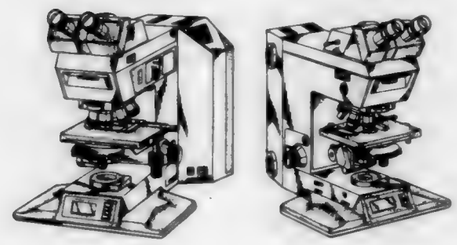
345,747
COMBINED MICROSCOPE STAND AND BODY
Werner Hölbl, Vienna, Austria, assignor to Leica Inc., Buffalo, N.Y.
Filed Apr. 23, 1992, Ser. No. 872,669
Term of patent 14 years
U.S. Cl. D16—131



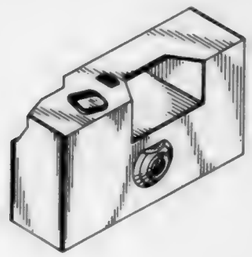
345,748
MICROSCOPE STAND
Werner Holbl, Vienna, Austria, assignor to Leica Inc., Buffalo, N.Y.
Filed Apr. 23, 1992, Ser. No. 872,670
Term of patent 14 years
U.S. Cl. d16—131



345,749
MICROSCOPE
Ernest Hofmann-Igl, Davos-Platz, Switzerland, assignor to Leica Mikroskopie und Systeme GmbH, Wetzlar, Fed. Rep. of Germany
Filed Jun. 5, 1992, Ser. No. 893,100
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1991, M 91 08 661
Term of patent 14 years
U.S. Cl. D16—131

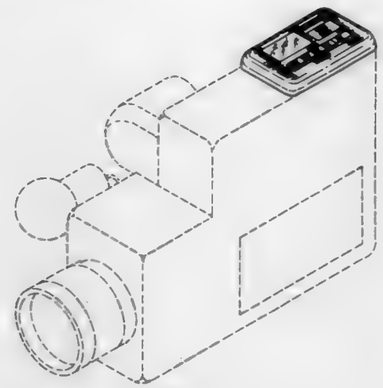


345,750
SINGLE USE CAMERA
Takuya Arai, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 13, 1992, Ser. No. 1,452
Claims priority, application Japan, May 14, 1992, 4-14033
Term of patent 14 years
U.S. Cl. D16—208

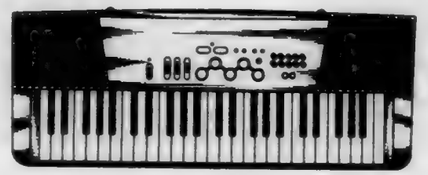


D 345,751
Patent Not Issued For This Number

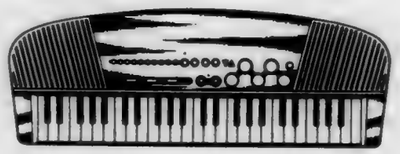
345,752
UNIT FOR DUBBING MUSIC ONTO CAMCORDER FILM
Emmanuel Noisette, 7545 N. Winchester #201, Chicago, Ill. 60626
Filed Aug. 22, 1991, Ser. No. 748,384
Term of patent 14 years
U.S. Cl. D16—219



345,753
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Hideaki Yamabe, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,480
Claims priority, application Japan, Mar. 19, 1992, 4-7629
Term of patent 14 years
U.S. Cl. D17—1

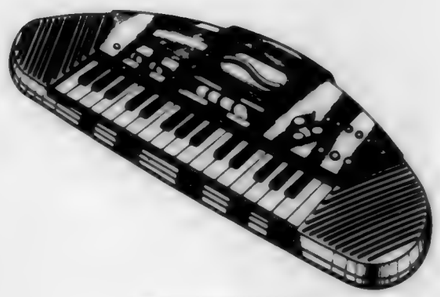


345,754
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Yuji Oki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,490
Claims priority, application Japan, Mar. 19, 1992, 4-7630
Term of patent 14 years
U.S. Cl. D17—1

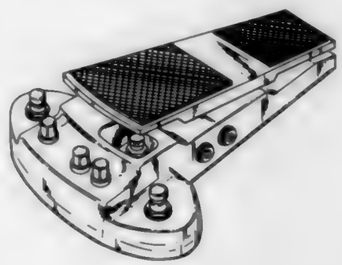


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345,755
ELECTRONIC MUSICAL KEYBOARD
Toshio Igo, Tokorozawa; Yukihiko Ida, Higashi-Kurume, and Kozo Hisanaga, Hino, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 1,863
Term of patent 14 years
U.S. Cl. D17—1



345,756
STEREO FILTER PEDAL
Edwin C. Clothier, 7112 Ranchito, Van Nuys, Calif. 91405
Filed Jan. 24, 1992, Ser. No. 825,183
Term of patent 14 years
U.S. Cl. D17—20



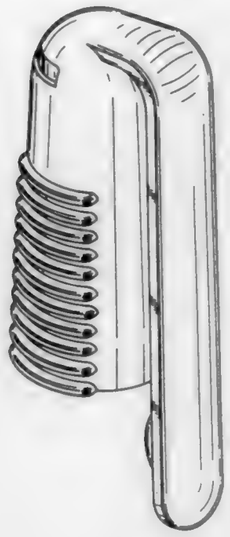
345,757
COMBINATION CALCULATOR AND CLOCK
Dennis R. Webb, Salt Lake City, and Jana S. Buchanan, Sandy, both of Utah, assignors to Franklin Quest, Company, Salt Lake City, Utah
Filed Apr. 17, 1992, Ser. No. 871,622
The portion of the term of this patent subsequent to Jan. 11, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—6



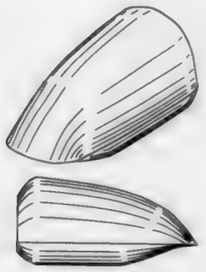
345,758
PAPER FEEDER FOR PRINTER
Kouki Fukuda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 27, 1992, Ser. No. 841,637
Claims priority, application Japan, Aug. 27, 1991, 3-25785
Term of patent 14 years
U.S. Cl. D18—49



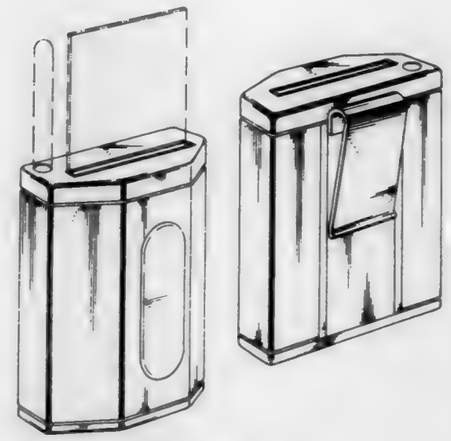
345,759
CORRECTION FLUID DISPENSER CAP
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jan. 7, 1992, Ser. No. 817,829
Term of patent 14 years
U.S. Cl. D19—57



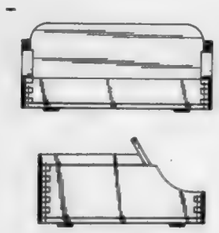
345,760
SIMULATOR CAPSULE
Edward T. Liljenwall, Everett, Wash., assignor to Magic Edge, Inc., Mountain View, Calif.
Filed Feb. 10, 1993, Ser. No. 4,653
Term of patent 14 years
U.S. Cl. D19—63



345,761
CARRYING CASE FOR WRITING INSTRUMENT AND BUSINESS CARDS
Sharon P. Bolds, P.O. Box 372426, Decatur, Ga. 30034
Filed Sep. 25, 1992, Ser. No. 950,052
Term of patent 14 years
U.S. Cl. D19—78

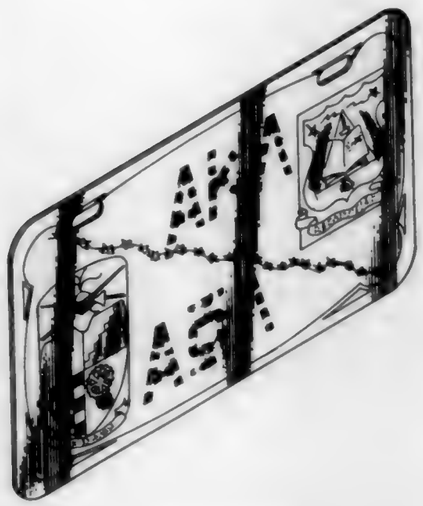


345,762
COMBINED CARD HOLDER AND DISPLAY UNIT
Beverly J. Bird, and Harry E. Bird, both of 6721 Cherry Pl., Oklahoma City, Okla. 73127
Filed Nov. 19, 1992, Ser. No. 1,670
Term of patent 14 years
U.S. Cl. D19—90

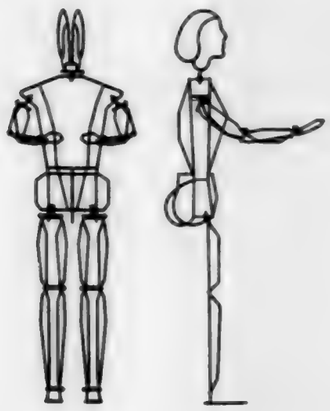


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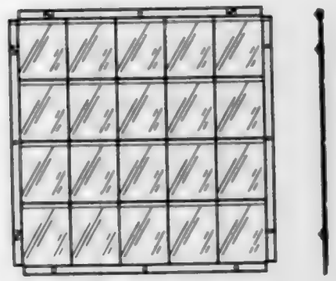
345,763
VEHICLE TAG
Lawrence E. Moore, 5255 Halcyon Dr., College Park, Ga. 30349
Filed Jul. 20, 1990, Ser. No. 555,150
Term of patent 14 years
U.S. Cl. D20—13



345,764
MANNEQUIN
Daron D. Duncan, and Patricia R. Duncan, both of 1812 Birch, Duncan, Okla. 73533
Filed Feb. 12, 1993, Ser. No. 4,774
Term of patent 14 years
U.S. Cl. D20—31



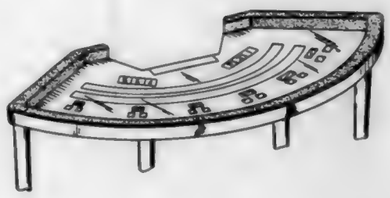
345,765
COLLECTOR CARDS DISPLAY HOLDER
Wayne L. Fritz, 11129 Decatur Plz., #522, Omaha, Nebr. 68154
Filed Mar. 9, 1992, Ser. No. 847,253
Term of patent 14 years
U.S. Cl. D20—42



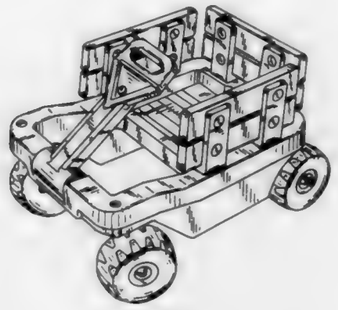
345,766
SIGN HOLDER
Daniel Goldman, Dix Hills, and Neal Goldman, Commack, both of N.Y., assignors to Premier Sydell Ltd., Bohemia, N.Y.
Filed Mar. 29, 1993, Ser. No. 6,441
Term of patent 14 years
U.S. Cl. D20—42



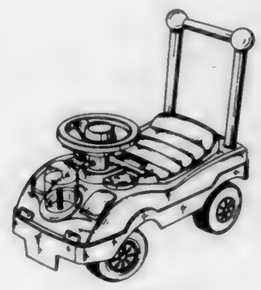
345,767
GAMING TABLE
Robert F. Ollington, 338 Howe Parade, Garden City, Victoria, 3207, Australia
Filed Jan. 30, 1992, Ser. No. 828,486
Term of patent 14 years
U.S. Cl. D21—37



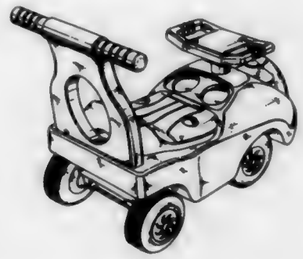
345,768
TOY WAGON
Jay M. Bro, and Philip M. Baerenwald, both of Plano, Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,467
Term of patent 14 years
U.S. Cl. D21—71



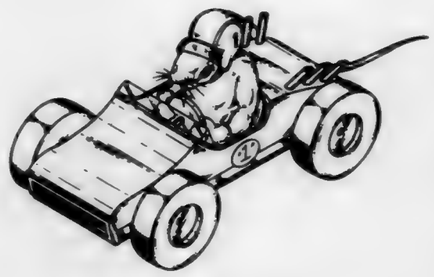
345,769
TOY VEHICLE
Kun-Hei Liu, 2F., No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan
Filed Jul. 7, 1993, Ser. No. 10,361
Term of patent 14 years
U.S. Cl. D21—76



345,770
TOY VEHICLE
Kun-Hei Liu, 2F., No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan
Filed Jul. 7, 1993, Ser. No. 10,362
Term of patent 14 years
U.S. Cl. D21—76



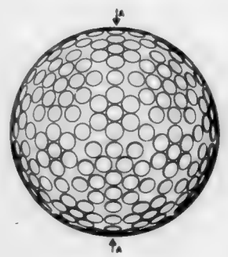
345,771
REMOTE CONTROLLED TOY VEHICLE
Aanthnie-Ruth Angiolelis, 7 Anneke Rd, Scarborough, Ontario, CN M1N-3M6, Canada
Filed Jun. 3, 1992, Ser. No. 892,009
Term of patent 14 years
U.S. Cl. D21—137



345,772
DOLL
Rhonda J. Smith, 64 Mills Cir., Byron, Ga. 31008
Division of Ser. No. 799,626, Nov. 29, 1991, Pat. No. Des. 342,105. This application Jul. 7, 1993, Ser. No. 10,982
Term of patent 14 years
U.S. Cl. D21—154



345,773
GOLF BALL
Richard R. Sanchez, Peoria, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Sep. 11, 1992, Ser. No. 943,213
Term of patent 14 years
U.S. Cl. D21—205

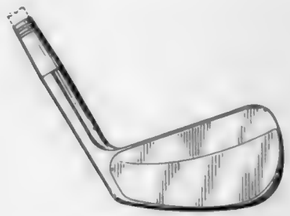


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345,774
GOLF CLUB
William J. Jarvis, 3600 Varoon Rd., Rochester, Mich. 48063
Filed Jan. 28, 1985, Ser. No. 695,710
The portion of the term of this patent subsequent to Oct. 5, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—217



345,775
GOLF CLUB HEAD
Lionel Poincenot, Vista; Bob Vokey, Carlsbad, both of Calif., and Harry Taylor, Old Hickory, Tenn., assignors to Taylor Made Golf Company, Carlsbad, Calif.
Filed Oct. 30, 1990, Ser. No. 605,478
Term of patent 14 years
U.S. Cl. D21—220



345,776
MULTIPURPOSE GOLF TOOL
James M. Williams, 24 Maplefield, Pleasant Ridge, Mich. 48069
Filed May 1, 1992, Ser. No. 877,122
Term of patent 14 years
U.S. Cl. D21—234



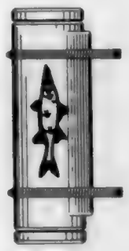
345,777
CHILD SWING MOTOR HOUSING AND FRAME
Daniel R. Pinch, Hope, and Dennis M. Turner, Scipio, both of Ind., assignors to Cosco, Inc., Columbus, Ind.
Filed Sep. 15, 1992, Ser. No. 941,933
Term of patent 14 years
U.S. Cl. D21—246



345,778
WEIGHTED LURE RETRIEVER
Allan L. Beck, 101 Sparksferry Rd., and Allan D. Beck, R.R. 1, both of Salem, Ind. 47167
Filed Oct. 14, 1992, Ser. No. 920,331
Term of patent 14 years
U.S. Cl. D22—134



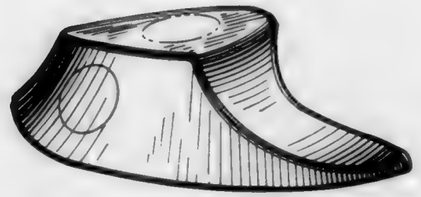
345,779
TACKLE TUBE
Michael J. Baggett, P.O. Box 634, Hallsville, Tex. 75650, and Ricky L. Wallace, 129 Wingate La., Longview, Tex. 75601
Filed Oct. 31, 1991, Ser. No. 785,708
Term of patent 14 years
U.S. Cl. D22—139



345,780
GAMBREL FOR GAME ANIMALS
Harley M. Ream, 27037 Weber Rd., Brownsville, Oreg. 97327
Filed Mar. 2, 1992, Ser. No. 843,086
Term of patent 14 years
U.S. Cl. D22—199



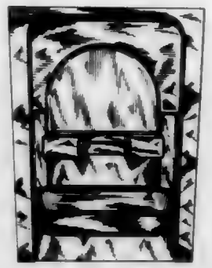
345,781
ESCUTCHEON FOR A PLUMBING SPOUT
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 824,192
Term of patent 14 years
U.S. Cl. D23—249



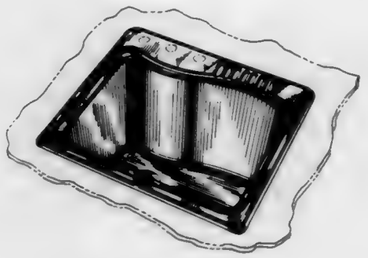
345,782
ESCUTCHEON FOR A CONTROL VALVE
Kevin G. Short, Midlothian, and Bruce M. Sauter, Elgin, both of Ill., assignors to Sterling Plumbing Group, Inc., Schaumburg, Ill.
Filed Mar. 6, 1992, Ser. No. 847,816
Term of patent 14 years
U.S. Cl. D23—249



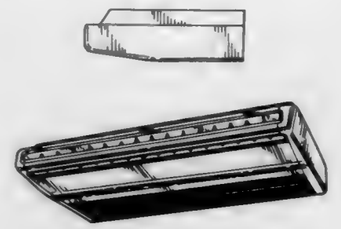
345,783
BATHING ENCLOSURE SHELL
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed May 29, 1992, Ser. No. 891,459
Term of patent 14 years
U.S. Cl. D23—275



345,784
SINK
David J. O'Connell, Sturgeon Bay, and William C. McKeone, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 823,651
Term of patent 14 years
U.S. Cl. D23—284

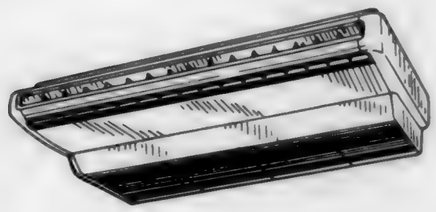


345,785
AIR CONDITIONER
Takeshi Saito; Nobuo Hata; Miyoshi Miwa, and Eiji Horino, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 11, 1992, Ser. No. 880,986
Claims priority, application Japan, Nov. 27, 1991, 3-35722
Term of patent 14 years
U.S. Cl. D23—351

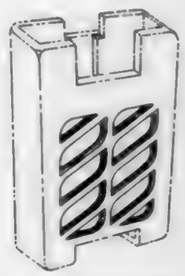


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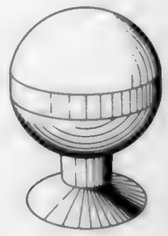
345,786
AIR CONDITIONER
Takeshi Saito; Nobuo Hata; Miyoshi Miwa, and Eiji Horino, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 13, 1992, Ser. No. 882,589
Claims priority, application Japan, Nov. 27, 1991, 3-35721
Term of patent 14 years
U.S. Cl. D23—351



345,787
DECORATIVE GRILLE FOR A VOLATILE SUBSTANCE DISPENSER UNIT
John Martin, Caledonia, assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jun. 24, 1992, Ser. No. 903,623
Term of patent 14 years
U.S. Cl. D23—366



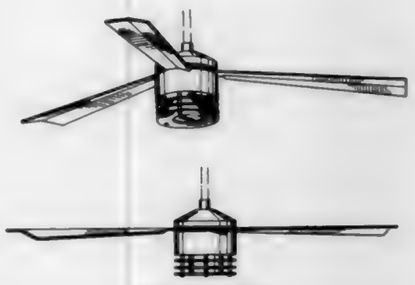
345,788
AIR FRESHENER CONTAINER
Dennis E. Green, Highlands Ranch, Colo., assignor to Dennis Green Design Group, Ltd., Highlands Ranch, Colo.
Filed Dec. 14, 1992, Ser. No. 2,581
Term of patent 14 years
U.S. Cl. D23—366



345,789
DOVE FACE ON VOLATILE SUBSTANCE DISPENSER UNIT
John Martin, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Mar. 25, 1993, Ser. No. 6,278
Term of patent 14 years
U.S. Cl. D23—367



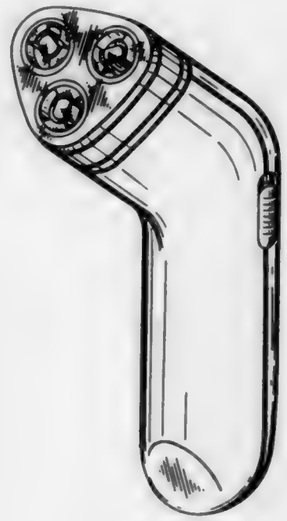
345,790
COMBINED CEILING FAN WITH V-SHAPED BLADE AND ILLUMINABLE ATTACHMENT
John Caldwell, 901 El Centro St., South Pasadena, Calif. 91030
Filed Jan. 7, 1993, Ser. No. 3,450
Term of patent 14 years
U.S. Cl. D23—377



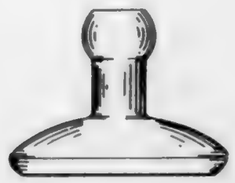
345,791
DIAPER WITH REUSABLE PAD
Maria L. Middleman, 7472 Hamilton Ave., Edwards AFB, Calif. 93523
Filed May 1, 1991, Ser. No. 694,048
Term of patent 14 years
U.S. Cl. D24—126



345,792
EPILATOR
Jan F. Van Asten, Wolfnitz-Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 615,826, Nov. 16, 1990. This application Jan. 25, 1993, Ser. No. 8,282
Claims priority, application World Int. Prop. O., Jun. 28, 1990, DM/017.021
Term of patent 14 years
U.S. Cl. D24—133



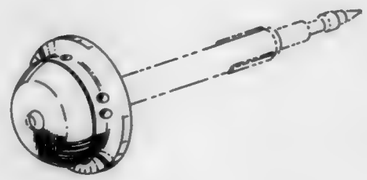
345,793
PESSARY
Denis P. Dorsey, 51 Rainlily Rd., Levittown, Pa. 19056, and James D. Dorsey, 417 Glendale Rd., Wilbraham, Mass. 01095
Filed Mar. 27, 1992, Ser. No. 859,541
Term of patent 14 years
U.S. Cl. D24—135



345,794
AN ULTRASONIC CUTTING TOOL FOR MEDICAL USE
Larry I. Hood, Laguna Hills, and Gregg Hughes, El Toro, both of Calif., assignors to Advanced Osseous Technologies, Inc., Aliso Viejo, Calif.
Filed Jun. 11, 1991, Ser. No. 714,091
Term of patent 14 years
U.S. Cl. D24—144



345,795
AN ANVIL FOR A SURGICAL STAPLER
David T. Green, Westport; Henry Bolanos, East Norwalk, and Robert J. Geiste, Milford, all of Conn., assignors to United States Surgical Corporation
Filed Sep. 27, 1991, Ser. No. 769,064
Term of patent 14 years
U.S. Cl. D24—145

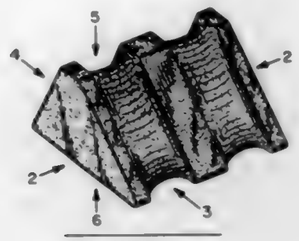


345,796
AN INSTRUMENT FOR DETERMINING THE ARCH CONFIGURATION OF A PERSON'S EYE CONTOUR
Martin Pernicka, Montreal, Quebec, Canada, assignor to Leader Manufacturing Inc., Boucherville, Canada
Filed May 28, 1992, Ser. No. 889,312
Term of patent 14 years
U.S. Cl. D24—150

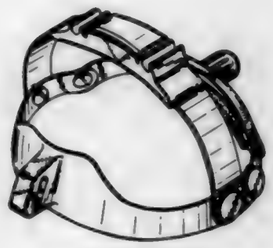


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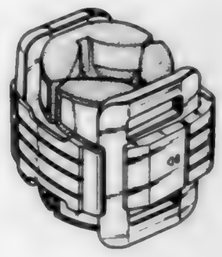
345,797
ERGONOMIC THERAPEUTIC LEG SUPPORT
David B. Gardner, P.O. Box 957, Belle Mead, N.J. 08502
Filed Jun. 22, 1992, Ser. No. 903,098
Term of patent 14 years
U.S. Cl. D24—183



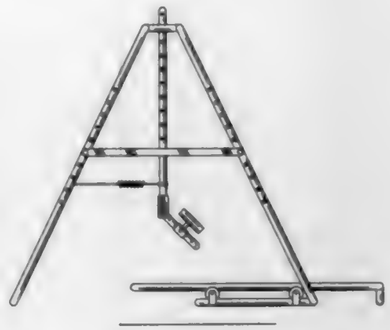
345,798
HEADBAND FOR SUPPORTING ONE OR MORE MEDICAL INSTRUMENTS
Peter Hildenbrand, Beimerstetten; Walter Matuschek, Aalen, and Heinz Gottlob, Konigsbronn, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany
Filed Apr. 9, 1992, Ser. No. 866,249
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 9107073.2
Term of patent 14 years
U.S. Cl. D24—172



345,799
MEDICAL TREATMENT SELF-CENTERING CLAMP
Donald R. Lamond, Lynbrook, N.Y., and Bert Heinzelman, Tenafly, N.J., assignors to OrthoLogic Corp., Phoenix, Ariz.
Filed Dec. 27, 1991, Ser. No. 816,079
Term of patent 14 years
U.S. Cl. D24—188



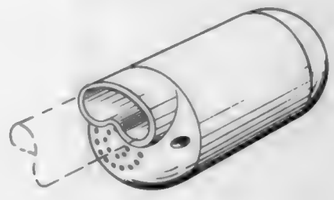
345,800
COMBINED BABY BOTTLE HOLDER AND FEEDER
Allan L. Mills, 319 Shawen Dr., Hampton, Va. 23669
Filed Jun. 1, 1993, Ser. No. 8,950
Term of patent 14 years
U.S. Cl. D24—199



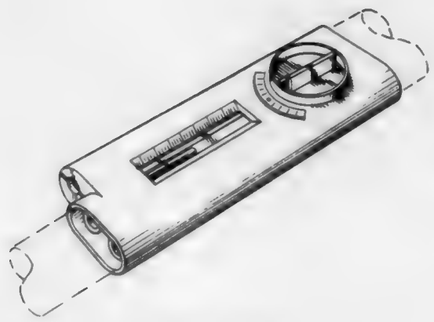
345,801
MASSAGER
Mimi L. Bosch, 9225 Loiret, Lenexa, Kans. 66219
Filed Feb. 28, 1992, Ser. No. 843,170
Term of patent 14 years
U.S. Cl. D24—200



345,802
THERAPEUTIC FLUID PUMP
Jeffrey T. Mason, Escondido, and Bradley R. Mason, Olivenhain, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Mar. 12, 1992, Ser. No. 850,063
Term of patent 14 years
U.S. Cl. D24—200



345,803
THERAPEUTIC FLUID FLOW CONTROLLER
Jeffrey T. Mason, Escondido, and Bradley R. Mason, Olivenhain, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Mar. 12, 1992, Ser. No. 850,064
Term of patent 14 years
U.S. Cl. D24—200



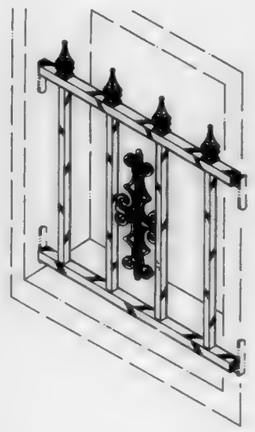
345,804
SOLE MASSAGER
Tsai Chin-Chi, No. 38, Lane 205, Hai Huan Street, Tainan, Taiwan
Filed Jan. 13, 1993, Ser. No. 3,569
Term of patent 14 years
U.S. Cl. D24—213



345,805
BELT MASSAGER
Marten F. Elkerbout, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 20, 1992, Ser. No. 916,577
Claims priority, application World Int. Prop. O., Feb. 7, 1992, DM/021,944
Term of patent 14 years
U.S. Cl. D24—215



345,806
ADJUSTABLE WINDOW GRILLE
Frank Vyvoda, 2004 Hiki St., Honolulu, Hi. 96819
Filed May 1, 1992, Ser. No. 877,123
Term of patent 14 years
U.S. Cl. D25—53

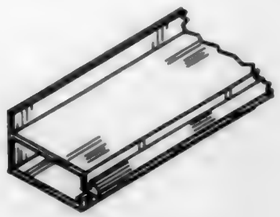


345,807
FLOOR EDGING TRACK
Larry G. Ingraham, Plantation, Fla., assignor to Roppe Corporation, Opa-Locka, Fla.
Filed Jan. 27, 1992, Ser. No. 825,863
Term of patent 14 years
U.S. Cl. D25—119

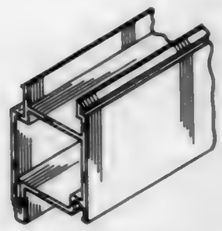


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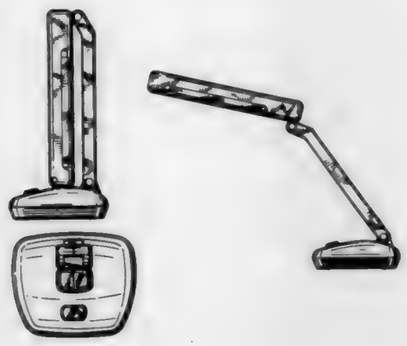
345,808
EXTERIOR FRAME EXTENSION
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,830
Term of patent 14 years
U.S. Cl. D25—119



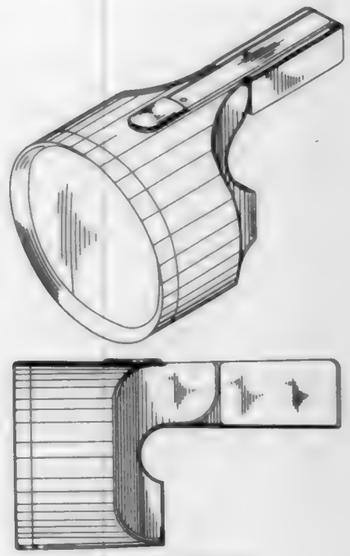
345,809
FIXED PANEL HEAD SILL
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,825
Term of patent 14 years
U.S. Cl. D25—124



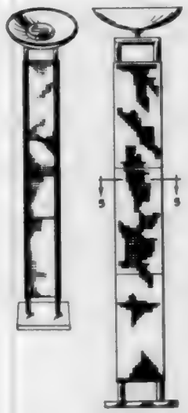
345,810
ADJUSTABLE FLUORESCENT LANTERN
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 10, 1992, Ser. No. 849,698
Claims priority, application United Kingdom, Sep. 11, 1991, 2-017 379
Term of patent 14 years
U.S. Cl. D26—44



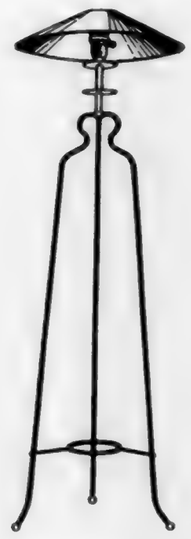
345,811
RECHARGEABLE FLASHLIGHT
Gary Van Deursen, Upper Saddle River, N.J., and Gregory K. Hoffman, Hamden, Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 10, 1992, Ser. No. 819,530
Term of patent 14 years
U.S. Cl. D26—46



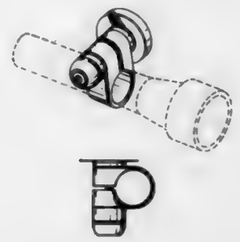
345,812
FLOOR LAMP
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 90266
Filed Nov. 9, 1992, Ser. No. 1,253
Term of patent 14 years
U.S. Cl. D26—106



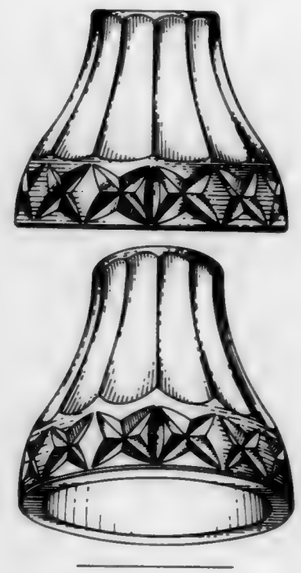
345,813
STANDING LAMP
Jimmy Huang, Taipei Hsien, Taiwan, assignor to Ben Caster Electric Industrial Co., Ltd., Taipei, Taiwan
Filed Oct. 23, 1992, Ser. No. 800
Term of patent 14 years
U.S. Cl. D26—111



345,814
HEADSET MOUNTED FLASHLIGHT HOLDER
Charles O. Wright, III, 6 Shannon Ct., Oxford, Conn. 06478
Filed Nov. 18, 1991, Ser. No. 794,159
Term of patent 14 years
U.S. Cl. D26—138



345,815
LIGHTING FIXTURE URN BODY
Arnold Schonbek, Plattsburgh, N.Y., assignor to Schonbek Worldwide Lighting Inc., Plattsburgh, N.Y.
Filed Jul. 3, 1991, Ser. No. 725,268
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—153

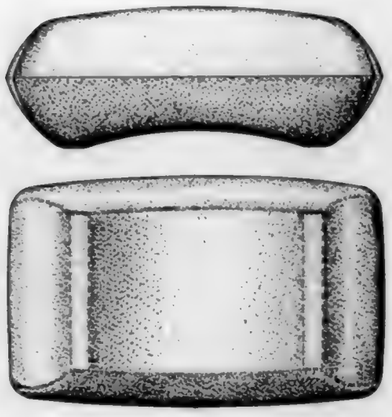


345,816
TANNING WAND
Jerry M. Moore, 1232 Lookout Dr., Monticello, Ind. 47960, and Daniel Scott, 1056 N. Main St., Frankfort, Ind. 46041
Filed Sep. 9, 1991, Ser. No. 756,364
Term of patent 14 years
U.S. Cl. D28—7

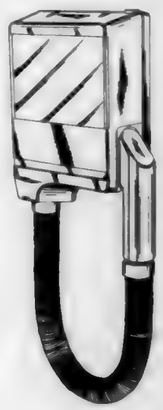


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345,817
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,944
Term of patent 14 years
U.S. Cl. D28—8.1



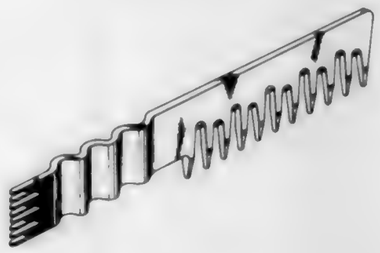
345,818
COMBINED WALL MOUNTED HAIR DRYER AND MIRROR
Jean-Marie Froidevaux, Carouge, Switzerland, assignor to Alisco Diffusion S.A., Switzerland
Filed Aug. 12, 1991, Ser. No. 744,010
Claims priority, application Int'l Pat. Institute, Mar. 6, 1991, DM/019075
Term of patent 14 years
U.S. Cl. D28—12



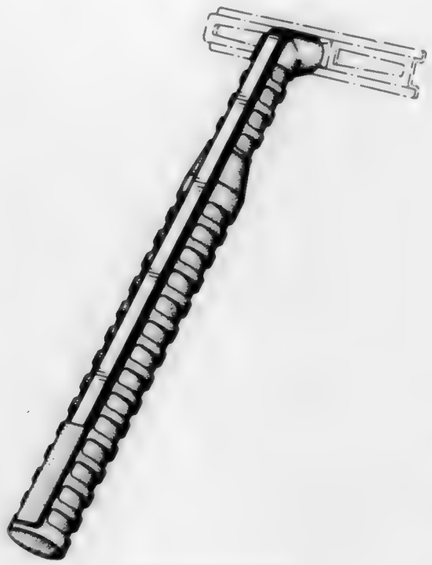
345,819
HAIR DRYER
Todd A. Bland, 4301 Abbott Rd., Lincoln, Nebr. 68516
Continuation-in-part of Ser. No. 247,576, Sep. 22, 1988, abandoned. This application Feb. 11, 1991, Ser. No. 653,126
Term of patent 14 years
U.S. Cl. D28—13



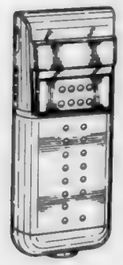
345,820
COMB
Thomas Van Dyk, Prospect Park, N.J., assignor to Goody Products, Inc., Kearny, N.J.
Filed May 4, 1992, Ser. No. 878,327
Term of patent 14 years
U.S. Cl. D28—28



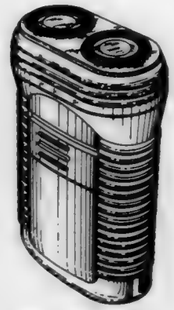
345,821
RAZOR HANDLE
Jeff W. Wonderley, Ft. Defiance, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Feb. 14, 1992, Ser. No. 835,671
Term of patent 14 years
U.S. Cl. D28—48



345,822
DRY SHAVER WITH CAP
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Baun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jul. 29, 1992, Ser. No. 923,154
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, M92 01 097.0
Term of patent 14 years
U.S. Cl. D28—49



345,823
DRY SHAVER
Olaf Barski, Frankfurt am Main, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 13, 1992, Ser. No. 368
Claims priority, application Switzerland, Apr. 27, 1992, DM/022,716
Term of patent 14 years
U.S. Cl. D28—50



345,824
COMBINED FLOSS DISPENSER AND TOOTHBRUSH HOLDER
Steven D. Fitz, 488 Canterbury Rd., Bay Village, Ohio 44140
Continuation of Ser. No. 647,570, Jan. 28, 1991, Pat. No. 5,097,464. This application Mar. 5, 1992, Ser. No. 846,412
Term of patent 14 years
U.S. Cl. D28—64

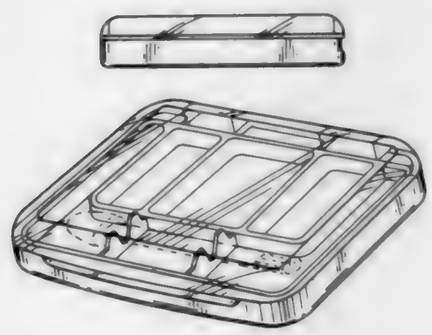


345,825
TOOTHPICK
Thomas J. Arnold, Winslow, Ind., assignor to Mion International Corporation, Winslow, Ind.
Filed Jul. 30, 1992, Ser. No. 922,941
Term of patent 14 years
U.S. Cl. D28—64

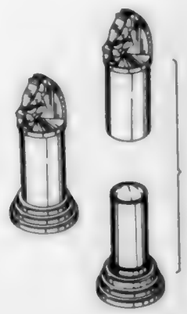


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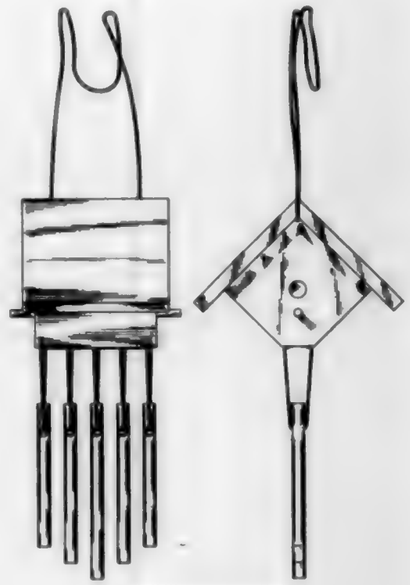
345,826
COSMETIC COMPACT
Tammye Byars, Cordova; Jerry W. Bonnot, Memphis, and John M. B. Ford, Cordova, all of Tenn., assignors to Maybelle, Inc., Memphis, Tenn.
Filed Oct. 21, 1991, Ser. No. 779,605
Term of patent 14 years
U.S. Cl. D28—83



345,827
LIPSTICK CASE
Shen-Shyong Yang, No. 227-17, Tay-Tzyy-Miaw, Tay-Tzyy Tsuen, Ren-Der Shiang, Tainan Hsien, Taiwan
Filed Apr. 29, 1992, Ser. No. 875,139
Term of patent 14 years
U.S. Cl. D28—87



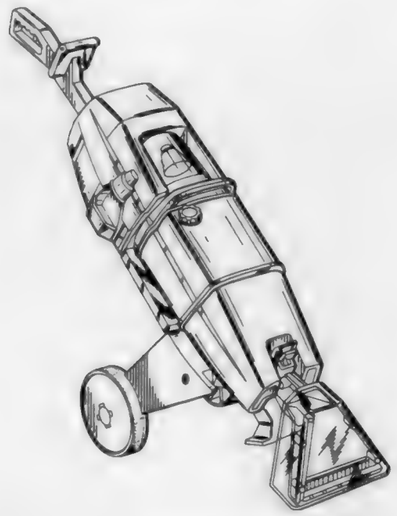
345,828
COMBINED BIRDHOUSE AND CHIME
John Stannard, Box 666, Crystal Beach, Fla. 34681
Filed Oct. 21, 1992, Ser. No. 692
Term of patent 14 years
U.S. Cl. D30—110



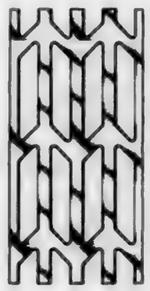
345,829
INDICATOR FOR IDENTIFYING CLEAN OR DIRTY DISHES IN A DISHWASHER
Ingrid M. Mancuso, and William G. Mancuso, both of 2358 Weatherstone Cir., Highlands Ranch, Colo. 80126
Filed Jan. 8, 1993, Ser. No. 3,364
Term of patent 14 years
U.S. Cl. D32—3



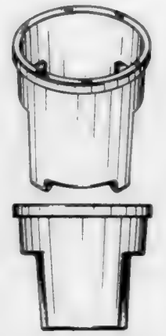
345,830
CLEANING DEVICE
Kent J. Furcron; Gary A. Miller, both of Bristol, Va.; Ricky A. Owens, Bristol, Tenn.; John W. Walch, Abingdon, Va., and Mark D. Dziersk, Simsbury, Conn., assignors to TRC Acquisition Corporation, Atlanta, Ga.
Filed Jul. 15, 1991, Ser. No. 729,814
Term of patent 14 years
U.S. Cl. D32—22



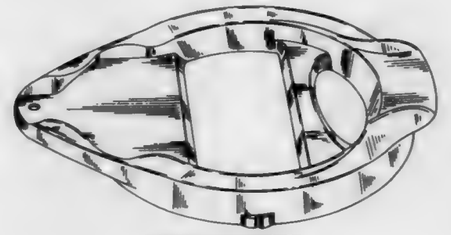
345,831
SIDE PANEL FOR HOUSEHOLD CONTAINERS
Jody A. Hobson, Rocky River, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Sep. 4, 1992, Ser. No. 940,701
Term of patent 14 years
U.S. Cl. D32—37



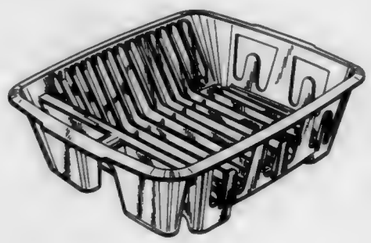
345,832
PAINT BUCKET
David B. Fraze, 2300 Gosford Rd. #7, Bakersfield, Calif. 93309, and Ronald J. Fraze, 172 La Mesa Dr., Bakersfield, Calif. 93305
Filed May 26, 1992, Ser. No. 887,926
Term of patent 14 years
U.S. Cl. D32—53.1



345,833
COMBINED PAINT CAN LID AND BRUSH HOLDER
Thomas M. Truran, P.O. Box 2359, Dearborn, Mich. 48123
Filed Jun. 21, 1993, Ser. No. 9,783
Term of patent 14 years
U.S. Cl. D32—54

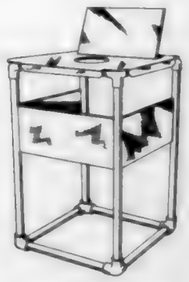


345,834
DISH RACK
Charles W. Craft, Apple Creek, and Stacy L. Wolff, Akron, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 10, 1992, Ser. No. 818,965
Term of patent 14 years
U.S. Cl. D32—55

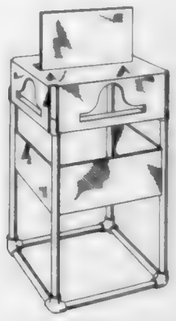


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345,835
RECYCLING BIN
James A. Tanner, Baldwinsville, N.Y., assignor to Native American Enterprises, Inc., Syracuse, N.Y.
Filed Aug. 31, 1992, Ser. No. 936,553
Term of patent 14 years
U.S. Cl. D34—5



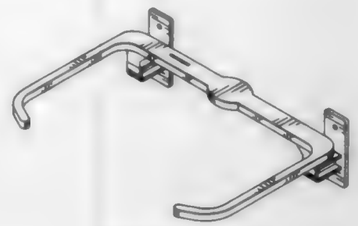
345,836
RECYCLING BIN
James A. Tanner, Baldwinsville, N.Y., assignor to Native American Enterprises, Inc., Syracuse, N.Y.
Filed Aug. 31, 1992, Ser. No. 936,557
Term of patent 14 years
U.S. Cl. D34—5



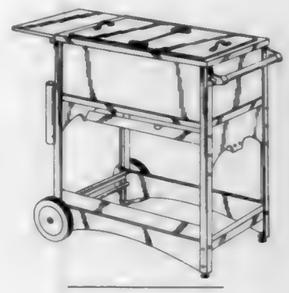
345,837
BODY PORTION OF A WASTE DISPOSAL CONTAINER
John R. H. Bean, Hampton, Australia, assignor to Brickwood Holdings Pty. Ltd., Cheltenham, Australia
Filed Dec. 30, 1992, Ser. No. 3,167
Claims priority, application Australia, Jul. 8, 1992, 1795/92
Term of patent 14 years
U.S. Cl. D34—5



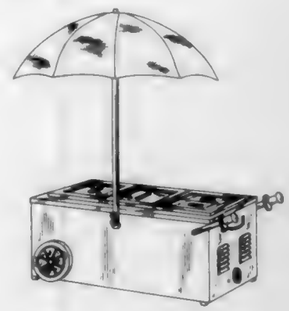
345,838
WALL-MOUNTED RACK FOR SUPPORTING A RECYCLING BAG
Robert W. Bunn, Dundee, Oreg., assignor to The Bag Connection, Inc., Newberg, Oreg.
Filed Oct. 27, 1992, Ser. No. 878
Term of patent 14 years
U.S. Cl. D34—6



345,839
ICE CHEST CART
Dante M. Senese, Huntington Beach, Calif., assignor to Classic Fabrications, Inc., Walnut, Calif.
Filed Aug. 30, 1991, Ser. No. 752,329
Term of patent 14 years
U.S. Cl. D34—14



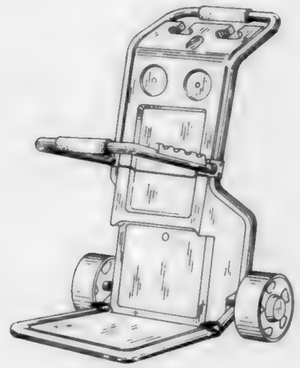
345,840
MINIATURE PUSHCART
Robert Serrano, 88 Oakland St., Hillsdale, N.J. 07642, assignor to Robert Serrano, Hillsdale, N.J.
Filed Jun. 22, 1992, Ser. No. 902,677
Term of patent 14 years
U.S. Cl. D34—25



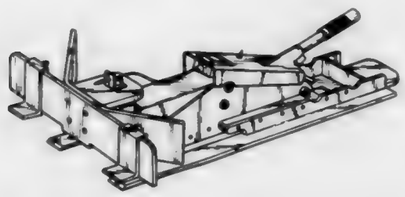
345,841
PAINTING EQUIPMENT CART
Wayne M. Bekius, Milaca, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 11, 1992, Ser. No. 924,891
Term of patent 14 years
U.S. Cl. D34—26



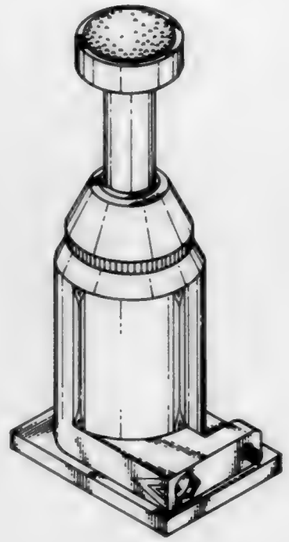
345,842
BEACH CART
Harry Sloan, Greenville, N.C.; Gene Higson, Conway, S.C., and D. Wayne Higson, Greenville, N.C., assignors to Omni Products, Inc., Greenville, N.C.
Filed Jul. 31, 1992, Ser. No. 922,945
Term of patent 14 years
U.S. Cl. D34—26



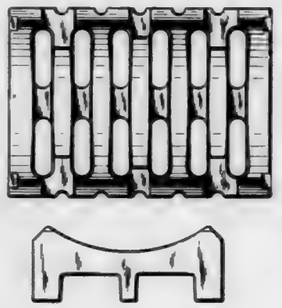
345,843
LIFTING JACK
Harvey C. Collins, 7143 S. River Rd., Marine City, Mich. 48039
Filed Apr. 8, 1992, Ser. No. 866,239
Term of patent 14 years
U.S. Cl. D34—31



345,844
AIR OPERATED VEHICLE LIFTING JACK
Earlie Steele, 20171 Schaefer, Detroit, Mich. 48235
Filed Jun. 9, 1992, Ser. No. 894,238
Term of patent 14 years
U.S. Cl. D34—31



345,845
PALLET FOR A PAPER ROLL
Joseph C. Strzegowski, Jr., Conway, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.
Filed May 18, 1992, Ser. No. 884,960
Term of patent 14 years
U.S. Cl. D34—38



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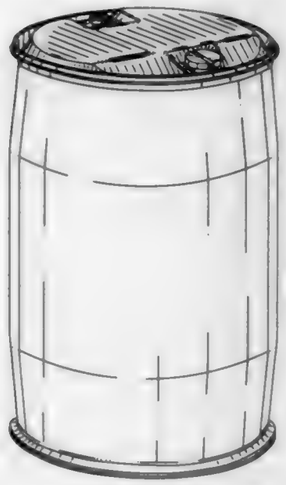
Dietmar Przytulla, Kerpen, and Maerten Burgdorf, Heimerzheim, both of Fed. Rep. of Germany, assignors to Mauser-Werke GmbH, Brühl, Fed. Rep. of Germany

Filed Aug. 13, 1990, Ser. No. 566,571

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1990, 9001186[U]

Term of patent 14 years

U.S. Cl. D34—39



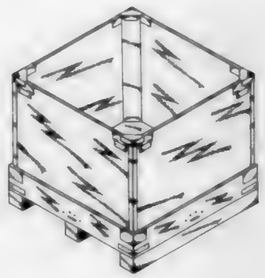
345,847
COLLAPSIBLE BIN

Kenneth D. Schuchard, Manteca, Calif., assignor to Reynolds Packing Co., dba Quality Bin Co., Stockton, Calif.

Filed Mar. 9, 1992, Ser. No. 849,322

Term of patent 14 years

U.S. Cl. D3—305



345,848
CREMATION URN

Marcus N. May, Cincinnati, Ohio, and Daniel J. Parker, Connersville, Ind., assignors to Batesville Casket Company, Batesville, Ind.

Filed Sep. 22, 1992, Ser. No. 949,048

Term of patent 14 years

U.S. Cl. D99—5



345,849
CREMATION URN

Daniel J. Parker, Connersville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Sep. 21, 1992, Ser. No. 2,318

Term of patent 14 years

U.S. Cl. D99—5



345,850
FIRE-RESISTING SAFE

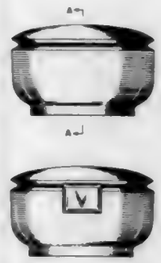
Kazuo Nakaue, Hiroshima, Japan, assignor to Kumahira Safe Co., Inc., Hiroshima, Japan

Filed Jun. 11, 1992, Ser. No. 897,343

Claims priority, application Japan, Feb. 4, 1992, 4-2880

Term of patent 14 years

U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF APRIL, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Bishop & Associates Pty. Limited: *See—*
Bishop, Arthur E., 5,299,388, Cl. 51-97.00R.

A-ICS Corporation: *See—*
Osa, Tetsuo; Ueno, Akihiko; Osakada, Atsushi; and Nakoji, Masateru, 5,300,251, Cl. 252-182.130.

A-LIne Products Corporation: *See—*
Laura, Alger E.; Easton, Ronald J.; Frisch, Kurt C.; and Xiao, Han X., 5,300,363, Cl. 428-413.000.

AAI/ACL Technologies, Inc.: *See—*
Bybee, Jimmy L., 5,301,128, Cl. 364-551.010.

AAI Corporation: *See—*
Barr, Iwrin R., 5,300,112, Cl. 623-3.000.

Aastuen, David J. W.: *See—*
Hoopman, Timothy L.; and Aastuen, David J. W., 5,300,263, Cl. 264-2.500.

AAT Aston GmbH Gerate fur Elektronikfertingung und Kabelbearbeitung: *See—*
Gross, Herman, 5,299,463, Cl. 73-862.542.

ABB Stromberg Drives Oy: *See—*
Miettinen, Erkki, 5,301,085, Cl. 361-93.000.

ABB Vetco Gray Inc.: *See—*
Eckert, Lawrence A., 5,299,644, Cl. 166-379.000.
Nelson, John E.; Milberger, Lionel J.; and Rebne, Egil, 5,299,642, Cl. 166-368.000.

Abbott Laboratories: *See—*
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Boehning, Karl-Heinz: *See*—
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Boelryk, Bartholomew J.: *See*—
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Bouchard, Daurent J. Engine coupler and adapter. 5,299,880, Cl. 403-1.000.

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Brosse, Gerard, to Sagem Allumage. First cylinder detector for a gasoline internal combustion engine. 5,299,451, Cl. 73-116.000.

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Broussard, Paul C., Sr. Water clarification method and apparatus. 5,300,222, Cl. 210-202.000.

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Brown, Stephen H.; Le, Quang N.; and Alemany, Lawrence B., to Mobil Oil Corporation. Process for improving olefin etherification catalyst life. 5,300,126, Cl. 44-449.000.

Brownell, Kenneth W.; and Vaden, Sterling A., to Superior Modular Products, Inc. Low cross talk electrical connector system. 5,299,956, Cl. 439-638.000.

Browner, Bruce D.; and Clewett, Richard H., to Ace Medical Company. Pelvic stabilizer. 5,300,071, Cl. 606-57.000.

Bruce, Douglas M.; Cooper, Thomas G.; Phetteplace, James E.; and Rosewarne, Joseph F., to Acuson Corporation. Endoscope with overload protective device. 5,299,559, Cl. 128-4.000.

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Brunolli, Michael J., to Brooktree Corporation. Apparatus for amplifying signals in ping-pong arrangement to reduce the frequency of amplification. 5,301,305, Cl. 395-550.000.

Bruski, Richard S.; Hudson, Larry G.; Jin, Iljoon; Lloyd, David J.; and Skibo, Michael D., to Alcan International Limited. Apparatus and process for casting metal matrix composite materials. 5,299,724, Cl. 266-207.000.

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BST Servo-Technik GmbH: *See*—
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Bucher, John C.; Wu, Shih T.; and Tao, Ta-Yao, to Chien Luen Industries Company, Ltd., Inc. Dual capacitor speed control apparatus and method for electric motor. 5,300,871, Cl. 318-794.000.

Buchwald, Hans; Hellmann, Joachim; Raszkowski, Boleslaus; Barthelemy, Pierre; and Paulus, Mireille, to Solvay Fluor und Derivate GmbH. 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether compositions for removing water from surfaces. 5,300,253, Cl. 252-194.000.

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Budde, William J.; Fanty, Louis A.; Mason, Scott F.; and Murphy, James E., to Omega Company, Inc., The. Automatic airbag folding apparatus and method. 5,300,011, Cl. 493-405.000.

Buell, Kenneth B., to Procter & Gamble Company, The. Absorbent article having a thermoplastic deformable element. 5,300,055, Cl. 604-385.100.

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Burke, Rodger W.; Dambach, Philip J.; and Reisdorf, Paul A., to Molex Incorporated. Input-output electrical connector. 5,299,942, Cl. 439-79.000.

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Gibson, Brian C.; and Bertsch, John P., to IVL Technologies Ltd. Method and apparatus for generating vocal harmonies. 5,301,259, Cl. 395-2.670.
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Golden, Timothy C.; Kratz, Wilbur C.; and Wilhelm, Frederick C., to Air Products and Chemicals, Inc. Method for separation of carbon monoxide by highly dispersed cuprous compositions. 5,300,271, Cl. 423-247.000.
Goldman, Neil M. Shoe with retractable spike assembly. 5,299,369, Cl. 36-61.000.
Goldstar Co., Ltd.: *See*—
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Goldstein, Avner. Method and kit for assembly of blind window frames. 5,299,398, Cl. 52-204.100.
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Gonzales, Cesar A.; and Viscito, Eric, to International Business Machines Corporation. Apparatus and method for motion video encoding employing an adaptive quantizer. 5,301,242, Cl. 382-56.000.
Gonzalez, Felipe J., to Kinetic Concepts, Inc. Hydraulic oscillating treatment table and method. 5,299,334, Cl. 5-607.000.
Gonzalez, John; Kudithipudi, Rao N.; and Young, Ronald F., to Lincoln Electric Company, The. Submerged arc flux and method of making same. 5,300,754, Cl. 219-146.300.
Goodman, Sidney H., to Hughes Aircarft Company. Glass fiber with solderability enhancing heat activated coating. 5,301,253, Cl. 385-128.000.
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Gopalkrishnan, Sridhar, to BASF Corp. Additive composition for oil well cementing formulations having nonionic and anionic surfactant stablizers to improve the fluid loss properties thereof. 5,300,542, Cl. 524-8.000.
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Gorfinkel, Vera B.; and Luryi, Sergey, to AT&T Bell Laboratories. Article comprising means for modulating the optical transparency of a semiconductor body, and method of operating the article. 5,300,789, Cl. 257-21.000.
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Gormley, John L.: *See*—
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Gory, Pierre; and Bovyn, Gilles. Device with a locating member for removably implanting a blood filter in a vein of the human body. 5,300,086, Cl. 606-200.000.
Gosnell, Thomas F., Sr.: *See*—
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Gou, Perng-Fei; Townsend, Harold E.; and Barbanti, Giancarlo, to General Electric Company. Nuclear reactor building. 5,301,215, Cl. 376-283.000.
Goulait, David J. K.; Thomas, Dennis A.; and Stanley, Maureen E., to Procter & Gamble Company, The. Disposable absorbent article having an improved mechanical fastening system. 5,300,058, Cl. 604-391.000.
Gow, Robert H., to SI Diamond Technology, Inc. Dental instruments having diamond-like working surface. 5,299,937, Cl. 433-165.000.
GPT Limited Coventry: *See*—
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Graf, James E.: *See*—
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Graham, Gary A. Rivnut (TM) installation apparatus. 5,299,442, Cl. 72-391.800.
Graiff, Leonard B.; Van Benthuysen, Peter B.; Ngan, Danny Y.; Diaz, Zaida; and Austgen, David M., Jr., to Shell Oil Company. Reduction of diesel engine particulate emissions by contacting diesel fuel with a carbon molecular sieve adsorbent. 5,300,218, Cl. 208-299.000.
Grajo, Theresa: *See*—
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Grana, Thomas A: *See*—
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Granados, Robert R., to Boyce Thompson Institute for Plant Research, Inc. *Trichoplusia ni* cell line which supports replication of baculoviruses. 5,300,435, Cl. 435-240.200.
Granger, Edward M.; Wellman, Sara T.; and Jones, Peter A., to Eastman Kodak Company. Scanning scene-based wavefront sensor hav-

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Grant, David C.; Lahoda, Edward J.; Learn, Leland L.; Ott, Arthur W.; and Dietrich, Albert J., to Westinghouse Electric Corp. Method for decontaminating soil containing resins. 5,300,258, Cl. 252-626.000.

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Graphico Co., Ltd.: *See*—
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Grass, William E.; Moldovan, Peter K.; Piber, Earl T.; Clarey, Robert J.; Jaeschke, James R.; Kiha, Robert A.; Smith, Richard G.; and Streich, Herbert R., to Eaton Corporation. Remote control residential circuit breaker. 5,301,083, Cl. 361-64.000.

Grateau, Luc; and Prassas, Michel, to Corning Incorporated. Photochromic glasses which darken to a pink hue. 5,300,465, Cl. 501-13.000.

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Great Lakes Tool and Machine: *See*—
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Green, Dror. Multilayer puzzle. 5,299,805, Cl. 273-157.00A.

Green, Richard F.: *See*—
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Greene, John. Air freshener device with a ceramic container and an absorbent pad. 5,299,736, Cl. 239-56.000.

Greenhill, Wesley H. Ratcheting threading tool. 5,299,895, Cl. 408-56.000.

Greenmaster Industrial Corporation: *See*—
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Grill, Thomas W. Jaw horse assembly and method. 5,299,656, Cl. 182-181.000.

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Grimmer, Johannes; Kiefer, Hans; and Martin, Christoph, to BASF Aktiengesellschaft. Spray granules or microgranules of pure riboflavin which contain no binder are non-dusting and free-flowing, and the preparation thereof. 5,300,303, Cl. 424-489.000.

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Grohe, Klaus; Dummer, Wolfgang; Rossen, Kai; and Paessens, Arnold, to Bayer Aktiengesellschaft. Quinolonecarboxylic acid derivatives. 5,300,643, Cl. 544-363.000.

Grosbong, Richard A.; Hope, Thomas R.; and Newgard, Robert A., to Rockwell International Corporation. High performance frequency tuning with low cost synthesizer. 5,301,366, Cl. 455-76.000.

Gross, Herman, to AAT Aston GmbH Gerate fur Elektronikfertingung und Kabelbearbeitung. Device for detecting force during pressing of cable sockets. 5,299,463, Cl. 73-862.542.

Gross, Robert A.; and Quesnel, Lisbeth S., to Xerox Corporation. Transfer system including a cam actuated segmented flexible transfer assist blade. 5,300,994, Cl. 355-277.000.

Gross, Terrance R. Portable rinse deck. 5,300,341, Cl. 428-44.000.

Grosser, Brian K.; and Miller, Thomas L., to Dow Chemical Company, The. Black-colored, laser-writable blends of carbonate polymer and polyester. 5,300,350, Cl. 428-195.000.

Grossman, Mark. Remote control pacifier novelty device. 5,299,527, Cl. 116-323.000.

Grossriether, Isabelle: *See*—
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Grosswiller, Leo; Anders, Walter G.; and Mannella, Lawrence F., to Diebold, Incorporated. Pneumatic tube system. 5,299,891, Cl. 406-112.000.

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Grott, Gerald J. Method of reforming soluble salts to effect purification and increase crystal size thereof. 5,300,123, Cl. 23-303.000.

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GTE Products Corporation: *See*—
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Guo, Ta-Pen; and Srinivasan, Adi, to Aptix Corporation. Static random access memory cell with single logic-high voltage level bit-line and address-line drivers. 5,301,147, Cl. 365-154.000.

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Haas, Guenter, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Hot-cathode ionization pressure gauge including a sequence of electrodes arranged at a distance from one another in sequence along an axis. 5,300,890, Cl. 324-462.000.

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Kanagawa, Shuichi; Kamio, Kunimasa; Hozumi, Shigeo; Nakamura, Hiroshi; and Yamagiwa, Masao, to Sumitomo Chemical Company, Limited. Thermosetting resin composition and a composite material comprising cured product and said resin composition and its matrix. 5,300,592, Cl. 525-488.000.

Kanai, Hachiro: *See*—
Fukuhara, Toru; Sosa, Toshio; Dobashi, Toshio; Sasagaki, Nobuaki; Hara, Masaharu; Kanai, Hachiro; Yokonuma, Norikazu; Tsukahara, Daiki; Machida, Kiyosada; Kotani, Noriyasu; Kato, Minoru; Inoue, Hideya; Miyamoto, Hidenori; Otani, Tadashi; Ohtsubo, Yoshiaki; and Amanuma, Tatsuo, 5,300,970, Cl. 354-415.000.

Kanai, Hiroaki, to Seiko Epson Corporation. Method and apparatus for communicating peripheral data to/from minor operating systems running as subprocesses on a main operating system. 5,301,277, Cl. 395-275.000.

Kanaida, Kenta: *See*—
Arita, Yoshihiro; Kawamura, Kiyoshi; and Kanaida, Kenta, 5,300,602, Cl. 526-260.000.

Kanazawa, Hajime: *See*—
Okumura, Ichiro; Mukohjima, Hitoshi; Tsukimoto, Takayuki; Atsuta, Akio; Ueda, Koichi; and Kanazawa, Hajime, 5,300,850, Cl. 310-323.000.

Kanazawa, Misaki: *See*—
Sugaya, Yoshio; Kanazawa, Misaki; and Miyake, Haruhisa, 5,300,228, Cl. 210-638.000.

Kanbayashi, Makoto; Nagatsuka, Takayuki; Kasuya, Takashige; Nakamura, Tatsuya; and Chiba, Tatsuhiko, to Canon Kabushiki Kaisha. Developer for developing electrostatic image, image forming method and heat fixing method. 5,300,386, Cl. 430-99.000.

Kanbe, Junichiro: *See*—
Katagiri, Kazuharu; Yoshinaga, Kazuo; Okada, Shinjiro; and Kanbe, Junichiro, 5,301,049, Cl. 359-90.000.

Kanda Optical Co., Ltd.: *See*—
Tanaka, Haruka, 5,300,963, Cl. 351-44.000.

Kanda, Ryouji, to Tokai Rubber Industries, Ltd. Fluid-filled cylindrical elastic mount having orifice passages and voids formed in elastic body. 5,299,788, Cl. 267-140.120.

Kane, Robert C.: *See*—
Parker, Norman W.; Jaskie, James E.; and Kane, Robert C., 5,300,862, Cl. 315-169.100.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Mohri, Fumihito; Nomura, Takuji; and Miki, Shougo, 5,300,156, Cl. 148-104.000.
Okada, Koji; Ohnari, Yoshihide; Mizuguchi, Toshinori; and Hazama, Junichi, 5,300,619, Cl. 528-170.000.

Kaneko, Takashi; Suzuki, Tatsuo; Inoue, Yoshihisa; and Kato, Tetsuya, to Suzuki Motor Corporation; and Ohta Sheet Compasy. Automobile with canvas. 5,299,850, Cl. 296-107.000.

Kaneko, Tetsuya, to Yamaichi Electronics, Co., Ltd. Socket contact. 5,299,950, Cl. 439-342.000.

Kaneto, Toshiyuki: *See*—
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Kang, Henry R.; and Coward, Robert E., to Xerox Corporation. Resolution conversion with simulated multi-bit gray. 5,301,037, Cl. 358-451.000.

Kanis, Charles M.: *See*—
Zezinka, Edward W.; Vicha, Susan K.; and Kanis, Charles M., 5,300,326, Cl. 427-385.500.

Kanno, Toshiaki: *See*—
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Kano, Ikuo, to Matsushita Electric Industrial Co., Ltd. Logic circuit for selecting signals indicative of operating states of floppy disk apparatus. 5,301,293, Cl. 395-425.000.

Kantner, Robert F., Jr.: *See*—
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Kao Corporation: *See*—
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Kao, Jenn-Yu: *See*—
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Kapp & Co. Werkzeugmaschinenfabrik: *See*—
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Karakama, Tatsuo: *See*—
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Kardell, Daniel J.: *See*—
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Kasprzak, Kenneth A.; and Madore, Linda M., to Dow Corning Corporation. Water dispersible silicone composition. 5,300,667, Cl. 556-437.000.

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Kato, Tatsunori; Kodama, Katsuhiko; Tajima, Masahiko; and Morikawa, Junya, to Nippondenso, Co., Ltd. Air-fuel ratio control apparatus of internal combustion engine. 5,299,546, Cl. 123-520.000.

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Katohno, Noboru; Yono, Masaki; and Hashiguchi, Yasuhiro, to Hitachi, Ltd. Take-up pulley with torque-limiting mechanism for magnetic recording and reproducing apparatus. 5,301,073, Cl. 360-96.300.

Katou, Naoyoshi; Itoh, Hirofumi; Tamiya, Seiki; and Takahara, Masateru, to Mitsubishi Jukogyo Kabushiki Kaisha; and Churyo Engineering Kabushiki Kaisha. Can seamer. 5,299,899, Cl. 413-27.000.

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Kennedy, Lawrence C., to Detroit Diesel Corporation. Internal combustion engine block having a cylinder liner shunt flow cooling system and method of cooling same. 5,299,538, Cl. 123-41.790.

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Mogavero, Cesare, to Saiag Industria S.p.A. Connection and/or T-joint for flexible tubes. 5,299,839, Cl. 285-110.000.

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Mohri, Atsushi; and Saito, Yuuichi, to Mitsubishi Denki Kabushiki Kaisha. Microprocessor with cache memory. 5,301,296, Cl. 395-425.000.

Mohri, Fumihito; Nomura, Takuji; and Miki, Shougo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Bonded rare earth magnet and a process for manufacturing the same. 5,300,156, Cl. 148-104.000.

Mohring, Fritz, to Eberspacher, J. Barner for a motor vehicle heater. 5,299,554, Cl. 126-110.00D.

Moldovan, Peter K.: *See*—
Grass, William E.; Moldovan, Peter K.; Piber, Earl T.; Clarey, Robert J.; Jaeschke, James R.; Kiha, Robert A.; Smith, Richard G.; and Streich, Herbert R., 5,301,083, Cl. 361-64.000.

Molex Incorporated: *See*—
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Molinaro, John R.: *See*—
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Monma, Toshihiko: *See*—
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Monsanto Company: *See*—
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Monsees, Thomas L.: *See*—
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Monticup, Anthony T., Jr. Gasoline nozzle with retrofitted emergency shut-off valve. 5,299,607, Cl. 141-208.000.

Moody, Paul E., to United States of America, Navy. Positive displacement rotary pump. 5,299,922, Cl. 418-45.000.

Moon, Kyung H., to Samsung Electronics Co., Ltd. Water feeding control method of a boiling clothes washing machine. 5,299,340, Cl. 8-158.000.

Moonen, Chrit T. W., to United States of America, Health & Human Services. Method to enhance the sensitivity of MRI for magnetic susceptibility effects. 5,300,886, Cl. 324-309.000.

Mooney, Kieran G.: *See*—
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Madole, Richard F., Jr., 5,299,833, Cl. 281-2.000.

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Moore, Lawrence A., to Resource Recovery Technologies, Inc. Reclaimer apparatus. 5,300,267, Cl. 422-286.000.

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Nishijo, Masaaki: *See*—
Garverick, Steven L.; Fujino, Kenji; Nishijo, Masaaki; and Imamoto, Masami, 5,301,121, Cl. 364-483.000.

Nishikawa, Hiroaki: *See*—
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Nishikawa, Youichiro: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Sakuta, Yoshio; Nishikawa, Youichiro; Hara, Shuji; Inaoka, Yoshie; Yamasaki, Tetsuo; Shima, Kenji; Yoshida, Shin-ichi; and Hine, Shunji, 5,301,313, Cl. 395-600.000.

Nishikura, Takahiro; Takeda, Katsu; Sumihara, Masanori; and Kawasaki, Osamu, to Matsushita Electric Industrial Co., Ltd. Linear-type actuator. 5,300,851, Cl. 310-328.000.

Nishimoto, Kazuo: *See*—
Mifune, Naoto; Nagai, Yasutaka; Ashizawa, Masaaki; Nishimoto, Kazuo; Niwa, Takahiro; Ito, Shuji; and Hansaka, Masanori, 5,300,355, Cl. 428-215.000.

Nishimoto, Toshiaki: *See*—
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Nishimura, Yukinobu; Taniguchi, Nobutake; Shimomura, Setsuhiro; and Tanimoto, Kouji, to Mitsubishi Denki Kabushiki Kaisha. Method of processing a signal from a thermal type flow sensor. 5,301,126, Cl. 364-510.000.

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Nishitani, Keizo; Sugiura, Masuo; Takiguchi, Isao; and Saimoto, Tetsurou, to Yazaki Corporation. Structure for welding electrical connecting portions to each other using laser light beam. 5,300,755, Cl. 219-121.630.

Nishiumi, Kenji; and Ishida, Takeshi, to Kabushiki Kaisha Nippon Conlux. Coin selector with coin slit shutter. 5,299,672, Cl. 194-318.000.

Nissan Motor Company, Ltd.: *See*—
Hirata, Toru, 5,301,368, Cl. 455-78.000.
Nouso, Kazunori, 5,301,115, Cl. 364-460.000.

Nissan Motor Co., Ltd: *See*—
Fukushima, Hiroshi; and Nakano, Masaki, 5,299,988, Cl. 476-42.000.

Nissei Plastic Industrial Co., Ltd.: *See*—
Magario, Takashi, 5,301,120, Cl. 364-476.000.

Nissen, Peter: *See*—
Schafer, Klaus; and Nissen, Peter, 5,299,461, Cl. 73-861.160.

Nissin Shokuhin Kabushiki Kaisha: *See*—
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Nitro Nobel AB: *See*—
Lindquist, Vidos; Lofgren, Lars-Gunnar; Olsson, Tord; Sallåker, Allan; and Wahlqvist, Bengt, 5,299,500, Cl. 102-275.120.

Niwa, Takahiro: *See*—
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NKK Corporation: *See*—
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Noda, Kazuo; and Kimura, Yasuyuki, to Nippon Conlux Co., Ltd. Optical information recording and reproducing apparatus. 5,301,041, Cl. 358-480.000.

Nogrady, John W.: *See*—
Hassett, Christopher R.; Collins, Harry J.; and Nogrady, John W., 5,301,267, Cl. 395-150.000.

Noguchi, Hitoshi: *See*—
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Nohr, Ronald S.; and MacDonald, John G., to Kimberly-Clark. Method of preparing a nonwoven web having delayed antimicrobial activity. 5,300,167, Cl. 156-167.000.

Nokia Mobile Phones Ltd.: *See*—
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Nokia Mobile Phones (U.K.) Limited: *See*—
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Nolte, Michael G.: *See*—
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Nomura, Tomoyoshi: *See*—
Uehira, Kazutake; Hagiwara, Noboru; Masuda, Kiyoshi; Nomura, Tomoyoshi; and Sakai, Shigenobu, 5,300,966, Cl. 353-30.000.

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Norden, Alexander R., to Connectron, Inc. Electrical apparatus. 5,299,945, Cl. 439-157.000.

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Nordex Inc.: *See*—
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Nordhaus, Douglas: *See*—
Bock, Lawrence A.; Pastorino, Ronald L.; and Nordhaus, Douglas, 5,300,600, Cl. 526-202.000.

Nordischer Maschinenbau Rud. Baader GmbH & Co KG: *See*—
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Norkus, Volkmar; Schiewe, Christian; and Nagel, Frank, to UL-TRAKUST electronic GmbH. Multispectral sensor. 5,300,778, Cl. 250-339.010.

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Norris, Keith A.: *See*—
Banks, Henry J.; Norris, Keith A.; Symons, Robert J.; and Whitlock, Robert C., 5,300,265, Cl. 422-172.000.

Norsk Hydro a.s.: *See*—
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North American Philips Corporation: *See*—
Merchant, Steven L.; and Arnold, Emil, 5,300,448, Cl. 437-41.000.
Richeson, William E., 5,300,883, Cl. 324-207.220.

North American Refractories Company: *See*—
Hyde, Jack, 5,299,629, Cl. 165-9.100.

Northeastern University: *See*—
Proakis, John G.; Catipovic, Josko; and Stojanovic, Milica, 5,301,167, Cl. 367-134.000.

Northwest Wire Works, Inc.: *See*—
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Northwestern University: *See*—
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Norton Company: *See*—
Eden, Richard C., 5,300,810, Cl. 257-686.000.

Nosco, Dennis L.: *See*—
DeRosch, Mark A.; Deutsch, Edward A.; Dyszlewski, Mary M.; and Nosco, Dennis L., 5,300,280, Cl. 424-1.530.

Notarianni, John; Cohen, Jerry; D'Ambrosio, John P.; and Orlowski, Charles, to Cad Forms Technology Inc. Method and apparatus for transferring data between a host device and plurality of portable computers. 5,301,346, Cl. 395-800.000.

Nouso, Kazunori, to Nissan Motor Co., Ltd. Apparatus for detecting the travel path of a vehicle using image analysis. 5,301,115, Cl. 364-460.000.

Novel Products, Inc.: *See*—
Muehlenbein, James A., 5,300,004, Cl. 482-140.000.

Noven Pharmaceuticals, Inc.: *See*—
Sablotsky, Steven; and Gentile, Joseph A., 5,300,291, Cl. 424-78.180.

Novotny, Donald W.: *See*—
Klontz, Keith W.; Divan, Deepakraj M.; Novotny, Donald W.; and Lorenz, Robert D., 5,301,096, Cl. 363-37.000.

Nozaki, Shohei; Murata, Naohiro; and Miyazaki, Kiyoo, to Mitsui Toatsu Chemicals, Incorporated. Separation method of amino acids. 5,300,653, Cl. 548-497.000.

NSK Ltd.: *See*—
Kasuga, Shinichi, 5,299,465, Cl. 74-424.80R.

NSK Ltd: *See*—
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Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., to PPG Industries, Inc. Polyamine-polyepoxide gas barrier coatings. 5,300,541, Cl. 523-414.000.

Numata, Hirotoshi: *See*—
Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Numata, Hirotoshi; Kobayashi, Naoki; Shinoda, Masanobu; Kawahara, Tetsuya; Murakami, Manabu; Oketani, Kiyoshi; Inoue, Takashi; Yamanaka, Takashi; and Yamatsu, Isao, 5,300,518, Cl. 514-338.000.

Numazawa, Shigeo: *See*—
Iritani, Kunio; Numazawa, Shigeo; Fujiwara, Kenichi; Yamanaka, Yasushi; Isaji, Akira; and Suzuki, Nobunao, 5,299,431, Cl. 62-243.000.

Nuovopignone-Industrie Meccaniche e Fonderia SpA: *See*—
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Nuyken, Oskar: *See*—
Helmreich, Brigitte; Burger, Klaus; Maier, Gerhard; Hecht, Reinhold; and Nuyken, Oskar, 5,300,625, Cl. 528-211.000.

O. D. Hopkins Associates, Inc.: *See*—
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O. M. Scott & Sons Company, The: *See*—
Hudson, Alice P.; and Woodward, Fred E., 5,300,135, Cl. 71-28.000.

Obara, Koichiro; Etani, Tadao; and Ohara, Hiromitsu, to Japan Tobacco Inc. Apparatus for piling and transferring cigarettes. 5,299,679, Cl. 198-418.300.

Obayashi, Shuichi: *See*—
Maeda, Tadahiko; Tsukumo, Yoshiaki; Yasuda, Satoshi; Sekine, Syuuichi; and Obayashi, Shuichi, 5,300,939, Cl. 343-703.000.

Oberster, Arthur E.: *See*—
DeTrano, Mario N.; Yang, James H. C.; Bohm, George G. A.; Oberster, Arthur E.; and Koch, Russell W., 5,300,164, Cl. 156-116.000.

Obrecht, Robert E.; and Waltonen, Edward J., to REO Hydraulic Pierce & Form. Pressure cylinder with low tolerance fit capable of supporting large transverse loads. 5,299,489, Cl. 92-5.00R.

O'Brien, Terence M.: *See*—
Clewlow, Paul J.; Haselgrave, John A.; Carruthers, Niall; and O'Brien, Terence M., 5,300,235, Cl. 252-8.555.

Obu, Makoto: *See*—
Wada, Takeo; Obu, Makoto; Kawanishi, Toshiyuki; Tarumi, Noriyoshi; Igarashi, Masato; Mori, Takashi; Miyawaki, Katsuaki; and Suzuki, Minoru, 5,300,952, Cl. 346-76.0PH.

Occidental Chemical Corporation: *See*—
Seper, Karl W.; and Molinaro, John R., 5,300,201, Cl. 204-157.600.

Occidental Research Corporation: *See*—
Mukadam, Hasham; and Morgan, John W., 5,299,530, Cl. 119-223.000.

OCG Microelectronic Materials, Inc.: *See*—
Honda, Kenji, 5,300,628, Cl. 528-482.000.

Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, to Toyama Chemical Co., Ltd. Penam derivatives and salts thereof, process for producing the same and antibacterial agent comprising the same. 5,300,497, Cl. 514-192.000.

O'Connor, Kevin M.: *See*—
Lushington, Kenneth J.; Szajewski, Richard P.; and O'Connor, Kevin M., 5,300,417, Cl. 430-536.000.

OCTEL Communications Corporation: *See*—
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Odaka, Masaki: *See*—
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Odell, Peter G.; Murti, Dasarao K.; and Martin, Trevor L., to Xerox Corporation. Imaging member with polycarbonate obtained from cyclic oligomers. 5,300,392, Cl. 430-130.000.

Odell, Peter G.; Martin, Trevor I.; and Mayo, James D., to Xerox Corporation. Imaging members and processes for the preparation thereof. 5,300,393, Cl. 430-134.000.

Oe, Hideyuki: *See*—
Nakagawa, Osamu; Ikemoto, Tomonari; and Oe, Hideyuki, 5,299,750, Cl. 242-35.50A.

Oechsle, Dietmar; Baur, Wolfgang; and Gottkehaskamp, Ludger, to Schenk-Filterbau gesellschaft mit beschrankter. Method of filtering beverages and chemical, pharmaceutical, or similar liquids. 5,300,234, Cl. 210-778.000.

Oetiker, Hans, to Hans Oetiker AG Maschinen- und Apparatefabrik. Reinforcing arrangement for open hose clamps, especially screw-type hose clamps. 5,299,344, Cl. 24-284.000.

Ogale, Kumar, to Himont Incorporated. Olefin polymer films. 5,300,365, Cl. 428-461.000.

Ogasawara, Kunio: *See*—
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Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Komatsu, Hajime; Tanaka, Michinori;

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Kitano, Kazuyoshi; Fujiioka, Takafumi; Teramoto, Shuji; Tominaga, Michiaki; and Yabuuchi, Yoichi, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives and pharmaceutical composition containing the same. 5,300,513, Cl. 514-312.000.

Ogawa, Hiroshi: *See*—
Mizuno, Chiaki; Kiyama, Masatoshi; Komi, Takao; Ogawa, Hiroshi; Fujiyama, Masaaki; and Funabashi, Shinichi, 5,300,244, Cl. 252-62.540.

Ogino, Masanori; Fukushima, Tadashi; Yamada, Takeo; and Shiotani, Shigeyuki, to Hitachi, Ltd. Display with vertical scanning format transformation. 5,301,021, Cl. 348-564.000.

Ogisawa, Yuka; and Yamanaka, Yuji, to Canon Kabushiki Kaisha. Heating apparatus having a movable film protection member and image forming apparatus using same. 5,300,998, Cl. 355-285.000.

Ogoh, Ikuo: *See*—
Hachisuka, Atsushi; Nagatomo, Masao; Ogoh, Ikuo; Genjou, Hideki; Okumura, Yoshinori; and Matsukawa, Takayuki, 5,300,444, Cl. 437-29.000.

Oguchi, Yasuhiro: *See*—
Hirabayashi, Yasuhisa; Sakuda, Takashi; Okawa, Kazuhiko; and Oguchi, Yasuhiro, 5,300,790, Cl. 257-202.000.

Ogura, Koh: *See*—
Igarashi, Akira; Ogura, Koh; Asai, Masayuki; Okubo, Kazuya; and Kuwazuru, Yosei, 5,300,520, Cl. 514-367.000.

Ogura, Setsuo: *See*—
Yamazaki, Kouichi; Ogura, Setsuo; Kamegaki, Kazuyuki; Yamauchi, Kenya; Kitamura, Yukinori; and Nagase, Tsuyoshi, 5,300,798, Cl. 257-207.000.

Oguri, Takashi, to Nec Corporation. Low voltage biCMOS circuit having ECL and TTL input buffers and no intervening level-shift circuits. 5,300,833, Cl. 307-475.000.

Ohara, Hiromitsu: *See*—
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Ohashi, Koji, to Kyoshin Kogyo Co, Ltd. Connecting terminal and a connecting terminal assembly. 5,299,941, Cl. 439-78.000.

Ohashi, Yoshio: *See*—
Kobayashi, Takashi; Tamachi, Sakae; Ohashi, Yoshio; Yoshino, Kouji; and Tobitani, Haruhisa, 5,301,076, Cl. 360-98.060.

Ohashi, Yuichi: *See*—
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Ohgita, Toshiki; Tokishige, Masato; Kubo, Takashi; and Moriyama, Koichi, to Sharp Kabushiki Kaisha. Fixing unit for controlling the moving speed of the fixing section. 5,300,995, Cl. 355-282.000.

Ohgo, Yasunori: *See*—
Kasahara, Seitaro; Asakawa, Minoru; and Ohgo, Yasunori, 5,300,761, Cl. 235-375.000.

Ohishi, Toshikazu: *See*—
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Ohishi, Toshiyuki: *See*—
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Ohkawa, Tihiro, to General Atomics. Pulse power generation from thermal quenching of magnetic materials. 5,301,362, Cl. 455-98.000.

Ohkura, Kazumi: *See*—
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Ohmer, Johannes: *See*—
Brand, Reinhold; Engler, Berad; Hoanen, Wolfgang; Koberstein, Edgar; and Ohmer, Johannes, 5,300,472, Cl. 502-309.000.

Ohmi, Koutoku; and Nire, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Method of forming thin oxysulfide film. 5,300,316, Cl. 427-66.000.

Ohmori, Nobuaki: *See*—
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Ohnari, Yoshihide: *See*—
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Ohnishi, Hiroki: *See*—
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Ohnishi, Takashi: *See*—
Iemoto, Takaaki; Kumada, Koji; Ohnishi, Takashi; and Yakushigawa, Hideki, 5,300,945, Cl. 345-92.000.

Ohri, Kul; and Dueeman, Kevin, to Micron Semiconductor, Inc. Method for identifying a semiconductor die using an IC with programmable links. 5,301,143, Cl. 365-96.000.

Ohshima, Akira: *See*—
Tashiro, Shinichi, 5,300,259, Cl. 261-44.300.

Ohsumi, Hideki, to Yazaki Corporation. Connector. 5,299,958, Cl. 439-752.000.

Ohta Sheet Company: *See*—
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Ohta, Takeshi; and Ito, Masao, to Fuji Xerox Co., Ltd. Multibeam semiconductor laser array and multibeam laser printer. 5,300,956, Cl. 346-107.00R.

Ohta, Tomohiro: *See*—
Nakano, Tadashi; and Ohta, Tomohiro, 5,300,321, Cl. 427-248.100.

Ohtaki, Shiro, to Asahi Glass Company Ltd. Process for fabricating a multilayer ceramic circuit board. 5,300,163, Cl. 156-89.000.

Ohtani, Hisao, to Sony Corporation. Disc loading mechanism for disc driving apparatus. 5,301,180, Cl. 369-77.200.

Ohtsubo, Toshiro: *See*—
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Ohtsubo, Yoshiaki: *See*—
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Sugimoto, Hiroshi; Matsui, Teruhito; Ohtsuka, Ken-ichi; Abe, Yuji; and Ohishi, Toshiyuki, 5,300,190, Cl. 156-653.000.

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Ohyama, Tsukasa: *See*—
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Oka, Hitoshi: *See*—
Yokono, Hitoshi; Arima, Hideo; Inoue, Takashi; Kitamura, Naoya; Matsuyama, Haruhiko; Oka, Hitoshi; Kataoka, Fumio; Shoji, Fusaji; Murooka, Hideyasu; and Kyooi, Masayuki, 5,300,735, Cl. 174-264.000.

Okabe, Masami, to Hoffmann-La Roche Inc. Process for the preparation of 1α,25,26-trihydroxy-22-ene-cholecalciferol. 5,300,705, Cl. 568-828.000.

Okabe, Satoshi; and Aoki, Sunao, to Olypus Optical Co., Ltd. Drive unit for optical memory device with portion of drive means mounted outside a sealing means. 5,301,178, Cl. 369-77.100.

Okabe, Sinji; Iwasa, Takashi; and Watanabe, Naoya, to Honda Giken Kogyo Kabushiki Kaisha. Aluminum-based intermetallic compound with high toughness and high wear resistance. 5,300,157, Cl. 148-437.000.

Okada, Hisashi; and Inaba, Tadashi, to Fuji Photo Film Co., Ltd. Method of bleaching or bleach-fixing a color silver halide photographic material. 5,300,408, Cl. 430-393.000.

Okada, Koji; Ohnari, Yoshihide; Mizuguchi, Toshinori; and Hazama, Junichi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyimide resin film and method of making said film. 5,300,619, Cl. 528-170.000.

Okada, Minoru: *See*—
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Okada, Ryoji: *See*—
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Katagiri, Kazuharu; Yoshinaga, Kazuo; Okada, Shinjiro; and Kanbe, Junichiro, 5,301,049, Cl. 359-90.000.

Okada, Shoichi: *See*—
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Mikami, Akira; Kimura, Akiyoshi; and Watanabe, Yuji, 5,299,506, Cl. 104-93.000.

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Pawlowski, Stephen; and MacWilliams, Peter D., to Intel Corporation. Optimized write protocol for memory accesses utilizing row and column strobes. 5,301,299, Cl. 395-425.000.

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Payne, Ronald G., to Combustion Engineering, Inc. Furnace buckstay stirrup. 5,299,535, Cl. 122-510.000.

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Pellicano, Russell A., to Computer Concepts Corp. Indexing/compression scheme for supporting graphics and data selection. 5,301,315, Cl. 395-600.000.

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Pepping, Karl-Heinz; Hausmann, Hubert; Engel, Michael; and Gebhardt, Gunther, to Diehl GmbH & Co. Vibration eliminator. 5,299,669, Cl. 188-379.000.

Percival, Christopher J.; and Luce, David A., to Leica Inc. Method and apparatus for determining the optical properties of a lens. 5,301,004, Cl. 356-125.000.

Perego, Luciano, to Tapematic U.S.A. Inc. Cassette delivery system. 5,299,752, Cl. 242-67.10R.

Perez, Arturo A.: *See*—
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Perkins, David A.; and Aiken, John E., to Aristech Chemical Corporation. Recovering values from heavy ends in bisphenol-A production. 5,300,702, Cl. 568-724.000.

Perng, Gin S. Alarm apparatus for a quilt slipping off. 5,299,332, Cl. 5-494.000.

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Peters, Henricus J., to Stork Brabant B.V. Stencil drive with main and auxiliary drive means. 5,299,494, Cl. 101-116.000.

Peters, Jack. Bicycle brake assembly including crank arm levers which function as second class levers. 5,299,664, Cl. 188-24.210.

Peters, Lester L.: *See*—
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Pfaff Industriemaschinen GmbH: *See*—
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Pfost, R. Fred; and Pfost, Dale R. Double action variable force pool cue. 5,299,983, Cl. 473-45.000.

Pham, Dac C.; Ventrone, Sebastian T.; and Raymond, Jonathan H. Logic macro and protocol for reduced power consumption during idle state. 5,300,831, Cl. 307-465.000.

Pham, Hieu T.; Zeise, Eric K.; and Tschang, Pin S., to Eastman Kodak Company. Dot printer and method for grey level recording and circuit for use in same. 5,300,960, Cl. 346-154.000.

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551.1 5,299,467
574 5,299,468
586 5,299,469
850 5,299,470

CLASS 75
670 5,300,137

CLASS 76
108.1 5,299,471
112 5,299,472

CLASS 81
53.2 5,299,473
471 5,299,474
489 5,299,475

CLASS 82
122 5,299,476

CLASS 83
13 5,299,477
5,299,478
18 5,299,479
27 5,299,480
170 5,299,481
566 5,299,482
870 5,299,483

CLASS 84
251 5,299,484
329 5,299,485
380 R 5,299,486
601 5,300,723
604 5,300,724
609 5,300,725
611 5,300,726
622 5,300,727
636 5,300,728
657 5,300,729
734 5,300,730

CLASS 89
33.14 5,299,487

CLASS 91
363 A 5,299,488

CLASS 92
5 R 5,299,489
208 5,299,490

CLASS 96
125 5,300,138
135 5,300,139

CLASS 99
289 T 5,299,491
373 5,299,492

CLASS 100
50 5,299,493

CLASS 101
116 5,299,494
147 5,299,495
181 5,299,496
405 5,299,497
477 5,299,498

CLASS 102
213 5,299,499
275.12 5,299,500
364 5,299,501
457 5,299,502
489 5,299,503

CLASS 104
2 5,299,504
7.2 5,299,505
98 5,299,506
138.1 5,299,507

CLASS 105
241.2 5,299,508

CLASS 106
1.11 5,300,140
10 5,300,141
14.14 5,300,142
22 H 5,300,143
162 5,300,144
213 5,300,145
456 5,300,146
498 5,300,148
810 5,300,149

CLASS 108
117 5,299,510
182 5,299,509

CLASS 109
24.1 5,299,511

CLASS 110
261 5,299,512

CLASS 112
121.12 5,299,514
121.26 5,299,513
141 5,299,515
162 5,299,516
254 5,299,517
323 5,299,518
456 5,299,519

CLASS 114
56 5,299,520
219 5,299,521
220 5,299,522
270 5,299,523
345 5,299,524
346 5,299,964

CLASS 116
173 5,299,525
267 5,299,526
323 5,299,527

CLASS 119
26 5,299,528
51.11 5,299,529
223 5,299,530
832 5,299,531

CLASS 122
4 D 5,299,532
379 5,299,533
477 5,299,534
510 5,299,535

CLASS 123
3 5,299,536
41.79 5,299,538
72 5,299,537
357 5,299,539
399 Re.34,574
468 5,299,540
5,299,541
470 5,299,542
479 5,299,543
520 5,299,544
5,299,545
5,299,546
559.1 5,299,547
586 5,299,548
672 5,299,549
674 5,299,550
701 5,299,551

CLASS 125
21 5,299,552

CLASS 126
25 R 5,299,553
110 D 5,299,554
152 B 5,299,555
263 R 5,299,556
299 R 5,299,557
512 5,299,558

CLASS 127
70 5,300,150

CLASS 128
4 5,299,559
5,299,560
5,299,561
5,299,562
20 5,299,563
5,299,564
67 5,300,074
200.21 5,299,565
200.24 5,299,566
204.28 5,299,567
205.11 5,299,568
633 5,299,570
634 5,299,571
639 5,299,572
645 5,299,573
658 5,299,574
5,299,575
660.04 B1 4,413,630
660.07 5,299,576
5,299,577
662.06 5,299,578
719 5,299,579
772 5,299,580
830 5,299,581
846 5,299,582

CLASS 131
312 5,299,583

CLASS 134
8 5,300,151
5,300,152
5,300,153
26 5,300,154
56 R 5,299,584
105 5,299,585
111 5,299,586
5,299,587

CLASS 135
16 5,299,588
68 5,299,589
104 5,299,590

CLASS 137
15 5,299,591
59 5,299,592
100 5,299,593
101.19 5,299,594
107 5,299,595
363 5,299,596
385 5,299,597
540 5,299,598
625.22 5,299,599
625.65 5,299,600
875 5,299,601

CLASS 139
420 A 5,299,602
431 5,299,603

CLASS 141
11 5,299,604
39 5,299,605
91 5,299,606
208 5,299,607
285 5,299,608

CLASS 144
1 F 5,299,609
370 5,299,610

CLASS 148
33 5,300,155
174 5,300,156
238 5,300,158
437 5,300,157
525 5,300,159

CLASS 150
180 5,299,611

CLASS 152
209 R 5,299,612
221 5,299,613
427 5,299,614
454 5,299,615

CLASS 156
64 5,300,160
5,300,161
73.2 5,300,162
89 5,300,163
116 5,300,164
150 5,300,165
160 5,300,166
167 5,300,167
204 5,300,168
230 5,300,169
235 5,300,170
249 5,300,171
275.5 5,300,172
277 5,300,173
283 5,300,174
285 5,300,175
286 5,300,176
290 5,300,177
292 5,300,178
381 5,300,179
403 5,300,180
542 5,300,181
555 5,300,182
5,300,183
582 5,300,184
613 5,300,186
628 5,300,187
636 5,300,188
643 5,300,189
653 5,300,190

CLASS 158
610 5,300,185

CLASS 160
89 5,299,616
271 5,299,617

CLASS 162
31 5,300,191
181.6 5,300,147
184 5,300,192
198 5,300,193
199 5,300,194
246 5,300,195
300 5,300,196

CLASS 164
5 5,299,618
53 5,299,619
97 5,299,620
98 5,299,621
200 5,299,622
316 5,299,623
344 5,299,624
359 5,299,625
457 5,299,626
472 5,299,627
479 5,299,628

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CLASS 163

9.1 5,299,629
10 5,299,630
29 5,299,631
163.1 5,299,632
113 5,299,633
135 5,299,634
173 5,299,635
5,299,636

CLASS 164

75.1 5,299,637
246 5,299,638
311 5,299,639
327 5,299,640
341 5,299,641
368 5,299,642
5,299,643
379 5,299,644

CLASS 169

39 5,299,645
52 5,299,646

CLASS 173

555 5,299,647

CLASS 174

48 5,300,731
92 5,300,732
106 SC 5,300,733
152 G 5,300,734
264 5,300,735

CLASS 177

145 5,300,736

CLASS 180

79.1 5,299,648
5,299,649
5,299,650
89.12 5,299,651
219 5,299,652

CLASS 182

63 5,299,653
118 5,299,654
5,299,655
181 5,299,656

CLASS 184

6.22 5,299,657

CLASS 187

8.41 5,299,658
9 R 5,299,659
5,299,660
89 5,299,661
104 5,299,662
112 5,300,737
121 5,300,738
127 5,300,739

CLASS 188

1.11 5,299,663
24.21 5,299,664
73.44 5,299,665
134 5,299,666
218 5,299,667
352 5,299,668
379 5,299,669

CLASS 191

12.2 R 5,299,670

CLASS 192

8 R 5,299,676
115 5,299,677
141 5,299,678

CLASS 194

310 5,299,671
318 5,299,672
345 5,299,673

CLASS 198

303 5,299,674
392 5,299,675
418.3 5,299,679
465.2 5,299,680
690.1 5,299,681

CLASS 200

43.14 5,300,740
83 P 5,300,741
302.002 5,300,742

CLASS 202

177 5,300,197

CLASS 203

6 5,300,198

CLASS 204

109 5,300,199
129.2 5,300,200
157.3 5,300,202
157.41 5,300,203
157.6 5,300,201
182.4 5,300,204
192.12 5,300,205
284 5,300,206
405 5,300,207

CLASS 205

80 5,300,208
325 5,300,209

CLASS 206

3 5,299,682
77.1 5,299,683
83.5 5,299,684
320 5,299,685
358 5,299,686
370 5,299,687
425 5,299,688
503 5,299,689
5,299,690
527 5,299,691

CLASS 208

88 5,300,210
65 5,300,211
67 5,300,212
87 5,300,213
112 5,300,214
114 5,300,215
130 5,300,216
216 PP 5,300,217
299 5,300,218

CLASS 209

2 5,299,692
3.3 5,299,693
135 5,299,694

CLASS 210

122 5,300,219
154 5,300,220
155 5,300,221
203 5,300,222
232 5,300,223
266 5,300,224
391 5,300,225
603 5,300,226
630 5,300,227
638 5,300,228
671 5,300,229
682 5,300,230
708 5,300,231
742 5,300,232
772 5,300,233
778 5,300,234

CLASS 211

77 5,299,695
123 5,299,696
163 5,299,697
181 5,299,698
187 5,299,699

CLASS 215

12.1 5,299,700
230 5,299,701
249 B1 5,085,332
256 5,299,702
274 5,299,703

CLASS 219

61 5,300,751
68 5,300,752
110 5,300,753
121.63 5,300,755
121.69 5,300,756
146.3 5,300,754
497 5,300,757
5,300,758
506 5,300,759
549 5,300,760
605 5,300,750
607 5,300,744
608 5,300,743
722 5,300,745
729 5,300,747
734 5,300,748
745 5,300,746
779 5,300,749

CLASS 220

6 5,299,704
23.83 5,299,705
266 5,299,706
321 5,299,707
404 5,299,708
445 5,299,709
675 5,299,710

CLASS 221

2 5,299,711
45 5,299,712

CLASS 222

51 5,299,713
81 5,299,714
129.1 5,299,715
146.6 5,299,716
340 5,299,717
518 5,299,718

CLASS 223

46 5,299,719

CLASS 224

35 5,299,720
42.42 5,299,721
273 5,299,722

CLASS 225

38 5,299,723

CLASS 227

176 B1 5,040,715

CLASS 228

220.1 5,299,725
111.5 5,299,726
177 5,299,727
179.1 5,299,728
180.22 5,299,729
5,299,730
219 5,299,731

CLASS 229

117.25 5,299,732
120.011 5,299,733
120.32 5,299,734

CLASS 235

375 5,300,761
472 5,300,762
475 5,300,763
487 5,300,764
492 5,300,765

CLASS 238

10 B 5,299,735

CLASS 239

56 5,299,736
77 5,299,737
91 5,299,738
102.2 5,299,739
117 5,299,740
124 5,299,741
136 5,299,742
248 5,299,743

CLASS 241

19 5,299,744
24 5,299,745
36 5,299,746
46.17 5,299,747
279 5,299,748

CLASS 242

7.02 5,299,749
35.5 A 5,299,750
57 5,299,751
67.1 R 5,299,752
75.2 5,299,753
197 5,299,754
199 5,299,755
5,299,756
248 5,299,757
261 5,299,758

CLASS 244

17.13 5,299,759
53 B 5,299,760
102.55 5,299,761
117 A 5,299,762
118.5 5,299,763
159 5,299,764
181 5,299,765

CLASS 248

27.1 5,299,766
129 5,299,767
145.6 5,299,768
219.2 5,299,769
281.1 5,299,770
422 5,299,771
441.1 5,299,772
514 5,299,773

CLASS 250

201.9 5,300,766
206.1 5,300,767
208.3 5,300,768
227.23 5,300,769
269 5,300,770
5,300,771
5,300,772
136 5,300,773
287 5,300,774
5,300,775
307 5,300,776
338.4 5,300,777
339.01 5,300,778
341 5,300,779
342 5,300,780
357.1 5,300,781
363.03 5,300,782
462.1 5,300,783
484.2 5,300,784
492.2 5,300,785
548 5,300,786
5,300,787

CLASS 251

26 5,299,774
30.03 5,299,775
77 5,299,776
144 5,299,777
263 5,299,778

CLASS 252

8.555 5,300,235
8.6 5,300,236
5,300,237
5,300,238
5,300,240
8.1 5,300,241
18 5,300,242
47.5 5,300,243
62.54 5,300,244
68 5,300,245
70 5,300,246
77 5,300,247
86 5,300,239
90 5,300,248
110 5,300,249
135 5,300,250
182.13 5,300,251
182.3 5,300,252
184 5,300,253
299.61 5,300,254
351 5,300,255
354 B1 4,565,647
363.5 5,300,256
400.28 5,300,257
416 5,300,258

CLASS 260

56 5,299,835

CLASS 264

1 5,299,779
333 5,299,780

CLASS 266

12.5 5,299,781
45 5,299,782

CLASS 257

12 5,300,793
13 5,300,788
21 5,300,789
166 5,300,791
181 5,300,792
190 5,300,794
192 5,300,795
202 5,300,790
203 5,300,796
206 5,300,797
219 5,300,798
295 5,300,799
314 5,300,800
309 5,300,801
316 5,300,802
322 5,300,803
332 5,300,804
346 5,300,805
594 5,300,806
632 5,300,807
660 5,300,808
684 5,300,809
686 5,300,810
691 5,300,811
723 5,300,812
752 5,300,813
758 5,300,814
786 5,300,815
797 5,300,816

CLASS 241

44.3 5,300,259
81 5,300,260
87 5,300,261

CLASS 264

2.1 5,300,262
2.5 5,300,263
46.4 5,300,264

CLASS 266

106 5,299,783
207 5,299,724
210 5,299,784
218 5,299,785

CLASS 267

33 5,299,786
64.12 5,299,787
140.12 5,299,788
140.14 5,299,789
292 5,299,790

CLASS 270

39 5,299,793
91 5,299,792

CLASS 271

9 5,299,794
5,299,795
5,299,796
161 5,299,797
245 5,299,798
280 5,299,799

CLASS 273

1.5 R 5,299,800
73 C 5,299,801
81.4 5,299,802
148 R 5,299,803
155 5,299,804
157 A 5,299,805
159 5,299,806
173 5,299,807
243 5,299,808
180 5,299,809
434 5,299,810

CLASS 277

1 5,299,811
125 5,299,812
174 5,299,813

CLASS 279

157 5,299,814

CLASS 280

11.2 5,299,815
33.998 5,299,816
35 5,299,817
5,299,818
260 5,299,819
277 5,299,820
304.1 5,299,824
305 5,299,821
610 5,299,822
625 5,299,823
644 5,299,825
651 5,299,826
732 5,299,827
741 5,299,828
766.1 5,299,829
806 5,299,830
831 5,299,831
854 5,299,832

CLASS 281

2 5,299,833

CLASS 283

51 5,299,834

CLASS 285

42 5,299,836
44 5,299,837
88 5,299,838
110 5,299,839
114 5,299,840
295 5,299,841
325 5,299,842
328 5,299,843

CLASS 290

55 5,300,817

CLASS 292

240 5,299,844

CLASS 294

2 5,299,845
19.2 5,299,846
88 5,299,847
106 5,299,848

CLASS 296

100 5,299,849
107 5,299,850
219 5,299,791

CLASS 297

284.5 5,299,851
335 5,299,852
362.12 5,299,853
472 5,299,854
485 5,299,855

CLASS 298

11 5,299,856

CLASS 299

39 5,299,857

CLASS 303

113.2 5,299,858
119.2 5,299,859

CLASS 305

54 5,299,860
189.09 5,301,151

CLASS 307

47 5,300,819
234 5,300,820
265 5,300,821
272.3 5,300,822
296.3 5,300,823
5,300,824
351 5,300,825
358 5,300,826
443 5,300,827
5,300,828
446 5,300,829
465 5,300,830
5,300,831
475 5,300,832
5,300,833
5,300,835
491 5,300,836
5,300,837
521 5,300,838
531 5,300,839
5,300,840
570 5,300,834

CLASS 310

12 5,300,846
61 5,300,847
83 5,300,848
90.5 5,300,841
5,300,842
5,300,843
5,300,849
215 5,300,844
217 5,300,845
323 5,300,850
328 5,300,851
331 5,300,852

CLASS 312

194 5,299,861
329 5,299,862
404 5,299,863

CLASS 313

309 5,300,853
414 5,300,854
5,300,855
429 5,300,856
491 5,300,857
503 5,300,858
573 5,300,859

CLASS 315

39 5,300,860
111.41 5,300,861
169.1 5,300,862
276 5,300,863
316 5,300,864
384 5,300,865

CLASS 318

254 5,300,866
446 5,300,867
568.13 5,300,868
587 5,300,869
700 5,300,870
704 5,300,871
802 5,300,872
807 5,300,873

CLASS 320

15 5,300,874
20 5,300,875

CLASS 322

58 5,300,876

CLASS 323

313 5,300,877

CLASS 324

76.27 5,300,878
95 5,300,879
158 F 5,300,881
158 R 5,300,880
207.17 5,300,882
207.22 5,300,883
207.25 5,300,884
247 5,300,885
309 5,300,886
5,300,887
315 5,300,888
457 5,300,889
462 5,300,890

CLASS 328

233 Re.34,575
5,300,891

CLASS 330

51 5,300,892
84 5,300,893
129 5,300,894
251 5,300,895
260 5,300,896
278 5,300,897

CLASS 331

57 5,300,898

CLASS 333

1 5,300,899
17.2 5,300,900

99 PL 5,300,901
193 5,300,902
204 5,300,903

CLASS 334

55 5,300,904

CLASS 335

167 5,300,905
5,300,906
172 5,300,907
256 5,300,908
278 5,300,909
306 5,300,910

CLASS 336

175 5,300,911

CLASS 337

180 5,300,912
242 5,300,913
249 5,300,914

CLASS 338

22 R 5,300,915
25 5,300,916
49 5,300,917
196 5,300,918
250 5,300,919

CLASS 340

323 R 5,300,920
572 5,300,922
573 5,300,921
628 5,300,923
660 5,300,924
676 5,300,925
853.8 5,300,929

CLASS 341

96 5,300,930
106 5,300,931

CLASS 342

20 5,300,932
36 5,300,933
172 5,300,934
359 5,300,935
404 B1 4,843,399

CLASS 343

700 MS 5,300,936
702 5,300,937
5,300,938
5,300,939
749 5,300,940
840 5,300,941

CLASS 345

1 5,300,943
32 5,300,942
88 5,300,928
5,300,944
92 5,300,945
153 5,300,946
155 5,300,947
157 5,300,926
5,300,927
189 5,300,948
202 5,300,949

CLASS 346

1.1 5,300,950
5,300,951
5,300,957
5,300,969
76 PH 5,300,952
5,300,953
107 R 5,300,954
5,300,955
5,300,956
108 5,300,962
138 5,301,099
140 R 5,300,958
5,300,959
5,300,968
154 5,300,960
160 5,300,961

CLASS 348

97 5,301,029
162 5,301,220
416 5,301,019
420 5,301,018
476 5,301,023
493 5,301,015
564 5,301,021
570 5,301,028
584 5,301,026
586 5,301,016
589 5,301,027
645 5,301,017
690 5,301,024
704 5,301,025
762 5,301,030
792 5,301,031

CLASS 351

44 5,300,963
207 5,300,964
212 5,300,965

CLASS 353

30 5,300,966
97 5,300,967

CLASS 354

75 5,300,974
173.11 5,300,975
219 5,300,976
222 5,300,977
412 5,300,978
415 5,300,970

CLASS 355

67 5,300,971
71 5,300,972
91 5,300,973
200 5,300,979
204 5,300,980
206 5,300,981
208 5,300,982
5,300,983
5,300,984
218 5,300,985
221 5,300,986
245 5,300,987
253 5,300,988
256 5,300,989
5,300,990
190.1 5,300,991
261 5,300,992
271 5,300,993
277 5,300,994
282 5,300,995
283 5,300,996
5,300,997
5,300,998
289 5,300,999
290 5,301,000

CLASS 356

35.5 5,301,001
36 5,301,002
73 5,301,003
125 5,301,004
141 5,301,005
311 5,301,006
326 5,301,007
345 5,301,008
358 5,301,010
359 5,301,011
364 5,301,012
400 5,301,013
437 5,301,014

CLASS 358

261.2 5,301,032
335 5,301,033
346 5,301,034
440 5,301,035
442 5,301,036
451 5,301,037
455 5,301,038
457 5,301,039
465 5,301,040
474 5,301,042
481 5,301,041
498 5,301,043
501 5,301,044

CLASS 359

37 5,301,045
51 5,301,046
55 5,301,047
60 5,301,048
61 5,301,049
124 5,301,051
5,301,052
125 5,301,053
132 5,301,054
139 5,301,055
145 5,301,056
163 5,301,057
168 5,301,058
218 5,301,060
332 5,301,059
362 5,301,061
487 5,301,009
567 5,301,062
619 5,301,063
654 5,301,064
692 5,301,065
698 5,301,066
857 5,301,067
870 5,301,068
5,301,069

CLASS 360

10.1 5,301,070
61 5,301,071
77.01 5,301,072
83 5,301,074
96.3 5,301,073
97.02 5,301,075
98.06 5,301,076
103 5,301,077
106 5,301,078
113 5,301,079
5,301,080

CLASS 361

56 5,301,081
58 5,301,082
64 5,301,083
91 5,301,084
93 5,301,085
505 5,301,087
641 5,301,086
685 5,301,088
744 5,301,089

CLASS 362

32 5,301,090
83.2 5,301,091
125 5,301,092
223 5,301,093
254 5,301,094

CLASS 363

21 5,301,095
37 5,301,096
60 5,301,097
97 5,301,098

CLASS 364

148 5,301,100
156 5,301,101
164 5,301,102
184 5,301,103
191 5,301,105
5,301,106
413.13 5,301,107
413.19 5,301,108
419.19 5,301,109
424.01 5,301,110
424.05 5,301,111
434 5,301,112
442 5,301,113
453 5,301,114
460 5,301,115
464.02 5,301,116
468 5,301,117
5,301,118
472 5,301,119
476 5,301,120
483 5,301,121
5,301,122
485 5,301,123
490 5,301,124
498 5,301,125
510 5,301,126
525 5,301,127
551.01 5,301,128
552 5,301,129
585 5,301,130
5,301,131
708.1 5,301,132
724.10 5,301,134
724.17 5,301,135
725 5,301,136
748 5,301,137
748.5 5,301,138
767 5,301,139
769 5,301,140

CLASS 365

49 5,301,141
51 5,301,142
56 5,301,143
104 5,301,144
110 5,301,145
154 5,301,146
5,301,147
185 5,301,149
5,301,150
190 5,301,152
200 5,301,153
201 5,301,155
5,301,156
203 5,301,157
205 5,301,158
225.7 5,301,159
226 5,301,160
229 5,301,161
230.03 5,301,162
230.06 5,301,163
233 5,301,164
233.5 5,301,165
777 5,301,148

CLASS 366

233 5,299,864
300 5,299,865
336 5,299,866

CLASS 367

1 5,301,166
134 5,301,167
138 5,301,168
147 5,301,169
150 5,301,170

CLASS 368

10 5,301,154
46 5,301,171
415 5,301,020

CLASS 369

32 5,301,172
44.250 5,301,173
44.28 5,301,174
44.32 5,301,175
75.2 5,301,176
5,301,177
77.1 5,301,178
77.2 5,301,179
5,301,180
84 5,301,181
103 5,301,182
280 5,301,183

CLASS 370

16 5,301,184
16.1 5,301,185
24 5,301,186
5,301,187
50 5,301,188
60.1 5,301,189
66 5,301,190
84 5,301,191
94.1 5,301,192
5,301,193
95.1 5,301,194
105.1 5,301,195
105.2 5,301,196

CLASS 371

5.1 5,301,197
19 5,301,198
22.5 5,301,199
67.1 5,301,200

CLASS 372

43 5,301,201
46 5,301,202
55 5,301,203
69 5,301,204

CLASS 374

20 5,299,867
117 5,299,868
137 5,299,869
153 5,299,870

CLASS 378

1 5,301,205
5,301,206
10 5,301,207
36 5,301,208
39 5,301,209
83 5,301,210

CLASS 376

260 5,301,211
5,301,212
5,301,213
261 5,301,214
283 5,301,215
299 5,301,216
301 5,301,217
417 5,301,218

CLASS 377

44 5,301,219

CLASS 378

181 5,301,221

CLASS 379

58 5,301,222
5,301,223
5,301,224
59 5,301,225
67 5,301,226
88 5,301,227
100 5,301,228
143 5,301,229
447 5,301,230

CLASS 380

4 5,301,231
10 5,301,245
21 5,301,232
23 5,301,233
5,301,234
5,301,246
42 5,301,235
43 5,301,247

CLASS 381

17 5,301,236
89 5,301,237

CLASS 382

1 5,301,238
5,301,239
5,301,240
8 5,301,248
44 5,299,991
56 5,301,241
5,301,242
89 5,301,243
5,301,244

CLASS 384

432 5,299,871

CLASS 385

31 5,301,249
76 5,301,250
91 5,301,251
96 5,301,252
128 5,301,253
143 5,301,254

CLASS 395

2.67 5,301,259
10 5,301,256
11 5,301,257
52 5,301,258
54 5,301,260
82 5,301,261
110 5,301,050
117 5,301,262
122 5,301,263
128 5,301,264
5,301,265
139 5,301,266
150 5,301,267
157 5,301,268
158 5,301,269
161 5,301,270
164 5,301,271
165 5,301,272
200 5,301,273
239 5,301,255
250 5,301,274
5,301,275
275 5,301,276
5,301,277
5,301,278
5,301,279
325 5,301,280
5,301,281
5,301,282
5,301,283
375 5,301,285
403 5,301,284
5,301,286
5,301,287
5,301,288
5,301,289
425 5,301,290
5,301,292
5,301,293
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5,301,298
5,301,299
5,301,300
5,301,301
500 5,301,302
5,301,303
5,301,304
550 5,301,305
5,301,306
5,301,307
5,301,308
575 5,301,309
5,301,310
5,301,311
5,301,312
600 5,301,313
5,301,314
5,301,315
5,301,316
5,301,317
5,301,318
5,301,319
650 5,301,320
5,301,321
5,301,322
5,301,323
5,301,324
700 5,301,325
5,301,326
5,301,327
5,301,328
725 5,301,329
5,301,330
5,301,331
5,301,332
5,301,333
750 5,301,334
775 5,301,335
800 5,301,104
5,301,336
5,301,337
5,301,338
5,301,339
5,301,340
5,301,341
5,301,342
5,301,343
5,301,344
5,301,345
5,301,346
5,301,347
5,301,348
5,301,349
5,301,350
5,301,351

CLASS 400

17 5,299,872
279 5,299,873
613 5,299,874
625 5,299,875

CLASS 401

139 5,299,876
206 5,299,877
209 5,299,878

CLASS 402

79 5,299,879

CLASS 403

3 5,299,880
274 5,299,881

CLASS 404

6 5,299,882
10 5,299,883
25 5,299,884

CLASS 405

45 5,299,885
86 5,299,886
128 5,299,887
267 Re.34,576

CLASS 406

67 5,299,888
88 5,299,889
5,299,890
112 5,299,891

CLASS 407

32 5,299,892
54 5,299,893

CLASS 408

1 R 5,299,894
56 5,299,895
72 R 5,299,896

CLASS 411

454 5,299,897

CLASS 412

7 5,299,898

CLASS 413

27 5,299,899

CLASS 414

206 5,299,900
404 5,299,901
416 5,299,902
534 5,299,903
581 5,299,904
624 5,299,905
792.3 5,299,906
797.8 5,299,907

CLASS 415

55.1 5,299,908
186 5,299,909
209.3 5,299,910

CLASS 416

35 5,299,911
87 5,299,912
197 A 5,299,913
203 5,299,914
223 A 5,299,915

CLASS 417

68 5,299,916
178 5,299,917
184 5,299,918
387 5,299,919
426 5,299,920
539 5,299,921

CLASS 418

45 5,299,922
180 5,299,923
220 5,299,924

CLASS 422

172 5,300,265
186.07 5,300,266
280 5,300,267

CLASS 423

150.1 5,300,268
239.1 5,300,269
5,300,270
247 5,300,271
445 R 5,300,272
492 5,300,273

VOL 1161 ISS 1 AP 5 1994 UMI

511 5,300,274
655 5,300,275
657 5,300,276
703 5,300,277

CLASS 428

1.29 5,300,281
1.53 5,300,282
1.77 5,300,279
80 5,300,282
49 5,300,283
54 5,300,289
5,300,290
70 5,300,284
71 5,300,285
78.03 5,300,286
78.04 5,300,287
78.08 5,300,288
78.18 5,300,291
85.2 5,300,292
405 5,300,293
423 5,300,294
427 5,300,295
5,300,296
438 5,300,297
442 5,300,298
448 5,300,299
456 5,300,300
464 5,300,301
488 5,300,302
489 5,300,303
490 5,300,304
5,300,305
550 5,300,306

CLASS 425

71 5,299,926
188 5,299,927
190 5,299,928

CLASS 426

5.31 5,300,309
112 5,300,310
540 5,300,310
622 5,300,311
634 5,300,312

CLASS 427

9 5,300,313
58 5,300,314
64 5,300,315
66 5,300,316
96 5,300,307
195 5,300,317
212 5,300,318
243 5,300,319
248.1 5,300,321
249 5,300,320
255 5,300,322
327 5,300,323
376.2 5,300,324
379 5,300,325
385.5 5,300,326
387 5,300,327
388.1 5,300,328
430.1 5,300,329
443.1 5,300,330
493 5,300,331

CLASS 428

34.1 5,300,332
35.6 5,300,333
35.7 5,300,334
35.8 5,300,335
35.9 5,300,336
36.1 5,300,337
36.6 5,300,338
36.9 5,300,339
40 5,300,340
44 5,300,341
57 5,300,342
64 5,300,343
131 5,300,344
137 5,300,345
156 5,300,346
171 5,300,347
194 5,300,348
195 5,300,349
5,300,350
207 5,300,351
212 5,300,352
213 5,300,353
215 5,300,354
5,300,355
220 5,300,356
224 5,300,357
286 5,300,358
290 5,300,359
304.1 5,300,360
5,300,361
375 5,300,362
413 5,300,363
459 5,300,364
461 5,300,365
549 5,300,366
586 5,300,367
610 5,300,368

CLASS 429

5,300,369
5,300,370
5,300,371
5,300,372
5,300,373
5,300,374
5,300,375
197 5,300,376

CLASS 430

5,300,377
5,300,378
5,300,379
5,300,380
18 5,300,381
30 5,300,382
42 5,300,383
45 5,300,384
47 5,300,385
86 5,300,386
110 5,300,387
5,300,388
5,300,389
115 5,300,390
127 5,300,391
130 5,300,392
134 5,300,393
137 5,300,394
143 5,300,395
169 5,300,396
176 5,300,397
200 5,300,398
253 5,300,399
271 5,300,401
280 5,300,402
308 5,300,400
325 5,300,403
326 5,300,404
363 5,300,405
382 5,300,406
386 5,300,407
393 5,300,408
418 5,300,409
488 5,300,410
496 5,300,411
503 5,300,412
5,300,413
5,300,414
507 5,300,415
513 5,300,416
529 5,300,417
536 5,300,418
546 5,300,419
551 5,300,420
615

CLASS 431

8 5,299,929
10 5,299,930
25 5,299,931
334 5,299,932

CLASS 432

5,299,933

CLASS 433

8 5,299,934
18 5,299,935
71 5,299,936
165 5,299,937

CLASS 434

5,299,938

CLASS 435

8 5,300,421
5,300,422
7.1 5,300,423
5,300,424
7.9 5,300,425
7.92 5,300,427
34 5,300,428
101 5,300,429
128 5,300,430
172.3 5,300,431
199 5,300,432
238 5,300,433
240.2 5,300,434
5,300,435
252.3 5,300,436
280 5,300,437
312 5,300,438

CLASS 436

5,300,439
74 5,300,440
110 5,300,441
125 5,300,442

CLASS 437

5,300,443
34 5,300,444
40 5,300,445
41 5,300,446
5,300,447
5,300,448

48 5,300,449
52 5,300,450
5,300,451
126 5,300,452
142 5,300,453
154 5,300,454
180 5,300,455
195 5,300,456
208 5,300,457
5,300,458
5,300,459
211 5,300,460
225 5,300,461
228 5,300,463
245 5,300,462

CLASS 439

74 5,299,939
76 5,299,940
78 5,299,941
79 5,299,942
136 5,299,943
157 5,299,944
5,299,945
159 5,299,946
215 5,299,947
266 5,299,948
275 5,299,949
342 5,299,950
367 5,299,951
376 5,299,952
395 5,299,953
422 5,299,954
500 5,299,955
638 5,299,956
712 5,299,957
752 5,299,958
5,299,959

CLASS 440

39 5,299,960
89 5,299,961

CLASS 441

26 5,299,962
79 5,299,963

CLASS 445

36 5,299,965

CLASS 446

5,299,966
5,299,967
5,299,968
5,299,969
5,299,970
5,299,971

CLASS 452

1 5,299,972
50 5,299,973
106 5,299,974
177 5,299,975
188 5,299,976

CLASS 453

10 5,299,977

CLASS 454

285 5,299,978

CLASS 485

3.2 5,301,352
9 5,301,353
13.1 5,301,354
21 5,301,355
33.2 5,301,356
33.4 5,301,357
56.1 5,301,358
5,301,359
67.4 5,301,360
69 5,301,364
73 5,301,365
76 5,301,366
5,301,367
78 5,301,368
79 5,301,369
95 5,301,361
98 5,301,362
111 5,301,363

CLASS 462

18 5,299,979

CLASS 464

99 5,299,980
111 5,299,981
133 5,299,982

CLASS 473

45 5,299,983

CLASS 474

160 5,299,925
244 5,299,984

CLASS 475

53 5,299,985
88 5,299,986

CLASS 476

5,299,987
42 5,299,988

CLASS 482

27 5,299,989
38 5,299,990
5,299,992
5,299,993
5,299,994
5,299,995
5,299,996
70 5,299,997
96 5,299,998
5,299,999
105 5,300,000
5,300,001
114 5,300,002
138 Re.34,577
139 5,300,003
140 5,300,004
142 5,300,005

CLASS 483

56 5,300,006

CLASS 493

23 5,300,007
30 5,300,008
373 5,300,009
379 5,300,010
5,300,011
459 5,300,012

CLASS 494

34 5,300,013
35 5,300,014

CLASS 501

5 5,300,464
13 5,300,465
54 5,300,466
67 5,300,467

CLASS 502

34 5,300,468
83 5,300,469
110 5,300,470
154 5,300,599
244 5,300,471
309 5,300,472

CLASS 503

221 5,300,473
227 5,300,474
5,300,475
5,300,476

CLASS 504

242 5,300,477
246 5,300,478
261 5,300,479
273 5,300,480
284 5,300,481

CLASS 505

120 5,300,482
133 5,300,487
473 5,300,484
474 5,300,485
501 5,300,486
510 5,300,483

CLASS 513

6 5,300,488
8 5,300,489

CLASS 514

5,300,490
111 5,300,491
15 5,300,492
58 5,300,493
55 5,300,494
182 Re.34,578
183 5,300,495
186 5,300,496
192 5,300,497
218 5,300,498
231.5 5,300,499
232.5 5,300,500
238.2 5,300,501
241 5,300,502
245 5,300,503
249 5,300,504
280 5,300,505
253 5,300,506
5,300,507
285 5,300,508
5,300,509
272 5,300,510
278 5,300,511
305 5,300,512
312 5,300,513
314 5,300,514
318 5,300,515
321 5,300,516

326 5,300,517
338 5,300,518
343 5,300,519
367 5,300,520
406 5,300,521
450 5,300,522
456 5,300,523
462 5,300,524
468 5,300,525
561 5,300,526
646 Re.34,579
648 5,300,527
772 5,300,528
788 5,300,529

CLASS 518

162 5,300,637

CLASS 521

49 5,300,530
51 5,300,531
5,300,532
76 5,300,533
79 5,300,543
99 5,300,534
137 5,300,535

CLASS 522

8 5,300,536

CLASS 523

115 5,300,537
161 5,300,538
204 5,300,539
209 5,300,540
414 5,300,541

CLASS 524

8 5,300,542
10 5,300,544
122 5,300,545
114 5,300,546
188 5,300,547
271 5,300,548
321 5,300,549
444 5,300,550
458 5,300,551
494 5,300,552
496 5,300,553
547 5,300,554
571 5,300,555
593 5,300,556
606 5,300,557
707 5,300,558
714 5,300,559
724 5,300,560
765 5,300,561
841 5,300,562

CLASS 528

42 5,300,563
54.1 5,300,564
54.2 5,300,565
60 5,300,566
64 5,300,567
68 5,300,568
78 5,300,569
80 5,300,570
109 5,300,573
153 5,300,571
167 5,300,572
181 5,300,574
186 5,300,575
190 5,300,576
237 5,300,577
252 5,300,578
290 5,300,579
301 5,300,580
5,300,581
314 5,300,582
329.3 5,300,584
332.7 5,300,585
332.8 5,300,586
333.2 5,300,583
359.3 5,300,587
422 5,300,588
437 5,300,589
444 5,300,590
474 5,300,591
488 5,300,592
489 5,300,593
502 5,300,594
523 5,300,595
539 5,300,596

CLASS 536

114 5,300,597
134 5,300,598
602 5,300,600
228 5,300,601
260 5,300,602
262 5,300,603
278 5,300,604
279 5,300,605
307.6 5,300,606

CLASS 528

14 5,300,607

5,300,608
5,300,609
5,300,610
15 5,300,611
17 5,300,612
26 5,300,613
42 5,300,614
49 5,300,615
67 5,300,616
101 5,300,618
170 5,300,619
172 5,300,620
195 5,300,621
196 5,300,622
199 5,300,623
5,300,624
211 5,300,625
274 5,300,626
353 5,300,627
482 5,300,628

CLASS 530

326 5,300,629
329 5,300,630
387.7F 5,300,631
420 5,300,632

CLASS 534

14 5,300,278
638 5,300,633

CLASS 536

17.1 5,300,634
25.4 5,300,635
28.5 5,300,636

CLASS 540

357 5,300,638
527 5,300,639

CLASS 544

58.2 5,300,640
229 5,300,641
238 5,300,642
363 5,300,643
5,300,644

CLASS 546

49 5,300,645
141 5,300,646
188 5,300,647
193 5,300,648
290 5,300,649
291 Re.34,580
329 5,300,650

CLASS 548

113 5,300,651
375.1 5,300,652
497 5,300,653
556 5,300,659
566 5,300,660

CLASS 549

13 5,300,654
71 5,300,655
226 5,300,661
288 5,300,656
290 5,300,662
420 5,300,657
502 5,300,658

CLASS 552

202 5,300,663
510 5,300,664

CLASS 554

49 5,300,665

CLASS 556

428 5,300,666
437 5,300,667
441 5,300,668
453 5,300,669
454 5,300,670

CLASS 558

78 5,300,617
159 5,300,671
254 5,300,672

CLASS 560

42 5,300,674
55 5,300,675
56 5,300,676
68 5,300,677
157 5,300,678

CLASS 562

11 5,300,679
17 5,300,680
496 5,300,681
512.2 5,300,682
547 5,300,684
582 5,300,683
608 5,300,685

CLASS 564

15 5,300,686
5,300,687
149 5,300,688
259 5,300,689
268 5,300,690
289 5,300,691
401 5,300,692

CLASS 568

323 5,300,693
480 5,300,707
608 5,300,694
647 5,300,695
5,300,696
698 5,300,697
720 5,300,698
724 5,300,699
5,300,700
5,300,702
792 5,300,701
794 5,300,703
806 5,300,704
828 5,300,705
830 5,300,706
853 5,300,708

CLASS 570

164 5,300,709
168 5,300,710
5,300,711
176 5,300,712
5,300,713
179 5,300,714

CLASS 585

254 5,300,715
277 5,300,716
320 5,300,717
324 5,300,718
417 5,300,719
419 5,300,720
451 5,300,721
467 5,300,722

CLASS 600

16 5,300,015
18 5,300,017

CLASS 601

21 5,300,095
26 5,300,090

CLASS 602

16 5,300,016

CLASS 604

1 5,300,018
4 5,300,019
9 5,300,020
22 5,300,021
35 5,300,022
51 5,300,023
73 5,300,024
96 5,300,025
97 B1 5,147,300
103 5,300,027
110 5,300,028
117 5,300,029
136 5,300,030
154 5,300,031
164 5,300,032
167 5,300,033
5,300,034
5,300,035
5,300,036
180 5,300,037
187 5,300,038
198 5,300,039
5,300,040

CLASS 606

2 5,300,061
4 5,300,062
5,300,063
13 5,300,065
15 5,300,066

CLASS 607

207 5,300,041
210 5,300,042
250 5,300,043
5,300,044
283 5,300,045
284 5,300,046
5,300,047
5,300,048
289 5,300,049
317 5,300,050
320 5,300,051
340 5,300,052
378 5,300,053
5,300,054
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	5,299,687		5,300,423		5,300,034		5,301,122		5,300,992		5,299,833
	5,299,707		5,300,886		5,300,057		5,301,125		5,300,993		5,299,868
	5,299,754		5,300,913		5,300,068		5,301,201		5,300,994		5,299,921
	5,299,769		5,301,102		5,300,082		5,301,207		5,301,004		5,300,273
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	5,299,797		5,299,328		5,300,094		5,301,286		5,301,036		5,300,552
	5,299,877		5,299,354		5,300,099		5,301,333		5,301,037	41 :	5,299,613
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	5,299,942		5,299,380		5,300,102	35 :	5,299,639		5,301,061		5,300,957
	5,299,969		5,299,397		5,300,106		5,300,307		5,301,067		5,300,958
	5,299,970		5,299,418		5,300,107		5,300,486		5,301,099		5,300,959
	5,299,977		5,299,448		5,300,109		5,300,875		5,301,118		5,301,141
	5,300,004		5,299,596		5,300,110		5,301,082		5,301,121		5,301,299
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	5,300,145		5,300,049		5,300,915		5,299,434		5,301,270		5,299,478
	5,300,211		5,300,097		5,300,973		5,299,454		5,301,290		5,299,482
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	5,300,696		5,300,538	29 :	5,299,330		5,299,804		5,299,566		5,299,735
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	5,300,863		5,300,788		5,299,999		5,299,951		5,300,188		5,300,001
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	5,299,738		5,301,337		5,301,325		5,300,313		5,299,824		5,300,541
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	5,300,869		5,299,779		5,300,075		5,300,418		5,300,129		5,301,054
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19 :	5,299,396		5,299,847		5,300,207		5,300,436		5,300,161		5,301,261
	5,299,399		5,299,853		5,300,227		5,300,448		5,300,164		4,843,399
	5,299,586		5,299,897		5,300,238		5,300,464		5,300,180		5,085,332
	5,299,646		5,299,935		5,300,247		5,300,466		5,300,220	44 :	5,299,818
	5,299,812		5,300,089		5,300,274		5,300,468		5,300,230		5,299,922
	5,299,844		5,300,098		5,300,283		5,300,544		5,300,242		5,300,010
	5,299,973		5,300,142		5,300,330		5,300,545		5,300,249		5,300,223
	5,300,495		5,300,171		5,300,362		5,300,622		5,300,250		5,300,396
	5,300,635		5,300,261		5,300,376		5,300,623		5,300,305		5,300,628
	5,300,941		5,300,285		5,300,395		5,300,624		5,300,310		5,300,756
	5,301,170		5,300,286		5,300,399		5,300,632		5,300,360		5,301,123
	5,301,208		5,300,295		5,300,437		5,300,686		5,300,422	45 :	5,299,414
	5,301,366		5,300,299		5,300,469		5,300,690		5,300,561		5,299,728
20 :	5,299,384		5,300,323		5,300,479		5,300,736		5,300,563		5,299,753
	5,299,557		5,300,327		5,300,488		5,300,748		5,300,565		5,299,768
21 :	5,299,680		5,300,328		5,300,489		5,300,766		5,300,573		5,299,775
	5,300,178		5,300,350		5,300,494		5,300,800		5,300,577		5,299,814
	5,300,817		5,300,363		5,300,498		5,300,806		5,300,580		5,299,832
	5,300,989		5,300,542		5,300,503		5,300,812		5,300,584		5,299,952
	5,301,086		5,300,641		5,300,527		5,300,813		5,300,585	46 :	5,300,341
22 :	5,299,326		5,300,667		5,300,529		5,300,827		5,300,590	47 :	5,299,475
	5,299,356		5,300,719		5,300,617		5,300,841		5,300,599		5,299,591
	5,299,574		5,300,759		5,300,657		5,300,842		5,300,682		5,300,198
	5,299,598		5,300,905		5,300,665		5,300,843		5,300,684		5,300,256
	5,299,773		5,300,917		5,300,666		5,300,881		5,300,724		5,300,272
	5,299,782		5,301,113		5,300,687		5,300,911		5,300,752		5,300,322
	5,300,153		5,301,350		5,300,688		5,300,914		5,300,754		5,300,549
	5,300,212	27 :	Re.34,573		5,300,694		5,300,942		5,300,922		5,301,110
	5,300,222		5,299,393		5,300,705		5,300,960		5,300,932		5,301,230
	5,300,681		5,299,580		5,300,747		5,300,961		5,300,953	48 :	5,299,334
	5,300,909		5,299,606		5,300,771		5,300,962		5,301,005		5,299,350
23 :	5,299,601		5,299,675				5,300,968		5,301,220		

5,299,359	5,299,937	5,300,567	5,301,204	5,299,808	5,300,762
5,299,376	5,299,987	5,300,586	5,301,251	5,299,852	5,300,769
5,299,379	5,300,015	5,300,589	5,301,275	5,300,122	5,300,878
5,299,385	5,300,037	5,300,591	5,301,279	5,300,193	5,300,896
5,299,405	5,300,040	5,300,594	5,301,284	5,300,225	5,300,946
5,299,424	5,300,065	5,300,596	5,301,300	5,300,807	5,301,223
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5,299,501	5,300,151	5,300,683	5,301,321	5,301,009	54 : 5,299,508
5,299,569	5,300,152	5,300,685	5,301,330	5,301,069	5,299,524
5,299,575	5,300,203	5,300,691	5,301,335	5,301,165	5,300,556
5,299,588	5,300,218	5,300,697	5,301,336	53 : 5,299,333	55 : 5,299,355
5,299,624	5,300,279	5,300,698	5,301,345	5,299,382	5,299,401
5,299,635	5,300,281	5,300,703	49 : 5,299,722	5,299,400	5,299,409
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5,299,643	5,300,289	5,300,770	5,299,990	5,299,464	5,299,690
5,299,644	5,300,296	5,300,777	5,300,027	5,299,668	5,299,691
5,299,688	5,300,301	5,300,795	5,300,931	5,299,765	5,299,718
5,299,714	5,300,312	5,300,797	5,301,237	5,299,823	5,299,743
5,299,716	5,300,324	5,300,824	50 : 5,299,720	5,299,894	5,299,793
5,299,760	5,300,338	5,300,828	51 : Re.34,574	5,299,932	5,299,982
5,299,777	5,300,441	5,300,831	5,299,346	5,299,972	5,300,051
5,299,790	5,300,447	5,300,895	5,299,357	5,300,002	5,300,263
5,299,806	5,300,450	5,300,929	5,299,449	5,300,073	5,300,347
5,299,865	5,300,454	5,300,934	5,299,455	5,300,096	5,300,782
5,299,874	5,300,456	5,301,006	5,299,507	5,300,192	5,300,908
5,299,880	5,300,531	5,301,056	5,299,548	5,300,216	5,301,083
5,299,882	5,300,539	5,301,094	5,299,776	5,300,434	5,301,096
5,299,889	5,300,559	5,301,160	5,299,778	5,300,630	5,301,108
5,299,930					

DESIGN PATENTS

[illegible]	345,731	08 : 345,656	18 : 345,690	345,709	345,835	47 :	345,667
	345,773	345,740	345,777	345,710	345,836		345,826
05 :	345,661	345,788	345,778	345,733	37 : 345,653	48 :	345,664
06 :	345,647	345,829	345,816	345,841	345,658		345,676
	345,665	09 : 345,657	345,825	28 : 345,808	345,842		345,681
	345,672	345,696	345,849	345,809	39 : 345,645		345,712
	345,673	345,795	20 : 345,741	31 : 345,765	345,650		345,713
	345,687	345,814	345,801	345,819	345,703		345,768
	345,694	12 : 345,720	21 : 345,668	34 : 345,652	345,723		345,779
	345,701	345,736	345,683	345,695	345,724	49 :	345,655
	345,706	345,739	345,729	345,702	345,728		345,688
	345,711	345,807	25 : 345,705	345,797	345,824		345,757
	345,719	345,828	345,759	345,811	345,831	51 :	345,800
	345,738	13 : 345,761	345,845	345,820	345,834		345,821
	345,756	345,763	26 : 345,717	345,840	345,848		345,830
	345,775	345,772	345,718	36 : 345,649	40 : 345,762	53 :	345,660
	345,790	15 : 345,806	345,730	345,654	345,764		345,716
	345,791	17 : 345,646	345,737	345,662	41 : 345,666		345,760
	345,794	345,663	345,774	345,693	345,780	55 :	345,678
	345,802	345,677	345,776	345,698	345,838		345,781
	345,803	345,725	345,833	345,744	42 : 345,692		345,783
	345,812	345,727	345,843	345,766	345,726		345,784
	345,832	345,742	345,844	345,799	345,743		345,787
	345,839	345,752	27 : 345,686	345,815	345,793		345,789
	345,847	345,782	345,708	345,817	45 : 345,659		

PLANT PATENTS

[illegible] :	8,672	34 :	8,674	41 :	8,673			

STATUTORY INVENTION REGISTRATIONS

[illegible] :	H1304	16 :	H1297	39 :	H1298			
12 :	H1296	26 :	H1299	41 :	H1295	[illegible] : H1301	H1302	H1303

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
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USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 9, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,005,214 through 5,007,107
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 7, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,654,893 through 4,656,666
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 5, 1983 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utility Patents 4,378,606 through 4,379,348
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 30, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,317	07/223,687	08/28/90
(4,566,727)	(06/672,861)	(01/28/86)
Re. 34,317	07/798,064	07/20/93
(4,567,488)	(06/520,270)	(01/28/86)
Re. 34,458	07/826,985	11/30/93
(4,896,835)	(07/374,603)	(01/30/90)
4,313,524	06/217,209	02/02/82
4,313,543	06/228,481	02/02/82
4,313,546	06/217,714	02/02/82
4,313,664	06/220,896	02/02/82
4,313,944	06/237,062	02/02/82
4,314,063	06/235,870	02/02/82
4,314,078	06/250,205	02/02/82
4,566,137	06/572,529	01/28/86
4,566,139	06/558,472	01/28/86
4,566,141	06/501,613	01/28/86
4,566,145	06/622,274	01/28/86
4,566,148	06/554,022	01/28/86
4,566,154	06/519,635	01/28/86
4,566,158	06/661,450	01/28/86
4,566,160	06/531,272	01/28/86
4,566,164	06/699,963	01/28/86
4,566,165	06/545,969	01/28/86
4,566,166	06/657,256	01/28/86
4,566,168	06/690,016	01/28/86
4,566,178	06/687,444	01/28/86
4,566,179	06/662,391	01/28/86
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4,567,597	06/434,491	01/28/86
4,567,609	06/479,372	01/28/86
4,896,376	07/147,688	01/30/90
4,896,378	07/249,583	01/30/90
4,896,379	07/240,208	01/30/90
4,896,384	07/122,238	01/30/90
4,896,390	07/294,238	01/30/90
4,896,392	07/173,866	01/30/90
4,896,396	07/262,490	01/30/90
4,896,397	07/355,125	01/30/90
4,896,398	07/298,774	01/30/90
4,896,409	06/800,500	01/30/90
4,896,410	07/356,116	01/30/90
4,896,414	07/145,910	01/30/90
4,896,416	07/285,573	01/30/90
4,896,424	07/299,549	01/30/90
4,896,427	07/316,543	01/30/90
4,896,428	07/296,706	01/30/90
4,896,430	07/263,550	01/30/90
4,896,434	07/269,693	01/30/90
4,896,438	07/238,569	01/30/90
4,896,439	07/242,547	01/30/90
4,896,441	07/194,304	01/30/90
4,896,443	07/298,908	01/30/90
4,896,444	07/226,531	01/30/90
4,896,448	07/288,034	01/30/90
4,896,449	07/385,011	01/30/90
4,896,451	07/304,855	01/30/90
4,896,452	07/364,644	01/30/90
4,896,453	07/232,608	01/30/90
4,896,455	07/255,376	01/30/90
4,896,457	07/232,115	01/30/90
4,896,465	07/273,194	01/30/90
4,896,469	07/282,899	01/30/90
4,896,472	07/300,203	01/30/90
4,896,478	06/929,949	01/30/90
4,896,479	07/372,215	01/30/90
4,896,482	07/114,301	01/30/90
4,896,485	07/305,592	01/30/90
4,896,488	07/291,575	01/30/90
4,896,503	07/272,093	01/30/90
4,896,506	07/122,333	01/30/90
4,896,507	07/276,579	01/30/90
4,896,508	07/259,710	01/30/90
4,896,517	07/379,922	01/30/90
4,896,518	07/244,039	01/30/90
4,896,519	07/350,858	01/30/90
4,896,524	07/252,275	01/30/90
4,896,526	07/201,558	01/30/90
4,896,533	07/251,438	01/30/90
4,896,534	07/274,200	01/30/90
4,896,539	07/257,446	01/30/90
4,896,540	07/179,076	01/30/90
4,896,541	07/149,475	01/30/90
4,896,556	07/191,995	01/30/90
4,896,557	06/577,894	01/30/90
4,896,558	07/200,825	01/30/90
4,896,564	07/004,018	01/30/90
4,896,565	07/187,497	01/30/90
4,896,568	07/272,835	01/30/90
4,896,570	07/315,640	01/30/90
4,896,571	07/217,753	01/30/90
4,896,572	07/271,272	01/30/90
4,896,574	07/248,726	01/30/90
4,896,578	07/363,435	01/30/90
4,896,582	07/216,542	01/30/90
4,896,586	07/222,674	01/30/90
4,896,587	07/217,567	01/30/90
4,896,588	07/148,765	01/30/90
4,896,595	07/322,179	01/30/90
4,896,601	07/272,534	01/30/90
4,896,603	07/231,276	01/30/90
4,896,606	07/325,958	01/30/90
4,896,609	07/348,753	01/30/90
4,896,610	07/071,848	01/30/90
4,896,622	07/323,678	01/30/90
4,896,623	07/117,870	01/30/90
4,896,624	07/326,974	01/30/90
4,896,626	07/235,516	01/30/90
4,896,627	07/320,393	01/30/90
4,896,628	07/186,850	01/30/90
4,896,633	07/237,226	01/30/90
4,896,634	07/361,565	01/30/90
4,896,647	07/326,985	01/30/90
4,896,649	07/213,378	01/30/90
4,896,652	07/271,417	01/30/90
4,896,653	07/307,751	01/30/90
4,896,654	07/153,378	01/30/90
4,896,655	07/194,837	01/30/90
4,896,664	07/333,522	01/30/90
4,896,665	07/252,137	01/30/90
4,896,667	07/265,899	01/30/90
4,896,684	07/331,745	01/30/90
4,896,687	07/264,863	01/30/90
4,896,688	07/063,505	01/30/90
4,896,695	07/331,224	01/30/90
4,896,706	07/263,785	01/30/90
4,896,707	07/135,673	01/30/90
4,896,710	07/290,193	01/30/90

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4,896,712	07/340,643	01/30/90
4,896,714	07/030,034	01/30/90
4,896,730	07/295,352	01/30/90
4,896,732	07/346,927	01/30/90
4,896,741	07/289,427	01/30/90
4,896,742	07/256,333	01/30/90
4,896,745	07/303,728	01/30/90
4,896,746	07/237,281	01/30/90
4,896,753	07/175,531	01/30/90
4,896,758	07/271,277	01/30/90
4,896,760	07/298,521	01/30/90
4,896,762	07/257,284	01/30/90
4,896,766	07/348,393	01/30/90
4,896,769	07/194,829	01/30/90
4,896,772	07/192,826	01/30/90
4,896,776	07/266,516	01/30/90
4,896,781	07/249,458	01/30/90
4,896,782	07/309,175	01/30/90
4,896,783	07/075,257	01/30/90
4,896,789	07/312,891	01/30/90
4,896,793	07/128,943	01/30/90
4,896,794	07/303,030	01/30/90
4,896,797	07/299,555	01/30/90
4,896,804	07/176,620	01/30/90
4,896,806	06/758,398	01/30/90
4,896,818	07/271,959	01/30/90
4,896,820	07/324,450	01/30/90
4,896,826	07/250,716	01/30/90
4,896,837	07/281,660	01/30/90
4,896,843	07/238,856	01/30/90
4,896,844	07/278,823	01/30/90
4,896,845	07/228,974	01/30/90
4,896,849	07/066,450	01/30/90
4,896,852	06/931,510	01/30/90
4,896,857	07/296,944	01/30/90
4,896,863	07/199,312	01/30/90
4,896,865	07/041,715	01/30/90
4,896,866	07/201,873	01/30/90
4,896,871	07/282,070	01/30/90
4,896,872	07/321,402	01/30/90
4,896,884	07/351,543	01/30/90
4,896,886	07/304,219	01/30/90
4,896,887	07/287,112	01/30/90
4,896,888	07/060,472	01/30/90
4,896,889	07/348,881	01/30/90
4,896,890	07/377,224	01/30/90
4,896,893	07/383,257	01/30/90
4,896,894	07/295,132	01/30/90
4,896,898	07/243,618	01/30/90
4,896,901	07/191,117	01/30/90
4,896,904	07/073,394	01/30/90
4,896,910	07/251,307	01/30/90
4,896,915	06/870,831	01/30/90
4,896,921	07/239,239	01/30/90
4,896,922	07/249,447	01/30/90
4,896,932	07/279,158	01/30/90
4,896,944	07/223,360	01/30/90
4,896,972	07/179,436	01/30/90
4,896,976	07/200,855	01/30/90
4,896,983	07/100,301	01/30/90
4,896,984	07/320,517	01/30/90
4,896,999	07/278,733	01/30/90
4,897,001	07/160,147	01/30/90
4,897,010	07/190,527	01/30/90
4,897,011	07/218,584	01/30/90
4,897,022	07/223,955	01/30/90
4,897,023	07/277,019	01/30/90
4,897,032	07/278,131	01/30/90
4,897,033	07/306,702	01/30/90
4,897,035	07/237,854	01/30/90
4,897,036	07/239,552	01/30/90
4,897,043	07/261,365	01/30/90
4,897,044	07/075,127	01/30/90
4,897,052	07/306,518	01/30/90
4,897,062	07/261,698	01/30/90
4,897,064	07/284,758	01/30/90
4,897,067	07/300,918	01/30/90
4,897,081	07/015,588	01/30/90
4,897,087	07/277,738	01/30/90
4,897,091	07/176,895	01/30/90
4,897,095	07/284,302	01/30/90
4,897,105	07/028,692	01/30/90
4,897,108	07/216,280	01/30/90
4,897,110	07/246,986	01/30/90
4,897,114	07/270,749	01/30/90
4,897,116	07/198,577	01/30/90
4,897,121	07/183,059	01/30/90
4,897,122	07/171,161	01/30/90
4,897,125	07/250,855	01/30/90
4,897,128	07/178,183	01/30/90
4,897,129	07/194,208	01/30/90
4,897,143	07/171,753	01/30/90
4,897,148	07/260,050	01/30/90
4,897,151	07/224,617	01/30/90
4,897,152	07/315,979	01/30/90
4,897,156	06/361,289	01/30/90
4,897,159	07/165,001	01/30/90
4,897,160	07/305,557	01/30/90
4,897,167	07/234,387	01/30/90
4,897,168	07/189,829	01/30/90
4,897,181	07/031,962	01/30/90
4,897,186	07/322,644	01/30/90
4,897,192	07/291,050	01/30/90
4,897,202	07/148,288	01/30/90
4,897,203	07/161,000	01/30/90
4,897,209	07/292,800	01/30/90
4,897,213	07/257,539	01/30/90
4,897,226	07/323,897	01/30/90
4,897,230	07/232,148	01/30/90
4,897,232	07/201,013	01/30/90
4,897,233	07/181,499	01/30/90
4,897,234	07/261,125	01/30/90
4,897,236	07/239,598	01/30/90
4,897,239	07/131,207	01/30/90
4,897,242	07/349,642	01/30/90
4,897,247	07/194,294	01/30/90
4,897,277	07/246,662	01/30/90
4,897,278	07/090,068	01/30/90
4,897,285	07/365,424	01/30/90
4,897,285	07/365,424	01/30/90
4,897,287	07/254,252	01/30/90
4,897,289	07/312,310	01/30/90
4,897,293	07/217,810	01/30/90
4,897,309	07/213,633	01/30/90
4,897,316	07/281,032	01/30/90
4,897,321	06/912,274	01/30/90
4,897,325	07/275,192	01/30/90
4,897,331	07/201,215	01/30/90
4,897,332	07/253,788	01/30/90
4,897,334	07/189,308	01/30/90
4,897,338	07/080,932	01/30/90
4,897,345	07/075,098	01/30/90
4,897,350	06/809,070	01/30/90
4,897,351	07/072,494	01/30/90
4,897,352	07/144,205	01/30/90
4,897,353	06/924,794	01/30/90
4,897,357	07/226,824	01/30/90
4,897,358	06/803,431	01/30/90
4,897,370	07/213,307	01/30/90
4,897,379	07/172,565	01/30/90
4,897,387	07/209,706	01/30/90
4,897,388	07/287,754	01/30/90
4,897,392	07/375,444	01/30/90
4,897,403	06/936,677	01/30/90
4,897,415	07/149,414	01/30/90
4,897,421	07/190,761	01/30/90
4,897,423	07/227,567	01/30/90
4,897,436	07/141,960	01/30/90
4,897,440	07/163,465	01/30/90
4,897,444	06/740,706	01/30/90
4,897,450	07/242,544	01/30/90
4,897,461	07/213,202	01/30/90
4,897,468	07/243,156	01/30/90
4,897,472	07/195,460	01/30/90
4,897,474	07/044,248	01/30/90
4,897,477	07/148,461	01/30/90
4,897,484	07/130,486	01/30/90

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4,897,485	07/166,945	01/30/90
4,897,491	07/321,111	01/30/90
4,897,496	07/300,878	01/30/90
4,897,500	07/336,953	01/30/90
4,897,504	07/270,188	01/30/90
4,897,512	07/182,727	01/30/90
4,897,517	07/346,319	01/30/90
4,897,524	07/315,481	01/30/90
4,897,527	07/324,991	01/30/90
4,897,542	07/174,734	01/30/90
4,897,548	07/259,524	01/30/90
4,897,557	07/163,764	01/30/90
4,897,558	07/127,927	01/30/90
4,897,568	07/252,499	01/30/90
4,897,570	07/154,693	01/30/90
4,897,572	07/298,743	01/30/90
4,897,578	07/191,405	01/30/90
4,897,579	07/289,286	01/30/90
4,897,589	07/194,195	01/30/90
4,897,600	07/122,201	01/30/90
4,897,605	06/840,370	01/30/90
4,897,609	07/138,740	01/30/90
4,897,610	07/187,597	01/30/90
4,897,629	07/176,912	01/30/90
4,897,631	07/186,909	01/30/90
4,897,632	07/211,340	01/30/90
4,897,647	07/251,377	01/30/90
4,897,660	06/819,528	01/30/90
4,897,664	07/201,972	01/30/90
4,897,667	07/284,677	01/30/90
4,897,677	07/165,655	01/30/90
4,897,684	07/235,840	01/30/90
4,897,689	06/642,884	01/30/90
4,897,690	07/250,450	01/30/90
4,897,697	07/137,187	01/30/90
4,897,699	07/247,390	01/30/90
4,897,706	07/285,488	01/30/90
4,897,712	07/153,049	01/30/90
4,897,715	07/264,621	01/30/90
4,897,717	07/175,074	01/30/90
4,897,738	07/153,343	01/30/90
4,897,755	07/212,437	01/30/90
4,897,768	07/315,846	01/30/90
4,897,770	07/164,397	01/30/90
4,897,772	07/289,250	01/30/90
4,897,796	07/275,072	01/30/90
4,897,806	06/466,626	01/30/90
4,897,809	07/095,696	01/30/90
4,897,822	07/309,075	01/30/90
4,897,826	06/802,325	01/30/90
4,897,841	07/295,896	01/30/90
4,897,842	07/117,772	01/30/90
4,897,849	07/231,511	01/30/90
4,897,853	07/200,710	01/30/90
4,897,859	07/149,729	01/30/90
4,897,862	07/199,481	01/30/90
4,897,871	07/031,336	01/30/90
4,897,880	07/319,930	01/30/90
4,897,883	07/197,750	01/30/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,409,637	06/441,765	10/11/83	11/15/82	01/21/94
4,423,791	06/341,279	01/03/84	01/21/82	02/22/94
4,449,750	06/416,268	05/22/84	09/09/82	02/23/94
4,457,094	06/408,426	07/03/84	08/16/82	02/14/94
4,460,834	06/527,264	07/17/84	08/29/83	01/31/94
4,462,205	06/276,434	07/31/84	06/22/81	11/15/93
4,464,935	06/492,740	08/14/84	05/09/83	11/15/93
4,475,256	06/477,158	10/09/84	03/21/83	02/23/94
4,485,363	06/334,779	11/27/84	12/28/81	12/21/93
4,492,324	06/358,048	01/08/85	03/15/82	02/14/94
4,506,155	06/420,636	03/19/85	09/21/82	01/31/94
4,514,780	06/456,482	04/30/85	01/07/83	02/23/94
4,531,587	06/582,482	07/30/85	02/22/84	12/17/93
4,532,313	06/642,251	07/30/85	08/20/84	02/04/94
4,534,544	06/542,288	08/13/85	10/14/83	12/17/93
4,536,026	06/522,503	08/20/85	08/12/83	02/22/94
4,539,040	06/420,090	09/03/85	09/20/82	02/14/94
4,542,823	06/663,289	09/24/85	10/22/84	12/17/93
4,543,221	06/313,443	09/24/85	10/21/81	02/22/94
4,543,963	06/554,179	10/01/85	11/22/83	02/22/94
4,554,305	06/717,047	11/19/85	03/28/85	01/31/94
4,713,843	07/009,726	12/22/87	02/02/87	02/23/94
4,714,322	06/835,751	12/22/87	03/03/86	02/22/94
4,760,296	06/634,331	07/26/88	07/25/84	11/23/93
4,778,183	06/931,719	10/18/88	11/17/86	02/22/94
4,792,353	06/917,577	12/20/88	10/10/86	02/22/94
4,804,147	07/138,304	02/14/89	12/28/87	02/14/94
4,813,264	07/110,859	03/21/89	10/21/87	01/31/94
4,827,744	07/232,527	05/09/89	08/16/88	01/31/94
4,832,797	06/936,720	05/23/89	11/25/86	02/23/94
4,837,669	07/007,889	06/06/89	01/28/87	02/22/94
4,840,274	07/172,250	06/20/89	03/23/88	02/23/94
4,844,536	07/067,825	07/04/89	06/30/87	02/22/94
4,855,190	07/127,640	08/08/89	12/02/87	02/23/94
4,856,132	07/215,274	08/15/89	07/05/88	11/30/93
4,858,091	07/127,339	08/15/89	12/01/87	02/22/94

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Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,862,477	07/239,829	08/29/89	09/01/88	01/31/94
4,872,356	07/290,458	10/10/89	12/27/88	01/31/94
4,879,631	07/298,736	11/07/89	01/18/89	01/31/94
4,887,040	07/305,593	12/12/89	02/03/89	02/22/94

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,489,471, Re. S.N. 08/169,183, Dec. 20, 1993, Cl. 525/66, IMPACT-RESISTANT POLYAMIDE COMPOSITION, Kazuaki Saito, et. al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Osako, Japan*, Attorney or Agent: Joseph A. Kolasch, Ex. Gp.: 1512

4,978,463, Re. S.N. 08/199,898, Feb. 22, 1994, Cl. 252/12, LUBRICATING RUBBER COMPOSITION, Fuminori Satuji, Owner of Record: *NTN-Rulan Industries Co., Ltd., Tokyo, Japan*, Attorney or Agent: George E. Oram, Jr., Ex. Gp.: 1111

5,028,829, Re. S.N. 08/087,372, July 2, 1993, Cl. 310/114, COMPACT MOTOR MOUNT FOR CASSETTE DRIVE, Heinrich Cap, et. al., Owner of Record: *Papst Licensing GmbH, Federal Republic of Germany*, Attorney or Agent: Christopher J. Reckamp, Ex. Gp.: 2102

5,069,804, Re. S.N. 08/162,551, Dec. 2, 1993, Cl. 252/427, LUBRICATING OIL ADDITIVES, John F. Marsh, et. al., Owner of Record: *Exxon Research and Engineering Co.*, Attorney or Agent: Doreen S. Lader, Ex. Gp.: 1111

5,078,546, Re. S.N. 08/174,060, Dec. 28, 1993, Cl. 405/156, PIPE BURSTING AND REPLACEMENT METHOD, Allan T. Fisk, et. al., Owner of Record: *Consolidated Edison Company of New York, Inc., New York N.Y.*, Attorney or Agent: Alfred L. Haffner, Jr., Ex. Gp.: 3501

5,079,502, Re. S.N. 08/177,171, Jan. 4, 1994, Cl. 324/207.19, PROXIMITY SENSOR HAVING A BRIDGE CIRCUIT WITH A VOLTAGE CONTROLLED RESISTANCE, Steven A. Rogacki, et. al., Syron Engineering & Manufactoring Corp., Saline, Mich., Attorney or Agent: Theodore W. Olds, Ex. Gp.: 2607

5,088,218, Re. S.N. 08/198,300, Feb. 18, 1994, Cl. 40/411, STRUCTURE OF THE ROTARY TYPE CRYSTAL BALL, J.H. Liu, Owner of Record: *Inventor*, Attorney or Agent: Harold L. Novick, Ex. Gp.: 3507

5,232,936, Re. S.N. 08/197,705, Feb. 17, 1994, Cl. 514/315, HYDANTOIN DERIVATIVES, Ei Mochida, et. al., Owner of Record: *Mochida Pharmaceutical Co., Ltd., Tokyo, Japan*, Attorney or Agent: James A. Olift, Ex. Gp.: 1205

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,111,111, Reexam. No. 90/003,322 Jan. 27, 1994, Cl. 099/499, SEPARATING MECHANISM FOR EGG BREAKING MACHINE, Charles H. Willsey, Owner of Record: *Inventor, Maple Hill, Kans.*, Attorney or Agent: Litton, McMahon & Brown, Kansas City, Mo., Ex. Gp.: 2402, Requester: Q.P. Corp., Tokyo, Japan

4,368,560, Reexam. No. 90/003,273, Dec. 15, 1993, Cl. 452/133, ARRANGEMENT FOR REMOVING SKIN OF SLAUGHTERED ANIMALS, Ludwig Wetzel, et. al., Owner of Record: *Schmid & Wezel, Maulbronn, Germany*, Attorney or Agent: Felix J. D'Ambrosio, Jones, Tullar & Cooper, Arlington, Va., Ex. Gp.: 3203, Requester: Owner

4,400,638, Reexam. No. 90/003,317, Jan. 27, 1994, Cl. 310/095, SHAFT MOUNTED EDDY CURRENT DRIVE, James W. Albrecht, et. al., Owner of Record: *Stromag, Inc., Dayton, Ohio*, Attorney or Agent: James E. Bradley, Felsman, Bradley, Gunter & Dillion. Ft. Worth, Tex., Ex. Gp.: 2102, Requester: Coyote Electronics, Inc., Haltom City, Tex.

4,554,635, Reexam. No. 90/003,303, Jan. 12, 1994, Cl. 364/474.25, METHOD AND APPARATUS FOR MARKING OR CUTTING LAMINAR PATTERNS OR FORMS, Richard W. Levine, Owner of Record: *Construction Technology, Inc., Elmsford, N.Y.*, Attorney or Agent: Louis C. Dujmich, Ostrolenk, Faber, Gert & Soffen, New York, N.Y., Ex. Gp.: 2306, Requester: Gregor N. Neff, Curtis, Morris & Stafford, New York, N.Y.

4,758,745, Reexam. No. 90/003,274, Dec. 15, 1993, Cl. 307/460, USER PROGRAMMABLE INTEGRATED CIRCUIT INTERCONNECT ARCHITECTURE AND TEST METHOD, Abbus Elgamal, et. al., Owner of Record: *Actel Corporation, Sunnydale, Calif.*, Attorney or Agent: Steven D. Hemminger, Lyon & Lyon, Los Angeles, Calif., Ex. Gp.: 2509, Requester: Owner

4,833,918, Reexam. No. 90/003,321, Jan. 25, 1994, Cl. 073/290, SENSOR AND METHOD FOR ULLAGE LEVEL AND FLOW DETECTION, Buford R. Jean, et. al., Owner of Record: *Baker Hughes, Inc., Houston, Tex.*, Attorney or Agent: Sroufe, Zamecki, Payne & Lundeen, Houston, Tex., Ex. Gp.: 2406, Requester: Paul V. Del Giudice, Shoemaker & Mattare, Arlington, Va.

4,941,819, Reexam. No. 90/003,315, Jan. 21, 1994, Cl. 432/072, AIR CIRCULATION AND EXHAUST CONTROL SYSTEM FOR COMMERCIAL OVENS, G. Wayne Stewart, et. al., Owner of Record: *Inventor, Plano, Tex.*, Attorney or Agent: Michael A. O'Neil, Gardere & Wynne, Dallas, Tex., Ex. Gp.: 3404, Requester: Owner

5,003,841, Reexam. No. 90/003,318, Jan. 27, 1994, Cl. 074/594.4, BICYCLE PEDAL, Masashi Nagano, Owner of Record: *Shimano, Inc., Osaka, Japan*, Attorney or Agent: Thomas J. D'Amico, Dickstein, Shapiro & Morin, Washington, D.C., Ex. Gp.: 3502, Requester: Owner

5,155,768, Reexam. No. 90/003,267, Dec. 3, 1993, Cl. 380/023, SECURITY SYSTEM FOR SOFTWARE, Taku Matsuhara, Owner of Record: Sega Enterprises, Ltd., Tokyo, Japan, Attorney or Agent: Michael E. Dergosits, Dergosits & Noah, San Francisco, Calif., Ex. Gp.: 2202, Requester: Owner

5,187,787, Reexam. No. 90/003,320, Jan. 21, 1994, Cl. 395/600, APPARATUS AND METHOD FOR PROVIDING DECOUPLING OF DATA EXCHANGE DETAILS FOR PROVIDING HIGH PERFORMANCE COMMUNICATION BETWEEN SOFTWARE PROCESSES, Marion D. Skeen, et. al., Owner of Record: *Teknekron Software Systems, Inc., Palo Alto, Calif.*, Attorney or Agent: Willis E. Higgins, Cooley, Godward, Castro, Huddleston & Tatum, Palo Alto, Calif., Ex. Gp.: 2307, Requester: ISIS Distributed Systems, Inc., Ithaca, N.Y.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED FEBRUARY 21, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
91,690	71/068,331	05/20/1913
303,155	71/333,758	05/16/1933
303,186	71/332,119	05/16/1933
303,203	71/333,314	05/16/1933
303,254	71/329,409	05/16/1933
303,275	71/334,238	05/16/1933
574,481	71/562,766	05/19/1953
574,489	71/579,294	05/19/1953
574,490	71/582,020	05/19/1953
574,500	71/592,242	05/19/1953
574,501	71/592,548	05/19/1953
574,506	71/594,063	05/19/1953
574,508	71/595,351	05/19/1953
574,513	71/601,180	05/19/1953
574,517	71/602,218	05/19/1953
574,532	71/608,957	05/19/1953
574,540	71/612,597	05/19/1953
574,552	71/615,105	05/19/1953
574,562	71/617,774	05/19/1953
574,563	71/617,979	05/19/1953
574,591	71/621,130	05/19/1953
574,592	71/621,200	05/19/1953
574,599	71/622,160	05/19/1953
574,605	71/622,825	05/19/1953
574,615	71/623,496	05/19/1953
574,616	71/623,742	05/19/1953
574,626	71/624,681	05/19/1953
574,632	71/625,289	05/19/1953
574,634	71/625,367	05/19/1953
574,640	71/626,637	05/19/1953
574,646	71/227,803	05/19/1953
574,647	71/627,805	05/19/1953
574,654	71/628,752	05/19/1953
574,662	71/629,084	05/19/1953
574,668	71/629,500	05/19/1953
574,669	71/629,619	05/19/1953
574,673	71/629,806	05/19/1953
574,676	71/630,021	05/19/1953
574,677	71/630,207	05/19/1953
574,685	71/630,350	05/19/1953
574,686	71/630,382	05/19/1953
574,692	71/630,695	05/19/1953
574,696	71/631,174	05/19/1953
574,698	71/631,326	05/19/1953
574,706	71/631,738	05/19/1953
574,707	71/631,739	05/19/1953
574,715	71/632,444	05/19/1953
574,718	71/632,632	05/19/1953
574,719	71/632,633	05/19/1953
574,724	71/633,000	05/19/1953
574,728	71/633,083	05/19/1953
574,733	71/633,326	05/19/1953
574,738	71/633,441	05/19/1953
574,742	71/633,746	05/19/1953
574,744	71/633,816	05/19/1953
574,757	71/634,928	05/19/1953
574,758	71/634,972	05/19/1953
574,770	71/636,234	05/19/1953
574,798	71/629,874	05/19/1953
574,802	71/637,320	05/19/1953
950,494	72/400,889	01/09/1973
955,509	72/403,297	03/13/1973
958,801	72/394,565	05/15/1973
958,805	72/408,598	05/15/1973
958,806	72/411,948	05/15/1973
958,809	72/420,755	05/15/1973
958,812	72/405,826	05/15/1973
958,817	72/407,972	05/15/1973
958,818	72/412,759	05/15/1973
958,824	72/419,550	05/15/1973
958,825	72/420,353	05/15/1973
958,827	72/420,991	05/15/1973
958,829	72/423,785	05/15/1973
958,830	72/424,101	05/15/1973
958,831	72/424,540	05/15/1973
958,832	72/424,602	05/15/1973
958,833	72/424,604	05/15/1973
958,834	72/424,605	05/15/1973
958,835	72/424,606	05/15/1973
958,836	72/424,800	05/15/1973
958,840	72/425,269	05/15/1973
958,843	72/385,089	05/15/1973
958,846	72/420,215	05/15/1973
958,847	72/420,597	05/15/1973
958,848	72/420,663	05/15/1973
958,849	72/434,915	05/15/1973
958,855	72/422,490	05/15/1973
958,860	72/409,157	05/15/1973
958,862	72/410,986	05/15/1973
958,863	72/422,564	05/15/1973
958,864	72/385,172	05/15/1973
958,868	72/426,229	05/15/1973
958,869	72/426,230	05/15/1973
958,870	72/425,430	05/15/1973
958,872	72/411,124	05/15/1973
958,878	72/418,909	05/15/1973
958,880	72/419,086	05/15/1973
958,885	72/398,384	05/15/1973
958,890	72/371,711	05/15/1973
958,893	72/385,724	05/15/1973
958,896	72/390,059	05/15/1973
958,915	72/426,919	05/15/1973
958,917	72/428,840	05/15/1973
958,920	72/403,002	05/15/1973
958,921	72/406,773	05/15/1973
958,922	72/411,111	05/15/1973
958,923	72/414,244	05/15/1973
958,925	72/418,281	05/15/1973
958,940	72/343,971	05/15/1973
958,946	72/389,562	05/15/1973
958,948	72/391,904	05/15/1973
958,949	72/389,512	05/15/1973
958,950	72/394,002	05/15/1973
958,953	72/396,454	05/15/1973
958,955	72/409,967	05/15/1973
958,964	72/397,643	05/15/1973
958,966	72/401,695	05/15/1973
958,968	72/402,507	05/15/1973
958,971	72/426,843	05/15/1973
958,973	72/428,573	05/15/1973
958,980	72/427,982	05/15/1973
958,985	72/412,407	05/15/1973
958,990	72/402,655	05/15/1973
958,991	72/403,657	05/15/1973
958,992	72/406,844	05/15/1973
958,993	72/409,969	05/15/1973
959,001	72/413,210	05/15/1973
959,002	72/413,211	05/15/1973
959,010	72/415,043	05/15/1973
959,014	72/408,109	05/15/1973
959,015	72/411,998	05/15/1973
959,019	72/416,755	05/15/1973
959,025	72/419,595	05/15/1973
959,027	72/420,558	05/15/1973
959,028	72/420,932	05/15/1973
959,029	72/421,483	05/15/1973
959,031	72/422,991	05/15/1973

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Reg. No.	Serial Number	Reg. No.	Contact:	
959,032	72/423,332	05/15/1973		
959,034	72/426,474	05/15/1973		
959,035	72/426,478	05/15/1973		
959,045	72/316,365	05/15/1973		
959,047	72/353,440	05/15/1973	4,965,492	LIGHTING CONTROL SYSTEM AND MODULE
959,051	72/397,240	05/15/1973		
959,054	72/407,152	05/15/1973		
959,056	72/408,604	05/15/1973	Contact:	Mark R. Galis Vedder, Price, Kaufman & Kammholz 222 North LaSalle Street Chicago, Ill., 60601-1003 (312) 609-7557
959,057	72/408,608	05/15/1973		
959,058	72/416,745	05/15/1973		
959,059	72/417,343	05/15/1973		
959,061	72/420,145	05/15/1973		
959,062	72/421,910	05/15/1973		
959,063	72/422,816	05/15/1973		
959,064	72/422,981	05/15/1973	4,967,915	STORAGE RACK AND THE LIKE
959,065	72/423,166	05/15/1973		
959,066	72/423,673	05/15/1973		
959,067	72/423,743	05/15/1973	Contact:	Jerry A. Robson Care, Inc. 2754 Lexington Mansfield, Ohio 44904 (419) 884-1255
959,077	72/372,588	05/15/1973		
959,080	72/400,281	05/15/1973		
959,084	72/421,875	05/15/1973		
959,090	72/397,030	05/15/1973		
959,092	72/404,805	05/15/1973		
959,093	72/407,536	05/15/1973	5,007,857	ELECTRICAL RECEPTACLE WITH POWER INDICATOR LIGHT
959,096	72/410,639	05/15/1973		
959,099	72/422,633	05/15/1973		
959,103	72/406,986	05/15/1973		
959,104	72/411,157	05/15/1973	Contact:	Duane E. Wright R.R. 1, Box 33A Maddock N. Dak. 58348 (701) 947-5966
959,105	72/411,158	05/15/1973		
959,106	72/411,159	05/15/1973		
959,107	72/415,616	05/15/1973		
959,108	72/421,253	05/15/1973		
959,113	72/404,494	05/15/1973	5,157,674	SECOND HARMONIC GENERATION AND SELF-FREQUENCY DOUBLING LASER MATERIALS COMPRISED OF BULK GERMANOSILICATE AND ALUMINOSILICATE GLASSES
959,115	72/343,906	05/15/1973		
959,117	72/398,246	05/15/1973		
959,118	72/398,309	05/15/1973		
959,123	72/409,779	05/15/1973		
959,129	72/402,347	05/15/1973		
959,131	72/416,338	05/15/1973		

Patents Available for License or Sale

08/092,453	CONTINUOUS MOTION MACHINE FOR FORMING CROISSANTS WITH THEIR ENDS OVERLAPPED AND COMPRESSED TOGETHER	Contact:	Harry F. Smith Intellectual Property Development Associates of Connecticut, Inc. P.O. Box 815 Trumbull, Conn., 06611 (203) 254-7538
Contact:	Jerome Shaunnessey 910 Southbridge Drive Aurora, Ill., 60506	5,202,687	ANALOG TO DIGITAL CONVERTER
4,111,120	TWO-COLOR SWING-AWAY PRESS	Contact:	Harry F. Smith Intellectual Property Development Associates of Connecticut, Inc. P.O. Box 815 Trumbull, Conn., 06611 (203) 254-7538
Contact:	David Fawcett Professional Asset Services, Inc. 458 East Cherry Street Columbus, Ohio 43214 (614) 457-3990	5,233,621	SECOND HARMONIC GENERATION AND SELF-FREQUENCY DOUBLING LASER MATERIALS COMPRISED OF BULK GERMANOSILICATE AND ALUMINOSILICATE GLASSES
4,137,844	PERFECTOR PRINTER PRESS	Contact:	Harry F. Smith Intellectual Property Development Associates of Connecticut, Inc. P.O. Box 815 Trumbull, Conn., 06611 (203) 254-7538
Contact:	David Fawcett Professional Asset Services, Inc. 458 Cherry Street Columbus, Ohio 43214 (614) 457-3990		
4,867,318	STORAGE RACK AND THE LIKE		

5,253,258	OPTICALLY ENCODED PHASE MATCHED SECOND HARMONIC GENERATION DEVICE AND SELF-FREQUENCY DOUBLING LASER MATERIAL USING SEMICONDUCTOR	Contact: Harry F. Smith Intellectual Property Development Associates of Connecticut, Inc. P.O. Box 815 Trumbull, Conn., 06611 (203) 254-7538
5,258,941	APPARATUS FOR UTILIZING A DISCRETE FOURIER TRANSFORMER TO IMPLEMENT A DISCRETE COSINE TRANSFORMER	Contact: Edward Newberger 55 Greenwich Drive, Apt. 1 Amherst, N.Y., 14228 (716) 636-8358
5,263,126	AUTOMATIC EXPERT SYSTEM	Contact: Hou-Mei Henry Chang 5909 Fondren Road, # 1908 Houston, Tex., 77036 (713) 787-9928
5,277,600	ELECTRICAL PLUG SAFETY LOCK	Contact: Lewis D. Meixler 11 Cherry Brook Lane East Windsor, N.J., 08520
5,286,949	APPARATUS AND METHOD FOR HEATING AND MOISTENING HAIR ROLLERS USING STEAM AND HAIR ROLLERS FOR USE THEREWITH	Contact: Rosemary Simons Simons & Simons 18 St. Andrews Road Arden, N.C., 28704

Errata

"All reference to Patent No. 5,281,853 to Yoshito Hazaki, et. al., of Japan for `RESIN-SEALED SEMICONDUCTOR DEVICE CONTAINING POROUS FLUOROCARBON RESIN´ appearing in the *Official Gazette* of Jan. 25, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,291,993 to James L. Schenz, et. al., of Minn., for `CARRIER TAPE´ appearing in the *Official Gazette* of March 8, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,294,344 to Joseph L. Feimer, et. al., of Canada for `SEPERATION OF ALCOHOL FORM ALCOHOL/ETHER OLEFIN/NON-LINEAR HYDROCARBON MIXTURES USING POLYESTER OR POLYESTER COPOLYMER MEMBRANES´ appearing in the *Official Gazette* of March 15, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,294,813 to John P. Phipps, et. al., of Ariz. for `SEMICONDUCTOR DEVICE HAVING HIGH ENERGY SUSTAINING CAPABILITY AND A TEMPERATURE COMPENSATED SUSTAINING VOLTAGE´ appearing in the *Official Gazette* of March 15, 1994 should be deleted since no patent was granted."

Issuance of a Patent to an Assignee

The purpose of this notice is to clarify the procedures to have a patent issue to an assignee. See 37 CFR 3.81 and Manual of Patent Examining Procedure § 307.

Section 3.81(a) permits a patent to issue an assignee, provided that at the time the issue is paid, the assignment has been submitted for recordation and the name of the assignee is provided. The name of the assignee is usually provided in item 5 of the Issue Fee Transmittal form (PTOL-85B).

Section 3.81(b) permits a patent to issue to an assignee when the assignment is submitted for recording after the date of payment of the issue fee, but prior to issuance of the patent, provided a petition and fee are filed requesting that the patent issue to the newly recorded assignee.

When the correct name of the assignee was not provided in accordance with either section 3.81(a) or (b) (i.e., either no name or an incorrect name was provided in item 5 of the Issue Fee Transmittal when the assignment had been recorded or submitted for recordation at the time the issue fee was paid, or an incorrect name was provided in the petition required by section 3.81(b) when the assignment is submitted for recording after the date of payment of the issue fee, but prior to issuance of the patent), a correction can be made by filing a petition under 37 CFR 1.183 requesting that the requirements of 37 CFR 3.81 be waived. This procedure is required at any time after the issue fee is paid, including after issuance of the patent. A petition under 37 CFR 1.183 should include: (1) the petition fee set forth in 37 CFR 1.17(h) (currently $130); (2) the correct name of the assignee; and (3) the reel and frame number where the assignment is recorded or proof of the date the assignment was submitted for recordation.

If the petition under 37 CFR 1.183 is filed and granted prior to issuance of the patent, the patent will either: (1) be printed with the correct assignee's name; or (2) be printed without the correct assignee's name. In the latter case, patentee would be entitled to a certificate of correction under 37 CFR 1.322 to correct an Office mistake in not correctly printing the assignee's name on the patent.

If the petition under 37 CFR 1.183 is filed and/or granted after issuance of the patent, the patent would be printed without the correct assignee's name. However, if the petition is granted, patentee would be entitled to a certificate of correction under 37 CFR 1.323 due to the mistake in not complying with 37 CFR 3.81.

March 16, 1994

CHARLES E. VAN HORN
Patent Policy and Project Administration
Office of the Assistant Commissioner
for Patents

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before May 27, 1994.

Belanger, Michel, 658 Duhamel St., Mascouche, Que., J7K 3H4, Canada

Brown, Christopher W., 13295-A Blueberry Ln., #202, Fairfax, Va., 22033

Coster, Robin L.A., 419 Euclid Ave., Toronto, Ont., M6G 2T1, Canada

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Lynch, Thomas E., 5303 Sherrill Ave., Chevy Chase, Md., 20815
McGlynn, Joseph H., 6111 Saddle Horn Dr., Fairfax, Va., 22030
Rudolph, John R., 26 Glenmanor Dr., Nepean, Ont., K2G 3G1, Canada
Yasich, Daniel M., 2005 High Timber Rd., Ft. Washington, Md., 20744

March 14, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Disclaimers

4,121,004--*Ake Ehrlund*, Spanga, Sweden. STRIP ROLL FOR USE IN DISPENSING TICKETS. Patent dated Oct. 17, 1978. Disclaimer filed Mar. 8, 1979, by the assignee, AB TURN-O-MATIC.

The term of this patent subsequent to May 27, 1992, has been disclaimed.

4,671,893--*Alwynn Pinto*, Middlesbrough, England. SYNTHESIS GAS. Patent dated June 9, 1987. Disclaimer filed Dec. 7, 1993, by the assignee, Imperial Chemical Industries PLC.

Hereby enters this disclaimer to claim 11 of said patent.

4,758,170--*Theodore R.D. Hayden*, Richmond, British Columbia, Canada. CURRENT CARRYING INLET VALVE FOR CENTRAL VACUUM SYSTEM. Patent dated July 19, 1988. Disclaimer filed Aug. 16, 1993, by the assignee, Hayden Manufacturing Co.

Hereby enters this disclaimer to claims 8, 9, 10, and 11 of said patent.

4,917,586--*Adir Jacob*, Framingham, Mass. PROCESS FOR DRY STERILIZATION OF MEDICAL DEVICES AND MATERIALS. Patent dated April 17, 1990. Disclaimer filed Nov. 15, 1993, by the inventor.

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 10, 11, 12, and 13 of said patent.

4,921,855--*Keiji Hemmi; Masahiro Neya; Hiroshi Marusawa*, all of Tsukuba; *Keisuke Imai*, Sapporo; *Natsuko Kayakiri; Masashi Hashimoto*, both of Tsukuba, all of Japan. NEW HISTIDYL AMINO ACID DERIVATIVES, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME. Patent dated May 1, 1990. Disclaimer filed January 11, 1994, by the assignee, Fujisawa Pharmaceutical Co., Ltd.

Hereby enters this disclaimer to all claims of said patent.

Disclaimers and Dedications

4,685,671--*Gene R. Hagerman*, Truckee; *John W. Atkins; John G. McMurtry*, both of South Lake Tahoe, all of Calif. MULTI-PURPOSE EXERCISER. Patent dated Aug. 11, 1987. Disclaimer and Dedication filed Jan. 5, 1994, by the Sport Cord, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

5,162,091--*Yasuo Ishii*, Wakayama; *Tsutomu Tanaka*, Aichi; *Nobuyuki Suzuki; Shigetoshi Suzue*, both of Wakayama, all of Japan. POLYESTER FIBERS AND PROCESS OF MAKING. Patent dated Nov. 10, 1992. Disclaimer and Dedication filed Nov. 30, 1993, by the assignee, Kao Corporation.

Hereby disclaims and dsdicates to the Public claims 1-7, 11-14, 18 and 19 of said patent.

5,166,626--*Norbert J. Hester*, Cincinnati; *Charles E. Hornbeck*, West Chester; *Joseph C. Young*, Cincinnati, all of Ohio. ELECTRICAL CAPACITANCE CLEARANCEOMETER. Patent dated Nov. 24, 1992. Disclaimer and Dedication filed Jan. 10, 1994, by the assignee, General Electric Company.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Certificate of Corrections Issued of April 12, 1994

Re: 34,101	4,943,608	5,036,834	5,085,398
Re: 34,323	4,943,750	5,037,831	5,086,508
Des: 320,007	4,948,787	5,044,546	5,087,075
Des: 320,621	4,950,646	5,050,606	5,087,617
Des: 331,654	4,957,540	5,052,008	5,091,091
Des: 336,716	4,963,433	5,054,652	5,091,505
Des: 339,318	4,969,319	5,055,131	5,095,637
Des: 339,611	4,980,361	5,055,517	5,098,759
Des: 339,658	4,983,037	5,065,503	5,100,380
4,253,995	4,984,353	5,068,871	5,100,628
4,276,206	4,985,575	5,070,832	5,101,572
4,711,955	4,994,473	5,073,562	5,101,810
4,714,620	5,005,857	5,074,430	5,102,774
4,776,671	5,011,188	5,075,232	5,103,578
4,777,633	5,011,914	5,077,278	5,106,386
4,819,062	5,021,080	5,077,280	5,106,456
4,846,979	5,027,791	5,078,301	5,106,750
4,849,693	5,030,565	5,079,096	5,107,804
4,873,185	5,030,664	5,079,352	5,108,753
4,900,548	5,031,607	5,081,124	5,109,991
4,919,468	5,032,432	5,082,558	5,110,597
4,939,213	5,032,623	5,083,297	5,111,349
4,941,721	5,034,305	5,083,440	5,111,942

5,113,066	5,168,533	5,194,239	5,210,056	5,220,964	5,230,723	5,239,016	5,248,317
5,114,278	5,168,588	5,194,795	5,210,091	5,221,137	5,231,037	5,239,112	5,248,410
5,116,033	5,168,646	5,194,899	5,210,174	5,221,564	5,231,105	5,240,361	5,248,494
5,116,139	5,169,716	5,194,937	5,210,621	5,221,737	5,231,369	5,240,469	5,248,524
5,116,547	5,169,752	5,195,132	5,210,884	5,221,756	5,231,544	5,240,483	5,248,670
5,117,137	5,170,238	5,195,215	5,211,046	5,221,928	5,231,650	5,240,688	5,248,726
5,117,612	5,170,550	5,195,660	5,211,271	5,222,409	5,231,683	5,240,858	5,248,772
5,117,641	5,171,756	5,195,834	5,211,503	5,222,550	5,231,753	5,240,915	5,248,988
5,117,748	5,171,818	5,195,868	5,211,921	5,223,110	5,232,120	5,241,182	5,249,372
5,121,657	5,172,381	5,196,132	5,212,031	5,223,427	5,232,306	5,241,578	5,249,445
5,124,780	5,174,181	5,196,192	5,212,072	5,223,539	5,232,412	5,241,587	5,249,713
5,125,963	5,174,977	5,196,265	5,212,176	5,223,628	5,232,779	5,241,701	5,249,717
5,126,930	5,175,109	5,196,379	5,212,253	5,223,729	5,232,958	5,241,704	5,249,842
5,129,698	5,175,299	5,196,395	5,212,329	5,223,752	5,233,123	5,241,779	5,249,890
5,130,010	5,175,697	5,196,429	5,212,340	5,223,848	5,233,397	5,241,898	5,250,030
5,130,845	5,176,133	5,196,956	5,212,503	5,223,860	5,233,455	5,241,932	5,250,106
5,130,994	5,176,209	5,197,768	5,212,524	5,223,940	5,233,509	5,242,176	5,250,254
5,131,524	5,177,261	5,198,001	5,213,445	5,224,037	5,233,533	5,242,188	5,250,834
5,131,635	5,178,124	5,198,349	5,213,709	5,224,050	5,233,575	5,242,251	5,250,859
5,133,498	5,178,448	5,198,475	5,213,933	5,224,064	5,233,592	5,242,272	5,250,882
5,133,773	5,178,995	5,198,544	5,213,938	5,224,180	5,233,598	5,242,520	5,251,008
5,133,929	5,179,171	5,198,666	5,214,021	5,224,291	5,233,853	5,242,529	5,251,098
5,134,280	5,180,503	5,198,669	5,214,123	5,224,480	5,233,979	5,242,583	5,251,238
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5,135,606	5,181,152	5,198,718	5,214,364	5,224,923	5,234,063	5,242,679	5,251,681
5,136,520	5,181,201	5,199,568	5,214,516	5,225,175	5,234,093	5,242,846	5,251,982
5,140,839	5,181,252	5,199,918	5,214,711	5,225,353	5,234,298	5,242,910	5,252,034
5,142,065	5,181,843	5,200,278	5,215,100	5,225,458	5,234,346	5,243,085	5,252,781
5,142,357	5,182,083	5,200,339	5,215,358	5,225,686	5,234,453	5,243,223	5,252,816
5,145,491	5,182,111	5,200,355	5,215,823	5,225,769	5,234,558	5,243,441	5,252,892
5,145,611	5,182,659	5,200,553	5,215,851	5,225,937	5,234,589	5,243,451	5,253,522
5,145,718	5,182,675	5,200,836	5,215,895	5,225,941	5,234,760	5,243,644	5,253,553
5,145,919	5,182,866	5,200,851	5,215,927	5,226,042	5,234,962	5,243,679	5,253,887
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5,147,532	5,183,645	5,200,994	5,216,056	5,226,178	5,235,690	5,243,689	5,254,250
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5,149,187	5,184,027	5,201,333	5,216,435	5,226,362	5,235,942	5,244,093	5,254,462
5,149,772	5,184,048	5,201,906	5,216,510	5,226,433	5,235,954	5,244,202	5,255,140
5,150,185	5,184,943	5,201,979	5,216,517	5,226,480	5,236,139	5,244,417	5,255,142
5,152,964	5,185,659	5,202,029	5,216,665	5,226,482	5,236,147	5,244,422	5,255,421
5,153,087	5,185,668	5,202,212	5,216,807	5,227,339	5,236,187	5,244,472	5,255,426
5,153,105	5,186,336	5,202,571	5,216,976	5,227,414	5,236,255	5,244,490	5,255,555
5,153,259	5,186,339	5,202,729	5,217,168	5,227,529	5,236,336	5,244,567	5,255,701
5,153,737	5,186,442	5,202,739	5,217,318	5,227,597	5,236,432	5,244,571	5,256,157
5,154,447	5,187,012	5,202,915	5,217,561	5,227,697	5,236,485	5,244,630	5,256,203
5,154,921	5,187,499	5,203,307	5,217,652	5,227,852	5,236,524	5,244,682	5,256,227
5,156,862	5,187,883	5,203,547	5,217,790	5,227,894	5,236,582	5,244,710	5,256,281
5,157,565	5,188,785	5,203,764	5,217,960	5,227,931	5,236,772	5,244,915	5,256,403
5,158,713	5,189,420	5,203,818	5,218,006	5,227,990	5,236,971	5,245,581	5,256,435
5,159,049	5,189,537	5,203,838	5,218,433	5,228,117	5,236,984	5,245,923	5,256,627
5,159,056	5,190,188	5,203,998	5,218,587	5,228,119	5,237,150	5,246,013	5,257,305
5,159,186	5,190,368	5,204,023	5,218,590	5,228,853	5,237,298	5,246,104	5,257,467
5,160,323	5,190,521	5,204,098	5,218,701	5,228,894	5,237,381	5,246,181	5,257,627
5,160,448	5,190,548	5,204,237	5,219,291	5,228,993	5,237,469	5,246,354	5,257,831
5,161,528	5,191,049	5,204,417	5,219,296	5,229,007	5,237,498	5,246,414	5,258,342
5,162,437	5,191,119	5,204,555	5,219,332	5,229,052	5,237,667	5,246,429	5,258,983
5,162,572	5,191,361	5,204,614	5,219,442	5,229,056	5,237,682	5,246,475	5,259,052
5,163,130	5,191,369	5,204,657	5,219,688	5,229,111	5,237,718	5,246,723	5,259,075
5,163,239	5,191,372	5,204,889	5,219,695	5,229,188	5,237,891	5,246,832	5,259,080
5,164,189	5,191,377	5,205,414	5,219,707	5,229,578	5,237,967	5,246,921	5,259,170
5,164,982	5,191,482	5,205,475	5,219,995	5,229,617	5,238,128	5,247,216	5,259,302
5,165,844	5,191,630	5,206,152	5,220,026	5,229,782	5,238,146	5,247,234	5,259,304
5,166,085	5,191,712	5,206,161	5,220,045	5,229,801	5,238,358	5,247,330	5,259,746
5,166,118	5,191,814	5,206,267	5,220,345	5,229,816	5,238,511	5,247,563	5,259,774
5,166,240	5,192,701	5,206,375	5,220,347	5,229,866	5,238,525	5,247,824	5,260,345
5,166,365	5,192,901	5,206,491	5,220,367	5,229,960	5,238,568	5,247,838	5,261,100
5,166,702	5,193,097	5,208,560	5,220,386	5,230,028	5,238,798	5,248,066	5,261,110
5,167,035	5,193,210	5,208,676	5,220,568	5,230,101	5,238,829	5,248,127	5,261,684
5,167,972	5,193,798	5,209,025	5,220,896	5,230,584	5,238,905	5,248,158	5,263,311
5,168,431	5,194,102	5,209,185	5,220,898	5,230,649	5,238,928	5,248,214	5,264,638

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Summary of Final Decisions
issued by the
Trademark Trial and Appeal Board
February 21-25, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication	TTAB Decision
2-23	EX	73/829,156	Jacobs Suchard S.A.	whether matter asserted for registration funtions as a trademark for the goods recited; 2(e)(1)		"SWISS WATER" [decaffeinated coffee]		No	Refusal Affirmed [on 2(e)(1) ground only]
2-24	EX	77,160	Seattle Pacific Industries, Inc. v. Jem Sportswear, Inc.	2(d); counterclaim for cancellation (asserting abandonment as to one of the marks pleaded by opposer)	"HEET," "HEET SPORTSWEAR" [both marks in stylized lettering], and "TROPICAL HEAT" [all three marks for clothing]	"PACIFIC HEAT" [men's and boys' sportswear]		No	Opposition Sustained; Counter-claim for cancellation granted

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	3/27/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/21/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	11/20/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	11/20/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	6/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	9/01/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	8/14/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	3/30/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	7/29/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	7/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	8/08/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	11/03/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	2/08/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	11/06/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/29/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/06/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	5/13/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during March 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,009,494 to 4,015,293 inclusive
Plant Patents ..... 4,019 to 4,031

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of March 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/93	01/13/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	11/03/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/22/93	11/12/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/20/93	10/20/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	11/12/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/05/93	01/26/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	01/01/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/24/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/03/93	09/13/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	01/07/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/93	01/24/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/06/93	01/07/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	10/06/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

APRIL 12, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,133,550 (2265th)

BICYCLE AND POWER TRANSMISSION SYSTEM

Lawrence G. Brown, P.O. Box 4107, San Marcos, Calif. 92069

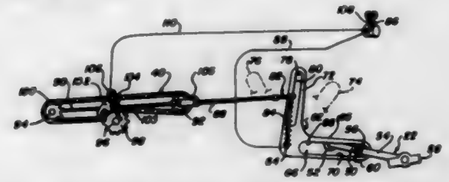
Reexamination Request Nos. 90/002,207, Nov. 21, 1990 and 90/002,465, Oct. 4, 1991.

Reexamination Certificate for Patent No. 4,133,550, issued Jan. 9, 1979, Ser. No. 874,786, Feb. 3, 1978.

Continuation of Ser. No. 668,043, Mar. 18, 1976, abandoned

Int. Cl.[5] B60M *23/00*

U.S. Cl. 280—210



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–37, 39, 48, 58–67, 69, 70, 77, 87–90, 92, 93, 97–108, 110–112, 114–126, 129** and **130** is confirmed.

Claims **38, 40–47, 49–57, 68, 71–76, 78–86, 91, 94–96, 109, 113, 127, 128** and **131–140** are cancelled.

1. A bicycle or the like comprising:

front and rear wheel means for enabling movement of the bicycle;

frame means for supporting said wheel means and a bicycle rider;

drive shaft means operably associated with the rear wheel means for unidirectional rotary motion by application of output force thereto to rotate the rear wheel means to propel the bicycle;

foot operated pedal means mounted on said frame means for application of input forces by the bicycle rider;

rotatable crank arm means mounted on said frame means and connected to said foot operated pedal means for rotary movement about an axis of rotation by application of the input forces and providing a 360° power input cycle therebetween;

cam means mounted on said frame means for movement relative thereto and for operative association with each of said rotatable crank arm means for controlling the application of the input forces to said drive shaft means in accordance with predetermined force transfer characteristics;

oscillator means mounted on said frame means for movement relative thereto about an axis of oscillation and for operative association with said cam means for transfer of the input forces to said oscillator means for causing oscillating movement of said oscillator means in accordance with the predetermined force transfer characteristics provided by said cam means;

rear wheel drive means operably associated with said drive shaft means and said oscillator means for movement relative to said drive shaft means and for transfer of the input forces from said oscillator means to said rear wheel drive means and for applying output forces to said drive shaft means; and

speed change means associated with said oscillator means for selective change of the velocity of the movement of said rear wheel drive means within a predetermined range of selectable velocities.

B1 4,137,487 (2266)

Patent Not Issued For This Number

B1 4,560,985 (2267th)

DUAL-COUNT, ROUND-ROBIN DISTRIBUTED ARBITRATION TECHNIQUE FOR SERIAL BUSES

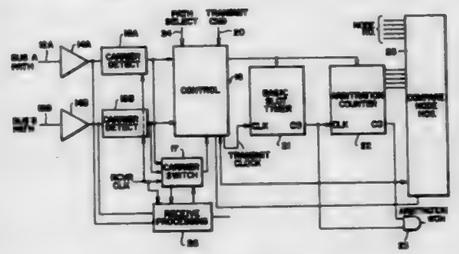
William D. Strecker, Harvard, Mass.; John E. Buzynski, Windham, N.H., and David Thompson, Malden, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Reexamination Request No. 90/002,967, Feb. 24, 1993.

Reexamination Certificate for Patent No. 4,560,985, issued May 7, 1982, Ser. No. 375,983, Dec. 24, 1985.

Int. Cl.[5] H04Q *9/00*; H04J *15/00*

U.S. Cl. 340—825.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–13** are confirmed.

Claim **1** is determined to be patentable as amended.

1. In a network for interconnecting a plurality of computer nodes via a bit-serial bus, the improvement comprising arbitration means for controlling access to the bus by ascribing [to each node]ep a priority value *to only those nodes which are requesting access to the bus* and permitting access by that node which is requesting access and which has the highest priority value, and wherein the arbitration means assigns priority values such that under conditions of substantial demand for bus access, the average of the priority values is the same for each node *which is requesting access to the bus.*

B1 4,596,446 (2268th)

LIQUID CRYSTAL DEVICES WITH PARTICULAR CHOLESTERIC PITCH-CELL THICKNESS RATIO

Colin M. Waters, and Edward P. Raynes, both of Malvern, England, assignors to The secretary of State for Her Defence in Her Britannic Majesty's Government the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

Reexamination Request No. 90/003,040, Apr. 30, 1993.

Reexamination Certificate for Patent No. 4,596,446, issued Jun. 24, 1986, Ser. No. 505,176, Jun. 17, 1983.

Claims priority, application United Kingdom, Jun. 29, 1982, 8218821

Int. Cl.[3] G02F *1/1343, 1/1337, 1/13*

U.S. Cl. 359—55

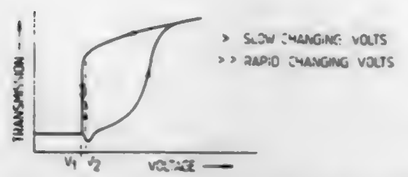
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims 1–10 is confirmed.

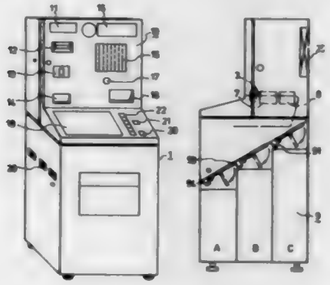
New claims 11, 12, and 13 are added and determined to be patentable.

1. A liquid crystal display device comprising:
a layer of positive dielectric anisotropy cholesteric liquid crystal material of natural pitch p and thickness d less than 20 μm contained between two parallel spaced cell walls, electrode structures on both cell walls arranged to form a plurality of addressable elements, a surface treatment on both cells wall in contact with the liquid crystal material to align liquid crystal molecules in a tilted homogeneous structure,



said surface alignment being matched to said cholesteric material no provide a progreasive molecular twist of greater than π and less than 2 π radians across said layer with a uniform tilt direction, the ratio of a layer thickness d divided by pitch p laying between 0.5 to 1.0, said device further comprising means for selectively absorbing transmitted light depending on the molecular orientation of the liquid crystal material, two sets of driver circuits and a controlling logic circuit for repetitively applying voltage from a voltage source to the electrode structures in a multiplexed sequence, wherein
each of said addressable elements may be switched directly between a light transmissive state and a nontransmissive state with a sharp transmission/voltage characteristic without substantial hysteresis.

B1 4,923,022 (2269th)
AUTOMATIC MAILING APPARATUS
Tzu-Yeu Haieh, Taipei, Taiwan
Reexamination Request No. 90/002,984, Mar. 4, 1993.
Reexamination Certificate for Patent No. 4,923,022, issued May 8, 1990, Ser. No. 343,002, Apr. 25, 1989.
Int. Cl.[5] G01G *23/38, 23/22;* **B07C** *5/00, 9/00*
U.S. Cl. 177—4



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

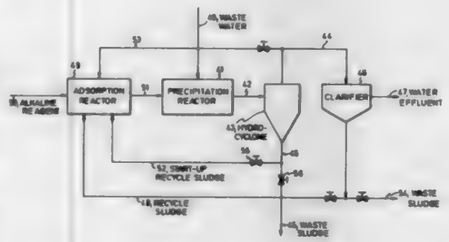
The patentability of claims 3, 4, 6 is confirmed.

Claims 1, 2 and 7 are cancelled.

Claim 5 is determined to be patentable as amended.

5. An automatic mailing apparatus as claimed in claim [1] *4*, wherein said transfer means further comprises a micro switch provided between said left and right conveyors so that each lower conveyor of said sets of conveyors can be lowered down and lifted up within a predetermined time period so as to enable said weighing means to perform weighing operations for said letter.

B1 5,039,428 (2270th)
WASTE WATER TREATMENT PROCESS USING IMPROVED RECYCLE OF HIGH DENSITY SLUDGE
Thomas H. Wentzler; Surendra K. Mishra, both of The Woodlands; Roger N. Kust, Spring, all of Tex., and E. Stuart Savage, Wexford, Pa., assignors to Tetra Technologies, Inc., The Woodland, Tex.
Reexamination Request No. 90/002,964, Feb. 19, 1993.
Reexamination Certificate for Patent No. 5,039,428, issued Aug. 13, 1991, Ser. No. 488,643, Mar. 5, 1990.
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—711



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 4–18 is confirmed.

Claims 1–3 are cancelled.

4. A process for removing dissolved metals from waste water, comprising the steps of:
(a) treating the waste water with an effective amount of alkaline surface activity particles, which have an alkaline surface activity, to precipitate the dissolved metals on the surfaces of the particles;
(b) removing a first portion of the waste water that has been treated in accordance with step (a) and subsequently treating said first portion with an effective amount of an alkaline reagent to provide alkaline surface activity to the particles in the portion of treated waste water from step (a);
(c) recycling the portion of alkaline treated waste water from step (b), which comprises an effective amount of alkaline surface activity particles, to step (a);
(d) separating a second portion of the waste water that has been treated in accordance with step (a) into a water component which is substantially free of particles and a sludge component which comprises particles and water;
(e) treating a portion of the sludge component from step (d) with an effective amount of alkaline reagent to provide alkaline surface activity to the particles; and
(f) recycling the treated sludge component portion from step (e) which comprises alkaline surface activity particles to step (a).

B1 5,100,469 (2271st)
INK COMPOSITIONS HAVING DECREASED DRYING TIMES
Fatima M. Pontes; Marcel P. Breton; Raymond W. Wong, all of Mississauga; Kerstin Henseleit, Toronto, and Melvin D. Croucher, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.
Reexamination Request No. 90/003,205, Sep. 24, 1993.
Reexamination Certificate for Patent No. 5,100,469, issued Mar. 31, 1992, Ser. No. 701,272, May 16, 1991.
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 D

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 14 and 16 are determined to be patentable as amended.

Claims 2–13, 15 and 17–19, dependent on an amended claim, are determined to be patentable.

New claims 20–23 are added and determined to be patentable.

1. A fast drying, good print quality ink composition, comprising a colorant, an ink vehicle and an effective amount of at least one additive to control drying times of the ink composition, said additive being selected from the group consisting of [meso-erythritol,] $RC(CH_2OH)_3$, salts of meso-erythritol, and salts of [$RC(CH_2OH_3$] $RC(CH_2OH)_3$, said salts being selected from the group consisting of organic and inorganic salts, wherein R is a member selected from the group consisting of —NH_2 and alkyl.

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REISSUES

APRIL 12, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,581

PUNCH PRESS TRANSFER MECHANISM

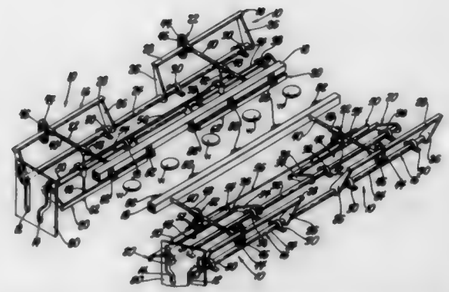
Hugh M. Sofy, 201 Warrington, Bloomfield Hills, Mich. 48013, and Dennis P. Farhat, Rochester Hills, Mich., assignors to Hugh M. Sofy, Bloomfield Hills, Mich.

Original No. 4,833,908, dated May 30, 1989, Ser. No. 140,479, Jan. 4, 1988. Application for reissue May 6, 1992, Ser. No. 879,023

Int. Cl.[5] B21J *13/08*

U.S. Cl. 72—405

25 Claims



1. A workpiece transfer assembly (**10**) for a press of the type including a reciprocating member and a series of *longitudinally spaced* in-line stations wherein each station is a further progression of the workpiece (W) forming process, said assembly (**10**) comprising: a first cam (**12**) and a second cam (**14**) for actuation by the reciprocating member; a first cam follower means (**16**) actuated by said first cam (**12**) for driving a workpiece engaging jaw (**18**) in a horizontal direction laterally of the stations into and out of a workpiece engagement position; a second cam follower means (**20**) actuated by said second cam (**14**) for raising and lowering said jaw (**18**) in a vertical direction relative to the stations; [said assembly (**10**) characterized by including] *said first cam follower means (16) including a first rock shaft (24), a pair of first rocker arms (26) longitudinally spaced from each other and each oscillatory about said first rock shaft (24), and a first crank bar (28) extending longitudinally parallel to said first rock shaft (24) and carried by said pair of first rocker arms (26); said second cam follower means (20) including a second rock shaft (32), a pair of second rocker arms (34) longitudinally spaced from each other and each oscillatory about said second rock shaft (32), and a second crank bar (36) extending longitudinally and parallel to said second rock shaft (32) and carried by said pair of second rocker arms (34); and* motion transmitting means (**22**) disposed between said jaw (**18**) and said first (**16**) and second (**20**) cam follower means *and operatively interconnecting said first and second crank bars (28, 36)* for providing positive motion transmission to said jaw (**18**) for horizontal movement into and out of engagement with the workpieces (W) and for providing lost motion transmission in the vertical direction to allow said jaw (**18**) to be raised and lowered relative to the stations while said first cam follower means (**16**) remains in the workpiece engagement position.

Re. 34,582

APPARATUS FOR LOOSENING THE SKIN OF MOISTURE BEARING FRUIT

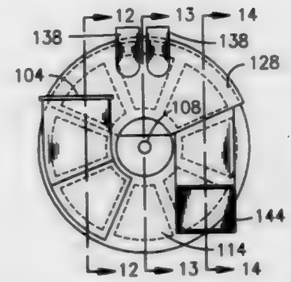
Jesus A. Silvestrini; Jose E. Barbier, and Juan C. Morsucci, all of Mendoza, Argentina, assignors to Imdec, S.A., Mendoza, Argentina

Original No. 4,760,780, dated Aug. 2, 1988, Ser. No. 904,878, Sep. 5, 1986. Application for reissue Jan. 19, 1993, Ser. No. 6,361

Int. Cl.[5] A23N *7/00*

U.S. Cl. 99—584

5 Claims



4. Apparatus for loosening the skin of moisture bearing fruit whose skin has been heated [as] *at* a first pressure to a predetermined temperature, said apparatus comprising [fruit introducing] means *open to ambient conditions* for introducing said *heated* fruit *at generally ambient pressure directly* into the apparatus;

means located adjacent said fruit introducing means for holding said fruit and moving said fruit along a predetermined path, said fruit holding and moving means comprising a generally cylindrical structure having a central axis and being rotatably driven about said central axis and including a plurality of fruit holding chambers angularly spaced about said axis of rotation, said cylindrical structure having a generally annular periphery with said fruit holding chambers comprising chambers positioned adjacent and within said periphery with each chamber having an opening extending through said periphery, with the other sides of said chamber being closed, said fruit holding and moving means further comprising cover means nonrotatably mounted to said apparatus and [slidably] *slidably* engaging said cylindrical structure periphery during at least a portion of the movement of said fruit along said path between said fruit introducing means and said fruit discharge means to cover said opening of said fruit holding chamber after said fruit has been received therein, said cover means being of generally arcuate shape and sealingly engaging said cylindrical structure periphery to maintain a pressure differential established between the interior of said fruit holding chambers and ambient conditions external to said chambers;

means positioned along said path for reducing the pressure surrounding aid fruit sufficiently below said [first] *generally ambient* pressure to effect expansion of moisture borne by said fruit adjacent and inside the skin thereof; and

means for discharging said fruit from said holding and moving means at generally ambient pressure.

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Re. 34,583

METHOD OF FORMING A CONFIGURATION OF INTERCONNECTIONS ON A SEMICONDUCTOR DEVICE HAVING A HIGH INTEGRATION DENSITY

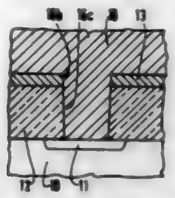
Malcolm K. Grief; Trung T. Doan, both of Boise, Id.; Hendrikus J.W. Van Houtum; Josephus M.H.L. Van Laarhoven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 4,936,950, dated Jun. 26, 1990, Ser. No. 339,029, Apr. 14, 1989. Application for reissue May 11, 1992, Ser. No. 880,860

Claims priority, application France, Apr. 22, 1988, 88 05391

Int. Cl.[5] H01L *21/306;* B44C *1/22;* C23F *1/00;* C03C *15/00*

U.S. Cl. 156—643 6 Claims



1. A method of manufacturing a configuration of interconnections on a semiconductor device, said method comprising:

(a) forming an insulating layer on a substrate [,] provided with said semiconductor device,

(b) providing said insulating layer with a separation layer capable of being etched selectively *with respect to said insulating layer so as* to form openings corresponding to contact openings to be etched into said insulating layer,

(c) selectively etching said openings corresponding to said contact openings into said separation layer,

(d) etching said [narrow] contact openings into said insulating layer *through said openings in said instant separation layer,*

(e) depositing at least one layer of conductive material, having an overall thickness which is sufficient to fill the volume of said contact openings, *in said contact openings and* on said separation layer,

(f) selectively removing, by etching, the major part of said conductive material and said underlying separation layer to thereby expose the surface of said insulating layer while maintaining said conductive layer [and said portion layer] in said contact openings, [(g) selectively removing said separation layer from said contact openings, and g)] *g) depositing a metal interconnection layer on said insulating layer and on said conductive layer in said contact openings* and etching said metallic interconnection into a desired configuration.

Re. 34,584

SHAMPOO COMPOSITIONS

Mark B. Grote, Cincinnati, and Glen D. Russell, Loveland, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Original No. 4,741,855, dated May 3, 1988, Ser. No. 80,022, May 3, 1988. Continuation of Ser. No. 795,285, Nov. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 670,189, Nov. 9, 1984, abandoned. Application for reissue May 1, 1990, Ser. No. 517,111

Int. Cl.[5] A61K *7/075;* C11D *3/20, 9/36, 17/08*

U.S. Cl. 252—142 20 Claims

1. A shampoo composition comprising

(a) from about 5% to about 70% of a synthetic surfactant selected from the group consisting of anionic surfactants, zwitterionic surfactants, amphoteric surfactants and mixtures thereof;

(b) from about 0.01% to about 10% of a dispersed, insoluble, nonvolatile silicone *in the form of fluids or gums selected from the group consisting of polyalkyl siloxanes, polyaryl siloxanes, polyalkylaryl siloxanes, polyether siloxane copolymers, and mixtures thereof;*

(c) from about 0.5% to about 5% of a long chain (C_{16}–C_{22}) acyl derivative or long chain (C_{16}–C_{22}) amine oxide *suspending agent* selected from the group consisting of ethylene glycol long chain esters, alkanol amides of long chain fatty acids, long chain esters of long chain fatty acids, glyceryl long chain esters, long chain esters of long chain alkanolamides, long chain alkyl dimethyl amine oxides and mixtures thereof; and

(d) the remainder water.

10. A shampoo composition comprising

(a) from about 5% to about 70% of a synthetic surfactant selected from the group consisting of anionic surfactants, zwitterionic surfactants, amphoteric surfactants, and mixtures thereof;

(b) from about 0.01% to about 10% of a dispersed, insoluble, non-volatile silicone in the form of fluids or gums selected from the group consisting of polyalkyl siloxanes, polyaryl siloxanes, polyalkylaryl siloxanes, polyether siloxane copolymers, and mixture thereof;

(c) from about 0.5% to about 5% of a long chain (C_{16}–C_{22}) acyl derivative suspending agent selected from the group consisting of long chain (C_{16}–C_{22}) esters, long chain (C_{16}–C_{22}) ethanol amides, and mixtures thereof, said suspending agent being present in the shampoo composition in crystalline form; and

(d) the remainder water.

PLANT PATENTS

GRANTED APRIL 12, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,677

ROSE PLANT AUSBLOOM

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,885

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of shrub rose plant of the Rosa hybrida class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its large open deep red flowers, floriferousness, and moderate fragrance.

8,678

ROSE PLANT 'AUSWALKER'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,960

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of shrub rose plant of the Rosa hybrida class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bright yellow flowers, quartered flowers, upright growth, and strong fragrance.

8,679

ROSE PLANT 'AUSWONDER'

David C. H. Austin, Wolverhampton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,961

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of shrub rose plant of the Rosa hybrida class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its lightly scented flowers having a distinctive apricot coloring and dwarf bushy growth.

8,680

ROSE PLANT 'AUSSAUCER'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,962

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of bush rose plant of the Rosa hybrida class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its highly scented flowers, mixture of yellow and apricot in flowers, dwarfer habit than the variety Graham Thomas, and very quartered, regular flowers.

8,681

ROSE PLANT 'AUSGLOBE'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,963

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of rose plant of the rosa hybrida class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its very large, soft pink flowers, branching habit, and strong fragrance.

8,682

ROSE PLANT 'AUSBREAK'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 955,912

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of shrub rose plant of the Rosa hybrida class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its having paler colored flowers than its parents, its being taller and more sturdy than the variety Tamora, flowers flatter and more quartered than parents, and highly scented flowers.

8,683

ELM TREE NAMED "CATHEDRAL"

Eugene Smalley, Cottage Grove, Wis., and Donald T. Lester, Vancouver, Canada, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 26, 1992, Ser. No. 857,885

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—53.3 1 Claim

1. A new and distinct variety of elm tree named "Cathedral" substantially as described and illustrated herein.

8,684

ELM TREE NAMED NEW HORIZON

Eugene B. Smalley, Cottage Grove, and Raymond P. Guries, Oregon, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jun. 18, 1992, Ser. No. 900,864

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—53.3 1 Claim

1. A new and distinct variety of elm tree named "New Horizon" substantially as described and illustrated herein and characterized by its hardness, rapid growth, upright form and compact growth habit.

8,685

CHRYSANTHEMUM PLANT NAMED EARLY YELLOW VERO

Matthew G. Coward, Punta Gorda, Fla., assignor to Burdette Coward & Company, Inc., Punta Gorda, Fla.

Filed Feb. 19, 1993, Ser. No. 19,890

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.2 1 Claim

1. A new and distinct Chrysanthemum plant name Early Yellow Vero, as described and illustrated.

8,686

ALSTROEMERIA NAMED FLORENCE

Cornelis T. J. de Jong, Roelofarendsveen, Netherlands, assignor to AgroPlant-Select BV, De Kwakel, Netherlands

Filed Mar. 24, 1993, Ser. No. 36,651

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 1 Claim

1. A new and distinct cultivar of Alstroemeria plant named Florence, as described and illustrated, characterized by its predominantly dark pink flowers with outer petals having green tips and substantially dark pink color with some brown spotting occurring in highest concentration around the green tips; the two top inner petals are light pink at the base and dark pink at the apex and have a cream with yellow band and patterns of elongated brownish stripes; and, with the bottom inner petal being dark pink with elongated brownish stripes.

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8,687
KATJANA
Cornelis T. J. de Jong, CR Roelofarendaveen, Netherlands, assignor to Agroplant-Select BV, De Kwakel, Netherlands
Filed Mar. 24, 1993, Ser. No. 36,652
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 1 Claim

1. A new and distinct cultivar of Alstroemeria named Katjana, as illustrated and described herein, characterized by its reddish-purple outer petals and the bright yellow and cream coloring of the inner two-thirds of the top inner petals length and strong dark streaking on the inside portion of the entire inner petal body.

PATENTS

GRANTED APR. 12, 1994

ERRATA

For CLASS	See PATENT NO.
096-125	5,301,439
180-168	5,301,617
601-004	5,301,659
604-004	5,301,660
601-084	5,301,661
607-009	5,301,669
607-116	5,301,687
607-099	5,301,688
180-268	5,301,772
220-320	5,301,853
225-034	5,301,854
228-121	5,301,861
228-043	5,301,862
228-033	5,301,863
226-196	5,301,864
226-118	5,301,865
226-011	5,301,866
281-043	5,301,967
403-218	5,302,039
439-127	5,302,131
205-085	5,302,256
428-195	5,302,404
435-005	5,302,507
428-035	5,302,686
546-226	5,302,717
568-090	5,302,750
558-208	5,302,758
568-727	5,302,774
331-001	5,302,916
345-088	5,302,946
359-058	5,302,987
348-708	5,303,038
348-708	5,303,039
348-589	5,303,040
348-590	5,303,041

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ERRATA—CONTINUED

348-014	5,303,042
348-040	5,303,043
348-445	5,303,044
348-443	5,303,045
348-500	5,303,046
348-607	5,303,047
348-607	5,303,048
348-231	5,303,049
348-211	5,303,050
348-031	5,303,051
348-299	5,303,052
348-312	5,303,053
348-766	5,303,054
348-761	5,303,055
348-836	5,303,057
369-013	5,303,212
380-002	5,303,293
380-005	5,303,294
380-010	5,303,295
395-143	5,303,321
380-051	5,303,370
381-109	5,303,371
382-056	5,303,372
385-115	5,303,373

PATENTS

GRANTED APRIL 12, 1994

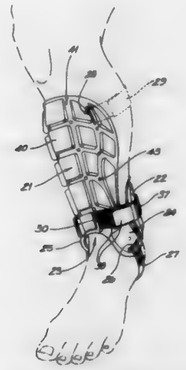
GENERAL AND MECHANICAL

5,301,370

SHIN PAD WITH ACHILLES TENDON PROTECTION

Anthony E. Henson, Harbord, Australia, assignor to Albion Hat & Cap Company Pty Limited, Chippendale, Australia

Filed Jan. 4, 1993, Ser. No. 232
Claims priority, application Australia, Jan. 23, 1992, PL0539
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—22 **17 Claims**



1. A sporting shin pad with Achilles tendon protection for a sport playing wearer having a leg including skin, a shin, ankle bones and an Achilles tendon; said shin pad comprising:

a first flexible elongate pad having a longitu linal extent sufficient to cover the shin of the wearer, said first pad further having a pair of first lobes and a first bight located between the lobes at a first, lower, end of said first pad, said lobes being positioned to cover the ankle bones of the wearer;

a second flexible elongate pad having a longitudinal extent sufficient to cover the Achilles tendon of the wearer, said second pad further having a pair of second lobes and a second bight located therebetween at a first, lower, end of said second pad,

wherein said first and second pads have a plurality of bosses extending from the outer surfaces thereof, and a plurality of protrusions extending from the inner surfaces thereof to bear against the wearer's skin, said bosses being delineated by an array of intersecting grooves, said protrusions being distributed over said inner surfaces and a plurality of through apertures located at some of the intersection of said grooves and extending through said pads and spaced between said protrusions, the arrangement of protrusions, apertures, bosses and grooves defining a plurality of air passages communicating the skin of the wearer with the outer surface of said pads; and

releasable securing means for securing said pads to said wearer.

5,301,371

SAFETY VEST TO BE USED IN A CAR

Wen-Chung Chao, No. 22, Lane 309, Chung-Shan Rd., Sec.2, Pan-Chiao City, Taipei Hsien, Taiwan

Filed Jul. 10, 1992, Ser. No. 912,551
Int. Cl.[5] A41D *1/04*
U.S. Cl. 2—102 **2 Claims**

1. A safety vest to be used in a car in cooperation with a car safety belt, said safety vest having a left side, a right side, a front side, and a back side, and comprising:

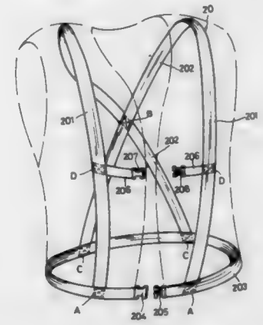
(b) a vest portion and a plurality of safety belts inside said vest portion;

(b) said safety belts including two front belts to be placed on the left and right sides, respectively, of said vest in a parallel manner, and said front belts are extended to the back side of said vest portion to become two back belts, respectively, said two back belts intersect each other;

(c) both said front belts and said back belts are fixedly attached to a waist belt, which is substantially a ring-shaped belt, said ring-shaped belt has an opening in the front side of said vest portion;

(d) said opening of said ring-shaped belt is attached with a pair of first buckle assemblies allowing said opening to be closed;

(e) each of said front belts is attached with a fastening strap,



said fastening strap is provided with a matching second buckle assembly at its end so as to allow said fastening straps to be fastened together;

(f) said safety vest being the same as a conventional vest having a front opening, which allows said safety vest to be put on a user's body, and two openings on the upper side thereof to allow the user's arms to pass therethrough;

(g) said safety vest further having two slots being provided in the back side of said vest portion so as to allow a car safety belt to pass therethrough; and

(h) said safety belts being fixedly attached to said vest portion so as to have said vest portion and said safety belts combined together as one piece, whereby when said car safety belt is inserted through said slots on the back side of said vest portion, said safety vest will be fastened onto a car seat.

5,301,372

FASTENER FOR RELEASABLY FASTENING FACE GUARD TO HELMET

Hiroshi Matoba, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

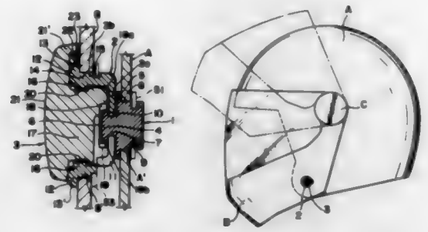
Filed Feb. 17, 1993, Ser. No. 18,515
Claims priority, application Japan, Feb. 27, 1992, 4-9320[U]
Int. Cl.[5] A42B *1/08*
U.S. Cl. 2—424 **11 Claims**

1. A fastener for releasably fastening a face guard to a helmet, the fastener comprising a plug having a plug proper and an attachment portion integrally joined to each other; a bowl-shaped socket having an engaging hole and a notch formed in the center and the edge, respectively, of its bottom, the notch communicating with the engaging hole for guiding the plug proper into engagement with the engaging hole of the socket, the socket further having on its upper rim a peripheral flange

152-936 O.G.-94-2

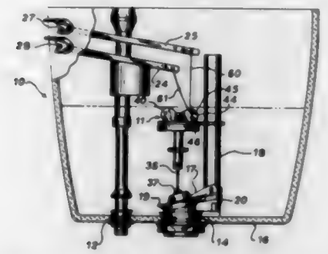
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which has a pair of diametrically-opposed locking prongs; and a retainer rotatably fitted in the bowl-shaped socket and including a cylindrical body and a closing plate mounted on its bottom for selectively opening and closing the notch in re-



sponse to rotation of the retainer, the retainer having a locking recess formed in its upper peripheral edge and selectively engageable with the locking prongs of the socket for retaining the retainer in a notch-opening position and a notch-closing position.

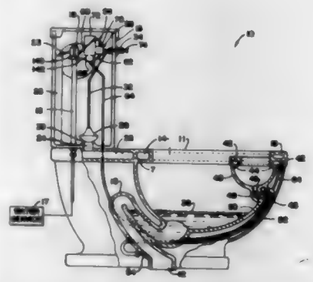
5,301,373
DUAL FLUSH MECHANISM
Douglas A. Hull, and Randy O. Mesun, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Feb. 17, 1993, Ser. No. 18,631
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—325 **4 Claims**



1. A flush mechanism for use to permit selection between two different toilet tank flush cycles, the tank being of the type having a wall with an outlet therein and a non-buoyant valve member for opening and closing the outlet to control the level of fluid in the tank the flush mechanism comprising:
- a shaft linked to said outlet valve;
- a float slidably mounted on the shaft;
- a cam pivotally connected to the shaft adjacent the float, the cam being rotatable between a short flush position wherein the cam allows the float to assume a high position along the shaft, and a long flush position wherein the cam member forces the float into a lower position along the shaft member;
- a first linkage connected at a first location on said cam;
- a second flush linkage connected at a second location on said cam;
- a first activation means connected to the first flush linkage, the first activation means being capable of moving the first flush linkage thereby allowing the cam to assume a short flush position; and
- a second activation means connected to the second linkage, the second activation means being capable of moving the second linkage thereby moving the cam into a long flush position;

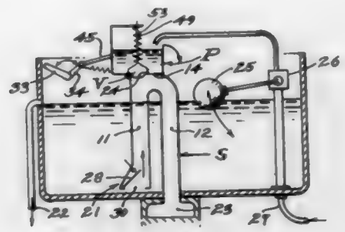
wherein said float being capable of retaining said non-buoyant valve member in an open position when said float is buoyant in the fluid.

5,301,374
URINAL ASSEMBLY
Everett J. Smiley, 1326 Sandtrap Dr. SW., Fort Myers, Fla. 33919
Continuation-in-part of Ser. No. 612,920, Nov. 13, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 994,354
Int. Cl.[5] F03D *9/00*
U.S. Cl. 4—341 **15 Claims**



14. A urinal assembly for use in a toilet apparatus having a toilet bowl, a tank communicably connected to and located generally above said bowl, a supply conduit for delivering water under service line pressure to said tank, inlet valve means attached to said supply conduit for regulating the flow of water into said tank, means for opening said inlet valve means when the water in said tank falls below a predetermined level to introduce water into said tank and for closing said inlet valve means when the water in said tank rises above said predetermined level to stop the flow of water into said tank, means for selectively releasing water in said tank into said toilet bowl to flush said bowl, and a sewer line connected to said toilet bowl for discharging the contents of said bowl when said bowl is flushed, said urinal assembly comprising:
- a urinal bowl for mounting within said toilet bowl;
- means, interconnected between said supply conduit and said urinal bowl, for selectively introducing water under service line pressure exclusively into said urinal bowl to flush said urinal bowl, said means for introducing including means defining a primary urinal flush line, which interconnects said supply conduit and said urinal bowl, and urinal flush valve means that are normally closed to restrict water from flowing through said primary urinal flush line into said urinal bowl and selectively opened to permit water under service line pressure to flow through said primary urinal flush line into said urinal bowl, said urinal flush valve means including a valve housing, a valve element movably mounted in said valve housing and having formed therethrough channel means that are communicably alignable with said primary urinal flush line, spring means for biasing said valve element into a closed condition within said housing such that said channel is not aligned with said primary urinal flush line, and actuator means for selectively urging said valve element against said spring means to align said channel with said primary urinal flush line and open said urinal flush valve means, said means for introducing further including means for temporarily retaining said valve element in an open condition in said valve housing;
- a discharge conduit interconnected between said urinal bowl and said sewer line for discharging the contents of said urinal bowl when said urinal bowl is flushed; and
- a secondary urinal flush line interconnected between said inlet valve means and said urinal bowl means and being responsive to opening of said inlet valve means for directing water under service line preasure into said urinal bowl.

5,301,375
PRIMER TANK-CHECKVALVE SYPHON TOILET FLUSHING APPARATUS
John S. Osmond, 731 Cedar St., Santa Monica, Calif. 90405
Filed Mar. 9, 1993, Ser. No. 28,399
Int. Cl.[5] E03D *1/06*
U.S. Cl. 4—368 **18 Claims**



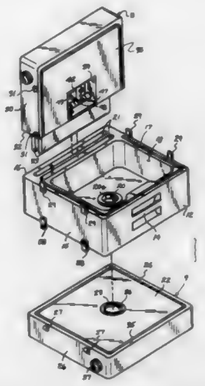
1. A flushing apparatus for toilets having a flush tank and a flush tube opening therefrom and into a toilet bowl, and having a water level control means responsive to depletion of water in said tank to refill said tank to a predetermined water level, said apparatus including;
- a syphon adapted to be positioned within the flush tank and comprised of a suction leg sized to open adjacent the bottom of said tank and extending upward to a bridge adapted to be positioned substantially above said predetermined water level, and a discharge leg continuing from the suction leg and extending downward from the bridge for discharging into the aforesaid flush tube of the toilet,
- a header overlying the suction leg and discharge leg and spaced above the bridge to define a transfer passage, there being an inlet check valve in the suction leg,
- a primer tank adapted to be filled with water by said water level control means and disposed over said header and with a valve seat opening therefrom and into said transfer passage,
- and a flush valve passively closing the valve seat and having control means for opening said flush valve to flood the suction leg for inducing a syphoning effect from the suction leg and into the discharge leg, whereby water from the suction leg is drawn over the bridge and continuously into the discharge leg.

5,301,376
PORTABLE SINK APPARATUS
Norbert G. Herbert, 10329 N. Forest Ave., Kansas City, Mo. 64155
Filed Mar. 15, 1993, Ser. No. 31,278
Int. Cl.[5] A47K *1/02*
U.S. Cl. 4—626 **7 Claims**

1. A portable sink apparatus, comprising,
- a lower housing, a central housing, and an upper housing, the central housing having a central housing front wall, a central housing rear wall, central housing side walls, a central housing top wall, and a central housing floor, the central housing including a sink cavity directed through the central housing top wall to the central housing floor, with the sink cavity having a floor opening directed through the central housing floor within the sink cavity,

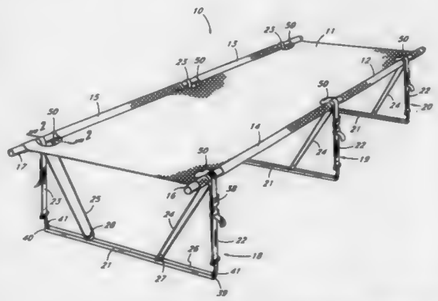
and
- the lower housing having lower housing side walls, and a lower housing top wall, with the lower housing top wall including a lower housing top wall opening oriented to be in fluid communication with the floor opening when the central housing is positioned on the lower housing,

and
- the central housing top wall including a plurality of channels orthogonally directed into the central housing top wall, with the upper housing defining a reservoir cavity including an upper housing floor, upper housing spaced side walls, and an upper housing rear wall, with the upper housing rear wall including a plurality of ribs orthogonally and fixedly mounted to the upper housing rear wall, wherein the ribs are arranged for complementary reception, respectively, within the channels, the upper housing further including means for selectively communicating



the reservoir cavity with the sink cavity, whereby the apparatus may be used as a sink when the ribs are engaged with the channels and may be easily transported when the upper housing is positioned on the central housing with the upper housing is positioned on the central housing with the upper housing floor engaging the central housing top wall.

5,301,377
PORTABLE COT
Samuel B. Kim, 17221 Balfern Ave., Bellflower, Calif. 90706
Filed Jul. 19, 1993, Ser. No. 93,482
Int. Cl.[5] A47C *17/64*
U.S. Cl. 5—110 **12 Claims**

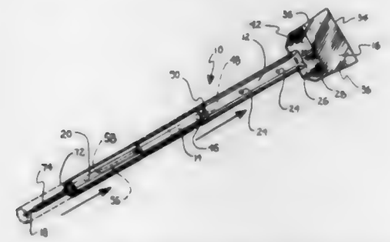


12. A portable cot which may be held in a disassembled condition in a compact package but which is assembled into a firm sleeping surface, said cot comprising:
- a generally rectangular canvas surface member having right and left sides and having right and left elongated pockets along said right and left sides, said elongated pockets having three openings, one near each end and one at the middle and said right and left elongated pockets each having hollow right and left elongated side rails respectively, each of said right and left side rails having a pair of

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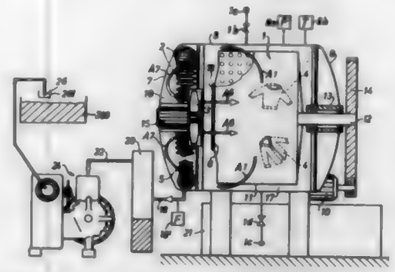
matching holes located in each of said openings in said elongated pockets of said canvas surface;
three sets of leg assemblies, each leg assembly having a base bar having a right and left end and each base bar having a pair of leg members fabricated from a generally "U"-shaped length of wire having a base pivotally affixed to the base bar inwardly from the right and left ends thereof and each leg member having a pair of upper termini which are inserted into said pair of matching holes in said elongated side rails; and
three pairs of adjustable straps, each strap having a lower end and an upper end and each strap having means for adjusting the length thereof, each strap being affixed at its lower end to an end of a base bar and at the upper end to one of said right and left elongated rails, one strap being held between each pair of matching holes and said straps being tightened to form a secure cot.

5,301,378
FIBERGLASS INSTALLATION TOOL
Vincent L. Schultz, 435 W. 7th Ave., Shakopee, Minn. 55379
Filed Feb. 23, 1993, Ser. No. 21,512
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—158 **26 Claims**



1. A rock wool or fiberglass installation tool comprising:
(a) a first tubular body member having a plurality of aligned apertures therethrough, an interior, and two ends;
(b) a paddle base affixed to one end of said first tubular body member;
(c) a paddle member affixed to said paddle base;
(d) a second tubular body member having an interior and first and second ends, said second end having a first aperture therethrough, said second tubular body member further having a spring stop traversing said interior, said second tubular body member further having a longitudinally extending guide groove proximal to said first end, said second tubular body member further having a spring positioned in said interior between said spring stop and said first end, said second end of said second tubular body member positioned inside said first tubular body member;
(e) an attachment means affixed to said interior of said second tubular body member proximal to said second end, said attachment means passing through said first aperture of said second end of said second tubular body member and one of said plurality of aligned apertures of said first tubular body member, said attachment means releasably affixing said second tubular body member to said first tubular body member;
(f) a blade base fixed to said first end of said second tubular body member;
(g) a blade member affixed to said blade base; and
(h) a retractable tubular safety sheath covering said blade member, said tubular safety sheath having a safety stop engaged to said guide groove, said safety stop further positioned adjacent to said spring confining said spring between said spring stop and said safety stop inside of said second tubular body member.

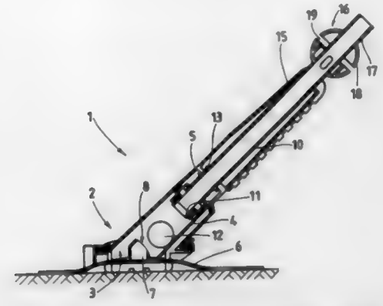
5,301,379
DRY-CLEANING METHOD USING IGNITABLE OR POTENTIALLY EXPLOSIVE SOLVENTS
Ulrich Schaal, Konstanz, Fed. Rep. of Germany, assignor to Rewatec AG, Zuckenried, Switzerland
Filed Jul. 21, 1992, Ser. No. 917,830
Claims priority, application Switzerland, Aug. 8, 1991, 02346/91
Int. Cl.[5] D06F *43/02, 43/08*
U.S. Cl. 8—158 **11 Claims**



1. A dry-cleaning method for cleaning and drying goods, by use of a liquid solvent,
said method being suitable for use wherein the liquid solvent is combustible or, where its vapors, when mixed with air, are potentially explosive,
comprising the steps of
loading a closable dry-cleaning machine with the goods;
closing and air-tightly sealing the dry-cleaning machine;
supplying and adding the liquid solvent under ambient temperature and pressure conditions into the machine to form, within the machine, a mixture of liquid solvent and air;
carrying out dry-cleaning of the goods by moving the goods about while in the liquid solvent;
draining the liquid solvent from the machine;
evacuating the interior of the machine while the machine is closed, resulting in under-pressure;
then, while maintaining the under-pressure in the machine, heating the mixture of solvent and air in the machine to a temperature above the boiling point of the solvent, whereby the solvent in the goods will vaporize,
said heating and evacuating step being carried out to an extent which maintains enough solvent in the vessel to form an air-solvent mixture which is excessively rich, thus inhibiting spontaneous combustion or explosion;
then, and while continuing to maintain the machine subject to the under-pressure or vacuum condition, cooling said air-solvent mixture in the machine to drop the temperature to a temperature level below the flame point, whereby the goods will be dried;
condensing the air-solvent mixture to separate solvent from the mixture;
reestablishing ambient atmospheric pressure in the machine in advance of opening the machine; and
then opening the machine and removing the goods therefrom.

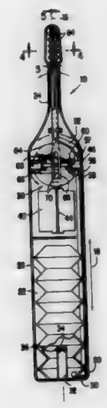
5,301,380
CLEANING APPARATUS FOR SUBMERGED SURFACES
Alexis A. F. Wadman, Bedfordview, and Hendrikus J. van der Meyden, Edenvale, both of South Africa, assignors to Cleave Corporation, Tortola, British Virgin Isls.
Filed Oct. 19, 1992, Ser. No. 963,103
Claims priority, application United Kingdom, Oct. 18, 1991, 9122153; South Africa, Jun. 11, 1992, 92/4264; Jun. 22, 1992, 92/4575
Int. Cl.[5] E04H *3/20*
U.S. Cl. 15—1.7 **26 Claims**

1. Cleaning apparatus arranged to clean a submerged surface, comprising a suction head with a liquid entrance which is locatable against the surface, and which is in communication with a tube projecting away from the entrance with its free end connectable to a suction hose, the suction head also having a flow interrupter with a closure member movable between an interruption position and a release position to periodically and abruptly interrupt a primary liquid flow in use from the suction entrance through the tube to the hose, thereby to cause the suction head to move along the surface in suction communication therewith, and clean the surface, characterised in that:



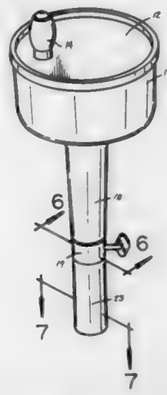
a release means is located downstream of the closure member in the primary flow path of the tube, said release means has at least one liquid flow passage allowing an auxiliary liquid flow into the tube when the closure member in the interruption position interrupts the primary liquid flow, the flow passage being shaped to direct such auxiliary liquid flow in use to cause a force to operate on the closure member to thereby dislodge and move said closure member to the release position and allow the primary liquid flow.

5,301,381
TOOTHBRUSH SYSTEM
Michael F. Klupt, 7 Thistledell Ct., Owings Mills, Md. 21117
Filed Dec. 7, 1992, Ser. No. 986,560
Int. Cl.[5] A61C *17/34*; A46B *13/04*
U.S. Cl. 15—22.1 **18 Claims**



1. A toothbrush system comprising:
(a) a handle member defining an internal handle chamber containing a liquid, said handle member extending in a longitudinal direction;
(b) a longitudinally extended head member defining a stationary head housing having bristles extending therethrough;
(c) means for displaceably oscillating said bristles with respect to said stationary head housing about a central axis of said head member and said handle member defined by said longitudinal direction;
(d) means for rotating said bristles about an axis extending normal said longitudinal direction responsive to said displaceable oscillation of said bristles; and,
(e) means for delivering said liquid contained in said handle member from said handle member through an interior of said head member and through said head housing adjacent said bristles, said means for displaceably oscillating said bristles, said means for rotating said bristles, and said means for delivering said liquid including drive means having motor means mounted within said internal handle chamber for displaceably oscillating said bristles, rotating said bristles, and delivering said liquid external said head housing.

5,301,382
DRAIN CONDUIT ROUTER APPARATUS
Charles W. Stout, 18145-28 Soledad Canyon Rd., Canyon Country, Calif. 91351
Filed Jan. 26, 1993, Ser. No. 9,211
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.33 **2 Claims**



1. A drain conduit router apparatus, comprising,
a cylindrical primary housing having a housing top wall spaced from and parallel a housing bottom wall, with a top wall handle orthogonally and rotatably mounted to the top wall, with the housing top wall and the housing bottom wall orthogonally and symmetrically oriented about a housing axis, and the top wall handle is arranged in a spaced relationship relative to the top wall axis, and a housing tube is fixedly mounted to the housing bottom wall coaxially aligned about the axis, with the housing tube having a housing tube cavity, the primary housing having a primary housing cavity, with the housing tube cavity and the primary housing cavity arranged in communication relative to one another,
and
the housing tube having a housing tube free distal end, with an end cap mounted to the free distal end in a fixed relationship, the end cap including an end cap fastener orthogonally oriented relative to the axis projecting into the housing tube cavity,
and
a flexible wire coil wound within the primary housing cavity and directed through the housing tube cavity, with the

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fastener arranged for engagement with the wire coil projecting through the cap within the housing tube cavity, the end cap having an end cap opening coaxially aligned with the axis to receive the wire coil therethrough in an extending relationship relative to the end cap and the housing tube cavity,

and

a housing tube sleeve rotatably mounted about the housing tube between the end cap and the housing bottom wall, and

a cap extension tube fixedly mounted to the end cap coaxially aligned relative to the axis, with the cap extension tube including a cylindrical array of bristle brush members substantially coextensive throughout the extension tube, wherein the bristle brush members includes a brush bore coaxially aligned relative to the axis to engage the wire coil directed therethrough to effect cleaning of the wire coil when projected relative to the bristle brush array.

5,301,383

ACTUATING MECHANISM HAVING AN EXTENDIBLE WIPER BLADE

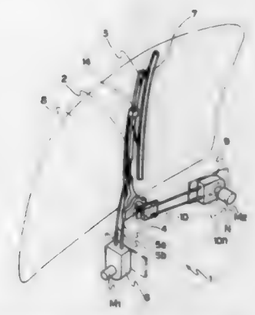
Kazuhiro Suzuki, Nishinomiya, Japan, assignor to Nippon Cable System Inc., Hyogo, Japan

Continuation of Ser. No. 529,424, May 29, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 31,083

Claims priority, application Japan, Jun. 1, 1989, 1-140574

Int. Cl.[5] B60S *1/36, 1/70*

U.S. Cl. 15—250.23 **6 Claims**



1. A window wiper assembly comprising:

an elongated arm having a first end portion which is rotatably supported for rotation about a pivot axis near a window glass, and a second end portion opposite said first end portion;

an elongated sliding member mounted on the arm in a slidable manner along the arm;

a wiper blade fixed to the sliding member;

a first control cable means for sliding said sliding member with said wiper blade along said arm, said first control cable means including an elongated cable having first and second elongated end portions, each end portion is defined by a conduit with an inner core slidably inserted therein, each inner core having a free end extending from the conduit, wherein said first end portion is generally linear along its extent thereof and extends generally radially from said axis along the arm, wherein said respective inner core free end is connected to the sliding member, said second end portion extending generally linear and radially from said axis along the arm and is looped around the second end portion of said arm, wherein the respective inner core free end is connected to the sliding member;

a reciprocal rotary actuating means coupled to the arm for actuating the arm, said rotary actuating means including a second control cable means to reciprocally rotate said arm about said axis so as to have said arm travel over a predetermined wiping stroke on said window glass; and

a slide-actuating means coupled to the inner cores of the first control cable means for reciprocally driving the inner cores and said sliding member,

wherein the slide-actuating means and the rotary actuating means include harmonizing means for harmonizing the operations of said slide-actuating means and said rotary actuating means such that said sliding member and said wiper blade extend and retract along the arm in a predetermined manner corresponding to the position of the arm throughout said stroke.

5,301,384

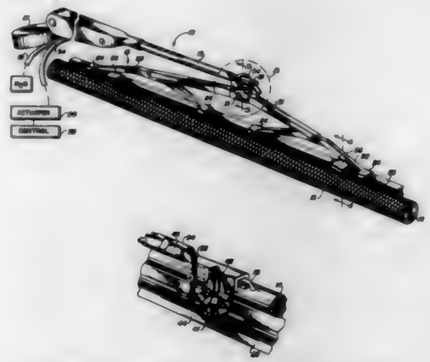
WINDSHIELD SCRUBBER AND BLADE WIPING ASSEMBLY

Joseph W. Perry, 1820 W. Roma Ave., Phoenix, Ariz. 85015

Filed Oct. 2, 1991, Ser. No. 769,859

Int. Cl.[5] B60S *1/38*

U.S. Cl. 15—250.40 **4 Claims**



1. A vehicular window cleaning apparatus comprising:

a windshield wiper assembly including a wiper arm, pivotal mounting means pivotally mounting a wiper blade to said wiper arm and drive means for driving said wiper arm and wiper blade across a windshield,

a scrubber for intensifying the cleaning effort of said wiper blade,

a coupling for detachably clamping said scrubber to said wiper blade for movement therewith,

an adjustment means for rotating said wiper blade relative to said wiper arm to selectively and sequentially position said wiper blade and scrubber against said windshield, and

a locking means comprising an over center toggle for interconnecting said wiper arm with said wiper blade for locking one of said wiper blade and scrubber of said window cleaning apparatus in contact with the associated windshield,

said toggle comprises a pair of toggle links one pivotally connected at one of its ends to the center of the other link, with its other end connected to said wiper blade,

one of the ends of said other of said links being connected to said adjustment means and its other end being connected to said wiper arm,

such that when said wiper blade is in contact with a windshield said over center toggle is in a first locked position and when said over center toggle is actuated to a second position by said adjustment means said scrubber is in a second locked position in contact with said windshield.

5,301,385

ELECTRIC VACUUM CLEANER

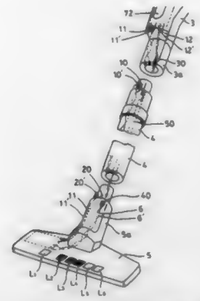
Katsumi Abe, and Takeshi Mine, both of Tokyo, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,104

Claims priority, application Japan, Dec. 10, 1991, 3-349984

Int. Cl.[5] A47L *9/28*

U.S. Cl. 15—319 **3 Claims**



1. An electric vacuum cleaner comprising a body incorporating a motor, a control circuit for controlling the power of the motor, a plurality of indicating lamps for indicating the power of the motor in steps, a hose part which is connected to the body, a grip part which is connected to the hose part and is provided with a grip connecting part, an extension pipe connected to the grip connecting part, and a nozzle part with a nozzle pipe connected to the extension pipe, wherein: the indicating lamps are provided on the nozzle part, the vacuum cleaner also comprising a light emitting element for converting a power signal generated into an optical signal, and wherein the extension pipe is provided with an optical signal passage for said optical signal, the nozzle part is provided with a light detecting element for receiving said optical signal and a driving means for driving the indicating lamps as a function of the optical signal received by the light detecting element is provided.

5,301,386

APPARATUS FOR CLEANING FLAT SURFACES

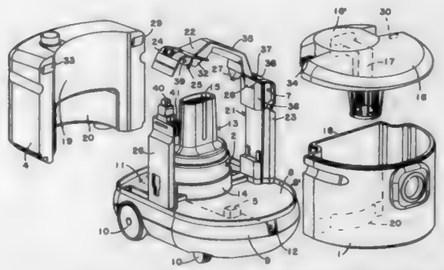
Gilbert P. Thomas, Soliers, and Jacky Y. L. Leguay, Plaine, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Nov. 27, 1992, Ser. No. 983,871

Claims priority, application France, Nov. 29, 1991, 91 14834

Int. Cl.[5] A47L *11/34*

U.S. Cl. 15—321 **7 Claims**



1. In an apparatus for cleaning flat surfaces comprising a collector for dust and liquid connected to a suction moto-ventilator unit and to a suction device, a reservoir for cleaning liquid connected to an injection pump unit, said injection pump unit being connected to a nozzle provided in said suction device, and electrical control means for said suction moto-ventilator unit and said injection pump unit, said collector and said reservoir being mounted removably on the base; the improvement wherein the base includes an arch which extends above and in a plane transverse to said base, said arch having two lateral members and a medial member mounted articulately on one of said lateral members and comprising at its free end a locking member adapted to lock with the other lateral member, and retention means for immobilizing the collector and the reservoir on the base when the medial member is locked.

5,301,387

CLEANING HEAD FOR FLAT SURFACES

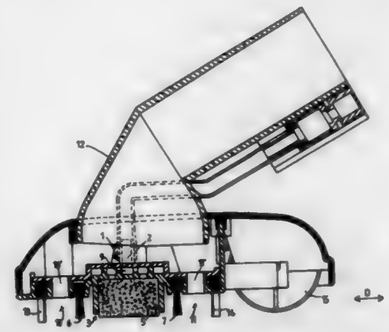
Gilbert P. Thomas, Soliers, and Jacky Y. L. Leguay, Plaine, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Nov. 6, 1992, Ser. No. 972,923

Claims priority, application France, Nov. 12, 1991, 91 13881

Int. Cl.[5] A47L *13/12*

U.S. Cl. 15—322 **5 Claims**



1. A cleaning head for flat surfaces comprising:

a. a device for distribution of cleaning liquid and including:

i) an injection pipe;

ii) washing means comprising a permeable body which is constituted by a porous absorbent material and in which discharges said injection pipe;

b. two brushes disposed symmetrically relative to said permeable body and disposed substantially transversely to the surface to be cleaned;

c. two squeegees constituted by blades of flexible material and disposed symmetrically relative to said permeable body and outside of said brushes;

d. a first suction chamber connected to a suction nozzle and disposed between one of said brushes and one of said squeegees;

e. a second suction chamber connected to said suction nozzle and disposed between the other brush and the other squeegee.

5,301,388

CRITICALLY SAFE VACUUM PICKUP FOR USE IN WET OR DRY CLEANUP OF RADIOACTIVE MATERIALS

Joseph D. Zeren, 390 Forest Ave., Boulder, Colo. 80304

Filed Dec. 4, 1992, Ser. No. 985,372

Int. Cl.[5] A47L *9/12*

U.S. Cl. 15—327.1 **11 Claims**

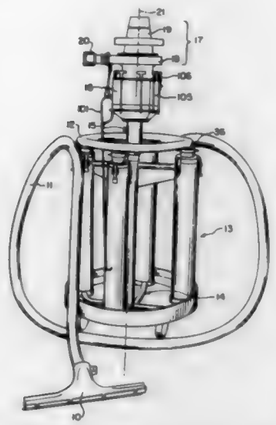
1. A vacuum cleaner for use in the cleanup of radioactive material, comprising;

a generally horizontal annular intake manifold having a cleanup hose connected thereto and having a plurality of vertically downward extending output nipples, said intake manifold defining a generally vertical central axis of the cleaner;

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a like plurality of upward extending cylindrical canisters, each canister having an upper end connected to one of said nipples, and each canister containing an internal filter bag having an open end facing a nipple and a closed end adjacent to a lower end of a canister;

a generally horizontal exhaust manifold comprising a like



plurality of tubes, one each being connected to one of said canisters and each of which extends radially inward toward said central axis;

a central cylinder coincident with said central axis having a lower end connected to said plurality of tubes; and

a motor/fan unit connected to a top portion of said central cylinder for creating a vacuum through said cleanup hose.

5,301,389

JACK HANDLE WITH MEANS FOR LIMITING THE TORQUE WHICH CAN BE APPLIED TO A JACK

Darryl L. Engel, LaOtto, and John R. Scoville, Butler, both of Ind., assignors to Universal Tool & Stamping Company, Inc., Butler, Ind.

Filed Apr. 26, 1993, Ser. No. 51,697

Int. Cl.[5] A47B *95/02;* **G05G** *5/06, 1/00;* **B62D** *1/06*

U.S. Cl. 16—114 R **5 Claims**



1. A jack handle for a jack with a drive shaft which prevents excessive torque from being applied to the jack comprising, a jack shaft with one end formed with a primary drive shaft engaging portion for raising and lowering said jack, a handle formed on said jack shaft for rotating it, a torque limiting region formed in said jack shaft between said primary drive shaft engaging portion and said handle frangible upon exceeding a predetermined torque, and a secondary jack shaft engaging portion formed on said jack shaft which can be used to engage said drive shaft to lower said jack after the predetermined torque of said torque limiting region has been exceeded.

5,301,390

HINGE MECHANISM FOR PANELS

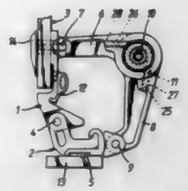
Brian E. Cleal, Hayling Island, Great Britain, assignor to Lewmar Marine Limited, Hampshire, England

Filed Mar. 25, 1992, Ser. No. 857,491

Claims priority, application United Kingdom, Mar. 25, 1991, 9106283

Int. Cl.[5] E05F *1/08;* **E05D** *11/10*

U.S. Cl. 16—306 **2 Claims**



1. A hinge mechanism for rotation of a panel about a pivot axis at an edge portion around an aperture, the axis having at least a horizontal component, the mechanism having:

a) a hinge with a first arm for securing rigidly to the edge portion, and with a second arm for pivotal attachment to the first arm at the pivot axis, the second arm being for securing rigidly to the panel to be rotatable with the panel about the pivot axis for opening or closing the aperture, and

b) a balancing arrangement including a first lever for pivotal attachment to the panel and a second level for pivotal attachment to the edge portion, the levers being pivotally joined at a second axis so that the levers form a pivotal linkage responding to relative pivotal movement of the edge portion and panel to positions of the panel wherein the aperture is respectively closed and open, the balancing arrangement further including helical spring means for variably counter-balancing the moment of the panel about the pivot axis, said helical spring means being arranged coaxially with the second axis to act on the levers such that potential energy in said spring means is at a minimum in a position of the linkage intermediate the closed and open positions of the panel, wherein said second lever comprises two arm elements, each said arm element having a hub portion and said first lever having a hub portion, said hub portions are arranged on said second axis to entrap the hub portion of the first lever between those of the first lever elements, at least one helical spring comprising said spring means being entrapped between a said arm element and said first lever about said axis, and

c) a brake for acting between said panel and said edge to tend to maintain said panel and said edge in a given relative condition.

5,301,391

DRAFTING ROLLER SLEEVE WITH DRIVE ENGAGING/DISENGAGING LEVER

Norbert Barnuke, Donzdorf, Fed. Rep. of Germany, assignor to Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH, Fed. Rep. of Germany

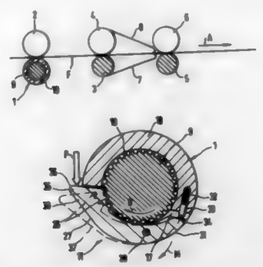
Filed Nov. 6, 1992, Ser. No. 972,650

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137800

Int. Cl.[5] D01H *05/80*

U.S. Cl. 19—293 **22 Claims**

1. A drafting unit arrangement for a spinning machine comprising several drivable bottom rollers, said drafting unit arrangement including a feeding bottom roller constructed as a sleeve which is selectively drivingly connectable with a drive shaft by means of a coupling device, wherein the coupling device comprises a swivel shaft mounted on the sleeve, a swivelling lever mounted on the swivel shaft, a catch formed on the drive shaft, the swivelling lever radially applied and engaging



or disengaging with the catch of the drive shaft for starting or stopping rotation of the sleeve.

5,301,392

MULTI-PURPOSE BALLOON CLOSURE DEVICE

Marvin J. Richman, 3238 Fond Dr., Encino, Calif. 91436

Filed Jun. 10, 1992, Ser. No. 896,622

Int. Cl.[5] B65D *77/10*

U.S. Cl. 24—30.5 R **7 Claims**

1. A multi-purpose closure device for the stem of an inflated balloon comprising:

a first wing of a generally elongated shape and having two ends;

a second wing having a generally elongated shape and two ends;

a hinge member interconnecting the first and second wings along one end;

a closure member provided on and projecting from one of said first or second wings;

an opening provided through the other of said first and second wings which corresponds to said closure member and is engageable with said closure member; and

a cutout formed in said hinge member, said cutout extending transversely to said wings and being opened at one end;

whereby a stem of a balloon is both compressed along the entire length of the first and second wings and clamped by said closure member and said opening when said closure device is closed to provide a reliable but easily removable seal.

5,301,393

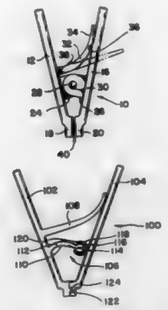
SPRING BIASED CLIP AND METHOD OF MAKING

Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205

Continuation-in-part of Ser. No. 587,029, Sep. 24, 1990, Pat. No. 5,079,808. This application Oct. 22, 1991, Ser. No. 780,289

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—67.7 **18 Claims**



1. A spring biased clip, comprising:

a first clamping element having a clamping edge, said first clamping element made from a length of stock material having a substantially constant cross section;

a second clamping element having a clamping edge, said second clamping element made from a length of stock material having a substantially constant cross section;

a hinge connecting said clamping elements together, said hinge comprising a male and female snap connections arrangement; and

a spring associated with the clip for biasing said clamping edges of said plate elements together, said spring defined by an integral leaf type tapered member which initially extends generally perpendicular from one of said clamping elements and in an assembled condition of the clip extends outwardly to a free end and towards the other opposite clamping element to slidably contact same along an arcuate end portion of said spring so that the clamping force of said spring will increase as said clamping edges are moved away from each other so that the clip will exert greater force on a thicker article than a thinner article.

5,301,394

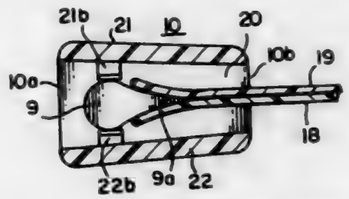
PLASTIC RECLOSABLE FASTENER WITH SLIDER DETENT LOCK FOR LOCKING SLIDER IN CLOSED POSITION

Dale S. Richardson, Westerville, and Roger W. Smith, Grove City, both of Ohio, assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 29, 1993, Ser. No. 98,982

Int. Cl.[5] A44B *19/16*

U.S. Cl. 24—399 **3 Claims**



1. A plastic reclosable fastener with slider particularly suited for plastic-film bags and the like for closing or opening the

VOL 1161 ISS 2 AP 12 1994 UMI

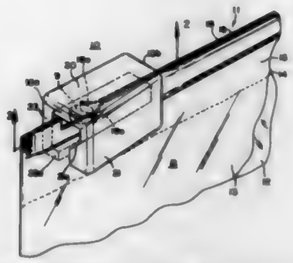
reclosable fastener, said reclosable fastener comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said strips including flanges extending along the length thereof parallel to said male and female elements, a straddling slider on said strips for moving along the fastener in straddling relation to open or close the reclosable interlocking male and female elements, said slider comprising an inverted substantially U-shaped plastic member for moving along the top edges of said fastener with depending sidewalls that comprise the two legs of the for maintaining said flanges and said male and female elements therebetween and a support member that comprises the base of the U, said sidewalls extend from an opening end of the slider to a closing end, the sidewalls being spaced wider apart at the opening end to permit separation of the male and female elements and being spaced sufficiently close together at the closing end to press the male and female elements into interlocking relationship as the slider is moved in a fastener-closing direction, said slider including separator structure depending from said support member and inserted between said flanges to open said male and female elements, said separator structure being located at said opening end of said slider, notched structure at the end of said flanges adapted to receive said separator structure when said reclosable fastener is in closed condition, and detent lock structure carried by said slider for engaging said separator structure when said separator structure is received in said notched structure and for restraining said slider in fully closed position and thereby maintaining said male and female elements in interlocking relation when said slider reaches the fully closed position at the end of its travel along said fastener.

5,301,395

PLASTIC RECLOSABLE FASTENER WITH STRUCTURE FOR RESTRAINING SLIDER IN CLOSED POSITION AND FOR FACILITATING REOPENING FASTENER

Dale S. Richardson, Westerville, and Roger W. Smith, Grove City, both of Ohio, assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 29, 1993, Ser. No. 98,983
Int. Cl.[5] A44B *19/16*
U.S. Cl. 24—400 **3 Claims**



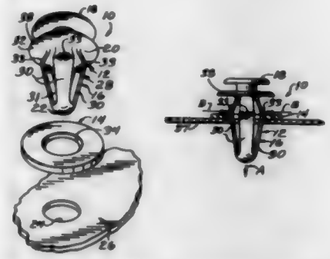
1. A plastic reclosable fastener with slider particularly suited for plastic-film bags and the like for closing or opening the reclosable fastener, said reclosable fastener comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said strips including flanges extending along the length thereof parallel to said male and female elements, a straddling slider on said strips for moving along the fastener in straddling relation to open or close the reclosable interlocking male and female elements, said slider comprising an inverted substantially U-shaped plastic member for moving along the top edges of said fastener with depending sidewalls that comprise the two legs of the U for maintaining said flanges and said male and female elements therebetween and a support member that comprises the base of the U, said sidewalls extend from an opening end of the slider to a closing end, the sidewalls being spaced wider apart at the opening end to permit separation of the male and female elements and being spaced sufficiently close together at the closing end to press the male and female elements into interlocking relationship as the slider is moved in a fastener-closing direction, said slider including separator structure depending from said support member and inserted between said flanges to open said male and female elements, said separator structure being located at said opening end of said slider, and means for restraining said slider in fully closed position and thereby maintaining said male and female elements in interlocking relation when said slider reaches the fully closed position at the end of its travel along said fastener comprising notched structure at the end of said flanges adapted to receive said separator structure when said reclosable fastener is in closed condition, said notched structure creating ends located on said flanges to permit said separator structure to move beyond said ends and from between said flanges and into said notched structure, said ends of said flanges being deformed so as to diverge outwardly, said separator structure being engageable with the diverging ends of said flanges when said slider is at the fully closed position at the end of its travel on said fastener thereby resisting movement of said separator structure from within said notched structure to a position between said flanges and thus resisting inadvertent opening of said male and female elements of said fastener, and said separator structure being so constructed and arranged as to spread said diverging ends of said flanges created by said notched structure and thereby facilitate reentry of said separator structure between said flanges when said separator structure is moved toward the opposite end of said fastener to open said male and female elements of said fastener.

5,301,396

FASTENER ASSEMBLY WITH COMPRESSION MEMBER

Thomas A. Benoit, Bourbonnais, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Jan. 13, 1993, Ser. No. 975,076
Int. Cl.[5] F16B *19/00*
U.S. Cl. 24—453 **20 Claims**



1. A fastener assembly for engagement with an aperture defined wtihin a first article in order to mount a second article upon said first article, comprising:

a fastener having a head portion disposed at a first end of said fastener; a distal end portion disposed at a second opposite end of said fastener for insertion within said aperture of said first article; and a resilient shank portion interconnecting said head and distal end portions of said fastener and having retaining means disposed thereon for releasably retaining said fastener within said aperture of said first article, after insertion of said resilient shank portion within said aperture of said first article, as a result of said retaining means of said resilient shank portion engaging said first article; and

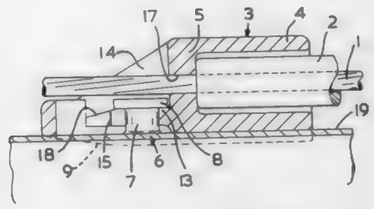
engagement means, separate and independent of said first and second articles, and disposed about said resilient shank portion, for compressing said resilient shank portion radially inwardly prior to insertion of said retaining means through said aperture of said first article so as to prevent contact and radially inward compression of said retaining means by wall portions of said first article defining said aperture of said first article.

5,301,397

DEVICE FOR FASTENING A BOWDEN CABLE ON A CONSTRUCTIONAL ELEMENT

Heinz-Otto Baum, Giessen-Allendorf, Fed. Rep. of Germany, assignor to Emhart Inc., Newark, Del.

Filed Sep. 11, 1992, Ser. No. 943,811
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1991, 9111309
Int. Cl.[5] A44D *21/00*
U.S. Cl. 24—701 **5 Claims**



1. A device for attaching a bowden cable to an associated structure and for supporting one end of the cable sheath comprising

an abutment having a bore therein for receiving the sheath of the bowden cable;

said bore being terminated by an end wall having an opening therethrough for passage of the transmission wire of the bowden cable;

a fastening tab extending from said abutment;

a keyhole-shaped recess in said tab having a large aperture for receiving the head of a T-bolt mounted on the structure, and a small aperture for receiving only the T-bolt shank;

the height of said tab being tapered from a smaller value adjacent said large opening to a larger value adjacent said small opening; and

means for preventing rotation of said device relative to the structure.

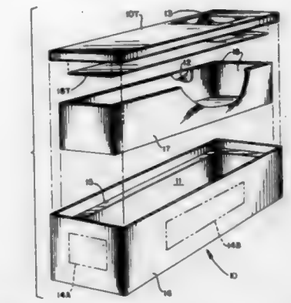
5,301,398

PLASTIC BODY CONTAINER

Paul Bursey, Jr., Rte. 4, Box 190, Star City, Ark. 71667

Filed Feb. 18, 1992, Ser. No. 839,548
Int. Cl.[5] A61G *17/00*
U.S. Cl. 27—7 **12 Claims**

1. A plastic cadaver container molded as a product produced from primarily plastic, comprising: a plastic outer container; a non porous material container contained within said plastic outer container; a plastic lid for said plastic outer container; a layer of non porous material on the bottom of said lid; a protective layer of plastic is laminated to the inside of said non porous material container and to the inside of said non porous material on the bottom of said lid; and wherein said non porous material container is glass.

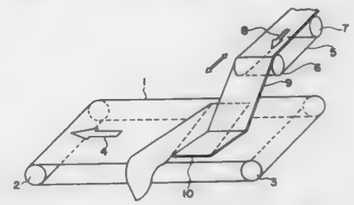


5,301,399

PROCESS OF DETECTING AND COMPENSATING POSITION ERRORS OCCURRING DURING THE MANUFACTURE OF A WEB CONSISTING OF A MULTILAYER NON-WOVEN FABRIC

Dietmar Erhardt, Sulzer Str. 116, D-7277 Wildberg, Fed. Rep. of Germany

PCT No. PCT/EP89/01555, § 371 Date Jun. 20, 1991, § 102(e) Date Jun. 20, 1991, PCT Pub. No. WO90/07148, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 18, 1989, Ser. No. 679,082
Int. Cl.[5] D04H *3/05*
U.S. Cl. 28—102 **14 Claims**



7. A laying machine for manufacturing a multilayer non-woven fabric having a certain thickness and mass per unit area and for detecting and compensating position errors occurring during the manufacture of the multilayer non-woven fabric, comprising:

a conveyor belt having a direction of conveyance to supply a monolayer non-woven fabric deflected at a leading end around a laying roller;

a motor for driving the conveyor belt;

a traversing drive for reciprocatively displacing the laying roller;

a delivering belt disposed below the laying roller and extended transversely to the conveyor belt, the monolayer fabric being layer onto the delivery belt by the conveyor belt to form the multilayer non-woven fabric;

a motor for driving the delivering belt;

a measuring device for continuously measuring a thickness or a mass per unit area of the multilayer non-woven fabric, and generating an output signal;

an analyzer coupled to the output signal of the measuring device, the analyzer analyzing the output signal for periodically occurring signal fluctuations; and

a controller coupled to an element of the group of elements consisting of the motor for driving the conveyor belt, the traversing drive for the laying roller, and the motor for

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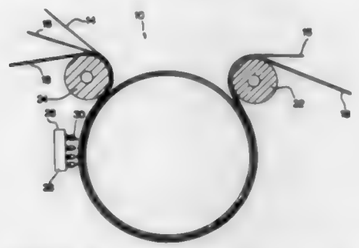
driving the delivering belt, the controller also coupled to the analyzer for receiving a controllable variable amplitude having an amplitude of the periodically occurring signals, which amplitude is to be minimized.

5,301,400

METHOD FOR PRODUCING A NON-WOVEN FABRIC WITH A THERMALLY ACTIVATED ADHESIVE SURFACE

Roger Boulanger, Ste-Julie, Canada, assignor to Johnson & Johnson, Inc., Canada

Division of Ser. No. 550,258, Jul. 9, 1990, Pat. No. 5,227,227. This application Mar. 15, 1993, Ser. No. 31,760
Claims priority, application Canada, Mar. 5, 1990, 2011515
Int. Cl.[5] D04H *1/46*
U.S. Cl. 28—105 **14 Claims**



1. A method to form a three-dimensional non-woven fabric having a thermally activated adhesive surface, said method comprising the steps of:

passing a first continuous fiber layer including bond-forming fibers fusible at a predetermined temperature and a second continuous fiber layer including fibers of a material in a solid phase at said predetermined temperature, in a face-to-face relationship through a fiber rearranging zone, confined therein between a foraminous member and an apertured member including openings arranged in a staggered relationship and spaced apart from one another by land areas, said first fiber layer facing said apertured member and said second fiber layer facing said foraminous member; and

applying a fluid force to said fibers in said fiber rearranging zone with a direction from said foraminous member toward said apertured member, causing said fibers to arrange under the influence of said fluid force flatwise in bundles over said land areas, and in protuberant fiber packings in said openings interconnecting said bundles at junctures thereof, said openings arranged in a staggered relationship providing a staggered pattern of protuberant fiber packings throughout said non-woven fabric, said bond-forming fibers and said fibers of a material in a solid phase being concentrated in apex and base portions of said fiber packings respectively.

5,301,401

PROCESS AND APPARATUS FOR PRODUCING NONWOVEN FABRIC

Migaku Suzuki, Kawanoe; Satoshi Nozaki, Ehime; Shigeo Imai, and Makoto Ishigami, both of Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Continuation of Ser. No. 384,448, Jul. 25, 1989, abandoned, which is a division of Ser. No. 219,000, Jul. 14, 1988, Pat. No. 4,868,958. This application Oct. 24, 1991, Ser. No. 782,101
Claims priority, application Japan, Feb. 11, 1985, 60-260625
Int. Cl.[5] D04H *1/46, 1/48*
U.S. Cl. 28—167 **1 Claim**

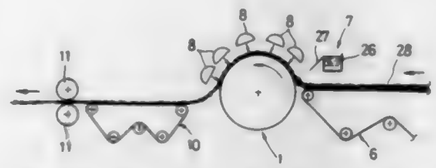
1. A process for continuously producing nonwoven non-apertured fabric comprising the steps of

(a) depositing a fibrous web on a conveyor belt and conveying it along a designated path,

(b) transferring said fibrous web intact from said conveyor belt onto a first support means consisting of a smooth-surfaced plate having a plurality of drainage holes, each having a diameter of 0.2 to 1.0 mm regularly distributed over the smooth surface at an occupying area ratio of 2.5 to 30% relative to an effective area of said surface,

(c) jetting water streams from a plurality of orifices arranged at a predetermined pitch transversely of said moving fibrous web on said first support means so as to entangle individual fibers in said fibrous web with each other at random, and

(d) immediately prior to step (c) delivering a screen of water by gravity downwardly from a reservoir directly upon



said moving fibrous web to achieve fiber entangling treatment of the fibrous web without raising the nap thereon and to achieve a stabilized condition of the web,

(e) draining said water streams which have completed their function under suction through said drainage holes,

(f) moving the resulting fibrous web resulting over a plurality of water-impermeable second support means, and

(g) jetting water streams from a plurality of orifices arranged at a predetermined pitch transversely of said fibrous web supported by said second support means so as to entangle individual fibers in said fibrous web with each other at random,

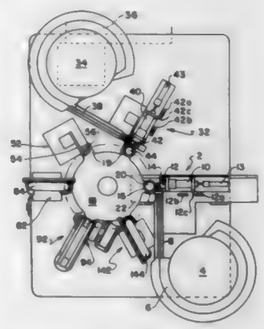
said water streams being supplied at a jetting pressure of 20 to 100 kg/cm^2 and at a water delivery of 0.5 to 20 l/m^2 in said first step.

5,301,402

AUTOMATED BUTTON CLOSING MACHINE

Charles E. Noel, Hamden, Conn.; Mark H. Hamilton, Jaffrey, and Timothy P. White, New Boston, both of N.H., assignors to Waterbury Companies, Inc., Waterbury, Conn.

Filed Jan. 31, 1991, Ser. No. 648,810
Int. Cl.[5] B21F *45/28*
U.S. Cl. 29—4 **52 Claims**



1. A method for orienting two button parts relative to each other, comprising:

supplying a first button part in a fixed orientation;

obtaining a video image of the first button part to ascertain its orientation;

orienting a second button part with respect to the first button part based upon the video image of the first button part;

placing the second button part in a desired orientation with respect to the first button part; and

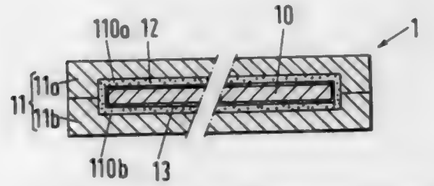
crimping said first and second button parts to secure said desired orientation.

5,301,403

METHOD OF PRODUCING METAL FOIL FROM A REACTIVE METAL SHEET UTILIZING A HOT ROLLING THERMAL PACK ASSEMBLY

Margret Blank-Bewersdorff, Zürich, and John A. Peters, Winterthur, both of Switzerland, assignors to Gebrueder Sulzer Aktiengesellschaft, Winterthur, Switzerland

Filed Apr. 6, 1993, Ser. No. 43,063
Claims priority, application European Pat. Off., May 8, 1992, 92810338.1
Int. Cl.[5] B21D *33/00*
U.S. Cl. 29—17.5 **11 Claims**



1. A method for forming a thin metal sheet from a piece of reactive metal by hot forming the reactive metal piece, the method comprising the steps of:

applying a first layer of a first release agent consisting of powder particles to a surface of the piece;

applying a second layer of a second release agent consisting of powder particles on a side of the first layer opposite from the piece, the first release agent comprising a substantially more compact packing of the powder particles than the second release agent;

embedding the reactive metal piece with its first and second layers of release agents within opposing, plastically deformable cover plates so that the second layer contacts a surface of the cover plates;

applying heat and pressure to the cover plates and therewith to the reactive metal piece to form the thin metal sheet; and

plastically deforming the second layer to a greater extent than the first layer while applying heat and pressure.

5,301,404

METHOD OF PRODUCING PRINTER HEAD USING PIEZOELECTRIC MEMBER

Kuniaki Ochiai; Shigeo Komakine, and Toshihiro Tsukamoto, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd. and Toshiba-Emi Limited, both of Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,586
Claims priority, application Japan, Mar. 26, 1992, 4-067990
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **13 Claims**

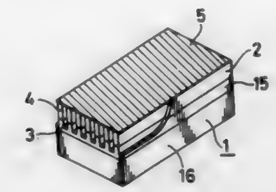
1. A method of manufacturing a printer head, comprising the steps of:

preparing a substrate including at least one piezoelectric member polarized in its thickness direction;

cutting at equal intervals a plurality of mutually parallel grooves from the surface of said substrate to form a plurality of posts;

causing a pre-processing solution to flow along said grooves at the following relative velocity so as to effect pre-processing when the velocity of the pre-processing solution for electroless plating relative to said substrate is V (Mm/s), the height of each of electrodes to be formed on the internal surfaces of said grooves is H (μm), the width of said each groove is W (μm) and a contact angle at which said pre-processing solution is brought into contact with the internal surfaces of said grooves is θ;

$$VW^2.(1+\cos\theta)/H^2>0.6 \text{ mm/s}$$



thereafter immersing said substrate in an electroless plating solution;

forming the electrodes on the surfaces of said grooves formed in said substrate;

fixing a roof plate on the surface of said substrate to form pressure chambers between the posts; and

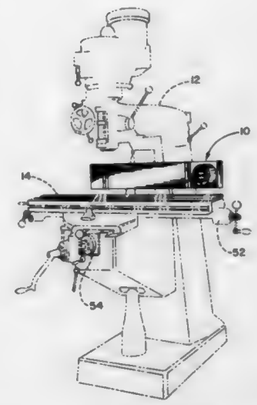
attaching an orifice plate provided with a plurality of ink jets to the end surface of said substrate so that the ink jets coincide respectively with the pressure chambers.

5,301,405

MILLING MACHINE LATHE ATTACHMENT

Richard A. Maker, 281 W. Main St., Littleton, N.H. 03561

Filed Jan. 11, 1993, Ser. No. 2,967
Int. Cl.[5] B23C *9/00*
U.S. Cl. 29—26 A **2 Claims**



1. A new and improved milling machine attachment which facilitates the use of said milling machine as a lathe, said attachment including:

mounting means for facilitating an attachment to said milling machine;

lathe means attached to said mounting means; and power supply means for driving said lathe means;

wherein said mounting means comprises a rectangular shaped support member having first and second opposed ends and first and second opposed sides, said support

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member further having a longitudinal axis and a transverse axis perpendicular to said longitudinal axis, said support member having a dovetailed shaped recess extending parallel to said transverse axis on one of said sides thereof, said support member dovetailed shaped recess adapted to be affixed to the vertically extending dovetail of said milling machine with said other opposed side thereof facing outwardly with respect to said milling machine vertical dovetail;

said support member having a first ridge member defining a first external supporting surface extending orthogonally with respect to said longitudinal axis thereof on a first side of said support member proximal to one of said opposed ends thereof and a second ridge member defining a second external supporting surface extending orthogonally with respect to said longitudinal axis thereof on a second opposed side of said support member proximal to the other of said opposed ends thereof;

wherein said lathe means comprises a lathe support member having opposed ends, a chuck rotatably mounted near one of said ends of said lathe support member whereby the rotation axis of said chuck extends orthogonally with respect to the longitudinal axis of said lathe support member passing axially through said opposed ends thereof, said power supply means comprising motor means mounted on said support member, and transmission means extending between said motor means and said rotatably mounted chuck; and

wherein said lathe support member has a first mounting recess and a second mounting recess extending parallel and at right angles to said first mounting recess whereby said lathe support member may be supported relative to said mounting means support member by causing either of said first and second mounting recesses to selectively engage said first or second ridge members on said support member.

5,301,406

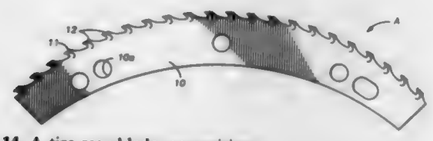
TIRE RASP BLADE

James S. Pincott, Auburn, Australia, assignor to Spencer Industries Pty. Ltd., Auburn, Australia

Continuation of Ser. No. 682,563, Apr. 9, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 943,385

Int. Cl.[5] B23D *71/00*

U.S. Cl. 29—79 **21 Claims**



14. A tire rasp blade, comprising:

a blade formed from a substantially planar body having an outer edge which is a segment of a circle;

a plurality of teeth formed at said outer edge of said body in sets of two teeth, with a recess between each set spacing apart adjacent sets, each of said teeth having a leading side edge, with the two teeth in each set being separated by a narrow slit such that adjacent side edges of said two teeth are not substantially spaced apart in the circumferential direction, said recesses between each of said sets of two teeth each having substantially the same width and depth; and a trailing side edge;

said plurality of teeth being formed as a portion of said planar body to form a unitary blade body throughout said segment of the circle;

substantially all of said leading side edges and trailing side edges of said teeth on said body having an angle of inclination relative to said outer edge extending in substantially the same circumferential direction; and

the outer portions of said planar body forming the teeth in each of said sets of two teeth being displaced laterally from each other and diverging from the plane of said planar body to the opposite sides of said blade body.

5,301,407

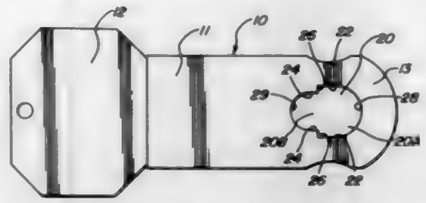
RETAINING RING REMOVAL AND INSTALLATION TOOL

David D. Koenig, Oro Valley, Ariz., assignor to Masco Building Products Corp., Taylor, Mich.

Filed Nov. 30, 1992, Ser. No. 982,795

Int. Cl.[5] B23F *19/04*

U.S. Cl. 29—229 **6 Claims**



1. A tool for removing and mounting a crescent shaped retaining ring having two end prongs disposed in an annular groove in a stem, said tool comprising a flat body having an aperture comprised of a front section and a contiguous rear section extending therethrough, said front section of said aperture adapted to seat said retaining ring in said groove and being defined by a first pair of spaced apart side walls and a front wall joining said side walls, said first pair of side walls being spaced apart a distance greater than the outer diameter of said retaining ring, said rear section of said aperture being defined by a second pair of spaced apart side walls disposed to the rear of said first pair of side walls, said second pair of side walls being spaced apart a smaller distance than said first pair of side walls thereby forming a pair of shoulders therebetween, said second pair of side walls being spaced apart a distance which is greater than the inner diameter of said annular groove, said shoulders adapted to engage said prongs of said retaining ring during removal of said ring, and a rear wall joining said second pair of side walls, said rear wall disposed opposite to said front wall, said front wall and said rear wall being curved in opposite directions.

5,301,408

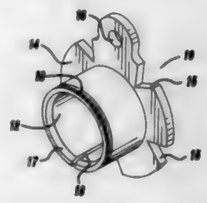
GARTER SPRING COUPLING RELEASE TOOL

Steven Berman, Blue Bell, Pa.; Billy Carlisle, San Antonio, Tex.; John Clark, North Hills, and William C. Rogers, Dresher, both of Pa., assignors to R & B, Inc., Colmar, Pa.

Filed Mar. 31, 1992, Ser. No. 861,132

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—237 **5 Claims**



1. A release tool for disconnecting a coupling from a tubular port having a flared end engaged by a garter spring of the coupling, said tool comprising a unitary selectively sized cylindrical body having first and second ends and an axial slot extending from end to end, said tool being made of a flexible material to permit the cylindrical body to be opened along said axial slot for positioning the tool about the tubular port to which the garter spring coupling is connected, the first end of said body having a flange for gripping the tool during use wherein said flange has a plurality of "V" slots for facilitating the opening of said tool along said axial slot, said cylindrical body from said flange to adjacent said second end having a constant thickness therearound, and the second end of said cylindrical body having a thickness sufficient to radially displace the garter spring from engagement with the tubular port to clear the flared end of the port thereby permitting the coupling to be disconnected from the port.

5,301,409

APPARATUS FOR SETTING A CIRCULAR COMPONENT INTO A CLOSE FITTING CIRCULAR OPENING

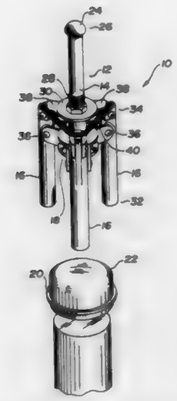
Oliver Laframboise, Box 206, Legal, Alberta, Canada T0G 1L0

Filed Mar. 25, 1993, Ser. No. 36,942

Claims priority, application Canada, Mar. 27, 1992, 2064293

Int. Cl.[5] B25B *27/14*

U.S. Cl. 29—275 **3 Claims**



1. An apparatus for setting a circular component into a close fitting circular opening, comprising:

a. an elongate body having a longitudinal axis;

b. means at one end of the body for engaging a circular component adjacent a circumference of the circular component, such that the circular component is centred upon and maintained transverse to the longitudinal axis and is supported evenly around the circumference, the means for engaging the circular component being a magnetic ring which is adapted to engage a metallic face of the circular component; and

c. an anvil centred on the longitudinal axis at an opposed end of the body, whereby a blow delivered to the anvil passes along the longitudinal axis causing a setting force to be exerted evenly adjacent the circumference of the circular component.

5,301,410

WORKPIECE MACHINING CENTER OF MODULAR CONSTRUCTION AND DRIVE MODULE FOR SAME

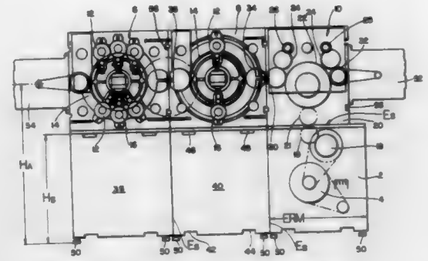
Heinz Finzer, Rheinvogtstrasse 17, 7880 Bad Saeckingen 11, Fed. Rep. of Germany

Continuation of Ser. No. 661,490, Feb. 26, 1991, abandoned, and a continuation of Ser. No. 768,294, Oct. 7, 1991, Pat. No. 5,209,101. This application Jul. 1, 1992, Ser. No. 907,782

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1990, 4003396; Mar. 29, 1990, 4010115; Aug. 29, 1990, 9012379

Int. Cl.[5] B21J *13/00*

U.S. Cl. 29—335 **33 Claims**



1. A modular machining center comprising:

a main base module having a first width;

a first machining module mounted on said main base module;

a drive unit positioned within said main base module;

a work module comprising:

a tool base module having a width corresponding to said first width,

a second machining module comprising a time controlled tool, said tool being mounted to said tool base module and being selected from the group consisting of bending tools, front-feed devices, welding stations, and assembly units,

an intermediate transmission having a power-receiving gear and a powertransferring gear,

said work module being positioned adjacent to said main base module to form an interface plane, said power-receiving gear being positioned to mesh at said interface plane; and

a main transmission for transferring power from the drive to an adjacent work module, said transmission including a toothed wheel which engages said power-receiving gear of said adjacent work module at said interface plane.

5,301,411

ELONGATED WORK ASSEMBLING METHOD

Hideki Fujiwara, Higashihiroshima, and Kanji Fujii, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 26, 1992, Ser. No. 904,965

Claims priority, application Japan, Jun. 28, 1991, 3-158092; Jun. 28, 1991, 3-158093; Sep. 26, 1991, 3-247944

Int. Cl.[5] B21D *39/03;* **B23P** *11/00*

U.S. Cl. 29—430 **13 Claims**

1. An elongated work assembling method for fastening a flexible elongated work having an integrated fixing member to a receive body, comprising:

a first placing step of placing and fixing the elongated work on an attaching mechanism arranged at one side along a continuous convey direction of said receive body;

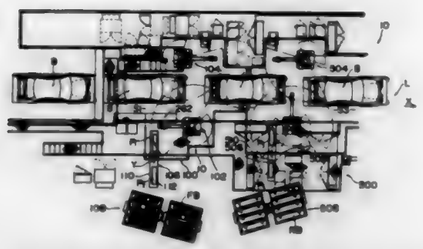
a first fastening step of fastening the placed elongated work to said attaching mechanism in substantially the same fastening state as a final fastening state to the receive body;

a clamping step of clamping the elongated work in the fastening state to said attaching mechanism;

a fastening state releasing step of releasing the fastening state of the elongated work on said attaching mechanism;

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a moving step of detaching from said attaching mechanism the elongated work released from the fastening state, and moving the detached elongated work to the receive body; and

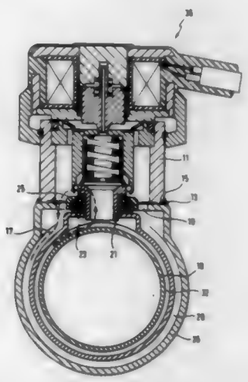


a second fastening step of finally fastening the moved elongated work to the receive body from an opposite direction against the continuous convey direction.

5,301,412
VIBRATION DAMPER

Albin Hahn, Schonungen; Günther Braun, Geldersheim; Helmut Baalmann, Bergrheinfeld; Horst Müller, Munnerstadt, and Klaus Kupfer, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 29, 1992, Ser. No. 875,458
Claims priority, application Fed. Rep. of Germany, May 2, 1991, 4114307
Int. Cl.[5] B23P *11/00*; F16F *9/46*
U.S. Cl. 29—434 21 Claims

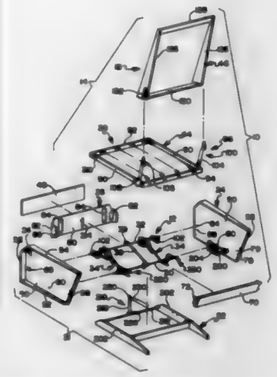


1. A method for making a vibration damper having a piston in a pressure tube in a casing tube and at least one bypass valve unit on the casing tube, comprising the steps of:
producing the casing tube from an initially substantially cylindrical tube, comprising deforming the initially substantially cylindrical tube so as to form at least one substantially planar area on a portion of a radially outer surface of the casing tube, and
attaching the bypass valve unit to the casing tube via connecting means to the at least one substantially planar area.

5,301,413
MODULAR RECLINING CHAIR AND METHOD OF MAKING

Douglas A. Habegger, Millbury, Ohio; Larry P. LaPointe, Temperance, Mich.; Clifford K. Weyher, Maybee, Mich.; Jonathan R. Saul, LaSalle, Mich., and Karl J. Komorowski, Petersburg, Mich., assignors to La-Z-Boy Chair Co., Monroe, Mich.

Filed Oct. 11, 1991, Ser. No. 772,231
Int. Cl.[5] A47C *1/02*; B23P *11/00*
U.S. Cl. 29—436 43 Claims



1. A method for assembling a reclining chair comprising:
providing means defining a chair frame having side frame members interconnected with cross rail members;
suspending an actuation mechanism between said side frame members;
pivotally interconnecting a seat and seat back; and
operably connecting said interconnected seat and seat back to said chair frame for reclining movement.

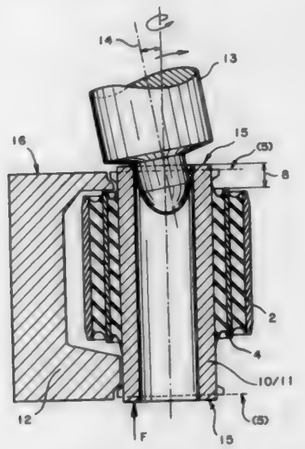
5,301,414
PROCESS FOR SHAPING A REINFORCEMENT ON THE EXTREMITIES OF THE INTERNAL CASING OF AN ELASTIC JOINT, AFTER MOLDING, AND ITS APPLICATIONS

Michel Gautheron, Nevers, France, assignor to Caoutchouc Manufacture et Plastiques, Versailles Cedex, France

Filed Jul. 20, 1992, Ser. No. 916,391
Claims priority, application France, Jul. 23, 1991, 91 09405; Dec. 11, 1991, 91 15484
Int. Cl.[5] B21D *35/00*
U.S. Cl. 29—451 16 Claims

1. A method for the manufacture of an elastic joint, said elastic joint including an internal casing member, said internal casing member having an exterior surface, an interior surface defining a throughgoing bore passing through said internal casing member and a central axis, said elastic joint also including an external casing member, said external casing member having an exterior surface, an interior surface defining a throughgoing bore passing through said external casing member and a central axis, and said elastic joint also including an elastomeric compound positioned between said exterior surface of said internal casing member and said interior surface of said external casing member, said method for the manufacture of said elastic joint comprising the steps of:
providing said internal casing member, said internal casing member having an end portion, said end portion having an interior portion and an end surface;
providing said external casing member;
providing said elastomeric compound;
positioning said external casing member, said internal casing

member and said elastomeric compound by molding said elastomeric compound about said internal casing member such that:
said external casing member at least partially surrounds and bonds with said elastomer compound;
said elastomer compound bonds with said internal casing member; and
said elastomeric compound is situated between said exterior surface of said internal casing member and said interior surface of said external casing member, thereby forming a molded blank comprising said external casing member, said internal casing member and said elastomeric compound;
providing a forming machine for shaping said end portion of said internal casing member, said forming machine comprising an internal die member;
radially expanding said interior portion of said end portion of said internal casing member by operating said forming machine, when said formed molded blank is in said forming machine, to thereby form an annular reinforcement on said end portion of said internal casing member, said step of radially expanding said end portion of said internal casing member being carried out by:

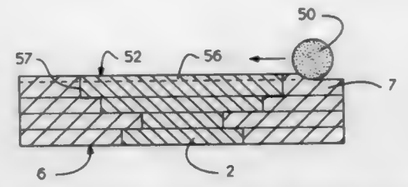


contacting a first portion of said internal die member of said forming machine at a plurality of positions at different times with said interior portion of said end portion of said internal casing member while said molded blank is mounted in said forming machine, thereby enlarging a diameter of said interior portion of said end portion; and
contacting a second portion of said internal die member of said forming machine at a plurality of positions at different times with said end surface of said end portion of said internal casing member while said molded blank is mounted in said forming machine, thereby radially thickening said end portion of said internal casing member, wherein
said radial thickening is thickening in a direction outwardly from said interior portion of said end portion of said internal casing member along radii of said internal casing member;
said step of radially expanding said interior portion of said end portion of said internal casing member being carried out subsequent to said positioning of said external casing member, of said internal casing member and of said elastomeric compound to form said molded blank.

5,301,415
METHOD FOR FABRICATION OF THREE-DIMENSIONAL ARTICLES

Fritz B. Prinz, 5801 Northumberland St., Pittsburgh, Pa. 15217, and Lee E. Weiss, 6558 Darlington Rd., Pittsburgh, Pa. 15217

Continuation of Ser. No. 829,767, Jan. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 620,745, Dec. 3, 1990, Pat. No. 5,126,529. This application Jun. 22, 1993, Ser. No. 80,995
Int. Cl.[5] B23K *26/00*; C23C *16/04*; B29C *33/38*; B23P *25/00*
U.S. Cl. 29—458 20 Claims

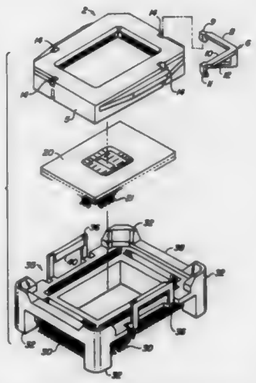


1. A method for the fabrication of a three dimensional article having a desired shape comprising the steps of
a) sequentially applying a series of layers, each said layer comprised of deposition material, each said layer being applied onto at least one of a substrate and another layer;
b) removing material from at least one surface of a plurality of selected layers after each selected layer has been deposited to shape a portion of an outside surface of the article being fabricated to any desired form; and
c) depositing at least one layer of deposition material over at least one of the plurality of selected layers from which material has been removed, the at least one layer of deposited deposition material not being deposited over the outer surface from which material has been removed.

5,301,416
SURFACE MOUNT CHIP CARRIER

Joseph W. Foerstel, Sunnyvale, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Apr. 24, 1992, Ser. No. 874,281
Int. Cl.[5] H01R *23/72*
U.S. Cl. 29—593 4 Claims



1. A method for handling a programmable logic device which has a body and a plurality of leads defining a lead footprint, the method comprising:
inserting the programmable logic device in a carrier having means for protecting the leads from deformation, and

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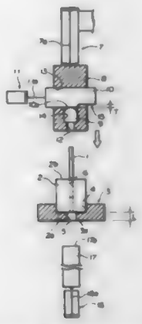
having a cavity to immobilize the programmable logic device;
inserting the carrier with the programmable logic device into a first socket having a plurality of contacts arranged within the socket such that electrical contact is made between the contacts and the plurality of leads of the programmable logic device, the first socket having socket leads arranged in the lead footprint of the programmable logic device;
performing a first electrical function utilizing the programmable logic device, said step of performing the first electrical function comprises programming the programmable logic device while the carrier with the programmable logic device is in the first socket;
removing the programmable logic device and the carrier from the first socket;
inserting the programmable logic device and the carrier into a second socket; and
performing a second electrical function utilizing the programmable logic device, said step of performing the second electrical function comprises programming the programmable logic device while the carrier with the programmable logic device is in the second socket.

5,301,417

METHOD FOR PRESSING ARMATURE SHAFT INTO AXIAL HOLE

Yasushi Kawakami, Kiryu, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Gunma, Japan

Filed Nov. 24, 1992, Ser. No. 980,986
Claims priority, application Japan, Nov. 29, 1991, 3-317077
Int. Cl.[5] H02K *15/02*
U.S. Cl. 29—598 **1 Claim**



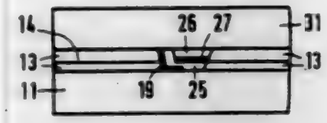
1. A method for pressing an armature shaft into an axial hole in a cylindrical-shaped core so as to protrude said armature shaft from a specified end face of said core at a specified protrusion dimension, said method comprising:
(a) placing said core with said armature shaft therein on a gage base so that said specified end face faces downward, said gage base being provided with a shaft through hole of a depth equal to said protrusion dimension;
(b) descending a core pressing portion, disposed above said gage base, to press down said armature shaft into said axial hole via a pressing body while restricting the vertical movement of said pressing body with a temporary fixing part disposed on the lower portion of said pressing portion;
(c) stopping the descent of said core pressing portion, when a lower face of said core pressing portion makes contact with an upper end face of said core, thus protruding an end portion of said armature shaft from a lower face of said gage base through said shaft through hole;
(d) releasing the fixation of said temporary fixing part; and
(e) raising a shaft push back portion, disposed below said gage base, to press said end portion of said armature shaft back upward until an upper end face of said shaft push back portion makes contact with said lower face of said gage base.

5,301,418

METHOD OF MANUFACTURING A MAGNETIC HEAD

Franciscus W. A. Dirne; Adrianus P. Severijns; Jacobus B. Giesbers, and Jacobus J. M. Ruigrok, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1992, Ser. No. 861,748
Claims priority, application Hague, Apr. 12, 1991, 91200859.6
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 **5 Claims**



1. A method of manufacturing a magnetic head provided with a head face, a winding aperture and a transducing gap which extends in a height direction from the head face to the winding aperture and which, in the height direction, has a height which is equal to the distance between the head face and the winding aperture, said winding aperture having a dimension extending in a direction parallel to the height direction of the transducing gap and measured from the transducing gap to a bounding wall of the winding aperture, which wall, viewed in the height direction, is situated opposite the transducing gap, said method comprising the following steps:
providing first magnetic layer on a substrate,
providing a recess in said layer, which recess extends as far as the substrate and in said height direction,
providing a gap layer on a flank of the magnetic layer, which flank constitutes a boundary of the recess,
subsequently providing a second magnetic layer in the recess and
after surface-polishing, arranging a counterblock on the layers provided,
characterized in that the recess is provided in the first magnetic layer over a distance which is greater than the height of the transducing gap to be formed and which is at most equal to the sum of the height of the transducing gap to be formed and said dimension of the winding aperture to be formed, and in that the winding aperture is provided in the substrate, said layers and the counterblock.

5,301,419

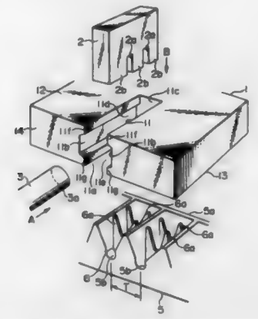
CABLE GUIDE BACK FOR USE IN A CABLE CONNECTION PROCESSING APPARATUS

Goichi Mitani; Masaoki Yasumi, and Akihiro Muraoka, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited, Japan

Filed Jan. 14, 1992, Ser. No. 821,382
Claims priority, application Japan, Jan. 17, 1991, 3-15671
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—753 **13 Claims**

1. A cable guide block which has a guide groove for receiving an end portion of a cable and which is for use in a cable connection processing apparatus for carrying out a cable connection operation by moving a cable pusher with respect to said guide groove, said movement being in a direction perpendicular to a cable receiving direction in order to press the end portion of said cable onto a cable connection portion of a contact disposed below said guide groove, said cable guide block comprising;

a first surface facing said cable pusher for pushing the end portion of said cable onto said cable connection portion;
a second surface opposite to said first surface;
a third surface perpendicular to said first and said second surface; and
said guide groove being formed in said third surface to extend along said cable receiving direction, said guide groove extending from said first surface to said second surface;
said guide groove comprising;
a cable inserting opening formed in said third surface for receiving the end portion of said cable;



a pair of wall surfaces for guiding the end portion of said cable, said pair of wall surfaces being spaced at a distance which is greater than a diameter of said cable;
a bottom surface for receiving the end face of said cable;
a first opening formed in said first surface for receiving said cable pusher;
a second opening formed in said second surface for permitting the end portion of said cable to be pushed out therethrough;
at least one projection formed on at least one of said wall surfaces so that the distance between said wall surface is less than the diameter of said cable, said portion of said cable being forced past the position where said projection is in an electrically deformed condition.

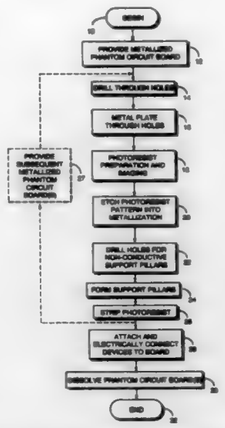
5,301,420

METHOD FOR MANUFACTURING A LIGHT WEIGHT CIRCUIT MODULE

Frederick Y. Cho, Higley; Russell J. Elias, and James F. Landers, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 86,060
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **21 Claims**

1. A method for making a light weight circuit module, said method comprising steps of:
providing a substrate, the substrate comprising a rigid planar substrate and having metallization disposed on at least a first and a second planar surface thereof, wherein the first and second planar surfaces are substantially parallel to one another;
drilling through holes in the substrate;
plating the through holes with a metal;
preparing a patterned photoresist layer on at least one of the first and second surfaces;
etching the metallization on the at least one of the first and second surfaces in accordance with the patterned photoresist layer;
drilling support holes;
filling the support holes with a material chemically distinct from the substrate;



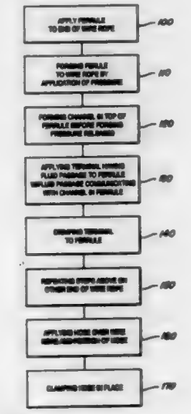
stripping the patterned photoresist layer from the at least one of the first and second surfaces; and
chemically removing the substrate from the metallization.

5,301,421

METHOD AND APPARATUS FOR MAKING FLUID COOLED CONDUCTOR

Dennis E. Strefling, Mt. Clemens, Mich., assignor to Electro-Max Mfg. Co., Clinton Township, Macomb County, Mich.

Division of Ser. No. 783,853, Oct. 28, 1991, Pat. No. 5,229,543.
This application Mar. 22, 1993, Ser. No. 34,724
Int. Cl.[5] H01R *43/04*; B23P *19/00*
U.S. Cl. 29—863 **9 Claims**



1. A method of applying a terminal to an end of a wire rope, said method including the steps of:
(a) placing a ferrule on one end of said wire rope;
(b) forging said ferrule to said wire rope by the application of pressure to said ferrule;
(c) maintaining said pressure on said ferrule while forming a channel in the top thereof by the use of a forming die;
(d) placing a unitary terminal having a fluid passage formed therein over said ferrule in a manner such that said fluid

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passage communicates with said channel formed in said ferrule; and

(e) crimping said terminal to said ferrule.

9. An apparatus for forging a ferrule to a wire rope or braid and forming a channel therein, said apparatus including:

(a) vertical reciprocating means for operably cycling a second side of the reciprocating means relative to a first side of the reciprocating means in a vertical direction;

(b) an axially extending fixed forming die having an arcuate forming recess and relief formed therein and fixed to said first side of said vertical reciprocating means;

(c) an axially extending pedestal for holding a ferrule during a forming process spring mounted to said axially extending fixed die in a spaced parallel relationship for transverse movement toward and away therefrom;

(d) an axially extending movable die having an arcuate forming recess and a relief formed therein, said movable die being disposed in guide means for establishing a spaced, parallel relationship with said pedestal and said fixed die, and said guide means permitting movement in a transverse direction toward and away from said pedestal and said fixed die, said guide means fixed to the first side of said vertical reciprocating means, said movable die having a cam surface;

(e) a ram fixed to said second side of said vertical reciprocating means having a camming surface moving vertically with said second side toward and away from said movable die, said camming surface operably contacting said cam surface of said movable die as said second side is cycled toward said first side and thereby moving said movable die first into contact with a ferrule mounted on said pedestal, and then moving said ferrule into contact with said fixed die and applying pressure to said ferrule mounted on said pedestal, and then maintaining said pressure, and

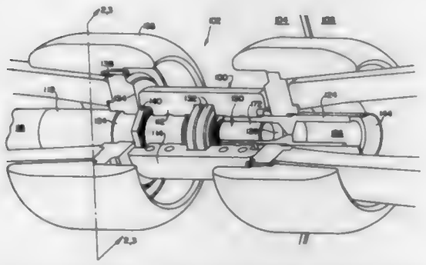
(f) a tool holder fixed to said second side of said vertical reciprocating means for vertical movement with said ram, said tool holder being in axial alignment with said pedestal when said pedestal is in its most transverse position, and holding a forming tool therein, said forming tool and said tool holder positioned with respect to said ram and operably pressing a channel into said ferrule mounted to said pedestal after said ram has applied said forging pressure, but before said ram beings its upward vertical travel with said second side of said vertical reciprocating means.

5,301,422

APPARATUS FOR JOINING TRANSMISSION CABLES

Milan Uzelac, Highland, Ind., assignor to G & W Electric Company, Blue Island, Ill.

Filed Mar. 6, 1992, Ser. No. 847,191
Int. Cl.[5] H01R *43/00, 11/09*
U.S. Cl. 29—869 **13 Claims**



1. A device for joining first and second sections of an electric power transmission cable, each section having a center conductor and a solid dielectric, comprising:

a first conductor extension mechanically and electrically attached to the center conductor of the first cable section:

a second conductor extension mechanically and electrically attached to the center conductor of the second cable section;

said first and second conductor extensions extending longitudinally from said cable section center conductors; and

clamp means for mechanically and electrically attaching said first conductor extension to said second conductor extension;

said first conductor extensions, said second conductor extension, and said clamp means cooperating to retain said first and second cable sections in an adjustable longitudinal relationship;

each of said first and second conductor extensions further comprising:

a substantially cylindrical wall;

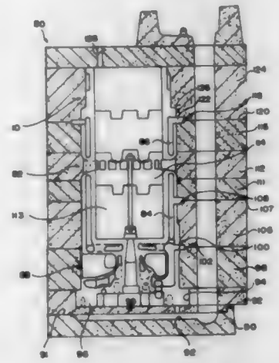
said wall forming a cavity extending longitudinally inward from an end of said conductor extension for receiving a conductor insert, said conductor insert having an exposed portion extending longitudinally outward from said end of said conductor extension.

5,301,423

ONE PIECE CYLINDER HEAD AND LINER INCLUDING A DRAFTLESS WATER JACKET AND METHOD FOR MAKING SAME

Richard J. Clark; Richard K. Clark, both of Gilman, and Dennis E. Clark, Onarga, all of Ill., assignors to Clark Industries, Inc., Gilman, Ill.

Continuation-in-part of Ser. No. 29,625, Mar. 11, 1993. This application Jul. 12, 1993, Ser. No. 89,109
Int. Cl.[5] B22C *9/00*
U.S. Cl. 29—888.01 **1 Claim**



1. A method of vertically casting a one piece cylinder head and liner combination, the liner including a water jacket therein, the method of comprising the steps of:

creating a mold base having a plurality of passages therein for transfer of molten metal into the mold;

creating a mold sectioning including a stepped in diameter inner surface to create a cylinder head lip and setting the mold section on the mold base;

creating a second mold section having slots on an upper surface thereof and setting same on said previous mold section;

creating a multiple piece core for creating channels and passages to be in the cylinder head and seating same within an inner bore of the engaged mold sections with the core being suspended by radial fingers engaging slots in the top surface of the second mold section;

creating a further circular mold section and placing same upon the previously engaged mold sections;

creating a first thick walled cylindrical mold section which engages within said previous mold sections and setting the mold section within the mold sections already created and aligned;

creating a first ring like mold section which seats on said engaged mold sections and accommodate the radial fingers of said bottom core piece and engaging same upon an upper peripheral surface of said circular mold section;

creating a second ring like mold section which seats on said first ring like mold section and accommodates the radial fingers of said bottom core piece and engaging same upon an upper peripheral surface of said first ring like section;

creating a wheel like mold section and engaging said wheel like mold section onto said second ring like mold section;

creating a third ring like mold section which engages upon said wheel like mold section and having a plurality of slots at predetermined positions in an upper wall thereof, and setting the mold section on the wheel like mold section;

creating a second hollow cylindrical core piece having a predetermined diameter which is equal to the diameter of said first core section and engaging the core section within the engaged mold sections;

creating a fourth ring like mold section which seats on said third ring like mold section and accommodates the radial fingers of said upper core piece;

creating identical second and third vertically nesting thick walled cylindrical mold sections a bottom one of which engages within said second cylindrical mold section and setting the second and third mold sections upon the hub of the wheel like mold section;

creating a mold top section having an opening in a top surface thereof which aligns with aligned passages in the engaged mold sections, an inner wall of all contiguous mold sections defining an outer wall of said liner and an outer surface of said thick walled and wheel like mold sections defining a center bore of said liner; and

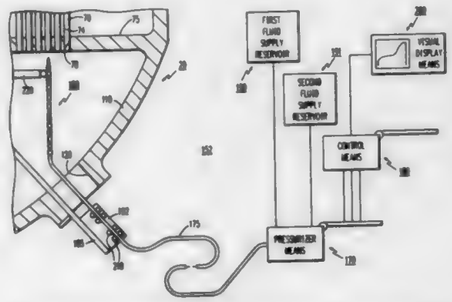
placing said top mold section and a pour trough over said fourth ring like mold section and pouring hot metal into the trough and created mold.

5,301,424

METHOD FOR HYDRAULICALLY EXPANDING TUBULAR MEMBERS

David A. Snyder, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1992, Ser. No. 986,151
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—890.044 **11 Claims**



1. A system for expanding a tubular member having an inner wall, comprising:

(a) a support body received in the tubular member, said support body having an exterior surface and a port on the exterior surface;

(b) a bladder connected to said support body and covering the port, said bladder having a corrugated wall portion for strengthening said bladder;

(c) pressurizer means connected to the port for supplying fluid to said bladder for radially expanding said bladder into engagement with the inner wall of the tubular member; and

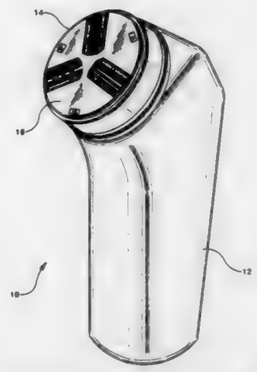
(d) a computer connected to said pressurizer means for controlling said pressurizer means, whereby said bladder controllably expands the tubular member as said bladder radially expands into engagement with the inner wall of the tubular member.

5,301,425

ROTARY POWERED DYNAMIC SHAVING SYSTEM WITH SHAVING AID

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 4, 1992, Ser. No. 971,496
Int. Cl.[5] B26B *19/14*
U.S. Cl. 30—42 **24 Claims**



1. A rotary powered dynamic shaving system providing multidirectional cutting during shaving comprising:

a handle configured to be grasped by a user;

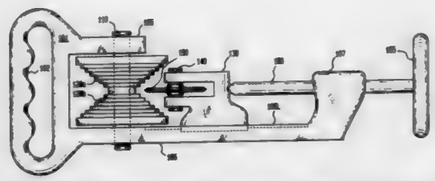
a head rotatably connected to said handle, said head including at least one blade having a cutting edge for shaving, said blade movably supported by at least one spring such that said blade is free to travel relative to and in a direction substantially perpendicular to said head in response to forces encountered during shaving.

5,301,426

INSULATION STRIPPING TOOL

Robert R. Regan, 17 E. 42 St., Bayonne, N.J. 07002

Filed Apr. 12, 1993, Ser. No. 45,090
Int. Cl.[5] B26B *27/00*
U.S. Cl. 30—90.9 **4 Claims**

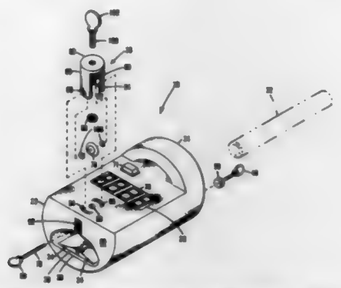


1. A tool for stripping the insulation from wire or cable, comprising a frame exhibiting a fixed and a slidable bracket and a further fixed bracket, a free-spinning cutting wheel and a vee-shaped shaped spool respectively journaled into said fixed and said slidable bracket, said spool including a plurality of different diameter, independently rotatable sheaves and said

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spool and said cutting wheel having substantially parallel axes, means including a lead screw retentively journaled between said slidable bracket and said further fixed bracket for positioning said cutting wheel and said spool relative to each other to determine the penetration of said cutting wheel into said insulation, said cutting wheel and said spool being caused to rotate when said tool is pulled along said wire or cable.

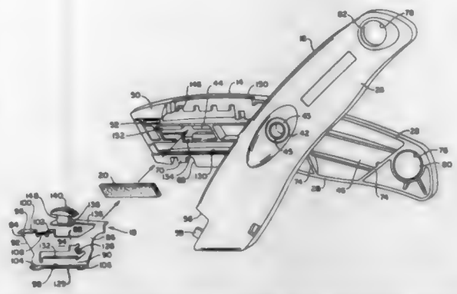
5,301,427
HANDHELD PIPE RULE AND CUTTER
Elizabeth A. Swatek, 214 Pecks Ct., Walworth, Wis. 53184
Filed May 19, 1993, Ser. No. 64,770
Int. Cl.[5] B23D *21/08*
U.S. Cl. 30—101 **8 Claims**



1. A handheld apparatus for cutting tubing to a selected length, comprising:
(a) a housing having an opening for receiving tubing which extends axially through the housing;
(b) a measuring assembly mounted to the housing, the measuring assembly having a rotatable wheel which rotates about an axis perpendicular to the tubing received within the opening, the wheel being rotatable such that an angular displacement of the wheel is proportional to a linear length of tubing inserted into the housing;
(c) a cutter assembly mounted to the housing, the cutter assembly having a rotatable cutter blade which rotates about an axis substantially perpendicular to the measuring assembly wheel axis, such that housing and the connected cutter blade may be rotated about tubing received within the opening to cut said tubing to a selected length;
(d) means for measuring the angular displacement of the measuring assembly wheel;
(e) an electronic controller which computes the linear length of tubing to be cut corresponding to said angular displacement; and
(f) a display connected to the controller which displays the computed linear length.

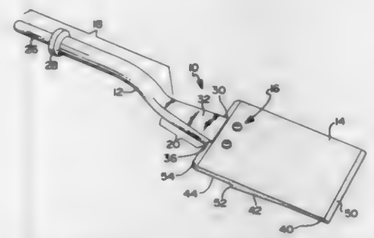
5,301,428
UTILITY KNIFE
John H. Wilcox, Shaftsbury, Vt., assignor to The Stanley Works, New Britain, Conn.
Filed Mar. 10, 1992, Ser. No. 848,736
Int. Cl.[5] B26B *3/06*
U.S. Cl. 30—162 **17 Claims**

1. In a retractable blade utility knife handle having a front end including a blade receiving opening and comprising a pair of elongated mating handle halves separated generally along a separation plane extending longitudinally of the handle, the handle halves being connected by a pivot positioned intermediate along the length thereof and being movable about the pivot between open and closed positions, and a blade carrier mounted between the handle halves for reciprocable movement toward and away from a fully forward position relative to the blade receiving opening to shift a blade mounted on the blade carrier toward and away from a fully extended position, the improvement wherein the handle is provided with first and second independently actuated interlocks for locking the handle halves in the closed position, each of the first and second interlocks in their locked condition including means extending across the separation plane of the handle halves for providing interference to pivotal opening of the handle halves, the first interlock being positioned adjacent said front end and the



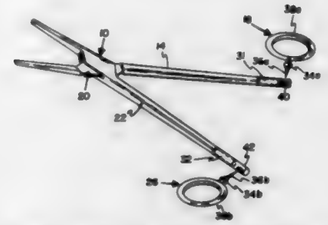
second interlock being longitudinally spaced therefrom by the pivot, the first interlock including a first movable locking portion which is formed on the blade carrier and is movable longitudinally relative to the handle in a direction generally parallel to the separation plane of the handle halves into and out of an unlocked condition when the blade carrier is adjusted into and out of a fully forward position, respectively.

5,301,429
TOOL FOR REMOVING MOLDINGS AND THE LIKE
Douglas M. Bundy, P.O. Box 56, Naubinway, Mich. 49762
Filed Feb. 16, 1993, Ser. No. 18,010
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—169 **5 Claims**



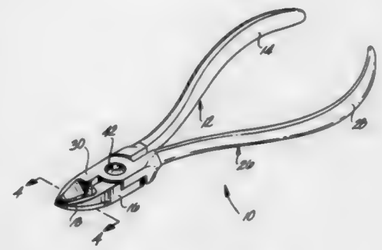
1. A tool connectable to a power source for removing moldings from a surface mounted thereupon, the tool comprising:
(a) a integrally formed handle having:
(1) a gripping portion comprising:
(i) a first leg, the first leg having a longitudinal axis, and
(ii) a second leg, the second leg being integral with the first leg and angularly inclined with respect thereto angle greater than zero degrees and less than 180 degrees;
(2) a blade-engaging portion, the blade-engaging portion having a forward portion and a rearward portion, the blade-engaging portion further having a longitudinal axis that is vertically displaced from the longitudinal axis of the first leg of the gripping portion, the blade-engaging portion having a flat bottom surface and a flat upper surface, the upper surface having a beveled shoulder formed therein, the shoulder defining the forward portion and having a reduced thickness relative to the rearward portion;
(b) a integral blade having a forward portion, a medial portion and a rearward portion, the blade further having a planar upper surface and a lower surface, the forward portion having a beveled forward edge and a first thickness, the medial portion having an increased thickness relative to the first thickness, a shoulder being formed on the lower surface separating the medial portion and the rearward portion, the rearward portion having a beveled rearward edge and a thickness less than the increased thickness of the medial portion, the rearward portion of the blade being interdigitally deployed with the blade-engaging portion of the handle; and
(c) means for releasably connecting the blade to the handle.

5,301,430
INTERCHANGEABLE RINGLETS FOR PIVOTED GRASPING INSTRUMENTS
Billy H. Brenton, P.O. Box 1656, Los Lunas, N. Mex. 87031, and James J. Stagnone, 2426 Vista Grande, NW., Albuquerque, N. Mex. 87120
Division of Ser. No. 393,676, Aug. 14, 1989, Pat. No. 5,125,159.
This application Jun. 30, 1992, Ser. No. 907,107
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—232 **4 Claims**



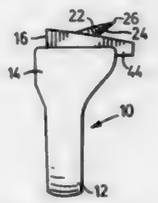
1. A pivoted grasping clamping instrument having interchangeable ringlets comprising in combination:
a first shank member having a handle portion and a grasping portion approximately separated by a first pivot location;
first elongated handle extension means rigidly attached to the handle portion of said first shank member substantially near to the terminus thereof away from the first pivot location, said first handle extension means having a tubular portion located at the end thereof opposite the position of attachment thereof to said first shank member and disposed substantially perpendicular to the long dimension thereof;
first flexible ring means having a ring-shaped portion and a generally cylindrical arm attached radially thereto, the arm having an enlarged deformable terminus;
a second shank member having a handle portion and a grasping portion approximately separated by a second pivot location, said second shank member being pivotably connected to said first shank member in the region of the first pivot location and the second pivot location in such a manner that the grasping portion of said first shank member and the grasping portion of said second shank member cooperate as opposing grasping portions of a grasping instrument;
second elongated handle extension means rigidly attached to the handle portion of said second shank member substantially near to the terminus thereof away from the second pivot location, said second handle extension means having a tubular portion located at the end thereof opposite the position of attachment thereof to said second shank member and disposed substantially perpendicular to the long dimension thereof; and
second flexible ring means having a ring-shaped portion and a generally cylindrical arm attached radially thereto, the arm having an enlarged deformable terminus; whereby the cylindrical arm of said first ring means can be inserted into the tubular portion of said first handle extension means forming thereby a rotatable thumb ringlet, the enlarged terminus thereof and the ring-shaped portion preventing escape therefrom, and the cylindrical arm of said second ring means can be inserted into the tubular portion of said second handle extension means forming thereby a rotatable finger ringlet, the enlarged terminus thereof and the ring-shaped portion preventing escape therefrom.

5,301,431
HAND-HELD CUTTING TOOL
Jonel Cera, Corona, Calif., assignor to ETM Corporation, Monrovia, Calif.
Filed Dec. 1, 1992, Ser. No. 983,880
Int. Cl.[5] B26B *13/00, 17/00*
U.S. Cl. 30—254 **17 Claims**



1. A hand-held cutting tool comprising:
a member having a handle portion at one end and a cutting portion at its other end;
a hardened tool-steel insert attached to the cutting portion comprising a cutting edge;
the surface of the member having a hard chrome plating except for the cutting edge; and
the cutting edge having a refractory material coating.

5,301,432
RING WITH MOVABLE BLADE
Stanley G. Richardson, and Derry J. Richardson, both of 261 Kenilworth Ave. No., Hamilton, Ontario, Canada L8H 4S6
Filed Dec. 15, 1992, Ser. No. 990,586
Int. Cl.[5] B26B *27/00*
U.S. Cl. 30—298 **20 Claims**



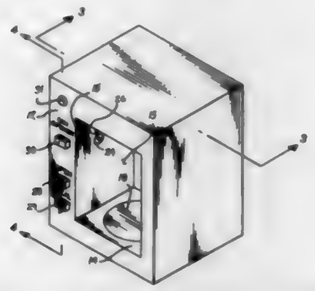
1. A ring blade comprising:
a ring with a top section, said ring being adapted for placement on a user's finger;
a movable crown member mounted on said top section and having an elongate slot formed therein;
a blade member having a sharp edge and arranged in said slot; and
pin means for pivoting said blade member from a retracted position where said sharp edge at least is located in said slot to an extended position where said sharp edge is

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exposed, said blade member being connected to said top section by said pin means;

wherein movement of said crown member towards said top section causes said pin means to pivot said blade member to the extended position.

5,301,433
CAN OPENER AND JAR SEALING APPARATUS
Jon C. Rogers, P.O. Box 2411, Yucca Valley, Calif. 92286
Filed Jan. 26, 1993, Ser. No. 9,058
Int. Cl.[5] B67B *7/46*
U.S. Cl. 30—401 **3 Claims**



1. A can opener and jar sealing apparatus, comprising,

a housing, the housing including a housing front wall, a housing cavity directed into the housing through the front wall, with the housing cavity having a cavity floor spaced from a roof plate, and a first side wall spaced from a second side wall, and

a resilient anvil pad mounted to the floor in a fixed orientation, and

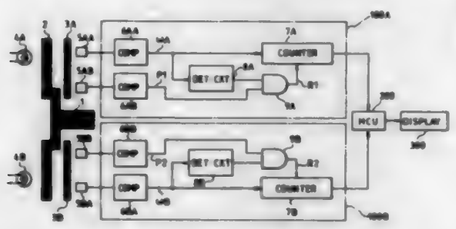
a resilient rotary roof plate pad rotatably mounted relative to the roof plate, and

first drive means provided within said housing for effecting selective rotation and contra-rotation of the roof plate pad relative to the anvil pad, and

a can opener cutter mounted to the first side wall, and a can opener drive gear arranged in cooperation with the can opener cutter, and

second drive means provided within said housing for effecting selective rotation of the can opener drive gear.

5,301,434
ROTATION ANGLE MEASURING APPARATUS
Yoshinobu Imaizumi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 992,438
Claims priority, application Japan, Dec. 24, 1991, 3-111938[U]
Int. Cl.[5] G01B *11/26;* **G01D** *5/245*
U.S. Cl. 33—1 N **9 Claims**



1. A rotation angle measuring apparatus comprising:

a rotatable disk formed with an angle pattern for rotation angle detection;

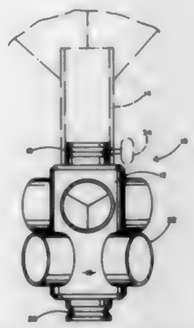
a first detecting member having a detection pattern for detecting said angle pattern;

a second detecting member having a detection pattern for detecting said angle pattern and provided at substantially rotation-symmetrical position of said rotatable disk with respect to said first detecting member;

means for determining the rotation angle of said rotatable disk on the basis of the positional relation between the detection pattern of said first detecting member and the angle pattern of said rotatable disk and the positional relation between the detection pattern of said second detecting member and the angle pattern of said rotatable disk; and

means for producing a reference signal defining the rotation reference of said rotatable disk, said reference signal producing means including a first reference pattern provided on said first detecting member, a second reference pattern provided on said second detecting member, a third reference pattern which is provided at a first position on said rotatable disk and which can be detected by said first reference pattern and cannot be detected by said second reference pattern, and a fourth reference pattern which is provided at a second position substantially rotation-symmetrical with the first position on said rotatable disk and which can be detected by said second reference pattern and cannot be detected by said first reference pattern.

5,301,435
PRISM ASSEMBLY HAVING MULTI-DIRECTIONAL REFLECTIVITY AND TARGETING
Galen L. Buckley, Dana Point, Calif., assignor to Pyramid Optical, Inc., Irvine, Calif.
Filed Apr. 4, 1989, Ser. No. 333,998
The portion of the term of this patent subsequent to Jan. 12, 2008, has been disclaimed.
Int. Cl.[5] G01C *15/06*
U.S. Cl. 33—293 **7 Claims**



1. A retro-reflective prism assembly of the type having at least one prism for reflecting light received from a distant light source for measuring the precise distance between the assembly and the source; the assembly comprising:

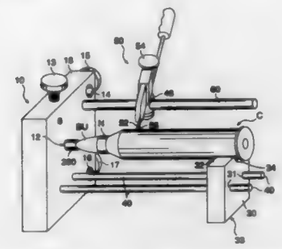
a cylindrical housing having a cylindrical wall defining a longitudinal axis and having a plurality of prism receptacles spaced around said cylindrical wall;

a plurality of retro-reflective prisms, one such prism in each of said respective receptacles, whereby incident light received from any direction in a plane substantially perpendicular to said longitudinal axis of said cylindrical housing is reflected by at least one of said prisms;

said plurality of receptacles comprising two sets of symmetrically spaced receptacles, said sets being spaced from one another along said longitudinal axis; and

wherein each such set comprises three receptacles positioned at 120 degree intervals around said cylindrical wall.

5,301,436
CARTRIDGE RUNOUT FIXTURE
Roger B. Johnston, 3372 N. Lucille La., Lafayette, Calif. 94549
Filed Sep. 14, 1992, Ser. No. 944,457
Int. Cl.[5] G01B *1/00*
U.S. Cl. 33—506 **4 Claims**



1. A fixture for indicating runout on a cylindrical ammunition component, the cylindrical ammunition component having a first end, an exterior surface including a second end, and a geometrical axis of concentricity, the fixture comprising:

a base;

a tip bearing coupled to the base for supporting said first end of the cylindrical ammunition component so as to permit rotation of said first end about the geometrical axis;

a support bearing coupled to the base for rotatably supporting an exterior surface of the cylindrical ammunition component between said first end and said second end of said cylindrical ammunition component, whereby said cylindrical ammunition component can be rotated relative to said support bearing; and

a single runout indicator means operable for detecting runout on said exterior surface, said single runout indicator means including a single tip which bears against the external surface of the cylindrical ammunition component;

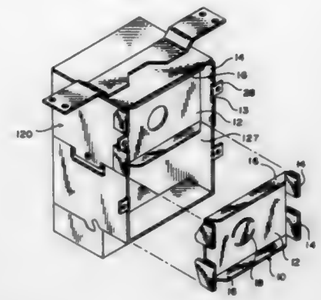
whereby runout is measured when said first end of said cylindrical ammunition component is supported by said tip bearing, a portion of exterior surface of said cylindrical ammunition component between said first end and said second end is supported by said support bearing, said tip of said single runout indicator means bears against the external surface of the cylindrical ammunition component, and said cylindrical ammunition component is rotated about a geometrical axis and wherein the tip bearing comprises a stepped cone having concentric cylindrical sections selectively insertable within an opening in said first end of said cylindrical ammunition component.

5,301,437
UTILITY BOX INSERT
Lynn Burke, 6 Jefferson Ave., Takoma Park, Md. 20912
Filed May 29, 1992, Ser. No. 890,127
Int. Cl.[5] H02G *3/02;* **B25H** *7/04;* **G01B** *3/14*
U.S. Cl. 33—562 **19 Claims**

1. A utility box insert for protecting the contents of a utility box during the installation of wallboard, comprising:

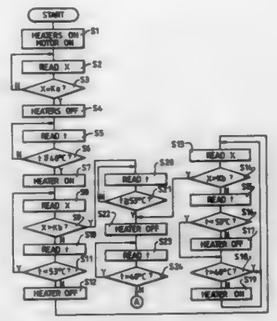
a plate dimensioned to fit within the interior of the utility box having opposed sides and ends;

a fastening tab at each end of said plate extending upwardly from said plate to hook over edges of the end walls of the utility box; and,



mounting ear accommodation means cooperating with said fastening tabs to align the insert and allow the insert to be secured within a utility box with mounting ears.

5,301,438
DRYING MACHINE
Miho Tanaka, Seto, and Kinya Hayashi, Toki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 19, 1993, Ser. No. 19,588
Claims priority, application Japan, Mar. 27, 1992, 4-070676
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—48 **19 Claims**



1. A drying machine comprising:

a) a drum constituting a drying chamber for containing clothes to be dried;

b) heating means or heating air supplied to the chamber;

c) means for determining a degree of dryness of the clothes in the drying chamber;

d) means for detecting the temperature of the heated air; and

e) control means for controlling the amount of heat supplied by the heating means, said control means being responsive to the dryness determining means and the temperature detecting means in order to maintain the heated air temperature within a predetermined temperature range when the clothes dryness reaches a first dryness value, and for controlling the heating means to supply heat intermittently when the clothes dryness reaches a second dryness value.

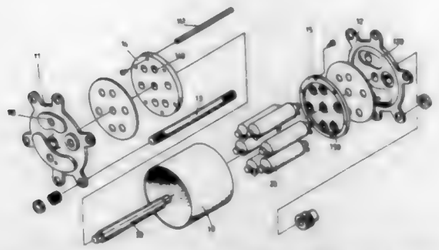
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5,301,439

DESICCANT ROTOR OF A DEHUMIDIFIER

Bang-Chih Wang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Nov. 10, 1992, Ser. No. 974,275
Int. Cl.[5] F26B *21/06*
U.S. Cl. 96—125 **5 Claims**



1. A desiccant rotor comprising a housing rotatably engaged between a cap and a base, at least one plate engaged on one end of said housing, at least one board engaged on the other end of said housing, and at least three barrels engaged between said plate and said board, each of said barrels including a passage formed in a center portion thereof and made of screen material and having one end for receiving air, a stop disposed in a middle portion of said passage for preventing said air from directly flowing out of said barrel, a shaft rotatably engaged between said cap and said base and coupled to said plate and said board such that said shaft rotates in concert with said barrels, said shaft including a first end extended outward through said board, and a rotating mechanism including at least one beam having a ring formed integral on a first end thereof, an actuator pivotally coupled to a second end of said beam, and having a piston rod, a stub rotatably engaged in said ring and having a ratchet gear formed thereon, said first end of said shaft coupled to said stub and rotated in concert with said stub, a lever having a first end pivotally coupled to said piston rod of said actuator and having a sleeve formed on a second end thereof and rotatably engaged on said stub, a pin disposed in said sleeve, and means for biasing said pin to engage with said ratchet gear, whereby, said shaft and said barrels are rotated when said sleeve is rotated relative to said stub by said actuator.

5,301,440

ON-LINE TYPE MOISTURE MEASURING SYSTEM FOR POWDERED OR GRANULAR MATERIALS

Motoharu Shimizu, and Osamu Matsui, both of Osaka, Japan, assignors to Kabushikikaisha Matsui Seisakusho, Osaka, Japan

Filed Jun. 22, 1992, Ser. No. 901,982
Claims priority, application Japan, Jun. 27, 1991, 3-183816
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—89 **4 Claims**

1. An on-line type moisture measuring system for powdered or granular materials, comprising:

sampling means designed to be attached to a material storage container storing powdered or granular materials, for sampling a fixed amount of the materials and for pneumatically transporting the sampled materials;

dehumidified and dried air supply means having an air supply source, for generating dehumidified and dried air by heating and dehumidifying the air supplied from said air supply source;

material weighing means for weighing the sampled materials fed from said sampling means;

a vaporization treatment chamber including a sample boat for receiving the weighed materials by said material weighing means and an airtight vaporizer having a heater for heating the weighed materials received in said sample boat while receiving the dehumidified and dried air supplied from said dehumidified and dried air supply means as a carrier gas;

a moisture measuring chamber having a moisture meter for measuring the water quantity of the weighed materials by the reaction of a Karl Fischer reagent by receiving the vapor generated in said vaporizer together with said carrier gas; and

an arithmetic operation unit for calculating the moisture



content of the sampled and weighed materials based on the moisture quantity measured by said moisture measuring chamber and the weight value weighed by said material measuring means;

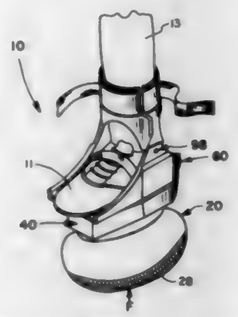
whereby a fixed amount of powdered or granular materials sampled from said material storage container is repeatedly supplied each time sampled materials are treated in said vaporization treatment chamber so as to get the moisture content of the sampled materials.

5,301,441

PNEUMATIC BOUNCING BOOT

Charles D. Kownacki, 3829 McClelland Ave., Erie, Pa. 16506

Filed Feb. 10, 1993, Ser. No. 16,039
Int. Cl.[5] A43B *3/10, 13/20*; A63B *25/08*
U.S. Cl. 36—7.8 **25 Claims**



1. A bouncing boot for attachment to a foot of a wearer for recreational exercise, said boot comprising:

a) attaching means for connecting said boot to the foot of said wearer, said attaching means including a platform and means for variably positioning a center of gravity of said wearer relative to said platform;

b) a pneumatic ball providing a lower extremity of said boot and forming a bouncing spring;

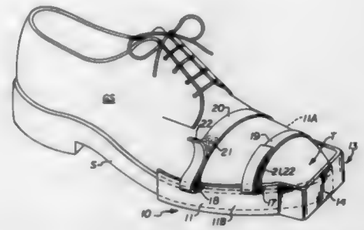
c) retaining means for engaging said ball and securing it to a lower portion of said platform, said retaining means including adjusting means to adjust the fore and aft position of said pneumatic ball relative to said platform to maintain said pneumatic ball generally beneath said center of gravity of the wearer.

5,301,442

SQUARE-TOE ATTACHMENT FOR GOLF SHOES

H. Richard Williams, 1430 Oyster Point Dr., Sugar Land, Tex. 77478

Filed Dec. 16, 1992, Ser. No. 991,395
Int. Cl.[5] A43B *5/00*
U.S. Cl. 36—127 **1 Claim**



1. A square-toe attachment device for removable attachment to the front portion of the sole of a conventional golf shoe of the type having a plurality of spikes threaded into the bottom of the sole thereof, the attachment device comprising:

a substantially rigid generally U-shaped attachment member having a flat generally rectangular vertical front wall portion and a pair of opposed curved vertical side wall portions extending rearwardly from said generally rectangular vertical front wall portion, said side wall portions curved in the shape of the inner and outer periphery of the metatarsal portion of the sole of the golf shoe farthest from the golfer's target,

said flat generally rectangular front wall portion and said vertical side wall portions each having a generally L-shaped cross section with a vertical side wall and horizontal bottom wall and said horizontal bottom wall extending a short distance inwardly from said opposed side wall portions and said generally rectangular front portion vertical wall to engage the bottom of the sides and front portion of the sole of the golf shoe to position said flat generally rectangular vertical front wall portion generally perpendicular to the bottom of the golf shoe,

said horizontal bottom wall extending inwardly a sufficient distance and having an aperture to receive the threaded shank of at least one spike and said horizontal bottom wall is releasably secured on the bottom of the sole of the golf shoe at the toe end by at least one spike having a threaded shank extending through said aperture and threadedly engaged in the bottom of the sole of the golf shoe,

first eyelet means on said vertical side wall portions near said generally rectangular front wall portion and second eyelet means on said vertical side wall portions near the open end of the U-shape, and

a first flexible strap connected with said first eyelet means to be fastened over the upper toe portion of the golf shoe and a second flexible strap connected with said second eyelet means to be fastened over the upper instep portion of the golf shoe and each said strap having mating hook and loop fastener means thereon for releasably attaching said attachment member to the golf shoe, and

said at least one spike and said first flexible strap at the toe portion and said second strap at the instep portion and said curved side wall portions at the metatarsal portion of the golf shoe secure said attachment member to the golf shoe and stiffen the metatarsal portion of the sole of the golf shoe to prevent the toe portion of the golf shoe from bending, such that

during the follow-through stage of a golf swing, as the golfer's weight is transferred from the foot farthest from the target to the foot closest to the target and the heel of the foot farthest from the target is raised, the stiffened metatarsal portion of the golf shoe and the flat generally rectangular front wall portion of said attachment member causes the golfer's foot farthest from the target to automatically assume a generally vertical position with the heel up and toe down and the golfer's knee bent with only the flat generally rectangular front wall portion of said attachment member in contact with the ground to facilitate a proper weight transfer and follow-through foot position.

5,301,443

SHOPING CART HANDLE ADVERTISING DISPLAY DEVICE

Leon M. Gori, 1206 Thomas St., Monongahela, Pa. 15063

Filed Sep. 12, 1990, Ser. No. 581,008
Int. Cl.[5] G09F *7/18*; B62B *5/06*
U.S. Cl. 40—308 **11 Claims**



1. An advertisement display device in combination with a handle of a shopping cart, comprising:

a multipiece body portion comprising a first member and a second member, said members being complementary to one another and adapted to be engageable in clamping relationship to said handle of said shopping cart, and one of said members of said body portion having a top surface comprising a fixed area with a variable display, said area having at least one frame means formed therein for retaining a removably mountable advertisement sheet, said frame means comprising a plurality of generally rectangular inner frames, said frames each receiving a removably mountable advertisement sheet; and

means for holding said first and second members of said multipiece body portion in clamping engagement around said handle.

5,301,444

SWIMMING TOY FISH

Shigeyuki Horiuchi, 1168-1 Shimomakuri, Ohaza, Koshigaya-Shi, Saitama-Ken, Japan

Filed Apr. 2, 1993, Ser. No. 41,566
Claims priority, application Japan, Apr. 9, 1992, 4-029852[U]; Jul. 29, 1992, 4-058427[U]
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—426 **18 Claims**

1. A marine display comprising a housing and a transparent liquid vessel at least partially filled with liquid, said liquid vessel having a front surface, a rear surface, an opening for introduction of liquid in said vessel and a closure means for sealing said opening so that the liquid is completely enclosed within said vessel;

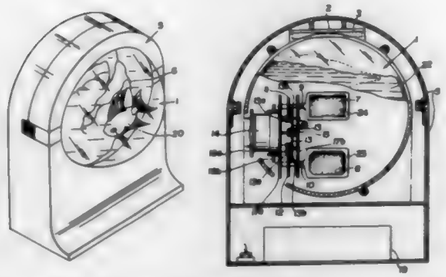
a toy marine object suspended freely in said liquid, said toy

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marine object including a magnet and means to impart buoyancy to said marine object;

two vertically spaced apart rotatable magnetic members, each disposed in said housing behind said rear surface and rotatable about a horizontal axis,

means for rotating said rotatable magnetic members, to generate a driving magnetic field, whereby



said magnet in said toy marine object and said rotating magnetic members co-act to cause said toy marine object to move freely in all directions in said liquid simulating the swimming action of a natural marine object in a liquid habitat.

5,301,445

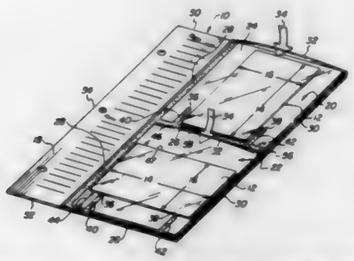
ALBUM PAGE FOR BI-DIRECTIONAL INSERTION AND CENTERING OF RECTANGULAR IMAGES

Thomas Hoffmeister, Sunapee, N.H., assignor to The Holson Burnes Company, North Smithfield, R.I.

Filed Jul. 17, 1991, Ser. No. 731,503

Int. Cl.[5] G09F *1/10*

U.S. Cl. 40—537 **20 Claims**



1. A page for storage and display of a rectangular image having a first dimension and second dimension smaller than said first dimension and four sides, said page comprising:

a backing sheet having a width and height substantially greater than the first dimension of said image;

at least one pocket for said image comprising a transparent sheet located in face-to-face relation with said backing sheet and having a width and height at least as great as the first dimension of said image, said pocket being defined by attachment between said backing sheet and said transparent sheet along a bottom edge of said pocket and along two opposing side edges of said pocket, said pocket having an opening along the top edge thereof to provide for insertion and removal of said rectangular image;

said transparent sheet being attached to said backing sheet at two separate areas located within said pocket, said areas being spaced-apart a distance slightly greater than said second dimension of said image to permit lengthwise insertion of the image between the areas and bracketing of said image on two sides thereof by said two areas and on one side thereof by said bottom edge of said pocket, said bracketing retaining said image against movement in three directions;

said two opposing pocket side edges being spaced-apart a distance slightly greater than said first dimension of said image, and, said distance of said areas being less than said first dimension of said image to obstruct widthwise insertion of said image beyond the areas, said two opposing pocket side edges bracketing said image on two sides thereof and said areas bracketing said image on one side thereby retaining said image against movement in three directions.

5,301,446

WIND-ACTUATED VEHICLE WARNING SIGN

James A. Kurtz, 2343 West Main St., #1067, Mesa, Ariz. 85201

Continuation of Ser. No. 764,156, Sep. 20, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 73,990

Int. Cl.[5] G09F *21/04*

U.S. Cl. 40—591 **14 Claims**



1. A vehicle warning device, comprising:

a generally flat planar base member having a tapered leading edge forming an air foil;

a planar cover member having a forward surface, a rearward surface, side surfaces and a recess defined by said rearward surface and said side surfaces;

sign means for providing a visual notice, said sing means being associated with said rearward surface of said planar cover member;

fine means for movably coupling said planar cover member to said generally flat planar base member;

biasing means or imparting a biasing force to said planar cover member, said biasing force being overcome by an external wind load acting upon said forward surface of said planar cover member thereby actuating closing of said planar cover member onto said generally flat planar base member and, upon unloading of the external wind load overcoming said biasing force, said biasing force actuating raising of said planar cover member to a substantially vertical position relative to said generally flat planar base member; and

means or mounting said planar base member onto a vehicle.

5,301,447

TENSIONING OF FLEXIBLE SHEET

Hancil R. Lotter, 44 Prince Charles Drive, Westville, Natal Province, and James G. Lowndes, Hillstar Avenue, Wetton, Cape Town, Cape Province, both of South Africa

Filed Dec. 20, 1991, Ser. No. 810,829

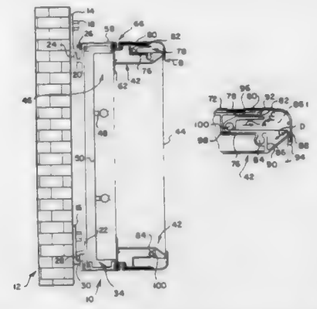
Claims priority, application South Africa, Dec. 20, 1990, 90/10291

Int. Cl.[5] G09F *17/00*

U.S. Cl. 40—603 **4 Claims**

1. A structure including a flexible sheet and means for tensioning the flexible sheet, the structure comprising first and second spaced apart members defining a cavity therebetween, each of said members having an edge, a mouth defined by said edges and forming an entrance to said cavity, locking means on said first member and a bearing surface on said second member, said locking means being closer to said mouth than said bearing

surface, a locking element in said cavity between said members, said element including a body, an external face on said body, said face making contact with said bearing surface of said second member along a contact zone and said element being pivotal with respect to said members about said contact zone, said external face providing a means for allowing said element to pivot with respect to said members about said contact zone, a limb protruding from said body, said limb being spaced from said second member and moving towards and away from the first member when said element pivots with respect to said members, locking means on said limb, said locking means on said limb and said locking means on said first member being adapted to lock said limb with respect to said members in any one of a number of locked positions and pre-



vent withdrawal of said element from said cavity through said mouth, said body of said element including an anchorage to which an edge of said sheet is secured with the sheet extending from said anchorage and out of said cavity through said mouth, said sheet having an opposed edge which is outside said cavity, means for anchoring said opposed edge so that said sheet can be tensioned by movement of said element away from said entrance, said sheet, once tensioned by moving said element away from said entrance, exerting a pull on said locking element and pivoting said element about said zone so that said limb moves towards said first member and said element is wedged between said members with said face pressed against said surface and said locking means in engagement with one another.

5,301,448

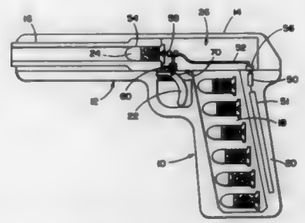
FIREARM SAFETY SYSTEM

John T. Petrick, Largo, Fla.; Billy R. Bridgewater, Havelock, N.C.; Richard L. Costello, South Windsor, Conn.; Ronald E. Stilwell, Hartford, Conn.; Michael E. Gamache, Tolland, Conn.; Kenneth M. Maynard, East Hartford, Conn.; Evan H. Whildin, Sr., Tolland, Conn., and Robert E. Roy, Wethersfield, Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.

Filed Sep. 15, 1992, Ser. No. 945,271

Int. Cl.[5] F41A *17/00, 19/00*

U.S. Cl. 42—70.01 **8 Claims**



1. A firearm comprising a frame, a barrel, a moveable slide, a firing system having a laser, and a safety system, the safety system comprising:

a first means for preventing a laser beam from reaching a propellant in the barrel, the first means for preventing comprising a shutter movably positioned in a path of the laser beam and means for moving the shutter based upon relative position of the slide relative to the frame;

a second means for preventing the laser beam from reaching the propellant in the barrel, the second means being deactivated upon the slide being located at a battery position relative to the barrel.

5,301,449

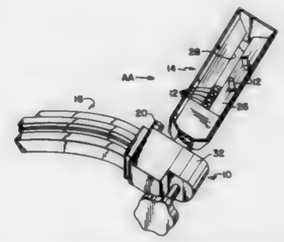
MAGAZINE CARTRIDGE LOADER

Terry R. Jackson, 1624 S. Rouse, Bozeman, Mont. 59715

Filed Nov. 13, 1992, Ser. No. 975,721

Int. Cl.[5] F41A *9/83*

U.S. Cl. 42—87 **5 Claims**



1. An apparatus for loading cartridges, each having a longitudinal axis, a cartridge body and a cartridge rim, into a magazine having an open end, the apparatus comprising:

an orienting means for orienting the longitudinal axes of a plurality of unoriented cartridges in parallel relation;

an accepting means, connected to the orienting means, for accepting and holding one cartridge at a time from the orienting means;

a rotatable cam mounted adjacent the accepting means having an axis of rotation substantially perpendicular to the longitudinal axis of the cartridge held by the accepting means;

the rotatable cam having a tooth to engage the rim of a cartridge held in the accepting means and move the cartridge toward the open end of the magazine; and

the rotatable cam further having a cam surface for directing the body of the cartridge toward the open end of the magazine and into the open end of the magazine upon further rotation of the rotatable cam.

5,301,450

FISH NET WITH ESCAPE PANEL

David M. Boyd, 3978 Aeries Way, Virginia Beach, Va. 23455

Filed Jan. 15, 1993, Ser. No. 5,082

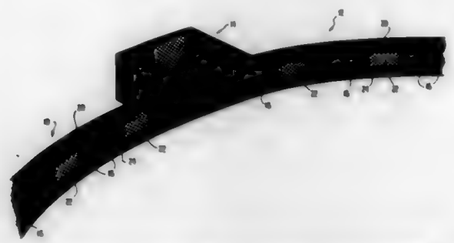
Int. Cl.[5] A01K *73/02*

U.S. Cl. 43—9.2 **1 Claim**

1. A fish net having an escape hatch comprising a flexible fish net having an open mesh construction for collecting and retaining fish, said net having at least one aperture therein and

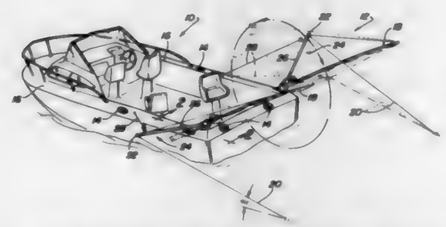
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an escape panel comprised of substantially rigid extruded high density polyethylene open mesh material secured to said net in



said aperture whereby mesh openings in said panel will retain their dimensions while permitting flexing of said panel.

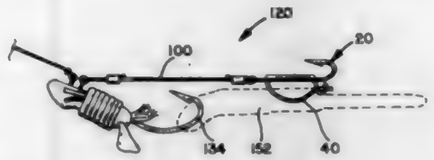
5,301,451
FLAT LINE BOOM
Charles R. VanAssche, 1102 Mitchell Ave. #303, Port St. Lucie, Fla. 34952
Filed Oct. 25, 1993, Ser. No. 142,601
Int. Cl.[5] A01K *91/00, 97/10*
U.S. Cl. 43—27.4 **14 Claims**



1. A flat line boom apparatus for holding a fishing rod on a boat and for guiding a first fishing line laterally outward from a gunwale of the boat so that the first line resists entanglement with a second fishing line, the apparatus comprising:
- an elongate sleeve having proximate and distal ends, the sleeve also having an outer diameter slidingly engageable with a conventional fishing rod holder mounted on the boat and an inner diameter for receiving the fishing rod;
- an annular collar secured about the proximate end of the sleeve;
- an elongate boom having proximate and distal ends, the proximate end of the boom disengageably connected to the collar; and
- a line clip for guiding the first fishing line laterally outward from the gunwale of the boat, the line clip being mounted proximate the distal end of the boom.

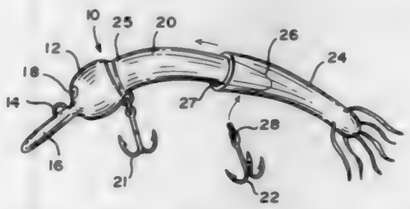
5,301,452
BAIT-CARRYING HOOK AND LURE
Gary F. Roach, Merrifield, Minn., assignor to Blue Fox Tackle Co., Minneapolis, Minn.
Filed Aug. 31, 1992, Ser. No. 938,390
Int. Cl.[5] A01K *85/00, 83/06*
U.S. Cl. 43—42.29 **3 Claims**

1. A fishing lure comprising:
- a body having forward and rearward attachment eyes;
- a hook, rigidly connected to and extending rearward from the body, having a shank, a bight curved in an upward direction and terminating in a forward directed point;
- a bait-carrying fishing hook including:
  - an eye defining a forward end of the hook;
  - a shank connected to the eye and having a rearward bight curving in a first direction relative to the shank, the bight terminating in a forward oriented point;
- a resilient leg connected to the forward end of the hook and projecting outwardly in a second direction relative to the shank, the second direction distinct from the direction of curve of the bight; and
- an offset catch protruding from adjacent the rearward end



the hook in the second direction, the offset catch having a receptor for the resilient leg; and
- wherein the shank, catch and leg, when received in the receptor of the catch define a closed loop bait holder; and
- a flexible tether connected at a first end to the rearward attachment eye and connected at a second end to the eye of the bait-carrying hook.

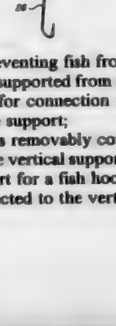
5,301,453
FISH LURE WITH INTERCHANGEABLE BODY SECTION
Maurice W. Terrill, 12454 E. Alsaka Ave., Aurora, Colo. 80012
Filed Oct. 17, 1991, Ser. No. 778,270
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.09 **5 Claims**



1. A fish lure having interchangeable body parts comprising:
- a head having simulated features of a living creature;
- a rigid body having a forward end attached to the head and tail end;
- an interchangeable, flexible body sleeve, tubular in shape and having at least one opening on one end thereof, said sleeve being telescopically attached onto said rigid body; said opening end of said sleeve positioned adjacent the forward end of said rigid body and juxtaposed the head whereby said sleeve extends the entire length of said rigid body from the forward end to the tail end; and,
- hook members attached to said lure.

5,301,454
FISHING HOOK HOLDER
Kuang-Sheng Chen, No. 33, Chung Hsing Rd., Mei Nung Chen, Kaohsiung Hsien, Taiwan
Filed Jan. 19, 1993, Ser. No. 6,051
Int. Cl.[5] A01K *91/04*
U.S. Cl. 43—42.74 **1 Claim**

1. A fishing hook holder comprising:
- a tubular body having a first end and a second end each with a substantially L-shaped cutout which extends longitudinally inward from a periphery thereof, said L-shaped cutout comprising a longitudinal portion and a radial portion, a flexible member extending in said longitudinal portion to block said radial portion at an unbiased status thereof;
- a first engaging means comprising a tubular member and a first ring rotationally mounted to said tubular member for engaging with a hook means, a member projecting outward and radially from an outer periphery of said tubular member, said member being removably received in said radial portion of said L-shaped cutout in said first end to



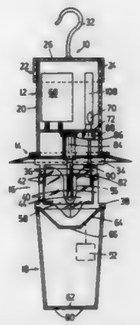
prevent disengagement of said first engaging member and said tubular body; and
- a second engaging means comprising a second tubular member and a second ring rotationally mounted to said tubular member for engaging with a main fishing line from a fishing rod, a second member projecting outward and radially from an outer periphery of said second tubular member, said second member being removably received in said radial portion of said L-shaped cutout in said second end to prevent disengagement of said second engaging member and said second tubular body.

5,301,455
NO-SWALLOW DEVICE FOR FISH HOOKS AND THE LIKE
Billy E. Harold, 32775 Missaukee Ct., Westland, Mich. 48185
Filed Apr. 6, 1992, Ser. No. 864,403
Int. Cl.[5] A01K *83/00*
U.S. Cl. 43—42.74 **31 Claims**



1. A device for preventing fish from swallowing fish hooks and similar structure supported from a fishing line, comprising:
- a vertical support for connection to a fishing line at a first upper end of the support;
- lateral guard means removably connected to and extending laterally from the vertical support, the lateral guard means forming a support for a fish hook when the lateral guard means are connected to the vertical support, wherein the fish hook is pivotally connected to the lateral guard means.

5,301,456
PORTABLE LUMINOUS INSECT TRAP
Luc Jobin, 2925, rue Summerside, Sainte Foy, Quebec, Canada G1W 2E9 , and Charles Coulombe, 161, chemin Saint Helène, St. Joseph de Levis, Quebec, Canada G6V 6N4
Filed Aug. 27, 1992, Ser. No. 935,911
Claims priority, application Canada, Aug. 29, 1991, 2,050,234
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—113 **13 Claims**



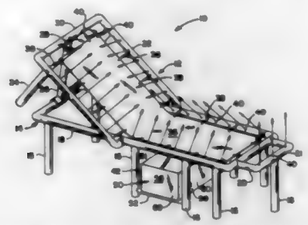
1. A trap for flying or crawling insects comprising: upper housing means;
- a frustoconical, outwardly projecting protective roof member at a lower end of said housing means;
- an insect ingress section connected to said housing means below said roof member;
- a removable insect entrapment container connected to said ingress section therebelow;
- a frustoconical funnel member within said container at an upper end thereof so as to open downwardly into said container;
- a removable light source centrally positioned within said ingress section;
- electrical power and circuit means within said housing means for supplying electrical power to said light source; and
- a plurality of spaced apart transparent baffle members within said ingress section, each baffle member extending vertically above said funnel member from adjacent the outer edge of said ingress section to adjacent said light source, with each pair of adjacent baffle members defining an insect ingress zone.

5,301,457
CHAIR WITH INSECT REPELLANT AIR JETS
James R. Seely, 35 Anvil Dr., Avon, Conn. 06001
Filed Feb. 22, 1993, Ser. No. 20,660
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—132.1 **21 Claims**

1. A chair having a frame, an occupant support mounted on the frame for supporting an occupant in a predetermined normal position relative to the frame, the frame having a plurality of tubular components providing an internal air plenum, and a blower unit connected to supply air under pressure to the air plenum, the air plenum comprising a primary air plenum with a predetermined orientation with respect to a said occupant, the tubular components forming the primary air plenum having an arrangement of a plurality of air nozzles pointing in specific directions in relationship to aeaid occupant to produce air stream barriers which cover and bathe certain, normally exposed, areas of a said occupant, including the lower legs and ankles of a said occupant, to protect said areas against mosqui-

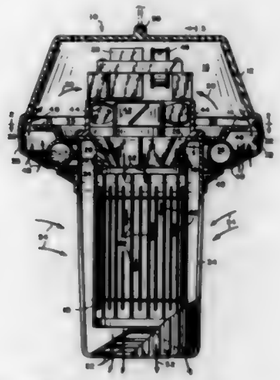
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toes and other flying insects, the arrangement of air nozzles including tow sets of air nozzles, on opposite sides of a said occupant, pointing laterally inwardly to produce air stream



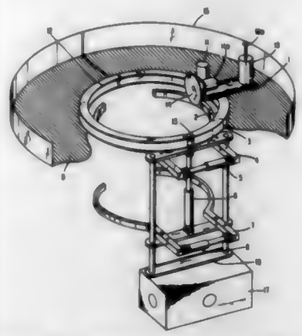
barriers which intersect within a zone of intersection spaced outwardly from the chair to protect certain areas of a said occupant between the two sets of nozzles.

5,301,458
INSECT KILLER
Sal G. Deyoreo, Boston, and David P. Stevens, Billerica, both of Mass., assignors to Armatron International, Inc., Melrose, Mass.
Filed May 3, 1993, Ser. No. 57,008
Int. Cl.[5] A01M *1/08, 1/22*
U.S. Cl. 43—139 14 Claims



1. An insect killing device comprising:
a housing having a roof overlying and coacting with a floor to define an upper compartment;
an inlet opening in said housing communicating with said compartment;
an outlet opening in said floor;
an electrically conductive killing grid aligned axially with said outlet opening and extending downwardly from said floor;
means in said compartment for energizing said grid;
a light source underlying said floor and positioned to visually attract insects towards said grid; and
fan means in said compartment for drawing air into said compartment via said inlet opening and for expelling air from said compartment in a stream directed downwardly and axially through said killing grid.

5,301,459
TREE CLIMBING DEVICE
Eliahu Eliachar, Haifa, and Eliahu Mizrachi, Petach Tikva, both of Israel, assignors to Toptech Ltd., Haifa, Israel
Filed May 21, 1992, Ser. No. 886,290
Claims priority, application Israel, Jun. 2, 1991, 98335
Int. Cl.[5] A01D *46/00;* A01G *3/08*
U.S. Cl. 47—1.01 17 Claims



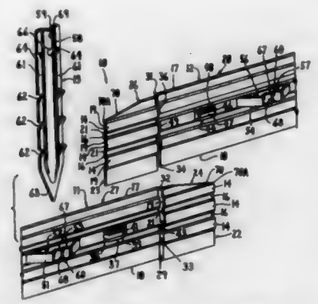
15. A device for climbing up a tree and for maintenance thereof, comprising:
a power source;
a climbing unit operatively connected to said power source, said climbing unit including at least a pair of climbing mechanisms each operable to open and close into and out of engagement with a tree trunk, and an extensible/retractable unit for varying the distance between said climbing mechanisms;
a control unit operable to vary the distance between said climbing mechanisms by extension or retraction of said extensible/retractable unit when one of said climbing mechanisms is locked to the trunk and the other of said climbing mechanisms is open so as to be moved along the trunk before being locked to it.

5,301,460
MULCH PRODUCT
H. C. Corbitt, Rte. 4, Box 76, Jasper, Fla. 32052
Filed Apr. 12, 1991, Ser. No. 684,242
Int. Cl.[5] A01G *7/00*
U.S. Cl. 47—9 5 Claims



1. A mulch product made from wood adapted to rapidly absorb water and maintain its position during exposure to water, when the mulch product is in position on an underlying surface, by sinking and binding with adjacent mulch elements to form a comparatively non-erodible mat, said mulch product comprising:
25–50% shredded single filament wood elements for rapidly absorbing water and filling gaps within the mulch and having a length between approximately 0.1 and 6 cm.;
40–70% shattered bulky multi filament wood elements for rapidly absorbing water and sinking to form a weighty bulk of the mulch product and having lengths between approximately 1 and 8 cm. and cross sectional dimensions between approximately 0.3 and 2 cm.; and,
5–10% stringy binding multifilament wood elements for overlying and interweaving within the water absorbing mulch product and binding the mulch product into a mat and having lengths between approximately 5 and 20 cm.

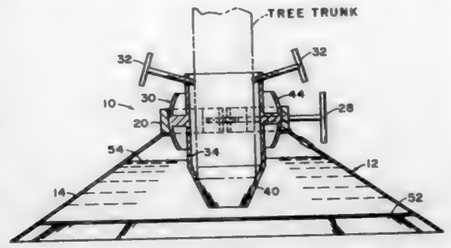
5,301,461
EDGING STRIP
Daniel G. Zwier, Grand Rapids, Mich., assignor to PermaLoc Corporation, Holland, Mich.
Filed Dec. 4, 1992, Ser. No. 985,303
Int. Cl.[5] A01G *1/00*
U.S. Cl. 47—33 18 Claims



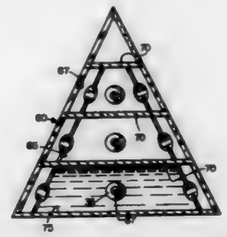
1. A landscape edging assembly, comprising:
first and second elongated strips of material having longitudinal top and bottom edges and being adapted for use as landscape edging, said strips being adapted for end-to-end alignment along longitudinal axes thereof, mutually adjacent ends of each of said strips having an end segment that is laterally offset with respect to a remainder segment by an amount equal to or just slightly greater than a thickness dimension of said strips, said end segment and said remainder segment on each strip being integrally connected by a transversely extending segment and having means defining an edge opening slot, said edge opening slot on said first strip being provided in said top edge of said transversely extending segment, said edge opening slot on said second strip being provided in said bottom edge of said transversely extending segment, each slot extending generally halfway into said strip from a respective edge leaving a remainder transversely extending segment joining said end segment and said remainder segment on each said first and second strips, said remainder transversely extending segment on each said first and second strips being received in a said slot with said end segments of said first and second strips being oriented in a parallel relation with said remainder segments, whereby said remainder segments of said first and second strips become longitudinally aligned and interconnected by said remainder transversely extending segments being received in a respective slot.

5,301,462
ADJUSTABLE TREE STAND
Albert L. Hronyetz, 70 Chicago Ave., Lower Burrell, Pa. 15068
Filed Jun. 8, 1992, Ser. No. 895,270
Int. Cl.[5] A47G *7/02*
U.S. Cl. 47—40.5 3 Claims

1. An adjustable tree stand for holding a tree trunk to position a tree in a substantially vertical position, the tree stand comprised of:
(a) a base member having a collar-shaped clamp means comprising a cylindrically curved strip of material positioned on said base member and attached thereto; and
(b) a tree trunk holder having a sleeve for receiving said tree trunk, the sleeve having a circumferential band thereon, the band having a substantial circular outer surface, said collar-shaped clamp means designed to receive said circumferential band and to permit said tree trunk holder to swivel prior to being clamped in position.



5,301,463
MUTLIPLE ORIENTATION FLORAL STAND
Kevin X. Domurat, 4135 Dixie Canyon Ave., Sherman Oaks, Calif. 91423
Filed Feb. 1, 1993, Ser. No. 11,806
Int. Cl.[5] A01G *5/00*
U.S. Cl. 47—41.01 3 Claims



1. A multiple orientation floral stand comprising:
(a) a hollow shell, having inner and outer surfaces and shaped in any pleasing configuration for flower and branch display; said shell having cut in its outer surface a multiplicity of first holes, said first holes being sized to accommodate flower or branch stems; and
(b) a watering means inside said hollow shell, said watering means including a liquid reservoir portion; said liquid reservoir portion comprising an outer continuous wall surrounding said reservoir, and a multiplicity of divider walls, creating separate liquid reservoir compartments;
said liquid reservoir outer wall and divider walls being attached to said inner surface of said hollow shell to make said liquid reservoir compartments air-tight;
said liquid reservoir compartments each having a second hole cut in its outer wall and lined up with one of said first holes in said shell, said second hole being sized to accommodate a flower or branch stem which may be inserted through said first hole and through said second hole into said liquid reservoir compartment;
said liquid reservoir compartments each including a means for gripping tightly said flower or branch stem; said means being inserted in and attached to said second hole; said means for gripping also acting to prevent leakage of liquid from said liquid reservoir compartments when said shell is oriented in a direction to induce liquid flow;
said liquid reservoir portion providing a means to grip said flower or branch stems and to water them continuously, independent of the orientation of said shell and flower arrangement, whether horizontal or vertical.

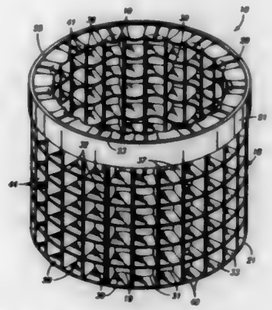
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,464
VARIABLE LENGTH LIMB-SPREADER
M. Lee LaVanway, Box 737, Flint Hill, Va. 22627, and Edward Derstewitz, 611 Lake St., St. Joseph, Mich. 49085
Filed Feb. 20, 1992, Ser. No. 839,189
Int. Cl.[5] A01G *17/10*
U.S. Cl. 47—43 9 Claims



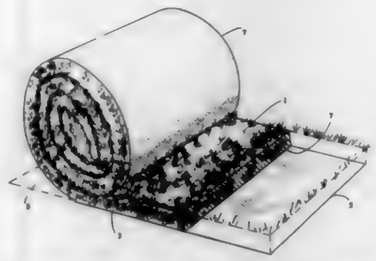
1. A variable length limb spreader for trees having a central leader and outwardly extending branches comprising:
a. an elongate shaft having opposed ends, top, bottom and side surfaces and further including:
i) a pair of diverging tree-engaging arms extending outwardly at each end of said shaft, and
ii) a plurality of limb-engaging struts extending outwardly from the top and bottom of said shaft so as to form a bearing surface for engaging the outwardly extending branches of the tree.

5,301,465
PLANTER, AND PROCESSES FOR CONSTRUCTION THEREOF AND PLANTING THEREIN
Dennis Caferro, E. 508 Augusta Ave., Spokane, Wash. 99207
Filed Jun. 18, 1992, Ser. No. 903,085
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—66 4 Claims



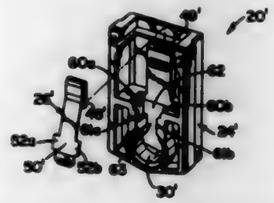
1. A planter, comprising:
a grid panel including first and second groups of strips with interfitting slits spaced along the lengths thereof and with the slits on one group of strips opening on a prescribed side of the panel and including tabs formed of strip ends projecting outwardly of side and end edges of the panel;
the tabs being folded against the side and end edges;
the folded tabs and adjacent side edges being crimped at locations along the grid panel along a side thereof opposite the prescribed side;
the panel being bent in a partial cylindrical configuration by passing the panel between a pair of yieldable bending rolls and a solid bending roll, with the prescribed side against the pair of yieldable bending rolls and the panel side opposite the prescribed side against the solid bending roll; and
a ring removably received about the prescribed side to hold the end edges together in a substantially cylindrical configuration.

5,301,466
PRODUCTION OF SOD USING A SOIL-LESS SAND BASED ROOT ZONE MEDIUM
Michael A. Egan, 105 E. 65th St., Savannah, Ga. 31405
Filed Aug. 7, 1992, Ser. No. 926,663
Int. Cl.[5] A01C *1/04*
U.S. Cl. 47—58 17 Claims



1. A method of cultivating developing and growing turf grass in sod form, the method comprising the steps of
a) determining the grain size and distribution of sand at a transplant site;
b) blending a soil-less sand based root zone material to form a soil-less blend that has a grain size and distribution of sand that substantially matches the grain size and distribution of said at the transplant site;
c) laying down a water permeable root impermeable barrier;
d) depositing from about 0.25 to about 1.0 inches of said soil-less blend on top of said water permeable root impermeable barrier;
e) introducing seeds, stolons, springs or plugs of a turf grass into the soil-less sand based root zone material;
f) propogating the seeds, stolens, sprigs, or plugs into a harvestable mat of combined turf grass sod and root zone medium characterized by having a water infiltration rate of 2 to 10 inches per hour and a grain size and distribution of sand that substantially matches the grain size and distribution of sand at said transplant site.

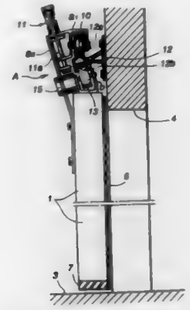
5,301,467
LOCKING SLIDE BLOCK
Melvin J. Schmidt, Lakeland, Minn., and Gary J. Marshik, Canton, S. Dak., assignors to Andersen Corporation, Bayport, Minn.
Continuation-in-part of Ser. No. 903,368, Jun. 24, 1992, Pat. No. 5,243,783. This application Sep. 2, 1993, Ser. No. 116,039
Int. Cl.[5] E05D *15/22*
U.S. Cl. 49—181 14 Claims



1. A locking slide block for slidably and pivotably mounting a window sash to a side member of a window frame having a vertical jamb channel, the slide block comprising:

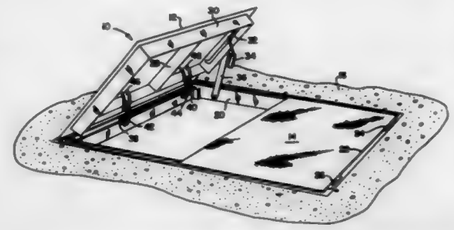
(a) a housing having oppositely disposed sliding surfaces for guiding the housing in a jamb channel;
(b) locking means for selectively engaging the jamb channel and locking the slide block in a fixed position relative to the jamb channel;
(c) a cam disposed in the housing, the cam having at least one camming surface arranged and configured to selectively operate the locking means, and wherein the cam includes a sash pivot opening having an open top slot;
(d) a sash pivot operatively connected to the cam in the sash pivot opening, and wherein the sash pivot is operatively connectable to a window sash;
(e) a sash pivot retainer spring, the retainer spring having a first end operatively connected to the housing and a second end proximate the cam, wherein the second end has a first position for allowing the sash pivot to be inserted or removed from the sash pivot opening through the open top slot and a second position for preventing removal of the sash pivot through the open top slot, the second end being normally biased to the second position and depressible to the first position; and
(f) second end retaining means, operatively connected to the housing, for restricting movement of the second end past the second position in a direction opposite the first position; whereby the second end is protected from deforming due to forces applied to the window sash in operation.

5,301,468
SLIDING DOOR
Masaaki Kamezaki, Iwai, Japan, assignor to Amsys Kabushiki Kaisha, Ibaragi, Japan
Filed Aug. 5, 1992, Ser. No. 924,971
Claims priority, application Japan, Aug. 16, 1991, 3-229583
Int. Cl.[5] E05D *15/10*
U.S. Cl. 49—225 7 Claims



1. A sliding door comprising:
a door body;
bracket assemblies each including a first bracket on which a rolling wheel is rotatably supported and a second bracket arranged at a predetermined inclination angle and provided at an upper end thereof with an elastic suspension including an extensible rod, said first and second brackets being connected to each other through said extensible rod of said elastic suspension;
said second bracket being mounted at a lower portion thereof on an upper portion of said door body;
a rail including an upper rail surface and a lower rail surface and horizontally rigidly arranged above an entrance of an object to be operated by said sliding door;
said lower rail surface of said rail being slanted at the same angle as said second bracket;
said rolling wheel being carried on said upper rail surface of said rail, resulting in said door body being suspended by means of upward elastic force of said elastic suspension while being kept raised from a floor on which said object is installed; and
a third bracket which is fixed at a lower portion thereof on an upper end of said door body and on which a driving wheel is rotatably supported while being slanted at the same angle as said bracket;
said driving wheel being pressedly abutted against said lower rail surface by means of the upward elastic force of said elastic suspension;
said lower rail surface of said rail being formed on a position thereof rendered opposite to said driving wheel of said door body when said door body is moved to the closing position with a tapered section on which said driving wheel strikes to extend said extensible rod against the upward elastic force of said elastic suspension, resulting in said door body being obliquely inward downward moved forcibly.

5,301,469
DOOR ASSEMBLY WITH MULTIPLE TORQUE ROD COUNTERBALANCING
Robert J. Lyons, Sr., Hamden, Conn., assignor to The Bilco Company, West Haven, Conn.
Division of Ser. No. 579,924, Sep. 7, 1990, Pat. No. 5,136,811.
This application Jan. 8, 1992, Ser. No. 817,768
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] E05F *1/10*
U.S. Cl. 49—386 15 Claims



1. A door assembly with multiple torque rod counterbalancing comprising:
a frame;
a door;
a hinge connecting the door to the frame for rotation about a first non-vertical axis;
a first torque rod arm having a rotating end and a force applying end, the rotating end of the torque rod arm being mounted for rotation about a second axis displaced from the first axis and the force applying end of the torque rod arm being adapted to apply a counterbalance force at a moving point of contact along a cam surface as the door opens and closes;
at least two torque rods attached to the first torque rod arm, each torque rod including a fixed end and a rotating end, the rotating ends of the torque rods being engaged at sequentially spaced locations along the first torque rod arm from the rotating end of the torque rod arm towards the force applying end of the torque rod arm, the torque rods being simultaneously twisted to produce the counterbalance force at the force applying end of the first torque rod arm as the first torque rod arm rotates about the second axis; and
a cam having the cam surface formed thereon, the cam being non-rotatably connected to either the door or the frame and the fixed ends of the torque rods being non-rotatably connected to the other of the door or the frame;
the cam defining the cam surface such that the counterbalance force from the torque rod arm is applied in a controlled direction over a controlled effective moment arm

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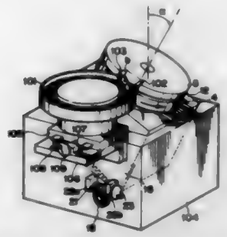
about the first axis to generate a counterbalance torque about the first axis which substantially counterbalances the door as it moves from an open to a closed position.

5,301,470

BALL LAPPING MACHINE

Chuichi Sato, Fujisawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 937,739
Claims priority, application Japan, Sep. 2, 1991, 3-248328
Int. Cl.[5] B24B *11/06*
U.S. Cl. 51—109 R **8 Claims**



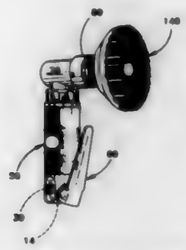
1. A ball lapping machine in which balls are machined by lapping between tow lapping plates providing a stationary plate and a turn table, comprising a shaft, a sleeve coaxial with and rotative around said shaft, and a housing having means supporting said sleeve rotatively, the ball lapping machine being characterized in that the stationary plate is mounted on said shaft and the turn table is mounted on said sleeve, and that means are provided for changing inclination of an axis of said housing relative to vertical.

5,301,471

PORTABLE AIR ANGLE HEAD RANDOM ORBITAL UNIT

Steven M. Fisher, Los Angeles, Calif., and Thomas Sato, Midoriko, Japan, assignors to Fisher Tool Co., Inc., Los Angeles, Calif.

Filed Jun. 11, 1993, Ser. No. 76,020
Int. Cl.[5] B24B *23/04*
U.S. Cl. 51—170 MT **29 Claims**



1. A portable air angle head random orbital unit comprising:
a. a main unit further comprising,
(i) a generally cylindrical shaped hollow housing having a top end with a top opening, a bottom end with a bottom opening, a middle portion, a first side opening and an opposite second side opening adjacent to the bottom end,
(ii) an air exhaust sleeve mounted to said bottom end of said housing at said bottom opening with a first "O" ring and a first retainer ring inserted,
(iii) a throttler unit assembled inside said housing adjacent to its said bottom end including an air regulator, a throttle valve having an inner end and an outer end, and a valve bushing, where the air regulator is supported by a speed control knob with a third "O" ring inserted, which the speed control knob is in turn mounted on said housing at its said first side opening with a second "O" ring inserted and secured by a first roll pin, the inner end of the throttle valve is inserted with a spring into the air regulator with a fourth "O" ring inserted, so that the spring tends to push the throttle valve out to block air passage through the air regulator, and the outer end of the throttle valve extends out from said second side opening of said housing through the valve bushing which is in turn mounted on said housing at its said second side opening,
(iv) a throttle lever pivotally mounted to said housing adjacent to its said bottom end by a second roll pin and against the extended outer end of said throttle valve of said throttler unit, such that when the throttle lever is pressed, said throttle valve of said throttler unit is pressed into said air regulator of said throttler unit to permit air passage,
(v) a rotor unit assembled inside said middle portion of said housing including a rotor collar and a cylinder having a front end and a rear end, a rotor with four rotor blades, a first ball bearing, a second ball bearing, a front end plate and a rear end plate, where the rotor collar, the rotor and the rotor blades are assembled inside the cylinder and supported by the first and second ball bearings, and the front and rear end plates are attached to the front and rear ends of the cylinder by a third roll pin and a fourth roll pin respectively;
b. an angle unit further comprising,
(i) a generally cylindrical shaped angle housing having a straight end and an angled end, a cap lock and a cap where said cap lock is screwed at said top end of said main housing, said straight end of said angle housing is connected to said top end of said main housing by said cap which screws onto said cap lock,
(ii) a pinion having one end mounted to said rotor of said rotor unit near said top end of said main housing, and an opposite end extended into said angle housing from said straight end of said angle housing,
(iii) a spin unit having a third ball bearing, a gear, a bearing, a clamp nut, a spindle, and a key, the gear engaged to said pinion transversely, one end of the spindle is attached to the gear by the key and supported by the third ball bearing and the bearing which are all assembled inside said angle housing and mounted by the clamp nut, and an opposite end of the spindle is extended out from said angled end of said angle housing;
c. a collet unit further comprising,
(i) a generally hollow cylindrical housing cap having a top surface with an eccentric opening, a bottom surface with an eccentric opening offset from the eccentric opening of the top surface, a circumferential sidewall with a small threaded side aperture located adjacent to the bottom surface, and an interior surface,
(ii) said circumferential sidewall of said housing cap being unbalanced, and thicker on one side and thinner on an opposite side,
(iii) said thicker side of said circumferential sidewall having a partial flange adjacent to said top surface of said housing cap, and an opposite partial recess adjacent to said bottom surface of said housing cap,
(iv) a speed reduction bearing having an inner ring, a middle friction bearing and an outer ring engaging against said interior surface of said circumferential sidewall of said housing cap within said eccentric opening of said top surface,
(v) an extending hollow shank having inner screw threads, with a first end, and a second end configured as a nut, the first end extending through said inner ring of said speed reduction bearing and secured by a screw, and the second end extending out from said eccentric opening of said top surface of said housing cap,

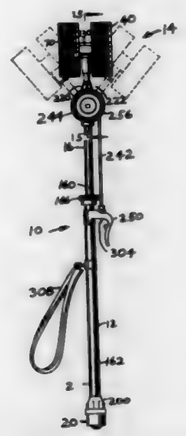
(vi) a second retainer ring for securing said speed reduction bearing within said eccentric opening of said top surface of said housing cap,
(vii) an utility head having an elongated threaded shaft threadedly mounted to said second end of said extending hollow shank, and
(viii) said spindle mounted to said eccentric opening of said bottom surface of said housing cap by aligning said small threaded side aperture of said circumferential sidewall with said small threaded side aperture of said spindle, such that said spindle can be secured to said housing cap by a hex screw;
d. whereby when said portable air angle head random orbital unit is assembled, said speed reduction bearing causes said utility head to rotate at a lower sped than said spindle, and said offset eccentric openings and said unbalanced housing cap causes said utility head to rotate in a random orbital rotation.

5,301,472

SANDING ELEMENT AND APPARATUS

James W. Lyng, 2350 SW. 42nd Ter., Fort Lauderdale, Fla. 33317

Continuation of Ser. No. 702,397, May 20, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,388
Int. Cl.[5] B24B *23/02*
U.S. Cl. 51—180 **55 Claims**



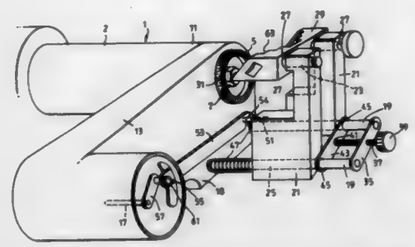
1. An apparatus for sanding a work piece comprising:
a cylindrical mounting surface having an axis of rotation and a plurality of strips disposed radially with relation to said axis and laterally to themselves, at least one of said strips having a front face comprising abrasive grit material such that sliding said front face over said work piece sands said work piece, and said strips being laterally and circumferentially spaced apart from each other,
an annular cylinder assembly, to which said strips are attached, adapted to removably slide fit over said mounting surface.

5,301,473

GRINDING APPARATUS COMPRISING A TOOL HOLDING JIG

David Secar, "Woodclear", 175 Oatlands Dr., Weybridge, Surrey KT13 9JY, United Kingdom

PCT No. PCT/GB90/00704, § 371 Date Jan. 8, 1992, § 102(e) Date Jan. 8, 1992, PCT Pub. No. WO90/13396, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 809,479
Claims priority, application United Kingdom, May 9, 1989, 8910640
Int. Cl.[5] B24B *41/06*
U.S. Cl. 51—217 R **14 Claims**



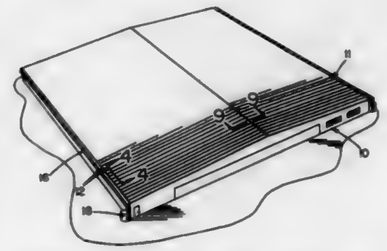
1. A tool holding jig for a grinding machine, comprising:
a holder for holding a tool blade;
first and second pivot members mountable on or adjacent the grinding machine; and
first and second linkages each having a first end and a second end, the first ends of the first and second linkages being pivotally connected to the first and second pivot members, respectively, and the second ends of the first and second linkages being pivotally connected to the tool holder in a parallelogram configuration, so that with pivoting of the parallelogram arrangement the tool blade can be rocked to and fro across a face of a grinding wheel mounted for rotation by the grinding machine;
the pivot members being provided by first and second substantially parallel swivel rods, and the linkages being mounted for uniaxial pivoting about the axes of the respective swivel rods.

5,301,474

ROOFING SYSTEM FOR POTABLE WATER

Jay F. Carey, II, Follansbee, W. Va., and Mehrooz Zamanzadeh, Pittsburgh, Pa., assignors to The Louis Berkman Company, Steubenville, Ohio

Division of Ser. No. 751,337, Aug. 29, 1991, Pat. No. 5,259,166. This application Jun. 11, 1993, Ser. No. 74,591
Int. Cl.[5] E04B *1/06*; E04D *1/34*
U.S. Cl. 52—90.11 **11 Claims**



4. A roofing system for a building having a pitched roof substrate optionally including a felt covering suitable for collecting potable water comprising:

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a) a plurality of preformed roofing pans of 99% pure titanium having a thickness of less than 0.020 inch and a length not exceeding about 10 feet; said roofing pans having a generally flat base section and longitudinally extending right and left hand ends formed as standing seam elements and positioned side-by-side with said right hand end of one pan interlockedly folded with a left hand end of an adjacent pan to form a press fit standing seam, said standing seam extending in the direction of the pitch of said roof and forming a water collecting trough between adjacent standing seams; and

b) a plurality of 99% pure titanium attachment cleats having a base section secured to said roof substrate and an orthogonal attachment section between said right and left hand ends of said pans and folded into and a part of said standing seam for securing said pans to said roof substrate, and one of said adjacent pans overlying said cleat base section.

5,301,475

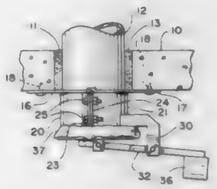
FIRE STOP DEVICE

Stephen F. Stefely, 941 Euclid Ave., Elmhurst, Ill. 60126

Filed Mar. 1, 1993, Ser. No. 25,161

Int. Cl.[5] F16K *17/36*

U.S. Cl. 52—1 **5 Claims**



1. A fire stop device for automatically closing a transverse opening in a floor or wall of a building having a plastic pipe extending through said opening when said pipe is destroyed by fire comprising

a. A base adapted to be attached to the surface of the floor or wall surrounding and closing said opening, except for the area through which the pipe extends;

b. an elongated collar attached to and extending at a right angle to said base adapted to surround said pipe;

c. closure means attached to an outer surface of said collar adapted to automatically close an open end of said collar upon the destruction of said pipe by fire;

d. said closure means including a bracket attached to and extending laterally from one side of the outer surface;

e. a lever pivotally secured to said bracket and extending longitudinally along the outer surface of said collar with one end of said lever projecting beyond the end of said collar with said end provided with a plate to serve as a closure for the opening of said collar.

5,301,476

MOBILE STAGE

Wen-Chong Wu, 4F, No. 37, lane 111, Kang Le St., Nei Hu Dist., Taipei, Taiwan

Filed Jan. 13, 1993, Ser. No. 3,564

Int. Cl.[5] E04H *3/10*

U.S. Cl. 52—6 **5 Claims**

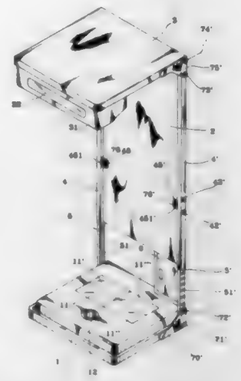
1. A mobile stage comprising:

a forestage having a plurality of concealed footlights, and a mounting socket in front of said concealed footlights for mounting a visual display terminal;

two channel bars detachably and bilaterally fastened to said forestage at the back in vertical direction, each channel bar having a series of vertically spaced locating slots;

two hollow, square columns respectively sleeved on said channel bars, each column having two vertically spaced screw holes, through which two locating bolts are respectively inserted into respective locating slots on either channel bar in locking the respective column at a desired elevation;

a roof detachably fastened to said columns at the top and disposed in parallel with said forestage;



a sky drop detachably mounted on said hollow, square columns between said roof and said forestage; and

a distributing box for power supply.

5,301,477

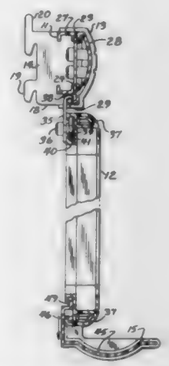
PANEL SYSTEM

Michael Rellinger, Chicago; Richard R. Gilbert, Barrington, and Sara E. Green, Chicago, all of Ill., assignors to Quartet Manufacturing Company, Skokie, Ill.

Filed May 22, 1992, Ser. No. 888,051

Int. Cl.[5] A47B *5/00*

U.S. Cl. 52—36.1 **31 Claims**



1. A panel system for a workstation comprising a display board and a hanging bar, said hanging bar having means to removably secure said bar to a wall and a slot member arranged in said bar for receiving and removing said display board from said hanging bar when said display board is disposed angularly to said slot member, and for securing said display board hanging from said bar, said display board having hook means adapted to hang in said slot member when said display board is oriented hanging relative to said hanging bar, said display board having extrusion members defining a frame for said board, said extrusion members being arranged angularly to one another, each of said extrusion members being adapted to removably received and secure said hook means in a selected position for hanging and securing said display in said hanging bar.

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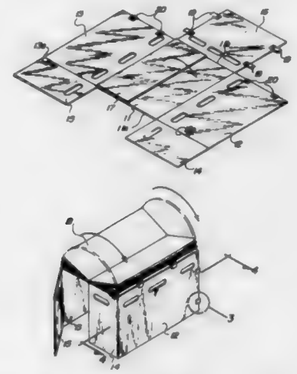
CHILD'S PLAYHOUSE

Maximiliano Maese, Jr., 480 Mt. Arbor St., McFarland, Calif. 93250

Filed Jan. 25, 1993, Ser. No. 8,148

Int. Cl.[5] E04B *1/344, 7/16*

U.S. Cl. 52—066 **4 Claims**



1. A child's playhouse, comprising,

a top wall panel, the top wall panel having a first side spaced from and parallel a second side, with a first side wall hingedly mounted to the first side, a second side wall hingedly mounted to the second side, and the top wall panel including a first end spaced from and parallel a second end, and

a first door plate hingedly mounted to the first side wall at a first side wall first end, and a second door plate hingedly mounted to the second side wall at a second side wall second end, with the first door plate and the second door plate positioned adjacent the top wall first end, and

an end wall, the end wall hingedly mounted to the top wall second end, and

a plurality of strap fasteners mounted to the end wall, and

a plurality of securement patches mounted to the first side wall and to the second side wall for securement to the strap fasteners of the end wall, and

including a pop-up plate hingedly mounted medially of the top wall panel extending coextensively between the top wall first end and the top wall second end, with the pop-up plate orthogonally oriented relative to the top wall first end and the top wall second end, and an accordion pleated pop-up member mounted to the pop-up plate and to the top wall panel between the pop-up plate and the top wall second side, wherein pivoting of the pop-up plate from a first position permits the pop-up plate to extend from the top wall panel to the top wall panel second side to a second position where the pop-up plate is rotated one hundred eighty degrees extending from the top wall panel to the top wall panel first side effecting projection of the accordion pleated pop-up member beyond the top wall panel and the pop-up plate.

5,301,479

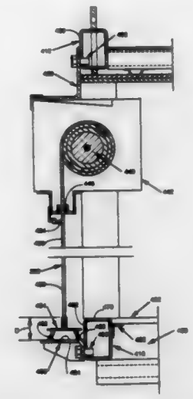
HAZARDOUS MATERIAL CONTAINER STORAGE BUILDING AND RELATED METHOD

Frederick W. Romig, Wexford, Pa., assignor to CID Associates, Inc., Leechburg, Pa.

Continuation-in-part of Ser. No. 678,830, Apr. 2, 1991, Pat. No. 5,191,742. This application Jan. 12, 1993, Ser. No. 3,527

Int. Cl.[5] E04H *5/00;* **B65D** *88/12*

U.S. Cl. 52—79.1 **16 Claims**



1. A modular building for storing a plurality of hazardous material containers comprising

a floor for supporting a plurality of containers of hazardous material;

a containment sump disposed underneath said floor for collecting leakage from said containers;

said modular building having a door header and a sill; and

an overhead door including a door curtain having a lower end, disposed of at least partially adjacent to said header and said sill and having a pair of spaced generally vertical door frame members with the lower end of the door curtain disposed at a level lower than the upper surface of said sill when said door is in a closed position.

5,301,480

STANCHION UNIT ASSEMBLY FOR FLOOR BOARDS

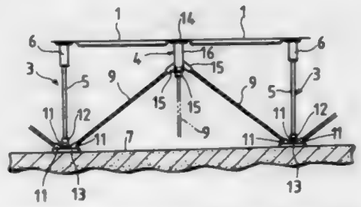
Fumihiro Oyama; Koji Marui, both of Osaka, and Yoshinari Kawai, Higashi-osaka, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Japan

Filed Nov. 13, 1991, Ser. No. 791,239

Claims priority, application Japan, Nov. 19, 1990, 2-121166[U]; Nov. 19, 1990, 2-313198; Nov. 30, 1990, 2-334648

Int. Cl.[5] E04B *9/00*

U.S. Cl. 52—126.6 **3 Claims**



1. A stanchion unit assembly for supporting floor boards comprising:

a plurality of vertical stanchion units including rests which constitute the upper portions of said vertical stanchion units and support said floor board's and base plates which

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constitutes the lower portions of said vertical stanchion units and are disposed in contact with a floor foundation;

a plurality of oblique member support stanchion units including rests which constitute the upper portions of said oblique member support stanchion units and support said floor boards, and base plates which constitute the lower portions of said oblique member support stanchion units and are provided with oblique member support parts;

a plurality of floating rests supporting said floor boards on the tops of said floating rests and provided with oblique member support parts at the lower portions of said floating rests; and

a plurality of oblique members extending from the oblique member support parts of each of said oblique member support stanchion units to those of the floating rests;

a plurality of said vertical stanchion units and all of said oblique member support stanchion units being alternately disposed on first imaginary straight lines extending in the direction of the width or depth of a room provided with said floor boards laid therein, and having intervals, each of which is slightly shorter than each side edge of said floor board;

all of said floating rests and other said vertical stanchion units being alternately disposed on second imaginary straight lines extending in parallel with said first imaginary straight lines and alternately thereto and separated therefrom by a direction slightly shorter than each side edge of said floor board, so that said floating rests face said plurality of said vertical stanchion units in the direction of the depth or width of said room, and said other vertical stanchion units face the oblique member support stanchion units in said direction of is a depth or width; and

said oblique members extending from the oblique member support parts of each of said oblique member support stanchion units to those of the floating rests located around the oblique member support stanchion unit diagonally thereto.

5,301,481

GARDEN STAKE

Sergei Novak, P.O. Box 1391, Vista, Calif. 92805-1391

Filed Dec. 10, 1991, Ser. No. 805,547

Int. Cl.[5] E02D *5/80*

U.S. Cl. 52—165 **19 Claims**



1. An apparatus for supporting a plant in soil comprising:

a support;

anchor means for holding said support in a vertical upright position, said anchor means having a center, said anchor means including a plurality of legs arranged radially around said center wherein only one end of each of said legs is integrally formed with said center, said legs having an inward position parallel to said support and an expanded position wherein said legs are splayed outwardly from said center;

means for connecting said anchor means to said support; and

guide means for maintaining said anchor in position, said guide means fitting over said legs, whereby said guide means hold said legs in said inward position until said support is in the desired position in the soil whereupon said guide means is removed permitting said legs to expand radially into said outward position in the soil thereby providing a base for said support substantially orthogonal to said support and maintaining said support in an upright position.

5,301,482

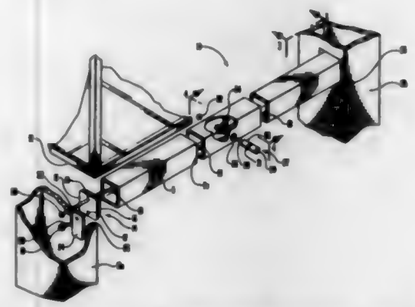
ADJUSTABLE TRUSS ASSEMBLY FOR SUPPORTING SHOWCASES AND THE LIKE

John E. Aspenwall, Lehi, Utah, assignor to Jahabow Industries, Inc., Owensville, Mo.

Filed Jun. 21, 1993, Ser. No. 78,360

Int. Cl.[5] E04C *3/10*

U.S. Cl. 52—223.1 **5 Claims**



1. A truss assembly for supporting showcases or the like comprising, a longitudinally open straight tube of a length to be supported between support means; support means that include means for coupling to ends of said tube to maintain said tube in essentially a horizontal attitude between said support means for supporting a showcase thereon; a fulcrum means mounted within and across a mid-section of said tube, positioned above a bottom interior surface; that consists of a straight cylinder having a tool receiving recess formed across one end and is stepped inwardly into a straight rod section adjacent to the other cylinder end that is threaded into an axial threaded shaft, and a first hole formed through a forward tube wall for mounting said cylinder across the interior of said tube to accommodate said smooth straight cylinder fitted therethrough, and a second hole aligned with said first hole formed through a rear rube wall to accommodate said axial threaded shaft, and a nut means for turning onto said axial threaded shaft; a tension rod for fitting through said tube, passing between said fulcrum means and said tube bottom interior surface, said tension rod having opposite ends that are each threaded and extend from said tube open ends; end cap means for arrangement across said tube open ends, where each said end cap includes a tension rod hole formed therethrough to pass one of said tension rod threaded ends therethrough; and means for turning onto each of said tension rod threaded ends and into engagement with said end cap for applying a tensile stress into said tension rod.

5,301,483

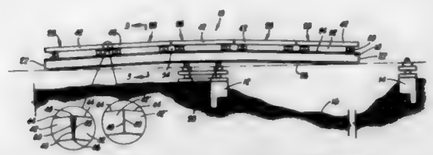
COMPOSITE, PRESTRESSED STRUCTURAL MEMBER AND METHOD OF FORMING SAME

Stanley J. Grossman, 1024 Cruce St., Norman, Okla. 73069

Division of Ser. No. 662,467, Feb. 28, 1991. This application May 18, 1992, Ser. No. 884,418

Int. Cl.[5] E04C *3/10*

U.S. Cl. 52—223.7 **16 Claims**



1. A prestressed structural apparatus comprising:

a plurality of girders extending in a longitudinal direction, said girders being spaced from one another in a transverse direction with respect to said girders; and

a plurality of adjacent composite units disposed above said girders and extending in said transverse direction between said girders, each composite unit comprising:

a plurality of beams extending in said transverse direction and attached to a top edge of said girders while said girders are in a construction position supported adjacent to center portions thereof with cantilevered ends of said girders allowed to deflect downwardly due to the weight thereof and the weight of said composite units; and

a molded deck portion disposed at least partially above said beams.

5,301,484

DEVICE FOR MOUNTING GLASS FACADE ELEMENTS

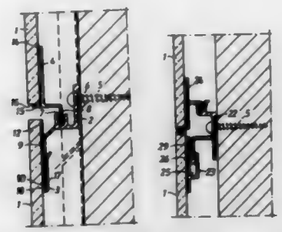
Nils-Gunnar Jansson, Enbärstigen 3B, S-133 36 Saltsjöbaden, Sweden

Filed Dec. 21, 1992, Ser. No. 992,688

Claims priority, application Sweden, Dec. 30, 1991, 9103855

Int. Cl.[5] E04B *2/88*

U.S. Cl. 52—235 **6 Claims**



1. A device for fitting and securing glass facade elements which are flat and have front and rear surfaces and upper and bottom parallel edges, to a building facade, wherein said device includes at least three parts, a first part (2: 22) adapted to be fastened to the facade, a second part (3: 23) which has a first upwardly facing channel (10, 25) and is adapted to be glued to the rear surface adjacent the upper edge of a facade element (1), and a third part (4: 24) which has a first downwardly directed tongue (8) and is adapted to be glued to the rear surface adjacent the bottom edge of a facade element (1); said first part (2) including a second upwardly facing channel (7) which is adapted to coact with said first downwardly extending tongue (8) belonging to the third part (4; 24), and said first part further includes a second downwardly extending tongue (9) which extends parallel with said second channel (7), said second tongue being disposed at a lower level than said second channel (7) and is adapted to coact with an in said first upwardly open channel (18) belonging to the second part (3: 23), said second part being provided with a first flat glue surface (11) which is adapted to be glued to the upper rear surface (12) of a facade element (1); and wherein the third part (4; 24) includes a second flat glue surface (13) which is adapted to be glued to the bottom rear surface (14) of a facade element (1), said second glue surface (13) being parallel with said first tongue (8), and said third part further including a supportive surface (15) which extends at right angles outwardly from said second glue surface (13) and against which the bottom edge (16) of a facade element, to which the third part is adapted to be glued, is intended to rest; and wherein, in a fitted state of facade elements and parts, the distance from a bottom edge (17) of said second tongue (9) on an associated said first part to a bottom (18) of a said first channel (10) of a second part exceeds the depth of the upwardly facing second channel (7) of the associated said first part.

5,301,485

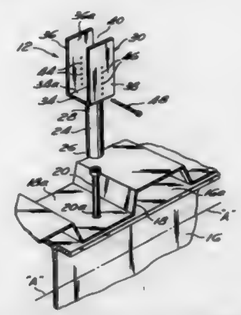
NELSON STUD SCREED POST ASSEMBLY

Lee A. Shaw, 1924 Irvine Ave., Newport Beach, Calif. 92660; Ronald D. Shaw, 1988 Pelican, Costa Mesa, Calif. 92626; Thomas W. Ennis, 2862 DeForrest Dr., Long Beach, Calif. 90806; Scott G. Shaw, 8206 Pawtucket, Huntington Beach, Calif. 92646, and Leory E. Shaw, 2861 Tobago Pl., Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 647,276, Jan. 28, 1991, abandoned. This application Jan. 27, 1992, Ser. No. 825,995

Int. Cl.[5] E04C *5/16*

U.S. Cl. 52—678 **6 Claims**



1. A rebar protection device for covering the top, exposed ends of a plurality of linearly aligned rebar members extending vertically upwardly from a support structure, said protection device comprising:

at least two screed post assemblies, each of said assemblies comprising:

an elongate, tubular screed post having upper and lower ends, said lower end being sized to receive the top end of a respective one of said rebar members; and

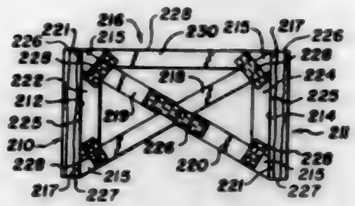
a support channel disposed on the upper end of the second post in a manner wherein said support channel substantially caps and covers said upper end;

a rail member sized and configured to be slidably receivable into and to extend between the support channels of said screed post assemblies;

the lower ends of said screed posts being extended over a pair of said rebar members with the top ends of the pair being abutted against the support channels when fully received into the screed posts, said support channels being oriented on said upper ends such that said rail member covers the top ends of each the remaining rebar members when received into the support channels.

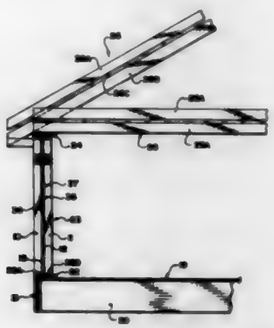
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,486
BRACING SYSTEM
John W. R. Taylor, Abbotsford, Canada, assignor to Western Interlok Systems, Ltd., Langley, Canada
Filed Dec. 13, 1991, Ser. No. 806,349
Int. Cl.[5] E04C 3/02
U.S. Cl. 52—695 6 Claims



1. A structural assembly, comprising:
a plurality of joists, said joists having opposed vertical side faces spaced apart from one another;
a plurality of cross-braces accommodated entirely between said joists, so that said cross-braces are separated from one another by said joists, and interconnecting said joists;
said joists having flat horizontal edges;
said cross-braces each having a flat horizontal edge flush with said horizontal edges of said joists;
said cross-braces each comprising a pair of inclined brace members connected in a vertical X-shaped configuration and having outer ends and a horizontal member extending between said outer ends of said brace members and forming a horizontal strut between said outer ends; and
said cross-braces having flat lateral vertical surfaces intersecting said outer edges of said cross-braces and abutting said opposed side faces of said joists.

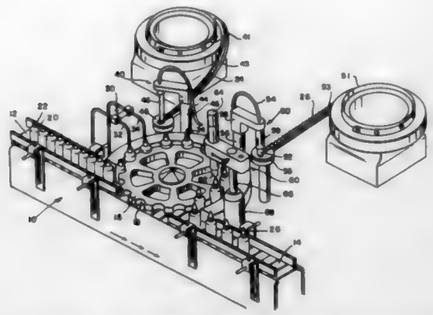
5,301,487
WOODEN STRUCTURAL MEMBER FOR USE IN A BUILDING
Jacob R. Wiebe, 60 Heaton Avenue, Winnipeg, Manitoba, Canada R3B 3E3
Continuation-in-part of Ser. No. 677,432, Mar. 29, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 924,872
Int. Cl.[5] E04C 3/26, 3/292; E04B 2/70
U.S. Cl. 52—743 9 Claims



1. A method of constructing a building comprising:
forming a plurality of structural members each comprising a first and a second elongate strip of wood which is generally rectangular in cross section arranged in spaced mutually parallel relationship so as to define first inwardly facing surfaces of the strips and second outwardly facing surfaces of the strips and a plurality of separate, straight, elongate connecting members extending from the first inwardly facing surface of the first strip to the first inwardly facing surface of the second strip so as to hold the strips in said relationship with said first surfaces of the first and second strips spaced apart to define a space therebetween, the connecting members being arranged at spaced positions longitudinally of the strips;
each of the structural members being assembled by the steps of locating the first strip and the second strip in spaced location with the first surfaces thereof facing inwardly, each connecting member including two pointed ends each for engagement with said first surface of the respective strip, holding the connecting members so as to remain at right angles to said first surfaces and forcing the pointed ends of the connecting members into each of the strips, such that each connecting member extends from one pointed end embedded with the interior of the first strip and spaced from the second surface thereof through said first surface thereof, across the space, through said first surface of the second strip and into the interior of the second strip with the pointed end embedded within the interior of the second strip and spaced from the second surface of the second strip;
subsequent to the assembly to the structural members, locating the structural members in vertical orientation and in horizontally spaced location to define a frame of a wall of the building such that the first strip of each structural member faces outwardly of the building and the second strip faces inwardly of the building and such that wall voids are defined between each structural member and the next;
using said space between the first and second strips which is free from intervening material for threading therethrough service lines for building utilities without cutting through the first and second strips;
applying sheathing material to the second surface of the first strips to form an outer sheathing for the building, applying sheathing material to the second surfaces of the second strips to form an inner sheathing for the building such that the connecting members are spaced from the inner and outer sheathing material to provide a thermal break; and
filling the wall voids between each structural member and the next and the spaces between the first and second strips with an insulating material;
forming one of the first and second strips so as to have a width in a direction transverse to the length of the connecting members which is at least 1.5 inches and so as to have a thickness in a direction longitudinal of the length of the connecting members which is greater than said width;
and forming the other of the first and second strips so as to have a width in a direction transverse to the length of the connecting members which is substantially equal to the width of said one of the first and second strips; and so as to have a thickness in a direction longitudinal to the length of the connecting members which is less than the thickness of said one of the first and second strips.

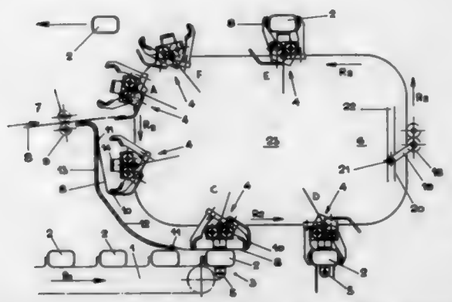
5,301,488
PROGRAMMABLE FILLING AND CAPPING MACHINE
Mark A. Ruhl, and Richard C. Jensen, both of Baltimore, Md., assignors to National Instrument Company, Inc., Baltimore, Md.
Filed Nov. 6, 1992, Ser. No. 972,809
Int. Cl.[5] B65B 3/34, 7/28, 57/00, 59/00
U.S. Cl. 53—55 20 Claims

1. A filling and capping machine comprising:
a conveyor means for positioning a plurality of containers at a plurality of positions along a path;
a filling means, raised and lowered at a filling position along said path, for filling a container at said filling position;
a capping means, pivoted about a first axis between a capping position on said path and a cap pickup position, and raised and lowered at said capping position, for retrieving a cap at said cap pickup position and capping a container at said capping position; and



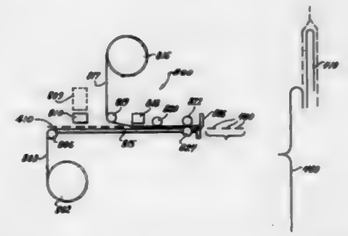
control means, including a servo motor connected to each of said conveyor means, said filling means and said capping means, for programmably positioning said conveyor means, said filling means and said capping means.

5,301,489
CONVEYING DEVICE WITH LEVERS FOR WRAPPING MACHINES DESIGNED FOR DELICATE PRODUCTS, EQUIPPED WITH A GRIPPING DEVICE FOR STRIPS OF MATERIAL FOR WRAPPING PRODUCTS, AND MACHINE WITH SAID CONVEYING DEVICE
Gino Benedetti, Funo di Argelato, Italy, assignor to B.F.B. S.p.A., Italy
Filed Aug. 4, 1992, Ser. No. 924,900
Int. Cl.[5] B65B 11/28, 49/00
U.S. Cl. 53—234 10 Claims



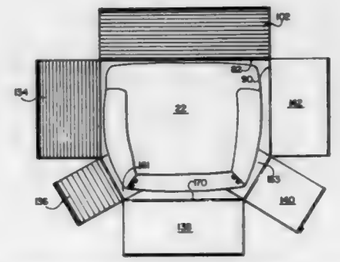
1. In a conveying device with levers for wrapping delicate products, equipped with a gripping device for strips of material for wrapping products, said conveying device, having:
a supporting structure sliding on a radial guide which forms part of a carrousel conveyor revolving around a support placed on a supporting plate;
a first operating lever and a second operating lever mounted for rotation around first and second pivots for movement toward and away from each other, said first and second pivots being supported by said supporting structure;
the improvement comprising a limit stop positioned to act in conjunction with said first operating lever to constitute a gripping device for said strips; said limit stop being positioned to limit the movement of said first operating lever in a direction away from said second operating lever, said limit stop being mounted integral with said supporting structure and independent of said first and second operating levers;
said improvement further comprising means to control movements of said levers;
said machine furthermore having a guiding device for ends of said strips.

5,301,490
APPLICATOR MITT
Duane L. Storandt, P.O. Box 6813, St. Louis, Mo. 63144
Division of Ser. No. 212,503, Jun. 28, 1988, Pat. No. 5,019,058, which is a continuation-in-part of Ser. No. 9,053, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 681,921, Dec. 14, 1984, abandoned, which is a continuation of Ser. No. 316,654, Oct. 30, 1981, abandoned. This application May 28, 1991, Ser. No. 705,919
Int. Cl.[5] B65B 61/00
U.S. Cl. 53—410 4 Claims



2. A method for the manufacture of a packaged mitt, comprising:
placing a mitt between strips of material sealable sufficiently large to enclose the mitt, the mitt comprising a laminate of a heat sealable material and a wear resistant material, the mitt being in contact with the sealable material,
substantially permanently sealing the mitt to one of the strips only, and
sealing the resulting upper and lower surfaces of the strips in spaced relation from the mitt as necessary to seal in the mitt to form an outer pouch, the enclosing material being formed by first placing the mitt on a strip of material and adding a second strip over the mitt so that the outer pouch can be opened from an end adjacent the seal between the mitt and one strip so that the mitt and outer pouch remain attached at the seal between the mitt and one strip.

5,301,491
METHOD OF PACKAGING A CHAIR FOR SHIPMENT
John K. Boardman, Jr., Bedford; Garmon W. Conner, Check, and B. Douglas Brockman, Lynchburg, all of Va., assignors to Sam Moore Furniture Industries, Inc., Bedford, Va.
Filed Feb. 14, 1992, Ser. No. 835,346
Int. Cl.[5] B65B 5/00
U.S. Cl. 53—428 12 Claims



11. A method of preparing a chair having a curved non-

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square rear configuration and a separable chair back component and chair base component for shipment, said method comprising the steps of:

(a) providing the chair back component and the chair base component in separated condition;

(b) positioning the chair base component in a closable chair base carton having vertical wall means having a peripheral dimension that is substantially less than the peripheral dimension of a square carton in which said chair base component would be snugly received and a height permitting complete enclosure of the chair base component; and

(c) positioning the chair back in a chair back carton of sufficient size to fully enclose the chair back;

wherein said closeable chair base carton includes;

(a) a front vertical wall panel having a right side and a left side;

(b) a right side vertical wall panel extending rearwardly from said right side of said front vertical wall panel;

(c) a left side vertical wall panel extending rearwardly rom said left side of said front vertical wall panel;

(d) a rear vertical wall panel oriented in a plane substantially parallel to said front vertical wall panel and having a right side and a left side;

(e) a right vertical diagonal beveled wall panel extending between said right side vertical wall panel and said rear vertical wall panel;

(f) a left vertical diagonal beveled wall panel extending between said left side vertical wall panel and said rear vertical wall panel;

(g) carton top defining means; and

(h) carton bottom defining means;

wherein said right vertical diagonal beveled wall panel and said left vertical diagonal beveled wall panel are symmetrically positioned relative to a front to rear extending plane of symmetry oriented perpendicularly to said front vertical wall panel and said rear vertical wall panel; and

wherein said carton top defining means comprises a front top panel joined by a fold line to the upper extent of said front vertical wall panel, a rear top panel joined by a fold line to the upper extent of said rear vertical wall panel, a right top panel joined by a fold line to the upper extent of said right side vertical wall panel, a left top panel joined by a fold line to the upper extent of said left side vertical wall panel, a right diagonal top panel joined by a fold line to the upper extent of said right vertical diagonal beveled wall panel and a left diagonal top panel joined by a fold line to the upper extent of said left vertical diagonal beveled wall panel.

5,301,492

BAG CLAMPING DEVICE

Karl-Wilhelm Kader, Hennef, Fed. Rep. of Germany, assignor to Chronos Richardson GmbH, Hennef, Fed. Rep. of Germany

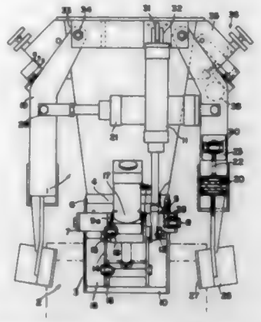
Filed Dec. 14, 1992, Ser. No. 990,643

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141254

Int. Cl.[5] B65B *39/10, 43/34, 43/16*

U.S. Cl. 53—459 **19 Claims**

1. In a system for filling bags, each having an open end, a closed end, opposed sides, and opposed walls, in which the bags are expanded at their open ends and slipped onto a filling neck having, at its exit end, a pair of opposed expanding flaps each having a side and opposed ends and movable relative to one another to open or close an opening through which a bag can be filled, the improvement comprising: bag clamping means operative to clamp opposed portions of the walls of a bag that has been slipped around the pair of opposed expanding flaps between a pair of opposed end clamps and the sides of the pair of opposed expanding flaps; to clamp portions of the opposing sides of the bag from the outside of the bag in proximity to the open end of the bag; to laterally clamp portions of the walls of the bag against the opposed ends of the pair of the opposed expanding flaps after opening the pair of opposed expanding flaps; after the bag if filled, to laterally unclamp portions of the walls of the bag against the opposed ends of the pair of opposed expanding flaps and close the pair of opposed



expanding flaps; to unclamp portions of the opposing sides of the bag in proximity to the open end of the bag; and to unclamp the opposed portions of the walls of the bag.

5,301,493

STEPLESSLY ADJUSTABLE PRE-STRETCHED FILM WRAPPING APPARATUS

Tsung-Yen Chen, No. 2, Lane 31, Chung-Hsing Road, Hsichih Cheng, Taipei Hsien, Taiwan

Filed Sep. 25, 1992, Ser. No. 951,240

Int. Cl.[5] B65B *11/04*

U.S. Cl. 53—556 **2 Claims**

1. A steplesaly adjustable pre-stretched film wrapping apparatus comprising an upstream film roller rotatable with a second rotational speed with a film web unwound from a film roll extending therebetween and partially wrapping around said upstream and downstream film rollers to be stretched thereby, a first motor being provided to generate a rotational motion which is transmitted to a main shaft via a mechanical transmission system, a first mechanical connection being provided between said main shaft and said downstream film roller to transmit the rotational motion to said downstream film roller to provide said downstream film roller with said first rotational speed, a second mechanical connection being provided between said main shaft and said upstream film roller to transmit the rotational motion to said upstream film roller to provide said upstream film roller with said second rotational speed, said second mechanical connection comprising an input member which is rotatable with said main shaft and an output member which is rotatable with said upstream film roller, an adjusting member being interposed between said input member and said output member to transmit the rotational motion from said

input member to said output member in an adjustable way so as to adjust a speed ratio therebetween and thus changing a ratio between said first rotational speed and said second rotational speed, said input member of said second mechanical connection being a cylindrical member coaxially mounted on said main shaft to be rotatable about a longitudinal axis of said main shaft and wherein said output member of said second mechanical connection is a disk member with a center thereof connected to a shaft of said upstream film roller to be rotatable with said upstream film roller about a central axis thereof, said central axis being substantially normal to said longitudinal axis, and wherein said adjusting member is an idle roller frictionally contractingly interposed between said disk member and cylindrical member, said idle roller having a rotational axis substantially parallel with said longitudinal axis so that a constant speed ratio between said cylindrical member and said idle roller is maintained, said idle roller being rolling on a side surface of said disk at a location with distance from the center of said disk member so as to transmit the rotational motion to said disk member, said adjusting member being provided with a linear motion actuation means to move said idle roller along the rotational axis thereof to change said distance from the center of said disk member so as to drive said disk member at different speed and thus adjusting the speed ratio therebetween.

5,301,494

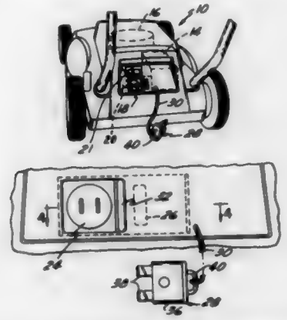
RECHARGING SYSTEM FOR A BATTERY OPERATED TOOL HAVING AN ON-BOARD TRANSFORMER

David G. Peot, Easley; G. Michael Hornick, Anderson; Adrian E. Hartz, Greenville, and Charles K. Long, Seneca, all of S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.

Filed Jul. 24, 1992, Ser. No. 920,133

Int. Cl.[5] A01D *34/82*

U.S. Cl. 56—10.5 **17 Claims**



8. A battery operated lawn mower having an electric motor, a battery and an activation switch, shiftable between an ON and an OFF position for selectively activating said motor, said lawn mower comprising:

a housing;

a receptacle electrically connected in series with said activation switch, said battery and said motor to form a motor circuit;

an electrical connector within said housing for receiving an electrical power cord, said connector cooperating electrically with said battery;

a removable key adapted to be inserted into said receptacle; and

a cover cooperating with said housing and said key, said cover movable between an open position allowing access to said connector and a closed position preventing access to said connector, said cover oriented relative said receptacle such that said key must first be removed from said receptacle before said cover may be moved to said open position, wherein removal of said key breaks said motor circuit thereby preventing motor operation while said battery is recharging.

5,301,495

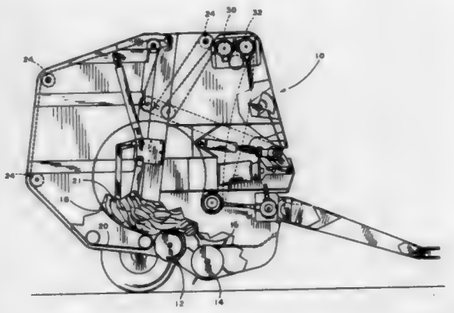
UNIDIRECTIONAL DRUM ROLLER FOR A BALER OF LARGE CYLINDRICAL BALES

Daryl W. Van Zee, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Mar. 12, 1992, Ser. No. 850,983

Int. Cl.[5] A01D *39/00*

U.S. Cl. 56—341 **3 Claims**



1. A unidirectional drum roller for a baler of cylindrical bales, comprising:

(a) a substantially cylindrical drum; and

(b) a plurality of ramped steps extended longitudinally of said drum, each of said ramped steps including a steeply inclined leading edge portion and a gradually inclined following portion.

5,301,496

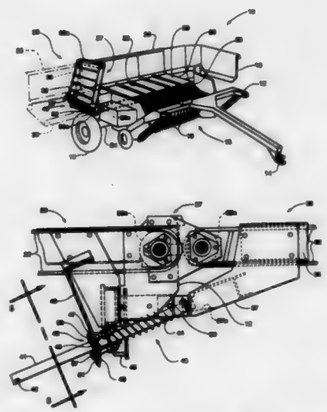
INVERTER EXTENSION POSITION LOCK

Cecil R. Sudbrack, New Holland, and James T. Clevenger, Jr., Lancaster, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Jul. 1, 1992, Ser. No. 907,462

Int. Cl.[5] A01D *78/00*

U.S. Cl. 56—366 **20 Claims**



10. In a windrow inverter having a frame mobilely supported for movement over the ground; a first transverse conveyor supported by said frame to convey said elevated crop material laterally; and an extension conveyor pivotally sup-

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ported by said frame laterally of and adjacent to said first transverse conveyor to receive crop material therefrom, said extension conveyor being operable to discharge said crop material to the ground laterally of said frame to one side thereof, said second conveyor being movable between a lowered operative position and a raised transport position, a position locking mechanism comprising:

a first movable member connected to said extension conveyor for corresponding movement between a first position corresponding to said operative position of said extension conveyor and a second position corresponding to said transport position of said extension conveyor;

a latching mechanism engageable with said first movable member for releasably fixing said first movable member in said first and second positions; and

a biasing means operatively engaged with said latching mechanism effect engagement thereof with said first movable member in response to said first movable member reaching said second position.

5,301,497

DEVICE FOR CONVEYING FULL AND EMPTY BOBBINS BETWEEN MULTI-POSITION TEXTILE MACHINES

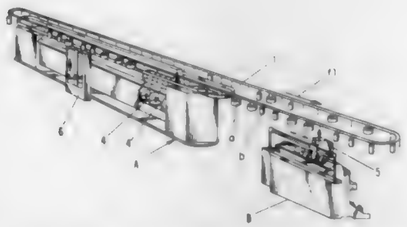
Wolfgang Leupers, Mönchengladbach, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 908,190

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1991, 4121772

Int. Cl.[5] D01H *9/02*

U.S. Cl. 57—281 **3 Claims**



1. A device for conveying full and empty bobbins between multi-position textile machines of different finishing stages, comprising:

an endless conveying rail, common to all of the multi-position textile machines of different finishing stages, with said endless conveying rail connecting directly at least two multi-position textile machines; and

an endless, driven conveying element connected to said endless conveying rail and extending over an entire length of said endless conveying rail, said conveying element comprising carriers for conveying the full and empty bobbins, said carriers being movable along said conveying rail.

5,301,498

ROPE CHAIN COMPONENT

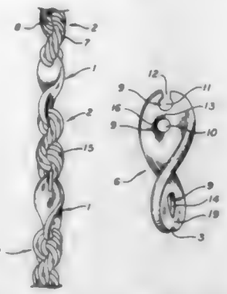
Meang Chia, and Cheo Chia, both of 412 W. 6th St., Suite #1104, Los Angeles, Calif. 90014

Filed Jun. 17, 1992, Ser. No. 899,742

Int. Cl.[5] B21L *17/00*

U.S. Cl. 59—80 **42 Claims**

1. Jewelry comprising annular links of the type used in forming a jewelry rope chain and a component for coupling with said annular links, said component comprising a body having connecting means at one edge thereof for receiving at least one of said annular links, said at least one of said annular links and at least three neighboring links all being located in a sequence and position corresponding to and maintaining the



continuity of the sequence and position which said annular links take when formed into said jewelry rope chain.

5,301,499

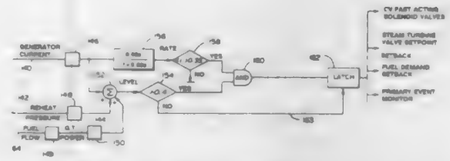
OVERSPEED ANTICIPATION AND CONTROL SYSTEM FOR SINGLE SHAFT COMBINED CYCLE GAS AND STEAM TURBINE UNIT

Jens Kure-Jensen; William I. Rowen, and James H. Moore, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1990, Ser. No. 544,983

Int. Cl.[5] F02C *6/18*

U.S. Cl. 60—39.03 **10 Claims**



1. Method for anticipating and limiting overspeed of a combined cycle turbine of the type having a gas turbine supplied with fuel by a fuel flow control valve and a steam turbine with a steam control valve both disposed on a single shaft, and having a heat recovery steam generator heated by said gas turbine and connected to supply steam to said steam control valve, said combined cycle turbine having a unified control system and driving an electrical generator, comprising the steps of;

providing a first power input signal representative of instantaneous power supplied by the steam turbine relative to full rated power output of the steam turbine,

providing a second power input signal representative of instantaneous power supplied by the gas turbine relative to full rated power output of the gas turbine,

providing a load responsive signal representative of actual load on said generator relative to full rated load of said generator,

applying proportional scaling factors to said first and second power input signals to provide first and second scaled signals,

summing said first and second scaled signals with said load responsive signal, and

reducing the opening of the steam control valve and reducing the fuel flow through the fuel flow control valve when the sum of said first and second scaled signals exceeds said load responsive signal by a preselected amount.

5,301,500

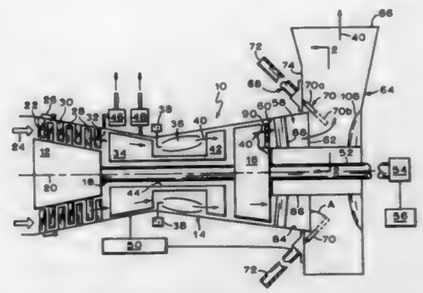
GAS TURBINE ENGINE FOR CONTROLLING STALL MARGIN

William R. Hines, Montgomery, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 9, 1990, Ser. No. 550,271

Int. Cl.[5] F02C *3/04, 7/00*

U.S. Cl. 60—39.161 **21 Claims**



1. A gas turbine engine of the marine and land-based industrial (M&I) type for powering a load connected thereto comprising:

a booster compressor for providing compressed airflow;

a core engine disposed in flow communication with said booster compressor for receiving said compressed airflow and generating combustion gases;

a power turbine disposed in flow communication with said core engine for receiving said combustion gases, said power turbine including a first shaft, joined to said booster compressor for rotation therewith, and an output shaft for providing power to said load at a synchronous speed;

a flow channel having an inlet disposed in flow communication with said power turbine for receiving said combustion gases channeled therethrough and an outlet for discharging said combustion gases as waste thrust;

an exhaust assembly disposed in flow communication with said flow channel outlet for receiving said combustion gases therefrom, and including an exhaust assembly outlet for discharging said combustion gases; and

means for selectively varying flow area of said channel outlet for reducing horsepower from said output shaft at said synchronous speed to a minimum output shaft horsepower of about zero, while maintaining a predetermined stall margin of said booster compressor.

5,301,501

DEVICE FOR DETERMINING DETERIORATION OF A CATALYTIC CONVERTER FOR AN ENGINE

Yasuhiro Shimizu, and Nobuyuki Kobayashi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 6, 1992, Ser. No. 956,987

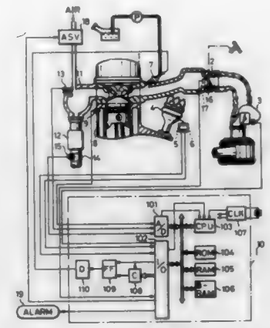
Claims priority, application Japan, Oct. 11, 1991, 3-263892

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 **10 Claims**

1. A device for determining a deterioration of a three-way catalyst disposed in an exhaust passage of an internal combustion engine, said engine comprising an upstream air-fuel ratio sensor disposed in the exhaust passage upstream of said three-way catalyst for generating an output signal corresponding to an air-fuel ratio of the exhaust gas upstream of said three-way catalyst, a downstream air-fuel ratio sensor disposed in the exhaust passage downstream of said three-way catalyst for generating an output signal corresponding to an air-fuel ratio of the exhaust gas downstream of said three-way catalyst, and a feedback control means for controlling the air-fuel ratio of the engine by feedback control, said device comprising:

a means for calculating the length of the response curve of the output signal of said downstream air-fuel ratio sensor when the air-fuel ratio of the engine is controlled by said feedback control means, and



a determining means for determining whether or not said three-way catalyst has deteriorated in accordance with, at least, said calculated length of the response curve of the output signal of said downstream air-fuel ratio sensor.

5,301,502

AFTER-BURNER SYSTEM

Nobuyuki Oota, Kariya; Yasutoshi Yamada, Chita; Motonobu Akaki, Anjo, and Souichi Matsushita, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

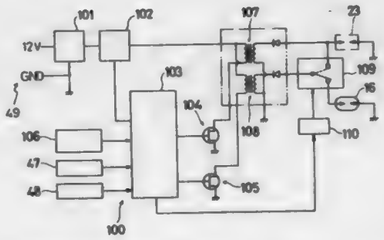
Division of Ser. No. 878,490, May 5, 1992, Pat. No. 5,263,318.

This application Aug. 31, 1993, Ser. No. 114,070

Claims priority, application Japan, May 8, 1991, 3-131586

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—286 **6 Claims**



1. An after-burner system comprising:

an exhaust passage of an engine;

a catalyzer located in the exhaust passage for purifying hydrocarbon;

an ignition plug for causing ignition;

a spark gap located in the exhaust passage at an upstream side of the catalyzer;

means for supplying hydrogen to the exhaust passage upstream of the spark gap;

an ignition coil connected to the ignition plug for sparking the ignition plug;

an auxiliary coil selectively connected to the ignition plug or the spark gap for sparking the ignition plug and the spark gap respectively;

switching means for switching between one connection in which the auxiliary coil is connected to the ignition plug and another connection in which the auxiliary coil is connected to the spark gap; and

a controller for controlling the switching means.

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5,301,503

VEHICLE INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM

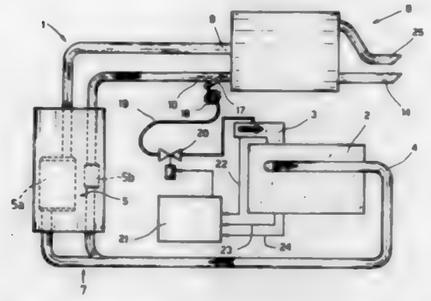
Paolo Martinelli, Modena, Italy, assignor to Ferrari S.P.A., Modena, Italy

Filed Jul. 24, 1992, Ser. No. 917,899

Claims priority, application Italy, Jul. 26, 1991, 000593 A/91

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—288 **8 Claims**



1. An exhaust system for an internal combustion engine, comprising:

a) an exhaust manifold having first and second ends, said first end for being connected to the engine;

b) first and second exhaust passageways each having first and second ends;

c) respective first ends of said first and second passageways being connected to said exhaust manifold second end and communicating therewith;

d) respective second ends of said first and second passageways for directing the exhaust gas to the atmosphere;

e) said first and second passageways having first and second silencers, respectively, and said first silencer having a higher loss load than said second silencer;

f) said first and second passageways including first and second catalysts, respectively, for processing the exhaust gas and said second catalyst being adapted to process exhaust gas of rich air/fuel mixtures; and

g) means for predominantly directing the exhaust gas to one of said first and second passageways in response to a variation of at least one engine performance parameter.

5,301,504

COMBINATION VALVE

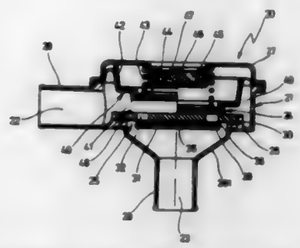
Johannes-Gerhard Bertling, Vaihingen/Enz, and Claudius Muscheknautz, Lauf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,381

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 4204415

Int. Cl.[5] F01N *3/22*; **F16K** *31/12*

U.S. Cl. 60—307 **12 Claims**



1. A combination valve assembly, particularly for a secondary air blower in internal combustion engines with controlled three-way catalyzer, the combination valve assembly comprising a valve housing having a valve inlet and a valve outlet; a pneumatically actuated valve arranged in said valve housing and having a valve member for locking and releasing a flow path between said valve inlet and said valve outlet; a return valve arranged in said housing downstream of said valve as considered in a flow direction and having a closing member formed as a leaf spring; a valve plate provided with openings and a stroke catcher limiting an opening stroke arranged so that said leaf spring located between said valve plate and said stroke catcher; a valve closing spring loading said valve member of said valve in a valve closing direction while a differential pressure between a valve inlet pressure and a surrounding pressure loads said valve member of said valve in a valve opening direction, said leaf spring of said return valve having spiral arms formed in it and being clamped between said valve plate and said stroke catcher.

5,301,505

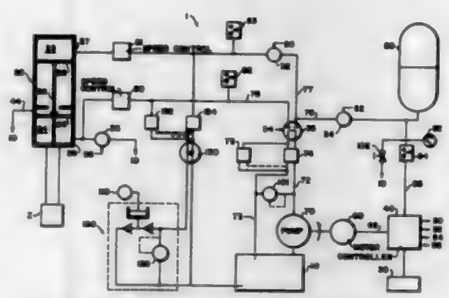
FAIL SAFE LINEAR ACTUATOR SYSTEM

John J. Wright, 9 Hix Ave., Rye, N.Y. 10580

Filed Dec. 4, 1992, Ser. No. 985,924

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—405 **5 Claims**



1. A fail safe actuator system which comprises:

a power source;

a controller, coupled to said power source, for transmitting control signals to selected components of said system;

a motor which is energized by said power source through said controller;

a pump means which is powered by said motor;

a fluid reservoir;

at least first, second, and third conduits;

at least first, second and third valves electrically connected to said controller for receiving said control signals;

an actuator comprising a first fluid chamber and a second fluid chamber, said first fluid chamber being in communication with said fluid reservoir via said first conduit and said second fluid chamber being in communication with said fluid reservoir via said second conduit;

means for changing fluid flow direction in both said first and second conduits;

a fail safe mechanism for returning the actuator to its inoperative position if the actuator system should lose electrical power, including a pressurized fluid storage means connected to said third conduit, said first valve being disposed within said third conduit for controlling fluid flow to and from said pressurized fluid storage means;

the second valve being disposed within said first conduit for controlling fluid flow between said pressurized fluid storage means and said actuator;

the third valve being operative for dumping fluid from said actuator when said actuator is being returned to its inoperative position;

means for signaling and automatically enabling said controller only when said pressurized fluid storage means has been sufficiently charged with fluid to provide fail safe operation, the controller otherwise being disabled from providing control signals to said valves, which signals would ordinarily permit fluid flow to said actuator.

5,301,506

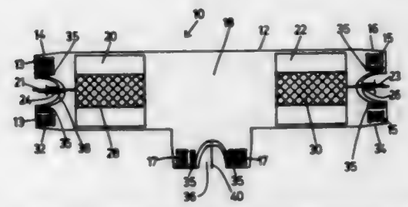
THERMAL REGENERATIVE DEVICE

Tom K. Pettingill, P.O. Box 281, Norval, Ontario, Canada L0P 1K0

Continuation-in-part of Ser. No. 727,960, Jul. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 545,646, Jun. 29, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 917,193

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 **34 Claims**



1. A thermal regenerative device having a constant volume with a one-phase working fluid distributed throughout, comprising displacers for dividing the volume into three chambers whose respective volumes are variable by movement of the displacers between them, a heat exchanger for each chamber in thermal contact with the working fluid, thermal regenerators in contact with the working fluid in the chambers, diffuser means arranged in fluid communication with the chambers and adapted to permit the passage of working fluid between the chambers, and means for the agitation of working fluid in at least one of the chambers.

5,301,507

SUPERCONDUCTING MAGNETIC ENERGY STORAGE DEVICE

Evangelos T. Laskaris, Schenectady, and Ahmed K. Kalafala, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,683

Int. Cl.[5] F25B *19/00*; **H01F** *7/22*

U.S. Cl. 62—51.1 **8 Claims**

1. A superconducting magnetic energy storage device, said device comprised of:

a superconductive winding;

a cryostat means substantially located around said winding means;

a suspension means which is operatively connected to said winding means and said cryostat means;

a vacuum containment means located substantially around said winding means, said cryostat means and said suspension means; and

a refrigeration means operatively connected to said winding means and said cryostat means, wherein said refrigeration means is further comprised of;

a cryocooler means;

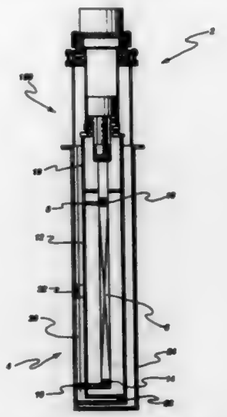
a thermal station means which is thermally connected to said superconductive winding and said cryocooler means;

a thermal contact means located substantially between said thermal station means and said cryocooler means;

a refrigeration suspension means operatively connected to said cryocooler means;

a cryocooler contact means located substantially between said refrigeration suspension means and said cryocooler; and

a refrigeration suspension adjustment means operatively connected to said refrigeration suspension means, and



wherein said refrigeration means is further comprised of: a ring means operatively connected to said superconductive winding.

5,301,508

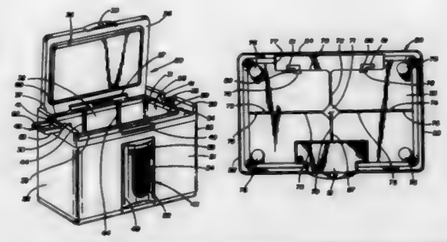
THERMOELECTRIC PORTABLE CONTAINER

W. Henry Kahl, Wooster, Ohio; James M. Kerner, Chico, Calif.; James A. Schillinger, Augusta, Kans., and Neil R. Taylor, Alameda, Calif., assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Aug. 14, 1992, Ser. No. 930,009

Int. Cl.[5] F25B *21/02*

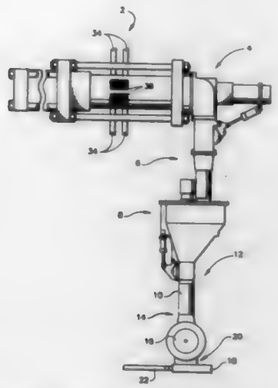
U.S. Cl. 62—3.62 **78 Claims**



1. A container comprising a base surface, first opposed walls extending from said bas surface, second opposed walls extending from said base surface, together said first opposed walls and said second opposed walls forming an opening for the container opposite to said base surface, a door for closing said opening, hinge means attaching said door to one of said first opposed walls, a recess formed in one of said first opposed walls, and thermoelectric power means slidably received in said recess to selectively cool or heat the interior of the container, the container thus being positionable selectively on said bas surface or either of said second opposed walls.

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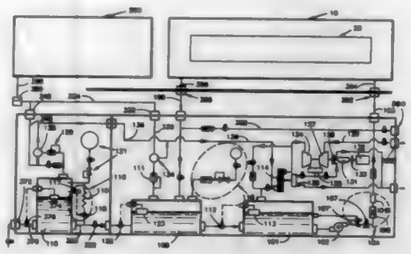
5,301,509
METHOD AND APPARATUS FOR PRODUCING CARBON DIOXIDE PELLETS
Daniel L. Lloyd, Mason, and Frederick C. Young, Maineville, both of Ohio, assignors to Cold Jet, Inc., Loveland, Ohio
Filed Jul. 8, 1992, Ser. No. 910,839
Int. Cl.[5] B29C *43/00*
U.S. Cl. 62—35 **1 Claim**



1. A method for producing carbon dioxide pellets, comprising the steps of:
(a) providing a die plate having a plurality of respective die openings formed therethrough, said die plate having upstream and downstream surfaces, each said respective die opening having an entrance adjacent said upstream surface;
(b) providing carbon dioxide in the solid phase adjacent said die plate upstream surface;
(c) urging said carbon dioxide in the solid phase toward said die plate with force sufficient to cause said carbon dioxide to under go a first phase change from the solid phase to the liquid phase and flow within the said entrance, thereby forcing said carbon dioxide to flow through said respective die openings such that substantially all of said carbon dioxide flowing within a portion of said respective die openings is in the liquid phase; and
(d) flowing said carbon dioxide through said respective die openings at a rate such that said carbon dioxide under goes a second phase change from the liquid phase to the solid phase within said respective die openings.

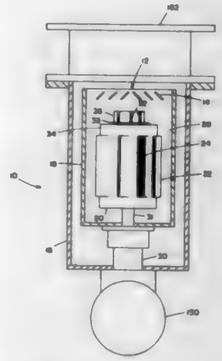
5,301,510
SELF-POWERED SLUSH MAINTENANCE UNIT
Sidney P. Glasser, Fullerton, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 25, 1992, Ser. No. 950,522
Int. Cl.[5] F17C *5/00*
U.S. Cl. 62—54.1 **10 Claims**

1. Apparatus for maintaining predetermined density of slush hydrogen in the fuel tanks of an aerospace vehicle, comprising:
means for collecting liquid hydrogen from the vehicle tanks,
means, communicating with said collecting means, for converting said liquid hydrogen to a slush hydrogen, said converting means including
first pumping means, including a vacuum pump receiving cold vapor directly from said converting means, for maintaining a predetermined slush density in said converting means, and



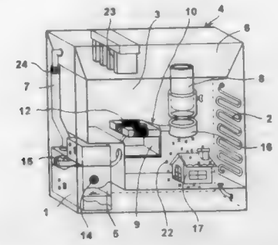
second pumping means for delivering said slush hydrogen to said aerospace vehicle to be used as a powering fuel.

5,301,511
CRYOPUMP AND CRYOPANEL HAVING FROST CONCENTRATING DEVICE
Allen J. Bartlett, Milford, Mass.; Charles A. Stochl, Cumberland, R.I.; Anthony M. Guerra, Scituate, Mass.; Dale A. Dopson, Stoughton, Mass.; Paul Meroski, Melrose, Mass., and Thomas F. Stevens, Westborough, Mass., assignors to Helix Technology Corporation, Mansfield, Mass.
Filed Jun. 12, 1992, Ser. No. 898,080
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 **40 Claims**



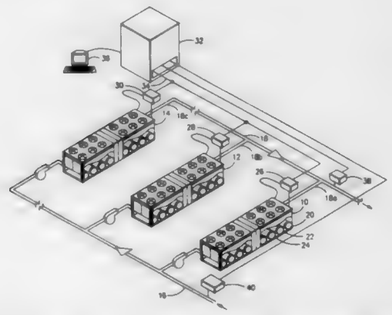
1. A cryopump comprising:
a vacuum vessel having an opening through which gases are cryopumped;
a cryogenic refrigerator;
a cryopanel in the vacuum vessel cooled to cryogenic temperatures by the cryogenic refrigerator and supporting adsorbent for adsorbing gases therein; and
a condensing cryopanel cooled to cryogenic temperatures by the cryogenic refrigerator facing the opening in the vacuum vessel and shielding the adsorbent from gases passing through the opening, the condensing cryopanel having surfaces extending therefrom toward the opening to condense gases.

5,301,512
METHOD AND APPARATUS FOR MAKING SNOW
Yasuo Yamamoto, c/o Wetmaster Kabushiki Kaisha, 25-18, Shimoochini 4-chome, Shinjuku-ku, Tokyo-to, Japan
Filed Sep. 12, 1991, Ser. No. 758,619
Int. Cl.[5] F25C *3/00*
U.S. Cl. 62—74 **61 Claims**



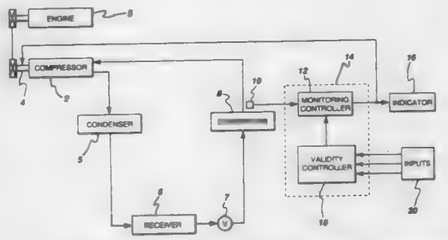
36. A method for making snow, comprising the steps of:
continuously generating a plurality of ice crystals;
directing said continuously generated ice crystals into an ultrasonic field; and
growing said ice crystals disposed within said ultrasonic field into snowflakes that fall out of said ultrasonic field;
wherein the step of growing said ice crystals disposed within said ultrasonic field into snowflakes further includes steps of:
generating said ultrasonic field in a first plane; and
passing said ice crystals through said ultrasonic field in a direction not contained in said first plane; and
wherein the step of generating said ultrasonic field in the first plane first includes steps of:
generating an ultrasonic field;
guiding said ultrasonic field in a direction parallel to said first plane;
generating a standing wave in said ultrasonic field; and
levitating said ice crystals in said ultrasonic field.

5,301,513
MONITORING AND CONTROL OF CHILLER UNITS
Paul J. Duff, Lebanon, and Keith G. Michaelsen, Winsted, both of Conn., assignors to Carrier Corporation, Syracuse, N.Y.
Filed May 7, 1993, Ser. No. 57,912
Int. Cl.[5] F25B *7/00*
U.S. Cl. 62—117 **19 Claims**



1. A process for selectively adding or dropping stages of compression within discrete chiller units each having dedicated control units for normally adding or deleting stages of compression, said process comprising the steps of:
defining a demand limit on the compression capacity in each respective chiller unit that may be activated by the dedicated control unit for that respective chiller unit;
defining an error between a sensed temperature of the chilled coolant following compression by the discrete chiller units and a desired temperature;
calculating an error rate at which the defined error between the sensed temperature of chilled coolant following compression and a desired temperature is changing over time;
imposing limits on both the defined error between the sensed temperature of chilled coolant following compression and a desired temperature and the calculated error rate; and
changing the demand limit on the compression capacity of at least one chiller unit in response to said step of imposing limits on both the defined error between the sensed temperature of chilled coolant following compression and a desired temperature and the calculated error rate whereby the dedicated control unit for that respective chiller unit changes the number of stages of compression in that respective chiller unit.

5,301,514
LOW REFRIGERANT CHARGE DETECTION BY MONITORING THERMAL EXPANSION VALVE OSCILLATION
Warren F. Bessler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 2, 1992, Ser. No. 984,647
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—126 **19 Claims**



1. A low refrigerant charge detecting system for a refrigeration system having an evaporator, a compressor and an expansion valve, said low refrigerant charge detecting system comprising:
a sensor for sensing the oscillation of said expansion valve, said sensor producing a sensor signal indicative of expansion valve oscillation; and
a first controller for monitoring said sensor signal, said first controller producing a low charge signal whenever the amplitude of said sensor signal falls below a predetermined level.

5,301,515
AIR CONDITIONING APPARATUS FOR AUTOMOBILE
Kunio Iritani, Anjo; Akira Isaji, Nishio, and Nobunao Suzuki, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 29, 1993, Ser. No. 12,156
Claims priority, application Japan, Feb. 5, 1991, 3-14033
Int. Cl.[5] B60H *1/00*
U.S. Cl. 62—126 **17 Claims**

1. An air conditioning apparatus for an automobile having a cabin, comprising:
a duct having a first end for intaking air and a second end for discharging the air flow to the cabin;
an air inlet switching means for switching between an outside air inlet mode where an air outside the cabin is introduced into the duct and an inside air inlet mode where the air inside the cabin is introduced into the duct;

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fan means for generating a forcible flow of air introduced into the duct via said inlet;

heat exchanging means for receiving a flow of a heat exchanging medium for obtaining a heat exchange between the medium and said air flow in the duct;

heat source switching means for switching between a low temperature source mode where a source of the low temperature medium is connected to the heat exchanging means, and a hot temperature source mode where a source of the high temperature medium is connected to the heat exchanging means, and;

means for forcing said air inlet switching means to obtain said outside air inlet mode upon switching to the hot temperature source mode after the execution of the low temperature source mode.

5,301,516

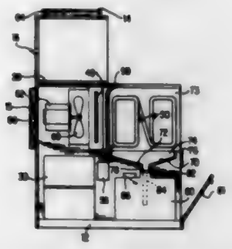
POTABLE WATER COLLECTION APPARATUS

Forrest Poindexter, 7729 Jewelwood Ct., Springfield, Va. 22152

Filed Feb. 11, 1993, Ser. No. 16,455

Int. Cl.[5] F25B *49/00*

U.S. Cl. 62—126 **20 Claims**



10. A potable water collection apparatus comprising:

a) a housing having a base and an enclosure, the housing further having an inlet port and an outlet port;

b) a fluid refrigerant compressor mounted within the housing and operated by a suitable power supply;

c) a fan blade rotatably powered by a fan motor within the housing, the fan blade positioned in a dynamic airflow path between the inlet and outlet ports;

d) a condenser coil in fluid communication with the refrigerant compressor, the condenser coil positioned within the housing in the dynamic airflow path between the inlet port and the outlet port;

e) a cooling coil in fluid communication with the condenser coil and the refrigerant compressor, the cooling coil having an outside surface positioned within the housing in the dynamic airflow path between the condenser coil and the inlet port;

f) an air filter removably positioned adjacent to the inlet port;

g) a collection pan positioned beneath the cooling coil, to collect potable water generated by condensation from the outside surface of the cooling coil, the collection pan having a drain aperture therethrough;

h) a collection container having an inlet aperture in fluid communication with the drain aperture on the collection pan;

i) a cleaning access member positioned to provide access to the cooling coils and the collection pan when the potable collection apparatus is not in operation, for ease of cleaning, and positioned to provide an enclosure about the outer surface of the cooling coils to provide dynamic airflow between the inlet and outlet ports when the potable collection apparatus is in operation;

j) a movable closure member disposed in closed position between the condensation coil and the cooling coil to isolate the cooling coil and the collection pan for ease of cleaning; and the movable closure member disposed in an open position between the condensation coil and the cooling coil to provide substantially unrestricted dynamic airflow between the inlet and outlet ports; wherein the fan motor is actuated to provide dynamic airflow; and the fan motor and the compressor are actuated to provide filtration of the air and the collection of potable water, as the refrigerant fluid is circulated in the closed loop circulation system between the compressor, the condensation coil and the cooling coil.

5,301,517

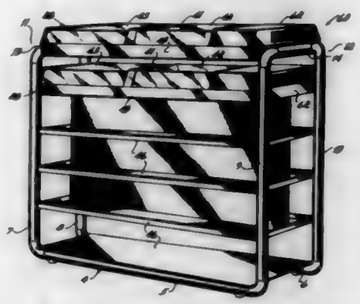
REFRIGERATED SHELF MERCHANDISER

Rafael Bustos, Alpharetta, Ga., assignor to L&P Property Management Company, Chicago, Ill.

Continuation of Ser. No. 891,653, May 29, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 93,309

Int. Cl.[5] A47F *3/04*

U.S. Cl. 62—251 **10 Claims**



9. A food merchandiser for merchandising refrigerated and unrefrigerated food products comprising:

a support structure having two ends;

at least one enclosed refrigerated merchandising shelf for supporting product and for containing refrigerated air spanning between said ends of said support structure;

at least one unrefrigerated merchandising shelf spanning between said ends of said support structure;

means for refrigerating product located on said at least one refrigerated merchandising shelf;

said at least one refrigerated merchandising shelf being individually supplied with refrigerated air from said refrigerating means; and

an openable and closable transparent cover means forming at least a portion of an enclosure on said at least one refrigerated merchandising shelf, said transparent cover means enabling product on said at least one refrigerated merchandising shelf to be viewed therethrough and accessed therefrom, said cover means permitting access to food products on said shelf when opened, and preventing escape of refrigerated air from said enclosed shelf when closed.

5,301,518

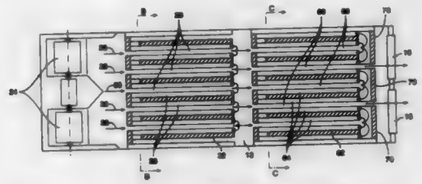
EVAPORATIVE AIR CONDITIONER UNIT

Victor A. Morozov, deceased, late of Moscow by Anzhelika R. Morozova, heiress ; Serguei P. Kanachine, Moscow; Iouri I. Krasnochtchekov, Moscow; Alexandre I. Makienko, Moscow; Valentine A. Matveev, Moscow; Valeri G. Khriachtchev, Moscow, all of Russian Federation, and Poi-Sik Tan, Singapore, Singapore, assignors to Acma Limited, Singapore, Singapore

Continuation-in-part of Ser. No. 929,248, Aug. 13, 1992. This application Jan. 26, 1993, Ser. No. 11,478

Int. Cl.[5] F24F *3/14*

U.S. Cl. 62—305 **11 Claims**



1. A self-contained air conditioner unit comprising:

an enclosure, said enclosure including a first intake aperture oriented to communicate with outside ambient air and a first outlet aperture positioned to communicate with a habitable space in which said air conditioner is placed, and a second intake aperture positioned to communicate with a habitable space and second and third outlet apertures positioned to communicate with ambient air outside of said habitable space;

a water reservoir disposed in said enclosure;

a premixing chamber disposed in said enclosure, and communicating with said first and second intake apertures, for premixing air from said first and said second intake apertures;

an air-distributing chamber disposed in said enclosure;

a first heat exchanger section disposed over said water reservoir in said enclosure, said first heat exchanger section comprising a plurality of vertically disposed, alternating first wet air channels and first dry air channels each having intake and outlet ends, said intake ends of said first wet channels and said outlet ends of said first dry channels communicating with said air-distributing chamber, and said outlet ends of said first wet channels being located proximate to said intake ends of said first dry channels, said alternating first wet air channels and first dry air channels defined by substantially parallel opposing heat-exchanging surfaces, each of said first dry channels communicating with said premixing chamber at said intake ends thereof, and each of said first wet channels communicating said second outlet aperture at said outlet ends thereof;

a second heat exchanger section disposed over said water reservoir in said enclosure, said second heat exchanger section comprising a plurality of vertically disposed, alternating second wet air channels and second dry air channels each having intake and outlet ends, first ones of said second dry channels having their intake ends communicating with said air-distributing chamber and their output ends communicating with said first outlet aperture, and second ones of said second dry channels having their intake ends communicating with said air-distributing chamber and their output ends communicating with said second wet air channels in said second heat exchanger section, the output ends of said second wet air channels in said second heat exchanger section communicating with said third outlet aperture;

a wet partition comprising a capillary porous material disposed in each of said first and second wet channels, each wet partition disposed in a plane substantially parallel to said opposing heat-exchanging surfaces and positioned so as to substantially bisect the volume of said wet channel in which it is disposed, each of said wet partitions extending into said water reservoir and immersed in a volume of water contained therein;

first air moving means for forcing a volume of air from said first and second intake apertures, through said premixing chamber and into said first dry channels in said first heat exchanger section, said air moving means sufficient to maintain a positive pressure in said air-distributing chamber; and

wherein the cross sectional areas of the wet and dry channels and the air moving means are selected so as to provide air flow velocities which promote laminar air flow and to substantially eliminate turbulent air flow across all surfaces defining all of said wet air channels and dry air channels.

5,301,519

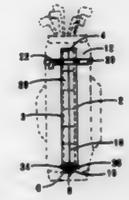
GOLF BAG COOLER

David J. Howorka, 1730 N. Clark St., Ste. 307, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 930,207, Aug. 13, 1992. This application Nov. 25, 1992, Ser. No. 981,232

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—457.5 **20 Claims**



1. A golf bag cooler comprising:

a hollow cylindrical housing having an interior and an exterior, the hollow cylindrical housing further defining an opening for accessing the interior of the hollow cylindrical housing and a fastener for closing said opening;

a top end;

a bottom end;

a protrusion associated with the bottom end, complimentary to an umbrella holder of a golf bag; and

at least one supplemental umbrella holder.

5,301,520

WATER REMOVING DEVICE IN REFRIGERATING SYSTEM

Keiichi Kitamura, Handa; Shin Honda, Nagoya; Hisayoshi Sakakibara, Nishio, and Masashi Honda, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 14, 1992, Ser. No. 868,301

Claims priority, application Japan, Apr. 15, 1991, 3-082675; Dec. 26, 1991, 3-345134; Feb. 5, 1992, 4-020313

Int. Cl.[5] F25B *43/04*

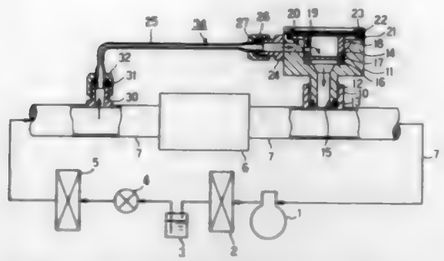
U.S. Cl. 62—475 **15 Claims**

1. A water removing device for removing water from a refrigerant for which saturated water concentration is lower in the gas phase than in a liquid phase comprising:

a by-pass passage including a capillary tube for by-passing a part of the refrigerant evaporated in an evaporator; and a

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water collector which is provided in the by-pass passage and connected to said capillary tube,



said water collector being formed with an expansion chamber which causes adiabatic expansion of the refrigerant from said capillary tube to condense water and collect the water contained in the refrigerant.

5,301,521

APPARATUS FOR CONTINUOUSLY DECATIZING A FABRIC

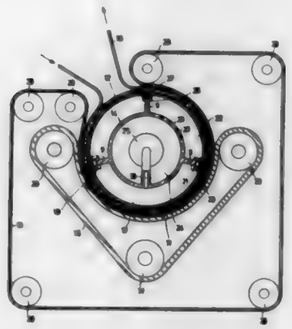
Franco Bertoldo, Brogliano, Italy, assignor to Sperotto Rimar S.p.A., Thiene, Italy

Filed Sep. 18, 1992, Ser. No. 946,625

Claims priority, application Italy, Sep. 19, 1991, M191 A 002478

Int. Cl.[5] D06B *5/08*

U.S. Cl. 68—5 D **12 Claims**



1. Apparatus for decatizing a web of fabric of indeterminate length, comprising:

a supporting frame;

a radially inner cylinder fixed to said supporting frame, said cylinder having a longitudinal axis and a radially outer perimetral surface;

a cylindrical drum having a perforated radially outer perimetral wall which coaxially, radially spacedly surrounds said inner cylinder;

said radially outer perimetral wall of said cylindrical drum being externally provided with a circumferentially extending covering sleeve made of textile material, and about a portion of which, in use, a web of fabric of indeterminate length is to be fed for being decatized as said cylindrical drum is rotated in a given angular direction about said axis;

an endless underpiece of textile material supported so as to have a portion thereof disposed to externally embrace said radially outer perimetral wall of said cylindrical drum throughout said portion of said radially outer perimetral wall of said cylindrical drum;

said outer perimetral wall of said cylindrical drum being maintained in radially spaced relation to said inner cylinder by:

at least two transverse radially outwardly projecting walls which are secured on said inner cylinder and are axially spaced from one another along said axis;

at least three longitudinal radially outwardly projecting walls which are secured on said inner cylinder and are angularly spaced from one another about said axis;

said longitudinal walls being connected at axially opposite ends thereof to respective ones of said transverse walls, for defining between two of said transverse walls and two of said longitudinal walls a steam chamber and between two of said transverse walls and two of said longitudinal walls a forced suction treatment chamber located rotationally downstream of said steam chamber along said given angular direction; and

seal elements sealing between radially inner edges of those of said walls which define said chambers and said radially outer perimetral wall of said cylindrical drum, and including a sealing structure which effectively isolates said steam chamber from said forced suction treatment chamber for preventing steam which, in use, is introduced into said steam chamber under pressure, from being lost to and suctioned-off out of said forced suction treatment chamber without having affected said web of fabric;

said cylindrical drum being supported for rotating in said direction about said axis; and

sealing structure effectively providing a radially outer wall for said steam chamber externally of said portion of said endless underpiece of textile material.

5,301,522

ABNORMAL VIBRATION DETECTING DEVICE FOR WASHING MACHINE

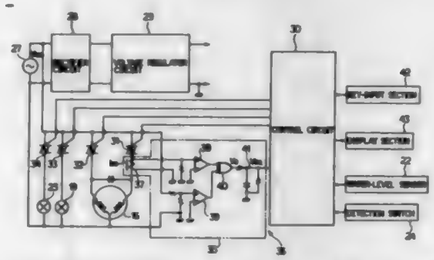
Tokihiko Ikemizu, Kasugai; Katsuharu Matsuo, Aichi, and Masahiro Imai, Seto, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 949,436, Sep. 23, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 95,356

Claims priority, application Japan, Oct. 15, 1991, 3-266068

Int. Cl.[5] D06F *33/02*

U.S. Cl. 68—12.06 **3 Claims**



1. An abnormal vibration detecting device for a washing machine having an outer cabinet, a water-receiving tub mounted via elastic suspension means in the outer cabinet, a rotational tub mounted in the water-receiving tub for enclosing clothes to be washed and an electric motor driving the rotational tub in a dehydration operation, the abnormal vibration detecting device comprising:

a) rotational speed detecting means for detecting a rotational speed of the rotational tub, the rotational speed detecting means generating a detection signal representative of the detected rotational speed of the rotational tub;

b)storage means for storing data of predetermined rotational speed rise characteristics of the rotational tub as abnormal condition determining data, the predetermined rotational speed rise characteristics being in accordance with rise characteristics of the rotational speed of the rotational tub when the rotational tub is rotated in an unbalanced state and corresponding to rotational speed rise characteristics of the rotational tub in a range of the rotational speed of the motor at a maximum torque thereof or above;

c) abnormal condition determining means comparing data of the rotational speed represented by the detection signal generated by the rotational speed detecting means with the abnormal condition determining data stored in the storage means, for determining whether or not the rotational tub is being rotated in the unbalanced state; and

d) tub motion detecting switch means including a detecting lever disposed to be moved when colliding with a part of the water-receiving tub swinging due to vibration caused by the unbalanced state of the rotational tub and a detection switch responding to the motion of the detecting lever.

5,301,523

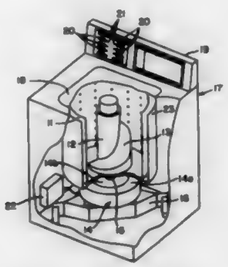
ELECTRONIC WASHER CONTROL INCLUDING AUTOMATIC BALANCE, SPIN AND BRAKE OPERATIONS

Thomas R. Payne; Steven A. Rice; Richard E. McKnight, Jr., and William W. Wead, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 27, 1992, Ser. No. 936,012

Int. Cl.[5] D06F *33/02*

U.S. Cl. 68—12.16 **4 Claims**



1. A fabric washing machine comprising:

a rotatable container to receive fluid and fabrics to be washed in the fluid;

fluid supply means to introduce fluid into said container;

drain means to remove fluid from said container;

agitation means adapted to contact fabrics in said container:

an electronically commutated motor and means connecting said motor to selectively oscillate said agitation means for washing operation and rotate said container for centrifugal extraction operation; said motor including a stator with a plurality of energizable stator phases and a rotor with a plurality of rotor phases; and

control means connected to provide commutation signals to said motor to energize said stator phases in a predetermined sequence as corresponding ones of said rotor phases approach the stator phase being energized so that said rotor rotates; said control means being effective to stop operation of said motor by repeatedly sensing the instantaneous alignment of said stator and rotor phases, supplying commutation signals to said motor to energize said stator phases in said predetermined sequence as corresponding ones of said rotor phases have become aligned with the stator phase being energized.

5,301,524

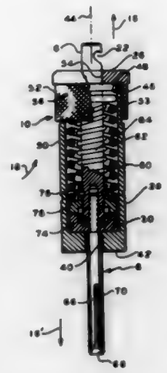
REPAIRABLE KEY FOR PLUNGER LOCK

George Georgopoulos, Pine Brook, and Richard C. Dreisbach, North Arlington, both of N.J., assignors to E. J. Brooks Company, Newark, N.J.

Filed Apr. 15, 1993, Ser. No. 49,034

Int. Cl.[5] E05B *19/18*

U.S. Cl. 70—34 **10 Claims**



1. A repairable key for use with a plunger lock having a pair of expandable balls and a cavity in which the key in inserted to selectively expand the balls to a locking state or retract the balls to an unlock state, said key comprising:

a cylindrical body having an axis with an axially extending first bore, said body having a proximal end and a distal end with openings at each end in communication with the bore, the distal end opening being restricted in transverse dimension relative to the proximal end opening;

a cylindrical cap having a second bore for axially receiving said body, said cap having proximal and distal ends with openings at each end in communication with the second bore, the cap proximal end opening being restricted in transverse dimension relative to the distal end opening, the cap distal opening being sufficient to receive said body therethrough;

expandable jaw cartridge means for placing said balls in said lock and unlock states, said jaw cartridge means including a collar and ball operating hollow core expandable jaws extending from the collar and a plunger including a jaw expanding portion resiliently secured in said core for selectively expanding said jaws in response to axial displacement of said plunger, said plunger including a shaft, said jaws being dimensioned to pass through the body distal end opening and the collar being dimensioned greater than said distal end opening such that the collar is retained in said first bore and said jaws extend beyond said distal end, said cartridge means including means in said first bore coupled to said shaft and collar for permitting resilient axial displacement of said shaft relative to the body for selective expansion of said jaws, said shaft having a portion which passes through said cap proximal end opening with the body received in the cap bore; and

means for releaseably securing the cap to said body with said shaft portion extending through said cap proximal end opening;

said shaft portion having an opening, said means for releasably securing comprising handle means including means which mate with said shaft opening for releasably securing the handle means to said shaft portion so the cap and cartridge means can be removed by hand from the body without tools.

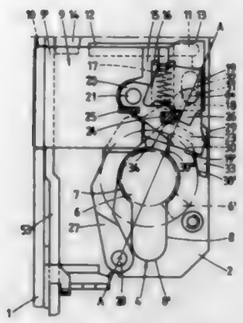
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,525

LOCK, PARTICULARLY MORTISE LOCK

Rolf Döring, Heiligenhaus, Fed. Rep. of Germany, assignor to Carl Fuhr GmbH & Co., Heiligenhaus, Fed. Rep. of Germany

Filed Apr. 16, 1992, Ser. No. 869,781
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1991, 4118480
Int. Cl.[5] E05B 59/04
U.S. Cl. 70—107 12 Claims



1. In a lock with a bolt and catch and a step-up lever, wherein said step-up lever acts on the bolt, has a closure engagement opening for a closure member and is pivoted below an axis of rotation of the closure member, for forward and backward closing of the bolt by means of the closure member with a lengthening of a closing stroke, and another lever which is liftable against spring action by the closure member, the improvement wherein

said lock further has a profiled-cylinder insertion opening having a cylindrical head section defining a circle, and

said closure engagement opening undergoes a path of movement upon pivoting said step-up lever via said closure member while moving said bolt from its backward closing to its forward closing, and said path of movement of the closure engagement opening extends approximately over a quarter-circle of said cylindrical head section of said profiled-cylinder insertion opening.

5,301,526

LOCK SET WITH IMPROVED SPINDLE MECHANISM

Yaw-Shin Fann, Chiayi; San-Yi Lin, Yunlin Hsien; Ming-Shyang Chiou, Chiayi; Rong-Fan Wu, and Ching-Chuan Kuo, both of Chiayi Hsien, all of Taiwan, assignors to Tong-Lung Metal Industry Co. Ltd., Taiwan

Continuation-in-part of Ser. No. 865,204, Apr. 8, 1992, abandoned. This application Sep. 8, 1992, Ser. No. 942,292
Int. Cl.[5] B60R 25/02
U.S. Cl. 70—224 18 Claims

1. A lock set for use in combination with a deadbolt comprising:

an outer knob assembly having an outer knob incorporating a key-operated lock member and a tubular member axially extending inward from an inner end of said outer knob assembly:

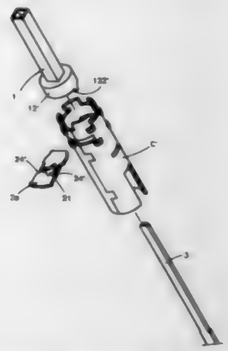
an inner knob assembly having an inner knob incorporating a turning button means;

a deadbolt-actuating hollow shaft connected to said inner and outer knob assemblies so as to be rotated thereby, said shaft having a pedestal extending into said tubular member;

a spindle connected to said key-operated lock member and said turning button means, said spindle passing through said tubular member and said deadbolt-actuating hollow shaft; and

a limit plate means provided in said tubular member adjacent to said pedestal and sleeved around said spindle, said limit plate means being movable diametrically, upon rotation of said spindle, between a locking position and an unlocking position,

wherein said pedestal is further provided with a push means to transmit a push force to said limit plate means so as to move the limit plate means in a diametral direction to said unlocking position by rotating said inner knob assembly after the limit plate means has been placed in said locking position by turning said turning button means, and wherein said limit plate means includes a cam means to



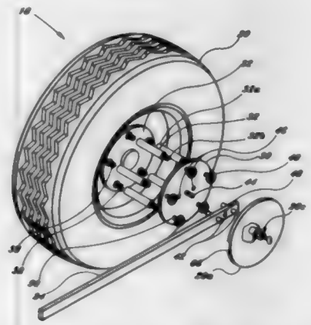
receive said push force when said inner knob assembly is rotated so as to cause said limit plate means to move to said unlocking position during the pushing operation of said push means whereby with the outer knob assembly locked by said limit plate means, rotation of the inner knob assembly produces unlocking of the outer knob assembly, said limit plate means also having a spindle pushing means so as to push said spindle to return to its original position when the limit plate means is moved to its unlocking position upon rotation of the inner knob assembly.

5,301,527

SECURITY DEVICE FOR A TRAILER

Marion F. Pollard, 12461 SW. 23rd Terr., Miami, Fla. 33175

Filed Feb. 17, 1993, Ser. No. 18,108
Int. Cl.[5] B60R 25/00
U.S. Cl. 70—226 4 Claims



1. A security device to prevent unauthorized movement of a wheeled vehicle such as a trailer, said trailer including removable wheels, each having a hub, a predetermined wheel radius, a wheel circumferential perimeter, and a plurality of wheel lug connectors, said security device comprising:

a plurality of elongated, rigid adapters having a means for connecting each adapter longitudinally to said wheel lug connectors, said adapters including connecting means disposed at both ends;

a rigid plate having apertures sized for mounting on said end connecting means on said adapters and a threaded stud affixed centrally thereto on one side;

means for attaching said plate to said adapters;

a rigid, elongated bar, longer than said trailer wheel radius, having at one end a means for attaching said bar to said plate, disposed radially relative to said wheel hub and having an end extending beyond said wheel circumferential perimeter;

means for covering said plate, said covering means including a means for locking said covering means to said plate;

said security device having two modes of operation and in a first mode, said security bar being removed for normal transport of said trailer, and in the security mode, said security bar and said covering means being locked to said plate, preventing rotation of the wheel;

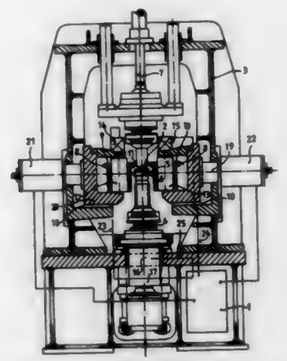
said covering means includes a circular plate having an elongated annular lip to prevent access to said means for attaching said plate to aid adapters, including a key-actuated lock disposed approximately in a central position of said covering means and a key for actuating said lock, said lock being attachable to said rigid plate threaded stud.

5,301,528

DEVICE FOR MANUFACTURING TOOTHED PULLEYS

Günter Hofmann, Coburg; Willi Schroth, Obertshausen, and Erwin Klein, Rodgau, all of Fed. Rep. of Germany, assignors to Langstein & Schemann GmbH, Coburg and Herzing & Schroth GmbH & Co., Obertshausen, both of Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,827
Int. Cl.[5] B21D 22/16
U.S. Cl. 72—96 3 Claims



1. A device for the non-cutting manufacturing of an annular pot-shaped part, having external teeth, from a pot-shaped blank, having internal teeth, said device comprising:

a core tool for supporting the pot-shaped blank and having an axis and external teeth for engaging the internal teeth of the pot-shaped blank to accurately position the pot-shaped blank on said core tool;

at least two identical profiling rollers arranged on opposite sides of said core tool diametrically opposite each other for rotation about axes extending parallel to the axis of said core tool, wherein each of said at least two profiling rollers has, on a circumference thereof, a runoff bevel with a tooth height increasing to a full-height tooth region;

a first drive means for rotating said core tool;

a second drive means for rotating said at least two profiling rollers;

a means for axially displacing said core tool;

a means for radially displacing said at least two profiling rollers toward said core tool; and

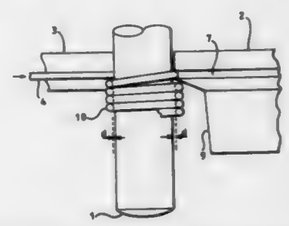
a computer means for controlling said first and said second drive means so that said first and said second drive means rotate said core tool and said at least two profiling rollers, respectively, with synchronized rotational speeds, for controlling said axially displacing means so that said axially displacing means displaces said core tool axially relative to said at least two profiling rollers during the main portion of the shaping operation, when said at least two profiling rollers remain radially stationary, and for controlling said radially displacing means so that said radially displacing means advances said at least tow profiling rollers toward said core tool by a calibration amount at the conclusion of the shaping operation when said core tool remains axially stationary so as to bring said full-height tooth regions of said at least two profiling rollers into engagement with a tooth profile which has already been formed on the pot-shaped blank, for calibrating the tooth profile.

5,301,529

COIL WINDING METHOD AND APPARATUS

Ali Paybarah, and Joseph A. McWilliams, both of Droitwich, United Kingdom, assignors to Zortech International Limited, United Kingdom

Filed Oct. 29, 1992, Ser. No. 968,490
Claims priority, application United Kingdom, Nov. 2, 1991, 9123300
Int. Cl.[5] B21F 3/04
U.S. Cl. 72—142 18 Claims



6. Apparatus for winding a close wound coil, comprising:

a rotatable mandrel on which the coil is to be formed, the mandrel having a driven end and a free end;

a rotatable guide wheel for supplying wire to the mandrel, the guide wheel incorporating a peripheral groove for receiving the wire; and

a rotatable pressure wheel for urging the wire against the mandrel at a point between the driven and free ends thereof, so as to cause the wire to deform and to become engaged around an in contact with the mandrel, the pressure wheel incorporating a peripheral groove for receiving the wire, the mandrel and pressure wheel being so constructed and disposed that the wire is freed from engagement with the mandrel and freed from contact with the pressure wheel immediately following the point at which it is urged against the mandrel by the pressure wheel.

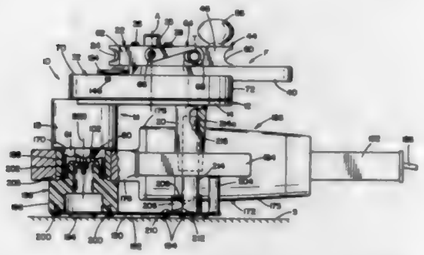
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5,301,530

TUBE BENDING APPARATUS

Valere H. J. Beelen, Sint-Truiden, Belgium, and David L. Machovina, Elyria, Ohio, assignors to Emerson Electric Company, St. Louis, Mo.

Division of Ser. No. 987,798, Dec. 9, 1992. This application Jul. 13, 1993, Ser. No. 90,622
Int. Cl.[5] B21D 7/04
U.S. Cl. 72—149 12 Claims



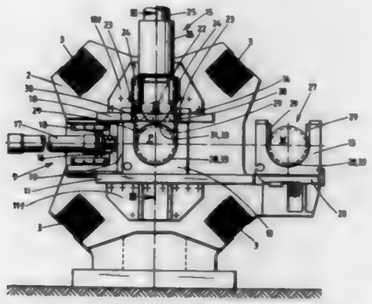
1. A stand for supporting drivable tube bending apparatus and a drive unit therefor, said bending apparatus comprising support means including drive shaft support means, drive shaft means on said drive shaft support means and having a vertical drive shaft axis, and post means on said support means and having an axis parallel to and spaced from said drive shaft axis, said drive unit including housing means supporting a drive motor having an axis transverse to said drive shaft axis and drive shaft coupling means driven by said motor and having a drive coupling axis parallel to said drive shaft axis, said stand comprising a base, support means on said base for supporting said drive unit and said bending apparatus for said drive shaft axis and said drive coupling axis to be coaxial, said support means on said base including post means interengaging with said post on said support means of said tube bending apparatus to preclude relative displacement between said drive unit and said tube bending apparatus about said drive shaft and drive coupling axes.

5,301,531

HORIZONTAL METAL EXTRUSION PRESS

Horst Groos, Mettmann, Fed. Rep. of Germany, assignor to SMS Hasenclever GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 936,519
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128677
Int. Cl.[5] B21C 23/02
U.S. Cl. 72—263 8 Claims



1. A horizontal metal extrusion press having a horizontal press axis, and comprising:

an extrusion cylinder crosshead disposed along said press axis;

a counter platen having a side facing said extrusion cylinder crosshead;

tie rods inter-connecting said extrusion cylinder crosshead and said counter platen;

a moving crosshead movable along said press axis;

an extrusion ram on said moving crosshead;

a billet receiver for a billet to be extruded movable along said press axis;

a guide frame on said side of said counter platen comprising an upper guide rail and a lower guide rail extending horizontally transversely to said press axis;

a tool set comprised of a die, a die holder and at least one pressure ring;

a cassette adapted to support said tool set and being displaceable horizontally along said guide rails transversely to said press axis between an extrusion position on said press axis and a changing position spaced horizontally from said press axis;

first drive means mounted on said guide frame for displacing said cassette between said extrusion and changing positions, said cassette being replaceable by a second cassette in said changing position;

each cassette having a substantially U-shape with upwardly extending arms and an upwardly facing opening and adapted to receive said tool set;

a locking member removably insertable into said cassette opening for retaining said tool set therein;

an upwardly extending guideway in said upper guide rail of said guide frame, said locking member being engageable with and movable along said upwardly extending guideway perpendicular to said press axis between an upper position located outside said cassette opening and a lower position located inside said cassette opening in the extrusion position of said cassette for closing said opening, said locking member being supported substantially radially in said cassette opening;

second drive means for moving said locking member along said guide means between said upper and lower positions; and

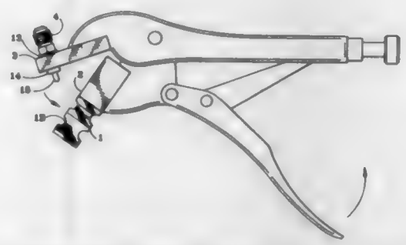
engaging surface means on said locking member and said cassette for axially supporting said die holder in said cassette, complementary to axial support by said cassette.

5,301,532

TUBE PIERCING AND FLUID IRRIGATION DEVICE

Carl E. Bickmore, 5 Shamrock Rd., South Burlington, Vt. 05403, and Larry F. Langlais, 189 Federal St., St. Albans, Vt. 05478

Filed Feb. 8, 1993, Ser. No. 14,718
Int. Cl.[5] B21D 28/28
U.S. Cl. 72—325 16 Claims



1. A tube piercing and fluid irrigatoin device, comprising:

a. an upper jaw mounting plate with four sides, a front face and a posterior face, the top side of which is permanently fastened to the bottom face of the upper jaw of a pair of locking pliers;

b. a threaded tapped hole through said upper jaw mounting plate from said plate's top side through said plate to said plate's bottom side for receipt of a hollow piercing pin housing unit;

c. a upper housing cavity centrally located within and resulting in a hole in the top of said piercing pin housing unit;

d. a lower housing cavity centrally located within said hollow piercing pin housing unit but extending from the bottom of said piercing pin housing unit to the base of said upper housing cavity;

e. a replaceable hollow press fit piercing pin held within said lower housing cavity;

f. a replaceable rubber sealing gasket penetrated by said replaceable hollow press fit piercing pin when said replaceable hollow press fit piercing pin is held within said lower housing cavity;

g. a counterbored hole in the bottom side of said upper jaw mounting plate for receipt of said replaceable rubber sealing gasket the diameter of which said counterbored hole is larger than that of said tapped hole and the long axis of which said counterbored hole is coterminus with the long axis of said tapped hole;

h. a metallic locking washer cushion resting above said tapped hole through which said cushion said piercing pin housing unit is thrust for receipt of said piercing pin housing unit by said tapped hole;

i. a lower jaw tube cradle component mounting plate with four sides, a front face and a posterior face, the bottom side of which is, permanently fastened to the upper face of the lower jaw of said pair of locking pliers;

j. a threaded retaining shoulder bolt;

k. a detent screw with a springloaded head;

l. a threaded hole in the upper corner of the front face of and extending therefrom partially into the body of said lower jaw tube cradle component mounting plate for receipt of the base and body of said detent screw with a springloaded head;

m. a hole centrally located in the front face of and extending therefrom partially into the body of said lower jaw tube cradle component mounting plate and further extended as a threaded hole within said body for receipt of the threaded tip and part of the body of said threaded retaining shoulder bolt;

n. a tube cradle component made up of a front portion with a front face and a back portion with a posterior face and with said front portion's said front face characterized by the presence of a plurality of detent screw holes and with said back portion's said posterior face characterized by the presence of a plurality of detent screw holes and with said front portion further characterized by the presence of four sides and a first set of cylindrically shaped notches all of different sizes arranged around the same, to wit, a first axis such that all said notches within said first set are cut into the exterior surfaces of a plurality of said front portion's said four sides in such a way that there is however no more than one said notch within said first set of notches per said side and with said back portion further characterized by the presence of four sides and a second set of cylindrically shaped notches all of different sizes arranged around the same axis, to wit, a second axis parallel to and coterminus with said first axis to thus form one common axis such that all said notches within said second set are cut into the exterior surfaces of a plurality of said back portion's said four sides in such a way that there is however no more than one said notch within said second set of notches per said side and further such that disassembly and rotation of said tube cradle component from a position whereat said tube cradle's posterior face abuts the front face of said mounting plate to a position whereat said tube cradle's front face abuts the front face of said mounting plate about an axis perpendicular to said axis and said second axis through an angle of 180 degrees can serve to operatively position any one of said notches within said second set after subsequent rotation of said tube cradle component about said first axis and said second axis through an axis of 90 degrees or 180 degrees or 270 degrees and reassembly, and further such that disassembly and rotation of said tube cradle component from a position whereat said tube cradle's front face abuts the front face of said mounting plate to a position whereat said tube cradle's posterior face abuts the front face of said mounting plate about an axis perpendicular to said first axis and said second axis through an angle of 180 degrees can serve to operatively position any one of said notches within said first set after subsequent rotation of said tube cradle component about said first axis and said second axis through an axis of 90 degrees or 180 degrees or 270 degrees;

o. a first counterbored hole for receipt of the head of said threaded retaining shoulder bolt which said counterbored hole is centrally located in the front face of and extends partially into the body of said solid tube cradle component;

p. a clearance hole extending from the end of said first counterbored hole through the body of said tube cradle component to an opening in the posterior face of said tube cradle component, the long central axis of which said clearance hole is coterminus with the central axis of said first counterbored hole;

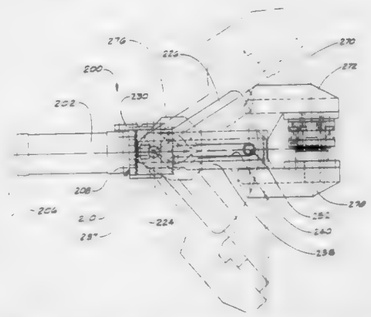
q. a plurality of posterior detent screw holes of equivalent size located one each in one or more of each of the four corners of the posterior face of said tube cradle component for receipt by only one of said posterior detent screw holes at any one time of the springloaded head of said detent screw when said tube cradle component is held fast to said lower jaw tube cradle component mounting plate by said threaded retaining shoulder bolt tightly screwed into place.

5,301,533

CAM OPERATED PIERCE APPARATUS

Donald T. Jackson, 1159 Ashley, Troy, Mich. 48098

Continuation-in-part of Ser. No. 784,381, Oct. 29, 1991, abandoned, which is a continuation of Ser. No. 730,582, Jul. 15, 1991, Pat. No. 5,085,480, which is a continuation of Ser. No. 506,671, Apr. 9, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,266
Int. Cl.[5] B21D 28/20
U.S. Cl. 72—328 4 Claims



1. A cam operated pierce apparatus for piercing an aperture in a workpiece, the apparatus comprising:

a linear drive means having a reciprocally extendable and retractable linear drive member movable along an axial path of movement;

guide means for guiding the linear movement of the linear drive member;

first and second pairs of oppositely movable arms, each arm of each of the first and second pairs of arms having a cam formed therein, each pair of the arms being pivotally connected at a first end to the guide means for reciprocal pivotal movement to and away from the opposed pair of arms;

the cams in the first pair of arms being identically formed to

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each other, the cams in the second pair of arms being identically formed to each other and to the cams in the first pair of arms and disposed in an inverted position with respect to the cams in the first pair of arms;

cam follower means, mounted on the linear drive member and engaging the cams in the first and second pairs of arms, for pivoting the first and second arms between a spaced-apart position and a closed, workpiece engaging position as the linear drive member reciprocates;

each cam having an arcuate-shaped first end portion with opposite ends which smoothly merges with a second, substantially linear second end portion, the first end portion of each cam extending along a line between the opposite ends thereof disposed at an obtuse angle from a line extending between a radial center of an end of the first end portion of each cam, the axial path of movement of the linear drive means, and a center of the pivot connection at the first end of each pair of arms to the guide means when the first and second arms are disposed in a spaced-apart position;

pierce means, mounted on a second end of the first pair of arms, for piercing aperture in a workpiece; and

die means, mounted on a second end of the second pair of arms and having a bore formed therethrough for receiving the pierce means.

5,301,534

MULTIPLE LANE IRONING AND DOMING APPARATUS

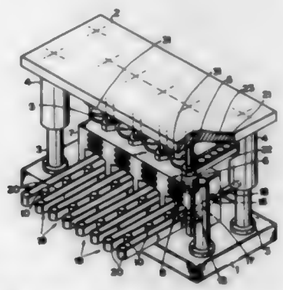
Yoshimi Nishikawa, Osaka; Keiji Murozuka, and Takaji Miyazaki, both of Sagamihara, all of Japan, assignors to Daiwa Can Company, Tokyo and Shin Nippon Koki Co., Ltd., Osaka, both of Japan

Filed Oct. 27, 1992, Ser. No. 967,128

Claims priority, application Japan, Oct. 28, 1991, 3-308530; Nov. 13, 1991, 3-101423

Int. Cl.[5] B21D *43/06*

U.S. Cl. 72—348 **15 Claims**



1. A multiple lane ironing and doming apparatus for ironing and doming cup-shaped blanks by pushing them through ironing dies and against doming dies utilizing reciprocating punches, comprising:

a plurality of simultaneously reciprocating punches each held vertically and retained at its upper end by a supporting means for vertically reciprocating said plurality of punches simultaneously;

a plurality of inlet feeders, each associated with one of said plurality of punches, for supplying cup-shaped blanks to be punched by said plurality of punches;

a plurality of ironing dies, arranged at least one each under and in coaxial alignment with each of said punches for ironing cup-shaped blanks into ironed can bodies;

a plurality of doming units, provided one each below and in coaxial alignment with each of said punches and said ironing dies for doming the bottoms of the ironed can bodies into a predetermined configuration;

a stripping means located below each of said punches when said punches are at a topmost position, said stripping means located below said ironing dies and above said doming units for stripping ironed and domed can bodies from said punches; and

a plurality of discharge conveyors, each associated with one of said plurality of punches, for discharging the stripped can bodies from a location below said punches.

5,301,535

ARRANGEMENT FOR CHANGING THE LEVER RATIO OF A TWO-ARMED ROCKER LEVER

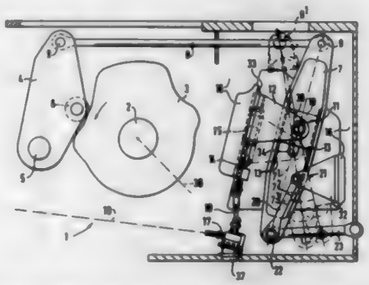
Karl Thudium, Wäschenbeuren, Fed. Rep. of Germany, assignor to L. Schuler Pressen GmbH, Fed. Rep. of Germany

Filed May 22, 1992, Ser. No. 887,056

Claims priority, application Fed. Rep. of Germany, May 25, 1991, 4117101

Int. Cl.[5] B21D *43/05*

U.S. Cl. 72—405 **6 Claims**



1. An arrangement for changing the lever ratio of a two-armed rocking lever for the transfer movements in a press, comprising:

a first lever arm for transmitting driving movement;

a rocker lever having a driven end pivotally connected to the first lever arm and an output end;

a second lever arm pivotally connected to the output end of the rocker lever so that said second lever arm is driven by said rocker lever;

a frame;

a slide guide slidably coupled to the rocker lever for providing a rocking bearing of the rocker lever;

a control device;

a rotation transmission device coupled to the control device;

a nut-spindle connection coupled to the rotation transmission device for providing sliding movement of the slide guide relative to the worker lever;

a support slidably guided in the frame and having a pivot bearing held in the slide guide, the rocker lever being disposed on the pivot bearing, said support being coupled to the nut of the nut-spindle connection for interaction with the spindle so as to move the support, the slide guide, and the pivot bearing relative to the rocker lever to change the lever ratio; and;

means for fixing the position of the pivot bearing in the rocker lever, said means for fixing being connected with the rocker lever in an operatively connected manner; and

a supporting bracket disposed on the frame, said supporting bracket pivotally supporting said rocker lever at the output end of the rocker lever;

wherein the control device, the rotation transmission device and the spindle are fixed of the frame.

5,301,536

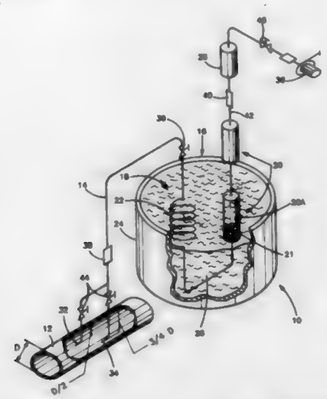
APPARATUS FOR OBTAINING ON-LINE GAS SAMPLES FOR THE MEASUREMENT OF CRUDE OIL CONTENT

Pedro Ortega; Fernando Cassani; Enrique Poleo, and Daniel Fernandez, all of Caracas, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Aug. 12, 1992, Ser. No. 928,289

Int. Cl.[5] B01D *53/00, 57/00;* **G01N** *21/75, 31/00*

U.S. Cl. 73—31.07 **14 Claims**



1. An apparatus for measuring crude oil contained in a gas flowing in a gas line by measuring the volume of crude oil contained in a sample of the gas, comprising:

a gas inlet for obtaining a sample of gas from a gas line, said sample of gas having a volume; and

means for selectively trapping substantially all crude oil contained in said sample of gas, said selective trap means being connected to said gas inlet, and wherein said selective trap means comprises means for cooling said sample of gas, connected to said gas inlet and having filter means for selectively trapping crude oil.

5,301,537

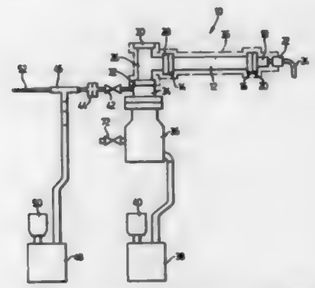
METHOD FOR DETECTING HALOCARBON REFRIGERANT LEAKS BY USAGE OF A CONTINUALLY HEATED MASS SPECTROMETER

John A. Atkinson, Guelph, Canada, assignor to W. C. Wood Company Limited, Guelph, Canada

Filed May 31, 1991, Ser. No. 708,195

Int. Cl.[5] G01M *3/04*

U.S. Cl. 73—40 **8 Claims**



1. A method for detection of leakage of a halogenated hydrocarbon refrigerant compound from apparatus having a compressor-evaporator-condenser circuit, in an immediate atmosphere comprising ambient air and halogenated hydrocarbon other than said refrigerant compound, comprising: providing a mass spectrometer having an elongated evacuated detector chamber containing at one end an ionizer and at an opposite end an ion detector providing means for discharging ions, said ion detector comprising an electron multiplier, said chamber being provided with means for accelerating ions along a path from said ionizer toward said ion detector, means for separating ions from said path according to mass to charge ratio, whereby ions of a predetermined mass range are caused to be incident on said detector, and a signal is generated proportional to the rate of incidence of ions on said detector, directly intaking the atmosphere adjacent the apparatus to be tested by ambient direct flow communication with said evacuated detector chamber through a flow restricting device, maintaining said detector chamber, ionizer and detector at substantially constant temperature in the range about 60° to about 130° C.; adjusting said ion separating means to cause incidence of ions on said detector in at least a mass range providing a spectrum of abundance versus mass, distinctive of said refrigerant and not exhibited by said other halogenated hydrocarbon; and comparing said mass spectrum with a reference indicative of said atmosphere free from leakage of said refrigerant, whereby an indication of leakage is obtained.

5,301,538

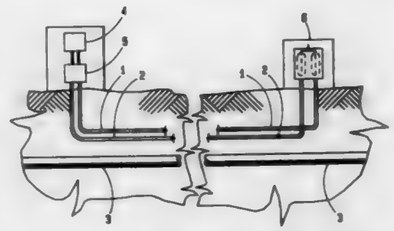
PROCESS AND APPARATUS FOR DISTRIBUTED WIDE RANGE LEAK DETECTION, LOCATION AND ALARM FOR POLLUTANTS

Dennis Recla, Garland, Tex., assignor to Teledyne Industries, Inc., Huntsville, Ala.

Filed Apr. 20, 1992, Ser. No. 870,999

Int. Cl.[5] G01M *3/18*

U.S. Cl. 73—40.5 R **11 Claims**



1. A process for detection, location and alarm for small, medium and large leaks of liquid or gaseous substances along a path to be monitored, and for continuous, emergency detection and alarm for medium to large leaks, comprising the steps of:

a. locating, along said path to be monitored, an apparatus for determining concentration profiles of said substances along said path, comprising at least two hollow conduits, each filled with a column of test medium; plus sensor means for sensing, detecting and measuring flow times of said test medium and concentration levels of said substances; pump means for moving said test medium at a selected rate of flow through each of said conduits, alternately, and past said sensor means; said column of test medium being defined as the volume of test medium with said substances diffused therein, if any, contained in the length of said conduit before said test medium is moved; and each said conduit being constructed so that said substances can diffuse into said test medium through the walls of said conduit, whereby a distribution corresponding to the amounts of said substances located along said path can be established in said column of test medium;

b. causing one said conduit to lie dormant for receiving diffusion of said substances into said column of test medium of said conduit for a selected diffusion time;

c. concurrently with step b., performing test and monitoring for alarm on another said conduit, comprising the steps of:

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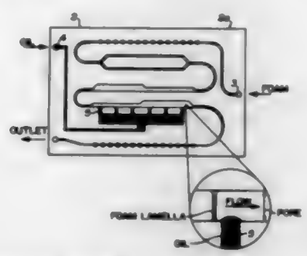
(1) determining the concentration profile of said column in said conduit;
(2) comparing said concentration profile with an ambient concentration profile along said path without leaks;
(3) detecting and locating deviations from said ambient profile, and signaling an alarm, whereby small, medium and large leaks are detected, located and alarmed;
(4) after moving said column past said sensing means, moving additional test medium through said conduit and past said sensing means until said selected diffusion time per step b. has transpired;
(5) sensing and measuring concentration levels of said substances in said additional test medium;
(6) comparing said levels with an emergency alarm level, detecting deviations by more than a user-defined amount, and signaling an alarm, whereby medium to large leaks are detected and alarmed;

d. continuing thereafter to repeat the steps of c., alternately, on one of said conduits, and then on the other, while in each said step c., continuing to cause said conduit that is not being tested to lie dormant for receiving diffusion as in step b.

5,301,539
METHOD FOR IMPROVING ENHANCED RECOVERY OF OIL USING SURFACTANT-STABILIZED FOAMS

Laurier L. Schramm; Conrad Ayasse; Karin Mannhardt, and Jaromir Novosad, all of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Division of Ser. No. 459,460, Jan. 2, 1990, Pat. No. 5,060,727. This application Oct. 29, 1991, Ser. No. 783,961
Int. Cl.[5] G01N *13/00*
U.S. Cl. 73—53.01 **7 Claims**



1. A method for selecting a surfactant for use in a surfactant-containing foam which is stable against collapse in the presence of an oil phase in a subterranean formation, comprising:
(i) forming a surfactant-containing foam with a test surfactant;
(ii) determining the lamella number, L, of the foam, by:
(a) determining the surface tension of the foam, γ_F^0;
(b) contacting the foam with an oil phase;
(c) determining the radius of a foam lamella plateau border where it initially contacts the oil phase, r_p;
(d) determining the radius of an emulsified drop of oil in the foam, r_O;
(e) determining the interfacial tension between the foam and the oil phase, γ_{OF}; and
(f) calculating L from the mathematical model

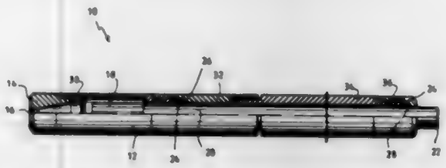
$$L = \frac{\gamma_F^0 \, r_O}{\gamma_{OF} \, r_p};$$

(iii) determining whether the L of the foam is less than 7, said range being indicative of foams which are stable against collapse in the presence of an oil phase; and
(iv) selecting the surfactant if it has a value of L less than 7 for use in a surfactant-containing foam which is stable against collapse in the presence of an oil phase in a subterranean formation.

5,301,540
PROBE FOR MEASURING THE VISCOSITY OF LIQUIDS

Wlodzimierz Pilacinski, ul. Wokalna 4 Apt. 13, 02-783 Warsaw; Bogusiaw Korecki, Al. Rew. Pazdziern. 151 Apt. 61, 01-424 Warsaw; Leon Gradon, ul. Dunikowskiego 12 Apt. 17, 02-784 Warsaw; Ryszard Plowiec, ul. Sobieskiego 70a Apt. 56, 02-430 Warsaw; Andrzej Kaczynski, ul. Zakroczymska 7 Apt. 7, 00-225 Warsaw; Jacek Bodasinski, ul. J.S. Bacha 26b Apt. 108, 02-764 Warsaw, and Ryszard Kurzawa, ul. Slonecznа 21 Apt. 7, 34-410 Rabka, all of Poland

Filed May 17, 1993, Ser. No. 61,738
Int. Cl.[5] G01N *11/06, 11/16*
U.S. Cl. 73—54.24 **6 Claims**



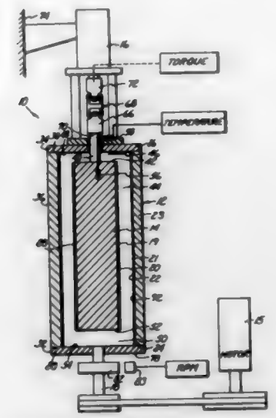
1. A probe for measuring the viscosity of liquids, comprising:
a) a housing having a surface, a first end point, and a second end point, said housing having a first, a ,second, and a third segment each being operably connected in sequence;
b) an electric cable clamp being fixed at said first end;
c) a transducer comprising electrodes on said surface of said transducer, transducer being disposed within said housing;
d) a quartz rod having a length with a first end connected to said transducer and extending from said third housing segment a free end which senses the viscosity of liquids;
e) transducer nodal points along said first, second, and third segments of said housing; and,
f) a clamp attaching said rod at each nodal point.

5,301,541
DRAG DETERMINING APPARATUS

Daniel D. Joseph, 1920 S. First St., Apt. 2302, Minneapolis, Minn. 55454; Francis J. Marentic, 7880 Pinehurst Rd., Woodbury, Minn. 55125, and Clement A. Nelson, 24 N. Oaks Rd., St. Paul, Minn. 55127

Filed Jun. 19, 1992, Ser. No. 901,493
Int. Cl.[5] G01N *11/02*
U.S. Cl. 73—54.32 **17 Claims**

6. An apparatus for determining the effect of a layer of material having a desired surface configuration and attached to a surface of an object on the drag of the object in a fluid, the apparatus comprising:
a housing having a wall forming a housing chamber, wherein an inner surface of the housing is capable of having a layer of material attached thereto;
a block in the housing chamber spaced from the wall of the housing so that there is a space between the inner surface of the housing and a facing outer surface of the block, wherein the outer surface of the block is capable of having a layer of material attached thereto;
a fluid filling the space between the wall of the housing and the block;
rotating means for rotating one of the housing and the block so that the inner surface of the housing is put in motion relative to the outer surface of the block;
torque measuring means for measuring the magnitude of torque exerted on the one of the housing and the block that is not rotated by the rotating means; and

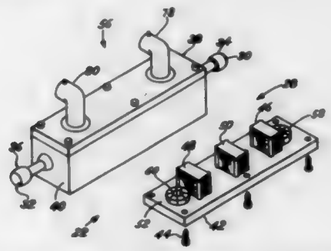


a layer of material having a desired surface configuration removable attached to at least one of the outer surface of the block and the inner surface of the housing.

5,301,542
FLEXIBLE FUEL PI FILTER SENSOR

Allen H. Meitzler, Ann Arbor, and George S. Saloka, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 834,890, Feb. 11, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 78,783
Int. Cl.[5] G01N *27/22*; G01R *27/26*
U.S. Cl. 73—61.43 **25 Claims**



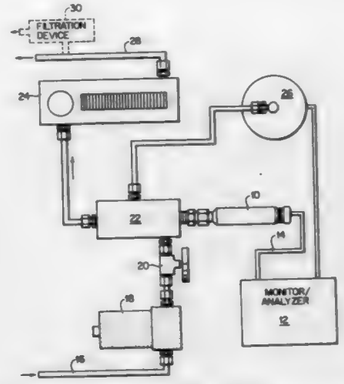
10. A fuel sensor for use in determining a fuel mixture of at least two liquid fuels comprising, in combination:
a housing including a fuel inlet for receiving said liquid fuel and a fuel outlet for passing said liquid fuels;
a first capacitor secured within said housing;
a second capacitor secured within said housing; and
a third capacitor secured within said housing and interconnecting said first and second capacitors to form a pi filter.

5,301,543
MOISTURE MONITOR IN A NON-CONDUCTIVE LIQUID MEDIA

Ralph Reichert, Belmont, Calif., assignor to Adfiltech Corporation, Alexandria, Va.

Filed Dec. 4, 1992, Ser. No. 985,816
Int. Cl.[5] G01N *27/02*
U.S. Cl. 73—64.45 **8 Claims**

1. A moisture monitor for in line determination of the amount of moisture in liquids, said moisture monitor comprising:
a probe, said probe being immersed in and in contact with a continuous flow of a contaminated non-conductive liquid;
a detection chamber, said detection chamber including means for determining vapor pressure of water at the

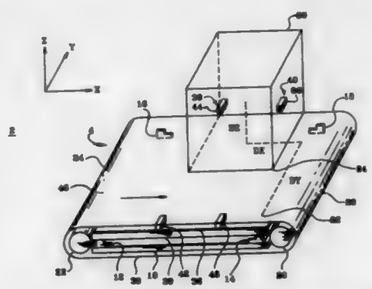


temperature of said contaminated non-conductive liquid; and
an analyzer monitor remote from said probe and in communication therewith; said analyzer monitor for manipulating information received from said probe to determine a moisture content of said contaminated non-conductive liquid.

5,301,544
METHOD AND APPARATUS FOR DETERMINING THE CENTER OF GRAVITY OF AN OBJECT

Steven L. Smith, Oxford, Conn., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Jun. 8, 1992, Ser. No. 895,097
Int. Cl.[5] G01M *1/00*
U.S. Cl. 73—65.07 **23 Claims**



1. An apparatus for determining a first component of the center of gravity of an object along a first axis and a second component of the center of gravity of the object along a second axis, wherein the first and second axes are two axes of a three-dimensional coordinate system, comprising:
(a) support means for supporting the load of the object at a plurality of known non-collinear locations;
(b) load sensing means for generating a load signal representative of the load applied by the supported object at each of said non-collinear locations;
(c) controller means for receiving said load signals and for calculating the first and second components of the center

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of gravity of the supported object based upon said load signals; and

(d) first axis location means for generating and providing to said controller means a first axis location signal representative of the location of the supported object along the first axis, wherein said controller means calculates the first component of the center of gravity of the supported object based upon said first axis location signal.

5,301,545

METHOD AND SYSTEM FOR MEASURING IRREGULARITIES IN THE SURFACE OF A COMMUTATOR

James A. Meyer, Erie; James R. Christensen, North East, and Douglas A. Dunbar, Erie, all of Pa., assignors to General Electric Company, Erie, Pa.

Continuation of Ser. No. 679,884, Apr. 3, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,525

Int. Cl.[5] G01B *7/34*

U.S. Cl. 73—105 **19 Claims**



19. A system for identifying and measuring irregularities in the outer surface of a commutator installed in an electric motor having at least one brush operatively positioned in at least one brushholder, the system comprising:

means for removing at least one brush from at least one brushholder;

sensor means, secured in the brushholder having a profiling foot operatively connected thereto, for generating electrical output signals in response to movement of the profiling foot at an end of the sensor means;

means for adjusting the sensor means so that the profiling foot contacts the commutator surface under tension and is capable of moving toward and away from the surface;

means for rotating the commutator at least one full revolution;

means for measuring the relative movement of the profiling foot in sliding contact with the commutator surface, so that irregularities on the commutator surface are identified; and

means, as the commutator rotates, for allowing the profiling foot to pivot.

5,301,546

MISFIRE DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

Masanori Inada; Akira Demizu, and Akihiro Nakagawa, all of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,363

Claims priority, application Japan, Feb. 18, 1991, 3-22486; Mar. 25, 1991, 3-60222

Int. Cl.[5] G01M *15/00*

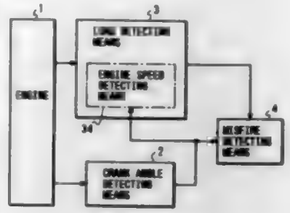
U.S. Cl. 73—117.3 **4 Claims**

1. A misfire detecting device for an internal combustion engine, comprising:

first detection means for detecting a variation of an operating parameter representing a state of combustion in said internal combustion engine;

second detection means for detecting an amount of a load given to said internal combustion engine;

means for setting a misfire rate determining value according to an amount of load of said internal combustion engine; and



third detection means for determining a misfire rate for said internal combustion engine from the amount of said load detected by said second detection means and the variation of said operating parameter detected by said first detection means, to output a misfire detection signal when said misfire rate exceeds said misfire rate determining value set by said setting means.

5,301,547

AIR FLOW RATE METER

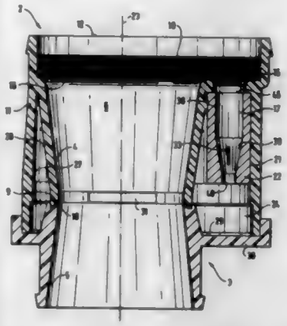
Bernd Oswald, Stuttgart; Thomas Schwegel, Vaihingen/Enz, and Hans-Peter Stiefel, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 948,550

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132050

Int. Cl.[5] G01M *19/00*; **G01P** *5/00*

U.S. Cl. 73—118.2 **3 Claims**



1. An air flow rate meter for measuring an air mass or flow rate aspirated by an internal combustion engine, having a main flow conduit with a Venturi-shaped flow portion and having an air bypass conduit that has a first flow portion with a constant flow cross section, said air bypass conduit discharges into the main flow conduit in the flow direction in a region of a narrowest cross section of the Venturi-shaped flow portion as well as downstream thereof, and having a temperature-dependent measuring resistor disposed in the air bypass conduit, the air bypass conduit (17), adjoining the first portion (38) in the flow direction, has a convergent portion (39), in which the measuring resistor (33) is disposed, the convergent portion (39) is adjoined by a second portion (40) of constant flow cross section, and said second portion (40) is coaxial to said convergent portion (39).

5,301,548

TRACK MEASURING CAR

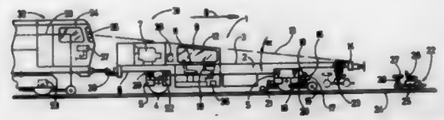
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jun. 18, 1992, Ser. No. 900,910

Claims priority, application Austria, Jun. 27, 1991, A1287/91

Int. Cl.[5] E01B *29/04*

U.S. Cl. 73—146 **17 Claims**



1. A measuring car arrangement for monitoring an existing track position with respect to a desired track position, the track comprising two rails having rail heads, which comprises

(1) a measuring car having

(1) a frame extending longitudinally in a plane and

(2) undercarriages supporting the frame for mobility in an operating direction and having wheels, the wheels having contact points with the rail heads and the contact points defining a reference plane, the frame plane extending parallel to the reference plane,

(2) a satellite bogie transportable on the measuring car frame and being drivable along the track independently of the measuring car,

(3) the measuring car and the satellite bogie having an upper periphery not projecting beyond a limiting plane enclosing a dihedral angle of 5° to 10° with the reference plane, and

(4) the limiting plane and the frame plane defining an intersecting line at a forward end of the measuring car in the operating direction, the intersecting line extending perpendicularly to the longitudinal extension of the frame and parallel to the reference plane.

5,301,549

LIQUID-LEVEL GAUGING

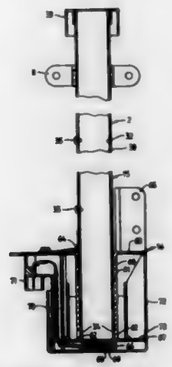
David Sinclair, Chineham, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Feb. 23, 1993, Ser. No. 21,465

Claims priority, application United Kingdom, Mar. 10, 1992, 9205148

Int. Cl.[5] G01F *23/28*

U.S. Cl. 73—290 V **10 Claims**



1. In an ultrasonic liquid level sensor of the kind including an ultrasonic transducer mounted towards the lower end of a tube so that ultrasonic energy from the transducer is directed upwardly along the length of the tube to a liquid/gas interface at which energy is reflected back to the transducer, said tube being mounted in a liquid reservoir and arranged to extend upwardly and to be filled with liquid to the same height as liquid outside the tube, the improvement wherein the tube is of a first, rigid material and has a surface layer along a major part at least of the length of the tube that is of a second material different from the first material, the second material being acoustically-absorbing and functioning to absorb ultrasonic energy and thereby damp the transmission of ultrasonic vibration from a wall of the tube into liquid within the tube.

5,301,550

FLOAT FOR AN AUTOMOTIVE LIQUID LEVEL DETECTION DEVICE

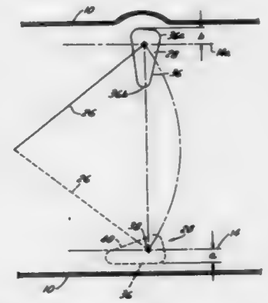
Steven Shortis, Billercay, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 12, 1993, Ser. No. 89,918

Claims priority, application United Kingdom, Sep. 19, 1992, 92/19838

Int. Cl.[5] G01F *23/76, 23/36*

U.S. Cl. 73—322.5 **15 Claims**



1. A float for a liquid level detection device comprising:

a substantially flat face on a side of said float;

a center of buoyancy closer to a peripheral edge of said flat face than to an opposite edge of said flat face; and

mounting means for mounting said float in a fixed non-rotatable position on an end of a float arm so that when said float arm is in a lowermost position, said flat face is substantially horizontal, and when said float arm is in an uppermost position, said peripheral edge of said flat face is uppermost with respect to said opposite edge, such that said float senses fuel level in said tank at nearly full and nearly empty conditions.

5,301,551

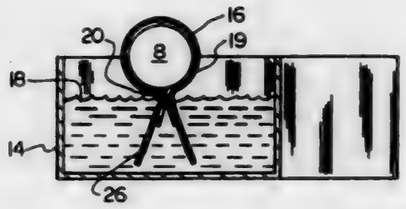
WET BULB WICKS FOR CORROSIVE ATMOSPHERES

Guido diVincenzo, Rte. 6, Box 240, Asheboro, N.C. 27203

Filed Mar. 2, 1992, Ser. No. 844,727

Int. Cl.[5] G01W *1/00*

U.S. Cl. 73—335.08 **14 Claims**



1. A wet bulb arrangement comprising a wet bulb, an absor-

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bent fabric having a portion configured to surround said wet bulb and

a lining inside the portion, said lining being attached to said absorbent fabric and resistant to corrosive materials to protect said bulb from corrosive materials while permitting intimate thermal contact between the absorbent fabric and the bulb.

5,301,552

ULTRASONIC APPARATUS

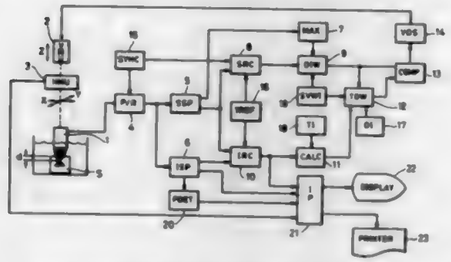
Masato Nagura, Chofu; Toshiaki Takahashi, Tachikawa, and Kazuhiko Hara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 457,887, Dec. 27, 1989, abandoned. This application Jan. 6, 1992, Ser. No. 991,338

Claims priority, application Japan, Jan. 20, 1989, 1-12218

Int. Cl.[5] G01N *29/10, 29/26*

U.S. Cl. 73—606 **30 Claims**



1. An ultrasonic apparatus comprising:

irradiating means including an ultrasonic probe for irradiating a focused ultrasonic beam onto an object;

reception means for receiving ultrasonic waves reflected from the object;

setting means for setting a desired depth to a predetermined point within the object;

detecting means for detecting at least either one of an inherent focal length of said irradiating means and a velocity of sound within said object;

evaluation means for evaluating a distance between said probe and said object at which a focus of said irradiating means coincides with the depth to the predetermined point within the object in accordance with a result of said detecting means; and

driving means for adjusting a distance between said probe and said object so as to make the adjusted distance coincide with an evaluated distance of said evaluation means.

5,301,553

APPARATUS FOR REMOTE SENSING AND RECEIVING

Thomas J. Schultz, Neenah, and Alan J. Campbell, New Berlin, both of Wis., assignors to TJS Development Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 453,785, Dec. 20, 1989, Pat. No. 5,083,457. This application Nov. 13, 1991, Ser. No. 792,134

Int. Cl.[5] G01L *9/00*

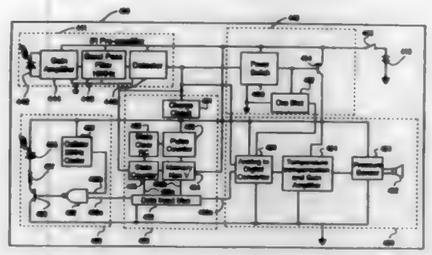
U.S. Cl. 73—705 **5 Claims**

1. A sensor for operating in a remote detect and display system, said system being of the type including a receiver for displaying data transmitted by said sensor, said sensor being spatially separate from said receiver and comprising:

transducer means for sensing a physical parameter associated with a work piece and generating a first electrical signal indicative of the parameter;

first electrical signal processing means for generating a second electrical signal and transmitting said second electrical signal; and

a response generator including an LED driver circuit and at least one LED driven thereby, said response generator being configured to transmit a response signal responsive



to said second electrical signal, in infrared frequency range, indicative of the parameter.

5,301,554

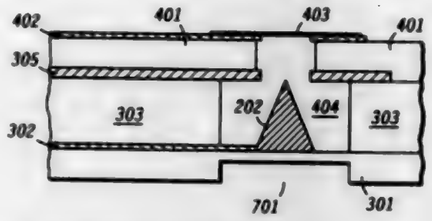
DIFFERENTIAL PRESSURE TRANSDUCER

Robert C. Kane, Woodstock, Ill., and James E. Jaskie, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 709,521, Jun. 3, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,233

Int. Cl.[5] G01L *7/08, 9/00*

U.S. Cl. 73—717 **9 Claims**



4. A pressure transducer comprising:

a field emission device including an emitter mounted on a first layer of conductive material and an anode mounted on a second layer of conductive material spaced from the first layer;

a third layer of conductive material positioned between the first and second layers and spaced from the emitter and the anode, an edge of the third layer being spaced from the emitter for dictating current flow from the emitter to the anode when properly energized;

an insulating layer positioned between the first layer and the third layer and between the second layer and the third layer and defining in conjunction with the anode and the first and second layers of material a sealed region surrounding the emitter and defining an interior and an exterior; and

one of the emitter and the edge of the third layer being flexibly mounted to provide variations in the spacing between the emitter and the edge of the third layer when a pressure differential between the exterior and the interior of the sealed region is applied.

5,301,555

METHOD AND APPARATUS FOR MEASURING THE MASS THROUGHPUT OF A FLOW OF MATERIAL ACCORDING TO THE CORIOLIS PRINCIPLE

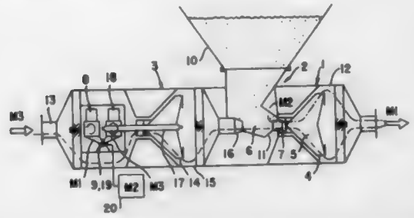
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsberg, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 961,941

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134319

Int. Cl.[5] G01F *1/74, 1/82*

U.S. Cl. 73—861.04 **22 Claims**



1. A method for measuring the mass throughput of material added to a conveying fluid according to the Coriolis principle, comprising the steps of:

providing an essentially closed material conveying system having a material charging station and a conveying fluid supply means upstream thereof;

determining mass throughput of conveying fluid supplied to said system;

charging said material to said system to be conveyed by said conveying fluid;

guiding a flow of said conveying fluid carrying said material into a first rotating measuring means for measuring effective inertia force thereof based on the Coriolis principle and for determining mass throughput of said flow; and

subtracting said mass throughput of said conveying fluid supplied to said system from said mass throughput determined in said rotating measuring means.

5,301,556

FLOW MEASURING APPARATUS

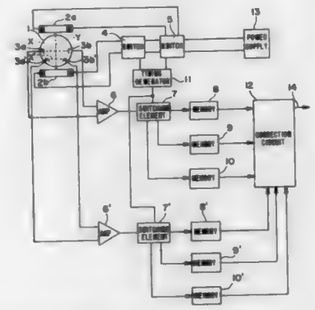
Peter Nissen, Roadorf, and Hans W. Schwiderski, Norten-Hardenberg, both of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Continuation of Ser. No. 681,997, Apr. 8, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,909

Claims priority, application European Pat. Off., Apr. 9, 1990, 90106783

Int. Cl.[5] G01F *1/58*

U.S. Cl. 73—861.15 **5 Claims**



1. Flow measuring apparatus comprising: .

a tube element through which fluid containing electric charges flows;

magnetic field generating means disposed outside said tube element for producing a magnetic field which passes through said tube element and is centered along a vertical diameter of said tube element;

a first pair of electrodes disposed inside said tube element along a horizontal diameter of said tube element and responsive to electric charges in fluid flow through said tube element for sensing electric charges passing through said magnetic field;

a second pair of electrodes disposed inside said tube element along a horizontal line below said horizontal diameter of said tube element and responsive to electric charges in fluid flow through said tube element for sensing electric charges passing through said magnetic field;

timing circuit means for controlling said magnetic field generating means to sequentially generate a plurality of magnetic fields in a predetermined timing sequence;

and signal processing circuit means responsive to said timing circuit means and said first pair and said second pair of electrodes for:

(a) developing a first set of signals from said first pair of electrodes as said plurality of magnetic fields is generated and the passage of electric charges is sensed by said first pair of electrodes,

(b) developing a second set of signals from said second pair of electrodes as said plurality of magnetic fields is generated and the passage of electric charges is sensed by said second pair of electrodes, and

(c) correcting said first and said second sets of signals by empirical parameters

to develop an output signal representative of fluid flow through said tube element.

5,301,557

STABILITY CORIOLIS MASS FLOW METER

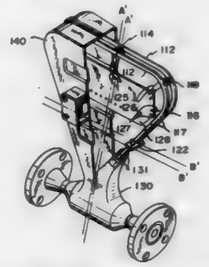
Donald R. Cage, Longmont; James R. Ruesch, and Timothy J. Cunningham, both of Boulder, all of Colo., assignors to Micro Motion, Inc., Boulder, Colo.

PCT No. PCT/US90/03284, § 371 Date Jan. 16, 1992, § 102(e) Date Jan. 16, 1992, PCT Pub. No. WO90/15310, PCT Pub. Date Dec. 12, 1990

Continuation-in-part of Ser. No. 364,032, Jun. 9, 1989, abandoned. This PCT application Jun. 8, 1990, Ser. No. 820,648

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **10 Claims**



1. A mass flow meter for flowable materials wherein mass flow rates for flowable materials are determined based on at least one measured effect of Coriolis forces, said flow meter comprising: a support means; at least one continuous flow conduit which is free of pressure sensitive joints or sections, each of said conduits being solidly mounted to said support means at inlet and outlet ends for said conduits; driver means for oscillating each of said conduits about bending axes adjacent each of said solid mountings; a pair of sensor means mounted on each of said conduits for monitoring motion of said conduits while flowable materials are flowing there-

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through and said conduits being oscillated by said driver means about said bending axes, monitored motion including motion caused by Coriolis forces about twist axes for each of said conduits, said sensor means generating signals related to all motions of said conduits; and signal processing means to detect and convert said signals to mass flow rate values; in which the improvement comprises:

fixed mounting of each of said pair of sensor means on each of said conduits to monitor motions of said conduits including motions about said twist axes, where each sensor means is mounted between nodes of a pair of vibration modes for said conduit, said pair of vibration modes being selected from a pairing of the first in phase bending mode, first out of phase bending mode, first out of phase twist mode, second out of phase twist mode, second out of phase bending mode, or third out of phase bending mode.

5,301,558

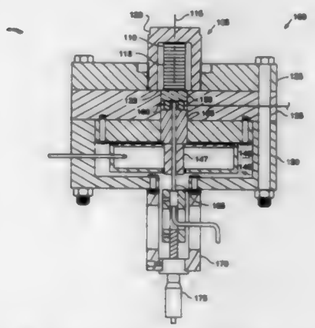
TESTING APPARATUS FOR A MULTILAYER PIEZOELECTRIC ACTUATOR

Jeffrey A. Livingston, Wichita, Kans.; Carl A. Kemner, Peoria Heights, Ill.; Chuong Q. Dam, Peoria, Ill.; Jack R. Davis, Peoria Heights, Ill., and Larry C. Clemens, Metamora, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 2, 1992, Ser. No. 955,946

Int. Cl.[5] G01L *5/00*

U.S. Cl. 73—862.541 **9 Claims**



1. A testing apparatus for testing properties of a multilayer ceramic actuator with a predetermined length, L_1, and a predetermined cross sectional area, A, the actuator having an axis and a plurality of active piezoelectric elements, N, with electrodes interleaved therebetween, comprising:

a pressure regulator adapted to controllably supply pressurized air;

a pneumatic cylinder adapted to receive the pressurized air and responsively apply constant axial forces to the actuator, each applied axial force having a uniform magnitude;

load cell means for measuring the applied force on the actuator and producing a force signal, F_n in response to the magnitude of the measured force;

a cylindrical plate being disposed adjacent the ceramic actuator;

optical means for emitting random light onto said cylindrical plate, receiving the light reflected from the cylindrical plate and responsively producing a position signal L_n, the position signal being indicative of the axial displacement of the actuator; and

computer means for receiving said force signals, F_n, and said position signals, L_n, and responsively determining the effective modulus of the actuator, Y_{eff}, according to the relationship:

$$Y_{eff} = \frac{|F_{n=o} - F_{n=f}|}{|L_{n=o} - L_{n=f}|} \times \frac{L_1}{A}$$

where n represents the number of measurements at each increment of applied force, o represents the original value and f the final value.

5,301,559

TORQUE DETECTING SYSTEM

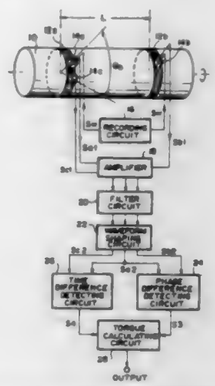
Yorikazu Tsuji; Toshimi Okazaki, and Hiroyuki Nakamura, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 23, 1992, Ser. No. 949,562

Claims priority, application Japan, Sep. 26, 1991, 3-248052; Mar. 31, 1992, 4-75002; May 21, 1992, 4-128441; Aug. 21, 1992, 4-223067

Int. Cl.[5] G01L *3/02*

U.S. Cl. 73—862.326 **22 Claims**



1. A torque detecting system for detecting torque acting on a rotational member comprising

a first magnetic head which is positioned close to the peripheral surface of the rotational member and is opposed to a first magnetic recording portion provided on the peripheral surface of the rotational member,

a second magnetic head which is positioned close to the peripheral surface of the rotational member and is opposed to a second magnetic recording portion provided on the peripheral surface of the rotational member, the second magnetic head being spaced from the first magnetic head by a predetermined distance in the longitudinal direction of the rotational member,

a third magnetic head which is positioned close to the peripheral surface of the rotational member and is opposed to the first magnetic recording portion, the third magnetic head being angularly spaced from the first magnetic head by a predetermined angle θo in the circumferential direction of the rotational member,

a recording means which records first and second position signals respectively on the first and second magnetic recording portions through the first and second magnetic heads while the rotational member is rotating under no load,

a reproducing means which reproduces the first position signal through the first and third magnetic heads and the second position signal through the second magnetic head while the rotational member is rotating under load,

a phase difference detecting means which detects the phase difference Δt between the position signals reproduced through the first and second magnetic heads,

a time difference detecting means which detects the time difference t between the position signals reproduced through the first and third magnetic heads,

a torsional angle calculating means which calculates the angle of torsion θ of the rotational member when it is rotating under load on the basis of the predetermined angle, the phase difference and the time difference, and

a torque calculating means which calculates the torque T acting on the rotational member on the basis of the angle of torsion.

5,301,560

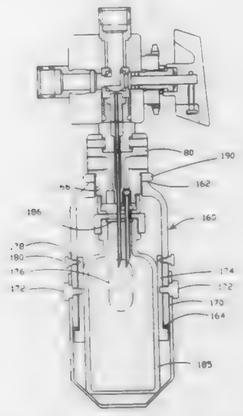
CLOSED LOOP LIQUID SAMPLER AND SAMPLING SYSTEM

John D. Anderson, Lake Jackson, and Charles R. Boyd, Victoria, both of Tex., assignors to Texas Sampling, Inc., Houston, Tex.

Filed Nov. 22, 1991, Ser. No. 795,969

Int. Cl.[5] G01N *1/00*

U.S. Cl. 73—863.86 **8 Claims**



1. A mechanism for interconnecting a ball valve having a plurality of positions and an interior space of a sample container having a resealable septum closure, said mechanism comprising:

an injector end fitting having a first end having an exteriorly threaded valve fitting surface and an interior forming a needle collar seating cavity, a second end, and a bore which communicates said second end with the needle collar seating cavity,

a hollow needle having a sharp terminus and a mating end,

a needle seating collar comprising a sleeve body having a flanged end and an orifice which is securely affixed about the mating end of said needle;

an injector body having a first and second end, said injector body first end formed with an injector end fitting receiving cavity, said injector body having an orifice therein which communicates said injector end fitting receiving cavity to said injector body second end, said injector body having a first fluid passageway which communicates said injector body second end to a side surface of said injector body at a point intermediate between said injector body first and second ends, and a second fluid passageway which communicates said injector body second end to a side surface of said injector body at a point intermediate between said injector body first and second ends, at least one end of said first and second fluid passageway which terminates with the second end of said body being interiorly threaded.

5,301,561

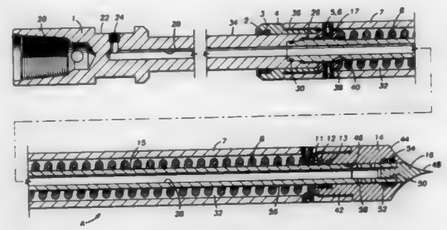
METHOD AND APPARATUS FOR TAKING A FLUID SAMPLE

Haraldur Karlsson, Kingwood, Tex., assignor to Energy Ventures, Inc., Houston, Tex.

Filed May 28, 1991, Ser. No. 706,212

Int. Cl.[5] E21B *49/08*

U.S. Cl. 73—864.74 **10 Claims**



1. A formation fluid sampling tool, comprising:

a housing;

a sample tube disposed for selective movement with respect to said housing from a retracted position where no sampling is taking place to an extended position for sampling;

retaining means on said sample tube, attaching said housing to said sample tube in said retracted position to selectively prevent relative longitudinal movement between said housing and said sample tube; wherein:

said retaining means allows said housing and sample tube in said retracted position to be simultaneously embedded into a formation to a sufficient depth to prevent well fluids from entering said sample tube; and wherein:

said sample tube is selectively actuated toward its extended position by release of said retaining means.

5,301,562

POWER TRANSMISSION DEVICE

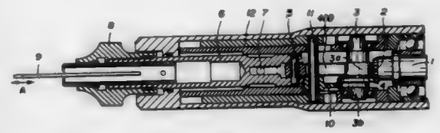
Norio Seto, Tokyo, Japan, assignor to OSADA Research Institute, Ltd., Tokyo, Japan

Division of Ser. No. 871,421, Apr. 21, 1992, Pat. No. 5,237,884. This application Mar. 2, 1993, Ser. No. 25,305

Claims priority, application Japan, Apr. 22, 1991, 3-36958; Apr. 22, 1991, 3-36959; Apr. 26, 1991, 3-38826; Apr. 26, 1991, 3-124894

Int. Cl.[5] F16H *21/22*

U.S. Cl. 74—44 **2 Claims**



1. A power transmission device for converting rotational movement of a first rotation shaft into reciprocal movement in an axial direction of said first rotation shaft, said power transmission device comprising:

bevel gear means for converting rotation of the rotation shaft into rotational movement of a second rotation shaft,

a first eccentric shaft turnable with an eccentricity to the second rotation shaft,

a second eccentric shaft turnable with an eccentricity to the second rotation shaft and being positioned 180° apart from the first eccentric shaft,

a first reciprocating member having a central axis and reciprocally movable along its central axis in the axial direction

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only of the first rotation shaft in response to turning movement of the first eccentric shaft, and

a second reciprocating member in surrounding relation to the first reciprocating member, said second reciprocating member having a central axis coincident with the central axis of the first reciprocating member and reciprocally movable along its central axis in the axial direction only of the first rotation shaft in response to turning movement of the second eccentric shaft, for exerting a damping effect on the first reciprocating member.

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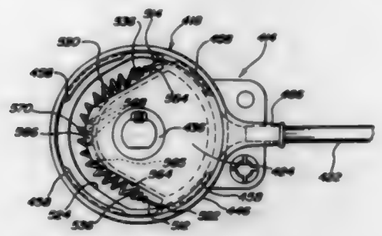
CABLE ASSEMBLY FOR HEATER AIR CONTROL

David A. Van Zanten, Clawson, and James J. Nagle, Birmingham, both of Mich., assignors to Nagle Industries, Inc., Clawson, Mich.

Continuation-in-part of Ser. No. 461,601, Jan. 5, 1990, Pat. No. 5,129,281. This application Jul. 10, 1992, Ser. No. 911,929

Int. Cl.[5] F16C *1/22, 1/10*

U.S. Cl. 74—501.5 R **4 Claims**



1. A cable assembly for rotating a member in response to a rotating input, comprising:

first and second pulley means;

conduit means extending longitudinally and interconnecting said first and second pulley means;

strand means extending longitudinally through said conduit means and about said second pulley means, said strand means having a pair of ends extending at least partially about said first pulley means;

said first pulley means including slack adjustment means for adjusting slack in said strand means, said slack adjustment means including a spring cooperating with each of said ends of said strand means; and

said spring has an arcuate central portion and a pair of inclined arm portions extending outwardly from said central position.

5,301,564

GEAR CHANGE BOX WITH MULTIPLE STEPS

Franz Müller; Jürgen Pohlenz, both of Friedrichshafen; Hubert Lehle, Meckenbeuren; Erwin Baur, and Herbert Simon, both of Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

PCT No. PCT/EP90/01056, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO91/00445, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 2, 1990, Ser. No. 781,217

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1989, 3922053

Int. Cl.[5] F16H *3/08*

U.S. Cl. 74—333 **34 Claims**

1. A gear change transmission having multiple gear steps comprising:

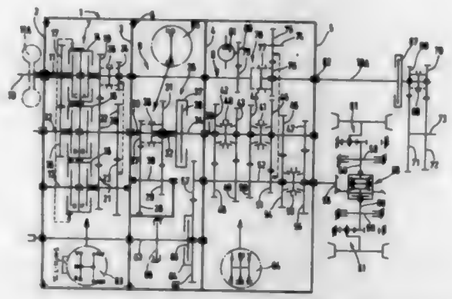
a starting clutch and a plurality of transmission groups;

one of said transmission groups being a wide step main group (8) having a plurality of synchronizer clutches (40, 41, 53) for selecting desired speed ranges, said main group having a drive shaft (39) and an output shaft (52);

another of said transmission groups being a closely stepped input group (7) located on an input side of said main group (8) for fine tuning the speed within a speed range selected by said main group (8);

said input group (7) having a first counter shaft (12) axially aligned with said main group drive shaft (39);

a main input shaft (10, 11) being parallel to and offset from said first counter shaft (2), said main input shaft (10, 11) extending past said main group (8) and being operatively



connectable with a power takeoff shaft (73) located on an output side of said main group (8);

said starting clutch being operatively positioned between said first counter shaft (12) and said drive shaft (39) and co-axial therewith;

said starting clutch having a friction disc set, said friction disc set being cooled by a flow of pressurized oil, the flow of pressurized oil being stopable when the starting clutch is engaged.

5,301,565

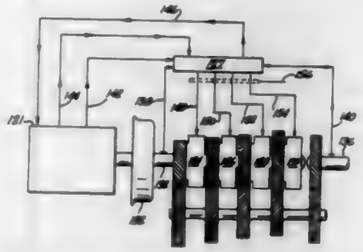
TRANSMISSION

Peter H. Weismann, and Patrick L. Weismann, both of 1631 Indus St., Santa Ana, Calif. 92707

Division of Ser. No. 647,650, Jan. 28, 1991, Pat. No. 5,131,285, which is a continuation-in-part of Ser. No. 333,599, Apr. 4, 1989, Pat. No. 4,987,790, which is a continuation-in-part of Ser. No. 19,217, Feb. 26, 1987, Pat. No. 4,817,451. This application Jul. 7, 1992, Ser. No. 909,989

Int. Cl.[5] F16H *3/10*

U.S. Cl. 74—336 R **9 Claims**



1. A drive train comprising

an engine;

a transmission, said transmission including constant mesh gearing and a two-way roller clutch to control engagement of said gearing;

a clutch in the drive train coupled between said engine and said transmission;

a sensor for sensing an engine condition indicative of generated power;

a variable rate clutch actuator coupled to said clutch;

a shift actuator coupled to said roller clutch;

a central processing unit coupled with said sensor, said variable rate clutch actuator and said shift actuator to inhibit engagement, by said variable rate clutch actuator, of said clutch when said shift actuator is not in a position of full engagement of said roller clutch.

5,301,566

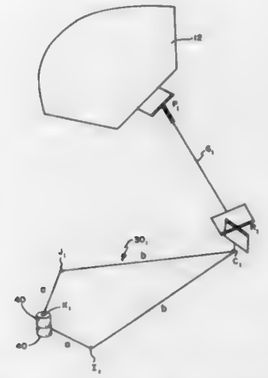
SIMPLIFIED AND SYMMETRICAL FIVE-BAR LINKAGE DRIVER FOR MANIPULATING A SIX-DEGREE-OF-FREEDOM PARALLEL "MINIMANIPULATOR" WITH THREE INEXTENSIBLE LIMBS

Farhad Tahmasebi, Burtonsville, and Lung-Wen Tsai, Potomac, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Division of Ser. No. 915,567, Jul. 20, 1992. This application Aug. 20, 1993, Ser. No. 110,181

Int. Cl.[5] G05G *11/00;* **B25J** *11/00*

U.S. Cl. 74—479 B **10 Claims**



1. A six-degree-of-freedom parallel manipulator comprising:

three inextensible limbs each having a first end and a second end;

each of said inextensible limbs moveably attached at said first end to a platform at non-collinear points on said platform; and

three simplified five-bar linkage planar driver means affixed to a base member and moveably attached to each said second end of said inextensible limbs for providing planar movement to each said second end of each said inextensible limb thereby providing manipulation of said platform;

each said simplified five-bar linkage planar driver means having two coaxial rotary actuators as driving means for each said five-bar linkage planar driver means.

5,301,567

LOW PIVOT TILT STEERING COLUMN CLAMPING MECHANISM

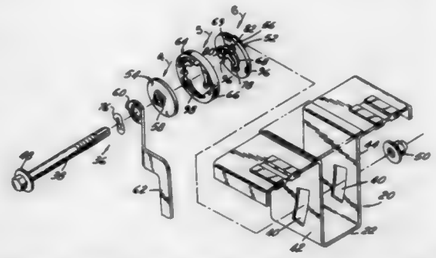
William M. Snell, Grand Blanc; Thomas S. Kaliszewski, Novi, and Rodney L. Eaton, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 23, 1992, Ser. No. 948,556

Int. Cl.[5] B62D *1/18*

U.S. Cl. 74—493 **10 Claims**

1. A locking device releasably locking a tilt steering column of an automotive vehicle in adjusted position, comprising a bracket adjacent to said column and fixed with respect to the automotive vehicle, a pin connected to a swinging portion of said column and movable along said bracket, a first clamping ring on said pin operably engaging said bracket and held against rotation relative to said bracket, a second clamping ring on said pin rotatable with respect to said first clamping ring, manually operable means for rotating said second ring in one direction to a clamping position and in the opposite direction to a release position, coacting means on said first and second clamping rings operable in response to rotation of said second ring in said one direction to said clamping position to press said first clamping ring against said bracket with sufficient force to frictionally lock said steering column in adjusted position, and



means for retaining said second ring in said clamping position with a resistance, the retaining means being able to be overcome by said manually operable means, said retaining means comprising an arm having one end fixed relative to said first clamping ring and having a retainer on the other end thereof, and a lug on said second ring engageable with said retainer upon rotation of said second ring in said one direction to said clamping position to resist reverse rotation of said second ring.

5,301,568

STICK LEVER DEVICE

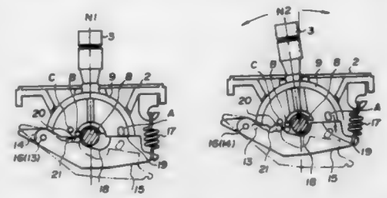
Toru Kono, Mobara, Japan, assignor to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Aug. 7, 1992, Ser. No. 926,178

Claims priority, application Japan, Aug. 9, 1991, 3-070674

Int. Cl.[5] G05G *5/05*

U.S. Cl. 74—525 **5 Claims**



1. A stick lever device comprising:

a mounting member provided on a rear side thereof with a pair of mounting brackets with a through-hole being interposed therebetween;

a variable resistor including a pivotal shaft and mounted on said mounting member;

a pivotal operation section including a stick lever and arranged on said pivotal shaft of said variable resistor;

said pivotal operation section being provided on a side surface thereof with a plurality of projections; and

an arm member abutted against said projections by force of a predetermined magnitude to return said pivotal operation section to a predetermined neutral position;

said arm member being selectively pivotally mounted on said mounting member at any one of different positions so that abutment between said arm member and said projections may be varied to permit the neutral position of said pivotal operation section to be selected as desired.

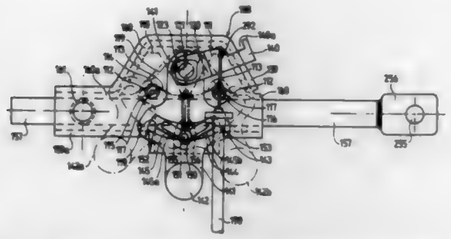
VOL 1161 ISS 2 APR 12 1994

5,301,569

DEVICE FOR LOCKING A RECTILINEAR DISPLACEMENT MECHANICAL JACK INCORPORATING AN INERTIA SAFETY LOCKING MEMBER

Georges Droulon, Orne, France, assignor to Bertrand Faure Automobile "BFA", Escoune, France

Filed Mar. 8, 1993, Ser. No. 27,749
Claims priority, application France, Mar. 6, 1992, 92 02701
Int. Cl.[5] G05G *5/16*
U.S. Cl. 74—531 **5 Claims**



1. A device for locking a rectilinear displacement mechanical jack, comprising:
- a casing of a substantially polygonal shape having a lower and an upper portion, said lower portion having two oppositely slanted inner elements having a point of convergence at lower ends thereof;
- at least one rod guided in said lower portion of said casing above said oppositely slanted inner elements;
- a fluted roller resting in a displaceable manner at said point of convergence, said fluted roller, upon impact, rolling up one of said oppositely slanted inner elements and engaging said rod for locking said rod;
- V-shaped locking members with an inner space with toothed inner slanted portions connected in a displaceable manner in said casing;
- said upper portion of said casing having slanted guides for said V-shaped locking members;
- a cam rotatably connected within said casing and positioned between said V-shaped locking members for controlling displacement of said V-shaped locking members along said guides; and
- toothed rollers, one said toothed roller positioned in said inner space of each said V-shaped locking member and cooperating with said toothed inner slanted portions, wherein in an initial locked position of said rod said toothed rollers are forced by said V-shaped locking members onto said rod.

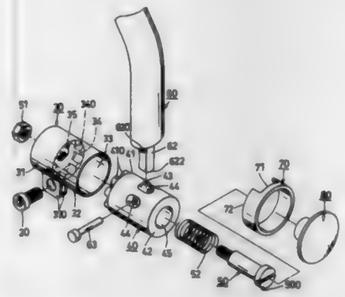
5,301,570

APPARATUS FOR CONNECTING AND AUXILIARY HANDLE TO A HANDLEBAR OF A BICYCLE

Min-Tsung Li, No. 2, Hai-Chien Lane, Chin-Tun Tsuen, Hua-Tan Hsiang, Changhua Hsien, Taiwan

Filed Sep. 28, 1993, Ser. No. 127,603
Int. Cl.[5] B62K *21/12*; **F16C** *11/00*
U.S. Cl. 74—551.1 **5 Claims**

1. An apparatus for connecting an auxiliary handle to a handlebar of a bicycle, said apparatus comprising:
- a tubular member having a partition plate with a central threaded hole provided therein, said partition plate dividing said tubular member into a first section which is adapted to clamp an end of said handlebar and a second section with a central bore, said second section of said tubular member having a first engaging member formed therein;
- a cylindrical member with a first end and a second end, said first end of said cylindrical member being inserted into said second section of said tubular member, said cylindrical member having a blind bore extending axially from said second end to said first end of said cylindrical member, a bottom of said blind bore which is formed near said first end of said cylindrical member and has a central opening aligned with said central threaded hole of said partition plate of said tubular member, said first end of said cylindrical member further having a second engaging member which engages said first engaging member of said tubular member in order to prevent said cylindrical member and tubular member being rotated with respect to each other, said cylindrical member having a radical hole which intercommunicates said blind bore and the exterior of said cylindrical member;
- a bolt having a threaded end threaded to said central threaded hole of said partition plate of said tubular member and an enlarged end;
- a spring member disposed between said enlarged head of said bolt and said bottom of said blind bore of said cylindrical member, urging said first end of said cylindrical



member toward said partition plate of said tubular member in order to allow said first and second engaging members to engage each other; and
- a lever arm having a first end and a second end extending into said blind bore of said cylindrical member through said radical hole of said cylindrical member, said second end of said lever arm abutting against said enlarged head of said bolt, said lever arm being pivoted to said cylindrical member in such a manner that said lever arm pushes said second end of said cylindrical member to move away from said tubular member in order to disengage said second engaging member from said first engaging member when said first end of said level arm is rotated clockwise, said lever arm being rotated counterclockwise to allow said second end of said cylindrical member to move toward said tubular member in order to permit said second engaging member to engage said first engaging member by means of the restoring force of said spring member.

5,301,571

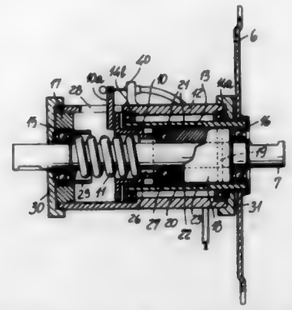
AUTOMATIC SPEED GEAR FOR BICYCLES

Giuseppe Arrivabene, Via Solferino, 4, 25122, Brescia, Italy

Filed Oct. 22, 1992, Ser. No. 964,769
Claims priority, application Italy, Oct. 30, 1991, MI91A-02834
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—594.3 **9 Claims**

1. An automatic speed gear for bicycles comprising a driving pinion, rotatably rigid with a main driving shaft, which can be driven with a rotary motion about a rotary axis thereof by a pair of pedals, and an assembly of driven pinions, said driven pinions having different numbers of teeth, and being coupled to the hub of a wheel of the bicycle and being adapted to be selectively connected to the driving pinion by means of a chain, a chain guide member being moreover provided, which operates on the chain near the driven pinions, for causing the chain to be switched over from one of the pinions to another of

said pinions, thereby changing the transmission or gear ratio, characterized in that it comprises a device for controlling the chain guide member, mounted on said shaft and including an element adapted to be axially displaced along the main shaft, as counterbiassed by resilient means, driving means being moreover provided affecting said movable element to displace it,



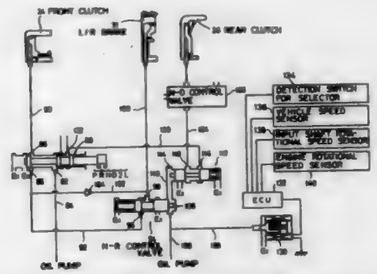
against the biassing of said resilient means, as on said main shaft there is exceeded a preset torque effort, the movable element being coupled to the chain-guide member in order to cause the chain to be switched over from a driving pinion to another driven pinion, providing a less transmission ratio, as the preset torque effort is exceeded.

5,301,572

SHIFT CONTROL METHOD FOR AN AUTOMATIC TRANSMISSION OF AN AUTOMOTIVE VEHICLE

Yuichi Tanaka, West Bloom Field, Mich.; Yasuhiro Nakajima, Kyoto, Japan; Toshitaka Narusе, Kyoto, Japan, and Katsuhiro Hatta, Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,260, Sep. 20, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,192
Claims priority, application Japan, Oct. 2, 1990, 2-264229; Oct. 2, 1990, 2-264230
Int. Cl.[5] F16H *61/08*
U.S. Cl. 74—866 **21 Claims**



1. A shift control method for an automatic transmission of an automotive vehicle, in which
- the automotive vehicle includes an internal combustion engine and drive wheels, and
- the automatic transmission includes an input shaft connected to an internal combustion engine side, an output shaft connected to a drive wheel side, a shift gear mechanism connecting the input and output shafts for providing a plurality of different rotational speed ratios between the input and output shafts, engaging elements capable of frictionally engaging with the shift gear mechanism for selecting one of the rotational speed ratios of the shift gear mechanism, the engaging elements being operated by a fluid pressure supplied thereto, and a control device for electrically controlling the supply of the fluid pressure to the engaging elements, the control device having a storing device for storing a control pattern which determines the fluid pressure to be supplied to the engaging elements at a shifting of the automatic transmission,

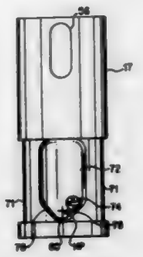
the shift control method comprising the steps of:
previously and separately preparing a precontrol pattern for executing a preliminary stage until play in a mechanism of the engaging element is eliminated, and a main control pattern for executing, subsequent to the precontrol pattern, an engagement stage in which the engaging element is operated substantially as the control pattern, the precontrol pattern being defined by at least one factor;
presetting an ideal reference time required from the start of the engagement stage until a shifting of the automatic transmission is substantially started;
measuring an actual time required from the start of the engagement stage to the start of the substantial shifting of the automatic transmission;
obtaining a difference between the actual time and the reference time; and
correcting the factor of the precontrol pattern on the basis of the obtained difference such that the obtained difference is eliminated, and storing the corrected factor, wherein said step of correcting the factor includes a learning process of obtaining the corrected factor by learning, based upon the obtained difference between the actual time and the reference time.

5,301,573

STUD DRIVER AND REMOVER FOR STUDS HAVING NON-GRIP AREA

Edward J. Weber, Girard, and Jerry L. Rounds, Erie, both of Pa., assignors to Titan Tool Company, Fairview, Pa.

Continuation-in-part of Ser. No. 24,296, Mar. 1, 1993, which is a continuation-in-part of Ser. No. 966,324, Oct. 26, 1992. This application Mar. 19, 1993, Ser. No. 34,706
Int. Cl.[5] B25B *13/50*
U.S. Cl. 81—53.2 **13 Claims**



1. A tool driven by a driving adaptor for driving and removing a stud relative to a workpiece, the stud having a longitudinal axis and diameter measured in a transverse direction perpendicular to the longitudinal axis of the stud, the tool comprising:
- a main ring with an axial bore along its central longitudinal axis, one end of the bore being located adjacent the driving adaptor and the opposite end having an outwardly tapering section;
- a core member mounted within the bore for limited axial and rotary movement relative to the main ring;
- a plurality of tapered rolls each having a longitudinal axis and being carried by the core member, each of said plurality of rolls cooperating with the outwardly tapering section of the bore for frictionally engaging the stud upon axial movement of the core toward the one end of the bore and for releasing the stud upon axial movement of the core toward the opposite end of the bore;

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a plurality of axially extending cam surfaces formed on the outwardly tapering section of the bore, wherein each of said plurality of cam surfaces is provided for a corresponding one of said plurality of rolls to lock each of said plurality of rolls against the stud upon rotation of the core member relative to the main ring in a radial direction, each cam surface having a first portion extending radially inward toward the central axis and a second portion extending radially outward from the central axis, wherein

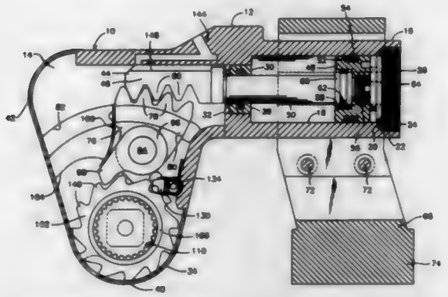
each of said second portions of said plurality of cam surfaces has a recess formed therein extending radially outward from the central axis to accommodate the corresponding one of said plurality of rolls.

5,301,574

HYDRAULIC WRENCH

Brian Knopp; Harry J. Knopp, both of West Newton, and Paul B. Stork, Belle Vernon, all of Pa., assignors to Bolttech Inc., West Newton, Pa.

Filed Mar. 2, 1993, Ser. No. 25,131
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—57.39 **9 Claims**



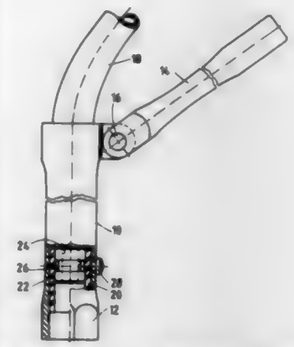
1. A high torque wrench for use in close, dirt contaminated quarters, said wrench including a narrow hollow body having a pair of registered first and second opposite side journal openings of the same diameter formed therein and a power wheel disposed within said body in axial registry with said openings, said power wheel having a central noncircular opening formed therethrough, an elongated drive member having first and second ends and of a cross-sectional shape for sliding, nonrotatable telescopic engagement of said first end into said central opening through either of said journal openings with said second end including a generally cylindrical portion journaled in the corresponding journal opening and a first non-circular terminal end projecting outwardly of said corresponding journal opening, said first end including a reduced second non-circular terminal end loosely disposed in the corresponding journal opening, a cylindrical end cap removably telescoped over and secured and keyed to said reduced second non-circular terminal end for rotation therewith and journaled in the corresponding journal opening, said journal openings including radially inwardly projecting shoulder means at the adjacent ends thereof immediately inwardly of and opposing the adjacent ends of said end cap and generally cylindrical portion, said first non-circular end being adapted to have a wrench socket removably coupled thereto, said drive member, upon removal of said cap, being removable from and reversely insertable through said central non-circular opening prior to reinstallment of said end cap, said body including power means operative to rotate said power wheel.

5,301,575

TOOL FOR VENTING HYDRAULIC SYSTEMS

Hans-Joachim Mehlan, Grabbestrasse 10, 5650 Solingen 11, and Dieter Hiedel, Eschensiepen 57, 5600 Wuppertal 2, both of Fed. Rep. of Germany

Filed Apr. 15, 1993, Ser. No. 46,967
Claims priority, application Fed. Rep. of Germany, May 11, 1992, 9206321[U]
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—124.7 **10 Claims**



1. A tool for venting hydraulic systems, comprising:

(a) a tubular tool element (10;30) forming a polygonal wrench (12;36) at a first end thereof, and

(b) a flexible drain tube (18;48) having a front end extending into said tool element (10;30) and emerging from a second end of said tool element (10;30), said front end (20;64) of said flexible drain tube being arranged to sealingly engage a nipple of a venting valve, when said tool element is placed with its first end on said nipple,

characterized in that

(c) a metal sleeve (22;60) is located in said flexible drain tube (18;48), and

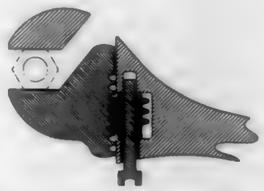
(b) clamping means (28;54) for clamping said flexible drain tube (18;48) to said tool element are provided at said tool element (10;30) adjacent said metal sleeve (22;60).

5,301,576

LOCKING AND CLAMPING ADJUSTABLE WRENCH

William J. Nye, 251 Tiffany Ave., Warwick, R.I. 02889-5820

Filed Mar. 2, 1993, Ser. No. 24,745
Int. Cl.[5] B25B *13/16*
U.S. Cl. 81—165 **6 Claims**



1. An adjustable wrench comprising a fixed upper jaw,

a handle,

a movable lower jaw slidably mounted on a wrench body,

said wrench body having a threaded opening and cutout, said threaded opening having its axis disposed in the direction of travel of the movable jaw,

a thumb adjuster coaxially aligned with said threaded opening axis and mounted within said cutout and having threaded engagement with said movable jaw,

said cutout sized to provide a gap between itself and said thumb adjuster to allow for a limited amount of axial displacement of said thumb adjuster, and having a surface at one end which is engagable with said thumb adjuster and a surface at the opposite end which is engagable with a retainer washer,

said thumb adjuster journaled on an adjuster pin and having a surface at one end which is engagable with said surface of said cutout and a surface at the opposite end which cooperates via said retainer washer with a shoulder on said adjuster pin,

said retainer washer sandwiched by both the cooperating shoulder surface of said adjuster pin and the cooperating surface of said thumb adjuster,

said adjuster pin loosely received at one end in said wrench body,

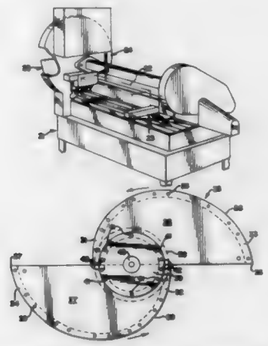
said adjuster pin having said end and adjacent mid-section formed as a shaft, a groove which holds said retainer washer, a shoulder surface normal to said threaded opening axis which cooperates with said surface on said thumb adjuster, a threaded portion which is received by said threaded opening, and a knob at the outer end.

5,301,577

METHOD OF FOOD SLICING TO FORM MULTIPLE SLICES EACH BLADE REVOLUTION

Dennis G. Flisram, Plainfield, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Division of Ser. No. 773,190, Oct. 8, 1991, which is a division of Ser. No. 586,066, Sep. 21, 1990, Pat. No. 5,065,656. This application Oct. 28, 1992, Ser. No. 967,331
Int. Cl.[5] B26D *1/28*
U.S. Cl. 83—42 **1 Claim**



1. A method for providing a series of sliced food products from a large stick of meat or other food product, comprising:

supporting and feeding a food stick to and into a slicing assembly having a rotary mounted blade assembly which rotates into slicing engagement with the food stick;

providing a blade assembly including a substantially centrally positioned mounting member and a plurality of blade members, each said blade member having a curved, non-semicircular involute cutting surface which includes a radius that continuously increases from a leading tip of the curved cutting surface to a trailing tip of the curved cutting surface, locating all of said curved, involute cutting surfaces in a single plane;

radially offsetting the leading tip of the curved cutting surface of each one of the blade members from the trailing tip of each other one of the blade members and providing substantially straight edge therebetween, thereby defining at least two gaps of the blade assembly and imparting non-slicing stages to the method, said radial offsetting surface from the mounting member by a radial distance that is substantially straight edge by which each trailing tip is spaced from the mounting member; and

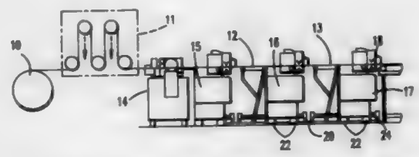
rotating the blade assembly while feeding the food stick to and into the slicing assembly, the method having alternating at least two slicing stages and at least two nonslicing stages for each revolution of said blade assembly, each said slicing stage including slicing the food stick by moving the involute cutting surface of the blade through the food stick to cut completely through a perpendicular cross-section of the food stick and each said non-slicing stage including rotating the blade assembly while the food stick is within one of said gaps and out of engagement with the rotating blade assembly whereby at least two slices of food stick are formed generally along the single plane during each revolution of the blade assembly during said rotating step.

5,301,578

METHOD AND APPARATUS FOR CUTTING A CONTINUOUS MATERIAL TO LENGTH

Howard A. Fromson, 49 Main St., Stonington, Conn. 06378

Continuation of Ser. No. 868,615, Apr. 14, 1992, abandoned. This application Jun. 15, 1993, Ser. No. 77,890
Int. Cl.[5] B26D *1/09*
U.S. Cl. 83—42 **6 Claims**



4. A method of cutting lithographic printing plates from an aluminum web comprising the steps:

(a) providing a source of a substantially continuous web of lithographic aluminum;

(b) accumulating a length of said web that is at least a multiple of a desired lithographic printing plate length to be cut from said web;

(c) feeding a length of said accumulated web which is a multiple of the desired plate length to a serially-disposed plurality of cutting means for cutting said material to length; and

(d) cutting the web to length with said cutting means, said cutting being timed such that the cutting proceeds sequentially from the cutting means farthest from the source of the continuous web to the cutting means closest to the source of the continuous web.

5,301,579

WORK RETAINING DEVICE FOR SCROLL-SAW MACHINE

Takeshi Shiotani, and Kouichi Miyamoto, both of Tokyo, Japan, assignors to Limited Ryobi, Japan

Continuation of Ser. No. 893,690, Jun. 4, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 84,318
Claims priority, application Japan, Jun. 7, 1991, 3-042789[U]
Int. Cl.[5] B26D *7/01*
U.S. Cl. 83—98 **17 Claims**

1. A work retainer device for scroll-saw having an upper arm assembly including an arm cover, cantileverdly extending generally horizontally, said work retainer device comprising:

two laterally spaced apart brackets formed on a distal end of the arm cover;

a work retainer holding member having two upright portions respectively overlapping said two upright brackets and having a lower portion provided at lower ends of the

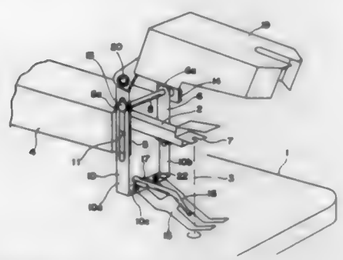
VOL 1161 ISS 2 AP 12 1994

two upright portions to form a generally U-shape member;

a projection provided on at least one of said brackets to prevent the work retainer holding member from rotating while allowing limited relative vertical adjustment;

a work retainer attached to the work retainer holder member lower portion for engaging an upper surface of a work piece to be cut;

a fastening means which passes laterally through an overlapped portion of a bracket and an upright portion of said work retainer holding member for fastening the work retainer holding member at a vertically adjustable position;



a longitudinal hole being formed in at least one of said bracket and said upright portion of said work retainer holding member while the fastening means is supported by the other bracket; and

a dust nozzle held by the lower portion of the work retainer holding member for keeping said scroll-saw clean, wherein said work retainer is bifurcated at a free end so that said dust nozzle is directed to a gap defined by the bifurcated portions of said work retainer;

wherein the overlapping upright brackets, the U-shape work retainer and the fastening means cooperate to from a rigid rectangular frame structure supporting the work retainer and the nozzle.

5,301,580

LOCKING RING STRIPPER PLATE ASSEMBLY

Ronald G. Rosene, Coon Rapids; Richard L. Timp, Vadnais Heights, and John H. Morehead, White Bear Lake, all of Minn., assignors to Wilson Tool International, Inc., White Bear Lake, Minn.

Filed Oct. 7, 1992, Ser. No. 958,019

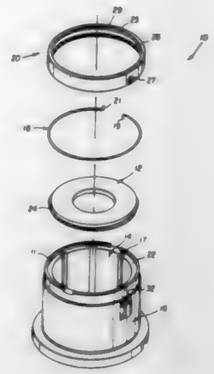
Int. Cl.[5] B21D *45/08*; B26D *7/18*

U.S. Cl. 83—136 **24 Claims**

1. A punch guide sleeve and stripper plate assembly useable with a punch set of the type having a punch disposed within the punch guide sleeve and reciprocally advanced through an opening of a stripper plate attached to one end of the punch guide sleeve by a ram of a punch press, wherein said stripper plate further includes an annular edge portion, and stripper plate locking means for locking said annular edge portion of said stripper plate to a seat in a locked position and releasing said stripper plate from said seat in an unlocked position, said locking means further comprising:

stripper cap means having a first annular surface for engaging with said punch guide sleeve for moving between said locked and unlocked positions; retaining means having first and second ends and formed in an arcuate shape for engaging with said annular edge portion of said stripper plate in said locked position of said stripper cap means and for withdrawing from said annular edge portion of said stripper plate in said unlocked position, and

means for attaching said first end of said retaining means to said stripper cap means and said second end of said retaining means to said guide sleeve, whereby movement of said cap means draws said first and second ends toward one



another in the locked position and away from one another in the unlocked position.

5,301,581

APPARATUS FOR CUTTING STACKED, SHEET-LIKE MATERIAL HAVING A SIDE STOP AND A PRESSING SLIDE MOVABLE AGAINST THE SAME FOR ALIGNING THE MATERIAL TO BE CUT

Wolfgang Mohr, Hundshager Weg 42, D-6238 Hofheim/Taunus, Fed. Rep. of Germany

Continuation of Ser. No. 645,225, Jan. 24, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 970,150

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1990, 4002101

Int. Cl.[5] B26D *7/01*

U.S. Cl. 83—272 **14 Claims**



1. Apparatus for cutting stacked, sheet-like material, having a table surface which has a working zone, above which a cutting blade and a press beam are located, an entry zone behind the working zone for receiving the material to be cut and an exit zone in front of the working zone for receiving the cut material, a feed device for the material to be cut, which feed device has teeth engaging in its foremost position in grooves of the press beam, and also a side stop for aligning the material to be cut by means of a pressing slide movable in the area of the working zone in the direction of the line of cut, wherein the feed device extends essentially over the entire width of the table surface, and the pressing slide is effective solely in the area of the working zone formed between a cutting plane and the foremost position of the feed device wherein the pressing slide is connected to a push rod arranged above the table surface and movable by power-transmission means parallel to the cutting plane in the direction of the line of cut, wherein the push rod is arranged between the cutting plane and a draw rod for the press beam, characterized in that the push rod is arranged directly adjacent to the table surface, and

the pressing slide is pivotably connected about a horizontal axis to the end of the push rod facing the side stop.

5,301,582

ROTARY CUTTER, PARTICULARLY FOR SHREDDING TOBACCO

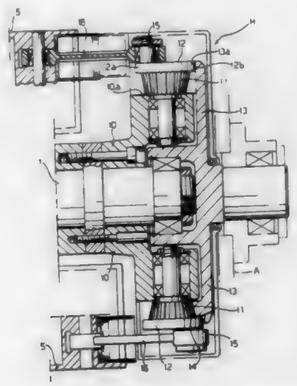
Giorgio Bragaglia, Bologna, Italy, assignor to Comas S.p.A., Silea, Italy

Filed Jul. 16, 1993, Ser. No. 93,176

Claims priority, application Italy, Aug. 3, 1992, T092A000673

Int. Cl.[5] A24B *7/12*; B26D *1/56*

U.S. Cl. 83—338 **5 Claims**



1. A rotary cutter, particularly for shredding tobacco, comprising:

a fixed support structure,

a shaft supported by said structure for rotation about an axis,

at least one blade-holder carriage rotatable with the shaft and capable of performing a translatory movement relative to the shaft along a line parallel to the axis of the shaft,

at least one cutting blade carried by the carriage for cutting through and penetrating a block of tobacco supplied in a direction such that the block of tobacco is inclined at an angle to the said axis,

motor means for rotating said shaft, and

drive means for bringing about the translatory movement of the carriage and of the associated blade during the cutting of the block of tobacco, in synchronism with the rotation of the shaft;

wherein said drive means comprise:

a support member associated with one end of said shaft and rotatable with the shaft,

at least one pinion carried by said support member and rotatable about an axis radially spaced with respect to the axis of the shaft,

a stationary drive member having a toothed sector extending through an angle substantially corresponding to the angle of rotation of the shaft during which the blade of said at least one carriage can cut through the block of tobacco, said drive member being disposed adjacent to said support member so that the pinion meshes with said toothed sector for each revolution of the shaft and, as a result of the meshing, said pinion performs a rotation of a predetermined magnitude about its own axis,

locking means associated with the pinion for preventing the pinion from rotating about its own axis when the pinion is disengaged from said toothed sector, and

transmission means between said pinion and the associated blade-holder carriage for bringing about a translatory movement of a predetermined magnitude as a result of the rotation of said pinion about its own axis.

5,301,583

ROTARY CUTTING APPARATUS

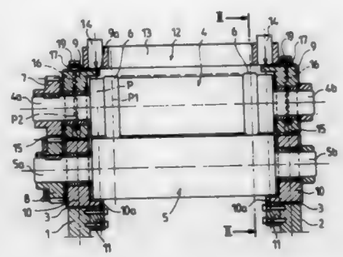
Nicolas Kakko-Chiloff, Olivet, France, assignor to Usinage Montage Et Assistance Technique, Loiret, France

Filed Dec. 15, 1992, Ser. No. 990,438

Claims priority, application France, Dec. 16, 1991, 91 15587

Int. Cl.[5] B26D *1/36, 1/42*

U.S. Cl. 83—344 **4 Claims**



1. A rotary cutting apparatus comprising: a frame, said frame supporting, between two vertical parallel uprights, two superimposed and parallel cutting cylinders, including an upper cutting cylinder and a lower cutting cylinder, one of said upper and lower cutting cylinder including at least one raceway in rolling contact with the other of said upper and lower cutting cylinders, two opposite coaxial spindles of said upper cutting cylinder being respectively rotatably mounted in two opposite upper bearing blocks vertically slidable on said two respective uprights, while two opposite coaxial spindles of said lower cutting cylinder are respectively rotatably mounted in two opposite lower bearing blocks vertically slidable on said two respective uprights and situated respectively below said upper bearing blocks, each of said upper bearing blocks having an upper cantilevered portion that extends over a portion of the upper roll, said cantilevered portion being subjected to action, in a downward direction, of a pressure exerting vertical jack mounted at an upper portion of said apparatus, and each of said lower bearing blocks having a lower cantilevered portion that extends under a portion of said lower roll, said cantilevered portion extending above an abutment carried by one of said uprights, the apparatus further comprising a shim or strut between each pair of said upper and lower bearing blocks, a central axis of one of said pressure exerting vertical jacks being extended in a first vertical and transverse plane (P), said shim or strut being extended in a second vertical and transverse plane (P2), one of said raceways being extended in a third vertical and transverse plane (P1), said first vertical and transverse plane (P) being situated between said second vertical and transverse plane (P2) and said third vertical and transverse plane (P1).

5,301,584

ZERO CLEARANCE HIGH SPEED WELDED SEAM TUBE CUT-OFF DIE

Wayne A. Rhodes, Luray, Tenn., assignor to Touchstone, Inc., Jackson, Tenn.

Filed Mar. 15, 1993, Ser. No. 31,612

Int. Cl.[5] B23D *21/00*; B26D *1/60*

U.S. Cl. 83—382 **6 Claims**

1. A cut-off die for use in conjunction with a continuously rotating cut-off blade mechanism for the purpose of closing on tubing while the cut-off blade mechanism is cutting the tubing and for opening to full clearance after cutting to release the tubing and to allow the tubing to move through the die without binding, comprising:

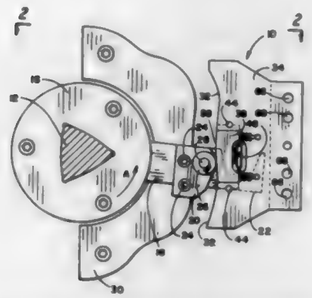
a pair of fixed die halves being spaced apart to admit passage of the rotating cut-off blade mechanism therebetween;

means for attaching the fixed die halves so the fixed die

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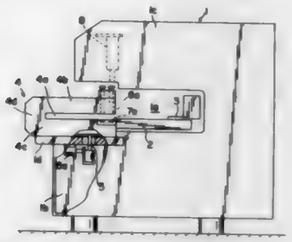
VOL 1161 ISS 2 AP 12 1994 UMI

halves move in alignment with the cut-off blade mechanism;
each of the fixed die halves being provided with a recess having slideways;
movable die inserts having slides, said slides engaging said slideways when said movable die inserts are inserted into said recesses;
an opening being formed between each of the fixed die halves and their associating movable die inserts in order to admit the tubing through the openings, a stationary half of each opening being provided on the fixed die halves and a movable half of each opening being provided on the movable die inserts;



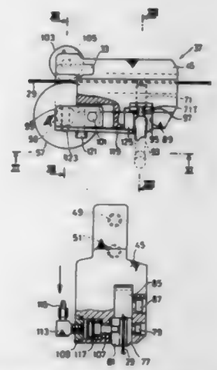
means for moving the movable die inserts toward the fixed die halves in order to close the stationary and movable halves on the tubing;
means for moving the movable die inserts away from the fixed die halves in order to release the tubing to freely move through the openings; and
die insert travel limit pins provided on each of said fixed die halves and extending into said slideways, said die insert travel limit pins engaging notches provided on said slides so as to limit the movement of said movable die inserts within said recesses.

5,301,585
PUNCH PRESSING MACHINE
Makoto Hosaka, Hatano, Japan, assignor to Amada Sonoike Co., Ltd., Kanagawa, Japan
Filed May 26, 1992, Ser. No. 888,127
Claims priority, application Japan, May 27, 1991, 3-149257
Int. Cl.[5] B26D *5/12*; B26F *1/04*
U.S. Cl. 83—549 **8 Claims**



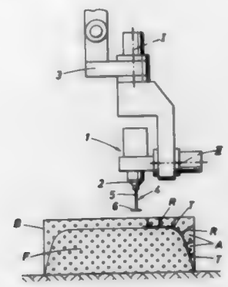
6. A punch pressing machine comprising:
a C-shaped frame having upper and lower arms with a cavity therebetween;
a C-shaped mounting plate having upper and lower arms with a cavity therebetween, said C-shaped mounting plate being rotatably carried by the lower arm of said C-shaped frame so that the cavities of said C-shaped frame and said C-shaped mounting plate are opposed when said mounting plate arms are aligned between said frame arms to form an enlarged cavity for a workpiece; and
means for performing a punching operation on a workpiece in said enlarged cavity.

5,301,586
VIBRATION PREVENTION DEVICE FOR BANDSAW MACHINES
Kenji Ohnishi, Isehara; Isomi Washio, Hatano, and Koji Nakano, Odawara, all of Japan, assignors to Amada Company, Ltd., Japan
Division of Ser. No. 884,943, May 18, 1992, Pat. No. 5,271,306, which is a division of Ser. No. 774,614, Oct. 10, 1991, Pat. No. 5,127,297, which is a continuation of Ser. No. 561,824, Aug. 2, 1990, Pat. No. 5,067,381, which is a division of Ser. No. 156,819, Feb. 17, 1988, Pat. No. 4,972,746. This application Aug. 13, 1993, Ser. No. 105,688
Claims priority, application Japan, Feb. 18, 1987, 62-021427
Int. Cl.[5] B23D *55/08*
U.S. Cl. 83—820 **8 Claims**



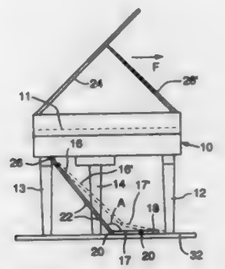
1. A bandsaw blade guide device which is mounted on the end of a bandsaw guide arm for guiding a bandsaw blade that runs between a pair of bandsaw blade wheels, comprising:
a first guide member which is mounted on the guide arm and free to contact one side surface of the bandsaw blade;
a second guide member which is mounted on the guide arm in such a way as to face the first supporting member across the bandsaw blade, and is free to contact a first portion of the other side surface of the bandsaw blade, the second supporting member being movable toward and away from the first guide member;
a support member mounted on the guide arm for pivoting about an axis extending in a direction perpendicular to a running direction of the bandsaw blade and parallel to the surface of the bandsaw blade, the support member substantially extending in the running direction of the bandsaw blade and having a first end and a second end;
a first roller rotatably mounted on the first end of the support member;
pressure applying means provided between the second guide member and the second end of the support member, for urging the second guide member to move toward the first guide member, and urging the second end of the support member to move away from the bandsaw blade.

5,301,587
METHOD AND CUTTING ASSEMBLY FOR MANUFACTURING THREE-DIMENSIONAL SHAPED PIECES FROM A PRE-FABRICATED BLOCK OF A MATERIAL HAVING LARGE PORES
Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria
Filed Oct. 28, 1992, Ser. No. 967,510
Claims priority, application Austria, Oct. 30, 1991, 2156/91
Int. Cl.[5] B26D *3/28*
U.S. Cl. 83—870 **4 Claims**



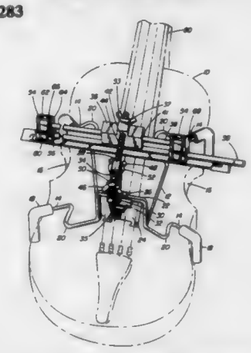
1. A method of cutting a three-dimensional shaped piece of a material having large pores, which comprises the steps of
(a) cutting the shaped piece out of a block of said material by trimming the block with adjacent cuts of a predetermined width guided along planes extending tangentially to the surface of the shaped piece whereby scrap of the material is produced, and
(b) cutting kerfs into the scrap no later than the trimming along planes projecting from the shaped piece surface and being substantially perpendicular thereto, the planes defined by the cutting kerfs being spaced from each other at the shaped piece surface a maximum distance corresponding to the predetermined width of the adjacent cuts.

5,301,588
GRAND PIANO HAVING A LOWER LID
Daniell Revenaugh, 2531 Etna St., Berkeley, Calif. 94704, and John Meyer, Berkeley, Calif., assignors to Daniell Revenaugh, Berkeley, Calif.
Filed Feb. 28, 1992, Ser. No. 843,291
Int. Cl.[5] G10C *3/02*
U.S. Cl. 84—177 **24 Claims**



1. A grand piano, including:
a case having an open bottom and a top lid;
a means for supporting the top lid in an open position in which the top lid reflects sound from within the case into a forward direction;
a lower lid;
a hinge means connecting the lower lid to the case so that the lower lid is free to pivot relative to the hinge means into an open position in which the lower lid reflects sound from within the case into the forward direction; and
a means for constraining the lower lid in a closed position substantially completely closing the open bottom, and releasing the lower lid from the closed position so that the lower lid is free to pivot about the hinge means into the open position.

5,301,589
VIOLIN BOW GUIDE
Robert J. Spadafora, 506 Annette Street, Toronto, Ontario, Canada M6P 1S3 ; Philipp Kraemer, 34 Kendleton Drive, Rexdale, Ontario, Canada M9V 1V4 , and Malcolm B. Stephens, Waterloo, Canada, assignors to Robert J. Spadafora and Philipp Kraemer, Ontario, Canada
PCT No. PCT/CA90/00321, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO91/05328, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 27, 1990, Ser. No. 838,728
Claims priority, application Canada, Sep. 28, 1989, 614356
Int. Cl.[5] G10G *7/00*
U.S. Cl. 84—283 **14 Claims**



1. A bow guide for a stringed, bow-played instrument, such as a violin, said instrument having a plurality of strings, a bridge and a fingerboard, said instrument being playable by a bow which has a back and two ends, said bow guide comprising:
(a) slide means comprising a rod for affixing to the bow;
(b) means for attaching the rod to the bow whereby the rod extends substantially between the ends of the bow;
(c) guide means comprising a rod guide having means for slidably receiving the rod and for guiding the rod for movement at substantially right angles to the strings; and
(d) means for supporting the rod guide above the strings of the instrument and between the bridge and fingerboard thereof.

5,301,590

Patent Not Issued For This Number

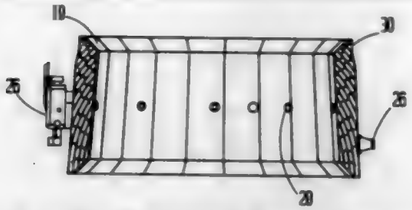
5,301,591
TAPERED SNARE DRUM
Mitch Greenberg, 109 N. Milwaukee Ave., Wheeling, Ill. 60090
Filed Jul. 30, 1992, Ser. No. 921,632
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—411 R **5 Claims**

1. A rigid drum shell comprising:
outside and inside walls;
a head end for engaging a first drum skin and having a first diameter;
a snare end for engaging a second drum skin and snare wires, having a second diameter;
the drum shell being substantially circular at the head end and being increasingly larger in transverse cross sectional

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shape proceeding from the head end toward the snare end; and

a substantially circular indentation on the circumference of



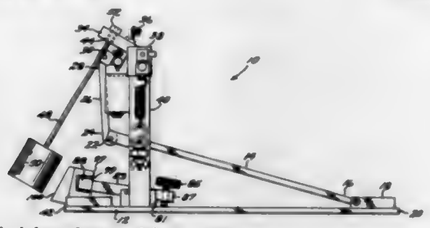
the outside wall substantially adjacent the head end for engaging the first drum skin with a hoop in a manner so that the first drum skin does not bind against the outside wall of the drum shell.

5,301,592

BASS DRUM FOOT PEDAL

Darrell N. Johnston, 23206 S. Normandie Ave. #7, Torrance, Calif. 90502

Filed Jun. 14, 1991, Ser. No. 715,626
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—422.1 2 Claims



1. A bass drum pedal comprising:

a base;

a foot pedal having one end pivotally secured to a front end of said base;

a column connected to said base adjacent to the opposite end of said base from said front end and extending longitudinally above said base;

a rocker arm pivotally mounted to said column and adjacent to the upper end of said column;

linkage means for linking said foot pedal to said rocker arm to actuate said rocker arm in response to a force applied to said foot pedal and adjustably coupled therebetween to permit selective positioning along said rocker arm;

bias means for biasing said rocker arm to said column and adjustably coupled therebetween to permit selective control of the force required for said foot pedal to move said rocker arm;

said bias means includes a spring connected between said column and said rocker arm;

a beater having a shaft releasably secured in said rocker;

a transducer mounted on said column and operative to generate electrical signals in response to receiving a strike force wherein said electrical signals are indicative of the strike force applied thereto;

striker means carried by said rocker for striking said transducer in response to said rocker being moved by said foot pedal.

5,301,593

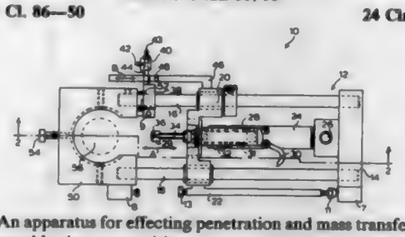
Patent Not Issued For This Number

5,301,594

APPARATUS AND METHOD FOR EFFECTING PENETRATION AND MASS TRANSFER AT A PENETRABLE SITUS

Dennis J. Argazzi, Centerbrook, and Larry A. Nativi, Rocky Hill, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Filed Dec. 30, 1992, Ser. No. 998,487
Int. Cl.[5] F42B *33/00*
U.S. Cl. 86—50 24 Claims



1. An apparatus for effecting penetration and mass transfer at a penetrable situs, comprising:

(a) a penetration member constructed and arranged for movement between (i) a first position disengaged from the penetrable situs, and (ii) a second position engaged with the penetrable situs to form a penetration opening in the penetrable situs communicating with an interior region thereof;

(b) a motive driver for selectively moving the penetration member between the first position and second position;

(c) a mass transfer assembly comprising a mass transfer passage member which is selectively engageable with the penetration opening in the penetrable situs, after formation thereof by the penetration member in the second position and subsequent movement of the penetration member by the motive driver to the first position, and wherein the mass transfer assembly is constructed and arranged to effect mass transfer through the penetration opening between the interior region of the penetrable situs and a locus exterior to the penetrable situs, when the mass transfer passage member is engaged with the penetration opening;

(d) means for actuating the motive driver and penetration member, to translate the penetration member from the first position to the second position, to form said penetration opening in the penetrable situs, and thereafter to translate the penetration member from the second position to the first position; and

(e) means for (i) swingably translating the mass transfer passage member, from an inactive position during formation of said penetration opening, into alignment between said penetration opening and said penetrable member after said penetration member has been returned to the first position after formation of said penetration opening, and (ii) linearly translating the mass transfer passage member in said alignment, into engagement with the penetration opening.

5,301,595

HIGH TEMPERATURE ROPE SEAL TYPE JOINT PACKING

Andrew S. Kessie, Fishers, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 25, 1992, Ser. No. 904,281
Int. Cl.[5] D04C *1/02*
U.S. Cl. 87—6 2 Claims

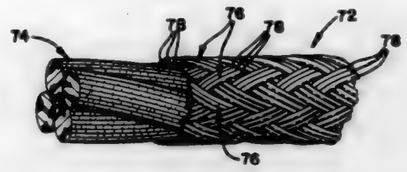
1. In a high temperature rope seal joint packing including

a cylindrical core made of a plurality of bundled and twisted ceramic fibers, and

a metallic cover around said cylindrical core consisting of a plurality of cross woven metallic strands,

the improvement comprising:

each of said cross woven metallic strands consisting of at



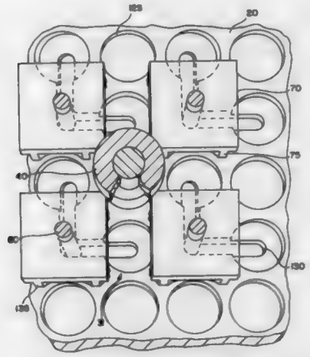
least one bare round stainless steel wire having a cross sectional diameter in a range of between 0.100 mm and 0.800 mm.

5,301,596

SHUTTLE PLATE BRAIDING MACHINE

Cecil O. Huey, Jr., Clemson, S.C., assignor to Clemson University, Clemson, S.C.

Filed Apr. 3, 1992, Ser. No. 862,779
Int. Cl.[5] D04C *3/04*
U.S. Cl. 87—8 21 Claims



1. An apparatus for moving yarn in a selected pattern to form a braided article, said apparatus comprising:

a grid assembly of stationary support elements;

a plurality of shuttles configured to carry yarn, said shuttles being supported for movement on said grid assembly, each said shuttle including means for selectively engaging a movable shuttle plate;

a unitary movable shuttle plate located below said grid assembly for imparting motion to each of said shuttles, and capable of moving said shuttles through the entire grid when said shuttles intermittently engage said shuttle plate;

means for driving said shuttle plate; and

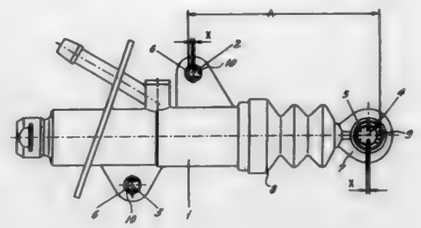
means for controlling said selective engagement means so as to cause engagement between said selective engagement means and said shuttle plate to cause said shuttles to move in a controlled pattern whereby when said shuttles carry yarn and are moved in said controlled pattern, a braided article of predetermined geometry will be formed.

5,301,597

HYDRAULIC CYLINDER

Herbert Sauer, Pfarrweisach; Oswald Muller, and Karl Peuker, both of Ebern, all of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schafer KGoA, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,061
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137770
Int. Cl.[5] F15B *15/24*
U.S. Cl. 92—13 9 Claims



1. An adjustable hydraulic cylinder, comprising:

a housing;

a piston rod movably disposed in the housing, the piston rod having a stroke length and a free end;

at least one attachment point disposed on the housing;

an attachment lug at the free end of the piston rod; and

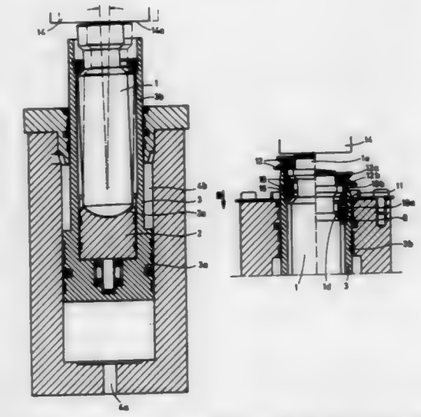
respective eccentric bushings arranged in the attachment lug and the at least one attachment point, wherein each of the respective eccentric bushings is adjustable so as to vary a distance between the at least one attachment point and the attachment lug to adjust the stroke length of the piston rod.

5,301,598

PISTON-CYLINDER UNIT FOR PRODUCING AND TRANSMITTING COMPRESSIVE FORCES

Karl H. Sonnabend, Ratingen, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 3, 1991, Ser. No. 802,129
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1990, 4038950
Int. Cl.[5] F16J *1/10*
U.S. Cl. 92—84 11 Claims



1. A piston cylinder unit for generating and transmitting

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compression forces to actuation elements displaceably guided in a straight line, comprising:

a skirt type piston open on one end;

a pressure tappet in said piston, abutted and sealed by ring elements against an internal wall of the skirt-type piston opening and protruding from the skirt-type piston opening with an end acting upon the actuation elements;

a floating piston with a hemispherical indentation on an upper portion thereof, wherein the pressure tappet is abutted with the hemispherical indentation and the pressure tappet is supported to execute a pendular motion inclined to a pressure direction;

wherein the floating piston is abutted by a spring on a lower portion thereof and is displaceably guided in the skirt-type piston;

cone-shaped surface in an internal wall of the skirt-type piston opening and on the external circumference on the pressure tappet, wherein said surfaces are brought by the pressure of the spring into an interacting position to each other to bring the pressure tappet into a centered position and to hold it there;

a guide pin protruding into a recess in the base of the skirt-type piston, wherein said guide pin is attached at an end face of the floating piston and enclosed by the spring; and

sealing rings and sealing sleeves, at the end of the pressure tappet, acting upon the actuation element and in the skirt-type piston opening embracing the end thereof to be elastically displaceable or pressable against each other.

5,301,599

PISTONS WITH RING GROOVE REINFORCING

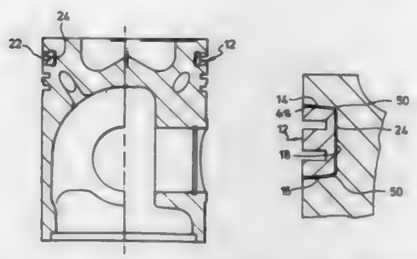
Timothy Dearnley, Huddersfield, and Simon Gazzard, Skipton, both of United Kingdom, assignors to AE Piston Products Limited, England

Filed Jan. 24, 1992, Ser. No. 825,051

Claims priority, application United Kingdom, Feb. 2, 1991, 9102324

Int. Cl.[5] F16J *1/04*

U.S. Cl. 92—222 **23 Claims**



1. A piston having therein at least one piston ring groove reinforcing member, the at least one reinforcing member being annular in form and having, in cross-section, upper and lower, generally radially extending face portions and a radially inner, generally axially extending face portion between the two generally radially extending face portions, only the generally axially extending face portion being coated with particulate material by a physical vapour deposition technique to provide a porous adhesion assisting layer, a piston body alloy being cast around the reinforcing member in engagement with said radially extending face portions and infiltrating said porous adhesion assisting layer.

11. A method of making a piston having at least one piston ring groove reinforcing member, the at least one reinforcing member having upper and lower, generally radially extending face portions and a generally axially extending face portion between the two generally radially extending face portions and radially inwardly of the piston outer diameter, the method comprising the steps of conting with particulate material only the generally axially extending face portion by a physical vapour deposition technique to form a porous adhesion assisting layer, preheating the coated reinforcing member, placing the reinforcing member in a piston casting die, pouring molten piston body alloy around the reinforcing member including the generally axially extending face portion and the radially extending face portions, and allowing the molten alloy to solidify under an applied pressure causing the alloy to infiltrate said porous adhesion assisting layer.

5,301,600

APPLIANCE FOR MAKING BEVERAGES

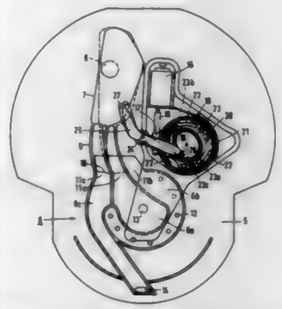
Pieter W. Medema, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 9, 1993, Ser. No. 15,722

Claims priority, application European Pat. Off., Feb. 12, 1992, 92200383.5

Int. Cl.[5] A47J *31/00*

U.S. Cl. 99—305 **6 Claims**



1. An appliance for making beverages, which appliance comprises a filter device and a movable arm connected to a coupling projection and having an outlet opening for the supply of hot water to the filter device, which arm is movable by means of the action of a motor and said coupling projection so as to position the outlet opening in different positions relative to the filter device, a transmission mechanism comprising a frictional coupling being interposed between the motor and the coupling projection of the arm, wherein there are provided means for holding the movable arm in a position, the frictional coupling being activated during operation of the motor to engage the coupling projection to move the movable arm and being operative to allow the motor to stop without subsequent movement of the arm.

5,301,601

STORAGE AND METERING APPARATUS FOR POPCORN POPPING OIL

Charles D. Cretors, Lake Forest, Ill., assignor to C. Cretors & Company, Chicago, Ill.

Filed Nov. 30, 1992, Ser. No. 984,063

Int. Cl.[5] A23L *1/18*

U.S. Cl. 99—323.5 **29 Claims**

1. A storage and dispensing system for popcorn popping oil used in the popping of popcorn comprising:

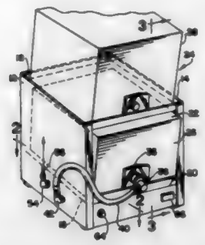
A. a housing, said housing supporting at least one shelf,

B. at least one container designed to contain popcorn popping oil supported on said at least one shelf, said at least one container being located at a first elevation,

C. a connector means, said connector means having first and second portions connectable with each other, said at least one container being provided with said first portion of a connector means,

D. a kettle within which popcorn is to be popped, said kettle being located at a second elevation, said second elevation being higher than said first elevation,

E. a dispensing means, said dispensing means provided with said second portion of said connector means, said dispensing means including pumping means for transferring pop-



corn popping oil through said connected first and second portions of said connector means from within said at least one container to said kettle in which popcorn is to be popped.

5,301,602

FAT-FREE ROASTER FOR POULTRY AND MEAT

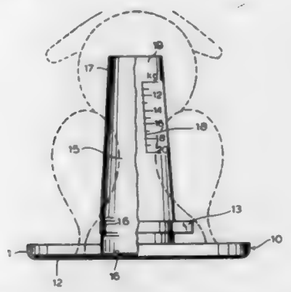
Wlodzimierz Ryczek, Warsaw, Poland, assignor to Marcin P. Mieloszyk, Brooklyn, N.Y.

Filed Mar. 31, 1993, Ser. No. 40,649

Claims priority, application Poland, Apr. 3, 1992, P.291040

Int. Cl.[5] A47J *37/04, 43/18*

U.S. Cl. 99—345 **5 Claims**



1. A roasting apparatus comprising:

a. a supporting pan having a flat bottom, an upstanding circumscribing flange which supports at central portions thereof a vertical roasting support element;

b. said vertical roasting element being in the form of a separable truncated conical element having internal surfaces which define a liquid retaining reservoir;

c. whereby a portion of poultry or meat to be roasted may be supported on the outer surfaces of said upstanding conical element with interior portions of said poultry or meat being exposed to the reservoir and to vapor generated from liquid in said reservoir;

d. said pan including a central opening therein defined by a cylindrical upstanding support member; and

e. said truncated conical element being fastened at lowermost portions to said upstanding flange by quick-connect means.

5,301,603

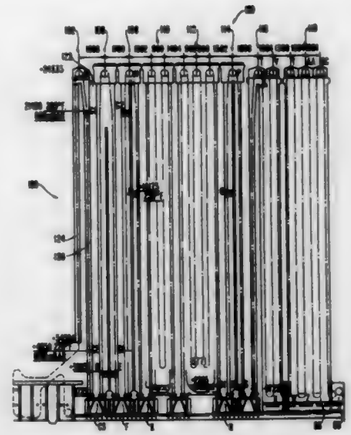
STERILIZING SYSTEM

Michael Mignogna, Medford, and Steven Santana, Maple Shade, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Continuation of Ser. No. 606,745, Oct. 31, 1990, abandoned, which is a division of Ser. No. 470,601, Jan. 26, 1990, Pat. No. 5,160,755. This application Oct. 28, 1991, Ser. No. 784,670

Int. Cl.[5] A23L *3/00, 3/04*

U.S. Cl. 99—359 **44 Claims**



1. A sterilization processing system, said system comprising:

a hydrostatic sterilizer including an infeed water leg, an outfeed water leg and a pressurized steam dome positioned operatively between said legs, said legs and said steam dome defining a sterilizing hydrostatic circuit;

a preheater including an infeed water leg, an outfeed water leg and a pressurized steam dome therebetween, said preheater legs and steam dome defining a preheater hydrostatic circuit;

wherein said preheater hydrostatic circuit is generally pressure and temperature independent of said sterilizer hydrostatic circuit such that the temperature in said preheater hydrostatic circuit can be rapidly changed without significantly effecting the pressure and temperature in said sterilizer hydrostatic circuit; and

conveying means for conveying packages of thermally treatable products through said preheater and out said preheater outfeed water leg, then into atmospheric pressure, then into said sterilizer infeed water leg through said sterilizer.

5,301,604

REDUCED-PRESSURE FRYER MACHINE

Kazuo Takahashi, No. 38-22, Kitazawa 5-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 97,229

Claims priority, application Japan, Nov. 4, 1992, 4-319338

Int. Cl.[5] A47J *37/12*

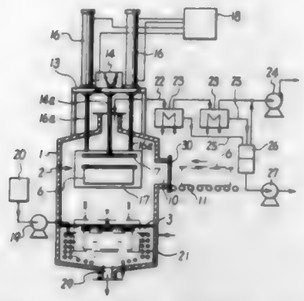
U.S. Cl. 99—407 **4 Claims**

1. A reduced-pressure fryer machine of the type including a food container case adapted to hold therein food material in the form of chips, slices, sticks, cubes or other arbitrary shapes, a reduced-pressure frying vessel arranged to immerse said container case in heated oil to fry the food material under reduced pressure, and a pressure reduction means for reducing the pressure within the frying vessel, characterized in that said food container case comprises:

an open-topped box-like container body constituted by sub-

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stantially unperforated walls on each side except the bottom side thereof; and



a substantially unperforated lid adapted to cover and uncover the open top side of said container body.

5,301,605

CURD RIPENING APPARATUS

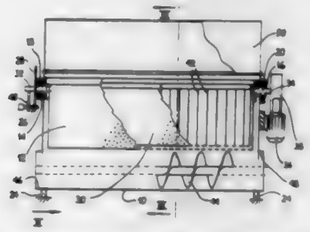
Stefano Tomatis, Peveragno, Italy, assignor to CMT Costruzioni Meccaniche e Tecnologia SPA, Peveragno, Italy

Filed Apr. 23, 1993, Ser. No. 51,422

Claims priority, application Italy, Sep. 30, 1992, TO92 A 000793

Int. Cl.[5] A01J *13/00, 25/00;* **A23C** *3/02, 9/00*

U.S. Cl. 99—459 **13 Claims**



1. A curd ripening apparatus for the production of cheese, comprising:

a) an external basket having the shape of a cylindrical sector of at least semicylindrical breadth, and rotatable around a horizontal axis;

b) an internal, perforated basket rotatable coaxially with the external basket, having the shape of a cylindrical sector of a breadth complementary to the external basket and of a diameter smaller than the external basket;

c) first motor means for rotating a first one of said baskets; and

d) synchronizing means for rotating a second one of said baskets synchronously with the first one, while the baskets are maintained selectively in positions nested with or opposite to each other.

5,301,606

HEAT-ACTIVATED SMOKE GENERATING DEVICE

George E. Ferguson, 7740 E. Gleneosa, No. 112, Scottsdale, Ariz. 85251

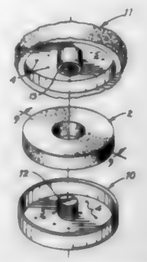
Division of Ser. No. 787,041, Nov. 4, 1991, Pat. No. 5,193,445. This application Mar. 16, 1993, Ser. No. 33,149

Int. Cl.[5] A23L *1/01*

U.S. Cl. 99—482 **12 Claims**

1. An apparatus for releasing a gas upon exposure to heat, comprising:

(a) housing having an accessible interior cavity formed by a top member and a base member, wherein each of said top member and said base member have a plurality of openings passing therethrough, and coupling means associated therewith for removably coupling said top member to said base member; and



(b) heat activated means disposed within said interior cavity of said housing for releasing at least one gaseous compound upon exposure to a heat source, wherein said heat activiated means comprises a removable cartridge which comprises a container that holds one of the group consisting of a compressed media and loose particulate matter.

5,301,607

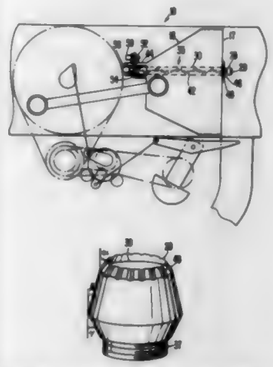
HAY BALER AERATOR

Velere D. Stromer, Klemme, and Harold R. Winston, Mason City, both of Iowa, assignors to Quality Hay of Iowa, Co., Mason City, Iowa

Filed Jan. 27, 1993, Ser. No. 10,008

Int. Cl.[5] B30B *9/00*

U.S. Cl. 100—98 A **37 Claims**



1. An apparatus for forming aerated, compressed bales of material comprising:

a bale chamber for receiving material to be compressed;

a plunger means reciprocal in said bale chamber for compressing the material placed therein to form a bale; and

at least one cutter means mounted on said plunger means for cutting a plug from the material in said bale chamber as it is compressed by said plunger means.

5,301,608

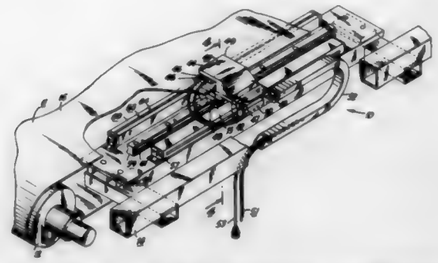
INDEX CONTROL SYSTEM FOR PRINTING APPARATUS

Sandor Szarka, and David Jaffa, both of Franklin Lks., N.J., assignors to Precision Screen Machines, Inc., Hawthorne, N.J.

Filed Jun. 4, 1993, Ser. No. 72,467

Int. Cl.[5] B41M *1/12*

U.S. Cl. 101—129 **11 Claims**



7. A method for controlling movement of a printing blanket, which comprises the steps of:

(a) clamping a translatable carriage assembly to the blanket, said clamping being effected by an expandable member which, upon selected expansion, contacts the blanket to secure the assembly thereto;

(b) indexing a blanket supported article to a printing station while an encoder monitors forward motion of the blanket and corrects for selected variation between the distance traveled by the blanket during indexing and a preset distance;

(c) contraction of the clamping member such that it concomitantly releases the blanket; and

(d) returning the assembly a selected distance in position for another indexing movement.

5,301,609

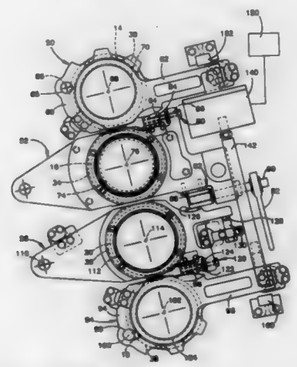
PRINTING UNIT WITH SKEW AND THROW-OFF MECHANISMS

Glenn A. Guaraldi, Kingston, N.H., and James W. Geary, Darien, Conn., assignors to Heidelberg Harris Inc., Dover, N.H.

Filed Mar. 4, 1993, Ser. No. 26,505

Int. Cl.[5] B41F *5/00*

U.S. Cl. 101—216 **16 Claims**



1. Apparatus comprising:

a frame (22);

a first printing cylinder (14) having an axis of rotation (68);

a bracket (50) supported on said frame (22) for movement relative to said frame (22), said bracket (50) supporting an end of said first printing cylinder (14) for movement with said bracket (50) relative to said frame (22);

a second printing cylinder (16) supported on said frame (22), said second printing cylinder (16) having an axis of rotation (76); and

skewing means for changing the angular positions of said first and second printing cylinders (14, 16) relative to each other, said skewing means including a hub (65) supporting said bracket (50) to rotate about a hub axis (170), and a support member (84) having a surface (190) supporting said bracket (50) to move in a direction transverse to said hub axis (170) in sliding contact with said surface (190) of said support member (84);

said skewing means further including means for rotating said bracket (50) about said hub axis (170) and for simultaneously moving said bracket (50) in said transverse direction in sliding contact with said surface (190) of said support member (84).

5,301,610

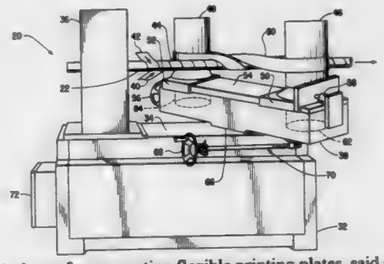
METHOD AND APPARATUS FOR MAKING SPIRAL WOUND SLEEVES FOR PRINTING CYLINDERS AND PRODUCT THEREOF

Ronald F. McConnell, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 30, 1993, Ser. No. 54,210

Int. Cl.[5] B41N *1/12;* **B41F** *13/16*

U.S. Cl. 101—401.1 **8 Claims**



1. A sleeve for supporting flexible printing plates, said sleeve having inner and outer surfaces, said sleeve comprising a multilayer structure with the outermost layer of said structure comprising: a first layer of resinous material of uniform thickness bonded to a second layer of resinous material of uniform thickness by a third layer of thermoplastic adhesive, said adhesive having a thickness that is in the range of from about 25% to about 70% of the sum of the thicknesses of said first, second and third layers.

5,301,611

METHOD OF DRIVING THE IMPRESSION CYLINDER RECEIVING CARRIAGES INTO THE PRINTING ELEMENTS OF A ROTARY PRINTING MACHINE

Ezio Derivi, Ivrea, Italy, assignor to Officine Meccaniche Giovanni Cerutti S.p.A., Italy

Filed Sep. 24, 1992, Ser. No. 950,819

Claims priority, application Italy, Sep. 27, 1991, MI91A-002588

Int. Cl.[5] B41L *3/02;* **B41F** *5/00, 9/00*

U.S. Cl. 101—486 **1 Claim**

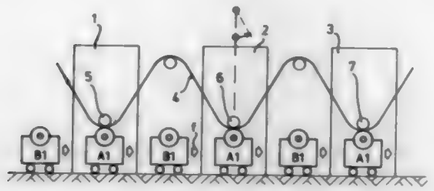
1. A method of changing impression cylinder carriages in printing units succesively arranged, and spaced apart by predetermined spacings, along a longitudinal path in a rotary printing press directly supported on a flat floor, comprising the steps of:

a) positioning a first set of carriages on the floor within the units;

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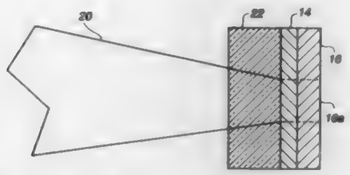
VOL 1161 ISS 2 AP 12 1994 UMI

b) positioning a second set of replacement carriages on the floor in the spacings at downstream sides of the units;
c) replacing the first set with the second set of carriages by simultaneously moving both first and second sets on the floor only in an upstream direction along the path over the distance of one said spacing;
d) vacating the first set of carriages from the spacings at upstream sides of the units;



e) positioning a third set of replacement carriages on the floor in the spacings vacated by the first set at the upstream sides of the units;
f) replacing the second set with the third set of carriages by simultaneously moving both second and third sets on the floor only in a downstream direction along the path over the distance of one said spacing; and
g) vacation the second set of carriages from the spacings at downstream sides of the units.

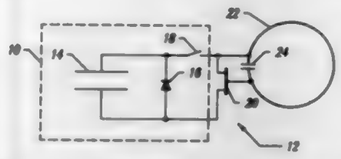
5,301,612
CARBON-ASSISTED FLYER PLATES
David B. Stahl, Los Alamos, and Dennis L. Paisley, Santa Fe, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 28, 1993, Ser. No. 68,032
Int. Cl.[5] F42C *19/08*; F42B *3/113*
U.S. Cl. 102—201 **8 Claims**



1. A laser driven flyer plate comprising:
a laser;
an optical fiber having proximal and distal ends, said proximal end being connected to said laser;
a layer of carbon deposited onto said distal end of said optical fiber; and
a metal layer deposited onto said layer of carbon.

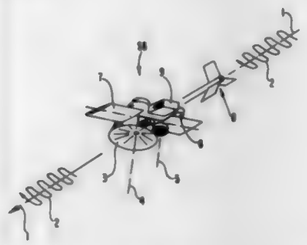
5,301,613
POWER SUPPLY FOR AN ELECTRICAL CIRCUIT MOUNTED ON A PROJECTILE
James O. Muirhead, San Pedro, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 14, 1992, Ser. No. 944,633
Int. Cl.[5] F42C *11/02*
U.S. Cl. 102—210 **3 Claims**

1. An improved power supply for an electrical circuit mounted on a projectile having a radio frequency transmitter, said projectile being accelerated upon firing and decelerated upon impact, said improved power supply comprising:
a single piezo-electric transducer mounted on said projectile for generating a predetermined amount of electrical energy on said acceleration thereof, said transducer having positive and negative output terminals, said transducer having a cross-sectional area and depth sufficient to produce power for said transmitter, said piezo-electric transducer being formed of a piezo-electric material having a dielectric coefficient sufficient to provide capacitive storage in the presence of an electric field.
a diode mounted across said positive and negative output terminals of said piezo-electric transducer for causing said



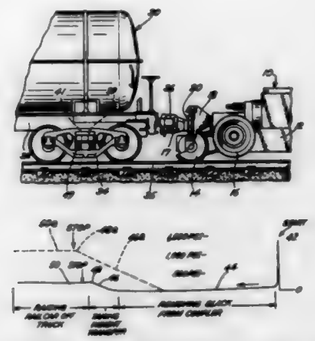
transducer to store said electrical energy generated thereby; and
an acceleration switch connected between said transducer and said transmitter, said switch being open on said acceleration of said projectile and closed on said deceleration of said projectile thereby applying said predetermined amount of energy stored in said transducer to said transmitter,
said acceleration switch and transducer and diode being integrated together on said projectile.

5,301,614
SUBMUNITION FOR USE DURING GROUND-LEVEL FLIGHT
Ulrich Rieger, Feldkirchen-Westerham, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm AG, Fed. Rep. of Germany
Filed Sep. 30, 1992, Ser. No. 953,266
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 4133405
Int. Cl.[5] F42B *10/02, 10/32, 12/58*
U.S. Cl. 102—384 **19 Claims**



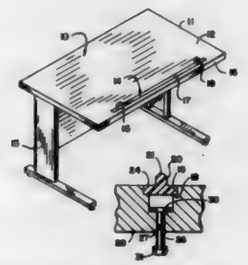
1. Submunition transportable by means of a carrier to a target area and launchable there on a given course relative to the carrier direction, said submunition comprising:
a target sensor,
a payload,
an altimeter and a circuit to evaluate the altimeter readings, at least one adjustable airfoil; and
means for controlling the at least one adjustable airfoil, responsive to the circuit, such that the submunition maintains a constant low altitude above ground level for a finite glide in a rolling position sequence on the given course under kinetic energy provided during the launch.

5,301,615
RAILCAR MOVING VEHICLE HAVING MONITORED WEIGHT TRANSFER PROCESS INCLUDING SENSORS FOR SENSING TRANSFER OF FULL WEIGHT
Robert E. Evans, LaGrange, and Richard L. Lich, Newnan, both of Ga., assignors to Trackmobile, Inc., LaGrange, Ga.
Filed Apr. 19, 1993, Ser. No. 49,822
Int. Cl.[5] B61C *15/04*
U.S. Cl. 105—75 **6 Claims**



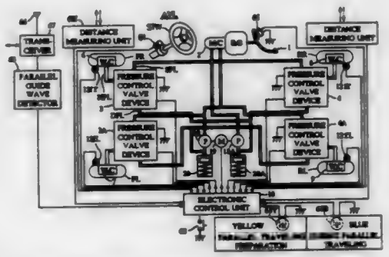
1. In a railcar moving vehicle having a frame, a coupler for coupling said vehicle to a coupler of a railcar, and hydraulic means having a hydraulic power line for raising said vehicle coupler to transfer weight from the railcar to the vehicle, the improvement comprising, in combination:
means for sensing fluid pressure in said hydraulic power line;
comparator means for monitoring an increase in said fluid pressure as the hydraulic means raises said vehicle coupler while coupled to a railcar, and for sensing a substantial termination of said increase in fluid pressure as said hydraulic means further raises said vehicle coupler while coupled to said railcar; and indicator means for signalling the occurrence of said substantial termination of the fluid pressure increase.

5,301,616
REPOSITIONABLE PAPER STOP FOR A TABLE SURFACE
Robert W. Wacker, Plymouth, and Dale M. Hemberger, Sheboygan, both of Wis., assignors to Mayline Company, Inc., Sheboygan, Wis.
Filed Jan. 22, 1993, Ser. No. 7,501
Int. Cl.[5] A47B *17/00*
U.S. Cl. 108—27 **8 Claims**



1. A repositionable paper stop in an edge of a surface comprising:
an elongate strip having a body including one flat planar side and another side having an upstanding edge portion extending along at least a part of the length of the body; and,
groove means in the surface for receiving the strip in one position to support said strip with the flat planar side flush with the surface and in another position to support said strip with the upstanding edge portion extending above the surface and generally perpendicular thereto.

5,301,617
PARALLEL TRAVELING CONTROL SYSTEM
Katsuhiko Miwa, Kassel, Fed. Rep. of Germany, and Alan Arai, Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan
Continuation of Ser. No. 525,683, May 21, 1990, abandoned. This application Mar. 3, 1992, Ser. No. 844,872
Claims priority, application Japan, May 19, 1989, 1-125745
Int. Cl.[5] B60T *7/16*
U.S. Cl. 180—168 **6 Claims**



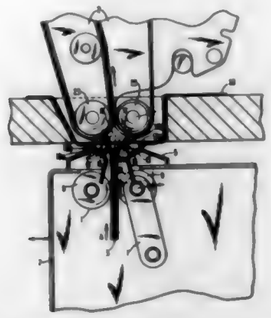
1. A parallel traveling control system comprising:
brake pressure adjusting means for adjusting brake pressures of bilateral wheel brakes;
distance detecting means for detecting distances to a guide means provided on a road surface of a traveling lane or set in the vicinity of said road surface along said traveling lane; and
a parallel control means for driving said brake pressure adjusting means, said parallel control means specifying pressures for each wheel brake to thereby adjust the direction of travel of the vehicle such that the distances detected by said distance detecting means coincides with a set value while referring to the distances.

5,301,618
GUIDE MEANS FOR CONVEYING SHEET-SHAPED MEDIA
Ulrich Abendschein, Herrenberg, and Friedrich Schlegel, Moessingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 5, 1992, Ser. No. 925,952
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 4141530
Int. Cl.[5] E05G *1/02*
U.S. Cl. 109—55 **8 Claims**

1. A guide assembly for conveying sheet-shaped media, comprising:
a first transfer unit and a second transfer unit, said first transfer unit and second transfer unit mounted to be relatively shiftable with respect to each other;
a first guide element having legs coupled about an aperture in said first transfer unit, said legs positioned in a converging manner to form a first channel in a sheet transfer direction from said first transfer unit; and
a second guide element having legs coupled about an aperture in said second transfer unit, said legs positioned to form a second channel and arranged in a converging manner oppositely directed to said legs of said first guide element, said first guide element and second guide element being engaged to form a substantially enclosed guide channel comprising said first and second channels be-

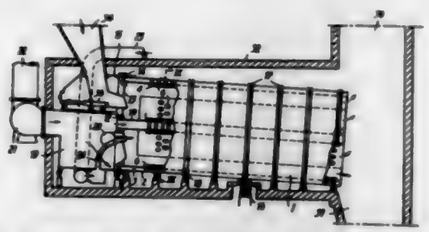
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tween said first transfer unit and second guide element comprised of a resilient material so as to maintain said



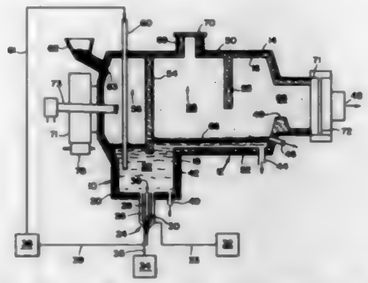
enclosed guide channel in the event of relative shifting between said first transfer unit and second transfer unit.

5,301,619
INSTALLATION FOR THE INCINERATION OF WASTE
Marc Keersmaekers, Kesselsteenweg 12, 2560 Nijlen, Belgium
Filed Nov. 25, 1992, Ser. No. 981,730
Claims priority, application Belgium, Nov. 27, 1991, 9101094
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—246 **6 Claims**



1. An installation for the incineration of waste comprising:
(a) an incineration drum having an axis, said drum having radial double walls with openings in said walls,
(b) means for axially rotating said drum,
(c) means for guiding said drum during rotation,
(d) a burner for heating air and combustion gases from waste in said drum to cause said waste to ignite,
(e) a double wall disposed in said drum and having a rear end, said double wall being closed at said rear end and the interior wall of said double wall being provided with openings,
(f) a hollow central tube provided with openings and having a front open end and a rear end and disposed in said drum, said rear end of said tube being closed, and
(g) means interconnecting said tube and said double wall to provide a duct for blowing incineration air directly into said drum, and
(h) a duct for at least partially recycling burnt combustion gases from said drum and returning said burnt gases to said drum to cool said double wall to control the furnace temperature and prevent waste from baking onto said drum.

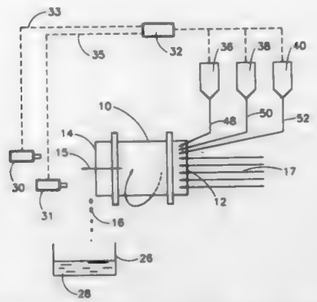
5,301,620
REACTOR AND METHOD FOR DISASSOCIATING WASTE
Christopher J. Nagel, Wayland; Mark A. Wilkinson, Lexington, and James E. Johnston, Waltham, all of Mass., assignors to Molten Metal Technology, Inc., Waltham, Mass.
Filed Apr. 1, 1993, Ser. No. 41,490
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **17 Claims**



1. A reactor for dissociating waste in a molten metal bath and for forming gaseous, vitreous and molten metal product streams from said waste, the reactor being formed of materials which are refractory to the product streams and comprising:
a) a vertical reaction section for containing a molten metal bath which can dissociate waste to form gaseous, vitreous and molten metal reaction products;
b) means for directing the waste into the vertical section of the reactor;
c) means for directing an oxidant into the reactor for reaction with dissociation products of the waste to form said reaction products; and
d) a horizontal separation section which is joined with an upper portion of said vertical reaction section, said horizontal separation section extending from the vertical reaction section and having discharge means for proximate and separate discharge of the gaseous, vitreous and molten metal product streams from the reactor at a location which is remote from said vertical reaction section, whereby the vitreous and molten metal reaction products formed in the vertical reaction section flow from said vertical reaction section through the horizontal separation section to the discharge means, thereby promoting physical separation of said reaction products to form distinct gaseous, vitreous and molten metal product streams for separate discharge of said streams from the reactor.

5,301,621
SLAG VISCOSITY DETECTION THROUGH IMAGE ANALYSIS OF DRIPPING SLAG WITHIN ROTARY INCINERATION KILNS
Eustathios Vassilou, Newark, Del.; Joseph F. Giunto, Pitman; Walter R. Schaefer, Cherry Hill, both of N.J., and Bruno R. Kuhn, Nassau Bay, Tex., assignors to Rollins Environmental Services, Inc., Wilmington, Del.
Filed May 17, 1993, Ser. No. 62,790
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **25 Claims**

1. An incinerating kiln device comprising
a rotary kiln having a substantially cylindrical shape, an inside wall, an inlet end, an outlet end opposite the inlet end, a bottom side, and a ceiling side, opposite the bottom side,
the ceiling side and the bottom side being part of the inside wall,
the rotary kiln being adaptable to contain a quantity of molten slag, in a manner that when the kiln rotates, at least a portion of the molten slag temporarily adheres to the inside wall and it is transferred from the bottom side of the kiln to the vicinity of the ceiling side, wherefrom it may fall back to the bottom side, at least partially, in the form of drippings; and

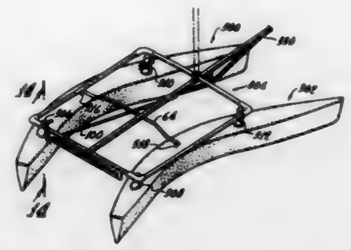


detection means at one end of the kiln for determining at least one property of the drippings selected from the group consisting of size of drippings, shape of drippings, aspect ratio of drippings, and number of drippings.

5,301,622
LOOPER FOR SEWING MACHINE
Kouichi Sakuma, Yamagata, Japan, assignor to Suzuki Manufacturing, Ltd., Japan
Filed Mar. 2, 1992, Ser. No. 844,230
Int. Cl.[5] D05B *1/20, 57/06*
U.S. Cl. 112—162 **8 Claims**

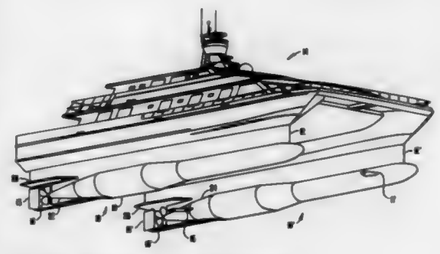
1. A looper mechanism for use in a sewing machine wherein a needle is fixed to a needle bar which is reciprocated substantially upwardly and downwardly for penetration through a needle plate while inclined in the direction of cloth feed, in synchronism with a main shaft, said looper mechanism comprising:
a lower looper which performs an arcuate reciprocating motion crosswise to the locus of the needle at the lower side of the needle plate, and
an upper looper which performs an elliptically-arcuate reciprocating motion crosswise to the locus of the lower looper at the lower side of the needle plate and crosswise to the locus of the needle at the upper side of the needle plate, whereby a needle thread passed through the needle, a lower-looper thread passed through the lower looper and an upper-looper thread passed through the upper looper cross with one another sewing the cloth,
said looper mechanism having at least one of said upper looper and said lower looper including a tube member in the form of a hollow circular cylinder through which a looper thread is passed from a thread inlet end of said one looper to a thread outlet end of said one looper, said tube having opposing open ends defining said thread inlet end and said thread outlet end, respectively.

5,301,623
MULTI HULL VESSEL WITH BENDABLE HULLS
Winton P. McMillen, 1552 Miramar, Balboa Point, Calif. 92661
Filed Apr. 22, 1991, Ser. No. 689,310
Int. Cl.[5] B63B *1/00*
U.S. Cl. 114—61 **49 Claims**



1. A sailing vessel comprising:
first and second hulls each having a forward hull section with an aft end and an aft hull section with a forward end, said forward and aft ends of said hulls being positioned in mutual proximity and nominal alignment with each other,
means for pivotally interconnecting the forward and aft sections of each hull to allow the sections of each hull to move through a plurality of positions in which the forward section extends longitudinally at different angles with respect to the aft section,
deck means supported on said hulls for holding the hulls in mutually laterally spaced positions, said deck means being connected to one of the forward and aft sections of said hulls at points that slide longitudinally relative to the deck means as said one hull moves through said positions; and
control means mounted on said deck means for causing said hulls to move through at least some of said positions.

5,301,624
STERN PLANES FOR SWATH VESSEL
Nelson W. Hall, Poway, Calif., and Donald T. Higdon, Flagler Beach, Fla., assignors to Swath Ocean Systems, Inc., Chula Vista, Calif.
Filed Feb. 24, 1993, Ser. No. 21,449
Int. Cl.[5] B63B *1/10*
U.S. Cl. 114—61 **17 Claims**



1. A twin pontoon vessel comprising:
a superstructure;
first and second pontoons disposed beneath the superstructure, each of said first and second pontoons including a streamlined tail cone forming the aft portion of the said pontoons said streamlined tail cones being of smaller diameter than said pontoons;
at least one strut disposed between each pontoon and the superstructure for supporting the superstructure, so that the combined buoyancy of the first and second pontoons

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and the struts is sufficient to support the superstructure spaced above the waterline by a prescribed distance when the vessel is at rest in calm water;

propellers located aft of each streamlined tail cone of each of said first and second pontoons;

engine means in said vessel for driving said propellers;

drive shaft means operatively connected to said engine means extending out of the aft portion of each of said streamlined tail cones of each said pontoons and connected to each propeller; and

horizontally disposed stern planes connected to the vessel immediately above each propeller and overlying between ⅓ to ½ of the aft portion of the streamline tail cone of each of said pontoons and below the design waterline of said vessel, each of said stern planes configured and located with respect to each propeller and each streamlined cone to influence water flow over the upper side of each of the streamlined tail cones to substantially reduce the tendency toward water flow which otherwise would cause propeller ventilation when the vessel is moving.

5,301,625

MARINE CONSTRUCTION

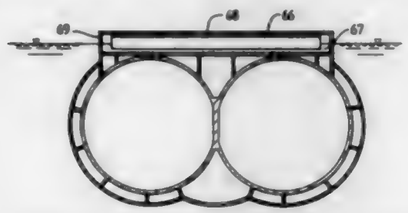
Olav Mo, Kristiansand, Norway, assignor to Offshore Concrete A/S, Kristiansand, Norway

Division of Ser. No. 801,934, Dec. 3, 1991, Pat. No. 5,201,275. This application Mar. 3, 1993, Ser. No. 25,341

Claims priority, application Norway, Dec. 4, 1990, 905239; Nov. 6, 1991, 914343

Int. Cl.[5] B63B *5/00*

U.S. Cl. 114—65 A **4 Claims**



1. A self-loadable and unloadable concrete-hulled submarine vessel system, comprising:

a concrete-hulled submarine including:

an inner skin made of concrete and providing a watertight, pressure-resistant hull;

an outer skin made of concrete spacedly surrounding said inner skin and thereby peripherally substantially enclosing said watertight, pressure-resistant hull and providing an enclosed space between said inner and outer skins, said hull being arranged to contain equipment which is to be transported; said outer skin having an upper side which in use is usually disposed facing upwardly, above said inner skin; said upper side having a planar region forming a deck;

bulkhead and girder structure supporting said outer skin from said inner skin;

at least one barge ingress and egress aperture formed through said outer skin;

said skins, aperture and bulkhead and girder structure being arranged to provide a stowing hanger for at least one barge between said inner skin and said outer skin;

at least part of said enclosed space, including at least part of said barge stowing hanger being arranged to flood with water due to submerging of said submarine, and to empty of water due to surfacing of said submarine;

a barge which is arranged to be floated from externally of said submarine, into said stowing hanger, and from said stowing hanger to externally of said submarine, when said submarine is in a surfaced state, whereby said barge is arranged to be transported by said submarine;

said barge while in said stowing location being arranged to at least partially flood with water as said barge stowing hanger at least partially floods with water due to submerging of said submarine, and to empty of water as said barge stowing hanger empties of water due to surfacing of said submarine; and

said barge while floating externally of said submarine when said submarine is in said surfaced state, being arranged to load equipment onto said deck for transportation by said submarine, and to unload equipment which has been transported by said submarine, from said deck onto said barge.

5,301,626

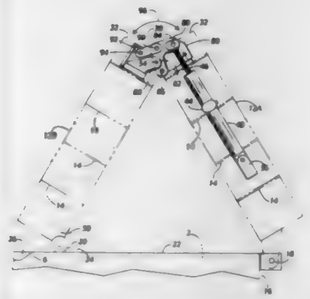
CARGO HATCH COVER MECHANISM

Donald A. Penny, Ocean Springs, Miss., assignor to The Main Deck, Inc., Ocean Springs, Miss.

Filed Dec. 24, 1992, Ser. No. 996,678

Int. Cl.[5] B63B *19/18*

U.S. Cl. 114—202 **13 Claims**



1. An apparatus for opening and closing a hatch having a hatch coaming with a cargo hatch cover, comprising:

the cargo hatch cover comprising a plurality of cover panels;

hinge means for connecting said cargo hatch cover to the hatch coaming and for interconnecting in succession said plurality of cover panels;

a mechanically driven actuator means attached to a particular cover panel, said actuator means for folding and unfolding said plurality of said cover panels, said actuator means having a shaft with a distal end and a threaded end, said shaft being longitudinally movable to an extended position and to a retracted position, said threaded end being driven by a gear in said actuator for moving said shaft longitudinally, said cover panels being unfolded when said shaft end is moved to said extended position so that said hatch is closed, and said cover panels being folded when said shaft is moved to said retracted position so that said hatch is open; and

a cam means associated with a hinge of said particular cover panel, said cam means for causing hinging motion of said hinge under control of said distal end of said shaft and for folding and unfolding said particular cover panel relative to an adjacent cover panel so that said plurality is collectively folded and unfolded respectively.

5,301,627

RETRACTABLE BOAT CLEAT

John Czipri, Clearwater, Fla., assignor to Accon, Inc., Clearwater, Fla.

Filed Aug. 27, 1993, Ser. No. 112,267

Int. Cl.[5] B63B *21/04*

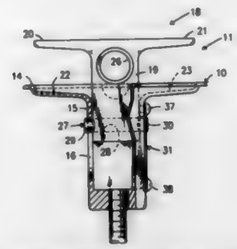
U.S. Cl. 114—218 **5 Claims**

1. A retractable boat cleat assembly having a depressed position and an exposed position and being moveable between such positions comprising,

a) a base plate having a flange portion for securing to a boat hull and a hollow body portion depending from said flange portion,

b) said body portion having a pair of laterally opposed vertically extending slots therein,

c) a cleat having opposed laterally extending cleat legs and a shank portion extending downwardly from said legs with said shank portion being received in said body portion for relative reciprocal movement upon manual manipulation,



d) pin means having opposed ends and being carried by said shank portion and with the opposed ends thereof extending guidingly into said vertically extending slots,

e) and a resilient member carried by said body portion and overlying one of said vertically extending slots and being engageable with said pin means at all times,

f) said resilient member having a pair of opposed cam surfaces thereon with one surface resiliently engaging said pin means when said cleat is in its exposed position and the other surface resiliently engaging said pin means when said cleat is in its depressed position.

5,301,628

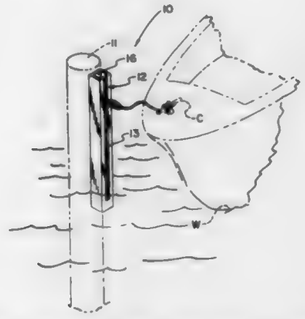
BOAT DOCKING POST

Georges B. Daskalides, 860 Sand Pine Dr. NE., St. Petersburg, Fla. 33703

Filed Feb. 8, 1993, Ser. No. 14,741

Int. Cl.[5] B63B *21/00*

U.S. Cl. 114—230 **2 Claims**



1. A boat docking post for securement to a mooring post, wherein the docking post comprises,

a tubular housing, the tubular housing including a housing rear wall arranged for securement to the mooring post, and a housing front wall, with the housing including a housing floor plate at a first distal end of the housing, and a housing entrance opening directed into the housing from an uppermost end of the housing, with the uppermost end oriented at a second distal end of the housing, and

the housing having an elongate longitudinally aligned cavity directed into the housing from the entrance opening, where the housing is symmetrically oriented about a housing axis, and

the housing having a front wall slot directed through the front wall extending from the uppermost end in a spaced relationship relative to the floor plate, and

a first tube complementarily and slidably received within the cavity, wherein the first tube includes a securement ring, the securement ring extending from the first tube through the front wall and projecting beyond the housing front wall, and

a second tube positioned in adjacency to the first tube below the first tube, and a third tube positioned below the second tube in adjacency to the second tube, and

the second tube is positioned intermediate the first tube and the third tube, and the third tube is buoyant to permit raising and lowering simultaneously of the first tube and the second tube with the third tube, and

the second tube includes a second tube internally threaded bore, the third tube having a third tube internally threaded bore, and an externally threaded adjuster rod directed rotatably from the second tube threaded bore and the third tube threaded bore, wherein the second tube threaded bore and the third tube threaded bore are of reverse hand threading relative to one another, with the threaded adjustor rod threadedly received within the second threaded bore and the third threaded bore to permit selective adjustment of the second tube relative to the third tube.

5,301,629

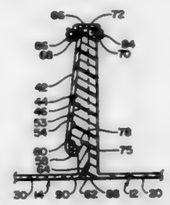
SEGMENTED BOAT

Norman F. Kleyh, and Kathleen C. Kleyh, both of 155 E. Kellogg Rd., Bellingham, Wash. 98226

Filed Sep. 25, 1992, Ser. No. 950,951

Int. Cl.[5] B63B *7/04*

U.S. Cl. 114—352 **13 Claims**



1. A segmented boat, comprising:

at least first and second sections, each said section having a transversely extending bulkhead at an end thereof; and

engagement means for selectively locking said transversely extending bulkheads together in face-to-face abutment along a substantially common plane so as to assemble said boat, said engagement means comprising:

(a) a plurality of vertically elongate lugs formed on a first said bulkhead and extending substantially the full height thereof, each said lug having:

(i) an outer face which slopes downwardly and outwardly at an inclined angle relative to said common plane, and

(ii) first and second vertically extending edge faces which border said outer face and extend at a generally perpendicular angle to said common plane,

a lower edge of each said lug being undercut so that a downwardly and outwardly extending flange portion is formed thereon, and said plurality of lugs being separated laterally by at least one flat area on said bulkhead which extends generally in the direction of said common plane; and

(b) a plurality of vertically elongate recesses formed in a second said bulkhead and extending substantially the

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full height thereof for receiving said lugs on said first bulkhead, each said recess having:

(i) an inner face which slopes downwardly and inwardly at said inclined angle relative to said common plane, and

(ii) first and second vertically extending edge faces which border said inner face and extend at a generally perpendicular angle to said common plane,

a lower end of said recess having an upwardly extending lip so that a downwardly and inwardly extending socket portion is formed therein for receiving a said flange portion of a said lug, and said plurality of recesses being separated laterally by at least one flat area on said bulkhead which extends generally in said direction of said common plane;

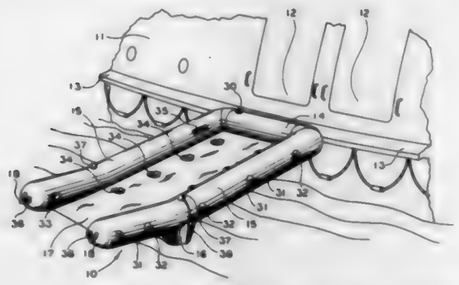
whereby said first and second sections of said boat may be joined by moving said first bulkhead toward said second bulkhead and downwardly until said flat areas on said first and second bulkheads come into abutment generally along said common plane, so that said flange portions on said lugs enter into said socket portions in said recesses in locking engagement therewith so as to prevent separation of said bulkheads in a longitudinal direction, and said vertically extending edge faces of said lugs and said recesses are positioned in abutting engagement so as to prevent motion between said bulkheads in a side-to-side direction.

5,301,630

INFLATABLE RESCUE RAMP

David E. Genovese, Peninsula, Ohio, and John F. Ryan, III, Houston, Tex., assignors to SMR Technologies, Inc., Sharon Center, Ohio

Filed Feb. 5, 1993, Ser. No. 16,144
Int. Cl.[5] B63B *23/00*
U.S. Cl. 114—375 20 Claims



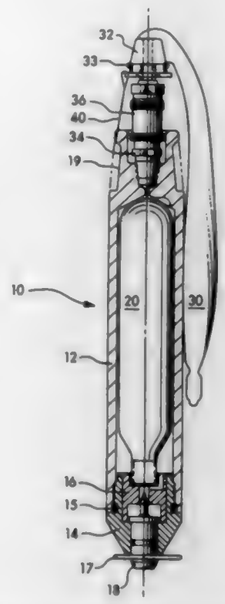
1. A rescue ramp for a watercraft comprising a laterally extending first inflatable tube member, means to at least temporarily connect said first tube member to the watercraft, second spaced inflatable tube members having one end fluidly connected to said first tube member and extending generally longitudinally away from said first tube member, a third tube member fluidly connected between and below said second tube members near the other end thereof and adapted to be positioned in the water when said first tube member is connected to the watercraft, and ramp means connected to and between said first and second tube members, said ramp means being the only connection between said first and second tube members at said other end thereof so that a person may readily move onto said ramp means from the water and thereafter may traverse said ramp means from the water to the watercraft or from the watercraft to the water.

5,301,631

BALLOON EMERGENCY LOCATING DEVICE

John K. Vining, 5075 S. Evanston St., Aurora, Colo. 80015

Filed Apr. 21, 1993, Ser. No. 50,867
Int. Cl.[5] B64B *1/50*
U.S. Cl. 116—210 12 Claims



10. An emergency locating device comprising:

a cartridge pressurized with a quantity of a lighter-than-air gas;

a substantially cylindrical housing having an interior cavity for containing said cartridge and a lower end, with a portion of said housing forming a spool to store a quantity of line;

an inflatable balloon made of metallized mylar and having an opening;

a fitting for removably attaching said balloon to said housing having:

(a) an upper segment secured to said opening of said balloon having a passageway with a one-way valve allowing gas to flow into said balloon, but preventing gas from escaping from said balloon;

(b) a lower segment secured to said housing having a passageway in communication with said housing cavity allowing gas to flow from said cartridge within said housing through said upper segment into said balloon; and

(c) a translatable sleeve for disconnecting said upper segment from said lower segment of said fitting;

a line having an upper end for tethering said balloon with the remainder of said line being wound around said spool portion of said housing; and

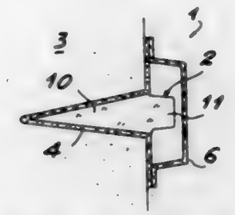
an actuator pin with a pointed upper end adjacent said cartridge and a lower end slidably extending vertically downward through said lower end of said housing, said upper end of said actuator pin puncturing said cartridge to release said gas therein when said lower end of said actuator pin is depressed.

5,301,632

CONTROL SAMPLE OF A DEEP-FROZEN PRODUCT OR A PRODUCT, WHOSE KEEPING TEMPERATURE MUST BE CHECKED

André Cayol, Thourotte; Jean-Pierre Pain, Le Meux, and Jean-Luc Berry, 7, Chemin des Vignes, 27650 Le Mesnil-sur-L'Estree, all of France, assignors to Jean-Luc Berry, Le Mesnil-sur L'Estree and Gradient, Compiegne Cedex, both of France

Continuation of Ser. No. 720,476, Jul. 9, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,677
Claims priority, application France, Jan. 9, 1989, 89 00160
Int. Cl.[5] G01K *1/02, 11/06*
U.S. Cl. 116—217 6 Claims



1. Check sample for a deep-frozen product or a product, whose keeping temperature has to be checked, comprising:

a case sealed in an inviolable manner, which is at least partly transparent, which has a predetermined internal shape and which has a meltable object located in said case having a predetermined shape, said object being at least partly different from the internal shape of the case and having a volume smaller than the internal volume of the case, said object having one of a melting point equal to or below the thawing temperature of said product and a melting temperature equal to or below the keeping temperature of said product, the predetermined shape of said object being impossible to be reconstituted following even a partial heating or thawing of the product resulting in partial melting of said object and despite subsequent product refreezing or cooling conditions, wherein said case comprises a first part which is located within the product and is thus invisible and integral with the product and a second visible part integral with the first part,

said object comprising a first portion filling the first invisible part of the case and a second portion having a shape which is at least partly different from the internal shape of the second visible part of the case, said second part of the case having at least one transparent window for rendering said object visible wherein said object is filled in said first part and extends into said second part.

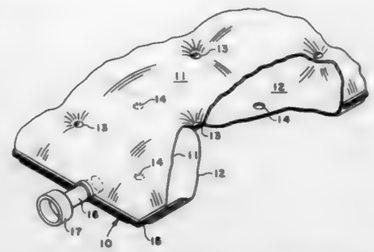
5,301,633

FLEXIBLE BLADDER FOR SOAKING THE EARTH AND COLLECTING EARTHWORMS AND METHOD OF USE

Thomas G. Lloyd, 264 E. Wymoning St., St. Paul, Minn. 55107

Filed Jul. 19, 1993, Ser. No. 94,498
Int. Cl.[5] A01K *67/00*
U.S. Cl. 119—6.7 9 Claims

1. A device for causing earthworms to migrate to the earth's surface for easy collection, said device comprising a flexible, substantially flat and thin bladder capable of being laid in flat condition on the earth's surface and having a top wall and a bottom wall of flexible sheet material defining the top and bottom limits of the bladder interior, said bladder having a maximum interior thickness between said top wall and bottom wall of not over about 5 centimeters when said bladder is filled with water after being laid in flat condition on the surface of the earth, said bladder having area dimensions greater than about 1 meter in all directions transverse to said thickness and not greater than about 4 meters in all directions transverse to said thickness, said maximum thickness of said bladder being limited by the fact that said top wall and said bottom wall are held against greater spacing from each other than about 5 centimeters by a pattern of spaced connections therebetween, at least said bottom wall being opaque to block out light under it when it is placed adjacent the earth, there being a plurality of openings substantially uniformly distributed through said bottom wall for the escape of water from said bladder to earth underlying said bottom wall, and a water entrance conduit extending from the interior of said bladder to the exterior thereof and functioning as a conduit for supplying water to said bladder.

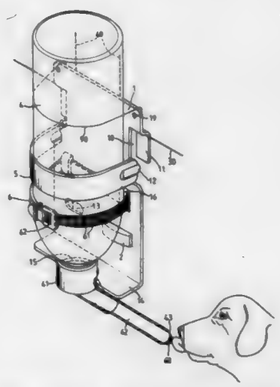


5,301,634

ANIMAL FEEDER HAVING A MOUNTING DEVICE

Ying-Kuan Ho, 22, Nung 18, Lane 75, An Ping Road, Tainan, Taiwan

Filed Feb. 17, 1993, Ser. No. 18,880
Int. Cl.[5] A01K *39/02*
U.S. Cl. 119—18 4 Claims



1. An animal feeder comprising a mounting device for mounting said animal feeder to a horizontal wire member of an animal house, said mounting device comprising a board including a pair of flaps extended rearward and downward therefrom for engagement with said horizontal wire member of said animal house, a pair of ears extended rearward from said board, and an elastic belt including two ends engaged with said ears for clamping said animal feeder to said board, said board including one oblong hole for aligning with a vertical wire member of said animal house, a bolt having a groove formed therein for engagement with said vertical wire member and a nut threadedly engaged with said bolt for further fixing said board to said animal house.

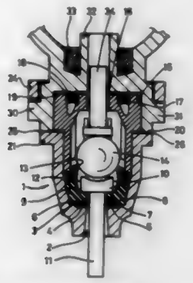
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,635

VALVE FOR DRINKERS AND AUTOMATIC DRINKER PROVIDED THEREWITH

Antonio Rovira Badia, and Jose Franco Tarazaga, both of Vilafranca del Penedés, Spain, assignors to Tecnica E Innovaciones Ganaderas, S.A. (TIGSA), Barcelona, Spain

Filed Apr. 10, 1992, Ser. No. 866,056
Claims priority, application Spain, Apr. 12, 1991, P9100934; Apr. 12, 1991, P9100935; Mar. 27, 1992, P9200660
Int. Cl.[5] A01K *39/02*
U.S. Cl. 119—72.5 4 Claims



1. A valve for drinkers comprising:
a body member having a lower narrowing portion, said lower narrowing portion having a lower passage extending therethrough;
a moveable push member having a head portion within said body and an extending portion extending from said head portion through said lower passage and out of said body;
a lower annular gasket arranged in said lower narrowing portion to form a seat for said head portion, said head portion normally resting on said lower annular gasket, said lower annular gasket having an inner edge through which said extending portion projects;
an upper annular gasket disposed above said lower annular gasket;
a valve member engageable with said upper annular gasket to restrict flow of fluid through said lower passage of said valve, said push member being moveable towards said valve member to disengage said valve member from said upper annular gasket to permit fluid flow through said valve; and
an annular metallic member having a sleeve, said metallic member disposed between said lower annular gasket and said lower narrowing portion with said sleeve disposed in a peripheral recess in said inner edge of said lower annular gasket for protecting said body and said lower annular gasket.

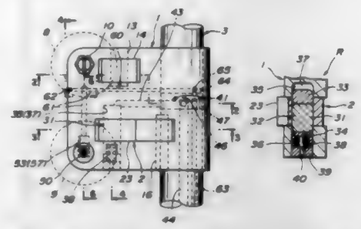
5,301,636

VALVE OPERATING MECHANISM OF INTERNAL COMBUSTION ENGINE

Makoto Nakamura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jul. 16, 1993, Ser. No. 92,108
Claims priority, application Japan, Sep. 17, 1992, 4-248237
Int. Cl.[5] F01K *1/34*
U.S. Cl. 123—90.16 14 Claims

1. In an internal combustion engine having at least two intake or exhaust valves for each cylinder,
a valve operating mechanism for operating said two valves, which comprises:
first and second cams provided about a common cam shaft;
a main rocker arm which pivots about a rocker shaft in accordance with a rotation of said first cam;
a sub-rocker arm which pivots relative to said main rocker arm in accordance with a rotation of said second cam;
a rocker arm coupling mechanism which, under a given operation condition of the engine, couples tightly said main rocker arm and said sub-rocker arm to cause said main rocker arm to pivot in accordance with the rotation of said second cam;
first and second tappet means held by said main rocker arm to press tops of said two valves in response to the pivoting movement of said main rocker arm, said second tappet means being detachably connected to said



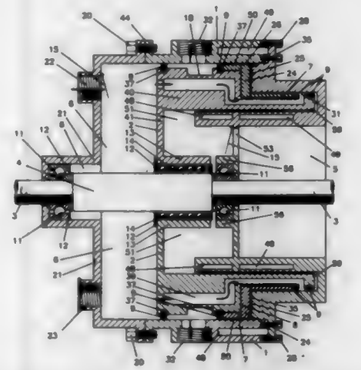
main rocker arm so that, under a certain condition, said second tappet means fails to transmit the pivoting movement of said main rocker arm to the associated valve; and
a tappet locking mechanism which, under a given operating condition of the engine, locks said second tappet means to said main rocker arm thereby to ensure the transmission of the pivoting movement of said main rocker arm to the associated valve.

5,301,637

ROTARY-RECIPROCAL COMBUSTION ENGINES

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Continuation-in-part of Ser. No. 831,792, Feb. 5, 1992, Pat. No. 5,156,115, which is a division of Ser. No. 560,868, Jul. 31, 1990, Pat. No. 5,152,257. This application Oct. 5, 1992, Ser. No. 956,269
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—45 A 24 Claims



1. An internal combustion engine of the rotary-reciprocal type comprising, a housing formed with a peripheral wall with side walls which contains a cylindrical inner wall attached to one of said side wall at 90°, inner surface of said peripheral wall being cylindrical, a rotor having a peripheral circular piston having equally spaced wave-shaped side wall with inner circular piston wall projection in front and below the piston waves, rotatably and reciprocal mounted in said housing, a shaft for said rotor, extending through said side walls and has means for the rotor to reciprocate on shaft and shaft rotates with rotor, said housing having a lateral and peripheral circular cylinder

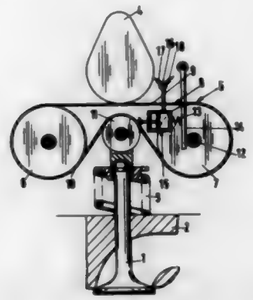
chamber having equally spaced arcuate recesses extending into said cylinder chamber's side wall and below the said arcuate recesses the peripheral wall and the inner cylindrical wall protrude out in front to form a chamber, the number and shape of recesses being equal to the number and shape of waves on the piston's side wall and the number being 2 or more, piston's waves movably mounted in each of said arcuate recesses respectively, the rotor's piston's peripheral and inner circular surface remaining in sealing contact with the inner peripheral wall, the peripheral surface of the circular inner wall at all times and any seal on the crest of waves of the piston remaining in sealing contact with the inner wall's peripheral surface, peripheral housing wall's inner surface and arcuate recesses of said side wall and forming variable volume cylinder chambers between the rotor's piston's waved side wall and said cylinder chamber walls, said housing being provided with means admitting a gaseous mixture communicating with said cylinder chambers, means discharging combustion products communicating with a said cylinder chambers and ignition means communicating with said cylinder chambers, means to guide rotor's rotary and reciprocal motions in said housing, said cylinder chambers of varying sizes enabling a compression of a gaseous mixture to take place after suction, ignition of said compressed gaseous mixture and expansion of said chambers due to the pressure of said combustion products.

5,301,638

ACTUATING ARRANGEMENT FOR A LIFT VALVE

Gerhard Eggers, Isenbüttel, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 27, 1993, Ser. No. 97,875
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1992, 4226357
Int. Cl.[5] F01L *1/12*
U.S. Cl. 123—90.16 5 Claims



1. An actuating arrangement for a lift valve comprising force-transmitting means including a flexible endless tension member interposed between a cam and a valve and at least two support members supporting the flexible endless tension member so as to provide at least two spaced segments, one of the segments being in force-transmitting relation to a cam and the other segment being in force-transmitting relation to a valve.

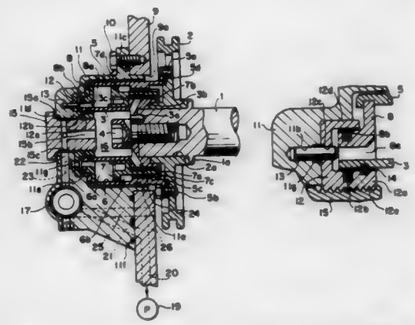
5,301,639

VALVE TIMING CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Osamu Satou, Obu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 25, 1993, Ser. No. 81,095
Claims priority, application Japan, Jun. 26, 1992, 4-169670
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 17 Claims

1. A rotational phase adjustment device for adjusting a rotational phase of an input shaft and an output shaft, comprising:
a stationary housing;
a tubular input member adapted for rotation with the input shaft;
a tubular output member adapted for rotation with the output shaft, said output member being coaxial with said input member, and there being formed an annular space between said input member and said output member;
a phase adjustment mechanism including a piston mounted within said annular space for movement in an axial direction of said input and output members, a hydraulic chamber being formed on one side of said piston in its axial direction, and said phase adjustment mechanism further including means for rotating said input member and said



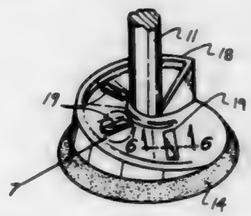
output member relative to each other in accordance with the movement of said piston in the axial direction;
a ring plate including an annular portion held in contact with an inner surface of said housing and fixed to said housing, and a pair of cylindrical rims extending axially from said annular portion;
a first oil seal provided between one of said pair of rims of said ring plate and said input member;
a second oil seal provided between the other rim of said ring plate and said output member; and
oil passage means provided in said housing and said annular portion of said ring plate and communicated with said hydraulic chamber.

5,301,640

ENGINE VALVE

Joseph M. Barranco, Jr., 127 Wood Dale Dr., Ballston Lake, N.Y. 12019

Filed May 24, 1993, Ser. No. 65,378
Int. Cl.[5] F01L *3/06*
U.S. Cl. 123—188.03 6 Claims



1. An engine valve, comprising,
a valve stem, the valve stem including a valve head fixedly and orthogonally mounted to the valve stem, the valve head including a valve head bottom wall and a valve head helical top wall, the top wall arranged concentrically about the valve stem, with the valve head further including a conical side wall portion, with the top wall including

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a top wall first end in contiguous communication with the conical side wall portion, and a top wall second end radially directed and in intersection with the valve stem, with the top wall second end arranged in a spaced relationship relative to the conical side wall portion.

5,301,641

INTERNAL COMBUSTION ENGINE

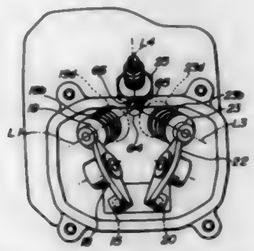
Hiroshi Kasai, Tokyo; Mitsuo Shiga, Saitama, and Takashi Ihara, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,000

Claims priority, application Japan, Nov. 6, 1991, 3-318479; Nov. 6, 1991, 3-318480

Int. Cl.[5] F02F *1/24*

U.S. Cl. 123—193.5 **11 Claims**



1. An air-cooled internal combustion engine comprising:
- a cylinder block having a cylinder having a central longitudinal axis;
- a piston slidably disposed in said cylinder;
- a cylinder head mounted on said cylinder block and having a partly spherical combustion chamber aligned with said cylinder;
- an intake valve mounted in said cylinder head and having a valve head disposed in said combustion chamber;
- an exhaust valve mounted in said cylinder head and having a valve head disposed in said combustion chamber; and
- a spark plug mounted in said cylinder head and having electrodes disposed in said combustion chamber;

said intake valve, said exhaust valve, and said spark plug being oriented radially outwardly from said axis of the cylinder and angularly spaced from each other by distances that are progressively increased in a direction away from said cylinder head relative to said axis of the cylinder.

5,301,642

WARMING-UP PROMOTING APPARATUS OF INTERNAL COMBUSTION ENGINE

Ryuichi Matsushiro, Okazaki; Toshihiko Igashira, Toyokawa; Shigeo Sasse, Nishio, and Masao Oobori, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

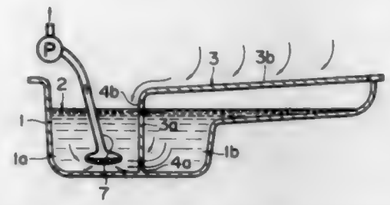
Filed Jul. 2, 1993, Ser. No. 84,953

Claims priority, application Japan, Jul. 6, 1992, 4-178500

Int. Cl.[5] F02F *7/00*; F02N *17/02*

U.S. Cl. 123—196 AB **10 Claims**

1. A warming-up promoting apparatus of an internal combustion engine comprising:
- an oil pan in which oil is stored;
- a partition member disposed in said oil pan of said internal combustion engine and including a substantially vertical wall and a slightly inclined ceiling, said substantially vertical wall serving to divide an interior space of said oil pan into a main chamber and an antechamber, and said slightly inclined ceiling serving to cover a top of said antechamber;
- an oil pump having a draft tube which is opened in said main chamber at a position adjacent to a bottom of said main chamber, said oil pump being for pumping the oil from said oil pan to said engine;
- a first hole means provided in a lower region of said substantially vertical wall of said partition member in the vicinity of an opening of said draft tube for making said main chamber and said antechamber communicate with each other constantly, an effective area of said first hole means being small enough to prevent the oil from being interchanged between said antechamber and said main chamber through said first hole means when a temperature of oil is low; and
- a second hole means provided in an upper region of said substantially vertical wall of said partition member below an oil level and making said main chamber and said antechamber communicate with each other constantly, an effective area of said second hole means being large enough to permit the oil to be interchanged between said antechamber and said main chamber through said second hole means.



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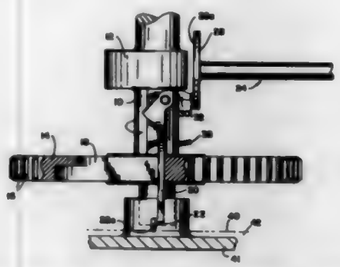
LOW OIL SENSOR USING COMPRESSION RELEASE TO AFFECT ENGINE OPERATION

Gary J. Garcyalay, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed May 5, 1993, Ser. No. 57,673

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 D **24 Claims**



1. An internal combustion engine having a combustion chamber and having a crankcase containing oil, comprising:
- low oil sensing means for sensing that the oil in said crankcase is below a predetermined level; and
- compression release means, interconnected with said low oil sensing means, for releasing the compression pressure in said combustion chamber to limit the power output of said engine when said low oil sensing means senses that the oil in said crankcase is below said predetermined level.

5,301,644

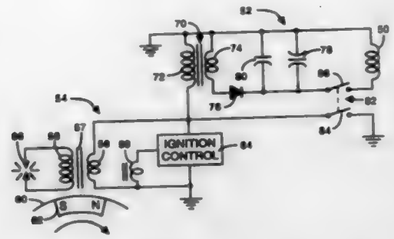
FUEL SHUT-OFF MECHANISM FOR INTERNAL COMBUSTION ENGINES

Jaroslav J. Olmr, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wash.

Filed Jun. 16, 1993, Ser. No. 78,526

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 DB **8 Claims**



1. In an internal combustion engine having an ignition system for igniting fuel in a cylinder, the improvement comprising:
- a valve through which the fuel flows between a fuel source and the cylinder;
- an electromagnetic coil which when energized closes said valve; an electricity generating mechanism driven by the engine;
- a capacitor coupled to said electricity generating mechanism to store electricity while the engine is running; and
- a kill switch that is closed to shut off the engine and when closed coupling said capacitor to said electromagnetic coil which thereby activates said valve to block fuel from flowing to the engine.

5,301,645

VEHICLE DRIVE ASSEMBLY WITH AUXILIARY ENGINE

Wilfried Ball, Dingolfing, and Reinhold Ficht, Kirchseeon, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

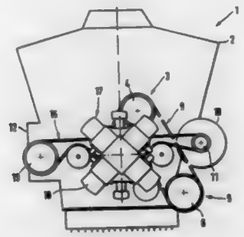
PCT No. PCT/EP91/00289, § 371 Date Jan. 6, 1992, § 102(e) Date Jan. 6, 1992, PCT Pub. No. WO91/14088, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 14, 1991, Ser. No. 784,432

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1990, 4007438

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 R **16 Claims**



1. A vehicle drive assembly, comprising a driving engine, an auxiliary engine and auxiliary assemblies selectively driven by a shiftable clutch by one of the engines,
- wherein, in a clear frontal area of the driving engine, a single-bank radial engine configured as an internal-combustion engine is the auxiliary engine.

5,301,646

THROTTLE CONTROL APPARATUS

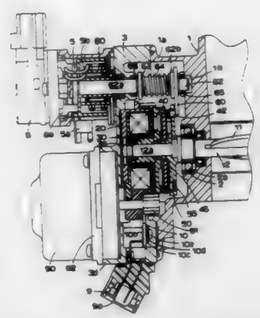
Shoichi Doi, Kariya; Masaru Shirazu, Toyota; Mitsuo Kikkawa, Anjo; Shinichiro Tanaka, Mishima, and Keiji Aoki, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Dec. 21, 1992, Ser. No. 994,319

Claims priority, application Japan, Dec. 27, 1991, 3-359593; Dec. 27, 1991, 3-359614

Int. Cl.[5] F02D *11/10*

U.S. Cl. 123—399 **16 Claims**

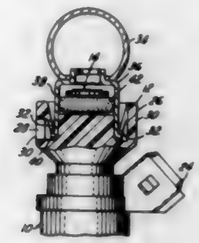


1. A throttle control apparatus for an internal combustion engine, comprising:
- an accelerator operating mechanism;
- a driving source for producing a driving force in accordance with an amount of operation of said accelerator operating mechanism;
- a throttle valve disposed in a housing mounted on said internal combustion engine;
- a throttle shaft rotatably mounted on said housing for supporting said throttle valve, said throttle shaft having at least an end portion extending out of said housing;
- a supporting member secured to said end portion of said throttle shaft;
- a rotor rotatably mounted on said end portion of said throttle shaft and positioned at a certain position thereof to prevent an axial movement of said rotor on said throttle shaft, said rotor being connected with said driving source to be rotated by said driving force;
- a movable member mounted on said throttle shaft between said rotor and said supporting member movably in the axial direction of said throttle shaft;
- a connecting member for connecting said movable member with said support member, and biasing said movable member toward said supporting member;
- an electromagnetic coil secured to said housing for facing said rotor, said electromagnetic coil attracting said movable member toward said rotor, and connecting said movable member and said rotor when said electromagnetic coil is energized;
- an engaging member having a base end mounted on said movable member for supporting said engaging member rotatably within a predetermined angle range, and having a free end extending in parallel with the axis of said throttle shaft; and
- a driving member mounted rotatably about an axis parallel with the axis of said throttle shaft, and having an end face engageable with said engaging member perpendicularly to the axis of said throttle shaft, said driving member being connected with said accelerator operating mechanism to be rotatable in response to operation of said accelerator operating mechanism, and said engaging member having an axial length engageable with said end face of said driv-

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ing member only when said movable member is positioned at the side of said supporting member.

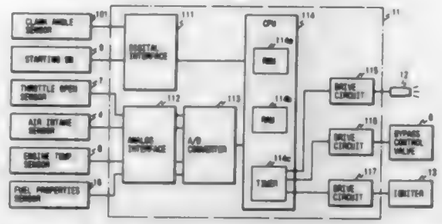
5,301,647
FUEL INJECTOR ATTACHMENT CLIP
Jack R. Lorraine, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.
Filed Jan. 14, 1993, Ser. No. 76,829
Int. Cl.[5] F02M *55/02*
U.S. Cl. 123—470 **20 Claims**



1. A fuel injector for injecting fuel into an engine for entrainment with air to form a combustible mixture that is combusted internally of the engine, said fuel injector comprising a body having a nozzle at one end via which fuel is injected from the fuel injector and an inlet at another end via which the fuel injector receives fuel, an attaching clip disposed on said body in circumferentially bounding relationship to said inlet for attaching the fuel injector to a socket which has a radially outwardly directed lip and is adapted to receive said inlet in a sealed manner for introducing fuel into the fuel injector, said attaching clip comprising a cylindrical wall extending axially from said body, said cylindrical wall comprising one or more apertures each extending radially through said wall and having a limited circumferential span, and at each such aperture, a catch that has a proximal portion on said wall and that extends from a circumferentially extending edge portion of the corresponding aperture radially inwardly and axially toward said body to terminate at a distal portion that is spaced radially inwardly and axially toward said body from said proximal portion for lodging behind the socket lip when the fuel injector is clipped to the socket by said attaching clip, and each said catch having a circumferential span that lies within the circumferential span of the corresponding aperture.

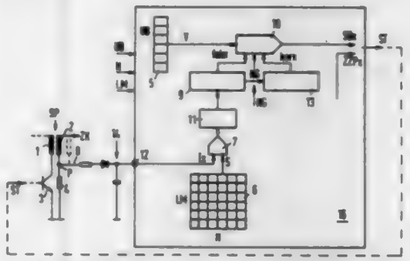
5,301,648
ELECTRONIC CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE
Masanobu Uchinami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1992, Ser. No. 986,808
Claims priority, application Japan, Dec. 9, 1991, 3-324280
Int. Cl.[5] F02D *43/04*
U.S. Cl. 123—491 **4 Claims**

1. An electronic control device for an internal combustion engine comprising:
- a fuel properties sensor for detecting fuel properties and fuel temperature in the internal combustion engine;
- calculation and storage means for calculating fuel properties detected by said fuel properties sensor, and correcting said fuel properties according to the fuel temperature detected by said fuel properties sensor, then calculating and storing at least one of a filtered value and an average value according to said corrected fuel properties; and
- control means responsive to the value stored in said calculation and storage means for correcting at least one of a fuel



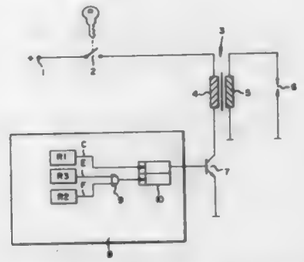
amount and an air amount fed to the engine when and just after the engine is started.

5,301,649
IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES
Erwin Achleitner, Regensburg; Hellmut Freudenberg, Pentling; Manfred Wier, Wenzenbach, and Thomas Elbe, Lasber, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 11, 1992, Ser. No. 989,229
Claims priority, application European Pat. Off., Dec. 17, 1991, 91121608.3
Int. Cl.[5] F02P *9/00*
U.S. Cl. 123—609 **10 Claims**



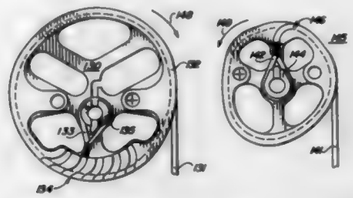
1. An ignition device for internal combustion engines, comprising:
- at least one ignition coil with separate primary and secondary windings, said primary winding having a primary current circuit, said secondary winding having a first terminal leading to a spark plug, and said secondary winding having a second terminal;
- a common point connected to said second terminal of said secondary winding;
- a sensor connected between said common point and a negative pole of a supply voltage source;
- a measuring line connected to said common point;
- a peak value rectifier connected in said measuring line; and
- a microprocessor having an ignition control circuit connected to said measuring line, said ignition control circuit including:
- a first memory region for storing pilot control values for a closing duration of said primary current circuit of said ignition coil, the pilot control values being associated with at least one operating parameter;
- a second memory region for storing command values for a peak value of an ignition current, the command values being dependent on at least one operating variable of an engine;
- a first computation circuit being connected to said measuring line for receiving an actual value of the peak ignition current value stored in said peak value rectifier and being connected to said second memory region for receiving the command value, and said first computation circuit calculating an adaptation value associated with a difference between the command value and the actual value
- a third memory region connected to said first computation circuit for buffer-storing the adaptation value; and
- a second computation circuit connected to said third memory region and to said first memory region for varying the pilot control value as a function of the calculated adaptation value and for supplying a varied pilot control value being equal to the closing duration.

5,301,650
IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES
Josef Neumayer, Bad Abbach, and Werner Gorski, Traunstein, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany
Filed Dec. 17, 1992, Ser. No. 992,149
Claims priority, application European Pat. Off., Dec. 17, 1991, 91121610
Int. Cl.[5] F02P *3/055*
U.S. Cl. 123—609 **1 Claim**



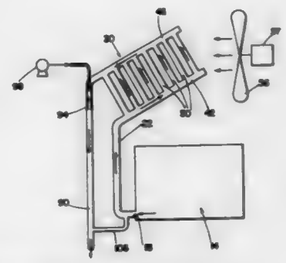
1. In an ignition device for internal combustion engines having a monitoring device for a closing duration of a primary current circuit of at least one ignition coil, being set into motion simultaneously with an onset of closure of the primary current circuit and opening the primary current circuit again after a monitoring duration has elapsed, in the event that the circuit is still supposed to be closed at that time, the improvement comprising:
- means for adjusting the monitoring duration as a function of the closing duration to be monitored.

5,301,651
THREE WAY WHEEL FOR COMPOUND ARCHERY BOW
Brian W. LaBorde, and James R. Allshouse, both of Tucson, Ariz., assignors to Paul E. Shepley, Jr., Tucson, Ariz.
Filed Aug. 20, 1992, Ser. No. 932,670
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—25.6 **16 Claims**



1. In a compound archery bow having a handle, first and second limbs each having a first end connected to said handle, an axle connected to a second end, and a wheel having a hub mounted on said axle, and lacing connecting said wheels with said first and second limbs, the improvement comprising:
- a first post on one side of the hub of each wheel and a second post on the opposite side of the hub of each wheel, said first post including a first hole and said second post including a second hole collinear with said first hole and extending through said hub; and
- said lacing being attached to at least one of said posts on each wheel.

5,301,652
CONDENSING APPARATUS FOR STEAM COOKING DEVICE
Thomas J. Willis, Solon, and James P. Bedford, Willoughby, both of Ohio, assignors to Cleveland Range, Inc., Cleveland, Ohio
Filed Jul. 31, 1991, Ser. No. 738,670
Int. Cl.[5] A21B *1/08*
U.S. Cl. 126—20 **3 Claims**



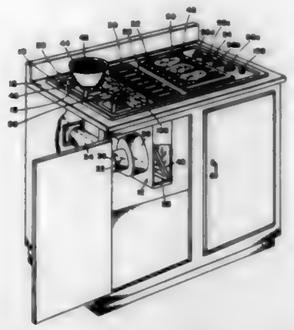
1. A steam cooking device, comprising:
- a cooking chamber adapted to receive steam;
- a condensing apparatus spaced from said-cooking chamber and adapted to receive steam from said-cooking chamber, said condensing apparatus comprising means for collecting steam; fan means in association with said collecting means, said fan means directing a flow of air toward said collecting means to condense steam in said collecting means; and drain means in association with said collecting means for draining condensed steam from said collecting means, wherein said drain means comprises a venturi tube and an aperture upstream of said venturi tube, said aperture communicating with a compressed air source.

5,301,653
GAS RANGE HAVING DOWN DRAFT WITH AUTOMATIC SHUTOFF DURING IGNITION
Michael D. Gerdes; Richard T. Jahr; William E. Nothe; Calvin J. Thomas, and Richard A. Wrege, all of Florence, S.C., assignors to Caloric Corporation, Florence, S.C.
Filed Jan. 25, 1993, Ser. No. 7,922
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—39 E **14 Claims**

1. A gas fueled appliance comprising:
- a gas burner;
- an electrical igniter for igniting said gas burner;
- means for actuating said electrical igniter;

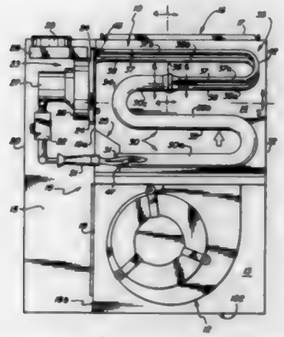
VOL 1161 ISS 2 AP 12 1994 UMI

exhaust means for forcing a flow of air past said gas burner to remove cooking effluents; and



means responsive to actuation of said igniter for disabling said exhaust means.

5,301,654
HEAT-EXCHANGER ESPECIALLY FOR FORCED AIR FURNACES
Richard H. Weber, III, Lafayette; Paul T. Richardson, Indianapolis; David E. Langenkamp, Lafayette, and Gerald K. Gable, Carmel, all of Ind., assignors to Consolidated Industries Corp., Lafayette, Ind.
Filed Jul. 29, 1992, Ser. No. 922,073
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 R **13 Claims**

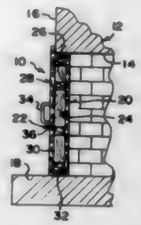


1. In a furnace for a forced air heating system having a blower chamber having a return air inlet and communicating with a heat exchange chamber having a heated air outlet to accommodate the movement of air in a primary path from the return air inlet through the heat exchange chamber to the heated air outlet, a heat exchanger dimensioned and configured to have combustion product flow therethrough and located in the heat exchange chamber, the improvement comprising:

at least one tube pack assembly comprising a single primary fire tube having an inlet and an outlet and extending transversely to the primary path and having at least one reverse bend, the tube pack assembly further comprising a plurality of secondary tubes exclusively associated in combustion product flow communication with the primary fire tube, each secondary tube having an inlet and an outlet and extending transversely to the primary path and having at least one reverse bend; and

a transition cap coupled to the outlet of the primary fire tube and to each inlet of the associated secondary tubes to connect the primary fire tube in combustion product flow communication with its associated secondary tubes.

5,301,655
FIREPLACE DRAFT ELIMINATOR
Anthony E. Licata, P.O. Box 177, Blakeslee, Pa. 18610-0177
Filed May 24, 1993, Ser. No. 65,490
Int. Cl.[5] F24B *1/192*
U.S. Cl. 126—547 **4 Claims**



1. A fireplace draft eliminator for a fireplace having an opening in a front face above a hearth, comprising:

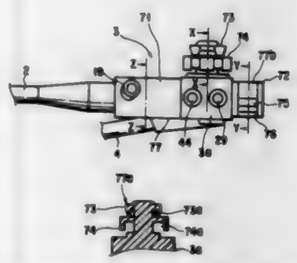
a) a rear plate being of the same size and shape as the opening, so as to fit into the opening;

b) an internal support frame being slightly smaller in size and shape as said rear plate and attached to a front surface of said rear plate;

c) a resilient gasket mounted on the periphery of said internal support frame, in which said internal support frame and said gasket together are of the same size and shape as said rear plate, so as to also fit into the opening, with said gasket forming a seal about the opening and the hearth; and

d) a front plate of generally the same shape as but of greater marginal extent in height and width than the opening, said front plate attached to a front surface of said internal support frame, so that said front plate can cover the opening and rest flat against the front face of the fireplace, to eliminate the draft through the opening when the fireplace is not being used.

5,301,656
ENDOSCOPE
Daisaku Negoro; Hisao Yabe; Hideo Ito; Yoshihiro Iida; Ichiro Nakamura; Akira Suzuki; Yoshinao Oaki, and Koji Koda, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1992, Ser. No. 864,490
Claims priority, application Japan, Apr. 19, 1991, 3-116976
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **12 Claims**



1. An endoscope having a body which, when water-washed, dries in a brief period of time to positively prevent contamination of the endoscope which may be caused by germs in a pool of water on a surface of the endoscope, the endoscope comprising:

a control section positioned on an operator side;

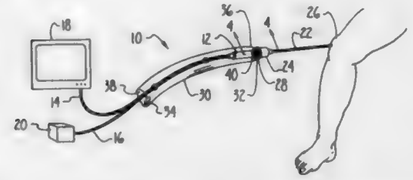
operation knob means projecting from the control section and having a plurality of recesses on an outer surface thereof;

an insertion section insertable into at least one of a human body cavity and a duct for medically treating the at least one of the human body cavity and duct;

the operation knob means when operated, enabling a distal end portion of the insertion section to be bent; and wherein

the operation knob means is so oriented as to have the plurality of recesses all opening substantially in one direction.

5,301,657
SLEEVE FOR MAINTAINING THE STERILITY OF AN ARTHROSCOPIC PROCEDURE
W. Michael Lafferty, Leucadia, Calif.; George H. Middle; Algis R. Banys, both of Reno, Nev., and Daniel S. Kline, Carlsbad, Calif., assignors to Citation Medical Corporation, Reno, Nev.
Continuation-in-part of Ser. No. 650,066, Feb. 4, 1991, Pat. No. 5,188,093. This application Aug. 21, 1992, Ser. No. 932,957
Int. Cl.[5] A61B *1/06, 17/06*
U.S. Cl. 128—6 **18 Claims**



1. A device for maintaining the sterility of an arthroscopic video camera comprising:

a thread on said video camera;

a flexible elongated shroud having a hollow tubular configuration with an open proximal end and an open distal end;

an annular collar connected to said open proximal end of said shroud, said collar having a thread engagable with said thread on said video camera, wherein said shroud is extendable over the length of said video camera when said collar threadably engages said video camera; and

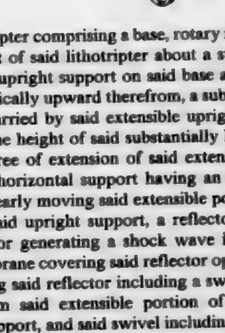
a means for rotatably retaining said collar in connection with said shroud such that said collar is rotatable independently of said shroud.

5,301,658
MEMBRANE ENDOSCOPIC RETRACTOR
Yong Hua Zhu, Loma Linda, and Wolff M. Kirsch, Redlands, both of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.
Filed Apr. 27, 1992, Ser. No. 874,536
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **34 Claims**

7. A retractor for use in endoscopic surgery, comprising:

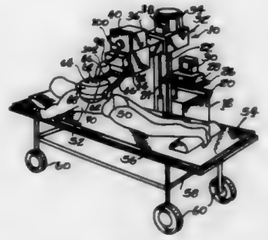
first and second probes, each of said probes being independently manipulatable into a variety of positions, and each prove having a distal portion and a proximal portion, said distal portion being inserted through a small incision in the body of a patient and said proximal portion being manipulatable such that said distal portion may be positioned in the desired location; and

a retractor surface mounted between and supported by said distal portions of said first and second probes for retracting tissues and organs and the like, said retractor surface



being externally controlled by manual manipulation of said proximal portions of said probes.

5,301,659
EXTRACORPOREAL SHOCKWAVE LITHOTRIPTER
A. Glen Brisson, Kildeer; Exequiel Dela Cruz, Arlington Heights, and Dianne L. Vickers, Cary, all of Ill., assignors to Bantum Tripter Joint Venture, Columbus, Ohio
Filed Jun. 8, 1992, Ser. No. 895,113
Int. Cl.[5] A61B *17/22*
U.S. Cl. 601—4 **10 Claims**



1. A lithotripter comprising a base, rotary means on said base for movement of said lithotripter about a supporting surface, an extensible upright support on said base and extending substantially vertically upward therefrom, a substantially horizontal support carried by said extensible upright support, means for varying the height of said substantially horizontal support with the degree of extension of said extensible support, said substantially horizontal support having an extensible portion means for linearly moving said extensible portions toward and away from said upright support, a reflector having an open end, means for generating a shock wave in said reflector, a flexible membrane covering said reflector open end, and means for supporting said reflector including a swivel mounting said reflector from said extensible portion of said substantially horizontal support, and said swivel including a forked member pivotally connected to said extensible portion for pivoting about a horizontal axis, said forked member having a pair of arms lying on opposite sides of and connected to said reflector for pivoting of said reflector about an axis perpendicular to said horizontal axis, said swivel being adapted to permit movement of said reflector to position said flexible membrane against a patient with said reflector aimed at a bodily concretion to be disintegrated.

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5,301,660

THERAPY APPARATUS FOR TREATING A SUBJECT WITH FOCUSED ACOUSTIC WAVES

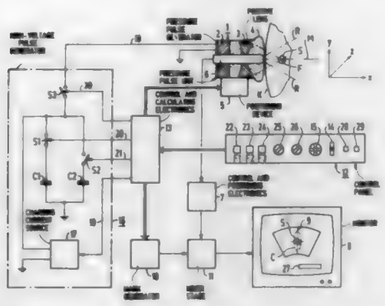
Manfred Rattner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1993, Ser. No. 36,238

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212809

Int. Cl.[5] A61B *17/22*

U.S. Cl. 601—4 **11 Claims**



1. A therapy apparatus for treating a subject with focused acoustic waves comprising:

means for generating acoustic waves exhibiting acoustic characteristics;

means for focusing said acoustic waves to a focus zone;

said means for generating and said means for focusing, in combination, having a plurality of parameters associated therewith which influence said acoustic characteristics of said acoustic waves;

locating means for locating a therapeutically relevant region in a subject, including graphic display means for visually protraying an image of a portion of said subject containing said therapeutically relevant region;

means for mixing a positionally correct and properly scaled contour into said image, said contour representing the boundary of a selected, displaced focus zone within said image outside of which said acoustic waves fall below a threshold of an acoustic characteristic; and

setting means for setting the size of said selected displayed focus zone mixed into said image by varying at least one of said parameters.

5,301,661

ROTARY MOTION BED APPARATUS

Bruce C. Lloyd, R.R. 2, Box 637, Orillia, Ontario, Canada L3V 6K5

Filed Jul. 9, 1991, Ser. No. 727,083

Int. Cl.[5] A61H *7/00*

U.S. Cl. 601—84 **9 Claims**

1. A rotary motion bed apparatus comprising:

a. a bed platform means having a length and width sufficient to carry on the surface thereof a horizontally reclining human subject through a circular movement in a vertical circular path perpendicular to the longitudinal axis of said platform;

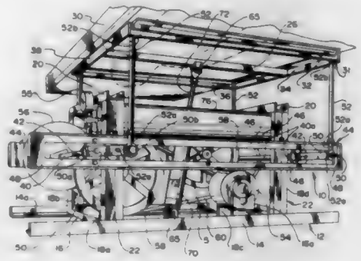
b. a supporting and mounting frame member;

c. a rotary drive means mounted on said frame member adapted to support and move said platform in a circular path;

d. a mechanical linkage means connected to said platform and adapted to hold said platform so that its directional orientation stays the same as said platform moves along said circular path responsive to said drive means, said mechanical linkage means including four parallel elongate members of equal length connecting said rotary drive means to said platform, said elongate members being each pivotally connected at one end thereof to said platform at spaced apart locations, and pivotally connected to said rotary drive means;

e. pneumatic means comprising a pneumatically driven piston and cylinder combination means operatively connected to and between said frame and bed platform means to provide supplemental pneumatic compressed air support to said platform means;

f. a source of compressed air operatively connected to said pneumatic piston and cylinder means to provide pressurized air to said piston wherein said source of compressed air includes a compressed air reservoir, an electrically driven air compressor connected to said air reservoir and regulator control means associated with said air compressor and reservoir adapted to maintain sufficient pressure in



said reservoir and associated pneumatically driven piston and cylinder means so as to provide an air cushioned buffer supportive effect for a predetermined load on said bed platform; and

g. an electrically operated solenoid valve means connected to the compressor and compressed air reservoir, positionable between an activated closed position to thereby maintain pneumatic pressure therein and an open inactivated position adapted to exhaust pressurized air from the pneumatic piston and cylinder means, and permit the bed platform to drop to a bottom dead center dismount position, said apparatus further including a series connected manually operated switch and a patient load responsive electric switch means to simultaneously cut electric power to said rotary drive means, air compressor, and electrically operated solenoid valve means when said switch and said switch means are opened.

5,301,662

NEBULIZER WITH HIGH OXYGEN CONTENT AND HIGH TOTAL FLOW RATE

James T. Bagwell, Anaheim, and Blair E. Howe, Rancho Santa Margarita, both of Calif., assignors to Cimco, Inc., Costa Mesa, Calif.

Filed Sep. 25, 1991, Ser. No. 765,133

Int. Cl.[5] A61M *11/00*

U.S. Cl. 128—200.14 **11 Claims**

1. An air entrainment nebulizer comprising:

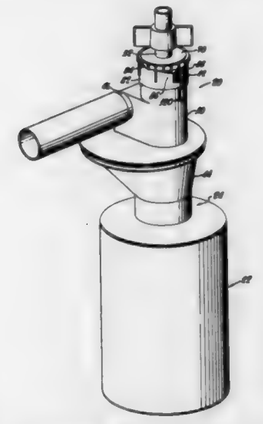
a mixer body having a mixing chamber and a pressurized gas input fitting, said mixer body having a discharge port for providing a total flow output of moisturized air having a selected oxygen content,

a unitary one piece oxygen jet mounted in said body and connected to said fitting, said jet having an orifice for projecting a high velocity stream of oxygen into said mixing chamber at a rate of more than fifteen liters per minute,

a liquid aspirating fitting mounted in said body adjacent said jet,

an air entrainment opening formed in said mixer body in communication with said chamber and with ambient air, said entrainment opening having a maximum open area not greater than an area that flows air into the chamber at a rate that causes total flow output of a moisturized mixture of oxygen and air from said discharge port at a rate not greater than about eighty liters per minute when pressurized oxygen flows through said jet at a rate of not greater than forty liters per minute, and

closure means mounted to said body and movable in a first direction between open and closed positions for progressively blocking and unblocking said opening to decrease the open area of said entrainment opening, said closure means and entrainment opening being configured and arranged to effect a rate of change of open area of said entrainment opening that decreases as said closure means moves toward said closed position, whereby the rate of air flow into said entrainment opening is adjustable in very small amounts when said closure means approaches said closed position, said air entrainment opening comprising a



plurality of mutually adjacent narrow, elongated slots extending in mutually parallel side by side relation in said first direction, said slots having intermediate portions that are in overlapping relation and coextensive with each other along said first direction, and each said slot having an end that terminates at a different position along said first direction, whereby said slots are partly overlapped and longitudinally staggered in said first direction, said closure means having an edge that simultaneously cooperates with all of said slot intermediate portions to simultaneously change the length of blocked parts of all slots in intermediate positions between said closed and open positions, and cooperating with less than all of said slot ends to simultaneously change the length of less than all of said slots when in positions near said closed position, whereby the staggered relation of said slot ends effect a decreasing rate of closure when the closure means is near to and moving toward said closed position.

5,301,663

AEROSOL DELIVERY SYSTEM

John C. Small, Jr., Bethlehem, Conn., assignor to Healthscan Products, Inc., Cedar Grove, N.J.

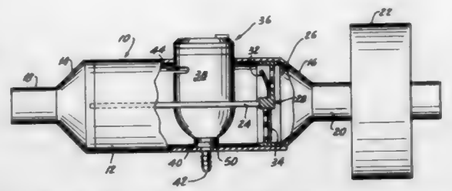
Continuation-in-part of Ser. No. 731,037, Jul. 16, 1991, Pat. No. 5,165,392. This application Nov. 19, 1992, Ser. No. 978,631

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] A61M *11/00*

U.S. Cl. 128—200.18 **15 Claims**

1. Apparatus for providing a nebulized fluid to a user, comprising a tubular body having an ambient air inlet at a first end and a mouthpiece outlet at a second end, a transverse horizontal divider extending substantially along the length of said tubular body dividing said body into first and second parallel passageways; valve means mounted at an end of said divider and having a unitary valve flap for providing independent one-way air flow inwardly into said tubular body from said inlet end through said first parallel passageway and outwardly from said tubular body from said second parallel passageway



through said inlet; a nebulizer having a body extending transversely through said first and second passageways and having an adjustment means for controlling fluid flow rate extending upwardly from said body and a gas inlet extending downwardly from said body; said nebulizer body having a nebulized-liquid output port located within said first parallel passageway oriented towards said second end.

5,301,664

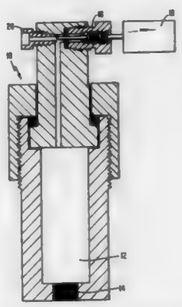
METHODS AND APPARATUS FOR DRUG DELIVERY USING SUPERCRITICAL SOLUTIONS

Robert E. Sievers, 655 Northstar Ct., Boulder, Colo. 80304; Brooks M. Hybertson, 280 County Rd. 83, and Brian N. Hansen, 1510 Eisenhower Dr., both of Boulder, Colo. 80302

Filed Mar. 6, 1992, Ser. No. 846,331

Int. Cl.[5] A61M *15/00;* **B65D** *37/00*

U.S. Cl. 128—200.23 **21 Claims**



1. A method of delivering a physiologically active compound to a target human or animal, comprising (a) forming a supercritical fluid solution comprising a supercritical fluid solvent and a physiologically active solute; (b) passing the supercritical fluid solution into a region in which the temperature and pressure of the solvent are below a critical temperature and a critical pressure, respectively, of the solvent to evaporate the solvent and form a gas-borne dispersion of solute particles; and (c) administering the gas-borne dispersion of solute particles to the target human or animal.

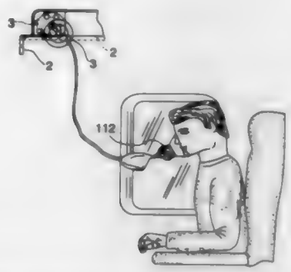
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,665

RESPIRATOR FOR EMERGENCY OXYGEN SUPPLY FOR PASSENGERS IN AIRCRAFT

Werner Jumpertz, and Christian Schnoor, both of Lübeck, Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 873,371, Apr. 24, 1992, abandoned. This application Oct. 26, 1992, Ser. No. 966,718
Claims priority, application Fed. Rep. of Germany, May 5, 1991, 4115361; Feb. 15, 1992, 4204532
Int. Cl.[5] **A62B** *7/08, 7/14*
U.S. Cl. 128—202.26 **16 Claims**



1. Respirator for emergency oxygen supply for passengers in aircraft, comprising:

a mounting container;

a lid for closing the mounting container;

a breathing mask positionable within the mounting container;

an oxygen generator positioned within said mounting container, said oxygen generator being connected to said breathing mask;

holding means rigidly connected to said mounting container for permitting a position of said oxygen generator to change by pivoting between a readiness position and a use position, a distance between said oxygen generator and an inner wall surface of said mounting container being greater in said use position than in said readiness position.

5,301,666

POWDER INHALER

Coenraad Lerk, Peize, and Anne H. de Boer, Darchten, both of Netherlands, assignors to Asta Medica Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 992,250
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141363; Apr. 6, 1992, 4211475
Int. Cl.[5] **A61M** *15/00;* **B65D** *83/04*
U.S. Cl. 128—203.15 **15 Claims**

1. In a powder inhaler comprising a housing, having a mouthpiece opening for flow of air laden with active substance and an active substance magazine including means for incorporating the active substance or a mixture of active substance and inert components into an air stream guided through the inhaler, the housing comprising parts designed to be moveable against each other, and one housing part having an inlet opening for air;

the improvement in which said inhaler includes

(a) a hollow cylindrical housing comprising a lower part with a lower outer diameter and an upper part, said lower part being insertable into said upper part in an axial direction and rotatable about its longitudinal axis,

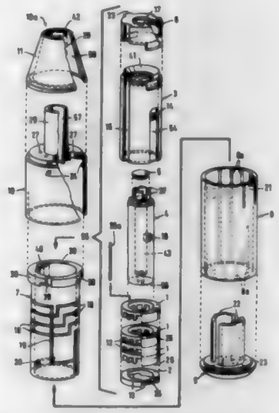
(b) a cylinder for containing medication which is concentrically positioned within the lower part of the housing, said cylinder comprising an outer hollow cylinder, an inner hollow cylinder with smaller outer diameter than the inner diameter of said outer hollow cylinder, so that an annular space is formed between said outer hollow cylinder and said inner hollow cylinder in which said active substance magazine can be accommodated, the inner hollow cylinder having an internal canal for flow of air and active substance and a first passage opening to said annular space,

(c) said housing having an inlet opening operatively connected with said internal canal,

(d) said inner hollow cylinder having an upper end, and, at said upper end, second passage openings operatively connected with said internal canal for flow of air laden with active substance,

(e) means comprising a cyclone chamber operatively connected to said passage openings,

(f means providing an exit opening from said cyclone chamber,



(g) means permitting axial displacement and/or rotation of the active substance magazine about its longitudinal axis, said magazine having a plurality of apertures for receiving individual doses of medication, whereby axial displacement and/or rotation of said magazine aligns successive apertures with said passage opening to said internal canal, and

(h) means providing a channel for flow of air from said inlet opening to the outer wall of the outer hollow cylinder and through said outer hollow cylinder to a position in alignment with said first passage opening

whereby a first air stream flows from said inlet opening through said internal canal and a second air stream expels a single dose of medication from one of said apertures, through said passage opening, into said internal canal.

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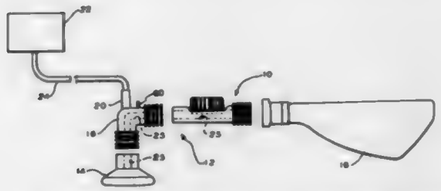
PRESSURE LIMITING VALVE FOR VENTILATION BREATHING BAG APPARATUS

Thomas W. Mc Grail, Sparta; Ralph J. De Vito, Stanhope, and James M. Howard, Dover, all of N.J., assignors to Vital Signs, Inc., Totowa, N.J.

Filed Aug. 3, 1992, Ser. No. 923,468
Int. Cl.[5] **A61M** *16/00, 15/00;* **A62B** *9/02;* **F24F** *5/00*
U.S. Cl. 128—205.14 **9 Claims**

4. An improved adjustable pressure limiting valve in combination with ventilation gas apparatus which apparatus includes at opposite ends a compressible breathing bag and a delivery device for delivering said ventilation gas to a person particularly an infant, said ventilation gas apparatus further including connecting means intermediate said opposite ends connecting said apparatus to a source of flow-regulated pressurized ventilation gas, said breathing bag for receiving said pressurized ventilation gas from said source through at least a portion of said apparatus and during periods of compression of said breathing bag said breathing bag producing further pressurized ventilation gas which is delivered from said breathing bag, through said apparatus, and through said delivery device for inhalation, said adjustable pressure limit valve providing said further pressurized ventilation gas delivered for inhalation with a peak inspiratory pressure, and said adjustable pressure limiting valve providing a base line PEEP pressure for said pressurized breathing gas from said source present in said apparatus during periods between said periods of compression of said breathing bag, said base line PEEP pressure providing a pressure against which exhalation occurs during periods between said periods of compression of said breathing bag, comprising:

a valve body including a first generally cylindrical member provided with a generally centrally formed ventilation gas communication passageway extending therethrough and at least partially communicating said breathing bag with said delivery device, and said valve body further including a second generally cylindrical member generally perpendicular with respect to said first generally cylindrical member and provided with a generally centrally formed exhaust passageway extending therethrough and in fluid communication with said communication passageway through a circular inlet opening formed between and interconnecting said gas communication passageway with said exhaust passageway, said second generally cylindrical member including a generally annular valve seat provided in said exhaust passageway and generally surrounding said inlet opening, and the exterior of said second generally



cylindrical member provided with a plurality of axially aligned spiral grooves, said grooves having a common angle of inclination;

a generally circular disc residing in said exhaust passageway and for being exposed to said further pressurized ventilation gas in said gas communication passageway through said inlet opening, said disc being forced into engagement with said valve seat to cover said inlet opening to substantially prevent exhausting of said further pressurized ventilation gas out of said communication passageway through said inlet opening;

a generally cylindrical cap including a circular top and an outwardly extending cylindrical wall circumscribing said top and oriented generally perpendicularly with respect thereto, a plurality of inwardly extending groove engaging tabs provided on the interior of said wall, and said tabs provided with substantially the same angle of inclination as said spiral grooves and said tabs spaced substantially equally circumferentially with respect to each other around said interior of said wall, each of said groove engaging tabs residing in one of said spiral grooves to mount said cap rotatably with respect to said second generally cylindrical member and for rotation with respect thereto in both the clockwise and counterclockwise directions of rotation, said top provided with a generally centrally formed vent port in fluid communication with the atmosphere and with said exhaust passageway and venting said further pressurized ventilation gas;

a spring residing in said exhaust passageway intermediate and in engagement with said disc and the underside of said top of cap, said spring applying a first force to said disc to force said disc into engagement with said valve seat, upon rotation of said cap in one of said directions of rotation said spring being increasingly compressed by said cap to cause said spring to gradually increase said first force and upon rotation of said cap in said other direction of rotation said cap allowing said spring to increasingly decompress to cause said spring to gradually decrease said first force;

upon said breathing bag being compressed, said further pressurized ventilation gas acting against said disc through said inlet opening to produce a second force acting on said disc in opposition to said first force and upon said second force exceeding said first force said disc being moved out of engagement with said valve seat to permit at least a portion of said further pressurized ventilation gas to be exhausted through said inlet opening and into said exhaust passageway, said exhaust passageway and said vent port thereby providing said further pressurized ventilation gas delivered for inhalation with said peak inspiratory pressure substantially equal to the pressure of said further pressurized ventilation gas producing said second force;

said disc provided with a bleed hole extending therethrough through which said pressurized ventilation gas from said source present in said apparatus can be exhausted to said exhaust passageway and therethrough to said cap vent port and therethrough to the atmosphere during periods between said periods of compression of said breathing bag to provide said base line PEEP pressure against which exhalation occurs, said bleed hole being sufficiently large to prevent said pressurized ventilation gas present in said apparatus from said source from becoming pressurized above said base line PEEP pressure, and said bleed hole being sufficiently small to permit said further pressurized ventilation gas to act against said disc to produce said second force in excess of said first force; and

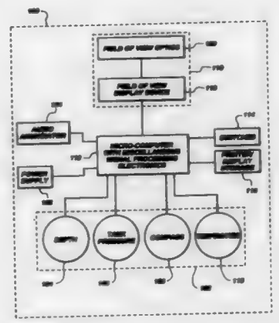
said mounting of said cap rotatably to said second generally cylindrical member for rotation in said clockwise and counterclockwise directions of rotation permitting said cap to increase and decrease said first force thereby permitting said peak inspiratory pressure to be adjusted in accordance with the amount of said first force with which said disc is being forced into engagement with said valve body by said spring.

5,301,668

FIELD OF VIEW UNDERWATER DIVING COMPUTER MONITORING AND DISPLAY SYSTEM

Lynn B. Hales, 5633 Emigration Canyon Rd., Salt Lake City, Utah 84108

Filed Jun. 20, 1991, Ser. No. 718,281
Int. Cl.[5] **A62B** *7/04, 9/00;* **G09G** *3/02;* **G08B** *25/00*
U.S. Cl. 128—205.23 **29 Claims**



1. A system for providing needed information to a user wearing a mask or a mask-like structure comprising a substan-

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tially transparent viewing area providing the wearer a field of view of the surrounding environment, the system comprising:

means for sensing the value of at least one measured parameter comprising means for sensing at least one of the user's physiological variables;

means for processing information received from the means for sensing and outputting a display signal;

means for generating a visually perceptible image representing the display signal;

means for presenting an image of the visually perceptible image within the wearer's field of view and for placing the image at a focus distance in the range from about six inches to about infinity in relation to the eye of the user such that the wearer is able to view the visually perceptible image within the field of view; and

means for holding the means for generating and the means for presenting in proximity to the mask.

5,301,669

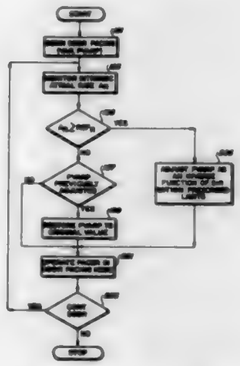
SYSTEM AND METHOD FOR PREVENTING ATRIAL COMPETITION DURING SENSOR-DRIVEN OPERATION OF A DUAL-CHAMBER PACEMAKER

James L. Duncan, Alpharetta, Ga., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Division of Ser. No. 740,554, Aug. 5, 1991. This application Nov. 19, 1992, Ser. No. 979,084

Int. Cl.[5] A61N *1/368*

U.S. Cl. 607—9 **10 Claims**



1. In a rate-responsive, dual-chamber pacemaker configured to operate in a DDDR mode of operation, a system for preventing atrial competition comprising:

means for defining a physiological pacing rate;

control means for generating timing signals indicative of when an atrial and/or ventricular stimulation pulse should be generated by said pacemaker in order to maintain said physiological pacing rate;

sensing means coupled to said control means for sensing atrial and ventricular activity, such as P-waves, indicating natural atrial activity, and R-waves, indicating natural ventricular activity, said control means generating the timing signals needed to generate atrial and/or ventricular stimulation pulses on demand as needed in the absence of intrinsic P-waves and/or R-waves;

stimulation pulse generating means coupled to said control means for generating said atrial and/or ventricular stimulation pulses in response to said timing signals;

said control means including:

PVARP generating means for generating a post ventricular atrial refractory period (PVARP) subsequent to the generation of each ventricular stimulation pulse or the sensing of an R-wave, said PVARP defining a time interval during which sensed atrial activity is not considered as a valid P-wave, said PVARP generating means generating at least a first PVARP and a second PVARP; and

atrial pulse prevention means for preventing an atrial stimulation pulse from being generated that is in competition with atrial activity sensed during said PVARP.

5,301,670

ULTRASONIC DIAGNOSIS APPARATUS

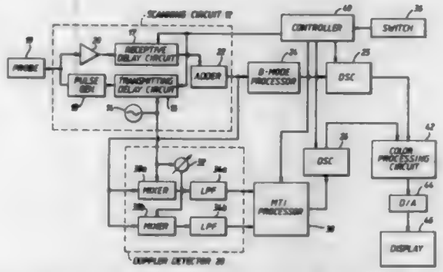
Takeshi Sato, and Nobuo Yamazaki, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 17, 1992, Ser. No. 870,595

Claims priority, application Japan, Apr. 17, 1991, 3-85232

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.05 **12 Claims**



1. An ultrasonic diagnosis apparatus for displaying an ultrasonic image, which image is obtained by data from a plurality of rasters scanned by an ultrasonic imaging transducer, comprising:

transducer means;

B-mode scanning means for scanning each raster by controlling the transducer means such that the transducer means transmits an ultrasonic pulse and receives a reflected echo from each raster;

CFM scanning means for scanning each raster by controlling the transducer means such that the transducer means transmits plural ultrasonic pulses and receives plural reflected echoes from each raster;

B-mode imaging means for calculating an intensity data from the reflected echo scanned by the B-mode scanning means for each raster, and for producing a tomogram image for a frame from the intensity data calculated in a plurality of rasters;

CFM imaging means for calculating d Doppler shift data from the reflected echoes scanned by the CFM scanning means for each raster, and for producing a color flow mapping image for a frame from the Doppler shift data calculated in a plurality of rasters;

display means for displaying the color flow mapping image on the tomogram image; and

scan controlling means for independently controlling a first scanning frame rate used by the B-mode scanning means for scanning a frame and a second scanning frame rate used by the CFM scanning means for scanning a frame, wherein the first scanning frame rate used by the B-mode scanning means for scanning a frame is higher than the second scanning frame rate used by the CFM scanning means for scanning a frame, and wherein when the CFM scanning means scans one frame, the B-mode scanning means scans more than one frame.

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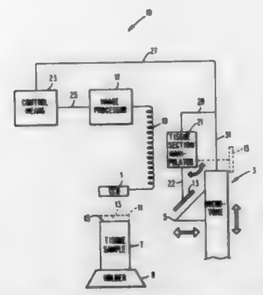
TWO- AND THREE-DIMENSIONAL AUTORADIOGRAPHIC IMAGING UTILIZING CHARGE COUPLED DEVICES

Stephen B. Leighton, Maplewood, N.J., and James L. Olds, Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 17, 1991, Ser. No. 761,157

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—654 **26 Claims**



1. An apparatus for producing a three-dimensional autoradiographical image of a tissue sample containing a radioactively tagged substance comprising:

a) a solid state radiation detecting means for detecting said radioactively tagged substance in said tissue sample;

b) means for sectioning said tissue sample to provide a section of tissue sample having a first surface and thereby providing a further exposed surface on said tissue sample;

c) means for processing information generated by said solid state radiation detecting means into a plurality of two-dimensional images and for further processing said plurality of two-dimensional images into said three-dimensional image of said tissue sample;

d) manipulating means for positioning said section of said tissue sample in a predetermined location;

e) control means for controlling said solid state radiation detecting means, said means for processing information generated by said solid state radiation detecting means, said means for sectioning and said manipulating means to automatically analyze said tissue sample and produce said three-dimensional image of said tissue sample containing said radioactively tagged substance.

5,301,672

RADIOLOGICAL DIAGNOSTICS SYSTEM EMPLOYING A CONTRAST AGENT

Willi Kalender, Kleinseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 977,053

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140552; Jun. 3, 1992, 4218321

Int. Cl.[5] A61B *6/00*

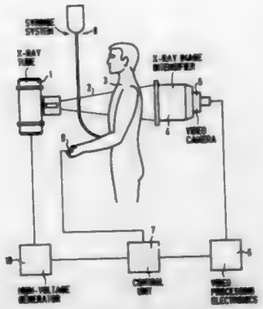
U.S. Cl. 128—654 **3 Claims**

1. A diagnostics system comprising:

means for generating a radiological image of a patient;

means for introducing a contrast agent and a contrast agent indicator into said patient;

means for identifying the in vivo concentration of said contrast agent in said patient at a predetermined location in the body of said patient by monitoring the presence of at least one of said contrast agent or said contrast agent indicator at said location, and for generating an electrical signal corresponding to said concentration; and



means for triggering generation of said radiological image when said signal reaches a predetermined level.

5,301,673

AMBULATORY CLEARANCE FUNCTION MONITOR

Carlos A. Rabito, Medford, and Richard H. Moore, Concord, both of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Filed Nov. 18, 1991, Ser. No. 793,781

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—659 **7 Claims**



2. A method for measuring a clearance function of an organ in a subject, comprising

providing a detectable substance to a subject, said detectable substance capable of equilibrating in a subject's extracellular fluid,

allowing said detectable substance to equilibrate in said subject's extracellular fluid forming equilibrated extracellular fluid,

situating a detector on a portion of said subject's body having a defined, constant volume of said equilibrated extracellular fluid,

enclosing said detector and said portion of said subject's body in a barrier that is substantially opaque to said detectable substance such that only said defined constant volume of said equilibrated extracellular fluid within said enclosed body portion is detected by said detector,

measuring a response of said detector to said detectable substance in said equilibrated extracellular fluid, said measured response indicative of the quantity of substance in said defined constant volume of said equilibrated extracellular fluid, and

determining the organ's clearance function from a change in quantity of said substance measured within said defined constant volume of said equilibrated extracellular fluid

wherein said detector responds substantially only to said detectable substance within said defined constant volume of said equilibrated extracellular fluid.

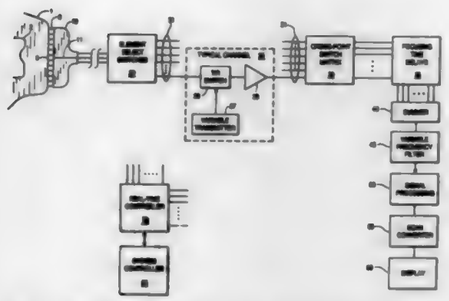
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5,301,674

METHOD AND APPARATUS FOR FOCUSING TRANSMISSION AND RECEPTION OF ULTRASONIC BEAMS

Kenneth R. Erikson; Syed O. Ishrak, both of Los Gatos; Wilbur A. Reckwerdt, Campbell, and Ray S. Spratt, San Jose, all of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Filed Mar. 27, 1992, Ser. No. 859,069
Int. Cl.[5] A61B *8/00*; G01N *29/00*
U.S. Cl. 128—661.01 **39 Claims**



1. A method of focusing energy waves during transmission and reception into a body at a plurality of focal points, each of said focal points corresponding to a zone within said body, wherein said energy waves are transmitted from a source into said body according to a set of time delays and transmit parameters and are reflected from discontinuities within said body, said method comprising the steps of:

selecting a plurality of zones, wherein said plurality of zones have a plurality of focal points, wherein each of said plurality of focal points is within one of said plurality of zones;

optimizing the transmit frequency of the energy waves for each of said plurality of zones, such that the energy is localized at said plurality of focal points within said body;

optimizing the bandwidth of the energy waves for each of said plurality of zones, such that the energy is localized at said plurality of focal points within said body;

determining the time delays between transmission necessary to ensure that energy waves subsequently transmitted to one of said focal points do not interfere with the reception of reflected energy waves from the remaining of said plurality of focal points, and

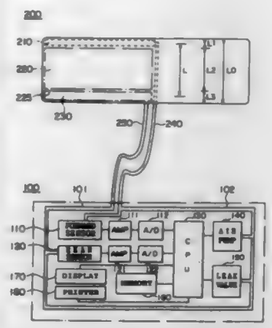
scanning the body along a plurality of scan lines with the energy waves that are transmitted and focused in each of the plurality of zones using the time delays, the transmit frequency and the bandwidth for each of the plurality of zones, such that the energy waves for each of the plurality of zones has a single frequency and bandwidth to localize the energy waves in each of the plurality of zones, wherein the reflected energy waves from zones outside any one of the plurality of zones are reduced in strength when transmitting energy waves to said one of the plurality of zones to avoid interference with the reflected energy waves from said one of the plurality of zones, such that all of the reflected energy waves along one of said plurality of scan lines from one of said plurality of zones is not received before transmitting energy waves to another of said plurality of zones along said one of said plurality of scan lines, such that an image of said object is generated according to said reflected energy waves received from each of the plurality of zones.

5,301,675

APPARATUS FOR MEASURING BLOOD FLOW VELOCITY AND BLOOD FLOW VOLUME IN AORTAS

Mitsuei Tomita, 407 Yamanote Villa Porte, 109 Yamanote-Cho, Naka-Ku, Yokohama 231, Japan

PCT No. PCT/JP90/00813, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO91/19451, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 19, 1990, Ser. No. 834,253
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—672 **7 Claims**



1. An apparatus for measuring a blood flow velocity in an aorta, comprising:

a cuff (**200**) including a blood flow shutting bag means (**220**) for shutting a blood flow of an upper arm, a forward detection bag means (**210**) for detecting a pulse wave heading to the blood flow shutting bad, means and a rear detection bag means (**230**) for detecting a pulse wave which has cleared the blood flow shutting bad means;

pressure control means (**130, 140, 150**) for retaining a reference internal pressure of the blood flow shutting bag means and the respective detection bag means at a systolic pressure SP;

forward sensor means (**110**) for detecting as a forward pulse wave (Wf) a pressure change generated in the forward detection bag means;

rear sensor means (**120**) for detecting as a rear pulse wave (Wb) a pressure change generated in the rear detection bag means with a delay time SPdt from a detection time of the forward pulse wave;

calculating means (**130**) for dividing a distance L between the forward detection bag means and the rear detection bag means by the delay time SPdt to obtain a quotient, and outputting the quotient as a blood flow velocity VH of an aorta in a high pressure period.

5,301,676

IDENTIFICATION METHOD FOR A CUFF TYPE IN A NON-INVASIVE SPHYGMOMANOMETER

Börje T. Rantala, Helsinki, and Lauri Kankkunen, Espoo, both of Finland, assignors to Instrumentarium Corporation, Finland

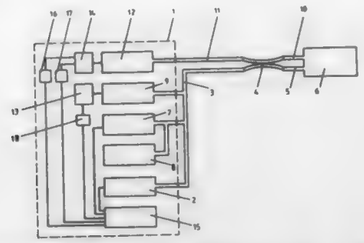
Filed Dec. 13, 1991, Ser. No. 807,111
Claims priority, application Finland, Dec. 18, 1990, 906255
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—686 **18 Claims**

1. A method for identifying which cuff of at least a pair of cuffs is connected to a fluid conduit of a sphygmomanometer, the sphygmomanometer pressurizing the cuff or an associated enclosed volume in fluid communication with the cuff, one of the cuffs including means for altering pressure changes applied to the cuff or associated volume, said method comprising the steps of:

applying a change in pressure to at least one of the cuff and the volume;

sensing the pressure magnitude variations with respect to time occurring upstream of the cuff resulting from the change in pressure;

sensing the pressure magnitude variations with respect to time occurring downstream of the cuff resulting from the change in pressure;



comparing the pressure magnitude variations sensed upstream and downstream of the cuff, the pressure or absence of the means for altering pressure changes in the cuff connected to the sphygmomanometer altering the sensed pressure magnitude variations; and

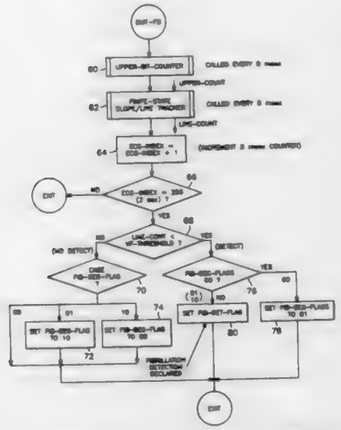
determining from the comparison which cuff is connected to the sphygmomanometer.

5,301,677

ARRHYTHMIA DETECTOR USING DELTA MODULATED TURNING POINT MORPHOLOGY OF THE ECG WAVE

Jean-Cheui Hsung, Shoreview, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Feb. 6, 1992, Ser. No. 833,843
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—705 **18 Claims**



13. An arrhythmia detector for analyzing ECG signals obtained from a heart, said detector comprising:

means for digitizing an input ECG signal for obtaining a digital representation of said input ECG signal;

means for periodically classifying said digital signal as representing no slope, positive slope, and negative slope segments of said input ECG signal and respectively generating a no slope, positive slope, or negative slope signal;

means for determining, based upon a sequence over a predetermined period of time of no slope, positive slope, or negative slope signals, the amount of time an isoelectric line segment is present in said input ECG signal over said predetermined period of time; and

means for issuing a fibrillation signal when the amount of time an isoelectric line is present in said input ECG signal is less than a first predetermined threshold.

5,301,678

STRETCHABLE BAND - TYPE TRANSDUCER PARTICULARLY SUITED FOR USE WITH RESPIRATION MONITORING APPARATUS

Herman L. Watson; Chu Pak, both of Miami; Jose A. Adams, Miami Beach, and William Meichner, DeLand, all of Fla., assignors to Non-Invasive Monitoring System, Inc. A Corporation of Florida, Miami Beach, Fla.

Continuation-in-part of Ser. No. 517,438, May 1, 1990, abandoned, which is a continuation of Ser. No. 316,996, Feb. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 932,724, Nov. 19, 1986, Pat. No. 4,807,640. This application Sep. 5, 1991, Ser. No. 755,205
Int. Cl.[5] A61B *5/08, 5/04*
U.S. Cl. 128—721 **17 Claims**



1. A band securable about an expandable three-dimensional object comprising:

a first strip of self-adherent elastic material;

an electrical conductor disposed on top of the first strip of elastic material in a pattern such that when secured to the first strip, the conductor is extended lengthwise during lengthwise stretching of the first strip of elastic material;

a second strip of said self-adherent elastic material disposed on top of the first strip of elastic material thereby securing said first and second strips of elastic material to each other with said conductor sandwiched therebetween thereby defining a sandwich comprising said first and second strips of material and said conductor, said sandwich having first and second free ends; and

means for securing said first and second free ends of said sandwich to each other for securing said band about said expandable three-dimensional object for forming a close-fitting, continuous loop thereabout.

5,301,679

METHOD AND SYSTEM FOR ANALYSIS OF BODY SOUNDS

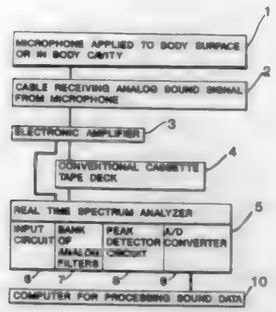
Colin R. Taylor, New York, N.Y., assignor to Taylor Microtechnology, Inc., New York, N.Y.

Filed May 31, 1991, Ser. No. 708,748
Int. Cl.[5] A61B *7/00*
U.S. Cl. 128—773 **9 Claims**

1. A system for evaluation of a human disease associated with abnormal body sound production from body multiple organ systems, the system comprising a microphone device placed in contact with a patient's body; means for generating and amplifying an analog sound signal received from said microphone device; as frequency analyzer connected to said generating and amplifying means and including first means for separating the sound signal into various frequency bands in infrasonic and audible spectrums, second means for determining a sound amplitude in each frequency band, and means for digitizing the analog sound signal to obtain digital signals; and

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a computer for receiving said digital signals from said frequency analyzer and performing an average wave form analysis of said signals so as to provide time averaged calculation of body sound data.

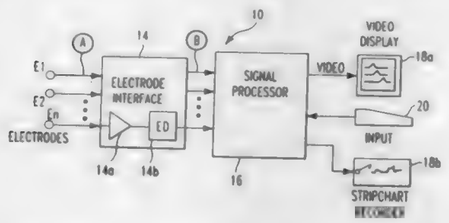


5,301,680

APPARATUS AND METHOD FOR THE DIAGNOSIS OF LABOR

Ethan Rosenberg, Monsey, N.Y., assignor to Hygeia Biomedical Research Inc., Monsey, N.Y.

Filed Dec. 9, 1992, Ser. No. 988,433
Int. Cl.[5] A61B *5/0488*
U.S. Cl. 128—733 **42 Claims**



1. Apparatus for use in diagnosing labor in a pregnant mammal, comprising:

means for detecting electrical fields inherent in muscular activity associated with labor;

means, responsive to the detected electrical fields resulting from a uterine contraction, for determining at each of a plurality of superficial abdominal regions a rate and a direction of movement of muscular activity; and

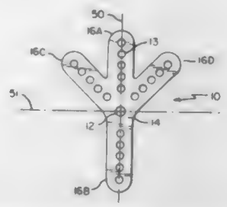
means for displaying information expressive of the determined rate and direction of muscular activity determined from the plurality of superficial abdominal regions to provide diagnostic information regarding the uterine contraction.

5,301,681

DEVICE FOR DETECTING CANCEROUS AND PRECANCEROUS CONDITIONS IN A BREAST

Abdou F. DeBan, 1431 Wilmington Ave. Apt. 309, Dayton, Ohio 45420; David M. Tumey, 8280 Millspring Pl., Dayton, Ohio 45424; Jonathon W. Reeves, 207 W. Center College, Yellow Springs, Ohio 45387; David B. McQuain, 964 Ashcreek Dr., Dayton, Ohio 45458; William H. Reeves, 10449 Steam Park Ct., Spring Valley, Ohio 45370; Carole C. Reeves, 10449 Steam Park Ct., Spring Valley, Ohio 45370, and Elias D. Aboujaoude, 1430 Kylemore Dr., Xenia, Ohio 45385

Filed Sep. 27, 1991, Ser. No. 768,373
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—736 **1 Claim**



1. A device for detecting cancerous and precancerous conditions in a mammalian breast, comprising:

non-invasive means for sensing temperature in the breast and generating a signal in response thereto, wherein said sensing means includes a plurality of temperature sensors removably affixable to the breast and capable of sensing over at least one circadian period; and

means for receiving and manipulating said signal and for producing an output signal indicative of cancerous and precancerous conditions in the breast, said receiving and manipulating means including neural network means for producing a generalization about said signal, wherein said generalization is used in forming said output signal; and

a relatively flexible template shaped to orient with respect to and to conform to said mammalian breast, wherein said template includes a central portion, and a plurality of arms extending radially outward from and at predetermined angles with respect to a vertical midline and a horizontal midline which extend through said central portion, said arms further defining a pattern wherein a greater number of said arms are above said horizontal midline to exhibit an orienting characteristic, and wherein said central portion has an opening and each said arm has a plurality of openings to accommodate for varying breast sizes so that markings can be made on areas of said breast to allow for spatially positioning said temperature sensors in accordance with said marked areas of the breast.

5,301,682

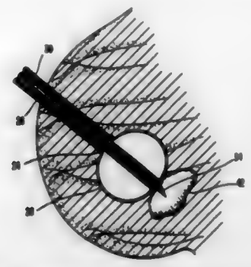
METHOD FOR LOCATING A BREAST MASS

Elie Debbas, 800 Southern Avenue, SE., Suite 407, Washington, D.C. 20032

Division of Ser. No. 604,092, Oct. 29, 1990, Pat. No. 5,183,463, which is a continuation-in-part of Ser. No. 305,965, Feb. 3, 1989, Pat. No. 4,966,583. This application Sep. 22, 1992, Ser. No. 948,320
Int. Cl.[5] A61B *17/34*
U.S. Cl. 128—737 **36 Claims**

24. A method for localizing a mass in body tissue employing a localization device including a tubing having an inflatable balloon member at a distal end of the tubing, said method comprising the steps of:

inserting a needle adjacent to a mass in body tissue, said needle including a tubing provided in the needle to position a distalmost portion of the tubing having the balloon member adjacent to the mass in the body tissue;



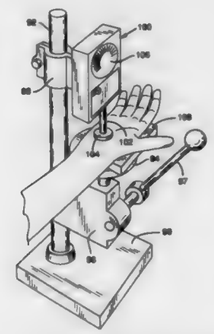
inflating the inflatable balloon member of said catheter to localize said mass.

5,301,683

DIAGNOSING CARPAL TUNNEL SYNDROME

John A. Durkan, 902 12th St., Hood River, Oreg. 97031

Filed Dec. 23, 1991, Ser. No. 813,210
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—744 **10 Claims**



1. A provocative method for diagnosing carpal tunnel syndrome in a patient, comprising the steps of:

providing a pressure-exerting member connected to a gauge operable to indicate the amount of pressure exerted by such member,

applying said pressure-exerting member externally to the wrist of the patient over the anatomic pathway of the median nerve through the carpal tunnel of the patient with a clamp that fits around the wrist including a support member that stabilizes the clamp on the wrist and an adjustment member that selectively varies the pressure applied to the wrist to exert a sustained selected pressure thereagainst in excess of 125 mm of mercury for a time less than one minute, and

determining whether the patient experiences symptoms of carpal tunnel syndrome within said time.

5,301,684

BIOPSY NEEDLE

Raja G. Ogirala, Mount Kisco, N.Y., assignor to International Electronic Technology Corp., Farmingdale, N.Y.

Filed Apr. 27, 1993, Ser. No. 53,986
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **10 Claims**

1. In a biopsy needle comprising (1) a tubular elongated body, (2) a plunger, slidably and rotatably arranged within the body, said plunger being pointed at one end and having a tissue-removing edge directed backwardly from the pointed end and (3) means for selectively engaging the plunger and body together while permitting limited rotational and translational movement of the plunger in prescribed directions with respect to the body, the improvement comprising a mechanical spring interposed between the plunger and body for applying a biasing force to the engaging means, thereby to maintain the plunger and body in their relative positions.

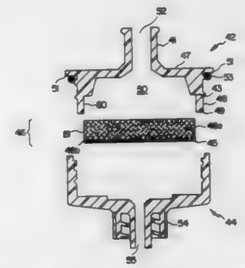


5,301,685

METHOD AND APPARATUS FOR OBTAINING A CYTOLOGY MONOLAYER

Raouf A. Guirguis, 11836 Dinwiddie Dr., Rockville, Md. 20852

Continuation-in-part of Ser. No. 686,934, Apr. 18, 1991, and a continuation-in-part of Ser. No. 680,896, Apr. 8, 1991, Pat. No. 5,139,031, which is a continuation-in-part of Ser. No. 553,585, Jul. 18, 1990, Pat. No. 5,042,502, which is a continuation-in-part of Ser. No. 411,041, Sep. 22, 1989, Pat. No. 4,953,561, and a continuation-in-part of Ser. No. 408,547, Sep. 18, 1989, Pat. No. 5,024,238, which is a continuation-in-part of Ser. No. 308,763, Jan. 10, 1989, Pat. No. 4,961,432. This application Jul. 28, 1992, Ser. No. 920,662
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—760 **21 Claims**



1. A cytology collection apparatus comprising first and second detachable portions defining a chamber; first and second ports defining at least two flow paths through the chamber; and a porous arrangement having a collection site adapted to collect cells positioned across one of the fluid flow paths.

5,301,686

FLUID SAMPLING METHOD

David P. Newman, Arvada, Colo., assignor to COBE Laboratories, Inc., Lakewood, Colo.

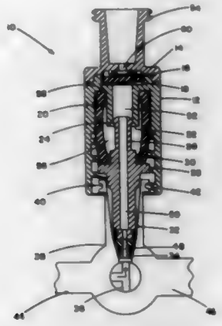
Continuation-in-part of Ser. No. 694,546, May 2, 1991, Pat. No. 5,167,238. This application Aug. 31, 1992, Ser. No. 938,407
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—760 **10 Claims**

1. A method for withdrawing a sample of a fluid from a sample site on a fluid container, said method being adapted to reducing the amount of excess fluid at the sample site, said method comprising:

engaging a sampling device with the sampling site, said sampling device defining a variable volume passage with a relatively larger volume position and a relatively smaller volume position and having a tip at one end of the variable

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volume passage and a valve at another end of the variable volume passage opposite the one end;
sealing the tip of the sampling device to the sampling site;
decreasing the volume of the variable volume passage by moving the variable volume passage to a relatively smaller volume position;
releasing air from the variable volume passage through the valve;
withdrawing the sample of fluid from the sample site through the variable volume passage in the sampling device;



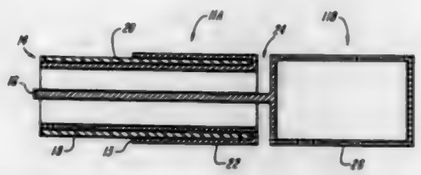
increasing the volume of the variable volume passage by moving the variable volume passage to a relatively larger volume position to create a negative pressure in the variable volume passage;
closing the valve to prevent entry of air into the variable volume passage through the valve;
drawing the excess fluid into the variable volume passage by action of the negative pressure; and
disengaging the sampling device from the sampling site.

5,301,687

MICROWAVE APPLICATOR FOR TRANSURETHRAL HYPERTHERMIA

Terence Z. Wong, Lebanon, and B. Stuart Trembly, Hanover, both of N.H., assignors to Trustees of Dartmouth College, Hanover, N.H.

Filed Jan. 6, 1991, Ser. No. 711,290
Int. Cl.[5] A61N *1/40*
U.S. Cl. 607—116 **8 Claims**



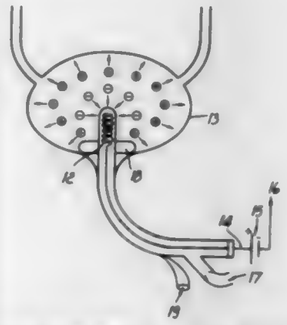
1. Radiant heating apparatus for deployment within an animal body to radiate heat-producing electromagnetic energy into the body, said apparatus having an antenna mounted on a catheter element and connected to an electrical transmission line having first and second conductors for feeding electrical current form a source to the antenna, said apparatus having the improvement in which
A. the antenna comprises a first radiating element carried on said catheter element and extending from an antenna food junction in a first direction along a first elongation axis,
(i) said first radiating element being an electrical choke at a frequency within said antenna operating range and being connected to said first transmission line conductor at said feed junction and presenting a first selected impedance to said feed junction,
(ii) said first radiating element forming said electrical choke with a conductive element connected to said transmission line conductor and with a dielectric having a dielectric constant substantially less than that of said animal body,
(iii) said first radiating element having a first length along said first direction that is substantially a quarter wavelength within said animal body at said operating frequency and said choke having a length which in said lesser dielectric constant is substantially less than a quarter wavelength at said same operating frequency,
B. a second radiating element carried on said catheter element and extending form said feed junction in a second direction opposite to said first direction along said first axis,
(i) said second radiating element being connected to said second transmission line conductor and presenting a second selected impedance to said feed junction,
C. said first and second radiating elements radiating electromagnetic energy outwardly form said feed junction upon being excited from said transmission line with alternating electrical current within a selected frequency range, and
D. said first and second radiating elements being axially disposed along said first axis for presenting said first and second impedances to said transmission feed line for providing said radiation substantially independently of the length of said catheter element inserted within the animal body beyond the full insertion of said first or second radiating elements within the animal body.

5,301,688

METHOD FOR LOCALISATION AND THERAPY OF OCCULT BLADDER CANCER

Robert L. Stephen, Salt Lake City, Utah; Franco Lugnani, Trieste; Cino Rossi, Rome, both of Italy, and Silvio Eruzzi, Mantova, Italy, assignors to Physion S.r.l., Mirandola, Italy

Filed Aug. 7, 1992, Ser. No. 925,780
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—99 **18 Claims**



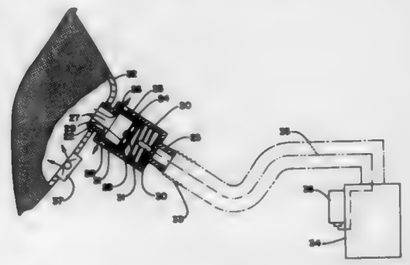
1. A method for localisation of occult cancerous sites of tissues of a bladder, which comprises introducing into the bladder an electrically conductive aqueous solution comprising at least a physiologically acceptable dye substance, positioning in contact with said solution within the bladder a treatment electrode connected to a controllable electrical current source, positioning outside the bladder on a convenient area of skin a dispersive electrode also connected to said controllable electric current source, feeding an electrical current to the electrodes to obtain an electromotive delivery of said dye substance to the bladder tissues with a selectively greater absorption thereof in cancerous tissues, and viewing the bladder by endoscopic means to locate greater dye absorption areas.

5,301,689

DEVICE FOR TEMPORARY ARTIFICIAL RESPIRATION ASSISTANCE FOR PERSONS HAVING SNORE PROBLEMS

Bjorn Wennerholm, Göteborg, Sweden, assignor to Breas Medical AB, Gothenburg, Sweden

PCT No. PCT/SE90/00464, § 371 Date Dec. 27, 1991, § 102(e) Date Dec. 27, 1991, PCT Pub. No. WO91/00075, PCT Pub. Date Jan. 10, 1991
Continuation of Ser. No. 781,144, Dec. 27, 1991, abandoned.
This PCT application Jun. 27, 1990, Ser. No. 28,769
Claims priority, application Sweden, Jun. 27, 1989, 8902313-9
Int. Cl.[5] A61F *5/56*; A62B *18/02*
U.S. Cl. 128—848 **5 Claims**



1. An apparatus for temporary assistance for relieving a sleeping person from obstructed sleep apnea, comprising:
a breathing mask adapted to cover the nose or mouth of said sleeping person;
an electric motor-driven source of pressurized air connected to said mask with a flexible tube;
isolation means for maintaining the space enclosed by said mask and said tube isolated from the atmosphere in the absence of inspiration or expiration of said sleeping person;
an expiratory valve operatively connected to said isolation means, said expiratory valve being actuated by the expiratory air of said sleeping person;
detection means for detecting a pause in the breathing rhythm of said sleeping person and for activating in response thereto said source of pressurized air to deliver a predefined amount of air into said space to create a gradually increasing positive air pressure in said mask until said pressure is sufficient for relieving said sleeping apnea, said detection means comprising a sensor, operatively connected to said isolation means, to emit pulses to a control apparatus connected to said source of pressurized air in response to movement of said expiratory valve; and
means for stopping said source of pressurized air when a resumed breathing of said sleeping person is detected by said detection means.

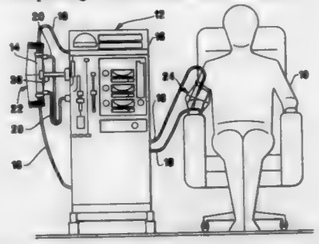
5,301,690

DEVICE FOR CONTAINING BODILY FLUID RESULTING FROM THE OCCURRENCE OF A RUPTURE OR LEAK DURING A MEDICAL PROCEDURE

Edmund J. Lewis, 680 N. Lakeshore Dr., Suite 724, Chicago, Ill. 60611, and Stephen M. Korbet, 1867 N. Halsted St., Chicago, Ill. 60614

Filed Jul. 23, 1992, Ser. No. 917,349
Int. Cl.[5] A61F *5/37*
U.S. Cl. 128—877 **18 Claims**

1. In combination with an extracorporeal medical device for filtering bodily fluid that includes a housing, a bodily fluid inlet extending out of the housing through which bodily fluid flows to the extracorporeal medical device and a bodily fluid inlet extending out of the housing through which filtered bodily fluid flows from the extracorporeal medical device, an enclosure for enclosing the extracorporeal medical device, said enclosure comprising a sleeve having an interior, said sleeve



surrounding the housing of the extracorporeal medical device so that the extracorporeal medical device is located in the interior of the sleeve to thereby contain bodily fluid resulting from the occurrence of a rapture during a medical procedure.

5,301,691

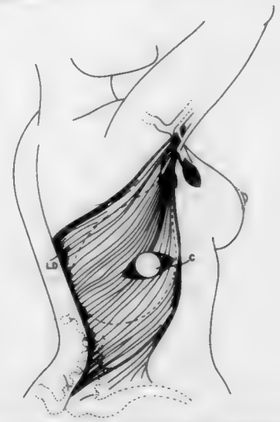
Patent Not Issued For This Number

5,301,692

METHOD FOR TOTAL, IMMEDIATE, POST-MASTECTOMY BREAST RECONSTRUCTION USING A LATISSIMUS DORSI MYOCUTANEOUS FLAP

Edward W. Knowlton, 25 Chestnut Pl., Danville, Calif. 94506

Filed Nov. 16, 1992, Ser. No. 979,493
Int. Cl.[5] A61B *19/00*; A61F *2/12, 2/54*
U.S. Cl. 128—898 **31 Claims**



16. A method for contemporaneous postmastectomy breast reconstruction, the mastectomy resulting in a mastectomy defect and the mastectomy performed through a substantially circumareolar incision opening so that an intact skin envelope of the breast is preserved and the mastectomy results in the substantially excision of a nipple-areolar complex having a three-dimensional size and shape, the method comprising steps of:
marking a cutaneous peg over a latissimus dorsi muscle ipsilateral to the mastectomy, the peg comprising a cutaneous portion;
creating a latissimus dorsi flap having the cutaneous peg and a functioning vascular connection;
establishing an internal pathway between the initial site of the flap and the mastectomy defect, the pathway being sized so that the flap can be moved through the pathway

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and so that the functioning vascular connection to the flap is preserved;

moving the flap through the pathway into the mastectomy defect;

attaching the flap within the mastectomy defect; and

closing the incision with use of the cutaneous peg of the flap.

5,301,693

SMOKING COMPOSITIONS CONTAINING AN α-ALKYLCINNAMALDEHYDE-RELEASE ADDITIVE

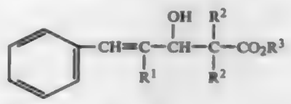
W. Geoffrey Chan, Chesterfield; William B. Edwards, III, Richmond; Harvey J. Grubbs, Mechanicsville; Yoram Houminer; Charles R. Howe, both of Richmond; John D. Naworal, Midlothian; John B. Paine, III, Richmond; Kenneth F. Podraza, Richmond; Edward B. Sanders, Richmond; Jeffrey I. Seeman, Richmond, and Everett W. Southwick, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y. and Philip Morris Products Inc., Richmond, Va.

Filed Jul. 9, 1992, Ser. No. 911,274

Int. Cl.[5] A24B *15/30;* **C07C** *57/03*

U.S. Cl. 131—276 **32 Claims**

1. A smoking composition comprising an admixture of (1) combustible filler selected from natural tobacco, reconstituted tobacco and tobacco substitutes, and (2) between about 0.0001–5 weight percent, based on the total weight of filler, of a flavorant-release additive corresponding to the formula:



where R^1 is a C_4–C_7 alkyl substituent, R^2 is a C_1–C_4 alkyl substituent, and R^3 is hydrogen or an alkali metal or alkaline earth metal atom.

5,301,694

PROCESS FOR ISOLATING PLANT EXTRACT FRACTIONS

Wynn R. Raymond, Chesterfield, and Robert W. Hale, Bon Air, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 12, 1991, Ser. No. 789,979

Int. Cl.[5] A24F *1/16*

U.S. Cl. 131—297 **60 Claims**

1. A process for producing and isolating intermediate molecular weight fractions from plant extracts, which fractions are substantially non-volatile and stable under ambient temperature conditions and are useful as flavoring agents, comprising:

(a) contacting plant matter with a solvent to produce a crude plant extract;

(b) concentrating said crude plant extract;

(c) subjecting said concentrated crude plant extract to a size exclusion process to provide intermediate molecular weight fractions having a molecular weight in the range from about 600 Daltons to about 100,000 Daltons, wherein said size exclusion process separates on the basis of a physical parameter to provide the intermediate molecular weight fractions; and

(d) isolating said intermediate molecular weight fractions by using a detection method to monitor changes in the distribution and intensity of the substances eluted in said size exclusion process.

5,301,695

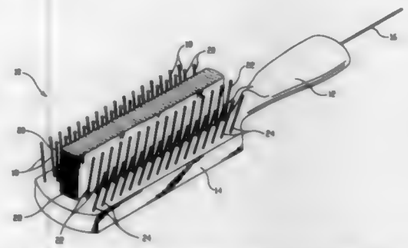
BRUSH AND METHOD FOR HAIR TREATMENT USING BRISTLE ARRAYS OF DIFFERENT DENSITIES AND MATERIALS

Hilda c. Wong, 14701 Saltamontes Way, Los Altos Hills, Calif. 94022

Filed Oct. 19, 1992, Ser. No. 963,061

Int. Cl.[5] A45D *24/16*

U.S. Cl. 132—108 **19 Claims**



1. A device for applying a hair treatment solution comprising:

a brush body having a substantially flat surface having generally parallel first and second longitudinal regions that are spaced apart by a void area,

solution-pickup bristle means for retaining hair treatment solution after being dipped into a volume of said solution, said solution-pickup bristle means having a high density array of first bristles extending outwardly from said first longitudinal region of said brush body to form a generally planar surface at outer ends of said first bristles, said first bristles being closely spaced at said outer ends to form a continuous grouping of contacting outer ends for retaining hair treatment solution, and

non-absorbent brush means for repartitioning hair, said brush means having a low density array of second bristles extending along said second longitudinal region of said brush body,

said first bristles and said second bristles being spaced apart and being generally coterminous at outer ends, said first and second bristles being spaced apart at inner ends by said void area,

said generally parallel first and second longitudinal regions of said brush body being disposed relative to each other such that said high density array of first bristles and said low density array of second bristles simultaneously contact hair to be treated, with said void area being sufficiently large such that said solution-pickup bristle means and said brush means are spaced apart by a distance wherein said first and second bristles may be positioned to act upon different hair strands.

5,301,696

DECORATIVE PONY TAIL HOLDER AND METHOD OF USING

Rommy H. Revson, 225 E. 57th St., Apt. 19H, New York, N.Y. 10022

Filed Jan. 6, 1993, Ser. No. 1,260

Int. Cl.[5] A45D *8/04*

U.S. Cl. 132—273 **18 Claims**

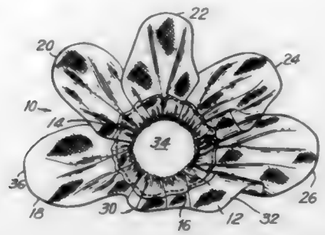
1. A decorative pony tail holder for securely holding the hair of a user, comprising:

a band of elastic material defining a central opening, said band having first and second portions,

fabric surrounding said band, said fabric being formed into a plurality of radial projections extending circumferentially about said first position of said band,

said second portion of said band being free of radial projections along its length so that a length of hair of a user may

be inserted through said band with said band inverted over itself to tightly hold the hair while providing said



projections around substantially the entire circumference of the held hair.

5,301,697

MANUFACTURE PROCESS FOR APPLICATOR ASSEMBLY CONTAINING A SMALL AMOUNT OF MAKE-UP PRODUCT AND CORRESPONDING APPLICATOR ASSEMBLY

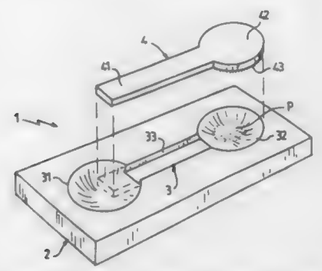
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 917,325, Jul. 23, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,460

Claims priority, application France, Jul. 29, 1991, 91 09587

Int. Cl.[5] A45D *27/22;* **B65D** *69/00*

U.S. Cl. 132—298 **17 Claims**



1. An applicator assembly with a powder or paste makeup product comprising a cradle including a receiving means having a groove having one end and an opposite end, a recess at said one end, an applicator comprising a stem having at one end thereof a pallet, a product deposited in said recess with said pallet being secured to at least a portion of said product pressure and said stem being located in said groove, said receiving means having a lifting recess located at said opposite end of said groove with a portion of said stem extending into said lifting recess.

5,301,698

MULTIPLE LOCK DENTAL FLOSS HOLDER AND SPOOL ENCLOSURE ASSEMBLY THEREFOR

Larry N. Ballard, 103 S. Kensington, LaGrange, Ill. 60525-2214

Filed Sep. 25, 1992, Ser. No. 951,452

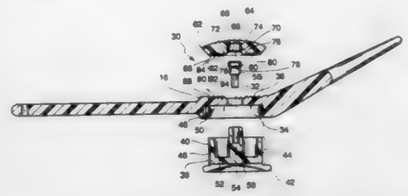
Int. Cl.[5] A61C *15/00*

U.S. Cl. 132—325 **47 Claims**

1. A dental floss holder for receiving a spool of dental floss and dispensing and maintaining a length of said dental floss in a taut condition comprising:

a body having a handle portion, an intermediate portion for housing a spool of dental floss, and a forked end portion including two spaced arms, each arm having at least one floss receiving slot at a distal end thereof whereby a taut length of dental floss can be held in said slots across a span between said arms, said intermediate portion having a through bore opening on one side into a spool receiving cavity and on the other side onto an irregular surface;

a spool enclosure piece received in said cavity and having an annular cavity about a central hub for receiving a spool of dental floss, said hub extending through said through bore, and an end cap connected to said hub adjacent said irregular surface;



coupling means between said end cap and said hub permitting selective pressure against a length of floss positioned between said cap and said irregular surface;

gripping means including said irregular surface for selectively locking in place the length of dental floss positioned between said cap and said irregular surface; and

means for unidirectional dispensing and collecting the dental floss across said arms to prevent release of tension in the dispensed length of dental floss.

5,301,699

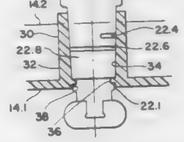
DENTAL FLOSS DISPENSER APPARATUS

Thomas Craft, 1809 Warwick Ave., 15 NW., Warwick, R.I. 02889

Filed Dec. 14, 1992, Ser. No. 989,779

Int. Cl.[5] A61C *15/00*

U.S. Cl. 132—325 **12 Claims**



1. Dental floss dispenser apparatus comprising

a housing having a floss supply section and being formed with an arm having a distal free end portion,

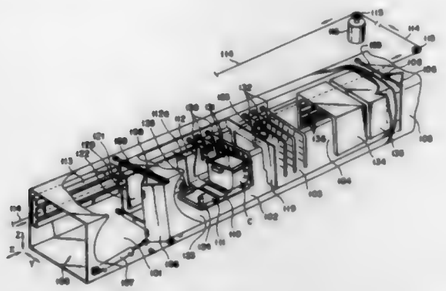
a locking station,

floss guide means for guiding a strand of floss from the supply section with a first portion of floss passing through the locking station to the distal free end portion and with a second portion of floss passing through the locking station and out of the dispenser apparatus,

the locking station comprising a pin in a pin seat, the pin being movable between a locking position and an unlocking position, the pin locking both the first and the second portions of the floss when int he locked position and unlocking both the first and the second portions of the floss when in the unlocked position and means to cause the pin to snap between the locking position and the unlocking position including a protrusion formed on the pin and a ridge formed in the housing and moved past the ridge is moving the pin between the locked and unlocked positions.

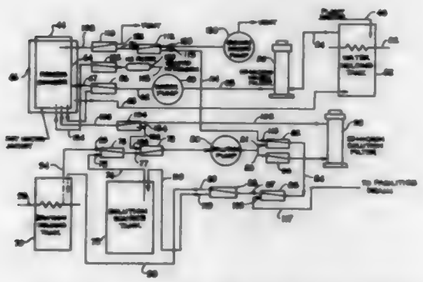
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,700
WASHING SYSTEM
Yuuji Kamikawa, Uto; Kouki Kuroda, Kurume; Yoshiyuki Honda, Kumamoto; Eiichi Mukai, and Mitsuo Nishi, both of Kurume, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Saga Limited, Tosu, both of Japan
Filed Mar. 5, 1993, Ser. No. 26,771
Claims priority, application Japan, Mar. 5, 1992, 4-83216; Mar. 18, 1992, 4-62083; Mar. 24, 1992, 4-96073; Sep. 18, 1992, 4-249252
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—76 **12 Claims**



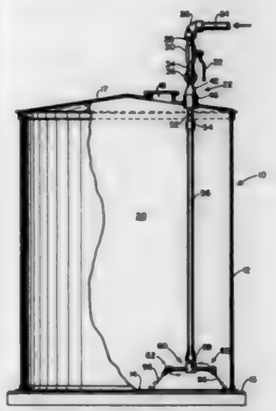
1. A washing system comprising;
a wafer washing section having means for washing plural semiconductor wafers by chemical solution, means for washing the wafers by water and means for drying the wafers;
a cassette washing section having means for washing plural cassette by water and means for drying the cassettes;
loader section for taking out the wafers from the cassette and for loading the wafers into the wafer washing section;
an unloader section for returning the washed wafers in the washed cassette and unloading the washed wafers from the wafer washing section;
means for carrying the wafers in the wafer washing section; and
means for carrying the cassettes from the loader section to the cassette washing section.

5,301,701
SINGLE-CHAMBER CLEANING, RINSING AND DRYING APPARATUS AND METHOD THEREFOR
Charles P. Nafziger, 2445 E. Encanto, Mesa, Ariz. 85213
Filed Jul. 30, 1992, Ser. No. 921,717
Int. Cl.[5] D06B *3/04*
U.S. Cl. 134—95.2 **5 Claims**



1. A machine for cleaning, rinsing and drying material in a single processing work station, comprising:
(a) a housing;
(b) a process chamber mounted on said housing and capable of being hermetically sealed;
(c) means for controlling the temperature of said process chamber;
(d) means for cleaning a material stored in said chamber with a cleansing solution and for draining the cleansing solution out of the chamber after the cleaning operation is completed;
(e) means for rinsing the cleaned material in said chamber with purified water and for draining the water out of the chamber after the rinsing operation is completed;
(f) means for drying the material in said chamber by applying a vacuum after the rinsing operation is completed;
(g) means for controlling the functioning of all said means for cleaning, rinsing and drying in said process chamber; and
(h) a gas delivery system for injecting a gas into said process chamber;
wherein said gas delivery system consists of a source of heated nitrogen, a nitrogen filter, a vacuum pump, a plurality of nitrogen valves, and nitrogen piping to pass the heated nitrogen through the process chamber and then alternatively either directly to a vent or first through said vacuum pump and then to a vent.

5,301,702
TANK POWER JET ASSEMBLY
Robert D. McKinney, 114 Stuart Dr., Vidalia, La. 71373
Filed Sep. 28, 1992, Ser. No. 951,786
Int. Cl.[5] B08B *3/02, 9/12*
U.S. Cl. 134—167 R **6 Claims**



1. An apparatus for preventing formation of crude oil solids in a crude oil storage tank and for removing and recovering crude oil solids contained in said crude oil storage tank by dissolving said crude oil solids with heated crude oil, said crude oil tank having a bottom from which cylindrical sidewalls extend vertically upward, said crude oil storage tank being generally cylindrical in shape, the longitudinal axis of said cylindrical crude oil storage tank being generally perpendicular to the bottom of said tank, said crude oil storage tank having a top connected to said cylindrical sidewalls for covering the interior of said tank, said apparatus comprising:
a. pipe means rigidly connected to said top of said crude oil storage tank for conveying crude oil heated above the melting point of any crude oil solids contained in said crude oil storage tank from the exterior of said crude oil storage tank to the interior of said crude oil storage tank, said crude oil being under pressure, and
b. rotatable jet means rotatably connected to said pipe means for receiving said heated crude oil from said pipe means and for spraying said heated crude oil toward said bottom of said tank, said rotatable jet means being supported by said pipe means inside said crude oil storage tank in a fixed position above said bottom of said crude oil storage tank, said rotatable jet means having a manifold means rotatably connected to said pipe means for conveying crude oil, said manifold means having a plurality of jets connected thereto pointed toward the bottom of said crude oil storage tank, said rotatable jet means being positioned above said bottom of said crude oil storage tank a distance above said bottom sufficient to enable heated crude oil spraying from said plurality of jets to strike said bottom of said crude oil storage tank to dissolve any solids collected on said bottom from said bottom.

5,301,703
CANE TIP
Melvin Kahn, 467 Central Ave., Alameda, Calif. 94501
Filed Jul. 2, 1993, Ser. No. 86,613
Int. Cl.[5] A45B *9/04*
U.S. Cl. 135—77 **18 Claims**



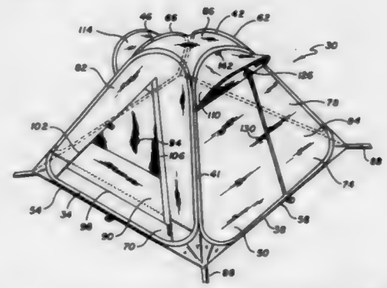
1. A tip for a cane for use by the visually handicapped wherein said cane has a shank and a bottom end of said shank, said tip comprising
a substantially hollow contact element having an outwardly facing convex contact surface which is relatively broad in relation to the diameter of the bottom end of the shank of a cane to which it is attached,
means for attaching said contact element to the bottom end of the shank of a cane such that the contact surface of said contact element acts as the tip of said cane; wherein said means for attaching being the only connection between said contact element and said cane; said contact element acting to amplify vibrations generated when contacting objects in a path of travel which are detectable by a user of the cane.

5,301,704
WALKING CANE USABLE ON SLIPPERY AND ICY SURFACES
E. Evangeline Brown, R.R. #1, Box 2229, Shapleigh, Me. 04076
Filed Mar. 18, 1993, Ser. No. 33,536
Int. Cl.[5] A45B *9/04*
U.S. Cl. 135—78 **6 Claims**

1. A walking cane comprising:
a shaft having an upper end and a lower end;
a handle on the shaft upper end;
a foot piece attached to the shaft lower end;
an axis of curvature extending transverse to the length dimension of said shaft, near the shaft lower end;
said foot piece having a convex arcuate lower surface centered on said axis of curvature;
said arcuate lower surface being essentially flat in a direction parallel to said axis of curvature, whereby the foot piece is enabled to have a rocking motion around the axis of curvature when the cane is used for walking purposes;
at least one row of pointed spikes projecting downwardly from the arcuate lower surface of the foot piece for tractive gripment in ice;
a resilient pad removably attached to the lower surface of said foot piece, said resilient pad having an upper surface and a lower surface;
the pad upper surface having a series of sockets therein spaced the same distance as the spikes, whereby the pad can be positioned on the lower surface of the foot piece, with the spikes fitting within the sockets;
each spike having a side surface, and an annular groove in said side surface; and
each socket comprising an annular lip extending into the annular groove in the side surface of the associated spike, whereby the spikes retain the pad on the foot piece.



5,301,705
COLLAPSIBLE SHADE STRUCTURE
Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722
Filed Sep. 24, 1991, Ser. No. 764,784
Int. Cl.[5] E04H *15/40*
U.S. Cl. 135—104 **16 Claims**



1. A collapsible shade structure supported on a surface for defining and enclosing an interior space, the shade structure comprising:
at least three foldable triangular frame members each having a folded and an unfolded orientation, each frame member comprising three sides and three rounded apexes forming a continuous loop in the unfolded orientation;
the three sides of each frame member comprising a first side, a second side and a third side and the three rounded apexes comprising a first apex, a second apex and a third

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apex, with the first side extending from the first apex to the second apex, the second side extending from the first apex to the third apex, and the third side extending from the second apex to the third apex;

a fabric material substantially covering the frame members to form a side panel for each frame member, each side panel having upper portions and assuming the unfolded orientation of its associated frame member;

wherein the first side of each frame member and its associated side panel is connected to an adjacent frame member and its associated side panel by an interconnecting portion of the fabric material forming a first hinge portion, with the first hinge portion extending from the first apex to the second apex, and wherein the second side is connected to another adjacent frame member and its associated side panel by another interconnecting portion of the fabric material forming a second hinge portion, with the second hinge portion extending from the first apex to the third apex;

the frame members and their associated side panels held together to form an enclosed interior space with the third side of each frame member resting on the surface to support the shade structure; and

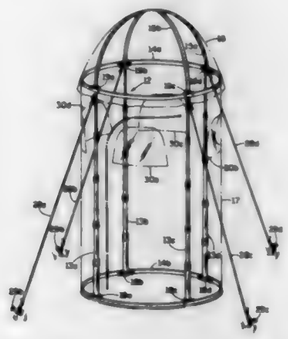
a roof interconnecting the upper portion of the side panels to enclose the interior space.

5,301,706

ULTIMATE PORTABLE BLIND

Steven C. Jones, Converse, Tex., assignor to BBK Corporation, San Antonio, Tex.

Filed Dec. 20, 1991, Ser. No. 811,309
Int. Cl.[5] E04H *15/40*
U.S. Cl. 135—104 **12 Claims**



1. A complete self-contained blind adapted to be folded and placed within a portable storage container, comprising:

a first support ring;

a second support ring;

a flexible body section secured between said first and second support rings, wherein said first and second support rings are adapted to collapse as a unit with said flexible body into a series of smaller loops to permit said first and second support rings and said flexible body section to fit within said storage container;

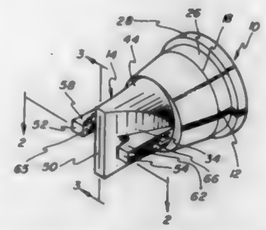
support posts for connection between said first and second support rings to support said body section in a raised position.

5,301,707

ANTI-WHISTLING DUCKBILL VALVE

Remko K. Hofsteenge, Hengelo, Netherlands, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Apr. 12, 1993, Ser. No. 44,697
Int. Cl.[5] F16K *15/16*
U.S. Cl. 137—12 **20 Claims**



12. A method of controlling noise in a valve having a resilient valve body, comprising the steps of:

supporting a vibration dampener on said valve body for dampening movement of said valve body; and

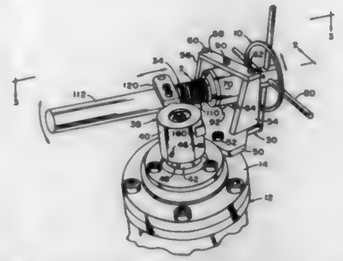
causing a fluid to flow past said valve body to create a vibrating movement in each of said valve body and said vibration dampener wherein said vibration dampener vibrates out of phase with said valve body.

5,301,708

ROTARY PLUG VALVE ACTUATOR AND ASSOCIATED ROTARY PLUG VALVE AND ASSOCIATED METHOD

George C. Schmidt, Port Lavaca, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 9, 1993, Ser. No. 15,603
Int. Cl.[5] F16K *31/50*
U.S. Cl. 137—15 **31 Claims**



29. A method of actuating a rotary plug valve comprising:

providing a rotary plug valve assembly including a rotary plug valve having mounted thereon a rotary plug valve actuator, said rotary plug actuator comprising (i) a mounting bracket removably secured to a portion of said rotary plug valve, (ii) ball screw assembly means, said ball screw assembly means including (a) a bearing housing pivotably mounted to said mounting bracket by pivot means connecting said mounting bracket to said bearing housing; (b) a ball screw shaft journalled in said bearing housing; (c) a ball nut means, said ball nut means moving axially on said ball screw shaft when said ball screw shaft is rotated; and (d) actuating means for rotating said ball screw shaft, whereby when said actuating means is actuated, said ball screw assembly means pivots at said pivot means, and (iii) lever means pivotably mounted to said ball nut means for converting said axial movement of said ball nut means to rotary movement of said lever means as a result of said ball screw assembly means being pivoted about said pivot means within said mounting bracket; and

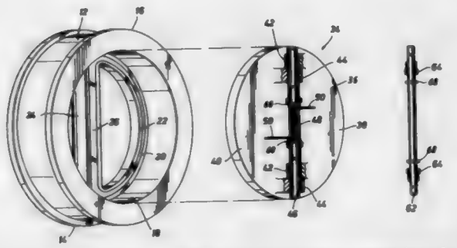
rotating said ball screw shaft by means of said actuating means such that said rotary plug valve is actuated.

5,301,709

CHECK VALVE AND METHOD OF ASSEMBLY

Richard C. Gasaway, Pearland, Tex., assignor to Gulf Valve Company, Houston, Tex.

Filed Apr. 1, 1993, Ser. No. 41,163
Int. Cl.[5] F16K *15/03*
U.S. Cl. 137—15 **15 Claims**



1. A method of assembling a check valve comprising the following steps:

providing a valve body having a central flow passage therethrough;

forming a pair of aligned opposed openings in the valve body communicating with said flow passage;

forming a subassembly including a hinge pin of a length less than the diameter of the flow passage in the valve body, a pair of semicircular valve discs mounted for pivotal movement on said pin, and a pair of extensible support members about the ends of said pin;

mounting said extensible support members on said pin for generally axial movement between a retracted position with the outer ends of said extensible support members not projecting substantially beyond the ends of said pins and a projected position with the outer ends of said support members extending substantially beyond the ends of said pin for supporting said pin;

inserting said subassembly within said valve body with said support members in a retracted position and aligning said pin and support members with said pair of aligned openings; and

then moving said support members outwardly within said openings for supporting said pin and said semicircular valve discs thereon for pivotal movement of said semicircular valve discs between open and closed positions relative to said flow passage.

5,301,710

AUTOMATIC FLUID FLOW CONTROL DEVICE, SYSTEM AND METHOD

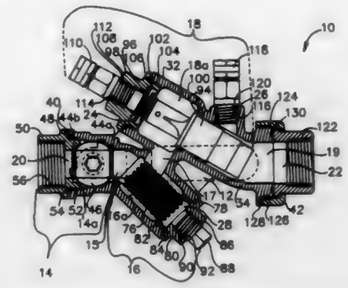
Ali Marandi, Irvine, Calif., assignor to Griswold Controls, Irvine, Calif.

Continuation-in-part of Ser. No. 911,206, Jul. 9, 1992, Pat. No. 5,230,366. This application May 18, 1993, Ser. No. 62,895
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—15 **5 Claims**

3. A method of plumbing a facility with a plurality of fluid flow control devices having a unitary body and including at least one flow member comprising the steps of

(a) installing in a plumbing system a plurality of fluid flow control devices with the flow members removed,

(b) providing excessive fluid flow to the plumbing system to flush the plumbing, and



(c) installing the flow members into the fluid flow control devices.

5,301,711

FLOW CONTROL AND MEASUREMENT DEVICE

Arvid A. Molitor, 1101 Florimond Dr., Elgin, Ill. 60123

Filed Aug. 2, 1993, Ser. No. 100,326
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—119 **10 Claims**

1. A device for connection to a fluid supply comprising:

an inlet assembly having at least one inlet port adapted for connection to said fluid supply;

an outlet assembly attached to said inlet assembly and having at least one outlet port, a flow path being defined between said inlet port and said outlet port;

a valve member positioned between said inlet and outlet assemblies and in said flow path, said valve member movable between at least one closed position in which said valve member blocks said flow path and at least one open position in which said flow path is open, said valve member moving from said closed position toward said open position in response to increased differential pressure between said inlet and outlet assemblies, said valve member defining discharge holes which selectively permit communication between said inlet port and said outlet port when said valve member is in said open position;

biasing means positioned in said outlet assembly beneath said valve member to apply a biasing force to said valve member sufficient to move said valve member from said open position toward said closed position in response to decreased differential pressure between said inlet and outlet assemblies; and

a cylindrical flow distribution ring seated within said outlet assembly and in said flow path, an upper extent of said cylindrical ring and a lower extent of said inlet assembly defining- a radial collector gap having a larger diameter than that of adjacent radial interior surfaces of said ring and said inlet assembly, said flow path being open when said valve member is in said open position and at least one of said discharge holes is exposed to said collector gap.

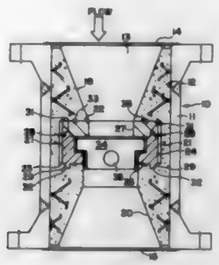
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,712

SLIDE VALVE

Lee E. Treichel, Fulshear, Tex., and Gary J. Baumgartner, Leawood, Kans., assignors to Tapco International, Inc., Houston, Tex.

Filed Jul. 12, 1993, Ser. No. 90,402
Int. Cl.[5] F16K *25/04*
U.S. Cl. 137—375 **3 Claims**



1. A slide valve for high temperature and/or abrasive service comprising,

a body having an outer metal shell and a lining of refractory material forming a flowway therethrough having an inlet and an outlet and a side opening intersecting the flowway intermediate the inlet and the outlet,

a groove disposed in each side of the lining extending transversely from the side opening beyond and on opposite sides of the flowway forming opposed downwardly facing upstream shoulders and upwardly facing downstream shoulders on each side of the flowway,

an orifice plate having an orifice slidable through the side opening in the grooves into position adjacent the upstream shoulder providing an orifice for the flowway,

a pair of guides, one each slidable from the side opening on the downstream shoulder into position under the orifice plate effective to support the orifice plate in position against the upstream shoulder while being supported on the downstream shoulder,

the orifice plate, the guides, and the downstream shoulder having interfitting keys and grooves arranged to permit sliding of the orifice plate and guides into position against the upstream shoulder and supported by the downstream shoulder,

the guides having inwardly extending shoulders effective to provide a guideway and be supported by the downstream shoulders,

a slide movable through the side opening having slide portions which are received by the guideway for guided movement between positions controlling flow through the orifice,

a removable bonnet closing the side opening,

a stem extending sealably through the bonnet and connected to the slide for movement between positions controlling flow through the orifice, and

sealing means on the orifice plate's upper surface surrounding the orifice, the guides holding the orifice plate against the downwardly facing upstream shoulder effective to provide a seal between the orifice plate and the upstream shoulder.

5,301,713

FLOW CONTROL VALVE HAVING ADJUSTABLE PISTON FOR VARYING FLOW RATE

Paul K. Skoglund, P.O. Box 848, Woodinville, Wash. 98072

Filed Jan. 1, 1993, Ser. No. 69,459
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—504 **17 Claims**

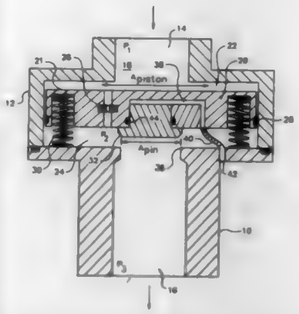
1. A valve;

a housing having an inlet and an outlet forming a flow passage through said housing;

a piston mounted in a bore in said flow passage, said piston dividing said bore into first and second chambers respectively communicating with said inlet and said outlet;

an orifice providing fluid flow from said inlet to said outlet;

spring means biasing said piston toward said inlet, said spring means providing a bias force that establishes a substantially constant pressure differential between said first



chamber and said second chamber to enable substantially constant outlet flow at varied pressures;

a valve seat in between said piston and said outlet;

a pin slidably mounted in said piston, said pin aligned to seat and unseat with said valve seat; and

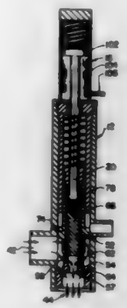
means for altering the position of said piston in said bore and with respect to said pin to adjust the fluid flow rate wherein said means for altering the position of said piston in said bore includes means for applying fluid pressure between said piston and said pin.

5,301,714

MULTI-POSITION VALVE APPARATUS HAVING A RETURN PORT

Keith E. Johnson, Rte. 4, Box 315A, Edenton, N.C. 27932

Filed Mar. 1, 1993, Ser. No. 24,420
Int. Cl.[5] F16K *11/16*
U.S. Cl. 137—599.2 **11 Claims**



1. A multi-position valve assembly for dispensing large incoming volumes of a fluid while preventing settling, separation or hardening which occurs in a non-flow condition, said assembly comprising:

a. a valve housing enclosing a fluid chamber and including an inlet port, an outlet port, and a return port leading into the fluid chamber, and wherein the fluid chamber includes a return flow path extending from the inlet port to the return port and a first and a second outlet flow path extending from the inlet port to the outlet port;

b. a closure assembly disposed within the valve housing for directing incoming fluid flow from the inlet port and including:

i. a first outlet closure member positionable between a seated position and an unseated position, and wherein when in the seated position the first outlet closure member seats with a first valve seat to block the first outlet flow path;

ii. a second outlet closure member positionable between a seated position and an unseated position, and wherein when in the seated position the second outlet closure member seats with a second valve seat to block the first outlet flow path;

iii. a return closure member positionable between a blocking position and an unblocking position, and wherein when in the blocking position the return closure member seals against the inner wall of said valve housing at a point between the inlet port and the return port to block the return flow path;

c. wherein said closure assembly is selectively positionable to place the closure assembly and valve assembly in a plurality of positions, the positions including:

i) a closed position where the closure assembly directs all of the incoming fluid flow through the return flow path while blocking incoming fluid flow from flowing through the first and second outlet flow paths;

ii) a partially-open position where the closure assembly directs incoming fluid flow through the return flow path and through the first outlet flow path while blocking incoming fluid flow through the second outlet flow path, so as to direct a portion of the incoming fluid flow to the return port and another portion of incoming fluid flow to the outlet port;

iii) a fully-open position where the closure assembly directs all of the incoming fluid flow through both the first and the second outlet flow paths while blocking incoming fluid flow from flowing to the return flow path, so as to direct all incoming fluid flow to the outlet port while blocking incoming fluid flow from the return port entirely; and

d. a control rod extending axially through said valve housing, wherein said first outlet closure member is attached to the lower end of said control rod and extends axially downwardly therefrom, said return closure member and said second outlet closure member being connected together and forming a sleeve about the control rod, and wherein the return closure member and the second outlet closure member are slidably movable along the control rod; and

e. means for moving said closure assembly between said closed, partially open, and fully open positions.

5,301,715

SANITARY FITTING WITH A PIVOTING FLOW ARM

Albert Becker, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

PCT No. PCT/EP91/00869, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/19125, PCT Pub. Date Dec. 12, 1991
PCT Filed May 8, 1991, Ser. No. 952,873
Claims priority, application Fed. Rep. of Germany, May 30, 1990, 4017328
Int. Cl.[5] E03C *1/02*
U.S. Cl. 137—615 **13 Claims**

1. A sanitary fitting comprising:

a cylindrical fitting body securable in a fixed position;

inlet and outlet channels;

an outflow channel;

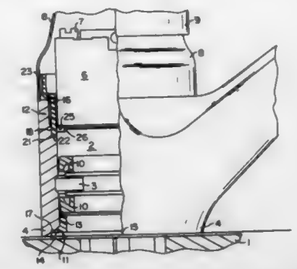
a cylindrical fitting sleeve having a pivot arm connected at the side, said pivot arm having an outlet mouthpiece, said fitting sleeve fitted on said fitting body;

a valve unit mounted on said fitting body;

a cap connected to said fitting sleeve and covering said valve unit;

a set of sealing rings provided in the area of said outflow channel and between said fitting body and said fitting sleeve; and

a lower bearing ring and an upper bearing ring provided between said fitting body and said fitting sleeve, said lower bearing ring having an L-shaped cross section including a cylindrical section forming a radial bearing and a projecting flange-like section forming an axial bearing, said upper bearing ring having a second cylindrical section forming a second radial bearing, said second cylindrical section of said upper bearing ring being continuous, said upper bearing ring having a second projecting section projecting upward above said fitting sleeve, said second projecting section having radial projections for locking said cap into position.

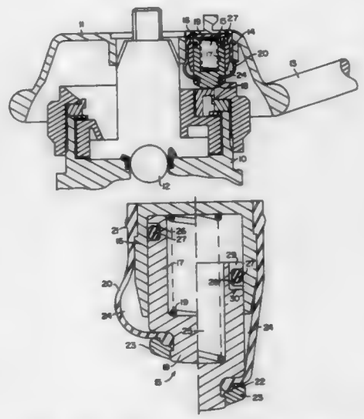


5,301,716

CLOSURE DAMPER FOR A SANITARY WATER FITTING

Konrad Bergmann, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

PCT No. PCT/DE91/00045, § 371 Date Aug. 11, 1992, § 102(e) Date Aug. 11, 1992, PCT Pub. No. WO91/12454, PCT Pub. Date Aug. 22, 1991
PCT Filed Jan. 18, 1991, Ser. No. 916,872
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1990, 4004700
Int. Cl.[5] F16K *11/06, 31/72*
U.S. Cl. 137—625.17 **9 Claims**



1. A water faucet comprising a casing having inlet means for receiving water and outlet means for discharging said received water, control means for selectively controlling said water

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including a handle for actuating said control means, damper means arranged intermediate said handle and said casing for damping said control means when actuated by said handle, said damper means including a cylinder and a piston slidably supported in said cylinder and defining a first chamber therebetween having a fluid therein, a fluid tight flexible membrane surrounding and coupled to said cylinder and said piston to define a membrane chamber, said membrane chamber being open to the flow of said fluid from and to said first chamber as said piston is slidably moved with respect to said cylinder, said cylinder including an inner surface, said piston including an outer surface having an annular groove formed therein, and a sealing ring supported in said groove and pressing against said inner surface of said cylinder, said groove further defining a notch which provides a fluid connection between said first chamber and said membrane chamber.

5,301,717

VALVE BASE PLATE ASSEMBLY

Wolf-Dieter Goedecke, Unterkirnach, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

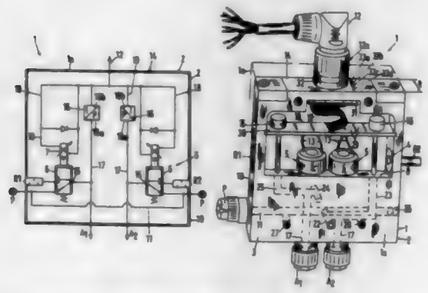
Filed Apr. 9, 1992, Ser. No. 866,790

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111893

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] F16K *71/00*

U.S. Cl. 137—884 **4 Claims**



1. A valve base plate assembly comprising:

a first base plate body having a thickness and a polygonal outer contour comprising a face plate, an upper narrow surface, a lower narrow surface and opposed narrow side surfaces;

a plurality of continuous valves within said base plate having a diameter less than the thickness of said base plate body, each of said valves comprising a pressure fluid inlet port, and a pressure fluid outlet port and an electromagnet having an electrical connecting line;

a pressure fluid inlet connection on at least one of said base plate narrow side surfaces;

a pressure fluid outlet connection at said lower narrow surface and in fluid communication with each of said pressure fluid outlet ports of said continuous valves;

a pressure fluid channel extending within said base plate body parallel to said base plate lower narrow surface and connecting each of said inlet ports of said continuous valves for supplying pressure thereto;

a plurality of pressure sensors each comprising an electrical connecting line and communicating with one of said pressure fluid outlet ports of said valves; and

a central signal connection on said narrow upper surface for receiving said electrical connecting lines of said electromagnets and said pressure sensors.

5,301,718

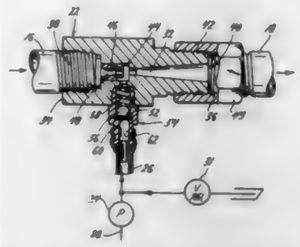
APPARATUS AND PROCESS FOR METERING A LOW PRESSURE FLUID INTO A HIGH PRESSURE FLUID FLOW

Kenneth R. Bolhofner, Fairview Heights, Ill., assignor to Chemstar, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 805,194, Dec. 9, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,765

Int. Cl.[5] B01F *5/04*

U.S. Cl. 137—893 **14 Claims**



1. An apparatus for metering a flow of a first fluid at a first pressure, into a conduit conducting a flow of a second fluid at a second pressure greater than the first pressure, the apparatus comprising:

means for being coupled into the conduit between an upstream side of the conduit and a downstream side of the conduit and for decreasing the pressure of the second fluid at the coupled means to a third pressure less than the first pressure;

means communicating with the coupled means for maintaining the pressure of the second fluid at the coupled means at the third pressure;

means for supplying a substantially constant metered flow of the first fluid to the coupled means at the first pressure, the coupled means receiving the flow of first fluid at the first pressure and adding the first fluid received to the second fluid at the coupled means with the pressure of the second fluid being reduced to the third pressure; and,

the metered flow supplying means includes a peristaltic pump connected in fluid communication between a source of the first fluid and the coupled means, the peristaltic pump drawing first fluid from the source of first fluid and supplying the first fluid to the coupled means at the first pressure.

5,301,719

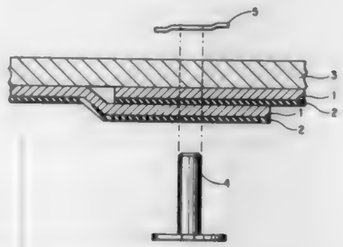
FLUOROELASTOMER LINED FLUE DUCTS

John G. Banerle, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 805,632, Dec. 12, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,222

Int. Cl.[5] B05D *5/00*

U.S. Cl. 138—97 **8 Claims**



1. A lined flue duct comprising

(a) a flue duct and

(b) a flue duct liner comprising a laminate of a metal substrate having a thickness of about from 0.5 to 4 mm and a sheet of cured, hydrogen-containing fluoroelastomer having a thickness of at least about 0.5 mm, the laminate being shaped to conform to the inner surface of the duct and mechanically attached thereto by means of detachable fastening means.

5,301,720

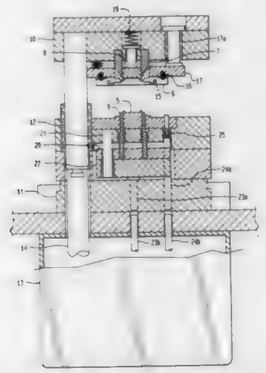
METHOD FOR USE IN THE MANUFACTURE OF SEMICONDUCTOR DEVICES AND APPARATUS FOR USE IN CONNECTION WITH THE METHOD

Lawrence L. Plummer, Jr.; Boon-Meng Chan; See-Lian Gan, and Hok-Ming Chan, all of Kwun Tong, Hong Kong, assignors to Kras Asia Ltd., Hong Kong, Hong Kong

Filed May 26, 1992, Ser. No. 888,138

Int. Cl.[5] B21F *1/02*

U.S. Cl. 140—147 **8 Claims**



1. A method for correcting distortions of electrical leads with project from an integrated circuit chip of the type having feet which are oriented generally parallel to a surface on which the chip is to be mounted, said method comprising the steps of:

(a) fixedly locating said chip in a clamping means with said electrical leads projecting therefrom,

(b) inserting a comb-like member between said leads and correcting thereby any skew distortion,

(c) deforming said leads in a direction perpendicular to the plane of the chip,

(d) final forming the leads to ensure coplanarity of the leads and to ensure that the feet of the leads are at the correct angle to the plane of the chip, and

(e) removing said chip from said clamping means.

5,301,721

UNDERGROUND SECONDARY CONTAINMENT AND VAPOR RECOVERY PIPING SYSTEM

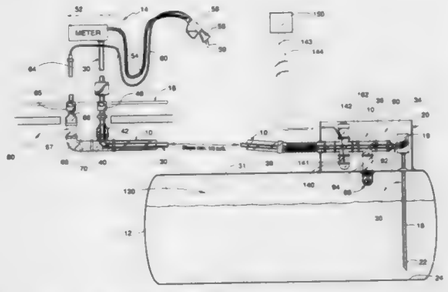
John P. Hartmann, 509 Lake Shore Dr. N., Barrington, Ill. 60010

Continuation of Ser. No. 528,687, May 24, 1990, abandoned. This application Apr. 8, 1993, Ser. No. 46,362

Int. Cl.[5] B67D *5/00*

U.S. Cl. 141—59 **6 Claims**

1. An underground secondary containment and simultaneous vapor return piping system for use at a fuel service station which includes a fuel dispenser including a fuel dispensing nozzle and nozzle vapor return means at a dispensing island, an underground fuel storage tank having a first, vapor return opening in a wall of the tank and a second, fuel outlet opening in a wall of the tank, and a primary fuel delivery pipeline having a given diameter and extending between the underground storage tank and the fuel dispenser, said secondary containment and simultaneous vapor return piping system comprising an outer, underground, sealed, larger diameter, secondary containment/vapor return pipeline extending around and axially with the inner, primary fuel delivery pipeline from the underground storage tank to the fuel dispenser to establish secondary containment for said fuel delivery pipeline and simultaneously to establish within the secondary containment/vapor return pipeline and around or about said fuel delivery pipeline, a continuous, uninterrupted, axially extending, interstitial space defining a vapor return path, upper fluid coupling termination means for coupling (a) the interstitial space within said outer secondary containment/vapor return pipeline to the nozzle vapor return means and (b) the fuel delivery pipeline to the fuel dispenser nozzle, and lower fluid coupling termination means for coupling (a) the interstitial space within said outer secondary containment/vapor return pipeline to the first, vapor return opening in a wall of the underground storage tank and (b) the fuel delivery pipeline to



the second, fuel outlet opening in a wall of the underground storage tank whereby a continuous uninterrupted, vapor return space or path, in addition to secondary containment, is established in and by said secondary containment/vapor return pipeline, between said upper and lower fluid coupling termination means and around or about said fuel delivery pipeline, said primary fuel delivery pipeline having a flexible portion at least adjacent to or as part of said lower fluid coupling termination means and said secondary containment/vapor return pipeline also having a flexible portion at least in the area surrounding said flexible portion of said primary fuel delivery pipeline, said lower fluid coupling termination means including valve means for preventing fuel from entering said secondary containment-/vapor return pipeline from the underground storage tank and said primary fuel delivery pipeline together with said secondary containment/vapor return pipeline being arranged to slope downwardly at a selected slope angle from the dispensing island to the underground storage tank.

5,301,722

UNDER-DISPENSER CONTAINMENT APPARATUS

John A. Todd, and Deborah A. Joines, both of Salisbury, Md., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 26, 1991, Ser. No. 813,575

Int. Cl.[5] B67D *5/04*

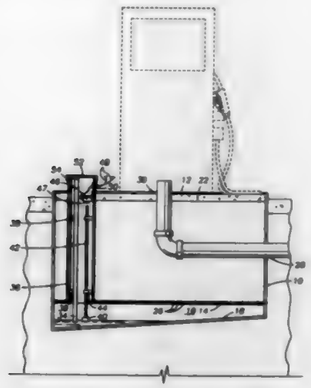
U.S. Cl. 141—86 **12 Claims**

1. An under-dispenser containment device for the collection of fuel spillings comprising:

(a) a means for collecting said spillings from one or more fuel supply devices;

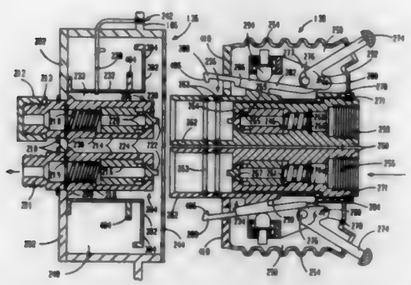
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(b) a collection reservoir integrally attached to said collecting means;
(c) fill material within said collecting means; and



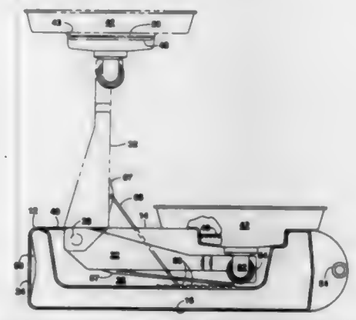
(d) a perforated barrier located so as to define the collection reservoir under said barrier and separate fill material from said collection reservoir.

5,301,723
APPARATUS AND METHOD OF PREVENTING ICE ACCUMULATION ON COUPLING VALVES FOR CRYOGENIC FLUIDS
John E. Goode, Arlington, Tex., assignor to Hydra Rig, Inc., Fort Worth, Tex.
Filed Nov. 6, 1992, Ser. No. 973,159
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—82 **23 Claims**



1. A quick-disconnect coupling for use in a cryogenic system having mating components for establishing a connection between two lines for transferring cryogenic fluid from one line to the other without ice forming on mating surfaces of the components, the quick-disconnect coupling comprising:
- a first connector coupled to a first line and having a first mating surface;
- a second connector coupled to a second line for carrying a flow of cryogenic fluid, the second connector having a second mating surface configured for mating with the first connector and establishing a disconnectable seal for communication of the flow of cryogenic fluid from the second line to the first line; the second connector including a passage for supplying a flow of dry purging gas to the second mating surface for displacing moisture-laden air from around the second mating surface, thereby preventing moisture in air from freezing onto the second mating surface when the second connector is very cold due to flow of cryogenic fluid.

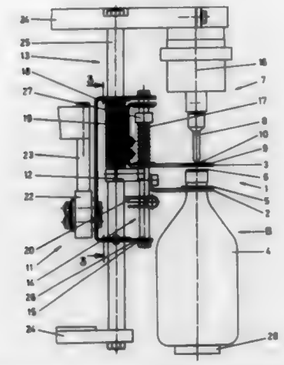
5,301,724
OIL COLLECTING AND DISPENSING APPARATUS
Boyce A. Maxwell, 10527 Kirkvale, Houston, Tex. 77089
Continuation-in-part of Ser. No. 624,348, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 464,425, Jan. 12, 1990, abandoned. This application Dec. 4, 1991, Ser. No. 906,501
Int. Cl.[5] F16N *31/00*
U.S. Cl. 141—98 **7 Claims**



1. An apparatus for collecting fluid from a vehicle comprising:
- a container having a generally rectangular shape with first and second sides, a top, and a bottom, and having a recess formed in the first side thereof;
- an arm having a passageway therethrough which opens into said container pivotally mounted to said container in the recess formed in the first side thereof;
- a funnel mounted on the end of said arm with the outlet from said funnel in fluid communication with the passageway in said arm, said funnel being selectively positionable in a first, stored position in which said arm and a significant portion of the vertical dimension of said funnel are both positioned within the recess formed in the first side of said container to minimize the height of said container when said container rests on the second side thereof and a second, raised position in which said funnel is positioned inclose approximation with the location from which a fluid is to be collected for draining the fluid from a vehicle into said funnel and down through the passageway in said arm into said container;
- means for supporting said funnel in said second, raised portion; and
- a drain spout having a valve therein for opening to dispense the fluid collected in said container when said container is stood upright on the bottom thereof.

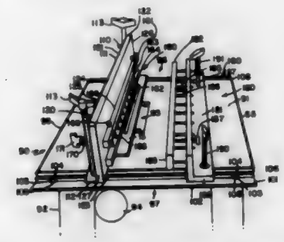
5,301,725
VESSEL TREATING MACHINE
Rupert Meinzinger, Kirchrot/Oberseitldorn, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany
PCT No. PCT/EP91/02469, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO92/11197, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 20, 1991, Ser. No. 920,560
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 9017262
Int. Cl.[5] B67C *3/00*; **B65B** *1/04, 3/00*
U.S. Cl. 141—372 **19 Claims**

1. In a vessel treating machine of the revolving type having at least one treatment element for treating a vessel on a revolving portion of the machine, the vessel having an upwardly directed opening with a collar below the opening and the treatment element having a terminal end required to be centered with respect to the opening of the vessel, the improvement comprising a device for holding the vessel for treatment by the treatment element independently of said treatment element, said holding device comprising a supporting element for supporting the vessel from its collar, means for moving the supporting element and the treatment element relative to each other in the axial direction of the vessel for treatment of the



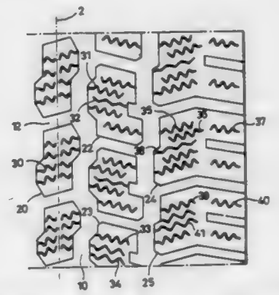
vessel by the treatment element, a centering element located between the terminal end of the treatment element and supporting element, and means for moving the centering element and the supporting element relative to each other in the axial direction of the vessel and independently of the treatment element to engage the opening of the vessel with the centering element to center the vessel axially relative to the axis of the treatment element and to clamp the vessel between said centering and supporting elements by its opening and collar, respectively, for treatment of the vessel by the treatment element.

5,301,726
WORKPIECE STABILIZER FOR BENCH TOOLS
Joseph J. Wojcik, 30 Avery St., Lowell, Mass. 01851
Filed Oct. 28, 1992, Ser. No. 967,701
Int. Cl.[5] B27C *5/02, 1/14*
U.S. Cl. 144—253 J **28 Claims**



1. Stabilizing apparatus for use with a tool having first and second perpendicular planar work surfaces, said apparatus including stabilizing means for supporting a workpiece for motion relative thereto, said stabilizing means comprising:
- A. elongated base means for attachment to one of the first and second work surfaces,
- B. elongated adjustable support means substantially parallel to said elongated base means for defining a work piece support plane that is displaced from the other of said first and second work surfaces, and
- C. a plurality of spaced interconnection means affixed to said elongated adjustable support means and biased against said elongated base means for enabling said elongated adjustable support means to move relative to said elongated base means and the other of the first and second work surfaces thereby to define a channel between the other of the first and second work surfaces and said elongated adjustable support means for stabilizing the position of the work piece against the other of the first and second work surfaces.

5,301,727
RADIAL-PLY TIRE HAVING WAVY SIPES
Teruo Inoue, Osaka, Japan, assignor to Toyo Tie & Rubber Co., Ltd., Osaka, Japan
Continuation of Ser. No. 534,590, Jun. 6, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 981,924
Claims priority, application Japan, Jun. 23, 1989, 1-161269
Int. Cl.[5] B60C *11/12*
U.S. Cl. 152—209 R **11 Claims**



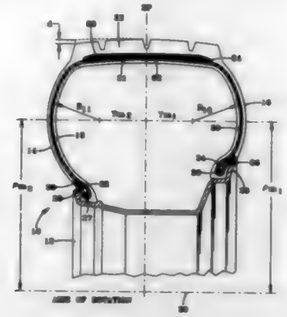
1. A radial-ply tire having an equatorial plane and a tread provided with longitudinal and transverse grooves thereon comprising:
- a block isolated by the longitudinal and transverse grooves on the tread; and
- a central wavy sipe and a peripheral wavy sipe disposed in a central region and a peripheral region of the block, respectively, with respect to a circumferential direction of the tire, each of the wavy sipes running zigzag along a centerline, wherein the centerlines for the central and peripheral wavy sipes extend in parallel to each other and substantially transversely relative to said equatorial plane and the central wavy sipe makes a smaller angle with the centerline therefor than the peripheral wavy sipe with the centerline therefor.

5,301,728
DUAL BEAD DIAMETER TIRE
Jack E. Brown, Jr., and Archie E. Ni, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 19, 1993, Ser. No. 5,682
Int. Cl.[5] B60C *3/06, 9/02, 9/18*
U.S. Cl. 152—209 R **11 Claims**

1. A pneumatic tire comprising a pair of annular beads of unequal diameter, at least one carcass ply wrapped around said beads, a tread disposed over said at least one carcass ply in a crown area of said tire, and a longer sidewall and a shorter sidewall disposed between said tread and said beads, the sidewall being said tread and the larger diameter bead being said shorter sidewall, wherein the rho_m of the longer sidewall is substantially equal to the rho_m of the shorter sidewall when

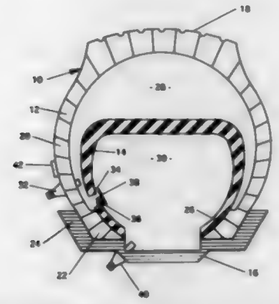
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said tire is inflated to its normal pressure, and wherein rho_m is the perpendicular distance from the axis of rotation of a tire to



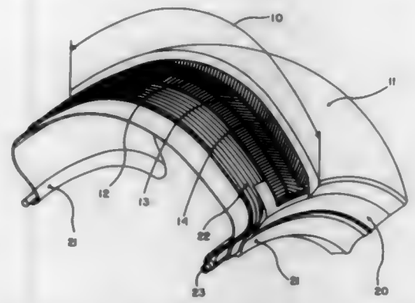
a line Y_m which is parallel to the axis of rotation and passes through the widest section width of the tire.

5,301,729
DUAL CHAMBER SAFETY TIRE
Johnny E. Blair, P.O. Box 16, Van, W. Va. 25206
Filed Jul. 27, 1992, Ser. No. 919,748
Int. Cl.[5] B60C *5/22*
U.S. Cl. 152—342.1 **7 Claims**



1. Apparatus comprising a rim and a dual chamber inflatable safety tire mounted on said rim, said tire comprising an outer tire having treads for engagement with a roadway, said outer tire having sidewalls, an inner tire disposed within said outer tire forming an outer chamber between said outer tire and said inner tire and forming an inner chamber between said inner tire and said rim, first inflation and deflation valve means extending through said sidewalls and spaced from said rim into said outer chamber to enable a vehicle operator to measure and thereby be responsible for the correct air pressure in said outer chamber and the correct wear of said treads, a one way valve extending through said inner tire to provide for air flow from said outer chamber to said inner chamber to that said first inflation and deflation valve means may inflate both said outer chamber and said inner chamber to equalize air pressures thereby presenting the outer chamber air pressure from pressing said inner tire inward to said rim to an unsafe position when inflating said outer chamber before inflating said inner chamber, second inflation and deflation valve means extending through said rim into said inner chamber to enable a vehicle operator to measure and thereby be responsible for the inflation of said inner chamber to a higher pressure than said outer chamber and to enable deflation of both said inner chamber and said outer chamber, said first and said second inflation and deflation valve means providing means to provide for independent measurement of air pressure in said inner and outer chambers whereby the inability to maintain a higher pressure in said inner chamber than in said outer chamber indicates a defect.

5,301,730
MOTORCYCLE TIRES
Alain Delias, Perignat-les-Sarlieves, France, assignor to Compagnie Generale de Etablissements Michelin - Michelin & Cie, Clermont-Ferrand, France
PCT No. PCT/FR91/00006, § 371 Date Sep. 3, 1902, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO92/12019, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 7, 1991, Ser. No. 934,618
Int. Cl.[5] B60C *9/18, 9/20, 9/22*
U.S. Cl. 152—531 **3 Claims**

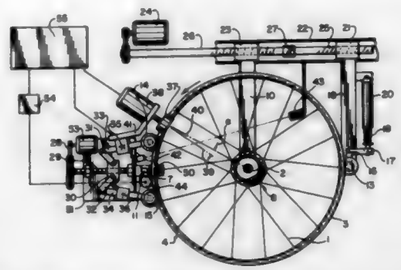


1. Motorcycle tire comprising a central part including the tread, and two sidewalls each extending between one end of the central part and a bead intended to assure the hooking on the rim, said central part, seen in radial section, forming approximately an arc, said tire being reinforced by a casing extending from one bead to the other, and by a belt placed in the central part, between the casing and the tread, said belt comprising one or more layers of cords oriented approximately parallel to a plane perpendicular to the axis of rotation and placed on the casing along the entire width of the tread, wherein the belt comprises, in addition to said layer or layers of cords, and placed radially thereover, a reinforcement whose cords form an angle α in relation to a plane perpendicular to the axis of rotation of the tire, and an angle $-\beta$ in relation to said plane, said angles α and β being between the values 35° and 55°.

5,301,731
APPARATUS FOR MOUNTING SPOKES BETWEEN A HUB AND RIM OF A SPOKE WHEEL
Anthonius S. Admiraal, Limmen, Netherlands, assignor to Holland Mechanics B.V., Netherlands
Filed Mar. 17, 1993, Ser. No. 32,505
Claims priority, application Netherlands, Mar. 18, 1992, 9200503; Nov. 13, 1992, 9201986
Int. Cl.[5] B21K *1/34*
U.S. Cl. 157—1.55 **10 Claims**

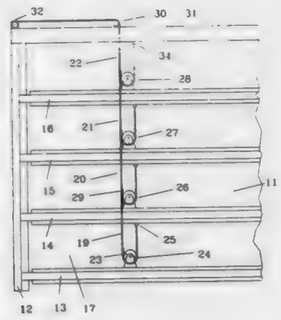
1. Apparatus for mounting spokes (1) between a hub (2) and rim (3) of a spoke wheel (4) and attaching nipples into the spokes through respective nipple holes in the rim, comprising a hub support (8) for rotatably supporting the hub, rim support rollers (13, 14, 15) for supporting the rim (3) concentrically around its axis, drive means (37, 38) for rotating the rim (3) about its axis, at least a rotatably driven, substantially radially directed screw driver (11) for screwing nipples (7) onto corresponding spokes (1) through the respective nipple holes (6) in the rim (3), measuring means (42, 44) for determining the position of the nipple holes (6) in the rim (3) and providing a measuring signal representative of that position, and control means (55) for receiving the measuring signal and controlling the drive means (37, 38) such that the nipple holes (6) are

successively positioned in front of the screw driver (11), wherein the drive means (37, 38) for the rim (3) is arranged less



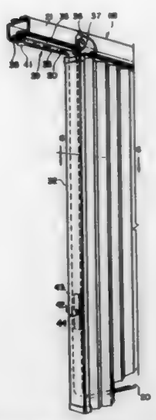
than 90° from the screw driver (11) along an arc defined by the rotating rim.

5,301,732
DOOR
Lasse Aabel, Drammen, Norway, assignor to Nomafa AB, Sweden
Filed Jul. 14, 1992, Ser. No. 913,178
Int. Cl.[5] E06B *9/06*
U.S. Cl. 160—84.1 E **5 Claims**



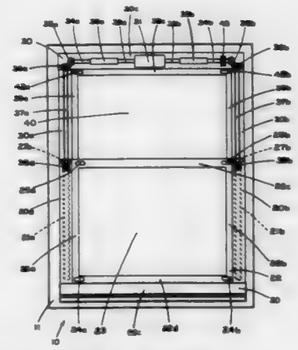
1. A door comprising:
a flexible planar door leaf suspended from an upper edge of a doorway including a continuous sheet in at least one layer attached to a series of lateral braces, said lateral braces being spaced at an equal distance from each other in a vertical direction of the doorway to define a plurality of sections, a vertically extending guide profile provided at respective lateral edges of the doorway for guiding and supporting the door, a plurality of hoisting means respectively attached to the respective lateral braces and to hoisting element so as to have an equal pulling velocity, wherein said plurality of hoisting means are connected to the respective lateral braces by pulleys so as to provide a common upper lifting limit for the respective lateral braces and a transfer of a weight load of the door to an upper edge of the doorway, and wherein the connection of the respective hoisting means to the common hoisting element enables a hoisting of the door between an open and closed position.

5,301,733
TAPE-SUPPORTED WINDOW COVER SYSTEM
Andrew J. Totl, 311 W. River Rd., Modesto, Calif. 95351
Filed Aug. 25, 1992, Ser. No. 934,989
Int. Cl.[5] E06B *3/94*
U.S. Cl. 160—84.1 R **23 Claims**



1. A window covering system, comprising: a track; a window cover; means for mounting the window cover to the track for traversing at least one end of the cover open and closed along the track; longitudinally-rigid, transversely-flexible tape means routed through the window covering and along at least said one end of the cover, for maintaining alignment of the window cover relative to the track; and means containing the tape means against transverse movement, to effect push and pull action by the tape and provide positive displacement of the tape and the cover at the end thereof.

5,301,734
WINDOW MECHANISM
George E. Opel, Ambler, Pa., assignor to Geo Ventures, Ambler, Pa.
Filed Feb. 16, 1993, Ser. No. 18,005
Int. Cl.[5] E06B *3/32;* **E05F** *11/38*
U.S. Cl. 160—100 **11 Claims**



1. A window assembly comprising:
a) a first window frame member comprising generally vertical side members disposed adjacent to opposite vertical edges of a first window pane, each of said side members of

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said first window frame member including a threaded hole therein;

b) a second window frame member comprising a generally horizontal member disposed adjacent to one horizontal edge of a second window pane and generally vertical side members disposed adjacent to opposite vertical edges of said second window pane;

c) drive means attached to said horizontal member of said second window frame member and comprising horizontally rotatable means; and

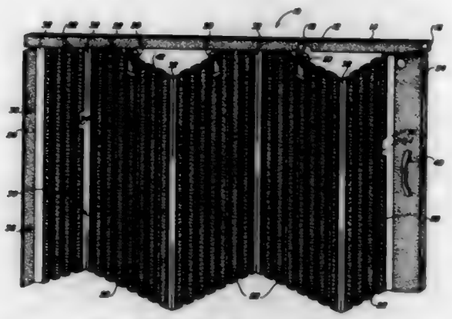
d) a pair of rotatable substantially vertical shafts in driving engagement with said horizontally rotatable means and located adjacent to said vertical side members of said second window frame member, said rotatable vertical shafts comprising threaded portions threadably engaging said threaded holes in said side members of said first window frame member, wherein rotation of said vertical shafts results in relative vertical movement of said first window frame member in relation to said second window frame member.

5,301,735

TEXTURED FOLDING DOOR AND FRAME ASSEMBLY

Chang-Than Chen, 181, Po-Hai Street, Kaohsiung, Taiwan

Filed Oct. 19, 1992, Ser. No. 962,383
Int. Cl.[5] E05D *15/26*
U.S. Cl. 160—199 **4 Claims**



1. An improved textured folding door and door frame assembly, said assembly comprising, in combination:

a) a door frame, including, in combination,

i. a horizontal channel member, generally U-shaped in transverse cross-section, and having a slide channel therein, and,

ii. a vertical side frame;

b) a folding door comprising,

i. a vertical side panel bearing a handle and including a side hinge running the length of a side thereof,

ii. an array of interconnected, parallel, translucent polyvinyl chloride slats having a plurality of staple fibers substantially uniformly distributed therethrough so that said slats have a sandy texture and appearance, each said slat in said array comprising a plurality of integral, parallel, vertical interconnected segments, each said slat including at least one integral foldable side hinge connected to a side thereof along the length thereof and received within a groove extending the length of the side of a next adjacent one of said slats in said array, one of said slats, namely the slat in said array facing one side of said array having its side hinge connected to said vertical side frame, and said slat on the opposite side of said array receiving said foldable side panel hinge; and,

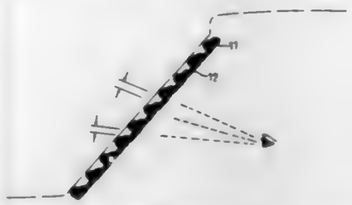
c) guide means connected to the tops of said side panel and said slats and slidably received within said channel member for movement of said door between a folded and open position along the length of said channel member.

5,301,736

SUN SHIELD FOR VEHICLES

Hans Wu, 2F, No. 2, Alley 97, Lane 226, Sec. 3, Tong-Men Rd., Tainan City, Taiwan

Filed Jul. 12, 1993, Ser. No. 89,578
Int. Cl.[5] E06B *9/00*
U.S. Cl. 160—370.2 R **3 Claims**



1. A sun shield for vehicles comprising:

a net member which is made of a plurality of interwoven threads with a plurality of openings formed among said threads, said threads being interwoven to form at least two layers of overlapped projection portions on a front face of said net member, said projection portions forming parallel eaves which are inclined toward a direction with respect to a plane defined by said net member in order to partially shield said openings; and

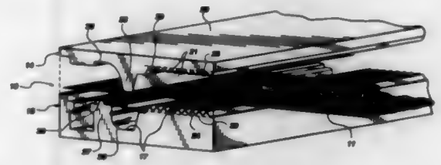
two mounting strips made of a plastic cling material with static characteristics which are secured to a rear face of said net member.

5,301,737

SCREEN INSERT FRAME

William D. Martin, Taylorsville, Utah, assignor to All Weather Steel Products Co., Inc., Salt Lake City, Utah

Filed May 19, 1992, Ser. No. 888,728
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—380 **17 Claims**



1. A screen enclosure device comprising:

a first rigid frame member surrounding an opening therethrough, said frame member having an exterior face and an opposing interior face on an opposite side thereof for abutting against a second frame member;

a second rigid frame member having a size and configuration corresponding to the first frame member and including an exterior face and an opposing interior face on an opposite side thereof for abutting against the opposing interior face on the first frame member when the first and second frame members are coupled together to form a single frame;

serrated contacting structure including a plurality of rows of teeth formed as an integral part of the interior face of at least one of said rigid frame members such that when said first and second frame members are coupled together to form a single frame, the serrated contacting structure is interposed in contacting relationship between the opposing interior faces of the first and second frame members; and

a screen drawn tightly across the opening of the frame lying in a first plane and retained in this tight configuration by force means supplied by the serrated contacting structure interposed between the opposing interior faces of the first and second frame members;

wherein said opposing faces of the first and second frame members are substantially planer in configuration, said serrated contacting structure also having each contacting surface of its teeth common to respective single planes each of which are parallel to said first plane;

wherein one of the frame members includes a first cavity formed along the full length of the frame member, outside the enclosure of the serrated contacting structure and having sufficient depth to receive excess screen material extending beyond the stretched portion of the screen, said cavity being closed at its open end by the remaining frame member when in the coupled configuration;

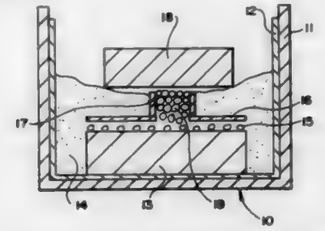
wherein the remaining frame member includes a protruding lip extending from its opposing face and in direct alignment with the cavity of the other frame member when coupled, said lip having a configuration which permits the lip to mate within the cavity with entrapment of excess peripheral screen material and with the opposing faces in near contact.

5,301,738

METHOD OF MODIFYING THE PROPERTIES OF A METAL MATRIX COMPOSITE BODY

Marc S. Newkirk, and Andrew W. Urquhart, both of Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.; Michael K. Aghajanian, Bel Air, Md.; Mark G. Mortenson, North East, Md.; Vilupanur A. Ravi; New Castle, Del.; Alan S. Nagelberg, Wilmington, Del.

Continuation of Ser. No. 520,944, May 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 269,309, Nov. 10, 1988, Pat. No. 5,000,248. This application Feb. 24, 1992, Ser. No. 841,241
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 **9 Claims**



1. A method for forming a metal matrix composite body, comprising:

forming a permeable mass of at least one material selected from the group consisting of a filler material and a preform;

providing at least one second material to at least a portion of said permeable mass, said second material consisting essentially of non-metals;

providing an infiltrating atmosphere;

providing a molten matrix metal;

providing at least one of an infiltration enhancer and an infiltration enhancer precursor to at least one of said matrix metal and said permeable mass;

spontaneously infiltrating said molten matrix metal into at least a portion of said permeable mass and, after said spontaneously infiltrating, at least partially reacting said at least one second material with at least one of said molten matrix metal and said permeable mass to define an infiltrated mass; and

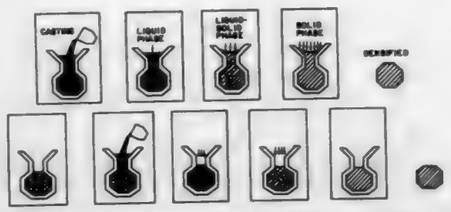
cooling said infiltrated mass containing said matrix metal therein, at least a portion of said infiltrated mass being modified by reaction with said second material.

5,301,739

METHOD FOR CASTING AND DENSIFICATION

Arnold J. Cook, 801 James Way, Mt. Pleasant, Pa. 15666

Filed Jun. 30, 1992, Ser. No. 906,373
Int. Cl.[5] B22D *27/13, 19/14*
U.S. Cl. 164—97 **26 Claims**



1. A method for casting and densification comprising the steps of:

filling a mold in a pressure vessel to a predetermined level with molten metal; and

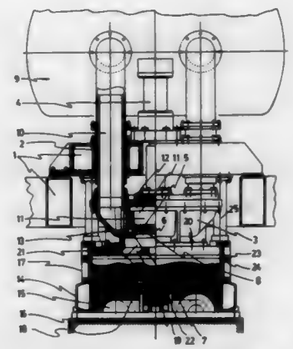
increasing pressure in the vessel at a predetermined rate through at least a stage of the casting process which is subsequent to the entire molten metal solidified as solid phase such that voids within the metal are substantially closed without removing the mold with the metal from the pressure vessel.

5,301,740

AIR IMPACT SANDBOX MOULDING MACHINE WITH A BLOWING HEAD

Augustin A. Erana, Zorrostes 4, Polígano Industrial Ali Gobeo, 01010- Vitoria (Alava), Spain

Filed Oct. 27, 1992, Ser. No. 967,698
Claims priority, application Spain, Oct. 30, 1991, 9102403
Int. Cl.[5] B22C *15/28*
U.S. Cl. 164—195 **1 Claim**



1. An air impact sandbox moulding machine comprising a stationary framework; a liftable table; a moulding box and a frame connected thereto for containing sand mass, said table carrying a moulding plate to place said plate in contact with the sand mass contained within said moulding box and said frame; two vertical guide columns positioned in said framework; a subframe positioned adjacent said frame at an end face thereof and rigidly connected to said framework, said subframe being tightly coupled to said frame as said table carrying said moulding plate has been lifted; a metal plate positioned in said subframe with a play and having holes for passing therethrough of air to be blown into said moulding box; a movable rammer positioned within said framework; a cylinder also

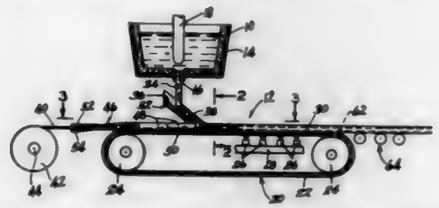
VOL 1161 ISS 2 AP 12 1994 UMI

positioned at said framework and connected to said rammer for driving said rammer in an upward and downward direction; and a blowing head including a drum and air conduits connected thereto for supplying blown air through said conduits, said air conduits being telescopic and positioned within said vertical guide columns with a play, said rammer including a valve having a stopper movable therewith so as to open or close a mouth opening which is in communication with said air conduits for blowing air into said moulding box through said holes in said metal plate so as to compact the sand mass within said moulding box and said frame by air blowing, said rammer including a flange rigidly connected to said metal plate to move said metal plate along with said rammer downwards so as to place said metal plate in contact with the sand mass contained within said moulding box and said frame to mechanically compact the sand mass after said compacting by air blowing.

5,301,741
CASTING OF METAL STRIP

W. Gary Watson, Cheshire; Harvey P. Cheskis, North Haven, and Thomas J. Melillo, East Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 709,556, Jun. 3, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 513
Int. Cl.[5] B27D *11/06*
U.S. Cl. 164—461 **12 Claims**



1. A method of casting a metal material into strip or sheet, comprising the steps of:

a. providing a flat supporting substrate beneath a means for feeding molten metal,

b. passing a flat metallic foil into a means for forming walls from each of two opposite edge portions of the foil, and then passing the foil from the wall forming means onto the substrate,

c. forming, in the wall forming means, an upright sidewall from each of the two opposite side edge portions,

d. passing the foil with upright formed sidewalls into a position underneath the means for feeding molten metal, and depositing molten metal on the center portion of the foil while maintaining the center portion of said foil flat, and

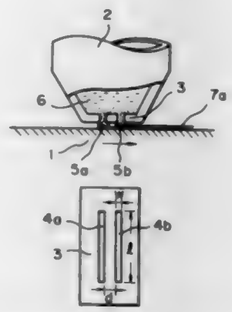
e. bonding the deposited metal to the center portion of the foil, and

f. removing the bonded foil and deposite from the substrate while maintaining the foil bonded to the deposit.

5,301,742
AMORPHOUS ALLOY STRIP HAVING A LARGE THICKNESS

Takashi Sato; Tsutomu Ozawa, and Toshio Yamada, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 762,733, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 537,165, Jun. 11, 1990, abandoned, which is a division of Ser. No. 373,175, Jun. 28, 1989, abandoned, which is a division of Ser. No. 102,274, Sep. 28, 1987, Pat. No. 4,865,664, which is a continuation of Ser. No. 797,176, Nov. 8, 1985, abandoned, which is a division of Ser. No. 672,065, Nov. 16, 1984, abandoned. This application Jun. 25, 1993, Ser. No. 83,851
Claims priority, application Japan, Nov. 18, 1983, 58-216287; Feb. 25, 1984, 59-33335; May 31, 1984, 59-112015
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—463 **6 Claims**



1. A method of producing a thick amorphous alloy strip by ejecting a molten metal onto a surface of a moving cooling substrate for quenching, comprising the steps of:

providing said moving cooling substrate by using a single-roll cooling process;

ejecting under pressure a first molten metal through a first nozzle opening onto the moving cooling substrate to form a first molten metal puddle portion;

drawing out first molten metal from the first molten metal puddle portion to form a strip, by moving the moving cooling substrate in a predetermined direction;

ejecting under pressure a second molten metal having the same composition as the first molten metal through a second nozzle opening spaced 0.5 to 4 mm from the first nozzle opening along the moving direction of the cooling substrate and formed in parallel with the first nozzle opening, said second molten metal being ejected on the surface of the strip, the strip being incompletely solidified, with said second molten metal forming a second molten metal puddle portion, wherein the second molten metal of the second molten metal puddle portion mixes with non-solidified metal of the incompletely solidified strip, the non-solidified metal of the incompletely solidified strip being located at a top portion of said strip facing said second nozzle opening and forming the surface of the strip onto which the second molten metal is ejected;

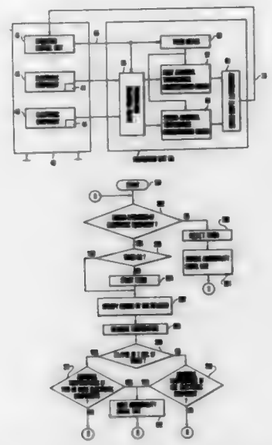
drawing out second molten metal from the second molten metal puddle portion to form an initial monolithic strip composed of the second molten metal and the incompletely solidified strip, the strip being brought into firm contact with the surface of the moving cooling substrate due to said ejection under pressure thereby increasing cooling rate; and

thereby obtaining a monolithic metal strip having a thickness of at least 50 μm and having a fracture strain of 0.01 or more upon complete solidification of said strip.

5,301,743
COOLING ABNORMALITY DETECTION SYSTEM FOR ELECTRONIC EQUIPMENT

Tsukasa Mizuno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 802,694, Dec. 5, 1991, Pat. No. 5,174,364, which is a continuation of Ser. No. 409,742, Sep. 20, 1989, abandoned. This application Sep. 16, 1992, Ser. No. 945,629
Claims priority, application Japan, Sep. 21, 1988, 63-234880; Jan. 11, 1989, 1-4491; Mar. 28, 1989, 1-77219
Int. Cl.[5] F28D *15/00*; G01K *17/00*; H02B *1/00*; H05K *7/20*
U.S. Cl. 165—12 **1 Claim**



1. A cooling abnormality detection system for external electronic equipment, including a heat exchanger for performing the heat exchange of a liquid coolant supplied from the external electronic equipment, a coolant tank for absorbing expansion of the liquid coolant supplied from said heat exchanger, a pump for circulating the liquid coolant stored in the coolant tank to the external electronic equipment, and a protection unit for detecting a cooling abnormality of the liquid coolant in said electronic equipment, said protection unit being arranged to stop the power supply to a given electronic equipment when the cooling abnormality of said given electronic equipment is detected, thereby preventing reliability degradation and breakdown of said electronic equipment, said protection unit comprising:

temperature measuring means for detecting the temperature of said electronic equipment while said electronic equipment is being powered;

timer means for starting counting a predetermined period of time when said electronic equipment is powered and for outputting a signal when the predetermined period of item elapses;

first abnormal temperature discriminating means, which operates until a time-out signal is output from said timer means, for discriminating whether one temperature measured by said temperature measuring means is an abnormal temperature;

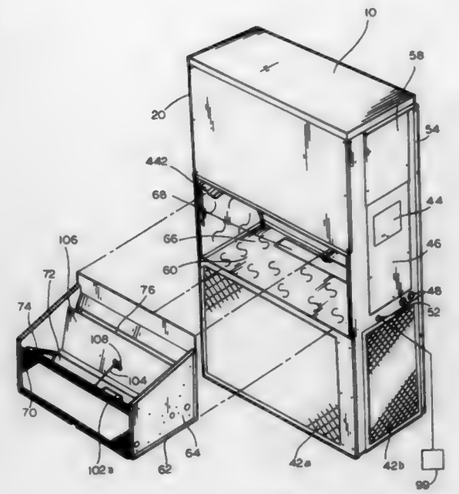
second abnormal temperature discriminating means, which operates after the time-out signal is output from said timer means, for discriminating whether a plurality of temperatures measured by said temperature measuring means are abnormal temperatures; and

abnormality alarm means for receiving an abnormality signal from at least one of said first and second abnormal temperature discriminating means for stopping the power supply to said internal electronic equipment.

5,301,744
MODULAR AIR CONDITIONING SYSTEM

Irvin L. Derks, Bryan, Ohio, assignor to Bard Manufacturing Company, Bryan, Ohio

Filed Feb. 5, 1993, Ser. No. 16,153
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—16 **23 Claims**



1. An air conditioning system attachable to a structure, said structure having an interior and an exterior, said air conditioning system comprising:

a) an elongate housing including;

1) a module receiving chamber inside said housing in communication externally and internally of said housing;

2) a return air opening in said housing in communication with said chamber and with said interior;

3) an air inlet opening in said housing in communication with said chamber and with said exterior;

4) an air exhaust duct in said housing in communication with said chamber and with said exterior for exhausting air from said interior to said exterior;

5) an air supply duct in said housing having a first end in communication with said chamber and a second end in communication with said interior to provide a conduit for passage of conditioned air from said ventilation system to said interior;

6) a ventilation module removably fastenable within said chamber, said ventilation module containing a damper for routing air through said return air opening, said air inlet opening, said air supply duct, and said air exhaust duct;

7) means for conditioning air within said air supply duct;

8) means for circulating air mounted in said air supply duct for drawing fresh air through said air inlet opening and said return air opening, through said chamber, through said air conditioning means, and out said second end of said air supply duct into said interior;

b) means for controlling said air circulating means and said conditioning air means, said control means receiving and processing signals from a thermostat located in said structure or in said return air opening; and

c) means for connecting said thermostat with said control means.

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5,301,745

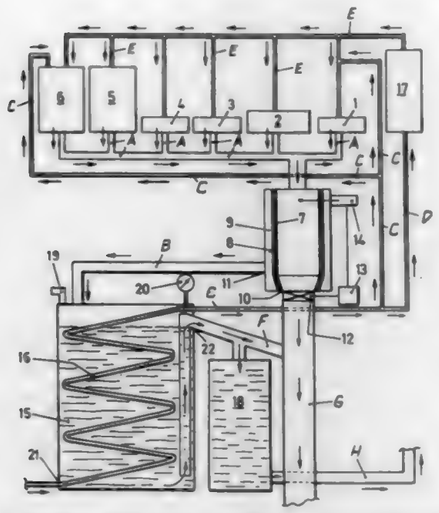
INSTALLATION FOR HEAT RECOVERY

Klaus Seib; Hans W. Thomas, both of Wörrstädter Str. 98, D-W 6505 Nierstein, and Rudolf S. Kodron, Adam-Karrillon-Str. 30, D-W 6500 Mainz 1, all of Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 6,387

Int. Cl.[5] F24D *17/00*; F24H *1/16*; F24I *3/04*; F28D *21/00*

U.S. Cl. 165—47 4 Claims



1. Installation for heat recovery from warm household drain water produced at household water consumption points, comprising

a distributor tank,

a first pipeline system (A) which collects warm household drain water from said consumption points and delivers it to said distributor tank,

said distributor tank having a first outlet leading into a drain water channel (V), a temperature sensor which senses the temperature of the drain water in the distributor tank, and a shut-off device with a solenoid valve located at said first outlet which opens the first outlet leading into the drain water channel (G) when the temperature of the drain water in the distributor tank is below a predetermined temperature,

said distributor tank having a second outlet leading into a second pipeline system (B) when the drain water in the distributor tank is above said predetermined temperature,

a heat exchange tank supplied by the drain water in the second pipeline system (B).

an overflow pipe (F) connecting the drain water in said heat exchange tank to said drain water channel (G),

a heat exchange coil through which cold drinking water is conveyed disposed within said heat exchange tank and in thermal communication with said drain water in said heat exchange tank,

a third pipeline system (C) connected to said heat exchange coil and conveying said drinking water away from said heat exchange tank and some of said drinking water to said household consumption points,

a fourth pipeline system (D) connected to said third pipeline system (C) and conveying the remainder of said drinking water in said third pipeline system (C) to a boiler, and

a fifth pipeline system (E) conveying the water in said boiler to said household consumption points.

5,301,746

NATURAL DRAFT COOLING TOWER

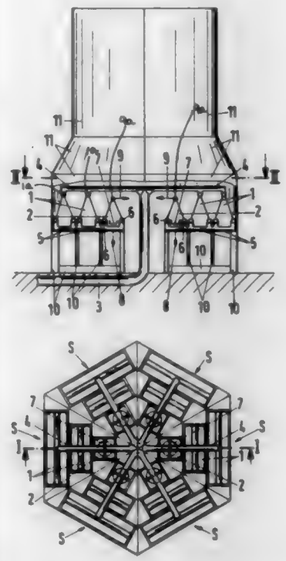
Burkhard Trage, Ratingen; Richard Leitz, Hilden, and Georg Schrey, Ratingen, all of Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 7,532

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4202069

Int. Cl.[5] F28B *9/08*

U.S. Cl. 165—113 8 Claims



1. A natural draft cooling tower for condensing turbine steam of a power plant, said cooling tower comprising:

individual identical sectors assembled to form said cooling tower;

a central steam inlet line terminating in radial distributing lines extending in a radial plane, each said sector having one said radial distributing line;

each said sector having first heat exchanger elements operating in a condensational manner and second heat exchanger elements operating in a dephlegmational manner, with said second heat exchanger elements arranged downstream of said first heat exchanger elements, said second heat exchanger elements each having at least one fan;

each said sector having an inert gas line connected to said second heat exchanger elements and a condensate removal line connected to said first and said second heat exchanger elements;

each said sector comprising an independent support frame for supporting said first and second heat exchanger elements, with said first heat exchanger elements connected to said support frame such that a longitudinal axis of each said first heat exchanger element is perpendicular to said radial distributing line and extends in a plane parallel to said radial plane of said radial distributing lines;

a cooling tower shell comprised of individual shell segments, wherein each said sector has one said shell segment, said cooling tower shell being a steel construction; and

each said shell segment supported on said support frame of said sector.

5,301,747

HEAT EXCHANGER COMPRISED OF INDIVIDUAL PLATES

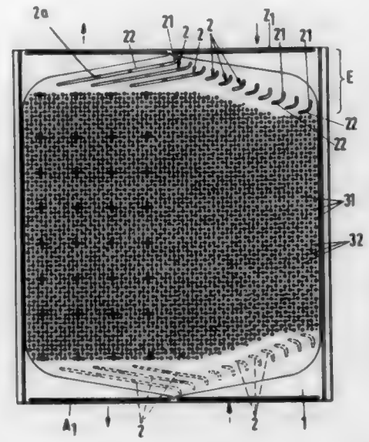
Horst Daschmann; Gregor Schäfer, and Horst Wittig, all of Ratingen, Fed. Rep. of Germany, assignors to Balcke-Durr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 992,705

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142177

Int. Cl.[5] F28F *3/04*

U.S. Cl. 165—166 25 Claims



1. A heat exchanger for counterflow and parallel flow operation, said heat exchanger comprised of:

individual plates combined to pairs and said pairs stacked atop one another, with first flow channels for a first medium begin formed between said plates of one said pair and with second flow channels for a second medium being formed between adjacent ones of said pairs;

each said individual plate having longitudinal rim portions extending parallel to a main flow direction of said heat exchanger, said longitudinal rim portions of a first one of said individual plates connected to said longitudinal rim portions of a second one of said individual plates to form one of said pairs, with said longitudinal rim portions of one said pair connected to said longitudinal rim portions of an adjacent said pair;

each one of said first and second flow channels having an inlet and an outlet arranged diagonally opposite one another in said main flow direction;

said inlets and said outlets of said first flow channels arranged directly atop one another and said inlets and said outlets of said second flow channels arranged directly atop one another, with said inlets and said outlets of said first flow channels staggered relative to said inlets and said outlets of said second flow channels by half a height of one said pair;

each said individual plate having a bottom side and a top side and comprising guiding projections on said bottom side and said top said eat least within an inflow area of said first and second flow channels for distributing the respective first and second medium entering through said inlets over the full width of said first and second flow channels; and

wherein within one said inflow area of said first and second channel said guiding projections at said bottom side are oppositely arranged to said guiding projections at said top side and have a gap therebetween.

5,301,748

HEAT EXCHANGE HAVING MORE THAN ONE SET OF TUBES, IN PARTICULAR FOR A MOTOR VEHICLE

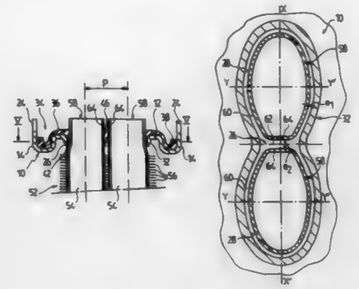
Michel Potier, Rambouillet, France, assignor to Valeo Thermique Moteur, St. Denis, France

Filed Jul. 6, 1993, Ser. No. 87,663

Claims priority, application France, Jul. 8, 1992, 92 08480

Int. Cl.[5] F28F *9/04*

U.S. Cl. 165—173 6 Claims



1. A heat exchanger comprising: a plurality of sets of parallel tubes constituting a tube bundle, with each tube having an end portion; .a header plate formed with a plurality of holes each having an edge, With the said end portion of each of a plurality of adjacent said tubes of different sets being received in each said hole and a compressible sealing gasket interposed between the edge of each said hole and associated tube end portions, wherein each said hole and the associated tube end portions define conjugate cross sectional shapes which themselves together define annular gaps of substantially constant width within the hole, and an intersection region of the hole joining the respective associated annular gaps and lying between two adjacent tube end portions, such that the width of the said intersection region is substantially constant.

5,301,749

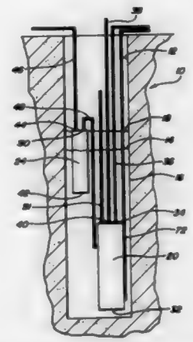
DUAL PUMP FLOATING LAYER RECOVERY APPARATUS

David A. Fischer, Ann Arbor, and Kevin L. Newcomer, Monroe, both of Mich., assignors to QED Environmental Systems, Inc., Ann Arbor, Mich.

Filed Sep. 16, 1992, Ser. No. 945,513

Int. Cl.[5] E21B *43/12*, *43/34*; F04F *1/08*

U.S. Cl. 166—54 15 Claims



1. An apparatus for recovery of a first liquid floating on a second liquid in a well, said apparatus comprising:

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first means for pumping said second liquid, said first pumping means having an inlet disposed within said second liquid; and

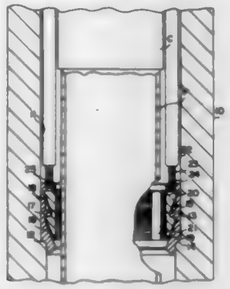
second means for pumping said first liquid, said second pumping means having an inlet disposed within said first liquid; said second pumping means is constant communication with said first pumping means such that activation of said first pumping means simultaneously activates said second pumping means.

5,301,750

WELLHEAD APPARATUS

Bruce J. Watkins, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Jan. 21, 1993, Ser. No. 7,334
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—208 **4 Claims**



1. Wellhead apparatus comprising

a housing having a bore therethrough and an upwardly facing seat in the bore,

a bowl lowerable into the bore of the housing and having a shoulder for landing on the seat therein and a bore therethrough with a downwardly and inwardly tapered seat about the bore,

a circumferentially expandible and contractible slip assembly having teeth about its inner side and received within the bowl,

said assembly having a downwardly and inwardly tapered outer side slidable downwardly and inwardly over the seat in the bowl between an outer position in which the teeth are retracted to permit the bowl and the assembly to be lowered within an annular space between the housing bore and a pipe string to be suspended within the housing and an inner position in which the teeth are wedged into gripping engagement with the string, and

a series of rods extendible through the upper end of the housing bore and threadedly connectible at their lower ends to the bowl for lowering the bowl into landed position in the bore,

said rods being rotatable in one direction, when the bowl is so landed, so as to force the slip assembly downwardly from its outer to its inner position, and being rotatable in the other direction, when the slip assembly is in its inner position to suspend the weight of the pipe string therefrom, in order to release the rods from threaded connection to the bowl and thereby permit their removal from the housing bore.

5,301,751

METHOD FOR USING SOAP AS A SOLUABLE FLUID LOSS ADDITIVE IN THE HYDRAULIC FRACTURING TREATMENT OF OIL AND GAS WELLS

Charles J. Githens, 3148 Cache Rd., Lawton, Okla. 73505, and William G. Harrison, P.O. Box 2450, Wichita Falls, Tex. 76307

Filed Oct. 21, 1992, Ser. No. 964,012
Int. Cl.[5] E21B *43/26*
U.S. Cl. 166—283 **22 Claims**

1. A method for using soap as a fluid loss additive in a well having a normal down-hole formation temperature in an area where fluid loss is to be reduced which includes;

reducing the down-hole formation temperature in the area where fluid loss is to be reduced to a reduced temperature below the normal down-hole formation temperature,

introducing soap as a fluid loss additive into the area where fluid loss is to be reduced, said soap having a titre which will cause the soap to remain substantially solid until it is subjected to a soap melting temperature above said reduced temperature but at or below said normal formation temperature,

and maintaining the temperature in the area where fluid loss is to be reduced below said soap melting temperature for a period during which said soap is to function as a fluid loss additive.

5,301,752

DRILLING AND CEMENTING WITH PHOSPHATE-BLAST FURNACE SLAG

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,799
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 166—292 **18 Claims**

1. A method for drilling and cementing a well, comprising:

combining constituents comprising water and blast furnace slag which serves as a proton acceptor metal compound to produce a drilling fluid;

thereafter utilizing said drilling fluid in a well drilling operation to form a borehole, thus producing a used drilling fluid;

thereafter combining said used drilling fluid with phosphorus acid to produce a cementitious slurry; and

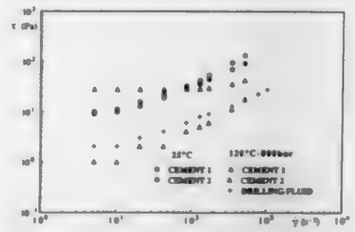
utilizing said cementitious slurry in a cementing operation.

5,301,753

USE OF SCLEROGLUCAN AS HIGH TEMPERATURE ADDITIVE FOR CEMENT SLURRIES

Ulysse Cartalos; Jacqueline Lecourtier, and Alain Rivereau, all of Rueil Malmaison, France, assignors to Institut Du Petrole, Rueil Malmaison, France

Filed Jul. 31, 1992, Ser. No. 922,401
Claims priority, application France, Aug. 1, 1991, 91 09939
Int. Cl.[5] E21B *33/14*; C04B *24/38, 24/16, 14/04*
U.S. Cl. 166—294 **23 Claims**



1. In a process of cementing a well casing comprising injecting a drilling fluid into the well casing and thereafter injecting

a composition comprising water, cement, and at least one viscosity-enhancing agent, the improvement wherein the viscosity-enhancing agent is scleroglucan having a content in the composition of 500–4000 ppm.

17. A composition suitable for well casings, said composition consisting essentially of water, cement, and a viscosity-enhancing amount of scleroglucan as essentially and sole viscosity-enhancing agent and, optionally, silica and a retarding agent which is other than a cellulose derivative.

5,301,754

WELLBORE CEMENTING WITH IONOMER-BLAST FURNACE SLAG SYSTEM

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

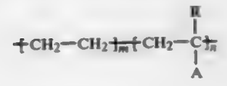
Filed Oct. 22, 1992, Ser. No. 964,989
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 166—295 **18 Claims**

1. A method for drilling and cementing a well, comprising:

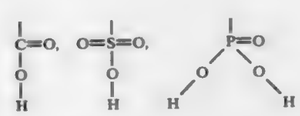
combining constituents comprising water and blast furnace slag which serves as a proton acceptor metal compound to produce a drilling fluid;

thereafter utilizing said drilling fluid in a well drilling operation to form a borehole, thus producing a used drilling fluid;

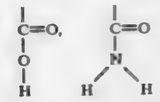
thereafter combining said used drilling fluid with 10 to 200 weight percent based on the weight of said metal compound, of a polymeric component selected from the group consisting of water-soluble polymers and water-dispersable polymers, said polymeric component being represented by the formula



wherein A is



or a mixture of



wherein R is hydrogen or 1–10 carbon atom alkyl radical and the ratio of m to n is within the range of 0:1 to 100:1 to produce a cementitious slurry; and

utilizing said cementitious slurry in a cementing operation.

5,301,755

AIR CHAMBER ACTUATOR FOR A PERFORATING GUN

Flint R. George, Flower Mound, and Kevin R. George, Columbus, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Mar. 11, 1993, Ser. No. 31,161
Int. Cl.[5] E21B *29/00, 43/11*
U.S. Cl. 166—297 **28 Claims**

1. A method of perforating a well, comprising:

(a) assembling on a tubing string, a perforating gun and a differential pressure firing head, said differential pressure firing head including an actuating piston having a high pressure side and a low pressure side;

(b) running said tubing string into said well;

(c) running a firing head actuator into said tubing string and landing said firing head actuator in said tubing string, said firing head actuator including a low pressure



(d) communicating said low pressure chamber with said low pressure side of said actuating piston and thereby creating a pressure differential across said actuating piston;

(e) moving said actuating piston in response to said pressure differential; and

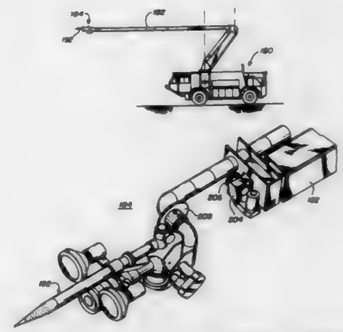
(f) firing said perforating gun in response to moving said actuating piston.

5,301,756

VEHICLE MOUNTED AERIAL LIFT

Robert G. Relyea, Dallas, Tex., and Edward V. Garnett, Huntington Beach, Calif., assignors to Crash Rescue Equipment Service, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 723,577, Jul. 1, 1991, Pat. No. 5,211,245. This application Feb. 8, 1993, Ser. No. 14,548
Int. Cl.[5] A62C *27/00*
U.S. Cl. 169—24 **3 Claims**



1. An aerial boom system for a fire-fighting vehicle comprising:

an elongated boom mounted on the vehicle;

power means for selectively raising and lowering the boom to a desired elevation;

a conduit on the vehicle for carrying a flowable fire-retardant material to the outer end of the boom;

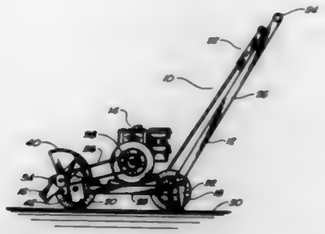
an elongated hollow piercing nozzle coupled to the conduit and having a tapered point with at least one orifice therein for expelling the fire-retardant material;

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mounting means on the outer end of the boom for supporting the hollow piercing nozzle;
drive means coupled to the mounting means for independently moving the hollow piercing nozzle in both a horizontal and a vertical plane;
the hollow piercing nozzle extending beyond the end of the boom such that the hollow piercing nozzle can be used to penetrate a wall of a structure from a remote distance and enable a fire-retardant to exit the at least one orifice into the interior of the structure; and
a slip clutch mounted between the outer end of the boom and the drive means such that undesirable forces on the elongated nozzle that may occur when piercing a structure are limited to a predetermined value in the Y plane perpendicular to the piercing direction of the elongated nozzle so as to protect the piercing nozzle, mounting, and drive means from damage.

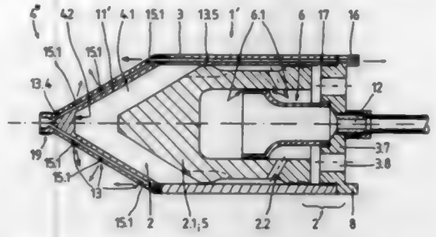
5,301,757
EDGING MACHINE
Milton C. Kelley, Jr., 4901 Saint Andrews, Baytown, Tex. 77521
Filed Aug. 21, 1992, Ser. No. 933,079
Int. Cl.[5] A01D *34/74, 34/84, 34/68*
U.S. Cl. 172—15 **11 Claims**



1. An edging machine comprising:
a frame having a handle at one end, said frame having a first wheel thereon for supporting said frame above a surface;
a prime mover means mounted on said frame;
an edger blade rotatably connected to said frame, said edger blade in driving connection with said prime mover means;
a second wheel interconnected to said frame and arranged in generally tandem alignment with said first wheel, said second wheel positioned within two inches of said edger blade, said edging machine having two and only two wheels; and
adjustment means interconnected to said second wheel for changing a distance of said frame from the surface.

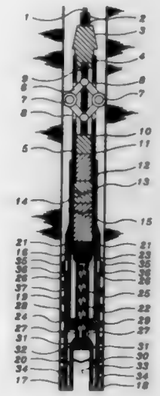
5,301,758
METHOD AND APPARATUS FOR ENLARGING A BORE HOLE
Dietmar Jenne, Wiesenweg, Switzerland, assignor to TERRA AG fuer Tiefbautechnik, Strengelbach, Switzerland
Filed Dec. 23, 1991, Ser. No. 812,915
Claims priority, application Switzerland, Dec. 24, 1990, 04077/90
Int. Cl.[5] E21B *4/14, 7/28*
U.S. Cl. 175—21 **16 Claims**

1. A method of forming a bore hole in the earth by enlarging a pilot bore hole to an increased diameter, comprising the steps of:
forming a pilot bore hole in the earth;
advancing a body of larger diameter than said pilot bore holes through said pilot bore hole while cyclically striking said body with a mass rammed to impact said body along a direction aligned with said pilot bore hole, simultaneously subjecting the earth ahead of said body to a cutting action by directing high pressure cutting jets ahead of said body and causing displacement of the surrounding earth by advance of said body through said pilot bore hole



while exerting a steady pull on said body as said body is advanced through said pilot bore hole.

5,301,759
METHOD AND APPARATUS FOR CORE-SAMPLING SUBSURFACE ROCK FORMATIONS
James L. Ruhle, 2535 E. Balfour Ave., Fullerton, Calif. 92631
Filed Mar. 2, 1992, Ser. No. 844,455
Int. Cl.[5] E21B *49/02*
U.S. Cl. 175—58 **2 Claims**



2. A downhole coring method for core-sampling rock formations using a low-cost lightweight narrow-kerf variable-speed reversible electrically-driven coring apparatus comprising the steps of:
conveyance at the ground surface of the downhole core-sampling apparatus by means of a winch and cable-conveyance system and conveyance of said apparatus from the ground surface to the bottom of a corehole in rock by means of a heavy-duty electromechanical cable;
providing a source of AC electric power and transmitting same through said heavy-duty electromechanical cable from the ground surface to the down-hole core-sampling apparatus;
converting AC electric power by downhole electric-power performing means to DC electric power so as to energize and expand the reversible and variable-speed DC electric-motor-driven screw-jack screw-jack wheeled reactive-torque suppressor and force the wheels of the rear against the core rock wall in a manner that prevents reactive-torque rotation of the downhole core-sampling apparatus;
converting AC electric power by downhole electric-power-conditioning means to DC electric power so as to energize the reversible and variable-speed DC electric motor drive

which among other functions cause the rotating cylinder and the attached core bit to rotate to the right or in a clockwise manner as viewed from above;
increasing or decreasing the applied voltage so as to cause a corresponding increase or decrease in the rotational speed, as so desired, of the downhole core-sampling apparatus;
operating a drum brake at the ground surface so as to increase or decrease the tension of said heavy-duty electromechanical cable and to therefore increase or decrease, as so desired, the axial thrust weight placed upon said core bit, and to operate said drum brake in a manner that unspools said heavy-duty electromechanical cable and allows the downhole coresampling apparatus to descend downward through the rock as so desired;
causing the drilling fluid at the bottom of the corehole to circulate by rotating to the right or clockwise as viewed from above the rotating cylinder, the attached core bit, and the attached combination component, causing said drilling fluid to displace upward and exterior to said rotating cylinder by the rotating action and spiral shape of the combination component, said displacement of drilling fluid, or pumping action, caused by Archimedes' screw-pump effects;
causing excavated rock particles not transported upward by the upward-flowing drilling fluid to be transported upward by means of inertial-displacement effects created by the rotating action and helical or screw shape of the auger-lie combination component;
causing the upward-flowing drilling fluid and upward-displaced rock particles to flow along a decreasing pressure gradient created by the circulating drilling fluid, and thence enter the scoop-assisted inletports of the combination centrifuge/storage-chamber component;
causing the circulating drilling fluid and excavated rock particles to enter the top of the rotating centrifuge/storage-chamber component so as to cause the excavated rock particles to separate by centrifuge effects from the lower-density drilling fluid and to cause the excavated rock particles to concentrate and compact against the outer rotating cylindrical wall of the combination centrifuge/storage-chamber component;
causing the clarified drilling fluid to circulate downward and inward along said decreasing pressure gradient so as to enter the slotted perforations of the inner rotating cylinder and flow downward through the center of the latter and to exit the combination centrifuge/storage chamber component through the exit ports just above the nonrotating inner core barrel;
causing the clarified drilling fluid to flow downward along said decreasing pressure gradient through the annular space between the nonrotating inner core barrel and the outer rotating cylindrical wall, or rotating outer core barrel, to the bottom of the corehole, thus completing the drilling-fluid circulation loop;
causing the downhole core-sampling apparatus to descent through the rock with minimal flexing of its rotating components and minimal dog-leg deviations and minimal deviations of the corehole trajectory from the vertical, such verticality enhancement resulting from the stabilizing effects, spiral-reinforcing effects, and the lower center of gravity created by the spiral-shaped combination component;
causing the downhole core-sampling apparatus to continue to descend through the rock until the nonrotating inner core barrel is filled to capacity with cored rock and the combination centrifuge/storage component is filled to capacity with excavated rock particles from the circular core kerf;
hoisting the downhole core-sampling apparatus along with its load of cored rock and excavated rock particles to the ground surface by means of the heavy-duty electromechanical cable, retrieving at the ground surface the sample of cored rock and excavated rock particles, and repeating the method until the downhole core-sampling operation is completed;
expanding the wheeled reactive-torque suppressor against the corehole wall when conveying the downhole core-sampling apparatus to and from the bottom of the corehole so as to prevent the rotation or twisting of the heavy-duty electromechanical cable;
dissipating as the ground surface by resistant-heating means or some other electrical-power dissipation means electric power generated by the electric-motor drive of the downhole core-sampling apparatus if and when said electric-motor drive inadvertently functions as an electric generator during the conveyance of said downhole core-sampling apparatus through drilling fluid to and from the bottom of the corehole;
reaming the corehole if and when it is necessary during core-sampling operations so as to eliminate constrictions within the corehole and allow the unobstructed passage of the downhole core-sampling apparatus to and from the bottom of the corehole, said corehole-reaming operations made possible by the rotation or counterrotation of the spiral-shaped combination component, operating in either the down-reaming mode or the up-reaming mode, and said corehole-reaming operation made possible, as well, by the wheeled reactive-torque suppressor;
cooling the corehole if and when it is necessary during core-sampling operations so as to allow the electrically-driven core-sampling apparatus to operate efficiently, said corehole-cooling operations accomplished by the conveyance of cooled drilling fluid to the bottom of the corehole by means of the combinations centrifuge/storage-chamber component;
stabilizing the corehole wall and the cored sample of rock if and when it sis necessary during core-sampling operations in loose or unstable formations so as to allow maximum recovery of the cored samples or rock and to minimize sloughing or cave-ins of the corehole wall, said stabilization operations accomplished by the conveyance of chilled brine or some other refrigerant drilling fluid to the bottom of the corehole by means of the combination centrifuge/storage-chamber component, said chilled brine or other refrigerant drilling fluid retained within the combination centrifuge/storage-chamber component, if so required, on its journey to the bottom of the corehole by expanding the wheeled-reactive-torque suppressor against the corehole wall and rotating the downhole core-sampling apparatus either in a clockwise or counterclockwise manner so as to create the necessary pressure gradient and thus prevent the loss of the drilling fluid on its downward journey to the bottom of the corehole where ultimately said chilled brine or other refrigerant drilling fluid freezes solid the formation porefluids thereby freeze-stabilizing the corehole wall and freeze-encapsulating the core sample of rock;
rotating the downhole core-sampling apparatus in a left-hand or counter-clockwise manner as viewed from above if and when it is necessary so as to back-auger said down core-sampling apparatus out of a caved-in corehole, said reverse-augering operation made possible by the reversible DC electric-motor drive, the spiral-shaped combination component, and the wheeled reactive-torque suppressor;
rotating the downhole core-sampling apparatus in a left-hand or counter-clockwise manner so as to straighten said heavy-duty electromechanical cable by reactive-torque means if and when said cable should become twisted at any time;
alternating a right-hand or clockwise-rotating and right-hand spiral core-sampling apparatus with a left-hand or counterclockwise-rotating and left-hand spiraled downhole core-sampling apparatus if and when it is necessary so as to minimize reactive-torque-induced corehole deviation, i.e., the left-hand corkscrew-trajectory effects that otherwise might result if just a right-hand or clockwise-

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rotating and right-hand-spiraled core-sampling apparatus were deployed in the corehole;

substituting if and when it is necessary to do so, i.e., when cored-rock samples are not required or when downhole conditions prevent the recovery of cored rock, a sinker bar or weight unit in place of the nonrotating inner core barrel, said sinker bar or weight unit centralized within the outer rotating cylindrical wall or rotating outer core barrel by centralizing fins so as to allow the passage of the downflowing drilling fluid, and substituting, as well, a drilling bit in place of the core bit so as to advance the downhole core-sampling apparatus downward through the rock in a drilling mode rather than in a coring mode;

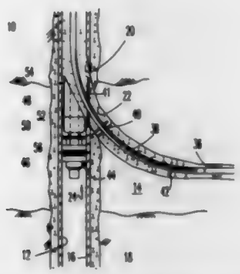
providing if and when it is necessary additional downward axial thrust to the downhole core-sampling apparatus during core-sampling, down-reaming, or drilling operations, and providing additional upward axial thrust to said apparatus during core-breaking or corehole up-reaming operations or when said apparatus is stuck in the corehole, said additional axial thrust provided by the deployment on the wheeled-reactive-torque suppressor of traction wheels and the activation of the latter by means of a remotely-controlled downhole reversible DC electric-motor drive.

5,301,760

COMPLETING HORIZONTAL DRAIN HOLES FROM A VERTICAL WELL

Stephen A. Graham, Bellaire, Tex., assignor to Natural Reserves Group, Inc., Houston, Tex.

Filed Sep. 10, 1992, Ser. No. 943,448
Int. Cl.[5] E21B *7/06*
U.S. Cl. 175—61 **21 Claims**



1. In a process of completing a horizontal well in a hydrocarbon formation comprising the steps of providing a vertical well, drilling a curved well bore from the vertical well, drilling a horizontal well bore into the formation through the curved well bore, positioning a first section of a pipe string in the curved well bore and a second section of the pipe string in the vertical well, and cementing the pipe string in the curved well bore, the improvement comprising comminuting the pipe string in the vertical well and thereby providing a passage between the horizontal well bore section and the vertical well and then producing hydrocarbons from the horizontal well bore section through the passage into the vertical well.

5,301,761

PRESSURE REVERSING VALVE FOR A FLUID-ACTUATED, PERCUSSIVE DRILLING APPARATUS

Chuen-Cheng Fu, and Warren T. Lay, both of Roanoke, Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 9, 1993, Ser. No. 28,749
Int. Cl.[5] E21B *4/00*
U.S. Cl. 175—296 **7 Claims**

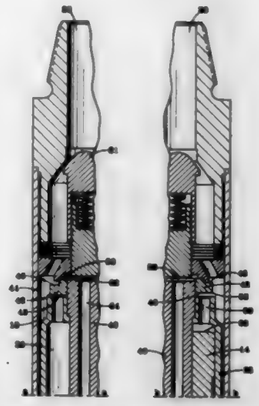
1. A pressure sensitive valve for pressurizing a drive chamber in a fluid-actuated, percussive apparatus, during the reciprocation of a piston in said apparatus comprising:

i. a first valve pressure surface in communication with the drive chamber;

ii. a second valve pressure surface in communication with a high pressure port;

iii. a third valve pressure surface in communication with a fluid outlet passageway;

iv. first passageway means for permitting a limited volume of fluid to travel between the high pressure port and the drive chamber when the valve is in the open position;



v. second passageway means for permitting a limited volume of high pressure fluid to travel between the drive chamber and the third valve pressure surface when the valve is in the open position, during a portion of a drive stroke of a piston; and

vi. third passageway means for permitting a limited volume of fluid to travel between the fluid outlet passageway and the third valve pressure surface, when the valve is in either the open or closed position.

5,301,762

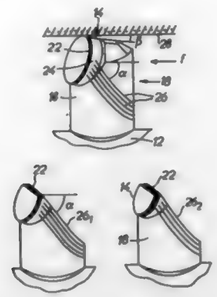
DRILLING TOOLFITTED WITH SELF-SHARPENING CUTTING EDGES

Alain Besson, Sartrouville, France, assignor to Total, Puteaux, France

PCT No. PCT/FR91/00720, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO92/05335, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 12, 1991, Ser. No. 30,109
Claims priority, application France, Sep. 14, 1990, 90 11386
Int. Cl.[5] E21B *10/46, 10/62, 10/56*
U.S. Cl. 175—379 **9 Claims**

1. A drilling tool (10), comprising a body (12) fitted with a plurality of bases (18), each base supporting a self-sharpening, plate-shaped cutting edge (14) comprising an outer polycrystalline, diamond-impregnated layer (22) deposited on a tungsten carbide layer (24), wherein each cutting edge 14) and/or

base (18) has formed on it areas (26) of least resistance, such as grooves, which can initiate successive fractures forming an



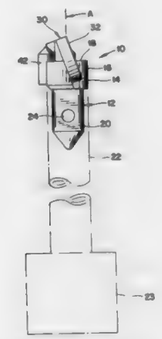
acute angle of clearance (α) with a rock formation to be drilled (28).

5,301,763

APPARATUS FOR DRILLING HOLES IN MINE ROOFS AND A ROOF DRILL BIT FOR USE THEREIN

Kent Peay, Bristol, Tenn., and Lawrence E. Gray, Bristol, Va., assignors to Sandvik Rock Tools, Inc., Bristol, Va.

Filed Mar. 2, 1993, Ser. No. 25,249
Int. Cl.[5] E21B *10/54*
U.S. Cl. 175—398 **14 Claims**



1. A roof drill bit for drilling a bolt hole in a mine roof while flushing fluid is circulated into and from the hole, comprising:

a body defining a longitudinal axis of rotation and having an external periphery and a front face, a longitudinal fluid channel formed in said external periphery for conducting the flushing fluid, an imaginary longitudinal plane which contains said axis of rotation serving to bisect said front face into first and second sides;

cutting edge means carried by said body and defined by at least one cutting insert mounted on said body, said cutting edge means projecting forwardly beyond said front face, and projecting laterally beyond said external periphery, at least a portion of said cutting edge means being inclined rearwardly and laterally outwardly, said at least one insert being positioned to be acted upon by the flushing fluid; and

at least one support pad mounted on said external periphery in circumferentially spaced relationship to said cutting insert for balancing cutting forces acting on said drill bit during a drilling operation;

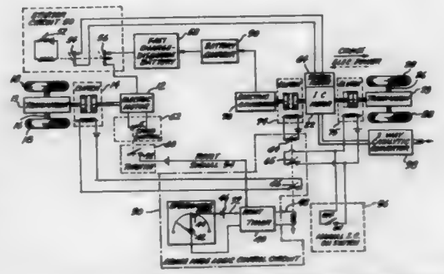
said cutting edge means being asymmetrical relative to said axis of rotation such that said cutting edge means is disposed on one of said sides, and the other side is substantially free of cutting edge means.

5,301,764

HYBRID MOTOR VEHICLE HAVING AN ELECTRIC MOTOR AND UTILIZING AN INTERNAL COMBUSTION ENGINE FOR FAST CHARGE DURING CRUISE MODE OFF CONDITION

Conrad O. Gardner, 22905 108th Ave. W., Edmonds, Wash. 98020

Filed Apr. 13, 1992, Ser. No. 867,412
Int. Cl.[5] B60L *11/02*
U.S. Cl. 180—65.2 **5 Claims**



1. In combination in a motor vehicle having a first pair of wheels and a second pair of wheels:

an electric motor for powering said first set of wheels;

a combustion engine for powering said second set of wheels:

an electrical energy storage device for transferring electrical energy to said electric motor:

said electrical energy storage device comprising a fast charge-discharge battery:

a cruise mode control circuit having preprogrammed cruise mode operating conditions which includes a vehicle operating speed exceeding a predetermined level and for a predetermined time interval, said control circuit automatically coupling said electric motor to said first set of wheels when said cruise mode operating conditions have not been satisfied and coupling said combustion engine to said second pair of wheels when said cruise mode operating conditions have been satisfied;

said cruise mode control control circuit controlling said combustion engine to drive an electric power generator for charging said fast charge-discharge battery when said cruise mode conditions have not been satisfied; and

user controlled means bypassing said control circuit for coupling said electric motor to said first set of wheels when said cruise mode conditions have been satisfied.

5,301,765

BATTERY PACK INSTALLATION AND STORAGE SYSTEM FOR ELECTRIC VEHICLES

Lennart H. Swanson, 284 Aria Dr., Pacheco, Calif. 94553

Filed May 14, 1993, Ser. No. 61,012
Int. Cl.[5] B60K *1/04;* **B60L** *11/18*
U.S. Cl. 180—68.5 **3 Claims**

1. Apparatus in combination with an electric vehicle having an electric motor, a vehicle body having a storage compartment and a storage compartment cover movable between an open position and a closed position, said apparatus comprising, in combination:

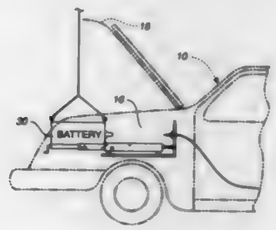
mounting means positioned within said storage compartment and including a telescoping frame having a plurality of relatively movable frame elements, one of said frame elements having a bottom support movable relative to said vehicle between a first position and a second position, said

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mounting means for receiving and supporting a selectively removable battery pack having electrical connectors at an end of said battery pack;

electrical contact means connected to said vehicle body at a predetermined location on said vehicle body in substantial alignment with said electrical connectors when the frame element bottom support is in either said first position or said second position and operatively associated with said electric motor, said electrical contact means and said electrical connectors comprising a plurality of tapered, matingly engageable male and female electrical fittings, and said predetermined location being on a generally vertical wall partially defining said storage compartment;

transport means for selectively transporting said frame element bottom support between said first position and said second position relative to said vehicle with said frame element bottom support moving along a predetermined substantially horizontal path of movement, said electrical contact means being so located relative to said mounting means as to engage with the electrical connectors of said battery pack supported by said frame element bottom



support when said frame element bottom support is in said first position and said frame element bottom support is closely adjacent to said generally vertical wall and disengaged therefrom to allow removal of the battery pack from said mounting means when said mounting means has been moved to said second position by said transport means, said transport means including actuator means operatively associated with said frame elements to selectively extend and telescope said frame elements and move said frame element bottom support between said first and second positions, said frame element bottom support when in said second position being uncovered by said storage compartment cover when said storage compartment cover is in open position to permit ready overhead access to said battery pack supported by said frame element bottom support and lifting of said battery pack therefrom; and

lock means cooperable with said mounting means for selectively locking said frame against movement relative to said vehicle when said frame element bottom support is in said first position to maintain engagement between the electrical connectors and electrical contact means.

5,301,766
POWER STEERING AND LIMITED SLIP DIFFERENTIAL SYSTEM

Fujio Momiyama; Noriaki Tokuda; Kenichi Ohmori; Kohji Harada, and Shinichi Oku, all of Hino, Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1991, Ser. No. 694,359
Claims priority, application Japan, May 7, 1990, 2-117403
Int. Cl.[5] B62D *5/07*
U.S. Cl. 180—197 **18 Claims**

1. A power steering and limited slip differential system comprising:

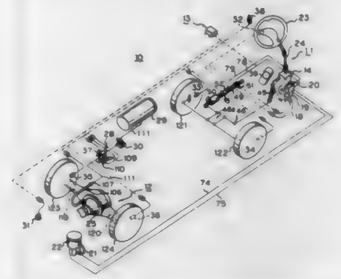
a main booster which generates a steering effort for front wheels;

an auxiliary booster which generates a compensation steering effort for the front wheels;

a directional control valve which has a pair of reaction chambers and which controls the direction of operating pressure oil which is supplied from a hydraulic pump to the main booster and concurrently discharged from the main booster to an oil reservoir;

a pressure oil setting valve which sets the pressure of the operating pressure oil supplied to the main booster, and the pressure of compensating pressure oil supplied to the auxiliary booster and the reaction chambers of the directional control valve;

injection pressure control valves which inject the compensating pressure oil into the reaction chambers of the directional control valve and the auxiliary booster in response



to a vehicle speed and a manual steering force applied at the beginning of steering into a turn and the beginning of steering out of a turn, and concurrently controls the pressure of the injected compensation pressure oil;

a friction clutch disposed between a differential case of a differential gear mechanism and a driving wheel axle for rear wheels;

a clutch control air cylinder for coupling and decoupling the friction clutch; and

an air pressure control valve which charges and discharges operating compressed air to and from the clutch control air cylinder in response to the vehicle speed and the steering angle of the front wheels, and further in response to the slipping of at least one of the rear wheels, and controls the air pressure of the clutch control air cylinder.

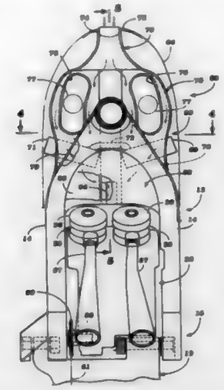
5,301,767
WIND INTRODUCING SYSTEM FOR MOTORCYCLE

Masakazu Shiohara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 21, 1992, Ser. No. 964,196
Claims priority, application Japan, Oct. 21, 1991, 3-302383
Int. Cl.[5] B60K *13/06*; **B62D** *61/02*
U.S. Cl. 180—219 **22 Claims**

1. A motorcycle type of vehicle having a frame assembly, at least one rear wheel carried by said frame assembly, an internal combustion engine supported by said frame assembly and driving said rear wheel, a front wheel, and a front wheel suspension and steering arrangement for journaling said front wheel for rotation and for steering movement, said frame assembly including an integral air delivery device for delivering ram air to said engine, said air delivery device being comprised of an atmospheric air inlet disposed in an area to receive high pressure air as said motorcycle is traveling, an air outlet for delivering said air to said engine, and a portion between

said air inlet and said air outlet encircling a component of said front wheel suspension and steering arrangement for air flow

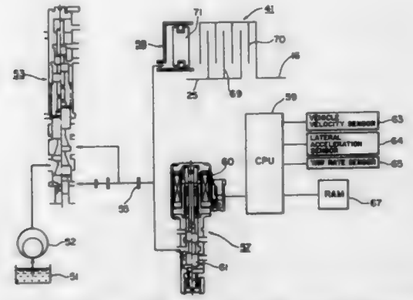


there around without interfering with the steering of said front wheel.

5,301,768
FOUR-WHEEL DRIVE TORQUE TRANSFER MECHANISM

Wataru Ishikawa, Davis; Donald L. Margolis, El Masero, both of Calif., and Minh Tran, Inkster, Mich., assignors to Aisin AW Co., Ltd., Japan

Filed May 4, 1992, Ser. No. 878,235
Int. Cl.[5] B60K *17/35*
U.S. Cl. 180—249 **13 Claims**



1. A vehicular four-wheel drive torque transfer mechanism for receiving torque output from a transmission and selectively distributing the transmission output torque to each of four wheel drive shafts, said four-wheel drive torque transfer mechanism comprising:

(a) a central differential for receiving said transmission output torque and selectively dividing said transmission output torque into front-wheel torque and rear-wheel torque;

(b) front-wheel drive means for receiving said front wheel torque and for driving said front wheels;

(c) rear-wheel drive means for receiving said rear wheel torque and driving said rear wheels;

(d) differential limiting means for controlling the operation of said central differential to vary the ratio of said front wheel torque to said rear wheel torque responsive to a control torque signal;

(e) detection means for detecting a plurality of vehicle turning parameters;

(f) memory means for storing control gain values corresponding to optimized turning characteristics for each of said turning parameters; and

(g) control means for:

(i) reading from said memory control gain values for each of said plural detected vehicle turning parameters;

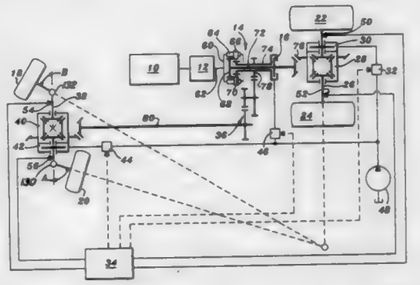
(ii) calculating control torque as the sum of the products obtained by multiplying each of said detected vehicle turning parameters by the corresponding control gain value read from said memory; and

(iii) generating said control torque signal in accordance with said calculated control torque.

5,301,769
VEHICLE POWER DISTRIBUTION AND CONTROL SYSTEM

Heinz Weiss, Bensheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jan. 22, 1993, Ser. No. 7,450
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4202026
Int. Cl.[5] B60K *17/344*
U.S. Cl. 180—249 **8 Claims**



1. A control system for controlling and distributing power to wheels of a motor vehicle having a driven steerable and a driven non-steerable axle, each axle having left and right wheels, at least one of said axles having an axle differential, at least one steering angle sensor for generating a steering angle value representing a steering angle of at least one of the wheels, rotational speed sensor to sense rotational speeds of the left and right wheels of at the least on of the axles, the control system characterized by:

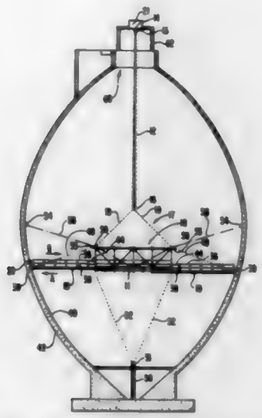
an axle differential lock for the axle differential of the at least one axle, the axle differential lock being controlled by the control system;

means for calculating from the steering angle value for conditions of rolling without slip a theoretical rotational speed difference ratio SDR_{req} and from the measured values of the rotational speed sensors an actual rotational speed difference ratio, SDR_{act}, according to the equation $SDR_{act}=\{|v_l-v_r|\}\div v_m$, where v_l and v_r are the rotational speeds of the left and right wheels and v_m is the means rotational speed of the left and right wheels;

means for comparing the theoretical and actual rotational speed difference ratios with each other in predetermined time intervals and transmitting control signals to the axle differential lock to increase a degree of locking of the axle differential when the actual rotational speed difference ratio SDR_{act} is greater than the theoretical rotational speed difference ratio SDR_{req} and to decrease the degree of locking of the axle differential when the actual rotational speed difference SDR_{act} is smaller than the theoretical rotational speed difference ratio SDR_{req}.

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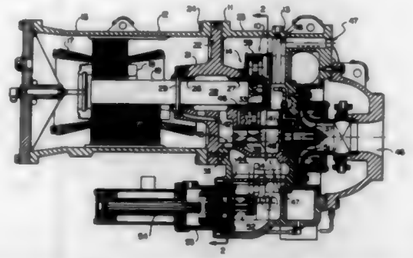
5,301,770
ADJUSTABLE WORK PLATFORM ASSEMBLY
Timothy J. Regan, 10 Twinleaf Ct., Cockeysville, and Albert J. Conners, 300 E. Joppa Rd., both of Towson, Baltimore, Md. 21204-3048
Filed Jul. 6, 1992, Ser. No. 909,179
Int. Cl.[5] E04G *3/10*
U.S. Cl. 182—128 17 Claims



1. A moveable work platform assembly capable of being suspended from an upper attachment assembly having a point attachment, comprising:
a platform assembly including a main platform and at least one adjustable platform for extending outward relative to said main platform and for retracting inward relative to said main platform a pivot disposed opposite said platform assembly from said attachment assembly;
a suspension assembly having one end fastened to the point of attachment and another end fastened to said platform assembly at spaced-apart points for suspending said platform assembly along an axis through said point of attachment and pivot;
a support assembly having one end attached to said platform assembly at spaced-apart points and another end, disposed along said axis, fastened to said pivot to support said platform assembly in alignment with said axis while permitting rotation about said axis.

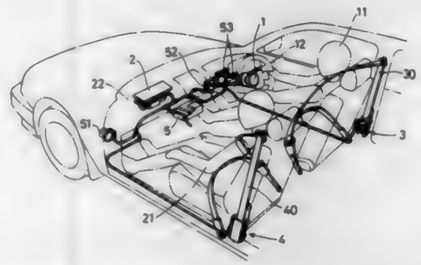
5,301,771
OIL CHANNELING IN A CENTRIFUGAL COMPRESSOR TRANSMISSION
Vishnu M. Sishtla, E. Syracuse, and Thomas M. Zinsmeyer, Pennellville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 22, 1991, Ser. No. 748,734
Int. Cl.[5] F01M *11/00*
U.S. Cl. 184—6.16 11 Claims

1. A method of reducing mechanical losses in a centrifugal compressor of the type having a bearing supported shaft connected to a gear, with the bearing being lubricated, comprising the steps of;
providing a stationary barrier around one end of the bearing to prevent oil from being slung out onto the gear; and



providing an oil drainage port in fluid communication with an internal portion of said barrier for draining off oil that accumulates within said barrier.

5,301,772
PASSENGER PROTECTION APPARATUS
Kiyoshi Honda, Takanezawamachi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 21, 1992, Ser. No. 838,890
Claims priority, application Japan, Mar. 18, 1991, 3-52460
Int. Cl.[5] B60R *21/18*
U.S. Cl. 180—268 3 Claims

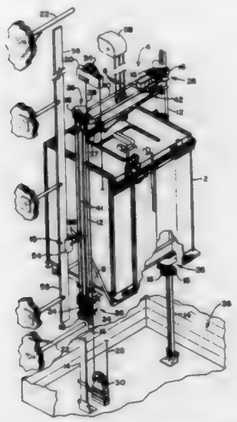


1. A passenger protection apparatus having plural kinds of passenger protection means which are actuated when a scale of collision of a vehicle is above an actuation level,
said passenger protection apparatus comprising memory means for memorizing actuation levels which are set in advance for each kind of said passenger protection means,
wherein actuation level correction means is provided for correcting the actuation level, which is kept in memory in said memory means, of a non-actuated kind of passenger protection means to a lower level when at least one kind, out of said plural kinds, of passenger protection means is actuated.

5,301,773
POSITIVE TERMINAL OVERSPEED PROTECTION BY RAIL GRABBING
Eric K. Jamieson, Farmington; Young S. Yoo, Avon; Rudi Steger, West Hartford, and Richard C. McCarthy, Simsbury, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Oct. 23, 1992, Ser. No. 965,477
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—88 4 Claims

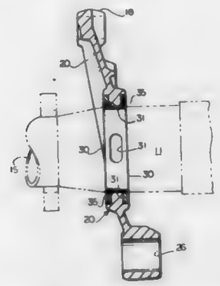
1. A rail grabbing apparatus for exerting a braking force on an elevator guide rail to brake the movement of an elevator car near an elevator terminal, comprising:

(a) a first wedge for contacting said elevator guide rail and producing a braking action;
(b) a second wedge on a side of said elevator guide rail opposite said first wedge;
(c) two rods, one connected to each wedge such that vertical movement of said rods initiates contact between said first and second wedges and said elevator guide rail; and
(d) brace force means including a magnet and a conductive plate and disposed at least along a limited length of one



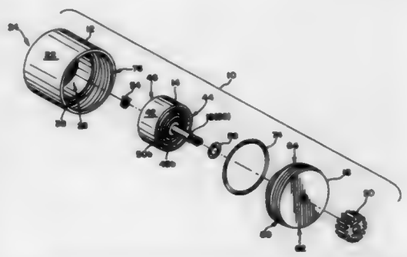
elevator terminal for causing said rods to initiate contact between said first and second wedges and said elevator guide rail, said magnet being mounted on at least one of said rods, for inducing a current in said conductive plate in a direction so as to generate a magnetic field to oppose the changing field that induced the current so that said magnet causes said rods to move, causing said first and second wedges to contact said elevator guide rail and exert the bracing force on the elevator guide rail.

5,301,774
BRAKE SPIDER ASSEMBLY
Sung J. Cho, Rochester Hills, and Klaus H. Pump, Mt. Clemens, both of Mich., assignors to Fruehauf Trailer Corporation, Southfield, Mich.
Continuation-in-part of Ser. No. 543,537, Jun. 26, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 801,020
Int. Cl.[5] F16D *65/09*
U.S. Cl. 188—206 A 20 Claims



1. A composite brake spider adapted for welding attachment to a steel axle component on a vehicle comprising:
an annular inner member formed of steel and including at least one radially extending surface irregularity in said inner member, and
an outer member encircling said inner member and formed of ductile cast iron, said outer member being formed in intimate contact around said inner member and physically interlocked to said surface irregularity in said inner member.

5,301,775
ADJUSTABLE HIGH TORQUE DAMPER DEVICE
Ralph G. Nedbal, Saint Charles, and Steven L. Bivens, Kankakee, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Jun. 29, 1993, Ser. No. 83,718
Int. Cl.[5] F16D *57/02*
U.S. Cl. 188—290 20 Claims



1. An adjustable high torque damper device comprising:
a stator housing formed of a cylindrically-shaped wall member having a closed end and an interior cavity;
a rotor formed of a cylindrically-shaped wall member having a top end and a bottom end, said rotor being disposed rotatably within the interior cavity of said stator housing, said rotor including a shaft extending perpendicularly from the center of its top end;
a cap formed of a cylindrically-shaped wall member having an upper end and a lower end for closing the interior cavity of said stator housing, said cap having a central opening through which said shaft of said rotor extends therethrough;
means for adjusting the amount of resistance to rotational movement of said rotor shaft relative to said stator housing so as to supply a variable amount of torque;
said adjustment means including said stator housing having a plurality of first concentric rings disposed inside the interior cavity thereof which define first grooves therebetween, and said rotor having a plurality of second concentric rings disposed on its bottom end which mate with corresponding ones of said first grooves between said first concentric rings;
a high viscosity dampening fluid filling said first grooves between said first concentric rings and the spaces between said second concentric rings; and
said adjustment means further including means for controlling relative axial motion of said rotor concentric rings and said stator concentric rings so as to selectively and gradually increase or decrease the distances therebetween thereby decreasing or increasing the amount of torque.

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5,301,776

HYDRAULIC ADJUSTABLE VIBRATION DAMPER

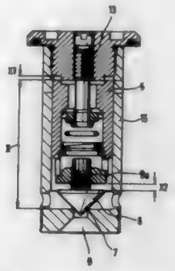
Hubert Beck, Eltorf, Fed. Rep. of Germany, assignor to Boge AG, Eltorf, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,339

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137821

Int. Cl.[5] B60G *17/08*; F16F *9/50*

U.S. Cl. 188—322.13 15 Claims



1. A vibration damper for motor vehicles, said damper comprising a cylinder assembly having an arrangement for varying damping of a piston assembly disposed therein, said piston assembly dividing said cylinder into at least two chambers, each for containing damping fluid, said vibration damper comprising:

means for throttling said damping fluid when said damping fluid moves from one of said chambers into another;

said piston assembly having a piston rod and piston;

said piston rod having first means for attachment of said piston rod at one end thereof;

said cylinder assembly having second means for attachment at a portion thereon other than said first means for attachment at said piston rod;

means for bypassing damping fluid between said at least two chambers;

means for accepting bypassed damping fluid;

said bypassing means being disposed to bypass said damping fluid from at least one of said damping fluid-containing chambers to said accepting means;

said bypassing means including valve means for regulating flow of said damping fluid in said bypassing means; and

said valve means comprising:

a valve seat and a displaceable component for opening and closing against said valve seat and for regulating flow of said damping fluid in said bypassing means;

said displaceable component being displaceable between a closed position and an open position, said displaceable component being disposed against said valve seat in said closed position, said displaceable component being disposed away from said valve seat in said open position, and said displaceable component being configured for being displaceable a first distance between said closed position and said open position;

means for adjusting said first distance between said closed position and said open position;

said valve means further comprising stop means for being disposed against said displaceable component in said open position;

said displaceable component comprising a first portion and a second portion, said first portion being disposed against said valve seat in said closed position, and said second portion being disposed against said stop means in said open position;

said displaceable component being configured to have a second distance between said first portion of said displaceable component and said second portion of said displaceable component;

said means for adjusting said first distance between said closed position and said open position comprising means for adjusting said second distance between said first portion of said displaceable component and said second portion of said displaceable component;

said means for adjusting said second distance between said first portion of said displaceable component and said second portion of said displaceable component comprising a set screw; and

said set screw threadedly engaging said second portion of said displaceable component.

5,301,777

COMBINATION OF A VIBRATION DAMPER AND A CAP MEMBER

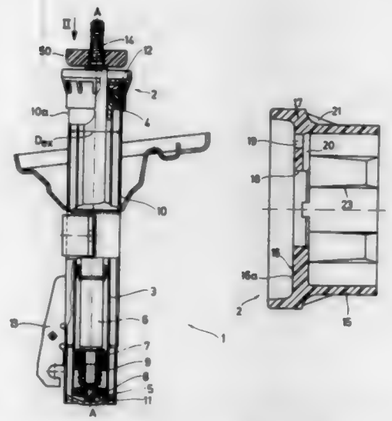
Günther Handke, Euerbach, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 917,837, Jul. 21, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 99,253

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1991, 9109019[U]

Int. Cl.[5] F16F *9/32*; B60G *15/00*

U.S. Cl. 188—322.17 18 Claims



1. A combination of a vibration damper (1) and a cap member, said vibration damper (1) comprising a tubular container (10) having an axis and two ends, a piston rod guiding and sealing unit (4) provided adjacent a first one of said ends and a piston rod member (6) axially movable through said piston rod guiding and sealing unit (4) inward and outward of said container (10), said piston rod member (6) being provided with a piston unit (7) inside said container (10), said tubular container (10) having an external cylindrical face (10*a*) at least axially adjacent said first one of said ends, said external cylindrical face (10*a*) having an external cylinder diameter (D_{ex}), said cap member (2) having a substantially sleeve-shaped carrier body (15) of a resilient material with a cap axis (BB) and internal engagement face means (25) frictionally engageable with said external cylindrical face (10*a*) of said container (10) and an end wall (16), said internal engagement face means (25) being provided with slip-on facilitating face means (32) adjacent an end (34) of said sleeve-shaped carrier body (15) which end is remote from said end wall (16), said internal engagement face means (25) having radially inward directed projection means (27) defining a minimum internal diameter (D_{imin}) of said internal engagement face means (25), said minimum internal diameter (D_{imin}) defined by said projection means (27) being smaller than said external cylinder diameter (D_{ex}) of said external cylinder face (10*a*) of said container (10), said radially inward directed projection means (27) being resiliently displaceable by engagement with said external cylindrical face (10*a*) when slipping on said sleeve-shaped carrier body (15) onto said external cylindrical face (10*a*), said sleeve-shaped carrier body (15) having relief zones adjacent said radially inward directed projection means (27) facilitating resilient displacement of said radially inward directed projection means (27), when said sleeve-shaped carrier body (15) is slipped onto said external cylindrical face (10*a*),

said internal engagement face means (25) being provided by a plurality of internal clamping ribs (23) distributed along an internal circumference of said sleeve-shaped carrier body (15), said clamping ribs (23) extending substantially in axial direction of said cap axis (BB),

said clamping ribs (23) defining—when regarded in a cross-sectional plane containing said cap axis (BB)—an engagement profile (32, 27, 26), said engagement profile (32, 27, 26) being defined by a first profile line (32) adjacent said end (34) remote from said end wall (16) and a second profile line (26) adjacent said end wall (16), said first and said second profile lines (32, 26) defining a profile of said radially inward directed projection means (27) which is defined by a radially inward projecting apex (27), said first and second profile lines (32, 26) having a decreasing radial distance from said cap axis (BB) when proceeding from said apex (27) in axial direction towards said end (34) remote from said end wall (16) and towards said end wall (16), respectively, the apices (27) of said plurality of clamping ribs (23) defining said minimum internal diameter (D_{imin}) of said internal face means (25).

5,301,779

FRICTION CLUTCH

Ian Nash, Warwick, Great Britain, assignor to Automotive Products, Plc, Leamington Spa, England

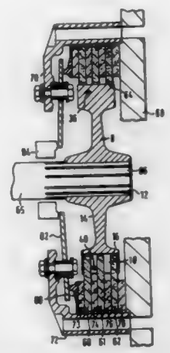
PCT No. PCT/GB91/00210, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO91/14878, PCT Pub. Date Oct. 3, 1991

PCT Filed Feb. 13, 1991, Ser. No. 934,450

Claims priority, application United Kingdom, Mar. 29, 1990, 9007076

Int. Cl.[5] F16D *13/68*

U.S. Cl. 192—70.2 8 Claims



1. A multi plate friction clutch assembly including a plurality of driven plates spaced apart by driving plates and arranged on a hub having a plurality of axially extending splines on the outer surface thereof, which splines are engageable with engaging means on the driven plates, for rotation of the driven plates with the hub, and locating means formed separately from the hub and located in a cavity in the hub said cavity extending into at least one of the splines thereof, so that the locating means is arranged in a gap between a pair of adjacent spaced apart driven plates to limit the axial movement of the driven plates relative to the hub.

5,301,778

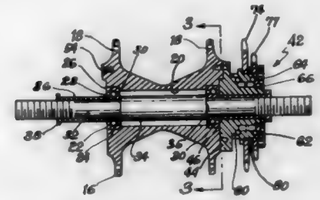
BICYCLE HUB AND FREEWHEEL ASSEMBLY

John Haeussinger, 10330 Everell Pl., Santee, Calif. 92071

Filed Sep. 21, 1992, Ser. No. 947,798

Int. Cl.[5] F16D *41/12*

U.S. Cl. 192—64 13 Claims



1. A bicycle hub and freewheel assembly comprising:

(a) a hub unit defining a rotational axis with an axle bore substantially coaxial with said axis;

(b) said hub unit defining two substantially identical hub endwalls around the end of said bore;

(c) a self-contained freewheel unit defining a mounting sidewall mateable against one of said endwalls;

(d) interfitting keying structure defined by said sidewall and by one of said endwalls such that when said sidewall and said one of said endwalls are mated, said keyed structure engages said hub unit and freewheel unit to positively prevent axial rotation therebetween such that torque applied to said freewheel unit is transmitted to said hub as substantially 100% torque with substantially a 0% axial force vector; and

(e) attachment means for retaining said freewheel on said hub substantially, functionally independently of said keying structure.

5,301,780

TORQUE TRANSMITTING APPARATUS

Johann Jäckel, Baden-Baden, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

Filed May 31, 1991, Ser. No. 708,938

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017519; Jun. 29, 1990, 4020759; Aug. 31, 1990, 4027542; Aug. 31, 1990, 4027593; Aug. 31, 1990, 4027614; Aug. 31, 1990, 4027629; Dec. 24, 1990, 4041709; Dec. 24, 1990, 4041722

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

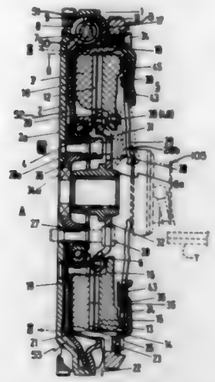
Int. Cl.[5] F16F *15/12*

U.S. Cl. 192—70.17 40 Claims

1. Apparatus for transmitting torque in a motor vehicle, comprising a first rotary flywheel connectable with an engine of the vehicle and including a toroidal portion defining at least a portion of an annular chamber which is at least partially filled with a viscous fluid; a second rotary flywheel which is connectable with a transmission of the vehicle by a clutch having an annular friction surface; at least one bearing between said flywheels; at least one damper provided in said chamber to oppose rotation of said flywheels relative to each other, said at least one damper including energy storing elements acting in the circumferential direction of said chamber; and a substantially disc-shaped member rotatable with said second flywheel and having portions extending into said chamber and engaging

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said energy storing elements, said toroidal portion being disposed radially outwardly of said friction surface and surrounding a space, at least a portion of said second flywheel extending into said space in the axial direction of said second flywheel.



5,301,781

CLUTCH FOR VEHICLES

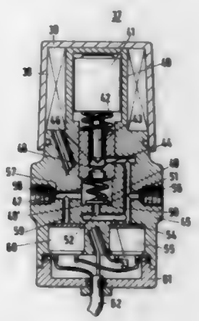
Dieter Tischer, Kirchheim/Teck; Bernd Niethammer, Nürtingen, and Alfred Trzmiel, Grafenberg, all of Fed. Rep. of Germany, assignors to Hydraulik-Ring Antriebs- Und Steuerungstechnik GmbH, Nürtingen, Fed. Rep. of Germany

Filed Dec. 22, 1992, Ser. No. 994,918

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1991, 4142744

Int. Cl.[5] F16D *25/14*

U.S. Cl. 192—85 R **9 Claims**



1. A clutch for vehicles comprised of:

a first cylinder activated by a clutch pedal and a second cylinder for receiving hydraulic fluid from said first cylinder when the clutch pedal is pressed down;

a fluid line connecting said first and said second cylinders;

a safety device connected within said fluid line, said safety device comprising:

a) at least one throttle element for reducing fluid flow from said second to said first cylinder when a preset engaging speed for engaging said clutch is surpassed;

b) a measuring orifice connected in parallel to said throttle element;

c) a solenoid having a closing means for closing said fluid line between said first and said second cylinders with the exception of said throttle element when a preset fluid pressure differential, is surpassed; and

d) two pressure switches coordinated with said measuring orifice for measuring said fluid pressure differential by measuring a fluid pressure before entering and after exiting said measuring orifice, said pressure switches actuating said solenoid for moving said closing means to close said fluid line.

5,301,782

DIAPHRAGM CLUTCH, IN PARTICULAR FOR MOTOR VEHICLES

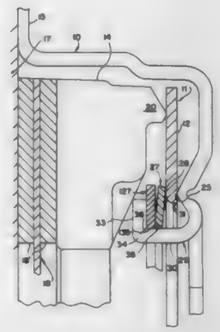
Jacques T. de Briel, Levallois Perret, and André Dalbiez, Argenteuil, both of, France, assignors to Valeo, Paris, France

Filed Oct. 2, 1992, Ser. No. 955,426

Claims priority, application France, Oct. 2, 1991, 91 12111

Int. Cl.[5] F16D *13/71*

U.S. Cl. 192—89 BL **11 Claims**



1. A diaphragm clutch mechanism comprising: a cover plate; a diaphragm within the cover plate, the diaphragm having a peripheral portion defining a Belleville ring and a central portion radially inward of the peripheral portion, the central portion having a plurality of radial fingers; at least one pressure plate engaging the diaphragm; assembly means for mounting the diaphragm pivotally to said cover plate and to said at least one pressure plate; and means for mounting said at least one pressure plate to the cover plate for rotation with said cover plate and for axial movement of the pressure plate with respect to the cover plate, with the peripheral portion of the diaphragm bearing on said at least one pressure plate, said assembly means comprising a crown ring disposed at the side of the diaphragm opposite to the cover plate, the cover plate including a plurality of integral, relatively thin flat retaining lugs constituting a further part of said assembly means and passing axially through the diaphragm, with each retaining lug having a bent-over end portion defining a locating bend of the lug, each retaining lug being relatively thin in the radial direction and relatively elongated in the circumferential direction, the cover plate defining a primary abutment for the diaphragm, said crown ring defining a secondary abutment for the diaphragm whereby the diaphragm is mounted for pivoting movement between the primary abutment and the secondary abutment, wherein the mechanism further includes a support crown engaged on said retaining lugs and located on the locating bends of said retaining lugs, with the crown ring being interposed axially between the diaphragm and the support crown, wherein each of the crown ring and the support crown have a respective internal aperture, the internal aperture of the crown ring being larger than that of the support crown.

5,301,783

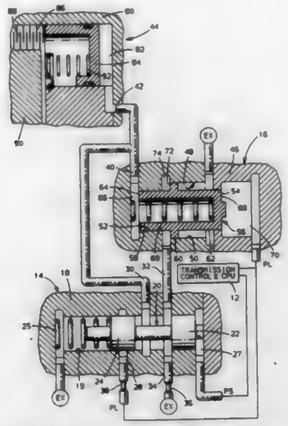
DUAL PRESSURE ACCUMULATOR

John D. Malloy, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 24, 1992, Ser. No. 903,403

Int. Cl.[5] F16D *25/14*

U.S. Cl. 192—85 R **3 Claims**



1. An accumulator and shift control apparatus comprising: a clutch means; a source of fluid pressure; shift control valve means for selectively operatively supplying pressurized fluid to said clutch means and exhausting fluid from said clutch means; and accumulator means disposed between the shift control valve means and the clutch means for controlling pressure change rate at the clutch means between first predetermined pressure limits during pressurizing of the clutch means for a predetermined time and between second predetermined pressure limits during exhausting of the clutch means for a predetermined time, said accumulator means comprising first chamber means subjected to pressure during both clutch means pressurization and exhaust, second chamber means subjected to pressure only during clutch means exhaust, and bias chamber means pressurized during clutch means pressurization and exhaust in opposition to pressure in the first chamber means during pressurization and in both the first and second chamber means during exhaust.

5,301,784

Patent Not Issued For This Number

5,301,785

METHOD FOR COOLING PLATES AND INSERT THEREFOR

Ronald L. Plesh, Sr., 31 Hemlock Hill, Orchard Park, N.Y. 14127

Continuation-in-part of Ser. No. 867,040, Apr. 10, 1992, Pat. No. 5,265,711. This application Apr. 1, 1993, Ser. No. 34,911

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] B65G *13/00*

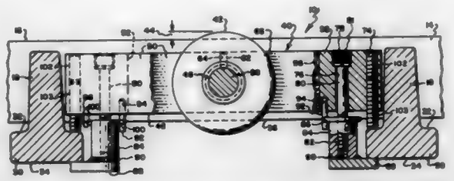
U.S. Cl. 193—35 R **20 Claims**

1. A method for cooling hot metal plates formed in a plate mill comprising the steps of:

a. providing a cooling bed plate transfer grid having a plurality of elongate parallel first members and a plurality of elongate second members extending crosswise to the first members for support thereof and defining therewith pockets;

b. clamping to the transfer grid a plurality of inserts each having a body and a roller so that the inserts are supported in a plurality of pockets respectively with the rollers projecting above the insert bodies and the first and second members for rotatably engaging the metal plates as they are moved along the transfer grid;

c. positioning the metal plates on the transfer grid; and



d. moving the plates along the transfer grid with the rollers engaging the plates to avoid frictional contact between the plates and the first and second members.

5,301,786

METHOD AND APPARTUS FOR VALIDATING A PAPER-LIKE PIECE

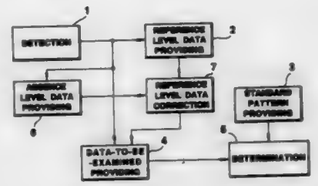
Kenzo Yoshihara, Kounosu, Japan, assignor to Nippon Conlux Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 539,913, Jun. 18, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,010

Claims priority, application Japan, Jun. 19, 1989, 1-154535

Int. Cl.[5] G07D *7/00*

U.S. Cl. 194—207 **9 Claims**



1. An apparatus for validating a paper-like piece, comprising:

detection means including a sensor system of light transmission type for producing a detection signal corresponding to a pattern on an inserted reference paper-like piece by irradiating light on the paper-like piece;

reference level data providing means for preparing reference level data on the basis of a detection signal produced by said detection means in response to insertion of the reference paper-like piece on which no particular pattern is provided and providing this reference level data;

standard pattern providing means for providing a predetermined standard pattern corresponding to a pattern of a true paper-like piece;

data-to-be-examined providing means for providing data to be examined by modifying a detection signal produced by said detection means in response to deposition of a paper-like piece to be validated based upon the reference level data provided by said reference level data providing means; and

determination means for determining whether the paper-like piece to be validated is true or false by collating the data to be examined provided by said data-to-be-examined providing means with the standard pattern provided by said standard pattern providing means.

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5,301,787

ARTICULATED SHUTTLECAR

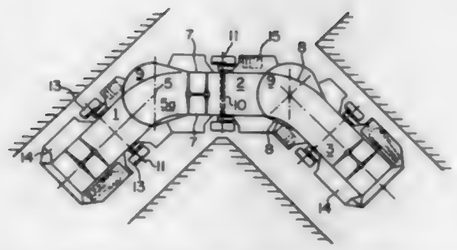
Michael Etherington, Abingdon, Va., and Michael R. Long, Gainesborough, England, assignors to Dosco Overseas Engineering Ltd., Notts, United Kingdom

Filed Jun. 30, 1992, Ser. No. 906,569

Claims priority, application United Kingdom, Jan. 14, 1992, 9200678

Int. Cl.[5] B65G *41/00*

U.S. Cl. 198—303 6 Claims



1. An elongated bi-directional horizontally articulated shuttlecar for transporting loose mined material from a first location where material is mined to a second location in a mine, said shuttlecar having at least one intermediate section and an end section adjacent to each end of said at least one intermediate section, vertical pivot means connecting each end of said at least one intermediate section to an end of one of said end sections, each of said sections of said shuttlecar having a pair of driven wheels mounted on a substantially horizontal axis, a separate motor for driving each pair of driven wheels to move said shuttlecar from a first location to a second location to transport loose mined material between the first and second locations, a continuous flexible conveyor having an upper surface and extending throughout the length of all of said sections of said shuttlecar, means for moving said continuous flexible conveyor relative to said sections of said shuttlecar for moving loose mined material from one end of said shuttlecar to the other end of said shuttlecar to substantially fill said upper surface of said conveyor with loose mined material and to support loose mined material during movement of said shuttlecar from a first location to a second location, spaced longitudinal edges on each of said sections of said shuttlecar, and a continuous flexible raised retaining means located along each of said spaced longitudinal edges of said sections of said shuttlecar for maintaining loose mined material on said single continuous flexible conveyor during filling of said conveyor an during movement of the shuttlecar for transportation of the loose mined material from a first location to a second location and an on-board operator station having controls on each of said end sections of said shuttlecar, whereby said bi-directional shuttlecar moves in a first direction with an operator in the operator station on the leading end section of said shuttlecar and moves in a second direction opposite the first direction with an operator in the operator station on the leading end section of said shuttlecar, whereby the movement of said shuttlecar is reversible for operation by an operator in an on-board operator station without turning said shuttlecar around.

5,301,788

METHOD OF AND APPARATUS FOR TRANSFERRING AND POSITIONING PALLET

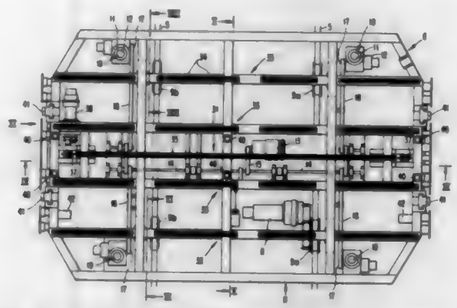
Masakazu Hirosaka, Sakado; Hiroshi Isozaki, Iruma; Satoru Ichihashi, Sayama, and Atsuhiro Sakai, Utsunomiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,038

Claims priority, application Japan, Oct. 21, 1991, 3-300987; Dec. 11, 1991, 3-350964; Dec. 11, 1991, 3-350965; Dec. 11, 1991, 3-350966

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—346.1 10 Claims



1. An apparatus for transferring and positioning a pallet for placing a workpiece thereon on a table of a machine tool, comprising:

a pallet carriage for carrying a pallet, said pallet carriage having a lifting mechanism for vertically moving the pallet carriage, and a first transfer mechanism for transferring the pallet substantially half of a predetermined stroke toward a machine tool;

a machine tool table having a second transfer mechanism for transferring substantially the remaining half of the predetermined stroke, and a positioning clamp mechanism for positioning and clamping the pallet on the table directly in close contact therewith.

5,301,789

APPARATUS FOR THE CONTROLLED INFEED STORAGE AND DISCHARGE OF ELONGATE OBJECTS

Holger Jönsson, Tylla 4, S-781 94 Borlänge, Sweden

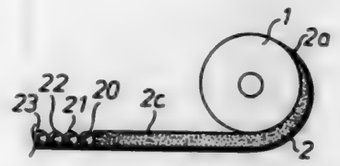
PCT No. PCT/SE90/00800, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/08154, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 4, 1990, Ser. No. 853,761

Claims priority, application Sweden, Dec. 4, 1989, 8904089-3

Int. Cl.[5] B65G *1/00*

U.S. Cl. 198—347.3 12 Claims



1. An apparatus for the controlled infeed, storage and discharge of elongate objects, comprising:

a rotary drum;

at least one belt substantially perpendicular to said drum and having a main body and a leading portion by which the main body is connected to said drum, said main body having a given thickness throughout its length and at least part of said leading portion being thicker than said given thickness; and

means for winding said at least one belt on said drum as the elongate objects are aligned with said drum and disposed on only the main body of said at least one belt such that the objects are retained on said drum by said at least one belt.

5,301,790

SORTING AND STORAGE SYSTEM FOR PIECES OF GOODS SUCH AS FLIGHT LUGGAGE

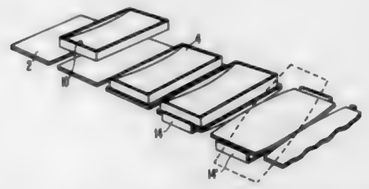
Ole Prydtz, Hjortshoj; Uffe Lykkegaard, Arhus C, and Ralph Kofoed, Hornslet, all of Denmark, assignors to Kosan Crisplant A/S, Arhus N, Denmark

Filed Jun. 17, 1992, Ser. No. 899,878

Claims priority, application Denmark, Jun. 18, 1991, 1171/91

Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—349 7 Claims



1. A process for sorting an interim storage of pieces of goods in dependance upon a precoded destination of the respective pieces of goods, the process comprising the steps:

individually placing respective pieces of goods on coded totes respectively releasably mounted on individual platforms of an endless conveyor at individual check-in stations;

moving the pieces of goods from the check-in stations to one of designated unloading bay or a storage unit adapted to receive the totes accommodating the individual pieces of goods;

selectively tilting the respective platforms at the designated unloading bay based upon the precoded destination for the respective pieces of goods for discharging the pieces of goods from the respective totes;

selectively releasing the respective totes with the respective pieces of goods therein at a storage unit;

removing the totes with the pieces of goods thereon from the storage unit and transferring the removed totes to platforms of the endless conveyor in dependance upon a timing of reception of the pieces of goods and a prescheduled forwarding of the pieces of goods to a designated unloading bay;

releasing respective empty totes from the respective platforms at a collecting station prior to a transport to the respective check-in stations, and

wherein the step of releasing includes removing an interlock between the individual carrying platforms and associated totes.

5,301,791

VIBRATORY PILE CONVEYOR SYSTEM

William J. Shampine, Baldwinsville, N.Y., assignor to Lipe-Rollway Automation Equipment Div. of Lipe-Rollway Corp., Syracuse, N.Y.

Filed Oct. 7, 1992, Ser. No. 957,109

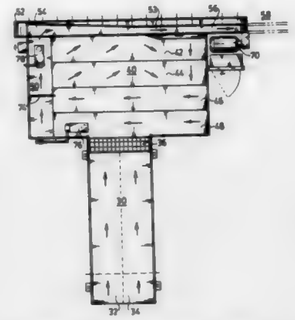
Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—391 19 Claims

1. Conveyor apparatus for automatically aligning elongated articles end-to-end for delivery into a work station area comprising:

accumulator means for circulating and recirculating elongated articles each of which has a longitudinal axis;

belt means for transferring and aligning the elongated articles, said belt means being positioned adjacent said accumulator means and arranged to move over a path of travel between a loading station and a discharge station, said discharge station being positioned proximate to the work station area;



delivery means for loading articles from said accumulator means onto said belt means at the loading station; and

drive means for moving said belt means along said path of travel at a predetermined velocity such that an elongated article on said belt means automatically aligns its longitudinal axis along the direction of belt travel prior to entering said discharge station.

5,301,792

UNIT FOR TRANSFERRING FOOD PRODUCTS, SUCH AS CHOCOLATES, BETWEEN PRODUCTION MACHINES

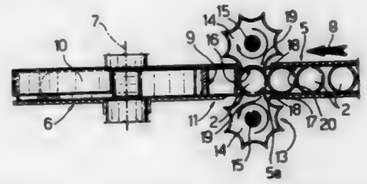
Mario Spatafora, and Giulio Strazzari, both of Bologna, Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed Nov. 20, 1992, Ser. No. 979,268

Claims priority, application Italy, Nov. 20, 1991, BO91A 000432

Int. Cl.[5] B65G *15/00*

U.S. Cl. 198—408 2 Claims



1. A unit for transferring food products, which comprises:

a conveyor for feeding a compact sequence of mutually contacting products in a direction of feeding;

a conveyor wheel located adjacent an output end of the conveyor and having a plurality of peripheral seats, each of said seats receiving a respective product; and

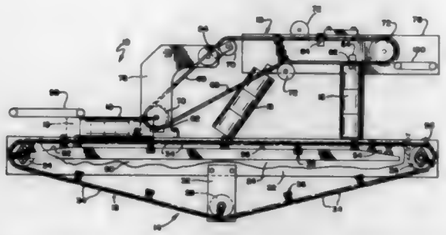
a transfer device for successively feeding the products from the conveyor to the respective seats on the conveyor wheel, the conveyor wheel being mounted for rotation about a first axis perpendicular to said direction of feeding wherein an outer edge of said conveyor wheel faces said output end of the conveyor;

the transfer device including a pocket conveyor which includes a lobed wheel located on either side of said con-

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veyor for counter-rotating so as to define a pocket for conveying each of said products wherein said pocket conveyor operates in such a manner as to feed said pocket in said direction of feeding.

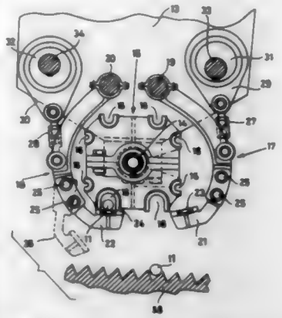
5,301,793
CONTINUOUS MOTION UPENDER
lloyd Kovacs, Sheboygan, Wis., assignor to Haysen Manufacturing Company, Sheboygan, Wis.
Filed Oct. 30, 1992, Ser. No. 969,752
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—415 **31 Claims**



1. An apparatus for conveying and upending an item from a prone orientation to an upright orientation, comprising
a. first means for engaging one end of the item at a first location, said first engaging means being carried by a first forward moving conveyor travelling a generally horizontal path,
b. second means for engaging a second end of the item opposite to said one end, said second engaging means being carried by a second forward moving conveyor, said second forward moving having a path of travel defined by a first inclined portion and a second horizontal portion downstream of said first inclined portion,
c. means for spacing said second horizontal portion above said first forward moving conveyor such that said first and second engaging means are spaced a distance substantially equal to the height of the item being upended,
d. means for guiding said second forward moving conveyor through said path of travel, and
e. means for driving said conveyors in a timed relationship.

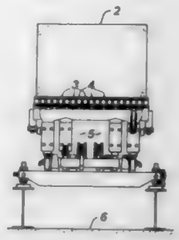
5,301,794
BAR RECEIVING AND DISCHARGING DEVICE IN A SIDERURGICAL FACILITY
Giovanni Tomasetig, Butrio, Italy, assignor to Pomini Techint S.p.A., Pordenone, Italy
Filed Jan. 29, 1993, Ser. No. 11,356
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—433 **8 Claims**

1. Device for receiving bars incoming along two parallel guides in a sideurgicial facility, in order to discharge said bars onto a cooling bed, characterized in that said device comprises at least one first element provided, at its bottom portion, with two channels lined up with said parallel guides in order to constitute a substantial extension thereof, with each of said channels showing a downwards orientated opening running throughout its length, for each channel a shutter means being provided in order to act as a closure means for said channel opening, which shutter means are supports by respective arms swinging around respective point means parallel to, and at a higher level than, said channels, said arms being each linked, through a respective tie-rod, with an idle crank installed on a cam rotatably actuated by a ratiomotor in order to reciprocate said shutter means between a closed-channel position and an open-channel position, in which said channel shutter means is spaced apart from said channel said shutter means being supported on said arms with support elements being interposed, which are linked to the arms by means of two pins arranged spaced apart from each other along the length of said arms, in



order to enable the shutter means to undergo a hinged movement, such as to move them away from the corresponding channel opening, upon one of said pins being removed.

5,301,795
CONVEYOR FOR FRESH BOXLESS SAND MOULDS
Viggo Persson, Nivå, Denmark, assignor to Dansk Industri Syndikat A/S, Denmark
Filed Mar. 1, 1993, Ser. No. 24,249
Claims priority, application Denmark, Mar. 25, 1992, 0392/92
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—773 **6 Claims**

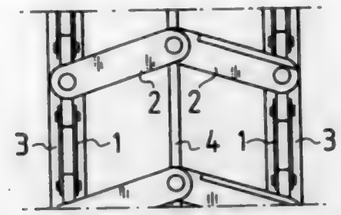


1. A conveyor for fresh boxless sand moulds or mould parts and of the kind comprising at least two sets of bars adapted to support said moulds or mould parts alternately, at least one set of said two sets of bars being adapted to move in the direction of conveying while supporting said moulds or mould parts and the surface of said bars adapted to face said moulds or mould parts being covered or coated by a layer of a material having substantially lower thermal conductivity than that of steel.

5,301,796
CHAIN CONVEYOR
Kauko Rautio, Kyttiläntie 1, SF-52700 Mäntyharju, Finland
Filed Jan. 12, 1993, Ser. No. 3,339
Claims priority, application Finland, Jan. 13, 1992, 920140
Int. Cl.[5] B65G *15/10*
U.S. Cl. 198—817 **7 Claims**

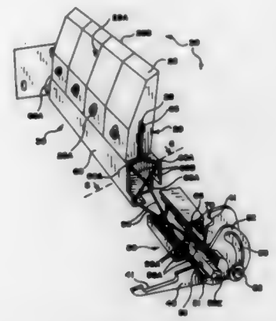
1. A chain conveyor for conveying sawn wood comprising at least two adjacent conveyor chains spaced apart by a predetermined variable distance and conveyor flights located on top of the chains and including means for supporting sawn wood, wherein the support means of the conveyor flights comprises

articulated support surfaces positioned on top of and above the chains and connected in such a manner that the width of the



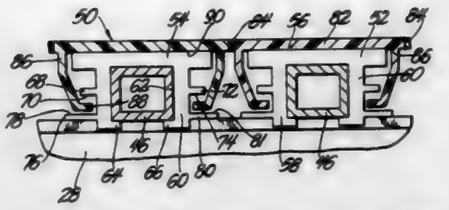
entire chain conveyor can be adjusted to the desired width by adjusting the distance between the conveyor chains.

5,301,797
TORQUE ARM SYSTEM FOR CONVEYOR BELT CLEANERS
Clifford G. Hollyfield, Jr., Roswell, and Allen S. Jackson, Atlanta, both of Ga., assignors to J & H Equipment, Roswell, Ga.
Filed Jan. 29, 1993, Ser. No. 11,282
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—499 **17 Claims**



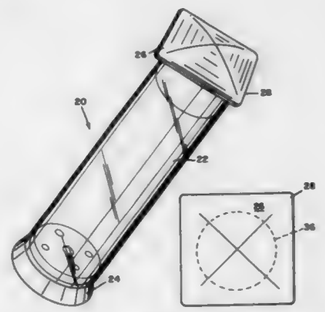
1. A belt cleaner system for conveyors, said system comprising:
a cleaning blade assembly for cleaning a conveyor belt, said blade assembly comprising an elongated torque arm and a plurality of scrapers mounted upon said torque arm for contacting said belt;
bracket means for rotatably mounting said blade assembly relative to said conveyor;
said torque arm having a polygonal cross section including opposed interior corners; and,
internal torsion spring means for yieldably biasing said cleaning blade assembly against said conveyor belt, said torsion spring means having a first leg secured relative to said conveyor and an opposite, second leg received internally within said torque arm, said internal torsion spring means having at least one Z shaped spring, said first leg terminated to said bracket means and said second leg generally diagonally fitted between opposed interior corners of said torque arm.

5,301,798
RECIPROCATING FLOOR CONVEYOR FOR CAUSTIC MATERIALS
Arthur L. Wilkens, R.R. 2, Box 46A, Osborne, Kans. 67473
Filed Mar. 8, 1993, Ser. No. 27,341
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—750 **20 Claims**



1. A reciprocating floor conveyor having a floor support frame, a plurality of parallel guide beams secured to the floor support frame, a plurality of slide bearings attached to the guide beams, a plurality of side by side parallel floor slats supported by the slide bearings, and a drive system for reciprocating the floor slats back and forth on the slide bearings to move cargo supported by the floor slats toward one end of the floor slats or the other end of the floor slats and wherein the floor slats are elongated, thermoplastic members with an upper cargo support surface, an under surface that slides on the slide bearings and bearing surfaces on each side of each floor slat extending the length of the floor slats that are in continuous sliding and sealing contact with adjacent floor slats, except at the ends of the slats, to prevent loss of cargo, to prevent cargo contamination and to laterally position the floor slats.

5,301,799
PORTABLE PAINT BRUSH HOLDER
Ronald S. Gurba, Jr., Box 13214, Monroe, La. 71213
Filed Apr. 6, 1993, Ser. No. 42,795
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—1.7 **6 Claims**

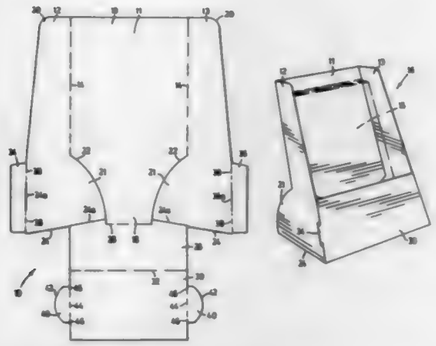


1. A portable paint brush holder adapted to hold a plurality of brushes firmly in a seperable, readily acceible position comprising;
a hollow cylindrical main body having open first and second ends;
a base adapted to fit snugly into said first end and capable of supporting said main body in an upright position, said base having a plurality of apertures formed therein, said apertures adapted to hold brushes securely in an upright position;
a covering for said second end, said covering having a top portion and a bottom portion, said top portion having a rectangular outer diameter and said bottom being substan-

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tially cylindrical, the covering adapted to fit over the second end in sealing engagement therewith.

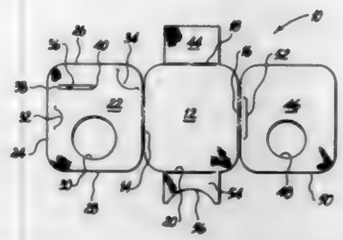
5,301,800
LITERATURE DISPLAY HOLDER AND BLANK FOLDABLE TO FORM SAME
Richard E. H. Kenney, 566 Brooker Ridge, Newmarket, Ontario, Canada L3X 1V7
Filed Mar. 5, 1993, Ser. No. 26,769
Int. Cl.[5] B65D *5/52*
U.S. Cl. 206—45.26 **19 Claims**



1. A holder for literature comprising:
a) a back panel having upper and lower portions and having side edges;
b) a side panel connected to each side edge of said back panel, each side panel folded generally forwardly with respect to said back panel;
c) each side panel having an integral rearwardly projecting foot portion, each foot portion having an area cut from said lower portion of said back panel and swung outwardly rearwardly from the plane of said back panel;
d) each side panel having a lower edge inclining with respect to the adjacent side edge of said back panel upwardly rearwardly from a front edge portion of said side panel toward a rear edge of said foot portion so that said back panel inclines upwardly rearwardly when the holder is placed on a plane surface;
e) a front panel; and
f) means for connecting said front panel to bridge said front edge portions adjacent a lower portion of each side panel.

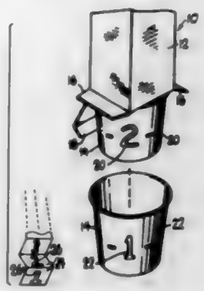
5,301,801
RETAINER PACKAGE FOR RESILIENT SURGICAL SUTURES
Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Apr. 17, 1992, Ser. No. 870,292
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.300 **15 Claims**

1. A retainer package configured to be loaded in a folded condition and adapted for receiving at least one resilient surgical suture comprising:
a first panel having opposed top and bottom edges and opposed first and second lateral edges;
a second panel foldably connected to said first lateral edge of said first panel and having a primary aperture formed therein being spaced from a periphery thereof to permit loading of said at least one resilient suture into said package;
a third panel foldably connected to said top edge of said first panel;
a fourth panel foldably connected to said second lateral edge of said first panel and having a secondary aperture formed therein being spaced from a periphery thereof to permit loading of said at least one resilient suture into said package;
a fifth panel foldably connected to said bottom edge of said first panel; and
means for maintaining said retainer package in said folded condition for loading, said means for maintaining said retainer package including a locking tab formed along an



edge of said second panel for engagement in a locking slit formed along an edge of said fourth panel whereby said fourth panel is folded upon said first panel, said third and fifth panels are folded upon said fourth panel, and said second panel is folded upon said third and fifth panels such that said primary and secondary apertures are in alignment so as to form a loading port which defines an unobstructed passageway for receiving said at least one resilient suture.

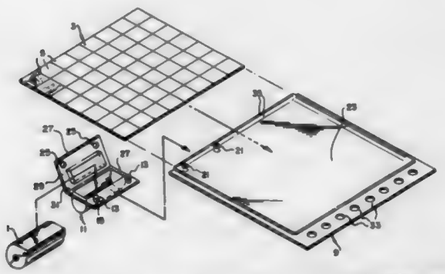
5,301,802
INVIDUAL DRINKING CUPS
Allan Nemeroff, 681 Longview Dr., Huntington Valley, Pa. 19006
Filed Aug. 3, 1993, Ser. No. 101,530
Int. Cl.[5] B65B *5/00*; **G09F** *19/00*
U.S. Cl. 206—217 **4 Claims**



1. A drinking cup identification apparatus comprising
a container,
a set of drinking cups comprising
a plurality of cups nestably received in said container and removable therefrom,
individual identifying first indicia associated with each of said cups so as to facilitate visual discrimination of one cup from the others of said set, said first indicia including
a visually discernable identifying symbol disposed on each of said cups, each identifying symbol on a cup being different from the symbols of the other cups in said set so as to distinguish the cups in said set from one another, and
a matching set of a plurality of labels for said first indicia, said labels including

a second indicia disposed thereon with one second indicia corresponding to one first indicia, any of said second indicia disposed on one label of said plurality of labels being different from any of said second indicia disposed on all other labels of said set, said labels for associating each said cup with a corresponding cup user.

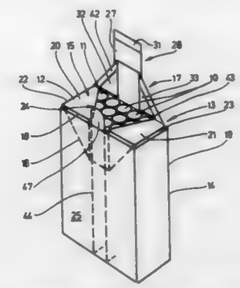
5,301,803
PACKAGE FOR INDEX PRINT SHEET AND CASSETTE
David E. Hansen, Fairport, N.Y., and William H. Valls, Harwinton, Conn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 12, 1993, Ser. No. 3,362
Int. Cl.[5] B65D *85/67*
U.S. Cl. 206—232 **5 Claims**



1. A holder for a cassette containing an image bearing medium having a plurality of images recorded on it, and a photsensitive paper sheet on which is to be printed a plurality of pictures that match the plurality of images on the image bearing medium, is characterized in that:
said holder and said sheet have respective mans for engaging one another to affix the holder with the cassette in it and the sheet with the plurality of pictures printed on it to each other and for disengaging to release one from the other; and
said holder includes hinge means for opening the holder to insert the cassette into the holder and to remove it from the holder and integral means for securing said engaging means located on the holder to maintain the holder closed when the engaging means and said engaging means located on said sheet are engaged to affix the sheet and the holder to each other.

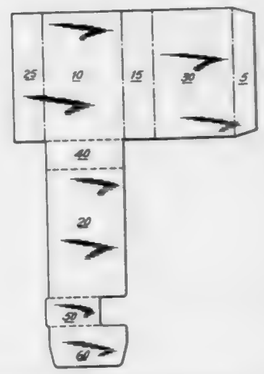
5,301,804
PACKAGE, ESPECIALLY SOFT-CUP PACK FOR CIGARETTES
Heinz Focke, Verden, and Henry Buse, Visselhövede, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany
Filed Feb. 9, 1993, Ser. No. 15,132
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1992, 4204827
Int. Cl.[5] B65D *85/10*, *85/12*
U.S. Cl. 206—271 **9 Claims**

1. A soft-cup pack (10) for cigarettes with a cup-shaped outer wrapping (14) and an inner wrapping (12) which is made of foldable packaging material and which has two side tabs (20, 21) in an upper end wall (15), which are each connected to a side wall (22, 23) of the inner wrappings (12), and first and second longitudinal tabs (16, 17) which are connected to a front wall (18) and to a rear wall (19), respectively, of the inner wrapping (12), the improvement wherein:
a) said first longitudinal tab (16) connected to the front wall (18) is folded such that it rests in a position against the front wall (18) and is fixed in said position;
b) said second longitudinal tab (17) connected to the rear wall (19) is located in the plane of the upper end wall (15) in a closed position of the pack;
c) in the closed position the second longitudinal tab (17) covers a withdrawal opening (24) which is formed within the upper end wall (15) of the inner wrapping (12), and which is bounded laterally by the side tabs (20, 21) forming part of the upper end wall (15);
d) in the closed position the second longitudinal tab (17) is retained by an adhesive closure means (26) which is connected to an outside of the second longitudinal tab (17) and to a front wall (25) of the cup-shaped outer wrapping (14);



e) the adhesive closure means has a leg (27) which is connected to the front wall (25) of the cup-shaped outer wrapping (14) and which has an adhesive-free grip end (31) which can be peeled off, and wherein the second longitudinal tab (17) is movable into an opening position by a pulling back of said closure means.

5,301,805
REUSABLE HARD-PACK CIGARETTE CASE AND BLANK THEREFOR
Donald H. Evers, Richmond, and William C. Harris, Jr., Midlothian, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 7, 1992, Ser. No. 926,826
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—273 **75 Claims**



1. A reusable hard pack for encasing cigarettes comprising:
a front wall;
a first side wall perpendicularly connected to the front wall;
a second side wall perpendicularly connected to the front wall and opposite and parallel to the first side wall;
a rear wall perpendicularly connected to each of the first and second side walls opposite and parallel to the front wall;

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a bottom wall pivotably attached to the front wall;
an interior wall pivotably attached to the bottom wall opposite the front wall; and
a top wall pivotably attached to the interior wall opposite the bottom wall;
wherein the interior wall is movable along the interior surface of the rear wall when the bottom wall is pivoted toward the top wall such that the angle between the bottom wall and the front wall is less than 90°; and
wherein the top wall is capable of a closed position in which it is perpendicular to each of the front wall, rear wall, and left and right side walls, and in which the top wall further comprises an overhang portion that extends across and beyond one of the planes defined by the first side wall and the second side wall.

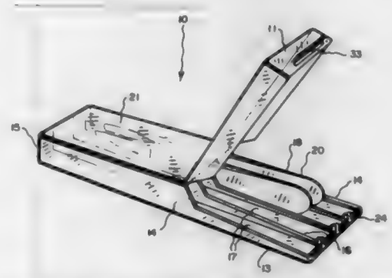
43. A blank for forming a reusable hard pack for encasing cigarettes comprising:
a front wall panel;
a right side wall panel foldably attached to the front wall;
a left side wall panel foldably attached to the front wall panel opposite, and substantially the same size and shape as, the right side wall panel;
a rear wall panel foldably attached to the left side wall panel opposite, and substantially the same size and shape as, the front wall panel;
a bottom wall panel pivotably attached to the front wall panel;
an interior wall panel pivotably attached to the bottom wall panel opposite the front wall panel;
a top wall panel pivotably attached to the interior wall panel opposite the bottom wall panel; and
a tuck portion panel pivotably attached to the top wall panel opposite the interior wall panel;
the blank when folded into a three-dimensional configuration defines:
the right side wall panel is secured to an perpendicular to the rear wall,
the left side wall panel is perpendicular to the front wall panel and rear wall panel,
the bottom wall panel is perpendicular to the front wall panel, the rear wall panel, the right side wall panel, the left side wall panel and the interior wall panel,
the interior wall panel is parallel to and abutted against the rear wall panel,
the top wall panel is perpendicular to the interior wall panel,
the tuck portion panel is perpendicular to the top wall panel and parallel to and abutted against the interior surface of the front wall panel; and
the top wall panel extends across and beyond one of the planes defined by the right and left side wall panels.

5,301,806
CLEAN UP WITH CUT RESISTANT LAYER
Mary Lou Olson, 1147 Ivyhill Dr., Mendota Heights, Minn. 55118
Filed Nov. 6, 1992, Ser. No. 973,467
Int. Cl.[5] B65D *85/18*; A47L *13/18*
U.S. Cl. 206—278 **5 Claims**



1. A clean up device comprising:
a plastic bag, said bag having a top and a bottom and a first and a second side;
a layer of cut-resistant material surrounding the exterior of said plastic bag;
a layer of absorbent material attached to an exterior surface of the cut-resistant material;
a glove attached to one interior side of said bag; and
a means for closing said bag, said means being located on the top of the bag.

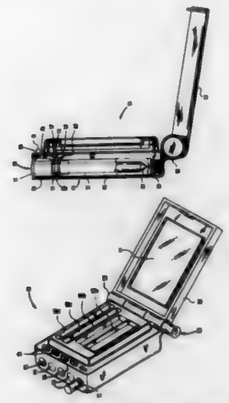
5,301,807
SURGICAL SCALPEL HOLDER
Deanna M. Donahue, 4696 Burch Creek Dr., Ogden, Utah 84403
Filed Jan. 22, 1993, Ser. No. 7,723
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—370 **15 Claims**



1. A scalpel holder to facilitate the conduct of a surgical operation, comprising:
a horizontal, planar, base;
a pair of spaced apart sidewalls upstanding from the base, each joining a rear wall upstanding from said base; and
at least one elongate, interior partition wall upstanding from the base, forming together with the sidewalls at least two elongate scalpel holding compartments; wherein each compartment comprises
an elongate rearward part proportioned so that the walls support a scalpel with a thin wide flat handle with an elongate edge resting upon the base, said walls being spaced sufficiently close together to hold the flats of said handle substantially vertical in easily graspable position; and wherein
the base extends forwardly of the rearward part of the compartments sufficiently for the scalpel to rest full length thereon, and the rear wall and at least the sidewalls at the scalpel supporting rearward part of each compartment of the holder upstand a distance greater than the width of a flat handled scalpel to be held in the compartment; and wherein
each wall portion forming the rearward part of each compartment is joined by a lowered wall portion forming a forward part of each compartment, said lowered wall portion having a height substantially less than the width of the scalpel handle, so that said lowered wall portion does not obstruct grasping of the handle.

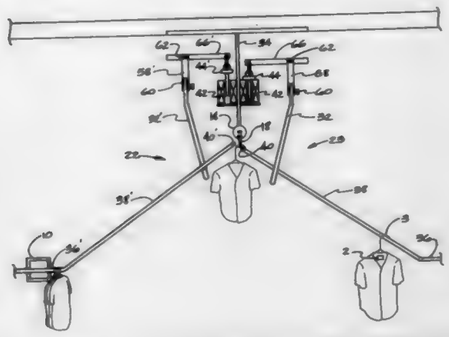
5,301,808
COSMETIC ORGANIZER
Theodore J. Pierson, Kinnelon, N.J., assignor to Pierson Industries, Inc., Rockaway, N.J.
Filed Nov. 13, 1992, Ser. No. 975,642
Int. Cl.[5] A45C *11/00, 11/34*; B65D *83/02, 85/26*
U.S. Cl. 206—581 **25 Claims**

1. A cosmetic organizer comprising:
a housing;
receptacle means for receiving and retaining at least one end of a cosmetic applicator, said receptacle means movable between a retracted position retained within said housing preventing removal therefrom and a projected position arranged at least partially outside of said housing permitting removal therefrom, said receptacle means being attached to the cosmetic applicator so that the cosmetic applicator is simultaneously removed from said housing when said receptacle means is removed therefrom;
moving means arranged in said housing for moving said receptacle means from said retracted position to said projected position; and



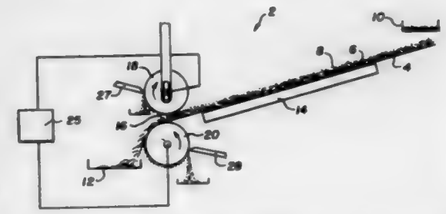
locking means for selectively retaining said receptacle means in said retracted position within said housing, said locking means positionable between a first position wherein said locking means directly engages said receptacle means so that said receptacle means is retained in said retracted position and a second position wherein said locking means is disengaged from said receptacle means and said moving means is operative to move said receptacle means to said projected position.

5,301,809
SORTING CONVEYOR
Karl L. Skinner, Moundridge, Kans., assignor to Star Uniform Rental Company, Inc., Ft. Worth, Tex.
Filed Feb. 14, 1992, Ser. No. 837,361
Int. Cl.[5] B07C *5/02*
U.S. Cl. 209—3.1 **6 Claims**



1. A sorting conveyor for hanger supported goods on conventional clothes hangers having a hook thereon, the conveyor having a plurality of sorting stations on opposite sides of the conveyor including:
a track;
a moving chain moving in a forward direction defining a conveyor path supported by the track with a plurality of hanger pendant means extending therefrom for supporting and transporting goods by conventional clothes hangers the pendant means including a support bar open in a rearward direction;
at least one pair of sorting stations juxtaposed to each other on opposite sides of the conveyor; each station having a pick-off rail extending laterally away from the conveyor to a collection point, each pick-off rail being bent normally to form an engaging probe for passing through and engaging the hook of a moving clothes clothes hanger and tripping the hanger from its support bar onto the pick-off rail; and
actuating means for moving the engaging probe of each pick-off rail into the conveyor path of a clothes hanger hook.

5,301,810
METHOD AND APPARATUS FOR REMOVING PLASTIC FROM WOOD CHIPS
Ronald V. Spencer, Box 194, Gold River, British Columbia, Canada V0P 1 G0 , and
Filed Sep. 29, 1992, Ser. No. 954,170
Int. Cl.[5] B07B *13/00*
U.S. Cl. 209—11 **14 Claims**



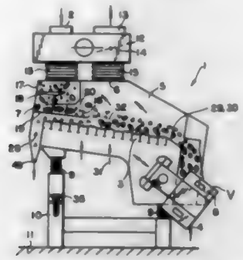
1. Apparatus for removing thermoplastic material from particulate material comprising:
transporting means for moving the particulate material and unwanted thermoplastic material in a material stream between a inlet area and an outlet area;
means for vibrating the particulate material and the thermoplastic material while on the transporting means to sort the particulate material and the thermoplastic material into layers according to density;
rotatable heatable surfaces spaced apart and positioned above and below the material stream as the stream leaves the transporting means for the outlet area for contacting the material stream, the surfaces being heatable to a temperature sufficient to render the thermoplastic material tacky such that the material adheres to the heatable surfaces and is extracted from the material stream; and
means for removing the thermoplastic material from the rotatable heatable surfaces.

5,301,811
APPARATUS FOR THE SEPARATION OF GRAIN MATERIAL AND THE SORTING OUT OF HEAVY INCLUSIONS FROM GRAIN MATERIAL
Roman Mueller, Niederuzwil, Switzerland, assignor to Gebruder Buhler AG, Uzwil, Switzerland
Continuation of Ser. No. 392,951, Jul. 21, 1989, abandoned. This application Sep. 24, 1992, Ser. No. 951,312
Claims priority, application Switzerland, Nov. 27, 1987, 04626/87; Mar. 24, 1988, 01110/88
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—44.2 **5 Claims**

1. In an apparatus for the separation of grain material, and

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for the sorting of heavy inclusions therefrom by the use of a through flowing air stream and having an inclined layering table having a higher and lower end which can be oscillated, said table having air guides for circulating air and wherein, on an upper side, a closed hood is arranged, on an end side, a product feed portion is arranged, and in about the middle thereof, an outlet suction portion coupled to said closed hood



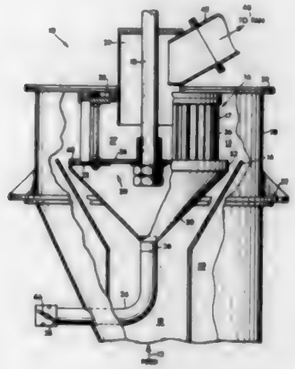
is arranged, the improvement comprising: that the inclined layering table as well as said closed hood with said guides for the air outlet suction portion form an oscillating box which is closed on all sides and that said guides include an air return guide which provides air flow in the vicinity of the lower end of the inclined layering table and wherein the box is oscillatably arranged on a frame that has a stationary head piece in an upper region.

5,301,812

AIR CLASSIFYING APPARATUS WITH WEAR REDUCING DEFLECTOR

Harvey M. Garrett, Sandersville, and George M. Johnson, Tennille, both of Ga., assignors to ECC International Inc., Atlanta, Ga.

Filed Apr. 2, 1993, Ser. No. 42,040
Int. Cl.[5] B07B *5/12, 7/083*
U.S. Cl. 209—714 **10 Claims**



7. In apparatus for air classifying mineral particles by size, said apparatus including a vertically oriented flow channel for carrying an upwardly directed air flow stream in which said particles are dispersed; a cylindrical air classifier mounted in said flow channel and including a cage which is rotatable about a vertical axis; said cage being laterally open to said flow channel, having a plurality of spaced vertical rejector blades mounted about its lateral periphery, and being substantially closed at its lower end by a support plate having a lateral edge; an outlet connected to the classifier interior for withdrawing particles passing radially through said blades for collection; and air drawing means connected to said classifier outlet for drawing said air stream and particles into said classifier and thereby establishing said upward flow of said air stream and dispersed particles within said channel;

THE IMPROVEMENT preventing or limiting damage of said classifier cage support plate by the abrasive impact of the said particles carried by said upward flow; comprising:

a hollow funnel-shaped deflector being fixedly secured below said classifier with its tip facing downwardly; said deflector being open at its base, and formed thereat into an axially-extending lip, the inside of which surrounds but is slightly spaced from the lateral edge of said cage support plate; and

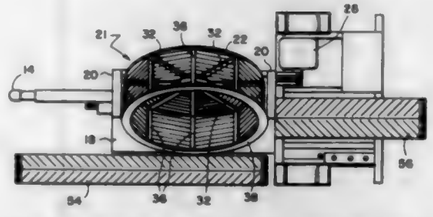
means for inducing an outward air flow said space between said support plate edge and said deflector lip, to thereby provide an air seal preventing particles from entering the interior of said deflector where they can interfere with the rotation of said cage or damage said support plate.

5,301,813

APPARATUS FOR SEPARATING MATERIAL

Bradley J. Schnittjer, P.O. Box 67, 303 Franklin St., Delhi, Iowa 52223

Filed Nov. 16, 1992, Ser. No. 976,943
Int. Cl.[5] B07B *1/18*
U.S. Cl. 209—284 **5 Claims**



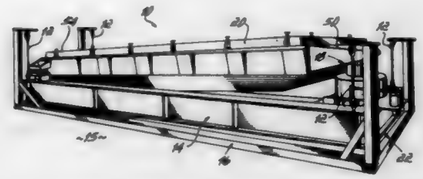
1. An apparatus for separating dry material into different sized particles comprising: a separating unit having a top wall and a bottom wall connected by a side wall, the bottom wall and the side wall each having spaced-apart structural members that define open spaces between them, the top wall being open to provide an opening for the introduction and discharge of material into and out of the separating unit, a screen medium covering the open spaces in the bottom and side walls and having a plurality of openings of the desired size to separate material placed in the separating unit into different sized particles, support means having a fixed imperforate back wall extending substantially parallel to and spaced from the bottom wall of the separating unit, said support means also having imperforate fixed side members extending upwardly along the lower portion of the side walls of the separating unit, a shaft combined with the separating unit to provide for rotation of the unit about an axis of rotation extending transversely to the bottom wall, support means for supporting the separating unit with the axis of rotation at a selected angle between 15° and 30° to the horizontal and with the top wall facing upwardly and outwardly toward a vertical plane, and power means for rotating the separating unit about the axis of rotation at a predetermined speed, whereby material placed into the separating unit will be separated when the smaller particles of the material pass through the screen medium for discharge and the larger particles are discharged through the open top wall of the separating unit.

5,301,814

INCREASING THE RELATIVE MOTION OF A SCREEN DECK

William E. Lower, Cincinnati, and Stephen C. Mitchell, West Chester, both of Ohio, assignors to Rotex, Inc., Cincinnati, Ohio

Filed Oct. 15, 1992, Ser. No. 961,430
Int. Cl.[5] B07B *1/34, 1/42*
U.S. Cl. 209—326 **31 Claims**



1. A positive displacement gyratory screening machine, comprising

a screen deck;

a base movably mounted to a fixed support structure, said base being mounted for movement relative to said fixed support during operation of said machine;

a drive attached to said base and connected to said screen deck to impart a gyratory screening motion to the deck at an operating frequency, and

a force reducer comprising a mass which is mounted by a spring to said movable base for oscillation in at least one of the directions in which said drive gyrates said deck, said force reducer being tuned to resonate at a frequency which is substantially equal to or close to the operating frequency of said drive,

oscillation of said force reduce dissipating forces of said drive acting through said base, reducing the motion of said movable base relative to said support structure, and increasing the motion of said screen deck relative to said support structure,

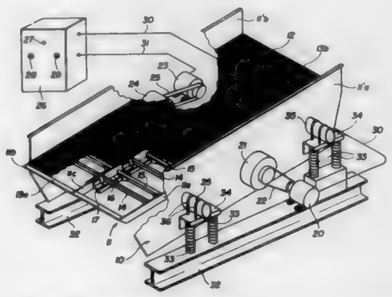
said machine displaying substantially greater deck-to-deck support movement in comparison to an otherwise similar machine without said force reducer.

5,301,815

SCREENING DEVICE AND METHOD

Gilles Chauvin, and Xavier Grasset, both of Saint-Ismier, France, assignors to Etablissements Chauvin S.a.r.l., France

Filed Jul. 14, 1992, Ser. No. 913,676
Claims priority, application France, Jul. 15, 1991, 91 09064
Int. Cl.[5] B07B *1/42, 1/54*
U.S. Cl. 209—365.4 **13 Claims**



1. A screening device comprising:

a fixed body supporting a vibrating framework including a vibrating housing, said vibrating housing supporting a vibrating screen;

at least one movable elongate bar, supported by a pair of arms, being located below said vibrating screen and extending parallel to said vibrating screen, said at least one elongate movable bar being flexible connected to said vibrating housing; and

drive means for vibrating said vibrating framework and said vibrating screen at a first frequency, during a screening operation, and for vibrating said vibrating framework and said vibrating screen at a second different frequency, during an unblocking operation, to maintain said arms and said at least one movable bar in resonance so that said at least one movable elongate bar strikes a lower surface of said vibrating screen to unblock said vibrating screen.

5,301,816

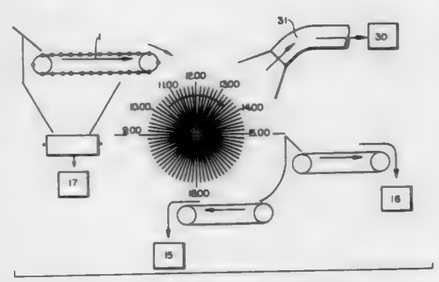
METHOD AND APPARATUS FOR THE SEPARATION OF A MATERIAL MIXTURE AND USE OF THE APPARATUS

Heinrich Weber; Falko Lehrmann, and Clemens Weibel, all of Oberuzwil, Switzerland, assignors to Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 596,864, Oct. 12, 1990, abandoned, which is a continuation of Ser. No. 426,974, Oct. 25, 1989, abandoned, and a continuation-in-part of Ser. No. 582,969, Oct. 11, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 931,115

Claims priority, application Switzerland, Jul. 28, 1989, 02823/89

Int. Cl.[5] B07C *5/36*
U.S. Cl. 209—616 **33 Claims**



1. In a method for environmentally sound separation of a material mixture into individual material components of different character, wherein the material mixture is continuously fed to a rotating inwardly elastic sorting drum from a depositing area, the drum having a direction of rotation and an axis of rotation, the improved method comprising the steps of:

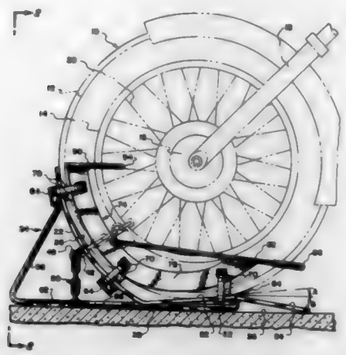
guiding the material mixture above the sorting drum and dropping the mixture into contact with the sorting drum, causing the material mixture to travel with the drum, in the direction of drum rotation; and,

dividing the material mixture into fractions of material components according to a common characteristic as the mixture travels with the drum, in the direction of drum rotation.

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5,301,817
MOTORCYCLE SECURITY STAND
Scott G. Merritt, 1055 Aviation Dr., Lake Havasu City, Ariz. 86404-2417
Filed Aug. 23, 1993, Ser. No. 110,221
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—5 9 Claims



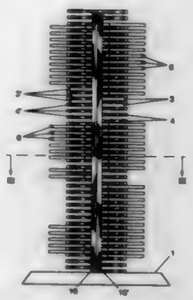
1. A motorcycle security stand to be located on a supportive surface, said motorcycle stand comprising:
a base to be placed on the supportive surface;
a backbone member mounted on said base, said backbone member adapted to function as a cradle for the front wheel of a motorcycle, said backbone member having a right edge and a left edge;
a right side support and a left side support, said rightside support located at said right edge of said backbone member, said left side support located at said left edge of said backbone member, said right side support adapted to abut against the right side of the front wheel of a motorcycle, the left side support adapted to abut against the left side of the front wheel of a motorcycle; and
a supporting rib assembly mounting both said right side support and said left side support on said backbone member, said supporting rib assembly being adjustable on said backbone member to vary the spacing between said right side support and said left side support, said supporting rib assembly being fixable in position on said backbone member.

5,301,818
SUPPORT RACK FOR A SKATEBOARD
Kevin M. Dix, 78-17 87th Ave., Woodhaven, N.Y. 11421
Filed May 7, 1993, Ser. No. 60,306
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—13 5 Claims



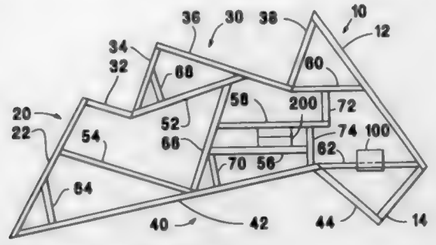
1. A wall-mountable rack for supporting a skateboard, the rack comprising a plate, the plate comprising a main upper portion and an integral lateral extension below the main portion, the plate having a back face and a front face, the back face being adapted to rest flat against a wall or horizontal flat surface, the front face of the plate having extending outwardly from the main portion an integral support shelf for supporting a skateboard by way of a pair of wheels thereof, the support shelf comprising two shelf parts located symmetrically about a central vertical axis of the plate, the shelf parts having a space therebetween for accommodating a wheel truck of the pair of skateboard wheels, the support shelf having a horizontal upper support surface in the shape of a partial inside tubular surface for conformingly retaining a pair of cylindrical skateboard wheels, the tubular surface having a total arc of less than 180° an arc as measured from a point on a vertical line tangentially intersecting the tubular surface of at least 130°, the lateral extension extending from below the main portion of the plate so as to resist a rotational force about a horizontal axis in a plane parallel to the plate, the lateral extension having a reduced width compared to the main portion, and the plate being substantially symmetrical about a vertical central axis thereof.

5,301,819
COMPACT DISK STORAGE RACK
A. P. Moeken, Westeinde 48, 2841 BW Moordrecht, Netherlands
Filed Feb. 11, 1993, Ser. No. 16,746
Claims priority, application Netherlands, Feb. 17, 1992, 9200285
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—40 5 Claims



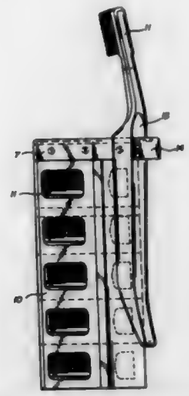
1. A storage rack for relatively flat objects, such as CD-cassettes, essentially consisting of an upwardly directed, form-retaining plate, in which at a fixed pitch distance a series of slotted recesses are provided having a slot width corresponding to the height of the object to be stored, said plate having been bent over about at least one longitudinal axis to form a three-dimensional element, characterized in that the storage rack comprises two three-dimensional elements (10, 11), each element having been bent so as to form approximately a dihedral angle, the pitch distance of the recesses (3) being approximately twice the height of the object and the recesses (3) in one element (10) being staggered relatively to the recesses (3) in the other element (11) by half the pitch distance, in such a manner that the two elements (10, 11) can be slid one into the other with the angular points (12) turned towards each other.

5,301,820
DISPLAY CASE
Howard Rossmoore, 1879 Fiesta Dr., Sarasota, Fla. 34231
Continuation-in-part of Ser. No. 807,104, Dec. 13, 1991, Pat. No. 5,211,293. This application May 17, 1993, Ser. No. 62,177
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—42 29 Claims



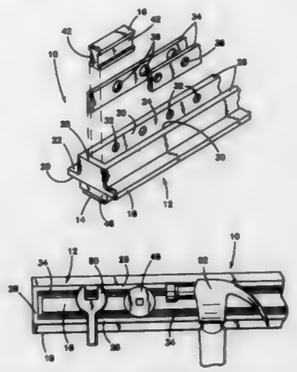
1. A display case, comprising:
a frame including first and second side portions, a top portion, and a bottom portion;
at least one substantially horizontal shelf adapted to support objects;
at least one inclined shelf adapted to support objects; and
at least one shelf extension extending from one of the at least one substantially horizontal shelf and the at least one inclined shelf.

5,301,821
HOLDER FOR A BODY GROOMING TOOL
Roland Jeannet, Duesseldorf, Fed. Rep. of Germany; Robert Leutwyler, Boppelsen, and Werner Leutwyler, Zurich, both of Switzerland, assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Feb. 4, 1993, Ser. No. 13,280
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4205027
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—65 3 Claims



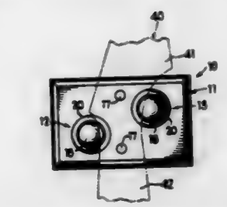
1. Holder for a body grooming tool, having a plate (1) to be attached to a wall and a holding element (7), extending essentially at a right angle thereto, for receiving the body grooming tool (13), characterised in that the plate (1) and the holding element (7) are pivotably connected to each other and in that there is provided, on the plate (1), a suspension device (3) for the detachable attachment of a magazine (10) containing accessories for the body grooming tool, the holding element (7), when swivelled into the usage position at a right angle to the plate (1), gripping over the suspension device (3) in such a way that the magazine (10) is protected against unintended detachment from the holder.

5,301,822
MAGNETIC TOOL HOLDER
Edward S. Coleman, Ridgefield, and Richard Scalise, Westport, both of Conn., assignors to Ullman Devices Corporation, Ridgefield, Conn.
Filed Feb. 22, 1993, Ser. No. 20,711
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—70.6 16 Claims



1. A magnetic tool holder, comprising:
a generally elongate body member having a first surface and a second surface and having a longitudinal channel running along at least a portion of the first surface;
a receiving magnet, disposed in the longitudinal channel; and
detent means provided on the receiving magnet and the longitudinal channel, whereby the receiving magnet is held in place in the longitudinal channel when the detent means on the receiving magnet and the longitudinal channel are engaged.

5,301,823
RACK FOR HANGING MUSICAL INSTRUMENTS
Carl D. Kingery, 12 Orchard Ave., Newark, Del. 19711
Continuation of Ser. No. 972,700, Nov. 6, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 95,308
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—87 16 Claims



1. A rack for hanging a stringed instrument on a substantially vertical wall, the instrument including a neck and a head disposed on a distal end of the neck, the rack comprising:
a base plate including a front surface and a rear surface, the base plate including means for mounting the base plate to the wall, the rear surface of the base plate engaging the wall when the base plate is mounted to the wall,

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means for mounting two pegs to the front surface of the base plate, each peg having a lateral and vertical position with respect to the other peg, the means for mounting the two pegs enabling adjustment of the lateral and the vertical positions of the pegs with respect to each other and wherein the means for mounting the two pegs includes two slots disposed in and extending through the base plate, at least one slot having a vertical portion and a lateral portion thereby allowing adjustment of the vertical and lateral position of one peg with respect to the other peg,

the two pegs extending substantially perpendicularly outward from the front surface of the base plate,

the two pegs supporting the head of the instrument, the instrument hanging from the pegs and juxtaposed to the wall.

5,301,824

STACKING COLUMN FOR STORING STORAGE ARTICLES

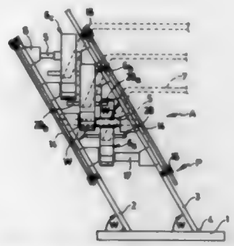
Heinz Schoeller, Rielasingen/Worblingen, Fed. Rep. of Germany, assignor to Croon & Lucke Maschinenfabrik GmbH, Mengen, Fed. Rep. of Germany

Filed Oct. 6, 1992, Ser. No. 957,426

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 4133464

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—150 **14 Claims**



1. Stacking column for storing storage articles one on top of the other at mutual intervals, which comprises twin-armed ratchet levers, which are rotatably mounted on rotary axles arranged approximately horizontally between two wall strips and exhibit, on the one hand, a supporting arm for holding the storage article and, on the other hand, a control arm, wherein the two wall strips form an acute angle with at least one of a base surface and a baseplate, and the ratchet levers between the two wall strips are arranged successively, lateral offset in the same direction, on the rotary axles.

5,301,825

AIR REMOVAL DEVICE FOR USE WITH A NURSING BOTTLE

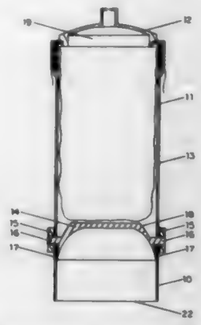
Luciano Di Scala, 111 Arpage Dr. East, Shirley, N.Y. 11967, and Frank Ida, 1 Jillet Dr., Smithtown, N.Y. 11787

Filed Jul. 28, 1992, Ser. No. 920,866

Int. Cl.[5] A61J *9/00, 9/06*

U.S. Cl. 215—11.1 **6 Claims**

1. An air removal device for use in combination with a nursing bottle including an outer rigid tubular shell open at both ends and having a longitudinal axis and longitudinal slots extending axially along the length of the shell, a flexible liner closed at one end and open at its opposite end, means of securing the open end of the liner at one of the open ends of the shell such that the liner extends down into the shell, a nipple in fluid communication with the open end of the liner, means of securing the nipple to said shell at said liner open end, and ah air removal device for removing excess air from the liner including a disc dimensioned for sliding engagement along the interior of the shell, said disc having radially extending tabs dimensioned to extend through said longitudinal slots in said shell, a ring dimensioned to slide longitudinally along the exterior of the shell and means connecting the tabs of the disc with the ring on the exterior of the shell such that when pressure is



applied to the ring to slide said ring along the exterior of the shell the disc inside the shell contacts the closed end of the flexible liner to exert pressure on the liner, thereby expelling any excess air from the liner.

5,301,826

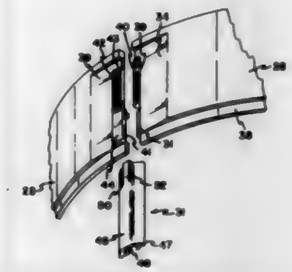
EXPANSION RING AND CLIP FOR USE WITH AN EXPANDABLE OVEN

Jeffrey Sandahl, Burnsville, Minn., assignor to Alternative Pioneering Systems, Inc., Chaska, Minn.

Filed Aug. 6, 1992, Ser. No. 926,848

Int. Cl.[5] B65D *45/16*

U.S. Cl. 220—4.26 **29 Claims**



1. An expansion ring for use in expanding the cooking capacity of an oven, comprising:

a plurality of expansion ring segments, said expansion ring segments each having two end portions and being removably fitted in end-to-end relation so as to form a ring, wherein when fitted in end-to-end relation, the end portions of two adjacent expansion ring segments form an engagement portion having a first stop; and

at least one clip, said clip being removably engagable with said engagement portion so as to connect said end portions of said two adjacent expansion ring segments together, said clip having a resilient finger which is biased toward the engagement portion, wherein the finger engages said stop so as to prevent said clip from moving freely relative to said engagement portion.

5,301,827

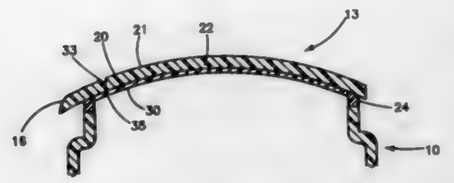
PLASTIC CONTAINER CLOSURE

Emery I. Valyi, Katonah, N.Y., assignor to Pepsico, Inc., Purchase, N.Y.

Continuation of Ser. No. 905,297, Jun. 29, 1992. This application Jul. 20, 1993, Ser. No. 94,845

Int. Cl.[5] B65D *17/34*

U.S. Cl. 220—257 **10 Claims**



1. A plastic closure for plastic containers, which comprises: a lid having top and bottom surfaces and a peripheral rim suitable for attachment to a plastic container to seal said container; a liner on the bottom surface of the lid resistant to gas permeation; and means for providing a closable opening in the lid and liner comprising a tab attached to at least the lid, a continuous notch on said lid adjacent said tab to permit propagation of an opening in said lid starting from said tab to form a flap portion of said lid defining an opening in the lid, hinge means on said lid terminating the notch and opposed to said tab to permit the flap portion to be rotated from a closed position to an open position and from an open position to a closed position; and a continuous notch on said liner adjacent and corresponding to said notch on the lid for permitting the liner to propagate a break forming a broken portion of the liner which corresponds in shape of the flap portion of the lid, said broken portion and said flap portion rotating together when the flap portion is moved to an open position, thereby forming a closable opening in the container closure.

5,301,828

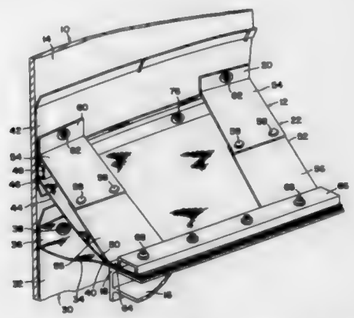
SECONDARY SHOE SEAL

Donald W. McKay, Chadds Ford, Pa., assignor to HMT, Inc., Houston, Tex.

Filed Jul. 29, 1992, Ser. No. 922,037

Int. Cl.[5] B65D *88/42*

U.S. Cl. 220—221 **14 Claims**



1. An arrangement for sealing a space between an inner wall of a tank and a floating roof therein comprising the combination of:

a primary seal mounted on the floating roof and extending into contact with the inner wall of the tank to provide primary sealing of the space between the inner wall of the tank and the floating roof; and

a secondary seal disposed above the primary seal, the secondary seal being mounted on the floating roof and extending into contact with the inner wall of the tank above the primary seal to provide secondary sealing of the space between the inner wall of the tank and the floating roof, the secondary seal including a shoe disposed against the inner wall of the tank and supported on the floating roof.

5,301,829

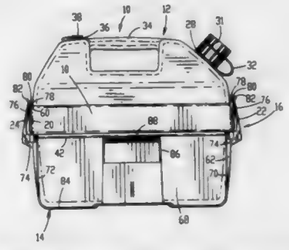
COMBINATION FUEL CONTAINER AND TOOL TRAY

Larry L. Chrisco, Fairland, Okla., assignor to Blitz U.S.A., Inc., Miami, Okla.

Filed Mar. 24, 1993, Ser. No. 36,367

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—521 **3 Claims**



1. In a container of the type having a receptacle for holding liquids, a tray having a well for holding items, and means for coupling the receptacle and tray in a superposed relationship with the receptacle positioned above the tray, the improvement comprising:

the tray having a handle having an uppermost surface; and

the receptacle having a flexible bottom wall presenting a lowermost surface located proximal to said uppermost surface, said lowermost surface being spaced apart from said handle when said receptacle is in an unfilled condition and flexing downwardly to contact said uppermost surface under influence of the liquid weight when said receptacle is in a filled condition, wherein said handle supports said receptacle in the filled condition.

5,301,830

CONTAINER

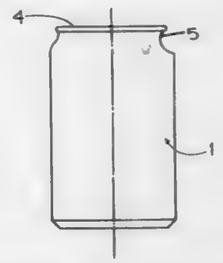
Michael R. Müller, C/.Bonavista, 7 - 2°/2ª, 08012-Barcelona, Spain

Filed Apr. 3, 1992, Ser. No. 862,898

Claims priority, application Spain, Apr. 5, 1991, 9101012

Int. Cl.[5] A47G *19/22;* **B65D** *1/40*

U.S. Cl. 220—669 **2 Claims**



1. In a container that is in the form of a beverage-containing can and has a top, bottom, and side portion interconnecting

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said top and bottom, with said top being provided with opening means for providing to a consumer access to contents of said can, the improvement wherein:

said side portion is provided with a circumferential groove having a first radial depth and a second radial depth extending further radially inwardly than said first radial depth, said groove being disposed adjacent to said can, with said second radial depth having a shape that is essentially adapted to a lower lip anatomy of a consumer;

said opening means includes a pull tab for removing a pull-out section to form a pour-out hole; and

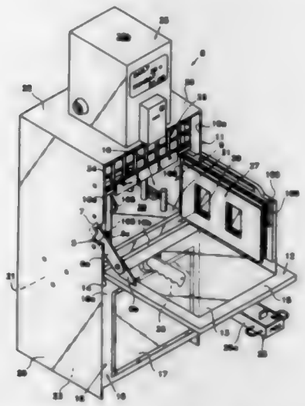
said second radial depth being disposed only in the immediate vicinity of said pour-out hole.

5,301,831

NEWSPAPER RACK WITH IMPROVED ONE-AT-A-TIME DISPENSING ASSEMBLY

Woodi N. Holmes, Vallejo, Calif., assignor to Harold D. Messner, Vallejo, Calif.

Filed Dec. 16, 1992, Ser. No. 991,152
Int. Cl.[5] G07F *11/24*
U.S. Cl. 221—28 **20 Claims**



1. A dispensing assembly for dispensing newspapers one-at-a-time from a newspaper rack having a windowed door disconnectably connectable to a coin-operatable latch mechanism, comprising

(a) a base support including a gate member disconnectably connected relative to said base support whereby said gate member is at least pivotable relative thereto,

(b) shaker means connected to said base support means and including a planar member capable of supporting a stack of newspapers including a deepest newspaper in surface contact therewith, and lever means capable of being provided with bi-directional, rectilinear travel relative to said base support, said lever means being fixedly connected to said planar member for providing corresponding travel of said planar member relative to said base support,

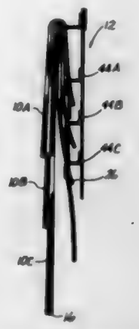
(c) gate height adjustment means disconnectably connectable to said gate member for adjusting a height of said gate member relative to said planar member of said shaker means whereby a slot formed therebetween is correctly sized wherein uni-directional travel of a single newspaper therethrough is provided even though said lever and said planar member undergo bi-directional rectilinear travel relative to said base support.

5,301,832

METHOD OF AND MEANS FOR DISPENSING SHOPPING BAGS FROM DIFFERENT SIZE BAG PACKS

Mark E. Daniels, Redondo Beach, Calif., assignor to The Avantage Group, Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 32,141, Mar. 17, 1993, which is a continuation of Ser. No. 871,856, Apr. 21, 1992, Pat. No. 5,205,435. This application Apr. 19, 1993, Ser. No. 49,978
Int. Cl.[5] A47K *10/24*
U.S. Cl. 221—44 **4 Claims**



1. A method of providing dispensable merchandise bags from a pack of coinciding plastic bags, each bag of the pack having a closed bottom and sides, and an open top defined by edges extending between the sides, said open top having a hook-receiving opening positioned in the vicinity of said top defining edges, said method comprising:

(a) providing a rack with a projecting transverse bar;

(b) providing a hooking element, said element extending downwardly at an angle at least 90 degrees from the vertical, said element being disposed below the level of the bar and aligned centrally with the bar to project below the bar and being spaced from the bar;

(c) draping the lower portions of the bags of the bag pack over the rack in a reverse position;

(d) hooking the hook-receiving openings of the pack of bags over the hooking element;

(e) draping the lower portions of the hooked bag pack over the rack forward over the transverse bar to cause said lower portion to hang downwardly over the bar in front of the U-shaped member; and

(f) removing a bag in the bag pack from the rack and the hooking element by grasping the top bag draped over the transverse bar and hanging downwardly therefrom, and pulling the bag to detach it from the hooking element.

5,301,833

LIQUID DISPENSER WITH CUP HOLDER

Erkin Aycan, 7 Ennismore Place, Willowdale, Ontario M2J 1Z9, Canada

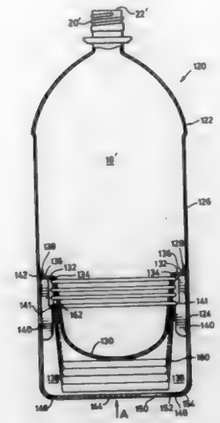
Continuation-in-part of Ser. No. 992,783, Dec. 18, 1992, abandoned. This application Jan. 29, 1993, Ser. No. 10,785
Int. Cl.[5] A47F *1/08*
U.S. Cl. 221—96 **14 Claims**

1. A liquid dispenser, compriising;

a) a container enclosing a liquid storage compartment and having an outlet passageway in flow communication with said liquid storage compartment through which liquid may be dispensed from said liquid storage compartment;

b) a separate base having sides and a base bottom defining a hollow portion, said base being attached to a bottom portion of said container, the bottom portion having a tapered protrusion extending into the hollow portion, and together with the sides of the separate base, defining a tapered recess for storing therein at least one cup, the base

bottom having an opening for receiving said at least one cup into the tapered recess; and



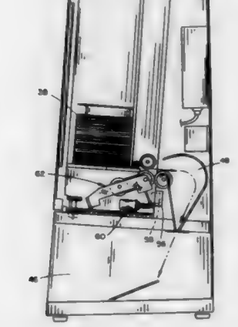
c) retaining means on said base for retaining said at least one cup in said tapered recess.

5,301,834

CARD VENDING MACHINE

Carroll J. Lee; Kenneth A. Lee, both of Columbus, and Robert J. Palmquist, Omaha, all of Nebr., assignors to The Lift Ticket, Oakland, Iowa

Filed Jan. 21, 1993, Ser. No. 6,503
Int. Cl.[5] B65H *3/44*; G07F *11/00*
U.S. Cl. 221—129 **8 Claims**



1. A card vending machine, comprising,

a cabinet means having a front portion, a rear portion, opposite sides, an upper end and a lower end,

a plurality of card holding and dispensing modules in said cabinet means,

each of said card holding and dispensing modules being individually removably positioned in said cabinet means,

each of said modules including a card holding portion for holding a plurality of cards therein in a stacked condition,

each of said modules including a card dispensing mechanism for dispensing the lowermost card in the stack in the associated card holding portion,

said card dispensing mechanism in each of said modules being selectively movable between an idle position and a card dispensing position,

a bill acceptor sensing means in said cabinet means for accepting and sensing the deposit of one or more bills of various denominations,

a credit register means in said cabinet means operatively connected to said bill acceptor sensing means for electronically registering a credit corresponding to the amount deposited in said bill acceptor sensing means,

an electrically operated drive motor positioned in said cabinet means and having a drive shaft extending therefrom,

said drive shaft being in operative engagement with the card dispensing mechanism of each of said modules for driving the same,

said cabinet means having a card access opening formed therein,

said card access opening being in operative communication with said card dispensing mechanisms so that dispensed cards will be delivered to said card access opening to enable a player to collect the same,

actuator means for moving the said card dispensing mechanism in each of said modules to its card dispensing position,

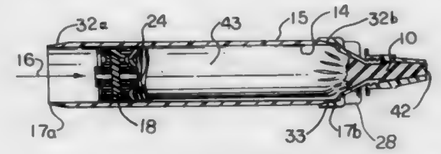
and control means operatively interconnecting said credit register means, said drive motor and said actuator means whereby said actuator means will move said card dispensing mechanism to its card dispensing position during the time said drive motor is driving said card dispensing mechanism so that cards will be dispensed from the associated card holder portion for delivery to said card discharge opening.

5,301,835

ADAPTER FOR DISPENSING MATERIAL FROM A SAUSAGE TYPE PACKAGE

Henry J. Fulks, Midland; Ronald R. Kubiak, Saginaw; Timothy W. Mitin, Midland, and Ronald W. Wieck, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 17, 1992, Ser. No. 946,201
Int. Cl.[5] B65D *35/14*
U.S. Cl. 222—95 **13 Claims**

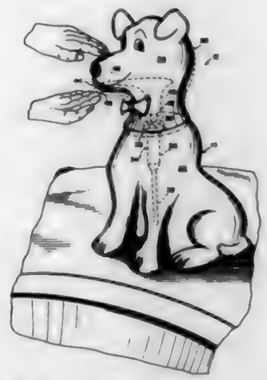


1. An adapter for dispensing extrudable material contained in collapsible, flexible, cylindrical sausage-shaped skin package from an extrusion device designed for dispensing such material, said adapter comprising a rigid walled cylindrical tube containing a circular dispensing plunger, said rigid walled cylindrical tube having an inner wall diameter approximating a diameter of the skin package and an axial length sufficient to accommodate a length of the skin package and at least a portion of the circular dispensing plunger, said dispensing plunger having an outer circumferential wall and first and second ends, the outer circumference of at least the first of said ends having a diameter approximating the inner wall diameter of the cylindrical tube for sliding, scraping contact therewith, the circumferential wall of the plunger intermediate to its ends having a diameter less than the diameter of said one end to reduce friction as the plunger is moved axially, said first plunger end also having a circular recess located between its movement axis and its periphery for collecting the sausage skin as material is dispensed therefrom by movement of the plunger and having an axially extending crown portion protruding beyond a plane encompassing the first end of the outer wall of the plunger; the

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second end of the plunger shaped to allow application of force to cause said plunger to slide through the cylindrical tube, the first and second ends of the plunger are essentially the same and have concentric circular ribs parallel to the movement axis.

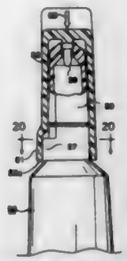
5,301,836
LIQUID DISPENSER HAVING MOVABLE HEAD AS PUMP ACTUATOR
Tom Tho Truong Luu, 232 Beegum Way, San Jose, Calif. 95123
Filed Apr. 14, 1993, Ser. No. 45,888
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—78 **6 Claims**



1. A liquid dispenser which comprises:
a. a plastic container in the shape of an animal body for holding liquid therein, said container having an externally threaded neck and an annular sleeve disposed about said externally threaded neck so as to form a recess therebetween;
b. means extending into and upwardly from said container for dispensing the liquid out of said container, said dispensing means comprising an internally threaded cap for engaging the externally threaded neck of the container, a dip tube below said internally threaded cap which extends into the liquid within the container, an accumulator between said internally threaded cap and said dip tube, a reciprocating piston disposed within and extending upwardly from said accumulator and through said internally threaded cap, and a saddle head fluidly connected to said piston and having a spout; and
c. a plastic cover in the shape of an animal head disposed over and engaging with said saddle head of said liquid dispensing means so that depressing said cover downwardly will operate said liquid dispensing means, and said cover having an opening approximate a mouth of said animal shaped head through which said spout of said saddle head extends.

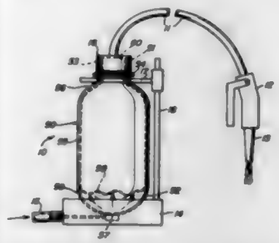
5,301,837
CHILD RESISTANT MEDICAMENT DISPENSER
John R. O'Meara, Jamesburg, N.J., assignor to CP Packaging, Inc., Jamesburg, N.J.
Filed Jan. 31, 1992, Ser. No. 830,308
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83 **14 Claims**

6. A child resistant cap and tube assembly, comprising:
a tube for containing a product and having an end portion with a recessed thin wall section puncturable to provide a discharge opening and a shoulder means for limiting axial movement on said end portion;
a cap having a control axis for alignment with said tube and sized to slidably engage said end portion;
an axially centered puncture means positioned to be aligned with said thin wall section and normally spaced from said thin wall section in a first position and operable to puncture said thin wall upon movement of said cap to a second position for opening said discharge opening;
said cap further including shoulder engaging means for preventing axial movement of said cap from said first position to said second position without intentional manipulation of said shoulder engaging means to a shoulder disengaging position; and



said shoulder comprising a boss means located on said end portion and said shoulder engaging means comprising socket means on said cap means, said socket means being normally out of alignment with said boss means to define said first position and said intentional manipulation includes aligning said boss means and said socket means to permit movement of said cap to said second position;
said socket means extending radially from said cap at one location on said cap and said boss means extending below said cap when said cap is in said first position to permit visual observation of both said socket means and said boss means in said first position.

5,301,838
MULTILAYER BOTTLE WITH SEPARABLE INNER LAYER AND METHOD FOR FORMING SAME
Steven L. Schmidt; Wayne N. Collette, both of Merrimack, and Suppayan M. Krishnakumar, Nashua, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.
Continuation-in-part of Ser. No. 644,624, Jan. 23, 1991, abandoned, and Ser. No. 698,931, May 13, 1991, abandoned. This application Jan. 8, 1992, Ser. No. 814,923
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—95 **21 Claims**



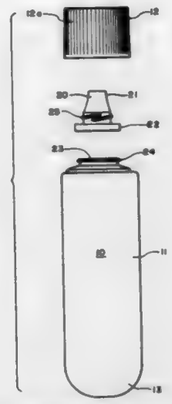
1. In a dispensing container having a substantially rigid outer body and a flexible collapsible inner bag with the inner bag holding a product to be dispensed, the container having an open end from which the product is dispensed and a closed end, the improvement comprising:
the inner bag and outer body being inner and outer layers respectively of a unitary multilayer expanded plastic preform container, wherein the inner layer is continuous and separate from the outer layer at the closed end of the container and joined thereto at least at the open end, and an opening is provided in the outer layer at the closed end to enable air to enter between the inner and outer layers to facilitate collapse of the inner layer.

5,301,839
SEALANT CARTRIDGE
Dieter Eierle, and Dieter H. Eierle, both of Hunfelden, Fed. Rep. of Germany, assignors to Dow Corning GmbH, Fed. Rep. of Germany
Filed Jun. 1, 1993, Ser. No. 69,612
Claims priority, application United Kingdom, Jun. 30, 1992, 9213852
Int. Cl.[5] B65D *35/14*
U.S. Cl. 222—95 **9 Claims**



1. A dispensing cartridge (10), suitable for use with sealant applicator guns, comprising a self-supporting sleeve (12) having an interior surface, a detachable end cap (14) including an exit port (18) through which a compoaition may be urged from the cartridge and a plunger (20) positioned within the sleeve (12) in slidable relationship therewith, the sleeve (12), end cap (14) and plunger (20) defining a cavity for a mass of sealant composition, wherein the plunger (20) is made from one part of plastic material and comprises an outer wall (22) having offsets on leading and trailing edge portions (29,31) adapted to be in frictional engagement with the interior surface of the sleeve (12), said offsets being the only portions of the plunger (20) which form a seal with the interior surface of the sleeve (12) and a support portion constructed in such a way that the plunger (20) may be moved in either direction axially within the sleeve (12) and in such a way that when pressure is applied to the support portion (24,25), the plunger (20) is urged from one end of the sleeve (12) to the other whilst the offsets on the leading and trailing edge portion (29,31) maintain sealing contact with the interior surface of the sleeve (12), wherein the support portion of the plunger (20) is provided with supporting ribs (28) extending diametrically and concentric cylindrical ribs (26).

5,301,840
TUBE DISPENSER CAPABLE OF CREATING A SUCKBACK EFFECT IN THE NOZZLE
Kai Sun, Warren, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 798,310, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 682,329, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 754,132, Sep. 3, 1991, Pat. No. Des. 338,397. This application Jun. 22, 1993, Ser. No. 80,999
Int. Cl.[5] B67D *1/16*
U.S. Cl. 222—109 **10 Claims**



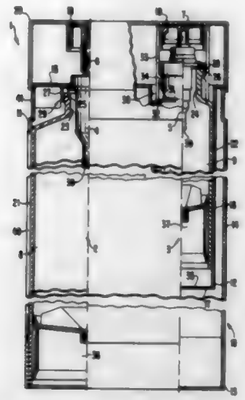
1. A tube dispenser comprising a continuous tube portion, a conical shoulder on one end of said tube portion and the other end of said tube portion being closed, said shoulder having a nozzle which extends away from said tube portion and having an aperture to deliver substances being dispensed from said tube, the ratio of the height of said nozzle to the diameter of said aperture being from about 1:1 to 10:1, the continuous tube portion having a multilayer structure with sufficient memory such that when the tube portion is compressed to deliver a product the tube portion rapidly regains its original shape upon the release of compression on the tube portion to thereby create a suckback to draw product in the nozzle opening downwardly at least about 0.3 cm, said multilayer structure comprised of an inner moisture barrier layer having a thickness of about 75 microns to 200 microns, an organic barrier layer having a thickness of about 15 to 40 microns and an outer protective layer having a thickness of about 200 to 400 microns, said outer protective layer being a low density polyethylene layer having a high density polyethylene content of up to about 50 percent by weight.

5,301,841
MEDIA DISCHARGE APPARATUS FOR HOUSING A MOVABLE RESERVOIR
Karl-Heinz Fuchs, Radolfzell, Fed. Rep. of Germany, assignor to Ing. Erich Pfeiffer GmbH & Co. KG, Radolfzell, Fed. Rep. of Germany
Filed Jan. 29, 1992, Ser. No. 827,399
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102506
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—135 **33 Claims**

1. A discharge apparatus for media, which comprises: two functional units, each of the functional units comprising a medium reservoir, a discharge unit operatively connected to the medium reservoir, and a discharge actuator operatively connected to the discharge unit, the discharge apparatus further comprising means for simultaneously depressing the dis-

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charge actuators of the functional units, wherein at least one of the functional units is movable with its associated discharge

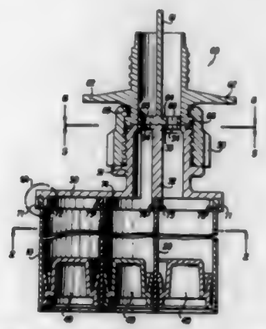


actuator over part of the depression of the discharge actuators, so as to not discharge media from its medium reservoir during movement of the at least one functional unit.

5,301,842
MULTICOMPONENT CARTRIDGE FOR PLASTIC MATERIALS

Frank Ritter, Schwibbogenmauer 18, D-8900 Augsburg, Fed. Rep. of Germany

Filed Feb. 21, 1992, Ser. No. 839,428
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 9102635; Mar. 6, 1991, 9102636
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—137 **20 Claims**



1. A multichamber cartridge of injection-molded plastic for at least two plastic materials with at least two cartridge tube wall parts located one inside the other to form at least two chambers to receive one material component each, the cartridge comprising:

an end wall part located at an anterior end of the cartridge tube wall parts, to which a mouthpiece to dispense the material components from the cartridge is formed,

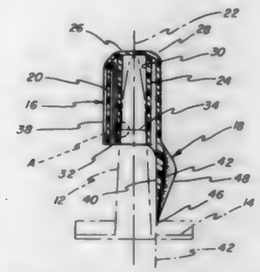
piston elements inserted in a rear end of the cartridge tube wall parts to express the material components, with the end wall part designed as a separate head piece and the cartridge tube wall parts made as separately manufactured parts, and

snap connections on the cartridge tube wall parts and head piece for connecting the cartridge tube wall parts with the head piece, wherein the snap connections have, between said head piece and each cartridge tube wall parts, an annular flange formed on respective tube wall parts with an annular groove having an undercut, and an annular projection formed on said head piece complementary to the annular groove for engaging said undercut of the annular groove.

5,301,843
COMBINATION CAULKING TUBE CAP AND APPLICATOR DEVICE

David E. Groene, Centerville, Ohio, and Earl E. Hoyt, Franklin Lakes, N.J., assignors to DAP Products Inc., Tipp City, Ohio

Filed Apr. 5, 1993, Ser. No. 42,864
Int. Cl.[5] B67D *1/07*
U.S. Cl. 222—192 **17 Claims**



1. A combination cap and applicator device comprising:

a tubular cap body including a cylindrical side wall and having opposing first and second ends, said cap body defining a cap body longitudinal axis,

means interior of said cap body for engaging a container nozzle,

a spreader blade formed integrally with said cylindrical side wall of said cap body and extending from said second end of said cap body for spreading a material dispensed through the container nozzle, said spreader blade including opposing first and second sides, said spreader blade defining a central blade axis parallel to said cap body longitudinal axis and further including a central longitudinal portion and a pair of wing portions extending laterally outwardly from said central longitudinal portion on said second side, and

wherein said cap body is located on a laterally opposite side of said central blade axis from said pair of wing portions such that said cap body forms a handle adapted to be held in laterally spaced relation to a surface contacted by said wing portions.

5,301,844
DRY SOLIDS MATERIALS FEEDER WITH VIBRATING MECHANISM AND A METHOD OF VIBRATING VARIOUS COMPONENT PARTS OF THE FEEDER

Ronald J. Ricciardi, Woodcliff Lakes, N.J., assignor to Acrison, Inc., Moonachie, N.J.

Continuation of Ser. No. 716,284, Jun. 17, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 994,168
Int. Cl.[5] B65G *65/46*
U.S. Cl. 222—199 **24 Claims**

1. A materials feeder comprising:

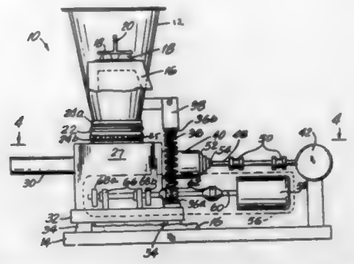
supply means for supplying material;

discharge means for receiving said material from said supply means and for discharging said material from said feeder at a predetermined rate;

a single vibratory means for vibrating said discharge means at a first amplitude and a first frequency;

a first vibration transfer means operatively connected between said discharge means and said supply means for

transferring the vibration of said vibratory means to said supply means at a changed amplitude and a changed frequency; and

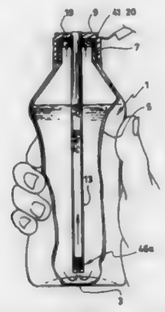


a stationary base having a first vibration isolator upon which the supply means is mounted and a second vibration isolator upon which the discharge means is mounted.

5,301,845
LIQUID MEASURING AND DISPENSING CONTAINER

Jean-Pierre Labonte, 20 Debonnair Street, Courville, Canada G1C 5L7

Filed Oct. 29, 1992, Ser. No. 968,423
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—211 **5 Claims**



1. A liquid measuring and dispensing container comprising:

(a) a squeeze container having a flexible and resilient sidewall;

(b) a bottom wall and a top mouth;

(c) a cap closing said mouth;

(d) a measuring tube fixed to said cap and extending into the container and opening outside said cap at its top end and adjacent said bottom wall at its bottom end, said tube marked with a calibration scale which increases in value from said bottom end to said top end;

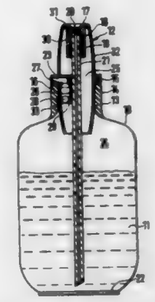
e) tube valve means carried by said tube bottom end for allowing liquid in said container to enter said tube in a measured quantity when said sidewall is squeezed and for retaining said measured quantity of liquid in said tube when said sidewall is released and returns to its original shape, said measured quantity of liquid capable of being discharged through the top end of said tube when said container is inverted; and

f) a cap valve communicating the inside of the container with the exterior, said cap valve opening upon the existence of a partial vacuum within said container when upright and closing when said vacuum ceases, said cap valve being a flexible and elastic membrane located under said cap, fixed and sealed to the periphery of said top mouth and having a central hole receiving said tube, said cap having a bleed hole laterally spaced from said tube and communicating the exterior with the top face of said membrane, said membrane having a sealing fit around said tube when there is no vacuum in said container when upright, and stretching radially away from said tube to leave an air passage between said membrane and said tube when partial vacuum exists in said container when upright.

5,301,846
SPRAY BOTTLE

Detlef Schmitz, Lunen, Fed. Rep. of Germany, assignor to Perfect-Valois Ventil GmbH, Dortmund, Fed. Rep. of Germany

Filed Oct. 21, 1991, Ser. No. 779,872
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106575
Int. Cl.[5] B65D *37/00, 1/32*
U.S. Cl. 222—211 **1 Claim**



1. A flexible plastic spray bottle having a neck rim, which bottle can be compressed by hand and is intended for the introduction of a liquid medicament into a body orifice, and an approximately cylindrically shaped spray cap having a plastic cap wall adapted to be inserted into an opening defined by the neck rim, said spray cap resting on the rim of the bottle neck and including an outer annular flange from which the plastic cap wall tapers upwards in the manner of a truncated cone with the diameter matched to the body orifice and forms a top wall from the underside of which there projects a cylindrical connection piece with a recess, said connection piece defines a spray opening arranged coaxially to the recess, a dip tube is disposed in said recess and one end extends to the bottom of the bottle and its other end is located adjacent said spray opening, the inside of the plastic cap wall and the dip tube defines an annular space, said spray cap also defines an air admitting passage in which is located a shut-off valve means that is closed only in response to positive pressure in the spray bottle, the air admitting passage is located in said annular flange of the spray cap and is generally of an inverted L shape including a radially extending portion connecting up with a downwardly extending portion that extends toward the interior of the spray bottle, said downwardly extending portion defines at its upper end a valve seat for a spherical valve member disposed therein which seats on the valve seat when the bottle is squeezed to exhaust said medicament from the spray bottle and the cap defines at the lower end of the downwardly extending portion a holding device for the valve member, the holding device permits the admission of air past the valve member to the spray bottle when a partial vacuum exists in the spray bottle when the bottle is released, said holding device at the lower end of the downwardly extending portion of the air-admitting passage comprises support arms for the valve member that define air flow passages open even when the spherical valve member is resting on the support arms.

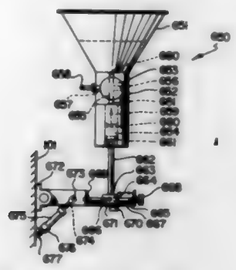
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5,301,847

PASTE PUMP WITH AN ADJUSTABLE STROKE PISTON

Amos Fehr, and Joseph Chong, both of 4572 Erie Avenue, Niagara Falls, Ontario, L2E 3N3, Canada

Continuation of Ser. No. 639,421, Jan. 10, 1991, abandoned. This application Jul. 8, 1991, Ser. No. 727,000
Int. Cl.[5] G01F *11/06*
U.S. Cl. 222—309 7 Claims



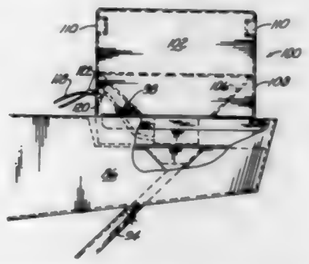
1. A food paste dispenser comprising:
a) a main food paste tank;
b) a holding chamber connected to said main food paste tank;
c) a rotary valve interconnecting said main food paste tank and said holding chamber, said rotary valve being drivable between a position where it interconnects said holding chamber to said main food paste tank, and a position where it interconnects said holding chamber to a discharge port of said rotary valve;
d) a piston drivably reciprocal in said holding chamber; and
e) means for controllably driving said piston downwardly in a loading action to a preset position within said holding chamber, and for drawing said piston upwardly to its full extent to a full discharge position, wherein said means for controllably driving comprises a rod pivotally connected to a framework which is pivotally secured to a main vertical frame member, and an air cylinder whose cylinder end is pivotally secured to said main vertical frame member and whose rod end is pivotally secured to said framework.

5,301,848

ELECTROMAGNETIC METER FOR CLOSED DISPENSING CONTAINER

Larry M. Conrad, R.R. 1 - Box 103, Delta, Iowa 52550, and David S. Walton, 483 W. Street Rd., Kennett Square, Pa. 19348

Continuation-in-part of Ser. No. 779,075, Oct. 18, 1991, Pat. No. 5,156,372. This application Oct. 15, 1992, Ser. No. 961,460
Int. Cl.[5] A01C *15/04*
U.S. Cl. 222—613 14 Claims



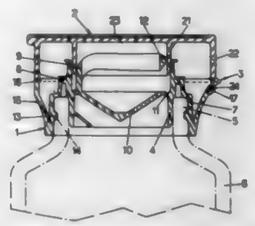
1. An electronic metering device for fluent material, comprising:
a closed container including a bottom wall having an opening, the closed container being disposed to carry a supply of fluent material;
an electronic meter attached to the closed container, the meter including a housing and a conduit disposed within the housing, the conduit having a discharge opening disposed in flow communication with the opening in the container, the meter further including:
an electrical coil operably attached to the conduit and being disposed to produce a magnetic field when electrical current flows through the coil;
switch means for selectively changing the direction of the electrical current flowing through the coil;
a ferromagnetic latching strip operably attached to the conduit and disposed within the magnetic field produced by the coil; and
a gate pivotally attached within the meter housing and being movable between a closed position covering the discharge opening and an open position spaced from the discharge opening, the gate including a magnet which is attracted to and contacts the latching strip when current flows through the coil in a first direction and which is repelled from and is spaced away from the latching strip when current flows through the coil in a second direction; and
means for selectively sequencing the switch means to set a frequency for a cycle of movement of the gate between the closed position and the open position, the cycle frequency being effective to accurately control the amount of fluent material flowing from the meter over a predetermined time period.

5,301,849

SPOUT ASSEMBLY AND SEALING CAP WITH SPRING-LOADED HINGE

Bernard Guglielmini, Crimolois, and Pierre Pellerano, Paris, both of France, assignors to Rical S.A., Longvic, France

PCT No. PCT/FR90/00346, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO90/14287, PCT Pub. Date Nov. 29, 1990
PCT Filed May 17, 1990, Ser. No. 777,240
Claims priority, application France, May 17, 1989, 89 06433
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—517 9 Claims



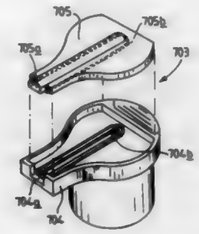
1. A spout and sealing cap assembly for a container, comprising:
a spout having means for securing said spout to the container;
a sealing cap adapted to close off said spout; and
a bi-stable spring hinge integrally formed with said sealing cap, said bi-stable spring hinge being dimensioned and arranged with respect to said spout and sealing cap such that said sealing cap is positionable in one of two positions, the first position being a stable closed position wherein said sealing cap closes off said spout and the second position being a stable, open position wherein said spout is in an open state,
said spout being a first one-piece part formed of a flexible plastic material, and said spout having a first undercut profile connection portion,
said sealing cap being a second one-piece part formed of a hard plastic material that is more rigid than the plastic material of said spout, said sealing cap having a second undercut profile connection portion adapted for interconnection with said first undercut profile connection portion, said second undercut profile connection portion being spaced from said bi-stable spring hinge which is integrally formed with said sealing cap of the hard plastic material, and said first and second connection portions being interconnected in an interconnection arrangement resulting from an over moulding of said one piece second part over said one-piece first part in a region defined by said first and second undercut profile connection portions such that said spout and sealing cap are interconnected to form said assembly.

5,301,850

UNIT FOR DISPENSING AT LEAST ONE FLUID PRODUCT, IN PARTICULAR A COSMETIC OR PHARMACEUTICAL PRODUCT

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Division of Ser. No. 556,546, Jul. 24, 1990, Pat. No. 5,154,328. This application Jul. 21, 1992, Ser. No. 916,256
Claims priority, application France, Jul. 25, 1989, 89 10000; European Pat. Off., Feb. 1, 1990, 90 400269.8
Int. Cl.[5] B65D *25/40*
U.S. Cl. 222—494 12 Claims



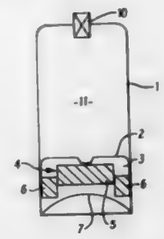
10. In a unit for dispensing at least one fluid product, said unit comprising:
(a) a container;
(b) a dispensing head;
(c) said dispensing head including means defining at least one dispensing duct for said at least one fluid product to be dispensed, said dispensing duct having a first and a second end;
(d) closing means situated at said second end of the said at least one dispensing duct;
(e) said closing means comprising an obturator which forms part of a first component of the dispensing head made of an elastically deformable material and at least one seat which forms part of a second component of the dispensing head;
(f) said obturator being adapted to be in contact with said seat when no dispensing is taking place, but to move away from said seat by elastic deformation under pressure of the product being dispensed and to reenter into contact with said seat by elasticity when dispensing stops;
the improvement comprising:
(g) said at least one dispensing duct comprising a first duct portion extending parallel to the longitudinal axis of the dispensing unit, said first duct portion communicating with the container, and said closing means comprising a second duct portion extending at an angle relative to said first duct portion to define a lateral outlet, said second duct portion terminating in said second end of said dispensing duct and which is remote from said first duct portion; said dispensing head including a cover having an interior rib extending along at least a portion of said second duct portion to said second end of said dispensing duct, said obturator comprising an elastic strip extending along said second duct portion and having a groove receiving said rib.

5,301,851

GAS STORAGE AND DISPENSING SYSTEM

Bernard D. Frutin, Glasgow, United Kingdom, assignor to Rocep-Lusol Holdings Limited, Great Britain

Filed Mar. 2, 1992, Ser. No. 843,079
Claims priority, application United Kingdom, Mar. 2, 1991, 9104458; Mar. 16, 1991, 9105608
Int. Cl.[5] B65D *83/14*; F17C *11/00*
U.S. Cl. 222—389 10 Claims



1. A pressure pack dispenser for dispensing a product therefrom by means of pressure of a propellant gas within the dispenser, the pressure pack dispenser comprising:
a pressurizable container having a valve for dispensing product from the container and a barrier which divides the container into a product chamber and a propellant chamber, the propellant chamber enclosing a gas storage and dispensing system for the substantially reversible storage of the propellant gas;
the gas storage and dispensing system comprising:
a material having open voids;
a liquid which occupies the open voids in said material; and
a propellant gas, the liquid being a solvent of the propellant gas;
wherein said liquid in said gas storage and dispensing system sorbs increasing quantities of propellant gas in increasing ambient gas pressure and desorbs previously sorbed gas in decreasing ambient gas pressure, said gas storage and dispensing system providing a source of the pressurized propellant gas;
wherein said barrier transmits the pressure of the propellant gas to the product in order to dispense the product from the pressure pack dispenser and wherein said barrier is substantially impermeable to the nongaseous components of said gas storage and dispensing system.

5,301,852

MANUALLY OPERATED PUMP FOR DISPENSING LIQUID OR CREAMY SUBSTANCES AT A PREDETERMINED CONSTANT PRESSURE

Carlo Mancini, Francavilla al Mare, Italy, assignor to Exo S.r.l., Chieti, Italy

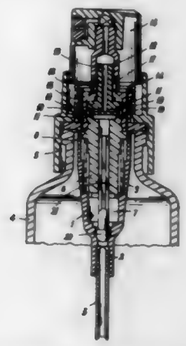
Filed Oct. 1, 1992, Ser. No. 955,051
Claims priority, application Italy, Oct. 11, 1991, MI 91 A 002698
Int. Cl.[5] G01F *11/04*
U.S. Cl. 222—321 3 Claims

1. A manually operated pump for dispensing liquid or creamy substances at a predetermined constant pressure, said pump comprising:
an elongate hollow body open at one end and closed at the other end by an end wall having a hole, a hollow first appendix projecting from the other end of said body and one end of a dip tube being insertable into the hollow first appendix;
a piston housed in and movable within a cavity of said body,

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said piston having, at an end close to said end wall of the hollow body, a portion which slides in a sealed manner along a corresponding portion of the hollow body, said piston further having an annular collar which projects from the piston in proximity from the other end of said piston, the annular collar sliding along a corresponding cylindrical portion of said hollow body, said piston being traversed by a substantially axial first longitudinal duct having one end which opens into a widened recess defined by an endless annular ridge which projects from the other end of said piston, said endless annular ridge being sealedly connected to a widened portion of a hollow stem which is housed in the cavity of said body and retained therein by a retention element provided on the hollow body, an elongate cylindrical second appendix extending from said widened portion of the stem and outwardly from said hollow body, said elongate cylindrical second appendix being traversed by a fluid dispensing channel, a chamber being defined by a stem cavity at said widened portion of said hollow stem and the other end of said piston which is connected to the widened portion, the annular ridge on the piston being positioned at a center of said chamber;

a valving member housed and movable within said chamber and having a widened base and a cylindrical third appendix, the widened base of said valving member having a peripheral cylindrical edge which sealedly slides along an adjacent cylindrical surface of the stem cavity defined by the widened portion of said hollow stem;



a first precompressed spring provided between the valving member and the hollow stem, said precompressed spring maintaining the valving member pressed against said annular ridge to seal against it when the pump is at rest;

a second duct provided in the valving member, said second duct being opened only at a free end of the cylindrical third appendix;

at least one substantially radial hole provided in the widened base of the valving member, one end of said radial hole opening into said second duct of the valving member, the other end of said radial hole opening into said chamber in a region between said peripheral cylindrical edge of said valving member and the annular ridge beyond the periphery of the ridge;

a second precompressed spring for urging the piston together with said stem towards and against said retention element of the hollow body, said second precompressed spring acting between said hollow body and said piston; and

a unidirectional valve provided within the hollow body for closing the hole provided in the end wall of the hollow body and allowing fluid to enter the pump.

5,301,853

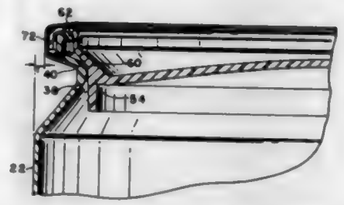
OPEN TOP PLASTIC DRUM WITH PLASTIC COVER

Robert A. Addison, Rancho Cucamonga, Calif., and John P. Berg, St. Paul, Minn., assignors to Greif Bros Corporation, Delaware, Ohio

Continuation of Ser. No. 884,047, May 14, 1992, abandoned, which is a continuation of Ser. No. 697,786, May 9, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 87,133

Int. Cl.[5] B65D *45/00*

U.S. Cl. 200—320 **16 Claims**



1. A plastic drum and cover assembly comprising:

a plastic cylindrical body having a cylindrical body portion with a body portion radius and a closed bottom, a neck forming an open top and coupling means for coupling said neck to said body portion, said coupling means including cylindrical wall, an upwardly and outwardly extending conical wall connecting said cylinder wall to said neck, a first annular hinge defined by the junction of the cylinder wall and the upwardly and outwardly extending conical wall, a downwardly and outwardly extending conical wall connecting said cylindrical wall to said body portion, a second annular hinge defined by the juncture of the cylindrical wall and the downwardly and outwardly extending conical wall, said cylindrical wall and hinging members having radii smaller than said body portion radius;

said annular hinges completely extending about the cylindrical body side wall providing substantially uniform degree of flexing at any point thereon upon impact;

a plastic cover for closing said open top and being radially recessed from said body side wall,

covering securing means for securing said plastic cover to said body to form a seal;

said cover including a central disk and the cover securing means being disposed peripherally about said central disk for coupling said cover to said body, said cover including cover hinging means for flexing said cover in the presence of said impact to permit the cover and neck to cooperate with one another in maintaining the seal on the top, said cover hinging means being located contemporaneously with respect to said first and second annular hinges; and

the hinges cooperating to isolated said neck from said body when said cover is secured by said securing means and said body is subjected to impact.

5,301,854

STORING AND DISPENSING CONTAINER

Brad Scobey, 6555 Rubio St., Van Nuys, Calif. 91406

Filed Jan. 21, 1992, Ser. No. 822,682

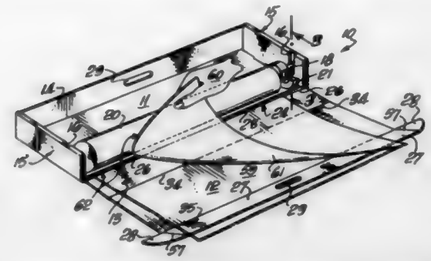
Int. Cl.[5] B65H *35/10*; **B26F** *3/02*

U.S. Cl. 225—34 **8 Claims**

1. In a carton assembly with an interior for a roll of material to be cut, the carton of the assembly including facing end panels having edges and slots therein, the slots for supporting a rod on which a roll of material is mountable, a top wall, a bottom wall joining with a back panel and a front panel by fold lines, and a cutter having a cutting edge, an edge opposing the cutting edge, and end portions, the improvement comprising

the cutter releasably mounted in its position on the back panel substantially at the one of the fold liens that joins the bottom wall to the back panel, the end portions of the cutter fitting under edges of the end panels that are secured to the back panel,

the bottom wall and the front panel abutting the end panels



when the assembly is in a closed position and extending from the back panel and away from the end panels thereby forming an apron for a web of material to be cut by the cutter when the assembly is in an open position.

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ARTICLE CARRIER

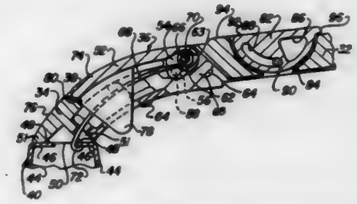
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 591,722, Oct. 2, 1990, Pat. No. 5,104,019, which is a continuation of Ser. No. 246,770, Sep. 20, 1988, Pat. No. 4,972,983. This application Oct. 2, 1991, Ser. No. 771,035

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—324 **7 Claims**



1. An article carrier for an automobile comprising:

a plurality of parallel slats fixedly secured on a generally horizontally extending exterior automobile body surface;

said slats extending generally longitudinally of the automobile;

a pair of bracket members disposed upon a pair of said slats;

at least one restraining bar extending laterally between and secured adjacent its opposite ends to said bracket members;

said restraining bar including a semi-circular, upwardly opening cavity formed therein;

article securing means disposed within said semi-circular cavity for facilitating securing of an object to said restraining bar, retaining means disposed within said cavity for captively retaining said article securing means within said cavity; said retaining means enabling said article securing means to move slidably in a semi-circular path in accordance with said semi-circular cavity without being completely removed from said semi-circular cavity;

said article securing means including a securing portion adapted to couple to a securing implement, and an upper surface, said upper surface of said article securing means being relatively flush with an outer surface of said restraining bar, and said securing portion being hidden within said cavity when said article securing means is in a closed position, and said article securing means being movable to an open position by a force exerted on a portion of said upper surface, whereby said article securing means is slidably urged so as to move said securing portion outwardly of said cavity, to an open position wherein said upper surface of said article securing means protrudes outwardly of said outer surface of said restraining means.

5,301,856

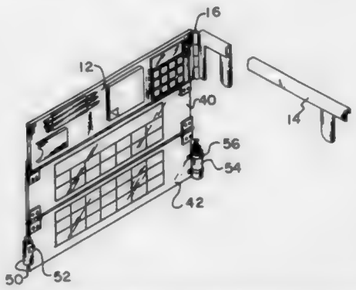
SUN VISOR ORGANIZER

Jack S. Newsome, 2228 S. Bundy Dr., Los Angeles, Calif. 90064

Filed Aug. 5, 1992, Ser. No. 924,959

Int. Cl.[5] B60R *7/05*

U.S. Cl. 224—312 **10 Claims**



1. A new and improved organizer for use in connection with the sun visor of a vehicle comprising:

a bracket assembly adapted to be affixed to said sun visor,

a panel, said panel being joined to said bracket by hinge means between said bracket and said panel, said hinge means permitting said panel to be folded to be substantially juxtaposed with respect to said visor in a first position, and unfolded to a second position where said panel makes an angle with respect to the plane of said visor, and

at least one useful article supported on said panel,

wherein said panel is transparent, and

wherein said transparent panel is effective to filter the harmful effects of sunlight and reduce glare thereby permitting said panel to be used as a supplemental sun visor in the unfolded position

wherein said at least one useful article is selected from the group consisting of writing instruments, a holder for business cards, a note pad, and a battery powered calculator.

5,301,857

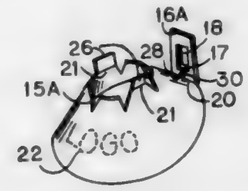
BOTTLE HOLDER WITH BOTTLE-NECK GRIP AND LOGO

Brian J. Green, 22 Granite Road, Gilford, Conn. 06437

Filed Oct. 26, 1992, Ser. No. 966,453

Int. Cl.[5] A45F *5/00*

U.S. Cl. 224—148 **5 Claims**



1. A portable bottle holder comprising

a truncated hollow flexible cone shaped holder open at both top and bottom ends, wherein a bottom circular opening is large enough to admit bottles of varying sizes within the

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opening, a top circular opening serrated to form on opposite sides of the top at least two protruding support points is the same size as a bottle neck which can be inserted through the serrated opening and supported therein with a protruding ridge around the bottle neck resting on the support points, and a main body of the holder forming a substantial sloped flexible surface for bearing a logo and covering a substantial portion of the bottle, wherein squeezing the cone shaped holder adjacent to the bottom circular opening separates the support points and releases the bottle; and

a bracket protruding vertically from an edge of the bottom circular opening, and protruding from the bracket a hook means for engaging external objects, wherein the bracket is attached to the cone shaped holder by a living hinge;

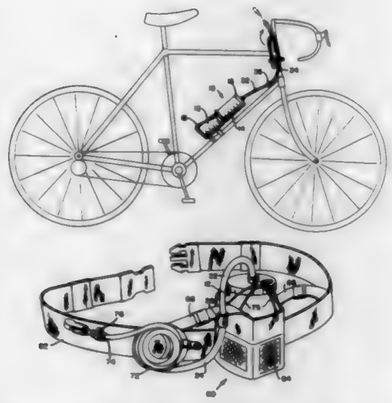
a straight pin extending between the bracket and the cone shaped holder, with the pin snapped into a small hole, thereby connecting the bracket to the cone shaped holder to maintain the bracket rigidly in place perpendicular to a plane formed by the bottom opening of the cone shaped holder.

5,301,858

COMBINATION WATER BOTTLE

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Filed Mar. 24, 1992, Ser. No. 856,760
Int. Cl.[5] A45F *3/18*; B62J *11/00*
U.S. Cl. 224—148 **18 Claims**



1. A recreational water bottle system comprising:

a primary vessel for holding liquids having a watertight cap;

a bottle tube extending through said cap into said primary vessel;

a first drinking tube for delivering liquids to a user;

a second drinking tube for delivering liquids to a user;

an oversleeve disposed between said bottle tube and either of said first drinking tube or said second drinking tube for passing liquids between said bottle tube and either of said first drinking tube or said second drinking tube and for selectively holding said bottle tube and either of said first drinking tube or said second drinking tube in structural alignment;

wherein said oversleeve is selectively removable from at least one of said bottle tube or said first or second drinking tubes; and

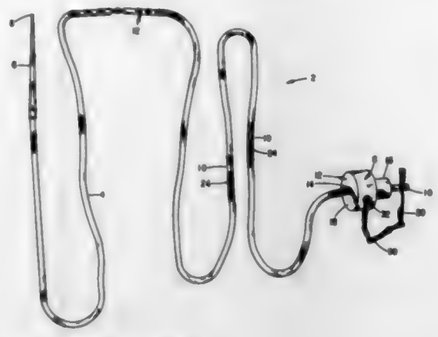
said oversleeve engages at least one of said bottle tube or one of said first or second drinking tubes in a frictional fit engagement.

5,301,859

FISH STRINGER

Ralph A. Brummel, 426 N. Lake St., Aurora, Ill. 60506

Filed Jan. 4, 1993, Ser. No. 418
Int. Cl.[5] A01K *65/00*
U.S. Cl. 224—103 **14 Claims**



1. A fish stringer including:

(a) a cord having first and second portions and swivel means for coupling said first and second portions to one another and allowing said second portion to rotate independent of said first portion;

(b) a threading needle secured to said first portion;

(c) a stop sleeve secured to said second portion and having a through bore;

(d) a flanged member having a through bore and through which bore said cord slidably mounts;

(e) restraint means mounting to said stop sleeve for limiting movement of said flanged member along said cord; and

(f) means for tethering said restraint means to said flanged member.

5,301,860

WATER SUPPLY APPARATUS FOR BICYCLE

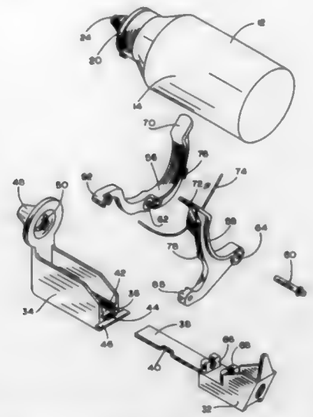
Joseph R. Pacsonay, 3050 Aptos Hill La., Aptos, Calif. 95003

Division of Ser. No. 883,467, May 15, 1992, Pat. No. 5,215,231, which is a continuation-in-part of Ser. No. 685,387, Apr. 15, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,223
Int. Cl.[5] B62J *11/00, 39/00*
U.S. Cl. 224—32 R **4 Claims**

1. In apparatus for dispensing liquid into the mouth of an individual riding a bicycle, the combination comprising:

holder means for attachment to said bicycle and for holding a liquid container having a liquid discharge end and a side wall, said holder means including two selectively relatively movable holder components for accommodating different sized containers, one of said relatively movable holder components defining a channel and the other of said relatively movable holder components including an elongated member adjustably slidably positioned in said channel; and

locking means operatively associated with said relatively movable holder components for selectively locking said elongated member against movement within said channel at preselected positions within said channel, one of said holder components including a receptacle for receiving the liquid discharge end of said container and the other of said holder components including engaging means for



engaging said container at a location spaced from the liquid discharging end.

5,301,861

GOLD-NICKEL-VANADIUM BRAZIN MATERIALS

Howard Mizuhara, Hillsborough, and Eugene Huebel, Union City, both of Calif., assignors to The Morgan Crucible Company, PLC, United Kingdom

Division of Ser. No. 924,848, Aug. 4, 1992, Pat. No. 5,273,832. This application Aug. 2, 1993, Ser. No. 100,723
Int. Cl.[5] B23K *35/30*
U.S. Cl. 228—121 **5 Claims**

1. A method of forming a brazed joint between a first material selected from the group consisting of metals, ceramics and mixtures thereof and a second material selected from the group consisting of metals, ceramics and mixtures thereof comprising the steps of disposing between said first material and said second material a brazing material having a liquidus temperature of approximately 960° C. to 1,100° C. and a composition consisting essentially of, in weight percent: 92–98% gold, 0.5–20% nickel, 0.5–6% vanadium, 0–4% molybdenum, 0–5% chromium and heating said first material, said second material and said brazing material to a temperature sufficient to melt said brazing material and form a braze between said first material and said second material.

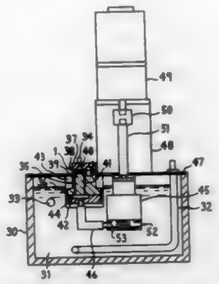
5,301,862

SOLDER COATING APPARATUS

Chiaki Shigematsu, and Naokatsu Kojima, both of Shizuoka, Japan, assignors to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Filed Oct. 5, 1992, Ser. No. 956,613
Claims priority, application Japan, Oct. 7, 1991, 3-285540
Int. Cl.[5] H01L *21/48*; B05C *3/20, 5/02*
U.S. Cl. 228—43 **4 Claims**

1. In a solder coating apparatus for coating lead sections of a lead frame having packages mounted thereon, said apparatus including a liquid solder bath and a coating block having a first slit-like passage therethrough for permitting a lead frame to pass through said block and a second passage of enlarged cross section communicating with and extending along said first passage for permitting the lead frame package to pass through the block, the improvement comprising a pair of liquid solder supply slits formed in said block and communicating with said first passage along the length thereof and on opposite sides of the second passage, pump means at least partially immersed in the liquid solder bath for positive supply of liquid solder to and through said slits into said first passage, and connecting conduit means connected between the delivery side of the pump and the liquid solder supply slits.

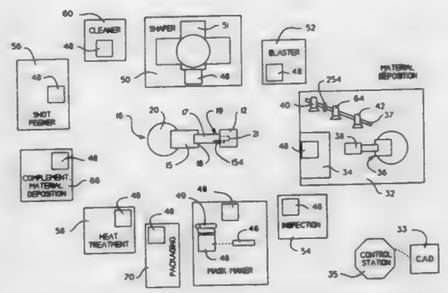


5,301,863

AUTOMATED SYSTEM FOR FORMING OBJECTS BY INCREMENTAL BUILDUP OF LAYERS

Fritz B. Prinz, 5801 Northumberland St., and Lee E. Weiss, 6558 Darlington Rd., both of Pittsburgh, Pa. 15217

Filed Nov. 4, 1992, Ser. No. 971,308
Int. Cl.[5] B23K *10/02*; C23C *26/00*
U.S. Cl. 228—33 **19 Claims**



1. An automated system for manufacturing an article that is formed by the incremental buildup of layers onto a work surface comprising:

a movable work surface onto which layers are deposited to form the article;

a material deposition station sized and positioned to receive the moveable work surface, where each layer of the article is deposited onto at least one of the work surface, a substrate placed on the work surface and a preceding layer, wherein each layer deposited on a preceding layer is simultaneously deposited and bonded to the preceding layer to form a portion of the article;

at least one processing station sized and positioned to receive the moveable work surface, each processing station capable of performing a desired operation on selected layers of the article; and

an article transfer apparatus sized and positioned for repetitively placing, removing and returning the work surface and any layers formed thereon at the deposition station and at the at least one processing station until each layer is processed and a completely manufactured article is produced.

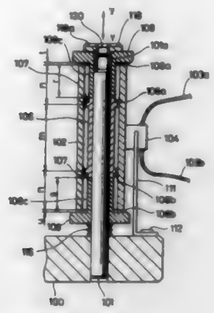
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5,301,864

ULTRASONIC TAPE GUIDE DEVICE

Etsuro Saito, and Takashi Sasao, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,301
Claims priority, application Japan, Jan. 27, 1992, 04-012283
Int. Cl.[5] B65H *27/00*
U.S. Cl. 226—196 6 Claims



1. A tape guide device comprising:
a guide member;
a support shaft;
flanges;
a main shaft;
a coil spring;
a height adjustment nut; and
vibrating means for vibrating said guide member, wherein said support shaft is disposed inside said guide member, said support shaft has teeth facing to a position of a node when said guide member is vibrated by said vibrating means, said teeth and said guide member are fixedly bonded to each other by a resilient adhesive, said main shaft is engaged with said support shaft so as to become freely slidable, said flanges are attached to the support shaft with a longitudinal clearance between said flanges and respective end faces of said guide member, said coil spring exerting a bias force on one of said flanges and said guide member and said flanges being adjustable in height relative to said main shaft by turning said height adjustment nut.

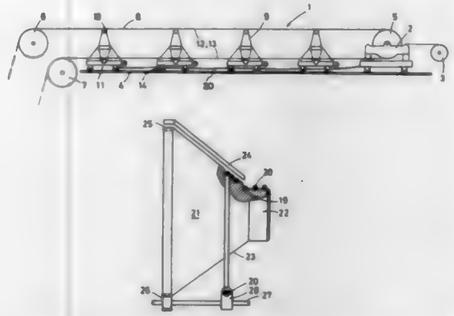
5,301,865

STRIP STORAGE UNIT FOR A CONTINUOUS OPERATION OF ROLLING MILL TRAINS

Klaus Klamma, Hilchenbach, and Withold Richert, Hückelhoven, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 793,489, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 497,856, Mar. 22, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,208
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1989, 3909403
Int. Cl.[5] B65H *20/24*
U.S. Cl. 226—118 6 Claims

1. A strip storage unit for a continuous operation of rolling mill trains, the strip storage unit comprising:
at least one feed roller and at least one run-out roller for a sheet metal strip, which are arranged at an inlet and an outlet of the strip storage unit, respectively;
a loop carriage having at least one deflection roller for a strip loop and movable on guide means for changing a loop length;
support carriages each having:
wheels with axes;
at least one support roller for guiding a strip; and
at least one cam drum including a conical portion and arranged on a same level as the axes of the wheels of the support carriage;
a traction member for connecting the support carriages to the loop carriage, the traction member being wound onto and unwound from the conical portions of respective cam drums during movement of the loop carriage;
means for forming equal distances between the support carriages relative to a point from which the loop carriage is moved in all positions of the support carriages during movement thereof, said forming means comprising a plu-



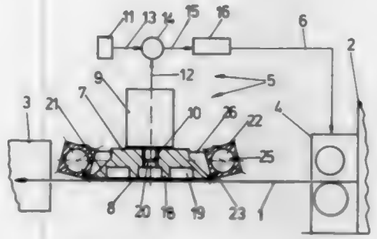
rality of torque motors of the same type, corresponding in number to a number of the support carriages, for applying an adjustable constant resistance torque to the cam drums of the support carriages, respectively, the torque motors being arranged on the same level as the axes of the wheels of respective support carriages; and
means for supplying current to the torque motors, the current supplying means including a current-carrying rail, which is mounted in a foundation and between the guide means and with which the torque motors are in electrical contact.

5,301,866

WEB BREAKAGE DETECTOR

Karl Veh, Diedorf, and Andreas Birkenfeld, Neusäss, both of Fed. Rep. of Germany, assignors to Grafotec Kotterer GmbH, Diedorf, Fed. Rep. of Germany

Filed Sep. 24, 1992, Ser. No. 950,483
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1991, 4134590
Int. Cl.[5] B65H *26/04*
U.S. Cl. 226—11 9 Claims



1. A web breakage detector for a web processing machine, particularly for a web feed printing machine, said web breakage detector comprising:
means for monitoring a level of tension of a web in a web processing machine, said means for monitoring including a pressure measuring device having a pressure sensor for detecting a level of pressure in a gap of higher pressure

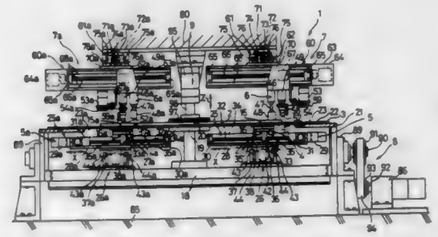
delimited during normal operation by said web on a first side and, on a second side, by a stationary cover of said means for monitoring, said stationary cover being a stationary plate disposed parallel with said web, said web passing along said stationary plate with a gap spacing leading to development of high pressure in said gap, said pressure sensor producing a signal a decrease in pressure in said gap, said stationary plate having a plurality of chambers open on said first side delimited by said web said plurality of chambers including a centrally arranged chamber, the pressure of said centrally arranged chamber being detected by said pressure sensor.

5,301,867

MACHINE FOR BREAKING GLASS PLATE

Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima, Japan

PCT No. PCT/JP92/01101, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO93/04992, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 28, 1992, Ser. No. 979,859
Claims priority, application Japan, Sep. 7, 1991, 3-255754; Mar. 23, 1992, 4-097131
Int. Cl.[5] C93B *33/037*
U.S. Cl. 225—104 7 Claims



1. A machine for breaking a glass plate comprising: a flexible endless belt on which the glass plate is placed; a travelling means for travelling the endless belt; a belt support plate with a plurality of windows, said plate supporting the endless belt; a plurality of receiving members for receiving the glass plate, each member being disposed at the corresponding window and having a first surface for supporting the glass plate through the belt and a second surface disposed at a lower position than the first surface through a step; a plurality of first moving means each for moving the corresponding member for receiving glass plate, in a plane parallel to a surface of the glass plate; a breaking means disposed above the endless belt and including a push rod and a cutter blade; a second moving means for moving the breaking means in a plane parallel to the surface of the glass plate; and a controller for controlling an operation of the first and second moving means such that a position of the receiving member moved by the first moving means corresponds to a position of the breaking means moved by the second moving means in a breaking operation of the said breaking means for the glass plate on the belt.

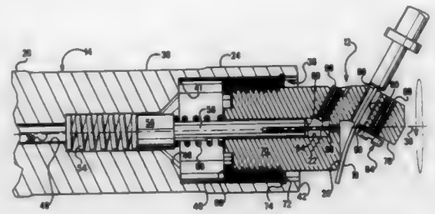
5,301,868

SCRIBE-AND-BREAK TOOL FOR OPTICAL FIBERS

Bryan T. Edwards, Camp Hill; David D. Erdman; Soren Grinderslev, both of Hummelstown, and Kevin T. Monroe, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 26, 1993, Ser. No. 97,358
Int. Cl.[5] C03B *37/16*
U.S. Cl. 225—96.5 18 Claims

1. A scribe-and-break tool for severing a free end of an optical fiber, comprising:
a body having a principle axis;
a plunger mounted to the body and extending along the principle axis, the plunger having an interrelated blade for scribing the free end of the optical fiber; and
a depressible head extending outward of the body and being movable rotationally about the principle axis and reciprocally along the principle axis between an outward position and an inward position, the head having
a positioning portion for receiving and supporting the free



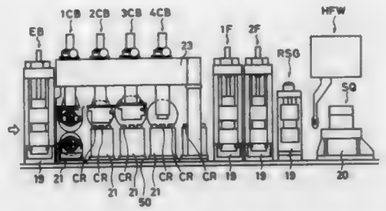
end of the optical fiber transversely to the principle axis and
a channel that slidably engages the plunger such that as the head is moved towards the inward position the blade comes in contact with the free end of the optical fiber;
whereby, the free end of the optical fiber is scribed and a tensile force applied thereto breaks the fiber.

5,301,869

MACHINE FOR MANUFACTURING WELDED STEEL PIPES AND METHOD FOR HANDLING THE MACHINE

Takaaki Toyooka; Yuuji Hashimoto, both of Chiba; Susumu Itadani, and Tsutomu Ide, both of Handa, all of Japan, assignors to Kawasaki Steel Corporation, Japan

PCT No. PCT/JP90/01572, § 371 Date Jul. 29, 1991, § 102(e) Date Jul. 29, 1991, PCT Pub. No. WO91/08064, PCT Pub. Date Jun. 13, 1991
PCT Filed Dec. 4, 1990, Ser. No. 721,566
Claims priority, application Japan, Dec. 4, 1989, 1-314694; Dec. 4, 1989, 1-314696; Dec. 6, 1989, 1-317289; Dec. 6, 1989, 1-317290; Nov. 14, 1990, 2-306297
Int. Cl.[5] B23K *37/04*
U.S. Cl. 228—147 15 Claims



1. A machine for manufacturing welded steel pipes, in which a strip is continuously roll-formed to shape a pipe and its butted seam is welded, having an edge bending roll for constraining under pressure a strip from its pipe edge portions to the boundaries between the pipe edge portions and said pipe side portions to bend the strip, a first center bending roll for constraining under pressure the pipe side portions to bend the pipe side portions, second to fourth center bending rolls for constraining under pressure the strip from the boundaries between the pipe side portions and its pipe bottom portion to the pipe bottom portion and applying lateral pressure to the pipe from both sides to bend the boundaries and the pipe bottom portion and a plurality of cage rolls arranged on both the sides of these center bending rolls, first and second fin pass rolls for further forming under pressure the pipe, are arranged in order from

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the upstream side to the downstream side of a roll forming process, wherein at least the edge bending roll, the first center bending roll, the first and second fin pass rolls each has a driving means provided thereon, and all the upper rolls of the first to fourth center bending rolls are set in one housing, and all the bottom roll stands of the first to fourth center bending rolls or all the bottom roll stands of the second to fourth center bending rolls are set on one common sub-base plate.

5,301,870

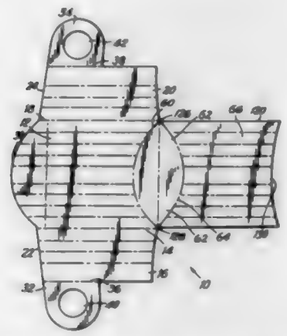
SCOOP

Preston M. Smith, Westminster, and Dominic Marazita, Phoenix, both of Md., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 812,595, Dec. 23, 1991. This application Dec. 14, 1992, Ser. No. 990,813

Int. Cl.[5] B65D *5/18*

U.S. Cl. 229—1.5 B **22 Claims**



1. A paperboard blank for forming a scoop, comprising:

a) a front panel having a top edge, a bottom edge and two side edges,

b) side panels attached to each side of said front panel,

c) a bottom panel attached to the bottom edge of said front panel,

d) a rear panel attached to the bottom edge of said bottom panel having side edges and having a first side and a second side,

e) said blank being formed from paperboard,

f) a scoreline generally bisecting said bottom panel, and intersecting the side edges of said rear panel,

g) said rear panel being adapted to fold toward said front panel with said first side facing said front panel, and

h) each said side panel being adapted to fold toward said rear panel with said second side of said rear panel facing said side panels,

i) at least one of the side panels including a handle.

5,301,871

PLATE AND CUP HOLDER

David F. Gross, Oak Forest; Chris A. Mercede, Blue Island, and Brian S. Grant, Wood Dale, all of Ill., assignors to Three Hands, Inc., Oak Forest, Ill.

Filed Feb. 8, 1993, Ser. No. 14,783

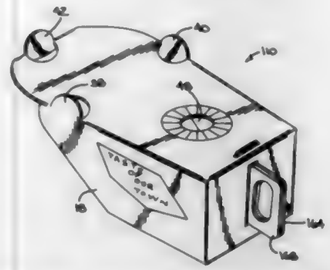
Int. Cl.[5] B65D *5/42*

U.S. Cl. 229—1.5 H **22 Claims**

1. A plate and cup holder comprising a plurality of panels foldably attached relative to each other and converted from a flattened state into an assembled state, the plate and cup holder comprising:

a support panel having a first end with an opening for receiving a cup and a second end for supporting a plate, the support panel having a pair of laterally spaced side edges extending between the first end and the second end;

a first side panel attached to the support panel along one of the side edges and a second side panel attached to the other of said side edges, the first side panel and the second side panel being swung transversely of the support panel when the holder is in the assembled state;



a tab on each of said side panels folded inwardly of a respective side panel and beneath said first end of the support panel when the holder is in the assembled state; and

an end panel foldably attached to the support panel at said first end and engaged with said tabs to maintain the holder in the assembled state.

5,301,872

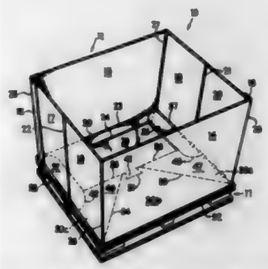
COLLAPSIBLE PALLET CONTAINER APPARATUS

Michael A. Tusing, Canton, and Robert B. Leftwich, Taylor, both of Mich., assignors to Stone Container Corporation, Chicago, Ill.

Filed Jun. 17, 1992, Ser. No. 899,773

Int. Cl.[5] B65D *5/36*

U.S. Cl. 229—117.03 **21 Claims**



1. A collapsible pallet container apparatus for automatically prompting orientation of a palletized container, in a facilitated manner, between an articulated, deployed position, in which articles may be positioned therewithin an interior region of the container during containment, storage and transportation of said articles, and an articulated collapsed position for minimizing the overall profile of the palletized container when not in use, said apparatus comprising:

a pallet means for supporting and moving said container, said pallet means having a top surface on said container is positioned;

said container including a front panel having an upper edge, a lower edge opposite to said upper edge and two side edges positioned opposite to each other between said upper and lower edges respectively, a back panel having an upper edge, a lower edge opposite to said upper edge and two side edges positioned opposite to each other between said upper and lower edges respectively, one or more side panels operably interposed between said front and back panels, each of said one or more side panels having an upper edge, a lower edge opposite to said upper edge, and two side edges positioned opposite to each other between said upper and lower edges respectively;

at least one of said one or more said panels being articulated through panel articulation means, so as to fold inwardly towards said interior region upon reconfiguration of said apparatus from said deployed position to said collapsed position;

each of said side edges of said front panel, back panel and one or more side panels being operably and hingedly attached to one another respectively, in succession;

said container further comprising a bottom panel having a front edge, a back edge and one or more side edges;

said bottom panel covering at least a portion of said pallet means, with at least a portion of said bottom panel being restrainably attached to said top surface of said pallet means;

said bottom panel operably emanating from the respective lower edge of at least one of said front, back and side panels at a respective one of said front, back and side edges of said bottom panel, said bottom panel being hingedly attached thereto said respective lower edge by at least one bottom panel fold; and

collapse prompting means operably positioned in at least one of said front, back, side and bottom panels for co-operation with said panel articulation means towards prompting the facilitated collapse of said container from said deployed position towards and into said collapsed position, upon initiation of reorientation of at least one of said fronts, back, side and bottom panels, while said apparatus is in a said articulated deployed position.

5,301,873

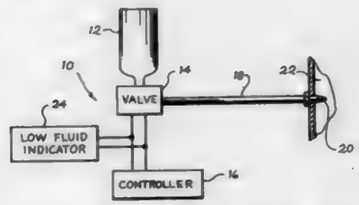
LOW FLUID INDICATOR FOR PRESSURIZED CANISTER

James O. Burke, Crystal Lake, and Dean R. Solberg, Mundelein, both of Ill., assignors to Kold Ban International, Algonquin, Ill.

Continuation-in-part of Ser. No. 899,119, Jun. 15, 1992, which is a division of Ser. No. 499,053, Mar. 26, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 904,158

Int. Cl.[5] F24D *5/00*

U.S. Cl. 237—53 **8 Claims**



1. A low fluid indicator for a fluid injection system of the type comprising a sealed, pressurized canister containing a fluid under pressure, a valve coupled to the canister to selectively release fluid from the canister in response to a control signal, and an injector coupled to the valve to inject fluid released from the canister by the valve into a volume, said low fluid indicator comprising:

a counter that maintains a count;

a pulse generating circuit effective to increment the count by a first increment and a second increment in response to the control signal, said first increment insensitive to duration of the control signal above a threshold duration and selected in accordance with a fill volume of the injection system, said second increment varying with duration of the control signal above the threshold duration and having a count rate selected in accordance with an injection flow rate of the injection system; and

a low fluid indicator responsive to the counter to indicate a low fluid condition in the canister when the count departs from a selected range of values.

5,301,874

ADJUSTING SLEEVE FOR AN ELECTROMAGNETICALLY ACTUATABLE VALVE

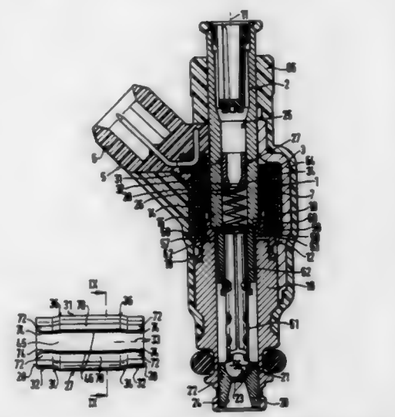
Dieter Vogt, Korntal-Muenchingen; Ferdinand Reiter, Markgroeningen, and Martin Maier, Moeglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 10, 1991, Ser. No. 698,029

Claims priority, application Fed. Rep. of Germany, May 26, 1990, 4016996; Mar. 16, 1991, 4108665

Int. Cl.[5] F16K *31/02;* **F02M** *51/06;* **F15B** *13/044;* **H01F** *7/16*

U.S. Cl. 239—585.4 **22 Claims**



1. An adjusting sleeve for an electromagnetically actuatable valve, in particular an injection valve for fuel injection systems of internal combustion engines, having a tubular metal core extending along a longitudinal axis of the valve, the core being surrounded by a magnet coil; an armature, by which a valve closing body cooperating with a fixed valve seat can be actuated; a restoring spring disposed concentrically with the longitudinal axis of the valve and acting on the valve closing body and being supported by one end on a cylindrical adjusting sleeve pressed into a flow bore of the core, the flow bore embodied concentrically with the longitudinal axis of the valve; wherein at least one encompassing bead is formed on the circumference of the adjusting sleeve, the at least one encompassing bead having a larger diameter than the diameter of a portion of the flow bore; said adjusting sleeve (**27**) having at least one transitional region (**34**) between the at least one encompassing bead (**31**) and an end portion (**32**), oriented toward the valve closing body (**55**) and being of lesser diameter than the flow bore (**25**), and at least one rounded area (**36**) being provided between the at least one transitional region (**34**) and the at least one encompassing bead (**31**).

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5,301,875

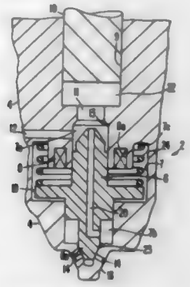
FORCE BALANCED ELECTRONICALLY CONTROLLED FUEL INJECTOR

Cary L. Gaut; George L. Muntean; Julius P. Perr, all of Columbus, Ind.; O. Eddie Sturman, Newbury Park, Calif.; Dennis A. Wilber, Elizabethtown, Ind., and Charles R. Kelso, Canton, Mich., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 540,288, Jun. 19, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,006

Int. Cl.[5] F02M *45/10*

U.S. Cl. 239—94 **36 Claims**



1. A unit fuel injector comprising:

an injector body containing a pumping chamber for receiving fuel at a low pressure level for subsequent discharge at a high pressure level above approximately 15,000 psi, a discharge orifice, and a transfer passage communicating with said pumping chamber and said discharge orifice;

fuel supply means including a supply passage for supplying fuel at said low pressure level to said injector body;

a control valve element reciprocally mounted within said injector body for movement between (i) an advanced position in which said supply passage communicates with said pumping chamber and (ii) a retracted position in which communication between said supply passage and said pumping chamber is blocked to allow fuel to flow from said pumping chamber through said transfer passage and out of said discharge orifice, said control valve element being substantially fluidically force balanced in both said advanced and said retracted positions; and

an actuator means for moving said valve element between said advanced and said retracted positions, said actuator means including an electromagnetic means positioned in said injector body between said pumping chamber and said discharge orifice, said control valve element and said electromagnetic means being at least partially overlapped along their axial lengths, wherein said injector body further includes a valve seat positioned between said electromagnetic means and said pumping chamber for sealable engagement by said control valve element when said control valve element is in said retracted position.

5,301,876

UNIT INJECTOR WITH INTERCHANGEABLE SUBASSEMBLY FOR CONVERTING FROM OPEN NOZZLE TO CLOSED NOZZLE OPERATION

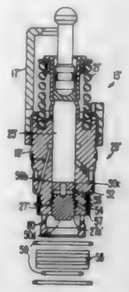
Bryan W. Swank; Laszlo Tikk, and Yul J. Tarr, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 729,500, Jul. 12, 1991, Pat. No. 5,209,403. This application Nov. 4, 1992, Ser. No. 971,232

Int. Cl.[5] F02M *61/20*

U.S. Cl. 239—95 **19 Claims**

10. A fuel injector for an internal combustion engine having an injector body having injection orifices at a lower end thereof, an upper plunger and a lower plunger which are mounted for reciprocation within the injector body; wherein the injector is divided into two subassemblies, an upper control subassembly and a lower nozzle subassembly; wherein the upper control subassembly comprises an upper portion of the injector body and the upper plunger; and wherein a plurality of different types of nozzle subassemblies are provided which are interchangeably mountable to a lower end of the upper subassembly; and wherein each of said nozzle subassemblies comprises a lower portion of the injector body which has said injection orifices and a metering and injection chamber into which fuel to be injected is metered, and a said lower plunger for injecting fuel metered into said chamber through the injection orifices.



5,301,877

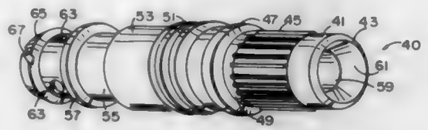
LAWN AND GARDEN SPRAYER WITH PRESS-FIT NOZZLE CONSTRUCTION

Charles H. Madison, Grand Rapids, Mich., assignor to R L Corporation, Lowell, Mich.

Filed Mar. 26, 1992, Ser. No. 858,210

Int. Cl.[5] B05B *15/06*

U.S. Cl. 239—154 **18 Claims**



1. A lawn and garden sprayer comprising:

a tank for holding a reservoir of fluid to be dispensed;

a wand connected in fluid communication with said tank for dispensing the fluid, said wand having a rigid tubular member defining a fluid passage, said wand having an aperture defining an inner diameter extending from said passage, through said rigid tubular member, to an outside of said wand;

a nozzle connected with said rigid tubular member; and

a nozzle support member interposed between said rigid tubular member and said nozzle, said nozzle support member having an axial bore connected in fluid communication between said passage of said rigid tubular member and said nozzle, having an insert portion received in press-fit engagement in said aperture through said rigid tubular member, and having a nozzle support portion adapted to receive said nozzle in slip fit engagement, said nozzle engaging said nozzle support portion, said insert portion including means located on a circumferential wall of said insert portion for sealing and inhibiting rotation of said nozzle support member within said wand, said means comprising:

a substantially smooth portion having a larger outer diameter than the inner diameter of a corresponding portion of said wand such that a fluid-tight seal is formed therebetween upon assembly of said nozzle support member to said rigid tubular member;

a textured portion having a larger diameter than the inner diameter of a corresponding portion of said wand such that rotation of said nozzle support member within said wand is inhibited upon assembly of said nozzle support member to said rigid tubular member;

said smooth portion and said textured portion combining to prevent separation of said nozzle support member from said wand due to rotation of said nozzle support member with respect to said wand.

5,301,878

DEVICE FOR PRODUCING A PARTICULATE DISPERSION

Colin S. Sinclair, Manchester, and Alan Tallentire, Cheshire, both of United Kingdom, assignors to The Victoria University of Manchester, Manchester, England

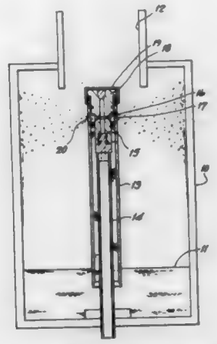
PCT No. PCT/GB90/01198, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/03270, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 2, 1990, Ser. No. 836,344

Claims priority, application United Kingdom, Sep. 1, 1989, 8919767

Int. Cl.[5] A61M *11/00*

U.S. Cl. 239—338 **9 Claims**



1. A device for producing a particulate dispersion comprising at least one duct to contain a supply of a fluid material to be dispersed, a plurality of outlet apertures communicating with said at least one duct and directed normal to the longitudinal axis of said at least one duct, and a plurality of pressurized gas jets aligned with the outlet apertures to draw material from said at least one duct and to form a dispersion of the material which is thus forced through the apertures, characterized in that the cross-sectional area of each outlet aperture is not greater than the cross-sectional area of the at least one duct communicating therewith, and wherein at least a part of the at least one duct is located upright in a vessel for containing a reservoir of the fluid material to be dispersed, an open bottom end of the at least one duct being located such that it will be submerged within the material in use.

5,301,879

FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

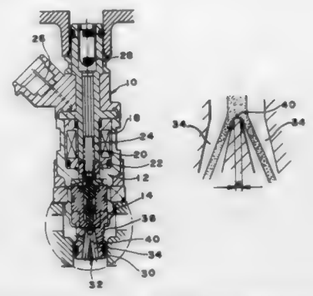
Keiso Takeda, and Tomojiro Sugimoto, both of Mishima, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 29, 1992, Ser. No. 890,682

Claims priority, application Japan, Jun. 6, 1991, 3-160787

Int. Cl.[5] B05B *7/12*

U.S. Cl. 239—408 **5 Claims**



1. A fuel injection device for an internal combustion engine comprising:

a fuel injection valve having an axis and a fuel injection port, formed coaxially in the fuel injection valve, for injecting fuel; and

an adapter coaxially coupled to the fuel injection valve, the adapter including:

a fuel dividing wall having a fuel collision surface at a top of the fuel dividing wall, the fuel collision surface being spaced from and coaxially opposite to the fuel injection port for causing fuel flowing from the fuel injection port toward the fuel collision surface to collide with the fuel collision surface to thereby divide the fuel into two portions, wherein the fuel collision surface is substantially flat and is oriented substantially perpendicular to the axis of the fuel injection valve;

two branch ports, formed on opposite sides of the fuel dividing wall, for allowing the fuel divided by the fuel collision surface of the fuel dividing wall to pass through the branch ports; and

two air injection passages, each having an axis extending downwardly and inwardly, for injecting air from above against the fuel passing through the branch ports to promote atomization of the fuel,

wherein the following relationship holds between a width a of the fuel collision surface and a diameter d of the fuel injection hole:

$$0.2 \leqq a/d \leqq 0.3$$

and wherein the following relationship holds for an angle θ defined between the axis of each air injection passage and the axis of the fuel injection valve;

$$45° \leqq \theta \leqq 75°.$$

5,301,880

FILTER CLEANING NOZZLE APPARATUS

Robert Benian, West Bloomfield, Mich., assignor to Benian Filter Company, Inc., West Bloomfield, Mich.

Division of Ser. No. 900,003, Jun. 17, 1992, Pat. No. 5,203,998. This application Jan. 29, 1993, Ser. No. 11,507

Int. Cl.[5] B05B *1/20, 15/06*

U.S. Cl. 239—557 **20 Claims**

1. A nozzle structure, arranged in a star configuration, for producing distinct multiple small streams of fluid flowing at high velocity, with each stream emanating from a different

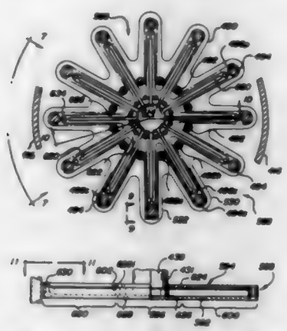
VOL 1161 ISS 2 AP 12 1994 UMI

location of the structure and at least most streams being in the same general plane, the streams being for backwashing a filter structure arranged in corresponding star configuration, the nozzle structure comprising:

a central manifold section including top and bottom planar wall portions spaced apart from one another and forming a central manifold chamber with at least one of the wall portions having a fluid inlet port therein; and

at least four elongated finger sections extending radially outwardly from the central manifold section and equiangularly spaced from one another in a common plane,

each elongated finger section having a top wall portion, a



bottom wall portion, two opposed side wall portions and an enclosed end portion, with a thin elongated slot provided along the side wall portions,

each elongated finger section including an elongated chamber enclosed by the wall portions of its finger section, and in fluid communication with the central manifold chamber and the slots in the side wall portions, the fluid flow capacity of the elongated chamber being significantly greater than the capacity of the slots such that the slots present a high resistance to fluid flow, thereby enabling back pressure to develop in the elongated chamber and expel the fluid from each of the slots of the finger section at relatively high velocity.

5,301,881

SYSTEM FOR DISPOSING WASTE

Masakatsu Hayashi, Ushiku; Yoshiyuki Takamura, Kudamatsu; Tsutomu Hasegawa, Niiza; Hideharu Mori, and Tatsuji Katoh, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 984,492, Dec. 2, 1992, abandoned. This application May 5, 1993, Ser. No. 56,937

Claims priority, application Japan, Dec. 2, 1991, 3-317643

Int. Cl.[5] B29C *29/00*

U.S. Cl. 241—65 **23 Claims**

1. A waste disposal system comprising:

a stock yard for storing waste articles comprising a metal bulk and other components;

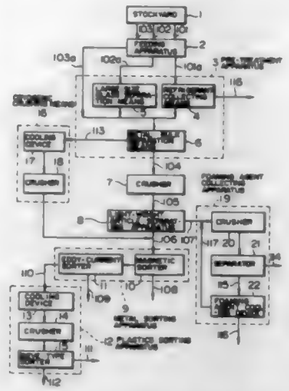
pre-treatment apparatus including metal bulk separating means for separating said metal bulk from said other components of said waste articles;

a cryogenic crushing apparatus for crushing said metal bulk thus separated by said metal bulk separating means;

a crushing apparatus for crushing said other components of said waste articles into fragments;

a light-weight article separating apparatus for separating said fragments obtained through the crushing performed by said crushing apparatus into fragments of foamed material and other waste; and

a foaming agent collecting apparatus including a crusher for crushing said fragments of said foamed material separated by light-weight article separating apparatus, a separator for separating the crushed fragments of said foamed material thus crushed by said separator into plastics and a



gaseous foaming agent, and a foaming agent cooling device for liquefying said gaseous foaming agent by cooling.

5,301,882

CONCRETE CRUSHER

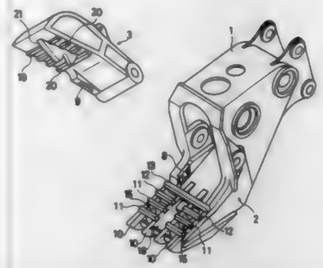
Sumio Morikawa, Sakai, and Nobuyuki Zakoji, Toyonaka, both of Japan, assignors to Ohyodo Diesel Co., Ltd., Osaka, Japan

Filed Feb. 3, 1992, Ser. No. 829,831

Claims priority, application Japan, Aug. 27, 1991, 3-76287

Int. Cl.[5] B02C *1/10*

U.S. Cl. 241—101.7 **3 Claims**



1. A concrete crusher comprising an upper jaw and a lower jaw which are connected to each other through a pivot pin and adapted to be opened and closed by a hydraulic cylinder, said lower jaw having a plurality of longitudinal cutters extending perpendicular to said pivot pin and arranged in the form of a fork, said upper jaw having a large rough cutter extending centrally on a surfacing plate member and perpendicular to said pivot pin, said lower jaw further having a plurality of short cross cutter bars disposed on said longitudinal cutters in the form of a grate-like pattern avoiding the position of descent of said large rough cutter and a long cross cutter bar disposed on and transversing all of said longitudinal cutters at a position rearwardly spaced from and parallel to said short cross cutter bars, said upper jaw having on said surfacing plate member a plurality of short cross cutter bars corresponding to said short cross cutter bars of the lower jaw on either side of said large rough cutter and a long cross cutter bar corresponding to said long cross cutter bar of the lower jaw, said short and long cross cutter bars of the lower jaw projecting from a plane defined by said longitudinal cutters and said short and long cross cutter bars of the upper jaw projecting from said surfacing plate member so that they abut against each other when the lower and upper jaws are fully closed, and said cross cutter bars being replaceable when worn by new cross cutter bars welded in place.

5,301,883

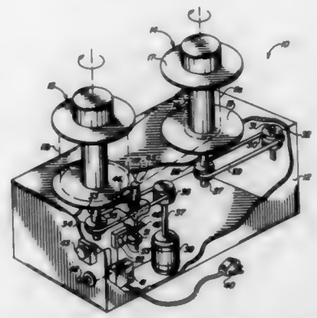
METHOD AND APPARATUS FOR CONSOLIDATING PARTIALLY USED TOILET TISSUE ROLLS

Dale J. Lukaart, 4733 N. Pine Hills Rd, #56, Orlando, Fla. 32808

Filed Dec. 1, 1992, Ser. No. 983,669

Int. Cl.[5] B65H *18/10*

U.S. Cl. 242—67.3 R **5 Claims**



2. Apparatus for consolidating partially used, standard private bathroom-sized rolls of toilet tissue into single, full-sized diameter ones of said rolls; each roll having a hollow cylindrical core of given height and inside diameter and having a length of toilet tissue of given width equal to said core height wrapped about said core; the apparatus comprising:

a housing;

supply and take-up reels rotatably mounted on the housing;

each reel having a spool-like shape and including a vertically extending, elongated spindle; a disk-shaped horizontally oriented, weighted cover plate removably gravitationally received coaxially at the top of the spindle; and a disk-shaped horizontally oriented base plate attached coaxially to the bottom of the spindle; the spindle having an outside diameter less than said inside diameter of the cores; the plates having opposing, tissue contacting flat circular surfaces with diameters larger than said full-sized roll diameter; and the spindle having a height above the tissue contacting surface of the base plate which is slightly less than said core height;

stop means for guiding the cover plate onto the spindle for controllably compressing a roll received about the spindle under weight of the cover plate, so that rotation of the reel will cause rotation of the roll; and

motive means for rotating the take-up reel.

5,301,884

AUTOMATIC FIBER OPTIC QUADRUPOLE COIL WINDING MACHINE

Erwin Horneman, Brampton, Canada, assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 16, 1991, Ser. No. 806,950

Int. Cl.[5] B21F *3/02*

U.S. Cl. 242—7.09 **5 Claims**

1. Apparatus for winding a multilayered coil of an optical fiber or the like on a reel, comprising:

a base;

a clamp connected to the base for retaining the reel in a predetermined position relative to the base; first and second linear stage assemblies mounted to the base, the first and second linear stage assemblies including:

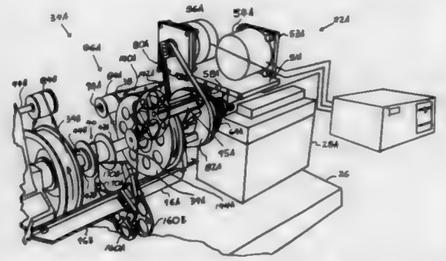
first and second fiber guide motors mounted to the base, the first and second fiber guide motors having corresponding first and second fiber guide motor shafts;

means for converting rotation of the first and second fiber guide motor shafts into linear motion for translating the first and second linear stage assemblies, respectively along a longitudinal axis relative to the base;

first and second rotator assemblies connected to the first and second linear stage assemblies for translational movement relative to the base, the first and second rotator assemblies including: first and second winding head support shafts; first and second fiber supply spools that are rotatably mounted to the first and second winding head support shafts, respectively;

first and second transition roller support arms mounted to the first and second winding head support shafts, respectively;

first and second transition rollers mounted to the first and second transition roller support arms, respectively and arranged to be adjacent the first and second fiber supply spools, the first and second transition rollers being



mounted for rotation parallel to the first and second fiber supply spools, respectively to receive an optical fiber therefrom;

first and second offset fiber guide assemblies connected to the first and second rotators, respectively, the first and second offset fiber guide assemblies including first and second pluralities of offset fiber guide rollers;

first and second final fiber guide assemblies connected to the first and second rotators, respectively, the first and second pluralities of offset fiber guide rollers being arranged to direct the optical fiber from the first and second transition rollers to the first and second final fiber guide assemblies, respectively, the first and second final fiber guide assemblies including:

first and second final fiber guide rollers for receiving the optical fiber from the first and second offset fiber guide assemblies, respectively; and

first and second final fiber guides that receive the optical fiber from the first and second final fiber guide rollers, respectively and direct the optical fiber to the reel where the coil is to be formed.

5,301,885

METHOD AND APPARATUS FOR FABRICATING UNIDIRECTIONAL MATERIALS FOR HELICOPTER PARTS

Tadahiro Matsumoto, Kanuma, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1990, Ser. No. 633,958

Claims priority, application Japan, Dec. 28, 1989, 1-341017

Int. Cl.[5] B65H *54/64*

U.S. Cl. 242—7.21 **6 Claims**

1. An apparatus for fabricating a unidirectional material, including a mandrel having two ends, drive means for rotating said mandrel around a longitudinal axis of said mandrel, roving feeding mechanism for feeding a composite-material roving so as to be wound on said mandrel, moving means for moving said moving feeding mechanism such that said roving traverses in a

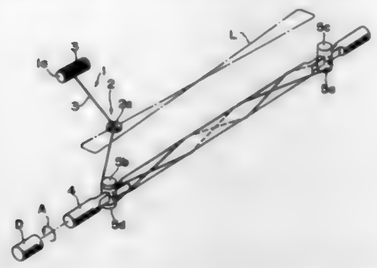
VOL 1161 ISS 2 AP 12 1994 UMI

figure eight between said two ends of said mandrel while said mandrel is rotated, the apparatus comprising:

first pin means disposed at one end of said mandrel; and

a second pin means disposed at the opposite end of said mandrel;

each of said first and second pin means having opposite end portions projecting outwardly from a periphery of said mandrel in a single transverse imaginary plane to said longitudinal axis of said mandrel, each of said first and



second pin means comprising two sets of pins, said pins of each set being disposed in parallel, one set of pins projecting in one direction in said single transverse imaginary plane, the other set of pins projecting in the opposite direction,

whereby said roving is successively and alternately wound over and between said first and second pin means so as to form said unidirectional material in a tubular mesh on said mandrel and in loops around said first and second pin means.

5,301,886

METHOD AND APPARATUS FOR WINDING TEXTILE YARN FROM A SUPPLY PACKAGE ONTO A TAKE-UP PACKAGE INCLUDING RESPONDING TO A FALSELY REPORTED YARN BREAK SITUATION

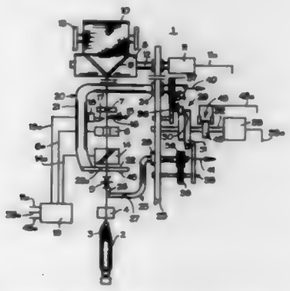
Gregor Kathke, Viersen; Rolf Haasen, Moenchengladbach, and Heribert Kargel, Viersen, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,561

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1991, 4139892

Int. Cl.[5] B65H *54/22*

U.S. Cl. 242—35.6 R **16 Claims**



1. Method of operating a textile winding station to wind yarn packages, the textile winding station being operable to unwind yarn from a supply package onto a take-up package during a yarn winding operation, comprising:

winding yarn from the supply package onto the take-up package in a yarn winding operation which includes guiding yarn relative to a sensing device during its travel from the supply package to the take-up package for sensing of the presence of the yarn;

ceasing the winding of yarn from the supply package to the take-up package in response to the sensing of an out-of-limits condition of the yarn by the sensing device;

initiating movement of a yarn end engaging member toward a yarn engaging position for subsequent engagement of a yarn end extending from a respective one of the supply and take-up packages following the ceasing of the winding of yarn;

controlling the yarn end engaging member to engage yarn while the yarn end engaging member is disposed in its yarn end engaging position such that the yarn end engaging member draws in a portion of a yarn which extends to both the supply package and the take-up package in the event the yarn is still in an unbroken condition after the ceasing of the winding of yarn or draws in a yarn end from the respective one package in the event that the yarn is in a broken condition after the ceasing of the winding;

preliminarily sensing the presence or absence of yarn at a sensing location after initiating movement of the yarn end engaging member toward its yarn engaging position and before orientation of a yarn in a splicing device for splicing a yarn end extending from the supply package together with a yarn end extending from the take-up package;

if no yarn is preliminarily sensed during the preliminarily sensing of yarn, orienting the yarn end extending from the one respective package into the yarn end engaging member in the splicer, orienting a yarn end from the other package in the splicer and splicing the pair of oriented yarn ends in the splicer together to restore the yarn to an unbroken condition; and

if yarn is sensed during the preliminary sensing of yarn, cutting the unbroken yarn extending between the supply and take-up packages to thereby create a pair of yarn ends each extending from a respective package, orienting the pair of yarn ends in the splicer and operating the splicer to splice the oriented yarn ends together to again restore the yarn to its unbroken condition.

5,301,887

MEANS FOR CONTROLLING THE TRAVEL OF A YARN IN A TEXTILE MACHINE

Ulrich Wirtz, and Andreas Kruger, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 30, 1991, Ser. No. 769,178

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1990, 4030892

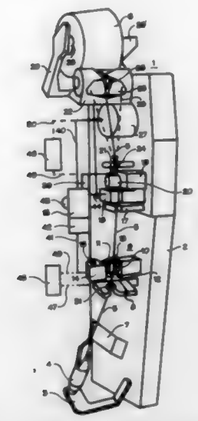
Int. Cl.[5] B65H *59/00, 63/00*

U.S. Cl. 242—36 **42 Claims**

1. Means for controlling the travel of yarn in a textile machine, comprising:

means for winding yarn from a yarn delivery bobbin onto a receiving bobbin, including means for causing the yarn to travel in a travel path between the two bobbins;

a heat sensor disposed for direct contact with the yarn during travel of the yarn in the yarn travel path between the two bobbins; and



means for selectively increasing or decreasing the tension of the yarn in response to the temperature thereof sensed by the heat sensor.

5,301,885

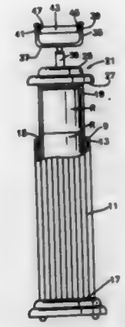
STORAGE UNIT AND DISPENSER FOR PAPER PRODUCT ROLLS

Anthony F. Danzi, 23 Jason Ct., Colonia, N.J. 07067

Continuation of Ser. No. 801,946, Dec. 3, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 82,345

Int. Cl.[5] A47K *10/22*

U.S. Cl. 242—55.2 **7 Claims**



1. A device for storing and dispensing paper product rolls, said device comprising:

a hollow, elongate body having an open head end and a closed base, adapted to stand upright on said base;

an elongated insert adapted to support vertically a plurality of said paper product rolls stacked in end-to-end relation, said insert being receivable within said body in telescoping relationship therewith and comprising a top member connected to a bottom member, said top member having an upper surface and a lower surface, said bottom member having a cross-sectional dimension smaller than the cross-sectional dimension of said body and being adapted to support a plurality of rolls in vertically stacked relationship, and said bottom member being formed with an opening dimensioned to permit lateral removal of at least one of said vertically stacked rolls;

a handle affixed to said upper surface of said top member and projecting a predetermined distance therefrom;

a means for dispensing a paper product roll horizontally and rotatably disposed on a mounting means projecting upwardly from said handle for mounting said dispensing means to said handle in spaced relation.

5,301,889

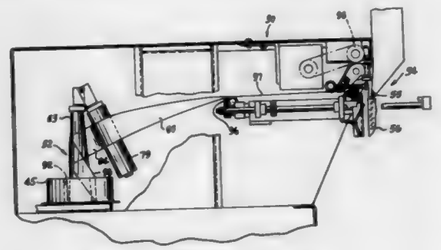
WEB DISPENSING APPARATUS

Joseph F. Ball, Stow, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Division of Ser. No. 809,048, Dec. 16, 1991, Pat. No. 5,174,449, which is a continuation-in-part of Ser. No. 593,335, Oct. 1, 1990, abandoned, which is a continuation of Ser. No. 864,026, May 16, 1986, abandoned. This application Mar. 5, 1992, Ser. No. 846,593

Int. Cl.[5] B65B *43/12, 41/16*; B65H *17/48*

U.S. Cl. 242—55.18 **22 Claims**



1. A web feeding mechanism comprising:

a) a base;

b) a rotatable support mounted on the base and adapted to carry a coiled web of material;

c) a tapered mandrel connected to the support and journaled for rotation about an axis;

d) a feed control mandrel supported above the base for rotation about an axis which is other than parallel to the tapered mandrel axis; and

e) wherein the tapered mandrel includes a driven section and the feed control mandrel includes a drive section for driving the driven section to rotate the tapered mandrel.

5,301,890

DEVICE FOR ATTACHING A FLEXIBLE WEB TO A NEW EMPTY WEB-ROLL

Heinrich Schuell, Klingenweg 33/1, D-6930 Eberbach, Fed. Rep. of Germany

PCT No. PCT/EP89/00763, § 371 Date Jan. 8, 1991, § 102(e) Date Jan. 8, 1991, PCT Pub. No. WO90/00513, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 4, 1989, Ser. No. 466,354

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1988, 3823311; Jan. 18, 1989, 3901305

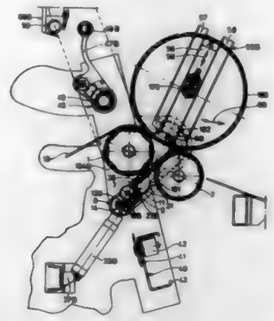
Int. Cl.[5] B65H *19/28*

U.S. Cl. 242—56 R **40 Claims**

1. A winding apparatus, comprising means for conveying a length of material along a predetermined path; means for winding the material; means for dividing the material into upstream and downstream segments; means for supplying a core which is to be wound with the material to a winding position in which the core is positioned to initiate winding of the upstream segment of the material onto the core; and means for initiating winding of the upstream segment of the material onto a core in said winding position, said initiating means including an application unit provided with a wrapping element, and a plate receiving element extending around part of the circumference of said wrapping element, said application unit being movable between a retracted position and an advanced position in which said wrapping element cooperates with a core in said

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winding position to wrap the material around part of the periphery of the core, and said receiving element having a generally convex external surface which faces away from said wrap-



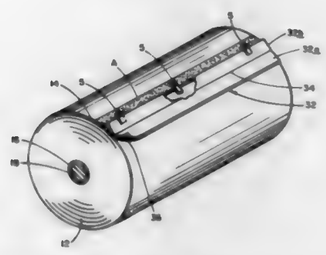
ping element, said receiving element being arranged such that the upstream segment of the material is receivable on said surface.

5,301,891

METHOD AND MEANS FOR PREVENTING THE LIFTING OF THE LEADING EDGE OF A WEB ON A ROTATING WEB ROLL DUE TO WINDAGE

Robert Duguay, Brockton, Mass., assignor to Butler Automatic, Inc., Canton, Mass.

Filed Sep. 4, 1992, Ser. No. 940,517
Int. Cl.[5] B65H *19/18*
U.S. Cl. 242—58.5 **5 Claims**



1. A method of preparing the leading end of a web on a roll of web convolutions in preparation for a splice of that end to another web, said method comprising the steps of

releasably securing the leading end of the web to the adjacent underlying web convolution on the roll;

forming a flexible spoiler strip whose length substantially corresponds to the length of said web end;

defining a lengthwise boundary line in the strip which extends the length of the strip;

applying an adhesive coating to a surface of the strip so that the strip portion on one side of the boundary line is adherent and the strip portion on the other side of the boundary line in non-adherent;

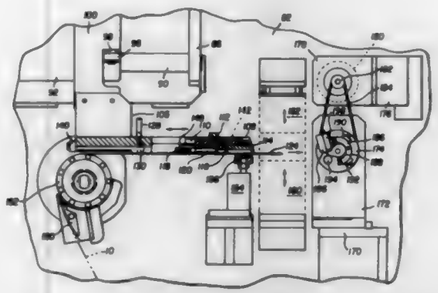
adhering the adhesive coated surface of the strip to the roll so that the non-adherent portion of the strip extends in front of and is substantially parallel to said web end whereby when the roll is rotated to advance the web end, said strip deflects the on coming air stream away from the web end, yet permits the web end to be pulled away from the roll when spliced to said other web.

5,301,892

APPARATUS AND METHOD FOR WINDING A STRIP OF WEB MATERIAL ONTO A SPOOL

Gary E. Merz, Rochester; William R. DeMunck, Hilton; John M. Giordano; Harold L. LaBrake, both of Rochester; Dale C. Marshall, Hamlin; David M. Reynolds, Rochester, and Garry L. Wohlschlegel, Hemlock, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 10, 1993, Ser. No. 60,107
Int. Cl.[5] B65H *18/10, 19/26*
U.S. Cl. 242—67.2 **4 Claims**



1. In an apparatus for spooling web of indeterminate length, said apparatus being of the type including a supply of said web, a winding station for receiving a cartridge enclosing an empty spool having a core with means for engaging an end of said web, said cartridge comprising a longitudinal opening through which said end may be inserted, means for rotating said spool to draw said web through said longitudinal opening and wind said web onto said spool and means for guiding said web from said supply to said winding station, the improvement comprising:

vacuum means for gripping said web between said supply and said winding station, said vacuum means comprising a first surface through which vacuum is applied to grip said web behind said end;

vacuum finger means extendable from said vacuum means for gripping said end, said vacuum finger means comprising a second surface through which vacuum is applied to grip said end when said vacuum finger means is extended;

means for extending and withdrawing said vacuum finger means; and

means for moving said vacuum means and said vacuum finger means between a first position where said web may be gripped by said vacuum means and a second position where said end may be inserted, while gripped by said vacuum finger means, through said longitudinal opening into engagement with said means for engaging.

5,301,893

SEAT BELT RETRACTOR HAVING A NOISE SUPPRESSION MECHANISM WITH A BLOCKOUT CAM

Gerald A. Doty, Crown Point, Ind., and William G. Drinane, New Lenox, Ill., assignors to Takata Inc, Auburn Hills, Mich.

Filed Aug. 25, 1992, Ser. No. 935,006
Int. Cl.[5] B60R *22/40*
U.S. Cl. 242—107.4 A **6 Claims**

1. A seat belt retractor for a vehicle comprising:

a retractor frame;

a reel having a reel shaft journaled for rotation in the retractor frame and having a seat belt wound thereon;

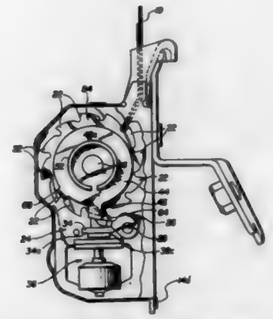
a retractor spring supported by the retractor frame, the retractor spring being connected to the reel shaft for biasing the reel in a belt retraction direction and for permitting the belt to rotate the reel in a belt protraction direction as it is unwound from the reel;

a ratchet wheel being coupled to the reel for rotation therewith and having ratchet teeth disposed thereon;

a locking pawl being pivotally mounted on the retractor for rotation between an inoperative position in which the pawl is spaced from the ratchet teeth and an operative position in which the pawl is engaged with the ratchet teeth to lock the reel against rotation in the belt protraction direction;

an inertial mechanism for actuating the locking pawl being responsive to a predetermined change in acceleration on the vehicle to move the locking pawl to its operative position; and

a noise suppression mechanism including a blocking member being mounted on the reel shaft for rotation relative to the



reel shaft and being moveable with the ratchet wheel for rotation between an actuated position for immobilizing the locking pawl against rattling and a neutral position allowing the locking pawl to pivot freely,

a stop on the frame for limiting movement of the blocking member to rotate only through a predetermined range,

a spring biasing the blocking member into engagement with the ratchet wheel, and

the blocking member having a blockout portion for immobilizing the pawl when rotated into its actuated position to prevent the pawl from bouncing against the ratchet wheel and making noise and a first side, the first side having a spring centering ring for locating and maintaining the spring centrally with the disc.

5,301,894

WEBBING RETRACTOR

Keisuke Imai, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Japan

Filed Nov. 6, 1992, Ser. No. 972,917
Claims priority, application Japan, Nov. 13, 1991, 3-297344
Int. Cl.[5] B60R *22/38*
U.S. Cl. 242—107.4 B **19 Claims**

1. A webbing retractor comprising:

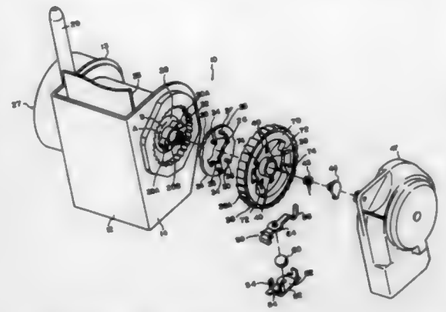
a frame;

a winding shaft having both ends rotatably supported by said frame for winding-up a webbing in a layer fashion, said winding shaft including forked portions extending in a direction substantially perpendicular to an axial direction of said winding shaft;

a lock ring supported by said winding shaft and relatively rotatable with respect to said winding shaft, usually rotating according to said winding shaft and serving to stop a rotation of said winding shaft in a webbing drawing-out direction when rotated relatively with respect to said winding shaft;

an inertial mass body integrally secured to said lock ring to rotate said lock ring relatively with respect to said winding shaft by inertial force when said winding shaft is rapidly rotated; and

a restricting means provided for said inertial mass body which is engagable with said winding shaft for restricting the relative rotation between said winding shaft and the lock ring within a predetermined range wherein said



restricting means comprises two pairs of projections which are engagable with said forked portions of said winding shaft.

5,301,895

YARN TENSIONING APPARATUS

Richard W. Sheehan, Johnson City, and Joseph L. Magner, Bristol, both of Tenn., assignors to Intronics, Inc., Johnson City, Tenn.

Division of Ser. No. 868,514, Apr. 15, 1992, Pat. No. 5,238,202.
This application May 4, 1993, Ser. No. 56,743
Int. Cl.[5] B65H *59/22;* **H01F** *7/08*
U.S. Cl. 242—150 M **11 Claims**

9. Filament tensioning apparatus for tensioning a plurality of filaments comprising,

a plurality of filament tensioning devices, each said filament tensioning device including,

means for guiding the movement of a filament in a discrete filament path,

tensioning means for placing the filament under tension, said tensioning means including a solenoid for exerting tension on the filament,

a control circuit for controlling the duration of the duty cycle of said solenoid based upon the tension exerted on said filament, said circuit comprising:

a power supply;

means for generating a reference current signal corresponding to a given tension upon said filament;

means for measuring the tension exerted on said filament;

means for generating a measured tension current signal based on the measured tension exerted on said filament;

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means for generating an error signal corresponding to the difference between said reference current signal and said measured tension current signal; and

means for incrementing or decrementing the duty cycle of said solenoid based upon said error signal.

5,301,896

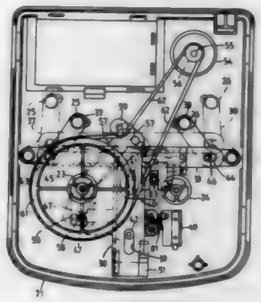
AUTO REWINDER FOR V8-TYPE VIDEO CASSETTE

David Tai, 1st Floor, No. 17, Lane 180, Ho Chiang Street, Taipei City, Taiwan

Continuation-in-part of Ser. No. 832,055, Feb. 6, 1992, abandoned. This application Aug. 5, 1992, Ser. No. 924,910

Int. Cl.[5] **G03B** *1/04*

U.S. Cl. 242—198 **3 Claims**



1. An auto rewinder for a video cassette comprising:

a) a base;

b) a first spindle rotatably mounted in a first position on the base for engaging a tape spool of the video cassette;

c) a second spindle rotatably mounted in a second position on the base for engaging a tape spool of the video cassette;

d) a first tape leading member pivotally mounted on the base;

e) a second tape leading member pivotally mounted on the base;

f) a first tape leading roller rotatably mounted on the first tape leading member;

g) a second tape leading roller rotatably mounted on the second tape leading member;

h) a driving member slidably mounted on the base so as to be movable between a non-operating position and an operating position and having driving portions operatively connected to the first tape leading member and the second tape leading member respectively, the driving member having a first hook portion;

i) a play key movably mounted on the base and operatively connected to the driving member such that movement of the play key moves the driving member from the non-operating position to the operating position;

j) a deflecting member connected to the first spindle, the deflecting member having a first end and a second end, the first end having a second hook portion for engaging the first hook portion of the driving member to keep the driving member in the operating position;

k) a first belt wheel rotatably mounted on the second end of the deflecting member;

l) a second belt wheel attached to the first spindle;

m) a belt driven by a motor, the belt contacting a side of the first belt wheel and contacting the second belt wheel so as to cause deflection of the deflecting member by virtue of the belt tension on the first belt wheel thereby causing the second hook portion of the deflecting member to disengage from the first hook portion of the driving member when the belt tension reaches a predetermined level; and

n) a locking assembly comprising

i) a locking portion connected to the driving member so as to move therewith, the locking portion defining a slot having an opening;

ii) baffles connected to the locking portion and located on opposite sides of the opening;

iii) a latching member attached to the base and extending through the opening, the latching member having a latch portion and being movable between a first position in which the latch portion contacts the baffles thereby preventing movement of the driving member from its non-operating position toward its operating position, to a second position by the insertion of the cassette into the rewinder in which the latch portion does not contact the baffles, thereby allowing the driving member to move toward its operating position; and,

iv biasing means associated with the latching member so as to bias the latching member toward its first position.

5,301,897

REEL BRAKE DEVICE OF DECK IN CAMERA-INTEGRATED TYPE VIDEO CASSETTE RECORDER SYSTEM

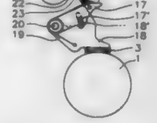
Il M. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 3, 1992, Ser. No. 923,622

Claims priority, application Rep. of Korea, Aug. 3, 1991, 13470/1991

Int. Cl.[5] **G11B** *15/18*

U.S. Cl. 242—204 **13 Claims**



1. A reel brake device for a deck in a video cassette recorder system, comprising:

a pinch arm pivotally mounted at one end thereof to a chassis of the deck and at the other to a pinch roller for selectively contacting a capstan shaft of the deck, the pinch arm also having an extension extending from one side portion of the pinch arm;

a first lever pivotally mounted at one end thereof to a lever shaft fixed to the chassis of the deck and provided at one side portion thereof with a pin, the first lever also having the other end being contactable with the extension of the pinch arm;

a second lever pivotally mounted at one end thereof to the lever shaft beneath the first lever and provided with a cam slot receiving the pin of the first lever, the second lever also having at the other end thereof a felt selectively contacting a take-up reel to apply a brake force thereto; and

a torsion spring disposed between the first lever and the second lever for urging the first lever and the second lever away from each other, the torsion spring having a coil portion fitted around the lever shaft and both ends connected to the first lever and the second lever respectively.

5,301,898

OUTER SPOOL TYPE SPINNING REEL HAVING IMPROVED BAIL ARM CONTROL MECHANISM

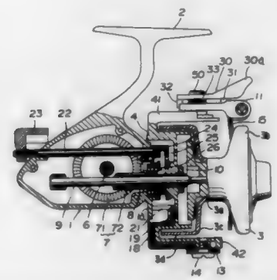
Masuo Ban, and Osamu Yoshikawa, both of Sakai, Japan, assignors to Shimano, Inc., Osaka, Japan

Continuation of Ser. No. 814,057, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 555,822, Jul. 20, 1990, abandoned, which is a continuation of Ser. No. 825,947, Feb. 3, 1986, abandoned, which is a continuation of Ser. No. 766,677, Aug. 16, 1985, abandoned, which is a continuation of Ser. No. 411,808, Aug. 26, 1982, abandoned, which is a continuation of Ser. No. 217,125, Dec. 17, 1980, abandoned. This application Mar. 8, 1993, Ser. No. 28,599

Claims priority, application Japan, Dec. 29, 1979, 54-184221[U]

Int. Cl.[5] **A01K** *89/01*

U.S. Cl. 242—233 **15 Claims**



10. An outer spool type spinning reel, comprising:

a reel body;

a spool supported adjacent to said reel body, said spool comprising a trunk and first and second flanges, said first flange being located in front of said second flange, said second flange having a skirt portion;

a rotary frame supported rotatably to said reel body, wherein said frame is at least partially surrounded by said skirt portion of said spool, and wherein said frame has first and second arms, said first and second arms being located radially outwardly from said spool;

a handle supported to said reel body;

a transmission mechanism for transmitting rotation of said handle to said rotary frame;

a bail means pivotably supported on said arms, said bail means being pivotable between a line-winding position for winding fishing line onto said spool and a line-releasing position for releasing said fishing line from said spool, said bail means including a line guiding roller which engages said fishing line to wind said fishing line onto said spool in a line-winding direction when said bail means is in said line-winding position; said line guiding roller being arranged relative to said frame such that moving said frame to a predetermined position after winding said fishing line onto said spool causes said fishing line to be in position to be caught by an angler's finger making a line-catching motion, said line-catching motion being a single continuous motion of said finger from an outstretched position to a retracted position, with said fishing line being caught by said finger when said finger is at said retracted position;

a trigger means mounted on said rotary frame for pivoting said bail means relative to said rotary frame from said line-winding position to said line-releasing position, said trigger means being positioned radially outside of said line guiding roller and facing thereto, said trigger means including an operating portion which is engaged by said finger making said line-catching motion, said operating portion being located radially outwardly of said line guiding roller, said operating portion being located in front of said reel body, said operating portion of said trigger means being arranged relative to said frame such that moving said frame to said predetermined position after winding said fishing line onto said spool causes said trigger means to be in position to be operated by said finger making said line-catching motion, and wherein said trigger means is arranged such that operation of said trigger means by said finger making said line-catching motion causes said frame to be biased in a line-unwinding direction, said line-unwinding direction being opposite to said line-winding direction, and wherein said operating portion of said trigger means is arranged relative to said frame such that said finger making said line-catching motion moves generally in said line-winding direction from said outstretched position to said retracted position; and

a positioning means for stopping said frame at said predetermined position and for preventing said rotary frame from rotating in said line-unwinding direction, said positioning means being responsive to rotation of said rotary frame by said transmission mechanism, wherein said positioning means comprises (i) a locking gear having at least one tooth and (ii) a pawl for engaging said tooth of said locking gear when said trigger means is located at said predetermined position;

whereby, after said frame is stopped at said predetermined position by said positioning means, said finger making said single continuous line-catching motion catches said fishing line and almost simultaneously operates said trigger means to pivot said bail means from said line-winding position to said line-releasing position, with said frame being positively maintained at said predetermined position by said positioning means and said finger during the operation of said trigger means.

5,301,899

BRAKE MECHANISM FOR A FISHING REEL

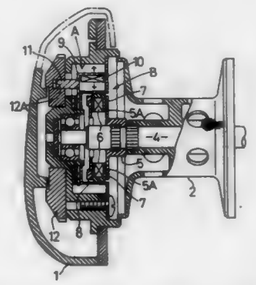
Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed May 28, 1992, Ser. No. 889,242

Claims priority, application Japan, Jun. 5, 1991, 3-133914

Int. Cl.[5] **A01K** *89/02*

U.S. Cl. 242—288 **11 Claims**



1. A brake mechanism for a fishing reel comprising:

a spool, and a rotating system rotatably interlocked with said spool, said rotating system including a spool shaft for supporting said spool;

braking pieces radially displaceably disposed on said rotating system, said braking pieces being rotatable with said spool;

an annular friction member fixedly disposed outwardly of a locus of revolution of said braking pieces, said brake mechanism being arranged such that said braking pieces are displaced radially outwardly by centrifugal force into contact with said friction member during rotation of said spool, to thereby apply a braking force to said spool; and

braking force adjusting means operable from outside a reel body for adjusting the braking force applied to said spool, said braking force adjusting means including:

magnetic material provided in said braking pieces;

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magnets positioned such that said friction member is located between said magnets and said braking pieces; and

shift members for supporting said magnets; and

wherein said brake mechanism is arranged such that the adjustment of the braking force applied to said spool is effected by operating said shift members to vary the distance between said braking pieces and said magnets, to thereby vary the magnitude of the magnetic force between said braking pieces and said magnets.

5,301,900

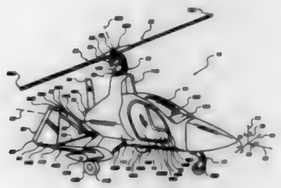
AUTOGYRO AIRCRAFT

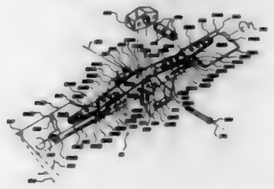
Henry J. Groen, 1813 Downing Ave., Salt Lake City, Utah 84108, and David L. Groen, Twenty Benchmark, Tooele, Utah 84074

Continuation-in-part of Ser. No. 857,317, Mar. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 626,972, Dec. 12, 1990. This application Aug. 17, 1992, Ser. No. 931,018

Int. Cl.[5] B64C *27/52, 13/04*

U.S. Cl. 244—17.25 **31 Claims**





1. An autogyro comprising:

frame means to support a load in flight and on a support surface;

support means connected to extend beneath said frame means to support said autogyro upon a surface;

tower means attached to said frame means to extend above said frame means, said tower means having a distal end and a tower longitudinal axis;

head means tiltably attached to said distal end of said tower means to tilt relative to said tower longitudinal axis, said head means having a rotor axis, a head pitch axis and a head roll axis;

rotor means rotatably attached to said head means to rotate about said rotor axis, said rotor means having a teeter axis;

wing means attached to said rotor means to extend away therefrom and rotate therewith to generate a lift force, said wing means being comprised of blade means tiltable between a first minimum lift angle and a second maximum lift angle;

propulsion means attached to said frame means for generating a force to urge said autogyro forward, and to selectively rotate said rotor means;

first control means connected to said frame means to control operation of said propulsion means, said first control means having means positioned to be operable by a user supported on the frame means;

second control means connected to said head means to control the tilting of said head means, said second control means having means positioned to be operable by the user; and

third control means connected to said rotor means to tilt said wing between said first minimum lift angle and said second maximum lift angle and to selectively adjust said wing at any position thereof between said first minimum lift angle and said second maximum lift angle, said third control means having means for actuation positioned to be operable by the user.

5,301,901

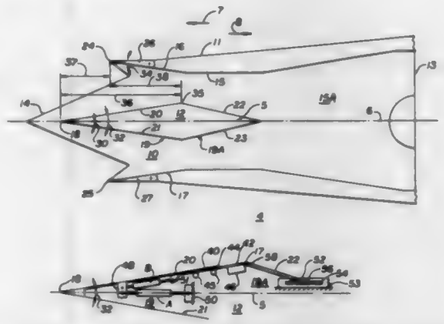
TELESCOPING CENTERBODY WEDGE FOR A SUPERSONIC INLET

Paul H. Kutschenreuter, Jr., Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 29, 1993, Ser. No. 10,963

Int. Cl.[5] B64D *33/02*

U.S. Cl. 244—53 R **10 Claims**



1. A two-dimensional inlet for a jet aircraft engine comprising:

an axially telescoping wedge having at least one upper and lower set of forward and aft walls in overlapping sliding engagement,

said forward walls overlapping said aft walls forming an aft facing step,

a forwardmost set of upper and lower walls disposed above and below a wedge centerplane at a forwardmost wedge angle to each other and forming a leading edge of said wedge at their forward edges,

a means for axially translating said leading edge relative to a fixed element of said inlet and a means for changing a length of said wedge from said leading edge to a throat of said inlet.

5,301,902

AIRCRAFT AIRBAG PROTECTION APPARATUS AND METHOD

Robert C. Kalberer, 7434 Singing Hills Ct., Boulder, Colo. 80301, and Kevin W. Kreutzer, 1065 Holli Springs, Colorado Springs, Colo. 80907

Filed Nov. 9, 1992, Ser. No. 973,798

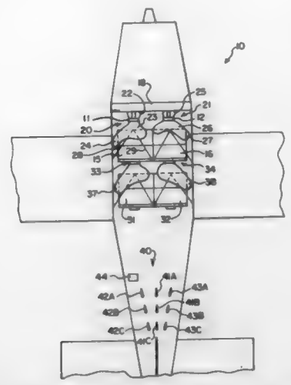
Int. Cl.[5] B64D *11/06*

U.S. Cl. 244—121 **9 Claims**

1. Apparatus for minimizing the prospect for loss of control in a craft which has a movable control yoke that is grippable by an individual for multiple degrees of motion thereof from a relatively neutral position for controlling the craft operation by the degree of yoke motion, comprising:

means for sensing that the craft has experienced an abnormal force,

an airbag assembly including an inflatable airbag mounted relative to the control yoke and means for responding to an actuation signal by expanding said airbag in a first direction so as to substantially fill the space both between the control yoke and an individual in proximity to the control yoke as well as expanding in a second direction so as to substantially fill the space between the control yoke and the frame of the craft thereby retaining the control yoke in the relatively neutral position, and



means responsive to said sensing means for producing said airbag actuation signal for rapidly expanding said airbag in said first and second directions upon the occurrence of an abnormal force relative to the craft.

5,301,903

OCCUPANT ARM AND HEAD RESTRAINING ASSEMBLY

Armand J. Aroane, Massapequa, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 6, 1993, Ser. No. 43,545

Int. Cl.[5] B64D *25/115*

U.S. Cl. 244—122 AG **14 Claims**



1. An occupant restraint assembly adapted for attachment to a seat for restraining movement of the upper limbs of an occupant thereof upon occurrence of a prerequisite condition comprising:

a storage unit;

means for fixedly securing said storage unit at an upper back support portion of a seat;

shroud means movable between a stowed position wherein said shroud means is housed within said storage unit and a deployed position wherein first and second cover members of said shroud means extend out of said storage unit, around opposite sides and laterally inward of an upper body portion of the occupant to retain an occupant's arms against the occupant's upper body;

bladder means movable between a deflated, stowed position within said storage unit and a deployed position wherein said bladder means extends about the occupant's neck;

means for inflating said bladder means in the deployed position; and

means for moving said shroud and bladder means from said stowed to deployed positions upon occurrence of the prerequisite condition.

5,301,904

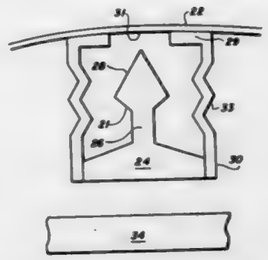
CANOPY BREAKING DEVICE

Frederick C. Guill, Crownsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 17, 1993, Ser. No. 35,780

Int. Cl.[5] B64D *25/00*

U.S. Cl. 244—129.1 **7 Claims**



1. A device for initiating crack propagation in frangible material, comprising:

means for penetrating said frangible material upon application of a force to said penetrating means;

means for prepositioning said penetrating means adjacent to said frangible material, adapted for attachment to said frangible materials, wherein said prepositioning means encloses said penetrating means and collapses in an accordion-like manner when a force is applied to said penetrating means.

5,301,905

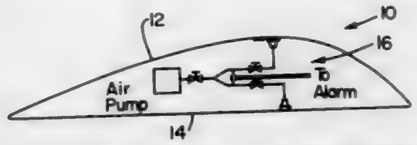
AIRCRAFT ICING DETECTION SYSTEM

David A. Bisha, 3323 W. Ridgewood Dr., Parma, Ohio 44134

Filed Dec. 23, 1992, Ser. No. 995,446

Int. Cl.[5] B64D *15/20*

U.S. Cl. 244—134 F **15 Claims**



1. A system for detecting accumulation of ice on a surface of an aircraft, comprising:

air pump means for pumping air;

a first generally horizontal extending exterior surface of an aircraft, said first surface being on an upper side of said aircraft and exposed to precipitation falling from above;

at least one first opening in said first horizontally extending surface;

a second surface of said aircraft, said second surface not exposed to precipitation;

at least one second opening in said second surface;

first conducting means for conducting air from said air pump means to said first opening;

second conducting means for conducting air from said air pump means to said second opening;

differential pressure sensing means for sensing a difference in

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pressure between said first and second conducting means; and

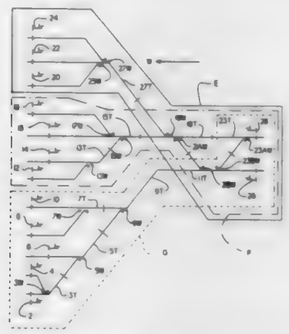
indicating means in connection with said sensing means for indicting said pressure difference to an operator of said aircraft.

5,301,906

RAILROAD INTERLOCKING CONTROL SYSTEM HAVING SHARED CONTROL OF BOTTLENECK AREAS

Stephen A. Bodnar, II, Pittsburgh, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Jun. 17, 1992, Ser. No. 900,150
Int. Cl.[5] B61L *17/00, 27/00*
U.S. Cl. 246—3 **15 Claims**



1. A railroad interlocking control for use in regulating a flow of railway traffic through an interlocking track layout having a multiplicity of switch and signal devices which are operated to provide a plurality of track routes converging and overlapping in a hierarchal arrangement, said control comprising:

interactive means for outputting selection signals representative of first and second boundary limits respectively serving as an entrance and exit of a selected one of said track routes;

a plurality of programmable controllers responsive to said selection signals and operable to produce function signals for actuating said switch and signal devices operably included in said selected one of said track routes;

each of said programmable controllers uniquely operatively connected to respective first sets of said switch and signal devices, each of said first sets including said switch and signal devices operably included in routes not operably including said switch and signal devices in other of said first sets;

each of said programmable controllers further operatively connected with other of said programmable controllers in a shared control arrangement to said switch and signal devices in a second set of said switch and signal device;

said second set including those of said switch and signal devices which are respectively operably included in a plurality of said track routes which operably include said switch and signal devices in at least two of said first sets; and

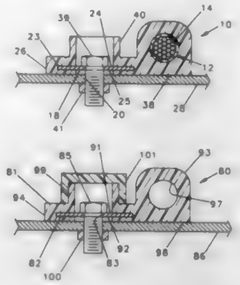
each of said programmable controllers further being electrical communication with other of said plurality of programmable controllers to transfer therebetween status information.

5,301,907

CABLE CLAMP

Kenneth A. Julian, Oak Brook, Ill., assignor to Julian Electric Inc., Westmont, Ill.

Filed Aug. 3, 1992, Ser. No. 923,523
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.1 **18 Claims**



1. A cable clamp for attaching a cable having an electrically conductive interior surrounded by a non-conductive cover to a mounting member comprising in combination:

tab of elastomeric material,

means for attaching said tab to said mounting member,

a portion of said elastomeric material attached to said tab forming a cylindrical strap adapted to encircle a portion of the length of a cable.

5,301,908

METHOD OF USING AN ARM SUPPORT CUSHION

Juanita Reames, 6201 15th NW. P-521, Seattle, Wash. 98107

Filed Sep. 9, 1992, Ser. No. 941,541
Int. Cl.[5] B68G *5/00*
U.S. Cl. 248—118 **1 Claim**



1. A method for using a support cushion to support the arms, wrists and hands of a person while engaging in repetitive motion activity,

said cushion having,

a flexible, substantially U-shaped support having a front portion and two side portions extending perpendicularly to said front portion, said front portion and two side portions forming three sides of a U-shaped opening within said support, each of said front and two side portions having an upper and a lower surface, said support cushion having an inner cushion surrounded by an outer fabric, said support cushion having a predetermined height to support a person's arms, wrists and hands in a substantially level position when supported across said front and side portions,

said method comprising:

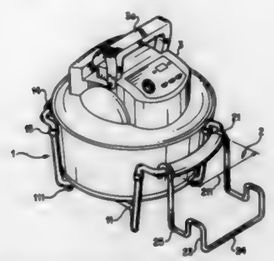
placing the support cushion on a person's lap with said front and side portions extending horizontally and said U-shaped opening directed toward the torso of the person, the side and front portions engaging and supporting a substantial portion of the person's arms, wrists and hands in a substantially horizontal position so as to provide support for the arms, wrists and hands while they are engaged in repetitive motion activity.

5,301,909

STOVE CARRIER

Kwei T. Chang, No. 14, Lane 54, Luong Chuan St., Panchiao City, Taipei Hsien, Taiwan

Filed Jun. 3, 1993, Ser. No. 71,113
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—146 **3 Claims**



1. A stove carrier comprising:

a base frame for carrying a baking stove, said base frame comprising two parallel horizontal bars, and two vertical supporting frames symmetrically connected between said horizontal bars at two opposite ends, each vertical supporting frame being made in a substantially arched configuration having two opposite ends terminated to respective legs for supporting said base frame on a flat surface, a horizontal middle portion disposed at a higher elevation above said horizontal bars, a heat-resisting grip covered around said horizontal middle portion, two heat-resisting collars fastened around two opposite ends of said horizontal middle portion;

a rack detachably fastened to said base frame for carrying the cover of the backing stove being carried on said base frame, said rack comprising two opposite ends terminated to respective hooks for hooking on the horizontal middle portion of either vertical supporting frame of said base frame, two L-shaped suspension portions respectively extended from said hooks, a cross bar portion, and two curved portions respectively connected between said cross bar portion and said L-shaped suspension portions, said L-shaped suspension portions and said curved portions forming into a bearer for carrying the cover of the baking stove.

5,301,910

COLLAPSIBLE SLANTED "X"-SHAPED SUPPORT STRUCTURE

Donald Lang, 880 Watertown St., W. Newton, Mass. 02165, and Joseph S. Shortlidge, 132 Bay State Rd., Melrose, Mass. 02176

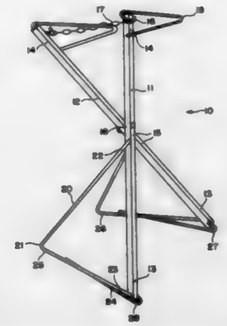
Filed Jan. 12, 1993, Ser. No. 3,150
Int. Cl.[5] F16M *11/38*
U.S. Cl. 248—166 **9 Claims**

1. A collapsible "X"-shaped support structure comprising:

A. a first longitudinally extending diagonal member having a longitudinal axis, a base portion, an upper end portion and an intermediate portion therebetween;

B. a second longitudinally extending diagonal member having a longitudinal axis, a base portion, an upper end portion and an intermediate portion therebetween, said second longitudinally extending diagonal member crossing in back of the first longitudinally extending member to form therewith a generally "X"-shaped structure;

C. means for rotationally connecting together the intermediate portions of said first and second longitudinally extending diagonal members, said connecting means allowing rotation of said first and second longitudinally extending diagonal members about a common axis that is normal to the plane of the generally "X"-shaped structure and is offset from the longitudinal axis of at least one of said first and second longitudinally extending diagonal members, said rotational axis being located closer to the upper end portion of said first longitudinally extending member than to the upper end portion of said second longitudinally extending diagonal member;



D. first and second base support means secured respectively to the base portions of said first and second longitudinally extending diagonal members to form an angle of less than 90 degrees therewith whereby the plane of said generally "X"-shaped structure intersects a ground plane at an angle of less than 90 degrees; and,

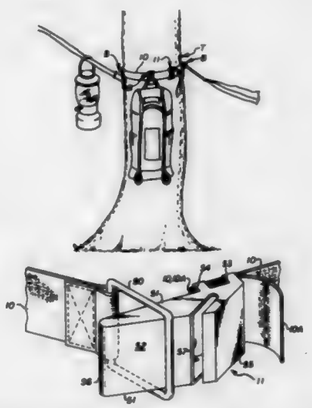
E. means for establishing a selected, angular rotational separation between said first and second longitudinally extending diagonal members.

5,301,911

PORTABLE HANGING SYSTEM FOR ATTACHMENT TO VERTICAL OBJECTS

David G. Beauchemin, 1312 W. Bell, Houston, Tex. 77019

Filed Sep. 30, 1992, Ser. No. 954,388
Int. Cl.[5] A47K *1/00*
U.S. Cl. 248—218.4 **12 Claims**



1. A portable hanging system for supporting various articles from generally vertical objects of varying diameters comprising;

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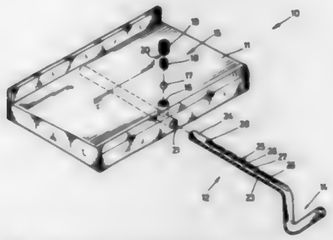
a non-elastic flexible fabric belt having and inner and outer surface and of sufficient length to encircle an exterior surface of generally vertical objects of varying diameters,
a rigid loop member secured on one end of said belt,
an adjustable lever-type cam buckle member installed on said belt having a pivotal lever portion configured to grip said belt and to releasably engage said loop member and draw said loop member and the gripped portion of said belt toward one another to apply tension in the encircled portion of said belt and bias said lever portion in a fastened condition to firmly secure said belt in the encircled condition,
a plurality of bracket members each having a generally vertical flat tang portion slidably and removably received between the exterior surface of the generally vertical object and the inner surface of said belt by vertical insertion or removal when said belt is in an encircled unfastened condition and each said bracket member having an outer surface disposed on the outer surface of said belt when installed thereon, and
connector means integrally formed on the outer surface of each said bracket member for securement of various articles to be suspended and supported from said bracket member,
each said bracket member tang portion being tightly gripped and rigidly secured between the exterior surface of the generally vertical object and the inner surface of said belt to prevent relative movement therebetween when said belt is firmly secured in the encircled and fastened condition, and
the article secured to said bracket member connector means being suspended and supported by said bracket member.

5,301,912

ADJUSTABLE AND MOVABLE HOOK STRUCTURE

Shou-Hwa Chang, P.O. Box 96-405, Taipei 10098, Taiwan

Filed Oct. 16, 1992, Ser. No. 962,248
Int. Cl.[5] F16B *45/00*
U.S. Cl. 248—221.3 **3 Claims**



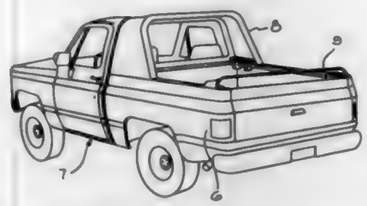
1. An adjustable and movable hook structure comprising:
a base block being a thick slab with a top side and a front side and having a round rod hole on the front side thereof, and having a screw hole on the top side adjacent the front side; said screw hole being in communication with said round rod hole;
a hook stem having a front end and a rear end;
a click stop assembly being mounted in said screw hole to be engaged with said hook stem so as to provide said hook stem with a positioning function; and
said hook structure characterized in that said hook stem being a solid round rod to fit in said round hole of said base block; the front end of said hook stem having a hook-shaped section; said hook stem having a groove side which including a plurality of positioning grooves and guide flats; the rear end of said hook stem being a round stub to fit in said round rod hole; a vertical stop being furnished between said round stub and said groove side.

5,301,913

MOUNTING CLAMP FOR PICK-UP TRUCK BEDS

Donald G. Wheatley, 4451 Ford Rd., Ann Arbor, Mich. 48105

Filed Jan. 29, 1993, Ser. No. 10,852
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231.4 **27 Claims**



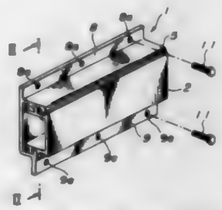
1. A clamp comprising:
a first member having a first clamping surface and a pair of spaced legs extending in a direction generally normal to said first clamping surface and being laterally offset from said first clamping surface, said pair of spaced legs forming a receiving pocket therebetween closed at one end and having a longitudinal axis generally normal to said first clamping surface;
a second member having a second clamping surface and a single leg extending in a direction generally normal to said second clamping surface, said single leg being laterally offset from said second clamping surface and said second leg being insertable into said receiving pocket formed in said first member, whereby said clamping surfaces are oppositely positioned from each other when said single leg is inserted into said receiving pocket;
means forming contact between said single leg and each leg of said pair of legs forming said receiving pocket to maintain alignment of said second member relative to said first member; and
threaded fastener means extending between said first and second members to couple said members together and constituting means upon rotation for moving said single leg relative to said pair of legs to alter the spacing between said clamping surfaces and to hold said clamping surfaces in desired positions relative to one another whereby said clamp can be used to attach two or more objects together between said clamping surfaces or said clamp can be mounted to a single object positioned between said clamping surfaces.

5,301,914

SEAT SLIDE DEVICE

Tomonori Yoshida, and Moriyuki Eguchi, both of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Feb. 24, 1993, Ser. No. 21,960
Claims priority, application Japan, Feb. 25, 1992, 4-17382[U]
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—430 **5 Claims**



1. A seat slide device, for an automotive vehicle which supports a seat to be slidably movable in front and aft direction, said seat slide device comprising:
a seat rail connected to the seat;

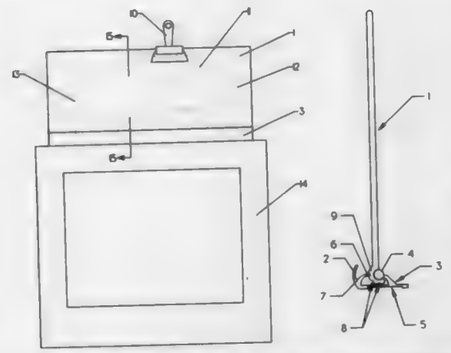
a floor rail slidably engaged with said seat rail;
bearings disposed between an end portion of said seat rail and an end portion of said floor rail such that the bearings are surrounded by a projection of said seat rail and a guide of said floor rail; and
a bracket integrally connected to said floor rail, said bracket vertically extending from said floor rail and being fittingly fixed to a vehicle body of the automotive vehicle.

5,301,915

COMPUTER NOTE HOLDER BOARD

Douglas E. Bahniuk, Cleveland Heights, and Dominic Valentino, Cleveland, both of Ohio, assignors to Adelsys, Inc., Cleveland Heights, Ohio

Filed Oct. 1, 1992, Ser. No. 955,030
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—452 **7 Claims**



1. A note holder board adapted to hold note papers adjacent to an office machine comprising in combination:
(a) a support means to be secured adjacently to a monitor screen;
(b) an extending panel, connected to said support means, having a surface allowing attachment of self-adhering note papers;
(c) means to provide pivotable movement of said extending panel at one end thereof, comprising of a resiliently biased holding apparatus to maintain angle adjustment of said extending panel, and to permit said extending panel to be pivotally moved to various angles in relation to said support means; and
(d) means to hold papers without adhesives or mechanical fasteners.

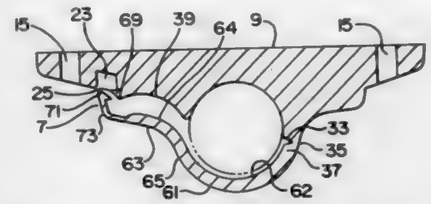
5,301,916

VEHICULAR MIRROR CLAMPING BRACKET

William P. Schmidt, Rockwood, and Franklin D. Hutchinson, New Boston, both of Mich.

Continuation-in-part of Ser. No. 419,213, Oct. 10, 1989, Pat. No. 5,106,049. This application Feb. 28, 1992, Ser. No. 843,508
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] B60R *1/00*
U.S. Cl. 248—475.1 **10 Claims**

1. A vehicular mirror clamping bracket for clamping tubular supports, said vehicular clamping bracket comprising:
(a) a base, the base having a latch side and an hinge side, the base having a radially shaped concave channel formed therein proximate the latch side, the concave channel having a first radius of curvature;
(b) a clamp, the clamp having a hinge side and a hook side, the hinge side of the clamp being integrally formed with the hinge side of the base, the clamp having a radially shaped convex portion proximate the hook side, the radially shaped convex portion having a second radius of curvature, the second radius being different than the first radius of curvature, the convex portion being seatable within the concave channel;
(c) means for opening and closing the clamp;
(d) means for latching the bracket; and



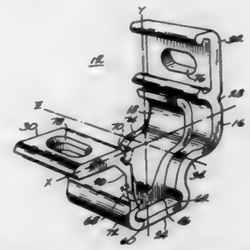
wherein the base and the clamp cooperate to define a unit, the unit having a throughbore therein and, upon latching the clamp to the base, of the convex portion and the concave channel are in a spaced part relationship such that a continuous torque is maintained on the tubular support.

5,301,917

BRAKE LINE ISOLATOR

Edward P. Dyer, Germantown, Wis., assignor to Tyton Corporation, Milwaukee, Wis.

Filed Nov. 23, 1992, Ser. No. 980,609
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.2 **14 Claims**



1. A bracket for holding elongated element means comprising, in combination,
a clip member and a liner nested within the clip member, said clip member including;
a generally U-shaped base having a clip web and first and second relatively spaced clip legs extending from said clip web,
a receiving member attached to and extending laterally from an area of said first clip leg and away from said second clip leg,
said second clip leg extending beyond said area from which said receiving member extends from said first clip leg and terminating in a locking member,
said second leg including a first flexible portion about which said second leg can be folded over said clip web of said U-shaped base to engage said locking member with said receiving member and
means on said locking member and said receiving member forming an interlock to hold said locking member in engagement with said receiving member,
said liner mountable between said first and second clip legs and being generally U-shape including a liner web in engagement with said clip member web and first and second liner legs extending from said clip web along said clip member first and second clip legs,
the one of said liner legs extending along said first clip mem-

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ber leg having a terminal end terminating short of said area of said first clip member leg from which said receiving member extends and

said other liner member leg having an extension that projects beyond said terminal end of said one liner member leg and terminating short of said locking member of said second clip leg and being flexible with said second locking member leg to fold therewith into engagement with said terminal end of said first liner leg to define an elongated element receiving space,

whereby said liner extension and said locking member are movable between a first position whereby both define an open end spaced from their respective web portions for receipt of elongated elements in said liner and a second position closing said first and second open ends of said U's to hold said elongated element means captive in said liner elongated element receiving space.

5,301,918

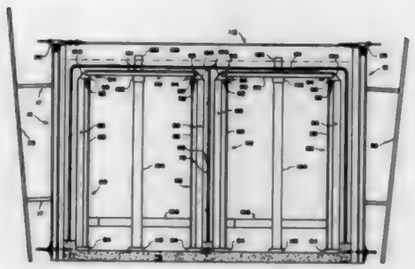
FORM ASSEMBLY FOR CONSTRUCTION OF CONCRETE CULVERTS

C. B. Miller, 205 Lakin Dr., Huntsville, Ala. 35801

Filed Jan. 6, 1992, Ser. No. 817,382

Int. Cl.[5] E04G *9/00*

U.S. Cl. 249—11 **11 Claims**



1. A form system for construction in an excavation of a concrete culvert having an inner cavity comprising:

a for assembly comprising:

first and second spaced, vertical, opposite frame members on opposite sides of said cavity, each having an inner and outer side,

first and second form members supported by said inner sides of said first and second frame members, respectively, and the combination of one said form member and its supporting frame member being a frame assembly,

a plurality of spaced openings in a lower region of each of said form members,

a concrete anchor positioned in each of said openings removably supporting each said form member and extending inward in said cavity such that when a lower region of liquid concrete is poured, aid anchors are submerged in liquid concrete and anchored therein after said concrete is hardened, initially securing a lower region of said first and second form members to sides of said lower region of concrete;

a protective wall spaced outward from each said frame assembly and forming a human passageway between said frame assembly and said protective wall; and

a plurality of supporting members, each being attached between a said frame assembly and a said protective wall, and positioning each said protective wall in a taper increasing in spacing with respect to a said frame assembly as a function height and being supported from said lower region of concrete, through said concrete anchors, and enabling maximum personal protection for workers.

5,301,919

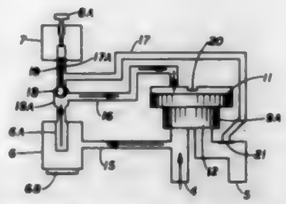
SPRINKLER VALVE

Gordon H. May, 3261 Woodleigh La., Cameron Park, Calif. 95682

Continuation-in-part of Ser. No. 762,565, Sep. 18, 1991, Pat. No. 5,195,718. This application Sep. 17, 1992, Ser. No. 947,047

Int. Cl.[5] F16K *31/02, 31/126*

U.S. Cl. 251—30.02 **11 Claims**



1. A diaphragm assembly for use in a sprinkler valve with an inlet port, an outlet port, a flapper valve, a fluid flow blocking means in a fluid flow blocking means chamber, a solenoid connected to a solenoid plunger which solenoid plunger may contact the fluid flow blocking means, a gasket, a passageway connecting the outlet port to the fluid flow blocking means chamber, a passageway connecting the inlet port to the fluid flow blocking means chamber, and a passageway connecting a top surface of an upper diaphragm of the diaphragm assembly to the fluid flow blocking means chamber which diaphragm assembly comprises a support ring in which are concentrically mounted a spool, a stop on top of the spool, the upper diaphragm beneath the stop and around the spool, and a lower diaphragm beneath the upper diaphragm and around the spool, and in which the surface area of the upper diaphragm is greater than the surface area of the lower diaphragm and in which sprinkler valve the upper diaphragm is part of the gasket and in which sprinkler valve the flapper valve is located in such a manner that fluid flow from the outlet port of the sprinkler valve in the direction of the fluid flow blocking means chamber closes the flapper valve and stops fluid from flowing from the outlet port to the passageway from the outlet port to the fluid flow blocking means chamber and which flapper valve is located in such a manner that fluid pressure at the outlet port is not applied to the top of the upper diaphragm and which sprinkler valve is controlled by application of fluid pressure at the inlet port of the valve to the diaphragms.

5,301,920

HIGH-SPEED SOLENOID VALVE APPARATUS

Nobuhiko Ichiki, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01145, § 371 Date Jan. 28, 1991, § 102(e) Date Jan. 28, 1991, PCT Pub. No. WO91/03672, PCT Pub. Date Mar. 21, 1991

Continuation of Ser. No. 646,721, Jan. 28, 1991, abandoned. This PCT application Sep. 6, 1990, Ser. No. 27,091

Claims priority, application Japan, Sep. 6, 1989, 1-229202

Int. Cl.[5] F16K *31/06, 31/40*

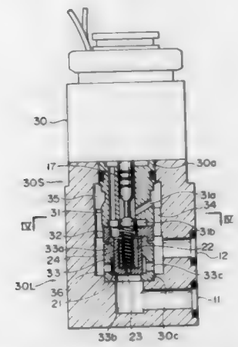
U.S. Cl. 251—30.04 **5 Claims**

1. In a high-speed solenoid valve apparatus that is ON-OFF-controlled by a digital electrical signal comprising a body having a body inlet port, a body outlet port, and an inner wall, and a high-speed solenoid valve section and a logic valve section both disposed in said body,

wherein said high-speed solenoid valve section comprises a solenoid valve outlet port communicating with said body outlet port, a solenoid valve sleeve having an end portion formed with a solenoid valve inlet port and having a first end surface surrounding said solenoid valve inlet port, and a spool for opening and closing a communication path between said solenoid valve inlet port and said solenoid valve outlet port at a high speed in response to said digital electrical signal, said spool having a stem axially movably situated in said solenoid valve sleeve and a valve body integral with said stem situated in said solenoid valve inlet port outside of said solenoid valve sleeve,

wherein said logic valve section comprises a logic valve sleeve guided and supported by the inner wall of said body, said logic valve sleeve having a logic valve inlet port formed in one of opposed ends thereof remote from said solenoid valve sleeve and communicating with said body inlet port and a logic valve outlet port communicating with said body outlet port, the other end of said logic valve sleeve facing said solenoid valve sleeve and having a second end surface with an opening therein, a poppet axially movably disposed within said logic valve sleeve and having an end portion for opening and closing a communication path between said logic valve inlet port and said logic valve outlet port, and a control chamber formed in said poppet and communicating with said logic valve inlet port via a small-diameter penetration hole formed in a wall of said end portion of the poppet, and

wherein said high-speed solenoid valve section and logic valve section comprises as common elements thereof a common return spring for applying a force in a valve closing direction to said spool and said poppet, and a plate disposed between said end portion of said solenoid valve sleeve and said logic valve sleeve and functioning as a common stopper for said spool and poppet moving in their



valve opening directions, said stopper plate having opposed third and fourth end surfaces facing said first and second end surfaces, respectively, and a central opening through which said control chamber communicates with said solenoid valve inlet port and said common return spring having opposed ends one of which extends through said central opening of the stopper plate and abuts with said valve body of the spool and the other of which extends in said control chamber and abuts with an inner surface of the end wall of said poppet, the improvement

wherein the inner wall of said body includes a guide portion by which said solenoid valve sleeve end portion is directly guided and supported, said third end surface includes a flat surface portion with which said first end surface is in surface-to-surface contact in a plane, said fourth end surface includes an inner circumferential recessed portion, and said second end surface includes an inner circumferential projecting portion fitted with said inner circumferential recessed portion to position said plate on said logic valve sleeve, so that said solenoid valve sleeve, said plate and said logic valve sleeve are disposed in said body in closely stacked relation,

wherein said inner recessed portion of the fourth end surface includes an outer surface portion with which said projecting portion of the second end surface abuts and an inner surface portion flush with said outer surface portion and functions as a stopper surface for said poppet, and

wherein said solenoid valve outlet port is directly formed in said solenoid valve sleeve and said guide portion of the inner wall is formed with grooves through which said solenoid valve outlet port is placed in communication with said body outlet port.

5,301,921

PROPORTIONAL ELECTROPNEUMATIC SOLENOID-CONTROLLED VALVE

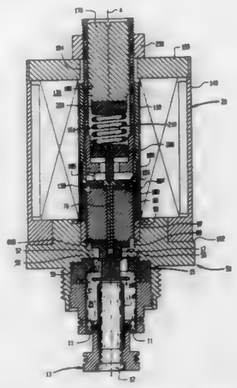
Viraraghavan S. Kumar, Palm Bay, Fla., assignor to Puritan-Bennett Corp., Kans.

Continuation of Ser. No. 360,429, Jun. 2, 1989, Pat. No. 4,954,799. This application Aug. 31, 1990, Ser. No. 575,943

The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.

Int. Cl.[5] F16K *31/06;* H01F *7/13*

U.S. Cl. 251—129.08 **17 Claims**



1. A rectilinear motion proportional solenoid device comprising:

a housing containing an electromagnetic coil, having a longitudinal axis and a bore coaxial therewith, for producing a magnetic field, said housing containing magnetic material for providing a flux path for said magnetic field;

a magnetic pole piece disposed within the bore of said electromagnetic coil;

a movable armature assembly of magnetic material;

suspension spring means within said bore for supporting said movable armature within said bore adjacent to one end of said magnetic pole piece for axial movement within said electromagnetic coil, so that an axial gap is formed between a first portion of said armature assembly and said magnetic pole piece and a radial gap is formed between a second portion of said armature assembly and a first portion of said housing; means for causing the force imparted to said movable armature by the application of a current to said electromagnetic coil to be substantially constant irrespective of the magnitude of said second gap for a variation in said second gap over a prescribed range; and

a fluid valve assembly having an inlet port, an outlet port, and valve means, coupled between said inlet port and said outlet port, and being coupled to said armature assembly, for controlling fluid continuity between said inlet port and said outlet port in accordance with the movement of said armature assembly in response to the application of electrical current to said electromagnetic coil.

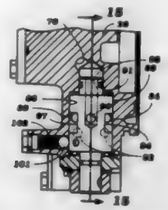
VOL 1161 ISS 2 APR 12 1994 UMI

5,301,922

CHANGE-OVER VALVE MEANS FOR A HYDRAULIC CLUTCH OF THE MARINE PROPULSION UNIT

Kenichi Hayasaka, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 4, 1991, Ser. No. 771,749
Claims priority, application Japan, Oct. 5, 1990, 2-266373; Oct. 5, 1990, 2-266374
Int. Cl.[5] F16K *39/06*
U.S. Cl. 251—283 6 Claims



1. A rotary type plug valve for a hydraulic system comprising a valve housing defining a cylindrical bore, a valve element having a cylindrical portion journalled within said bore by means including thrust bearing means for taking axial thrust on said valve element, said valve element having an end portion thereof with a reduced diameter cylindrical portion received in a complimentary reduced diameter cylindrical bore of said valve housing, means for admitting fluid under pressure to said smaller diameter housing bore portion and to an axially extending passage formed in said reduced diameter portion of said valve element and terminating in the large diameter cylindrical portion thereof, and a delivery port extending radially through said larger diameter portion and intersecting said axially extending passage.

5,301,923

GREASE-SEALED ROLLING CONTACT BEARING

Mitsunari Asao, Suzuki; Osamu Hirano, and Hidenobu Mikami, both of Kuwana, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 6,796
Claims priority, application Japan, Jan. 22, 1992, 4-9329; Jun. 30, 1992, 4-173093
Int. Cl.[5] C10M *115/08*
U.S. Cl. 252—12.002 1 Claim

1. A grease-sealed rolling contact bearing having sealed therein a grease composition comprising a base oil which is a mixture of an alkyldiphenylether oil and a poly-α-olefin oil in the weight ratio of between 20:80 and 80:20, 5–40% by weight of a thickening agent which is at least one of an aromatic diurea compound and an aromatic urea-urethane compound, a passivation oxidizing agent and an organic sulfonate.

5,301,924

ARROWHEAD PULLER

Fred O. Kammerer, Chestnut Dr. - Box 389, Purdys, N.Y. 10578

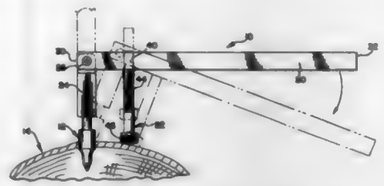
Filed Apr. 16, 1993, Ser. No. 49,090
Int. Cl.[5] B66F *3/00*
U.S. Cl. 254—131 4 Claims

1. An arrowhead puller for pulling an arrowhead having a threaded shank from a wooden object with a leverage force-multiplying action, the arrowhead puller comprising

(a) an elongate handle having a working end and a gripping end, the handle having a tapped hole located between the working and gripping ends, the tapped hole being closer to the working end and farther from the gripping end,

(b) a bolt having a shank with a threaded portion threaded into the tapped hole, the bolt having a head providing a fulcrum, and

(c) an end piece having a tapped socket adapted threadedly to receive the threaded shank of an arrowhead, the end piece being hinged to the handle, near the working end, so as to permit relative movement of the handle and the end piece through a range of relative positions including rela-



tive positions wherein the handle is generally aligned with the tapped socket and relative positions wherein the handle is perpendicular to the tapped socket.

5,301,925

DEPRESSED WATERWAY FENCE AND METHOD OF USE THEREOF

Eric Carlson, Rte. 2, Box 65, Ottumwa, Iowa 52501

Filed Oct. 26, 1992, Ser. No. 966,420
Int. Cl.[5] E01F *7/00*; E04H *17/14*
U.S. Cl. 256—13 13 Claims



4. A fence for a depressed waterway, comprising,

a pair of anchor posts on opposite sides of said waterway, at least one ground anchor between said anchor posts,

fence wire extending between said anchor posts and over said ground anchors,

a vertical post secured to said wire and suspended by said wire above said ground anchor; said vertical post having a lower end detachably secured to said ground anchor so that the lower end of said vertical post will disengage said ground anchor and will tilt on said wires in a down stream direction when encountered by debris under flooded conditions.

5,301,926

PREFABRICATED SIMULATED WROUGHT IRON AND LIKE FENCING SYSTEMS AND METHODS

Ivan Sharp, 5413 N. 3100 West, Amalga, Utah 84335

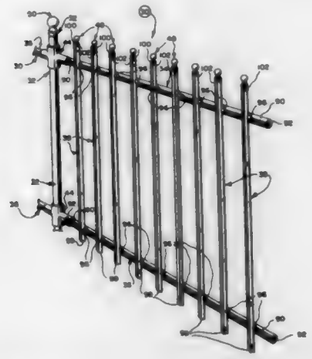
Division of Ser. No. 645,164, Jan. 24, 1991, Pat. No. 5,192,054. This application Aug. 7, 1992, Ser. No. 926,734
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—24 17 Claims

1. Fencing apparatus comprising:

at least two spaced load-bearing vertically-extending columns, each column being fixedly anchored at the lower end so as to be stationary and vertically erect;

a unitary vertically erect fence section spanning between and solely supported above the ground by the two columns, the fence section comprising a plurality of spaced elongated vertical members each connected to upper and lower horizontal members of fixed non-extendable length, each horizontal member comprising opposed ends extending beyond any vertical member;

a dimensionally fixed torque transferring clamp connectors interposed between each column and an adjacent end of each horizontal member and comprising a concave portion contiguously circumferentially surrounding the exterior of the associated erect column in alignment with each end of each horizontal member, each clamp connector comprising opposed contoured clamshell halves free of fastener-receiving flanges and contiguously collectively surrounding the end of the associated horizontal member, the clamshell being secured by a releasable fastener passing through the clamshell and the one end of the associated horizontal member the clamshell halves collectively defining wall parts defining a vertically-extending bore



through which the column vertically passes in clamped, load-transfer relation, and (b) wall parts defining a horizontally-extending blind bore one end of which abuts the column, the wall parts defining the blind bore surroundingly receiving the end of the associated horizontal member in a cantilevered relation whereby weight of the fence section is transferred to the clamshell halves, as a moment load imposed at the wall parts defining the blind bore and thence across the clamshell halves at the wall parts defining the vertically-extending bore to the column and thence along the vertical column, as a vertically-directed compression load.

5,301,927

METHOD OF MAKING CONCRETE SWITCH CROSS TIES

Frithjof Schimpff, Wiesbaden, Fed. Rep. of Germany, assignor to Wayss & Freytag Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 865,210, Apr. 8, 1992, Pat. No. 5,227,112, which is a continuation-in-part of Ser. No. 434,683, Oct. 5, 1989, Pat. No. 5,124,093. This application Feb. 16, 1993, Ser. No. 18,009
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1988, 3823860
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] B28B *1/14, 13/06, 25/00*; B29C *33/40*
U.S. Cl. 264—40.1 6 Claims

1. A method of making a concrete switch cross tie, the method comprising the steps of sequentially:

a) forming in a base plate of a mold a multiplicity of holes in a regular pattern;

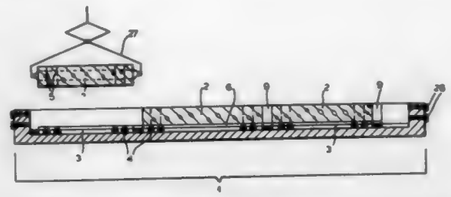
b) blocking each of the holes with a respective temporary covering;

c) unblocking all of the holes corresponding to a particular switch cross tie;

d) providing on the base plate at each of the unblocked holes an anchor;

e) filling the mold with concrete on the base plate over and around the anchors;

f) setting the concrete; and



g) removing the set concrete and the anchors from the mold as a tie with anchors imbedded in the tie at locations corresponding to the unblocked holes.

5,301,928

BLOWING LANCE SUSPENSION WITH INTEGRATED MEDIUM SUPPLY

Hubert Stomp, Luxembourg-Howald; Andre Kremer, Leudelange, both of Luxembourg; Daniel Fries, Arlon, Belgium, and Marc Reichert, Schifflange, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jan. 19, 1993, Ser. No. 4,896
Claims priority, application Luxembourg, Jan. 25, 1992, LU 88 057
Int. Cl.[5] C21C *5/46*
U.S. Cl. 266—225 9 Claims

1. Blowing lance suspension with integrated medium supply for mounting a metallurgical blowing lance on a lance carriage comprising:

a lance carriage comprising a medium collector box forming a fork-shaped carrier arm for the lance, a top carrier plate on said medium collector box, said top carrier plate having a substantially horizontal carrier connection surface at its upperside and first medium connections opening in said carrier connection surface; and

a lance including on its top end a lance head plate having a lance connection surface, perpendicular to the longitudinal axis of the lance, at its underside and second medium connections opening in said lance connection surface, said lance connection surface lying on said carrier connection surface and said first medium connections cooperating with and corresponding to said second medium connections, when the lance is supported on the medium collector.

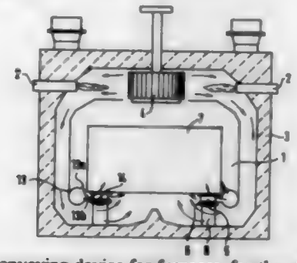
VOL 1161 ISS 2 APR 12 1994 UMI

5,301,929

CONVEYING DEVICE FOR PUSH-TYPE OR CONTINUOUS-HEATING FURNACES

Rudolf Pflanz, Singen, and Franz Engelberg, Konstanz, both of Fed. Rep. of Germany, assignors to Gantschi Electro-Fours SA, Taegerwilen, Switzerland

Filed Nov. 19, 1992, Ser. No. 978,633
Claims priority, application Switzerland, Nov. 21, 1991, 3414/91
Int. Cl.[5] F27D 5/00
U.S. Cl. 266—252 17 Claims



1. In a conveying device for furnaces, for the gliding transport through the furnace of material to be annealed which is supported on at least one crosshead shoe having an approximately U-shaped cross section with downwardly projecting legs for the laterally guided support of the crosshead shoe on rails or on guide rails arranged on said rails, wherein glide elements for improving the gliding capability between the crosshead shoe and the rails are provided on one of the inner crosshead surface of the crosshead shoe and the rails, the improvement comprising means for resisting breakage of said glide elements, including one of: (1) the glide surfaces of the glide elements being rounded, (2) the glide surfaces being downwardly inclined in the area of their lateral edges, (3) the edges enclosing the glide surfaces being associated with one another in obtuse angles, and (4) the edges enclosing the guide surfaces being at least partly circular.

5,301,930

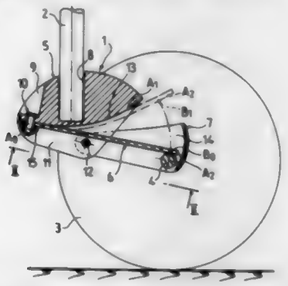
Patent Not Issued For This Number

5,301,931

SUSPENSION DEVICE FOR A PERAMBULATOR, COMPRISING A COMPOSITE STRIP OF VARIABLE STIFFNESS

Jean Bigo, Cholet, France, assignor to Ampafrance S.A., Boulogne-Billancourt, France

Filed Jul. 15, 1992, Ser. No. 913,453
Claims priority, application France, Jul. 15, 1991, 91 08894
Int. Cl.[5] B60G 11/107; B62B 7/00
U.S. Cl. 267—5 15 Claims



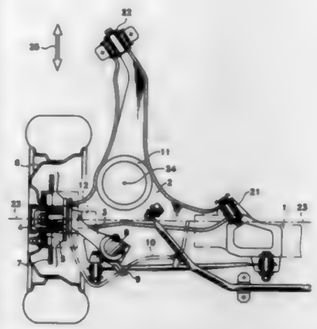
1. A perambulator having a frame and at least four wheels, each mounted on a wheel axle, at least two of said wheel axles being connected to said frame by suspension devices, each suspension device comprising:
a body secured to said frame and having a rounded contacting surface, said body including a pin;
a strip spring having a first end secured to said body at a securing point and a second, free and unsecured end opposite to said first end which bears freely against said wheel axle; and
a movable support assembly mounted for rotation on said pin of said body and which is mounted on said wheel axle, said pin being located between said securing point of said strip spring and said wheel axle wherein in use of the perambulator a downward force exerted on said body bends said strip spring so as to bear on said rounded contacting surface.

5,301,932

VEHICULAR STRUT TYPE SUSPENSION

Takao Shibaya, Hamamatsu, Japan, assignor to Suzuki Motore Corp., Shizuoka, Japan

Continuation-in-part of Ser. No. 613,937, Oct. 26, 1990, abandoned, which is a continuation of Ser. No. 333,692, Apr. 4, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 863,339
Claims priority, application Japan, Jul. 15, 1988, 63-176491
Int. Cl.[5] B60G 15/00
U.S. Cl. 267—221 8 Claims



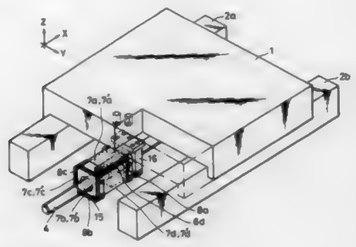
1. A vehicular strut type suspension, comprising:
a wheel;
a non driven vehicle wheel spindle having a spindle axis;
a knuckle connected to said spindle at one end and having another end, said knuckle extending at an angle with respect to said spindle axis, said another end of said knuckle being positioned rearwardly of said spindle axis and inwardly from said wheel;
a hub supported by said spindle;
a disk brake assembly supported by said hub including a disk brake rotor mounted with respect to said spindle, inwardly of said wheel, and a disk brake actuator also disposed inwardly of said wheel on an upper most end of said disk rotor;
a strut connected to said another end of said knuckle;
a coil spring disposed at an opposite side of said spindle axis from said strut, said coil spring being disposed at an offset position from said spindle axis and extending substantially vertically, said substantially vertically extending strut and said substantially vertically extending coil defining an access region between said strut and said coil, substantially equal to a width of the disc brake actuator said access region being located directly adjacent said upper most end part of said disk rotor on said inward side of said wheel.

5,301,933

SAMPLE MOVING DEVICE

Mitsuru Inoue, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 961,040, Oct. 14, 1992, abandoned, which is a continuation of Ser. No. 659,088, Feb. 22, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,225
Claims priority, application Japan, Feb. 27, 1990, 2-047850
Int. Cl.[5] B23Q 3/18
U.S. Cl. 269—73 7 Claims



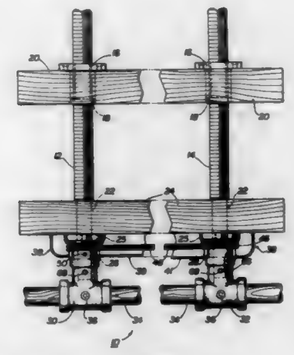
1. A moving device, comprising:
a movable table;
a driving mechanism having a screw and a nut for converting a rotational movement to a linear movement;
at least one set of parallel leaf springs for connecting said movable table with said nut, said parallel leaf springs absorbing a displacement of said nut relative to said movable table in a direction other than the movement direction of said nut; and
an oscillation-damping material being disposed between said parallel leaf springs and damping displacement of said nut relative to said movable table in a direction other than the movement direction of said nut.

5,301,934

TWIN SCREW VISE

John S. Lynn, Ottawa; Francis A. McLean, Oxford Station; Edwin C. Tucker, Ottawa; Lloyd Sevack, Nepean; Gary W. Lacoste, Almonte; Timothy C. Frank, Ottawa; Michel Perrier, Orleans, and Leonard G. Lee, Ottawa, all of Canada, assignors to Lee Valley Tools Ltd., Ottawa, Canada

Filed Aug. 10, 1992, Ser. No. 927,326
Int. Cl.[5] B23Q 1/04
U.S. Cl. 269—222 6 Claims



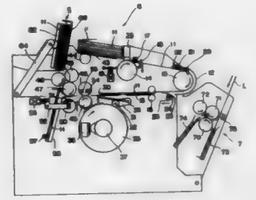
1. A twin screw vise, comprising:
(a) two vise screws positioned to move
(b) a vise jaw relative to
(c) a fixed member,
(d) a first sprocket journaled on and fixable to one of the vise screws,
(e) a second sprocket journaled to freely rotate on the other vise screw,
(f) a means for coupling the second sprocket to the other vise screw in at least one predetermined rotational position, comprising a spring-loaded, retractable pin positioned in and protruding from one of
(i) the second sprocket or
(ii) the tee fixture secured to the other vise screw
so that the pin may be received within a depression in the other of
(i) the second sprocket or
(ii) the tee fixture secured to the other vise screw
when the pin is not retracted,
(g) a chain coupling the two sprockets so they will rotate in synchronism, and
(h) two tee-fixtures, one of which is secured to each vise screw adjacent to the sprocket journaled on the respective vise screw.

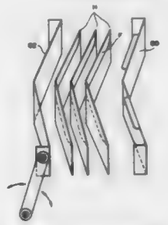
5,301,935

APPARATUS FOR INSERTING AND SEALING ENVELOPES WITH TEMPORARY STORAGE POCKET

Toshio Miki; Masato Takeda, and Yoshiyuki Ishikura, all of Komae, Japan, assignors to Duplo Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,370
Claims priority, application Japan, Jul. 15, 1991, 3-201249; Jul. 15, 1991, 3-201250
Int. Cl.[5] B42C 1/00; B65B 1/00
U.S. Cl. 270—45 4 Claims





1. An enclosing and sealing apparatus comprising:
a hopper portion in which a plurality of envelopes each of which has a flap and a gummed portion thereon, are held;
a content-inserting portion in which a content is inserted into said envelope;
a guide means for guiding said envelope moving from said hopper portion to said content-inserting portion along an envelope-moving path;
a reverse roller disposed in said envelope-moving path for turning over said envelope-moving path;
a flap unfolding member disposed in the course of said moving path for unfolding the flap of said envelope when said envelope passes therethrough;
an expanding means for advancing into the inside from the opening of said envelope staying at said content-inserting portion and expanding said opening;
a paper-folding means for folding a content and inserting

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said folded content into said envelope with its opening being spread out by said expanding member; and

a sealing means for damping the gummed portion on the flap of said envelope and closing said flap;

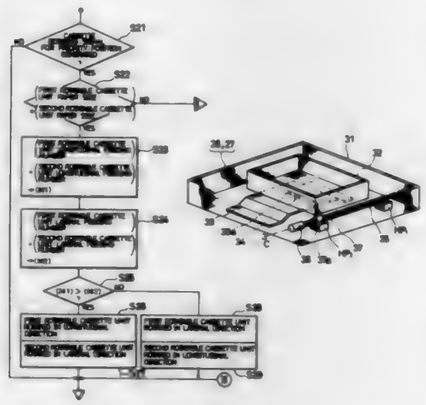
said sealing means comprising a pocket for temporarily storing said envelopes, a conveyer roller for sending out said envelope from said inserting portion toward said pocket, a damping member for damping said gummed portion on the flap of said envelope being driven by said conveyor roller, a discharge roller for sending out said envelope from said pocket, and a sealing member for sealing said opening by folding said flap of said envelope being sent by said discharge roller.

5,301,936

FEEDING DEVICE AND METHOD FOR DETERMINING FEEDING POSITION BY FEEDING NUMBER IN BOTH A LONGITUDINAL AND LATERAL POSITION

Manabu Matsumoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 920,820
Claims priority, application Japan, Jul. 30, 1991, 3-189782
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 **19 Claims**



1. A feeding device comprising:

paper storing means rotatable between a longitudinal feed position from which paper is fed in a longitudinal direction and a lateral feed position from which the paper is fed in a lateral direction;

rotation drive means for rotating said paper storing means to the longitudinal position or to the lateral position;

feeding number memory means for storing feeding numbers in the longitudinal direction and the lateral direction from said paper storing means; and

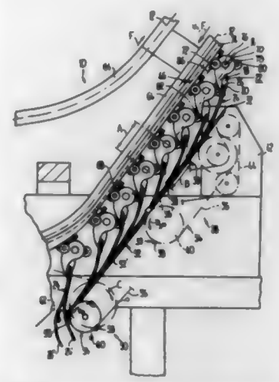
control means for determining a priority feed direction based on the feeding numbers stored in said feeding number memory means and controlling said rotation drive means so as to rotate said paper storing means in the priority feed direction.

5,301,937

METHOD AND APPARATUS FOR PROCESSING PRINTED PRODUCTS

Egon Hansch, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 8, 1992, Ser. No. 895,081
Claims priority, application Switzerland, Jun. 10, 1991, 01725/91-6
Int. Cl.[5] B65H *29/04*
U.S. Cl. 271—204 **30 Claims**



1. A method of processing folded printed products, the method comprising the steps of:

providing a conveying device having a plurality of individually controllable grippers arranged at a fixed distance one after the other, the grippers having a mouth and moving in a conveying direction;

driving the grippers in circulation;

providing a straightening mechanism, the straightening mechanism comprising a plurality of straightening cams interacting in each case with a gripper, the straightening cams arranged on a traction element;

driving the traction element in circulation and along a substantially rectilinear strand substantially parallel to the conveying device;

holding the printed products in the mouth of the individually controllable grippers, the printed products being held at a first edge which runs transversely to the conveying direction;

conveying the printed products at a conveying speed in the conveying direction with the grippers;

at least partially opening the mouth of the grippers;

displacing the printed products in the mouth of the grippers when the grippers are at least partially opened;

after the printed products are displaced in the mouth of the grippers, bringing the printed products to rest such that the second edge opposite the first edge rests on the straightening mechanism;

leading the second edge of the printed products relative to the first edge of the printed products;

driving the straightening mechanism at a lower speed than the conveying speed to thrust the printed products towards the interior of the mouth of the grippers;

leading the corresponding straightening cams in the conveying direction relative to the grippers;

arranging the straightening cams such that the distance between successive straightening cams is smaller than the distance between the grippers;

driving the straightening cam at a lower speed than the grippers such that the distance between the relevant grippers and straightening cams, seen in the conveying direction, corresponds at the end of the strand of the straighten-

ing device to a reference distance corresponding to the positioning of the printed products; and

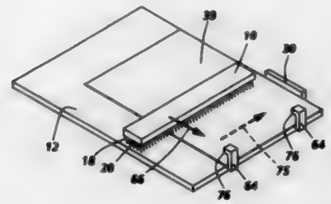
after the printed products are thrust towards the interior of the mouth of the grippers, closing the grippers to further transport the printed products.

5,301,938

APPARATUS FOR GRIPPING AND REGISTERING SHEETS

Cindy L. Casper, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1992, Ser. No. 991,923
Int. Cl.[5] B65H *9/04*
U.S. Cl. 271—245 **5 Claims**



1. A sheet registration and gripping device for sheets transported by sheet handling apparatus comprising:

a sheet registration edge including a first surface for registering the transported sheets, and a second surface substantially perpendicular to the first surface;

a gripping surface positioned proximate to said registration edge; and

first means for moving said registration edge from a first position for registering sheets against said first surface to a second position for engaging sheets by said second surface and gripping sheets between said gripping surface and said second surface;

second means for moving said registration edge to a third position locating said first and said second surfaces remote from said gripping surface to enable sheets to be transported past said first surface and said second surface, said first moving means and said second moving means include means for resiliently urging said registration edge selectively to said first position, said second position, and said third position, and a camming device for moving said registration edge in a direction opposite to the direction of movement urged by said resilient means, said camming device is a cam which defines a track having said registration edge disposed therein.

5,301,939

BASKETBALL SAFETY FUNNEL

Cecil L. Ellsworth, 131 West 200 North, Hyrum, Utah 84319

Continuation-in-part of Ser. No. 653,617, Feb. 11, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,653
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **17 Claims**

1. A basketball apparatus for use with a basketball having a first diameter, said basketball apparatus comprising:

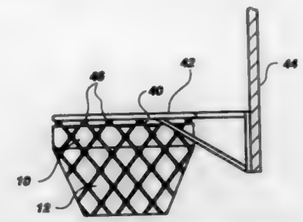
a circular basketball rim of a second diameter that is larger than the first diameter of the basketball, said rim having a plurality of attachment hooks depending therefrom;

a safety device attached to and depending from said attachment hooks of said rim, said safety device comprising a funnel-shaped annular body made of a transparent plastic material and having an upper edge and a lower edge;

said annular body having at said upper edge a third diameter substantially equal to said second diameter, a fourth diameter at said lower edge less than said third diameter and greater than said diameter of said basketball, said body tapering inwardly and downwardly from said upper edge to said lower edge;

a plurality of small openings formed through the material of said body adjacent said upper edge, said openings being sized and shaped to prevent insertion therein of any appendage of a person using said apparatus, said material of said body being otherwise imperforate; and

means for securing said body to said rim, said securing means passing through each of said small holes and secured to said hooks on said rim.

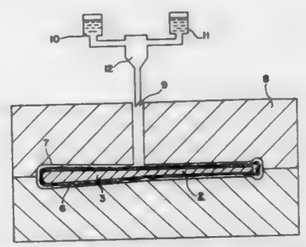


5,301,940

BASEBALL BAT AND PRODUCTION THEREOF

Takao Seki, Gifu, and Yasuo Sano, Osaka, both of Japan, assignors to Mizuno Corporation and Takeda Chemical Industries, Ltd., both of Osaka, Japan

Continuation of Ser. No. 793,956, Nov. 15, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,656
Claims priority, application Japan, Nov. 15, 1990, 2-310198
Int. Cl.[5] A63B *59/06*
U.S. Cl. 273—72 R **9 Claims**



1. A hollow baseball bat having a fiber reinforced outer layer which is formed by steps comprising:

preparing a core roughly in the form of a bat;

winding continuous reinforcing fibers in layers around the core to provide a preformed material wherein at least one of the layers is composed of a triaxial braid and wherein the fibers are used in an amount of 30–65% by weight based on the resultant bat;

placing the preformed material in a mold cavity;

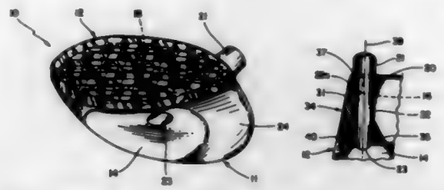
while evacuating the mold cavity, injecting thereinto a molding material which contains 2,2'-(1,3-phenylene)-bis-2-oxazoline and at least one polyfunctional compound selected from the group consisting of an aromatic diamine compound, a dibasic carboxylic acid and polyfunctional epoxy compound together with a catalyst and has a viscosity of not more than 100 centipoises when being injected thereby to impregnate the reinforcing fibers therewith;

curing the molding material in the mold cavity under heating and pressure to form a molded material composed of a fiber reinforced crosslinked resin; and

removing the core from the molded material.

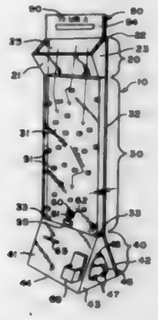
VOL 1161 ISS 2 AP 12 1994 UMI

5,301,941
GOLF CLUB HEAD WITH INCREASED RADIUS OF GYRATION AND FACE REINFORCEMENT
Dillis V. Allen, Elk Grove Village, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.
Filed May 13, 1992, Ser. No. 882,561
Int. Cl.[5] A63B *53/04*; B22D *19/00*
U.S. Cl. 273—78 **18 Claims**



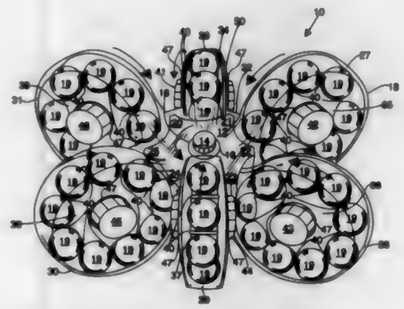
6. A golf club, comprising: a clubhead having a hosel receiving an elongated shaft, said clubhead being constructed of a metal alloy, said clubhead having a generally vertical impact supporting wall with a plurality of integral reinforcing bars projecting forwardly from the impact supporting face wall, and a face wall defining a ball striking surface integrally bonded to and covering a forward surface of the impact supporting face wall and at least portions of the integral reinforcing bars, said club head being a composite high impact golf clubhead, wherein the reinforcing bars form part of an "I" beam supporting structure for a composite impact wall, said face wall being formed over the supporting wall and constructed of a different material therefrom having a forward ball striking surface that together with the supporting wall define a composite ball striking wall having increased strength and improved ball striking performance, said reinforcing bars projecting from the supporting wall a distance less than 0.250 inches, and said face wall being formed between the interstices of the reinforcing bars and engaging the supporting wall to form an effective "I" beam composite forward ball striking wall having improved strength and weight characteristics.

5,301,942
COIN DROP AMUSEMENT GAME
William R. Lacrosse, 115 Coltridge Ct., Alpharetta, Ga. 30202
Filed Apr. 30, 1993, Ser. No. 54,305
Int. Cl.[5] A63F *7/02*
U.S. Cl. 273—138 R **20 Claims**



1. An amusement device of chance in the form of a receptacle comprising:
a) a mouth portion through which a coin may be dropped;
b) a central body portion extending downward from said mouth portion having a maze of pins and a coin rest pedestal disposed therein;
c) a base supporting the central body and mouth portions thereabove such that the coin rest pedestal is spaced above the bottom interior surface of the base; and,
d) wherein in use, a coin dropped anywhere along the mouth will come to rest either on the pedestal or continue travelling on to the bottom interior surface of the base.

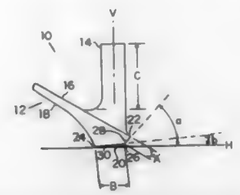
5,301,943
PUZZLE WITH A TOROIDAL CHANNEL ENGAGING A PLURALITY OF TOROIDAL RINGS PERPENDICULAR THERETO
Imre Asztalos, 283 Bay 17 St., Apt. 3C, Brooklyn, N.Y. 11214
Filed Oct. 1, 1992, Ser. No. 955,308
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—153 S **15 Claims**



1. A puzzle apparatus including:
a central closed loop channel;
a plurality of peripheral closed lop channels intersecting substantially perpendicularly with said central closed loop channel and in communication with said central closed loop channel, said peripheral closed loop channels being toroidal with a circular path and a circular cross section, and said central closed loop channel being toroidal with a circular path;
a plurality of spherical balls which travel within said central closed loop channel and said plurality of peripheral closed loop channels, said balls being provided in M groups of N balls each, each of M groups being a different color one from another, and wherein M is equal to the number of peripheral closed loop channels;
first means for urging said balls to traverse said central closed loop channel;
second means for urging said balls to traverse said peripheral closed loop channels;
wherein said balls travel a path including said central closed loop channel and said plurality of peripheral closed loop channels in response to said first and second means for urging.

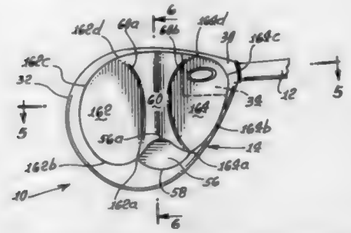
5,301,944
GOLF CLUB HEAD WITH IMPROVED SOLE
Terry B. Koehler, 122 Lehmann, Boerne, Tex. 78006
Filed Jan. 14, 1993, Ser. No. 4,530
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 A **21 Claims**

1. An improved club head for a golf club, the improved club head comprising:
a metal blade having a striking face, a heel portion and a toe portion and having a hosel to receive a shaft at the heel portion thereof, said metal blade having a rear surface opposite the striking face and a sole, the sole meeting the striking face along a leading edge and the rear surface along a trailing edge, the sole being comprised of a substantially flat leading edge portion and a trailing edge portion, the leading edge portion having a positive bounce angle thereto, the trailing edge portion also having a positive bounce angle thereto, which trailing edge portion



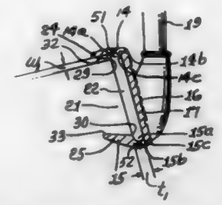
bounce angle is less than the bounce angle of said leading edge portion.

5,301,945
HOLLOW, METALLIC GOLF CLUB HEAD WITH RELIEVED SOLE AND DENDRITIC STRUCTURE
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Continuation of Ser. No. 819,379, Jan. 15, 1992, Pat. No. 5,240,252, which is a continuation-in-part of Ser. No. 791,322, Nov. 14, 1991, Pat. No. 5,180,166, which is a continuation of Ser. No. 595,963, Oct. 16, 1990, Pat. No. 5,067,715. This application Mar. 11, 1993, Ser. No. 29,553
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 A **28 Claims**



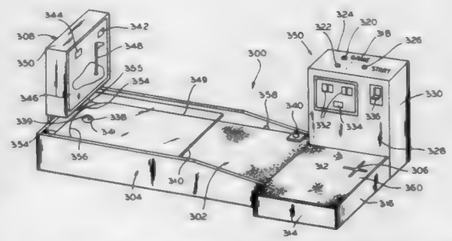
1. In a golf club head having a shell and defining top, bottom, front, rear, toe and heel walls, and a shell interior, the combination that includes:
a) the bottom wall having upwardly dished wall extent,
b) said upwardly dished wall extent having downwardly facing surface means inclined forwardly and upwardly relative to the head swing path as the bottom wall engages the turf, so that the turf moving relatively rearwardly engages said inclined surface means for creating lift force acting to urge the bottom wall and the head in an upward direction,
c) the head having a club shaft-receiving tube that extends within the shell interior and integrally connected with said dished wall extent,
d) said bottom wall also having a downward facing medial ridge which extends generally forwardly, said dished wall extent including two dished extents each defining a portion of said inclined surface means whereby upward lift forces are developed at opposite sides of said ridge,
e) said dished extents defining shallow recesses.

5,301,946
IRON GOLF CLUB HEAD WITH DUAL INTERSECTING RECESSES AND ASSOCIATED SLITS
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application Jan. 19, 1993, Ser. No. 999,250
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **25 Claims**



1. A golf club head having a hosel and a body defining a heel, toe, top wall, sole defining a bottom wall, and a front wall defining an upwardly and rearwardly inclined front face, and comprising
a) said body defining a forwardly extending main recess located rearwardly of said front wall,
b) and said body also defining an undercut recess located directly rearwardly of said front wall and extending outwardly from said main recess toward at least three of the following:
i) said top wall
ii) said bottom wall
iii) said toe
iv) said heel,
c) said body having at least one elongated slit therein extending generally parallel to the front face and spaced rearwardly therefrom, the slit intersecting an outer surface defined by the body,
d) said at least one elongated slit being everywhere spaced from the hosel, and intersecting said undercut recess.

5,301,947
PUTTING GREEN WITH ADJUSTABLE TOPOGRAPHY AND MULTI-BALL RETURN
Samuel Kim, 3820 Charlemagne Dr., Hoffman Estates, Ill. 60195
Division of Ser. No. 578,568, Sep. 6, 1990, Pat. No. 5,100,145, which is a continuation-in-part of Ser. No. 485,296, Feb. 26, 1990, Pat. No. 5,087,045. This application Nov. 20, 1991, Ser. No. 795,123
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—176 H **16 Claims**

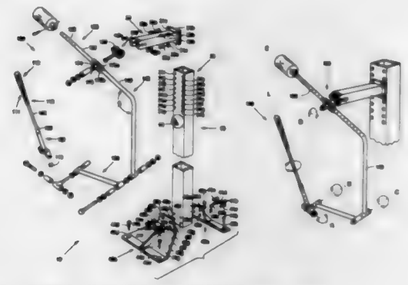


1. A putting green assembly for use in golf ball putting practice, said assembly comprising a playing mat, a ball hole in said playing mat, means for adjusting the topography of said playing mat, said adjusting means including a plurality of independently controllable actuators located beneath and bear-

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ing against said playing mat, said actuators vertically moveable against said playing mat to create inclines therein, means for returning any putted balls on said playing mat to a predetermined location within said assembly, at least one detector for determining whether a putted ball has passed a predetermined location on the playing mat, and a control unit responsive to said detector and for automatically operating said topography adjusting and ball return means, wherein said actuators incline said playing mat at different locations and create at least nine different topographies.

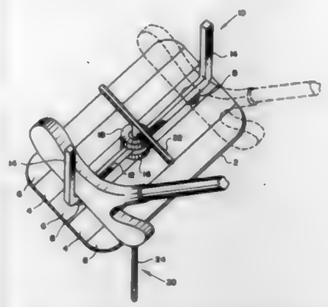
5,301,948
GOLF SWING TRAINING DEVICE
Edward A. Hundley, Rte. 12, Box 305, New Braunfels, Tex. 78132
Filed Apr. 22, 1993, Ser. No. 52,103
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—191 R **10 Claims**



1. A golf swing training device comprising:
a swing element;
a swing plane adjuster element;
a base element;
said swing element comprising a first shaft pivotally connected to a second shaft, said second shaft pivotally connected to a third shaft by joining means, said third shaft pivotally connected to a fourth shaft, said fourth shaft rigidly connected to a sleeve, said sleeve rigidly connected to a fifth shaft;
said swing plane adjuster element having a shaft element fixedly attached to a bracket element;
said sleeve of said swing element pivotally attached to said shaft element of said swing plane adjuster element; and
said bracket element of said swing plane adjuster element rigidly attached to said base element.

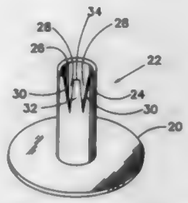
5,301,949
PUTT STROKE TRAINING APPARATUS AND METHOD FOR USING SAME
Steven M. Aupied, 4711 Grammer Ave., Metairie, La. 70001
Filed Jun. 11, 1993, Ser. No. 74,615
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—192 **8 Claims**

4. A golf putting practice and training device, comprising:
(a) a substantially flat plate having a plurality of parallel stripes on an upper surface and having a plurality of holes, including a central hole, for receiving means for anchoring the plate to a putting surface; and
(b) an upright, substantially U-shaped bar having a central hole for receiving means for pivotally connecting the bar above the plate and for receiving means for anchoring the plate to a putting surface, wherein the pivotally connecting means and central anchoring means comprise a T-



shaped stake having a spike portion and a top portion, the spike portion being inserted through the central holes.

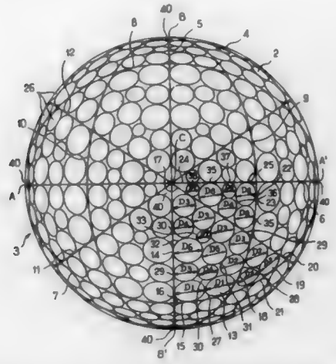
5,301,950
GOLF PRACTICE TEE
Leonard G. Patterson, 5673 Sinclair Rd., Columbus, Ohio 43229
Filed Aug. 6, 1993, Ser. No. 102,778
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 R **8 Claims**



1. A practice golf tee adapted for use with a conventional practice golf mat comprising;
a) a generally horizontal extending base provided with a generally planar bottom surface and an integrally formed generally cylindrical hollow stem portion extending vertically upward from said base and terminating in a top end forming a seat conformed to support a conventional golf ball in a teed position;
b) said hollow cylindrical stem including upstanding side walls provided with a pair of slots spaced from one another and extending axially downward from said top end toward said base and defining a resilient strip in said side walls between said slots resiliently movable between a normally, generally vertical position for aiding the support of a golf ball on said seat and an inwardly deflected position cooperating with opposing edges of said slots to define an inclined ramp for moving a golf ball up said ramp toward said seat.

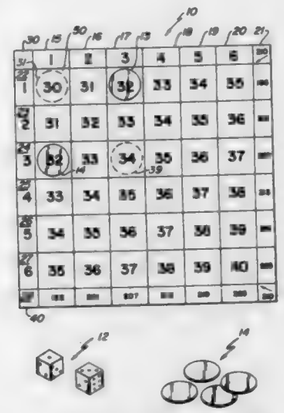
5,301,951
GOLF BALL
Joseph Morell, Annecy le Vieux, France, assignor to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Continuation of Ser. No. 700,440, May 15, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 936,729
Claims priority, application France, May 16, 1990, 90 06131
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 **20 Claims**

8. A golf ball comprising:
a peripheral surface, generally having the shape of a sphere, said peripheral surface having a plurality of dimples, said dimples being arranged in predetermined patterns generally within a plurality of elementary surfaces defined by arcs of nine equatorial circles of said sphere, said plurality of elementary surfaces comprising:
a plurality of first elementary surfaces in the form of spherical quadrilaterals;



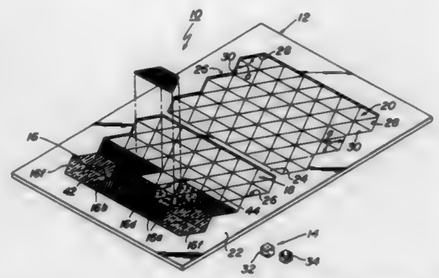
a plurality of second elementary surfaces in the form of first spherical triangles; and
a plurality of third elementary surfaces in the form of second spherical triangles having a shape different from said first spherical triangles.

5,301,952
GAME APPARATUS
Stanley E. Fitzgerald, 40 Fairview Ave., Sellersville, Pa. 18960
Filed Nov. 6, 1992, Ser. No. 972,649
Int. Cl.[5] A63F *9/04*
U.S. Cl. 273—269 **7 Claims**



1. An apparatus for amusement comprising a game board having horizontally and vertically disposed lines which enclose a plurality of playing areas, wherein said areas are arranged into an equal number of rows and columns, and said playing areas having a peripherally arranged indicia to identify various rows and columns of said apparatus comprising,
a.) a plurality of common six-sided dies having different pips to represent various numbers;
b.) numbered indicia located in said playing areas which are consecutive along all rows and columns beginning with the numbered indicia located at an intersection of the first row and column, which has a lowest value,
c.) said numbered indicia representing a summation of all visible pips appearing on said dies,
d.) and the intersecting of any column and row which is abetted by said peripherally arranged indicia identifying a playing area for locating said numbered indicia, and a particular column and row being selected by upward facing pips on said dies;
e. a plurality of markers for placement on certain of said playing area indicia, and
f. whereby a roll of said dies locates the row and column or, alternatively, the column and row via said upward facing pips for placement of a marker in said playing area such that a match occurs between said visible pips and said numbered summation indicia, and a player who fills a row, column, or diagonal with said markers receives a score based on a total of the numbered indicia located in said row, column, or diagonal.

5,301,953
CONSTRUCTION BOARD GAME WITH CHANCE DEVICE
John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072
Filed May 29, 1992, Ser. No. 891,389
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—276 **46 Claims**



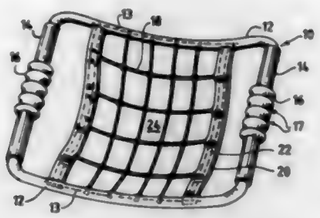
1. A board game to be played by more than one person, the winner of said game being the first person to fill an identified playing area on a board with a plurality of playing pieces, said board game comprising:
(a) a board having a playing surface with said identified playing area thereon, said playing area being sub-divided into a plurality of identical units, each unit being of a basic geometric shape;
(b) a plurality of playing pieces of different geometric configurations, each of said geometric configurations being formed of a whole number multiple of said basic geometric shape and at least some of said different configurations being formed of different whole number multiples of said basic geometric shape, at least some of said plurality of playing pieces being receivable on the playing surface for filling said playing area, each playing piece received on the playing surface overlying a number of the identical units equal to the whole number multiple of the basic geometric shape associated with the geometric configuration of said each playing piece; and
(c) at least one die including a plurality of surfaces, each surface of each die including indicia for identifying a geometric configuration of a playing piece to be placed on the playing area, said indicia being a whole number multiple of said basic geometric shape to thereby identify a geometric configuration, the indicia on each surface of each die identifying a geometric configuration which is different from the geometric configuration identified by the indicia on every other surface of the same die.

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5,301,954
APPARATUS FOR THROWING AND CATCHING OBJECTS

Randall C. Wotring, Livonia, Mich., assignor to Saturnian I, Plymouth, Mich.

Filed Oct. 23, 1992, Ser. No. 965,440
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—323 **21 Claims**



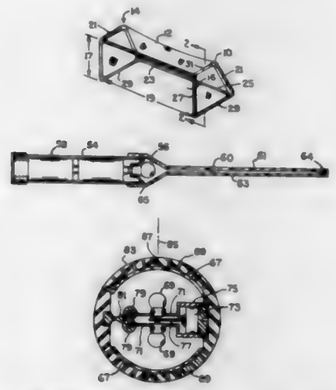
1. An apparatus for catching and throwing an object, comprising:
- a panel of flexible sheet material having opposing ends and sides defining a length and a width sufficient to receive said object;
- a plurality of elongated straps connected to said opposing sides of said panel;
- a plurality of handles connected to said straps;
- a plurality of elastic bridge members connected to said elongated straps thereby contracting said panel to form said panel into a generally cradle shaped receptacle for said object; and

means for connecting said handles to said elongated straps so that pulling said handles away from one another places said elongated straps in tension and causes said elastic bridge members to expand thereby expanding the panel to form said panel into a generally flat shape.

5,301,955
STREET PADDLE SOCCER GAME

Jose Fedullo, 4571-A Sheila St., Commerce, Calif. 90040

Filed Dec. 21, 1992, Ser. No. 993,640
Int. Cl.[5] A63B *43/06, 59/00, 63/00*
U.S. Cl. 273—411 **5 Claims**



1. Game apparatus comprising at least one miniature soccer goal, a paddle for each game player, and a resilient ball adapted to be struck by any one of the paddles for travel into the soccer goal; each soccer goal comprising an upstanding four-sided framework, and a netting draped over the framework to form a cage structure having an open mouth for passage of the ball into the space circumscribed by the netting; said framework comprising two upstanding parallel side frame assemblies and two tubular crosspieces extending transversely between said frame assemblies; each side frame assembly comprising a front vertical tube, a lower horizontal tube extending rearwardly from said front tube, an upper horizontal tube extending rearwardly from said front tube directly above said lower tube, and a rear tube joining the upper and lower tubes in the space behind the front tube; said upper tube being appreciably shorter than the lower tube, whereby said rear tube is inclined in the forward direction; each side frame assembly having a trapezoidal configuration; one of said tubular cross-pieces extending between the side frame assemblies so that each end of said one tubular crosspiece connects with the joint formed between a front tube and an upper horizontal tube of the respective side frame assembly; the other tubular crosspiece extending between the side frame assemblies so that each end of said other tubular crosspiece connects with the joint formed between the lower tube and the rear tube of the respective side frame assembly; each paddle comprising a handle portion and a flat ball-striking portion; each handle portion comprising a battery-containment flashlight having a light bulb in one end thereof; each ball-striking portion comprising two flat parallel sheets of transparent plastic material having edge areas thereof joined together so that the facing surfaces thereof are spaced a slight distance apart; each ball-striking portion being joined to the associated handle portion so that the light bulb shines into the space formed between the transparent plastic sheets.

5,301,956
ACTIVITY GAME APPARATUS

Jose M. Sanchez Hernandez, Antonio Cardenas No. 337, Col. Heroes de Churubusco Mexico 13, DF C.P. 09090, Mexico

Filed Jan. 23, 1992, Ser. No. 824,363
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—429 **4 Claims**



1. An activity game apparatus arranged to direct an individual player of a plurality of individual players to recreate a predetermined activity, wherein the apparatus comprises,
- a support case base, the support case base including a rear flange mounted to the support case base, wherein the flange includes a timer mechanism mounted therewithin, the timer mechanism including a first position and a second position,

and
- an audio cassette record and playback device mounted within the support case base,

and
- a microphone socket mounted to the case in operative association with the audio cassette record and playback device,

and
- a microphone arranged for electrical communication to the microphone input socket,

and
- a card deck of a plurality of individual activity cards, each activity card includes a predetermined designation mounted to a bottom surface of each card,

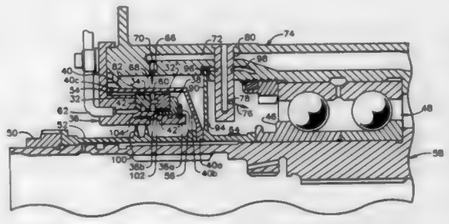
and
- an interpretation book arranged for interpretation of the designation upon selection of an activity card of said activity card deck by one of said individual players,

and
- at least one audio speaker mounted within the flange in operative association with the audio cassette record and playback device to permit recording and subsequent playback of an audio activity directed through the microphone into the audio cassette record and playback device.

5,301,957
EXPANDING CIRCUMFERENTIAL SEAL WITH UPPER-COOLED RUNNER

Ming-Fong Hwang, Chester, and Adam N. Pope, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 27, 1992, Ser. No. 876,733
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—58 **7 Claims**



1. A seal arrangement for incorporation in a gas turbine engine, comprising:

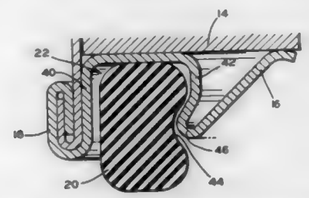
first circumferential sealing means rotatable with a shaft; and

second circumferential sealing means supported by a stationary housing structure and arranged in opposition to said first circumferential sealing means to form rubbing interface means therebetween, wherein said first circumferential sealing means is arranged radially outside of and is concentric with said second circumferential sealing means, said first circumferential sealing means comprises a runner having an inner circumferential surface, said second circumferential sealing means comprises a first carbon ring having an outer circumferential surface, and said rubbing interface means comprises a first rubbing interface formed by said inner circumferential surface of said runner and said outer circumferential surface of said first carbon ring.

5,301,958
SEAL FOR SPIN-ON FILTER HAVING CIRCUMFERENTIAL RETAINING GROOVE

Edward A. Covington, Gastonia, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 7, 1992, Ser. No. 927,117
Int. Cl.[5] F16J *15/10*
U.S. Cl. 277—183 **22 Claims**

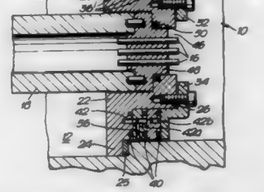


1. A seal for a spin-on filter of the type including a generally cylindrical outer housing having a longitudinal axis and provided with a closed end and an open end, an end cover provided in the open end and a filter element disposed within the housing, the filter being adapted to be attached by screw threads to a mounting plate, the seal comprising:
- an annular gasket disposed within an annular seating recess formed in said end cover, said gasket having a circumferential groove formed therein and being substantially symmetrical about a generally radially extending plane;
- said end cover including retention means formed integrally therewith which is received by the groove in said gasket, for retaining said gasket within said recess;
- whereby said gasket is retained within the recess in said end cover but is substantially freely rotatable relative to said end cover as the filter is rotated during installation.

5,301,959
SEALING GLAND

Colin A. Gould, Suffolk, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB90/01516, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/05282, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 4, 1990, Ser. No. 852,189
Claims priority, application United Kingdom, Oct. 4, 1989, 8922355
Int. Cl.[5] F16J *15/04*
U.S. Cl. 277—184 **17 Claims**



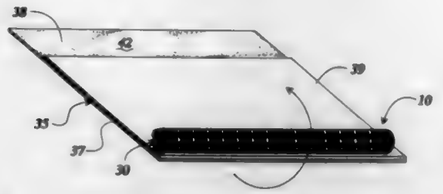
1. A gland seal for sealing a flexible elongate element passing through an aperture in a boundary, the seal comprising a set of one or more sealing plates and at least one end plate, each sealing plate having a pair of faces which are in contact with either the faces of adjacent sealing plates or a face of an end plate, each pair of adjacent faces defining at least one sealing channel between them; the sealing channel being in the form of an arcuate groove, each sealing plate including at or near an end of the arcuate groove a slot or hole through the sealing plate, said slot or hole providing a passageway to a further sealing channel or providing a passageway to exit the seal, said sealing and end plates being connected so that when the seal is in use, the flexible elongate element extends through an aperture in an end plate and into and along a first sealing channel, and further extends through said slot or hole in a sealing plate to exit the seal or to extend into a further sealing channel located between a further pair of adjacent faces of sealing plates and through a hole or slot in a further sealing plate such that the flexible elongate element extends along a substantially helical path through the seal, the flexible elongate element being sealingly engaged in each arcuate groove to inhibit the passage of fluid therethrough.

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5,301,960
IMPROVED SPIRALLY-FORMED SEAL FOR SHAFTS AND VALVE STEMS

Reid M. Meyer, Atlanta; Jim B. Cohen, Lilburn; James W. Suggs, Jr., and Steven M. Suggs, both of Atlanta, all of Ga., assignors to Suggs Group, Inc., Atlanta, Ga.

Continuation of Ser. No. 782,897, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 331,406, Mar. 31, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 879,144
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—229 **5 Claims**

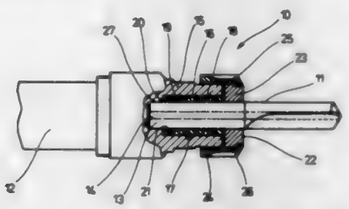


1. A packing material for use in the formation of a seal, comprising:
a flexible core made of mesh wire and expanded solidified graphite, said core being of a substantially rectangular cross-section; and
a skin element of expanded graphite material longitudinally enveloped about said core,
said packing material being formed into a coil having a first diameter, whereby a ring of said packing material is formed by cutting a length of said packing material for insertion into a cavity to be sealed, said cavity having a second different diameter.

5,301,961
CHUCK FOR TOOL, WORKPIECE, ETC.

Joachim A. Woxar, Esslingen, Fed. Rep. of Germany, assignor to Otto Blix, Werkzeugfabrik GmbH & Co., Ostfildern, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 989,768
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 9115854[U]
Int. Cl.[5] B23B *31/20*
U.S. Cl. 279—46.2 **16 Claims**

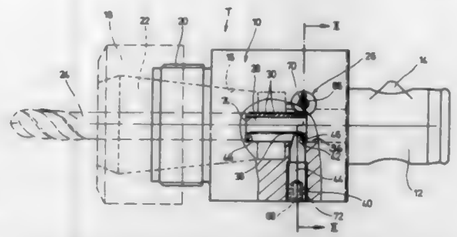


1. A chuck for a tool or a workpiece comprising a chuck body having an inner receptacle; a clamping device accommodated in said inner receptacle and having axially projecting spring regions, said clamping device having two ends which are axially supported and being axially compressible for clamping an element in an interior of said clamping device; and means for applying a compressing force to said clamping device at a front end of said chuck body, said clamping device at its each end being provided with a non-springy and non-clamping centering ring.

5,301,962
TOOL HOLDER

Bernd Killinger, Freiberg, and Gerhard Scheer, Loechgau, both of Fed. Rep. of Germany, assignors to Komet Praezisionswerkzeuge Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed May 5, 1993, Ser. No. 58,908
Claims priority, application Fed. Rep. of Germany, May 6, 1992, 4214479
Int. Cl.[5] B23B *31/02*
U.S. Cl. 279—105.1 **14 Claims**

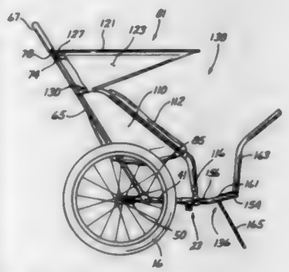


1. In a tool holder having a base member, a shaft which is arranged on the rearward end of the base member for connection to a machine spindle or a spindle adapter, a recess at a front end of the base member and is arranged coaxially with respect to the shaft axis for receiving therein a coaxially aligned tool which can be clamped in place by means of a clamping member and a regulating member axially movable in the base member and engaged by a clamping element from a side of the shaft into a recess, to form a positioning stop for the tool, with the regulating member being constructed so that it has an axially extending rack thereon and a gear mating with the tooth system of the rack and a clamping element supported in the base member movable into and out of engagement with the rack, the improvement wherein the regulating member has an axially extending keyway for receiving and guiding therein a corresponding key or cone tip on the clamping element, and wherein the regulating member, under the action of the clamping element pressing with its key or cone tip against the flanks of the keyway, can at least locally be expanded and thereby pressed against the base member.

5,301,963
CONVERTIBLE STROLLER

Chen-Yuan Chen, El Centro, Calif., assignor to Motiv Sports Inc., Yorba Linda, Calif.

Filed Jun. 12, 1991, Ser. No. 715,859
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—30 **16 Claims**



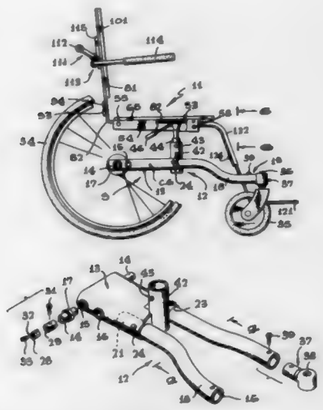
1. A carriage for a child, including:
a base assembly having a medial plane;
a base frame included in the base assembly;
at least a pair of wheels rotatably attached to the base frame;

means for supporting the child in the carriage;
a front wheel assembly adapted to be coupled to the base assembly with the front wheel assembly generally symmetrical about the medial plane;
a front wheel frame included in the front wheel assembly;
at lest one wheel rotatably attached to the front frame;
a tow bar assembly adapted to be coupled to the base assembly with the tow bar assembly being generally symmetrical about the medial plane;
a tow bar frame included in the tow bar assembly;
a tow bar attached to the tow bar frame; and
coupling means having a fixed relationship with the base frame for alternatively attaching one of the front wheel assembly and the tow bar assembly to the base assembly.

5,301,964
WHEELCHAIR

James B. Papac, 1366 Village Ct., Simi Valley, Calif. 93065

Filed Mar. 29, 1993, Ser. No. 38,111
Int. Cl.[5] A61G *5/00*
U.S. Cl. 280—250.1 **9 Claims**

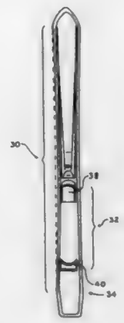


1. A wheelchair, comprising:
a unitary, wishbone-shaped main frame including a body; a pair of limbs extending divergently from said body and terminating in a pair of radially offset ends, said limbs being journalled for axial rotation on said body, whereby the position and spacing of the ends of said limbs are adjustable by rotating said limbs; a transverse axle mounted to said body; and attachment means for securing a seat mount to said main frame;
a pair of drive wheels mounted to said transverse axle, and a pair of swivable casters mounted to said limbs;
a seating assembly including a seat control assembly and a seat back control assembly, said seat control assembly comprising a seat mounting bracket that is adjustable in pitch, and said seat back control assembly comprising a back support that is moveable longitudinally of said main frame for supportingly positioning a seated user; and
a seat mount on said seating assembly for mounting said seating assembly to said attachment means.

5,301,965
SNOW SKI

Adrian J. Floreani, Anahiem, Calif., assignor to Richard Floreani and Eleanor Floreani

Continuation of Ser. No. 258,384, Oct. 17, 1988, abandoned, which is a division of Ser. No. 923,208, Oct. 21, 1986, Pat. No. 4,778,197, which is a continuation-in-part of Ser. No. 689,605, Jan. 7, 1985, abandoned. This application Sep. 26, 1990, Ser. No. 588,492
Int. Cl.[5] A63C *5/025, 5/048, 5/075*
U.S. Cl. 280—600 **38 Claims**



1. A snow ski having longitudinal edges, the snow ski comprising:
(a) an elongated bottom element;
(b) an elongated top element which is coupled to said bottom element, said top element having a portion which is spaced apart from the bottom element to define a hollow section extending a major portion of the distance between a forward end of the ski and a binding area of the ski and extending a major portion of the distance between the longitudinal edges of the ski; and
(c) said hollow section containing a flowable material or combination of materials which flow within said hollow section, said flowable material shifting forward when the forward end of the ski is pointed downward, the mass of the flowable material being added to the mass of the forward end of the ski during downhill skiing to increase the stability of the ski.

5,301,966
AIR BAG DEVICE FOR A PASSENGER

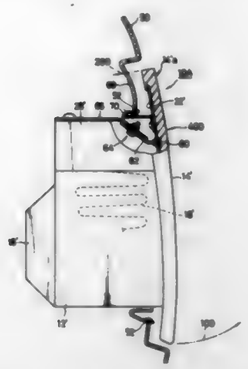
Yoshiaki Sakata, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,262
Claims priority, application Japan, Mar. 10, 1992, 4-051625
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 **6 Claims**

1. An air bag device for a passenger adapted to be installed in an air bag device mounting window of an instrument panel of a vehicle, comprising:
a box-shaped container having an open front face and a front edge at one side thereof;
an air bag fitted in a folded shape in said container;
an inflater mounted in said container;
a lid for covering the open front face of said container and having at one side a lid brim protruded from the front edge of the container, said lid brim having a fragile portion and being arranged at a back side thereof with an edge portion of the air bag device mounting window; and
a hinge having a hinge pin and turning around the hinge pin,

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said hinge hinging one side of said lid in a vicinity of said fragile portion to the one side of the front edge of said



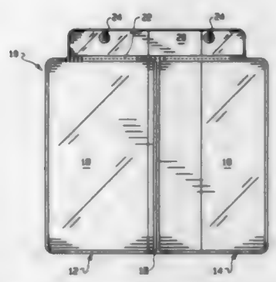
container so that said lid is opened on said hinge pin and is bent along the fragile portion when said inflater operates.

5,301,967

PROTECTIVE JACKET HAVING DISPLAY TAB

Victor W. Sparber, Newport News, Va., assignor to Jay Plastics, Inc., Hampton, Va.

Filed Jun. 2, 1993, Ser. No. 71,011
Int. Cl.[5] B42D *17/00*
U.S. Cl. 281—43 **19 Claims**



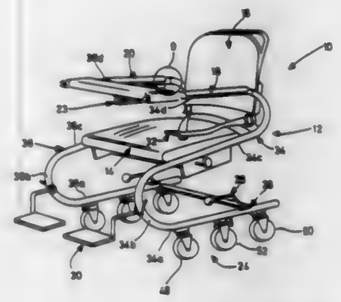
1. A jacket for protectively covering an insert, comprising:
means for covering portions of the insert comprising a material having greater resistance to deterioration than the insert and including means for receiving at least a portion of the insert to properly position the insert adjacent the covering means, said receiving means comprising a sheet of material which is joined to the covering means along portions of its periphery to form a pocket having three closed sides for receiving a portion of the insert;
means associated with the covering means for mounting the jacket upon a hanging rod display rack; and
means for at least partially connecting the mounting means to the covering means, the connecting means having sufficient strength to retain the mounting means at lest partially secured to the covering means while the jacket is mounted upon the display rack, but which facilitates separation and removal of the mounting means from the covering means before use thereof.

5,301,968

MOBILITY SUPPORT DEVICE

Adele E. Ward; J. R. Kingsley Ward, both of Richmond Hill; Kevin R. Lunau; Jeffrey D. Stringer, both of Mississauga; A. Edward Moore, Grand Pré L'Acadie, and Victor J. Irving, Holland Landing, all of Canada, assignors to Guardian Products, Inc., Arleta, Calif.

Continuation of Ser. No. 388,043, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 46,828, May 6, 1987, Pat. No. 4,893,826. This application Oct. 15, 1991, Ser. No. 782,873
Claims priority, application Canada, Jul. 18, 1989, 514111
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
Int. Cl.[5] A61H *3/04*
U.S. Cl. 280—87.021 **24 Claims**



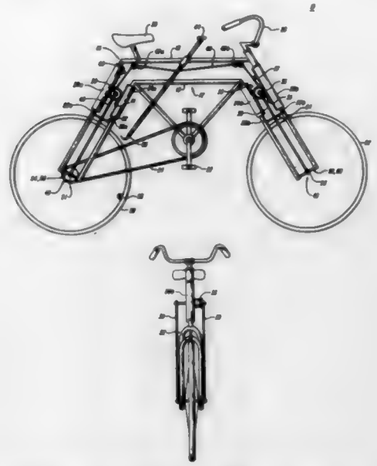
1. A mobile support device for a handicapped person and rollable along a reaction surface, the mobile support device comprising:
frame means including first and second longitudinally extending frame sections oriented in spaced relationship, each of said frame sections having a lower portion and a front portion;
a back support portion extending between and coupled with the first and second frame sections;
a seat portion extending between and coupled with the first and second frame sections and centrally disposed above said lower portions; and
a wheel assembly mounted on said lower portions so as to engage the reaction surface, said wheel assembly including a pair of front caster wheels, a pair of rear caster wheels, and a pair of intermediate wheels, each of said intermediate wheels having a fixed transverse axis of rotation and being positioned intermediate said front and rear caster wheels to inhibit transverse motion, each of said frame sections carrying out of said front caster wheels, one of said intermediate wheels and one of said rear caster wheels, each of said wheels having a lower most tangent lying in a common plane, said spaced frame sections defining a free region in front of said seat portion through which said handicapped person's feet can reach said reaction surface and provide a propelling force to said mobile support device, said wheels being disposed outside of said free region, said lower portions being rigid to inhibit relative vertical displacement between said caster wheels and said intermediate wheels so that said wheel assembly constitutes means to inhibit rocking of said first and second frame sections about said intermediate wheels so that contact between all of said wheels with said reaction surface is maintained, the front portions of said frame sections being spaced from one another so that unrestricted access is provided for the handicapped person to said seat portion, said back support portion, and said free region.

5,301,969

BICYCLE WITH JUMPING CAPABILITY

Wayne Bynoe, 1049 Massachusetts Ave., Arlington, Mass. 02174

Filed Jul. 23, 1992, Ser. No. 919,348
Int. Cl.[5] B62M *1/20*; B62K *19/00, 19/18*
U.S. Cl. 280—221 **15 Claims**



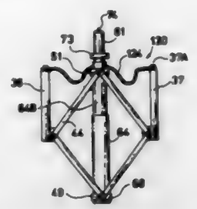
1. A bicycle with jumping capability comprising:
a first frame comprising first and second portions, said first and second portions connected by at least two compressible members, said at least two compressible members operative for storing energy in a compressed state;
a second frame comprising first and second portions, said first and second portions coupled by at least two tensionable members, said at least two tensionable members operative for storing energy in a tensioned state;
first and second frame connectors adapted for coupling to a first bicycle wheel and a second bicycle wheel, respectively, for maintaining said first and second frames in a spaced relationship, said first frame connector for securing a first region of each of said first and second frames to said first bicycle wheel, said second frame connector for securing a second region of each of said first and second frames to said second bicycle wheel;
first and second frame coupling and energizing members, rotatably engaged with said first portions of both said first and second frames, for maintaining said first and second frames in spaced relationship, and for facilitating translational movement of said first portion of said first frame with respect to said first portion of said second frame;
selectively engageable energizing means, coupled to said first and second frame coupling and energizing members, for urging said at least two compressible members into said compressed state, and for urging said at least two tensionable members into said tensioned state; and
energy release means, coupled to said selectively engageable energizing means for releasing said energizing means and for allowing said at least two compressible members to move from said compressed state to an uncompressed state, and for allowing said at least two tensioned members to move from said tensioned state to an untensioned state, said movement of said at least two compressed and tensioned members effecting rapid translational movement of said first portion of said first frame member with respect to said first portion of said second frame member, causing said bicycle to jump.

5,301,970

COLLAPSIBLE WHEELCHAIR FRAME CONSTRUCTION

John T. Haskins, 18721 Mantle La., Roland, Ark. 72135

Continuation-in-part of Ser. No. 547,199, Jul. 3, 1990, Pat. No. 5,076,390. This application Dec. 27, 1991, Ser. No. 815,343
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 **6 Claims**



1. A collapsible wheelchair comprising:
seat means for receiving and supporting a user of said wheelchair;
selectively collapsible frame means for suspending said seat means;
means for removably mounting said seat means to said frame means;
power pack means operatively associated with said frame means for extending and/or retracting said seat means relative to said frame means, said power pack means comprising extensible sleeve means coupled to said frame means, and cylinder means operatively associated with said sleeve means for raising or lowering said seat means, said cylinder means comprising a pair of pneumatic cylinders;
wheel means for suspending and propelling said wheelchair over a supporting surface; and,
wherein said frame means comprises:
a pair of rigid, spaced apart sides;
a foldable linkage assembly for mechanically linking said sides together and enabling them to fold toward or away from one another, said linkage assembly comprising a pair of spaced apart parallelogram linkages interconnected between said sides and said power pack means;
foldable brace means extending between said sides for reinforcing said frame means; and,
means for selectively locking said foldable brace means when said frame means is deployed.

5,301,971

RATCHETING WHEELCHAIR HUB

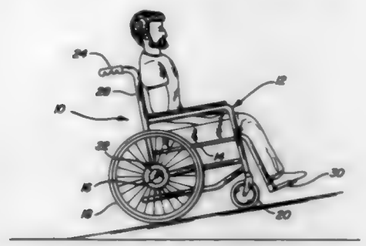
H. Arthur Brereton, 417 Crescent, NE., Grand Rapids, Mich. 49503, and Charles C. Harrett, Jr., 933 Lakeside, Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 840,028, Feb. 24, 1992, abandoned. This application Oct. 26, 1992, Ser. No. 966,349
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 **30 Claims**

1. A wheelchair assembly (**10**) for forwardly transporting a passenger in a sitting position and for preventing rearward motion when disposed on an incline, said wheelchair assembly (**10**) comprising:
a frame (**12**);
said frame (**12**) including an axle (**16**);
seat means (**14**) mounted on said frame (**12**) for supporting a passenger in a forwardly facing sitting position;
a drive wheel (**18**) rotatably supported on said axle (**16**) for rollably supporting said seat means (**14**) above a travel surface;

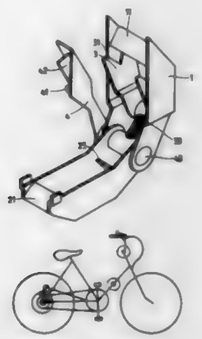
VOL 1161 ISS 2 AP 12 1994 UMI

said drive wheel (18) including a drive wheel hub (38) rotatably supported on said axle (16);
ratchet means (22) ratchetingly interconnecting said frame (12) with said drive wheel (18) for permitting rotation of said drive wheel (18) in one direction with respect to said frame (12) while preventing rotation in the opposite direction whereby said wheelchair assembly (10) is freely



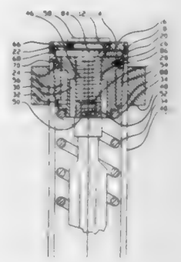
moveable forwardly but is prevented from rearward movement;
said ratchet means (22) including a pawl (54) mounted on said frame (12); and
characterized by said ratchet means (22) including a plurality of engaging surfaces (55) mounted on said drive wheel hub (38) for ratchetingly engaging said pawl (54).

5,301,972
BICYCLE FRAME FOLDER
Gin-Chaung Lee, 1F, No. 14, Lane 107, San Jiun Street, Shuhlin, Taipei Hsien, Taiwan
Filed Mar. 30, 1993, Ser. No. 39,800
Int. Cl.[5] B62K *15/00*
U.S. Cl. 280—278 **1 Claim**



1. A bicycle frame folder comprising:
an upper folding frame and a lower folding frame each having a respective first end pivotally connected one to the other by a pivot, each folding frame having a front hook on a second end thereof for locking in a closed position and a middle circular hole which receives a respective bicycle frame tube, said lower folding frame having a cross bar disposed on an inside surface thereof and a stub retaining rod disposed on an outside surface of said lower folding frame;
a control lever having one end thereof fastened to said pivot and driven to turn said pivot in closing and opening said upper and lower folding frames, said control lever having a safety hook supported on a spring and controlled to hook on said stub retaining rod as said upper and lower folding frames are closed;
a stop block disposed in between said upper and lower folding frames, and having a triangular opening on a rear end thereof and a front end connected to said pivot by a guide screw, said stop block being stopped at said cross bar as said upper and lower folding frames are closed, said guide screw being turned to, (1) move said stop block forward to engage with the hook on said upper folding frame and the hook on said lower folding frame as said upper and lower folding frames are closed, and (2) move said stop block backward to disengage from the hook on said upper folding frame and the hook on said lower folding frame for permitting said upper and lower folding frames to be opened.

5,301,973
EXTERIOR ADJUSTABLE SUSPENSION PRECOMPRESSION FORK CAP MECHANISM FOR TWO WHEELED VEHICLES
Rich Truchinski, 27930 N. Tyler #402, Santa Clarita, Calif. 91351
Filed Jul. 6, 1992, Ser. No. 909,282
Int. Cl.[5] B62K *21/22*
U.S. Cl. 280—276 **12 Claims**

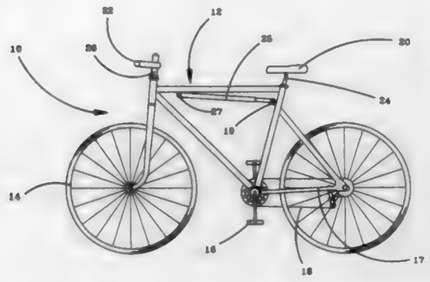


1. An adjustable precompression cap comprising:
(a) an outer housing connectable to a shock absorber telescoping user;
(b) an adjuster hub fitted and retained inside said outer housing;
(c) a spring collar fitted inside said outer housing interfacing a suspension compression device;
(d) a spring collar rotational stop engaging said outer housing and interfacing with said spring collar at a stop engagement area;
(e) a spring locator interfacing with said spring collar;
(f) a hub retaining spanner threaded into said outer housing; and
(g) an oil seal interfacing with said adjuster hub and said hub retaining spanner.

5,301,974
BICYCLE SUSPENSION SYSTEM
Thomas D. Knapp, Kent, Ohio, assignor to Knapp Engineering, Kent, Ohio
Continuation-in-part of Ser. No. 340,088, Apr. 18, 1989, Pat. No. 5,044,648. This application Sep. 3, 1991, Ser. No. 753,839
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[5] B62K *19/36, 21/20;* **F16F** *9/36, 11/00*
U.S. Cl. 280—283 **37 Claims**

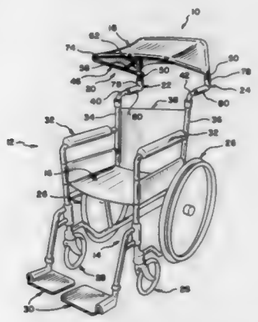
1. A shock isolation system for a vehicle having a main frame associated therewith, the shock isolation system comprising:
an outer housing member secured to said main frame of said vehicle;
a piston assembly slidably disposed within said outer housing member with at least a part of said piston assembly extending outwardly from said outer housing member;
first guide means associated with said piston assembly and

second guide means associated with said outer housing member which coact with said first guide means, and bearing means disposed in said coacting first and second guide means which allow at least relative linear movement between said piston assembly and said outer housing member and to limit rotational movement of said piston assembly relative to said outer housing member;



biasing means acting between said piston assembly and said outer housing member so as to bias said piston assembly to an extended position with respect to said outer housing member;
a hydraulic fluid disposed within said housing member;
and means to allow said hydraulic fluid to flow past said piston assembly to provide dampening of movement of said piston assembly on compression and rebound motions thereof.

5,301,975
OVERHEAD SCREEN FOR A WHEELCHAIR
Eddy Rivera, 9619 Artesia Blvd., Bellflower, Calif. 90706
Filed Dec. 11, 1991, Ser. No. 804,977
Int. Cl.[5] B62J *17/08;* **E04H** *15/06*
U.S. Cl. 280—304.1 **2 Claims**



1. An overhead screen adapted for mounting above a wheelchair and removable therefrom, said wheelchair having a back, a frame including a pair of upright supporting members on opposite sides of said back formed in a tubular configuration and having upper end extremities which extend mutually parallel to each other and horizontally rearwardly to serve as handles for pushing said wheelchair, and a seat supported by said frame, comprising a canopy formed of a flexible material, a screen framework including a first U-shaped member attached to said canopy and having a pair of upright legs with end extremities forming upright posts for supporting said canopy at an elevated level above said wheelchair seat and above said handles, coupling means formed of hollow, tubular elbows having horizontally disposed legs engageable with said handles of said wheelchair in sliding, telescopic engagement therewith and having vertically disposed legs extending upwardly to engage said upright posts, a second U-shaped member attached to said canopy and having legs with end extremities hinged to said upright legs of said first U-shaped member at intermediate locations therealong, two first cross link members hinged to said legs of said first U-shaped member and two second cross link members hinged to said legs of said second U-shaped member and to said first cross link members, detent means on said cross link members which are releasable to allow said cross link members to fold together, whereby said U-shaped members are collapsible together, and said detent means are alternatively engageable when said first cross link members are linearly aligned with said second cross link members to hold said canopy extended out over said seat.

5,301,976
SKI BONDING
Premek Stepanek, Garmisch-Partenkirchen; Ludwig Wagner; Edwin Lehner, both of Farchant, all of Fed. Rep. of Germany, and Piero G. Ruffinengo, Salt Lake City, Utah, assignors to Marker Deutschland GmbH, Eschenlohe, Fed. Rep. of Germany
Division of Ser. No. 715,598, Jun. 14, 1991, Pat. No. 5,251,923. This application Apr. 27, 1993, Ser. No. 54,439
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1990, 9017486[U]
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **7 Claims**



1. A system for changing the stiffness and controlling the vibration of a ski, said system comprising:
an elongated member attachable to a ski;
means for fixedly securing one portion of said member to the ski;
means for securing a movable end portion of said member to the ski while permitting longitudinal movement of said movable end portion relative to the ski as the ski bends, said end portion having an end surface; and
control means fixed to the ski proximate said movable end portion, said control means having biasing means attached to said control means and to said movable end portion for exerting a biasing force on said end surface of said movable end portion for limiting the amount of bending and controlling the vibration of the ski.

5,301,977
METHOD AND APPARATUS FOR ADJUSTING TOE AND/OR CAMBER
Richard D. Schlosser, Loveland; Steve Johnson, and Robert M. Allman, both of Longmont, all of Colo., assignors to Specialty Products Company, Longmont, Colo.
Filed Nov. 2, 1992, Ser. No. 970,130
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **22 Claims**

1. A method for providing toe and/or camber adjustment for a normally fixed wheel of a vehicle which normally fixed wheel is mounted on a central portion of a control means between and offset from two spaced apart control arms wherein each of the spaced apart control arms has a first opening through which a bolt may be passed and a pair of spaced apart brackets are fixedly mounted on the subframe of the vehicle and wherein each of the spaced apart brackets has two outwardly projecting spaced apart legs, each having a second opening extending therethrough and wherein said second openings are in alignment and wherein the first opening in each control arm is aligned with the aligned second openings in one

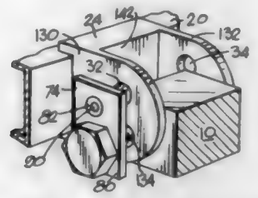
VOL 1161 ISS 2 AP 12 1994 UMI

of the brackets and a bolt is passed through the aligned openings to secure the spaced apart arms in the spaced apart brackets comprising:

removing said bolt from at least one of said brackets;

separating at least one of said control arms from said at least one of said brackets;

forming a center point on at least one of said spaced apart legs of said at least one of said brackets with said center point being located on an arc of a circle concentric with said second opening in said at least one of said spaced apart legs and having a radius greater than the radius of said second opening;



forming a third opening in said at least one of said spaced apart legs using said center point;

moving said first opening in said at least one of said control arms into alignment with said third opening;

forming another third opening in the other of said spaced apart legs; and

passing said bolt through said third openings in said spaced apart legs and said first opening in said at least one of said control arms and securing said bolt to said at least one of said brackets to provide for the toe and/or camber adjustment.

5,301,978

MOTOR VEHICLE OCCUPANT PROTECTIVE DEVICE

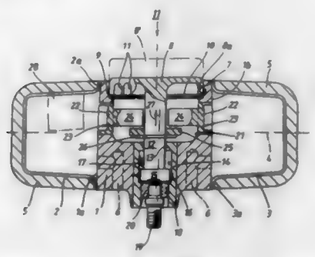
Wolf-Dietrich Münzel, Altdorf; Gudrun Delonge-Immik, Kornwestheim; Wolfgang Henseler, Tübingen; Heinz Knoll, Stuttgart; Karl Peitsmeier, Remseck-Aldingen, and Helmut Patzelt, Kernen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Feb. 24, 1992, Ser. No. 839,550

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1991, 4105788; Dec. 18, 1991, 4141835

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 **24 Claims**



1. A protective device for occupants of a motor vehicle usable with a gas inflatable bag, comprising a pressure vessel for storage of a pressurized gas with an outflow orifice provided in a wall of the pressure-vessel, a closed tripping cylinder filled with a pyrotechnic medium, at least one valve having a pressure-vessel wall piece surrounded by a predetermined breaking point and a piston rod associated operatively with the wall piece and projecting on one side thereof from the closed tripping cylinder for closing the outflow orifice, the piston rod being axially displaceable out of a first end position into a second end position by a piston arranged in the tripping cylinder when the pyrotechnic medium is ignited, wherein the wall piece comprises a wall of a hollow valve block provided with the outflow orifice and an extension projecting into the interior of the valve block, the piston rod having means for impacting the extension and being displaceable in the valve block transversely relative to the extension, and the extension is located in the path of movement of the means for impacting, whereby when the piston is displaced from said first end position to said second end position, said means for impacting impacts said extension, causing said predetermined breaking point to be exceeded.

5,301,979

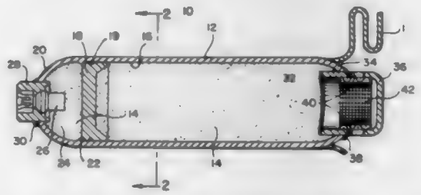
PISTON DRIVEN COLD GAS AIR BAG INFLATOR

John E. Allard, North Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 23, 1993, Ser. No. 95,586

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280.1—737 **8 Claims**



8. An inflator for delivering pure inert cold gas to an air bag comprising,

a container in which a pressurized cold pure inert gas is stored, said container having a first end and a second end, said container including a cylindrical section positioned between said first end and said second end of said container and having an outlet conduit positioned at said second end, said outlet conduit being sealed by a burst disk that ruptures upon a predetermined increase of pressure in said container,

a piston in sealed, slidable relation over substantially the full length of said cylindrical section of said container, said piston during storage of said pure inert gas in said container being positioned at the end of said cylindrical section that is adjacent to the first end of said container,

pyrotechnic material positioned between said piston and the first end of said container with both sides of said piston being at the same pressure during storage of said pure inert gas in said container, and

initiating means for activating said pyrotechnic material located in said pyrotechnic material,

whereby, upon activation of said pyrotechnic material by said initiating means, said piston is driven down the length of said cylindrical section to increase the pressure of the pressurized cold pure inert gas in said container, and

when the pressure in said container exceeds the burst disk strength the burst disk ruptures and allows the pressurized cold pure inert gas in said container to expand through said outlet conduit to an air bag to be inflated.

5,301,980

ROAD TANKER

Trevor Dingle, Bilpin, Australia, assignor to Hockney Pty Ltd., New South Wales, Australia

Filed Feb. 18, 1992, Ser. No. 836,422

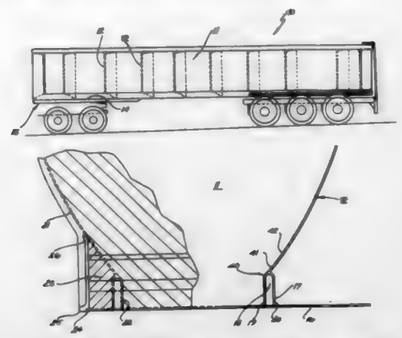
Int. Cl.[5] B60D *3/24*

U.S. Cl. 280—837 **19 Claims**

1. A road tanker comprising:

a hollow tanker body formed of sheet metal;

at least one transversely extending single thickness divider wall positioned internally of said tanker body, said at least one divider wall having opposite side edges; and



at least a portion of each of said opposite side edges of said at least one divider wall comprising a bifurcated edge, and each of spaced flanges bifurcated edge being welded to said tanker body.

5,301,981

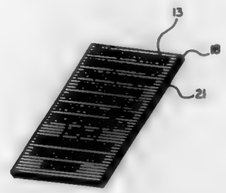
COPY PREVENTING DEVICE AND METHOD

Dov Nesis, New York, N.Y., assignor to Docusafe, Ltd., Road Town, V.I.

Continuation-in-part of Ser. No. 912,093, Jul. 9, 1992, abandoned. This application Oct. 29, 1992, Ser. No. 968,249

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—73 **16 Claims**



1. A copy preventing sheet-form screen comprising a lenticular screen formed by a sheet of transparent material having front and rear faces and a series of adjacent lens portions with major optical axes perpendicular to the front face and a series of light blocking striae located spaced apart underlying respective lens portions and extending across a major part of their major optical axes so that positioning the copy preventing sheet-form screen with the rear face in covering relation to a sheet carrying indicia providing meaningful information, enables the information to be easily seen when viewed obliquely in ambient white light bu prevents a meaningful copy thereof being made by conventional, perpendicularly aligned, photo-transference techniques including at least one of xerographic, offset printing, and facsimile.

5,301,982

SELF-ILLUMINATING SHEET/BOOK PAGE

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 765,517, Sep. 25, 1991, Pat. No. 5,118,138. This application Jun. 2, 1992, Ser. No. 892,268

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—83 **3 Claims**

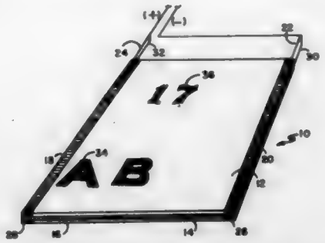
1. A sheet, comprising:

a base sheet;

a layer of electroluminescent polymer film having first and second side edges, said layer disposed on said base sheet;

a first electrode contacting said first side edge of said layer of electroluminescent polymer film;

a second electrode contacting said second side edge of said layer of electroluminescent polymer film;



means to provide electrical current to said first and second electrodes to cause said layer of electroluminescent polymer film to illuminate; and

non-transparent indicia disposed on said layer of electroluminescent polymer film, said indicia visible when said layer of electroluminescent polymer film is illuminated.

5,301,983

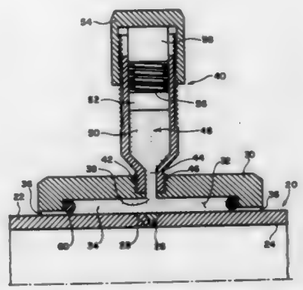
PIPE COMPONENT SEAL ASSEMBLY

Jan S. Porowski, 241 Curry Hollows Rd., Pittsburgh, Pa. 15236

Filed Mar. 23, 1992, Ser. No. 856,349

Int. Cl.[5] F16L *55/16*

U.S. Cl. 285—10 **7 Claims**



1. A pipe seal assembly for sealing a crack in a pipe, comprising:

a housing adapted to be attached to the pipe around the crack and containing therein a sealant maintained under pressure and in contact with the crack in the pipe; and

a charger securely attached to said housing and having an opening therein for fluidly communicating with the interior of said housing through an opening in said housing, first means for automatically pressurizing and forcing said sealant from said charger under pressure into said housing through said openings and second means for manually adjusting the pressure on the sealant and forcing said sealant from said charger under pressure into said housing through said openings.

5,301,984

WEAR RESISTANT PIPE ELBOW

Sam J. Farris, 727 Ash, Ardmore, Okla. 73401

Filed Jan. 14, 1993, Ser. No. 4,323

Int. Cl.[5] F16L *9/14*

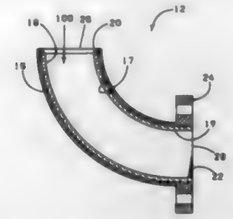
U.S. Cl. 285—55 **9 Claims**

1. A pipe elbow, comprising:

an outer shell having an upstream end, a downstream end, and an interior surface defining an interior space; and

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a seamless liner extending substantially over the interior surface of the outer shell, the seamless liner including an outer and an inner surface and a beveled annular end tapered from the inner surface to the outer surface in a downstream direction, the beveled annular end being



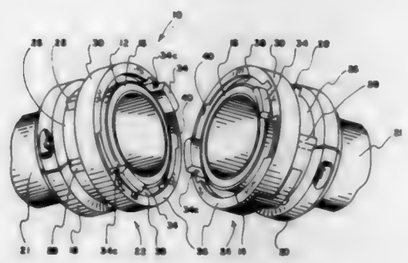
generally adjacent the upstream end of the outer shell, the seamless liner further including a half annular lip end generally adjacent to radially outward portion of the downstream end of the outer shell, the half annular lip end slanting generally in the downstream direction and extending a distance into the interior space.

5,301,985

DOUBLE POINT SUPPORTED LOCKING LEVER FOR A HOSE COUPLING ASSEMBLY

Vittorio Terzini, Weston, Canada, assignor to Angus Fire Armour Corp., Angier, N.C.

Filed Mar. 5, 1993, Ser. No. 26,753
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—79 **2 Claims**



1. A hose coupling assembly for coupling two ends of a hose together comprising:

a) a pair of flanges with each flange adapted to fit inside the end of a hose and to extend therefrom;

b) a retainer for securing the underlying flange within the end of the hose;

c) seal means associated with said flanges for sealing the hose coupling assembly when the two ends of the hose are coupled together; and

d) a pair of rotatable locking collars, co-acting means on said locking collars and flanges for confining said locking collars on the flanges such that said locking collars are freely rotatable on the flanges when the hose coupling assembly assumes an uncoupled mode, each locking collar comprising:

1) an inner sleeve;

2) a raised outer rim disposed adjacent the inner sleeve and including an outer face and wherein the raised rim and outer face define an enclosed inner race formed within the outer raised rim that extends around the outer raised rim, and wherein there is formed a circumferential opening adjacent the outer face of the raised outer rim;

3) a cam lock stop formed in the race of each raised outer rim;

4) a cam lock projecting outwardly from each raised outer rim and including a leading and a trailing edge and wherein each cam lock is designed to be inserted and moved through the circumferential race formed in the outer raised rim of an adjacent mating locking collar;

5) a cam lock inlet formed in each outer face for permitting a cam lock associated with the other locking collar to be inserted therethrough such that the cam lock can be moved through a respective circumferential race;

6) a series of lugs circumferentially spaced around the inner sleeve with each lug extending parallel to the axis of the hose coupling assembly;

7) a cut-out formed transversely across and completely through at last one lug on each sleeve and wherein the cut-out effectively splits the lug so as to form a pair of spaced apart lug portions on opposite sides of the cut-out;

8) a cam lock latching mechanism associated with each locking collar for engaging the cam lock of the other locking collar and locking the cam lock within the race by securely confining the cam lock between the locking mechanism and the cam lock stop formed in the race so as to effectively lock the two flanges together in end-to-end relationship; and

9) each cam lock latching mechanism being attached to the split lug on a respective inner sleeve of a respective locking collar and each cam latching mechanism including a pivot pin for said attachment spanning the transverse cut-out of the split lug and supported on opposite ends by the two spaced apart lug portions formed by the transverse cut-out formed in the respective lug, and further including a transverse rocker arm extending through the transverse cut-out formed in the respective lug and pivotally mounted on the pivot pin and supported on opposite sides by the split pair of lug portions such that both the pivot pin and rocker arm are supported on opposite sides, and wherein the rocker arm includes a locking head formed on one end thereof with the locking head being adapted to extend downwardly through an opening formed in the raised outer rim for locking the cam lock between the locking head and the cam lock stop formed in the recess of the raised outer rim, and wherein there is biasing means associated with the rocker arm for biasing the rocker arm and locking head downwardly towards a locked position where the locking head engages the trailing edge of the cam lock while the cam lock stop is stationed on the opposite sides of the cam lock so as to securely hold the cam lock within the recess and accordingly lock the two locking collars together.

5,301,986

CLAMP

Oded Yehezkeli, Kiryat Hai, Israel, assignor to State of Israel-Ministry of Defense, Armament Development Authority, Raphael, Haifa, Israel

Filed Oct. 9, 1992, Ser. No. 959,319
Claims priority, application Israel, Oct. 9, 1991, 99695
Int. Cl.[5] F16L *23/036*
U.S. Cl. 285—367 **4 Claims**

1. A clamp for joining a pair of elements having generally circular flanges comprising:

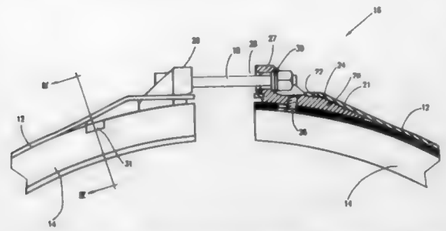
an inner flange engaging portion arranged to provide generally axially extending forces to said flanges for retaining them against one another when substantially radial forces are applied to the inner flange engaging portion;

an outer circumferential strap element for applying said substantially radial forces to said inner flange engaging portion;

at least one bolt;

a coupler engaging the strap element, and

wherein said strap element is formed with apertures adjacent free ends thereof defining internal edge surfaces abutting radially extending portions of said coupler, said apertures lying perpendicular to said radial forces, said portions of



said coupler extending through said apertures, wherein said portions and said bolt apply a tension force to the strap element along said internal edge surfaces of said apertures.

5,301,987

CONVERTIBLE TOP STACK LATCH

Stephen P. Tokarz, Flat Rock; David J. Siefert, New Hudson, and Stanley S. Maday, Grosse Point, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Sep. 4, 1992, Ser. No. 940,570
Int. Cl.[5] E05C *1/12*
U.S. Cl. 292—39 **20 Claims**



1. An apparatus for securing the free-moving portion of a hinged bow of an automotive convertible top to the automobile body structure so that the underside of said bow lies substantially flush with the exterior surface of said automobile body structure, said apparatus comprising:

a plurality of latching means, affixed to the underside of said bow, for providing securing points on said bow;

a plurality of catch means, mechanically connected to the interior side of said automobile body structure, for engaging said latching means and securing said bow to said automobile at said securing points, said automobile body structure having a plurality of passageways formed therein through which said plurality of latching means pass to allow mechanical communication between said latching means and said catching means at the interior side of said automobile body structure; and

a drive means, mechanically linked with said catch means, for selectively engaging said latching and catch means to secure said bow to said automobile body structure;

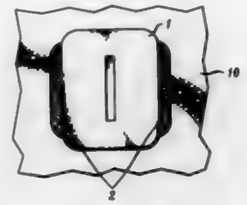
said drive means comprising a central drive mechanism for engaging said latching and catching means by moving said catch means toward said central drive mechanism and said central drive mechanism disengaging said catching means from said latching means by moving said catch means away from said central drive mechanism, said mechanical link between said drive means and said catch means being fixedly attached to said catch means and being in tension when said drive means is engaging said catch means and being in compression when said drive means is disengaging said catch means.

5,301,988

PAWL LATCH PROVIDING A VISUAL INDICATION OF CLOSURE AND A GRIPPING MECHANISM

Douglas M. Davenport, Holmdel, N.J., and Charles J. Sherman, Westminster, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 28, 1993, Ser. No. 54,801
Int. Cl.[5] E05C *3/04*
U.S. Cl. 292—067 **8 Claims**



1. Pawl latch attached to a panel for securing the panel to a supporting frame, the pawl latch comprising:

a barrel secured to the panel and having a front face;

a spindle inserted through the barrel and having a front face;

a pawl secured to the back portion of the spindle with respect to the front face of the spindle and holding the latch to the frame by a portion of the pawl contacting the frame when the latch is in the locked position and releasing the latch from the frame when the latch is in the unlocked position; and

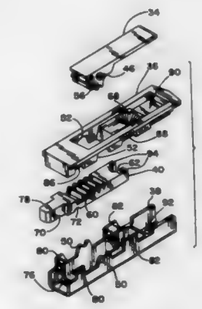
the front face of the spindle overlapping the front face of barrel when the latch is in the locked position so that the front face of the barrel is not visible and the front face of the spindle allowing a portion of the front face of barrel to be visible when the latch is in the unlocked position so that the unlocked position can be determined by observation.

5,301,989

TILT LOCK FOR DOUBLE-HUNG WINDOWS

Mary B. Dallmann, and Guy C. Stormo, both of Owatonna, Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.

Filed Mar. 9, 1993, Ser. No. 28,306
Int. Cl.[5] E05C *1/06*
U.S. Cl. 292—142 **18 Claims**



1. A latch for selectively connecting a sash of a double-hung window to a slide track in a window frame, comprising:

a latch housing mountable to the sash, said housing defining an upper boundary and a longitudinal channel;

a lever supported by said latch housing for pivoting about an axis, said lever including a gear segment at one end and a lever arm extending generally radially relative to said axis and axially aligned with said gear segment;

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a locking member movable in said channel between a locked position securing the sash to the track and an unlocked position releasing the sash from the track, including

a tongue projecting from said latch housing when said tilt latch is in the locked position and lying within said latch housing when said tilt latch is in the unlocked position,

a longitudinal slot defining a shoulder at one end of the slot, and a rack engaging the lever gear segment to move said locking member to locked and unlocked positions in response to pivoting of the lever, said lever being substantially flush with the housing upper boundary when positioning said locking member in said locked position;

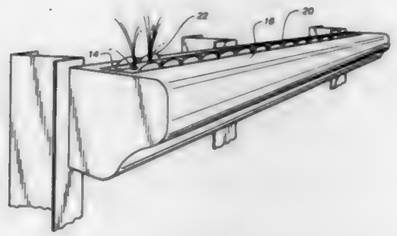
a guide stop secured to said latch housing and extending through said channel, said guide stop guiding said locking member during movement between said locked and unlocked positions, said guide stop further being positioned to engage the shoulder of said locking member before said lever arm passes vertical when said lever is moved into said unlocked position.

5,301,990

AUTOMATIC CLOSURE FOR SHOCK ATTENUATING APPARATUS

Lorene F. Willeford, 723 Montgomery St., Napa, Calif. 94559

Filed Jul. 9, 1993, Ser. No. 89,368
Int. Cl.[5] B60R *19/20*
U.S. Cl. 293—107 **2 Claims**



1. An impact attenuating device for disposition in association with a first object over an area thereof which may collide with a second object of substantial mass in a direction of impact, the device comprising an elongated, hollow one-piece resilient body having a substantially flat rear wall, a top wall and front, side and bottom walls defining an elongated cavity, the cavity filled with water, the rear wall being secured to the first object, the improvement comprising:

the top wall of the body having portions thereof extending parallel to said direction of impact and defining a plurality of upwardly directed apertures;

a plurality of resiliently deformable flap members adjacent to and covering said apertures, said flap members adapted for deformation vertically from the respective apertures;

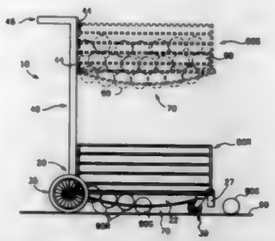
so that upon impact of said second object against the front wall of the body at a speed in excess of several miles per hour and in said impact direction, transverse to the direction of flap member deformation, pressure increases in said body until a number of the flap members are deformed and displaced from their respective apertures, the number depending upon the severity of the impact so that water is ejected through the apertures from which the respective flap members have been displaced as pressure of the water in the body decreases, followed by at least another pressure increase during which relative speed between the two objects decreases materially.

5,301,991

TENNIS BALL RETRIEVER AND STORAGE CART

Sam H. Chen, 13947 Carriage Rd.; Shunder Chang, 12655 Danielson Ct., #310, both of Poway, Calif. 92064, and East White, No. 14 San-S. St., Taichung, Taiwan

Filed May 18, 1992, Ser. No. 884,940
Int. Cl.[5] A63B *47/02;* **B62B** *3/02*
U.S. Cl. 294—19.2 **5 Claims**



1. A ball retrieval and storage cart for collecting a ball from the ground and inserting it into a basket; said cart comprising:

wheel means, including a plurality of wheels, for rollingly supporting a basket bottom wall in position for retrieval of a ball from the ground;

a basket rollingly supported in a ball retrieval position by said wheel means; said basket for retaining a plurality of balls therein; said basket having a front end and a rear end; said basket including:

a bottom wall including:

two side members oriented front to rear and having a normal position spaced apart less than the ball diameter and defining a slotted aperture for entrance of a ball into said basket; in the ball retrieval position:

at least one of said side members being a slanted member; said slanted member having a front end higher from the ground than the ball radius and a rear end lower to the ground than the ball radius;

at least one of said side members being a sideways deflectable member; said deflectable member being biased to the normal position but being sideways deflectable such that a ball on the ground entering said aperture sideways deflects said deflectable member sufficiently for the ball to pass into said basket; and wherein:

said deflectable member si a rod having a front end and a rear end; and

said bottom wall includes a V-shaped guide supporting said rod front end such that said rod may move upward and outward in response to encountering the horizontal diameter of a ball on the ground.

5,301,992

CAR TRUNK CADDY

Henry B. Whitmore, Rte. 5, Box 369, San Antonio, Tex. 78221

Filed Jun. 17, 1992, Ser. No. 899,700
Int. Cl.[5] B60R *5/04*
U.S. Cl. 296—37.1 **7 Claims**

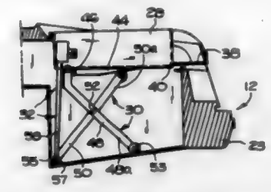
1. A caddy for retrofitting in a car trunk having a bottom element, a front end, a rear end, and a generally open top, said caddy comprising,

a tray in the trunk and extending generally horizontally,

supporting means under and supporting the tray, and including a pair of scissor links at each of two lateral sides of the tray, extendible and contractible vertically for moving the tray vertically between upper and lower positions,

one link of each pair having one end pivotally secured to the bottom element of the trunk, and the other link of each pair having one end pivotally connected to the tray at the front end of the tray, and the other ends of the links being slidable along the tray and bottom element respectively,

means for extending and contracting the links, including an upright rotatable threaded shaft connected to the bottom element and extending to the tray, and



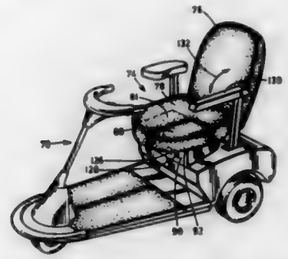
means on the tray cooperable with the threaded shaft for moving the tray vertically.

5,301,993

AUTOMOTIVE VEHICLE SEAT FOR DISABLED PERSONS

Wojciech Zalewski, Belmont, Mass., assignor to Enhancements Unlimited, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 745,944, Aug. 16, 1991, Pat. No. 5,147,104, which is a continuation-in-part of Ser. No. 490,086, Mar. 7, 1990, Pat. No. 5,040,832. This application Sep. 9, 1992, Ser. No. 942,312
Int. Cl.[5] B60N *1/10*
U.S. Cl. 296—65.1 **16 Claims**



1. A seat only for a single driver or single passenger of an automotive vehicle comprising:

(a) back cushion means presenting a geometrical contour only for said single driver or single passenger;

(b) seat cushion means presenting a geometrical contour only for said single driver or single passenger;

(c) electromechanical means; and

(d) operational means coupled to said electromechanical means;

(e) said seat cushion means including stationary cushion means and transport cushion means, said stationary cushion means providing a portion of said geometrical contour of said seat cushion means;

(f) said transport cushion means being constrained for movement in an arcuate path between a retracted position and an extended position when actuated by said operational means;

(g) said operational means including telescoping means to move said transport cushion means in said arcuate path;

(h) said operational means including manual actuating means for maintaining movement between said retracted position and said extended position when under constant manual control;

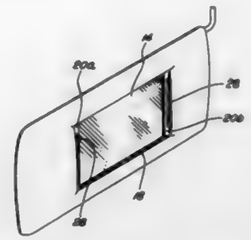
(i) said actuating means being accessible to said constant manual control in close proximity to said transport cushion means.

5,301,994

DUAL SYNCHRONOUS OPENING MIRROR DOORS FOR SUN VISORS

Douglas J. Wilson, Jeddo, Mich., assignor to Plasta Fiber Industries Corp., Marlette, Mich.

Filed Oct. 14, 1992, Ser. No. 960,957
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.2 **4 Claims**



1. An arrangement for selectively covering and uncovering a mirror disposed within a hollow vehicle visor, the vehicle visor defining therein a channel and an opening exposing the mirror, the arrangement comprising:

a pair of doors selectably and linearly movable within the channel between an extended position covering the mirror and a retracted position uncovering the mirror.

said pair of doors including a first door and a second door, each of said pair of doors having an upper edge and a lower edge and each of said pair of doors having a proximate end closest to that of the other of said pair of doors and a distal end farthest from that of the other of said pair of doors;

conversion means concealably disposed behind the mirror for converting a motion of either one of said pair of doors in one direction to a simultaneous motion of the other one of said pair of doors in the opposite direction.

said conversion means including rotatable transfer means rotatably disposed behind the mirror for transferring reversed linear motion from either of said pair of doors to the other of said pair of doors,

said rotatable transfer means including a first lever having a first end and a second end and being pivotally and centrally mounted on the visor behind the mirror;

first linear transfer means connected to said first door and cooperatively engaged with said rotatable transfer means for applying a torque thereto when said first door is linearly moved within the channel.

said first linear transfer means including a second lever having a first end and a second end, the first end of said second lever being pivotally connected to the first end of said first lever, the second end of said second lever being pivotally connected to the distal end of said first door near the upper edge thereof; and

second linear transfer means connected to said second door and cooperatively engaged with said rotatable transfer means for applying a torque thereto when said second door is linearly moved within the channel,

said second linear transfer means including a third lever having a first and a second end, the first end of said third lever being pivotally connected to the second end of said first lever, the second end of said third lever being pivotally connected to the distal end of said second door near the lower edge thereof, each of said first, second and third levers being angularly disposed with respect to the lever to which it is pivotally connected when said pair of doors are in their extended position and said levers being substantially linearly disposed when said pair of doors are in their retracted position,

said first and second linear transfer means being in diametrically opposed engagement with said rotatable transfer means so that a linear motion of one of said pair of doors

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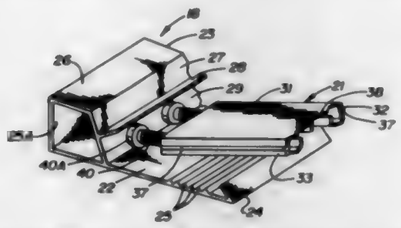
in one direction causes a rotation of said rotatable transfer means and, consequently, a linear motion of the other of said pair of doors in the opposite direction, said rotatable transfer means and said first and second linear transfer means being disposed behind the mirrors and said pair of doors and being thereby concealed from view.

5,301,995

ADJUSTABLE BOW FOR A TRUCK TONNEAU COVER

Mark Isler, 8447 Tod Ave., Lordstown, Ohio 44481

Filed Dec. 21, 1992, Ser. No. 994,359
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—100 **4 Claims**



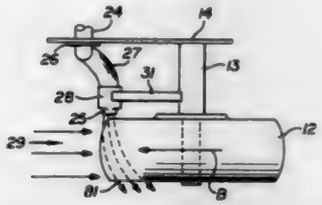
1. An adjustable bow assembly for a tonneau cover assembly on a truck bed of the type having a front wall, an end wall, and an opposing sidewalls therebetween, said tonneau cover assembly comprising in combination a support frame on said truck walls, said support frame comprising an elongated base having opposing frame portions on said respective opposing sidewalls of said truck bed, an enclosed channel area extending from said base, a flange element on said channel area in vertically spaced relation to said base, adjustable bows comprising an elongated rail section, said rail section having first and second sidewalls in spaced parallel relation to one another, a transverse wall extending between said first and second sidewalls, each of said first and second sidewalls terminating in a transversely inwardly directed flange having a return flange thereon extending from each of said first and second sidewalls defining mounting channels therebetween, an inwardly projecting rib on said transverse wall, a pair of adjustable extension elements threadably secured within said respective mounting channels, means for advancement of said extension elements within said channels, and means for positioning said adjustable bows within said support frame.

5,301,996

METHOD AND APPARATUS FOR DIRECTING A STREAM OF PRESSURIZED FLUID ATA LOCATION FORWARD OF A WHEEL TO IMPROVE THE TRACTION OF THE SAME

Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050

Filed Jan. 4, 1993, Ser. No. 209
Int. Cl.[5] B60J *9/00*
U.S. Cl. 296—180.1 **18 Claims**



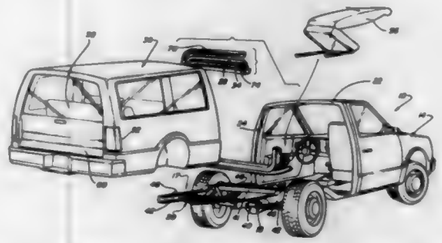
1. In a device having a rotating wheel which rotates about a spin axis and is adapted to contact a surface at the contact patch such that the wheel at the contact patch and the surface at the contact patch have the same velocity, means for supplying a gas jet in a direction that is essentially parallel with the spin axis at a location which is ahead of the contact patch.

5,301,997

MODULAR PASSENGER COMPARTMENT FOR MOTOR VEHICLE

Charles Cudden, 24395 Power, Farmington Hills, Mich. 48336

Continuation of Ser. No. 818,621, Jan. 10, 1992, abandoned. This application Feb. 18, 1993, Ser. No. 20,263
Int. Cl.[5] B62D *27/00*
U.S. Cl. 296—183 **3 Claims**



1. A modular assembly in combination with a pick-up truck comprising:

a pick-up truck chassis having a cab assembly which is modified to define a cab aperture having a peripheral flange;

a structurally self-supported compartment for receiving passengers or cargo, said compartment enclosing an interior space defined by a roof, floor, side and rear walls and defining a compartment aperture at a front wall with a peripheral flange;

said compartment flange being alignably connected with said cab flange and allowing movement of said passengers or cargo between said compartment and said cab assembly; and

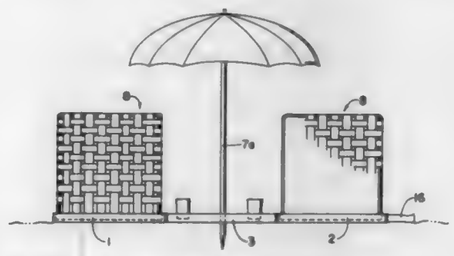
seal means disposed between said compartment aperture and said cab aperture peripherally about said cab flange for sealingly connecting said compartment and said cab assembly, said means including a stiffening member peripherally positioned about said cab flange, a U-shaped seal member surrounding said cab flange for providing a seal, and a cover concealing said stiffening member and seal member from view.

5,301,998

FOLDABLE FURNITURE

Owen M. Davis, 5576 Cabin John Dr., Virginia Beach, Va. 23464

Filed Dec. 28, 1992, Ser. No. 997,508
Int. Cl.[5] A47B *39/00*
U.S. Cl. 297—135 **8 Claims**



1. A folding lounge comprising:

a first base member;

a first back rest member;

and a table member;

said first base member having a first end and a second end opposite to and substantially parallel to said first end, and a first side and a second side substantially parallel to said first side, said first end and said second end of said first base member being relatively shorter than said first side and said second side of said first base member; and said first base member having a top surface and a bottom surface;

wherein said bottom surface of said first base member is substantially rectangular in shape;

and said bottom surface of said first base member is substantially flat;

and said table member has a top surface and a bottom surface, said top surface of said table member being substantially parallel to said bottom surface of said table member, and said top surface of said table member being substantially rectangular in shape, and said top surface of said table member having a first side and a second side;

and further comprising means for attaching said first side of said table member to said first side of said first base member;

wherein said means for attaching said first side of said table member to said first side of said first base member comprises a first hinge connection;

and further comprising means for attaching said first back rest member to said first end of said first base member;

wherein said means for attaching said first back rest member to said first end of said first base member comprises a second hinge connection;

and further comprising a convex depression in said top surface of said first base member,

and wherein said first back rest member has a front surface and a rear surface, and a finite thickness as measured between said front surface and said rear surface of said first back rest member;

and wherein the depth of said convex depression in said top surface of said first base member, as measured perpendicular to said top surface of said first base member, is at least as great as said finite thickness of said first back rest member.

5,301,999

LIGHTWEIGHT STOWABLE SUNSHADE FOR CHILD'S CAR SEAT

Marion L. Thompson, and Irene L. Thompson, both of 6871 Hwy. 19, Waunakee, Wis. 53597

Filed Mar. 3, 1993, Ser. No. 26,510
Int. Cl.[5] A47C *7/66*
U.S. Cl. 297—184.13 **6 Claims**

1. A sunshade assembly for positionable mounting to a child's car seat, comprising:

a) a mounting bracket adapted for rigidly mounting to the side of a child's car seat;

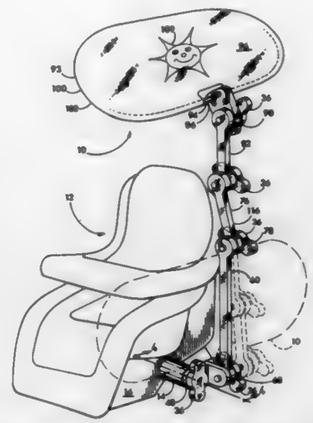
b) an angle bracket having a first flange rotatably mounted to the mounting bracket for selected positioning, and a second flange extending approximately 90 degrees to the first flange;

c) a first arm rotatably mounted for selected positioning to the second flange of the mounting bracket, wherein the first arm is rotatable in a first plane defined with respect to the second flange;

d) at least one second arm rotatably mounted for selected positioning to the first arm and rotatable in a plane substantially parallel to the first plane;

e) a support bracket rotatably mounted for selected positioning to said second arm and rotatable in a plane substantially parallel to the first plane;

f) a lightweight sunshield having a tubular support frame rotatably mounted to the support bracket for selected positioning, wherein a cover extends across the frame to serve to positionably block sunlight directed at the car seat's passenger.

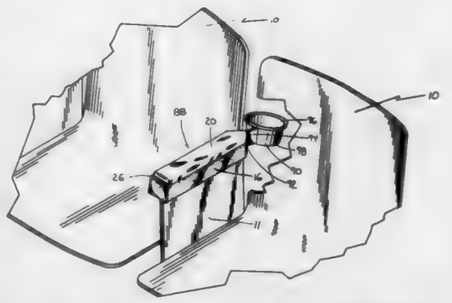


5,302,000

CUP HOLDER ARMREST

John P. Ayotte, Eagan, Minn., assignor to MTS Northwest Sound, Inc., Minneapolis, Minn.

Filed Oct. 21, 1992, Ser. No. 964,357
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—194 **12 Claims**



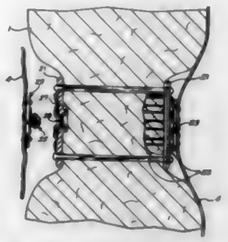
1. A cup holder armrest for use with a seat having an arm and a back, the cup holder armrest providing a container holder for the occupant of the seat behind the seat to which the cup holder armrest is attached, the cup holder armrest comprising:

a main body having an armrest portion and a container holder portion extending from a first end of the armrest portion, past the back of the seat to which it is attached, to a point located behind the back of such seat, the container holder portion thereby being located behind the back of the seat to which the cup holder armrest is attached; and

means for mounting the main body on the arm of the seat.

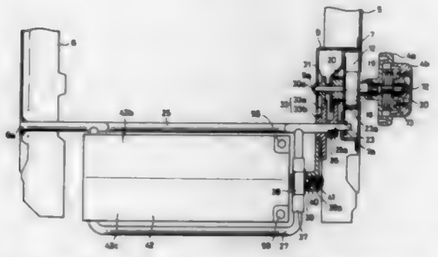
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,001
GARDEN FURNITURE CUSHIONS WITH EXCHANGEABLE COVER
Willem van Dis, Fijnaart, Netherlands, assignor to Q. C. International B. V., Bosschenhoofd, Netherlands
Continuation of Ser. No. 609,160, Nov. 2, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 951,304
Claims priority, application Netherlands, Nov. 3, 1989, 89.02723; Dec. 22, 1989, 89.03149; Aug. 30, 1990, 90.01917
Int. Cl.[5] A47C *31/02*
U.S. Cl. 297—228.13 2 Claims



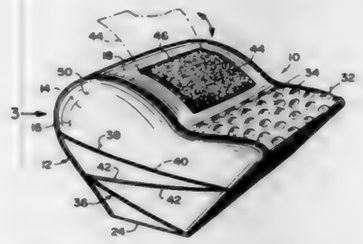
1. A cushion filling defining an outer surface having a first side for supporting a person's weight and a second opposing side, the filling being capable of being enclosed on both the first and second sides by a cover provided with at least one opening for receiving and completely enclosing the filling, wherein:
the filling is provided on its outer surface with first connection elements that are releasably connectable with second connection elements provided on an inner surface of the cover, and
wherein each of the first connection elements comprises a square plate that forms an outwardly extending funnel disposed around a central opening defined by the plate for receiving a second connection element of the cover, the plate further defining a plurality of openings disposed regularly in a circle about the central opening, the plate being secured to the filling by stitching thread extended through the filling and the circularly disposed openings.

5,302,002
HIP SUPPORTING APPARATUS OF SEAT
Youetsu Nagasaka, Kanagawa, Japan, assignor to Shiroki Corporation, Kanagawa, Japan
Filed Sep. 24, 1991, Ser. No. 764,828
Claims priority, application Japan, Sep. 28, 1990, 2-103111[U]
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284.4 28 Claims



17. A seat having a seat cushion and a seat back having a lower portion, comprising:
a horizontally extending fitting board shaft which is provided in said lower portion of said seat back;
a fitting board which is rotatable about said horizontally extending fitting board shaft;
means, removably secured to said fitting board, for connecting said fitting board to said fitting board shaft;
torque transmitting means mounted on said fitting board shaft, wherein said means for connecting comprises a hole with a shape corresponding to a shape of said torque transmitting means; and
means for rotatably adjusting said fitting board; wherein said means for rotatably adjusting comprises a gear train which transmits rotation to said fitting board.

5,302,003
COLLAPSIBLE FOOTREST
Judy Xenofos, 5212 Ua Rd., Kapaa, Kauai, Hi. 96746
Filed Dec. 18, 1992, Ser. No. 992,781
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.44 7 Claims

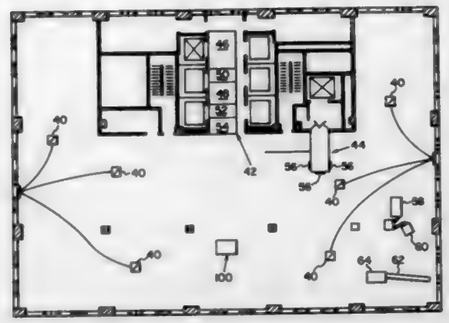


1. A collapsible footrest which comprises:
a) a base having an inflatable chamber, said base made of flexible material with a top contoured surface to support the feet of a person and a flat bottom to sit upon the floor;
b) means for inflating and deflating said chamber of said base, whereby said base may be folded when deflated, so as to occupy considerably less storage space, said inflating and deflating means includes an air valve affixed to said base to allow air to enter and exit said chamber, so that said base may be inflated for use and deflated for storage as required, and a plug for closing said air valve after said chamber is inflated;
c) means located on said top contoured surface of said base for massaging the feet of the person, said massaging means includes a plurality of protrusions on a forward portion of said top contoured surface of said base to produce stimulation to the soles of the feet for increasing circulation of blood within feet; and
d) means on said base for adjusting the height of said base and allowing said base to fold itself in a deflated condition, said adjusting means includes a plurality of zig-zag slide fasteners, with each of said slide fasteners having an expansion flap between two rows of teeth, so that when said slide fasteners are opened said expansion flaps can be extended to increase the height of said base.

5,302,004
METHOD OF REMOVING ASBESTOS FROM A BUILDING
David B. Docherty, Wexford, Pa., assignor to QSI International, Inc., Allison Park, Pa.
Filed Oct. 29, 1992, Ser. No. 968,492
Int. Cl.[5] A47L *13/06*; B08B *7/04*
U.S. Cl. 299—18 16 Claims

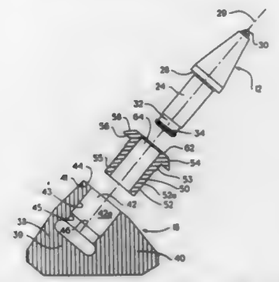
15. A method for removing asbestos containing material from a structure comprising:
a) erecting a containment area surrounding the portion of the structure wherein said asbestos containing material is located;
b) creating a negative pressure in said containment area;

c) compressing compressible asbestos containing material located within said containment area;
d) sizing non-compressible asbestos containing material located within said containment area; and



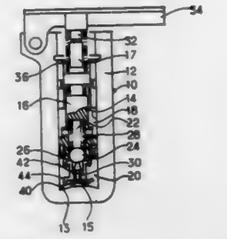
e) removing said asbestos containing material from said containment area.

5,302,005
APPARATUS FOR HOLDING A CUTTING BIT
Michael L. O'Neill, Lucinda, Pa., assignor to Joy Technologies Inc., Pittsburgh, Pa.
Continuation of Ser. No. 834,919, Feb. 12, 1992, abandoned, which is a continuation of Ser. No. 578,908, Sep. 7, 1990, Pat. No. 5,088,797. This application Jun. 4, 1993, Ser. No. 72,506
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] E21C *35/18*
U.S. Cl. 299—91 28 Claims



23. Apparatus for supporting a cutting bit having an elongated shank, on a cutting element which is moveable in a cutting direction, in a bit holder having a base portion and a body portion, said base portion constructed for attachment to said cutting element, said body portion having a trailing end facing away from the cutting direction and a leading end facing in the cutting direction, said body portion further having an aperture coaxial with the cutting bit and extending from said trailing end to said leading end and defining an inner surface, comprising:
a sleeve member having a body member constructed to be received in said aperture through said leading end of said body portion, said body member defining an outer surface, said sleeve member further having a bore therein for coaxially receiving the shank of said cutting bit; and
retaining means on said outer surface of said sleeve for providing an annular area of interference fit between said outer surface and said inner surface which is shorter in length than said outer surface and is adapted to prevent rotation and axial movement of the sleeve relative to the body portion while in use and to allow the removal of said sleeve from said aperture of said body portion.

5,302,006
BRAKE REGULATOR WITH LEVER AND IMPROVED RESPONSE TIME
Philippe Castel, Paris, France, assignor to Bendix Europe Services Techniques, Drancy, France
Filed Jul. 6, 1992, Ser. No. 909,269
Claims priority, application France, Jul. 30, 1991, 91 09668
Int. Cl.[5] B60T *8/22*, *11/34*
U.S. Cl. 303—9.69 4 Claims



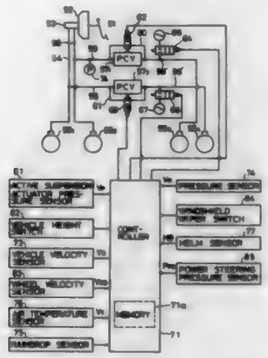
1. A brake regulator interposable between a hydraulic pressure source and a motor-vehicle brake circuit, comprising a housing equipped with a bore, a piston sliding in said bore and delimiting first and second pressure chambers capable of being connected respectively to the pressure source and the motor-vehicle brake circuit, said chambers communicating with one another by means of a passage in said piston, a valve in said passage and stressed elastically to bear sealingly against a seat at the piston, and a return spring interposed between a movable element, the position of which varies as a function of loading of the vehicle, and said piston, so as to stress the piston toward a bottom of the second chamber, in a rest position in which said valve is set apart from the seat by a stop, characterized in that said stop is mounted movably relative to the bottom of the second chamber and in opposition to the movement of the piston and rests on lever means which bears on said bottom and on one end of said piston in said second chamber.

5,302,007
REAR WHEEL BRAKING FORCE CONTROL METHOD AND AN APPARATUS THEREFOR
Takao Moritta, Toyota; Tsutomu Matsukawa, Okazaki; Hiromichi Yasunaga, Okazaki; Tadao Tanaka, Okazaki; Akihiko Togashi; Yasutaka Taniguchi, Hoi, and Masanori Tani, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1992, Ser. No. 983,468
Claims priority, application Japan, Nov. 30, 1991, 3-317174
Int. Cl.[5] B60T *8/30*, *8/24*, *8/26*
U.S. Cl. 303—9.73 28 Claims

1. A rear wheel braking force control apparatus for a vehicle, having at least one proportioning control valve arranged in a first passage connecting a master cylinder and wheel cylinders for rear left and right wheels of the vehicle for controlling a wheel cylinder pressure so that a rate of increase of the wheel cylinder pressure is lower than that of a master cylinder pressure, at least one solenoid-operated valve provided in the first passage for selectively making a pressure control action of the at least one proportioning control valve effective or ineffective, and a control device for controlling an operation of the at least one solenoid-operated valve, said control apparatus comprising:
braking degree detecting means for detecting a degree of braking of the vehicle;
braking condition detecting means for detecting braking conditions of the vehicle which influence a level of a

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locking limit of at least one of the rear wheels, said control means being adapted to determine a set braking degree in accordance with the level of the locking limit of the at least one rear wheel discriminated based upon a detection output of said braking condition detecting means, to actuate the at least one solenoid-operated valve so that the action of the at least one proportioning control valve is made ineffective when the braking degree detected by said braking degree detecting means is lower than the set braking degree, and to actuate the at least one solenoid-operated valve so that the action of the at least one proportioning control valve is made effective when the detected braking degree is higher than the set braking degree;



locking tendency detecting means for detecting a tendency for the at least one rear wheel to be locked;

a reservoir communicating with a second passage constituting a part of the first passage and connecting the wheel cylinders and the at least one proportioning control valve; and

a reducing valve for selectively allowing or preventing the communication between the second passage and the reservoir, said control means being adapted to keep the reducing valve closed in a normal state and to open said reducing valve when the tendency for the at least one rear wheel to be locked is detected by said locking tendency detecting means.

5,302,008

FAIL-SAFE SYSTEM AND BRAKE ACTUATING APPARATUS FOR A VEHICULAR BRAKE CONTROL APPARATUS

Katsuya Miyake; Tatsuo Ogawahara, both of Saitama; Takashi Kunimi, Tokyo; Tadashi Kobayashi, Saitama; Masahiro Nezu, Saitama; Kimio Takahashi, Saitama; Masatomo Mori, Chiba, and Takashi Kurosawa, Saitama, all of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Saitama, both of Japan

Filed Sep. 4, 1992, Ser. No. 941,272

Claims priority, application Japan, Sep. 6, 1991, 3-254256; Sep. 6, 1991, 3-254257

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—14 **16 Claims**

1. A brake control system for a vehicle, comprising:

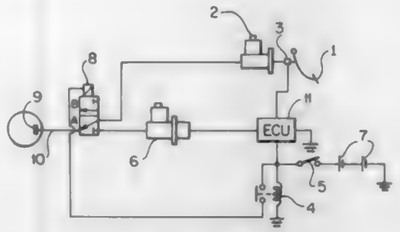
a sensor for producing a first electric signal representing a status of a brake pedal of the vehicle;

a master cylinder in which a first brake pressure is generated by actuation of the brake pedal;

electric brake actuating means for generating a second brake pressure in response to a second electric signal;

electric control means for generating said second electric signal and controlling said brake actuating means in accordance with said first electric signal produced by said sensor; and

valve means communicating with vehicle brakes for operatively changing between a first position and a second position under the control of the electric control means, said valve means assumes said first position during normal conditions so that said second brake pressure generated by



said brake actuating means is supplied to the vehicle brakes, and said valve means changes to said second position when an electrical defect has occurred so that communication between said brake actuating means and the vehicle brakes is shut off and said first brake pressure generated in the master cylinder is supplied to the vehicle brakes.

5,302,009

METHOD AND DEVICE FOR THE BRAKING OF VEHICLES BY THE SERVO-CONTROL OF THE BRAKING TORQUE APPLIED TO A WHEEL

Christian Menard, Villennes S/ Seine, France, assignor to Thomson-CSF, Puteaux, France

Filed Oct. 21, 1992, Ser. No. 964,055

Claims priority, application France, Oct. 23, 1991, 91 13119

Int. Cl.[5] B60T *8/00*

U.S. Cl. 303—100 **5 Claims**



1. A method for braking at least one wheel of a vehicle by servo-control of the braking torque applied to said at least one wheel, which comprises:

determining the adherence of the wheel to a braking track by using a point of operation that is variable on an adherence curve as a function of slip of the wheel, a maximum value of adherence of the at least one wheel being unknown, wherein the parameter of servo-control of the braking torque consists of one of a positive and negative sign of variation of the slope of the adherence curve at said point of operation, and wherein the braking torque is increased when the sign of the variation of the slope at the point of operation on the adherence curve is negative, and the braking torque is decreased when the sign of the variation of the slope at the point of operation on the adherence curve is positive; and

performing braking action of said at least one wheel based upon braking torque of the wheel, the speed of the wheel, and the speed of the vehicle.

5,302,010

CIRCUIT CONFIGURATION FOR IMPROVING THE DRIVING BEHAVIOR OF AN AUTOMOTIVE VEHICLE TENDING TO OVERSTEERING

Norbert Ehmer, Bad Orb; Hans-Joachim Buettner, Hohenahr/-Erdar, and Thomas Striegel, Liederbach, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

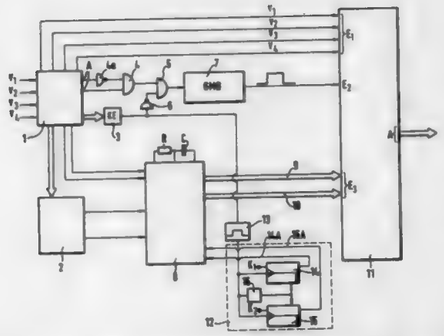
Continuation of Ser. No. 713,193, Jun. 10, 1991, abandoned.

This application Jun. 24, 1993, Ser. No. 81,836

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1990, 4018495

Int. Cl.[5] B60T *8/64*

U.S. Cl. 303—111 **3 Claims**



1. Apparatus for improving the driving behavior of an automotive vehicle tending to oversteering, said automotive vehicle having an outer front wheel during cornering, an inner front wheel during cornering, rear wheels, means for developing wheel signals representative of the rotational behavior of said front wheels, and anti-lock control system, and a yaw moment limitation circuit, said apparatus comprising:

means responsive to said wheel signals for developing:

(a) from said wheel signals cornering identification signals representative of said automotive vehicle undergoing cornering maneuvers,

(b) at least one slip threshold signals and deceleration threshold signals representative of a slip threshold and a deceleration threshold of the outer front wheel during cornering, respectively, and

(c) anti-lock signals representative of anti-lock control applied to one of said front wheels;

means responsive to said cornering identification signals and said anti-lock signals for disabling said yaw moment limitation circuit when said automotive vehicle undergoes cornering maneuvers;

and means responsive to said wheel signals and said cornering identification signals for modifying at least one of said slip threshold signals and said deceleration threshold signals to raise said slip threshold and said deceleration threshold, respectively, by a predetermined amount for a predetermined duration upon the occurrence of said automotive vehicle undergoing a cornering maneuver.

5,302,011

BRAKING PRESSURE CONTROL DEVICE FOR A HYDRAULIC AUTOMOTIVE VEHICLE BRAKE SYSTEM

Peter Volz, Darmstadt, and Bernd Schopper, Kriftel, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

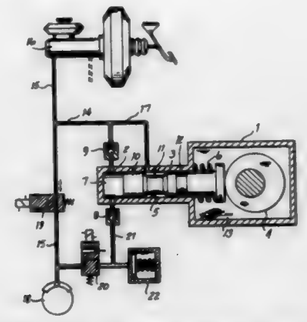
PCT No. PCT/EP91/01924, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO92/06874, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 10, 1991, Ser. No. 859,495

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1990, 4130729; Oct. 16, 1990, 4032797

Int. Cl.[5] B60T *8/40, 8/42*

U.S. Cl. 303—116.1 **4 Claims**



1. A braking pressure control device for a hydraulic automotive vehicle anitlock brake system, comprising: a braking pressure generator, at least one wheel brake cylinder connected via a brake line with the braking pressure generator to actuate a brake, a braking pressure control circuit which is interposed into the brake line between the braking pressure generator and the wheel brake cylinder, and comprising a piston pump having an inlet and an outlet, said outlet connected to said brake line, an inlet brake control valve connected to said wheel brake cylinder via said brake line, an outlet brake control valve connected in a return line leading to said inlet of said piston pump, said pump including a housing, a piston axially movable in a cylinder bore in said housing, a mechanical piston drive enlarging one end of said piston, the other end of said piston defining a working chamber in said cylinder bore; a slide seal sealing said piston in relation to said cylinder bore in said pump housing, a pump inlet valve and pump outlet valve each connected to said piston pump working chamber, said pump outlet valve also connected to said brake line, said pump inlet valve also connected to said return line, said pump inlet valve opened by a predetermined pressure difference thereacross, said difference in pressure such that said pump inlet valve remains closed to said working chamber if the pressure in said working chamber is below atmospheric pressure, an annular chamber encircling said piston at an axial location on one side of said slide seal away from said working chamber, said annular chamber being sealed in relation to said housing portion containing said piston drive, said annular chamber communicating with one of said brake line or said return line.

5,302,012

COMPOSITE TREAD RING FOR TRACK ROLLER

Delbert D. Dester, Washington, and Daniel L. Mikrut, Peoria, both of Ill., assignors to Caterpillar, Inc., Peoria, Ill.

Filed Jan. 14, 1993, Ser. No. 4,443

Int. Cl.[5] B62D *55/14*

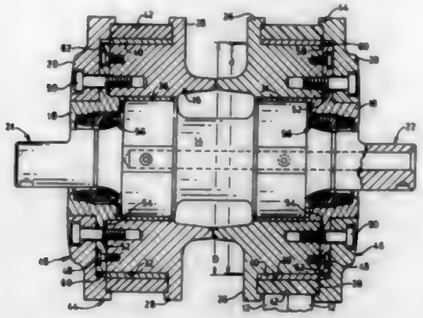
U.S. Cl. 305—56 **17 Claims**

1. A replaceable composite tread ring in combination with a roller assembly comprising:

a non-metallic outer tread portion;

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a metallic inner base portion having a side surface and a projection extending outwardly of said side surface, said base portion further having a U-shape in cross-section having first and second side legs, said legs being adapted



to enclose portions of said non-metallic tread portion, and said tread portion being bonded to said base portion; and said roller assembly includes a retainer plate and said retainer plate has a cavity adapted to receive said projection.

5,302,013

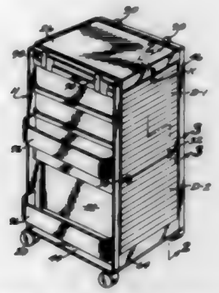
LOCKABLE BEAUTY SUPPLIES TROLLEY

Kenneth Reiner, 1455 La Perla Ave., Long Beach, Calif. 90815

Filed Jan. 31, 1992, Ser. No. 829,768

Int. Cl.[5] A47B *96/00*

U.S. Cl. 312—249.11 **19 Claims**



1. An easily openable and closeable cabinet comprising:

a housing having sidewalls with upper and lower ends, a top wall, a bottom wall, a rear wall and an open front end;

rigid upper and lower doors having front and back surfaces are horizontally hinged together at a upper end of the lower door and a lower end of the upper door;

horizontal extending pin means secured to the back surface of the lower end of the upper door;

horizontal grooves formed on a interior of the sidewalls between said upper and lower ends, said grooves being aligned to receive and guide both the pin means and edges of the doors as the doors are moved from a vertically aligned closed position to a retracted folded-together horizontal position entirely within the cabinet wherein when the doors are in the retraced position their front surfaces are juxtaposed facing one another;

horizontal surfaces formed on the interior of the housing below said grooves to support the edges of the doors in said retracted horizontal position; and

means to releasably hold the upper door in its vertical closed position.

5,302,014

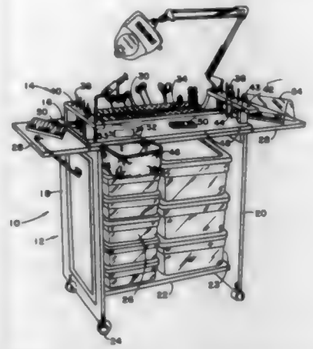
CART FOR TYING FISHING LURES

George K. Hobson, 202 Bobby Dale, Waynesville, Mo. 65583

Filed Oct. 19, 1992, Ser. No. 963,416

Int. Cl.[5] A47B *88/00, 81/00;* **A47F** *7/00*

U.S. Cl. 312—249.12 **12 Claims**



1. A combination of a cart and a work tray for use in storing fly tying material and for providing a work area for making fishing lures, said cart being comprised of:

a framework defining a storage bin being open at a front side thereof,

said work tray having a flat work surface being supported on a top surface of said framework,

casters mounted beneath said framework,

a storage rack having a plurality of apertures for receiving and storing tools being located at a rear border of said work surface,

a raised rack arm being located at each side border of said work surface, each raised rack arm having a plurality of upwardly-projecting spindles for receiving thread spools, and at least one hole for receiving a support shaft of a lamp or vise, said hole having means for securing said support shaft,

and a waste receptacle for attachment to a forward edge of said work tray, said work tray being removable from said car, whereby said work tray can be taken to a location remote from said cart to allow the user to engage in fly tying activities.

5,302,015

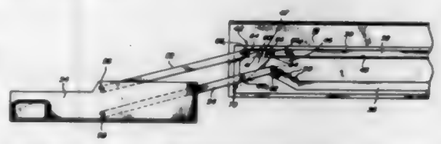
ADJUSTABLE KEYBOARD DRAWER

Gregory Du Vall, Santa Monica, Calif., assignor to Microcomputer Accessories, Inc., Los Angeles, Calif.

Filed Mar. 12, 1992, Ser. No. 849,893

Int. Cl.[5] A47B *88/00;* **E04G** *3/00;* **A47H** *1/00*

U.S. Cl. 312—282 **20 Claims**



1. An adjustable keyboard support for use with a desk top comprising:

a shelf for supporting a keyboard;

a base having an outer end and an inner end, the outer end of said base locatable at a front edge of the desk top, said base including a vertical support surface having first and second slots, the first slot being substantially horizontal along its entire length and the second slot having a horizontal portion and an outer angled end portion;

at least one support arm connecting the shelf to the vertical support surface of said base;

the support arm having first and second bars respectively connecting first and second points on the shelf to the first and second slots in the vertical support surface;

the first and second bars respectively having inner ends slidably and pivotally received in the first and second slots of the base and outer ends pivotally mounted to the first and second points on the shelf; and

a mounting plate for connecting the inner end of the first bar to a pivot point on the second bar, the pivot point being intermediate the inner and outer ends of the second bar so that the inner end of the second bar extends beyond the pivot point to be received in the second slot;

whereby the first and second bars of the support arm may be slid laterally along the first and second slots relative to the front edge of the desk top so that the shelf may be laterally positioned as desired and, when the inner end of the second bar reaches the outer angled end portion of the second slot, the first and second bars of the support arm are pivoted so that the shelf may be vertically positioned as desired.

5,302,016

AUTOMATIC PULL-IN MECHANISM FOR DRAWER GUIDES

Gerhard Lautenschläger, Brensbach 1-Wersau, and Horst Berger, Bielefeld, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

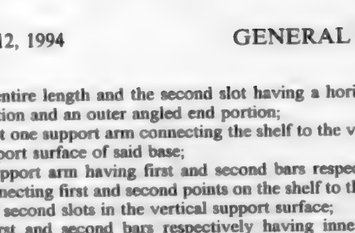
PCT No. PCT/EP91/00710, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO92/00027, PCT Pub. Date Jan. 9, 1992

PCT Filed Apr. 15, 1991, Ser. No. 809,543

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1990, 4020277

Int. Cl.[5] A47B *88/04*

U.S. Cl. 312—333 **12 Claims**



11. An automatic pull-in mechanism in combination with a drawer guide,

(a) the drawer guide having a guide rail formed of sheet metal which is to be fastened to a carcase wall of a carcase, the guide rail having a portion of its profile bent upwardly from a profile portion, the profile portion projecting at substantially a right angle and horizontally from the carcase wall, the upwardly bent portion of the guide rail entering from below into a corresponding runner rail formed by an open-bottomed hollow member which is to be fastened removably on a drawer, the runner rail having tracks formed in an interior thereof for roller bearings mounted in an elongated cage, the roller bearings being rollable via an inside portion thereof on an outside portion of the upwardly bent portion of the guide rail and the roller bearings being rollable via an outside portion thereof on the tracks formed by associated portions of an inner surface of the runner rail to thereby permit a longitudinal displacement of the runner rail relative to the guide rail, the runner rail having a projection reaching downward therefrom into an interior of the carcase,

(b) the automatic pull-in mechanism comprising a shallow, elongated case for fastening to the profile portion of the guide rail, the pull-in mechanism having journaled therein

a toggling component which can move between two end positions and which toggling component is biased by a spring, the toggling component having an open-ended slot such that when the pull-in mechanism is disposed on the guide rail with the toggling component disposed in a location extending past the profile portion of the guide rail and into the carcase interior, the open-ended slot can receive the projection, the case further comprising

a slide guiding means cooperating with the toggling component to positively and slidingly guide the toggling component from an end position of the toggling component associated with an open-drawer position to a position aligned with the projection such that the projection is received in the open-ended slot of the toggling component during a movement of the runner rail toward a closed-drawer position, the slide guiding means being formed such that the toggling component, in cooperation with the projection received in the open-ended slot of the toggling component, can be further displaced in the direction of the closing movement of the projection and associated runner rail, the spring exerting a bias on the toggling component in a direction of the closed-drawer position,

whereby when the toggling component is disposed relative to the runner rail and the guide rail such that, upon a shift of the runner rail from the open-drawer position to the closed-drawer position, as the closed-drawer is approached, the toggling component is in the end position associated with the open-drawer position and receives the projection into the open-ended slot, and such that after the toggling component is driven by the projection to the open-drawer position of the toggling component, the projection and an associated runner rail is thereby driven resiliently by the toggling component to the closed-drawer position by the biasing force of the spring,

wherein the toggling component further comprises a resilient catch located at a distance from the open-ended slot and towards the interior of the carcase, such the when the toggling component is in an end position associated with the drawer-open position, the catch is retracted into the case so as to be outside of a path of the projection, and such that when the toggling component is in an end position associated with the closed-drawer position, the catch protrudes into the path of the projection to thereby retain the projection such that the retaining action can be overridden in the drawer-closing direction by resilient deformation of the catch.

5,302,017

ROTATING MIXING DRUM WITH REPLACEABLE LINER FOR MIXING AGGREGATE AND BINDER

Raymond C. Platek, Port Washington, and Robert W. Cramer, Brookfield, both of Wis., assignors to Construction Forms, Inc., Cedarburg, Wis.

Filed Aug. 7, 1992, Ser. No. 926,680

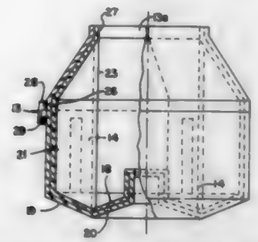
Int. Cl.[5] B28C *5/18, 7/16;* **B01F** *15/02*

U.S. Cl. 366—57 **6 Claims**

1. A mixing drum liner adapted to be disposed within a rotating mixing drum formed of a strong rigid self-supporting material and having a cylindrical outer wall and internal radial drive members projecting inwardly from said outer wall, said drive members extending axially for substantially the length of said mixing drum and being circumferentially spaced, said drum liner comprising a single integral member having side walls having a cylindrical drum portion and an outer cone-shaped extension having a side wall projecting co-axially out-

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wardly of said side wall of said cylindrical drum portion and terminating in an outer open end, a base wall closing the inner end of said drum portion, and said cylindrical drum portion having a length extending outwardly of said base wall a distance greater than the length of said rotating mixing drum whereby said cylindrical portion projects outwardly of said rotating mixing drum, said cylindrical portion having a plurality of paddle members connected to and projecting inwardly from the side walls of said cylindrical drum portion and outer cone-shaped extension throughout the total length of the liner,



said paddle members being circumferentially spaced about the axis of said drum portion in accordance with the circumferential spaced of said drive members, said paddle members being substantially straight for alignment with said drive members, each of said paddle portions having circumferentially spaced walls joined at a radially inner end and defining an open end adjacent the base of the liner establishing direct placement and removal of the liner within said drum with said paddles mating with said drive members, and wherein each of said paddles projects substantially radially inwardly with said radially inner ends aligned with the opening to the liner.

5,302,018

CONCRETE KNEADING APPARATUS

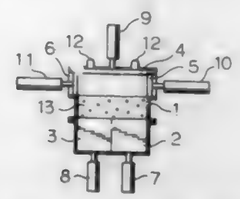
Kenji Maeda, 4-7, Matsunoki 3-chome, Suginami-ku, Tokyo, Japan

Division of Ser. No. 732,075, Jul. 18, 1991, Pat. No. 5,183,332. This application Jan. 12, 1993, Ser. No. 961,080

Claims priority, application Japan, Mar. 26, 1991, 3-086128

Int. Cl.[5] B28C *5/08*; **B29B** *7/00*; **B01F** *11/00*; **B30B** *7/04*

U.S. Cl. 366—66 **8 Claims**



1. A kneading apparatus for concrete, comprising:

a kneading tank for receiving a layer of concrete material, said kneading tank having a bottom seat, side walls and a top portion;

a plurality of lower pusher bodies provided at said bottom seat of said kneading tank arrayed side by side in a horizontal direction for alternate movement in a vertical direction, said lower pusher bodies having pusher surface areas substantially equal to one another, the total of said pusher surface areas being substantially equal to an entire horizontal cross-sectional area of said kneading tank;

an upper pusher body having a pusher surface area which is substantially equal to said entire horizontal cross-sectional area of said kneading tank, said upper pusher body being provided at said top portion of said kneading tank so as to be movable in said vertical direction;

side pusher bodies provided at said side walls of said kneading tank which face each other and are movable in the horizontal direction to define a passage zone; and

actuating means for driving said plurality of lower pusher bodies, said upper pusher body and said side pusher bodies.

5,302,019

APPARATUS FOR MIXING AND/OR KNEADING MATERIALS

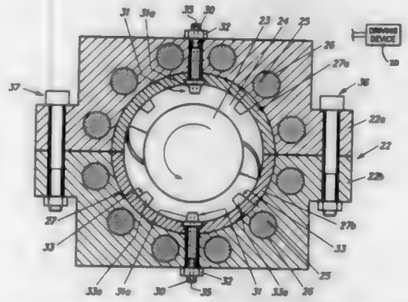
Werner Henschel, Giebenbach, and Kurt Heuberger, Tecknau, both of Switzerland, assignors to Buss AG, Basel, Switzerland

Filed Dec. 11, 1992, Ser. No. 989,120

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141328

Int. Cl.[5] B29B *1/04*; **B01F** *7/08, 15/06*

U.S. Cl. 366—80 **20 Claims**



1. An apparatus for mixing and/or kneading materials comprising:

a housing defining a mixing and kneading chamber;

a jacket member enclosing said mixing and kneading chamber;

a mixing and kneading member located in the interior of said mixing and kneading chamber;

means for driving said mixing and kneading member to a rotating and/or oscillating motion;

a first plurality of kneading pins distributed along the circumference of said jacket member, projecting into the interior of said mixing and kneading chamber and being integrally formed with said jacket member, and a second plurality of kneading pins distributed along the circumference of said jacket member, directed against said central axis of said jacket member and penetrating said housing in essentially radial direction with regard to said central axis of said jacket member.

5,302,020

PLANETARY MIXING APPARATUS

Ernst O. Kruse, Gottmadingen, Fed. Rep. of Germany, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Mar. 31, 1993, Ser. No. 40,868

Claims priority, application Switzerland, Apr. 15, 1992, 1-254/92

Int. Cl.[5] B01F *7/30*

U.S. Cl. 366—288 **3 Claims**

1. An apparatus for mixing molding sand so as to prepare a fluid molding sand mixture comprises:

a mixing vessel having an elongated sidewall portion extending about an axis (A), a top cover and a bottom base which together define a mixing chamber;

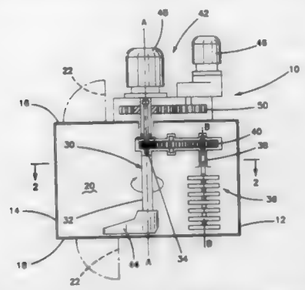
drive means disposed about said axis (A) within said mixing chamber;

first mixing means located radially of said drive means about an axis (B) substantially parallel to said axis (A);

coupling means located between said drive means and said first mixing means for drivingly connecting said drive means to said first fixing means;

motor means for driving said drive means for orbiting said first mixing means about axis (A) as said first mixing means rotates about axis (B);

said drive means includes a first drive shaft connected to said coupling means for orbiting said first mixing means about axis (A) and a second drive shaft concentric with said first drive shaft and connected to said coupling means for rotating said first mixing means about axis (B);



second mixing means fixed to said first drive shaft wherein said second mixing means rotates about axis (A) as said first mixing means orbits about axis (A); and

said coupling means includes a first gear unit positioned between said motor means and said first drive shaft and a second gear unit positioned between said second drive shaft and a centrifugal shaft of said first mixing means for rotating said first mixing means about axis (B).

5,302,021

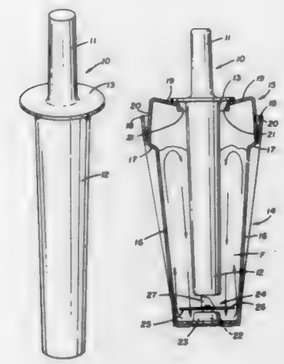
METHOD OF PREVENTING THE FORMATION OF AN AIR POCKET IN A BLENDER

David Jennett, Olmsted Township, Cuyahoga County; Richard D. Boozer, Columbia Station, and John K. Barnard, Bay Village, all of Ohio, assignors to Vita-Mix Corporation, Cleveland, Ohio

Continuation of Ser. No. 860,892, Mar. 31, 1992, abandoned. This application May 13, 1993, Ser. No. 59,954

Int. Cl.[5] B01F *15/00*

U.S. Cl. 366—348 **1 Claim**



1. A method of preventing the formation of an air pocket around rotating blades positioned in a pitcher of a blender, the air pocket being created from an air channel of a cross-sectional size defined by a member associated with the blades, comprising the steps of supplying a fluid into the pitcher, and positioning a plunger, having a cross-sectional size approximating the cross-sectional size of the member, adjacent to and above the rotating blades while maintaining the plunger free of contact with the pitcher thereby preventing the formation of an air pocket in the fluid around the rotating blades.

5,302,022

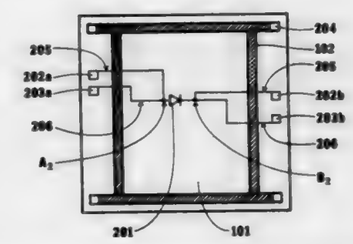
TECHNIQUE FOR MEASURING THERMAL RESISTANCE OF SEMICONDUCTOR PACKAGES AND MATERIALS

Chin-ching Huang, San Jose, and Kenny Y. Ng, Union City, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 22, 1992, Ser. No. 995,236

Int. Cl.[5] G01N *25/18*

U.S. Cl. 374—44 **8 Claims**



1. An apparatus for measuring the thermal characteristics of semiconductor packaging material, said apparatus comprising:

a substrate in contact with said semiconductor packaging material;

a heat source for heating the substrate;

a temperature sensitive element on or in said substrate wherein the voltage drop across the element is a function of temperature;

sensing terminals for measuring the voltage across the element;

forcing terminals for forcing current through the element;

a first set of conductive traces connecting the forcing terminals to the element for forcing current through said element;

a second set of conductive traces connecting the sensing terminals to said first set of conductive traces at two points across the element for measuring the voltage across the element, each of said two points located such that the ratio of the voltage drop across the two points due to the resistance of the first set of conductive traces to the voltage drop across the element is not more than 5%.

5,302,023

LOCALIZED CONVECTION ENVIRONMENTAL CHAMBER

Carl G. Larsen, and Bryon J. Saari, both of Minneapolis, Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Apr. 30, 1992, Ser. No. 876,362

Int. Cl.[5] G01N *25/00*

U.S. Cl. 374—46 **20 Claims**

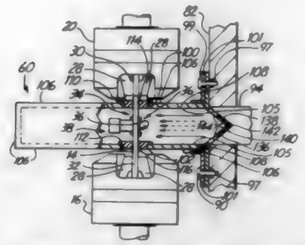
1. A gas convection assembly for maintaining a desired temperature on a test portion of a test specimen, the test specimen mounted at opposite ends on support members for loading along a longitudinal axis, the assembly comprising:

a housing having a chamber defined by bounding walls, wherein the chamber is accessible through apertures in the housing, and wherein the housing is positioned relative to the test specimen such that the apertures are on the longitudinal axis with the test portion located in the chamber and with end portions of the test specimen extending out the apertures;

means connected to the housing for forcing a gas into the

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chamber, the gas maintaining the test portion at the desired temperature; and



means for adjusting the velocity of the gas striking different areas of the test portion.

5,302,024

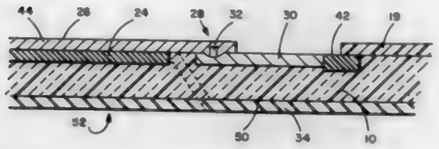
MONOLITHIC MICROWAVE POWER SENSOR USING A HEAT SENSING DIODE JUNCTION

Michael W. Blum, Nashua, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.

Continuation of Ser. No. 818,723, Jan. 6, 1992, abandoned, which is a continuation of Ser. No. 595,066, Oct. 9, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 24,927

Int. Cl.[5] G01J *5/18*

U.S. Cl. 374—122 **4 Claims**



1. A monolithic integrated circuit device for sensing microwave power, comprising:

a monolithic integrated circuit substrate;

an integrated circuit microwave transmission line formed on the substrate;

conversion means formed in the substrate in the form of an ion implanted resistor coupled to the transmission line for converting microwave energy into heat; and

a thermally sensitive diode junction electrically insulated from the conversion means and formed in the substrate and in sufficiently close proximity to the conversion means to be thermally coupled thereto, wherein the diode junction is formed by ion implantation of a portion of the substrate and by the creation of a Schottky metal contact in electrical contact with the ion implanted portion; and

means responsive to the conductivity of the diode junction for generating a signal indicative of the microwave energy received by the conversion means.

5,302,025

OPTICAL SYSTEMS FOR SENSING TEMPERATURE AND OTHER PHYSICAL PARAMETERS

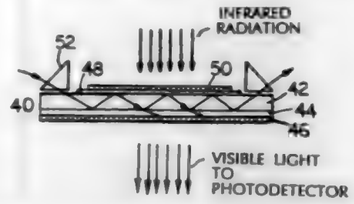
Marcos Y. Kleinerman, 24 Jerome St., Southbridge, Mass. 01550

Division of Ser. No. 711,062, Mar. 12, 1985, Pat. No. 5,004,913, which is a continuation-in-part of Ser. No. 608,932, May 14, 1984, Pat. No. 4,708,494, which is a continuation of Ser. No. 405,732, Aug. 6, 1982, abandoned. This application Feb. 13, 1991, Ser. No. 654,809

Int. Cl.[5] G02B *6/22;* **G01K** *11/16*

U.S. Cl. 374—131 **19 Claims**

1. An optical fiber comprising a core having an index of refraction n_1 and at least one light-guiding region including a light-absorbing organic material, said material capable of absorbing light of pre-selected wavelengths λ_1 to which the core is substantially transparent.



5,302,026

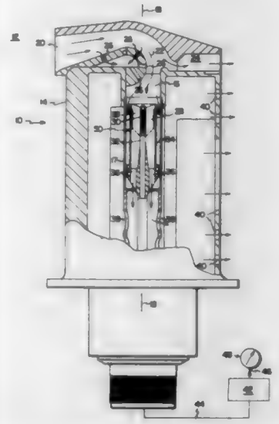
TEMPERATURE PROBE WITH FAST RESPONSE TIME

Richard W. Phillips, Eagan, Minn., assignor to Rosemount, Inc., Inver Grove Heights, Minn.

Continuation of Ser. No. 915,016, Jul. 16, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 56,571

Int. Cl.[5] G01K *13/02, 1/16, 1/18*

U.S. Cl. 374—135 **14 Claims**



1. A probe for measuring a temperature of a fluid moving relative to the probe, comprising:

a housing having a bore with a bore axis, the housing adapted to carry at least a portion of the fluid along the bore axis;

a transducer having a thermally responsive characteristic, the transducer further having a sensing length; and

at least one fin disposed in the bore and thermally coupled to the transducer along substantially the full sensing length;

wherein the fin is thermally coupled to the transducer to a greater extent than any thermal coupling between the fin and the housing, and the fin is substantially aligned with the bore axis to promote laminar flow of the fluid.

5,302,027

REFRACTORY SIGHT TUBE FOR OPTICAL TEMPERATURE MEASURING DEVICE

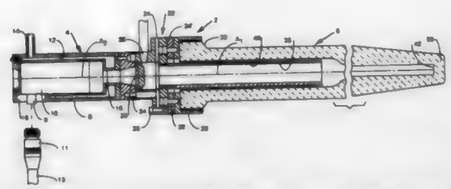
Han K. Park, Allegheny County, Pa., assignor to Vesuvius Crucible Company, Pittsburgh, Pa.

Filed Oct. 22, 1992, Ser. No. 964,763

Int. Cl.[5] G01K *1/08*

U.S. Cl. 374—139 **6 Claims**

1. A sight tube for use with an optical temperature measuring device suitable for immersion in liquid steel and like molten media, comprising a refractory body having an axial sighting bore therein, formed from a carbon bonded alumina graphite



refractory material wherein the alumina graphite refractory is pressed and fired from a mix consisting essentially of in % by weight:

graphite	5–45%;
alumina	25–85%;
anti-oxidant	0 to 15%;
phenolic resin binder	3–20%;

wherein the alumina contains none or less than 0.05% by weight each of volatile elements, including sodium, potassium, boron, phosphorous, sulphur and chlorine.

5,302,028

BATHTUB THERMOMETER DEVICE

Dianna M. Carey, R.R. 1, Box 78, Beardstown, Ill. 62618

Filed Apr. 12, 1993, Ser. No. 44,810

Int. Cl.[5] G01K *1/14, 11/00, 5/72*

U.S. Cl. 374—156 **5 Claims**

1. A bathtub thermometer device, comprising,

a housing member having an enclosed pneumatic chamber coextensive with the housing member, the housing member including a top wall spaced from a bottom wall and a side wall, with the top wall, the bottom wall, and the side wall symmetrically oriented about a housing axis, and

a support hook fixedly mounted to the side wall, and

temperature sensing means contained within the pneumatic chamber, having an indicator arrow leg mounted to the temperature sensing means, with the indicator arrow leg positioned exteriorly of the housing member in a parallel spaced relationship relative to the top wall for visually indicating ambient temperature relative to the housing member, and

the top wall includes a semi-annular first top wall indicator area, and a semi-annular second top wall indicator area for cooperation with the indicator arrow leg, and the temperature sensing means includes an indicator axle fixedly mounted to the indicator arrow leg in an orthogonal relationship, with the indicator axle coaxially aligned with the housing axis, and a bi-metallic spring mounted to the indicator axle, with the bi-metallic spring including a support boss fixedly securing the bi-metallic spring within the pneumatic chamber, and

the bottom wall includes an annular ring housing positioned beyond the bottom wall and fixedly mounted to the bottom wall concentrically oriented relative to the housing axis, and wherein the annular ring housing includes a counterweight member directed coextensively throughout the annular ring housing.

5,302,029

LARGE FLEXIBLE CONTAINER WITH REPLACEABLE INNER LINER

Ute Weber, Claudiusring 40e, 2400 Lübeck, and Gerd Lange, Nachtigallenweg 8, 4950 Minden, both of Fed. Rep. of Germany

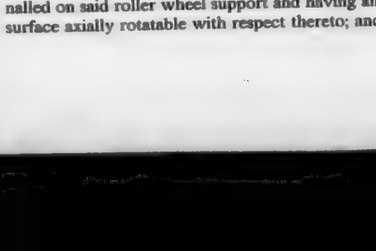
PCT No. PCT/EP92/01818, § 371 Date Apr. 13, 1993, § 102(e) Date Apr. 13, 1993, PCT Pub. No. WO93/03980, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 10, 1992, Ser. No. 39,183

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4127201

Int. Cl.[5] B65D *30/26*

U.S. Cl. 383—66 **6 Claims**



1. A flexible container for holding gaseous, liquid or pourable products comprising:

an outer tear-resistant shell which is impermeable to air, said outer shell having a linear closure;

a replaceable inner liner which is inserted into said outer shell through said closure;

venting means in said outer shell through which air between said inner liner and said outer shell can escape; and

means for filling and emptying said inner liner, said filling and emptying means extending through said outer shell, said container being characterized in that

said container is substantially elongate in shape and has a front face that bulges to conform to filling pressure,

said front face is reinforced by at least one flexibly pliable bar that extends perpendicular to a base of the container, and

said closure, said filling and emptying means, and said venting means are located on said front face.

5,302,030

ADJUSTABLE ROLLER

Scott Buie, Statesville; Kurt P. Rindoks, Cornelius, and Mike Patton, Maiden, all of N.C., assignors to Kewaunee Scientific Corporation, Statesville, N.C.

Filed Jun. 29, 1992, Ser. No. 905,538

Int. Cl.[5] A47B *88/00*

U.S. Cl. 384—18 **19 Claims**

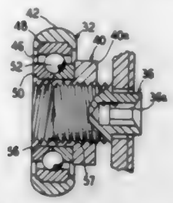
1. An adjustable roller for a drawer held in a cabinet comprising:

an annular roller wheel support providing an axial threaded bore therethrough and having on an outside circumference thereof a radial flat side for engagement with a tool;

a roller wheel mounted around said threaded bore and journalled on said roller wheel support and having an outside surface axially rotatable with respect thereto; and

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a threaded stud engageable with the threaded bore and mountable to one of said drawer and said cabinet, said roller wheel rollable along a horizontal surface provided between said cabinet and said drawer, the horizontal



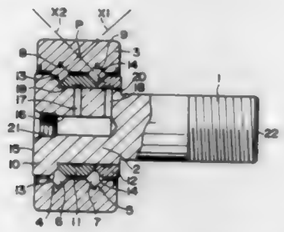
surface mounted onto the respective other of said cabinet and said drawer, said roller wheel axially adjustable by progression or retraction of said stud into said threaded bore.

5,302,031

STUD TYPE TRACK ROLLER ROLLING BEARING

Kohei Yuasa, Gifu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1992, Ser. No. 933,271
Claims priority, application Japan, Aug. 19, 1991, 3-230954
Int. Cl.[5] F16C *19/38*
U.S. Cl. 384—449 **8 Claims**



1. A stud type track roller bearing comprising:
a stud generally elongated in shape and having an inner ring portion at one end portion thereof;
defining means fixedly mounted on said stud located at said inner ring portion for defining a pair of circumferential inner guide grooves spaced apart from each other in a direction parallel to a longitudinal axis of said stud;
an outer ring formed with a pair of circumferential outer guide grooves spaced apart from each other at an inner peripheral surface thereof and fitted onto said stud such that each of said circumferential outer guide grooves is aligned with a corresponding one of said circumferential inner guide grooves to thereby define a pair of annular guide channels; and
a plurality of rollers provided in each of said pair of annular guide channels.

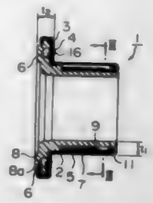
5,302,032

RADIAL/THRUST COMPOSITE-BEARING HAVING ROLLING ELEMENTS

Kosaburo Niwa, and Hideyumi Matsumura, both of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jun. 29, 1993, Ser. No. 83,169
Claims priority, application Japan, Jul. 1, 1992, 4-174457
Int. Cl.[5] F16C *19/54*
U.S. Cl. 384—454 **2 Claims**

1. A radial/thrust composite bearing having rolling elements, which comprises a metallic outer tube having a flange at one end thereof, an inner tube of resin having a flange at one end thereof, rollers of the rolling elements interposed between both said tubes, and a plurality of thrust balls of the rolling elements interposed between the flanges of the respective inner and outer tubes, wherein
a plurality of radial roller receiving grooves extending along an axis of said bearing and extending in parallel relation to one another are formed in an outer peripheral surface of said inner tube, and a plurality of thrust-ball receiving



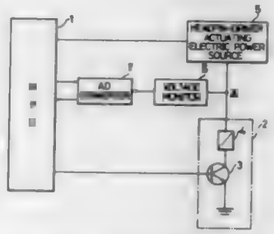
recesses are formed intermittently and circumferentially on a surface of the flange of said inner tube, which faces to the position side of said radial-roller receiving grooves on the outer surface of the inner tube;
a circumferential raceway groove for guiding said thrust balls are formed in a surface of the flange of said outer tube, which opposes to the flange of said inner tube; and
said two kinds of rolling elements roll between said inner and outer tubes.

5,302,033

BURNING DAMAGE PROTECTING APPARATUS AND METHOD FOR A PRINTING HEAD IN A PRINTER

Hisayoshi Matsumoto, Hidaka, and Takeya Uehara, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,560
Claims priority, application Japan, Mar. 26, 1991, 3-084389
Int. Cl.[5] B41J *29/38, 2/30*
U.S. Cl. 400—54 **16 Claims**



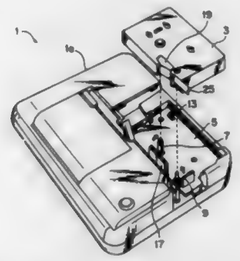
11. A burning damage protecting method for a printing head in a printer having a printing head actuating circuit with a driver and a coil, a headpin-driver actuating electric power source which is connected to the printing head actuating circuit and supplies electric current to the driver, and a voltage monitor connected to a connecting point of the printing head actuating circuit and the headpin-driver actuating electric power source for measuring a voltage at the connecting point; said burning damage protecting method comprising the steps of:
once turning on the headpin-driver actuating electric power source for a predetermined short period of time immediately after the printer is turned on, and turning it off again;
measuring a voltage by inputting a signal from the voltage monitor;
again measuring a voltage by inputting a signal from the voltage monitor after a predetermined time has elapsed;
judging whether the driver is normal or not by comparing a voltage change derived from the difference between said detected two voltages with a predetermined reference value; and
prohibiting electric current supply to the coil by not turning on the headpin-driver actuating electric power source when the abnormal condition is detected.

5,302,034

PRINTING DEVICE FOR PRINTING IMAGE ON TAPE LIKE MEMBER

Yasunori Kitazawa, Anjou, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 695,566, May 3, 1991, abandoned. This application Jun. 12, 1992, Ser. No. 898,239
Int. Cl.[5] B41J *2/00*
U.S. Cl. 400—120 **5 Claims**



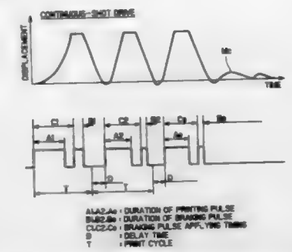
1. A printing device for printing an image on a tape like image receiving member in either normal or reverse printing modes comprising:
a feeding mechanism for feeding the tape like image receiving member in a first direction;
a print head having an array of a plurality of image forming elements for forming an image on the tape like image receiving member, the array extending in a second direction perpendicular to the first direction;
a cartridge accommodation means capable of accommodating in the same position relative to said print head either a first cartridge containing therein a first tape like image receiving member to which the image is applied in a normal printing mode or a second cartridge containing therein a second tape like image receiving member to which the image is applied in a reverse printing mode and further comprising cartridge discrimination means for discriminating between kinds of cartridges accommodated therein;
memory means for storing therein character patterns;
a print head driving means connected to the print head for selectively driving at least one of the image forming elements in accordance with printing data and a character pattern read from the memory means;
signal generation means response to said cartridge discrimination means for generating one of first and second print mode signals, in the first print mode the tape like image receiving member comprising said first tape image receiving member and in the second printing mode the tape like image receiving member comprising said second tape like image receiving member;
switching means connected to the print head driving means for reversely driving the image forming elements with respect to the second direction in order to turn the character pattern from side to side with respect to the second direction so that the printed image has a normal orientation when viewed from a back surface of the image receiving member in the second print mode; and
control means for selectively actuating the switching means in response to said first and second print mode signals from the signal generation means.

5,302,035

METHOD OF DRIVING WIRE-DOT PRINT HEAD

Michio Ueda, Gamagoori, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 19, 1992, Ser. No. 962,750
Claims priority, application Japan, Oct. 18, 1991, 3-299790
Int. Cl.[5] B41J *2/30*
U.S. Cl. 400—124 **9 Claims**



1. A method of driving a wire dot printer head having an actuator for driving a print wire in response to a pulse signal having a duration, a dot impression being made on a recording medium when the print wire is driven in response thereto, comprising the steps of:
immediately after driving the actuator for making a leading dot impression of a series of dot impressions to be made on the recording medium in response to a leading pulse signal, driving the actuator in response to a first pulse signal having a duration shorter than the duration of the leading pulse signal for making the leading dot impression, a dot impression not being made in response to the first pulse signal; and
immediately after driving the actuator for making a trailing dot impression of the series of dot impressions to be made on the recording medium in response to a trailing pulse signal, driving the actuator in response to a second pulse signal having a duration shorter than the duration of the first pulse signal, a dot impression being not made in response to the second pulse signal, wherein the duration of the trailing pulse signal is shorter than the duration of the leading pulse signal and a first period of time from a start of the trailing pulse signal to application of the second pulse signal is shorter than a second period of time from a start of leading pulse signal to application of the first pulse signal.

5,302,036

MULTI-COLOR RIBBON CASSETTE POSITION ADJUSTING APPARATUS

Masahiro Akiyama, Numazu; Hidekazu Ishii, and Kozo Hara, both of Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

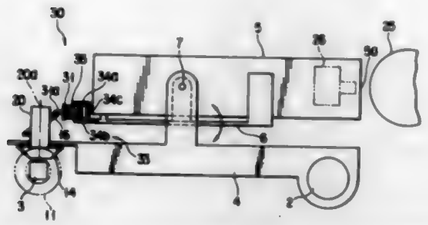
Filed Aug. 14, 1992, Ser. No. 930,849
Claims priority, application Japan, Aug. 21, 1991, 3-209104; Sep. 11, 1991, 3-232009
Int. Cl.[5] B41J *33/14*
U.S. Cl. 400—229 **11 Claims**

1. A multi-color ribbon cassette position adjusting apparatus comprising:
a frame;
a guide member supported on the frame;
a carrier including a print head and supported for reciprocation along the guide member;
a cassette mounting member holding a multi-color ribbon cassette containing a multi-color ribbon having a plurality of colors and rockably supported on the carrier so that any desired color may face the print head;
a rotating shaft extending parallel to the guide member and supported on the frame, the rotating shaft being rotated by means of a drive source mounted on the frame;

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a driving gear mounted on the rotating shaft so as to be rotatable together therewith and a driven gear in mesh with the driving gear;

sliding means for sliding the driving gear along the rotating shaft as the carrier reciprocates; and



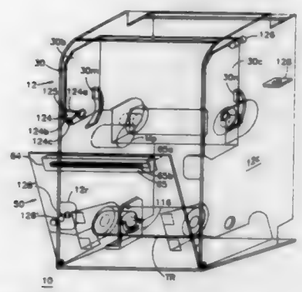
power transmission means attached to the cassette mounting member and the driven gear, for transmitting a rotatory motion of the rotating shaft to the cassette mounting member so that the desired color of the multi-color ribbon faces the print head.

5,302,037

WEB HANDLING AND FEEDING SYSTEM FOR PRINTERS

Rudolph Schoendienst, Sea Girt, and William S. Bagdi, Toms River, both of N.J., assignors to Hecon Corporation, Eatontown, N.J.

Filed Apr. 10, 1992, Ser. No. 867,140
Int. Cl.[5] B41J *11/48*
U.S. Cl. 400—586 **52 Claims**



1. A printer assembly comprising:

a housing having an access opening for servicing the printer assembly;

a platform pivotally mounted within said housing and being swingable between an access and an operating position;

printer means being mounted upon said platform and having an input for receiving a web, an output for feeding out a web, and means for moving said web from said input to said output through a printing location intermediate said input and output;

take-up means for receiving said web arranged adjacent to said access opening and adjacent to said input and output;

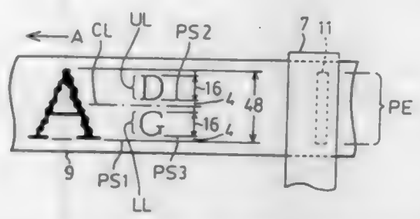
said input and output being adjacent to said, access opening and being moved away from said take-up means when said platform is in said access position and said input and output being moved closer to said take-up means and displaced from said access opening when in said operating position.

5,302,038

TAPE PRINTING DEVICE FOR PRINTING A PLURALITY OF PRINTING LINES ACROSS THE WIDTH OF A TAPE

Kazuhisa Hirono; Yasuyo Ooshio, and Takashi Ito, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 6, 1992, Ser. No. 831,971
Claims priority, application Japan, Mar. 28, 1991, 3-91492
Int. Cl.[5] B41J *15/00*
U.S. Cl. 400—615.2 **24 Claims**



1. A tape printing device for printing a plurality of lines of characters on a print medium tape comprising:

character input means for enabling a user to input character data;

command input means for enabling a user to input command data specifying on which single one of the plurality of lines a particular input character is to be printed, said command input means including means enabling the printing of different characters on each of said plurality of lines, said plurality of lines being located adjacent to each other across the width of said tape so that separate characters can be printed simultaneously in said plurality of lines without said separate characters overlapping each other;

an input data buffer for storing the data input from said character and command input means;

a printing head for printing characters on a print medium tape;

printing setting means, responsive to the command data input from said command data input means, for selectively setting each particular input character in one of said plurality of printing lines according to the command data associated with each particular input character, in accordance with the data stored in said input data buffer;

data arrangement means for arranging the character data stored in said input data buffer in order to enable the printing of a plurality of printing lines of characters directly adjacent to each other across the tape width according to a printing line set by said printing setting means; and

controlling means for controlling said printing head based on the data arranged by said data arrangement means.

5,302,039

PANEL COUPLER

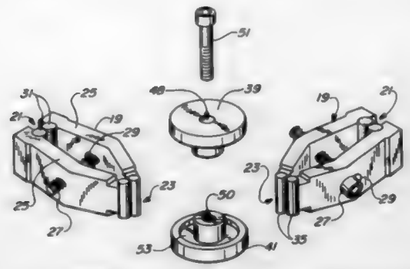
Bruce D. Omholt, 1034 Holly, Rohnert Park, Calif. 94928

Filed Aug. 11, 1992, Ser. No. 928,827
Int. Cl.[5] F16B *5/06*
U.S. Cl. 403—218 **16 Claims**

1. An improved panel coupler comprising

at least two panel clamps, each of said panel clamps having a keeper end and a distal clamping end, the distal clamping end of each of said panel clamps being formed by two opposed clamping arms for holding a panel therebetween, each of said panel clamps further having clamping adjustment means connected between the clamping arms thereof for adjusting separation of said clamping arms and for providing positive clamping of panels of different thicknesses, and

hub means including keeper means for releasably retaining the keeper ends of said panel clamps such that said panel



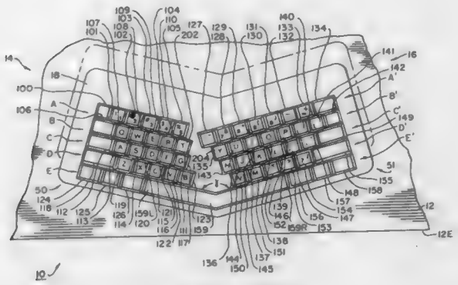
clamps can be releaseably and adjustably held in said hub means.

5,302,040

ERGONOMIC KEYBOARD APPARATUS AND METHOD OF USING SAME

William M. Louis, Encinitas, Calif., assignor to Typerite Keyboard Corporation, Encinitas, Calif.

Continuation-in-part of Ser. No. 659,604, Feb. 21, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,021
Int. Cl.[5] B41J *5/10*
U.S. Cl. 400—489 **14 Claims**



10. A keyboard apparatus comprising:

a housing;

a right hand group of planar character key means mounted on said housing in columns and staggered rows said right hand group having a left end edge with a step shaped configuration;

a left hand group of planar character keys means mounted on said housing in columns and staggered rows, said left hand group having a right end edge with a step shaped configuration;

said right hand group of planar character key means and said left hand group of planar character key means being disposed in a single substantially common plane to facilitate QWERTY touch typing keystroke techniques;

means defining a narrow planar angle θ between said right and said left hand group of character key means;

said narrow angle θ being sufficiently narrow to help cause the forearms of a user to assume a natural position in a non-parallel converging manner to cause the wrists of the user to be maintained in a substantially straight aligned position relative to the hands and forearms when the left hand and right hand digits are resting on the respective left and right character key means;

means defining a generally irregularly shaped small space for completely separating said left and right hand groups of character key means said space being defined in part generally by the right and left end edges of the character key means groups disposed relative to one another generally by said angle θ to help the hands and forearms of the user to be maintained in a substantially straight aligned position relative to one another in a natural, relaxed manner, when the left and right hand digits are resting on the respective left and right character key means;

elongated common key means configured generally in a V-shape to still further help both sets of the wrists, hands and forearms of the user to be maintained in substantially straight aligned positions when the thumbs of the user actuate said common key means;

said common key means having a right leg portion being at least partially disposed adjacent to a plurality of the columns in said right hand group of character key means to facilitate actuation of said common key means by the right hand thumb of said user;

said common key means having a left leg portion being partially disposed adjacent to a plurality of the columns in said left hand group of character key means to facilitate actuation of said common key means by the left hand thumb of said user;

said housing having a right hand front edge portion and a left hand front edge portion for facilitating user access to the respective said right hand and left hand groups of character key means;

the right hand group of character key means each having parallel adjoining edges and being substantially perpendicular to said right hand front edge portion to facilitate conventional QWERTY right hand digit touch typing keystroke techniques;

the left hand group of key means each having parallel adjoining edges each being substantially perpendicular to said left hand front edge portion to facilitate conventional QWERTY left hand digit touch typing keystroke techniques;

said right hand front edge portion extending substantially parallel to one imaginary longitudinal line defining the bottom peripheral boundary of said right leg portion of said common key means;

said left hand front edge portion extending substantially parallel to another imaginary longitudinal line defining the bottom peripheral boundary of said left leg portion of said common key means; and

said right hand and left hand front edge portions being planar angularly displaced relative to one another by about ϕ degrees, where ϕ is equal to $180°-\theta$, so the right and left wrists of the user may be disposed adjacent to said right and left groups of character key means respectively when the fingers of the user engage them;

whereby known and conventional touch typing keystroke techniques can be utilized without causing substantially physiological stress to wrists and forearms of the user.

5,302,041

PRINTER

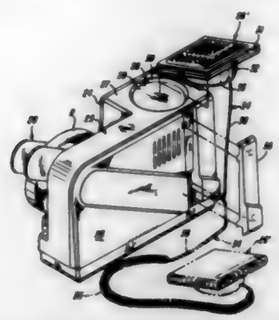
Ronald L. Fogle, Lebanon, and Orville C. Huggins, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 232,205, Aug. 15, 1988, abandoned, which is a division of Ser. No. 885,886, Jul. 15, 1986, Pat. No. 4,776,714. This application Jan. 22, 1991, Ser. No. 643,702
Int. Cl.[5] B41J *29/02*
U.S. Cl. 400—692 **12 Claims**

1. A printer comprising: a housing, means in the housing for printing on record members, a keyboard for the printing means, a data cord electrically connecting the keyboard and the printing means, the keyboard having a base portion, the base portion having means for mounting the keyboard for use on a flat horizontal surface, the housing having means defining a supporting surface for rotatably and removably supporting the base portion, the data cord being long enough to enable the keyboard to be mounted either on a flat horizontal surface spaced from the housing or on the supporting means, wherein

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the base portion includes a lower portion with a generally frusto-conical construction, and wherein the supporting sur-



face comprises a recess shaped to receive the lower portion of the base portion.

5,302,042

ANTI-BACKOFF LIPSTICK CONTAINER

Walter T. Ackermann, Watertown, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Filed Dec. 3, 1992, Ser. No. 985,121
Int. Cl.[5] A45D *40/12, 40/06*
U.S. Cl. 401—74 **4 Claims**



1. A cosmetic container comprising:

a. a tubular sleeve having a longitudinal slot therein, the slot having a stepped profile along one edge thereof, the steps having relatively short, generally horizontal treads and relatively long risers, the risers slanting down from the vertical to the inside of the adjacent tread at a relatively small acute angle to the vertical,

b. a pomade-containing cup reciprocable inside the sleeve, the cup having a sidewall formed with an outward lug thereon, the lug fitting into and through the slot, the lug having a generally pointed lower corner toward the stepped profile of the slot, the lug being of narrower width than the minimum width of the slot,

c. a tubular cam having a steep spiral opening thereabout, the cam circumposing the sleeve and the opening receiving the lug, the spiral opening having smooth sides and being inclined in a direction so that where it overlies the slot it inclines downward toward the stepped profile,

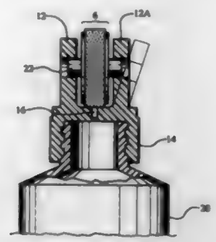
whereby turning the cam relative to the sleeve to retract the pomade will move the lug away from the stepped profile and lower the cup, and turning the cam to advance the pomade will move the lug up to ratchet along the stepped margin to raise the cup, the spiral opening normally guiding the lug down toward the stepped profile so that the pointed lower corner engages in the juncture of a riser at the inside of the tread to provide anti-backoff when downward pressure is put on the pomade during use.

5,302,043

DISC SHAPED ABSORBENT WHEEL FOR APPLYING A STRIP OF SEALER

Stephen P. Velliquette, 4411 Bee Ridge Rd., Suite 593, Sarasota, Fla. 34233

Filed Jan. 26, 1993, Ser. No. 9,298
Int. Cl.[5] B05C *17/035, 17/02*
U.S. Cl. 401—208 **2 Claims**



1. A striper device for holding a quantity of low viscosity liquid sealer comprising:

a handle having an axle disposed at one end thereof;

a single compressible disc-shaped absorbent member having a continuous, unbroken width substantially less than a diameter thereof and mounted for rotation on said axle, said absorbent member capable of absorbing the quantity of liquid sealer;

a rigid disc-shaped washer positioned for rotation on said axle on both sides of and directly against said absorbent member;

said absorbent member being slightly larger in diameter than, and in close proximity to, a common diameter of said washers to define a radially extending outer periphery of said absorbent member;

said periphery being compressible to release liquid sealer from said absorbent member into a grout joint only of a tile surface when said washers are rolled along, and in contact with, either edge of the grout joint to define an area of application of the liquid sealer and to support said absorbent member in contact with the grout joint;

said absorbent member having a thickness no larger than a width of the grout joint, said washers preventing the liquid sealer from flowing onto the tile surface.

5,302,044

TEMPORARY MECHANICAL ATTACHMENT DEVICE FLEXIBLE IN BENDING AND DESIGNED TO FRACTURE AT A PREDETERMINED TENSILE LOAD, AND METHOD OF MANUFACTURING IT

Jacques Spariat, Saint Medard en Jalles; Jean-Pierre Aubret, Bordeaux, and Michel Barriere, Saint Medard en Jalles, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, France

Filed Jun. 26, 1992, Ser. No. 906,950
Claims priority, application France, Jul. 9, 1991, 91 08592
Int. Cl.[5] F42B *15/36*
U.S. Cl. 403—291 **25 Claims**

1. A device for temporarily attaching an object to a support comprising:

a body mounted to said support, said body having a longitudinal axis;

an annular end portion attached to said body and secured to said object; and

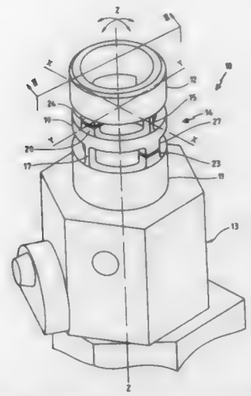
a coupling located between said body and said annular end portion for securing said annular end portion to said body, said coupling comprising:

an intermediate ring having a central axis;

at least two axial tangs circumferentially spaced apart and extending longitudinally between said annular end portion and said intermediate ring, each of said at least two

axial tangs having one end attached to said annular end portion and an opposite end attached to said intermediate ring;

at least two body portions circumferentially spaced apart and extending longitudinally between said annular end portion and said intermediate ring, each of said at least two body portions being alternately spaced with each one of said at least two axial tangs such that each one of said at least two body portions are spaced between said at least two axial tangs, each said at least two body portions having one end attached to said annular end portion and an opposite end attached to said intermediate ring; and



each of said at least two body portions further comprising two foot portions, one of said two foot portions having one end attached to said annular end portion and an opposite end extending in a direction opposite to said one end, the other of said two foot portions having one end attached to said intermediate ring and an opposite end extending in a direction opposite to said one end such that the opposite ends of each of said two foot portions are adjacent each other whereby when a force is applied to said object in a direction transverse to said central axis said opposite end of each of said two foot portions cooperate with one another to limit the relative bending movement of said coupling.

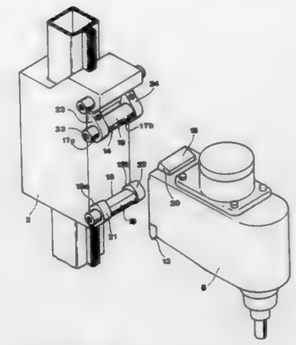
5,302,045

DEVICE FOR RELEASABLE CONNECTION OF TWO MEMBERS

Anders Johnsen, Borlänge, Sweden, assignor to Gearmec Sweden AB, Borlange, Sweden

PCT No. PCT/SE90/00745, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO91/08074, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 19, 1990, Ser. No. 910,161
Claims priority, application Sweden, Nov. 27, 1989, 8903984-6
Int. Cl.[5] B23B *47/00*
U.S. Cl. 403—322 **17 Claims**

1. A device for releasable connection of two members (2, 8), which comprises wedge surfaces (12, 13) adapted to cooperate by being pressed into engagement with each other, a first (2) of said members comprising a tightening means (14) adapted to actuate the second member so that a component (37) of the tightening force actuates the members towards each other whereas a second component (38) of the tightening force actuates the wedge surfaces to co-operate so that the wedge surfaces also actuate the members towards each other, characterized in that the first member, in addition to the first mentioned tightening means, comprises a second tightening means (16) for actuating the second member (8), that the first member (2), in addition to its first mentioned wedge surface, comprises a second wedge surface (17) for co-operating with the wedge surface (13) of the second member, that the device is adapted for connecting the members in two relative positions, between which the members are rotated generally 180° relative to each other, namely a first position, in which the first wedge surface (12) of the first member (2) is in engagement with the wedge surface (13) of the second member and the first tightening means (14) actuates the second member whereas the second tightening means (16) is inactive, and a second position, in



which the second wedge surface (17) of the first member is in engagement with the wedge surface (13) of the second member and the second tightening means (16) actuates the second member whereas the first tightening means (14) is inactive, that the first wedge surface (12) of the first member and that portion (18) of the second tightening means (16) which is arranged for actuating the second member, are arranged beside each other and that also the second wedge surface (17) of the first member and that portion (19) of the first tightening means (14) which is adapted for actuating the second member, are arranged beside each other.

5,302,046

CLAMPING MECHANISM FOR FRICTIONALLY ENGAGING AND SECURING TOGETHER GEAR DRIVE COMPONENTS

Josef Mathes, Offenbach am Main, Fed. Rep. of Germany, assignor to Man Roland Druckmashinen AG, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 992,583
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141818
Int. Cl.[5] F16B *1/00*
U.S. Cl. 403—370 **5 Claims**

1. A clamping mechanism for frictionally securing together two radially adjacent concentric components of a gear drive including as components a toothed gear ring, a gearwheel, a hub and a shaft having an axis, comprising in combination,

an annular recess formed in one of said gear drive components concentric with said shaft axis, said recess defining at least one circumferential wall extending substantially concentric to said shaft axis and one radial wall extending substantially perpendicular to said shaft axis,

said radial wall having a plurality of circumferentially spaced axially disposed bores formed therein,

one of said radially adjacent gear drive components defining a concentric cylindrical surface disposed in oppositely facing relation to said circumferential wall,

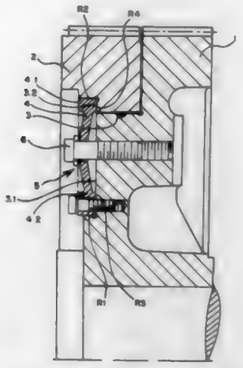
an annular clamping disc partially disposed in said annular recess, said disc having concentric inner and outer peripheral edges with an outwardly substantially conically shaped convex portion having a substantially smooth outer surface between said peripheral edges and a plural-

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ity of circumferentially spaced apertures formed in said convex portion,

each of said concentric inner and outer peripheral edges of said disc being uniformly circular and disposed substantially in a single plane perpendicular to said axis,

and force applying means cooperating with said circumferentially spaced apertures and bore for compressing said



disc so as to urge one of said peripheral edges thereof substantially uniformly radially into frictional engagement with said circumferential wall and substantially uniformly axially into frictional engagement with said radial wall and to urge said other peripheral edge thereof substantially uniformly radially into frictional engagement with said concentric cylindrical surface of said radially adjacent gear drive component.

5,302,047

PEDESTRIAN SAFETY BARRIER

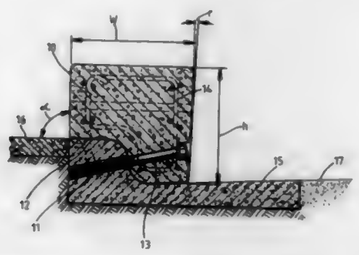
Don L. Ivey, Bryan, Tex., assignor to Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 691,392, Apr. 25, 1991, Pat. No. 5,156,485. This application Jul. 1, 1992, Ser. No. 907,153

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] E01F *13/00, 15/00*

U.S. Cl. 404—6 **11 Claims**



1. A pedestrian safety barrier for use between a roadway and an adjoining pedestrian walkway having an elongated concrete structure up to about 24 inches in height and provided with a cross-sectional concavity to engage a raised curb.

5,302,048

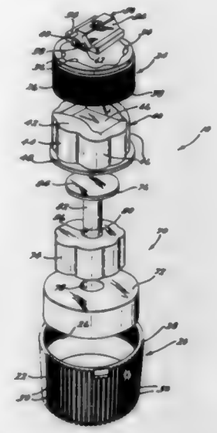
RESILIENT PAVEMENT MARKER

Dean H. Paulos, Columbus, Ohio, and Kenneth L. Todd, Roseville, Mich., assignors to Olympic Machines, Inc., Columbus, Ohio

Filed Feb. 18, 1992, Ser. No. 837,784

Int. Cl.[5] E01F *9/00*

U.S. Cl. 404—11 **21 Claims**



1. A reflective pavement marker comprising:

a housing adapted to be fixedly mounted within an opening formed within a pavement such that an upper end of said housing is positioned at or below the pavement surface;

a piston reciprocally movable within said housing, said piston including an upper end normally protruding above said housing and the pavement surface, said piston being depressible downwardly in said housing to move said upper end into said housing;

cooperating means formed on said piston and said housing to prevent rotation of said piston within said housing;

a reflector assembly mounted to said upper end of said piston; and

resiliently compressible means biasing said piston upwardly to raise said upper end of said piston above said housing and the pavement surface, said biasing means filling substantially all the space within said housing and being resiliently compressible upon depression of said piston into said housing as a result of surface traffic.

5,302,049

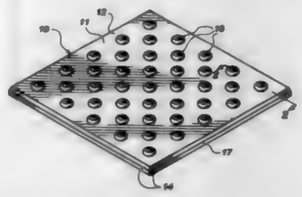
MOBILITY GUIDE TILE FOR VISUALLY HANDICAPPED

Donald W. Schmanski, Carson City, Nev., assignor to Guidance Systems, Inc., Carson City, Nev.

Filed Jan. 14, 1991, Ser. No. 640,876

Int. Cl.[5] E01C *5/00, 5/18;* **E01F** *11/00*

U.S. Cl. 404—42 **6 Claims**



1. A tile for positioning on walkways, crosswalks and other

areas, of pedestrian traffic for providing direction and warning to visually handicapped persons, said tile comprising:

(1.1) a flat plate having a top and bottom surface; and

(1.2) raised bumps coupled and formed integrally with the top surface of the plate and projecting upward therefrom in a tactile pattern for providing tactile information to a visually handicapped person, and being configured as truncated structure having a larger base attached at the top surface of the plate and tapering to a narrower top which includes a substantially flat, contacting surface adapted to withstand repeated contact with footwear;

(1.3) said flat plate and raised bumps being comprised of fiber reinforced, thermosetting resin to form a rigid tile of integral construction.

5,302,050

DEVICE FOR BRIDGING EXPANSION JOINTS IN BRIDGES OR THE LIKE

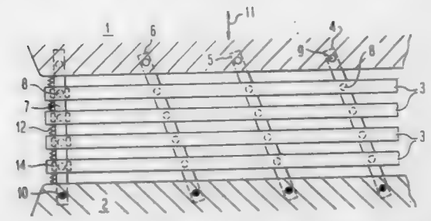
Günter Buckenauer, Baldham, and Christian Braun, Holzkirchen, both of Fed. Rep. of Germany, assignors to Friedrich Maurer Söhne GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1992, Ser. No. 860,084

Claims priority, application European Pat. Off., Apr. 29, 1991, 91106926.8

Int. Cl.[5] E01C *11/02;* **E01F** *13/00*

U.S. Cl. 404—53 **21 Claims**



1. A device for bridging expansion joints in bridges or the like having a superstructure, said device comprising lamellae which extend at right angles to the longitudinal axis of the traffic route and are supported on traverses which are pivoted and/or movably supported in the joint edges and bridge the joints, wherein

said traverses are in the form of inclined traverses extending diagonally with respect to the direction of displacement of the superstructure and being arranged parallel to each other, and control means are provided, said control means comprising at least one guide traverse in addition to said inclined traverses, said control means functioning to counteract movement of the lamellae in a longitudinal direction thereof lamellae as a result of horizontal traffic wheel loads or during a movement of the superstructure, respectively.

5,302,051

APPLICATOR BLADE ASSEMBLY FOR RESURFACING APPARATUS

Jack H. Wilson, Sr., Jackson, Miss., assignor to Koter Industries, Inc., Madison, Miss.

Filed Jan. 16, 1992, Ser. No. 821,934

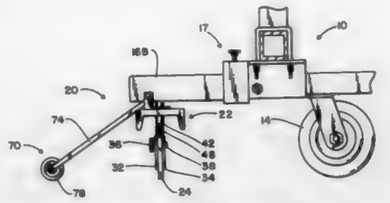
Int. Cl.[5] E01C *19/00, 19/26, 23/02, 19/28*

U.S. Cl. 404—84.1 **25 Claims**

1. An blade applicator assembly for use with resurfacing apparatus, the applicator blade assembly comprising:

an elongated base member;

an elongated blade assembly mounted to said elongated base member, wherein said blade assembly comprises a plurality of blades aligned in end to end relationship; and



an elongated roller extending rearwardly away from said base member and at least substantially coextensive in length with said blade assembly.

5,302,052

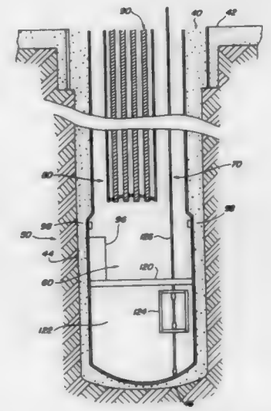
UNDERGROUND WORK CHAMBER ASSEMBLY AND METHOD FOR THE CONSTRUCTION THEREOF

Agust Agustsson, Redondo Beach; Richard A. Wallers, Balboa Island, and Tomas H. Agustsson, Rolling Hills Estates, all of Calif., assignors to Groundtech, Inc., Redondo Beach, Calif.

Filed Apr. 16, 1993, Ser. No. 48,479

Int. Cl.[5] E21D *11/10*

U.S. Cl. 405—133 **17 Claims**



1. A method for constructing an underground work chamber comprising:

drilling a hole of a minimum diameter into a ground surface located either on land or underwater, the hole including a cylindrical interior surface and a bottom surface, the earth displaced to form the hole constituting spoils;

removing said spoils from said hole;

lowering an underground work chamber assembly into said hole, said underground work chamber assembly comprising:

a chamber sized to fit within said hole, said chamber including an exterior surface, said chamber being lowered to a position near said hole's bottom surface;

a plurality of elevator shaft sections interconnected to form an elevator shaft spanning between said chamber and said ground surface;

a plurality of ventilation shaft sections interconnected to provide an air path between said chamber and said ground surface; and

a plurality of slotted grout pipe sections attached to said chamber's exterior surface and to a plurality of dispensing pipes; and

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dispensing a higher-strength cementitious material through said plurality of dispensing pipes, into said slotted grout pipe sections and out said slots of said slotted grout pipes, into a volume being bounded by said hole's interior surface and said exterior surface of said chamber, said higher-strength cementitious material substantially filling said volume, circumfusing said chamber's exterior surface, and thereafter hardening into a shoring mass, thereby filling said volume and supporting said hole's interior surface.

5,302,053

APPARATUS FOR REPLACING BURIED PIPE

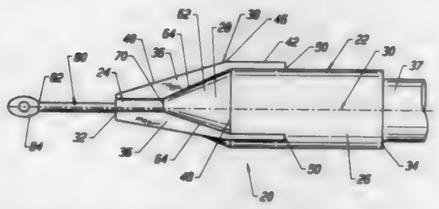
Martin Moriarty, Valentia Island, County Kerry, Ireland

Continuation of Ser. No. 817,905, Jan. 8, 1992, Pat. No. 5,173,009. This application Dec. 1, 1992, Ser. No. 983,641

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] **F16L** *55/00, 1/00*

U.S. Cl. 405—154 **17 Claims**



1. Apparatus for replacing an existing buried pipe with a replacement pipe, comprising:

body having a first end, a second end, and a body axis, said body including a first cylindrical portion, a second cylindrical portion generally coaxial with said first cylindrical portion and having a diameter smaller than the diameter thereof, and a frustro-conical portion joining said first and second cylindrical portions;

at least three protrusions extending radially outward from said body

means for transmitting a pulling force to said apparatus;

means attached to said means for transmitting a pulling force to said apparatus for attaching the replacement pipe.

5,302,054

HOLE SHORING SYSTEM

W. E. Winkler, P.O. Box 386, Mt. Airy, Md. 21771, and Nicholas J. A. White, Damascus, Md., assignors to W. E. Winkler, Mt. Airy, Md.

Filed Sep. 23, 1992, Ser. No. 949,643

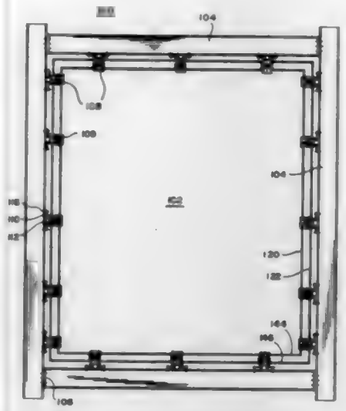
Int. Cl.[5] **E21D** *5/12*

U.S. Cl. 405—274 **8 Claims**

1. A hole shoring system for shoring the peripheral side walls of an excavation hole in the ground comprising:

vertical soldier beams placed in a hole to be shored, said soldier beams being spaced along and abutting corresponding side walls of the hole to be shored and being inserted into the ground at the bottom of the hole, each said soldier beam including a hole-facing front flange, a web and a back flange;

horizontal reinforcing beams disposed at grade level around the periphery of said hole to be shored and parallel to the



side walls thereof, said reinforcing beams being attached to back flanges of adjacent soldier beams; and

shoring panels disposed between adjacent soldier beams.

5,302,055

SIGNALLING DEVICE

David A. Johnston, 10 Jainba Street, Indooroopilly, Queensland, 4068, Australia

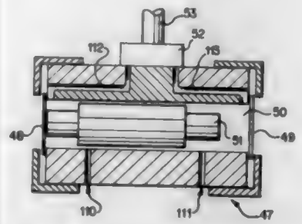
PCT No. PCT/AU91/00521, § 371 Date Jul. 15, 1992, § 102(e) Date Jul. 15, 1992, PCT Pub. No. WO92/10401, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 13, 1991, Ser. No. 910,145

Claims priority, application Australia, Dec. 11, 1990, PK3833

Int. Cl.[5] **B63C** *11/26*

U.S. Cl. 405—186 **19 Claims**



1. A signalling device for generating an audible sound in signalling to and between divers, said signalling device comprising:

a main body part having a bore along an axis therethrough which forms a cylinder having at least one open end;

a diaphragm fitted to the main body part over the at least one open end of the cylinder, the diaphragm being, in use underwater, in direct contact with water;

a piston having first and second ends and being movably contained within the cylinder for axial movement to and fro therein relative to the diaphragm, the second end impacting against the diaphragm during movement of the piston;

an air inlet component disposed in the main body part to which an air line is removably attached and through which pressurized air is supplied to the cylinder and the first and second ends of the piston; and

a valve means, mounted in the main body part between the inlet component and the cylinder, for alternately allowing pressurized air to flow to the first and second ends of the piston;

wherein the valve means operatively interacts with the piston via passages in the main body which communicate the valve means with ports in the cylinder so that pressurized air is alternately allowed to flow to the first and second ends of the piston whereby the piston is repetitively driven against the diaphragm.

5,302,056

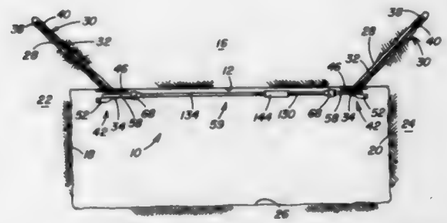
METHOD AND APPARATUS FOR SUPPORTING A MINE ROOF

Frank Calandra, Jr., Pittsburgh, Pa.; Jerry E. Frease, Lexington, Ky.; Lajos Kovacs, Mansfield, Ohio; John C. Stankus, Canonsburg, Pa., and Eugene H. Stewart, Pittsburgh, Pa., assignors to Jennmar Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1992, Ser. No. 962,255

Int. Cl.[5] **E21D** *20/00*

U.S. Cl. 405—288 **19 Claims**



1. A roof support for an underground passage comprising,

first and second truss brackets,

means for securing said first and second truss brackets to the roof of an underground passage adjacent to opposing ribs of the passage,

said truss brackets each including a roof engaging surface for positioning in contact with the roof and a downwardly depending body portion, said body portion including a truss supporting arm member having an upper surface extending in a horizontal plane from said body portion a preselected distance to an end portion,

said arm member extending horizontally relative to said roof engaging surface,

truss means extending between said first and second truss brackets for applying an uplifting force to the roof to support the roof above the passage,

said truss means including a pair of U-shaped members releasably engaged to said first and second truss brackets, each of said U-shaped members being supported in a vertically hanging position by said arm members,

said arm members each including said end portion having means for supporting said U-shaped member through a range of horizontal movement between said body portion and said arm member end portion on said truss bracket, and

means for applying tension to said truss means with said U-shaped members engaged to said truss brackets to apply an uplifting force to the roof.

5,302,057

METHOD AND DEVICE FOR CENTERING A GUIDE ROD IN A VALVE GUIDE FOR THE PURPOSE OF THE PRECISION MACHINING OF A VALVE SEAT

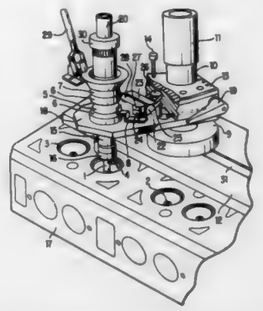
Ruedi Siegfried, Hinwil, Switzerland, assignor to Serdi-Societe d'Etudes de Realisation et de Diffusion Industrielles, Annecy, France

Continuation-in-part of Ser. No. 764,217, Sep. 23, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 39,776

Claims priority, application Switzerland, Sep. 28, 1990, 3119/90

Int. Cl.[5] **B23B** *45/14, 35/00*

U.S. Cl. 408—1 R **10 Claims**



1. A method for centering a guide rod in a valve guide, for the purpose of precision machining of a valve seat, comprising the steps of:

nutation of the guide rod around an inner surface of the periphery of the valve guide;

determining in at least one centering plane a closed line of nutation inscribed in a rectangle or rhomboid; and

centering the guide rod in said centering plane at the center of said rectangle or rhomboid.

5,302,058

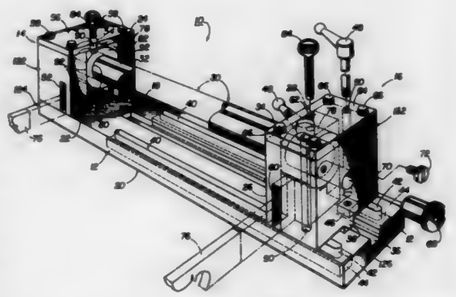
WORKPIECE SUPPORT DEVICE

David H. Bishop, P.O. Box 590, Leesburg, Ga. 31763

Filed Jun. 21, 1993, Ser. No. 80,297

Int. Cl.[5] **B23B** *49/02, 47/28*

U.S. Cl. 408—115 R **10 Claims**



1. A device for supporting a workpiece in which an eccentric hole is to be drilled, the device co rising:

(a) a base member having a top surface and an opposing bottom surface;

(b) a first receiving means for receiving a first end of the workpiece disposed on the top surface of the base member and having a first face with a first cavity therein for receiving the first end of the workpiece and also having a

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first drill guiding means for passing a drill longitudinally through the workpiece;

(c) a second receiving means for receiving a second end of the workpiece disposed on the top surface of the base member and having a second face with a second cavity therein for receiving the second end of the workpiece and also having a second drill guiding means for passing a drill longitudinally through the workpiece;

(d) workpiece securing means on each of the first and second receiving means for adjustably securing the respective ends of the workpiece within the respective cavities at a selected height above the base; and

(e) a distance adjustment means for adjustably securing at least one of the receiving means to the base member at a selected distance from the other receiving means whereby the first face and second face are in opposed relationship with one another and the first and second drill guides are aligned so that a drill penetrating one of the drill guides will also pass through the other drill guide, thereby drilling an eccentric hole parallel to the longitudinal axis of the workpiece.

5,302,059

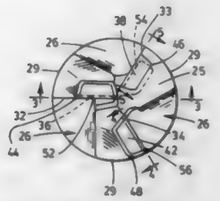
INSERT DRILL

Joseph F. Fabiano, 4776 Huxley Dr., Rockford, Ill. 61101

Division of Ser. No. 738,671, Jul. 31, 1991, Pat. No. 5,146,669. This application Sep. 14, 1992, Ser. No. 945,273

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—223 **7 Claims**



1. A three flute insert drill comprising a generally cylindrical drill body having a drill axis, a drive portion and a drill portion, the drill portion having a drill surface formed by three generally cylindrical surface segments extending along the direction of the drill axis and three spaced apart chip channels extending along the direction of the drill axis between the surface segments from a cutting end of the insert drill, the surface segments and the boundaries of chip channels adjacent to the surface segments extending inwardly toward the drill axis from the cylindrical surface segments defining drill flutes, a boundary of each chip channel extending from the cutting end defining a generally flat insert face approximating a plane generally parallel to the drill axis and extending inwardly toward the drill axis from the drill surface, each insert face positioned to follow the chip channel adjacent to the insert face as the drill is rotated about the drill axis in the drill rotation direction, the plane of each insert face intersecting the cutting end at a drill edge, each drill edge defined by an outer drill edge and an inner drill edge, the outer drill edge extending from the drill surface toward the drill axis and in the direction of the drill axis away from the drive portion to an edge point, the inner drill edge extending from the edge point toward the drill axis and in the direction of the drill axis toward the drive section, the edge points lie generally in a plane that is perpendicular to the drill axis and the edge points are the farthest extend of the insert drill along the drill axis away from the drive portion of the insert drill, and three insert pockets formed in the drill portion, one insert pocket, opening to each insert face and the cutting end adjacent the drill edge, each insert pocket having an inner and outer side boundary extending generally along the direction of the drill axis from the cutting end and one of the side boundaries extending from the edge point, one insert pocket is formed to have an inner side boundary at the drill axis and an outer side boundary at an inner pocket outer radius from the drill axis approximately equal to the distance from the drill axis to the drill surface divided by the square root of three, one insert pocket is formed to have an inner boundary that is a distance from the drill axis that is less than the inner pocket outer radius and an outer boundary on the drill end at an intermediate pocket outer radius from the drill axis approximately equal to the inner pocket outer radius multiplied by the square root of two, and one insert pocket is formed to have an inner boundary at the drill end that is a distance from the drill axis that is less than the intermediate pocket outer radius and an outer boundary at the drill surface.

5,302,060

DRILLING TOOL AND INSERT THEREFOR

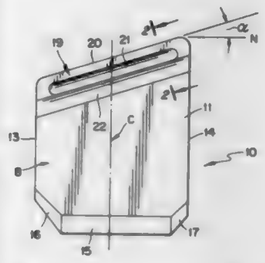
Leif R. Nyström, Järbo; Claes G. Lagerholm, Sandviken, both of Sweden, and Anthony F. Yakamavich, Jr., Glenwood, N.J., assignors to Sandvik AB, Sandviken, Sweden

Filed Dec. 17, 1991, Ser. No. 808,748

Claims priority, application Sweden, Dec. 19, 1990, 9004061-9

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—224 **23 Claims**



1. A cutting insert for use in a rotary drill for chipforming machining of bores in metal workpieces, comprising:

upper and lower portions,

said upper portion including a top surface and a rake face spaced from said top surface in a direction toward said lower portion, and

edges faces extending between said rake face and said lower portion, an intersection between said rake face and a first of said edge faces defining a cutting edge, with said first edge face defining a clearance face for said cutting edge,

said cutting edge extending obliquely relative to the center line of said insert, said center line intersecting said first edge face and a second edge face disposed opposite said first edge face as said insert is viewed in top plan,

said edge faces including third and fourth mutually parallel edge faces each extending between said first and second edge faces, at least a portion of said second edge face extending perpendicular to said third and fourth edge faces,

said rake face including a chip breaking recess extending parallel to said cutting edge and spaced inwardly therefrom as said insert is viewed in top plan.

5,302,061

DOOR OPENING AND CLOSING DEVICE USING A ROBOT

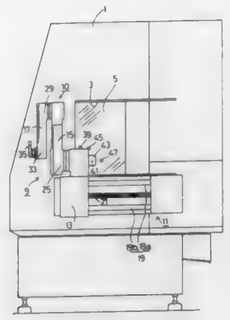
Toyofumi Terawaki, and Osamu Tanigawa, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 5, 1992, Ser. No. 956,281

Claims priority, application Japan, Oct. 18, 1991, 3-271355

Int. Cl.[5] B23Q *11/08*

U.S. Cl. 409—134 **15 Claims**



1. A machine tool comprising:

a housing;

a door provided on said housing and adapted to be slidably moved to open and close;

a robot adapted to enter said housing for replacing a machined workpiece with a workpiece to be machined;

moving means for moving said robot in a direction parallel to a slideably opening and closing movement direction of said door;

connecting means for connecting said robot and said door with each other; and

control means for controlling said moving means so as to move said robot to open and close said door under the condition where said robot and said door are connected to each other by said connecting means.

5,302,062

SPINDLE CLAMPING DEVICE FOR MACHINE TOOL

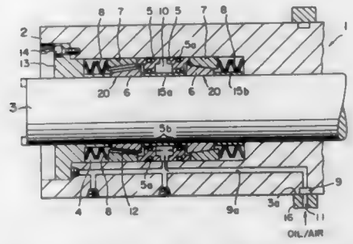
Sadamu Baba, Numazu, and Toshio Kawakami, Zama, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 924,960

Claims priority, application Japan, Aug. 8, 1991, 3-223414; Sep. 3, 1991, 3-250394

Int. Cl.[5] B23C *1/02*

U.S. Cl. 409—231 **12 Claims**



1. A spindle clamping device for a machine tool for clamping a spindle assembly supported by a spindle head and composed of a first spindle rotatably supported by the spindle head and a second spindle rotatably supported inside the first spindle to be reciprocal along an axial direction thereof, said first spindle having an inner hollow portion and said second spindle being inserted into said inner hollow portion of the first spindle so that a space is formed between an inner peripheral surface of the first spindle and an outer peripheral surface of the second spindle, said spindle clamping device comprising:

pressure applying means disposed in the space between the first and second spindles for applying a pressure in an axial direction of the first and second spindles, said pressure applying means being provided with an oil chamber;

at least a pair of clamp rings disposed in the space axially outside the pressure applying means, each of said paired clamp rings comprising a first ring element having one surface contacting the outer peripheral surface of the second spindle and another surface tapered downwardly outward of the pressure applying means and a second ring element having one surface contacting the inner peripheral surface of the first spindle and another surface slidably contacting the tapered surface of the first ring element;

elastic means disposed in the space axially outside the clamp rings, respectively, for urging the second ring element inwardly; and

a static pressure pocket formed to a contacting portion of the spindle head supporting the first spindle wherein a pressurized oil or an air is supplied into the oil chamber through the static pressure pocket.

5,302,063

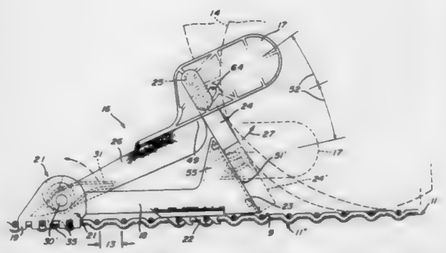
VEHICLE WHEEL CHOCK

Robert B. Winsor, Montreal, Canada, assignor to Holden America Inc., Montreal, Canada

Filed Feb. 28, 1992, Ser. No. 843,122

Int. Cl.[5] P60T *3/00*

U.S. Cl. 410—30 **15 Claims**



1. A wheel chock for preventing rotation of a wheel on a supporting structure provided with a plurality of openings extending therethrough, the wheel chock comprising:

a base member having a front and a rear end;

clamping teeth comprised of a plurality of spaced apart arcuate appendages extending downwardly and forwardly from the base member front end for sliding insertion into the supporting structure openings and under the supporting structure in a direction toward the wheel and for sliding extraction from the supporting structure openings in a direction away from the wheel;

articulated locking means attached to the base member adjacent the rear end thereof, the articulated locking means comprising a hooking finger for insertion into and engagement with a supporting structure opening other than the supporting structure openings wherein the clamping teeth are inserted;

a plurality of arresting studs depending downwardly from the base member for insertion into the supporting structure openings other than the supporting structure openings wherein the clamping teeth are inserted to further prevent movement of the wheel chock; means coupled with the articulated locking means for engaging and disen-

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gaging the articulated locking means with the supporting structure openings to prevent and allow movement of the wheel chock, respectively; and

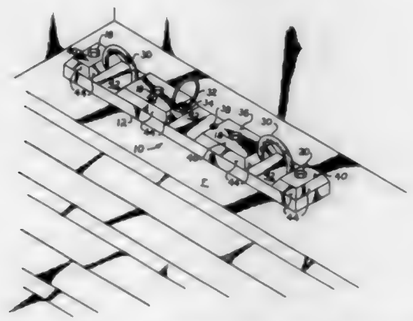
face plate means supported by the base member for contact with the wheel to prevent rotation thereof.

5,302,064

CARGO TIEDOWN

Jim B. Davis, 10350 56th St., Mira Loma, Calif. 91752

Filed Jun. 15, 1993, Ser. No. 76,760
Int. Cl.[5] B60P 7/08
U.S. Cl. 410—115 15 Claims



1. A cargo tiedown apparatus providing for permanent attachment to a floor in a cargo area of a vehicle, said cargo tiedown apparatus comprising:

an elongate base portion having a flat, planar lower surface providing for complementary installation of said tiedown apparatus to the vehicle cargo area floor, and including a plurality of tiedown attachment holes normal to said lower surface and extending completely through said base portion,

at least one tiedown means extending upward from at least one of said tiedown attachment holes;

said base portion further including a plurality of mounting holes therein and extending completely therethrough, with one mounting hole of said plurality of mounting holes disposed to either side of said at least one tiedown means and each of said mounting holes normal to said lower surface of said base portion;

each of said tiedown attachment holes includes a recess therein and adjacent said lower surface;

each said recess comprises a counterbore;

said at least one tie-down means being installed through a plurality of said attachment holes by means of a plurality of threaded nuts;

each of said plurality of threaded nuts being disposed completely within a respective one of said recesses thereby precluding protrusion of said threaded nuts from said lower surface of said base portion; and

said mounting holes and said tiedown attachment holes being coplanar; whereby,

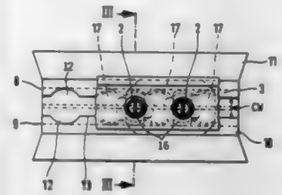
said cargo tiedown apparatus is permanently installed to the vehicle cargo area floor and cargo is secured immediately adjacent the cargo area floor by means of said tiedown means.

5,302,065

LOCKING DEVICE FOR SECURING A COMPONENT TO A RAIL, ESPECIALLY IN AN AIRCRAFT

Guenter Vogg, and Juergen Wieck, both of Bremen, Fed. Rep. of Germany, assignors to Deutsche Aerospace Airubs GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 16, 1993, Ser. No. 48,826
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212694
Int. Cl.[5] F16B 21/00, 27/00
U.S. Cl. 411—85 15 Claims



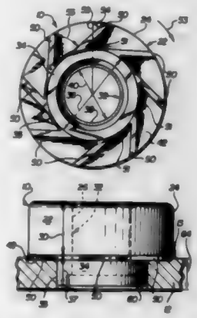
1. A locking device for securing a component to a floor, especially in an aircraft, comprising a support rail secured to said floor, said support rail comprising a rail channel extending longitudinally in said support rail, at least one locking rail rim (8 or 9) cantilevered over part of said rail channel to form a longitudinal rail gap along said rail rim (8 or 9) in said support rail, and recesses (12) in said rail rim spaced by an on-center spacing between neighboring recesses, said locking device further comprising a carrier member (3) connected to said component, at least one locking bolt (4) including a threading (14) at one end and a locking cross-head (5) at an opposite end of said locking bolt (4), said locking cross-head having at least one projection (6,7) for engaging said rail rim, at least two alignment guide studs (17) secured to said carrier member with said on-center spacing for fitting into said recesses in said rail rim, said locking bolt (4) passing rotatably through said carrier member (3) between said two alignment guide studs with said locking cross-head (5) extending below said carrier member and said threading (14) extending above said carrier member, said locking device further comprising a threaded member for engaging said threading (14) to provide a locking force.

5,302,066

LOCKING FASTENER

Martin P. Bieschke, Rockford, Ill., and James A. Briney, Rochester, Ind., assignors to Textron Inc., Providence, R.I.

Filed Jan. 19, 1993, Ser. No. 6,032
Int. Cl.[5] F16B 37/04
U.S. Cl. 411—181 19 Claims



1. A lock nut comprising: a generally tubular nut body having a radially outer surface defining an outer periphery of

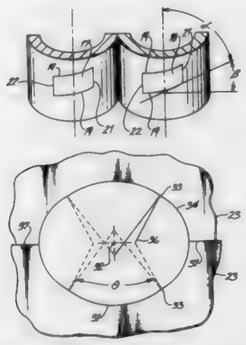
selectible configuration, a generally cylindrical radially inner surface defining an inner diameter, and a height dimension defining an axial direction, said inner surface being threaded and configured for mating threaded engagement with an externally threaded shank of a screw-type fastener; a substantially annular locking neck portion extending axially from said nut body and having a radially outer surface defining a smaller cross-sectional dimension than said outer periphery of said nut body and a generally cylindrical radially inner surface substantially coaxial with said nut body radially inner surface and defining an inner diameter substantially identical to said inner diameter of said nut body; a substantially flat radially extending locking surface defined on said nut body between said outer surface of said nut body and said outer surface of said locking neck, and a plurality of raised locking ribs extending across at least a portion of said locking surface, each of said ribs being arranged at an acute angle angularly offset in a direction corresponding to the direction of rotation of a fastener for mating with the nut to attain advancement toward a clamped engagement, said acute angle being defined by the rib and a radial line extending across said locking surface and intersecting said rib; and each of said ribs being substantially rectangular in cross-section.

5,302,067

PREVAILING TORQUE FASTENER

Jack Rath, 9823 Kincardine Ave., Los Angeles, Calif. 90034

Continuation-in-part of Ser. No. 928,849, Aug. 11, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 26,683
Int. Cl.[5] F16R 39/22
U.S. Cl. 411—281 10 Claims



1. A prevailing torque fastener comprising:

a hollow body with a generally circular bore and an exterior radius;

an internal thread in the bore; and

a portion of the thread deformed from a circular cross section to an approximately elliptical cross section by pair of die impressions on diametrically opposite sides of the exterior of the body;

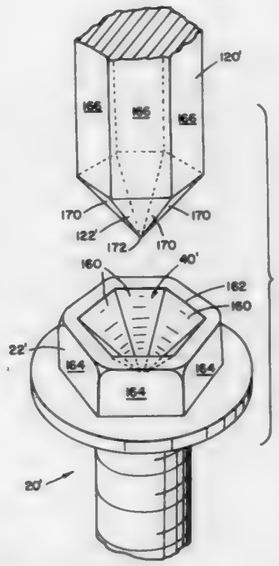
each die impression having a circular arc with a radius approximately equal to the radius of the exterior of the undeformed body, the distance from the center of the circular arc to the axis of the body being less than the radius of the undeformed body, and each portion of the exterior of the body between the die impressions comprising a portion having a radius less than the exterior radius.

5,302,068

FASTENER HAVING RECESSED, NON-CIRCULAR HEAD, AND FASTENER-DRIVING TOOL

Michael Janusz, Elgin, and George G. Dewey, Prospect Heights, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 908,751, Jul. 6, 1992, which is a continuation-in-part of Ser. No. 592,129, Oct. 3, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,887
Int. Cl.[5] F16B 23/00, 35/06
U.S. Cl. 411—402 13 Claims



1. A fastener, comprising:

a head; and

a shank having a threaded portion;

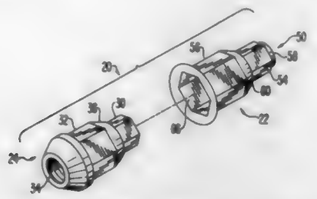
said head and said shank defining a longitudinal axis through said fastener;

said head having an external portion which has a configuration which is non-circular when viewed axially so as to adapt said head for driving coaction with a driving member having a socket shaped similarly to said external portion of said head so that said socket can be axially fitted over and about said external portion of said head so as to define a driving relationship therewith; and

said head has a recess extending axially into said head, and a continuous, upper edge portion having a configuration which comprises a regular polygon and which separates said external portion of said head from said axially extending recess of said head, said axially extending recess having a polygonal configuration for cooperating with a similarly configured centering pin fixedly associated with said socket of said driving member so as to guide said centering pin of said driving member from a radially offset position with respect to said longitudinal axis of said fastener toward said longitudinal axis of said fastener and thereby center said socket and said head relative to each other, and for defining an additional driving coaction with said centering pin of said driving member in addition to, and in conjunction with, said driving coaction defined between said socket and said external portion of said head of said fastener.

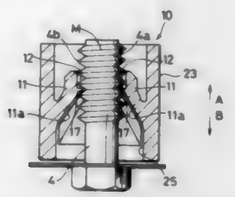
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,069
STEPPED, CAPPED WHEEL NUT
John A. Toth, Orchard Lake, Mich.; Glenn A. Snowberger, Ontario, Canada; Richard W. Guillod, Bingham Farms, and John M. Liston, Southfield, both of Mich., assignors to Key Manufacturing Group, Inc., Royal Oak, Mich.
Filed Sep. 29, 1992, Ser. No. 953,102
Int. Cl.[5] F16B 37/14
U.S. Cl. 411—429 14 Claims



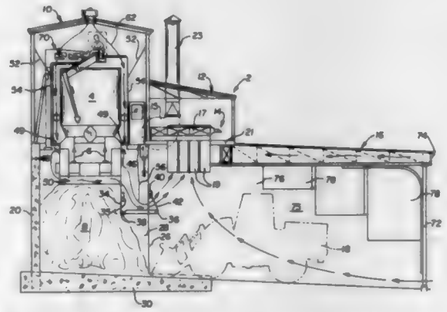
1. A capped wheel nut for retaining a wheel on a vehicle comprising:
a nut insert having first and second ends, the first one of said ends for engaging a vehicle wheel, the nut insert having at least first and second axially spaced apart exterior portions; and
a cap mounted to said nut insert and covering the second one of said ends and said first and second exterior portions of the nut insert, for rotation with said nut insert, the cap having at least one exterior portion;
wherein:
said at least one cap exterior portion is engageable by a tool for applying a rotational force to the cap for rotating the cap and nut insert; and
said nut insert second exterior portion is the same size as said at least one cap exterior portion and is engageable by the same tool as said at least one cap exterior portion, whereby the same tool may be used to apply a rotational force to the nut insert in the absence of the cap to rotate the nut insert.

5,302,070
BOLT ENGAGING STRUCTURE
Yasushi Kameyama, and Mitsunari Tashiro, both of Hiroshima, Japan, assignors to Yazaki Corporation, Japan
Filed Dec. 8, 1992, Ser. No. 987,191
Claims priority, application Japan, Dec. 9, 1991, 3-101150[U]
Int. Cl.[5] F16B 37/16
U.S. Cl. 411—437 6 Claims



1. An engaging structure for engaging a bolt comprising:
a boss section with a cylindrical wall defining a hole to accommodate the bolt thereinside in the axial direction, said hole being provided with an open end to allow the bolt to come into the hole;
a supporting portion provided inside the hole of the boss section so as to support the bolt inside the hole and having an engaging projection and an abutting portion, said engaging projection projecting inwardly so as to engage with the screw thread of the bolt accommodated inside the hole, and said abutting for portion abutting against an edge of the screw threads of the bolt accommodated inside the hole; and
a flexible connecting portion extending from said cylindrical wall of the boss section while slanting inwardly away from said open end and connecting the supporting portion with the cylindrical wall so as to allow the supporting portion to be flexible inwardly and outwardly.

5,302,071
DUST CONTAINMENT SYSTEM FOR BOTTOM DUMPING RAILROAD CARS
Willard Binzen, Saratoga Springs, N.Y., assignor to Svedala Industries, Inc., Pittsburgh, Pa.
Filed Aug. 28, 1991, Ser. No. 751,880
Int. Cl.[5] B65G 65/34, 69/18
U.S. Cl. 414—376 18 Claims

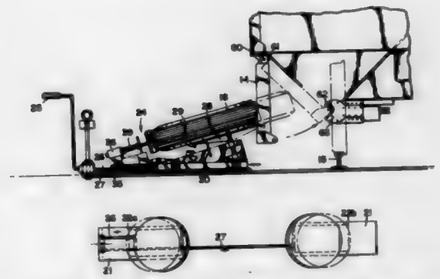


9. A dust containment system for a bottom dumping railroad car of the open top, hopper type used to transport dusty, particulate materials, said system comprising:
an open railroad track segment for supporting the bottom dump car;
a building structure surrounding said track segment and including a roof having ventilator means therein;
a hopper pit situated beneath the track segment and adapted to receive particulate material dumped from said car, said hopper pit defined by spaced sidewalls, a rear wall and a front side;
floor means positioned between said building structure and said hopper pit and extending along opposite sides of said track segment, said floor means having air passageways formed therein;
damper means positioned along said air passageways; and
dust collection means including fan means communicating with said hopper pit to induce an air draft through the ventilator means of the building structure downwardly through said air passageways, open track segment and through said hopper pit whereby fugitive dust generated during dumping is entrained in said induced air draft and captured by said dust collection means.

5,302,072
TRACKSIDE DOOR CLOSING DEVICE FOR RAILWAY HOPPER CARS
Rick J. Stauffer; Keith C. Kieres, both of Overland Park, Kans., and Lyle W. Burr, Lincoln, Nebr., assignors to Burlington Northern Railroad Company, Fort Worth, Tex.
Filed Sep. 14, 1992, Ser. No. 944,497
Int. Cl.[5] B61D 7/30
U.S. Cl. 414—387 11 Claims

8. For use with a side-discharge railroad hopper car having a pair of doors hingedly mounted on opposite longitudinal side sills, which doors rotate inwardly and upwardly from an open position to a closed position as the hopper car moves along a railroad track, a closing mechanism comprising:

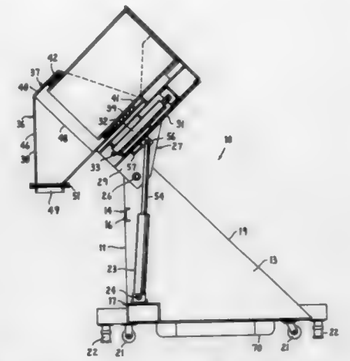
(a) a pair of bases mounted on opposite sides of and adjacent the railroad track;
(b) a carriage slidably mounted on each base which is arranged and configured to slide in an essentially horizontal plane on the base in a direction perpendicular to the railroad track;
(c) means operatively connected to each carriage for synchronized movement of the carriages inward toward the railroad track and outward from the railroad tack;
(d) an axle operatively connected to each carriage inclined away from the railroad track;
(e) a wheel eccentrically mounted on and rotatable about each axle wherein the wheel has a short radius and a long



radius between the axle and circumference, the wheel having a ready position wherein the short radius is essentially directed toward the railroad track, and the wheel in the ready position contacts a moving hopper door which is in an open position at a point on the circumference near the short radius, rotates about the axle to maintain contact with the door while moving the door inward to a closed position and releases contact with the door after closing the door, the radius between the axle and point of contact between the wheel and hopper door substantially increasing from the short radius to the long radius during contact between the wheel and hopper door; and
(f) means for positioning the wheel in the ready position.

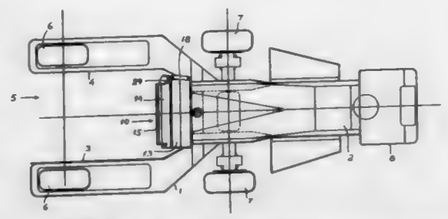
5,302,073
LIFT AND SEAL DRUM DUMPER
Keith A. Riemersma; Philip S. Keller, and Steven C. Nyland, all of Holland, Mich., assignors to National Bulk Equipment, Inc., Holland, Mich.
Filed Aug. 20, 1992, Ser. No. 932,659
Int. Cl.[5] B65G 65/34
U.S. Cl. 414—421 11 Claims

1. A dumper for use in dumping the contents of a container, comprising:
a hood having a hollow receiving means for receiving therein at least an upper end of the container, and an outlet means for guiding contents emanating from the container to a desired location, said outlet means being a hollow and enclosed chamber with an openable and closable gate means thereon at a location remote from said receiving means;
means for effecting a relative movement between said hollow receiving means and the upper end of the container thereby orienting said upper end of the container inside said hollow receiving means, so that the upper end of the container, when received inside of said hollow receiving means, is entirely open with unobstructed access to said outlet means being provided to the contents in the container, so that all of the contents in the container can be emptied into said outlet means when the container is tipped;
an inflatable bladder means mounted on an inwardly facing surface of said hollow receiving means and oriented to solely engage a peripheral side surface of the container, when inflated, with sufficient force to clamp and be the only holder of the container to said hollow receiving means and provide a sealed connection with the container so that said chamber, when said gate means is closed and said bladder is inflated, is sealed off from external conditions; and



tipping means for tipping said receiving means and said container in unison only when said bladder is inflated so as to prevent relative movement between said receiving means and said container from occurring when said container is tipped over for purposes of effecting a dumping of the contents of the container and a delivery of the contents to the outlet means.

5,302,074
WHEELED VEHICLE FOR GROUND TRANSPORT OF AIRCRAFT
Bo Elfström, Kalmar, Sweden, assignor to Kalmar Motor AB, Kalmar, Sweden
Filed Apr. 1, 1992, Ser. No. 861,550
Int. Cl.[5] B60P 3/06; B62D 49/02
U.S. Cl. 414—427 19 Claims



1. A wheeled vehicle for transporting aircraft on the ground, said aircraft having nose wheels with front and rear ends and a predetermined width, said nose wheel further initially making contact with the ground at contact points, said vehicle comprising:
a chassis mounted on wheels; and
an engagement and hoisting unit mounted to said chassis, said unit comprising:
first and second substantially parallel support arms spaced apart a distance greater than the width of the nose wheels, and defining a nose wheels-receiving volume between them;
an inner counter member mounted by and substantially stationary with respect to said support arms; and inner counter member having a concave support surface with a lower portion thereof terminating in a leading edge dis-

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posed at or just above the ground at the front ends of the nose wheels;

an outer counter member including a horizontal plate with a downwardly sloping support surface terminating in a leading edge disposed at or just above the ground at the rear ends of the nose wheels;

means for mounting said outer counter member to said first arm for rotation about a substantially vertical axis from a first horizontal position in which said outer counter member allows substantially free passage of the nose wheels into said nose wheels-receiving volume, to a second horizontal position in which said outer counter member blocks passage of the nose wheels out of said nose wheels-receiving volume;

means for lifting said counter members with respect to the ground from a first vertical position in which said counter members are at or spaced a first distance from the ground and said outer counter member is in said second horizontal position, to a second vertical position in which said counter members engage the nose wheels received in said nose wheels-receiving volume and are spaced a second distance from the ground greater then said first distance and sufficient to lift the nose wheels engaged by said counter members off the ground; and

said leading edges of said inner and outer counter members being spaced from each other a distance slightly greater than the length of a chord of the nose wheels when said outer counter member is in said second horizontal position and said counter members are in said first vertical position so that said counter members are adjacent the nose wheels at the front and rear ends but do not touch the nose wheels.

5,302,075

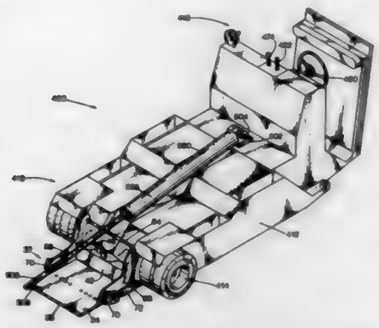
UNIVERSAL AIRCRAFT NOSEWHEEL CRADLE AND TUG ASSEMBLY

Robert A. Zschoche, Astoria, Oreg., assignor to Eric W. Paulson, Warrenton, Oreg.

Continuation-in-part of Ser. No. 621,070, Nov. 30, 1990, Pat. No. 5,151,003. This application Sep. 28, 1992, Ser. No. 953,693

Int. Cl.[5] B60B *29/00*

U.S. Cl. 414—428 **18 Claims**



1. An aircraft tug assembly for moving an aircraft having a nosewheel, the tug assembly comprising:

a self-propelled chassis controllable by an operator, with the chassis having a frame with a front portion;

a cradle assembly and a pivotal attachment mechanism for pivotally attaching the cradle assembly to the chassis front portion, with the cradle assembly having a cradle member and an adjustable nosewheel receiving apparatus for accommodating varying sized aircraft nosewheels, with the nosewheel receiving apparatus having a pair of lateral substantially mutually parallel arms and a mechanism for adjustably mounting the lateral arms to the cradle member to provide lateral adjustment therefor;

a telescoping arm member pivotally coupled to the chassis frame; and

a coupling mechanism attached to the telescoping arm member for securing the aircraft nosewheel to the telescoping arm member;

the telescoping arm member retracting to draw the aircraft nosewheel onto the cradle assembly, and the telescoping arm member extending to push the aircraft nosewheel off the cradle assembly.

5,302,076

TOW VEHICLE FOR MANEUVERING OF VEHICLES

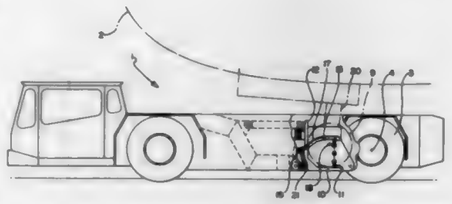
Michael Bammel, and Franz-Johannes Clirten, both of Ulm, Fed. Rep. of Germany, assignors to Goldhofer Fahrzeugwerk GmbH & Co., Memmingen, Fed. Rep. of Germany

Filed Jul. 19, 1991, Ser. No. 732,630

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1989, 3901650

Int. Cl.[5] B64F *1/22*; B62D *49/02*; B60P *3/11*

U.S. Cl. 414—428 **20 Claims**



1. An aircraft maneuvering tractor comprising, in combination:

a bifurcated tractor chassis providing an aircraft nose wheel receiving space having an entrance end;

a shovel movably mounted on the chassis in said space for receiving thereon and supporting an aircraft nose wheel;

retractable and extensible nose wheel pulling means for engaging behind an aircraft nose wheel at the entrance end of said receiving space and pulling the wheel on to said shovel;

an elongated hold down member having a pivotal axis adjacent one end and being free at the opposite end and intermediate said ends having angularly related portions providing a generally arcuate configuration for the hold down member with said free opposite end overhanging the shovel;

means supporting said pivotal axis of the hold-down member in front of an aircraft nose wheel on said shovel the pivotal axis supporting means and the hold down member being operable such that as the free end of the hold-down member engages the nose wheel as the nose wheel is pulled on to the shovel, the hold-down member is caused to swing upwardly about its pivotal axis so that one of said portions extends upwardly from the pivot axis in front of the nose wheel and the other of said portions extends rearwardly over the top of the nose wheel; and

means for urging the hold-down member downwardly against a nose wheel supported on said shovel to prevent the nose wheel from lifting;

wherein said means supporting said pivotal axis of the hold-down member is vertically linearly movable.

5,302,077

MAGAZINE CONVEYING APPARATUS

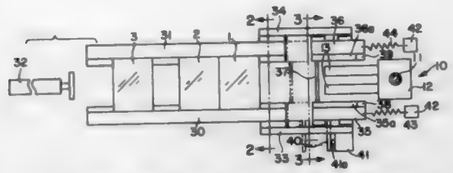
Koji Sato, and Junichi Ide, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 21,165

Claims priority, application Japan, Feb. 20, 1992, 4-069343

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—609 **4 Claims**



1. A magazine conveying apparatus, which transfers one magazine at a time from a magazine stand to a magazine receiver of an elevator means for lifting said magazine comprising sing a magazine pusher that pushes said magazines on said magazine stand toward said elevator means, slide rails that are installed so as to move horizontally toward said elevator means from said magazine stand, and a slide rail pusher that drives said slide rails back and forth and has a power greater than a power of said magazine pusher, wherein one magazine on said magazine stand is transferred onto said slide rails by actuating said slide rail pusher and said magazine pusher with the magazine receiver of said elevator means being positioned beneath magazine carrying surfaces of said slide rails, and said magazine receiver of said elevator means is raised when said magazine which has been transferred onto said slide rails is positioned directly above said magazine receiver.

5,302,078

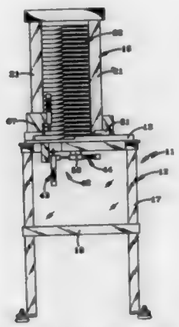
AUDIOCASSETTE AUTOMATIC UNLOADING MACHINE

Gale W. Essick, E. Canton, and David J. Dillon, Canton, both of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio

Filed Feb. 5, 1992, Ser. No. 831,511

Int. Cl.[5] B65G *65/00*

U.S. Cl. 414—786 **6 Claims**



1. A method of unloading a cassette from a security package of a type having a storage compartment with an access opening in communication with the storage compartment for inserting and removing the cassette into and out of the storage compartment, and a lock plate mounted on the package and movable across at least a portion of said access opening between locked an unlocked positions, and lock means for locking the plate in the locked position to block removal of the cassette from within the storage compartment through the access opening, said method including the steps of:

a) automatically moving a loaded security package from a supply of said loaded packages to an unload station;

b) disengaging the lock plate from the lock means within the security package;

c) moving the lock plate from the locked position to the unlocked position;

d) applying a generally downward force to the cassette to move a first end of the cassette downwardly through the access opening of said storage compartment and partially out of said storage compartment; and

e) allowing a second end of said cassette to fall out of said storage compartment to fully remove said cassette from said compartment.

5,302,079

APPARATUS AND METHOD FOR ALIGNING PACKAGING BLANKS

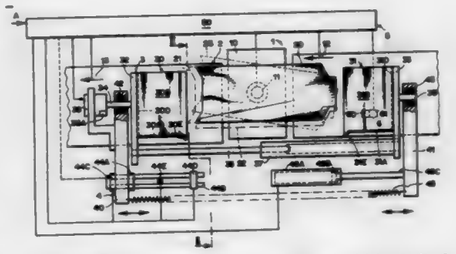
Jean Ceatonaro, Marin, and Philippe Brea, Cernier, both of Switzerland, assignors to Fabriques de Tabac Reunies SA, Neuchatel-Sierrieres, Switzerland

Filed Jun. 24, 1993, Ser. No. 80,761

Claims priority, application European Pat. Off., Jul. 6, 1992, 92810517.0

Int. Cl.[5] B65H *29/00*

U.S. Cl. 414—788 **13 Claims**



1. Apparatus for aligning packaging blanks, especially for cigarette boxes, comprising:

two parallel support arms, each perpendicular to a longitudinal axis;

means for bringing said arms closer together and for moving them apart longitudinally;

two bearings, each bearing respectively disposed on one of said arms, said two bearings being aligned along a longitudinal horizontal axis perpendicular to said two arms;

two half-shell-shaped receiving portions, each including an end wall, a supporting wall, a top wall, and a bottom wall, each said wall being of substantially rectangular shape, each said end wall being disposed perpendicular to said longitudinal horizontal axis and each other said wall being fixed perpendicularly to a respective edge of said end wall and defining on each said receiving portion a front opening and a side opening, said two front openings facing one another and said two side openings being oriented in the same direction;

a respective pivot joined perpendicularly in a substantially central position to each said end wall thereof, each said pivot being fitted in a respective one of said bearings;

actuation means for causing said receiving portions to pivot synchronously about said longitudinal horizontal axis; and

transport means, including means for delivering, and means for discharging, a stack of packaging blanks to be engaged by and withdrawn from said receiving portions, and further including presentation means for accepting said stack from said delivery means and presenting said stack to said receiving portions.

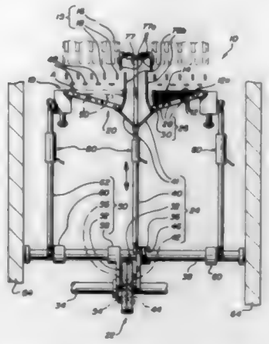
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,080

METHOD AND APPARATUS FOR STACKING NON-SYMMETRICAL FLEXIBLE ARTICLES

David A. Smith, Midland, and Robert J. Nestle, Essexville, both of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.

Filed Feb. 19, 1992, Ser. No. 838,621
Int. Cl.[5] B65G *57/16*
U.S. Cl. 414—788.2 **29 Claims**



1. An apparatus for stacking zippered plastic bags in a generally horizontal relationship comprising:

means for delivering a series of individual zippered plastic bags having zippered and nonzippered portions to a delivery point, said means for delivering including a transfer drum;

means at said delivery point for receiving successive zippered plastic bags in a stacked relationship, said receiving means including means for supporting said bags; and

means for controlling the position of said means for supporting such that as said bags are delivered to said delivery point, at least the uppermost bag in said series of bags on the stack, including both said zippered and nonzippered portions, is maintained in a substantially horizontal position at said delivery point.

5,302,081

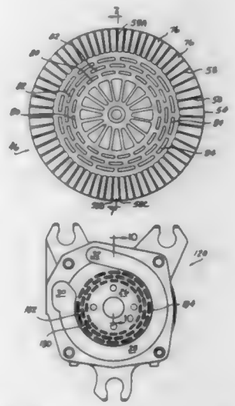
TORIC PUMP

John E. Smith, Rochester Hills, Mich., assignor to Coltec Industries Inc., New York, N.Y.

Continuation-in-part of Ser. No. 741,236, Aug. 5, 1991, Pat. No. 5,163,810, which is a continuation of Ser. No. 502,157, Mar. 28, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 970,818
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] F01D *1/12*
U.S. Cl. 415—55.1 **16 Claims**

8. In a toric pump including a pump housing having an internal impeller receiving chamber defined in part by a pair of spaced parallel side wall surfaces, a disk-like pump impeller mounted in said impeller chamber between said side wall surfaces for rotation about an axis normal to said side wall surfaces, opposed annular recesses in said side wall surfaces defining a toric pump chamber extending circumferentially of said axis from an inlet end to an outlet end, said impeller having planar side wall surfaces in opposed facing relationship to the respective side wall surfaces of said impeller chamber and a plurality of vanes at opposite sides of said impeller lying in respective general planes radiating from said axis for driving fluid in said pump chamber from said inlet end to said outlet end, said inlet and outlet ends of said recesses being separated from each other by stripper portions on said housing co-planar with the respective side wall surfaces of said impeller chamber and defining a restricted passage for said vanes while inhibiting flow of fluid from said outlet through said restricted passage;

the improvement wherein said planar side wall surfaces of said impeller radially inwardly of said vanes are spaced from the respective opposed side wall surfaces of said impeller chamber by a clearance gap of a width sufficient to accommodate from rotation of said impeller relative to said housing and insufficient to accommodate any substantial flow of fluid through said clearance gap, means defining a plurality of pockets in at least one of said side wall surfaces selected from a group including said impeller and said housing side wall surfaces, said pockets arranged in at least two circular arrays at different radial distances from the impeller axis, the pockets in each circular array being uniformly circumferentially spaced from each other with the spaces between the pockets of one circular array being radially aligned with the pockets of the other circular array, wherein the vanes at one side of said impeller lie in



radial general planes which are non-uniformly angularly spaced about said axis at one side of said impeller in a pattern such that a first radial plane bisects a first vane at said one side of said impeller and bisects the space between two adjacent vanes at said one side of said impeller at a location 180° from said first vane, the vanes at said one side of said impeller located at one side of said first radial plane being non-uniformly angularly spaced in a mirror image relationship to the non-uniform spacing between the vanes at said one side of said impeller located at the other side of said first radial plane, the vanes at the opposite side of said impeller being arranged in the same non-uniform angular spacing as the vanes at said one side of said impeller with the vanes at said opposite side being angularly displaced 180° about said axis from the respective corresponding vanes at said one side.

5,302,082

IMPROVED EFFICIENCY GRINDING PUMP FOR SLURRY

Robert Gilbert, Paramus, N.J., assignor to Arde, Inc., Norwood, N.J.

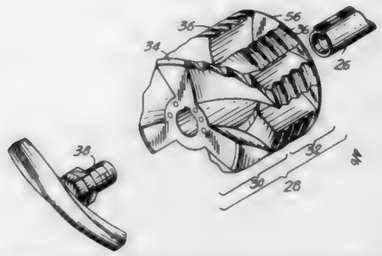
Filed Jul. 9, 1992, Ser. No. 910,243
Int. Cl.[5] F04D *7/04*
U.S. Cl. 415—121.1 **29 Claims**

1. A grinding pump for pumping liquid slurry containing solid and/or semi-solid matter, comprising:

a) a housing structure having a chamber with a longitudinal axis, said chamber having an inlet port, an intermediate portion defined by a wall surface of revolution, said intermediate portion wall surface having a plurality of projections into the chamber intermediate portion, an eccentric portion having a wall surface defining the eccentricity of said eccentric portion, said eccentric portion wall surface having a plurality of projections into the chamber eccentric portion, and an outlet port;

b) a rotatable shaft disposed along said longitudinal axis within said chamber;

c) a rotor mounted on said shaft within said chamber for rotation with said shaft and comprising a comminutor and an impeller, said comminutor and said impeller being disposed serially along said shaft, said comminutor including a helical blade having an outer edge, the outer edge of said helical blade having a plurality of projections and when rotating defining a surface of revolution complementary to and closely spaced from said surface of revolution of the intermediate portion of said chamber, said



rotating helical blade operatively urging the slurry downstream; said impeller including a vane with an outer edge and being downstream from said comminutor, the outer edge of said impeller vane having a plurality of projections and when rotating defining a surface of revolution complementary to and closely spaced from a portion of said eccentric portion of said wall surface of said chamber, said vane urging the slurry towards said outlet port during the rotation of said impeller;

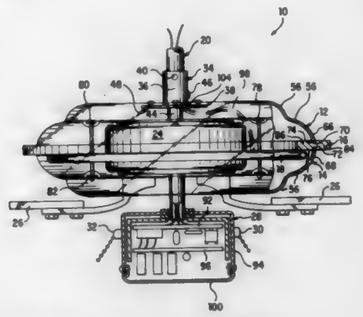
d) the plurality of projections on the intermediate and eccentric wall surface portions of said chamber and the complementary shaped rotating blade and impeller vane together comprising means for efficiently cutting, chopping and grinding the solid and semi-solid material of the slurry.

5,302,083

CEILING FAN WITH NEON LIGHT

John C. Bucher, Coral Springs, Fla.; Shih T. Wu, and Ta-Yao Tao, both of Taiwan, China, assignors to Chien Luen Industries Company, Ltd., Inc., Ft. Lauderdale, Fla.

Filed Aug. 27, 1992, Ser. No. 937,575
Int. Cl.[5] F04D *19/00*
U.S. Cl. 416—5 **4 Claims**



1. A ceiling fan, comprising in combination:

upper and lower dome-shaped light housings, said light housings being light emissive;

annular ring means for connecting said upper and lower light housings together to create a space therebetween;

a motor including a stator and rotor, said rotor being journalled on a hollow shaft in said stator, said motor being positioned within said space between said light housings;

a plurality of fan blades connected relative to said rotor of said motor to rotate therewith;

means for non-rotatably connecting said stator of said motor to a down rod with an upper end of said hollow shaft of the motor being in colinear alignment therewith;

a switch housing mounted to a lower end of said hollow shaft;

power supply electrical wires extending through said down rod and said hollow shaft of said motor into said switch housing;

motor switch and circuit means positioned within said switch housing, said motor switch and circuit means being connected to said power supply electrical wires and to said motor for controlling the operation of said motor;

a neon light positioned within said space between said light housings such that illumination from said neon light shines therethrough; and

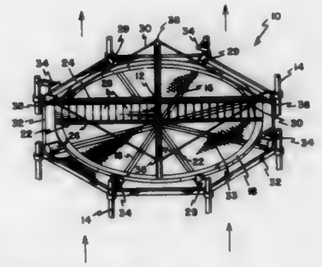
light circuit means positioned within said switch housing, said light circuit means being connected to said power supply electrical wires and having high voltage electrical wires extending therefrom through said hollow shaft to said neon light for powering said neon light to cause illumination thereof, said light circuit means including means for transforming AC power supplied by said power supply electrical wires to a high voltage DC power, means for pulsing said high voltage DC power to create substantially AC power at a higher frequency, and means for supplying said AC power at said higher frequency to terminals of said neon tube.

5,302,084

WINDMILL WITH ANNULAR FLYWHEEL

Wilbert B. Nelson, Rte. 2, Box 87, Sandstone, Minn. 55072

Filed Dec. 30, 1992, Ser. No. 998,451
Int. Cl.[5] F03D *7/06*
U.S. Cl. 416—17 **4 Claims**



1. A windmill comprising:

an approximately vertical center support post;

a plurality of wheels, each wheel rotatably mounted on a separate horizontal axis, each axis being radially disposed about the center post;

a horizontal annular ring, being radially disposed about the center support post, the ring having an inverted channel section adapted to engage the wheels;

a first and second set of parallel beams, each set including an upper beam and a lower beam, the first set of beams substantially perpendicular to the second set of beams, the beams intersecting at the vertical center support post and attached to the annular ring; and

a plurality of vanes pivotally mounted between the upper and lower beams each having a vertical axis, the vanes adapted to swing to a first open position when travelling against the wind and adapted to swing into a second closed position when engaged in a downwind position.

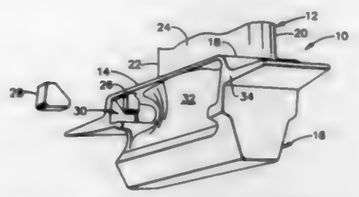
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,085

TURBINE BLADE DAMPER

Philip W. Dietz, Cincinnati; Charles E. Steckle, Loveland, and Robert J. Corsmeier, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 3, 1992, Ser. No. 830,143
Int. Cl.[5] F01D 5/26
U.S. Cl. 416—220 R 10 Claims



1. A rotor blade for a rotor of an engine having an axis of rotation, comprising:

a root portion, a platform portion connected to said root portion and having a pocket formed therein, an airfoil portion connected to said platform portion, a generally wedge-shaped damping member loosely arranged in said pocket and having first and second scrubbing surfaces disposed at a predetermined angle relative to each other, and means for orienting said wedge-shaped damping member such that said damping member is slidably displaceable and rotatable only in a predetermined plane during rotation of said rotor, said orienting means defining said pocket in part; and

wherein said orienting means comprises first and second substantially mutually parallel planar surfaces axially located at first and second axial positions respectively, wherein each of said first and second substantially mutually parallel planar surfaces of said orienting means are integral with said platform portion and form a portion of said pocket, and said wedge-shaped damping member further comprises first and second substantially mutually parallel planar surfaces which are respectively oriented by contact with said first and second planar surfaces of said orienting means during displacement of said damping member under the influence of centrifugal forces.

5,302,086

APPARATUS FOR RETAINING ROTOR BLADES

Joseph C. Kulesa, West Chester, and David E. Crawford, Jr., Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 18, 1992, Ser. No. 931,640
Int. Cl.[5] F01D 5/32
U.S. Cl. 416—221 10 Claims

3. Apparatus for axially retaining rotor blades on a rotor disk of a gas turbine engine, each rotor blade having a root portion, the rotor disk having a web extending radially outward from a hub to a circumferential rotor disk rim and rotor blade mounting posts extending radially outward from said rim, each mounting post spaced from circumferentially adjacent mounting posts forming axial slots therebetween, each slot substantially complementary to said root portion, said mounting posts retaining said rotor blades radially and circumferentially, said apparatus comprising:

said rotor disk including:

a radially extending axial blade stop surface; and

a circumferentially continuous outward facing groove in said rim including a first annular interior wall extending radially to said mounting posts, a second, facing, annular interior wall having an outer diameter defining a first radius, and a depth with a third radius;

each of said rotor blades including:

a first radially extending surface for engaging said stop surface; and

a radially inward facing hook including a radially extending interior wall and an axially extending interior wall, defining a second radius, extending away from said radially extending interior wall; and

a split ring blade retainer mounted within said inward facing hook, said split ring blade retainer comprising:

an outer circumferential surface with a radius substantially the same as said second radius;

an inner circumferential surface having a radius less than said first radius;

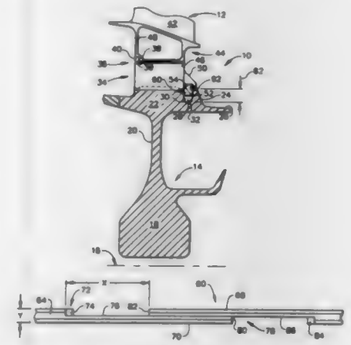
a first annular surface engaging said groove first annular interior wall and said hook radially extending interior wall;

a second, opposite, annular surface engaging said groove second annular interior wall;

a first radial cut across said first annular surface extending axially partway through said ring, defining a first radially extending axial surface;

a planar portion extending circumferentially from said first radially extending axial surface;

a second radial cut extending from said circumferential planar portion to said second annular surface, defining a second radially extending axial surface; and



corresponding third and fourth radially extending surfaces separated by a corresponding circumferential planar portion and spaced from said first and second radially extending surfaces such that said radius of said circumference may be adjusted from said second radius to said first radius by compressing said first and third radially extending axial surfaces towards each other, said circumferential planar surfaces slidingly engaged allowing circumferential movement, whereby said second and fourth radially extending axial surfaces also are moved towards each other;

such that said split ring blade retainer is restrained radially by said outer circumferential surface engaging said hook axial extending surface and restrained axially by said first and second annular surfaces engaging said groove walls, and wherein said groove third radius enables compression of said split ring outer circumferential surface to reduce said radius of said outer circumferential surface to a radius substantially the same as said first radius, enabling axial movement of said rotor blades for installation and removal from said rotor disk;

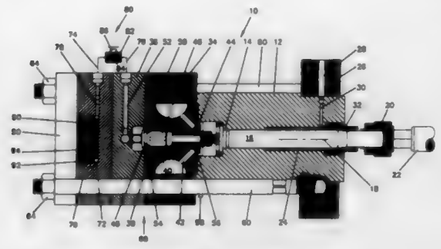
whereby said rotor blades are restrained from axial movement in one direction by said rotor blade first radially extending surface engaging said axial blade stop surface and restrained from axial movement in a second, opposite, direction by said radially extending interior wall engaging said split ring first annular surface.

5,302,087

HIGH PRESSURE PUMP WITH LOADED COMPRESSION RODS AND METHOD

Amos Pacht, Houston, Tex., assignor to Butterworth Jetting Systems, Inc., Houston, Tex.

Filed Apr. 29, 1993, Ser. No. 54,728
Int. Cl.[5] F04B 21/02
U.S. Cl. 417—53 29 Claims



1. A high pressure pump, comprising:

a pump housing having a fluid inlet and a fluid outlet, and defining a pump chamber therein;

a pump piston linearly moveable within the pump chamber along a central axis during stroking of the pump;

an inlet valve for passing fluid from a pump inlet to the pump chamber and preventing fluid from passing from the pump chamber to the pump inlet;

a discharge valve for passing fluid from the pump chamber and preventing high pressure fluid from returning to the pump chamber;

an outlet housing having a pump discharge flow line therein for receiving high pressure fluid passed by the discharge valve from the pump chamber;

a plurality of compression members spaced outward of the pump chamber for sealingly mating the pump housing and the outlet housing;

a pressure housing having a liquid pressure chamber therein in fluid communication with the pump discharge flow line via a compression line;

a sealing member movable within the pressure housing for sealing high pressure fluid within the liquid pressure chamber while transmitting force from the liquid pressure chamber to the plurality of compression members to create a desired axial load on each of the plurality of compression members; and

a control valve spaced along the compression line, such that the control valve may be opened to receive high pressure fluid within the liquid pressure chamber from the pump chamber, then the control valve closed to trap high pressure fluid within the liquid pressure chamber to maintain the desired axial load upon the plurality of compression members.

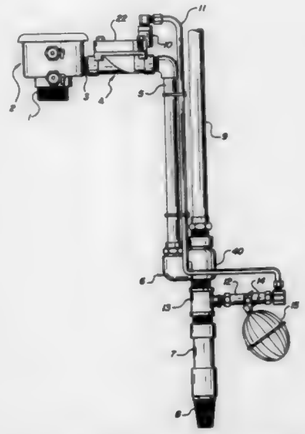
5,302,088

WATER POWERED SUMP PUMP

Michael L. Gronski, 4260 N. Steele Rd., Hemlock, Mich. 48626, and Leslie M. Tyner, 14 E. Hannum Blvd., Saginaw, Mich. 48602

Filed Dec. 30, 1992, Ser. No. 998,797
Int. Cl.[5] F04F 5/48
U.S. Cl. 417—182.5 10 Claims

1. A sump pump construction comprising a fluid inlet line for connection to a source of fluid under pressure; a fluid drain line for positioning in a sump in which liquid may collect and in communication with said inlet line; a fluid discharge line in communication with said drain line; a fluid outlet line in communication with said inlet line, said drain line, and said discharge line; suction generating means in communication with said inlet line, said drain line, and said discharge line for producing a negative pressure in said drain line in response to flow of fluid from said inlet line through said outlet line, thereby enabling liquid in said sump to be entrained in said drain line and said fluid discharge line; control means interposed between and in communication with said inlet line and said outlet line; a bleed line external of said control means and in communication with said control means and said drain line upstream of the communication of said drain line and said suction generating means; actuating valve means in said bleed line downstream of said control means and being movable between first and second positions in which fluid is selectively unable and able to flow from said control means through said bleed line; and operating means coupled to said valve means and responsive to a rise in level of liquid in said sump to move said valve means



from said first position to said second position, said control means comprising a housing having a partition through which a passage extends for establishing fluid flow through said housing from said inlet line to said outlet line, a closure movable between first and second positions in which said closure respectively closes and opens said passage, said closure dividing said housing into an inlet chamber and an outlet chamber, and means yieldably biasing said closure to said first position, said closure having a passageway therethrough for admitting fluid from said inlet chamber to said outlet chamber when said valve means is in said first position and said closure is in said first position, thereby enabling pressures in each of said chambers to equalize and said biasing means to maintain said closure in said first position.

5,302,089

FLUID ROTATING APPARATUS

Teruo Maruyama, Hirakata; Akira Takara, Moriguchi, and Yoshikazu Abe, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 8, 1992, Ser. No. 957,787
Claims priority, application Japan, Oct. 8, 1991, 3-260005
Int. Cl.[5] F04B 23/08
U.S. Cl. 417—199.1 6 Claims

1. A fluid rotating apparatus of a positive displacement type pump, comprising:

a housing having a suction port and a discharge port formed therein;

a plurality of rotors accommodated in said housing;

bearings for rotatably supporting said rotors, respectively;

a plurality of motors for individually rotating said rotors;

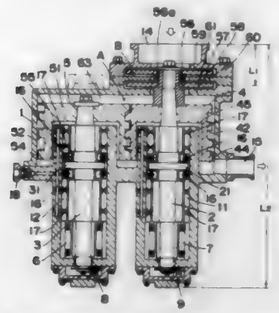
a detecting means for detecting rotating angles and rotating speeds of said motors;

a synchronous control means for controlling rotation of said

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plurality of motors in dependence on a signal from said detecting means; and

a transporting means for transporting fluid in a radial direction of one of said rotors, said transporting means comprising a rotary disk mounted coaxially with said one of said rotors so as to be rotatable together with said one of said rotors, and a fixed disk fixed to said housing such that one



surface of said rotatable disk is opposed to one surface of said fixed disk, at least one of said one surface of said rotatable disk and said one surface of said fixed disk having spiral grooves formed therein which rotate relative to other of said one surface of said rotary disk and said one surface of said fixed disk upon rotation of said one of said rotors.

5,302,090

METHOD AND APPARATUS FOR THE UTILIZATION OF THE ENERGY STORED IN A GAS PIPELINE

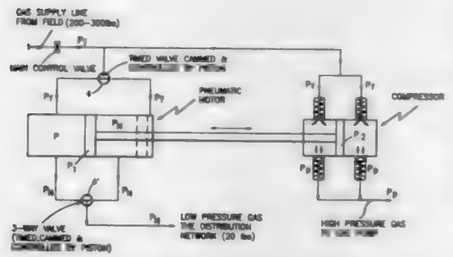
Raul A. I. Schoo, French Street No 2952, Piso 10 DPTO, 1425 Buenos Aires, Argentina

Filed Dec. 4, 1992, Ser. No. 986,106

Claims priority, application Argentina, Dec. 5, 1991, 321324

Int. Cl.[5] F04B *17/00, 35/00*

U.S. Cl. 417—379 **11 Claims**



1. Apparatus for supplying natural gas from a natural gas field both at a low pressure and at a high pressure, under the control of the natural gas field pressure comprising;

a pneumatic motor receptive of natural gas under pressure from a gas field as a sole source of energy for driving said pneumatic motor;

the pneumatic motor having pressure-reducing means driven by the natural gas received under pressure for reducing the natural gas pressure received for supply to a distribution network at a reduced pressure;

a compressor driven by the pneumatic motor and receiving natural gas under pressure from the natural gas field;

the compressor having pressure-increasing means respective of the natural gas under pressure and driven cyclically by said pressure-reducing means and natural gas received therein for effectively compressing the natural gas received to a desired higher pressure;

means to deliver the natural gas from said compressor at said desired higher pressure; and

means for supplying the natural gas at the reduced pressure from said pneumatic motor to said distribution network.

5,302,091

MAGNETICALLY DRIVEN CENTRIFUGAL PUMP

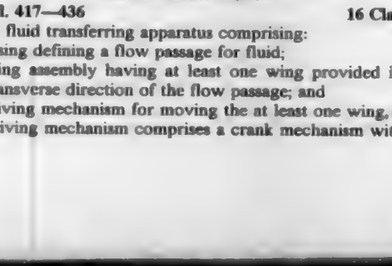
Korejiro Horiuchi, Kobe, Japan, assignor to Sanwa Hydrotech Corp., Hyogo, Japan

Filed Jan. 28, 1993, Ser. No. 10,531

Claims priority, application Japan, Mar. 24, 1992, 4-015360[U]

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—420 **5 Claims**



1. A magnetically driven centrifugal pump so designed that a drive power of an electric motor is transmitted from a magnets-embedded drive rotor to a magnets-embedded follower rotor opposed to one another for formation of a magnetic coupling; comprising a pump casing separated internally by a partition into two rooms of which one accommodates the drive rotor and the other accommodates the follower rotor, a rotating shaft holding the follower rotor on an inward portion thereof while holding an impeller on an outward end portion, the rotating shaft being supported with a sleeve-shaped radial bearing of ceramic material of non-rotation which is fitted into a supporting member fixed in the pump casing, a sleeve-shaped supplementary bearing of ceramic material set inside said sleeve-shaped radial bearing in mutual contact and secured on the rotating shaft, a thrust bearing of ceramic material being secured to the rotation shaft for integral rotation and juxtaposed in a condition of direct contact with rear ends of said radial bearing of non-rotation and said supplementary bearing so as to receive an axial load of the rotating shaft, said radial bearing of non-rotation being adapted to move only in an axial direction, and a cushioning member being mounted compressedly in an interspace between a front end of the radial bearing and a circular edged projection of the supporting member which are opposed to one another.

5,302,092

FLUID TRANSFERRING APPARATUS IMITATING FLAPPING MOVEMENT OF BEES

Mishihisa Tsutahara, Osaka; Takeyoshi Kimura, Takarazuka; Yasunori Okamoto, and Toru Iwata, both of Sakai, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Jun. 4, 1992, Ser. No. 894,271

Claims priority, application Japan, Jun. 7, 1991, 3-136704

Int. Cl.[5] F04B *19/00*

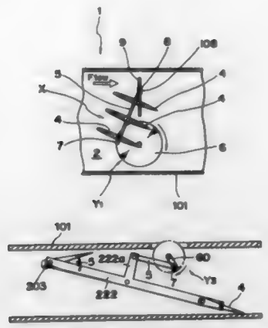
U.S. Cl. 417—436 **16 Claims**

1. A fluid transferring apparatus comprising:

a casing defining a flow passage for fluid;

a wing assembly having at least one wing provided in a transverse direction of the flow passage; and

a driving mechanism for moving the at least one wing, the driving mechanism comprises a crank mechanism with a rotating crank, a crank pin, a guide member, a slider and a link, the guide member extends in the transverse direction of the flow passage, the slider is guided by the guide member to slide in the transverse direction of the flow



passage, the link has one end thereof rotatably coupled to the crank pin and the other end thereof rotatably coupled by a pin to the slider, the at least one wing of the wing assembly being mounted to the link of the crank mechanism.

5,302,093

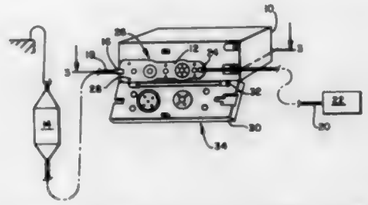
DISPOSABLE CASSETTE WITH NEGATIVE HEAD HEIGHT FLUID SUPPLY AND METHOD

Dana J. Owens, Irving; Aaron Raines, Dallas; Ed G. Rasmussen; David J. Harrison, both of Carrollton, and Carl R. Anderson, Dallas, all of Tex., assignors to McGaw, Inc., Carrollton, Tex.

Filed May 1, 1992, Ser. No. 877,618

Int. Cl.[5] F04B *43/02*

U.S. Cl. 417—474 **5 Claims**



2. A disposable cassette for use in an infusion pumping instrument of the type having an inlet valve, an inlet fluid actuator, a transfer valve, an outlet fluid actuator, an outlet valve and means for replaceably holding a disposable cassette, said disposable cassette comprising:

(a) first and second flexible sheets sealed along interior surfaces defining an inlet passage, an inlet fluid chamber, a transfer passage, an outlet fluid chamber, an outlet passage and means for locating said defined passages and fluid chambers adjacent corresponding valves and fluid actuators in said pumping instrument;

(b) a relatively rigid carrier to which an exterior surface of said first flexible sheet is attached and having concave indentations correspondingly sized and located for receiving said inlet fluid chamber and said outlet fluid chamber and for constraining movement of said first flexible sheet thereinto; and

(c) means operatively associated with said inlet fluid chamber for expanding the volume of the inlet fluid chamber corresponding to retraction of the inlet fluid actuator away from the cassette and for decreasing the volume of the inlet fluid chamber corresponding to advancement of said inlet fluid actuator against said cassette wherein said means for expanding the volume of said inlet fluid chamber includes:

(i) detachable coupling means having a first portion thereof rigidly affixed to said inlet actuator, having a second portion thereof rigidly affixed to the second sheet at the inlet chamber, and having a magnetic coupling between the inlet actuator and the second sheet interactive between the first and second portion with coupling force, so that the second sheet is pulled away from the first sheet upon retraction of the inlet actuator and so that the interactive mechanism can be manually separated for replacement of the disposable cassette; and

(ii) means for affixing an exterior surface of said first sheet to the concave depression in said relatively rigid carrier so that it is not drawn with the retraction of the second sheet at the inlet fluid chamber.

5,302,094

TUBE SWITCH FOR A DOUBLE-CYLINDER SLUDGE PUMP

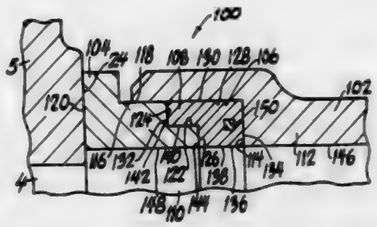
Karl Schlecht, and Hartmut Benckert, both of Filderstadt, Fed. Rep. of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 935,063, Aug. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 640,397, Jan. 18, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 940,557

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1988, 3824466

Int. Cl.[5] F04B *15/02*

U.S. Cl. 417—517 **48 Claims**



1. A tube switch for a double-cylinder sludge pump, comprising:

a swing pipe adapted to swivel in f ront of a center plate, the swing pipe including a cylindrical axial guide surface at one end thereof, the swing pipe also including an extension portion having an inner surface;

a wearing ring supported between the end of the swing pipe and the center plate and axially movable relative to the swing pipe, the wearing ring including a recess at one end thereof, the recess having a radial boundary surface and an axial step surface, the cylindrical axial guide surface of said swing pipe being adapted to receive the end of the wearing ring including the recess therein, the recess thus defining an annular space between the swing pipe and the wearing ring, the wearing ring including an outer frontal contact surface at the other end thereof being adapted to be pressed against the center plate in response to pressure within the swing pipe, the inner surface of the extension portion of the swing pipe facing the annular space; and

a elastic member including a radial inner portion and front and back ends, the elastic member supported between the swing pipe and the wearing ring within the annular space defined by the recess, wherein the radial inner portion of the elastic member abuts the radial boundary surface of the wearing ring, the front end of the elastic member abuts the axial step of the wearing ring, and the back end of the elastic member abuts the inner surface of the swing pipe, and wherein at least one third of the axial length of the

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radial inner portion of the elastic member is seated on the radial boundary surface, and wherein the inner surface of the extension portion of the swing pipe is ridgeless such that generally no portion of the swing pipe contacts the radial inner portion of the elastic member, the elastic member thus being adapted to seal the space between the wearing ring and the swing pipe.

5,302,095

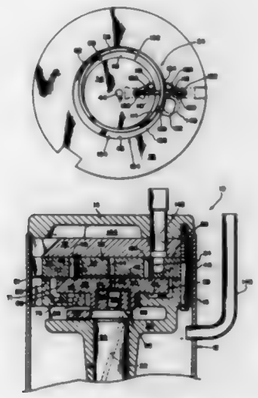
ORBITING ROTARY COMPRESSOR WITH ORBITING PISTON AXIAL AND RADIAL COMPLIANCE

Hubert Richardson, Jr., Brooklyn, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 692,140, Apr. 26, 1991, abandoned. This application Aug. 14, 1992, Ser. No. 930,481

Int. Cl.[5] F04C *18/356, 23/00*

U.S. Cl. 418—57 **24 Claims**



1. A compressor for compressing refrigerant fluid comprising:

a cylinder having a side wall and an end wall defining a chamber;

a cylindrical piston, said piston having an end face, and a cylindrical side wall, said piston disposed in said chamber;

drive means including an Oldham ring for causing said piston to orbit in said chamber in a manner such that said piston sidewall orbitally contacts said cylinder sidewall;

axial compliance means for yieldably pressing said end face of said piston against said end wall of said cylinder to form a seal; and

radial compliance means for yieldably pressing said side wall of said piston against said side wall of said cylinder to form a seal.

5,302,096

HIGH PERFORMANCE DUAL CHAMBER ROTARY VANE COMPRESSOR

Robert J. Cavalleri, 1605 Gran Via, Orlando, Fla. 32825

Continuation-in-part of Ser. No. 936,679, Aug. 28, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 46,173

Int. Cl.[5] F03C *2/00*

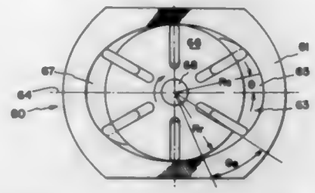
U.S. Cl. 418—150 **8 Claims**

1. A high performance rotary vane compressor, comprising:

a) a housing having two opposed chambers, each of said chambers being defined by an outer contour, each of said chambers having an inlet port and a discharge port;

b) a rotor rotatably disposed within said housing between said chambers, said rotor carrying at least four vanes, each vane having a tip and being reciprocably received within a slot formed in said rotor, whereby, rotation of said rotor causes said vanes to extend outwardly so that said vane tips engage said outer contours of said chambers;

c) each outer contour being defined by a mathematical formula including a sine function, said formula being used to define a contour radius of a said outer contour at each angular location therealong, said contour radius being limited to, at maximum, a major radius of an ellipse to restrict bending loads and deflections of said vanes, each said outer contour, in a direction of rotation of said rotor, rapidly increasing in radius from adjacent an inlet port thereof to an elliptical major radius to thereby increase



displacement of each chamber over elliptical shape displacement;

d) said mathematical formula being as follows:

$Rm = Re + a^{*} (Re - Rr) (\sin 2\theta)^{n}$

where

Rm = Radius as modified

Re = elliptical radius

a = +1 for an upper half of said housing and −1 for a lower half of said housing

Rr = rotor radius

n = an experimentally derived exponent

θ = the particular angular displacement.

5,302,097

HEAT RESISTANT HOT FORMABLE AUSTENITIC STEEL

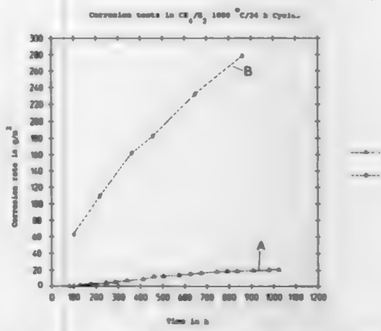
Ulrich Brill, Dinslaken, Fed. Rep. of Germany, assignor to Krupp VDM GmbH, Werdohl

Filed Aug. 25, 1992, Ser. No. 935,532

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1991, 4130140

Int. Cl.[5] C22C *30/00*

U.S. Cl. 420—584.1 **5 Claims**



1. A heat resistant hot formable austenitic steel which is resistant to carbonization, sulphidization and oxidation at temperatures in the range of 500° to 1,000° C. even under conditions of cyclic stressing, consisting essentially of, in % by weight,

carbon	0.10 to 0.20
silicon	2.5 to 3.0

-continued

manganese	0.2 to 0.5
phosphorus	max 0.015
sulphur	max 0.005
chromium	25 to 30
nickel	30 to 35
aluminum	0.05 to 0.15
calcium	0.001 to 0.005
rare earths	0.05 to 0.15
nitrogen	0.05 to 0.20

balance iron and usual impurities due to melting.

5,302,098

PCI RIM

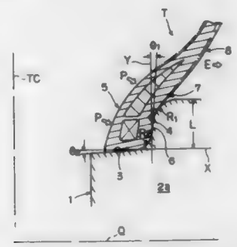
Yoshiaki Uemura, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Nov. 17, 1992, Ser. No. 977,839

Claims priority, application Japan, Nov. 21, 1991, 3-334009

Int. Cl.[5] B29D *30/06*

U.S. Cl. 425—58.1 **1 Claim**



1. A PCI rim comprising a bead seat and a flange each engaging with a tire bead of a tire wherein flange radius of the flange is set in a range from 7.5 mm to 12 mm, flange height of the flange is set in a range from 14 mm to 25 mm, and bead seat radius of the bead seat is set in a range from 4.5 mm to 7.0 mm.

5,302,099

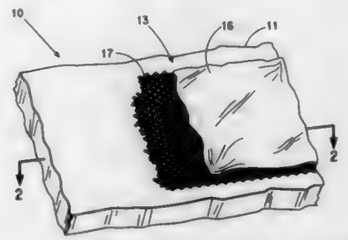
LAMINATED FABRIC USEFUL AS A CONCRETE FORM LINER

Franco L. Serafini, Leudelange, Luxembourg, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 28, 1992, Ser. No. 952,117

Int. Cl.[5] B28B *1/26, 7/36*

U.S. Cl. 425—84 **8 Claims**



1. An improved concrete form for making concrete comprising:

(a) a support means; and

(b) a porous form liner juxtaposed with, but not attached to, the support means, the improvement comprising the form liner comprising a porous fabric laminated to a drainage scrim to increase the draining effect of the form liner on any excess water present in the concrete, the form liner being untensioned and positioned such that the porous fabric side of the form liner contacts the concrete and the drainage scrim side of the form liner contacts the support means, the drainage scrim having a thickness of at least 1 mm and an open space of at least 40%, and the form liner having sufficient stiffness such that a 2 cm wide strip of the form liner having a thickness of at least 1.5 mm, having been stored or at least 16 hours at room temperature, hanging free over a length of 15 cm at room temperature, will need a weight of at least 15 grams, placed a 2 mm from the free edge of the form liner, to bend the form liner so as to form an angle of 41 degrees with the plane on which the remainder of the strip is resting within 30 seconds.

5,302,100

DRUM INSERT FOR A DEVICE FOR PRODUCING SHAPED PADS OF FIBROUS MATERIAL SURROUNDED ON ALL SIDES BY FOILS

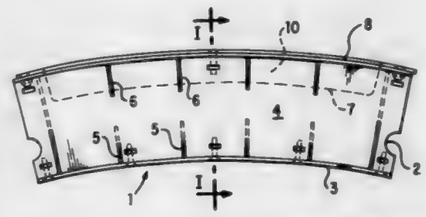
Stephan Scheu, and Armin Geisen, both of Neuwied, Fed. Rep. of Germany, assignors to Winkler & Dunnebier, Neuwied, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 889,383

Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117662

Int. Cl.[5] B29C *33/30*

U.S. Cl. 425—80.1 **6 Claims**



1. An insert for the drum of a device rotating in a first direction for producing shaped pads of fibrous material, the insert having a circular, segmented shape when viewed in an axial direction, the insert serving as the construction for the drum with a number of similar inserts to be affixed to a disk, to whose interior a negative pressure can be applied for the purpose of suction of the fibrous material therethrough to produce the shaped pads, comprising:

a planar supporting sheet serving as the base of the insert, said sheet provided with a plurality of holes therethrough;

a plurality of parallel longitudinal webs affixed to said planar supporting sheet, each of said longitudinal webs extending radially outwardly from said planar supporting sheet;

a plurality of parallel transverse webs affixed to said planar supporting sheet, each of said transverse webs extending radially outwardly from said planar supporting sheet, said planar supporting sheet, said plurality of parallel longitudinal webs and said plurality of parallel transverse webs forming a frame body for said insert;

a forming nest removably attached to said frame body, said forming nest including a sieve frame and a sieve provided within said sieve frame, said sieve corresponding to the shape of pads to be produced; and

a plurality of parallel forming webs provided in said nest located vertically above said plurality of parallel transverse webs and supported by said frame body, each of said forming webs provided with an upper side, said plurality of parallel forming webs extending transversely to said first direction of rotation, and said plurality of parallel forming webs adapted to the shape of said sieve, and thus to the shape of the pad to be produced.

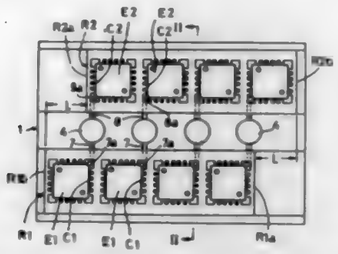
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5,302,101

MOLD FOR RESIN-PACKAGING ELECTRONIC COMPONENTS

Hiroyuki Nishimura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 796,799, Nov. 23, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,381
Claims priority, application Japan, Jan. 9, 1991, 3-12927
Int. Cl.[5] B29C *45/02, 45/14, 45/32*
U.S. Cl. 425—116 **5 Claims**



1. A mold for resin-packaging electronic components on a pair of leadframes comprising:

an upper mold member and a lower mold member, the mold having a plurality of molding cavities, the molding cavities being arranged in first and second rows, the first and second rows being parallel to each other, each of said rows having a longitudinal axis,

wherein for each cavity in the first row there is a corresponding cavity in the second row, wherein each cavity in the first row is longitudinally offset relative to the corresponding cavity in the second row,

the mold further having a row of resin supplying portions between said first and second rows of cavities, the cavities having corner portions formed with injection ports which communicate with the resin supplying portions through runners,

wherein the injection ports are arranged such that a line joining an injection port of a cavity in the first row with an injection port of the corresponding cavity in the second row is perpendicular to the longitudinal axes of the first and second rows, and

wherein all of the runners are of equal length.

5,302,102

EQUIPMENT FOR BRIQUETING VEGETAL MATERIAL IN PARTICULAR STALK-PLANT MATERIALS

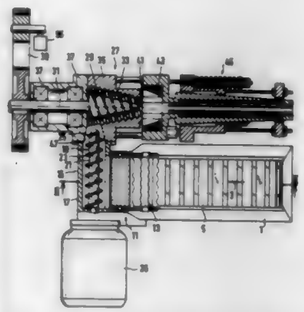
Franz Haimer, Weiherstrasse 21, D-8894 Igenhausen, Fed. Rep. of Germany

PCT No. PCT/EP90/00427, § 371 Date May 9, 1991, § 102(e) Date May 9, 1991, PCT Pub. No. WO91/04150, PCT Pub. Date Apr. 4, 1991
PCT Filed Mar. 15, 1990, Ser. No. 690,951
Claims priority, application European Pat. Off., Sep. 15, 1989, 89 117142.3
Int. Cl.[5] B29C *47/00*
U.S. Cl. 425—135 **23 Claims**

1. Equipment for briqueting plant stalk-produce, comprising:

a conical-screw compactor (**27**) with a rotatably driven screw (**29**) evincing, at least at its front end as seen in the direction of feed, an external contour tapering conically in the feed direction and determined by several windings of at least one screw coil (**51**) projecting from a conical screw shank (**49**) and with a screw housing (**35**) that forms a conical compactor space (**33**) entered by the screw (**29**), the compactor space (**33**) comprising an inside conical surface (**55**) with at least one stalk-produce guide-strip (**53**) projecting toward the screw (**29**), the guide-strip (**53**) enclosing the screw (**29**) in the manner of a conical coil with a direction of its windings opposite to the direction of the windings of the screw (**29**), a discharge aperture (**41**) for the compacted stalk-produce being present at the tapered end of the inside conical surface,

a tubular press-cavity (**45**) connected to the screw housing (**35**) and, following, as seen in the direction of feed coaxially with the conical axis (**31**) of the conical screw (**29**), the discharge aperture (**41**) of the compactor space (**33**), said press cavity (**45**) comprising several radially displaceable tongues (**77**) which are mutually displaceable by a hydraulic adjustment drive (**93**; **113**) for the purpose of changing the discharge cross-section of a compression-cavity pipe (**59**) of the press-cavity (**45**),



annular degassing means (**43**) adjoining the discharge aperture of the compactor space (**33**), with a plurality of narrow, axial degassing slits (**63**) open to the atmosphere, which issue into the discharge aperture of the compactor space (**33**),

control means including a molding pressure sensor (**95**) associated with the conical screw compactor (**27**), said means so controlling the adjustment drive (**93**; **113**) as a function of the molding pressure sensor (**95**) that the discharge cross-section of the compression-cavity pipe (**59**) is enlarged and narrowed respectively when reference molding pressure values are being crossed upward and downward.

5,302,103

INJECTION MOLDING MACHINE INCLUDING QUICK-CHANGE MOLD ASSEMBLY

Robert L. Brown, Hartville; Todd A. England, North Canton, and Edward F. Huff, Wadsworth, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Oct. 10, 1991, Ser. No. 774,772
Int. Cl.[5] B29C *45/80*
U.S. Cl. 425—150 **11 Claims**

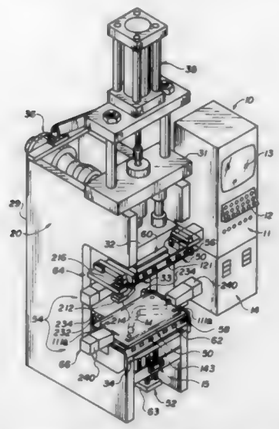
1. An injection molding machine for injecting molding material to form molded products comprising:

a machine frame, an injection assembly coupled with said frame, a press assembly also coupled with said frame, a mold-mounting assembly coupled with said press assembly, and a mold pallet assembly to be secured to said press assembly by said mold-mounting assembly;

said mold pallet assembly includes first and second mold pallet units which define a mold cavity when in a closed condition, and alignment members to ensure correct alignment between said first and second mold pallet units when in said closed condition;

said first mold pallet unit including an injection passageway assembly for engagement with said injection assembly and receiving molding material;

said mold-mounting assembly has first and second mold-mounting devices, each having a clamping unit for releasably securing said first and second mold pallet units to said press assembly to enable the quick release of the mold pallet units from the press assembly, and further includes a sensor which indicates the position of said mold pallet assembly relative to said press assembly; and



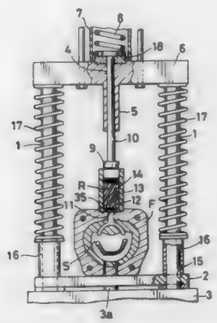
said press assembly being adapted to move said first and second mold pallet units between said closed condition in which said first mold pallet unit engages said injection assembly and an open condition in which said units are separated from one another.

5,302,104

RESIN DENTURE BASE MOLDING APPARATUS

Noboru Ueda, Toyonaka, Japan, assignor to High Dental Service Co., Ltd., Osaka, Japan

Filed Jun. 18, 1992, Ser. No. 900,391
Int. Cl.[5] A61C *13/20*
U.S. Cl. 425—178 **7 Claims**



1. A resin denture base molding apparatus for molding denture bases by injecting fused resin, comprising:

a table provided in a manner capable of elevating up and down along a plurality of vertical guide rods;

an elevation driving means for elevating said table;

an upper support member provided horizontally across each upper end of said guide rods and having a through hole;

a spring storing section provided at a location of said through hole on an upper surface of said upper support member;

a push spring stored in said spring storing section;

a piston rod inserted in said through hole, urged downwardly by said push spring and having a resin pressurizing piston at the lower end thereof;

a flask having a denture base mold placed on said table and having a resin filling hole at the top thereof;

a cylinder having a resin passage that communicates with said resin filling hole at a bottom wall thereof and located below said piston; and

a pressure breakable member disposed within said cylinder so that the pressure breakable member covers said resin passage; and

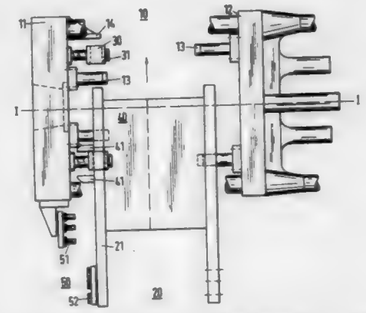
wherein said piston rod has an abutment surface which abuts a fixed member when said piston is pushed against the resiliency of the spring to a completely retracted position, said fixed member being fixed relative to said upper support member.

5,302,105

METHOD FOR REPLACING A MOLD BLOCK IN AN INJECTION MOLDING MACHINE

Wolfgang Bertleff, Pegnitz, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 13, 1992, Ser. No. 882,326
Int. Cl.[5] B29C *45/66*
U.S. Cl. 425—190 **2 Claims**



1. A method for replacing a mold block in an injection molding machine having a central axis and in which the mold block has an outer surface and is movable, substantially parallel to the central axis, between an operating state in which the mold block is clampable in a centered position between a pair of clamping plates comprising a stationary clamping plate and a movable clamping plate, and a replacement state in which the mold block is removable from the machine, comprising the steps of:

substantially restricting free movement of the mold block in two substantially perpendicular restriction axes during installation of the mold block, so as to permit movement of the mold block along only a single axis substantially perpendicular to the two restriction axes, one of said restriction axes being substantially parallel to the central axis;

after said restricting step, gripping the mold block about the mold block outer surface so as to apply gripping forces to the mold block in directions along the central axis for maintaining the mold block in a substantially vertical position;

moving the clamping plates relatively together, no earlier than said gripping step, to clamp the mold block between the clamping plates;

shortly before said clamping of the mold block between the clamping plates, centering the mold block in the centered position between the clamping plates, said gripping step and said centering overlapping in time so that the outer surface of the mold block is simultaneously gripped and the mold block is centered before said clamping by the clamping plates; and,

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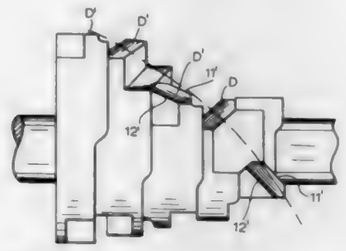
simultaneously vertically guiding the mold block into the centered position during the movement of the clamping plates and the centering of the mold block.

5,302,106

DOUBLE-WORM EXTRUDER WITH POLYGONAL-DISK KNEADER

Alfred Nogossek, Salzgitter, Fed. Rep. of Germany, assignor to Friedrich Theysohn GmbH, Langenhagen, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,602
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1991, 4122912
Int. Cl.[5] B29C *47/00*
U.S. Cl. 425—204 **7 Claims**



1. A double-worm extruder, comprising:
a worm housing;
a pair of mutually interengaging extrusion worms rotatable about respective parallel axes in the same sense in said housing for plastifying a plastic material and displacing said plastic material toward an extrusion end of said housing;
a respective kneading unit along each of said worms and at substantially the same location along the respective worms, said kneading units each comprising:
a plurality of polygonal disks disposed one adjacent another along the respective worm and rotatable therewith, each of said disks being formed with two diametrically opposite sealing surfaces juxtaposed with an inner surface of said housing and having an outer diameter corresponding substantially to an inner diameter of said inner surface at locations at which said sealing surfaces are juxtaposed therewith, said sealing surfaces extending generally in a circumferential direction of the respective worm and having edges generally transverse to axial directions of the worm and at least partly inclined to the axes of the respective worm; and
means on said housing for driving said worms and said kneading units in the same sense, each of said sealing surfaces having two of said edges off parallel with respect to one another.

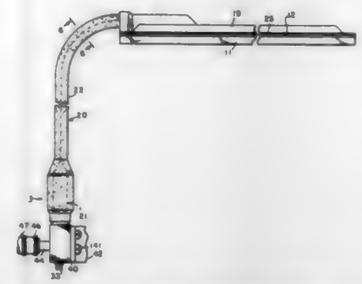
5,302,107

APPARATUS FOR FORMING SHAPED PARTS OF THERMOSETTING RESINS OR OTHER MATERIALS

William R. Dahlgren, Palos Verdes Estates, Calif., assignor to Airtech International Inc., Carson, Calif.

Filed Jun. 8, 1992, Ser. No. 894,951
Int. Cl.[5] B29C *43/12*
U.S. Cl. 425—388 **12 Claims**

1. Apparatus for use in the forming of a part of thermosetting resinous material or metallic and thermosetting adhesive material or a combination thereof in which said part is mounted in uncured state on a forming tool and under a flexible porous pad with the pad and part covered by a flexible bag of an air-impervious material sealed to said tool therearound, which comprises:
a tube of air-impervious material connectable at one end to a vacuum source and hermetically insertable into said flexible bag at its other end,



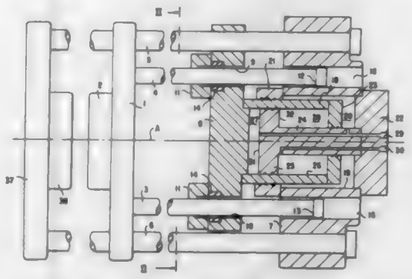
a porous liner in said tube, said liner extending beyond said other end and being in contact with said pad whereby to provide vacuum connection between said one end of said tube and said part through said liner and said pad.

5,302,108

MOLD CLOSING APPARATUS FOR AN INJECTION MOLDING MACHINE

Walter Wohlrab, Weissenburg, Fed. Rep. of Germany, assignor to Krauss Maffei Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 727,351, Jul. 8, 1991, Pat. No. 5,204,047, which is a continuation of Ser. No. 421,307, Oct. 13, 1989, abandoned, which is a continuation of Ser. No. 115,053, Oct. 30, 1987, abandoned. This application Feb. 5, 1993, Ser. No. 14,026
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637175
Int. Cl.[5] B29C *45/68*
U.S. Cl. 425—589 **19 Claims**



1. A mold closing apparatus useful for injection molding machines, said apparatus comprising:
a stationary mold platen fixedly connected by guide columns to a support;
a mobile mold platen supported on said guide columns and including support columns, each of said support columns having a stop rim located at an end of said support column;
a lock plate defining passages configured so said stop rims of said support columns pass through said passages and including stop rim securing elements for securing said stop rims to said lock plate; and
at least one closing cylinder configured so said mobile mold platen is displaced toward and against said stationary mold platen to close a mold disposed between said stationary mold platen and said mobile mold platen, and said mobile mold platen is displaced away from said stationary mold platen to open said mold, said closing cylinder comprising at least:
an immobile piston cylinder attached to a second support;

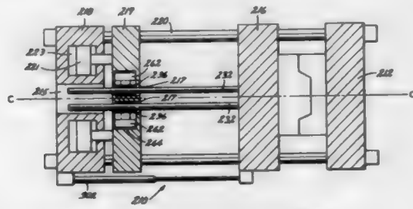
a displaceable double-acting differential piston at least partially within and guided by said immobile piston cylinder during displacement; and
an immobile differential piston within said double-acting differential piston and attached to said second support;
wherein said immobile differential piston divides interior space within said double-acting differential piston into a mold-opening chamber having mold-opening pressure surfaces and a mold-closing chamber having mold-closing pressure surfaces, said pressure surfaces are configured so said mobile mold platen is displaced when pressure is applied to said pressure surfaces.

5,302,109

CLAMP MECHANISM EMPLOYING A BRAKE UNIT

Pierre Glaesener, Bissen, Luxembourg, and Robert D. Schad, Toronto, Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Division of Ser. No. 780,159, Oct. 21, 1991, Pat. No. 5,230,911. This application Feb. 11, 1993, Ser. No. 16,458
Int. Cl.[5] B29C *45/64*
U.S. Cl. 425—595 **8 Claims**



1. An injection molding machine comprising:
a stationary platen and a moving platen;
a mold between said platens;
at least two brake plates mounted to said moving platen;
a main clamp block having at least one slot and a brake housing having at least two slots through which said brake plates pass; and
said brake housing being slidable on tiebars extending between said clamp block and said stationary platen.

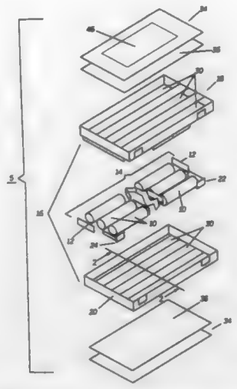
5,302,110

UNITIZED BATTERY PACKAGE

Venus D. Desai; Robert D. Kreisinger, both of Plantation, and Russell E. Gyenes, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1993, Ser. No. 33,936
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—96 **15 Claims**

1. An electrical energy source, comprising:
a housing having first and second parts;
power supply means, disposed in the housing, for providing electrical potential;
positive and negative terminals attached to the housing;
conductor means for connecting the power supply means to the positive and negative terminals;
one or more apertures in at least the first housing part, the apertures corresponding to the location of the power supply means; and
a non-conductive film having first and second opposing faces, the first face having first and second adhesive portions, the first adhesive portion bonded to the power supply means, and the second adhesive portion bonded to the housing; and



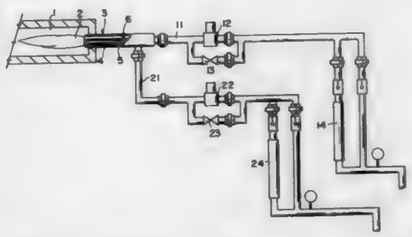
a cover bonded to a third adhesive portion on the second face of the non-conductive film.

5,302,111

PROCESS AND APPARATUS FOR PULSED COMBUSTION

Dominique Jouvaud, Paris, and Bernard Genies, Bures Sur Yvette, both of France, assignors to Frair Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Jul. 23, 1992, Ser. No. 917,278
Claims priority, application France, Jul. 23, 1991, 91 09304
Int. Cl.[5] F23C *11/04*
U.S. Cl. 431—1 **22 Claims**



1. Process of pulsed combustion, where a pulsation is provided to a flame of a burner discharging into an industrial furnace which is supplied with fuel and oxidant by producing cyclic variations of at least one of the flows of fuel and oxidant, wherein the oxidant contains at least 80% O_2 and the frequency of the cyclic variations is lower than 3 Hz.

5,302,112

BURNER APPARATUS AND METHOD OF OPERATION THEREOF

James K. Nabors, Jr., Apopka, and William C. Andrews, Longwood, both of Fla., assignors to Xothermic, Inc., Apopka, Fla.

Filed Apr. 9, 1993, Ser. No. 45,992
Int. Cl.[5] F23C *5/00*
U.S. Cl. 431—8 **6 Claims**

1. A burner apparatus for the combustion of a gaseous fuel and an oxidizer, said apparatus comprising:
a burner block having first and second opposed burner block faces, said block including an oxidizer channel and a gaseous fuel channel which extend between said first and

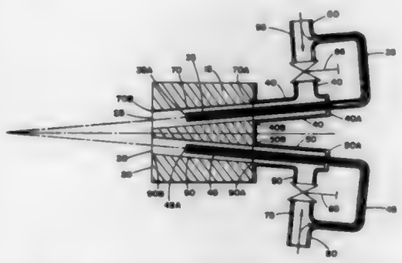
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second burner block faces, said oxidizer channel and said gaseous fuel channel being closest together at said first burner block face;

a primary oxidizer passageway centrally situated within said oxidizer channel for supplying oxidizer to said oxidizer channel;

a secondary oxidizer passageway situated surrounding said primary oxidizer passageway within said oxidizer channel for supplying oxidizer to said channel, the oxidizer exiting said primary oxidizer passageway within said oxidizer channel and combining with the oxidizer from said secondary oxidizer passageway to form a combined primary/secondary oxidizer stream;

a primary gaseous fuel passageway centrally situated within said gaseous fuel channel for supplying gaseous fuel thereto;



a secondary gaseous fuel passageway situated surrounding said primary gaseous fuel passageway within said gaseous fuel channel for supplying gaseous fuel to said gaseous fuel channel, the gaseous fuel exiting from said primary gaseous fuel passageway within said gaseous fuel channel and combining with the gaseous fuel from said secondary gaseous fuel passageway to form a combined primary/-secondary gaseous fuel steam, and

an oxidizer exit aperture situated in said oxidizer channel at said first burner block face and a gaseous fuel exit aperture situated in said gaseous fuel channel at said first burner block face for permitting said combined primary/secondary oxidizer stream to combine with said combined primary/secondary gaseous fuel stream adjacent said first burner block face to cause combustion.

5,302,113

METHOD FOR INSTALLATION OF FLARE PILOT THERMOCOUPLE

Norman D. Eichelberger, Port Allen, La., and Troy W. Vanatta, Chattanooga, Tenn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 6, 1993, Ser. No. 44,991

Int. Cl.[5] F23D *11/36*

U.S. Cl. 431—155 **4 Claims**

1. A method for installing a flare pilot thermocouple assembly comprising the steps of:

a. adapting a pilot flare thermowell to accept a tube fitting;

b. attaching one end of a length of tubing to said fitting the other end of said tubing being located at a predetermined grade level, said tubing forming a sleeve;

c. inserting a thermocouple into said sleeve at grade;

d. pushing said thermocouple upwardly within said sleeve to the tip of said thermowell; and



e. securing said thermocouple to said other end of said sleeve.

5,302,114

COOKING FUEL CONTAINER AND BURNER

Natalie R. Kiefer, Boonton Township, Morris County; Francis T. Barbato, Milford, both of N.J.; Larry Hinderer, Texarkana, Tex., and Neale A. Messina, Ewing, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 785,960, Oct. 31, 1991. This application Sep. 29, 1992, Ser. No. 953,422

Int. Cl.[5] F23D *3/24*

U.S. Cl. 431—320 **19 Claims**

1. A cooking fuel container comprising a container which has an open top, a wick supporting means coupled to said container adjacent said open top and substantially closing said open top and having at least one aperture communicating with an inner portion of said container, wick means supported on said wick supporting means and having at least one wick feed portion extending downwardly through said at least one aperture in said wick supporting means, a cover having at least one aperture and overlaying said wick to expose and define a burning surface of said wick, said cover being sealed onto said open top of said container and being coupled to said wick supporting means, said wick means comprising a fabric having a pile extending therefrom a distance of about 1 mm to 10 mm.

5,302,115

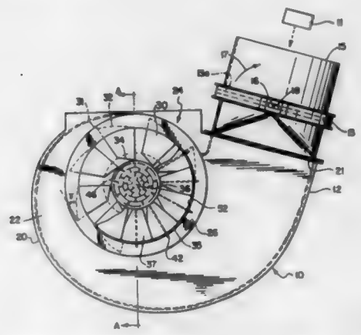
BURNER REGISTER ASSEMBLY

Donald K. Hagar, Emmans, and Lyle D. Geiger, Fogelsville, both of Pa., assignors to Damper Design, Inc., Allentown, Pa.

Continuation of Ser. No. 555,817, Jul. 20, 1990, abandoned, which is a continuation of Ser. No. 277,636, Nov. 19, 1988, abandoned, which is a continuation of Ser. No. 56,429, Jun. 1, 1987, abandoned, which is a continuation of Ser. No. 673,851, Nov. 21, 1984, abandoned, which is a continuation of Ser. No. 418,434, Sep. 15, 1982, Pat. No. 4,504,216. This application Dec. 14, 1992, Ser. No. 990,948

Int. Cl.[5] F23M *9/00*

U.S. Cl. 431—183 **15 Claims**



1. A burner register assembly for controlling a supply of secondary air to a furnace having a fuel and primary air nozzle and a secondary air supply, comprising:

a) a body;

b) an air valve in said body for controlling the amount of secondary air admitted to the burner register assembly;

c) means in said body for mounting the fuel and primary air nozzle with respect to said body so that said body surrounds the nozzle; said mounting means including an axial opening through said body; and

d) means in said body for uniformly distributing air about said mounting means to effect a controlled pattern of discharge of secondary air into the furnace, said uniform distributing means including a scroll section in said body, said scroll section having a scroll passageway which spirals inwardly in the direction of a secondary air flow therethrough, said scroll section communicating with said air valve, said air valve being disposed upstream of such scroll section.

5,302,116

ORTHODONTIC BRACKET

Anthony D. Viazis, 373 E. Las Colinas Blvd., Apt. 368, Irving, Tex. 75039

Continuation of Ser. No. 854,571, Mar. 20, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 45,277

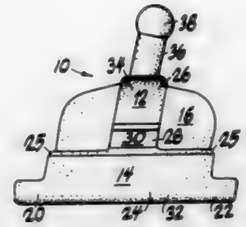
Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—8 **15 Claims**

1. An orthodontic bracket for use with an arch wire to apply corrective forces to a tooth, comprising:

a substantially vertical element having a slot formed therein for receiving the arch wire; and

a substantially horizontal element connected to said vertical element with said vertical element being positioned gingivally with respect to said horizontal element, said horizontal element having opposing first and second ends extending away from said vertical element and defining a pair of spaced-apart wire engaging points engageable with the arch wire for enabling proper rotational control of the bracket during use, said slot in said vertical element having its lower surface vertically spaced from said horizontal element to limit contact between the arch wire and said horizontal element, said horizontal member having at the ends thereof horizontally extending wings for engaging stretched elastomeric modules thereby enhancing rotational control.



5,302,117

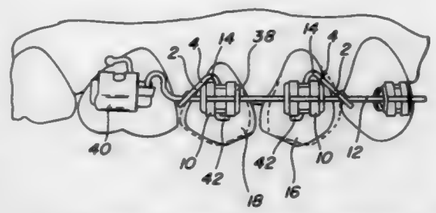
COIL-LESS UPRIGHTING SPRING

Jon Kraut, Trenton, N.J.; Paul Blanchette, Harwinton, Conn., and Timothy P. Kane, Holland, Pa., assignors to Dentaurum, Inc., Newtown, Pa.

Filed May 6, 1993, Ser. No. 58,493

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—21 **14 Claims**



1. An orthodontic uprighting wire-form appliance for use with an archwire and bracket to effect mesial/distal root inclination, said bracket having an archwire slot for receiving said archwire and a recess for receiving said wire-form appliance, said wire-form appliance comprising:

an intermediate portion formed into a predetermined shape of a material having shape-memory;

a tail portion, extending from said intermediate portion, capable of being bent for locking said appliance to said bracket;

a hook having a bight portion, remote from said tail portion, for engaging said archwire, said hook extending lateral to said plane; and

said intermediate and tail portions lying in a common plane and extending in a substantially direct path between the archwire and bracket;

whereby, when said tail portion is locked to said bracket and said hook is engaged with said archwire, said intermediate portion tends to return to a predetermined memorized shape causing uprighting forces to be applied to said tooth for effecting either mesial or distal root movement.

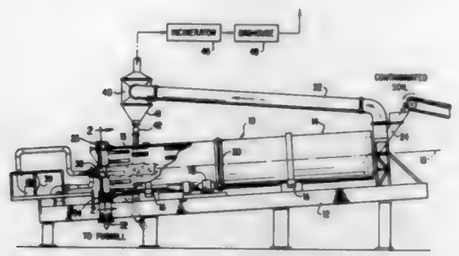
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,118

SOIL REMEDIATION APPARATUS

James G. Renegar, East Ridge, Tenn., and Malcolm L. Swanson, Chickamauga, Ga., assignors to Astec Idustries, Inc., Chattanooga, Tenn.

Filed Feb. 8, 1993, Ser. No. 14,767
Int. Cl.[5] F27B *7/00*
U.S. Cl. 432—14 **15 Claims**



1. An apparatus for the decontamination of soil which is contaminated with petroleum products and the like and comprising

a rotary drum dryer having an inlet end for receiving particulate material to be processed, an opposite discharge end for discharging the material therefrom, burner means for delivering heated gases into one of said ends of said drum, and an air exhaust duct adjacent the other of said ends of said dryer for the removal of the heated gases and any entrained dust particles from the interior of said dryer, and drive means for rotating said dryer so as to convey the particulate material therethrough in a cascading fashion as the drum rotates so that the particulate material is heated by contact with the heated gases,

air cleaning means connected to said air exhaust duct of said dryer for removing the dust particles from the gases removed from said dryer,

enclosure means fixedly mounted so as to enclose the discharge end of said dryer and such that the heated particulate material which is discharged from said discharge end is received therein,

means for conveying the dust particles removed by said air cleaning means into said enclosure means, and

means for intermixing the heated particulate material and the dust particles received in said enclosure means and removing the resulting mixture from said enclosure means.

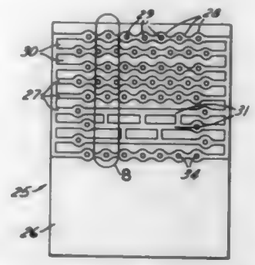
5,302,119

HOT CEMENT CLINKER COOLER POCKET GRATE

A. J. Bartoletto, 1975 Tuckaway, Bloomfield Hills, Mich. 48302, and Ronald W. T. Birchard, 385 Church St., Beaconsfield, Quebec, Canada H9W 3R5

Filed Nov. 30, 1992, Ser. No. 982,997
Int. Cl.[5] F27D *15/02;* **F23B** *1/22*
U.S. Cl. 432—77 **18 Claims**

1. Cooler pocket grate for longitudinal progressive transport of hot clinker on cooling bed, alternating rows of grates having overlapping alternating movable and stationary grates, each row of stationary grates being secured to stationary frame means (18), each row of movable grates being reciprocated by moving frame means (20) characterized by said grates having pocket grate construction with upper surface spaced ridges providing between said ridges intermediate surface clinker



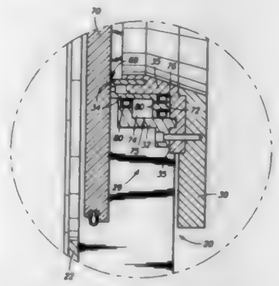
retention pockets for clinker-to-clinker drive engagement with superimposed hot clinker bed.

5,302,120

DOOR ASSEMBLY FOR SEMICONDUCTOR PROCESSOR

Daniel L. Durado, Kalispell, Mont., assignor to Semitool, Inc., Kalispell, Mont.

Filed Jun. 15, 1992, Ser. No. 901,613
Int. Cl.[5] F23M *7/00*
U.S. Cl. 432—250 **44 Claims**



37. A door assembly adapted for use in a semiconductor processor for processing semiconductor substrates, wafers, photomasks, data disks, and other units, comprising:

at least one guide adapted to be connected to a processing enclosure having an access opening;

a door assembly mounted upon said guide including an extension member and a base member; said extension member being positioned in concentric alignment with said base member and being axially movable relative thereto between extended and retracted positions; said door assembly being movable along said guide between aligned and displaced positions;

an annular piston operatively coupled to door assembly for moving the extension member between open retracted positions and closed extended positions.

5,302,121

BALL-IN-SOCKET ORTHODONTIC BRACKET

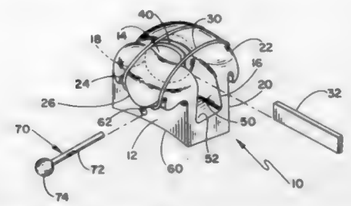
William P. Gagin, 5122 S. 8th St., Sheboygan, Wis. 53081

Filed Jun. 30, 1992, Ser. No. 906,337
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—10 **13 Claims**

1. A fixed-functional orthodontic bracket assembly adaptable to a tooth for receiving an archwire, comprising:

(a) a control shape housing having a base portion adapted to be fastened to the tooth; and

(b) wire restraining means constrained and substantially encompassed by said control shape housing for receiving



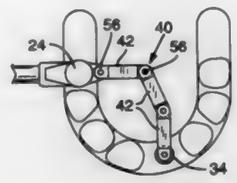
said archwire, said wire restraining means having mobility in three dimensions.

5,302,122

DENTISTRY IMPLANT PARALLELING DEVICE AND METHOD OF INSTALLING IMPLANTS

Robert H. Milne, 700 NE. Multnomah, Portland, Oreg. 97232

Filed Apr. 5, 1993, Ser. No. 42,712
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—76 **10 Claims**



1. A dentistry implant paralleling device comprising:

an arm having forward and rearward ends,

support means on the rearward end of said arm,

base means capable of being associated with a person's mouth engageable by said support means,

said base means comprising an anchor member having means for temporarily anchoring said base means in an implant hole cut in the jaw at a predetermined angle and capable of supporting said arm in cantilevered pivot arrangement in a person's mouth,

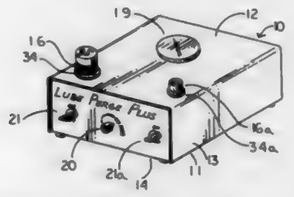
and handpiece guide means on the forward end of said arm capable of guiding a burr for drilling a hole in the jaw at an angle parallel with said base means.

5,302,123

DENTAL HANDPIECE LUBRICATION PURGING APPARATUS

Craig A. Bechard, 3 Ridgewood Ter., Barre, Vt. 05641

Filed Jan. 4, 1993, Ser. No. 410
Int. Cl.[5] A61C *1/02, 1/08, 3/02*
U.S. Cl. 433—104 **1 Claim**



1. A dental handpiece lubrication purging apparatus, for use in dental offices in order to meet regulations regarding health and safety requirements, comprising:

a housing;

said housing comprising a structure having a top surface, a base surface and a perimeter surface;

at least one coupling means positioned on the exterior surface of said housing for permitting quick attachment and release of dental handpieces;

said coupling means having a plurality of port means;

said port means comprising orifice means for the passage of gaseous elements, fluids and fiber optics;

said coupling mean further having threading means for the attachment or removal of many types of handpieces and quick release disconnects;

a tubing network connected to said couplings to allow the passage of air and gas throughout the network;

said tubing network comprising a plurality of flexible tubes that direct the flow of air and gas to said ports as necessary;

measuring means for determining the pressure of the air and gas positioned on said exterior surface;

said measuring means comprising an air and gas pressure gauge;

said tubing network having valve means for directing the flow of the air and gas;

regulation means for controlling the flow of air and gas to said couplings;

said regulation means comprising a regulator that allows the user to accurately control the flow of air and gas;

switch means;

said switch means comprising a two way, on and off, flow system;

said switch means further comprising a timing mechanism for controlling the amount of time that the handpieces are purged;

means for filtering the excess materials from said dental handpieces positioned within said housing;

said filtering means having clip means attached to said base of said housing to retain said filtering means in position within said housing;

said filtering means further having exhaust means for permitting clean purged air to exit from said apparatus;

said housing means further comprising means for supporting said couplings said measuring means and said switch means;

cover means to be positioned over said dental handpiece to keep any spray from the atmosphere; and

said cover means comprising an absorbant filter sleeve that allows said dental handpiece to be inserted within said sleeve to minimize blowback when the handpiece is lubricated or purged.

5,302,124

DISPOSABLE PROTECTIVE SLEEVE FOR DENTAL APPARATUS SUCH AS LIGHT CURING GUNS

Thomas A. Lansing, Pine Springs, Minn., and Paul Kuehn, Eau Claire, Wis., assignors to Pinnacle Products, Inc., St. Paul, Minn.

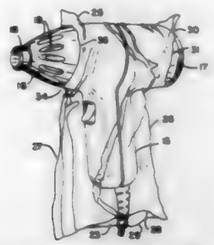
Filed Mar. 25, 1993, Ser. No. 37,996
Int. Cl.[5] A61C *1/16*
U.S. Cl. 433—116 **23 Claims**

1. A disposable protective sleeve adapted for covering hand held dental equipment of the type having a body with a front end and a back end and a handle extending from the body, comprising:

two flexible plastic film panels joined together at a top edge and joined together at two opposite side edges, the panels having bottom edges which are not joined to allow access to the interior of the protective sleeve, two apertures formed in the protective sleeve at positions opposite to each other in the sleeve which are nearer to the top edge

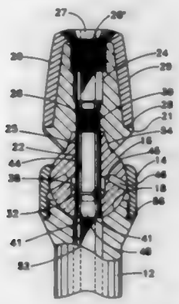
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of the sleeve than to the bottom edges, the apertures adapted to allow the front end and back end of the dental



equipment to be passed therethrough while the sleeve covers the rest of the body and the handle.

5,302,125
DENTAL PROSTHETIC IMPLANT
Charles D. Kownacki, 2714 W. 23rd St., Erie, Pa. 16506, and Wade W. Prescott, 3011 Deeb Ct., Vista, Calif. 92084
Filed Oct. 22, 1992, Ser. No. 964,747
Int. Cl.[5] A61C *13/12, 13/225, 8/00*
U.S. Cl. 433—172 **18 Claims**



1. A dental prosthetic implant comprising:
a) an implant fixture receivable in a portion of a maxilla or mandible;
b) an abutment attached to said implant fixture which forms at least a portion of a prosthetic tooth element;
c) means for connecting said abutment to said implant fixture, said means including
i) means for prohibiting relative axial and translational displacement, and
ii) means for permitting relative rotational displacement for allowing adjustment to a particular desired rotational position;
d) means for locking said abutment in said particular desired rotational position against further rotational displacement relative to said implant fixture, said means for locking including
i) a first receiving surface associated with one of said implant fixture and said abutment, said first receiving surface having a minimum internal dimension.
ii) a plurality of flexible fingers associated with another of said implant fixture and said abutment, said plurality of fingers having a maximum external dimension.
iii) means for biasing said flexible fingers into engagement with said receiving surface with sufficient force to inhibit said relative rotational movement.
whereby said means for biasing said flexible fingers increases said maximum external dimension of said fingers to a value greater than said minimum internal dimension of said receiving surface creating a mechanical interlock between said implant and said abutment.

5,302,126
DENTAL IMPLANT WITH ADJUSTABLE POST
Joachim Wimmer, Fort Lee, N.J., and Hans Baumayr, East Aurora, N.Y., assignors to Park Dental Research Corp., New York, N.Y.
Filed Mar. 19, 1992, Ser. No. 854,436
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **14 Claims**

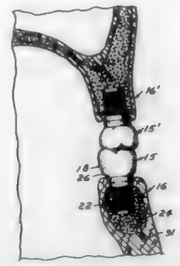


1. A dental implant system comprising:
(a) an implant body biocompatible with human bone and adapted to be implanted in a pre-formed cavity in a human jaw bone; said implant body having a bore with internal screw threads therein, said bore adapted to be vertically aligned along an imaginary axis thereof after said implant body is implanted in said cavity, said implant body having a top face having a conical portion and having said bore therethrough, and at least three sockets in said top face, said sockets being radially spaced about said axis;
(b) a post adapted to hold a dental fixture, said post having a top face and a bottom face and a bore therethrough having an imaginary axis and extending from said top face to said bottom face; the post bottom face having a conical portion fitting against said implant body top face conical portion; said post having an outer wall at a predetermined angle in the range of 5 degrees to 45 degrees to said bore axis; and at least one pin protruding from said bottom face and being inserted into a selected one of said sockets; and
(c) a screw having a screw head portion and a shaft portion, said shaft portion extending through said post bore and into said body bore, said shaft having external screw threads in mesh with the internal screw threads of said body bore.

5,302,127
DENTAL IMPLANT STRESS STABILIZER
Raymond A. Crisio, Jr., 18 S. 13th St., Belleville, Ill. 62220
Filed Jun. 1, 1993, Ser. No. 69,335
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **7 Claims**

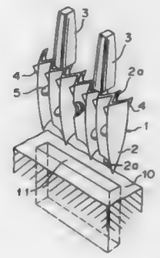
1. A dental implant for a prothesis, comprising:
a substantially cylindrical root member having threaded bores and having a die threaded exterior for threadedly entering a jaw bone cavity,
a root member stabilizing bar projecting through one of the root member threaded bores for entering a patient's jaw bone adjacent the jaw bone cavity;

a prothesis having a base cooperatively received by the root member socket; and,



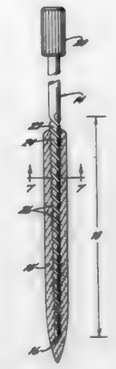
anchor means including a first screw in another of the root member threaded bores for securing the prothesis to said root member.

5,302,128
DENTAL IMPLANT
Shinichi Suga, 25-9, Fukasawa 5-chome, Setagaya-ku, Tokyo, Japan
Filed Aug. 13, 1992, Ser. No. 929,258
Claims priority, application Japan, Dec. 6, 1991, 3-108951
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—176 **4 Claims**



1. A dental implant for insertion in an elongated rectangular groove formed with side walls in the alveolar bone of a body, comprising a body of saw tooth form in cross section with a plurality of tapering teeth with a top zigzag surface adapted for implantation in said alveolar bone of said body, and at least one integral head extending upwardly therefrom for supporting a denture; said dental implant having small, thin sharp triangular pointed projections extending outwardly from a crest on each saw tooth adjacent said top zigzag surface so as to contact said side walls of the groove formed in the alveolar bone at the time of insertion; whereby an immediate strong friction connection is obtained between said groove and said implant in one step or operation, and cracking of said alveolar bone is minimized due to the compression of said dental implant body in the elongated direction of said groove and by the dispersion of the load in a transverse direction of the groove by said small, thin, sharp, triangular-pointed projections which wedge in place near the top surface of said alveolar bone.

5,302,129
ENDODONTIC PROCEDURE AND INSTRUMENT
Derek E. Heath, 1917 Sherwood Dr., Johnson City, Tenn. 37604, and Jerry A. Mooneyhan, 711 N. Mountainview Cir., Johnson City, Tenn. 37601
Filed Nov. 19, 1991, Ser. No. 794,069
Int. Cl.[5] A61C *5/02;* **A61G** *5/02*
U.S. Cl. 433—224 **13 Claims**



1. A method of applying a filler material in an endodontically prepared root canal and comprising the steps of
providing an endodontic compactor having an elongate shank portion,
heating a quantity of gutta percha having a beta phase crystalline structure, and including heating the gutta percha in a mold for a predetermined time and at a predetermined temperature and so as to convert the crystalline structure from beta phase to alpha phase,
inserting the shank portion of the endodontic compactor into the heated gutta percha in the mold and then allowing the same to cool and solidify and form a coating about the shank portion,
positioning the coated shank portion of the endodontic compactor into the prepared root canal and then rotting the compactor at a speed sufficient to plasticize the gutta percha solely from the frictional heat generated by the rotation of the compactor, and then
withdrawing the compactor from the canal and so as to leave the plasticized gutta percha therein, and such that the gutta percha then cools and hardens to form a solid filler in the canal.

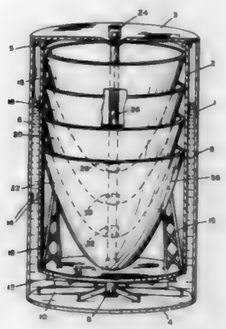
5,302,130
GRAVITY DIFFERENTIAL CONDITIONING FACILITY AND METHOD OF USE
David L. Sieving, 15919-A S. Harvard Blvd., Gardena, Calif. 90247
Filed Jul. 6, 1992, Ser. No. 909,293
Int. Cl.[5] G09B *9/00*
U.S. Cl. 434—55 **20 Claims**

20. A process method for gravity differential conditioning of individuals undergoing physical therapy, athletic conditioning or other physical training not necessarily related to space travel; said process method utilizing a gravity differential conditioning facility (GDCF), said GDCF incorporating a plurality of habitation levels which revolve about a vertical axis of revolution, said habitation levels being formed from concave-up circular paraboloids which produce a characteristic of zero incremental local net vertical acceleration magnitude at said paraboloid surface vertex area located near its axis of revolution, and increasing higher local net vertical acceleration at each increasing surface radius zone; each said habitation level having a radial area of its surface with an acceleration

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magnitude simulating a gravity environment to within plus or minus ten percent of a desired gravity environment, said radial area being designated a target zone; and comprising the steps of:

(a) entering the facility, proceeding to a habitation level and moving gradually or directly outward from the vertex of the level to a target zone within which the magnitudes of the local net acceleration vectors are appropriate for the desired therapy, conditioning or training regimen;



(b) remaining in said target zone for a designated period, exercising and resting as prescribed for the particular regimen;

(c) exiting the habitation level and the facility;

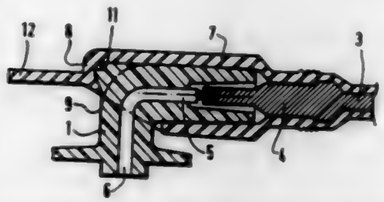
(d) periodically returning to the facility and an appropriate target zone for continued therapy, conditioning or training.

5,302,131

CONNECTOR CAP FOR LINKING ELECTRICAL CABLE

Pierre Heritier-Best, Orbeil, and Franck Sauzedde, Veyre-Monton, both of France, assignors to Sagem Allumage, Paris, France

Filed Oct. 19, 1992, Ser. No. 962,650
Claims priority, application France, Oct. 21, 1991, 91 12968
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—127 **10 Claims**



1. A connector cap for linkage between an end of an electrical cable and a high-voltage output shaft having an elbowed part of an ignition device said connector cap including:

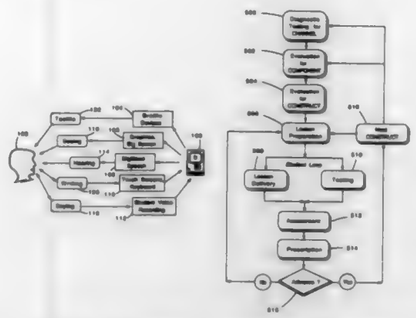
a flange substantially perpendicular to the end of the cable, on a side of the connector cap opposite the end of the cable, and arranged to be turned down behind a stop surface of the elbowed part of the high-voltage output shaft, for locking the cap counter to a movement in a direction parallel to the end of the cable.

5,302,132

INSTRUCTIONAL SYSTEM AND METHOD FOR IMPROVING COMMUNICATION SKILLS

Paul R. Corder, 522 Hillhurst Dr., Baytown, Tex. 77521

Filed Apr. 1, 1992, Ser. No. 863,687
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—156 **5 Claims**



1. A method for teaching communication skills utilizing language constructs and a computer based instructional system including processing means, memory means, and input and output means, said method comprising the steps of:

a) evaluating a student's communication skills by using computer generated stimuli requiring the student to respond thereto and the student's previous response data from the memory means, wherein the stimuli and the student's response thereto utilize either touch, movement, sight, sound, or speech;

b) selecting a target instructional objective for mastering a language construct, wherein the target instructional objective is selected by the computer based instructional system from a plurality of hierarchically ranked objectives stored in the system, wherein the target instructional objective either sequentially follows from an objective previously mastered by the student or by a teacher supervising use of the system;

c) using the evaluation to prepare an optimal cognitive strategy to achieve the target instructional objective, wherein the optimal strategy employs touch, movement, sight, sound, and speech as the student progressively encounters subsequent objectives to develop proficiency;

d) testing the student's ability either to reproduce, recognize, write, type, hand sign, speak, spell, use, or translate the target instructional objective by using decision rules stored in the system for comparing the results of the testing to a first predetermined performance criterion stored in the system, whereby the system presents test stimuli and receives the response of the student of the stimulus;

e) repeating steps (c) and (d) if the test results do not exceed the first predetermined performance criterion;

f) when the first predetermined performance criterion has been exceeded, repeating steps (b) through (e) with the next higher hierarchically ranked objective; and

g) repeating steps (b) through (f) until the student exceeds a second predetermined performance criterion for the next higher hierarchically ranked target instructional objective.

4. An instructional system for improving communication skills comprising:

(a) a digital computer comprising processing means, memory means, and input and output means,

(b) digital information stored in the memory means of said computer comprising logic sequences, language constructs and audio waveforms representing the pronunciation of the language constructs, decision rules, statistical formulas, and definitions of iconographic symbols for

display on the output means of said computer and associated with predetermined control features for executing the logic sequences, language constructs, and audio waveforms, and

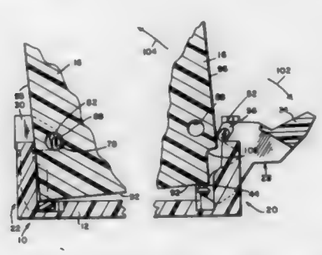
(c) program means for controlling the processing means, memory means, and input and output means of said computer to utilize said digital information stored therein to provide an individualized instructional strategy to a student interacting with said computer, wherein said program means includes means for evaluating the student's capacities for use of each of the available tactile, kinesthetic, visual, verbal, and auditory learning channels by using the decision rules to identify the student's cognitive learning style, rate of comprehension, level of experience, and level of ability using the input and output means of said computer, means for preparing an optimal instructional strategy individually structured for the cognitive learning style, rate of comprehension, level of experience, and level of ability of the student, means for presenting the optimal instructional strategy to the student as sequential lessons through the output means of said computer, means for recording the responses of the student to the sequential lessons to the memory means of said computer, and means for assessing the recorded responses by using the decision rules stored in the memory means of said computer to determine whether the student has learned the language constructs provided in the optimal instructional strategy.

5,302,133

ELECTRICAL CONNECTOR SOCKET WITH DAUGHTERCARD EJECTOR

Robert J. Tondreault, Louisville, Ky., assignor to Robinson Nugent, Inc., New Albany, Ind.

Filed May 11, 1993, Ser. No. 60,308
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—157 **30 Claims**



1. An electrical connector for receiving a daughtercard having a plurality of conductive surfaces formed thereon, the connector comprising:

a socket having a first end and a second end, the socket being formed to include an elongated slot extending between the first and second ends for receiving the daughtercard therein and including a plurality of electrical terminals for engaging the plurality of conductive surfaces formed the daughtercard for electrically coupling the daughtercard to the socket;

an ejector coupled to the first end of the socket, the ejector including first and second spring arms for engaging opposite sides of the daughtercard upon insertion of the daughtercard into the socket to retain the daughtercard within the socket, and including means for engaging the daughtercard to force an end of the daughtercard adjacent the ejector out of the elongated slot upon movement of the ejector relative to the socket; and

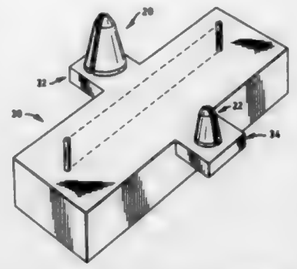
a post coupled to the second end of the socket in a fixed position relative to the socket to guide insertion of the daughtercard into the socket so that the plurality of conductive surfaces formed the daughtercard are aligned with the plurality of electrical terminals of the socket, the post being formed to include a pair of spring arms projecting away from the post for engaging opposite sides of the daughtercard adjacent the second end of the socket to retain the daughtercard within the socket.

5,302,134

ARTICLE LOCATING AND CENTERING MEANS

Ronald E. Thomas, and K. Troy Alwine, both of Warren, Pa., assignors to GTE Products Corporation, Danvers, Mass.

Division of Ser. No. 787,359, Nov. 4, 1991. This application Sep. 23, 1993, Ser. No. 125,389
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—247 **1 Claim**



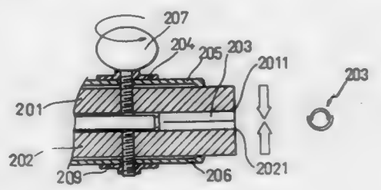
1. An article for mounting upon a substrate, said article having a lateral wing extending from either side thereof, said lateral wings including a mounting plane having locating and centering means thereon, said locating and centering means comprising: first and second spaced apart, depending lugs, each of said lugs tapering from a first area attached to said mounting plane to a second area, smaller than said first area, distal from said mounting plane, said first lug having a longitudinal slot extending substantially its entire length in a given direction and said second lug having a longitudinal slot extending substantially its entire length in a direction orthogonal to said given direction.

5,302,135

ELECTRICAL PLUG

Feng-Jui Lee, 4F-1, No. 92, Kuang-Hua S. St., Hsin Chu City, Taiwan

Filed Feb. 9, 1993, Ser. No. 15,230
Int. Cl.[5] H01R *13/15*
U.S. Cl. 439—263 **1 Claim**



1. An electrical plug comprising:

a top shell having two parallel grooves on a flat bottom wall thereof;

a bottom shell having two parallel grooves on a flat top wall thereof respectively connected to the parallel grooves on said top shell;

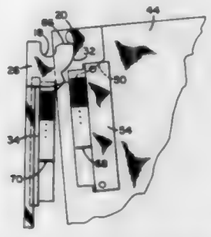
an adjusting binding screw inserted through center holes on said top and bottom shells to bind up said top and bottom shells together;

two contact tubes inserted in said parallel grooves and retained between said top and bottom shells, each contact tube having a rear end connected to an electric wire and

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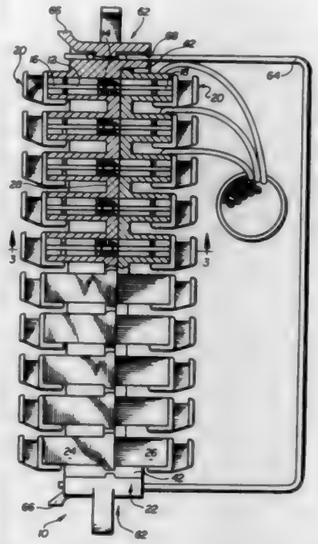
a front end for receiving a respective contact pin of an electrical socket;
a first washer fastened to said top shell on the outside by said adjusting binding screw;
a plate spring retained between said top shell and said first washer;
a second washer fastened to said bottom shell on the outside by said adjusting binding screw; and
wherein each contact tube has a split front end, the diameter of the split front end being reduced by turning said adjusting binding screw inwards.

5,302,136
APPARATUS FOR POSITIVELY PREVENTING MISENGAGEMENT OF MULTIPOINT CONNECTOR ELEMENTS
Ronald E. St. Germain, Amesbury, and Lawrence Pardo, Boxford, both of Mass., assignors to Modicon, Inc., North Andover, Mass.
Filed Nov. 23, 1992, Ser. No. 980,573
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—376 **18 Claims**



1. An apparatus for positively preventing misengagement of multipoint connector elements, said apparatus comprising:
a plug element of a multipoint connector;
a receptacle element of a multipoint connector, wherein said plug element and said receptacle element may be engaged when properly aligned;
first alignment means associated with said multipoint connector elements for providing engagement alignment between said plug element and said receptacle element, wherein said first alignment means includes at least one pivot pin having an associated stepped guide surface with an associated step, the stepped guide surface disposed concentrically about said pivot pin; and
second alignment means associated with said multipoint connector elements for providing engagement alignment between said plug element and said receptacle element, wherein said second alignment means includes at least one pivot slot having an associated stepped guide surface with an associated step, the stepped guide surface disposed concentrically about said pivot slot, such that each said pivot pin associated stepped guide surface is concentrically mated with a corresponding pivot slot associated stepped guide surface, wherein said pivot slot and said stepped guide surface of the second alignment means corresponding with said pivot pin and stepped guide surface of the first alignment means by having said steps abut against each other prior to engagement of said multipoint connector elements unless said pivot pin is fully seated in said pivot slot; thereby preventing misengagement of said multipoint connector elements unless said pivot pin is fully seated in said pivot slot, thus insuring that said multipoint connector elements are properly aligned.

5,302,137
INSULATION DISPLACEMENT CONNECTOR TERMINAL BLOCK
Louis Suffi, Westchester, Ill., assignor to Reliance Comm/Tec Corporation, Mayfield Heights, Ohio
Filed Apr. 22, 1993, Ser. No. 52,061
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—403 **17 Claims**



1. A terminal block comprising: a plurality of bi-ended insulation displacement connector type terminal clips formed of an electrically conductive material, each terminal clip having a base portion and a pair of similar insulation displacing wire-engaging portions projecting oppositely outwardly from said base portion; a plurality of activators configured for selectively electrically coupling wires to said terminal clips; a block body formed of an electrical insulator material; said block body comprising an upper block section and a lower block section configured for releasably lockingly interengaging said upper block section to form said block body, each of said upper block section and said lower block section having a base and a plurality of generally parallel substantially equally spaced walls extending substantially equidistantly outwardly of said base and defining therebetween a plurality of similar elongate open-ended cavities extending through said base; alignment means formed respectively on said upper and lower block sections for coaxially aligning respective ones of said walls and cavities, such that one of the open ends of each cavity coaxially aligns with an open end of a corresponding cavity at respective base portions of the upper and lower block sections, and such that opposite open ends of each cavity face respectively oppositely outwardly when the sections are interengaged; each pair of said coaxially aligned cavities being configured for surroundingly receiving one of said terminal clips with said wire-engaging portions thereof extending toward one of said opposite open ends of each cavity, and each cavity being configured for receiving an activator slidably movable therein between a first position for permitting the insertion of a conductor into said activator externally of an associated cavity, and a second position for engaging a conductor inserted into said activator with the wire-engaging portion of a terminal clip in said associated cavity.

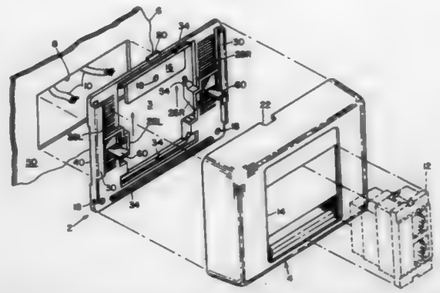
5,302,138
ELECTRICAL COUPLER WITH WATERTIGHT FITTING
Winston E. Shields, 8612 W. 127th St., Palos Park, Ill. 60464
Continuation-in-part of Ser. No. 853,282, Mar. 18, 1992. This application Feb. 22, 1993, Ser. No. 21,003
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—527 **18 Claims**



1. A quick disconnect, watertight electrical coupler for connecting an electrical cable to leads from a sensor circuit within a housing, said electrical coupler comprising:
a hose fitting means coupled to the housing and disposed about an aperture therein for forming a seal with the housing, wherein the sensor leads pass through the aperture in the housing and are disposed within said hose fitting means, said hose fitting means including a cylindrical body having a first end portion with a plurality of circumferential barbs disposed in a spaced manner along a portion of the length thereof outside of the housing;
hose means disposed about the electrical cable for forming a watertight seal thereabout, wherein an end of said hose means is inserted over and securely engages said barbs on said hose fitting means;
clamp means for securely engaging said hose means intermediate said barbed end portion thereof and said housing for forming a watertight seal between said hose means and said hose fitting means;
quick disconnect coupling means for connecting the electrical cable to the senor leads; and
connector housing means for coupling the sensor leads to said quick disconnect coupling means, wherein said connector housing means is in sealed engagement with said hose fitting means and said quick disconnect coupling means and engages and maintains the sensor leads in fixed position within the electrical coupler.

5,302,139
MODULAR FURNITURE OUTLET
Steven J. Starsja, Princeton, Mass., assignor to MOD-TAP W Corp., Harvard, Mass.
Filed Jun. 29, 1993, Ser. No. 81,521
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—544 **12 Claims**

1. An adaptor for securing a data communication port to a panel having an exposed surface, an unexposed surface and a panel cutout comprising:
a base plate having a projecting latching member immovable relative thereto for extending through the cutout and engaging the unexposed surface of the panel when the plate is in engagement with the exposed surface, and
movable latching members separate from and projecting from the plate for extending through the cutout and engaging the unexposed surface of the panel;



the movable members being adjustable toward and away from the fixed member to accommodate cutouts of different sizes.

5,302,140
CONNECTOR WITH MOUNTING COLLAR FOR USE IN UNIVERSAL PATCH PANEL SYSTEMS
Jamie R. Arnett, Fishers, Ind., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 2, 1993, Ser. No. 42,346
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—557 **20 Claims**

1. A device which is capable of being mounted in an opening in a panel, and which is adapted to hold a component, said device comprising:
a plurality of detents configured to allow quick connection and disconnection within the opening of the panel; and
a base extension portion which secures the device from the front of the panel in an angled orientation which provides ready frontal access to the component held by that device.

5,302,141
COMPATIBLE TRAILER CONNECTING
Michael O'Reilly, and Dana P. Scribner, West Groton, both of Mass., assignors to Cole Hersee Company, South Boston, Mass.
Filed Nov. 23, 1992, Ser. No. 979,847
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—680 **19 Claims**

1. A socket connector which can accommodate a first plug connector having a first array of plug contacts or a second plug

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connector having a second array of plug contacts, said socket connector comprising,

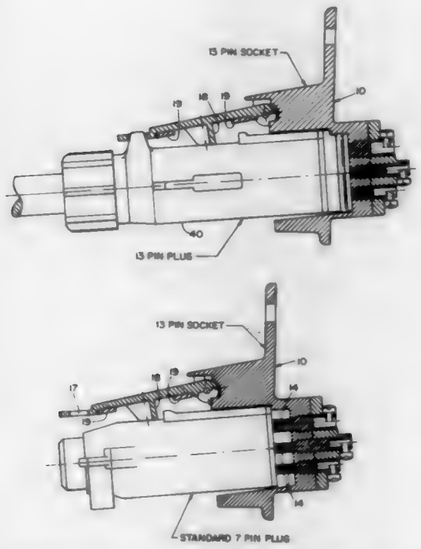
a cylindrical cavity with a first plurality of socket contacts, and a second plurality of socket contacts,

said second plurality of contacts being shorter than said first plurality of contacts,

said first array of plug contacts arranged for mating engagement with both said first plurality of socket contacts and said second plurality of socket contacts,

said second array of plug contacts arranged only for mating engagement with said first plurality of socket contacts,

said socket connector constructed and arranged so as to allow penetrating travel of said first plug connector fully into said cylindrical cavity so as to engage with said first array of plug contacts said first plurality of socket contacts and said second plurality of socket contacts, while limiting penetrating travel of said second plug connector into said cylindrical cavity to a point at which said second array of plug contacts engage said first plurality of socket contacts, but said second plurality of socket



contacts are neither engaged nor contacted by said second plug connector.

13. A plug connector which can accommodate a first socket connector having a first array of socket contacts or a second socket connector having a second array of socket contacts, said plug connector comprising,

a cylindrical body with a first plurality of plug contacts, and a second plurality of plug contacts,

said first array of socket contacts arranged for mating engagement with both said first plurality of plug contacts and said second plurality of plug contacts,

said second array of socket contacts arranged only for mating engagement with said first plurality of plug contacts,

said plug connector constructed and arranged so as to be able to penetrate fully into either said first socket connector or said second socket connector thereby engaging all said socket contacts in said first socket connector or all said socket contacts in said second socket connector, whereas a different plug connector would be limited in penetrating said first socket connector to a point at which only said first plurality of socket contacts is engaged.

5,302,142

BATTERY TERMINAL

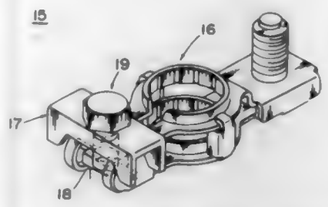
Masaaki Tabata, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jul. 30, 1993, Ser. No. 99,647

Claims priority, application Japan, Sep. 10, 1992, 4-63406

Int. Cl.[5] H01R *13/631*

U.S. Cl. 439—762 **4 Claims**



1. A battery terminal for fixing a circular electrode engaging portion thereof to an outer surface of a battery post, comprising: a terminal main body including a pair of tightening plates, each having a through-hole formed thereon, continuous with an open free end of the electrode engaging portion into which the battery post is inserted, and an electric wire connecting portion continuous with the electrode engaging portion, a rotatable nut interposed between the tightening plates in such a manner that a supporting shaft projecting from each of opposed side walls of the rotatable nut is rotatably inserted through each of the opposed through-holes formed on the tightening plates; and a tightening tool, having an trapezoidal cut-out portion which is formed on each of side walls thereof and has a pair of tapered surfaces which are brought into contact with an outer surface of each of the tightening plates; and a bolt-installing through-hole, formed on an upper surface of said tightening tool, through which a bolt is tightened into the rotatable nut.

5,302,143

BATTERY . TERMINAL

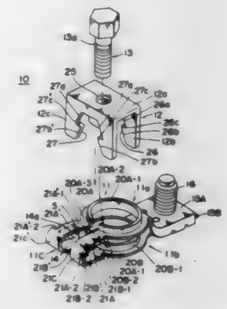
Nori Inoue; Masaaki Tabata, and Kazumoto Konda, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jun. 2, 1993, Ser. No. 70,199

Claims priority, application Japan, Jun. 9, 1992, 4-39304[U]

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—762 **6 Claims**



1. A battery • terminal comprising a terminal main body having a pair of right and left clamping plate portions respectively coupled to opened free ends of a circular ring shaped electrode engagement portion, said engagement portion adapted to externally engage a battery • post, an electric wire connecting portion connected with one of the right and left

clamping plate portions, a clamping element having a notch portion having faces spaced in a horizontal direction and diverging downwardly, said pair of right and left clamping plate portions of the terminal main body being inserted into the notch portion of the clamping element, a bolt being clamped from above with respect to a nut through a gap between the right and left clamping plate portions, the external ends of the right and left clamping plate portions being depressed by the tapered faces of the clamping element at the time of clamping so as to move the right and left clamping plate portions in mutually approaching horizontal directions, the electrode engagement portion being adapted to be put into pressure contact against an external peripheral face of the battery post.

5,302,144

CONNECTOR FOR ELECTRICAL CABLES

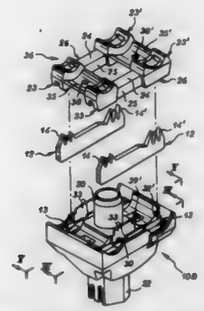
Pierre Francois, Limoges, and Robert Battle, Arnac Pompadour, both of France, assignors to Societe Industrielle de Construction d'Appareils et de Materiel Electrique S.I.C.A.M.E., Arnac Pompadour, France

Filed May 20, 1993, Ser. No. 64,571

Claims priority, application France, Jun. 30, 1992, 92 08035

Int. Cl.[5] H01R *4/24, 4/70*

U.S. Cl. 439—781 **9 Claims**



1. Electrical cable connector comprising at least two insulative material jaw members adapted to define between them at least two parallel channels, one per electrical cable, at least one metal contact member carried by one of said jaw members in a housing there of in which is at least partially accommodated and having active parts at its front adapted to intersect both said channels, clamping means adapted to close said jaw members so as to close said channels onto said electrical cables, and insulative material seals disposed around the respective active parts of said contact member and linked by a crosspiece which is secured to the respective jaw member be deformation thereof so that it is fastened thereto.

5,302,145

FEMALE ELASTIC-BLADE CONTACT AND BLADE FOR SUCH A CONTACT

Gilbert Spinnato, Guyancourt, and Yves Dohan, Paris, both of France, assignors to Souriau et Cie., Versailles, France

Filed Sep. 18, 1992, Ser. No. 946,671

Claims priority, application France, Sep. 19, 1991, 91 11561

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—843 **8 Claims**

1. A female contact for an electrical connector, comprising:

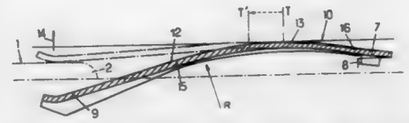
(a) a rigid tubular socket having a wall pierced by a longitudinal slot;

(b) a blade supported by a tail end by said tubular socket so that it extends into said slot, said blade having a contact end opposite said tail end engaged inside said tubular socket and radially movable in an elastic fashion; and

(c) an external tube surrounding said tubular socket and serving as a bearing surface for said blade;

(d) wherein said blade comprises:

(i) a portion bearing against said external tube and located between said tail end and said contact end, said blade having a continuous longitudinal curvature of large radius and without folding so that a surface of said blade bearing against said external tube moves longitudinally when said contact end of said blade is stressed radially on introduction of a corresponding male contact; and,



(ii) two inertia-reducing zones capable of causing flexure of said blade and being respectively located between said tail end and said bearing portion and between said bearing portion and the contact end;

(iii) said contact portion and said bearing portion of said blade having a predetermined transverse curvature so that said portions have a desired stiffness.

5,302,146

CRIMP-STYLE TERMINAL

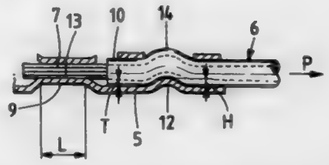
Masaya Yamamoto, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,903

Claims priority, application Japan, Oct. 14, 1991, 3-083003[U]

Int. Cl.[5] H01R *4/18*

U.S. Cl. 439—877 **7 Claims**



1. A crimp-style terminal with an electrical contact section at one end thereof and a cable clamp section comprising:

a conductor clamp portion for clamping an unsheathed conductor of a cable; and

a sheath clamp portion for clamping a sheath of said cable; and

a convex projection arranged in said sheath clamp portion for bending a part of said sheath, wherein said sheath clamp portion includes a pair of sheath clamp pieces adapted to be inwardly folded and located positionally offset from each other in a longitudinal direction of said crimp-style terminal and wherein said convex projection is located between said pair of sheath clamp pieces in said longitudinal direction.

5,302,147

COWLING ASSEMBLY FOR A MARINE PROPULSION ENGINE

Hiroshi Oishi, Hamamatsu, Japan, assignor to Sanshin Industries, Co., Ltd.

Filed Sep. 23, 1992, Ser. No. 949,132

Claims priority, application Japan, Sep. 27, 1991, 3-276514

Int. Cl.[5] B63H *21/36*

U.S. Cl. 440—77 **7 Claims**

1. A cowling assembly for covering a fore-to-aft extending marine propulsion engine comprising:

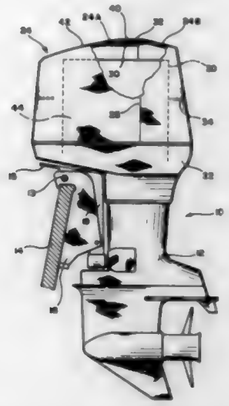
a front cowling section having a front wall, a top wall and

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sidewalls adapted to extend around a front portion of a marine propulsion engine;

a rear cowling section having a rear wall, a top wall and a sidewalls adapted to extend around a rear portion of a marine propulsion engine; and

means for permanently, fixedly connecting said front and rear cowling sections along a continuous joint extending laterally across the top wall and sidewalls thereof to form



a unitary cowling member, said joint having an associated thickness which is greater than the adjacent thickness of the top walls and sidewalls of the front and rear cowling sections such that said cowling assembly is stiffer in resisting deflection at the top wall and sidewalls which are subject to the greatest stresses and strains created by vibrations developed during operation of a marine propulsion engine.

5,302,148

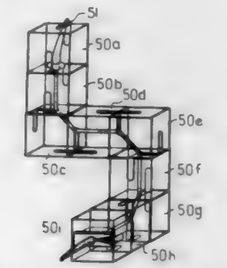
ROTATABLE DEMOUNTABLE BLOCKS OF SEVERAL SHAPES ON A CENTRAL ELASTIC ANCHOR

Ted Heinz, 33694 Colgate Dr., Union City, Calif. 94587

Filed Aug. 16, 1991, Ser. No. 746,245

Int. Cl.[5] A63H *33/10, 33/00;* **A63F** *9/06;* **G06C** *1/00*

U.S. Cl. 446—119 **23 Claims**



1. An educational experimenting device using hollow polyhedron building blocks and an elastic cord for stringing said building blocks for building modifiable configurations of threaded building blocks comprising

a plurality of groups of building blocks,

including a first group of building blocks non-removably stringed on said elastic cord and

a second group of building blocks adapted for insertion on said cord between two building blocks by stretching said elastic cord at the location of insertion and releasing said cord after insertion of said building block of said second group,

each of said building blocks of said second group including openings in at least two interface surfaces for receiving said elastic cord thereby engaging said building block of said second group with adjacent building blocks of said first group.

5,302,149

BONING METHOD AND APPARATUS

William J. Witham, 28 Cavell Road, Birkdale, Queensland 4159; Russel J. Rankin, Clear Mountain; Andrew M. Leiner, Sunnybank; Darryl J. Heidke, Morningside; Richard J. Gibboas, Cannon Hill; Edward G. Mills; Paul A. Green, both of Wilston; Matthew Aqualini, Mt Gravatt; John W. Buhot, Coorparoo; Phillip R. Boyce, Tingalpa, and Andrew L. Finney, Marsden, all of Australia, assignors to William John Witham, Queensland; Commonwealth Scientific & Industrial Research Organisation, Australian Capital Territory and Meat Research Corporation, Sydney, all of Australia

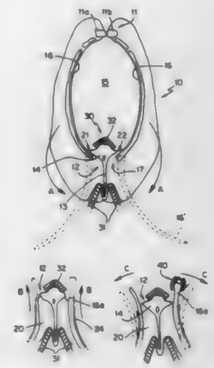
PCT No. PCT/AU91/00172, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/01385, PCT Pub. Date Feb. 6, 1992

PCT Filed Apr. 29, 1991, Ser. No. 965,242

Claims priority, application Australia, Jul. 23, 1990, PK 1316

Int. Cl.[5] A22C *17/00*

U.S. Cl. 452—135 **26 Claims**



1. A boning process for separating meat and bone in an animal carcass or in a portion of an animal carcass, the process being characterised by the steps of: restraining a first one (12) of two bones meeting at a joint (17) so that the first bone (12) is restrained relative to the other second one (16) of the two bones; moving the second bone (16) relative to the first bone (12) in a direction (A) so as to dislocate the joint; exposing the second bone (16) at or in close proximity to the dislocated joint; and moving the second bone (16) relative to the restrained first bone (12) to progressively extend the exposed portion (16a) of the second bone (16) along the length of the second bone so as to thereby separate at least a major part of the second bone (16) from tissues (20) remaining attached to the restrained first bone (12).

5,302,150

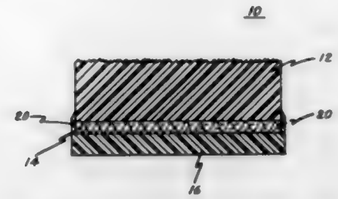
DESINEWING BELT

Mark V. Walbeck, 610 Alton Woods; David M. H. Stewart, 90 N. Spring St., Unit 3, both of Concord, N.H. 03301, and Alan T. Cushing, 216 Grapevine Rd., Dunbarton, N.H. 03045

Filed Jun. 18, 1993, Ser. No. 79,020

Int. Cl.[5] A22C *17/00*

U.S. Cl. 452—138 **6 Claims**



1. A belt for use with a perforated drum desinewing apparatus for processing food comprising:

a composite of a monofilament fabric layer that is continuous, said layer having a carrying side and a running side;

a carrying layer, having a thickness, adjacent to the carrying side of said monofilament layer, and having a textured surface and a durometer in the range of 30A to 60A, adapted to cause soft material to be separated from the sinew of the food to be processed and pressed through the perforated drum of said apparatus;

a running layer, adjacent to the running side of said monofilament layer and having a thickness substantially less than the thickness of said carrying layer, and having a durometer corresponding to the durometer of said carrying layer and having a substantially smooth surface that is adapted to drive said apparatus;

an additive which is added to said carrying layer and said drive layer and comprises at least five percent by weight of said carrying and drive layers wherein said additive substantially increases the tensile strength of said carrying and drive layers.

5,302,151

VARIABLE AIR FLOW EDDY CONTROL

Keith G. Crouch, Cincinnati, Ohio, assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 705,201, May 24, 1991, Pat. No. 5,176,566, which is a division of Ser. No. 397,226, Aug. 23, 1989, Pat. No. 5,027,694. This application Jan. 4, 1993, Ser. No. 88

Int. Cl.[5] B08B *15/02*

U.S. Cl. 454—56 **3 Claims**

1. An apparatus for controlling the flow of a fluid stream around an object which comprises a chamber in which said object is located, means to draw a flowing stream through said chamber, and means to periodically vary the direction of flow of at least a portion of the total fluid stream, in such a manner so as to prevent the formation of eddies in said fluid stream in the vicinity of said object, said means to periodically vary the



direction of flow comprising means to vary the cross-sectional area of a fluid port through which said fluid flow is drawn.

5,302,152

HEATING INSTALLATION FOR A MOTOR VEHICLE WITH SEPARATE LEFT AND RIGHT HAND AIR CIRCUITS

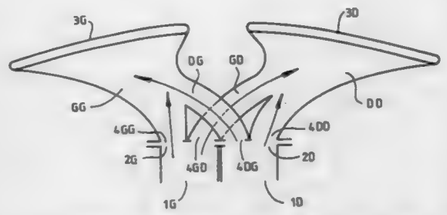
Michel Auvity, Velizy, France, assignor to Valeo, Le Mesnil-Saint Denis, France

Filed Aug. 7, 1991, Ser. No. 741,593

Claims priority, application France, Aug. 8, 1990, 90 10147

Int. Cl.[5] B60S *1/54*

U.S. Cl. 454—127 **6 Claims**



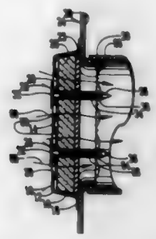
1. An installation for a motor vehicle for at least one of the functions selected from ventilation, heating and air conditioning, comprising means defining a left hand air processing circuit for processing air to be delivered into the left hand side of the cabin of the vehicle, means defining a right hand circuit, separate from the left hand circuit, for processing air to be delivered into the right hand half of the cabin, slot means comprising at least one de-icing/de-misting slot, for delivering the processed air towards a windshield of the vehicle, the installation further including means defining four flow paths for the air variously between the said air circuits and the slot means, the left hand circuit having a left hand outlet aperture and the right hand circuit having a right hand outlet aperture, and the slot means defining a left hand slot region and a right hand slot region situated in the left hand and right hand halves of the vehicle respectively, whereby the said flow paths comprise:

a first flow path extending from the left hand outlet aperture to the left hand slot region;

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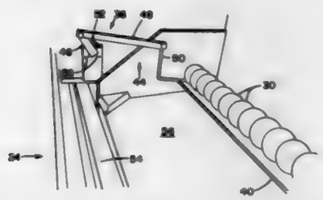
a second flow path extending from the left hand outlet aperture to the right hand slot region;
a third flow path extending from the right hand outlet aperture to the left hand slot region; and
a fourth flow path extending from the right hand outlet aperture to the right hand slot region.

5,302,153
AIR FILTERING DEVICE FOR A MOTOR VEHICLE
David J. Winters, R.R. #1, Box 162, Glenwood, Mo. 63541
Filed Feb. 4, 1993, Ser. No. 13,632
Int. Cl.[5] B60H *3/06*
U.S. Cl. 454—158 **18 Claims**



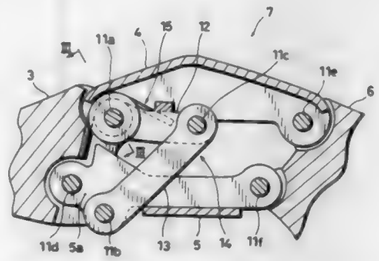
1. An air filtering device for an over-the-road truck having an exterior body with at least one air inlet therein providing communication to a heating and air condition system of the truck, the air inlet having a screen therein, the device comprising:
a housing having an outer wall, a sidewall extending from the outer wall, and a substantially planar perimeter flange extending from the sidewall, and having a plurality of apertures extending through the outer wall, said housing positioned on the exterior body of the truck over the air inlet;
a filter element positioned within the housing adjacent the air inlet for removing airborne particles from the air; and
connecting means extending through the housing to engage the screen for mounting the housing over the air inlet on the exterior body of the truck, the connecting means being removably secured to the screen, the flange of the housing engages a portion of the exterior body of the truck surrounding the air inlet, whereby air is first passed through the apertures and the filter element to remove particles from the air before the air enters the heating and air conditioning system of the truck.

5,302,154
POOL TABLE BALL RETURN CONTROLLER
Robert D. Sundstrom, Biwabik, and Robert L. Thomas, Virginia, both of Minn., assignors to Nortech, Inc., Virginia, Minn.
Filed Sep. 9, 1991, Ser. No. 756,892
Int. Cl.[5] A63D *15/00*
U.S. Cl. 473—24 **7 Claims**



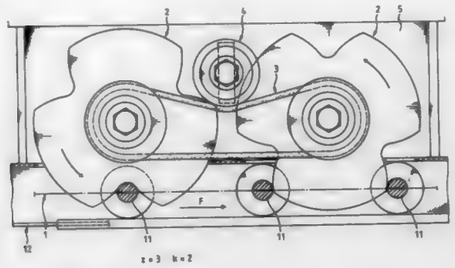
1. An apparatus for controlling the release of pool balls in money-operated pool tables, comprising:
a pivotally mounted guard movable between a raised position and a lowered position, said guard being adapted to hold pool balls in place when in said raised position and to release the balls when in the lowered position;
an electrically powered motor; linkage means connecting said motor to said guard for raising and lowering the guard upon activation of the motor; and,
Hall Effect transistors electrically connected to said motor for sensing the position of said linkage, control means electrically connecting and transistors to said motor for activating and deactivating said motor when said linkage is in a prescribed predetermined position.

5,302,155
BICYCLE DERAILLEUR
Yasunori Ishibashi, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan
PCT No. PCT/JP92/00603, § 371 Date Jan. 14, 1993, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO92/20567, PCT Pub. Date Nov. 26, 1992
PCT Filed May 11, 1992, Ser. No. 949,828
Claims priority, application Japan, May 17, 1991, 3-142430
Int. Cl.[5] F16H *61/00*
U.S. Cl. 474—82 **9 Claims**



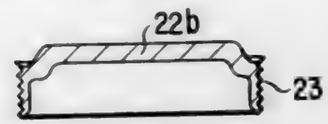
1. A bicycle derailleur comprising:
a parallelogram pantograph link mechanism including a base member mounted to a bicycle frame, a parallel pair of link members each having a base end pivoted by a connecting pin to the base member, and a movable member pivoted by connecting pins to respective free ends of the link members; and
a chain guide rotatably supporting a guide pulley and a tension pulley, the chain guide being moved laterally of the bicycle by the parallelogram pantograph link mechanism for speed change operation: wherein
the parallelogram pantograph link mechanism is provided with a first and a second pivotal members each having a predetermined length and pivoted to a predetermined position of a different constituent member of the parallelogram pantograph link mechanism, respective free ends of the first and second pivotal members being mutually connected by a pin for causing the first and second pivotal members to pivot relative to the member to which they are pivoted when the parallelogram pantograph link mechanism is deformed; and
a return spring is provided between the first or second pivotal member and a selected one of the constituent members of the parallelogram pantograph.

5,302,156
CHAIN DRIVE
Rudolf Infanger, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Oct. 14, 1992, Ser. No. 961,141
Claims priority, application Switzerland, Nov. 6, 1991, 03-231/91
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—148 **13 Claims**



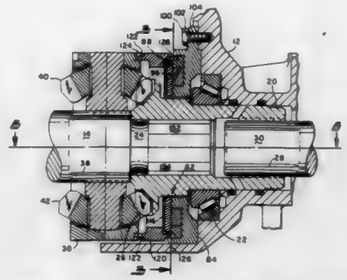
1. Chain drive comprising:
a chain made with link pins at constant intervals (D);
a number (k) of at least two identical sprocket wheels whose axis of rotation is perpendicular to the direction of movement (F) of the chain, each sprocket wheel having a number (z) of sprockets so placed in relation to the chain as to ensure an effective working contact therewith;
the center-to-center distance between the sprocket wheels being $nD+D/k$, wherein n is zero or any integer;
the sprocket wheels being connected together by a slip-free coupling means which ensures that they turn in unison at the same speed of rotation when one of them is being driven;
the sprockets of consecutive sprocket wheels in the feed direction (F) being phase-offset in relation to each other by an angle of 360°/zk; and
the tip radius (R_K) of the sprocket wheels being chosen in such a manner as to ensure an overlap of 1/k.

5,302,157
LIGHTWEIGHT V-GROOVED PULLEY
Ken-ichi Ogura; Tomokazu Kawamura, both of Tokyo, and Yukio Kanemitsu, Hyogo, all of Japan, assignors to Furukawa Aluminum Co., Ltd., Tokyo and Kabushiki Kaisha Kanemitsu, Hyogo, both of Japan
Filed Jun. 22, 1992, Ser. No. 901,890
Claims priority, application Japan, Jun. 21, 1991, 3-177119
Int. Cl.[5] F16H *55/36*
U.S. Cl. 474—166 **6 Claims**



1. A lightweight V-grooved pulley obtained from a metal plate and having a cylindrical member with one open end, the cylindrical member having a circumferential surface formed with at least one groove having a substantially V-shaped section, wherein
a material of said metal plate essentially consists of an aluminum alloy containing 2 to 6 wt % of Mg, at least one of 0.005 to 0.2 wt % of Ti and 0.0005 to 0.02 wt % of B, impurities containing not more than 0.2 wt % of Si, not more than 0.2 wt % of Fe, and not more than 0.5 wt % of Zn, and a balance consisting of Al and an inevitable impurity, and an anodized film is formed on a region including the groove.

5,302,158
LUBRICANT PUMPING IN TANDEM DRIVE AXLES
Dale L. Kwasniewski, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 24, 1992, Ser. No. 982,170
Int. Cl.[5] F16H *57/04*
U.S. Cl. 475—160 **13 Claims**



1. In combination with tandem drive axles having a power divider therebetween, the improvement comprising:
(a) a housing means having a supply of lubricant therein;
(b) a power input shaft for one of said axles and a power output shaft having a gear thereon for the other of said tandem axles and a power divider comprising an inter-axle differential having the spider or carrier thereof drivingly connected to said input shaft and carrier mounted differential or idler gears meshing with said output shaft gear and a drive gear for said one axle;
(c) pump means having a stator mounted to said housing means and a rotor means operative upon rotation with respect to said stator to circulate said lubricant for lubricating said input and output shafts and said power divider; and,
(d) coupling means drivingly connecting said carrier to said rotor means.

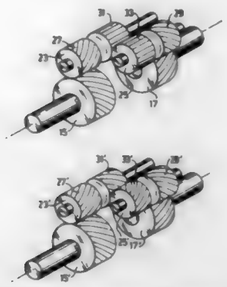
5,302,159
END-THRUST DESIGN FOR PARALLEL-AXIS DIFFERENTIAL
James S. Dye, Walworth, and Gordon B. Tseng, Rochester, both of N.Y., assignors to Zexel-Gleason USA, Inc., Rochester, N.Y.
Continuation of Ser. No. 735,441, Jul. 25, 1991, Pat. No. 5,169,370. This application Dec. 4, 1992, Ser. No. 986,100
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] F16H *1/45*
U.S. Cl. 475—227 **7 Claims**

1. A gear differential having a planetary gearing arrangement comprising:
a housing that is rotatable about a pair of axle shafts which share a common axis;
a pair of sun gears positioned within said housing relative to respective bearing surfaces and adapted to be fixed to the respective ends of said axle shafts for rotation;
at least one pair of planet gears, each gear of the pair being mounted within said housing for rotation about a respective axis which is parallel to said common axis, and for axial movement:
(a) in relation to, and for contact with, at least one respective bearing surface, and
(b) in relation to its paired planet gear;
said sun and planet gears having helical teeth and exerting

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axial end thrust against their respective bearing surfaces when subjected to torque; and

each planet gear having a first engagement portion with helical teeth for meshing with a respective one of said sun gears and a second engagement portion for meshing with its paired planet gear,



said first and second engagement portions having teeth designed so that said axial end thrust exerted by said planet gears is at least equal to the end thrust exerted by said sun gears.

5,302,160

PLANET-PINION CARRIER ASSEMBLY FOR PLANETARY GEAR SYSTEM

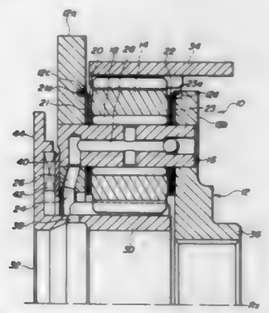
Kazuyoshi Fujioka, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Continuation of Ser. No. 498,764, Mar. 26, 1990. This application Jan. 27, 1993, Ser. No. 9,443

Claims priority, application Japan, Mar. 28, 1989, 1-34387[U]

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—348 **18 Claims**



1. A planet pinion carrier assembly for a planetary gear system, comprising:

a planet-pinion carrier having a rotation axis, said planet-pinion carrier including a first section extending radially with respect to the rotation axis and a second section radially extending and axially spacing a predetermined distance from said first section;

planet pinions each rotatably mounted onto a pinion shaft through bearing means, said pinion shaft extending between said first and second sections with its one axial end fixed to said first section and with its other axial end fixed to said second section, said planet pinions each having a first axial end facing said first section and a second axial end facing said second section;

a first thrust washer;

a second thrust washer;

a third thrust washer; and

a fourth thrust washer;

said first thrust washer and said third thrust washer being disposed between said first axial end of each planet pinion and said first section;

said second thrust washer and said fourth thrust washer being disposed between said second axial end of each planet pinion and said second section;

said first and secnd thrust washers each having a surface hardness which is in a range from Hv 700 to Hv 1500 and said third and fourth thrust washers each being made of a lubricated copper alloy, said third and fourth thrust washers being effective to prevent abrasion when said first and second thrust washers are subjected to loads in excess of a predetermined level.

5,302,161

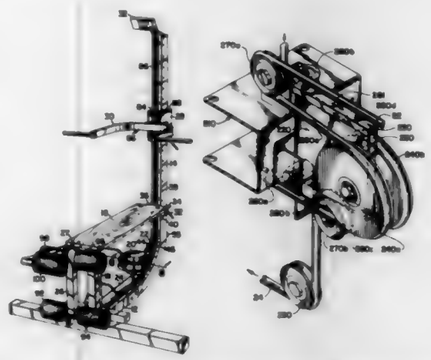
FLEXIBLE LINE GUIDANCE AND TENSION MEASURING DEVICE

Craig A. Loubert, Minneapolis; Stephen S. Peterson, Maple Grove, and Timothy S. Engel, Mound, all of Minn., assignors to NoordicTrack, Inc., Chaska, Minn.

Continuation-in-part of Ser. No. 791,073, Nov. 12, 1991, Pat. No. 5,195,937, and a continuation-in-part of Ser. No. 769,549, Oct. 1, 1991, and a continuation-in-part of Ser. No. 500,517, Mar. 28, 1990, Pat. No. 5,090,694. This application Feb. 13, 1992, Ser. No. 835,186

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—8 **15 Claims**



1. A flexible line guidance and tension measuring device for use on an exercise apparatus to guide a flexible line from a resistance mechanism to an exercise member and measure tension in the flexible line, comprising:

(a) a fixed member arranged and configured so as to be operatively securable to an exercise apparatus, said fixed member having an operating surface;

(b) a movable member pivotally mounted to said fixed member at one operative connection, said connection being at the point about which said movable member pivots, and said movable member movable among a plurality of positions relative to said operating surface;

(c) a load bearing pulley rotatably mounted on said movable member, wherein when a movement is induced in said movable member from one of said plurality of positions to another of said plurality of positions relative to said operating surface, an incremental deflection is defined; and

(d) an incremental deflection measuring means operatively mounted to said moveable member, for measuring said incremental deflection of said movable member relative to said operating surface; said

(e) an intermediate guide pulley rotatably mounted on said fixed member and designed to guide a flexible line from a first location to said load bearing pulley, wherein said intermediate guide pulley rotates in a plane perpendicular to both said operating surface and the plane of rotation of

said load bearing pulley, and wherein said intermediate guide pulley shares a common tangent with said load bearing pulley; and

(f) a distal guide pulley rotatably mounted on said fixed member and designed to guide a flexible line from said load bearing pulley to a second location, wherein said distal guide pulley rotates in the plane of rotation of said load bearing pulley, and wherein said distal guide pulley shares a common tangent with said load bearing pulley;

(g) wherein said incremental deflection measuring means includes:

(i) a sliding member slidably secured relative to a sliding surface on said movable member, wherein said sliding member has a first end surface and a second, opposite, end surface, and said first end surface extends beyond a leading surface on said movable member, such that said first end surface contacts said operating surface of said fixed member upon movement of said moveable member toward said fixed member;

(ii) a strain gauge having a first end mounted to a trailing surface on said movable member, and a second end mounted to said second end surface of said sliding member, whereby when a movement is induced in said movable member, said first end surface is forced against said operating surface, thereby inducing a measurable strain on said strain gauge.

5,302,162

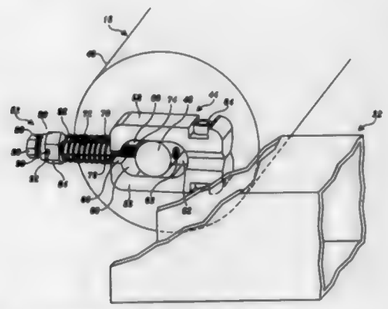
EXERCISE TREADMILL WITH TENSION-LIMITED BELT ADJUSTMENT

Peter A. Pasero, Renton, Wash., assignor to Precor Incorporated, Renton, Wash.

Filed Nov. 5, 1992, Ser. No. 972,002

Int. Cl.[5] A63B *22/02*

U.S. Cl. 482—54 **16 Claims**



10. An exercise treadmill, comprising:

(a) a frame;

(b) a first roller mounted on a first axle to the frame to rotate about a first transverse axis;

(c) a second roller mounted on a second axle to the frame to rotate about a second transverse axis;

(d) an endless belt trained about the first and second rollers; and

(e) an adjustment bolt assembly including a threaded end portion and a ratcheting head, wherein:

(i) the adjustment bolt assembly is rotatably secured to the frame with the threaded end portion threadably engaged with the second axle;

(ii) the ratcheting head is graspable to rotate the adjustment bolt assembly to threadably advance the second axle on the threaded end portion of the adjustment bolt assembly, thereby changing the distance between the first and second transverse axis and adjusting the tension in the belt; and

(iii) the ratcheting head ratchets on the adjustment bolt assembly to prevent an increase in the tension of the belt in exceas of a predetermined maximum belt tension.

5,302,163

INFANT EXERCISER AND ACTIVITY CENTER

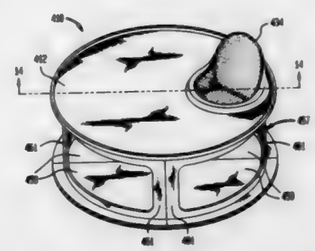
Daniel R. Fermaglich; Lois F. Fermaglich, both of 9 Van Duyne Rd., Mountain Lakes, N.J. 07046, and Alexander R. Malcolm, West Greenwich, R.I., assignors to Daniel R. Fermaglich and Lois F. Fermaglich, both of Mountain Lakes, N.J.

Continuation-in-part of Ser. No. 821,993, Jan. 16, 1992, Pat. No. 5,211,607, which is a continuation-in-part of Ser. No. 528,724, May 24, 1990, Pat. No. 5,085,428. This application May 17, 1993, Ser. No. 62,020

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] A63B *26/00*; A47D *13/04*

U.S. Cl. 482—66 **20 Claims**



1. An infant exerciser adapted for use in a substantially stationary location on a support surface, such as a floor, comprising a base immovably positioned relative to the support surface; a rotatable tray having a central axis and an outer peripheral edge; mounting means for rotatably mounting said tray on said base such that said tray is maintained in a substantially horizontal orientation with its said central axis extending vertically and such that said tray is positioned above the support surface; supporting means, positioned in said tray adjacent to said outer peripheral edge thereof, for supporting an infant for rotation about an axis of rotation of said supporting means, said supporting means including a seat sized and shaped so as to permit an infant to sit thereon; and suspending means for suspending said seat above the support surface such that said seat is revolvable about said central axis of said tray in a circular path and such that an infant in said seat can walk along said circular path, said suspending means including rotating means for enabling said seat to freely rotate about said axis of rotation of said supporting means, whereby an infant in said seat can walk along said circular path and/or spin about said axis of rotation.

5,302,164

ISOMETRIC BODY CONDITIONING APPARATUS

Edgar R. Austin, 9357 Christopher St., Cypress, Calif. 90630

Filed Jun. 7, 1993, Ser. No. 72,116

Int. Cl.[5] A63B *21/02*

U.S. Cl. 482—91 **21 Claims**

1. An exercise apparatus which comprises:

a. a standard having a straight upper leg with a longitudinal axis, and a dependent, inclined lower leg extending outwardly from said axis by a brace distance, and having a support plate on its lower end;

b. a handle bar head being supported on the upper end of said standard and having

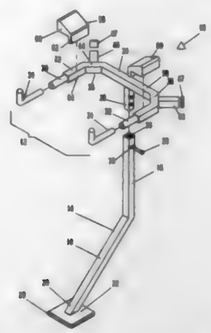
(1) a cross bar located above said standard and extending laterally to opposite sides thereof;

(2) a pair of handle bars, one each, distally located at opposite lateral extremities of said cross bar and coplanar therewith, each handle bar extending in the direc-

VOL 1161 ISS 2 APR 12 1994 UMI

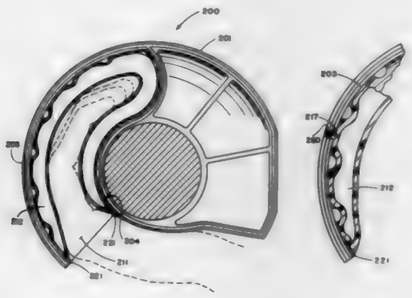
tion of said inclined lower leg, but terminating at a distance less than said brace distance; and

(3) a pair of wall struts, coplanar with and supported symmetrically on, and extending from, said head opposite the direction of said handle bars, and oriented on



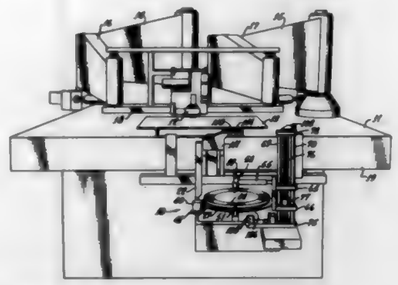
said head to provide an included angle between said struts of 90 degrees, whereby said apparatus can be placed in a right angle corner of a room with said standard in a vertical orientation and said lower leg thereof resting on the floor, and each of said struts bearing against adjacent walls.

5,302,165
EXERCISE DEVICES
Scott Caruthers, Millersville, Md., assignor to DAR Products Corporation, Baltimore, Md.
Division of Ser. No. 470,616, Jan. 26, 1990, Pat. No. 5,139,472, which is a continuation-in-part of Ser. No. 241,297, Sep. 9, 1988, Pat. No. 4,896,880, which is a continuation-in-part of Ser. No. 94,794, Sep. 14, 1987, Pat. No. 4,813,669. This application Mar. 6, 1992, Ser. No. 846,901
Int. Cl.[5] A63B *21/072*
U.S. Cl. 482—108 **10 Claims**



1. In an exercise device, the combination of a weight means, an inflatable bladder surrounding the weight means and having an opening through which the hand of the user may be inserted, and means including a valve on the bladder for introducing air under pressure to the bladder.

5,302,166
TOOL CHANGER
William F. Marantette, and Joseph E. Smith, both of Torrance, Calif., assignors to Optima Industries, Inc., Torrance, Calif.
Filed Feb. 21, 1992, Ser. No. 839,131
Int. Cl.[5] B23Q *3/157*
U.S. Cl. 483—1 **19 Claims**



1. A tool changer comprising

tool holder means for supporting a tool, receptacle means adapted to receive a tool, movable means for relatively moving said tool holder means and receptacle means to position where said receptacle means is adjacent said tool holder means,

means for creating a vacuum in said receptacle

means for drawing a tool from said tool holder

means into said receptacle means,

said movable means further including

means for moving said receptacle means to a position adjacent a machine for operating said tool, and

means for creating a positive pressure in said receptacle means for forcing said tool into said machine for operation thereby.

13. The method of providing a tool for a machine tool which includes a spindle for driving said tool comprising the steps of

positioning a tool holder adjacent said machine tool,

supporting a tool on said tool holder, positioning a receptacle adjacent said tool, creating a negative pressure in said receptacle for causing said tool to be withdrawn from said tool holder and to enter said receptacle,

positioning said receptacle adjacent said spindle, and

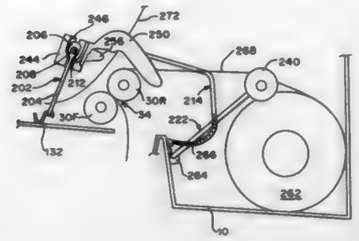
creating a positive pressure in said receptacle so as to force said tool out of said receptacle and into said spindle.

5,302,167
EMBOSSING DISPENSER ROLL TRANSFER ASSEMBLY
Richard D. Kley, West Chester, Pa., and Dean H. Heili, Manitowoc, Wis., assignors to Scott Paper Company, Delaware County, Pa.
Continuation of Ser. No. 738,078, Jul. 30, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 79,850
Int. Cl.[5] B31B *1/36*
U.S. Cl. 493—400 **18 Claims**

10. In combination with an embossing dispenser for dispensing primary and secondary rolls of sheet material through a pair of embossing rollers, the embossing rollers including a plurality of disks and annular grooves arranged in alternating relationship, a transfer apparatus for feeding sheet material from the reserve roll into the nip between the two embossing rollers when the primary roll of sheet material nears exhaustion, said transfer apparatus comprising:

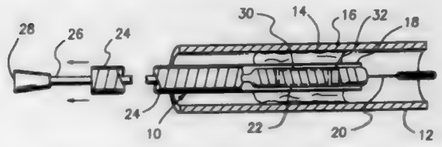
(a) transfer linkage pivotally mounted within the cabinet, said transfer linkage supporting a roll contacting surface;

(b) a bar means attached to said transfer linkage, said bar means including a comb means projecting therefrom and a wing member extending from each end thereof, said transfer linkage biased for rotational movement to maintain said roll contacting surface in contact with the primary roll as the primary roll is depleted thereby simultaneously rotating said bar means toward the embossing rollers, said wing members engaging one of embossing rollers as the



primary roll nears exhaustion to thereby position said comb means to partially invade the grooves of that embossing roller.

5,302,168
METHOD AND APPARATUS FOR RESTENOSIS TREATMENT
Robert L. Hess, 222 Wyndham Dr., Portola Valley, Calif. 94025
Filed Sep. 5, 1991, Ser. No. 755,480
Int. Cl.[5] A61N *5/00*
U.S. Cl. 600—3 **6 Claims**



1. A method for treatment and post-treatment of a stenosed area of an artery comprising the steps of:

reducing the annular stenosed area within an artery;

advancing a radioactive dose means within the artery to the area of reduced stenosis, the radioactive dose means being operatively connected to positioning means and the advancing step being performed by moving the positioning means;

applying a radioactive dose to the area of reduced stenosis by exposing the area of reduced stenosis to the radioactive dose means; and

removing the dose means from the artery by moving the positioning means.

5,302,169
POST OPERATIVE KNEE BRACE
Dean A. Taylor, Vancouver, Canada, assignor to Generation II Orthotics Inc., Richmond, Canada
Filed Jan. 4, 1993, Ser. No. 1,204
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—16 **17 Claims**

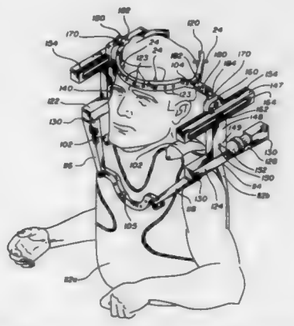
1. In an orthopaedic brace comprising:

a pair of arms to be secured to a wearer's body, a pivotable joint between said arms to allow pivoting of the knee while supporting the knee, the improvement comprising:



joint means in the brace for allowing controlled medial and lateral inclination of each arm relative to the pivotable joint.

5,302,170
EXTERNAL FIXATION SYSTEM FOR THE NECK
Lisa A. G. Tweardy, Mt. Laurel, N.J., assignor to The Jerome Group, Inc., Moorestown, N.J.
Continuation-in-part of Ser. No. 647,228, Jan. 4, 1991, Pat. No. 5,156,588. This application Oct. 19, 1992, Ser. No. 963,442
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—17 **15 Claims**



1. A device for maintaining the head of a patient in a predetermined spatial relationship to the body of the patient, said device comprising:

an elliptical member including a plurality of mounting holes for receiving skull pins; and

adjustable means for rigidly attaching said elliptical member to the body of the patient, said adjustable means comprising:

a vest adapted to be worn by the patient including front and rear braces thereon adapted to extend laterally across the chest and back of the patient;

right and left front uprights secured to and projecting upward from said front brace

right and left rear uprights secured to and projecting upward from said rear brace;

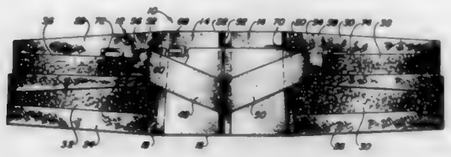
a right top portion connecting said right front and right rear braces and a left top portion connecting said left front and left rear braces;

right and left vertical pieces secured to said right and left top

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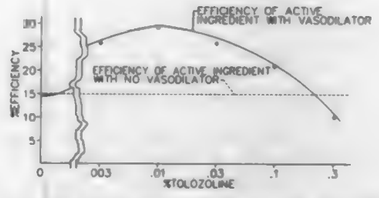
portions, each said vertical piece having an elongated vertical slot therethrough and a vertically positioned rack;
right and left T-bars connected to and extending vertically from said right and left vertical pieces
each said right and left T-bars having a crossbar situated horizontally and a vertical stem extending therefrom, each said vertical stems including a pinion gear which rides on said vertical piece rack and allows vertical movement relative to said vertical piece, and a set screw to lock and prevent said vertical movement, each said horizontal crossbar having an elongated horizontal slot therethrough and a horizontally positioned rack;
right and left connect pieces each having two pinion gears therein, said two pinion gears comprising a T-bar pinion gear which rides on said T-bar crossbar rack and allows horizontal movement relative to said T-bar crossbar, and a set screw to lock and prevent said horizontal movement, and an extension pinion gear;
right and left extensions, each said extension having an elongated vertical slot therethrough and a vertically positioned rack, which rack rides on said extension pinion gear allowing vertical movement thereof, and a set screw to lock and prevent said vertical movement; and
means for connecting said elliptical member to said right and left extensions.

5,302,171
BACK AND STOMACH SUPPORT DEVICE
David P. Pearson, 861 Bosthorn Ave., Newbury Park, Calif. 91320, and Thomas J. Johnston, 24 Thunder Trail, Irvine, Calif. 92714
Filed Mar. 16, 1992, Ser. No. 851,598
Int. Cl.[5] A61F *5/00, 5/37*
U.S. Cl. 602—19 **10 Claims**



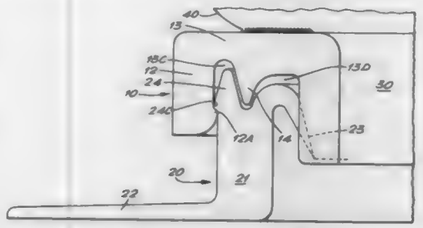
1. An improved back and stomach support device, said device comprising, in combination:
a) a generally flat, upraised, central, elastic, flexible, and stretchable back support with a top, bottom, and sides;
b) a first pair of generally flat, flexible, upraised, inelastic, elongated strips connected to said opposite sides said central back support adjacent said bottom of said support and extending laterally thereof and adapted to be wrapped around the sides and front of the mid-section of a human torso;
c) a second pair of generally flat, upraised, flexible, inelastic elongated padded strips connected to said opposite sides of said central back support adjacent said top of said support and extending laterally thereof, overlapping the rear surface of the upper portion of said first pair of strips and adapted to be wrapped around the sides and front of the mid-section of a human torso; and,
d) adjustable securing means on said strips to releasably hold said strips in an overlapped back and front support position on the mid-section of a human torso.

5,302,172
METHOD AND COMPOSITION FOR IONTOPHORESIS
Burton H. Sage, Jr., and Jim E. Riviere, both of Raleigh, N.C., assignors to North Carolina State University, N.C. and Becton Dickinson and Company, N.J.
Continuation-in-part of Ser. No. 494,062, Mar. 15, 1990, abandoned. This application Feb. 8, 1991, Ser. No. 653,202
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **11 Claims**



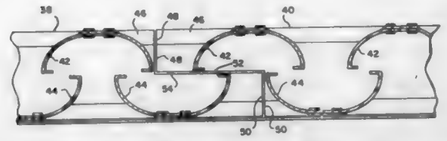
1. A method for enhancing iontophoretic delivery of an active agent comprising:
(a) providing an iontophoretic delivery system comprising a reservoir and an electrical energy source, said reservoir containing a pharmaceutically acceptable composition comprising an active agent and a delivery enhancing amount of a vasodilator;
(b) contacting said iontophoretic delivery system to the skin of a subject; and
(c) delivering said pharmaceutically acceptable composition to the subject by iontophoresis;
wherein said delivery enhancing amount of vasodilator is from about 0.001% to about 0.1% in solvent.

5,302,173
OSTOMY COUPLING
Peter L. Steer, Nr East Grinstead, United Kingdom, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Apr. 14, 1992, Ser. No. 868,620
Claims priority, application United Kingdom, Apr. 18, 1991, 9108276
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—338 **6 Claims**



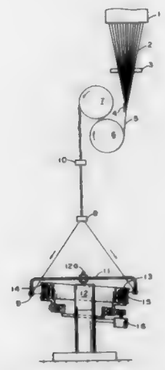
1. A coupling for joining a pad or dressing to an ostomy bag comprising:
a first member with an annular channel surrounding a stomal aperture, said annular channel including two upstanding opposing parallel walls with a base extending between said walls and an upstanding tapering rib extending from said base and between said walls, and
a second member including an annular wall surrounding a stomal aperture, said annular wall having two diverging extensions, said second member being dimensioned to fit between said opposing parallel walls with each of said extensions bearing against an opposing parallel wall of said annular channel so as to form a sealing engagement of the first and second members, said second member having a tapering groove between said two diverging extensions dimensioned so as to complementary shape to the rib but not expand said diverging extensions when forming said sealing engagement.

5,302,174
MULTI-UNIT GREASE FILTER
Timothy L. Guetersloh, Deerfield, Wis., assignor to Research Products Corporation, Madison, Wis.
Filed Jul. 7, 1993, Ser. No. 88,443
Int. Cl.[5] B01D *45/00*
U.S. Cl. 55—444 **6 Claims**



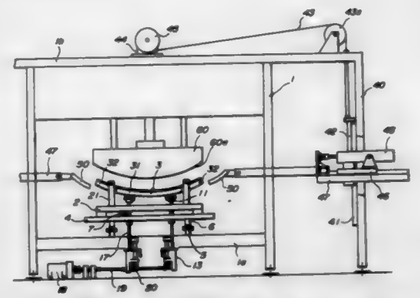
1. A multi-unit grease filter of the type in which a plurality of substantially rectangular filter frames are disposed side by side with each of the frames containing a plurality of elongated overlapping baffles so that air passing through the filter encounters a plurality of surfaces causing the air to change directions, said filter comprising:
a first filter unit and a second filter unit, each having an upstream series of spaced apart elongated baffles and a downstream series of spaced apart elongated baffles offset from said upstream series of baffles so that the baffles overlap and expose the air flow to multiple surfaces,
said elongated baffles in said first and second filter units being disposed between and connected to two end frame members,
said end frame members having spacing means whereby said first and second filter units may be disposed side by side with said end frame members in abutment and with a downstream baffle of one of said filter units overlapping an upstream baffle of the other of said filter units.

5,302,175
METHOD OF WINDING GLASS FIBERS
Warren W. Drummond, 3721 SW. 84th St., Gainesville, Fla. 32608
Filed Sep. 1, 1992, Ser. No. 938,693
Int. Cl.[5] C03B *37/03*
U.S. Cl. 65—2 **14 Claims**



1. A method of preparing glass fiber strand comprising applying sufficient tractive force to a plurality of glass fibers issuing from a molten glass source to attenuate the glass fibers at glass fiber forming speeds while gathering them into strand, feeding the strands so formed onto a flyer which encompasses a strand collection surface, revolving the flyer around the collection surface at speeds at least equal to the attenuation speed of the glass fibers using means other than the tractive forces used to attenuate the glass fibers, depositing the strands from the flyer onto the collection surface while rotating the collection surface at a speed slower than that of the flyer and in a direction counter thereto, maintaining the collection surface during the collection of the strand at an angle of from 2 up to 8 degrees to the revolving plane of the flyer to thereby impart a traversing laydown of the strand on the collection surface and collecting the strand on the collection surface as a substantially flat package.

5,302,176
METHOD OF AND APPARATUS FOR BENDING SHEET GLASS
Takashi Shibuya, Tokyo, and Kazuo Yamada, Kanagawa, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan
Filed Sep. 4, 1992, Ser. No. 940,452
Claims priority, application Japan, Sep. 4, 1991, 3-253132
Int. Cl.[5] C03B *23/023*
U.S. Cl. 65—106 **11 Claims**



1. An apparatus for bending a glass sheet, comprising:
a furnace for heating a glass sheet therein, said furnace having a gravity bending zone for bending the glass sheet due to gravity, a press bending zone for bending the glass sheet under pressure, and an annealing zone for annealing the bent glass sheet;
a ring mold for supporting the glass sheet thereon, said ring mold being movable, with the glass sheet supported thereon, along a feed path successively through said gravity bending zone, said press bending zone, and said annealing zone;
said ring mold comprising a central member and a pair of opposite wings angularly movably coupled to said central member;
said press bending zone comprising a fixed upper mold, a mold opening mechanism for turning said wings with respect to said central member when said ring mold is in said press bending zone, a movable lower mold assembly disposed below said fixed upper mold, and actuating means for moving said movable lower mold assembly to engage opposite edges of the glass sheet to lift and press the glass sheet against said upper mold.

5,302,177
TIN FLOAT BATH FOR MANUFACTURING SHEET GLASS UTILIZING RECUPERATIVE GAS BURNERS
Herbert A. Gessler, II, 439 Church Hill Rd, Venetia, Pa. 15367; Herbert A. Gessler, 101 Lexington Dr., Lawrence, Pa. 15055, and Matthew A. Gessler, 252 Papp Rd., Canonsburg, Pa. 15317
Filed Jul. 27, 1992, Ser. No. 920,399
Int. Cl.[5] C03B *18/18*
U.S. Cl. 65—162 **1 Claim**

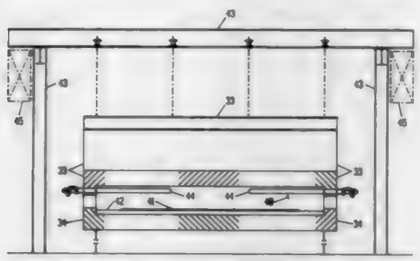
1. An apparatus for manufacturing sheet glass comprising a molten tin float bath which supports a molten glass ribbon, a bottom supporting said molten tin float bath, a pair of sidewalls connected to said bottom, one said sidewall on each side of and extending above said molten tin float bath and said molten

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glass ribbon, a top extending between and connecting said sidewalls above said molten tin float bath and said molten glass ribbon;

a plurality of recuperative gas burners mounted on each of said sidewalls with each said recuperative gas burner mounted in a parallel spaced relationship to adjacent burners;

each said recuperative gas burner having a heat-radiating chamber extending from said sidewalls and overlying said molten tin float bath and said molten glass ribbon and having a nozzle for producing a gas flame in said heat-radiating chamber, and each said recuperative gas burner including a gas inlet for supplying gas to said burner nozzle in said heat-radiating chamber, an air inlet for supplying gas to said burner nozzle in said heat-radiating



chamber, an exhaust outlet for exhausting burnt gas from said heat-radiating chamber, and a flange mount for mounting said recuperative gas burner to said sidewall;

said recuperative gas burners being mounted in said sidewalls utilizing said flange mount, with said gas inlet, said air inlet, and said exhaust outlet located on a side of said sidewall opposite said molten tin float bath and said molten glass ribbon so that gas and air entering said heat-radiating chamber are ignited and burned and said burnt gas is exhausted from said heat radiating chamber externally to said molten float bath and said molten glass ribbon preventing contamination of said molten float bath and said molten glass ribbon;

and a burner control panel for controlling said recuperative gas burners including a main valve train control, a burner ignition control, and a flame monitoring control.

5,302,178

HARDENING FURNACE FOR SHEETS OF GLASS AND THE LIKE

Alberto Severi, Modena, Italy, assignor to Poppi S.p.A., Reggio Emilia, Italy

Filed Feb. 18, 1992, Ser. No. 837,065

Claims priority, application Italy, Mar. 8, 1991, MO91A000033

Int. Cl.[5] **C03B** *27/00, 35/00;* **F27B** *9/24*

U.S. Cl. 65—350 **9 Claims**

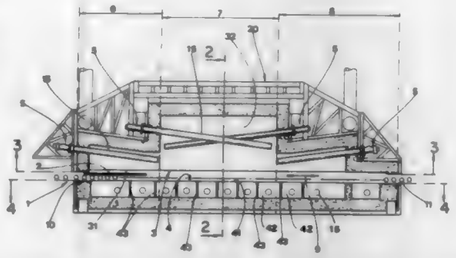
1. A hardening furnace comprising:

a conveyor plane (**1**) defined by means for supporting and transferring, selectively in two directions, in accordance with a pre-established longitudinal direction, sheets of glass (**2**);

an upper radiating surface (**3**), positioned above the conveyor plane (**1**), the upper radiating surface (**3**) being comprised of a plurality of longitudinal strips (**31**) arranged side-by-side and oriented parallel to the longitudinal direction of said plane (**1**), said longitudinal strips (**31**) being sub-divided, along the longitudinal direction, into at least three consecutive zones (**6, 7 and 8**) comprised of two end zones with a central zone between said two end zones;

a lower radiating surface (**4**) positioned beneath said plane (**1**), the lower radiating surface (**4**) being comprised of a plurality of transversal strips (**41**) arranged consecutively side-by-side and arranged transverse to the longitudinal direction of said plane (**1**);

a plurality of separate longitudinal chambers (**32**) located above said upper radiating surface, each longitudinal chamber (**32**) being defined by one of said longitudinal strips (**31**) and at least one corresponding longitudinal isolating wall of a plurality of longitudinal isolating walls (**33**);



a plurality of separate transversal chambers (**42**) located below said lower radiating surface, each transversal chamber (**42**) being defined by one of said transversal strips (**41**) and at least one corresponding transverse isolating wall of a plurality of transverse isolating walls (**43**);

at least one regulatable thermal energy supply device provided into each said longitudinal and transversal chamber (**32**) and (**42**) for supplying thermal energy to each of said longitudinal (**31**) or transversal (**41**) strips.

5,302,179

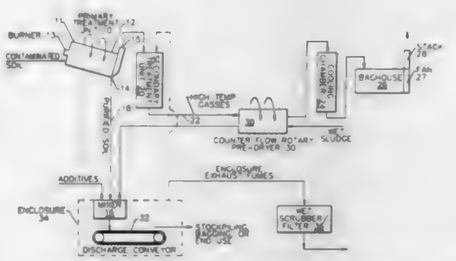
METHOD AND APPARATUS FOR PRODUCING USEFUL SOIL PRODUCTS FROM WASTE PRODUCTS

Larry R. Wagner, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Sep. 11, 1991, Ser. No. 757,827

Int. Cl.[5] **C05F** *7/00;* **A01G** *11/00*

U.S. Cl. 71—13 **10 Claims**



1. A method for enriching soil and comprising the steps of heating the soil in a primary treatment unit, and

mixing the heated soil with sedimentary sludge produced by a sewage treatment process, with the quantity and temperature of the heated soil being such as to heat and substantially sterilize in the sludge and with the quantity and water content of the sludge being such as to cool the heated soil and to reduce the amount of dust in the heated soil.

5,302,180

IRON HUMATE PRODUCT

Lawrence N. Hjersted, Bartow, Fla., assignor to Kemiron, Inc., Bartow, Fla.

Continuation of Ser. No. 751,872, Aug. 28, 1991, Pat. No. 5,213,692. This application Feb. 16, 1993, Ser. No. 18,287

Int. Cl.[5] **C05F** *11/02*

U.S. Cl. 71—24 **4 Claims**

1. An iron humate product having:

(a) an iron concentration ranging from fifteen to forty-five percent by weight on a dry solids basis;

(b) a concentration of humic substances equal to or greater than thirty percent by weight; and

(d) said product has a concentration of iron hydroxides that is less than 25 percent by weight of total iron present, wherein said iron humate product is produced by adding a sufficient concentration of an iron salt coagulant to a quantity of raw water having a pH between about 3.8 and 5.5 to reduce the organic color of the water and form a solid residue containing said iron humate product.

5,302,181

OXIDE-DISPERSION-STRENGTHENED HEAT-RESISTANT CHROMIUM-BASED SINTERED ALLOY

Toshiaki Morichika, Hirakata; Takashi Onishi, Suita; Hiroshi Yamamoto; Koichi Yanai, both of Osaka, and Hiroyuki Araragi, Hirakata, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Apr. 14, 1992, Ser. No. 868,191

Claims priority, application Japan, Apr. 26, 1991, 3-097000

Int. Cl.[5] **B22F** *9/00;* **C22C** *29/12*

U.S. Cl. 75—245 **2 Claims**

1. An oxide-dispersion-strengthened heat-resistant-sintered alloy including 0.2 to 2.0% by weight of Y_2O_3, wherein the Y_2O_3 is uniformly dispersed in a metal matrix by a mechanical alloying process, as discrete particles with a mean particle size of up to 0.1 μm, the metal being selected from the group consisting of:

(a) a metal consisting essentially of more than 0% to up to 20% of Fe, and the balance substantially Cr;

(b) a metal consisting essentially of 0% to up to 20% of Fe, at least one member selected from the group consisting of Al, Mo, W, Nb, Ta, Hf and Al-Ti in a total amount of more than 0% to up to 10%, and the balance substantially Cr;

(c) a metal consisting essentially of more than 0% to up to 20% of Fe, 0.1 to 2.0% of Ti, and the balance substantially Cr; and

(d) a metal consisting essentially of more than 0% to up to 20% of Fe, 0.1 to 2.0% of Ti, at least one member selected from the group consisting of Al, Mo, W, Nb, Ta, Hf and Al-Ti in a total amount of more than 0% to up to 10%, and the balance substantially Cr;

wherein said mechanical alloying process comprises forcibly finely dispersing said Y_2O_3 into said metal by means of a high energy ball mill.

5,302,182

METHOD OF PREPARING PARTICLES WITH A CONTROLLED NARROW DISTRIBUTION

Igor V. Gorynin; Boris V. Farmakovsky; Alexander P. Khinsky; Karina V. Kalogina, all of Leningrad, U.S.S.R.; Alfredo Riviere V., Caracas, Venezuela; Julian Szekely, Weston, and Navtej S. Saluja, Cambridge, both of Mass., assignors to Technalum Research, Inc., Cambridge, Mass.

Filed Sep. 5, 1991, Ser. No. 755,074

Int. Cl.[5] **B05B** *3/02*

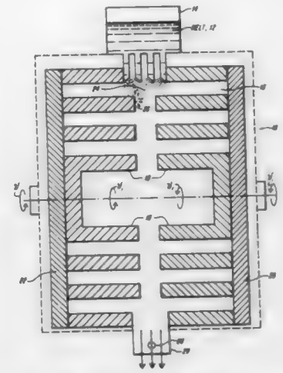
U.S. Cl. 75—334 **19 Claims**

1. A method for preparing a metal powder, comprising the steps of:

positioning at least two rotatable surfaces in a working chamber in facing relationship so as to define at least one gap between at least a portion of said facing surfaces, at least a portion of said facing surfaces having teeth disposed thereon which project into said gap;

introducing a molten metal stream into said gap;

rotating said surfaces along an axis of rotation substantially orthogonal to a direction of introduction of said molten



metal stream, whereby small particles of molten metal are formed within said gap by contacting said molten stream with said teeth;

solidifying said particles by heat loss to said disks and working chamber; and

collecting said particles.

5,302,183

RECOVERY OF PRECIOUS METALS FROM CATALYST RESIDUE

Gerben B. J. De Boer, and Melis Hasselaar, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 21, 1993, Ser. No. 6,395

Claims priority, application Netherlands, Jan. 23, 1992, 92200192.0

Int. Cl.[5] **C22B** *11/00*

U.S. Cl. 75—426 **12 Claims**

1. A process for recovering a precious metal from a non-aqueous effluent comprising the metal, which comprises contacting the effluent with a reduction agent, depositing the precious metal onto a carrier, and separating the precious metal loaded carrier from the effluent.

5,302,184

MANUFACTURE OF FERROALLOYS USING A MOLTEN BATH REACTOR

Robin J. Batterham, Sandringham; Roderick M. Grant, Doncaster; James V. Happ, Ringwood, all of Australia, and Glenn A. Thiele, Williams Lake, Canada, assignors to CRA Services Limited, Melbourne, Australia

PCT No. PCT/AU90/00233, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/15165, PCT Pub. Date Dec. 13, 1990

PCT Filed May 30, 1990, Ser. No. 768,432

Claims priority, application Australia, Jun. 2, 1989, PJ 4546

Int. Cl.[5] **C22C** *35/00, 38/18*

U.S. Cl. 75—501 **21 Claims**

1. A process for producing a ferroalloy or a slag that is capable of being converted to a ferroalloy comprising the following steps:

(a) injecting charge material including an alloying metal-containing material and a flux at controlled rates into a bath having a gas space thereabove; said bath containing molten material comprising a metal phase containing metallic iron;

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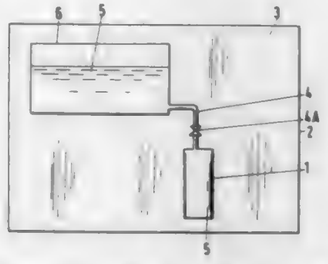
(b) injecting a carbonaceous material at controlled rates into the bath or into a gas space above the bath or both;
(c) injecting an oxygen-containing gas at controlled rates into the gas space above the bath;
(d) injecting a gas into the bath to assist reaction gases formed in the bath to create a transition zone in the gas space above the bath by projecting molten material from the bath into the gas space above the bath;
(e) combusting in said gas space above the bath, by means of the oxygen-containing gas, combustible reaction gases emitted from the bath to provide heat of post combustion;
(f) utilizing the heat of post combustion to heat said molten material projected into the transition zone;
(g) allowing molten material projected into the transition zone to fall back into the bath thereby transferring to the bath the heat of post combustion;
(h) controlling the rate of injection of the alloying metal-containing material, the flux, the oxygen-containing gas and the carbonaceous material to achieve rapid incorporation of the alloying metal-containing material and the flux into the bath as well as to control the oxidation/reduction environment within the bath and the proportion of the heating by post combustion;
(i) causing the alloying metal-containing material to be reduced and an alloying-metal so produced to report to the metal phase to form a ferroalloy, or causing the alloy metal-containing material to be oxidized and report to a slag phase; and
(j) recovering the ferroalloy from said metal phase or recovering said slag phase.

5,302,185

METHOD FOR THE HANDLING OF ALKALI METALS

Günther Steinleitner, Schriesheim, Fed. Rep. of Germany, assignor to ABB Patnet GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 11, 1992, Ser. No. 989,228
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141058
Int. Cl.[5] C22B *9/00*
U.S. Cl. 75—592 **9 Claims**



1. In a method of handling alkali metals, wherein the alkali metals are intermediately treated and filled into containers, the improvement which comprises:
intermediately treating and filling an alkali metal into a container in a defined temperature range and in a protective gas atmosphere selected from the group consisting of carbon dioxide, carbon monoxide and a gas having carbon dioxide and carbon monoxide as an essential component and which behaves inertly with regard to the alkali metal in the defined temperature range and which reacts with the alkali metal to form solids or passes into solution in a temperature range outside the defined temperature range.

5,302,186

PELLETISATION PROCESS

John R. Field, and Anthony P. Allen, both of West Yorkshire, England, assignors to Allied Colloids Limited, England

PCT No. PCT/GB91/00645, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO91/16463, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 23, 1991, Ser. No. 941,039
Claims priority, application United Kingdom, Apr. 26, 1990, 9009404
Int. Cl.[5] C22B *1/24, 1/242*
U.S. Cl. 75—771 **10 Claims**

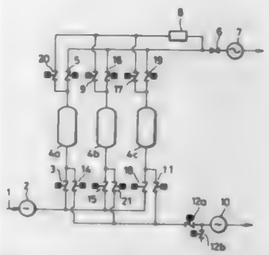
1. A process in which pellets of water insoluble particulate material are made by providing a mixture of the particulate material, moisture and a pelletising binder, forming moist green pellets by pelletising this mixture by a balling drum or disk pelletiser, applying a non-aqueous water displacing additive to the surface of the moist green pellets after they are substantially wholly formed and thereby displacing water from the surface of the pellets, and then drying the green pellets.

5,302,187

CONCENTRATION PROCESS OF GASEOUS CHLORINE

Hiroyuki Itoh; Yoshitsugu Kono; Shinji Takenaka, all of Fukuoka; Yukihiro Yoshikawa, Chiba; Isao Kikuchi, and Teruo Hirayama, both of Fukuoka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP90/01632, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991, PCT Pub. No. WO91/08824, PCT Pub. Date Jun. 27, 1991
Continuation of Ser. No. 752,606, Aug. 15, 1991, abandoned. This PCT application Dec. 14, 1990, Ser. No. 975,158
Claims priority, application Japan, Dec. 16, 1989, 1-324893; Mar. 27, 1990, 2-7500
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—11 **7 Claims**



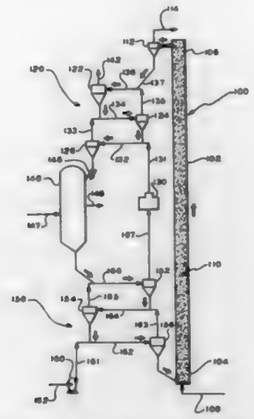
1. A process for concentrating gaseous chlorine comprising:
(a) introducing a gas containing carbon dioxide and chlorine into an adsorption column packed with a Y-type zeolite as a chlorine-adsorbable adsorbent to selectively separate the chlorine from the gas so that a substantially chlorine-free gas is obtained;
(b) stopping the introduction of the gas; and
(c) reducing the pressure of the adsorbent to a lower pressure than that during the gas introduction to desorb the chlorine, thereby obtaining a second gas having a chlorine concentration higher than that of the introduced gas, as well as regenerating the adsorbent.

5,302,188

NITROGEN OXIDES AND SULFUR OXIDES REMOVAL UTILIZING TRANSPORT LINE ADSORBER

Lewis G. Neal, Finleyville, and Warren Ma, Pittsburgh, both of Pa., assignors to Noxso Corporation, Bethel Park, Pa.

Continuation of Ser. No. 801,697, Dec. 2, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,864
Int. Cl.[5] B01D *53/12*
U.S. Cl. 95—34 **1 Claim**



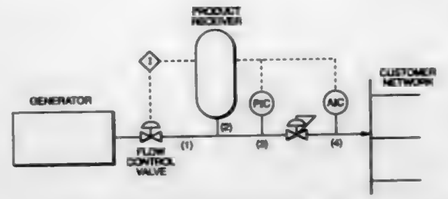
1. Process for utilizing cooled regenerated sorbent particles to substantially remove nitrogen oxides and sulfur oxides from pressurized flue gas, comprising the steps of:
providing sorbent particles suitable for adsorbing nitrogen oxides and sulfur oxides from said flue gas and providing said sorbent particles of a size in the range of about 70 to about 140 mesh;
transporting said sorbent particles in a fluidized state through a transport line adsorber utilizing said pressurized flue gas to cause said sorbent particles to substantially adsorb said nitrogen oxides and said sulfur oxides from said flue gas while said sorbent particles are being transported through said transport line adsorber by said pressurized flue gas, upon said sorbent particles adsorbing said nitrogen oxides and said sulfur oxides said sorbent particles becoming saturated sorbent particles;
separating said saturated sorbent particles from said flue gas to provide a stream of substantially nitrogen oxide and sulfur oxide free flue gas;
providing a source of heated gas;
passing said saturated sorbent particles through a plurality of interconnected cyclones utilizing said heated gas and gravity to heat said sorbent particles to remove therefrom said nitrogen oxides and to separate said sorbent and remove nitrogen oxides and to produce an off gas stream of heated gas carrying away said nitrogen oxides;
contacting said heated sorbent with a regenerant gas to substantially remove said sulfur oxides from said sorbent particles and to produce heated regenerated sorbent and an off gas stream of regenerant gas carrying away said sulfur oxides removed from said heated regenerated sorbent;
providing a cooling gas;
passing said heated regenerated sorbent through a second plurality of interconnected cyclones utilizing said cooling gas and gravity to cool said sorbent particles and to separate said sorbent particles from said cooling gas to produce cooled regenerated sorbent; and
returning said cooled regenerated sorbent to said transport line adsorber to repeat said steps for removing said nitrogen oxides and said sulfur oxides from said pressurized flue gas.

5,302,189

MEMBRANE NITROGEN GAS GENERATOR WITH IMPROVED FLEXIBILITY

Christian Barbe, Fontenay aux Roses, and Jean-Renaud Brugerolle, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Aug. 26, 1992, Ser. No. 935,169
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—54 **30 Claims**



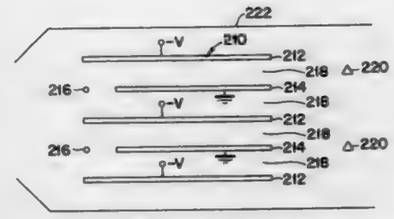
1. A method of generating nitrogen with improved flexibility, which comprises:
(a) generating a first nitrogen gas from a membrane nitrogen generator, said gas being of higher purity than required by customer demand during periods of low generator demand,
(b) storing said first nitrogen gas having higher purity in one or more product storage means, and
(c) mixing said stored first nitrogen gas from said one or more storage means with a second nitrogen gas having a lower purity than said stored first nitrogen gas, said lower purity gas being produced during periods of high generator demand, to produce an increased flow rate of final product which has a purity higher than that which would be produced by the generator alone at the same flow rate.

5,302,190

ELECTROSTATIC AIR CLEANER WITH NEGATIVE POLARITY POWER AND METHOD OF USING SAME

Tony G. Williams, Sanford, N.C., assignor to Trion, Inc., Sanford, N.C.

Filed Jun. 8, 1992, Ser. No. 894,936
Int. Cl.[5] B03C *3/08*
U.S. Cl. 95—57 **20 Claims**



8. An ionizing/collector cell for an electrostatic air cleaner, comprising:
a first conductive plate;
a second conductive plate that is grounded and is arranged parallel to said first conductive plate so as to create an air gap therebetween;
said second conductive plate including more corona discharging surfaces on said second conductive plate than on said first conductive plate; and
a source of negative high voltage electrically connected to said first conductive plate.

17. A method of removing particulate matter from a fluid stream, comprising the steps of:
providing a housing having a fluid inlet and a fluid outlet;

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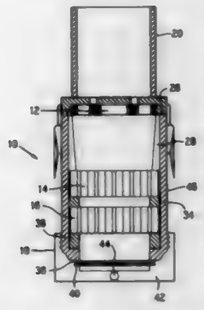
creating a fluid stream through said housing;
providing in said housing a first conductive plate and a second conductive plate parallel to said first conductive plate, and providing on said second plate means for creating a corona discharge;
grounding said second conductive plate;
using a negative high voltage to create an electric field extending from said second conductive plate to said first plate;
moving the fluid stream through said housing and past said plates so that particulate matter in the fluid stream is charged and collected on said first plate.

5,302,191

DENUDER FOR GAS SAMPLING

Petros Koutrakis, Wellesley; Stephen T. Ferguson, W. Concord, and Jack M. Wolfson, Jamaica Plain, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Sep. 1, 1992, Ser. No. 938,854
Int. Cl.[5] B01D *46/24*
U.S. Cl. 95—285 **19 Claims**



19. A method for sampling gas comprising a denuder for collection of gases, said denuder comprising a plurality of generally parallel elongated tubes having a surface formed from an inert non-metallic material, said tubes being configured and arranged to allow recovery of gaseous material collected on each said surface.

5,302,192

ANTI-FOULING COATING COMPOSITIONS

James McLoarie; Alistair A. Finnie, both of Tyne and Wear; Adrian F. Andrews, Northumberland; Ian S. Millichamp, Tyne and Wear, and Alexander Milne, Newcastle upon Tyne, all of England, assignors to Courtaulds Coatings (Holdings) Limited, London, England

PCT No. PCT/GB90/02019, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/09915, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 21, 1990, Ser. No. 916,158
Claims priority, application United Kingdom, Dec. 22, 1989, 8929111; Dec. 5, 1990, 9026392
Int. Cl.[5] C09D *5/14, 5/16*
U.S. Cl. 106—18.33 **19 Claims**

1. An anti-fouling coating composition which comprises an effective anti-fouling amount of a marine biocide and a binder which is a hydrolysable film-forming seawater-erodible polymer, wherein the polymer contains sulphonic acid groups in quaternary ammonium salt form.

5,302,193

WATERBASED GRAVURE INK AND METHOD OF PRINTING

Gerald Wouch, Lisle; Gerald J. Bender, Park Forest, and Gary Procknow, Chicago, all of Ill., assignors to R. R. Donnelley & Sons Co., Lisle, Ill.

Filed Dec. 21, 1992, Ser. No. 994,622
Int. Cl.[5] C09D *11/08*
U.S. Cl. 106—20 R **20 Claims**

1. In a waterbased gravure ink having a resinous vehicle, the improvement comprising the addition of an additive package comprising a siloxane nonionic surfactant and polyoxyalkylenated nonionic surfactant.

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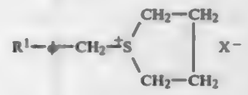
HEAT SENSITIVE COLOR DEVELOPING MATERIAL

Hisaki Tanabe, Yawata; Yasuhiko Nakae, Sakai; Shingi Nakano, Takatsuki, and Yoshio Eguchi, Ikeda, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jul. 8, 1991, Ser. No. 726,835
Claims priority, application Japan, Jul. 9, 1990, 2-181877
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—21 A **9 Claims**

1. A heat sensitive color developing material comprising:
(A) an electron donating color forming organic compound;
(B) a heat activating compound selected from the group consisting of compounds I, II, and III,

I

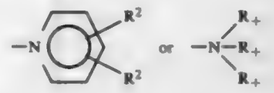


wherein R^1 is selected from the group consisting of H, —R, —OR, a halogen atom, and a nitro group, X is selected from the group consisting of AsF_6, SbF_6, BF_4, PF_6, ClO_4, $FeCl_4$, CF_3SO_3, RSO_3, and RCOO—, wherein R is selected from the group consisting of alkyl and cycloalkyl of 1 to 12 carbon atoms substituted by —OH,

II

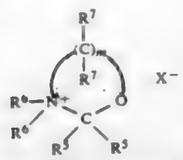


wherein R^2 is independently selected from the group consisting of —COR, —R^1, —OH, a cyano radical, and an amino radical, R^3 is selected from the group consisting of H, —R, and a halogen atom, A is selected from the group consisting of



wherein R^4 is independently selected from the group consisting of an alkyl, alkenyl of 1 to 12 carbon atoms substituted by a group selected from the group consisting of hydroxy, carboxy, nitro, alkoxy, alkanoyloxy of 1 to 4 carbon atoms, a phenyl group substituted by one or more of a halogen atom, nitro, cyano, amino, —R, and —OR, wherein R, R^1 and X are as defined above,

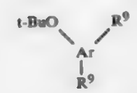
III



wherein R^5 is selected from the group consisting of H, —R, alkenyl of 2 to 3 carbon atoms and R^8, R^6 is selected from the group consisting of —R, alkenyl of 2 to 3 carbon atoms and R^8, R^7 is selected from the group consisting of H, hydroxy, —R, —OR, and —R^8, wherein —R^8 is selected from the group consisting of phenyl and phenyl substituted by a group selected from the group consisting of halogen atom, hydroxy, nitro, cyano, —NHR, —R, and —OR, m is an integer of 1 to 4 and R and X are as defined above, and

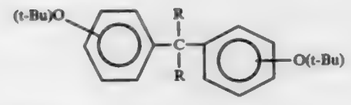
(C) a color developer selected from the group consisting of compounds IV, V, and a resin compound containing a chain of a t-butoxyphenyl group:

IV



wherein Ar is selected from the group consisting of benzene, naphthalene, and napthalene substituted by a group selected from the group consisting of t-butyl oxide and R^9, and R^9 is selected from the group consisting of H, —R, —OR, —OCOR, a halogen atom and a nitro group, and R is as defined above;

V



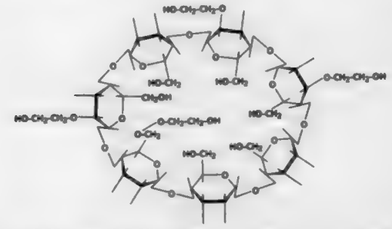
wherein R is as defined above.

5,302,195

INK COMPOSITIONS CONTAINING CYCLODEXTRINS

Barbel Helbrecht, Oakville; Marcel P. Breton, Mississauga; Kerstin M. Henseleit, Toronto, and Melvin D. Croucher, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed May 22, 1991, Ser. No. 704,161
Int. Cl.[5] C09D *11/14*
U.S. Cl. 106—25 R **37 Claims**



1. An ink composition which comprises an aqueous liquid vehicle, a dye which exhibits a water solubility of less than about 1 gram of dye per liter of water, and a cyclodextrin in an effective amount to enable a stable dispersion of the dye in the aqueous liquid vehicle, wherein the concentration by weight of the cyclodextrin in the ink is equal to two thirds or less of the concentration by weight of the dye in the ink.

5,302,196

MODIFIED CELLULOSE ETHERS AND THE USE THEREOF IN DISPERSION PAINTS

Christoph Meister, Wiesbaden; Reinhard Dönges, Bad Soden am Taunus; Walter Schermann, Mainz, and Walter Schrattenholz, Schnorbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 9, 1991, Ser. No. 756,821
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028746
Int. Cl.[5] C09D *101/32, 101/26;* C08L *01/32, 01/26*
U.S. Cl. 106—197.1 **16 Claims**

1. A water-soluble cellulose ether containing at least one fluorine-free radical attached via an ether link and selected from the group hydroxyethyl, hydroxypropyl, methyl, ethyl and carboxymethyl, and a hydrophobic substituent which comprises a fluorine-containing alkyl radical containing 3 to 24 carbon atoms, the fluorine content being 0.05 to 5, by weight, based on the dry weight of the cellulose ether wherein the hydrophobic substituent attached to the cellulose ether has one of the formulae selected from the group consisting of

(a) R—CH(OH)—CH_2—O—cellulose ether
(b) R^1—CHF—CFR—O—cellulose ether
(c) R—CHF—CFR^1—O—cellulose ether
(d) R—O—cellulose ether
(e) R—O—CH_2—CH(OH)—CH_2—O—cellulose ether
(f) Y—CHX—CX_2—O—cellulose ether
(g) Y—CHX—CXR^2—O—cellulose ether
(j) HCRR^2—CO—O—cellulose ether
(l) R—NH—CO—O—cellulose ether

in which R and R^1 are each a (C_1–C_{22})alkyl radical and R^2 is either H or a (C_1–C_{22})alkyl radical, the total number of the carbon atoms of the alkyl groups of the formulae (b), (c) and (j) being 3 to 24,
X is fluorine and/or hydrogen and
Y is —CN or —CO_2R^3, R^3 being a (C_1–C_{22})alkyl radical, and in the formulae (a) to (g) at least 3 carbon atoms, in the formula (j) and (l) at least 2 carbon atoms, of the substituents are linked with fluorine atoms.

5. A dispersion paint containing hydrophobically modified cellulose ethers added for the enhancement of the splashing characteristics of the paint, wherein the cellulose ether comprises one or more of the cellulose derivatives referred to in claim **1**.

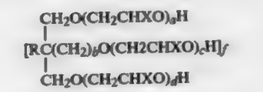
5,302,197

INK JET INKS

Palitha Wickramanayke, Corvallis, Oreg., and Sheau-Hwa Ma, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1992, Ser. No. 998,691
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 H **18 Claims**

1. An aqueous ink jet ink composition comprising:
(a) a pigment dispersion;
(b) an aqueous carrier medium; and
(c) a cosolvent combination comprising:
(i) at least 4.5% by weight based on the total weight of the ink composition of a polyol/alkylene oxide condensate having a solubility in water of at least 4.6% at 25° C. and represented by the formula:



wherein X is independently —H or —CH_3;
R=—H, —CH_3, —C_2H_5, —C_3H_9, —C_4H_9, or —$CH_2O(CH_2CH_2O)_cH$;
b=0 or 1;
a+d+f(c+e)=2–100;

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f=1–6; and

(ii) at least 2% by weight based on the total weight of the ink composition of a cyclic amide derivative having a solubility in water of at least 4.5% at 25° C. and represented by the formula:



wherein n=3–7,

R=H, or alkyl group having 1 to 4 carbon atoms, and optionally containing one or more hydroxy or ether groups,

m=0–3,

X=alkyl group having 1 to 4 carbon atoms, and optionally containing one or more hydroxy or ether groups, and wherein X replaces a H on the ring when m=1–3;

wherein the ratio of cosolvent (i) to cosolvent (ii) is in the range from 10:1 to 1:10 by weight.

5,302,198

COATING SOLUTION FOR FORMING GLASSY LAYERS

Derryl D. J. Allman, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 14, 1990, Ser. No. 582,570

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] C09K *3/00*; C08G *77/00*

U.S. Cl. 106—287.16 **9 Claims**

1. A coating solution for forming glassy layers comprising a solution of crosslinked polyorganosiloxane wherein said polyorganosiloxane has at least 30 atomic weight percent carbon and a silane adhesion promotor incorporated therein.

5,302,199

INTERFERENCE PIGMENTS

Constanze Prengel, Noordwijkerhout, Netherlands, and Klaus Bernhardt, Gross-Umstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 976,836

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137860

Int. Cl.[5] C09C *1/44*

U.S. Cl. 106—417 **14 Claims**

1. A pigment having improved covering power and high luster comprising a platelet-shaped substrate, optionally coated with at least one film comprising at least one metal oxide or hydroxide, and on said optionally coated substrate a layer prepared from at least one metal oxide having carbon black dispersed therein, prepared by a process comprising:

adding an aqueous carbon black dispersion and a solution of at least one metal salt to an aqueous suspension of said optionally coated platelet-shaped substrate at a pH suitable for hydrolysis of a film comprising said metal oxide(s) or hydroxide(s) and carbon black,

separating a pigment product and

igniting the product in an oxygen-containing atmosphere at a temperature of 700°–900° C. sufficient to oxidize the carbon black.

5,302,200

HYDRATING AND PLASTICIZING ADMIXTURE FOR DENSE CONCRETE

David A. Smetana; Alfonzo L. Wilson, and Richard J. Lenczewski, all of Cleveland, Ohio, assignors to Specrete - IP Incorporated, Cleveland, Ohio

Continuation-in-part of Ser. No. 526,244, May 18, 1990, abandoned, and a continuation-in-part of Ser. No. 571,549, Aug. 24, 1990, Pat. No. 5,114,617. This application Nov. 27, 1991, Ser. No. 800,604

Int. Cl.[5] C04B *14/02*, *14/08*

U.S. Cl. 106—482 **5 Claims**

1. An admixture for a concrete mix consisting essentially of silica fume and diatomaceous earth in the parts by weight ratio of 1 part of diatomaceous earth for 1 part of silica fume up to 1 part of diatomaceous earth for 8 parts of silica fume.

5,302,201

DEVICE FOR CARRYING OUT A SUGAR-COATING AND/OR FILM COATING METHOD

Roland Lücke, Paderborn, Fed. Rep. of Germany, assignor to Gebruder Lodige Maschinenbau GmbH, Fed. Rep. of Germany

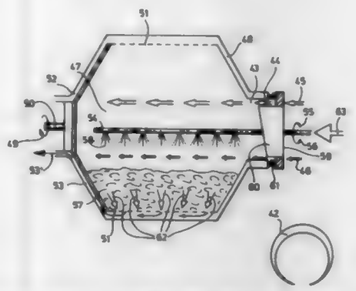
PCT No. PCT/DE91/00128, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO91/12790, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 16, 1991, Ser. No. 923,899

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1990, 4005208

Int. Cl.[5] B05C *5/00*, *11/08*

U.S. Cl. 118—19 **7 Claims**



1. Device for coating material, said device comprising:

a partially perforated drum mounted for rotation about an axis, the drum having an opening and an inner space for accepting a coating fluid flow wherein the inner space is associated with an element means which is disposed at the drum opening and in communication with said inner space, for guiding a gas flow as a controlled shell-shaped flow through a plane of the drum opening with at least one longitudinal component of the gas flowing in the direction of the drum axis, thought the inner space of the drum, the element means being formed by two cylindrical pipe sections which intersect one another and delimit an annular gap between the pipe sections, said annular gap containing the shell-shaped flow, and wherein the element is disposed in or directly at the drum opening and the axes of the cylindrical pipe sections are offset with respect to one another.

5,302,202

PROCESS AND DEVICE FOR APPLYING A COATING OR SUBSTANCE E.G. ADHESIVE FOR WASHING AND/OR DRYING AN ENDLESS CONVEYOR BELT OR THE LIKE

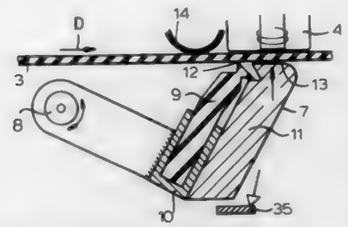
Johannes Zimmer, Ebentaler Str. 133, A-9020 Klagenfurt, Austria

Continuation of Ser. No. 635,115, Feb. 13, 1991, abandoned. This application Sep. 2, 1992, Ser. No. 939,843

Claims priority, application Austria, Jun. 13, 1989, 1446/89

Int. Cl.[5] B05C *11/04*

U.S. Cl. 118—70 **5 Claims**



1. A wiper system for a belt, comprising:

magnet means juxtaposed with one side of said belt;

a support swingably mounted on an opposite side of said belt and pivotal toward and away from said belt;

a magnetically attractable element on said support juxtaposed with said magnet means across said belt, said magnetically attractable element being formed with a shoulder turned toward said belt, said support being formed with a recess opening toward said belt and generally parallel to said magnetically attractable element;

a resilient working element received in said recess and generally spaced from said magnetically attractable element but deflectable toward said magnetically attractable element, said working element being formed with a head joined by a narrow neck with a body of said working element, said head having two edges, one of said edges forming a wiping edge engageable with said belt upon attraction of said magnetically attractable element toward said magnet means by magnetic force, the other of said edges bearing upon said shoulder upon attraction of said magnetically attractable element toward said belt.

5,302,203

APPARATUS FOR PRESSING WEBS USUALLY IN CONTACT WITH A FLOWABLE SUBSTANCE

Johannes Zimmer, Ebentaler Strasse 133, A-9020 Klagenfurt, Austria

Filed Jul. 10, 1991, Ser. No. 727,622

Claims priority, application Austria, Jul. 10, 1990, 1468/90; Aug. 6, 1990, 1649/90

Int. Cl.[5] B05C *1/08*

U.S. Cl. 118—117 **27 Claims**

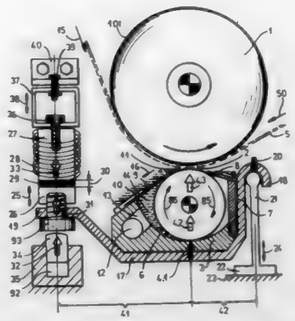
1. An apparatus for applying a flowable substance to or squeezing a flowable substance from a web of fabric, comprising:

an axially journaled counterroll of relatively large diameter and relatively large bending resistance;

a peripherally supported pressing roll having an axis parallel to said counterroll, a diameter substantially smaller than that of the counterroll and a bending resistance less than that of said counterroll, said pressing roll being juxtaposed with said counterroll so that said web passes between said pressing roll and said counterroll;

a peripheral bearing and pressing body formed in at least one piece and extending along said pressing roll and bearing peripherally thereon to press said pressing roll against said web and said web against said counterroll;

a bridge member formed in at least one piece and extending along a length of said pressing roll, receiving said peripheral-bearing and pressing body and supported on one longitudinal side thereof and engaged by at least one element bracing said bridge member along an opposite longitudinal side thereof; and



at least one force-generating unit acting upon said bridge member and urging said body against said pressing roll, said bridge member being supported along said one longitudinal side by at least one pivot on a force-takeup element and said bridge member being pivotally movable about said pivot relative to said force-takeup member.

5,302,204

METHOD AND APPARATUS FOR PRODUCING AN IMITATION STONE FINISH

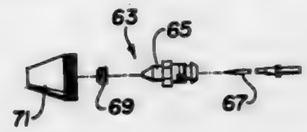
Michael R. Hayslip, Dallas, Tex., assignor to Clark Moulding, Co., Inc., Dallas, Tex.

Continuation of Ser. No. 569,593, Aug. 20, 1990, Pat. No. 5,113,786, which is a continuation of Ser. No. 276,871, Nov. 28, 1988. This application May 18, 1992, Ser. No. 885,134

The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.

Int. Cl.[5] B05B *7/12*; B05C *5/00*

U.S. Cl. 118—300 **9 Claims**



4. A spray gun for spraying a quantity of pigmented mixture of solvents onto a workpiece to produce an imitation stone finish, comprising:

a fluid nozzle;

a needle assembly within the fluid nozzle;

an air nozzle, mounted on the fluid nozzle, to mix air with solvents flowing through the fluid nozzle, the air nozzle having an opening that is small enough to spray in a series of erratic droplets; and

a core, mounted within the air nozzle, having a plurality of spiral grooves on the outer surface to cause air to spiral and to create turbulence within the air nozzle.

5,302,205

NAIL HOLE FILLER

Robert V. Priddy, 504 N. Central, Cushing, Okla. 74023

Filed Sep. 14, 1992, Ser. No. 944,667

Int. Cl.[5] B05C *17/06*

U.S. Cl. 118—406 **6 Claims**

1. A tool for guiding a filler material into an opening in a structure comprising:

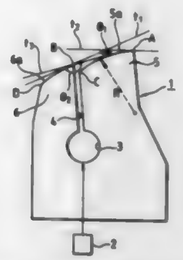
VOL 1161 ISS 2 AP 12 1994 UMI

a thin plate having a plurality of holes therethrough, with each hole of a different diameter,
the plate is substantially rectangular,
a handle attached at one end of the plate,
the handle oriented at a low angle in relation to the plate



so that a user may rest a hand member on the structure to steady the tool while guiding filler material,
the holes arranged in a row longitudinally of the plate, and
the holes are axially perpendicular to the plate and have a wider diameter at the bottom of the plate than at the top of the plate.

5,302,206
EXTRUSION-TYPE APPLICATION DEVICE
Norio Shibata; Shinsuke Takahashi, and Tsunehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 23, 1990, Ser. No. 498,137
Claims priority, application Japan, Apr. 5, 1989, 1-84711
Int. Cl.[5] B05C *3/02, 3/12*
U.S. Cl. 118—410 **1 Claim**

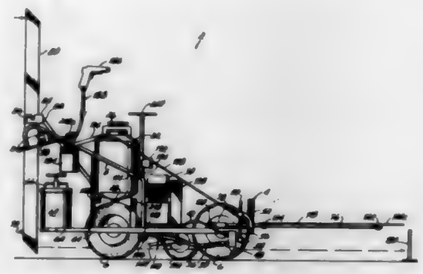


1. An extrusion-type application device for applying a liquid onto a surface of a flexible carrier, comprising: means for running a flexible carrier at a speed of at least 300 m/min; and an extruder having an extrusion slot defined between a back edge portion and a doctor edge portion, said liquid being expelled through said slot onto said surface of said carrier, a surface of said doctor edge portion being curved and having an effective width in a range of 0.1 to 2.0 mm, an inner longitudinal edge of a surface of said back edge portion being located at an outlet of said slot so that an angle θ_1 between a tangent to said surface of said back edge portion at said inner longitudinal edge and a tangent to said surface of said doctor edge portion at an outer longitudinal edge of said surface of said doctor edge portion and an angle θ_2 between said tangent to said surface of said back edge portion at said inner longitudinal edge and a tangent to said surface of said doctor edge portion and to said inner longitudinal edge are as follows:

$$\theta_1 < \theta_2 < 180°,$$

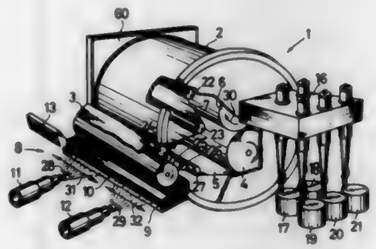
and a radius of curvature R of said surface of said doctor edge portion is approximately 1.0 mm, whereby said liquid can be applied to said surface of the flexible carrier at a speed in excess of 300 m/min.

5,302,207
LINE STRIPER APPARATUS WITH OPTICAL SIGHTING MEANS
Gregory D. Jurcisin, 114 Cleveland Ave., Milford, Ohio 45150
Filed Apr. 16, 1992, Ser. No. 869,751
Int. Cl.[5] B05C *11/00;* **B05B** *15/04*
U.S. Cl. 118—713 **24 Claims**



1. A striping apparatus for applying a paint line to a surface, comprising:
a mobile platform;
paint dispensing apparatus mounted on said mobile platform and operable for applying a paint line to a surface; and
optical sighting mans mounted on said platform, adapted to be viewed by an operator and operable to be sighted onto a point toward which said mobile platform is directed and which remains fixed during movement of said mobile platform, said optical sighting means facilitating the application of a paint line from said paint dispensing apparatus.

5,302,208
VACUUM COATING INSTALLATION
Helmut Grimm, Darmstadt; Thomas Krug, Rodenbach; Andreas Meier, Pfulingen; Klemens Ruebsam, Josgrund; Gerhard Steiniger, Ronneburg, all of Fed. Rep. of Germany; Mika Gamo, Kasukabe, Japan; Mamoru Sekiguchi, Kawaguchi, Japan; Mitsuru Kano; Hiroyuki Yasujima, both of Tokyo, Japan; Takashi Miyamoto, and Noboru Sasaki, both of Sugito, Japan, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany and Toppan Printing Co., Ltd, Tokyo, Japan
Filed Aug. 3, 199-, Ser. No. 924,149
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203632
Int. Cl.[5] C23C *14/28, 14/30*
U.S. Cl. 118—718 **20 Claims**

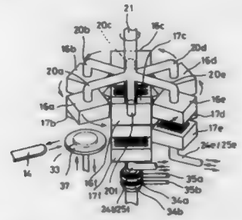


1. Vacuum coating installation, comprising:
a container in which is contained a material to be vaporized,

a vaporization arrangement for vaporizing the material disposed in the container,
material to be coated disposed at a distance from the material to be vaporized,
a microwave transmitter which transmits microwaves into the space between the material to be vaporized and the material to be coated,
characterized in that the material to be coated is a sheet or foil having a width, the which of the container is at least as large as the width of the sheet, and the microwave transmitter comprises a horn antenna with an opening the width of which corresponds substantially to the width of the container.

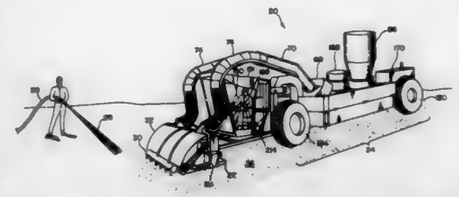
4. Vaccum coating installation as stated in claim 2, wherein the material to be coated is a synthetic film and which includes a transport arrangement for the synthetic film, characterized in that the transport arrangement comprises a feeder roller, a take-up roller, and a coating roller wherein that area of the synthetic film is coated which faces the material to be vaporized.

5,302,209
APPARATUS FOR MANUFACTURING SEMICONDUCTOR DEVICE
Kazuo Maeda; Kouichi Ohira, and Mitsuo Hirose, all of Tokyo, Japan, assignors to Semiconductor Process Laboratory Co., Ltd.; Canon Sales Co., Inc. and Alcan-Tech Co., Inc., all of Japan
PCT No. PCT/JP92/00135, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/15114, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 12, 1992, Ser. No. 930,709
Claims priority, application Japan, Feb. 15, 1991, 3-22358
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 **8 Claims**



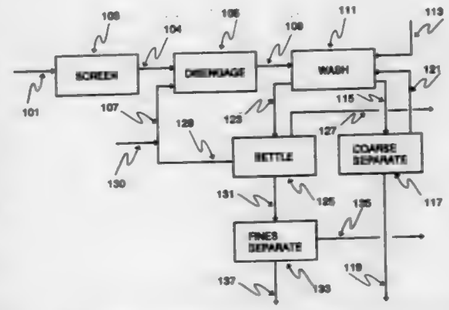
1. An apparatus for manufacturing a semiconductor device comprising:
a wafer-holder providing a plurality of wafer loading surfaces;
a rotary shaft for supporting and rotating said wafer holder so that said wafer loading surfaces rotate in a circle and in a single plane;
a gas dispersion unit mounted separate from and facing said wafer loading surfaces of said wafer holder;
at least one heater for heating said wafer holder;
a first pair of electrical contacts electrically connected to said heater and mounted on said rotary shaft; and
a second pair of electrical contacts connected to a power source and in sliding contact with said first pair of electrical contacts so that the rotation of said rotary shaft is not obstructed.

5,302,210
RAPID DEPLOYMENT METHOD FOR RECOVERING OIL FROM BEACHES
Gary R. Whyte, Aurora, Oreg., assignor to Fraser Environmental Systems, Inc., Seattle, Wash.
Filed Apr. 7, 1992, Ser. No. 864,869
Int. Cl.[5] B01D *33/00*
U.S. Cl. 134—25.1 **15 Claims**



1. A method for decontaminating a particulate media which has been contaminated with a fluid contaminate having a density less than water comprising the steps of:
irrigating the particulate media with sufficient water to substantially saturate the media;
applying an air flow across a surface of the media and substantially normal thereto with sufficient velocity so as to develop a water column supporting a frothy mixture of air, water and fluid contaminant;
directing the mixture into an air/fluid separation chamber without reducing the velocity of the air flow below a critical velocity so that droplets of the water and the fluid contaminant remain entrained in the air flow;
reducing the velocity of the air flow within the air/fluid separation chamber below the critical velocity so that the droplets of the water and the fluid contaminant fall into the fluid sump and coalesce into a water/contaminant fluid mixture; and
removing the water/contaminant fluid mixture from the fluid sump.

5,302,211
PROCESS FOR THE REMEDIATION OF CONTAMINATED SOIL
James W. Bunger; Christopher P. Russell; Donald E. Cogswell, all of Salt Lake City, and Jerald W. Wiser, Kaysville, all of Utah, assignors to James W. Bunger & Assoc., Inc., Salt Lake City, Utah
Filed Aug. 19, 1992, Ser. No. 932,090
Int. Cl.[5] B08B *1/02, 3/04, 3/08*
U.S. Cl. 134—25.1 **11 Claims**



1. A process for remediation of soil containing contaminants comprising;
(a) treating contaminant-containing soil with water to disen-

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gage contaminant from the soil and form a liquid phase containing water and contaminant,

(b) continuously introducing the treated soil and the liquid phase from step (a) into a wash zone at a first end of the wash zone,

(c) conveying the soil through the wash zone by moving the soil and the liquid phase between the first end and a second end of the wash zone in successive and discrete portions with essentially no mixing of the soil between the discrete portions and essentially no flow of water between discrete portions in the direction from first end toward the second end,

(d) introducing wash water into the wash zone by adding the wash water to each discrete portion as said discrete portion reaches the second end of the wash zone,

(e) conveying by gravity the wash water through the wash zone from the second end toward the first end counter to the conveyance of the discrete portions, such that the wash water passes between and through the discrete portions to remove contaminants from the liquid phase in each discrete portion,

(f) withdrawing each discrete portion from the wash zone as said discrete portion reaches the second end of the wash zone, said discrete portions reaching the second end containing soil and liquid phase with contaminant removed, and

(g) withdrawing contaminant-containing wash water from each discrete portion as said discrete portion enters the wash zone at the first end.

5,302,212

USE OF (PERFLUOROALKYL)ETHYLENES AS CLEANING OR DRYING AGENTS, AND COMPOSITIONS WHICH CAN BE USED FOR THIS PURPOSE

Daniel Desbiendras, Villetaneuse; Jean-Jacques Martin, Bois-Colombes, and Pascal Michaud, Saint-Gratien, all of France, assignors to Societe Atochem, France

Filed Feb. 20, 1991, Ser. No. 658,270

Claims priority, application France, Feb. 20, 1990, 90 02011

Int. Cl.[5] C23G *5/028*; H05K *3/26*; C11D *7/30, 7/50*

U.S. Cl. 134—40 **20 Claims**

1. Process for cleaning a solid surface which comprises removing grease or flux residue by contacting said solid surface with an effective amount of (perfluoroalkyl) ethylene of formula:

$$R_fCH{=}CH_2 \qquad (I)$$

in which R_f denotes a linear or branched perfluoroalkyl radical containing from 3 to 6 carbon atoms.

5,302,213

HEAT TREATING ATMOSPHERES FROM NON-CRYOGENICALLY GENERATED NITROGEN

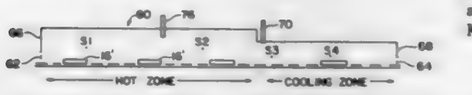
Brian B. Bonner, Nesquehoning, and Diwakar Garg, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1992, Ser. No. 995,623

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] C21D *1/00*

U.S. Cl. 148—208 **8 Claims**



1. A process for producing a nitrogen-based atmosphere inside a furnace for oxide annealing carbon steels comprising the steps of:

humidifying non-cryogenically produced nitrogen containing up to 5% by volume residual oxygen;

mixing said humidified non-cryogenically produced nitrogen with less than four times the amount of a hydrocarbon gas required to convert the residual oxygen to a mixture of carbon dioxide and moisture; and

feeding said mixture of humidified nitrogen and hydrocarbon gas into the heating zone of the furnace maintained at a temperature above about 750° C. so that said oxygen in said mixture reacts with said hydrocarbon, said reaction being essentially complete prior to said mixture contacting steel in said furnace so that the atmosphere produced in said furnace is oxidizing in nature; and

controlling pH_2/pH_2O and pCO/pCO_2 ratios in the furnace atmosphere to effect oxide annealing.

5,302,214

HEAT RESISTING FERRITIC STAINLESS STEEL EXCELLENT IN LOW TEMPERATURE TOUGHNESS, WELDABILITY AND HEAT RESISTANCE

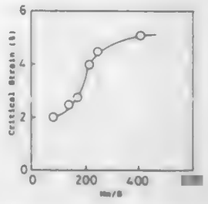
Yoshihiro Uematsu; Naoto Hiramatsu, and Sadayuki Nakamura, all of Yamaguchi, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 775,990, Nov. 20, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,840

Claims priority, application Japan, Mar. 24, 1990, 2-74785

Int. Cl.[5] C22C *38/22, 38/20*

U.S. Cl. 148—325 **10 Claims**



1. A heat resisting ferritic stainless steel excellent in low temperature toughness, weldability, and heat resistance which comprises, by weight,

an amount greater than zero and up to 0.03% of C,

from 0.1 to 0.8% of Si,

from 0.6 to 2.0% of Mn,

up to 0.006% of S,

up to 4% of Ni,

from 17.0 to 25.0% of Cr,

from 0.2 to 0.8% of Nb,

from 1.0 to 4.5% of Mo,

from 0.1 to 2.5% of Cu, and

an amount greater than zero and up to 0.03% of N,

the balance being Fe and unavoidable impurities, wherein the alloying elements are further adjusted so that the ratio of Mn%/S% is not less than 200, [Nb] defined by the equation:

$$[Nb] = Nb\% - 8\,(C\% + N\%)$$

is not less than 0.2, and (Ni% + Cu%) is not more than 4.

5,302,215

METHOD AND APPARATUS FOR SELECTIVELY HEATING A WORKPIECE SUBJECTED TO LOW TEMPERATURE THERMOMECHANICAL PROCESSING

George D. Pfaffmann, Farmington, Mich., assignor to Tocco, Inc., Boaz, Ala.

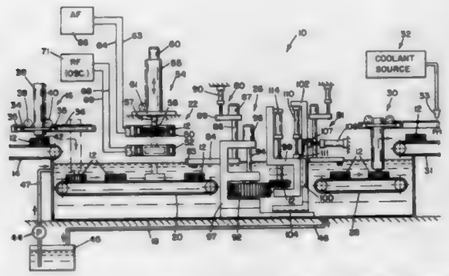
Continuation of Ser. No. 643,034, Jan. 18, 1991, abandoned, which is a continuation of Ser. No. 166,103, Mar. 9, 1988, Pat. No. 5,009,395, which is a division of Ser. No. 6,142, Jan. 23, 1987, Pat. No. 4,744,836, which is a continuation-in-part of Ser. No. 899,323, Aug. 22, 1986, Pat. No. 4,715,907, which is a division of Ser. No. 752,550, Jul. 8, 1985, Pat. No. 4,637,844.

This application Dec. 23, 1991, Ser. No. 813,068

The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.

Int. Cl.[5] C21D *1/04*

U.S. Cl. 148—567 **6 Claims**



1. A method for forming and heat treating a ferrous workpiece comprising the sequential steps of:

a) preheating said workpiece to a predetermined temperature above the M_s temperature by any means;

b) inductively heating the surface of said workpiece by a coil energized at a radio frequency to a second predetermined temperature which is higher than said first temperature and sufficient to permit plastic deformation of said surface;

c) mechanically forming the surface of said workpiece by a shaping tool below said surface temperature of said workpiece drops below a temperature whereat said workpiece cannot be plastically deformed; and,

d) then quenching said workpiece.

5,302,216

METHOD FOR PRODUCING BY CONTINUOUS HEAT TREATMENTS OIL-TEMPERED STEEL WIRES FOR SPRINGS HAVING HIGH STRENGTH AND HIGH TOUGHNESS

Heiji Sugita, Ichikawa; Yoshitaka Nitta, Yachiyo; Masao Toyama, Minoo, and Hiroharu Sawada, Ichikawa, all of Japan, assignors to Sugita Wire Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 866,016

Claims priority, application Japan, Apr. 10, 1991, 3-104806

Int. Cl.[5] C21D *9/02*

U.S. Cl. 148—595 **4 Claims**

1. An improved method for continuously hardening and tempering oil-tempered steel wires for springs having high strength and high toughness, comprising heating at an elevated temperature a medium carbon low alloy spring steel having a chemical composition corresponding to an Mf point lower than 80° C., containing carbon in amount of 0.40–0.65 mass %, Si, Mn, and at least one species selected from the group consisting of Cr, Ni, Mo and V, and which does not undergo martensitic transformation substantially upon oil hardening alone, performing a two-step accelerated hardening consisting of subjecting the heated spring steel to oil hardening, wiping oil from the steel, immediately followed by water hardening to produce a hardened steel, and subsequently performing tempering on the hardened steel to produce a tempered steel.

5,302,217

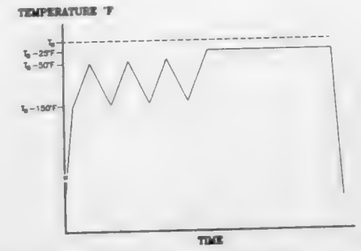
CYCLIC HEAT TREATMENT FOR CONTROLLING GRAIN SIZE OF SUPERALLOY CASTINGS

William J. Gostic, Tequesta; Charles M. Biondo, Jupiter, both of Fla., and Timothy P. Fuesting, Lynchburg, Va., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1992, Ser. No. 995,438

Int. Cl.[5] C22F *1/10*

U.S. Cl. 148—675 **7 Claims**



1. A method for heat treating superalloy castings, comprising the steps of:

a. cyclically annealing the casting with a cyclic heat treatment that cycles in a temperature range with low and high ends of about 50°–150° F. (28°–83° C.) below a second phase particle solvus temperature, respectively; and

b. after cyclically annealing, solution heat treating the castings at a temperature about 25° F. (14° C.) below the second phase particle solvus temperature.

5,302,218

SURFACE REFORMING METHOD OF ALUMINUM ALLOY MEMBERS

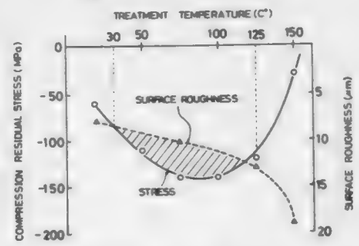
Kazuhiko Shirai, and Masaru Takatoo, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 22, 1992, Ser. No. 948,411

Claims priority, application Japan, Sep. 24, 1991, 3-243162

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—695 **4 Claims**



1. A surface reforming method for improving a fatigue strength of aluminum alloy members comprising the steps of:

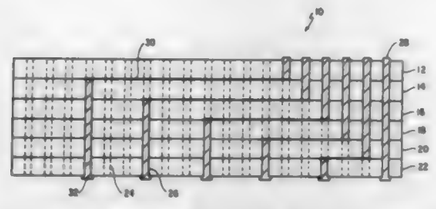
(a) performing a shot peening treatment on a surface of an aluminum alloy member at its softening temperature, and

(b) lowering the temperature of the aluminum alloy member on which the shot peening treatment has been performed, down to room temperature;

wherein the fatigue strength of the aluminum alloy member is increased without increasing a surface roughness of the surface of the aluminum alloy member.

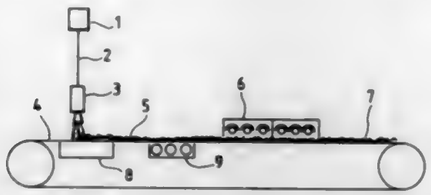
VOL 1161 ISS 2 APR 12 1994 UMI

5,302,219
METHOD FOR OBTAINING VIA PATTERNS IN CERAMIC SHEETS
Billy M. Hargis, Chattanooga, Tenn., assignor to Coors Electronic Package Company, Chattanooga, Tenn.
Filed Apr. 3, 1991, Ser. No. 679,722
Int. Cl.[5] B32B *18/00*
U.S. Cl. 156—89 16 Claims



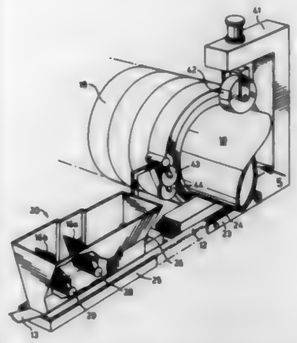
1. A process for fabricating a ceramic sheet for a multi-layer ceramic device, comprising the steps of:
a) providing a ceramic sheet;
b) forming a plurality of vias in said ceramic sheet; and
c) filling at least a portion of at least one of said vias with substantially non-conductive filler material to provide electrical insulation through said at least one via whereby the remaining unfilled vias form a via pattern.

5,302,220
METHOD FOR MANUFACTURING BULKY NONWOVEN FABRICS
Taiju Terakawa, Shiga; Shingo Horiuchi, Moriyama, and Sadaaki Nakajima, Shiga, all of Japan, assignors to Chisso Corporation, Osaka, Japan
Continuation-in-part of Ser. No. 494,317, Mar. 16, 1990, abandoned. This application Sep. 12, 1991, Ser. No. 757,956
Claims priority, application Japan, Apr. 6, 1989, 1-87559
Int. Cl.[5] D04H *3/05, 3/16*
U.S. Cl. 156—167 1 Claim



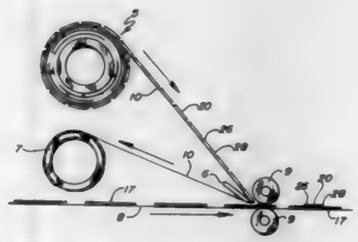
1. A method for manufacturing nonwoven fabrics in which a fiber bundle, comprising a plurality of composite fibers spun out of a spinneret, is blown against a working net conveyor by a drawing force of a first high-speed air stream while said first air stream is sucked and removed from below the net conveyor to deposit said fiber bundle on the net conveyor to form a web, and the web is then heat-treated to develop crimps and the fibers thermally adhere together at their points of contact, wherein:
a second, room temperature air steam is blown against said web from below said net conveyor for a time before the heat-treatment, with an intensity sufficient to make said web to float in such a manner that a bottom face of said web rises above said net conveyor by 0.2 to 30 mm thereby disentangling the web from the net conveyor, said web being heat-treated after exposure to said second, room temperature air stream wherein the floating of the web permits free development of crimps during the heat-treatment.

5,302,221
PIPE WRAPPING METHOD
Ronald W. Golden, 33 Head Street, Hamilton, Ontario, Canada L8R 1P8
Division of Ser. No. 997,422, Dec. 28, 1992, Pat. No. 5,261,995.
This application Sep. 8, 1993, Ser. No. 117,688
Int. Cl.[5] B65H *81/00*
U.S. Cl. 156—187 3 Claims



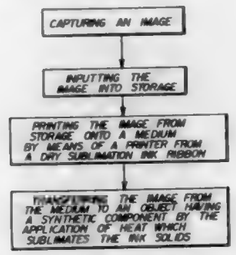
1. In a process for wrapping pipe wherein the pipe is rotated and advanced in relation to its axis while a continuous strip of wrapping material is conveyed to the pipe to be spirally wrapped thereon, the strip of wrapping material comprising a continuous carrier tape on which is deposited a continuous layer of cementatious material, said layer being of predetermined rectangular cross section and having one or more continuous notches along one longitudinal edge thereof, the other longitudinal edge being formed with one or more complementary notches as the strip is wound onto the pipe whereby to form a continuous coating with the notches interlocked, the improvement in which the continuous layer of cementatious material is formed as a plurality of superimposed layer portions including at least a base layer portion deposited onto the carrier tape and a flat top layer portion, said layer portions being deposited and formed successively, and being of successively reduced widths to define said longitudinal notches.

5,302,222
DEADFOLD STICKER METHOD
Brian D. Larsen, and Lloyd Tinklenberg, both of Worthington, Minn., assignors to Bedford Industries, Inc., Worthington, Minn.
Division of Ser. No. 790,349, Nov. 12, 1991, Pat. No. 5,227,210.
This application Feb. 19, 1993, Ser. No. 19,897
Int. Cl.[5] B32B *31/16, 31/04*
U.S. Cl. 156—226 4 Claims



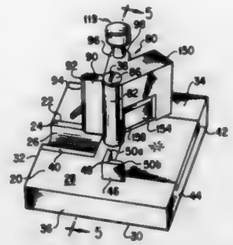
1. A method of dispensing deadfold reclosure stickers from a dispensing roll of the same onto the side of an open mouthed bag, wherein said dispensing roll comprises a length of flexible carrier tape having a low adhesion surface and a plurality of flexible deadfold reclosure stickers releasably adhered to said low adhesion surface for easy removal therefrom, each said deadfold reclosure sticker comprising a laminate of pliable layers and at least two deadfold wires in spaced parallel alignment permanently embedded in said laminate in a direction transverse to the length of said carrier tape, said method including the steps of:
A. conveying a multiplicity of open-mouthed bags in linear alignment with the mouth of the bags facing a common direction, said bags being unfilled and in flattened condition,
B. drawing said flexible carrier tape with its releasably adhered stickers from said dispensing roll around a peel element so as to sequentially release discrete reclosure stickers from said tape in a manner such that the leading edge of the sticker having a deadfold wire near it is first released and passed into temporary adherence onto the side of a conveyed bag at a location near the bag mouth so that the deadfold wires are in perpendicular relationship to the bag mouth, and
C. passing the bag having a temporarily adhered reclosure sticker thereon between rollers to apply pressure for permanently affixing said reclosure sticker on said bag.

5,302,223
PERMANENT HEAT SENSITIVE TRANSFER PRINTING PROCESS
Nathan Hale, Mt. Pleasant, S.C., assignor to Sawgrass Systems, Inc., Mt. Pleasant, S.C.
Continuation-in-part of Ser. No. 549,600, Jul. 9, 1990. This application Jul. 2, 1991, Ser. No. 724,610
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—230 3 Claims



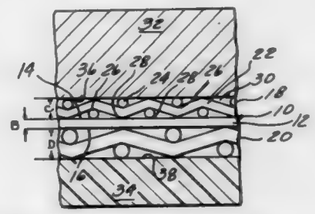
1. A method of printing a multiple color design using heat sensitive ink solids, comprising the steps of:
a. printing by the thermal means heat sensitive ink solids in at least three colors in a multiple color design onto a medium at a temperature which is below the temperature at which said heat sensitive ink solids activate; and
b. transferring said heat sensitive ink solids from said medium to an object on which the multiple color design is to appear by thermal means at a temperature which will cause said heat sensitive ink solids to activate, and cause sufficient of said heat sensitive ink solids to bond to said object in the multiple color design.

5,302,224
METHOD AND APPARATUS FOR CREATING IMAGES ON NAILS
Nevin Jenkins, Homosassa, and Martin Fleit, Miami, both of Fla., assignors to Fashion Nails, Inc., Miami, Fla.
Filed Jun. 18, 1992, Ser. No. 900,292
Int. Cl.[5] B41F *1/00*
U.S. Cl. 156—230 15 Claims



1. A method for applying an image on a person's nail comprising the steps of:
establishing a reference point,
positioning a person's nail in a block removably located on a supporting base at a first preselected location relative to said reference point,
creating an image composed of an image defining coating material on a plate removably located on the supporting base at a second preselected location relative to said reference point,
picking up the created image by a transfer means mounted on the supporting base from said second preselected location and transferring over the upper surface of the supporting base to the person's nail at said preselected location.

5,302,225
METHOD OF JOINING DISSIMILAR MATERIALS
James B. Padden, West Bloomfield, Mich., assignor to Purolator Products Company, Greensboro, N.C.
Continuation of Ser. No. 457,304, Jan. 11, 1983, Pat. No. 5,076,875. This application Nov. 1, 1990, Ser. No. 607,520
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] C09J *5/02*
U.S. Cl. 156—309.3 9 Claims



1. A method for forming a strong, permanent bond between a surface of a first element and a surface of a second element, said surfaces of said first and second elements being incompatible for forming a strong, permanent bond directly therebetween, said method comprising the steps of:
providing a non-porous metallic sheet, said sheet having a first side and a second side;
joining a first porous metallic mesh to said first side of said sheet;
joining a second porous metallic mesh to said second side of said sheet;

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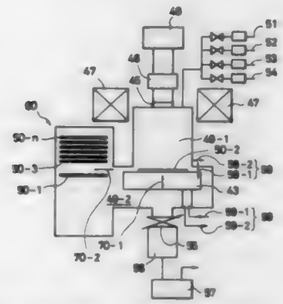
applying a solvent to said surface of said first element;
pressing together said surface of said first element and said first porous metallic mesh to bond said first element to said first porous metallic mesh; and
bonding said surface of said second element to said second porous metallic mesh to thereby form a strong, permanent bond between said first element and said second element.

5,302,226

APPARATUS FOR MICROWAVE PROCESSING IN A MAGNETIC FIELD

Shunpei Yamazaki, Tokyo; Naoki Hirose, Shimonoseki; Masaya Kadono, Atsugi; Kenji Itoh, Zama; Toru Takayama; Yasuyuki Arai, both of Atsugi, and Noriya Ishida, Asahikawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 537,300, Jun. 13, 1990. This application May 29, 1992, Ser. No. 892,710
Claims priority, application Japan, Jun. 15, 1989, 1-152909; Jun. 15, 1989, 1-152910
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **22 Claims**



1. A plasma processing apparatus comprising:
a reaction chamber;
means for emitting a microwave to said reaction chamber from a microwave window placed on one side of the reaction chamber;
means for inducing a magnetic field in said reaction chamber;
a substrate holder coaxially disposed in said reaction chamber for supporting a substrate to be treated;
a gas feeding system for inputting a process gas into the reaction chamber; and
an evacuation means provided on another side of said reaction chamber so that an exhaust gas is discharged from the reaction chamber through a gap between said holder and an inside wall of said reaction chamber;
wherein the gap between said substrate holder and the inside wall of said reaction chamber is not larger than ¼ of the wavelength of the emitted microwave such that the maximum value of the gap is solely a function of the frequency of the emitted microwave.

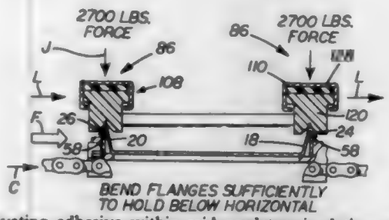
5,302,227

METHOD FOR CLOSING A HEAT-RESISTANT CARTON

Bruce H. Dalrymple, Loganville; Charles R. Landrum, Dunwoody, and Randall L. Stauffer, Lithia Springs, all of Ga., assignors to Kiklok Corporation, Decatur, Ga.

Filed Mar. 20, 1992, Ser. No. 855,519
Int. Cl.[5] B32B *31/12*; B31B *1/44*; B65B *51/00*
U.S. Cl. 156—443 **22 Claims**

12. A continuous closing method including sealing a cover with side edge extensions on a paperboard carton with corresponding side flanges defined by fold lines on the body and the interior coated with heat resistant material comprising the steps of:
feeding the carton continuously along a path with said side flanges upstanding;
bending the flanges downward during the continuous feed movement with a force sufficient to cause the flanges to fold and, when released, to remain free and below a plane passing through the fold lines;
placing the cover on the carton so as to lie substantially in said plane and with the edge extensions overlying said flanges;



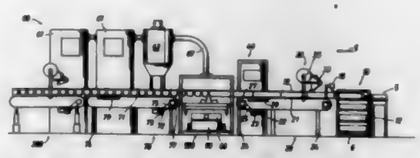
activating adhesive within said predetermined time while the flanges remain free in the at least half-V formed between the flanges and the cover;
said predetermined time being sufficient to allow full adhesive activation; and
pressing said flanges against said cover for sealing after the adhesive activation;
whereby efficient sealing of the flanges occurs during continuous feed movement and while the flanges remain free during adhesive activation.

5,302,228

APPARATUS AND METHOD FOR MAKING V-GROOVE INSULATION AND TANK WRAP

David Holland, 518 Sunpark, Friendswood, Tex. 77546

Division of Ser. No. 684,016, Apr. 11, 1991, Pat. No. 5,134,917. This application May 19, 1992, Ser. No. 884,798
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—510 **7 Claims**



1. An apparatus for fabricating tank wrap of desired thickness having fibers oriented generally in the thickness direction from lengths of insulation material having fibers oriented generally in the length direction, said apparatus comprising:
(a) a frame;
(b) a first conveyor system comprising an endless loop belt disposed along the frame and adapted to travel in a longitudinal direction;
(c) a means for feeding situated at an upstream end of the conveyor system, and adapted to position the lengths of insulation material lengthwise along the belt, such that the fibers are oriented generally parallel to the direction of travel;
(d) a means for cutting situated downstream of the feeding means and adapted to completely sever the insulation material across the length, at intervals equal to the desired thickness of the tank wrap to be fabricated wherein the means for cutting comprises;
(i) a base comprising a generally parallel pair of rods;

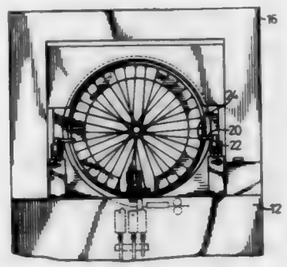
(ii) saw mounts comprising a generally parallel pair of rods each independently slidably and rotatably disposed on and oriented generally perpendicular to the base rods;
(iii) a pair of saws, each slidably mounted on one of the saw mounts;
(iv) a saw mount movement means for each saw mount affixed to each base rod for slidably moving each saw mount independently along the base;
(v) a saw mount means for each saw affixed to each saw mount rod for slidably moving each saw along the saw mount rods; and
(vi) a saw mount rotation means for each saw mount affixed to the saws mounts for rotating the saw mounts about its axis of symmetry to set the saw cutting angle;
(e) a second conveyor system comprising a second endless belt disposed along the frame and adapted to travel in the longitudinal direction and transport the severed lengths away from the cutting menus, and off of the second conveyor system;
(f) a third conveyor system comprising a third conveyor system comprising a third belt disposed along the frame and adapted to travel in the longitudinal direction, which is positioned downstream and below the second conveyor system to catch the severed lengths as they convey off of the second conveyor system;
(g) a means for reorienting situated at an upstream end of the third conveyor system and adapted to reorient the severed lengths lengthwise across the third belt such that the fibers of the severed lengths are now oriented generally perpendicular to the direction of travel;
(h) an means for abutting located downstream of the reorienting means and adapted to place the severed lengths in an abutted relationship while maintaining the conveyor system to catch the severed lengths as they convey off of the second conveyor system;
(i) a means for backing situated downstream of the abutting means and adapted to affix backing to the abutted severed lengths to form a continuous sheet of tank wrap.

5,302,229

APPARATUS FOR APPLYING A RIM TAPE

Chien F. Lai, No. 51, 22 Road, Taichung Industrial Park, Taichung, Taiwan

Filed Nov. 10, 1992, Ser. No. 973,907
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—512 **10 Claims**



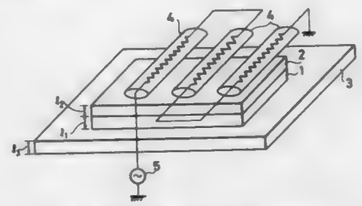
1. An apparatus for applying a wheel rim tape around a wheel rim, comprising:
a table;
a first means comprising a frame against which the wheel rim is disposed, at least a robot for firmly abutting the wheel rim against said frame, and a spoke-trapping bar for trapping one of a number of spokes of the wheel rim;
a second means for shearing a loop from a strap of wheel rim tape and for adhering first and second terminal portions of the loop, the loop manually sited about the wheel rim.

5,302,230

HEAT TREATMENT BY LIGHT IRRADIATION

Masumitsu Ino, Yokohama, and Katsuhiko Tani, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 485,826, Feb. 27, 1980, abandoned, which is a continuation of Ser. No. 223,689, Jul. 25, 1988, abandoned, which is a continuation of Ser. No. 818,121, Jan. 10, 1986, abandoned. This application Aug. 5, 1991, Ser. No. 741,237
Claims priority, application Japan, Jan. 11, 1985, 60-2033; Jan. 14, 1985, 60-3178; Apr. 1, 1985, 60-66588; Apr. 1, 1985, 60-66589
Int. Cl.[5] C30B *1/02*
U.S. Cl. 156—603 **36 Claims**



1. A heat-treating method comprising the steps of:
providing a substrate of an electrically insulating material, having first and second sides opposite to each other and having formed on the first side thereof a thin film of amorphous silicon;
placing said substrate on a support plate with the second side of said substrate in contact with a first side of said support plate;
irradiating at least said support plate with blanket irradiation of light which is transmissible through said substrate without appreciable absorption and which is preferentially absorbed by and thus heats said support plate to cause said support plate to conduct sufficient heat to an entire surface of said thin film to cause said thin film to monocrystallize in a solid phase process;
wherein said irradiating is carried out from the first side of the support plate; and
removing said substrate from said support plate after said irradiating step.

5,302,231

CVD DIAMOND BY ALTERNATING CHEMICAL REACTIONS

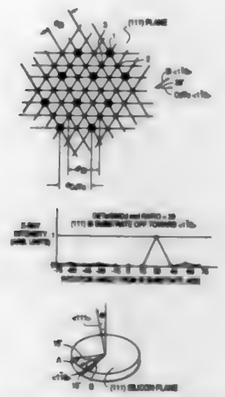
Harold P. Bovenkerk, Worthington, Ohio; Thomas R. Anthony, Schenectady, N.Y.; James F. Fleischer, Scotia, N.Y.; William F. Banholzer, Columbus, Ohio, assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 618,149, Nov. 26, 1990, abandoned. This application Oct. 5, 1992, Ser. No. 956,817
Int. Cl.[5] C30B *25/00*
U.S. Cl. 156—614 **5 Claims**

1. A method for growing diamond on a diamond substrate by chemical vapor deposition substantially free of atomic hydrogen which comprises:
alternatingly contacting at elevated temperature said diamond substrate with a gas having the formula C_nX_m and then with a gas having the formula C_lZ_p, wherein
(a) X and Z each form single bonds with C;
(b) X and Z are reactable to form ZX or a derivative thereof;
(c) the Z—X bond is stronger than the C—X bond; and
(d) the Z—X bond is stronger then the C—Z bond,
wherein n, m, l, and p are integers wherein l can be zero.

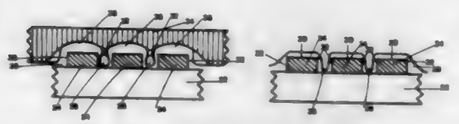
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,232
(111) GROUP II-VI EPITAXIAL LAYER GROWN ON (111) SILICON SUBSTRATE
Hiroji Ebe, and Akira Sawada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 9, 1992, Ser. No. 987,683
Claims priority, application Japan, Jan. 31, 1992, 4-16663
Int. Cl.[5] H01L *21/20*
U.S. Cl. 156—614 15 Claims



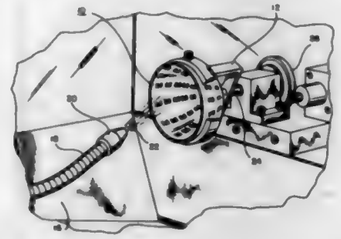
1. A composite crystal structure comprising:
a substrate of a material selected from the class consisting of silicon, gallium arsenide, and gallium arsenide (GaAs) on silicon and having a crystal orientation in the (111) plane;
a group II–VI epitaxial layer grown on the substrate and having a crystal orientation in the (111) plane; and
the respective crystal orientations of said substrate and said group II–VI epitaxial layer having a 30 degree in-plane rotation slip therebetween.

5,302,233
METHOD FOR SHAPING FEATURES OF A SEMICONDUCTOR STRUCTURE USING CHEMICAL MECHANICAL PLANARIZATION (CMP)
Sung C. Kim, and Scott Meikle, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Mar. 19, 1993, Ser. No. 34,421
Int. Cl.[5] H01L *21/461*
U.S. Cl. 156—636 18 Claims



1. In semiconductor manufacture, a method for forming a semiconductor structure, comprising:
providing a semiconductor structure with patterned features formed on a substrate said features forming a topography;
providing a chemical mechanical planarization apparatus having a polishing pad soft enough to conform to the topography of the features;
rotating the substrate with respect to the polishing pad while holding the substrate against the polishing pad with a predetermined force;
contouring and rounding the topography of the features by conforming a shape of the polishing pad to the features;
controlling process parameters and continuing the contouring for a time period sufficient to achieve a desired topography for the features to facilitate a subsequent deposition onto the contoured topography; and
depositing a layer of material over the contoured topography.

5,302,234
SURGICAL CUTTING INSTRUMENT FORMING METHOD
Richard L. Grace, Russellville; Jeff Grace, Dover; James Sturtevant, Dardanelle, all of Ark., and Ronald E. Vansaghi, Arlington, Tex., assignors to Grace Manufacturing Inc., Russellville, Ark.
Filed Jan. 28, 1993, Ser. No. 10,359
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—640 10 Claims

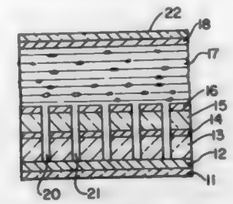


1. A method of manufacturing a nonplanar, sheet metal tool form from a planar metal blank of the type having two surfaces with a first surface opposing a second surface, the method comprising the steps of:
applying to the first surface of the metal blank a predetermined design of etching resistant material defining exposed areas separated by resist areas;
applying a layer of etching resistant material to the second surface of the metal blank which overlies at least the exposed areas on the first surface of the metal blank;
shaping the metal blank into a nonplanar shape; and
subjecting the exposed areas on the first surface of the metal blank to an etchant to form a surface with a cutting edge, the etchant being applied solely from the first surface of the metal blank, whereby the cutting edges so formed terminate in sharpened surfaces in the second surface and are protected by the layer of etching resistant material on the second surface of the metal blank.

5,302,235
DUAL ANODE FLAT PANEL ELECTROPHORETIC DISPLAY APPARATUS
Frank J. DiSanto, North Hills, and Denis A. Krusos, Lloyd Harbor, both of N.Y., assignors to Copyteie, Inc., Huntington Station, N.Y.
Continuation-in-part of Ser. No. 345,825, May 1, 1989, Pat. No. 5,053,763. This application Jun. 21, 1991, Ser. No. 719,021
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] G09G *3/34*
U.S. Cl. 156—643 7 Claims

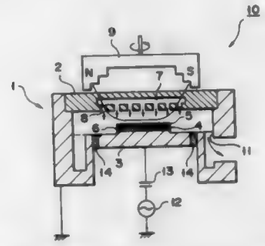
1. A method of fabricating an electrophoretic display comprising the steps of:
forming a cathode configuration on a glass sheet wherein said cathode consists of a plurality of separate metallic lines,
applying a first insulator to cover said cathode,
coating said insulator with a thin layer of a first metal,
applying a second insulator layer to cover said first metal layer,
coating said second insulator layer with a thin layer of a second metal,

forming a first pattern consisting of a plurality of transverse lines to said cathode lines in said second metal layer,
removing said second insulator layer between said between said first pattern of lines and said cathode lines,
forming a second pattern consisting of a plurality of congruent lines to said first pattern of lines,



removing said first insulating layer between said second pattern of lines and said cathode lines to form an electrophoretic display structure,
applying a covering layer of insulator over said structure.

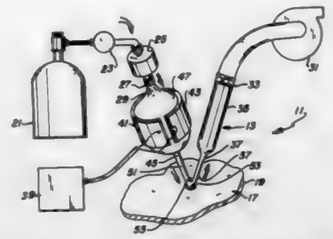
5,302,236
METHOD OF ETCHING OBJECT TO BE PROCESSED INCLUDING OXIDE OR NITRIDE PORTION
Yoshifumi Tahara, Yamato; Yoshihisa Hirano, Yokohama; Isahiro Hasegawa, Zushi, and Keiji Horioka, Kawasaki, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan
Filed Oct. 18, 1991, Ser. No. 779,376
Claims priority, application Japan, Oct. 19, 1990, 2-283155; Nov. 5, 1990, 2-300361
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 11 Claims



1. A method of etching an object to be processed which contains at least an oxide or nitride portion, and a substrate which comprises:
introducing an object to be processed into a processing vessel,
introducing into the processing vessel a stream of carbon monoxide gas and a stream of fluorine-containing gas, wherein the flow rate of said stream of carbon monoxide gas is sufficiently greater than the flow rate of said fluorine-containing gas to achieve a plasma characterized by an etch rate of the oxide or nitride portion of a selectivity ratio of at least 20 with respect to the substrate.

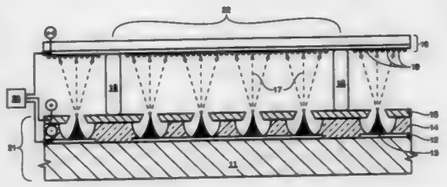
5,302,237
LOCALIZED PLASMA PROCESSING
Donald R. Larson, Arvada, and David L. Vessey, Boulder, both of Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
Filed Feb. 13, 1992, Ser. No. 835,293
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 18 Claims

1. An apparatus for processing a portion of a surface of a unit utilizing a plasma processing agent while leaving other portions of the unit unexposed to the processing agent and accessible during processing, said apparatus comprising:
a partial enclosure having an open side and in part defining a processing area, said enclosure having an access for the plasma processing agent to the processing area and an outlet from said processing area;
a plasma formation chamber upstream of said processing area and communicating therewith through said access;



pumping means connected with said outlet from said processing area for pumping reactive species created in said formed plasma from said formation chamber to said processing area; and
sealing means at said open side of said partial enclosure for releasably establishing a seal between said partial enclosure and the surface of the unit surrounding the portion of the surface to be processed so that said processing area is established by said partial enclosure, said sealing means and the portion of the surface of the unit to be processed.

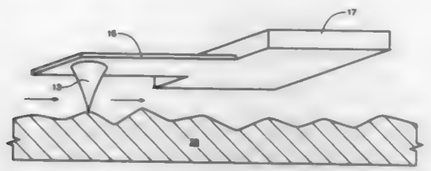
5,302,238
PLASMA DRY ETCH TO PRODUCE ATOMICALLY SHARP ASPERITIES USEFUL AS COLD CATHODES
Fred L. Roe, and Kevin Tjaden, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed May 15, 1992, Ser. No. 883,074
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 14 Claims



1. An in situ etch process for the formation of emitter tips, said process comprising the following steps:
providing a substrate having a mask layer and a photoresist layer disposed thereon;
patterning said photoresist layer and said mask layer; and
subjecting said substrate having said mask layer and said photoresist layer disposed thereon to a plasma comprising a halogenated species in a plasma reactor, thereby forming said emitter tips, said emitter tips being formed in a single etch step.

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5,302,239
METHOD OF MAKING ATOMICALLY SHARP TIPS USEFUL IN SCANNING PROBE MICROSCOPES
Fred L. Roe, and Kevin Tjaden, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed May 15, 1992, Ser. No. 884,482
Int. Cl.[5] G21K *7/00*
U.S. Cl. 156—643 **15 Claims**



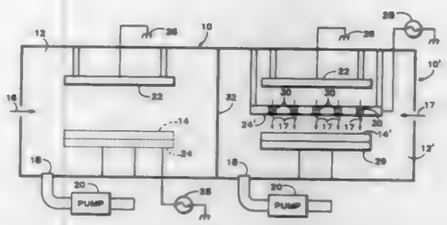
1. A process for the formation of microtips, said process comprising the following steps:
exposing a patterned substrate to a plasma, thereby creating microtips having a tip size less than 10Å; and
segmenting the substrate in order to separate at least some of the plurality of microtips from each other.

5,302,240
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE
Masaru Hori, Aichi; Hiroyuki Yano, Yokohama; Keiji Horioka, Kawasaki; Hisataka Hayashi, Urayasu; Sadayuki Jimbo, Yokohama; Haruo Okano; Kazuhiro Tomioka, both of Tokyo; Yasuhiro Ito, and Haruki Mori, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation-in-part of Ser. No. 824,095, Jan. 22, 1992, Pat. No. 5,240,554. This application Feb. 19, 1993, Ser. No. 20,193
Claims priority, application Japan, Jan. 22, 1991, 3-21569; Jul. 30, 1991, 3-211302; Jan. 13, 1992, 4-4197; Jan. 13, 1992, 4-4198; Feb. 19, 1992, 4-032060; Jul. 17, 1992, 4-191076
Int. Cl.[5] H01L *2/306*; B44C *1/22*; C03C *15/00*; C23F *1/00*
U.S. Cl. 156—643 **22 Claims**



13. A dry-etching method comprising the steps of:
forming a carbon film on a substrate to be etched;
forming a resist pattern on said carbon thin film;
selectively etching said carbon film using said resist pattern as a mask to form a carbon film pattern.,
selectively etching said substrate to be etched using said carbon film pattern as a mask or said resist pattern and said carbon film pattern as masks;
heating said carbon film pattern; and
removing said carbon film pattern by oxygen radicals.

5,302,241
POST ETCHING TREATMENT OF SEMICONDUCTOR DEVICES
David A. Cathey, Jr., Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 658,183, Feb. 20, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,479
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—664 **1 Claim**



1. An IC process of making, comprising:
a) providing a semiconductor wafer, having an etching area comprising an exposed silicon dioxide surface, at least one expose metal line on the silicon dioxide surface, and an exposed photoresist surface that covers at least part of the top surface of the metal line;
b) etching the wafer, in the etching area, using a compound containing bromine, the bromine reacting with the exposed surfaces of the photoresist layer, metal line, and silicon dioxide;
c) completing the etching process, whereby the bromine superadjacent to exposed surfaces in the etching area; and
d) exposing the bromine on the etching area surfaces to silicon tetrafluoride (SiF4), in an amount that replaces bromine, whereby the fluorine will not corrode the exposed etching area surfaces when exposed to moisture.

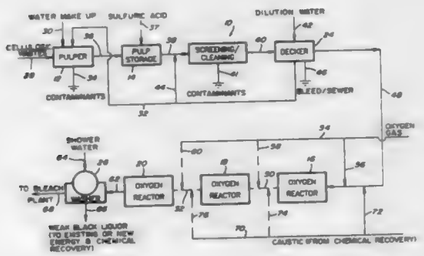
5,302,242
PROCESS AND COMPOSITION FOR DEINKING DRY TONER ELECTROSTATIC PRINTED WASTEPAPER
Sandra K. Richmann, Jacksonville Beach, and Mary Beth Letscher, Jacksonville, both of Fla., assignors to PaperChem Inc. Betz, Jacksonville, Fla.
Continuation-in-part of Ser. No. 691,210, Apr. 25, 1991, Pat. No. 5,141,598. This application Apr. 20, 1992, Ser. No. 871,366
The portion of the term of this patent subsequent to Aug. 25, 2008, has been disclaimed.
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—5 **8 Claims**

1. In the deinking of electrostatic printed wastepaper, a process for enhancing the aggregation of electrostatic toner particles and allowing for the separation of the particles from pulp fibers, said process comprising adding to an aqueous slurry of the electrostatic printed wastepaper an amount, sufficient for the intended purpose, of a synergistic combination of at least two of the following components the percentage range of each component based on total weight of said combination: (a) about 16–60% by weight of aliphatic petroleum distillates, (b) about 10–67% by weight of an alkylphenoxypoly-(ethyleneoxy) ethanol and (c) about 16–67% by weight of an ethoxylated polyoxypropylene glycol, the hydrophile/lipophile balance of both (b) and (c) being from about 0.5 to 10, said aggregation of electrostatic toner particles occurring at a pH of from about 5.0 to 12.0.

5,302,243
DEINKING METHOD
Yoichi Ishibashi; Yoshinao Kono; Yoshitaka Miyauchi; Takanobu Shiroishi, and Hiromichi Takahashi, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed May 5, 1992, Ser. No. 880,087
Claims priority, application Japan, May 31, 1991, 3-129508
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—5 **15 Claims**

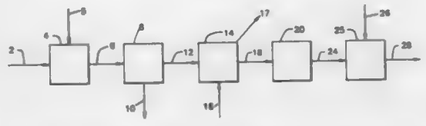
1. A method for deinking waste paper which comprises treating a waste paper pulp containing waste OA paper, magazines, or telephone directories, or mixtures thereof with a deinking composition comprising a deinking effective amount of 0.03 to 1.0% by weight, based on the waste paper to be deinked, of a reaction product mixture (III) obtained by conducting the addition reaction of ethylene oxide and propylene oxide with a mixture (I) comprising a fat and/or oil (a) and a mono- to hexahydric alcohol (b) or with a transesterification mixture (II) obtained by conducting the transesterification reaction of a fat and/or oil (a) with a mono- to hexahydric alcohol (b), or with both, in such a manner that the molar ratio of ethylene oxide to propylene oxide which are used as starting materials in said addition reaction range from 0.8 to 1.2 and that the molar number of ethylene oxide which is used for the addition reaction ranges from 50 to 100 mol per mole of the fat and/or oil (a).

5,302,244
OXYGEN DELIGNIFICATION OF WASTE CELLULOSIC PAPER PRODUCTS
Xuan T. Nguyen, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada
Filed Feb. 18, 1992, Ser. No. 837,870
Int. Cl.[5] D21F *5/02*
U.S. Cl. 162—6 **13 Claims**



1. A process for recycling old corrugated containers to produce a cellulosic fiber pulp consisting essentially of:
i) reslushing old corrugated containers having a kappa number of 80 to 180 with water,
ii) subjecting the reslushed old corrugated containers from i) to a pretreatment with aqueous sulfuric acid at a pH of 2 to 4,
iii) subjecting the thus pretreated old corrugated containers from ii) to oxygen delignification, in the presence of sodium hyxdroxide at a temperature of 80° C. to 120° C., and an oxygen pressure of 60 to 120 psig for a time effective to lower the kappa number to 20 to 30, said oxygen delignification consisting essentially of exposing said pretreated old corrugated containers in an aqueous vehicle, to oxygen gas in the presence of said sodium hydroxide, in a plurality of sequential oxygen delignification stages, in which the pretreated old corrugated containers are exposed to said sodium hydroxide in sequentially introduced dosages of the sodium hydroxide, each dosage being not more than 50%, by dry weight, of sodium hydroxide, based on the weight of lignin in the old corrugated containers, said pretreated old corrugated containers and aqueous vehicle flowing sequentially through said stages and having a residence time in each stage to permit delignification,
iv) recovering from iii) a cellulosic fiber pulp having a kappa number of 20 to 30 and a viscosity of 10 to 15 cp.

5,302,245
INTEGRATED WASTEPAPER TREATMENT PROCESS
Allan Nadeau, Kennebonk, Me., assignor to VPS Technology Partnership, Boston, Mass.
Filed Apr. 2, 1991, Ser. No. 679,330
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—8 **21 Claims**



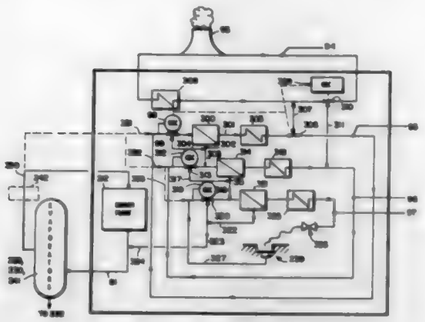
1. A process for treating wastepaper consisting essentially of:
(a) pulping said wastepaper in an aqueous suspension in the presence of a caustic and a surfactant at a temperature below the melting point of non-ink contaminants present in the wastepaper to form a fiber slurry having a consistency of less than about 15 percent and to release substantially all non-ink contaminants from the wastepaper fibers;
(b) screening the effluent from the pulping stage to separate substantially all of said non-ink contaminants from said wastepaper fibers;
(c) after separating non-ink contaminants from said wastepaper fibers by screening, deinking said wastepaper fibers by froth flotation at a temperature of less than about 28° C.;
(d) cleaning the deinked fibers by dilution and filtration to substantially remove remaining ink particles and ash;
(e) bleaching the washed fibers from step (d) in a bleaching liquor at a temperature of at least about 60° C. for about 1.5 to about 2 hours; and
(f) recovering the bleached fibers from step (e); wherein said recovering fibers are substantially free from non-ink contaminants and ink particles and have a brightness of at least about 80° ISO.

5,302,246
METHOD OF MANAGING LIQUID STEAMS IN A PULP MILL
Tuomo S. Nykanen, Glens Falls, N.Y.; Jan T. Richardsen, and Rolf Ryham, both of Roswell, Ga., assignors to Kamyr, Inc., Glens Falls, N.Y.
Continuation-in-part of Ser. No. 922,334, Jul. 30, 1992. This application Mar. 2, 1993, Ser. No. 25,386
Int. Cl.[5] D21C *11/00*
U.S. Cl. 162—29 **15 Claims**

1. A method of managing liquid streams in a cellulose pulp mill having a digester, a bleach plant, and at least first, second, and third loops of liquid streams in the pulp mill, the loops having liquid streams therein of significantly different contamination levels, the contamination level gradually increasing from the first loop to the third loop; comprising the steps of:
(a) sensing the contamination level in at least the first and second loops;
(b) when the contamination level in the first loop exceeds a first predetermined level, discharging some of the contaminated liquid from the first loop to the second loop, and replacing it with less contaminated liquid;
(c) when the contamination level in the second loop exceeds a second predetermined level, discharging some of the contaminated liquid from the second loop to the third loop, and replacing it with less contaminated liquid; and

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(d) purifying the most contaminated liquid from the loops to produce the less contaminated liquid for addition to at least step (b) and wherein step (d) is practiced by combining the most contaminated liquid with the liquid effluents from the bleach plant to produce a combined effluent stream, and producing a clean liquid used as the less contaminated liquid in step (b).

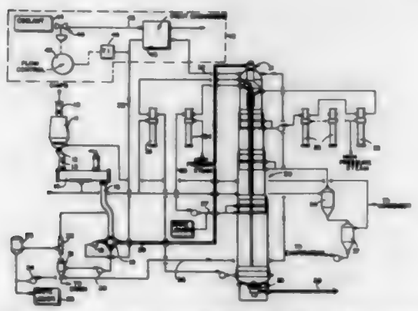


5,302,247

TOP CIRCULATION LINE COOLING FOR A MODIFIED COOK DIGESTER

Jan T. Richardsen; Victor L. Bilodeau; Mark D. Barrett, and Carl L. Luhrmann, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,403
Int. Cl.[5] D21C 7/00
U.S. Cl. 162—42 16 Claims



1. A method of feeding comminuted cellulosic fibrous material to a continuous digester having a plurality of feed points for cooking liquor, utilizing a high pressure feeder, comprising the steps of:

(a) entraining comminuted cellulosic fibrous material in liquid to produce a slurry, and feeding the slurry to the top of the digester using the high pressure feeder;

(b) adding some cooking liquor to the slurry as part of the liquid entraining the material;

(c) separating some of the liquid from the slurry at the top of the digester;

(d) recirculating the separated out liquid from the top of the digester to the high pressure feeder; and

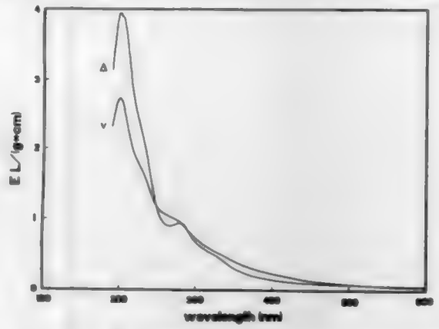
(e) cooling the recirculating liquid so that the temperature of the slurry in the high pressure feeder and being fed to the top of the digester will be low enough to avoid hydraulic hammering due to liquor flashing.

5,302,248

DELIGNIFICATION OF WOOD PULP BY VANADIUM-SUBSTITUTED POLYOXOMETALATES

Ira A. Weinstock, Madison, Wis., and Craig L. Hill, Atlanta, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 28, 1992, Ser. No. 937,634
Int. Cl.[5] D21C 3/00
U.S. Cl. 162—79 13 Claims



1. A method for delignifying wood pulp comprising the steps of:

obtaining a wood pulp; and

exposing the wood pulp to a solution of a polyoxometalate of the formula $[V_nMo_mW_lNb_oTa_p(TM)_q(MG)_rO_s]^{x-}$ wherein n is 1–18, m is 0–40, l is 0–40, o is 0–10, p is 0–10, $q \leqq 6$, $r \leqq 6$, TM is a d-electron-containing transition metal ion, and MG is a main group ion, $n+m+o+l+p \geqq 4$, and s is sufficiently large that $x>o$, under conditions of temperature, time, consistency, pH and reactor design wherein the polyoxometalate is reduced and enhanced delignification occurs.

5,302,249

TREATED PAPERS

Shadi L. Malhotra, Mississauga; David F. Rutland, Milton, and Arthur Y. Jones, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 25, 1990, Ser. No. 469,985
Int. Cl.[5] D21H 25/00
U.S. Cl. 162—135 15 Claims

1. An ink jet water absorbing paper comprised of a supporting substrate surface treated with desizing agents comprised of (1) hydrophilic poly(dialkylsiloxanes).

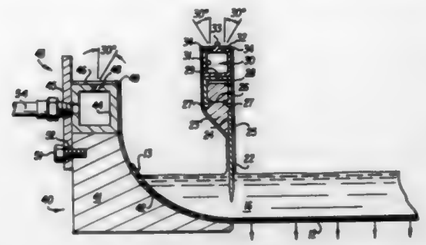
5,302,250

PAPER MACHINE DECKLE FLUSHING FOUNTAIN

Ralph S. Peterson, Clifton Forge, Va.; William J. Thurston, Covington Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 9, 1992, Ser. No. 958,722
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] D21F 1/56, 1/58
U.S. Cl. 162—353 7 Claims

1. A surface flushing fountain in combination with and for a paper machine fourdrinier deckle board, said fountain comprising: an aqueous fluid conduit having at least three substantially planar, fluid channel conduit walls, two of said conduit walls being oriented substantially normal to a third of said conduit walls, said fluid conduit being secured to an upper structural edge of said fourdrinier deckle board whereby said third conduit wall further comprises an upper, flat fountain surface and said two normal conduit walls form side walls; an elongated fluid barrier means upstanding from said fountain surface substantially along a midline thereof; and a row of evenly spaced apertures through said fountain surface and along respective sides of said barrier means for transferring an aqueous fluid from said fluid conduit to a respective continuous weir edge of said fountain surface on opposite sides of said barrier wall whereby flow from said apertures is toward said side walls and descends from said respective continuous weir edges which are located along said upper fountain surface.

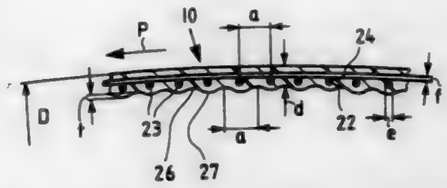


5,302,251

INNER SURFACE CONTOURED PRESS JACKET FOR A SHOE PRESS

Christian Schiel, Heidenheim, and Harald Aufrecht, Aalen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,882
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202731
Int. Cl.[5] D21F 3/02
U.S. Cl. 162—358.4 11 Claims



1. A press jacket in a shoe press in a press section of a paper making machine, wherein the press jacket is an endless loop that moves in a travel direction and between a sliding surface of a stationary shoe and a rotating counter roll and the counter roll forms a lengthened press nip with the slide surface of the shoe, the press jacket comprising:

an elastomeric jacket material, having an inner surface which slides over the sliding surface of the press shoe and having an opposite outer surface facing outward of the sliding surface;

an inner layer of reinforcement threads in the elastomeric press jacket material, the inner layer being formed of longitudinally extending threads which extend approximately parallel to the axis about which the jacket rotates and transversely to the travel direction of the press jacket; an outer reinforcement layer, outward of the inner layer and also in the elastomeric material; the layer of reinforcement threads and the outer layer being surrounded on all sides by the layer of elastic material;

the inner surface of the press jacket having a plurality of grooves defined therein which extend generally parallel to the longitudinal threads, the grooves having a depth of at most 0.25 mm, so that the inner surface, as seen in a cross section through the press jacket along the travel direction, has a corrugated contour; and

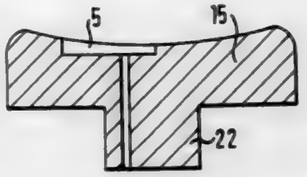
adjacent ones of said longitudinally extending threads having spacings therebetween that are generally equal to spacings between central planes of adjacent ones of said grooves.

5,302,252

HEATED EXTENDED NIP PRESS WITH INLET SUPPORT POCKET

Thomas Götz, Hagnau, Fed. Rep. of Germany, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 24, 1992, Ser. No. 981,170
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138788
Int. Cl.[5] D21F 3/06
U.S. Cl. 162—358.5 14 Claims



1. Apparatus for dewatering a fibrous web passing therethrough in a direction of through movement, the apparatus comprising:

a first press surface formed by an impermeable band and a second press surface, said press surfaces forming an extended press zone for exerting dewatering pressure on the fibrous web;

heating means for heating at least one of said press surfaces;

a porous band for feeding through the extended press zone together with the fibrous web in order to take up water pressed out of the fibrous web;

pressing element means for pressing said impermeable band towards said second press surface, thereby exerting a pressure over a pressure active total length as seen in said direction of through movement, said pressing element means having an inlet end and a center, also as seen in said direction of through movement, and being arranged along said extended press zone such that a hydrodynamic pressure field is applicable between said pressing element means and said impermeable band by setting a lubricant in circulation; and

one or more support pockets actuatable by a pressure medium, arranged on said pressing element means and open towards said impermeable band, wherein all the one or more support pockets are located essentially in the region between said inlet end and said center of the pressing element means.

5,302,253

ON-LINE ACID MONITOR AND NEUTRALIZER FEED CONTROL OF THE OVERHEAD WATER IN OIL REFINERIES

Ronald B. Lessard, Elmhurst, Ill., and Paul Fearnside, Sugar land, Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 13, 1992, Ser. No. 867,890
Int. Cl.[5] B01D 3/42
U.S. Cl. 196—132 8 Claims

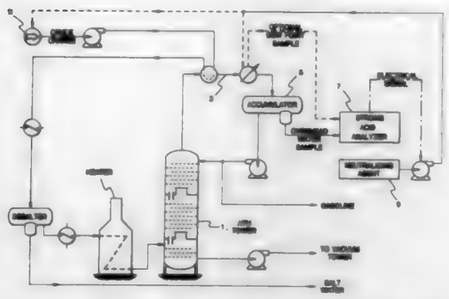
1. An apparatus for controlling the acidity of overhead water in an oil refinery which includes a crude oil charge, and a distillation tower having an overhead vapor line which produces a dew point condensate, comprising:

a means for collecting a sample of said dew point condensate;

an automated titrator in fluid communication with said sample, said automated titrator being capable of detecting the concentration of acids in said sample and generating a signal responsive to the detected concentration of acids;

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a neutralizer dispenser arranged to dispense a neutralizing agent into the crude oil charge or overhead vapor line of the oil refinery at variable rates; and



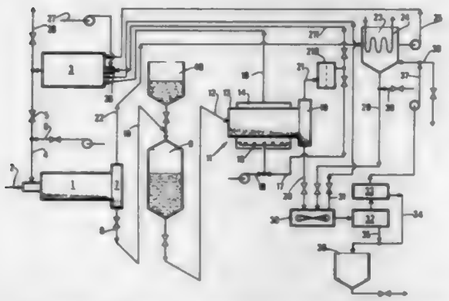
a dispenser controller operationally connected to said automated titrator and to said neutralizer dispenser, said controller being capable of responding to said signal generated by said automated titrator to control the dispensing rate of said dispenser.

5,302,254

PROCESS AND PLANT FOR THE THERMOLYSIS OF INDUSTRIAL AND/OR URBAN WASTE

Gerard Martin, Rueil Malmaison, and Robert Gaulard, Sussy En Brie, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison Cedex, France

Filed Jul. 9, 1992, Ser. No. 911,033
Claims priority, application France, Jul. 9, 1991, 91 08718
Int. Cl.[5] C10B *47/00, 53/00*
U.S. Cl. 201—21 **14 Claims**



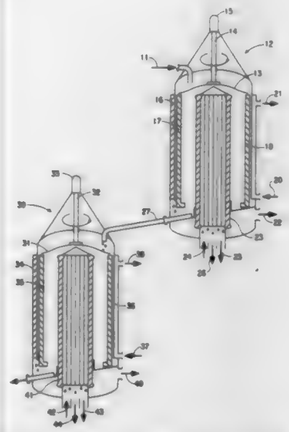
1. A process for treating industrial and/or urban waste, which comprises drying the waste in a drier supplied with warm drying gases produced in a gas generator; effecting thermolysis of the dried waste by indirect heating in a reactor with combustion gases; and treating solids and gases resulting from the thermolysis, the drying gases being treated to remove water vapor and then recycled to the gas generator for supplying the warm drying gases to said drier; effecting dechlorination of the solids resulting from the thermolysis by washing the solids with an aqueous liquid; effecting separation between the washed solids and the resulting wash liquid; and injecting the combustion gases used for heating the thermolysis reactor, the treated drying gases and light organic compounds resulting from the dechlorination of the solids into said gas generator and supplying a burner of said gas generator with a portion of the gases resulting from the thermolysis as fuel.

5,302,255

REDUCING MOLECULAR WEIGHT DISTRIBUTION OF POLYETHER GLYCOLS BY SHORT-PATH DISTILLATION

Suriyanarayan Dorai, Lockport, N.Y.; Frank L. Rawling, Jr., Newark, Del., and James A. Schultz, Swedesboro, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 847,466, Mar. 6, 1992, abandoned. This application Sep. 15, 1992, Ser. No. 944,994
The portion of the term of this patent subsequent to Oct. 6, 1993, has been disclaimed.
Int. Cl.[5] B01D *1/22, 3/10;* **C07C** *41/38*
U.S. Cl. 203—72 **6 Claims**



1. A separation process consisting essentially of feeding poly(tetramethylene ether) glycol having a dispersity of 1.8 to 2.3 to at least one short-path distillation apparati each of which has at least one mechanically wiped cylindrical evaporator surface, providing a film of poly(tetramethylene ether) glycol on said evaporator surface, maintaining said evaporator surface at 270° to 400° C. and a pressure of 0.001 to 1.0 millibar, condensing evaporated material on an internal condenser mounted inside said cylindrical evaporator surface and recovering unevaporated poly(tetramethylene ether) glycol having a reduced molecular weight ratio of 1.5 to 2.05 and a dispersity of 1.2 to 1.8.

5,302,256

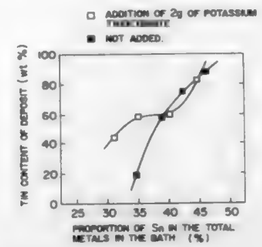
IMMERSION TIN/LEAD ALLOY PLATING BATH

Takeshi Miura, Oomiya; Masaru Seita, Ina, and Shigeru Kodaira, Kiyose, all of Japan, assignors to LeaRonal Japan Inc., Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,448
Claims priority, application Japan, Jun. 25, 1991, 3-153480
Int. Cl.[5] B05D *1/18*
U.S. Cl. 205—85 **11 Claims**

1. An immersion tin/lead alloy plating bath having a basic composition comprising at least one organic sulfonic acid selected from the group consisting of an alkane sulfonic acid,

an alkanol sulfonic acid and an aromatic sulfonic acid, divalent tin and lead salts of said organic sulfonic acid or acids, and



thiourea as a chelating agent and further containing at least one of thiocyanic acid and derivative thereof as an additive.

5,302,257

ELECTROCATALYTIC ASYMMETRIC DIHYDROXYLATION OF OLEFINIC COMPOUNDS

Yun Gao, Framingham, and Charles M. Zepp, Berlin, both of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Filed Feb. 21, 1992, Ser. No. 839,601
Int. Cl.[5] C25B *3/02*
U.S. Cl. 204—86 **35 Claims**

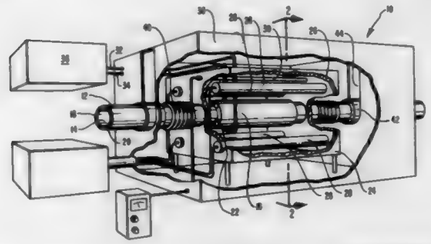
1. A method of preparing optically active glycols comprising:
(a) conducting an asymmetric dihydroxylation of an olefin in a medium comprising water and an oxidation resistant organic solvent in the presence of a catalytically active amount of a complex comprising osmium tetroxide and a chiral oxidation resistant tertiary amine ligand;
(b) employing an effective amount of a secondary oxidant to generate osmium tetroxide, which reparticipates in said asymmetric dihydroxylation, by chemical oxidation from lower valent osmium species; and
(c) electrolytically regenerating secondary oxidant, which reparticipates in said chemical oxidation, from spent secondary oxidant species,
under conditions effective to provide optically active glycols in amounts which exceed the combined amount in moles of osmium tetroxide and secondary oxidant present initially.

5,302,258

METHOD AND APPARATUS FOR SEPARATING OXYGEN FROM A GASEOUS MIXTURE

Gary M. Reuland; Richard R. Mackerell, and Mustafa A. Syammach, all of Salt Lake City, Utah, assignors to Triox Technologies, Inc., Murray, Utah

Filed Feb. 28, 1992, Ser. No. 843,463
Int. Cl.[5] C25B *1/02, 9/00, 15/08*
U.S. Cl. 204—129 **25 Claims**



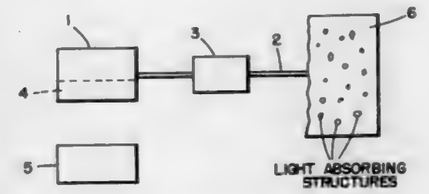
18. A method for removing oxygen from a mixture of gases containing oxygen and inert gases, said method comprising the steps of:
obtaining a solid electrolyte having a first side and a second side, said solid electrolyte comprising a ceramic oxide, a first dopant incorporated within said ceramic oxide, a second dopant incorporated within said ceramic oxide, wherein the ratio of the mole percentages of said first dopant to said second dopant is in the range of from about 6.5:10 to about 9.5:10;
creating an electrical potential between said first side and said second side; and
placing said mixture of gases in contact with said first side such that oxygen is transported through said electrolyte but said inert gases remain on said first side of said electrolyte.

5,302,259

METHOD AND APPARATUS FOR ALTERING THE PROPERTIES IN LIGHT ABSORBING MATERIAL

Reginald Birngruber, Veilchenweg 48, 8028 Taufkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 693,678, Apr. 30, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 22,773
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—131 **11 Claims**



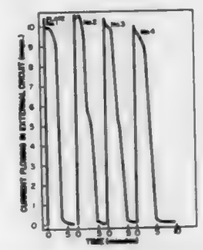
1. A method of coagulating a material which has a plurality of spaced light absorbing structures therein comprising the steps of:
directing a beam of light onto and through the material to be influenced; and
pulsing the light beam with a pattern of successive pulses to achieve coagulation of the material substantially only at each light absorbing structure, the pattern of successive light pulses being a plurality of pulses of predetermined number, pulse duration, pulse energy, and repetition rate matched to the spatial distribution and size of the light absorbing structures and to the sensitivity of the material to coagulation.

5,302,260

GALVANIC DEZINCING OF GALVANIZED STEEL

Rodney L. LeRoy, and M. Barakat I. Janjua, both of Pointe-Claire, Canada, assignors to Noranda Inc., Toronto, Canada

Filed Oct. 9, 1991, Ser. No. 773,532
Claims priority, application Canada, Oct. 15, 1990, 2027656
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—144 **10 Claims**



1. A method of removing zinc from galvanized steel without

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substantial co-dissolution of substrate iron comprising immersing the galvanized steel in a caustic electrolyte solution selected from caustic soda solution and caustic potash solution, at a pH between 11 and 15.5, and electrically connecting the galvanized steel to a cathode material without application of an external source of voltage to said cathode material, said cathode material being stable in caustic electrolyte and having a low hydrogen overvoltage.

5,302,261

POWER ASSISTED DEZINCING OF GALVANIZED STEEL

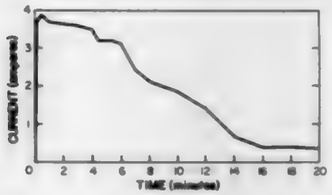
Rodney L. LeRoy, Pointe-Claire; George Houlachi, Kirkland, and M. Barakat I. Janjua, Pointe-Claire, all of Canada, assignors to Noranda Inc., Toronto, Canada

Continuation of Ser. No. 827,627, Jan. 29, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 107,178

Claims priority, application Canada, Mar. 18, 1991, 2038537

Int. Cl.[5] C25F *5/00*

U.S. Cl. 204—146 **8 Claims**



1. A method of removing zinc from galvanized steel without significant cathodic deposition of zinc on the cathode, comprising immersing the galvanized steel in a caustic electrolyte solution selected from caustic soda solution and caustic potash solution at a pH between 11 and 15.5, electrically connecting the steel to the positive terminals of a source of direct current, and electrically connecting the negative terminals of the current source to a cathode material which is stable in caustic electrolyte and has a low hydrogen overvoltage.

5,302,262

TASTE SENSING METHOD FOR DISCRIMINATING IN DETAIL TASTE OF SUBSTANCES WITH HIGH REPRODUCIBILITY BY USING ARTIFICIAL LIPID MEMBRANES

Kaoru Yamafuji, 1-6-21, Kusagae, Chuo-ku, Fukuoka-shi, Fukuoka-ken; Kiyoshi Toko, 2-8-32-2, Miwadai, Higashi-ku, Fukuoka-shi, Fukuoka-ken; Kenshi Hayashi, 2-14-18-407, Takatori, Sawara-ku, Fukuoka-shi, Fukuoka-ken; Hidekazu Ikezaki, Isehara, and Rieko Toukubo, Hadano, all of Japan, assignors to Anritsu Corporation, Tokyo; Kaoru Yamafuji, Fukuoka; Kiyoshi Toko, Fukuoka and Kenshi Hayashi, Fukuoka, all of Japan

Continuation of Ser. No. 725,655, Jul. 3, 1991, abandoned. This application May 19, 1993, Ser. No. 64,342

Claims priority, application Japan, Jul. 4, 1990, 2-176584

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.12 **13 Claims**

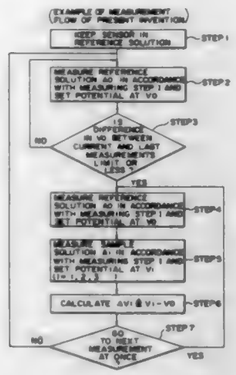
1. A method for individually measuring a plurality of similar taste sample solutions each including a plurality of taste substances to be tested by using a lipid membrane that is applied to a system of taste reception, said lipid membrane representing response of membrane potential and individually interacting with the plurality of similar taste sample solutions, said method comprising the steps of:

(a) preparing a reference solution having a taste identical or similar to one of the plurality of similar taste sample solutions;

(b) measuring the reference solution by using the lipid membrane to obtain a measured value V0 relating to the response of membrane potential;

(c) measuring one of the plurality of similar taste sample solutions by using the lipid membrane to obtain a measured value Vi relating to the response of membrane potential; and

(d) calculating a relative value Vi−V0 in accordance with



the measured value V0 of the reference solution and the measured value Vi of one of the plurality of similar taste sample solutions,

wherein steps (b) to (d) are repeatedly executed for each of the plurality of taste sample solutions, and the reproducibility of the relative value Vi−V0 obtained by the lipid membrane is increased, and a variation in the relative value Vi−V0 is decreased.

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ULTRASONIC CYANO-DE-HALOGENATION

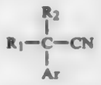
Thanikavelu Manimaran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 29, 1993, Ser. No. 54,586

Int. Cl.[5] C07B *43/08*

U.S. Cl. 204—157.62 **8 Claims**

1. A process for preparing an aryl-substituted aliphatic nitrile of the following formula II:



II

where Ar is phenyl, naphthyl, substituted phenyl or substituted naphthyl and R_1 and R_2 are hydrogen, alkyl, cycloalkyl, alkyl-unsubstituted, cycloalkyl, phenyl or naphthyl either substituted or unsubstituted, alkoxy, alkylthio, heteroaryl either substituted or unsubetituted, alkanoyl, benzoyl or naphthanoyl either substituted or unsubstituted, heteroarylcarbonyl either substituted or unsubstituted alkoxycarbonyl, aryloxycarbonyl, trifluoromethyl or halo which comprises treating anhydrous solution of a compound of the following formula I



I

where Ar, R_1 and R_2 are as previously defined and X is halo with an organic or inorganic cyanide substantially insoluble in said solution at an ultrasonic frequency for a time and at a

temperature sufficient to produce said aryl-substituted aliphatic nitrile.

5,302,264

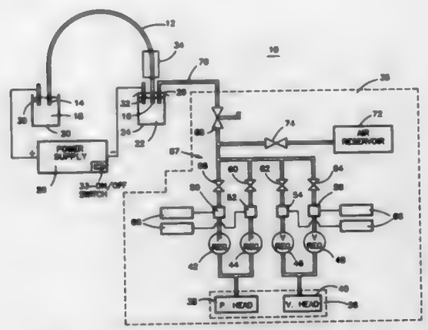
CAPILLARY ELETROPHORESIS METHOD AND APPARATUS

Brenton P. Welch, Los Gatos, and Barry M. Bredt, Berkeley, both of Calif., assignors to Scientronix, Inc., San Jose, Calif.

Filed Sep. 2, 1992, Ser. No. 939,061

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—180.1 **6 Claims**



1. Apparatus for capillary electrophoresis comprising:

a capillary tube for separating an analyte sample mixture, said tube including an inlet end for receiving a sample to be separated, and an outlet end for discharging a separated sample;

means to apply a voltage across said capillary tube to generate an electric field which will cause separation of analytes in a sample;

means to apply differential pressure to one end of said capillary tube for selectively controlling sample loading, separation and post-separation mobilization, said differential pressure being selectively adjustable over a range of magnitudes including positive, zero and negative magnitudes; and

detector means positioned near said outlet end of said capillary tube for sensing at least one detectable characteristic of a separated analyte as it is moved in said capillary tube past said detector towards said outlet end.

5,302,265

HIGH RATE ELECTROPHORESIS PROCESS FOR CERAMIC COATED FIBERS

William J. Dalzell, Jr., Jupiter, and Robert J. Wright, Tequesta, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 7, 1991, Ser. No. 637,718

Int. Cl.[5] C25D *13/00*

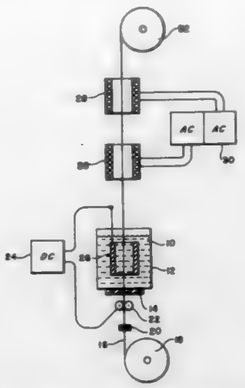
U.S. Cl. 204—181.5 **21 Claims**

1. A process for the preparation of a metal oxide coated fiber, said process comprising the steps of:

a) providing a sol comprising metal hydrate particles selected from the group consisting of aluminum hydrate, yttrium hydrate, and mixtures thereof, said particles being less than 150 Angstroms in size, said sol also comprising an alcohol such that the molar ratio of said alcohol to said metal hydrate is from about 50 to about 70, and less them about 10 wgt. percent water;

b) electrophoretically depositing particles from said sol onto an electrically conductive fiber core by applying a direct current potential between said fiber core and an anode, said potential being from about 0.1 to about 100 volts, for sufficient time to obtain a uniform deposit of the desired thickness of metal hydrate on said fiber core, while providing means for removal of hydrogen gas generated by said electrophoresis;

c) removing the metal hydrate coated fiber core from said sol;



d) heating the metal hydrate coated fiber core to dry the coating and to transform said metal hydrate to the corresponding metal oxide; and

e) recovering the metal oxide coated fiber.

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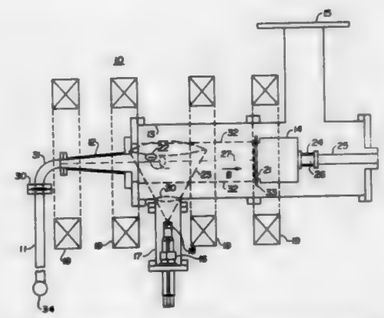
METHOD AND APPARATUS FOR FILING HIGH ASPECT PATTERNS WITH METAL

Henry J. Grabarz, Huntington, Conn.; Alfred Grill, White Plains, N.Y.; William M. Holber, New York, N.Y.; Joseph S. Logan, Poughkeepsie, N.Y., and James T. C. Yeh, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 854,187, Mar. 20, 1992, abandoned. This application Sep. 25, 1992, Ser. No. 951,924

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.12 **24 Claims**



1. A method of filling previously formed passages in a semiconductor substrate using a metal plating apparatus of the electron cyclotron resonance plasma heating type, comprising the steps of:

(a) evacuating the chamber;

(b) transmitting metal atoms into the evacuated chamber from a metal vapor source which has no line of sight to the substrate, such that no matter is added to the evacuated chamber except the metal atoms;

(c) generating a magnetic field having magnetic field lines that are symmetric relative to an axis of the chamber;

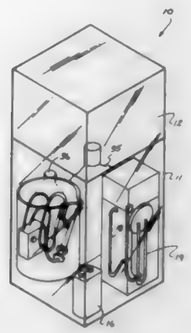
(d) transmitting microwave energy through the chamber in

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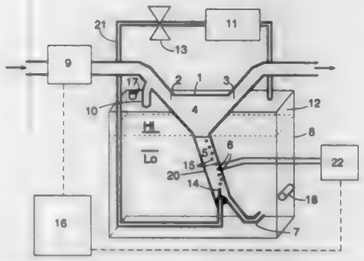
an axial direction parallel to the axis, generating energetic electronic which spiral around the magnetic field lines;
(e) ionizing the metal atoms to form metal ions by the energetic electrons, thereby forming a plasma; and
(f) directing the plasma through the chamber, towards the substrate.

5,302,267
GOLD PLATING KIT APPARATUS
Oscar W. Mauser, and Maura E. Mauser, both of 11111 Verdant Rd., Owings Mills, Md. 21117
Filed Apr. 26, 1993, Ser. No. 51,980
Int. Cl.[5] C25D *17/00, 17/12*
U.S. Cl. 204—224 R **2 Claims**



1. A gold plating kit apparatus, comprising,
a storage container, the storage container including a container lid and a container cavity directed within the storage container, wherein the container cavity includes a beaker, the beaker including a pour spout,
and
a battery member contained within the storage container,
and
a voltage regulator, the voltage regulator including a voltage regulator first post and a voltage regulator second post, the battery having a battery positive terminal and a battery negative terminal arranged for respective mounting the regulator first post and the regulator second post,
and
a positive output cable directed from the voltage regulator, and a negative output cable directed from the voltage regulator, and a first spring clip member mounted to the positive output cable, and a second spring clip member to the negative output cable,
and
a first generally S-shaped support clip for securement to the first spring clip,
and
a gold anode plate having an aperture therethrough arranged for mounting upon the support clip,
and
a further support clip arranged for receiving a workpiece thereon, and the first support clip arranged for securement to the second spring clip,
and
a first container adapted to have sodium cyanide granules therewithin, and a second container adapted to have gold chloride therewithin, and
the second spring clip includes a sleeve, and a reciprocatable leg member mounted within the sleeve directed through the sleeve and projecting beyond a forward end of the sleeve, wherein the sleeve includes a sleeve head mounted to the sleeve, and a plunger mounted to the reciprocatable leg, the plunger including a plunger spring oriented between the plunger and the sleeve head, the plunger secured to the reciprocatable leg for biasing the reciprocatable leg within the sleeve for securement of the further support clip to the reciprocatable leg.

5,302,268
ELECTROLYTIC APPARATUS FOR GENERATING SELECTED CONCENTRATIONS OF GAS IN A FLOWING GAS STREAM
David B. Layzell; Stephen Hunt, and Adrian N. Dowling, all of Kingston, Canada, assignors to Queen's University, Kingston, Canada
Filed Mar. 4, 1993, Ser. No. 27,511
Int. Cl.[5] C25B *9/00, 15/08*
U.S. Cl. 204—228 **8 Claims**

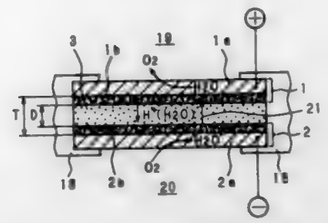


1. An apparatus for generating a selected concentration of a selected gas flowing in a gas stream, comprising:
(a) electrolyte cell means, adapted to contain a selected electrolyte, and having a gas inlet means and a gas outlet means with a gas flow path therebetween;
(b) electrode means in said cell means, between said gas inlet means and said gas outlet means, arranged for immersion in said electrolyte;
(c) means to supply a selected electrical current to said electrode means;
(d) means to supply a gas stream to said gas inlet means;
(e) means to introduce a portion of said gas stream into said cell means and direct said portion towards said electrode means so as to dislodge gas bubbles forming thereon, when said electrical current is applied, and into said stream in said flow path.

5,302,269
ION EXCHANGE MEMBRANE/ELECTRODE ASSEMBLY HAVING INCREASED EFFICIENCY IN PROTON EXCHANGE PROCESSES
Glenn A. Eisman, Midland, Mich., and Robert D. Door, Clute, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 536,146, Jun. 11, 1990, abandoned. This application Jun. 27, 1991, Ser. No. 722,712
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—252 **14 Claims**

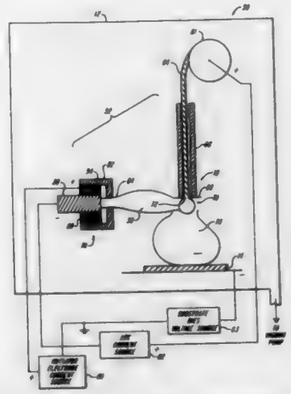
10. An ion exchange membrane electrode assembly for use in a proton exchange electrolytic cell, said membrane having a water uptake of about 60–300% by weight of said membrane.

5,302,270
OXYGEN CONCENTRATION OR HUMIDITY CONTROLLING APPARATUS
Shiro Yamauchi; Takeo Yoshioka; Kenro Mitsuda, and Toshiaki Murahashi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 12, 1993, Ser. No. 30,886
Claims priority, application Japan, Mar. 12, 1992, 4-053224; Jun. 22, 1992, 4-162566; Aug. 5, 1992, 4-208908
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—265 **9 Claims**



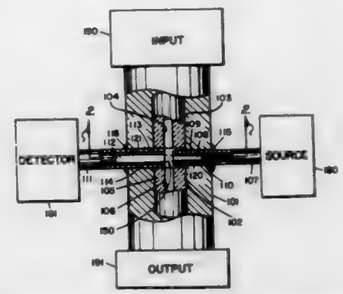
1. An oxygen concentration controlling element comprising:
a porous anode for electrolyzing water to generate oxygen;
a porous cathode for generating water to consume oxygen; and
a solid electrolyte film sandwiched between said anode and cathode,
wherein said anode and cathode are arranged having a shortest distance of not larger than 50 μm thereby to back diffuse the water generated by said cathode to said anode.

5,302,271
ANODIC VACUUM ARC DEPOSITION SYSTEM
Chung Chan, West Newton, and Steven Meassick, Sharon, both of Mass., assignors to Northeastern University, Boston, Mass.
Filed Aug. 25, 1992, Ser. No. 934,925
Int. Cl.[5] C23C *14/32*
U.S. Cl. 204—298.41 **14 Claims**



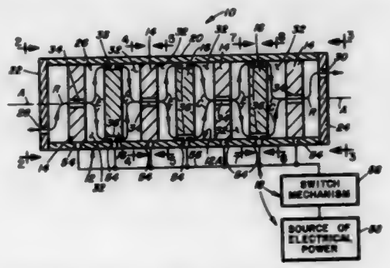
1. A liquid anodic arc deposition system for depositing a material on a substrate comprising:
a vacuum chamber;
an anode assembly comprising:
an anode of spooled wire of said material to be deposited, said spooled wire having a free end and a spooled end; and
a cathode assembly comprising:
a cathode; and
an initiator electrode juxtaposed with and separated from said cathode by an insulator,
said anode assembly and said cathode assembly located within said vacuum chamber in close juxtaposition,
said anode, in use, forming a liquid region from which the deposition material is vaporized.

5,302,272
FIBER OPTIC FLOW CELL FOR DETECTION OF ELECTROPHORESIS SEPARATION WITH A CAPILLARY COLUMN AND METHOD OF MAKING SAME
Gerald L. Klein, Orange, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Mar. 5, 1992, Ser. No. 847,783
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—299 R **16 Claims**



1. A capillary electrophoresis detector comprising:
capillary means for providing a capillary flow path for a sample;
light means for defining an optical path and including light transmitting members; and
sleeve means for supporting said capillary means and positioning said light transmitting members on opposite sides of said sleeve means with respect to said capillary flow such that said optical path is across said capillary flow, wherein said light transmitting members extend into an inner space within said sleeve means.

5,302,273
INDUCED IONIC REACTION DEVICE WITH RADIAL FLOW
Terry L. Kemmerer, 1835 W. Union, Unit 5, Englewood, Colo. 80110
Filed Feb. 8, 1993, Ser. No. 15,376
Int. Cl.[5] B03C *9/00*
U.S. Cl. 204—305 **35 Claims**



1. An induced ionic reaction device, comprising:
(a) an elongated hollow transport tube having an elongated chamber with a longitudinal axial and an inlet and outlet in

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opposite end portions of said transport tube for entry of fluid to be treated into said chamber of said transport tube and for exit of fluid treated from said chamber of said transport tube;

(b) means disposed in said chamber of said transport tube for defining a radial path of fluid flow through said chamber of said transport tube, said means for defining a radial path of fluid flow through said chamber of said transport tube including a plurality of disc-shaped elements stationarily disposed in said chamber of said transport tube and being spaced from one another along said longitudinal axis of said chamber of said transport tube, said disc-shaped elements and an interior surface of said hollow transport tube together defining said radial path of fluid flow through said chamber of said transport tube, said plurality of disc-shaped elements including a first group of said elements being sealed about their peripheral edges with said interior surface of the transport tube, each of said elements of said first group having a flow passage formed through substantially a central portion of said element, each of said disc-shaped elements of said first group having an exterior cylindrical shape and a pair of concave face surfaces define don opposite ends of said element; and

(c) control means connected to said radial path defining means for imposing a predetermined electron field in said chamber of said transport tube to induce ionic reactions in the fluid flowing through said chamber of the transport tube and thereby precipitate out substances carried by the fluid into large complex molecular clumps.

5,302,274

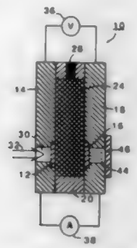
ELECTROCHEMICAL GAS SENSOR CELLS USING THREE DIMENSIONAL SENSING ELECTRODES

Klaus Tomantschger, Mississauga, Canada; Allan A. Janis, Snyder, N.Y.; Norman L. Weinberg, East Amherst, N.Y., and Joseph M. Rait, Buffalo, N.Y., assignors to Minitech Co., Buffalo, N.Y.

Continuation-in-part of Ser. No. 513,441, Apr. 16, 1990, Pat. No. 5,173,166. This application Jul. 20, 1992, Ser. No. 915,263

Int. Cl.[5] G01N *27/416*

U.S. Cl. 204—412 **29 Claims**



1. An electrochemical gas sensor cell for quantitative measurement of gaseous or volatile contaminants in an atmosphere being monitored, said gas sensor cell comprising at least a first gas permeable porous sensor electrode mounted in a first frame member, a second counter electrode mounted in a second frame member, a third electrically non-conductive electrolyte encirclement member, an ion conductive electrolyte at least partially confined within an electrolyte chamber formed in said third electrolyte encirclement member, said first and second electrodes and said first and second frame members being located at first and second sides, respectively, of said electrolyte chamber such that at least a portion of each of said first sensor electrode and said second counter electrode contacts said electrolyte;

wherein at least one of said first and second frame members is electrically conductive, and conductor means is associated with the other of said first and second frame members when said other frame member is electrically non-conductive;

wherein said electrolyte is immobilized and confined in such a manner at to substantially accommodate changes in temperature or humidity of said atmosphere being monitored;

wherein said first sensor electrode and optionally also said second counter electrode contains a catalyst;

wherein electrolyte is incorporated into said porous sensor electrode, and wherein at least the catalyst contained in said porous sensor electrode is a high surface area catalyst having a surface area of at least 40 m^2/g carried on a substrate and dispersed within said sensor electrode in such a manner that a three dimensional interface exists within the structure of said porous sensor electrode between said electrolyte, the electrocalytically active sites defined by said high surface area catalyst, and a gaseous or volatile contaminant that may be present in said atmosphere being monitored;

each of said first and second frame members and said electrolyte encirclement member being formed of an inert material which is impervious to said electrolyte;

said porous sensor electrode being mounted and secured with respect to said first frame member so as to be exposed to said atmosphere being monitored, and said counter electrode being mounted and secured with respect to said second frame member so as to be isolated from any exposure to said atmosphere being monitored; and

wherein each of said first and second electrodes is connected to electrical measurement means;

whereby, when said atmosphere being monitored contains a gaseous or volatile contaminant for which the catalyst on said sensor electrode is chosen to produce a change in the electrical characteristic between said porous sensor electrode and said counter electrode when said porous sensor electrode is exposed to said gaseous or volatile contaminant in the presence of the chosen ion conductive electrolyte, said electrical measurement means detects the change of said electrical characteristics, which change is thereby indicative of the presence of said gaseous or volatile contaminants in said atmosphere being monitored.

5,302,275

SENSOR ELEMENT FOR AN OXYGEN LIMITING CURRENT PROBE IN ORDER TO DETERMINE THE LAMBDA VALUE OF GAS MIXTURES

Hermann Dietz, Gerlingen; Barbara Beyer, Stuttgart; Werner Gruenwald, Gerlingen, and Claudio Da La Prieta, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

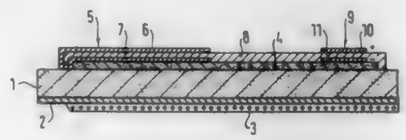
PCT No. PCT/DE91/00166, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/14174, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 27, 1991, Ser. No. 934,489

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1990, 4007856

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—424 **11 Claims**



1. A sensor element for determining the λ value of gas mixtures, said element comprising a pumping cell as the measuring cell, said pumping cell having a cathode; a short-circuit cell which precedes the pumping cell on the side of the measuring gas and which provides the sole access to the pumping cell for the measuring gas; and a diffusion barrier disposed between said short-circuit cell and said cathode of said pumping cell.

5,302,276

ELECTROCHEMICAL ELEMENT

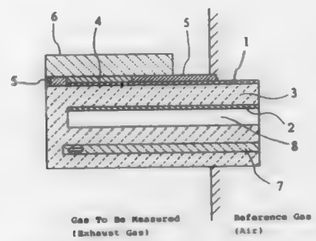
Nobuhide Kato, Aichi; Hitoshi Nishizawa, Iwakura, and Toshihiko Suzuki, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Feb. 7, 1992, Ser. No. 832,340

Claims priority, application Japan, Mar. 29, 1991, 3-93456

Int. Cl.[5] G01N *27/417*

U.S. Cl. 204—429 **6 Claims**



1. An electrochemical element including a first electrode layer located to contact gas to be measured, a second electrode layer located to contact a reference gas and a solid electrolyte interposed between said first and second electrode layers, characterized in that said first electrode layer is covered on its high-temperature portion with a first porous protecting layer and on its low-temperature portion with a second porous protecting layer that is lower in gas permeability than said first porous protecting layer.

5,302,277

PROCESS FOR PRODUCING PARAFORMALDEHYDE OF HIGH FORMALDEHYDE CONTENT

Yasuhiko Sakaguchi, Shimonoseki, Japan, assignor to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,609

Claims priority, application Japan, Nov. 28, 1990, 2-323132

Int. Cl.[5] C01B *31/00*

U.S. Cl. 204—157.43 **4 Claims**

1. A process for producing paraformaldehyde containing at least 88% by weight of formaldehyde by drying paraformaldehyde obtained by cooling and solidifying a 78–83 wt. % aqueous formaldehyde solution which comprises effecting the drying by means of microwave heating that is carried out while air at a temperature of 30–100° C. is passed through the paraformaldehyde wherein said paraformaldehyde exhibits superior warm water solubility after 30 days compared to paraformaldehyde dried by hot air or far infrared rays.

5,302,278

CYANIDE-FREE PLATING SOLUTIONS FOR MONOVALENT METALS

Fred I. Nobel, Sands Point; William R. Brasch, Nesconset, and Anthony J. Drago, East Islip, all of N.Y., assignors to Learonal, Inc., Freeport, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,949

Int. Cl.[5] C25D *3/38*

U.S. Cl. 205—296 **28 Claims**

24. A solution for use in electroplating which comprises: at least one monovalent metal of copper, silver, gold or combinations thereof in an amount of between about 0.5 to 100 g/l which is complexed by a thiosulfate ion and wherein the thiosulfate ion and metal ion or ions are present in a molar ratio of about 1:1 to 3:1; and a stabilizer of an organic sulfinate compound in an amount of at least about 2 to 15 g/l to stabilize the thiosulfate ion when the solution is operated at an acidic pH of between about 4 and 6.

5,302,279

LUBRICANT PRODUCTION BY HYDROISOMERIZATION OF SOLVENT EXTRACTED FEEDSTOCKS

Thomas F. Degnan, Moorestown, and Quang N. Le, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 23, 1992, Ser. No. 996,386

Int. Cl.[5] C10G *1/04, 35/06*

U.S. Cl. 208—87 **20 Claims**

1. A process for producing a high viscosity index (VI) lubricant from a hydrocarbon feed of mineral oil content having a paraffin content of at least 30 wt %, an aromatics content of at least 10 wt %, and a nitrogen content of at least 50 ppm, and which comprises:

i) extracting said feed with a solvent which is selective for aromatics to provide an extracted feed containing greater than 40 wt % paraffins, less than 15 wt % aromatics, and less than 30 ppm nitrogen content, and

ii) hydroisomerizing the extracted feed with a low acidity zeolite beta catalyst having an alpha value less than 15 and an inorganic oxide matrix to provide a lubricant having a viscosity index of at least 110.

5,302,280

FLUIDIZED CATALYTIC CRACKING UTILIZING A VENTED RISER

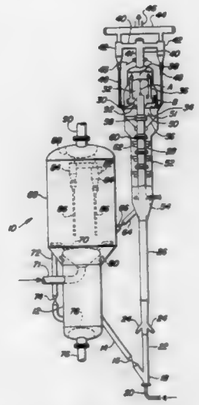
David A. Lomas, Barrington; Paul A. Sechrist, Des Plaines, and Edward C. Haun, Glendale Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 801,208, Dec. 2, 1991, which is a continuation of Ser. No. 524,525, May 17, 1990, Pat. No. 5,104,517. This application Nov. 9, 1992, Ser. No. 973,465

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—113 **16 Claims**



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

a) passing said FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to a gaseous product stream and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles;

b) discharging a first mixture of spent catalyst particles and gaseous products directly into the dilute phase of a reactor

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vessel in an upward direction from a discharge end of said riser located less than about 8 riser diameters below the upper end of said reactor vessel thereby providing an initial separation of the spent catalyst from the gaseous products;

c) passing separated catalyst downward through said vessel;

d) maintaining said separated catalyst in said reactor vessel as a dense catalyst bed and passing a stripping gas upward through the reactor vessel;

e) maintaining the upper surface of said dense catalyst bed a distance of less than 16 feet below said riser outlet end;

f) passing said spent catalyst downwardly through said reactor vessel into a stripping zone and contacting said spent catalyst with said stripping gas;

g) passing spent catalyst from said stripping zone into a regeneration zone and contacting said spent catalyst with a regeneration gas in said regeneration zone to combust coke from said catalyst particles and produce regenerated catalyst particles for transfer to said reactor riser;

h) withdrawing a second mixture of gaseous products, stripping fluid, and spent catalyst particles from said reactor vessel through a collector located in said reactor vessel above said dense catalyst bed about the periphery of the outlet end of the riser and transferring said mixture to a particle separator located outside of the reactor vessel, separating gaseous components from said spent catalyst in said separator, and returning said spent catalyst to said reactor vessel, and

i) contacting said second mixture with a quench fluid downstream of said reactor vessel and upstream of said particle separator.

5,302,281

METHOD FOR CATALYTIC CRACKING OF PETROLEUM HYDROCARBONS

Eiji Iwamatsu; Yasushi Waknshima, and Yoshifumi Hiramatsu, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,571

Claims priority, application Japan, Jul. 16, 1991, 3-199784

Int. Cl.[5] C10G *11/02;* **B01J** *21/16*

U.S. Cl. 208—118 **18 Claims**

1. A method for catalytic cracking of a petroleum hydrocarbon, comprising: contacting the petroleum hydrocarbon at cracking conditions with a catalyst composition comprising a cation-exchanged stevensite, wherein the cation-exchanged stevensite contains as a cation component at least one cation selected from the group consisting of a mononuclear cation of an element selected from the group consisting of H, Cu, Mg, Ca, Sr, Ba, Zn, La, Ce, Al, Ga, Ti, Zr, Ge, Sn, V, Nb, Bi, Cr, Mo, Fe, Co or Ni, and a polynuclear cation of an element selected from the group consisting of Cu, Mg, Ca, Sr, Ba, Zn, La, Ce, Al, Ga, Ti, Zr, Ge, Sn, V, Nb, Bi, Cr, Mo, Fe, Co and Ni.

5,302,282

INTEGRATED PROCESS FOR THE PRODUCTION OF HIGH QUALITY LUBE OIL BLENDING STOCK

Tom N. Kaines, La Grange; Steven P. Lankton, Wheeling, and Robert B. James, Jr., Northbrook, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 569,045, Aug. 17, 1990, abandoned. This application Mar. 5, 1992, Ser. No. 846,114

Int. Cl.[5] C10G *67/04;* **C10M** *175/02*

U.S. Cl. 208—179 **15 Claims**

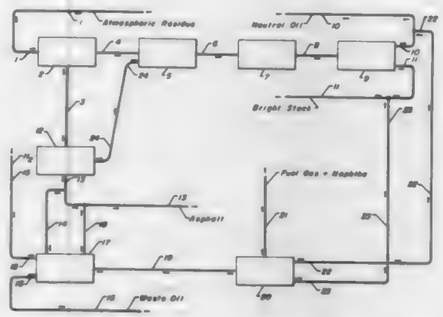
1. An integrated process for the production of high quality lube oil blending stock from atmospheric fractionation residue and waste lubricant which process comprises:

(a) fractionating said atmospheric fractionation residue in a vacuum fractionation zone to provide a distillable hydrocarbon stream and a vacuum fractionation residue;

(b) solvent deasphalting said vacuum fractionation residue to provide a deasphalted oil stream and an asphalt residue;

(c) contacting said waste lubricant and at least a portion of said asphalt residue with a hot first hydrogen-rich gaseous stream in a flash zone at flash conditions thereby increasing the temperature of said waste lubricant to provide a hydrocarbonaceous vapor stream comprising hydrogen and a non-distillable component containing asphalt;

(d) contacting said hydrocarbonaceous vapor stream comprising hydrogen with a hydrogenation catalyst in a hydrogenation reaction zone at hydrogenation conditions to increase the hydrogen content of the hydrocarbonaceous compounds;



(e) condensing at least a portion of the resulting effluent from the hydrogenation reaction zone to provide a second hydrogen-rich gaseous stream and a liquid stream comprising hydrogenated distillable hydrocarbonaceous compounds;

(f) separating said liquid stream recovered in step (e) to provide at least a portion of said lube oil blending stock; and

(g) separating said distillable hydrocarbon stream recovered in step (a) to provide at least a portion of said lube oil blending stock.

5,302,283

LEAF GUARD AND STRAINER ASSEMBLY FOR A GUTTER DOWNSPOUT

Howard O. Meache, R.R. 1 Box 273, Fort Branch, Ind. 47648

Filed Aug. 16, 1993, Ser. No. 106,856

Int. Cl.[5] B01D *35/02*

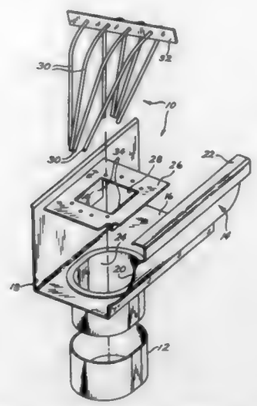
U.S. Cl. 210—162 **9 Claims**

1. A leaf guard and strainer assembly for a gutter downspout comprising

a base plate defining an opening therein, said base plate being adapted for disposition upon a floor of a gutter over an entrance to a downspout such that said opening registers with said entrance,

a plurality of spaced apart, generally U-shaped ribs, each of said ribs having a pair of legs inserted through edge portions of said base plate on opposite sides of said opening, lower free end portions of said legs which project below said base plate being insertable into said entrance on opposite interior sides of said downspout such that planes containing each of said ribs face opposing sidewalls of said gutter, and

a rigid beam member connected to upper apex portions of said ribs for maintaining a selected spacing between said ribs, one end of said beam being adapted to be inserted immediately under an inwardly projecting lip of an outer



wall of said gutter and said member extends between opposing gutter sidewalls.

5,302,284

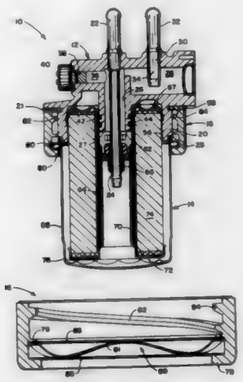
FUEL FILTER WITH SPRING-LOADED RETENTION SYSTEM

Robert W. Zeiner, Torrington, and M. Craig Maxwell, Colchester, both of Conn., assignors to Stanadyne Automotive Corp., Windsor, Conn.

Filed Dec. 23, 1992, Ser. No. 997,289

Int. Cl.[5] B01D *27/08*

U.S. Cl. 210—232 **20 Claims**



15. A filter assembly comprising:

base means defining a receiving structure and ramp means at the exterior of said structure for forming a spiral ramp terminating in a first end;

disposable cartridge means mountable to said base means for housing a filter element, at least a portion of said cartridge means being receivable in said structure, said cartridge means housing filter means and comprising a peripheral first shoulder;

spring means comprising a wave spring having a central axis for exerting a biasing force angularly distributed about said central axis; and

retainer collar means having a second axis and comprising receiving means for receiving said spring means, said spring means being received by said receiving means, said retainer collar means comprising an interior follower terminating in a catch, said catch being slidably engageable against said first ramp as said collar is rotated about said central axis, said wave spring exerting said biasing force against said first shoulder so that said interior follower rides said first ramp and said catch slides by said ramp end to thereby releasably lock said cartridge means to said base means under the force of said biasing force.

5,302,285

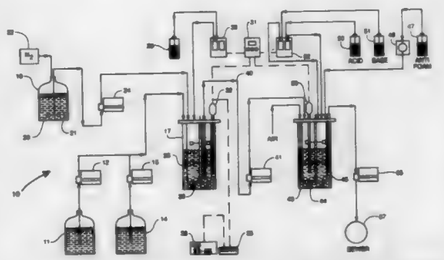
PROPELLANT WASTEWATER TREATMENT PROCESS

Hubert Attaway, and Mark D. Smith, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 20, 1993, Ser. No. 128,005

Int. Cl.[5] C02F *3/30, 1/58*

U.S. Cl. 210—605 **15 Claims**



1. A method for treating wastewater to remove ammonium perchlorate dissolved therein, comprising the steps of:

(a) providing a substantially closed anaerobic reactor having an inlet for inserting said wastewater thereinto and an outlet for discharge of effluent liquid therefrom, said anaerobic reactor being of preselected size to provide a preselected resident time of said wastewater therewithin at preselected flow rate therethrough;

(b) providing a source of an organism from a sewage enrichment culture for reducing perchlorate ion in said wastewater to chloride ion;

(c) adding said organism to said wastewater within said anaerobic reactor;

(d) adjusting the pH of said wastewater within said anaerobic reactor to about 6.5 to 8.0;

(e) discharging effluent liquid from said anaerobic reactor at a rate corresponding to said preselected resident time of said wastewater within said anaerobic reactor;

(f) providing a substantially closed aerobic reactor having an inlet for inserting said effluent liquid thereinto and an outlet for discharge of treated liquid therefrom, said aerobic reactor being of preselected size to provide a preselected resident time of said effluent liquid therewithin at preselected flow rate therethrough;

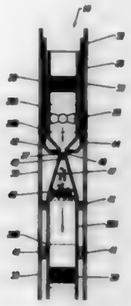
(g) circulating air into said aerobic reactor and into said effluent liquid therein to convert soluble organics contained within said effluent liquid to carbon dioxide and sludge;

(h) adjusting the pH of said effluent liquid within said aerobic reactor to about 7.0 to 8.5; and

(i) discharging treated liquid from said aerobic reactor.

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5,302,286
METHOD AND APPARATUS FOR IN SITU GROUNDWATER REMEDIATION
Lewis Semprini, Palo Alto; Perry L. McCarty; Peter K. Kitanidis, both of Stanford, and Jae-Ho Bae, Sunnyvale, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.
Filed Mar. 17, 1992, Ser. No. 855,351
Int. Cl.[5] C02F *3/02*
U.S. Cl. 210—610 **21 Claims**

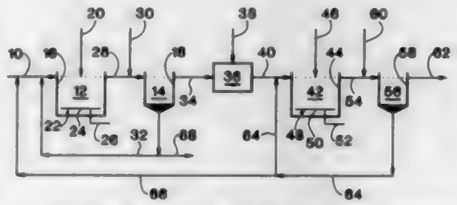


16. A method for in-situ treatment of contaminated groundwater, comprising:
(a) providing a well extending toward a saturated zone;
(b) recirculating groundwater through said well by flowing groundwater down said well and out of said well at a first level, and drawing groundwater water into said well at a second level above said first level;
(c) providing a passageway for the flow of groundwater with a downward component, having a throat section located between two tapered sections in the well between said first and second levels, and said throat section sufficiently narrow to allow water to flow therethrough and to prevent upward movement of bubbles confined therebeneath; and
(d) adding nutrients to said groundwater in the vicinity of said throat section as it flows through said passageway.

5,302,287
METHOD FOR ON SITE CLEANING OF SOIL CONTAMINATED WITH METAL COMPOUNDS, SULFIDES AND CYANOGEN DERIVATIVES
Billy J. Losack, Hondo, Tex., assignor to Tuboscope Vetco International, Houston, Tex.
Filed Sep. 11, 1992, Ser. No. 943,819
Int. Cl.[5] C02F *1/58*
U.S. Cl. 210—612 **20 Claims**

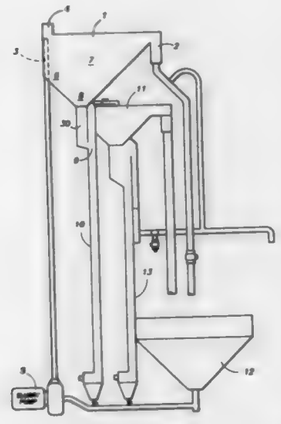
1. An in situ method of cleaning soil and/or water contaminated with a contaminant comprising one or more compounds selected from the group consisting of metal compounds, sulfur compounds and cyanide compounds, the method comprising
(a) breaking up contaminated soil;
(b) admixing soil with water and a biodegradable detergent in a proportion effective to obtain an aqueous slurry wherein the soil, any contaminant present, and the detergent interact to form contaminant-detergent formations;
(c) allowing the slurry to stand under conditions effective to permit any contaminant-detergent formations to rise in the aqueous slurry;
(d) separating the contaminant-detergent formations from the aqueous slurry which now comprises partially decontaminated soil and water;
(e) separating the partially decontaminated soil from the water;
(f) repeating steps (b) through (e) until the content of contaminant of the soil becomes lower than a predetermined value;
(g) admixing an activating agent for promoting the growth of contaminant -accumulating, -adsorbing or -degrading indigenous microorganisms with the lower contaminant-containing soil and water, the agent being capable of generating H_2O_2 in solution;
(h) allowing the microorganisms to interact with the aqueous mixture comprising the activating agent under conditions effective to substantially accumulate or adsorb therewithin, or degrade, any contaminant remaining therein;
(i) separating the activating agent-treated soil from the aqueous mixture comprising the contaminant laden microorganisms and the activating agent;
(j) washing the separated soil and returning it to the environment;
(k) separating decontaminated water obtained in step (e) from the contaminant laden microorganisms; and
(l) recycling the decontaminated water into step (b) or step (g) or returning it to the environment.

5,302,288
TREATMENT OF HIGHLY COLORED WASTEWATERS
John A. Meidl, and Thomas J. Vollstedt, both of Weston, Wis., assignors to Zimpro Environmental, Inc., Rothschild, Wis.
Filed Mar. 19, 1993, Ser. No. 35,110
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—616 **34 Claims**



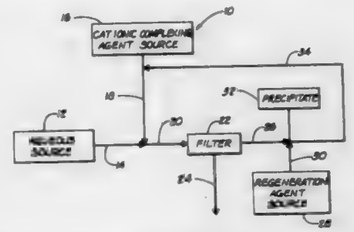
1. A process for purifying wastewater containing organic and color-causing pollutants comprising the steps:
(a) providing a primary aerobic treatment zone including an aeration zone and a quiescent zone for treating the wastewater;
(b) introducing wastewater into said aeration zone;
(c) aerating the wastewater in said aeration zone with an oxygen-containing gas in the presence of sufficient amounts of powdered adsorbent solids and biologically active aerobic solids to reduce the organic and color-causing pollutants to desired levels, said thus-treated wastewater and solids transferred from said aeration zone to said quiescent zone;
(d) retaining said thus-treated wastewater and solids in the quiescent zone for a sufficient time for solids therein to settle by gravity and produce a first settled solids phase and a first aqueous phase substantially free of solids;
(e) transferring said first aqueous phase from said primary treatment zone to an oxidizer contact zone;
(f) contacting said first aqueous phase with a chemical oxidizer in the oxidizer contact zone for a sufficient time to remove a further portion of said organic and color-causing pollutants;
(g) transferring said thus-treated aqueous phase from the oxidizer contact zone to an adsorbent contact zone;
(h) agitating said thus-treated aqueous phase in the adsorbent contact zone in the presence of powdered adsorbent solids for an agitation period sufficient to further reduce the organic and color-causing pollutants to desired levels;
(i) terminating agitation and allowing adsorbent solids in said adsorbent-treated aqueous phase to settle by gravity for a settling period sufficient to produce a clarified, substantially solids-free, second aqueous phase and a second solids phase; and
(j) separating said second aqueous phase from said second solids phase and discharging said second aqueous phase to the environment or to further use.

5,302,289
MATERIAL SEPARATION PROCESS AND APPARATUS
Lonnie McClung, and Michaelene J. McClung, both of Prosser, Wash., assignors to Material Separation, Inc.
Continuation-in-part of Ser. No. 757,710, Sep. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 789,302, Nov. 8, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 943,938
Int. Cl.[5] B01D *21/02*
U.S. Cl. 210—634 **20 Claims**



1. A process for the separation of materials, which is comprised of the following steps:
a. mixing feedstock material with a composition comprised of a separation fluid and a portion of feedstock material previously through this process, resulting in a mixed feedstock solution;
b. depositing the mixed feedstock solution into a hopper separation means wherein:
i. a less buoyant portion of the mixed feedstock solution immediately descends through relatively static separation fluid, referred to as a first separation zone;
ii. a more buoyant portion of the mixed feedstock solution is pushed upward by incoming mixed feedstock solution, referred to as a second separation zone, wherein:
(1) a more buoyant and a liquid portion of the mixed feedstock solution are discharged above and a portion is recirculated to the first mixing step stated above; and
(2) a less buoyant portion of the mixed feedstock solution descends through relatively static water and into a separation chamber and third separation zone;
c. the feedstock solution descending to the third separation zone encounter the separation fluid moving upward at a pre-determined velocity, but in a substantially turbulent flow, calibrated to separate materials above a pre-specified settling velocity, and in which:
i. a portion of the remaining feedstock solution with a settling velocity greater than the upward velocity of the separation fluid, descends to the bottom of the separation chamber and is removed as separated material;
ii. whereas the portion of the feedstock solution entering the separation chamber with a settling velocity less than the separation fluid velocity in the separation chamber are carried by the separation fluid upward to a fourth separation zone, wherein the upward flow of the separation fluid and feedstock solution is substantially laminar and an additional and finer separation occurs, and a portion of the more buoyant material and liquid being discharged at the upper end thereof is recirculated to the first step stated herein.

5,302,290
METHOD FOR REMOVING TOXIC ANIONS FROM WATER
Edwin E. Tucker; Sherril D. Christian, and John F. Scamehorn, all of Norman, Okla., assignors to Board of Regents of the University of Oklahoma, Norman, Okla.
Filed Mar. 1, 1993, Ser. No. 24,705
Int. Cl.[5] B01D *61/16*
U.S. Cl. 210—638 **24 Claims**



1. A method for removing toxic anions from water, comprising the steps of:
providing an untreated aqueous source comprising a quantity of a toxic anion;
providing a cationic complexing agent;
providing a regeneration agent;
passing an untreated aqueous stream;
passing the cationic complexing agent in a first cationic complexing agent stream;
passing the regeneration agent in a regeneration agent stream;
mixing the untreated aqueous stream and the first cationic complexing agent stream, the cationic complexing agent contained therein forming a retention complex with at least a portion of the toxic anion contained in the aqueous stream;
passing the retention complex in a treated aqueous stream;
filtering the treated aqueous stream, thereby forming a purified aqueous stream and a retention complex stream;
passing the purified aqueous stream;
passing the retention complex stream;
mixing the regeneration agent stream with the retention complex stream, at least a portion of the regeneration agent and retention complex contained respectively therein acting to release at least a portion of the cationic complexing agent in a second cationic complexing agent stream; and
passing the second cationic complexing agent stream.

5,302,291
METHOD FOR IMPROVING THE DISPERSIBILITY OF SOLVENT-BASED PAINTS IN AQUEOUS SYSTEMS
Joseph P. Miknevich, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.
Filed Sep. 30, 1992, Ser. No. 954,451
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—696 **6 Claims**

1. A method for improving the dispersibility of oversprayed, solvent-based paint in the circulating water of a paint spray treated with an acid colloid detackifier which is a melamine condensation product with formaldehyde, wherein said paint is

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a high solids paint containing in excess of about 50% solids, and said water contains hardness, as calcium carbonate, in excess of about 100 mg/L based on the weight of said water, comprising adding to said water an effective amount of a chelating agent selected from the group consisting of ethylenediaminetetraacetic acid or salts or derivatives thereof, diethylenetriaminepentaacetic acid or salts or derivatives thereof, N-hydroxyethylethylene diaminetriacetic acid or salts or derivatives thereof, nitrolotriacetic acid or salts or derivatives thereof, phosphates, triethylaminediamine, and tetraborates, to maintain said hardness in said circulating water below about 100 mg/L.

5,302,292

METHOD FOR TREATING GROUND WATER CONTAMINATION

Kenneth Soeder, Haddam, and Mitchel Helfeld, Trumbull, both of Conn., assignors to Jamestown Chemical Company, Inc., West Haven, Conn.

Continuation-in-part of Ser. No. 702,923, May 20, 1991, abandoned. This application Apr. 27, 1992, Ser. No. 875,253

Int. Cl.[5] C02F *1/00*

U.S. Cl. 210—700 **7 Claims**

1. A method for treating groundwater contamination for controlling fouling in groundwater remediation equipment by metal oxides, which comprises:

providing an aqueous solution containing:

from 5–50% of citric acid as a chelating agent;

from 3–50% of a sequestration agent of diethylenetriaminemethylenephosphoric acid;

from 2–25% of a crystal growth modifier of 2-phosphono-1,2,4-butanetricarboxylic acid; and

from 2–25% of a dispersant of a low molecular weight sulfonated styrene maleic anhydride copolymer having a molecular weight from 1000 to 20000; and

adding said solution into the incoming water line upstream of an air stripping unit in a concentration of at least 10 ppm by weight, thereby preventing fouling of the unit and permitting continuous use thereof.

5,302,293

METHOD OF CONTROLLING IRON IN PRODUCED OILFIELD WATERS

Roy I. Kaplan, Missouri City, and John D. Johnson, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

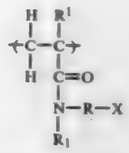
Filed Jul. 13, 1992, Ser. No. 912,871

Int. Cl.[5] C02F *5/12*

U.S. Cl. 210—701 **7 Claims**

1. A process for stabilizing iron (hydr)oxides in produced oilfield waters comprising:

adding to produced oilfield water a water soluble polymer having a molecular weight of from 5,000 to 100,000 which contains from 5 to 85 mole percent pendant N-substituted amide functionality units having the chemical formula



wherein R' is hydrogen or methyl, R_1 is hydrogen, R is alkylene having 1 to 3 carbon atoms or phenylene, X is sulfonate, and said alkylene may be further subatituted with hydroxy, and 15 to 95 mole percent of acrylic acid units or a mixture of acrylic acid and (meth)acrylamide units,

wherein said polymer is added to said produced water at a rate of about 6 parts by weight polymer to 10 parts by weight iron in said produced water.

5,302,294

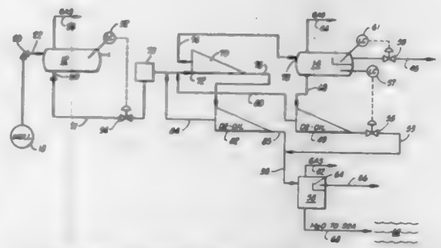
SEPARATION SYSTEM EMPLOYING DEGASSING SEPARATORS AND HYDROGLYCLONES

Mark F. Schubert, and David A. Hadfield, both of Houston, Tex., assignors to Conoco Specialty Products, Inc., Houston, Tex.

Filed May 2, 1991, Ser. No. 694,723

Int. Cl.[5] B01D *17/038, 21/00*

U.S. Cl. 210—702 **51 Claims**



1. A process for separating the components of a fluid stream being substantially free of solids wherein the fluid stream comprises a majority of a greater density first liquid component, a leaser density second liquid component, and a gaseous component, comprising:

(a) at least partially degassing said stream in a first separator to create a degassed stream comprised primarily of liquid;

(b) introducing at least a portion of said degassed liquid stream into an inlet of a second separator, said second separator being a liquid/liquid hydrocyclone second separator of the type having an separating chamber designed, constructed and arranged for separating a mixture consisting essentially of a lighter phase liquid and a heavier phase liquid wherein the separating camber of the hydrocyclone has a ratio of length to diameter at its inlet so as to effect separation of a lighter phase liquid component of said degassed liquid stream from a heavier phase liquid component thereof;

(c) separating said degassed liquid stream in said hydrocyclone second separator into a more dense liquid stream and a less dense liquid stream wherein each liquid stream comprises greater and lesser density liquid components and wherein said more dense liquid stream comprises a relatively lower concentration of said lesser density second liquid component compared to said degassed stream and said less dense liquid stream comprises a relatively higher concentration of said lesser density second liquid component compared to said degassed stream;

(d) separating said less dense liquid stream into a more dense phase, a less dense phase and a gaseous phase;

(e) introducing said more dense liquid stream into a float tank; and

(f) reducing the content of said lesser density second liquid component of said more dense liquid stream in the float tank at least in part by gravity separation.

10. The process of claim 1, further comprising:

coalescing a dispersed phase of one of said first and second liquid components upstream of said hydrocyclone second separator.

5,302,295

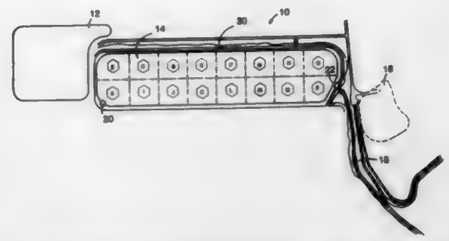
METHOD OF SLUDGE REMOVAL

Stephen R. Kellogg, Stratford, and Ralph A. Klass, New Milford, both of Conn., assignors to YWC Technologies, Trumbull, Conn.

Filed Dec. 29, 1992, Ser. No. 997,877

Int. Cl.[5] C02F *11/14*

U.S. Cl. 210—710 **20 Claims**



1. A method for removing solid material comprising a sludge from the bottom of a body of liquid comprising the steps of:

a) placing a turbidity curtain of liquid impermeable material about a first minor portion of the body of liquid, the curtain extending from the surface to the bottom of the body and defining a first cell,

b) pumping sludge from the first cell and discharging said pumped sludge out of said body,

c) placing a turbidity curtain around a second minor portion of the body of liquid, the curtain extending from the surface to the bottom of the body and defining a second cell,

d) discontinuing the pumping of sludge from said first cell,

e) thereafter pumping sludge from the second cell and discharging said pumped sludge out of said body,

f) after solids resuspended in the liquid in the first cell as a result of pumping sludge therefrom have been allowed to settle for a predetermined time after pumping has been discontinued, moving the first cell to a different location in the body of liquid, and

g) repeating steps d), e) and f) with the first cell, after being moved, becoming the second cell and the second cell becoming the first cell.

5,302,296

WATER CLARIFICATION USING COMPOSITIONS CONTAINING A WATER CLARIFIER COMPONENT AND A FLOC MODIFIER COMPONENT

Eric J. Evain, Mobile, Ala.; Hartley H. Downs, Kingwood, and Daniel K. Durham, Spring, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 540,048, Jun. 19, 1990, Pat. No. 5,190,683. This application Feb. 22, 1993, Ser. No. 20,760

Int. Cl.[5] C02F *1/54*

U.S. Cl. 210—728 **11 Claims**

1. A method of clarifying an aqueous system without production of a problematic floc in the system, comprising the steps of:

contacting the system with an effective water clarifying amount of a composition having present therein a dithiocarbamate;

including in the composition an effective amount of a floc modifier selected from the group consisting of amines, alcohols, aminoalcohols, ethers, and mixtures thereof, and halogenated adducts thereof; and

maintaining the composition in the system for sufficient time to effectively clarify the system without production of a problematic floc.

5,302,297

REMOVAL OF SCALE-FORMING INORGANIC SALTS FROM A PRODUCED BRINE

Richard T. Barthrope, 8889 W. Fremont Ave., Littleton, Colo. 80123

Filed Feb. 26, 1993, Ser. No. 23,277

Int. Cl.[5] C02F *1/58*

U.S. Cl. 210—728 **23 Claims**

1. A process for removing scale-forming inorganic salts from a brine comprising:

providing a brine having an inorganic salt and a scale inhibitor dissolved therein, wherein said scale inhibitor substantially inhibits precipitation of said inorganic salt;

adding an organic chelant having at least one carboxylic acid group to said brine in an amount sufficient to induce precipitation of said inorganic salt in the presence of said scale inhibitor; and

precipitating said inorganic salt from said brine.

5,302,298

PROCESS AND INSTALLATION FOR TREATING LIQUIDS CHARGED WITH POLLUTANTS

Ortwin Leitzke, Kaarst, Fed. Rep. of Germany, assignor to Wedeco Umwelttechnologien Wasser Boden Luft GmbH, Herford, Fed. Rep. of Germany

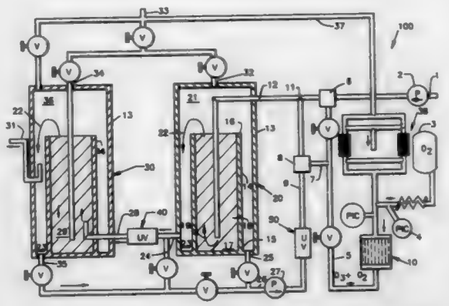
PCT No. PCT/DE90/00446, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO90/15778, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 13, 1990, Ser. No. 778,141

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919885

Int. Cl.[5] C02F *1/78*

U.S. Cl. 210—748 **26 Claims**



1. A process for treating a liquid, which is charged with pollutants that are difficult to break down, by wet oxidation with an ozone-containing gas and UV radiation, comprising the steps of: passing and dissolving an ozone-containing carrier gas, without exposing the gas to UV radiation, into a liquid which is charged with pollutants, isolating undissolved carrier gas from the liquid containing ozone and removing gas bubbles from the ozonated liquid to render the ozonated liquid substantially free of gas bubbles, and thereafter irradiating the liquid containing ozone with UV radiation to achieve simultaneous radical formation and oxidation with radicals in the liquid.

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5,302,299

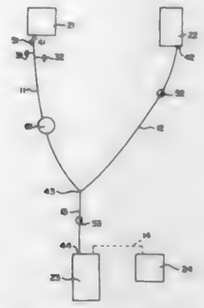
BIOLOGICAL SEMI-FLUID PROCESSING ASSEMBLY

Frank R. Pascale, Glen Cove; Thomas J. Bormann, Melville, and Vlado I. Matkovich, Glen Cove, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 820,608, Jan. 21, 1992, which is a continuation-in-part of Ser. No. 528,160, May 24, 1990, Pat. No. 5,126,054. This application Mar. 20, 1992, Ser. No. 854,588

Int. Cl.[5] B01D *37/00*

U.S. Cl. 210—767 **17 Claims**



1. A method for treating a biological semi-fluid comprising diluting the biological semi-fluid with a physiologically acceptable diluent; and

removing leukocytes from the diluted biological semi-fluid by passing the diluted biological semifluid through a filter assembly which removes leukocytes from the biological semi-fluid; and,

separating a substantial portion of the diluent from the leuococyte depleted biological semi-fluid.

5,302,300

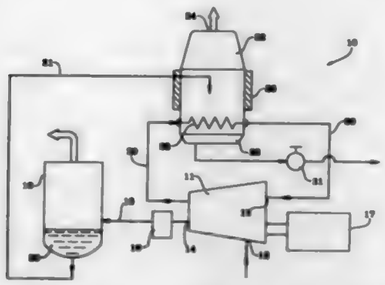
METHOD AND APPARATUS FOR SEPARATING WATER FROM A CONDENSATE MIXTURE IN A COMPRESSED AIR SYSTEM

Richard E. Porri, Charlotte, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 5, 1993, Ser. No. 42,958

Int. Cl.[5] B01D *5/00*

U.S. Cl. 210—774 **6 Claims**



1. An apparatus for removing water from a condensate mixture which has formed in a compressed gas system, the condensate mixture containing both a lubricant and water, the apparatus comprising:

an oil flooded gas compressor having an inlet port for receiving low pressure gas to be compressed and a discharge port through which a stream of compressed gas flows;

an aftercooler disposed in fluid communication with the discharge port;

a vessel for collecting, as an effluent condensate mixture, any entrained liquid water and lubricant from the compressed gas stream, the vessel having a sump portion and a vent to an atmosphere external to the compressed air system, the vessel being disposed in fluid receiving relation with the aftercooler;

means for vaporizing the water, the vaporizing means heating the effluent condensate mixture to a predetermined temperature to thereby vaporize the water, at which time, the water vapor exits the vessel through the vent, whereby the lubricant remains in the sump portion of the vessel; and

valve means for draining the separated lubricant from the sump portion of the vessel to a location external to the compressed air system.

5,302,301

MULTISTAGE LIQUID AND GAS SEPARATOR

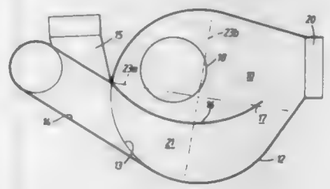
Jeffrey Stamp, Emsworth, and Eric C. Bula, Fareham, both of England, assignors to Pall Corporation, Glen Cove, N.Y.

Filed Jun. 17, 1992, Ser. No. 899,886

Claims priority, application United Kingdom, Jun. 18, 1991, 9113165

Int. Cl.[5] B01D *45/12, 19/00*

U.S. Cl. 210—787 **14 Claims**



1. An apparatus for separating a liquid from a liquid/gas mixture comprising a chamber having opposed end walls and a side wall extending between the end walls, an inlet provided in the side wall for directing the mixture towards a curved section of the side wall extending from the inlet to separate the liquid from the mixture by centrifugal force, a filter unit provided in the chamber for filtering the air and offset from the center of the chamber, a liquid outlet for separated liquid, and an air outlet leading from the filter unit.

5,302,302

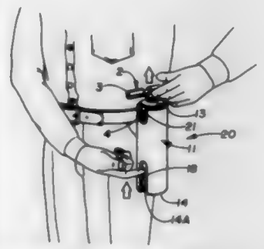
HOLSTER FOR CYLINDRICAL ARTICLES, SUCH AS AEROSOL CANS AND THE LIKE

Robert O. Shelley, 1706 Linden Ave., Baltimore, Md. 21217, and Glenn C. Shelley, 1160 White Sands Dr., Lusby, Md. 20657

Filed Jul. 6, 1992, Ser. No. 908,476

Int. Cl.[5] B65D *25/14*

U.S. Cl. 224—148 **15 Claims**



1. A holster for an aerosol can intended to be carried on a body of a person, wherein the can is cylindrical and has an outer diameter, the holster comprising a sleeve, means for supporting the sleeve on the body of the person, such that the sleeve is oriented generally vertically, the sleeve having a pair of ends including a top open end and a bottom end, and the sleeve being tapered downwardly from the top open end of the sleeve towards the bottom end thereof, such that the sleeve has an inner diameter which is greater than the outer diameter of the can at the top of the sleeve, and which is less than the diameter of the can towards the bottom of the sleeve, so that the can may be dropped into the top open end of the sleeve, and the can will be frictionally gripped within the sleeve above the bottom end of the sleeve, the sleeve further comprising access means to the can from the bottom end of the sleeve to enable removal of the can from the open top end of the sleeve without reaching into said open top end.

5,302,303

STORAGE STABLE ISOCYANATE-REACTIVE COMPOSITIONS FOR USE IN FLAME-RETARDENT SYSTEMS

Jan L. R. Clatty, Monaco, Pa.; Michael T. Wellman, Moundsville, W. Va., and Sanjeev Madan, Coraopolis, Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Aug. 24, 1993, Ser. No. 111,099

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—6.5 **20 Claims**

1. A storage-stable isocyanate-reactive composition containing a flame retardant comprising

(a) 10 to 90 percent by weight, based on the total of components (a), (b), (c), (d), and (e), of at least one isocyanate-reactive compound having a molecular weight of 400 to 10,000 and a functionality of 2 to 7;

(b) 0.6 to 67 percent by weight, based on the total of components (a), (b), (c), (d), and (e), of at least one isocyanate-reactive compound having a molecular weight of less than 399 and a functionality of 2 to 6;

(c) 0.7 to 30 percent by weight, based on the total of components (a), (b), (c), (d), and (e), of a tertiary amine or ammonium compound selected from the group consisting of (i) an isocyanate-reactive tertiary amine polyether other than components (a) or (b) having a molecular weight of from 100 to 1000 and having the formula

$$R[NR^1R^2]_m$$

wherein

R is saturated or unsaturated C_2–C_8 aliphatic or C_2–C_8 aliphatic substituted with -OH, -SH, or NHR^a wherein R^a is C_1–C_8 alkyl or C_2–C_8 alkenyl; saturated or unsaturated C_5–C_8 cycloaliphatic or C_5–C_8 cycloaliphatic substituted with C_1–C_8 alkyl, C_2–C_8 alkenyl, C_1–C_8alkylene, -OH, -SH, or NHR^a wherein R^a is alkyl or alkenyl; or five- or six-membered aromatic or heteroaromatic optionally substituted with C_1–C_8alkyl, C_1–C_8 alkoxy, halogen, cyano, nitro, C_1–C_8 alkylene, -OH, -SH, or NHR^a wherein R^a is C_1–C_8 alkyl or C_2–C_8 alkenyl;

R^1 and R^2 are independently polyether groups terminated with isocyanate-reactive groups selected from -OH, -SH, and NHR^b wherein R^b is C_1–C_8 alkyl or C_2–C_8 alkenyl; and

m is an integer of from 1 to 4;

(ii) a fatty amido-amine;

(iii) an ammonium salt derivative of a fatty amido-amine other than components (a) or (b) and

(iv) mixtures thereof;

(d) 5 to 55 percent by weight, based on the total of components (a), (b), (c), (d), and (e), of a flame retardant;

(e) 0.007 to 6 percent by weight, based on the total of components (a), (b), (c), (d), and (e), of a catalyst selected from tertiary amines, organic metal compounds, and mixtures thereof; and

(f) 0 to 15 percent by weight, based on the total of components (a), (b), (c), (d), and (e), of additives.

5,302,304

SILVER PROTECTIVE LUBRICANT COMPOSITION

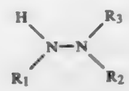
Joseph J. Valcho, Naperville, Ill., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 633,088, Dec. 21, 1990, abandoned. This application Mar. 5, 1992, Ser. No. 847,747

Int. Cl.[5] C10M *105/72, 105/56*

U.S. Cl. 252—47 **17 Claims**

1. An internal combustion engine lubricating composition comprising a major proportion of an oil of lubricating viscosity and from about 0.01 weight percent to about 10 weight percent, based on the weight of the total lubricating composition, of a silver-wear and copper-corrosion protection additive comprising the reaction product of a C_5 to C_{60} aliphatic monocarboxylic acid, formic acid, and at least one hydrazine of the formula:



(I)

wherein R_1, R_2, and R_3 are independently selected from hydrogen, C_1 to C_{20} hydrocarbyl, and hydroxy-substituted hydrocarbyl wherein, the mole ratio of hydrazine to monocarboxylic acid is from about 0.8:1 to about 1.5:1, and the mole ratio of hydrazine to formic acid is from about 0.5:1 to about 1.5:1, 0.01 to about 1 weight percent of the total composition of an organo-sulfur compound selected from the group consisting of sulfurized olefins, sulfurized fatty acids and esters, sulfur-containing heterocyclic compounds, sulfurized hydroxy-aromatic compounds, disulfides, dithiocarbamates and thiadiazoles.

5,302,305

CARBOXYLIC ESTERS, LIQUID COMPOSITIONS CONTAINING SAID CARBOXYLIC ESTERS AND METHODS OF LUBRICATING METAL PARTS

Scott T. Jolley, Mentor, and Richard M. Lange, Euclid, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 9, 1989, Ser. No. 310,146

Int. Cl.[5] C10M *137/12*

U.S. Cl. 252—32.005 **7 Claims**

1. A method for lubricating metal parts which comprises contacting said parts with a lubricant comprising at least one phosphorus-containing composition characterized by the formulae

	Parts by Wt.
Example A	
1,1,1,2-tetrafluoroethane (R134a)	90
Lubricant of Example 2	10
Example B	
1,1,2,2-tetrafluoroethane	85
Lubricant of Example 4	15
Example C	
1,1,1,2-tetrafluoroethane	95
Lubricant of Example 6	5
Example D	
R134a	80
Product of Example 7	20
Example E	
R134a	85
Product of Example 4	15

wherein

R+ is a hydrocarbylene group substituted with a $—P(O)(OR^3)_2$ group;

Z is $—COOR^1$, $—C(O)NR^4R^5$, $—C(O)(OR^6)_yN(R^4)C(O)R^7$, $—C(O)(OR^6)_yOC(O)R^7$, —CN, —CHO, or $—C(O)R^7$;

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R^6 is an alkylene group;
R^1 and R^3 are each independently lower alkyl groups;
R^4 and R^5 are each independently H or hydrocarbyl groups;
R^6 is a hydrocarbylene group;
R^7 is a hydrocarbyl group;
y is an integer from 1 to about 20;
R^{10} is independently H or a hydrocarbyl group;
R^{11} is H or —COOR[1]; and
n is an integer from 2 to about 6, provided that at least one of Z or R^{11} in Formula IA is a COOR[1] group.

5,302,306
PROCESS FOR PREPARING POLYCRYSTALLINE FERRITE MATERIALS AND COMPOSITES CONTAINING THEM
Shinji Nagata, Kanagawa; Norio Sasaki, and Mineo Yorizumi, both of Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 851,337, Mar. 16, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 78,843
Claims priority, application Japan, Mar. 15, 1991, 3-075576; Mar. 15, 1991, 3-75577; Aug. 3, 1991, 3-217813; Aug. 30, 1991, 3-244998
Int. Cl.[5] C04B *35/38*
U.S. Cl. 252—62.62 4 Claims

1. A process for preparing a polycrystalline Mn-Zn ferrite comprising coprecipitating Mn-Zn ferrite material from an aqueous solution; immersing the coprecipitant in an alkaline aqueous solution; separating the coprecipitant therefrom to form a starting powder; calcining the starting powder at a temperature not lower than 900° C.; placing the calcined starting powder in a mold and applying a compressive pressure thereto with electrodes inserted therein; and applying potential between the electrodes to cause a discharge plasma sintering of the compressed calcined starting powder to form polycrystalline Mn-Zn ferrite.

3. A process for preparing a composite of polycrystalline Mn-Zn ferrite bonded to a single crystal of Mn-Zn ferrite comprising the steps of coprecipitating Mn-Zn ferrite material from an aqueous solution; immersing the coprecipitant in an alkaline aqueous solution; separating the coprecipitant therefrom to form a starting powder; calcining the starting powder at a temperature not lower than 900° C.; placing the calcined starting powder together with a single crystal of Mn-Zn ferrite of the same composition as the starting powder to form a mixture in a mold; applying a compressive pressure thereto with electrodes inserted therein; and applying potential between the electrodes to cause a discharge plasma sintering of the mixture to form said composite.

5,302,307
LIQUID ANTICORROSIVE AND ANTISCALING DEICING COMPOSITION
Donald T. Ireland, Delano, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.
Continuation of Ser. No. 572,504, Aug. 23, 1990, abandoned. This application Apr. 8, 1992, Ser. No. 865,676
Int. Cl.[5] C09K *3/18*
U.S. Cl. 252—70 16 Claims

1. A liquid composition consisting essentially of from about 95 to about 99.9 weight percent of a deicer selected from the group consisting of liquid bittern and aqueous $MgCl_2$, the aqueous $MgCl_2$ consisting essentially of about 34 weight percent $MgCl_2$ based upon the weight of the aqueous $MgCl_2$; and from about 0.1 to about 5.0 weight of an organic inhibitor selected from the group consisting of triethanolamine, a triethanolamine acid salt, citric acid, an alkali metal salt of citric acid and mixtures thereof.

5,302,308
METHODS FOR CONTROLLING DUST IN HIGH TEMPERATURE SYSTEMS
Donald C. Roe, Tabernacle, N.J., assignor to Betz Laboratories, Inc., Trevose, Pa.
Filed Aug. 24, 1992, Ser. No. 934,835
Int. Cl.[5] C09K *3/22;* C10L *10/00*
U.S. Cl. 252—88 11 Claims

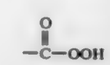
1. A method for reducing the emission of dust from hot particulate substrates having a temperature of about 250° F. comprising contacting the bulk of the particulate substrates with an aqueous solution of polyethylene oxide, said polyethylene oxide having a molecular weight of about 100,000 to about 5,000,000.

5,302,309
POURABLE SULFONE DIPEROXYCARBOXYLIC ACID COMPOSITIONS
Bertie J. Reuben, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 282,715, Dec. 12, 1988, Pat. No. 5,039,447. This application Aug. 2, 1991, Ser. No. 739,929
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] C11D *3/395;* C01B *15/055*
U.S. Cl. 252—95 17 Claims

1. An aqueous stable liquid bleaching composition comprising
a) from about 1% to about 25% by weight of a sulfone peroxycarboxylic acid having the formula



wherein A and B are alkyl peroxycarboxylic acid compatible organic moieties bonded to the sulfur atom by a carbon atom, wherein both A and B at the same time contain at least one



group bonded to a carbon atom,
b) from about 1% to about 20%, by weight of an anionic surfactant, and
c) from about 1% to about 20%, by weight of a non-ionic surfactant
d) an amount of a salt stabilizer effective to enhance the shelf-like of said composition.

5,302,310
DETERGENT COMPOSITIONS CONTAINING A CARBONATE BUILDER, A SEED CRYSTAL AND AN IMMOBILIZED SEQUESTRANT
Mark P. Houghton, Rotterdam, Netherlands, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Apr. 29, 1993, Ser. No. 55,442
Claims priority, application United Kingdom, Apr. 30, 1992, 9209366
Int. Cl.[5] C11D *3/10, 3/12, 3/30, 3/36*
U.S. Cl. 252—95 9 Claims

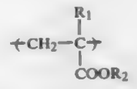
1. A cleaning composition comprising:
(a) 5 to 60% alkali metal carbonate builder;
(b) a seed crystal material for said carbonate builder wherein the ratio of carbonate builder to seed crystal material is from 10:1 to 0.5:1;
(c) a heavy metal sequestrant immobilized on a high surface area solid support medium wherein the amount of heavy metal sequestrant plus solid support medium is from 0.01% to 5% of the total cleaning composition and wherein the weight ratio of heavy sequestrant to solid support medium is from 0.1 to 10 mmol/gram and wherein poisoning of the seed crystal material by the heavy metal sequestrant is avoided.

5,302,311
CLEANING SOLUTION OF SEMICONDUCTOR SUBSTRATE
Yasuo Sugihara; Kazushige Tanaka, and Michiya Kawakami, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
PCT No. PCT/JP92/00219, § 371 Date Sep. 24, 1992, § 102(e) Date Sep. 24, 1992, PCT Pub. No. WO92/16017, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 28, 1992, Ser. No. 927,282
Claims priority, application Japan, Feb. 28, 1991, 3-057736
Int. Cl.[5] C11D *7/06, 7/18, 7/32, 7/36*
U.S. Cl. 252—102 1 Claim

1. A cleaning solution for a semiconductor substrate which comprises a basic aqueous solution containing 0.1 to 20% by weight of hydrogen peroxide, 0.1 to 10% by weight of ammonia and 1 ppb to 1000 ppm of 1,2 propylenediamine tetra (methylenephosphonic acid).

5,302,312
DETERGENT FOR CONTACT LENS COMPRISING A WATER-SOLUBLE COMPOUND AND A COPOLYMER OF POLYHYDRIC ALCOHOL AND A CROSS-LINKED ACRYLIC ACID AND A METHOD FOR WASHING CONTACT LENS
Atsushi Kawai; Megumi Nozawa; Shoko Kanda, all of Nagoya; Kenji Kodama, and Hidetake Sendai, both of Tokyo, all of Japan, assignors to Tomei Sangyo Kabushiki Kaisha, Nagoya, Japan
PCT No. PCT/JP89/00613, § 371 Date Feb. 14, 1990, § 102(e) Date Feb. 14, 1990, PCT Pub. No. WO89/12842, PCT Pub. Date Dec. 28, 1989
Continuation of Ser. No. 465,264, Feb. 14, 1990, abandoned. This PCT application Jun. 15, 1989, Ser. No. 799,861
Claims priority, application Japan, Jun. 18, 1988, 63-150524
Int. Cl.[5] C11D *3/37, 1/12, 1/72*
U.S. Cl. 252—106 3 Claims

1. A detergent for a contact lens comprising 40 to 80% by weight of fine particles of a water-soluble compound which is safe for eyes and suspended in correspondingly 60 to 20% by weight of a pasting agent, wherein the water-soluble compound has a salt value of at most 0.65 and a solubility in water of 3 to 30 g per 100 g of a saturated solution of the compound at 30° C. to 60° C., with the product of the salt value and the solubility at 30° C. being at most 10, and 100% of which passes a JIS standard sieve of a nominal size of 75 μm, and said pasting agent contains 5 to 100% by weight of an aqueous dispersion of a gel composed of a reaction product of (a) a polyhydric alcohol having 2 to 4 carbon atoms and (b) a crosslinked acrylic acid compound having a crosslinkable recurring unit represented by the general formula (I):


(I)

wherein R_1 represents at least one of hydrogen and methyl, R_2 represents at least one member selected from the group consisting of hydrogen, sodium, potassium, lithium, NH_4, a residue of a saturated polyhydric alcohol having 2 to 4 carbon atoms and alkyl having 1 to 32 carbon atoms.

5,302,313
HALOGENATED HYDROCARBON SOLVENTS
Teruo Asano, Yokohama; Naohiro Watanabe, Chiba; Kazuki Jinushi, Ichihara, and Shunichi Samejima, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Continuation of Ser. No. 670,740, Mar. 18, 1991, abandoned, which is a division of Ser. No. 602,041, Oct. 25, 1991, Pat. No. 5,116,426, which is a continuation of Ser. No. 369,769, Jun. 22, 1989, abandoned. This application Dec. 1, 1992, Ser. No. 984,241
Claims priority, application Japan, Jun. 22, 1988, 63-152271; Jun. 22, 1988, 63-152272; Jun. 22, 1988, 63-152273; Jun. 22, 1988, 63-152274; Jun. 22, 1988, 63-152275; Jun. 22, 1988, 63-152276; Jun. 22, 1988, 63-152277
Int. Cl.[5] C23G *5/028, 5/032*
U.S. Cl. 252—171 2 Claims

1. A solvent composition consisting essentially of from 10 to 90% by weight of a compound of the formula $CC1F_2CF_2CHC1F$, from 10 to 80% of weight of an organic solvent selected from the group consisting of a hydrocarbon, an alcohol, a ketone, a chlorinated hydrocarbon, an ester and an aromatic compound, and from 0 to 10% by weight of a surfactant.

5,302,314
STABLE AQUEOUS-SUSPENSIONS OF INORGANIC MATERIALS ON SILICA BASIS AND INSOLUBLE IN WATER
Claudio Troglia, Milan, and Giancarlo Barbero, Arona Novara, both of Italy, assignors to Enimont Augusta Industriale, Italy
Continuation of Ser. No. 629,765, Dec. 18, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 999,176
Claims priority, application Italy, Dec. 18, 1989, 22728 A/89
Int. Cl.[5] C11D *3/12, 3/37*
U.S. Cl. 252—174.23 8 Claims

1. Aqueous suspensions containing from 30–70% by weight based on the aqueous suspension of water-insoluble, anhydrous silica-based inorganic materials in finely subdivided form, which suspensions are stabilized with 0.05 to 0.4% by weight based on the aqueous suspension of at least one organic, partially crosslinked polymeric compound comprising:
(a) from 15 to 99.9% by weight based on the organic, partially crosslinked polymeric compound of at least one monomer selected from the group consisting of acrylic and methacrylic acid;
(b) 0 to 85.0% by weight based on the organic, partially crosslinked polymeric compound of at least one non-crosslinking acrylic monomer selected from the group consisting of esters, amides, and nitriles of acrylic acid or methacrylic acid and mixtures thereof;
(c) at least one crosslinking monomer containing at least two double bonds, said monomer is selected from the group consisting of those having acrylic, allylic, and vinylic moieties and mixtures thereof; and
(d) optionally at least one crosslinking, at least bifunctional, monomer containing a double bond and at least one further chemical function reactive towards the other monomers with acidic, ester, amidic, or nitrilic function of components (a) and (b), wherein components (c) and (d) are present in an amount ranging from 0.1 to 5% by weight relative to the total weight of the organic, partially crosslinked polymeric compound.

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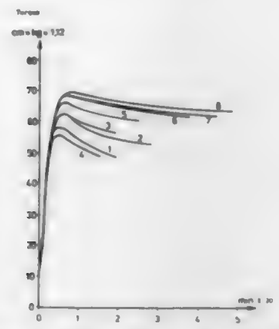
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,315

VULCANIZATION ACTIVATOR METHOD

Henning Umland, Wimsen/Luhe, Fed. Rep. of Germany, assignor to Schill & Seilacher (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 405,556, Sep. 11, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 925,237
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831883
Int. Cl.[5] C09G *3/00*
U.S. Cl. 252—182.14 20 Claims



1. A method for preparing rubber for sulfur vulcanization, comprising:

adding to said rubber, which is to be vulcanized, a vulcanization activator, comprising

a homogeneous eutectic mixture of zinc salts of the following acids:

(a) at least one carboxylic acid of the formula R—COOH, wherein R is a radical selected from the group consisting of an alkyl group having 5 to 17 carbon atoms and a cycloalkyl group having 5 to 17 carbon atoms; and

(b) an unsubstituted or substituted aromatic carboxylic acid;

and in that the molar ratio of component (a) and component (b) of said homogeneous mixture of zinc salts is such that the zinc salt mixture is eutectic, and within the range of 1:19 to 19:1.

5,302,316

OPTICAL FIBER COATING COMPOSITION

Yutaka Hashimoto; Jun Shirakami, and Masayuki Kamei, all of Osaka, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 827,212
Claims priority, application Japan, Jan. 31, 1991, 3-10609; Mar. 12, 1991, 3-46698
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—183.11 9 Claims

1. A curable coating composition comprising

1) a first monomer represented by formula (A)

$$RfOCOC(R)=CH_2 \qquad (A)$$

wherein Rf represents linear or branched fluorinated alkyl group having not less that 6 carbon atoms, a hydroxyl substituted fluorinated alkyl having not less that 6 carbon atoms, a fluorinated sulfonamide having not less that 6 carbon atoms, or a fluorinated amide having not less that 6 carbon atoms, and R represents H, F, or C_{1-10} fluorinated alkyl;

2) a second monomer represented by formula (B) wherein Rf' represents a linear or branched C_{1-5} fluorinated alkyl and R' represents —H, —F, or $—CH_3$; and

3) at least one polyfunctional methacrylic curable monomer, wherein the weight ratio of the first monomer to the second monomer from 75:25 to 99:1.

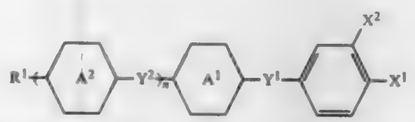
5,302,317

HALOBENZENE LIQUID CRYSTALS

Arthur Boller, Binningen; Richard Buchecker, Zurich; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 262,652, Oct. 26, 1988, Pat. No. 5,230,826. This application Mar. 29, 1993, Ser. No. 38,395
Claims priority, application Switzerland, Nov. 6, 1987, 4344/87; Aug. 18, 1988, 3080/88
Int. Cl.[5] C09K *19/06, 19/30, 19/34;* G02F *1/13*
U.S. Cl. 252—299.6 9 Claims

1. A compound of the formula:



I

wherein X^1 is chlorine and X^2 is hydrogen; R^1 is 3E-alkenyl, 4-alkenyl, 2E-alkenyloxy, or 3-alkenyloxy; n is the integer 0 or 1; one of the groups Y^1 and Y^2 is a single covalent bond, —COO—, —OOC—, $—CH_2CH_2—$, $—CH_2O—$, or $—OCH_2—$ and the other of the groups Y^1 and Y^2 is single covalent bond; and each of the rings A^1 and A^2 individually is trans-1,4-cyclohexylene, trans-1,4-cyclohexylene in which in two non-adjacent CH_2 groups are replaced by oxygen, 1,4-phenylene, or 1,4-phenylene in which 1 CH group or 2 CH groups are replaced by nitrogen, the above substituents for rings A^1 and A^2 being unsubstituted or substituted with at least one of cyano, lower alkyl, or halo.

5,302,318

METHOD FOR INCREASING THE COHESIVENESS OF POWDERS IN FLUID BEDS

Arunava Dutta, Chestnut Hill, and Leonard V. Dullea, Peabody, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 612,942, Nov. 13, 1990, Pat. No. 5,071,590. This application Jul. 30, 1991, Ser. No. 737,958
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] B05C *11/02*
U.S. Cl. 252—301.4 R 6 Claims



1. A method of fluidization in a bed of particles having a top portion and a bottom portion and being confined within a container having a side wall comprising:

distributing upwardly flowing gases into said bottom portion for fluidizing the particles;

said bed of particles comprising phosphor particles and inorganic fibers, said inorganic fibers comprising an oxide or nitride of aluminum or silicon, said fibers being present in an effective amount for increasing the Hausner Ratio of said phosphor by a factor greater than 1 and less than or equal to 1.33.

5,302,319

PREPARATION OF SOL GEL COMPOSITION FOR ELECTROPHORESIS

Robert J. Wright, Tequesta, and William J. Dalzell, Jr., Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 7, 1991, Ser. No. 637,717
Int. Cl.[5] B01J *13/00*
U.S. Cl. 252—314 14 Claims

1. A method for the preparation of a sol suitable for use in electrophoresis, said method comprising the steps of:

a) hydrolysing a precursor organometallic compound by heating at a temperature of from about 80° to about 90° C. in an aqueous medium comprising water and an organic solvent, the molar ratio of precursor organometallic compound to water being from about 0.005 to about 0.03, the molar ratio of organic solvent to precursor organometallic compound being from about 1.0 to about 5.0;

b) adding to the reaction mixture a peptizing agent, in a molar ratio of from about 0.05 to about 0.3 moles of peptizer per mole of precursor organometallic compound, and permitting the sol to clear;

c) permitting the sol to cool and removing at least 90 percent of the separated aqueous phase;

d) reducing the volume of the remaining sol to from about 50 percent to about 75 percent of its previous volume by evaporation; and

e) adding thereto sufficient alcohol to provide a molar ratio of added alcohol to metallic hydrate of from about 50 to about 70.

5,302,320

EMULSIFICATION COMPOSITION

Edward Hosmer, Westford, Mass., and Ronald D. LaRoche, 90 Jimney Dr., Westford, Mass. 01886, assignors to Ronald D. LaRoche, Westford, Mass.

Continuation-in-part of Ser. No. 520,127, May 7, 1990, abandoned, which is a continuation of Ser. No. 43,215, Apr. 27, 1987, abandoned. This application Apr. 10, 1992, Ser. No. 867,135
Int. Cl.[5] B01F *17/42;* C11D *9/26, 9/44*
U.S. Cl. 252—356 16 Claims

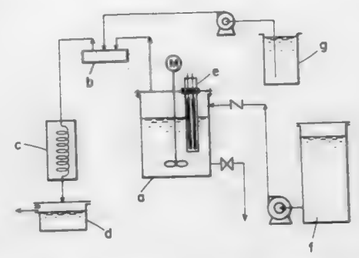
1. An oil and water miscible composition for emulsifying a hydrocarbon composition consisting essentially of Component A which is ethoxylated nonyiphenol, Component B which is a soap of tall oil and an alkanolamine, and Component C which is tripropylene glycol methyl ether wherein the weight percent of Component A is between about 64% and 69%, the weight percent of Component B is between about 17% and 21% and the weight percent of Component C is between about 13% and 16% based upon the total weight of Components A, B and C.

5,302,321

ANTICORROSIVE METHOD OF STREAM AND CONDENSER SYSTEMS

Shunichi Akama; Takanobu Sasa, both of Ibaragi, and Tokuko Yanagisawa, Tokyo, all of Japan, assignors to Aquas Corporation, Tokyo, Japan

PCT No. PCT/JP91/00410, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO91/15612, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 28, 1991, Ser. No. 860,493
Claims priority, application Japan, Mar. 30, 1990, 2-81011
Int. Cl.[5] C23F *11/12*
U.S. Cl. 252—396 4 Claims



1. A method for inhibiting corrosion in steam condenser systems which comprises adding thereto an anticorrosive amount of Vitamin A.

5,302,322

HAIR CARE COMPOSITION

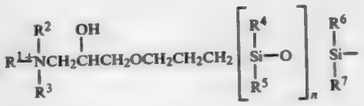
David H. Birtwistle, Irby, United Kingdom, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

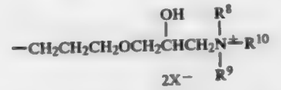
Filed Aug. 3, 1992, Ser. No. 924,263
Claims priority, application United Kingdom, Aug. 5, 1991, 9116871
Int. Cl.[5] C11D *3/26, 1/90*
U.S. Cl. 252—547 10 Claims

1. A hair care composition suitable for use as a shampoo, comprising:

(a) from about 5 to about 40% by weight of at least one surfactant;

(b) from about 0.01 to about 1.0% by weight of at least one water-insoluble end-functionalised quaternary silicone polymer represented by the following formula:





wherein R^1 and R^{10} are the same or different and independently selected from the group consisting of hydrogen, saturated or unsaturated long or short chain alk(en)yl, branched chain alk(en)yl, and C_5–C_6 cyclic ring systems: R^2, R^3, R^4, R^5, R^6, R^7, R^8 and R^9 are the same or different and independently selected from the group consisting of hydrogen, straight chain or branched lower alk(en)yl, and C_5–C_8 cyclic ring systems; and X^- is a counterion: and wherein n has an integral or nonintegral averaged value in the range 70 to 90, said silicone

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polymer being capable of dissolving in said at least one surfactant; and

(c) from about 0.01 to 1% by weight of a cationic deposition polymer.

5,302,323

SELENIUM SULFIDE SHAMPOO WITH CONDITIONING PROPERTIES

Donald E. Hartung, Arlington Heights, Ill., and Murray J. Sibley, Westerville, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 29, 1992, Ser. No. 889,880

Int. Cl.[5] C11D *1/12*

U.S. Cl. 252—550 **8 Claims**

1. An anti-dandruff shampoo with conditioner comprising:

(a) two detergents, said two detergents being ammonium lauryl ether sulfate and ammonium lauryl sulfate;

(b) a silicone compound conditioning agent;

(c) selenium sulfide;

(d) two suspending agents, said two suspending agents being di(hydrogenated) tallow phthalic acid amide and hydroxypropyl methylcellulose said hydroxypropyl methylcellulose present at a level in the range of 0.2% to 0.5%; and

(e) a buffer system, the shampoo having an active detergent content of at least 18% and a pH in the range of about 4.0 to about 6.0.

5,302,324

METHOD FOR DECONTAMINATING SUBSTANCES CONTAMINATED WITH RADIOACTIVITY, AND METHOD FOR DECONTAMINATING THE MATERIALS USED FOR SAID DECONTAMINATION

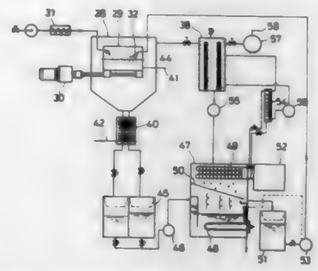
Kenji Morikawa; Yasuo Shimizu, both of Kohshoku, and Akira Doi, Toguramachi, all of Japan, assignors to Morikawa Sangyo Kabushiki Kaisha, Kohshoku, Japan

Filed Mar. 19, 1991, Ser. No. 671,940

Claims priority, application Japan, Mar. 20, 1990, 2-71144

Int. Cl.[5] G21F *9/00*

U.S. Cl. 252—626 **14 Claims**



1. A method of decontaminating an article contaminated with radioactivity, comprising:

applying shotblast or sandblast to the article contaminated with radioactivity to remove materials adhered to the surface of the article;

cleaning the surface of the article with a liquid;

washing grit resulting from the application of shotblast or sandblast to the article with an organic solvent;

filtering the organic solvent used for washing the grit;

vaporizing the organic solvent by heating to remove residue from the organic solvent; and

cooling and liquefying the vaporized organic solvent for recovery.

5,302,325

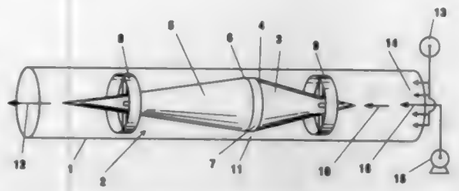
IN-LINE DISPERSION OF GAS IN LIQUID

Alan T. Cheng, Livingston, N.J., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Sep. 25, 1990, Ser. No. 587,860

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—76 **17 Claims**



1. An improved system for the dispersion of a gas in a liquid comprising:

(a) a flow line in which said gas and liquid are to be mixed;

(b) flow means for passing one of the fluids to be mixed through said flow line;

(c) injection means for injecting the other fluid for the desired mixture of gas and liquid into said flow line to form a gas bubble/liquid mixture;

(d) a conical in-line mixer positioned in said flow line downstream of the point at which said gas bubble/liquid mixture is formed, said conical in-line mixer comprising a first cone portion having its enlarged section positioned in the downstream direction and a second cone portion having its enlarged section adjacent that of the first cone portion and its pointed end section positioned downstream thereof, the enlarged sections of said cone portions of the mixer being of essentially the same diameter and forming an enlarged intermediate portion of the mixer, said enlarged intermediate portion being such as to provide an annular opening between said enlarged intermediate portion and the wall of said flow line, said first cone portion having a flow passage of decreasing flow area enabling the acceleration of the flowing gas bubble/liquid mixture such that a large portion thereof will be accelerated therein to a supersonic velocity, with subsequent deceleration of the flowing gas bubble/liquid mixture to a flow velocity in the subsonic range upon passage through said second cone portion of the conical mixer, such acceleration-deceleration action of the conical mixer serving to create a sonic shock wave effect resulting in the fine dispersion of the gas bubbles in the liquid.

5,302,326

MANUFACTURING METHOD OF URETHANE FOAM MOLDED PRODUCTS

Takeshi Minegishi; Masayuki Kubo; Ryosuke Nozaki, all of Yokohama; Masahiko Ogawa, Takasaki; Masaki Tanaka, Annaka, and Yukio Morimoto, Tokyo, all of Japan, assignors to NHK Spring Co., Ltd., Yokohama and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Filed May 18, 1992, Ser. No. 885,319

Claims priority, application Japan, May 20, 1991, 3-115040

Int. Cl.[5] B29C *67/22*; B28B *7/36*

U.S. Cl. 264—22 **13 Claims**

1. A manufacturing method for producing urethane foam molded products, comprising:

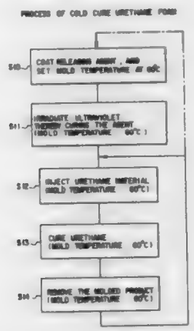
(i) applying a releasing agent on the inner surface of a mold, said agent consisting essentially of:

(a) a first organopolysiloxane of which 0.1 to 5.0% of all organic groups bonded with Si atoms are vinyl groups, and at least 80% of the remaining organic groups are methyl groups, the first organopolysiloxane (a) being a dimethylorganopolysiloxane with a degree of polymerization of 150 and having a viscosity of 400 cs at 25° C.

with both ends terminated with dimethylvinylsiloxy groups;

(b) a second organopolysiloxane containing at least three Si bonded hydrogen atoms in one molecule, in which the first and second organopolysiloxanes have Si vinyl groups and SiH groups contained in a ratio of 1:0.5 to 1:5, and do not substantially contain unreactive siloxane, the second organopolysiloxane being in an amount of 0.3 to 10 parts by weight per 100 parts by weight of the first organopolysiloxane, the second organopolysiloxane (b) being a methylpolysiloxane with a polymerization degree of 40 and a viscosity of 25 cs at 25° C. with both ends terminated with trimethylsiloxy groups;

(c) a catalytically effective amount of a reaction catalyst



for the Si vinyl group and for the SiH group, said reaction catalyst being a complex of a platinum compound and vinyl siloxane, optionally in a solvent, and

(d) a reaction regulator for inhibiting gel formation, said reaction regulator being selected from the group consisting of 2-methyl-3-butyn-2-ol, 3,5-dimethyl-1-hexyn-3-ol and 1-ethynyl-1-cyclohexanol and

(e) optionally a lanthanum rare earth compound;

(ii) irradiating the agent with ultraviolet rays of 250 to 400 nm to cure the agent;

(iii) injecting a raw liquid of urethane foam inside the mold and foaming;

(iv) curing the urethane foam inside the mold; and

(v) removing the cured urethane foam molded product from the mold.

5,302,327

PROCESS FOR MAKING COATED POLYPROPYLENE FILM

Shaw-Chang Chu, Cranbury, N.J.; Kevin A. Kirk, Macedon, and Leland W. Reid, Palmyra, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 813,168, Dec. 24, 1991, abandoned. This application May 17, 1993, Ser. No. 62,031

Int. Cl.[5] B29C *55/14*

U.S. Cl. 264—22 **28 Claims**

1. A process for making a thermoplastic film comprising coextruding (1) a thermoplastic resin, said thermoplastic comprising polypropylene, and (2) a resin containing ethylene units into a sheet; orienting said sheet in the longitudinal direction to form a monoaxially oriented film; coating said resin containing ethylene units with a layer of a polyglycerol ester or sorbitan ester of a fatty acid of 10 to 20 carbon atoms; and orienting said coated film in the transverse direction to form a biaxially oriented film.

5,302,328

MAKING HOT PRESSED SILICON NITRIDE BY USE OF LOW DENSITY REACTION BONDED BODY

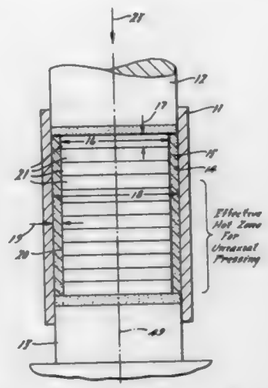
Andre Ezis, Grosse Ile, Mich., assignor to Ceradyne, Inc., Costa Mesa, Calif.

Filed Jul. 19, 1983, Ser. No. 527,642

The portion of the term of this patent subsequent to Jun. 12, 2009, has been disclaimed.

Int. Cl.[5] B28B *11/00*; C04B *35/58*

U.S. Cl. 264—58 **8 Claims**



1. A method of fully densifying a plurality of at least five preformed ceramic plates by axial compression of said plates along a wall defining a cylindrical cavity, comprising:

(a) stacking a series of said preformed ceramic plates with an intervening rigid inert spacer between groups of said plates, said plates being stacked along said wall with the smallest dimension of said plates being aligned with the axis of said cavity, each said plate having a ratio of the smallest dimension to largest dimension in the range of 1:3 to 1:40, said largest dimension being less than the lateral dimension of said cavity to leave an annular side space between said plates and wall, said annular space having a dimension of $\frac{1}{4}$–1/64 inch along a radius of said cavity;

(b) either before or after introduction of said plates into said cavity, placing a pseudo isostatic pressing medium about said plates to fill said space when stacked in said cavity, said pressing medium being in a condition to have a compression ratio greater than that for said preformed plates to achieve equivalent densities; and

(c) hot pressing said stacked series of preformed plates by said axial compression with said pressing medium filling said side space to resist only lateral movement of the plates, said hot pressing being carried out with sufficient temperature and pressure to convert said plates into billets with substantially full density.

5,302,329

PROCESS FOR PRODUCING β-SIALON BASED SINTERED BODIES

Tatsuya Shiogai; Yoshitsugu Nishi, both of Chiba, and Chitake Yamagishi, Tokyo, all of Japan, assignors to Nihon Cement Co., Ltd., Tokyo, Japan

PCT No. PCT/JP89/00452, § 371 Date Oct. 21, 1991, § 102(e) Date Oct. 21, 1991

PCT Filed Apr. 28, 1989, Ser. No. 775,946

Int. Cl.[5] C04B *35/58*

U.S. Cl. 264—65 **10 Claims**

1. A process for producing a beta-sialon based sintered body having a fracture toughness of at least 6.5 $MPam^{\frac{1}{2}}$ using as starting materials

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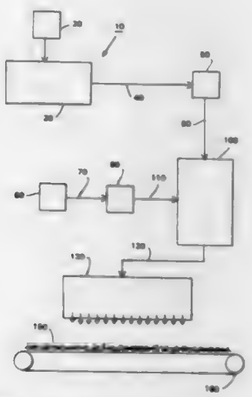
beta-sialon powder ($Si_{6-z}Al_zO_zN_{8-z}$ where $O<z<4.2$) having an average particle size of no more than 0.8 μm, a sintering aid comprising an oxide, the sintering aid having an average particle size of no more than 5.0 μm, and an additive that has an average particle size of no more than 5.0 μm, said additive comprising a compound selected from the group consisting of the compounds SiC, B_4C, and BN, one of said compounds and TiB_2, and one of said compounds and TiC, the process comprising the steps of: wet mixing the starting materials to form a slurry, the starting materials being in such proportion that the sintering aid comprises 0.5–20 wt % and the additive comprises 3–40 wt %, the remainder being the beta-sialon powder, drying the resulting slurry, and sintering the dried slurry.

5,302,330

METHOD FOR THE MANUFACTURE OF WAFERBOARD

Harold Umansky, 701 Sheridan Ave., Plainfield, N.J. 07060, and Robert J. Coakley, 114 Makatom Dr., Cranford, N.J. 07016

Filed Jun. 8, 1993, Ser. No. 73,032
Int. Cl.[5] D04H *1/00*
U.S. Cl. 264—109 **10 Claims**



1. A method for applying release agent to a mass of wood material and binder during production of chipboard, the release agent enhancing release of the mass from a platen after hot compression of the mass to form the chipboard, the method comprising the steps of:
(a) pressurizing an aqueous solution comprising a release agent and a foaming agent;
(b) metering a predetermined amount of the pressurized aqueous solution to a foamer;
(c) foaming the aqueous solution in the foamer to form a coherent, continuously uniform, finely bubbled foam; and
(d) dispersing the foam formed in the foamer onto the mass.

5,302,331

WASTE TREATMENT PROCESS

Robert E. Jenkins, 27049 155th St., Leavenworth, Kans. 86048

Filed Nov. 30, 1992, Ser. No. 982,968
Int. Cl.[5] B28B *1/00*
U.S. Cl. 264—115 **1 Claim**

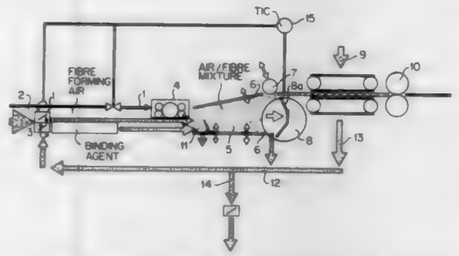
1. A process for recycling household waste materials comprising the following steps:
(a) grinding a predetermined quantity of said waste materials in an untreated condition into finely divided particles varying in size in a range of about 0.125 inches to about 0.5 inches to form a powdery mass,
(b) adding water to said powdery mass to form a slurry,
(c) preparing a mixture of calcium carbonate, portland cement and sand to form a binder for inhibiting bacteriological growth,
(d) adding said binder to said slurry to form a mixture of said binder and said slurry
(e) placing said slurry and binder mixture into a shape forming device to form a desired shape, and
(f) drying said desired shape in said shape forming device in an environment maintained at a temperature of 80 degrees Fahrenheit for two hours.

5,302,332

METHOD FOR MANUFACTURING A MAT-LIKE PRODUCT CONTAINING MINERAL FIBERS AND A BINDING AGENT

Jarmo Simola, Kuusisto; Jean Le Bell, Kaarina, and Ulf Westerlund, Parainen, all of Finland, assignors to Roctex Oy AB, Parainen, Finland

Filed Mar. 8, 1993, Ser. No. 27,477
Claims priority, application Finland, Mar. 9, 1992, 921011
Int. Cl.[5] D04H *1/56*
U.S. Cl. 264—119 **14 Claims**



1. A method for manufacturing a product in the form of a mat containing mineral fibers and a binding agent, said method comprising the steps of:
melting a mineral and forming fibers from the melted mineral;
mixing the resulting hot mineral fiber in a mixing zone with solid thermoplastic particles defining said binding agent in a turbulent stream of air such that said fibers and said thermoplastic particles are carried away from said mixing zone by said stream of air, whereby heat contained in the hot mineral fiber brings said thermoplastic particles into a state in which they bind the mineral fibers to each other.

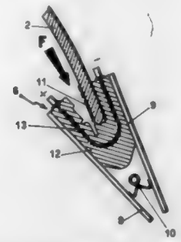
5,302,333

PROCESS AND DEVICE FOR THE JUNCTION OF THE ENDS OF AN EDGE GASKET ON A SHEET OF GLASS

Luigi Capriotti, San Benedetto del Tronto, and Oscar De Lena, Termoli, both of Italy, assignors to Societa Italiana Vetro - SIV - S.p.A., San Salvo CH, Italy

Filed Jan. 27, 1993, Ser. No. 9,634
Claims priority, application Italy, Jan. 28, 1992, RM92A000061
Int. Cl.[5] B29C *35/02*
U.S. Cl. 264—177.190 **10 Claims**

6. A method of forming a gasket along an edge of a sheet of glass, said method comprising:
extruding a seam along only a portion of the edge of the sheet of glass by delivering a polymeric material under pressure from a nozzle of an extrusion device, calibrated to impart to the seam a cross-sectional shape including a first portion contacting the sheet of glass and a second portion projecting outwardly from the first portion to a position above a plane in which the sheet of glass lies, by moving the nozzle along the edge of the glass at a predetermined speed, and by terminating the delivery of plastic material once the nozzle is adjacent a first-formed head end of the seam so as to leave a second-formed tail end of the seam opposing and spaced from the head end;
allowing the seam to polymerize in situ;
orienting the sheet of glass in a vertical or nearly vertical position with the opposed ends of the seam located at a lowermost position;
positioning the sheet of glass in a mold, including a body of elastic plastic material configured to accommodate a portion of the sheet of glass at which the ends of the seam are located and having a cavity therein of a cross-sectional shape corresponding to that of said seam, with said portion of the sheet so accommodated in the body of elastic plastic material,
the mold being movable between an open position at which the cavity is exposed and a closed position at which the cavity extends between the ends of the seam when said portion of the sheet of glass is accommodated in the body of elastic material;
while the mold is in the open position thereof and the sheet is oriented in the vertical or nearly vertical position, pouring a polymerizable polyurethane composition compatible with material of the seam into the mold in an amount sufficient to fill the cavity with the composition;
moving the mold to the closed position thereof after the polyurethane composition has been poured into the mold whereupon the polyurethane composition in the cavity assumes a shape corresponding to that of the seam;
polymerizing the polyurethane composition disposed in the cavity;
moving the mold to the open position thereof after the composition has been polymerized; and
subsequently extracting the sheet of glass from the mold.



5,302,334

PROCESS FOR COAGULATING AND WASHING LYOTROPIC POLYBENZAZOLE FILMS

Peter E. Pierini, Berkeley; Reid H. Bowman, Walnut Creek; Willie E. Rochefort, Hercules, and Ming-Biann Liu, Clayton, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 21, 1992, Ser. No. 887,443
Int. Cl.[5] B29C *55/12*
U.S. Cl. 264—233 **6 Claims**

1. A process for coagulating a polybenzoxazole film comprising the steps of:
a) contacting a lyotropic polybenzoxazole dope film that is constrained in at least two directions with a coagulant under conditions such that the polybenzoxazole polymer separates as a gelled moiety with the structure set such that further removal of solvent will result in no more than a 5% increase in the force necessary to constrain the film; and
b) removing some of the constraint on the film such that the film is constrained in at most one direction; and
c) subjecting the coagulated film to washing with a suitable washing medium under conditions such that the desired level of residual solvent in the film is reached while ensuring that the film is not allowed to dry out until said desired levels of residual solvent in the film have been reached.

5,302,335

METHOD FOR THE PREPARATION OF WATER-REPELLANT HARDENED MOLDINGS

Tsutomu Naganawa, and Isao Ona, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 33,733
Claims priority, application Japan, Mar. 24, 1992, 4-096978
Int. Cl.[5] B28B *1/26, 3/00*
U.S. Cl. 264—333 **13 Claims**

1. A method for preparation of water-repellent hardened moldings, wherein the method comprises
(I) preparing a slurry of a mixture comprised of a calcareous material that has CaO unit as a main component and siliceous material that has SiO_2 unit as a main component, in an arbitrary quantity of water;
(II) adding to the slurry an emulsion comprising 0.05 to 10 weight parts per 100 parts of the calcareous and siliceous material of a diorganopolysiloxane represented by



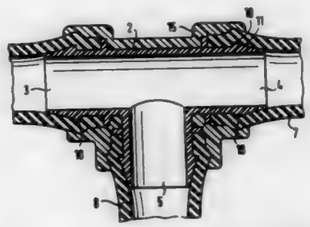
and a nonionic surfactant that has a cloud point; wherein the addition to the slurry is carried out with mixing and at a temperature at or above the cloud point of the nonionic surfactant; and
wherein R is a monovalent hydrocarbon group; R^1 is an alkyl group having 4 to 12 carbon atoms; x is a number having a value of zero to 1,000; y is a number having a value of zero to 500; x+y has a value of 2 to 1,000; and A is selected from the group consisting of R and R^1; with the provision that, when y=zero, A is selected from the group consisting of R, OR^2, R^1, and a hydroxyl group, where R^2 is an alkyl group having 1 to 3 carbons; and
(III) subsequently draining off the water, forming a molding, and drying the molding to provide a water-repellent hardened molding.

5,302,336

METHOD FOR PRODUCING MOLDED HOSE BRANCHES FROM RUBBER AND A HOSE PRODUCED BY THE METHOD

Volker Härtel, Germering; Carl Heynemann, Taufkirchen, and Hermann Kahlefeld, Hemsbach, all of Fed. Rep. of Germany, assignors to Metzeler Automotive Profiles GmbH, Lindau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 449,364, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 206,267, Jun. 13, 1968, abandoned. This application Dec. 19, 1991, Ser. No. 810,690
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1987, 3713064
Int. Cl.[5] B29C *45/00*
U.S. Cl. 264—263 **4 Claims**



1. Method for producing flexible molded hose branches of rubber, which comprises slipping three completely vulcanized

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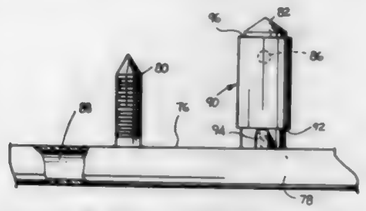
rubber hose lengths with ends onto free ends of a T-shaped plastic tubing branching piece for forming an assembly, placing the assembly into a mold, and injection molding a thermoplastic rubber material being a blended mixture of polypropylene and EPDM around the assembly for joining the thermoplastic material to the rubber hose lengths for forming a sleeve around the rubber hose lengths and free parts of the tubing branching piece between the ends of the rubber hose lengths.

5,302,337

METHOD FOR MAKING A COATED GAS-ASSISTED INJECTION MOLDED ARTICLE

Brian A. Krajewski, Grand Rapids, Mich., assignor to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed Jun. 11, 1993, Ser. No. 76,468
Int. Cl.[5] B29C *45/16, 45/00*
U.S. Cl. 264—513 **10 Claims**



1. A method for coating a gas assisted injection molded article comprising the steps of;

providing a pressurized supply of molten thermoplastic material and a pressurized supply of fluid to a mold cavity to form a molded article having at least a partial hollow interior, a gas injection stud having at least a partially hollow interior in fluid communication with the hollow interior of the molded article and a hollow runner connected to a sidewall of the gas injection stud;

cooling the molded article and gas injection stud;

removing the molded article and gas injection stud from the cavity;

separating the hollow runner from the gas injection stud, resulting in the formation of an aperture in the sidewall of the gas injection stud, the aperture being in fluid communication with the hollow interior of the article and the hollow interior of the gas injection stud;

mounting a sleeve formed of a selectively shrinkable material to the sidewall of the gas injection stud to cover the aperture;

shrinking the sleeve tightly onto the sidewall of the gas injection stud such that the sleeve seals the aperture and prevents the flow of fluid into and out of the hollow interior of the molded article; and

immersing the molded article and gas injection stud in a suitable coating liquid.

5,302,338

METHOD FOR HOOPING AND MAINTAINING IN COMPRESSION A CORE BY A SHEATH MADE OF A COMPOSITE MATERIAL

Guy Metivaud, Talence, and Marcel Auberon, Le Haillan, both of France, assignors to Aérospatiale Société Nationale Industrielle, Paris, France

Continuation of Ser. No. 777,048, Oct. 16, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 18,922
Claims priority, application France, Oct. 17, 1990, 90 12841
Int. Cl.[5] B29C *31/08, 63/20*
U.S. Cl. 264—516 **6 Claims**

1. A method for hooping and maintaining a core by a sheath, comprising the steps of:

providing an elongated core having a homothetic outer peripheral surface and a first end having a frusto-conical shape;

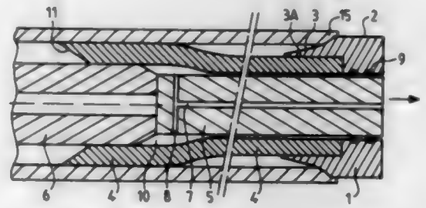
providing an elongated sheath, said sheath being made of a composite material by winding fibers impregnated with a first polymerizable resin over a support then polymerizing said first polymerizable resin, said sheath having an internal cross section which is less than an external cross section of the core, and having a homothetic circumferential inner peripheral surface, in a shape of a surface of revolution which corresponds to said outer peripheral surface of said core, said sheath also having a first end with a frusto-conical internal shape which corresponds to said frusto-conical shape of said first end of said core;

providing a base piece for supporting said sheath; said method further comprising the steps of

holding said sheath in said base piece;

aligning said first end of said core with first end of said sheath by centering them with respect to each other;

exerting a prior tensile force over said core, in such a manner as to provide a suitable sealing between the portion in



contact with each of the first ends of the core and of the sheath;

injecting a pressurized second polymerizable resin into said sheath in a direction of the said core, in order to increase the cross section of the sheath by expanding the sheath in a circumferential direction and, where appropriate, to reduce the cross section of the core and simultaneously to continue to exert a tensile force over the said core, in such a manner as to insert the core gradually into said sheath, wherein a portion of the second polymerizable resin is present between an internal surface of the sheath and an external surface of the core, forming a residual resin portion;

stopping the resin injection after complete insertion of the core into the sheath;

polymerizing the residual resin portion present between the internal surface of the sheath and the external surface of the core;

cutting off an expendable portion of the sheath held by the base piece.

5,302,339

METHOD FOR GAS ASSISTED INJECTION MOLDING WITH PIN AND SLEEVE MECHANISM

Indra R. Baxi, Solon, and Tom W. Johnson, Hunting Valley, both of Ohio, assignors to Nitrojection Corporation, Chagrin Falls, Ohio

Division of Ser. No. 682,616, Apr. 9, 1991, Pat. No. 5,151,278. This application Jun. 23, 1992, Ser. No. 902,378
Int. Cl.[5] B29C *45/20, 45/00*
U.S. Cl. 264—572 **16 Claims**

16. A method of gas-assisted injection molding, the method comprising:

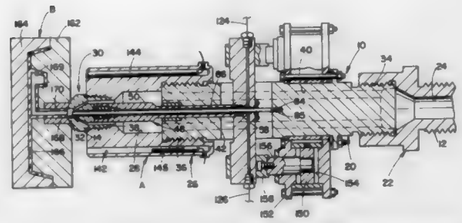
regulating a flow of a thermoplastic through a nozzle body discharge end and into a mold cavity with a valve element, said valve element being mounted for reciprocation in a nozzle body flow passage and comprising a barrel having a first end, said first end selectively engaging a portion of the nozzle body discharge end to prevent a flow of the thermoplastic therepast, and a second end, and a bore extending longitudinally through said barrel;

positioning a pin in said barrel bore;

defining an annular gas flow passage between said pin and said barrel, wherein the annular gas flow passage has a substantially constant thickness at and adjacent said barrel first end;

leaving the annular gas flow passage defined between said pin and said barrel open at all times;

injecting the thermoplastic through the nozzle body flow passage around the barrel and into the mold cavity;



flowing an annular stream of the gas through the gas flow passage and into the mold cavity;

minimizing a flow of the thermoplastic into the gas flow passage during said steps of flowing the thermoplastic and flowing the gas due to the relationship between the pin and barrel forming the annular gas flow passage;

venting the gas from the mold cavity through the annular gas flow passage; and,

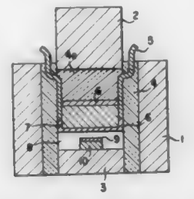
minimizing a flow of the thermoplastic back through the gas flow passage during said step of venting the gas due to the gas flow effects caused by the cooperation of the barrel and pin in forming the annular flow passage.

5,302,340

METHOD OF FORMING CERAMIC LAYER ON METALLIC BODY

Shuichi Takeda, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP89/00429, § 371 Date Dec. 19, 1989, § 102(e) Date Dec. 19, 1989, PCT Pub. No. WO89/10432, PCT Pub. Date Nov. 2, 1989
Continuation of Ser. No. 764,978, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 457,791, Dec. 19, 1989, abandoned. This PCT application Apr. 21, 1989, Ser. No. 879,135
Claims priority, application Japan, Apr. 21, 1988, 63-98827
Int. Cl.[5] B22F *3/10, 3/12, 7/02*
U.S. Cl. 419—45 **8 Claims**



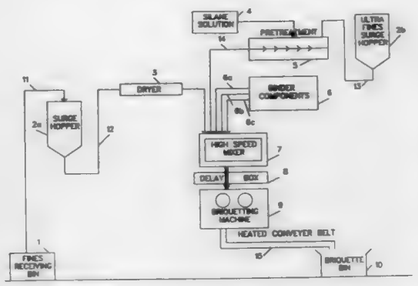
1. A method of forming a ceramic or cermet layer on a metallic or cermet body, comprising the steps of placing a ceramic green compact powder or a green compact mixture of a ceramic powder with a metallic powder on the metallic or cermet body, applying pressure to the green compact powder or mixture, heating the green compact powder or mixture by heat generated by a thermitic reaction, thus forming on said metallic or cermet body a bonded compact ceramic or cermet layer.

5,302,341

CONTINUOUS METHOD FOR FORMATION OF BRIQUETTES CONTAINS LESS THAN 1% BINDER BY WEIGHT OF THE BRIQUETTE

Francis S. Palowitz, Boardman, and Sudarshan R. Sathe, Canfield, both of Ohio, assignors to Palsat International, Inc., Boardman, Ohio

Filed Oct. 29, 1992, Ser. No. 968,386
Int. Cl.[5] B22F *1/00*
U.S. Cl. 419—65 **16 Claims**



6. A continuous process for producing briquettes from fines comprising:

discharging said fines into a high speed mixer;

discharging the components of a binder system into said high speed mixer through fog nozzles simultaneously with said discharge of said fines;

agitating said binder and said fines to produce a homogeneous binder-fines mixture;

discharging said homogeneous binder-fines mixture into a delay box for a period of time such that said mixture is at the point of incipient cure;

discharging said mixture at said point of incipient cure into a briquetting press and forming briquettes therefrom;

discharging said briquettes onto a heated conveyor for a period of not longer than 4 minutes to cure said briquettes; and,

collecting said cured briquettes containing less than about 1% but greater than 0% binder by weight of the briquette.

5,302,342

ALUMINUM ALLOY FOR HEAT EXCHANGERS

Tsuyoshi Kawabe; Nobuaki Yamamoto, both of Utsunomiyashi; Tadayoshi Hayashi, Fujimishi; Makoto Tanio, Sakaishi; Ichiro Iwai, Oyamashi; Ichizo Tsukuda, Kishiwadashi, and Ryotatsu Otsuka, Osakashi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Showa Aluminum Kabushiki Kaisha, Japan

Continuation of Ser. No. 785,863, Oct. 28, 1991, abandoned, which is a continuation of Ser. No. 606,712, Oct. 31, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 92,761
Claims priority, application Japan, Nov. 17, 1989, 1-300132
Int. Cl.[5] C22C *21/00*
U.S. Cl. 420—546 **2 Claims**

1. A material for forming heat exchangers, the material consisting of: 0.1 to 0.8 wt % of Mg; 0.2 to 1.0 wt % of Si; 0.3 to 1.5 wt % of Mn; 0.01 to 0.3 wt % of Fe; and 0.01 to 0.3 wt % of Ni, wherein the balance of material consists essentially of aluminum of purity of 99.9% or higher and 0.1 wt % or less of unavoidable impurities contained therein, and the content of Cu as one of the impurities is 0.05 wt % or less, said material being further characterized by the fact that the pinhole corrosion of the material is less than or approximately equal to 0.1

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mm when immersed in an ASTM solution comprising decuple water plus 10 ppm of Cu^{++} at 95° C. or 50° C. for 500 hours.

5,302,343

PROCESS FOR DRY STERILIZATION OF MEDICAL DEVICES AND MATERIALS

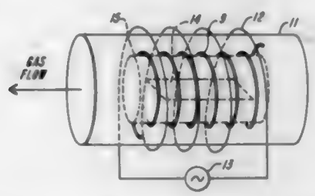
Adir Jacob, 23 Juniper La., Framingham, Mass. 01701

Continuation of Ser. No. 762,573, Sep. 19, 1991, Pat. No. 5,200,158, which is a continuation of Ser. No. 562,392, Aug. 3, 1990, Pat. No. 5,171,525, which is a continuation of Ser. No. 331,438, Mar. 31, 1989, Pat. No. 4,976,920, which is a continuation-in-part of Ser. No. 72,899, Jul. 14, 1987, Pat. No. 4,818,488, which is a continuation-in-part of Ser. No. 19,134, Feb. 25, 1987, Pat. No. 4,801,427. This application Apr. 2, 1993, Ser. No. 42,136

The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.

Int. Cl.[5] A61L *2/14*

U.S. Cl. 422—23 **12 Claims**



1. A method for sterilization of articles comprising the steps of:

placing said articles within an electrically conductive perforated electrode, said electrode being positioned within, and spaced apart from, a gas-tight confining chamber, said chamber being formed from electrically conductive material and connected to a point of potential reference;

evacuating said chamber to a substantially low pressure and introducing a gas into said chamber;

initiating an electrical discharge in said gas within said chamber by application of an electric field between said internal perforated electrode and the electrically conductive chamber wall, creating a gas plasma, having a substantially field free and glowless volume within the confines of the perforated electrode containing said articles, whereby said articles are contacted by substantially electrically neutral active species at a temperature below that which would be detrimental to said articles; and

maintaining said gas plasma for a controlled period of time.

5,302,344

METHOD FOR CONTAINMENT OF A LABORATORY CHEMICAL

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Oct. 31, 1990, Ser. No. 606,466

Int. Cl.[5] A61L *2/06*

U.S. Cl. 422—26 **16 Claims**

1. A method for containment of a laboratory chemical or device during a procedure selected from the group consisting of weighing, physical transfer, storage, incubation and sterilization comprising the steps of:

providing a repeatedly foldable layered sheet comprising an aluminum foil layer having a first thickness of between 0.0005 inches and 0.002 inches and a plastic layer having a second thickness less than or substantially equal to said first thickness disposed on one side of and bonded to said foil layer, said plastic layer being unreactive with caustic chemicals and organic solvents, wherein said layered sheet can be folded and unfolded along a line at least five times without structural failure and wherein said layered sheet can be steam autoclaved at approximately 120° C. without structural failure and wherein said sheet possesses the dead-fold property of said foil layer and further possesses the property of soft fold thereby failing to form a crease when subject to pressure in an amount of 2 $lb/inch^2$,

selecting a sized portion of said layered sheet sufficient to cover or contain said chemical or device,

orienting said plastic layer of said sheet toward said chemical or device,

folding and shaping said sheet one or more times to form a protector which covers or contains said chemical or device, and

subjecting said covered or contained chemical or said device to said procedure.

5,302,345

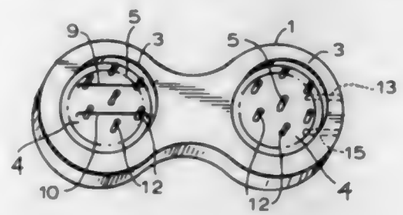
ELECTROCHEMICAL CONTACT LENS DISINFECTION AND NEUTRALIZATION SYSTEM

Henry C. Oksman, 140 Morris La., Scarsdale, N.Y. 10583, and Joseph Eisner, 219 E. 32nd St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 74,703, Jul. 17, 1987, abandoned. This application Nov. 4, 1987, Ser. No. 117,922

Int. Cl.[5] A61L *2/18*

U.S. Cl. 422—30 **20 Claims**



1. A method of neutralizing a disinfectant liquid, wherein said liquid contains hydrogen peroxide and a salt, comprising

immersing first and second electrodes in said disinfectant liquid in spaced relationship, and

causing an electric current to flow between said electrodes through said liquid.

7. Apparatus for performing a process for sterilizing a contaminated article comprising

container means for storing said article,

a disinfectant liquid stored in said container means for at least partially covering said article,

first and second electrode means at least partially in contact within said liquid, said container means including supporting means for maintaining said article disengaged from each of said first and second electrode means,

a current source,

first and second conductor means operatively connected between said respective first and second electrode means and said current source,

means for producing a first signal indicative of the commencement of the process for sterilization of the contaminated article by the disinfectant liquid, and for producing a second signal a predetermined time after said first signal is produced, and

current enabling means responsive to said second signal, enabling current to flow from said current source between said first and second electrode means.

5,302,346

TEST CARRIER FOR THE DETERMINATION OF IONS

Peter Vogel, Hemsbach; Detlef Thym, Mannheim; Michael Fritz, Biblis, and Dan Mosoiu, Limburgerhof, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

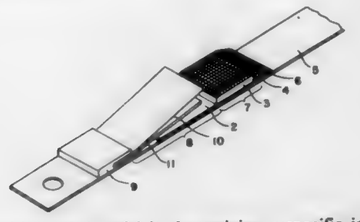
Division of Ser. No. 698,466, May 10, 1991, Pat. No. 5,211,914. This application Mar. 8, 1993, Ser. No. 27,690

Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015590

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] G01N *31/22*

U.S. Cl. 422—56 **23 Claims**



1. A test carrier useful in determining a specific ion in a liquid sample comprising:

a) a first test layer having a liquid resistant porous film layer having an organic phase which contains a homogeneous mixture of

(i) a hydrophobic polymer,

(ii) a plasticizer,

(iii) an ionophore,

(iv) a substance which changes color in the presence of the ion to be determined, and

(v) a plurality of particles having an oil absorption value from 80–200, wherein said ionophore is homogeneously dispersed in said organic phase, and

b) a second test layer containing a buffer substance capable of maintaining the pH in said second test layer at a value of between 5–10 wherein said first and second layers are positioned in said test carrier to permit fluid contact therebetween.

5,302,347

APPARATUS FOR CYCLINCIAL TEMPERATURE PROCESS WITH AUTOMATIC MONITORING AND ADJUSTING OF THE TEMPERATURE OF A WATER BATH

Van Den Berg, Hoofddorp, and Heiman H. Volkens, Monnickendam, both of Netherlands, assignors to Kreatech Biotechnology B.V., Amsterdam, Netherlands

PCT No. PCT/NL91/00034, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/12888, PCT Pub. Date Sep. 5, 1991

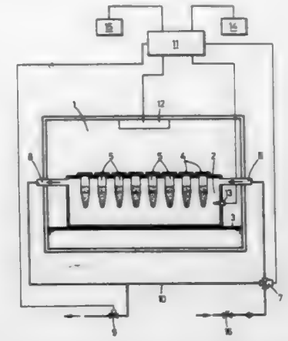
PCT Filed Feb. 28, 1991, Ser. No. 923,938

Claims priority, application Netherlands, Feb. 28, 1990, 9000481

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—67 **2 Claims**

1. An apparatus for cyclical temperature processes with automatic monitoring and adjusting of the temperature of a water bath, comprising a reactor chamber, a water bath in said chamber a receiver in said chamber for holding a plurality of sample containers with samples to be examined, adjustment means for providing signals representative desired temperatures and incubation periods, a temperature sensor for measuring the temperature of the water bath and a control unit for controlling the temperature of the water bath in response to said temperature sensor and said representative signals, characterized in that at least one magnetron tube is mounted in the reactor chamber for heating the water bath and the sample containers placed in said water bath, the water bath being provided with an inlet line connected to a water conduit through a mixing valve an outlet line leading to a discharge conduit through an operable valve, said outlet line is selectively connected to said mixing valve through a return line, wherein the control unit controls the magnetron tube and said valves in response to said measured temperature and the desired temperature and incubation period.



5,302,348

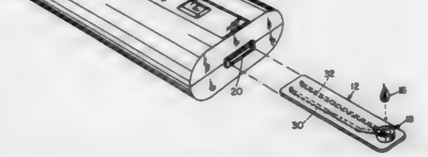
BLOOD COAGULATION TIME TEST APPARATUS AND METHOD

Robert Casack, Edison; Frank M. Laduca, East Brunswick, and Robert J. Samo, Lakewood, all of N.J., assignors to ITC Corporation, Edison, N.J.

Filed Dec. 10, 1992, Ser. No. 988,672

Int. Cl.[5] G01N *21/03, 33/86*

U.S. Cl. 422—73 **29 Claims**



1. An apparatus for performing a coagulation time test on a blood sample, comprising:

fluid reservoir for retaining the blood sample, said fluid reservoir including a volume control means for isolating a predetermined volume of the blood sample for testing;

conduit means extending from a distal end to a proximate end, wherein said distal end is coupled to said fluid reservoir, said conduit means having at least one restricted region between said distal end and said proximate end;

driving means, coupled to said proximate end of said conduit means, for selectively altering air pressure within said conduit means, said driving means controlled so as to draw the predetermined volume of the blood sample into said conduit means from said fluid reservoir and causing the predetermined volume of the blood sample to reciprocally move within said conduit means back and forth between a first position on one side of said at least one restricted region and a second position on an opposite side of said at least one restricted region;

a plurality of detection means for detecting the presence of

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the blood sample within said conduit means at said first position and said second position; and

control means coupled to said plurality of detection means, said control means counting the time elapsed each time the blood sample moves between said first position and said second position, said control means providing an indication to an operator when a measured time is a predetermined percentage longer than a previous measured time, whereby said predetermined percentage is indicative of coagulation in the blood sample.

5,302,349

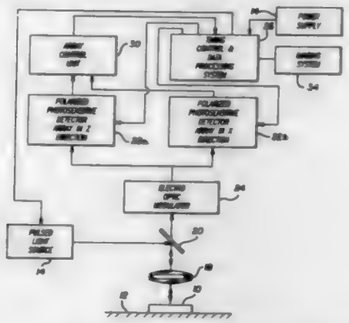
TRANSIENT-STATE LUMINESCENCE ASSAY APPARATUS

Walter B. Dandliker; June K. Dandliker, both of La Jolla, Calif., and Jacques C. Levin, Fort Lauderdale, Fla., assignors to Diatron Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 365,420, Jun. 13, 1989, abandoned. This application Mar. 6, 1990, Ser. No. 490,770

Int. Cl.[5] G01N *21/64*

U.S. Cl. 422—82.08 **28 Claims**



1. A fluorometer for measuring a fluorescence emanating from particular fluorophore molecules initially in a specimen with a dye and subsequently in the specimen without the dye to identify at least one of the existence and the concentration of the particular fluorophore molecules in the specimen, including,

first means for producing a burst of concentrated light energy having a turn-off time short compared to the decay time of the fluorescence from the particular fluorophore molecules and having sufficient energy to excite the particular fluorophore molecules,

second means responsive to the burst of the concentrated light energy for directing the burst of the concentrated light energy initially toward the specimen with the dye and subsequently toward the specimen without the dye to produce a fluorescence, including the fluorescence emanating from the particular fluorophore molecules, initially from the specimen with the dye and subsequently from the specimen without the dye and to produce polarized components in particular directions of the fluorescence initially from the specimen with the dye and subsequently from the specimen without the dye,

third means responsive to the fluorescence from the specimen initially with the dye and the specimen subsequently without the dye for detecting the polarized components of the fluorescence in the particular directions,

fourth means coupled to the third means for obtaining a controlled operation of the third means during a particular time period having a beginning time and an ending time to enhance the detection of the signals representing the polarized components of the fluorescence emanating from the particular fluorophore molecules relative to the portion of the signals representing the remaining fluorescence, the beginning time of the time period being a first particular time after the burst of the concentrated energy and after the production of the fluorescence emanating from the particular fluorophore molecules and the ending time being a second particular time after the first particular time and during the production of the fluorescence from the particular fluorophore molecules,

the burst of concentrated light energy occurring before the particular time period, and

fifth means coupled to the first means, the third means and the fourth means for timing the operation of the third means to sequence the detection of the polarized components of the fluorescence in the particular directions during the particular time after the burst of the concentrated energy fluorescence, and

sixth means for processing the detection of the polarized components of the fluorescence polarized in the particular directions from the specimen with the dye and the specimen without the dye to provide an indication of the fluorescence emanating from the particular fluorophore molecules.

5,302,350

SPECIFIC AND REVERSIBLE CARBON MONOXIDE SENSOR

Kisholoy Goswami; Devinder P. S. Saini; Stanley M. Klainer, all of Henderson, and Chuka H. Ejiofor, Las Vegas, all of Nev., assignors to FCI - FiberChem, Inc., Las Vegas, Nev.

Filed Jan. 26, 1993, Ser. No. 9,066

Int. Cl.[5] G01N *31/00, 33/00*

U.S. Cl. 422—86 **18 Claims**



1. A CO sensor comprising, in solution:

a source of Mo^{+6} or W^{+6} ions;

a source of Pd^{+2} ions;

a source of Fe^{+3} ions;

a source of $CH_3CO_2^-$ counterions in an amount sufficient to substantially prevent the Pd^{+2} ions from being reduced to Pd^0 by other ions in the absence of CO.

5,302,351

LENGTH OF STAIN DOSIMETER

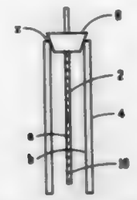
Dale E. Lueck, Merritt Island, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 16, 1992, Ser. No. 976,853

Int. Cl.[5] G01J *1/48;* **G01N** *30/90*

U.S. Cl. 422—87 **4 Claims**

1. A passive length of stain dosimeter having a sensitivity rendering it capable of detecting a gas in a concentration as low as 2 ppm on an exposure of five minutes, the dosimeter comprising an outer hollow cylinder having an inner wall, an open end, and a closed end, an inner cylinder selected from the group consisting of nonporousglass, plastic and metal, having on its outer wall a thin film of a reagent which undergoes a color change when contacted by the gas being detected, means for attaching the inner cylinder to the closed end of the outer cylinder, wherein the inner cylinder is concentrically disposed within the outer cylinder with its outer wall parallel to the inner wall of the outer cylinder and so that its longitudinal axis is also the longitudinal axis of the outer cylinder, wherein the thin film is a film whose maximum thickness is less than 1 mil, and wherein the thickness of the thin film up to its maximum



and a ratio of the area of the open end of the outer cylinder to the surface area of the thin film in the range of 1.5:1 to 10:1 govern sensitivity, with sensitivity increasing when the film thickness is decreased and when the ratio is increased.

5,302,352

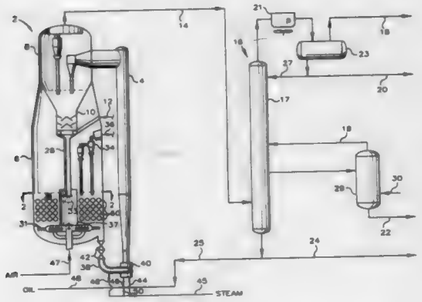
PROTECTED COILS FOR A STEAM GENERATOR

William C. Rahlwes, Lake Jackson, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 592,726, Oct. 4, 1990. This application Dec. 3, 1992, Ser. No. 985,056

Int. Cl.[5] F27B *15/16;* **B01J** *8/26*

U.S. Cl. 422—146 **10 Claims**



1. Apparatus comprising:

a first vessel for containing a bed of solid particles;

at least one horizontally oriented steam generating coil having an inlet section, an outlet section and a U-bend between said inlet and outlet sections, wherein said at least one coil is inside said first vessel for contacting said bed of solid particles;

means for fluidizing said bed of solid particles so as to form a fluidized bed of solid particles surrounding said horizontally oriented steam generating coil; and

means for forming a non-moving layer of said solid particles surrounding said U-bend while maintaining fluidization of said solid particles surrounding said inlet and outlet sections of said coil.

5,302,353

CATALYTIC CONVERTER

Gordon M. Cameron, 4 Wellesbourne Crescent, Willowdale, Ontario, Canada M2H 1Y7

Continuation of Ser. No. 826,534, Jan. 24, 1992, abandoned. This application Jan. 28, 1993, Ser. No. 13,536

Int. Cl.[5] B01D *50/00*

U.S. Cl. 422—171 **6 Claims**

1. A converter comprising:

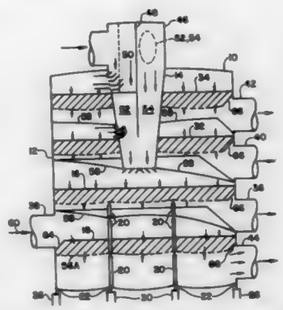
an exterior shell of a heat resistant weldable metal;

an interior core tube of said metal vertically disposed, partway within said shell from an upper part thereof;

foundation means including internal support members and posts for the support of the internal support members and from which said shell vertically extends;

a plurality of catalyst beds disposed one above the other within said shell and comprising:

at least one full catalyst bed including a first full bed extending the full diameter of the converter across a lower part of said shell, and



at least one annular catalyst bed including a first annular bed between said shell at an upper part thereof and said core tube;

partition means defining with said core tube a plurality of distinct, non-concentric, non-coaxial gas passages within said core tube; and

wherein each annular bed is in singular gaseous communication within said shell with at least one of said passages.

5,302,354

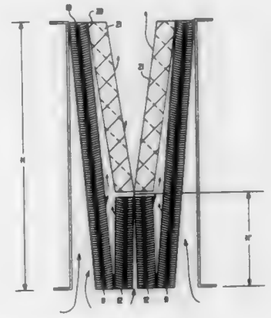
FILTRATION DEVICE

Jorn S. Watvedt, Degernes, Norway, and Staffan B. Linnersten, Raleigh, N.C., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Jun. 26, 1992, Ser. No. 903,928

Int. Cl.[5] B01D *27/06, 29/07, 50/00, 53/34*

U.S. Cl. 422—177 **14 Claims**



1. A filtration device comprising:

a first filter having in cross-section first and second outer legs and first and second inner legs connected to each other at first ends and connected to the first and second outer legs, respectively, at second ends such that said first filter forms generally the shape of a W wherein the height of the first and second inner legs is less than the height of the first and second outer legs and a space is defined between the first and second outer legs, said first filter including a porous medium adapted to remove particulates from a gas; and

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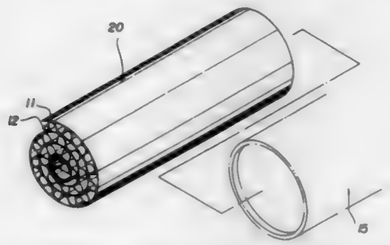
a second filter having first and second legs, the first and second legs contacting the first and second outer legs of said first filter, respectively, at first ends to prevent bypass flow between the first and second legs of said second filter and the first and second outer legs of said first filter, respectively, said second filter being disposed in the space within said first filter, said second filter including a sorbent for removing or rendering innocuous undesirable substances in the gas.

5,302,355

EXHAUST PURIFYING DEVICE AND METHOD OF PRODUCING THE SAME

Toshikazu Fujikura, and Shin-ichi Nigorikawa, both of Saitama, Japan, assignors to Sankei Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,236
Claims priority, application Japan, Feb. 28, 1992, 4-009707[U]
Int. Cl.[5] B01D *53/36;* **F01N** *3/28*
U.S. Cl. 422—180 **10 Claims**



1. An exhaust purifying device for promoting oxidation of an exhaust emanating from an internal combustion engine, comprising:

a casing including a cylindrical portion and end cover portions; and

a core received in said casing and provided with a honeycomb structure;

said core being made of a single webbing having a flat portion and a corrugated portion adjoining each other in a longitudinal direction of said webbing, said flat portion of said single webbing being wound a predetermined plurality of turns in the longitudinal direction of said single webbing thereby forming a core portion about which superposed layers of the flat and corrugated portions are wound.

5,302,356

ULTRAPURE WATER TREATMENT SYSTEM

Farhang F. Shadman, and Robert A. Governal, both of Tucson, Ariz., assignors to Arizona Board of Reagents Acting on Behalf of University of Arizona, Tucson, Ariz.

Filed Mar. 4, 1992, Ser. No. 845,988
Int. Cl.[5] B01J *19/12*
U.S. Cl. 422—186.3 **8 Claims**

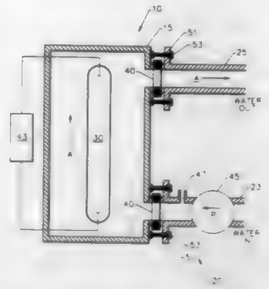
1. An ultrapure water treatment system comprising:

a housing,

water supply means including a water inlet and a water outlet communicating with said housing and defining a path of travel of the water from said inlet to said outlet,

irradiation means for irradiating water in the housing with UV light of wavelength of 180 nm to 190 nm,

and catalytic filter means positioned within said path of travel of the water external of said housing and between said housing and said water outlet such that all water flowing from said housing passes therethrough, said filter blocking the leakage of any UV light, said catalytic filter means comprising a non-polymeric porous support having



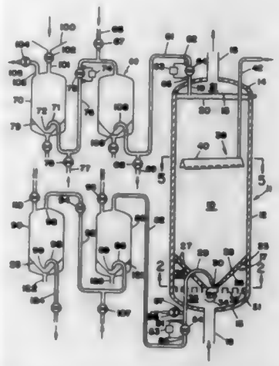
a photoactive catalyst having the ability to convert organic contaminants to carbon dioxide thereon.

5,302,357

APPARATUS FOR AN ON-STREAM PARTICLE REPLACEMENT SYSTEM FOR COUNTERCURRENT CONTACT OF A GAS AND LIQUID FEED STREAM WITH A PACKED BED

David C. Kramer, San Anselmo; Bruce E. Stangeland, Berkeley, both of Calif.; David S. Smith; James T. McCall, both of Baton Rouge, La.; Georgieanna L. Scheuerman, Moraga, and Robert W. Bachtel, El Cerrito, both of Calif., assignors to Chevron Research and Technology Co., San Francisco, Calif.

Continuation of Ser. No. 727,656, Jul. 9, 1991, abandoned, which is a division of Ser. No. 381,948, Jul. 19, 1989, Pat. No. 5,076,908. This application Feb. 8, 1993, Ser. No. 14,847
Int. Cl.[5] B01J *8/08*
U.S. Cl. 422—219 **15 Claims**



1. Apparatus for controlling the uniformity of a combined stream of gas and liquid hydrocarbon components in a mixed feed stream for simultaneous upward flow thereof through a substantially packed catalyst bed flowing downwardly in a reactor vessel which comprises

a generally cylindrical reactor vessel having means for introducing a mixed feed stream of gas and liquid hydrocarbon components into a lower end of said vessel,

and means for supporting a bed of catalyst extending upwardly from said lower end of said vessel,

said catalyst bed support means including a generally truncated conical member diverging upwardly from its apex and having a fluid pervious conical screen portion truncated at said apex by a fluid impervious central portion,

said catalyst bed support means and the lower end of said reactor vessel forming a fluid reservoir which includes a generally horizontal wall means extending across said vessel and dividing said reservoir into a lower surge chamber and an upper plenum chamber, said wall means including a multiplicity of tubes forming the only fluid passageways therethrough, said tubes being substantially equally spaced from each other around said wall means, said tubes extending downwardly from said wall means to a depth in said surge chamber sufficient to form a multiplicity of fluid flow paths only from the lower end of said surge chamber for flow into said plenum chamber so as to prevent entry of gas components into said plenum chamber, except as components of a mixed feed stream,

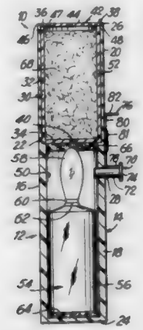
said plenum chamber including a plurality of concentric and generally cylindrical baffle members extending vertically upward in said chamber, an upper end of each of said baffle members abutting the lower surface of said screen member, said cylindrical baffle members being radially spaced apart from each other across the diameter of said cylindrical reactor vessel to form with said screen member a plurality of concentric reservoir rings to minimize separation of the gas and liquid components from said mixed feed stream prior to direct contact with the lower surface of said screen member, each of said generally cylindrical baffle members being generally coaxial with said vessel, and having substantially equal vertical lengths so that a lower end of each baffle member is at a depth below said upper end of the radially adjacent inward baffle member and below said lower end of the radially adjacent outward baffle member to divide said mixed feed stream into a plurality of concentric reservoir rings to prevent separation of said gas and liquid components of said mixed feed stream by forming multiple alternate gas and liquid flow rings through said conical screen member and into a catalyst bed to be supported thereon.

5,302,358

STERILIZING APPARATUS

Harold W. Andersen, Oyster Bay, N.Y., and Charles H. Harrison, Haw River, N.C., assignors to H. W. Andersen Products, Inc., Oyster Bay, N.Y.

Filed Jan. 15, 1993, Ser. No. 6,030
Int. Cl.[5] A61L *2/20;* **B05B** *11/04*
U.S. Cl. 422—305 **18 Claims**



17. Apparatus for releasing a sterilant to sterilize objects comprising:

a sealed ampule containing a sterilant in liquid form;

cartridge means having a first chamber and a second chamber, said ampule being disposed in said first chamber;

absorbing means in said second chamber;

communication means in said cartridge means providing communication between said first and second chambers;

breaking means on said cartridge means and movably manipulatable externally of said cartridge means to effect breaking of said ampule in said first chamber such that upon breaking of said ampule, the liquid sterilant is released from the broken ampule and passes through said communication means to said absorbing means, said absorbing means being operably to absorb said liquid sterilant and thereby facilitate conversion of the liquid sterilant into a gaseous state; and

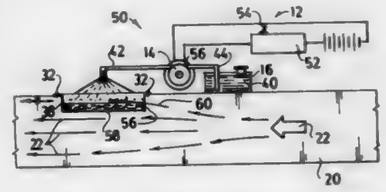
passageway means on said cartridge means for the gaseous sterilant in gaseous state to pass from said second chamber to sterilize said objects.

5,302,359

DEODORIZING SYSTEM

Raymond L. Nowatzki, 2310 Rte. #63, Wayland, N.Y. 14572

Filed Nov. 18, 1992, Ser. No. 977,918
Int. Cl.[5] A61L *9/00*
U.S. Cl. 422—306 **7 Claims**



1. An apparatus for dispensing odorant vapor into an air stream, comprising a reservoir for containing a volatilizable liquid, a dispensing well, a pump, and switch means for activating said pump, wherein:

(a) said dispensing well is comprised of a bottom wall and a side wall, absorbent material contiguous with said bottom wall, and at least two orifices in said side wall;

(b) said pump is comprised of a fluid inlet connected to said reservoir, and a fluid outlet connected to said dispensing well; and

(c) said switch means is electrically connected to said pump and is comprised of means for causing an electrical signal to be transmitted to said pump.

5,302,360

METHOD OF WORKING UP ANTIMONY HALIDE CATALYST SOLUTIONS

Guenter Fernschild, deceased, late of Hannover, and Sarah Fernschild, heir, Hemmingen, both of Fed. Rep. of Germany by Claudia Gerdau, legal representative , assignors to Kali-Chemie AG, Hannover, Fed. Rep. of Germany

Continuation of Ser. No. 574,448, Aug. 29, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 990,943
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929263
Int. Cl.[5] C01G *30/00*
U.S. Cl. 423—87 **17 Claims**

1. A method for working up inactive solutions containing antimony pentahalide catalysts and organic impurities, said method comprising adding elemental antimony to the solution and allowing the added antimony and the antimony pentahalide to react to produce antimony trihalide, crystallizing the antimony trihalide, and separating the organic impurities from the resulting crystalline antimony trihalide.

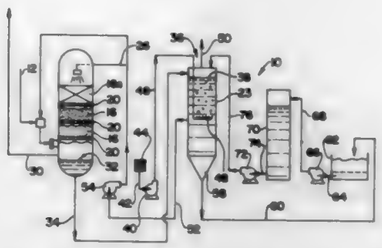
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,361

MULTI-BED MASS TRANSFER COLUMN WITH MOBILE PACKING

Gary J. Nagl, Deer Park, Ill., assignor to Ari Technologies, Inc., Palatine, Ill.

Filed Apr. 8, 1991, Ser. No. 682,545
Int. Cl.[5] C01B *17/16*
U.S. Cl. 423—220 **13 Claims**



1. A liquid phase oxidation process for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream including contacting said gas stream in a gas/liquid contactor with a liquid oxidizing solution under conditions effective for oxidizing hydrogen sulfide to elemental sulfur, thereby forming solid sulfur particles that become entrained in said liquid solution, including the steps of:

contacting said H_2S-containing gas with said solution in a packed tower as said contactor, wherein said packed tower includes:

at least one mobile packed bed of spherical packing elements, having a diameter in the range of about 1 cm to about 10 cm, disposed in said tower;

at least one fixed packed bed disposed in said tower vertically above said mobile packed bed, wherein all of said fixed packing elements being disposed above all of the mobile packing elements, said fixed packing elements providing a bed thickness sufficient to prevent the mobile packing elements from substantial partitioning, thereby preventing uneven gas flow upwardly through the mobile packing elements and essentially eliminating gas surging and channeling through the mobile packed bed, and to achieve H_2S oxidation in the fix bed;

each of said mobile and fixed packed beds being supported by a respective grid in said tower; said mobile packed bed being separated vertically from said fixed packed bed and associated support grid by a distance sufficient to permit the mobile packing elements in said mobile packed bed to effect fluidized motion from gas flow upwardly through said mobile packed bed;

flowing said H_2S-containing gas upwardly through the mobile packed bed and said fixed bed, respectively; and

flowing the liquid solution downwardly through the fixed packed bed and said mobile packed bed, respectively, to achieve substantially uniform flow of gas and liquid over the cross-section of the tower.

5,302,362

CRYSTALLINE MICROPOROUS METALLO-ZINC PHOSPHATE COMPOSITIONS

Robert L. Bedard, Fishkill, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Apr. 10, 1992, Ser. No. 866,937
Int. Cl.[5] C01B *25/45*
U.S. Cl. 423—306 **13 Claims**

1. A crystalline molecular sieve having: 1) a three-dimensional microporous framework structure of ZnO_2, PO_2 and $M'O_2$ tetrahedral units; 2) an intracrystalline pore system; and 3) an empirical formula, on an anhydrous basis, expressed as the ratio of the oxides of:

$$rM_2O:sZnO:tM'O_{n/2}:uP_2O_5$$

where M is at least one alkali metal, M' is a metal selected from the group consisting of magnesium, copper, gallium, aluminum, silicon, germanium, cobalt, chromium, iron, manganese, titanium and mixtures thereof, n is the valence of M' and has a value of +2, +3, or +4, r, s, t and u are defined by the following equations:

1) when n=+2 and

a) $t + s = 2.0$ then	b) $2.0 < t + s \leq 3.0$ then
$t = 0.02$ to 1.98	$t = 0.02$ to 2.98
$s = 1.98$ to 0.02	$s = 2.98$ to 0.02
$r = 0.80$ to 1.20	$r = 0.80$ to 1.20
$u = 0.98$ to 1.02	$u = 0.98$ to 1.02;

2) when n=+3 and

a) $t + s = 2.0$ and M' is not Al^{+3}, then	b) $t + s = 2.0$ and M' is Al^{+3} then
$t = 0.02$ to 1.98	$t = 0.01$ to 0.56
$s = 1.98$ to 0.02	$s = 1.99$ to 1.44
$r = 0.99$ to 0.01	$r = 0.99$ to 0.72
$u = 0.98$ to 1.02	$u = 0.98$ to 1.02;
c $2.0 < t + s \leq 3.0$ then	
$t = 0.02$ to 1.98	
$s = 2.98$ to 1.02	
$r = 0.99$ to 0.01	
$u = 0.98$ to 1.02;	

3) when n=+4 and

a) $t/2 + s = 2.0$ then	b) $2.0 < t/2 + s \leq 3.5$ then
$t = 0.04$ to 3.96	$t = 0.04$ to 3.96
$s = 1.98$ to 0.02	$s = 2.98$ to 0.02
$r = 0.99$ to 0.01	$r = 0.99$ to 0.01
$u = 0.99$ to 0.01	$u = 0.99$ to 0.01.

the crystalline molecular sieve characterized in that it has the structure of zeolite ABW or has the structure characterized by the x-ray diffraction pattern, d-spacings and intensities, set forth in Table A

TABLE A

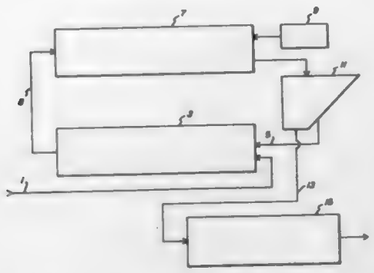
2θ	d (Å)	Relative Intensity
11.60–11.72	7.55–7.63	vs
16.46–16.60	5.35–5.39	w
20.20–20.34	4.37–4.40	m
23.39–23.52	3.78–3.80	w
28.76–28.89	3.09–3.10	vs
33.34–33.48	2.68–2.69	w–m
34.91–35.06	2.56–2.57	w
35.43–35.56	2.52–2.53	m
37.42–37.56	2.39–2.40	w–m
39.32–39.47	2.28–2.29	w
41.14–41.30	2.19	w
44.62–44.76	2.02–2.03	w
47.88–48.06	1.89–1.96	w
49.45–49.61	1.84	w
50.98–51.16	1.79	w
53.96–54.15	1.70–1.69	w.

5,302,363

PROCESS FOR PREPARING ANHYDROUS POLYPHOSPHATE MIXED ALKALI METAL SALTS

Louis A. Highfill, Union, Mo., and George D. Rozelle, Evans, Ga., assignors to Monsanto Company, St. Louis, Mo.

Filed May 3, 1993, Ser. No. 55,345
Int. Cl.[5] C01B *25/30*
U.S. Cl. 423—315 **11 Claims**



1. A process for preparing a mixed alkali metal polyphosphate salts which comprises the steps of:

a. preparing a solution of a mixture of alkali metal orthophosphate salts;

b drying said salt solution by spraying the solution onto a hot tumbling bed of a mixture of phosphate salts, and;

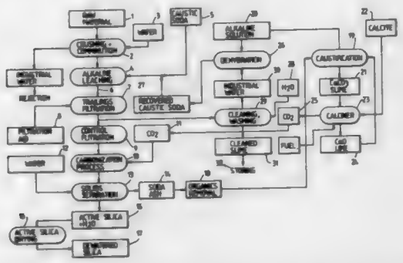
c. calcining the dried salt mixture at a temperature in the range of from about 400° C. to about 600° C. to form a mixed alkali metal polyphosphate salts containing a major amount of tripolyphosphate, said salts comprising a crystalline, solid solution having an M_2O/P_2O_5 ratio less than 2 and greater than 1.5 wherein M_2O is a mixture of Na_2O and K_2O in a molar ratio of 3:2 respectively.

5,302,364

PROCESS FOR THE PREPARATION OF AMORPHOUS SILICA

Ephraim Feinblum, Beer Sheva, Israel, assignor to R & D Silicate Products, Ltd., Beer Sheva, Israel

Filed Dec. 24, 1992, Ser. No. 996,638
Claims priority, application Israel, Dec. 25, 1991, 100503
Int. Cl.[5] C01B *33/12*
U.S. Cl. 423—340 **7 Claims**



1. A process for the production of a high grade amorphous silica having a purity of at least 90% active silica of the formula $SiO_2.nH_2O$, comprising the steps of:

a. comminuting and wet classification of porcellanite rock to form granules having an average diameter of 200 microns to 8 mm;

b. combining the resulting granules with NaOH temperature of up to 100° C. to form a product containing sodium silicates;

c. separating a containing said silicates from solid waste;

d. adding CO_2 to said liquid product to form $SiO_2.nH_2O$ and Na_2CO_3;

e. washing the resulting product to effect a separation of the precipitated $SiO_2.nH_2O$ from the soluble Na_2CO_3; and

f. recovering $SiO_2.nH_2O$ of a purity of at least 90%.

5,302,365

PROCESS FOR THE CATALYTIC COMBUSTION OF METHANE

Giuseppe Fornasari, Cremona; Stefano Palmery, Milan, and Gianluca Calestani, Parma, all of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed Nov. 13, 1992, Ser. No. 975,793
Claims priority, application Italy, Nov. 15, 1991, 003056 A/91
Int. Cl.[5] C01B *31/20*
U.S. Cl. 423—437 **14 Claims**

1. A methane combustion process comprising reacting methane with oxygen or air in the presence of a heat-resistant catalyst of pyrochloric structure having the following formula:

$$X_aY_bZ_cSn_2O_7$$

where

X is a trivalent metal cation

Y is a tetravalent metal cation

Z is a bivalent metal cation

$O \leqq a \leqq 2$

$O \leqq b \leqq 1$

$O \leqq c \leqq 1$

$a+b+c=2$,

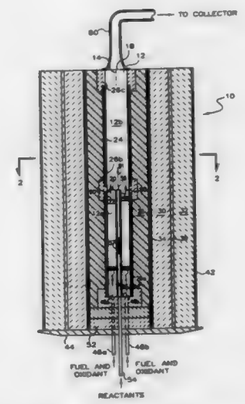
to selectively produce CO_2 by methane combustion.

5,302,366

PRODUCTION OF SILICON PRODUCT CONTAINING BOTH CARBON AND NITROGEN

George F. Schuette; Michael C. Carter, and Bruce W. Gerhold, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 28, 1991, Ser. No. 676,403
Int. Cl.[5] C01B *31/36*; C04B *35/58*
U.S. Cl. 423—346 **11 Claims**



1. A method comprising the steps of:

providing a reactor having a chamber defined therein which has a longitudinal axis and longitudinally separated upstream and downstream ends, wherein the chamber comprises a combustion zone and a reaction zone such that the combustion zone longitudinally extends from the upstream end to a boundary between the zones and such that

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the reaction zone longitudinally extends from the boundary to the downstream end;

establishing a flow of a combustible mixture in the combustion zone so as to flow in a direction generally toward the reaction zone, wherein the combustible mixture comprises a mixture of a fuel and an oxidant comprising oxygen;

combusting the combustible mixture in the combustion zone to produce hot cumbustion products which flow generally toward and into the reaction zone;

injecting a silicon-containing first reactant, a carbon-containing second reactant, and a nitrogen-containing third reactant into the chamber at the boundary so as to flow with the hot combustion products into the reaction zone, wherein the temperature conditions in at least a portion of the reaction zone are at least about 1400° C., the elemental molar ratio of carbon to oxygen for the combination of the combustible mixture, the first reactant, the second reactant, and the third reactant is at least about 0.8:1, and the elemental molar ratio of carbon to nitrogen for the combination of the first reactant, the second reactant, and the third reactant is about 0.5:1 to about 20:1;

whereby a product powder containing carbon, nitrogen and silicon is produced in the reaction zone.

5,302,367

PROCESS FOR OBTAINING AQUEOUS HYDROGEN PEROXIDE SOLUTIONS

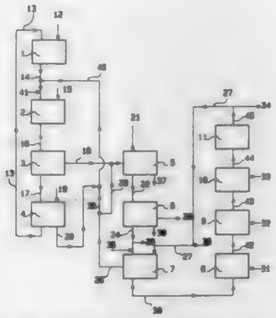
Lido Signorini; Konstantin Glinos, both of Brussels; Philippe Deroisy, Wavre, and Fabienne Banneux, La Louviere, all of Belgium, assignors to Interox International (Societe Anonyme), Brussels, Belgium

Filed Aug. 20, 1992, Ser. No. 932,390

Claims priority, application Belgium, Aug. 27, 1991, 09100788

Int. Cl.[5] C01B *15/023*

U.S. Cl. 423—588 **7 Claims**



1. A process for obtaining aqueous hydrogen peroxide comprising:

(1) hydrogenating an organic solution which comprises (i) an alkylanthraquinone and (ii) an organic solvent;

(2) combining said organic solution with an aqueous solution which comprises (i) water and (ii) the purge containing an inorganic stabilizer, an acidifying compound or a mixture thereof obtained in step (5*a*) and oxidizing the combined solution;

(3*a*) separating said aqueous solution from said organic solution;

(4) returning said organic solution to step (1);

(5*a*) distilling said aqueous solutin to obtain a hydrogen peroxide solution and a purge,

(6) repeating steps (1) to (6).

5,302,368

PROCESS FOR PREPARATION OF ALUMINA

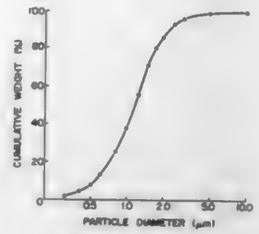
Takuo Harato, Tokyo; Toshiki Furubayashi, Niihama; Toshio Ashitani, Niihama, and Toru Ogawa, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 147,872, Jan. 25, 1988, abandoned. This application May 28, 1991, Ser. No. 705,620

Claims priority, application Japan, Jan. 29, 1987, 62-19126; Jan. 29, 1987, 62-19127

Int. Cl.[5] C01F *7/20, 7/22*

U.S. Cl. 423—625 **5 Claims**



PARTICLE SIZE DISTRIBUTION OF ALUMINUM HYDROXIDE

1. A process for preparing an α-alumina having a particle size distribution index, $(D_{95}-D_5)/D_{50}$, of not more than 1.5, comprising:

dispersing in an aqueous medium aluminum hydroxide having average secondary particle diameters of up to about 5 μm and produced by Bayer's process and/or transition alumina having average secondary particle diameters of up to about 5 μm and produced by Bayer's process to form a slurry;

adjusting the viscosity, at the temperature and pressure of the resulting slurry, to viscosities of about 100 to about 1000 centiposes;

spray-drying the slurry to obtain dry powders; and

calcining the resulting dry powders in the presence of a chlorine-containing substance at a temperature of about 1100° C. to about 1500° C.

5,302,369

MICROSPHERES FOR RADIATION THERAPY

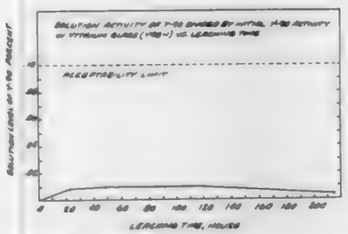
Delbert E. Day, Rolla, and Gary J. Ehrhardt, Columbia, both of Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Continuation of Ser. No. 280,005, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 673,123, Nov. 19, 1984, Pat. No. 4,789,501. This application Aug. 29, 1991, Ser. No. 751,721

The portion of the term of this patent subsequent to Dec. 6, 2005, has been disclaimed.

Int. Cl.[5] A61K *43/00;* **A61N** *5/00;* **C03C** *3/095, 3/097*

U.S. Cl. 424—1.29 **20 Claims**



1. A substantially spherical microsphere adapted for radiation therapy of a mammal consisting essentially of at least one non-radioactive isotope distributed substantially uniformly throughout the microsphere and which, upon being subjected to an effective amount of neutron irradiation, emits a therapeutic intensity and amount of beta or gamma radiation, and a balance of elements selected from the group consisting of elements that do not become radioactive during neutron irradiation and elements that have a half-life that is sufficiently short so that the balance of elements does not emit a significant amount of beta or gamma radiation at the time of administration, the microsphere having a chemical durability such that subsequent to administration of the microsphere to the mammal, the microsphere will not release a significant amount of radiation emitting radioisotope into the mammal's system.

5,302,370

CHELATING AGENTS FOR FORMING COMPLEXES WITH RADIOACTIVE ISOTOPES, METAL COMPLEXES THEREOF AND USE THEREOF IN DIAGNOSIS AND THERAPY

Reinhard Neumeier; Wolfgang Kramp, both of Berlin, and Helmut R. Mäcke, Lorrach, all of Fed. Rep. of Germany, assignors to Institut fur Diagnostikforschung GmbH, Berlin, Fed. Rep. of Germany

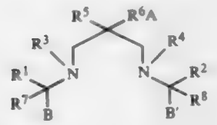
Filed Aug. 22, 1990, Ser. No. 572,140

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1989, 3930674

Int. Cl.[5] A61K *49/02;* **C07C** *211/27, 211/25*

U.S. Cl. 424—1.53 **8 Claims**

1. A compound according to formula I



(I)

where

R^1, R^2 and R^5 are the same or different and stand for hydrogen or a C_{1-6}-alkyl radical, substituted optionally by a hydroxyl group,

R^3 and R^4 are the same or different and stand for a hydrogen atom or C_{1-6}-alkyl or amino(C_{1-6})-alkyl or carboxymethyl or (C_{1-6}-alkoxycarbonyl)methyl or (C_{1-6}-alkoxycarbonyl)-benzyl radical,

R^6 stands for a C_{1-6}-alkylene radical,

R^7 and R^8 are the same or different and stand for hydrogen or a C_{1-6}-alkyl radical and

B and B' are the same or different and stand for a phenyl or naphthyl or 2-mercaptophenyl or thienyl or pyrrolyl or nitrosomethyl radical, each radical substituted optionally with 1–3 hydroxyl groups, wherein the nitrosomethyl radical having the formula



where R^x denotes a C_{1-6}-alkyl radical which, optionally together with r^1 or R^2, is cyclised via a trimethylene or tetramethylene group to form a 5 or 6 ring, and

A denotes a functional group C, where C stands for an amino or hydrazino or hydrazido or carboxy or C_{2-6}-alkynyl or alkenyl or hydroxyl or aminophenyl of oxiranyl or fluorinated phenoxycarbonyl or halogen or formyl or nitrile or phenylisothiocyanate or a succinimide oxycarbonyl radical which latter is substituted optionally with a sodium sulphate radical, or contains a compound T, bonded by means of the functional group C, which selectively concentrates in lesions or certain tissues, where T stands for monoclonal antibodies or fragments thereof or hormones or enzymes or growth factors or ligands for cell membrane receptors or steroids or neurotransmitters or lipids or saccharides or amino acids or oligopeptides or biotin or radiosensitizers,

and complexes thereof with radioactive metal ions suitable for diagnosis and tumor therapy, and salts thereof with inorganic and organic acids.

5,302,371

FLUORESCENT ORGANOSILICON COMPOUNDS AND METHODS

Jo A. Lamb, and Maris J. Ziemelis, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 517,893, May 2, 1990, Pat. No. 5,176,906. This application Aug. 10, 1992, Ser. No. 926,621

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/80;* **C08F** *8/36;* **C08G** *77/388;* **C09K** *11/06*

U.S. Cl. 424—7.1 **4 Claims**

1. A fluorescent organosilicon compound derived from the reaction of an aminofunctional organopolysiloxane and a fluorescent labeling reagent, the fluorescent labeling reagent being a dansyl derivative.

5,302,372

METHOD TO OPACIFY LEFT VENTRICLE IN ECHOCARDIOGRAPHY

Shoa-Lin Lin, Kaohsiung, and Chung-Yuan Mou, Taipei, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Jul. 27, 1992, Ser. No. 919,902

Int. Cl.[5] A61B *8/00*

U.S. Cl. 424—9 **16 Claims**

1. A method to opacify left ventricle comprising the steps of:

(a) obtaining an echo contrast agent which comprises:

(i) an aqueous albumin-glucose solution containing 0.40 to 0.60 grams of albumin and 4.0 to 10.0 grams of glucose per 10 ml of said aqueous albumin-glucose solution; and

(ii) glycerin having a volume ratio between said glycerin and said aqueous albumin-glucose solution of no less than 0.050;

(b) sonicating said echo contrast agent from step (a);

(c) introducing said sonicated echo contrast agent into a body through peripheral venous or inferior vena cava injection; and

(d) performing an echocardiographic study on said body using an appropriate echocardiographic machine.

5,302,373

LIQUID MOUTHWASH CONTAINING A PARTICULATE BICARBONATE SUSPENSION

Kenneth J. Gincin, Pennington, and Amy L. Joseph, Hopewell, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jun. 10, 1993, Ser. No. 75,216

Int. Cl.[5] A61K *7/16, 9/50, 33/00*

U.S. Cl. 424—49 **21 Claims**

1. A mouthwash composition which is a liquid concentrate comprising (1) about 5–50 weight percent of ethanol; (2) about 5–35 weight percent of water; (3) about 0.5–30 weight percent of a humectant ingredient; (4) about 2–30 weight percent of a suspension of particulate alkali metal bicarbonate ingredient, having an average particle size of about 0.5–5 microns wherein the bicarbonate particles are encapsulated with a hydrophilic organic coating; (5) about 0–3 weight percent of a hydrophilic polymer ingredient; and (6) about 0–5 weight percent of a surfactant ingredient.

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5,302,374

ORAL HYGIENE SYSTEM

Eugene C. Wagner, Chappaqua, N.Y., assignor to Dental Concepts Inc., Elmsford, N.Y.

Filed Apr. 21, 1993, Ser. No. 50,565
Int. Cl.[5] A61K 7/16, 7/18, 7/20
U.S. Cl. 424—52 11 Claims

1. A method of cleansing tooth surfaces while reducing dentin abrasion which occurs during tooth brushing with a conventional abrasive-containing toothpaste, which comprises the steps of:

(a) providing a sufficient amount of a conventional toothpaste containing from 20% to 50% by weight of an abrasive agent selected from the group consisting of hydrated silica, aluminum hydroxide, calcium carbonate, and dicalcium phosphate dihydrate;

(b) providing a sufficient amount of non-abrasive, aqueous, homogeneously dispersed dentifrice having a toothpaste consistency and comprising from 0.2% to 10% by weight of hydrogen peroxide, from 0.2% to 4% by weight of Carbomer 940 gelling agent, from 2% to 35% by weight of corn starch filler, and from 0.2% to 2% by weight of surfactant and foaming agent, based upon the weight of the total dentifrice;

(c) admixing the conventional toothpaste from step (a) with the dentifrice from step (b) to accelerate the release of oxygen from the dentifrice; and

(d) brushing tooth surfaces with the admixture from step (c).

5,302,375

ORAL COMPOSITION HAVING IMPROVED TOOTH WHITENING EFFECT

David Viscio, Moamouth Jct., N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Nov. 19, 1992, Ser. No. 978,840
Int. Cl.[5] A61K 7/16, 7/20
U.S. Cl. 424—53 20 Claims

1. A tooth whitening composition for whitening teeth in the oral cavity comprising a safe and effective tooth whitening amount of peracetic acid wherein there is provided separate unmixed phases comprised of (a) a water soluble alkali metal carbonate contained in a non-aqueous carrier and unmixed (b) acetyl salicylic acid in a weight ratio of (a):(b) of 4:1:1:4, the two phases being combined shortly before application to the teeth in the presence of water, the pH of the combined phases being at a pH of 7 or below whereby said peracetic acid is generated in situ and is effective for whitening teeth when allowed to remain on the teeth for a time sufficient to effect whitening thereof.

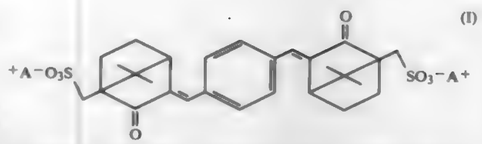
5,302,376

COSMETIC SCREENING EMULSION COMPRISING A UV-A SCREENING AGENT AND A UV-B SCREENING AGENT AND ITS USE FOR SKIN PROTECTION AGAINST ULTRAVIOLET RADIATION

Serge Forestier, Claye-Souilly, and Martine Eteve, Paris, both of France, assignors to L'Oreal, Paris, France

Filed May 7, 1991, Ser. No. 696,784
Claims priority, application France, May 18, 1990, 90 06278
Int. Cl.[5] A61K 7/42, 7/44, 9/10, 9/12
U.S. Cl. 424—59 15 Claims

1. An ultraviolet radiation screening cosmetic emulsion which screens out wavelengths between 280 nm and 400 nm which comprises in an oil phase, an effective amount of 2,4,6-tris[p-(2'ethylhexyl-1'-oxycarbonyl)anilino-1,3,5-triazine and, in an aqueous phase, an effective amount of partially or fully neutralized benzene-1,4-acid of the formula:



(I)

in which A designates a hydrogen atom, an alkali metal, a $N(R)_4^+$ group, R designating a hydrogen atom or a C_1–C_4 alkyl or hydroxyalkyl radical, or a M^{n+}/n group where M^{n+} is a polyvalent metal cation in which n is 2, 3 or 4.

5,302,377

FATTY ALKOXYLATE ESTERS OF ALIPHATIC AND AROMATIC DICARBOXYLIC AND TRICARBOXYLIC ACIDS AS EMOLLIENTS

Abel G. Pereira, Belleville; Kevin F. Gallagher, Middletown; Phillip G. Abend, Fort Lee, and John C. Carson, Jr., Highland Park, all of N.J., assignors to Croda, Inc., Parsippany, N.J.

Filed Apr. 2, 1992, Ser. No. 862,074
Int. Cl.[5] A61K 7/42, 7/50, 7/48; C07C 69/34, 69/80
U.S. Cl. 424—59 36 Claims

1. A fatty alkoxylate ester consisting of a triester of an aliphatic or aromatic tricarboxylic acid, formed by reacting said acid with a stoichiometric excess of one or more polyalkoxylated fatty alcohols.

5,302,378

SELF-TANNER COSMETIC COMPOSITIONS

Brian A. Crotty, Branford, and Philip D. Ziegler, Oxford, both of Conn., assignors to Chesebrough-Pond's USA Co., Greenwich, Conn.

Filed Jun. 17, 1992, Ser. No. 899,402
Int. Cl.[5] A61K 7/42, 31/74
U.S. Cl. 424—59 1 Claim

1. A method for improving color intensity of a tan imparted by dihydroxyacetone comprising applying to the skin a composition comprising:

(i) from about 0.1 to about 40% by weight of dihydroxyacetone;

(ii) from about 0.1 to about 20% by weight of an anionic silicone copolyol;

(iii) an amount of propylene glycol such that the weight ratio of dihydroxyacetone to propylene glycol ranges between about 2:1 to about 1:50;

(iv) from about 5 to about 95% by weight of a pharmaceutically acceptable vehicle for delivering components (i), (ii) and (iii) to the skin.

5,302,379

NAIL LACQUER PRIMARY FILM FORMING RESIN

Milan F. Sojka, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 5, 1993, Ser. No. 26,706
Int. Cl.[5] A61K 7/04
U.S. Cl. 424—61 9 Claims

1. In a nail lacquer which includes a film forming resin, a plasticizer, and a solvent, the improvement comprising utilizing as the film forming resin a blend of (i) a graft copolymer having a main backbone chain of acrylic ester units and methacrylic ester units, the main backbone chain having grafted thereto pendant trialkoxysilyl groups and pendant ethylene glycol dimethacrylate groups, the trialkoxysilyl grafts being grafted to only acrylic ester units and the ethylene glycol dimethacrylate grafts being grafted to other of the remaining unsubstituted acrylic ester units; and (ii) a silsesquioxane resin containing $RSiO_{3/2}$ units and ≡SiOH units in which R is an alkyl group or an aryl group.

5,302,380

COSMETIC COMPOSITIONS CONTAINING ATACTIC POLYPROPYLENES AND RELATED METHODS

Anthony Castrogiovanni, Belford; Joseph F. Caiello, Union, both of N.J.; Arvind Shah, Owings Mills, Md., and Steven Amato, Clifton, N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Filed Jun. 8, 1992, Ser. No. 895,065
Int. Cl.[5] A61K 7/021, 7/025
U.S. Cl. 424—63 8 Claims

1. A cosmetic composition selected from the group consisting of an eyeshadow containing 0.1–50% pigment, 0.1–40% wax, and 0.1–60% oil, a lipstick containing 0.1–50% pigment, 0.1–80% wax, and 0.1–50% oil, a blush containing 0.1–60% pigment, 0.1–50% wax, and 0.1–60% oil, and a makeup containing 0.1–40% pigment, 0.1–60% water, and 0.1–60% oil comprising 0.5–5% of an atactic polypropylene consisting essentially of 50–100% atactic content, 0.1–15% crystallinity, and a molecular weight of 1,000–10,0000, said composition having improved adherence to skin as compared to the same composition not containing said atactic polypropylene.

5,302,381

LOW RESIDUE ANTIPERSPIRANT STICKS

Wendy R. Greczyn, Randolph; Linda J. Lancaster, Old Bridge, and Richard T. Murphy, Belle Mead, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 854,209, Mar. 20, 1992, Pat. No. 5,254,332. This application Aug. 27, 1992, Ser. No. 937,525
Int. Cl.[5] A61K 7/32, 7/34, 7/36, 7/38
U.S. Cl. 424—66 26 Claims

1. An antiperspirant stick which provides the user with excellent antiperspirant/deodorant efficacy, reduced residue and high temperature stability, which comprises

(a) from about 25 to 50 percent by weight of a volatile silicone oil;

(b) from about 2 to 20 percent by weight of a water-insoluble liquid emollient;

characterized in that the weight ratio of volatile silicone oil to water-insoluble liquid emollient is from about 5.0:1 to 25.0:1

(c) from about 12 to 20 percent by weight of a low melting point wax;

(d) from about 1.0 to 15 percent by weight of a coupling agent;

(e) from about 0.50 to 3.0 percent by weight of a surface active agent which is a non-ionic ether or ester having a HLB greater than about 10;

(f) from about 18 to 30 percent by weight of an antiperspirant active material; and

(g) from about 1.0 to 30 percent by weight of a sodium bicarbonate deodorant active material.

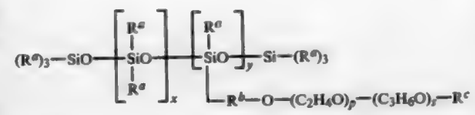
5,302,382

SILICONE CONTAINING PERSONAL CARE PRODUCTS

Kenneth A. Kasprzak, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 3, 1993, Ser. No. 71,730
Int. Cl.[5] A61K 31/765
U.S. Cl. 424—78.03 11 Claims

1. A method of making a stable emulsified personal care product having as an ingredient thereof a silicone skin conditioning agent, comprising (i) forming an anhydrous silicone mixture which includes a silicone selected from the group consisting of volatile cyclopolysiloxanes having the formula in which x has a value of 3 to 10, non-volatile linear polysiloxanes having a viscosity of 5 to 10,000 centistokes, and a silicone gum, the mixture further including a first silicone oxyalkylene copolymer, and a second silicone oxyalkylene copolymer; (ii) forming a pre-emulsified aqueous based personal care product; and (iii) adding the anhydrous silicone mixture directly to the pre-emulsified personal care product without further emulsification, the first silicone oxyalkylene copolymer in the anhydrous silicone mixture being a siloxane polyether of the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $—C_mH_{2m}—$; R^c is a terminating radical selected from the group consisting of hydrogen, an alkyl group of one to six carbon atoms, and an aryl group; m has a value of two to eight; p and s each have values between 18 to 28; x has a value of 80 to 120; and y has a value of 2 to 10.

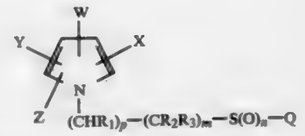
5,302,383

INSECTICIDAL, ACARICIDAL AND MOLLUSCICIDAL 1-(SUBSTITUTED)THIOALKYLPYRROLES

David G. Kahn, Newtown, Pa., and Venkataraman Kameswaran, Princeton Junction, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 804,260, Dec. 4, 1991, Pat. No. 5,254,559. This application Jul. 22, 1993, Ser. No. 95,973
Int. Cl.[5] A01N 25/04
U.S. Cl. 424—84 12 Claims

1. A molluscicidal bait composition which comprises an edible nutritive substance, a carbohydrate source and a molluscicidally effective amount of a compound having the structure



I

wherein W is CN or NO_2;

X is halogen or phenyl optionally substituted with one to three C_1–C_3alkyl, C_1–C_3alkoxy, C_1–C_3alkylthio, C_1–C_3alkylsulfinyl, C_1–C_3alkylsulfonyl, halogen, CN, NO_2, CF_3, R_4CF_2B, R_5CO or NR_6R_7 groups;

Y is CF_3, halogen or phenyl optionally substituted with one to three C_1–C_3alkyl, C_1–C_3alkoxy, C_1–C_3alkylthio, C_1–C_3alkylsulfinyl, C_1–C_3alkylsulfonyl, halogen, CN, NO_2, CF_3, R_4CF_2B, R_5CO or NR_6R_7 groups;

Z is halogen or CF_3;

R_1 is hydrogen, C_1–C_6alkyl, C_3–C_6cycloalkyl;

R_2 and R_3 are each independently hydrogen, C_1–C_6alkyl or C_3–C_6cycloalkyl;

R_4 is hydrogen, fluorine, CHF_2, CHFCl or CF_3;

R_5 is C_1–C_3alkyl, C_1–C_3alkoxy or NR_6R_7;

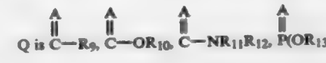
R_6 is hydrogen or C_1–C_3alkyl;

R_7 is hydrogen, C_1–C_3alkyl or R_8CO;

R_8 is hydrogen or C_1–C_3alkyl;

B is $S(O)_q$ or O;

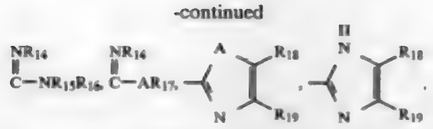
m, n, p and q are each independently an integer of 0, 1 or 2 with the proviso that the sum (p+m) must be greater than 0;



Q is

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-continued



CN, C_1–C_6alkyl optionally substituted with one or more phenyl, CN or halogen groups or phenyl optionally substituted with one to three C_1–C_3alkyl, C_1–C_3alkoxy, halogen, CN, NO_2, CF_3 or $NR_{20}R_{21}$ groups;

A is O or S;

R_9 is C_1–C_6alkyl or phenyl;

R_{10} is C_1–C_6alkyl;

R_{11} and R_{12} are each independently hydrogen, C_1–C_6alkyl or may be taken together with the atom to which they are attached to form a 5- to 7-membered ring;

R_{13} is C_1–C_4alkyl;

R_{14} is C_1–C_4alkyl or may be taken together with either R_{15} or R_{17} and the atoms to which they are attached to form a 5- to 7-membered ring optionally substituted with one or two C_1–C_3alkyl groups;

R_{15} and R_{16} are each independently hydrogen or C_1–C_4alkyl;

R_{17} is C_1–C_4alkyl or when taken together with R_{14} and the atoms to which they are attached may form a 5- to 7-membered ring optionally substituted with one or two C_1–C_3alkyl groups;

R_{18} and R_{19} are each independently hydrogen or C_1–C_3alkyl or when taken together may form a ring wherein $R_{18}R_{19}$ is represented by —CH=CH—CH=CH—;

R_{20} and R_{21} are each independently hydrogen or C_1–C_3alkyl and

the acid addition salts thereof.

5,302,384

ENDOTHELIAL-DERIVED IL-8 ADHESION INHIBITOR

Michael A. Gimbrone, Jr., Jamaica Plain, Mass., and M. Elyse Wheeler, Diamond Head, Ariz., assignors to Brigham and Women's Hospital, Boston, Mass.

Continuation of Ser. No. 442,786, Nov. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 232,224, Aug. 15, 1988, abandoned. This application Feb. 25, 1993, Ser. No. 28,705

Int. Cl.[5] A61K *45/05*

U.S. Cl. 424—85.2 **6 Claims**

1. A method of treating inflammation in a mammalian subject which comprises providing to said subject in need of such treatment a pharmaceutical composition comprising an inflammatory-reducing amount of endothelial-derived IL-8 substantially free of natural contaminants and a pharmaceutically acceptable carrier.

5,302,385

POLYURETHANE-POLYVINYLPYRROLIDONE BLOCK COPOLYMER AND IODINE CARRIER THEREFROM

Mohammad A. Khan, Sandy, Utah; Mutlu Karakelle; Min-Shiu Lee, both of Spring Valley, Ohio, and Robert A. Taller, Centerville, Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 20, 1990, Ser. No. 569,804

Int. Cl.[5] A61L *15/00, 29/00*

U.S. Cl. 424—486 **17 Claims**

1. A polymer comprising a block of polyurethane covalently bonded to a block of a copolymer of N-vinylpyrrolidone and allyl alcohol, said polyurethane comprising the reaction product of a diisocyanate, a polyglycol, and a chain extender.

5,302,386

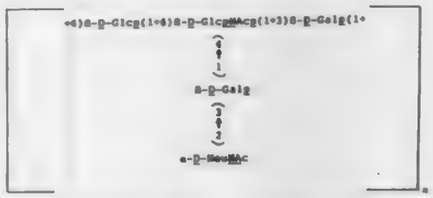
BACTERIAL ANTIGENS, ANTIBODIES, VACCINES AND METHODS OF MANUFACTURE

Dennis L. Kasper, Newton Center, Mass.; Harold J. Jennings, Gloucester, Canada; Nancy J. Levy, Newton Center, and Michael R. Wessels, Brookline, both of Mass., assignors to Brigham and Women's Hospital, Inc.

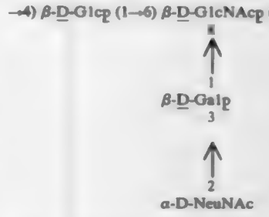
Continuation of Ser. No. 701,595, May 13, 1991, abandoned, which is a continuation of Ser. No. 303,095, Jan. 27, 1989, abandoned, which is a continuation of Ser. No. 852,840, Apr. 16, 1986, abandoned. This application Nov. 24, 1992, Ser. No. 982,023

Int. Cl.[5] A61K *39/385, 39, 09;* **C12P** *19/04;* **C07K** *17/02*

U.S. Cl. 424—92 **12 Claims**



1. An immunogenic substance comprising a purified oligosaccharide hapten and a protein carrier conjugated with said oligosaccharide hapten, said oligosaccharide hapten consisting essentially of from 1–50 monomer units of the type III group B Streptococcus polysaccharide capsule, said monomer units having the following chemical formula:



in which GlcNAcp represents N-acetyl glucosamine in the pyranose form, Galp represents galactose in the puranose form, Glcp represents glucose in the pyranose form, and α-D-NeuNAc represents N-acetyl neuraminic (sialic) acid; said oligosaccharide hapten being prepared by

a) culturing a type III group B Streptococcus bacterium in a medium;

b) recovering polysaccharide capsule in said medium or bacterial cells, said polysaccharide capsule having a backbone and side chains;

c) digesting said polysaccharide with an endo-β-galactosidase specific for cleaving one linkage on the backbone of said III GBS polysaccharide without cleaving side chain linkages of said III GBS polysaccharide and without cleaving other backbone linkages of said III GBS polysaccharide; and

d) recovering said oligosaccharide hapten.

5,302,387

BACILLUS THURINGIENSIS ISOLATES ACTIVE AGAINST COCKROACHES AND GENES ENCODING COCKROACH-ACTIVE TOXINS

Jewel M. Payne, San Diego, Calif.; M. Keith Kennedy, Racine, Wis.; John B. Randall, Racine, Wis., and David O. Brower, Racine, Wis., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 788,654, Nov. 6, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 958,551

Int. Cl.[5] A01N *63/00*

U.S. Cl. 424—93 L **6 Claims**

1. A process for controlling cockroaches which comprises contacting said cockroaches with a cockroach-controlling amount of a *Bacillus thuringiensis* isolate selected from the group consisting of: PS185L8, which is NRRL B-18915; PS201T6, which is NRRL B-18750; and mutants of said isolates which have activity against cockroaches.

5,302,388

CONTROL OF CAMPYLOBACTER JEJUNI COLONIZATION

Michael P. Doyle, Peachtree City, Ga., and Jean L. Schoeni, Lake Mills, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 13, 1991, Ser. No. 791,741

Int. Cl.[5] C12N *1/12, 1/20*

U.S. Cl. 424—93 C **20 Claims**

1. An anti-*Campylobacter jejuni* colonizing poultry feed which is useful for preventing the colonization of *Campylobacter jejuni* in a poultry animal, having dispersed therein, as an active ingredient, an effective amount of at least one cecal-colonizing strain of microorganism to provide anti-Campylobacter activity, wherein the strain is selected from the group consisting of *Klebsiella pneumoniae* strain 23 (ATCC No. 55234), *Citrobacter diversus* strain 22 (ATCC No. 55236), *Escherichia coli* (013:H⁻) strain 25 (ATCC No. 55235), mutants thereof which retain the ability to produce anti-Campylobacter activity, and mixtures thereof.

5,302,389

METHOD FOR TREATING UV-INDUCED SUPPRESSION OF CONTACT HYPERSENSITIVITY BY ADMINISTRATION OF T4 ENDONUCLEASE

Margaret L. Kripke, Kingwood, Tex., and Daniel B. Yarosh, Merrick, N.Y., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Aug. 17, 1992, Ser. No. 931,218

Int. Cl.[5] A61K *37/22, 37/54*

U.S. Cl. 424—94.6 **6 Claims**

1. A method for the treatment of UV induced suppression of the T-cell mediated immune response in a human individual comprising topically administering to the individual a therapeutically effective amount of liposome encapsulated T4 endonuclease V (T4N5) DNA repair enzyme.

5,302,390

HYBRID PROTEINS OF HUMAN PLASMINOGEN AND HUMAN T-PA, PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

Michael J. Browne; Jeffery H. Robinson; Richard A. G. Smith, all of Epsom, and Sarkis B. Kalindjian, Banstead, all of England, assignors to Beecham Group plc, United Kingdom

Continuation of Ser. No. 808,979, Dec. 17, 1991, abandoned, which is a continuation of Ser. No. 212,910, Jun. 29, 1988, abandoned. This application Sep. 29, 1992, Ser. No. 953,312

Claims priority, application United Kingdom, Jul. 1, 1987, 8715391; Jul. 1, 1987, 8715392; Aug. 14, 1987, 8719279

Int. Cl.[5] C12N *9/64, 15/00, 9/68;* **A61K** *37/547*

U.S. Cl. 424—94.64 **14 Claims**

1. A hybrid plasminogen activator of the formula:

$$NH_2—(Y)_m—K_1^p—Z_1^t—K_2^p—Z_2^t—K_3^p—Z_3^t—K_4^p—Z_4^t—K_5^p—Z_5^t—B^t$$

where B^t comprises residues 276-527 of human t-PA, m is 0 or 1, each of K_1^p to K_5^p represents kringle domains 1–5, respectively, from human plasminogen, each "—" represents a bond, Z_1^t, Z_2^t, Z_3^t and Z_4^t represent the native human plasminogen inter-domain sequences between human plasminogen kringle domains 1 and 2, 2 and 3, 3 and 4 and 4 and 5, respectively, and Y represents a linking sequence of amino acids which may be introduced synthetically during the preparation of the hybrid plasminogen activator and/or derived from native human plasminogen and/or human t-PA sequences, the sequence Z_5^t comprising residues 262-275 of human t-PA, including one- and two-chain variants, cleavage site muteins and glycosylation site muteins of said t-PA residues.

5,302,391

METHOD OF ENHANCING THE ABILITY OF CATTLE AND SWINE TO RESIST AUJESKY'S DISEASE

Atsushi Hamano, Ibaraki; Megumi Ogawa, and Takashi Sasaki, both of Sakura, all of Japan, assignors to National Federation of Agricultural Cooperative Associations, Tokyo, Japan

Continuation of Ser. No. 634,335, Dec. 26, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 836,204

Claims priority, application Japan, Dec. 27, 1989, 1-340728

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 **2 Claims**

1. A method of enhancing the ability of cattle and swine to resist Aujeszky's virus, comprising the steps of:

a) adding 0.01 to 0.4% by weight of bile powder to a livestock feed; and

b) administering the livestock feed prepared in step a) to said cattle and said swine.

5,302,392

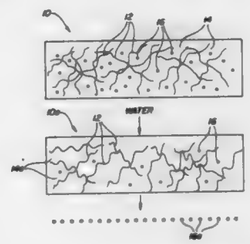
POLYURETHANE SPONGE HAVING RAPID IODINE RELEASE

Mutlu Karakelle, Spring Valley; C. David Benson, Waynesville; Robert A. Taller, Centerville; Min-Shiu Lee, Spring Valley, all of Ohio, and Mohammad A. Khan, Sandy, Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 20, 1990, Ser. No. 570,656

Int. Cl.[5] C08G *18/10;* **A61M** *31/00*

U.S. Cl. 424—409 **23 Claims**



1. A composition comprising a polyurethane foam having dispersed evenly therein solid particles of a complex of polyvinylpyrrolidone and iodine, said polyurethane comprising the reaction product of a diisocyanate, polyglycol and water, said polyurethane and polyvinylpyrrolidone being substantially uncomplexed so that said foam, when contacted by an aqueous liquid, instantaneously releases said complex into said liquid.

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5,302,393

METHOD FOR INHIBITING BIOLOGICAL DEGRADATION OF IMPLANTATION POLYMERIC MATERIAL, INHIBITOR THEREOF AND IMPLANTATION POLYMERIC MATERIAL CONTAINING THE INHIBITOR

Hiroshi Matsumoto, Tokyo; Kensuke Kondo; Kazuhiko Inoue, both of Hyogo, and Nobutaka Tani, Osaka, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 9, 1992, Ser. No. 910,809
Claims priority, application Japan, Jul. 11, 1991, 3-171063; Aug. 2, 1991, 3-194169
Int. Cl.[5] A61M *39/00*; A61L *27/00*; A61K *31/74*
U.S. Cl. 424—423 16 Claims

1. A method for inhibiting decomposition or degradation of an polyurethane implantation material in a living body, comprising administering to the living body in the vicinity of said polyurethane implantation polymeric material implanted in the living body, a composition comprising:

(a) an effective amount of at least one member selected from the group consisting of dipyridamole, dipyridamole derivative and salts of said dipyridamole and dipyridamole derivatives, as an active component; and

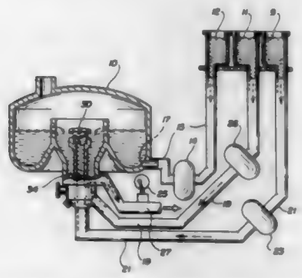
(b) a pharmaceutically acceptable carrier.

5,302,394

DEXTROMETHORPHAN CONTINUOUS LOZENGE MANUFACTURING PROCESS

James S. Beahm, Exton, Pa., assignor to McNeil-PPC, Inc., Milltown, N.J.

Filed Jul. 14, 1992, Ser. No. 913,260
Int. Cl.[5] A61K *9/68*
U.S. Cl. 424—440 13 Claims



1. A process for producing dextromethorphan medicated hard candy lozenges comprising the steps of:

a) heating a candy making admixture of corn syrup, sucrose syrup and a liquid suspension comprising (i) from about 4 to about 40 weight percent of dextromethorphan hydrobromide adsorbate comprising from abut 1 to 20 weight percent dextromethorphan hydrobromide adsorbed onto magnesium trisilicate and (ii) from about 60 to about 96 weight percent of a liquid, to dehydrate said candy making admixture and produce a dextromethorphan-containing candy mass;

b) cooling the candy mass; and

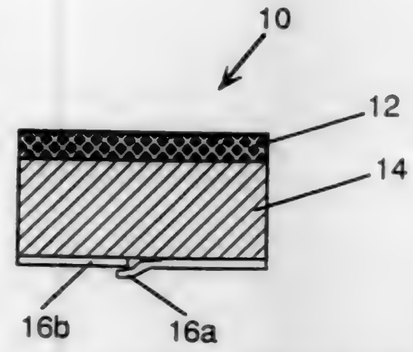
c) forming dextromethorphan candy lozenges therefrom.

5,302,395

METHOD AND SYSTEMS FOR ADMINISTERING NITROGLYCERIN TRANSDERMALLY AT ENHANCED TRANSDERMAL FLUXES

Charles D. Ebert, Salt Lake City; Dinesh Patel, Murray, and Sonia Hefber, Salt Lake City, all of Utah, assignors to Thera-Tech, Inc., Salt Lake City, Utah

Division of Ser. No. 625,906, Dec. 10, 1990, Pat. No. 5,202,125.
This application Jul. 24, 1992, Ser. No. 919,296
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—449 14 Claims



1. A laminated composite for administering nitroglycerin transdermally through a predetermined area of skin over a sustained time period, comprising:

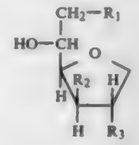
(a) a backing layer that is substantially impermeable to nitroglycerin,

(b) a reservoir layer comprising an adhesive polymer the basal surface of the reservoir layer being adapted to be adhered to the skin, and

(c) contained in the reservoir layer,

(i) nitroglycerin, and

(ii) a permeation enhancer consisting essentially of a sorbitan ester having the structural formula



wherein R_1 has the structure —O(CO)R', where R' is selected from the group consisting of saturated, monounsaturated, di-unsaturated, or tri-unsaturated aliphatic hydrocarbon substituents of 7 to 21 carbon atoms optionally containing 1 to 3 hydroxyl groups, and R_2 and R_3 are selected from the group consisting of hydroxyl and —O(-CO)R'; and

an alcohol R—OH, wherein R is a saturated or monounsaturated aliphatic hydrocarbon substituent of 8 to 22 carbon atoms and may be either unsubstituted or substituted with one to three additional hydroxyl groups,

wherein the nitroglycerin and the permeation enhancer are present in the reservoir in an amount sufficient to enable transdermal administration of the nitroglycerin at a flux of at least about 50% higher than that obtained in the absence of said enhancer.

5,302,396

SUPERIOR TASTING COMPOSITION HAVING POROUS PARTICLES AND THE PROCESS OF PREPARING SUCH PHARMACEUTICAL COMPOSITION

Deepak S. Phadke, and Melissa P. Neddermeyer, both of Indianapolis, Ind., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 606,284, Oct. 13, 1990, abandoned, Continuation-in-part of Ser. No. 586,351, Sep. 21, 1990, abandoned. This application May 12, 1992, Ser. No. 884,299
Int. Cl.[5] A61K *9/16*, *9/20*
U.S. Cl. 424—465 2 Claims

1. A method of preparing a quick dissolving, reconstitutable pharmaceutical composition of porous particles comprising:

(a) mixing stoichiometric amounts of a base selected from the group consisting of sodium or potassium bicarbonate or sodium or potassium carbonate and an acid selected from the group consisting of citric acid, tartaric acid, malic acid or maleic acid in a press to produce a compact;

(b) milling the compact to form an evenly distributed effervescent mixture of the acid and the base;

(c) adding the effervescent mixture to a preparation of a pharmacologically active agent selected from the group consisting of methylcellulose or hydroxypropylmethylcellulose to form an active mixture;

(d) granulating the active mixture in admixture with an amount of a granulating agent to from a wet granulation containing water;

(e) drying said wet granulation with applied heat whereby the applied heat and the water in the wet granulation cause the acid and the base to react releasing gas from the wet granulation to form porous particles;

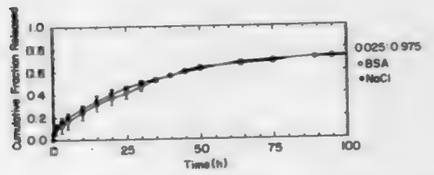
(f) milling said porous particles to form a powder, which can be compressed to form a tablet, used in a reconstitutable powder dosage form or filled in a capsule as a quick dissolving powder.

5,302,397

POLYMER-BASED DRUG DELIVERY SYSTEM

Brian G. Amsden, 40 Fountainhead Rd., Apt. #1516, Downsview, Ontario M3J 2V1, and Yu-Ling Cheng, 1399 Glenburnie Rd., Mississauga Ontario L5G 3C7, both of Canada

Filed Nov. 19, 1991, Ser. No. 793,836
Int. Cl.[5] A61K *9/26*
U.S. Cl. 424—473 19 Claims



1. A drug delivery system useful for delivering therapeutic amounts of a drug to a patient in a sustained and controlled fashion, the system comprising a matrix formed of a wettable, polymer and, dispersed uniformly within the polymer, a multiplicity of particles each containing a substantially homogeneous blend of drug and sodium chloride, wherein the amount of drug contained in each of said particles is not greater than about 10% of the particle, by weight.

5,302,398

GASTRORESISTANT PHARMACEUTICAL FORMULATIONS FOR ORAL ADMINISTRATION CONTAINING SALTS OF BILE ACIDS

Marchi Egidio; Tamagnone Gianfranco, both of Casalecchio di Reno, and Rotini L. Gabriele, Bologna, all of Italy, assignors to Alfa Wassermann S.p.A., Alanno Scalo, Italy

Filed Apr. 1, 1992, Ser. No. 861,461
Claims priority, application Italy, Apr. 12, 1991, 000112 A/91
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—474 5 Claims

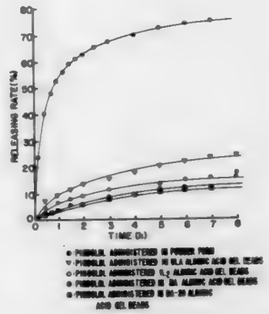
1. A pharmaceutical formulation for oral use consisting of a core and an outer coating, said core containing a salt of a bile acid, said bile acid being a member selected from the group consisting of cholic, deoxycholic, chenodeoxycholic, iocholic, iodeoxycholic and ursodeoxycholic acids, said bile acid salt being a member selected from the group consisting of the salt with sodium, lithium, potassium, triethylamine, triethanolamine, trimethanolamine, N-methylmorpholine, 1-(2-hydroxyethyl)-pyrrolidine, L-arginine, L-lysine, L-ornithine, D-glucamine, N-methyl-D-glucamine, glucosamine and choline, the amount of said bile acid salt being 158–582 mgs, said outer coating is insoluble in the acidic gastric juice but is soluble at a pH higher than 5, said formulation containing between said core and said outer coating a non-protective coating in the amount of 1–5% by weight with respect to said non-coated portion, said non-protective coating consisting of hydroxypropylmethylcellulose, polyethylene glycol 6000, titanium dioxide and talc.

5,302,399

SLOW-RELEASING PHARMACEUTICALS PREPARED WITH ALGINIC ACID

Masaki Otagiri, and Teruko Imai, both of Kumamoto, Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Continuation of Ser. No. 444,161, Nov. 9, 1989, abandoned. This application Mar. 12, 1992, Ser. No. 852,624
Claims priority, application Japan, Mar. 9, 1988, 63-055784; Sep. 2, 1988, 63-219747
Int. Cl.[5] A61K *9/62*
U.S. Cl. 424—493 12 Claims



1. In a process for the production of alginate gel beads containing a particulate bioactive material dispersed therein by the steps of adding a solution of a water soluble salt of alginic acid which contains the bioactive material dispersed therein dropwise into a solution of gellant for the alginic acid, thereby producing the beads and then separating and drying the thus-produced beads, the improvement which comprises the combination of employing as the bioactive material a suspension in the starting solution of particles of a basic medicament adapted for oral ingestion; employing $CaCl_2$ as the gellant; and employing as the starting solution of a water soluble salt of alginic acid, a 4% solution of the sodium salt of an alginic acid which

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has a molecular weight of about 10,000–100,000 , a ratio of homo-block (MM) mannuronic acid to homo-block (GG) guluronic acid therein of from 0.13 to 1.77 and a viscosity, as a 1% solution of the sodium salt thereof, of less than 100 cps, thereby producing beads in which the rate of release of the basic medicament from the beads upon ingestion thereof is controlled.

5,302,400

PREPARATION OF GASTRIC ACID-RESISTANT MICROSPHERES CONTAINING DIGESTIVE ENZYMES AND BUFFERED-BILE ACIDS

Tibor Sipos, Lebanon, N.J., assignor to Digestive Care Inc., Lebanon, N.J.

Filed Jun. 22, 1992, Ser. No. 901,758
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—494 **10 Claims**

1. A process for preparing a digestive enzyme/buffered- bile acid composition for the treatment of digestive enzymes/ursodeoxycholate deficient mammals comprising the steps of:

a) blending dry, powdery ingredients selected from the group consisting of (i) from about 65 to about 90% w/w of an enzyme selected from the group consisting of pancreatic proteases, lipases, nucleases and amylase; (ii) from about 0.3 to about 13% w/w of a buffered micronized bile acid, said buffer selected from the group consisting of sodium and potassium carbonate and bicarbonate, ammonium carbonate, tromethamine, ethanolamine, diethanolamine and triethanolamine, said buffer/bile acid forming a mixture of a 1 to 1 neutralization equivalent ratio; (iii) a buffering agent selected from the group consisting of from about 0.25 to about 5.0% w/w sodium carbonate (anhydrous), sodium bicarbonate, potassium carbonate, potassium bicarbonate and ammonium carbonate, and from about 0.25 to about 1.5% w/w, tromethamine, diethanolamine and triethanolamine; (iv) of from about 3.0 to about 19% w/w of an adhesive polymer selected from the group consisting of polyvinylpyrrolidone, cellulose acetate phthalate, and a 60:40 blend of hydroxypropylmethyl cellulose, and ethyl cellulose; (v) of from about 0.5 to about 16% w/w a disintegrant selected from the group consisting of starch, modified starches, microcrystalline cellulose and propylene glycol alginate;

b) wetting said blended ingredients with a liquid to cause the blend to stick together, wherein said liquid is selected from the group consisting of: 1%–25% w/w ethanol/75%–99% w/w 2-propanol/0.2%–2.5% w/w water; 98%–99% w/w 2-propanol/0.2%–2.0% w/w water; 1%–25% w/w methanol/0.2%–2.5% w/w water/75%–98% w/w 2 propanol/1%–5% w/w ethylacetate;

c) granulating or extruding the liquid-wetted blend through a 10 or 18 mesh standard sieve screen;

d) converting the granules to a uniform diameter particle size;

e) compacting the uniform particles to spherical particles;

f) drying the spherical particles under drying conditions not exceeding 35° C. and 40% relative humidity;

g) separating the spherical particles if not of uniform size according to desired sizes using U.S. Standard sieve screens;

h) coating the particles with from about 7.0 to about 15% of a gastric acid-resistant polymer that disintegrates under neutral or slightly basic conditions selected from the group consisting of hydroxypropyl methyl cellulose phthalate, cellulose acetate phthalate, an aqueous enteric coating polymer dispersion and an acrylic based polymeric dispersion; and

i) drying the polymer-coated spherical particles under drying conditions not exceeding 35° C. and 40% relative humidity.

5,302,401

METHOD TO REDUCE PARTICLE SIZE GROWTH DURING LYOPHILIZATION

Gary G. Liversidge, West Chester; Christopher P. Phillips, Brandamore, both of Pa., and Kenneth C. Cundy, Belmont, Calif., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 9, 1992, Ser. No. 987,879
Int. Cl.[5] A61K *9/51*
U.S. Cl. 424—501 **4 Claims**

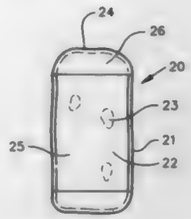
1. A composition comprised of nanoparticles containing 0.1–90% by weight of the therapeutic agent 17α-pregno-2,4-dien-20-yno-[2,3-d]-isoxazol-17-ol and having 99.9–10% by weight polyvinylpyrrolidone as a surface modifier adsorbed on the surface thereof and sucrose as the cryoprotectant associated therewith, which cryoprotectant is present in an amount of 0.5–90% by weight based on the total weight of the composition and sufficient to allow said nanoparticles to be lyophilized.

5,302,402

BONE-IN FOOD PACKAGING ARTICLE

Vincent J. Dudenhoeffer, Centerville, Iowa, and Jeffrey M. Schuetz, Woodridge, Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Nov. 20, 1992, Ser. No. 979,520
Int. Cl.[5] B65B *25/00, 31/02;* **B65D** *85/00*
U.S. Cl. 426—129 **19 Claims**



1. An article for enclosing bone-in food mass comprising a biaxially oriented heat shrinkable relatively thin-walled thermoplastic film bag and a non-heat shrinkable relatively thick-walled thermoplastic film patch having its inner surface bonded to outer surface of said bag, the patch outer surface comprising a member selected from the group consisting of ethylene vinyl acetate, very low density polyethylene and linear low density polyethylene, or blends thereof; the patch inner surface comprising a member selected from the group consisting of ethylene vinyl acetate, very low density polyethylene, and blends of ethylene vinyl acetate and very low density polyethylene; and the bag outer surface comprising a member selected from the group consisting of ethylene vinyl acetate, very low density polyethylene, blends of ethylene vinyl acetate and very low density polyethylene, blends of ethylene vinyl acetate and linear low density polyethylene, and blends of ethylene vinyl acetate, very low density polyethylene and linear low density polyethylene; and said patch inner surface and said bag outer surface each having high surface energy of at least about 38 dynes/cm wetting tension as the sole bonding means therebetween such that when said bag is filled with bone-in food mass, evacuated, sealed and heat shrunk around said mass, the strength of the patch-bag bond increases and the bag portion adhered to said patch shrinks to a lesser extent than the remainder of said bag, but said patch does not delaminate from said bag.

19. A food package comprising a heat shrunk and relatively thin-walled thermoplastic film bag with an outer surface comprising a member selected from the group consisting of ethylene vinyl acetate, very low density polyethylene, blends of ethylene vinyl acetate and very low density polyethylene, blends of ethylene vinyl acetate and linear low density polyethylene, and blends of ethylene vinyl acetate, very low density

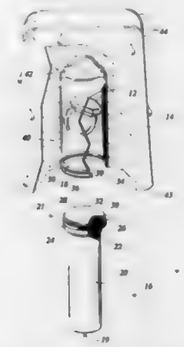
polyethylene and linear low density polyethylene; said bag containing bone-in food mass in an evacuated and sealed space within the bag such that the bone-in food mass outer surface is in direct supporting relationship with the collapsed bag inside surface; a non heat shrinkable and relatively thick-walled, thermoplastic film patch having an outer surface comprising a member selected from the group consisting of ethylene vinyl acetate, very low density polyethylene and linear low density polyethylene, or blends thereof; the patch inner surface comprising a member selected from the group consisting of ethylene vinyl acetate, very low density polyethylene, and blends of ethylene vinyl acetate and very low density polyethylene; and said patch inner surface and the heat shrunk bag outer surface being bonded together solely by each of said surfaces having high surface energy of at least about 38 dynes/cm wetting tension such that when said bag is heat shrunk the strength of the patch-bag bond increases and the bag portion adhered to said patch shrinks to a lesser extent than the nonpatched remainder of said bag, but said patch does not delaminate from said bag.

5,302,403

NOVELTY-CONTAINING HANDLE FOR CONFECTIONERY PRODUCT AND METHOD

Kathleen Cook, Rising Fawn, Ga., and Fred Schalmo, Birchwood, Tenn., assignors to Novelty Concepts, Inc., Atlanta, Ga.

Filed Feb. 22, 1993, Ser. No. 20,691
Int. Cl.[5] A23G *9/00, 9/26*
U.S. Cl. 426—134 **6 Claims**



1. A combined novelty containing handle assembly and a confectionery product supported on said handle assembly, said handle assembly comprising:

support means dimensioned to be held in a hand of a person consuming said confectionery product, said support means comprising an elongated support member having top and bottom ends wherein said top end comprises a top wall; and

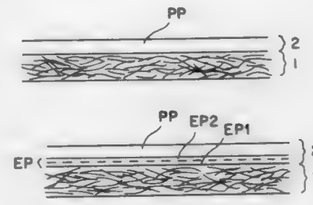
elongated housing means for serving the dual functions of housing said novelty and supporting said confectionery product, said housing means having an outer wall rigidly secured to and within said confectionery product, said housing means having an interior compartment containing said novelty, a closed top first end disposed within said confectionery product, and an open bottom second end communicating with said interior compartment, and complimentary means on both the top end of said support member and said open bottom of said second end of said elongated housing selectively fittingly engaging said elongated housing onto said support member to form a connection junction and selectively enclose said novelty in said interior compartment and close said open second end of said housing with said top wall of said support means, said confectionery product surrounding substantially the entirety of said housing means except for said bottom second end, such that said connection junction and said support member are exposed below said confectionery product.

5,302,404

WALLPAPER

Pentti Rissanen, Kyröskoski; Antero Juopperi, Laitikkala, and Veli-Matti Kaukonen, Kyröskoski, all of Finland, assignors to Oy Kyro Board & Paper Ltd., Kryoskoski, Finland

Filed Nov. 18, 1992, Ser. No. 976,359
Claims priority, application Finland, Nov. 18, 1991, 915425; Jan. 3, 1992, U 920026
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **20 Claims**



1. A wallpaper comprising a coating layer containing latex binder and pigment positioned on top of a base paper, said coating layer having a surface coating (PP) containing pigment and latex binder, the amount of the surface coating (PP) being at least 20 g/m^2 as dry matter and the total amount of the coating layer being at least 30 g/m^2 as dry matter, wherein the surface coating (PP) contains at least 30–70 parts of the latex binder per 100 parts of a water-insoluble pigment, whereof the amount of a water-insoluble inorganic mineral pigment is at least 40 wt-%.

5,302,405

METHOD FOR REMOVING CHOLESTEROL AND FAT FROM EGG YOLK BY CHELATION AND REDUCED-CHOLESTEROL EGG PRODUCT

Rudolf J. Hsieh, Mt. Laurel; Donald P. Snyder, Turnersville, and Eugene W. Ford, Woodbury, all of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Aug. 31, 1992, Ser. No. 937,404
Int. Cl.[5] A23L *1/29, 1/32*
U.S. Cl. 426—271 **9 Claims**

1. A method for producing a low cholesterol liquid egg product comprising:

(a) separating egg yolk into lipoprotein-containing solids and an aqueous fraction by a method comprising:

(i) blending dilute egg yolk with an aqueous solution of a lipoprotein chelating agent to form an intimate mixture;

(ii) allowing the intimate mixture to sit undisturbed for time sufficient to form an aqueous fraction and solid lipoprotein-containing complexes with the chelating agent; and

(iii) separately recovering the lipoprotein-containing solids and the aqueous fraction;

(b) removing fat and cholesterol from the lipoprotein-containing solids to form protein-containing complexes having reduced fat and cholesterol; and

(c) blending liquid egg white, the protein-containing complexes of step (b), and fat essentially free of cholesterol to form a low cholesterol egg product.

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5,302,406

METHOD OF INHIBITING BACTERIAL GROWTH IN MEAT

Wolfgang Ludwig, Highland, N.Y., and Siddik Iyimen, Neunkirchen, Fed. Rep. of Germany, assignors to WTI, Inc., New York, N.Y. and MYAC Fleischtechnologie GmbH, Meukirchen, Fed. Rep. of Germany

Filed Dec. 1, 1992, Ser. No. 983,636
Int. Cl.[5] A23L *1/314, 1/315;* A23B *4/20*
U.S. Cl. 426—281 4 Claims

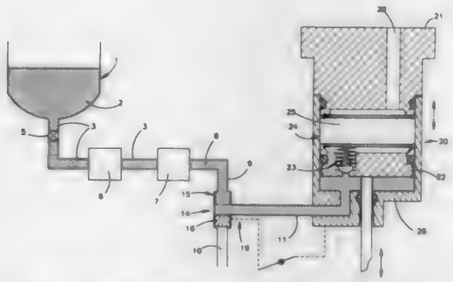
1. A method of inhibiting bacterial growth and retaining flavor in red meat or poultry which comprises the step of injecting into the red meat or poultry a composition consisting essentially of an aqueous citrate solution containing 50% saturation of sodium citrate buffered with citric acid to a pH of 5.6, so that the sodium citrate content in the red meat or poultry is about 1.2 to 1.3% to reduce bacterial growth and retain flavor during storage of said red meat or poultry.

5,302,407

METHOD AND APPARATUS FOR PREPARING COFFEE BEVERAGES

Heinz A. Vetterli, Siebnen, Switzerland, assignor to COSMEC S.r.l., Bergamo, Italy

Filed Mar. 18, 1993, Ser. No. 32,390
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208854
Int. Cl.[5] A23F *5/26;* A47J *31/14*
U.S. Cl. 426—433 16 Claims



1. A method for the preparation of coffee beverages in a coffee machine, said method comprising the following steps:
heating brewing water in a boiler member;
compressing coffee powder contained in a brewing chamber;
percolating the compressed coffee powder contained in the brewing chamber by said heated brewing water for brewing a coffee beverage in a brewing step;
passing the brewed coffee beverage to an outlet;
withdrawing said brewed coffee beverage from said outlet;
draining all of the residual water contained in said apparatus between said boiler member and said outlet before to starting the next cycle of beverage preparation.

5,302,408

EDIBLE PLASTIFIED DISPERSION

Frederick W. Cain, Voorburg, Netherlands; Malcolm G. Jones, Stevington, and Ian D. Bowler, Kempston, both of Great Britain, assignors to Van Den Bergh Foods Co., Division of Conopco Inc., Lisle, Ill.

Continuation of Ser. No. 663,769, Mar. 1, 1991, abandoned, which is a continuation of Ser. No. 324,963, Mar. 16, 1989, abandoned, which is a continuation of Ser. No. 157,208, Feb. 17, 1988, abandoned. This application Feb. 3, 1993, Ser. No. 13,121
Claims priority, application United Kingdom, Feb. 18, 1987, 8703761
Int. Cl.[5] A23D *7/04*
U.S. Cl. 426—603 12 Claims

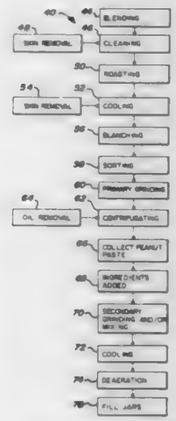
1. An edible plastified dispersion containing less than 35 wt. % fat, which comprises from 10–35 wt. % continuous fat phase and from 90–65 wt. % dispersed aqueous phase, said dispersed aqueous phase having an average droplet size, indicated by the number weighted mean diameter, of less than 2.5 um, which dispersion comprises less than 2.5 ppm amino acid residues and wherein at least 20 wt. % of the aqueous phase droplets have a diameter of less than 4 microns, said dispersion releasing its flavor in the mouth.

5,302,409

REDUCED FAT PEANUT BUTTER AND METHOD OF MAKING SAME

Kerin K. Franklin, 3765 Orange La., Boulder, Colo. 80304

Filed Mar. 15, 1993, Ser. No. 31,542
Int. Cl.[5] A23L *1/38*
U.S. Cl. 426—633 19 Claims



1. A reduced fat peanut butter composition comprising a mixture of ground peanuts from which oil in an amount of at least 6% by weight of the ground peanuts has been removed, maltodextrin, and modified food starch.

5,302,410

PROCESS FOR PRODUCING FROZEN PAR-FRIED POTATO STRIPS

John W. Calder, Othello, Wash.; Linda J. Erickson, Newhall, Calif., and Richard K. Pinegar, Moses Lake, Wash., assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 12, 1993, Ser. No. 89,470
Int. Cl.[5] A23L *1/217*
U.S. Cl. 426—637 20 Claims

1. A process for producing frozen par-fried potato strips which remain crisp for an extended time after finish frying which comprises

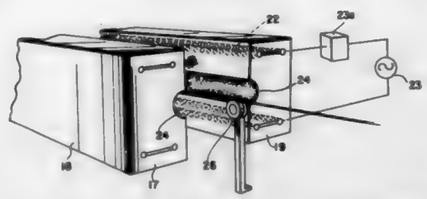
cutting potatoes to produce elongated potato strips,
blanching the potato strips,
contacting the blanched potato strips with an aqueous solution having a pH in the range of about 5.5 to 8.5 which contains between about 3% to 12% by weight of a hydrolyzed starch product having a DE value of less than 12,
par-frying the potato strips, and then
freezing the par-fried strips, whereby the frozen strips when finish fried have a crisp surface and a mealy internal texture, with the surface of the strips remaining crisp for an extended period of time after finish frying.

5,302,411

PROCESS FOR VULCANIZING INSULATED WIRE

Endre Toth, 89 Smith St., Greenville, R.I. 02828

Continuation-in-part of Ser. No. 643,221, Jan. 22, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 901,732
Int. Cl.[5] B05D *3/02, 3/06*
U.S. Cl. 427—8 5 Claims



1. Process for continuously curing a polymer cross-linkable material on a wire, comprising applying the polymer material onto a continuous wire substrate to cover the wire, passing the covered substrate directly into a curing tunnel of refractory material having embedded radiant heaters at atmospheric pressure, coating the inner surface of the tunnel with a black colored material having an emissivity of at least 0.9, heating the inner surface of said tunnel with said radiant heaters to temperatures in excess of 1000° F. using the black body principle to cure the polymer material, monitoring an exit temperature of the substrate and polymer coating and sending a signal based on said exit temperature to a controller to adjust a temperature in the tunnel and then cooling the cured covered substrate.

5,302,412

SINGLE ATMOSPHERE FOR FIRING COMPATIBLE THICK FILM MATERIAL

Satish S. Tamhankar, Scotch Plains, and Mark J. Kirschner, Morristown, both of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Division of Ser. No. 640,540, Jan. 14, 1991, abandoned, which is a continuation of Ser. No. 306,429, Feb. 3, 1989, abandoned. This application May 14, 1992, Ser. No. 883,794
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—102 5 Claims

1. In a method of producing a thick film hybrid circuit containing multiple layers of electrical components and formed by separately applying thick film pastes to a hybrid circuit substrate and after application of each of the thick film pastes, drying and then, in a furnace, firing each of the thick film pastes; the thick film pastes having, an organic solvent, an organic binder, and different thick film materials selected from the group consisting of conductor material resistor material, dielectric material; and the furnace having a burnout section to remove the organic binder, a firing section to sinter the thick film materials and a cooling section to cool the hybrid circuit substrate; the improvement comprising introducing the hybrid circuit substrate and each of the thick film pastes into the furnace while introducing a single firing atmosphere into at least the burnout section of the furnace, wherein the single firing atmosphere is the same for each of the thick film pastes and the thick film pastes have thick film materials comprising one of a base metal conductor, a base metal compatible resistor, and a base metal compatible dielectric and wherein the single firing atmosphere is carbon dioxide, an inert gas doped with carbon dioxide, or a mixture of inert gases doped with carbon dioxide so that the single firing atmosphere will be compatible with all of the thick film materials.

5,302,413

PROTECTIVE COATING AND METHOD OF USING SUCH COATING

Edward W. Woodhall, Los Altos, and Nicholas Kondrats, Goleta, both of Calif., assignors to Cal-West Equipment Company, Inc., Los Altos, Calif.

Continuation-in-part of Ser. No. 788,006, Nov. 5, 1991, Pat. No. 5,186,978, which is a continuation-in-part of Ser. No. 614,330, Nov. 16, 1990, abandoned. This application Nov. 5, 1992, Ser. No. 972,037
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] B05D *1/32;* C09D *5/20*
U.S. Cl. 427—154 30 Claims

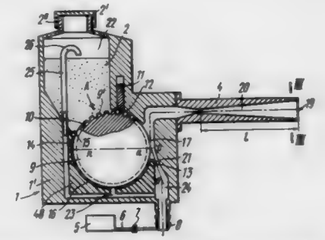
1. A masking composition comprising:
(a) at least about 5% by weight polyvinyl alcohol;
(b) less than about 40% by weight ethyl alcohol;
(c) deionized water; and
(d) less than about 5% by weight surfactant composition including a functional derivative of a fluorinated alkyl chain.

5,302,414

GAS-DYNAMIC SPRAYING METHOD FOR APPLYING A COATING

Anatoly P. Alkhimov; Anatoly N. Papyrin, ulitsa Vyazemskogo 2, kv. 72; Vladimir F. Kosarev; Nikolai I. Nesterovich, and Mikahil M. Shushpanov, all of Novosibirsk, U.S.S.R., assignors to Anatoly Nikiforovich Papyrin, Novosibirsk, U.S.S.R.

PCT No. PCT/SU90/00126, § 371 Date Feb. 2, 1992, § 102(e) Date Feb. 2, 1992, PCT Pub. No. WO91/19016, PCT Pub. Date Dec. 12, 1991
PCT Filed May 19, 1990, Ser. No. 781,233
Int. Cl.[5] B05D *1/12*
U.S. Cl. 427—192 6 Claims



1. A gas-dynamic spraying method for applying a coating to an article, the method comprising:
introducing into a gas particles of a powder of at least one first material selected from the group consisting of a metal, alloy, polymer and mechanical mixture of a metal and an alloy, the particles having a particle size of from about 1 to 50 microns;
forming the gas and particles into a supersonic jet having a temperature sufficiently low to prevent thermal softening of the first material and a velocity of from about 300 to about 1,200 m/sec.; and
directing the jet against an article of a second material selected from the group consisting of a metal, alloy and dielectric, thereby coating the article with the particles.

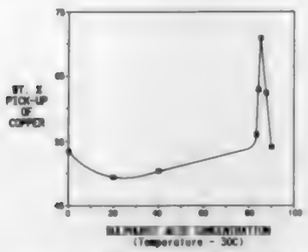
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,415

ELECTROLESS PLATED ARAMID SURFACES AND A PROCESS FOR MAKING SUCH SURFACES

Vlodek Gabara, Richmond, Va.; Che-Hsiung Hsu, Wilmington, and Edward W. Tokarsky, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 8, 1992, Ser. No. 987,898
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—306 11 Claims



1. In a process for electrolesly plating aramid fibers with a durable metal coating comprising the steps of contacting the fibers to be plated with an activation solution, rinsing the fibers, and immersing the fibers in a solution of metal cations to be plated;

the improvement which comprises,

(a) contacting the aramid fibers with an aqueous solution consisting of 80 to 90% sulfuric acid for 2 to 60 seconds at a temperature in the range from 10° to 100° C.; and

(b) washing the acid-contacted fibers with water until substantially all of the acid is removed,

before contacting the fibers to be plated with the sensitizing solution.

5,302,416

PROCESS FOR PRODUCING POLYACETYLENE OR POLYACENE TYPE LONG CONJUGATED POLYMERS

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 561,594, Aug. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 342,883, Apr. 25, 1989, abandoned. This application Dec. 13, 1991, Ser. No. 807,636
Claims priority, application Japan, Apr. 28, 1988, 63-106309; Apr. 28, 1988, 63-106310
The portion of the term of this patent subsequent to Sep. 2, 2008, has been disclaimed.
Int. Cl.[5] B05D *1/20*
U.S. Cl. 427—341 7 Claims

1. A process for producing a film having conjugated polyacetylenic bonds which comprises dipping a substrate having a $-(CH_2)_n-$ group wherein n represents an integer of 14 to 24, an acetylenic group and —Si—Cl group in a first nonaqueous organic solvent to form a monomolecular film of said substance on said substrate by chemical adsorption and then dipping the substrate on which said monomolecular film has been deposited into a second organic solvent containing a metallic catalyst which is selected from the group consisting of $MoCl_5$, WCl_6, $NbCl_5$, $TaCl_5$, $Mo(CO)_5$, $W(CO)_6$, $Nb(CO)_5$, and $Ta(CO)_5$ to polymerize the acetylenic group part of the monomolecular film.

5,302,417

AQUEOUS DISPERSION AND SUBSTRATE COATED WITH THE SAME

Junnosuke Yamauchi; Akimasa Aoyama; Toshio Tsuboi; Satoshi Hirofuji, and Takeshi Moritani, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 938,137, Oct. 14, 1992, Pat. No. 5,272,200. This application Aug. 9, 1993, Ser. No. 103,592
Claims priority, application Japan, Feb. 15, 1991, 3-44282
Int. Cl.[5] B32B *15/08, 27/06, 27/30, 27/08*
U.S. Cl. 427—385.5 2 Claims

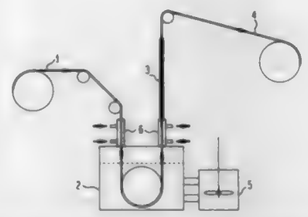
1. A substrate to which has been applied and dried thereon an aqueous dispersion comprising a dispersoid of an ethylene-vinyl alcohol copolymer having an ethylene content of 15 to 65 mole % and a dispersion stabilizer of a saponified product of an ethylene-vinyl ester copolymer having an ionic group and having an ethylene content of 10 to 70 mole % and a saponification degree of at least 80%.

5,302,418

PROCESS FOR SURFACE-MODIFYING POLYPROPYLENE OR POLYETHYLENE

Tai-Shung Chung, Morris, and Edward R. Kafchinski, Union, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Apr. 17, 1992, Ser. No. 870,526
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—389.9 11 Claims



1. A process for bonding a copolymer to a polypropylene or polyethylene surface, which copolymer comprises a maleic acid-grafted polypropylene or polyethylene copolymer, said process producing a copolymer surface coating adapted to adhere at gas pressures up to about 90 psi to a material having selective permeance to gases said process comprising:

coating said surface with a dope, said dope comprising said copolymer and a solvent, at a coating temperature sufficient to keep said copolymer dissolved in said solvent; and,

drying said coated surface at a drying temperature sufficient to vaporize said solvent which drying temperature is at least as high as said coating temperature,

wherein the temperature of said dope is not allowed to fall below that needed to keep said copolymer dissolved in said solvent prior to drying.

5,302,419

TOWPREGS FROM RECYCLED PLASTICS BY POWDER FUSION COATING AND METHOD OF PRODUCTION THEREFOR

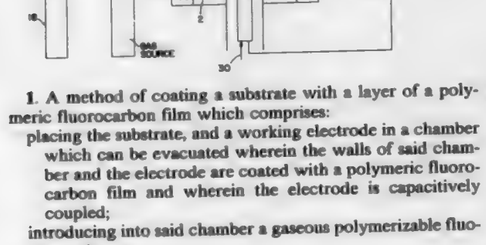
John D. Muzzy, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 339,297, Apr. 17, 1989, Pat. No. 5,094,883, and a continuation-in-part of Ser. No. 700,559, May 15, 1991, Pat. No. 5,171,630. This application Mar. 9, 1992, Ser. No. 848,119
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—485 21 Claims

1. A method for the production of a composite article comprising a plurality of multiply towpregs, comprising towpreg plies, said towpreg plies comprising reinforcing filaments and matrix forming material comprising recycled plastic, comprising the steps of:

(a) spreading said reinforcing filaments to expose individually substantially all of said reinforcing filaments;

(b) coating said reinforcing filaments with said matrix forming material in a manner causing interfacial adhesion of said matrix forming material to said reinforcing filaments;



(c) forming said towpreg plies by heating said matrix forming material contacting said reinforcing filaments until said matrix forming material liquefies and coats said reinforcing filaments;

(d) cooling said towpreg plies in a manner such that substantial cohesion between neighboring towpreg plies is prevented until said matrix forming material solidifies so as to form said multiply towpregs; and

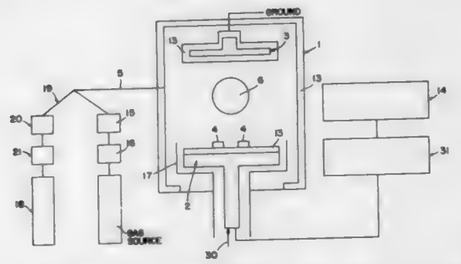
(e) configuring said multiply towpregs into said composite article.

5,302,420

PLASMA DEPOSITION OF FLUOROCARBON

Thao N. Nguyen, Katonah; Gottlieb S. Oehrlein, Yorktown Heights, and Zeev A. Weinberg, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 693,736, Apr. 30, 1991, Pat. No. 5,244,730. This application Jul. 9, 1993, Ser. No. 88,533
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—490 12 Claims



1. A method of coating a substrate with a layer of a polymeric fluorocarbon film which comprises:

placing the substrate, and a working electrode in a chamber which can be evacuated wherein the walls of said chamber and the electrode are coated with a polymeric fluorocarbon film and wherein the electrode is capacitively coupled;

introducing into said chamber a gaseous polymerizable fluorocarbon;

applying radio-frequency power of about 100 watts to about 1000 watts to said electrode; to thereby deposit a polymeric fluorocarbon film onto said substrate while maintaining the pressure at about 10 to about 180 mTorr and a self-bias voltage on said electrode of about −50 to about −700 volts.

5,302,421

PRODUCTION OF MICROSTRUCTURE ELEMENTS

Peter Hoessel, Schifferstadt, and Gerhard Hoffmann, Otterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 87,902
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1992, 4223888
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—552 6 Claims

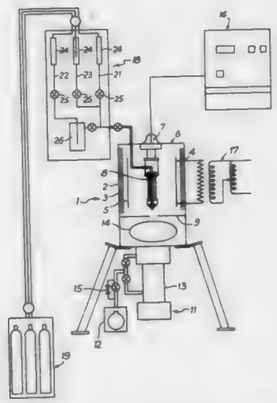
1. A process for the production of microstructure elements having structure depths of from several μm into the mm range by imagewise irradiation of polymers with X-rays and removal of the areas of the polymers which have been irradiated imagewise, which comprises applying the polymers, before the imagewise irradiation, to an electroconductive substrate in a layer thickness of from several μm into the mm range by melting under pressure, thus firmly anchoring the polymers.

5,302,422

DEPOSITION PROCESS OF A CERAMIC COATING ON A METALLIC SUBSTRATE

Jean-Francois Nowak, Saint Etienne; Francis Maury, Labege; Djarollah Oquab, Toulouse Cedex, and Roland Morancho, Toulouse, all of France, assignors to Nitruvid, Argenteuil and C3F (Compagnie Francaise de Forges et Fonderies), Puteaux, both of France

Continuation of Ser. No. 479,676, Feb. 15, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,999
Claims priority, application France, Feb. 16, 1989, 89 02048
Int. Cl.[5] B05D *3/06;* C23C *16/00*
U.S. Cl. 427—533 12 Claims



1. A process for the chemical vapor deposition of a ceramic coating on a metallic substrate, which process comprises the steps of:

subjecting the metallic substrate to a reactive ionic nitridation by contacting the metallic substrate with a reducing atmosphere containing nitrogen at a substrate temperature of 400° to 600° C., without subsequently placing the metallic substrate in contact with an oxidizing and/or polluting atmosphere, to form a nitrogen diffusion layer having a thickness of from 20 to 500 μm;

heating the metallic substrate to a temperature of 300° C. to 700° C.;

contacting the heated metallic substrate with at least one organo-metallic precursor in a vapor phase to deposit the

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coating on the metallic substrate, and the coating comprised of carbides, nitrides or carbonitrides of metallic elements selected from the group consisting of Cr, V, Zr, W, Mo, Co, Mn, Ni, Hf, Ta, Ti, Nb and Fe.

5,302,423

METHOD FOR FABRICATING PIXELIZED PHOSPHORS

Nang T. Tran, Lake Elmo, and Kenneth R. Paulson, N. St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 9, 1993, Ser. No. 90,882
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—555 **29 Claims**

1. A process comprising the steps of:
(a) depositing a phosphor on a support;
(b) exposing the deposited phosphor to a source of electromagnetic radiation through a mask, thereby ablating the phosphor segmentally, resulting in a series of structures in both the X and Y directions to produce an array of pixelized phosphors separated by slots; and
(c) filling the resulting slots between said pixelized phosphors with phosphor material of the same or different composition as utilized in step (a) such that each of said pixelized phosphors on said support are separated by a width of from about 0.5–25 microns,

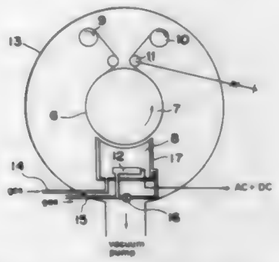
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5,302,424

METHOD FOR FORMING A FILM WITH PLASMA CVD PROCESS

Mikio Murai, Hiraksta; Kiyoshi Takahashi, Ibaragi; Masaru Odagiri, Kawanishi, and Hideyuki Ueda, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 14, 1992, Ser. No. 913,189
Claims priority, application Japan, Jul. 15, 1991, 3-173613
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—131 **18 Claims**



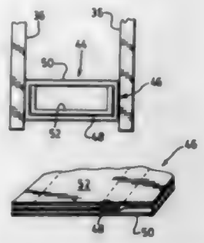
1. A method for forming a film in a plasma CVD apparatus comprising a vacuum chamber, a first electrode provided in the vacuum chamber, the first electrode having narrow holes in an inner wall, and a second electrode provided in the vacuum chamber opposed to the inner wall of the first electrode, the second electrode holding a substrate for CVD deposition, the first and second electrodes defining a plasma discharge region; said method comprising the steps of:
evacuating the vacuum chamber to a pressure for plasma discharge;
introducing a non-polymerizable gas through said first electrode;
introducing a polymerizable gas through an inlet to the plasma discharge region;
applying an electrical voltage to the first electrode to cause plasma discharge in the plasma discharge region, and;
forming a carbon film on the substrate.

5,302,425

RIBBON TYPE SPACER/SEAL SYSTEM

Donald M. Taylor, 3844 Sandown Dr., Nanaimo, B.C., Canada V9T 4H5

Continuation-in-part of Ser. No. 609,336, Nov. 5, 1990, which is a continuation-in-part of Ser. No. 366,069, Jun. 14, 1989, abandoned. This application Aug. 5, 1992, Ser. No. 925,537
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[5] E06B *3/24*
U.S. Cl. 428—34 **30 Claims**



1. In combination, a sealed multilayer glazing panel having at least a pair of glazing panes and an elongated insulating ribbon seal having a fibrous web portion, located in space enclosing sealing relation between said pair of glazing panes, said panes being held in mutually parallel, spaced apart relation, said seal being located adjacent the edges of said panes and having said seal ribbon fibrous web portion extending in secured spacing relation between said glazing panes; said ribbon having a coherent, substantially permeable surface with a hermetic sealing layer of substantially totally gas impermeable material covering at least the span between said panes in hermetic sealing, substantially thermally non-conductive space-enclosing relation therebetween.

5,302,426

TRANSPIRATION COOLED CERAMIC FIBER SEAL

Edmund B. Stastny, Stuart, assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 16, 1991, Ser. No. 760,290
Int. Cl.[5] B29D *22/00*; B32B *1/08*
U.S. Cl. 428—34.5 **20 Claims**

1. A flexible high temperature transpiration seal for use at temperatures in excess of 1200° C., comprising a ceramic fiber insulation barrier having controlled porosity, said barrier being a tubular hollow body suitable for carrying a gaseous cooling medium, said hollow body having a coating on at least one surface thereof of an elastomeric material serving to reduce the porosity of said insulation carrier, thereby limiting the transpiration of said gaseous cooling medium from the interior to the exterior of said hollow body.

5,302,427

PRINTABLE, BIAXIALLY ORIENTED POLYOLEFIN MULTILAYER FILM

Ursula Murschall, Nierstein; Angela Speith, Wiesbaden, and Herbert Peiffer, Mainz-Finthen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 772,839
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1990, 4031784
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—34.2 **26 Claims**

1. A printable, biaxially oriented multilayer film which is low temperature sealing on both sides comprising:
a) a base layer comprising a peroxide-degraded propylene homopolymer, and

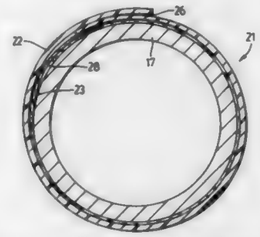
b) at least one outer sealing layer on each side of the base layer, each sealing layer comprising a mixture of a first polymer being an ethylene/propylene/butylene terpolymer and a second polymer, different from said first polymer, being a propylene/butylene copolymer, at least one of said sealing layers is not corona-treated and comprises a polydiorganosiloxane and silicon dioxide particles.

5,302,428

MULTI-LAYER WRAPAROUND HEAT SHRINK SLEEVE

Robert E. Steele, Richmond Hill, and Alfredo Andrenacci, Toronto, both of Canada, assignors to Shaw Industries Ltd., Rexdale

Filed Sep. 29, 1992, Ser. No. 953,087
Int. Cl.[5] B65D *65/02*; B32B *7/00*
U.S. Cl. 428—34.9 **13 Claims**



1. A multiple layer wraparound heat shrinkable sleeve comprising a sheet of dimensionally heat unstable flexible material having longitudinally spaced end portions capable of being brought into overlapping relation when said sheet is applied to an article in wrapping relation thereto, the material of said sheet being crosslinked and weldable to itself and having been stretched in the longitudinal direction from an originally heat stable form to a dimensionally heat unstable form capable of moving in the direction of its original form by the application of heat alone, one of said end portions having connected thereon at least one flexible auxiliary sheet comprising a functional material and of length at least sufficient to encircle the article and the other of said end portions having an exposed portion directly overlapping on and weldable to said one end portion when the auxiliary sheet is wrapped around the article with its end portions overlapping and the dimensionally heat unstable sheet is wrapped over the auxiliary sheet with its end portions overlapping.

5,302,429

THERMOPLASTIC POLYMER COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT POLY(VINYL AROMATIC) MELT-RHEOLOGY MODIFIERS

Nazir A. Memon, Fallsington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 389,662, Aug. 4, 1989, Pat. No. 5,102,952. This application Nov. 21, 1991, Ser. No. 795,433
Int. Cl.[5] B29D *22/00*; B32B *27/30, 27/34, 27/36*
U.S. Cl. 428—35.7 **11 Claims**

1. A blow-molded article formed from a polymer blend which comprises a thermoplastic engineering resin selected from the group consisting of polycrbonate/aromatic polyester blends, polyesters, poly(aromatic ketones), poly(phenylene ethers), poly(phenylene sulfides), poly(aromatic sulfones), poly(ether-imides), polyactals, poly(aromatic imides) polyamides, poly(amide-imides), copolymers and blends thereof from about 1 to about 25%, based on the total weight of the blend, of a vinyl aromatic polymer of units of one or more copolymerizable vinyl monomers, wherein at least 50% by weight of the units have the formula

$$CH_2=C(R^1)-Ar-(R^2)n$$

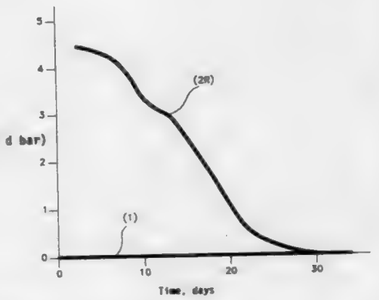
where R^1 is H or CH_3, n is an integer of from 0 to 2, Ar is an aromatic group of from 6 to 10 nuclear carbon atoms, an R^2 is the same or different group selected from CH_3 or Cl having a minimum weight-average molecular weight of about 1,500,000.

5,302,430

POLYMERIC COMPOSITIONS WITH BARRIER PROPERTIES AND PACKAGING MATERIALS MADE FROM THESE COMPOSITIONS

Momtaz Ardéchir; Gauthy Fernand, both of Brussels; Churin Esteban, Ottignies, and Michel Claude, Wavre, all of Belgium, assignors to Solvay (Soceite Anonyme), Brussels, Belgium

Filed Jan. 3, 1992, Ser. No. 816,250
Claims priority, application Belgium, Jan. 8, 1991, 09100014
Int. Cl.[5] B29D *22/00, 23/00*
U.S. Cl. 428—35.7 **25 Claims**



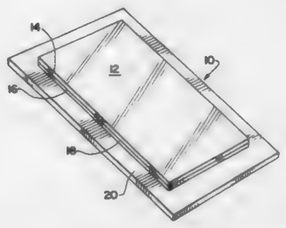
1. A composition comprising:
(1) a polyamide (PA), containing less than 150 ppm of phosphorus, produced by the polycondensation of an aliphatic α,ω-dicarboxylic acid with xylylenediamine; and
(2) a salt of a metal (M) selected from the group consisting of salts of the transition metals of Group VIIIA of the Periodic Table of the Elements, manganese, zinc and copper.

5,302,431

DEFORMABLE LABEL

Marvin I. Schultz, Courtland, Minn., assignor to National Poly Products, Inc., Mankato, Minn.

Filed Jan. 6, 1992, Ser. No. 817,853
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—35.7 **20 Claims**



1. A deformable label for application to a surface, wherein the label comprises a film containing from about 50 wt. % to about 70 wt. % high density polyethylene; from about 5 wt. %

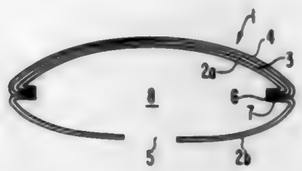
VOL 1161 ISS 2 AP 12 1994 UMI

to about 15 wt. % filler; from about 5 wt. % to about 10 wt. % polypropylene or an ionomer resin derived from a copolymer of ethylene and methacrylic acid; and from about 5 wt. % to about 15 wt. % colorant.

5,302,432
AIR BAG

Seizaburo Shigeta, Funabashi, and Katsuyoshi Kimoto, Kounosu, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/01088, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO92/03310, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 15, 1991, Ser. No. 847,044
Claims priority, application Japan, Aug. 16, 1990, 2-214952
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.1 **14 Claims**



1. An air bag for forming an internal space for accommodating an inflated gas for expanding the air bag, comprising:
a laminated cloth forming at least a portion of the air bag;
said laminated cloth comprising a woven fabric of synthetic fiber multifilament, a film of polyolefin group resin laminated on said woven fabric, and a nonwoven fabric laminated on said film;
said film being closely bonded to and integrated with a surface of the woven fabric and a surface of the nonwoven fabric by a molten portion of said film which solidifies upon cooling such that an air permeability of the laminated cloth becomes 2 $cc/cm^2/min$ or less; and
said laminated cloth having a weight per unit area of 280 g/m^2 or less.

5,302,433
HEAT-MELT TRANSFER RECORDING MEDIUM

Kazuo Miyai; Motoshi Morimoto, and Yuriko Kameda, all of Osaka, Japan, assignors to Fujicopian Co., Ltd., Osaka, Japan

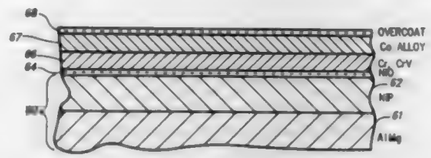
Filed Nov. 12, 1992, Ser. No. 974,623
Claims priority, application Japan, Nov. 15, 1991, 3-300576; Dec. 10, 1991, 3-325857
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—42 **5 Claims**

1. A heat-melt transfer recording medium comprising a foundation, and a release layer, a barrier layer and a colored ink layer provided on the foundation in that order from the foundation side, the release layer comprising a wax, the barrier layer consisting essentially of a polyalkyl methacrylate having a number average molecular weight of from 10^4 to 5.0×10^5 and the colored ink layer comprising a coloring agent dispersed in a vehicle comprising not less than 50% by weight of a thermoplastic resin.

5,302,434
MAGNETIC RECORDING DISK FOR CONTACT RECORDING

Mary F. Doerner, Los Gatos; Dan S. Parker, San Jose; Anthony W. Wu, San Jose, and Tadashi Yogi, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1992, Ser. No. 926,986
Int. Cl.[5] G11B *5/704*
U.S. Cl. 428—64 **11 Claims**

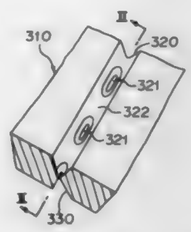


1. A thin film metal alloy magnetic recording disk comprising:
a substrate comprising an aluminum alloy having a nickel-phosphorous surface coating;
a film of nickel oxide formed on the nickel-phosphorous coating;
an underlayer formed on the nickel oxide film; and
a magnetic layer comprising a cobalt-based alloy formed over the underlayer.

5,302,435
PLASTIC SHEET WITH A RULED LINE FOR BENDING

Tadashi Hashimoto, Nagahama, Japan, assignor to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,481
Claims priority, application Japan, Mar. 24, 1992, 4-066073; Sep. 7, 1992, 4-238561; Sep. 7, 1992, 4-238567; Sep. 7, 1992, 4-238570
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—167 **5 Claims**



1. A plastic sheet with a ruled line for bending which comprises a groove as a ruled line extending in a longitudinal direction in at least one surface of a plastic sheet, wherein the groove includes a deep recess portion and a shallow portion in the longitudinal direction of the groove, with the deep recess portion extending more deeply into said plastic sheet relative to said shallow portion, wherein said shallow portion includes first and second ends, and wherein chamfered portions having a radium of curvature of 0.05–1 mm are formed at each of said first and second ends of the shallow portion, and further wherein said deep recess portion and said shallow portion are disposed at different longitudinal locations of said groove.

5,302,436
INK RECEPTIVE FILM FORMULATIONS

Alan G. Miller, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 731,415, Jul. 17, 1991, abandoned. This application Jun. 4, 1992, Ser. No. 893,384
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **8 Claims**

1. A transparent sheet suitable for making visual transparencies comprising a transparent film backing having a thickness of from about 50 micrometers to about 100 micrometers having coated on at least one major surface thereof an ink-jet receptive layer comprising form about 1% to about 10% of at least one protic organic-solvent-soluble carboxylic acid additive having a pKa of from about 2 to about 6, said acid additive being selected from the group consisting of aryl monocarboxylic acids, aryloxy monocarboxylic acids, alkyl carboxylic acids having alkyl groups containing at least about 11 carbon atoms, dicarboxylic acids and pyridinium salts, and at least one liquid-absorbent polymer comprising from about 90% to about 99% aprotic constituents, wherein said sheet shows reduced image density loss after 184 hours when imaged with an ink containing triarylmethane dye and at least one nucleophile over an identical composition containing no protic organic-solvent-soluble carboxylic acid additive.

5,302,437
INK JET RECORDING SHEET

Kouji Idei; Masaru Andoh; Hideaki Senoh, and Hirokazu Ohkura, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Jul. 21, 1992, Ser. No. 916,431
Claims priority, application Japan, Jul. 25, 1991, 3-210007; Dec. 16, 1991, 3-331926; Jun. 5, 1992, 4-145123
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **3 Claims**

1. An ink jet recording sheet which comprises a support, at least one ink-receiving layer having continuous voids provided on one side of the support by coating or impregnation and at least one backcoat layer provided on another side of the support by coating or impregnation, wherein the ink-receiving layer contains synthetic silica and water-soluble polymer binder and coating amount of the ink-receiving layer is 1–10 g/m^2; the backcoat layer contains a platy inorganic pigment having an aspect ratio of 5–90 and an average particle size of 0.1–25 μm, and coating amount of the backcoat layer is 1–10 g/m^2; difference in the coating amount of the ink-receiving layer and the coating amount of the backcoat layer is 5 g/m^2 or less.

5,302,438
PHOTOGRAPHIC-IMAGE-BEARING RECORDING MEMBER AND METHOD OF ITS PREPARATION

Tawara Komamura, Hachioji; Takao Nimura, Fuchu, and Taketo Nozu, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 620,643, Dec. 3, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,162
Claims priority, application Japan, Dec. 5, 1989, 1-315925
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **8 Claims**

1. A photographic image-bearing recording member comprising:
a support,
a thermoplastic resin layer bearing a photographic image therein, which is provided on a surface of said support, and
a protective layer produced by irradiating with actinic radiation a coating layer comprising a radiation setting composition having a prepolymer containing at least two epoxy groups per prepolymer molecule, which protective layer is provided at an outermost position of said photographic



image-bearing recording member on the side of the support on which said thermoplastic layer is provided.

5,302,439
RECORDING SHEETS

Shadi L. Malhotra, Mississauga, and Brent S. Bryant, Milton, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1993, Ser. No. 33,932
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **32 Claims**

1. A recording sheet consisting essentially of (a) a substrate; (b) a coating on the substrate which consists essentially of a binder and a material having a melting point of less than about 65° C. and a boiling point of greater than 150° C. and selected from the group consisting of alkyl phenones of the formula $C_6H_5CO(CH_2)_nCH_3$, wherein n is a number of from about 5 to about 16, alkyl ketones, halogenated alkanes, alkyl amines, alkyl anilines, alkyl diamines, alkyl alcohols, alkyl diols, halogenated alkyl alcohols, alkane alkyl esters, saturated fatty acids, unsaturated fatty acids, alkyl aldehydes, alkyl anhydrides, alkanes, and mixtures thereof; (c) an optional filler; and (d) an optional antistatic agent.

5,302,440
POLYMER COATED CONTACT SURFACE

Elbert Davis, 30781 S. Coast Hwy. Villa #91, Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 532, Dec. 3, 1990. This application Jun. 11, 1992, Ser. No. 897,216
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—196 **13 Claims**

1. A coated contact surface having a high coefficient of friction comprising a contact surface coated directly with a polymer having a hardness of 10 to 40 Shore A, a tensile strength of 400 to 1700 psi, an elongation of 200 to 1400 percent and a tear resistance of 50 to 400 PLI, wherein said polymer is a cross-linked acrylic polymer, a plasticized polyvinyl chloride elastomer, a silicone rubber, or a polyurethane elastomer, and forms a solid film from an evaporating solvent, said solidified polymer itself providing said high coefficient of friction.

5,302,441
POSTFORMABLE DECORATIVE LAMINATING PAPER

Stephen A. Canary, Westfield, Mass., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 15, 1991, Ser. No. 792,807
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—211 **10 Claims**

1. A decor sheet for use in a decorative laminate, said sheet including cellulosic fibers, a sulfur dye, and about 5 to 20% by weight of a water insoluble precipitate of a basic salt, wherein said precipitate is formed by interaction of a first water soluble salt and a second water soluble salt.

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5,302,442

HEAT SEALABLE BASE FILMS

Jeffrey J. O'Brien, Walworth, and Donald F. Sexton, Fairport, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 848,450, Mar. 9, 1992, abandoned. This application Jan. 26, 1993, Ser. No. 9,161

Int. Cl.[5] B32B 7/02

U.S. Cl. 428—213 18 Claims

1. A film structure comprising a thermoplastic film oriented or unoriented having a heat sealable layer on at least one side thereof which on heat sealing under the conditions of 170°–250° F., 20 psi and for sufficient time to effect a seal which can be opened by separation at the original seal surface without film tear or by delamination of the sealant material from the base layer, said sealable layer comprising a blend of (1) from about 10 to about 50% by weight of a random terpolymer of ethylene, propylene and butene, (2) from about 10 to about 50% of low density polyethylene, and (3) from about 10 to about 50% of polybutene.

5,302,443

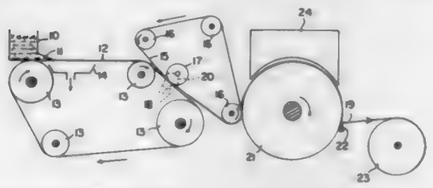
CRIMPED FABRIC AND PROCESS FOR PREPARING THE SAME

James H. Manning, Appleton; Joseph H. Miller, Menasha; Robert J. Marinack, Oshkosh, and Mary J. Flien, Appleton, all of Wis., assignors to James River Corporation of Virginia, Richmond, Va.

Filed Aug. 28, 1991, Ser. No. 751,121

Int. Cl.[5] D02G 3/00; D03D 25/00; D04B 1/00; D04H 13/00

U.S. Cl. 428—224 26 Claims



1. A thermally bonded non-woven fabric having a degree of elasticity in a first direction which is substantially greater than the degree of elasticity in a second direction which is perpendicular to said first direction, comprising:

a network of thermally bondable bicomponent fibers which comprise a core having a first melting point and a sheath arranged concentrically around said core and having a second melting point which is lower than said first melting point, portions of which extending generally in said first direction are crimped to a degree which is substantially greater than the degree of crimp or portions extending generally in said second direction.

5,302,444

MICROPOROUS THERMAL INSULATION MATERIAL

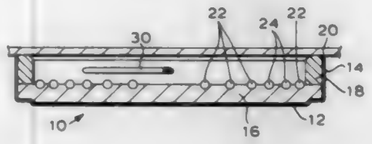
James D. J. Jackson; Tony M. Matthews, both of Kidderminster, and Darren J. Glover, Stourport-on-Severn, all of United Kingdom, assignors to Zortech International Limited, Worcestershire, United Kingdom

Filed Feb. 4, 1993, Ser. No. 13,334

Claims priority, application United Kingdom, Feb. 7, 1992, 9202608

Int. Cl.[5] B32B 9/00

U.S. Cl. 428—228 22 Claims



1. A thermal insulation material comprising an intimate, dry mixture of a particulate microporous material and reinforcing glass filaments, wherein the glass constituting the glass filaments contains not more than 1 per cent by weight Na_2O.

5,302,445

PROCESS FOR MAKING A REINFORCED FIBROUS MAT AND PRODUCT MADE THEREFROM

Robert DePetris, Chatsworth, and William Reeve, Burlington, both of N.J., assignors to Leucadia, Inc., La Jolla, Calif.

Filed Aug. 22, 1991, Ser. No. 748,674

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] D04H 1/70

U.S. Cl. 428—283 8 Claims

1. A method of making a molded product from a reinforced fibrous mat comprising:

(a) admixing fibrous material with a heat-curable thermoset binding agent to form a fiber/thermoset admixture, said thermoset binding agent being a phenolic resin;

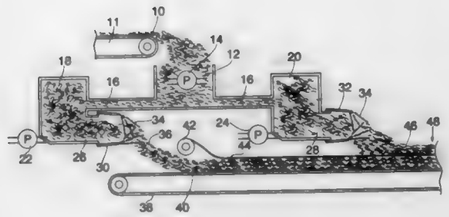
(b) ejecting a first portion of said admixture from a first ejection nozzle and, as it is ejected, spraying said admixture with a thermoplastic binding agent to form a first sprayed admixture, said thermoplastic binding agent being an aqueous starch solution;

(c) allowing said first sprayed admixture to free fall onto a substrate, thereby forming a first layer of fibrous material;

(d) applying a net-like structure on top of said first layer of fibrous material;

(e) ejecting a second portion of said admixture from a second ejection nozzle and, as it is ejected, spraying said admixture with a thermoplastic binding agent to form a second sprayed admixture, said thermoplastic binding agent being an aqueous starch solution;

(f) allowing said second sprayed admixture to free fall onto said net-like structure to form a second layer of fibrous material, said first and second layers of fibrous materials being in contact with and bonded to each other through interstices in said net-like structure;



(g) said first layer of fibrous material, said net-like structure, and said second layer of fibrous material forming said reinforced fibrous mat;

(h) drying said reinforced fibrous mat to a moisture content of less than about 5%;

(i) cutting said reinforced fibrous mat to a desired size; and

(j) applying heat and pressure to the cut, reinforced fibrous mat of step (i) to form a molded product.

5,302,447

HOTMELT-ADHESIVE FIBER SHEET AND PROCESS FOR PRODUCING THE SAME

Satoshi Ogata, Moriyama, and Yoshimi Tsujiyama, Moriya, both of Japan, assignors to Chisso Corporation, Ohsaka, Japan

Filed Jul. 22, 1992, Ser. No. 918,437

Int. Cl.[5] D02G 3/00

U.S. Cl. 428—288 4 Claims

1. A hotmelt-adhesive fiber sheet composed of melt blown conjugate fibers consisting of as a first component, a mixture of 20% by weight or more of a terpolymer of ethylene, acrylic acid ester and maleic anhydride, with 80% by weight or less of a polyolefin, the content of maleic anhydride in said mixture being 0.7% by weight or more, and as a second component, a thermoplastic resin having a melting point higher by 30° C. or more than that of said first component, said first component being formed continuously in the fiber length direction so as to occupy at least a part of the surface of said fibers, the average fiber diameter being 10 μm or less, and the contact points of said conjugate fibers being fixed with the melt adhesion of said terpolymer.

5,302,448

Patent Not Issued For This Number

5,302,449

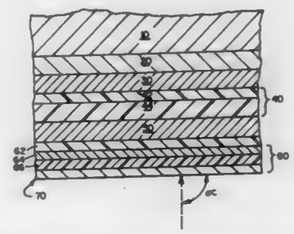
HIGH TRANSMITTANCE, LOW EMISSIVITY COATINGS FOR SUBSTRATES

Eric Eby, Spring Green, Wis.; Roger O'Shaughnessy, Chaska, Minn., and Robert Bond, Spring Green, Wis., assignors to Cardinal IG Company, Minnetonka, Minn.

Filed Mar. 27, 1992, Ser. No. 859,576

Int. Cl.[5] G02B 5/28

U.S. Cl. 428—336 10 Claims



1. A high transmittance, low emissivity coated substrate comprising a substrate having a coating on a surface providing the coated substrate with a substantially neutral color over a wide range of angles of incidence, the coating comprising:

(a) A base coat of an anti reflective metal oxide applied to a surface of said substrate at a thickness of no more than about 275 Angstroms;

(b) A first reflective metal layer applied over said base coat;

(c) An intermediate layer of an anti reflective metal oxide applied over said first reflective metal layer;

(d) A second reflective metal layer applied over said intermediate anti-reflective layer; and

(e) An outer anti-reflective layer of a metal oxide carried over said second reflective metal layer.

5,302,446

TWO-SIDED SKIN CARE WIPE MATERIAL AND METHOD FOR ITS MANUFACTURE

Drew Horn, Hingham, Mass., assignor to International Paper Company, Purchase, N.Y.

Filed Mar. 30, 1992, Ser. No. 859,771

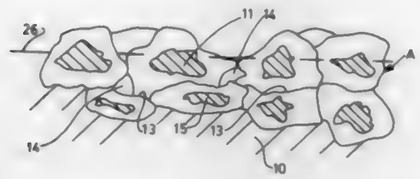
Int. Cl.[5] B32B 5/26, 7/10, 31/08, 31/20

U.S. Cl. 428—286 28 Claims

1. A laminated fabric material suitable for use in wiping human skin, comprising first and second plies of fibrous material bonded together, wherein each of said first and second plies of fibrous material is a nonwoven layer having a fiber composition consisting of at least 50 wt. % thermally fusible plastic fibers, at least one of said nonwoven layers being formed by hydroentangling, and the surfaces of at least some of said thermally fusible plastic fibers of each of said first and second plies have been treated to render said plastic fibers hydrophilic.

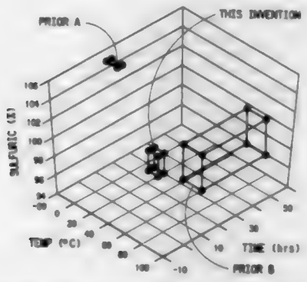
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,450
METAL ENCAPSULATED SOLID LUBRICANT COATING SYSTEM
V. Durga N. Rao, Bloomfield Hills; Daniel M. Kabat, Oxford, and Robert A. Rose, Grosse Pointe Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 6, 1993, Ser. No. 88,486
Int. Cl.[5] B32B *19/00*
U.S. Cl. 428—357 20 Claims



1. A thermally sprayable powder, having grains of the powder comprising essentially:
(i) a core of solid lubricant particles comprising graphite and MoS_2;
(ii) a soft metal shell encapsulating said core.

5,302,451
FIBERS OF SULFONATED POLY(P-PHENYLENE TEREPHTHALMIDE)
Minshon J. Chiou, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 796,312, Nov. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 435,829, Nov. 9, 1989. This application Sep. 30, 1992, Ser. No. 953,271
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 2 Claims

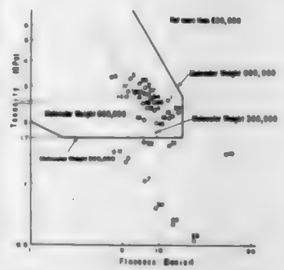


1. An as-spun yarn made from sulfonated PPD-T wherein the PPD-T of the yarn has an inherent viscosity of greater than 4.5 and includes 0.5 to 3%, by weight, sulfur, as bound sulfonic acid or sulfonate groups, and wherein the yarn exhibits yarn tenacity of greater than 20 grams per denier and heat aged strength retention of greater than 90%.

5,302,452
DRAWN PLASTIC PRODUCT AND A METHOD FOR DRAWING A PLASTIC PRODUCT
Tsugihiko Kai, Otsu; Masao Seki, Kusatsu; Fumiko Kawai, Kusatsu, and Kazuyoshi Koide, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Japan
Continuation of Ser. No. 743,384, Sep. 23, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,807
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 2 Claims

1. A polyester fiber having all of the following properties:
(1) A tensile strength of 7.0 g/d or larger;
(2) An initial modulus of 140 g/d or larger;
(3) The long range period X-ray diffraction value in the equatorial direction (De) is greater than the long range period X-ray diffraction value in the meridional direction (Dm); and
(4) Density (g/cm^3): 1.3800 or larger.

5,302,453
MOLECULAR ORIENTATION ARTICLES MOLDED FROM HIGH-MOLECULAR WEIGHT POLYETHYLENE AND PROCESSES FOR PREPARING SAME
Yasuo Kouno; Yuichi Itoh, and Kazuo Yagi, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Division of Ser. No. 585,963, Sep. 21, 1990, Pat. No. 5,252,394. This application May 28, 1993, Ser. No. 68,100
Claims priority, application Japan, Sep. 22, 1989, 1-247529; Nov. 29, 1989, 1-310024; Dec. 7, 1989, 1-318454; Feb. 8, 1990, 2-29055; Feb. 8, 1990, 2-29056
Int. Cl.[5] D02G *3/00*; D01D *5/08*
U.S. Cl. 428—364 6 Claims



1. A filament obtained by melt-spinning a polyolefin article composed of a mixture of a high molecular weight polyethlene having a weight average molecular weight exceeding 600,000 and a solid waxy substance under the application of shearing stress, stretching the polyolefin article, and removing the solid waxy substance therefrom, wherein said filament has a fineness of not more than 15 deniers and satisfies the tensile strength S (GPa)-weight average molecular weight M (g/mol)-fineness D (denier) relationship represented by the following formula [II].

$$S > \left(\frac{M}{2 \times 10^6} + 3.0\right) \times D^{-0.074} \quad [II]$$

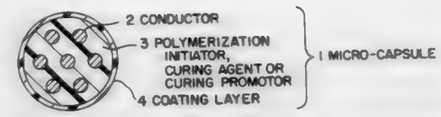
5,302,454
PLASTO-ELASTIC POLYPROPYLENE COMPOSITIONS
Giuliano Cecchin, and Floriano Guglielmi, both of Ferrara, Italy, assignors to HIMONT Incorporated, Wilmington, Del.
Continuation of Ser. No. 515,936, Apr. 27, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 931,127
Claims priority, application Italy, Apr. 28, 1989, 20328 A/89
Int. Cl.[5] C08L *23/16, 23/12*
U.S. Cl. 428—402 5 Claims

1. A polypropylene composition, in the form of spheroidal flowable particles, obtained by sequential polymerization in at least two steps wherein components (B) and (C) are polymerized in the presence of component (A) polymerized in the first step, comprising;
(A) 10–60 parts by weight of homopolymer polypropylene with isotactic index greater than 90, or of crystalline propylene copolymer with ethylene, with a CH_2=CHR olefin where R is a 2–6 carbon alkyl radical, or combinations thereof, containing over 85% by weight of propylene and having an isotactic index greater than 85;
(B) 10–40 parts by weight of a crystalline, polymer fraction containing ethylene and propylene, having an ethylene content of from about 52.4% to about 74.6% and insoluble in xylene at room temperature;
(C) 30–60 parts by weight of an amorphous ethylene-propylene copolymer fraction containing optionally small proportions of a diene, soluble in xylene at room temperature and containing 40 to 70% by weight ethylene;
said composition having a flex modulus smaller than 700 MPa, tension set at 75% less than 60%, tensile stress greater than 6 Mpa and notched Izod resilience at −20° and −40° C. greater than 600 J/m.

5,302,455
ENDOTHERMIC BLOWING AGENTS COMPOSITIONS AND APPLICATIONS
Satish K. Wason, Bel Air, Md.; Gerry Mooney, Ajax, Canada; Michael E. Tarquini, Havre de Grace, Md.; John A. Kosin, Bel Air, Md.; Rod A. Garcia, Orange, Tex., and Claude R. Andrews, Pasadena, Md., assignors to J. M. Huber Corporation, Rumson, N.J.
Continuation of Ser. No. 591,522, Oct. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 467,584, Jan. 19, 1990, Pat. No. 5,009,809, Ser. No. 467,585, Jan. 19, 1990, Pat. No. 5,045,570, and Ser. No. 467,587, Jan. 19, 1990, Pat. No. 5,037,580, each is a continuation-in-part of Ser. No. 352,307, May 16, 1989, Pat. No. 5,009,810. This application Apr. 22, 1992, Ser. No. 873,540
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—403 3 Claims

1. An endothermic blowing agent which comprises a mixture of a polycarboxylic acid and sodium aluminum hydroxy carbonate, wherein said polycarboxylic acid and said sodium aluminum hydroxy carbonate have each been surface treated with between about 0.1 to about 10 weight percent, based on total weight, of a component which prevents water from being absorbed by said polycarboxylic and said sodium aluminum hydroxy carbonate; and wherein said surface treating component is selected from the group consisting of mono glycerides including glyceryl monostearate, diglycerides, silane coupling agents, fatty acids including stearic acid, fatty acid salts, oleates, titanates including hydrotitanates, zirconates, and mixtures thereof.

5,302,456
ANISOTROPIC CONDUCTIVE MATERIAL AND METHOD FOR CONNECTING INTEGRATED CIRCUIT ELEMENT BY USING THE ANISOTROPIC CONDUCTIVE MATERIAL
Koji Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 7, 1992, Ser. No. 879,303
Claims priority, application Japan, May 7, 1991, 3-101370
Int. Cl.[5] B32B *5/16, 7/12*
U.S. Cl. 428—407 19 Claims



1. An anisotropic conductive material including micro-capsules dispersed in an insulative resin, each of said micro-capsules containing a filler material composed of a conductor and an acting material which acts on said insulative resin so as to solidify said insulative resin, a wall member encapsulating said filler material being formed of an insulative material.

5,302,457
WEATHERABLE MONOLITHIC COVERINGS
James P. Sheahan, Midland, Mich., assignor to J. P. Sheahan & Associates, Midland, Mich.
Division of Ser. No. 319,105, Mar. 6, 1989, Pat. No. 5,093,171. This application Dec. 2, 1991, Ser. No. 801,432
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—411.1 4 Claims



1. A composite which consists essentially of at least one layer of thermoplastic polymeric membrane and at least one layer of thermoset polymeric membrane fused together.

5,302,458
ADHESION PROMOTER
Rainer Blum, Ludwigshafen; Hans J. Heller, Hamburg; Hans-Joachim Haehnle, Ludwigshafen, and Klaus Lienert, Hamburg, all of Fed. Rep. of Germany, assignors to BASF Lacke+Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany
Division of Ser. No. 873,197, Apr. 24, 1992. This application Jul. 6, 1993, Ser. No. 86,314
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1991, 4113655
Int. Cl.[5] B32B *27/04*
U.S. Cl. 428—429 3 Claims

1. An inorganic substrate coated with an adhesion promoter comprising a mixture of from 5 to 95% by weight of an azidosilane of the formula

$$N_3—R^3—Si—R^1_a(OR^2)_{3-a} \quad (I)$$

where R^1 is C_1-C_3-alkyl, phenyl, benzyl or tolyl, R^2 is C_1-

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C_4-alkyl, C_2-C_4-alkoxyalkyl, phenyl or benzyl, R^3 is C_1-C_8-alkylene, which may be interrupted by —(N—R^4)— in which R^4 is hydrogen, methyl, ethyl or phenyl, and n is 0, 1 or 2, and from 5 to 95% by weight of an aminoalkoxysilane of the formula

$$N_2N—R^5—Si—R^6_m(OR^7)_{3-m} \quad (II)$$

where R^5 is C_1-C_6-alkylene, C_5-C_6-cycloalkylene or C_5-C_6-arylene, each of which may be substituted by one or two C_1-C_3-alkyl groups, and R^6 and R^7, independently of one another, are C_1-C_6-alkyl or C_5-C_6-cycloalkyl, each of which may likewise be substituted by one or two C_1-C_3-alkyl groups, and m is 0, 1 or 2.

5,302,459

METHOD FOR PREPARATION OF POLYESTER FILMS WITH GOOD RELEASE AND SLIP PROPERTIES

Kwang-Tae Kim, Seoul; Ik-Sung Kim, and Choon-Young Kim, both of Suwon, all of Rep. of Korea, assignors to Cheil Synthetics Inc., Kyungsan, Rep. of Korea

Filed Jul. 28, 1992, Ser. No. 920,710

Claims priority, application Rep. of Korea, Aug. 1, 1991, 91-13315

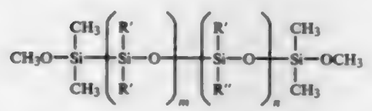
Int. Cl.[5] B32B *9/04*; B29C *55/12*

U.S. Cl. 428—447 **12 Claims**

1. A method for preparation of a biaxially stretched polyester film with good slip and release properties comprising the steps of:

forming an acrylic resin-based aqueous composition by combining:

an amino-modified silicone compound having the structural formula:



(I)

wherein

R′ is at least one member selected from the group consisting of hydroxyl, methyl and ethyl,

R″ is at least one of an amine and an amine substituted hydrocarbon containing up to 10 carbon atoms,

m is an integer in the range of 5 to 1,000,

n is an integer in the range of 100 to 20,000,

$n/(m+n)=0.5$,

polyethylene wax,

inert inorganic particles,

an acrylic resin, and

additional resin component which is reactive with both said acrylic resin and said silicone compound;

mono-axially stretching a polyester film;

coating said composition on at least one surface of said film;

drying the polyester film coated with said aqueous resin composition;

mono-axially stretching said dried polyester film in a direction perpendicular to that of the previous mono-axial stretching; and

heat-treating the stretched polyester film to produce a coated polyester film having improved slip and release properties.

5,302,460

SUPPORT MATERIAL FOR OFFSET-PRINTING PLATES IN THE FORM OF A SHEET, A FOIL OR A WEB PROCESS FOR ITS PRODUCTION AND OFFSET-PRINTING PLATE COMPRISING SAID MATERIAL

Engelbert Pliefke, and Raimund J. Faust, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 17, 1991, Ser. No. 731,484

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1990, 4023267

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—461 **31 Claims**

1. A support material for offset-printing plates, which comprises mechanically, chemically or electrochemically roughened aluminum or an aluminum alloy in the form of a sheet, a foil or a web, and which is coated on at least one side with a hydrophilic coating comprising a hydrophilic polymer having a mean molecular weight of at least 1,000, which comprises (a) at least 2 mol% of units having acidic side groups and (b) at least 2 mol% of units having basic side groups which are capable of being protonated.

5,302,461

DIELECTRIC FILMS FOR USE IN MAGNETORESISTIVE TRANSDUCERS

Thomas C. Anthony, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 5, 1992, Ser. No. 894,398

Int. Cl.[5] G11B *5/30*

U.S. Cl. 428—472 **3 Claims**

1. An electrical insulator for separating two electrically conductive layers in a magnetoresistive transducer, comprising an oxidized thin metal film selected from a group comprising Ta, Hf, Zr, Y, Ti, or Nb, wherein said thin metal film is first deposited on one conductive layer of said magnetoresistive transducer and then is oxidized after said deposition.

5,302,462

SHELF-STABLE POLYESTER/HMMM POWDER COATING

Navin B. Shah, and Andrew T. Daly, both of Sinking Spring, Pa., assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 9, 1992, Ser. No. 848,514

Int. Cl.[5] B32B *27/42*

U.S. Cl. 428—482 **14 Claims**

1. A storage-stable, partially cured powder coating resin free of gelation comprising a reaction mixture of a linear, hydroxyl-terminated polyester resin having an OH value of from 15 to 55 and methoxymethyl aminotriazine at a weight ratio of resin to triazine of from about 97:3 to about 70:30 in which a portion, corresponding to a reaction efficiency of from about 5% to about 15%, of methanol by-product has been removed at a temperature of from 150° to about 170° C.

5,302,463

THERMOPLASTIC ELASTOMER LAMINATES AND GLASS RUN CHANNELS MOLDED THEREFROM

Kazuhiko Murata; Norishige Murakami, both of Ichihara; Kyooji Muraoka, Waki, and Noboru Sakamaki, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,158

Claims priority, application Japan, Apr. 22, 1991, 3-090666; Apr. 22, 1991, 3-090667; Apr. 22, 1991, 3-090668; Apr. 26, 1991, 3-097636; May 10, 1991, 3-105918; May 10, 1991, 3-105919; May 10, 1991, 3-105920

Int. Cl.[5] B32B *27/08*

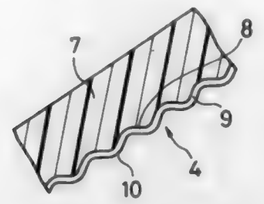
U.S. Cl. 428—517 **7 Claims**

1. A thermoplastic elastomer laminate which comprises a layer comprising a thermoplastic elastomer (A) composed of a crystalline polyolefin and a rubber, and

a layer comprising an ultra-high molecular weight polyolefin (b),

wherein said thermoplastic elastomer (A) is obtained by subjecting a mixture comprising

70–10 parts by weight of a crystalline polyolefin (a) and



(30–90 parts by weight of a rubber (b) which is an ethylene/propylene copolymer rubber or an ethylene/propylene/diene copolymer, the sum total of the components (a) and (b) is 100 parts by weight,

to dynamic heat treatment in the presence of an organic peroxide, said rubber (b) being partially cross-linked.

5,302,464

METHOD OF PLATING A BONDED MAGNET AND A BONDED MAGNET CARRYING A METAL COATING

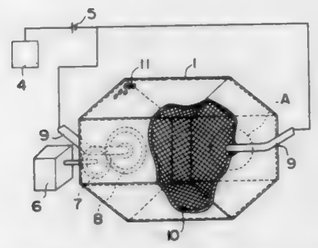
Takuji Nomura, Otsu, and Hiroshi Watanabe, Sagamihara, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1992, Ser. No. 845,645

Claims priority, application Japan, Mar. 4, 1991, 3-63976; Mar. 4, 1991, 3-63977; Mar. 4, 1991, 3-63978; Mar. 4, 1991, 3-63979

Int. Cl.[5] C23C *28/00*

U.S. Cl. 428—551 **10 Claims**



1. A method of manufacturing a bonded magnet which comprises mixing and molding a powder of a magnetic material represented as R-T-B, where R stands for Nd or a mixture of Nd and another rare-earth element, and T stands for Fe or a mixture of Fe and a transition element, and a binder to form the bonded magnet; coating the magnet with a mixture of a resin and a powder of an electrically conductive material, and electroplating the coated magnet to form a metal coating thereon.

5,302,465

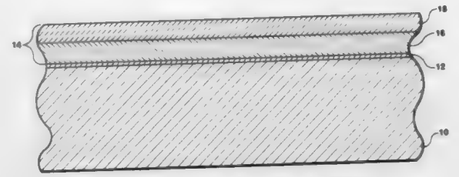
PLASMA SPRAYED CERAMIC THERMAL BARRIER COATING FOR NIA1-BASED INTERMETALLIC ALLOYS

Robert A. Miller, Brecksville, and Joseph Doychak, Westlake, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 26, 1992, Ser. No. 970,669

Int. Cl.[5] B22F *7/00*

U.S. Cl. 428—552 **10 Claims**



1. A coated article of manufacture comprising

an intermetallic alloy substrate having a surface exposed to high temperature gases,

a scale covering said surface, and

a ceramic thermal barrier coating in direct contact with said surface scale for protecting said surface from said gases.

5,302,466

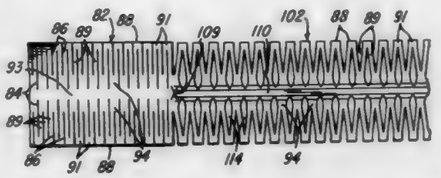
EXPANDED METAL STRIP FOR REINFORCING A RESILIENT PRODUCT

Robert W. Davis, Xenia, and Thomas H. Harney, Beavercreek, both of Ohio, assignors to The Gem City Engineering Co., Dayton, Ohio

Continuation-in-part of Ser. No. 754,942, Sep. 4, 1991, Pat. No. 5,199,142. This application Feb. 11, 1993, Ser. No. 16,792

Int. Cl.[5] E06B *7/22, 7/232*

U.S. Cl. 428—573 **3 Claims**



1. An expanded elongated metal strip adapted for reinforcing a resilient weatherstrip product, comprising a continuous series of longitudinally spaced opposing V-shaped tabs each having a pair of diverging leg portions, said leg portions of said tabs being integrally connected by corresponding longitudinally spaced separate marginal edge portions of said strip, the adjacent said leg portions of adjacent said tabs being integrally connected by a longitudinally extending center portion of said strip, and said center portion of said strip having a thickness substantially less than the thickness of said tabs.

5,302,467

HALOGENATED POLYIMIDE COMPOSITION HAVING IMPROVED ADHESION CHARACTERISTIC AND ARTICLES OBTAINED THEREFROM

Charles E. Baumgartner, Schenectady, N.Y., and Lisa R. Scott, Chicago, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,453

Int. Cl.[5] B32B *15/08*; H05K *9/00*

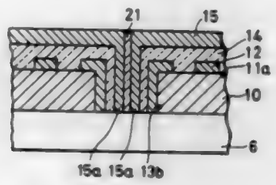
U.S. Cl. 428—626 **23 Claims**

1. An article comprising:

VOL 1161 ISS 2 AP 12 1994 UMI

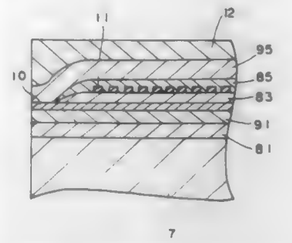
a substrate;
an imidized layer of a reaction product of a halogenated polyamic acid with about 0.1–14% by weight, based on said polyamic acid, of water added to said polyamic acid about 5 minutes to about 8 hours before application of said imidized layer to a surface of said substrate to cleave up to about 3% of the polyamic acid molecules; and
at least one metal layer disposed on said imidized layer.

5,302,468
ORGANIC ELECTROLUMINESCENT DISPLAY APPARATUS
Tohru Namiki; Hitoshi Sato; Kenichi Nagayama, and Teruichi Watanabe, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jul. 29, 1992, Ser. No. 921,128
Claims priority, application Japan, Jan. 28, 1992, 4-13206
Int. Cl.[5] F21K *2/00*; H05B *33/06*
U.S. Cl. 428—690 3 Claims



1. An organic electroluminescent display apparatus comprising:
a plurality of organic electroluminescent element assemblies having light-emitting sections each including an organic electroluminescent layer, a transparent electrode and a metal electrode facing each other with said organic electroluminescent layer in between,
a substrate having a first major surface for supporting at least one of the light-emitting sections, said plurality of organic electroluminescent element assemblies being arranged adjacent to one another such that each said transparent electrode of said adjoining organic electroluminescent element assemblies is electrically connected to one another and each said metal electrode of said adjoining organic electroluminescent element assemblies is electrically connected to one another,
each said transparent electrode and said metal electrode having at least one extending portion continuously formed from said first major surface of said substrate to a side surface thereof; and,
a first anisotropic conductive adhesive layer electrically connecting said transparent electrodes of said adjoining organic electroluminescent element assemblies at the extending portions, said first anisotropic conductive adhesive layer electrically connecting said metal electrodes of said adjoining organic electroluminescent element assemblies at the extending portions, and said first anisotropic conductive adhesive layer having conductivity only in a direction substantially normal to the surface of the extending portions.

5,302,469
SOFT MAGNETIC THIN FILM
Shoutatsu Sugenoya; Yuuichi Satoh, both of Toyko, and Osamu Kohmoto, Okayama, all of Japan, assignors to TDK Corporation, Tokyo, Japan
Filed May 22, 1991, Ser. No. 704,093
Claims priority, application Japan, May 22, 1990, 2-131491
Int. Cl.[5] G11B *5/66*; H01F *1/00*; B32B *9/00*
U.S. Cl. 428—694 T 7 Claims

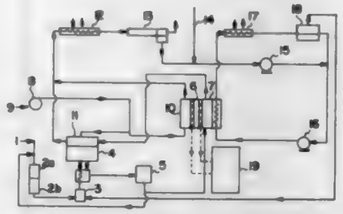


1. A soft magnetic thin film having an atomic ratio composition represented by the formula:

$$Fe_{(100-a-b)}M_aO_b$$

wherein M is at least one element selected from the group consisting of the elements Sc, Y, La, Ac, Ce, Th Ti, Zr, Hf, Pr, and Pa, $2 \leqq a \leqq 15$ and $4 \leqq b \leqq 35$
wherein said soft magnetic thin film has a coercive force Hc of up to 4 Oe as measured with DC to about 50 Hz.

5,302,470
FUEL CELL POWER GENERATION SYSTEM
Osamu Okada; Takeshi Tabata; Masataka Masuda; Susumu Takami, and Masamichi Ippommatsu, all of Osaka, Japan, assignors to Osaka Gas Co., Ltd., Japan
Continuation of Ser. No. 635,509, Jun. 15, 1990, abandoned.
This application Jul. 31, 1992, Ser. No. 921,596
Claims priority, application Japan, May 16, 1989, 1-123575; May 17, 1989, 1-123420; May 18, 1989, 1-125771
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—17 11 Claims

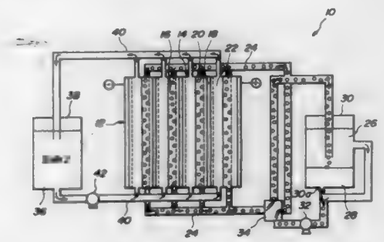


1. A fuel cell power generation system comprising: a source of a hydrocarbon raw fuel material, a desulfurizing unit for desulfurizing the raw fuel material; a fuel reforming section for converting the desulfurizing raw fuel material by a steam reforming reaction into a fuel gas which consists mainly of hydrogen and in turn, is fed to the fuel electrode of a fuel cell; an oxidant feeding section for feeding an oxidant to the oxidant electrode of the fuel cell; and a fuel cell unit for generating electricity by an electrochemical reaction between hydrogen from the fuel gas and oxygen from the oxidant, wherein said desulfurizing unit has at least a copper/zinc desulfurization reactor containing a desulfurizing agent comprising at least copper and a zinc component, and the amount of sulfur in the raw fuel material is reduced to 5 ppb or less by desulfurization in the desulfurization unit.

5,302,471
COMPACT PHOSPHORIC ACID FUEL CELL SYSTEM AND OPERATING METHOD THEREOF
Tsukasa Ito, Sumoto; Nobuyoshi Nishizawa, Neyagawa; Akira Hamada, Kadoma, and Akihiro Furuse, Sumoto, all of Japan, assignors to Sanyo Electric Co. Ltd., Osaka, Japan
Filed Apr. 7, 1992, Ser. No. 864,763
Claims priority, application Japan, Apr. 8, 1991, 3-75180
Int. Cl.[5] H01M *27/14*
U.S. Cl. 429—24 12 Claims

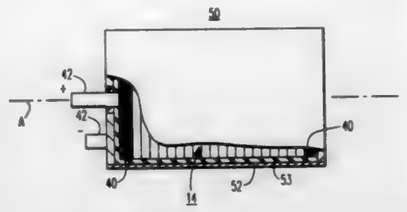
1. A method for controlling the concentration of phosphoric acid during operation of a compact phosphoric acid fuel cell system whose operation is started and stopped repeatedly, comprising:
providing a cell stack having a plurality of cell units each of which has an electrolyte matrix impregnated with a phosphoric acid electrolyte between a positive electrode and a negative electrode,
operating and stopping the fuel cell system repeatedly; and
controlling the phosphoric acid concentration of the fuel cell system so that each of the cell units has a phosphoric acid electrolyte whose concentration is in at least a portion thereof less than 91.6 wt % during the operating of the fuel cell system.

5,302,472
METHOD OF OPERATING METAL-HALOGEN BATTERY
Yasuo Ando; Hiroshi Hashiguchi, and Hiroshi Hosono, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed Dec. 11, 1992, Ser. No. 989,167
Claims priority, application Japan, Dec. 13, 1991, 3-330318
Int. Cl.[5] H01M *10/44*
U.S. Cl. 429—50 4 Claims



1. A method of operating a metal-halogen battery, comprising the steps of:
carrying out an operation of discharging the battery at a constant current having a first current value throughout charging the battery; and
initiating an operation of charging the battery at a second current value higher than said first current value and continuing the charging operation at a third current value which linearly decreases from said second current value to a zero value toward a termination of charging the battery.

5,302,473
CURRENT COLLECTOR FOR ELECTROCHEMICAL DEVICE
William R. Bennett, North Olmsted, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 20, 1992, Ser. No. 916,349
Int. Cl.[5] H01M *2/24*
U.S. Cl. 429—160 7 Claims



1. A current collector structure for a multi-cell electrochemical device having a stack of cells lying along an axis, comprising:
a) a plurality of pairs of layers of electrically conductive material;
b) adjacent layers of each said pair being of different conductivities to form an anisotropic resistivity structure having a greater resistivity in the direction of said axis;
c) said current collector being in electrical contact with an end cell of said stack; and
d) a terminal electrically connected to said current collector.

5,302,474
FULLERENE-CONTAINING CATHODES FOR SOLID ELECTROCHEMICAL CELLS
Dale R. Shackle, Morgan Hill, Calif., assignor to Valence Technology, Inc., San Jose, Calif.
Filed Apr. 2, 1993, Ser. No. 42,300
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 6 Claims

1. A solid electrochemical cell comprises:
a solid ionically conducting electrolyte comprising a polymeric matrix, an inorganic salt, and a solvent;
a compatible anode;
a compatible cathode prepared by radiation curing and comprising a mixture of said electrolyte and fullerene; and
a current collector;
wherein said electrolyte is operationally interposed between said cathode and said anode, and said cathode is operationally interposed between said electrolyte and said collector.

5,302,475
RECHARGEABLE ZINC CELL WITH ALKALINE ELECTROLYTE WHICH INHIBITS SHAPE CHANGE IN ZINC ELECTRODE
Thomas C. Adler, Berkeley; Frank R. McLarnon, Orinda, and Elton J. Cairns, Walnut Creek, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Nov. 12, 1991, Ser. No. 791,583
Int. Cl.[5] H01M *10/34*
U.S. Cl. 429—207 13 Claims

1. A rechargeable cell containing an electrode comprising an electrochemically active zinc material, and an aqueous alkaline

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electrolyte which inhibits shape change in said zinc electrode, said electrolyte comprising:

a) KOH, in a concentration of about 3.2M;



b) KF, in a concentration of about 1.8M; and

c) K_2CO_3, in a concentration of about 1.8M.

5,302,476

HIGH PERFORMANCE POSITIVE ELECTRODE FOR A LEAD-ACID BATTERY

Wen-Hong Kao, Brown Deer; Norma K. Bullock, Pewaukee, and Ralph A. Petersen, West Allis, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Dec. 3, 1990, Ser. No. 624,720
Int. Cl.[5] H01M *4/88*
U.S. Cl. 429—228 **18 Claims**

1. In a positive lead-acid battery electrode including a conductive current collector and an active lead material in contact with said collector, the active lead material consisting essentially of lead dioxide which is converted to a lead sulfate upon discharge, the improvement wherein the positive electrode is made by a method comprising:

combining a basic lead sulfate or lead oxide with a persulfate salt to form a dry mixture;

then combining water with said mixture to form a paste;

applying the paste to a conductive support; and

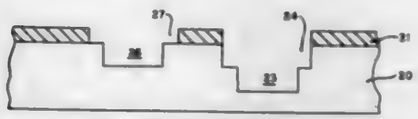
forming the pasted support into an electrode containing active lead material having a porosity in the range of about 55% to 70% and a surface area of at least 4 m^2/g, and has sufficient strength to maintain its structure when assembled and used in a lead-acid battery.

5,302,477

INVERTED PHASE-SHIFTED RETICLE

Giang T. Dao; Ruben A. Rodriguez, both of Fremont, and Harry H. Fujimoto, Sunnyvale, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 21, 1992, Ser. No. 933,400
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **21 Claims**



1. A reticle for use in patterning a radiation sensitive layer on a lithographic printer having a numerical aperture (NA), an image reduction factor (IRF) and an exposing radiation wavelength (λ), comprising:

a first region, said first region transmitting at least a portion of radiation incident thereon;

a second region proximate said first region, said second region comprising a phase-shifting element for said first region, said second region transmitting at least a portion of radiation incident thereon, wherein radiation transmitted through said second region is phase shifted approximately 160–200 degrees relative to radiation transmitted through said first region;

a third region disposed within approximately 0.55 IRF •λ/NA of said second region, said third region transmitting at least a portion of radiation incident thereon, wherein radiation transmitted through said third region is phase shifted approximately 160–200 degrees relative to said second region; and,

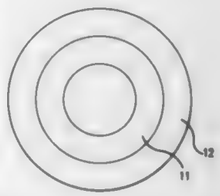
a fourth region proximate said third region, said fourth region transmitting at least a portion of radiation incident thereon, wherein said third region comprises a phase-shifting element for said fourth region, and wherein radiation transmitted through said fourth region is phase shifted approximately 160–200 degrees relative to said third region.

5,302,478

IONOGRAPHIC IMAGING MEMBERS AND METHODS FOR MAKING AND USING SAME

Brian E. Springett, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1990, Ser. No. 575,392
Int. Cl.[5] G03G *17/00*
U.S. Cl. 430—53 **16 Claims**



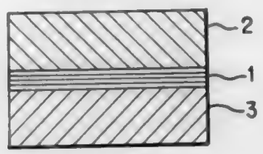
1. An ionographic imaging member comprising a conductive layer and a dielectric layer comprising boron nitride dispersed in non-conductive binder, wherein substantially all electric charge is stored on a surface of said dielectric layer, said imaging member possessing no more than negligible photosensitivity.

5,302,479

CRYSTALS OF HYDROXYGALLIUM PHTHALOCYANINE, METHOD OF PREPARING THE CRYSTALS, PHOTOCONDUCTIVE MATERIAL COMPRISING THE CRYSTALS, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING THE MATERIAL

Katsumi Daimon; Katsumi Nukada; Akira Imai; Masakazu Iijima; Kazuo Yamasaki; Kiyokazu Mashimo; Yasuo Sakaguchi, and Toru Ishii, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,026
Claims priority, application Japan, Apr. 26, 1991, 3-122812; Jan. 20, 1992, 4-27450; Apr. 13, 1992, 4-118524
Int. Cl.[5] G03G *5/00, 15/00*
U.S. Cl. 430—78 **23 Claims**



1. Hydroxygallium phthalocyanine crystals having distinct diffraction peaks at 7.5°, 9.9°, 12.5°, 16.3°, 18.6°, 25.1° and 28.3° of the Bragg angle (2θ±0.2) in the X-ray diffraction spectrum.

5,302,480

Patent Not Issued For This Number

5,302,481

TONER COMPOSITIONS WITH NEGATIVE CHARGE ENHANCING COMPLEXES

Beng S. Ong, Ontario, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1993, Ser. No. 72,252
Int. Cl.[5] G03G *9/09, 9/097*
U.S. Cl. 430—106 **25 Claims**

1. A negatively charged toner composition comprised of resin, pigment particles and/or dyes, optional surface additives, and an aluminum complex charge enhancing additive obtained from the reaction of aluminum ion with two molar equivalents, each of an ortho-hydroxybenzoic acid and an ortho-hydroxyphenol in the presence of a base.

5,302,482

LIQUID ELECTROPHOTOGRAPHIC TONER

Mohamed A. Elmasry, Woodbury, Wash.; Kevin M. Kidnie, St. Paul; Susan K. Jongewaard, North St. Paul, both of Minn., and Gregory L. Zwadlo, Ellsworth, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 8, 1991, Ser. No. 652,572
Int. Cl.[5] G03G *9/00*
U.S. Cl. 430—115 **22 Claims**

1. A liquid electrophotographic toner comprising a carrier liquid, a pigment particle, and a coordinated association of steric stabilizer and charge directing moiety, said liquid toner being characterized by said charge directing moiety having bonded thereto a monovalent alkali metal cation or ammonium cation.

2. The toner of claim **1** wherein said monovalent alkali metal cation or ammonium cation is ionically bonded to said charge directing moiety.

17. A process for preparing a liquid electrophotographic toner comprising mixing a carrier liquid, pigment particle, and a coordinated association of a steric stabilizer and charge direction moiety, said process further comprising adding a monovalent alkali metal cation compound or ammonium compound to said carrier liquid, pigment particle and coordinated association to bond said monovalent alkali metal cation or ammonium cation to said charge direction moiety.

5,302,483

IMAGE FORMING METHOD COMPRISING THE USE OF A DEVELOPER HAVING COMPLEX PARTICLES THEREIN

Kenji Yamane; Kazuhisa Horiuchi, and Hiroshi Yamazaki, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 24, 1992, Ser. No. 840,445
Claims priority, application Japan, Feb. 28, 1991, 3-55527
Int. Cl.[5] G03G *13/16*
U.S. Cl. 430—126 **14 Claims**

1. An electrophotographic image forming method comprising steps of

forming an static image on an amorphous silicon electrophotographic photoreceptor,

developing said static image with a developer to form a toner image,

transforming said toner image to an image receiving material, and

cleaning toner remaining on the surface of said amorphous silicon photoreceptor,

wherein said developer comprises a toner comprising colored particles comprising a resin and a colorant; and complex particles comprising resin particles comprising an acryl polymer, a styrene polymer or a styrene-acryl copolymer and hydrophobicized microparticles of an inorganic oxide which are bound to the surface of said resin particles.

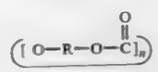
5,302,484

IMAGING MEMBERS AND PROCESSES FOR THE PREPARATION THEREOF

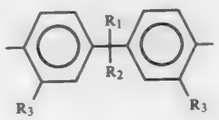
Peter G. Odell, Mississauga, and Trevor I. Martin, Burlington, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1992, Ser. No. 933,843
Int. Cl.[5] G03G *5/00*
U.S. Cl. 430—127 **16 Claims**

1. A process for the preparation of supporting substrates for layered imaging members consisting essentially of heating a mixture of cyclic oligomers with degrees of polymerization of from about 2 to about 20 and a catalyst to obtain a polycarbonate resin formed as web or drum, and wherein said cyclic oligomer mixture is represented by the formula



where n represents the degree of polymerization and is from 2 to about 20, and R represents the principle repetition unit of the formula



wherein R_1, R_2, and R_3 are independently selected from the group consisting of hydrogen, alkyl and aryl, halogen, and halogen substituted alkyl and aryl.

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5,302,485

METHOD TO SUPPRESS PLYWOOD IN A PHOTOSENSITIVE MEMBER

Eugene A. Swain, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 340
Int. Cl.[5] G03G *5/10*
U.S. Cl. 430—127 **25 Claims**

1. A process for forming a photosensitive imaging member comprising:

(a) providing a substrate;

(b) forming in successive layers on the substrate, an optional intermediate layer, and one or more photosensitive layers; and

(c) contacting moving refractory fibers in the configuration of a conditioning wheel against the exterior surface of the substrate or one of the layers to provide at least one surface having a roughness sufficient to substantially suppress the formation of a pattern of light and dark interference fringes upon exposure of the photosensitive imaging member.

5,302,486

ENCAPSULATED TONER PROCESS UTILIZING PHASE SEPARATION

Raj D. Patel; Guerino G. Sacripante, both of Oakville, and Grazyna Kmiecik-Lawrynowicz, Burlington, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1992, Ser. No. 870,375
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—137 **23 Claims**

1. A phase separation process for the preparation of an encapsulated toner composition consisting essentially of a core and a shell thereover, which process consists essentially of mixing an organic phase comprised of an olefinic monomer, pigment, and a first resin A soluble in the organic phase; dispersing at a temperature of from about 5° C. to about 60° C. the organic phase into microdroplets in an aqueous solution comprised of a surfactant; subjecting the resulting mixture to free radical polymerization by heating at a temperature of from about 35° C. to about 120° C. wherein the olefinic monomer is converted to a second resin B; and wherein said resin B is incompatible with said resin A and phase separates whereby a core and shell results, and wherein said shell is formed from said second resin B which migrates to the surface of the toner.

5,302,487

NEGATIVE-WORKING PHOTOSENSITIVE COATING SOLUTION CONTAINING PHOTOHARDENABLE DIAZO COMPOUND, POLYMERIC BINDER AND FOUR COMPONENT SOLVENT

Reinhold Arneth, Budenheim; Eberhard Hehl, Ingelheim; Werner Frass, Wiesbaden, and Guenter Jung, Taunusstein-Hahn, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 558,485, Jul. 27, 1990, abandoned. This application May 19, 1992, Ser. No. 898,345
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1989, 3924812
Int. Cl.[5] G03F *7/021, 7/09*
U.S. Cl. 430—157 **22 Claims**

1. A coating solution for the production of a negative-working photosensitive recording material, which includes in admixture, a negative-working photohardenable diazo compound, a polymeric binder, and a solvent mixture which dissolves the diazo compound and the polymeric binder, wherein the solvent mixture comprises in admixture

(a) a first component comprising

(i) a first constituent comprising either

(aa) a polar solvent of the formula R—OH, wherein R is an alkyl group having from 1 to 3 carbon atoms, or

(aa') a monoalkylether or an alkylether ester of propylene glycol and

(ii) a second constituent comprising an organic solvent having a boiling point in the range of from about 60° to 160° C. and which is selected from the group consisting of an aliphatic ketone, an alkanoic acid alkylester, a hydroxyalkanoic acid alkylester and a cyclic ether, and

(iii) a third constituent comprising an organic solvent having a boiling point in the range of from about 120° to 180° C. and which comprises a monoalkylether or an alkylether ester of propylene glycol or an alkylester of a hydroxyalkanoic acid,

with the proviso that solvent (iii) can not be a monoalkylether or an alkylether ester of propylene glycol and solvent (ii) can not be an alkylester of a hydroxyalkanoic acid if component (aa') is present and the proviso that solvent (iii) can not be an alkylester of a hydroxyalkanoic acid, if component (ii) is an alkylester of a hydroxyalkanoic acid,

wherein solvents (i), (ii), and (iii) are present in quantitative proportions selected to form a homogeneous mixture, and

(b) from about 0.1 to 8% by weight, relative to the total solvent mixture, of a second component comprising a solvent, the boiling point of which is in the range from about 160° to 250° C. and is higher than each individual boiling point of the constituents of the first component (a), and which is selected from the group consisting of lactones, cyclic esters other than lactones, sulfoxides and lactams

wherein the types and proportions of ingredients are selected so as to give a solution useful for the production of a negative-working photosensitive recording material.

5,302,488

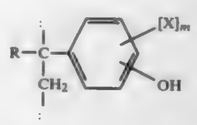
RADIATION-SENSITIVE POLYMERS CONTAINING NAPHTHOQUINONE-2-DIAZIDE-4-SULFONYL GROUPS AND THEIR USE IN A POSITIVE WORKING RECORDING MATERIAL

Horst Roeschert, Ober-Hilbersheim, Fed. Rep. of Germany; Hans-Joachim Merrem, Basking Ridge, N.J.; Georg Pawlowski, Wiesbaden; Juergen Fuchs, Floersheim/Wicker, both of Fed. Rep. of Germany, and Ralph Dammel, Coventry, R.I., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 841,545
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106356
Int. Cl.[5] G03F *7/023*
U.S. Cl. 430—190 **24 Claims**

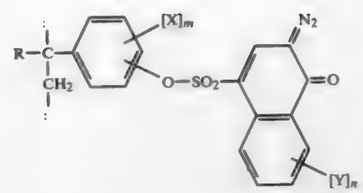
1. A radiation-sensitive polymer, comprising

(a) units of the general formula I



and

(b) units of the general formula II



wherein the numerical ratio of units (a) to units (b) is about 98:2 to 75:25, and wherein

R is a hydrogen atom or a (C_1–C_4)alkyl group,

X is a (C_1–C_6)alkyl, (C_1–C_6)alkoxy-(C_1–C_6)alkyl, carboxyl, formyl, (C_1–C_{15})alkoxycarbonyl, (C_2–C_5)alkanoyl, (C_2–C_5)alkanoyloxy, or a (C_1–C_6)-alkoxy group,

Y is a (C_1–C_5)alkyl, (C_1–C_5)alkoxy or a halogen atom,

m is 1 or 2, wherein the radicals X can be different if m=2, and

n is 0, 1 or 2, wherein the radicals Y can be different if n=2.

5,302,489

POSITIVE PHOTORESIST COMPOSITIONS CONTAINING BASE POLYMER WHICH IS SUBSTANTIALLY INSOLUBLE AT PH BETWEEN 7 AND 10, QUINONEDIAZIDE ACID GENERATOR AND SILANOL SOLUBILITY ENHANCER

Suisheng J. Shu, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1991, Ser. No. 784,355
Int. Cl.[5] G03F *7/023*; G03C *1/61*
U.S. Cl. 430—191 **6 Claims**

1. A positive photoresist composition comprising in admixture:

(a) 100 parts by weight of a base polymer, the base polymer being substantially insoluble in alkaline media at a pH between 7 and 10;

(b) 25–50 parts by weight of a quinonediazide acid generator, the acid generator being activatable by actinic radiation;

(c) 25–50 parts by weight of a silanol, the silanol being nonvolatile under 110° C., and soluble in alkaline media at a pH greater than 7.5; and

(d) a common solvent to the base polymer, the acid generator and the silanol.

5,302,490

RADIATION SENSITIVE COMPOSITIONS COMPRISING BLENDS OF AN ALIPHATIC NOVOLAK RESIN AND AN AROMATIC NOVOLAK RESIN

Theodore H. Fedynyshyn, Sudbury, and Marc Connelly, Roslindale, both of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Continuation of Ser. No. 780,641, Oct. 21, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 43,153
Int. Cl.[5] G03C *1/76*; G03F *7/023*
U.S. Cl. 430—271 **13 Claims**

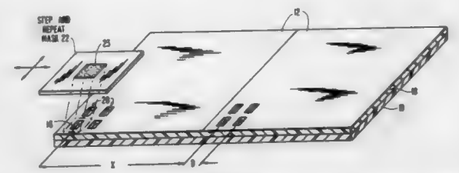
8. An article comprising a substrate having a coating layer of radiation sensitive composition on the substrate surface, said composition coating layer having a thickness of about 3 microns or greater, and the thickness of the coating layer having a standard deviation of about 30 nm or less, the composition comprising an admixture of a resin binder and a radiation sensitizer compound, the sensitizer present in an amount sufficient to enable development following exposure to activating radiation, the resin binder being a blend of an aliphatic novolak resin and an aromatic novolak resin, said resin blend consisting of between about 20 and 40 weight percent of said aromatic novolak resin, the balance of said resin blend consisting of said alphatic novolak resin and the aromatic novolak resin being the condensation product of a phenolic compound and a hydroxy-substituted aromatic aldehyde.

5,302,491

METHOD OF ENCODING IDENTIFICATION INFORMATION ON CIRCUIT DICE USING STEP AND REPEAT LITHOGRAPHY

Victor R. Akylas, San Jose, and Charles Seaborg, Fremont, both of Calif., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 750,746, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 453,544, Dec. 20, 1989, abandoned. This application Jul. 19, 1993, Ser. No. 93,446
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—311 **12 Claims**



1. A method whereby formation of a predetermined circuit pattern on each of a plurality o circuit dies of a semiconductor wafer is accompanied by inclusion on each die of electrically detectable information for identifying said die, the dies all having the same rectangular dimensions and being in rectangular array in successive rows and columns; said method comprising the steps of:

(a) forming on each of said dies in succession, by step-and-repeat lithography, said predetermined circuit pattern and a rectangular array of identical electrically detectable identification elements, said array constituting an identification array which is the same and at the same position on each die, the identification elements therein being in successive rows and columns analogous to the rows and columns of said die array, adjoining identification elements all having the same pitch distance (D); the step-and-repeat lithography including positioning a first photomask over the die in a first column of a first row of the die array and subsequently successively repositioning the first photomask over each successive die in successive columns of successive rows of the die array, each said repositioning being by stepping the first photomask a stepping distance (W) from a present position thereof;

(b) modifying the identification array on each die so as to select, by retention or removable, one of the identification elements therein; the position of the selected identification element in the identification array on any particular die constituting electrically detectable information for identifying said die; said modification being performed by the steps of:

(i) forming a photosensitive resist on the identification arrays on all dies;

(ii) providing a second photomask having an aperture therein of dimensions matching corresponding dimensions of each identification element;

(iii) positioning the second photomask over the die in a first column of a first row of the die array so that the aperture in the second photomask registers with the identification element in a first column of a first row of the identification array on said die;

(iv) successively repositioning the second photomask over the identification array on each succeeding die in successive columns of successive rows of said die array, each said repositioning being by stepping the second photomask said stepping distance (W) augmented by said pitch distance (D), so that at each step the aperture in the second photomask registers with the identifica-

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tion element in a row and column of the identification array on the next succeeding die which corresponds to the row and column of said next succeeding die in the die array;

(v) during each of steps (iii) and (iv), subjecting the second photomask to radiation while the aperture therein is registered with an identification element, thereby photolithographically modifying the area of the photosensitive resist overlying said registered identification element; and

(vi) after completion of steps (iv) and (v) for all dies, developing said photosensitive resist so as to pattern it in accordance with the modified areas thereof, and using the patterned resist to select, by retention or removal, only those of the identification elements on which the modified areas of said resist had been formed;

whereby the identification array on each die is modified so that position of the selected identification element therein constitutes electrically detectable information for identifying such die.

5,302,492

METHOD OF MANUFACTURING PRINTING CIRCUIT BOARDS

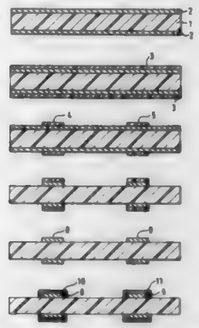
Albert Ott, Bissingen an der Teck; Werner Motz, Boeblingen; Werner Koramayer, Weil im Schoenbuch, and Michael Moser, Stuttgart, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 900,539, Jun. 19, 1992, abandoned, which is a continuation of Ser. No. 536,962, Jun. 19, 1990, abandoned. This application May 24, 1993, Ser. No. 67,396

Claims priority, application European Pat. Off., Jun. 16, 1989, 89110954.8

Int. Cl.[5] **G03F** *7/36;* **B05D** *3/00*

U.S. Cl. 430—314 **18 Claims**



1. A method of manufacturing printed circuit boards, wherein metallic conductive structures according to a desired pattern, are produced on a carrier board of isolating material, and wherein said carrier board has a metal foil laminated to the surface of the carrier board, said method comprising the steps of:

forming conductive traces on said carrier board from said metal foil according to a desired pattern;

deactivating said carrier board, after having formed said conductive traces, by rinsing said carrier board to remove substantially all substances deposited on said carrier board other than said conductive traces; and

forming final conductive structures by electroless metal deposition on said conductive traces, after deactivating said carrier board, wherein said final conductive structures have as a base layer portions of said metal foil laminated to said carrier board.

5,302,493

METHOD FOR THE PREPARATION OF OPTICAL RECORDING MEDIA CONTAINING UNIFORM PARTIALLY OXIDIZED METAL LAYER

Andrew J. G. Strandjord, and Steven P. Webb, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 30, 1992, Ser. No. 906,906

Int. Cl.[5] **G11B** *7/26*

U.S. Cl. 430—321 **13 Claims**

1. In a method of forming a medium for storage of information that can be optically read comprising coating a solid substrate with a highly reflective soft metal layer adhered to at least one surface thereof in a vacuum deposition process, said soft metal layer being a recording and reflecting layer and composed of an alloy comprising at least about 8 percent by weight tin, at least about 8 percent by weight bismuth and at least about 1 percent by weight of at least one of Mg, Au, Fe, Cr, Mn, Cu, Ag and Ni wherein bismuth is present in an amount greater than any of Mg, Au, Fe, Cr, Mn, Cu, Ag and Ni, the improvement comprising partially oxidizing said soft metal by contact with an oxidant during the process of coating it to the substrate to form a uniform partially oxidized reflective alloy layer on said substrate said oxidation being sufficient to increase the modulation depth and the C/N ratio of the alloy layer.

9. In a method of forming a medium for storage of information that can be optically read comprising vacuum depositing a highly reflective soft metal onto a solid substrate to provide a layer adhered to at least one surface thereof, said soft metal layer being an alloy comprising at least about 5 percent by weight of bismuth, and at least 5 percent by weight of at least one other metal selected from the group consisting of cadmium, indium, tin, antimony, lead, magnesium, silver, aluminum, zinc and copper, the improvement comprising: partially oxidizing said soft metal while vacuum depositing onto the substrate to form a uniform partially oxidized alloy layer on said substrate said oxidation being sufficient to provide a metal surface which is substantially free of bismuth-rich dendrites.

5,302,494

MULTILAYER CIRCUIT BOARD HAVING MICROPOROUS LAYERS AND PROCESS FOR MAKING SAME

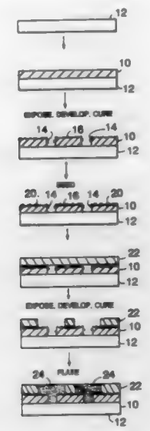
Paul E. Grandmont, Cumberland, R.I.; Harold Lake, Sharon, and Richard A. Anderson, Attleboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 429,139, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 742,747, Jun. 10, 1985, Pat. No. 4,915,983. This application Jul. 17, 1992, Ser. No. 915,341

Int. Cl.[5] **G03C** *5/00*

U.S. Cl. 430—325 **45 Claims**

1. An electroless plating process comprising contacting a catalytically activated layer of a microporous photoprocessable material prepared by creating micropores in the photoprocessable material and deposited on a substrate with a metal plating solution under reaction conditions sufficient to deposit



metal on the portions of said layer exposed to said plating solution.

5,302,495

METHOD FOR THE PHOTOLITHOGRAPHIC PRODUCTION OF STRUCTURES ON A SUPPORT

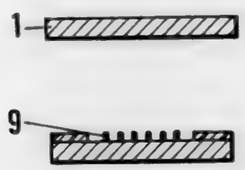
Rainer Wieland, Grasbrunn, and Wilfried Houben, Munich, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 21, 1991, Ser. No. 780,156

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033294

Int. Cl.[5] **G03F** *7/26*

U.S. Cl. 430—330 **7 Claims**



1. A method for the photolithographic production of a relief structure on a support, comprising the steps of:

preexposing to radiation an edge region of a substrate which is provided with a dry film resist on its surface and a protective film on the dry film resist, the edge region surrounding a useful substrate surface area;

removing the protective film;

exposing the dry film resist of the useful substrate surface area surrounded by the edge region to radiation in a pattern corresponding to an intended structure;

heating the exposed dry film resist; and

processing the substrate to remove unexposed portions of the dry film resist.

5,302,496

PHOTOGRAPHIC SILVER HALIDE MATERIALS AND PROCESS COMPRISING NEW PYRAZOLOAZOLE COUPLER

Robert F. Romanet, and Teh-Hsuan Chen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

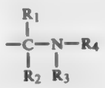
Continuation of Ser. No. 580,978, Sep. 12, 1990, Pat. No. 5,183,728, which is a continuation of Ser. No. 297,459, Jan. 13, 1989, abandoned, which is a continuation of Ser. No. 23,518, Mar. 9, 1987, abandoned. This application Sep. 18, 1992, Ser. No. 946,730

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] **G03C** *7/32*

U.S. Cl. 430—386 **39 Claims**

1. A photographic element comprising a support, at least one photographic silver halide emulsion and a photographic 1H-pyrazolo[3,2-c]-s-triazole coupler having substituted at the -3-position a group represented by the structure:



wherein:

R_1 and R_2 are individually hydrogen or substituents which do not adversely affect the coupler;

R_3 and R_4 are individually hydrogen, unsubstituted or substituted alkyl, unsubstituted or substituted aryl, or $C(O)R_5$, wherein at least one of R_3 and R_4 is unsubstituted or substituted alkyl, unsubstituted or substituted aryl, or $C(O)R_5$;

R_5 is unsubstituted or substituted alkyl, unsubstituted or substituted aryl, or NHR_6; and

R_6 is unsubstituted or substituted alkyl or unsubstituted or substituted aryl.

5,302,497

PHOTOSENSITIVE ORGANIC POLYMERIC MATERIAL CONTAINING UV ABSORBERS

Godwin Berner, Binningen, Switzerland, and Andreas Valet, Eimeldingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 836,144, Feb. 13, 1992, abandoned, which is a continuation of Ser. No. 628,736, Dec. 17, 1990, abandoned. This application Aug. 19, 1992, Ser. No. 932,272

Claims priority, application Switzerland, Dec. 21, 1989, 4594/89-0

Int. Cl.[5] **G03C** *1/815*

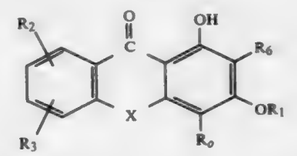
U.S. Cl. 430—512 **12 Claims**

1. A composition stabilized against the harmful effects of UV radiation which comprises:

(a) a major amount of a photosensitive organic polymeric material subject to the harmful effects of UV radiation; and

(b) a minor stabilizing effective amount of a combination of:

(i) a compound of formula (1)



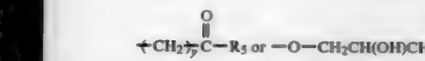
(1)

wherein X is —O—,

R_0 is hydrogen or a radical of the formula $—(CH_2)_nCO_2R$, wherein n is 1 or 2 and R is alkyl having 1 to 18 carbon atoms or $—(CH_2CH_2O)_mH$ wherein m is 1 to 12, R_1 is

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hydrogen, alkyl having 1 to 12 carbon atoms, alkyl having 2 to 18 carbon atoms which is substituted by hydroxyl and/or interrupted by oxygen, alkenyl having 2 to 12 carbon atoms or —COR_4, wherein R_4 is alkyl having 1 to 12 carbon atoms, alkenyl having 2 to 12 carbon atoms,



or R_1 is —$(CH_2)_yO$—COR_5 wherein R_5 is alkyl having 1 to 12 carbon atoms or alkenyl having 2 to 12 carbon atoms and y is 1 to 12,

R_2 and R_3 independently of the other are hydrogen, alkyl having 1 to 12 carbon atoms, alkenyl having 2 to 12 carbon atoms, chlorine or —OR_1 wherein R_1 is as defined above, and

R_6 is hydrogen or alkyl having 1 to 4 carbon atoms, and

(ii) at least one sterically hindered amine or hydroxyphenylbenzotriazole derivative.

5,302,498

ELEMENT AND PROCESS FOR PHOTOGRAPHIC DEVELOPER REPLENISHMENT

David T. Southby; John Texter, both of Rochester, N.Y., and Timothy Glover, London, United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 810,944, Dec. 19, 1991, Pat. No. 5,256,525. This application Sep. 29, 1992, Ser. No. 952,937

Int. Cl.[5] G03C *1/42, 5/31*

U.S. Cl. 430—399 **27 Claims**

16. A process for replenishing developing solution and developing an image in a photographic element comprising a support, a photographic silver halide emulsion layer containing an imagewise distribution of developable silver halide grains, and a non-photosensitive layer comprising at least one blocked developing agent or blocked developing agent precursor, said non-photosensitive layer being coated on the side of said support on the side opposite said emulsion layer, said process comprising the step of contacting said element with a processing solution which comprises a nucleophile.

5,302,499

PHOTOGRAPHIC SILVER HALIDE MATERIAL COMPRISING TABULAR GRAINS OF SPECIFIED DIMENSIONS IN SEVERAL COLOR RECORDS

James P. Merrill; Lois A. Buitano; Allan F. Sowinski, and Richard P. Szajewski, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,677

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—503 **25 Claims**

1. A color photographic recording material comprising a support bearing at least two photographic elements each said elements being sensitized to a different region of the spectrum,

wherein a light sensitive layer of two of said elements comprises a high aspect ratio tabular grain silver halide emulsion; and

wherein the thickness of said silver halide emulsion grains in both of said layer is chosen so as to minimize the spectral reflectance in the region of the spectrum to which the most light sensitive layer of said elements positioned further from the exposing image source of all said most light sensitive layers is sensitized wherein said light sensitive layer and at least one other light sensitive layer comprise high aspect ratio tabular grain silver halide emulsions having an aspect ratio of greater than 10, wherein said grains are about 0.14 to 0.17 microns thick and said most sensitive layer is red sensitive.

5,302,500

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL OFFERING EXCELLENT HUE REPRODUCTION

Yasushi Irie, and Hiroshi Shimazaki, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 3, 1992, Ser. No. 829,943

Claims priority, application Japan, Feb. 8, 1991, 3-060914

Int. Cl.[5] G03C *1/46, 1/08, 7/32*

U.S. Cl. 430—505 **3 Claims**

1. A silver halide photographic light-sensitive material comprising a support having provided thereon a red-sensitive silver halide emulsion layer containing a cyan dye-forming coupler, a green-sensitive silver halide emulsion layer containing a magenta dye-forming coupler, and a blue-sensitive silver halide emulsion layer containing a yellow dye-forming coupler, wherein

said blue-sensitive silver halide emulsion layer has a maximum spectral sensitivity at a wavelength of 415 nm to 470 nm, a spectral sensitivity of said blue-sensitive emulsion layer at 480 nm being not more than 35% of said maximum spectral sensitivity, maximum spectral sensitivity and said specrtral sensitivity at 480 nm being determined based on a reciprocal of an amount of light necessary to form an image having a density 0.7 times higher than the minimum density of said blue-sensitive emulsion layer, said blue-sensitive emulsion layer further containing a cyan dye-forming DIR coupler capable of releasing a development inhibitor or its precursor, said development inhibitor or said precursor having a diffusibility of 0.34 to 0.60.

5,302,501

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yutaka Tamura; Yasuyuki Takagi, and Junichi Yamanouchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

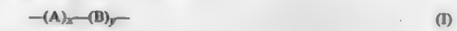
Filed Oct. 26, 1992, Ser. No. 966,383

Claims priority, application Japan, Oct. 25, 1991, 3-305545; Oct. 25, 1991, 3-305602; Oct. 28, 1991, 3-307158; Oct. 28, 1991, 3-307213

Int. Cl.[5] G03C *1/76*

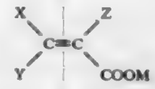
U.S. Cl. 430—537 **15 Claims**

1. A silver halide photographic material comprising a support thereon at least one silver halide emulsion layer and at least one hydrophilic colloid layer containing at least one carboxyl group-containing polymer (having a carboxyl group-containing monomer unit content of at least 20 mol %, but excluding polyacrylic acid) on the same side of the support as the emulsion layer, said polymer having been dissolved in water and added to said hydrophilic colloid layer, wherein the swelling ratio of all the hydrophilic colloid layers on the carboxyl group-containing polymer-containing layer side of the support is 200% or more in distilled water and wherein silver halide grains in at least one silver halide emulsion layer are tabular grains having an aspect ratio of not lower than 3.0, the carboxyl group-containing polymer is represented by the following general formula (I):



(I)

wherein A represents a polymerized unit derived from at lest one monomer represented by the following general formula (II), and B represents a unit derived from at least one ethylenically unsaturated monomer copolymerizable with A; X represents 20 to 80 mol %; and y represents 20 to 80 mol %:



(II)

wherein X, Y and Z each represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 8 carbon atoms,

—COOM, —$COOR_1$, —$CONR_2R_3$ or a substituted or unsubstituted phenyl group provided that at least one of X, Y and Z is a substituted or unsubstituted alkyl group having 1 to 8 carbon atoms, —$COOR_1$, —$CONR_2R_3$ or a substituted or unsubstituted phenyl group; R_1 represents a substituted or unsubstituted alkyl group having 1 to 18 carbon atoms, a substituted or unsubstituted aryl group having 6 to 18 carbon atoms or a substituted or unsubstituted aralkyl group having 7 to 12 carbon atoms; R_2 represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 4 carbon atoms, a substituted or unsubstituted phenyl group or a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms; R_3 represents a hydrogen atom, R_2 or —$(R_4$—$CONH)_w$—R_4—COR_5; R_4 represents an aliphatic or aromatic bivalent group having 1 to 12 carbon atoms; R_5 represents OM or —NR_2R_3; M represents a hydrogen atom or a cation; and W represents an integer of 0 to 6, and the carboxyl group-containing polymer contains a polymerized unit derived from methacrylic acid in an amount of from 20 to 80 mol %.

5,302,502

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

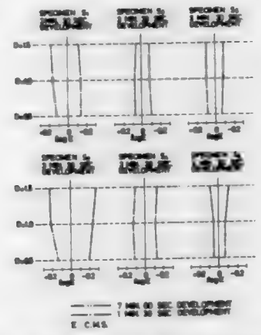
Yoshinori Shibata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 798,060, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 285,384, Dec. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 856,264, Apr. 25, 1986, abandoned. This application Dec. 23, 1992, Ser. No. 996,473

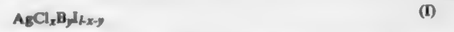
Claims priority, application Japan, Apr. 25, 1985, 60-89651

Int. Cl.[5] G03C *7/38, 1/035*

U.S. Cl. 430—546 **30 Claims**

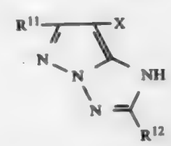


1. A silver halide color photographic material comprising a pyrazoloazole coupler and silver halide grains consisting of regular crystals with a twin content of 5% or less, said silver halide grains being represented by the formula (I)



(I)

wherein x and y satisfy the relationship $0 \leqq x \leqq 1$, $0 \leqq y \leqq 1$, and $0 \leqq 1\text{-}x\text{-}y \leqq 0.02$, wherein the coefficient of variation of size of the silver halide grains is 12% or less, the average particle size of the silver halide grains is from 0.2 to 0.9 μm and wherein said pyrazoloazole coupler is represented by formula (VIII):



wherein R^{11} and R^{12}, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an aralkyl group, an aryl group, a heterocyclic group, a cyano group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, an acylamino group, an anilino group, a ureido group, an imido group, a sulfamoylamino group, a carbamoylamin group, an alkylthio group, an arylthio group, a heterocyclic thio group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, a sulfonamido group, a carbamoyl group, an acyl group, a sulfamoyl group, a sulfonyl group, a sulfinyl group, an alkoxycarbonyl group, or an aryloxycarbonyl group, and X represents a hydrogen atom, a halogen atom, a carboxy group or a group which is bonded to the carbon atom at the coupling position thereof via an oxygen, nitrogen, or sulfur atom and liberated upon coupling, or R^{11}, R^{12}, or X may be a divalent group to form a bis compound.

7. A silver halide color photographic material as in claim 1, wherein said color photographic material comprises a high boiling point organic solvent selected from the group consisting of a phthalic ester, a phosphoric ester, a phosphonic ester, a benzoate, an alcohol, a phenol, an aliphatic carboxylic ester, an aniline derivative and a hydrocarbon.

5,302,503

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Naoki Saito; Keiji Mihayashi, and Takayoshi Kamio, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

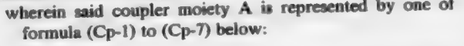
Filed Feb. 18, 1992, Ser. No. 836,505

Claims priority, application Japan, Feb. 18, 1991, 3-044091

Int. Cl.[5] G03C *7/34, 7/36, 7/38, 7/384*

U.S. Cl. 430—552 **12 Claims**

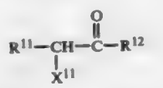
1. A silver halide color photographic light-sensitive material, comprising a support and at least one hydrophilic colloid layer formed on the support, said hydrophilic colloid layer containing a coupling compound represented by formula (I) below:



(I)

wherein A represents a coupler moiety, each of R^1 and R^2 independently represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, and n represents an integer of not less than 1, if n is an integer of not less than 2, respective R^1's and R^2's can be the same or different, and A and R^1, A and R^2, or R^1 and R^2 may combine to form a ring;

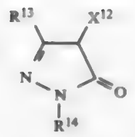
wherein said coupler moiety A is represented by one of formula (Cp-1) to (Cp-7) below:



(Cp-1)

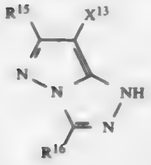
wherein R^{11} represents $R^{31}CO$—, R^{32}, or $R^{33}R^{34}NCO$—, R^{12} represents R^{33}, $R^{33}O$—, or $R^{33}R^{34}N$—, R^{31} represents an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, R^{32} represents an aryl group or a heterocyclic group, and each of R^{33} and R^{34} independently represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, and X^{11} represents a coupling split-off group;

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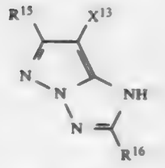
(Cp-2)

wherein R^{13} represents R^{31}, $R^{31}CONR^{33}$—, $R^{31}R^{33}N$—, $R^{31}SO_2NR^{33}$—, $R^{31}S$—, $R^{33}O$—, $R^{33}R^{35}NCONR^{34}$—, $R^{31}O_2C$—, $R^{33}R^{34}NCO$—, or N≡C—, R^{35} represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, R^{14} has the same meaning as R^{31}, and X^{12} represents a coupling split-off group;



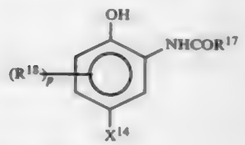
(Cp-3)

wherein each of R^{15} and R^{16} independently represents R^{33}, $R^{31}S$—, $R^{33}O$, $R^{31}CONR^{33}$—, $R^{31}R^{33}N$—, $R^{31}OCONR^{33}$—, $R^{33}R^{34}NCONR^{35}$—, or $R^{31}SO_2NR^{33}$—, and X^{13} represents a coupling split-off group;



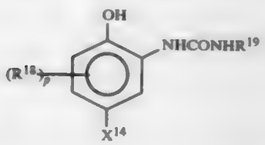
(Cp-4)

wherein each of R^{15} and R^{16} independently represents R^{33}, $R^{31}S$—, $R^{33}O$, $R^{31}CONR^{33}$—, $R^{31}R^{33}N$—, $R^{31}OCONR^{33}$—, $R^{33}R^{34}NCONR^{35}$—, or $R^{31}SO_2NR^{33}$—, and X^{13} represents a coupling split-off group;



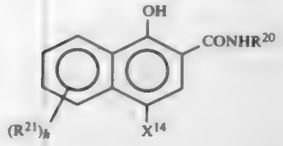
(Cp-5)

wherein R^{17} has the same meaning as R^{31}, R^{18} represents R^{31}, $R^{31}CONR^{33}$—, $R^{31}OCONR^{33}$—, $R^{31}SO_2NR^{33}$—, $R^{33}R^{34}NCONR^{35}$—, $R^{33}R^{34}NSO_2NR^{35}$—, $R^{31}S$—, $R^{33}O$—, a halogen atom, or $R^{31}R^{33}N$—, X^{14} represents a coupling split-off group, p represents 0, 1, 2, or 3, and if p represents a plural number, the respective R^{18}'s may be the same or different or may combine as divalent groups to form a cyclic structure;



(Cp-6)

wherein R^{18} represents R^{31}, $R^{31}CONR^{33}$—, $R^{31}OCONR^{33}$—, $R^{31}SO_2NR^{33}$—, $R^{33}R^{34}NCONR^{35}$—, $R^{33}R^{34}NSO_2NR^{35}$—, $R^{31}S$—, $R^{33}O$—, a halogen atom, or $R^{31}R^{33}N$—, X^{14} represents a coupling split-off group, and p represents 0, 1, 2, or 3, and if p represents a plural number, the respective R^{18}'s may be the same or different or may combine as divalent groups to form a cyclic structure, and R^{19} has the same meaning as R^{31}; and



(Cp-7)

wherein R^{20} has the same meaning as R^{31}, R^{21} represents R^{31}, $R^{31}CONH$—, $R^{31}SO_2NH$—, $R^{31}OCONH$—, $R^{33}R^{34}NCONR^{35}$—, $R^{33}R^{34}NSO_2NR^{35}$—, $R^{31}S$—, $R^{33}O$—, a halogen atom, or $R^{31}R^{33}N$—, h represents an integer from 0 to 4, if a plurality of R^{31}'s are present, they may be the same or different, and X^{14} represents a coupling split-off group;

wherein in formulas (Cp-2) to (Cp-7), R^{31}, R^{32}, R^{33} and R^{34} have the same meaning as in formula (Cp-1), and wherein in formulas (Cp-3) to (Cp-7), R^{35} has the same meaning as in formula (Cp-2).

5,302,504

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL CONTAINING A PYRAZOLOTRIAZOLE TYPE MAGENTA COUPLER

Shuji Kida, and Hidenubu Ohya, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 16, 1991, Ser. No. 760,489

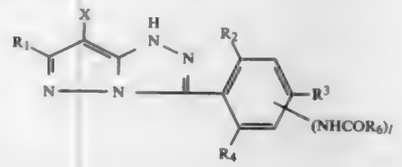
Claims priority, application Japan, Sep. 16, 1990, 2-249269; Sep. 16, 1990, 2-249270; Jan. 16, 1991, 3-014948

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—558 **4 Claims**

1. A color photographic material comprising a support and a light sensitive silver halide emulsion layer

said color photographic material further comprising a coupler represented by a formula I:



I

wherein, R_1 represents a primary alkyl group; R_2, R_3 and R_4 represent each an alkyl group, an alkoxy group or a halogen atom; R_6 is a straight or branched non-substituted alkyl group having 8 to 18 carbon atoms;

X represents a hydrogen atom or a releasing group; and

l is an integer of 1 or 2.

5,302,505

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC ELEMENT

Gerolamo Delfino; Milena Debenedetti, both of Savona; Marco Bucci, Genoa, and Dino Ferrari, Millesimo, all of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1993, Ser. No. 20,987

Claims priority, application Italy, Mar. 6, 1992, MI92 A 000502

Int. Cl.[5] G03C *1/035*

U.S. Cl. 430—567 **15 Claims**

1. A light-sensitive silver halide photographic element comprising a support and silver halide emulsion layer or layers, wherein at least one of said silver halide emulsion layers contains tabular silver halide grains having an average diameter to thickness ratio of at least 3:1 and highly deionized gelatin and wherein said photographic element shows a swelling index lower than 140% and a melting time of from 45 to 120 minutes, wherein at least one of said silver halide emulsion layer or layers is hardened with a bi-, tri-, or tetra-vinylsulfonyl substituted organic hydroxy compound of formula $(CH_2{=}CH{-}SO_2{-})_n{-}A$, wherein A is an n-valent organic group containing at least one hydroxy group and n is 2, 3, or 4.

5,302,506

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Nobuaki Kagawa, and Shinri Tanaka, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

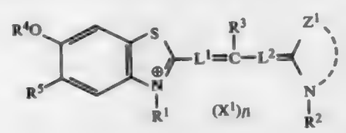
Filed Jun. 19, 1992, Ser. No. 901,130

Claims priority, application Japan, Jun. 26, 1991, 3-181980

Int. Cl.[5] G03C *1/18*

U.S. Cl. 430—572 **5 Claims**

1. In a silver halide photographic material that comprises a base and overlying photographic constituent layers including at least one light-sensitive silver halide emulsion layer, the improvement wherein the silver halide grains contained in at least one of said light-sensitive silver halide emulsion layers are spectrally sensitized with at least one sensitizing dye represented by the following general formula [I]:



[I]

where R^1 and R^2 each independently represents an alkyl group having 1–10 carbon atoms or an alkenyl group having 3–10 carbon atoms; R^3 represents a hydrogen atom, a heterocyclic group, an aryl group or an alkyl group; R^4 and R^5 each represents an alkyl group; Z^1 represents the group of non-metallic atoms necessary to form a 5-membered monocyclic or condensed nitrogenous hetero ring; L^1 and L^2 each represents a methine group, provided that R^1 or R^2 may combine with L^1 or L^2, respectively, to form a 5- or 6-membered hetero ring; X^1 represents an ion that cancels an electric charge in the molecule; l^1 represents the number of ions necessary to cancel electric charges in the molecule, provided that when the compound of interest forms an intramolecular salt, l^1 is zero.

5,302,507

ANTIGENIC PEPTIDE FOR DETECTING ANTI-HEPATITIS C VIRUS ANTIBODIES AND USE THEREOF

Joe Chiba, B-26-4, 626, Endo, Fujisawa-shi, Kanagawa-ken; Tatsuo Miyamura, Tokyo; Izumu Saito, Tokyo; Shizuko Harada, Tokyo, and Yoshiharu Matsuura, Kamifukuoka, all of Japan, assignors to Japan as represented by Director General of the Agency of the National Institute of Health, Tokyo and Joe Chiba, Fujisawa, both of Japan

Filed Aug. 13, 1991, Ser. No. 744,427

Claims priority, application Japan, Aug. 14, 1990, 2-214553

Int. Cl.[5] C12Q *1/70;* **C07K** *7/08*

U.S. Cl. 435—5 **3 Claims**

1. A peptide consisting of the amino acid sequence (SEQ ID NO: 1):

Met—Ser—Thr—Asn—Pro—Lys—Pro—Gln—Arg—Lys—Thr—Lys—Arg—Asn—Thr—Asn—Arg—Arg—Pro—Gln.

5,302,508

Patent Not Issued For This Number

5,302,509

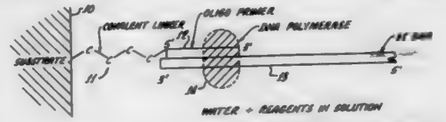
METHOD FOR SEQUENCING POLYNUCLEOTIDES

Peter C. Cheeseman, Palo Alto, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 393,586, Aug. 14, 1989, abandoned. This application Feb. 27, 1991, Ser. No. 661,750

Int. Cl.[5] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **10 Claims**



1. A method for determining the nucleotide sequence of identical single strand DNA molecules comprising the steps of:

(a) providing said single strand DNA molecules at their 3' end with a known leader sequence, said leader sequence forming a double stranded DNA hybrid with an oligonucleotide having a sequence complementary to said leader sequence;

(b) providing to said leader sequence said oligonucleotide having a sequence complementary;

(c) covalently attaching either the 3' end of said leader or the 5' end of said oligonucleotide to a solid support;

(d) forming a stable double stranded DNA hybrid, said hybrid comprising said oligonucleotide and said leader;

(e) exposing said hybrid to a DNA polymerase in the presence of optically-labeled derivatives of four nucleotide 5'-triphosphates of 2'-deoxyadenosine, 2'-deoxyguanosine, 2'-deoxycytidine and 2'-deoxythymidine, where said optically-labeled derivatives comprise a blocking group at the 3' portion thereof, said blocking group comprising an optical label capable of being removed to expose the 3' portion thereof, where each of said four derivatives is labeled with an optical label distinguishable by an optical detection means capable of detecting said optical label from the other three labels on the other three of said derivatives under conditions whereby said polymerase will add the complementary optically-labeled 3'-blocked nucleotide 5'-triphosphate to said oligonucleotide;

(f) washing any unused derivatives from said double stranded DNA hybrid;

(g) detecting the labeled derivative incorporated onto the double stranded DNA hybrid by said optical detection means thereby identifying the complement of said optically-labeled 3'-blocked nucleotide 5'-triphosphate added to

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said oligonucleotide present in said single stranded DNA molecules;

(h) removing, by chemical means or photochemical means, the optically-labeled 3'-blocking group from the derivative incorporated in step (g) to expose the OH group in the 3' position; of the nucleotide 5'-triphosphate derivative incorporated into the double stranded DNA hybrid

(i) separating the removed optically-labeled blocking group from said double stranded DNA hybrid;

(j) repeating steps (e) through (i) through a plurality of cycles until labeled nucleotide 5'-triphosphate derivatives can no longer be added to said oligonucleotide, whereby the result of each cycle identifies the next deoxynucleotide in sequence in said single stranded DNA molecules.

5,302,510

DNA SIZING CONTROL STANDARDS FOR ELECTROPHORETIC ANALYSES

Leonard Klevan, Gaithersburg, Md., assignor to Life Technologies, Inc., Gaithersburg, Md.

Filed Jul. 27, 1992, Ser. No. 918,765
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **10 Claims**

1. A method for determining the reliability of electrophoretic DNA sizing measurements comprising:

a) supplying a sizing standard wherein:

i) said sizing standard is obtained by pooling more than one measuring DNA fragment and more than one coding DNA fragment;

ii) each measuring DNA fragment and each coding DNA fragment is generated by a separate DNA restriction endonuclease digest;

iii) each coding DNA fragment recognizes a first nucleic acid probe; and

iv) each measuring DNA fragment recognizes a second nucleic acid probe which may be the same as the first nucleic acid probe;

b) electrophoresing through a gel a DNA sample to be analyzed;

c) concurrently, in a different lane of the same gel, electrophoresing the sizing standard of step (a);

d) visualizing the DNA bands in the gel obtained in step (c) by annealing one or more of said first or second nucleic acid probes, wherein said probes have been labeled;

e) measuring the sizes of the DNA bands of both the electrophoresed DNA sample and the electrophoresed sizing standard;

f) determining the expected sizes of said measuring fragments from the electrophoretic positions of said coding fragments; and

g) determining the reliability of data obtained for said sample according to how closely the electrophoretic measurements obtained for said measuring fragments in said sizing standard correspond to their expected measurements.

5,302,511

ANTIBODIES TO PEPTIDES UNIQUE TO SPECIFIC KERATIN PROTEINS

Stuart H. Yuspa, Bethesda; Dennis R. Roop, Garrett Park, and Peter Steinert, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 110,305, Oct. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 654,213, Sep. 25, 1984, Pat. No. 4,722,895. This application Aug. 14, 1990, Ser. No. 571,513
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[5] A61K *35/14*; C07K *3/00, 13/00, 15/00*
U.S. Cl. 435—7.21 **13 Claims**

1. An antibody which specifically binds to one and only one of the proteins selected from the group consisting of: murine keratin 6, murine keratin 14, murine keratin 16 and murine filaggrin.

5,302,512

AGGLUTINANT COMPLEX AS BLOOD TYPING REAGENT

Michel Pernelle, Igny, France, assignor to Pasteur Sanofi Diagnostics, Marnes La Coquette, France

Filed May 4, 1992, Ser. No. 877,718
Claims priority, application France, May 2, 1991, 91 05410
Int. Cl.[5] G01N *33/555, 33/541*
U.S. Cl. 435—7.25 **11 Claims**

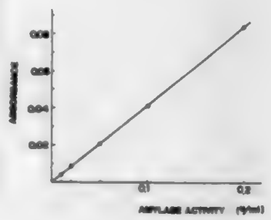
1. Agglutinant complex for the identification of antigens on erythrocytes, comprising an IgG antibody that is specific for the antigen to be identified, a protein selected from the group consisting of proteins A and G and an anti-immunoglobulin antibody or its antigen-binding fragments, bound directly through affinity bonds.

5,302,513

METHOD FOR DETERMINATION OF COMPONENTS

Akira Miike, Shizuoka, and Toshio Tatano, Numazu, both of Japan, assignors to Kyowa Medex Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 465,121, Feb. 22, 1990, abandoned. This application Jul. 9, 1991, Ser. No. 727,369
Claims priority, application Japan, Jun. 29, 1988, 63-161148
Int. Cl.[5] C12Q *1/48, 1/26, 1/37, 1/52*
U.S. Cl. 435—15 **10 Claims**



7. A method for quantitatively determining NAD(P)H comprising the steps of:

(a) oxidizing a sample using oxidized glutathione and glutathione reductase;

(b) decomposing the oxidized glutathione remaining in the sample using γ-glutamyl transpeptidase at 25° to 50° C. at pH 6 to 9 in the presence of glycine, glycylglycine or an equivalent thereof;

(c) forming NAD(P)H in a reaction using a component present in the sample;

(d) quantitatively determining any NAD(P)H formed in said reaction; and

(e) correlating the amount of component present in the sample from the amount of NAD(P)H determined in step (d).

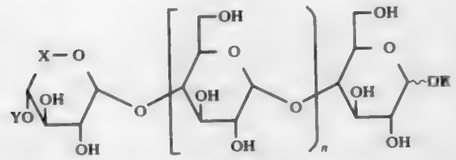
5,302,514

MALTOOLIGOSIDE DERIVATIVE, REAGENT FOR DETERMINING α-AMYLASE ACTIVITY CONTAINING THE SAME AS EFFECTIVE INGREDIENT AND A PROCESS FOR DETERMINING THE α-AMYLASE ACTIVITY USING SAME

Shoichi Tokutake; Tadashi Tomikura, both of Noda; Kazuo Kotani; Kazunori Saito, both of Tokyo, and Kohichiro Tobe, Noda, all of Japan, assignors to Kikkoman Corporation, Noda; Daiichi Pure Chemicals Co. Ltd., Tokyo and Seishin Pharmaceutical Co., Ltd., Noda, all of Japan

Filed Jun. 5, 1992, Ser. No. 894,468
Claims priority, application Japan, Jun. 26, 1991, 3-180473
Int. Cl.[5] C12Q *1/40*
U.S. Cl. 435—22 **7 Claims**

1. A maltooligoside derivative represented by the formula:



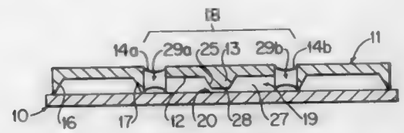
wherein n denotes an integer of 3–5, R represents an aromatic chromophoric group, X represents a group $>CHCH_2N_3$ or $>C{=}CH_2$, and Y represents a hydrogen atom, a substituted or unsubstituted hydrocarbon group, or alkyl- or arylsulfonyl group.

5,302,515

CHEMOTACTIC TEST APPARATUS AND METHOD

Richard H. Goodwin, Jr., Bethesda, Md., assignor to Neuro Probe, Inc., Cabin John, Md.

Filed Aug. 20, 1992, Ser. No. 932,976
Int. Cl.[5] C12Q *1/02*; C12M *3/04, 1/18, 1/20*; B01L *11/00*
U.S. Cl. 435—29 **32 Claims**



1. A chemotactic test apparatus comprising:

(a) a bottom plate having a top surface; and

(b) a top plate, said top plate having:

(i) a peripheral knife-edge protrusion around the periphery of the top plate, said peripheral knife-edge protrusion having a first height;

(ii) at least one pair of holes;

(iii) hole-pair knife-edge protrusions around the outer periphery of each pair of holes, the height of said hole-pair knife-edge protrusions substantially matching the height of the peripheral knife-edge protrusion;

(iv) a substantially flat-bottomed protrusion in between the two holes in each pair of holes, the height of said flat-bottomed protrusion being less than the height of said peripheral knife-edge protrusion; and

(v) front and rear hole-pair side walls extending down from the bottom surface of the top plate and joining the pair of holes, into which the flat-bottomed protrusion extends forwards and backwards, the height of said hole-pair side walls substantially matching the height of the peripheral knife-edge protrusions,

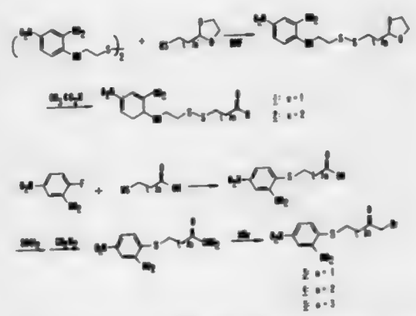
wherein the top plate is attached to the top surface of the bottom plate such that the peripheral knife-edge protrusions form a seal around the periphery of the assembly, the hole-pair knife edges and the front and rear hole-pair side walls form a seal around the periphery of each pair of holes, thus forming a chemotactic site, each site having a pair of wells formed by the holes in the top plate, and also having a passageway between each pair of wells, each said passageway having a restricted area formed by the volume between the top surface of the bottom plate, the front and rear walls of the hole-pair side walls, and the bottom surface of the flat-bottomed protrusion, such that the height of the restricted area is less than the diameter of typical cells to be tested.

5,302,516

CATALYTIC AND REACTIVE POLYPEPTIDES AND METHODS FOR THEIR PREPARATION AND USE

Peter Schultz, Oakland, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 404,920, Sep. 8, 1989, which is a continuation-in-part of Ser. No. 273,455, Nov. 18, 1988, abandoned. This application Dec. 10, 1992, Ser. No. 988,643
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] C12N *9/00*; C12P *1/00*
U.S. Cl. 435—41 **7 Claims**



1. A method for enhancing the rate of a chemical reaction involving the conversion of one or more reactants to one or more products, said method comprising exposing a reaction mixture including said one or more reactants to a modified polypeptide selected from the group consisting of antibodies and antibody fragments, said modified polypeptide having a binding site capable of forming a complex with said one or more reactants or with a reaction intermediate including said one or more reactants, wherein an active functionality is present in the modified polypeptide proximate the binding site, said active functionality being an amino acid side chain other than a naturally-occurring amino acid side chain, and said active functionality being capable of promoting the conversion of said one or more reactants to one or more products.

5,302,517

METHOD OF CONTROLLING THE EXPRESSION OF A GENE IN A CELL CULTURE, CELL CULTURE VECTOR USED IN THE METHOD AND METHOD OF MAKING THE VECTOR

Solon L. Rhode, III, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 555,773, Jul. 19, 1990, which is a continuation of Ser. No. 63,638, Jun. 16, 1987. This application Mar. 20, 1992, Ser. No. 857,100
Int. Cl.[5] C12P *21/00*; C12N *5/00, 15/00*
U.S. Cl. 435—69.1 **9 Claims**

1. A method of controlling the expression of a protein product in a mammalian cell culture comprising the steps of:

growing a culture of mammalian cells to a density in the range of 100,000 to 10 million cells per milliliter, wherein

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said cells have been transfected with DNA comprising first and second genes each under the control of the parvovirus P_{38} promoter, and wherein one of said first and second genes expressing an early protein which activates said P_{38} promoter and the other expressing a late protein which is said protein product, and

introducing into said culture sodium butyrate to activate said P_{38} promoter, whereby the cells in said culture begin to express said early protein for activating said P_{38} promoter in a self-stimulating manner to cause the other of said first and second genes to express the late protein.

5,302,518

PROCESS FOR THE BIOCATALYTIC, CORRECT CHAIN FOLDING OF DENATURED RECOMBINANT FUSION PROTEINS

Walter Neupert, Germering, and Franz-Ulrich Hartl, Unterschleissheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 563,189, Aug. 6, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,495

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1989, 3926103

Int. Cl.[5] **C07K** *3/00, 15/00;* **A61K** *37/02;* **C12P** *21/06*

U.S. Cl. 435—69.1 **5 Claims**

1. A process for the biocatalytic, correct chain folding of denatured recombinant fusion proteins comprising:

contacting a fluid sample having denatured recombinant fusion proteins at a temperature from about 15° C. to about 30° C. and a pH of about 6 to about 8 with

a heat shock protein selected from the group consisting of bacterial GroEL, the equivalent mitochondrial component Hsp60, and a mixture thereof, and ATP wherein ATP is employed in a concentration of about 1 to about 50 mM.

5,302,519

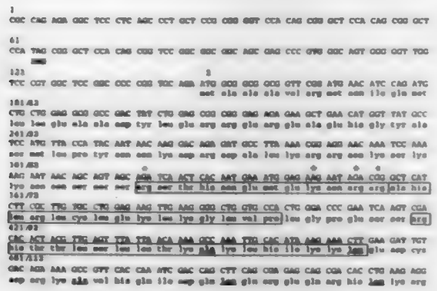
METHOD OF PRODUCING A MAD POLYPEPTIDE

Elizabeth M. Blackwood, Kirkland; Robert N. Eisenman, and Donald E. Ayer, Jr., both of Mercer Island, all of Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Continuation-in-part of Ser. No. 756,195, Sep. 9, 1991, abandoned. This application Jun. 23, 1992, Ser. No. 903,710

Int. Cl.[5] **C12Q** *1/68;* **C12P** *21/06;* **G01N** *33/53;* **C07H** *15/12*

U.S. Cl. 435—69.1 **10 Claims**



1. An isolated nucleic acid molecule capable of hybridizing under stringent conditions to the nucleotide sequence residing between positions 1 and 1002 of the mad cDNA shown in FIG. 14 (Seq. I.D. No. 5).

5,302,520

ENZYMATIC SYNTHESIS OF ISOTOPICALLY LABELED CARBOHYDRATES

Warren J. Goux, Farmers Branch, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 587,934, Sep. 25, 1990, Pat. No. 5,227,296. This application Mar. 25, 1993, Ser. No. 37,577

Int. Cl.[5] **C12Q** *1/54;* **C12P** *19/24, 19/12, 19/02*

U.S. Cl. 435—94 **16 Claims**

1. A method of enzymatic synthesis of a labeled carbohydrate, comprising the steps of:

preparing a reaction mixture comprising

(A) an adenosine phosphate regeneration system which includes phosphocreatine, phosphocreatine phosphokinase and ATP wherein the ATP is about 2% to about 5% of the amount of the phosphocreatine added;

(B) a nicotinamide adenine nucleotide regeneration system which includes a reducing sugar, a nicotinamide adenine nucleotide and a reducing sugar dehydrogenase wherein the nicotinamide adenine is about 2% to about 5% of the level of the reducing sugar added; and

(C) a labeled pyruvate;

adding to said reaction mixture an enzyme combination comprising pyruvate kinase, enolase, phosphoglycerate mutase, phosphoglycerate kinase, glyceraldehyde-3-phosphate dehydrogenase, and aldolase;

incubating said reaction mixture; and

obtaining the labeled carbohydrate from the reaction mixture.

5,302,521

PROCESS FOR PRODUCING L-LYSINE BY IODOTHYRONINE RESISTANT STRAINS OF MUCORYNEBACTERIUM GLUTAMICUM

Tetsuo Nakano; Tomoki Azuma, and Yoshiyuki Kuratsu, all of Hofu, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,273

Claims priority, application Japan, Oct. 21, 1991, 3-272461

Int. Cl.[5] **C12P** *13/08;* **C12N** *1/20*

U.S. Cl. 435—115 **2 Claims**

1. A process for producing L-lysine which comprises the steps of:

culturing *Corynebacterium glutamicum* FERM BP-3594 in a culture medium;

accumulating L-lysine in the culture medium; and

recovering said L-lysine therefrom.

5,302,522

PROCESS FOR THE PRODUCTION OF SEC-CEDRENOL AND CEDRENONE FROM ALPHA-CEDRENE BY RHODOCOCCUS

Hirofumi Takigawa, Tochigi; Hiromi Kubota, Tokyo; Susumu Ito; Yoshiaki Fujikura, both of Tochigi, and Shigeyoshi Tanaka, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

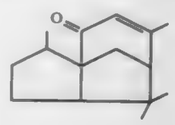
Division of Ser. No. 861,749, Apr. 1, 1992. This application Aug. 26, 1993, Ser. No. 111,888

Claims priority, application Japan, Apr. 2, 1991, 3-94918; Jun. 4, 1991, 3-159540; Jul. 9, 1991, 3-193578

Int. Cl.[5] **C12P** *15/00;* **C12N** *1/20*

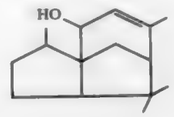
U.S. Cl. 435—127 **3 Claims**

1. A process for producing cedrenone of the formula:



which comprises

A) culturing Rhodococcus sp. KSM-7358 in a nutrient medium containing α-cedrene under conditions effective to produce sec-cedrenol of the formula:



B) recovering said sec-cedrenol;

C) oxidizing the recovered sec-cedrenol to obtain cedrenone; and

D) recovering the cedrenone.

5,302,523

TRANSFORMATION OF PLANT CELLS

Ronald Coffee, Haslemere, and James M. Dunwell, Henley-On-Thames, both of England, assignors to Zeneca Limited, London, England

Continuation-in-part of Ser. No. 541,890, Jun. 21, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 804,664

Claims priority, application United Kingdom, Jun. 21, 1989, 8914232

Int. Cl.[5] **C12N** *5/14*

U.S. Cl. 435—172.1 **6 Claims**

1. A method of introducing a nucleic acid into plant cells comprising providing in a liquid medium (i) plant cells suspended therein, (ii) a multiplicity of metal or ceramic whiskers bodies and (iii) a nucleic acid, and subjecting said liquid medium containing the said suspended cells, the said metal or ceramic whiskers bodies and said nucleic acid to physical motion so as to create collisions between said metal or ceramic whiskers and said plant cells whereby said nucleic acid is introduced into said plant cells.

5,302,524

COAL DERIVED OXIDATION PRODUCT FOR SEEDLING GROWTH STIMULATION

Hendrik A. Van De Venter; Johannes Dekker, both of Pretoria, and Izak J. Cronje, Verwoerdburg, all of South Africa, assignors to National Energy Council, Pretoria, South Africa

Filed May 14, 1990, Ser. No. 523,077

Claims priority, application South Africa, May 15, 1989, 89/3611

Int. Cl.[5] **C12N** *5/00;* **C05F** *11/02;* **C07C** *65/01*

U.S. Cl. 435—240.54 **11 Claims**

1. A method of increasing the root to shoot ratio of a seedling during seedling growth includes the step of applying a coal-derived oxidation product in the form of a solution or a slurry having a pH in the range of 2 to 12 to the medium in which growth is to take place, the solution or slurry having no auxiliary plant nutrients or fertilizers present therein, the coal-derived product having the following elemental and functional group analysis on an air-dried basis:

ELEMENTAL ANALYSIS	
Element	Range (%)
Carbon	30–70
Hydrogen	2–6
Nitrogen	0.1–5
Sulphur	0.1–10
Oxygen	15–45

FUNCTIONAL GROUP ANALYSIS	
Functional Group	Range (meq/g)
Total acidity	3–13
Carboxylic groups	0.5–12
Phenolic groups	0.5–9.

5,302,525

METHYLOBACTERIUM EXTORQUWNS MICROORGANISM USEFUL FOR THE PREPARATION OF POLY-β-HYDROXYBUTYRIC ACID POLYMERS

Denis Groleau, Quebec, Canada H7E 4C9 ; Denis Bourque, Quebec, Canada and Yves Pomerieau, Beaconsfield, Quebec, all of Quebec, Canada

Filed Nov. 23, 1992, Ser. No. 980,081

Int. Cl.[5] **C12N** *1/12;* **C12R** *1/01;* **C12P** *7/40*

U.S. Cl. 435—252.1 **1 Claim**

1. A biologically purified culture of a *Methylobacterium extorquens* microorganism strain designated by the ATCC no. 55366.

5,302,526

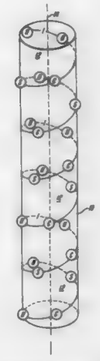
RECOMBINANT DNA ENCODING AMPHIPHILIC LEADER SEQUENCES FOR THE PRODUCTION AND PURIFICATION OF FUSION PROTEINS

Peter C. Keck, Millbury; Charles M. Cohen, Medway; James S. Huston, Newton, and Richard J. Ridge, Acton, all of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Division of Ser. No. 857,684, Mar. 25, 1992, Pat. No. 5,215,896, which is a continuation of Ser. No. 731,303, Jul. 16, 1991, abandoned, which is a continuation of Ser. No. 28,500, Mar. 20, 1987, abandoned. This application Jan. 15, 1993, Ser. No. 5,322

Int. Cl.[5] **C12N** *15/62, 15/11, 15/74;* **C07K** *3/24*

U.S. Cl. 435—252.33 **12 Claims**



1. An isolated recombinant DNA encoding an improved fused protein comprising a target polypeptide linked through a cleavable cleavage site, to a pendant polypeptide, the improvement wherein

in aqueous solution, said pendant polypeptide has an amphiphilic alpha helical structure having a central axis and opposed hydrophilic and hydrophobic lateral surfaces, the hydrophobic surface comprising axially proximate nonpolar amino acid residues and the hydrophilic surface comprising axially proximate charged amino acid residues,

said fused protein being characterized by spontaneous formation of insoluble aggregates within a host organism in which it is expressed, said pendant polypeptide comprising a proline-free polypeptide of the structure:

$$(N\text{-}C\text{-}S\text{-}N\text{-}S\text{-}C\text{-}N)_b$$

wherein b is an integer from 1 to 10; N comprises a member selected from the group consisting of nonpolar amino acid residues and the N's together define said hydrophobic surface; C comprises a member selected from the group consisting of charged amino acid residues; and the C's together define said hydrophilic surface; S comprises a

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member selected from the group consisting of hydrophilic, neutral amino acid residues, and wherein up to two of said N, C, and S residues may independently be histidine.

5,302,527

NITRATE REDUCTASE AS MARKER FOR FILAMENTOUS FUNGI

John A. Birkett, Ulverston, and James R. Kinghorn, St. Andrews, both of Great Britain, assignors to Glaxo Group Limited, London, England

PCT No. PCT/EP90/00372, § 371 Date Nov. 9, 1990, § 102(e) Date Nov. 9, 1990, PCT Pub. No. WO90/10074, PCT Pub. Date Sep. 7, 1990

PCT Filed Mar. 2, 1990, Ser. No. 613,493

Claims priority, application United Kingdom, Mar. 2, 1989, 8904762

Int. Cl.[5] C12N *1/15, 15/80*; C12P *21/00*

U.S. Cl. 435—254.5 **6 Claims**

1. Vector DNA for the transformation of cells of *P. chrysogenum* or *A. chrysogenum* which are deficient in the expression of nitrate reductase, which comprises a marker gene coding for nitrate reductase, operatively linked to a control sequence for expression of the said gene and wherein said marker gene coding for nitrate reductase is isolated from cells of the same species as the intended transformation host.

5,302,528

PROCESS FOR THE ENZYMATIC SEPARATION OF THE OPTICAL ISOMERS OF ALPHA-SUBSTITUTED CARBOXYLIC ACIDS USING ESTERASE FROM *BREVIBACTERIUM IMPERIALE*

Ezio Battistel, La Spezia; Daniele Bianchi, Milan; Pietro Cesti, Novara; Giuliana Franzosi, Milan; Roberto Tassinari, Novara, and Sandro Spezia, Piacenza, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

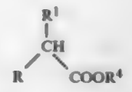
Filed Apr. 22, 1992, Ser. No. 872,108

Claims priority, application Italy, Apr. 26, 1991, MI91A001154

Int. Cl.[5] C12P *41/00*

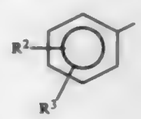
U.S. Cl. 435—280 **6 Claims**

1. A process for the enzymatic separation of the optical isomers of an alpha-substituted carboxylic ester of the formula (V)

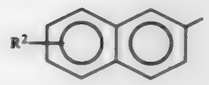


(V)

wherein R^1 represents a C_1–C_4 alkyl group, and wherein R represents a phenyl, naphthyl or phenoxy group, having the formulae (II), (III), and (IV) respectively:

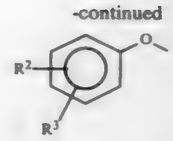


(II)



(III)

-continued



(IV)

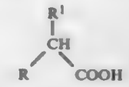
wherein R^2 and R^3 are the same or different and are a hydrogen atom, a C_1–C_8 alkyl group, a C_2–C_4 alkenyl group, a phenyl alkoxyl, phenoxyl group, or a halogen, and R_4 represents a C_1–C_4 alkyl group;

comprising the steps of:

(i) reacting said compounds of formula (V) with *Brevibacterium imperiale* (CBS 49874),

an esterase obtained therefrom, and

(ii) separating a substantially pure single enantiomer of an acid corresponding to the formula (I),



(I)

wherein R and R^1 are as defined above.

5,302,529

PLASMID CODING FOR HUMAN PROTEIN C

Donald C. Foster, Seattle, and Earl W. Davie, Bellevue, both of Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 766,109, Aug. 15, 1985, Pat. No. 4,968,626. This application Apr. 23, 1990, Ser. No. 512,961

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] C12N *15/73*

U.S. Cl. 435—320.1 **4 Claims**



1. A bacterial plasmid or bacteriophage transfer vector comprising cDNA coding for the amino acid sequence of FIG. 3, starting with alanine, number 1, and ending with proline, number 419, said cDNA sequence coding for human protein C.

5,302,530

DNA CODING FOR AN ANTIGEN OF *BLASTOMYCES DERMATITIDIS*

Bruce S. Klein; Laura H. Hogan, and Jeffrey M. Jones, all of Madison, Wis., assignors to Wisconsin Alumni Research Association, Madison, Wis.

Filed Feb. 16, 1993, Ser. No. 21,537

Int. Cl.[5] C12N *15/70*

U.S. Cl. 435—320.1 **1 Claim**

1. A recombinant vector containing a cDNA having a nucleotide sequence which codes for a twenty-five amino acid residue epitope portion of a WI-1 protein, said nucleotide sequence being selected from the group consisting of residues 1–25 of SEQ ID NO: 3, residues 26–50 of SEQ ID NO: 3, residues 51–75 of SEQ ID NO: 3, and residues 76–100 of SEQ ID NO: 3.

5,302,531

COMPOSITION FOR THE SEMIQUANTITATIVE DETERMINATION OF SPECIFIC GRAVITY OF A TEST SAMPLE

Robert Bauer, Bristol, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Oct. 22, 1992, Ser. No. 964,873

Int. Cl.[5] G01N *33/20*

U.S. Cl. 436—74 **16 Claims**

1. A composition capable of exhibiting a detectable and measurable color transition in response to the cation concentration of an aqueous test sample, said composition consisting essentially of:

(a) a polyvalent metal ion having a valence of at least two;

(b) a complexing agent capable of complexing with the polyvalent metal ion, said complexing agent selected from the group consisting of a polyelectrolyte, an ion exchange material, a chelating agent, and mixtures thereof;

(c) an indicator capable of interacting with the polyvalent metal ion to provide a color transition, said indicator selected for the group consisting of 1,10-phenanthroline, bathophenanthroline, 2,2'-dipyridyl, ripyridyl-s-triazine, disodium pyrocatechol-3,5-disulfonate, diemthylglyoxime, rubeanic acid, eriochrome black T, rhodizonic acid, calmagite, gallocyanine, diphenylthiocarbazone, diphenylcarbazone, potassium ferricyanide, pyrocathechol violet, 5-methyl-1,10-phenanthroline, 5-nitro-1,10-phenanthroline, 3-(4-phenyl-2-pyridyl)-5,6-diphenyl-1,2,4-triazinetrisulfonic acid trisodium slat, 3-(2-pyridyl)-5,6-diphenyl-1,2,4-triazine, 3-(2-pyridyl)-5,6-diphenyl-1,2,4-triazinedisulfonic acid disodium slat, henyl-2-pyridyl ketoxime, 4'-phenyl-2,2',2''-terpyridine, 2,2',2''-terpyridine, 4,4',4''-triphenyl-2,2',2''-terpyridine, 2,3,5,6-tetrakis (2'-pyridyl)pyrazine, 2,2'-biquinoline, bis-cyclohexanone oxaldihydrazone, 2,4-bis(5,6-diphenyl-1,2,4-triazine-3-yl)pyridine, 2,4-bis(5,6-diphenyl-1,2,4-triazin-3-yl)pyridinetetra-sulfonic acid tetrasodium salt, 4,4'-dihydroxy-2'-biquinoline, 4,7-dihydroxy-1,10-phenanthroline, 4,4'-dimethyl-2,2'-bipyridine, 2,9-dimethyl-1,10-phenanthroline, 2,9-dimethyl-4,7-diphenyl-1,10-phenanthorline, 2,9-dimethyl-4,7-diphenyl-1,10-phenanthrolinedisulfonic acid, 4,7-dimethyl-1,10-phenanthroline, 5,6-dimethyl-1,10-phenanthorline, and mixtures thereof; and

(d) a carrier comprising water, a water miscible alcohol, or a mixture thereof.

5,302,532

CHROMATOGRAPHIC SUPPORTS HAVING AN IMMOBILIZED FLOCCULATING AGENT AND THEIR USE IN IMMUNOASSAYS

Hon-Peng P. Lau, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 74,242, Jul. 16, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 337,992

Int. Cl.[5] G01N *33/544, 33/546, 33/551, 33/553*

U.S. Cl. 436—528 **19 Claims**

1. A chromatographic support for use in affinity separation and heterogeneous immunoassay consisting of:

a. a primary solid support consisting essentially of particulate resins or porous plastics, the primary solid support having a flocculating agent immobilized thereon; and

b. a secondary support consisting essentially of microparticles having ligand or binder for the ligand affixed thereon wherein said secondary support is flocculated onto the primary support.

5,302,533

ANTIBODY-ENHANCED CHEMILUMINESCENCE REACTIONS

Larry J. Kricka, Berwyn, Pa., assignor to British Technology Group Limited, London, England

Filed Apr. 10, 1992, Ser. No. 866,043

Int. Cl.[5] G01N *33/542, 33/563*; C07K *15/06*

U.S. Cl. 436—537 **15 Claims**

1. A method of increasing the light output from a chemiluminescent reaction of a dihydrophthalazinedione (DPD) with an oxidant, said DPD being substituted in its benzene ring, which method comprises the step of carrying out said reaction in the presence of at least one antibody raised against the ground state of the emitting species of the chemiluminescent reaction which antibody increases the light output of said chemiluminescent reaction, said ground state being the phthalic acid which is substituted in its benzene ring in the same manner as the DPD.

5,302,534

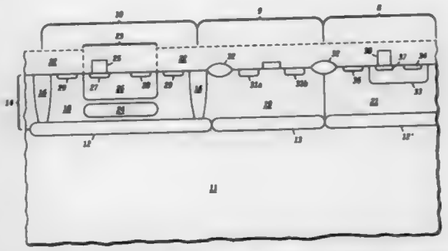
FORMING A VERTICAL PNP TRANSISTOR

David J. Monk, Gilbert; Robert H. Reuss, Scottsdale, and Jenny M. Ford, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,311

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—31 **15 Claims**



1. A method of forming a vertical PNP transistor comprising:

providing a P-type substrate;

forming an N-type region on a portion of the substrate;

covering the substrate and the N-type region with a thin P-type epitaxial layer thereby forming the N-type region into a buried layer;

implanting an N-type sinker that extends from a surface of the P-type epitaxial layer to the N-type region wherein the sinker has a donut shape for the purpose of defining a

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P-well that is a portion of the P-type epitaxial layer overlying the N-type region and surrounded by the N-type sinker;

applying a base mask to the surface, the base mask having a base opening that exposes a portion of the P-well;

forming a collector enhancement through the base opening by doping a portion of the p-well with a P-type dopant, the collector enhancement forming a low resistance conduction path that lowers a collector resistance of the vertical PNP transistor and having a first distance from the surface;

forming a base region through the base opening by doping a portion of the P-well with an N-type dopant wherein the N-type dopant extends from the surface to a second distance from the surface that is less than the first distance and wherein the base region overlays the collector enhancement;

forming an emitter within the base region;

forming a base contact that is within the base region and adjacent to the emitter; and

forming a plurality of collector contacts within a portion of the P-well external to the base region.

5,302,535

METHOD OF MANUFACTURING HIGH SPEED BIPOLAR TRANSISTOR

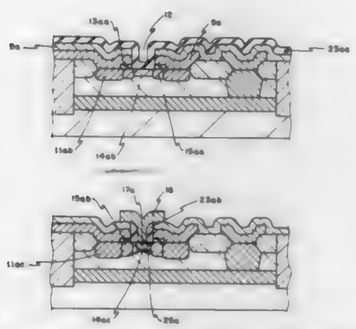
Kiyotaka Imai, and Hiroshi Hirabayashi, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Sep. 18, 1992, Ser. No. 947,257

Claims priority, application Japan, Sep. 20, 1991, 3-240692; Sep. 27, 1991, 3-248689

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—31 **11 Claims**



10. A method of manufacturing a semiconductor device including steps of:

forming a first insulating film on a major surface of a collector region of a first conductivity type, said first insulating film comprising impurities of a second conductivity type; forming a polycrystalline silicon layer covering a surface of said collector region and said first insulating film, consecutively, said polycrystalline silicon layer comprising impurities of said second conductivity type; forming an opening going through said polycrystalline silicon layer and said first insulating film, consecutively, and to expose said major surface of said collector region; forming a second insulating film at side surface of said opening, said second insulating film comprising impurities of said second conductivity type; forming an intrinsic base region, a link base region and an extrinsic base region in said collector region by diffusing impurities of said second conductivity type from said second insulating film, said first insulating film and said polycrystalline silicon layer, respectively, and forming an emitter region of said first conductivity type in said intrinsic base region.

5,302,536

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE, IN WHICH ISOLATED CONDUCTOR TRACKS ARE PROVIDED ON A SURFACE OF A SEMICONDUCTOR BODY

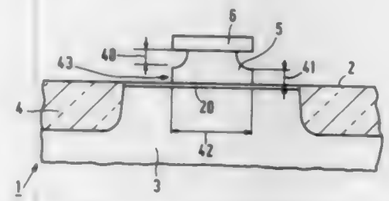
Wilhelmus J. M. J. Josquin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 374,518, Jun. 29, 1989, abandoned. This application Nov. 16, 1990, Ser. No. 617,304

Claims priority, application Netherlands, Jul. 13, 1988, 8801772

Int. Cl.[5] H01L *21/04*

U.S. Cl. 437—40 **6 Claims**



1. A method of manufacturing a semiconductor device comprising steps of

(a) depositing a conductive layer on a surface of a semiconductor body,

(b) depositing an insulating layer on said conductive layer,

(c) forming a mask on said insulating layer,

(d) etching said insulating layer about said mask to form an insulating top layer portion and to expose said conductive layer,

(e) etching said conductive layer to form a conductor track by using at least said insulating top layer portion as a second mask, said step of etching said conductive layer being initially carried out isotropically to form cavity portions in said conductive layer beneath side edges of said insulating top layer portion, and thereafter anisotropically etching said conductive layer from said cavity portions to said surface to form side edges of said conductor track parallel to said side edges of said insulating top layer portion,

(f) forming a second insulating layer over said insulating top layer portion and said side edges of the underlying said conductor track, said second insulating layer entirely filling said cavity portions with insulating material, and

(g) anisotropically etching said second insulating layer to remove said second insulating layer from said insulating top layer portion and from at least portions of said surface, said second insulating layer remaining in said cavity portions and at said side edges of said conductor track.

5,302,537

MANUFACTURING METHOD FOR A LOW VOLTAGE POWER MISFET UTILIZING ONLY THREE MASKS

Helmut Strack, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich

Filed Nov. 13, 1992, Ser. No. 976,189

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137341

The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **7 Claims**

4. A method for manufacturing a power MISFET having a semiconductor substrate that has a field of transistor cells as well as at least one field plate and at least one channel stopper, comprising the steps of:

covering the semiconductor substrate with a first oxide layer;

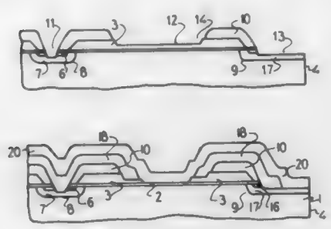
covering the first oxide layer with a polysilicon layer;

structuring the polysilicon layer with a first photostep;

producing the transistor cells and producing edge zones lying above one another for the channel stopper;

covering the semiconductor substrate with a second oxide layer;

structuring the second oxide layer such that at least an annular depression surrounding the transistor cells is produced



in the polysilicon layer between the transistor cells and the edge zones;

covering the semiconductor substrate with a metal layer;

with a third photostep, completely interrupting the metal layer and the polysilicon layer in a region of the annular depression thereby forming a surface of the MISFET; and

applying a passivation layer onto a resulting surface of the MISFET.

5,302,538

METHOD OF MANUFACTURING FIELD EFFECT TRANSISTOR

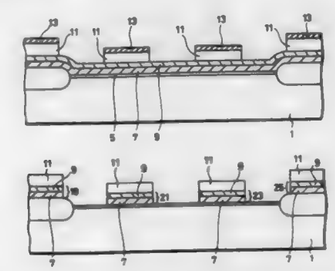
Eiichi Ishikawa; Takayuki Saito, and Shinya Watanabe, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,327

Claims priority, application Japan, Aug. 4, 1992, 4-207798

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—40 **10 Claims**



1. A method of manufacturing a field effect transistor, comprising:

a step of forming a first insulating film for serving as a gate insulating film on a major surface of a semiconductor substrate;

a step of forming a gate electrode on said first insulating film;

a step of forming a transparent second insulating film including at least either a silicon oxide film or a silicon nitride film on said conductive film;

a step of forming an opaque film including at least one film selected from a group of a polycrystalline silicon film, an amorphous silicon film, a tungsten silicide film and a titanium nitride film on said second insulating film;

a step of forming a photoresist layer on said opaque film;

a step of applying light to said photoresist layer for exposing said photoresist layer in a pattern for forming said gate electrode;

a step of selectively removing said opaque film through said photoresist layer serving as a mask;

a step of removing said photoresist layer;

a step of selectively removing said second insulating film through said opaque film serving as a mask; and

a step of selectively removing said conductive film by etching through said second insulating film serving as a mask for forming said gate electrode and simultaneously removing said opaque film being employed as said mask by said etching.

5,302,539

VLSI INTERCONNECT METHOD AND STRUCTURE

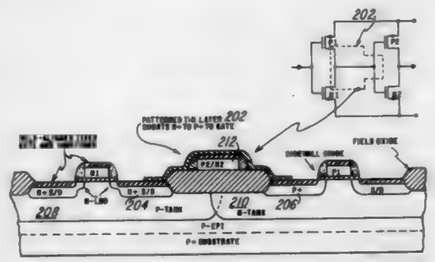
Roger A. Haken, Richardson, and Thomas C. Holloway, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 275,810, Nov. 22, 1988, abandoned, which is a division of Ser. No. 729,318, May 1, 1985, Pat. No. 4,821,085. This application May 29, 1990, Ser. No. 530,492

The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.

Int. Cl.[5] H01L *21/283, 21/336*

U.S. Cl. 437—41 **13 Claims**



1. A method for fabricating an integrated circuit at a silicon surface of a semiconductor body, comprising the steps of:

forming a device isolation structure at portions of said surface;

fabricating an insulated gate field effect transistor in said silicon surface leaving portions of said surface exposed;

depositing titanium metal over said exposed surface and said device isolation structure;

heating said body and said titanium metal in a nitrogen-bearing atmosphere, so that said titanium metal reacts with silicon of said exposed surface to form a titanium silicide thereat, and so that said titanium metal also reacts with said nitrogen atmosphere to form a layer overlying said device isolation structure which comprises titanium nitride; and

removing selected portions of said titanium nitride layer so that a remaining portion thereof provides an interconnection in contact with said titanium silicide and overlapping onto said device isolation structure.

5,302,540

METHOD OF MAKING CAPACITOR

Jaehong Ko; Sungtae Kim, both of Seoul, and Hyunbo Shin, Kyunggi, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Apr. 23, 1992, Ser. No. 872,514

Claims priority, application Rep. of Korea, Nov. 16, 1991, 91-20419

Int. Cl.[5] H01L *21/70*

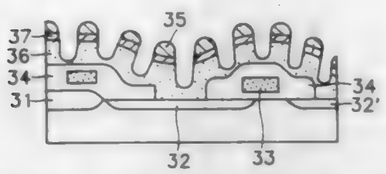
U.S. Cl. 437—47 **12 Claims**

1. A method for manufacturing a capacitor comprising the steps of

forming a first conductive layer;

VOL 1161 ISS 2 AP 12 1994 UMI

forming an oxidation impervious barrier on a surface first conductive layer;
depositing a polysilicon layer having hemispherical sections on a surface thereof onto the oxidation impervious barrier;
oxidizing the polysilicon layer to form a silicon oxide film thereon;
dry-etching the oxidation impervious barrier and silicon oxide film to expose partial sections of the first conductive layer;



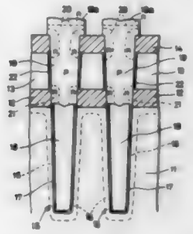
anisotropically etching the exposed sections of the first conductive layer;
thereafter removing the remainder of the oxidation impervious barrier and silicon oxide film to expose the etched surface of the first conductive layer;
then forming a dielectric film along said etched surface of the first conductive layer:
then forming a second conductive layer over the dielectric film.

5,302,541

MANUFACTURING METHOD OF A SEMICONDUCTOR DEVICE WITH A TRENCH CAPACTTOR

Moriaki Akazawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 895,158, Jun. 5, 1992, Pat. No. 5,218,218, which is a continuation of Ser. No. 647,012, Jan. 29, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,904
Claims priority, application Japan, Feb. 1, 1990, 2-23898
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **8 Claims**



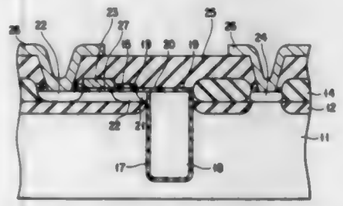
1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a first insulator layer, a first conductor layer and a second insulator layer sequentially on a semiconductor substrate;
forming a trench by making a hole penetrating said second insulator layer, said first conductor layer and said first insulator layer normally to a main surface of said semiconductor substrate and extending into said semiconductor substrate;
patterning said second insulator layer and said first conductor layer;
implanting impurities onto a side surface of said trench, to render a region on the side surface of said trench located in said semiconductor substrate conductive;
forming a dielectric film and a second conductor layer in turn on respective regions on the side surface and a bottom surface of said trench located in said semiconductor substrate;
forming a gate insulation film on the side surface of said trench at a position of said first conductor layer;
forming an active layer on a region in said trench above said semiconductor substrate; and
diffusing impurities having a second conductivity type in opposite regions formed on an outer circumference of said active layer to form a drain region and a source region.

5,302,542

METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE

Koichi Kishi, Fujisawa, and Shizuo Sawada, Urawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 5, 1993, Ser. No. 56,900
Claims priority, application Japan, May 6, 1992, 4-113377
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **3 Claims**



1. A method for making a semiconductor memory device, comprising the steps of:
selectively forming an insulating film in one surface of a first semiconductor substrate of a first conductivity type to define an exposed surface region;
bonding a second semiconductor substrate of a second conductivity type, opposite to the first conductivity type, to the surface of the first semiconductor substrate;
forming a trench in the first semiconductor substrate through both the second semiconductor substrate and the exposed surface region;
forming a dielectric film over an inner wall of the trench;
forming a conductive layer of the first conductivity type in the trench;
forming source and drain regions of the first conductivity type in the second semiconductor substrate;
forming a gate insulating film on the second semiconductor substrate; and
forming a gate electrode on the gate insulating film.

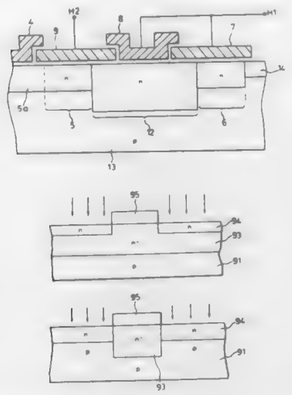
5,302,543

METHOD OF MAKING A CHARGE COUPLED DEVICE

Kiyohiko Sakakibara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 608,387, Nov. 2, 1990, Pat. No. 5,189,498. This application Nov. 25, 1992, Ser. No. 981,846
Claims priority, application Japan, Nov. 6, 1989, 1-289029; Mar. 22, 1990, 2-74024; Jun. 22, 1990, 2-153399; Jul. 31, 1990, 2-204505
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—53 **6 Claims**

1. A method of producing a charge coupled device comprising:
producing a first second conductivity type region in a first conductivity type substrate to form a pn junction at a first depth in said substrate;
producing a second second conductivity type region having a smaller impurity concentration than that of said first second conductivity type region by annealing said substrate and moving the pn junction in said substrate to a second depth deeper than the first depth;
implanting impurities producing the second conductivity type only in spaced apart regions and in adjacent parts of said second second conductivity type region to produce first and second horizontal channels in said substrate; and
implanting impurities producing the first conductivity type



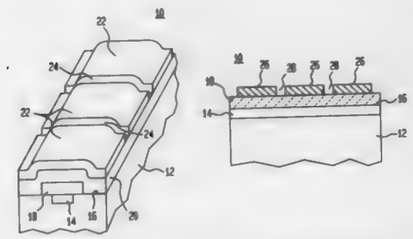
at such an implantation energy and dosage to change said second second conductivity type region opposite but not between each of said spaced apart first and second horizontal channels to first conductivity type regions and to move the pn junction in said substrate opposite said first and second horizontal channels but not between said first and second horizontal channels to a third depth intermediate the first and second depths.

5,302,544

METHOD OF MAKING CCD HAVING A SINGLE LEVEL ELECTRODE OF SINGLE CRYSTALLINE SILICON

James P. Lavine, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,220
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—53 **13 Claims**



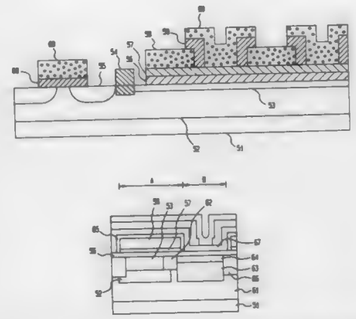
1. A method of making a CCD comprising the steps of:
forming a channel region in a body of a semiconductor material that extends to a surface of the body;
forming a layer of an insulating material on the surface of the body over the channel region which exposes at least a portion of the surface of the body;
growing a layer of single crystalline silicon on the exposed surface of the body over the insulating layer; and
removing portions of the epitaxially grown layer of single crystalline silicon so as to form separated gate electrodes located over the channel region.

5,302,545

METHOD OF MAKING CHARGE-COUPLED DEVICE AND SOLID-STATE IMAGING DEVICE HAVING AN ONO TRANSFER GATE INSULATING FILM

Hiroyuki Okada, Osaka; Wataru Kamisaka, Takatsuki; Masaji Asaumi, Takatsuki, and Yuji Matsuda, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Division of Ser. No. 797,307, Nov. 25, 1991, Pat. No. 5,241,198. This application Jun. 7, 1993, Ser. No. 73,137
Claims priority, application Japan, Nov. 26, 1990, 2-324648
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—53 **3 Claims**



1. A method of fabricating a charge-coupled device, said method comprising the steps of:
forming a first silicon oxide layer on a top surface of a semiconductor substrate, said top surface having a charge transfer region and a peripheral circuit region;
forming a silicon nitride layer on said first silicon oxide layer;
forming at least one window through said silicon nitride layer and said silicon oxide layer, said window exposing part of said peripheral circuit region;
oxidizing said part of the peripheral circuit region and a surface of said silicon nitride for forming a second silicon oxide layer on said part of the peripheral circuit region and on said silicon nitride layer, thereby forming a transfer gate insulating film including said first silicon oxide layer, said silicon nitride layer and said second silicon oxide layer; and
depositing a polysilicon film on said second silicon oxide layer, and patterning said polysilicon film into a plurality of transfer gate electrodes and at least one gate electrode, said transfer gate electrodes being over said charge transfer region and said at least one gate electrode being over said part of the peripheral circuit region.

5,302,546

PROGRAMMING OF ANTIFUSES

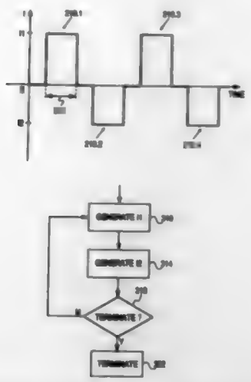
Kathryn E. Gordon, Mountain View, and Andrew K. Chan, Palo Alto, both of Calif., assignors to QuickLogic Corporation, Santa Clara, Calif.

Filed Jul. 31, 1991, Ser. No. 738,707
Int. Cl.[5] H01L *21/14, 21/306*
U.S. Cl. 437—170 **35 Claims**

1. A method of programming an antifuse, said antifuse comprising a material which is non-conductive if said antifuse is unprogrammed and which is conductive if said antifuse is programmed, said method comprising the steps of:
passing a first current through said material so as to reduce the resistance of said antifuse; and then
passing a second current through said material in the direc-

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tion opposite from the direction of said first current so as to further reduce the resistance of said antifuse;



wherein said second current is lower in magnitude than said first current.

5,302,547

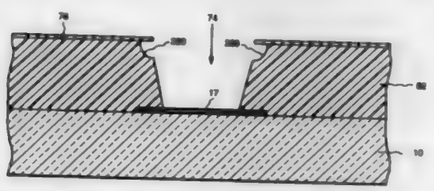
SYSTEMS FOR PATTERNING DIELECTRICS BY LASER ABLATION

Robert J. Wojnarowski, Ballston Lake; Herbert S. Cole, Burnt Hills; Richard J. Saia, Schenectady; Thomas B. Gorczyca, Schenectady, and Ernest W. Balch, Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 8, 1993, Ser. No. 14,609

Int. Cl.[5] H01L *21/283, 21/306*

U.S. Cl. 437—173 **2 Claims**



2. A method for removing a dielectric ridge formed around a via surface in a dielectric layer, comprising the steps of:

applying a hard mask over the dielectric layer;

laser dithering a via through the hard mask and the dielectric layer such that a portion of the dielectric layer is left unprotected by the mask; and

isotropically etching the unprotected portion of the dielectric layer with control to taper the dielectric ridge around the via surface; and

then removing the hard mask from the dielectric layer.

5,302,548

SEMICONDUCTOR DEVICE MANUFACTURING METHOD

Tohru Watanabe, and Katsuya Okumura, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 226,472, Aug. 1, 1988, Pat. No. 5,101,259. This application Jan. 10, 1992, Ser. No. 819,051

Claims priority, application Japan, Jul. 31, 1987, 62-192068

Int. Cl.[5] H01L *21/441, 21/324*

U.S. Cl. 437—187 **8 Claims**

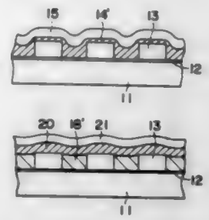
1. A method of manufacturing a semiconductor device comprising the steps of:

forming semiconductor elements on a semiconductor substrate;

forming an insulating film on said semiconductor substrate;

forming a wiring layer including aluminum as a major constituent part on said insulating film by deposition and patterning thereon;

depositing a thermoplastic heat resistant, high molecular weight organic film containing a radical with a small water absorbing property of less than 10 PPM on at lest a side surface of said wiring layer;



heating said heat resistant high molecular weight organic film at a temperature to fluidize and flatten said heat resistant high molecular weight organic film; and

depositing a protective layer of inorganic material acting as an uppermost layer of said semiconductor device, said organic film having a lower glass transition temperature than the depositing temperature range of the protective layer and a higher decomposition temperature than maximum process temperature.

5,302,549

METAL-SEMICONDUCTOR OHMIC CONTACT FORMING PROCESS

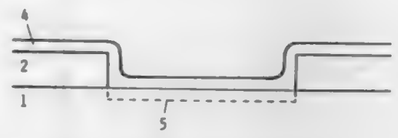
Antonello Santangelo, Belpasso CT; Carmelo Magro; Guiseppe Feria, both of Catania CT, and Paolo Lanza, Cassaro SR, all of Italy, assignors to SGS-Thompson Microelectronics S.r.l., Milan, Italy

Continuation of Ser. No. 651,622, Feb. 7, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,293

Claims priority, application European Pat. Off., Feb. 20, 1990, 90830063.5

Int. Cl.[5] H01L *21/265, 21/283, 21/324*

U.S. Cl. 437—188 **5 Claims**



1. A process for forming a metal-semiconductor ohmic contact, which comprises the successive steps of:

enriching a surface of a semiconductor on which a contact is to be formed by implanting ions of a dopant to produce a surface layer of an amorphous semiconductor material,

depositing a metal film on the implanted surface layer, and

annealing the resulting surface layer at a temperature lower than 500° C. for less than 60 minutes, to cause an epitaxial regrowth of the amorphous semiconductor material, to cause an activation of the implanted dopant, and to obtain a semiconductor layer enriched with dopant on the interface of the metal and the semiconductor.

5,302,550

METHOD OF BONDING A MICROELECTRONIC DEVICE

Jitsuho Hirota; Kazumichi Machida, both of Amagasaki; Masaaki Shimotomai, and Seizo Omae, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

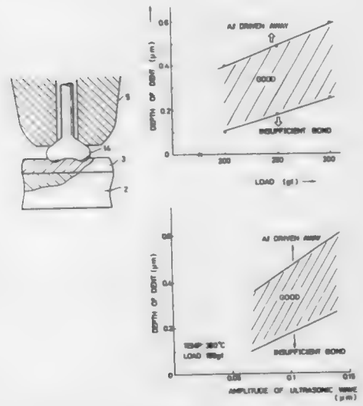
Continuation-in-part of Ser. No. 944,213, Dec. 22, 1986, which is a continuation-in-part of Ser. No. 938,515, Dec. 5, 1986. This application Apr. 13, 1988, Ser. No. 223,980

Claims priority, application Japan, Dec. 24, 1985, 60-291082; Dec. 24, 1985, 60-291084; Jan. 28, 1986, 61-17348; Jan. 28, 1986, 61-17349

The portion of the term of this patent subsequent to Oct. 12, 2008, has been disclaimed.

Int. Cl.[5] H01L *21/607*

U.S. Cl. 437—194 **15 Claims**



1. A method of manufacturing a semiconductor device having an electrode on which a bonding wire is to be bonded, comprising the steps of:

preparing a semiconductor structure having electrode film thereon;

wherein preparation of said semiconductor structure is controlled so that said electrode film has mechanical qualities such that the depth of a test indentation, which results when a ball of a material identical or similar to the material of said bonding wire is pressed against a specimen of said electrode film with a force of about 200 to 300 grams-force, is within the range of 0.1 to 0.6 microns;

said ball having a diameter of about 70 to 75 microns; and

bonding said bonding wire to said electrode film.

5,302,551

METHOD FOR PLANARIZING THE SURFACE OF AN INTEGRATED CIRCUIT OVER A METAL INTERCONNECT LAYER

Ali Iranmanesh, Sunnyvale, and John M. Pierce, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 11, 1992, Ser. No. 880,880

Int. Cl.[5] H01L *21/44*

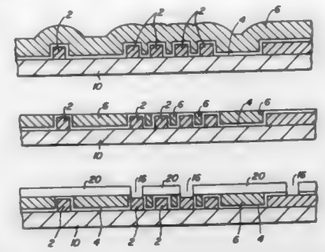
U.S. Cl. 437—195 **18 Claims**

1. A method of forming a planarized surface over an interconnect layer, said method comprising the following steps:

forming interconnect lines on a surface of a partially fabricated integrated circuit;

conformally depositing a dielectric layer over the interconnects and exposed regions of the surface of said partially fabricated integrated circuit, said dielectric layer having upper dielectric surfaces over the interconnects and lower dielectric surfaces over the partially fabricated integrated circuit;

depositing a layer of poly over said dielectric layer; and



planarizing the layer of poly to at least about the level of the upper surfaces of said dielectric layer, wherein after planarization, said layer of poly is composed of a plurality of regions separated by said interconnect lines.

5,302,552

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WHEREBY A SELF-ALIGNED COBALT OR NICKEL SILICIDE IS FORMED

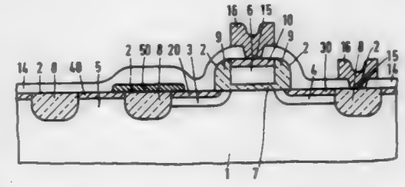
Johan P. W. B. Duchateau; Alec H. Reader, both of Eindhoven, and Gerrit J. Van Der Kolk, Maarheeze, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 840,367, Feb. 24, 1992, abandoned. This application Mar. 26, 1993, Ser. No. 38,045

Claims priority, application Netherlands, Feb. 26, 1991, 9100334

Int. Cl.[5] H01L *21/283*

U.S. Cl. 437—200 **7 Claims**



1. A method of manufacturing a semiconductor device whereby a layer comprising a metal from a group consisting of Co and Ni is deposited on a surface of a semiconductor body which is bounded by regions of silicon and regions of an insulating material, after which the semiconductor body is heated during a heat treatment to a temperature at which the Co or Ni forms a metal silicide with the silicon, but not with the insulating material, wherein the Co- or Ni- containing layer comprises an amorphous alloy of this metal and a metal from a group consisting of Ti, Zr, Ta, Mo, Nb, Hf and W and the temperature is adjusted during the heat treatment such that the layer of the amorphous alloy remains amorphous during the heat treatment, and the metal silicide is formed in a self-aligned manner only on the silicon, and not on the insulating material.

5,302,553

METHOD OF FORMING A COATED PLASTIC PACKAGE

Donald C. Abbott, Norton, Mass., and Raymond A. Frechette, N. Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 4, 1991, Ser. No. 771,720

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **8 Claims**

1. A method of packaging a semiconductor device having

lead wires extending from the package, comprising the steps of:

encapsulating the semiconductor device and a portion of the lead wires with plastic material; and



applying a coating of a ceramic material over the plastic material.

5,302,554

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

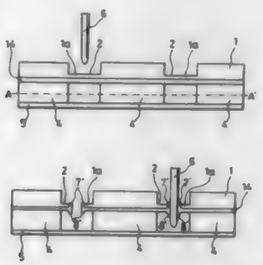
Takuo Kashiwa; Takahide Ishikawa, and Yoshihiro Notani, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 928,026

Claims priority, application Japan, Feb. 6, 1992, 4-057152

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—227 **6 Claims**



1. A method for producing semiconductor chips comprising:

forming grooves serving as dicing lines in a front surface of a semiconductor wafer;

depositing one of WSi and SiO_2 as a reinforcing layer in the grooves;

grinding said semiconductor wafer from the rear surface to a prescribed thickness, leaving portions of the wafer in place opposite the dicing lines;

forming a metallic feeding layer on the ground rear surface of the wafer;

forming a metal layer for heat radiation on said feeding layer;

applying a dicing tape to said metal layer; and

cutting through said wafer and said feeding layer along said dicing lines with a dicing blade to produce a plurality of semiconductor chips.

5,302,555

ANISOTROPIC DEPOSITION OF DIELECTRICS

Chen-Hua D. Yu, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 712,375, Jun. 10, 1991, abandoned.

This application Apr. 6, 1993, Ser. No. 42,914

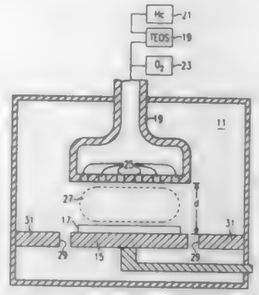
Int. Cl.[5] H01L *21/316*

U.S. Cl. 437—235 **11 Claims**

1. A method of semiconductor integrated circuit fabrication comprising:

i) establishing a baseline process for deposition of a dielectric upon a substrate in a plasma reactor from a gas mixture comprising a precursor gas and oxygen, said mixture while flowing in said reactor having a tendency to deposit said dielectric conformally at a first total gas pressure and a first oxygen/precursor ratio, and then

ii) depositing a dielectric upon at least one substrate in a plasma reactor from said gas mixture, at a second total pressure of said gas mixture and a second oxygen/precursor gas flow ratio, said second total gas pressure being less than said first total gas pressure and said second oxygen/-precursor gas flow being less than said first oxygen/-precursor gas flow, thereby forming a dielectric with anisotropic characteristics.



5,302,556

SYNTHETIC SILICA GLASS ARTICLES AND A METHOD FOR MANUFACTURING THEM

Takaaki Shimizu, and Masatoshi Takita, both of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 485,954, Feb. 27, 1990, Pat. No. 5,141,786.

This application Apr. 3, 1992, Ser. No. 862,799

Claims priority, application Japan, Feb. 28, 1989, 1-048060; Sep. 4, 1989, 1-228907

Int. Cl.[5] C03C *3/06*

U.S. Cl. 501—12 **5 Claims**

1. A glass article consisting essentially of a synthetic silica glass having a viscosity of not lower than 10^{10} poise at 1400° C., and an impurity content within the following ranges:

Al, no more than 1 ppm;
Fe, no more than 0.2 ppm;
Na, no more than 0.2 ppm;
K, no more than 0.2 ppm;
Li, no more than 0.01 ppm;
Ca, no more than 0.2 ppm;
Ti, no more than 0.02 ppm;
B, no more than 0.01 ppm;
P, no more than 0.01 ppm; and
As, no more than 0.01 ppm.

5,302,557

AUTOMOTIVE GLASS THICK FILM CONDUCTOR PASTE

Alan F. Carroll, Raleigh, N.C., and Hideaki Kuno, Kanagawa, Japan, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 3, 1991, Ser. No. 801,918

Int. Cl.[5] C03C *8/22*

U.S. Cl. 501—19 **2 Claims**

1. A thick film paste composition for applying conductive patterns to automotive window glass comprising finely divided particles of (a) metallic silver, (b) glass frit being a mixture of high and low melting glasses having melting points which differ by at least 100° C. and having softening points of 350°–620° C. containing 0.1–2.0% wt., basis paste, of at least one oxide of a transition metal having an atomic number of 22–28, with the provisos (1) that the valence of the transition metal in the oxide is higher than 2+, and (2) that when the transition metal oxide in the glass frit is Mn, at least 0.2% wt. is used, and (c) 0–10% wt., basis paste, of an oxide of a transition metal selected from Ti, V, Mn, Fe, Co, Ni and mixtures thereof, all of (a), (b), and (c) being dispersed in (d) an organic medium.

5,302,558

POROUS SEPIOLITE, PROCESS FOR PRODUCING SAME AND ADSORPTIVE DECOMPOSITION CATALYST COMPOSITION UTILIZING SUCH POROUS SEPIOLITE

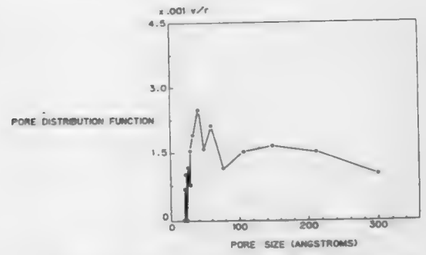
Norio Inoue, Kanagawa; Eiki Iida, Tokyo; Makoto Sakura, Kanagawa; Hideyuki Yunoki, Kanagawa; Koji Hara, Kanagawa; Yoshiki Nakano, Kanagawa, and Takashi Aihara, Kanagawa, all of Japan, assignors to Nikki-Universal Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,192

Claims priority, application Japan, Jun. 27, 1990, 2-169330; Aug. 3, 1990, 2-206481

Int. Cl.[5] C04B *38/00*

U.S. Cl. 501—80 **3 Claims**



1. A water-resisting, hard, porous metasepiolite wherein the pores having a pore diameter of 50 angstroms or less have a specific surface area in the range of from 40 to 200 m^2/g and in which no less than 20% of the total surface of said metasepiolite is occupied with the pores having a pore diameter of 50 angstroms or less and wherein the pore distribution curve of said metasepiolite has a main peak at a pore diameter of no more than 50 angstroms.

5,302,559

MIXED CRYSTALS OF DOPED RARE EARTH GALLIUM GARNET

Dieter Mateika, Ellerbek; Erich Volkel, Hamburg, both of Fed. Rep. of Germany, and Jan Haisma, Valkenswaard, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

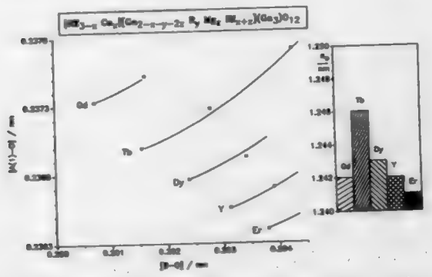
Continuation of Ser. No. 480,693, Feb. 14, 1992, abandoned.

This application Jun. 2, 1992, Ser. No. 896,489

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3904868

Int. Cl.[5] C04B *35/60, 35/00*

U.S. Cl. 501—86 **11 Claims**



1. A homogeneous mixed crystal, grown from melts of oxidic multi-component systems, comprising dodecahedral lattice sites and octahedral lattice sites wherein the bond length ratio of dodecahedral cations to oxygen to that of octahedral cation to oxygen is in the range from 0.7–1.5 and having a composition of the formula

$$\{RE_{3-x}Ca_x\}[Ga_{2-x-y-2z}R_yMg_zHf_{x+z}](Ga_3)O_{12}$$

wherein

RE=a cation selected from the group consisting of Tb^{3+}, Dy^{3+}, Ho^{3+} and Er^{3+}

R=In and/or RE and

$0 \leqq x \leqq 0.55$

$0.01 \leqq y \leqq 0.28$

$0 \leqq z \leqq 0.55$

$0.15 \leqq x+z \leqq 0.60$.

5,302,560

PROCESS FOR THE PRODUCTION OF MAGNETIC HEAD SLIDERS

Toshiaki Wada, Takatsuki; Yoshiaki Katsuyama, Muro; Mitsuhiko Furukawa; Takashi Kitahira, both of Fukuoka; Michito Miyahara, Nakagawa; Kiyohito Misumi, Kurume, and Masaharu Shiroyama, Fukuoka, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka and Nippon Tungsten Co., Ltd., Fukuoka, both of Japan

Continuation of Ser. No. 367,123, Jun. 16, 1989, abandoned, which is a division of Ser. No. 155,851, Feb. 16, 1988, Pat. No. 4,859,638, which is a continuation of Ser. No. 727,756, Apr. 26, 1985, abandoned. This application Jan. 8, 1992, Ser. No. 817,976

Claims priority, application Japan, Apr. 27, 1984, 59-83674

The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—88 **34 Claims**

1. A process for the production of a sintered material for recording/reading head slider comprising the steps of:

preparing a powdery mixture which comprises 0.5 to 6.0% by weight of at least one component selected from the component group A consisting of Ti, V, Cr, Mn, Mg, Y, Zr, Nb, Mo, Ba, La, Ce, Gd, Hf, Ta, W, Th, and Cs and compounds thereof, 5 to 15% of erbium oxide, and the balance being silicon carbide powder, wherein said erbium oxide and said component group A are uniformly dispersed through said silicon carbide powder;

forming a substantially micropore-free, highly densified sintered material by sintering the powder mixture.

5,302,561

MONOLITHIC, FULLY DENSE SILICON CARBIDE MIRROR AND METHOD OF MANUFACTURING

Andre Ezis, Vista, Calif., assignor to Cercom, Inc., Vista, Calif.

Filed Mar. 11, 1993, Ser. No. 29,713

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—89 **5 Claims**



1. A monolithic alpha-type silicon carbide finished material, which may be provided with a polished optical surface, made

VOL 1161 ISS 2 AP 12 1994 UMI

is used, and (c) 0–10% wt., basis paste, of an oxide of a transition metal selected from Ti, V, Mn, Fe, Co, Ni and mixtures thereof, all of (a), (b), and (c) being dispersed in (d) an organic medium.

5,302,558

POROUS SEPIOLITE, PROCESS FOR PRODUCING SAME AND ADSORPTIVE DECOMPOSITION CATALYST COMPOSITION UTILIZING SUCH POROUS SEPIOLITE

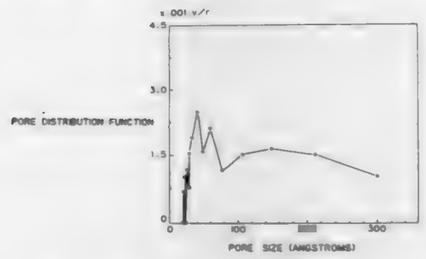
Norio Inoue, Kanagawa; Eiki Iida, Tokyo; Makoto Sakura, Kanagawa; Hideyuki Yunoki, Kanagawa; Koji Hara, Kanagawa; Yoshiki Nakano, Kanagawa, and Takashi Aihara, Kanagawa, all of Japan, assignors to Nikki-Universal Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,192

Claims priority, application Japan, Jun. 27, 1990, 2-169330; Aug. 3, 1990, 2-206481

Int. Cl.[5] C04B *38/00*

U.S. Cl. 501—80 **3 Claims**



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5,302,559

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Dieter Mateika, Elberbek; Erich Volkel, Hamburg, both of Fed. Rep. of Germany, and Jan Haisma, Valkenswaard, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

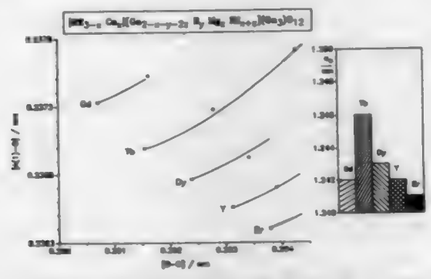
Continuation of Ser. No. 480,693, Feb. 14, 1992, abandoned.

This application Jun. 2, 1992, Ser. No. 896,489

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3904868

Int. Cl.[5] C04B *35/60, 35/00*

U.S. Cl. 501—86 **11 Claims**



1. A homogeneous mixed crystal, grown from melts of oxidic multi-component systems, comprising dodecahedral lattice sites and octahedral lattice sites wherein the bond length ratio of dodecahedral cations to oxygen to that of octahedral cation to oxygen is in the range from 0.7–1.5 and having a composition of the formula

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wherein

RE=a cation selected from the group consisting of Tb^{3+}, Dy^{3+}, Ho^{3+} and Er^{3+}

R=In and/or RE and

$0 \leq x \leq 0.55$

$0.01 \leq y \leq 0.28$

$0 \leq z \leq 0.55$

$0.15 \leq x+z \leq 0.60$.

5,302,560

PROCESS FOR THE PRODUCTION OF MAGNETIC HEAD SLIDERS

Toshiaki Wada, Takatsuki; Yoshiaki Katsuyama, Muro; Mitsuhiko Furukawa; Takashi Kitahira, both of Fukuoka; Michito Miyahara, Nakagawa; Kiyohito Misumi, Kurume, and Masaharu Shiroyama, Fukuoka, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka and Nippon Tungsten Co., Ltd., Fukuoka, both of Japan

Continuation of Ser. No. 367,123, Jun. 16, 1989, abandoned, which is a division of Ser. No. 155,851, Feb. 16, 1988, Pat. No. 4,859,636, which is a continuation of Ser. No. 727,756, Apr. 26, 1985, abandoned. This application Jan. 8, 1992, Ser. No. 817,976

Claims priority, application Japan, Apr. 27, 1984, 59-83674

The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—88 **34 Claims**

1. A process for the production of a sintered material for recording/reading head slider comprising the steps of:

preparing a powdery mixture which comprises 0.5 to 6.0% by weight of at least one component selected from the component group A consisting of Ti, V, Cr, Mn, Mg, Y, Zr, Nb, Mo, Ba, La, Ce, Gd, Hf, Ta, W, Th, and Cs and compounds thereof, 5 to 15% of erbium oxide, and the balance being silicon carbide powder, wherein said erbium oxide and said component group A are uniformly dispersed through said silicon carbide powder;

forming a substantially micropore-free, highly densified sintered material by sintering the powder mixture.

5,302,561

MONOLITHIC, FULLY DENSE SILICON CARBIDE MIRROR AND METHOD OF MANUFACTURING

Andre Exis, Vista, Calif., assignor to Cercom, Inc., Vista, Calif.

Filed Mar. 11, 1993, Ser. No. 29,713

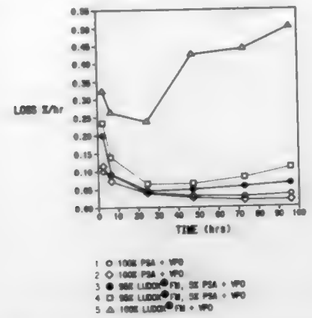
Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—89 **5 Claims**



1. A monolithic alpha-type silicon carbide finished material, which may be provided with a polished optical surface, made

by weight of the total weight of the particles and oxide rich surface layer;



B) spray drying the slurry from step A) to form porous microspheres; and

C) calcining and activating the spray dried microspheres.

5,302,567

ZEOLITE OCTANE ADDITIVE

James G. Miller, Ellicott City, and Robert R. Gatte, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,170

Int. Cl.[5] B01J *29/06*

U.S. Cl. 502—67 **12 Claims**

1. In an FCC catalyst for the catalytic cracking of hydrocarbons wherein said catalyst comprises a conventional cracking catalyst dispersed in an inorganic matrix and a zeolite additive composition comprising a medium-pore zeolite selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-23, ZSM-35, and ZSM-38 with a Constraint Index from about 1 to about 12 and a silica to alumina mole ratio greater than about 12, the improvement comprising exchanging the zeolite additive with cations selected from one or more elements of Group IA, Group IIA or Group IIIA excluding rare earths of the Periodic Table to improve the octane number of the gasoline-range product of an FCC process while reducing the yield loss typically observed for such octane-enhancing additives.

5,302,568

HYDROGENATION CATALYST AND PRODUCTION PROCESS THEREOF

Morio Matsuda, and Masamitsu Horio, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,378

Claims priority, application Japan, Oct. 9, 1991, 3-261768

Int. Cl.[5] B01J *23/78, 23/72, 23/74, 37/03*

U.S. Cl. 502—331 **9 Claims**

1. A hydrogenation catalyst comprising copper-iron-aluminum-an alkali metal and/or an alkaline earth metal or copper-iron-aluminum-an alkali metal and/or an alkaline earth metal-zinc as an active ingredient, said active ingredient being precipitated on a carrier in a catalytically effective amount, wherein said carrier of said catalyst comprises at least one compound selected from oxides and hydroxides of aluminum, silicon, titanium, zirconium, magnesium or iron, zeolites or silica-alumina, and said catalyst has an atomic ratio, the atomic ratio being based on the active ingredient, of Cu/Fe/Al/(an active metal and/or an alkaline earth metal)/Zn=1/0.4 to 2.5/0.1 to 5.0/0.001 to 0.4/0 to 1.0; wherein the ratio is based on both the active ingredient and the carrier when the carrier comprises an aluminum atom-containing substance.

5,302,569

COPPER/ZINC OXIDE/ALUMINUM OXIDE-CONTAINING CATALYSTS

Gerhard Horn, Oberhausen, and Carl D. Frohning, Wesel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,019

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127318

Int. Cl.[5] B01J *23/72, 23/80, 37/03, 21/04*

U.S. Cl. 502—342 **24 Claims**

1. A catalyst containing, per 100 parts by weight of CuO, 40 to 130 parts by weight of ZnO, and 2 to 50 parts by weight of Al_2O_3, said catalyst having a total BET surface area of 80 to 175 m^2/g, 75% to 95% of said total BET surface area consisting of pores having a radius $r_p \leqq 15$ mn.

5,302,570

ENVIRONMENTAL PRODUCT CAPABLE OF ABSORBING OIL FROM THE SURFACE OF WATER, AND PROCESS

Harold C. Newman, Fallon, Nev., assignor to Enviro-Clean Alaska, Inc., Portland, Oreg.

Filed Nov. 2, 1992, Ser. No. 970,938

Int. Cl.[5] B01J *20/22, 20/32*

U.S. Cl. 502—401 **8 Claims**

1. An environmental particulate product capable of spreading on the surface of a body of water and capable of absorbing an oil film floating on the surface of the water, comprising:

a siliceous particulate material that has been treated at room temperature with silicone in liquid form thinned with a volatile thinner, said silicone upon evaporation of said liquid thinner therefrom and upon treating said particulate material therewith producing a coating and impregnation of said particulate material that renders the particulate material highly hydrophobic, buoyant, and capable of absorbing oil.

2. The product of claim 1 wherein said siliceous particulate material comprises diatomaceous earth.

5,302,571

CRYSTALS OF FLUORAN COMPOUND, CRYSTALLINE SOLVATES THEREOF, PROCESS FOR THEIR PREPARATION AND RECORDING MATERIAL COMPRISING SAID CRYSTAL OR SAID SOLVATE

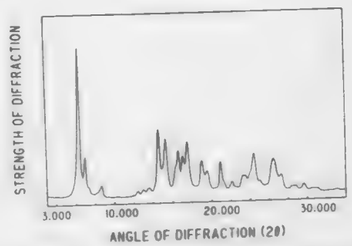
Atsuo Otsuji; Masakatsu Nakatsuka; Kiyoharu Hasegawa; Kazuyoshi Kikkawa, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 729,299, Jul. 12, 1991, Pat. No. 5,245,049. This application Jun. 14, 1993, Ser. No. 75,935

Claims priority, application Japan, Jul. 12, 1990, 2-182641; Oct. 2, 1990, 2-263040; Feb. 26, 1991, 3-30956

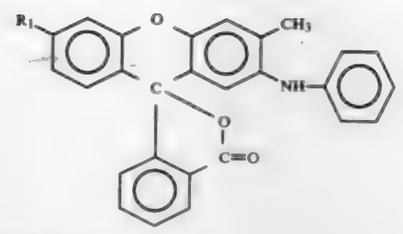
Int. Cl.[5] B41M *5/145, 5/30*

U.S. Cl. 503—221 **11 Claims**



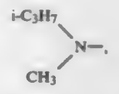
1. A recording material comprising a support having at least one layer thereon containing crystal of the fluoran compound of the formula (I):

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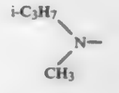
(I)

wherein R_1 in the formula (I) is:



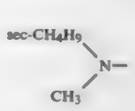
(1)

and the crystal has an X-ray diffraction diagram having a high peak at a diffraction angle (2θ) of 6.4° in X-ray diffraction analysis by the Cu-Kα beam,



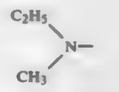
(2)

and the crystal has an X-ray diffraction diagram having high peaks at diffraction angles (2θ) of 20.3° and 20.5° in X-ray diffraction analysis by the Cu-Kα beam,



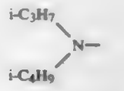
(3)

and the crystal has an X-ray diffraction diagram having high peaks at diffraction angles (2θ) of 7.1°, 18.5°, 20.0°, 20.5° and 21.4° in X-ray diffraction analysis by the Cu-Kα beam,



(4)

and the crystal has an X-ray diffraction diagram having high peaks at diffraction angles (2θ) of 16.5° and 20.4° and relatively high peaks at 11.9°, 17.8°, 18.3°, 19.2° and 20.0° in X-ray diffraction analysis by the Cu-Kα beam, or



(5)

and the crystal has an X-ray diffraction diagram having high peaks at diffraction angles (2θ) of 16.3° and relatively high peaks at 19.7°, 20.1° and 21.4° in X-ray diffraction analysis by the Cu-Kα beam.

5,302,572

MULTILAYER IMAGE RECEIVING MATERIAL FOR THERMAL DYE TRANSFER AND PROCESS FOR PRODUCING SAME

Reiner Anthonsen, Bramsche; Wieland Sack, Bessendorf; Dieter Becker, Georgsmarienhutte; Jurgen Graumann, Wallenhorst, and Manuela Hesse, Melle, all of Fed. Rep. of Germany, assignors to Felix Schoeller, Jr. and Papierfabrik GmbH & Co., AG, Osnabruck, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 877,992

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116994

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **21 Claims**

1. An image receiving material for dye diffusion thermal transfer comprising a carrier material, an intermediate layer and an image receiving layer, said intermediate layer comprising a crosslinked material, said image receiving layer consisting essentially of an uncrosslinked material, and wherein both of said layers are formed without the use of organic solvents.

5,302,573

TRANSFER SHEET FOR SUBLIMATION RECORDING

Tsukasa Ohyama; Yasushi Shimokawa; Keisuke Takuma, all of Ohmuta; Isamu Ghoda, Kobe; Hitoshi Koshida, Nishinomiya, and Akitoshi Igata, Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

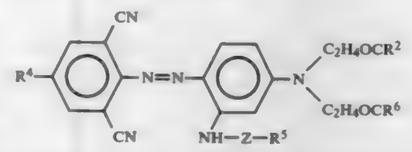
Division of Ser. No. 766,193, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 721,340, Jul. 1, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,426

Claims priority, application Japan, Dec. 28, 1988, 63-328899; Mar. 28, 1990, 2-076572

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **10 Claims**

1. A transfer sheet adapted for sublimation heat transfer recording which comprises a substrate and an ink layer containing at least one dyestuff which is coated onto one side of the substrate, wherein the ink layer contains a magenta dyestuff represented by the formula



wherein R^2 is an alkyl group, an aryl group or a halogenoalkyl group R^4, R^5 and R^6 are independently an alkyl group having 1 to 8 carbon atoms which may be branched, and Z is —CO— or —SO_2—.

5,302,574

THERMAL DYE TRANSFER RECEIVING ELEMENT WITH POLYESTER/POLYCARBONATE BLENDED DYE IMAGE-RECEIVING LAYER

Kristine B. Lawrence, and Robert C. Daly, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,449

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **20 Claims**

17. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer and transferring a dye image to a dye-receiving element to form said dye transfer image, said dye-receiving element comprising a support having thereon a dye image-receiving layer, wherein the dye image-receiving layer comprises a miscible blend of an unmodified bisphenol-A polycarbonate having a number molecular weight of at least about 25,000 and a polyester comprising recurring dibasic acid derived units and diol derived units, at least 50 mole % of the dibasic acid derived units comprising dicarboxylic acid derived units containing an alicyclic ring, within two carbon atoms of each carboxyl group of said corresponding dicarboxylic acid, and at least 30 mole % of the diol derived units containing an aromatic ring not immediately adjacent to each hydroxyl group of said diol or an alicyclic ring.

5,302,575

IMAGE RECEIVING MEDIUM FOR USE WITH SUBLIMATION TYPE THERMAL IMAGE TRANSFER RECORDING MEDIUM

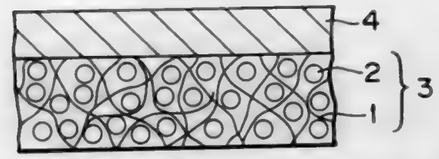
Chiharu Nogawa, Shizuoka; Naoya Moroboshi, Numazu; Hiroyuki Uemura, Numazushi; Hidehiro Mochizuki, Numazu; Hiroki Kuboyama, Mishima, and Yutaka Ariga, Fuji, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 240

Claims priority, application Japan, Jan. 8, 1992, 4-019587; Aug. 10, 1992, 4-234322; Nov. 25, 1992, 4-339816

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **29 Claims**



1. An image receiving medium for use in combination with a sublimation type thermal image transfer recording medium comprising a sublimation dye containing image transfer layer, said image receiving medium comprising:

(a) a substrate comprising a sheet made of a fibrous material and a polymeric material in the form of particles or a porous resin, said polymeric material or said porous resin being located in the interstices within said fibrous material; and

(b) a dye receiving layer formed on said substrate.

5,302,576

IMAGE-RECEIVING PAPER FOR THERMAL TRANSFER RECORDING SYSTEM AND METHOD OF PRODUCING IT

Tomofumi Tokiyoshi; Yoshitaka Okumura; Yuichiro Hayashi; Hiromasa Kondo, and Hiromichi Yasuda, all of Amagasaki, Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,563

Claims priority, application Japan, Jan. 31, 1992, 4-016002; Feb. 27, 1992, 4-041562

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **5 Claims**

1. An image-receiving paper for a thermal transfer recording system comprising a paper substrate and an image-receiving layer thereon, said image-receiving layer being formed by coating or saturating said paper substrate with an aqueous coating composition, wherein said paper substrate contains a porous pigment in an amount of 6 to 20% by weight, said pigment having an apparent specific gravity of 0.10 to 0.50 g/cm^3; and wherein the initial angle of contact of the surface of said paper substrate with water is 75° to 120°.

5,302,577

TRANSFER OF ANTHRAQUINONE DYES

Ruediger Sens; Thomas Werner, both of Mannheim, and Karl-Heinz Etzbach, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

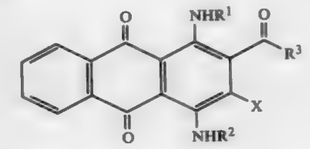
Filed Mar. 29, 1993, Ser. No. 38,867

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214175

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **4 Claims**

1. A method for thermal transfer printing which comprises the steps of transferring an anthraquinone dye from a transfer to a plastic-coated substrate with the aid of a heat pulse, wherein said transfer comprises one or more dyes of the formula I



I

where

X is hydrogen or cyano,

R^1, R^2 and R^3 independently of one another are each hydrogen, alkyl, alkanoyloxyalkyl, alkoxycarbonyloxyalkyl or alkoxycarbonylalkyl, each of which may be of up to 20 carbon atoms and may be substituted by halogen, hydroxyl or cyano, phenyl or benzyl, each of which may be substituted by C_1–C_{15}-alkyl or C_1–C_{15}-alkoxy or

a radical of the formula II

$$[—W—O]_n—R^4 \qquad \text{II}$$

where

the radicals W are identical or different C_2–C_6-alkylene radicals,

n is from 1 to 6 and

R^4 is C_1–C_4-alkyl or unsubstituted or C_1–C_4-alkyl-substituted or C_1–C_4-alkoxy-substituted phenyl.

5,302,578

STREPTOMYCES NCIMB 40277 ACTIVE IN THE BIOSTIMULATION OF AGRICULTURAL PRODUCTION

Ernesto Signorini; Giorgio Pirali, both of Varese; Mario Ferri, Novara, and Sergio Quaroni, Pavia, all of Italy, assignors to Ministero Dell 'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

Continuation of Ser. No. 683,644, Apr. 11, 1991. This application Aug. 6, 1993, Ser. No. 103,166

Claims priority, application Italy, Apr. 12, 1990, 20014A/90

Int. Cl.[5] A01N *63/04*

U.S. Cl. 504—117 **2 Claims**

1. Biostimulating composition for agrarian cultivations wherein the active principle is constituted by an effective amount of spores and/or cells of vegetative mycelium of Streptomyces NCIMB 40277, and comprises either solid or liquid vehicles, and other conventional additives.

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5,302,579

HERBICIDE AND METOD USING ADDUCT OF GLYPHOSATE, SULFURIC ACID AND CHALCOGEN COMPOUND

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 306,529, Feb. 3, 1989, Pat. No. 5,116,401, which is a continuation of Ser. No. 890,076, Jul. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 771,260, Aug. 30, 1985, abandoned, and a continuation-in-part of Ser. No. 673,358, Nov. 20, 1984, Pat. No. 4,664,717, and a continuation-in-part of Ser. No. 442,296, Nov. 17, 1982, abandoned, and a continuation-in-part of Ser. No. 444,667, Nov. 26, 1982, abandoned, and a continuation-in-part of Ser. No. 453,496, Dec. 27, 1982, Pat. No. 4,910,179, which is a continuation-in-part of Ser. No. 331,001, Dec. 15, 1981, Pat. No. 4,402,852, which is a continuation-in-part of Ser. No. 330,904, Dec. 15, 1981, Pat. No. 4,404,116, and a continuation-in-part of Ser. No. 318,629, Nov. 5, 1981, Pat. No. 4,445,925, and a continuation-in-part of Ser. No. 318,368, Nov. 5, 1981, Pat. No. 4,447,253, and a continuation-in-part of Ser. No. 318,343, Nov. 5, 1981, Pat. No. 4,397,675. This application Apr. 28, 1992, Ser. No. 876,732

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Int. Cl.[5] A01N *57/12, 37/16, 37/18*

U.S. Cl. 504—206 60 Claims

1. A herbicidal composition comprising an adduct of glyphosate, sulfuric acid, and a chalcogen compound of the formula $R_1—CX—R_2$, wherein X is selected from oxygen and sulfur, R_1 and R_2 are independently selected from hydrogen, monovalent organic radicals, NR_3R_4 and NR_5, at least one of R_1 and R_2 being NR_3R_4 or NR_5, R_3 and R_4 are independently selected from hydrogen and monovalent organic radicals, and R_5 is a divalent organic radical.

5,302,580

OXIDE SUPERCONDUCTOR LAMINATION

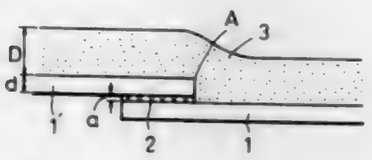
Hideki Shimizu, Nagoya; Takeyoshi Togashi, Okazaki; Hitoshi Higuchi; Toshio Oda, both of Nagoya, and Hitoshi Yoshida, Okazaki, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 13, 1991, Ser. No. 668,842

Claims priority, application Japan, Mar. 14, 1990, 2-63406; Mar. 14, 1990, 2-63407; Mar. 26, 1990, 2-76253

Int. Cl.[5] H01B *12/00;* B32B *15/00*

U.S. Cl. 505—233 5 Claims



1. An oxide superconductor lamination member comprising a base, precious metal plates and an oxide superconductor layer, said precious metal plates and said oxide superconductor layer being successively laminated on said base, end portions of said precious metal plates being connected by an adhesive so as to form a lap joint, wherein a relationship: $D/(d+a) \geq 1.5$ is satisfied where D is a thickness of said oxide superconductor layer not directly over the lap joint, d is a thickness of a portion of the lap joint of said precious metal plates adjacent to the oxide superconductor layer, and a is a thickness of said adhesive layer.

5,302,581

PULMONARY SURFACTANT PROTEIN FRAGMENTS

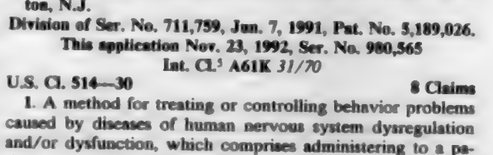
Virender K. Sarin, Libertyville; Jack L. Fox, Lake Bluff; Shanker L. Gupta, Vernon Hills, all of Ill., and Darryl R. Absolom, Columbus, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 397,151, Aug. 22, 1989, Pat. No. 5,238,920. This application Jan. 22, 1992, Ser. No. 826,323

Int. Cl.[5] A61K *37/02;* C07K *7/08, 7/10*

U.S. Cl. 514—12 18 Claims

1. A composition of matter which comprises a fragment of the SP-B protein which exhibits surfactant activity when admixed with lipids in a weight ratio of said peptide to said lipid of not less than 1:5,000, said SP-B fragment consisting essentially of the amino acid sequence:



5,302,582

ENKASTINS: NEW GLYCOPEPTIDES WHICH ACT TO INHIBIT ENKEPHLINASE, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS PHARMACEUTICAL PRODUCTS

László Vértesy, Eppstein/Taunus; Peter Schindler, Mörfelden-Walldorf; Herbert Kogler, Kelkheim; Hans-Wolfram Fehlhaber, Idstein/Taunus, all of Fed. Rep. of Germany, and Francoise Delevallée, Fontenay-sous-bois, France, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 185,028, Apr. 22, 1988, abandoned. This application Jul. 5, 1991, Ser. No. 727,388

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1987, 3713873; Nov. 20, 1987, 3739376

Int. Cl.[5] C07H *7/02;* A61K *31/70*

U.S. Cl. 514—23 5 Claims

1. A compound of the formula I

in which

Sacch denotes fructosyl or 1-deoxyfructopyranos-1-yl;

A denotes Ile, Phe, Leu, Val, Gly, Cys, Ala or Hhp, wherein each residue is in the L or D form or—where B is absent—each of the preceding residues is in the D form;

B is absent or denotes Asp, Aax, Glu or Ser, wherein each residue is in the L- or D-form; and

R denotes hydroxyl;

with the exception of N-(1-deoxy-β-D-fructopyranos-1-yl)Gly-Ser-OH and the physiologically tolerated salts thereof.

5,302,583

TREATMENT OF HUMAN DISEASES INVOLVING DYSREGULATION OR DYSFUNCTION OF THE NERVOUS SYSTEM

Jonathan L. Costa, Wheaton, Ill., and Jesus A. Diazgranados, Cali, Colombia, assignors to Fractal Laboratories, Inc., Newton, N.J.

Division of Ser. No. 711,759, Jun. 7, 1991, Pat. No. 5,189,026. This application Nov. 23, 1992, Ser. No. 980,565

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—30 8 Claims

1. A method for treating or controlling behavior problems caused by diseases of human nervous system dysregulation and/or dysfunction, which comprises administering to a patient in need of such treating or controlling an effective amount of a compound of the avermectin family.

5,302,584

CARBAMATES OF RAPAMYCIN

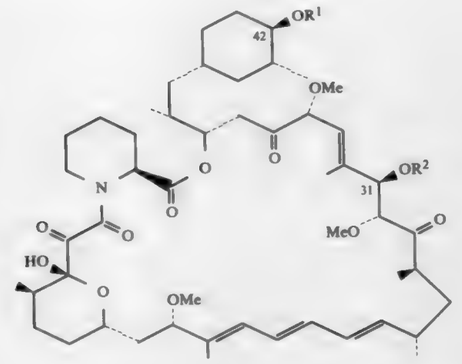
Wenling Kao, Paoli; Magid A. Abou-Gharbia, Glen Mills, both of Pa., and Robert L. Vogel, Stratford, N.J., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 960,597, Oct. 13, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 54,655

Int. Cl.[5] C07D *491/06;* A61K *31/675, 31/395*

U.S. Cl. 514—80 33 Claims

1. A compound having the structure



wherein

R^1 and R^2 are each, independently, hydrogen, or —CONH—$[(CR^3R^4)_m(—A—(CR^5R^6)_n)_p]_q$—B;

R^3, R^4, R^5, and R^6 are each, independently, alkyl of 1–6 carbon atoms, phenylalkyl of 7–10 carbon atoms, piperazinylalkyl of 7–10 carbon atoms, piperidinylalkyl of 7–10 carbon atoms, pyridylalkyl of 7–10 carbon atoms, cycloalkyl of 3–8 carbon atoms, —OR^7, —SR^7, halogen, —CN, —NO_2, —CF_3, —COR_7, —$CONH_2$, —SO_2R_7, —OSO_3R^7, —NR^7R^8, —$NHCOR^7$, —$NHSO_2R^8$, or Ar;

B is hydroxy, —SR^7, —CN, —COR_7, —$CONH_2$, —OSO_3R^7, —NR^7R^8, —$NHCOR^7$, —$NHSO_2R^8$, or Ar;

A is —CH_2—, —NR^7—, —O—, —S—, —PR^7—, or —P(O)(R^7)—;

R^7 and R^8 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, phenylalkyl of 7–10 carbon atoms, piperazinylalkyl of 7–10 carbon atoms, piperidinylalkyl of 7–10 carbon atoms, pyridylalkyl of 7–10 carbon atoms, or Ar;

Ar is naphthyl, pyridyl, quinolyl, isoquinolyl, quinoxalyl, thienyl, thionaphthyl, furyl, benzofuryl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, or benzodioxolyl; wherein the Ar group may be optionally mono-, di-, or tri- substituted with a group selected from alkyl of 1–6 carbon atoms, phenylalkyl of 7–10 carbon atoms, piperazinylalkyl of 7–10 carbon atoms, piperidinylalkyl of 7–10 carbon atoms, pyridylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

with the proviso that R^1 and R^2 are not both hydrogen;

m=0–6;

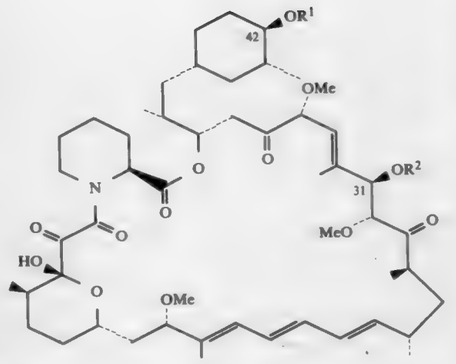
n=0–6;

p=0–1;

q=0–1;

or a pharmaceutically acceptable salt thereof.

28. A method of inducing immunosuppression by administering an immunosuppressive amount of a compound having the structure



wherein

R^1 and R^2 are each, independently, hydrogen, or —CONH—$[(CR^3R^4)_m(—A—(CR^5R^6)_n)_p]_q$—B;

R^3, R^4, R^5, and R^6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, phenylalkyl of 7–10 carbon atoms, piperazinylalkyl of 7–10 carbon atoms, piperidinylalkyl of 7–10 carbon atoms, pyridylalkyl of 7–10 carbon atoms, cycloalkyl of 3–8 carbon atoms, —OR^7, —SR^7, halogen, —CN, —NO_2, —CF_3, —COR_7, —$CONH_2$, —SO_2R_7, —OSO_3R^7, —NR^7R^8, —$NHCOR^7$, —$NHSO_2R^8$, or Ar;

B is hydroxy, —SR^7, —CN, —COR_7, —$CONH_2$, —OSO_3R^7, —NR^7R^8, —$NHCOR^7$, —$NHSO_2R^8$, or Ar;

A is —CH_2—, —NR^7—, —O—, —S—, —PR^7—, or —P(O)(R^7)—;

R^7 and R^8 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, phenylalkyl of 7–10 carbon atoms, piperazinylalkyl of 7–10 carbon atoms, piperidinylalkyl of 7–10 carbon atoms, pyridylalkyl of 7–10 carbon atoms, or Ar;

Ar is naphthyl, pyridyl, quinolyl, isoquinolyl, quinoxalyl, thienyl, thionaphthyl, furyl, benzofuryl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, or benzodioxolyl; wherein the Ar group may be optionally mono-, di-, or tri- substituted with a group selected from alkyl of 1–6 carbon atoms, phenylalkyl of 7–10 carbon atoms, piperazinylalkyl of 7–10 carbon atoms, piperidinylalkyl of 7–10 carbon atoms, pyridylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

with the proviso that R^1 and R^2 are not both hydrogen;

m=0–6;

n=0–6;

p=0–1;

q=0–1;

or a pharmaceutically acceptable salt thereof.

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5,302,585

USE OF CHIRAL 2-(PHOSPHONOVETHOXY)PROPYL GUANINES AS ANTIVIRAL AGENTS

Kuo-Long Yu, Hamden; Joanne J. Bronson, Madison, and John C. Martin, Cheshire, all of Conn., assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic, Prague, Czechoslovakia and Rega Stichting v.z.w., Leuven, Belgium

Continuation of Ser. No. 801,338, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 650,531, Feb. 5, 1991, abandoned, which is a continuation of Ser. No. 513,307, Apr. 20, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 918,507

Int. Cl.[5] A61K *31/675*

U.S. Cl. 514—81 2 Claims

1. A method for treating a patient infected with a retrovirus, which comprises administering to said patient a therapeutically anti-retroviral effective amount of a composition free of (S)-9-[2-(phosphonomethoxy)propyl]-guanine which composition comprises (R)-9-[2-(phosphonomethoxy)propyl]-guanine or a pharmaceutically acceptable salt or solvate thereof, either alone or in a mixture with a pharmaceutically acceptable carrier.

5,302,586

PHOSPHONOMETHYL-IMIDAZO[1,2-A]PYRIMIDINE-2-CARBOXYLIC ACID COMPOUNDS FOR TREATMENT OF NEUROTOXIC INJURY

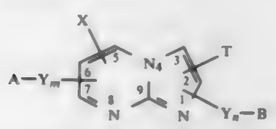
Alexis A. Cordi, Suresnes, France, and Eric T. Sun, San Diego, Calif., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 810,242, Dec. 19, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 982,819

Int. Cl.[5] A61K *31/505*; C07F *9/09*

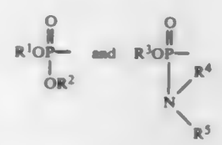
U.S. Cl. 514—81 15 Claims

1. A compound in Formula I

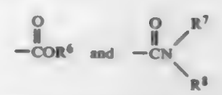


(I)

wherein A is selected from



wherein B is selected from



wherein each of R^1 through R^8 is independently selected from hydriodo, alkyl, allyl, cycloalkyl, cycloalkylalkyl, phenyl and benzyl;

wherein each of Y_m and Y_n is a spacer group independently selected from one or more groups of the formula



with the proviso that the total number of carbon atoms in each of Y_m or Y_n cannot exceed twenty carbon atoms; wherein each of R^9 and R^{10} is independently selected from hydrido, alkyl, cycloalkyl, halo, haloalkyl, phenyl, benzyl, hydroxy, hydroxyalkyl, alkoxy, phenoxy, alkoxyalkyl, benzyloxy, cyano and alkanoyl; wherein each of R^{11} and R^{12} is independently selected from hydrido, alkyl, haloalkyl, phenyl, hydroxyalkyl and alkoxyalkyl; wherein each of m and n is a number independently selected from zero to four, inclusive;

wherein X is one or more groups attachable at one or more of the 5-, 6- and 7-ring positions of the imidazo[1,2-a]pyrimidine ring system; wherein each X and T is independently selected from hydrido, halo, alkyl, cycloalkyl, cycloalkylalkyl, haloalkyl, alkenyl having two to about twenty carbon atoms and having one carbon-carbon double bond, alkynyl having two to about twenty carbon atoms and having one carbon-carbon triple bond, phenyl, benzyl, hydroxy, hydroxyalkyl, alkoxyl, phenoxy, alkoxyalkyl, benzyloxy, cyano, alkanoyl, alkylthio and arylthio,



wherein each of R^{13}, R^{14}, R^{15} and R^{16} is independently selected from hydrido, alkyl and phenyl;

or a pharmaceutically-acceptable salt thereof.

5,302,587

PLATINUM (II) COMPLEX AND AGENT FOR TREATING MALIGNANT TUMOR

Go Hata, Fujisawa; Masato Mutoh, Yokohama, and Hideyuki Hashimoto, Ohtsu, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP90/01610, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO91/09041, PCT Pub. Date Jun. 27, 1991

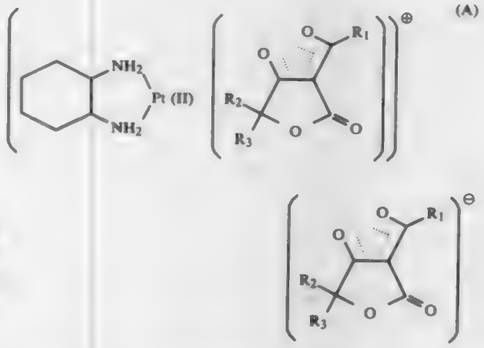
PCT Filed Dec. 11, 1990, Ser. No. 741,433

Claims priority, application Japan, Dec. 12, 1989, 1-323377

Int. Cl.[5] A61K *33/24*, *31/28*; C07F *15/00*

U.S. Cl. 514—184 13 Claims

1. A platinum (II) complex represented by the following formula (A):



(A)

(wherein R_1 is a group containing 1-5 carbon atoms, R_2 and R_3 can be the same or different and are selected from the group consisting of hydrogen and a group containing 1-3 carbon atoms, the configuration of 1,2-diaminocyclohexane being cis, trans-l- or trans-d-).

5,302,588

CRYSTALLINE (5R,6S)-2-CARBAMOYLOXYMETHYL-6-[(1R)-HYDROXYETHYL]-2-PENEM-CARBOXYLIC ACID AND ITS PHARMACEUTICAL FORMULATION

Carlo Battistini, Milan; Roberto Bianchini, Bergamo; Stefano del Nero, Milan; Pierluigi Griggi, Monza, and Sergio Vioglio, Cusano Milanino, all of Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

Continuation of Ser. No. 469,586, May 1, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,057

Claims priority, application United Kingdom, Aug. 8, 1988, [illegible]

Int. Cl.[5] C07D *499/00*; A61K *31/425*

U.S. Cl. 514—192 6 Claims

1. A crystalline form of (5R,6S)-2-carbamoyloxy-methyl-6-[(1R)-hydroxyethyl]-2-penem-3-carboxylic acid incorporating two molecules of water per molecule of the said acid.

5,302,589

HETEROCYCLIC INHIBITORS OF 5-ALPHA-TESTOSTERONE REDUCTASE

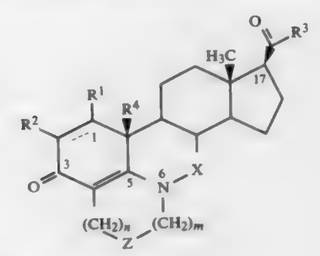
Stephen V. Frye, Durham, N.C.; David Middlemiss, Ware, United Kingdom, and Francis G. Fang, Durham, N.C., assignors to Glaxo, Inc., Research Triangle Park, N.C.

Filed Aug. 7, 1992, Ser. No. 927,091

Int. Cl.[5] A61K *31/435*

U.S. Cl. 514—210 5 Claims

1. A compound of formula (I):



(I)

wherein

R^1 and R^2 are

i) independently hydrogen or lower alkyl and the bond between the carbons bearing R^1 and R^2 is a single or a double bond, or

ii) taken together are a —CH_2— group to form a cyclopropane ring, and the bond between the carbons bearing R^1 and R^2 is a single bond;

X is CH_2:

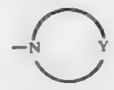
R^3 is lower alkyl, lower alkenyl, lower cycloalkyl, lower alkoxy, thiopyridyl, adamantyl, —NR^9R^{10} or —Ar—NR^9R^{10}

wherein

R^9 and R^{10} are

i) independently, hydrogen or lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl, lower alkoxy, phenyl, naphthyl, benzyl, norbornyl or

ii) taken together with the linking nitrogen to form a 4 to 8 atom heterocyclic group,



wherein:

Y represent), CH_2, —N= NH or N(lower alkyl) optionally substituted with one or more lower alkyl groups;

Ar is phenyl or naphthyl;

R^4 is hydrogen or methyl;

Z is —CH_2CH_2— or —CH=CH—;

n and m are independently 0, 1 or 2;

and pharmaceutically acceptable salts thereof.

5,302,590

COMPOUNDS USEFUL AS DUAL ANTAGONISTS OF PLATELET ACTIVATING FACTOR AND LEUKOTRIENE D4

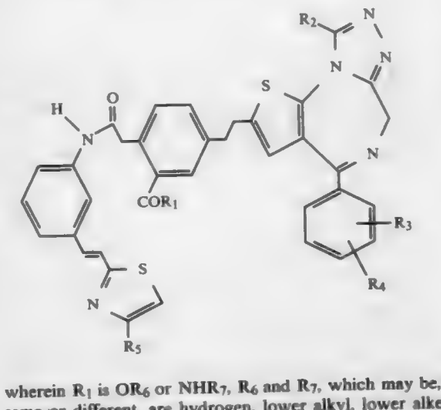
James V. Earley, Cedar Grove; Norman W. Gilman, Wayne, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 18, 1992, Ser. No. 993,227

Int. Cl.[5] C07D *495/14*; A61K *31/55*

U.S. Cl. 514—220 27 Claims

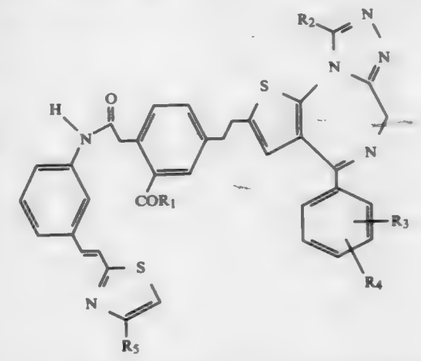
1. A compound of the formula



I

wherein R_1 is OR_6 or NHR_7, R_6 and R_7, which may be, the same or different, are hydrogen, lower alkyl, lower alkenyl, cycloalkyl having between 3 to 6 carbon atoms or phenyl, R_2 is lower alkyl, lower alkoxy or trifluoromethyl, R_3 and R_4, independently, are hydrogen, chlorine, fluorine, lower alkyl or lower alkoxy, and R_5 is lower alkyl or cycloalkyl having between 3 to 6 carbon atoms, and when at least one asymetric carbon is present, an enantiomer diastereomer or racemate thereof, or pharmaceutically acceptable salts thereof.

19. A method of treating bronchopulmonary constriction which comprises administering to a host requiring such treatment an effective amount of a compound of the formula



I

wherein R_1 is OR_6 or NHR_7, R_6 and R_7, which may be, the same or different, are hydrogen, lower alkyl, lower alkenyl, R_2 is lower alkyl, lower alkoxy or trifluoromethyl, R_3 and R_4,

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independently, are hydrogen, chlorine, fluorine, lower alkyl, lower alkoxy, cycloalkyl having between 3 to 6 carbon atoms or phenyl, and R_5 is lower alkyl or cycloalkyl having between 3 to 6 carbon atoms, and when at least one asymetric carbon is present, an enantiomer, diastereomer or racemate thereof, or pharmaceutically acceptable salts thereof.

5,302,591

BENZODIAZEPINE DERIVATIVES

S. R. Fletcher, Hatfield Heath, and V. G. Matassa, Furneux Pelham, both of England, assignors to Merck Sharpe & Dohme Ltd., Hertfordshire, England

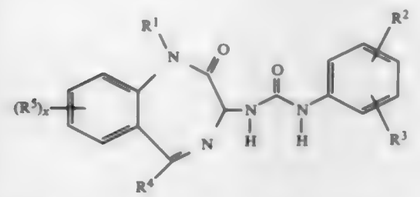
Filed Apr. 28, 1993, Ser. No. 54,369

Claims priority, application United Kingdom, May 1, 1992, 9209518

Int. Cl.[5] A61K *31/55;* **C07D** *243/24*

U.S. Cl. 514—221 **11 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt or prodrug thereof:

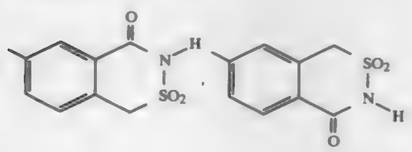


(I)

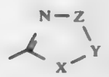
wherein:

R^1 is selected from the group consisting of H, $(CH_2)_q$imidazolyl, $(CH_2)_q$tetrazolyl, $(CH_2)_q$triazolyl; $C_{1\text{-}6}$alkyl; $C_{1\text{-}6}$alkyl substituted by at least one group selected from halo, hydroxy and NR^6R^7; $C_{3\text{-}7}$cycloalkyl; cyclopropylmethyl; $CH_2CO_2R^8$, $CH_2CONR^6R^7$ and $CH_2CH(OH)$-W-$(CH_2)_2NR^6R^7$ where W is S or NH;

R^2 is selected from the group consisting of $(CH_2)_m$-tetrazolyl, $(CH_2)_m$-tetrazolyl substituted in the tetrazole ring by $C_{1\text{-}4}$alkyl, $(CH_2)_m$-imidazolyl, $CONR^6R^7$, $CONHSO_2R^9$, SO_2NHCOR^9, SOR^8, SO_2NHR^{10}, 5-hydroxy-4-pyrone, $(CH_2)_nCO_2H$,



and



wherein X is selected from the group consisting of O, S and NR^{11} where R^{11} is selected from the group consisting of H and $C_{1\text{-}4}$alkyl; one of Z and Y is C=O and the other is selected from the group consisting of O, S and NR^{12} where R^{12} is selected from the group consisting of H and $C_{1\text{-}4}$alkyl;

R^3 is selected from the group consisting of H and $C_{1\text{-}6}$alkyl;

R^4 represents pyridyl;

R^5 is selected from the group consisting of $C_{1\text{-}6}$alkyl, halo and NR^6R^7;

R^6 and R^7 are each independently selected from H or $C_{1\text{-}4}$alkyl or R^6 and R^7 together form a chain $(CH_2)_p$ where p is 4 or 5;

R^8 is $C_{1\text{-}4}$alkyl;

R^9 is selected from the group consisting of $C_{1\text{-}6}$alkyl, unsubstituted aryl, $C_{1\text{-}4}$alkyl substituted aryl, 2,2-difluorocyclopropane and trifluoromethyl;

R^{10} represents a nitrogen containing heterocycle selected from thiazole, thiadiazole, or pyrazine;

q is selected from 1, 2 and 3;

m is selected from 0, 1, 2 and 3;

n is selected from 1, 2 and 3; and

x is selected from 0, 1, 2 and 3.

8. A method for the treatment or prevention of a physiological disorder involving CCK and/or gastrin, which method comprises administration to a patient in need thereof of a CCK and/or gastrin reducing amount of a compound according to claim 1.

5,302,592

USE OF SUBSTITUTED 3-THIOACRYLOYL COMPOUNDS AS ANTIMICROBIAL AGENTS

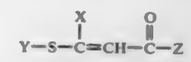
Peter Osei-Gyimah, Horsham, Pa.; Samuel E. Sherba, Willingboro, N.J.; Raj J. Mehta, King of Prussia, Pa.; Barry C. Lange, Lansdale, Pa., and Rhoda W. Joseph, Buckingham, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 880,471, May 6, 1992, abandoned, which is a continuation of Ser. No. 747,157, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 568,809, Aug. 18, 1990, abandoned. This application Aug. 16, 1993, Ser. No. 107,422

Int. Cl.[5] A01N *31/02, 43/78*

U.S. Cl. 514—230.8 **6 Claims**

1. A process of inhibiting the growth of microbials comprising introducing a microbicidally effective amount of one or more thiocryloyl compounds onto, into, or at a locus subject to microbial attack, said thioacryloyl compounds being of the formula



wherein

Z is selected from the group consisting of OR and R;

R is selected from the group consisting of hydrogen; $(C_1\text{–}C_{18})$alkyl; $(C_2\text{–}C_8)$alkenyl; $(C_2\text{–}C_8)$haloalkynyl; 2-(5-chlorothienyl)methyl; phenyl optionally substituted with one or more substituents selected from the group consisting of halo-, $(C_1\text{–}C_3)$alkoxy-, nitro-, and $(C_1\text{–}C_3)$alkyl; phenacx optionally substituted with one or more substituents selected from the group consisting of ring halo-,$(C_1\text{–}C_3)$alkoxy-, nitro-, and $(C_1\text{–}C_3)$alkyl; arylalkyl optionally substituted with one or more substituents selected from the group consisting of ring halo-,$(C_1\text{–}C_3)$alkoxy-, nito-, and $(C_1\text{–}C_3)$alkyl;

X is selected from the group consisting of hydrogen, halogen, phenyl, CO_2CH_3, and $(C_1\text{–}C_3)$alkyl; and

Y is selected from the group consisting of CN, $CH(COCH_3)_2$, CH_2COCH_3, CH_2CN, $CH_2CO_2C_2H_5$, propargyl, $SCH{=}CHCO_2CH_3$, $C(=NH)NH_2$ hydrochloride, 2-(5-chlorothienyl)methyl, and a saturated or unsaturated heterocylic 5- or 6-membered ring with 1 to 4 heteratoms selected from the group consisting of S, O or N, said ring being unsubstituted or substituted with substituents independently selected from the group consisting of unsubstituted or halosubstituted alkyl of 1 to 8 carbon atoms, unsubstituted or halosubstituted alkenyl or alkynyl of 2 to 8 carbon atoms, nitro, cyano, halo, $(C_1\text{–}C_8)$alkoxy, amino, alkylamino, dialkyamino, and benzyl; or optionally fused to a benzene ring which is optionally substituted with substituents independently selected from the group consisting of unsubstituted or halosubstituted alkyl of 1 to 8 carbon atoms, unsubstituted or halosubstituted aklenyl or alkynly of 2 to 8 carbon atoms, nitro, cyano, halo, $(C_1\text{–}C_8)$alkoxy, amino, alkylamino, and dialkylamino; or

said nitrogens in the nitrogen-containing heterorcycles possible being N-oxides;

provided that when Y is heterocyclic, z is $(C_1\text{–}C_{18})$alkyl;

provided that when Z is R, X is hydrogen or $(C_1\text{–}C_3)$aklyl and Y is CN, R is not substituted or unsubstituted phenyl.

5,302,593

AMINOALKYLCARBAMIC ESTERS OF ESEROLINE SUITABLE FOR USE AS CHLORINESTERASE ACTIVITY INHIBITORS

Maria A. Aliai; Mario Brufani; Maria C. Cesta; Luigi Filocamo; Gianluca Gostoli; Sperandina Lappa, all of Rome; Pier Giuseppe Pagella, Catraglia; Enrico Ferrari, Milan; Stefano Maiorana, Milan, and Donata Marchesini, Milan, all of Italy, assignors to Mediolanum Farmaceutici S.p.A., Milan, Italy

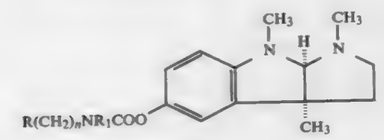
Filed Jun. 23, 1993, Ser. No. 79,921

Claims priority, application Italy, Jun. 25, 1992, MI92A001559

Int. Cl.[5] A61K *31/535, 31/54;* **C07D** *413/12, 417/12*

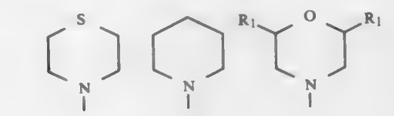
U.S. Cl. 514—232.8 **7 Claims**

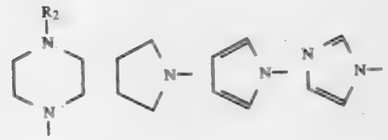
1. Aminoalkylcarbamic esters of eseroline ((3aS,8aR)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrol[2,3-b]indol-5-ol) as per general formula (I)

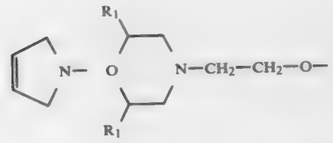


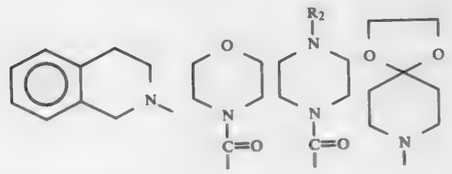
(I)

where n is ian integer from 2 to 20 (atoms); R1 may be H, methyl, ethyl, propyl, and isopropyl; and R is an amine selected out of the group consisting of









where R2 is linear or branched C_1-C_4 alkyl or acyl or benzyl; and their pharmacologically acceptable salts.

5,302,594

5-LIPOXYGENASE INHIBITORS QUINOXALINYL DERIVATIVES

Graham C. Crawley, Macclesfield, and Philip N. Edwards, Bramhall, both of England, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy Cedex, France

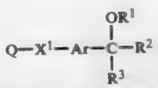
Division of Ser. No. 584,944, Sep. 21, 1990. This application Feb. 8, 1993, Ser. No. 14,673

Claims priority, application European Pat. Off., Sep. 29, 1989, 894026996; May 2, 1990, 904011830

Int. Cl.[5] A61K *31/495;* **C07D** *241/36*

U.S. Cl. 514—249 **8 Claims**

1. A heterocyclic derivative of the formula I



I

wherein Q is quinoxalinyl or a hydrogenated derivative thereof which may optionally bear one, two or three substituents selected from halogeno, hydroxy, oxo, carboxy, cyano, amino, (1-4C)alkyl, (1–4C)alkoxy, fluoro-(1–4C)alkyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, hydroxy-(1–4C)alkyl, amino-(1–4C)alkyl, (1–4C)alkylamino-(1–4C)alkyl, di-[(1–4C)alkyl-]amino-(1–4C)alkyl, amino-(2–4C)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy and di-[(1–4C)alkyl]amino-(2–4C)alkoxy;

wherein X^1 is oxy, thio, sulphinyl, sulphonyl or imino;

wherein Ar is 1,3- or 1,4-phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano, carbamoyl, ureido, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, fluoro-(1–4C)alkyl and (2–4C)alkanoylamino;

wherein R^1 is (1–6C)alkyl, (3–6C)alkenyl or (3–6C)alkynyl; and

wherein R^2 and R^3 together form a group of the formula $—A^2—X^2—A^3—$ which, together with the carbon atom to which A^2 and A^3 are attached, defines a ring having 6 ring atoms, wherein A^2 and A^3, which may be the same or different, each is (1–4C)alkylene, and X^2 is oxy, and which ring may bear one, two or three substituents, which may be the same or different, selected from halogeno, hydroxy, (1–4C)alkyl, (1–4C)alkoxy and fluoro-(1–4C)alkyl; or a pharmaceutically-acceptable salt thereof.

5,302,595

MUSCARINIC RECEPTOR ANTAGONISTS

Peter E. Cross, Canterbury, and Alexander R. MacKenzie, Deal, both of England, assignors to Pfizer Inc., New York, N.Y.

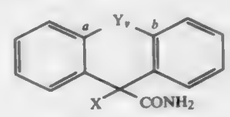
Continuation of Ser. No. 416,894, Oct. 4, 1989, Pat. No. 5,219,871. This application Jan. 6, 1993, Ser. No. 2,498

Claims priority, application United Kingdom, Oct. 4, 1988, 8823203.8

Int. Cl.[5] A61K *31/495, 31/44;* **C07D** *241/02, 333/36*

U.S. Cl. 514—255 **12 Claims**

1. A compound of the formula



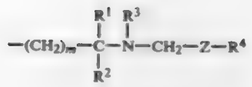
I

or a pharmaceutically acceptable salt thereof, wherein

v is 0 or 1, and when v is 0, there is no bond between the carbons at positions a and b;

Y is $—CH_2CH_2—$, —CH=CH—, $—CH_2—S—$, $—CH_2—O—$, —O— or —S—; and X is a group of the formula:

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wherein
m is 1 or 2;
R^1 and R^2 are each independently H or C_1–C_4 alkyl, or R^1 and R^2 together represent $—(CH_2)_n—$ wherein n is an integer of from 2 to 5;
R^3 is H or C_1–C_4 alkyl;
Z is a direct link, $—CH_2—$, $—(CH_2)_2—$, $—CH_2O—$ or $—CH_2S—$; and
R^4 is pyridyl, pyrazinyl, thienyl or a group of the formula



wherein
either R^5 and R^6 are each independently selected from H, C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, $—CF_3$, —CN, $—(CH_2)_pNR^7R^8$, $—OCO(C_1$–C_4 alkyl), $—CO(C_1$–C_4 alkyl), $—CH(OH)(C_1$–C_4 alkyl), $—C(OH)(C_1$–C_4 alkyl$)_2$, $—SO_2NH_2$, $—NHSO_2(C_1$–C_4 alkyl), $—(CH_2)_pOH$, $—(CH_2)_pCOO(C_1$–C_4 alkyl), and $—(CH_2)_pCONR^7R^8$, or R^5 and R^6 together represent $—(CH_2)_q—$, $—O(CH_2)_rO—$ wherein one oxygen atom is attached to the 3-position of the benzene ring and the other is attached to the 4-position, or $—O(CH_2)_r—$ wherein the oxygen atom is attached to the 3- or 4- position of the benzene ring;
R^7 and R^8 are each independently H or C_1–C_4 alkyl;
p is 0, 1 or 2;
q is 3, 4 or 5;
r is 1, 2 or 3; and
t is 2, 3 or 4;
with the proviso that when v is zero and z is $—CH_2—$, $—(CH_2)_2—$ or a direct link, R^4 must be pyridyl, pyrazinyl or thienyl.

5,302,596

TRICYCLIC COMPOUNDS AS TXA_2 ANTAGONISTS

Etsuo Oshima, Shizuoka; Hiroyuki Obase, Mishima; Akira Karasawa, Shizuoka; Kazuhiro Kubo, Shizuoka; Ichiro Miki, Shizuoka, and Akio Ishii, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

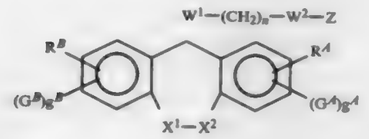
Division of Ser. No. 856,296, Mar. 23, 1992, Pat. No. 5,242,931, which is a division of Ser. No. 612,446, Nov. 14, 1990, Pat. No. 5,118,701, which is a division of Ser. No. 368,242, Jun. 6, 1989, Pat. No. 4,999,363. This application Nov. 23, 1992, Ser. No. 980,617

Claims priority, application Japan, Jun. 9, 1988, 63-142374

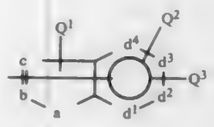
Int. Cl.[5] **A61K** *31/435, 31/505;* **C07D** *471/04, 473/00*

U.S. Cl. 514—261 **10 Claims**

1. A tricyclic compound represented by formula (*I*):



wherein
is
(a) single bond, or
(b) double bond;
X_1–X_2 is:
(a) $—CH_2—O—$,
(b) $—CH_2—S—$,
(c) $—CH_2—CH_2—$, or
(d) $—CH=CH—$;
G^A and G^B are independently:
(a) lower alkyl,
(b) halogen, or
(c) OR^1, wherein R^1 is:
(a)′ hydrogen, or
(b)′ lower alkyl;
g^A and g^B are independently 0, 1, 2 or 3;
one of R^A and R^B is hydrogen and the other is —Y—$COOR^{1e}$, wherein R^{1e} has the same significance as R^1, and wherein Y is:
(a)′ single bond,
(b)′ $—CR^{1b}R^{1c}—(CH_2)_m—$, or
(c)′ $—CR^{1b}=CR^{1c}—(CH_2)_m—$, wherein each of R^{1b} and R^{1c} independently has the same significance as R^1 and m is 0, 1, 2, 3 or 4, wherein the left side of the formula in (b)′ and (c)′ is bound to the mother nucleus;
W^1 is:
(a) —S—,
(b) $—SO_2—$,
(c) —O—,
(d) $—NR^{1d}$, wherein R^{1d} has the same significance as R^1,
(e) —NHCO—,
(f) =N—,
(g) =CH—, or
(h) $—CH_2—$,
wherein the left side of the formula in (e) through (g) is bound to the mother nucleus;
n is 0, 1, 2, 3 or 4;
W_2 is;
(a) single bond,
(b) —S—, or
(c) $—NR^{1e}—$ wherein R^{1e} has the same significance as R^1;
Z is:



wherein
a is:
(a)′ $—CH_2—$,
(b)′ —NH—,
(c)′ —O—,
(d)′ —S—, or
(e)′ $—SO_2—$
b, c, d^1, d^2, d^3 and d^4 are independently:
(a)′ =CH—, or
(b)′ =N—, wherein at least one of b, c, d^1, d^2, d^3 and d^4 is =N—;
Q^1, Q^2 and Q^3 are independently:
(a)′ hydrogen,
(b)′ lower alkyl,
(c)′ benzyl,
(d)′ substituted benzyl wherein each substituent on the phenyl independently represents 1 to 3 of:
(a)″ halogen, or
(b)″ OR^{1f} wherein R^{1f} has the same significance as R^1 a substituent on the methylene is one of:
(c)″ $—OR^{1g}$ wherein R^{1g} has the same significance as R^1;
(e)′ phenyl,
(f)′ halogen,
(g)′ $—CF_3$,
(h)′ nitro,
(i)′ —CN,
(j)′ $—N_3$,
(k)′ $—COOR^2$,
(l)′ $—OR^2$,
(m)′ $—OCOR^2$,
(n)′ $—SR^2$,
(o)′ $—COR^2$
(p)′ $CONR^{2a}R^{2b}$, wherein R^{2a} and R^{2b} are independently:
(a)″ hydrogen,
(b)″ straight or branched alkyl having 1 to 18 carbon atoms,
(c)″ benzyl, or
(d)″ phenyl,
(q)′ methylenedioxyl formed together with the ortho-position;
on the saturated methylene carbon atom or (e) and (h) in the definition for Z,
(r)′ =O,
(s)′ =S;
and pharmaceutically acceptable salts thereof.

5,302,597

2-SUBSTITUTED-4,6-DI-TERTIARYBUTYL-5-HYDROXY-1,3-PYRIMIDINES USEFUL AS ANTIINFLAMMATORY AGENTS

David T. Connor, Ann Arbor, and Catherine R. Kostlan, Saline, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 924,713, Aug. 3, 1992, Pat. No. 5,248,682, which is a division of Ser. No. 648,115, Jan. 31, 1991, Pat. No. 5,177,079. This application Jun. 10, 1993, Ser. No. 875,151

Int. Cl.[5] **A61K** *31/505;* **C07D** *239/02*

U.S. Cl. 514—269 **9 Claims**

1. A compound of the formula I

I

or a pharmaceutically acceptable salt, or hydrate thereof; wherein n is an integer of zero or one;
W is phenyl, phenyl having one, two or three of lower alkyl, lower alkoxy, halogen, trifluoromethyl, $NR_{10}R_{11}$ wherein R_{10} and R_{11} are independently hydrogen or lower alkyl, NO_2; mercapto, hydroxy, or lower thioalkoxy, naphthyl, or naphthyl.

5,302,598

METHOD AND COMPOSITIONS FOR TREATING PNEUMOCYSTIC CARINII INFECTIONS

Allen B. Clarkson, Jr., New York, N.Y., and Robert W. Grady, Kinnelon, N.J., assignors to New York University, New York, N.Y.

Division of Ser. No. 340,344, Apr. 19, 1989, Pat. No. 5,158,979. This application Jul. 7, 1992, Ser. No. 910,714

Int. Cl.[5] **A61K** *31/505, 31/42, 31/155*

U.S. Cl. 514—275 **8 Claims**

1. A method of treating pneumonia caused by *Pneumocystis carinii* comprising administering (a) a pharmaceutically acceptable iron chelator and (b) trimethoprim/sulfamethoxazole wherein the amounts of (a) and (b) in combination are effective in treating pneumonia caused by *Pneumocystis carinii.*

5,302,599

THERAPEUTICALLY USEFUL HETEROCYCLIC INDOLE COMPOUNDS

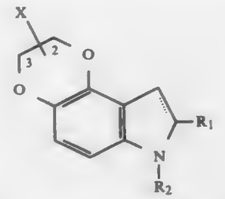
Michael D. Eanis, Portage, Mich., and Mark E. Baze, Los Altos, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 494,100, Mar. 15, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 945,323

Int. Cl.[5] **A61K** *31/44, 31/445, 31/40;* **C07D** *471/10, 211/68, 491/00*

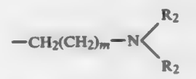
U.S. Cl. 514—278 **8 Claims**

1. A compound having the structural formula:

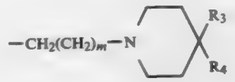


I

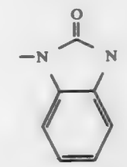
or pharmaceutically acceptable salts thereof wherein;
R_1 is hydrogen,
C_1–C_6 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl,
$—CO_2R_2$,
$—CONHR_2$,
—CN,
halogen,
—CHO,
$—(CH_2)_m—OR_2$,
$—(CH_2)_m—Ar$, or
$—SO_2R_2$;
R_2 is hydrogen,
C_1–C_6 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl,
$—(CH_2)_m(C_3$–$C_8)$ cycloalkyl or cycloalkenyl, or
$—(CH_2)_m—Ar$ where Ar is phenyl optionally substituted with —OH, $—O(C_1$–C_6 alkyl), halogen, —CH, —CHO, $—(CH_2)_m—Ph$, $—NO_2$, —SH, $—S(C_1$–C_6 alkyl) or $—NH_2$, $—NH(C_1$–C_6 alkyl) and m is 0 to 6; and
X is
a)



except that one R_2 must be a hydrogen or a C_1–CC_6 alkyl,
b)



where R_3 is hydrogen, $—CO_2R_2$, $—CONHR_2$, —CN, $—NHR_2$, —CHO, $—(CH_2)_m—Ar$, $—NR_2Ar$ or

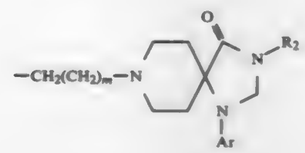


and
R_4 is hydrogen, C_1–C_6 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl,

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—$(CH_2)_m$—(C_3–C_8) cycloalkyl or cycloalkenyl, —$(CH_2)_m$—Ar, —CO_2R_2, —$CONHR_2$, —CN or —CHO; or

c)



5,302,600

27-HYDROXYRAPAMYCIN AND DERIVATIVES THEREOF

Frances C. Nelson, Yardley, Pa., assignor to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 9,605, Jan. 27, 1993, Pat. No. 5,256,790, which is a continuation-in-part of Ser. No. 930,124, Aug. 13, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,071

Int. Cl.[5] C07D *498/16;* **A61K** *31/695*

U.S. Cl. 514—291 **3 Claims**

1. A compound which is 27-hydroxyrapamycin.

5,302,601

5-SUBSTITUTED IMIDAZO[4,5-C]PYRIDINES

Ish K. Khanna, Vernon Hills; Roger Nosal, Buffalo Grove; Richard M. Weier, Lake Bluff, and Kirk T. Leatz, Niles, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

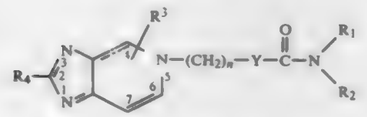
Continuation-in-part of Ser. No. 670,133, Mar. 15, 1991, Pat. No. 5,227,384, which is a continuation-in-part of Ser. No. 317,871, Mar. 6, 1989, Pat. No. 5,019,581, which is a continuation-in-part of Ser. No. 167,671, Mar. 14, 1988, Pat. No. 4,914,108. This application Nov. 6, 1992, Ser. No. 973,127

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] **A61K** *31/395;* **C07D** *471/04*

U.S. Cl. 514—303 **10 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable acid addition salt thereof, wherein

R_1 and R_2 are each independently selected from straight or branched chain alkyl of 1 to 15 carbon atoms; cycloalkyl having 3 to 8 carbon atoms; or substituted cycloalkyl which can be substituted one or more by alkyl of 1 to 6 carbon atoms;

Y is phenyl or phenyl substituted by alkoxy having 1 to 6 carbon atoms;

n is 1; R_3 is a group substituted at one or more of the 4, 6, or 7 position of the pyridine ring said group being independently selected from hydrogen, alkyl having 1 to 6 carbon atoms and alkoxy having 1 to 6 carbon atoms; and R_4 is hydrogen.

5,302,602

TRICYCLIC THROMBOXANE A_2 ANTAGONISTS

Etsuo Oshima, Shizuoka; Hiroyuki Obase, Mishima; Akira Karasawa; Kazuhiro Kubo, both of Shizuoka; Ichiro Miki, Tokyo; Akio Ishii; Hidee Ishii, both of Shizuoka, and Kenji Ohmori, Mishima, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

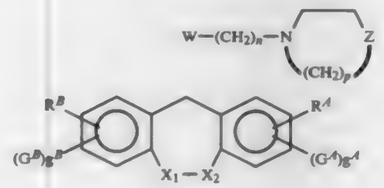
Division of Ser. No. 616,095, Nov. 20, 1990, Pat. No. 5,143,922, which is a division of Ser. No. 281,545, Dec. 8, 1988, Pat. No. 4,994,463. This application May 18, 1992, Ser. No. 884,208

Claims priority, application Japan, Dec. 14, 1987, 62-315769; Feb. 3, 1988, 63-23543

Int. Cl.[5] **A61K** *31/445;* **C07D** *211/22*

U.S. Cl. 514—325 **10 Claims**

1. A tricyclic compound represented by formula (I):



wherein

represents single bond or double bond;

X_1–X_2 represents —CH_2—CH_2—, or —CH=CH—;

W represents —S— or =CH—;

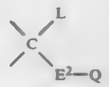
n is 1, 2, 3, or 4;

one of R^A and R^B represents hydrogen and the other represents —Y—M wherein Y represents single bond, —CR^1R^2—$(CH_2)_m$—, or —CR^1=CR^2—$(CH_2)_m$— wherein each of R^1 and R^2 independently represents hydrogen or lower alkyl and m is 0, 1, 2, 3 or 4, in which the left side of each formula is bound to the mother nucleus; and M represents —$CONR^{3a}R^{3b}$ wherein each of R^{3a} and R^{3b} independently has the same significances for R^3 as described above, or tetrazolyl;

each of G^A and G^B independently represents lower alkyl, halogen, hydroxyl, or lower alkoxyl;

each of g^A and g^B independently represents 0, 1, 2 or 3;

Z represents



wherein Q represents aryl, aralkyl or aralkenyl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of lower alkyl, halogen, trifluoromethyl, hydroxyl, lower alkoxyl and methylene dioxy formed together with the ortho-position of the aromatic ring;

wherein L represents hydrogen, hydroxyl, or lower alkoxy; and E^2 represents single bond, —CO—, or



wherein R^4 represents hydrogen or lower alkyl; >C=CH—Q wherein Q has the same significance as described above;

p is 1, 2 or 3;

and a pharmaceutically acceptable salt thereof.

5,302,603

HETEROCYCLIC CYCLIC ETHERS

Graham C. Crawley, Macclesfield, United Kingdom, and Annie Hamon, Reims, France, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy Cedex, France

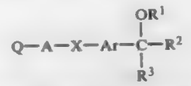
Division of Ser. No. 785,879, Nov. 4, 1919, Pat. No. 5,196,419, which is a continuation of Ser. No. 486,053, Feb. 27, 1990, abandoned. This application Dec. 18, 1992, Ser. No. 993,035

Claims priority, application European Pat. Off., Feb. 28, 1989, 89400558.6

Int. Cl.[5] **A61K** *31/44;* **C07D** *401/10*

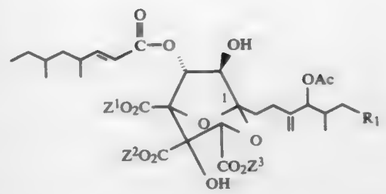
U.S. Cl. 514—336 **7 Claims**

1. A heterocyclic cyclic ether of the formula I



I

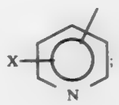
wherein Q is pyridyl which may optionally bear one, two or three substituents selected from halogeno, hydroxy, oxo, carboxy, cyano, amino, (1–4C)alkyl, (1–4C)alkoxy, fluoro-(1–4C)alkyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, hydroxy-(1–4C)alkyl, amino-(1–4C)alkyl, (1–4C)alkylamino-(1–4C)alkyl, di-[(1–4C)alkyl]amino-(1–4C)alkyl, amino-(2–4C)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy, di-(1–4C)alkyl]amino-(2–4C-)alkoxy and phenyl-(1–4C)alkyl; wherein A is (1–6C)alkylene, (3–6C)alkenylene, (3–6C)alkynylene or cyclo(3–6C)alkylene; wherein X is oxy, thio, sulphinyl, sulphonyl or imino; wherein Ar is phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano, ureido, carbamoyl, (1–4C)alkyl, (3–4C)alkenyloxy, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, fluoro-(1–4C)alkyl, (1–4C)alkoxycarbonyl, N-[(1–4C)alkyl]carbamoyl, N,N-di-[(1–4C)alkyl]carbamoyl, (2–4C)alkanoylamino, cyano-(1–4C)alkoxy, carbamoyl-(1–4C)alkoxy, amino-(2–4C)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy, di-[(1–4C)alkyl]amino-(2–4C)alkoxy and (1–4C)alkoxycarbonyl-(1–4C)alkoxy; wherein R^1 and R^2 together form a group of the formula —A^2—X^2—A^3— which, together with the oxygen atom to which A^2 is attached and with the carbon atom to which A^3 is attached, defines a ring having 5 ring atoms, wherein A^2 and A^3, which may be the same or different, each is methylene and X^2 is oxy, and which ring may bear one, two or three substituents, which may be the same or different, selected from hydroxy, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl and (1–4C)alkylsulphonyl or which ring may bear a (1–4C)alkylenedioxy substituent, and wherein R^3 is (1–6C)alkyl, (2–6C)alkenyl, (2–6C)alkynyl, fluoro-(1–4C)alkyl, cyano (1–4C)alkyl, hydroxy-(1–4C)alkyl, (1–4C)alkoxy-(1–4C)alkyl or (2–4C)alkanoyloxy(1–4C)alkyl; or a pharmaceutically acceptable salt thereof.



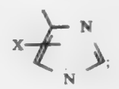
(I)

wherein R_1 is selected from the group consisting of:

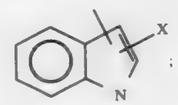
(a)



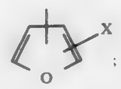
(b)



(c)

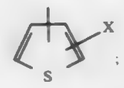


(d)



and

(e)



wherein X is selected from the group consisting of:

(a) H;

(b) halogen (F, Cl, Br, I);

(c) OH; and

(d) CH_3;

and wherein Z_1, Z_2 and Z_3 are each independently selected from the group consisting of:

(a) H;

(b) C_{1-5}alkyl;

(c) C_{1-5}alkyl substituted with a substituent selected from the group consisting of

(i) phenyl, and

(ii) phenyl substituted with methyl, methoxy, halogen (Cl, Br, I, F) or hydroxy; and

(d) a pharmaceutically acceptable cation.

5,302,604

CHOLESTEROL LOWERING COMPOUNDS PRODUCED BY DIRECTED BIOSYNTHESIS

Kevin M. Byrne, West Trenton; Shieh-Shung T. Chen, Morganville, both of N.J.; Louis Kaplan, New City, N.Y.; John G. MacConnell, Westfield, N.J.; Brian R. Petuch, Florence, N.J.; Raymond F. White, Palmyra, Va., and Byron H. Arison, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 848,628, Mar. 9, 1992, abandoned. This application Oct. 6, 1992, Ser. No. 957,316

Int. Cl.[5] **A61K** *31/38, 31/44;* **C07D** *493/08*

U.S. Cl. 514—338 **17 Claims**

1. A compound of structural formula (I)

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5,302,605

PICOLINE OXIDES

Odd Kristiansen, Möhlin; Laurenz Goell, Basel, and Peter Maienfisch, Roderadorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 11, 1991, Ser. No. 758,932

Claims priority, application Switzerland, Sep. 18, 1990, 3016/90

Int. Cl.[5] A61K *31/44*; C07D *401/06*

U.S. Cl. 514—341 **3 Claims**

1. The compound 2-chloro5-(2-nitroimino-imidazolidin-1-ylmethyl)-pyridine-N-oxide.

5,302,606

STYRYL-SUBSTITUTED PYRIDYL COMPOUNDS WHICH INHIBIT EGF RECEPTOR TYROSINE KINASE

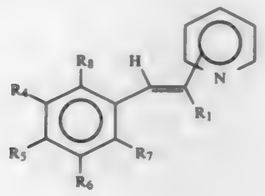
Alfred P. Spada, Lansdale; Paul E. Persons, King of Prussia, both of Pa.; Alexander Levitzki, and Chaim Gilon, both of Jerusalem, Israel, assignors to Rhône-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 509,942, Apr. 16, 1990, abandoned. This application Apr. 16, 1991, Ser. No. 685,854

Int. Cl.[5] C07D *213/57*; A61K *31/44*

U.S. Cl. 514—357 **12 Claims**

1. A compound of the following formula



wherein:

R_1 is —CN;

R_4, R_5, R_6, R_7 and R_8 are each independently lower alkyl, —H, lower alkoxy or —OH, with the provisos that at least two of R_4, R_5, R_6, R_7 and R_8 are not —H and that R_4, R_5 or R_6 is not lower alkoxy when R_7 or R_8 is lower alkoxy; and

R_4 and R_6 are also each independently halo.

5,302,607

COMPOSITIONS FOR PROTECTING PLANTS AGAINST DISEASE

Walter Kunz, Oberwil, and Rolf Schurter, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

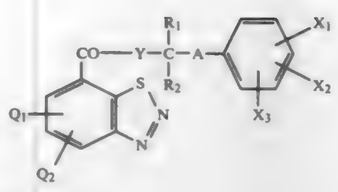
Continuation of Ser. No. 905,064, Jun. 24, 1992, abandoned, which is a continuation of Ser. No. 737,826, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 481,423, Feb. 16, 1990, abandoned. This application May 6, 1993, Ser. No. 58,838

Claims priority, application Switzerland, Feb. 21, 1989, 615/89

Int. Cl.[5] C07D *285/14*; A01N *43/82*

U.S. Cl. 514—361 **6 Claims**

1. A compound of formula I



(I)

in which

Y is oxygen or sulfur;

Q_1 and Q_2 independently of one another are each hydrogen or halogen;

R_1 and R_2 independently of one another are each hydrogen or C_1–C_4alkyl;

X_1 is hydrogen, halogen, C_1–C_4alkyl, trifluoromethyl, C_1–C_3alkoxy, C_1–C_2alkoxy halo-substituted in the alkyl moiety, nitro, cyano, dimethylamino, phenyl, phenoxy, or phenyl or phenoxy each substituted by halogen and/or by C_1–C_2alkyl and/or by C_1–C_2alkoxy;

X_2 is hydrogen, halogen or methyl;

X_3 is hydrogen or halogen; and

A is —Si(R_5)(R_6), wherein

R_5 is C_1–C_6alkyl, C_3–C_6cycloalkyl, C_1–C_6alkoxy, phenyl, or phenyl substituted by halogen or methoxy;

R_6 is C_1–C_6alkyl or C_1–C_6alkoxy;

or alternatively R_5 and R_6 together represent a saturated 5- to 7-membered heterocycle having a maximum of 2 oxygen or sulfur atoms as additional hetero atoms.

5,302,608

AGE FORMATION INHIBITORS

Takashi Sohda, Takatsuki; Hitoshi Ikeda, Higashiosaka, and Yu Momose, Neyagawa, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

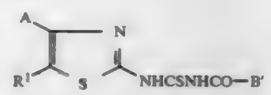
Continuation of Ser. No. 707,300, May 29, 1991, abandoned, which is a continuation of Ser. No. 437,897, Nov. 17, 1989, abandoned. This application Jun. 2, 1993, Ser. No. 71,036

Claims priority, application Japan, Nov. 18, 1988, 63-293105; Aug. 16, 1989, 1-211984

Int. Cl.[5] C07D *277/48*; A61K *31/425*

U.S. Cl. 514—371 **14 Claims**

1. A thiourea compound of the formula:



wherein A is a condensed aromatic ring group selected from (1) naphthyl which may be partly saturated, (2) anthryl which may be partly saturated, (3) C_{6-14} aryl which may be partly saturated condensed with a 5 to 6 membered aromatic heterocyclic ring containing 1 to 4N, O and/or S atom(s) as the ring-forming hetero atom(s) which may be partly or wholly saturated and (4) 5 to 6-membered aromatic heterocyclic ring containing 1 to 4N, O and/or S atom(s) as the ring-forming hetero atom(s), which may be partly saturated, condensed with a C_{16-14} aryl, which may be partly saturated; the condensed aromatic ring being unsubstituted or substituted by one to four substituent(s) selected from a group S^1 consisting of (1) C_{1-10} alkyls which may be substituted by halogens; (2) hydroxyls which may be substituted by C_{1-10} alkyls, phenyl-C_{1-4} alkyls, and/or C_{2-8} alkanoyls; (3) thiols which may be substituted by C_{1-10} alkyls, phenyl-C_{1-4} alkyls, and/or C_{2-8} alkanoyls; (4) formyl; (5) C_{2-11} alkanoyls which may be substituted by halogens, C_{1-6} alkoxys and/or phenyls which may be substituted by halogens, C_{1-6} alkyls and/or C_{1-6} alkoxys; (6) amines which may be substituted by C_{1-6} alkyls which may be substituted by

C_{1-6} alkylthios and/or halogens; (7) C_{2-11} alkanoylaminos which may be substituted by halogens, C_{1-6} alkoxys, C_{1-6} alkylthios and/or hydroxyl; (8) aromatic ring groups selected from C_{6-14} aryl groups and 5 to 6 membered aromatic heterocyclic ring groups containing 1 to 4N, O and/or S atom(s) as the ring forming hetero atom(s), each of which may be partially saturated and each of which may be unsubstituted or substituted by halogens, nitro, amino, C_{1-6} alkanoylamino, C_{1-6} alkoxys, C_{1-6} alkylthios, and/or hydroxyl; (9) a condensed aromatic ring group selected from (a) naphthyl which may be partly saturated, (b) anthryl which may be partly saturated, (c) C_{6-14} aryl which may be partly saturated, condensed with a 5 to 6 membered aromatic heterocyclic ring containing 1 to 4N, O and/or S atom(s) as the ring-forming hetero atom(s), which may be partly or wholly saturated, and (d) 5 to 6 membered aromatic heterocyclic ring which may be partly saturated, containing 1 to 4N, O and/or S atom(s) as the ring-forming hetero atom(s), condensed with a C_{6-14} aryl which may be partly saturated; the condensed aromatic ring being unsubstituted or substituted by halogens, nitro, amino, C_{1-6} alkanoylamino, C_{1-6} alkoxys, C_{1-6} alkylthios, and/or hydroxyl; (10) halogens; (11) cyano; (12) C_{2-11} alkoxycarbonyl which may be substituted by halogens (13) C_{6-14} aryloxycarbonyl which may be substituted by halogens and (14) nitro; R^1 is (1) a hydrogen atom; (2) C_{1-10} alkyl which may be substituted by one to three substituent(s) selected from a group S^2 consisting of phenyl, halogens, C_{1-6} alkoxys, C_{1-6} alkylthios and/or C_{2-8} alkanoylamino; or (3) a C_{6-14} aryl which may be substituted by one to three substituent(s) selected from the group S^1 as defined above, or may combine with A to form a dihydronaphthalene, dihydrophenanthrene, indene, 5,6-dihydro-1H-benzocycloheptane, or quinoline; B' is (1) a group represented by OR^2 wherein R^2 is a C_{1-10} alkyl, a phenyl-C_{1-4} alkyl, C_{6-14} aryl, C_{1-4} alkenyl, cinnamoyl, 3-(2-pyridyl)acryloyl, 3-(3-pyridyl)acryloyl, 3-(2-furyl)acryloyl, 4-phenyl-2-butenoyl or a C_{1-4} alkynyl; (2) a C_{1-10} alkyl, a C_{1-4} alkenyl, a C_{1-4} alkynyl, a phenyl-C_{1-4} alkyl, cinnamoyl, 3-(2-pyridyl), 3-(3-pyridyl)acryloyl, 3-(2-furyl)acryloyl or 4-(phenyl-2-butenyl) or (3) the aromatic ring group as defined above for A; or a pharmaceutically acceptable salt thereof.

5,302,609

TREATMENT OF DIABETIC NEPHROPATHY

James A. Shayman, and Norman S. Radin, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 16, 1992, Ser. No. 991,574

Int. Cl.[5] A61K *31/42, 31/195, 31/16*

U.S. Cl. 514—380 **16 Claims**

1. A method for treating renal hypertrophy associated with diabetic nephropathy in mammals comprising the step of administering to a mammal in need of such treatment a therapeutically effective amount of an inhibitor of glycosphingolipid synthesis.

5,302,610

RENAL-SELECTIVE BIPHENYLMETHYL IMIDAZOLE ANGIOTENSIN II ANTAGONISTS FOR TREATMENT OF HYPERTENSION

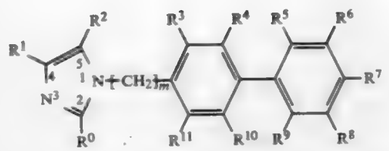
Robert E. Manning, St. Louis, and David B. Reitz, Chesterfield, both of Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 566,208, Aug. 10, 1990, abandoned. This application Dec. 19, 1991, Ser. No. 810,321

Int. Cl.[5] A61K *31/415, 31/495*; C06D *241/04, 233/54, 257/04, 265/30*

U.S. Cl. 514—381 **47 Claims**

1. A renal selective conjugate consisting of a first radical and a second radical, said first and second radicals connected together by a kidney-enzyme-cleavable bond, wherein said first radical is provided by a biphenylalkyl 1H-substituted-1,3-imidazole angiotensin II antagonist compound of Formula I:

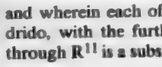


(I)

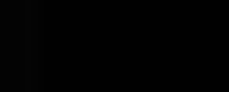
wherein m is one; wherein R^0 is selected from C_4H_9(n), $CH_3CH_2CH{=}CH$, C_3H_7(N), SC_3H_7,



C_2H_5, C_5H_{11}(n), C_6H_{13}(n), SC_4H_9,



$CH_3CH{=}CH$ and $CH_3CH_2CH_2CH{=}CH$—; wherein R^1 is selected from amino, aminomethyl, aminoethyl, aminopropyl, CH_2OH, CH_2OCOCH_3, CH_2Cl, F, Cl, Br, I, CH_2OCH_3, $CH_2OCH(CH_3)_2$, CHO, CH_2CO_2H, $CH(CH_3)CO_2H$, $—CO_2CH_3$, $—CONH_2$, $—CONHCH_3$, $CON(CH_3)_2$, $—CH_2—NHCO_2C_2H_5$,



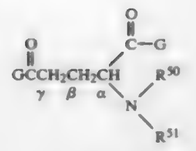
$—CH_2NHCO_2CH_3$, $—CH_2NHCO_2C_3H_7$, $—CH_2NHCO_2CH_2(CH_3)_2$, $—CH_2NHCO_2C_4H_9$, CH_2NHCO_2-adamantyl, $—CH_2NHCO_2$-(1-naphthyl), $—CH_2NHCONHCH_3$, $—CH_2NHCONHC_2H_5$, $—CH_2NHCONHC_3H_7$, $—CH_2NHCONHC_4H_9$, $—CH_2NHCONHCH(CH_3)_2$, $—CH_2NHCONH$(1-naphthyl), $—CH_2NHCONH$(1-adamantyl), $—CH_2CH_2CH_2CO_2H$, $—CH_2CH_2F$, $—CH_2OCONHCH_3$, $—CH_2CH_2CH_2F$, $—CH_2SH$ and

wherein R^2 is selected from H, F, Cl, Br, I, NO_2, CF_3, CH_2OH, methyl, ethyl, n-propyl, isoproyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, benzyl, phenethyl, cyclohexyl, cyclohexylmethyl, 1-oxoethyl, 1-oxopropyl, 1-oxobutyl, 1-oxopentyl, 1,1-dimethoxypropyl, 1,1-dimethoxybutyl, 1,1-dimethoxypentyl, hydroxyalkyl, difluoromethyl, 1,1-difluoroethyl, 1,1-difluoropropyl, 1,1-difluorobutyl and 1,1-difluoropentyl; with the proviso that at least one of R^5, R^6, R^8 and R^9 is an acidic group selected from CO_2H, SH, SO_3H and

and wherein each of the remainder of R^3 through R^{11} is hydrido, with the further proviso that at least one of said R^1 through R^{11} is a substituent selected from COOH and moieties

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containing a terminal primary or secondary amino group; or a tautomer thereof or a pharmaceutically-acceptable salt thereof; wherein said second radical is provided by a compound selected from a class of compounds of Formula II:



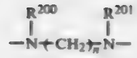
(II)

wherein each of R^{50} and R^{51} may be independently selected from hydrido, alkylcarbonyl, alkoxycarbonyl, alkoxyalkyl, hydroxyalkyl and haloalkyl; and wherein G is selected from hydrido, hydroxyl, halo, mercapto, $—OR^{52}$, $—SR^{53}$ and



with each of R^{52}, R^{53} and R^{54} independently selected from alkyl, and wherein each of R^{53} and R^{54} may be further independently selected from hydrido;

with the proviso that said kidney-enzyme-cleavable bond is within an amide group formed between said first and second radicals, wherein said first radical has a terminal primary or secondary amino moiety, wherein said first-radical amino moiety is provided by one of said R^1 through R^{11} substituents of said Formula I compound or is provided by a linking moiety attached to a carbonyl group attached at one of said R^1 through R^{11} substituents of said Formula I, and wherein said second radical has a carbonyl moiety attached at the gamma-position carbon of said Formula II compound, whereby said amide bond is formed from said first-radical amino moiety and said second radical carbonyl moiety; and wherein said linking moiety is a divalent radical of Formula III:



(III)

wherein each of R^{200} and R^{201} may be independently selected from hydrido, alkyl, cycloaklyl, cycloalkylalkyl, alkoxyalkyl, hydroxyalkyl and haloalkyl; and wherein n is a number selected from zero through six, inclusive;

or a pharmaceutically-acceptable salt of said renal-selective conjugate.

5,302,611

OXINDOLE ALKALOIDS HAVING PROPERTIES STIMULATING THE IMMUNOLOGIC SYSTEM & PREPARATION CONTAINING THE SAME

Klaus Keplinger, Mullerstrasse 30, A-6020 Innsbruck, and Dietmar Keplinger, Innsbruck, both of Austria, assignors to Klaus Keplinger, Innsbruck, Austria

Continuation-in-part of Ser. No. 857,682, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 402,494, Sep. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 333,846, Apr. 3, 1989, Pat. No. 4,940,725, which is a continuation of Ser. No. 195,458, May 16, 1988, Pat. No. 4,844,901, which is a continuation of Ser. No. 684,154, Dec. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 436,512, Feb. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 195,051, Oct. 14, 1980, abandoned. This application Sep. 30, 1992, Ser. No. 954,040

Claims priority, application Austria, Oct. 7, 1980, 4971/80

The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.

Int. Cl.[5] A61K *31/40, 31/35*

U.S. Cl. 514—411 **42 Claims**

1. A pharmaceutical agent for stimulating the immunological system comprising:

oxindole alkaloids of the formula $C_{21}H_{24}O_4N_2$, and a pharmaceutical carrier selected from the group consisting of water and at least one organic solvent miscible with water,

said oxindole alkaloids being extracted from plant parts by a supercritical fluid, and

said oxindole alkaloids being dissolved in said pharmaceutical carrier to form an aqueous solution.

5,302,612

6-SUBSTITUTED-HEXAHYDROBENZ[CD]INDOLES

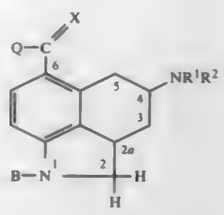
Michael E. Flaugh, and Michael J. Martinelli, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 883,803, May 13, 1992, abandoned, which is a continuation of Ser. No. 567,986, Aug. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 482,811, Feb. 26, 1990, Pat. No. 5,204,340. This application May 27, 1993, Ser. No. 68,561

Int. Cl.[5] A61K *31/40, 31/535;* **C07D** *209/90, 295/192*

U.S. Cl. 514—411 **15 Claims**

1. A compound of the Formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl-substituted C_1–C_4 alkyl, $—COR^4$, $—(CH_2)_nS(C_1$–C_4 alkyl) or $—(CH_2)_nCONR^9R^{10}$;

R^2 is hydrogen, C_1–c_4 alkyl, C_3–C_4 alkenyl, or cyclopropylmethyl;

Q is OR^3, SR^3, NR^5R^6 or hydrogen;

R^3 is C_1–C_8 alkyl, C_1–C_8 alkyl substituted with one or two moieties independently selected from C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl or nitro, aryl, aryl substituted with one or two moieties independently selected from C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 alkylthio, nitro, C_1–C_3 alkyl or trifluoromethyl, aryl(C_1–C_4 alkyl), aryl(C_1–C_4 alkyl) substituted with one or two moieties independently selected from C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 alkylthio, nitro, C_1–C_3 alkyl or trifluoromethyl, or C_3–C_7 cycloalkyl;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl. C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl substituted with a penyl group, phenyl, or together form a C_3–C_5 heterocyclic ring, with the proviso that R^5 and R^6 are not both hydrogen;

R^9 and R^{10} are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl;

B is hydrogen, C_1–C_4 alkyl, or an amino-blocking group;

X is oxygen or sulfur; or a pharmaceutically acceptable salt thereof.

5,302,613

ANTIATHEROSCLEROIC AND ANTITHROMBOTIC 2-AMINO-6-PHENYL-4H-PYRAN-4-ONES

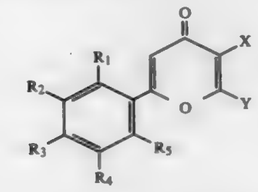
Joel Morris, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 842,020, Feb. 25, 1992, Pat. No. 5,252,735, which is a continuation-in-part of Ser. No. 545,935, Jun. 29, 1990, abandoned. This application Apr. 9, 1993, Ser. No. 45,998

Int. Cl.[5] A61K *31/35, 31/535, 31/435, 31/415*

U.S. Cl. 514—451 **2 Claims**

1. A method for treating atherosclerosis comprising: the administration to a patient in need thereof an effective amount of a compound of Formula I



I

or pharmaceutically acceptable salts thereof, wherein:

X is hydrogen, C_1–C_5 alkyl, or a halogen atom;

Y is selected from the group consisting of $—(CH_2)_nNR_9R_{10}$ wherein R_9 and R_{10} are independently selected from the group consisting of

(a) hydrogen;

(b) C_1–C_{12} alkyl;

(c) phenyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4 alkyl);

(d)$—(CH_2)_p$phenyl wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4alkyl);

(e) $—(CH_2)_n$pyridinyl; or

(f) wherein R_9 and R_{10}, taken together with N, form a saturated or unsaturated heterocyclic amine ring selected from the group consisting of

(aa) 4-morpholine optionally substituted with one or two members selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo or trifluoromethyl

(bb) 4-thiomorpholine optionally substituted with one or two members selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo or trifluoromethyl

(cc) 3-amino-1-pyrrolidine,

(dd) 1-pyrrolidine optionally substituted with one or two members selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, $—CH_2OH$, or trifluoromethyl

(ee) 1-piperidine optionally substituted with one or two members selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, trifluoromethyl, $—(CH_2)qOH$, $—CO_2H$, $—CO_2CH_3$, $—CO_2CH_2CH_3$ or phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo or trifluoromethyl),

(ff) 1-piperazine, 4-methyl-1-piperazine, 4-(cycloC_3–C_6alkyl)-1-piperazine, 4-phenyl-1-piperazine (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo or trifluoromethyl) or 4-pyridinyl-1-piperazine optionally substituted with one or two members selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl, $—CH_2OH$, $—CO_2H$, $—CO_2CH_3$ or $—CO_2CH_2CH_3$, and

(gg) thiazolidine, thiazolidine-4-carboxylic acid, pipecolinic acid, p-piperazinacetophenone, 1-piperazine, 1-methylpiperazine, 4-phenyl-1,2,3,6-tetrahydropyridine, proline, tetrahydrofurylamine, 1-(3-hydroxy)pyrrolidine, nipecotamide, 1,2,3,4-tetrahydroisoquinoline or imidazole;

R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of:

hydrogen,

C_1–C_8 alkyl,

$—(CH_2)_n$phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4alkyl)),

$—(CH_2)_n$naphthyl,

$—(CH_2)_n$pyridinyl,

$—(CH_2)_qNR_9R_{10}$,

—CH═CH-phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4alkyl)),

$—CH_2—CH═CH_2$,

—CH═CH—CH_3,

$—O—CH_2—CH═CH_2$,

—C≡C-phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4alkyl)),

$—O(CH_2)p$(N-methylpiperdin-3-yl),

$—O—(CH_2)pNR_9R_{10}$,

$—O—CH_2CH(OCH_3)_2$,

$—O—(CH_2)pOR_{15}$ (wherein R_{15} is selected from C_1–C_5 alkyl, $—(CH_2)_n$phenyl (phenyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4alkyl)), $—(CH_2)_n$pyridin-yl or $—(CH_2)_p$piperidin-1-yl),

$—(CH_2)_nC(O)—(CH_2)_nR_9$,

$—(CH_2)_nC(O)O—(CH_2)_nR_9$,

$—(CH)_nC(O)O—(CH_2)_pNR_9R_{10}$,

$—(CH_2)_nC(O)(CH_2)_nNR_9R_{10}$,

NO_2,

$—O—(CH_2)_nC(O)—(CH_2)_nR_9$,

$—O—(CH_2)_nC(O)O—(CH_2)_nR_9$,

$—O—(CH_2)_nC(O)—(CH_2)_nNR_9R_{10}$,

$—NR_9R_{10}$,

$—N(R_9)(CH_2)_nC(O)—(CH_2)_nR_{10}$,

$—N(R_9)—(CH_2)_nC(O)O—(CH_2)_nR_{10}$,

$N(R_9)(CH_2)_nC(O)—(CH_2)_nNR_9R_{10}$,

$—OCH(C_9H_9)$phenyl,

$—O—(CH_2)_n$phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, OH, trifluoromethyl or $—CO_2(C_1$–C_4alkyl)),

$—O—(CH_2)_n$pyridine,

$—O(CH_2)_nC(O)—(CH_2)_n$pyridine,

$—O—(CH_2)_nC(O)O—(CH_2)_n$pyridine,

$—O(CH_2)_nC(O)—N(R_9)(CH_2)_n$pyridine,

$—O—(CH_2)_n$quinoxalinyl,

$—O—(CH_2)_n$quinolinyl,

$—O—(CH_2)_n$pyrazinyl,

$—O—(CH_2)_n$naphthyl,

$—O—(CH_2)_nC(O)—(CH_2)_n$naphthyl,

$—O—(CH_2)_nC(O)O—(CH_2)_n$naphthyl,

$—O—(CH_2)_nC(O)NR_9—(CH_2)_n$naphthyl,

halo,

OH,

$—(CH_2)_q—OH$,

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$(CH_2)_qOC(O)R_9$,
—$(CH_2)_qOC(O)$—NR_9R_{10},
—(1-cyclohexyl-1H-tetrazol-5-yl)C_1–C_4 alkoxy,
—(1-(C_1–C_5alkyl)-1H-tetrazol-5-yl)C_1–C_4 alkoxy,
—(1-(phenyl)-1H-tetrazol-5-yl) C_1–C_4 alkoxy (wherein phenyl is optionally substituted with one, 2 or 3 C_1–C_4 alkyl,C_1–C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1–C_4alkyl)),
—(1-(pyridinyl)-1H-tetrazol-5-yl)C_1–C_4 alkoxy,
—(1-(1-phenylethyl)-1H-tetrazol-5-yl)C_1–C_4 alkoxy,
—C_1–C_4 alkoxyl;
n is 0–5;
p is 2–5; and
q is 1–5;
other than 2-(4-hydroxyphenyl)-6-(4-morpholinylmethyl)-4H-pyran-4-one.

5,302,614

PROCESS AND COMPOSITION FOR INHIBITING AND CONTROLLING MICROBIAL GROWTH

Wilson K. Whitekettle, Jamison, Pa., and Deborah K. Donofrio, The Woodlands, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed May 19, 1993, Ser. No. 64,199
Int. Cl.[5] A01N *37/52, 43/08*
U.S. Cl. 514—471 **7 Claims**

1. A microbial composition comprising (a) dodecylguanidine hydrochloride and (b) 2-(2-bromo-2-nitroethenyl) furan wherein (a) and (b) are present in an amount synergistically effective to reduce the growth of fungi, the weight ratio of (a) to (b) being from about 13:1 to 1:150.

5,302,615

BIOCIDAL COMPOSITIONS AND USE THEREOF

Deborah K. Donofrio, The Woodlands, Tex., and Wilson K. Whitekettle, Jamison, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed May 19, 1993, Ser. No. 64,201
Int. Cl.[5] A01N *37/34, 43/08*
U.S. Cl. 514—471 **7 Claims**

1. A bacterial inhibiting composition comprising a synergistic mixture of (A) phenyl-(2-cyano-2-chlorovinyl) sulfone and (B) 2-(2-bromo-2-nitroethenyl) furan wherein the weight ratio (100% actives basis) of (A):(B) is from about 4:1 to about 1:40.

5,302,616

BIOCIDAL COMPOSITIONS AND USE THEREOF

Wilson K. Whitekettle, Jamison, Pa., and Deborah K. Donofrio, The Woodland, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed May 19, 1993, Ser. No. 64,205
Int. Cl.[5] A01N *41/10, 43/08*
U.S. Cl. 514—471 **7 Claims**

1. A fungal inhibiting composition comprising a synergistic mixture of (A) diiodomethyl-p-tolylsulfone and (B) 2-(2-bromo-2-nitroethenyl) furan wherein the weight ratio of (A):(B) (100% actives basis) is from about 9.6:1 to about 1:26.3.

5,302,617

BIOCHEMICAL TREATMENT WITH 15-DEHYDROXY-16-OXOPROSTAGLANDIN COMPOUNDS

Ryuji Ueno, Hyogo, Japan, assignor to Kabushikikaisha Ueno Seiyaku Oyo Kenkyuio, Osaka, Japan

Continuation-in-part of Ser. No. 691,289, Apr. 25, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,690
Claims priority, application Japan, Apr. 27, 1990, 2-112303; Mar. 1, 1991, 3-061327
Int. Cl.[5] A61K *31/19, 31/557*
U.S. Cl. 514—573 **26 Claims**

1. A method for treatment of an allergic disease which comprises administering, to a subject in need of such treatment, a 15-dehydroxy-16-oxoprostaglandin compound in an amount effective in treatment of the allergic disease.

5,302,618

Patent Not Issued For This Number

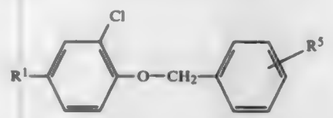
5,302,619

AROMATIC COMPOUNDS, THEIR PRODUCTION PROCESSES AND THEIR COMPOSITIONS FOR THE CONTROL OF INSECT PESTS

Akira Shuto, Takarazuka; Noriyasu Sakamoto, Nishinomiya; Hiroshi Kisida, Takarazuka; Hiroaki Fujimoto; Kimitoshi Umeda, both of Toyonaka, and Noritada Matsuo, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 28, 1992, Ser. No. 843,200
Claims priority, application Japan, Mar. 19, 1991, 3-081955
Int. Cl.[5] C07C *43/225;* **A01N** *31/14*
U.S. Cl. 514—718 **12 Claims**

1. An aromatic compound of the formula:



wherein R^1 is a sec-butoxy group, a 2-ethylbutyl group or an isobutoxymethyl group; and R^5 is a halogen atom, a methyl group or an ethyl group.

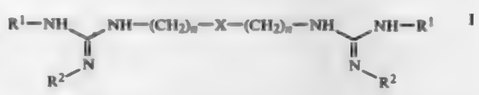
5,302,620

BISGUANIDINES AND FUNGICIDES CONTAINING THEM

Thomas Mueller, Hessheim; Matthias Zipplies, Hirschberg; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 743,160, Aug. 9, 1991, Pat. No. 5,242,948. This application Apr. 20, 1993, Ser. No. 49,439
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1990, 4026473
Int. Cl.[5] A61K *31/155;* **C07C** *279/16*
U.S. Cl. 514—635 **8 Claims**

1. A substituted bisguanidine of the formula I



I

where

R^2 is C_5–C_{10}-alkyl, C_3–C_{10}-alkenyl, C_3–C_{10}-alkynyl, C_1–C_8-alkoxy-C_2–C_8-alkyl, C_3–C_{10}-haloalkenyl; or cycloalkyl which has 5–12 carbon atoms in the ring and can carry up to three of the following substituents: hydroxyl, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-haloalkyl and C_1–C_8-alkoxy-C_1–C_8-alkyl; or benzyl which can be substituted up to three times by C_1–C_{10}-alkyl or C_1–C_{10}-alkoxy, it being possible for these benzyl substituents also to carry a hydroxyl or C_1–C_6-alkoxy group, or the benzyl is substituted by C_1–C_{10}-haloalkyl,

R^1 is benzyl which can be substituted up to three times by C_1–C_{10}-alkyl or C_1–C_{10}-alkoxy, it being possible for these benzyl substituents also to carry a hydroxyl or C_1–C_6-alkoxy group, or the benzyl is substituted by C_1–C_{10}-haloalkyl,

X is CH_2, O, a single bond, NH, N-(C_1–C_{10}-alkyl) or N-benzyl whose phenyl can be substituted once to three times by C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-haloalkyl or halogen, and

n is 5 to 8,

and its plant-compatible acid addition salts and its metal complexes.

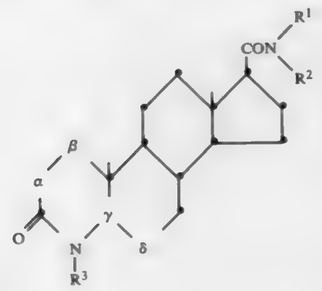
5,302,621

AZASTEROID COMPOUNDS FOR THE TREATMENT OF PROSTATIC HYPERTROPHY, THEIR PREPARATION AND USE

Koichi Kojima; Hitoshi Kurata; Hiroyoshi Horikoshi, and Takakazu Hamada, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 781,982, Oct. 24, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 23,871
Claims priority, application Japan, Oct. 29, 1990, 2-291401
Int. Cl.[5] A61K *31/58;* **C07J** *73/00*
U.S. Cl. 514—284 **101 Claims**

1. A compound of formula (I):



(I)

in which:

R^1 represents a hydrogen atom, an unsubstituted alkyl group having from 1 to 6 carbon atoms or a substituted alkyl group having from 1 to 6 carbon atoms which is substituted by at least one substituent selected from the group consisting of aryl groups as defined below, aromatic heterocyclic groups as defined below, carboxy groups and hydroxy groups;

R^2 represents a substituted alkyl group having from 1 to 6 carbon atoms which is (i) substituted by at least one substituent selected from the group consisting of aryl groups as defined below and aromatic heterocyclic groups as defined below, and (ii) which alkyl group is not further substituted or is additionally substituted by at least one substituent selected from the group consisting of carboxy groups and hydroxy groups, or a diarylamino group;

R^3 represents a hydrogen atom, an unsubstituted alkyl group having from 1 to 6 carbon atoms, a substituted alkyl group having from 1 to 6 to carbon atoms which is substituted by at least one substituent selected from the group consisting of aryl groups as defined below, carboxy groups and hydroxy groups, or an alkenyl group having from 3 to 6 carbon atoms; each of the bonds represented by α-β and γ-δ is a carbon-carbon single bond or a carbon-carbon double bond;

said aryl groups are carbocyclic aryl groups which have from 6 to 10 ring carbon atoms and which are unsubstituted or are substituted by at least one substituent selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, alkoxy groups having from 1 to 6 carbon atoms, alkoxycarbonyl groups having from 2 to 7 carbon atoms, hydroxy groups, halogen atoms and groups of formula —NHR^a, where R^a represents an alkanoyl group having from 1 to 5 carbon atoms;

said aromatic heterocyclic groups have 5 or 6 ring atoms of which from 1 to 3 are hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms and are unsubstituted or are substituted by at least one substituent selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, alkoxy groups having from 1 to 6 carbon atoms and halogen atoms;

and pharmaceutically acceptable salts and esters thereof.

5,302,622

COBALT-BASED CATALYST AND PROCESS FOR CONVERTING SYNTHESIS GAS INTO HYDROCARBONS

Patrick Chaumette, Bougival; Catherine Verdon, Rueil Malmaison, and Daniel Cruypelinck, Nanteuil Le Haudoin, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed May 5, 1993, Ser. No. 57,604
Claims priority, application France, Jul. 27, 1992, 92 09338
Int. Cl.[5] C07C *27/00, 1/00*
U.S. Cl. 518—713 **15 Claims**

1. A process for the conversion of synthesis gases into a mixture of essentially linear and saturated hydrocarbons, comprising subjecting said gases to conversion conditions in the presence of a catalyst prepared by a gelling procedure and incorporating cobalt, copper and ruthenium, the cobalt, copper and ruthenium being dispersed on a support having at least one oxide of silica or alumina, the cobalt content, expressed as cobalt weight present in the catalyst based on the catalyst weight, being between 1 and 60% by weight, the ruthenium content, expressed as ruthenium weight present in the catalyst based on the cobalt weight present in the catalyst, being between 0.1 and 20%, and the copper content, expressed as copper weight present in the catalyst based on the cobalt weight present in the catalyst, being between 0.1 and 10%.

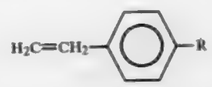
5,302,623

METHOD OF STABILIZING CATION-EXCHANGE RESINS AGAINST OXIDATIVE DEGRADATION

Yog R. Dhingra, Midland, and Paul R. VanTol, Essexville, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 666,117, Mar. 7, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 25,006
Int. Cl.[5] B01J *39/18, 41/08;* **C08F** *8/36;* **C08J** *5/20*
U.S. Cl. 521—38 **7 Claims**

1. A method for improving the resistance of styrenic cation-exchange resins to oxidative degradation by incorporating into the copolymer beads a para-substituted styrenic monomeric unit of the formula



wherein R is phenyl or an aliphatic moiety having up to 8 carbon atoms.

5,302,624

PROCESS FOR PRODUCING POLYSTYRENE FOAM

Michael E. Reedy, 42 First St., Keyport, N.J. 07735, and Edward W. Rider, Jr., R.D. #1 Box 43 S. Plank Rd., Slate Hill, N.Y. 10973

Division of Ser. No. 891,866, Jun. 1, 1992, Pat. No. 5,218,006. This application May 14, 1993, Ser. No. 61,670
Int. Cl.[5] C08J *9/14, 9/224*
U.S. Cl. 521—81 **16 Claims**

1. A process for the preparation of polystyrene foams comprising:

(A) feeding a predetermined amount of masterbatch mix and styrenic polymer to a first zone and heating said mixture to a first temperature above the melting point of said mixture to form a molten mixture wherein said masterbatch mix comprises:

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(1) monosodium citrate and sodium bicarbonate encapsulated in vegetable oil;
(2) styrene-ethylene/butylene-styrene block copolymer;
(3) poly alpha methyl styrene;
(4) white mineral oil; and
(5) silica;

(B) passing said molten mixture through an injection zone wherein a gas such as CO_2 and/or nitrogen or mixtures thereof, in either gas or liquid form is injected into said molten mixture;

(C) feeding said molten mixture and CO_2 and/or nitrogen or mixture thereof, in either gas or liquid form, into a second zone and cooling the molten mixture and CO_2 and/or nitrogen to a second temperature below the first temperature and above the melting temperature of the mixture; and

(D) passing said mixture and CO_2 and/or nitrogen or mixtures thereof, through die means.

5,302,625

METHOD FOR REDUCING THE MELT FLOW RATE OF FLAME RETARDANT EXPANDED POLYSTYRENE

Franklin A. Paris, deceased, late of Santa Cruz, Calif. by Darlene Paris, legal representative , assignor to Darlene May Paris, Santa Cruz, Calif.

Filed May 27, 1993, Ser. No. 68,558
Int. Cl.[5] C08J *9/36, 9/40*
U.S. Cl. 521—146 **32 Claims**

1. A method for lowering the melt flow rate of flame retardant expanded polystyrene, comprising exposing the polystyrene to an aqueous solution of sodium bicarbonate for a time sufficient to reduce the melt flow rate of said flame retardant expanded polystyrene.

5,302,626

USE OF REACTION MIXTURES CONTAINING POLYESTER POLYOLS IN THE PRODUCTION OF SOLID POLYURETHANE MATERIALS BY CASTING

Rainer Hoefer, Duesseldorf; Gerhard Stoll, Korschenbroich; Peter Daute, Essen, and Roland Gruetzmacher, Wuelfrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/02215, § 371 Date Jun. 23, 1992, § 102(e) Date Jun. 23, 1992, PCT Pub. No. WO91/09894, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 17, 1990, Ser. No. 862,568
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 3943890
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—156 **23 Claims**

1. The process of producing a polyurethane material which can be cast at room temperature, comprising mixing a compound containing at least two isocyanate groups per molecule in the presence of a polymerization catalyst with a reaction mixture containing a polyester polyol, said polyester polyol having been prepared by at least partial ring opening of an epoxidized ester with a carboxylic acid wherein said epoxidized ester has been added slowly to said carboxylic acid.

5,302,627

METHOD OF INDICATING A CURE POINT FOR ULTRAVIOLET RADIATION CURING COMPOSITIONS BY COLOR CHANGE

Arthur J. Field, Kawkawlin, and Michael R. Strong, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 635,061, Dec. 28, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 848,579
Int. Cl.[5] C08F *2/50, 283/04, 283/12;* **C08G** *18/04*
U.S. Cl. 522—13 **27 Claims**

1. A method of indicating a cure point of an ultraviolet radiation curing composition comprising adding a non-cure inhibiting amount of a dye with a visible color to an ultraviolet radiation curable composition comprising a photoinitiator which generates free radicals upon exposure to ultraviolet radiation and at least one material which cures upon exposure to ultraviolet radiation and thereafter exposing the resulting composition to a dosage of ultraviolet radiation which causes the visible color to either disappear or change to a different color indicating that cure has occurred coincidentally, where the amount of the dye is less than 30 parts by weight per one million parts by weight of the composition and where the dye is selected from the group consisting of an anthraquinone dye having a Color Index Solvent Blue 104, 1-hydroxy-4-[(methylphenyl)amino]-9,10-anthracenedione, and an azo dye mixture of azo benzene azo naphthyl benzene amine alkyl/alkoxy derivatives having a Color Index Solvent Blue 99 and azo benzene azo naphthyl benzene amine alkyl derivatives having a Color Index Solvent Red 166.

5,302,628

DENTURE ADHESIVE COMPOSITION

Richard Lim, Livingston, and Robert Leone, Fanwood, both of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Filed Feb. 3, 1992, Ser. No. 829,220
Int. Cl.[5] A61K *6/00*
U.S. Cl. 523—105 **17 Claims**

1. A denture adhesive which comprises an anhydrous combination of solid polyacrylic acid and polyhydroxy compound having a sufficient molecular weight to be solid at room temperature wherein said polyhydroxy compound is selected from the group consisting of polyalkylene glycol polymer, polyvinyl alcohol and combinations thereof.

5,302,629

HYDROPHILIC ACRYLIC PRESSURE SENSITIVE ADHESIVES

Anthony J. Berejka, 4 Watch Way, Huntington, N.Y. 11743

Filed May 15, 1992, Ser. No. 885,038
Int. Cl.[5] C08L *33/08, 33/10, 33/14;* **C08F** *20/26*
U.S. Cl. 523—111 **23 Claims**

1. A pressure sensitive, insoluble adhesive composition comprising the reaction product of (a) an oligomeric precursor made predominately from C_4 to C_{10} alkyl esters of acrylic acid, and (b) a hydroxy containing monomeric moiety having vinyl functionality capable of coreacting with said oligomeric base wherein the oligomeric precursor has a molecular weight of greater than 1,000 Daltons.

5,302,630

DENTAL ADHESIVE COMPOSITION

Nobuhiro Mukai, and Takayuki Makino, both of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1990, Ser. No. 545,653
Claims priority, application Japan, Aug. 14, 1989, 1-207879
Int. Cl.[5] C08F *230/08, 4/40;* **A61K** *6/083*
U.S. Cl. 523—118 **7 Claims**

1. A dental adhesive composition comprising, as the main components, (a) a polymer powder obtained by radical copolymerization of at least one (meth)acrylate unsaturated monomer containing no carboxyl or anhydride group in its molecule, with a silane compound having a polymerizable unsaturated group, (b) at least one radical polymerizable unsaturated monomer, and (c) a redox polymerization initiator consisting essentially of a combination of an organic peroxide and an aromatic amine and/or a sulfinate.

5,302,631

INK FOR JET PRINTER

Yutaka Yamada; Isao Tabayashi, both of Saitama; Sadahiro Inoue, Chiba, and Shinji Amaya, Saitama, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 838,907
Claims priority, application Japan, Feb. 25, 1991, 3-030085
Int. Cl.[5] C03C *17/32;* **C08K** *5/04;* **C08L** *73/00*
U.S. Cl. 523—160 **10 Claims**

1. An ink having excellent jetting stability for a jet printer containing an oil soluble dye, a synthetic resin, and an organic solvent, wherein said synthetic resin contains a terpene-phenol copolymer resin having a good compatibility with wax and a styrene-acrylic copolymer resin, wherein the acid value of said styrene-acrylic copolymer resin is not higher than 120.

5,302,632

HIGH CONSISTENCY ORGANOSILOXANE COMPOSITIONS COMPRISING FLUORINATED AND NON-FLUORINATED POLYORGANOSILOXANES

Myron T. Maxson, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 22, 1991, Ser. No. 688,766
Int. Cl.[5] C08K *9/06;* **C08L** *83/00*
U.S. Cl. 523—213 **7 Claims**

1. A curable organosiloxane composition comprising a homogeneous blend of

A. 100 parts by weight of at least one high consistency fluorine-containing polydiorganosiloxane comprising at least two alkenyl radicals per molecule and repeating units of the formula R^1RfSiO, where R^1 represents an alkyl radical containing from one to four carbon atoms and Rf represents a perfluoroalkylethyl radical containing a total of from 3 to 12 carbon atoms,

B. from 5 to 95 weight percent, based on the combined weight of all high consistency polydiorganosiloxanes, of at least one high consistency fluorine-free polydialkylsiloxane containing at least two alkenyl radicals per molecule, where the repeating units of said fluorine-free polydialkylsiloxane correspond to the formula R^2R^3SiO, R^2 and R^3 represent identical or different alkyl radicals containing from 1 to 4 carbon atoms, and where said fluorine-containing polydiorganosiloxane and said fluorine-free polydialkylsiloxane constitute all of the high consistency polydiorganosiloxanes present in said composition and exhibit the consistency of a gum at 25° C.;

C. from 10 to 100 weight percent, based on the combined weight of all high consistency polydiorganosiloxanes, of a reinforcing silica filler, said filler having been treated with

D. from 10 to 50 weight percent, based on the weight of said filler, of a mixture comprising a first liquid silanol-terminated terminated organosilicon compound or hydrolyzable precursor thereof wherein at least 50 percent of the silicon atoms present in said first silanol-terminated organosilicon compound or precursor contain a monovalent fluorinated hydrocarbon radical Rf', where Rf' is selected from the same group as Rf, and a second liquid silanol-terminated organosilicon compound or hydrolyzable precursor thereof, wherein substantially none of the silicon atoms of said second silanol-terminated organosilicon compound or precursor contain a fluorinated hydrocarbon radical;

E. an amount of an organohydrogenpolysiloxane sufficient to achieve curing of said composition in the presence of a hydrosilation catalyst, where said organohydrogenpolysiloxane is soluble in or miscible with said high consistency polydiorganosiloxanes and said high consistency polydialkylsiloxane; and

F. an amount of a platinum-containing hydrosilation catalyst sufficient to promote curing of said composition.

5,302,633

OPTICAL RESOLUTION AGENT AND PROCESS FOR THE PREPARATION OF THE SAME

Kazuhiro Kimata, and Riyo Tsuboi, both of Kyoto, Japan, assignors to Nacalai Tesque, Inc., Kyoto, Japan

PCT No. PCT/JP92/00696, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993
PCT Filed May 28, 1992, Ser. No. 988,113
Int. Cl.[5] C08J *9/224*
U.S. Cl. 523—218 **6 Claims**

1. An optical resolution agent prepared by polymerizing a polysaccharide derivative having vinyl groups introduced into the hydroxyl groups thereof through an ester or urethane linkage on the surface of a porous support.

5,302,634

CURED UNSATURATED POLYESTER-POLYURETHANE HYBRID HIGHLY FILLED RESIN FOAMS

John N. Mushovic, The Plains, Va., assignor to Hoppmann Corporation, Chantilly, Va.

Filed Oct. 15, 1992, Ser. No. 961,332
Int. Cl.[5] C08J *9/32*
U.S. Cl. 523—219 **33 Claims**

1. A rigid, lightweight filled open-celled resin foam, comprising:

(A) a continuous phase having cellular voids therein, wherein said continuous phase comprises an unsaturated polyester-polyurethane polymer resin, wherein said resin forms a matrix comprising an interpenetrating polymer network formed by entanglement of (1) hybrid networks comprising polyester polyurethane chains cross-linked with reactive monomer, (2) modified polyurethane hybrid networks comprising networks obtained by the reaction of a poly- or diisocyanate, an unsaturated polyester polyol, a saturated polyol, and reactive monomer, (3) polymerization products of saturated polyol and poly- or diisocyanate, or (4) mixtures thereof, wherein said resin is formed as the reaction product of an unsaturated polyester polyol, a saturated polyol, a poly- or diisocyanate, and a reactive monomer, wherein said resin forms the walls of said cellular voids; and

(B) fine multisize reinforcing particles selected from the group consisting of fly ash, treated red mud, and mixtures thereof, dispersed in said matrix of said continuous phase and immobilized therein, wherein the diameter of the largest of said multisize particles is no greater than about 33% of the average thickness of said walls between said cellular voids, and wherein the smaller of said multisize particles fill the spaces between the larger particles within said walls.

5,302,635

METHOD AND ARRANGEMENT FOR THE SINGLE-STAGE CONTINUOUS PRODUCTION OF A RUBBER BASE COMPOUND AND A RUBBER END COMPOUND

Heinz Brinkmann, Springe, and Gerd Capelle, Langenhagen, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 806,364
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039943
Int. Cl.[5] C08K *13/02*
U.S. Cl. 523—348 **3 Claims**

1. A method for continuously producing a a rubber end product in a single stage from crude rubber, the method comprising the steps of:

feeding the crude rubber (a) into a two-screw extruder having a predetermined length and intermeshing self-cleaning extruder screws wherein the crude rubber is plasticized;

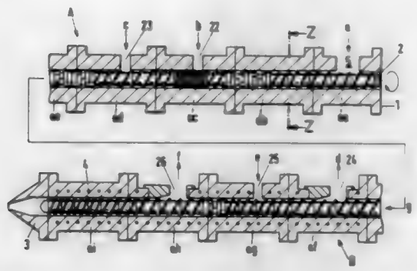
feeding non-reactive mixing additives needed for producing

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a base compound (g) into the twin-screw extruder at preselected distances along the length of the twin-screw extruder;

mixing and homogenizing the non-reactive mixing additives with the plasticizer crude rubber (a) in said extruder at temperatures in the range of 100° C. to 160° C. to form the base compound (g) while simultaneously avoiding the formation of vulcanized particles and deposits of extrudate because of the intermeshing self-cleaning operation of said extruder screws;

cooling the base compound (g) down in said twin-screw extruder to a temperature in the range of 100° C. to 120° C.;



adding all reactive mixing additives needed for producing the end product to the base compound (g) while in said twin-screw extruder and while maintaining the base compound (g) in said twin-screw extruder at a temperature in said range of 100° C. to 120° C.; and,

mixing and homogenizing said reactive mixing additives into said base compound (g) in said twin-screw extruder while continuously cooling said base compound to maintain the temperature thereof within said range of 100° C. to 120° C. thereby preventing vulcanization and producing the rubber end product.

5,302,636

RUBBER COMPOSITION

Hiroshi Takino, Ibaraki; Makoto Komai, Itami; Riichiro Ohara, Suita; Satoshi Iwama, Takatsuki; Yuji Yamaguchi, Osaka; Rinichi Nakayama, Takatsuki; Koji Hiramatsu, Osaka, and Kenji Komamizu, Ibaraki, all of Japan, assignors to Toyo Tire & Rubber Company Limited, Osaka, Japan

Continuation of Ser. No. 684,519, Apr. 15, 1991, abandoned, which is a continuation of Ser. No. 482,480, Feb. 21, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 940,755

Claims priority, application Japan, Feb. 21, 1989, 1-42085; Feb. 21, 1989, 1-42086; Mar. 1, 1989, 1-49674; Mar. 1, 1989, 1-49675

Int. Cl.[5] **C08L** *89/06*

U.S. Cl. 524—11 **3 Claims**

1. A rubber composition for a skid-resistant tire tread which comprises a sulfur-vulcanized, solution-polymerized, styrene-butadiene rubber having a styrene content of up to 18% having incorporated therein 3 to 50 parts by weight of a leather powder having a mean particle size of up to 300 μm, and 30 to 100 parts by weight of carbon black per 100 parts of the rubber, said rubber composition having a Δ hardness according to ASTM D2228 of 4–6 when measured at −15° C. and 23° C.

5,302,637

MISCIBLE BLENDS OF CELLULOSE ESTERS AND VINYLPHENOL CONTAINING POLYMERS

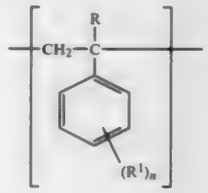
Christine J. T. Landry, Honeyoe Falls; David M. Teegarden, Rochester, both of N.Y.; Kevin J. Edgar, Kingsport, Tenn., and Stephen S. Kelley, Bend, Oreg., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1992, Ser. No. 917,705

Int. Cl.[5] **C08F** *10/00*; **C08G** *63/00*

U.S. Cl. 524—37 **19 Claims**

14. A miscible blend composition comprising (a) a cellulose ester and (b) a copolymer, wherein said miscible blend has a single glass transition temperature, and said copolymer comprises an α,β-ethylenically unsaturated comonomer and at least 10 mole percent of vinylphenol comonomer of the structure defined as having repeating units derived from vinylphenol or derivatives of vinylphenol, as represented by the general formula (I) as follows,



I

wherein,

R is hydrogen or methyl;

n is an interger from 1 to 5; and

R^1 may be the same or different and represents —OH, —O-Si(R^2)$_3$, —OR^2, —OCOR^2, —OM, or tert-butyloxycarbonyloxy;

R^2 represents a straight or branched C_1 to C_5 alkyl group, a C_6 to C_{18} aryl group, or an alkyl ether group of 2 to 5 carbon atoms; and

M represents metal cation.

5,302,638

ASPHALT/O-MODIFIED POLYETHYLENE

Kam Ho, and Ludo Zanzotto, both of Calgary, Canada, assignors to Husky Oil Operations Ltd., Calgary, Canada

Filed Sep. 8, 1992, Ser. No. 941,924

Int. Cl.[5] **C08L** *95/00, 23/04*

U.S. Cl. 524—59 **10 Claims**

1. A process for the preparation of polymer modified asphalt said process consisting of:

(a) preparing an O-modified polyethylene by shearing a polyethylene thermoplastic in a screw extruder at a shear rate of at least 350 reciprocal seconds in the presence of an O-containing gas; and

(b) mixing said O-modified polyethylene with asphalt.

5,302,639

POLYMER SCALE PREVENTIVE AGENT

Toshihide Shimizu, Urayasu, and Minoru Shigemitsu, Kashima, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 780,281, Oct. 22, 1991, abandoned. This application Oct. 20, 1992, Ser. No. 963,511

Claims priority, application Japan, Oct. 23, 1990, 2-284559

Int. Cl.[5] **C08K** *5/34, 39/06*

U.S. Cl. 524—86 **10 Claims**

1. A polymer scale preventive agent for use in polymerization of a monomer having an ethylenic double bond, comprising:

(A) a nitrogen-containing organic compound having at least five continuous conjugated π bonds and selected from the group consisting of nitrogen-containing naphthalene derivatives, nitrogen-containing heterocyclic compounds and nitrogen-containing azo compounds,

(B) an anionic compound comprising at least one member selected from the group consisting of anionic heterocyclic compounds and anionic azo compounds and having at least one group selected from the group consisting of the sulfonic acid group and the carboxylic acid group and having at least five continuous conjugated π bonds, and

(C) a vinylpyrrolidone-based polymer comprising at least one member selected from the group consisting of polyvinylpyrrolidones, vinylpyrrolidone-acrylic acid copolymers and vinylpyrrolidone-vinyl acetate copolymers with a molecular weight of 2,000 to 2,000,000.

5,302,640

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Roberto Oriani, Milan; Enrico Masarati, Piacenza, and Gilberto Nucida, Milan, all of Italy, assignors to Ministero Dell 'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

Filed Nov. 13, 1992, Ser. No. 976,337

Claims priority, application Italy, Nov. 14, 1991, MI91-A-003040

Int. Cl.[5] **C08K** *5/3492*

U.S. Cl. 524—100 **15 Claims**

1. Self-extinguishing polymeric compositions comprising:

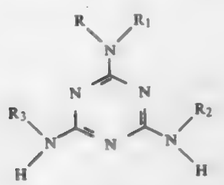
(a) from 90 to 40 parts by weight of a thermoplastic polymer, or of a polymer endowed with elastomeric properties;

(b) from 6 to 33 parts by weight of one or more ammonium or amine phosphate and/or phosphonates;

(c) from 4 to 27 parts by weight of one or more aminoplastic resin(s), obtained by means of the polymerization of a mixture comprising:

(1) from 0 to 50 parts by weight of one or more polyaminic derivatives;

(2) from 50 to 100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine having the general formula (I):

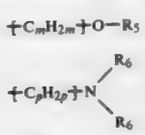


(I)

with formaldehyde or a mixture of formaldehyde and an aldehyde having formula (II):

R_4—CHO (II)

wherein the aldehyde having formula (II) can be present in an amount of up to 20% by mol, and wherein at least one of radicals from R to R_3 is:



wherein:

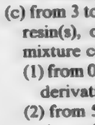
m=an integer within the range of from 2 to 8;

p=an integer within the range of from 2 to 6;

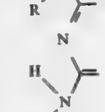
R_5=H; C_1–C_8 alkyl; C_2–C_6 alkenyl; —C_qH_{2q} O—R_7 wherein q is an integer within the range of from 1 to 4 and R_7 is H or C_1–C_6 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

the radicals R_6, which may be the same, or different from each other, are:

H, C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety;



is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom and is a radical selected from the group consisting of aziridinyl, pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, piperazinyl, 4-methylpiperazinyl and 4-ethylpiperazinyl, or in formula (I) the moiety:



is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom, and optionally containing another heteroatom; the other radicals from R to R_3, which may be the same or different from one another, having the above said meaning, or they are: H; C_1–C_{18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl or alkylcycloalkyl, optionally substituted with a hydroxy or C_1–C_4 hydroxyalkyl function;

R_4 is C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl; C_6–C_{12} aryl; C_7–C_{16} aralkyl; C_8–C_{12} aralkenyl.

5,302,641

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Roberto Oriani, Milan; Enrico Masarati, Castelnuovo Valtidone, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell 'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy

Filed Nov. 13, 1992, Ser. No. 978,494

Claims priority, application Italy, Nov. 14, 1991, MI91 A 003039

Int. Cl.[5] **C08K** *5/3492*

U.S. Cl. 524—100 **15 Claims**

1. A self-extinguishing polymeric composition comprising:

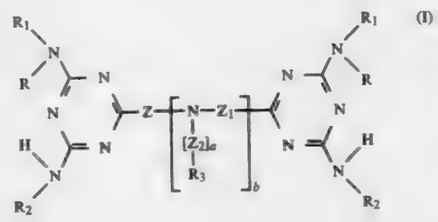
(a) from 91 to 40 parts by weight of a thermoplastic polymer, or of a polymer endowed with elastomeric properties;

(b) from 6 to 33 parts by weight of one or more ammonium or amine phosphate and/or phosphonates;

(c) from 3 to 27 parts by weight of one or more aminoplastic resin(s), obtained by means of the polymerization of a mixture comprising:

(1) from 0 to 50 parts by weight of one or more polyaminic derivatives;

(2) from 50 to 100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine having formula (I):



(I)

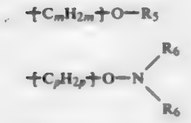
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with formaldehyde or a mixture of formaldehyde and an aldehyde having formula (II):

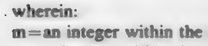
$$R_4—CHO \quad (II)$$

wherein R_4 is C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl; C_6–C_{12} aryl optionally substituted by at least one C_1–C_4 alkyl; C_7–C_{16} anaikyl or C_8–C_{12} aralkenyl; and wherein the alkdehyde having formula (II) can be present in an amount of up to 20% by mol, and wherein

the radicals from R to R_2, which may be the same or different from each other, and may have different meanings on each trizinic ring, are: H; C_1–C_{18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl or alkylcycloalkyl, optionally substituted with a hydroxy or C_1–C_4 hydroxyalkyl function;



wherein:
m=an integer within the range of from 2 to 8;
p=an integer within the range of from 2 to 6;
R_5=H; C_1–C_8 alkyl;



wherein q is an integer within the range of from 1 to 4 and R_7 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or aklylcycloalkyl;

the radicals R_6, which may be the same, or different from each other, are:

H, C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety;



is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom which is selected from the group consisting of aziridinyl, pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, piperazinyl, 4-methylpiperazinyl and 4-ethylpiperazinyl or in formula (I) the moiety;

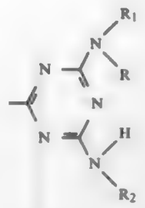


is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom, and optionally containing another heteroatom;

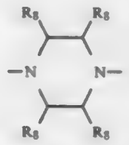
a is 0 (zero) or 1;

b is 0 (zero) or an integer within the range of from 1 to 5;

R_3 is hydrogen or:

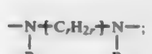


and its meaning may vary within each repeating unit; when b is 0 (zero), Z is a divalent radical falling within the scope of one of the following formulas:

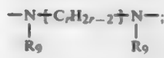


(III)

wherein the radicals R_8, which may be the same or different from each other, are hydrogen or C_1–C_4 alkyl;

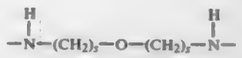


(IV)

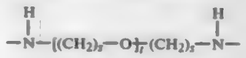


(V)

wherein r is an integer within the range of from 2 to 14;
R_9 is hydrogen C_1–C_4 alkyl; C_2–C_6 alkenyl or C_1–C_4 hydroxyalkyl;

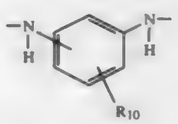


(VI)

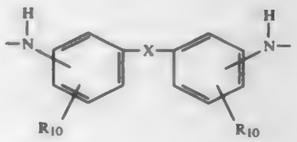


(VII)

wherein s is an integer within the range of from 2 to 5 and t is an integer within the range of from 1 to 3;



(VIII)



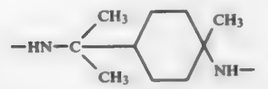
(IX)

wherein:
x is a direct C—C bond; O; S; S—S; SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2;
R_{10} is hydrogen; hydroxy; C_1–C_4 alkyl; C_1–C_4 alkoxy;

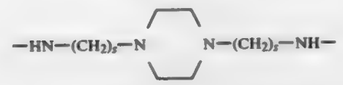


(X)

wherein A may be a saturated or unsaturated ring;

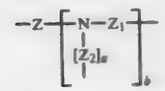


(XI)

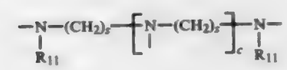


(XII)

wherein s has the above defined meaning; when, on the contrary, b is an integer within the range of from 1 to 5, the moiety:



is a multivalent moiety falling within the scope of one of the following formulas:



(XIII)

wherein:
R_{11} is hydrogen or C_1–C_4 alkyl;
c is an integer within the range of from 1 to 5;
the indexes s, which may be the same, or different from each other, have the same meaning as defined hereinabove; or



(XIV)

wherein:
R_{11} has the meaning as defined hereinabove;
w is an integer within the range of from 2 to 4;
d is either 1 or 2.

5,302,642

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Roberto Oriani, Milan; Enrico Masarati, Castelnuovo Valtidone, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell-'Universita' e Della Ricerca Scientifica e Technologica, Rome, Italy

Filed Nov. 13, 1992, Ser. No. 975,888

Claims priority, application Italy, Nov. 14, 1991, MI91A003038

Int. Cl.[5] C08K *5/3432, 5/3492, 3/28*

U.S. Cl. 524—100 **12 Claims**

1. A self-extinguishing composition comprising:

(a) from 90 to 40 parts by weight of a thermoplastic polymer, or of a polymer endowed with elastomeric properties;

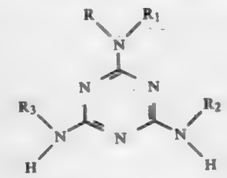
(b) from 10 to 60 parts by weight of one or more composites constituted by ammonium polyphosphate of formula (I):

$$(NH_4)_{n+2}P_nO_{3n+1} \quad (I)$$

wherein n stands for an integer within the range of from 2 to 800, microencapsulated with 10–80% by weight of a resin obtained by polymerizing with aldehydes a mixture comprising:

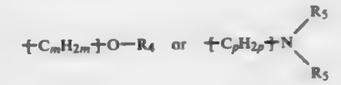
(1) from 0 to 50 parts by weight of one or more polyaminic derivatives;

(2) from 50 to 100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine having formula (II):



(II)

wherein at least one of radicals from R to R_3 is:



or

wherein:
m=an integer within the range of from 2 to 8;
p=an integer within the range of from 2 to 6;
R_4=H; C_1–C_8 alkyl; C_2–C_6 alkenyl;



wherein q is an integer within the range of from 1 to 4 and R_6 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

the radicals R_5, which may be the same or different from each other, are:

H; C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety:



is replaced by a heterocyclic radical selected from the group consisting of aziridinyl, pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, piperazinyl, 4-methylpiperazinyl and 4-ethylpiperazinyl linked to the alkyl chain through the nitrogen atom; or in the formula (II) the moiety:



is replaced by a heterocyclic radical selected from the group consisting of aziridinyl, pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, piperazinyl, 4-methylpiperazinyl, 4-ethylpiperazinyl, 2-methylpiperazinyl, 2,5-dimethylpiperazinyl, 2,3,5,6-tetramethylpiperazinyl, 2,2,5,5-tetramethylpiperazinyl, 2-ethylpiperazinyl and

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2,5-diethylpiperazinyl, linked to the triazinic ring through the nitrogen atom;

the other radicals from R to R_3, which may be the same or different from one another, have the above said meaning, or they are:

H; C_1–C_{18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl or alkylcycloalkyl, possibly substituted with a hydroxy or C_1–C_4 hydroxyalkyl function.

5,302,643

CLARIFIERS FOR POLYOLEFINS AND POLYOLEFIN COMPOSITIONS CONTAINING SAME

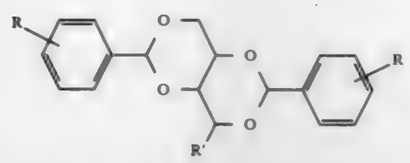
O. Elmo Millner, Durham; Richard P. Clarke, and George R. Titus, both of Raleigh, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 545,161, Jun. 28, 1990. This application Jul. 26, 1993, Ser. No. 96,284

Int. Cl.[5] C08K *5/15;* **C08L** *23/00, 23/12*

U.S. Cl. 524—109 **4 Claims**

1. A composition comprising a polyolefin and a clarifying amount of an additive of the structure



wherein R is selected from the group consisting of halogen and lower alkyl of 1 to 6 carbon atoms, and R^1 is selected from the group consisting of carboxyl and a carboxyl derivative.

5,302,644

STABILIZERS CONTAINING KETOFATTY ACID GLYCERIDES FOR CA/ZN-STABILIZED PVC MOLDING COMPOUNDS

Kurt Worschech, Loxstedt; Gerhard Stoll, Korschenbroich; Ernst-Udo Brand, and Peter Wedl, both of Bremerhaven, all of Fed. Rep. of Germany, assignors to Neynaber Chemie GmbH, Loxstedt, Fed. Rep. of Germany

PCT No. PCT/EP91/01000, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO91/18945, PCT Pub. Date Dec. 12, 1991

PCT Filed May 29, 1991, Ser. No. 956,030

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1990, 4018293

Int. Cl.[5] C08K *5/15, 5/10, 5/09;* **C09K** *15/32*

U.S. Cl. 524—114 **18 Claims**

1. A stabilizer composition effective as an internal lubricant for Ca/Zn-stabilized PVC molding compounds, said composition consisting essentially of

a) a Ca salt of a saturated straight-chain C_1–C_{34} fatty acid,

b) a Zn salt of a saturated, straight-chain or branched chain C_1–C_{22} fatty acid,

c) an epoxidized glycerides of an unsaturated, straightchain C_{16}–C_{22} fatty acid having an oxirane number of about 6 to about 8 and an iodine number of less than 5, and

d) a ketofatty acid glycerides corresponding to formula I

$$R^1COO—CH_2—(R^2COO)CH—CH_2—OOCR^3 \quad (I)$$

in which the gropus R^1COO—, R^2COO— and R^3COO— represent a residue of a ketofatty acid containing 16 to 22 carbon atoms and, optionally, a residue of a fatty acid containing 12 to 22 carbon atoms and about 60% to 100% by weight of said groups are derived from said ketofatty acid and about 40% to 0% by weight from said fatty acid, wherein the ratio of the total weight of said Ca salt of said component a) and said Zn salt of said component b) to the percentage by weight of said ketofatty acid glycerides of said component d) is from about 1:1 to about 1:50.

5,302,645

POLYETHYLENE TEREPHTHALATE COMPOSITION

Seiko Nakano, and Kiyoharu Yada, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 690,580, Apr. 24, 1991, abandoned. This application Jul. 30, 1992, Ser. No. 921,388

Claims priority, application Japan, Apr. 26, 1990, 2-108700; Jun. 4, 1990, 2-144554

Int. Cl.[5] C08K *5/524*

U.S. Cl. 524—120 **9 Claims**

1. A polyethylene terephthalate composition comprising:

(A) 100 parts by weight of polyethylene terephthalate,

(B) 3 to 25 parts by weight of a bisphenol A type epoxy resin having an epoxy equivalent of 1000 or less,

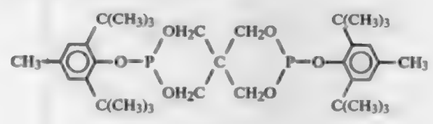
(C) 10 to 50 parts by weight of a thermoplastic resin,

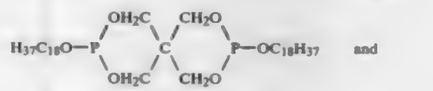
(D) 0.5 to 8 parts by weight of a modified thermoplastic resin containing at least one epoxy group, carboxyl group or carboxylic anhydride in a molecular chain of one molecule,

(E) 0.1 to 2 parts by weight of a phosphorus type stabilizer having the structure represented by the formula:

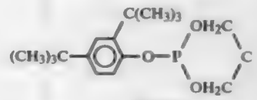
$(RO)_3P$

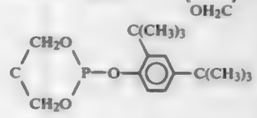
wherein R represents a hydrocarbon or cyclic hydrocarbon having 2 to 20 carbon atoms or at least one selected from the group consisting of:





and





and

(F) 5 to 150 parts by weight of a glass fiber.

5,302,646

LOW GLOSS FLAME-RETARDED POLYCARBONATE/ABS BLENDS OBTAINED BY USING HYDROXYALKYL (METH) ACRYLATE FUNCTIONALIZED ABS

Shripathy Vilasagar, and Herbert S. Rawlings, both of Parkersburg, W. Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1992, Ser. No. 843,661

Int. Cl.[5] C08K *5/521;* **C08L** *69/00*

U.S. Cl. 524—127 **7 Claims**

1. A reduced gloss thermoplastic composition consisting of:

(a) an aromatic polycarbonate present at a level of from 10 to 85 weight percent based on the total weight of the composition;

(b) a phosphate flame retardant present at a level of from 1 to 25 weight percent based on the total weight of the composition;

(c) a hydroxy functional graft polymer present at a level of from 5 to 60 weight percent based on the total weight of the composition, said hydroxy functional graft polymer being formed by grafting monomers consisting of a monovinyl aromatic monomer, a hydroxy alkyl (meth)acrylate monomer and at least one ethylenically unsaturated nitrile onto a diene rubber substrate.

5,302,647

FLAME RESISTANT RESIN COMPOSITION

Masanori Suzuki; Hiroyuki Itoh; Masaaki Mawatari, and Tateki Furuyama, all of Yokkaichi mie, Japan, assignors to DSM N.V., Netherlands

Filed Jul. 12, 1991, Ser. No. 728,223

Int. Cl.[5] C08K *5/523, 3/32, 3/28*

U.S. Cl. 524—141 **8 Claims**

1. A flame retardant thermoplastic resin composition comprising:

a) a thermoplastic polymer component comprising ring substituted methylstyrene and hydroxylated aromatic vinyl monomers;

b) a halogen-free flame retarder comprising at least one compound selected from the group consisting of a phosphorus-containing flame retarder and a nitrogen-containing flame retarder

wherein components a) and b) are blended in the ratio of 100:1–40 parts by weight, respectively.

5,302,648

DEALCOHOLIZATION-TYPE ROOM TEMPERATURE VULCANIZING SILICONE RUBBER COMPOSITION

Tetsuo Fujimoto, and Masayoshi Anzai, both of Ohta, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 8, 1990, Ser. No. 535,447

Claims priority, application Japan, Jun. 15, 1989, 1-152532

Int. Cl.[5] C08K *5/16*

U.S. Cl. 524—200 **9 Claims**

1. A room temperature vulcanizing silicone rubber composition comprising:

(A) 100 parts by weight of a polyorganosiloxane in which the molecular chain is terminated with silanol groups, the polyorganosiloxane having a viscosity at 25° C. of 100–100,000 centistokes,

(B) 0.1–30 parts by weight of an alkoxysilane or its partially hydrolyzed condensate, the alkoxysilane being represented by the formula: $R^1Si(OR^2)_3$ wherein R^1 represents a monovalent hydrocarbon group or OR^2, in which R^2 represents a monovalent hydrocarbon group,

(C) 10–200 parts by weight of colloidal calcium carbonate which has a BET specific surface area of 14.0–20.0 m^2/g and an average particle size of 0.05–0.20 μm the surface of the colloidal calcium carbonate having been treated with rosin acid, and

(D) 0.01–5 parts by weight of a curing catalyst.

5,302,649

CURABLE FILM FORMING COMPOSITIONS

Yukihiko Sasaki, Claremont, and Kevin Lossner, Monrovia, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 57,504, Jun. 3, 1987, Pat. No. 4,948,825. This application Dec. 14, 1989, Ser. No. 452,563

Int. Cl.[5] C08L *53/00*

U.S. Cl. 524—274 **21 Claims**

1. A pressure-sensitive adhesive comprising a free radical cured mixture of at least one unsaturated elastomeric polymer present in a total amount of from about 10 to about 60 parts by weight of the mixture and at least one organic additive which is substantially nonresponsive to the action of free radicals, said organic additive selected from the group consisting of aromatic organic additives which are at least 50% saturated and aliphatic organic hydrocarbon additives in which at least 65% of the unsaturated groups of the hydrocarbon as formed are saturated, the total of organic additive being present in an amount of from about 90 to about 40 parts by weight of the mixture, said cured adhesive having a glass transition temperature at least 10° C. below use temperature and an elevated temperature shear higher than the elevated temperature shear prior to cure, and in which a crosslinking agent comprising a brominated hydrocarbon is present during free radical cure of the mixture.

5,302,650

VINYL CHLORIDE RESIN COMPOSITION

Toshio Ito, Tokyo, Japan, assignor to Riken Vinyl Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 737,659, Jul. 30, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,468

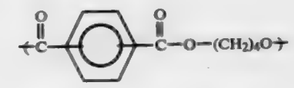
Claims priority, application Japan, Aug. 6, 1990, 2-206793

Int. Cl.[5] C08K *5/12;* **C08L** *27/06, 67/02*

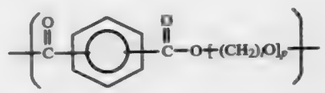
U.S. Cl. 524—298 **5 Claims**

1. A vinyl chloride resin composition comprising:

a mixture composed of 10 to 97 wt % vinyl chloride resin and 3 to 90 wt % segmented copolyester the molecular weight of which is 5000 to 100,000 and which is composed of a terephthalic acid crystalline polyester hard segment expressed by the following formula:



and an aliphatic polyether soft segment the molecular weight of which is 600 to 6000 and which is expressed by the following formula:



where l is an integer from 2 to 4 and p is integer from 8 to 140; and

10 to 200 parts by weight of an organic acid ester plasticizer selected from the group consisting of trimellitic acid esters, pyromellitic acid esters and adipic acid polyesters with respect to 100 parts by weight of said mixture, the molecular weight of said plasticizer being 500 to 5000.

5,302,651

POLYARYLENE SULFIDE RESIN COMPOSITION

Kiyotaka Kawashima, Takaishi, and Shigeaki Nagano, Izumiohtsu, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 779,789

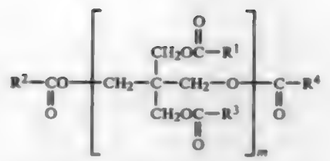
Claims priority, application Japan, Oct. 19, 1990, 2-279219; Oct. 19, 1990, 2-279223; Oct. 23, 1990, 2-284711

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—306 **12 Claims**

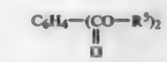
1. A polyarylene sulfide resin composition characterized in being manufactured by compounding polyarylenesulfide resin with at least one ester-based compound selected from the groups of compounds shown in the following formulas (1) and (2):

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(1)

where R^1 and R^4 are such that at least one of them is an alkyl or alkenyl group of 10–40 carbon atoms, the remaining Rs represent —H, —OH, alkyl, or aryl radicals, and $2.0 \leq m < 6.0$,



(2)

wherein R^5 is C_nH_{2n+1}, and $40 \leq n \leq 70$.

5,302,652

PROCESS FOR PREPARING A PIGMENTED POLYIMIDE SHAPED ARTICLE

Darrell J. Parish, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 15, 1992, Ser. No. 991,524

Int. Cl.[5] C08K *3/04, 9/04;* **C08L** *79/08;* **C04B** *35/00*

U.S. Cl. 524—424 **13 Claims**

1. A shaped polyimide article comprising an aromatic polyimide matrix derived from the reaction of an aromatic tetrcarboxylic acid dianhydride and an aromatic diamine and containing from 10% to 50% by weight of finely divided pigment particles, prepared by the steps of:

(a) dispersing said pigment particles in an organic polymerization solvent to provide a slurry;

(b) treating said pigment slurry with a polyamic acid precursor derived from the reaction of substantially equimolar amounts of 4,4'-oxydiphthalic dianhydride and at least one diamine selected from the group consisting of a bis(aminophenoxy)benzene, a diaminodiphenyl ether, a phenylenediamine and a C_{2-6} alkylene diamine to uniformly wet said pigment particles;

(c) admixing said precursor treated pigment particles with a polymerization mixture comprising an aromatic tetracarboxylic acid dianhydride and an aromatic diamine in said organic polymerization solvent;

(d) polymerizing said admixture to form a dope comprising a polyimide polymerization product dissolved in said organic polymerization solvent and containing the pigment particles uniformly dispersed therein;

(e) shaping said dope into a predetermined structure; and

(f) converting the shaped structure into a shaped polyimide article containing the pigment particles uniformly dispersed therein.

5,302,653

THERMOPLASTIC POLYMER COMPOSITION

Takeyoshi Nishio, Okazaki; Nobuya Kawamura; Takao Nomura, both of Toyota; Hiroki Sato, Yokkaichi; Akihiko Uchikawa, Yokkaichi; Ikuo Tsutsumi, Yokkaichi, and Yukitaka Goto, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Jan. 24, 1992, Ser. No. 825,587

Claims priority, application Japan, Jan. 25, 1991, 3-025344

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—451 **5 Claims**

1. A thermoplastic polymer composition in which the thermoplastic polymer component consists essentially of component (i) defined below and which thermoplastic polymer composition comprises:

(i) 100 parts by weight of a thermoplastic polymer component which consists essentially of an ethylene-propylene rubber, an ethylene copolymer having a melting point of 60° to 100° C. obtained by copolymerizing ethylene and an α-olefin, and a propylene polymer and

(ii) 7 to 25 parts by weight of talc,

the thermoplastic polymer component having a degree of crystallinity, determined by pulsed NMR, of 50% or less and being composed of, according to fractionation using o-dichlorobenzene as a solvent, component (A) which is a component soluble in the solvent at 40° C., component (B) which is a component insoluble in the solvent at 40° C. but soluble at 110° C. and component (C) which is a component insoluble in the solvent even at 110° C. in such a proportion that the total amount of the components (A) and (B) is from 50 to 70 parts by weight, the weight ratio of the component (A) to the component (B) being from 0.5 to 1.5, and the amount of the component (C) is from 50 to 30 parts by weight;

said composition having a flexural modulus of 10,000 to 20,000 kg/cm2.

5,302,654

PRODUCTION OF POLYMER MICROPARTICLES HAVING WATER-INSOLUBLE CHEMICALS IMMOBILIZED THEREIN

Keizo Ishii, Ashiya; Hidetsumu Okada, Takahama; Masanori Oiwa, Toyonaka; Hisaichi Muramoto, Hirakata, and Shinichi Ishikura, Tanabe, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 2, 1993, Ser. No. 24,966

Claims priority, application Japan, Mar. 2, 1992, 4-81718

Int. Cl.[5] C08F *2/22;* **C09D** *11/02*

U.S. Cl. 524—458 **20 Claims**

1. A method of the production of polymer microparticles having immobilized therein a water-insoluble substance which comprises the steps of:

dissolving a self-emulsifiable resin having an ethylenically unsaturated group in a nonaqueous solvent;

dissolving or dispersing said water-insoluble substance in the resulting resin solution;

emulsifying said resin solution in conjunction with an ethylenically unsaturated monomer or a mixture therof into droplets suspended in an aqueous medium; and

allowing said monomer to polymerize in said droplets in situ

5,302,655

MONOVINYLIDENE AROMATIC AND CONJUGATED DIENE COPOLYMER COATING COMPOSITIONS COMPRISING SULFOALKYL MONOMERIC EMULSIFIER

Jean-Luc Guillaume, La Wantzenau, France; Stephen M. Oliver, Horgen, Switzerland, and Chiu-Kwan Lam, Achern, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 503,196, Apr. 2, 1990, abandoned. This application Dec. 26, 1991, Ser. No. 813,638

Claims priority, application United Kingdom, Apr. 4, 1989, 8907534

Int. Cl.[5] C08K *3/26*

U.S. Cl. 524—547 **3 Claims**

1. A paper coating composition comprising an aqueous dispersion comprising:

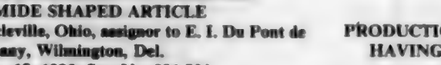
I. A monovinylidene aromatic and conjugated diene copolymer composition comprising in polymerized form:

(a) from 40 to 80 parts by weight monovinylidene aromatic monomer(s)

(b) from 15 to 55 parts by weight conjugated diene monomer(s),

(c) from 0.5 to 10 parts by weight of at least one ethylenically unsaturated carboxylic acid monomer and

(d) from 0.3 to 3 parts by weight of at least one sulfoalkyl surfactant monomer of the formula I:



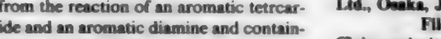
(I)

wherein A is a bivalent radical of formula Ia or Ib:



(Ia)

or,



(Ib),

R_1 is —H or a methyl radical, R_2 is is bivalent hydrocarbyl radical having 1 to 5 carbon atoms and M is a salt-forming cation, said weight parts being based on 100 weight parts (a), (b), (c) and (d); and

II. one or more paper coating pigments.

5,302,656

MOLDED ARTICLE OF NORBORNENE-BASED POLYMER

Teiji Kohara, Kawasaki, and Tadao Natsuume, Yokosuka, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,161

Claims priority, application Japan, Apr. 13, 1990, 2-096568; Mar. 13, 1991, 3-073998

Int. Cl.[5] C08L *45/00*

U.S. Cl. 524—579 **16 Claims**

1. A molded article integrally formed by molding a thermoplastic saturated norbornene-based polymer composition comprising (a) 100 parts by weight of a thermoplastic saturated norbornene-based polymer having an intrinsic viscosity of 0.3 to 3.0 dl/g when measured in decalin or chlorobenzene at 80° C. and (b) 10 to 100 parts by weight of a filler in the presence of an insertion member having a linear expansion coefficient of not more than 2.5×10^{-5}/°C.

5,302,657

HIGHLY DISPERSED ORGANOPOLYSILOXANE EMULSIONS

Karl Huhn; Christine Seidl, and Kurt Ullrich, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 661,479, Feb. 14, 1991, abandoned. This application Jun. 1, 1992, Ser. No. 891,901

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004946

Int. Cl.[5] C08L *83/00*

U.S. Cl. 524—588 **10 Claims**

1. A process for preparing clear and/or transparent polyorganosiloxane-containing emulsions having a mean particle size of less than 0.3 μm, which comprises, in a first step, (A) preparing a concentrate by mixing a mixture of polyorganosiloxanes having at least one polyorganosiloxane of the formula



(I)

in which R is selected from the group consisting of hydrocarbon radicals having from 1 to 18 carbon atoms, halogenated hydrocarbon radicals and cyanoalkyl radicals having from 1 to 18 carbon atoms, hydrocarbonoxy radicals having from 1 to 18 carbon atoms and hydrocarbonoxy radicals in which the hydrocarbon radicals are halogenated monovalent hydrocarbon radicals or cyanoalkyl radicals, R' is selected from the group consisting of hydroxyl groups, Si-C-bonded aminofunctional hydrocarbon radicals, ammonium alkyl radicals, SiC-bonded hydrocarbon radicals which contain epoxy, hydroxyl, amido, carboxyl or sulfonic acid radicals and esters thereof and SiC-bonded mercaptoalkyl radicals, n is an integer having a value ob 0, 1, 2 or 3, and m is an integer having a value of 0, 1, 2 or 3, and the sum of n+m has an average value of from 1.8 to 2.2, with the proviso that m has a value such that at least one R' radical is present in the polyorganosiloxane and that at least 50% by weight of the polyorganosiloxanes are of formula (I), in which R' is an ammonium alkyl radical, with sufficient water and an emulsifier which is soluble in the polyorganosiloxane mixture to form a concentrate, in which the emulsifier is regarded as being soluble in the polyorganosiloxane mixture if the mixture of one part by weight of emulsifier with one hundred parts by weight of polyorganosiloxane mixture is clear at 20° C., and in a second step, (B) diluting the resultant concentrate with water to the desired polyorganosiloxane concentration.

5,302,658

METHOD OF MANUFACTURING SILICONE EMULSIONS

Ronald P. Gee, and Padmakumari J. Varaprath, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 14, 1992, Ser. No. 913,555

Int. Cl.[5] C08K *5/07;* **B01J** *13/00*

U.S. Cl. 524—732 **13 Claims**

1. A method of making an emulsion comprising the steps of (A) forming a mixture by combining 35 to 75 percent by weight of a polysiloxane and 0.25 to 2.0 percent by weight of a primary nonionic surfactant having an HLB value of 10 to 19, and stirring the mixture until uniform: (B) adding and dispersing 3–6 percent by weight of a first portion of surfactant free water in the mixture, the first portion of surfactant free water being added and dispersed in the mixture gradually over a period of time in a series of from about five to about ten separate incremental steps; (C) adding to the mixture 0.25 to 2.0 percent by weight of a secondary nonionic surfactant having an HLB value of 1.8–15; (D) stirring the mixture until the particle size of the polysiloxane in the mixture is in the range of 1–100 microns; and (E) adding a second portion of water to the mixture in an amount to provide a total content of water in the product of 25–65 percent by weight based on the total weight of the mixture, the second portion of water being added to the mixture gradually over a period of time in a series of from about five to about ten separate incremental steps.

5,302,659

EMULSIONS COMPRISING ACYLATED AMINO-FUNCTIONAL ORGANOPOLYSILOXANE

Johann Bindl, Burghausen; Hans-Juergen Lautenschlager, Haiming, both of Fed. Rep. of Germany; Karl Huhn, Adrian, Mich., and Kiyoshi Ninomiya, Tokyo, Japan, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 19, 1993, Ser. No. 35,108

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211269

Int. Cl.[5] C08L *83/00*

U.S. Cl. 524—838 **7 Claims**

1. A process for preparing emulsions of acylated amino-functional organopolysiloxanes, which comprises reacting (A) an organopolysiloxane containing at least one monovalent SiC-bonded radical having primary and/or secondary amino groups with (B) a carboxylic acid anhydride in the presence of (C) an emulsifier and (D) an aqueous phase.

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5,302,660

PROCESS FOR THE PRODUCTION OF VISCOSITY-STABLE, LOW-GEL HIGHLY CONCENTRATED ELASTANE SPINNING SOLUTIONS

Bernd Klinksiek, Bergisch Gladbach; Rolf-Volker Meyer, Krefeld-Bockum; Beatrix Frauendorf, Leverkusen; Klaus Rall, K ln; Wolfgang 35e,uml/a/ cker, Pulheim; Hans-Joachim Wollweber, Krefeld; Helmut Ohse, and Wolfram Wagner, both of Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1993, Ser. No. 87,978

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1992, 4222772

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—871 **13 Claims**

1. A continuous process for the production of highly concentrated elastane spinning solutions having improved flow properties and high viscosity stability from rapidly reacting polyaddition components, wherein the reaction components are continuously introduced from mixing tanks into a multistage jet reactor consisting of a mixing chamber (10) with a feed nozzle (1), a mixing nozzle (2) and a homogenizing nozzle (7), which are arranged immediately one behind the other, the reaction components are mixed together in the mixing nozzle (2) of the reactor in up to 10 ms in the first stage of the multistage jet reactor, the reacting mixture is homogenized in a homogenizing nozzle (7) in a second stage and is then reacted to completion in a following reactor.

5,302,661

CONTINUOUS PRODUCTS MADE OF THERMOSETTABLE MONOMERS

Cornelius W. M. Bastiaansen, Maastricht, Netherlands, assignor to DSM N.V., Netherlands

Filed Dec. 16, 1991, Ser. No. 808,375

Claims priority, application Netherlands, Dec. 14, 1990, 9002758

Int. Cl.[5] C08F *261/04, 263/04, 291/10, 283/06*

U.S. Cl. 525—59 **18 Claims**

1. A composition suitable for producing continuous products without using continuous carrier material, comprising at least 50% by weight with respect to the entire composition of bismaleimide monomers and a high molecular weight thermoplastic polymer having a weight average molecular weight of at least 50,000 that is soluble in said monomers, the polymer being present in an amount sufficient to make the mixture spinable.

5,302,662

COMPATIBLE POLYAMIDE BLENDS

Christine J. Landry, Honeoye Falls; Dennis J. Massa, Pittsford; Timothy E. Long, Hilton; Michael R. Landry, Honeoye Falls; David M. Teegarden, and Ralph H. Colby, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,718

Int. Cl.[5] C08L *77/00, 69/00, 71/12, 25/04*

U.S. Cl. 525—66 **17 Claims**

1. A blend comprising: (A) a polyamide; (B) a polymer selected from the group consisting of poly(phenylene oxide), polystyrene, high-impact polystyrene, tetramethyl-bisphenol-A polycarbonate, poly(vinyl methyl ether), and mixtures thereof; and (C) a compatibilizer comprising a copolymer having repeating units derived from an aromatic vinyl compound monomer and repeating units derived from vinylphenol monomers, wherein at least about 50% of said aromatic vinyl compound monomers are styrene monomeric units.

5,302,663

ABS MOLDING COMPOUNDS

Herbert Eichenauer, Dormagen; Karl-Heinz Ott, Leverkusen, and Alfred Pischtschan, Kürten-Eichhof, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 793,161, Nov. 18, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 70,494

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4038004; Jul. 11, 1991, 4122870

Int. Cl.[5] C08L *25/12, 55/02, 69/00*

U.S. Cl. 525—67 **7 Claims**

1. Thermoplastic molding compounds having high toughness, adequate heat resistance, adjustable surface gloss and excellent thermoplastic processability, said molding compounds containing

A) 20 to 70 parts by weight of one or more thermoplastic copolymers or terpolymers synthesized from at least one polymerized vinyl monomer selected from styrene, α-methyl styrene, methyl methacrylate, acrylonitrile having an average molecular weight ($\overline{M}_w$) in the range from 120,000 to 200,000,

B) 5 to 50 parts by weight of one or more thermoplastic copolymers synthesized from 60 to 95% by weight styrene and 40 to 5% by weight acrylonitrile having an average molecular weight ($\overline{M}_w$) in the range from 50,000 to 80,000,

C) 1 to 20 parts by weight of one or more thermoplastic copolymers or terpolymers synthesized from at least one polymerized vinyl monomer selected from styrene, α-methyl styrene, methyl methacrylate, acrylonitrile having an average molecular weight ($\overline{M}_w$) in the range from 1,500 to 6,000,

D) 12 to 30 parts by weight of a particulate grafted rubber having a glass temperature of ≦10° C. and an average particle diameter (d_{50}) of 0.05 to 0.5 μm which contains per 100 parts by weight rubber from 30 to 80 parts by weight of a polymer of styrene, methyl methacrylate, acrylonitrile or mixtures thereof in chemically bound form and

E) 2.5 to 20 parts by weight of a particulate grafted rubber having a glass temperature of ≦10° C. and an average particle diameter (d_{50}) of 1 to 5 μm which contains per 100 parts by weight rubber from 100 to 150 parts by weight of a polymer of styrene, α-methyl styrene, methyl methacrylate, acrylonitrile or mixtures thereof in chemically bound form, and, optionally,

F) 20 to 200 parts by weight (based on 100 parts by weight of A+B+C+D+E) of one or more aromatic polycarbonates wherein the 1 to 20 parts by weight of component C) is in addition to any thermoplastic copolymers or terpolymers having an average molecular weight ($\overline{M}_w$) in the range from 1,500 to 6,000 that may be present in components A) and B).

5,302,664

ABS MOLDING COMPOUNDS

Herbert Eichenauer, Dormagen; Karl-Heinz Ott, Leverkusen, and Alfred Pischtschan, Kuerten-Eichhof, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 793,185, Nov. 18, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 74,006

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4038006; Jul. 11, 1991, 4122871

Int. Cl.[5] C08L *25/12, 25/16, 55/02, 69/00*

U.S. Cl. 525—67 **8 Claims**

1. Thermoplastic molding compounds having good toughness, high heat resistance, adjustable surface gloss and good thermoplastic processability, said molding compounds containing

A) 20 to 70 parts by weight of one or more thermoplastic copolymers or terpolymers synthesized from at least one polymerized vinyl monomer selected from styrene, α-methyl styrene, methyl methacrylate, acrylonitrile having an average molecular weight ($\overline{M}_w$) in the range from 120,000 to 200,000,

B) 20 to 70 parts by weight of one or more thermoplastic copolymers synthesized from 60 to 95% by weight α-methyl styrene and 40 to 5% by weight acrylonitrile having an average molecular weight ($\overline{M}_w$) in the range from 50,000 to 80,000,

C) 1 to 20 parts by weight of one or more thermoplastic copolymers or terpolymers synthesized from at least one polymerized vinyl monomer selected from styrene, α-methyl styrene, methyl methacrylate, acrylonitrile having an average molecular weight ($\overline{M}_w$) in the range from 1,500 to 6,000,

D) 1 to 30 parts by weight of a particulate grafted rubber having a glass temperature of ≦10° C. and an average particle diameter (d_{50}) of 0.05 to 0.5 μm which contains per 100 parts by weight rubber from 30 to 80 parts by weight of a polymer of styrene, α-methyl styrene, methyl methacrylate, acrylonitrile or mixtures thereof in chemically bound form and

E) 1 to 20 parts by weight of a particulate grafted rubber having a glass temperature of ≦10° C. and an average particle diameter (d_{50}) of 1 to 5 μm which contains per 100 parts by weight rubber from 100 to 150 parts by weight of a polymer of styrene, α-methyl styrene, methyl methacrylate, acrylonitrile or mixtures thereof in chemically bound form, and, optionally,

F) 20 to 200 parts by weight (based on 100 parts by weight of A+B+C+D+E) of one or more aromatic polycarbonates wherein the 1 to 20 parts by weight of component C) is in addition to any thermoplastic copolymers or terpolymers having an average molecular weight ($\overline{M}_w$) in the range from 1,500 to 6,000 that may be present in components A) and B).

5,302,665

STYRENE OR VINYL CHLORIDE RESIN WITH GLYCIDYL(OXY)/AMIDO-MODIFIED POLYOLEFIN

Ikuhiro Mishima, Hyogo; Yoshihiko Hashimoto, Osaka; Kazuhiko Tamai, and Hisataka Hayashi, both of Hyogo, all of Japan, assignors to Kanegafuchi Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Jul. 9, 1992, Ser. No. 911,099

Claims priority, application Japan, Jul. 12, 1991, 3-198722

Int. Cl.[5] C08L *51/04, 51/06*

U.S. Cl. 525—71 **8 Claims**

1. A thermoplastic resin composition comprising from 5 to 98 parts by weight of a styrene resin (A) and/or a vinyl chloride resin (B) and from 95 to 2 parts by weight of a modified olefin polymer (C) having, per from 2 to 1,000 olefin-derived repeating units, one structural unit containing at least one amido group (a) and at least one reactive group (b) selected from the group consisting of glycidyloxy group and glycidyl group.

5,302,666

BISPHENOL A AND NOVOLAK EPOXY RESINS WITH NITRILE RUBBER

Seiichi Hino, Yokohama; Jun Enda, Machida, and Masaki Yamamoto, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jan. 4, 1991, Ser. No. 637,624

Claims priority, application Japan, Jan. 8, 1990, 2-1174

Int. Cl.[5] C08L *63/02, 63/04*

U.S. Cl. 525—113 **8 Claims**

1. A resin composition for fiber reinforced plastic comprising the following component A, B, C, D and E as essential components:

A: a bisphenol A epoxy resin having an epoxy equivalent of at most 250 and being liquid at room temperature,

B: a bisphenol epoxy resin having an epoxy equivalent within a range of from 400 to 5,000 and softening point of from 60° C. to 200° C.,

C: a phenol novolak epoxy resin,

D: a nitrile rubber, and

E: a curing agent,

wherein relative to 100 parts by weight of component A, component B is from 5 to 40 parts by weight, component C is from 50 to 140 parts by weight, and component D is from 1 to 8 parts by weight, and

wherein said component B comprises component B1 which is a bisphenol epoxy resin having an epoxy equivalent of at most 1,000 and a softening point of at most 100° C. and being solid at room temperature and component B2 which is a bisphenol A epoxy resin having an epoxy equivalent of at least 1,10 and softening point of at least 100° C. and being solid at room temperature.

5,302,667

ASYMMETRICAL RADIAL POLYMER AND COMPOSITION OF MATTER COMPRISING THE SAME

Robert B. Rhodes, and Arthur R. Bean, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 938,558, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 509,528, Apr. 16, 1990, abandoned. This application Oct. 1, 1993, Ser. No. 130,321

Int. Cl.[5] C10M *143/12*

U.S. Cl. 525—314 **2 Claims**

1. An oil composition containing a hydrogenated radial polymer comprising a plurality of arms, said arms being of two distinctly different peak molecular weights as measured by gel permeation chromatography with a low angle laser light scattering detector, wherein said arms are homopolymers of polyisoprene, wherein the peak molecular weight of the longer polymer arms is within the range from about 40,000 to about 200,000 and the peak molecular weight of at least a first set of lower molecular weight arms is within the range from about 5,000 to about 80,000, and wherein the weight ratio of said at least two distinctly different molecular weight arms is within the range from about 2.0:1 to about 3.0:1.

5,302,668

PERMANENTLY ANTISTATIC POLYACRYLATE ARTICLES AND PROCESS FOR MAKING THEM

Raj Chakrabarti, 1361 Redfern Dr., Upper St. Clair, Pa. 15241

Division of Ser. No. 685,743, Apr. 16, 1991, Pat. No. 5,258,468. This application May 28, 1993, Ser. No. 68,210

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—328.2 **14 Claims**

1. Permanently antistatic polyacrylate resin articles made by reacting

a. polyacrylate resin articles made from polyacrylate resin composition having the formula:

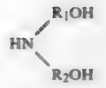


wherein R is either hydrogen or an alkyl group containing from 1 to 2 carbon atoms; R′ is an alkyl group containing from 1 to 4 carbon atoms; R″ is phenyl, cyano, or acetoxy group; $n_1+n_2=1$ wherein n_1 has a value ranging from about 0.2 to 1 and n_2 has a value ranging from 0 to 0.8;

and where x is an integer ranging from about 100 to about 10,000,000, with

b. a dialkanolamine having the formula:

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wherein R_1OH and R_2OH are alkanol groups containing from 1 to 4 carbon atoms,
the reaction being carried out at temperatures ranging from about 70° C. to about 180° C.

5,302,669
CURABLE RESIN AND PROCESS FOR PREPARING THE SAME

Hisao Furukawa, Kobe; Naotami Ando, Hyogo, and Yasushi Kato, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

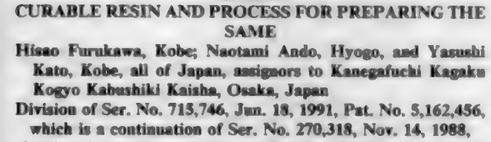
Division of Ser. No. 715,746, Jun. 18, 1991, Pat. No. 5,162,456, which is a continuation of Ser. No. 270,318, Nov. 14, 1988, abandoned, which is a division of Ser. No. 905,107, Sep. 8, 1986, Pat. No. 4,801,658. This application Sep. 21, 1992, Ser. No. 947,459

Claims priority, application Japan, Sep. 9, 1985, 60-199049

Int. Cl.[5] **C08F** *30/08, 230/08*

U.S. Cl. 525—440 **18 Claims**

1. A curable resin having a number average molecular weight of 1,000 to 100,000 and comprising units of a prepolymer (C) having a number average molecular weight of 200 to 60,000 and a prepolymer (F) having a number average molecular weight of 250 to 60,000, said prepolymer (C) having the formula (I):

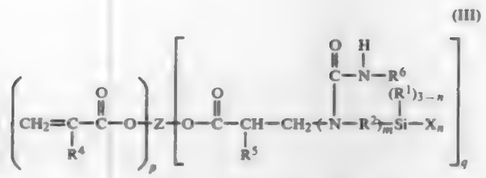


(I)

wherein R^1 is an alkyl, aryl or aralkyl group having 1 to 10 carbon atoms; R^2 is a bivalent group having 1 to 10 carbon atoms selected from the group consisting of alkylene groups, arylene groups and aralkylene groups; R^4 and R^5 are the same or different and each is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; X is a hydrolyzable group selected from the group consisting of a halogen atom, an alkoxyl group, an acyloxyl group, a ketoxymate group, an amino group, an acid amide group, an aminooxy group, a mercapto group and an alkenyloxy group; Y is —S— or



in which R^3 is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; Z is a residue of an oligomer (A) having a number average molecular weight of 100 to 50,000 and having at least two groups selected from the group consisting of acryloyloxy groups and methacryloyloxy groups; p and q are an integer of one or more satisfying the equation of $2 \leq p+q \leq 8$; n is an integer of 1 to 3, and m is an integer of 1 to 10; and said prepolymer (F) having the formula (III):



(III)

wherein R^6 is an alkyl, aryl or aralkyl group having 1 to 30 carbon atoms or a group having the formula: $(C_2H_5O)_3$ —Si—$(CH_2)_3$—; and X, Z, R^1, R^2, R^4, R^5, p, q, m and n are as defined above.

5,302,670
NEW PLASTICS ON FATTY ACID BASIS

Rainer Frische, Frankfurt am Main; Jürgen Volkheimer, Wiesbaden; Klaus Wollmann, Eschhofen; Herrmann Schomann, Langen; Judith Schneider; Alexander Ach, both of Frankfurt am Main; Renate Gross-Lannert, Dietzenbach, and Bernd Best, Moerfelden, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/00995, § 371 Date Feb. 28, 1991, § 102(e) Date Feb. 28, 1991, PCT Pub. No. WO91/00305, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 22, 1990, Ser. No. 659,317

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921305

Int. Cl.[5] **C08L** *67/08*

U.S. Cl. 525—444.5 **15 Claims**

1. A thermoplastic linear polymer obtained by a process of preparing and reacting a monomer containing two reactive groups comprising steps for:

(a) reacting at least one natural fatty acid or ester selected from the group consisting of unsaturated fatty acids or esters and hydroxyl-group containing fatty acids or esters with an equimolar amount of a bifunctional ester- or amide-forming compound to produce a monomer component, comprising at least one difatty acid diamide, difatty acid diester, difatty acid amide ester, monofatty acid amide amine or monofatty acid amide alcohol, having only two groups reactive with a second bifunctional compound to produce a thermoplastic linear polymer said reactive groups including ethylenic double bonds, hydroxyl groups, epoxy groups or amino groups; and

(b) subsequently reacting said monomer component with an equimolar amount of said second bifunctional compound selected from the group consisting of disulfur dichloride, diisocyanate, dicarboxylic acid and activated dicarboxylic acid.

5,302,671
MOISTURE-CURABLE COMPOSITIONS CONTAINING AMINOALKOXY-FUNCTIONAL SILICONE

Martin E. Cifuentes; William P. Brady; William N. Fenton; Randall G. Schmidt; Michael R. Strong; David L. Stickles, and Bernard VanWert, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1993, Ser. No. 76,619

Int. Cl.[5] **C08G** *77/38*

U.S. Cl. 525—477 **28 Claims**

1. A moisture-curable silicone composition comprising:

(i) a hydroxyl-functional organopolysiloxane resin comprising $R_3SiO_{\frac{1}{2}}$ siloxane units and $SiO_{4/2}$ siloxane units, wherein the mole ratio of the $R_3SiO_{\frac{1}{2}}$ siloxane units to $SiO_{4/2}$ siloxane units has a value of from 0.5/1 to 1.2/1 and R is selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals;

(ii) a diorganopolysiloxane polymer having at least two silicon-bonded alkoxy groups and at least one carbon-bonded amine group in its molecule, said polymer having a viscosity at 25° C. of 20 to 100,000 centipoise, the weight ratio of said resin to said polymer being in the range 20:80 to 80:20;

(iii) optionally, a hydrolyzable silane in sufficient amount to provide stability to said composition; and

(iv) optionally, sufficient catalyst to accelerate the cure of said composition.

5,302,672
2,7-DIHYDROXYNAPHTHALENE BASED EPOXY RESIN, INTERMEDIATE THEREOF, PROCESSES FOR PRODUCING THEM, AND EPOXY RESIN COMPOSITION

Ichiro Ogura; Shunji Ehara; Taku Kitamura, and Hiroshi Sakata, all of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 841,470

Claims priority, application Japan, Feb. 27, 1991, 3-032765

Int. Cl.[5] **C08G** *59/08*

U.S. Cl. 525—481 **6 Claims**

1. An epoxy resin composition comprising a mixture of a 1,1-bis(2,7-diglycidyloxy-1-naphthyl)alkane, a 1-(2,7-diglycidyloxy-1-naphthyl)-1-(2-glycidyloxy-1-naphthyl)alkane, and a 1,1-bis(2-glycidyloxy-1-naphthyl)alkane and a curing agent.

5,302,673
POLY-HYDROXYNAPHTHALENE COMPOUNDS AND EPOXY RESIN COMPOSITION

Akihiro Naka; Shuichi Ito, both of Kyoto; Shinya Akizuki, Osaka, and Kiyoshi Saito, Hyogo, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto and Nitto Denko Corporation, Osaka, both of Japan

Filed Jun. 18, 1992, Ser. No. 900,883

Claims priority, application Japan, Jun. 21, 1991, 3-150538; Nov. 11, 1991, 3-294437

Int. Cl.[5] **C08G** *8/12;* **C08L** *61/08, 63/02*

U.S. Cl. 525—481 **2 Claims**

1. An epoxy resin composition which comprises an epoxy resin and a poly-hydroxynaphthalene compound as an epoxy resin curing agent, said poly-hydroxynaphthalene compound being derived from alpha-naphthol and beta-naphthol by copolycondensation with an aldehyde, the proportions of the alpha-naphthol unit and the beta-naphthol unit being 85 to 15:15 to 85 mole percent, the amount of said aldehyde to be used being within the range of 0.3 to 0.9 mole per mole of the sum total of the alpha-naphthol and the beta-naphthol, said compound having a weight-average molecular weight of 300 to 2,000; wherein the epoxy resin is selected from the group consisting of bisphenol A resins, phenol novolak resins and cresol novolak resins, said epoxy resin has a softening point of 50° to 130° C. and an epoxy equivalent weight of 160 to 210; and wherein an equivalent ratio between the epoxy groups of said epoxy resin and the phenolic hydroxyl groups of said poly-hydroxynaphthalene compound is within the range of 1:0.8 to 1.2.

5,302,674
DIMERIC AND TETRAMERIC CYCLOPENTADIENYL GROUP 6B METAL ALPHA-OLEFIN POLYMERIZATION CATALYSTS AND PROCESS FOR POLYMERIZING ALPHA-OLEFINS

Michael J. Carney, and David L. Beach, both of Kingwood, Tex., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 973,139, Nov. 6, 1992, Pat. No. 5,240,895. This application May 13, 1993, Ser. No. 61,792

Int. Cl.[5] **C08F** *4/22*

U.S. Cl. 526—114 **32 Claims**

1. A process for the polymerization of olefins, which comprises homopolymerizing or copolymeizing olefins selected from the group consisting of ethylene and alpha-olefins of 3–8 carbon atoms in the presence of a catalyst system comprising a dimeric or tetrameric cyclopentadienyl chromium compound in which chromium metal has an oxidation state of +2, said chromium compound being supported on an inorganic support.

5,302,675
HIGH TENSILE STRENGTH AMORPHOUS 1-BUTENE/PROPYLENE COPOLYMERS

Andres Sustic, and George C. Allen, both of Odessa, Tex., assignors to Rexene Corporation, Dallas, Tex.

Filed Sep. 8, 1992, Ser. No. 941,916

Int. Cl.[5] **C08F** *210/06, 4/654*

U.S. Cl. 526—125 **19 Claims**

1. A process for the production of an amorphous propylene/1-butene copolymers comprising:

reacting propylene and 1-butene monomers in the presence of a catalyst system comprising:

(a) a solid supported catalyst component is prepared by the method comprising: (i) co-comminuting magnesium halide support base and aluminum trihalide in a molar ratio from about 8:0.5 to about 8:3 in the absence of added electron donor; and (ii) then co-comminuting the product of step (i) in the absence of added electron donor with sufficient titanium tetrahalide to provide a molar ratio of magnesium halide to titanium tetrahalide from about 8:0.1 to about 8:1.0.

(b) a trialkylaluminum co-catalyst, having from 1 to 9 carbon atoms in each alkyl group in an amount such that the Al/Ti ratio is between about 50:1 and about 500:1.

(c) an alkoxy silane component in a sufficient quantity such that the molar ratio of organoaluminum co-catalyst to alkoxy silane is in the range from about 20:1 to about 45:1;

said amorphous copolymer being characterized by a propylene content of 25 to 50 wt% and 1-butene content of 75 to 50 wt%.

13. A copolymer comprising:

from 25 to 50 wt% propylene and from 75 to 50 wt% 1-butene characterized by a tensile strength of greater than 300 psig;

said copolymer containing no heptane insolubles and being further characterized by having no detectable heat of fusion.

5,302,676
POLYMERS HAVING ENHANCED CROSSLINKING EFFICIENCIES, AND METHODS FOR THEIR PREPARATION USING 1',6,6'–TRIMETHACRYLOYL–2,3,3',4,4'–PENTA–O–METHYL SUCROSE AS A CROSSLINKING AGENT

Navzer D. Sachinvala; Reui F. Ju, both of Aiea, Hi., and Morton H. Litt, Cleveland, Ohio, assignors to Hawaiian Sugar Planters' Association, Aiea, Hi.

Division of Ser. No. 877,813, May 4, 1992, Pat. No. 5,248,747, which is a continuation-in-part of Ser. No. 697,983, May 10, 1991, Pat. No. 5,116,961, which is a continuation-in-part of Ser. No. 623,548, Dec. 7, 1990, abandoned. This application Jul. 15, 1993, Ser. No. 91,283

Int. Cl.[5] **C08F** *218/14, 226/02, 220/10*

U.S. Cl. 526—238.23 **10 Claims**

1. A method for producing a composition including a crosslinked polymer which comprises polymerizing a mixture containing at least:

(i) 1',6,6'-trimethacryloyl-2,3,3',4,4'-penta-O-methylsucrose monomer, and

(ii) a monomer which is capable of being crosslinked by said 1',6,6'-trimethacryloyl-2,3,3',4,4'-penta-O-methylsucrose monomer,

in amounts sufficient to produce a crosslinked polymer containing composition.

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5,302,677

ALKENYLAMINOALKANE-1,1-DIPHOSPHONIC ACID DERIVATIVES AND COPOLYMERS THEREOF WITH UNSATURATED CARBOXYLIC ACIDS

Matthias Krull, Bad Soden am Taunus; Christoph Naumann, Niedernhausen, and Herrmann Hoffmann, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

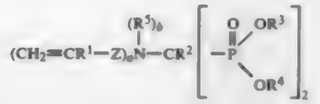
Filed Mar. 26, 1993, Ser. No. 37,256

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1992, 4210296

Int. Cl.[5] C08F *230/02*

U.S. Cl. 526—240 **15 Claims**

1. A copolymer comprising 0.1–50 mol %, of at least one alkenylaminoalkane-1,1-diphosphonate unit of the formula I



(I)

in which

R^1 is hydrogen or methyl,

R^2 is hydrogen or C_1–C_{10}-alkyl,

R^3 is C_1–C_4-alkyl, phenyl, hydrogen or a cation,

R^4 is hydrogen or a cation,

R^5 is C_1–C_{22}-alkyl, C_3–C_{22}-alkenyl,

Z is C_1–C_3-alkylene and

a is 1 or 2, b is 0 or 1, a+b is 2,

and 99.9–50 mol % of at least one unit of the formula II

$$R^6R^7C{=}CR^8{-}Y \quad \text{(II)}$$

in which

R^6 and R^7, independently of one another, are hydrogen, phenyl or a group of the formula COOM,

R^8 is hydrogen, methyl, phenyl or a group of the formula $-CH_2-COOM$,

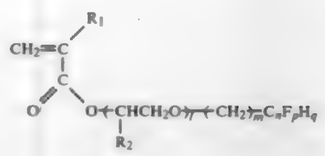
Y is a group of the formula COOM or

R^7 and R^8 together are a group of the formula —C(O)—O—C(O)— or

R^7 and Y together are a group of the formula —C(O)—O—C(O)— or

R^8 and Y together are a group of the formula $-CH_2-$C(O)—O—C—(O)— and in which

M is hydrogen, lower alkyl or a cation, with the proviso that the monomers of the formula II contain one or two units of the formula —C(O)—O— and contain 0 to 10 mol % of further ethylenically unsaturated monomer units.



(I)

wherein each of R_1 and R_2 is independently H or CH_3, l is an integer of 1 to 9, m is an integer of 1 to 5, n is an integer of 4 to 10, p is an integer of not less than 8, q is an integer of not less than 0, and p, q and n has the relationship of $p+q=2n+1$, and at least one hydrophilic monomer, and optionally, containing other monomer.

5,302,678

CONTACT LENS

Masashi Nomura, Kodama; Yuuichi Yokoyama, Kounosu; Hideyuki Futamura, Kamisato, and Makoto Tsuchiya, Honjo, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

PCT No. PCT/JP90/00973, § 371 Date Apr. 6, 1992, § 102(e) Date Apr. 6, 1992, PCT Pub. No. WO91/02279, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 31, 1990, Ser. No. 667,395

Claims priority, application Japan, Jul. 31, 1989, 1-198417

Int. Cl.[5] C08F *18/20*; G02C *7/04*

U.S. Cl. 526—246 **9 Claims**

1. A hydrous contact lens comprising a copolymer obtained by copolymerizing a monomer mixture containing, as essential components, at least one member of fluorine-containing monomers having the general formula,

5,302,679

ANAEROBIC COMPOSITIONS WHICH EXPAND WHEN POST-CURED

Eerik Maandi, Rocky Hill, and Richard D. Rich, Avon, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Filed Aug. 6, 1992, Ser. No. 926,344

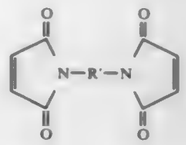
Int. Cl.[5] C08F *22/40*

U.S. Cl. 526—262 **5 Claims**

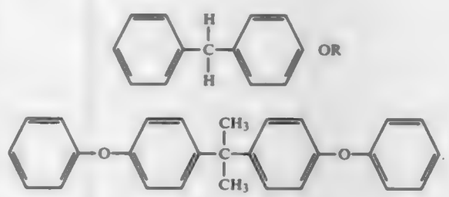
1. An anaerobic adhesive composition capable of post-cure expansion in situ comprising the reaction product formed by further curing

a) a partially polymerized difunctional methacrylate monomer and;

b) a substantially unreacted maleimide capable of effectuating permanent post-cure expansion said maleimide having the formula



wherein R' has from 6 to 100 carbon atoms and is selected from a group consisting of alkyl, aryl, cycloalkyl, aralkyl and alkaryl, and wherein R' is not



5,302,680

COPOLYMERS OF EPOXYBUTADIENE AND MALEIMIDES

Richard W. Blevins, Rochester, and S. Richard Turner, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1992, Ser. No. 988,489

Int. Cl.[5] C08F *226/06, 224/00*

U.S. Cl. 526—262 **7 Claims**

1. A copolymer comprising polymerized repeating monomeric units of (a) 3,4-epoxy-1-butene, and (b) a maleimide.

5,302,681

POLYMERIZATION INHIBITION BY FULLERENES

Robert D. McClain, Houston, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 10, 1992, Ser. No. 989,933

Int. Cl.[5] C08F *36/08, 12/08*; C07C *7/20*

U.S. Cl. 526—340.2 **21 Claims**

15. A composition inhibited against premature free-radical polymerization of a non-linear, readily polymerizable monomer which comprises an intimate mixture of the monomer and a polymerization inhibiting, soluble amount of a fullerene compound.

16. The composition of claim **15** wherein the monomer is alkenylaromatic compound, conjugated alkadiene, α,β-unsaturated carboxylic acid ester, or α,β-unsaturated nitrile.

18. The composition of claim **16** wherein the fullerene compound is a fullerene of from 32 to 300 carbon atoms.

20. The composition of claim **18** wherein the monomer is isoprene.

5,302,682

METHOD FOR THE PREPARATION OF DIORGANOSILOXANE-DIORGANOSILAZANE COPOLYMER

Akihiko Shirahata, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 89,203

Claims priority, application Japan, Jul. 21, 1992, 4-215530

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—14 **11 Claims**

1. A method for the preparation of a diorganosiloxane-diorganosilazane copolymer, said method comprising equilibration polymerizing

(A) a mixture or polymerization reaction product of

(a) a hexaorganodisiloxane of the formula

$$R^1{}_3SiOSiR^1{}_3$$

and

(b) a cyclic diorganosiloxane of the formula

$$\left[(R^1{}_2SiO)_m\right]$$

wherein R^1 of components (a) and (b) is an independently selected monovalent hydrocarbon group and m is at least 3; with

(B) a cyclic diorganosilazane of the formula

$$\left[(R^1{}_2SiNR^2)_n\right]$$

wherein R^1 is an independently selected monovalent hydrocarbon group, R^2 is selected from the group consisting of hydrogen and an independently selected monovalent hydrocarbon group and n is 3 or 4, said polymerizing being carried out in the presence of

(C) cesium hydroxide,

whereby the diorganosiloxane units and diorganosilazane units of said copolymer product are randomly dispersed therein.

5,302,683

SILICONE RESIN-BASED COATINGS

Richard Weidner, Burghausen, Fed. Rep. of Germany; Erich Bildl, Franking, Austria; Volker Frey, Burghausen, Fed. Rep. of Germany; Manfred Meisenberger, Burghausen, Fed. Rep. of Germany, and Reinhardt Mueller, Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 862,705, Apr. 3, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 51,911

Claims priority, application Fed. Rep. of Germany, May 3, 1991, 4114517; Aug. 30, 1991, 4128893

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—21 **5 Claims**

1. A process for preparing a coating composition which comprises condensing at an elevated temperature a mixture containing component (A) selected from the group consisting of

(1) a silicone resin of the formula

$$R_xR'_ySiO_{(4-x-y)/2} \quad \text{(1)}$$

in which R is a C_1- to C_{18}-hydrocarbon radical selected from the group consisting of alkyl radicals, cycloalkyl radicals, aryl radicals, alkaryl radicals and aralkyl radicals, R' is selected from the group consisting of C_1- to C_4-alkyl radicals and hydrogen atoms, x has an average value of from 1.1 to 1.9, y has a value of from 0.1 to 1.8 and the sum of x+y has a maximum value of 2.5,

(2) a silane of the formula

$$R_aSi(OR')_{4-a} \quad \text{(2)}$$

in which R and R' are the same as above, and a has an average value of from 1.1 to 1.9, and

(3) mixtures thereof, in which a portion of component (A) is a silane of formula (2) and at least 30% of the radicals R in component (A) are phenyl radicals and/or tolyl radicals, in the presence of a basic condensation catalyst (B) selected from the group consisting of (1) tetra(C_1- to C_{12}-hydrocarbon)-ammonium hydroxide, (2) tetra (C_1- to C_{12}-hydrocarbon)phosphonium hydroxide, (3) a silanolate of tetra (C_1- to C_{12}hydrocarbon)ammonium hydroxide, (4) a silanolate of tetra(C_1- to C_{12}-hydrocarbon) phosphonium hydroxide and (5) mixtures thereof in an amount sufficient to render the resultant mixture basis, with the proviso that the silanol content of the mixture is at least 0.3% by weight based on the weight of component (A) and when the silanol content of the mixture is less than 0.3% by weight based on the weight of component (A) then sufficient water (C) is added so that a silanol content of at least 0.3% by weight based on the weight of component (A) is obtained and an organic solvent (D), removing the resultant alkanol formed during the condensation, in which said resultant coating composition is free from carboxylic acids and salts thereof.

5,302,684

SILICONIMIDES

Bernhard Stapp, Kalchreuth; Armin Datz, Poxdorf; Volker Muhrer, Fuerth, all of Fed. Rep. of Germany, and Gabriele Moesges, deceased, late of Hemhofen, Fed. Rep. of Germany by Heinz Moesges, executor , assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

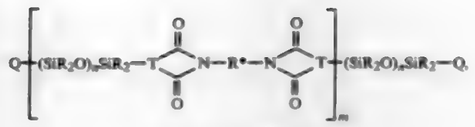
Filed Jul. 14, 1992, Ser. No. 913,276

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1991, 4123574

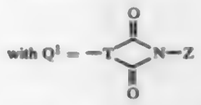
Int. Cl.[5] C08G *77/14, 77/26*

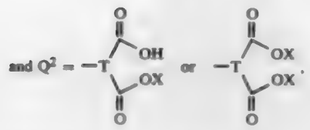
U.S. Cl. 528—26 **1 Claim**

1. A siliconimide which contains cross-linkable, functional groups, the siliconimide having a general formula

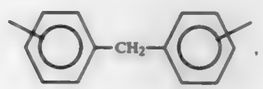


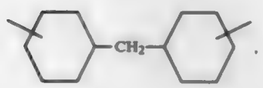
in which Q = Q^1 or Q^2,

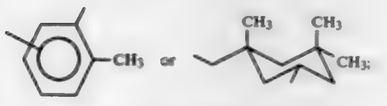


and Q^2 = 

m is an integer from 0 to 10, when Q=Q^1,
m is an integer from 1 to 10, when Q=Q^2,
n is an integer from 0 to 50,
R=alkyl, cycloalkyl, aryl, aralkyl or alkaryl;
R*=—$(CH_2)_6$—, —CH_2—$C(CH_3)_2$—CH_2—CHC_3—$(CH_2)_2$—,

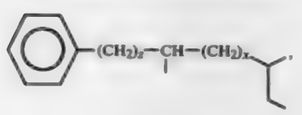




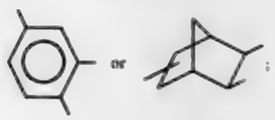


T = —$(CH_2)_3$—, CH_3—$(CH_2)_y$—CH—$(CH_2)_z$—

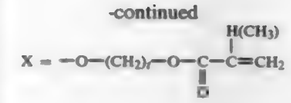
x = 1 or 2
y = an integer of from 0 to 16, inclusive



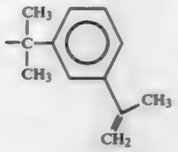
x = 1 or 2
z = 0 or 1

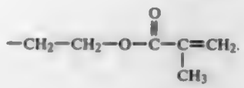


-continued



where t = 2, 3 or 4;

Z = R*—NCO,  or



5,302,685

METHOD FOR PREPARING ORGANOPOLYSILOXANE POWDER

Hiroshi Tsumura, Annaka; Nobuhiko Kodana, Tomioka; Hidehiko Aonuma, and Kenichi Isobe, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,593
Claims priority, application Japan, Jun. 18, 1992, 4-184524
Int. Cl.[5] C07F 7/08; C08G 77/06
U.S. Cl. 528—33 **9 Claims**

1. A method for preparing organopolysiloxane powder from an organopolysiloxane solution, comprising the steps of:

admitting an organopolysiloxane solution into a generally conical hollow tank having a vertical center axis and an inner wall, said tank being equipped with agitating means including a rotating shaft having at least one impeller positioned at an inclination in close proximity to the tank inner wall, said agitating means being effective for driving said shaft such that said shaft may rotate about its own axis and revolve about the center axis of the tank along the tank inner wall, and

operating said agitating means for agitating the solution by rotation and revolution of said rotating shaft at a sufficient temperature to allow a low-boiling liquid component to evaporate from the solution, thereby evaporating and removing the low-boiling liquid component from the solution.

5,302,686

HOLLOW CONTAINER AND STRETCHED FILM MADE OF A COPOLYESTER

Katsuji Tanaka; Hitoshi Matsumoto, both of Machida; Takuji Hirahara, Kawasaki, and Osamu Kishiro, Atsugi, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 912,181, Jul. 13, 1992. This application Jul. 15, 1993, Ser. No. 91,371
Claims priority, application Japan, Jul. 15, 1991, 3-174132; Dec. 9, 1991, 3-324865; Dec. 9, 1991, 3-324866; Dec. 19, 1991, 3-337306
Int. Cl.[5] B29D 22/00
U.S. Cl. 428—35.7 **15 Claims**

1. A hollow container of a copolyester, which is produced by biaxial stretch blow molding of a preform which is produced by injection molding or extrusion molding of a copolyester which comprises, as main components, terephthalic acid as a dicarboxylic acid component and ethylene diol as a diol component and which is characterized by:

(1) isophthalic acid as a dicarboxylic acid component being from 0.5 to 3.0 mol %,
(2) diethylene glycol as a diol component being from 1.0 to 2.5 mol %,
(3) the intrinsic viscosity being from 0.60 to 1.50 dl/g,
(4) the concentration of terminal carboxyl groups being at most 18 eq/ton, and,
(5) the content of a cyclic trimer being at most 0.40% by weight.

5,302,687

PREPARATION OF RESINS FROM PHENOLIC COMPOUNDS AND OXAZOLINES USING AMMONIUM OR PHOSPHONIUM SALT CATALYSTS

Billy M. Culbertson, Worthington; Omar Tiba, and Gilbert M. Gynn, both of Dublin, all of Ohio, assignors to Ashland Oil, Inc., Russell, Ky.

Filed Mar. 29, 1993, Ser. No. 38,417
Int. Cl.[5] C08G 65/40, 69/44, 69/40
U.S. Cl. 528—153 **10 Claims**

1. The process for preparing a polymeric composition comprising reacting a mixture of at least one phenolic compound which contains two or more phenolic hydroxyl groups per molecule and at least one compound containing at least two oxazoline groups per molecule and devoid of other functional groups capable of reacting in any manner with either an oxazoline group or a hydroxyl group in the presence of from about 0.5% to about 5% by weight based on the combined weight of phenolic compound/oxazoline compound of at least one member selected from the group consisting of a tetrahydrocarbyl ammonium salt and a tetrahydrocarbyl phosphonium salt, and optionally in the presence of an alkyl halide.

5,302,688

SELECTED BLOCK PHENOLIC OLIGOMERS AND THEIR USE IN PHENOLIC RESIN COMPOSITIONS AND IN RADIATION-SENSITIVE RESIST COMPOSITIONS

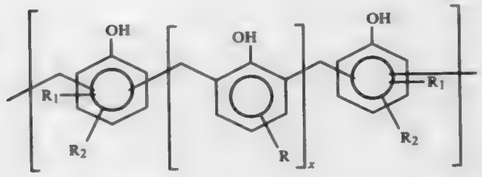
Alfred T. Jeffries, III, Providence; Kenji Honda, Barrington, both of R.I.; Andrew J. Blakeney, and Sobhy Tadros, both of Seekonk, Mass., assignors to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Division of Ser. No. 711,350, Jun. 4, 1991, Pat. No. 5,196,289, which is a continuation of Ser. No. 404,138, Sep. 7, 1989, abandoned. This application Dec. 3, 1992, Ser. No. 984,700
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C08G 8/04
U.S. Cl. 528—155 **4 Claims**

1. A block copolymer binder resin comprising the reaction product of:

(1) a block phenolic oligomer having a unit of formula (II):

(II)

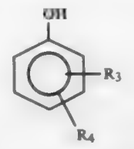


wherein x=2 to 5;
wherein R is hydrogen, a lower alkyl or lower alkoxy group having 1–4 carbon atoms or a halogen;
wherein R_1 and R_2 are individually selected from a hydrogen, a hydroxyl, a lower alkyl group or lower alkoxy having 1 to 4 carbon atoms or a halogen group subject to the following provisos:

(a) at least one ortho- or para-position tot he hydroxyls on both terminal phenolic moieties is unsubstituted;
(b) the terminal phenolic moieties are different from the phenolic moiety used to construct the interior block; with

(2) at least one aldehyde source and at least one other phenolic monomeric compound having formula (III):

(III)



wherein R_3 and R_4 are individually selected from the group consisting of hydrogen, lower alkyl having 1–4 carbon atoms, halogen, and hydroxyl; wherein said block phenolic oligomer units constitute from about 5% to about 70% by weight of said binder resin.

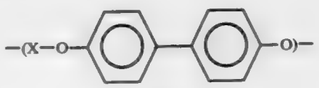
5,302,689

THERMOTROPIC COPOLYESTER CONTAINING UNITS FROM A MIXTURE OF DICARBOXYLIC ACIDS

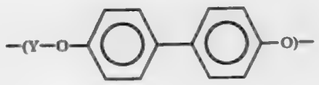
Hong-Bing Tsai, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 28, 1992, Ser. No. 967,786
Int. Cl.[5] C08G 63/133
U.S. Cl. 528—194 **14 Claims**

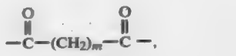
1. A thermotropic liquid crystalline copolyester consisting essentially of two different recurring units with each of the units being linked to another via an ester bond, said two different recurring units having the respective formulae



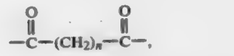
and



which X is



wherein m is 4–10, inclusive; and Y is



wherein n is 14–18, inclusive; and the molar ratio of X to Y in said copolyester ranging from 2:8 to 9:1.

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5,302,690

PROCESS FOR PREPARING POLYESTER RESIN AND THE POLYESTER RESIN THEREBY PREPARED

Kuniaki Kawaguchi; Kenji Hijikata, and Toshio Nakane, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Jun. 3, 1992, Ser. No. 892,898

Claims priority, application Japan, Jun. 3, 1991, 3-131235; Jun. 3, 1991, 3-131236

Int. Cl.[5] C08G *63/85*

U.S. Cl. 528—279 **9 Claims**

1. A process for preparing a polyester resin by reacting a lower alkyl ester of an aromatic dicarboxylic acid with an aliphatic diol to form an aromatic polyester, which process includes the steps of:

(i) subjecting to transesterification reaction conditions in the presence of a titanium compound catalyst, a transesterification reaction system which includes the lower alkyl ester of the aromatic dicarboxylic acid, the aliphatic diol and between 0.02 to 5.0 mole percent, based on the amount of the lower alkyl ester of the aromatic dicarboxylic acid, of an aromatic sulfonic acid compound represented by the following general formula (I):

$$OH—R—O—Ar—SO_3M \quad (I)$$

wherein Ar is a p-substituted benzene group or a 2,6-substituted naphthalene group, R is a divalent group selected from among $—CH_2CH(CH_3)—$, $—CH(CH_3)CH_2—$, $—CH_2CH(CH_3)—$ and $—CH_2CH_2OCH_2CH_2—$, and M is an alkali metal selected from the group consisting of lithium, sodium and potassium, and thereafter

(ii) polycondensing the transesterification product to obtain the polyester resin.

5,302,691

MANUFACTURE OF TEREPHTHALIC ACID/2-METHYLPENTAMETHYLENE DIAMINE/HEXAMETHYLENE DIAMINE COPOLYAMIDES

Richard R. Soelch, Wilmington, Del., assignor to Du Pont Canada Inc., Mississauga, Canada

Filed May 19, 1992, Ser. No. 885,330

Int. Cl.[5] C08G *69/28*

U.S. Cl. 528—349 **4 Claims**

1. A process for the preparation of a partially crystalline copolyamide comprising the polymerization stages of:

(a) feeding to a reactor an aqueous salt solution of an admixture of aromatic carboxylic acid and aliphatic diamine, (i) said aromatic carboxylic acid being selected from terephthalic acid or a mixture of terephthalic acid and isophthalic acid and (ii) said aliphatic diamine being a mixture of hexamethylene diamine and 2-methyl pentamethylene diamine;

(b) heating aqueous salt solution under pressure and venting water and other volatile matter from the reactor;

(c) reducing the pressure in the reactor to atmospheric pressure;

(d) controlling stages (b) and (c) so as to avoid excessive foaming of the admixture in the reactor; and

(e) discharging the copolyamides obtained from the reactor; wherein the total amount of 2-methyl pentamethylene diamine and, when present, isophthalic acid fed to reactor in stage (a) is selected so that the copolyamide has less than 1% by weight, based on the total amount of copolyamide, of fractions with melting points greater than 320° C.

5,302,692

POLYIMIDES CONTAINING THE PENTAFLUOROSULFANYLBENZENE MOIETY

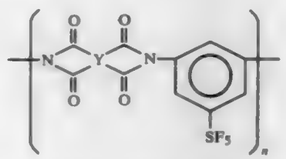
Anna K. St. Clair, and Terry L. St. Clair, both of Poquoson, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 755,207, Sep. 5, 1991, Pat. No. 5,220,070. This application May 27, 1993, Ser. No. 77,132

Int. Cl.[5] C08G *73/10, 69/26*

U.S. Cl. 528—353 **11 Claims**

1. Polyimide polymers prepared from the diamine, 1,3-diamino-5-pentafluorosulfanylbenzene, having the following structural formula:



where Y is any aromatic moiety and n=10–100.

5,302,693

PROCESS FOR PREPARING POLY-D,L-LACTIDE AND THE USE THEREOF AS A CARRIER FOR ACTIVE SUBSTANCES

Herbert Stricker, Neckargemund, and Dieter Bendix, Ingelheim am Rhein, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jun. 19, 1991, Ser. No. 717,562

Claims priority, application European Pat. Off., Jun. 23, 1990, 90111954.5; Fed. Rep. of Germany, Sep. 11, 1990, 4028764

Int. Cl.[5] C08G *63/08*

U.S. Cl. 528—354 **2 Claims**

1. An improved process for preparing poly-D,L-lactide wherein D,L-lactide is polymerized by ring-opening polymerization in the presence of a polymerization catalyst, wherein the improvement comprises performing such reaction with the concurrent addition of about 5 to 40% by weight of poly-lactic acid, based upon the amount of D,L-lactide.

5,302,694

PROCESS FOR PREPARING POLYESTERS BASED ON HYDROXYCARBOXYLIC ACIDS

Berthold Buchholz, Ingelheim am Rhein, Fed. Rep. of Germany, assignor to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 6,588, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 837,716, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 654,859, Feb. 13, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 111,029

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1990, 4005415

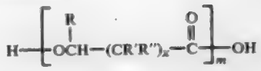
Int. Cl.[5] C08G *63/06*

U.S. Cl. 528—354 **20 Claims**

1. A improved process for preparing polyesters based on hydroxycarboxylic acids according to the following reaction plan



-continued



wherein R, R′ and R″ independently of one another may represent an alkyl group and/or hydrogen and x and m and n may represent integers— wherein m>n and x may also be zero,

wherein the improvement comprises carrying out the condensation reaction in the presence of a linking reagent selected from the group consisting of:

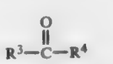
a) compounds of the formula I

$$R^1—N=C=N—R^2 \quad (I)$$

wherein

R^1 and R^2 may be identical or different and may represent an alkyl, cycloalkyl or aryl group which may optionally be substituted;

b) compounds of the formula II



(II)

wherein R^3 and R^4 may be identical or different and may represent an alkoxy group, which may optionally be substituted by one or more halogen atoms, a 5-, 6- or 7-membered ring in which one or more carbon atoms may be replaced by one or more heteroatoms, said ring optionally being unsaturated and/or substituted, or a halogen atom;

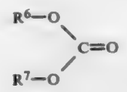
c) compounds of the formula III



(III)

wherein R^5 may represent an optionally substituted alkyl or aryl group and X represents a halogen atom;

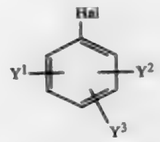
d) compounds of the formula IV



(IV)

wherein R^6 and R^7 independently of each other may represent an optionally substituted heteroaryl or aryl group;

e) compounds of the formula V



(V)

wherein Hal may represent a halogen atom and Y^1, Y^2 and Y^3 may be identical or different and may represent a hydrogen atom or a nitro group;

f) phosgene, diphosgene or triphosgene;

g) carbonyl diimidazole (CDI); and,

h) dicyclohexylcarbodiimide (DCC).

5,302,695

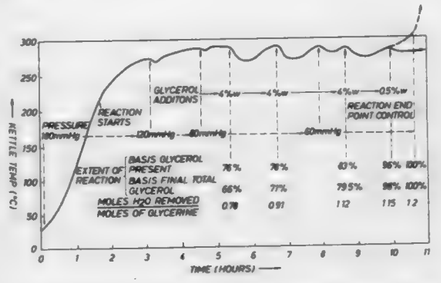
POLYCONDENSATION OF EPOXY ALCOHOLS WITH POLYHYDRIC ALCOHOLS AND THERMAL CONDENSATION TO FORM POLYETHERCYCLICPOLYOLS

Harry Frank; George C. Blytas, and Anne H. Zuzich, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 41,636, Apr. 1, 1993, abandoned, which is a division of Ser. No. 869,091, Apr. 14, 1992, Pat. No. 5,204,444, which is a continuation of Ser. No. 672,203, Mar. 19, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 119,796

Int. Cl.[5] C08G *65/04, 65/02*

U.S. Cl. 528—403 **31 Claims**



1. A composition prepared by a method for preparing polyethercyclicpolyol by copolymerization and thermal condensation, comprising:

(a) heating a reaction mixture comprising a reactant selected from the group consisting of (1) a polyol having at least three hydroxyl groups of which at least two of the hydroxyl groups are vicinal, (2) precursors of the polyol, (3) cyclic derivatives of the polyol, and (4) mixtures thereof, said heating initiating the thermal condensation;

(b) removing water formed during the thermal condensation;

(c) continuing the thermal condensation until at least 1.05 moles of water per mole of reactant are removed, wherein the condensation goes to completion without incurring substantial undesirable degeneration; and

(d) prior to the condensation going to completion, admixing an epoxy alcohol with the reaction mixture.

5,302,696

PROCESS FOR MINIMIZING RESIDUAL FREE HYDRAZINE IN POLYMER LATICES

Henry W. Schiessl, Northford, Conn., assignor to Olin Corporation, Cheshire, Conn., and The Goodyear Tire & Rubber Co., Akron, Ohio.

Continuation-in-part of Ser. No. 664,146, Mar. 4, 1991, Pat. No. 5,171,833, which is a continuation-in-part of Ser. No. 352,782, May 16, 1989, Pat. No. 5,068,313. This application Dec. 14, 1992, Ser. No. 989,626

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] C08F *6/10, 6/16*

U.S. Cl. 528—487 **2 Claims**

1. A process for the hydrogenation of a polymer latex and the reduction or elimination of residual free hydrazine from the polymer latex characterized by:

(a) contacting said polymer latex with hydrazine and peroxide at a temperature of between about 60° C. and about 70° C., in the presence of a metal ion initiator selected from the group consisting of copper sulfate, ferrous sulfate, and combinations thereof, in order to effect a reaction of said polymer latex with said hydrazine and said peroxide, using

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a reaction time of between about 1 hour and about 5 hours, thereby producing a hydrogenated polymer latex, and

(b) contacting free hydrazine in said polymer latex with a hydrazine scavenger selected from the group consisting of isocyanates, alkylene oxides, acrylates, methacrylates, acrylic acids, acrylonitrile, methacrylic acids, ketones, diketones, aldehydes, and combinations thereof, in a scavenging effective amount of between 1 and 10 times the number of moles of hydrazine present in said purified mixture in order to bind at least a portion of said free hydrazine, thereby providing a hydrogenated polymer latex containing a reduced amount of free hydrazine therein.

5,302,697

PEPTIDE AND DNA SEQUENCES

Andrew R. Goodey; Graham P. Belfield, and Darrell Sleep, all of Nottingham, United Kingdom, assignors to Delta Biotechnology Limited, Nottingham, England

Continuation of Ser. No. 460,165, Mar. 13, 1990, abandoned. This application May 21, 1993, Ser. No. 67,243

Claims priority, application United Kingdom, Jul. 23, 1988, 8817598; Mar. 28, 1989, 8906920

Int. Cl.[5] **A61K** *37/00, 37/02;* **C07K** *7/00;* **C12P** *21/06*

U.S. Cl. 530—325 **8 Claims**

1. An amino acid sequence as follows:

(a) H_2N-Met-Lys-Trp-Val-Ser-Phe-Ile-Ser-Leu-Leu-Phe-Leu-Phe-Ser-Ser-Ala-Tyr-Ser-Arg-Ser-Leu-Asp-Lys-Arg-COOH; or

(b) H_2N-Met-Asn-Ile-Phe-Tyr-Ile-Phe-Leu-Phe-Leu-Leu-Ser-Phe-Val-Gln-Gly-Ser-Leu-Asp-Lys-Arg-COOH; or

a conservatively modified variant of either sequence, said sequence or variant being capable of providing for the secretion of a polypeptide fused thereto when the fused polypeptide is expressed in *S. cerevisiae.*

5,302,698

DNA CODING FOR PROTEIN BINDS TO ENHANCER OF α-FETOPROTEIN GENE

Tomonori Morinaga; Hisataka Yasuda, both of Shimotsuga; Kanji Higashio, Kawagoe, all of Japan, and Taiki Tamaoki, Calgary, Canada, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

PCT No. PCT/JP90/00557, § 371 Date Dec. 31, 1990, § 102(e) Date Dec. 31, 1990, PCT Pub. No. WO90/13655, PCT Pub. Date Nov. 15, 1990

Continuation of Ser. No. 635,498, Dec. 31, 1990, abandoned. This PCT application Apr. 27, 1990, Ser. No. 22,411

Claims priority, application Japan, May 1, 1989, 1-112519

Int. Cl.[5] **C07K** *13/00;* **C12N** *15/00, 15/12*

U.S. Cl. 530—350 **3 Claims**

1. An isolated DNA sequence for coding for a protein having the amino acid sequence SEQ ID NO:2.

5,302,699

ANTITUMORIGENIC PROTEIN, METHOD OF PREPARING IT AND ANTITUMORIGENIC COMPOSITION CONTAINING THE PROTEIN AS ACTIVE COMPONENT

Yukio Kawamura, Tsukuba; Akihiro Morita, Kasukabe; Makoto Tomatsu, Tsukuba, and Masaru Ishikawa, Koshigaya, all of Japan, assignors to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries, Tsukuba and Momoya Co., Ltd., Tokyo, both of Japan

Filed Jan. 22, 1993, Ser. No. 7,754

Claims priority, application Japan, Sep. 4, 1992, 4-260532

Int. Cl.[5] **A61K** *35/80;* **C07K** *3/22*

U.S. Cl. 530—371 **3 Claims**

1. A substantially pure antitumorigenic protein derived from fruit bodies of *Tricholoma matsutake* mushrooms, having the following physicochemical properties:

(a) molecular weight:

by SDS polyacrylamide electrophoresis, a molecular weight of the subunit is from 100,000 to 110,000;

by gel permeation chromatography, the molecular weight of the protein is from 200,000 to 210,000;

(b) ultraviolet absorption spectrum:

as shown in FIG. 1;

(c) color:

pale yellowish brown to pale brown;

(d) amino acid constitution (molar ratio):

Amino Acid	Molar Ratio
Aspartic Acid	15.2
Glutamic Acid	10.5
Serine	7.3
Glycine	8.8
Histidine	2.0
Arginine	3.4
Threonine	9.6
Alanine	7.5
Proline	8.7
Tyrosine	2.5
Valine	7.3
Methionine	1.9
Isoleucine	3.6
Leucine	6.1
Phenylalanine	2.8
Lysine	2.6.

5,302,700

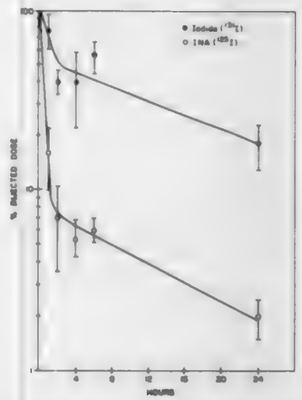
RADIOHALOGENATION CONJUGATE TECHNOLOGY

Michael R. Zalutsky, Chapel Hill, and Acharan S. Narula, Durham, both of N.C., assignors to Duke University, Durham, N.C.

Filed May 23, 1988, Ser. No. 197,246

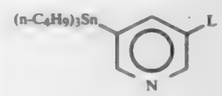
Int. Cl.[5] **C07K** *15/28, 17/02;* **A61K** *49/02*

U.S. Cl. 530—391.5 **3 Claims**

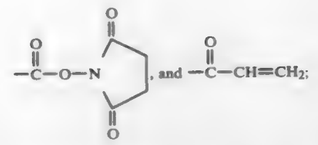


1. A method of radiohalogenating macromolecules comprising the steps of:

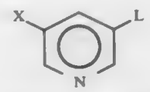
(1) radiohalogenating a compound of the formula



where L is a linking group selected from the structures



with a radioactive halogen selected from the group consisting of F, Cl, Br, I, ^{18}F, ^{75}Br, ^{76}Br, ^{77}Br, ^{123}I, ^{125}I, ^{131}I, and ^{211}At and wherein said radiohalogenation forms a radiohalogenated compound of the formula



wherein X is said radioactive halogen and wherein said radiohalogenation is carried out at approximately 80°–85° C.;

(2) coupling said radiohalogenated compound to a macromolecule.

5,302,701

POLYPEPTIDE HAVING HUMAN FIBRONECTIN-LIKE CELL ADHESIVE ACTIVITY

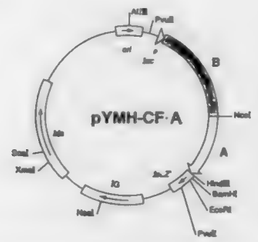
Hidetaka Hashi, Ibaraki; Fusao Kimizuka, Ohmihachiman; Ikunoshin Kato, Uji; Mika Hatai, Tokyo, and Yoshihito Yaoi, Yokohama, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Oct. 13, 1992, Ser. No. 959,369

Claims priority, application Japan, Oct. 14, 1991, 3-291959; Mar. 5, 1992, 4-83220

Int. Cl.[5] **A61K** *35/14;* **C07K** *13/00*

U.S. Cl. 530—399 **1 Claim**



1. An artificial functional polypeptide having a cell-adhesive activity and a fibroblast growth activity, and having the structure represented by the following formula:

X—Z

wherein X is a polypeptide having an amino acid sequence of SEQ ID No: 3, and Z is a polypeptide having an amino acid sequence of SEQ ID No: 6 or SEQ ID No: 7.

5,302,702

CHIMERIC FIBROBLAST GROWTH FACTORS

Andrew P. Seddon, Monroe; Peter Bohlen, Peekskill, both of N.Y., and Yakov Gluzman, Upper Saddle River, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 615,202, Nov. 23, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 23,757

Int. Cl.[5] **C07K** *13/00*

U.S. Cl. 530—399 **11 Claims**

1. A chimeric basic fibroblast growth factor selected from the group consisting of:

(a) a chimeric basic fibroblast growth factor having about 155 amino acids wherein the alanine at position 3 and the serine at position 5 are replaced with glutamic acid;

(b) a chimeric basic fibroblast growth factor having about 155 amino acids wherein the alanine at position 3 and the serine at position 5 are replaced with glutamic acid, and the cysteines at positions 78 and 96 are replaced with amino acids that eliminate disulfide scrambling; and

(c) (a) and (b) having no N-terminal methionine.

5,302,703

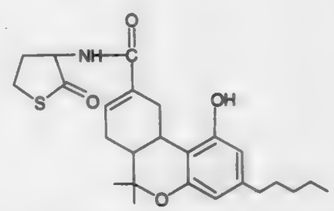
TETRAHYDROCANNABINOL DERIVATIVES AND PROTEIN AND POLYPEPTIDE TETRAHYDROCANNABINOL DERIVATIVE CONJUGATES AND LABELS

Kenneth F. Buechler, San Diego, and Si S. Moi, Escondido, both of Calif., assignors to Biosite Diagnostics Incorporated, San Diego, Calif.

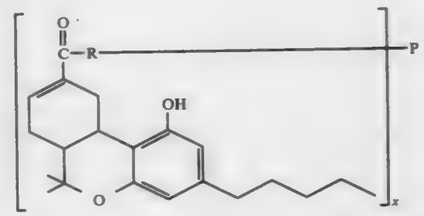
Division of Ser. No. 864,106, Apr. 6, 1992, Pat. No. 5,237,057. This application Mar. 17, 1993, Ser. No. 32,598

Int. Cl.[5] **C07K** *17/06;* **C07D** *49/16;* **C07H** *13/02;* **G01N** *33/532*

U.S. Cl. 530—404 **4 Claims**



1. An immunogenic protein or polypeptide molecule or a protein or polypeptide molecule or a label derivatized to a compound of the formula:

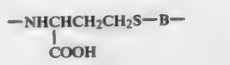


where P is an antigenic protein or polypeptide or a protein, polypeptide or label;

where x is at least one and not greater than 100;

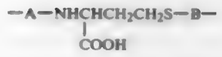
where R is a linking group of the following:

—NH—A—S—B—



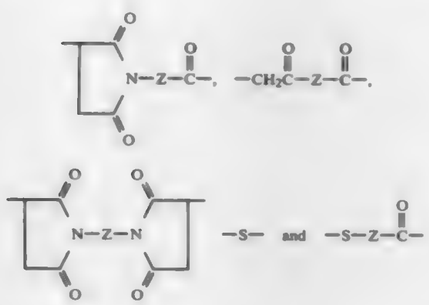
VOL 1161 ISS 2 AP 12 1994 UMI

-continued



where A is a linking group of from 1 to 20 carbons and 0 to 10 heteroatoms (NH, O, S) either branched or straight chain;

where B is a linking group ultimately attached to a protein, polypeptide or label selected from the group consisting of;



where Z is a linking group of from 1 to 20 carbons and 0 to 10 heteroatoms (NH, O, S) and may be branched or straight chain.

5,302,705

6-O-METHYLERYTHROMYCIN A OXIME DERIVATIVES

Yoko Misawa, Omiya; Toshifumi Asaka, Ageo; Masato Kashimura, Omiya; Shigeo Morimoto, Saitama; Yoshiaki Watanabe, Kodaira, and Katsuo Hatayama, Omiya, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

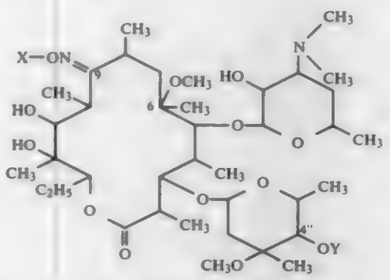
Filed Oct. 1, 1990, Ser. No. 590,805

Claims priority, application Japan, Oct. 7, 1989, 1-262797

Int. Cl.[5] C07H *17/08*

U.S. Cl. 536—7.4 1 Claim

1. A 6-0-methylerythromycin A oxide derivative represented by the formula



wherein X is an anthracenylmethyl group, a 2,4,6-trimethylbenzyl group or a 4-(t-butyl)benzyl group, and Y is a hydrogen atom or a pharmaceutically acceptable salt thereof.

5,302,706

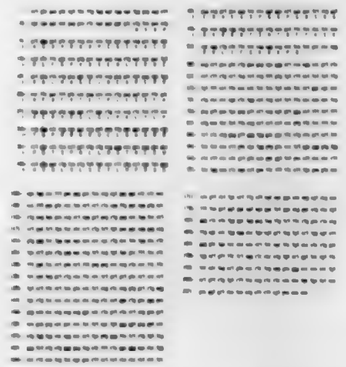
SENESCENT CELL DERIVED INHIBITORS OF DNA SYNTHESIS

James R. Smith, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 808,523, Dec. 16, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 970,462

Int. Cl.[5] C07H *15/12, 17/00;* C07K *3/00;* C12P *21/06*

U.S. Cl. 536—23.1 4 Claims



1. A nucleic acid molecule substantially free of natural contaminants, wherein said molecule is selected from the group consisting of: (a) a DNA molecule having the sequence of senescent cell derived inhibitor-1, SDI-1 (SEQ ID NO. 1); and (b) an RNA molecule having the sequence of senescent cell derived inhibitor-1, SDI-1 (SEQ ID NO. 1) with the proviso that in said RNA molecule the deoxynucleotides A, G, C and T of SEQ ID NO. 1 are replaced by ribonucleotides A, G, C and U respectively.

5,302,704

AZODYES CONTAINING A SULFOACETOACETIC ACID ANILIDE COUPLING COMPONENT

Jean-Marie Adam, Rosenau, France, and Thomas Eichenberger, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

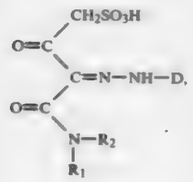
Filed Aug. 3, 1992, Ser. No. 924,140

Claims priority, application Switzerland, Aug. 8, 1991, 2344/91-1

Int. Cl.[5] C09B *29/033, 29/33;* D06P *1/06;* C07C *309/14*

U.S. Cl. 534—738 6 Claims

1. A dye of the formula



(1)

wherein D is the radical of a diazo component of the benzene or naphthalene series or of the heterocyclic series, R_1 is hydrogen or C_1–C_4alkyl and R_2 is unsubstituted phenyl or phenyl which is substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino or halogen, and wherein the dye of formula (1) contains only one sulfo group.

5,302,707

5-FLUOROURIDINE NUCLEOSIDE PHOSPHATE COMPOUNDS

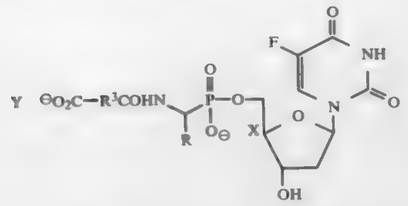
David A. Campbell, and Mark A. Gallop, both of East Palo Alto, Calif., assignors to Affymax Technologies N.V., Palo Alto, Calif.

Filed Mar. 26, 1992, Ser. No. 858,298

Int. Cl.[5] C07H *19/06*

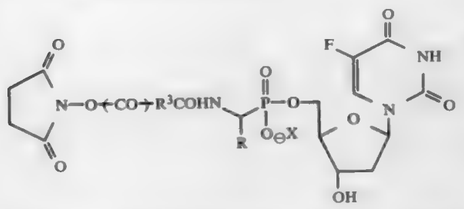
U.S. Cl. 536—25.33 8 Claims

1. A compound having the formula:



in which R is selected from the group consisting hydrogen, methyl, isopropyl, isobutyl, sec-butyl, and 4-hydroxybenzyl; X and Y are independently selected from the group consisting of hydrogen, an alkali metal counterion, and a counterion derived from an organic base wherein the organic base is selected from the group consisting trimethylamine, diethylamine, ethanolamine, piperidine, isopropylamine, choline, and caffeine; and R^3 is $-(CH_2)_2-$.

4. A compound having the formula:



in which R is selected from the group consisting of hydrogen, methyl, isopropyl, isobutyl, sec-butyl, and 4- hydroxybenzyl; X and Y are independently selected form the group consisting of hydrogen, an alkali metal counterion, and a counterion derived from an organic base wherein the organic base is selected from the group consisting of trimethylamine, diethylamine, ethanolamine, piperidine, isopropylamine, choline, and caffeine; and R^3 is $-(CH_2)_2-$.

5,302,708

WATER-SOLUBLE PHTHALOCYANINE DYES

Thomas Beck, Bad Soden am Taunus; Werner H. Russ, Flörsheim am Main; Hartmut Springer, Königstein/Taunus, and Marcus Bänfer, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

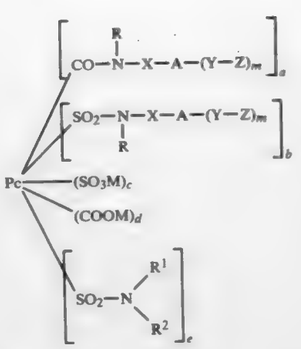
Filed Aug. 6, 1992, Ser. No. 926,589

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126395

Int. Cl.[5] C07F *15/04;* C09B *47/30*

U.S. Cl. 540—123 9 Claims

1. A water-soluble phthalocyanine dye conforming the formula (1)



(1)

in which

Pc is the radical of a metal-free or a copper phthalocyanine, cobalt phthalocyanine or nickel phthalocyanine, unsubstituted or additionally substituted in the 3- or 4-positions or both of the carbocyclic aromatic rings of the phthalocyanine by substituents selected from halogen and phenyl, and the chlorosulfonyl, sulfonamide and sulfo groups being bound in the 3- or 4-positions or both of the carbocyclic aromatic rings of the phthalocyanine;

R is hydrogen or lower alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfophenyl and carboxyphenyl;

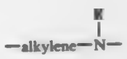
R^1 is hydrogen or alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfophenyl and carboxyphenyl, or is cycloalkyl having 5 to 8 carbon atoms, and

R^2 is hydrogen or alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfophenyl and carboxyphenyl, or is naphthyl unsubstituted or substituted by sulfo, or is phenyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of methyl, ethyl, methoxy, chlorine, carboxy and sulfo or is cyano, or

R^1 and R^2 together with the nitrogen and alkylene of 3 to 8 carbon atoms, or together with a further hetero atom selected from nitrogen or oxygen and two alkylenes of 1 to 4 carbon atoms form the radical of a 4- to 8-membered heterocyclic ring;

A is phenylene or naphthylene, or phenylene or naphthylene substituted each by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, carboxy, nitro and sulfo, or is alkylene of 1 to 8 carbon atoms or alkylene of 2 to 8 carbon atoms which his interrupted by 1 or 2 hetero groups selected from the group consisting of —O— and —NH—;

X is an alkylene radical of 1 to 6 carbon atoms, or an alkyleneamino group of the formula

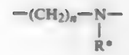


in which

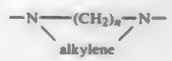
alkylene is an alkylene radical of 1 to 6 carbon atoms, and

R has one of the abovementioned meanings, or is a radical of the formula (2*a*), (2*b*), (2*c*), (2*d*), (2*e*), (2*f*), (2*h*), or (2*j*), $-(CH_2)_k-$ or

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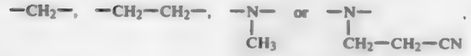


in which
k is an integer from 1 to 5,
n is an integer from 2 to 6, and
$R^\bullet$ is a hydrogen atom or an alkyl group of 1 to 5 carbon atoms or
X together with the group —N(R)— forms a group of the formula (3)



(3)

in which
n is an integer from 2 to 6 and
alkylene is an alkylene of 1 to 6 carbon atoms;
Y is a direct bond or a group of the formula —CO—N-H—alkylene—, where alkylene has the above meaning, or is



Y is an alkylene of 2 to 6 carbon atoms, in which case the grouping —X—A— as a whole must be a direct bond and m is 2;
Z is vinylsulfonyl or is ethylsulfonyl containing in the β-position a substituent which is eliminated by alkali;
a is an integer from zero to 4;
b is an integer from zero to 3;
c is an integer from zero to 3;
d is an integer from zero to 3;
e is an integer from zero to 2;
the sum of (a+b+c+d+e+) is at most 4;
the sum of (a+b) is 1 to 4;
the sum of (a+d) is 1 to 4;
the sum of (c+d) is zero to 4;
m is the number 1 or 2;
M is a hydrogen atom or an alkali metal.

5,302,709

POLYARYL-METALLIC COMPLEX INTERCALATED LAYERED DOUBLE HYDROXIDES

Thomas J. Pinnavaia, East Lansing, Mich.; Elena M. Perez-Bernal; Ricardo Ruarno-Casero, both of Salamanca, Spain, and Malama Chibwe, East Lansing, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Nov. 25, 1992, Ser. No. 981,603
Int. Cl.[5] C09B *47/20, 47/24*
U.S. Cl. 540—131 **13 Claims**

1. A crystalline layered double hydroxide (LDH) metal complex which comprises:

$$(M^{II}_{1-x}M^{III}_{x}(OH)_2)\,(A^{n-})_{z/n}\cdot yH_2O$$

as a spaced apart hydroxide host layers wherein M^{II} is a divalent metal cation, M^{III} is a trivalent metal cation, and A^{n-} is intercalated with a phthalocyanine, with a disc-like shape wherein the disc-like shape defines a plane across the disc-like shape with the plane of the complex such that the disc-like shape is approximately orthogonal to a plane of the spaced apart hydroxide host layers which have a basal spacing greater than approximately 18 Å and x is between about 0.7 and 0.37, and y is a positive number and wherein the metal selected from the group consisting of a Group VII-B metal, metals from a cobalt and iron triads of Group VII and mixtures thereof.

5,302,710

PHTHALOCYANINE MIXED CRYSTAL AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING THE SAME

Katsumi Nukada; Akira Imai; Katsumi Daimon, and Masakazu Iijima, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 927,967
Claims priority, application Japan, Aug. 16, 1991, 3-229688
Int. Cl.[5] C09B *47/04, 47/32*
U.S. Cl. 540—140 **11 Claims**

1. A phthalocyanine mixed crystal comprising a halogenated indium phthalocyanine and a halogenated gallium phthalocyanine.

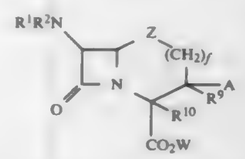
5,302,711

ESTER CLEAVAGE PROCESS FOR USE WITH β-LACTAMS

Jack W. Fisher, and Kristina Thomas, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

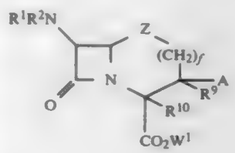
Filed Feb. 18, 1992, Ser. No. 836,640
Int. Cl.[5] C07D *499/08, 501/04*
U.S. Cl. 540—215 **18 Claims**

1. A process for producing a compound of the formula I



I

or a pharmaceutically acceptable salt thereof; which comprises reacting, in a non-basic solvent having a dielectric constant between about 0 and about 15, lithium iodide and a compound of the formula II or a salt of a compound of the formula II that is capable of forming a salt,



II

wherein:
W is lithium ion;
W^1 is a carboxy-protecting group;
Z is —S—, —S(O)—, —SO_2— or —CH_2—;
R^9 is hydrogen, C_1–C_6 alkyl or is combined with R^{10} to form a double bond;
R^{10} is hydrogen or is combined with R^9 to form a double bond;
f is 0 or 1, with the provisos that when f is 1, R^9 and R^{10} combine to form a double bond and when f is 0, A is C_1–C_6 alkyl;
R^1 and R^2 are independently hydrogen, C_1–C_6 alkyl, amino-protecting group or —C(O)—R where R is the residue of a carboxylic acid, with the proviso that when one of R^1 or R^2 is —C(O)—R then the other cannot be hydrogen;
A is hydrogen or a substituent selected from those found in the cephalosporin, 1-carbacephalosporin or penicillin arts.

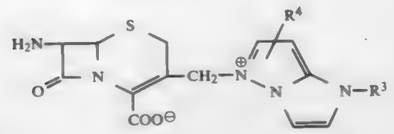
5,302,712

INTERMEDIATES FOR CEPHEM COMPOUNDS

Kazuo Sakane; Kohji Kawabata, both of Kawanishi, and Yoshiko Inamoto, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 604,632, Oct. 26, 1990, Pat. No. 5,215,982. This application Feb. 23, 1993, Ser. No. 21,470
Claims priority, application United Kingdom, Nov. 10, 1989, 8925404; Jan. 25, 1990, 9001778; Jul. 30, 1990, 9016688
Int. Cl.[5] C07D *501/18*
U.S. Cl. 540—222 **1 Claim**

1. A compound of the formula:



wherein
R^3 is hydrogen, lower alkyl, hydroxy(lower)alkyl, protected hydroxy(lower)alkyl, amino(lower)alkyl, protected amino(lower)alkyl, carbamoyl(lower)alkyl, N,N-di(lower)alkylcarbamoyl(lower)alkyl or an imino protective group, and R^4 is hydrogen, lower alkyl, carboxy, protected carboxy, amino, protected amino or carbamoyl, or a salt thereof.

5,302,713

METHOD FOR THE PREPARATION OF DELTA3-7-SUBSTITUTED AMINO DESACETOXY CEPHALOSPORANIC ACID

Jinun B. Yeh; Lain-Tze Lee, and Mei-Hueih Chen, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, China

Filed Mar. 31, 1992, Ser. No. 861,232
Int. Cl.[5] C07D *501/10*
U.S. Cl. 540—230 **15 Claims**

1. A method for the preparation of Δ^3-7-substituted amino desacetoxy caphalosporanic acid which comprises reacting, in the presence of an organic acid catalyst and at a temperature ranging between about 80° C. and about 150° C., (a) a penicillin sulfoxide with (b) a copolymer of urea and a mixture of hexamethylcyclotrisilazane and octamethylcyclotetrasilazane, said copolymer having a mole ratio of said urea to said mixture ranging between about 1:1 and about 2:1 and being present in an amount sufficient to esterify said penicillin sulfoxide and to remove byproduct water from the reaction, so as to form said cephalosporanic acid.

5,302,714

SAPPHYRINS, DERIVATIVES AND SYNTHESES

Jonathan L. Sessler, and Michael J. Cyr, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 454,298, Dec. 21, 1989, Pat. No. 5,159,065. This application Oct. 26, 1992, Ser. No. 966,317
Int. Cl.[5] C07D *245/02*
U.S. Cl. 540—472 **10 Claims**

1. A method for synthesizing sapphyrins comprising the steps of:
(A) reacting an alkyl derivative$_a$ aldehyde and an n-nitromethylenealkyl derivative$_b$ to produce beta-hydroxynitroalkyl derivative$_c$;
(B) reacting the beta-hydroxynitroalkyl derivative$_c$ with acetic anhydride to form beta-acetoxynitroalkyl derivative$_c$;
(C) reacting the beta-acetoxynitroalkyl derivative$_c$ with ethyl isocyanoacetate in the presence of a nonnucleophilic base to form ethyl 3-alkyl derivative$_a$-4-alkyl derivative$_b$-pyrrole-2-carboxylate;
(D) reacting ethyl 3-alkyl derivative$_a$-4-alkyl derivative$_b$-pyrrole-2-carboxylate with iodine and iodide to form ethyl 3-alkyl derivative$_a$-4-alkyl derivative$_b$-5-iodopyrrole-2-carboxylate;
(E) coupling two molecular equivalents of ethyl 3-alkyl derivative$_a$-4-alkyl derivative$_b$-5-iodo-pyrrole-2-carboxylate in the presence of copper bronze and heat to produce diethyl 4,4'-dialkyl derivative$_a$-3,3'-dialkyl derivative$_b$-2,2'-bipyrrole-5,5'-dicarboxylate;
(F) converting diethyl 4,4'-dialkyl derivative$_a$-3,3'-dialkyl derivative$_b$-2,2'-bipyrrole-5,5'-dicarboxylate to 4,4'-dialkyl derivative$_a$-3,3'-dialkyl derivative$_b$-2,2'-bipyrrole by saponification and decarboxylation;
(G) reacting 4,4'-dialkyl derivative$_a$-3,3'-dialkyl derivative$_b$-2,2'-bipyrrole with dimethylformamide and phosphorus oxychloride to form 4,4'-dialkyl derivative$_a$-5,5'-diformyl-3,3'-dialkyl derivative$_b$-2,2'-bipyrrole;
(H) treating benzyl 4-alkyl derivative$_d$-3,5-dimethylpyrrole-2-carboxylate with an oxidizing agent to produce benzyl 5-(X-methyl)-4-alkyl derivative$_d$-3-methylpyrrole-2-carboxylate;
(I) condensing two molecular equivalents of benzyl 5-(X-methyl)-4-alkyl derivative$_d$-3-methylpyrrole-2-carboxylate with 3-alkyl derivative$_c$-4-alkyl derivative$_f$pyrrole under acidic conditions to produce 2,5-bis(5-benzyloxycarbonyl-3-alkyl derivative$_d$-4-methylpyrrol-2-ylmethyl)-3-alkyl derivative$_c$-4-alkyl derivative$_f$pyrrole;
(J) hydrogenating 2,5-bis(5-benzyloxycarbonyl-3-alkyl derivative$_d$-4-methylpyrrol-2-ylmethyl)-3-alkyl derivative$_c$-4-alkyl derivative$_f$pyrrole to produce 2,5-bis(5-carboxy-3-alkyl derivative$_d$-4-methylpyrrol-2-ylmethyl)-3-alkyl derivative$_c$-4-alkyl derivative$_f$pyrrole; and
(K) condensing 4,4'-dialkyl derivative$_a$-5,5'-diformyl-3,3'-dialkyl derivative$_b$-2,2'-bipyrrole with 2,5-bis(5-carboxy-3-alkyl derivative$_d$-4-methylpyrrol-2-ylmethyl)-3-alkyl derivative$_c$-4-alkyl derivative$_f$pyrrole under acidic oxidizing conditions to produce a 2,23-dialkyl derivative$_b$-3,22-dialkyl derivative$_a$-7,18-dimethyl-8,17-dialkyl derivative$_d$-12-alkyl derivative$_e$-13-alkyl derivative$_f$sapphyrin;
wherein alkyl derivative$_a$, alkyl derivative$_b$, alkyl derivative$_c$, alkyl derivative$_d$, alkyl derivative$_e$ and alkyl derivative$_f$ are independently alkane, functionalized alkane, derivatized alkane or derivatized functional alkane and x is a substituent capable of leaving as an anionically stable moiety.

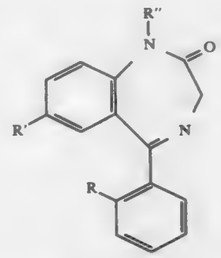
5,302,715

BENZODIAZEPINE DERIVATIVES

Kenneth F. Buechler, San Diego, and Joseph B. Noar, Solana Beach, both of Calif., assignors to Biosite Diagnostics, Inc., San Diego, Calif.

Filed Apr. 6, 1992, Ser. No. 864,093
Int. Cl.[5] C07D *243/24*; A61K *31/55*
U.S. Cl. 540—507 **4 Claims**

1. A compound of the formula:

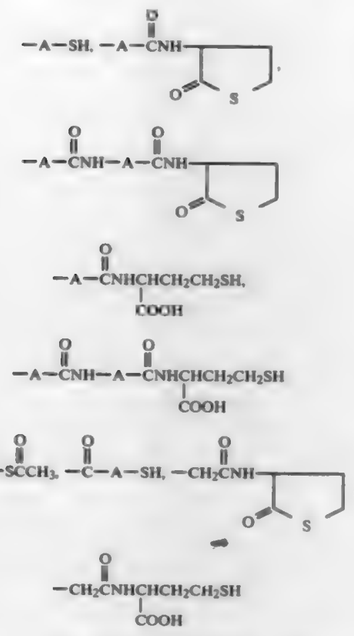


where R is -F, —Cl

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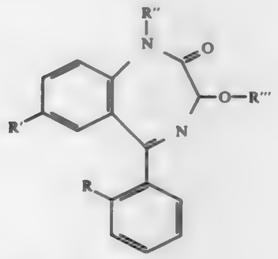
where R′ is —H, —Cl, —NO_2

where R″ is a linking group consisting of one of the following:



where A is a linking hydrocarbyl group of from 1 to 20 carbon atoms and 0 to 10 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, which may either be in the chain or substituted on the chain which may be straight or branched.

4. A compound of the formula:

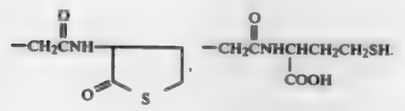


where R is —F, —Cl

where R′ is —Cl

where R″ is —H, —CH_3

where R‴ is a linking group consisting of one of the following:

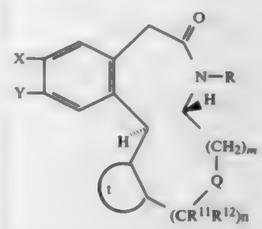


5,302,716
FUSED BENZAZEPINES

Joel G. Berger, Cedar Grove; Wei K. Chang, Livingston; Elijah H. Gold, West Orange, and John W. Clader, Cranford, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 223,739, Jul. 18, 1988, Pat. No. 4,973,586, which is a continuation-in-part of Ser. No. 71,460, Jul. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 3,874, Jan. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 820,471, Jan. 16, 1986, abandoned. This application Nov. 6, 1990, Ser. No. 609,949
Int. Cl.[5] C07D *223/14, 223/32*
U.S. Cl. 540—519 9 Claims

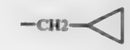
1. A compound of formula XIV



XIV

or a pharmaceutically acceptable salt or isomer thereof, wherein

R is hydrogen, alkyl, —CH2CH=CH2 or

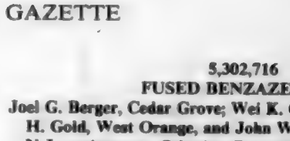


Q is methylene;

m is 1; n is zero;

X is hydrogen, halo, alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, hydroxy, alkoxy or trifluoromethyl;

Y is hydrogen, hydroxy, alkoxy,



R^1, R^{11} and R^{12} are the same or different and each is hydrogen or alkyl;

ring



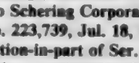
represents a fused benzene ring, said fused benzene ring optionally being substituted with a substituent Z as defined below;

R^2 and R^3 are independently hydrogen (provided that both are not hydrogen), alkyl, aralkyl, cycloalkyl, aryl, hydroxyalkyl, or alkoxyalkyl;

in still further addition, when R^2 is hydrogen, R^3 may additionally be —$CHR^7CO_2R^8$, wherein R^7 and R^8 are independently hydrogen, alkyl or aralkyl;

R^9 is alkyl, aralkyl, aryl, alkoxyalkyl, aryloxyalkyl, aralkoxyalkyl, cycloalkylalkyl, alkoxycarbonylalkyl, cycoalkyl, 1-adamantyl, cycloalkoxyalkyl, alkoxy, aralkoxy, cycloalkoxy, aryloxy or —CHR^7NHR^8 wherein R^7 and R^8 are as defined above; and

Z is X as defined above, amino alkylamino and



wherein R^{10} is hydrogen, alkyl or aryl.

5,302,717
PREPARATION OF URETHANE AND CARBONATE PRODUCTS

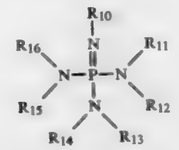
William D. McGhee, St. Louis, and John J. Talley, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 15, 1992, Ser. No. 961,734
Int. Cl.[5] C07D *211/16;* C07C *68/04*
U.S. Cl. 546—226 11 Claims

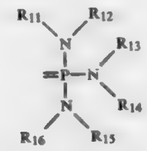
1. A process for preparing urethanes and carbonates comprising:

(a) contacting CO_2 and a compound selected from the group consisting of an amine and an alcohol in the presence of a base selected from the group consisting of a phosphazene compound and a mixture of a phosphazene compound and an organic, nitrogenous base wherein said organic, nitrogenous base is selected from the group consisting of guanidine compounds, amidine compounds and mixtures thereof, under reaction conditions of time and temperature sufficient to produce an ammonium carbamate salt or carbonate salt corresponding to said amine or alcohol starting material, and

(b) reacting, in a polar aprotic solvent, said salt with a primary or secondary hydrocarbyl halide under reaction conditions of time and temperature sufficient to produce the corresponding urethane or carbonate wherein said phosphazene compound is represented by the formula:



wherein R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15} and R_{16} are independently selected from the group consisting of alkyl, aryl, alkaryl, aralkyl and cycloalkyl radicals; or one of R_{11} or R_{12} together with one of R_{13} or R_{14}, one of R_{15} or R_{16} together with one of R_{13} or R_{14}, and R_{10} together with one of R_{11} or R_{12} or one of R_{15} or R_{16} independently form a nitrogen-containing heterocycle; or R_{11} together with R_{12}, R_{13} together with R_{14}, and R_{15} together with R_{16} independently represent a radical represented by the formula:



wherein R_{11}, R_{12}, R_{13}, R_{14}, R_{15} and R_{16} are as defined above.

5,302,718
COMPOUNDS CONTAINING AN AMINO SALICYLIC ACID MOIETY LINKED TO A SULPHAPYRIDINE MOIETY VIA STABLE BRIDGE

Hubert Aqback, Uppsala; Leif Ahrgren, Örbyhus; Thomas Berglindh, Uppsala; Martin Haraldsson, Vallentuna; Göran Smedegard, Uppsala, and Lars-Inge Olsson, Södertälje, all of Sweden, assignors to Kabi Pharmacia AB, Uppsala, Sweden

Filed Nov. 9, 1992, Ser. No. 973,753
Claims priority, application Sweden, Nov. 18, 1991, 9103397-7
Int. Cl.[5] C07D *237/26, 211/56, 249/12*
U.S. Cl. 544—235 20 Claims

1. A compound of the formula Het—NR—SO_2—Ph^1—$APh^2(COOH)(OH)$ and tautomeric forms, salt, solvate, C_{1-6}- alkyl ester and pharmaceutical composition of the compound, in which compound Ph^1 and Ph^2 are optionally substituted benzene rings with the condition that carboxy and hydroxy are ortho to one another, A is a bridge and Het is (R_1,R_2,R_3)—Het′ wherein Het′— is the heterocyclic ring and satisfies the formula:



where the free valency binds to NR, and X is

(i) —N=CH—NH—, —N=CH—S, —N=CH—O—, —N—H—N=CH—, —O—CH=CH—, —CH=CH—O—, —NH—CH=CH—, —CH=CH—NH—, —CH=CH—S—, —CH=N—NH,

(ii) —CH=CH—CH=CH—, —CH=CH—CH=N, —CH=N—CH=CH, —CH=CH—N=CH—, —N=CH—CH=CH—,

where mutually adjacent bold-typed hydrogen atoms (H) can be substituted in pairs with —CH=CH—CH=CH—, so as to form a bicyclic structure (condensed rings); and

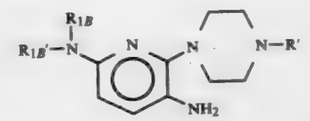
R_1, R_2 and R_3 are substituents on carbon atoms in Het′ and are chosen from among the group hydrogen, lower alkyl, halogen, hydroxy, cyano, carboxy, lower alkoxy, benzyloxy, lower acyl (including acetyl and benzoyl) and phenyl and benzyl, wherein any occurrent benzene rings can be substituted, A is a bridge which is stable against reduction because it is not azo; and R is hydrogen or lower alkyl.

5,302,719
N,N,N′,N′-6-(1-PIPERAZINYL)-2,5-PYRIDINEDIAMINES

André Claussner, Villemomble; Jacques LeClaire, Massy; Lucien Nedelec, La Raincy, and Daniel Philibert, La Varenne Saint Hilaire, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 774,568, Oct. 9, 1991, Pat. No. 5,202,316, which is a continuation of Ser. No. 497,563, Mar. 21, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 990,729
Claims priority, application France, Mar. 22, 1989, 89 03740
Int. Cl.[5] C07D *401/00*
U.S. Cl. 544—360 1 Claim

1. A compound having the formula selected from the group consisting of

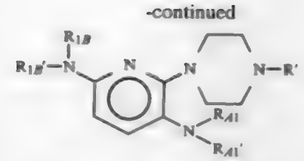


VII

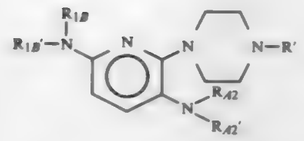
VOL 1161 ISS 2 AP 12 1994 UMI

-continued

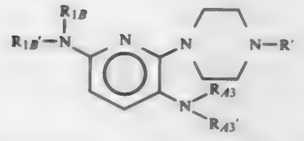
VII'



VII"



VII'''



wherein R_{1B} and R'_{1B} are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms or one is hydrogen and the other is a monovalent amino protecting group or together a divalent amino protecting group, R_{A1} and $R_{A1'}$ are both alkyl of 1 to 4 carbon atoms or one is alkyl of 1 to 4 carbon atoms and the other is hydrogen, R_{A2} and $R_{A2'}$ are the same alkyls of 1 to 4 carbon atoms and R_{A3} and $R_{A3'}$ together with nitrogen to which they are attached form a member of the group consisting of pyrrolidine, piperidine and pyrrole optionally substituted with alkyl of 1 to 3 carbon atoms and R' is hydrogen or an amino protecting group.

5,302,720

BIPHENYL-SUBSTITUTED GUANIDINE DERIVATIVES USEFUL AS HYPOGLYCAEMIC AGENTS

Balasubramanian Gopalan, Bombay, India, assignor to The Boots Company, England

Continuation of Ser. No. 701,695, May 16, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 899,939

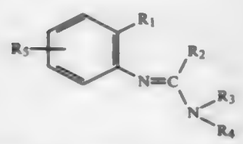
Claims priority, application United Kingdom, Jun. 28, 1990, 9014456

Int. Cl.[5] **C07D** *211/46;* **A61K** *31/445*

U.S. Cl. 546—216 **33 Claims**

1. A compound of formula I

I



and pharmaceutically acceptable salts thereof, in which

R_1 is phenyl optionally substituted by halo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, alkanoyl of 2 to 4 carbon atoms, or a group of formula $S(O)_nR_8$ in which n=0 or 1 and R_8 is an alkyl group of 1 to 3 carbon atoms;

R_2 is a group of formula II

II

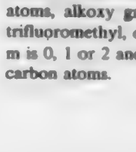


in which R_6 and R_7, which are the same or different, are H or an alkyl group containing 1 to 4 carbon atoms; R_3 is H or a straight or branched aliphatic group of 1 to 4 carbon atoms;

R_4 is (a) H, (b) a straight or branched aliphatic group of 1 to 6 carbon atoms optionally substituted by hydroxy or an acylated derivative thereof, by an alkoxy group containing 1 to 3 carbon atoms, by an alkylthio group containing 1 to 3 carbon atoms, by an optionally alkylated amino group, by a carbocyclic group containing 3 to 7 carbon atoms, by pyridyl or by cyano, (c) a carbocyclic ring containing 3 to 7 carbon atoms and optionally substituted by hydroxy with the proviso that R_3, R_4, R_6 and R_7 are not all methyl when R_1 is phenyl; or

the group R_2 and the group R_3 together with the carbon and nitrogen atoms to which they are attached form a heterocyclic ring of formula IV

IV

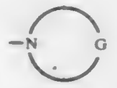


in which

R_4 is an hereinbefore described except that R_4 cannot be H, in which R_{11} is H or an alkyl group containing 1 or 2 carbon atoms, and E is an alkylene group of 2 to 4 carbon atoms optionally substituted by one or more alkyl groups containing 1 to 3 carbon atoms; or

R_3 and R_4 together with the nitrogen atom to which they are attached form a heterocyclic ring of formula V

V



in which

G is an alkylene group of 4 to 6 carbon atoms optionally interrupted by oxygen, sulphur, sulphinyl, sulphonyl, or nitrogen optionally substituted by (a) a carbocyclic ring containing 3 to 7 carbon atoms (b) a methylsulphonyl group or (c) an alkyl group containing 1 to 3 carbon atoms and optionally substituted by hydroxy or an alkoxy group containing 1 to 3 carbon atoms, said alkylene group being optionally substituted by (a) one or more alkyl groups containing 1 to 3 carbon atoms and optionally substituted by hydroxy, (b) by one or more hydroxy groups or an ester thereof, (c) by one or more alkoxy groups, (d) by oxo or oxime or oxime ether or (e) by one or more groups of formula $S(O)_mR_8$ in which m=0 or 1 and R_8 is an alkyl group containing 1 to 3 carbon atoms and

R_5 represents H or one or more optional substituents selected from halo, alkyl groups containing 1 to 4 carbon atoms, alkoxy groups containing 1 to 3 carbon atoms, trifluoromethyl, or groups of formula $S(O)_mR_8$ in which m is 0, 1 or 2 and R_8 is an alkyl group containing 1 to 3 carbon atoms.

5,302,721

METHOD OF PREPARATION OF PHYSOSTIGMINE CARBAMATE DERIVATIVES FROM ESERETHOLES

George S. K. Wong, Summit; Thomas B. K. Lee, Whitehouse Station, and Franz J. Weiberth, Belle Mead, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

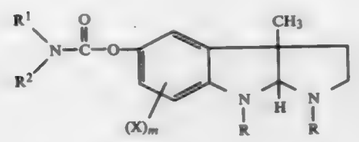
Filed Jul. 21, 1992, Ser. No. 918,337

Int. Cl.[5] **C07D** *487/04*

U.S. Cl. 548—429 **14 Claims**

1. A process for the preparation of a product of the formula

(I)



wherein

R is lower alkyl;

R^1 is hydrogen, loweralkyl, lowercycloalkyl, lowercycloalkylloweralkyl, lowerbicycloalkyl, aryl or arylloweralkyl;

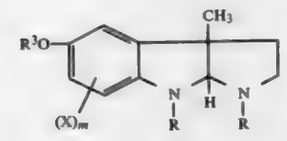
X is loweralkyl, loweralkoxy; halogen or trifluoromethyl; and

m is 0, 1 or 2;

which process comprises

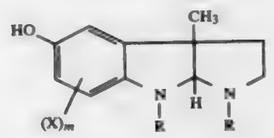
(a) contacting a compound of Formula II

(II)



wherein R, X and m are as defined above and R^3 is loweralkyl, with a reagent selective from the group consisting of aluminum chloride, hydrobromic acid and boron tribromide followed by tartaric acid to afford a compound of Formula III

(III)



wherein R, X and m are as defined above;

(b) contacting the reaction mixture containing compound of Formula III with an isocyanate of the formula R^1NCO and isolating a product of the Formula I.

5,302,722

3-CARBOXY-PYRROLE DERIVATIVES

Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

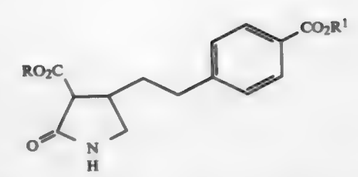
Division of Ser. No. 961,595, Oct. 15, 1992, Pat. No. 5,254,716. This application May 25, 1993, Ser. No. 67,204

Int. Cl.[5] **C07D** *207/12*

U.S. Cl. 548—531 **14 Claims**

1. A compound of formula II

II



wherein

R is C_1–C_4 alkyl or phenyl which may be substituted; and

R^1 is H, C_1–C_4 alkyl, phenyl which may be substituted or benzyl; or a salt thereof.

5,302,723

PROCESS FOR PREPARING FLAME RETARDANT BISIMIDE COMPOSITIONS

Christian J. Petit, Chicopee, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 4, 1993, Ser. No. 130,947

Int. Cl.[5] **C07D** *209/56, 209/36, 207/452*

U.S. Cl. 548—437 **7 Claims**

1. A process for preparing a flame retardant bisimide composition which comprises:

A) reacting i) a diamine with ii) a mixture of ethylenically unsaturated dicarboxylic acid anhydride and a halogenated compound containing aromatic or bicyclo groups and an anhydride group, to form an intermediate bisamic acid composition, the molar ratio of the halogenated compound to the ethylenically unsaturated dicarboxylic acid anhydride being no less than 1:1; and

B) dehydrating the bisamic acid composition to ring close the end groups and form a flame retardant bisimide composition having end groups containing ethylenically unsaturated carbon-carbon bonds and end groups free of non-benzenoid unsaturation containing halogen atoms and aromatic or bicyclo groups.

5,302,724

ANTITUMOR COMPOSITIONS AND METHODS OF TREATMENT

J. Jeffry Howbert; Fariborz Mohamadi, and Michael M. Speed, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

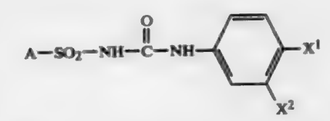
Continuation of Ser. No. 554,226, Jul. 17, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 875,902

Int. Cl.[5] **C07D** *209/04, 209/52, 209/16, 209/36, 207/12, 207/24, 207/30, 209/02*

U.S. Cl. 548—452 **6 Claims**

1. A compound of Formula I

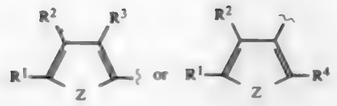
I



wherein

X^1 and X^2 are independently hydrogen, halo, methyl or trifluoromethyl with the proviso that at least one of X^1 and X^2 is chlorine, bromine, fluorine or trifluoromethyl;

A is

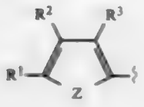


or

wherein:

Z is sulfur, oxygen or nitrogen;

R^1, R^2, R^3, and R^4 are independently hydrogen, halo, C_1–C_3 alkyl, C_1–C_3 alkoxy, or C_1–C_3 alkylthio with the proviso that when A is



at least one of R^1, R^2, or R^3, is a substituent other than hydrogen, and

pharmaceutically acceptable salts thereof.

5,302,725

ARYL TRIFLATE COMPOUNDS AND RADIOLOGICALLY ACID PRODUCING AGENTS THEREOF

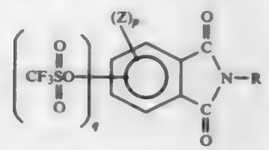
Makoto Kaji, Hitachi, Japan, and S. Peter Pappas, West Hartford, Conn., assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 790,169, Oct. 18, 1991, Pat. No. 5,198,402. This application Oct. 20, 1992, Ser. No. 963,754

Int. Cl.[5] C07D *209/48*

U.S. Cl. 548—479 **3 Claims**

1. An aryl triflate compound of the formula (II):



(II)

wherein R is a linear or branched alkyl group having 1 to 22 carbon atoms, an aralkyl group having 7 to 22 carbon atoms, or a substituted or unsubstituted phenyl group, the substituent being a halogen atom, a cyano group, a straight or branched chain alkyl group having 1 to 22 carbon atoms, or an alkoxy group having 1 to 20 carbon atoms; Z is a hydrogen atom, a halogen atom or an alkyl group; q is an integer of 1 to 4; and p is zero or an integer of 1 to 3, p and q being chosen so that p+q=4.

5,302,726

N-BENZYL-4-ALKYL-PYRROLIDINONE HERBICIDES

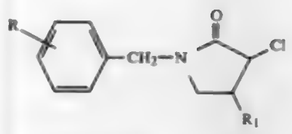
Frank X. Woolard, Richmond, Calif., assignor to Imperial Chemical Industries PLC, Millbank, England

Filed Dec. 21, 1992, Ser. No. 992,315

Int. Cl.[5] C07D *207/273;* A01N *43/36*

U.S. Cl. 548—543 **8 Claims**

1. A 3,4-cis-isomer of a compound having the formula



in which R is hydrogen, halogen, C_1–C_4 alkoxy C_1–C_4 haloalkyl or mono- or di-(C_1–C_4 alkyl), and R_1 is C_1–C_4 alkyl.

5,302,727

MULTIDRUG RESISTANCE MODIFYING DITHIANES

James F. Eliason, Yokohama, Japan; Henri Ramuz, Birsfelden, Switzerland, and Franz A. Kaufmann-Schmid, deceased, late of Möhlin, Switzerland by Beatrice Elvira Kaufmann-Schmid; Stephan F. Kaufmann-Schmid; Andrea R. Kaufmann-Schmid, heir, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

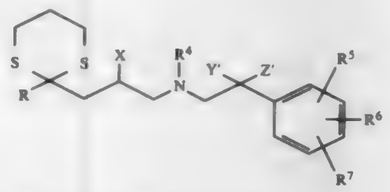
Filed Jul. 15, 1992, Ser. No. 914,241

Claims priority, application Switzerland, Jul. 18, 1991, 2144/91

Int. Cl.[5] C07D *339/08*

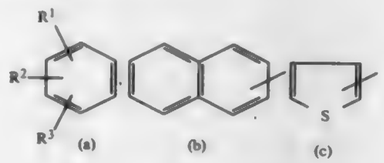
U.S. Cl. 549—22 **11 Claims**

1. A dithiane comprising a compound of the formula



I

wherein R is a residue of the formula



(a) (b) (c)

R^1, R^2, and R^3 are individually hydrogen, halogen, lower alkyl, lower alkoxy, aryl-lower-alkoxy, lower alkylthio, trifluoromethyl or di-lower-alkylamino or when two of these residues are adjacent substituents, these substituents can additionally be taken together to form methylenedioxy, ethylenedioxy, trimethylene or tetramethylene; R^4 is lower alkyl; R^5, R^6 and R^7 are individually hydrogen, halogen, lower alkyl, lower alkoxy or aryl-lower-alkoxy or when two of these residues are adjacent substituents, these substituents can additionally be taken together to form methylenedioxy or ethylenedioxy; X is hydrogen or lower alkyl; and Y' and Z' taken together form di-, tri-, tetra-, or pentamethylene; or an acid addition salt thereof.

5,302,728

POLYCONDENSATION OF PHENOLIC HYDROXYL-CONTAINING COMPOUNDS AND POLYHYDRIC ALCOHOLS AND THERMAL CONDENSATION TO FORM POLYETHERCYCLIPOLYOLS

Anne H. Zuzich, and George C. Blytas, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 879,536, May 4, 1992, abandoned, which is a continuation of Ser. No. 672,199, Mar. 19, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,517

Int. Cl.[5] C07D *319/12*

U.S. Cl. 549—378 **31 Claims**

1. A method for preparing polyethercyclicpolyol by copolymerization and thermal condensation, comprising:

(a) heating a reaction mixture comprising a reactant selected from the group consisting of (1) a polyol having at least three hydroxyl groups of which at least two of the hydroxyl groups are vicinal, (2) precursors of the polyol, (3) cyclic derivatives of the polyol, and (4) mixtures thereof, said heating initiating the thermal condensation;

(b) removing water formed during the thermal condensation;

(c) continuing the thermal condensation until at least 1.05 moles of water per mole of reactant are removed, wherein the condensation goes to completion without incurring substantial undesirable degeneration; and

(d) prior to the condensation going to completion, admixing a phenolic hydroxy-containing compound with the reaction mixture.

5,302,729

DIBENZO CROWN MONOMERS AND POLYMERS FORMED THEREFROM

Harry W. Gibson, and Yadollah Delaviz, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Continuation-in-part of Ser. No. 418,362, Oct. 6, 1989, Pat. No. 5,028,721, and a continuation-in-part of Ser. No. 574,633, Aug. 29, 1990, Pat. No. 5,142,068. This application Apr. 16, 1991, Ser. No. 686,087

Int. Cl.[5] C07D *323/00*

U.S. Cl. 549—349 **2 Claims**

1. A bis(extraannular functionally-substituted 1,3-phenylene) crown compound, wherein the functional substituent is selected from the group consisting of carboxy, $—NH_2$, hydroxy, isocyanate, and $—CH_2OH$.

5,302,730

PROCESS FOR THE PREPARATION OF 6,7-DIACYL-7-DEACETYLFORSKOLIN DERIVATIVES

Tochiro Tatee, 18-8, Nakajujo-1-chome, Kita-ku, Tokyo; Akira Shiozawa, 22-7, Horisaki, Omiya-shi; Hirotaka Yamamoto, 1039, Kamiochiai, Yono-shi; Yuh-ichiro Ichikawa, 17-1-301, Shimo-3-chome, Kita-ku, Tokyo; Aya Narita, Oyamadai Danchi 1-1-502, 2716, Oaza Kawarabuki, Ageo-shi; Chikara Komuro, 31-1, Nishikojiya-3-chome, Ota-ku, Tokyo, and Kazuhisa Narita, 27-21-303, Hayamiya-4-chome, Nerima-ku, Tokyo, all of Japan

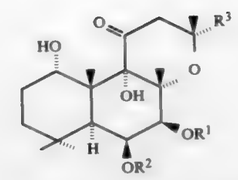
Continuation of Ser. No. 624,528, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 212,013, Jun. 27, 1988, abandoned. This application Jun. 4, 1993, Ser. No. 71,616

Claims priority, application Japan, Jun. 29, 1987, 62-159638; Jun. 29, 1987, 62-159639

Int. Cl.[5] C07D *311/92*

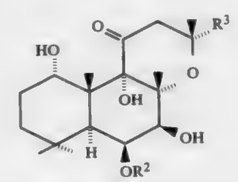
U.S. Cl. 549—389 **8 Claims**

1. A process for the preparation of a 6,7-diacyl-7-deacetylforskolin derivative represented by the formula:



(I)

wherein R^1 stands for an acetyl group, R^2 stands for a dimethylaminopropionyl or dimethylaminobutyryl group and R^3 stands for an aliphatic group having 2 to 3 carbon atoms, which comprises reacting a 6-acyl-7-deacetylforskolin derivative represented by the formula:



(II)

wherein R^2 and R^3 are as defined above, with acetic acid or a reactive derivative thereof in a solvent to acylate the hydroxyl groups at positions 1 and 7, concentrating the acylated derivative to produce a concentrate, dissolving said concentrate in a water soluble solvent or miture thereof with water and eliminating the acyl group at position 1 by solvolysis in said water soluble solvent or mixture thereof with water.

5,302,731

FLUORESCENT PH INDICATORS

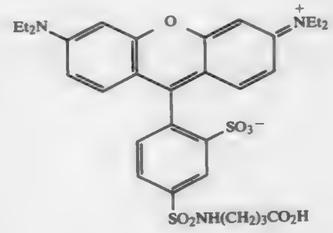
J. Bruce Pitner, Durham, and Randal A. Hoke, Cary, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 13, 1992, Ser. No. 912,426

Int. Cl.[5] C07D *311/90*

U.S. Cl. 549—394 **2 Claims**

1. A fluorescent pH indicator compound having the structure:



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5,302,732

USE OF ULTRA-LOW SODIUM SILICA-ALUMINAS IN THE ALKYLATION OF AROMATICS

Karl Z. Steigleder, Glen Ellyn; Christine M. Conway, Rogers Park; David M. Baldwin, Bolingbrook, and Diane C. Dierking, Orland Park, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Sep. 14, 1992, Ser. No. 944,571
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C07C 41/00, 39/12, 2/64, 15/107
U.S. Cl. 554—98 35 Claims

14. A process for the production of a biodegradable detergent alkylbenzene sulfonate which comprises: alkylating benzene with at least one linear monoolefin containing from 6 to about 20 carbon atoms at alkylating conditions in an alkylation zone in the presence of a catalytic composite to selectively form monoalkylated benzenes, said catalytic composite being a silica-alumina having a silica:alumina weight ratio of from about 1:1 to about 19:1 and containing less than about 0.1 weight percent sodium; sulfonating the monoalkylated benzenes in a sulfonation zone with a sulfonating agent at sulfonation conditions to form sulfonic acids of the monoalkylated benzenes; and reacting said sulfonic acids with an aqueous solution of an alkali metal base to form the monoalkylbenzene alkali metal sulfonate.

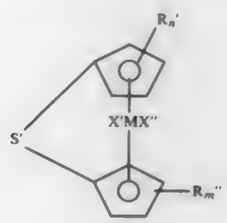
5,302,733

PREPARATION OF METALLOCENES

Steven P. Diefenbach; Meng-Sheng Ao; John M. Power, and Jamie R. Strickler, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

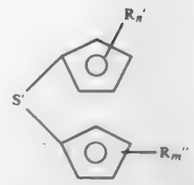
Filed Mar. 30, 1992, Ser. No. 860,339
Int. Cl.[5] C07F 7/28, 17/00
U.S. Cl. 556—11 13 Claims

1. A process for making a racemic mixture of a chiral transition metal compound of the formula:



wherein;
M is titanium or zirconium;
X' and X" are the same or different halogen;
n and m are the same or different integers from 1 to 4;
Each R' and R" are the same or different hydrocarbyl or silahydrocarbyl of 1–20 carbon atoms, and 0–2 silicon atoms, or taken together, two or more of R' or R" are hydrocarbylene or silahydrocarbylene of 1–20 carbon atoms and 0–2 silicon atoms; and
S' is a chain of 0–4 carbon atoms and 1–2 silicon atoms selected from the group consisting of silyanylene, silaalkylene, oxasilanylene and oxasilaalkylene, in which each silicon atom is disubstituted with the same or different hydrocarbyl having 1 to 10 carbon atoms;

said compound being substantially free of meso isomer, said process comprising reacting, at a temperature of from about 25° to 65° C., in an organic solvent medium which includes a cyclic ether, a solution of an alkali metal salt of a ligand having the formula:



wherein S', R', R", m and n are as defined above, with a titanium or zirconium tetrahalide-ether complex in concentrations of said salt and said complex in the reaction mixture which are each from about 0.2 to 1 molar based on the total volume of organic solvent medium such that said racemic mixture of chiral transition metal compound precipitates from said reaction mixture.

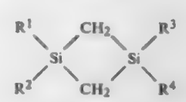
5,302,734

1,3-DISILACYCLOBUTANES AND THE METHOD FOR PRODUCING THEREOF

Il Nam Jung; Gyu-Hwan Lee, both of Seoul; Jang-Hwan Hong, and Seung Ho Yeon, both of Kyungki-Do, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jun. 11, 1992, Ser. No. 897,470
Claims priority, application Rep. of Korea, Jun. 14, 1991, 9858/1991
Int. Cl.[5] C07F 7/08
U.S. Cl. 556—406 4 Claims

1. A 1,3-disilacyclobutane compound having the formula:



wherein R^1, R^2, R^3 and R^4 are methoxy groups.

5,302,735

POLYSILOXANIC STABILIZERS CONTAINING STERICALLY HINDERED PHENOL GROUPS AND OXAMIDIC GROUPS

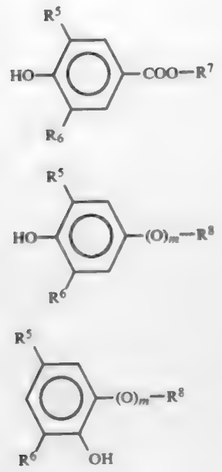
Carlo Neri, San Donato Milanese; Daniele Fabbri, Riccione, and Luciano Pallini, San Donato Milanese, all of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Filed Apr. 21, 1993, Ser. No. 50,877
Claims priority, application Italy, Apr. 27, 1992, MI 92/A/000993
Int. Cl.[5] C07F 7/08, 7/10
U.S. Cl. 556—419 16 Claims

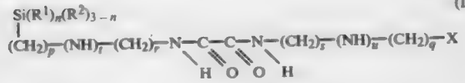
1. Polysiloxanic compounds, containing in the molecule sterically hindered phenol groups and oxamidic groups, obtained by the copolymerization of monomers having general formula (I):

$$(R^1)_n(R^2)_{3-n}Si—R^3 \qquad (I)$$

wherein:
R^1 is an alkyl radical, linear or branched, containing from 1 to 20 carbon atoms, or a phenyl;
R^2 is equal to OR^1 or Cl;
R^3 is a radical selected from the group consisting of:



wherein:
R^5 and R^6, the same or different, are alkyl radicals, linear or branched, containing from 1 to 10 carbon atoms;
R^7 an alkyl radical, linear or branched, containing from 3 to 10 carbon atoms;
R^8 is an alkyl radical, linear or branched, containing from 1 to 10 carbon atoms, or a biradical selected from —R^9—COO—R^{10}, —R^9—COO—R^{10}—S—R^{11} and —R^1-o—S—R^{11} where R^9, R^{10} and R^{11}, the same or different, are alkyls, linear or branched, containing from 2 to 10 carbon atoms;
n is equal to 0, 1 or 2;
m is equal to 0 or 1;
with monomers having general formula (II):



(II)

wherein:
R^1, R^2 and n have the meaning described above;
X is H or —$Si(R^1)_n(R^2)_{3-n}$;
p and q, the same or different, are integers between 1 and 10;
r and s, the same or different, are integers between 0 and 10;
t and u, the same or different, are 0 or 1.

5,302,736

PROCESS FOR THE REMOVAL OF HYDROGEN-CONTAINING SILANES FROM SILANES

Wilfried Kalchauer, and Bernd Pachaly, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich

Filed Nov. 1, 1993, Ser. No. 143,593
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1992, 4241696
Int. Cl.[5] C07F 7/08, 7/18
U.S. Cl. 556—430 4 Claims

1. A process for the removal of silanes containing hydrogen atoms bonded directly to silicon from silanes of the general formula

$$R_xCl_{3-x}Si—[SiR_yCl_{2-y}]_n—A \qquad (I)$$

and mixtures thereof, in which R denotes an a hydrocarbon which may be submitted with halogen radical having 1 to 18 carbon atoms which is free from ethylenic double bonds, A denotes a chlorine atom or a radical R, x has the value of 0, 1, 2 or 3, y has the value of 0, 1 or 2 and n has the value of 0 or 1, in which the silanes containing hydrogen atoms bonded directly to silicon are reacted with hydrogen chloride in the presence of silver or gold as catalysts to give the corresponding chlorosilanes.

5,302,737

SILYCARBONYLATION OF 1-ALKYNES

Michael P. Doyle, and Michael S. Shanklin, both of San Antonio, Tex., assignors to Trinity University, San Antonio, Tex.

Filed Dec. 23, 1992, Ser. No. 996,360
Int. Cl.[5] C07F 7/08
U.S. Cl. 556—436 21 Claims

1. A process to regioselectively prepare silylcarbonylated derivatives of a 1-alkyne, comprising:
(a) combining with a suitable solvent a catalyst, a 1-alkyne, carbon monoxide, and an organosilane of the formula $SiHR_1R_2R_3$ to form a reaction mixture, wherein said catalyst is a carboxylate salt of rhodium, iridium, or rhenium, and wherein R_1, R_2, and R_3 could be the same or different and are selected from the group consisting of hydrogen, a C_1–C_6 alkyl, a phenyl group, a naphthyl group and an alkoxy of the formula —OR' wherein R' is a C_1–C_6 alkyl, provided at least one of said R_1, R_2 and R_3 is not hydrogen; and
(b) silylcarbonylating said 1-alkyne in said reaction mixture at a temperature and pressure operative to produce predominantly the Z-isomer of said silylcarbonylated derivative with a substantial absence of hydrosilylated by-product.

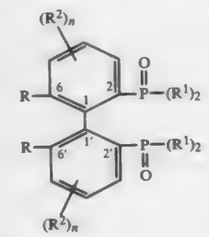
5,302,738

CHIRAL PHOSPHINES

Joseph Foricher, Mulhouse, France; Bernd Heiser, Inzlingen, Fed. Rep. of Germany, and Rudolf Schmid, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

PCT No. PCT/CH92/00050, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO92/16535, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 12, 1992, Ser. No. 949,878
Claims priority, application Switzerland, Mar. 15, 1991, 794/91
Int. Cl.[5] C07F 9/40, 9/52
U.S. Cl. 558—162 10 Claims

1. Racemic and optically active phosphorus compounds of the general formula



I

wherein R signifies lower alkyl or protected hydroxy, R^1 signifies lower alkoxy, phenoxy, benzyloxy, chlorine or bromine, R^2 stands for lower alkyl or lower alkoxy and n represents the number 0, 1 or 2.

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5,302,739

PYRIMIDINE OR TRIAZINE DERIVATIVES

Masatoshi Tamaru, Kakegawa; Norihiro Kawamura, Shizuoka; Masahiro Sato, Fukuroi; Fumiaki Takabe, Shizuoka; Shigehiko Tachikawa, Shizuoka, and Ryo Yoshida, Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

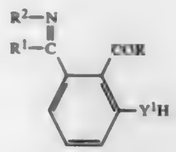
Division of Ser. No. 845,658, Mar. 4, 1992, which is a division of Ser. No. 630,892, Dec. 20, 1990, Pat. No. 5,118,339. This application Oct. 29, 1992, Ser. No. 968,316

Claims priority, application Japan, Dec. 28, 1989, 1-343287; Oct. 5, 1990, 2-120678

Int. Cl.[5] **C07C** *229/38*

U.S. Cl. 558—257 **3 Claims**

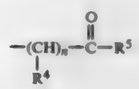
1. A compound of the formula:



wherein

R represents a group of the formula OR^3;

where R^3 represents a hydrogen atom; a C_{1-8} alkyl group which may be substituted with a halogen atom, a nitro group, a cyano group a C_{1-8} alkoxy group, a C_{1-8} alkylthio group, a C_{1-8} alkylsulfinyl group, a C_{1-8} alkylsulfonyl group, a phenylsulfinyl group, a phenylsulfonyl group, a benzyloxy group, R′ CO— group wherein R′ = C_{1-8} alkyl, a C_{1-8} alkoxycarbonyloxy group, an N,N-di-C_{1-4} alkylamino group or a phthalimidoyl group; a C_{2-8} alkenyl group; a halogen-substituted C_{2-8} alkenyl group; a C_{2-8} alkynyl group; a halogen-substituted C_{2-8} alkynyl group; a phenyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group or a C_{1-6} alkoxy group; a benzyl group which may be substituted with a halogen atom, a C_{1-8} alkyl group or a C_{1-8} alkoxy group; a C_{1-4} alkylideneamino group; a C_{4-6} cycloalkylideneamino group; a group of the formula



wherein R^4 represents a hydrogen atom or a C_{1-3} alkyl group; R^5 represents a C_{1-8} alkyl group; a phenyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group or a C_{1-6} alkoxy group; an amino group; a C_{1-8} alkylamino group or a di-C_{1-4} alkylamino group; and n represents an integer of 1 to 3;

or R^3 represents an alkali metal atom; an alkaline earth metal atom or an organic amine cation;

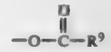
or R represents a group of the formula SR^6; wherein R^6 represents a hydrogen atom; a C_{1-8} alkyl group; a phenyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group; a benzyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group or a C_{1-6} alkoxy group; a C_{2-8} alkenyl group; a halogen-substituted C_{2-8} alkenyl group; a C_{2-8} alkynyl group or a halogen-substituted C_{2-8} alkyl group;

or R represents a group of the formula



wherein R^7 and R^8 may be the same or different and represents a hydrogen atom; a C_{1-8} alkyl group; a C_{1-8} alkoxy group or a phenyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group or a C_{1-6} alkoxy group;

or R represents an imidazolyl group; R^1 represents a C_{1-8} alkyl group which may be substituted with a halogen atom, a C_{1-8} alkoxy group, a C_{1-8} alkylthio group, A C_{1-8} alkylsulfinyl group, a C_{1-8} alkylsulfonyl group, R″CO— group wherein R″ = C_{1-6} alkyl, phenyl or benzyl, or a cyano group; a phenyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group or a C_{1-6} alkoxy group; or a benzyl group which may be substituted with a halogen atom, a C_{1-6} alkyl group or a C_{1-6} alkoxy group; R^2 represents a hydroxyl group; a C_{1-8} alkyl group which may be substituted with one or two halogen atom; a C_{2-8} alkoxyalkyl group; a C_{2-8} alkenyl group; a C_{2-8} alkynyl group; a C_{1-8} alkoxy group which may be substituted with a halogen atom, a benzyloxy group, a C_{1-8} alkoxycarbonyl group, a C_{3-7} cycloalkyl group, a R″CO— group wherein R″ = C_{1-6} alkyl, phenyl or benzyl, an N,N-di C_{1-4} alkylamino group or a C_{1-8} alkoxy group; a phenyl group which may be substituted with a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group; a phenoxy group which may be substituted with a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group; a C_{2-8} alkenyloxy group which may be substituted with one or two halogen atoms or a phenyl group; a benzyloxy group which may be substituted with a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group; a trimethylsilyloxy group; a C_{3-7} cycloalkoxy group; a group of the formula

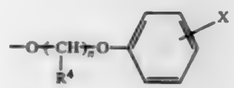


wherein R^9 represents an alkyl group which may be substituted with a halogen atom; a C_{3-7} cycloalkyl group; a phenyl group which may be substituted with a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group; a C_{1-8} alkoxy group or a group of the formula:



wherein R^7 and R^8 are as defined above;

a group of the formula



wherein X represents a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group, n represents an integer of 1 to 3 and R^4 is as defined above;

a phenylamino group, a C_{1-4} alkoxycarbonylamino group or a C_{1-4} alkylcarbonylamino group; and Y^1 is an oxygen atom or a sulfur atom.

5,302,740

ULTRAVIOLET LIGHT-ABSORBING COMPOUNDS AND SUNSCREEN FORMULATIONS AND POLYMERIC MATERIALS CONTAINING SUCH COMPOUNDS OR RESIDUES THEREOF

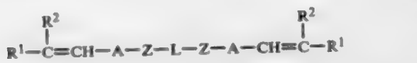
James J. Krutak; Max A. Weaver; Clarence A. Coates, Jr., all of Kingsport; Samuel D. Hilbert, Jonesborough; Terry A. Oldfield, Kingsport; William W. Parham, Kingsport, and Wayne P. Pruett, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 733,769, Jul. 22, 1991, abandoned, which is a division of Ser. No. 395,386, Aug. 17, 1989, Pat. No. 5,057,594. This application Oct. 30, 1992, Ser. No. 968,917

Int. Cl.[5] **C07C** *255/34*

U.S. Cl. 558—401 **5 Claims**

1. A compound having the formula



wherein

each R^1 is independently selected from cyano; carboxy; C_1–C_{24} alkoxycrbonyl, optionally substituted by a group selected from the group consisting of hydroxy, C_1–C_{24} alkoxy, halogen, C_1–C_{24} alkoxycarbonyl, cyano, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkoxy, succinimido, and phthalimido; C_5–C_7 cycloalkoxycarbonyl or phenyloxycarbonyl or napthyloxycarbonyl radical; or a phenyl or napthyl radical optionally substituted by a group selected from the group consisting of hydroxy, C_1–C_{24} alkoxy, halogen, C_1–C_{24} alkoxycarbonyl, cyano, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkoxy, succinimido, and phthalimido;

each R^2 is independently selected from cyano or C_1–C_{24} alkoxycarbonyl, optionally substituted by a group selected from the group consisting of hydroxy, C_1–C_{24} alkoxy, halogen, C_1–C_{24} alkoxycarbonyl, cyano, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkoxy, succinimido, and phthalimido; C_5–C_7 cycloalkoxycarbonyl or phenyloxycarbonyl or naphthyloxycarbonyl radical;

each A is independently selected from a 1,2-phenylene or 1,2-naphthylene radical;

each Z is independently selected from —O— or —S—; and

L is an organic linking group bonded by non-oxo carbon atoms to each Z atom, wherein said linking group is a C_1–C_{12} alkylene, 2-hydroxy-1,3-propanediyl, 2-methyl-1,3-propanediyl, oxy-bis-ethylene, oxy-bis-1,4-butanediyl, sulfonyl-bis-ethylene, thio-bis-ethylene, 1,2-, 1,3-, and 1,4-phenylene-bis-methylene, 1,2-, 1,3-, and 1,4-phenylene-bis-ethylene, 1,4-cyclohexylene-bis-methylene, 1,2-, 1,3-, and 1,4-phenylene-bis-(oxyethylene), methylsulfonylimino-bis-ethylene, phenylimino-bis-ethylene, acetylimino-bis-ethylene, and 1,2-, 1,3-, and 1,4 phenylene, wherein at least one of the R^1 or groups is a cyano radical.

5,302,741

OPTICAL RESOLUTION OF THREO-2HYDROXY-3-(2-AMINOPHENYLTHIO)-3-(4-METHOXYPHENYL)-PROPIONIC ACID

Ramy Lidor, and Claude Singer, both of Kfar Saba, Israel, assignors to Teva Pharmaceutical Industries Ltd., Jerusalem, Israel

Filed Jul. 12, 1993, Ser. No. 90,602

Claims priority, application Israel, Jul. 21, 1992, 102592

Int. Cl.[5] **C07C** *319/28;* **C07B** *57/00*

U.S. Cl. 560—7 **15 Claims**

1. A process for the optical resolution of racemic (±)-threo-2-hydroxy-3-(2-aminophenylthio)-3-(4-methoxyphenyl) propionic acid (A) which comprises:

reacting two mole equivalents of (A) with one mole equivalent of quinine (B) and with one mole equivalent of a first base in a first polar solvent system, at a temperature from about 20° C. to the reflux temperature of the solvent system, to form the quinine salt of D(+)-(A) which precipitates;

separating the quinine salt of D(+)-(A);

treating the said salt with a strong second base in a second solvent system to yield the corresponding carboxylate salt of the D(+) isomer of (A) with said second base, substantially in optically pure form, and quinine in free base form; and, if desired, converting said carboxylate salt of D(+) (A) to the free acid D(+) (A) by known means.

5,302,742

PROCESS FOR THE PREPARATION OF N-ACYLATED P-AMINO-PHENOLS

Heinz Landscheidt, Duisburg; Alexander Klausener, Cologne, and Heinz-Ulrich Blank, Odenthal-Gloebusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

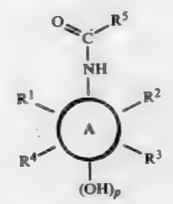
Filed May 5, 1993, Ser. No. 58,549

Claims priority, application Fed. Rep. of Germany, May 12, 1992, 4215592

Int. Cl.[5] **C07C** *269/00*

U.S. Cl. 560—29 **20 Claims**

1. A process for the preparation of a N-acylated p-aminophenol of the general formula



in which

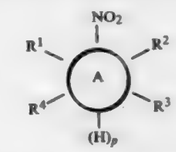
A represents a benzene or naphthalene nucleus,

p indicates the p position to the amino group,

R^1, R^2, R^3 and R^4, independently of each other, denote hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or the group CO—R^6 in which R^6 represents hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, hydroxyl or unsubstituted or substituted aryl, and

R^5 denotes C_1–C_{20}-alkyl, C_3–C_{10}-cycloalkyl, C_5–C_{10}-cycloalkenyl, C_1–C_{10}-alkoxy, unsubstituted or substituted aryloxy or unsubstituted or substituted aryl,

wherein a nitro compound of the general formula

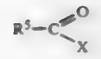


in which

R^1 to R^4, A and p have the above meanings,

is hydrogenated in an aqueous acidic reaction medium in which the amount of water is 2 to 40 times the amount by weight of the aromatic nitro compound, and in the absence or presence of a water-miscible organic solvent with the aid of a catalyst selected from the group consisting of the platinum metals in accordance with a Bamberger reaction at a temperature of 50°–160° C. and a hydrogen partial pressure of 0.1–50 bar and the resulting reaction mixture is reacted with the compound of the formula

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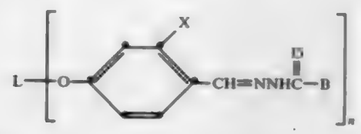
where
R⁵ has the above meaning and
X represents a leaving group,
in an amount of 0.5–2 per mol of the nitro compound used, at a temperature of −30° C. to +150° C. and in the absence or presence of a basic auxiliary or another acid acceptor and in the absence or presence of a diluent.

5,302,743
PREPARATION OF N-PROTECTED α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER
Toshio Katoh, Kawasaki; Chojiro Higuchi, Kamakura; Takeshi Oura, Zushi; Masanobu Ajioka, Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Continuation-in-part of Ser. No. 639,768, Jan. 14, 1991, abandoned, which is a continuation of Ser. No. 327,230, Mar. 22, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 823,535
Claims priority, application Japan, Mar. 22, 1988, 63-65920; May 9, 1988, 63-110403; May 9, 1988, 63-110417; Jun. 13, 1988, 63-143674; Jul. 1, 1988, 63-162593; Jul. 7, 1988, 63-169782; Jul. 7, 1988, 63-169783; Jul. 21, 1988, 63-180358
Int. Cl.⁵ C07C *229/00*
U.S. Cl. 560—49 **20 Claims**

1. In a process for the preparation of an N-protected α-L-aspartyl-L-phenylalanine methyl ester from an N-protected L-aspartic anhydride and L-phenylalanine methyl ester in a non-aqueous organic solvent, the improvement which comprises employing the L-phenylalanine methyl ester in the form of a mineral acid salt thereof and conducting the reaction in the presence of either (a) a salt of an organic carboxylic acid or, when the nonaqueous organic solvent comprises an organic carboxylic acid, at least one member of the group consisting of (i) an alkali metal inorganic base, (ii) an alkaline earth metal inorganic base, (iii) an ammonium, alkali metal or alkaline earth metal salt of an organic carboxylic acid and (iv) ammonium carbonate.

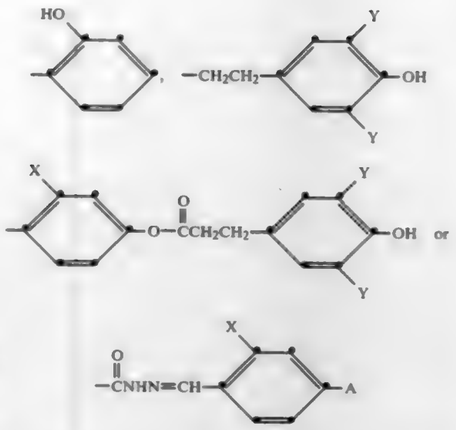
5,302,744
PHENOLIC-HYDRAZIDE COMPOUNDS AND POLYOLEFIN COMPOSITIONS STABILIZED THEREWITH
Richard H. S. Wang; Ping P. Shang, and Daniel A. Jervis, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 27, 1992, Ser. No. 858,809
Int. Cl.⁵ C07C *69/76, 241/00*
U.S. Cl. 560—75 **3 Claims**

1. A compound having the formula:

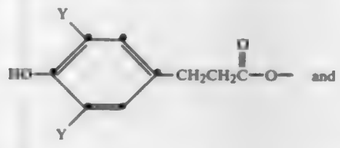


(II)

wherein
B is a group having the formula



L is a divalent, trivalent or tetravalent hydrocarbon radical selected from aliphatic, cycloaliphatic and aromatic groups having up to about 12 carbon atoms;
n is 2, 3 or 4;
X is hydrogen or hydroxyl;
A is hydrogen or a group having the formula



and

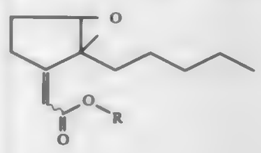
Y is a tertiary hydrocarbyl group having the formula



wherein Z is alkyl or aryl.

5,302,745
PROCESS FOR THE PREPARATION OF ALKYL 3-OXO-2-PENTYL-1-CYCLOPENTENE ACETATES
Béat Winter, Sezenove/Bernex, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland
Filed Jun. 16, 1993, Ser. No. 78,366
Claims priority, application Switzerland, Jul. 20, 1992, 2279/92
Int. Cl.⁵ C07C *67/333, 69/608;* C07D *303/12*
U.S. Cl. 560—126 **7 Claims**

1. A process for preparing alkyl 3-oxo-2-pentyl-1-cyclopentene acetates, which comprises isomerizing by means of acidic isomerization agent an epoxy-ester of formula



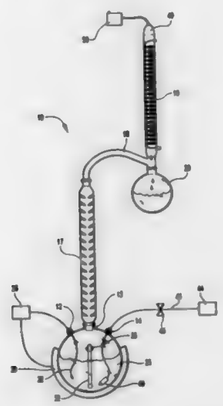
(I)

wherein R designates a lower linear or branched alkyl radical of C_1–C_6 and wherein the wavy line stands for a C—C bond of cis or trans configuration.

5,302,746
PROCESS FOR PRODUCING CARBOXYLIC ACID ESTER
Seiji Koono; Osamu Moriya; Toshio Noguchi, all of Niihama, and Haruki Okamura, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Apr. 12, 1993, Ser. No. 44,708
Claims priority, application Japan, Apr. 13, 1992, 4-092639
Int. Cl.⁵ C07C *69/52*
U.S. Cl. 560—205 **14 Claims**

1. A process for producing a carboxylic acid ester which comprises reacting a carboxylic acid with an alcohol in the presence of an acid catalyst to produce a reaction solution and neutralizing the reaction solution, characterized by using a countercurrently contacting column for neutralization, into which the esterified reaction solution is introduced at the lower portion of the column, an aqueous strong alkaline solution at a middle portion and an aqueous weak alkaline solution at an upper portion, removing a neutralized oil phase containing the carboxylic acid ester from the top of the column and removing an aqueous phase from the bottom, thereby continuously neutralizing the reaction solution.

5,302,747
PROCESS FOR THE MANUFACTURE OF ESTERS
Philip E. Nelson, West Lafayette, Ind., and Athula Ekanayake, Cincinnati, Ohio, assignors to Purdue Research Foundation, West Lafayette, Ind.
Filed Aug. 24, 1992, Ser. No. 934,770
Int. Cl.⁵ C07C *67/02*
U.S. Cl. 560—265 **22 Claims**



1. In a method for preparing an ester by mixing an alcohol with a carboxylic acid to form a reaction mixture, wherein the mixture reacts to form an esterification product, the improvement comprising removing the esterification product from the reaction mixture by bubbling a gas inert to the esterification reaction through the mixture during the reaction while the mixture is at a temperature of at least about the boiling point of the alcohol.

5,302,748
ESTERIFICATION PROCESS
Leroy O. Krbechek, Santa Rosa, Calif., assignor to Henkel Corporation, Plymouth Meeting, Pa.
Filed Feb. 11, 1993, Ser. No. 16,377
Int. Cl.⁵ C07C *69/52*
U.S. Cl. 560—265 **22 Claims**

1. A process of preparing an ester of an alcohol and an organic carboxylic acid comprising reacting said alcohol and said carboxylic acid at elevated temperature in the presence of sulfuric acid in an amount effective to both (a) catalyze the reaction of said alcohol and said carboxylic acid and (b) to remove the water of reaction whereby an ester of said alcohol and said carboxylic acid is provided.

5,302,749
STABILIZING METHOD OF ISOCYANATE COMPOUNDS AND ISOCYANATE COMPOSITIONS STABILIZED THEREBY
Teruyuki Nagata; Hiroyuki Yamashita; Masahiko Kusumoto, and Koju Okazaki, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Mar. 17, 1992, Ser. No. 852,724
Claims priority, application Japan, Mar. 19, 1991, 3-054275
Int. Cl.⁵ C07C *263/18*
U.S. Cl. 560—333 **6 Claims**

1. A stabilizing method of an isocyanate compound, which comprises adding 10–5000 ppm of phenol to an isocyanate compound.

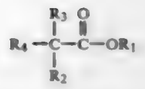
5,302,750
METHOD FOR PRODUCING N-OCTADIENOL FROM BUTADIENE
Joel R. Livingston, Basking Ridge, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.
Filed May 25, 1993, Ser. No. 67,196
Int. Cl.⁵ C07C *29/36, 29/44, 33/02*
U.S. Cl. 568—909.5 **27 Claims**

1. A method for separating a water soluble noble metal catalyst from a crude reaction product of a noble metal-catalyzed process for preparing octadienol from butadiene in aqueous solution, in an aqueous emulsion or as an aqueous suspension, said crude reaction product including an aqueous phase containing a water soluble Group VIII noble metal-ligand complex catalyst, and an organic phase containing unreacted butadiene feed and an octadienol reaction product, which comprises: (a) contacting said crude reaction product with a hydrophobic membrane capable of allowing a substantial portion of said unreacted butadiene feed and octadienol reaction product to pass therethrough while retaining a substantial portion of said water soluble Group VIII noble metal-ligand complex catalyst; (b) removing unreacted butadiene feed and said octadienol reaction product which passes through said hydrophobic membrane as permeate; and (c) retaining said water soluble Group VIII noble metal-ligand complex catalyst as retentate.

5,302,751
PROFEN RESOLUTION
Thanikavelu Manimaran, and Alicia A. Potter, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
Filed Jan. 21, 1992, Ser. No. 823,367
Int. Cl.⁵ C07B *57/00;* C07D *307/02;* C07C *67/60*
U.S. Cl. 562—401 **13 Claims**

1. A process for separating the enantiomers of a racemic mixture of an aliphatic carboxylic acid or ester thereof having the formula:

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(I)

where R_1 is hydrogen or alkyl; R_2, R_3 and R_4 are independently different and are hydrogen; alkyl; cycloalkyl; alkenyl; alkynyl; phenyl; naphthyl; phenyl or naphthyl substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, alkyl, alkoxy and haloalkyl; heteroaryl; heteroaryl substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, alkyl, alkoxy and haloalkyl; alkoxyalkyl; alkylthioalkyl; phenylalkyl; phenylalkyl substituted with at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, alkyl, alkoxy and haloalkyl; heteroarylalkyl; heteroarylaklyl substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, alkyl, alkoxy and haloalkyl; or cycloalkylalkyl, comprising forming a supersaturated solution of a conglomerate salt of said racemic mixture by reaction with a base, said conglomerate salt being a mixture of the enantiomeric salts and having the following properties:

i) the infrared spectrum of each of the enantiomeric salts, individually, and of the racemate salt are superposable;

ii) the melting point of each of the enantiomeric salts, individually, is greater than the melting point of the racemate salt; and

iii) the solubility of each of the enantiomeric salts, individually, is less than the solubility of the racemate salt in the same solvent;

and precipitating the enantiomeric salt from the supersaturated solution.

5,302,752

ACETIC ACID DERIVATIVES AND THEIR PRODUCTION

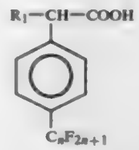
G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 428,918, Oct. 30, 1989, abandoned. This application Apr. 16, 1990, Ser. No. 509,231

Int. Cl.[5] **C07C** *53/34*

U.S. Cl. 562—496 **6 Claims**

1. Compounds of the formula:



wherein n is an integer from 1 to 12, R_1 is C_1 to C_6 linear or branched alkyl and the physiologically active salts, alkyl esters and amides thereof and the enantiomers, mixtures, and racemates thereof.

5,302,753

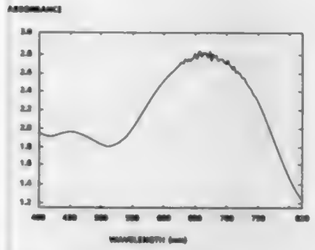
ANILIDE COUPLERS FOR PHOTOGENERATING PIGMENTS

Kock-Yee Law, Penfield, and Ibor W. Tarnawskyj, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

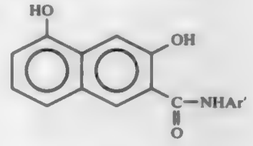
Filed Oct. 1, 1992, Ser. No. 955,192

Int. Cl.[5] **C07C** *237/20*

U.S. Cl. 564—173 **6 Claims**



1. The anilide coupler of the formula



wherein Ar' is an aromatic group.

5,302,754

PURIFICATION PROCESS OF METHACRYLAMIDE

Akira Ibi; Toshimi Ogata; Yoshihiro Nodate, and Takayuki Kageyama, all of Chiba, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 712,109, Jun. 7, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 961,020

Claims priority, application Japan, Jun. 13, 1990, 2-152710; Jun. 28, 1990, 2-168374

Int. Cl.[5] **C07C** *233/09*

U.S. Cl. 564—206 **4 Claims**

1. A purification process of crude methacrylamide by recrystallization from an aqueous methacrylamide solution obtained by neutralizing methacrylamide sulfate with a basic compound, comprising the steps of conducting crystallization by adjusting the hydrogen ion concentration of the aqueous methacrylamide solution to between pH 8 and pH 13, separating methacrylamide crystal, adjusting 5% or more by weight of the resulting mother liquor to between pH 1 and pH 5, separating precipitated insoluble matter, and recycling the thus-treated mother liquor to the neutralization step.

5,302,755

METHOD FOR DMTDA PRODUCTION

Robert A. Schaerfl, Jr.; Gordon G. Knapp, and W. Dirk Klobucar, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 708,470, May 31, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,248

Int. Cl.[5] **C07C** *319/14*

U.S. Cl. 564—440 **12 Claims**

1. In a process for producing thioalkylated toluene diamines comprising allowing a reaction mixture comprising

a) a toluenediamine having no substituents other than the required amino groups or having one or more substituents which are inert to the reaction conditions,

b) an organic disulfide, and

c) A Lewis acid or organometallic catalyst to form a product mixture and removing the desired thioalkylated toluene diamines from said product mixture by a thermal product recovery method, the improvement comprising adding to said reaction mixture a chaser selected from the group consisting of alkylene diol, alkylene ether glycol, alkyl-terminated alkylene ether polymer and aryl-terminated alkylene ether polymer said chaser having the following properties: a) it is soluble in the organic compounds of the reaction mixture and b) it has a boiling point such that it will not be removed from the product mixture prior to the recovery of the desired product.

5,302,756

AMMONOLYSIS OF NYLON

Ronald J. McKinney, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1992, Ser. No. 997,612

Int. Cl.[5] **C07C** *209/62*; **C08J** *11/04*

U.S. Cl. 564—488 **10 Claims**

1. A process for preparing a mixture of hexamethylene diamine, adiponitrile and 5-cyanovaleramide consisting of reacting polyhexamethylene adipamide with at least 1 equivalent of ammonia per amide group of the polymer, optionally in the presence of a phosphate catalyst, at a temperature between 250° C. and 400° C. and at a pressure of at least 100 psig.

5,302,757

ULTRAVIOLET LIGHT SENSITIVE ONIUM SALTS

Franklin D. Saeva, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1992, Ser. No. 944,640

Int. Cl.[5] **C07C** *321/28*

U.S. Cl. 568—58 **18 Claims**

1. An onium salt having the general formula:



wherein:

$W^{(-)}$ is an anion;

R^1 is a substituted or unsubstituted aryl or heteroaryl ring system having three fused rings;

R^2 is a substituted or unsubstituted arylene or heteroarylene ring system having a single ring or two fused rings;

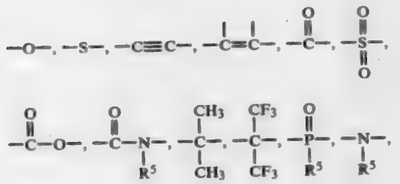
n in each C_nH_{2n} group is an integer from 1 to about 12 independent of the value of n in the other C_nH_{2n} group;

each g is independently an integer from 0 to 2;

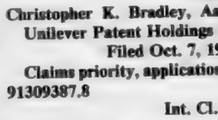
each Z is independently H, Cl, Br, F, or OCH_3;

each R^4 is independently alkylene having from 1 to carbons; and

each L is independently a direct link or is selected from the group consisting of

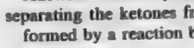


-continued



wherein n is an integer from 1 to 11, each R^5 is independently selected from the group consisting of —H, alkyl having from 1 to 12 carbons, and aromatic and heteroaromatic ring systems having 1 or 2 solitary, fused or linked rings, m is an integer from 1 to 12, and j is an integer from 0 to 10; with the provisos

that R^1 is an electron donating group which can absorb ultraviolet radiation and exhibit a higher energy occupied molecular orbital than said



groups:

that if n=1, g=0; and

that the onium salt is capable of forming a Bronsted acid upon exposure to ultraviolet radiation in the presence of a proton source.

5,302,758

DEUTERATED DIBUTYL AND MONOBUTYL PHOSPHATES

Richard I. Larson, Wilmington, N.C.; Woodfin V. Ligon, Schenectady, N.Y.; Richard L. Fox, Wilmington, N.C., and Hans Grade, Schenectady, N.Y., assignors to General Electric Company, San Jose, Calif.

Filed May 10, 1993, Ser. No. 58,180

Int. Cl.[5] **C07F** *9/11*

U.S. Cl. 558—208 **2 Claims**

1. A deuterated compound having the chemical formula $(C_4D_9O)PO_3H_2$.

2. A deuterated compound having the chemical formula $(C_4D_9O)_2PO_2H$.

5,302,759

PROCESS FOR SEPARATING KETONES FROM ALCOHOLS

Christopher K. Bradley, Ashford, Great Britain, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Oct. 7, 1992, Ser. No. 957,484

Claims priority, application European Pat. Off., Oct. 11, 1991, 91309387.8

Int. Cl.[5] **C07C** *45/85*

U.S. Cl. 568—366 **7 Claims**

1. A process for separating ketones from alcohols comprising the steps of:

reacting a mixture of ketones and alcohols with an organometallic compound $M(X)_n$ to form compound(s) HX, wherein M is chosen from aluminum, titanium and boron, n is the valence of M and X denotes equal or different organic groups chosen from alkyl groups and alkoxy groups having up to 10 carbon atoms;

liberating the newly formed compound(s) HX from the reaction mixture by distillation;

separating the ketones from the organometallic compound formed by a reaction between $M(X)_n$ and the alcohols in the mixture.

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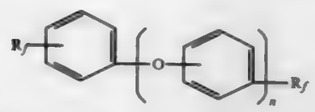
5,302,760

STABILITY ADDITIVE FOR PERFLUOROPOLYALKYLETHERS

Lois J. Gschwender, Kettering, and Carl E. Snyder, Jr., Trotwood, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1993, Ser. No. 30,969
Int. Cl.[5] C07C *41/46*
U.S. Cl. 568—581 6 Claims

1. A perfluorinated fluid having improved stability consisting essentially of a perfluoropolyalkylether and about 0.01 to 3.0 weight percent of a bis-perfluoroalkyl phenyl ether of the formula:



where R_f is a perfluoroalkyl group having 1 to 15 carbon atoms and n has a value of 1 to 6.

5,302,761

TETRABROMOBISPHENOL A HAVING A LARGE PARTICLE SIZE AND PROCESS FOR ITS PRODUCTION

Hanzo Tamabayashi, Tokuyama; Shinji Kakimoto, Shinnanyo; Tetsuto Mizui, Tokuyama; Akihiko Nomura, Shinnanyo, and Koji Kanimoto, Tokuyama, all of, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed May 19, 1993, Ser. No. 63,603
Claims priority, application Japan, May 19, 1992, 4-150025; May 19, 1992, 4-150026; May 19, 1992, 4-150027
Int. Cl.[5] C07C *39/367*
U.S. Cl. 568—726 9 Claims

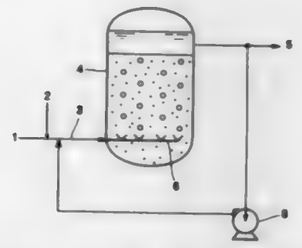
1. Single crystals of tetrabromobisphenol A having an average particle size of from 150 to 500 μm, each having a polyhedral shape.

5,302,762

METHOD FOR HYDRATING A CYCLOOLEFIN

Kanihiko Yamashita, Kurashiki; Hideaki Obana, Kamakura, and Tadashi Kai, Machida, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1993, Ser. No. 32,220
Int. Cl.[5] C07C *29/04*
U.S. Cl. 568—895 25 Claims



1. A method for hydrating a cycloolefin to produce a cyclic alcohol corresponding thereto, comprising reacting a cycloolefin with water in the presence of a crystalline aluminosilicate catalyst,

said cycloolefin being selected from the group consisting of cyclopentene, methylcyclopenten, cyclohexene, methylcyclohexene, cyclooctene and cyclododecene,

said reaction being effected in a reaction system comprising:

a continuous aqueous phase including water and the crystalline aluminosilicate catalyst suspended therein; and

an oil phase including the cycloolefin, while dispersing the oil phase in the continuous aqueous phase as globules having an average diameter of between about 0.05 and about 30 mm.

5,302,763

PROCESS FOR PREPARING DINITROTOLUENE

Allen B. Quakenbush, Lake Charles, La., assignor to Olin Corporation, Stamford, Conn.

Filed Mar. 1, 1993, Ser. No. 24,052
Int. Cl.[5] C07C *205/11*
U.S. Cl. 568—934 14 Claims

1. A process for the production of dinitrotoluene which comprises reacting, in the liquid phase, toluene with concentrated nitric acid, using at least 10 moles of nitric acid per mole of toluene, the reaction being carried out in the presence of a hydrated nitrate salt in an effective amount to reduce the hazard of detonation, the relative proportions of reactants and salt being such as to provide, upon completion of the reaction, a product mixture containing less than 15 percent by weight of dinitrotoluene.

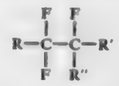
5,302,764

PROCESS FOR PREPARING TRIFLUOROHYDROCARBON COMPOUND

Akira Sekiya; Shigeru Kurosawa, both of Tsukuba; Toshiro Yamada, Fujisawa, and Kuniaki Goto, Setagaya, all of Japan, assignors to Japan as represented by Director General of Agency of Industrial Science & Technology and Nippon Zeon Co., Ltd., Tokyo, Japan

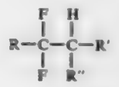
PCT No. PCT/JP91/01140, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO92/03397, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 28, 1991, Ser. No. 849,076
Claims priority, application Japan, Aug. 28, 1990, 2-227531
Int. Cl.[5] C07C *17/10, 19/02, 19/08*
U.S. Cl. 570—123 11 Claims

1. A process for preparing a trifluorohydrocarbon compound represented by the following formula (2):



(2)

wherein R is an alkyl group having 1 to 4 carbon atoms, and each of R′ and R″ is a hydrogen atom, a halogen atom, or an alkyl group having 1 to 4 carbon atoms, which may have a halogen substituent, which comprises the step of reacting a difluorohydrocarbon compound represented by the following formula (1):



(1)

wherein R, R′, and R″ are as defined above, and are identical in formula (1) and formula (2), with cobalt trifluoride.

5,302,765

CATALYTIC PROCESS FOR PRODUCING CF_3CHClF

Leo E. Manzer; V. N. Mallikarjuna Rao, and Frank J. Weigert, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1992, Ser. No. 892,064
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] C07C *17/00*
U.S. Cl. 570—123 17 Claims

1. A process for producing 2-chloro-1,1,1,2-tetrafluoroethane comprising the step of: contacting gaseous 1,1,1,2-tetrafluoroethane and chlorine with a catalyst of metal halide supported on carbon at a temperature of from about 150° C. to about 450° C., wherein the metal halide is a chloride and/or fluoride of a metal selected from the group consisting of lanthanum, zinc, copper, chromium, ruthenium, rhodium, platinum, and mixtures thereof.

5,302,766

ISOMERIZATION PROCESS

William H. Gumprecht, Wilmington, Del.; William J. Steiner, Butler, Pa., and John A. Wehner, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 3, 1993, Ser. No. 70,833
Int. Cl.[5] C07C *19/08*
U.S. Cl. 570—151 6 Claims

1. A process for converting at least one of the isomers, CCl_2FCHF_2 and $CClF_2CHClF$ to CF_3CHCl_2 comprising

(a) forming a reaction mixture consisting essentially of at least one of the isomers, $CClF_2CHClF$ and CCl_2FCHF_2, and an effective amount of at least one of TaF_5 and NbF_5 without the addition of HF;

(b) maintaining said reaction mixture at a temperature and pressure and for a time effective to result in a decrease in the isomer content and an increase in the CF_3CHCl_2 content; and

(c) recovering a dichlorotrifluoroethane composition from the reaction mass enriched in CF_3CHCl_2.

5,302,767

[2.2] PARACYCLOPHANE AND AND DERIVATIVES THEREOF

Richard A. Galley, Belle Mead; Robert S. Landon, Highland Park, and Kenneth C. Senior, S. Somerville, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 26, 1993, Ser. No. 37,935
Int. Cl.[5] C07C *21/24, 2/72, 25/18*
U.S. Cl. 570—184 20 Claims

1. In a process for the preparation of {2.2}-paracyclophane or derivatives thereof selected from the group consisting of dichloro-{2.2}-paracyclophane, tetrachloro-{2.2}-paracyclophane, tetramethyl-{2.2}-paracyclophane, dimethyldichloro-{2.2}-paracyclophane, diethyl-{2.2}-paracyclophane and dibromyl-{2.2}-paracyclophane comprising contacting at least one of p-methylbenzyltrimethylammonium hydroxide, p-methylbenzyltrimethylammonium halide, or derivatives thereof, with an alkaline medium in the presence of at least one solvent in a reaction vessel at a temperature of from about 50° to 120° C. to promote the formation of a reaction product comprising the {2.2}-paracyclophane or said derivatives thereof and a by-product polymer; the improvement which comprises conducting said contacting in the presence of an effective amount of oxygen to inhibit the formation of the by product polymer.

5,302,768

PROCESS FOR DECARBROMODIPHENYLALKANE PREDOMINANT PRODUCT

Saadat Hussain, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 559,655, Jul. 30, 1990. This application Mar. 2, 1992, Ser. No. 844,202
Int. Cl.[5] C07C *22/04, 25/18*
U.S. Cl. 570—185 12 Claims

1. A process for preparing a product predominant in decabromodiphenylalkane and containing a minor amount of dodecabromodiphenylalkane, the process consisting essentially of: forming a stirrable reaction mass by feeding molten diphenylalkane to a reaction vessel to which aluminum halide catalyst and bromine had been previously charged, the molten diphenylalkane being maintained under a non-oxidizing atmosphere prior to the feeding, and the bromine (i) containing about 10 ppm or less impurities, and (ii) being charged in an amount which provides from about 15 to about 30 moles of bromine per mole of diphenylalkane fed; maintaining the reaction mass at a temperature in the range of from about 15° C. to about reflux during the feeding; subsequent to the feeding, separating from the reaction mass the decabromodiphenylalkane predominant product; and heat treating the separated product for a period of time ranging from 1 to 20 hours and at a temperature within the range of from about 200° C. to about 400° C. which time and temperature are sufficient to form the decabromodiphenylalkane predominant product containing the minor amount of dodecabromodiphenylalkane wherein the minor amount is less than about 20 weight percent based upon the total amount of heat-treated product thus obtained.

5,302,769

PROCESS FOR MAKING ALKYLATED POLYCYCLIC AROMATICS

David O. Marler, Deptford; Dominick N. Mazzone, Wenonah, and L. Deane Rollmann, Moorestown, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 7, 1992, Ser. No. 986,187
Int. Cl.[5] C07C *2/66, 15/24, 15/27*
U.S. Cl. 585—455 22 Claims

1. A process of making a methylated polycyclic aromatic comprising contacting a polycyclic aromatic which contains at least three cyclic groups with a methyl-substituted single ring aromatic in the presence of a transmethylation catalyst comprising a zeolite having the structure of a faujasite under conditions sufficient to effect methylation of the polycyclic aromatic.

5,302,770

CATALYST WITH A MORDENITE BASE CONTAINING AT LEAST ONE METAL OF GROUPS IIA, IVB, IIB OR IVA AND ITS USE IN ISOMERIZATION OF A C8 AROMATIC CUT

Jean M. Basset; Agnès Choplin, both of Villeurbanne; Francis Raatz, Saint-Avold; Albert Theolier, Decines, and Christine Travers, Rueil Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Division of Ser. No. 781,167, Oct. 16, 1991, Pat. No. 5,234,873. This application May 17, 1993, Ser. No. 61,475
Claims priority, application France, Mar. 3, 1989, 89 02946
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—481 17 Claims

17. In a process for the isomerization of an aromatic C_8 cut, comprising subjecting said cut to isomerization conditions, in the presence of a catalyst, the improvement wherein said mordenite is prepared by a process comprising starting from an H-form mordenite in which the deposition of the group IIa, IVb, IIb or IVa metal is performed by grafting at least one organometallic compound of said metal on said H-form mordenite after the prior deposition on said mordenite of at least one metal of group VIII.

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5,302,771

PROCESS FOR UPGRADING THE QUALITY OF LIGHT ENDS

Ramdas Venkatram, Morris Township, Morris County, and George E. Milliman, Fanwood, both of N.J., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Continuation of Ser. No. 833,615, Feb. 13, 1992, abandoned, which is a continuation of Ser. No. 682,040, Apr. 8, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,269

Int. Cl.[5] C07C *7/12, 7/00*

U.S. Cl. 585—823 20 Claims

1. A process for removing impurities from hydrocarbon streams, said process comprising:

contacting a hydrocarbon stream containing an initial amount of at least one impurity selected from the group consisting of AsH_3 and PH_3 with a chemical adsorbent comprising a modified alumina impregnated with a metal selected from the group consisting of lithium, sodium, potassium, calcium, magnesium, and barium, and having a surface area within the range of about 10 m^2/g to about 300 m^2/g and a pore volume within the range of about 0.1 mL/g to about 1 mL/g under contacting conditions effective to result in a purified hydrocarbon stream containing a reduced amount of said impurity.

5,302,772

ALPHA-OLEFIN POLYMERS

Roger L. Sowerby, Mentor, and Curtis R. Scharf, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 362,631, Jun. 7, 1989, Pat. No. 5,210,362. This application Dec. 16, 1992, Ser. No. 991,833

Int. Cl.[5] C07C *2/20, 2/22*

U.S. Cl. 585—532 33 Claims

1. A process for preparing a liquid polymer comprising contacting at least one alpha-olefin with a catalyst system comprising a primary organo halide and a Lewis acid catalyst in the presence of a halogenated solvent and in the presence of an activating amount of a protic compound under polymerization conditions thereby obtaining the liquid polymer.

5,302,773

PROCESS OF OXIDIZING ALIPHATIC HYDROCARBONS EMPLOYING A MOLYBDATE CATALYST ENCAPSULATED IN A HARD, GLASSY SILICA MATRIX

G. Edwin Vrieland; Stephen J. Doktycz, and Bijan Khazai, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 505,751, Apr. 6, 1990, Pat. No. 5,146,031, which is a continuation-in-part of Ser. No. 383,107, Jul. 20, 1989, Pat. No. 4,973,791. This application Nov. 26, 1991, Ser. No. 797,882

Int. Cl.[5] C07C *5/09;* B01J *21/08*

U.S. Cl. 585—624 38 Claims

1. A process of preparing an unsaturated aliphatic hydrocarbon comprising contacting an aliphatic hydrocarbon having at least three carboe atoms with a solid heterogeneous catalyst composition having reactive oxygen and having a crush strength of at least about 0.60 lb, the catalyst composition comprising a glassy silica matrix having a BET surface area no greater than about 20 m^2/g and having macropores ranging in size from about 500 Å to about 4000 Å, the silica matrix comprising from about 25 to about 90 weight percent of the catalyst composition and having encapsulated therein domains of a catalyst component comprising an oxide of magnesium and an oxide of molybdenum, the contacting occurring under conditions such that an unsaturated aliphatic hydrocarbon is produced in a productivity of at least about 0.15 g/g cat-hr.

5,302,774

PROCESS FOR THE PRODUCTION OF BISPHENOLS

Klaus Berg; Hans-Josef Buysch, both of Krefeld; Alfred Eitel, Dormagen; Gerhard Fennhoff, Willich; Otto Immel, Krefeld; Ralf Pakull, Cologne; Bernhard Wehrle, Langenfeld, and Claus Wulff, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 9, 1993, Ser. No. 103,584

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1992, 4227520

Int. Cl.[5] C07C *39/16*

U.S. Cl. 568—727 1 Claim

1. A process for the production of 4,4-dihydroxydiphenyl propanes from acetone and phenols in the presence of sulfonic acid ion exchangers modified with alkyl-SH groups, characterized in that 0.6 to 5% by weight water is added to the educt mixture of acetone and phenols.

5,302,775

PROCESS AND APPARATUS FOR THE ENTRAINED BED CATALYTIC CONVERSION OF A CHARGE CONTAINING AN OXYGEN COMPOUND

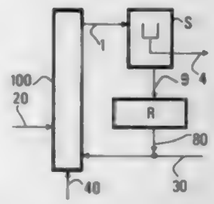
Francois Hugues, Vernaison; Daniel Vuillemot, Saint Genis Laval; Jean Pierre Burzynski, Sainte Foy les Lyon; Pierre Galtier, Vienne, and Thierry Gauthier, Saint Genis Laval, all of France, assignors to Institut Francais du Petrole, Rueil Maimaison, France

Filed Feb. 7, 1992, Ser. No. 831,245

Claims priority, application France, Feb. 7, 1991, 91 01519

Int. Cl.[5] C07C *1/20*

U.S. Cl. 585—639 16 Claims



1. In an entrained bed process for the catalytic conversion of a change containing at least one oxygen compound into olefinic hydrocarbons rich in compounds having 2 to 4 carbon atoms in their molecule, the steps comprising:

supplying, to a zone located in the vicinity of a first end of an elongated reaction zone, catalytic solid particles and at least one entrainment fluid so as to establish an entrained bed;

contacting said catalytic solid particles and said charge in a zone located in the vicinity of the first end;

circulating the solid particles and the charge in the reaction zone to at least partially convert said charge and to at least partially deactivate the catalytic solid particles by the deposition of coke thereon;

withdrawing from a second end of said elongated reaction zone a mixture M1 containing products of the at least partial conversion of said charge and at least partially separating said mixture M1;

regenerating at least one part of the deactivated solid catalytic particles; and

recycling resultant at least partially regenerated solid catalytic particles to a recycling zone in the vicinity of said first end,

the improvement which comprises:

conducting the separation of the solid particles and the gases containing the products of the reaction in the mixture M1 in a co-current cyclone separator comprising at least one external enclosure, elongated along an axis, having a substantially circular section of diameter (Dc) and having at a first end introduction means;

introducing by an external inlet the mixture M1 containing the catalytic solid particles forming a dense phase D1 and the charge in a gaseous form forming a light phase L1 and imparting at least to the said light phase L1 in said external enclosure a helical movement in the flow direction of said mixture M1 and separating the phases D1 and L1, and recovering at the second end opposite said first end via an external outlet, at least part of the dense phase D1, said external enclosure having between said opposite ends a length L;

at least one internal enclosure elongated along an axis and having a substantially circular section arranged coaxially with respect to said external enclosure and having at a distance Ls, smaller than L, from the extreme level of the external inlet, an internal inlet having an internal diameter (Di) smaller than (Dc); and

passing through said internal enclosure at least part of the light phase L1 to an opposite end of the internal inlet and recovering the at least part of the light phase L1 by an internal pipe, which is respectively axial when the pipe of the external outlet is lateral, or lateral when the pipe of the external outlet is axial, said cyclone separator also having downstream, in the circulation direction of the dense phase D1 means limiting the advance of the light phase L1 outside said internal enclosure.

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5,302,776

METHOD OF CHORD IN ELECTRONIC MUSICAL INSTRUMENT SYSTEM

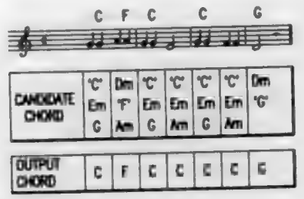
Ik Beom Jeon, Anyang; Tae Jhin Shin, Seoul, and Hyun Cheol Kim, Kwangmyoung, all of Rep. of Korea, assignors to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed May 27, 1992, Ser. No. 888,483

Claims priority, application Rep. of Korea, May 27, 1991, 91-8669; Jun. 26, 1991, 91-10692

Int. Cl.[5] G10H *7/00, 1/38*

U.S. Cl. 84—613 4 Claims



1. In an electronic musical instrument system having a first keyboard for playing the accompaniment part and a second keyboard for playing the melody part, a method of automatically generating accompaniment chords comprising the steps of:

determining the key signature of music to be played according to key data from said first keyboard;

drawing up primary chords to be used in the play tune according to the determined key signature;

generating a melody note corresponding to key data from said second keyboard;

comparing the generated melody note with the notes constituting the primary chords;

selecting one or more chords which include the same note as the generated melody note in said note comparing step;

comparing position values of the chord-constituting notes equal to the generated melody note with one another when at least two chords are selected in said selecting step; and

outputting with the generated melody note said selected chord when only one chord is selected in said selecting step, and a chord which includes the note having the highest position value in said position-value comparing step when at least two chords are selected in said selecting step.

5,302,777

MUSIC APPARATUS FOR DETERMINING TONALITY FROM CHORD PROGRESSION FOR IMPROVED ACCOMPANIMENT

Hiroko Okuda, Tokyo; Hiroshi Yoshimura, Kawasaki, and Chisato Nakamura, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 906,275

Claims priority, application Japan, Jun. 29, 1991, 3-185410; Oct. 16, 1991, 3-294817; Oct. 16, 1991, 3-294818; Dec. 30, 1991, 3-360544

Int. Cl.[5] G10H *1/38*

U.S. Cl. 84—637 14 Claims

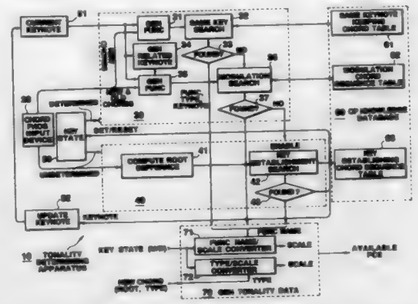
8. An automatic accompaniment apparatus comprising:

chord progression input means for inputting a chord progression;

chord progression analyzing means for analyzing said input chord progression with respect to tonality and for detecting a modulation in said input chord progression; and

accompaniment forming means for forming an accompaniment based on results from said chord progression analyzing means; and

wherein said accompaniment forming means comprises modulation compensating means for controlling a pitch line of said accompaniment defined by a succession of



pitches thereof so as to compensate a pitch difference formed between keys before and after said modulation.

5,302,778

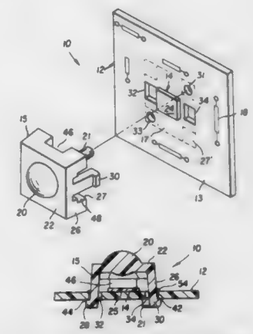
SEMICONDUCTOR INSULATION FOR OPTICAL DEVICES

Martin A. Maurinus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 28, 1992, Ser. No. 937,791

Int. Cl.[5] H01L *23/02*

U.S. Cl. 174—52.4 11 Claims



1. Apparatus for enclosing and focusing light on or from an optically active integrated circuit die mounted on a region of a printed circuit substrate of the type having conductive paths and connected components on at least one major surface thereof, and attached so that the optically active integrated circuit elements are electrically connected to the conductive paths, comprising:

a lens element;

an enclosure for supporting the lens element in a wall thereof for focusing the lens element upon the optically active integrated circuit element, the enclosure having side walls; and

a plurality of tabs extending from the side walls of the enclosure and a like plurality of apertures in the substrate for receiving the tabs, the tabs having catches configured to engage the apertures and maintain the side wall edge surfaces in contact with the substrate surface.

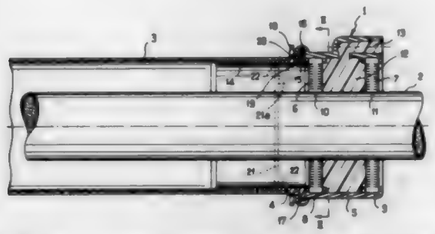
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5,302,779

PLUG FOR FIXING IN AN IMPERMEABLE MANNER AN ELECTRIC CABLE TO AN OPENING AND CABLE PROTECTION SLEEVE COMPRISING SUCH PLUGS

Jacques Morel, and Didier Morel, both of Chateauneuf-en-Thymerais, France, assignors to Etablissements Morel - Ateliers Electromechaniques de Favieres, Chateauneuf-en-Thymerais, France

PCT No. PCT/FR91/00135, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO92/15138, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 20, 1991, Ser. No. 938,138
Int. Cl.[5] H02G *15/08*
U.S. Cl. 174—92 24 Claims



1. Plug which makes it possible to fix in an impermeable manner an electric or telephone cable (2) to the end (4) of a tube (3) of circular cross section for passage of said cable, said plug (1, 50) comprising a hollow body (5) having at least two shells (5*a*, 5*b*) adapted to be fixed around a cable (2) and to receive at least two jaws (6, 7) which are retained radially in said shells and each comprise a central opening (10, 11) for passage of the cable (2) and are supported radially on this cable at the time of assembly by clamping of the two shells to one another, the two jaws defining between them inside said hollow body (5) a chamber (12) adapted to be filled with a sealing material, said plug (1, 50) further comprising adaptation means for adapting said hollow body to said end (4) of the tube (3) and means sealing between said adaptation means and said tube and between said hollow body (5) and said adaptation means, said adaptation means (14, 51) being adapted to be partly introduced into said tube (3) and comprising radially projecting means (18, 54) adapted to abut against the end (4) of said tube section (3) as well as retaining means for placing and fixing said hollow body in a predetermined position with respect to said end (4) of the tube (3) so that said jaws are easily accessible and removable for removing and changing the cable (2).

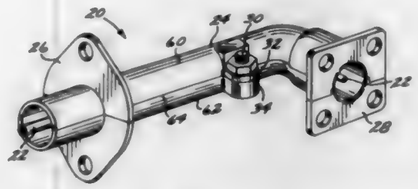
5,302,780

SPLIT COAXIAL CABLE CONDUCTOR AND METHOD OF FABRICATION

Norman L. Alfing, Green Valley, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 29, 1992, Ser. No. 905,601
Int. Cl.[5] H01B *7/00*
U.S. Cl. 174—102 R 3 Claims

1. A coaxial cable conductor, comprising:
a center conductor having a preselected longitudinal shape;
a longitudinally split outer conductor, including
a first partial outer conductor comprising less than half of the circumference of the outer conductor along its longitudinal length,
a second partial outer conductor comprising the remaining portion of the circumference of the outer conductor along its longitudinal length and mating with the first partial outer conductor along two joints, the two outer conductors including a conforming overlapped lip in the two partial outer conductors at each of the joints, such that radio frequency energy has no straight line path to escape from the interior of the conductor,
an end flange at an end of the outer conductor,
a mechanical fastener that holds the two partial outer conductors together, and



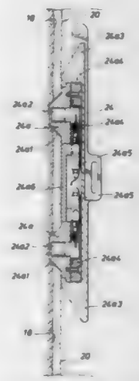
a metallic sealing layer applied over the external surfaces of the joints; and
a plurality of poly(tetrafluoroethylene) dielectric supports that support the center conductor in a precise central location within the outer conductor, leaving a gap between the center conductor and the outer conductor.

5,302,781

SIDEWALL CONTACT TEMPERATURE TOOL INCLUDING KNIFE EDGE SENSORS FOR CUTTING THROUGH MUDCAKE AND MEASURING FORMATION TEMPERATURE

Thomas H. Hanson, III, Bakersfield, Calif., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 5, 1993, Ser. No. 13,906
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—102 22 Claims



1. An apparatus adapted to be disposed in a wellbore for measuring one or more parameters associated with said wellbore, a mudcake adhering to a wall of a formation traversed by said wellbore, comprising:
measurement means for measuring the parameter of said formation disposed under said mudcake and not the parameter of said mudcake, said measurement means including,
a pad assembly adapted to contact said mudcake and measure the parameter of said formation disposed under said mudcake, said pad assembly including,
a flat surface adapted for contacting a surface of said mudcake,
a knife edge housing connected to and outwardly protruding from said flat surface adapted for cutting through said mudcake and penetrating said formation disposed under said mudcake, and

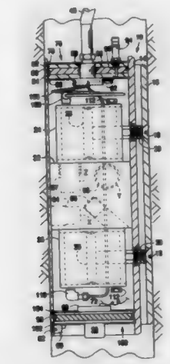
temperature sensor means disposed within said knife edge housing for measuring a temperature of said formation disposed under said mudcake and not a temperature of said mudcake when said flat surface contacts the surface of said mudcake and said knife edge housing cuts into said mudcake and penetrates said formation disposed under said mudcake.

5,302,782

THREE-COMPONENT BOREHOLE WALL-LOCKING SEISMIC DETECTOR

Thomas E. Owen, Helotes, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 898,298, Jun. 15, 1992, abandoned. This application Oct. 19, 1993, Ser. No. 139,222
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—122 10 Claims



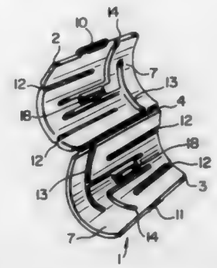
1. A seismic detector for profiling a subterranean formation by detecting seismic signals within a given frequency range, the seismic signals being induced in the subterranean formation at distance from a cased or uncased borehole in which said seismic detector is located, said seismic detector comprising:
a generally cylindrical housing;
accelerometer means rigidly secured in said generally cylindrical housing;
a moveable shoe carried by said housing, said shoe having an extended position and a retracted position, said shoe having a generally cylindrical shape through an arc, said arc having an outer radius approximately equal to a radius of said borehole, said arc being approximately 120 degrees and having a radius center generally coincident with a radial center line for said cylindrical housing, the length of said shoe being close in length to said generally cylindrical housing;
actuating means in said housing for extending said shoe to said extended position and retracting said shoe to said retracted position, said extended position clamping said seismic detector in said borehole and said retracted position releasing said seismic detector from said borehole; and
control circuit for controlling said seismic detector particularly said actuating means and said accelerometer means to measure said seismic signals;
wherein contact with said borehole is maximized during said extended position of said shoe to reduce concentrated clamping stresses at points of contact with said borehole, and wherein said seismic detector is constructed of materials which in combination have a density that approximates that of said subterranean formation, the density matching providing a better transfer of said seismic signals to said seismic detector.

5,302,783

RESONATOR

Changize Sadr, Toronto, and Douglas J. Georgas, Blenheim, both of Canada, assignors to ABC Group, Rexdale, Canada

Filed Dec. 21, 1992, Ser. No. 994,348
Int. Cl.[5] F01N *7/18*
U.S. Cl. 181—243 8 Claims



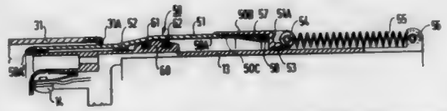
1. A sound resonator device for use on a cylindrical sound transmitting tube connected to an engine comprising elongated casing means, said casing means including two elongated, hollow sections of arcuate cross section, each said section being concavo-convex, and including parallel outer and inner walls; hinge means interconnecting first side edges of said sections whereby said sections can be wrapped around the cylindrical sound transmitting tube; partition means in each said section dividing the interior thereof into one elongated, tortuous passage; an inlet nozzle extending outwardly from the center of said inner wall of each said section for connecting the interior of said tube to the passage in said casing means, whereby sound is attenuated during movement along said tortuous passage; and latch means on the free side edge of at least one said section for engaging the free side edge of the other said section for securing the sections together around a tube.

5,302,784

CIRCUIT BREAKER INERTIA CONTACT ASSEMBLY FOR RESISTANCE INSERTION DURING OPENING AND CLOSING OPERATIONS

Michel Perret, Bourgoin-Jallieu, France, assignor to GEC Alsthom T&D SA, Paris, France

Filed Mar. 9, 1993, Ser. No. 29,053
Claims priority, application France, Mar. 10, 1992, 92 02837
Int. Cl.[5] H01H *33/16, 33/90*
U.S. Cl. 200—144 AP 8 Claims



1. An inertia contact for engagement with a fixed contact of a circuit-breaker in series with an insertable component, such as a resistor or a varistor, disposed in an interrupting chamber of said circuit-breaker and insertion in parallel with main contacts of the circuit-breaker for a limited period of time, said circuit-breaker including a tube supporting moving contacts and connected to a drive rod, said inertia contact comprising a circularly-symmetrical metal casing coaxial with said tube and surrounding said tube, the casing being substantially tubular in shape with a radial projection flanked by two rings fitting snugly against said tube and sliding thereon, said inertia contact having a first end made of an alloy resistant to the effects of arcing, and a second end including means for fixing the inertia contact to a first end of at least one coil spring, means fixing a second end of said at least one coil spring to the

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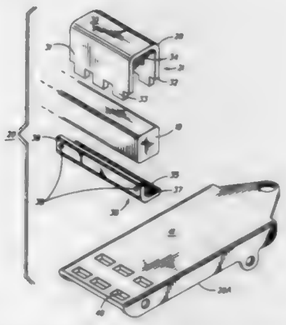
end of the tube remote from said inertia contact, a band having a conical inside cross-section being disposed on the interior of said projection and at one end of a cavity, a domed collar fixed to said tube and projecting into said cavity and engagable with said band to damp the shock upon impact between the domed collar and said band as a result of relative motion of said tube during circuit-breaker opening resisted by expansion of said at least one coil spring, whereupon the tube drives the inertia contact to effect a delayed opening of the inertia contact and the fixed contact of the circuit-breaker in series with the insertable component.

5,302,785

MOLDED CASE CIRCUIT BREAKER OPERATING MECHANISM CROSSBAR ASSEMBLY

Roger N. Castonguay, Terryville, and David Arnold, Chester, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 18, 1993, Ser. No. 33,474
Int. Cl.[5] H01H *1/22*
U.S. Cl. 200—244 **4 Claims**



1. A molded case circuit breaker movable contact arm assembly comprising:
a movable contact arm carrier supporting at least one movable contact arm having a movable contact on a bottom surface;
a U-shaped metal staple attached to a top surface of said movable contact arm carrier by means of tabs extending from said staple and slots formed within said movable contact arm carrier;
a rectangular crossbar trapped between said staple and said movable contact arm carrier;
an adapter piece supporting a part of said crossbar and being trapped between said crossbar and a part of said staple whereby said adapter and said crossbar conform to an inner surface defined within said staple; and
a pair of projections extending from said adapter and trapping one side of said staple there between to prevent relative motion between said staple and said adapter.

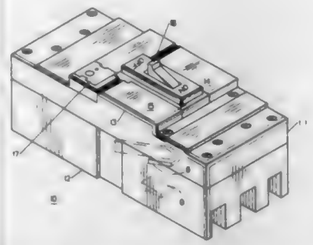
5,302,786

MOLDED CASE CIRCUIT BREAKER FOR REMOTE CONTROL OPERATIONS

James L. Rosen, West Hartford, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Oct. 19, 1992, Ser. No. 962,814
Int. Cl.[5] H01H *5/00*
U.S. Cl. 200—400 **8 Claims**

1. A molded case circuit breaker comprising:
a plastic cover joined to a plastic case;
a pair of separable contacts within said case controlled by an operating mechanism;
a pair of opposing sideframes arranged within said case and supporting said operating mechanism;
a pair of springs within said operating mechanism arranged for driving said contacts between open and closed positions;
a handle operator extending external to said cover at one end and connecting with said operating mechanism at an opposite end, said handle operator moving said contacts between open and closed positions under quiescent current conditions;
a latch system coupled with said operating mechanism restraining said operating mechanism from separating said contacts until occurrence of an overcurrent condition of predetermined magnitude;



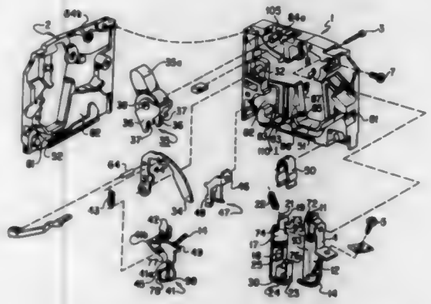
a cradle operator pivotally-arranged within said sideframes and removably connecting between said latch system and said operating mechanism, said cradle operator having a pivot end and an opposing latching end said latching end interacting with said latch system whereby said cradle operator releases from said latch system to allow said operating mechanism to separate said contacts upon occurrence of said overcurrent condition; and
a cradle point pin pivotally attaching said cradle operator between said sideframes, said pivot pin including an inner and outer metal cylinder, said pivot pin outer cylinder comprising a split cylinder.

5,302,787

AUTOMATIC MINIATURE CIRCUIT BREAKER WITH Z-AXIS ASSEMBLABLE CONTACT ASSEMBLY

Thomas A. Edds, Cedar Rapids; Gary W. Scott, Mount Vernon; Matthew D. Sortland, Swisher; Eugene W. Wehr; John M. Winter, both of Cedar Rapids, all of Iowa; James V. Fixemer, Denton, and Charles H. Wagner, Hickman, both of Nebr., assignors to Square D Company, Palatine, Ill.

Filed May 5, 1992, Ser. No. 878,577
Int. Cl.[5] H01H *73/04*
U.S. Cl. 200—401 **8 Claims**



1. An automatic miniature circuit breaker comprising:

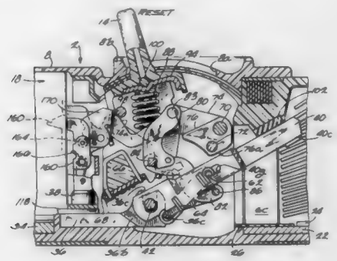
a base having a bottom wall and molded recesses and barriers for
supporting circuit breaker components;
a line terminal carried by said base;
a load terminal carried by said base;
an electrical circuit extending between said line terminal and said load terminal, said circuit comprising:
a first contact;
a second contact; and
an integral movable contact carrier carrying said second contact and movable between (i) a first position wherein said second contact is engaged with said first contact and corresponding to a closed electrical circuit condition wherein said electrical circuit is completed between said line terminal and said load terminal and (ii) a second position wherein said second contact is placed away from said first contact and corresponding to an open electrical circuit condition wherein said electrical circuit is not completed between said line terminal and said load terminal;
said contact carrier comprising a generally flat central base portion (**41***a*), an upper portion and a lower portion, said lower portion having a substantially (**98**) extending outwardly at substantially a right angle from said base portion and a contact platform (**78**) carried by said extension at substantially right angles on both said extension and said base portion, said platform having said second contact disposed thereupon, said contact platform having a generally rectangular shape with opposed side portions in close association with the opposite bottom walls of said base and cover and having a top portion distal from said extension; and
said contact carrier including a vertical rib formed thereupon at the point where said extension is connected to said contact platform.

5,302,788

MOLDED CASE CIRCUIT BREAKER HAVING TRAPEZOIDALLY SHAPED SHAFT

Donald A. Link, Hubertus; Michael R. Larsen, Milwaukee, and Edward L. Wellner, Colgate, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 926,484, Aug. 6, 1992. This application Jul. 29, 1993, Ser. No. 98,992
Int. Cl.[5] H01H *23/00*
U.S. Cl. 200—401 **6 Claims**



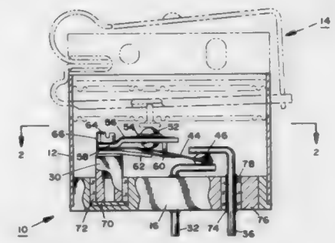
1. A circuit breaker comprising, in combination:
an insulating housing comprising a molded insulating base and molded insulating cover means defining a plurality of co-extensive compartments within said housing;
a pair of terminals extending from each said compartment to opposite exterior ends of said housing;
a stationary contact connected to one of said terminals within each said compartment;
a movable contact finger having a contact thereon within each said compartment movable into and out of engagement with respective said stationary contacts;
a movable frame supported for pivotal movement in each said compartment, said frame comprising means providing a resilient driving connection with a respective said movable contact finger;
an operating mechanism in one of said compartments for moving said movable frame in said one of said compartments, said operating mechanism comprising an operating handle, a collapsible toggle linkage connected to a respective said movable frame in said one of said compartments, and a latching mechansim;
current responsive tripping means for releasing said latching mechanism, thereby effecting collapse of said toggle linkage and movement of said movable frame and said movable contact finger contact in said one of said compartments out of engagement with a respective said stationary contact;
a shaft extending between said compartments attached to each said movable frame for effecting unitary movement of all said movable frames, said shaft having a beveled side surface; and
clamping means for attaching said shaft to respective said movable frames, said clamping means comprising a strap encompassing said shaft, said strap having opposite ends secured to said movable frame, said strap further having means cooperating with said beveled side surface for camming said shaft against a juncture of one end of said strap and said respective movable frame.

5,302,789

SNAP SWITCH HAVING LOW RESISTANCE

Robert R. Hellman, Sr., Oxford, and Stephen B. Barrey, Milford, both of Conn., assignors to Westport Development & Manufacturing Company, Inc., Orange, Conn.

Continuation-in-part of Ser. No. 856,874, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 605,880, Oct. 29, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 24,797
Int. Cl.[5] H01H *5/18*
U.S. Cl. 200—461 **6 Claims**



1. A snap switch, comprising:
(a) a base member;
(b) a support post attached to said base member;
(c) a snap-action, over center spring blade having a proximal end attached to said support post and a distal end free;
(d) actuator means operatively engaging said spring blade to cause said spring blade to selectively snap between first and second positions;
(e) said free end of said spring blade having attached thereto a contact having a first conical contact surface extending outwardly from a first surface of said spring blade, said contact being moveable generally vertically as said spring blade snaps between said first and second positions; and
(f) a first pair of spaced apart terminals attached to said base, said terminals comprising two, generally horizontal, parallel, round wires, and disposed such that when said spring blade is snapped to its first position, said first contact surface will engage both of said first pair of terminals to complete an electrical circuit from one of said first pair of terminals, through said contact, and to the other of said first pair of terminals, said engagement being such that the

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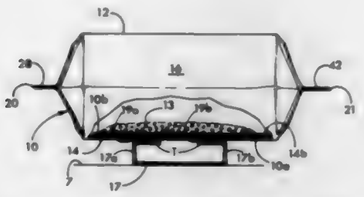
radius of said first conical contact surface engages the radii of said first pair of terminals.

5,302,790

MICROWAVE POPCORN POPPING BAG

Charles H. Turpin, Minneapolis, Minn., assignor to Golden Valley Microwave Foods Inc., Edina, Minn.

Continuation-in-part of Ser. No. 852,291, Mar. 16, 1992, abandoned. This application Oct. 13, 1992, Ser. No. 959,681
Int. Cl.[5] H05B 6/80
U.S. Cl. 219—727 7 Claims



1. An expandable popcorn bag for microwave popping of popcorn comprising,

a bag body formed from flexible microwave transparent sheet material including superimposed upper and lower face panels having parallel left and right side edges, longitudinally extending centrally projecting gussets folded between the upper and lower face panels,

said bag having top and bottom cut ends, top and bottom seals aligned adjacent to the cut ends of the bag,

said seals bonding the upper and lower face panels together and bonding the gussets between the face panels to seal the ends of the bag whereby said bag expands to accommodate expansion of popcorn as the popcorn pops therein during microwave cooking,

said lower face panel having a microwave heating susceptor for absorbing microwave energy to enhance the popping of said popcorn,

a collapsible stand as a part of the bag bonded to an outside surface of the lower face panel of said bag below the susceptor for supporting said bag in spaced relationship above a cooking surface when the stand is erected,

said stand is folded to a collapsed condition so that said stand occupies a reduced space during shipment and storage,

said stand enables the bag to be placed in selected positions within said microwave oven during cooking including a) a lower position when the stand is folded to the collapsed condition and b) a raised position when the stand is folded to an erect condition,

said stand being thereby adapted to support the bag in said selected positions during cooking while the bag remains sealed for improving cooking efficiency in microwave ovens,

said stand comprises base portions adhesively bonded to an outer surface of said lower panel of the bag,

at least two upright panels spaced apart from one another and connected to said base portions by means of fold lines whereby the upright panels serve as legs for supporting the bag in a raise position when the stand is erected and the legs are upright, and

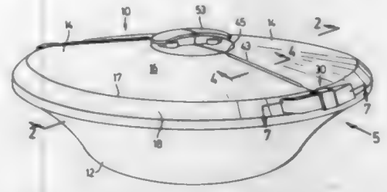
means for securing at least one of said legs in an erect position.

5,302,791

DISH COVER FOR USE IN A MICROWAVE OVEN

Joel Meyers, Don Mills, and Klaus K. P. Kuehn, Pickering, both of Canada, assignors to Consolaid Inc., Concord, Canada

Filed Feb. 11, 1993, Ser. No. 16,548
Int. Cl.[5] H05B 6/80
U.S. Cl. 219—735 14 Claims



1. A dish cover for use in a microwave oven, said cover having a generally circular shape and comprising:

first and second generally semicircular portions, each portion having a top surface from which semicircular edge depends a downwardly extending peripheral sidewall having an inwardly extending lip along its bottom edge and having an inwardly extending flange positioned between the bottom peripheral lip and top surface so that a rim of a dish may be inserted in the space defined between the flange and lip with the flange extending slightly into the space above the dish;

latch means on each first and second portion for releasably joining the two portions together so that the assembled cover may be fastened to a rim of a dish;

vent means defined through the top surface for allowing pressure equalization between the interior and exterior of the covered dish; and

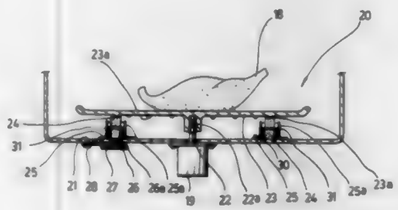
handle means attached to each semicircular portion which coact when the cover is assembled to facilitate manipulation of the covered dish.

5,302,792

HIGH FREQUENCY COOKING DEVICE WITH TURNTABLE AND WEIGHT SENSOR

Hwa-Gyu No, and Jong-Hak Hyun, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 22, 1993, Ser. No. 50,638
Claims priority, application Rep. of Korea, May 18, 1992, 92-8458; May 18, 1992, 92-8459
Int. Cl.[5] H05B 6/78
U.S. Cl. 219—754 4 Claims



1. A high frequency cooking device comprising:

a housing forming a cooking chamber for cooking food, said chamber including a floor;

a food-supporting turntable mounted in said chamber for rotation about a vertical axis, said turntable including a plurality of downwardly depending first lugs disposed on an underside thereof and arranged in an annular pattern about said vertical axis;

driving means for rotating said turntable about said vertical axis;

means for supplying a high frequency waves to said chamber for cooking food supported on said turntable;

support rollers mounted on a topside of said floor and disposed in fixed locations in said chamber beneath said turntable, each of said support rollers being freely rotatable about a horizontal axis within a respective bracket affixed to said floor;

one of said support rollers being mounted for vertical movement within its bracket and biased upwardly, said one support roller being spaced radially from said vertical axis and positioned to be contacted sequentially by said first lugs as said turntable rotates; and

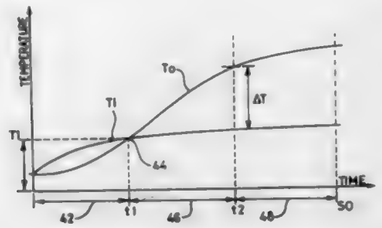
a weight sensor device affixed to an underside of said floor and including a second lug projecting upwardly into said chamber through a hole in said floor, and engaging said one support roller so that said one support roller bears downwardly against said second lug while supporting said turntable to enable said weight sensor to weigh food disposed on said turntable.

5,302,793

MICROWAVE OVENS WITH AIR INLET AND AIR OUTLET TEMPERATURE SENSORS

Kenneth I. Eke, Woldingham, United Kingdom, assignor to Microwave Ovens Limited, Shirley, United Kingdom

Filed Apr. 27, 1993, Ser. No. 53,950
Claims priority, application United Kingdom, Apr. 30, 1992, 9209350
Int. Cl.[5] H05B 6/68
U.S. Cl. 219—710 10 Claims



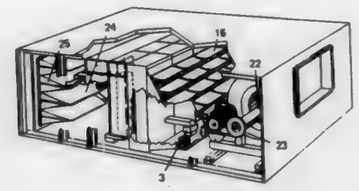
1. A method of cooking food in a microwave oven comprising an oven cavity to receive the food, a magnetron for delivering microwave power to the oven cavity, means for admitting to the cavity a flow of air which cools the magnetron, and a radiant heating element for delivering radiant power to the oven cavity, wherein the temperature of the air cooling the magnetron is detected as the air enters the cavity to yield an air inlet temperature and the temperature is detected as the air leaves the cavity to yield an air outlet temperature, monitoring variations with time of the air inlet and air outlet temperatures, detecting a crossover temperature or a crossover time when said variations intersect, and utilising the magnitude of the crossover temperature or crossover time to control the duration of the remaining cooking time and the application of microwave power and radiant power during the remaining cooking time.

5,302,794

MICROWAVE APPARATUS FOR DRYING AIR

Per E. Gustafsson, Stjarnvagen 26, S 541 55 Skovde, Sweden

Continuation of Ser. No. 500,310, Mar. 28, 1990, abandoned. This application Oct. 7, 1992, Ser. No. 957,453
Claims priority, application Sweden, Mar. 28, 1989, 8901070; Feb. 9, 1990, 9000471
Int. Cl.[5] H05B 9/06
U.S. Cl. 219—688 15 Claims



1. An apparatus for drying air, comprising:

a regenerating room which includes at least one wall that reflects microwaves while allowing the passage of air through said at least one wall;

a drying material for removing and retaining water molecules from moist air forced therethrough;

means for forcing said moist air through the drying material;

a removable magazine containing the drying material, the magazine including a transmissive surface which allows the passage of microwaves and said moist air, the magazine operatively engageable with the regenerating room; and

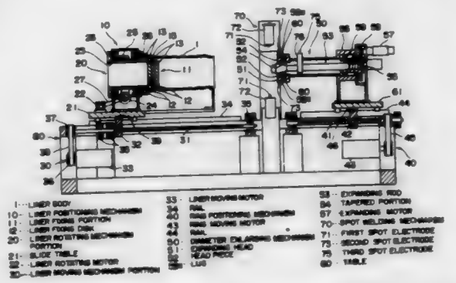
a microwave transmitter positioned in the regenerating room for producing microwaves which pass through the magazine transmissive surface to the drying material, causing said water molecules retained in the drying material to be vibrated and heated, whereupon the heated water molecules are removable as water vapor from the drying material by forced air, thereby drying the drying material.

5,302,795

WELDING EQUIPMENT FOR FABRICATING A COMBUSTION LINER

Takeo Kurokawa; Yoji Akutsu; Noboru Umehara, and Toshio Netsu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 759,528
Claims priority, application Japan, Sep. 13, 1990, 2-242904
Int. Cl.[5] B23K 11/00
U.S. Cl. 219—59.1 6 Claims



1. Welding equipment which welds an outer cylinder and an inner cylinder, comprising:

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outer cylinder positioning means for axially moving said outer cylinder to a desired position;

inner cylinder positioning means for arranging said inner cylinder so as to become coaxial with said outer cylinder, and axially moving said inner cylinder;

diameter enlargement means including an expanding head which has its outside diameter changed, thereby making it possible to enlarge the diameter of said inner cylinder; and

welding means including at least one first electrode for lap resistance welding, which is provided on the outer peripheral side of the positioned outer cylinder, and at least one second electrode for lap resistance welding, which is embedded in said expanding head and which forms a pair with the first lap resistance welding electrode, said welding means subjecting said outer cylinder and said inner cylinder to the lap resistance welding.

5,302,796

WIRE-CUT ELECTRICAL DISCHARGE MACHINE HAVING WIRE ELECTRODE CUTTING DEVICE

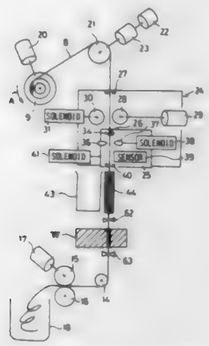
Kazutaru Kuriki, Nishikasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 14, 1992, Ser. No. 990,245

Claims priority, application Japan, Jan. 27, 1992, 4-12248

Int. Cl.[5] B23H *7/10*

U.S. Cl. 219—69.12 **21 Claims**



21. A wire-cut electrical discharge machine comprising:

a fixed frame;

a moving plate movably mounted to said fixed frame;

a wire guide mounted on said moving plate and disposed between a supply of the wire electrode and a workpiece, the wire guide introducing the wire electrode into a processing passage in which the wire electrode moves toward the workpiece;

a cutting means disposed between the supply of the wire electrode and the workpiece for cutting off the unusable length of the wire electrode;

a disposal portion for storing a scrap wire electrode which is cut off by the cutting means; and

a moving means for moving the moving plate so as to selectively position the wire guide in line with one of the processing passage and a disposal passage through which the scrap wire electrode moves to the disposal portion.

5,302,797

RESISTANCE WELDING OF ALUMINUM

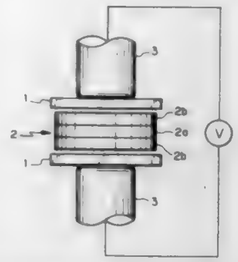
Masanori Yasuyama, Amagasaki; Takao Taka, Ikoma, and Kazuhiro Ogawa, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Aug. 28, 1992, Ser. No. 936,515

Claims priority, application Japan, Aug. 30, 1991, 3-246749; Oct. 22, 1991, 3-304166; Feb. 17, 1992, 4-069275

Int. Cl.[5] B23K *11/11, 11/20, 11/18*

U.S. Cl. 219—118 **20 Claims**



1. A method of effecting resistance welding of aluminum to aluminum, characterized by placing a clad plate between first and second aluminum plates to be welded, the clad plate comprising a resistor between third and fourth aluminum plates, the resistor having a specific resistance at least two times that of aluminum, and supplying an electric current through the aluminum plates to be welded and the clad plate.

5,302,798

METHOD OF FORMING A HOLE WITH A LASER AND AN APPARATUS FOR FORMING A HOLE WITH A LASER

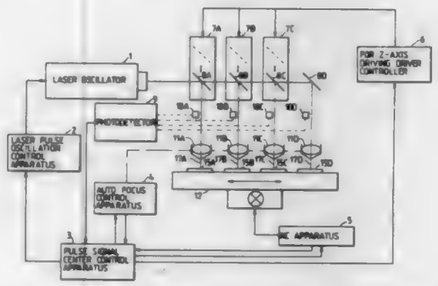
Hideo Inagawa, Yokohama; Shigenobu Nojo, Kawasaki, and Tohru Ohsaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,687

Claims priority, application Japan, Apr. 1, 1991, 3-68228; Apr. 1, 1991, 3-68229; Apr. 1, 1991, 3-68230

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.7 **3 Claims**



1. A laser working apparatus for working a plurality of articles with a laser, said apparatus comprising:

article support means for supporting the plurality of articles and moving the articles along predetermined coordinates to a work position where each article is to be worked;

laser oscillation means for providing an oscillated laser beam;

laser beam switching means for directing a laser beam to the plurality of articles on the article support means in succession, said laser beam switching means including laser direction changing means for changing a direction of the laser beam, and a drive controller for controlling the change in direction of the laser beam by said laser direction changing means such that the laser beam travels along a laser beam incidence axis to work the article;

oscillation control means for controlling the oscillation of the laser beam so the laser beam emitted from said laser oscillation means is pulsed;

sensing means for sensing incidence of the laser beam onto the laser beam incidence axis; and

control means for controlling said article support means, said laser oscillation means, said laser beam switching means, and said oscillation control means on the basis of a signal from said sensing means, said control means

controlling movement of the articles on said article support means to the work position where each article is to be worked,

setting said laser beam switching means such that the laser beam from said laser oscillation means is directed to the work position where a first article on said article support means is to be worked,

recognizing the incidence of the laser beam onto the laser beam incidence axis of the first article at the work position according to the signal from said sensing means to work the first article by the pulsed laser beam from said laser oscillation means,

operating said laser beam switching means after the first article has been worked to set the laser beam switching means such that the laser beam from said laser oscillation means goes along the laser beam incidence axis of a second article, and

recognizing incidence of the laser beam onto the laser beam incidence axis of the second article on the work position according to the signal from said sensing means to work the second article by the pulsed laser beam from said laser oscillation means.

5,302,799

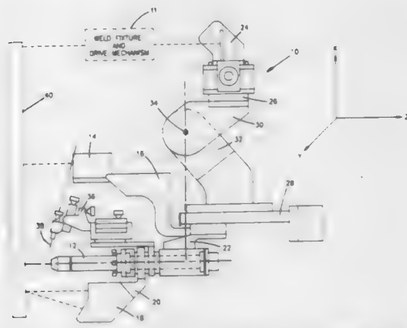
WELD ANALYSIS AND CONTROL SYSTEM

Larry Z. Kennedy; Michael H. Rodgers, both of Huntsville; Bradley W. Powell, Athens; Ivan A. Burroughs, Gurley, and K. Wayne Goode, Madison, all of Ala., assignors to Applied Research, Inc., Huntsville, Ala.

Filed Dec. 9, 1991, Ser. No. 803,575

Int. Cl.[5] B23K *9/127*

U.S. Cl. 219—124.34 **15 Claims**



13. A weld analysis and control system for receiving, storing and disseminating predetermined parameters of a weld, for tracking an indicia on a material to be welded, for monitoring and recording the desired track and weld configurations during operation of the system, for comparing the desired track and weld parameters to the actual track and weld configuration of a weld as the weld is formed upon the material, and for controlling a welding device in response to the comparison of the desired track and weld parameters to the actual weld as it is formed on the material, said system comprising:

means for receiving storing and disseminating said predetermined parameters of a weld;

means for receiving information relating to said desired parameters and for transmitting parametric signals in response thereto;

means for tracking said indicia on said material to be welded;

means for providing tracking signals in response to said tracking;

means for receiving said tracking signals and said parametric signals and for controlling said welding device in response thereto;

means for monitoring and recording the actual tracking and the characteristics of the weld performed by said welding device as the weld is formed.

5,302,800

PROCESS AND DEVICE FOR CONTROLLING THE OPERATION OF AN OPTICAL CHANNEL, FOR A LASER-BEAM CARRIED BY A WELDING TOOL

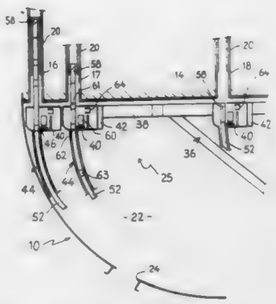
Jacques Griffaton, Chalon-sur-Saone, France, assignor to Framatome, Courbevoie, France

Filed Jun. 15, 1992, Ser. No. 898,722

Claims priority, application France, Jun. 13, 1991, 91 07240

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.63 **9 Claims**



1. Process for controlling the operation of an optical channel carried by a welding tool and conducting a welding laser beam, at an operational power, from a laser source (**26**) to a welding location, the welding tool being out of service, between two welding operations, the process comprising, between two welding operations, the steps of

(a) providing at a controlling position luminous intensity measuring means having determinate working characteristics adapted to the measurement of the intensity of an auxiliary optical radiation having a low power as compared with the operational power of the laser beam;

(b) displacing the welding tool (**52**) from an operational position in the region of the welding location to the controlling position;

(c) supplying the optical channel of the welding tool (**52**) with the auxiliary optical radiation power;

(d) measuring with the measuring means the luminous intensity emitted by the welding tool (**52**), in its controlling position, supplied with the auxiliary optical radiation;

(e) comparing this intensity with an intensity threshold corresponding to the satisfactory operation of the welding tool (**52**); and

(f) displacing the welding tool (**52**) towards a new operational welding position.

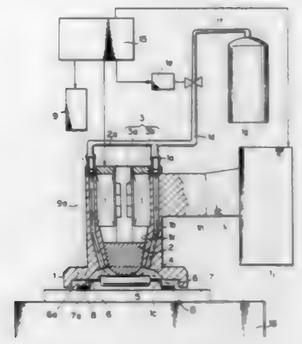
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,801

LASER BONDING APPARATUS

Makoto Kanda, and Masaharu Yoshida, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 780,495, Oct. 22, 1991, Pat. No. 5,250,781. This application May 25, 1993, Ser. No. 66,259
Claims priority, application Japan, Nov. 16, 1990, 2-312194
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 **7 Claims**



1. A bonding apparatus comprising:
a base for supporting a printed circuit board;
an atmosphere cover which has a concavity covering a semiconductor device mounted on the printed circuit board and which is formed of laser light transmitting material;
driving means for moving the atmosphere cover upwards and downwards related to the base;
pressing means provided in the atmosphere cover for pressing the semiconductor device toward the printed circuit board;
atmosphere gas supplying means for supplying atmosphere gas into the concavity; and
laser heating means for irradiating laser light through the atmosphere cover to bonding agent applied on junctions of the semiconductor device and the printed circuit board and heating and fusing the bonding agent.

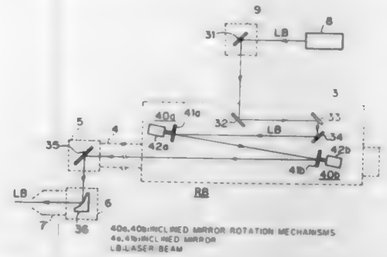
5,302,802

LASER ROBOT AND METHOD OF CONTROLLING SAME, AND LIGHT BEAM DEFLECTOR AND CONTROL SIGNAL GENERATOR THEREFOR

Shigeki Fujinaga; Kiyoshi Takeuchi; Masakazu Kobayashi; Shigeki Ochi; Junko Momosaki, all of Nishinomiya; Eizo Tsuda, Takarazuka; Shinsuke Inoue, Takarazuka, and Kazumasa Yoshima, Takarazuka, all of Japan, assignors to Shin Meiwa Industry Co., Ltd., Nishinomiya, Japan

PCT No. PCT/JP91/00700, § 371 Date Feb. 5, 1992, § 102(e) Date Feb. 5, 1992, PCT Pub. No. WO91/17857, PCT Pub. Date Nov. 28, 1991
PCT Filed May 20, 1991, Ser. No. 807,828
Claims priority, application Japan, May 23, 1990, 2-133473; Feb. 6, 1991, 3-37954; Feb. 18, 1991, 3-45970
Int. Cl.[5] B23K *26/08*
U.S. Cl. 219—121.78 **16 Claims**

1. A laser robot (RB) which propagates a laser beam (LB) along an arm (4) and performs a predetermined processing while directing said laser beam (LB) from a torch (7) mounted on a leading edge of said arm (4) to workpieces (21, 22) and travelling said torch (7) along a processing line (l) on said workpieces (21, 22), comprising:
laser beam generation mans (8) for generating said laser beam (LB) to introduce said laser beam (LB) into said arm (4),
at least one pair of inclined mirrors (41*a*, 41*b*) having reflecting surfaces inclined from planes perpendicular to directions of predetermined rotation axes respectively and arranged in series along an optical path of said laser beam (LB) for serially reflecting said laser beam (LB) by said respective reflecting surfaces to introduce said laser beam (LB) to said torch (7),



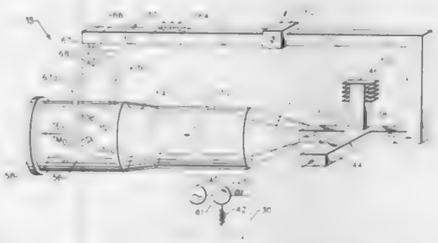
at least one pair of inclined mirror rotation mechanisms (40*a*, 40*b*) for rotating said at least one pair of inclined mirrors (41*a*, 41*b*) on said rotation axes, respectively, and
control means (1090) for controlling a number of rotations and a rotation direction of each pair of inclined mirror rotation mechanisms (40*a*, 40*b*) so that the laser beam (LB) oscillates in a predetermined oscillation mode.

5,302,803

APPARATUS AND METHOD FOR UNIFORM MICROWAVE PLASMA PROCESSING USING TE_{11} AND TM_{01} MODES

James E. Stevens, Princeton, and Joseph L. Cecchi, Lawrenceville, both of N.J., assignors to Consortium for Surface Processing, Inc., Princeton, N.J.

Filed Dec. 23, 1991, Ser. No. 812,695
Int. Cl.[5] B23K *9/00;* **H05H** *1/46*
U.S. Cl. 219—121.43 **31 Claims**



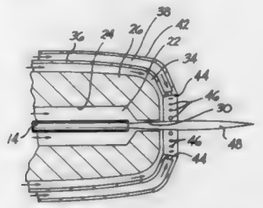
1. A plasma processing apparatus for generating a substantially radially uniform plasma, said apparatus comprising:
a processing chamber;
means for providing a feed gas within said processing chamber;
microwave power source means communicating with said processing chamber for generating a plasma from the feed gas within said processing chamber; and
a microwave coupler having an input portion communicating with said microwave power source means and an output portion communicating with said processing chamber, said microwave coupler including means for generating a TE_{11} mode and a TM_{01} mode from said microwave power source means having predetermined relative proportions of power so that the TE_{11} mode has about 30 to 70 percent of the combined power of the TE_{11} and TM_{01} modes at the output portion of said coupler to provide substantially radially uniform plasma within said processing chamber.

5,302,804

GAS ARC CONSTRICTION FOR PLASMA ARC WELDING

William F. McGee, Decatur, and Daniel J. Rybicki, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1993, Ser. No. 81,890
Int. Cl.[5] B23K *10/00, 9/167*
U.S. Cl. 219—121.51 **2 Claims**



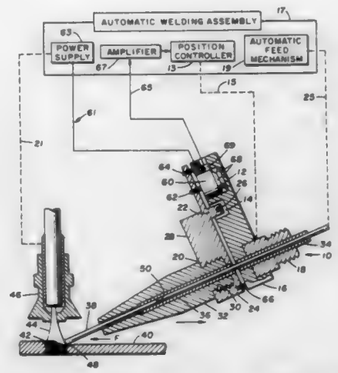
1. A plasma gas arc welding torch, comprising
a. an annular nozzle body having a first orifice in a front end of the body and an axially extending first plenum chamber formed within said nozzle body in communication with said orifice, said first orifice having an axis,
b. an axially extending electrode disposed within said chamber in alignment with said first orifice,
c. means connected to the electrode for supplying electricity to the electrode to form an arc extending from the electrode through the first orifice to a workpiece positioned in front of the torch,
d. a second plenum chamber formed by and between a pair of spaced inner and outer cups surrounding the forward end of the nozzle body, said cups having forward ends extending beyond the forward end of the nozzle body, the forward ends of the cups being directed radially inward toward the axis of the orifice and terminating in a circumferentially extending joining wall, said wall facing and being spaced from the axis of the orifice, said wall being provided with a plurality of spaced second orifices, said cups being spaced from the nozzle body to form a third plenum chamber between the nozzle body and the inner cup, said third plenum chamber having an annular third orifice surrounding the first orifice, said torch having therein a first passageway for feeding an inert gas to the first plenum chamber to form a plasma exiting from said nozzle through said first orifice, said torch having a third passageway for feeding an inert gas through the third plenum chamber to exit from the third orifice and form a column of blanketing gas surrounding said plasma, said torch having a second passageway for feeding an inert gas through the second plenum chamber to exit through said second orifices in the joining wall and impinge on the column of gas to constrict said column of gas.

5,302,805

WELDING WIRE PRESSURE SENSOR ASSEMBLY

Timothy B. Morris, Scottsboro; Peter F. Milly, Sr., and J. Kevin White, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 27, 1993, Ser. No. 70,132
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—137.71 **16 Claims**



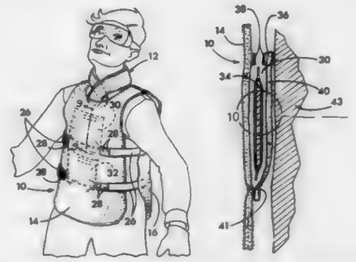
1. A welding wire pressure sensor assembly adapted for connection to an automatic welding and wire feed system comprising:
a base disposed for attachment to said automatic welding and wire feed system and having a base wire passage therethrough;
a tip mechanism pivotally attached to said base and having a tip wire passage therethrough;
sensing means mounted between said base and said tip mechanism for providing signals to said automatic welding and wire feed system in response to a rotational force applied to said tip mechanism so as to provide a rotational bias of said tip mechanism about said pivotal attachment and against said sensing means and said base as a welding wire is passed through said tip mechanism by said automatic welding and wire feed system.

5,302,806

HEATED VEST WITH POUCHES FOR ACCOMMODATING INSERTED HEATING PACKETS

John J. Simmons; Jane Simmons, and Steve Simmons, all of Bismarck, N. Dak., assignors to Thermo-Cool Products Inc., Mandan, N. Dak.

Filed Dec. 8, 1992, Ser. No. 986,680
Int. Cl.[5] A41D *1/02*
U.S. Cl. 219—211 **8 Claims**



1. A reversible vest to be worn by a person for heating the

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body core by applying heat to the torso with heat produced by an air-activated chemical heating packet likely to produce overheating or a sensation of burning the skin compriaing,

a reversible vest article formed from cloth, said vest article being flexible and sufficiently supple to conform to the body contours,

said vest having front and rear panels for being placed adjacent to the front and rear portions of the human body with releasable fasteners on each side of the front and rear panels of the vest comprising straps that extend between the front and rea: panels for drawing the panels together so as to hold the panels in contact with the front and rear of the torso of the body of the user so that each such heating packet is located adjacent to the body and in heat conductive relationship with the skin of the person for transferring heat from the heating packet to the body core,

said vest having inner and outer adjacent layers of cloth forming a pouch therebetween for receiving and supporting the heating packets removably, and each pouch having an opening to enable the heating packets to be inserted into the pouch before use and removed after use,

said reversible vest includes a front pouch located in the front panel and a rear pouch located in the rear panel,

said front and rear pouches being located in different positions on the respective front and rear panels so that the user by reversing the front and rear panels on the body can change the location of the front and rear pouches on the front and back of the person's body with heat then being applied to different selected parts of the body than before the reversal of the front and rear panels of the vest,

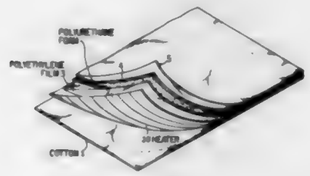
at least the inner layer of cloth of the pouch is a porous layer positioned between the heating packet and the person's body and comprising a high pile cloth of at least 1.5 mm thickness including a multiplicity of fibers extending from a portion of the cloth for holding trapped air to control heat distribution by diffusing the heat supplied by the chemical heating packet so as to the body while assuring the comfort of the user when the vest is reversed to apply heat to said different selected parts of the body.

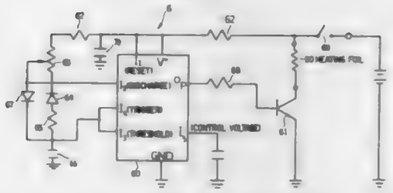
5,302,807

ELECTRICALLY HEATED GARMENT WITH OSCILLATOR CONTROL FOR HEATING ELEMENT

Zhi-Rong Zhao, 5F, No. 18-1, Lane 143, Hang Chue South Road Sec. 1, Taipei, Taiwan

Filed Jan. 22, 1993, Ser. No. 8,354
Int. Cl.[5] H05B *3/00*
U.S. Cl. 219—211 **2 Claims**





1. An electrically heated garment, comprising:

heating means tailored to form an article of clothing for protecting a user from cold weather, said heating means including (1) a backing layer formed of cotton cloth, (2) a flexible heating element electrically insulated on opposing sides thereof and adhered to said cotton cloth on a bottom surface of said flexible heating element, said flexible heating element being formed by a length of aluminum foil, (3) a polyethylene film layer adhered to an upper surface of said flexible heating element, (4) a polyurethane foam layer overlaying said polyethylene film layer, and (5) a fabric layer formed of synthetic fibers overlaying said polyurethane foam layer;

a battery power source having a first terminal coupled to a first end of said length of aluminum foil; and,

controller means electrically coupled to said flexible heating element and said battery power source for controlling electrical energy supplied to said flexible heating element, said controller means including:

a. a transistor amplifier having a collector element coupled to a second end of said length of aluminum foil and an emitter element coupled to a second terminal of said battery power source for completing a current path through said flexible heating element responsive to an oscillation signal having a predetermined frequency applied to a base element of said transistor amplifier;

b. an integrated circuit oscillator having an output coupled to said base element of said transistor amplifier; and,

c. means for altering a duty cycle of said oscillation signal output from said integrated circuit oscillator to thereby vary the amount of electrical energy supplied to said flexible heating element, said integrated circuit having a trigger input terminal and a threshold input terminal wherein each are coupled to a first terminal of a capacitor, said capacitor having second terminal coupled to said second terminal of said battery power source, said duty cycle altering means including (1) a potentiometer having a first terminal coupled to said first terminal of said battery power source and a movable tap coupled to a discharge input terminal of said integrated circuit oscillator and coupled to an anode of a first diode, said first diode having a cathode coupled to both said trigger input terminal and said threshold input terminal for establishing a charge RC time constant dependent solely on a first resistance portion of said potentiometer defined between said first potentiometer terminal and said movable tap, and (2) a resistor having one end coupled to both said trigger input terminal and said threshold input terminal and an opposing end coupled in series relation with a second terminal of said potentiometer and a second diode, said second diode having a cathode coupled to said second terminal of said potentiometer for establishing a charging RC time constant determined by said resistor and a second portion of said potentiometer defined between said movable tap and said second terminal, whereby a duty cycle of said oscillation signal is variable without affecting said predetermined frequency thereof.

5,302,808

THERMAL FIXING APPARATUS AND A HEATER THEREFOR

Shigehiro Sato, Yokohama, and Yoshiyuki Matsunaga, Yokosuka, both of Japan, assignors to Toshiba Lighting & Technology, Tokyo, Japan

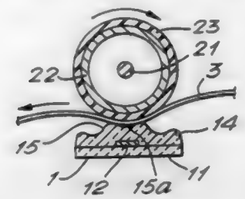
Continuation of Ser. No. 691,846, Apr. 26, 1991, abandoned.
This application Sep. 3, 1992, Ser. No. 939,038
Claims priority, application Japan, Apr. 26, 1990, 2-111174
Int. Cl.[5] H05B *1/00, 3/16*
U.S. Cl. 219—216 **12 Claims**

5. A heater comprising:

a substrate;

an electrical heating element mounted on the substrate, the electrical heating element being a strip shape having a longitudinal axis and comprising a first resistive element having a predetermined effective resistance;

means for decreasing the effective resistance of a first portion and a second portion of the first resistive element, the decreasing means including second and third resistive elements, the effective resistance of the first portion of the first resistive element decreasing when the second resistive element is coupled in parallel with the first portion of the first resistive element and the effective resistance of



the second portion of the first resistive element decreasing when the third resistive element is coupled in parallel with a third portion of the first resistive element; and

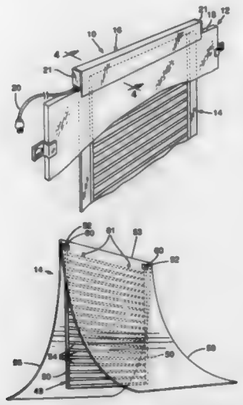
a protective layer covering the electrical heating element and having a raised contacting edge, the contacting edge having a concave groove, extending along the longitudinal axis facing the heating element.

5,302,809

MIRROR DEFOGGER WITH ELONGATED FRAME MEMBER AND DOWNWARDLY EXTENDING HEATER SHEET

Abby Ghiassy, 8605 SW. Beaverton-Hillsdale Hwy., Portland, Oreg. 97225

Filed Mar. 6, 1992, Ser. No. 847,178
Int. Cl.[5] H05B *3/00*
U.S. Cl. 219—219 **8 Claims**



1. A resistive sheet electrical mirror heater for defogging a rectangular mirror having a horizontal top edge fixed proximate to a mounting surface, the heater comprising:

an elongated frame member having a U-shaped cross section, the frame member comprising an elongated top panel with opposed spaced-apart elongated front and rear panels depending downwardly therefrom, the front and rear panels defining a channel therebetween sized to receive a portion of a top edge of a mirror, the front and rear panels having opposed inwardly facing surfaces;

a planar heater sheet having electrically resistive heating elements, the sheet having an upper edge attached to the rear panel of the frame member and a lower portion comprising the majority of the area of the sheet depending downwardly therefrom, the entire lower portion being positioned at a level below the entire frame member with the sheet being suspended solely from above by the frame, the lower portion of the heating element being adapted to be positioned between the mirror and the mounting surface; and

electrical control means for providing power to the heater sheet, the control means being adapted to be connected to an external source of power and substantially contained within the channel of the frame member.

5,302,810

METHOD FOR RAPID AND UNIFORM HEATING OF A MULTILAYER ASSEMBLY COMPRISING AT LEAST ONE THIN LAYER BASED ON AN ION-CONDUCTING MACROMOLECULAR MATERIAL INTERLEAVED BETWEEN TWO STRUCTURES WITH HIGH ELECTRONIC CONDUCTION

Michel Gauthier, La Prairie, Canada; Philippe Ricoux, Oullins, and Daniel Muller, Pau, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France and Hydro-Quebec, Montreal, Canada

PCT No. PCT/FR90/00326, § 371 Date Feb. 14, 1991, § 102(e) Date Feb. 14, 1991, PCT Pub. No. WO90/13925, PCT Pub. Date Nov. 15, 1990
PCT Filed May 10, 1990, Ser. No. 635,522
Claims priority, application France, May 10, 1989, 89/06110
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] H05B *3/16, 1/00*
U.S. Cl. 219—543 **30 Claims**



1. A method for rapidly and uniformly heating a multilayer assembly comprising at least one thin layer of an ion-conducting macromolecular material, intercalated between two structures having high electronic conduction so as to be in intimate contact with the said structures, which comprises:

applying an electrical voltage between the structures with high electronic conduction which are situated on either side of each layer of ion-conducting macromolecular material, at least a part of the voltage comprising an alternating component which has a frequency of less than 5 kHz and an amplitude of between 0.05 and 100 volts, so as to generate in the multilayer assembly an alternating ion current capable of effecting heating of the ion-conducting macromolecular material by the Joule effect.

5,302,811

A POINT OF SALE APPARATUS INCLUDING A DEPOSITING/WITHDRAWING APPARATUS

Kunio Fukatsu, Ebina, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 16, 1991, Ser. No. 731,072
Claims priority, application Japan, Jul. 31, 1990, 2-203544
Int. Cl.[5] G07F *7/08;* **G07G** *1/14*
U.S. Cl. 235—381 **2 Claims**

2. A terminal apparatus for use in an article sales system, comprising:

first means for determining total sales amount of at least one article sold to a customer;

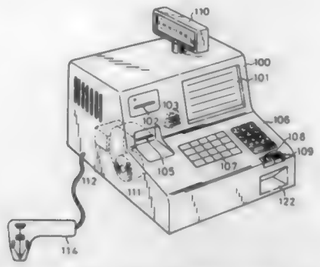
reading means for reading account data from an identity medium;

designating means for designating an amount of money to be withdrawn from the account read by the reading means;

second means connected to the first means and designating

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means for calculating the difference between the total sales amount and the amount of money to be withdrawn;
payment-mode designating means for designating a payment mode to the customer, said payment mode being either payment in cash or payment to a prepaid card;



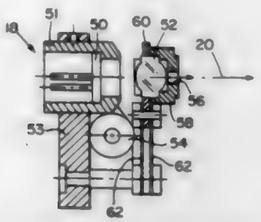
dispensing means for either dispensing cash or a prepaid card, corresponding in value to the difference calculated by the second means, in response to the payment mode designated by the payment-mode designating means; and
settling means for withdrawing the designated amount of money from the customers account corresponding to the account data read by the reading means.

5,302,812

LASER SCANNING DEVICE WITH AUTOMATIC RANGE AND SPOT SIZE ADJUSTMENT

Yajun Li, Oakdale; Joseph Katz, and Paul Dvorkis, both of Stony Brook, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,605
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **9 Claims**



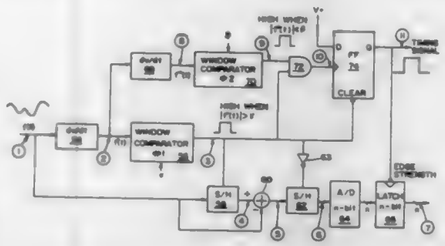
1. In a laser scanning head for reading a symbol on a target, the symbol being of a type having regions of different light reflective properties, the symbol being positioned at a range with respect to said laser scanning head, a laser light source comprising:
a laser source mounted on a base and oriented so that the laser beam emitted by the laser source travels generally along an optical axis,
an optical member positioned along the optical axis so that the laser beam is focused into a beam having a cross-sectional area in a plane orthogonal to the optical axis, which varies as a function of distance from the laser source, said cross-sectional area including a waist at which the cross-sectional area of the beam is smaller than at other locations,
means for producing relative movement of the optical member longitudinally along the optical axis, said means being operable independently of measurement of the actual range of the symbol from the scanning head, to produce a variation in the range of the beam waist independently of the actual range of the symbol
further comprising circuitry for controlling the movement of the optical member and thereby the variation in the range of the beam waist, and for synchronizing said variation with scanning of the beam across the symbols so that the range remains substantially constant for a predetermined number of scans before being further adjusted.

5,302,813

MULTI-BIT DIGITIZER

David P. Goren, Bonkonkoma, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Apr. 2, 1992, Ser. No. 862,471
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **20 Claims**



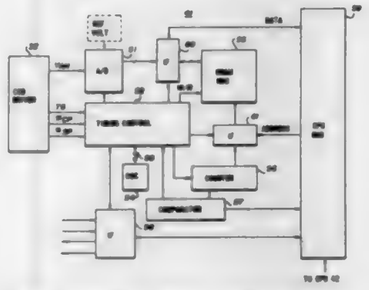
1. A multiple bit digitizer for a bar code reader, comprising:
a. a sensor means for sensing light reflected from a bar code symbol and for producing an analog scan signal representative thereof;
b. means for detecting positive and negative edges in the analog scan signal and for developing timing signals representative thereof;
c. means for measuring the strength of each detected edge in the analog scan signal and for developing digital signals representative thereof; and
d. decoder means, receiving said timing signals and said digital signals as inputs, for performing multiple threshold processing on each individual analog scan signal by procesing each analog scan signal a multiple number of times at different detection threshold levels.

5,302,814

BAR CODE READING APPARATUS

Tatsuro Kawabata, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 714,902, Jun. 17, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 994,451
Claims priority, application Japan, Jun. 18, 1990, 2-159196
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—463 **6 Claims**



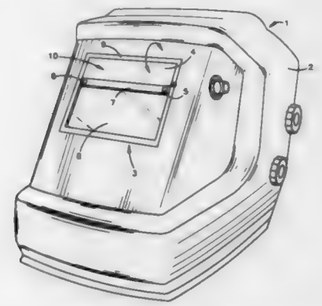
1. A bar code reading apparatus comprising:
a light source for illuminating a bar code, said bar code including a combination of bars and spaces;
light receiving means, including means for receiving reflected light from the bar code and means for subjecting the received reflected light to a photoelectric conversion to output an electrical signal; and
decoding means, coupled to said light receiving means, for decoding the bar code by reading width data related to widths of the bars and spaces of the bar code based on the electrical signal from said light receiving means,
said decoding means including:
sampling means, coupled to said light receiving means, for sampling the electrical signal from said light receiving means with a predetermined period and for outputting sampled data,
calculating means, coupled to said sampling means, for calculating an average value of the sampled data for every predetermined interval, said predetermined interval being greater than a maximum width of a noise which is detectable from the electrical signal, and
operation means, coupled to said calculating means, for obtaining intersecting points where a waveform connecting the sampled data and a waveform connecting the average values intersect, and for reading a width of each bar and space within the bar code based on an interval between each two adjacent intersecting points.

5,302,815

LIGHT PROTECTION APPARATUS COMPRISING AN ELECTRICALLY CONTROLLABLE LIGHT PROTECTION FILTER ELEMENT

André M. Eggenschwiler, Stäfa, Switzerland, assignor to Optrell AG, Wattwill, Switzerland

Filed Aug. 27, 1992, Ser. No. 936,900
Claims priority, application Switzerland, Jan. 10, 1992, 57/92
Int. Cl.[5] G02F *1/13;* **A61F** *9/06*
U.S. Cl. 250—201.1 **27 Claims**



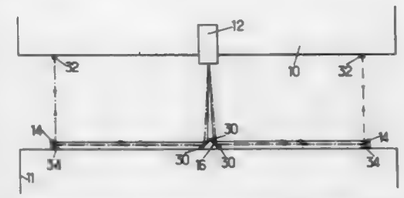
2. A light protection apparatus, particularly for welder's protective helmets, welder's protective eyeglasses or welder'-protective shields, comprising a light protection filter element, the optical transmission thereof being electrically controllable, a control means connected to said light protection filter element to control the optical transmission of said light protection filter element, said control means comprising a light sensitive sensor means to control the light transmission of said light protection filter element in dependence of the light falling onto said sensor means, said light protection filter element being provided with shield means ad pated to shield said sensor means against interfering light falling onto said sensor means in at least on preselected direction.

5,302,816

OPTICAL DEVICE FOR DETERMINING THE RELATIVE POSITION OF TWO VEHICLES, AND AN ALIGNMENT SYSTEM COMPRISING AN APPLICATION THEREOF

Michel Tulet, Balma, France, assignor to Matra Marconi Space France, France

PCT No. PCT/FR92/00122, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO87/02797, PCT Pub. Date May 7, 1987
PCT Filed Feb. 11, 1992, Ser. No. 937,849
Claims priority, application France, Feb. 12, 1991, 90 01608
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—206.2 **8 Claims**



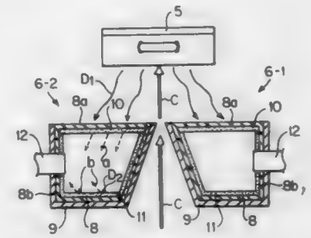
1. A device for determining the relative position of a chaser vehicle and of a target vehicle, said device comprising:
a camera located on a chaser vehicle for forming an image of a direct field of view of predetermined angular extent;
a set of a plurality of markers carried by a target vehicle, located at spacings selected to enable them to be contained in said direct field of view as long as a distance between the chaser vehicle and the target vehicle is greater than a predetermined value and the camera is centered relative to the target, but such that at least some of said markers lie outside the direct field of view of the camera when the range between the chaser and the target is less than said predetermined value; and
reflector means carried by said target vehicle which remain entirely within said direct field of view, even below said predetermined value, and which provide images of said markers in said direct field of view of said camera.

5,302,817

X-RAY DETECTOR AND X-RAY EXAMINATION SYSTEM UTILIZING FLUORESCENT MATERIAL

Kazuto Yokota; Akihisa Saito, and Noriaki Yagi, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 19, 1992, Ser. No. 901,476
Claims priority, application Japan, Jun. 21, 1991, 3-150606
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT **9 Claims**



1. An X-ray detector comprising:
a housing;
a fluorescent generator, mounted in said housing, for generating a fluorescent output in response to X-rays impinged thereon, said fluorescent generator having a peak luminous wavelength;

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a photomultiplier, mounted in said housing, for converting the output of the fluorescent generator to electrical image signals, said photomultiplier having a peak wavelength sensitivity independent of said peak luminous wavelength;
wherein said fluorescent generator includes at least one fluorescent material selected from the group consisting of:

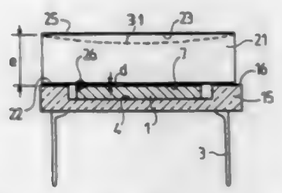
A_2O_2S:D and BaFX:E

wherein
A is at least one element selected from Gd, La and Y,
D is at least one element selected from Tb and Pr, or,
D is at least one element selected from Tb and Pr, and at least one element selected from Ce and Yb,
X is at least one element selected from Cl and Br,
E is Eu or a mixture of Eu and at least one element selected from the group consisting of Ce and Yb.

5,302,818
IMAGE DETECTOR WITH REDUCED PARASITIC LIGHT

Christian Pezant, Villecresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,609
Claims priority, application France, Oct. 30, 1991, 91 13404
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **8 Claims**



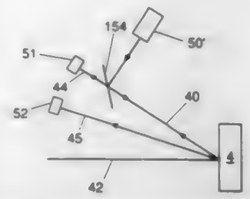
1. An image detector comprising a surface sensitive to photon radiation and protected from the external environment by a transparent window with an internal diopter and an external diopter which is integral with a housing and is placed in front of said sensitive surface, the sensitive surface having a surface quality capable of generating radiation reflections over angles of up to several dozens of degrees relative to the direction of mirrored deflection on said surface, characterized in that said window which forms part of the detector is formed by a transparent, non-diffusing medium which attenuates the photon radiation, in that said internal diopter is at a distance from said sensitive surface which is smaller than or at most equal to about 25 μm, and in that the external diopter is sufficiently far removed from said sensitive surface such that the reflection of the radiation coming from the source of maximum radiation off of said external diopter has a level, on said sensitive surface, which is lower than that of the direct radiation coming from the source of minimum radiation which is to be detected.

5,302,819
METHOD OF, AND APPARATUS FOR, DETECTING AN OBJECT

Michiel Kassies, 2 de Laurierdwarsstraat 10E, Amsterdam 1016 RB, Netherlands

PCT No. PCT/NL90/00134, § 371 Date May 15, 1992, § 102(e) Date May 15, 1992, PCT Pub. No. WO91/04499, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 17, 1990, Ser. No. 849,435
Claims priority, application Netherlands, Sep. 15, 1989, 8902314
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1 **23 Claims**

1. A method of detecting the presence of an object in a three-dimensional space, said object having a part thereof which is retro-reflective, the method comprising the steps of:
generating radiation by means of a source of radiation;
emitting the radiation into the three-dimensional space object along an axis of propagation;
detecting a first radiation component reflected by objects in said three-dimensional space at a first angle of deflection of substantially 180° with respect to the axis of propagation of the radiation emitted into the three-dimensional space;

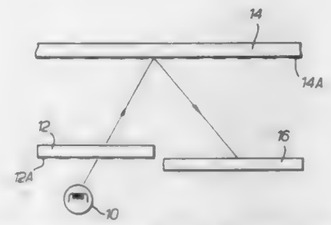


detecting at least a second component of the reflected radiation at a second angle of deflection which is slightly greater than or slightly less than 180° with respect to the axis of propagation of the emitted radiation; and
determining a first differential measurement between a first intensity signal representing the first radiation component and a second intensity signal representing the second radiation component, said first differential measurement indicating the presence of the object in the three-dimensional space.

5,302,820
OPTO-ELECTRONIC SCALE READING APPARATUS HAVING AN ARRAY OF ELONGATE PHOTO-SENSITIVE ELEMENTS AND A PERIODIC LIGHT PATTERN

James R. Henshaw, Stroud; Peter G. Holden, Cirencester, and Colin K. Howley, Stonehouse, all of United Kingdom, assignors to Renishaw Transducer Systems Limited, Wotton-Under-Edge, United Kingdom

Continuation of Ser. No. 970,175, Nov. 2, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,693
Claims priority, application United Kingdom, Nov. 6, 1991, 9123567; Mar. 27, 1992, 9206750; Apr. 24, 1992, 9208898
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.16 **15 Claims**



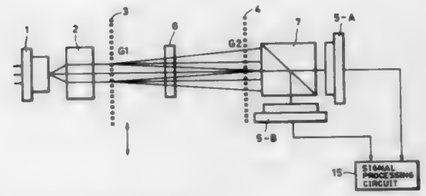
1. Opto-electronic scale reading apparatus comprising a scale defined by a series of spaced apart lines, and a readhead, moveable relative to the scale in the direction of spacing of the lines, for generating an output signal from which the magnitude and direction of relative movement of the scale and the readhead may be determined, the readhead comprising:
means for illuminating the scale and generating, in an image plane, a periodic light pattern which varies cyclically in intensity in the direction of spacing of the scale lines, a corresponding cyclic variation in light intensity at a given point in said plane resulting from relative movement of said scale and said readhead;

an analyser, positioned in said plane, comprising an array of elongate elements having a photo-sensitive surface, said elements being spaced apart in the direction of spacing of the scale lines and in a direction perpendicular to their length, said elements being grouped in a plurality of sets with elements of a given set being connected in common, all said elements being interleaved with elements of a different set in a repeating pattern; wherein:
said illuminating means comprises a plurality of elongate coplanar light emitting regions provided on a substrate, said regions being spaced apart in the direction of spacing of said scale lines and in a direction perpendicular to the direction of their length, and
said photo-sensitive array and said light emitting regions are provided on the same substrate.

5,302,821
ENCODER USING A BIREFRINGENT ELEMENT AND A SYSTEM INCLUDING THE SAME

Masahiko Igaki, Tokyo; Koh Ishizuka, Urawa, and Masaru Nyui, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,522
Claims priority, application Japan, Jul. 29, 1991, 3-188666
Int. Cl.[5] G01D *5/34*; H01J *3/14*
U.S. Cl. 250—237 G **16 Claims**



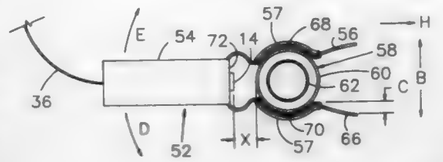
1. An encoder, comprising:
a moving optical scale;
a light source for generating light for illuminating said optical scale;
a birefringent element placed in an optical path of the light generated by said light source for receiving light emitted from said optical scale; and
photosensing means for obtaining a plurality of output signals having a phase difference from light passing through said birefringent element, with the output signals having intensities which change in accordance with relative displacement of said moving optical scale with respect to the illuminating light.

5,302,822
QUICK ATTACHCLAMP FOR PHOTOCELLS

Richard K. Weltz, Richmond; Peter Schuerch, Mechanicville, and James Kallio, Richmond, all of Va., assignors to Infico Degremont, Inc., Richmond, Va.

Division of Ser. No. 925,386, Aug. 4, 1992. This application Jun. 29, 1993, Ser. No. 84,417
Int. Cl.[5] G01J *5/04*
U.S. Cl. 250—239 **14 Claims**

11. A clamp for positioning a photocell adjacent to an ultraviolet light source comprising:
a housing sized to receive a portion of said photocell, said photocell having a detection end;
a seal positioned about conductive members extending from said photocell and out of said housing against penetration of liquids into said housing; and
spaced apart opposed arms extending from said housing and having portions sized and shaped to firmly receive an outer surface of said ultraviolet light source, wherein said

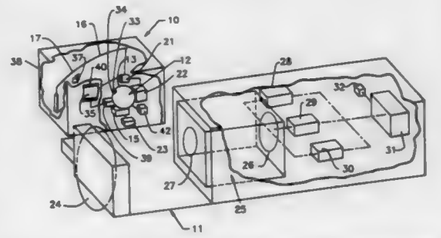


detection end of said photocell is positioned at a predetermined distance from said light source.

5,302,823
SATELLITE SOLAR BAND CALIBRATION SOURCE TARGET APPARATUS

William M. Franklin; Alan D. Bell, and Richard V. Annable, all of Fort Wayne, Ind., assignors to ITT Corporation, New York, N.Y.

Filed Aug. 31, 1992, Ser. No. 937,646
Int. Cl.[5] G01D *18/00*
U.S. Cl. 250—252.1 **22 Claims**



1. In an electrooptical apparatus, having an optical element, wherein said electrooptical device detects radiant energy in different frequency bands each of a separate bandwidth caused to impinge upon said optical element and produces an electrical signal output corresponding to the radiant energy detected, a device for calibrating the performance of said electrooptical apparatus, comprising:
a radiant energy source for emitting radiant energy within said different frequency bands;
a plurality of detectors for detecting said radiant energy, wherein each of said detectors detects a single frequency band contained within said different frequency bands emitted by said radiant energy source, thereby quantifying the emissions of said radiant energy source in each of the frequency bands, said plurality of detectors being positioned in an unobstructed relationship with said radiant energy source to receive said different frequency bands in an unobstructed and unaltered condition; and
collimator means for collimating said radiant energy and directing the collimated radiant energy onto said optical element, whereby the electrical signal output created by said electrooptical apparatus in response to said radiant energy is indicative of the performance of said electrooptical apparatus as compared to a predetermined output expected for the radiant energy detected by said plurality of detectors.

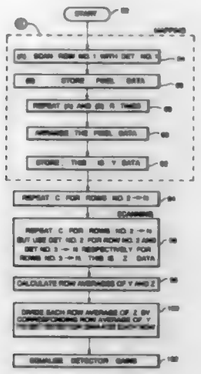
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,824

MEASUREMENT OF RELATIVE DETECTOR GAIN

Kenneth E. Prager, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 1, 1992, Ser. No. 984,156
Int. Cl.[5] G01J 5/00
U.S. Cl. 250—252.1 8 Claims



1. A method for measuring the relative gains of detectors in an array of detectors scanning a field of radiation emanating from a source, the method comprising steps of:

designating a set of scan lines corresponding to respective detectors of said array, scanning a first of said scan lines by a first of said detectors and scanning an Nth one of said scan lines by an Nth one of said detectors;

scanning said radiation field by said array of detectors with each detector scanning its designated line;

averaging values of radiation detected for each line scan of said scanning step;

mapping said source, said mapping step comprising activating only said first detector while other ones of said detectors are inactive, said mapping step further comprising providing a set of line scans by said first detector while introducing an offset of said array relative to said radiation field between successive ones of said line scans, said offset enabling a scan of each of the N scan lines by said first detector;

averaging values of radiation detected for each line scan of said mapping step; and

dividing an average value for each line scan of said scanning step by an average value for a corresponding line of said mapping step to obtain a normalized gain of each of said detectors relative to a gain of said first detector.

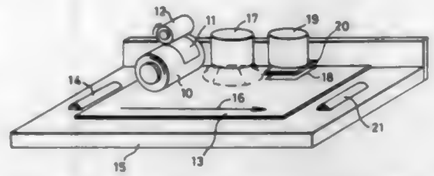
5,302,825

FRANKING MACHINE AND METHOD OF FORMING FRANKING IMPRESSION

Cyrus Abumehdi, Harlow; Dennis T. Gilham, Brentwood; Raymond J. Herbert, Leigh-on-Sea, and Rodney F. Jude, Brentwood, all of United Kingdom, assignors to Alcatel Business Systems Limited, Essex, United Kingdom

Filed Oct. 10, 1991, Ser. No. 774,320
Claims priority, application United Kingdom, Oct. 11, 1990, 9022080
Int. Cl.[5] G06K 7/12
U.S. Cl. 250—271 29 Claims

1. A franking machine including means to deposit an area of material on a face of a mail item, said material being switchable from a first optically stable state to a second optically stable state by exposure to light of predetermined wavelength and said deposited material being in said first state; and selectively operable first exposure means to expose at least one selected region of the area of material in said first state to light of said first predetermined wavelength to switch the selected region or regions to the second state to represent information and wherein said material is switchable from said first optically stable state to said second optically stable state by exposure to



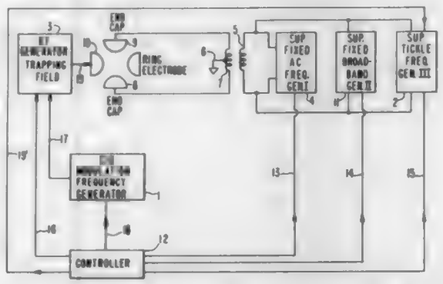
light of first wavelength and is switchable from said second optically stable state to said first optically stable state by exposure to light of a second wavelength different from said first wavelength.

5,302,826

QUADRUPOLE TRAP IMPROVED TECHNIQUE FOR COLLISIONAL INDUCED DISASSOCIATION FOR MS/MS PROCESSES

Gregory J. Wells, Fairfield, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 29, 1992, Ser. No. 890,996
Int. Cl.[5] H01J 49/42
U.S. Cl. 250—292 12 Claims



1. In a method for performing collisionally induced disassociation (CID) of ions in a quadrupole ion trap (QIT) having a ring and end cap electrodes, including the steps of:

(a) applying RF trapping voltages V(t) to said ring electrode at RF frequency W_0;

(b) applying supplemental voltages to said end caps;

(c) adjusting said RF trapping voltage level and sequencing said RF trapping voltage and said supplementary voltages to isolate a selected ion in said QIT;

(d) modifying the potential field within said QIT for causing energy absorption of said selected ion and resulting in collisional disassociation of said ion,

The Improvement Comprising:

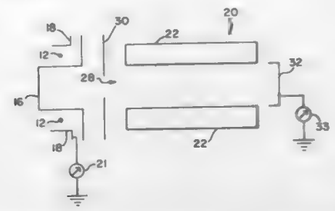
wherein said step of modifying the potential field within said QIT for causing energy absorption of said selected ion and for resulting in collisional disassociation includes modulating one of said voltages so that the potential field periodically has a frequency component which equals the secular frequency of said selected ion.

5,302,827

QUADRUPOLE MASS SPECTROMETER

Paul V. Foley, North Attleboro, Mass., assignor to MKS Instruments, Inc., Andover, Mass.

Filed May 11, 1993, Ser. No. 60,344
Int. Cl.[5] H01J 49/42
U.S. Cl. 250—292 10 Claims



1. A quadrupole mass spectrometer for measuring the relative amounts of the respective constituents of a gas present in said spectrometer, said spectrometer being of the type comprising a quadrupole mass filter, the quadrupole mass spectrometer comprising:

means for defining a space for containing a representative sample of said gas;

biased electron repeller means for repelling electrons and attracting positive ions contained within said space;

electron source means, disposed generally within said space, for emitting a plurality of electrons, the plurality of electrons being accelerated into said space so as to produce a plurality of positive ions, a fraction of the plurality of positive ions being attracted to the electron repeller means; and

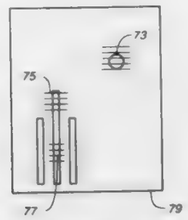
current measurement means, coupled to the electron repeller means, for measuring a current that results from the fraction of the plurality of positive ions that are attracted to the electron repeller means, and for providing a signal representative of the total ion current entering the quadrupole mass filter.

5,302,828

SCANNING TECHNIQUES IN PARTICLE BEAM DEVICES FOR REDUCING THE EFFECTS OF SURFACE CHARGE ACCUMULATION

Kevin M. Monahan, Cupertino, Calif., assignor to Metrologix Corporation, Santa Clara, Calif.

Filed Dec. 3, 1992, Ser. No. 984,932
Int. Cl.[5] H01J 37/28
U.S. Cl. 250—307 8 Claims



1. In a scanning particle beam microscope, a method of reducing signal distortion, comprising the steps of:

scanning across an object along a line in a first direction to produce a first signal;

scanning across said object along the identical line in an opposite, anti-parallel, direction to produce a second signal;

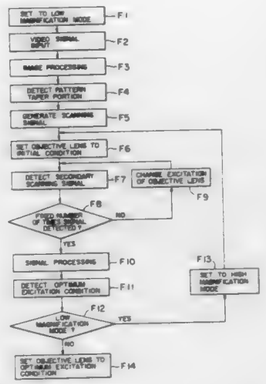
combining said first and second signals so as to reduce the influence of a charging effects on a resulting combined signal.

5,302,829

AUTOMATIC FOCUSING METHOD FOR SCANNING ELECTRON MICROSCOPY

Fumio Komatsu, Fuchu, and Yasuhiro Kaga, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 12, 1993, Ser. No. 3,472
Claims priority, application Japan, Jan. 13, 1992, 4-004021
Int. Cl.[5] H01J 37/26
U.S. Cl. 250—307 3 Claims



1. An automatic focusing method for scanning electron microscopy, comprising the steps of:

setting a scanning electron microscope in a predetermined low magnification mode to scan electron beams upon an object to be observed via an objective lens of the microscope;

detecting first secondary electron signals from the object to convert the first electron signals into first video signals;

smoothing and multivalue processing the first video signals to separate a signal component corresponding to a taper portion of the object, thus to detect a position of the taper portion;

obtaining a beam scanning direction perpendicular to the taper portion to deflect the beams in the obtained direction;

changing a control condition of the objective lens at a first predetermined pitch to vary a focal distance of the objective lens, thus to detect second secondary electron signals obtained when the beam scanning is effected in the obtained direction for each first predetermined pitch and convert the second electron signals into second video signals;

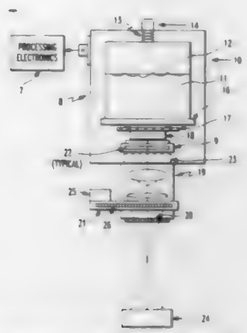
differential smoothing the second video signals to calculate a sum of absolute values of the second video signals for each first predetermined pitch, thus to determine a first excitation condition of the objective lens on the basis of the calculated sum of the absolute values of the second video signals;

setting the microscope in a predetermined high magnification mode and changing the excitation condition at a second predetermined pitch within a predetermined range with the first excitation condition as a center of the range, to vary the focal distance, thus to detect third secondary electron signals obtained when the beam scanning is effected in the obtained direction for each second predetermined pitch and converting the third electron signals to third video signals, and differential smoothing the third video signals to calculate a sum of absolute values of the third video signals for each second predetermined pitch, thus to determine a second excitation condition of the objective lens on the basis of the calculated sum of the absolute values of the third video signals; and

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determining the focal distance of the objective lens on the basis of the second excitation condition.

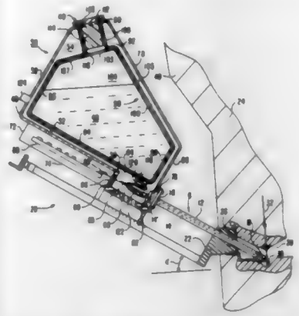
5,302,830
METHOD FOR MEASURING THERMAL DIFFERENCES IN INFRARED EMISSIONS FROM MICRO DEVICES
Kandiah Shivanandan, Bethesda, Md., assignor to General Research Corporation, Vienna, Va.
Filed Mar. 5, 1993, Ser. No. 26,599
Int. Cl.[5] G01N *21/88*
U.S. Cl. 250—342 **20 Claims**



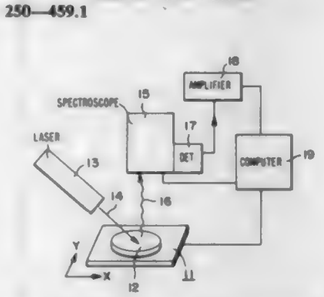
1. A method of measuring thermal differences in electromagnetic radiation emission from a micro device, comprising the steps of:
placing said micro device within a field of view of an optical lens system;
providing an array detector having a plurality of detector elements;
arranging said optical lens system to focus said electromagnetic radiation emission on said array detector;
filtering said electromagnetic radiation focused on said array detector to substantially eliminate segments of said electromagnetic radiation emission with wavelengths greater than 5 micrometers; and
measuring signals produced by each of said detector elements, said signals respectively corresponding to a portion of said electromagnetic radiation emission focused on each of said detector elements.

5,302,831
DEWAR CONSTRUCTION FOR COOLING RADIATION DETECTOR COLD FINGER
Brian W. Gallagher, Highland Lakes, and Duncan R. Quinn, Ridgewood, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Apr. 30, 1992, Ser. No. 876,848
Int. Cl.[5] H01J *37/244*
U.S. Cl. 250—397 **22 Claims**

1. A dewar construction for cooling a radiation detector cold finger of a cold finger assembly for use with an electron microscope, said dewar comprising:
a housing;
a vessel secured thermally insulated from and within the housing for receiving liquid nitrogen for cooling said cold finger, said vessel being spaced from the housing to form a chamber therebetween, said chamber maintaining a vacuum;
means for releasably securing said cold finger assembly to said housing in a given fixed orientation relative to said vessel with a portion of the secured cold finger extending into said chamber adjacent to said vessel; and
means secured to said vessel in a given vessel region for thermally conductive coupling to said received cold finger, said means for conductive coupling being so positioned such that liquid nitrogen in said vessel is in thermal contact with the vessel at said region regardless the orientation of the vessel relative to gravity when said cold finger is coupled to said microscope.

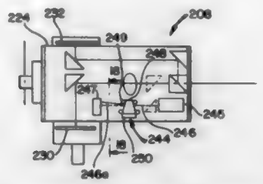


5,302,832
METHOD FOR EVALUATION OF SPATIAL DISTRIBUTION OF DEEP LEVEL CONCENTRATION IN SEMICONDUCTOR CRYSTAL
Yutaka Kitagawara; Ryoji Hoshi, and Takao Takenaka, all of Gunma, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Sep. 25, 1992, Ser. No. 950,677
Claims priority, application Japan, Sep. 26, 1991, 3-274545
Int. Cl.[5] G01N *21/63*
U.S. Cl. 250—459.1 **1 Claim**



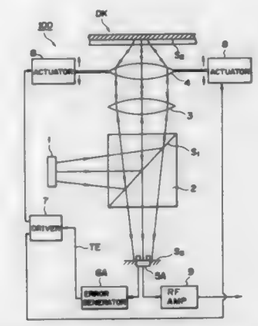
1. A method for the evaluation of distribution of deep level concentration near the surface of a semiconductor wafer under test, comprising the steps of:
scanning the surface of said semiconductor wafer in the X and Y direction with a laser beam for carrier excitation from a laser beam source in accordance with the room-temperature photoluminescence (PL) process;
measuring wafer map (M_D) of photoluminescence intensity (deep level PL intensity) (I_D) due to deep level;
measuring wafer map (M_B) of band edge PL intensity (I_B) in said semiconductor wafer; and
dividing said wafer map (M_D) of the said PL intensity (I_D) by the ν'th power of said wafer map (M_B) of PL intensity (I_B) {the magnitude of the ν'th power representing the numerical value obtained by empirically confirming the dependence of the band edge PL intensity (I_B) on the power of the excitation laser beam} thereby determining the spatial distribution (M_N) of the relative value of deep level concentration (N_D).

5,302,833
ROTATIONAL ORIENTATION SENSOR FOR LASER ALIGNMENT CONTROL SYSTEM
Martin R. Hamar, Wilton, and Carlos Araujo, Danbury, both of Conn., assignors to Hamar Laser Instrument, Inc., Conn.
Continuation-in-part of Ser. No. 427,759, Oct. 26, 1989. This application Aug. 16, 1991, Ser. No. 746,470
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—561 **20 Claims**



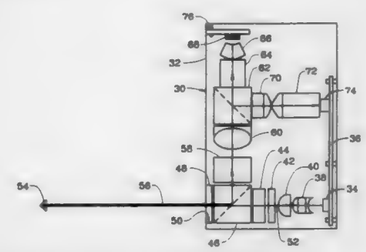
1. A control system for aligning an operating member to a part comprising:
a laser means for generating a laser beam, said laser means being removably mountable to a selected one of said operating member and said part;
a photosensitive target capable of generating signals identifying locations at which the laser beam impinges thereon, said photosensitive target being removably mountable in a selected one of the operating member and the part;
rotational orientation sensing means mounted to a selected one of said laser means and said photosensitive target for generating a signal identifying the rotational orientation of the selected one of the laser means and the photosensitive target to which the rotational orientation sensing means is mounted; and
computer means operatively connected to said target and said rotational orientation sensing means for calculating alignment data based on the signals generated by the target for each of plural rotational orientations of at least one of said target and said laser means.

5,302,834
OPTICAL PICKUP AND TILT CONTROL DEVICE INCLUDING A PLURALITY OF PHOTOSENSITIVE UNITS FOR GENERATING SIGNALS INDICATING WHETHER TILT CORRECTION IS NECESSARY
Noriaki Murao, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 12, 1992, Ser. No. 974,629
Claims priority, application Japan, Nov. 15, 1991, 3-300710
Int. Cl.[5] G11B *7/00*
U.S. Cl. 250—561 **18 Claims**



1. An optical pickup for reading information recorded on a recording surface of an optical information storage medium, comprising:
a light beam source for emitting a linear light beam;
an optical system for converging said linear light beam as a linear image on the recording surface and collecting and emitting a linear light beam reflected from said recording surface;
refracting means for refracting the reflected linear light beam emitted from said optical system; and
a plurality of photodetector units each having a plurality of photosensitive surfaces for photoelectrically converting the reflected linear light beam applied thereto from said refracting means into a plurality of respective detected signals indicative of a tilt of said optical system with respect to the optical information storage medium.

5,302,835
LIGHT DETECTION SYSTEM HAVING A POLARIZATION PLANE ROTATING MEANS AND A POLARIZING BEAMSPLITTER
Mark Bendett, and Masahiko Nakamura, both of Ann Arbor, Mich., assignors to Imra America, Inc., Ann Arbor, Mich.
Filed Mar. 22, 1993, Ser. No. 35,177
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—561 **30 Claims**



1. An optical detection system, comprising:
transmitting means for transmitting a light beam to create a field of view;
detecting means for detecting a reflected light beam resulting from reflection of the transmitted light off at least one object in the field of view, said detecting means including a range channel having a first detector for sensing reflected light from the at least one object to determine a distance to the object, and an angle channel having a second detector for sensing reflected light from the at least one object to determine an angle of the reflected light beam;
deflecting means through which the transmitted light beam and the reflected light beam pass for either deflecting the transmitted light beam as it passes through the deflecting means while allowing the reflected light beam to pass through the deflecting means without being deflected, or deflecting the reflected light beam as it passes through the deflecting means while allowing the transmitted light beam to pass through the deflecting means without being deflected;
means disposed between said deflecting means and said detecting means for splitting the reflected light beam into two beam components that include a first beam component which is directed to the first sensor and a second beam component which is directed to the second sensor.

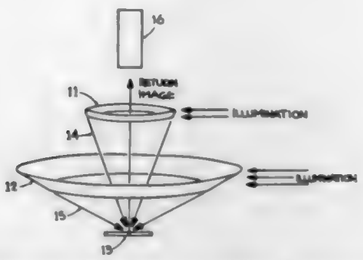
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,836

HIGH SPEED IMAGE ACQUISITION FOR MICROELECTRONICS INSPECTION

Bernard Siu, 732 N. Diamond Bar Blvd., Diamond Bar, Calif. 91765

Filed Jul. 16, 1992, Ser. No. 914,541
Int. Cl.[5] G01N *21/88*
U.S. Cl. 250—572 22 Claims



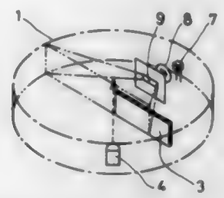
1. Illumination apparatus for inspection of microelectronic assemblies with internal microcircuit chips electrically connected by bonding to circuit conductive traces on a mounting substrate, wherein interconnect wires, ball bonds, bond wedges and chip bodies may be visually discriminated against similar reflective backgrounds, comprising:
a plurality of circular ring light source means for illumination of said chips and interconnect wire bonding means placed at the focused annular ring center;
means for focusing each said ring light source at a predetermined angle of incidence for optimal contrast between said chip bodies and interconnect means and similar reflective trace backgrounds; and
an array of light responsive transducers arranged for image acquisition of reflections along a vertical axis through the concentric centers of both said ring lights.

5,302,837

PHOTOELECTRIC SMOKE DETECTOR WITH EXPANDED VISUAL FIELD

Hiroshi Sawa, Tokyo; Hironobu Kawai, and Naoki Kosugi, both of Kanagawa, all of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Continuation of Ser. No. 857,749, Mar. 26, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 29,980
Claims priority, application Japan, Mar. 29, 1991, 3-089279
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—574 1 Claim



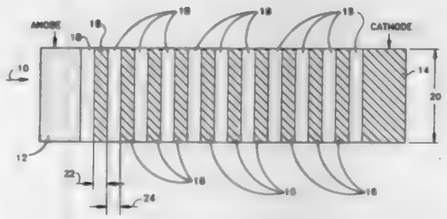
1. A photoelectric smoke detector comprising:
a light source means,
a smoke detecting chamber with a circular shape in a first plane having a diameter much greater than a linear dimension i a second plane being substantially 90 degrees from said first plane,
a source light that is irradiated from said light source means into said smoke detecting chamber,
a light-sensing element for detecting scattered light of said source light due to smoke entering into said smoke detecting chamber,
an optical means for expanding a visual field of said light-sensing element into a flat visual field corresponding to a sectional shape of said chamber;
wherein said optical means includes a light-condensing member arrange din front of a photosensitive surface of said light-sensing element,
wherein said optical means further includes a field stop member arranged in front of said light-condensing member,
wherein said field stop member comprises a resin molding having a rectangular slit-shaped stop opening; and
wherein said opening has an inner peripheral surface in which a groove is formed.

5,302,838

MULTI-QUANTUM WELL INJECTION MODE DEVICE

Kenneth P. Roenker, Lakeside Park, Ky., and Chungkun Song, Pusan, Rep. of Korea, assignors to University of Cincinnati, Cincinnati, Ohio

Filed Jun. 9, 1992, Ser. No. 896,144
Int. Cl.[5] H01L *29/161, 29/205*
U.S. Cl. 257—14 4 Claims



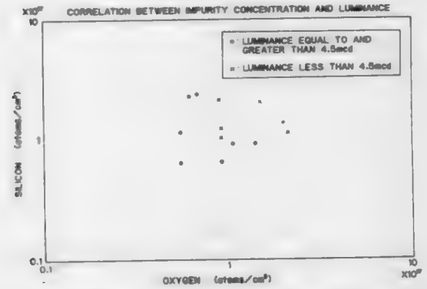
1. A multi-well diode, for use with various external devices, comprising:
(a) a cathode comprising a doped n-type first semiconductor material, said cathode having a first boundary and a second boundary, said first boundary being electrically connected to one of said external devices;
(b) a multi-well region, comprising:
(i) at least one barrier comprising undoped second semiconductor material having a first boundary and a second boundary, the first boundary of the first of said at least one barrier forming an electrical junction with the second boundary of said cathode;
(ii) at least one deep well comprising doped n-type first semiconductor material having a first boundary and a second boundary, the first boundary of said at least one deep well forming an electrical junction with the second boundary of said at least one barrier;
(iii) an end barrier comprising undoped second semiconductor material having a first boundary and a second boundary, the first boundary of said end barrier forming an electrical junction with the second boundary of the last of said at least one deep well; and
(c) an anode comprising a doped p-type first semiconductor material, said anode having a first boundary and a second boundary, the first boundary of said anode forming an electrical junction with the second boundary of said end barrier, and said second boundary of said anode being electrically connected to one of said external devices;
wherein said multi-well diode operates in a low conductance state at forward bias until said multi-well diode's threshold voltage is exceeded, at which time said multi-well diode briefly operates in an unstable negative resistance region as it switches into a high conductance state, after which said multi-well diode remains in the high conductance state until the forward voltage across and current through said multi-well diode decreases below the multi-well diode's holding condition, at which time said multi-well diode switches back into the low conductance state, thereby exhibiting an S-curve current-voltage characteristic in forward bias.

5,302,839

LIGHT EMITTING DIODE HAVING AN IMPROVED GAP COMPOUND SUBSTRATE FOR AN EPITAXIAL GROWTH LAYER THEREON

Tsuneyuki Kaise, Annaka; Toshio Otaki, Takasaki, and Jun Ikeda, Iwaki, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 919,340
Claims priority, application Japan, Jul. 29, 1991, 3-212846
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—101 6 Claims



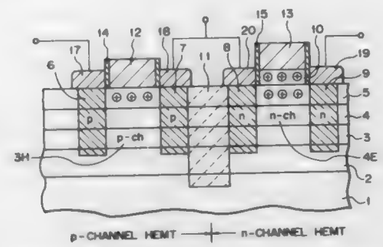
1. A compound semiconductor single crystal having a GaP substrate, wherein said substrate contains an impurity concentration in an amount insufficient to cause precipitation of sufficient silica to increase the amount of defects generated by a subsequent epitaxial growth process, of at least one of not more than 1×10^{17} atoms/cm^3 of silicon and not more than 7×10^{16} atoms/cm^3 of oxygen in said substrate.

5,302,840

HEMT TYPE SEMICONDUCTOR DEVICE HAVING TWO SEMICONDUCTOR WELL LAYERS

Masahiko Takikawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 17, 1992, Ser. No. 899,699
Claims priority, application Japan, Jun. 20, 1991, 3-147741
Int. Cl.[5] H01L *29/161, 29/205, 29/225*
U.S. Cl. 257—194 10 Claims



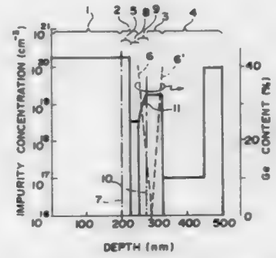
1. A HEMT type semiconductor device comprising:
a semiconductor substrate;
a buffer semiconductor layer formed on said semiconductor substrate; a first semiconductor well layer formed on said buffer semiconductor layer and serving as a first conductivity type channel layer, which is selected from one of a p-channel layer and an n-channel layer;
a second semiconductor well layer formed directly on said first semiconductor well layer and serving as a second conductivity type opposite said first conductivity type, channel layer and which is the other of said p-channel layer and said n-channel layer, one of said first and second semiconductor well layers being formed of a material having a higher valence band top energy level and a higher conduction band bottom energy level than a material forming the other of said first and second semiconductor well layers; and
a potential barrier layer formed on said second semiconductor well layer and forming a potential barrier for carriers, said n-channel layer having a conduction band bottom energy level lower than a conduction band bottom energy level of said semiconductor substrate.

5,302,841

HETEROJUNCTION BIPOLAR TRANSISTOR

Toru Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 27, 1991, Ser. No. 800,063
Claims priority, application Japan, Nov. 28, 1990, 2-327918
Int. Cl.[5] H01L *31/072, 31/109, 29/06*
U.S. Cl. 257—197 7 Claims



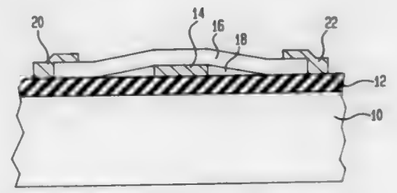
1. A semiconductor device comprising a silicon heterojunction bipolar transistor having a base region formed of silicon-germanium (SiGe) with a narrow gap base in which the germanium content of said base is higher in the neighborhood of a base-emitter junction and also in the neighborhood of a base-collector junction as compared to the germanium content in a central portion of the base region, and the germanium concentration distribution in the base region has a slope toward said central portion from said base-emitter junction and from said base-collector junction.

5,302,842

FIELD-EFFECT TRANSISTOR FORMED OVER GATE ELECTRODE

Winston K. Chan, Fair Haven, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Jul. 20, 1992, Ser. No. 916,535
Int. Cl.[5] H01L *29/80, 31/112, 27/095*
U.S. Cl. 257—280 7 Claims



1. A field-effect transistor comprising:
an insulating substrate having a principal upper surface;
a conducting body formed on said substrate, extending in a first direction along said substrate and extending up-

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wardly at least in part above said principal upper surface; and

a free-standing semiconductor thin film bonded in a bent shape both to an upper surface of said conducting body and to two portions of said principal upper surface on opposing lateral sides of said conducting body, said thin film extending from said two portions over said principal upper surface without touching said principal upper surface whereby lacunae are formed between said conducting body and said portions and over which lacunae said thin semiconductor film hangs suspended, said thin film having a crystalline orientation unrelated to said conducting body and said insulating substrate and said thin film being stressed by said conducting body above said principal upper surface; and

electrical contacts attached to opposed ends of said thin film with respect to said conducting body, whereby a current path is established through said thin film over said conducting body and said conducting body acts as a gate to said current path.

5,302,843

IMPROVED VERTICAL CHANNEL TRANSISTOR

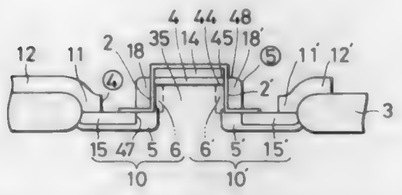
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanngawa, Japan

Filed Jul. 18, 1991, Ser. No. 732,089

Claims priority, application Japan, Jul. 26, 1990, 2-200303; Aug. 7, 1990, 2-210042

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—296 **15 Claims**



1. A pair of gate insulated field effect transistors comprising:

a single crystalline semiconductor substrate having an upper surface;

a rectangular parallelepiped single crystalline elevation erected from the upper surface of said substrate and having a pair of first parallel side surfaces and a pair of second parallel side surfaces, the orientation of said first parallel side surfaces being substantially in the (100) plane or an equivalent plane of the crystalline structure of said elevation;

a pair of gate electrodes formed on said first side surfaces with a pair of gate insulating film therebetween;

a pair of first impurity regions of a first conductivity type formed within said semiconductor substrate, said first impurity regions being located laterally outside of said elevation;

a second impurity region of said first conductivity type located at an upper portion of said elevation;

a pair of channel regions located between said first impurity regions and said second impurity region;

wherein said pair of second parallel side surfaces each is doped with an impurity to prevent undesirable leakage current therethrough between (a) said pair of first impurity regions and (b) said second impurity region; and

wherein said pair of field effect transistors are independent of one another.

5,302,844

SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

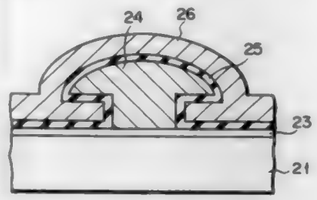
Tomohisa Mizuno, and Shizuo Sawada, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 672,322, Mar. 20, 1991. This application Feb. 9, 1993, Ser. No. 15,676

Claims priority, application Japan, Mar. 20, 1990, 2-68080

Int. Cl.[5] H01L *27/02, 29/68, 29/78, 29/92*

U.S. Cl. 257—396 **22 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

a lower electrode formed on said semiconductor substrate having a cross section comprising a lower part and an upper part having a lower periphery with lateral ends defining a width which is greater than a width of said lower part, said upper part having a central portion which overlies said lower part, wherein a height of said upper part decreases from said central portion to said lateral ends of said upper part;

an insulation film overlying at least said lower electrode and in contact with a portion of said upper part of said lower electrode; and

an upper electrode opposing said lower electrode and formed so as to cover at least said insulation film,

wherein said lower electrode, said insulation film, and said upper electrode form a capacitor.

5,302,845

TRANSISTOR WITH AN OFFSET GATE STRUCTURE

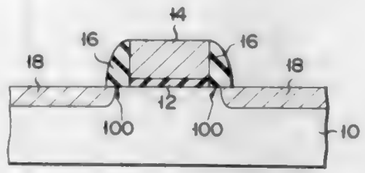
Jumpei Kumagai, and Tomohisa Mizuno, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 751,058, Aug. 28, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 121,292

Claims priority, application Japan, Aug. 29, 1990, 2-229220; Aug. 19, 1991, 3-206769

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—327 **44 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having a main surface;

a first and second diffused layers of a second conductivity type which are formed at the main surface of said substrate and which have a first impurity concentration;

a gate insulating film which is composed of a first insulator with a first permittivity and formed on the substrate between said first and second diffused layers so as to be isolated from the first and second diffused layers;

a gate electrode formed on said gate insulating film;

first sidewalls which are formed on the sides of said gate insulating film and said gate electrode, extending upward from said substrate and which are composed of a second insulator with a second permittivity higher than the first permittivity of said first insulator;

second sidewalls which are formed on the sides of said first sidewalls, extending upward from said substrate and which are composed of said second insulator; and

a third and fourth diffused layers of the second conductivity type which are formed in said first and second diffused layers and which have a second impurity concentration higher than said first impurity concentration, with the interface with said first and second diffused layers being placed below said second sidewalls.

5,302,846

SEMICONDUCTOR DEVICE HAVING IMPROVED VERTICAL INSULATED GATE TYPE TRANSISTOR

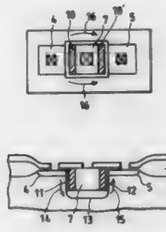
Shigeyuki Matsumoto, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 708,216, May 31, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 986,890

Claims priority, application Japan, Jun. 4, 1990, 2-144544

Int. Cl.[5] H01L *29/76, 29/94, 31/062, 23/48*

U.S. Cl. 257—329 **3 Claims**



1. A semiconductor device comprising:

a semiconductor body having a recess formed therein;

an impurity doped region formed within said semiconductor body;

a gate electrode region provided directly on said impurity doped region and filling said recess formed in said semiconductor body;

first and second semiconductor regions having said gate electrode region sandwiched therebetween, said first and second semiconductor regions being positioned on a surface of said semiconductor body and defining a source region and a drain region;

an insulating film provided between said gate electrode region and a portion of said semiconductor body;

a first channel constituting a first path at least partly in a direction substantially perpendicular to said surface and within said semiconductor body through which carriers flow into said second semiconductor region through said impurity doped region from said first semiconductor region; and

a second channel constituting a second path in a direction along said surface of said semiconductor body through which carriers flow into said second semiconductor region from said first semiconductor region.

5,302,847

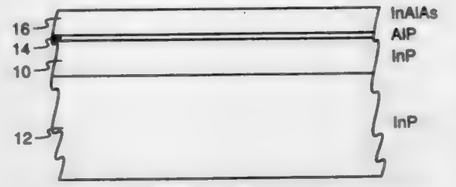
SEMICONDUCTOR HETEROSTRUCTURE HAVING A CAPPING LAYER PREVENTING DELETERIOUS EFFECTS OF AS-P EXCHANGE

Rajaram Bhat; Maria J. S. P. Brasil, both of Red Bank; Robert E. Nahory, Lincroft, all of N.J.; William E. Quinn, Boulder, Colo., and Maria C. Tamargo, Plainfield, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Division of Ser. No. 859,120, Mar. 27, 1992, Pat. No. 5,246,878. This application Jun. 4, 1993, Ser. No. 72,634

Int. Cl.[5] H01L *29/20*

U.S. Cl. 257—615 **7 Claims**



1. A III–V semiconductor heterostructure comprising:

a first layer having a first III–V semiconductor composition including a first group III element and phosphorous;

an atomically thin capping layer formed over said first layer and having a second III–V semiconductor composition including a second group III element and phosphorous but not arsenic, said capping layer being of sufficient thinness to be pseudomorphic to said first layer and of sufficient thickness to provide chemical isolation of said first layer; and

a second layer formed in contact with said capping layer and having a third semiconductor composition including said second group III element and arsenic but substantially no phosphorous;

whereby said capping layer is a transition layer between the phosphide first layer and the arsenide second layer, and wherein said capping layer is not lattice matched to both of said first and second layers.

5,302,848

INTEGRATED CIRCUIT WITH COMPLEMENTARY JUNCTION-ISOLATED BIPOLAR TRANSISTORS

Jerome F. Lapham, Groton, and Brad W. Scharf, Woburn, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 788,883, Nov. 7, 1991, abandoned, which is a division of Ser. No. 430,810, Nov. 1, 1989, Pat. No. 5,065,214, which is a division of Ser. No. 190,499, May 5, 1988, Pat. No. 4,969,823, which is a continuation of Ser. No. 912,771, Sep. 26, 1986, abandoned. This application Mar. 1, 1993, Ser. No. 24,604

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—555 **4 Claims**



1. An integrated circuit with complementary bipolar transistors comprising:

a semiconductor substrate; and

a P-type epitaxial layer comprising additional semiconductor material over said substrate and at least substantially free of N-type dopant, said epitaxial layer forming with said substrate a composite structure;

said substrate and epitaxial layer being formed with:

a pnp transistor comprising:

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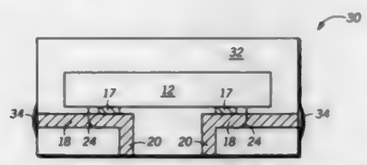
a P-type collector formed at least partly of the P-type material of said P-type epitaxial layer;
an N-type base formed in said epitaxial layer; and
a P-type emitter formed in said epitaxial layer; an npn transistor comprising:
an N-type collector formed in said epitaxial layer and in said substrate;
a P-type well in said N-type substrate to isolate said N-type collector, said P-type well being contiguous with said P-type epitaxial layer;
a P-type base formed in said epitaxial layer;
an N-type emitter formed in said epitaxial layer; and
isolating means to isolate said pnp and npn transistors.

5,302,849

PLASTICLAND GRID ARRAY SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

Daniel Cavasin, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,060
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—666 **15 Claims**



1. A plastic land grid array semiconductor device comprising:
a leadframe having a plurality of L-shaped leads, the plurality of L-shaped leads having a horizontal portion and a vertical portion, both portions having a thickness;
a semiconductor die having a plurality of pads on an active surface which is electrically connected to the horizontal portion of the plurality of L-shaped leads, wherein the horizontal portion originates in proximity to an edge of the semiconductor die, extends over the active surface toward the plurality of pads, and terminates with the vertical portion angling away from the semiconductor die;
a plastic package body covering at least the active surface of the semiconductor die and a portion of the plurality of leads, wherein the vertical portion of the plurality of leads terminates at a surface of the plastic package body, said surface being substantially parallel to the active surface of the semiconductor die; and
an insulative coating on an external side portion of the plastic package body to cover any exposed thickness of the horizontal portion of the plurality of leads;
wherein the thickness of the vertical portion of the plurality of leads is exposed on the surface of the plastic package body to form a grid array of external electrical contacts.

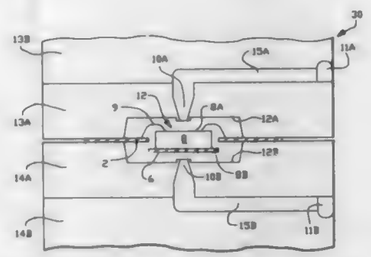
5,302,850

SEMICONDUCTOR SEALING MOLD

Akitoshi Hara, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 946,808, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 757,426, Sep. 10, 1991, abandoned, which is a division of Ser. No. 583,813, Sep. 17, 1990, Pat. No. 5,077,237. This application Aug. 30, 1993, Ser. No. 114,413
Claims priority, application Japan, Sep. 18, 1989, 1-241164
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—667 **3 Claims**

1. A semiconductor sealing mold useful in sealing a semiconductor element within an encapsulant material while subjecting opposite element surfaces to balanced encapsulant input pressures, comprising:
first and second opposing mold members each having a partial mold cavity and configured for mating engagement providing an enclosed mold cavity employed in sealing a semiconductor element within an encapsulant material;
said semiconductor element mounted on a lead frame;
one of said semiconductor element surfaces comprising an active surface with a plurality of conductive fine leads each with one end attached to said active surface, said leads substantially extending radially outward relative to a center of said active surface each with their other end attached to said lead frame;
an encapsulant input opening in a bottom portion of each of said mold members and connected to receive encapsulant from at least one source, said input openings being centrally located on said mold member bottoms and opposing



one another in substantial axial alignment when said mold members are brought together in mating engagement;
said element mounted lead frame held in a fixed position in said enclosed mold cavity between said opposing mold members with said element active surface substantially perpendicular to said input opening axial alignment with said element active surface center substantially positioned along said input opening axial alignment when said mold members are brought together in mating engagement;
each of said input openings configured to introduce encapsulant with balanced encapsulant input pressures which create substantially equal pressure on said opposite surfaces of said semiconductor element during encapsulation so that vibratory and oscillatory motion due to encapsulant input pressure differences is eliminated and outward radial forces of introduced encapsulant substantially conforms with the radial outward extent of said leads for preventing lead deformation or severance.

5,302,851

CIRCUIT ASSEMBLY WITH POLYIMIDE INSULATOR

Moonhor Ree, Hopewell Junction, N.Y.; Willi Volksen, San Jose, and Do Y. Yoon, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,621
Int. Cl.[5] H01L *39/02*
U.S. Cl. 257—702 **5 Claims**

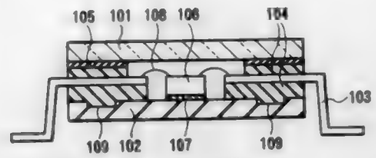
1. An integrated circuit packaging structure for providing signal and power current to a plurality of integrated circuit chips comprising:
a substrate having electrical connecting means for connection to a circuit board;
a plurality of insulating and conducting layers stacked on said substrate wherein at least one of the layers comprises poly(3,4'-oxydiphenylene pyromellitimide); and
a plurality of vias for electrically interconnecting the electrical connecting means, the conducting layers and the integrated circuit chips.

5,302,852

SEMICONDUCTOR DEVICE PACKAGE HAVING A LOW PROFILE STRUCTURE AND HIGH STRENGTH

Kenichi Kaneda, and Akio Tanda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,318
Claims priority, application Japan, Feb. 27, 1992, 4-039957
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—704 **7 Claims**



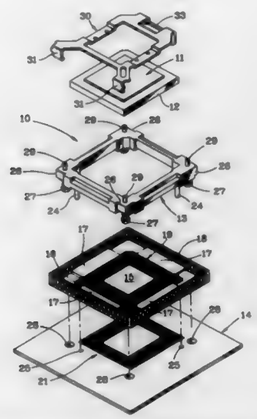
1. A semiconductor device comprising:
a semiconductor element;
a flat shaped base on which said semiconductor element is mounted, and which consists of high-purity alumina and has a thickness of not more than 0.5 mm;
a cap arranged on said base to cover said semiconductor element, consisting of translucent alumina, having a crystal grain size of not more than 10 μm, and having a thickness of not more than 0.5 mm;
a cap arranged on said base to cover said semiconductor element, consisting of translucent alumina, having a crystal grain size of not more than 10 μm, and having a thickness of not more than 0.4 mm;
leads extending out of said semiconductor device to be interposed between said base and said cap and electrically connected to said semiconductor element; and
low-melting glass for integrally and hermetically sealing said base, said leads, and said cap, at least one groove being formed in a sealing surface of said base contacting said low-melting glass.

5,302,853

LAND GRID ARRAY PACKAGE

Keith L. Volz, Jamestown; Robert M. Renn, Pfafftown; Frederick R. Deak, Kernersville; David C. Johnson; Warren A. Bates, both of Winston Salem, and Robert D. Irlbeck, Greensboro, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 25, 1993, Ser. No. 7,932
Int. Cl.[5] H01L *23/02, 23/12, 23/42, 23/44*
U.S. Cl. 257—707 **15 Claims**



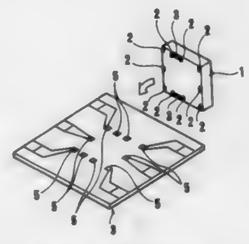
1. In a land grid array package, wherein an integrated circuit is retained in a frame mounted on a printed circuit board, and wherein the printed circuit board has respective circuit pads for selective engagement with the integrated circuit, the improvement comprising a metallic wafer between the integrated circuit and the printed circuit board, where said wafer is substantially rectangular, has four sides and a heat sink, wherein a finger is formed integrally with each side and projects laterally therefrom, and wherein the heat sink is secured to the respective fingers, said wafer further having a plurality of laterally spaced-apart flexible electrical connectors between the integrated circuit and the circuit pads on the printed circuit board, thereby providing a combination circuit interface and heat sink for the package.

5,302,854

PACKAGING STRUCTURE OF A SEMICONDUCTOR DEVICE

Masanori Nishiguchi, and Atsushi Miki, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 644,566, Jan. 19, 1991, Pat. No. 5,092,033. This application Oct. 18, 1991, Ser. No. 779,280
Claims priority, application Japan, Jan. 23, 1990, 2-13418; Jan. 23, 1990, 2-13419
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—737 **17 Claims**



1. A packaging structure comprising:
a semiconductor device which has a plurality of bumps extending on a surface thereof and in which at least two bumps of said plurality of bumps are electrically and directly connected to each other; and
a packaging substrate having at least two electrode terminals formed on a surface in correspondence with said bumps electrically and directly connected to each other.

5,302,855

CONTACT ELECTRODE STRUCTURE FOR SEMICONDUCTOR DEVICE

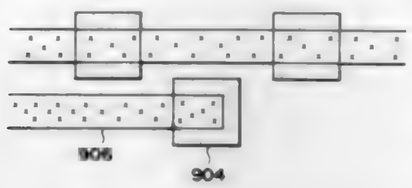
Shigeyuki Matsumoto; Masaru Sakamoto, and Yoshio Nakamura, all of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,480
Claims priority, application Japan, Sep. 10, 1990, 2-240494; Sep. 12, 1990, 2-239981
Int. Cl.[5] H01L *23/48, 29/44*
U.S. Cl. 257—774 **5 Claims**

1. A semiconductor device comprising:
a semiconductor element provided on a surface of a semiconductor substrate;
an insulating layer provided on said surface, with an opening provided therein;
a metal electrode filling within said opening;
a metal wiring pattern provided on said insulating layer, wherein said semiconductor element and said metal wiring pattern are interconnected through said metal electrode; and
an upper surface of said metal electrode at a connecting

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portion between said metal electrode and said metal wiring pattern is substantially flat, and is substantially aligned with an upper surface of said insulating layer; and



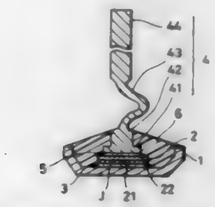
a relationship of A>C is established where A is a length of one side of the upper surface of said electrode and C is a width of said wiring in said connecting portion therebetween.

5,302,856

SEMICONDUCTOR RECTIFYING DEVICE AND FULL-WAVE RECTIFIER FABRICATED USING THE SAME

Kazutoyo Narita, Hitachi; Yoichi Nakashima, Ibaraki; Hiroshige Okinoshima, Annaka, and Tadashi Nosaka, Kariya, all of Japan, assignors to Hitachi, Ltd.; Shin-Etsu Chemical Co., Ltd., both of Tokyo and Nippondenso Co., Ltd., Kariya, all of Japan

Filed Oct. 8, 1991, Ser. No. 772,871
Claims priority, application Japan, Oct. 8, 1990, 2-270188
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—788 **17 Claims**



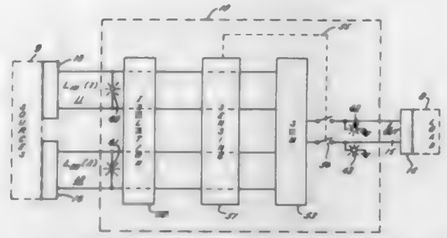
1. A semiconductor rectifying device, comprising:
a metallic container;
a semiconductor chip having a pn junction, one of whose main surfaces is bonded to the bottom surface of the container;
a lead bonded to the other main surface of the semiconductor chip; and
a silicone resin layer which covers an exposed portion of the semiconductor chip and contains silica powder, the silica powder having a particle size, and being contained in the silicone resin layer in an amount, such that destruction of siloxane bonding of the silicone resin, by alkali formed from salt, is eliminated, wherein the silicone resin layer contains 40 to 120 parts by weight of silica powder with respect to 100 parts by weight of the silicone resin, and wherein the average particle size of the silica powder is 2 to 6 μm.

5,302,857

PORTABLE POWER ADAPTER

Joseph T. Charles, Inverness, Ill., and Michael A. Reinhart, Gering, Nebr., assignors to Charles Industries, Ltd., Rolling Meadows, Ill.

Division of Ser. No. 522,652, May 11, 1990, Pat. No. 5,160,852.
This application Oct. 15, 1992, Ser. No. 961,450
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] H02J *3/06*
U.S. Cl. 307—20 **21 Claims**



1. A portable self-contained adapter for connecting an electrical load of a given characteristic to a pair of electrical sources of a characteristic different from the given characteristic, the adapter serving to sum the sources in a predetermined manner to produce a desired output, the adapter comprising, in combination:
a portable housing from which extend first and second connectors for connection to the respective electrical sources,
first and second isolation means in the portable housing and associated with the first and second connectors, each isolation means including at least two conductors independent of the conductors of the other isolation means, the two independent conductors of each isolation means being connected so that the respective isolation means senses a potential across two lines of a connected electrical source to determined therefrom whether the connected electrical source is live, the conductors of each isolation means being independent of the conductors of the other isolation means so that there is no direct electrical connection between said conductors of the respective isolation means and the two isolation means preventing feedthrough of one electrical source to the other connector when only one of the source connections is made, whereby each connector can be connected to an associated electrical source without creating an electrical shock hazard for a person manipulating the other connector,
sensing means in the portable housing for responding to a relationship between the sources which indicates that the sources will sum to produce the desired output, and
output means in the portable housing responsive to the sensing means for switching from an open condition to a closed condition in which the summed inputs are connected to the output in the predetermined manner for driving an electrical load connected thereto.

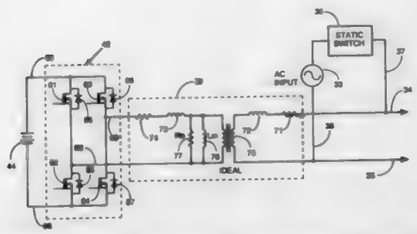
5,302,858

METHOD AND APPARATUS FOR PROVIDING BATTERY CHARGING IN A BACKUP POWER SYSTEM

Douglas C. Folts, Mauston, Wis., assignor to Best Power Technology, Incorporated, Necedah, Wis.

Filed Dec. 11, 1991, Ser. No. 805,496
Int. Cl.[5] H02J *9/06, 7/04*
U.S. Cl. 307—66 **22 Claims**

13. A method of charging the battery in a power system of the type having power lines for receiving AC input power having a waveform with positive and negative half cycles, a power transformer having its secondary connected across the power lines and a primary coupled to the secondary, a battery providing a DC output voltage, and an inverter connected to the battery and having an output connected to the primary of the power transformer and switching devices connected in a bridge configuration with anti-parallel diodes associated with each of the switching devices which are normally back-biased off by the battery voltage, comprising the steps of:
(a) turning on at least one of the switching devices in the bridge to provide a current path from the primary of the transformer through the switching device and through one of the anti-parallel diodes back to the primary to



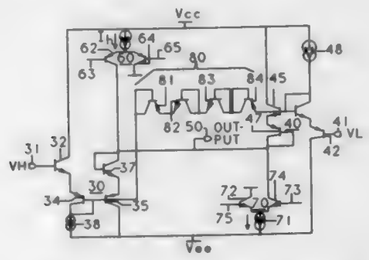
effectively short the primary during a positive or negative half cycle of the input power waveform for a selected period of time which is short compared to the period of the power waveform to build up a current through the effective leakage inductances of the primary and secondary of the transformer;
(b) then, turning off the switching device and allowing current induced by the inductances of the transformer to flow through one of the anti-parallel diodes into the battery and through another of the anti-parallel diodes back to the primary to discharge the energy stored in the transformer inductances.

5,302,859

SYMMETRIC, HIGH SPEED, VOLTAGE SWITCHING CIRCUIT POSSESSING REVERSE VOLTAGE APPLICATION IMMUNITY

Donald K. Whitney, West Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 14, 1991, Ser. No. 791,856
Int. Cl.[5] H03K *5/08*
U.S. Cl. 307—255 **15 Claims**



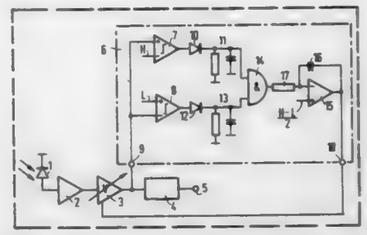
1. A switching circuit for controllably coupling a selected one of a first voltage and a second voltage to an output terminal comprising:
a first input terminal for receiving said first voltage;
a second input terminal for receiving said second voltage;
a first voltage relay circuit coupled between said first input terminal and said output terminal, there being no feedback path provided between said output terminal and said first input terminal;
a second voltage relay circuit coupled between said second input terminal and said output terminal, there being no feedback path provided between said output terminal and said second input terminal;
a first controllable current source which supplies a first current coupled to said output terminal; and
a second controllable current source which supplies a second current coupled to said output terminal; and wherein
in a first operational state, said first controllable current source being rendered operative to supply said first current to said output terminal so as to cause said first voltage relay circuit to couple said first voltage to said output terminal, while said second controllable current source is rendered inoperative and is thereby isolated from said output terminal, and, in a second operational state, said second controllable current source is rendered operative to supply said second current to said output terminal so as to cause said second voltage relay circuit to couple said second voltage to said output terminal, while said first controllable current source is rendered inoperative and is thereby isolated from said output terminal, further including a reverse voltage protection circuit coupled between said first and second voltage relay circuits and being inoperative to limit current flow through said first and second voltage relay circuits in the event of the application of said first voltage to said second in put terminal and said second voltage to said first input terminal.

5,302,860

CIRCUIT ARRANGEMENT FOR AUTOMATIC GAIN CONTROL

Jens Fischer, and Jörg Jost, both of Darmstadt, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 9, 1993, Ser. No. 15,719
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4204956
Int. Cl.[5] H04N *5/52;* **H03F** *1/08*
U.S. Cl. 307—264 **21 Claims**



1. A transmission system having a transmitter coupled to a receiver by way of a channel, which receiver includes a circuit arrangement for automatic gain control, said circuit arrangement comprising:
a controllable amplifier having an input for receiving a signal to be controlled, an output for presenting a controlled output signal which is absent of a dc component and a control input for receiving a control signal which causes the gain of said amplifier to adjust as a function of the control signal; and
generator means for producing the control signal, said generator means including:
a first comparator for receiving the controlled output signal and presenting a first signal when the controlled output signal exceeds a specific positive level;
a second comparator for receiving the controlled output signal and presenting a second signal when the controlled output signal falls below a specific negative level;
an averaging circuit coupled to said first and second comparators for time-averaging the first signal and the

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second signal to produce a first average signal and a second average signal, respectively; and

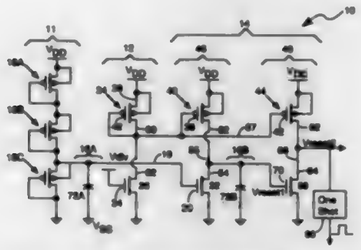
a combining circuit coupled to said averaging circuit for combining the first and second average signals if both the first average signal and the second average signal exceed a specific level to produce a combined output signal.

5,302,861

POWER ON RESET CIRCUIT WITH SHARPLY SLOPED VOLTAGE TRANSFER FUNCTION

Jules J. Jelinek, San Francisco, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 25, 1992, Ser. No. 981,883
Int. Cl.[5] H03K *17/22*
U.S. Cl. 307—296.5 **8 Claims**



1. A power on reset circuit, comprising:

a voltage divider coupled to a supply voltage, said voltage divider dividing said supply voltage to generate an output;

a current reference generator that generates a reference current, said current reference generator including a first current source MOS transistor of a first polarity coupled in series with a first MOS transistor of a second polarity opposite said first polarity; and

a switching circuit, coupled to said voltage divider and said current reference generator, having a sharply sloped voltage transfer characteristic, said switching circuit including (A) a second current source MOS transistor of said first polarity coupled to said first current source MOS transistor so as to mirror said reference current, and (B) a second MOS transistor of said second polarity gated by said voltage divider output and coupled to said second current source MOS transistor at a first circuit node to draw current from said second current source MOS transistor only when said voltage divider output exceeds a threshold voltage and such that said switching circuit develops a first react voltage on said first circuit node;

wherein said second MOS transistor of said second polarity is sized large relative to said first MOS transistor of said second polarity so as to produce said sharply sloped voltage transfer characteristic of said switching circuit.

5,302,862

EFFICIENT TRANSFORMER-COUPLED GATE DRIVER CIRCUIT FOR POWER FET'S

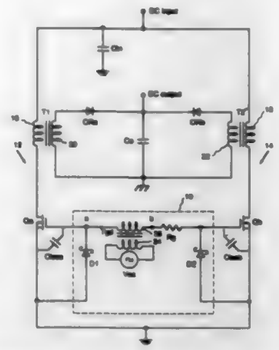
Robert L. Steigerwald, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,202
Int. Cl.[5] H03K *17/687, 3/30*
U.S. Cl. 307—282 **7 Claims**

1. A gate drive circuit for driving each of a pair of active switching devices at approximately 50% duty cycle and approximately 180° out-of-phase, each of said switching devices having a gate electrode and an associated gate capacitance, said gate drive circuit comprising:

a gate drive transformer having a secondary winding coupled between the gate electrodes of said active switching devices; and

means for applying a square wave voltage to a primary winding of said gate drive transformer such that upon plurality reversal of said square wave voltage, the gate capacitance of an off-going switching device discharges



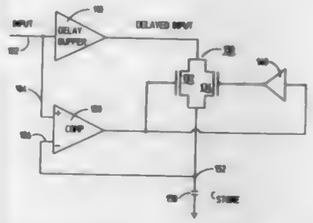
from an on-voltage level to zero as the gate capacitance of an on-going switching device charges to said on-voltage level.

5,302,863

CMOS PEAK AMPLITUDE DETECTOR

Thomas M. Walley, Loveland; Larry S. Metz, Ft. Collins, and Charles E. Moore, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 29, 1993, Ser. No. 11,028
Int. Cl.[5] G11C *27/02;* **H03K** *5/153*
U.S. Cl. 307—351 **17 Claims**



1. An integrated CMOS peak amplitude detector comprising:

a delay buffer generating a delayed signal, the delay buffer having an input that receives an input signal and an output that produces the delayed signal;

a comparator having a positive undelayed input, a negative delayed input and an output, the positive input connected to the input signal;

a transfer gate having a first input connected to the delayed signal, a second input connected to the output of the comparator, and an output; and

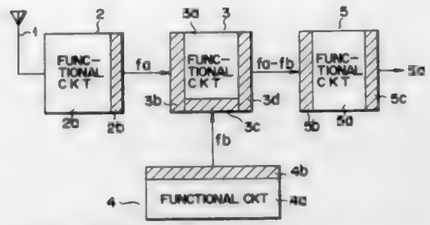
a storage capacitor connected to the output of the transfer gate and the negative delayed input of the comparator, the storage capacitor being fully integrated with the delay buffer, the comparator and the transfer gate on a single chip.

5,302,864

ANALOG STANDARD CELL

Seitaro Shinbara, Yokomaha, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 678,244, Apr. 1, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 921,360
Claims priority, application Japan, Apr. 5, 1990, 2-89141
Int. Cl.[5] G06F *7/38;* **H01L** *25/00*
U.S. Cl. 307—465 **10 Claims**



1. An analog standard cell comprising:

a functional circuit portion and an interface circuit portion,

the functional circuit portion outputting a function output signal and comprising a predetermined circuit configuration for providing a predetermined analog circuit function, and

the interface circuit portion comprising a predetermined circuit configuration for providing an analog interface circuit, the analog interface circuit outputting an analog interface output signal corresponding to the function output signal, the analog interface output signal having a predetermined output peak-to-peak signal level and a predetermined output DC bias level,

wherein the analog standard cell formed by the functional circuit portion and the interface circuit portion is associated with a plurality of analog standard cells, each analog standard cell of the plurality of analog standard cells providing one of a plurality of predetermined analog functions and outputting a corresponding analog interface output signal, each analog interface output signal having the predetermined output peak-to-peak signal level and the predetermined output DC bias level, and

wherein the analog standard cell is connectable to at least one other analog standard cell of the plurality of analog standard cells to form an integrated analog circuit.

5,302,865

HIGH-SPEED COMPARATOR LOGIC FOR WIDE COMPARES IN PROGRAMMABLE LOGIC DEVICES

Randy C. Steele, Folsom, and Richard P. Vireday, Cameron Park, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 16, 1993, Ser. No. 17,851
Int. Cl.[5] H03K *19/173;* **G06F** *7/38*
U.S. Cl. 307—465 **7 Claims**

1. A programmable gate array comprising:

a plurality of configurable functional blocks;

each configurable functional block having a maximum number (m) of inputs thereto;

first means for providing a global interconnect matrix, said first means being connected to said plurality of configurable functional blocks;

said first means including routing means for selectively routing any combination of signals entering said first means to any configurable functional block, up to and including said maximum number (m) of inputs of said configurable functional block;

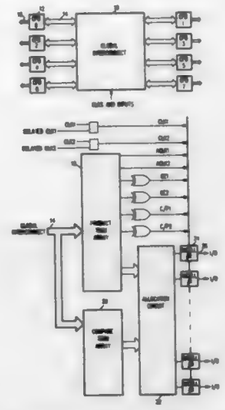
said configurable functional block including

second means for generating product terms, said second means being connected to said (m) inputs;

said second means including third means for performing a logical AND of up to m bits on said m inputs;

fourth means connected to said m inputs;

said fourth means including fifth means for performing an identity compare of up to m/2 bits;



sixth means for providing a logical output of said programmable gate array, said sixth means including a number (n) of macro cells; and,

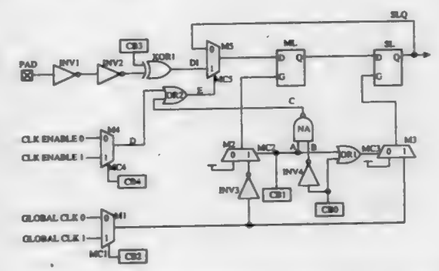
seventh means for allocating the outputs of said fourth means and said product terms in one macro cell of said macro cells, any compare term being allocable in place of a product term in said one macro cell.

5,302,866

INPUT CIRCUIT BLOCK AND METHOD FOR PLDS WITH REGISTER CLOCK ENABLE SELECTION

David Chiang, Saratoga; Thomas Y. Ho, Milpitas; Jeffrey H. Seltzer, and Jeffrey Goldberg, both of San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Mar. 18, 1993, Ser. No. 32,919
Int. Cl.[5] H03K *3/289*
U.S. Cl. 307—465 **20 Claims**



1. An input block for programmable logic devices, comprising:

a flip-flop circuit (IR) including a master latch (ML) and a slave latch (SL),

means (DI) for inputting a data signal into said flip-flop circuit,

means (M1) for providing a global clock signal for clocking said data signal input to said flip-flop circuit,

a clock enable terminal (E), and

at least one configuration terminal (CB1, CB0) for providing at least one configuration signal to said flip flop circuit,

logic elements (OR2, NA, INV4, XOR2, INV3) responsive

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to said at least one configuration signal for providing a clock enable signal (D) on said clock enable terminal.

5,302,867

APPARATUS FOR SENSING DATA IN DATA BUS LINES

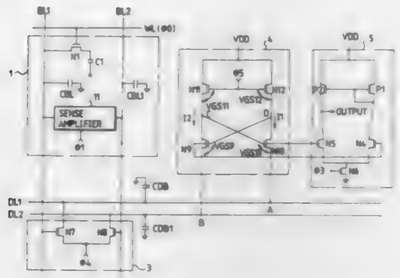
Seung H. Ahn, Suweon, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Mar. 5, 1992, Ser. No. 846,179

Claims priority, application Rep. of Korea, Mar. 6, 1991, 1991-3584

Int. Cl.[5] **G01R** *19/00;* **G11C** *7/00, 7/02;* **G06G** *7/12*

U.S. Cl. 307—530 **5 Claims**



1. A data sense circuit for sensing data sent through a pair of data bus lines in a semiconductor device comprising:

a work line for generating a data word line selection signal;

a pair of bit lines responsive to said data word line selection signal for producing a voltage difference between the bit lines;

said pair of data bus lines;

bit line sense amplifying means connected to said pair of bit lines and said word line;

a voltage difference to current difference converter connected to said bit line sense amplifying means through said pair of bit lines, for converting the voltage difference between said pair of bit lines into a current difference between said pair of data bus lines;

current sensing means connected to said pair of data bit lines and a power source, for sensing respective currents flowing to said pair of data bus lines whose current difference occurs in said current sensing means and for holding a same voltage level in said pair of data bus lines while said current difference occurs; and

current difference to voltage difference converting and amplifying means connected to said current sensing means, for converting the current difference which occurs in said current sensing means into a converted voltage difference and then amplifying the converted voltage difference.

5,302,868

METHOD AND APPARATUS FOR PROVIDING A REPRESENTATION OF AN INPUT VOLTAGE AT A DISABLED VOLTAGE MULTIPLIER'S OUTPUT

George H. Fergus, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,402

Int. Cl.[5] **H03F** *1/32, 3/04, 1/26*

U.S. Cl. 307—491 **11 Claims**

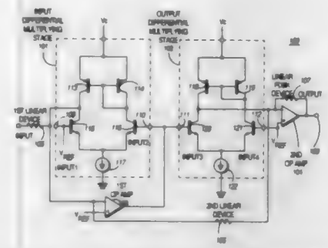
1. A voltage multiplier that provides a linear representation of an input voltage when the voltage multiplier is disabled, the voltage multiplier comprises:

an input differential multiplying stage that includes a first input and a second input, wherein the first input is operably coupled to a reference voltage;

an output differential multiplying stage that includes a third input and a fourth input, wherein the third input is operably coupled to the second input and the fourth input is operably coupled to either the first input or the reference voltage;

a first operational amplifier, wherein the input voltage is received at an inverting input of the first operational amplifier via a first linear device, a noninverting input of the first operational amplifier is operably coupled to the reference voltage, and an output of the first operational amplifier is operably coupled to the second input and the third input;

a second operational amplifier, wherein an inverting input of the second operational amplifier is operably coupled to an



output of the output differential multiplying stage, a noninverting input of the second operational amplifier is operably coupled to the reference voltage, and an output of the second operational amplifier provides an output of the voltage multiplier; and

a second linear device that is operably coupled to the inverting input of the second operational amplifier, wherein, when the voltage multiplier is disabled, the second linear device provides the input voltage a linear path to the second operational amplifier, and when the voltage multiplier is operational, the second linear device has negligible effect on the voltage multiplier.

5,302,869

VOLTAGE COMPARATOR AND SUBRANGING A/D CONVERTER INCLUDING SUCH VOLTAGE COMPARATOR

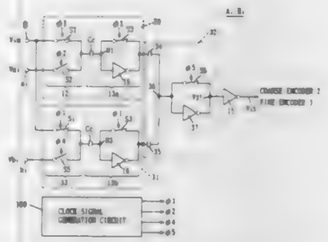
Shiro Hosotani, and Masao Ito, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 952,421

Claims priority, application Japan, Oct. 3, 1991, 3-256367

Int. Cl.[5] **H03K** *5/24*

U.S. Cl. 307—518 **15 Claims**



1. A voltage comparator for comparing a potential of an analog input signal to potentials of reference voltages of coarse and fine stages, comprising:

coarse comparison means for comparing said potential of analog input signal and the coarse reference voltage;

fine comparison means for comparing said analog input voltage and the fine reference voltages;

outputting means for outputting a comparison result of said coarse comparison means and a comparison result of said fine comparison means in a time dividing manner such that said comparison results of said coarse and fine comparison means are outputted during different periods of time;

amplification means, commonly coupled to said outputting means to receive both of said comparison results of said coarse and fine comparison means, for amplifying said comparison results output in the time dividing manner; and

resetting means for resetting the offset voltage of said amplification means before outputting said comparison results to said amplification means.

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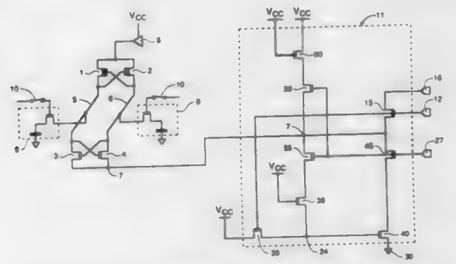
APPARATUS FOR PROVIDING MULTI-LEVEL POTENTIALS AT A SENSE NODE

Wen-Foo Chern, Colorado Springs, Colo., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 869,990, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 749,398, Aug. 23, 1991, Pat. No. 5,175,450. This application Jan. 6, 1993, Ser. No. 1,429

Int. Cl.[5] **H03F** *3/45;* **H03K** *19/02*

U.S. Cl. 307—530 **34 Claims**



1. A sense node in electrical communication with and responsive to a multi-level potential generating circuit, such that the sense node attains potentials generated by the multi-level potential generating circuit, said multi-level potential generating circuit comprising:

a) a first cycle circuit having;

i) a first electrical device for discharging a potential of the sense node to a first potential substantially equal to a reference potential, said first electrical device electrically interposed between the sense node and a reference node, said reference node connectable to said reference potential, said first electrical device discharging the potential of said sense node when coupled to said sense node through a first switching device when a switching logic level is maintained at a control input node of said first electrical device, said control input node precharged to said switching logic level through a second switching device, said second switching device coupling said switching logic level to said control input node from a supply node when actuated, and isolating said control input node from said supply node when deactuated, said supplying node connectable to a supply potential, the sense node attaining a second potential subsequent to the potential discharging to said first potential, said second potential substantially equal to said first potential plus a potential equal to a threshold voltage of said first electrical device; and

ii) a second electrical device electrically interposed between the sense node and said supply node for pulling the potential of said sense node to said second potential, said second electrical device activated by a sense signal having active and inactive states; and

b) a second cycle circuit for discharging said second potential of the sense node to a third potential having a value less than said second potential, the discharging of said second potential to said third potential performed sufficiently later than the pulling of the potential of the sense node to said second potential such that an interim time period exists during which the second potential remains at the sense node, said interim time period interposed between a time period wherein said first potential is effected at said sense node and a time period wherein said third potential is effected at said sense node, wherein said second potential is greater than said first potential and wherein said second potential is greater than said third potential.

5,302,871

DELAY CIRCUIT

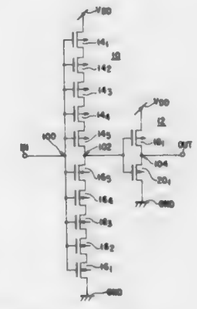
Yukiya Matsuzaki; Yasushi Sato, both of Kawasaki, and Masaharu Kawauchi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 14, 1992, Ser. No. 929,521

Claims priority, application Japan, Aug. 27, 1991, 3-214955

Int. Cl.[5] **H03K** *19/094*

U.S. Cl. 307—605 **18 Claims**



1. A delay circuit comprising:

an input terminal;

a first MOS transistor series including at least two MOS transistors of a first conductivity type whose current paths are connected to one another and whose gates are connected to said input terminal;

a second MOS transistor series including at least two MOS transistors of a second conductivity type whose current paths are connected to one another and whose gates are connected to said input terminal;

an output terminal connected to a connection point of said first and second MOS transistor series;

a first power supply serving as a current supplier to said first MOS transistor series; and

a second power supply serving as a current discharger of said second MOS transistor series.

5,302,872

LINEAR MAGNETIZATION MOVER MOTOR DUE TO LINEAR FORCE RESULTING FROM THE INTERACTION BETWEEN MAGNETOSTATIC INDUCTION ELEMENT AND ELECTROMAGNETIC COIL

Yasutsugu Ohki, c/o Railway Technical Research Institute, 8-38, Hikari-cho 2-chome, Kokubunji-shi, Tokyo; Shin-ichi Hase, Kokubunji; Hiroyasu Toda, Kokubunji; Kouichi Matsuoka, Kokubunji, and Tetsuo Uzuka, Kokubunji, all of Japan, assignors to Railway Technical Research Institute and Yasutsugu Ohki, both of Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,668

Claims priority, application Japan, Jul. 9, 1991, 3-194793

Int. Cl.[5] **H02K** *41/00*

U.S. Cl. 310—12 **21 Claims**

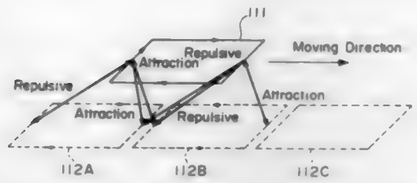
1. A DC linear magnetization mover motor for creating linear force resulting from the interaction between magneto-

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static induction element and an electromagnetic coil comprising:

a plurality of electromagnetic coils disposed in line; and

a magnetostatic induction element supported so as to be relatively movable through the electromagnetic coils,



wherein the electromagnetic coils are selectively excited so that a magnetic field created by the excited coils exerts a forward attractive force on the magnetostatic induction element, and the magnetostatic induction element has a length sufficient to substantially exclude interference from magnetic poles created by induction.

5,302,873

LINEAR PULSE MOTOR HAVING A HIGH RESOLUTION

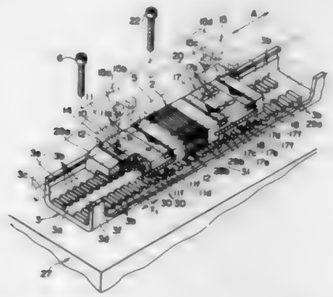
Seiji Takei, Yokohama, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 997,274

Claims priority, application Japan, Dec. 24, 1991, 3-355624

Int. Cl.[5] H02K *41/00*

U.S. Cl. 310—12 **6 Claims**



1. A linear pulse motor, comprising:

a primary side unit, including at least a pair of first and second electromagnets, each having at least one magnetic pole portion;

a secondary side unit, including a number of inductor teeth arranged along a straight line at a predetermined pitch, said primary and secondary side units being arranged such that a predetermined gap is maintained between said magnetic pole portions of the primary side unit and the inductor teeth of said secondary side unit;

controlling means for controlling energization of said first and second electromagnets such that a relative motion is created between said primary and secondary side units; and

wherein said primary side unit further includes adjusting means for adjusting a distance between said magnetic pole portion of said first electromagnet and said magnetic pole portion of said second electromagnet in a longitudinal direction of said inductor teeth.

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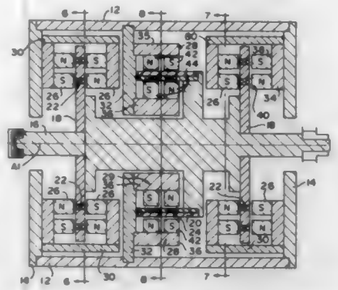
MAGNETIC BEARING AND METHOD UTILIZING MOVABLE CLOSED CONDUCTIVE LOOPS

Joseph F. Pinkerton, Austin, Tex., assignor to Magnetic Bearing Technologies, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 950,607, Sep. 25, 1992, abandoned. This application Dec. 23, 1992, Ser. No. 996,192

Int. Cl.[5] H02K *7/02*

U.S. Cl. 310—90.5 **67 Claims**



53. A method of operating a magnetic bearing system which has magnet means for producing one or more magnetic fields, and an object which includes a plurality of closed, self-inductive loops of material which has a finite electrical conductivity, said method including the following steps:

moving said loops through said magnetic field(s) along a prescribed path which is substantially circular and is located around an axis of rotation,

subjecting the interior of each said loop to magnetic flux from said field(s) when said loop is on its prescribed path so that the net magnetic flux is substantially zero and no electrical current is induced in said loop,

subjecting the interior of said loops to unequal magnetic flux from said field(s) when said loops deviate from their prescribed paths to induce, in said loops, an electrical current in a first direction which, in the presence of said magnetic field(s), exerts a force on said loops tending to move the loops laterally toward the prescribed path.

60. A magnetic bearing system, comprising,

an object which includes a plurality of closed loops of electrically conductive material with a finite inductance,

a plurality of stationary magnet means which each produce first and second magnetic fields,

said object being rotatable about an axis of rotation so that said loops travel along a prescribed circular path relative to and through said magnetic fields of each magnet means,

said magnet means being located along said prescribed circular path, each magnet means including a magnet having north and south poles positioned in a same circumferential position of the prescribed circular path, said poles facing said path at positions where laterally opposed segments of the loop are simultaneously exposed respectively to said first and second magnetic fields, adjacent said magnets being spaced apart a distance of 0 to 2 D and each having a dimension of 0.5 D to 2 D measured parallel to said path where "D" is the length of a said loop measured parallel to said path,

a plurality of said magnets having their north and south poles located at different distances from the axis of rotation,

a plurality of said magnets having their north and south poles located at different axial positions with respect to said axis of rotation,

said magnetic fields of each magnet means being positioned to (a) subject the interior of said loop to magnetic flux to produce equal and opposed electromotive forces in said loop when said loop is on its prescribed circular path so that no electrical current flows in said loop, and (b) to subject the interior of said loop to magnetic flux to produce unequal and opposed electromotive forces in said loop when said loop deviates from its prescribed circular path so that an electrical current is induced in said loop; said electrical current having a first direction which, in the presence of said magnetic fields, exerts a force on said loop tending to move the loop toward the prescribed circular path,

L/R being approximately D/2 v, where the loop has a resistance R, a length D measured parallel to said path, a self-inductance L, and a relative velocity v; and,

flux compression means for providing magnetic flux lines which are opposite in direction to flux lines produced by current flowing in said loop, said flux compression means being nonmagnetic and electrically conductive and having a surface positioned adjacent to said loop so as to be struck by flux lines produced by current flowing in said loop.

5,302,875

ELECTROMAGNETIC MOTOR WITH TWO ROTATION SENSES PARTICULARLY INTENDED FOR A TIMEPIECE

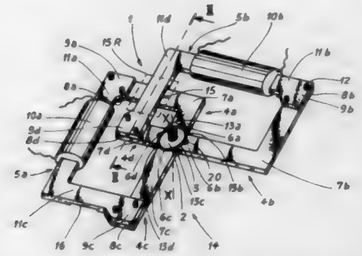
Daho Taghezout, Lausanne, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Granges, Switzerland

Filed Apr. 17, 1992, Ser. No. 872,703

Claims priority, application Switzerland, Apr. 19, 1991, 01169/91

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **15 Claims**



1. An electromagnetic motor of n phases, n being greater than 1, having n magnetic circuits, such motor including:

a stator defining a stator cavity and including 2n magnetic poles, each such pole comprising a polar expansion partially defining said stator cavity, a polar arm which extends from said polar expansion and a polar attachment lug serving as a magnetic contact at an end of said polar arm, said polar expansions being separated from one another by high magnetic reluctance zones forming necks, the stator further including n magnetic shunts, each having two attachment lugs and each magnetically coupling a separate pair of non-adjacent ones of said magnetic poles to one another;

a rotor mounted in the stator cavity for rotation relative to said stator around a rotation axis said rotor comprising a permanent magnet located in the stator cavity;

means mounted on each magnetic shunt for generating a magnetic flux in the non-adjacent pair of magnetic poles with which they are magnetically associated; each of said shunts forming, with said non-adjacent pair of magnetic poles with which they are magnetically associated and with the permanent magnet of the rotor, one of said magnetic circuits which is magnetically decoupled from the n−1 other magnetic circuits of the motor, said magnetic poles of the stator being formed by a single star-shaped piece, with said polar arms extending from said stator cavity, said polar expansions all being situated in a single and common plane perpendicular to the rotation axis of said rotor.

5,302,876

ROTOR OF SYNCHRONOUS MOTOR

Noboru Iwamatsu, and Syougo Higashi, both of Yamanashi, Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

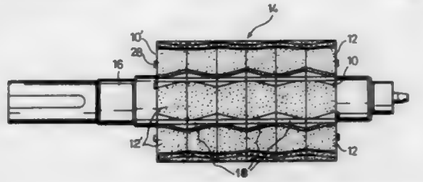
PCT No. PCT/JP92/00408, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO92/17931, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 2, 1992, Ser. No. 949,855

Claims priority, application Japan, Apr. 2, 1991, 3-69823

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **6 Claims**



1. A rotor core assembly for a rotor of a synchronous motor, comprising:

a plurality of rotor core units coaxially connected to each other in an axial direction, each of said plurality of rotor core units including a cylindrical auxiliary rotor core formed from a lamination of thin magnetic plates,

fastening means for integrally fastening and holding the lamination of the auxiliary rotor cores,

a plurality of auxiliary permanent magnets affixed on an outer periphery of each auxiliary rotor core at predetermined equal pitches in a circumferential direction, each of the plurality of auxiliary rotor cores being individually magnetized with said auxiliary permanent magnets affixed thereto,

aligning means for aligning the plurality of auxiliary permanent magnets between said plurality of rotor core units connected to each other so as to align bound surfaces located in the circumferential direction such that aligned auxiliary permanent magnets constitute a plurality of permanent magnets extending along an axial direction on an outer periphery of said rotor core assembly, and

fixing means for fixing said plurality of rotor core units so as to be connected to each other; and

a rotating shaft coaxially passing through said plurality of coaxially connected rotor core units and integrally affixed thereto, the aligning means of each of said plurality of rotor core units include projections formed on and projecting from at least one axial end face of each of the plurality of auxiliary rotor cores, and depressions formed in an opposing end face of an adjacent rotor core unit for alignably receiving the projections.

5,302,877

SURFACE ACOUSTIC WAVE DEVICE

Takahiro Sato, and Hidenori Abe, both of Toda, Japan, assignors to Nikko Kyodo Co. Ltd., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,514

Claims priority, application Japan, Mar. 16, 1992, 4-58306; Feb. 4, 1993, 5-17663

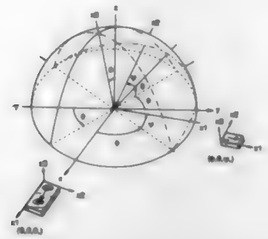
Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 A **20 Claims**

1. A surface acoustic wave device comprising a metal film formed on a surface of a lithium tetraborate single crystal substrate, the metal film being for exciting, receiving, reflecting and/or propagating surface acoustic waves,

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the metal film being so formed that a cut angle of the substrate, and a propagation direction of the surface acoustic



waves are in an Eulerian angle representation of (39°–51°, 66°–114°, −20°–20°) and directions equivalent thereto.

5,302,878

HIGH-FREQUENCY ACOUSTIC RHEOMETER AND DEVICE TO MEASURE THE VISCOSITY OF A FLUID USING THIS RHEOMETER

Arthur Soucemarianadin, St. Peray; Renaud Gaglione, Valence, and Pierre Attane, Grenoble, all of France, assignors to Imaje S.A., France

Filed Oct. 30, 1992, Ser. No. 969,338
Claims priority, application France, Oct. 30, 1991, 91 13434
Int. Cl.[5] G01N *11/02*; H01L *41/04, 41/18*
U.S. Cl. 310—360 **24 Claims**



1. An acoustic rheometer comprising a torsional-mode transducer including a piezoelectric crystal electrically excited by means of electrodes, designed to emit and receive torsional waves, coupled to a sensor of said torsional waves plunged into a tube of fluid to be measured, said torsional-mode transducer and said sensor being placed in a thermostat-controlled chamber, maintained at constant pressure, wherein:

said torsional-mode transducer is a cylinder crystal belonging to the sillenites class, having a height determining the resonance frequencies of the torsional-mode, and being provided with an electrical excitation means,

the sensor is a rod of an iron/nickel alloy having a low thermoelastic coefficient and connected rigidly to said torsional-mode transducer by means of a spot of bonder having a thickness far smaller than the wavelength of the torsional waves emitted by said torsional-mode transducer,

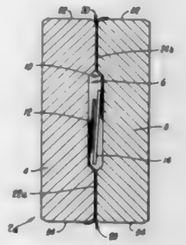
the respective diameters of said torsional-mode transducer and of the sensor being such that the coefficient of reflection at the interface of the transducer/sensor is zero.

5,302,879

TEMPERATURE/REFERENCE PACKAGE, AND METHOD USING THE SAME FOR HIGH PRESSURE, HIGH TEMPERATURE OIL OR GAS WELL

Charles D. Totty; Gary R. Dellinger, both of Duncan, Okla.; Michael P. Mahler, Roanoke, Tex.; Vincent P. Zeller, Flower Mound, Tex., and Everett D. Stokes, Cleburne, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 31, 1992, Ser. No. 999,441
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—361 **20 Claims**



1. A dual crystalline resonator package, comprising:

a first crystalline body having a cavity defined therein;

a second crystalline body having a cavity defined therein, said first and second crystalline bodies connected directly together so that said cavities adjoin;

a crystalline temperature resonator connected to said first crystalline body within said cavity thereof; and

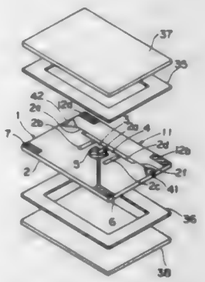
a crystalline reference resonator connected to said second crystalline body within said cavity thereof.

5,302,880

PIEZOELECTRIC TUNING FORK RESONATOR AND METHOD OF MANUFACTURING THE SAME

Hiroaki Kaida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 20, 1993, Ser. No. 64,944
Claims priority, application Japan, May 20, 1992, 4-127591; Jun. 19, 1992, 4-161468; Jun. 19, 1992, 4-161469
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—370 **9 Claims**



1. A piezoelectric tuning fork resonator comprising:

a piezoelectric substrate, said piezoelectric substrate having an edge;

an indentation formed extending inwardly from said edge of said piezoelectric substrate; and

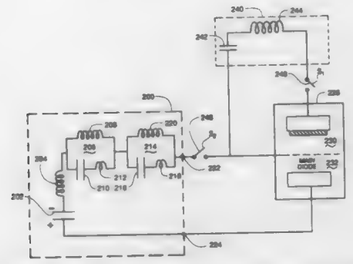
grooves extending inwardly in said piezoelectric substrate from said indentation, said grooves forming a tuning fork arm portion.

5,302,881

HIGH ENERGY CATHODE DEVICE WITH ELONGATED OPERATING CYCLE TIME

James P. O'Loughlin, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 8, 1992, Ser. No. 896,064
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.21 **19 Claims**



1. A method for segregating generation and use of charged plasma particles in a pulsed beam device to achieve increased charged particle operating cycle lifetime, said method comprising the steps of:

generating a positive charged particle and negative charged particle plasma in a particle generator portion of an evacuated enclosure;

accelerating selected of said charged plasma particles toward a particle transparent first electrode member in a plasma closing velocity responsive portion of said evacuated enclosure;

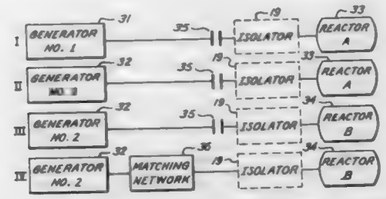
attracting particles, of said selected particles passing through said first electrode member, toward a particle collecting second electrode member in a closing velocity-immune, use portion of said evacuated enclosure.

5,302,882

LOW PASS FILTER FOR PLASMA DISCHARGE

Paul A. Miller, Albuquerque, N. Mex., assignor to Sematech, Inc., Austin, Tex.

Continuation of Ser. No. 756,649, Sep. 9, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,629
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.21 **13 Claims**



1. In a plasma processing apparatus, having a reactor for processing a reactive gas and wherein said reactor is coupled to a first electrical source which provides an electrical signal at a fundamental frequency f to generate an electrical energy field in said reactor for generation of plasma, the improvement comprising:

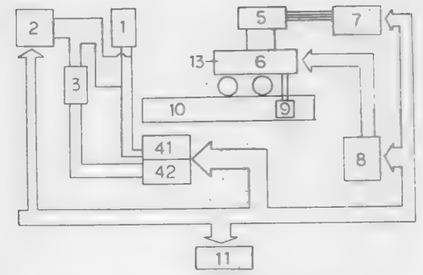
an electrical filter coupled between said reactor and said first electrical source for passing said frequency f, but inhibiting harmonics of said fundamental frequency f generated due to a non-linear response characteristic of said plasma in said reactor from interacting with electrical circuit parameters of said first electrical source, such that a second electrical source can be readily substituted in place of the first electrical source and wherein original plasma characteristics can be substantially restored by adjusting the amplitude of an electrical signal from said second electrical source at frequency f, but without requiring retuning of said second electrical source.

5,302,883

AUTOMATED APPARATUS AND METHOD FOR THE REPRODUCTION OF SAME COLOR TEMPERATURE LUMINOUS INTENSITY STANDARD LIGHT SOURCE

Kent-Hao Hwang, Chutung, Taiwan, assignor to Industrial Techology Research Institute, Chutung, Taiwan

Filed Oct. 23, 1992, Ser. No. 965,353
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—149 **5 Claims**



1. Apparatus for the reproduction of a standard light source having same color temperature luminous intensity from a standard illuminant at a designated color temperature, comprising:

a power supply for supplying electric power;

a light source coupler used to make an electrical connection between said power supply and said standard illuminant or said standard light source to be reproduced;

a light detector assembly, comprising at least a first wavelength spectral irradiance detector and a second wavelength spectral irradiance detector for detecting intensities of a spectral irradiance component at a first wavelength and a spectral irradiance component at a second wavelength component, respectively, of light emitted by said standard illuminant or said standard light source to be reproduced when coupled with said coupler;

a displacement apparatus for mounting and driving said light detector assembly so that it adjusts a test distance relative to said light source coupler;

a system controller, comprising:

memory means, for recording detected values of said intensities of said second wavelength spectral irradiance component, designated as S1, and of said first wavelength spectral irradiance component, designated as S3, the ratio between S1 and S3, designated as R1 (i.e., R1=S1/S3), the luminous intensity, designated as I_S, of the standard illuminant, and the test distance, designated as r_s, under a predetermined voltage or current;

first controlling and recording means, for controlling an input voltage or current to said standard light source to be reproduced, for setting predetermined values, and for recording values of said input voltage or current;

second controlling and recording means, for controlling the distance between said light detector assembly and said standard light source to be reproduced, and recording said distance as r_t;

recording and calculating means for recording, based on output signals of said light detector assembly, detected

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values of intensities of said second wavelength spectral irradiance component, designated as S2, and of said first wavelength spectral irradiance component, designated as S4 ,and the ratio between S2 and S4, designated as R2 (i.e., R2=S2/S4);

first control means, which compares the values of R2 and R1, and when R2>R1, issues a command to said first controlling and recording means to raise input voltage to said standard light source to be reproduced; otherwise, to lower input voltage until R2=R1;

second control means, which compares the values of S2 and S1, and when S2>S1, issues a command to said second controlling and recording means to increase the distance from said light detector assembly to said standard light source to be reproduced; otherwise, to reduce said distance until S2=S1, and record said distance as r_f, and;

calculation means, which uses the following formula to calculate a luminous intensity I_f of said standard light source to be reproduced when R2=R1 and S2=S1;

$I_f = I_0 * ((r_0)^2/(r^f)^2)$, and;

recording means for recording said luminous intensity I_f of and input current to said standard light source to be reproduced when R2=R1 and S2=S1.

5,302,884

POWER SUPPLY SYSTEM AND METHOD FOR LINEAR STATOR MOTOR

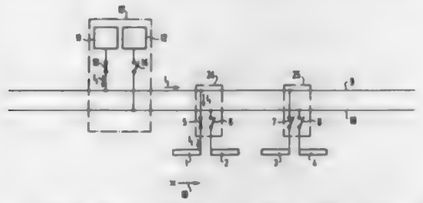
Rolf Fischperer, and Jan Maj, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 16, 1992, Ser. No. 946,271

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1991, 4130779

Int. Cl.[5] B60L *13/00*; H02P *19/00*

U.S. Cl. 318—135 **20 Claims**



1. A power supply system for a linear stator motor for a magnetic suspension vehicle travelling along a travel path, which motor has a stator winding divided into a plurality of switching segments that are alternately assigned to a first and a second cable route system, said power supply system comprising:

a) a plurality of segment switches, one interposed between each of said plurality of switching segments and its assigned cable route system;

b) a first power supply device for the first cable route system;

c) a second power supply device for the second cable route system;

d) a first feed switch, said first feed switch being interposed between the first power supply device and the first cable route system;

e) a second feed switch, said second feed switch being interposed between the second power supply device and the second cable route system; and

f) a first controllable coupling switch coupling the first and second cable route systems with each other, wherein by controlling said controllable coupling switch a switching segment in which the magnetic suspension vehicle is located at a specific time is always connected with the first and second cable route systems and when changing from one switching segment to another switching segment both switching segments are each coupled to only one cable route system.

5,302,885

STARTING DEVICE FOR A SINGLE PHASE INDUCTION MOTOR

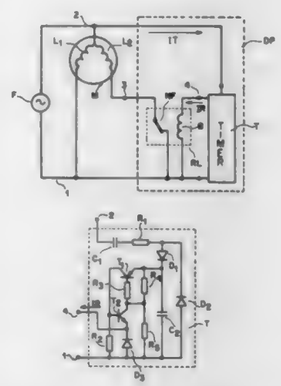
Marcos G. Schwarz, and Egidio Berwanger, both of Joinville, Brazil, assignors to Empresa Brasileira de Compressores S.A.-Embraco, Joinville-SC, Brazil

Filed Jan. 29, 1992, Ser. No. 827,206

Claims priority, application Brazil, Jan. 30, 1991, PI9100477

Int. Cl.[5] H02P *1/44*

U.S. Cl. 318—781 **21 Claims**



1. Starting device for a single phase induction motor, of the type having a cage type rotor and a stator with at least one main winding and one starting winding connected in series with first and second terminals of an alternating current source comprising:

a relay having at least one contact with a pair of terminals, one of the terminals of said contact being connected to the first terminal of the alternating current source and the other terminal connected to the starting winding:

a coil for actuating the relay;

an electronic timer circuit connected to the coil for actuating the relay to open the relay contact by supplying a current to the coil thereof to end the starting operation of the motor after a period of time has elapsed from the motor powering up, said electronic timer circuit comprising:

a current limiting circuit having a first terminal connected to the second terminal of the alternating current source and a second terminal;

a rectifier circuit with an input connected to the second terminal of the current limiting circuit and an output;

a timing capacitor having its terminals connected between the output of said rectifier circuit and the first terminal of the supply source; and

output terminals respectively connected to the terminals of the timing capacitor and which are in turn connected to the coil for actuating the relay.

5,302,886

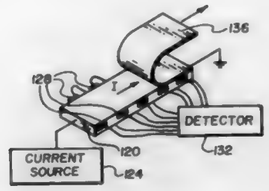
MECHANICAL/ELECTRICAL DISPLACEMENT TRANSDUCER

Stephen C. Jacobsen; Michael G. Mladejovsky, and John E. Wood, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 417,181, Oct. 4, 1989, abandoned. This application Mar. 9, 1993, Ser. No. 28,767

Int. Cl.[5] G01R *29/12*; H04R *19/00*

U.S. Cl. 318—568.016 **6 Claims**



1. Displacement measuring apparatus comprising

an element whose displacement is to be measured,

sensor means including a substrate having a first surface area,

an elongate, flexible, electrically conductive band having a first end and a second end, said first end of the band being coupled to said element to move when said element is moved, and said second end of the band being joined to the first surface area so that at least a portion of the band overlies the first surface area, the amount of such portion varying as the first end of said band is moved, and

said sensor means further including means, at least a portion of which is disposed at the first surface, for detecting the portion of the band overlying the first surface area and thus the displacement of said element, wherein said detecting means comprises a field-effect transistor having a source region, at least one drain region, and a channel region positioned between the source region and drain region.

5,302,887

CHARGING APPARATUS

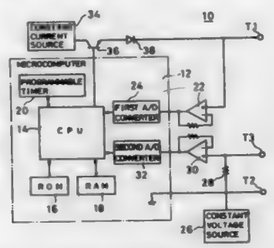
Kazutoshi Ishiguro, and Makoto Nojima, both of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 751,320, Aug. 28, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 85,130

Claims priority, application Japan, Dec. 1, 1990, 2-400070; Dec. 1, 1990, 2-400073; Dec. 6, 1990, 2-400600; Jun. 26, 1991, 3-154821

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—32 **17 Claims**



1. A charging apparatus, comprising:

power source means for supplying a charging current to a secondary battery;

battery voltage value holding means for holding a battery voltage value of said secondary battery;

predicted time setting means for setting a predicted time during which the battery voltage of the secondary battery to be charged will increase by a predetermined voltage and for continually adjusting the predicted time on the basis of the battery voltage value previously held in said battery voltage value holding means; and

terminating means for stopping said charging current from being supplied to said secondary battery when the battery voltage of said secondary battery is not increased by said predetermined voltage within said predicted time.

5,302,888

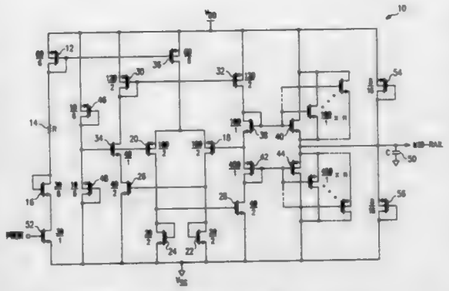
CMOS INTEGRATED MID-SUPPLY VOLTAGE GENERATOR

James R. Hellums, Plano, and Henry T. Yung, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 1, 1992, Ser. No. 861,759

Int. Cl.[5] G05F *3/26*

U.S. Cl. 323—280 **17 Claims**



17. A voltage generator comprising:

a differential amplifier having a positive input coupled to a selected mid-rail voltage, a negative input and first and second outputs;

a pair of diode connected transistors establishing a current path between said outputs of said differential amplifier, sources of said pair of transistors coupled to said negative input, a gate and a drain of a first transistor of said pair driven by said first output, and a gate and drain of a second transistor of said pair driven by said second output; and

a pair of output transistors establishing a second current path between said high voltage rail and said low voltage rail, a first one of said output transistors mirroring current flow in said first one of diode connected transistors and a second one of said output transistors mirroring current flow in said second one of said diode connected transistors, a current gain of each of said output transistors being substantially equal.

5,302,889

VOLTAGE REGULATOR

Brian J. Marsh, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 19, 1992, Ser. No. 901,641

Int. Cl.[5] G05F *1/56*

U.S. Cl. 323—284 **19 Claims**

1. A voltage regulator, comprising:

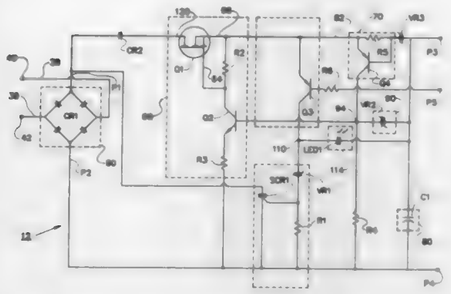
first and second circuit points connectable to a source of rectified AC power;

third and fourth circuit points connectable to a device requiring DC power;

means connected between said third and fourth circuit points for storing power;

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means for monitoring a current flow between said first and third circuit points;
means for monitoring the voltage potential between said third and fourth circuit points;
means for controlling said current flow between said first and second circuit points, said controlling means being responsive to said current flow monitoring means and said voltage potential monitoring means;
means for connecting and disconnecting said first and second circuit points in shorted electrical communication with each other;
means, responsive to a preselected signal from said device, for causing said connecting and disconnecting means to connect said first and second circuit points in shorted electrical communication with each other; and
means, responsive to said causing means, for charging said storing means more rapidly in response to a presence in said preselected signal than in an absence of said preselected signal.

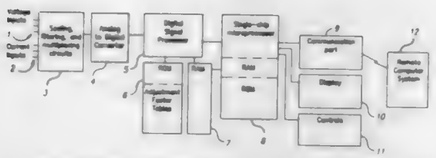


5,302,890

HARMONIC-ADJUSTED POWER FACTOR METER

Alexander McEachern, Oakland, Calif., and W. Mack Grady, Round Rock, Tex., assignors to Basic Measuring Instruments, Foster City, Calif.

Division of Ser. No. 841,392, Feb. 25, 1992, Pat. No. 5,212,441. This application Oct. 6, 1992, Ser. No. 957,252
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—142 **1 Claim**



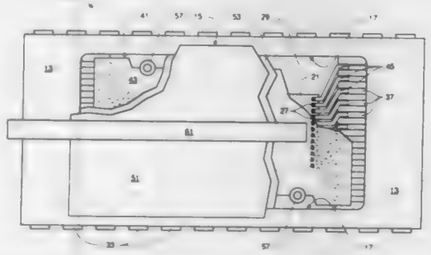
1. A method for measuring electric power consumed by a power consumer, comprising the steps of:
a. measuring time-domain current samples from time-domain current consumed by the consumer;
b. transforming the time-domain current samples to frequency-domain current;
c. storing current adjustment tables;
d. adjusting the frequency-domain current for forming an adjusted current having a predetermined relationship to the frequency-domain current;
e. measuring time-domain voltage samples from time-domain voltage consumed by the consumer;
f. transforming the time-domain voltage samples to frequency-domain voltage;
g. storing voltage adjustment tables;
h. adjusting the frequency-domain voltage for forming an adjusted voltage having a predetermined relationship to the frequency-domain voltage; and
i. calculating an adjusted power factor using the adjusted current and the adjusted voltage.

5,302,891

DISCRETE DIE BURN-IN FOR NON-PACKAGED DIE

Alan G. Wood; Tim J. Corbett; Gary L. Chadwick; Chender Huang, and Larry D. Kinsman, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 709,858, Jun. 4, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 973,931
Int. Cl.[5] G01R *31/02, 1/073*
U.S. Cl. 324—158 F **43 Claims**



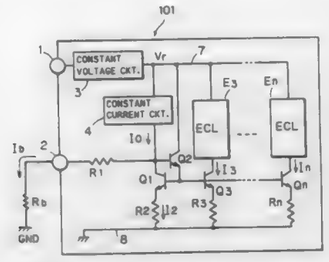
1. Discrete testing apparatus for testing a semiconductor device in die form, comprising:
a) a first plate;
b) a die-receiving cavity in the first plate;
c) a second plate;
d) means to secure the first and second plates together;
e) an insulative substrate, separate from the first and second plates having a plurality of circuit traces thereon and dimensioned so as to fit within said die receiving cavity being received by the die receiving cavity prior to insertion of the die in a position juxtaposed to a face side of the die when the die is in the die receiving cavity, so that the insulative substrate is at least partially contained within the die receiving cavity when the first and second plates are secured together, and means to retain the insulative substrate is received in the die receiving cavity prior to placement of the die into the die receiving cavity;
f) a plurality of contacts on the plurality of circuit traces, the contacts being positioned so that, when the first plate and the second plate are aligned and the die and the insulative substrate are positioned in the die-receiving cavity, the contacts are in alignment with contact locations on the die;
g) connector terminals in an electrical communication with the plurality of contacts; and
h) means to bias the die and the insulative substrate together when the first plate and the second plate are secured together, thereby causing the contacts to be maintained in electrical communication with said contact locations;
i) the means to secure including a clamp, the clamp extending across at least one of the first and second plates to secure the first and second plates together, wherein
when the first and second plates are secured together with the die in the die receiving cavity, a plurality of said contact locations are in electrical communication with the connector terminals.

5,302,892

SEMICONDUCTOR INTEGRATED CIRCUIT

Masashige Tada, and Takehiko Umeyama, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,638
Claims priority, application Japan, Sep. 12, 1991, 3-232859
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **33 Claims**



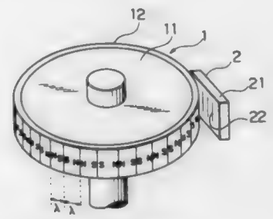
19. A semiconductor integrated circuit, comprising:
at least one ECL circuit;
a current supply circuit for supplying bias current to said ECL circuit;
a constant current circuit for outputting a constant current signal;
a transistor having a first electrode to which the constant current signal circuit is connected for receiving the constant current from the constant current circuit, a second electrode to which a first resistor is connected, and a control electrode to which said current supply circuit is connected; and
a test terminal connected to said first electrode of the transistor for varying a value of said bias current supplied by the current supply circuit.

5,302,893

MAGNETIC ENCODER HAVING A MAGNETIC RECORDING MEDIUM CONTAINING BARIUM-FERRITE

Kuniaki Yoshimura, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Aug. 7, 1991, Ser. No. 741,623
Claims priority, application Japan, Sep. 4, 1990, 2-234118
Int. Cl.[5] G01R *33/00;* **G01B** *7/14*
U.S. Cl. 324—207.22 **4 Claims**



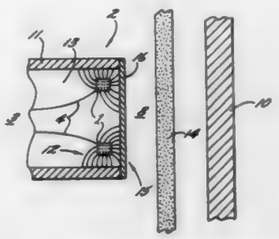
1. A magnetic encoder comprising:
a non-magnetic substrate which can be moved or rotated;
a film-like magnetic recording medium formed on the substrate including a magnetic coating material which contains barium-ferrite magnetic powder particles, said particles having a mean particle size of 0.2 to 1.5 μm and a coercive force of 1,500 to 3,000 Oe, the medium being magnetically recorded; and
a magnetic sensor arranged to be opposed to the medium.

5,302,894

NONCONTACTING DISPLACEMENT MEASURING SYSTEM HAVING AN ELECTRIC FIELD SHIELD

Franz Hrubes, Rottalmünster, Fed. Rep. of Germany, assignor to Micro-Epsilon Messtechnik GmbH & Co. KG, Ortenburg, Fed. Rep. of Germany

PCT No. PCT/DE90/00090, § 371 Date Sep. 30, 1991, § 102(e) Date Sep. 30, 1991, PCT Pub. No. WO90/12274, PCT Pub. Date Oct. 18, 1990
PCT Filed Feb. 12, 1990, Ser. No. 768,540
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1989, 3910297
Int. Cl.[5] G01B *7/14;* **G01N** *27/90*
U.S. Cl. 324—207.16 **13 Claims**



1. A noncontacting displacement measuring system comprising:
a sensor with a measuring side and a connection side;
an electronic supply/evaluation units;
a cable having two inner conductors and leading from said sensor to said electronic supply/evaluation unit;
said sensor comprising a housing, at least one coil, and an embedding substance for anchoring said at least one coil and said inner conductors from said cable within said housing; and
a shield positioned adjacent the measuring side of said sensor, said shield having a predetermined thickness and comprising a material so that said shield is both substantially impervious to electric field lines emanating from said at least one coil and substantially permeable to electromagnetic field lines emanating from said at least one coil;
said electronic supply/evaluation unit including means cooperating with said sensor for operating based upon one of an eddy-current basis and an induction basis;
whereby said shield substantially eliminates an influence on a measurement caused by a contaminating material having a high dielectric constant temporarily interposed between said sensor and an object being measured.

5,302,895

JOINT OR DISCONTINUITY DETECTOR FOR USE WITH PIPES AND THE LIKE

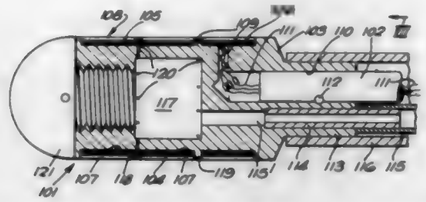
Frank V. Philpot, Rowlands Castle, United Kingdom, assignor to British Gas PLC, London, United Kingdom

PCT No. PCT/GB89/00297, § 371 Date Oct. 5, 1990, § 102(e) Date Oct. 5, 1990, PCT Pub. No. WO89/09417, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 21, 1989, Ser. No. 573,311
Claims priority, application United Kingdom, Mar. 26, 1988, 8807301
Int. Cl.[5] G01N *27/72, 27/82;* **G01R** *33/00*
U.S. Cl. 324—220 **26 Claims**

1. Apparatus for detecting a discontinuity in a pipe and for supplying a sealant to seal the discontinuity so detected, the apparatus comprising means for generating an electrical drive current, a sonde having a body with transmitting coil means to be subjected to the drive current and adapted to induce a magnetic field in two adjacent portions of the pipeline and receiving coil means adapted to have induced therein voltages

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from the portions and to provide a signal when the magnetic field in one portion of the pipeline differs from that in the other portion of the pipeline due to the fact that the discontinuity lies in the vicinity of one or other of the portions and means for detecting the signal, the sonde body having a surface at which



there terminates a plurality of sealing compound jetting nozzle drillings extending through and circumferentially around the body, the plurality of nozzle drillings being connected to a sealing compound supply pipe whereby on detecting the discontinuity the compound can be supplied to the plurality of nozzle drillings to seal the discontinuity.

5,302,896

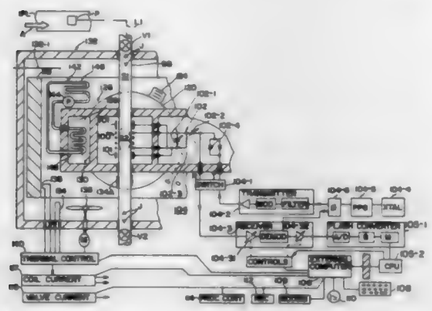
MAGNETIC RESONANCE ANALYSIS IN REAL TIME INDUSTRIAL USAGE MODE

Ronald L. Dechene, Boxford, Mass.; Thomas B. Smith, Atkinson, N.H.; Scott A. Marino, Haverhill, and Ajoy K. Roy, Danvers, both of Mass., assignors to Auburn International, Inc., Danvers, Mass.

Filed Nov. 20, 1991, Ser. No. 794,931

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—307 **19 Claims**



1. Magnetic resonance system for industrial process monitoring of the number of bound (Abragam), intermediately bound (slow Gaussian) and unbound (exponential) magnetically active nuclei in a sample, by exciting these nuclei and measuring the sample relaxation free induction decay of said nuclei, comprising:

(a) means for accessing and removing successive samples of material from an industrial process, placing them in a sample measuring region and discarding successive samples from said region,

(b) means for applying a base magnetic field to said region to effect precession on sample magnetically active nuclei therein and means for applying a local excitation pulse to said region to modify the precession, wherein said excitation pulse comprises frequency characteristics offset from resonance, by more than 0.1 KHz,

(c) means defining receive antenna coil means and signal translating means interacting with the sample to detect the sample relaxation free induction decay to form an electronic signal over time from said free induction decay indicating the form of decay,

(d) means for establishing a digitized version of the electronic signal indicator of free induction decay and means for analyzing the electronic signal to components of the electronic signal, said components including, in time sequence, Abragam, slow Gaussian and exponential portions, said means for analysis comprising:

means for determining the time equation of each of said electronic signal components, and establishing zero intercepts, and time constants of said electronic signal components, from which the number of bound (Abragam), intermediately bound (slow Gaussian), and unbound (exponential) magnetically active nuclei are determined.

5,302,897

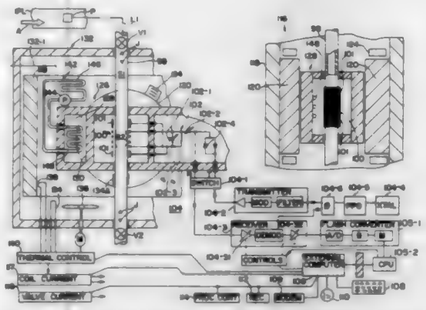
NMR ANALYSIS OF POLYPROPYLENE IN REAL TIME

Ronald J. Tache, Malden; Ajoy Roy, Danvers; Ronald L. Dechene, Boxford, all of Mass.; Thomas B. Smith, Atkinson, N.H., and Scott A. Marino, Haverhill, Mass., assignors to Auburn International, Inc., Danvers, Mass.

Filed May 19, 1992, Ser. No. 885,633

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—307 **9 Claims**



1. Magnetic resonance system for industrial process monitoring of polypropylene materials with unknown proportions of component nucleus structures of varying mobilities of relaxation from precession in magnetic resonance measuring processes, the system comprising:

(a) means for accessing and removing successive samples of polypropylene from an industrial process, placing them in a sample measuring region and discarding successive samples from said region,

(b) means for applying a base magnetic field to said region to effect precession of sample nuclei therein and applying a local excitation pulse to said region to modify the precession, wherein said excitation pulse comprises frequency characteristics offset from resonance,

(c) means defining transmit/receive antenna coil means and signal translating means interacting with the sample to effect a precession of nuclei to be measured and relaxation detected at the coil means as a free induction decay curve,

(d) means for establishing a digitized version of the free induction decay and making an analysis of it to components of the decay curve corresponding to true characteristics of the samples, said analysis comprising:

establishing zero intercepts and time characteristics from said curve components

and wherein said means (a)–(c) are constructed and arranged to effect such measurement and analysis to measure the number of decay curve regions corresponding to structures of differing mobilities of relaxation.

5,302,898

ELECTRON SPIN RESONANCE SPECTROMETERS

Ronald Pethig; Myles H. Capstick, both of Gwynedd, Great Britain, and Peter R. C. Gascoyne, Bellaire, Tex., assignors to Gyros Technology Limited, United Kingdom

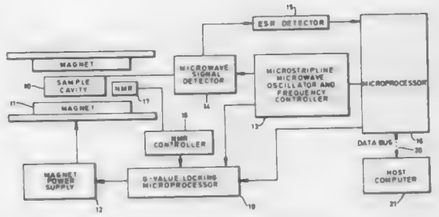
PCT No. PCT/GB90/01300, § 371 Date Apr. 16, 1992, § 102(e) Date Apr. 16, 1992, PCT Pub. No. WO91/02967, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 17, 1990, Ser. No. 834,225

Claims priority, application United Kingdom, Aug. 17, 1989, 8918902

Int. Cl.[5] G01R *33/08*

U.S. Cl. 324—316 **7 Claims**



1. An electron spin resonance spectrometer for measuring free-radical resonance of a material comprising:

(1) a material-receiving cavity positioned between poles of a permanent magnet;

(2) means for applying microwave energy having a frequency to the cavity;

(3) electromagnetic means for measuring the frequency of the microwave energy applied to the cavity and which in conjunction with the permanent magnet provides a magnetic field of variable strength to the cavity;

(4) means for adjusting the strength of the magnetic field in the cavity;

(5) means for detecting changes in the microwave energy which is reflected from the cavity;

(6) means for analyzing the changes detected in the microwave energy reflected from the cavity;

(7) a sample-receiving reference cell positioned between the poles of the permanent magnet and parallel to the material-receiving cavity;

(8) means for measuring a nuclear magnetic resonance frequency of a sample present in the reference cell;

(9) means for calculating from the nuclear magnetic resonance frequency measured the magnetic field to be provided by the permanent magnet to the cavity and the reference cell; and

(10) means for applying the magnetic field as calculated by the means for calculating the magnetic field to control the strength of the magnetic field provided by the permanent magnet.

5,302,899

METHOD AND DEVICE FOR COMPENSATING OF FIELD DISTURBANCES IN MAGNETIC FIELDS

Oskar Schett, Uster, and Arthur Schwilch, Schwerzenbach, both of Switzerland, assignors to Spectrospin AG, Switzerland

Filed Jul. 7, 1992, Ser. No. 910,661

Claims priority, application European Pat. Off., Jul. 11, 1991, 91111546.7

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—318 **18 Claims**

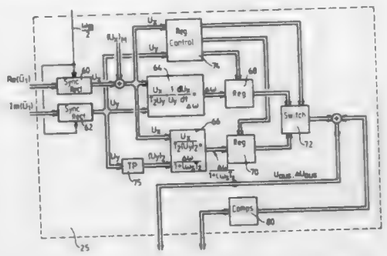
1. Method for compensation of time varying field disturbances in magnetic fields of electromagnets with high field homogeneity using a field correction coil and an NMR RF transmitter and receiver said method comprising the steps of:

a) exciting a reference substance with the NMR transmitter;

b) detecting an NMR signal with the NMR receiver;

c) separating the NMR signal into a dispersion signal u_x and an absorption signal u_y;

d) converting the dispersion signal u_x and absorption signal u_y into a first weighted signal u_x/u_y and a second weighted signal $(1/u_y)\ (du_x/dt)$;



e) generating a current, dependent on the weighted signals, in the field correction coil for compensating a field disturbance; and

f) repeating the steps a) through e) to compensate the time varying field disturbances.

5,302,900

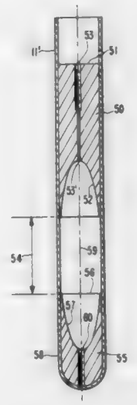
NMR SAMPLE SHAPER

Michael D. Cummings, Sunnyvale, Calif., assignor to Varian Associates Inc., Palo Alto, Calif.

Continuation of Ser. No. 811,443, Dec. 19, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,352

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—321 **5 Claims**



1. In a sample tube designed to fit into an NMR probe for insertion into an H_0 field and to couple a sample to an interaction observe region with coil turns for exciting and receiving NMR radio frequency energy, said tube being a glass, thin walled elongated structure having a tube axis, an open end and a closed end, and a uniform circular cross section of a first diameter D throughout said interaction observe region,

the improvement comprising:

said tube axis being co-axial with said H_0 field;

means to provide a first and second volume within said tube, said first volume being outside said interaction observe region and between said interaction region and said closed end and being adjacent to said closed end, said second volume of said tube being outside said interaction observe region and between said interaction region and said open

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end, the shape of said first and second volume of said tube being mathematically defined as bodies of revolution such that said volumes satisfy the equation, Volume$=\pi\int y^2dz$ where the axis of revolution is said tube axis z, and where z is distance along said axis measured from said observe interaction region and where y is the perpendicular distance from said tube axis to the surface defining said volume and wherein y decreases as a function of distance from said interaction region and wherein the perpendicular distance from said tube axis to said tube surface of said first and second portions are substantially symmetrical functions of z such that $y=f(-z)=f(+z)$.

5,302,901

MAGNETIC RESONANCE APPARATUS COMPRISING DECOUPLED RECEIVER COILS

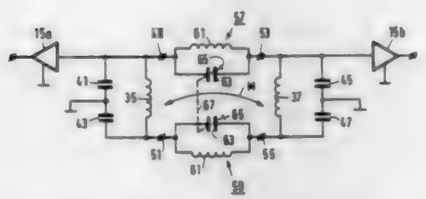
Jeroen Snelten, Eindhoven, Netherlands, assignor to U.S Philips Corporation, New York, N.Y.

Filed Aug. 20, 1992, Ser. No. 932,870

Claims priority, application European Pat. Off., Aug. 26, 1991, 91202168.0

Int. Cl.[5] **G01R** *33/20*

U.S. Cl. 324—322 **12 Claims**



1. A magnetic resonance apparatus comprising a magnet system for generating a steady magnetic field, a coil system for generating a gradient field, an RF transmitter coil, and an RF receiver coil system for detecting magnetic resonance signals generated in an object, which RF receiver coil system comprises first and second receiver coils which are coupled to one another by an unwanted coupling due to mutual inductance, and a decoupling network means for producing a compensation coupling between said first and second coils which is opposite in sign and substantially equal in magnitude to said unwanted coupling due to mutual inductance, which network means comprises first and second terminals which are connected to opposite ends, respectively, of the first receiver coil and third and fourth terminals which are connected to opposite ends, respectively, of the second receiver coil, said decoupling network means comprising a first circuit of variable impedance which interconnects the first and third terminals and a second circuit of variable impedance which interconnects the second and fourth terminals, said first and second circuits being variable in impedance over a range including both inductive and capacitive reactance such that the compensation coupling produced by said decoupling network means is variable in both sign and magnitude.

5,302,902

ABNORMAL BATTERY CELL VOLTAGE DETECTION CIRCUITRY

Lawrence R. Groehl, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1991, Ser. No. 691,908

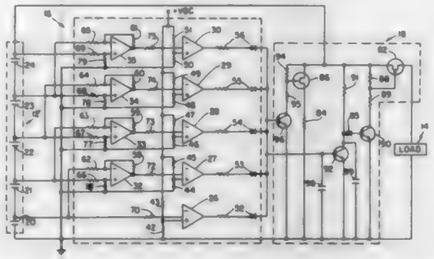
Int. Cl.[5] **G01N** *27/416*

U.S. Cl. 324—434 **2 Claims**

2. A detector for indicating when the pressure within at least one cell of a lithium type battery reaches a dangerous level, comprising:

means for referencing each cell to a common ground while generating a control signal when the voltage output from at least one cell becomes abnormally low; and

transistors arranged in cooperating groups of three with each said group including a pair of bipolar junction transistors and a field effect transistor, each said bipolar junction transistor being controlled at a base terminal and each said field effect transistor being controlled at a gate terminal;



each said cooperating group of three transistors having said field effect transistor therein connected to pass current from the battery and having said control signal applied therein to the base terminal of one transistor in said bipolar junction transistor pair, while the gate terminal of said field effect transistor therein is driven by the other transistor in said bipolar junction transistor pair to control the current passing through said field effect transistor.

5,302,903

MASTITIS DETECTOR FOR DAIRY CATTLE

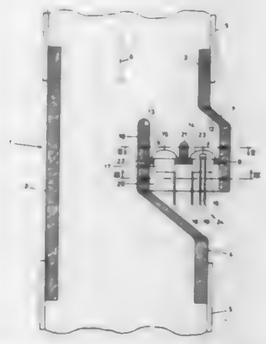
Hendrik J. De Jong, Groenlo; Albertino B. M. Verstege, Aalten, and Pieter H. Hogewerf, Wageningen, all of Netherlands, assignors to N.V. Nederlandsche Apparatenfabriek NEDAP, De Groenlo, Netherlands

Continuation of Ser. No. 520,199, May 9, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 959,536

Claims priority, application Netherlands, May 10, 1989, 8901165

Int. Cl.[5] **G01N** *27/02*

U.S. Cl. 324—446 **10 Claims**



1. In a throughflow-type mastitis detector comprising an inlet stub and an outlet stub by means of which the mastitis detector is coupled to a milk tube; a measuring chamber having side walls, a closed bottom, and an opening opposite said bottom in spaced relationship to said inlet stub, through which opening the milk to be monitored, supplied through the inlet stub, flows into the measuring chamber, and through which the milk can again leave the measuring chamber when the level of the milk within the measuring chamber exceeds the height of the lowest side wall portion; and a pair of electrodes in the bottom of said measuring chamber for measuring the electrical conductivity of the milk, the improvement which comprises that at least one of the electrodes has a head projecting above the surface of the closed bottom and a shank extending through an opening in the bottom wherein said head has a larger diameter than the shank and presents a shoulder portion resting flush on the surface of said closed bottom such that no gaps exist substantially perpendicular with respect to the surface of the closed bottom between the closed bottom and the head of said at least one electrode, whereby bacteria colonies are prevented from developing between said at least one of the electrodes and the closed bottom of said measuring chamber.

5,302,904

METHOD OF DETECTING INSULATION FAULTS AND SPARK TESTER FOR IMPLEMENTING THE METHOD

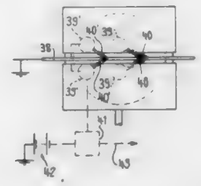
Peter Nopper, Lyss, Switzerland, assignor to Zumbach Electronic AG, Orpund, Switzerland

Filed Sep. 30, 1992, Ser. No. 953,717

Claims priority, application Switzerland, Oct. 29, 1991, 03154/91

Int. Cl.[5] **G01R** *31/08, 31/12*

U.S. Cl. 324—536 **18 Claims**



1. In a method of detecting insulation faults in a test object, including applying a voltage to a layer of insulation of the object by means of electrodes that contact the surface of the insulation; and detecting and counting pulses caused by sparkovers of the applied voltage due to defects in the insulation; the improvement wherein said step of applying comprises applying a relatively low voltage of 800 to 5000 V by means of carbon fiber brush electrodes.

5,302,905

APPARATUS AND METHOD FOR DETECTING AND ISOLATING NOISE-CREATING IMBALANCES IN A PAIRED TELECOMMUNICATIONS LINE

Robert G. Crick, San Diego, Calif., assignor to Tempo Research Corporation, Vista, Calif.

Continuation-in-part of Ser. No. 671,045, Mar. 18, 1991, Pat. No. 5,157,336. This application Sep. 23, 1992, Ser. No. 949,438

Int. Cl.[5] **G01R** *31/02, 31/08*

U.S. Cl. 324—613 **16 Claims**

1. An apparatus for measuring noise in a paired line comprising:

a first contact engagable with a first conductor of said line;

a second contact engagable with a second conductor of said line;

measuring means in electrical communication with said first and second contacts for measuring metallic voltage signals generated by an imbalance between said first conductor and said second conductor representative of a noise in said line;

a first voltage inlet pathway across which said measuring means electrically communicates with said first contact;

a second voltage inlet pathway across which said measuring means electrically communicates with said second contact;

a first balanced pathway in electrical communication with said first contact;

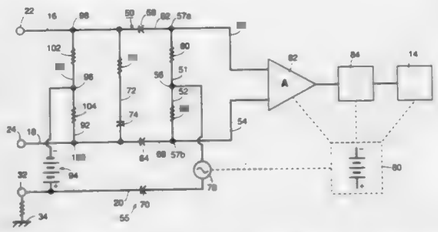
a second balanced pathway in electrical communication with said second contact, said first balanced pathway substantially electrically balanced with said second balanced pathway;

an alternating current source electrically connected to said first contact across said first balanced pathway and to said second contact across said second balanced pathway to provide an alternating current signal to said paired line; and

a first high voltage bias pathway in electrical communication with said first contact;

a second high voltage bias pathway in electrical communication with said second contact;

a direct current source electrically connected to said first contact across said high voltage bias pathway and to said second contact across said second high voltage bias pathway to provide a direct current signal to said paired line.



5,302,906

METHOD AND ARRANGEMENT FOR DETERMINING A LOAD ANGLE OF A GENERATOR WHICH IS CONNECTED TO AN ELECTRICAL SUPPLY NETWORK

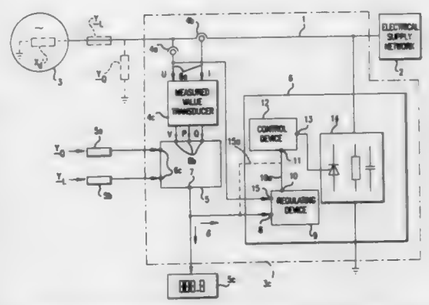
Edwin Lerch, Poxdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE90/00224, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/15047, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 21, 1990, Ser. No. 927,298

Int. Cl.[5] **H02J** *3/24*

U.S. Cl. 324—650 **9 Claims**



1. A method for controlling fluctuations in real power in an electrical supply network, which includes a generator coupled to the electrical supply network via a line, the method comprising the steps of:

a) detecting measured values of current and voltage at any desired location within the electrical supply network;

b) providing the measured values to a measured value transducer;

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c) forming a voltage signal V, a real power flow signal P, and a reactive power flow signal Q in said measured value transducer;

d) performing a reduction of the electrical supply network to determine equivalent variables for the generator and line parallel reactance component Y_Q and for the generator and line series reactance component Y_L;

e) providing the signals Q, P, V, Y_Q and Y_L to a computing device;

f) determining an angular measure δ of a load angle of the generator according to the following equation:

$$\delta = -\tan^{-1}\left\{\frac{Im\left(V-\left(\frac{P-jQ}{V}-Y_QV\right)Y_L^{-1}\right)}{Re\left(V-\left(\frac{P-jQ}{V}-Y_QV\right)Y_L^{-1}\right)}\right\}$$

where Im denotes an imaginary part, Re denotes a real part and j denotes a complex operator, and Y_Q and Y_L are complex variables;

g) providing the angular measure of the load angle δ to a reactive power compensator; and

h) controlling the real power in the electrical supply network with a reactive power compensator by using the angular measure of the load angle δ as a controlled variable in the reactive power compensator.

5,302,907

METHOD OF AND APPARATUS FOR ASCERTAINING A CHARACTERISTIC VALUE OF A HIGH-FREQUENCY OSCILATOR

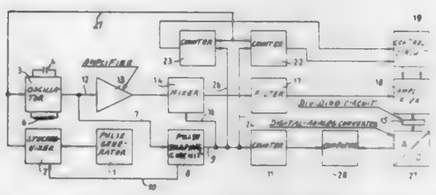
Norbert Hohenstein, Glinde, and Dierk Schröder, Hamburg, both of Fed. Rep. of Germany, assignors to Korber AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 378,865, Jul. 12, 1989, abandoned. This application Oct. 22, 1992, Ser. No. 965,043

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1988, 3825111

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—655 **11 Claims**



1. A method of ascertaining a characteristic value of a self-oscillating harmonic high-frequency oscillator which oscillates during intervals between periodically occurring short-lasting excitations and contains an impedance, comprising the steps of exciting the oscillator including periodically applying first electrical pulses thereto; generating second pulses having a frequency corresponding to the frequency of oscillations during said intervals; rectifying the oscillations during each interval with the corresponding second pulses; generating first signals denoting the envelope curves of oscillations during intervals of oscillations between successive excitations of the oscillator; sampling each first signal and generating second signals corresponding to the values of each sampled first signal during predetermined times of the respective interval; and generating third signals denoting damping and constituting quotients of second signals for each first signal.

5,302,908

HIGH PRECISION PHASE COMPARATOR AND PHASE LOCKED LOOP

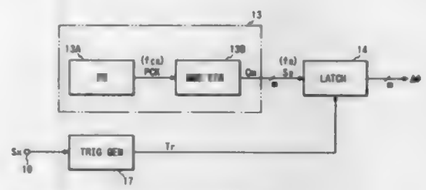
Yoshiaki Tarusawa, Yokohama; Toshio Nojima, Yokosuka, and Kazuaki Murota, Yokohama, all of Japan, assignors to NTT Mobile Communications Network Inc. and Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,163

Claims priority, application Japan, Jan. 20, 1992, 4-027515

Int. Cl.[5] H03D *13/00*; **H03K** *9/06*

U.S. Cl. 328—133 **8 Claims**



1. A phase comparator comprising:

first pulse generator means which generates first clock pulses of a first frequency;

modulus counter means which counts said first clock pulses to modulus M and outputs the count value as a reference signal, said M being a positive integer;

trigger signal generator means which generates a trigger signal synchronized with an input signal;

latch means which responds to said trigger signal to sample and hold said count value of said modulus counter means;

second pulse generator means which generates second clock pulses of a second frequency higher than said first frequency;

high-speed counter means which counts said second clock pulses, said high-speed counter means starts counting of said second clock pulses in response to said trigger signal synchronized with said input signal and stops said counting in response to a first shot of said first clock pulses thereafter; and

data processor means which generates phase difference data corresponding to a phase difference between said reference signal and said input signal, on the basis of data held in said latch means and counted data of said high-speed counter means.

5,302,909

NON-LINEAR SIGNAL PROCESSOR

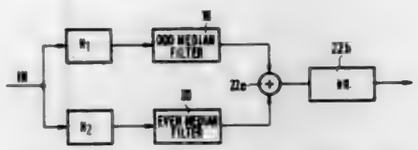
Jeroen M. Kettenis, and Laureas Doornbein, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1992, Ser. No. 823,929

Claims priority, application European Pat. Off., Jan. 24, 1991, 91200136.9

Int. Cl.[5] H03K *5/00*; **H03B** *1/00*

U.S. Cl. 328—167 **4 Claims**



1. Method for removing at least one undesired harmonic created by non-linear processing of sequential sets of received signal samples having a given sample frequency, comprising: delaying each of the signal samples in a set of said received signal samples by a predetermined delay time thereby creating a delayed signal sample, combining each delayed signal sample with a corresponding received signal sample to create combined signal samples, processing the sequential sets of received signal samples non-linearly to create a processed output signal having said undesired harmonic, processing the sets of combined signal samples non-linearly and independently of the processing of the sets of received signal samples to produce a second processed output signal having said undesired harmonic of the same amplitude and opposite phase of said undesired harmonic in said first processed output signal, and combining said first processed output signal and said second processed output signal to form a final output signal not having the undesired harmonic.

5,302,910

FM DETECTOR CIRCUIT WITH ERROR VOLTAGE APPLIED TO PHASE SHIFTING CIRCUIT

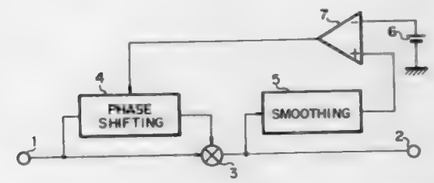
Hiroshi Kondo, and Isao Fukai, both of Tsurugashima, Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,035

Claims priority, application Japan, Dec. 27, 1991, 3-360276

Int. Cl.[5] H03D *3/00*

U.S. Cl. 329—336 **2 Claims**



1. An FM detector circuit comprising a phase-shifting circuit constituted by three integrating circuits each consisting of a transconductance amplifier and capacitor, said phase-shifting circuit being arranged to cause an output signal of a limiter incorporated in a FM receiver to be phase-shifted by 90 degrees at a center frequency of said output signal, said phase-shifting circuit also forming a band pass; a multiplying circuit adapted to receive said output signal of said limiter and an output signal from said phase-shifting circuit, thereby effecting phase-detection of said filter output signal of said limiter; and an error amplifier which is provided with a smoothed version of an output signal derived from said multiplying circuit, wherein output of said error amplifier is applied to said transconductance amplifiers constituting said phase-shifting circuit.

5,302,911

PREAMPLIFIER

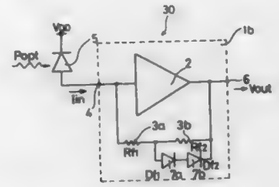
Miyo Miyashita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,690

Claims priority, application Japan, Jul. 10, 1992, 4-207317

Int. Cl.[5] H03F *3/08*

U.S. Cl. 330—110 **10 Claims**



1. A preamplifier for converting an input current signal into a voltage signal and outputting the voltage signal comprising:

a voltage amplifier having an input terminal and an output terminal;

a feedback resistor comprising first and second resistors connected in series to each other, said feedback resistor being connected in parallel with said voltage amplifier between said input terminal and said output terminal; and

a plurality of diodes, each diode having an anode and a cathode and connected in series in common polarity to each other and in parallel with said first resistor so that the anode of a first of the diodes is connected to a first terminal of said first resistor and the cathode of a last of the diodes is connected to a second terminal of said first resistor.

5,302,912

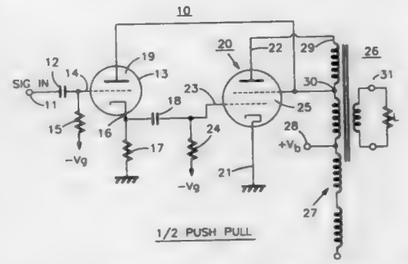
PUSH-PULL AUDIO AMPLIFIER WITH CROSSOVER DISTORTION COMPENSATION

Alan M. Grant, P.O. Box 102, Erieville, N.Y. 13061

Filed May 10, 1993, Ser. No. 60,089

Int. Cl.[5] H03F *3/26, 3/28*

U.S. Cl. 330—118 **10 Claims**



1. A linear amplifier comprising a driver stage, a power stage, and an output transformer, wherein said driver stage includes a control electrode coupled to a signal input, a current input electrode, and a current output electrode coupled to an output resistor and to an input of said power stage; said power stage including a power amplifier tube having a cathode, a control grid coupled to said power stage input, and an anode; and said output transformer including a multitap primary having a first tap coupled to a source of dc plate voltage; an end tap connected to the electrode of said power amplifier tube, and an intermediate tap coupled to the current input electrode of said driver stage, such that at low signal levels the driver stage powers the output transformer primary directly while at higher signal levels the power amplifier stage provides an output signal to the output transformer primary.

5,302,913

POWER AMPLIFYING CIRCUIT CAPABLE OF PRODUCING AN OUTPUT SIGNAL HAVING A DESIRED WAVEFORM

Tsuguo Hori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,807

Claims priority, application Japan, Sep. 27, 1991, 3-249740

Int. Cl.[5] H03G *3/20*

U.S. Cl. 330—129 **2 Claims**

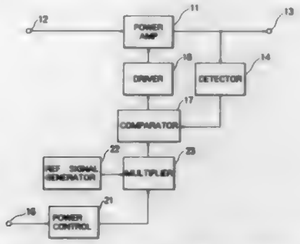
1. A power amplifying circuit for amplifying an input signal having input electric power in response to an amplification control signal to produce an output signal having amplified electric power, said power amplifying circuit including:

(a) a power amplifier for amplifying said input electric power into said amplified electric power;

(b) a detector connected to said power amplifier for detecting said amplified electric power to produce a detection signal representative of a level of said amplified electric power;

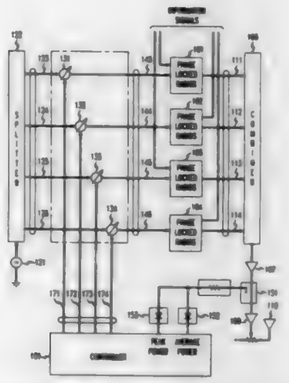
VOL 1161 ISS 2 AP 12 1994 UMI

(c) power control signal generating means for generating a power control signal which has a d.c. level determined by said amplification control signal;
(d) a comparator connected to said detector and said power control signal generating means for comparing said detection signal with said power control signal to produce an error signal representative of a difference between said detection signal and said power control signal;
(e) a driver connected to said comparator and said power amplifier for driving said power amplifier based on said error signal;



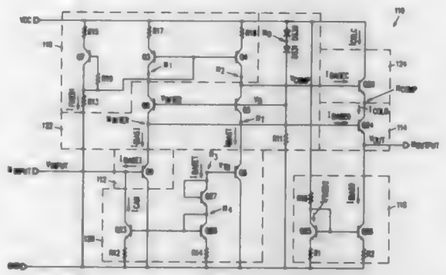
(f) a reference signal generator for generating a reference signal which has a predetermined waveform specified by a smooth rising edge and a smooth falling edge; and
(g) a multiplier connected to said power control signal generating means, said reference signal generator, and said comparator for multiplying said power control signal and said reference signal to produce, as said power control signal, a level control signal which has similarity to said reference signal and an amplitude determined by said power control signal and to supply said power control signal to said comparator.

5,302,914
METHOD AND APPARATUS FOR REDUCING THE PEAK-TO-AVERAGE POWER IN MULTI-CARRIER RF COMMUNICATION SYSTEMS
Bernard J. Arntz, Morris Township, Morris County; William A. Nitz, Rockaway Township, Morris County, and Josef Ocenasek, Parsippany-Troy Hills Township, Morris County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 20, 1992, Ser. No. 964,596
Int. Cl.[5] H03G *3/20*
U.S. Cl. 330—129 **6 Claims**



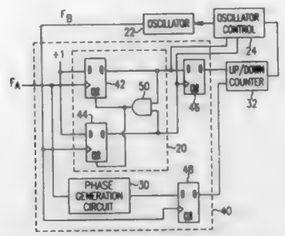
2. In a power amplifier in which an individual amplifier processes a plurality of signal channel carriers each equally spaced from one another by similar frequency differentials, a method of increasing the average power handling capacity of the amplifier;
comprising the steps of:
monitoring a peak power level of the combined signals processed by the amplifier;
determining if the peak power is equal to or greater than a power threshold;
altering a phase of at least one of the carriers if the peak power is equal to or greater than the power threshold;
again determining if the peak power is equal to or greater than the power threshold;
altering a phase of additional carriers if the peak power is equal to or greater than the power threshold;
ceasing alteration of phases of the carriers when the peak power drops below the threshold.

5,302,915
UNITY-GAIN, WIDE BANDWIDTH, BIPOLAR VOLTAGE FOLLOWER WITH A VERY LOW INPUT CURRENT
William D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jan. 29, 1993, Ser. No. 11,359
Int. Cl.[5] H03F *1/56*
U.S. Cl. 330—296 **6 Claims**



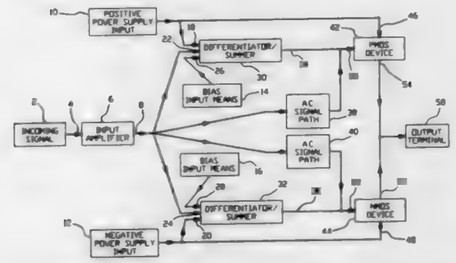
4. A method for providing a very-low input current in a bipolar voltage-follower, the method comprising the steps of:
generating a substantially constant input stage bias current and a substantially constant tracking bias current, the input stage bias current and the tracking bias current being substantially equivalent;
generating an intermediate voltage signal and sourcing an input base current in response to an input voltage signal and the input stage bias current, the intermediate voltage signal being equivalent to the input voltage signal plus a first offset voltage;
sinking an output bias current;
generating an output voltage signal and sinking a portion of the input stage bias current and an output collector current in response to the intermediate voltage signal and the output bias current, the output voltage signal being equivalent to the intermediate voltage signal minus a second offset voltage;
sinking substantially all of the input base current in response to the tracking bias current; and
sinking a portion of the tracking bias current in response to the output collector current, the portion of the tracking bias current sunk being substantially equivalent to the portion of the input stage bias current sunk.

5,302,916
WIDE RANGE DIGITAL FREQUENCY DETECTOR
Robert L. Pritchett, East Allen Township, Northampton County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 21, 1992, Ser. No. 992,882
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—1 A **14 Claims**



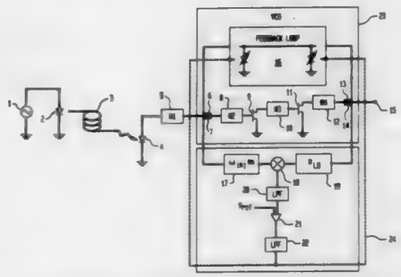
1. An integrated circuit for generating an oscillator clock signal based on a reference clock signal, comprising:
a first shift register clocked by the reference clock signal, the first shift register providing a first shift register output;
a second shift register clocked by the oscillator clock signal, the second shift register providing a second shift register output;
a third shift register for receiving as an input the first shift register output and for receiving the second shift register output as a clock signal, the third shift register providing a third shift register output;
a fourth shift register for receiving a phase of the reference clock signal as an input and for receiving the oscillator clock signal as a clock signal, the fourth shift register providing a fourth shift register output, whereby the third shift register output and fourth shift register output are utilized to control the oscillator clock signal.

5,302,917
LINEAR AMPLIFIER CIRCUIT FOR AUDIO EQUIPMENT
James A. Concorso, 1007 Rector Rd., Bridgewater Township, Somerset County, N.J. 08807-1317
Filed Feb. 12, 1993, Ser. No. 17,512
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—264 **20 Claims**



1. An amplifier circuit for connection to an input source and to one or more output devices, such as one or more speakers, which comprises:
(a) input amplifier;
(b) positive power supply input;
(c) negative power supply input;
(d) a first bias input means;
(e) a second bias input means;
(f) a first differentiator/summer, receiving signals from said input amplifier, receiving signals from said positive power supply input and receiving signals from said first bias input means;
(g) a second differentiator/summer, receiving signals from said input amplifier, receiving signals from said negative power supply input and receiving signals from said second bias input means;
(h) a PMOS device, receiving signals from said first differentiator/summer, receiving power from said positive power supply input and receiving signals from a first A. C. signal path set forth below;
(i) an NMOS device, receiving signals from said second differentiator/summer, receiving power from said negative power supply input and receiving signals from a second A. C. signal path set forth below;
(j) a first A. C. signal path, receiving signals from said input amplifier and sending resultant signals to said PMOS device;
(k) a second A. C. signal path, receiving signals from said input amplifier and sending resultant signals to said NMOS device; and,
(l) an output terminal receiving signals from said PMOS device and said NMOS device;
wherein said first differentiator/summer and said second differentiator/summer act to assure that the gate tracks the source of the PMOS device and that the gate tracks the source of the NMOS device respectively so that the respective gate-source potentials of the PMOS device and the NMOS device are unaffected by changes in the potential of the power supply, and act to send signals to the PMOS device and the NMOS device respectively only upon potential differences in signals between the bias input means and the input amplifier signals, and act to maintain an idle bias, as desired; and,
wherein said first A. C. signal path and said second A. C. signal path provide parallel paths to said PMOS device and said NMOS device respectively to bypass said differentiator/summers, when signals from said input amplifier exceed a preset frequency.

5,302,918
SUBHARMONIC OPTICALLY INJECTION LOCKED OSCILLATOR
Dana J. Sturzebecher; Thomas P. Higgins, both of Tinton Falls, N.J., and Afshin S. Daryoush, Shaker Heights, Ohio, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 1, 1993, Ser. No. 71,412
Int. Cl.[5] H03B *5/18;* **H03C** *3/22;* **H03L** *7/093, 7/24*
U.S. Cl. 331—10 **5 Claims**



1. A multi functional injection locked oscillator comprising:
means to provide an injected optical signal of a predetermined frequency and phase;
a voltage controlled oscillator having a transistor network, a feedback loop having a tunable element, and an output wherein the output is connected to the transistor network and feedback loop, the voltage controlled oscillator being connected to the means to provide an optical signal; and

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phase locked loop circuitry connected to the feedback loop of the voltage controlled oscillator such that any difference between the phase of the injected signal and the output of the voltage controlled oscillator is recognized as a voltage to adjust the tunable element of the feedback loop so as to equalize the phase of the injected signal and the output of the voltage controlled oscillator.

5,302,919

VCO HAVING VOLTAGE-TO-CURRENT CONVERTER AND PLL USING SAME

Akira Abe, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

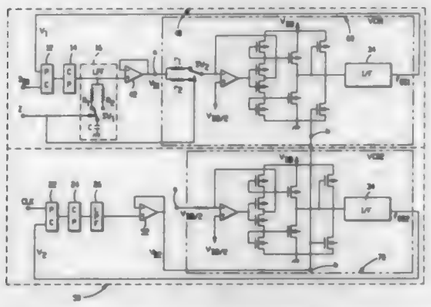
PCT No. PCT/JP91/01434, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO92/07425, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 18, 1991, Ser. No. 862,581

Claims priority, application Japan, Oct. 23, 1990, 2-285233; May 14, 1991, 3-109121

Int. Cl.[5] H03K *3/354;* **H03L** *7/07, 7/099*

U.S. Cl. 331—2 **13 Claims**



1. A voltage-controlled oscillator having a voltage-current conversion apparatus that generates a converted current proportional to the level of an input voltage, and a current frequency conversion apparatus that generates an oscillation frequency output corresponding to the level of the converted current, wherein the voltage-current conversion apparatus comprises: voltage differential-current conversion means for receiving the input voltage as a first input voltage and for converting it to a current in proportion to a difference between the input voltage and a reference voltage; and current adder-subtracter means for generating a second current proportional to a second input voltage and for generating the converted current by adding or subtracting a first current based on the current generated by the voltage differential-current conversion means and the second current.

5,302,920

CONTROLLABLE MULTI-PHASE RING OSCILLATORS WITH VARIABLE CURRENT SOURCES AND CAPACITANCES

Ricky F. Bitting, Fort Collins, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 13, 1992, Ser. No. 959,868

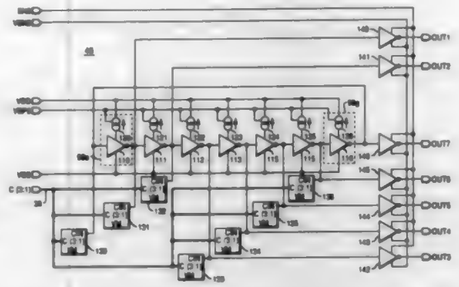
Int. Cl.[5] H03B *5/24;* **H03K** *3/354*

U.S. Cl. 331—45 **13 Claims**

1. An electrically controlled oscillator circuit comprising:

a ring oscillator having a plurality of stages, each stage having an input terminal and an output terminal, and producing a signal having a preselected frequency;

a plurality of capacitor means having electrically programmable capacitance values, each of said capacitor means being electrically coupled to respective ones of said output terminals of said plurality of oscillator stages; and



means for selecting the programmable values of said plurality of capacitor means for setting said output signal frequencies of said stages.

5,302,921

PIEZOELECTRIC OSCILLATOR HAVING REDUCED RADIATION OF HIGHER HARMONICS

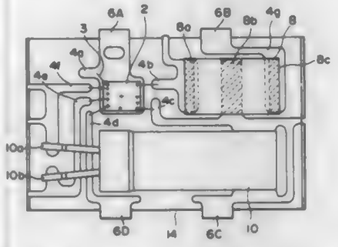
Mikio Shigemori; Toru Oida; Shigeru Hirasawa, and Katsumi Yamamura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,767

Claims priority, application Japan, May 31, 1991, 3-129802; May 31, 1991, 3-129803; May 31, 1991, 3-129804; May 31, 1991, 3-129805; Jun. 19, 1991, 3-147380; Mar. 30, 1992, 4-71996

Int. Cl.[5] H03B *5/36, 1/04;* **H03L** *5/00*

U.S. Cl. 331—67 **13 Claims**



1. A piezoelectric oscillator comprising a piezoelectric vibrator, a semiconductor device provided therein with an oscillation circuit for making said piezoelectric vibrator oscillate, and a filter for cutting components in a predetermined frequency band or higher harmonic components of an oscillation signal outputted from said semiconductor device, wherein said filter is provided in the output side of said semiconductor device and said piezoelectric vibrator, said semiconductor device and said filter are packed in one package.

5,302,922

EQUALIZER FOR OPTICALLY TRANSMITTED ANALOG INFORMATION SIGNALS

Rolf Heidemann, Weinsberger; Heinz Krimmel, Stuttgart, and Bernhard Junginger, Herrenberg, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

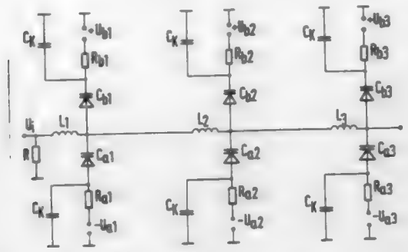
Filed Jun. 29, 1992, Ser. No. 905,836

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1991, 4121569

Int. Cl.[5] H03H *7/03*

U.S. Cl. 333—18 **10 Claims**

1. Circuit designed to compensate for nonlinear distortions in signals transmitted through an optical communication system, characterized in that the signals are analog signals, the circuit receives the signals from the communication system and the circuit comprises an LC ladder network (L_1, C_1, L_2, C_2, L_3, C_3) having capacitive elements which are reverse-biased varactor diodes (C_1, C_2, C_3), the total of all LC components producing a sufficient voltage-dependent delay of the analog signals transmitted through the optical communication system so as to result in sufficient equalization of the received signals having nonlinear distortions.



5,302,923

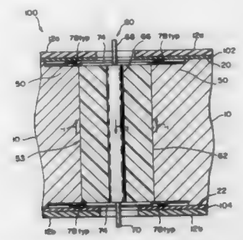
INTERCONNECTION PLATE HAVING HIGH FREQUENCY TRANSMISSION LINE THROUGH PATHS

Roy L. Mason, Lake Stevens; Paul A. Richer, Snohomish, and James K. Pietsch, Edmonds, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 16, 1992, Ser. No. 914,952

Int. Cl.[5] H01P *1/00*

U.S. Cl. 333—33 **17 Claims**



1. An interconnection assembly for high frequency transmission line communication in the gigahertz frequency range between a first pc board and either one of a second pc board and an electrical component, comprising:

an integral conductive plate having first and second elongated surfaces, said first surface defining a first recessed area, the plate having a through-channel between said first recessed area and said second surface defined by plate walls;

an insulating member received into said through-channel, the insulating member defining a central channel;

a conductive member received into the central channel of the insulating member; and

a first conductive ring received into said first recessed area for providing physical communication between the first pc board and the conductive plate; and

wherein an undersurface of the first pc board is in contact with said first surface, and an undersurface of the one of the second pc board and electrical component is in contact with said second surface; and

wherein said conductive member, insulating member and plate walls of said through channel form a transmission line with impedance matched to impedance of a signal path at said first pc board that is in communication with said conductive member, a first current travelling along said conductive member and an opposite ground current travelling along said plate walls; and

wherein said first conductive ring receives said ground current and serves as a first ground current path from said plate walls to said first pc board, said first conductive ring minimizing differential in signal path length of said ground current relative to said first current at a junction between the transmission line and the signal path at the first pc board, said first ground current path minimizing power loss at said junction.

5,302,924

TEMPERATURE COMPENSATED DIELECTRIC FILTER

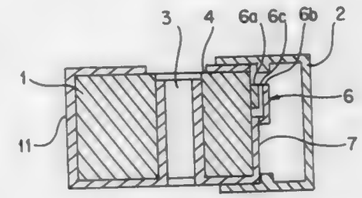
Heli Jantunen, and Aimo Turunen, both of Oulu, Finland, assignors to Lk-Products Oy, Kempele, Finland

Filed Jun. 25, 1992, Ser. No. 906,214

Claims priority, application Finland, Jun. 25, 1991, 913087

Int. Cl.[5] H01P *1/20*

U.S. Cl. 333—202 **10 Claims**



1. A temperature compensated filter comprising a body of dielectric material having at least one transmission line resonator formed therein, and a capacitor coupled to said transmission line resonator for tuning said filter and having a temperature coefficient of frequency opposite that of the dielectric body.

5,302,925

CIRCUIT BREAKER ROTARY HANDLE OPERATOR WITH POSITIVE ON INDICATION

Roger N. Castonguay, Terryville, and James L. Rosen, West Hartford, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jun. 11, 1993, Ser. No. 74,633

Int. Cl.[5] H01H *73/12*

U.S. Cl. 335—17 **6 Claims**

1. An improved molded case circuit breaker rotary operator of the type consisting of a housing, a rotary handle on the housing, a cam rotatively attached to an underside of the housing and a lever rotatively attached to an underside of the cam, wherein the improvement comprises:

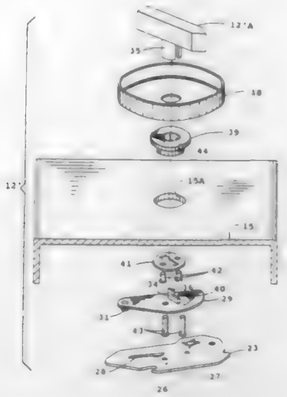
a locking plate slidingly arranged on said rotary handle and interacting with a clearance slot arranged on a perimeter rim upstanding on said housing for locking said rotary handle in a fixed position, said locking plate having a detent slot on a bottom thereof;

a tab upstanding from a top part of said cam, said tab being received within said detent slot to prevent translation of said locking plate when an associated circuit breaker handle is in a first position, and said tab being outside said detent slot to allow translation of locking tab when an associated circuit breaker handle is in a second position; and

a post extending from a bottom of said rotary handle and

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terminating in a shaped slot, said shaped slot having an hourglass configuration to provide first and second positions to said tab corresponding to first and second positions of an associated circuit breaker operating handle.



5,302,926

Patent Not Issued For This Number

5,302,927

SADDLE COIL DEFLECTION WINDING, APPARATUS AND METHOD OF MAKING THEREOF

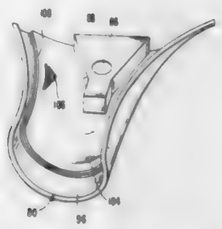
Jean-Pierre Fourche, Marsannay La Cote, and Eric Audoux, Aiserey, both of France, assignors to Videocolor, S.A., Paris, France

Filed Jul. 22, 1991, Ser. No. 733,032

Claims priority, application European Pat. Off., Aug. 7, 1990, 90402261.3

Int. Cl.[5] H01F *7/00*

U.S. Cl. 335—210 **7 Claims**



1. A deflection yoke coil of a deflection yoke assembly for a cathode ray tube, comprising:

a plurality of convolutions of wire formed into a shape having opposing side members with a window opening therebetween, said coil including front end turns and rear end turns, each wound in a direction generally transverse to said side members; and

at least one depression or dimple of predetermined shape being formed in an intermediate region of each one of said side members, for controlling the distribution of said wire proximate said depressions.

5,302,928

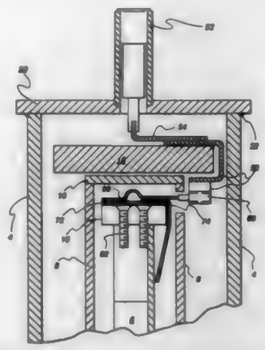
SUPERCONDUCTING CURRENT LEADS FOR A CRYOGENLESS SUPERCONDUCTING MAGNETIC ENERGY STORAGE DEVICE

Evangelos T. Laskaris, Schenectady, and Ahmed K. Kalafala, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,684

Int. Cl.[5] H01F *1/00*

U.S. Cl. 335—216 **10 Claims**



1. A current lead assembly for a superconducting magnet, said assembly comprised of:

a superconducting magnet having a thermal shield means and a heat station means;

an ambient temperature interface means;

a first stage current lead means operatively connected to said thermal shield means and said ambient temperature interface means;

a second stage current lead means operatively connected to said thermal shield means and said magnet and a first stage lead extension means engaging said second stage lead.

5,302,929

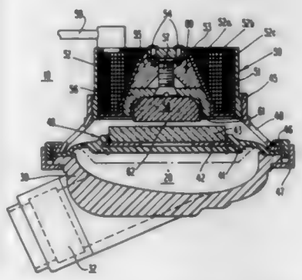
MAGNETICALLY ACTUATED POSITIVE DISPLACEMENT PUMP

Steven G. Kovacs, Oldsmar, Fla., assignor to University of South Florida, Tampa, Fla.

Division of Ser. No. 300,361, Jan. 23, 1989, Pat. No. 5,011,380. This application Jan. 28, 1991, Ser. No. 646,870

Int. Cl.[5] H01F *7/00*

U.S. Cl. 335—229 **5 Claims**



2. In combination, an electromagnet and a mating coaxially aligned moveable permanent magnet, said electromagnet comprising a core and windings surrounding said core, said moveable permanent magnet variably distant from said electromagnet along said coaxial line, said electromagnet and said permanent magnet positioned to be attracted to and repulsed by one another along said coaxial line upon activation and deactivation of said electromagnet to increase and decrease the distance therebetween wherein:

said electromagnet core and windings are coaxially aligned with said permanent magnet;

the cross-sectional area of said core; taken perpendicularly to said coaxial line, varies inversely with the distance from said permanent magnet; and

the cross-sectional area of said windings, taken perpendicularly to said coaxial line, varies directly with the distance from said permanent magnet.

5,302,930

ELECTROMAGNETIC VALVE

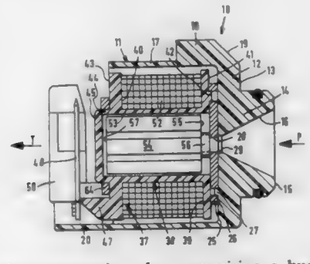
Werner Brehm, Hemmingen; Kurt Gensheimer, Bad Liebenzell; Bernd Groll, Ingersheim, and Erwin Krimmer, Pluederhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 872,633, Apr. 22, 1992. This application Mar. 25, 1993, Ser. No. 37,081

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1991, 4122517

Int. Cl.[5] H01F *7/00, 3/00;* **F16K** *31/02*

U.S. Cl. 335—278 **12 Claims**



1. An electromagnetic valve comprising a bucket-shaped housing; a coil having a coil body and arranged in said housing; a pole element; a flux conducting element; a magnet armature cooperating with said coil body through said pole element and said flux conducting element, said flux conducting element being formed as a substantially U-shaped bracket fixing and mounting of said coil, said coil body, and said pole element in said housing.

5,302,931

COIL FOR A TRANSFORMER, IN PARTICULAR A HIGH-VOLTAGE TRANSFORMER

Edwin Muz, Reutlingen, Fed. Rep. of Germany, assignor to Haugh GmbH & Co. KG, Leinfelden-Echterdingen, Fed. Rep. of Germany

PCT No. PCT/EP90/00806, § 371 Date Nov. 18, 1991, § 102(e) Date Nov. 18, 1991, PCT Pub. No. WO90/14673, PCT Pub. Date Nov. 29, 1990

PCT Filed May 18, 1990, Ser. No. 776,419

Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917212

Int. Cl.[5] H01F *15/02*

U.S. Cl. 336—82 **1 Claim**

1. A method for manufacturing a coil for a transformer, in particular a high-voltage transformer, comprising the steps of:

directly electrically conductively connecting the start (6) of a wire with a bondable thermoplastic sheath to a sleeve (2) made of electronically conductive non-magnetic metal and slit axially throughout its length,

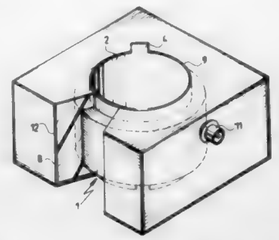
attaching said sleeve to a rotating winding tool to form an essentially cylindrical wire winding directly on said sleeve with the end faces of said sleeve extending beyond said winding,

applying heat to said winding to bond the individual turns of the winding to each other,

placing one end face of said sleeve carrying said winding on the bottom of a casting mold to hold the wire winding (5) at a distance from the bottom,

connecting the end (7) of said wire remote from said start to a connecting terminal (11),

introducing a casting compound (8) into said mold to also



enclose the wire winding (5) at its lower end face and to anchor said connecting terminal in said casting compound,

providing the outside of said casting compound with an electrically conductive casing (12),

electrically conductively connecting said casing to said sleeve and

attaching a connection wire directly to the sleeve (2) which is connected to the start (6) of said wire.

5,302,932

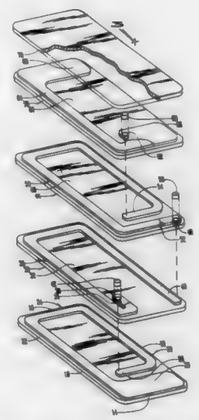
MONOLYTHIC MULTILAYER CHIP INDUCTOR AND METHOD FOR MAKING SAME

Herman R. Person; Scott D. Zwick; Thomas L. Veik, and Joseph F. Hesse, all of Columbus, Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed May 12, 1992, Ser. No. 881,856

Int. Cl.[5] H01F *5/00*

U.S. Cl. 336—200 **11 Claims**



1. A monolythic multilayer chip inductor comprising:

a laminated bottom subassembly comprising a bottom ferrite layer and a bottom coil conductor on said bottom ferrite layer, said bottom ferrite layer having a top surface, a front edge, a rear edge, and opposite side edges;

said bottom coil conductor having a top face and having a first end adjacent said front edge of said bottom ferrite layer and

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having a second end spaced inwardly from said front, rear, and opposite side edges of said bottom ferrite layer;

a laminated top subassembly comprising a top ferrite layer having a top via opening extending therethrough and a top coil conductor on said top ferrite layer;

said top coil conductor having a bottom face and having a first end registered and in substantially covering relation with said top via opening of said top ferrite layer and having a second end above one of said rear and opposite side edges of said bottom ferrite layer;

columnar conductor means electrically connecting said top face adjacent to said second end of said bottom coil conductor to said bottom face at said first end of said top coil conductor through said top via opening in said top ferrite layer;

a ferrite top cap printed in covering relation over said top coil conductor;

first and second terminal means;

said first end of said bottom coil conductor being exposed from between said bottom ferrite layer and said top ferrite layer and being electrically connected to said first terminal means; and

said second end of said top coil conductor being exposed from between said top ferrite layer and said top cap, and being electrically connected to said second terminal means.

5,302,933

INFRARED SENSOR

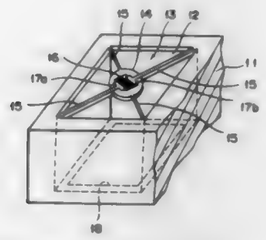
Takeshi Kudo; Takehisa Mori, and Kiyoshi Komatsu, all of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 950,085

Claims priority, application Japan, Sep. 27, 1991, 3-249027

Int. Cl.[5] H01L *31/08*

U.S. Cl. 338—18 **19 Claims**



1. An infrared radiation sensor comprising:

a sensor substrate having a cave portion;

a bridge portion formed on a surface of said sensor substrate so as to bridge said cave portion, said bridge portion comprising infrared radiation receiving portion means for receiving infrared radiation and support portion means for supporting said infrared radiation receiving portion means, said infrared radiation receiving portion means having a grater width than that of said supporting portion means; and

thermally sensitive portion means for detecting said infrared radiation, said thermally sensitive portion means being formed on said infrared radiation receiving portion means, said thermally sensitive portion means having characteristics in which electrical resistance varies in accordance with the infrared radiation received by said infrared receiving radiation portion means.

5,302,934

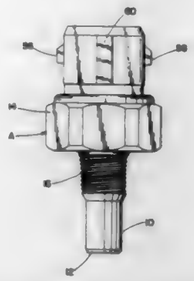
TEMPERATURE SENSOR

John R. Hart, Lexington, and Lowell F. Kline, Mansfield, both of Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Apr. 2, 1993, Ser. No. 41,856

Int. Cl.[5] H01C *7/10, 3/04*

U.S. Cl. 338—22 R **12 Claims**



1. A temperature sensor including a metal housing having an elongated tubular portion with a closed distal end, said metal housing having an opening opposite said distal end for providing access to the interior of said tubular portion, said tubular portion having an internal shoulder intermediate said opening and said distal end, a larger first diameter internal cylindrical surface extending from said shoulder to said opening and a smaller second diameter internal cylindrical surface extending from said shoulder to said distal end, a dielectric sleeve extending through said opening along said first diameter internal cylindrical surface and having a sleeve end abutting said shoulder, a thermistor positioned within said tubular portion adjacent said distal end, an electrical connector attached to said housing and closing said opening, said connector including a molded plastic body having a pair of electrical terminals molded therein, said electrical terminals having blade portions projecting from said body on the opposite side thereof from said metal housing and tail portions projecting from said body into said opening in said metal housing, said tail portions of said terminals including terminal end portions projecting at least partly into said dielectric sleeve, and a pair of conductors extending between said thermistor and said terminal end portions, each said conductor being connected to one of said terminal end portions.

5,302,935

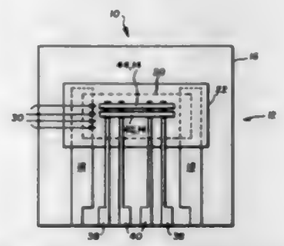
RENEWABLE GAS SENSOR, RENEWABLE GAS SENSOR BASE AND METHOD FOR RENEWING A GAS SENSOR

Dilip K. Chatterjee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1992, Ser. No. 987,931

Int. Cl.[5] H01C *7/00*

U.S. Cl. 338—34 **20 Claims**



1. A renewable gas sensor comprising a substantially planar

heater, a substantially planar separator superimposed on said heater, said separator being electrically insulating and thermally conducting, an electrode array superimposed on said separator, said electrode array and said separator defining a plurality of juxtaposed sensing sites disposed in electrically conductive relation to said electrode array and in thermally conductive relation to said separator, and a chemical sensing film superimposed on said separator and said electrode array in one of said sensing sites.

5,302,936

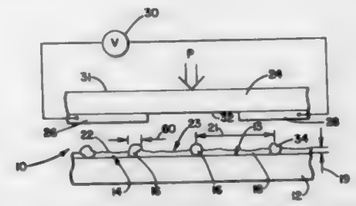
CONDUCTIVE PARTICULATE FORCE TRANSDUCER

Stuart I. Yaniger, Ventura, Calif., assignor to Interlink Electronics, Inc., Camarillo, Calif.

Filed Sep. 2, 1992, Ser. No. 941,228

Int. Cl.[5] H01C *10/10*

U.S. Cl. 338—47 **24 Claims**



1. A transducer having a resistance which varies in response to the amount of applied force comprising:

a base ply;

a resistance ply disposed on the base ply and having a resistance ply surface, the resistance ply comprising:

a resin resistive to electrical current passing therethrough, the resin forming a layer on the base ply, the resin layer having a first thickness and defining a resin surface; and

a conductive particulate interspersed in the resistive resin for forming a plurality of microprotrusions of the conductive particulate extending from the resin surface, wherein the ratio of resin to particulate is such that the mean distance between microprotrusions along the resistance ply surface is greater than about five times the particulate size;

at least two spaced apart contacts electrically interconnected across the resistance ply to enable electrical conduction through the resistance ply, at least one of the contacts juxtaposed opposite the surface of the resistance ply for being pressed theretoward, the resistance to electrical current conducting through the resistance ply varying in response to the amount of force applied to press the at least one contact toward the resistance ply surface.

5,302,937

POTENTIOMETER

Wolfgang Lenz, Abstatt, Fed. Rep. of Germany, assignor to Horst Siedle KG, Furtwangen, Fed. Rep. of Germany

Filed Oct. 30, 1992, Ser. No. 969,135

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1991, 4136343

Int. Cl.[5] H01C *10/30, 10/32, 10/10*

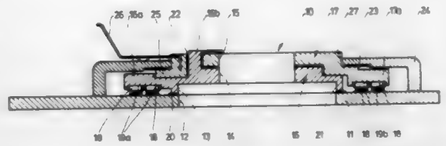
U.S. Cl. 338—160 **9 Claims**

1. A potentiometer comprising:

a base plate carrying at least one resistance and/or collector path;

at least one wiper for each of said paths;

at least one wiper carrier mounted on said base plate; and at least one additional path formed on said base plate and engaged by said at least one wiper carrier, said at least one additional path forming a sliding surface for said at least one wiper carrier.



5,302,938

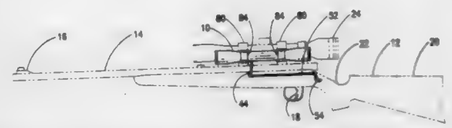
SOUND GENERATING DEVICE FOR FIREARM, BOW OR THE LIKE

Mark Martineau, Rte. 1, Box 144A, Southwest City, Mo. 64863

Filed Dec. 7, 1992, Ser. No. 986,339

Int. Cl.[5] F41C *27/00*

U.S. Cl. 340—573 **10 Claims**



1. A sound generating device for a firearm, bow or the like hand-held by the hunter, which said sound generating device comprises:

mounting means to mount a housing to said firearm, bow or the like;

noise generating means within said housing to produce a sound audible to an animal; and

switch means mounted on said firearm to activate said noise generating means with at least one of said hunter's hands while holding said firearm, bow or the like, said switch means normally in a deactivated position so that said noise generating means may be selectively activated in order to cause said animal to pause in response to said audible sound.

5,302,939

DUAL TIRE EQUALIZER HAVING REMOTE INDICATOR

Edward A. Downs, Charlotte, N.C., and Stephen McClelland, Portadown, Ireland, assignors to Schrader Automotive Inc., Charlotte, N.C.

Filed Sep. 8, 1992, Ser. No. 941,941

Int. Cl.[5] B60C *23/00*

U.S. Cl. 340—447 **7 Claims**

1. A tire pressure equalizer and remote pressure indicator system for dual tires mounted on a set of wheels on a vehicle body comprising:

(A) on the set of wheels:

(1) a housing having a first chamber and a second chamber separated by a transverse sealed diaphragm, the first chamber having:

(a) a valve seat opposite the diaphragm, with a central opening, the diaphragm being adapted to seat and close off the seat,

(b) first passage means for connecting the seat opening and one tire.

(c) second passage means for connecting the first chamber to the other tire, and

(d) fill means communicating with the first chamber;

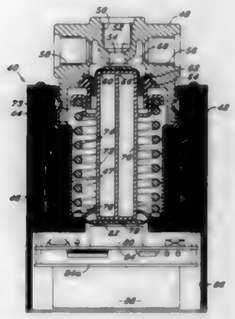
(2) a rigid hollow tubular elongate probe disposed in the

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second chamber with one end thereof engaging the diaphragm opposite the seat, the probe being formed with an outward annular web having an annular trough directed away from the diaphragm,

(3) spring means in the second chamber encircling the probe and compressively disposed between the trough and a housing part remote from the diaphragm and urging the probe and diaphragm toward seating disposition,

(4) electric switch means having a first and second condition disposed adjacent the other end of the probe adapted to be changed from first to second condition thereby when the diaphragm moves from seated to unseated position,



(5) a radio transmitter including a power supply in circuit with the switch;

(B) on the vehicle body;

(1) a radio receiver spaced from the transmitter and responsive thereto,

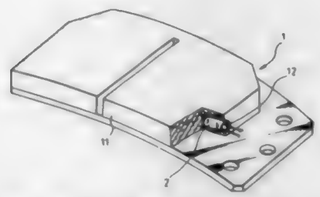
(2) tire condition indicator means connected to the receiver; whereby as pressure drops from a selected pressure, the diaphragm and elongate probe driven by the spring, move to seat and the condition of the switch is changed to indicate to the indicator means a less-than-selected pressure, and the diaphragm in seating isolates the two tires.

5,302,940

MOTOR VEHICLE BRAKE DETECTOR

Chi-Shan Chen, No. 15, Alley 18, Lane 42, Chung-Nan Street, Nan-Kang District, Taipei, Taiwan

Filed Oct. 5, 1992, Ser. No. 956,266
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—454 1 Claim



1. A motor vehicle brake detector comprising a blind hole formed in a brake shoe of a motor vehicle brake assembly, a thermo sensor packed by an insulator fastened inside said blind hole and connected to a warning control circuit for permitting said warning control circuit to give warning signals as said brake assembly was overheated during a brake or said brake shoe of said brake assembly was worn off;

said thermo sensor including a metal sleeve connected to one end of said warning control circuit by a first conductor, and a thermo resistor received inside said metal sleeve and having an output terminal extended outwardly and welded to said metal sleeve and an input terminal connected to an opposite end of said warning control circuit by a second conductor; and

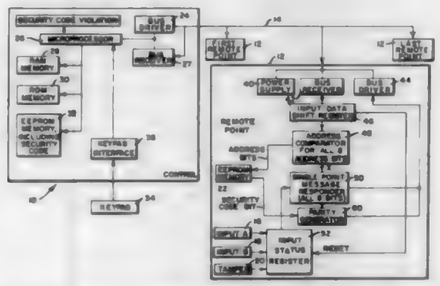
said warning control circuit including an indicator lamp electrically connected with said thermo resistor in series in between said first and said second conductors of said thermo resistor, whereby upon increasing of temperature of said brake assembly, said thermo resistor will decrease its resistance and increase its negative voltage to thereby increase a light intensity of said indicator lamp for warning purpose.

5,302,941

MULTI-SENSOR SECURITY/FIRE ALARM SYSTEM WITH MATED MASTER CONTROL

James E. Berube, Farmington, N.Y., assignor to Detection Systems Inc., Fairport, N.Y.

Filed Jan. 7, 1992, Ser. No. 817,865
Int. Cl.[5] G08B *26/00*
U.S. Cl. 340—505 8 Claims



1. In a security/fire alarm system of the type comprising a plurality of event-sensing units distributed throughout a region to be protected by such systems, each of said event-sensing units being connected to a communications bus and being addressable individually by a multibit digital address code which is unique to each event-sensing unit; and a master control unit operatively connected to each of said event-sensing units via said communications bus, said master control unit being adapted to communicate with each of said event-sensing units by transmitting an appropriate multibit digital address code on said bus, each of said event-sensing units being responsive to being addressed by said master control unit to transmit a multibit response code indicating its alarm/operating status, the improvement comprising:

(a) first memory means associated with said master control unit for storing a multibit security code comprising several different portions;

(b) second memory means associated with each of said event-sensing units, said second memory means functioning to store information representing one of said several different portions of said multibit security code, said several different portions of the security code stored by said second memory means of said event-sensing units collectively defining the multibit security code stored by said first memory means, each of said event-sensing units being responsive to being addressed to transmit or said bus information representing its stored portion of said multibit security code; and

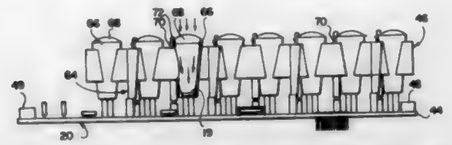
(c) means associated with said master control unit for comparing its stored multibit security code with the portions of said security code transmitted by said event-sensing units, said comparing means being adapted to produce an indication that said stored security code does not match the security code collectively defined by the portions of the security code transmitted by the addressed event-sensing units.

5,302,942

LIGHT CURTAIN SYSTEM WITH INDIVIDUAL BEAM INDICATORS AND METHOD OF OPERATION

David Blau, Cupertino, Calif., assignor to Scientific Technologies Incorporated, Hayward, Calif.

Filed Nov. 19, 1992, Ser. No. 978,597
Int. Cl.[5] G08B *13/18, 29/00*
U.S. Cl. 340—556 7 Claims



1. A light curtain system for establishing a guard zone along a machine which is controlled by a human operator, the light curtain system comprising the combination of light transmitter means for transmitting light beams along a plurality of parallel channels which extend across at least a portion of the guard zone, light receiver means for receiving and detecting the presence and absence of light beams at a predetermined location on a side of the guard zone which is opposite the light transmitter means, indicator light signal means for displaying visible light signals at signaling positions which are adjacent respective channels with the signaling positions being in the operator's range of sight, beam control means for controlling the light transmitter means to transmit light beams in a predetermined timed sequence along the channels, receiver control means for enabling the light receiver means to detect in synchronism with said predetermined timed sequence a light beam being present or absent in a channel which corresponds to a light beam being transmitted for such channel, and indicator control means for controlling said light signal means to display a visible light signal at a signaling position which is adjacent a channel in which the receiver control means detects the absence of a light beam when the light receiver means is enabled for such channel whereby the operator can be alerted by observing from the presence of a light signal that a channel is blocked.

5,302,943

Patent Not Issued For This Number

5,302,944

METHOD AND APPARATUS FOR THE MONITORING OF THE OPERATION OF LINEAR AND ROTARY ENCODERS

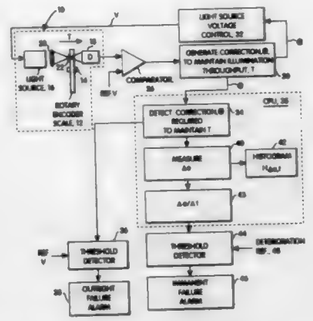
Stephen J. Curtis, 213 Harris Rd., Nashua, N.H. 03062

Filed Jul. 22, 1991, Ser. No. 734,244
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—653 9 Claims

1. Apparatus for monitoring the condition of an encoder having a scale which is illuminated from a light source and in which light from the scale is detected by a detector, so as to provide an indication of potential, imminent or actual encoder failure, comprising:

a feedback circuit for varying the power to said light source, said feedback circuit providing constant maximum intensity light from the scale through the monitoring of light from the scale, said feedback circuit including means coupled to said detector for detecting a maximum output therefrom, and means including a feedback signal for adjusting the output of said light source so as to maintain said maximum detector output at a predetermined level;

means for monitoring said feedback signal to provide an error signal representing the variation in said feedback signal and thus the amount of adjustment of the output of said light source; and,



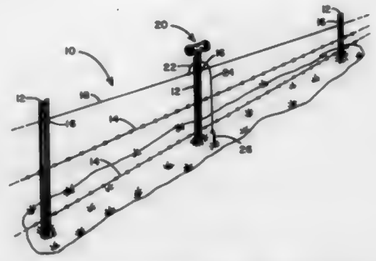
means for providing an alarm indication responsive to said error signal, whereby said alarm indication can indicate either potential or imminent encoder failure as well as actual encoder failure.

5,302,945

ELECTRIC APPLIANCE FAULT MONITOR AND INDICATOR

Kevin J. Stoltenberg, Clitherall, Minn., assignor to Technimedics Corporation, Clitherall, Minn.

Filed Aug. 24, 1992, Ser. No. 934,599
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—660 16 Claims



1. Apparatus for monitoring the voltage applied to an electrical appliance and for visually signalling a drop in said voltage below a predetermined acceptable threshold to a location remote from said appliance comprising, in combination:

(a) means electrically coupled to a voltage supply for said appliance for sensing when the amplitude of the voltage from said voltage supply has fallen below said predetermined acceptable threshold;

(b) a power source independent and electrically isolated from said appliance voltage supply; and

(c) xenon flash lamp means operatively coupled to said means for sensing and to said independent power source for providing an intense flash of light visible at great distances at predetermined intervals, so long as the amplitude of the voltage of said voltage supply remains below said predetermined acceptable threshold.

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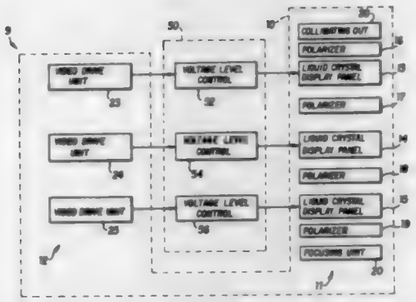
5,302,946
STACKED DISPLAY PANEL CONSTRUCTION AND METHOD OF MAKING SAME

Leonid Shapiro, 13055 Beachtree, Lakeside, Calif. 92040; William K. Bohannon, 9921 Carmel Mountain Rd., San Diego, Calif. 92129, and Randall S. Farwell, 6920 Schilling Ave., San Diego, Calif. 92126

Continuation of Ser. No. 506,621, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,688, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,144, Jul. 21, 1988, abandoned. This application Aug. 7, 1991, Ser. No. 741,584

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—88 **16 Claims**



1. A display system for substantially optimizing distinguishable liquid crystal shading level pixel images, comprising:

liquid crystal display panel means having a plurality of electrically operable pixel elements for displaying a color image;

said panel means being interposed between a pair of polarizers that cooperate with said panel means for permitting a given portion of the visible light spectrum to pass to form said color image;

gray scale means for energizing said display panel means with a gray scaled drive signal, said drive signal causing said plurality of pixel elements to be energized to either a fully on selected state or a fully off deselected state;

said drive signal being duty cycled over a large number of frames to cause said plurality of pixel elements to produce pixel images having a large number of shading levels;

said large number of color shading levels including a maximum color shading level and a minimum color shading level;

direct current voltage level control means for applying a select bias voltage signal to said panel means to facilitate maximizing substantially the luminance of each pixel image;

said plurality of electrically operable pixel elements being electrically energized by both said drive signal and said select bias voltage signal;

contrast means for adjusting said select bias voltage signal to an optimum level to cause the pixel images produced by said plurality of pixel elements to exhibit substantially maximum luminance when said pixel elements are energized by said drive signal to said maximum color shading level;

whereby the color contrast between each of said large number of color shading levels is substantially optimized.

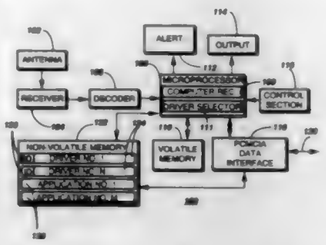
5,302,947
METHOD AND APPARATUS FOR LOADING A SOFTWARE PROGRAM FROM A RADIO MODEM INTO AN EXTERNAL COMPUTER

Gregory W. Fuller, Boca Roton; Robert D. Fennell, Coral Springs, and William J. Macko, West Palm Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1992, Ser. No. 923,056

Int. Cl.[5] G08B *3/10*

U.S. Cl. 340—825.34 **18 Claims**



1. A method in a selective call receiver of choosing and loading a software driver program into an external computer, the selective call receiver comprising a data interface for coupling with the external computer and a memory containing pre-programmed data comprising a plurality of executable software driver programs, the selective call receiver further comprising a processor coupled to the memory and to the data interface for controlling interactions between the memory and the data interface, the method comprising the steps of:

(a) coupling the data interface to the external computer;

(b) receiving, from the external computer, in response to step (a) a signal comprising an identifier which identifies the external computer;

(c) accessing the memory to locate a software drier program compatible with the external computer identified by the identifier receiver in step (b); and

(d) transmitting to the external computer the software driver program in response to locating the software driver program in step (c).

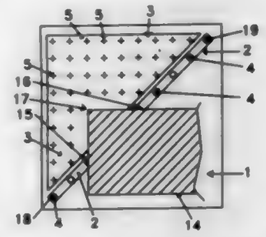
5,302,948
OBJECT POINTER COMPUTER INPUT APPARATUS

Clifford B. Lau, 94-871 Farrington Highway, 2nd Floor, Waipahu, Hi. 96797-3146, and Marian S. Gould, 13 Elm St., Albany, N.Y. 12202

Filed Oct. 3, 1991, Ser. No. 770,453

Int. Cl.[5] H03M *11/26*

U.S. Cl. 341—31 **11 Claims**



1. A computer input apparatus having a linear array of regularly spaced sensors, a field of regularly arranged symbols positioned apart from the sensors, for covering with an object one sensor or a group of sensors as a corner of said object is pointed to a particular symbol within the field, a sensing network connected to the sensors for sensing which of the sensors have been covered by said object, and an output connected to the sensing network for supplying information from the sensing network to a computer, wherein the field is a triangular field, and wherein the linear array is a line of sensors spaced from one edge of the triangular field.

5,302,949
SIGNAL ENCODING WITH REVERSE RUN LENGTH AND VARIABLE LENGTH CODING

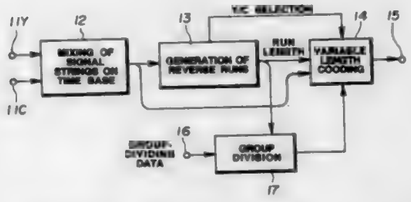
Hiromi Yoshinari, and Yoshihiro Murakami, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,972

Claims priority, application Japan, Oct. 31, 1991, 3-313770

Int. Cl.[5] H03M *7/40, 7/46*

U.S. Cl. 341—67 **6 Claims**



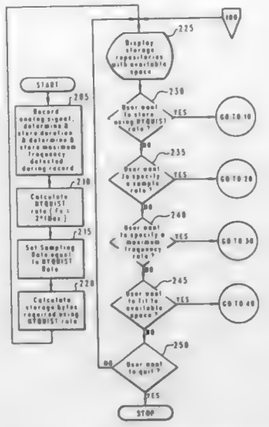
1. A method for variable length encoding comprising the steps of

mixing plural signals on the time base,

taking runs for the signals mixed on the time base in a direction opposite to the encoding direction, and

performing variable length encoding on the basis of the runs taken out in the reverse direction.

further comprises the step of allowing the user to select an appropriate action wherein the sampling rate is determined automatically by a size of a user specified storage repository.



5,302,951
WIDE-RANGE LINEAR OUTPUT DIGITAL/ANALOG CONVERTER

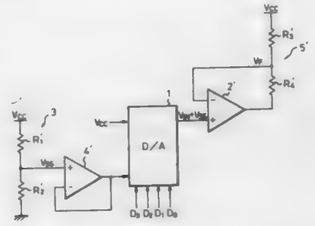
Masahiro Yamashita, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Continuation of Ser. No. 725,700, Jul. 3, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,196

Claims priority, application Japan, Jul. 3, 1990, 2-175940

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **13 Claims**



1. A digital/analog converter comprising:

a high power supply terminal means for generating a digital signal portion having a first maximum voltage;

a lower power supply terminal means for generating a digital signal portion having a first minimum voltage;

a conversion circuit for directly receiving the digital signal to thereby convert the digital signal and generate a converted analog signal having a voltage proportional to a digital value of the digital signal defined by the digital signal portions having the first minimum voltage and the first maximum voltage;

an amplifier circuit connected to said conversion circuit, for directly receiving, from the conversion circuit, the converted analog signal and for amplifying the analog voltage to obtain an amplified and converted output voltage having a linear characteristic between a second minimum voltage and a second maximum voltage;

a voltage amplitude reducing circuit, connected to said

5,302,950
METHOD OF AND APPARATUS FOR PROVIDING AUTOMATIC DETERMINATION OF INFORMATION SAMPLING RATE

William J. Johnson, Flower Mound; Larry M. Lachman, Irving; Guillermo Vega, Grapevine, and Marvin L. Williams, Lewisville, all of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 17, 1992, Ser. No. 915,149

Int. Cl.[5] H03M *5/00*

U.S. Cl. 341—123 **12 Claims**

1. A method of analog to digital conversion of an analog signal, said method comprising the steps of:

determining a highest frequency component of an analog signal;

calculating a Nyquist rate responsive to the highest frequency component;

altering a sampling rate responsive to the Nyquist rate by informing a user that the sampling rate and the Nyquist rate are not equal and allowing the user to select an appropriate action;

the step of allowing the user to select an appropriate action

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conversion circuit, for reducing a first amplitude of the digital signal defined by the digital signal portions having the first minimum voltage and the first maximum voltage inputted into said conversion circuit; and

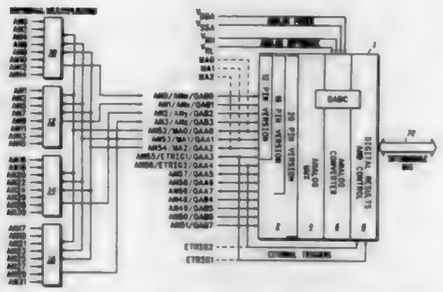
a voltage amplitude enlarging circuit connected to said amplifier circuit, for directly receiving, from the amplifier circuit, the amplified and converted output voltage and for enlarging a second amplitude defined by the second minimum voltage and the second maximum voltage of the amplified and converted output voltage of said amplifier circuit to thereby conform the second amplitude to the first amplitude.

5,302,952

AUTOMATIC A/D CONVERTER OPERATION WITH PAUSE CAPABILITY

Jules D. Campbell, Jr.; Carl D. Wiseman; William D. Huston; Colleen M. Collins, and Mark R. Heene, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 1992, Ser. No. 936,492
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—155 **27 Claims**



1. An analog-to-digital conversion system, comprising:

at least one analog input terminal;

storage circuitry for storing a first set of conversion command words and a second set of conversion command words, the first set of conversion command words including a first at least one conversion command word, and the second set of conversion command words including a second at least one conversion command word;

accessing means for accessing the first set of conversion command words and for accessing the second set of conversion command words, said accessing means being coupled to said storage circuitry;

sampling means responsive to the first at least one conversion command word for sampling an analog signal on said at least one analog input terminal and for providing a sampled value of the analog signal, said sampling means being coupled to said at least one analog input terminal and to said accessing means;

an analog-to-digital converter, coupled to said sampling means, said analog-to-digital converter converting the sampled value of the analog signal into a digital value; and

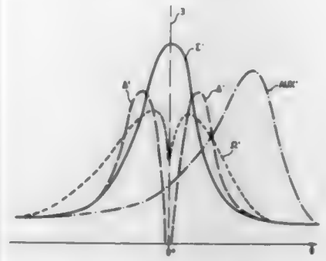
pause means for selectively inhibiting said accessing means from accessing one of the first set of conversion command words and the second set of conversion command words, said pause means being coupled to said accessing means.

5,302,953

SECONDARY RADAR ANTENNA OPERATING IN S MODE

Maryse Pierre, Gif s/Yvette, and Michel Niboyet, Antony, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Jul. 2, 1993, Ser. No. 85,057
Claims priority, application France, Jul. 3, 1992, 92 08210
Int. Cl.[5] G01S *13/76*
U.S. Cl. 342—37 **11 Claims**



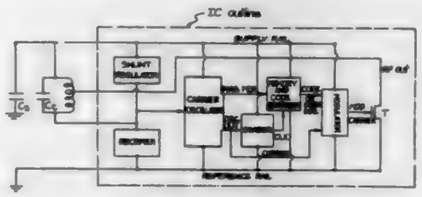
1. Secondary radar antenna operating in S mode comprising a row of columns (1) of radiating elements powered by a hyperfrequency distribution circuit (2) containing a summing channel (Σ), a difference channel (Δ), and a secondary lobe suppression channel (Ω), each producing an illumination (Σ'', Δ'', Ω'') and an associated radiation diagram (Σ', Δ', Ω'), wherein the L and R antenna end columns are powered by at least one auxiliary channel to produce at least one auxiliary radiation diagram (AUX') and by another channel to contribute with the other antenna columns (1) in creating three other diagrams (Σ', Δ', Ω').

5,302,954

IDENTIFICATION APPARATUS AND METHODS

David R. Brooks, and Graham A. M. Murdoch, both of Perth, Australia, assignors to Magellan Corporation (Australia) Pty. Ltd., Perth, Australia

Continuation of Ser. No. 449,296, May 17, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,033
Claims priority, application Australia, Dec. 4, 1987, P15744
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—44 **39 Claims**



1. In a system for multiple device identification and communication of data having an interrogating station for interrogating a plurality of transponders wherein the interrogating station is capable of receiving communications from said transponders via carrier frequencies, each said transponder comprising:

transmitter means adapted, when the transponder is interrogated by the interrogating station, to transmit an information signal via a carrier signal having a frequency selected from a set of possible carrier signal frequencies; and

frequency generating means for selectively generating the set of possible carrier signal frequencies;

the information signal being transmitted successively or repetitively using at each transmission a newly selected carrier signal frequency or set of newly selected carrier signal frequencies;

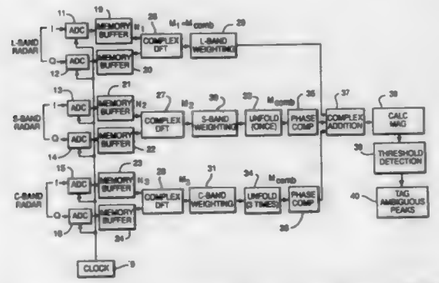
wherein the frequency of the newly selected carrier signal frequency or set of newly selected carrier signal frequencies is selected independent of external influence and independent of external knowledge by the interrogating station.

5,302,955

APPARATUS FOR COMBINING DATA PRODUCED FROM MULTIPLE RADARS ILLUMINATING A COMMON TARGET AREA

Peter C. Schutte, 12 Gail Ct., Huntington, N.Y. 11743; Theodore Koutsoudis, 5 Vin Ct., Farmingdale, N.Y. 11735, and Ivan Kadar, 75-11 195th St., Flushing, N.Y. 11366

Filed Oct. 19, 1992, Ser. No. 962,911
Int. Cl.[5] G01S *13/00*
U.S. Cl. 342—59 **14 Claims**



1. An apparatus for combining radar signals from a plurality of radars which illuminate a common target at different PRF, providing multiple samples of a plurality of range bins representing an increment of radial distance to said target comprising:

first, second and third analog-to-digital converters for respectively converting each radar signal to a digital signal representation:

first, second and third complex discrete Fourier transform filters for respectively receiving the digitized signals, said filters providing from said digitized signals first, second and third groups of velocity range bins, representing substantially the same velocity increment of said common target;

first means for unfolding said second group of velocity range bins to be identical in number to each of said first group of velocity range bins;

second means for unfolding said third group of velocity range bins to be identical in number to each of said first group of velocity range bins; and,

means for combining said first group of velocity range bins with corresponding velocity range bins from said first and second means for unfolding, whereby a single group of velocity range cells are provided.

5,302,956

MULTI-FREQUENCY, MULTI-TARGET VEHICULAR RADAR SYSTEM USING DIGITAL SIGNAL PROCESSING

Jimmie R. Asbury, Imperial Beach; Bryan D. Woll, Laguna Niguel, and Van R. Malan, La Jolla, all of Calif., assignors to Vorad Safety Systems, Inc., San Diego, Calif.

Filed Aug. 14, 1992, Ser. No. 930,066
Int. Cl.[5] G01S *13/00*
U.S. Cl. 342—70 **14 Claims**

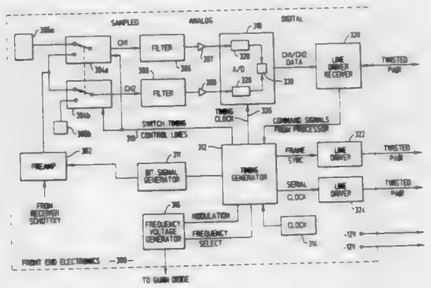
1. A vehicular radar system for detecting targets about an automotive vehicle having an operator, and warning the operator of dangers presented by the targets, including:

a) a microwave transceiver means for transmitting, receiving, and comparing the frequencies of at least two radio frequency (RF) signals, and generating a time-multiplexed output signal of the frequencies;

b) front end electronics means, coupled to the microwave transceiver means, for digitizing the time-multiplexed output signal generated by the microwave transceiver means and converting the output signal of the microwave transceiver means from an analog signal to an interleaved sequence of digital data words, each subsequence of digital data words corresponding to one of the frequencies;

c) digital electronics means for determining the presence of targets, calculating the range of each target, and calculating the relative speed of each target with respect to the automotive vehicle, including:

(1) at least one digital signal processor means, coupled to the front end electronics means, for mapping the digital data words output by the front end electronics means



from the time domain to the frequency domain for each subsequence of digital data words to determine the frequency of the received signal from each target;

(2) at least one microcontroller means, coupled to at least one of the digital signal processor means, for determining the range of each target from the phase difference between the received signal from such target for each of the RF signals, and for determining the relative speed from the frequency difference between the received signal from such target for each of the RF signals and for tracking the targets and assessing dangers presented by the targets as a function of such determined range and relative speed; and

d) display and sensor means coupled to the microcontroller means for presenting a indications to the automotive vehicle operator of the presence of danger presented by the targets.

5,302,957

PASSIVE RANGING SYSTEM

John P. Franzen, Live Oak, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1993, Ser. No. 55,457
Int. Cl.[5] G01S *13/08*
U.S. Cl. 342—125 **10 Claims**

1. Aircraft ranging apparatus comprising:

source means located at a radius vector terminal point for generating a narrow beam of microwave radio frequency energy having a fixed predetermined angular sweep velocity about said radius vector terminal point;

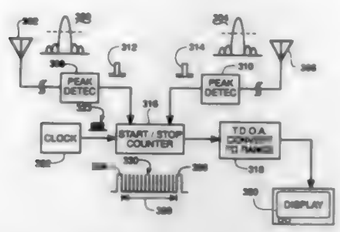
said source means including an aircraft microwave landing system radio frequency energy source having electronically scanned antenna array means for accomplishing remote craft azimuth guidance;

said narrow beam of microwave radio frequency energy also having a scanning velocity, along a cord vector perpendicular to said radius vector, that is proportional to a said aircraft range determined length of said radius vector;

means for measuring a delay time interval between arrival of

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said source means originated microwave radio frequency energy signals at predetermined physical distance segregated radio frequency antennas located at opposed wingtip extremities points contiguous of said aircraft; and



means for computing from said aircraft predetermined physical segregation distance, said fixed predetermined angular sweep velocity, and said measured delay time interval, a radius vector length range of said aircraft from said terminal point radio frequency energy source.

5,302,958

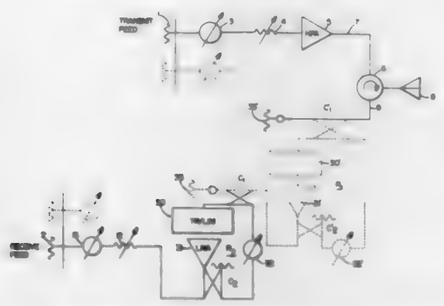
LOW LOSS, FAST SWITCHING, TUNABLE FILTER CIRCUIT

Roger G. Roberts, Auburn, and Paul R. Cox, Duluth, both of Ga., assignors to EMS Technologies, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 910,442, Jul. 8, 1992, abandoned. This application Aug. 14, 1992, Ser. No. 929,529

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—157 **31 Claims**



14. A transmitter/receiver module for use in a phased array, said module comprising:

receiver channel;

a resonant ring structure coupled to said receiver channel by a first coupling element for coupling RF signals to said ring structure;

said resonant ring structure further including a phase shifter having a variable setting, an amplifier and a second coupling element for coupling RF energy to a receiver port;

said resonant ring structure forming a bandpass filter which is tunable over an operating frequency bandwidth by variation of said phase shifter setting,

whereby third order intermodulation products of said amplifier are reduced and the dynamic range of said module receiver is increased.

5,302,959

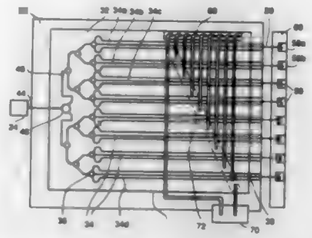
SINGLE ELEMENT DRIVER ARCHITECTURE FOR FERRITE BASED PHASE SHIFTER

William A. Harrington, Whittier, and James V. Strahan, Brea, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 25, 1992, Ser. No. 841,126

Int. Cl.[5] H01P *1/19;* **H01Q** *3/36*

U.S. Cl. 342—372 **9 Claims**



1. A phase shifter subarray for use in directing a beam of electromagnetic waves generated by radiating elements of a phased array antenna, comprising:

a magnetic substrate having a longitudinal axis, a first edge and a second edge, said first and second edges being disposed parallel to the longitudinal axis and one another;

a plurality of phase shifter elements, each phase shifter element being associated with a corresponding radiating element of the phased array antenna, each element having a first end, a second end and a finite length which is substantially equal for all elements, said elements being attached to said substrate adjacent to and spaced apart from one another in a direction from the first edge to the second edge, each said phase shifter being coupled to a corresponding radiating element of the phased array antenna at said second end;

an electrical coil wound around said phase shifter elements in a direction transverse to the longitudinal axis.

means for feeding energy coupled to each said phase shifter element at the respective first ends thereof; and

a driver coupled to said coil for sending current through said coil to induce a magnetic flux through said phase shifter elements,

wherein said coil is wound about said phase shifter elements such that a first turn of said coil winds around a first phase shifter element at said first edge, a second turn of said coil winds around said first phase shifter element and an adjacent phase shifter element, with each successive turn winding around an increasing number of phase shifter elements until the final turn encompasses all the phase shifter elements.

5,302,960

MULTI-ELEMENT SUSCEPTIBILITY ROOM

Peter Boers, Marlboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 20, 1992, Ser. No. 916,459

Int. Cl.[5] H01Q *3/22;* **G01S** *4/40*

U.S. Cl. 342—372 **7 Claims**

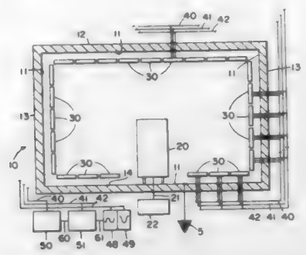
1. An apparatus for generating a predetermined radio-frequency field within a bounded space, comprising:

a room having interior surfaces enclosing a bounded space;

a signal generator for generating radio-frequency signals;

a programmable controller for generating predetermined phase control signals and predetermined gain control signals;

a plurality of radiating elements, coupled to said controller and said signal generator, said plurality of radiating elements arranged on said interior surfaces to radiate inwardly into said bounded space, said plurality of radiating elements arranged to cover a substantial portion of said interior surfaces, each of said radiating elements individually responsive to said phase control and gain control signals, for generating a homogeneous radio-frequency field within said bounded space of said room.



5,302,961

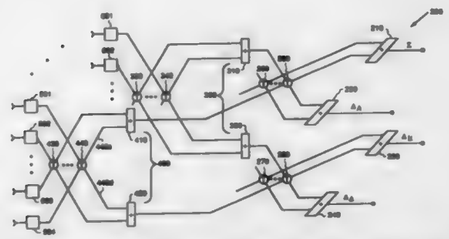
ANTENNA APERTURE WITH MAINLOBE JAMMER NULLING CAPABILITY

David J. Murrow, Clifton Park; Kai-Bor Yu, Schenectady, and Moayyed A. Hussain, Menands, all of N.Y., assignors to General Electric Co., Moorestown, N.J.

Filed Dec. 28, 1992, Ser. No. 997,466

Int. Cl.[5] G01S *5/02, 13/00*

U.S. Cl. 342—427 **23 Claims**



1. A nonrectangular aperture for a phased array radar antenna having the capability to form predetermined electromagnetic field radiation patterns, said aperture comprising:

a first, second, third, and fourth quadrant, said quadrants substantially forming a surface having the capability for receiving electromagnetic signals having a component substantially in the direction of an axis oriented at a predetermined azimuth angle and a predetermined elevation angle with respect to the plane of said aperture, said quadrants further having the capability to modulate the component of the received electromagnetic signals substantially in accordance with predetermined illumination distributions so that said aperture is responsive to electromagnetic signals within predetermined electromagnetic field radiation patterns corresponding to the illumination distributions, the radiation patterns being defined as a function of angle in azimuth and elevation relative to said axis;

the aperture having the capability to form a predetermined sum beam when said four quadrants modulate the received signals to be substantially in phase, a predetermined first difference beam when a first pair of successively adjacent quadrants modulate the received signals to be substantially out of phase with respect to the signals modulated by the remaining pair of successively adjacent quadrants, a predetermined second difference beam when a second successively adjacent pair of quadrants, other than said first pair and said remaining pair, modulate the received signals to be substantially out of phase with respect to the signals modulated by a second remaining pair of successively adjacent quadrants, and a predetermined double difference beam when a pair of diagonally adjacent quadrants modulate the received signals to be substantially out of phase with respect to the signals modulated by the remaining diagonally adjacent pair of quadrants; and

the aperture further being adapted to form said beams so that a first product of said first and second difference beams is substantially equal to a second product of said sum beam and said double difference beams.

5,302,962

ANTENNA SYSTEM PRODUCING A MILLIMETER WAVE BEAM HAVING A GAUSSIAN-LIKE DISTRIBUTION

Luigi Rebuffi, Sceaux, France, and Manfred Thumm, Sindelfingen, Fed. Rep. of Germany, assignors to European Atomic Energy Community (Euratom), Plateau Du Kirchberg, Luxembourg

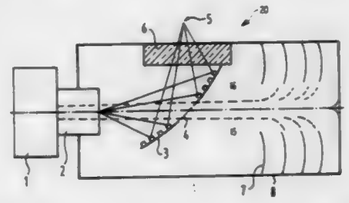
PCT No. PCT/EP89/01483, § 371 Date May 23, 1991, § 102(e) Date May 23, 1991, PCT Pub. No. WO90/06665, PCT Pub. Date Jun. 14, 1990

PCT Filed Dec. 5, 1989, Ser. No. 688,502

Claims priority, application European Pat. Off., Dec. 5, 1988, 88120273.3

Int. Cl.[5] H01Q *13/00*

U.S. Cl. 343—781 P **6 Claims**



1. An antenna system for producing a millimeter wave beam having a Gaussian-like distribution, said system comprising: a high power source, a partial mode ocnverter operatively coupled to said source, said source comprising means for supplying to said partial mode converter a $T_{m,n}$ mode wave of the group consisting of $TE_{m,n}$ and $TM_{m,n}$, said partial mode converter comprising means for delivering a mixture of modes including a mode $T_{m,n}$ at a relative power rate of 70 to 85% and at a relative phase 0, and at least one additional mode of the group consisting of $T_{m,n-1}$ at a relative power rate of 10 to 20% and at a relative phase π, and $TE_{m,n+1}$ at a relative power rate of 10 to 20% and at a relative phase π, and said system further comprising means for applying said mixture of modes to collimation reflector having a focus concentration point constituting an antenna system outlet.

5,302,963

RETRACTABLE ANTENNA ASSEMBLY WITH CONNECTOR

James T. Wiggenhorn, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 753,503, Sep. 3, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 987,590

Int. Cl.[5] H01Q *1/10, 1/24*

U.S. Cl. 343—901 **19 Claims**

1. An antenna assembly, comprising:

a housing having first and second ends, the housing including a conductive sleeve and a dielectric sleeve which define a cavity;

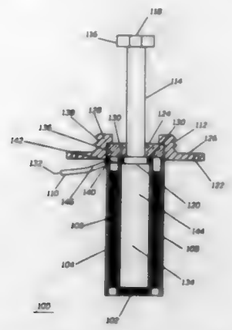
an antenna feed point located closer to the first end of the housing;

an antenna element coupled to the antenna feed point and

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carried by the housing, the antenna element being movable between a first position wherein the antenna element forms an active antenna portion and a second position substantially within the cavity wherein the antenna element exhibits a high impedance with respect to the antenna feedpoint, the antenna element including a first connector contact; and

a connector means coupled to the housing at the first housing end for providing a second connector contact, the first and second connector contacts form an antenna connector when the antenna element is in the second position.

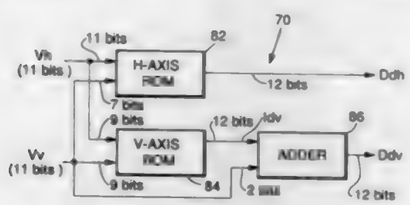


5,302,964

HEADS-UP DISPLAY (HUD) INCORPORATING CATHODE-RAY TUBE IMAGE GENERATOR WITH DIGITAL LOOK-UP TABLE FOR DISTORTION CORRECTION

Lloyd J. Lewins, Marina Del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 25, 1992, Ser. No. 951,077
Int. Cl.[5] G09G *1/04*
U.S. Cl. 345—7 **16 Claims**



1. A display apparatus, comprising:

a cathode ray tube including a cathodoluminescent screen, beam generating means for emitting an electron beam toward the screen and deflection means for laterally deflecting said beam in accordance with applied analog horizontal and vertical deflection signals;

vector signal generator means for generating digital horizontal and vertical vector signals selected from an orthogonal array;

memory means for storing digital horizontal and vertical deflection signals in an orthogonal array of locations which are addressed by said horizontal and vertical vector signals respectively; and

digital-to-analog converter means for generating said analog horizontal and vertical deflection signals in response to said digital horizontal and vertical deflection signals which are output from the memory means in response to addressing of said locations by said horizontal and vertical vector signals respectively;

said digital horizontal and vertical deflection signals differing from said horizontal and vertical vector signals in a manner which is predetermined to reverse inherent distortion in the display apparatus such that an image formed on the screen by said beam in response to selected combinations of said horizontal and vertical vector signals generated by the vector signal generator means as viewed from a predetermined position appears substantially orthogonal; in which

the rate of change of said digital vertical deflection signals with respect to said respective vertical vector signals is approximately unity;

said vertical vector signals each comprise a predetermined number of most significant bits and a predetermined number of least significant bits;

the memory means comprises a vertical memory section for storing digital intermediate vertical signals in locations which are addressed by said horizontal vector signals and are also addressed by and differ from said most significant bits of said vertical vector signals in said predetermined manner; and

the apparatus further comprises adder means for adding said intermediate vertical signals to said least significant bits of said respective vertical vector signals.

5,302,965

DISPLAY

Barry J. Belcher, Berks, and Clive V. Mott, Middlesex, both of Great Britain, assignors to Stellar Communications Limited, England

PCT No. PCT/GB90/00564, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO90/12354, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 12, 1990, Ser. No. 768,953
Claims priority, application United Kingdom, Apr. 13, 1989, 8908321
Int. Cl.[5] G09G *3/20*
U.S. Cl. 345—31 **8 Claims**



1. A display comprising a static unit and a moving unit, said moving unit carrying a plurality of light sources and being arranged to move relative to the static unit so that said light sources perform a repeated movement, said moving unit including a memory for storing data for providing a plurality of displayed images and control means for controlling said light sources so as to display at least one selected image at a time, said static unit containing a further memory for storing data for a plurality of further displayed images and transmission means for transmitting the data from said further memory to said memory and said control means of said moving unit via a communication link and wherein the moving unit is a rotating unit and the light sources are arranged as a plurality of columns parallel to the axis of rotation, with the light sources in each column lying in a common plane and the planes of at least two of said columns having their optical axes angularly offset relative to each other and disposed parallel to the rotational axis so

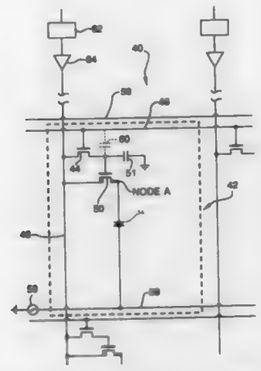
that the image visible from any point covers an extended cylindrical surface.

5,302,966

ACTIVE MATRIX ELECTROLUMINESCENT DISPLAY AND METHOD OF OPERATION

Roger G. Stewart, Neshanic Station, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Jun. 2, 1992, Ser. No. 892,464
Int. Cl.[5] G09G *3/30*
U.S. Cl. 345—76 **7 Claims**



1. An electroluminescent display comprising an array of pixels, each pixel including

a first transistor having its gate connected to a select line, its source connected to a data line and its drain connected to the gate of a second transistor;

the second transistor having it source connected to the data line and its drain connected to a first electrode of an electroluminescent cell; and

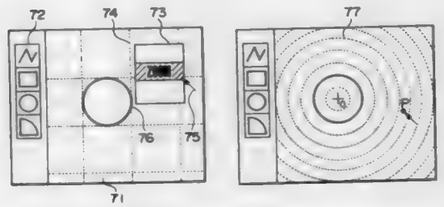
said electroluminescent cell having a second electrode which is connected to means for providing an alternating voltage power source with the voltage power source means being connected between the second electrode and a source of reference potential.

5,302,967

FIGURE PROCESSING APPARATUS AND METHOD AIDED BY DISPLAY WITH RULED LINES

Kay Yonezawa, Machida, and Kunihiro Yanagi, Sagamihara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,663
Claims priority, application Japan, Nov. 26, 1990, 2-317790
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—131 **7 Claims**



1. A figure processing method for drafting drawings using a drafting machine having a display screen for displaying a subjected figure to be drafted with a figure constructing procedure and ruled lines defined by at least one datum point and used for aiding an operator in a drafting operation, comprising the steps of:

displaying the subjected figure to be drafted on the display screen;

determining a sort of the ruled lines to be displayed, in accordance with a shape of the subjected figure to be drafted and displayed on the display screen and the figure constructing procedure selected by the operator;

determining a coordinate of the datum point of the ruled lines on the display screen in accordance with the shape of the subjected figure;

displaying a configuration of the ruled lines, based on the coordinates of the datum point;

acquiring coordinates of a point designated by the operator;

modifying the coordinates of the designated point, for compliance with the ruled lines; and,

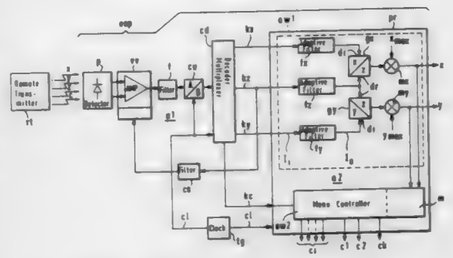
performing the selected figure constructing procedure on the subjected figure, for compliance with the modified coordinates of the designated point.

5,302,968

WIRELESS REMOTE CONTROL AND ZOOM SYSTEM FOR A VIDEO DISPLAY APPARATUS

Klaus Heberle, Reute, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 558,261, Jul. 26, 1990, Pat. No. 5,146,210. This application Mar. 12, 1992, Ser. No. 850,473
Claims priority, application European Pat. Off., Aug. 22, 1989, 89115455.1
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—131 **18 Claims**



1. In a remotely controlled video display apparatus having a screen for displaying at least one video signal, a zoom system for enlarging a selected portion of said video signal on said screen, comprising:

a remote transmitter means for transmitting positional signals with intensities indicative of said transmitter, wherein an unsteady motion of said transmitter creates a high frequency component in each of said positional signals;

an electrooptical control means, responsive to said positional signals, for controlling the position of a cursor on said screen in response to the motion of said transmitter means, whereby said cursor is used to determine said selected portion of said video signal on said screen to be enlarged, said control means receiving said digitizing said positional signals, filtering said high frequency component from each of said positional signals, resolving said positional signals into coordinate values indicative of the position of said cursor on said screen and displaying said cursor on said screen; and

a zoom means for enlarging said selected portion of said video signal chosen by an operator on said screen by said cursor, said zoom means including a picture interpolation means for interpolating a video frame from said selected portion of said video signal.

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5,302,969

DOCUMENT FORMAT SETTING METHOD AND APPARATUS

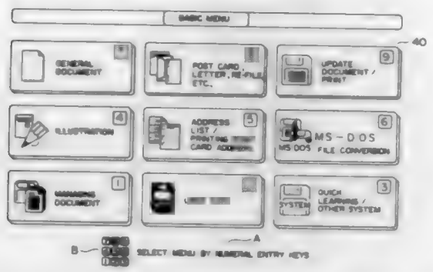
Masayoshi Kuroda, Yokohama; Yasumasa Matsuda, Tokyo; Hiroyuki Kumai, Yokohama; Yasuhiko Kasai, Fujisawa; Kiyoshi Masuda, Omiya; Akihiro Kaneko, Hitachi, and Junichiro Takeyama, Omiya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,612

Claims priority, application Japan, Sep. 12, 1990, 2-239838; Sep. 14, 1990, 2-242395

Int. Cl.[5] **G09G** *3/02*

U.S. Cl. 345—168 **3 Claims**



1. A document format setting apparatus for setting a format of a document, comprising:

memory means for storing usage and purpose information of said document and format setting information of said document;

categorizing means for receiving said usage and purpose information of said document and properly categorizing said document information into a menu of document items;

display means for displaying said menu of document items;

selecting means for selecting, from said memory, a menu of format setting items corresponding to a designated document item, said selected menu of format setting items being displayed by said display menus;

said selecting means further selecting a designated format setting item from said menu of format setting items; and

format operating means for formatting said document in accordance with said selected document item; and said selected format setting item;

wherein said selecting means comprises a numerical entry keyboard formed in a 3×3 matrix arrangement,

said menu of document items also forming a 3×3 matrix arrangement to correspond with said numerical entry keyboard arrangement,

each document item comprising a picture character to represent the content of said document item and a corresponding numerical entry key,

said picture characters and corresponding numerical entry keys, along with a message requesting a user to designate a document item, being displayed by said display means.

5,302,970

PERSONAL COMMUNICATION DEVICE

Susan L. Lakso, Springfield, Mass.; Michael A. Ceppetelli, Broad Brook, Conn.; David M. Kroll, Wilbraham, and Richard D. Rose, Springfield, both of Mass., assignors to Abovo, Inc., Springfield, Mass.

Filed Jun. 22, 1992, Ser. No. 901,973

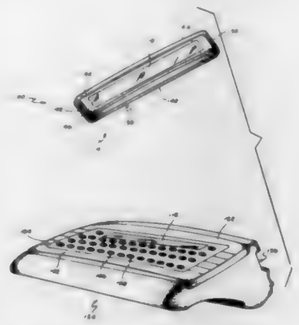
Int. Cl.[5] **G09G** *3/02*

U.S. Cl. 345—168 **23 Claims**

1. A personal communicating device that facilitates expression of a thought by a user who either cannot speak or who has difficulty in speaking, the device comprising:

a. a base unit having an attached alpha-numeric keyboard for manually entering character data representative of a thought of the user and having base electronic means for generating corresponding data in a digital data format, said base electronic means including display means coupled thereto for displaying said data in a human readable form, said base electronic means including further optical transmitting means for converting said digital data into atmospherically transmitted pulses of optical radiation;

b. a remote data processing unit comprising optical receiving means for receiving the atmospherically transmitted pulses of optical radiation, and for converting the received pulses into digitally formatted data, wherein said optical receiving means is electronically connected to a local



processing means for receiving data transmitted from the base unit, remote electronic means for converting the data received from the base unit into the human readable form is electronically coupled to said local processing means, and local display means for displaying the data from said local processing means; and

c. cradle means having a bottom panel that rests on a surface, a top panel that is canted, and four side panels, said top panel being adapted in size and shape to receive the base unit, one of the four side panels being adapted in size and shape to receive and store the remote unit.

5,302,971

LIQUID DISCHARGE RECORDING APPARATUS AND METHOD FOR MAINTAINING PROPER INK VISCOSITY BY DEACTIVATING HEATING DURING CAPPING AND FOR PREVENTING OVERHEATING BY HAVING PLURAL HEATING MODES

Takashi Ohba, Atsugi; Hiroshi Iida, and Haruyuki Matsumoto, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 640,582, Jan. 14, 1991, abandoned, which is a continuation of Ser. No. 406,814, Sep. 12, 1989, abandoned, which is a continuation of Ser. No. 132,692, Dec. 14, 1987, abandoned, which is a continuation of Ser. No. 009,108, Jan. 29, 1987, abandoned, which is a continuation of Ser. No. 813,485, Dec. 26, 1985, abandoned. This application Sep. 21, 1992, Ser. No. 947,951

Claims priority, application Japan, Dec. 28, 1984, 59-280716; Dec. 28, 1984, 59-280717; Dec. 28, 1984, 59-280718

Int. Cl.[5] **B41J** *2/165, 2/05*

U.S. Cl. 346—1.1 **12 Claims**

1. A liquid-discharge recording apparatus comprising:

switching means for selectively supply power to said recording apparatus;

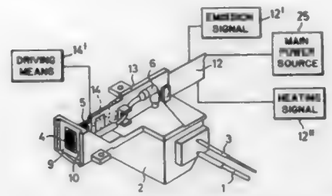
a recording head having a discharge opening for discharging liquid;

discharging means for discharging liquid from the discharge opening;

heating means for heating liquid in said recording head prior to recording;

capping means for covering the discharge opening; and

control means for controlling said heating means including activating and deactivating said heating means so that the heating means is deactivated every time the capping



means covers the discharge opening, even while said switching means supplies power to said recording apparatus.

5,302,972

METHOD OF SETTING DENSITY FOR IMAGE RECORDING APPARATUS

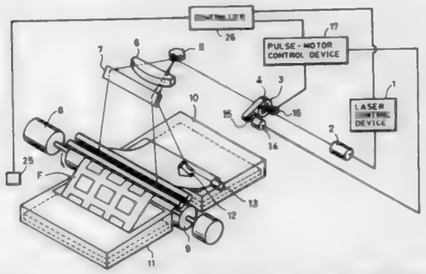
Hitoshi Inoue, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 779,823

Claims priority, application Japan, Nov. 29, 1990, 2-336726

Int. Cl.[5] **H04N** *1/21*

U.S. Cl. 346—108 **8 Claims**



1. A method of setting recording density in an image recording apparatus, the method comprising the steps of:

supplying a constant intensity light beam;

varying the supplied constant intensity light beam to provide a plurality of amounts of light;

recording a sample image having a plurality of regions, each having different densities, by scanning a photosensitive material with the plurality of amounts of light, each of the different densities corresponding to a respective one of the plurality of amounts of light;

measuring the different densities of the sample image;

obtaining a relationship between the measured different densities and the corresponding plurality of amounts of light; and

setting light-amount adjusting means so that an image having a desired density is recorded according to the obtained relationship.

5,302,973

METHOD AND APPARATUS FOR IMAGE REGISTRATION IN A SINGLE PASS ROS SYSTEM

Daniel W. Costanza, and William J. Nowak, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1991, Ser. No. 807,927

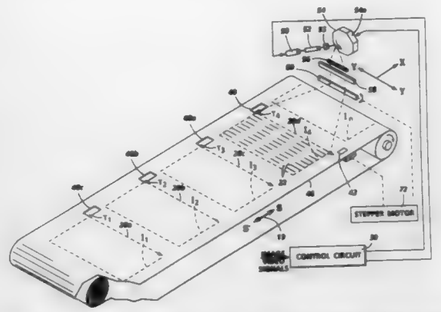
Int. Cl.[5] **H04N** *1/21;* **B41J** *2/435*

U.S. Cl. 346—108 **9 Claims**

1. An imaging system for forming multiple image exposure frames on a photoconductive member during a single pass including:

a photoreceptor belt adapted to accommodate the formation of an integral number of image exposure frames, said belt having a first and second alignment aperture on opposite sides of the belt width and outside of the exposure frame,

a plurality of Raster Output Scanners (ROS) units, each ROS unit associated with the formation of one of said image exposure frames, each ROS unit forming a plurality of projected scan lines in a fast scan (traverse) direction across the belt width, said scan lines beginning and ending at points outside of the image exposure frame,



first and second detecting means associated with each of said ROS units, said detecting means adapted to sense the projected scan lines when they become visible through said alignment apertures and to generate position signals indicative thereof, and

means for rotating said scan line to correct for process registration errors until the detected position signals from said first and second detecting means are concurrent.

5,302,974

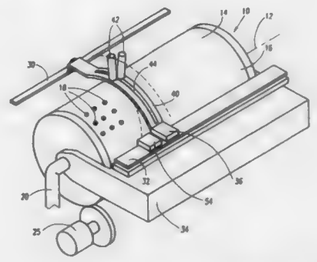
DRUM PLOTTER

Abraham Gross, Rehovot, and Itzhak Taff, Ness Ziona, both of Israel, assignors to Optrotech Ltd., Ness Ziona, Israel

Filed Jan. 3, 1992, Ser. No. 816,804

Int. Cl.[5] **G01D** *15/14*

U.S. Cl. 346—108 **11 Claims**



1. External drum plotter apparatus, comprising:

a generally cylindrical drum having a longitudinal axis of symmetry and a cylindrical support surface disposed about the longitudinal axis, for supporting thereon in generally cylindrical configuration, recording material to be written upon;

means for rotating the drum about the longitudinal axis;

longitudinal track means arranged parallel to the longitudinal axis;

mounting means arranged for longitudinal riding movement on the track means and parallel to the longitudinal axis;

a multiplicity of laser diode writing assemblies mounted on the mounting means and arranged for writing engagement

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with the recording material while the recording material rotates and the mounting means moves longitudinally parallel to the longitudinal axis; and

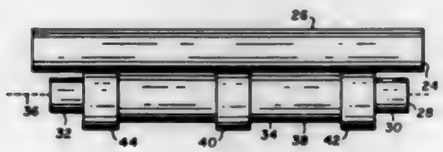
reading means, mounted on the mounting means for motion therewith relative to the recording material and directed towards the recording material for sensing laser writing on the recording material and for providing verification of correct writing by the multiplicity of laser diode writing assemblies.

5,302,975

TRANSPORT ROLLER HAVING COMPRESSIBLE HUBS

James A. Whritenor, Mendon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 8, 1992, Ser. No. 895,074
Int. Cl.[5] B41J *11/00*
U.S. Cl. 346—136 15 Claims



11. In a thermal printer having a platen and a print head to effect thermal transfer of dye from a dye donor onto receiving medium traversing a path between said print head and a take-up spool, the improvement comprising:

a first roller having a surface and being positioned along said path; and

a second roller having first and second end portions, a middle portion intermediate said end portions, a longitudinal axis, and a cylindrical surface concentric with said longitudinal axis and radially spaced a first preselected distance from said axis, said rollers being moveable between an open position at which said rollers are spaced apart and a closed position at which said rollers abut one another, said second roller having a hub with an outer surface concentric with said axis and radially spaced from said axis a distance greater than said first preselected distance, said hub outer surface extending radially outward beyond said cylindrical surface a distance sufficient to engage said receiving medium without said receiving medium coming into contact with said cylindrical surface so that said receiver can be transported by said hub with said rollers in the open position, said hub being compressible in response to transporting contact with said first roller at the closed position so that said hub outer surface is flush with said cylindrical surface.

5,302,976

LOW-VOLTAGE ACTUATABLE INK DROPLET EJECTION DEVICE

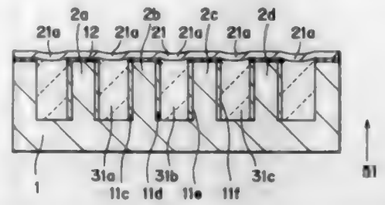
Hiroto Sugahara, Aichi; Masahiko Suzuki, Nagoya, and Yoshikazu Takahashi, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 27, 1992, Ser. No. 888,793
Claims priority, application Japan, May 30, 1991, 3-127486; May 30, 1991, 3-127487; May 31, 1991, 3-129441
Int. Cl.[5] B41J *2/045*
U.S. Cl. 346—140 R 5 Claims

1. An ink droplet ejection device comprising:

a piezoelectric transducer having a surface formed with a plurality of ribs spaced apart defining a plurality of grooves therebetween, the transducer being actuatable by electrodes, which create an electric field to deform the plurality of ribs; and

a plate member attached to the surface of said piezoelectric transducer to cover the plurality of grooves and define a plurality of ink channels, each of said ink channels having a volume and containing ink, the volume of said ink channels being changed when corresponding ones of said plurality of ribs are deformed, wherein said plate member flexes in response to a deformation of any one of said plurality of ribs so as not to restrain said deformation,



wherein said ribs are polarized in a direction perpendicular to said plate member, and

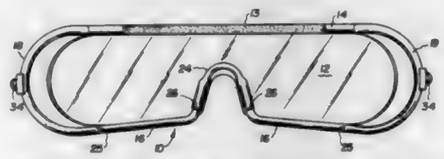
said plate member has a plurality of portions corresponding to respective ones of said plurality of grooves, said portions being curved inwardly of each of said ink channels and readily inwardly buckling in response to said change in volume of said ink channels resulting from said deformation of associated ribs.

5,302,977

EYEWEAR HAVING SELF-ADJUSTING EAR STEMS

Aaron M. Markovitz, and Jeffrey K. Raub, both of Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,239
Int. Cl.[5] G02C *5/06, 5/16, 5/20*
U.S. Cl. 351—114 18 Claims



1. Eyewear having a self-adjusting ear stem system comprising

a lens member containing at least one lens and having a top edge and a bottom edge, said lens member having a generally inverted U-ahaped recess on said bottom edge for mounting said lens member on the nose of a wearer,

an upper frame member substantially conforming to said top edge of said lens member,

a lower frame member substantially conforming to said bottom edge of said lens member and containing two inner ends on opposite sides of said recess, and

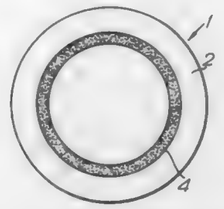
an elastic cord moveably connected to said upper and lower frame members and affixed at one or more locations on said upper frame member or said lower frame member, and wherein said elastic cord can be extended on opposite sides of said upper and lower frame members to fit around the ears of a wearer.

5,302,978

CONTACT LENS

John M. Evans, Fremont; Ashok R. Thakrar, San Jose; Praful Doshi, Poway, all of Calif., and C. Edward Williams, Denver, Colo., assignors to Pilkington Visioncare, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 732,129, Jul. 18, 1991, Pat. No. 5,160,463, which is a continuation-in-part of Ser. No. 605,704, Oct. 30, 1990, abandoned. This application Oct. 21, 1991, Ser. No. 779,993
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—162 20 Claims



1. A contact lens of generally disc-like configuration which has a central axis extending through the contact lens and about which the contact lens is substantially symmetric in configuration, which contact lens has

a pupil zone through which the central axis extends and which comprises the area immediately circumferentially surrounding the central axis;

an iris zone, which comprises the area circumferentially surrounding the pupil zone; and

a peripheral zone which comprises the area circumferentially surrounding the iris zone and extends to the edge of the contact lens;

wherein in the area immediately adjacent to the periphery of the iris zone and the peripheral zone of the contact lens there is a circumferentially extending band of dark substantially light-absorbing colour.

5,302,979

OPHTHALMIC APPARATUS CAPABLE OF MEASURING THE SHAPE OF A CORNEA

Yasuo Maeda, Kawasaki, and Takashi Masuda, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 557,773, Jul. 26, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 945,583
Claims priority, application Japan, Jul. 28, 1989, 1-195631; Sep. 11, 1989, 1-236311
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—212 40 Claims

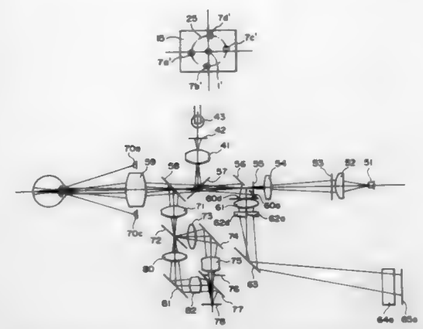
1. An ophthalmic apparatus capable of measuring the shape of a cornea, comprising:

an index mark adapted to be projected onto the cornea of an eye to be examined, said index mark being provided with a first index mark positioned substantially on an optic axis and a second index mark positioned around the optic axis;

an imaging optical system for re-imaging the cornea-reflected images of said first and second index marks;

light position detecting means provided at the image plane position of said imaging optical system for detecting the position of the cornea-reflected images of said first and second image marks; and

calculating means for calculating the information of the shape of the cornea based on the position information of the cornea-reflected image of both said first index mark



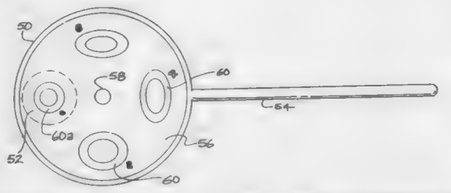
and said second index mark detected by said light position detecting means.

5,302,980

LENS USEFUL AS A KERATOSCOPE

Graham D. Barrett, 56 Dampier Avenue, City Beach, Western Australia, Australia 6015

PCT No. PCT/AU90/00148, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/12533, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 17, 1990, Ser. No. 768,194
Claims priority, application Australia, Apr. 14, 1989, PJ3670
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—212 7 Claims



1. A keratoscope which comprises a light transmitting lens which is of annular shape, has a toroidal surface and is disposed in a plane, wherein said lens is attached to a handle which extends away from said lens in a direction generally in alignment with the plane of said lens, and said lens and said handle are formed in one piece.

5,302,981

METHOD AND APPARATUS TO CORRECT VERTICAL AND LATERAL DOUBLE VISION

Paul C. Wirtz, 20 King Rd., Lebanon, N.J. 08833

Filed Oct. 22, 1992, Ser. No. 964,712
Int. Cl.[5] A61B *3/00, 3/02*
U.S. Cl. 351—246 15 Claims

1. A method for prescribing a prism factor for eyeglasses for substantially correcting double vision problems, in a manner substantially maximizing the involvement of the eye muscles in combination with the prism to substantially extend the range of correction, the method comprising the steps of:

(A) establishing a target image;

(B) establishing a measurement grid on each side of said target image;

(C) positioning a patient a predetermined distance from the target image;

(D) retaining a patient's head in substantially a fixed position

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for gazing out at said target image along a predetermined line of sight;

(E) requesting said patient to close their defective eye, while keeping their other eye open and gazing at said target image;

(F) requesting said patient after a period of time to open their defective eye and immediately indicate where a double

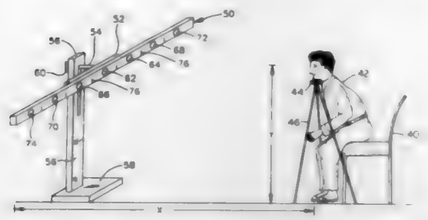


image of said target image occurs on said measurement grid, for obtaining the substantial maximum distance of the double image from said target image; and

(G) selecting a prism factor for an eyeglass lens for substantially reducing the measured distance of said double image from said target upon said patient opening their defective eye.

5,302,982

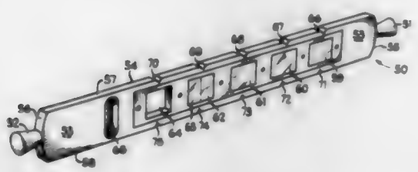
PROJECTOR SLIDE APPARATUS

Deanne I. Davis, Hoffman Estates, Ill., assignor to Woodlyn Inc., Arlington Heights, Ill.

Filed Feb. 23, 1993, Ser. No. 21,050

Int. Cl.[5] A61B *3/02*

U.S. Cl. 353—30 **17 Claims**



1. A projector slide apparatus for use in association with an integrated, duplex optical chart projector, said slide apparatus being operably positionable for combined projection with optical acuity chart slide means simultaneously, to project and display at least a selected portion of said optical acuity chart slide means having projectable indicia and background described thereupon, at different acuity diffusion levels on display means, for the testing, evaluation and measurement of the capabilities and sensitivities of a patient's eye, said projector slide apparatus comprising:

frame means having a front face and a back face positioned opposite to said front face, each of said front and back faces traversing substantially the same longitudinal and latitudinal axes, each of said front and back faces having at least one or more side edges operably positioned about their respective periphery between said front and back faces of said frame means;

one or more apertures operably positioned in said front face and extending through said frame means to said back face so as to permit light to be transmitted through at least one of said one or more apertures towards and onto said display means, simultaneously with said selected portion of said optical acuity chart slide means when said projector slide apparatus and said optical acuity chart slide means are operably engaged in said optical chart projector; and

one or more acuity diffusion filter means operably positioned within selected ones of said one or more apertures, at least one of said one or more acuity diffusion filter means describing a fixed, nonadjustable contrast gradation for operable alignment with selected portions of said optical acuity chart slide means,

said one or more acuity diffusion filter means being capable of modifying the visual contrast between said projectable indicia and said background of said portion of displayed optical acuity chart slide means when simultaneously projected upon said display means by said integrated, duplex optical chart projector,

each of said one or more acuity diffusion filter means and said selected portion of said acuity chart slide means having said desired projectable indicia and background associated therewith, being independently variable in position within said optical chart projector, respectively, to enable combinations of selected portions of each as desired by a user.

5,302,983

PROJECTOR

Makoto Sato, and Kazushi Yoshida, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd. and Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 690,285, Apr. 24, 1991, Pat. No. 5,220,363, which is a continuation of Ser. No. 407,158, Sep. 14, 1989, Pat. No. 5,032,022. This application Dec. 10, 1992, Ser. No. 988,974

Claims priority, application Japan, Sep. 14, 1988, 63-230985; Oct. 13, 1988, 63-255790

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[5] G03B *21/14*

U.S. Cl. 353—69 **10 Claims**



1. A rear projection type projector including a casing provided with a display window and an image projecting apparatus mounted in said casing, said image projecting apparatus comprising:

screen means, of a transmission type, provided on said display window for permitting the transmission of an image through said window, a rear surface of said screen means facing towards said casing;

at least one liquid crystal display means for forming an image;

light source means for illuminating said light crystal display means; and

projecting means for enlarging and projecting said image formed by said liquid crystal display means onto said screen means from a direction inclined with respect to said screen means, said projecting means comprising an auxiliary projecting lens which projects an image to be projected to form an intermediate image, and a projecting lens which projects said intermediate image formed by said auxiliary projecting lens onto said screen means, a plane perpendicular to an optical axis of said auxiliary projecting lens and including an image focal point of said auxiliary projecting lens, and a plane perpendicular to an optical axis of said projecting lens and including an object focal point of said projecting lens, intersect along a line, said line on which said plane intersect lying in a plane of said intermediate image, wherein an image of said object is formed on said screen means without distortion.

5,302,984

DEVICE FOR MOVING A SLIDE INTO A SLIDE GATE AND FOR RECEIVING A LENS MOUNT

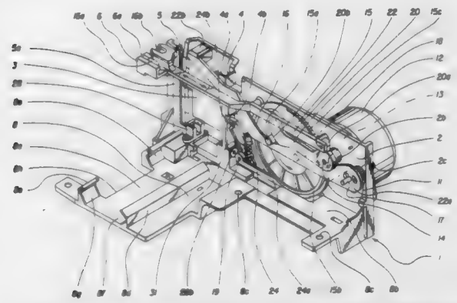
Uwe Kohle, Esslingen, and Ulrich Kowatsch, Leonberg, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1993, Ser. No. 1,018

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200765

Int. Cl.[5] G03B *23/00*

U.S. Cl. 353—103 **7 Claims**



1. Slide projector apparatus adapted for moving a slide from a slide tray via a slide chute to a slide gate and having a motor-driven cam for actuating a slide lifter, slide pressure means arranged in the area of the slide chute and guides for a lens mount, said apparatus comprising:

an integral mounting component on which is provided said slide chute, support means for said cam, said slide lifter, said slide pressure means, said lens mount guides, support means for a tray release lever for arresting the slide tray and supporting guide means for said lever;

said integral mounting component being comprised of a rectangular vertical wall and a plate defining an L, said plate projecting horizontally from the front side of said integral component in an area of said slide chute, and in that said slide chute, said lever supporting guide means and said support means for the tray release lever, for said cam and for said slide lifter are provided in the vertical wall.

5,302,985

OVERHEAD PROJECTOR FOR LCD PANEL

James K. Kennedy, Round Rock; Michael Sweaton, Austin, and Gary L. Tritle, Lakeway, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 861,284, Mar. 31, 1992, Pat. No. 5,231,434. This application Mar. 2, 1993, Ser. No. 25,266

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—122 **19 Claims**

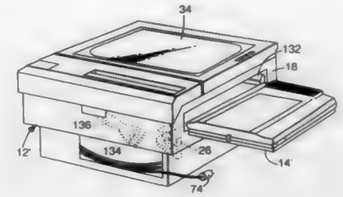
1. An apparatus for electronically generating an image in a light-transmissive display panel and for projecting the image, the apparatus comprising:

a light source;

means for housing said light source, said housing means having a transparent stage area;

optical means attached to said housing means, proximate said stage area, for collecting and projecting light which passes through said stage area;

drawer means located in said housing means for slidably moving the display panel between said light source and said stage area;



computer means located in said housing means for electronically storing the image; and

means for electrically connecting said computer means to the display panel, including a generally planar card member having at least one surface, there being a plurality of electrically conductive paths located on said surface.

5,302,986

INFORMATION RECORDING CONTROL APPARATUS IN A CAMERA

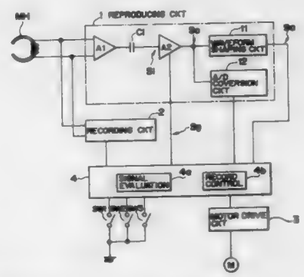
Kazuyuki Kazami, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 921,044, Jul. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 745,287, Aug. 14, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 91,750

Claims priority, application Japan, Aug. 17, 1990, 2-217544; Aug. 16, 1991, 3-229615

Int. Cl.[5] G03B *17/24*

U.S. Cl. 354—21 **8 Claims**



1. An information recording control apparatus in a camera provided with:

reproducing means for reproducing information pre-recorded on film;

recording means for recording information on said film;

evaluation means for evaluating a state in which a signal is recorded on said film on the basis of the of the amplitude reproduction signal by said reproducing means; and

control means for setting the recording condition of said recording means in conformity with the result of the evaluation by said evaluation means.

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5,302,987

ACTIVE MATRIX SUBSTRATE INCLUDING CONNECTING ELECTRODE WITH EXTENDED PORTION

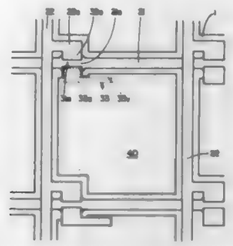
Yuzuru Kanemori; Hiroshi Fujiki; Toshiaki Fujihara, all of Tenri; Akihiko Imaya; Hiroaki Kato, both of Nara; Mikio Katayama, Ikoma, and Takayoshi Nagayasu, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 875,039

Claims priority, application Japan, May 15, 1991, 3-110464; May 22, 1991, 3-117385

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—58 20 Claims



1. An active matrix substrate having an insulating substrate, a plurality of signal lines and a plurality of scanning lines arranged in a matrix on the insulating substrate and defining a matrix of areas, each area including a pixel electrode and a switching device, the switching device having a connecting electrode for connecting the switching device to the pixel electrode,

wherein the connecting electrode comprises

a rectangular main portion having four edges including a channel edge which both runs parallel to a channel width of the switching device and is closest to a gate of the switching device;

an extended portion connected to the main portion at an edge thereof which is contiguous with the channel edge and at the main portion edge farthest from the channel edge;

said extended portion having an elongated rectangular portion at the point of attachment, said elongated rectangular portion having a width which is narrower then one of the edges of the rectangular main portion;

the main portion an the extended portion being disposed between the pixel electrode and the insulating substrate.

5,302,988

STEREOSCOPIC RETINAL CAMERA INCLUDING VERTICALLY SYMMETRICAL APERTURES

Tsuguo Nanjo, Toyohashi, Japan, assignor to Nidek Co., Ltd., Japan

Filed Mar. 17, 1993, Ser. No. 37,653

Claims priority, application Japan, Mar. 31, 1992, 4-108502; Sep. 30, 1992, 4-287001

Int. Cl.[5] G03B *29/00*; A61B *3/10, 3/14*

U.S. Cl. 354—62 14 Claims

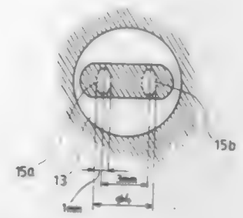
9. A stereoscopic retinal camera comprising:

illumination optical system for illuminating a fundus to be photographed with a luminous flux comprising at least one of and observing illumination light and a photographing illumination light;

photographing optical system for transmitting the luminous flux reflected by the fundus onto a photographing film;

observation optical system for transmitting the luminous flux reflected by the fundus onto an imaging device;

said photographing optical system and said observation optical system partially sharing a common light path which comprises a photographing diaphragm, said photographing diaphragm including a pair of apertures to divide the luminous flux reflected by the fundus into two stereoscopic light beams for stereoscopic observation through said observation optical system and for stereoscopic photographing through said photographing optical system; wherein



each aperture of the photographing diaphragm are shaped like a drum which has a longer vertical length than width, and is substantially symmetrical in shape about a vertical central axis.

5,302,989

METHOD OF PROJECTING STEREOSCOPIC IMAGE AND APPARATUS FOR PRINTING STEREOSCOPIC PHOTOGRAPH

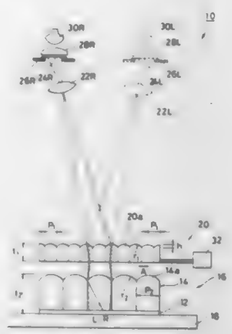
Seiichi Taguchi; Samon Hosoya, both of Kanagawa, and Shunkichi Igarashi, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 1, 1992, Ser. No. 955,061

Claims priority, application Japan, Oct. 4, 1991, 3-257722

Int. Cl.[5] G03B *35/00*

U.S. Cl. 354—112 6 Claims



4. An apparatus for printing a stereoscopic photograph, comprising: a light source; a means for holding a film having at least one of images from two or more different viewpoints; a projecting lens; a means for holding a lenticular light-sensitive material for printing said images that is composed of a lenticular sheet and a light-sensitive layer provided on the back side thereof; and an additional lenticular sheet that has a different pitch of lenticular lenses from said lenticular sheet of said lenticular light-sensitive material, that has a curvature only in a direction perpendicular to its own generatrix, and that is to be either placed on top of said lenticular light-sensitive material or inserted in the vicinity thereof in the optical path between said projecting lens and said lenticular light-sensitive material in such a way that the generatrices of the two lenticular sheets are parallel to each other.

5,302,990

METHOD AND APPARATUS FOR DISPLAYING RECORDABLE DATA IN A CAMERA

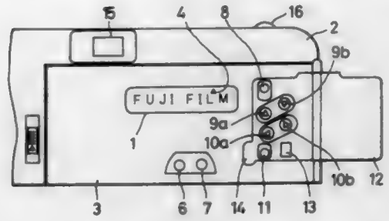
Muneyoshi Satoh; Junichi Iwamoto, and Haruo Onozuka, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1991, Ser. No. 776,167

Claims priority, application Japan, Oct. 19, 1990, 2-109965[U]; Oct. 19, 1990, 2-109966[U]; Oct. 19, 1990, 2-282597; Oct. 19, 1990, 2-282598; Oct. 19, 1990, 2-282599; Oct. 19, 1990, 2-282600

Int. Cl.[5] G03B *17/24*

U.S. Cl. 354—106 28 Claims



1. A recording data display method for a camera in which character data to be recorded on a photographic film are displayed on a display device, said method comprising a selectable data recording mode comprising the steps of:

a) displaying character data to be revised;

b) designating a first character to be change in said character data;

c) displaying a plurality of character groups in a predetermined sequence on said display device wherein said character groups include various character kinds, each of said character groups consisting of a plurality of different characters of the same kind, thereafter;

d) selecting one of said character groups which includes a second character;

e) designating said second character from among a plurality of simultaneously displayed characters which compose said selected character group;

f) temporarily storing said second character, and when said selected data recording mode is terminated before executing step h), said temporary storage of said second character is cancelled, and said first character is maintained stored;

g) setting said second character in place of said first character;

h) repeating steps b) to f) until all necessary characters have been set to form new character data; and

i) displaying said new character data as data ready to be recorded.

5,302,991

VARIFOCAL CAMERA

Haruki Nakayama, Hachioji, Japan, assignor to Konica Corporation, Japan

Filed Mar. 6, 1991, Ser. No. 665,892

Claims priority, application Japan, Mar. 8, 1990, 2-57263

Int. Cl.[5] G03B *1/18*

U.S. Cl. 354—195.12 11 Claims

1. A camera, comprising:

a fixed lens barrel fixed on a camera body;

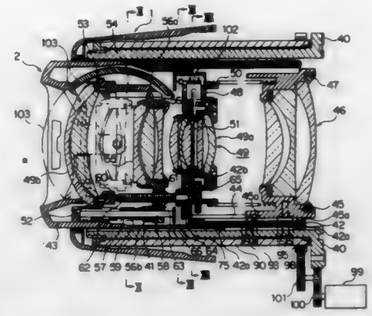
a cam cylinder rotatably arranged around an external surface of said fixed lens barrel;

a driver for rotating said cam cylinder;

a lens system disposed inside said fixed lens barrel, including plural lens groups movable in an optical axis direction by said cam cylinder, said lens groups including a first, second, third and fourth lens group positioned in that order along an optical axis from the subject side;

a first holding barrel for integrally holding said first and third lens groups and for holding said second lens group so as to be movable in said optical axis direction and

a second holding barrel for holding said fourth lens group;



said cam cylinder providing said first holding barrel and said second holding barrel respectively with different movements in said optical axis direction during a changing a focal length.

5,302,992

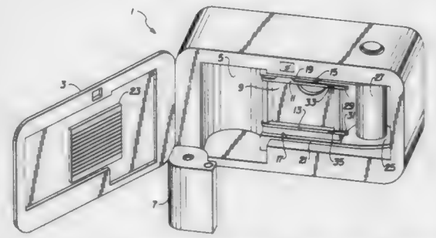
CAMERA WITH EXTENSIONS FOR FILM RAILS

Timothy J. Fuss, Rochester, and Susan J. Metler, Holley, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1993, Ser. No. 92,680

Int. Cl.[5] G03B *1/00*

U.S. Cl. 354—212 3 Claims



1. A camera comprising a back frame opening for exposing successive longitudinal sections of a filmstrip, a pair of parallel film rails located adjacent opposite sides of said back frame opening for supporting successive sections of the filmstrip flat over the back frame opening, a take-up chamber for taking up the filmstrip beginning with a leading film end, and respective rail extensions to said take-up chamber abutted end to end with said film rails to effect narrow discontinuities between said rail extensions and the film rails, is characterized in that:

said abutted ends of said film rails and said rail extensions are inclined relative to the direction of film travel along the film rails to similarly arrange said discontinuities in order to facilitate advance of the leading film end over the discontinuities.

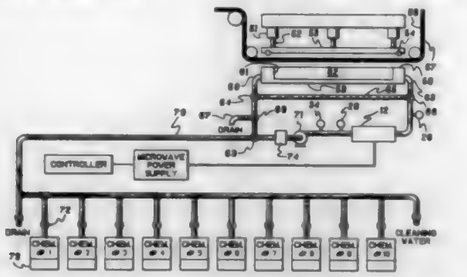
VOL 1161 ISS 2 AP 12 1994 UMI

5,302,993

MICROWAVE-HEATED FILM PROCESSING APPARATUS

Duane J. Farling, Webster, and Steven M. Bryant, Holley, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1992, Ser. No. 823,921
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—299 1 Claim



1. An apparatus for the fluid processing of a photosensitive material comprising

(a) a first platen having a cavity on one planar surface and a pair of ducts at opposite ends of said cavity penetrating said platen to provide fluid communication with said ends of said cavity;

(b) a second platen having a raised resilient pattern on one planar surface, said pattern being of overall length and width smaller than said first platen and minimally larger than said cavity on said first platen, said pattern further being of uniform elevation above said surface of said second platen, said raised pattern being aligned so as to urge a coated surface of a web into sealing contact with said planar surface of said first platen at the perimeter of said cavity to provide a processing chamber in which one wall of said chamber is provided by a photosensitive material-coated surface of said coated web, said chamber having provision for the flow of processing chemicals;

(c) means, comprising a plurality of pneumatic cylinders, for urging said second platen against a fixed first platen, said second platen being in contact with an uncoated surface of said web and said cavity containing surface of said first platen being in contact with a coated surface of said web;

(d) a microwave heating unit, the output from which is controllable within ±1° C. from 20° to 60° C., comprising means for measuring temperature before and after a control point and for measuring flow rate, a source of microwave energy to provide thermal energy at said control point, and a programmed digital computer to provide forward and backward feedback control of said microwave source based on said temperatures and flow rate;

(e) means for transporting processing chemicals between a source, said heating unit, said processing chamber, and a waste drain; and

(f) a computer supervised process monitor and controller.

5,302,994

Patent Not Issued For This Number

5,302,995

PHOTOGRAPHIC DEVELOPING APPARATUS

Hiroshi Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

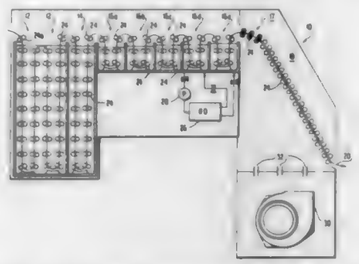
Filed Aug. 20, 1992, Ser. No. 932,545
Claims priority, application Japan, Aug. 22, 1991, 3-233780; Jun. 12, 1992, 4-177765
Int. Cl.[5] G03D *3/08, 3/02*
U.S. Cl. 354—323 19 Claims

1. A wet photographic processing apparatus adapted for processing an imagewise exposed silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, said processing comprising at least a developing step followed by at least one of a washing step and a stabilizing step, said apparatus comprising:

(i) a developing bath;

(ii) at least one of a plurality of washing baths in countercurrent cascade connection and/or a plurality of stabilizing baths in countercurrent cascade connection;

(iii) means for filtering at least a portion of a washing and/or stabilizing solution drawn from an upstream bath among said plurality of baths, said filtering means including a



reverse osmotic membrane apparatus and a pipe connecting the upstream bath and the reverse osmotic membrane apparatus, said reverse osmotic membrane apparatus filtering said washing or stabilizing solution to produce a filtrate;

(iv) means for introducing the filtrate from said reverse osmotic membrane apparatus into a downstream bath among said plurality of baths; and

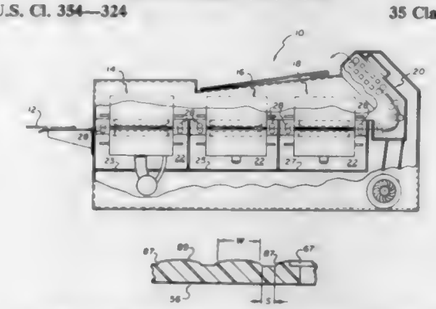
(v) means, provided in said pipe, for automatically shutting-off fluid flow between said upstream bath and said reverse osmotic membrane apparatus concurrent with suspension of processing.

5,302,996

APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

Douglas O. Hall, Canandaigua; Bruce R. Muller, Rochester, and David G. Sherburne, Ontario, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,564
Int. Cl.[5] G03D *3/02, 13/02*
U.S. Cl. 354—324 35 Claims



1. In an apparatus for processing photosensitive material, the apparatus having, a narrow processing chamber formed by a pair of substantially planar guide plates spaced apart a predetermined distance, said processing chamber having an entrance and an exit for allowing the photosensitive material to travel through the processing chamber, first supply means for supplying processing fluid to the processing chamber to create a first fluid layer on one side of the photosensitive material, second supply means for supplying processing fluid to the processing chamber to create a second fluid layer on the opposite side of the photosensitive material; the improvement comprising:

means for inducing a force in the processing fluid so as to cause the processing fluids to provide a force against the photosensitive material so as to minimize contact of the photosensitive material with the guide plates

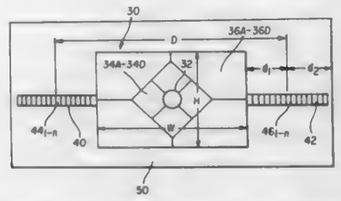
wherein said means for inducing a force in the processing fluid comprises a plurality of raised projections are spaced apart a distance in the range of 0.02 inches (0.508 cms) to 0.5 inches (1.27 cms), said projection being disposed on the surface of the guide plates such that they extend in a substantially perpendicular direction with respect to the direction of travel of the photosensitive material and across substantially the entire width of the photosensitive material.

5,302,997

COMPOSITE PHOTOMETRIC AND RANGE FINDING ELEMENT ARRAY

J. David Cocca, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1992, Ser. No. 997,386
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—432 12 Claims



1. A multiple photosensitive element array positioned on a common substrate and lens system particularly adapted for use in a camera for providing scene image light intensity signals for use in automatic exposure and automatic focus control comprising:

a two-dimensional photometric sensor array of one or more planar photosensitive elements positioned on said substrate, wherein each of said planar elements receives light from a segment of the image focused thereon and develop one or more respective first light intensity related signals in response thereto;

at least one pair of linear photosensitive element arrays, each linear array comprising a plurality of photosensitive elements, positioned on said substrate either side of said two-dimensional array of planar photosensitive elements, such that said linear arrays are separated by a baseline distance extending across said two-dimensional photometric array and wherein said elements of said pair of linear photosensitive element arrays each receive light from a fractional portion of the image focused thereon and develop a respective pair of second light intensity related signals in response thereto; and

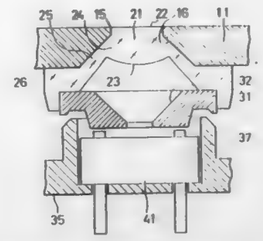
a lens system having lens means for focusing a segment of said image upon each photosensitive element of said two-dimensional photometric array and at least a portion of the same image upon said linear photosensitive element arrays.

5,302,998

CAMERA WITH INSTALLATION STRUCTURE OF LENS FOR LIGHT MEASUREMENT

Kiyoshi Kawano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,701
Claims priority, application Japan, Sep. 17, 1991, 3-310258
Int. Cl.[5] G03B *7/099*
U.S. Cl. 354—476 8 Claims



1. A camera with an installation structure for a light measurement lens, comprising:

a camera body having a front surface which comprises a front outer periphery of said camera, to which a photographing lens is mounted, and on which a hole is formed;

a light-receiving element provided in said camera body; and

a lens for light measurement which is installed in said hole and has a first surface located at an objective side, for focusing an objective image light onto said light-receiving element, said first surface of said lens for light measurement being positioned substantially on the same plane as said front surface of said camera body and substantially flush with said front outer periphery of said camera; wherein said first surface of the lens for light measurement is formed as a flat surface so as to be positioned substantially on the same plane as the outer surface of the camera body.

5,302,999

ILLUMINATION METHOD, ILLUMINATION APPARATUS AND PROJECTION EXPOSURE APPARATUS

Yoshitada Oshida, Fujisawa; Tutomu Tawa, Katsuta; Yukihiro Shibata, Yokohama; Shigemi Ishii, Ibaraki; Minori Noguchi, Yokohama; Tsuneo Terasawa, Ome, and Makoto Murayama, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,928
Claims priority, application Japan, Feb. 4, 1992, 4-018676; Jul. 13, 1992, 4-184962
Int. Cl.[5] G03B *27/00*
U.S. Cl. 355—1 32 Claims

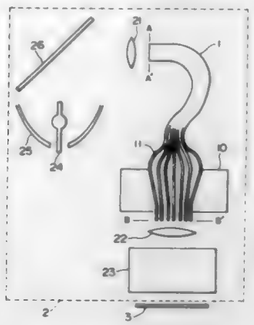
1. A projection exposure apparatus comprising:

a light source for emitting a light beam for exposure;

an illumination optical system comprising optical fiber bundle portion including a plurality of bundled optical fibers having an entrance plane to which a light beam emitted from said exposing light source is incident, and a little optical fiber bundle portion including a plurality of little optical fiber bundles respectively having an outgoing plane; and

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a projection exposure system for projecting a light beam passing through said illumination optical system and transmitting a mask or a reticle onto an object to be exposed as a pattern image of the mask or the reticle.



5,303,000

METHOD OF AND APPARATUS FOR ASCERTAINING THE CHARACTERISTICS OF SHORTER AND LONGER SECTIONS OF PHOTOGRAPHIC MATERIAL

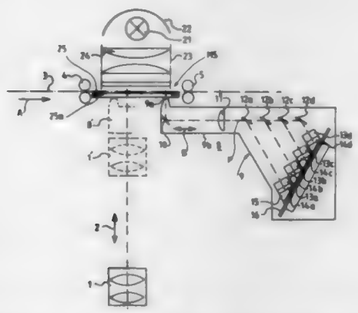
Gerhard Benker, Pullach; Ulrich Klueter; Reimund Muench, both of Munich; Erich Nagel, Anzing; Wilhelm Nitsch, Munich; Volker Weinert, Taufkirchen, and Hans-Joachim Vedder, Puchheim, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 5, 1992, Ser. No. 878,768

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118812; Feb. 26, 1992, 4205922

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—41 **32 Claims**



1. Apparatus for ascertaining the characteristics, including the density, of longer and shorter sections of photographic material, comprising means for advancing longer sections along a predetermined path through a monitoring station which is arranged to receive discrete shorter sections; a monitoring device located at one side of said predetermined path adjacent the latter and having an array of detectors including means for generating signals denoting the characteristics of successive increments of a longer section which is being advanced along said path, said array comprising at least one row of photosensitive elements, and said advancing means including means for advancing longer sections transversely of said at least one row of photosensitive elements; means for transporting said monitoring device past a shorter section at said station so that said signal generating means can generate signals denoting the characteristics of the shorter section at said station; a frame having at least one window at said monitoring station, said monitoring device being disposed at said at least one window during advancement of a longer section along said path and during transport of said device past a shorter section at said station; a radiation source at the other side of said path; and means for directing radiation from said source through a section at said station and through said at least one window, said device having means for imaging at least part of a section at said station onto said photosensitive elements.

5,303,001

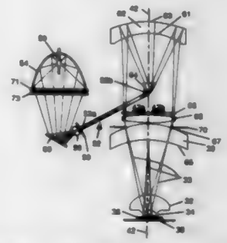
ILLUMINATION SYSTEM FOR HALF-FIELD DYSON STEPPER

Hwan J. Jeong, Los Altos, Calif., and Shafer David R., Fairfield, Conn., assignors to Ultratech Stepper, Inc.

Filed Dec. 21, 1992, Ser. No. 994,239

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **25 Claims**



1. An illumination system for a stepper employing a Half-Field Dyson projection system, whereby a wafer coated with a photoresist sensitive to radiation of a given wavelength may be exposed through a reticle window by an image of a pattern on a reticle that is illuminated with said radiation of said given wavelength; said illumination system comprising optical relay means that includes:

a light pipe of a certain aperture having an input end and an output end;

a first relay portion for illuminating said input end of said light pipe with radiation of said given wavelength radiated from a radiation source that is remotely situated from said Half-Field Dyson projection system; and

a second relay portion that (1) comprises said Half-Field Dyson projection system, (2) is illuminated with radiation of said given wavelength from said output end of said light pipe, and (3) provides substantially uniform bright illumination of said reticle pattern with radiation of said given wavelength without any significant spill over of said reticle-pattern illuminating radiation through said reticle window.

5,303,002

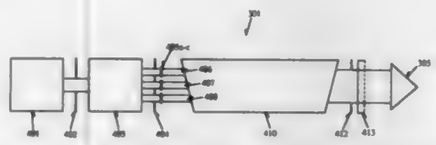
METHOD AND APPARATUS FOR ENHANCING THE FOCUS LATITUDE IN LITHOGRAPHY

Pei-Yang Yan, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 40,678

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **36 Claims**



1. A method of patterning a photosensitive layer comprising:

irradiating a mask having a pattern thereon with a plurality of bands of radiation, each of said bands having a bandwidth;

passing at least some of said radiation in each of said plurality of bands of radiation through a lens, said lens having a chromatic aberration coefficient; and,

forming a plurality of images of said pattern on said photosensitive layer, each of said images corresponding to one of said plurality of bandwidths and being focused at one of a plurality of focal planes.

5,303,003

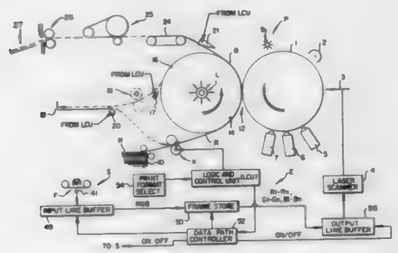
COLOR TRANSPARENCY HAVING TONER IMAGES TRANSFERRED TO BOTH SIDES AND METHOD OF MAKING

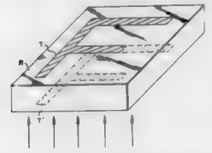
Fereidoon S. Jamzadeh, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1992, Ser. No. 832,129

Int. Cl.[5] G03G *15/00, 21/00, 15/01*

U.S. Cl. 355—200 **1 Claim**





1. A method of producing a high density color transparency, said method comprising the steps of:

forming a first series of electrostatic images on an image member,

toning the images of said first series of electrostatic images with different color dry toners to form a first series of different color dry toner images,

transferring said first series of toner images to a first side of a transparent substrate in registration to form a first multicolor image,

forming a second series of electrostatic images on the image member which images are a mirror image of the first series of electrostatic images,

applying different color toner to the second series of electrostatic images to form a second series of different color toner images comparable to the first series of different color toner images,

transferring the second series of different color toner images to a second side opposite the first side of the transparent substrate to form a second multicolor image in registration with the first multicolor image, and

applying heat and pressure to each of the multicolor images to fix the images to the respective opposite sides of the substrate to form a color transparency with the first and second multicolor images collectively defining the density of a single multicolor image when viewed from one side of the substrate or when projected.

5,303,004

APPARATUS FOR DRIVING IMAGE BEARING MEMBER VIA TORQUE LIMITER

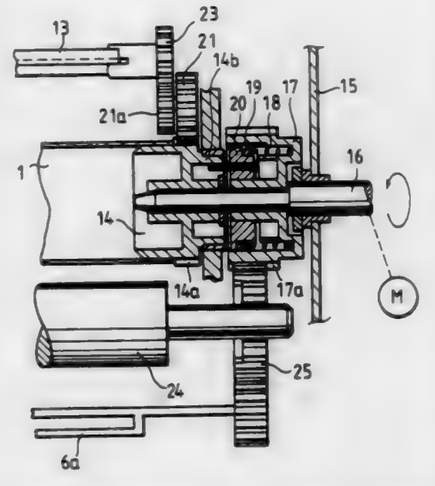
Hiroyoshi Maruyama, Yokohama; Kazuo Kagiura, Higashi; Tatsuya Shiratori, Kawasaki; Naomasa Kimura, Yokohama; Eiichi Ando, Toride; Masanari Shirai, Chigasaki; Yoshikuni Toyama, Yokohama, and Masashi Ohashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 681,647, Apr. 8, 1991, abandoned, which is a continuation of Ser. No. 310,959, Feb. 16, 1989, abandoned. This application Sep. 14, 1992, Ser. No. 944,751

Claims priority, application Japan, Feb. 19, 1988, 63-38320

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **7 Claims**



1. An image forming apparatus for recording an image onto a recording medium, comprising:

an image bearing member;

developing means, having a developer bearing member, for developing a latent image formed on said image bearing member;

transfer means for transferring the image formed by said developing means onto the recording medium;

a developer container having a developer conveying means for conveying developer removed from said image bearing member in a predetermined direction after the transfer operation by said transfer means;

a driving source;

a first drive force transmitting means for transmitting a driving force from said driving source;

a second drive force transmitting means for transmitting the drive force from said first drive force transmitting means to said image bearing member via a torque limiter;

a third drive force transmitting means, connecting said image bearing member and said developer conveying means, for transmitting the drive force from said image bearing member to said developer conveying means; and

a fourth drive force transmitting means for transmitting the drive force from said first drive force transmitting means to said developing means independently of said torque limiter,

wherein transmission of the drive force to said image bearing member is interrupted when said torque limiter operates thereby indicating that the developer in the cleaning means has reached a predetermined amount.

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5,303,005

IMAGE FORMING APPARATUS WITH IMPROVED MAINTENANCE CONTROL

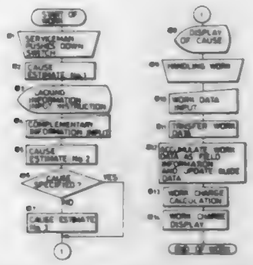
Yoshiaki Takano; Tadafumi Shimizu; Hiroyuki Ideyama; Manabu Kamitamari, all of Toyokawa; Kadotari Nishimori, Amagasaki; Yoshihiko Hatta, Toyokawa; Masazumi Ito; Tsugihito Yoshiyama, both of Toyohashi; Yoshifumi Shibata, Toyokawa, and Yoshiaki Hata, Ashiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 648,130, Jan. 30, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,244

Claims priority, application Japan, Jan. 31, 1990, 2-22712; Jan. 31, 1990, 2-22719

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—202 30 Claims



1. An image forming apparatus connectable to an external control unit through a communication line, comprising:

means, associated with at least one element of said image forming apparatus, for generating a signal having a first value when maintenance work has been performed on said at least one element and a second value indicating that maintenance work has not been performed;

first detecting means for detecting maintenance work performed by a serviceman on said image forming apparatus based on said generated signal;

second detecting means for detecting operating parameters of said image forming apparatus;

storing means for storing work data indicating the detected results by said first detecting means and parameter data indicating the detected results by said second detecting means; and

transmitting means for transmitting at least said work data stored in said storing means to said control unit through said communication line.

5,303,006

IMAGE DENSITY CONTROL DEVICE FOR USE IN AN IMAGE FORMING APPARATUS

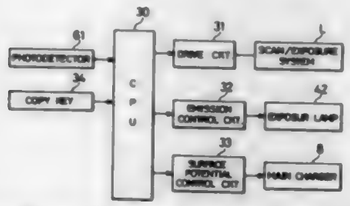
Kazuhiro Mizude, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1991, Ser. No. 809,657

Claims priority, application Japan, Dec. 25, 1990, 2-406099; Dec. 25, 1990, 2-406100

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 7 Claims



1. An image density control device for use in an image forming apparatus having an exposure lamp for emitting light to illuminate a document, a photoreceptor for receiving light reflected from the document to produce an electrostatic latent image, and a charger for charging the photoreceptor, the device comprising:

detector means for detecting a density of the document;

light emission amount controlling means for controlling the amount of light emitted from the exposure lamp;

surface potential controlling means for controlling the charger to change the surface potential of the photoreceptor; and

control means responsive to the detector means for controlling, when the document density is in a first predetermined range, the light emission amount controlling means and the surface potential controlling means so as to change the emitted light amount as a first function of the document density change and so as to change the surface potential of the photoreceptor as a second function of the document density change, and controlling, when the document density is in a second predetermined range, the light emission amount controlling means and the surface potential controlling means so as to change the emitted light amount as a third function of the document density change and so as to change the surface potential of the photoreceptor as a fourth function of the document density change.

5,303,007

PRINTING APPARATUS FOR ELECTROSTATIC PHOTOCOPYING

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

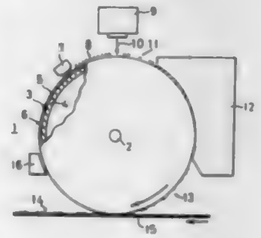
Division of Ser. No. 891,049, Jun. 1, 1992, abandoned, which is a division of Ser. No. 606,187, Oct. 31, 1990, Pat. No. 5,143,808, which is a division of Ser. No. 577,006, Sep. 4, 1990, Pat. No. 5,070,364, which is a division of Ser. No. 452,355, Dec. 19, 1989, Pat. No. 4,999,270, which is a division of Ser. No. 116,337, Nov. 2, 1987, Pat. No. 4,889,783, which is a division of Ser. No. 814,083, Dec. 24, 1985, abandoned, which is a continuation of Ser. No. 502,583, Jul. 21, 1983, abandoned, which is a division of Ser. No. 276,503, Jun. 23, 1981, Pat. No. 4,418,132. This application Apr. 14, 1993, Ser. No. 46,839

The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.

Claims priority, application Japan, Jun. 25, 1980, 55-86801

Int. Cl.[5] G03G *15/22*

U.S. Cl. 355—211 12 Claims



1. A machine comprising:

a printing member including

a conductive substrate;

a non-single-crystal first semiconductor layer formed on said conductive substrate.

a non-single-crystal second semiconductor layer formed on said first semiconductor layer;

a substantially intrinsic insulating or semi-insulating layer formed on said second layer with an external surface to permit the passage of charge photo-generated in said second layer so that charge on the external surface can be neutralized;

where the band gap of the first layer is substantially larger than the band gap of the second layer; and

where each of said first layer, said second layer and said insulating or semi-insulating layer comprise a material selected from the group consisting of silicon, silicon with nitrogen, silicon with carbon, and silicon with oxygen either in stoichiometric or non-stoichiometric amounts;

where each of said first layer, said second layer and said insulating or semi-insulating layer includes hydrogen, fluorine or chlorine;

where said second layer is thicker than any of said first and said insulating or semi-insulating layers;

means for providing said charge on said external surface of the insulating or semi-insulating layer of the printing member;

means for projecting a light image onto said external surface of said insulating or semi-insulating layer to thus form an electrostatic charge image; and

means for developing the electrostatic charge image to form a visible image pattern on the insulating or semi-insulating layer of the printing member.

5,303,008

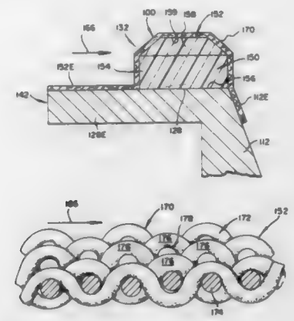
SEAL-FORMING DEVICE FOR A TONER RECEIVING APERTURE

Satyan R. Kalyandurg; Richard S. Fox, both of Rochester, and Blaise P. Pelligra, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 8, 1992, Ser. No. 895,303

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 10 Claims



1. A device for forming a seal between a toner receiving part of an electrostatographic development apparatus having a toner receiving aperture and lips of a toner container being loaded onto and unloaded from the toner receiving aperture, the seal forming device comprising:

(a) a resilient member to be mounted onto a surface of the toner receiving part and around the toner receiving aperture; and

(b) a woven fabric mounted onto said resilient member for forming a loading and unloading contact surface with the lips of the toner container, said fabric having wavy and undulating fibers forming said contact surface and generally straight fibers, said generally straight fibers each having a different and smaller cross-sectional area from that of each said wavy and undulating fibers for creating a fabric surface having low areas and high areas.

5,303,009

IMAGE FORMING APPARATUS WITH AN IMPROVED DISCHARGER

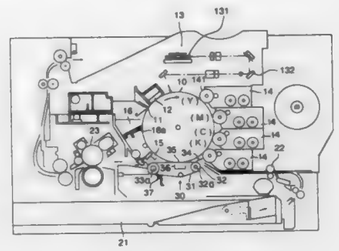
Kimio Nishizawa, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 92,246

Claims priority, application Japan, Jul. 21, 1992, 4-194128

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—219 3 Claims



1. An image forming apparatus comprising:

a photorecepter means;

means for producing a latent image on said photorecepter means;

a plurality of developing means, each of said developing means developing said latent image and forming a toner image on said photorecepter means;

means for selecting one of a multi-color mode which selects at least two of said developing means to superimpose a plurality of toner images on said photorecepter means, and a mono-color mode which selects one of said developing means to form a mono-color toner image on said photorecepter means;

means for transferring said plurality of toner images of said mono-color toner image onto a recording medium;

means for neutralizing said photorecepter means to impress a neutralizing voltage;

means for cleaning a residual toner on said photorecepter means; and

means for changing said neutralizing voltage according to said selection in said selecting means.

5,303,010

DOCTOR BLADE MOUNTING STRUCTURE

Masatoshi Takano, and Satoru Morisawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 895,033

Claims priority, application Japan, Jun. 7, 1991, 3-073726[U]

Int. Cl.[5] G03G *15/06, 21/00*

U.S. Cl. 355—245 3 Claims

1. A doctor blade mounting structure for mounting a doctor blade to a main body of a development device which includes a development roller which is rotatably arranged in said main body, and on an outer circumferential surface of which, a magnetic brush is formed, said doctor blade being disposed in confrontation with said development roller with a predetermined doctor gap defined between a distal end of said doctor blade and an outer periphery of said development roller, for setting a height of said magnetic brush to a uniform level, said doctor blade mounting structure comprising:

a rigid support member to which said doctor blade is attached;

fixing means for fixing said rigid support member to said main body of said development device;

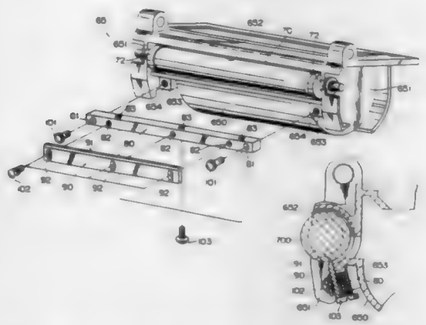
doctor gap adjusting means provided between said doctor blade and said rigid support member and adjusting the relationship between said doctor blade and said rigid support member, for adjusting said doctor gap by said

VOL 1161 ISS 2 AP 12 1994

doctor blade extending towards and retracting from said development roller;

whereby said doctor blade is mounted to said main body of said development device through said support member;

said doctor gap adjusting means including a doctor blade adjusting member provided to said rigid support member, to be movable in a direction intersecting the outer periphery of the development roller, for allowing an amount of said doctor gap to be adjusted by moving said adjusting member, said doctor blade disposed in a plane including a central axis of rotation of said development roller and movable along said plane;



said doctor blade adjusting member comprising a screw threaded into an under end surface of said support member;

said doctor blade being disposed below said development roller;

said doctor blade comprising a lower end which projects downward from a lower end of said support member, and said screw is disposed at a position such that a head portion of said screw interferes with a lower rear portion of said doctor blade.

5,303,011

IMAGE FORMING APPARATUS

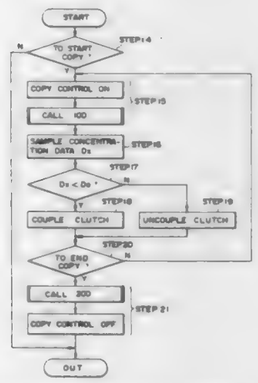
Yukio Noguchi, and Masanori Nagayama, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,557

Claims priority, application Japan, May 10, 1991, 3-105623

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 **6 Claims**



1. An image forming apparatus comprising:

an image carrier for electrostatically forming a latent image thereon;

charging means for uniformly charging a surface of said image carrier;

exposing means for exposing the charged surface of said image carrier by imagewise light to form the latent image;

developing means comprising a developer carrier located to face said image carrier and carrying a two-component developer made up of a toner and a carrier thereon for developing the latent image by supplying said toner to said latent image;

toner concentration adjusting means for performing a toner concentration adjusting operation including drive of said developer carrier for controlling a toner concentration of said developer to a predetermined value;

cleaning means for removing the toner remaining on said image carrier after a developing operation;

discharging means for dissipating a charge from said image carrier; and

control means for activating at least said image carrier, said cleaning means and said discharging means in synchronism with the toner concentration adjusting operation of said toner concentration adjusting means, such that after an interrupt state occurring during a normal copy operation, said control means activates said developing means after said image carrier has been charged to a predetermined potential by said charging means, said cleaning means has removed any remaining toner from the image carrier, and the discharging means has dissipated any remaining charge from the image carrier.

5,303,012

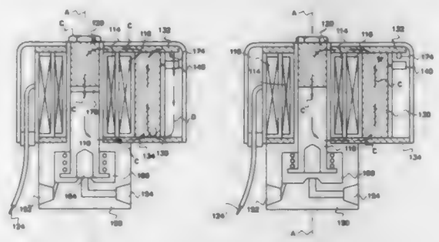
SINGLE MAGNET LATCH VALVE WITH POSITION INDICATOR

Wilhelm H. Horlacher, Newington, and Harry S. Kuhlman, III, Berlin, both of Conn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 10, 1993, Ser. No. 16,587

Int. Cl.[5] H01F *7/08, 7/00*

U.S. Cl. 335—253 **20 Claims**



1. A solenoid actuator, comprising:

a coil having a central axis;

a plunger disposed within said coil, said plunger being magnetic and slidable within said coil in response to a magnetic field induced by an electrical current flowing through said coil;

a stationary stop member disposed in the path of said plunger to limit the travel of said plunger in a first direction along said central axis;

a magnet;

a magnetically sensitive component;

first means for providing a first magnetic circuit comprising said magnet, said stationary stop member and said plunger, the reluctance of said first magnetic circuit being variable in response to movement of said plunger relative to said stationary stop member; and

second means for providing a second magnetic circuit comprising said magnet and said magnetically sensitive component, a magnetic field strength of said second magnetic circuit being variable in response to changes in said reluctance of said first magnetic circuit, said magnetically sensitive component having an output signal, said output signal being representative of said magnetic field strength of said second magnetic circuit, said magnet being disposed between said magnetically sensitive component and said plunger.

5,303,013

COLOR PICTURE IMAGE FORMATION DEVICE FOR DEVELOPING LATENT IMAGE FORMED ON A PHOTOSENSITIVE BODY

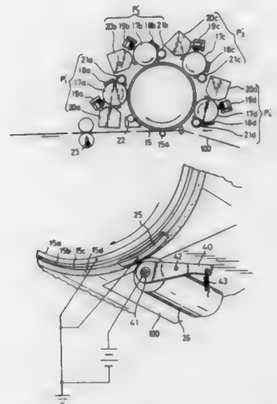
Shuji Koike; Akihiko Ishii, and Shino Sakai, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 16, 1992, Ser. No. 851,613

Claims priority, application Japan, Mar. 18, 1991, 3-051876; Jul. 19, 1991, 3-179423

Int. Cl.[5] G03G *15/01, 15/14*

U.S. Cl. 355—271 **17 Claims**



1. A color image forming apparatus comprising:

a plurality of image formation sections, each of which includes an endless image bearing member, an image forming device for forming an electrostatic image onto the image bearing member, and a developing unit for developing the electrostatic image by a color toner, and the color toner of each developing unit being different from each other;

an intermediate transfer body for holding toner images in a required number of colors and cooperating with the image bearing members so that respective color toner images on the image bearing members are transferred, and said intermediate transfer body including an endless metallic layer, an insulation layer provided onto the metallic layer, and a conductive electrode which is split thinly into sections in the direction of a longitudinal axis of said intermediate transfer body;

means for transferring the color toner image on said intermediate transfer body to a recording medium after all of the toner images have been formed on said intermediate transfer body;

means for fixing transferred toner picture images on said intermediate body to the recording medium; and

voltage application brushes, provided for each image formation section, each of said voltage application brushes being constructed to come in contact with the sections of the conductive electrode at portions where the image bearing members are in contact with said intermediate transfer body.

5,303,014

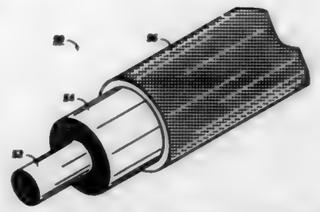
BIASABLE MEMBER HAVING LOW SURFACE ENERGY

Zhao-Zhi Yu, Webster, and Daniel E. Kuhman, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1992, Ser. No. 979,683

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—273 **11 Claims**



1. A transfer member for transferring electrically charged particles from an image support surface to a substrate, comprising:

an electrically conductive core member; and

a layer of resistive material covering said core member, said layer of resistive material including a chemically modified peripheral surface having a low surface energy material embedded therein to enhance removal of charged particles therefrom.

5,303,015

RECORDING APPARATUS FOR CONSERVING ENERGY

Kaoru Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

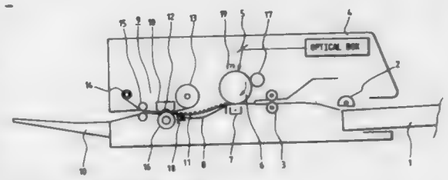
Continuation of Ser. No. 449,757, Dec. 13, 1989, abandoned.

This application May 15, 1992, Ser. No. 883,163

Claims priority, application Japan, Dec. 15, 1988, 63-317249

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **19 Claims**



1. A recording apparatus comprising:

(a) input means for inputting an image signal;

(b) a light source for emitting a light to be scanned over a photosensitive member to from a latent image;

(c) driving means for driving said light source in response to the image signal;

(d) developing means for developing the latent image formed on the photosensitive member into a visible image by using a visualizing substance;

(e) transfer means for transferring the visible image on the photosensitive member onto a recording medium;

(f) fixing means for heat-fixing said visible image on said recording medium with a heating element which is heated upon conduction of electric power;

(g) control means for controlling the conduction of electric power to said heating element; and

(h) means for supplying the image signal to both said driving means and said control means;

wherein said control means controls the conduction of electric power to said heating element in accordance with the image signal from said supplying means.

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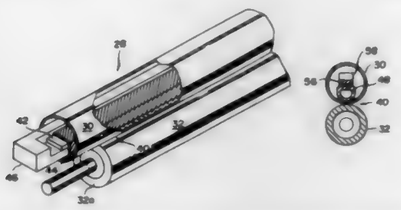
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,016

IMAGE FIXING DEVICE FOR IMAGE FORMING APPARATUS INCLUDING MEANS FOR LOCALLY HEATING INNER WALL OF FIXING MEANS AT LOCATION CORRESPONDING TO NIP

Katsunari Oda; Akiyoshi Kamisaki; Norimasa Kubota, all of Machida; Teruo Narikawa, Tokyo, and Tateki Oka, Atsugi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 20, 1992, Ser. No. 964,391
Claims priority, application Japan, Oct. 22, 1991, 3-302510; Oct. 22, 1991, 3-302511; Nov. 14, 1991, 3-298912; Jan. 30, 1992, 4-015282; Mar. 5, 1992, 4-083372; Apr. 6, 1992, 4-083684
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—289 52 Claims



1. An image fixing device for an image forming apparatus, comprising:

rotatable fixing means defining therein a space;

pressure means for cooperating with said rotatable fixing means to form a nip therebetween for receiving a sheet to which a toner image has been transferred, said pressure means pressing the sheet against said rotatable fixing means at the nip; and

heating means, arranged in said space, for locally heating an inner wall of said rotatable fixing means at a location corresponding to said nip to fix said toner image to said sheet,

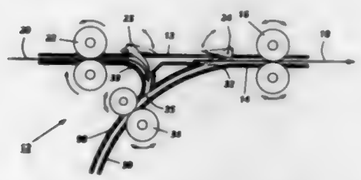
wherein said heating means comprises a heating element for producing heat, and heat conductive means for locally transmitting the heat to the inner wall of said rotatable fixing means at the location corresponding to said nip.

5,303,017

PRINT SKIP AVOIDANCE FOR ON-LINE COMPILING

Richard S. Smith, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 7, 1993, Ser. No. 57,941
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—318 8 Claims



1. In a reproduction apparatus for producing a sequential stream of precollated outputted printed copy sheets into a sheet output path with a limited space and time therebetween, and for compiling with edge registration and finishing said stream of output sheets into plural collated finished sets on line as subsequent said copy sheets are being printed and outputted by said sheet output path of said reproduction apparatus, by outputting said stream of copy sheets in said sheet output path downstream into a compiler tray for repeatedly sequentially stacking said copy sheets into collated printed sets, the improvement comprising:

a reversible exit sheet feeder upstream of said compiler tray for normally feeding copy sheets downstream to said compiler tray;

said reversible exit sheet feeder being selectably intermittently reversed to reverse the feeding of a first copy sheet therein upstream in coordination with the operation of said compiler tray on preceding copy sheets;

a sheet diverter chute path upstream of said exit sheet feeder, branching off from said sheet output path;

a diverter gate actuated to divert said first copy sheet out of said sheet output path into said diverter chute when that first copy sheet is reverse fed upstream by said reversible exit sheet feeder;

said diverter chute having another reversible sheet feeder therein for first feeding said first sheet into said diverter chute and then reversing to feed said first sheet out of said diverter chute in coordination with the passage past said diverter chute of a next subsequent second copy sheet, so that both said first and second copy sheets are fed downstream to said exit sheet feeder together;

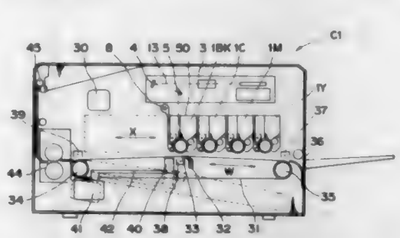
said exit sheet feeder then being operated to feed both said first and second sheets together downstream to said compiler tray, with a substantial increase in said time between said first copy sheet and said preceding copy sheets being operated on in said compiler tray.

5,303,018

COLOR ELECTROPHOTOGRAPHIC APPARATUS

Hiroshi Terada, Ikoma, and Hajime Yamamoto, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1993, Ser. No. 79,881
Claims priority, application Japan, Jun. 24, 1992, 4-165828; Jul. 3, 1992, 4-176458
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 17 Claims



1. A color electrophotographic apparatus which comprises:

a plurality of movable image forming means each provided with a rotatable electrostatic latent image holding member and a developing means each having toner of different color, and capable of forming a toner image of different color on said electrostatic latent image holding member,

a transfer and transport means capable of supporting thereon a transfer material so as to reciprocatingly move said transfer material, and provided with a transfer means for transferring the toner image on said electrostatic latent image holding member onto the transfer material at a single transfer position,

an exposure means for effecting image exposure at a single exposure position corresponding to said transfer position,

a displacing means for successively displacing each of said plurality of image forming means to an image forming position corresponding to said exposure position and also, to said transfer position, and

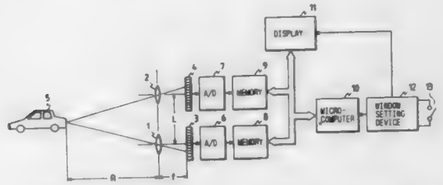
a positioning means for positioning said image forming means which has moved to said image forming position, whereby the toner images of different colors are overlapped on the transfer material, with positions thereof aligned, thereby to effect the color image formation.

5,303,019

INTER-VEHICLE DISTANCE MEASURING DEVICE

Tatsuji Irie, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,780
Claims priority, application Japan, Dec. 9, 1991, 3-324536
Int. Cl.[5] G01C *3/00, 5/00;* B60T *7/16*
U.S. Cl. 356—1 5 Claims



1. A device installed on a first vehicle for measuring a distance to a second vehicle running ahead of said first vehicle, said device comprising:

first and second image sensors arranged vertically, each for picking up an image, including said second vehicle and background images;

window setting means, coupled to said first and second image sensors, for setting a plurality of distance measuring windows arranged perpendicularly with said arrangement of said first and second image sensors, respectively, on the image picked up by said first image sensor;

corresponding area setting means, coupled to said second image sensor, for setting a plurality of window areas corresponding to said distance measuring windows, respectively, on an image picked up by said second image sensor;

first distance determining means for comparing the image signals contained within said distance measuring windows with the image signals contained within said window areas corresponding to said distance measuring windows, respectively, to determine distances to objects contained within each of said distance measuring windows from said first vehicle, and for selecting adjoining windows from said distance measuring windows which include a portion of said image that is a substantially equal distance away from said first vehicle, indicating the presence of image data corresponding to said second vehicle;

comparison window setting means for setting a comparison window corresponding to said selected adjoining windows in said area of said plurality of distance measuring windows corresponding to image data of said second vehicle on the image picked up by said first image sensor;

symmetry detecting means for shifting said comparison window within an area defined by said plurality of distance measuring windows in a direction of said plurality of distance measuring windows to detect symmetry of said image in said comparison window with every shift; and

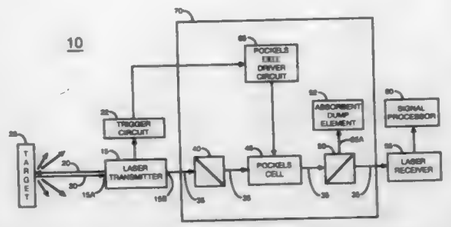
estimating means for estimating presence and position of said second vehicle in said image picked up by said first image sensor based on data obtained by said symmetry detecting means and said first distance detecting means.

5,303,020

OPTICAL TRANSCEIVER APPARATUS HAVING TIME PROGRAMMED GAIN

Michael G. Croteau, Ocoee, Fla., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 30, 1992, Ser. No. 997,729
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—5 8 Claims



1. An optical transceiver for transmitting a light pulse to a target and for receiving a reflected light pulse from said target comprising:

a light source for transmitting a coherent light pulse which is reflected by said target along a first optical path;

trigger signal generating means, coupled to said light source, for generating a trigger signal to indicate when said light pulse is transmitted;

a first polarizer situated in said first optical path;

a second polarizer situated in said first optical path and oriented to exhibit a cross polarity with respect to said first polarizer, and

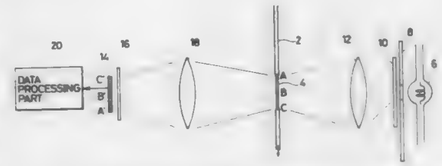
variable rotation polarizer means, responsive to said trigger signal and situated between said first and second polarizers and in said first optical path, for varying optical attenuation through said first optical path inversely as a function of time from transmission of said light pulse.

5,303,021

OPTICAL DETECTOR FOR CAPILLARY CHROMATOGRAPHY

Jun-ichi Kita, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 20, 1991, Ser. No. 810,873
Claims priority, application Japan, Dec. 28, 1990, 2-416041
Int. Cl.[5] G01N *21/85, 30/74*
U.S. Cl. 356—72 6 Claims



1. An optical detector for a capillary chromatography, comprising:

a capillary supplied with a flow of a sample solution;

a capillary cell defined by a portion of said capillary;

a light application part for converging light from a light source onto said capillary cell;

an array photodetector provided with a plurality of photodetecting elements aligned with a direction of flow through the capillary cell;

an optical system for guiding signal light from said capillary cell onto said array photodetector so that positions of said capillary cell correspond to said photodetecting elements on said array photodetector; and

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a data processing part for incorporating outputs from said photodetecting elements of said array photodetector and data-processing the outputs, said data processing part provided with a storage part for storing said outputs from said photodetecting elements and an integrated average operating part for calculating integrated averages of outputs from the same sample portions detected by different photodetecting elements with differences in time as to said outputs from said photodetecting elements stored in said storage part.

5,303,022

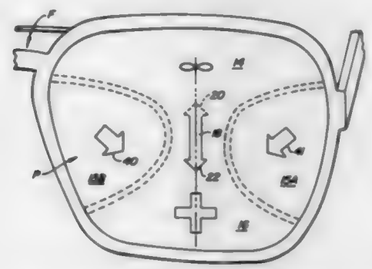
LENSOMETER WITH GUIDED LENS MOVEMENT FOR PROGRESSIVE ADDITION LENS

William E. Humphrey, Castro Valley; Charles E. Campbell, Berkeley, and James E. Sheedy, Oakland, all of Calif., assignors to Humphrey Instruments, Inc., San Leandro, Calif.

Filed Jul. 17, 1992, Ser. No. 916,243

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—124 **3 Claims**



1. A process of measuring a progressive addition lens having an upper portion with reduced positive sphere for distance vision and a lower portion with increased positive sphere for near vision and a zone of gradually changing sphere between said portions, said process of measuring comprising the steps of:

providing a lensmeter for measuring lenses having at least first and second pairs of sampling apertures with each of said apertures resolving the deflection of light passing through a lens to be tested at said sampling apertures;

placing a lens in said lensmeter at said sampling apertures;

determining the power variation of light at said first pair of sampling apertures for a first deflection comparison;

determining the power variation of light at said second pair of sampling apertures for a second deflection comparison;

comparing said deflection comparisons; and,

where said deflection comparisons are not equal to a preselected value, directing movement of said lens substantially towards upper lens portions having reduced positive sphere; and,

where said deflection comparisons are substantially equal, recording lens spherical power and cylinder measurement in a first measurement.

5,303,023

APPARATUS AND METHOD FOR INSPECTING A TEST LENS, METHOD OF MAKING A TEST LENS

Valdemar Portney, Irvine, Calif., and Paul W. Bolton, Bozeman, Mont., assignors to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 857,784, Mar. 26, 1992, abandoned. This application Sep. 4, 1992, Ser. No. 941,367

Int. Cl.[5] G01M *11/00*

U.S. Cl. 356—124.5 **36 Claims**

MICROFICHE APPENDIX INCLUDED

(128 Microfiche, 2 Pages)

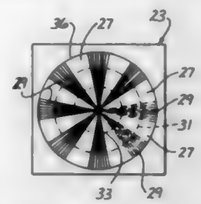
1. An apparatus for inspecting a test lens comprising:

a light source;

a first target positionable to receive light from the light source;

means for directing light from the target to the test lens with an image of the target being formed;

said target providing a particular image which has generally radially extending and alternating first and second sectors,



each of the first sectors being relatively light and each of the second sectors being relatively dark; and

means responsive to image contrast along a generally circumferentially extending region of said particular image for determining an optical quality characteristic of the test lens.

5,303,024

SCINTILLOMETER FOR THE MEASURMENT OF THE STRUCTURE FUNCTION CONSTANT AND THE INNER SCALE OF ATMOSPHERIC REFRACTIVE INDEX FLUCTUATIONS

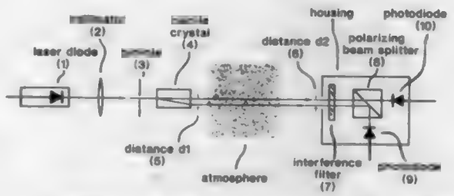
Volker Thierman, Panoramastrasse 67, D-7406 Mossingen 5, Fed. Rep. of Germany

Filed Apr. 7, 1992, Ser. No. 864,856

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113308

Int. Cl.[5] G01N *21/41;* **G01J** *4/00*

U.S. Cl. 356—128 **14 Claims**



1. A scintillometer for the measurement of the structure function constant and the inner scale of atmospheric refractive index fluctuations comprising:

a transmitter unit with a single source emitting radiation;

said transmitter unit formed by a piece of birefringent material which splits the radiation into two displaced and orthogonally polarized divergent beams;

a receiver unit; a line of sight between said transmitter unit and said receiver unit; atmospheric media situated along said line of sight; said divergent beams passing through said atmospheric media; said receiver unit containing two detectors; at least one detector having a preferred sensitivity to one polarization component; the apparent location of said detectors substantially being in a plane perpendicular to said line of sight; the apparent distance between the detectors in said plane substantially equals the beam displacement produced at said transmitter.

5,303,025

EMISSION SPECTROCHEMICAL QUANTITATIVE ANALYSIS METHOD AND APPARATUS

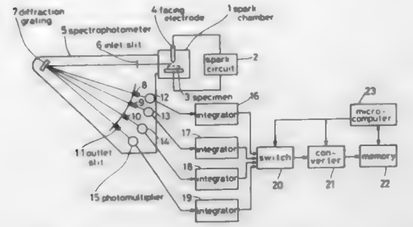
Isao Fukui; Takao Miyama, and Naoki Imamura, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 20, 1992, Ser. No. 854,842

Claims priority, application Japan, Mar. 22, 1991, 3-83524

Int. Cl.[5] G01N *21/63, 21/67*

U.S. Cl. 356—313 **11 Claims**



1. A spectroscopic analyzing method comprising the steps of;

exciting a specimen a plurality of times and producing a spectral emissions thereby;

detecting the light intensity data of the spectral lines of the constituent element of said specimen and non-constituent element of said specimen for each emission;

storing the detected light intensity data of the lines;

specifying emission which contains said constituent element and said non-constituent elements over a predetermined level based on said stored data; and

determining that a composite of the constituent element and the non-constituent element is present at a portion of said specimen corresponding to said specified emissions.

5,303,026

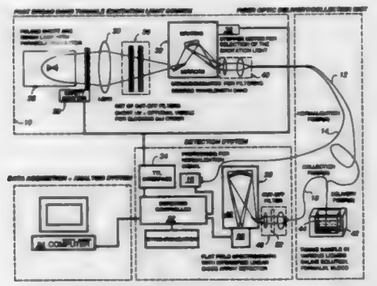
APPARATUS AND METHOD FOR SPECTROSCOPIC ANALYSIS OF SCATTERING MEDIA

Karlheinz Strohl, Los Angeles, Calif.; Irving J. Bigio, Los Alamos, and Thomas R. Loree, Santa Fe, both of N. Mex., assignors to The Regents of the University of California Los Alamos National Laboratory, Los Alamos, Calif.

Continuation-in-part of Ser. No. 660,504, Feb. 26, 1991, abandoned. This application Feb. 12, 1992, Ser. No. 835,641

Int. Cl.[5] G01N *21/63*

U.S. Cl. 356—318 **7 Claims**



1. An apparatus for recording the optical responses of biological tissue, comprising in combination:

a. wavelength-tunable light generation means for rapidly generating high-brightness multiple wavelengths of light within a chosen range of wavelengths;

b. fiber-optic means for collecting the light generated from said light generation means and for directing the light into a small volume of the biological tissue under investigation;

c. detection means for receiving and for rapidly detecting light; and

d. fiber-optic means for collecting the light emitted and scattered from the biological tissue and for directing the emitted and scattered light into said detection means, said means for collecting the generated light and said fiber-optic means for collecting the emitted and scattered light being disposed in a substantially parallel manner in the proximity of one another and in contact with the biological tissue, whereby light emitted, transmitted and scattered by the biological tissue is measured.

5,303,027

PHOTODIODE ARRAY

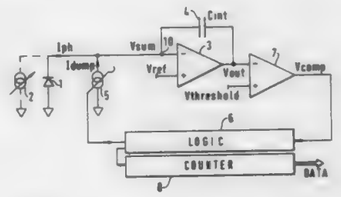
Hubert Kuderer, Waldbronn, and Stefan Rohrer, Schramberg, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 18, 1992, Ser. No. 900,953

Claims priority, application European Pat. Off., Jun. 20, 1991, 91110156.6

Int. Cl.[5] G01J *3/42;* **H01J** *40/14*

U.S. Cl. 356—328 **8 Claims**



1. A photodiode array comprised a plurality of n channels, each channel comprising a photodiode which is reverse biased such that it acts as a current source, and A/D converter means for providing a digital output signal which is representative of the photocurrent provided by that channel's photodiode; each A/D converter means comprising a controllable current source, an integrator circuit, a comparator for comparing an output signal of the integrator circuit with a predetermined signal, and a logic circuit for controlling the current source in response to the output signal of the comparator such that the output signals is kept within a pre-defined range.

5,303,028

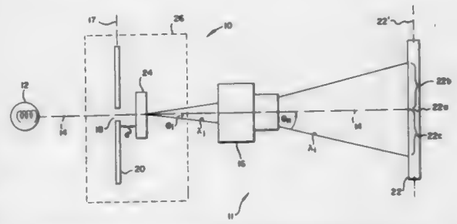
SPECTROMETER APPARATUS FOR CALIBRATING COLOR IMAGING APPARATUS

James R. Milch, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1992, Ser. No. 933,553

Int. Cl.[5] G01J *3/28;* **H04N** *1/46*

U.S. Cl. 356—328 **20 Claims**



1. Spectrometer apparatus for measuring the spectral characteristics of color imaging apparatus of the type including a solid state image sensor, having multiple pixels, and optical

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apparatus for projecting light from a color image along an optical axis for illuminating pixels of the image sensor, said spectrometer apparatus comprising:

a light source;

a member, defining an optical slit, positionable on the optical axis between said light source and the optical apparatus substantially in a plane occupied by a color image when it is illuminated; and

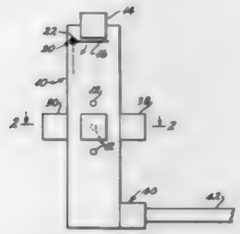
a diffraction grating positionable on the optical axis in proximity to the optical slit, between the optical apparatus and said member, to disperse light transmitted by the optical slit through the optical apparatus and onto the image sensor, the magnitude and the location of the light impinging upon the image sensor varying as a function of the optical characteristics of the color imaging apparatus including the spectral content of said light source and the spectral transmissivity characteristics of the optical apparatus and the image sensor.

5,303,029

SAMPLE EVALUATION BY DUST MEASURING

Edward M. Sioma, Levittown; James Litterio, Bensalem, and Wen H. Chia, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 24, 1992, Ser. No. 903,383
Int. Cl.[5] G01N *21/53*
U.S. Cl. 356—339 **6 Claims**



1. In a method of evaluating dustiness of a sample of a substance by dropping said sample past a test light source of a test chamber and detecting an amount of light from said test light source which is received by a photodetector of said test chamber, wherein said amount of light received by said photodetector is affected by an interference between said sample and said light directed from said test light source, the improvement comprising the steps of:

a. integrating an output from said photodetector in response to, and over a period of time of, said detecting;

b. outputting a single characteristic number in response to said integrating, said number being characteristic of said dustiness of said sample;

c. providing a reference light source for said test chamber;

d. eliminating light to said test chamber from said test light source;

e. providing light to said test chamber from said reference light source only; and

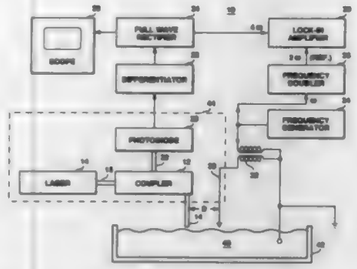
f. calibrating said apparatus during use of said reference light source.

5,303,030

METHOD AND APPARATUS FOR MONITORING AND MEASURING THE SURFACE TENSION OF A FLUID USING FIBER OPTICS

Bernard M. Abraham, Oak Park; John B. Ketterson, Evanston; Thomas M. Bohanon, and John M. Mikrut, Evanston, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Dec. 2, 1991, Ser. No. 801,153
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **15 Claims**



1. Apparatus for monitoring the surface of a fluid comprising:

means for generating a surface wave on the surface of the fluid;

means for producing an optical beam of optical energy;

photo sensor for detecting optical energy and generating a detected signal in response thereto;

fiber optic coupler for directing a portion of the optical beam onto the surface of the fluid, for directing another portion of the optical beam to the photo sensor, and for directing optical energy reflected from the surface to the fluid to the photo detector;

phase sensitive detector;

differentiator to differentiate the detected signal to produce a differentiated signal; and

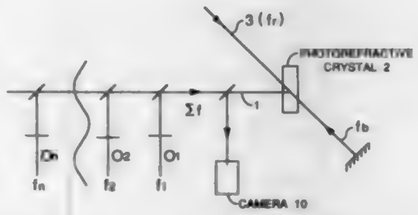
means for coupling the differentiated signal to the phase sensitive detector.

5,303,031

ALL OPTICAL PHASE SENSITIVE DETECTOR AND IMAGE DEMULTIPLEXER

Jihad Khoury, Somerville; Philip R. Hemmer, Fitchburg; Charles L. Woods, Stow, and Vincent E. Ryan, Arlington, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 8, 1992, Ser. No. 880,399
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **20 Claims**



1. Method of processing a composite signal light beam having a plurality of signal light beams to be detected, each signal light beam being modulated by a modulation frequency which differs from modulation frequencies of other signal light beams comprising the steps of:

(a) directing a reference light beam at a time integrating nonlinear optical element;

(b) directing said composite signal light beam at said nonlinear optical element for producing interference patterns within the nonlinear optical element between said reference light beam and said composite signal light beam;

(c) modulating the reference beam at a reference beam modulation frequency substantially equal to the modulation frequency of a selected signal beam of the composite signal light beam for producing a particular interference pattern within the nonlinear optical element capable of being read out of the nonlinear optical element; and

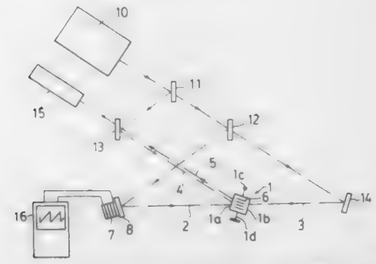
(d) reading out said particular interference pattern from said nonlinear optical element to retrieve a selected signal of the composite signal light beam.

5,303,032

METHOD OF MEASURING THE TIME FOR FORMING REFRACTIVE INDEX GRATING OF A PHOTO-NONLINEAR MEDIUM

Yoshiki Uesu; Jun Iba; Toshiyuki Yoshihara, all of Tokyo; Kazuyasu Hikita, and Hiroyuki Iizuka, both of Saitama, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 949,392
Claims priority, application Japan, Mar. 19, 1992, 4-93546
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **5 Claims**



1. In a method of measuring the time for forming a refractive index grating of a photo-nonlinear medium using a method of mixing four-waves including the steps of:

splitting a laser beam with a wavelength (λ) emitted from a laser beam source into first and second pump beams and a probe beam;

allowing the first and second pump beams to be correspondingly incident on first and second light incident surfaces from opposing directions on the same optical path, the first and second light incident surfaces being opposing surfaces formed on a photo-nonlinear medium;

in addition to the first pump beam, allowing the probe beam incident on the first light incident surface forming an angle (θ) with the pump beam to generate interference fringes in the normal direction of the first light incident surface, thereby forming a refractive index grating; and

emitting a phase conjugate wave from the photo-nonlinear medium in a direction reverse to an incident optical path of the probe beam by means of irradiating the second pump beam on the refractive index grating, the improvement comprising the steps of:

determining a wave vector (K) of the interference fringes from each value of the wavelength (λ) and the angle (θ) by the following relationship:

$$K = (4\pi \sin(\theta/2))/\lambda;$$

applying a direct-current electric field to a pair of external electrodes to be coincident to the wave vector (K) of the interference fringes, the pair of the external electrodes provided on opposing surfaces of the photo-nonlinear medium in a direction orthogonal to the normal direction of the first and second light incident surfaces;

moving the interference fringes by providing a frequency modulation to the first pump beam using a piezoelectric oscillator;

determining a moving speed (v) of the interference fringes when light intensity of the phase conjugate wave is maximized; and

determining a forming time (τ) of the refractive index grating from each value of the wave vector (K) and a moving speed (v) of the interference fringes by the following relationship:

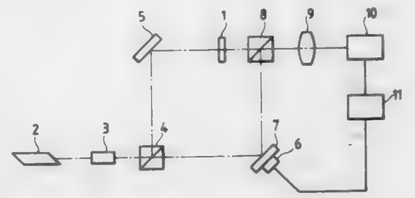
$$\tau = 1/(K \cdot v).$$

5,303,033

GRADIENT INDEX MEASURING APPARATUS

Hiroshi Matsuzaki, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,334
Claims priority, application Japan, Nov. 19, 1991, 3-302911
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **2 Claims**



1. A gradient index measuring apparatus comprising:

means for generating at least a first light beam and a second light beam which have coherence;

a sample to be measured, placed on a first optical path along which said first light beam travels;

means for combining said first light beam traveling along said first optical path, transmitted through said sample, with said second light beam traveling along a second optical path; and

arithmetic means for measuring interference fringes produced by the combination of said first light beam and said second light beam to calculate a gradient index of said sample from a measured value thereof,

wherein said arithmetic means including, at least:

(a) means for approximating phase distribution data measured from said interference fringes to a phase distribution polynomial;

(b) means for separating said phase distribution data into an approximate component and an approximate error component;

(c) means for converting each of said approximate component and said approximate error component to the gradient index; and

(d) means for adding a gradient index conversion value of said approximate component to another gradient index conversion value of said approximate error component.

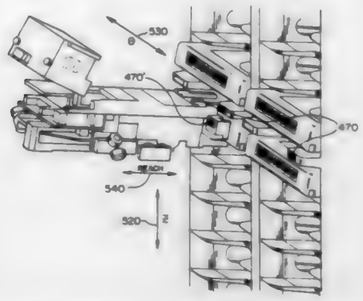
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5,303,034

ROBOTICS TARGETING SYSTEM

Larry K. Carmichael, Westminster; Frank A. Goodknight, Boulder; Michael E. Moy, Lafayette, and Robert W. Schmidt, Broomfield, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed May 1, 1992, Ser. No. 877,668
Int. Cl.[5] G01B *11/14*; G06K *7/015*; B65G *1/06*; B25J *19/02*
U.S. Cl. 356—375 12 Claims



1. In a storage system for storing a plurality of objects in an array of object storage locations and having a robotic arm with a line scan camera attached thereto, a method for calibrating a position of said robotic arm with respect to a given one of said objects stored in said system to enable said robotic arm to retrieve said given one of said objects, said method comprising the steps of:

(a) displaying on said array of object storage locations in a predetermined position thereon an "N"-shaped target having a first stripe, a second stripe parallel to said first stripe, and a middle stripe positioned diagonally between said first stripe and said second stripe, said first, middle and second stripes being aligned in a horizontal direction;

(b) scanning said target with a single scan of said line scan camera in a direction from said first stripe to said second stripe to produce a scanned image of said target; and

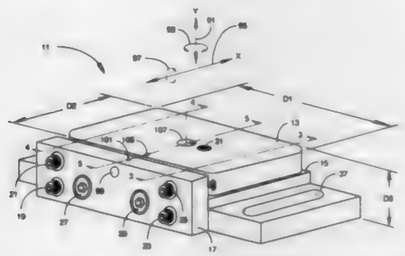
(c) determining a vertical position of said robotic arm with respect to said given one of said objects by analyzing said scanned image.

5,303,035

PRECISION MICROPOSITIONER

Francis S. Luecke, and David F. Arnone, both of Mountain View, Calif., assignors to New Focus, Inc., Sunnyvale, Calif.

Filed May 4, 1992, Ser. No. 878,427
Int. Cl.[5] G01B *11/00*; F16M *11/12*
U.S. Cl. 356—399 18 Claims



1. A micropostioner for adjusting position of an object, comprising:

adjustable platform means for supporting and positioning the object;

a frame means having a portion underlying the platform means;

first, second, and third balls contacting and supporting the adjustable platform means;

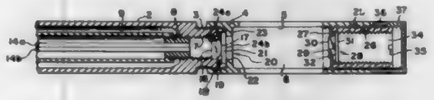
translatable plane means contacting the first, second, and third balls for adjusting the vertical position of the balls to translate the platform means vertically and to rotate the platform means about at least one substantially horizontal axis.

5,303,036

VARIABLE PATH LENGTH LIGHT TRANSMISSION PROBE

Richard D. McLachlan; Mary A. Leugers, and Robert A. Bredeweg, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 26, 1991, Ser. No. 765,756
Int. Cl.[5] G01N *21/00*, *21/15*
U.S. Cl. 356—440 1 Claim



1. An improved light transmission probe comprising an elongate body having between its ends a transverse opening through which a fluid may pass; means for transmitting light from a source thereof across said opening along a path extending in a direction from one end of said opening toward the other; reflecting means spaced from said transmitting means for reflecting light impinging thereon across said opening in the opposite direction; collecting means for collecting said reflected light; and transparent collimating means interposed between said transmitting means and said reflecting means for collimating the transmitted light and focusing the reflected light onto said collecting means, wherein the improvement comprises: said reflecting means comprising a transparent member having a first surface facing said opening and a second surface remote from said opening; a protective member overlying said second surface; a light reflective coating interposed between said second surface and in engagement with said protective member, said light reflective coating having an area less than that of said second surface so that a marginal zone of uncoated second surface surrounds said light reflective coating; and adhesive means positioned in said marginal zone for securing said protective member to said second surface.

5,303,037

COLOR SENSOR ILLUMINATION SOURCE EMPLOYING A LIGHTPIPE AND MULTIPLE LEDS

Michael G. Taranowski, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 24, 1992, Ser. No. 840,477
Int. Cl.[5] G01N *21/27*
U.S. Cl. 356—406 12 Claims

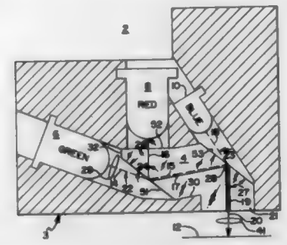
1. A color sensor light source for balancing and combining the emitted light from a plurality of light emitting diodes and then directing the combined emitted light toward an object comprising:

three light emitting sources each emitting light in a predetermined narrow range of wavelengths and each emitting light at a level of light power output;

a lightpipe having at least three surfaces formed on a one piece block structure, said emitted light from one of said light emitting sources directed toward one of said surfaces respectively;

a common transmission point on one of said surfaces from which said emitted light is transmitted along a substantially common path towards said object whose color is to be measured;

said surfaces oriented relative to said light emitting sources to reflect and refract said emitted light through said lightpipe and exiting therefrom at said common transmission point on one of said surfaces from which said emitted light is directed along a substantially common path towards said object whose color is to be measured, and where said emitted light from said light emitting source having a highest level of light power output is transmitted by one of said surfaces and then reflected from another of said surfaces and then reflected by another of said surfaces toward said common transmission point and where said emitted light from said light emitting source having an intermediate level of light power output is refracted by one of said surfaces and then reflected by another of said surfaces toward said common transmission point and where said emitted light from said light emitting source having a lowest level of light power output is refracted at one of said surfaces toward said common transmission point thereby substantially balancing the light power output from said three light emitting sources.

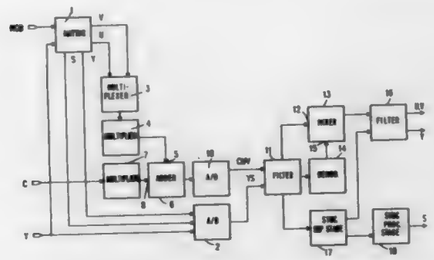


5,303,038

CIRCUIT ARRANGEMENT FOR A/D CONVERSION OF THE COLOR INFORMATION COMPONENTS OF TWO PICTURE SIGNALS

Hermann Treber, Hamburg, and Eckhart Pech, Ammersbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 5, 1991, Ser. No. 755,385
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028424
Int. Cl.[5] H04N *9/00*
U.S. Cl. 348—708 8 Claims



1. A circuit arrangement for A/D conversion of two color difference signals of a first picture signal and a carrier-modulated chrominance signal of a second picture signal, characterized in that said circuit arrangement comprises:

a multiplexer for generating a time-division multiplex signal from the two color difference signals, in which the two color difference signals alternate in time;

an adder for forming a sum signal of the time-division multiplex signal and the chrominance signal;

an A/D converter for digitally converting the sum signal; and

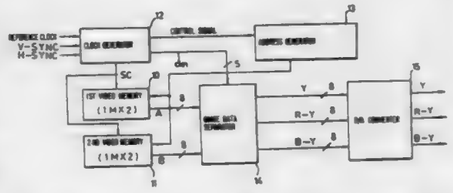
a separating filter coupled to receive the digitally converted sum signal for separating the digital time-division multiplex signal from the digital chrominance signal.

5,303,039

DATA READ DEVICE AND METHOD FOR VIDEO MEMORY INCLUDING FIRST AND SECOND VIDEO MEMORIES AND IMAGE DATA SEPARATOR

Hyoung-Ju Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi, Rep. of Korea

Filed Mar. 1, 1993, Ser. No. 24,369
Claims priority, application Rep. of Korea, Feb. 28, 1992, 92-3246
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—708 12 Claims



1. A data read device for a video memory comprising:

first and second video memories which record luminance signal data and chrominance signal data in an intermingled format and in a predetermined ratio;

a clock generator which generates a clock signal and a control signal, the signals having predetermined frequencies, in accordance with an input reference clock signal, an input horizontal synchronizing signal and an input vertical synchronizing signal;

an address generator that generates an address signal and supplies the address signal to the first and second video memories in response to the control signal generated by the clock generator;

an image data separator, responsive to the clock signal from the clock generator, that receives inputs of data output by the video memories, separates the luminance signal data and the chrominance signal data, and outputs the luminance signal data and the chrominance signal data; and

a digital-to-analog converter for converting the luminance signal data and the chrominance signal data separated by the image data separator into an analog signal.

5,303,040

MICROKEYER: MICROCOMPUTER BROADCAST VIDEO OVERLAY DEVICE AND METHOD

Henry B. Mistrot, 2304 Hancock, Suite 1-F, Austin, Tex. 78756

Continuation of Ser. No. 336,679, Jan. 4, 1982, abandoned. This application Jan. 15, 1985, Ser. No. 692,053
Int. Cl.[5] H04N *5/04*, *5/265*, *5/272*
U.S. Cl. 348—589 26 Claims

1. A method for merging a video display signal, such as that provided as an output from a microcomputer, with a raster scan video signal to form a composite video signal comprising:

providing the raster scan video signal to an input video processor to obtain vertical drive synchronization, horizontal drive synchronization, and direct current restored video signal components;

synchronizing the microcomputer video display output signal to the horizontal drive synchronization component

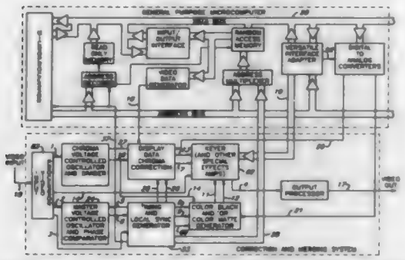
VOL 1161 ISS 2 AP 12 1994 UMI

and the vertical drive synchronization component of the raster scan video signal;

merging the synchronized microcomputer video display output signal with the direct current restored video signal component of the raster scan video signal to form said composite video signal, said step of merging comprising the steps of:

providing the synchronized microcomputer video display output signal as a first input to a keying circuit;

providing the direct current restored video signal component of the raster scan video signal as a second input to the keying circuit;



sensing the presence of input microcomputer video display signal;

forming said composite video signal as the output of the keying circuit causing the output of the keying circuit to be switched to the synchronized microcomputer video display output signal whenever the synchronized microcomputer video display output signal is present; and

switching the keying circuit to the direct current restored video signal component of the raster scan video signal whenever the synchronized microcomputer video display output signal is not present.

5,303,041

SPECIAL EFFECTS GENERATOR WITH KEY SIGNAL MOTION DETECTION

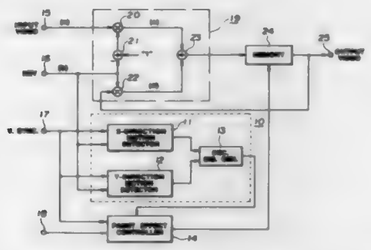
Kazuhisa Nishimura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,314

Claims priority, application Japan, Nov. 30, 1991, 3-342333

Int. Cl.[5] H04N *5/262*

U.S. Cl. 348—590 **5 Claims**



1. A special effects apparatus for processing an input video signal in accordance with a key signal that represents an image pattern, said apparatus comprising:

processing means receiving said input video signal and said key signal for processing said input video signal in accordance with said key signal and for outputting a processed video signal;

storage means for storing said processed video signal output from said processing means;

means for feeding back said processed video signal from said storage means to said processing means for further processing of said processed video signal in accordance with said key signal and said input video signal;

motion detecting means receiving said key signal for detecting motion of the image pattern represented by said key signal; and

control means responsive to said motion detecting means for selectively preventing said storage means from storing the processed video signal output from the processing means.

5,303,042

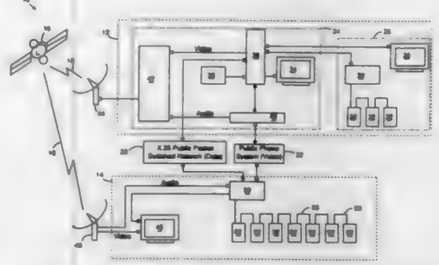
COMPUTER-IMPLEMENTED METHOD AND APPARATUS FOR REMOTE EDUCATIONAL INSTRUCTION

Howard S. Lewis, San Jose; Steve R. Falcon, Palo Alto; Jimmy Soetarman, San Jose; John A. Roberts, III, Santa Clara; Yean W. Chan, and Richard M. Hartman, both of Sunnyvale, all of Calif., assignors to One Touch Systems, Inc., Santa Clara, Calif.

Filed Mar. 25, 1992, Ser. No. 858,321

Int. Cl.[5] H04N *7/15*

U.S. Cl. 348—14 **16 Claims**



1. A interactive network for remote educational instruction, system comprising:

a host site including:

a studio for transmitting a plurality of live video images and sounds that are directed by a presenter via a satellite radio link to at least one remote audience location,

a computer for displaying an interactive network status to said presenter that includes a total number, identity and prioritization of callers from said remote audience locations,

a phone controller for accepting phone calls from at least one individual at said remote audience location for permitting telephone conversations; and

at least one remote site at said remote audience location that includes:

a video monitor for receiving said video images and sounds via said satellite radio link, and

a remote site controller with a plurality of response keypad terminals for digitally communicating a series of keypad entry responses of said at least one individual to said video images and sounds and including a microphone for telephonic communication with said presenter.

5,303,043

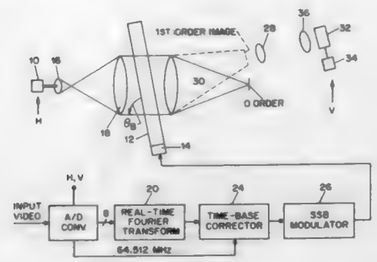
PROJECTION TELEVISION DISPLAY UTILIZING BRAGG DIFFRACTION CELL FOR PRODUCING HORIZONTAL SCAN

William E. Glenn, Ft. Lauderdale, Fla., assignor to Florida Atlantic University, Boca Raton, Fla.

Filed Sep. 1, 1992, Ser. No. 938,712

Int. Cl.[5] H04N *5/74*

U.S. Cl. 348—40 **14 Claims**



1. A video imaging system responsive to electronic signals representing a video image, said system comprising, in combination:

an acoustic-optic modulator comprising a Bragg Diffraction cell having an aperture for generating a diffraction grating which diffracts light at a Bragg diffraction angle;

a laser light source for providing a beam of light signals that pass along a beam axis through the aperture of said cell and through the diffraction grating generated in said modulator;

means coupled to said modulator for converting said electronic input information, one horizontal line at a time, into a real time fourier transform for producing inside said modulator a diffraction grating which modulates light signals from said laser source passing therethrough to generate modulated light signals that reconstruct at infinity as a stationary image corresponding to said one horizontal line of said video input information; and

a lens positioned to intercept modulated light signals exiting from said modulator for re-imaging said stationary image at a plane positioned at a distance from said modulator corresponding to the focal length of said lens.

5,303,044

VIDEO STANDARDS CONVERSION

John W. Richards, Stockbridge, United Kingdom, assignor to Sony United Kingdom Ltd., Staines, United Kingdom

Filed Jul. 1, 1992, Ser. No. 907,315

Claims priority, application United Kingdom, Jul. 8, 1991, 9114706

Int. Cl.[5] H04N *7/01*

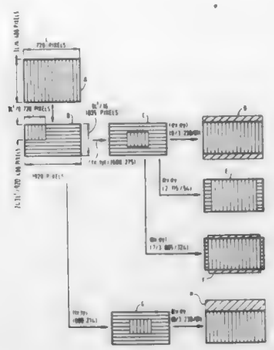
U.S. Cl. 348—445 **23 Claims**

1. An apparatus for down-converting an input digital video signal from a first definition format to a second lower-definition format, the input video signal being arranged as fields/-frames of pixel data, each field/frame having an active portion extending in vertical and horizontal directions, the apparatus comprising:

processing means for processing an input field/frame by compressing the active portion thereof in the vertical and horizontal directions to produce an intermediate field/-frame in the first format having an active portion of the pixel data, the active portion of the intermediate field/-frame occupying only part of the intermediate field/-frame;

storage means which receives the intermediate field/frame in the first format;

storage control means for controlling said storage means to store the pixel data of at least part of the active portion of the intermediate field/frame and to output the stored pixel data as an output field/frame in the second format having an active portion, such that the pixel data of the active



portion of the output field/frame extends across substantially the whole of the output field/frame in at least one of the two directions.

5,303,045

STANDARDS CONVERSION OF DIGITAL VIDEO SIGNALS

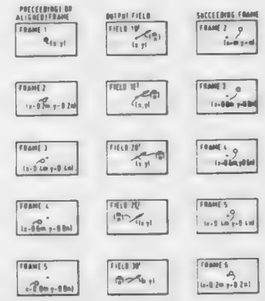
John W. Richards, Stockbridge; Clive H. Gillard, Basingstoke, and Stephen M. Keating, Reading, all of United Kingdom, assignors to Sony United Kingdom Limited, Staines

Filed Aug. 24, 1992, Ser. No. 933,932

Claims priority, application United Kingdom, Aug. 27, 1991, 9118340

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—443 **17 Claims**



1. A method of converting an input digital video signal to an output digital video signal wherein the input and output signals have different frame rates and different numbers of pixel lines per frame, the method comprising the steps of:

forming a first series of progressive scan format frames from the input signal;

temporally interpolating selected ones of said progressive scan format frames using temporally offset motion vectors and pixel weights to provide the difference in frame rate, said pixel weights for each of said progressive scan format frames being different than the temporal offsets for said each of said progressive scan format frames, thereby forming a second series of frames; and

performing vertical spatial interpolation so as to provide the difference in the number of pixel lines per frame.

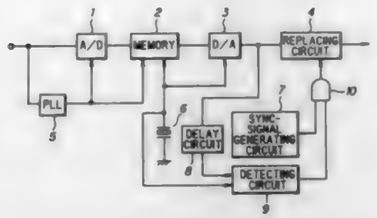
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5,303,046

VIDEO SIGNAL PROCESSING APPARATUS WITH TIME BASE CORRECTION AND INHIBITION OF HORIZONTAL SYNC SIGNAL REPLACEMENT DURING VERTICAL FLYBACK

Izuo Masuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 967,041
Claims priority, application Japan, Nov. 1, 1991, 3-313502
Int. Cl.[5] H04N *5/06, 5/95*
U.S. Cl. 348—500 **4 Claims**



1. An apparatus for processing an input video signal that contains horizontal sync signals and a vertical flyback period, comprising:

means for generating reference horizontal sync signals;

means for replacing said horizontal sync signals contained in said input video signal with said reference horizontal sync signals; and

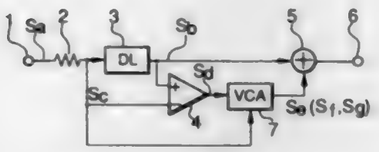
means for inhibiting operation of said means for replacing during said vertical flyback period contained in said input video signal.

5,303,047

CONTOUR COMPENSATION CIRCUIT FOR A SIGNAL PROCESSING APPARATUS OF AN IMAGE RECORDING AND REPRODUCTION APPARATUS

Masaji Yoshida, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 28, 1991, Ser. No. 723,176
Claims priority, application Japan, Jun. 28, 1990, 2-170851
Int. Cl.[5] H04N *5/208*
U.S. Cl. 348—607 **8 Claims**



1. A contour compensation circuit comprising:

first means for providing a first signal by delaying an input image signal by a predetermined time;

second means for providing a second signal which represents a sum of the input image signal and the input image signal which has been delayed by twice the predetermined time;

third means for providing a third signal by subtracting the second signal from the first signal;

fourth means for controlling the magnitude of the third signal by using said second signal to output a magnitude-controlled signal; and

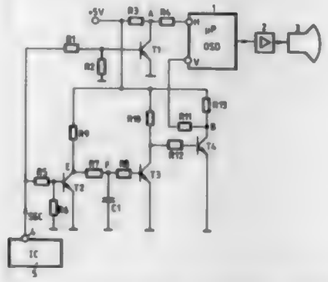
fifth means for adding said first signal with said magnitude-controlled signal which is outputted from said fourth means, to thereby obtain a contour-compensated image signal.

5,303,048

CIRCUIT FOR SYNCHRONIZING AN ON-SCREEN DISPLAY (OSD) ON A PICTURE SCREEN

Huan S. Chiok, Singapore, Singapore, assignor to Thomson Consumer Electronics S.A., Courbevoie, France

Filed Mar. 25, 1993, Ser. No. 37,625
Claims priority, application European Pat. Off., Mar. 25, 1992, 92400814.7
Int. Cl.[5] H04N *5/272*
U.S. Cl. 348—607 **2 Claims**



1. A circuit for synchronizing an On-Screen-Display (OSD) on a picture screen within a television device including an OSD processor having horizontal and vertical sync input terminals, characterized in that a source of super sandcastle pulse (SSC) is connected via a horizontal sync signal extracting first circuit and a vertical sync signal extracting second circuit to said horizontal and vertical sync input terminals of said OSD processor and wherein:

said second circuit includes an RC-integration network and a subsequent threshold circuit having such a bias that vertical sync pluses only are produced at the output.

5,303,049

ELECTRONIC STILL CAMERA WITH ENHANCED TONAL RENDITION

Satoshi Ejima, Tokyo, and Takao Ikuma, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 14, 1991, Ser. No. 640,922
Claims priority, application Japan, Jan. 18, 1990, 2-9315
Int. Cl.[5] H04N *5/30, 5/225*
U.S. Cl. 348—231 **6 Claims**

1. An electronic still camera comprising:

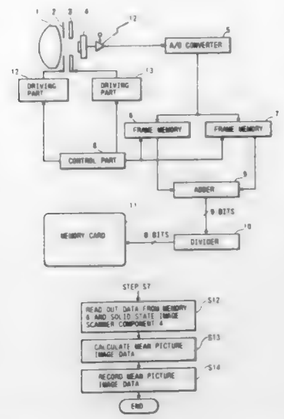
image pickup means for converting the image of an object input through a phototaking lens into an image signal;

calculation means for calculating an appropriate exposure amount of the object image;

regulation means for regulating the amount of exposure in said image pickup means;

means for producing a mean image signal, including control means for causing said image pickup means to generate only two image signals of the object and controlling said regulation means in such a manner that one of said two image signals has a first exposure amount greater than said calculated appropriate exposure amount and the other of said two image signals has a second exposure amount less than said calculated appropriate exposure amount, and

further including mean value determination means for calculating the mean value of corresponding pixel data



from each of said two image signals so as to determine said mean image signal; and

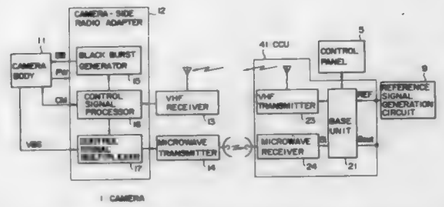
means for storing said mean image signal.

5,303,050

VIDEO CAMERA APPARATUS

Yoshikazu Nishimura, and Takashi Nakamura, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,902
Claims priority, application Japan, May 23, 1991, 3-147994; May 27, 1991, 3-151019
Int. Cl.[5] H04N *5/30*
U.S. Cl. 348—211 **14 Claims**



1. A camera control unit for communicating with a video camera, said camera control unit comprising:

means for generating a reference signal having a reference synchronizing portion;

means for receiving a video signal having a video synchronizing portion transmitted from said video camera over a first radio channel;

means for comparing the phase of the received video synchronizing portion with the phase of said reference synchronizing portion and for generating a phase difference signal therefrom only when a phase difference between said received video synchronizing portion and said reference synchronizing portion corresponds to at least one of said lines;

transmitting means for transmitting said phase difference signal to said video camera over a second radio channel; and

synchronizing means for synchronizing the received video signal with said reference signal so as to obtain a synchronized output video signal, said synchronizing means having storage means for storing the received video signal; means for generating a write clock signal based upon said received video synchronizing portion; means for generating a read clock signal based upon said reference synchronizing portion, means responsive to said write clock signal for writing said received video signal into said storage means so as to store said received video signal therein and means responsive to said read clock signal for reading the stored video signal from said storage means so as to obtain said synchronized output video signal.

5,303,051

METHOD FOR REMOVING THE EFFECTS OF PARTICULATE MATTER FROM SEQUENCES IMAGES

Martin Lévesque, Loretteville; Auguste Blanchard, Cap-Rouge; Georges R. Fournier, Lac Beauport, and Luc J. M. Forand, Ste-Foy, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Goverment, Ottawa, Canada

Filed Mar. 18, 1992, Ser. No. 853,616
Claims priority, application Canada, May 6, 1991, 2041848
Int. Cl.[5] H04N *3/14, 5/335, 5/213*
U.S. Cl. 348—31 **21 Claims**



1. A system for removal of effects on images of a scene of moving particulate matter interposed between an imaging device and that scene, wherein a sequence of images is obtained by the imaging device and the system comprises means for determining differences between signal values for each pixel in one image and signal values for corresponding pixels in a following image of the scene in the sequence by comparing images in the sequence pixel-by-pixel, processing means for selecting a valid value for each pixel from said differences and means for reconstructing a corrected image from said valid values, wherein signal values for corresponding pixels imaging a portion of the scene in said sequence of images have a maximum and a minimum value forming two signal values, said valid value for a pixel imaging that portion of the scene in the corrected image being selected from one of said two signal values.

5,303,052

CCD SOLID-STATE PICKUP DEVICE WITH CONTROLLED SHUTTER PULSE GENERATION

Tadakuni Narabu; Hisanori Miura, and Maki Sato, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 890,005, May 29, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 98,755
Claims priority, application Japan, May 30, 1991, 127832
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—299 **5 Claims**

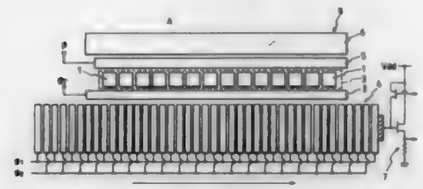
1. A CCD solid-state image pickup device comprising:

a CCD solid-state image pickup element including a sensor array comprising a number of one-dimensionally arranged

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photosensitive units for accumulating a charge therein, a read-out gate to which a read-out pulse is applied during a read-out period so that said charge is read-out, a transfer register to which said charge is transferred during a transfer period following said read-out period and electronic shutter means comprising a drain gate and a drain region, said read-out gate and said transfer register being disposed at one side of said sensor array and said electronic shutter means being disposed at the other side of said sensor array;

a comparator for comparing the output level of each image pickup signal with a predetermined reference signal to output a comparison signal; and



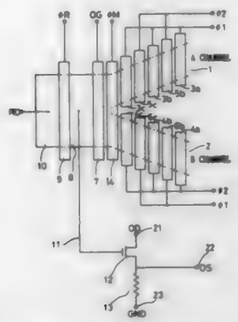
a shutter-timing generating unit connected to said comparator for generating an shutter pulse in response to said comparison signal from said comparator, and supplying the shutter pulse to said drain gate during the transfer period to discharge accumulated charges in said photosensitive units, wherein said read-out period and said transfer period each having a fixed value, and the timing of said shutter pulse is changeable depending upon the output level of each image pickup signal from said CCD solid-state image pickup element.

5,303,053

CHARGE COUPLED DEVICE FOR OVERCOMING AN OUTPUT VOLTAGE DIFFERENCE BETWEEN DIFFERENT SHIFT REGISTERS

Shigehiro Miyatake, Osaka, and Kenji Takada, Itami, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 16, 1992, Ser. No. 899,437
Claims priority, application Japan, Jun. 17, 1991, 3-173023
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 348—312 **18 Claims**



1. A charge coupled device for reducing an output voltage level difference between different shift registers, comprising:

a plurality of shift registers;

a floating and diffusion layer connected to the plurality of shift registers for receiving signal charges transferred by the shift registers when driven and for converting the signal charges into voltage;

a common transfer electrode, located between the plurality of shift registers and the floating and diffusion layer, for receiving signal charges from each of the shift registers and for transferring the signal charges to the floating and diffusion layer; and

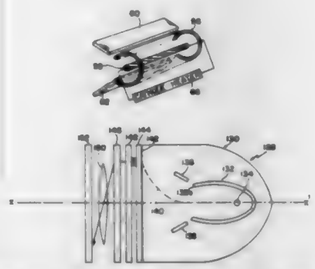
timing means for applying clock pulses to the common transfer electrode in a predetermined sequence in order that the common transfer electrode transfers the signal charges into the floating and diffusion layer while the respective shift registers are not being driven.

5,303,054

LINE ELECTRON BEAM LIGHT SOURCE FOR PROJECTION LCD SYSTEM

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

Filed May 17, 1993, Ser. No. 61,552
Int. Cl.[5] H04N *5/74*
U.S. Cl. 348—766 **20 Claims**



1. A projection display apparatus for projecting a video image on a screen comprising:

a liquid crystal display (LCD) panel including a generally planar layer of liquid crystal material and a first plurality of transparent scanning electrodes and a second plurality of transparent signal electrodes respectively disposed on first and second facing surfaces of said layer of liquid crystal material, wherein said first and second pluralities of electrodes are respectively arranged in first and second linear, spaced, parallel arrays and wherein said first and second arrays are mutually orthogonal such that each of said first linear arrays of scanning electrodes crosses each of said second linear arrays of signal electrodes, and wherein a voltage is applied to each linear array of scanning electrodes in a sequential manner such that video image information is presented sequentially on said LCD panel;

a cathode ray tube (CRT) including:

a faceplate disposed in facing relation to the second surface of said layer of liquid crystal material, said faceplate having a layer of phosphor elements disposed on an inner surface thereof;

electron beam generating means for directing an elongated, linear beam of energetic electrons on the inner surface of said faceplate and forming a narrow, elongated, linear light beam directed toward said LCD panel as said energetic electrons strike said phosphor elements, and wherein said elongated, linear light beam and beam of electrons are aligned generally parallel to said first linear arrays of scanning electrodes; and

deflection means for deflecting said electron beam over the inner surface of said faceplate in a direction generally transverse to a longitudinal axis of said beam; and

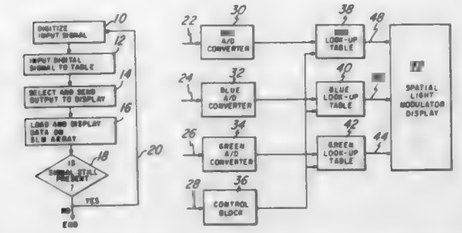
control means coupled to said first plurality of scanning electrodes and to said deflection means for synchronously applying a voltage to each linear array of scanning electrodes in sequence and deflecting said electron beam such that said light beam is sequentially directed upon each linear array of scanning electrodes as a voltage is applied to each of said arrays of scanning electrodes.

5,303,055

METHOD AND APPARATUS TO IMPROVE A VIDEO SIGNAL

Henry D. Hendrix, Roswell, Ga., and Paul M. Urbanus, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 803,246, Dec. 5, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,471
Int. Cl.[5] H04N *5/202, 3/14*
U.S. Cl. 348—761 **10 Claims**



1. A method for improving a compensated broadcast signal comprising:

a. providing an input digital word;

b. looking up said digital word in a memory table;

c. removing said compensation by selecting a digital output signal corresponding to said digital input signal, wherein said digital output signal has a lower number of bits than said digital input signal;

d. sending said digital output signal to a spatial light modulator array;

e. loading said digital output signal onto said array; and

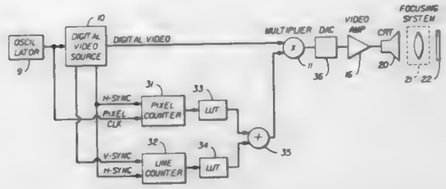
f. displaying image data represented by said digital output signal.

5,303,056

DYNAMIC GAIN CORRECTION FOR CRT PRINTING

Douglas W. Constable, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1992, Ser. No. 944,866
Int. Cl.[5] H04N *5/16, 5/57*
U.S. Cl. 358—350 **6 Claims**



1. An analog dynamic gain correction system for modifying the illumination of an image that appears on the screen of a CRT of a CRT printing device from a video source producing an analog video signal that represents the image, characterized by:

producing a correction signal which comprises summed horizontal and vertical parabolic signals that are generated in accordance with stored parabolic relationships;

a multiplier coupled to the video source for receiving the video signal and the summed horizontal and vertical parabolic signals so that the parabolic signals provide an even illumination towards the edges of the CRT, and to the CRT, for controlling gain of the video signal and producing a modified image on the screen of the CRT;

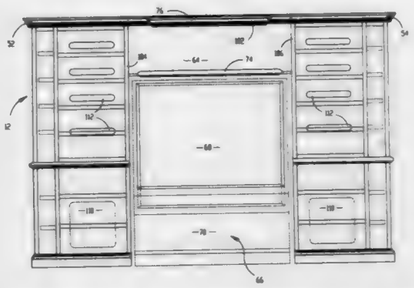
whereby, when a photographic media is placed in front of the image appearing on the screen of the CRT, the photographic media will have a uniform illumination on all points on the photographic media for the same video signal amplitude.

5,303,057

UNIVERSAL PROJECTION TELEVISION CABINET

Emily A. Davidow, and Robert L. Davidow, both of Leawood, Kans., assignors to Benchmark Industries, Incorporated, Lenexa, Kans.

Filed Apr. 30, 1993, Ser. No. 56,247
Int. Cl.[5] H04N *5/64*
U.S. Cl. 348—836 **13 Claims**



1. Cabinet structure for receiving a television set having a fixed height and width, the structure comprising:

a pair of spaced apart towers defining a television set receiving area between the towers;

a spacing means spanning the towers for determining the horizontal distance between the towers, the spacing means including a pair of relatively shiftable end members, whereby the length of the adjustable spacing means may be regulated by shifting said end members with respect to one another to vary the size of the television set recieving area in order to accommodate television sets of different widths; and

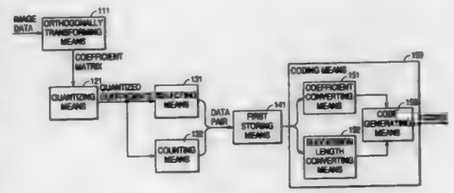
an attachment means for connecting the spacing means with each of said towers.

5,303,058

DATA PROCESSING APPARATUS FOR COMPRESSING AND RECONSTRUCTING IMAGE DATA

Masahiro Fukuda, and Tsugio Noda, both of Isehara, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 18, 1991, Ser. No. 779,274
Claims priority, application Japan, Oct. 22, 1990, 2-284049; Oct. 30, 1990, 2-294146
Int. Cl.[5] H04N *1/415, 1/417*
U.S. Cl. 358—261.1 **10 Claims**



1. An image data compressing apparatus comprising:

orthogonally transforming means for obtaining a coefficient matrix comprising N rows and N columns of transform coefficients by two-dimensionally orthogonally trans-

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forming continuous-tone image data in block units each having N×N picture elements;

quantizing means for quantizing respective elements of said coefficient matrix obtained by said orthogonally transforming means by corresponding quantization thresholds and for outputting quantized coefficients, being the results of quantizing respective elements of said coefficient matrix, in a predetermined sequence;

signal producing means for converting a series of said quantized coefficients outputted from said quantized means into serial quantized coefficients comprising significant coefficients having non-zero values each paired with the corresponding one of insignificant coefficient succession lengths indicating the numbers of successive insignificant coefficients having the zero value, and for outputting said serial quantized coefficients by attaching a termination signal to the tail end of said serial quantized coefficients when a block of said quantized coefficients have been inputted from said quantizing means; and

coding means for outputting codes respectively corresponding to said significant coefficients each paired with said corresponding one of said insignificant coefficient succession lengths included in said serial quantized coefficients outputted from said signal producing means.

5,303,059

MOTION ADAPTIVE FREQUENCY FOLDING METHOD AND CIRCUIT

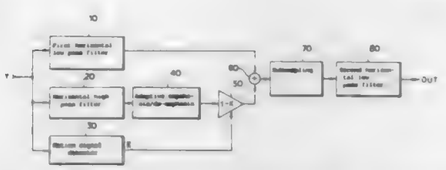
Young-Je Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Jun. 24, 1992, Ser. No. 903,348

Claims priority, application Rep. of Korea, Jun. 27, 1991, 91-10836

Int. Cl.[5] H04N *9/77, 7/18*

U.S. Cl. 358—310 **6 Claims**



1. A motion adaptive frequency folding method, comprising the steps of:

separately filtering high frequency and low frequency brightness signal, each having a bandwidth above and below the bandwidth of a recording medium, from a brightness signal having a full bandwidth;

detecting a motion signal from the brightness signal having said full bandwidth;

controlling gain of the high-frequency brightness signal;

limiting an output level of the high-frequency brightness signal in dependence upon the motion signal; and

folding the high-frequency brightness signal at the time of detection of a still image over the lower-frequency signal.

5,303,060

APPARATUS FOR RECORDING AND/OR REPRODUCING HDTV SIGNALS

Hiroshi Iwamura, and Takehiko Shioda, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,345

Claims priority, application Japan, Apr. 13, 1992, 4-92701

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—310 **4 Claims**

1. An HDTV video signal recording apparatus comprising:

A/D converting means for digitizing inputted three primary HDTV color signals;

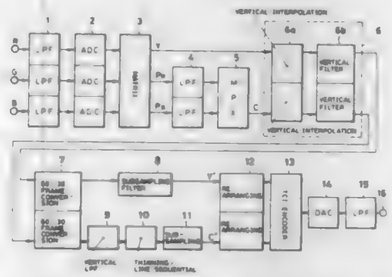
Y/C converting means for converting the digitized HDTV color signals into a luminance signal and two color difference signals;

line sequential means for thinning pixels of the respective ones of said color signals to generate a single line sequential color signal;

signal format converting means for producing a sequential scanning luminance signal and a sequential scanning color signal by thinning every other horizontal line from each of said luminance signal and said line sequential color signal after being vertically interpolated;

frame frequency reducing means for thinning every other frame from each of said sequential scanning luminance signal and said sequential scanning color signal;

pixel number reducing means for performing two-dimensional subsampling for the sequential scanning luminance signal outputted from said frame frequency reducing means to reduce the number of horizontal pixels thereof to a half, and for thinning pixels on every line of the sequential scanning color signal for converting the same into a line sequential signal and performing two-dimensional subsampling for the line sequential color signal to reduce the number of horizontal pixels thereof to a quarter;



rearranging means for distributing dots on each line of the luminance signal and the color signal outputted from said pixel number reducing means to two lines to rearrange one scanning line to two scanning lines each having a half of the number of pixels of a line, thus dividing each of the luminance signal and the color signal from said pixel number reducing means into two frames;

a TCI encoder for time-base compressing and time-division multiplexing each of said frames divided from the luminance signal and the color signal from said rearranging means and outputting a resulting TCI signal; and

D/A converting and recording means for converting the TCI signal outputted from said TCI encoder into an analog signal and thereafter recording the analog signal onto a recording medium.

5,303,061

APPARATUS FOR REJECTING TIME BASE ERROR OF VIDEO SIGNAL

Tokikazu Matsumoto; Fumiaki Koga, both of Osaka; Hiromu Kitaura, Osakasayama; Takashi Inoue, Osaka, and Nobuyuki Ogawa, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1992, Ser. No. 894,923

Claims priority, application Japan, Jun. 18, 1991, 3-145812

Int. Cl.[5] H04N *9/89*

U.S. Cl. 358—320 **16 Claims**

1. An apparatus for rejecting a time base error of a video signal comprising:

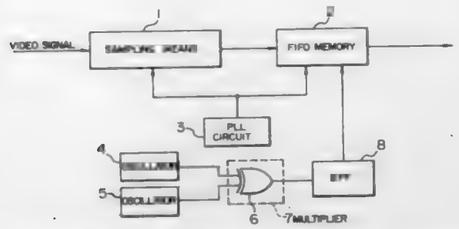
a PLL (phase locked loop) circuit for generating a clock signal synchronized with said video signal, said video signal including a carrier chrominance signal modulated with a color subcarrier;

sampling means for sampling said video signal with said clock signal generating by said PLL circuit;

a FIFO (first-in first-out) memory for performing write the read operations with independent clock signals, the video signal sampled by said sampling means being written to said FIFO memory with the clock signal generated by said PLL circuit;

a first oscillator for generating a first signal having a predetermined frequency;

a second oscillator for generating a second signal having a lower frequency than the frequency of said first signal, the lower frequency being (n+½) fH (where n is an arbitrary integer and fH is a horizontal synchronizing frequency of said video signal);



a multiplier for multiplying said first and second signals by each other and generating an output; and

a band pass filter for filtering one of an upper side and a lower side of a spectra of said output of said multiplier to generate a filtered signal and outputting said filtered signal to said FIFO memory read as a clock signal.

5,303,062

FOLDING CAMCORDER FOR COMPACT STORAGE

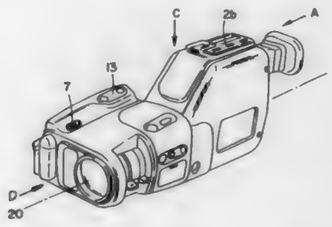
Takeshi Kawarai, Ibaraki; Michiaki Ezure; Seiko Nakasuna, both of Katsuta, and Takanori Nishiyama, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1990, Ser. No. 634,442

Claims priority, application Japan, Jan. 16, 1990, 2-004599

Int. Cl.[5] H04N *5/225*

U.S. Cl. 358—335 **14 Claims**



12. In a camera-VCR combination that includes a VCR portion housing a video tape drive means for recording and playing back a video tape, the VCR portion being operable in a camera operation mode in which the VCR portion records the video tape and in a VCR operation mode in which the VCR portion plays back the video tape, a camera portion housing a lens block means for converting received light images into electronic video signals, the lens block means being electrically connected with the video tape drive means for supplying the electronic video signals thereto for recording, a view finder portion housing a view finder for converting the electronic video signals into viewable images, the view finder being electrically connected with one of the video tape drive means and the lens block means for receiving the electronic video signals therefrom, and a grip portion operatively connected with one of the VCR, camera, and view finder portions for providing a holding grip for a operator, the improvement characterized in that

a connecting means movably connects at least one of the camera portion, the view finder portion, and the grip portion with respect to the VCR portion such that at least one of the camera portion, the view finder portion, and the grip portion is humanly relative to the VCR portion between first and second positions, and a means is located inside one of the connecting means, VCR, camera, view finder, and grip portions for switching the operation mode of the VCR portion in response to movement between the first and second positions, the switching means being disposed such that it cannot be reached by direct contact to switch the operation mode of the VCR portion by direct interaction in both of the first and second positions.

5,303,063

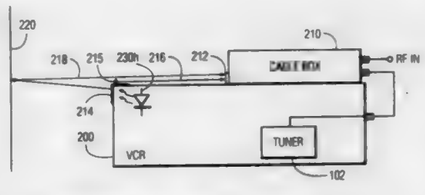
VCR CONTROL OF A CABLE CONVERTER UNIT

Sung J. Kim, Fishers; Alfred J. Schick, and John H. Furrey, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 13, 1991, Ser. No. 807,472

Int. Cl.[5] H04N *5/50*

U.S. Cl. 358—335 **10 Claims**



1. A videocassette recorder, comprising:

a radio frequency (RF) signal input terminal, for receiving a group of RF signals;

tuner means coupled to said RF signal input terminal for receiving said group of RF signals, said tuner means selecting a particular RF signal from said group of RF signals in response to a control signal, said tuner means being capable of tuning to a predetermined number of channels;

control means for generating said control signal for causing said tuner means to select said particular RF signal;

means, coupled to said control means, for entering data in response to operation by a user; and

means coupled to said control means for transmitting a remote control signal for controlling an external source of said particular RF signal;

said control means in response to data entered by said user generates said remote control signals and applies said remote control signals to said remote control signal transmitting means; and

means for detecting an active television signal, said detecting means being coupled to said tuner means for receiving said selected signal, and in response to the detection of a predetermined characteristic of said selected signal generates a signal indicative of an active television signal and applies said indicative signal to said control means;

wherein said control means transmits said remote control signals and monitors said indicative signal as a feedback signal to ensure that commands corresponding to said remote control signals are executed.

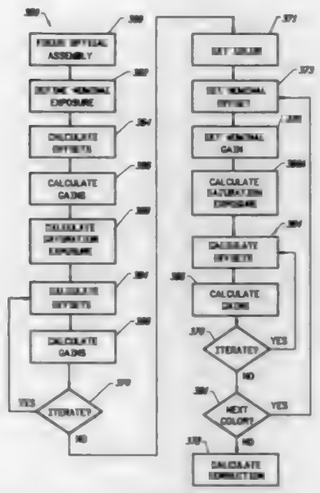
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,064

IMAGE SCANNER WITH CALIBRATION MECHANISM TO OBTAIN FULL DYNAMIC RANGE AND COMPENSATED LINEAR OUTPUT

Kent Johnson, 1038 Neilson St., Albany, Calif. 94706; Lynn L. Ackler, 864 Walnut St., Alameda, Calif. 94501; David C. Jenkins, 5406 Ridge Park Dr., Loomis, Calif. 95650; Howard H. Barney, 2237 Carleton St., Berkeley, Calif. 94703, and Chris A. Brooks, 1801 Clement Ave., Bldg. 27, Alameda, Calif. 94501

Filed Feb. 20, 1991, Ser. No. 658,177
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—406 12 Claims



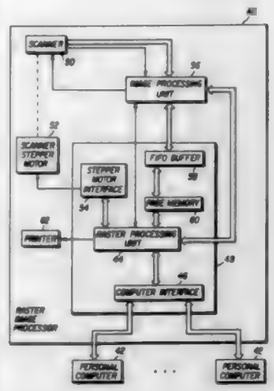
1. An image scanner comprising:
a charge coupled device for receiving an image, said charge coupled device generating a first video output signal and a second video output signal;
a filter assembly including a plurality of color filters, said filer assembly including means for positioning a selected color filter from said plurality of color filters in front of said charge coupled device to generate a first selected color video output signal corresponding to said first video output signal and a second selected color video output signal corresponding of said second video output signal;
means or defining a non-clipping DC bias signal, said defining means including
means for assigning a threshold value,
means for iteratively incrementing a temporary DC bias signal,
means of iteratively applying said temporary DC bias signal to said first selected color video output signal and said second selected color video output signal until said first selected color video output signal is above said threshold and forms a first non-clipped video output signal and said second selected color video output signal is above said threshold and forms a second non-clipped video output signal;
means for iteratively defining a firs gain value and a second gain value;
means for adding said first gain value to said first non-clipped video output signal to provide a first non-saturated, non-clipped video output signal; and
means for adding said second gain value to said second non-clipped video output signal to provide a second non-saturated, non-clipped video output signal.

5,303,065

ASYNCHRONOUS, NONCONTINUOUS VIDEO CLOCK APPARATUS

Brian J. Kwarta, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1991, Ser. No. 784,332
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—409 9 Claims



8. A document scanning apparatus, comprising:
a raster image processor;
a scanner connected to said raster image processor and comprising:
sensor means for sensing a document and outputting pixel data; and
a timing and control unit connected to said sensor means and producing a clock signal only when the pixel data is output;
a cable connected to said sensor means and said timing and control unit; and
an image processing unit connected to said processor and said cable, and said processing unit comprising a latch connected to said cable and storing the pixel data responsive to the clock signal.

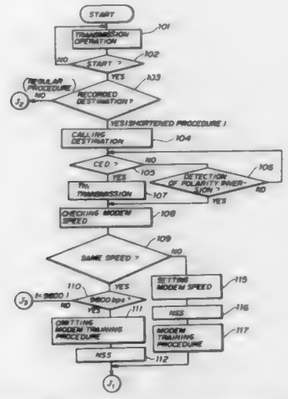
5,303,066

IMAGE COMMUNICATION SYSTEM HAVING A FUNCTION FOR SHORTENING THE PRE-MESSAGING PROCEDURE

Tetsuya Kawaguchi, Ebina, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 13, 1990, Ser. No. 611,827
Claims priority, application Japan, Nov. 13, 1989, 1-292466
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—434 20 Claims

1. A facsimile image system comprising:
a transmitting unit;
a receiving unit for connection to said transmitting unit by a communication line; and
pre-message procedure means for performing a pre-message procedure between said transmitting unit and said receiving unit before said transmitting unit transmits image information to said receiving unit, said pre-message procedure means having
first procedure means for sending a first signal for identifying said receiving unit to said transmitting unit,
second procedure means for sending a second signal for informing said transmitting unit about functions provided in said receiving unit,
third procedure means for determining transmission functions to be used for communicating with said receiving unit and for sending a third signal corresponding to said transmission functions to said receiving unit, and
fourth procedure for setting said transmission functions in said receiving unit by referring to said third signal,
wherein said transmitting unit comprises:
hangup detecting means for detecting a hangup of said receiving unit called by said transmitting unit,
tone signal generating means for generating a tone signal,
memory means for storing function information regarding said functions provided in said receiving unit,
first control means, coupled to said hangup detecting means and said memory means, for activating said third procedure means by referring to said function information stored in said memory means when said hangup detecting means detects said hangup of said receiving unit before said first procedure, and



second control means, coupled to said tone signal generating means and said memory means, for sending said tone signal generated by said tone signal generating means to said receiving unit and for activating said third procedure means by referring to said function information stored in said memory means after sending said tone signal when said first procedure means is activated before said hangup detecting means detects said hangup of said receiving unit, and
wherein said receiving unit comprises:
third control means for omitting activation of said first procedure means and said second procedure when said third procedure means is activated before activation of said first procedure means, and
fourth control means for omitting activation of said second procedure means when said tone signal is received before deactivation of said first procedure means.

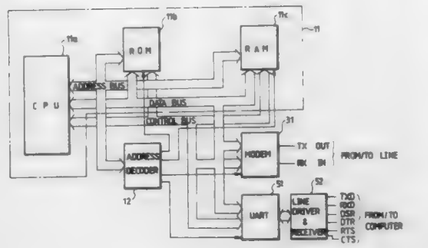
5,303,067

COMPUTER CONNECTION CIRCUIT IN FACSIMILE

Seung I. Kang, Seoul, and Cha S. Dong, Seongnam-Si, both of Rep. of Korea, assignors to Sindo Ricoh Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 21, 1991, Ser. No. 795,718
Claims priority, application Rep. of Korea, Nov. 28, 1990, 1990-19412
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—442 1 Claim

1. A computer connection circuit in a facsimile device, for directly connecting a computer having an RS232C interface unit to the facsimile device, said facsimile device having an image scanner and an image printer, said connection circuit comprising:
control and memory means including a CPU (Central Processing Unit), a RAM (Random Access Memory) and a ROM (Read Only Memory) for controlling a general operation control of the facsimile device;
address decoding means connected to said control and memory means through an address bus, for selecting and enabling an output terminal according to an input address;
a modem connected to said control and memory means through a data bus and connected to communication lines, whereby said modem is driven by a first chip selection signal received from said address decoding means and requires an interrupt to be applied to said control and memory means in sending/receiving image information;
an UART (Universal Asynchronous Receiver & Transmitter) directly connected to said control and memory means through the data bus, whereby said UART requires an



interrupt to be applied to the control and memory means in sending/receiving image and character information to/from the computer and said UART is driven by a second chip selection signal received from said address decoding means;
line driving and receiving means connected to said UART and connected to the RS232C interface unit of the computer, for performing a voltage transformation between said UART of the facsimile and the RS232C interface unit of the computer; and
wherein said control and memory means alternatively checks and detects a state of said modem and said UART by periodically controlling the chip selecting operation of said address decoding means, and preferentially processing information to and from said modem.

5,303,068

IMAGE DATA PROCESSING APPARATUS FOR DIFFERENCE SCANNING METHODS

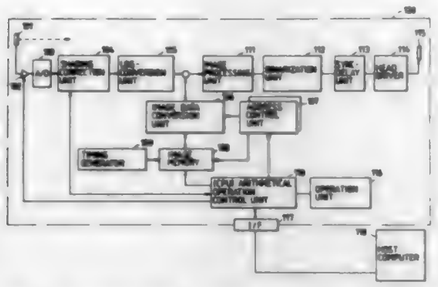
Yutaka Udagawa, Machida, and Toshihiko Ohtsubo, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 625,047, Dec. 10, 1990. This application Jun. 8, 1993, Ser. No. 73,979
Claims priority, application Japan, Dec. 11, 1989, 1-322312
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—444 25 Claims

1. A memory addressing method by which it is possible to write in memory or read out from memory a plurality of kinds of image data, each kind of image data corresponding to a different scanning method, wherein
a parameter can be preset in correspondence to the kind of the image data,

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an address value is calculated for every pixel datum, based on the set parameter, and



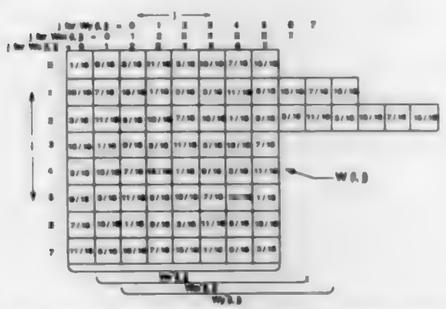
each of the pixel data is written or read out by using the calculated address value.

5,303,069

METHOD FOR PRODUCING A MULTITONE IMAGE

Michael Speciner, Acton, Mass., assignor to Camex, Inc., Culver City, Calif.

Filed Dec. 19, 1991, Ser. No. 810,462
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 19 Claims



17. A system for producing a multitone reproduction image representative of an original image, comprising:

means for scanning said original image to produce an original image density signal representative of the darkness value V_o of each picture element (s,t) of said original image;

means for processing said original image density signal to produce a reproduction image density signal representative of one of N reproduction darkness values V_r for each picture element (i,j) in an array of reproduction picture elements where $V_o(s,t)$ and $V_r(i,j)$ are related by $U(i,j)=(N-1)V_o(s,t)+W(i,j)$ in which U represents a darkness level defined by $U=(N-1)V_r$ and W is a real number in a range 0 W 1; and

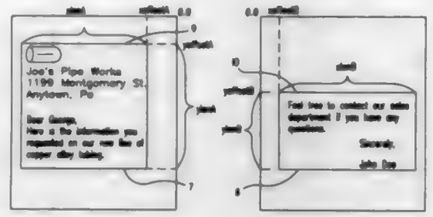
an image reproduction apparatus, controlled in response to said reproduction image density signal, to produce said multitone reproduction image.

5,303,070

METHOD AND APPARATUS FOR SELECTION OF DATA PACKETS IN DOUBLE SIDED SCANNING

John R. Christ, Santa Clara, Calif., assignor to Konica Corporation, Japan

Filed Jan. 13, 1992, Ser. No. 820,332
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—474 10 Claims



1. An apparatus for scanning both sides of a document simultaneously and transferring image data resulting from said scanning to a host computer wherein there are limitations on the amount of said image data which can be transferred at one time, said apparatus comprising

a scanner, connected to said host computer, for scanning both sides of said document simultaneously, an image RAM adapted to receive said image data from said scanner and of sufficient size to hold said image data from said both sides,

an image RAM controller which keeps a running total of said image data and is connected to a CPU, said image RAM, and said host computer, said CPU adapted to receive said running total from said RAM controller and said limitations from said host computer during said scanning, and further adapted to transmit said limitations to said scanner,

said scanner adapted to determine the location of a first bottom of a first packet window on a first of said sides with respect to a current position of a scanner head in said scanning direction, said scanner adapted to determine the location of a second bottom of a second packet window on a second of said sides with respect to said current position, said first packet window and said second packet window each conforming to said limitations,

said scanner adapted to transfer data to said host computer based on the one of the first packet window and the second packet window having its bottom nearer said current position in a scanning direction.

5,303,071

COLOR CORRECTOR IN AN APPARATUS FOR PRODUCING COLOR IMAGE

Yoshiaki Kakimura, Machida, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Continuation of Ser. No. 813,139, Dec. 23, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 73,282
Claims priority, application Japan, Dec. 25, 1990, 2-413735
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—519 6 Claims

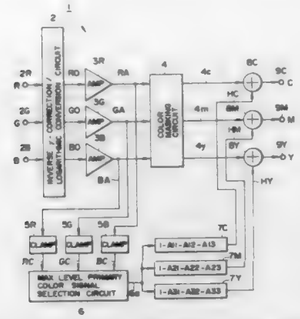
1. A color corrector provided in an apparatus for reproducing a color image from respective signals corresponding to predetermined primary colors of a plurality of primary colors constituting said color image, and adapted for correcting chromaticity of a color image reproduced,

said color corrector at least comprising:

corrective operation means adapted to execute a predetermined operation between a color correction coefficient matrix and signals corresponding to said primary colors to thereby correct relative levels of signals corresponding to said primary colors;

gray component extraction means adapted to make a level comparison between signals corresponding to said primary colors to thereby extract a gray component;

correction signal output means adapted to execute an operation between the extracted gray component and correction coefficients corresponding to said respective primary



colors determined by said color correction coefficient matrix to thereby output gray balance corrected signals for every said primary colors; and

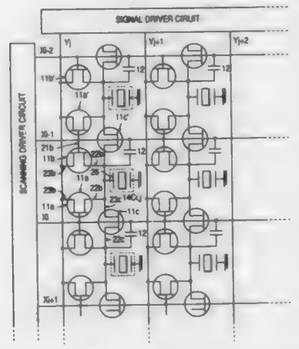
means for adding the level corrected signals corresponding to said respective primary colors outputted from said corrective operation means and outputs from said correction signal output means.

5,303,072

LIQUID CRYSTAL DISPLAY DEVICE

Mamoru Takeda; Sadayoshi Hotta, both of Hirakata; Ichiro Yamashita, Katano; Tatsuhiko Tamura, Neyagawa, and Yoneharu Takubo, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 26, 1991, Ser. No. 722,550
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—59 2 Claims



1. A liquid crystal display device having an array of thin film transistors serving as switch elements for activating pixels, comprising:

a plurality of signal lines Yj for supplying signals, wherein j=1 to N and N is the total number of signal lines;

a plurality of scanning lines Xi for controlling the thin film transistors, wherein i−1 to M and M is the total number of scanning lines;

a matrix of pixels C(i,j), each pixel being disposed at an intersection of a scanning line Xi and signal line Yj;

each pixel C(i,j) of said matrix of pixels being provided with first and second thin film transistors controlled by the scanning line Xi, wherein source and drain electrodes of the first thin film transistor are respectively coupled to the signal line Yj and pixel electrode of the pixel C(i,j), and wherein gate, source and drain electrodes of the second thin film transistor are respectively coupled to the scanning line Xi, the pixel electrode of the pixel C(i,j) and a pixel electrode of an adjacent pixel (Ci+1,j) being arranged on the opposite side of the scanning line Xi with respect to the pixel C(i,j);

each pixel C(i,j) being accompanied by a storage capacitor formed of a portion of a gate insulating layer of a second thin film transistor of a previous pixel C(i−1,j) and sandwiched between its pixel electrode and a previous scanning line Xi−1; and

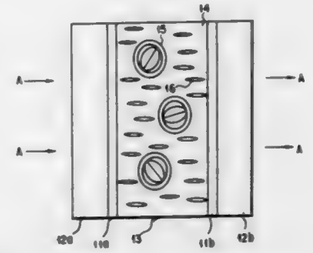
a scanning driver circuit for activating two adjacent scanning lines at the same time by applying a scanning pulse to each scanning line Xi which is shifted such that a portion of the scanning pulse overlaps a scanning pulse applied to a previous scanning line Xi−1.

5,303,073

DISPERSION-TYPE LIQUID CRYSTAL DISPLAY ELEMENT WITH ORIENTED DICHROIC DYE IN THE SUPPORT MEDIA

Koichiro Shirota, Kawasaki, and Kazuyuki Sunohara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 24, 1992, Ser. No. 903,282
Claims priority, application Japan, Jun. 24, 1991, 3-151656
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—51 20 Claims



1. A liquid crystal display element comprising:

a pair of substrates at least one of which is transparent; and

a light control layer consisting of a dispersion type liquid crystal material disposed between the substrates, said dispersion type liquid crystal material comprising,

a support medium,

liquid crystal molecules, and

a dichromatic dye which is oriented within the supporting medium and located separate from said liquid crystal molecules in the supporting medium,

said dichromatic dye having an absorption axis perpendicular to a plane of the substrates.

5,303,074

EMBEDDED REPAIR LINES FOR THIN FILM ELECTRONIC DISPLAY OR IMAGER DEVICES

Roger S. Salisbury, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 692,843, Apr. 29, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,740
Int. Cl.[5] G02F *1/133;* H01L *29/68;* G09G *3/36*
U.S. Cl. 359—59 21 Claims

1. A thin film electronic display device comprising:

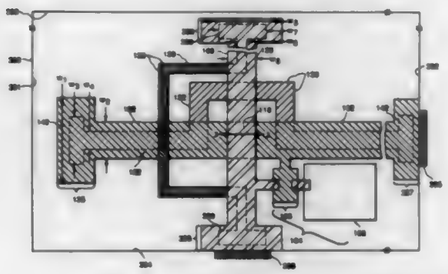
a substrate;

a plurality of electrically conductive first transmission lines

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disposed on said substrate in a first layer, each of said transmission lines having first and second end portions disposed substantially adjacent to first and second borders respectively of said substrate, each of said end portions further having a width that is greater than the width of remaining portions of said transmission line, said first end portion being embedded within said device so that only said second end portion is adapted to be coupled to an external drive circuit;

a plurality of electrically conductive first repair lines disposed in said device in a second layer, each of said repair lines being embedded within said device and associated with a respective one of said first transmission lines and extending along substantially the entire length of said respective associated first transmission line, each of said first repair lines being proximate to said respective associated first transmission line at selected connection points and electrically coupleable, within said device, to said



respective associated first transmission line at selected connection points, each of said repair lines further terminating at said first and second border of said substrate in respective first and second weld pads substantially aligned respectively with the first and second end portions of the associated first transmission line, each of said first and second weld pads having a width that is greater than the width of remaining portions of said repair line; and

a dielectric layer disposed between said first repair lines and said first transmission lines, said dielectric layer being removable at said selected connection points to provide for electrical coupling between each of said repair lines and said respective associated first transmission line so that an electrical defect on one of said first transmission lines between a pair of said selected connection points is bypassed by one of said repair lines when said transmission and repair lines are connected together at said pair of said selected connection points.

5,303,075

LIQUID CRYSTAL DISPLAY WITH PHASE DIFFERENCE PLATE HAVING PARTICULAR ΔNXD PERPENDICULAR TO SURFACE OVER ΔNXD AT 45° ANGLE TO SURFACE

Hiroshi Wada, and Hitoshi Nishizawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 683,419, Apr. 9, 1991, Pat. No. 5,212,819. This application Jan. 27, 1993, Ser. No. 9,848

Claims priority, application Japan, Apr. 9, 1990, 2-93667; Jan. 28, 1992, 4-12838

Int. Cl.[5] **G02F** *1/1335, 1/13*

U.S. Cl. 359—73 **6 Claims**

5. A liquid crystal display device, comprising:

a twisted nematic liquid crystal display cell defining a display screen having a rear edge as viewed from the user and including a pair of spaced apart opposed substrates with electrodes selectively disposed thereon and a nematic liquid crystal material having positive dielectric anisotropy disposed in the space between the substrates such that the liquid crystal molecules are essentially homogeneously aligned so as to provide a helical structure having a twist angle of about 180° to about 270°;

a pair of polarizing plates disposed on opposite sides of the liquid crystal cell;

at least one layer of an optically anisotropic substance disposed between said liquid crystal cell and one of said polarizing plates and serving as a phase difference plate for color compensation; and

a reflector disposed beneath the lower of the polarizing plates, wherein the value of the ratio K of the product Δn1·d1, where Δn1 is the optical anisotropy and d1 is the thickness in the vertical direction of said phase difference plate, to the product Δn2·d2, where Δn2 is the optical anisotropy and d2 is the thickness of said phase difference

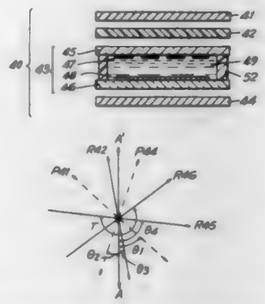


plate when inclined at 45° from the vertical direction of said phase difference plate in the direction of the optical axis, is in the range of K equal to or greater than 1.20, and the optical axis of said phase difference plate is disposed at an angle in the range from about +30° to about +60°, or in the range of from about −30° to about −60° with respect to the observation direction, where the values of angles are positive when measured clockwise from the observation direction, said observation direction being both in the plane of the display screen and substantially perpendicular to the rear edge thereof, the observation direction being the direction of the projection in the plane of the display screen of the direction from which a user of said display device most frequently views said display screen.

5,303,076

CHIRAL SMECTIC LIQUID CRYSTAL DEVICE WITH HOMOGENEOUS ORIENTATION LAYER ON ELECTRODES AND HOMEOTROPIC BETWEEN ELECTRODES

Shinjiro Okada, Ischara; Osamu Taniguchi, Chigasaki; Hironobu Mizuno, Hiratsuka, and Yutaka Inaba, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,123

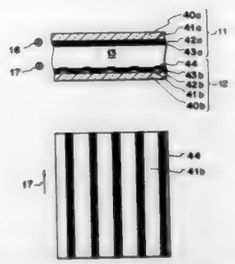
Claims priority, application Japan, Feb. 1, 1991, 3-31390

Int. Cl.[5] **G02F** *1/1337, 1/1343*

U.S. Cl. 359—78 **26 Claims**

1. A liquid crystal device having a first substrate on which a first group of belt-shaped electrodes are formed, a second substrate on which a second group of belt-shaped electrodes are formed so as to cross the first group of belt-shaped electrodes, and a chiral smectic liquid crystal arranged between the first and second substrates

wherein a first orientation firm having a homogeneous orienting function is formed on said first group of belt-shaped electrodes and second orientation films having a homeotropic orienting function are formed in spaces among said belt-shaped electrodes.



5,303,078

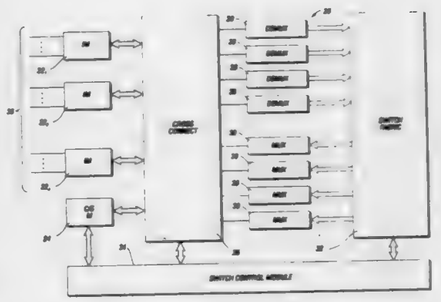
APPARATUS AND METHOD FOR LARGE SCALE ATM SWITCHING

Charles A. Brackett, Mendham, and Arturo Cisneros, Lincroft, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 629,584, Dec. 18, 1990, Pat. No. 5,130,984. This application Jun. 22, 1992, Ser. No. 902,876

Int. Cl.[5] **H04J** *14/08*

U.S. Cl. 359—139 **16 Claims**



1. An optical switch for switching a succession of ATM cells, each ATM cell being received on one of a plurality of input lines and each being switched to one of a plurality of output lines to which it is directed as determined by an embedded identifier in each received cell, comprising:

a plurality of input modules, each input module connected to a different subset of the plurality of input lines and each input module comprising a buffer for sequentially storing ATM cells received on the input lines to which it is connected and a tunable laser that is tunable to a plurality of different wavelengths;

a plurality of output modules, each output module connected to a different subset of the plurality of the output lines and each output module comprising an optical receiver fixed-tuned to receive one of the plurality of different wavelengths to which the tunable lasers in the input modules and tunable;

a contention resolution device electrically connected to each of said plurality of input modules for selecting from a head of queue of ATM cells stored in the buffer of each input module at most one ATM cell to be transmitted during a cell transmission time to each output module; and

an optical star coupler connecting said input modules and said output modules for simultaneously transmitting to each output module during each cell transmission time the ATM cells selected by the contention resolution device form the head of queue of ATM cells stored in the buffers of the input modules;

the tunable laser in each input module which has an ATM cell selected to be transmitted being tuned during each cell transmission time to the wavelength associated with the receiver of the output module connected to the output line to which the selected ATM cell is directed as determined by the embedded identifier in the selected ATM cell when received by one of the input modules.

5,303,077

OPTICAL SWITCH AND SWITCHING MODULE THEREFOR

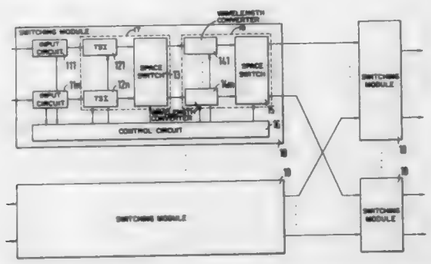
Dietrich Böttle, Salach, and Gert Ellenberger, Kirchheim, both of Fed. Rep. of Germany, assignors to Standard Elektrik Lorenz A.G., Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1992, Ser. No. 851,754

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108213

Int. Cl.[5] **H04J** *4/00, 14/00;* **G02B** *6/26, 6/42*

U.S. Cl. 359—123 **12 Claims**



1. Apparatus, responsive to optical input signals on a plurality of optical input signal lines, for providing a plurality of optical output signals on optical output signal lines, comprising devices for interchanging the time slots or converting the wavelengths of one or more of the input signals, and further comprising a space-division switching network for freely exchanging signals on different signal lines, wherein the apparatus is a multistage switch having both a stage comprising a device for interchanging the time slots and a stage comprising a device for converting the wavelengths of one or more of the input signals and having at least two space-division switching network stages, and wherein between every two of the space-division switching network stages, a time-slot-interchanging or wavelength-converting stage is inserted.

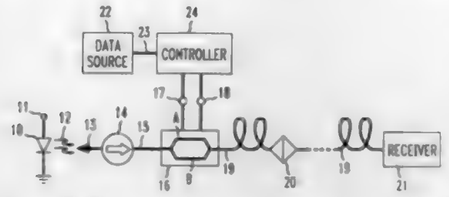
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,079

TUNABLE CHIRP, LIGHTWAVE MODULATOR FOR DISPERSION COMPENSATION

Alan H. Gnauck, Middletown; Steven K. Korotky, Toms River, and Jane E. Zucker, Aberdeen, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 9, 1992, Ser. No. 865,567
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—188 **10 Claims**



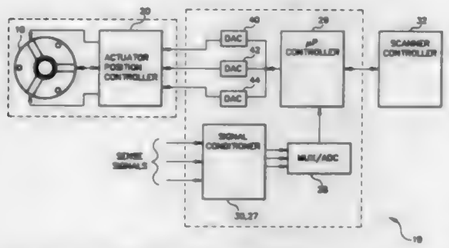
1. Apparatus for externally modulating an optical beam with information signal comprising:
first and second waveguide means responsive to the optical beam, each waveguide means including an optical waveguide for supporting propagation of the optical beam and an electrode means for applying signals to the optical waveguide, the electrode means of the first waveguide means being substantially independent from the electrode means of the second waveguide means;
waveguide output means for combining a modulated optical beam from each of said first and second waveguide means into a single modulated optical beam; and
means responsive to the information for modifying the information to generate first and second modulation control signals, each said modulation control signal including a representation of the information signal, the first and second modulation control signals generated in a predetermined relationship to each other for inducing a predetermined non-zero amount of a modulation chirp parameter in the single modulated optical beam when the first and second modulation control signals are applied to the electrodes of the first and second waveguide means, respectively.

5,303,080

BEAM SCANNING SYSTEM INCLUDING ACTIVELY-CONTROLLED OPTICAL HEAD

Michael J. O'Brien, and William B. Smith, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,730
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **11 Claims**



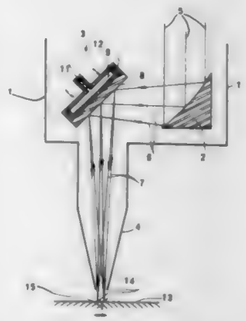
1. A beam scanning system, comprising:
an optical head assembly for controlling the provision of a collimated light beam in response to an applied optical head control signal;
a beam deflector for imparting a scanning motion to the collimated light beam to thereby produce a scanning beam;
sense signal provision means for providing sense signals indicative of one or more parameters indicative of the optical performance of the scanning beam; and
a control system, responsive to the sense signals, for computing said optical head control signal according to a predetermined beam scanning system influence matrix.

5,303,081

LASER BEAM SCANNER

Kazuhiro Totsuka; Akio Asai; Hideki Kamogawa, all of Aichi, and Masao Kishi, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed May 12, 1993, Ser. No. 60,009
Claims priority, application Japan, May 15, 1992, 4-148822
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—213 **5 Claims**



1. A laser beam scanner mounted in an apparatus for welding or annealing objects by irradiating the objects with a beam emitted from a CO_2 laser or a YAG laser comprising:
a parabolic mirror for reflecting and converging an incident laser beam,
a swaying mirror for reflecting again the reflected beam toward the objects,
a galvanometer for supporting and reciprocating the swaying mirror in a small angle,
a cooling device for cooling the swaying mirror by circulating water in an inner space of the swaying mirror, the cooling device having a cooling water inlet and a cooling water outlet installed at a center line of the rear surface of the swaying mirror, and
coiled tubes communicating with the cooling water inlet and the cooling water outlet for supplying water to or exhausting water from the cooling device of the swaying mirror.

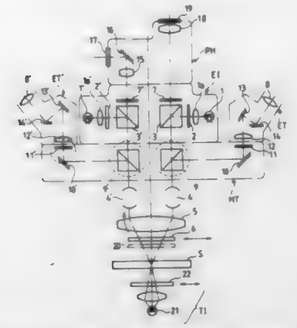
5,303,082

STEREOMICROSCOPE INCLUDING TWO PAIR OF POLARIZERS AND A QUARTER WAVELENGTH PLATE

Hideki Obuchi, Yokohama; Akira Watanabe, Hachiouji, and Shinichi Douska, Kanagawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,424
Claims priority, application Japan, Feb. 28, 1991, 3-064742
Int. Cl.[5] G02B *21/22, 21/36, 21/06*
U.S. Cl. 359—371 **14 Claims**

1. A stereomicroscope permitting microscopy in a coaxial vertical illumination mode comprising:
a pair of observation systems having the same optical configuration, and each comprising an objective lens and an eyepiece lens,
a pair of light source means disposed above said objective lens for emitting illumination light beams through first polarizing beam splitters into said observation systems so as to be coaxial therewith,
two pairs of polarizers disposed on the side of said eyepiece lenses and on the side of said light source means respectively so as to have polarizing directions perpendicular to each other, and
a quarter wavelength plate interposed in an optical path between said objective lens and a sample to be observed;
wherein said stereomicroscope further comprises a pair of light beam deflecting means capable of being selectively



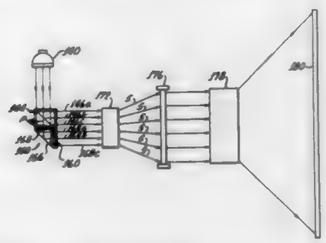
interposed in optical paths between said first polarizing beam splitters and said objective lens, each of said polarizers disposed on the side of said eyepiece lenses is removably disposed in an optical path deflected by each of said light beam deflecting means, and a pair of eyepiece tubes including said eyepiece lenses are arranged with the polarizer disposed on the side of the eyepiece lenses interposed between said eyepiece tubes and an intermediate tube containing said pair of light beam deflecting means and said pair of polarizers disposed on the side of said pair of eyepiece lenses.

5,303,083

POLARIZED LIGHT RECOVERY

Randall D. Blanchard, Vista; Eugene W. Cross, Jr., Escondido, and Ronald D. Shirley, Vista, all of Calif., assignors to Hughes Aircraft Cmpany, Los Angeles, Calif.

Filed Aug. 26, 1992, Ser. No. 935,622
Int. Cl.[5] G02B *5/32, 27/28;* G02F *1/1335*
U.S. Cl. 359—495 **14 Claims**



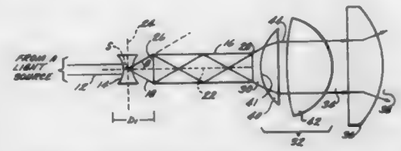
1. A method for converting unpolarized light to light having a single polarization state comprising the steps of:
dividing a beam of unpolarized light into an original beam of a first polarization state and a separated beam of a second polarization state,
passing said separated beam in a first direction through a first quarter-wave retarder to provide a first circularly polarized beam,
passing said first circularly polarized beam in a second direction at a right angle to said first direction through a second quarter-wave retarder oriented at a perpendicular to said first quarter-wave retarder to provide a recovered beam having the polarization state of said original beam, and
directing at a utilization device both said original and recovered beams.

5,303,084

LASER LIGHT BEAM HOMOGENIZER AND IMAGING LIDAR SYSTEM INCORPORATING SAME

Kent P. Pflibsen, and Albert N. Stuppi, both of Tucson, Ariz., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Aug. 27, 1991, Ser. No. 750,572
Int. Cl.[5] G02B *5/02, 6/00, 17/00*
U.S. Cl. 359—503 **19 Claims**



1. In a laser light beam homogenizer having diverging means for diverging a light beam with spatially inhomogeneous intensity, said light having a coherence length L_C with said diverging means providing a diverging light beam, integrator means having a first aperture for receiving said diverging light beam and having a plurality of internally reflective surfaces for forming an array of apparent light sources, the light from each apparent source in said array being superposed by said integrator means at a second aperture thereof, each individual light ray from each apparent source following a distinct light path to said second aperture to provide a uniform illumination beam, and minimum path length difference means for providing a minimum path length difference between the individual path lengths of any two rays coincident at said second aperture and arising from adjacent apparent sources in said array, said minimum path length difference means being at least said coherence length L_C of said beam, wherein the improvement comprises:
control optics means for receiving said uniform illumination beam from said integrator means, said control optics means for reducing the divergence and the radiance of said uniform illumination beam, said control optics means providing a controlled beam;
wherein said control optics means comprises:
(1) first lens means having a first pair of opposed optical surfaces, one of said first surfaces receiving said uniform illumination beam, said first lens means reducing the divergence of said uniform illumination beam and providing a reduced divergence uniform beam; and
(2) second lens means having a second pair of opposed optical surfaces, one of said second surfaces being disposed adjacent to one of said first surfaces for receiving said reduced divergence uniform beam, said second lens means providing said controlled beam and controlling higher order distortion in said controlled beam; and
wherein said first lens comprises a plano-convex lens, whereby one of said first surfaces is convex and one of said first surfaces is flat; and
wherein said second lens comprises an aspheric lens.

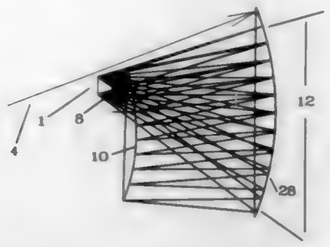
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,085

OPTICALLY CORRECTED HELMET MOUNTED DISPLAY

Richard D. Rallison, P.O. Box 142, Paradise, Utah 84328

Filed Feb. 7, 1992, Ser. No. 832,237
Int. Cl.[5] G02B *27/10, 6/08*
U.S. Cl. 359—631 2 Claims



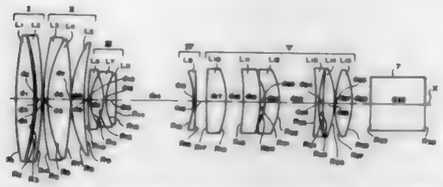
1. An optically corrected helmet mounted display, comprising:
   a reflective collimator-combiner situated to combine with light rays from the surrounding environment a generated image and to transmit such combined image and light rays to the eye position;
   a fiber optic faceplate located to receive an image from an image generator, said fiber optic faceplate having an input numerical aperture approximately equal to twice the pixel size of the image generator divided by the distance between said fiber optic faceplate and said pixels and having its output surface shaped to match the locus of points generated by ray tracing many parallel bundles of rays from the eye position to the points where the collimator-combiner focuses said parallel bundles of rays; and
   a fold mirror placed to receive from the output of the fiber optic faceplate the generated image and to reflect such image to said collimator-combiner.

5,303,086

ZOOM LENS WITH CLOSE-UP LENS

Masao Mori, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 4, 1993, Ser. No. 13,753
Claims priority, application Japan, Mar. 24, 1992, 4-015299[U]
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—683 2 Claims



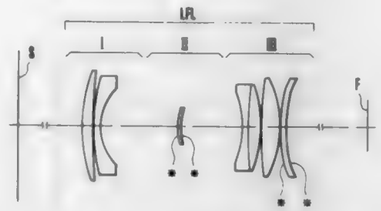
1. A zoom lens with a close-up lens comprising first to fifth lens groups arranged in this order from the object side, each of the first, second and fifth lens groups having a positive power and each of the third and fourth lens groups having a negative power, characterized in that
   said first to fifth lens groups are arranged so that the spaces between the second to fifth lens groups change when the zoom lens is zoomed from a shortest focal length to a longest focal length and at the same time the first lens group can be moved along the optical axis in response to change in the optical length between an object point and the first lens group so that the object side focal point of the first lens group coincides with the object point.

5,303,087

RETROFOCUS TYPE LENS

Shingo Hayakawa, Kanagawa; Nozomu Kitagishi, Tokyo; Shouichi Yamazaki, and Koutaro Yano, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 787,822
Claims priority, application Japan, Nov. 8, 1990, 2-303006; Nov. 8, 1990, 2-303010
Int. Cl.[5] G02N *3/02, 13/04*
U.S. Cl. 359—708 16 Claims



1. A retrofocus type lens with the total length of said retrofocus type lens divided into three substantially equal regions, said retrofocus type lens comprising:
   a first lens unit lying in the region on the side of a first conjugate point of long distance, a second lens unit lying in the intermediate region and a third lens unit lying in the region on the side of a second conjugate point of short distance,
   wherein at least said second lens unit and one of said first and third lens units each include an aspherical lens, and, letting the distance from a lens surface on the side of the second conjugate point of said third lens unit to the second conjugate point be denoted by SK and the focal length of said retrofocus type lens be denoted by fT, the following condition is satisfied:

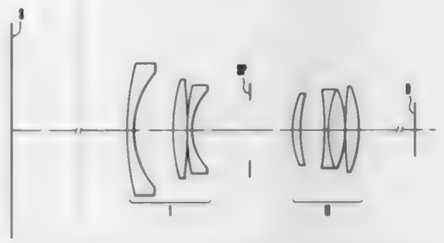
$$SK > 0.7fT.$$

5,303,088

RETROFOCUS TYPE LENS

Saburo Sugawara, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,826
Claims priority, application Japan, Oct. 23, 1991, 3-275409
Int. Cl.[5] G02B *13/04*
U.S. Cl. 359—753 25 Claims



1. A retrofocus type lens comprising, from a first conjugate side of long distance to a second conjugate side of short distance, a first lens unit having a negative refractive power and a second lens unit comprising positive and negative lenses, said second lens unit having an overall positive refractive power with a longest air separation in the lens system left between said first lens unit and said second lens unit, wherein a lens positioned closest to the first conjugate side in said second lens unit is constructed from a meniscus positive lens convex toward the first conjugate side, and wherein said retrofocus type lens satisfies the following condition:

$$n_{2n} - n_{2p} > 0.2$$

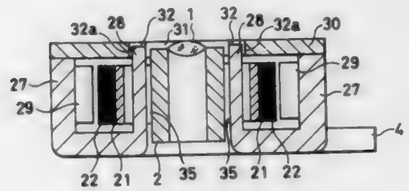
where n_{2p} and n_{2n} are respectively mean values of refractive indices of said positive and negative lenses in said second lens unit.

5,303,089

OBJECTIVE LENS DRIVE UNIT

Takehide Ohno, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 27, 1993, Ser. No. 68,247
Claims priority, application Japan, Jun. 3, 1992, 4-142674
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—814 9 Claims



1. An objective lens drive unit comprising:
   a bobbin having an objective lens and supported such that the bobbin can be displaced;
   an electromagnetic coil disposed in the bobbin;
   a base;
   two sets of inner and outer yokes integrally formed with said base;
   a magnet disposed in each of the outer yokes such that the magnet is opposed to said electromagnetic coil;
   an upper yoke connected to upper ends of said inner and outer yokes and formed by one sheet metal; and
   a through hole formed in the upper yoke such that a light beam transmitted through said objective lens passes through the through hole,
   said base, said sets of inner and outer yokes, said magnet and said upper yoke forming a magnetic circuit for applying a magnetic field to said electromagnetic coil in association with each other, and
   said upper yoke being arranged and fixed onto an upper end face of each of said two outer yokes.

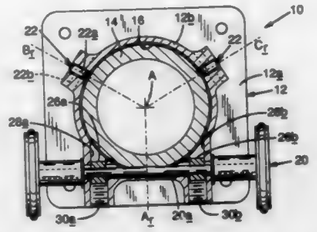
5,303,090

APPARATUS FOR ADJUSTING THE POSITION OF A DRAWTUBE IN AN OPTICAL INSTRUMENT

James D. Burr, 1960 Jefferson Co. Rd. 23, Evergreen, Colo. 80439, and Rick McWilliams, Mountain View, Calif., assignors to James D. Burr, Evergreen, Colo.

Filed Sep. 24, 1992, Ser. No. 951,678
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—823 5 Claims

1. An apparatus for use in adjusting ocular mechanism in an optical instrument, the apparatus comprising:
   a substantially rigid base with an aperture passing therethrough, said base including an upstanding member adjacent said aperture;
   a hollow drawtube controlledly movable through said aperture to effect adjustment of ocular mechanism held thereby, said drawtube having a flat expanse extending along a portion of the periphery thereof;
   a plurality of spaced bearings, mounted on said upstanding member, each operatively interposed between said upstanding member and said drawtube;
   a control shaft extending transversely of the drawtube and having a peripheral portion paralleling and contacting said flat expanse of said drawtube;



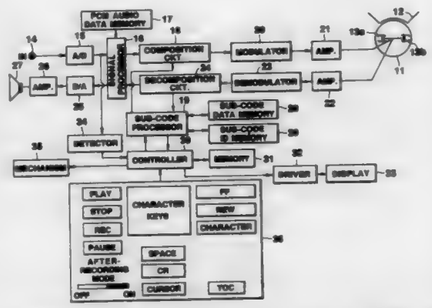
   carriage structure rotatably supporting said control shaft; and
   a mounting for said carriage structure on said base supporting the carriage structure for movement in a direction extending toward and away from said flat expanse.

5,303,091

DIGITAL AUDIO TAPE RECORDER FOR RECORDING CHARACTER DATA WITH DIGITAL DATA

Keiichi Sakurai, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 825,409, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 431,745, Nov. 3, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 18,470
Claims priority, application Japan, Nov. 10, 1988, 63-284144
Int. Cl.[5] G11B *5/02, 5/09*
U.S. Cl. 360—19.1 14 Claims



1. An apparatus for recording character data together with digital data for a plurality of programs on a magnetic tape having a plurality of tracks, and for reproducing recorded data, said apparatus comprising:
   magnetic head means provided with a plurality of magnetic heads for reproducing recorded data and for recording data on tracks on said magnetic tape, each of the tracks having a PCM data recording area and sub-code recording areas;
   signal processing means for receiving the digital data, and including means for adding an error correction code to the digital data to generate PCM data;
   sub-code processing means for generating sub-code block data having pack data, the pack data including a pack item, a data block, and a parity block;
   frame composing means coupled to said signal processing means and to said sub-code processing means, for composing PCM data at a timing corresponding to said PCM data

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recording area and sub-code block data at a timing corresponding to a sub-code recording area to output the composed data;

modulating means, coupled to said magnetic head means and to said frame composing means, for modulating the composed data relating to each of the programs;

character data input means for inputting character data relating to each of the programs; and

control means, coupled to said sub-code processing means, and to said character data input means, for supplying character code data corresponding to the character data input by said input means to said sub-code processing means, for controlling said sub-code processing means so that said sub-code processing means generates, for each of the programs, the sub-code block data including pack data of a character code including the character code data relating to a respective program, the sub-code block data further including pack data of a Table of Contents mode including the character code data of the Table of Contents mode which includes the character code data relating to all of the programs, and for controlling said modulating means and said magnetic head means so that said modulating means and said magnetic head means record said sub-code block data which contains the pack data of the character code including the character code data relating to a respective program being stored in a sub-code recording area of such corresponding program of the magnetic tape automatically, and said sub-code block data which contains the pack data of the Table of Contents mode including the character code data relating to all of the programs being stored in a predetermined sub-code recording area of a first program of the programs.

5,303,092

MAGNETIC TRANSFER METHOD

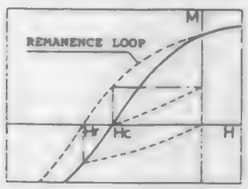
Makoto Noda, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1991, Ser. No. 664,780

Claims priority, application Japan, Mar. 6, 1990, 2-52619

Int. Cl.[5] G11B *5/86*

U.S. Cl. 360—17 **3 Claims**



1. A magnetic transfer method for transferring information signals recorded on a master medium onto a slave medium placed in pressure contact with the master medium, by impressing a bias magnetic field with emphasis in the perpendicular direction to said master medium and the slave medium, comprising the step of

maintaining the relation between the longitudinal remanent coercivity Hr_1 of the master medium and the perpendicular remanent coercivity Hr_2 of the slave medium so as to satisfy the formula

$$Hr_1/Hr_2 \geq 2.0$$

wherein the perpendicular remanent coercivity Hr_2 of the slave medium is not compensated for anti-magnetizing fields.

5,303,093

NOISE REDUCTION/ELIMINATION APPARATUS FOR USE WITH ROTARY HEAD TYPE RECORDING/REPRODUCING APPARATUS

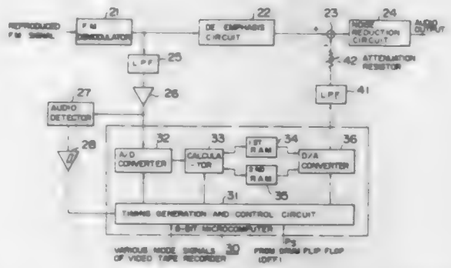
Satoshi Kawasaki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 31, 1991, Ser. No. 708,873

Claims priority, application Japan, Jun. 1, 1990, 2-143843; Jul. 31, 1990, 2-204303

Int. Cl.[5] G11B *20/06*

U.S. Cl. 360—30 **10 Claims**



1. A noise reduction apparatus for use with a magnetic reproducing apparatus wherein a signal FM modulated and recorded on a recording medium is reproduced using a rotary head and FM modulated to pick up a reproduced audio signal, comprising:

a first filter for extracting low frequency components from said reproduced audio signal;

level detection means for detecting whether a level of said low frequency components extracted by said first filter is less than or equal to a first threshold level;

averaging means which comprises first means for sampling said low frequency components at a sampling point synchronous with the rotation of said rotary head during a period while a level of said low frequency components extracted by said first filter is less than or equal to said first threshold level, second means for converting said low frequency components sampled by said first means into digital data, third means for averaging said digital data for a predetermined number of rotations at each of said sampling points, fourth means for continuing averaging said digital data if a difference between said low frequency components sampled by said first means and said digital data averaged by said third means is less than or equal to a second threshold value, and fifth means for converting said digital data averaged by said third means obtained during a period corresponding to a predetermined number of rotations of said rotary head into an analog signal which is output at a timing corresponding to said sampling point, thereby averaging said low frequency components;

a second filter for removing high frequency components from said analog signal; and

means for subtracting a signal obtained from said second filter from said audio signal.

5,303,094

APPARATUS FOR RECORDING AND/OR REPRODUCING DIGITAL AND ANALOG MAGNETIC TAPE SIGNALS WITH A/D AND D/A CONVERTERS

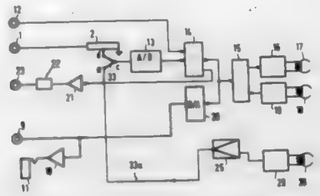
Yasuo Kato, Kanagawa, Japan, and Gerardus C. P. Lokhoff, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 26, 1992, Ser. No. 936,147

Claims priority, application Japan, Aug. 30, 1991, 3-76801; Aug. 30, 1991, 3-76802; Aug. 30, 1991, 3-76803

Int. Cl.[5] G11B *5/00, 5/09, 15/12*

U.S. Cl. 360—32 **7 Claims**



1. An apparatus for receiving a magnetic tape accommodated in a cassette, the apparatus comprising a digital-signal reproducing part, an analog-signal reproducing part, an analog-signal output terminal and first switching means for selectively coupling the analog-signal output terminal to an output of the analog-signal reproducing part and via a D/A converter to an output of the digital-signal reproducing part, characterized in that the apparatus further comprises an A/D converter and in that the apparatus is adapted to couple the output of the analog-signal reproducing part to the analog-signal output terminal via said A/D converter and said D/A converter, in the situation when the first switching means is switched such so as to provide the coupling between the output of the analog-signal reproducing part and the analog-signal output terminal.

5,303,095

SYSTEM AND METHOD OF CONTROLLING DATA TRANSFER RATE IN A MAGNETIC TAPE DRIVE

Binh Vuong, Simi Valley, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.

Continuation of Ser. No. 614,162, Nov. 13, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 991,080

Int. Cl.[5] G11B *5/09, 15/46, 15/48*

U.S. Cl. 360—46 **33 Claims**

1. A method of transferring data between a host device and a magnetic tape comprising the steps of:

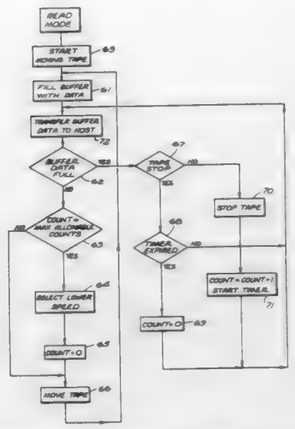
running a tape drive at a first tape speed to transfer data signals between said magnetic tape and a tape drive buffer at a tape drive data transfer rate;

transferring digital data between said host device and said tape drive buffer at a host data transfer rate;

transferring buffered data between said magnetic tape and said host device by way of said tape drive buffer;

monitoring a state of said buffer during said buffered data transfer;

interrupting said tape drive running in response to said state of said buffer to produce an adjusted tape drive data transfer rate for transfer of data between said magnetic tape and said tape drive buffer, said adjusted tape drive data transfer rate being lower than said tape drive data transfer rate to reduce effects of disparity between said tape drive data transfer rate and said host data transfer rate during said buffered data transfer; and than



selectively changing said tape drive speed to a second tape speed in response to said monitoring to minimize said interrupting.

5,303,096

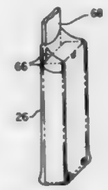
MERGING OF HEADS INTO DISK DRIVES USING LOW MELTING WAX

Christopher G. Keller, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 14, 1992, Ser. No. 913,252

Int. Cl.[5] G11B *5/012*

U.S. Cl. 360—97.01 **38 Claims**



1. A method of assembling a disk drive of a computer having a plurality of disks included therein, the method comprising the steps of:

mounting a slider with an associated head to a suspension to form a head suspension assembly, the head suspension assembly having a slider end and an opposite end;

coating at least a portion of the slider end with a layer of wax;

merging the head suspension assembly with the disks of the disk drive by sliding the slider end over a selected disk to a predetermined landing zone; and

thereafter removing the wax.

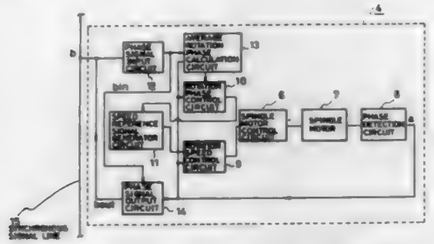
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5,303,097

DISK SYNCHRONIZATION CONTROL SYSTEM AND METHOD

Hiroshi Baba, and Toshio Matsumoto, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1992, Ser. No. 878,331
Claims priority, application Japan, May 13, 1991, 3-106219
Int. Cl.[5] G11B *15/46, 21/04*
U.S. Cl. 360—73.02 **7 Claims**



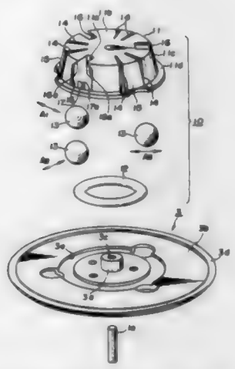
1. A disk synchronization control system including a plurality of disk units having rotation phase signal outputs and a single disk controller, wherein each said disk unit comprises:
means for receiving a composite rotation phase identification signal formed by combining rotational phase signals output from said plurality of disk units;
means for calculating an average rotation phase value to which each of said plurality of disk units is to be synchronized; and
means for synchronizing the rotation phase signal output of said disk unit with the calculated average rotation phase value.

5,303,098

DISC CHUCKING MECHANISM

Eiji Yamamori, and Tetsu Yanagisawa, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 610,796, Nov. 8, 1990, abandoned. This application May 5, 1993, Ser. No. 56,940
Claims priority, application Japan, Nov. 16, 1989, 1-298614
Int. Cl.[5] G11B *17/028*
U.S. Cl. 360—99.12 **7 Claims**



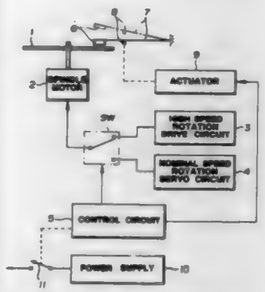
1. A disc chucking mechanism comprising:
a disc table having an axis of rotation and a flat-plate portion on which a disc having a central opening is placed, said flat-plate portion being formed at an outer periphery of said disc table;
a cap member disposed on said disc table at a position which is coaxial with said axis of rotation of the disc table, said cap member being formed with a plurality of slits arranged about an outer periphery thereof, said slits defining deflectable portions of said cap member which are displaceable in a radial direction of said disc table;
a ring-shaped member provided within said cap member and being made of an elastic material; and
a plurality of ball-shaped members provided within said cap member and protruding from an outer periphery of said cap member, said ball-shaped members being biased outwardly of said cap member by engagement with said ring-shaped member, wherein a disc placed on said disc table is thrusted towards said disc table by engagement of the central opening of the disc with said ball-shaped members, and said deflectable portions of said cap member engage the central opening of the disc for centering the disc with respect to said axis of rotation of said disc table.

5,303,099

HARD DISK DRIVER INCLUDING A FLYING HEAD SLIDER

Kazushige Kawazoe, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 717,524, Jun. 19, 1991, abandoned.
This application Mar. 2, 1993, Ser. No. 26,212
Claims priority, application Japan, Jun. 25, 1990, 2-165974
Int. Cl.[5] G11B *5/60, 11/12, 5/012*
U.S. Cl. 360—103 **4 Claims**



1. A hard disk drive apparatus comprising:
(a) a power supply, including a power switch which can be turned on an off, for selectively supplying power;
(b) motor means, including a speed controllable motor, for rotating a recording medium either at a first, nominal speed of a second speed higher than the nominal speed;
(c) a flying head slider for supporting a transducer head relative to a recording surface on the recording medium as a result o an air bearing effect created by an air flow generated by rotation of the recording medium;
(d) support means which can be controlled to support the flying head slider at an unloading position where the flying head slider is prevented from contacting the recording surface; and
(e) control means connected to the power switch, the motor means, and the support means for detecting that the power switch has been turned off and thereafter controlling the motor to increase the rotational speed of the recording medium from the first, nominal speed to the second, higher speed thereby increasing the air flow and causing the flying head slider to lift the transducer head further away from the recording surface, and for thereafter controlling the support means to support the flying head slider from the unloading position.

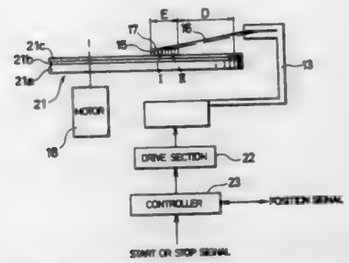
3. A method of raising a transducer head of a hard disk drive away from a recording surface of a rotating recording medium when the hard disk drive is depowered, comprising the steps of:
(a) flying a head slider for supporting the transducer head relative to the recording surface on an air bearing created by rotation of the recording medium at a first, nominal speed;
(b) turning off a power supply for supplying power to the hard disk drive; and
(c) thereafter increasing the rotation of the recording medium from the first, nominal speed to a second speed, higher than the nominal speed, thereby increasing a lifting force exerted by air bearing on the flying head slider and causing the flying head slider to lift the transducer head further away form the recording surface, and
(d) thereafter stably supporting the flying head slider at an unloading position where the flying head slider is prevented from contacting the recording surface after the recording medium stops rotating.

5,303,100

MAGNETIC DISK DEVICE WITH FLOATING-TYPE MAGNETIC HEAD

Junichiro Nakayama; Hiroyuki Katayama; Tomoyuki Miyake, and Kenji Ohta, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 29, 1991, Ser. No. 752,052
Claims priority, application Japan, Sep. 7, 1990, 2-237867
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—104 **16 Claims**



1. A magnetic disk device having a floating-type magnetic head for use with a disk-shaped recording medium which is adapted to be removed from the magnetic disk device and has a sliding area for the floating-type magnetic head formed outside a recording area thereof; said magnetic disk device comprising:
a suspension means for supporting the floating-type magnetic head and applying an elastic force to the floating-type magnetic head when the floating-type magnetic head floats above the recording medium; and
fixing means whereto the suspension means is fixed,
wherein a radial position for sliding of the floating-type magnetic head on the recording medium is varied depending on individual magnetic disk devices by changing lengths of the suspension means and the fixing means in a radial direction of the recording medium depending on individual magnetic disk devices.

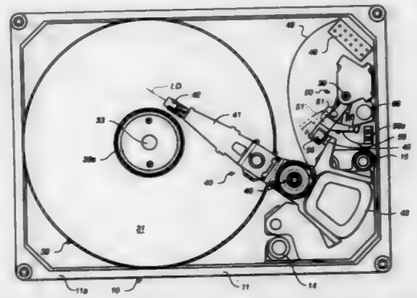
5,303,101

ACTIVE MAGNETIC LATCH FOR DISK DRIVE AND METHOD

Michael R. Hatch, Palo Alto; Ronald R. Moon, Los Gatos, and Robert P. Cloutier, Campbell, all of Calif., assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 851,372
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—105 **27 Claims**

11. In combination a disk drive comprising at least one disk driven by a spindle motor, a rotary actuator including read and write heads for accessing data storage tracks on the at least one disk, an actuator voice coil motor for rotationally and incrementally driving said actuator, and means including the actuator voice coil motor for driving said actuator and read and write heads to a parking position against a parking stop; and a magnetic latch for latching the actuator against the parking stop to prevent shock induced movement of the actuator and read and write heads from the parking stop, said magnetic latch comprising:
a ferrous member extending from said actuator;
a latching arm spacedly juxtaposed from said ferrous member, said latching arm having a latch magnet spaced from said ferrous member;
means for moving said latching arm and said latch magnet from an unlatched position spaced from said ferrous member to a latch position more closely spaced from said



ferrous member where a magnetic force of said latch magnet holds the actuator against the parking stop;
means for unlatching said magnetic latch; and
wherein said latching arm further comprises an elongated pivotable arm, a distal end of the pivotable arm mounting said latch magnet, and in which said means for moving said latching arm includes a latch voice coil associated with an opposite end of the pivotable arm forming part of a magnetic circuit and wherein said spindle motor generates a back EMF when power is removed therefrom, said back EMF being coupled to said latch voice coil to drivingly pivot said pivotable arm and said latch magnet to the latch position.

5,303,102

DISK DRIVE APPARATUS HAVING HEAD GUARD

Tomoe Aruga, and Kenji Okuhara, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 894,834
Claims priority, application Japan, Apr. 24, 1991, 4-131554; Jun. 7, 1991, 3-136183; Jun. 24, 1991, 3-151521; Jun. 24, 1991, 3-151522; Jun. 24, 1991, 3-151523
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—105 **18 Claims**

1. A disk drive apparatus comprising:
a support for movably supporting a pair of carriages, each carriage having a head, which heads together are for pinching a magnetic disk from both sides thereof and for reading and writing information thereon, said carriages for moving said pair of heads to a desired track on the disk, said carriages being movable selectively toward and away from each other, one of said carriages having an arm section that moves through an arm path when said carriages move toward and away from each other; and
a holder, supported by said support, for holding a disk cartridge containing the magnetic disk;
said holder being provided with: a head guard movable between a guarding position where said head guard is inserted in said arm path to prevent said pair of heads from abutting each other and a withdrawn position where said head guard withdraws from said arm path to that said

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heads can pinch the magnetic disk; said head guard biased to said guarding position; and

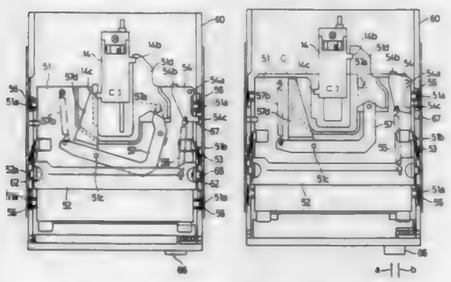
said head guard moving from said guarding position to said withdrawn position when one end of the disk cartridge to be stored in said holder abuts with a portion of said head guard.

13. A disk cartridge holder for holding a disk cartridge containing a magnetic disk between first and second heads mounted on respective first and second carriages in a disk drive apparatus, comprising:

a frame for receiving and holding the disk cartridge;

a slot for receiving the first and second carriages of the disk drive apparatus;

a shutter lever, mounted on said frame, for opening a shutter of the disk cartridge as the disk cartridge is inserted into said frame, and having a pin that is contacted by the disk



cartridge as the disk cartridge is inserted into said frame, said pin moving with the inserted disk cartridge to cause said shutter lever to open said shutter;

a head guard attached to said frame for movement between a guarding position where said head guard is located at least partially over said slot for contacting one of the first and second carriages for preventing the heads from contacting each other when the disk cartridge is not mounted in said frame, and a withdrawn position where said head guard is not located over said slot so that said head guard will not prevent the heads from contacting each other when the disk cartridge is mounted in said frame, said head guard attached to said shutter lever so as to move to said withdrawn position as said pin moves said shutter lever; and

means for biasing said head guard toward said guarding position.

5,303,103

HEAD DRIVE MECHANISM WITH RESILIENT SIGNAL TRANSMITTING MEMBER

Yuichi Kurosawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1990, Ser. No. 588,016

Claims priority, application Japan, Sep. 26, 1989, 1-251330

Int. Cl.[5] G11B *21/08*

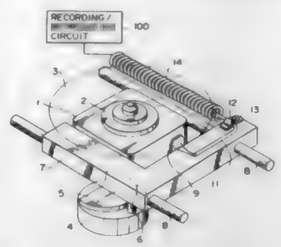
U.S. Cl. 360—106 **15 Claims**

1. A head drive mechanism associated with a disk drive device, said disk drive device being capable of rotatably mounting a disk member, said head drive mechanism comprising a head member capable of recording signals onto said disk member and reproducing said signals from said disk member, said head drive mechanism further comprising:

a supporting member for supporting said head member;

drive means for driving said supporting member to move along a path of movement in a direction parallel to a surface of said disk member; and

a signal transmitting member for transmitting signals, one end of said signal transmitting member being electrically connected to said head member and secured to said supporting member, another end of said signal transmitting member being secured at a predetermined position which is fixed with respect to said disk drive device, said signal



transmitting member being formed to have a resilient force to be applied to said supporting member for biasing said supporting member toward one position located in the path of movement of said supporting member.

5,303,104

DISK DRIVE APPARATUS HAVING CARRIAGE DRIVING MECHANISM

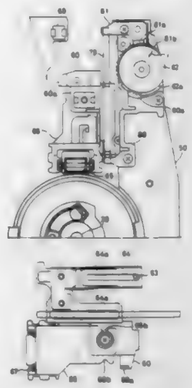
Tomoe Aruga, and Hideya Yokouchi, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 894,835

Claims priority, application Japan, Jun. 10, 1991, 3-137396; Jun. 10, 1991, 3-137397; Jun. 10, 1991, 3-137398; Jun. 10, 1991, 3-137399; Jun. 24, 1991, 3-151526; Jun. 24, 1991, 3-151527; Apr. 24, 1992, 4-131552

Int. Cl.[5] G11B *5/55*

U.S. Cl. 360—106 **20 Claims**



1. In a disk drive apparatus wherein information is recorded and reproduced from a disk using a head mounted on a carriage which is moved in a radial direction of the disk, a carriage driving mechanism for moving the carriage in the radial direction of the disk, comprising:

a step motor having a drive shaft and a pinion located at one end of said drive shaft;

a rack including an elongate slot, plural teeth on one side of said slot, said pinion inserted into said slot so that said plural teeth are engaged with said pinion; and

a pair of parallel leaf springs attached to said rack and having means for attachment to the carriage so that said pair of parallel leaf springs bias said plural teeth of said rack against said pinion, said parallel leaf springs being parallel to said elongate slot.

5,303,105

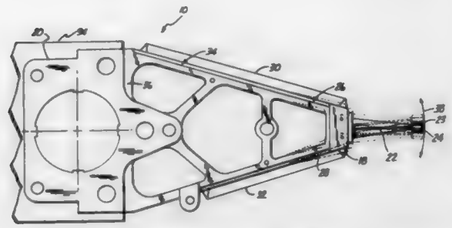
SHAPE MEMORY ALLOY FOR CENTERING A TRANSDUCER CARRIED BY A SLIDER IN A SUPPORT ARM OVER A TRACK ON A MAGNETIC DISK

David J. Jorgenson, St. Louis Park, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 555,078, Jul. 18, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 991,518

Int. Cl.[5] G11B *5/55*

U.S. Cl. 360—106 **63 Claims**



1. An apparatus for repositioning a transducer, carried by a slider, over a track on a magnetic disk, comprising:

an arm having a first end for attachment to an actuator for rotating the arm, a second end for attachment to the slider, and an arm portion extending between the first and second ends;

shape memory alloy means, responsive to thermal energy to deform the shape memory alloy means, being coupled to the arm portion for deforming the arm upon deformation of the shape memory alloy means; and

means for selectively applying thermal energy to the shape memory alloy means to cause corresponding deformation of the shape memory alloy means causing the arm to deform and move the second end along an arcuate path in a plane substantially transverse to the track to position the transducer over a center of the track.

5,303,106

ROTARY-HEAD DRUM DEVICE FOR GUIDING A TAPE THEREAROUND

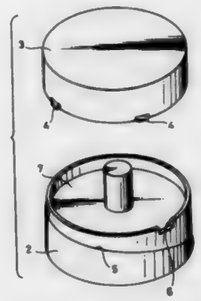
Masahiro Kiko, Chiba, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 715,621, Jun. 14, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,440

Claims priority, application Japan, Jul. 31, 1990, 2-203466

Int. Cl.[5] G11B *5/53, 21/18*

U.S. Cl. 360—107 **11 Claims**



1. A rotary-head drum device comprising:

a fixed drum having a cylindrical wall and an interior cavity;

a rotatable drum rotatably mounted on said fixed drum;

a magnetic head mounted on said rotatable drum for sliding contact with a magnet tape guided around said fixed drum and said rotatable drum, wherein the fixed drum has a tape entry point where the magnetic tape makes contact with said cylindrical wall of the fixed drum and a tape exit point where the magnetic tape leaves contact with the cylindrical wall of the fixed drum, and wherein the magnetic tape is in contact with and guided around said cylindrical wall of said fixed drum between said tape entry and tape exit points; and

said fixed drum having an air outlet defined through said cylindrical wall for allowing the passage of air under pressure from said interior cavity of said fixed drum, said air outlet being located adjacent to said tape exit point so that the passage of air under pressure through said air outlet will force a portion of the magnetic tape adjacent to the magnetic head radially outwardly to increase contact area of the magnetic tape with the magnetic head.

5,303,107

SYSTEM FOR HOLDING A TRACK COUNTER ACTIVE DESPITE POWER SUSPENSION IN ROTATING DISK DATA STORAGE APPARATUS

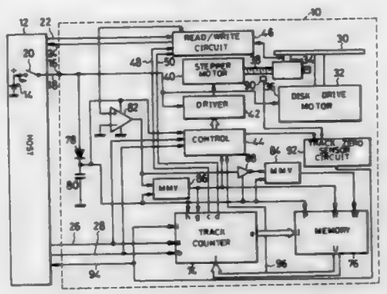
Tohru Miura, Chofu; Hiroshi Tsuyuguchi, Tokyo; Fumio Nagase, Tama, and Miya Enami, Higashikurume, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 869,237

Claims priority, application Japan, Apr. 18, 1991, 3-113957

Int. Cl.[5] G11B *20/00*

U.S. Cl. 360—137 **6 Claims**



1. A rotating disk data storage apparatus suitable for use with a host system capable of connecting power supply means to the data storage apparatus when the operation of the apparatus is necessary, and disconnecting the power supply means from the data storage apparatus when the operation of the apparatus is unnecessary, the rotating disk data storage apparatus comprising:

(a) a transducer for data transfer with a rotating data storage disk having a multiplicity of record tracks thereon;

(b) transducer positioning means including stepper motor means for moving the transducer across the record tracks on the data storage disk;

(c) a stepper motor control circuit connected to the stepper motor means for causing the transducer to be positioned on successive destination tracks on the data storage disk in response to stepping pulses;

(d) a read/write circuit connected to the transducer for processing data being transferred between the transducer and the data storage disk, the read/write circuit having means for changing a data processing condition;

(e) a track counter for ascertaining the radial position of the transducer on the data storage disk by counting the stepping pulses being applied to the stepper motor control circuit, the track counter being connected to the changing means of the read/write circuit for causing the same to change the data processing condition depending upon the radial position of the transducer on the data storage disk;

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(f) a supply terminal to be connected to the power supply means of the host system, the supply terminal being connected at least to the track counter so that the track counter is fed from the power supply means of the host system when the data storage apparatus is connected thereto;

(g) a switching element connected between the supply terminal and the track counter, the switching element being closed when the data storage apparatus is connected to the power supply means of the host system, and opened when the data storage apparatus is disconnected from the power supply means; and

(h) storage means connected between the switching element and ground for storing electrical energy fed from the power supply means when the switching element is closed;

(i) whereby the track counter is fed from the storage means, instead of from the power supply means of the host system, when the data storage apparatus is disconnected from the power supply means; and

further comprising memory means for having a count of the track counter stored thereon when the data storage apparatus is disconnected from the power supply means of the host system, and for having the stored count preset on the track counter when the data storage apparatus is reconnected to the power supply means of the host system.

5,303,108

MAGNETIC HEAD DEVICE

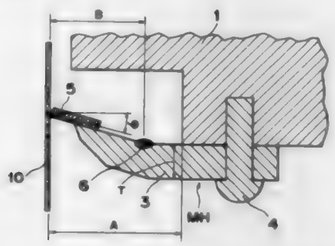
Masaru Higashionji, Katano; Hideaki Mukae, Sanda; Akio Murata, Ibaraki, and Takaaki Maegawa, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,427

Claims priority, application Japan, Apr. 17, 1991, 3-085048

Int. Cl.[5] G11B *21/16, 21/24*

U.S. Cl. 360—137 **6 Claims**



1. A magnetic head device for writing and reading a magnetism pattern onto and from a recording medium wound around a rotary cylinder, said device comprising:

a magnetic head for writing and reading the magnetism pattern onto and from the recording medium; and

an elongate plate having one end fixed to one surface of the rotary cylinder so as to extend from said one end toward an outer circumference of the rotary cylinder and having another end with said magnetic head fixed thereto, said elongate plate having a thickness T and a length A, said length A defined by a distance between said fixed end and an outer edge of said magnetic head, said thickness T and said length A having a relationship $A \leq 5 \times T^{\frac{1}{2}}$, said elongate plate having a plastically deformed bent portion located at a position which is at least 2 mm from said outer edge of said magnetic head so that said magnetic head is aligned at a predetermined level.

5,303,109

PORTABLE INFORMATION REPRODUCING AND VOICE AMPLIFYING APPARATUS

Hideo Takao, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

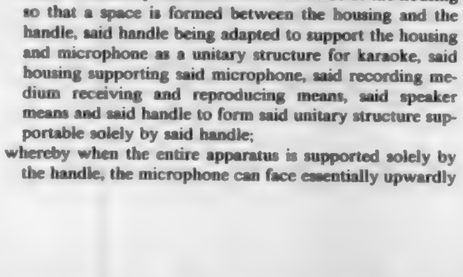
Continuation of Ser. No. 900,523, Jun. 17, 1992, Pat. No. 5,208,717, which is a continuation of Ser. No. 827,544, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 445,655, Nov. 29, 1989, abandoned. This application Jan. 28, 1993, Ser. No. 11,620

Claims priority, application Japan, Mar. 31, 1988, 63-044135; Mar. 31, 1988, 63-044136; Jun. 10, 1988, 63-077497

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] G11B *33/12;* **H04B** *1/20, 1/00;* **H04R** *27/00*

U.S. Cl. 360—137 **17 Claims**



1. A portable music information reproducing and voice amplifying apparatus for outputting information from a recording medium and an external voice sound suitable for use as a karaoke device which can be held as a unit in one hand of a user with a microphone thereof facing the user's head, comprising:

a housing having a first side facing in a first direction, a second side facing in a second direction, said first and second sides facing in different directions, a first end between said first and second sides facing in a third direction and a second end opposed to said first end;

said microphone for detecting the external voice sound;

means for coupling said microphone to said housing in the region of said first end so that the microphone is joined to the housing to form a unitary structure for movement therewith and is faced essentially in the direction faced by said first end;

recording medium receiving and reproducing means positioned in the housing for receiving the recording medium and reproducing the information on the recording medium;

speaker means for outputting the information from the recording medium receiving and reproducing means and the external voice sound received by the microphone, said speaker means essentially positioned on the second side of the housing so as to be spaced from the microphone so that no feedback occurs and so as to face essentially in a direction away from the directions faced by said first end and said first side; and

a handle essentially mounted on the first side of the housing so that a space is formed between the housing and the handle, said handle being adapted to support the housing and microphone as a unitary structure for karaoke, said housing supporting said microphone, said recording medium receiving and reproducing means, said speaker means and said handle to form said unitary structure supportable solely by said handle;

whereby when the entire apparatus is supported solely by the handle, the microphone can face essentially upwardly toward the head of the user and the speaker means can face essentially forwardly away from the user.

5,303,110

INSULATED-GATE CONTROLLED SEMICONDUCTOR DEVICE

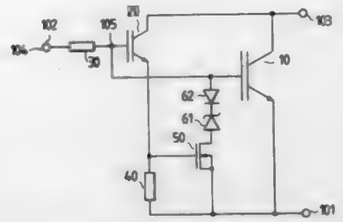
Naoki Kumagai, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 19, 1992, Ser. No. 854,085

Claims priority, application Japan, Mar. 22, 1991, 3-057495; Dec. 4, 1991, 3-319459

Int. Cl.[5] H02H *7/10*

U.S. Cl. 361—18 **12 Claims**



1. An insulated-gate controlled semiconductor device comprising:

a main circuit controlled by an insulated gate having a gate resistor;

an overload detector also controlled by said insulated gate, the overload detector being of substantially the same construction as that of the main circuit;

current detecting means for detecting current passing through the overload detector;

a field effect transistor having a gate, said gate receiving a voltage corresponding to a voltage drop across the current detecting means; and

constant-voltage means inserted between the field effect transistor and the insulated gate, the main circuit being protected by lowering the voltage applied to the insulated gate through a gate resistor and an on-resistance of the field effect transistor while the field effect transistor is held on.

5,303,111

SUPERCONDUCTING COIL PROTECTIVE SYSTEM

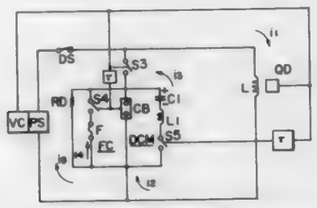
Satarou Yamaguchi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,068

Claims priority, application Japan, Apr. 23, 1991, 3-091894

Int. Cl.[5] H02H *9/00, 3/00*

U.S. Cl. 361—19 **10 Claims**



3. A superconducting coil protective system for protecting a superconducting coil connected in parallel to a power source generating an output voltage, said protective system comprising:

quenching detecting means for detecting occurrence of quenching in said superconducting coil and generating a quenching signal indicative of the occurrence of quenching;

a protective resistor connected in parallel to the superconducting coil for dissipating the energy stored on the superconducting coil;

a current interrupting means connected in parallel to the superconducting coil and said protective resistor;

a commutation switch connected in series with said protective resistor and said current interrupting means for allowing a commutation of a current from said superconducting coil to said current interrupting means in response to said quenching signal; and

a fuse circuit connected in parallel to said protective resistor and including a fuse and a closure switch connected to each other in series.

5,303,112

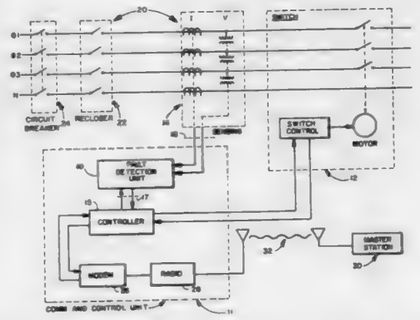
FAULT DETECTION METHOD AND APPARATUS

John A. Zulaski, Mt. Prospect, and Thomas J. Tobin, Northbrook, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Oct. 26, 1990, Ser. No. 604,700

Int. Cl.[5] H02H *3/08*

U.S. Cl. 361—67 **42 Claims**



42. A method of detecting first and second types of operation of an upstream protective device in an electrical circuit comprising:

detecting the occurrence of a predetermined overcurrent condition and an end of the predetermined overcurrent condition;

determining in response to the detecting of the end of the predetermined overcurrent condition a continuous absence of a predetermined circuit parameter throughout a first predetermined time duration to establish the first type of operation of the protective device; and

thereafter continuing to monitor a continued absence of the predetermined circuit parameter throughout a second predetermined time duration to establish the second type of operation of the protective device.

5,303,113

DIGITAL CIRCUIT INTERRUPTER WITH RFI AND EMI SHIELDING

Ira B. Goleman, Waterbury; Mark S. DeBiasi, Windsor, and Edward R. Bednarik, Farmington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,627

Int. Cl.[5] H02H *3/00*

U.S. Cl. 361—93 **9 Claims**

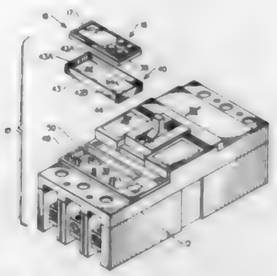
1. An electronic circuit interrupter having RFI-EMI shielding comprising:

a molded plastic circuit breaker cover and case secured together to form an enclosure for a circuit interrupter operating mechanism;

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a pair of contacts within said enclosure arranged for automatic separation upon actuation of said operating mechanism;

an electronic trip unit within said enclosure interacting with said operating mechanism, said electronic trip unit articulating said operating mechanism upon occurrence of an overcurrent condition of predetermined magnitude and duration; and



an RFI-EMI filter partially encompassing said electronic trip unit providing shielding to electronic components contains therein, said RFI-EMI filter comprising a self-contained insulative enclosure defining an interior bottom surface facing said electronic components, and an exterior bottom surface facing away from said components, said exterior bottom surface including electrically-conductive material.

5,303,114

OVERLOAD PROTECTION CIRCUIT CAPABLE OF SUSTAINING HIGH INRUSH CURENT IN THE LOAD CIRCUIT

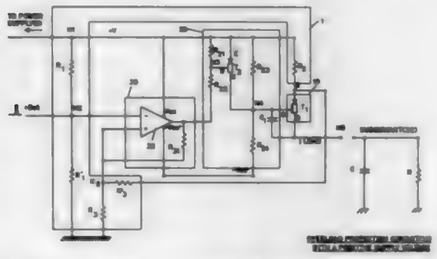
Michel Ferry, Vallauris, and Philippe Zeraffa, Nice, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1992, Ser. No. 942,872

Claims priority, application European Pat. Off., Nov. 15, 1991, 91480170.9

Int. Cl.[5] H02H *3/087*

U.S. Cl. 361—101 **10 Claims**



1. An overload protection circuit for protecting a device (22) having a high inrush current powered from a power supply means (9) providing to the device a limited inrush current (I load) and a supply voltage (V), including:

a switching means (10) having a close or open status controlled by a closing or opening signal provided on its control input;

an overload detecting means (1) composed of a first resistor bridge (R1, R1', R2, R3, R3') having two legs of resistors (R1, R1') and (R2', R3, R3') connected in parallel between the supply voltage (V) and a reference voltage (ground) and a first and second output terminals (N2, N6) which are respectively the common points of resistors (R1, R1') and resistors (R3, R3'), and generating a fixed voltage on the first output terminal (N2) and a variable voltage which depends on the load current value on the second output terminal (N6);

said protection circuit characterized in that it comprises:

(a) a comparator (32) having first and second inputs respectively connected to the first and second output terminals of said first resistor bridge, and an output providing on its output a control signal;

(b) means (R31 or R131) for implementing hysteresis to avoid the oscillations in the region of the system transition from on to off states and vice-versa;

(c) a timing and control means (20) for controlling the close and open status of said switching means (10) comprising:

first means responsive to the output signal of the comparator (32) for generating a closing control signal on the control input of said switching means (10) for slowing down its closing;

second means responsive to the output signal of the comparator (32) for generating an opening control signal on the control input of the switching means (10) for accelerating its opening;

(d) said switching means (10) has an input receiving the supply current, an output connected to the device (22) and a control input responsive to the control signal on the output of said timing and control means (20) for closing and opening the switching means (10).

5,303,115

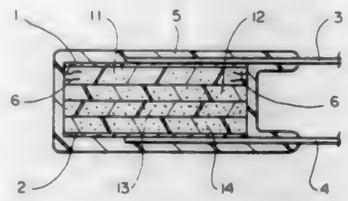
PTC CIRCUIT PROTECTION DEVICE COMPRISING MECHANICAL STRESS RISER

Deepak Nayar, Hayward; William C. Beadling, San Jose; Thanh U. Chung, Union city, and Martin Pineda, Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 27, 1992, Ser. No. 828,544

Int. Cl.[5] H02H *5/04*

U.S. Cl. 361—106 **18 Claims**



1. A circuit protection device which comprises

(1) a PTC element which is composed of a PTC composition and which includes or which has at a boundary thereof a mechanical stress riser, and

(2) at least two electrodes which can be connected to a source of electrical power and which, when so connected, cause current to flow through said PTC element;

said device being such that,

(1) when the device is in still air at 23° C. and forms a part of a first test circuit which consists essentially of the device, a switch, a source of AC electrical power having voltage of 250 volts, and a fixed resistor of resistance R_1 ohms such that the initial current through the device in a first test cycle conducted as defined below is 3 amps, and the test circuit is subjected to N successive test cycles, where N is 5, in each of which test cycles the switch is closed for 3 seconds, the switch is then opened and the device is allowed to cool to 23° C. before the next test cycle is carried out, then in each of said test cycles, the result of closing the switch is to convert the device into a high temperature, high resistance stable operating condition; and

(2) when the device is in still air at 23° C. and forms part of a second test circuit which consists essentially of the device, a switch, a source of AC electrical power having a voltage of 600 volts, and a fixed resistor having a resistance of 15 ohms, then the result of closing the switch is that the device is physically ruptured so that the current in the test circuit becomes zero in less than 20 milliseconds.

5,303,116

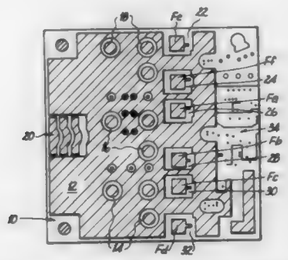
SURGE PROTECTOR

Glenn F. Grotz, Cranbury, N.J., assignor to MCG Electronics Inc., Deer Park, N.Y.

Filed Sep. 16, 1991, Ser. No. 760,740

Int. Cl.[5] H02H *3/20, 9/04;* **H01R** *9/09*

U.S. Cl. 361—111 **18 Claims**



10. A PC board adapted to carry a plurality of transient suppression devices for multiphase AC power lines, wherein a given AC phase line is protected by an associated transient suppression device comprising spaced first and second metalizations carried on one side of the PC board and associated with a given one of the AC phase lines, said first metalization electrically coupling the given phase line being protected and one side of a corresponding suppression device, said first metalization having as large a surface area as possible to provide a low impedance path between the given phase line being protected and the corresponding suppression device, said second metalization being electrically coupled to the other side of the corresponding suppression device and having as large a surface area as possible to provide a low impedance path between said other side of the corresponding suppression device and the neutral line of said multiphase AC line, and a neutral metalization being placed on the other side of the PC board in opposition with said first and second metalizations of each phase line so that in plan said neutral metalization overlies as much of said first metalization as possible whereby the close confronting disposition of said first and second metalizations with respect to said neutral metalization combines to negate inductance and form a neutral system acting as a shunt capacitor for high frequency components of a transient riding on any one of the AC phase lines.

5,303,117

ELECTROSTATIC POSITIONER

Masaaki Ogihara, Tokyo; Michio Aoyama, Kitakyushu; Tsumoru Fujii, Ichikawa; Yuji Ikegami, Chiba, and Joji Shinohara, Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 883,899, May 12, 1992, abandoned, which is a continuation of Ser. No. 483,362, Feb. 22, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,283

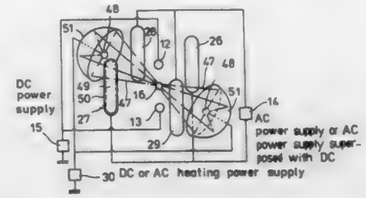
Claims priority, application Japan, Feb. 23, 1989, 1-44930; Mar. 14, 1989, 1-61902; Nov. 9, 1989, 1-289913; Nov. 21, 1989, 1-300752; Nov. 30, 1989, 1-309419

Int. Cl.[5] H02N *13/00*

U.S. Cl. 361—233 **6 Claims**

1. An electrostatic positioner comprising four first electrodes in the form of parallel bars which are located at vertexes of a square viewed from the direction of a center axis and are equidistantly and parallely spaced apart from said center axis to define an inner space; two second electrodes on said center axis and vertically spaced apart from each other as upper and lower electrodes; means for controlling a specimen by levitation and position control, said means including

an AC power supply connected to said four first electrodes to supply an AC voltage alone or superposed to with a direct current to each pair of said first electrodes in diagonally opposed relationship with each other such that said each pair of said first electrodes have the same polarity so that electric lines of forces are produced therebetween to



levitationally control a specimen in a direction perpendicular to the axis of said first four electrodes,

a DC power supply connected to the second electrodes so that an electrical repelling force is produced between said second electrodes and the specimen to retain the specimen in a stationary levitation state in the direction of the axis;

said first four electrodes in the form of parallel bars with said AC power supply being arranged to surround a specimen with said upper and lower second electrodes with said DC power supply and means for providing heating to the specimen.

5,303,118

ELECTRIC DOUBLE LAYER CAPACITOR

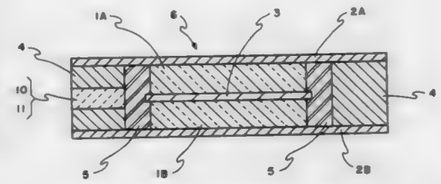
Takashi Saito; Junji Tabuchi; Yukari Kibi, and Atsushi Ochi, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Apr. 9, 1993, Ser. No. 45,613

Claims priority, application Japan, Apr. 15, 1992, 4-095113

Int. Cl.[5] H01G *9/04*

U.S. Cl. 361—502 **5 Claims**



1. An electric double layer capacitor comprising: a pair of polarizable electrodes consisting of a porous electrically conductive solid material impregnated with an electrolytic solution, a ion permeating separator member consisting of an insulating material inserted between said polarizable electrodes, a pair of collector members arranged respectively in electrically conductive manner on both end surfaces of a laminated body of said polarizable electrodes and said separator member, and a gasket housing said laminated body therein to constitute an airtight container for said laminated body by being bonded to said collector members, a gap being provided between inner surface of said gasket member and said laminated body, such that said gap is filled with an electrolytic solution holding body impregnated with gellike auxiliary electrolytic solution having the solvent and the solute common to, and having an effectively identical concentration to, said electrolytic solution or an equivalent liquid electrolytic solution.

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5,303,119

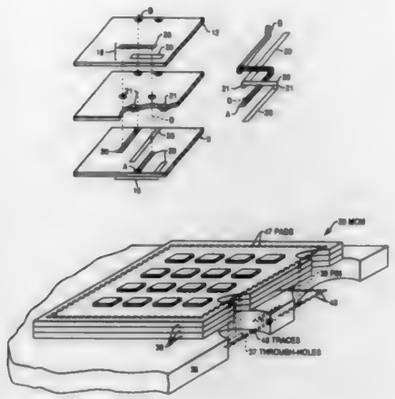
INTERCONNECTION SYSTEM FOR INTEGRATED CIRCUITS

Johan O. Hillbrink, Blue Ash, Ohio, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 735,749, Jul. 25, 1991. This application May 11, 1993, Ser. No. 60,677

Int. Cl.[5] H05K *1/00*

U.S. Cl. 361—749 **1 Claim**



1. Apparatus for interconnecting Integrated Circuits (ICs), comprising:

a) a multi-layered carrier for ICs, including a plurality of vertically stacked layers, such that

i) each of the layers is individually flexible without heating;

ii) a plurality of layers contain patterns of conductive traces, which patterns connect together to form a 3-dimensional network;

iii) a plurality of ICs mounted on top of the multi-layered carrier and connected to the network;

iv) a plurality of conductive pads on the carrier, connected to the network;

b) a printed circuit board, carrying a plurality of conductive traces on one side and the multi-layered carrier on the other side; and

c) a plurality of pins, each having a head portion and a tail portion, wherein the head portion holds the printed circuit board against the multi-layered carrier and the tail portion

i) extends from one of the conductive traces of the printed circuit board, through the board, through the multi-layered carrier, and to one of the conductive pads and

ii) bonds to the one conductive pad and the one conductive trace.

5,303,120

METHOD OF MANUFACTURING INVERSION TYPE IC'S AND IC MODULE USING SAME

Kazunari Michii, and Hiroshi Seki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 956,104

Claims priority, application Japan, Oct. 15, 1991, 3-266412

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—760 **18 Claims**

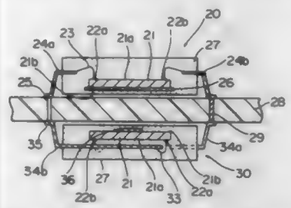
3. A packaged semiconductor chip module comprising:

a mounting substrate having opposed first and second surfaces;

a non-inverted packaged semiconductor chip mounted on the first surface of the mounting substrate, the non-inverted package semiconductor chip including a plurality of leads arranged in first and second rows, a first semiconductor chip having opposed top and bottom surfaces, a plurality of electrode pads arranged in first and second rows on the top surface of the first semiconductor chip, and wires connecting leads of the first and second rows of leads to corresponding electrode pads of the first and second rows of electrode pads, respectively, each of the leads including an outer lead portion extending from the noninverted packaged semiconductor chip wherein the outer lead portions of the leads are bent toward the bottom surface of the first semiconductor chip and the bottom surface of the first semiconductor chip faces the first surface of the mounting substrate;

an inverted packaged semiconductor chip mounted on the second surface of the mounting substrate and including a plurality of leads arranged in first and second rows, a second semiconductor chip identical to the first semiconductor chip and having opposed top and bottom surfaces, a plurality of electrode pads arranged in first and second rows on the top surface of the second semiconductor chip, and wires connecting leads of the second and first rows of leads to corresponding electrode pads of the first and second rows of electrode pads, respectively, each of the leads including an outer lead portion extending from the inverted packaged semiconductor chip wherein the outer lead portions of the leads are bent toward the bottom surface of the second semiconductor chip and the bottom surface of the second semiconductor chip faces the second surface of the mounting substrate; and

a plurality of connecting members on and penetrating the mounting substrate, electrically connecting leads of the noninverted packaged semiconductor chip to corresponding leads of the inverted packaged semiconductor chip.



5,303,121

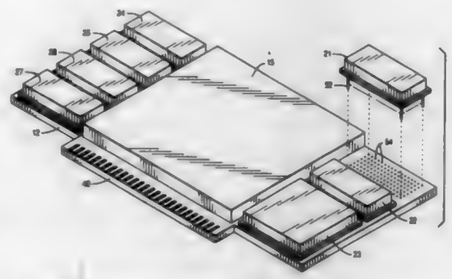
MULTI-CHIP MODULE BOARD

Gary R. Thornberg, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 28, 1992, Ser. No. 996,993

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—760 **12 Claims**



1. A multi-chip module board, comprising:

(a) a multi-chip module substrate;

(b) a first multi-chip module secured to said substrate; and

(c) a space on said substrate configured to receive a second multi-chip module and to operatively connect said second multi-chip module to said first multi-chip module, wherein said second multi-chip module is selected from a group of optional multi-chip modules, each member of said group being designed to provide an additional functionality to said multi-chip module board, all members of said group having a common connecting interface providing connection to said substrate.

5,303,122

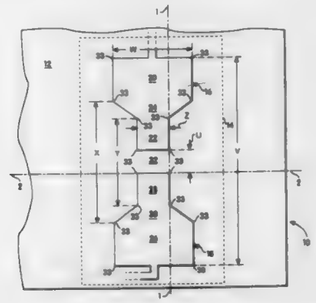
PRINTED CIRCUIT BOARD HAVING A COMMONIZED MOUNTING PAD WHICH DIFFERENT SIZED SURFACE MOUNTED DEVICES CAN BE MOUNTED

Clifford G. Adams, Jr., Rochester Hills, Mich.; Donald P. Beaudoin, Toronto, Canada, and Arturo Ruiz-Miramontes, Chihuahua, Mexico, assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 785,718, Oct. 31, 1991, abandoned. This application May 19, 1993, Ser. No. 64,722

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—767 **7 Claims**



1. A printed circuit board having at least one commonized pad adapted to receive, in the alternative:

a large surface mounted device having length A, width B, a non-conductive center portion of length C, and first and second conductive end portions of length D; and

a small surface mounted device having length A1, width B1, a non-conductive center portion of length C1, and first and second conductive end portions of length D1;

the commonized pad having length V and comprising LSMD means for receiving the large surface mounted device and SSMD means for receiving the small surface mounted device, wherein the LSMD means and SSMD means together comprise:

(a) a first electrically conductive pad having a substantially rectangular wide portion of width W and a substantially rectangular narrow portion of width Z shorted together by a tapered portion of length X and width decreasing from W at the wide portion to Z at the narrow portion; and

(b) a second electrically conductive pad having a substantially rectangular wide portion of width W and a substantially rectangular narrow portion of width Z shorted together by a tapered portion of length X and width decreasing from W at the wide portion to Z at the narrow portion;

the second electrically conductive pad having a configuration substantially identical to the first electrically conductive pad and being oriented oppositely thereto, the narrow portions being closer to each other than the wide portions are to each other, the narrow portions being separated from each other by a non-conductive portion of length U of the printed circuit board, and Y being the combined length of the narrow portions and the non-conductive portion between them, and wherein:

(i) U is greater than min(C1) and less than or equal to max(C1);

(ii) V is greater than max(A);

(iii) W is greater than or equal to min(B);

(iv) X is less than V and greater than or equal to min(C);

(v) Y equals X; and

(vi) Z is greater than or equal to min(B1); "max" and "min" designating the maximum and minimum value of a dimension within manufacturing tolerances.

5,303,123

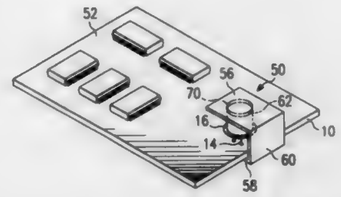
RETAINER FOR REMOVABLE CIRCUIT BOARD COMPONENTS

Kirk R. Chandler, Garland, and William C. Sherard, Jr., Richardson, both of Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Dec. 21, 1992, Ser. No. 994,273

Int. Cl.[5] H01R *23/68*

U.S. Cl. 361—785 **8 Claims**



1. A circuit board retainer for retaining a plurality of leads of a pluggable component in a plurality of associated sockets on a circuit board, comprising:

a retaining surface for applying a retaining force to the component, said retaining force comprising a spring force for directing the plurality of leads into the associated sockets;

a positioning surface for positioning said retaining surface in association with a component by engaging said positioning surface with an exterior surface of each of said associated socket;

a connecting surface for connecting said retaining surface to said positioning surface around said circuit board and generating from said connecting of said retaining surface with said position surface and said connecting surface.

5,303,124

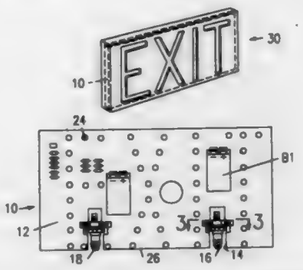
SELF-ENERGIZING LED LAMP

Avi Wrobel, 445 S. Douglas St., El Segundo, Calif. 90245

Filed Jul. 21, 1993, Ser. No. 95,301

Int. Cl.[5] F21V *19/04*

U.S. Cl. 362—20 **17 Claims**



1. An illuminating module which can be retrofitted into an existing incandescent light bulb socket having a female connector socket which is energized by an external source of electrical power, the module comprising:

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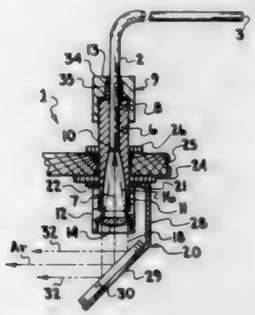
(a) a planar baseboard having an upper baseboard surface and a parallel lower baseboard surface;
(b) a plurality of light emitting electrical units affixed to the upper baseboard surface or to both upper and lower baseboard surfaces, the light emitting electrical units being electrically interconnected in a desired pattern to form an array, the array having opposite electrical poles;
(c) an electrically conductive cylindrical base connector adapted to connect to the female connector socket, the base connector having oppositely charged electrical poles and being affixed to the baseboard, and wherein the base connector is rotatable about its longitudinal axis while the baseboard is kept stationary;
(d) means for electrically connecting the array with the oppositely charged poles of the female connector to form a closed circuit;
(e) battery means affixed to the baseboard for supplying electrical power to the array when the flow of external electrical power to the female connector is disrupted;
(f) recharging means for recharging the battery means from the source of external electrical power; and
(g) automatic switching means for automatically switching the supply of electrical power for the array from the external source of electrical power to the battery means, when the flow of external electrical power is disrupted.

5,303,125

FIBER OPTIC AIMABLE SPOTLIGHT LUMINAIRE

Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Apr. 19, 1993, Ser. No. 49,833
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **14 Claims**



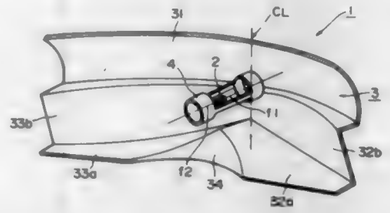
1. A fiber optic aimable spotlight luminaire including:
a fiber optics light guide light having a first end receiving light from a remote source of illumiation and a second, light-emitting end;
a generally cylindrical tubular housing having an optical axis therethrough, a proximal end having a light guide retaining means for adjustably holding the second end of the light guide therein, and a distal end including an enlarged flange means;
an optical element on the optical axis at the distal end of the housing, said optical element having a focus at the second end of the light guide, whereby light emitted by the light guide is formed by the optical element into a generally collimated beam of light on the optical axis;
a mirror-mount bracket rotatable about the optical axis, said bracket having a first portion disposed normal to the optical aids and having a hole therethrough encompassing the cylindrical tubular housing, said first portion rotatable about said housing and having a means for holding said first portion in frictional contact with the flange means of the housing, a bendable second portion of said bracket extending from the first portion tangent to the flange means of the housing and extending generally parallel to the optical axis in the distal direction, and a third portion of said bracket distal to the second portion, said third portion extending from the second portion, said third portion oriented at an angle intercepting the optical axis and including a mirror which reflects the beam of light from the optical element off the optical axis to form a transverse beam of light at an angle to the optical axis.

5,303,126

HEADLIGHT FOR IRRADIATING LIGHT BEAM FOR A VEHICLE PASSING BY IN THE OPPOSITE DIRECTION

Hitoshi Taniuchi, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,581
Claims priority, application Japan, Nov. 26, 1991, 3-335567
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—61 **3 Claims**



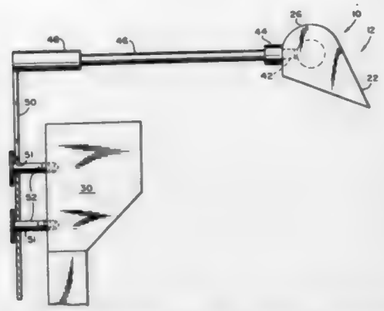
1. In a headlight exclusively usable for irradiating a light beam for a vehicle passing by in an opposite direction, said headlight including a light source and a reflective mirror, and said headlight emitting light in an irradiating direction, the improvement wherein said reflective mirror comprises:
an upper half including a first reflective surface extending continuously in an unbroken manner to opposite sides of said upper half and having a contour of a revolving parabolic plane arranged on the upper half of said reflective mirror so as to cause a light beam generated by said light source to be reflected in the shape of a substantially parallel light beam oriented in a predetermined downward direction, and
a lower half including:
a second reflective surface having a contour of a revolving parabolic plane arranged at a central part of the lower half of said reflective mirror so as to cause said light beam generated by said light source to be reflected in the form of a substantially parallel light beam oriented in another predetermined downward direction, and
third and fourth reflective surfaces each having a contour of a cylindrical parabolic plane so as to cause said light beam generated by said light source to be irradiated in the irradiating direction of said headlight, said third and fourth reflective surfaces being arranged on opposite sides of said second reflective surface on the lower half of the reflective mirror, and said third and fourth reflective surfaces each comprising a fifth surface and a sixth surface, said fifth surface serving to cause said light beam generated by said light source to be converged in the shape of a substantially parallel light beam as seen in one direction and said sixth surface serving to cause said light beam generated by said light source to be converged in the shape of substantially parallel light beam as seen in another direction at a right angle relative to said one direction.

5,303,127

LIGHTING FIXTURE

Sidney Kosann, 155 Rimmon Rd., Woodbridge, Conn. 06525

Filed Jul. 16, 1992, Ser. No. 915,019
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—296 **16 Claims**



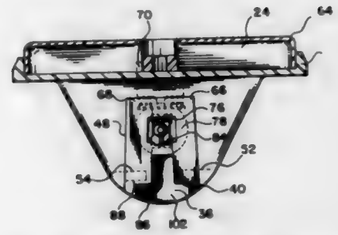
1. A lighting fixture for use with a compact fluorescent or E-lamp type bulb for illuminating works of art or the like hanging vertically from a vertical wall, comprising:
a) a reflector having a planar front portion, an arcuate portion continuing from said planar front and a back planar portion which continues from said arcuate portion, said back planar portion being substantially parallel said vertical wall, said planar front portion being disposed at an angle of 30°±10° to said vertical and said planar front portion extending down beyond said back planar portion;
b) at least one bulb socket disposed in said arcuate portion for receiving the bulb, said arcuate portion having a radius of at least 1.25 inches;
c) a mounting means for supporting said reflector, said mounting means having first and second ends, said first end being coupled to said reflector at a location other than on said planar front portion and said second end adapted to be coupled to a picture frame vertically hanging from the vertical wall or from the vertical wall.

5,303,128

DOME LIGHT HOUSING

Joseph E. Baader, 333 Holiday Dr., Springfield, Ohio 45505, and Edward J. Baader, 232 Stephen La., Springfield, Ohio 45505

Continuation-in-part of Ser. No. 772,818, Oct. 8, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 902,202
Int. Cl.[5] B60G *3/02*
U.S. Cl. 362—80 **3 Claims**



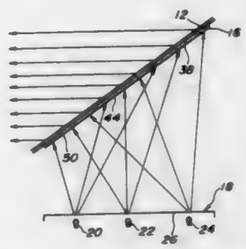
1. A dome light housing adapted for fitting within a vehicle interior, comprising:
a) a unitary housing adapted for supporting a bulb assembly and a covering lens, said unitary housing further including:
i) a base defining a well having an enclosed bottom, an enclosed end, an end with aperture and an open top for enclosing the bulb assembly;
ii) a covering lens support surface with peripheral ledge extending around the open top of said well as a seat for a covering lens, and
iii) a seat for a plug insert defined at said end with aperture, said seat including an aperture and adjacent structures for complemental fitting and support of a plug insert within the well, said adjacent structures including a pair of adjacent horizontal ledges defined at said enclosed bottom of said well as a support for a plug insert;
iv) an inclined planar surface extending from the covering lens support surface inwardly into said well and above said seat for a plug insert as a support for an illuminating a bulb which connected to one end of a resilient clip and connecting at its other end to a wiring assembly and including a downwardly extending locking spur which engages with an upwardly extending spur of the plug insert;
b) a covering lens removably supported upon said covering lens support surface and engaging at its periphery with said peripheral ledge, and
c) a plug insert supporting said wiring assembly, said plug insert being complementally fitted within said seat for plug insert and said end with aperture, such that said illuminating bulb is presented within said well and adjacent said covering lens, said wiring assembly extends from said resilient clip and through an aperture defined in said plug insert and outwardly of said housing.

5,303,129

LAMP ARRANGEMENT FOR MOTOR VEHICLE

Masayuki Hori, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 866,966, Apr. 10, 1992, Pat. No. 5,186,533, which is a continuation of Ser. No. 646,541, Jan. 28, 1991, abandoned. This application Jul. 30, 1992, Ser. No. 921,803
Claims priority, application Japan, Jan. 30, 1990, 2-20242
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80.1 **4 Claims**



1. A light arrangement for a vehicle having a window, comprising:
a hologram assembly affixed adjacent the window; and
a light source including a plurality of diverging light sources, each emitting a diverging light for interference with said hologram assembly;
said hologram assembly including a plurality of holograms, wherein each of said plurality of holograms interferes with diverging light from each of said plurality of diverging light sources.

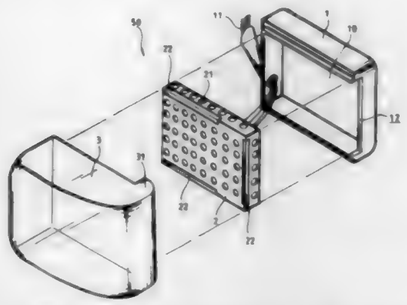
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,130

ILLUMINATING AUTOMOBILE SIDEVIEW MIRROR

Yung-Feng Wei, No. 9, Aly 2, Lane 32, Jen-Ai St., and Eagle Fan, No. 30, Lu-Chang, both of Chu-Pei, Hsin-Chu Hsien, Taiwan

Filed Dec. 28, 1992, Ser. No. 997,348
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—83.1 3 Claims



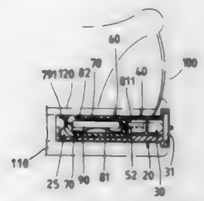
1. An illuminating automobile sideview mirror assembly comprising a mirror holder which is secured on an automobile having an electricity system, said holder having a front surface on which a mirror is mounted and a rear surface opposite to said front surface on which a recess is formed, a transparent cover being mounted on said recess to house the recess and defining therein an interior space to receive therein an illuminator means, said illuminator means comprising a plurality of illuminators secured thereon for projecting light through said transparent cover, said illuminator means further comrpising light reflective materials attached thereto to reflect light projected thereon through said transparent cover, said illuminator means further comprising a block-shaped member complemental in shape and size to said recess to be received therein and having an extended portion thereof extending out of said recess from a lateral side of said sideview mirror assembly away from said automobile and wherein said cover comprises an extension to cover the extended portion of said illuminator means, said illuminator means further comprising a top side, a bottom side, a surface opposite to said mirror, and a lateral side away from the automobile which are exposed through said transparent cover, said plurality of illuminators being evenly distributed on said exposed sides and surface of the illuminator means and said reflective materials being attached to connecting corners between said exposed sides and surface of the illuminator means.

5,303,131

SHOE WARNING LIGHT DEVICE

Andy Wu, No. 10, Lane 139, Sec. 1, Chain-Pin Rd., Taichung, Taiwan

Filed Aug. 23, 1993, Ser. No. 109,907
Int. Cl.[5] F21L *15/08*
U.S. Cl. 362—103 9 Claims



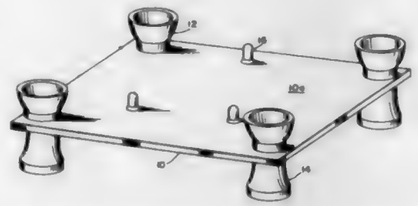
1. A shoe warning light device comprising:
a fastening seat having a bottom wall, a front wall, a rear wall, a left wall and a right wall, which form a holding space with an open top, said fastening seat being so dimensioned as to fit into a cavity of a shoe midsole such that said holding space of said fastening seat is corresponding in location to a person's heel, and that said front wall of said fastening seat is exposed;
a luminous body having two polar feet which extend to reach an inner wall surface of said holding space and to form two conducting connections;
a housing having a top wall, a bottom wall, a front wall, a rear wall, a left wall and a right wall, which form a receiving space, said top wall having a U-shaped slot forming a flexible tongue, said housing being detachably mounted in said holding space of said fastening seat such that said tongue can be caused to bend toward said receiving space by a treading action of said heel;
two conducting pieces fastened respectively at one end thereof with said front wall of said housing such that said two conducting pieces are exposed to form two power source connections capable of making contact with said two conducting connections of said luminous body, with one of said two conducting pieces extending downwards to locate over said bottom wall of said housing, and with another one of said two conducting pieces extending upwards to locate under said tongue of said top wall of said housing such that said another one of said two conducting pieces is capable of moving downwards along with said tongue; and
a battery disposed in said receiving space of said housing and between said two conducting pieces such that said battery is in contact with a lower conducting piece, and that said battery remains apart with an upper conducting piece capable of moving downwards along with said tongue so as to make contact with said battery to provide said luminous body with a power source.

5,303,132

GLASS REPAIR APPARATUS AND METHOD

Robert Lowder, 110 Argentina, Bartonville, Ill. 61607

Filed Jul. 18, 1991, Ser. No. 732,231
Int. Cl.[5] F21V *21/08, 33/00*
U.S. Cl. 362—138 11 Claims



1. An apparatus comprising a battery-powered light means and attachment means for attaching the light means to a surface, including a curved portion of a windshield, the light means and attachment means being suitable for improving visibility of a break in a glass windshield or window pane for a glass repair technician on a side of the windshield or window pane opposite a side on which the light is attached by the attachment means, further comprising a mirror means for reflecting a scene illuminated by the light means.

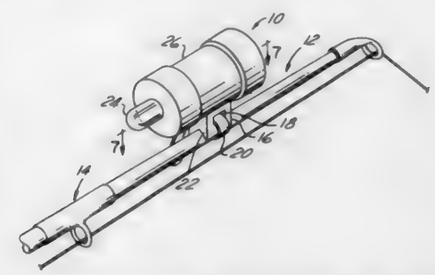
5,303,133

MINIATURE ELECTRICAL LIGHTING DEVICE

Harry R. Wagner, 30026 Terrace Court Dr., Warren, Mich. 48093

Filed Jul. 23, 1992, Ser. No. 919,050
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—157 9 Claims

1. A miniature electrical lighting device for releasably connecting to an object, sad miniature electrical lighting device comprising:
a housing of cylindrical shell shape having a first end and an opposite second end, said housing having an outer surface and an inner surface, said inner surface defining a cylindrical axis of the housing;
a first endcap having a first annular flange structured for connecting said first endcap to said first end of said housing, said first endcap having a central aperture thereon;
a light emitting member having a first electrical lead and a second electrical lead, said light emitting member extending through said central aperture of sad first endcap;
a mounting plate located within said housing adjacent said first end thereof, said mounting plate having first electrical lead hole means through which passes said first electrical lead, said mounting plate having second electrical lead hole means through which passes said second electrical lead;
battery means located within said housing for supplying electrical energy to said light emitting member, said battery means having a positive electrode and a negative electrode;
first control slot pattern means located on said outer surface of said housing adjacent said second end thereof for providing a first plurality of guidance slots;
second control slot pattern means located on said outer surface of said housing adjacent said second end thereof and opposite said first control slot pattern means for providing a second plurality of guidance slots;



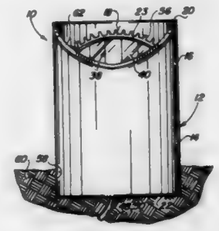
a second endcap located at said second end of said housing, said second endcap having a second annular flange, said second annular flange having an inside surface dimensioned to receive said second end of said housing;
first tab means located on said inside surface of said second annular flange for being guidably engaged by said first plurality of guidance slots of said first control slot pattern means;
second tab means located on said inside surface of said second annular flange opposite said first tab means for being guidably engaged by said second plurality of guidance slots of said second control slot pattern means;
biasing means located within said housing for biasing said battery means away from said mounting plate along said cylindrical axis;
first electrical contact means connected with said first electrical lead for providing a first electrical contact between said first electrical lead and one of said positive and negative electrodes of said battery means;
second electrical contact means connected with said second electrical lead for providing a second electrical contact between said second electrical lead and the other of said positive and negative electrodes of said battery means; and
attachment means connected with said housing for releasably connecting said housing to an object;
wherein said biasing means biases said battery means and said second endcap away from said first electrical contact means, said light emitting member not being electrically connected with both said positive and negative electrodes of said battery means when said second endcap is at a first position with respect to said first end of said housing defined by said first and second control slot pattern means; wherein further, said light emitting member is electrically connected with both of said positive and negative electrodes of said battery means when said second endcap is moved guidably with respect to said first and second control slot pattern means to a second position with respect to said first end of said housing; and
wherein each of said first and second plurality of guidance slots, each respectively of said first and second control slot pattern means, comprise:
a first entry slot on said outer surface of said housing oriented parallel with respect to the cylindrical axis, said first entry slot beginning at said second end of said housing;
a second entry slot on said outer surface of said housing communicating with said first entry slot, said second entry slot being oriented perpendicular with respect to said first entry slot;
a first guide slot on said outer surface of said housing communicating with said second entry slot, said first guide slot being oriented parallel with respect to the cylindrical axis, said first guide slot having a distal end; and
a second guide slot on said outer surface of said housing communicating with said first guide slot, said second guide slot being oriented perpendicular with respect to said first guide slot;
wherein said second endcap is located at said second position when said first and second tabs are located respectively at said distal end of said first guide slot of each of said first and second plurality of guidance slots; wherein further, said second endcap is located at said second position when said first and second tabs are located respectively at said second guide slot of each of said first and second plurality of guidance slots.

5,303,134

LANDSCAPE LIGHTING DEVICE

Daniel F. Canado, 1739 Trosa St., Granada Hills, Calif. 91344

Filed Jun. 22, 1992, Ser. No. 918,825
Int. Cl.[5] F21V *19/02*
U.S. Cl. 362—372 20 Claims



1. An improved landscape lighting device, said device comprising, in combination:
a) a housing comprising an elongated generally cylindrical tube having a sidewall defining a central space, said sidewall having exterior and interior surfaces, said tube having an open upper end and an open opposite lower end communicating with said central space;
b) a lamp in said central space for projecting light from said upper end of said tube; and,
c) a flexible resilient gasket in said central space, releasably holding and disposed around said lamp and holding said lamp in said central space, said gasket comprising a generally cylindrical member comprising a sidewall defining a central cavity, said gasket having opposite open upper and lower ends communicating with said central cavity, in which cavity is held said lamp by said gasket, said gasket sidewall having an exterior surface comprising a plurality of flexible, resilient lugs radiating outwardly thereof, said

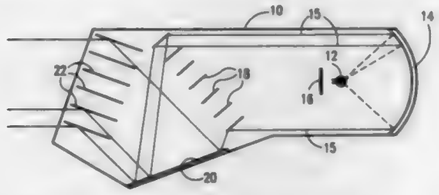
VOL 1161 ISS 2 AP 12 1994 UMI

lugs comprising fingers individually disposed about said sidewall at a series of discrete locations extending vertically and horizontally about said sidewall, each said finger capable of being flexed in both horizontal and vertical directions about said sidewall, whereby the ends of said lugs contact and frictionally grip the interior surface of said housing sidewall, said lugs permitting said gasket to be substantially rotated and pivoted in said space for adjustable horizontal and vertical directional orientation of a light beam emitted from said lamp.

5,303,135
REDUCED-GLARE HEADLIGHTS

Meir Sprecher, 49 Hagalil Street, 43251 Raanana, Israel

Filed Sep. 22, 1992, Ser. No. 948,532
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—301 **7 Claims**

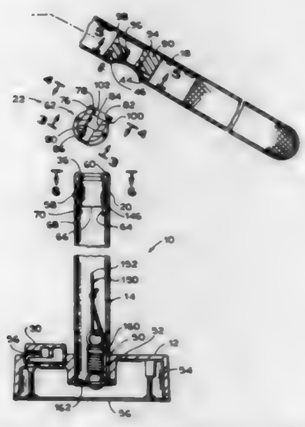


1. A glare-reducing light source, comprising:
(a) a means for producing a substantially horizontal light beam;
(b) a first set of reflective slats for reflecting said light beam, forming a once reflected light;
(c) a reflector for reflecting said once reflected light, forming a twice reflected light; and
(d) a second set of reflective slats for reflecting said twice reflected light forming a thrice reflected light.

5,303,136
ARTICULATED LAMP

Tobias A. Brown, Wilton, Conn., assignor to Nessen Lighting, Inc., Mamaroneck, N.Y.

Filed Dec. 22, 1992, Ser. No. 995,129
Int. Cl.[5] F21M *3/18*
U.S. Cl. 362—421 **38 Claims**

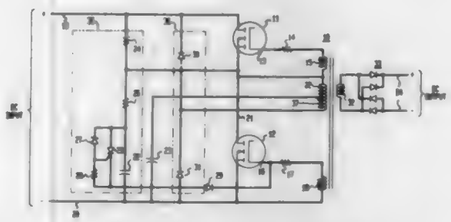


1. An articulated lamp including first and second support arms and means for articulating said first arm to said second arm; said first arm comprising a hollow tube having a first open end portion and said second arm comprising a hollow tube having a central opening formed therein; said articulating means comprising a tubular sleeve rotatably mounted in the first open end portion of said first arm for rotation in the arm about the longitudinal axis thereof; cooperating means on said sleeve and first tube for preventing rotation of said sleeve in said tube through more than 360°; a joint member mounted in said sleeve for rotation about axes extending perpendicular to said longitudinal axis of the sleeve and second cooperating means on said sleeve and said joint member for preventing rotation of said joint relative to said sleeve about said longitudinal axis; said joint including an extension received in the opening of said second arm; means for providing a seat in said second arm for said joint extension mounted in the second arm at said opening; said joint extension and seating means including third cooperating means for preventing rotation of said extension in said seating means; and means for maintaining said sleeve in contact with said joint member and said joint extension in said seating means.

5,303,137
MULTIRESONANT SELF-OSCILLATING CONVERTER CIRCUIT

William A. Peterson, Vestal, N.Y., assignor to Dawn Technologies, Ltd., Vestal, N.Y.

PCT No. PCT/US91/09080, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992
PCT Filed Dec. 4, 1991, Ser. No. 923,957
Int. Cl.[5] H02M *3/337*
U.S. Cl. 363—16 **5 Claims**

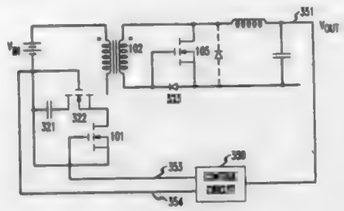


1. A direct current power converter comprising
a source of direct current voltage,
a single transformer having primary windings and a load winding,
a pair of transistors connected in a half-bridge configuration across said primary windings of said single transformer,
a feedback path for producing oscillations in said transistors and including said primary windings of said single transformer,
a multiresonant circuit in said feedback path and including a series inductance effectively connected in series with said load and shunt inductance effectively connected in parallel with said load, and a capacitor effectively connected in series with both said series inductance and said parallel inductance,
said capacitor being connected between an intermediate point on one of said primary winding and said source of direct current voltage, and
voltage limiting means connected between said source of direct current voltage and one end of said one primary winding for limiting the voltage across said capacitor to a voltage substantially less than said source of direct current voltage.

5,303,138
LOW LOSS SYNCHRONOUS RECTIFIER FOR APPLICATION TO CLAMPED-MODE POWER CONVERTERS

Allen F. Rozman, Richardson, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 29, 1993, Ser. No. 54,918
Int. Cl.[5] H02M *3/335, 7/217*
U.S. Cl. 363—21 **10 Claims**



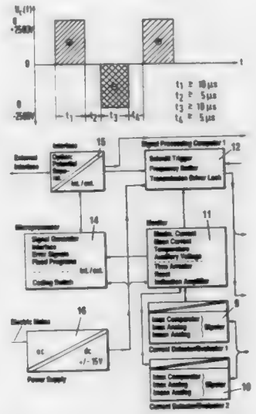
1. In a power converter, comprising
an input for accepting a DC voltage;
a power transformer including a primary and secondary winding;
a power switch for periodically connecting the input to the primary winding;
an output for accepting a load to be energized;
clamping means for limiting a voltage across the secondary winding during a specified interval of a cyclic period of the power converter;
a rectifier circuit connecting the secondary winding to the output; and including:
a synchronous rectification device connected for enabling conduction from the secondary winding to the output during operation of the clamping means during the specified interval; and
a low forward voltage drop bipolar diode connected for enabling conduction from the secondary winding to the output during a second interval other than the specified interval.

5,303,139
LOW FREQUENCY, PULSED, BIPOLAR POWER SUPPLY FOR A PLASMA CHAMBER

Gunter Mark, Ottersweier, Fed. Rep. of Germany, assignor to Magtron Magneto Elektronische Gerate GmbH, Ottersweier, Fed. Rep. of Germany

Filed Jul. 30, 1992, Ser. No. 922,159
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 9109503
Int. Cl.[5] H02M *7/42*
U.S. Cl. 363—63 **8 Claims**

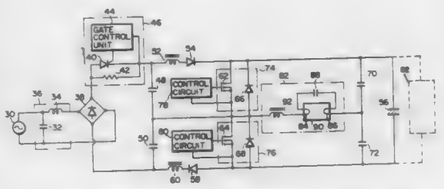
1. A bipolar power supply for a plasma chamber comprising:
an adjustable DC power supply having a positive output terminal and a negative output terminal;
a semiconductor bridge circuit having two bridge input terminals coupled to said positive and negative output terminals and two bridge output terminals coupled to the plasma chamber; and
current detection means coupled to said two bridge output terminals for detecting the current flowing to the plasma chamber and controlling said semiconductor bridge circuit to provide a bipolar power supply to the plasma chamber; wherein said current detection means comprises:
(a) a shunt having a tap coupled to said two bridge output terminals;
(b) two current detection and evaluation circuits coupled to said tap of said shunt and having a bipolar maximum current comparator;
(c) monitoring means coupled to said two current detection and evaluation circuits for monitoring the maximum current, the mean current, the temperature, an auxiliary voltage, and having a timer, a reset and an indication amplifier;
(d) a microprocessor coupled to said monitoring means; and
(e) an interface, and two control signal processing units coupled to said microprocessor, said two control signal processing units each having a Schmitt trigger, a frequency limiter, a transmitter driver, and transmitter arrestor;
whereas said semiconductor bridge circuit includes four transistors each with a module driver, two of said transistors forming a first branch of said bridge circuit and having their module drivers coupled to one of said two control signal processing units, the other two of said transistors forming a second branch of said bridge circuit and having their module drivers coupled to the other of said two control signal processing units; and
whereas said microprocessor receives signals from said two current detection and evaluation circuits and said monitoring means and through said interface instructs said two control signal processing units to switch said first and second branches of said semiconductor bridge circuit on and off to control and regulate the plasma intensity.



5,303,140
POWER SOURCE CIRCUIT

Keiichi Shimizu, Yokohama, Japan, assignor to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 647,649
Claims priority, application Japan, Jan. 31, 1990, 2-21090
Int. Cl.[5] H02M *7/537*
U.S. Cl. 363—132 **4 Claims**



1. A power source circuit comprising:
a full-wave rectifier, receiving an output voltage from an AC power source and performing full-wave rectification;

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a series circuit connected to output terminals of said full-wave rectifier comprising: a smoothing capacitor; first and second inductors; and first and second diodes, said diodes having polarities in forward directions with respect to said output terminals of said full-wave rectifier;

first and second reverse-conductive switches connected in parallel with said smoothing capacitor, said first and second reverse-conductive switches being connected in series with each other; and

second and third capacitors connected between said first and second inductors and said output terminals of said full-wave rectifier, forming a circuit for supplying stored energies of said inductors to said smoothing circuit in accordance with an alternate ON/OFF operation of said first and second reverse-conductive switches.

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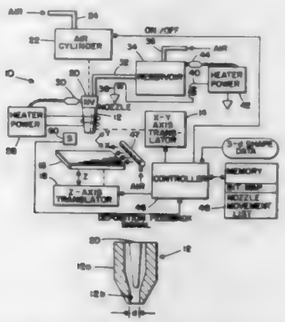
MODEL GENERATION SYSTEM HAVING CLOSED-LOOP EXTRUSION NOZZLE POSITIONING

John S. Batchelder, Somers; Huntington W. Curtis, Chelsea; Douglas S. Goodman; Franklin Gracer, both of Yorktown Heights; Robert R. Jackson, Millbrook; George M. Koppelman, New York, and John D. Mackay, Pound Ridge, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 637,570, Jan. 3, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,180

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—149 **40 Claims**



17. A method for fabricating a three-dimensional object in accordance with a computer-generated specification of the object in three dimensions, comprising the steps of:

controllably positioning an extruding means for extruding a self-supporting material in accordance with the specification of the object in three dimensions;

generating a feedback signal that is indicative of at least a location of a previously extruded portion of the material; and

responsive to the feedback signal, modifying, if required, further positioning of the extruding means to compensate for a deviation of the location from a location specified by the specification of the object in three dimensions.

5,303,142

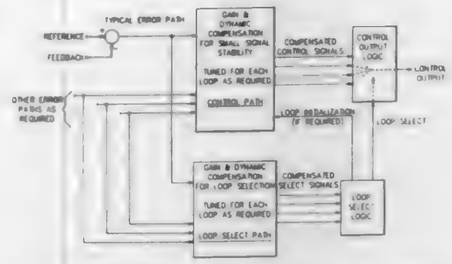
CONTROL SYSTEM FOR GAS TURBINE HELICOPTER ENGINES AND THE LIKE

Douglas A. Parsons, Enfield; Mark A. Johnston, Windsor; John E. Games, Granby, and Gerald L. DePardo, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 967,335, Oct. 28, 1992, abandoned, which is a division of Ser. No. 418,359, Oct. 6, 1989, Pat. No. 5,189,620. This application Jul. 2, 1993, Ser. No. 87,347

Int. Cl.[5] G05B *13/02*

U.S. Cl. 364—160 **6 Claims**



1. A select and control system architecture for controlling a plant, comprising:

control logic, having a plurality of error paths and corresponding control dynamic compensations, each of said error paths providing an error path signal, each of said dynamic compensations being operable to compensate the corresponding error path signal and to provide a corresponding control dynamic compensation signal in response thereto, a selected one of said corresponding control dynamic compensation signals controlling said parameter of the plant; and

loop select logic, responsive to at least two of said plurality of error path signals, for selecting one of said corresponding control dynamic compensation signals to control said parameter of the plant independent of the values of said corresponding control dynamic compensation signals, and for providing a loop select signal indicative of said selected one of said corresponding control dynamic compensation signals; and

control output logic, responsive to said loop select signal, for selectively providing a plant control output signal indicative of said selected one of said corresponding control dynamic compensation signals.

5,303,143

MONITORING CIRCUIT FOR A MULTIPROCESSOR MEANS OF AN APPARATUS OR OF A SYSTEM

Andres-Guenter Sommer, Fuerth, and Karl Patzelt, Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 25, 1991, Ser. No. 797,344

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4041062

Int. Cl.[5] G05B *9/02;* **H02H** *3/08*

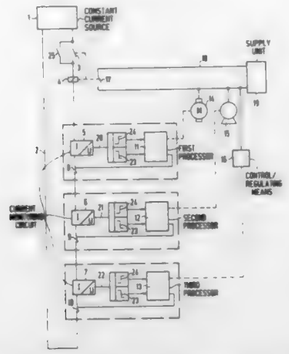
U.S. Cl. 364—184 **10 Claims**

1. A monitoring circuit for a system having a plurality of function elements, comprising:

a plurality of processor means each respectively connected for monitoring a reliability or safety of a respective one of the function elements, and for generating a malfunction signal at an output thereof when a malfunction of the respective function element occurs;

means responsive to said malfunction signal for switching all of the function elements into a quiescent condition and for also switching all of the processor means into a quiescent condition; and

said means responsive to said malfunction signal including means connected to said processor means for generating upon occurrence of the malfunction signal a first signal for



effecting a highest priority interrupt of the processor means and a second signal for effecting a hardware reset of the processor means.

5,303,144

COMPUTER AIDED PLANNING SUPPORT SYSTEM

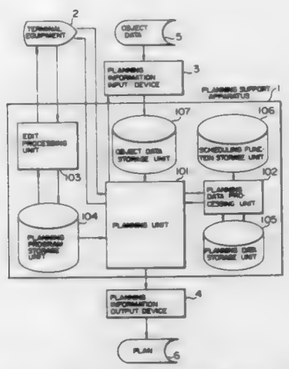
Kazuhiro Kawashima, Yokohama; Norihisa Komoda; Keiichi Hara, both of Kawasaki; Tetsushi Tomizawa, Urawa; Kouichi Taniguchi, Yokohama, and Michiko Oba, Ikeda, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System Ltd., Tokyo, Japan

Filed Dec. 3, 1990, Ser. No. 621,360

Claims priority, application Japan, Dec. 8, 1989, 1-320212

Int. Cl.[5] G06F *15/22, 15/24, 15/46;* **G06G** *7/52, 7/64, 7/66*

U.S. Cl. 364—401 **23 Claims**



1. A computer aided planning support system, comprising:

planning information input means for inputting an object data for making a plan;

object data storage means for storing said object data inputted by said input means;

planning means for reading said object data from said object data storage means and processing said object data in accordance with a planning program to make said plan;

planning data storage means for storing planning data associated with said plan by said planning means;

planning case data storage means for storing precedent planning data and precedent object data wherein said precedent planning data and said precedent object data are data which have been previously generated;

means for comparing said object data stored in said object data storage means with said precedent object data stored in said planning case data storage means;

means for determining a combination of said precedent object data having a greater degree of similarity with said object data than other precedent object data stored in the planning case data storage means have;

said planning means for making said plan by modifying said precedent object data having said greater degree of similarity:

planning data processing means responsive to a data process request from said planning means for processing said planning data stored in said planning data storage means in accordance with a predetermined scheduling function, and sending said processed data to said planning means; and

planning output means for receiving said plan made by said planning means and outputting said plan in a usable form.

5,303,145

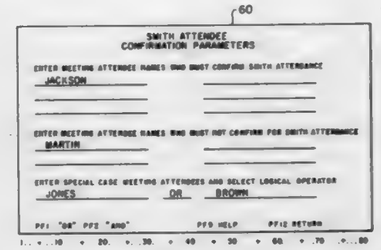
METHOD AND APPARATUS FOR MEETING CONFIRMATION IN A DATA PROCESSING SYSTEM

Susan F. Griffin; David L. Griffin, both of Keller, and Patrick J. Keane, Grapevine, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1990, Ser. No. 633,875

Int. Cl.[5] G06F *15/21, 7/00*

U.S. Cl. 364—401 **9 Claims**



1. A method in a data processing system for scheduling a meeting utilizing attendee calendars stored in said data processing system, said method comprising the steps of:

presenting a scheduler with a prompting screen for permitting said scheduler to key in a plurality of desired meeting parameters including at least: a list of desired attendees, a desired date range, and a desired time span;

presenting a prospective attendee with a prompting screen for permitting said prospective attendee to key in a plurality of attendee confirmation parameters for specifying conditions under which said prospective attendee will attend a desired meeting;

comparing in said data processing system said desired meeting parameters with each desired attendees' calendar and said attendee confirmation parameters; and

presenting an option screen to said scheduler for displaying available times, if any, for selection of a meeting time which complies with said desired meeting parameters and said attendee confirmation parameters.

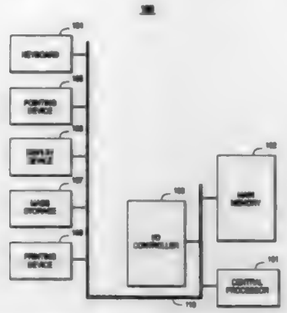
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5,303,146

SYSTEM AND METHODS FOR IMPROVED SCENARIO MANAGEMENT IN AN ELECTRONIC SPREADSHEET

Joseph M. Ammirato, San Jose, and Gavin Peacock, Capitola, both of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Mar. 11, 1993, Ser. No. 31,379
Int. Cl.[5] G06F *15/22*
U.S. Cl. 364—401 **34 Claims**



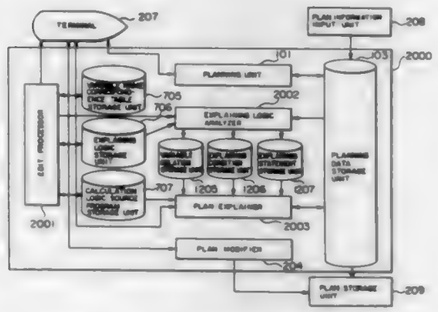
1. In an electronic spreadsheet system for modeling user-specified information in a data model comprising a plurality of information cells, a method for automatically tracking different versions of the data model, the method comprising:
(a) specifying a base set of information cells for the system to track changes;
(b) creating a new version of the data model by modifying at least one information cell from the specified base set; and
(c) automatically determining cells of the data model which have changed by comparing cells in the new version against corresponding ones in the base set.

5,303,147

COMPUTER AIDED PLANNING METHOD AND SYSTEM

Michiko Oba, Ikeda; Norihisa Komoda, Kawasaki, and Kazuhiro Kawashima, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1990, Ser. No. 586,792
Claims priority, application Japan, Sep. 27, 1989, 1-249134
Int. Cl.[5] G05F *15/20, 15/46*; G06G *7/48, 7/64*
U.S. Cl. 364—402 **21 Claims**



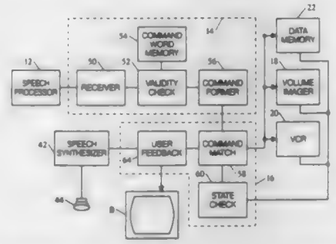
1. A planning support method comprising the steps of:
storing data standing for an object to be planned, data of planning and data of planning results in a first memory;
storing in a second memory a variable name correspondence table defining a variable name in data used for planning in terms of terminology specific to one of a planning process and a Japanese language and an English character corresponding thereto;
storing data of definition of an explaining statement concerning a planning procedure and planning results in a third memory;
storing in a fourth memory a calculation program used for preparing an explanation statement;
preparing a plan on the basis of the contents of said first memory;
preparing an explaining statement concerning said planning on the basis of the contents of said first, second, third and fourth memories including storing a fixed part of the explaining statement stored in said third memory into a fifth memory, determining the variable of a variable part comprising an English code name corresponding to said variable or a program name on the basis of data stored in said second memory, storing a value of the variable of English code name in said fifth memory on a basis of the contents of said first memory when said variable of the variable part is the English code name and when said variable of the variable part is a program name, starting a program corresponding to said program name stored in said fourth memory, and storing a value calculated through said program in said fifth memory whereby the fixed part and the variable are combined to form the explaining statement; and
delivering a prepared explaining statement.

5,303,148

VOICE ACTUATED VOLUME IMAGE CONTROLLER AND DISPLAY CONTROLLER

Rodney A. Mattson, Mentor; Todd J. Krochta, Copley, and Heang K. Tuy, Chesterland, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 391,484, Aug. 9, 1989, Pat. No. 5,079,699, which is a continuation-in-part of Ser. No. 200,697, May 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 126,368, Nov. 27, 1987, abandoned. This application Oct. 30, 1990, Ser. No. 605,372
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—413.01 **20 Claims**



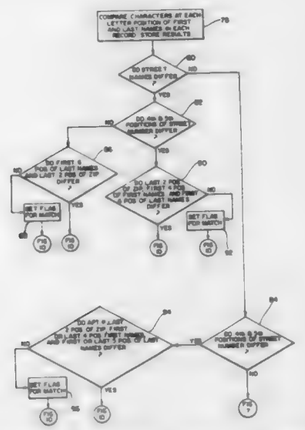
1. An operating room hands free medical diagnostic image display and recording system comprising:
a receiving means for receiving acoustic voice sounds spoken by a surgeon during an operating room procedure and converting the acoustic voice sounds into electrical audio signals;
a speech processor means for converting the electrical audio signals into electrical word signals indicative of words;
a command interpreter means for converting selected ones of the electrical word signals which correspond to preselected command words into corresponding command signals;
a volume imager which stores image data corresponding to a preselected three dimensional volumetric region of a subject and for withdrawing a selected fraction of the stored image data corresponding to one of an orthogonal slice through the volumetric region, an oblique slice in the volumetric region, and a projection of at least a portion of the volumetric region in response to the command signals from the command interpreter means and generating corresponding image representation signals indicative of a selected slice or projection;
a display means for converting the image representation signals from the volume imager means into a man-readable image display depicting a portion of the volumetric area of the patient such that the surgeon verbally calls up and controls the display of images to assist in the operating room procedure in progress;
a recording means for recording at least one of: (i) the electrical audio signals from the receiving means, (ii) the word signals from the speech processor means, and (iii) the image representation signals from the volume imager means.

5,303,149

SYSTEM FOR ELIMINATING DUPLICATE ENTRIES FROM A MAILING LIST

Paul C. Janigian, 8007 Carroll Ave., Takoma Park, Md. 20912

Division of Ser. No. 431,184, Nov. 3, 1989, Pat. No. 5,111,395. This application Oct. 28, 1991, Ser. No. 783,119
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—408 **8 Claims**



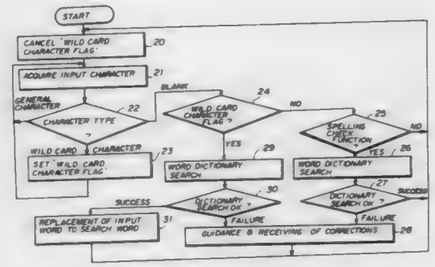
1. A method of creating lists comprising the steps of:
creating a file, said file comprising a plurality of records, each record including a name and address of an individual,
selecting portions of each record,
making a first comparison between a first predetermined portion of a first record and a first predetermined portion of at least one second record to determine if said first portions match,
if said first portions do not match, making a subsequent comparison between a second predetermined portion of said first record and a second predetermined portion of said at least one second record to determine if said second portions match,
if said first portions do match, making a subsequent comparison between a third predetermined portion of said first record and a third predetermined portion of said at least one second record to determine if said third portions match,
identifying at least one duplicate record in said file when a predetermined combination of said first, second, and third portions match,
eliminating identified duplicate records from said file and creating a second file of unique records, wherein no two unique records identify the same individual,
creating a list of individuals from said second file of unique records, and
wherein if said first and subsequent comparisons do not identify a duplicate record, the steps of making a number of additional comparisons between additional predetermined portions of said first record and said at least one second record until a duplicate record is identified or until said additional comparisons are complete, and
wherein said number of rotational comparisons are performed in one of a plurality of sequences, a particular sequence being selected in accordance with the results of said first, subsequent and additional comparisons.

5,303,150

WILD-CARD WORD REPLACEMENT SYSTEM USING A WORD DICTIONARY

Masayuki Kameda, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 12, 1990, Ser. No. 626,444
Claims priority, application Japan, Dec. 15, 1989, 1-324935
Int. Cl.[5] G06F *15/00, 15/40*
U.S. Cl. 364—419.08 **9 Claims**



1. An alphabet word input system comprising:
word dictionary means including first storing means for storing replacement candidates, wherein each candidate is a full-text word made up of alphabet characters, and second storing means for storing syntactical element information about each of said replacement candidates stored in first storing means;
input means for inputting a wild-card word, said wild-card word including one or more wild card characters, and for inputting syntactical information associated with said wild-card word;
searching means for searching said input wild-card word in said word dictionary means to find at least one of said replacement candidates, separating said syntactical information from said wild-card word, and discarding replacement candidates that have syntactical elements information that differs from the syntactical information associated with said input wild-card word; and
replacing means for replacing said input wild-card word with said replacement candidate found by said search means.

5,303,151

METHOD AND SYSTEM FOR TRANSLATING DOCUMENTS USING TRANSLATION HANDLES

Angelika G. C. Neumann, Bothell, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Feb. 26, 1993, Ser. No. 23,976
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.02 **12 Claims**

1. A computer system for translating a source language document written in a source language to a target language document written in a target language, the source language including a multiplicity of source terms and the target lan-

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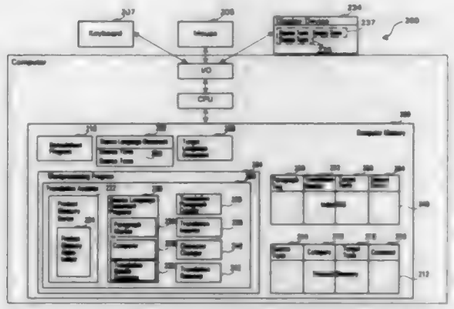
guage including a multiplicity of target terms, the computer system including a display screen, the source language document, a product glossary having a plurality of source terms from the source language and a plurality of target terms from the target language, each source term being associated with the corresponding target term which translates the source term into the target language, the computer system comprising:

means for producing a translation screen portion on the display screen, the translation screen portion including a current insertion point;

means for displaying the source language document on the translation screen portion;

means for comparing each of the plurality of source terms from the product glossary with the source terms in the source language document;

inserting means for inserting a character adjacent to the source term in the source language document, in response to each comparison by the comparing means which produces a match between one of the source terms in the source language document and one of the source terms in the product glossary;



means for associating in an index file the inserted character with a target term from the product glossary that translates the matched source term from the source language into the target language;

means for inputting an insert target term command which contains a translation request character corresponding to the inserted character;

means for retrieving the translation request character from the insert target term command;

means for retrieving from the index file the target term associated with the retrieved translation request character; and

means for inserting the retrieved target term on the translation screen portion in response to the insert target term command.

5,303,152

LIGHTNING STRIKE DETECTION SYSTEM CAPABLE OF QUICKLY DETERMINING AN INVALID CORRELATION OF STRIKE SIGNALING

Randolph L. Moses, Worthington; Joseph G. Kuzma, Dublin, and Kenneth A. Ostrander, Columbus, all of Ohio, assignors to BFGoodrich FlightStstems, Inc., Columbus, Ohio

Filed Apr. 29, 1992, Ser. No. 875,901

Int. Cl.[5] G06F *15/31*; G01S *3/02*; G01W *1/16*

U.S. Cl. 364—420 **12 Claims**

1. A sampled data lightning strike detection and mapping system comprising:

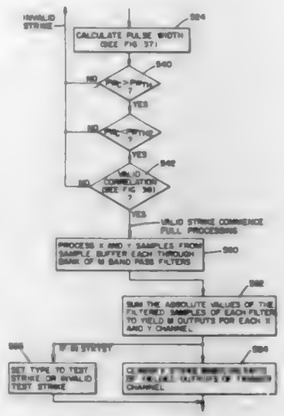
first means for receiving at least a first signal waveform representative of a magnetic field;

second means for receiving a second signal waveform representative of an electric field, said first and second signal waveforms both including a pulse shaped portion and a trailing shaped portion;

means for sampling said received first and second signal waveforms and for digitizing the samples to generate a first train of digital data samples representative of the first signal waveform and a second train of digital data samples representative of the second signal waveform;

means for identifying a sample which exceeds a predetermined threshold level from said first train as a trigger sample;

collecting means governed by the trigger sample to collect a predetermined number of samples from said first and



second trains substantially coherent with the pulse shaped portion of the first signal waveform;

processing means governed by the trigger sample to commence processing of the digital data samples of the first and second trains for the detection and mapping of the lightning strike; and

means for aborting the processing of the processing means upon determination of an invalid correlation of the collected predetermined number of samples of said first and second train.

5,303,153

VEHICLE AUTOMATIC TRANSMISSION CONTROL SYSTEM

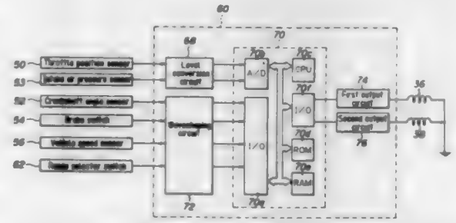
Ichiro Sakai; Yasuhisa Arai; Yusuke Hasegawa, and Shinichi Sakaguchi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 691,066

Claims priority, application Japan, Apr. 27, 1990, 2-112816

Int. Cl.[5] B60K *41/06*

U.S. Cl. 364—424.1 **26 Claims**



1. A system for controlling a vehicle automatic transmission, comprising:

first means for determining operating parameters of said vehicle at least including a degree of throttle opening, a vehicle speed and a current gear ratio;

second means for carrying out a first fuzzy reasoning based on a fuzzy production rule to infer a driver's intention for changing at least one of said vehicle speed and said current gear ratio;

third means for carrying out a second fuzzy reasoning based on a said first set of fuzzy production rules and a second set of fuzzy production rules with each set defining a gear ratio shift conclusion using at least one of said determined operating parameters and the inferred driver's intention to determine a target gear ratio to be shifted to; and

actuator means for driving a gear ratio shift mechanism in response to said determined target gear ratio.

5,303,154

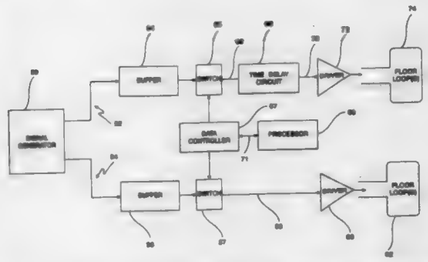
CONTINUOUS ON-LINE COMMUNICATIONS SYSTEM FOR AUTOMATIC GUIDED VEHICLES

Walter Luke, Jr., R.D. #2, Box 136C, Binghamton, N.Y. 13903

Filed Oct. 25, 1991, Ser. No. 782,687

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 364—424.02 **18 Claims**



1. An inductive communications and guide path system for automatic guided vehicles (AGVs) that provides substantially continuous on-line communications for an AGV proximate one of its guide paths, comprising:

means defining at least two continuous, closed loop guide paths for AGVs;

signal generating means operatively connected to said at least two continuous, closed loop guide paths;

buffer means operatively connected to said signal generating means and to each of said at least two continuous, closed loop guide paths for providing a first, or reference signal at a predetermined frequency and for providing a second signal at said predetermined frequency; and

means operatively connected to said buffer means for shifting or time delaying said second signal relative to said first signal as a periodic function of time, whereby destructive coupling of said first and second signals provided in respective ones of said guide paths is substantially eliminated.

5,303,155

METHOD OF GENERATING CONTROL/REGULATION SIGNALS FOR A VEHICLE CHASSIS

Rainer Kallenbach; Dieter Kunz, both of Stuttgart, and Klaus Landesfeind, Feilbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Fed. Rep. of Germany

Filed Jun. 24, 1991, Ser. No. 719,806

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1990, 4020107

Int. Cl.[5] B60G *17/015*

U.S. Cl. 364—424.05 **4 Claims**

1. A method of generating control/regulation signals for at least one of control and regulation of a chassis on a vehicle, the vehicle including a body and a plurality of wheels, the chassis including at least one of a shock absorber and spring, comprising the steps of:

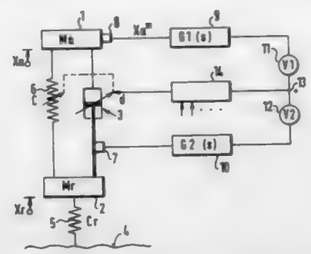
sensing an acceleration of the vehicle body;

providing first signals representing said sensed acceleration;

sensing relative movements between the vehicle body and wheels;

providing second signals representing said sensed relative movements;

filtering said first signals in a first filtering means, said first filtering means having at least a high-pass type transfer performance and providing output signals representing high-frequency portions of said first signals;



filtering said second signals in a second filtering means, said second filtering means having a transfer performance dependent on the transfer performance of said first filtering means and providing output signals representing low-frequency portions of said second signals;

additively combining said first filtering means output signals and said second filtering means output signals in a linkage means providing respective output signals; and

generating said control/regulation signals dependent on said linkage means output signals.

5,303,156

ELECTRIC POWER STEERING APPARATUS HAVING OVERLOAD PROTECTION

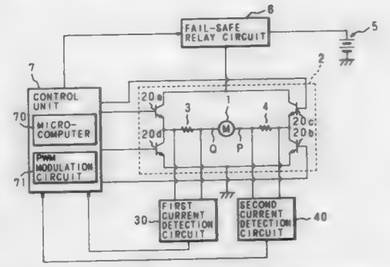
Hirofumi Matsuoka, Souraku, and Hidetoshi Tabuse, Wakayama, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jul. 8, 1992, Ser. No. 910,696

Claims priority, application Japan, Jul. 10, 1991, 3-061682[U]

Int. Cl.[5] B62D *5/04*

U.S. Cl. 364—424.05 **20 Claims**



1. An electric power steering apparatus which assists a steering power by an electric motor, comprising:

first current detection means for detecting a current flowing into said electric motor;

second current detection means for detecting a current flowing out from said electric motor;

means for obtaining the difference between the currents detected by said first and second current detection means;

abnormality detection means for detecting an abnormality of said electric power steering apparatus on the basis of the obtained current difference; and

inhibition means for, when the abnormality is detected,

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inhibiting said electric motor from assisting the steering power.

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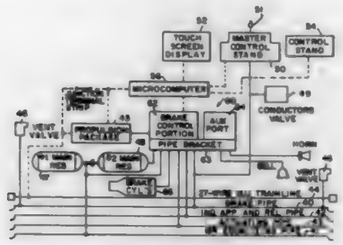
SINGLE HANDLE LOCOMOTIVE CONTROLLER

Kevin B. Root, Black River; John J. Allen, Watertown, and Ronald O. Newton, Adams, all of N.Y., assignors to Knorr Brake Holding Corporation, Westminster, Md.

Continuation of Ser. No. 620,827, Dec. 3, 1990, abandoned. This application Jun. 23, 1993, Ser. No. 101,266

Int. Cl.[5] B60T *13/66, 13/74*

U.S. Cl. 364—426.05 **15 Claims**



1. A train propulsion and braking controller comprising:

handle means, including a single handle movable between a maximum propulsion position, through diminishing propulsion positions, through a release/idle position, through increasing braking positions, through a full service braking position, to an emergency brake position, for providing a position signal representing a position of said handle;

control means for receiving said position signal and generating propulsion, dynamic braking, and fluid braking control signals as a function of said position signal;

when said handle position assumes an initial braking position, said control means generates a dynamic braking signal necessary for said initial braking position until a maximum value of dynamic braking signal is generated and generates a fluid braking signals after said maximum value of dynamic braking signal is generated if necessary for said initial braking position; and

when said handle assumes a next braking position less than a previous braking position, said control means generates a dynamic braking signal of a smaller value than a dynamic braking signal of said previous braking position and maintains a fluid braking signal of said previous braking position until a zero dynamic braking signal is generated.

5,303,158

MISFIRE-DETECTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Shigetaka Kuroda, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1991, Ser. No. 672,796

Claims priority, application Japan, May 14, 1990, 2-123574

Int. Cl.[5] G06F *15/50;* **G01M** *15/00*

U.S. Cl. 364—431.08 **14 Claims**

1. A system for detecting abnormality in combustion of an internal combustion engine based on fluctuations in the rotational speed of said engine, comprising:

signal-outputting means for outputting a signal corresponding to the rotational speed of said engine;

frequency-analyzing means for subjecting said signal from said signal-outputting means to frequency analysis to thereby detect amplitudes of components of said signal at respective predetermined frequencies;

comparing means for calculating a difference between an amplitude of a component of said signal at each of said respective predetermined frequencies and an amplitude of a component of said signal at one of said respective predetermined frequencies as a reference frequency, said amplitude of said component of said signal at said each of said respective predetermined frequencies and said amplitude of said component of said signal at said one of said respective predetermined frequencies as said reference frequency being detected by said frequency-analyzing means on the same occasion of operation of said engine; and

abnormality-determining means for determining that there is abnormality in combustion of said engine when said difference is smaller than a predetermined value.

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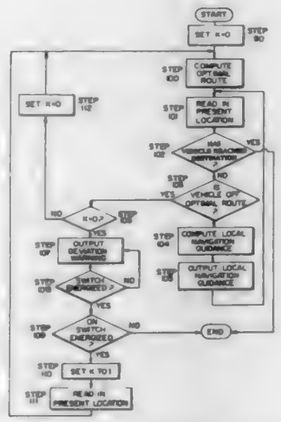
NAVIGATION SYSTEM WITH OFF-ROUTE DETECTION AND ROUTE RECALCULATION

Haruhisa Tamai, Sunnyvale, Calif., and Tatsuhiko Abe, Tsurugashima, Japan, assignors to Zexel Corporation Daihatsu-Nissan, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 869,141

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—449 **12 Claims**



1. A vehicle navigation system, which comprises:

means for storing and retrieving map data;

first means for detecting a present location of a vehicle;

means for computing from said map data an optimal route for said vehicle from a starting point to a destination;

said means for computing including means for computing local navigation guidance from said map data;

second means for detecting deviation of a position of said vehicle from said optimal route;

first means for determining whether said deviation is a first deviation;

second means for determining whether said deviation is a deviation subsequent to said first deviation;

third means for determining whether said deviation is a deviation subsequent to a recomputation of said optimal route;

means for displaying that said vehicle has deviated from said optimal route;

said means for displaying including means for displaying said local navigation guidance when said first means for determining determines that said deviation is said first deviation;

means for commanding a recomputation from said map data of a new optimal route from a new starting point to said destination;

said new starting point being a new present location as detected by said first means for detecting; and

means for automatically computing, from said map data, said new optimal route from said new starting point to said destination, using, as said new starting point, said new present location as detected by said first means for detecting, when said third means for determining determines that a new deviation has been detected after a command from said means for commanding has caused recomputation of a previous optimal route.

5,303,160

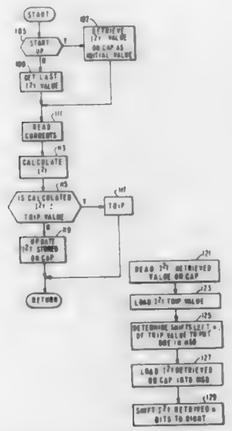
LOAD CONTROLLER WITH DIGITALLY MODELED OVERLOAD PROTECTION AND ANALOG TRACKING OF HEAT STATE DURING POWER OFF

Marlan L. Winter, Hendersonville, and Mark E. Innes, Asheville, both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 13, 1992, Ser. No. 819,900

Int. Cl.[5] H02H *7/08, 5/04*

U.S. Cl. 364—481 **4 Claims**



1. Apparatus for connecting an electrical load to an electric power and providing overload protection for said electrical load, said apparatus comprising:

separable contacts selectively connecting said electrical load to said electric power source when closed and interrupting current flow to said electrical load when open;

electromagnetic means closing said separable contacts when energized and opening said separable contacts when deenergized;

digital control means responsive to current supplied to said electrical load from said electric power source with said separable contacts closed to generate a digitally modeled load heat state signal, and operative to deenergized said electromagnetic means to open said separable contacts and deenergize said electrical load when said digitally modeled heat state signal exceeds a selected limit, said digital control means being powered down when said separable contact are open;

power down retention means generating and storing an analog heat state signal which is an analog equivalent of said digitally modeled heat state signal, and including means decaying said analog heat state signal at a rate approximating cooling of said electrical load when said separable contacts are open and current to said electrical load is interrupted; and

converter means responsive to powering up of said digital control means to generate from said analog heat state signal, as decayed, a retrieved digital heat state signal, said digital control means including means utilizing said retrieved digital heat state signal as an initial value of said digitally modeled heat state signal in response to powering up of said digital control means, said digital control means comprising an X-bit digital processor which includes a Y-bit register having X most significant bits including a most significant bit with Y being greater than X, and said converter means being an X-bit analog to digital converter which generates an X-bit retrieved digital heat state signal, and including means entering said X-bit retrieved digital heat state signal generated by said analog to digital converter into said X most significant bits in said Y-bit register, and shift means shifting said X-bit retrieved digital heat state signal n bits away from said most significant bit in said Y-bit register, where n is selected to place said retrieved digital heat state signal in said Y-bit register in a range common with said digitally modeled heat state signal.

5,303,161

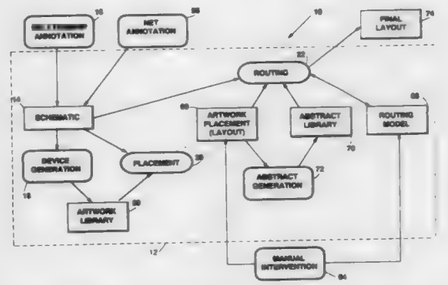
TECHNOLOGY INDEPENDENT INTEGRATED CIRCUIT MASK ARTWORK GENERATOR

Richard J. Burns, Canyon Country, and Stacy W. Mehranfar, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 10, 1990, Ser. No. 624,958

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—490 **13 Claims**



1. A system for generating integrated circuit mask artwork from a schematic of an electrical circuit, said electrical circuit containing electrical components and connections between said components, said system comprising:

artwork library database containing macros, each of which generate artwork for one of said electrical components of

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a particular technology type, wherein said components are identified by a component designator;

device generator means for defining the type of circuit to be executed and for executing the macro for that circuit independent of the component's particular technology type;

means for defining relationships between said circuits, said relationships specifying desirable physical relationships between sets of related circuit components which influence their performance;

means for determining placement of said components on said artwork including means for determining placement groups, the groups consisting of groups of components with related placements based on said defined physical relationships;

means for arranging said components so as to optimize a predetermined parameter, the parameter being a function of the physical relationship between the components;

means for eliminating overlaps between said components by moving said groups as a whole wherein said defined relationships are preserved; and

means for routing the electrical connections between said placed components.

5,303,162

SYSTEM FOR AUTOMATICALLY MEASURING PILING RESULTS IN A PILING OPERATION

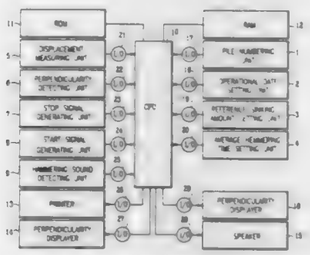
Myung Oh Yoon, Seoul, Rep. of Korea, assignor to Korea National Housing Corporation, Rep. of Korea

Filed Nov. 12, 1991, Ser. No. 790,341

Claims priority, application Rep. of Korea, Oct. 7, 1991, 17545/1991

Int. Cl.[5] G01B *7/26*

U.S. Cl. 364—550 **6 Claims**



1. A system for automatically measuring piling results of a piling operation by a piling machine operated by an operator comprising:

a pile numbering unit for numbering a pile;

an operational date setting unit for setting a date when the piling operation is carried out;

a reference sinking amount setting unit for setting a reference sinking amount of the pile;

an average times of hammering setting unit for setting average times of hammering by a piling machine;

a stop signal generating unit for generating a stop signal;

a start signal generating unit for generating a start signal;

a pile sinking displacement measuring unit for measuring a sinking displacement amount of the pile, said unit being operatively coupled with the pile;

a pile perpendicularity detecting unit for detecting perpendicularity of the pile;

a hammering sound detecting unit for detecting a hammering sound;

a central processing unit (CPU) electrically connected to and being supplied with electrical signals from said pile numbering unit, said operational date setting unit, said reference sinking amount setting unit, said average times of hammering setting unit, said stop signal generating unit, said start signal generating unit, said pile sinking displacement measuring unit, said pile perpendicularity detecting unit, and said hammering sound detecting unit, for processing said electrical signals, and controlling said system;

a data printer for printing operation data upon receiving data signals from the CPU;

a signal display for displaying respective visual signals such as a waiting signal, a working signal and a stop signal upon receiving a control signal from the CPU;

an informing speaker for informing the operator of information upon receiving an information signal from the CPU;

a pile perpendicularity display for displaying perpendicularity of the pile upon receiving a perpendicularity signal from the CPU; and

a measuring arm for mounting said pile sinking displacement measuring unit and said pile perpendicularity detecting unit.

5,303,163

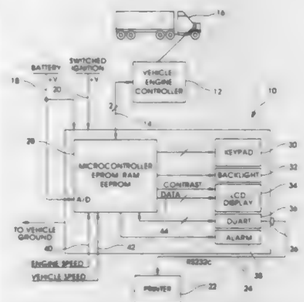
CONFIGURABLE VEHICLE MONITORING SYSTEM

Paul J. Ebaugh; Michael Maass, both of Columbus, Ind.; Gregg Broering, Montgomery, Ala., and Salim A. Jaliwala, Columbus, Ind., assignors to Cummins Electronics Company, Columbus, Ind.

Filed Aug. 20, 1992, Ser. No. 932,611

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—550 **16 Claims**



1. A configurable vehicle monitoring device comprising:

keypad means for producing a plurality of keypad signals corresponding to operator depressions of a plurality of keys forming a part of said keypad means;

display means having a display input for displaying alphanumeric information in response to signals supplied to said display input;

audible alarm means for producing an audible signal in response to a signal supplied to an input of said alarm means; and

processor means for receiving, storing, and outputting data, said processor means including memory and a first communication port for communicating with a vehicle control computer to receive vehicle operating information, said processor means:

(a) receiving vehicle operating condition data via said first communication port;

(b) responding to said keypad signals by supplying display signals to said display means in response to certain ones of said keypad signals, said display signals causing vehicle operating conditions to be displayed on said display means;

(c) responding to a configuration request represented by a predetermined code sequence of said plurality of keypad signals and entering a configuration programming mode of operation wherein the operator is prompted by messages displayed on said display, in response to signals supplied to said display input by said processor means, to enter driver controlled vehicle operating limits through said keypad which limits are stored in said memory of said processor means;

(d) displaying a warning message on said display and supplying an alarm signal to said input of said alarm means in response to detection of vehicle operating conditions monitored by said processor means via data received through said first communication port that are in excess of said driver controlled vehicle operating limits; and

(e) processing and storing at least some of the data received via said first communication port for recall and display at a later time.

5,303,164

INSULATION MONITOR WITH IMPROVED PRECISION

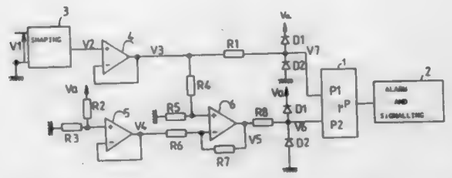
Erik Masson, Barraux; Serge Lassagne, Meylan, and Philippe Magnard, Bourgoin Jallieu, all of France, assignors to Merlin Gerin, France

Filed Nov. 12, 1991, Ser. No. 789,880

Claims priority, application France, Nov. 28, 1990, 9014990

Int. Cl.[5] G01B *7/00*

U.S. Cl. 364—551.01 **6 Claims**



1. A continuous insulation monitor for monitoring an electrical mains system, said continuous insulation monitor comprising: an input voltage generator for generating an input signal, a processing circuit comprising a measuring circuit having an input coupled to the output of the input voltage generator, a microprocessor comprising a first input connected to the output of the measuring circuit, wherein the microprocessor converts the output signal of the measuring circuit into a numerical value, computes from the numerical value a value representative of the insulation resistance of the mains system to be monitored, compares the value representative of the insulation resistance with at least one present threshold and supplies an alarm signal on an output when the value is lower than the threshold, an alarm and signalling circuit connected to the microprocessor output, and a magnifying circuit, coupled between the output of the measuring circuit and a second input of the microprocessor, comprising means for determining the difference between the measuring circuit output signal and a present threshold value and means for multiplying said difference by a preset multiplication coefficient and supplying the result to the second input of the microprocessor.

5,303,165

STANDARDIZING AND CALIBRATING A SPECTROMETRIC INSTRUMENT

Alan M. Ganz, Trumbull; David H. Tracy, Norwalk, both of Conn., and Robert A. Hoult, Beaconsfield, England, assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

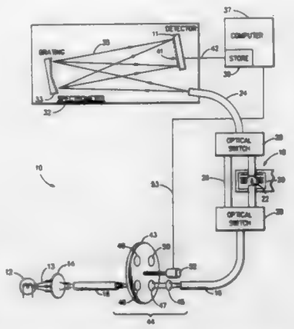
Filed Feb. 12, 1992, Ser. No. 834,448

Int. Cl.[5] G01R *35/00;* **G01J** *3/42*

U.S. Cl. 364—571.01 **51 Claims**

1. A method of standardizing a spectrometric instrument having a characteristic intrinsic profile of spectral line shape for a hypothetically thin spectral line in each segment of a selected spectral range, each intrinsic profile having an associated intrinsic width, the instrument including a line source of at least one narrow spectral line in at least one selected segment of the spectral range, and each narrow spectral line having an associated line width substantially narrower than the intrinsic width for a corresponding selected segment, the method comprising:

specifying a target profile of spectral line shape for a hypothetically sharp spectral line in each selected segment, initially operating the instrument with the line source to



produce a set of profile data for each narrow spectral line such that each set of profile data is representative of the intrinsic profile for a corresponding selected segment, computing a transformation filter for transforming each set of profile data to a corresponding target profile for each selected segment, and saving the transformation filter for future application to sample data.

5,303,166

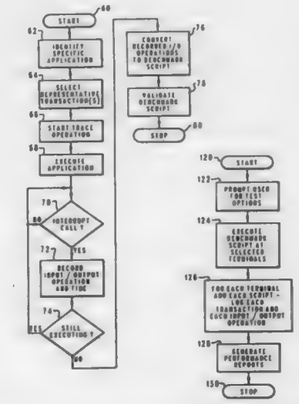
METHOD AND SYSTEM FOR AUTOMATED NETWORK BENCHMARK PERFORMANCE ANALYSIS

Eugenie A. Amalfitano, Delray Beach, and Gregory J. McKnight, Lake Worth, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1992, Ser. No. 868,744

Int. Cl.[5] G06F *11/34*

U.S. Cl. 364—551.01 **18 Claims**



1. A method in a data processing system for analyzing input-/output efficiency, said method comprising the steps of:

identifying at least one software application generally utilized within said data processing system;

executing at least one representative transaction within said at least one software application;

identifying and recording a plurality of input/output operations generated between said at least one software applica-

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tion and an operating system within said data processing system while executing said at least one representative transaction within said at least one software application;

utilizing said recorded plurality of input/output operations to create a benchmark script which emulates said at least one representative transaction; and

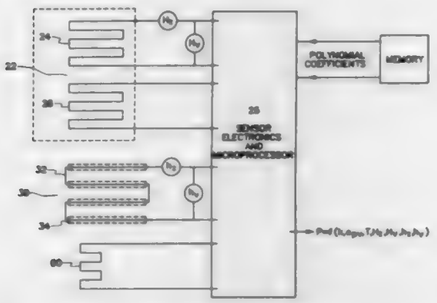
executing said benchmark script within said data processing system while monitoring input/output operations within said data processing system wherein input/output efficiency may be analyzed with high degree of verisimilitude without requiring actual installation of said at least one software application during testing.

5,303,167

ABSOLUTE PRESSURE SENSOR AND METHOD

Ulrich Boone, Hopkins, Minn., assignor to Honeywell Inc, Minneapolis, Minn.

Filed Mar. 8, 1991, Ser. No. 666,780
Int. Cl.[5] G01N *9/00*
U.S. Cl. 364—556 **10 Claims**



1. Apparatus for determining absolute pressure, P, of a gas comprising:

a first microbridge having a first heated element and a thermal sensor thereon, immersed and situated in such proximity to each other and to said gas so as to be thermally coupled by said gas;

T_g measuring sensor for producing a signal, T_g, representative of the temperature of said gas;

k and c_p, computing means for determining thermal conductivity, k, and specific heat, c_p, of said gas using said first microbridge;

sensor electronics means for measuring a first current, H_I, flowing in said first heated element and producing an electrical signal representative thereof;

sensor electronics means for measuring a first voltage, H_V, impressed across said first heated element and providing an electrical signal representative thereof;

a second microbridge having located thereon a second heated element extending over an etched V-groove;

sensor electronics means for measuring a second current, h_i flowing in said second heated element and providing an electrical signal representative thereof;

sensor electronics means for measuring a second voltage, h_v impressed across said second heated element and providing an electrical signal representative thereof;

computing means for determining P based on the electrical signals representative of k, c_p, T_g H_V, H_I, h_v, and h_i; and

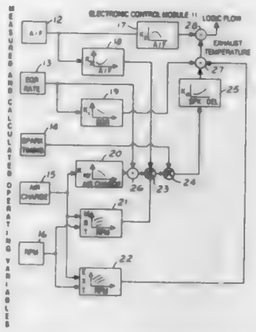
output means for providing an output representative of the value of P.

5,303,168

ENGINE OPERATION TO ESTIMATE AND CONTROL EXHAUST CATALYTIC CONVERTER TEMPERATURE

Michael J. Cullen, Dearborn; James M. Kindree, Livonia, and Richard L. Wanat, Troy, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 31, 1991, Ser. No. 785,719
Int. Cl.[5] F02P *5/14*; G06F *15/48*
U.S. Cl. 364—557 **11 Claims**



3. A method of inferring engine exhaust gas temperature including:

providing inputs indicating air/fuel ratio, exhaust gas recirculation rate, spark timing, air charge intake, engine speed rpm;

providing stored look-up tables indicating air/fuel ratio versus a first constant, air/fuel ratio versus a second constant, exhaust gas recirculation (EGR) versus a third constant, engine aircharge versus a fourth constant, engine rpm and engine aircharge versus MBT, engine rpm and engine discharge versus nominal exhaust temperature;

multiplying an output from the EGR rate sensor and an output of the engine aircharge versus the fourth constant table to produce a first product;

adding the output from the table of air/fuel ratio versus the second constant, the product, and an output of the rpm versus MBT table to produce a first sum;

finding a difference between the spark timing input and the first sum;

applying the difference to a table for spark delay versus constant;

multiplying an output of the spark delay table by the output of the EGR versus constant table and the rpm versus nominal exhaust temperature table to produce a second product;

multiplying the second product by an output of the air/fuel ratio versus constant to produce a third product of the exhaust temperature;

providing stored tables and memory for adjusting exhaust temperature as a function of air/fuel ratio, exhaust gas recirculation, spark delay and engine speed;

coupling an input indicating air/fuel ratio to information stored as a function of air/fuel ratio;

coupling an input indicating EGR rate to information stored as a function of EGR;

coupling an input indicating air charge to information stored as a function of air charge and engine speed;

coupling engine speed to information stored as a function of engine speed;

multiplying the output of information stored as a function of air charge and an input indicating exhaust gas recirculation and applying the output to a first adder;

applying the output of information stored as a function of air/fuel ratio and information stored as a function of engine speed to the first adder;

applying an input indicating spark timing to the negative

input of a difference module and applying output of the first adder to the positive input of the difference module;

applying the output of the difference module to an exhaust temperature adjustment table stored as a function of spark retard;

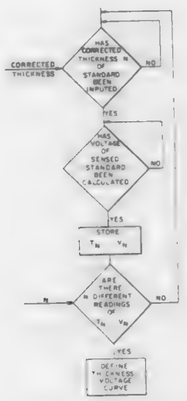
applying the output of the exhaust temperature adjustment table to a second multiplier along with information stored as a function of exhaust gas recirculation, engine speed stored as a function of spark retard to provide an output indicative of exhaust temperature.

5,303,169

METHOD FOR CALIBRATING A WALL THICKNESS INSPECTION MACHINE

Russ J. Baker, Horseheads, N.Y., assignor to Emhart Industries, Inc., Towson, Md.

Filed Mar. 19, 1991, Ser. No. 675,099
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—571.01 **1 Claim**



1. A method for calibrating a wall thickness inspection system having sensing means for producing a voltage representative of the thickness of the sensed wall of a glass container and control means for defining the sensed voltage as a thickness based on a voltage/thickness curve defined by at least two inputted points wherein the actual container to be inspected has a dimension different than the dimension of an available standard container, the method comprising

defining the plurality of inputted points by calculating at least two calibration thicknesses of the actual glass container to be tested which will result in the same voltage being sensed as will be sensed by the sensing means when a corresponding number of known thicknesses on the standard container are sensed, using the following equation,

{((Calibration Standard Diameter in inches—Container Diameter in inches)×0.2)+1}×Calibration Standard Thickness in mils, and

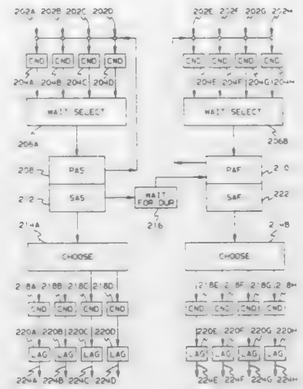
equating these calibration thicknesses to the corresponding voltages produced by the sensing means when sensing said at least two thicknesses of the standard.

5,303,170

SYSTEM AND METHOD FOR PROCESS MODELLING AND PROJECT PLANNING

Andrew G. Valko, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1992, Ser. No. 862,905
Int. Cl.[5] G06G *7/48*
U.S. Cl. 364—578 **8 Claims**



1. A method for modelling on a computer a network of activities, each activity being performed over a fixed or variable period of time within the method, each current activity comprising the steps of:

selecting among N number of activities in the network as next activity or activities to be performed in the network as a successor activity or activities of the current activity,

inputting for the current activity a plurality of conditions for starting or finishing M of N successor activity or activities in the network in which the N successor activity or activities are in relation to the current activity, and

specifying each condition for starting or finishing a successor activity as a connection of the current activity to the successor activity.

5,303,171

SYSTEM SUSPEND ON LID CLOSE AND SYSTEM RESUME ON LID OPEN

Steven L. Belt, Stevensville; Robert J. Grabon, Berrien Springs, Oronoko Township, Berrien County; Chandrakant H. Pandya; Jiming Sun, both of St. Joseph, and Neysa K. Terry-Gray, Lake Township, Berrien County, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

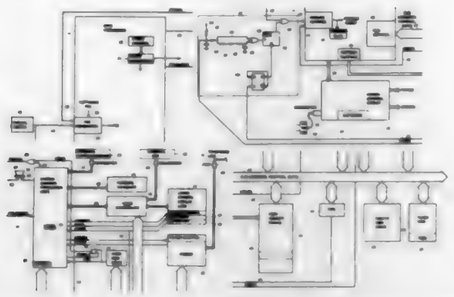
Filed Apr. 3, 1992, Ser. No. 865,048
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—707 **15 Claims**

1. An apparatus comprising: a computer system which includes a housing, a lid supported on said housing for movement between open and closed positions, a processor provided in said housing and having a first operational mode in which said processor executes instructions and a second operational mode in which said processor is halted in a reduced power state from which said processor can automatically exit in response to a predetermined condition, first means responsive to movement of said lid to said closed position when said processor is in said first operational mode for switching said processor to said second operational mode, and second means responsive to movement of said lid away from said closed position for switching said processor from said second operational mode to said first operational mode, said processor thereafter continuing in said first operated mode from a point at which said first operational mode was discontinued for said switching to said second operational mode; wherein said first means further

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responses to movement of said lid to said closed position by enabling said second means to respond to movement of said lid,



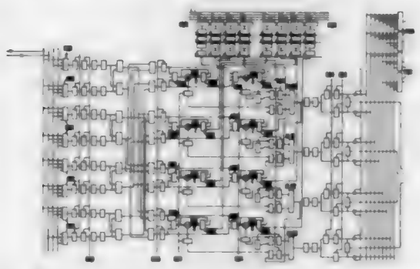
and said second means responds to movement of said lid away from said closed position by disabling said second means from responding to movement of said lid.

5,303,172

PIPELINED COMBINATION AND VECTOR SIGNAL PROCESSOR

Surender S. Magar; Michael E. Fleming; Shannon N. Shen; Kevin M. Kishavy; Christopher D. Furman, and Kenneth N. Murphy, all of Colorado Springs, Colo., assignors to Array Microsystems, Colorado Springs, Colo.

Filed Feb. 16, 1988, Ser. No. 155,671
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—726 **30 Claims**



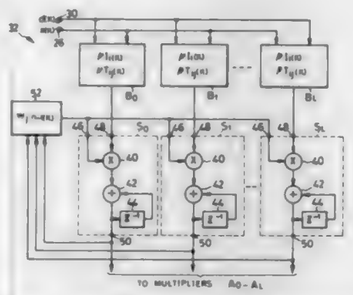
8. A digital signal processor integrated circuit comprising:
a first data input bus;
first input leads coupled to said first input data bus;
a second data input bus;
a first set of multiplexers coupled to said first data input bus;
a second set of multiplexers coupled to said second data input bus;
a first arithmetic processor coupled to outputs of said first set of multiplexers;
a number of latch stages coupled to outputs of said second set of multiplexers, said number corresponding to a number of clock cycles for sequencing data through said first arithmetic processor;
a second arithmetic processor having first inputs coupled to outputs of said first arithmetic processor and second inputs coupled to outputs of said latch stages;
a data output bus coupled to outputs of said second arithmetic processor;
output leads coupled to said data output bus;
control input leads coupled to said integrated circuit;
control means, having control inputs coupled to said control input leads of said integrated circuit and control outputs coupled to said first and second sets of multiplexers and said first and second arithmetic processors, for selecting a first combination of said multiplexers for a fast FFT operation in said first and second arithmetic processors in response to a first control signal on said control input leads, and for selecting a second combination of said multiplexers for a block multiply operation in one of said first and second arithmetic processors in response to a second control signal on said control input leads;
an internal data bus coupled between said output data bus and said first data input bus; and
means, coupled to said internal data bus, for selectively providing data from said output leads or said outputs of said second arithmetic processor to one of said first input leads and said first set of multiplexers.

5,303,173

ADAPTIVE DIGITAL FILTER, AND METHOD OF RENEWING COEFFICIENTS THEREOF

Shinsaku Mori, 1-31-6, Okuzawa, Setagaya-ku, and Kiyoshi Takahashi, both of Tokyo, Japan, assignors to Shinsaku Mori and TEAC Corporation, both of Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 936,909
Claims priority, application Japan, Aug. 29, 1991, 3-244625
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.19 **1 Claim**



1. An adaptive digital filter system of the type having first input means for inputting samples of a reference signal at predetermined sampling times, second input means for inputting at the predetermined sampling times samples of data which is associated with the reference signal, and a filter circuit for imparting a unit delay of one interval between the predetermined sampling times to the successive input data samples in order to concurrently obtain a set of (L+1) data samples of different sampling times, from 0'th to L'th, where L is an integer greater than one, for multiplying the set of data samples by respective coefficients $W_0(k)$, $W_1(k)$, . . . $W_L(k)$, and for adding together the set of multiplied data samples into a sum y(k), the filter circuit including a coefficient renewal circuit for renewing the coefficients for each set of input data samples by computing the following equations from a reference signal d(k) and set of (L+1) data samples at any one sample time K;

$$T_{ij}(k) = -2x(k-i)x(k-j)$$

$$I_i(k) = 2d(k)x(k-i)$$

where
i and j = variables denoting the numbers from 0 to L
$T_{ij}(k) = (L+1)^2$ values, including like values, used for the renewal of the coefficients
$I_i(k) = (L+1)$ values used for the renewal of the coefficients
$x(k-i) = (L+1)$ data samples chosen successively from the set of data samples
$x(k-j) = (L+1)$ data samples chosen successively from the set of data samples,
by renewing the set of (L+1) data samples n times, where n is an integer not less than two, during a time interval from the

sampling time k to the next sample time (k+1) according to the equation:

$$w_i n(k) = w_i n - 1(k) + \mu\left\{ \sum_{j=0}^{L} T_{ij}(k) 7\ w_i n - 1(k) + I_i(k) \right\}$$

where
$w_i n-1(k) = (L+1)$ unrenewed coefficients to be renewed at each of the n renewals
$w_i n(k) = (L+1)$ renewed coefficients at each of the n renewals μ = stepsize constant
$w_i n-1(k) = (L+1)$ unrenewed coefficients to be renewed at each of then n renewals,
and by using the coefficients renewed at the last of the n renewals as coefficients by which a set of data samples obtained at the next sampling time (k+1) are to be multiplied, the adaptive digital filter system being characterized in that the coefficient renewal circuit comprises:
(a)first data supply means for supplying the (L+1) unrenewed coefficients $w_i n-1(k)$ to be renewed at each of the n renewals and an unit value;
(b) second data supply means connected to the first and the second input means for supplying the products $\mu T_{ij}(k)$ of $T_{ij}(k)$ and μ, and the products $\mu I_i(k)$ of $I_i(k)$ and μ; and
(c) (L+1) arithmetic circuits each having inputs connected to the first and the second data supply means and an output connected to the first data supply means, the arithmetic circuits simultaneously conducting the n renewals of the set of (L+1) data samples and putting out the coefficients renewed at the last of the n renewals;
wherein each arithmetic circuit comprises:
(a) a multiplier having a first input connected to the first data supply means and a second input connected to the second data supply means;
(b) an adder connected between the multiplier and the output of the arithmetic circuit; and
(c) a delay circuit connected to the adder for delaying an output from the adder by one interval between the predetermined sampling times for application to the adder.

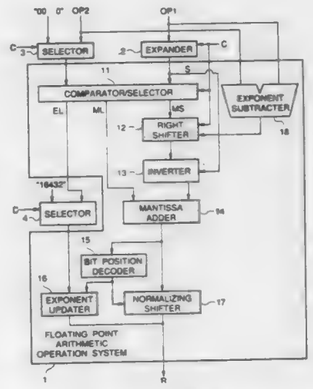
5,303,174

FLOATING POINTING ARITHMETIC OPERATION SYSTEM

Fuyuki Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,948
Claims priority, application Japan, Oct. 7, 1991, 3-258990
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **3 Claims**

1. A floating point arithmetic operation system to perform addition or subtraction, comprising:
an expander receiving a first input operand and controlled to output the received first operand without modification when floating point data including its mantissa part expressed in an absolute value is inputted as said first input operand so that a floating point arithmetic operation should be executed, said expander being also controlled to output a value obtained by expanding a sign bit of said first input operand when integer data expressed in 2's complement is inputted as said first input operand so that the integer data should be converted into floating point data;
a first selector receiving a second input operand and a value of all "0" bits and controlled to output the received second input operand without modification when another floating point data including its mantissa part expressed in an absolute value is inputted as said second input operand so that the floating point arithmetic operation should be executed, and to output said value of all "0" bits when the integer data should be converted into floating point data;
a comparator/selector having first and second inputs connected to outputs of said expander and said first selector, respectively, and configured to compare said first and second inputs so as to determine a large-and-small relation between said first and second inputs, said comparator/selector having first, second and third outputs and being controlled, when the floating point arithmetic operation should be executed, so as to output a mantissa part of a smaller one of said first and second inputs, a mantissa part of a larger one of said first and second inputs and an exponent part of said larger one to said first, second and third outputs, respectively, said comparator/selector being also controlled, when the integer data should be converted into floating point data, so as to output the expanded integer data and said value of all bits of "0" to said first and second outputs, respectively;
an exponent subtracter receiving an exponent part of said first and second input operands for outputting a difference in the exponent part of said first and second input operands;
a right shifter receiving said first output of said comparator/selector and said difference in the exponent part, said right shifter being controlled, when the floating point arithmetic operation should be executed, so as to shift said first output of said comparator/selector by an amount corresponding to said difference in the exponent part for matching of the exponent part between said first and second input operands, said right shifter being also controlled, when the integer data should be converted into



floating point data, so as to output said first output of said comparator/selector without modification;
an inverter receiving data outputted from said right shifter for outputting the received data without modification when addition of said first and said second input operands is to be executed, said inverter outputting a 1's complement of the received data when subtraction of said first and said second input operands is to be executed;
a mantissa adder having a first input receiving said second output of said comparator/selector and a second input receiving an output of said inverter, said mantissa adder outputting a sum of said first and second input operands when addition of said first and said second input operands is to be executed, and also outputting a value obtained by adding "1" having a weight of the least significant bit to said sum of said first and second input operands when subtraction of said first and said second input operands is to be executed;
a bit position decoder receiving said output of said mantissa adder, said bit position decoder detecting and outputting a position of the most significant "1" bit in the output of said mantissa adder;
a normalizing shifter receiving said output of said mantissa adder and controlled by said output of said bit position decoder for shifting said output of said mantissa adder on the basis of said output of said bit position decoder for

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normalization of said output of said mantissa adder, an output of said normalizing shifter giving a mantissa part of the result of the addition/subtraction;

a second selector receiving said third output of said comparator/selector and a biased value for an exponent part, said second selector being controlled so as to output said third output of said comparator/selector when the floating point arithmetic operation should be executed, said second selector being also controlled so as to output said biased value when the integer data should be converted into floating point data; and

an exponent part updater receiving an output of said second selector and controlled by said output of said bit position decoder for modifying said third output of said comparator/selector on the basis of said output of bit position decoder, when the floating point arithmetic operation should be executed, so that an output of said exponent part updater gives a mantissa part of the result of the addition/-subtraction, said exponent part updater being controlled by said output of said bit position decoder for modifying said biased value on the basis of said output of said bit position decoder, when the integer data should be converted into floating point data, so that an output of said exponent part updater gives an exponent part of floating point data converted from the integer data,

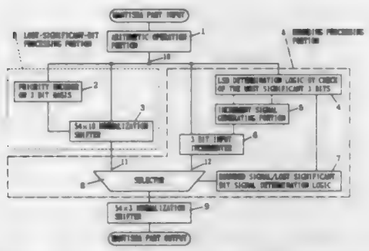
whereby when integer data expressed in 2's complement is applied as said first input operand, floating point data converted from said integer data can be constituted from said sign bit of said integer data, said output of said exponent updater and said output of said normalizing shifter.

5,303,175

FLOATING POINT ARITHMETIC UNIT

Hiroaki Suzuki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,984
Claims priority, application Japan, Aug. 10, 1992, 4-212785
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **14 Claims**



1. A float point arithmetic unit including an arithmetic operation portion performing an arithmetic operation for a mantissa part of floating point data, comprising:

counting means for counting the number of zeroes arranged in sequence from the upper bit toward the lower bit in an operation result from which information is lost by said arithmetic operation, for each partial data of a plurality of bits;

first normalization means for normalizing said operation result from which information is lost in response to the counted result of said counting means;

rounding processing means for rounding the operation result considering overflow and underflow of the arithmetic operation result by said arithmetic operation portion; and

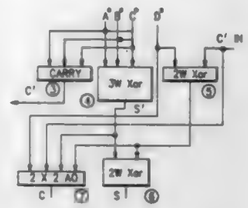
second normalization means for normalizing the operation result normalized by said first normalization means or the operation result rounded by said rounding processing means.

5,303,176

HIGH PERFORMANCE ARRAY MULTIPLIER USING FOUR-TO-TWO COMPOSITE COUNTERS

David A. Hrusecky, Johnson City; James E. Phillips, Binghamton, and Stamatis Vassiliadis, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1992, Ser. No. 916,937
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—759 **5 Claims**



1. A computing apparatus, comprising,

input means for receiving a multiplier and a multiplicand and for supplying partial product terms of the multipler and multiplicand,

a partial product reduction device for effecting partial product reduction of four partial products terms with a composite counter having a first pre-addition partial product addition counter stage and a second transmission partial product addition counter stage, the composite counter comprising two like four-to-two counter stages for pre-addition and for transmission addition, and wherein the like four-to-two counter stages each has five inputs, four of which are partial product terms and the other of which is a carry in, and wherein the first pre-addition partial product addition counter stage is a four-to-two counter having said five inputs, and having three outputs including a sum (S) at a weighted bit position (i), a second carry output (C) at a next adjacent weighted bit position for the more significant bit position (i−1) and a third carry output (C') provided to a next adjacent weighted more significant bit position (i−1);

said first pre-addition partial product addition four-to-two counter stage receiving the partial product terms and reducing the partial product terms to two which are coupled to an arithmetic logic unit;

said arithmetic logic unit coupled to said partial product reduction device, whereby the reduction of partial products to two is added by said arithmetic logic unit for producing results from a multiplication that can be used for subsequent processing in the apparatus.

5,303,177

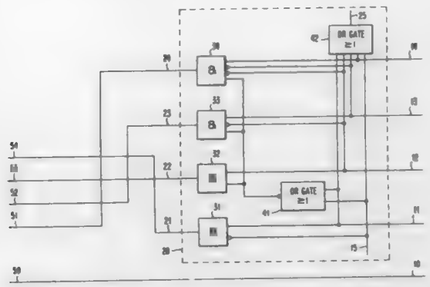
METHOD AND DEVICE FOR PERFORMING AN APPROXIMATE ARITHMETICAL DIVISION

Tore M. André, Bandhagen, and Mansoor F. Khan, Huddinge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 2, 1990, Ser. No. 691,878
Claims priority, application Sweden, Oct. 4, 1989, 8903265
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—764 **3 Claims**

1. A system for performing an approximate arithmetical division of a constant number by a number in binary form which includes a character bit, N1 whole-number bits and N2 binary character bits, where N1≧0 and N2≧0, including a first input signal terminal for obtaining said character bit, N1+N2 input signal terminals for obtaining said whole-number bits and binary character bits, a first output terminal for handling a character bit and N1+N2 output terminals for handling whole-number bits and binary character bits, comprising:

a logic device connected to said N1+N2 input terminals and said N1+N2 output terminals having means for receiving a first digital word from said input terminals, means for generating a second digital word which coincides with the first digital word, and means for substituting any logic ones of said second word which are less significant than the most significant logic one with logic zeroes; wherein said first output terminal is connected to said first input



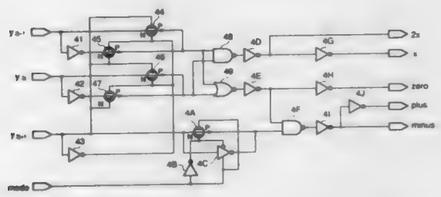
terminal and said N1+N2 output terminals are connected to corresponding output terminals of said logic device; and wherein starting with connecting the least significant bit of said second digital word to the most significant bit of said whole number and binary fraction bits, said logic device sequentially and repetitively connects the least significant bits of said second digital word to the most significant bits of the whole-number and binary function bits.

5,303,178

MULTIPLYING SYSTEM BASED ON THE BOOTH'S ALGORITHM AND GENERATING A POSITIVE OR NEGATIVE PRODUCT IN RESPONSE TO A MODE SIGNAL

Yasushi Ozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 830,400
Claims priority, application Japan, Jan. 31, 1991, 3-032444
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—760 **1 Claim**



1. A multiplying system based on the Booth's algorithm, comprising:

a second order Booth's decoder having a first input receiving a multiplier "Y" and a second input receiving a mode signal designating either a first multiplication of "X×Y" (where "X" is a multiplicand and "Y" is a multiplier) or a second multiplication of "−X×Y", said second order Booth's decoder being configured to fulfill the following input/output relation:

INPUT				OUTPUT				
mode	y_{2j+1}	y_{2j}	y_{2j-1}	2x	x	zero	plus	minus
0	0	0	0	0	1	1	1	0
0	0	0	1	1	0	0	0	1
0	0	1	0	0	1	0	1	0
0	0	1	1	0	1	0	0	1
0	1	0	0	0	1	0	1	0
0	1	0	1	0	1	0	0	1
0	1	1	0	1	0	0	1	0
0	1	1	1	0	1	1	1	0
1	0	0	0	0	1	1	1	0
1	0	0	1	1	0	0	1	0
1	0	1	0	0	1	0	0	1
1	0	1	1	0	1	0	1	0
1	1	0	0	0	1	0	0	1
1	1	0	1	0	1	0	1	0
1	1	1	0	1	0	0	0	1
1	1	1	1	0	1	1	1	0

where input values y_{2j-1}, y_{2j}, and y_{2j+1} are indicative of three continuous bits of said multiplier "Y", "mode" is indicative of a mode signal, "2x", "x" and "zero" indicates twice the multiplicand "X", the multiplicand "X" and zero, respectively, "plus" and "minus" indicate a sign of an output selected in by said signal "2x" or "x";

a partial product generation circuit receiving the multiplicand "X" and said signals "2x", "x", "zero", "plus" and "minus" outputted from said decoder, for generating either a first partial product of "X×Y" or a second partial product "−X×Y" in accordance with said sign selection signals "plus" and "minus";

a partial product summing circuit receiving an output of said partial product generation circuit;

an output register for holding a given value "A"; and

an arithmetic unit receiving an output of said partial product summing circuit and said given value "A" for writing the result of an accumulating multiplication A=A+X×Y or A=A−X×Y into said output register;

wherein said Booth's decoder includes:

a first NAND gate having a first input connected to receive said input signal y_{2j-1} through a first transfer gate and also to receive the same input signal y_{2j-1} through a second transfer gate and a first inverter, a second input of said NAND gate being connected to receive said input signal y_{2j} through a third transfer gate and also to receive the same input signal y_{2j} through a fourth transfer gate and a second inverter, said first to fourth transfer gates being controlled by said input y_{2j+1} in such a manner that when said input signal y_{2j+1} assumes the logic value "1", said first and third transfer gates are put in a signal blocking condition and said second and fourth transfer gates are put in a signal propagating condition;

a third inverter having an input connected to an output of said NAND gage and an output generating said output signal "2x";

a fourth inverter having an input connected to an output of said third inverter and an output generating said output signal "x";

a NOR gate having a pair of inputs connected to said first and second inputs of said first NAND gates, respectively;

a fifth inverter having an input connected to an output of said NOR gate;

a sixth inverter having an input connected to said output of said fifth inverter and an output generating said output signal "zero";

a second NAND gate having a first input connected to said output of said fifth inverter and a second input connected to receive said input signal y_{2j+1} through a fifth transfer gate and also to receive the same input signal y_{2j+1} through a tristate inverter, said fifth transfer gate and said tristate inverter being controlled by said mode signal in such a manner that when said mode signal has the logic level "0", said fifth transfer gate is put in a signal propagat-

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ing condition and said tristate transfer gate is put in a high impedance, and when said mode signal has the logic level "1", said fifth transfer gate is put in a signal blocking condition and said tristate inverter operates as an inverter;

a seventh inverter having an input connected to an output of said second NAND gate and an output generating said output signal "minus"; and

an eighth inverter having an input connected to an output of said seventh inverter and an output generating said output signal "plus".

5,303,179

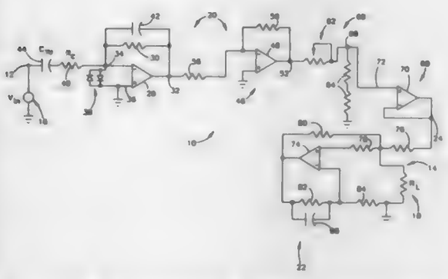
METHOD AND APPARATUS FOR ELECTRONICALLY SIMULATING CAPACITORS

Lalit Kumar, Shelburne, Vt., assignor to Simmonds Precision Products, Inc., Akron, Ohio

Filed Jan. 3, 1992, Ser. No. 816,274

Int. Cl.[5] G06G *7/62*

U.S. Cl. 364—802 **29 Claims**



1. A circuit that electronically simulates a capacitor such as a fuel tank capacitor comprising a first node connectable to an input signal, an output node connectable to a load, a differentiator that produces in response to said input signal an output signal proportional to rate of change of said input signal, and a high impedance current source that produces in response to said differentiator output signal an output node current having a capacitance-simulated amplitude and phase with respect to said input signal.

5,303,180

PIN PROGRAMMABLE DRAM THAT ALLOWS CUSTOMER TO PROGRAM OPTION DESIRED

Hugh P. McAdams, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 29, 1991, Ser. No. 752,111

Int. Cl.[5] G11C *5/06*

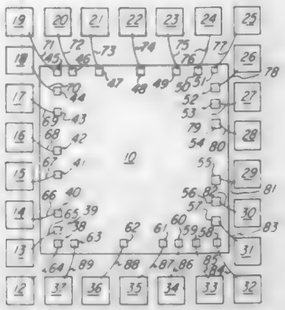
U.S. Cl. 365—63 **12 Claims**

1. An electronic device having selectable programmable features comprising:

an integrated circuit carrying plural programming bond pads, said programming bond pads each being connected to a respective programming lead pin;

said programming lead pins each being selectively connectable either to an external first voltage Vcc source or to an external second voltage Vss sources; and

programming option circuitry connected to said plural programming bond pads and sensing the voltage on each of said programming lead pins, said option circuitry producing at least one output signal of one state in response to a respective programming lead pin being coupled to said external first voltage Vcc source and of another state in



response to said respective programming lead pin being coupled to said external second voltage Vss source.

5,303,181

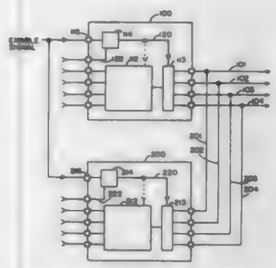
PROGRAMMABLE CHIP ENABLE LOGIC FUNCTION

David W. Stockton, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 691,546, Apr. 25, 1991, Pat. No. 5,179,540, which is a continuation of Ser. No. 796,215, Nov. 8, 1985, abandoned. This application Oct. 20, 1992, Ser. No. 963,468

Int. Cl.[5] G11C *17/16*

U.S. Cl. 365—96 **10 Claims**



9. A memory circuit arrangement, comprising:

a first memory device having an array of memory elements, a plurality of inputs and outputs for accessing the memory elements, an input for receiving first and second enable signals from an external source, and electrically programmable circuit means for selectively enabling the first memory device in response to one of said first and second enable signals; and

a second memory device having an array of memory elements, a plurality of inputs and outputs for accessing the memory elements, an input for receiving said first and second enable signals from said external source, and electrically programmable circuit means for selectively enabling the second memory device in response to the other of said first and second enable signals; and

wherein, at least one of the respective outputs of said first and second memory devices are connected together.

5,303,182

NONVOLATILE SEMICONDUCTOR MEMORY UTILIZING A FERROELECTRIC FILM

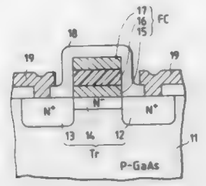
Hironobu Nakao, and Takashi Nakamura, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 6, 1992, Ser. No. 973,074

Claims priority, application Japan, Nov. 8, 1991, 3-321045; Nov. 11, 1991, 3-323930

Int. Cl.[5] G11C *11/22*

U.S. Cl. 365—145 **3 Claims**



1. A nonvolatile semiconductor memory device comprising:

a semiconductor layer;

a field-effect transistor formed on the semiconductor layer and comprising source and drain regions and a channel region;

a conductive film containing metal atoms and formed on the channel region; and

a ferroelectric capacitor comprising a ferroelectric film formed on the conductive film and a top electrode formed on the ferroelectric film, the ferroelectric capacitor storing data in the form of spontaneous polarization in the ferroelectric film;

wherein the conductive film serves both as a gate electrode of the field-effect transistor and as a bottom electrode of the ferroelectric capacitor.

5,303,183

SEMICONDUCTOR MEMORY DEVICE

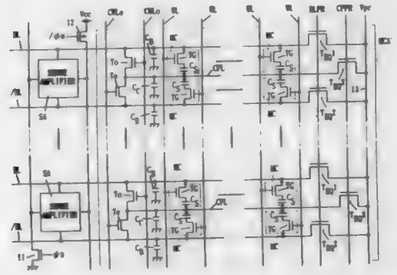
Mikio Asakura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1991, Ser. No. 705,812

Claims priority, application Japan, May 30, 1990, 2-142193; Apr. 15, 1991, 3-082348

Int. Cl.[5] G11C *11/24*

U.S. Cl. 365—149 **9 Claims**



1. A semiconductor memory device, comprising:

a plurality of word lines, and a plurality of bit lines crossing said word lines and arranged as complementary bit line pairs,

a plurality of memory cells arranged at respective crossings of said word lines and said bit lines,

a plurality of cell plate lines corresponding, respectively, to said bit line pairs,

each said memory cell comprising a transfer means and a capacitor for storing an information charge, the capacitor of each memory cell having a first plate connected, through corresponding said transfer means, to one bit line of a corresponding bit line pair and a second plate connected to the corresponding cell plate line,

first and second switches connected, respectively, between said cell plate line and said first bit line and between said cell plate line and said second bit line of each bit line pair, each of said first and second switches being common to a plurality of memory cells connected to each bit line pair; and

selector means for selecting a word line and a bit line corresponding to a particular memory cell,

transfer control means responsive to said selecting means for controlling the transfer means of the particular memory cell on one of said first and second bit lines of a selected bit line pair; and

switch control means for controlling said first and second switches to connect said cell plate line to the other one of said first and second bit lines of said selected bit line pair.

5,303,184

NON-VOLATILE SEMICONDUCTOR MEMORY HAVING COMMONLY USED SOURCE OR DRAIN REGIONS OF FLOATING GATE TYPE TRANSISTORS

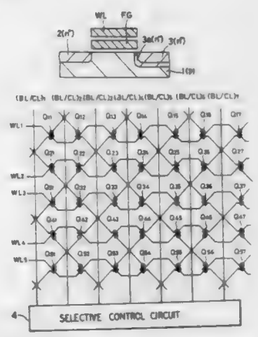
Masanori Noda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,195

Claims priority, application Japan, Nov. 30, 1990, 2-338491

Int. Cl.[5] G11C *11/34, 16/02*

U.S. Cl. 365—185 **3 Claims**



1. An electrically programmable memory device comprising:

a plurality of memory cells formed in a semiconductor substrate and arranged in rows and columns so as to form an X-character shape array, each cell including a control electrode and a first region and a second region having a conductivity type different from that of said substrate, said first region having a higher impurity concentration region and a lower impurity concentration region, said second region having a higher impurity concentration region;

a plurality of row lines wherein the control electrode of each cell in each row being coupled to the row line, each row of said cells storing bits from a plurality of data lines; and

alternate first and second column lines, the first region and the second region of each cell in each column being coupled to said first column line and said second column line, respectively, said first column lines selectively functioning as ground liens for inputting data during a data writing mode, and further said first column lines functioning as bit lines and said second column lines selectively functioning as ground lines for outputting data during a data reading mode.

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5,303,185

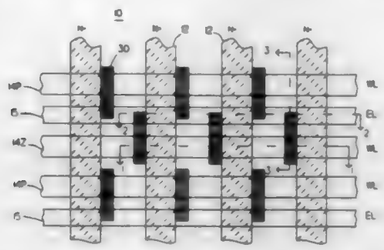
EEPROM CELL STRUCTURE AND ARCHITECTURE WITH INCREASED CAPACITANCE AND WITH PROGRAMMING AND ERASE TERMINALS SHARED BETWEEN SEVERAL CELLS

Emanuel Hazani, 1210 Sesame Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 377,311, Jul. 10, 1989, Pat. No. 5,099,297, which is a continuation-in-part of Ser. No. 327,663, Mar. 22, 1989, Pat. No. 5,047,814. This application Feb. 10, 1992, Ser. No. 832,977

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—185 **29 Claims**



1. A programmable non-volatile memory array formed on a semiconductor substrate comprising:

first and second split gate transistors each including: (a) a first channel region integrally formed in said substrate; (b) a floating gate of an electrically conductive material having a bit line defining edge, and said floating gate insulatively disposed over said first channel region; (c) a source region integrally formed in said substrate and spaced apart from said first channel region; (d) a second channel region integrally formed in said substrate and interposed between said first channel region and said source region and (e) a drain region integrally formed in said substrate adjacent to said first channel region and being partially disposed under said floating gate;

a bit line region, integrally formed in said substrate to be continuous with and join said drain regions of the first and second split gate transistors, said bit line region having opposed first and second sides arranged in a direction not parallel to a horizontal direction, and said opposed bit line sides are arranged not to have the same columnar alignment along a direction that is orthogonal to said horizontal direction; and

wherein said drain regions of said first and second split gate transistors are respectively: (a) positioned at said first and second sides of said bit line region; and (b) separated from each other in a vertical direction so as not to have the same horizontal row alignment.

5,303,186

SEMICONDUCTOR MEMORY AND PROCESS FOR MANUFACTURING THE SAME

Yoshimitsu Yamauchi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 20, 1992, Ser. No. 963,758

Claims priority, application Japan, Dec. 26, 1991, 3-345115

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—185 **3 Claims**

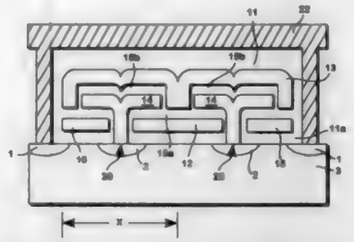
1. A semiconductor memory comprising a plurality of non-volatile DRAMs and volatile DRAMs overlaying an identical semiconductor substrate,

each of the non-volatile DRAMs comprising a word select transistor having a word selective gate electrode, a recall transistor having a recall gate electrode, a Flotox type memory transistor having a floating gate electrode and a capacitor having a storage node and a capacitor electrode, and

each of the volatile DRAMs comprising a select transistor having a selective gate electrode and a capacitor having a capacitor lower electrode, a storage node and a capacitor upper electrode;

the word selective gate electrode, the recall gate electrode and the floating gate electrode in the non-volatile DRAM and the selective gate electrode and the capacitor lower electrode in the volatile DRAM being formed of a first conductive layer on the semiconductor substrate,

the storage nodes in the non-volatile DRAM and volatile



DRAM being formed of a second conductive layer on the first conductive layer,

the capacitor electrode in the non-volatile DRAM and the capacitor upper electrode in the volatile DRAM being formed of a third conductive layer on the second conductive layer, and

any of the lower electrode and the upper electrode being common to a lower electrode and a upper electrode in their adjacent cells.

5,303,187

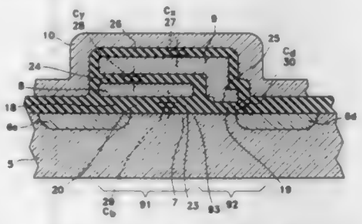
NON-VOLATILE SEMICONDUCTOR MEMORY CELL

Shih-Chiang Yu, 10451 Davison Ave., Cupertino, Calif. 95014

Filed Dec. 28, 1992, Ser. No. 997,236

Int. Cl.[5] H01L *29/68*; G11C *11/34*

U.S. Cl. 365—185 **9 Claims**



1. A non-volatile, electrically programmable and erasable, read-only memory cell formed on a surface of and within a semiconductor substrate, comprising:

a first source-drain region formed in the substrate adjacent to the surface;

a second source-drain region formed in the substrate adjacent to the surface, spaced apart from the first source-drain region and thereby defining a channel region between said first and second source-drain regions;

a first control gate, isolated from and overlying at least a portion of the channel region;

a floating gate isolated from and overlying at least a portion of the channel region and at least a portion of the first control gate; and

a second control gate, dielectrically isolated from the first control gate and the floating gate, and overlying at least a portion of the floating gate and the source-drain regions.

5,303,188

SEMICONDUCTOR MEMORY DEVICE REGULABLE IN ACCESS TIME AFTER FABRICATION THEREOF

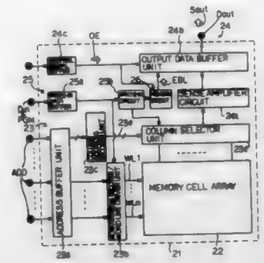
Takaki Kohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 52,664

Claims priority, application Japan, Apr. 28, 1992, 4-136231

Int. Cl.[5] G11C *7/00, 11/40*

U.S. Cl. 365—189.05 **4 Claims**



1. A semiconductor memory device comprising:

a) a memory cell array having a plurality of non-volatile memory cells each addressable with an address signal;

b) an addressing means associated with said memory cell array for allowing an external device to selectively access data information stored in said non-volatile memory cells indicated by said address signal;

c) a data transferring means coupled between an output data port and said memory cell array, and having a main output data buffer circuit originally installed in said data transferring means and driving an external load coupled with said output data port for supplying the accessed data information to an external device, and an auxiliary output data buffer circuit enabled with an internal enable signal for driving said external load together with said main output data buffer circuit; and

d) a non-volatile memory means for storing an external control data signal indicative of activation of said auxiliary output data buffer circuit after completion of a fabrication process of said semiconductor memory device, and operative to produce said internal enable signal while storing said control data signal.

5,303,189

HIGH-SPEED MEMORY WITH A LIMITER OF THE DRAIN VOLTAGE OF THE CELLS

Jean Devin; Emilio Yero, both of Aix En Provence, and Claude Costabello, Marseille, all of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Mar. 1, 1991, Ser. No. 663,410

Claims priority, application France, Mar. 5, 1990, 90-02737

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—189.06 **31 Claims**

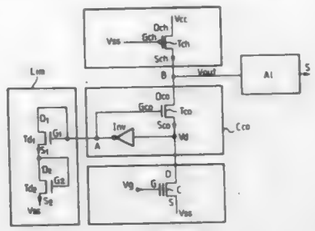
1. An erasable and electrically programmable memory, comprising:

an array of rows and columns, each column having a plurality of memory cells and a respective bit line, and each said bit line having a respective preload circuit;

a respective compensation circuit connected in series between each of said memory cells and the respective bit line of said corresponding column,

each said compensation circuit including a compensation transistor and an inverter, wherein an output of said inverter is connected to a gate of said compensation transistor; and

a voltage limiter connected to said gate of said compensation transistor to prevent the value of the voltage at said gate



of said compensation transistor from rising above a limit voltage imposed by said voltage limiter.

5,303,190

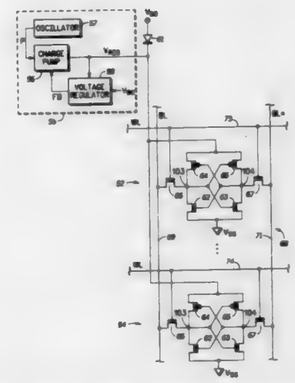
STATIC RANDOM ACCESS MEMORY RESISTANT TO SOFT ERROR

Perry H. Pelley, III, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1992, Ser. No. 966,910

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.11 **19 Claims**



1. A static random access memory resistant to soft error, comprising:

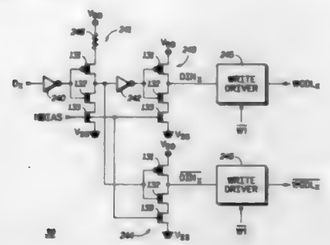
a plurality of static random access memory cells coupled to word lines and bit line pairs, each memory cell for receiving data from, or providing data to the bit line pair to which it is coupled, when the word line to which it is coupled is enabled;

a power supply voltage terminal for receiving a power supply voltage at a first potential; and

charging circuit means, coupled to said plurality of memory cells, and to said power supply voltage terminal, for providing a boosted supply voltage to said plurality of memory cells at a second potential, said second potential higher than said first potential, and said second potential is provided to said plurality of memory cells when said plurality of memory cells are both receiving said data and providing said data.

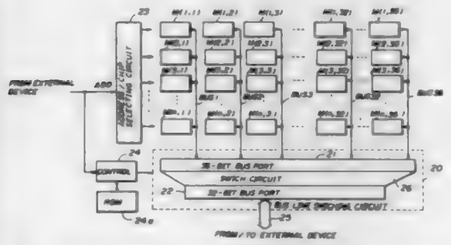
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,191
MEMORY WITH COMPENSATION FOR VOLTAGE, TEMPERATURE, AND PROCESSING VARIATIONS
John W. Eagan; Scott G. Nogle, and Ruey J. Yu, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 23, 1992, Ser. No. 824,666
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—194 25 Claims



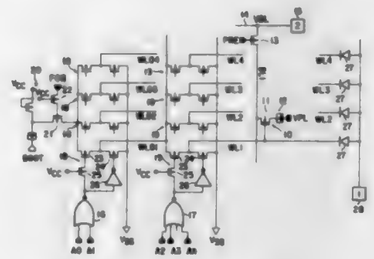
1. A memory with compensation for voltage, temperature, and processing variations comprising:
input means for receiving a plurality of input signals, and for providing a plurality of internal signals in response thereto;
a memory portion for storing a plurality of memory bits at locations determined by a plurality of decoded signals; and
decoding means coupled to said input means and to said memory portion for activating at least one of said plurality of decoded signals in response to said plurality of internal signals;
said input means including means for delaying at least one transition of at least one of said internal signals for a first delay, said delaying means including means for compensating said delaying means to keep said first delay substantially constant with respect to voltage, temperature, and processing variations.

5,303,192
SEMICONDUCTOR MEMORY DEVICE HAVING INFORMATION INDICATIVE OF PRESENCE OF DEFECTIVE MEMORY CELL
Fumio Baba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 493,433, Mar. 14, 1990, abandoned. This application Feb. 6, 1992, Ser. No. 831,662
Claims priority, application Japan, Mar. 14, 1990, 1-68404
Int. Cl.[5] G11C *7/00*; G06F *11/16*
U.S. Cl. 365—200 23 Claims



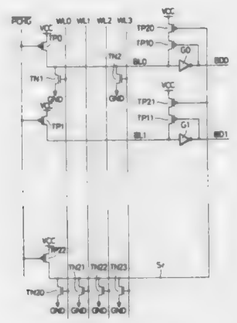
1. A semiconductor memory device storing data having a unit of N bits (N is an integer), comprising:
M alternate memory elements having a plurality of memory cells (M is an integer and larger than N), each of said alternate memory elements being divided into a plurality of blocks, each of said memory blocks having a plurality of said memory cells in at least one column, and each of said memory cells storing one-bit data;
M first bus lines each carrying one-bit data and connected to a corresponding one of said M alternate memory elements;
designating means, coupled to said M alternate memory elements, for receiving an address signal from an external device and for designating one of said plurality of blocks of each of said M alternate memory elements so that at least M blocks are designated by said address signal;
memory means for storing information on whether or not each of said plurality of blocks of each of said M alternate memory elements has a defective memory cell and for outputting said information in accordance with said address signal;
N second bus lines each carrying one-bit data; and
bus line switching means, provided between said M first bus lines and N second bus lines and connected to said memory means, for determining whether each of said at least M blocks designated by said designating means has a defective memory cell by referring to said information from said memory means and for selectively connecting N of said M first bus lines to said N second bus lines so that one of said M blocks which has a defective memory cell is prevented from being selected and so that an alternate one of said M blocks of an alternate one of said M alternate memory elements is selected,
said bus line switching means including N switches each connected between L (L is an integer and L<N<M) internal bus lines among said M internal bus lines and one of said N external bus lines, each of said N switches connecting one of said L internal bus lines to said one of said N external bus lines in accordance with said information supplied from said memory means.

5,303,193
SEMICONDUCTOR DEVICE
Masaki Ogihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 26, 1991, Ser. No. 813,580
Claims priority, application Japan, Dec. 27, 1990, 2-418753
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 21 Claims



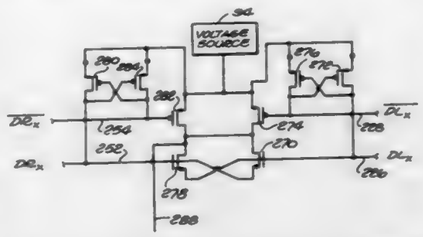
1. A semiconductor device comprising:
a plurality of MOS transistors arranged in a matrix form of rows and columns, each MOS transistor having a rated voltage characteristic for a normal operation;
a plurality of common wiring lines commonly connected to gates of MOS transistors arranged in the same row or the same column;
a plurality of diodes each having a first terminal and a second terminal, the first terminal of each of said diodes connected to a corresponding one of said common wiring lines, said diodes being formed in a substrate of said semiconductor device to be electrically isolated from said substrate; and
a stress voltage applying means for controlling a potential of the second terminal of each of said diodes and simultaneously applying a stress voltage higher than said rated voltage characteristic to all said common wiring lines or to an arbitrary number of said common wiring lines, wherein the arbitrary number is not less than a number of common wiring lines selected during said normal operation, said stress voltage applying means including a stress test terminal, coupled to said second terminal of each of said diodes, wherein said stress test terminal is connected to a node having one of a ground potential or a predetermined negative potential to thereby prevent forward bias of said plurality of diodes.

5,303,194
READ ONLY MEMORY
Hiroshi Suzuki, Ichikawa, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan
Filed Oct. 23, 1992, Ser. No. 965,421
Claims priority, application Japan, Oct. 30, 1991, 3-311918
Int. Cl.[5] G11C *9/00*
U.S. Cl. 365—203 6 Claims

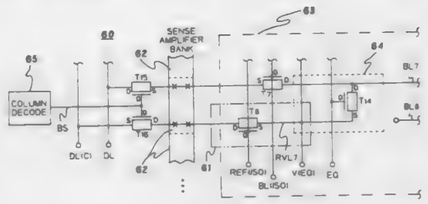


1. A read only memory, comprising:
at least one bit line;
a plurality of word lines, wherein each intersection between one bit line and one word line has one of a presence and an absence of a transistor in order to provide a corresponding one of a connection and a disconnection between the bit line and the word line;
reset means for setting the logic state of the plurality of bit lines to a reset logic state; wherein, when one of the plurality of word lines is selected, the reset logic state of each bit line is altered to a data logic state based on the presence and absence of transistors in the intersections between each bit line and the selected word line; and
at least one bit data holding means, each bit data holding means associated with a corresponding bit line, for holding the data logic state of the corresponding bit line only when the intersection between the corresponding bit line and the selected one of the plurality of word lines has an absence of said transistor.

5,303,195
TRANSDUCER SYSTEM
Michael J. Brunolli, Escondido, Calif., assignor to Brooktree Corporation, San Diego, Calif.
Continuation of Ser. No. 316,333, Feb. 27, 1989, abandoned, which is a division of Ser. No. 810,911, Dec. 18, 1985, Pat. No. 4,905,189. This application Jul. 27, 1992, Ser. No. 920,265
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—205 25 Claims
1. In combination,
a plurality of first lines,
a resultant line for passing an output signal,
first means for providing a plurality of input signals each having first and second characteristics,
second means for introducing each individual one of the input signals to an associated one of the first lines,
a plurality of first transistors each connected to an associated one of the first lines to become conductive upon the occurrence of the first characteristics in the associated one of the input signals introduced to such line, and
third means including a second plurality of transistors each operatively coupled to an individual one of the first transistors and an individual pair of the first lines for providing for the passage of the output signal to the resultant line through the particular one of the first transistors conductive in accordance with the occurrence of the first characteristics in the associated one of the input signals and for preventing any output signal from passing through the other ones of the first transistors to the resultant line.



5,303,196
OPEN BIT LINE MEMORY DEVICES AND OPERATIONAL METHOD
Hoo D. Sang, Mahopac, N.Y., and Edmund J. Sprogis, Underhill, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 22, 1992, Ser. No. 888,226
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—206 25 Claims



12. A dynamic random access memory device comprising:
a plurality of memory cells arranged in an open bit line configuration, at least some of said memory cells being interconnected by a bit line, said bit line for performing selection of said interconnected memory cells;
means for selecting a particular one of said interconnected memory cells for reading;
a reference voltage line associated with said one bit line, said reference voltage line providing a reference voltage signal,
a sense amplifier coupled to said one bit line for sensing a developing signal from said selected one of said plurality of interconnected memory cells during a predefined bit line signal development period, said sense amplifier also being coupled to said reference voltage line for receiving said reference voltage signal, said sense amplifier including means for setting to one of two logic states based upon a determined differential between a sensed signal on said bit line and said reference voltage signal during a predefined setting period; and
means for electrically isolating said bit line and said associated reference voltage line from said sense amplifier for at

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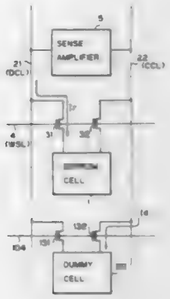
least a portion of said predefined setting period so that any signal variations on said bit line or said associated reference voltage line are isolated from said sense amplifier.

5,303,197

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING EEPROM CELL, DUMMY CELL, AND SENSE CIRCUIT FOR INCREASING RELIABILITY AND ENABLING ONE-BIT OPERATION

Takumi Miyashita, Inagi; Toshiyuki Teramoto, Kawasaki, and Haruo Koizumi, Iruma, all of Japan, assignors to Fujitsu Limited, Japan

Filed Apr. 24, 1991, Ser. No. 690,482
Claims priority, application Japan, Apr. 25, 1990, 2-107516
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—210 **20 Claims**



1. A non-volatile semiconductor memory device comprising:
first and second signal lines;
a memory cell, operatively connected to said first and second signal lines, for storing data;
a dummy cell, operatively connected to said first and second signal lines; and
a sense circuit, for amplifying the difference between a potential of said first signal line and a potential of said second signal line;
wherein, when a first current flowing through said memory cell from said first signal line, in response to data stored in said memory cell, is larger than a second current flowing through said dummy cell from said second signal line at a read-out operation, said second current is decreased; and when said first current is smaller than said second current at the read-out operation, said second current is increased.

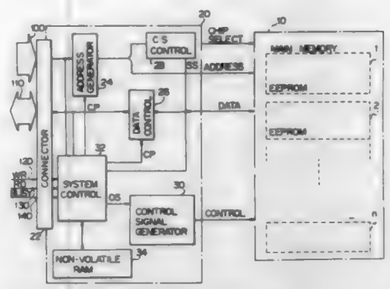
5,303,198

METHOD OF RECORDING DATA IN MEMORY CARD HAVING EEPROM AND MEMORY CARD SYSTEM USING THE SAME

Kaoru Adachi, and Kouichi Gouhara, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 5, 1991, Ser. No. 726,173
Claims priority, application Japan, Sep. 28, 1990, 2-257374; Sep. 28, 1990, 2-257375
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **4 Claims**

1. A method of recording data in a memory card having a main memory which is implemented by a collective erasure type EEPROM (Electrically Erasable Programmable Read Only Memory), said method comprising the steps of:
providing said memory card with at least two EEPROMs having an identical capacity, and conditioning at least one of said EEPROMs for a spare memory in which no data is stored;
copying, in response to an access which is to rewrite data stored in one of said EEPROMs, all of said data of said one EEPROM except for data stored in a storage location of an address to rewrite in said spare memory;
replacing a relative address of said spare memory and a relative address of said one EEPROM to convert said spare memory to a data holding memory;



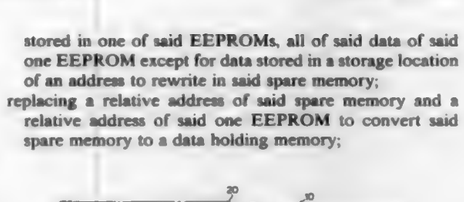
collectively erasing said one memory to convert said one memory to a spare memory; and
writing in a storage location of a non-occupied address of said EEPROM having been converted to a data holding memory data which had been interrupted, thereby rewriting data.

5,303,199

REDUNDANT MEMORY DEVICE HAVING A MEMORY CELL AND ELECTRICALLY BREAKABLE CIRCUIT HAVING THE SAME DIELECTRIC FILM

Hiroshi Ishihara, Tenri, and Makoto Tanigawa, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1991, Ser. No. 656,441
Claims priority, application Japan, Feb. 19, 1990, 2-39451
Int. Cl.[5] H01L *21/70;* **G11C** *11/40*
U.S. Cl. 365—225.7 **5 Claims**



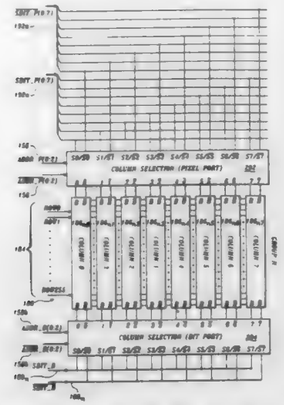
1. A semiconductor device which comprises a dynamic random access memory (DRAM) unit and a redundancy circuit therefor,
the DRAM unit being comprised of a MOS transistor and a capacitor connected to the MOS transistor, the capacitor being comprised of a dielectric film interposed between two electrodes, the dielectric film being comprised of a silicon oxide/silicon/nitride/silicon oxide composite layer,
the redundancy circuit having an electrically breakable dielectric film interposed between two electrodes, the electrically breakable dielectric film being the same film as the dielectric film of a silicon/oxide/silicon nitride/silicon oxide composite layer and interposed at a connection between the DRAM unit and the redundancy circuit,
whereby the application of a predetermined voltage to the two electrodes between which the breakable dielectric film is interposed breaks the breakable dielectric film and electrically connects the DRAM unit and the redundancy circuit.

5,303,200

N-DIMENSIONAL MULTI-PORT MEMORY

Steven E. Elrod, Kent, and John S. Jensen, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 2, 1992, Ser. No. 907,715
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.05 **28 Claims**



11. An integrated circuit for storing and accessing data represented as if stored in an N-dimensional array, comprising:
(a) data storage means for selectively writing the data at specified locations in the circuit, where the locations are uniquely defined by N coordinates so that the data are represented as being stored in one of a plurality of memory planes comprising the N-dimensional array, the memory planes being organized as logically orthogonal sets of memory planes, whereby the data can subsequently be retrieved and read from said specified locations;
(b) address means for identifying each of said specified locations with a plurality of the coordinates that comprise an address identifying a location in one of the memory planes in the logically orthogonal sets of memory planes;
(c) input/output means, including a plurality of ports each of which conveys data to and from the data storage means, for storage and retrieval at the specified locations identified by the coordinates; and
(d) multiplexing means for controlling access of the input-/output means to the data in accordance with the addresses of the data so that each port conveys data for a different set of the logically orthogonal sets of memory planes.

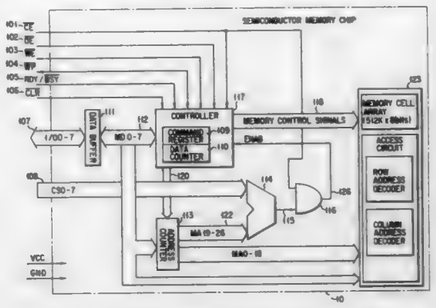
5,303,201

SEMICONDUCTOR MEMORY AND SEMICONDUCTOR MEMORY BOARD USING THE SAME

Hiroyuki Sakamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1993, Ser. No. 39,906
Claims priority, application Japan, Mar. 30, 1992, 4-71954
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—236 **19 Claims**

14. A semiconductor memory comprising:
a memory cell array;
a plurality of data input/output terminals for exchanging input/output data to/from said memory cell array with an external circuit;
an address counter for sequentially incrementing a value of address data set therein, and outputting an incremented value of the address data;
means for receiving a command supplied from the external circuit via said data input/output terminals, and setting a value of the address data designated by the command in said address counter; and
an access circuit for selectively accessing said memory cell array in accordance with a value of a lower bit portion, corresponding to a memory capacity of said memory cell array, of the address data output from said address counter.

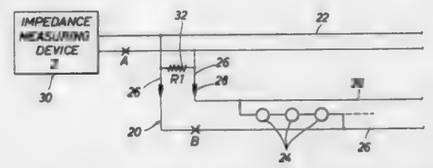


5,303,202

METHOD FOR DETECTING BREAKS IN GEOPHONE CABLES FOR SEISMIC DATA ACQUISITION SYSTEM

Paul E. Carroll, 12203 Mile Dr., Houston, Tex. 77065, and Glenn D. Fisseler, 7918 Roos, Houston, Tex. 77036

Filed Sep. 1, 1993, Ser. No. 115,880
Int. Cl.[5] H04B *17/00*
U.S. Cl. 367—13 **5 Claims**



1. In a seismic data acquisition system including a takeout conductor pair connected at a takeout connection to a seismic cable conductor pair, a method of identifying the location of a break in the conductor pair or the takeout conductor pair comprising the steps of:
electrically connecting a test impedance across the takeout conductor pair adjacent the connection of said takeout conductor pair to said seismic cable conductor pair;
measuring the impedance of said seismic cable conductor pair at its end;
identifying a break in said seismic cable conductor pair between said end of said seismic cable conductor pair and said takeout connection if said impedance is approximately infinite; and
identifying a break in said takeout conductor pair if said impedance is approximately the same as said test impedance.

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5,303,203

METHOD FOR REDUCING NOISE EFFECTS IN ACOUSTIC SIGNALS TRANSMITTED ALONG A PIPE STRUCTURE

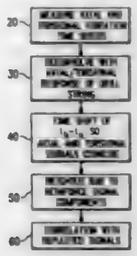
John E. E. Kingman, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 746,172, Aug. 14, 1991, Pat. No. 5,130,951, which is a continuation of Ser. No. 564,621, Aug. 8, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 911,413

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] **G01V** *1/14, 1/40*

U.S. Cl. 367—75 **7 Claims**



1. A method for improving the signal quality of vibrations comprising axial and torsional components, transmitted over a known distance along a structure between a first location at which the vibrations are generated and a second location, comprising the steps of:

detecting axial and torsional components of the vibrations at said second location, and storing first and second time series representations corresponding to said axial and torsional components, respectively;

calculating a delay time corresponding to the known distance between said first location and said second location multiplied by the difference between the velocities of axial and torsional vibrations in the structure;

calculating a constant corresponding to the ratio of the amplitude of axial noise vibrations in the structure to the amplitude of torsional noise vibrations in the structure;

multiplying said second time series representations by said constant; and

time shifting one of said first and second time series representations relative to the other of said first and second time series representations by an amount corresponding to said delay time; and

after said multiplying and time shifting steps, adding said first and second time series representations to one another so that the axial and torsional components of the generated vibrations reinforce one another.

5,303,204

SUBMERGED OBJECT WARNING AND LOGGING SYSTEM

Shalom Wertsberger, P.O. Box 2769, South Portland, Me. 04116-2769

Filed Feb. 23, 1993, Ser. No. 21,202

Int. Cl.[5] **G01S** *15/93*

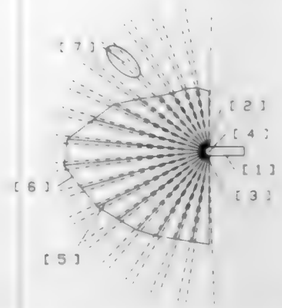
U.S. Cl. 367—099 **19 Claims**

1. A ship warning system for providing detection and warning of submerged objects comprising:

transducer means mounted on the ship and constructed to provide multidirectional radiation of detection signals at least in a direction of travel of the ship, below the ship, and radiating sideways from the ship's heading, said transducer means also including detectors for receiving detection signals reflected from submerged objects;

a detection signal processing system for measuring the distance and bearing of submerged objects based on reflected detection signals;

said detection signal process system defining an envelope of selected distances and bearings from the ship for flagging a submerged object detected within said envelope;



said detection signal processing system comprising a variable control of setting the specified distances and bearings for defining and varying the dimensions of the envelope; and

warning means for providing an indication upon detection of a submerged object within the defined envelope.

5,303,205

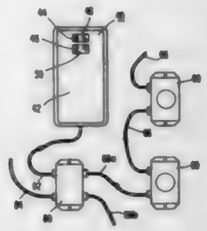
VEHICULAR DISTANCE MEASURING SYSTEM WITH INTEGRAL MIRROR DISPLAY

Dale R. Gauthier, Cedar, and Thomas R. Wayne, Grand Rapids, both of Mich., assignors to Trend Tec Inc., Traverse City, Mich.

Continuation-in-part of Ser. No. 484,626, Feb. 26, 1990, Pat. No. Des. 340,903. This application Jul. 2, 1992, Ser. No. 908,267

Int. Cl.[5] **G01S** *15/00*

U.S. Cl. 367—108 **54 Claims**



1. A vehicular distance measuring system, comprising:

a distance measuring device arranged to detect a distance to an object and, in response, to output a distance signal; and

a display structure including

(i) a vehicular mirror having an image reflecting surface with a window portion located therein, and

(ii) a digital display mounted on said vehicular mirror and viewable through said window portion, said digital display being activated in continuous response to said distance signal for displaying the detected distance to the object.

5,303,206

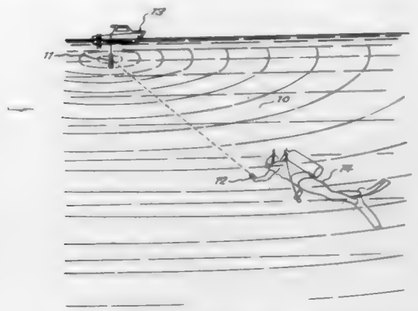
METHOD AND APPARATUS FOR MEASURING DISTANCE AND DETERMINING DIRECTION IN A FLUID MEDIUM

Richard Bemb, 18 Idlewood Dr., Tonawanda, N.Y. 14150, and Edward Crovella, 425 Roycroft, Amherst, N.Y. 14226

Filed Jul. 17, 1992, Ser. No. 916,289

Int. Cl.[5] **G01S** *3/80*

U.S. Cl. 367—127 **41 Claims**



1. A method of determining distance between two locations in a fluid medium, comprising:

transmitting a first periodic signal from a first device located at a first location within said fluid medium, wherein said first device is capable of transmitting a signal only and is incapable of receiving a signal;

receiving said first periodic signal by a second device located within said fluid medium;

initially synchronizing in time said first periodic signal with a second periodic signal generated by and contained within said second device, wherein said synchronizing occurs when said first and second devices are proximate one another; and

at any time thereafter, determining the distance between said first and second devices by measuring a time difference between said first periodic signal, which continues to be received by said second device, relative to said second periodic signal generated by and contained within said second device, where said time difference is related to the distance between the first and second devices.

5,303,207

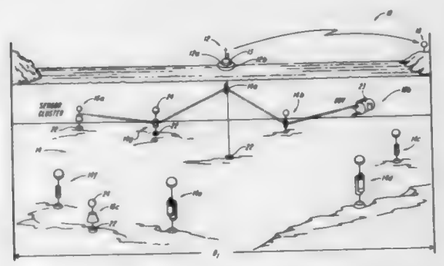
ACOUSTIC LOCAL AREA NETWORKS

David P. Brady, Newton, and Josko A. Catipovic, Woods Hole, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Oct. 27, 1992, Ser. No. 967,346

Int. Cl.[5] **H04B** *11/00*

U.S. Cl. 367—134 **17 Claims**



1. A network node receiver for simultaneously receiving signals from a plurality of stations coupled to a local area network and for resolving collisions between the received signals, said network node receiver having an input port and an output port and comprising:

a soft decision processor, having an input port coupled to the input port of the network node receiver, for making an initial interpretation of the characteristics of data fed thereto;

a channel estimator for providing a signal corresponding to the characteristics of a communication channel;

an interference estimator coupled to said soft decision processor and said channel estimator, wherein said interference estimator receives a first signal from said soft decision processor and a second signal from said channel estimator and provides an interference signal at an output port;

a summing circuit having a first input port coupled to the input port of the network node receiver, a second input port coupled to the output port of said interference estimator and an output port coupled to an output port of the network node receiver, wherein said summing circuit combines the signals fed thereto at the first and second input ports and provides an output signal to the output port of said network node receiver.

5,303,208

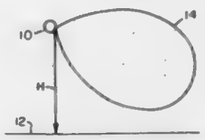
SIDE LOOKING SONAR TRANSDUCER

John A. Dorr, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,415

Int. Cl.[5] **H04R** *17/00*

U.S. Cl. 367—153 **4 Claims**



1. Side looking sonar apparatus comprising:

a) a plurality of transducer active elements each having an active surface of a certain length and width;

b) said elements being arranged in end-to-end relationship and lying substantially along a line extending between end points;

c) the depression angle of said elements nearer said end points being less than the depression angle of elements near the center of said line.

5,303,209

ELECTROACOUSTIC TRANSDUCER HAVING A PARTITION WALL AND A MASK WALL

Ewald Frasl, Biedermannsdorf, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 16, 1993, Ser. No. 78,718

Claims priority, application Austria, Mar. 4, 1993, 419/93

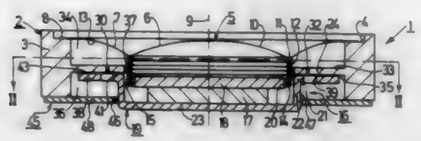
Int. Cl.[5] **H04R** *21/00*

U.S. Cl. 367—174 **10 Claims**

1. An electroacoustic transducer (**1**) having a diaphragm (**5**) constructed to be capable of vibration parallel to a transducer axis (**9**), which transducer comprises a partition wall (**24**) facing the back (**13**) of the diaphragm, which partition wall substantially extends transversely of the transducer axis (**9**) and is transversed by at least one partition opening (**25**, **26**, **27**, **28**, **29**, **30**, **31**, **32**) to form a passage between a first space (**34**) situated between the diaphragm (**5**) and one side (**33**) of the partition wall (**24**) and a second space (**36**) situated at the other side (**35**)

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of the partition wall (24), which partition wall is formed with and surrounds a central passage (37) belonging to the first space (34), and a mask wall (38) arranged adjacent one (35) of the two sides (33, 35) of the partition wall (24) and having at least one mask-wall opening (39, 40, 41, 42) to form a passage between the two spaces (34, 36), which mask wall is connected in a mechanically rigid manner to the partition wall (24) by means of a continuous acoustically sealed joint (43) situated radially outside the openings (25, 26, 27, 28, 29, 30, 31, 32, 39, 40, 41, 42) in the two walls (24, 38), one (24) of the two walls (24, 38) being provided with at least one opening (29, 30, 31, 32) having a small cross-sectional area of at the most 0.2 mm^2 and an opening (39, 40, 41, 42) of large cross-sectional area in the other wall (38) being coincident with at least one opening



(29, 30, 31, 32) of small cross-sectional area in the one wall (24) to form at least one passage having a small acoustically active cross-sectional area between the two spaces (34, 36) in the direction of the transducer axis (9), characterized in that each opening (29, 30, 31, 32) of small cross-sectional area in one (24) of the two walls (24, 38) is situated between two spacer elements (49 and 50, 51 and 52, 53 and 54, 55 and 56, respectively) arranged between the two walls (24, 38) and having substantially the same distance from the central passage (37) in the partition wall (24), and each time two spacer elements (49 and 50, 51 and 52, 53 and 54, 55 and 56, respectively) together with the two walls (34, 38) circumferentially bound a duct-like gap (57, 58, 59, 60) situated between the two walls (24, 38) and leading to the passage (37) in the partition wall (24) to form an acoustic resistance.

5,303,210

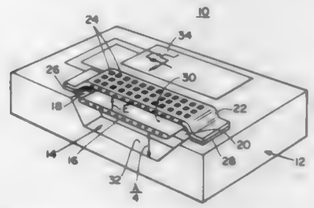
INTEGRATED RESONANT CAVITY ACOUSTIC TRANSDUCER

Jonathan Bernstein, Medfield, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Oct. 29, 1992, Ser. No. 968,285

Int. Cl.[5] H04R *19/00*

U.S. Cl. 367—181 **16 Claims**



1. An integrated resonant cavity acoustic transducer, comprising:

a substrate chip having a cavity with a back wall;

a movable plate electrode;

means for resiliently mounting said movable plate electrode across said cavity in said substrate chip;

a perforated electrode spaced from said movable plate electrode and mounted across said cavity in said substrate chip; and

said cavity having a depth from said movable electrode to the back wall of said cavity of approximately one quarter wavelength of an acoustic wave for enabling constructive interference between the primary and reflected acoustic waves for maximizing the displacement of said movable electrode.

5,303,211

WALL CLOCK

Makoto Yanaka, and Hideo Irie, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Sep. 27, 1989, Ser. No. 414,090

Claims priority, application Japan, Oct. 4, 1988, 63-130357[U]

Int. Cl.[5] G04B *19/00, 19/04*

U.S. Cl. 368—76 **11 Claims**



1. A clock comprising:

an hour dial;

a timepiece movement fixedly mounted to the dial and disposed behind the dial, wherein the movement includes a rotatable hour hand shaft projecting therefrom and through the dial;

an hour hand connected to the hour hand shaft in front of the dial;

a first wheel disposed behind the dial and rotatable with the hour hand shaft and having means therearound for receiving a belt;

a second wheel having means therearound for receiving a belt;

a belt disposed around the first and second wheels to suspend and rotate the second wheel in response to the rotation of the first wheel so that the second wheel is suspended only by the belt;

wherein the first and second wheels have diameters in a predetermined ratio to rotate the second wheel at a given number of rotations per rotation of the first wheel;

a minute hand shaft projecting from the second wheel and rotatable therewith;

a minute hand fixed to the minute hand shaft and rotatable therewith;

a minute dial disposed between the second wheel and the minute hand; and

means connected to the minute dial to effect relative rotation between the minute hand shaft and the minute dial.

5,303,212

LOW VOLTAGE, HIGH CURRENT MAGNETIC TRANSDUCER DRIVE SYSTEM FOR DIGITAL RECORDING

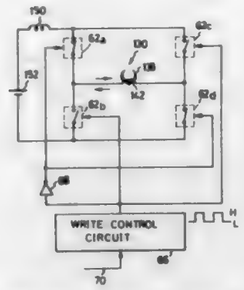
Shou Sugiyama, Iruma, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,197

Claims priority, application Japan, Jul. 11, 1991, 3-62103

Int. Cl.[5] G11B *11/00*

U.S. Cl. 369—13 **2 Claims**



1. A low voltage, high current digital recording system comprising:

(a) a magnetic transducer having a magnetic core and a first and second coil would in opposite directions on the core;

(b) a power source of direct current;

(c) a first switch connected between the first transducer coil and the power source;

(d) a second switch connected between the second transducer coil and the power source

(e) a single inductance connected in series with the power source and the first and the second transducer coils; and

(f) a write control circuit connected to the first and the second switches for applying thereto a binary write control signal representative of digital information to be recorded, in order to cause the switches to be alternately turned on and off, with the consequent alternate excitation of the first and the second transducer coils from both the power source and the inductance.

5,303,213

UNIDIRECTIONAL CORRECTION ARRANGEMENT FOR A TIME DISPLAYING DEVICE

Laurent Kaelin, Bienne, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Granges, Switzerland

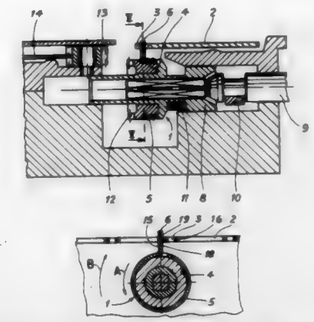
Filed Sep. 11, 1992, Ser. No. 943,705

Claims priority, application Switzerland, Sep. 11, 1991, 02671/91

Int. Cl.[5] G04B *19/24*

U.S. Cl. 368—185 **7 Claims**

1. A unidirectional correction arrangement for at least one time displaying device in a timepiece, said display device having a circular element provided with teeth, comprising: a cylindrical element, a lightly tightened helical spring wrapped around the cylindrical element, the spring having two ends, one of which ends is radially raised so as to serve as a finger adapted to come into contact with a tooth of the circular element and to cause the circular element to rotate only when said cylindrical element is driven in a first sense (A) of rotation for which a force exerted on the finger by the tooth is directed in a sense tending to wrap the helical spring around the cylindrical element and to tighten it thereabout, said circular element remaining stationary when the cylindrical element is driven in a second sense (B) of rotation for which the force exerted on the finger by the tooth is directed in a sense tending



to open the helical spring and to free it from said cylindrical element.

5,303,214

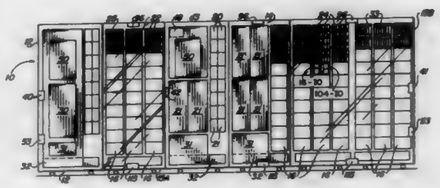
MULTI-MEDIA-TYPE AUTOMATIC LIBRARIES

John E. Kulakowski, and Rodney J. Means, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1992, Ser. No. 816,590

Int. Cl.[5] G11B *17/22, 15/68*

U.S. Cl. 369—34 **84 Claims**



1. In an apparatus for storing and retrieving diverse media-containing cartridges, first and second types of said cartridges respectively containing recording media having different physical and data recording characteristics so as to be incompatible such that one media drive does not access both of said first and second types of media, including, in combination:

a plurality of like-sized media-cartridge storing bins, each bin having a predetermined plurality of cartridge receiving and storing slots, a plurality of said media-containing cartridges in said bins;

cabinet means having a first open side;

cartridge storage array means disposed in the cabinet means adjacent said first open side and having first and second oppositely facing open sides, a plurality of like-size bin receptacles in said cabinet means, each said bin having a cartridge access opening at both said first and second open sides for removably receiving respective ones of said cartridges;

an openable door on said first side of the cabinet means for closing the first side for preventing access to said receptacles;

door sensing means on one of said means and disposed in juxtaposition to said openable door for sensing and indicating whether the openable door is closed or open;

bin sensing means disposed in each of said receptacles adjacent said second open side of the array means for sensing and indicating the presence or absence of a bin in the respective receptacle;

a plurality of cartridge-receiving devices in the cabinet

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means, each said device having a cartridge receiver opening, a first one of said devices being capable of receiving and operating only with a first type of media cartridge having a first cartridge outline, a second one of said devices being capable of receiving and operating only with a second type of medin cartridge having a second cartridge outline, said first and second cartridge outlines having different physical dimensions;

cartridge transport means having stationary support means mounted in said cabinet means and cartridge carrier means movably mounted on said stationary support means for accessing any one of said receptacles and said plurality of cartridge-receiving devices for transporting either of said first and second types of media cartridges between said receptacles and said respective cartridge receiver of said first and second devices, respectively; and

control means having bin indicating means for indicating which of said bins in said receptacles contain said first and second types of media cartridges, said control means connected to both said sensing means for responding to their respective indications to enable the cartridge transport means to transfer cartridges to and from said bins only if said door sensing means indicates said door is closed, said control means being further responsive for transporting cartridges to and from said bins containing either said first and second type of media cartridges respectively for said first and second one of said devices.

5,303,215

SELF-TIMING OPTIC LATHE

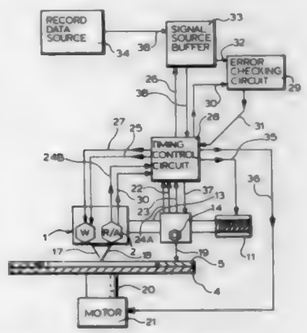
Stephen W. Dewar, 296 Richmond St. W.#601, Toronto, Ontario, Canada M5V 1X2 , and Marvin G. Breyfogle, Y301, 1605 Sherrington Pl., Newport Beach, Calif. 92663

Filed Mar. 15, 1990, Ser. No. 493,954

Claims priority, application United Kingdom, Mar. 20, 1989, 8906353

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.25 **23 Claims**



1. A self-timing optic lathe, comprising:

a) a source of information data signal;

b) a code track embodying a precise optical recording of a control signal;

c) an object disposed in a predetermined location remote from said code track;

d) write means for generating and directing a first energetic beam at said object;

e) read means for generating and directing a second energetic beam at said code track for reading said control signal;

f) means for establishing relative positioning of said first and second energetic beams;

g) means for establishing conjoint relative movement between said read means and said code track and between said object and said write means; and

h) timing and control means for receiving said information data signal and said control signal and in response controlling said conjoint relative movement and timely operation of said write means and controlling said means for establishing relative positioning of said first and second energetic beams to record said information data signal on said object.

5,303,216

OPTICAL RECORDING AND REPRODUCING APPARATUS FOR TRACKING WOBBLING GUIDE GROOVES

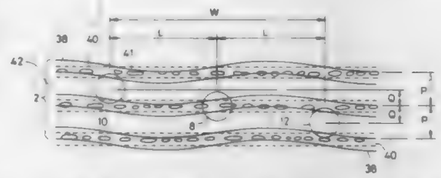
Masahisa Shinoda; Kenjiro Kime; Toshiya Matozaki; Keiji Nakamura; Toru Yoshihara, and Takeshi Ito, all of Nagaoka-kyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,925

Claims priority, application Japan, Aug. 28, 1991, 3-217027; Nov. 22, 1991, 3-307418

Int. Cl.[5] G11B *7/09*

U.S. Cl. 369—44.13 **22 Claims**



1. An optical apparatus for recording or reproducing information on or from an information recording medium having grooves that are disposed at a certain pitch and that wobble with a certain repeating period, said apparatus comprising:

a laser for emitting at least one laser beam;

an optical system for receiving said laser beam and forming a center spot and two satellite spots on said information recording medium, said center spot and said two satellite spots being aligned in a straight line at an angle to said grooves with said center spot midway between said two satellite spots, said center spot being distant form each of said two satellite spots by an odd multiple of substantially one-fourth said repeating period in a longitudinal direction of said grooves;

a first photodetector for receiving reflected light from one of said two satellite spots and generating a first electrical signal;

a second photodetector for receiving reflected light from another of said two satellite spots and generating a second electrical signal; and

a tracking error detection circuit for subtracting said second electrical signal from said first electrical signal to generate a tracking error signal.

5,303,217

OPTICAL RECORDING DEVICE WHEREIN RECORDING BEAM INTENSITY IS SET IN ACCORDANCE WITH AN OPTIMUM VALUE OF THE DC COMPONENT OF A RECORDED SIGNAL

Johnannes L. Bakx, and Johannes G. F. Kablau, both of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 491,399, Mar. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 453,547, Dec. 20, 1989, Pat. No. 5,105,413. This application Aug. 13, 1992, Ser. No. 929,843

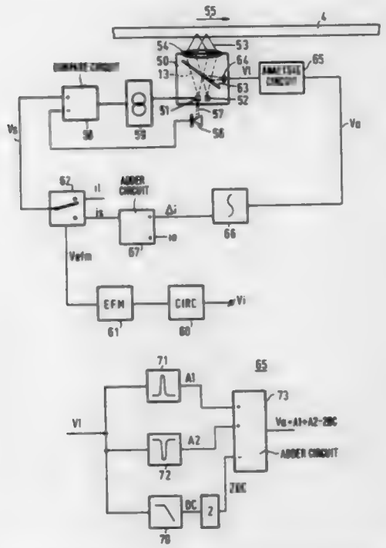
Claims priority, application Netherlands, Jun. 23, 1989, 8901591

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—48 **20 Claims**

1. An optical recording apparatus for recording a digital information signal having successive signal portions on a radiation-sensitive record carrier, each signal portion having a duty cycle, the apparatus comprising:

recording means for recording a signal portion on the record carrier by scanning the record carrier with a write beam, said recording means having switching means for switching the write beam between a low intensity level which is insufficient to bring about a change in optical properties of the record carrier at a scanning location and a high intensity level which is sufficient to produce a change in optical properties of the record carrier at a scanning location in conformity with the signal portion during recording thereof so as to produce a recorded information pattern of recording areas having first optical properties and intermediate areas having second optical properties, the average ratio of the lengths of the recording areas and intermediate areas being optimum when it corresponds to the duty cycle of the signal portion, such average ratio being controllable by variation of the high intensity level of the write beam;



read means for scanning the recorded information pattern with a read beam to produce a corresponding read signal;

an analysis circuit comprising:

means for deriving from the read signal a first peak signal which corresponds to a maximum level of the read signal and a second peak signal which corresponds to a minimum level of the read signal; and

means for combining the first and second peak signals so as to derive therefrom an analysis signal indicative of deviation of a DC component of the read signal from a specific value relative to the first and second peak signals, the specific value corresponding to the duty cycle of the signal portion; and

means for setting at least the high intensity level of the write beam in dependence upon the analysis signal for recording a subsequent signal portion of the information signal, whereby the lengths of the recording areas and intermediate areas produced for the subsequent signal portion are brought substantially into conformity with the optimum average ratio thereof.

5,303,218

DIGITAL RECORDER FOR REPRODUCING ONLY REQUIRED PARTS OF AUDIO SIGNALS WHEREIN A PLURALITY OF PARTS OF AUDIO SIGNALS ARE STORED ON A SAME TRACK OF A RECORDING MEDIUM

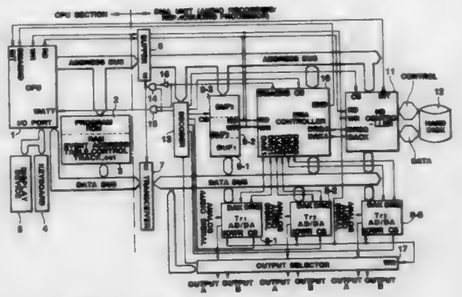
Atsushi Miyake, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 850,682

Claims priority, application Japan, Mar. 13, 1991, 3-074057

Int. Cl.[5] G11B *5/09*

U.S. Cl. 369—48 **12 Claims**



1. A digital recorder comprising:

audio memory medium means for storing digital audio data, the digital audio data stored in said audio memory medium means being divided into a plurality of sectioned data, each of which comprises an event;

a plurality of audio output channel means for executing an output operation of audio signals corresponding to the digital audio data stored in said audio memory medium means;

event table memory means for storing an event table which includes event identifying index data for identifying respective events and memory location data for specifying memory locations where the respective events are stored in the audio memory medium means;

reproduction control track memory means for storing a reproduction control track in which a sequence of event identifying index data included in said event table are disposed in the order of reproduction of the events and in which channel identifying index data for designating one of said plurality of audio output channel means are assigned to the respective events to be reproduced; and

channel identifying means for supplying the audio signals corresponding to digital audio data corresponding to the events to an audio output channel means which is selected from among said plurality of audio output channel means in accordance with the channel identifying index data in said reproduction control track, said digital audio data of the events being transferred from said audio memory medium means to a corresponding audio output channel means.

5,303,219

RECLAMATION OF DUST CONTAMINATED SECTORS IN OPTICAL DISK APPARATUS

John E. Kulakowski, and Rodney J. Means, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 9, 1991, Ser. No. 756,729

Int. Cl.[5] G11B *7/00*

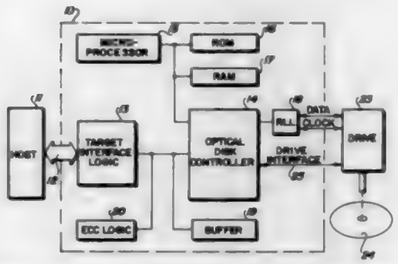
U.S. Cl. 369—54 **18 Claims**

1. In optical disk drive apparatus including a controller with a microprocessor and working memory, wherein optical disks for use in said apparatus are formatted with user areas and with

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available spare sector areas, said spare sector areas providing an assigned spare sector location for recording data when sectors in said user areas are found defective, said optical disk containing defects that are most likely due to permanent defects within the disk itself and temporary defects caused by dust or the like, a method of identifying those sectors containing temporary defects that can be reclaimed, comprising the steps of:

at the time of an initial disk load into said drive apparatus, formatting all user area sectors on said disk and storing the address of all sectors found defective in a primary defect list (PDL) located on said disk, said PDL thereby containing a list of sectors with permanent defects,



during subsequent use of said disk, storing the address of all sectors found defective during use in a secondary defect list (SDL) located on said disk,

setting a threshold of spare sector consumption,

determining spare sector usage by adding the number of sectors listed in said PDL and the number of sectors listed in said SDL,

comparing spare sector usage to said threshold, and if said threshold is exceeded requesting a disk cleaning operation, and

upon reinsertion of a cleaned disk into said drive, inspecting said SDL and reformatting all sectors therein to determine if they are now reusable.

5,303,220

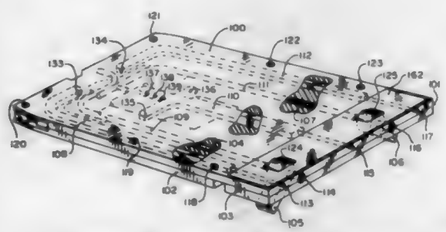
COMPRESSED AIR OPTICAL DRIVE CLEANING CARTRIDGE

Kenton L. Whitaker, Fremont; Sunny K. Hsu, Sunnyvale; Nathan Gold, deceased, late of San Jose by Janet A. Gold, legal representative , and Frank Houghton, Campbell, all of Calif., assignors to Maxoptix Corporation, San Jose, Calif.

Filed Sep. 16, 1992, Ser. No. 945,663

Int. Cl.[5] G11B *3/58*

U.S. Cl. 369—71 **9 Claims**



7. An apparatus for removing particle contaminants from internal components of an optical recording device without requiring disassembly thereof, said internal components including movable and stationary components, said apparatus comprising:

(a) a housing including opposed first and second face-plates, a main portion insertable into said optical recording device, and a protruding portion which remains outside said optical recording device as said main portion is inserted therein, said protruding portion having an inlet face;

(b) a transverse recess formed in said first face-plate and having a depth, said transverse recess separating said main portion from said protruding portion and improving access of said main portion to said internal components of said optical recording device by allowing said main portion to draw closer to said internal components of said optical recording device by a distance equal to said depth when said main portion is inserted inside said optical recording device;

(c) a contoured opening for further improving access of said main portion to said internal components of said optical recording device, said contoured opening being formed in said first face-plate along said main portion and having a transverse section as well as a longitudinal section;

(d) a pair of L-shaped hollow tubes for directing pressurized gas, said pair of L-shaped hollow tubes being pivotally contained within said housing and protracting therefrom when acted upon by a corresponding pair of spring-loaded levers rotationally mounted in said protruding portion, each said L-shaped hollow tube having an inlet and an outlet end, each said inlet end being attached to one of said spring-loaded levers and having an inlet opening located in said inlet face of said protruding portion, each said outlet end having an outlet opening to protract from said housing through said transverse section of said contoured opening to direct said outlet opening at said internal components of said optical recording device;

(e) a pair of channels for directing pressurized gas, said pair of channels being formed in said second face-plate and having inlet openings located in said inlet face of said protruding portion and outlet openings located in said first face-plate around the periphery of said contoured opening, said outlet openings being directed at said internal components of said optical recording device;

(f) a channel for directing pressurized gas, said channel being formed in said second face-plate and having an inlet opening located in said inlet face, said channel also having a multiplicity of outlet openings located in said second face-plate opposite said longitudinal section of said contoured opening and in said first face-plate around the periphery of said contoured opening, said outlet openings being directed at said internal components of said optical recording device; and

(g) a protrusion located on said first face-plate along said main portion and positioned to depress a switch internal to said optical recording device for orienting said movable components of said optical recording device within said longitudinal section of said contoured opening.

5,303,221

OPTICAL PICKUP FOR AN OPTICAL DISC REPRODUCING SYSTEM

Takanori Maeda, and Noriaki Murao, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 72,941

Claims priority, application Japan, Jun. 10, 1992, 4-175060

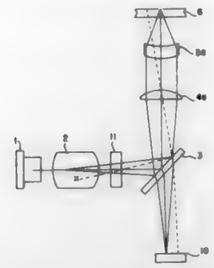
Int. Cl.[5] G11B *7/08*

U.S. Cl. 369—112 **1 Claim**

1. An optical pickup for an optical disc reproducing system, comprising a light source for generating a first light having a first wavelength and a second light having a second wavelength; wherein the first wavelength is longer than the second wavelength, a focusing lens assembly for focusing the first and second lights on the optical disc, respectively, and a phase hologram disposed between the light source and the focusing lens assembly; wherein

the focusing lens assembly has a spherical aberration coefficient for the first light larger than a spherical aberration coefficient for the second light; and

the phase hologram corrects a phase difference of the second light by providing a phase difference of an integer multiple of 2π to the phase difference of the second light, and corrects a spherical aberration coefficient of the first light



by providing the spherical aberration coefficient of the first light an opposite polarity to a polarity of the spherical aberration coefficient of the focusing lens assembly.

5,303,222

OPTICAL RECORD REPRODUCING APPARATUS INCLUDING AUTOMATIC LIGHT AMOUNT CONTROL

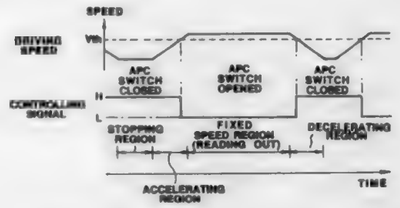
Akira Matsueda, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,767

Claims priority, application Japan, May 13, 1991, 3-107552

Int. Cl.[5] G11B *7/125*

U.S. Cl. 369—116 **6 Claims**



1. An optical record reproducing apparatus comprising:

an optical head having a light source provided with a light emitting device for generating a reproducing light beam, said optical head condensing said reproducing light beam on an optical recording medium on which information is optically recorded to read out the information;

a recording medium driving means for driving said recording medium and moving said reproducing medium to said reproducing light beam;

an automatic light amount controlling means for monitoring the amount of light emitted from the light source generating said reproducing light beam and controlling a light source driving electric current so that a predetermined light amount can be obtained;

a switching means for providing switching on/off control of said light source driving electric current by said automatic light amount controlling means, said switching means switching off the control of said light source driving electric current at least during an operation of reading out the information recorded in said optical recording medium; and

a holding means holding the light source driving electric current just before switching off the control of the light source driving electric current by said automatic light amount controlling means by said switching means.

5,303,223

HEAD CARRIAGE APPARATUS MOVED BY A LEAD-SCREW SHAFT INCLUDING RESILIENT MEANS FOR PRESSING THE LEAD-SCREW SHAFT IN A SLANTING DIRECTION TOWARD THE HEAD CARRIAGE

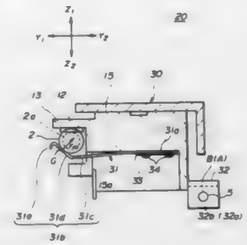
Takahiro Sakaguchi, Kodaira; Daihachiro Takasu, Niiza; Yasuhiko Ando, Tachikawa; Kazuo Yokota, and Hiroshi Tsuyuguchi, both of Tokyo, all of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Dec. 3, 1991, Ser. No. 802,146

Claims priority, application Japan, Dec. 5, 1990, 2-400522

Int. Cl.[5] G11B *5/55, 21/08*

U.S. Cl. 369—215 **4 Claims**



1. A head carriage apparatus comprising: a head carriage including a head which is placed onto a disk for recording and reproducing information on the disk, said head carriage including an extension extending eternally from an end portion of said head carriage and a connecting portion formed on said extension integrally with said head carriage;

a lead-screw shaft coupled to said head carriage and having a lead screw in which a thread ridge and a thread groove are formed, said connecting portion being fitted in the thread groove of the lead screw;

drive means for driving and rotating said lead-screw shaft, said head carriage being moved in a radial direction of the disk, parallel to an axial direction of said lead-screw shaft, by rotation of said lead-screw shaft rotated by said drive means;

resilient means for pressing the lead-screw shaft in a slanting direction toward the head carriage, a force acting on the lead-screw shaft in said slanting direction due to said resilient means having a first component force perpendicular to the axial direction of the lead-screw shaft in which the head carriage is moved acting to press the lead-screw shaft in a horizontal direction toward the head carriage and a second component force perpendicular to the axial direction of the lead-screw shaft in which the head carriage is moved acting to press the lead-screw shaft onto said head carriage in an upward vertical direction, said resilient means being fixed at one end onto said head carriage, and the other end of said resilient means being brought into contact with an outer peripheral surface of said lead-screw shaft at a position which corresponds, with respect to the axial direction of the lead-screw shaft, to a first position at which the connecting portion of the head carriage is fitted in the thread groove of the lead-screw shaft; and

a guide portion, into which a guide shaft is inserted, provided on a side of said head carriage opposite to said extension for guiding said movement of said head carriage in a direction parallel to the radial direction of the disk, said head carriage being supported by said guide shaft at first and second supporting positions of the guide portion which ar located apart from each other in the axial direction of the guide shaft, said first and second supporting positions being located on the same side with respect to a perpendicular line passing through said connecting portion and being perpendicular to the axial direction of the

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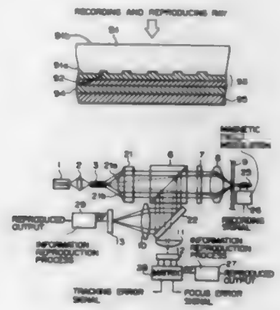
guide shaft, said first and second positions being completely spaced from said perpendicular line.

5,303,224

OPTICAL PICKUP, OPTICAL INFORMATION RECORDING CARRIER AND RECORDING AND REPRODUCING APPARATUS THEREOF

Kiyofumi Chikuma, and Seta Okamoto, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 637,036, Jan. 3, 1991, Pat. No. 5,172,369.
This application Jul. 29, 1992, Ser. No. 921,214
Claims priority, application Japan, Mar. 2, 1990, 2-50945; Mar. 2, 1990, 2-90946
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—275.1 **6 Claims**



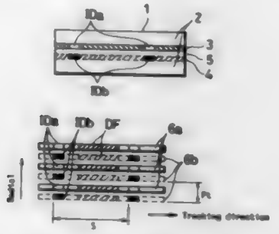
1. An optical information recording carrier, comprising:
a transparent substrate on which a pit train in accordance with predetermined information is formed on one main surface thereof;
a selective reflection film laminated on said main surface of said transparent substrate for reflecting one of rays having different wavelengths and irradiated from other main surface side and for transmitting the other of the rays; and
a recordable layer laminated on said selective reflection film and responsive to the irradiation ray transmitted through said selective reflection film, wherein said selective reflection film comprises a dielectric multi-layer film.

5,303,225

MULTI-LAYERED OPTICAL DISK WITH TRACK AND LAYER IDENTIFICATION

Isao Satoh, Neyagawa; Yoshihisa Fukushima, Osaka; Yuji Takagi, Kadoma; Yasushi Azumatani, Neyagawa, and Hiroshi Hamasaka, Nishinomiya, all of Japan, assignors to Matshushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed Oct. 11, 1990, Ser. No. 595,422
Claims priority, application Japan, Oct. 30, 1989, 1-283241
Int. Cl.[5] G11B *7/24, 23/40, 23/42*
U.S. Cl. 369—275.3 **14 Claims**



1. A multi-layered optical disk formatted to increase the density of information that can be read by a relatively small light beam when focused on a specific layer, comprising:
a base plate;
a plurality of recording layers progressively stacked above the base plate;
a spacing layer positioned between recording layers to segregate adjacent recording layers; and
a plurality of tracks positioned on each recording layer at a predetermined track pitch, the track pitch being the distance between adjacent tracks in the same recording layer, the respective tracks extending approximately transverse to a radial direction of the disk, all of the tracks on each adjacent recording layer being shifted in radial pitch in the radial direction from the tracks on another adjacent recording layer, wherein each track includes an identification section having a specific area on which to record a recording layer address, LA, of the layer on which the track is positioned.

3. A multi-layered optical disk formatted to increase the density of information that can be read by a relatively small light beam of a single predetermined wavelength when focused on a specific layer, comprising:
a base plate;
a plurality of recording layers progressively stacked above the base plate;
a spacing layer positioned between recording layers to segregate adjacent recording layers; and
a plurality of tracks positioned on each recording layer at a predetermined track pitch, the track pitch being the distance between adjacent tracks in the same recording layer, each track including an identification section having a specific area on which to record a recording layer address, LA, of the layer on which the track is positioned, the respective tracks extending approximately transverse to a radial direction of the disk, all of the tracks on each adjacent recording layer being shifted in radial pitch in the radial direction from another adjacent recording layer so that each respective track on one recording layer is offset from each respective track on the other adjacent recording layer in the stacked direction of the optical disk.

6. A multi-layered optical disk capable of being used by focusing a light beam on individual layers comprising:
a first recording layer;
a second recording layer, spaced from and positioned below the first recording layer;
a third recording layer, spaced from and positioned below the second recording layer;
a spacer material, transparent to the light beam, positioned between the first, second, and third recording layers;
a plurality of tracks provided in each of the recording layers, the tracks extending approximately transverse to a radial direction of the disk, each track being divided into a plurality of sectors; and
a plurality of identification sections provided in one of the sectors of each track, each identification section holding an address for discriminating one recording layer to which the identification section belongs from the other layer, the address being able to be read by the light beam which is in the state of being focused on the sector.

5,303,226

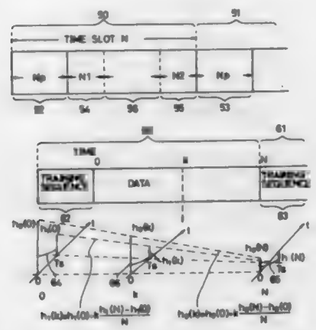
RECEPTION OF TDMA DIGITAL DATA SIGNAL WITH COMPENSATION FOR CHANNEL VARIATIONS

Kazuhiro Okanoue, and Yukitsuna Furuya, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Oct. 1, 1992, Ser. No. 955,320
Claims priority, application Japan, Oct. 1, 1991, 3-253261
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—17 **2 Claims**

1. A method of successively receiving time-division-multiplexed digital data signals each composed of a plurality of symbols including a training sequence of symbols in one time slot, said method comprising the steps of:

storing receiving digital data signals,
extracting first channel information from a portion of a stored digital data signal received in a first time slot and second channel information from a portion of a stored digital signal received in a second time slot immediately following the first time slot,
combining said first and second channel information into an estimated value of third channel information with respect to all the symbols of the digital data signal in said first time slot,
wherein the extracting step includes extracting the first channel information from Np symbols of the training sequence and N1 symbols following the Np symbols in



said first time slot, and extracting the second channel information from the Np symbols of the training sequence in the second time slot; and
equalizing and demodulating all of the symbols of the digital data signal, wherein the equalizing and demodulating step includes equalizing the training sequence and N1 symbols in said first time slot with said first channel information, and equalizing last N2 symbols in said first time slot with said second channel information, equalizing remaining symbols, except the Np, N1 and N2 symbols, in said first time slot with third channel information, and combining the equalized symbols to demodulate and output all the symbols in said first time slot.

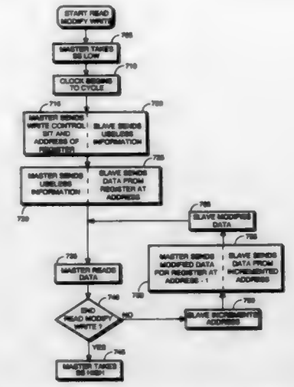
5,303,227

METHOD AND APPARATUS FOR ENHANCED MODES IN SPI COMMUNICATION

Barry W. Herold, and Joan S. DeLuca, both of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1992, Ser. No. 923,774
Int. Cl.[5] H04L *5/14;* **G06F** *3/00*
U.S. Cl. 370—24 **17 Claims**

1. A method for full duplex data transference between a master device and a slave device, comprising the steps of:
(a) the slave device providing a first amount of data stored in a location within the slave device to the master device, wherein the location is associated with a first address previously provided to the slave device by the master device;
(b) the master device providing to the slave device modified data to be stored in the location associated with the first address previously provided to the slave device by the master device; and
(c) the slave device, substantially coincident with step (b), automatically providing a second amount of data stored in a subsequent location within the slave device to the master device, wherein the subsequent location is associated with



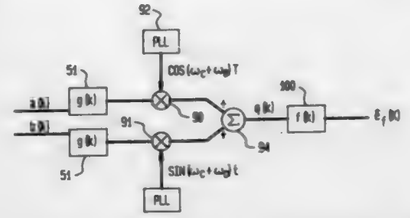
a second address generated by incrementing the first address.

5,303,228

A FAR-END ECHO CANCELLER WITH A DIGITAL FILTER FOR SIMULATING A FAR END ECHO CONTAINING A FREQUENCY OFFSET

Chin-Pyng J. Tzeng, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Aug. 27, 1991, Ser. No. 750,642
Int. Cl.[5] H04J *15/00*
U.S. Cl. 370—32.1 **8 Claims**



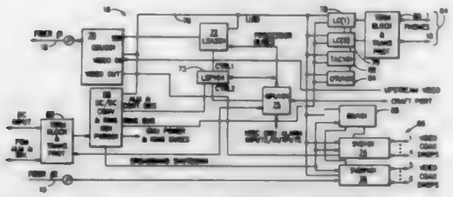
1. A circuit for simulating a far-end echo path in a receiver of a communication system which utilizes Quadrature Amplitude Modulation to correct for frequency offset on a carrier frequency comprising
pulse shaping filter means for filtering in-phase and quadrature data symbols,
first and second multiplication means in communication with said pulse shaping filter means for multiplying said filtered in-phase and quadrature data symbols by cos $(\omega_c+\omega_o)t$ and sin $(\omega_c+\omega_o)t$, respectively, where ω_c is a carrier frequency and ω_o is a continuously variable offset frequency of said far-end echo path,
summing means for summing the outputs of said first and second multiplication means, and
a single real transversal filter in communication with said summing means, said transversal filter having a single real signal input and a real transfer function with adaptively determined coefficients for outputting a simulated far-end echo signal.

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5,303,229
OPTICAL NETWORK UNIT

Andrew L. Withers; Joseph E. Sutherland; Richard M. Czerwiec; William C. Meador, and Larry W. Burton, all of Raleigh, N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 31, 1991, Ser. No. 738,327
Int. Cl.[5] H04Q *11/04*; H04J *1/02*; H04N *7/14*
U.S. Cl. 370—58.1 3 Claims



3. An optical network unit, comprising:

means for receiving baseband telephony signals from an optical fiber and converting said signals to electrical signals;

a plurality of line cards for providing electrical outputs to a plurality of subscribers served by the network unit;

means for distributing the electrical signals provided by the first-mentioned means to the plurality of line cards wherein said means for receiving is also a means for transmitting baseband telephony signals to the optical fiber and wherein said plurality of line cards provide electrical interfaces to the plurality of subscribers and wherein the optical fiber provides broadband video channels frequency division multiplexed with the baseband telephony signals and wherein said transmitting and receiving means further comprise means for multiplexing and demultiplexing the electrical signals to combine and separate the baseband telephony signals from the broadband video channels;

means for transmitting and receiving the broadband video channels;

means for multiplexing and demultiplexing said video channels so as to allocate the channels among subscribers requesting such channels;

means for transmitting and receiving video control signals to and from the subscribers over the transmission means used to deliver the video channels to the subscribers;

means for extracting said control signals from said video transmission;

means for combining control signals into a single video control channel; and

means for transmitting the video control channel as a baseband telephony channel over the optical fiber.

5,303,230
FAULT TOLERANT COMMUNICATION CONTROL PROCESSOR

Tatsuo Hishida; Yoshimasa Suetsugu, and Toshiki Nakajima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

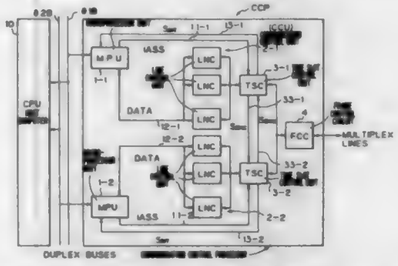
Filed Mar. 6, 1992, Ser. No. 846,903
Claims priority, application Japan, Mar. 6, 1991, 3-040140; Aug. 21, 1991, 3-209000; Nov. 28, 1991, 3-314165
Int. Cl.[5] H04J *3/16*; H04Q *3/545*, *11/04*
U.S. Cl. 370—58.1 19 Claims

2. A communication control processor in a time division multiplex data communication system in which data for a plurality of channels are transferred by dividing and multiplexing the data in a plurality of time slots, comprising:

a plurality of microprocessor units to execute communication control programs for controlling said time division multiplex data communication system;

sets of line control units, each set operatively connected to a corresponding microprocessor unit included in said plurality of microprocessor units, for transmission and reception of the data in the channels which have addresses;

a plurality of time slot control units, each of said time slot control units operatively connected to a corresponding set of line control units included in said sets of line control units and to the corresponding microprocessor unit, to assign the data output from each of said line control units in the corresponding set to at least one of the time slots, when available, in dependence upon correspondence information between the channel addresses and the time slots, one of said time slot control units assigning a specified channel to a given time slot in accordance with channel assignment instructions from the corresponding microprocessor unit and instructing all other time slot control



units to cancel assignment of any channel to the given time slot, thereby enabling any of said line control units to be active and which of said control units are active to be determined by the channel assignment instructions;

means for sending the channel assignment instructions to assign the channels to the time slots, from said microprocessor units to respectively corresponding time slot control units;

means for sending intercepting signals giving notice of canceling assignment of the channels to the time slots, from each of said time slot control units to respectively corresponding microprocessor units; and

means for sending exclusive control signals for inhibiting the assignment of the channels to the given time slot, from a first time slot control unit to all other time slot control units.

5,303,231
SWITCH COUPLED BETWEEN INPUT AND OUTPUT PORTS IN COMMUNICATION SYSTEM

Tomohiro Shinomiya; Toshio Shimoe, and Hiroshi Takeo, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Filed Mar. 10, 1992, Ser. No. 847,280
Claims priority, application Japan, Mar. 11, 1991, 3-045037
Int. Cl.[5] H04L *12/54*
U.S. Cl. 370—58.2 6 Claims

1. A switch having plural input ports and which selectively switches input data, received at a corresponding one of said input ports to an output port, said switch comprising:

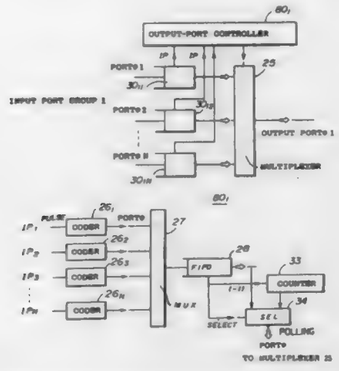
a plurality of memories respectively connected to corresponding ones of said input ports of the switch, each of said memories comprising input acknowledgement signal generating means for generating an input acknowledgement signal in response to receipt of said input data;

multiplexer means, coupled between the plurality of memories and the output port of the switch, for connecting one of the memories to the output port in response to a port number signal;

coder means for receiving said input acknowledgement signal from each of the memories and for generating the port number signal indicating one of the memories which has received said input data each time the input acknowledgement signal is received;

order control memory means, coupled between said coder means and said multiplexer means, for storing the port number signal generated each time one of the input acknowledgement signals is generated and outputting the port number signal to said multiplexer means by a first-in first-out process;

counter means, coupled to said order control memory means for generating a counter number which is incremented



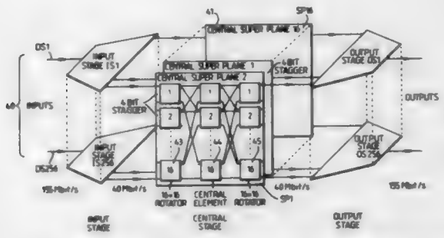
when there is no data in said order control memory means, said counter number serving as the port number signal; and

selector means, coupled to said order control memory means, said counter means and said multiplexer means, for outputting the port number signal from said order control memory means to said multiplexer means when said order control memory means stores the port number signal, and for outputting the counter number from said counter means when there is no data in said other control memory means.

5,303,232
HIGH PERFORMANCE ASYNCHRONOUS TRANSFER MODE SWITCH

Richard J. Proctor; Thomas S. Maddern, both of Wimborne; Mark T. Jeffrey, Wareham, and Alexander Philip, Wimborne, all of England, assignors to GPT Limited, England

Filed Apr. 3, 1991, Ser. No. 679,768
Claims priority, application United Kingdom, May 25, 1990, 9011743
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 4 Claims

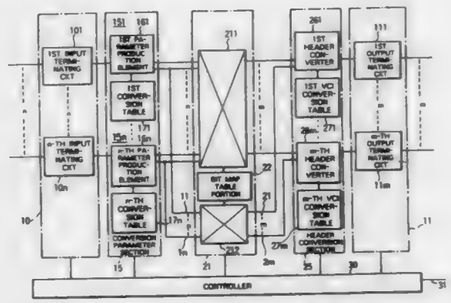


1. An Asynchronous Transfer Mode Switch having a plurality of input stages each for receiving a digital data transmission stream consisting of a series of cells, a cell comprising data and a header containing control data from which the destination of the cell can be determined, a plurality of central stages connected to the input stages to receive the data from the input stages to be switched across the switch, each central stage including a central switch, and a plurality of output stages each connected to the central stages, and wherein for every input stage there is a route to every central stage for the transmission of data, and from every central stage there is a route to every output stage, and wherein each input stage includes a circuit for determining the destination of the cells of that data stream, a circuit for disassembling each cell into cell elements and for allocating to each cell element routing data to enable it to be routed across the central stages, means for storing the cell elements sequentially, means for requesting from a central stage, in response to receipt of a cell within the input stage, permission to transmit a cell element in the series and after a predetermined delay a further request for the same destination point provided that the stored cell elements are derived from the same cell, means for receiving a response output from the central stage in response to the request as to the availability of the requested destination between the sending of requests so that the sequence of sending a request of one cell element is interleaved with the response to the request for the preceding cell element, and means for transmitting each cell element to the central stage after a second predetermined delay from the receipt of a positive response therefrom.

5,303,233
ARRANGEMENT FAVORABLY CARRYING OUT A CONNECTION BY THE USE OF AN INTERMEDIATE CONVERSION PARAMETER BETWEEN INPUT AND OUTPUT VIRTUAL CHANNEL IDENTIFIERS (VCI'S)

Tugio Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1991, Ser. No. 703,643
Claims priority, application Japan, May 18, 1990, 2-129568
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 4 Claims



1. An arrangement located between a plurality of input paths and a plurality of output paths and operable in response to each of a plurality of input data signals representing asynchronous transfer mode cells that includes a data signal representing an input virtual channel identifier and that is given through each of said input paths, said arrangement being for producing a data signal representative of an output virtual channel identifier of an output asynchronous transfer mode cell from said input virtual channel identifier, said arrangement comprising:

conversion parameter producing means connected to said plurality of input paths for producing an intermediate conversion parameter between said input virtual channel identifier and said output virtual channel identifier, said intermediate conversion parameter corresponding to the input virtual channel identifier at every one of the input paths and being different from said input and said output virtual channel identifiers;

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output path deciding means connected to said conversion parameter producing means for deciding at least one of said output paths that corresponds to said intermediate conversion parameter to allow said intermediate conversion parameter to pass therethrough; and

header converting means between said output path deciding means and said output paths for converting said intermediate conversion parameter into said output virtual channel identifier to form said output asynchronous transfer mode cell after said at least one of said output paths is decided by said output path deciding means.

5,303,234

RANDOM ACCESS DATA COMMUNICATION SYSTEM WITH SLOT ASSIGNMENT CAPABILITY FOR CONTENDING USERS

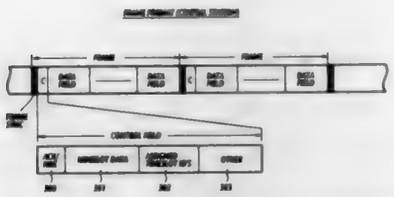
Yukari Kou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,684

Claims priority, application Japan, Jul. 15, 1991, 3-199977

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—85.2 **14 Claims**



1. A random access communication system comprising:

a central station; and

a plurality of user stations, each of the user stations transmitting a packet to said central station on a randomly selected timeslot of a time-division multiple access channel, the user station defining a plurality of short-duration slots within said selected timeslot and transmitting a burst on one of said short-duration slots,

said central station monitoring the defined short-duration slots to detect said burst transmission, assigning as many timeslots as required if more than one burst transmission is detected within a same timeslot, and transmitting a slot assignment signal to said user stations containing a negative acknowledgement of said transmitted packet,

said user station from which said packet was transmitted being responsive to said negative acknowledgement for selecting one of the assigned timeslots and retransmitting to said central station a copy of said packet on the selected assigned timeslot,

wherein said central station transmits a status signal indicating a status of each of said defined short-duration slots, the packet-sending user station being responsive to said status signal for determining a relative position of the short-duration slot on which the burst was transmitted and selecting one of the assigned timeslots according to the determined position.

5,303,235

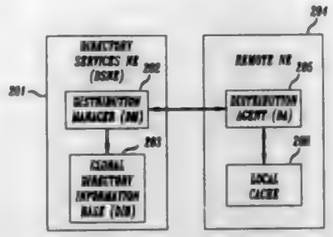
AUTOMATIC DETECTION OF REACHABLE NETWORK ELEMENTS

Douglas W. Chan, Lexington, Mass.; Christopher J. Hunt, Howell, N.J.; C. Daniel Vanevic, Fremont, N.H., and Christopher S. Welles, Weston, Mass., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 14, 1992, Ser. No. 989,615

Int. Cl.[5] H04L *12/56, 12/24, 12/12*

U.S. Cl. 370—60.1 **12 Claims**



1. A network element for use in a digital transmission system including at least one other network element comprising:

means for supporting an open standard interface (OSI) protocol stack having at least an OSI network layer including OSI routing protocols and an application layer including a directory distribution protocol;

means for connecting said network element to said at least one other network element via a data communications channel, said data communications channel being used to transport OSI protocol stack data; and

means for utilizing said OSI routing protocols for detecting via received OSI protocol stack data that said at least one other network element has become reachable and for automatically providing an indication of said at least one other network element being reachable to said directory distribution protocol in said applications layer.

5,303,236

SIGNALLING APPARATUS FOR USE IN AN ATM SWITCHING SYSTEM

Masao Kunimoto, Yokohama; Jiro Kashio, Kawasaki; Makoto Mori, and Shinobu Gohara, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 397,048, Aug. 21, 1989, Pat. No. 5,101,404, which is a continuation-in-part of Ser. No. 313,601, Feb. 21, 1989, Pat. No. 5,175,818. This application Oct. 22, 1991, Ser. No. 780,811

Claims priority, application Japan, Aug. 26, 1988, 63-210718; Jun. 21, 1989, 1-156772

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

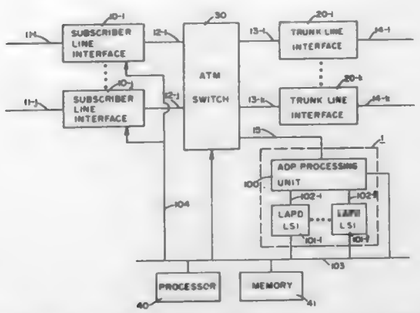
Int. Cl.[5] H04L *12/56, 12/24*

U.S. Cl. 370—60.1 **7 Claims**

1. A communication system comprising:

an asynchronous transfer mode switching means for selectively transferring fixed length input packets received from a plurality of input lines to one of a plurality of output lines selected in accordance with routing information appended to each of said input packets;

signalling means operatively connected to one of said output lines of said switching means for converting at least one packet received from said switching means to a message block; and



processor means operatively connected to receive said message block from said signalling means.

5,303,237

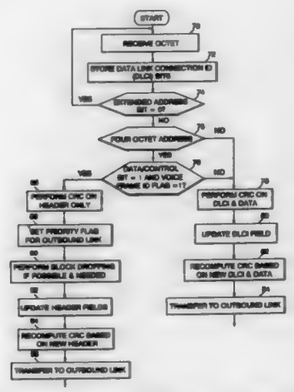
FRAME RELAY SYSTEM CAPABLE OF HANDLING BOTH BOICE AND DATA FRAMES

William C. Bergman, Raleigh, and Janakirama R. Cherukuri, Chapel Hill, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,713

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—85.6 **4 Claims**



3. In a frame relay communication system comprising a plurality of nodes interconnected by communication links, a method of processing both digital data frames and voice frames in at least one node comprising the steps of:

receiving a frame from an incoming link;

identifying the frame as a voice frame or a data frame;

if the frame is a voice frame, performing an error check only on a first set of fields in the frame, said first set of fields excluding data fields; and

if the frame is a data frame, performing an error check on a second set of fields in the frame, said second set of fields including data fields.

5,303,238

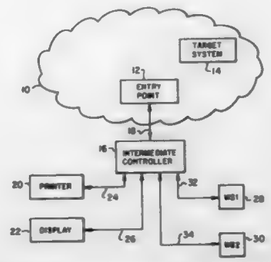
NETWORK COMMUNICATIONS INTERMEDIATE INTERFACE

Jeffrey L. Brodd, Cary, N.C.; Joel D. Eikenhorst, Rochester, Minn.; Adel F. Fahmy, Cary, N.C.; Harvey G. Kiel, Rochester, Minn., and James H. Maher, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1990, Ser. No. 626,131

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **23 Claims**



1. A system for transferring data packets between a network entry point and a plurality of workstations, comprising:

a single input/output port connected to the network entry point;

a plurality of input/output ports each connected to one of the workstations, each input/output port having an input-/output port address for uniquely identifying each of the connected workstations; and

redirection means connected to all of the input/output ports for routing data packets received through the entry point input/output port to a workstation input/output port address corresponding to a session identified in a header of the packet, and for routing data packets received from a workstation input/output port address to the entry point input/output port;

wherein, for a session initiated through the entry point, such session is identified by both the entry point and the workstation with a single session identifier, and for a session initiated by a workstation, such session is identified by the entry point and the workstation with session identifiers which are different from each other;

and wherein, for any received data packet, if such packet belongs to a session which is identified by the entry point and the workstation with different identifiers, said redirection means further changes a session identifier in the packet header to the identifier used by the device connected to the input/output port to which the packet is routed.

5,303,239

TELEPHONE SYSTEM

Takashi Aoki, and Yoshikazu Sano, both of Hino, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1991, Ser. No. 674,952

Claims priority, application Japan, Mar. 26, 1990, 2-76282

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.2 **4 Claims**

1. A telephone system, comprising:

central means having

exchange means for executing exchange service, and

exchange control means for controlling said exchange means; and

interface means

connected to said exchange means for communication of communication-data therewith,

connected to said exchange control means for communication of control-data therewith, and

connected to a data terminal unit for providing an inter-

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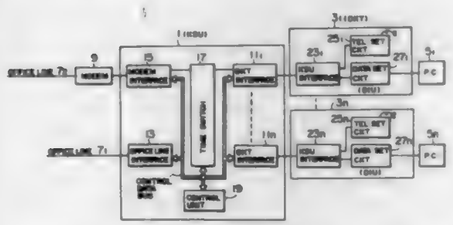
face for communication of said communication-data between said central means and said data terminal unit;

said interface means enabling and disabling said communication of said communication-data between said central means and said data terminal unit in response to predetermined control commands included in a data stream received from said data terminal unit, and

said interface means enabling and disabling said communication of said communication-data independently of operations of said exchange means in said central means, wherein said interface means

transmits first control data to said exchange control means in response to a first control command from said data terminal unit indicative of a data communication start,

transmits second control data to said exchange control means in response to a second control command from said data terminal unit indicative of a data communication end,



disables said communication of communication-data between said central means and said data terminal unit in response to a third control command from said data terminal unit indicative of a data communication interrupt, and

enables said communication of communication-data between said central means and said data terminal unit in response to a fourth control command from said data terminal unit indicative of a data communication restart; and

said exchange control means controlling said exchange means so that communication of communication-data between said data terminal unit and another selected data terminal unit is maintained from a time when said first control data is received from said interface means to a time when said second control data is received from said interface means.

5,303,240

TELECOMMUNICATIONS SYSTEM USING DIRECTIONAL ANTENNAS

Jaime A. Borras, Hialeah; Thomas V. D'Amico, Boca Raton, and Ronald E. Sharp, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 8, 1991, Ser. No. 727,031
Int. Cl.[5] G01S *3/72*
U.S. Cl. 370—95.3 **19 Claims**

14. In a radio-frequency communications system, a method for improving telecommunications using a directional antenna, comprising the steps of:

at a first communication unit:

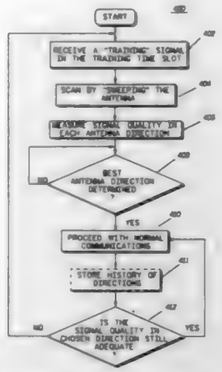
transmitting an information signal having a training signal;

at a second communication unit having an array of phase delay antennas with a plurality of antenna settings:

receiving said information signal by said array of antennas;

steering said array of antennas in a setting in accordance with said training signal within a TDMA time frame;

transmitting by said array of antennas in accordance with said training signal within the TDMA time frame;



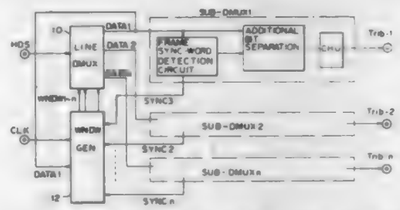
wherein said training signal comprises a portion of a time slot within said TDMA time slot arrangement.

5,303,241

DEMULTIPLEXING SYSTEM FOR WORD INTERLEAVED HIGHER ORDER SIGNALS IN A DIGITAL COMMUNICATION SYSTEM

Tadayuki Takada, and Haruki Watanabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 25, 1991, Ser. No. 797,296
Claims priority, application Japan, Nov. 27, 1990, 02-323704
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—100.1 **3 Claims**



1. A system for demultiplexing a higher order signal which is multiplexed by a word interleave method in a digital communication system, said demultiplexing system comprising:

line demultiplexing means receiving a higher order signal for demultiplexing lower order signals therefrom;

window generating means operatively connected to the line demultiplexing means for generating widows to demultiplex the lower order signals from the higher order signal in the line demultiplexing means;

a plurality of sub-demultiplexing means each operatively connected to the line demultiplexing means for receiving corresponding lower order signals from the line demultiplexing means and each generating a synchronous signal to the widow generating means; and

word synchronous detection means operatively connected to the line demultiplexing means and the window generating means for receiving the higher order signal and generating a detection signal to the window generating means;

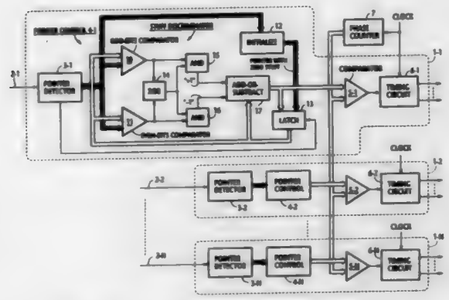
wherein the work synchronous detection is performed for the higher order signal, the detected signal at the word synchronous detection means is input to the window generating means, the window generating means generates the windows synchronized with the word, and the windows are shifted by the synchronous signals from the sub-demultiplexing means to establish frame synchronization.

5,303,242

DESTUFFING CONTROL BY MODIFYING DETECTED POINTER WITH DIFFERENTIAL VALUE

Hiroaki Kaneko, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 24, 1992, Ser. No. 874,048
Claims priority, application Japan, Apr. 25, 1991, 3-122464
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—102 **4 Claims**



3. A destuffing circuit for a plurality of data signals separated from a stuff-synchronized time-division multiplex signal, wherein each of said data signals is a sequence of frames and each of the frames includes a pointer indicating a head position of the frame and specifying one of positive, negative and zero destuffing to be performed on the frame, the destuffing circuit comprising:

a common phase counter for counting clock pulses and producing a common binary count of the clock pulses;

a plurality of pointer detectors corresponding respectively to said data signals, each of the pointer detectors detecting a pointer from the corresponding data signal;

a plurality of stuff discriminators associated respectively with said pointer detectors, each of the stuff discriminators comparing the pointer detected by the associated pointer detector with a previous pointer and determining therefrom a status of destuffing to be performed on a given frame;

a plurality of destuffing means associated respectively with said stuff discriminators, each of the destuffing means adding +1, −1 or 0 to said previous pointer depending on the status of destuffing detected by the associated stuff discriminator and producing therefrom a current pointer; and

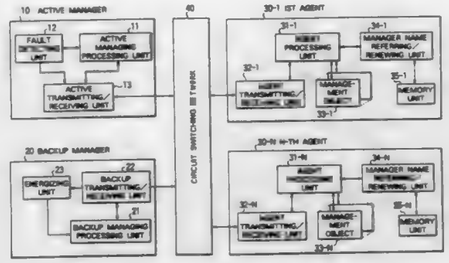
a plurality of comparators associated respectively with said destuffing means, each of the comparators comparing the current pointer from the associated destuffing means with the binary count produced by said phase counter and generating a signal indicating the head position of said given frame when the current pointer is equal to said binary count.

5,303,243

NETWORK MANAGEMENT SYSTEM CAPABLE OF EASILY SWITCHING FROM AN ACTIVE TO A BACKUP MANAGER

Akihiro Anezaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 6, 1991, Ser. No. 665,275
Claims priority, application Japan, Mar. 6, 1990, 2-54159
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—9.1 **2 Claims**



1. A network management system, comprising:

first through N-th agents, each of which carries out a management operation on a management object, where N represents a predetermined natural number which is not less than two;

an active manager for managing said first through said N-th agents; and

a backup manager for managing said first through said N-th agents, whenever a fault occurs in said active manager, and wherein:

said active manager includes fault detecting means for detecting said fault in said active manager to produce a fault detection signal,

said backup manager includes delivering means supplied with said fault detection signal for delivering, in response to said fault detection signal, a name signal representative of a backup manager name, assigned to said backup manager as an indicated name to said first through said N-th agents, and

each of said first through said N-th agents comprising:

storing means for preliminarily storing an active manager name assigned to said active manager as a stored manager name and for storing, as said stored manager name, said indicated name when supplied with said name signal; and

sending means connected to said storing means for sending management information to one of said active and said backup managers which is assigned with said stored manager name.

5,303,244

FAULT TOLERANT DISK DRIVE MATRIX

M. Cameron Watson, Los Angeles, Calif., assignor to Teradata, El Segundo, Calif. and NCR Corporation, Dayton, Ohio

Filed Mar. 1, 1991, Ser. No. 662,744
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—10.1 **20 Claims**

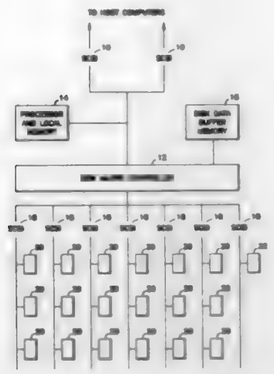
1. A data storage device for a computer, comprising:

(a) a plurality of disk drives arranged in a matrix, wherein each disk drive therein is identified by a row and column intersection of the matrix;

(b) mapping means for associating a subset of the plurality of disk drives with a logical array, wherein each of the disk drives belongs to a plurality of different logical arrays, the mapping means further comprising means for mapping a logical unit number received from the computer into a

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column number and a row number of the matrix identifying a disk drive; and



(c) storage means for subdividing a logical unit of data into blocks and storing the blocks in an interleaved manner across the disk drives associated with the logical array.

5,303,245

INFORMATION SIGNAL PROCESSING METHOD AND APPARATUS

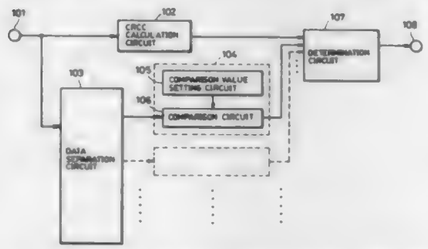
Akihiro Shikakura, Kawasaki, and Shinichi Yamashita, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1991, Ser. No. 666,608

Claims priority, application Japan, Mar. 20, 1990, 2-072931

Int. Cl.[5] H03M *13/00*; G06F *11/10*

U.S. Cl. 371—37.1 **28 Claims**



13. An information signal processing apparatus comprising:

(A) reception means for receiving an information signal to which an error detecting code has been added and a part of which other than said error detecting code has been set to a code indicating a predetermined value;

(B) first error detection means for detecting an error in the received information signal according to the error detecting code added to the information signal; and

(C) second error detection means for detecting an error in the received information signal by detecting whether or not said part of the information signal set to the predetermined value has changed.

5,303,246

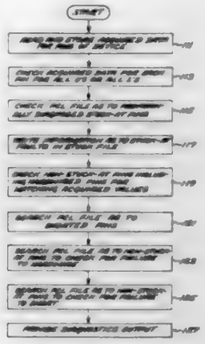
FAULT ISOLATION DIAGNOSTICS

Jerry D. Anderson, Hawthorne; Avery C. Johnson, Long Beach, and Manick Steve A., Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 3, 1991, Ser. No. 725,161

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.3 **5 Claims**



1. A process for diagnosing boundary scan test observed data for a selected circuit device having three-state bidirectional scan cells which were controlled to drive I/O pins of the device pursuant to a set of test patterns and to scan out observed values, the circuit device being interconnected to other circuit devices which have three-state bidirectional scan cells that are in the high impedance state while the selected circuit device was subjected to the set of test patterns, the process comprising the steps of:

(a) identifying any device pins having observed data containing only all 0's or only all 1's;

(b) determining by reference to a pin connection list whether any of the pins identified in step (a) comprise stuck-at faults;

(c) identifying whether the observed data for any non-stuck-at pins match; and

(d) determining by reference to the pin connection list whether any of the pins identified in step (b) as having matching observed values are improperly shorted together.

5,303,247

OPTICAL HARMONIC GENERATING DEVICE FOR GENERATING HARMONIC WAVE FROM FUNDAMENTAL WAVE AND SHORTER WAVELENGTH LASER GENERATING APPARATUS IN WHICH FUNDAMENTAL WAVE OF LASER IS CONVERTED TO HARMONIC WAVE WITH THE DEVICE

Kazuhisa Yamamoto, and Kiminori Mizuuchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 10, 1993, Ser. No. 28,864

Claims priority, application Japan, Mar. 11, 1992, 4-052548; Jan. 20, 1993, 5-007253

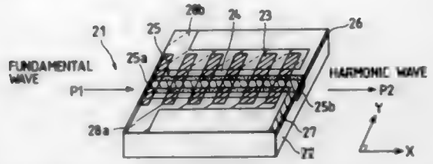
Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—22 **25 Claims**

1. An optical harmonic generating device for generating a harmonic wave from a fundamental wave, comprising:

fundamental wave converting means for converting a fundamental wave to a harmonic wave in first dielectric polarization layers of which a dielectric polarization is directed in a first direction, the first dielectric polarization layers being periodically arranged at regular intervals;

harmonic wave amplifying means for amplifying the harmonic wave converted in the fundamental wave converting means in a second dielectric polarization layers of which a dielectric polarization is directed in a second direction opposite to the first direction, each of the second dielectric polarization layers being arranged between the first dielectric polarization layers; and



electric field inducing means for inducing an electric field in the first dielectric polarization layers of the fundamental wave converting means and the second dielectric polarization layers of the harmonic wave amplifying means to change refractive indices of the first and second dielectric polarization layers.

5,303,248

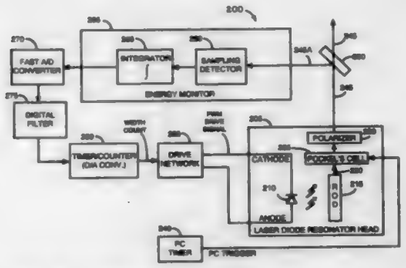
LASER APPARATUS AND METHOD EMPLOYING DIGITAL FILTER CONTROLLED PULSE WIDTH MODULATION

David M. Gibbs, Apopka, Fla., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Mar. 1, 1993, Ser. No. 24,373

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—25 **5 Claims**



1. A laser apparatus comprising:

a laser source for generating a plurality of laser pulses in response to respective drive pulses in a drive signal;

sampling means for sampling the energy output of each said laser pulses to produce a sampled laser energy output signal including a plurality of laser energy output samples;

analog to digital conversion means, coupled to said sampling means, for converting said sampled laser energy output signal to a digitized sampled signal including a plurality of digitized sample energy values;

a digital filter, coupled to said analog to digital conversion means, for determining a respective filter value from each digitized sample energy value, said filter value being selected by said filter to cancel undesired response characteristics exhibited by said semiconductor laser source and said lasing medium;

digital to analog conversion means, coupled to said digital filter, for converting each filter value to a count number, and

driving means, coupled to said digital to analog conversion means, for generating a respective drive pulse in said drive signal from each count number, the duration of each drive pulse corresponding to a respective count number.

5,303,249

LASER WITH AN ADJUSTMENT DEVICE

Erich Weimel, Schnaittach, Fed. Rep. of Germany, assignor to NWL Laser Technologies GmbH, Schnaittach, Fed. Rep. of Germany

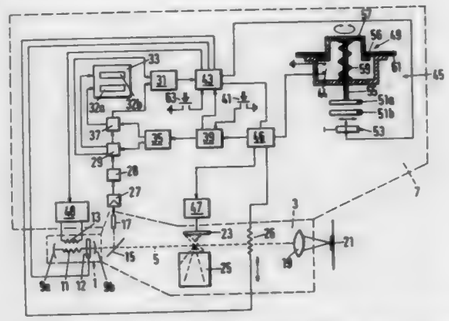
PCT No. PCT/EP91/00137, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/12640, PCT Pub. Date Aug. 22, 1991

PCT Filed Jan. 24, 1991, Ser. No. 920,303

Claims priority, application Switzerland, Feb. 15, 1990, 489/90

Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—33 **20 Claims**



1. A laser device having a laser resonator (1) for emitting a laser beam with a laser output power,

an active element positioned within said laser resonator for generating a laser radiation for said laser beam,

said active element connected to be pumped by pumping power of a power supply,

measuring means (15, 17) positioned relative to said laser beam for measuring said emitted laser output power,

a display device (33) connected to said measuring means (15, 17) and displaying the value of said measured laser output power,

an adjustment device (45) having a handling element (57), a coupling element (51*a*, 51*b*) and an adjustment element (49) connected for adjusting said pumping power of said power supply,

said handling element (57) being manually operable,

said coupling element (51*a*, 51*b*) cooperatively connected with said adjustment element (49) for movement between a decoupled position and a coupled-in position, and said coupling element moveable manually by said handling element (57) to the coupled-in and a switched-in position for setting said pumping power in correspondence to a desired value of said laser output power,

adjusting said pumping power of said power supply by said adjustment element (49) being only possible in the switched-in position of said coupling element (51*a*, 51*b*), and means connected with said handling element whereby when released, said coupling element automatically moves from the coupled-in position into the decoupled position wherein adjustment of said adjustment element (49) is ineffective, so that changing of the laser output power by unintentional adjustment of said adjustment element (49) is avoided.

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5,303,250

LASER LIGHT GENERATING APPARATUS

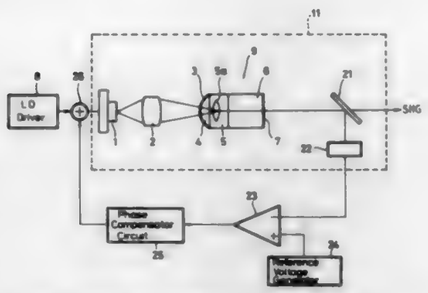
Hisashi Masuda, Tokyo; Kiyoshi Obsato, Chiba, and Atsushi Fukumoto, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,091

Claims priority, application Japan, May 22, 1991, 3-146920

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—38 **14 Claims**



1. A laser light generating apparatus, comprising:

a light source connected to generate an excitation light beam;

an optical element mounted at an output of said light source to converge said excitation light beam from said light source;

a laser medium mounted to receive said excitation light beam via said optical element to generate a laser light of a first wavelength;

a nonlinear optical crystal element mounted to receive said laser light from said laser medium to generate a second laser light;

reflecting means for constituting a laser resonator together with at least said laser medium and said nonlinear optical crystal element, wherein said reflecting means is composed of a pair of reflecting means and said laser medium and said nonlinear optical crystal element are disposed between said pair of reflecting means;

detecting means for detecting a part of a light beam output from said reflecting means, wherein said detecting means includes separating means for separating said second laser light output from said reflecting means into a fundamental frequency and a second harmonic and transmitting said fundamental frequency to photodetector means and a photodetector means for sensing said fundamental frequency laser light separated by said separating means; and

control means for controlling said light source depending on a detected output from said detecting means, said control means including a comparator having an output connected to a phase compensation circuit which outputs a signal to an adder.

5,303,251

METHOD AND CIRCUIT ARRANGEMENT FOR DRIVING A LASER DIODE

Thomas Zelenka, Moenkeberg, Fed. Rep. of Germany, assignor to Linotype-Hell AG, Fed. Rep. of Germany

PCT No. PCT/DE91/00653, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/03860, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 16, 1991, Ser. No. 977,415

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1990, 4026087

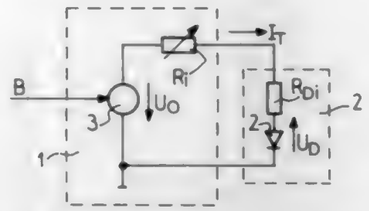
Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—38 **4 Claims**

1. A method for driving a laser diode, comprising the steps of:

driving the laser diode with a driver current that defines an output light power, the output light power dropping in dependence upon a rise of internal temperature of the laser diode;

compensating the temperature-dependent drop in light power by driving the laser diode with a voltage generator having a variable internal resistance R_i, a rise of the driver



current given rising internal temperature of the laser diode being limited by the internal resistance R_i such that a rise in the output light power caused by a rise of the driver current compensates said temperature-dependent drop in light power; and

calculating the internal resistance R_i according to the equation:

$$R_i = \sigma \frac{T_{KU}}{T_{KP}} - R_{Di}$$

wherein ρ is an efficiency of the laser diode, T_{Ku} is a temperature coefficient with reference to an on-state voltage of the laser diode, T_{Kp} is a temperature coefficient relating to a power of the laser diode, and R_{Di} is an internal resistance of the laser diode.

5,303,252

GAS LASER

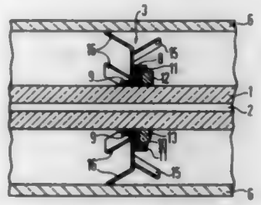
Wolfgang Welsch, Baldham; Peter Geschka, Brunnthal; Klemens Huebner, Ottobrunn, and Hans Krueger, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 910,542

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123209

Int. Cl.[5] H01S *3/03*

U.S. Cl. 372—65 **16 Claims**



1. In a gas laser having a jacket tube and a capillary containing a discnarge channel, said capillary being received at least partially in the jacket tube and being supported in the tube in a radial direction with at least one resilient means including a spring washer, said spring washer having an axially proximate annular region with an axially symmetrical aperture for receiving the capillary and resilient fingers extending in a radial direction from said annular region, said resilient fingers pressing against the jacket tube as the resilient means is secured to the capillary, the improvements comprising the resilient means including a flange ring having an inner cylindrical portion, said spring washer having the axially symmetrical aperture received on said inner cylindrical portion and said means for

securing including glass solder extending between the flange ring and the capillary.

5,303,253

FLOWING GAS LASER

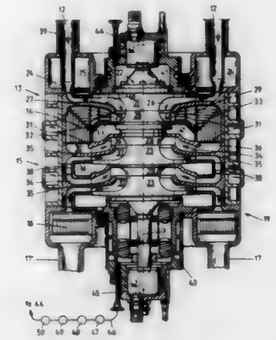
Hans-Heinrich Henning, Ennepetal; Bernd Ellinghaus; Frank Diedrichsen, both of Wuppertal; Walter Winkelsträter, and Dieter Frohn, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Gebr. Becker GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,400

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118786

Int. Cl.[5] H01S *3/22*

U.S. Cl. 372—58 **50 Claims**



1. A flowing gas laser comprising:

gas discharge means through which the gas flows including at least one resonator having an inlet for admission of cooled gas and an outlet for energy-bearing heated gas;

gas confining means defining at least one path for the flow of gas from said gas discharge means outlet to said inlet;

a turbine provided in said confining means receiving the energy bearing heated gas and comprising at least one rotary impeller driven by the cooling and expansion of the energy-bearing gas; and

a compressor located in said confining means downstream of said turbine driven at least in part by said at least one impeller of said turbine to compress the cooled gas.

5,303,254

TRANSVERSELY DISCHARGE-PUMPED GAS LASER

Sándor Szatmári, Goettingen, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschafen e.V., Goettingen, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 867,121

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1991, 4112311

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—87 **2 Claims**

1. A transversely discharge-pumped gas laser comprising

a) a discharge vessel (18),

b) a laser gas in the discharge vessel,

c) at least one pair of oppositely disposed elongated discharge electrodes (20) in the discharge vessel which extend in a predetermined longitudinal direction and are separated by an elongated discharge region having a longitudinal center plane extending in spaced relationship between said electrodes, the electrodes of said pair being symmetrical with respect to said longitudinal center plane, in which discharge region the laser gas is stimulable by the discharge to form an active laser medium in the discharge region, and

d) means for directing laser radiation along a beam path leading in a predetermined direction (16) through the discharge region, and

e) means to cause said laser radiation to traverse said active laser medium only once such that the longitudinal direc-



tion of said elongated discharge region forms an angle in said longitudinal center plane differing from zero with the direction (16) of the beam path, said angle being chosen such that an output beam having an energy distribution of improved homogeneity across the output beam results.

5,303,255

DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER DEVICE AND A METHOD OF PRODUCING THE SAME

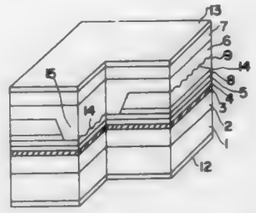
Hiroaki Kudo; Haruhisa Takiguchi; Kazuhiko Inoguchi; Chitose Nakanishi, and Satoshi Sugahara, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 979,474, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 756,852, Sep. 10, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 85,129

Claims priority, application Japan, Sep. 10, 1990, 2-240770; Aug. 9, 1991, 3-200844

Int. Cl.[5] H01S *3/08, 3/19*

U.S. Cl. 372—96 **13 Claims**



1. A distributed feedback semiconductor laser device comprising:

a semiconductor substrate;

a multilayer structure formed on said semiconductor substrate, said multilayer structure including an active layer for laser oscillation;

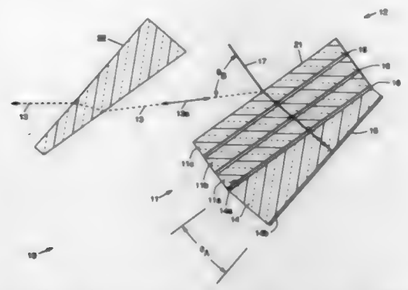
an optical guiding layer formed on said multilayer structure;

a current blocking structure for confining electric currents within a selected region of said active layer, said current blocking structure being formed over said optical guiding layer and having a stripe groove along the cavity length direction, said stripe groove defining said selected region and exposing said optical guiding layer, and said current blocking structure including an etch stop layer in the lower portion of said current blocking structure; and

a diffraction grating formed in a region of said optical guiding layer, said region being located at the bottom of said stripe groove.

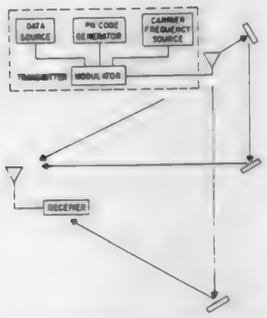
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,256
QUASI-MONOLITHIC SATURABLE OPTICAL ELEMENT
David S. Sumida, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 12, 1993, Ser. No. 30,763
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—106 **11 Claims**



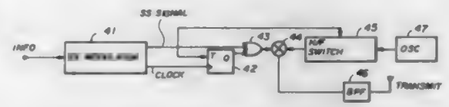
1. An optical element for use in a laser resonator having an optical axis along which a laser beam is adapted to propagate, and that provides for saturable absorption, polarization, and retroreflection of the laser beam, said element comprising:
an undoped substrate having front and rear surfaces that are disposed at a predetermined apex angle with respect to each other, and wherein the substrate is relatively transparent to the laser beam provided by the laser resonator;
a dielectric coating disposed on the rear surface of the undoped substrate that is adapted to reflect the laser beam;
a saturable absorber platelet disposed on the front surface of the undoped substrate that has a front surface that is adapted to be disposed at Brewster's angle with respect to the optical axis of the laser resonator;
and wherein saturable absorption of the laser beam is provided by the saturable absorber, polarization of the laser beam is provided by orienting the front surface of the optical element at Brewster's angle relative to the optical axis of the laser resonator, and retroreflection of the laser beam is provided by the dielectric coating.

5,303,257
CARRIER FREQUENCY CORRECTION FOR A DSSS COMMUNICATION SYSTEM
Seymour Stein, Newton Center; William E. DeLisle, Milford, and Karen M. Schramm, Needham, all of Mass., assignors to GTE Government Systems Corporation, Needham, Mass.
Filed Dec. 31, 1992, Ser. No. 999,503
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **1 Claim**



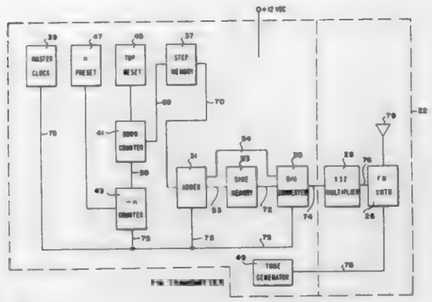
1. Method for carrier frequency correction in a direct sequence code division multiple access communication system having a carrier frequency, consisting of an expected carrier frequency and a carrier frequency error, modulated by a pseudo-noise code comprising the steps:
producing a local frequency equal to the expected carrier frequency;
producing demodulated received signals demodulated of the pseudo-noise and mixed with the local frequency, said demodulated signals consisting of in-phase signal components and quadrature signal components and the carrier frequency error;
converting each of said demodulated signal to digital samples;
multiplying each signal digital sample by stored digitized samples of a plurality of sinusoidal tones to produce a product corresponding to each tone;
squaring each product corresponding to each tone;
comparing the resulting squared products to determine which squared product has the maximum value, the tone which corresponds to the squared product with the maximum value substantially equal to said carrier frequency error; and
adjusting the local frequency to compensate for the carrier frequency error.

5,303,258
SPREAD SPECTRUM COMMUNICATIONS SYSTEM
Masaru Nakamura, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 22, 1992, Ser. No. 964,943
Claims priority, application Japan, Oct. 24, 1991, 3-306572; May 26, 1992, 4-160218; Oct. 14, 1992, 4-303068
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **14 Claims**



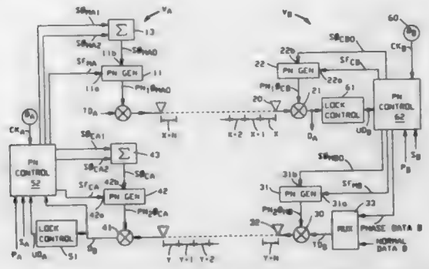
1. A spread spectrum communications system comprising:
a transmitter having an input information modulation means for generating a spread spectrum signal in accordance with an input information signal and for generating a pseudonoise clock signal which is used to generate a first pseudonoise signal formed of a plurality of chips, the value of said first pseudonoise signal being either 0 or 1 at each chip, a switch for switching on and off a locally generated carrier signal of said input information signal in accordance with the value of the present chip of said first pseudonoise signal, first means for inverting a phase of said spread spectrum signal outputted from said modulation means when the present value of said first pseudonoise signal is equal to 1, second means for multiplying the inverted-phase spread spectrum signal outputted from said first means by said locally generated carrier signal outputted from said switch so as to produce a transmit signal at an output of said second means, an output means for transmitting said transmit signal from said transmitter, and a receiver which receives said transmit signal from said transmitter, said receiver having a detector for obtaining a baseband signal from said transmit signal received at said detector, and demodulation means for demodulating said baseband signal with a second pseudonoise signal generated synchronously with said transmit signals to reproduce said input information signal.

5,303,259
FREQUENCY-HOPPED ELECTRONIC SIGNAL TRANSMITTER
Peter S. Loveall, 9330 LBJ Freeway, Suite 900, Dallas, Tex. 75243
Filed Nov. 7, 1991, Ser. No. 788,821
Int. Cl.[5] H04L *27/30;* **G08G** *1/00*
U.S. Cl. 375—1 **18 Claims**



18. A frequency-hopped electronic signal transmitter, comprising, in combination:
first storage means for storing digital data representing selected transmission frequencies;
second storage means for storing a plurality of discrete digital codes representing respective amplitudes of respective portions of a sinusoidal waveform;
signal generating means responsive to the digital codes stored in said second storage means for generating an analog signal corresponding to said sinusoidal waveform;
frequency control means for controlling said signal generating means to generate at least one complete cycle of said analog signal a each of the selected transmission frequencies in succession; and
transmitting means for transmitting said analog signal on each of said transmission frequencies in succession, said analog signal being detectable by a compatible electronic signal receiver tuned to any of the selected transmission frequencies.

5,303,260
METHOD AND CIRCUIT FOR COMPENSATING FOR OSCILLATOR DRIFT IN A SPREAD-SPECTRUM COMMUNICATION SYSTEM
Dale D. Fonnesbeck, Kaysville, and Vaughn L. Mower, Bountiful, both of Utah, assignors to Unisys Corporation, Blue Bell, Pa.
Filed Jan. 6, 1993, Ser. No. 1,356
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 **11 Claims**

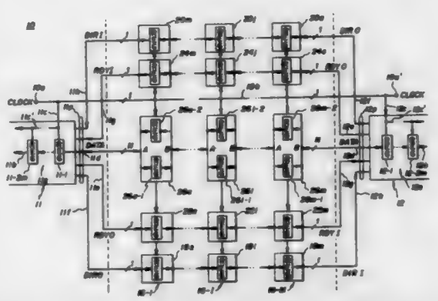


1. A method in a communication system where - a) two vehicles V_A and V_B transmit data to each other intermittently, b) data transmitted from V_A to V_B is modulated in V_A by a PN code PN having a time varying phase ϕ_{MA} and is correlated in V_B by said code PN_1 having a different time varying phase ϕ_{CB}, and c) data transmitted from V_B to V_A is modulated in V_B by a PN code PN_2 having a time varying phase ϕ_{MB} and is correlated in V_A by said code PN_2 having a different time varying phase ϕ_{CA}; wherein said codes PN_1 and PN_2 have respective nominal frequencies $f_1=1/T_1$ and $f_2=1/T_2$ that drift in at least one of said vehicles, and wherein said method compensates for said drift by including the steps of:
sensing, during said data transmissions, the phase shifts $\Delta\phi_{MA}$, $\Delta\phi_{CA}$, $\Delta\phi_{MB}$ and $\Delta\phi_{CB}$ which respectively occur in said PN codes over a time interval ΔT_X;
calculating a drift rate DR from the sensed phase shifts where

$$DR = \frac{(\Delta\phi_{CB}T_1 + \Delta\phi_{MB}T_2) - (\Delta\phi_{CA}T_2 + \Delta\phi_{MA}T_1)}{2\Delta T_X};$$

stopping said data transmissions between V_A and V_B for a time interval ΔT_Y; and thereafter,
phase shifting, in one of said vehicles, code PN_1 by an amount $C_1 \approx -(DR)\Delta T_Y \div T_1$ and code PN_2 by an amount $C_2 \approx -(DR)\Delta T_Y \div T_2$.

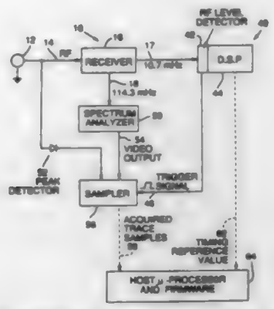
5,303,261
HIGH-THROUGHPUT PIPELINED COMMUNICATION CHANNEL FOR INTERRUPTIBLE DATA TRANSMISSION
Michael F. Junod, Bensalem, Pa.; Edward J. Monastra, Voorhes, N.J., and Chaim Strasberg, Philadelphia, Pa., assignors to General Electric Company, Philadelphia, Pa.
Filed Nov. 29, 1991, Ser. No. 799,649
Int. Cl.[5] H03K *11/00;* **H04L** *25/60, 25/64*
U.S. Cl. 375—4 **19 Claims**



1. Communications channel apparatus for digital data transfer between first and second spaced-apart devices in a system, comprising:
clock means for providing a periodic transfer signal; and
a plurality M of pipeline transfer stages, through which said data is sequentially transferred between a data I/O port of a sending one of said devices and a data I/O port of a receiving one of said devices; each of said transfer stages having register means for temporarily storing all bits of a N-bit-wide word of parallel data input for transfer, responsive to a first clock signal, and then transferring all of the stored data bits, responsive to a next clock signal, to a next one of a subsequent stage and the receiving device, if no further stages exist in the pipeline.

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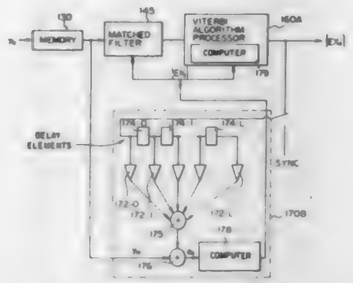
5,303,262
METHOD AND APPARATUS FOR TRIGGERING MEASUREMENTS FROM A TDMA SIGNAL
Matthew Johnson, Liberty Lake, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 21, 1992, Ser. No. 839,827
Int. Cl.[5] H04B *3/46*
U.S. Cl. 375—10 **9 Claims**



1. A radio frequency ("RF") measurement apparatus for making triggered, analog measurements of an RF signal in a time domain multiple access ("TMDA") communications system, the RF signal comprising digital information modulated in bursts on an RF carrier, the RF
- a receiver having an output;
- a level detector connected to the receiver output for detecting a level of the RF signal and for generating a trigger signal when the level of the RF signal exceeds a predetermined threshold level;
- analog measurement means connected to the receiver means for measuring and sampling the RF signal to generate a trace sample; and
- processing means for determining a timing relationship between the trigger signal and the digital information and for identifying from the timing relationship a subset of samples of the trace sample to be used in an RF burst measurement.

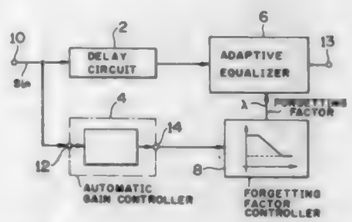
5,303,263
TRANSMISSION CHANNEL CHARACTERISTIC EQUALIZER
Yasuo Shoji; Haruhiro Shiino; Norio Yamaguchi, and Masami Abe, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 24, 1992, Ser. No. 904,337
Claims priority, application Japan, Jun. 25, 1991, 3-153545; Jun. 25, 1991, 3-153561; Jul. 29, 1991, 3-188590; Jul. 29, 1991, 3-188591; Oct. 14, 1991, 3-264566
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—11 **17 Claims**

1. An equalizer, comprising:
- a memory to temporarily store values y_n of a received signal that has passed through a transmission channel having an input response;
- filter means, connected to the memory, for maximizing the signal-to-noise ratio of the sample values y_n temporarily stored in and outputted from the memory;
- Viterbi algorithm processor means, connected to the filter means, for estimating, in a single time slot or a plurality of symbol periods, a transmitted symbol sequence maximizing a path metric every plurality of parameters of an adaptive algorithm and outputting an estimate EX_n of the transmitted symbol sequence maximizing the path metric; and
- channel estimator means for generating estimates of the impulse response of the transmission channel, the channel estimator means having an input port which receives sample values outputted by the memory means, another input port which receives either a training sequence SYNC or the estimate of the transmitted symbol sequence outputted by the Viterbi algorithm processor means, and an output port through which the estimates of the impulse response of the transmission channel are supplied to the Viterbi algorithm processor means, the channel estimator means including
- a plurality of delay elements connected in series to selectively receive the training sequence SYNC or the transmitted symbol sequence estimate EX_n,



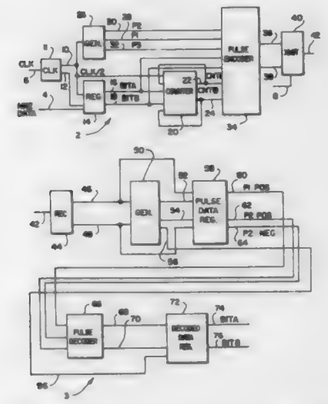
- a plurality of multipliers, each responsive to an input or an output of an associated one of the delay elements,
- first adder means for adding outputs of the multipliers,
- second adder means for adding an output of said first adder means and a sample value outputted by the memory, thereby outputting an error sequence e_n, and
- computing means, connected to the second adder means, for using the adaptive algorithm to generate the estimate of the impulse response of the transmission channel in response to the error sequence e_n.

5,303,264
ADAPTIVE EQUALIZER USING RECURSIVE LEAST-SQUARES ALGORITHM AND METHOD THEREFOR
Tomoki Ohsawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 29, 1991, Ser. No. 693,183
Claims priority, application Japan, Apr. 27, 1990, 2-114583
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—12 **8 Claims**



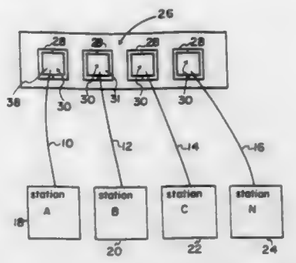
1. A hardware arrangement for equalizing waveform distortion caused by multipath fading in a digital radio communications system according to a recursive least-squares algorithm using a forgetting factor, including:
- first means for receiving an incoming signal and generating a signal which indicates a signal-to-noise ratio of said incoming signal;
- second means being coupled to said first means to receive said signal and generating the forgetting factor which varies with said signal-to-noise ratio of said incoming signal; and
- third means being coupled to receive the incoming signal and the forgetting factor, said third means adaptively equalizing the waveform distortion of the incoming signal using the forgetting factor according to the recursive least-squares algorithm and generating an output which is an output of said hardware arrangement.

5,303,265
FREQUENCY INDEPENDENT ENCODING TECHNIQUE AND APPARATUS FOR DIGITAL COMMUNICATIONS
Peter T. McLean, Colorado Springs, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 29, 1990, Ser. No. 546,422
Int. Cl.[5] H04L *25/34, 25/49*
U.S. Cl. 375—17 **15 Claims**



1. A digital communication system for receiving data bit sets and encoding each bit set in to a pulse set, the number of bits in each bit set being equal to or greater than the number of pulses in each pulse set and each of the pulses in a pulse set having a fixed width comprising:
- detection means receiving said data bit sets for determining the relative number of positive pulses transmitted compared to the number of negative pulses transmitted and providing an output representing the average level of the previously transmitted pulse sets;
- pulse generator means for providing at least a first pulse in a first pulse period of the pulse set, a second pulse in a second pulse period of the pulse set and a third pulse having a duration equal to twice the period of the first pulse or the second pulse and beginning coincidentally with the first pulse and ending coincidentally with the second pulse;
- pulse encoder means receiving said pulses from said pulse generator means and being responsive to said data bit sets and said output from said detection means for encoding each of said data bit sets into said pulse set;
- transmitting means connected to a transmission medium and receiving said pulse sets from said pulse encoder means and transmitting said pulse sets at a given rate on said transmission medium;
- receiver means connected to said transmission medium for receiving said transmitted pulse sets and being activated by a leading edge of each of said transmitted pulse sets; and
- converting said received pulse sets into said data bit sets based upon said fixed pulse width and independent of said rate at which said pulse sets are transmitted.

5,303,266
MULTIMEDIA HIGH SPEED NETWORK
Daniel Budin, Newton; Yoseph Linde, Needham; Gordon Saussy, Brighton; Robert Snyder, Westford, and Jack W. Lee, Brookline, all of Mass., assignors to Chipcom Corporation, Southborough, Mass.
Continuation-in-part of Ser. No. 535,033, Jun. 8, 1990. This application Dec. 28, 1990, Ser. No. 635,486
Int. Cl.[5] H04B *3/14*
U.S. Cl. 375—36 **7 Claims**



1. An extremely high speed transmission link system, comprising:
- a transmission cable formed from one of twisted pair, shielded twisted pair, coaxial cable media or the like, said cable having frequency domain characteristics which distort high speed data transmission;
- a transmitter connected to said cable, said transmitter including conversion means for receiving high speed data transmission signals and for converting said high speed data transmission signals into high speed transmission link signals operating at a rate above 32 megabauds and up to 125 megabauds, said high speed transmission link signals being composed to overcome said frequency domain characteristics which distort said high speed data transmission signals;
- a receiver connected to said transmitter via said transmission cable, said receiver including reconversion means for regenerating a signal received from said transmission cable to an adequate signal level; and
- a concentrator platform connected to either one of said transmitter or said receiver, said concentrator platform including signal channel means for transferring said high speed data transmission signals, said concentrator platform including another transmitter and another receiver, said channel means transferring said high speed data transmission signals between said one of said transmitter or said receiver, and said another transmitter or receiver connected to said concentrator platform.

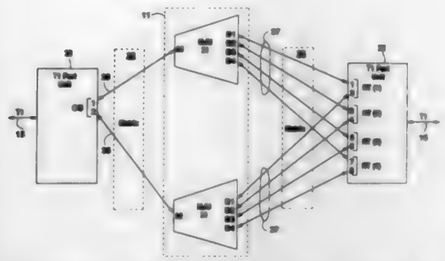
5,303,267
MULTIPOINT DATA COMMUNICATIONS SYSTEM
Sudhir Gupta, Carrollton, Tex., assignor to DSC Communications Corporation, Plano, Tex.
Filed May 4, 1992, Ser. No. 878,043
Int. Cl.[5] H04K *1/10;* **H04L** *27/28;* **H04J** *3/04;* **H04Q** *11/00*
U.S. Cl. 375—38 **18 Claims**

1. A method of interconnecting at least two standard multiple junction units (MJUs) for providing wideband data bridging on data channels of a transmission line, comprising the steps of:
- connecting a branch port of a first MJU to a first channel-port of a remote terminal port unit;
- connecting a corresponding branch port of a second MJU to a second channel-port of said remote terminal port unit, wherein said first channel-port and said second channel-port of said remote terminal port unit are for adjacent channels;

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connecting a master port of said first MJU to a first channel-port of a central site port unit; and

connecting a mater port of said second MJU to a second channel-port of said central site port unit, wherein said first channel-port and said second channel-port of said control site port unit are for adjacent channels;



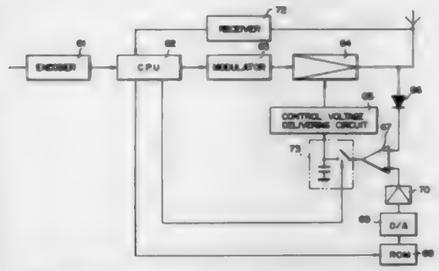
wherein all connections are by means of a time slot interchange switching system, such that during operation, data transmitted on adjacent channels will arrive on adjacent channels.

5,303,268

AUTOMATIC POWER CONTROL APPARATUS

Shyuitsu Tsutsumi, and Tatsuya Yamada, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1991, Ser. No. 735,898
Claims priority, application Japan, Jul. 27, 1990, 2-197866
Int. Cl.[5] H04B *7/005*
U.S. Cl. 375—60 **6 Claims**



1. An automatic power control apparatus for controlling digital data output from a transmitter so as to have a predetermined power level while the digital data is linearly modulated and non-modulated wave is added to an initial part of each time slot of a time division multiplexing access system, said automatic power control apparatus comprising:

level varying means for amplifying a modulated wave output from said transmitter at an amplification factor specified by level control means;

level detecting means for detecting a power level of the modulated wave output from the level varying means;

computing means for, during a period other than a time slot assigned to said transmitter, computing a power level of said non-modulated wave which is varied by a modulated wave, said modulated wave obtained by linearly modulating digital data to be transmitted in a next time slot, said computing means also for computing an average voltage of the power level of said time slot;

comparing means for comparing a power level, which is obtained by adding a difference between the power level of the non-modulated wave computed by said computing means and said average voltage of the power level of said time slot to said average voltage, with the power level detected by said level detecting means; and

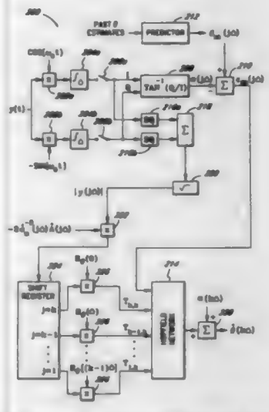
said level control means for operating said level varying mean at an amplification factor of said level varying means during a transmission period of said non-modulated wave, said amplification factor being adjusted during a transmission period of said modulated wave so that said power levels compared by said comparing means become equal to each other.

5,303,269

OPTICALLY MAXIMUM A POSTERIORI DEMODULATOR

Richard A. Altes, La Jolla, Calif., assignor to Chirp Corporation, La Jolla, Calif.

Filed Nov. 1, 1990, Ser. No. 607,582
Int. Cl.[5] H03D *3/00*
U.S. Cl. 375—78 **26 Claims**



1. An angle demodulator for an input signal y(t), comprising:

a network having a plurality of amplifiers each amplifier having a plurality of inputs, a bias b and an output wherein a set of feedback lines are connected between a selected set of amplifier outputs and a selected set of amplifier inputs; and

block processing means for iteratively setting each amplifier bias as a function of the difference between a predicted mean phase estimate $\theta_m(j\Delta)$ and a measured phase $\alpha(j\Delta)$ at a time $j\Delta$, where $1 \leq j \leq K$ for a K-sample data block and Δ is a sampling period of signal data $y(j\Delta)$, the mean phase estimate provided to the block processing means and the block processing means including means for receiving the input signal.

5,303,270

FRAME GUARD SYSTEM

Hironori Fujii, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,555
Claims priority, application Japan, Mar. 15, 1991, 3-074290
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—114 **8 Claims**

1. A frame guard system comprising:

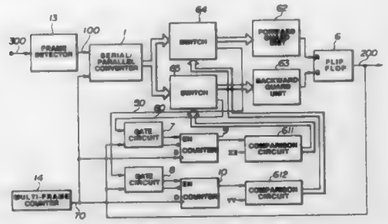
means for extracting frame synchronization bits from a received signal and for generating a frame synchronization signal when detecting a frame synchronization from the frame synchronization bits;

means for extracting the frame synchronization bits from the received signal and for generating an out-of-frame signal when failing to detect the frame synchronization from the frame synchronization bits;

backward guard means for outputting a frame alignment signal when the frame synchronization signal is generated continuously for a first predetermined number of times;

forward guard means for stopping output of the frame alignment signal when the out-of-frame signal is generated continuously for a second predetermined number of times;

first time measuring means for measuring a time after output of the frame alignment signal until the generation of the out-of-frame signal;



second time measuring means for measuring a time after the stoppage of the output of the frame alignment signal until the generation of the frame synchronization signal;

first control means for controllably changing the second predetermined number of times previously set at the forward guard means depending on a length of the time measured by the first time measuring means; and

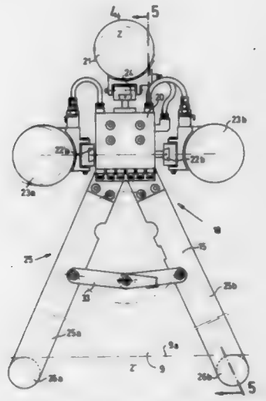
second control means for controllably changing the first predetermined number of times previously set at the backward guard means depending on a length of the time measured by the second time measuring means.

5,303,271

MOVABLE CARRIER DEVICE FOR CONDUCTING ATTENDANCE WORK IN THE SECONDARY PART OF A STEAM GENERATOR OF A PRESSURIZED-WATER NUCLEAR REACTOR

Antoine Cacciuttolo, Saint-Priest, France, assignor to Framatome, Coubevoie, France

Filed Oct. 7, 1992, Ser. No. 957,489
Claims priority, application France, Oct. 7, 1991, 91 12321
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—249 **11 Claims**



1. Device for conducting an inspection operation and attendance work in the secondary part of a steam generator of a nuclear reactor, said steam generator comprising an outer casing of generally cylindrical shape comprising at least one orifice, a number of exchange tubes having ends fastened in a tube plate separating an internal volume of the steam generator into a primary part communicating with inner space of the tubes and a secondary part containing the bundle of tubes, and a bundle casing which is arranged around the bundle coaxially within the outer casing, said bundle casing having one end located in the vicinity of the tube plate at a distance from said tube plate, the movable carrier being displaced in an annular space provided between the bundle casing and the outer casing, said device comprising:

(a) a central body carrying a first flexible head connected to inflation means for causing the head to change from a contracted state, in which the head can be displaced in the annular space between the bundle casing and the outer casing, to an expanded state, in which the head is retained by wedging at a location of the annular space;

(b) two jacks carried by the central body and having rods each of which carries at its end an inflatable flexible head connected to inflation and deflation means making it possible selectively to maintain the head at a location of the annular space and to displace said head in the annular space, the rods of the jacks being oriented in two directions located on either side of the central body of the carrier circumferentially of the annular space as a result of the successive retraction and extension of each of the jack rods; and

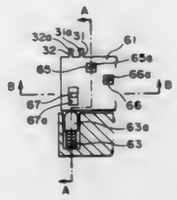
(c) an assembly for guiding the carrier circumferentially of the annular space, said assembly comprising two flexible arms each connected to the central body at one of its ends and carrying at least one rolling means at its other end.

5,303,272

APPARATUS FOR OPERATING THE GRID SPRINGS OF NUCLEAR FUEL ASSEMBLY

Junichi Oyama; Akio Sando, and Shuji Yamazaki, all of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,073
Claims priority, application Japan, Oct. 24, 1991, 3-278098
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—261 **8 Claims**



1. A key manipulating apparatus for manipulating inner and outer springs for firmly holding nuclear fuel rods in a plurality of grid cells of a plurality of grids in a fuel assembly, wherein said grids consist essentially of inner straps assembled with outer straps to form said grid cells and said inner and outer springs are formed respectively on said inner straps and on said outer straps so as to protrude into said grid cells and to hold said fuel rods by contacting the surface of said fuel rods; said apparatus comprising:

(a) a support for supporting said grids;

(b) outer spring manipulator means, disposed on said support at a position to correspond with said outer springs formed on said outer straps, for manipulating said outer springs so as to retract said outer springs from said grid cells; and

(c) inner key manipulating means for manipulating said inner springs so as to retract said inner springs formed on said inner straps from said grid cells by inserting a key into each grid cell of said grids, and rotating said key around the axis thereof;

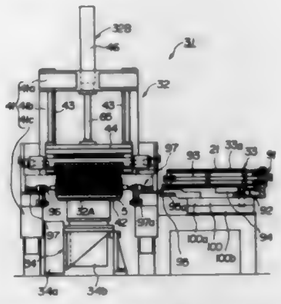
VOL 1161 ISS 2 AP 12 1994 UMI

wherein:
said outer straps are provided with through slits at both sides of said outer springs formed on said outer straps; and
said outer spring manipulator means comprises a plurality of hook manipulator means;
said hook manipulator means comprising:
a pair of hook stems having a set of opposing hooks disposed on opposing end side surfaces of said hook stems for grabbing an outer spring; and
retraction means for inserting said hook stems into the grid cell through said slits and moving said opposing hook stems toward each other for grabbing and withdrawing said outer spring from the grid cell through the slit.

5,303,273
APPARATUS FOR ASSEMBLING NUCLEAR FUEL ASSEMBLY

Taichi Koiwai; Katsunori Ohuchi, and Akio Sando, all of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,065
Claims priority, application Japan, Dec. 26, 1991, 3-357763
Int. Cl.[5] G21C *21/00*
U.S. Cl. 376—261 **13 Claims**

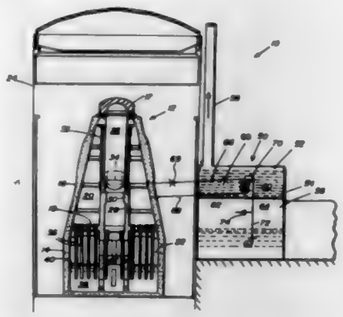


1. An apparatus for assembling a nuclear fuel assembly which includes a grid for supporting a plurality of fuel rods, said grid having a plurality of straps intersecting each other to define a plurality of grid cells therein, and a plurality of pairs of dimples and springs provided on the straps for supporting the fuel rods, the dimple and the spring being disposed in facing relation to each other, on wall portions of the straps, which cooperate with each other to define the grid cells, the dimple and the spring projecting into the grid cell, said apparatus comprising:
deflecting means disposed adjacent to said grid for deflecting the spring away from the dimple opposing thereto;
said deflecting means including a tubular member defining a plurality of circumferentially divided sleeve pieces, a rod member releasably inserted in said tubular member for sliding movement therealong, and drive means drivingly connected to said rod member for moving said rod member in said tubular member in a longitudinal direction thereof to bring the rod member into urging engagement with said sleeve pieces of the tubular member, whereby the sleeve pieces are deflected to be urged against the spring to deflect the same;
said assembling apparatus further comprising:
holding means for holding said grid;
maintaining means disposed adjacent to said holding means for maintaining the spring deflected, said maintaining means including a key member adapted to be releasably inserted in said grid cell of said grid for maintaining the spring deflected, and inserting means for inserting said key member into said grid cell of said grid; and
moving means attached to said holding means for moving said holding means into a shifted position, to thereby allow said maintaining means to insert another key member in another grid cell of said grid to maintain another spring deflected.

5,303,274
RETROFITTABLE PASSIVE CONTAINMENT COOLING SYSTEM

Craig D. Sawyer, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jan. 21, 1993, Ser. No. 6,536
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—283 **8 Claims**

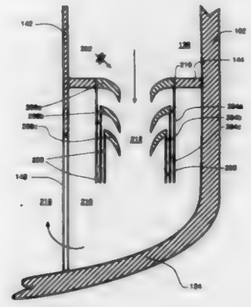


1. In a nuclear reactor system which includes
a containment structure having an upper drywell space and a lower wetwell space, the said spaces being separated one from the other by an intervening floor member,
a nuclear reactor pressure vessel disposed in the drywell space, there being a reactor core within said pressure vessel,
a suppression pool of water confined in the wetwell space, there being a gas space above a normal level of the water in the suppression pool, and
means for venting a heated and pressurized fluid present in said structure drywell space incident a pressure vessel loss-of-coolant accident to a submerged location in said suppression pool thereby to remove heat from and reduce pressure in the drywell space by condensing a water fraction of said heated fluid in said suppression pool water, a non-condensable fraction of said heated fluid venting to the wetwell gas space,
satellite heat removal means operable for effecting additional drywell heat removal during such accident and all drywell venting in the event the floor member structure is breached by a core meltdown during the loss-of-coolant accident with consequent merger of the gas space and drywell so that the containment lacks a space to which the heated fluid non-condensable fraction can vent, said satellite heat removal means comprising
a satellite structure external of said containment and set adjacent said containment structure, said satellite having upper and lower chambers,
at least one heat exchanger in said upper chamber,
a pool of cooling water in said upper chamber surrounding said heat exchanger,
vent means communicating the cooling water pool with an ambient environment,
an inlet conduit communicating an inlet end of the heat exchanger with the containment drywell whereby heated fluid present in the containment drywell can flow into the heat exchanger and be cooled to condense a water fraction therefrom,
an outlet conduit communicating an outlet end of the heat exchanger with the containment drywell,
a condensate/non-condensable gas collector in said outlet conduit, condensate collected in the collector passing therefrom to the containment drywell, a non-condensable gas fraction collected in the collector passing into a vent pipe, and
a pool of water in said lower chamber, there being a gas space in said lower chamber above a level of the water pool therein, the vent pipe having an outlet end submerged below said water pool level.

5,303,275
FORCED-CIRCULATION REACTOR WITH FLUIDIC-DIODE-ENHANCED NATURAL CIRCULATION

Irvin R. Kobsa, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 716,024, Jun. 13, 1991, Pat. No. 5,120,493. This application Jun. 5, 1992, Ser. No. 894,697
Int. Cl.[5] G21C *1/00*
U.S. Cl. 376—352 **9 Claims**

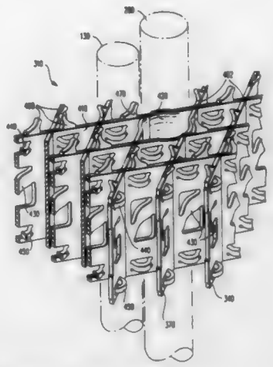


1. A forced-circulation dual-phase reactor comprising:
a reactor vessel;
a reactor core disposed within said vessel and defining a core inlet plenum below said core;
a chimney means disposed above said core for guiding fluid exiting upward from said core along a substantially vertical path so as to support a steam/water column therein;
a fluid return path for recirculating fluid exiting said chimney means to said core inlet plenum, said fluid return path defining an upstream direction and a downstream direction;
pump means for controllably enhancing a pressure differential across a boundary in said fluid return path so as to urge fluid in said downstream direction along said fluid return path; and
fluidic diode means for asymmetrically constraining fluid flow across said boundary, said fluidic diode means providing a path for at least some fluid to bypass said pump means and to pass relatively freely across said boundary in said downstream direction, said fluidic diode means relatively restricting fluid flow across said boundary in said upstream direction;
whereby, when said pump means is not operating, said fluid diode means provides relatively unrestricted natural circulation flow across said boundary, and when said pump means is operating, said fluid diode means relatively restricts backflow across said boundary.

5,303,276
FUEL ASSEMBLY INCLUDING DEFLECTOR VANES FOR DEFLECTING A COMPONENT OF A FLUID STREAM FLOWING PAST SUCH FUEL ASSEMBLY

Edmund E. DeMario, and Charles N. Lawson, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 29, 1992, Ser. No. 968,647
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—442 **11 Claims**

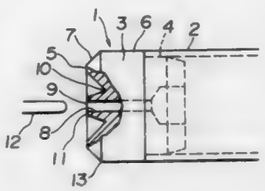


1. A fuel assembly, comprising:
(a) a lattice member defining a plurality of rhombic-shaped rod cells and a plurality of generally rhombic-shaped thimble cells therethrough;
(b) a plurality of fuel rods, each of said fuel rods extending through respective ones of the rod cells;
(c) a plurality of thimble tubes, each of said thimble tubes extending through respective ones of the thimble cells; and
(d) deflector means associated with each of the rod cells and attached to said lattice member and protruding over its associated rod cell for deflecting a liquid component of a fluid stream about said fuel rod extending through the rod cell.

5,303,277
PROCESS FOR FABRICATING FUEL ROD AND END PLUG THEREFOR

Yoshitaka Yaginuma, Tohkai, Japan, assignor to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 219
Claims priority, application Japan, Jan. 7, 1992, 4-1006
Int. Cl.[5] G21C *3/10*
U.S. Cl. 376—451 **4 Claims**



1. A process for fabricating a fuel rod including an elongated fuel tube having openings at opposite ends thereof, a plurality of fuel pellets inserted in the fuel tube, a lower end plug for sealing one of the openings, and an upper end plug for sealing an opposite opening, said upper end plug comprising an end face, an outer peripheral surface, a chamfer formed at an inter-

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section between the end face and the outer peripheral surface, an aperture formed in the center of the upper end plug, a groove formed around the aperture, and a lead portion formed between the aperture and the groove, said process comprising the steps of;

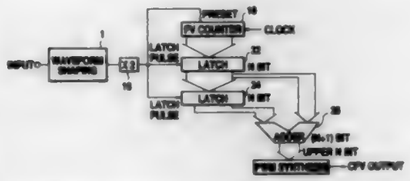
sealing an opening of the aperture by melting the lead portion of the upper end plug in such way that welding is carried out along the lead portion, and a welded portion formed by the welding is disposed inwardly of an edge formed between the chamfer and the outer peripheral surface of the upper end plug.

5,303,278

CIRCUIT FOR COMPENSATING WAVEFORM SHAPING ERROR

Hirokazu Tagiri, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 29, 1992, Ser. No. 921,246
Claims priority, application Japan, Aug. 9, 1991, 3-200791
Int. Cl.[5] H03K *5/00*; G06M *3/00*
U.S. Cl. 377—20 **2 Claims**



1. A waveform shaping error compensator circuit comprising:

(a) a waveform shaper for performing waveform shaping by converting an input signal to a rectangular signal;

(b) a multiplier connected to said waveform shaper for multiplying the waveform-shaped signal;

(c) a counter connected to said multiplier for counting a time t1 from a rise to a subsequent fall of the multiplied signal and a time t2 from a fall and a subsequent rise of the multiplied signal;

(d) two levels of latch circuits connected to said counter and said multiplier for latching the times t1 and t2 counted by said counter; and

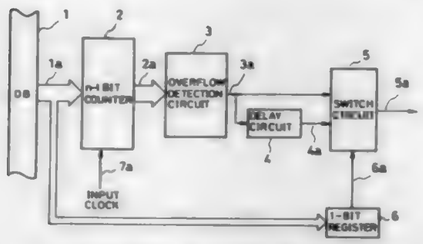
(e) an adder for adding up the times t1 and t2 latched by said two levels of latch circuits and for outputting a means value of the times t1 and t2.

5,303,279

TIMER CIRCUIT

Takeshi Fujii, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,453
Claims priority, application Japan, Feb. 6, 1992, 4-056274
Int. Cl.[5] H03K *21/08*
U.S. Cl. 377—51 **7 Claims**



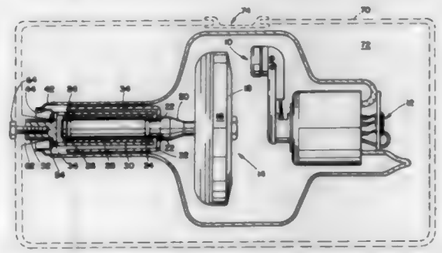
1. A timer circuit having an overflow detection circuit for detecting an overflow of a counter to which a count value is set and for outputting an overflow signal comprises counter means provided before said overflow detection circuit for counting high-order n−1 bits of the set n-bit input count value in response to a predetermined input clock, bit storage means for storing a low-order one bit of the input count value, delay means for delaying the overflow signal from said overflow detection circuit by half the cycle of the input clock, and switch means for selecting the overflow signal delayed by said delay means or the undelayed overflow signal from said overflow detection circuit according to a value stored in said bit storage means and for outputting the selected signal.

5,303,280

LARGE DIAMETER ANODE X-RAY TUBE WITH REINFORCED SUPPORT

Robert C. Crawford, St. Charles, and Mark S. Maska, Palatine, both of Ill., assignors to Picker International, Inc., Highland Hts., Ohio

Filed Nov. 27, 1992, Ser. No. 982,478
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—132 **16 Claims**



1. In a rotating anode x-ray tube in which an anode supporting bearing assembly is mounted in a cup-like bearing housing of a high thermal conductivity, the bearing housing including a shoulder portion which connects to a larger diameter cylindrical bearing containing side wall with a mounting shank of high thermal conductivity to define a unitary structure with the shoulder portion extending outward from the mounting shank, the improvement comprising:

a reinforcing member having a first, longitudinal portion extending longitudinally generally parallel to the shank and connected therewith and a second, seat portion which abuts and reinforces the shoulder region, the reinforcing member having greater structural strength than the bearing housing and the shank.

5,303,281

MAMMOGRAPHY METHOD AND IMPROVED MAMMOGRAPHY X-RAY TUBE

Thomas J. Koller, and Robert C. Treseder, both of Salt Lake City, Utah, assignors to Varian Associates, Inc., Palo Alto, Calif.

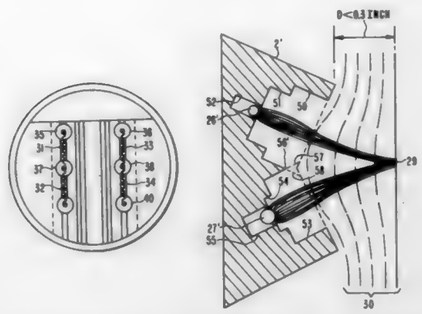
Filed Jul. 9, 1992, Ser. No. 910,932
Int. Cl.[5] H01J *35/06*
U.S. Cl. 378—134 **16 Claims**

13. A new method of using a mammography X-ray tube having a rotating anode target and spaced apart cathode, said cathode being a plurality of helically wound filaments, for X-ray mammography comprising the steps of:

simultaneously exiting said plurality of helically wound filaments to each produce a beam of electrons;

shaping the electric field in said space between said rotating anode target and said filaments to simultaneously superposition each said produced electron beam onto the same

region on said rotating anode target thereby increasing the intensity of X-rays produced; decreasing the exposure



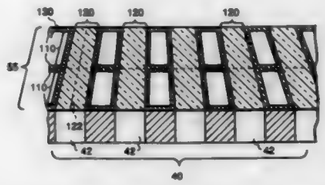
time of a patient such that the integral X-ray intensity times the exposure time is equal to the standard dose.

5,303,282

RADIATION IMAGER COLLIMATOR

Robert F. Kwasnick, and Ching-Yeu Wei, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 802,797, Dec. 6, 1991, Pat. No. 5,231,654.
This application Mar. 15, 1993, Ser. No. 31,450
Int. Cl.[5] G21K *1/02*
U.S. Cl. 378—147 **16 Claims**



1. A method of forming a collimator for use with a radiation point source adapted to emit radiation having a predetermined wavelength distribution, said collimator comprising:

forming a mask having a pattern of openings therein corresponding to a pattern of detector elements in a radiation detector array to which said collimator is to be mated;

exposing a photosensitive substrate to light beams passing through said mask and along paths corresponding to direct paths extending between said radiation point source and said collimator such that unmasked portions of said substrate are exposed at respective selected orientation angles;

etching said photosensitive substrate to form channels therein such that said channels have respective longitudinal axes aligned with respective ones of said selected orientation angles, said selected orientation angles being determined by the angle at which the light struck said photosensitive substrate; and

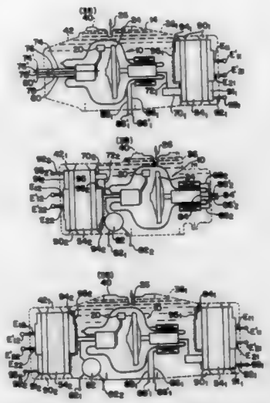
applying a radiation absorbent material to said at least one photosensitive substrate, said radiation absorbent material being selected to absorb radiation of the wavelength distribution emitted by said radiation point source.

5,303,283

X-RAY UNIT WITH HIGH-VOLTAGE POWER SUPPLY DEVICE INTEGRATED INTO THE CASING

Hans Jedlitschka, Chatillon, and Jacques Sireul, Wissous, both of France, assignors to General Electric CGR S.A., Issy les Mouloineaux, France

Filed Aug. 28, 1992, Ser. No. 936,383
Claims priority, application France, Sep. 3, 1991, 91 10889
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—202 **10 Claims**



1. An imperviously sealed casing for an X-ray device having a least one elongated end, sad casing being formed from the assembly of at least three assembly parts including at least one intermediate component joined to at least two abutting end components at opposite ends thereof, said casing further comprising:

an X-ray tube, attachably supported by said intermediate component, placed inside a chamber of the casing which is filled with an insulating and cooling fluid;

at least one high-voltage power supply having at least one high-voltage output terminal and at least one low-voltage input terminal, said at least one high-voltage output terminal being connected to a high-voltage electrode of the X-ray tube;

said at least one high-voltage power supply positioned within said casing at a corresponding at least one elongated end; and

means for fixing said at least one high-voltage power supply to the inside of said casing and within said chamber filled with the insulating and cooling fluid, said at least one high-voltage power supply being electrically coupled to one of said at least one low-voltage input terminals for adaptable connection to a low-voltage source means located outside the casing.

5,303,284

RINGING CIRCUIT FOR USE IN PORTABLE TELEPHONE SET

Nobuhisa Shinozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,759
Claims priority, application Japan, Jan. 31, 1990, 2-21233
Int. Cl.[5] H04M *11/00, 3/00, 1/00*
U.S. Cl. 379—58 **16 Claims**

1. A portable telephone set comprising:

means for receiving a radio frequency signal to produce a received signal;

means for detecting a calling signal out of said received signal to produce a calling signal detection signal;

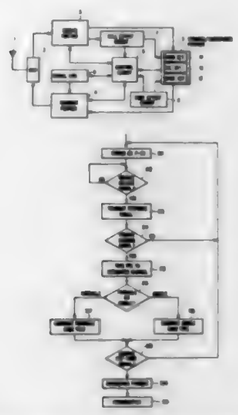
mode detecting means for detecting the use mode of said

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portable telephone set to produce portable-mode and mobile-mode signals when said telephone set is in portable and mobile modes, respectively;

an internal loudspeaker housed in said portable telephone set;

an external loudspeaker having a frequency characteristic different from that of said internal loudspeaker and adapted to be connected to a first connector provided on said telephone set when said portable telephone set is in the mobile mode; and



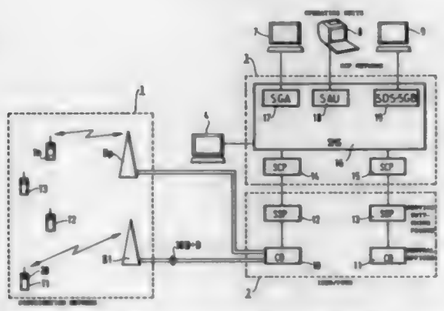
ringing signal generator means for generating a first ringing signal having a frequency spectrum corresponding to said frequency characteristic of said internal loudspeaker in response to said portable-mode signal and said calling signal detection signal and for generating a second ringing signal having a frequency spectrum corresponding to said frequency characteristic of said external loudspeaker in response to said mobile-mode signal and said calling signal detection signal.

5,303,285

WIRELESS TELEPHONE SERVICE ACCESS METHOD

Jean-Bernard Kerihuel, and Maurice Martin, both of Paris, France, assignors to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 706,969, May 29, 1991, abandoned.
This application Jan. 8, 1993, Ser. No. 2,100
Claims priority, application France, May 30, 1990, 90 06705
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **5 Claims**



5. Wireless telephone service network comprising:

a distribution network including a plurality of fixed stations and a plurality of wireless digital telephones linked by radio to the fixed stations;

an integrated digital services public switched telephone network to which each fixed station is connected by standard ports including a signaling channel;

a service control point connected to the public switched telephone network, including a wireless telephone service subscriber database and a call processing logic device;

a service management system including a reference database;

information exchange means associated with each of the fixed stations for exchanging with said service control point or said service management system, via the signaling channel of the standard port connecting the fixed station to the public switched telephone network, information concerning a caller desiring to access the public switched telephone network from a particular said wireless digital telephone;

access means responsive to said information for determining to what extent said caller has a right to access the public switched telephone network from said particular wireless digital telephone;

means for storing and keeping up to data in the service control point and service management system databases, for each subscription, the subscription telephone charging account status and a predetermined maximum debit or ceiling authorized for the account of said subscription;

means for verifying if the called party number is an emergency service number;

means for verifying in said service control point whether the caller's subscription account status has reached said ceiling if the called party number is not an emergency service number;

means for sending from the service control point servicing the caller to said particular telephone of the caller a message indicating his subscription telephone charging account status at the time access to the service is requested; and

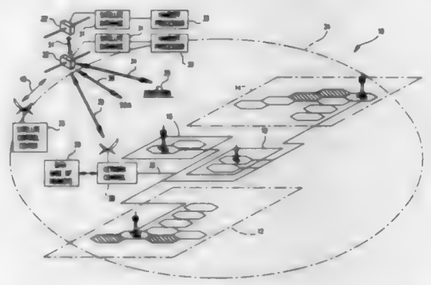
means for displaying this status on a display on said particular wireless digital telephone.

5,303,286

WIRELESS TELEPHONE/SATELLITE ROAMING SYSTEM

Robert A. Wiedeman, Los Altos, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Mar. 29, 1991, Ser. No. 678,931
Int. Cl.[5] H04M *11/00*; **H04B** *7/185, 1/00*; **G01J** *1/34*
U.S. Cl. 379—59 **8 Claims**



1. A wireless telephone/satellite telecommunications system operative in connection with a terrestrial communications system, comprising:

at least one satellite in earth orbit;

at least one gateway for communicating between said at least one satellite and the terrestrial communications system;

a network database management system;

at least one wireless telephone transceiver user capable of two-way communication with said at least one satellite, said wireless telephone transceiver user identified with a single terrestrial service area having linking capabilities to said network database management system;

a database, said database containing identification of each user, a physical location of said user, and a home gateway of said user, wherein portions of said database corresponding to users that are logged on to the system are maintained in each said at least one satellite;

means for maintaining and updating said portions of said datasbase in substantially real time; and

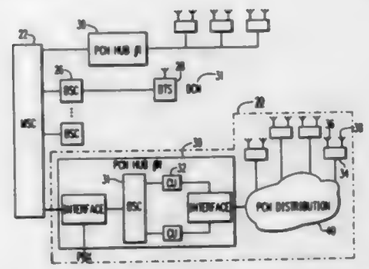
means for communicating between said network database management system and said portions of said roaming database, such that each one of said orbiting satellites establishes communications links to and from said user and said terrestrial communications system via a gateway based on information stored on-board said satellite in said portions of said database and further based on on-board processing, so that said user can send and receive traffic via said terrestrial communications system.

5,303,287

INTEGRATED PERSONAL/CELLULAR COMMUNICATIONS SYSTEM ARCHITECTURE

Enrique Laborde, Gaithersburg, Md., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 13, 1992, Ser. No. 929,603
Int. Cl.[5] H04B *7/204*
U.S. Cl. 379—59 **28 Claims**



1. A personal communications network, PCN, for use over allocated cellular communications channels, said PCN comprising a plurality of PCN subnetworks, each of said PCN subnetworks comprising:

a plurality of microcells arranged in a multi-dimensional grid, said grid defining at least rows and columns of said microcells, wherein the allocated cellular communications channels are divided into sets of said cellular channels and each of said columns of said grid is assigned one of said sets for internal spectral reuse;

a plurality of centralized channel units divided into groups, each of said columns corresponding to a respective group, and each of said channel units in said respective group including means for transmitting signals over the set of cellular channels assigned to the corresponding column; and

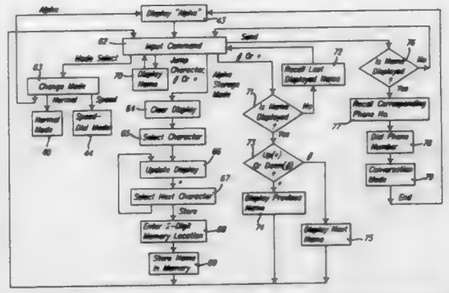
a downstream distributor for distributing said signals transmitted by said channel units in said respective group to personal communications units positioned within said corresponding column.

5,303,288

MULTIPLE MODE CELLULAR TELEPHONE CONTROL DEVICE

Paul E. Duffy, Ypsilanti; Jeffrey N. Golden, Southfield; Louis J. Bresinski, Jr., Trenton, and Danny N. Korovesis, Redford, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 628,134, Dec. 17, 1990, abandoned.
This application Apr. 15, 1993, Ser. No. 42,902
Int. Cl.[5] H04M *1/27, 11/00*
U.S. Cl. 379—59 **11 Claims**



4. A method for operating a vehicular communication apparatus including a memory, a display, and a plurality of input keys, said apparatus having a normal mode, a speed-dial mode, and an alpha mode, said method comprising the steps of:

entering one of said modes in response to turning on of said apparatus; and

entering a different one of said modes in response to activating at least one of said input keys;

wherein said normal mode comprises the steps of:

displaying an indication that said normal mode is active;

accepting digits corresponding to a phone number entered from said input keys or accepting input of a memory location storing a phone number and retrieving said phone number in response to activation of said input keys;

displaying said phone number as it is entered or as retrieved from said memory location;

storing a displayed phone number in response to a store command and a desired memory location within said memory entered from said input keys; and

calling said displayed phone number in response to a send command entered from said input keys;

wherein said speed-dial mode comprises the steps of:

displaying an indication that said speed-dial mode is active;

retrieving and calling a phone number stored in said memory in response to activation of an input key; and

displaying said retrieved phone number; and wherein said alpha mode comprises the steps of:

displaying an indication that said alpha mode is active;

displaying and scrolling through stored alphabetic names each corresponding to a respective phone number in a respective memory location in response to a jump command for displaying an alphabetic name beginning with an alphabetic character selected by a corresponding input key and scroll commands entered from input keys not corresponding to an alphabetic character for displaying another alphabetic name beginning with said selected alphabetic character, wherein said scrolling wraps around within said stored alphabetic names beginning with said selected alphabetic character;

storing an alphabetic name in said memory in response to a store command, alphabetic characters, and a desired memory location entered from said input keys; and

calling the phone number corresponding to said displayed

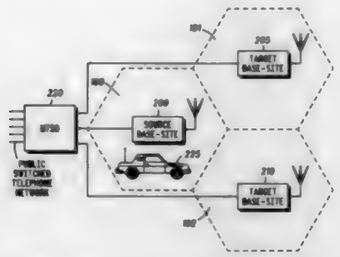
VOL 1161 ISS 2 AP 12 1994 UMI

alphabetic name in response to a send command entered from said input keys.

5,303,289
COMMUNICATION TRANSFER IN A CELLULAR RADIOTELEPHONE SYSTEM

Robert O. Quinn, Wheeling, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 12, 1991, Ser. No. 743,656
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—60 **18 Claims**



18. A cellular radiotelephone system requiring a communication transfer from a serving base-site to a selected target base-site, said base-sites operating under the direction and control of a mobile telephone switching office (MTSO), comprising:

means for determining that a mobile unit handoff is required;

means for identifying a target base-site to hand the mobile unit to;

means, coupled to the serving and the target base-sites, for switching audio to both the serving and the target base-sites;

means, coupled to the target base-site, for directing the target base-site to tune a target channel transceiver circuit to and monitor the mobile unit's in progress call on a serving base-site channel to verify signal quality;

said target channel transceiver circuit, in communication with the mobile unit via the serving base-site channel, for directing the mobile unit to tune to a selected target base-site channel different from the serving base-site channel;

means, coupled to the target base-site, for directing the target base-site to re-tune said target channel transceiver circuit to the selected target channel after transmitting directions to the mobile unit; and

means, coupled to the serving base-site, for releasing the serving base-site channel upon the arrival of the mobile unit onto the selected target base-site channel.

5,303,290
SYSTEM FOR ELMINATING GLARE IN VIRTUAL PRIVATE LINE CIRCUITS

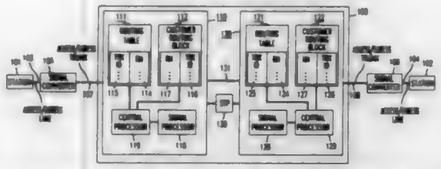
David A. Redberg, Red Bank, N.J., and David L. Sprague, Haverhill, Mass., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 29, 1991, Ser. No. 800,812
Int. Cl.[5] H04M *7/10*
U.S. Cl. 379—241 **9 Claims**

1. In a switching system arranged to establish a virtual private line connection between a first station and a second station, with each of said stations having a separate link to a communication switching system which i) sets up said virtual private line and ii) allows said stations to communicate only with each other, a method of eliminating a busy line condition which arises when said first station initiates a first call to said second station and said second station simultaneously initiates a second call to said first station, wherein said method comprises the steps of:

(a) detecting said busy line condition by monitoring the status of signals on each said link;

(b) clearing each said link by sending terminating supervisory signals towards said first and second stations while said stations are still off-hook; and

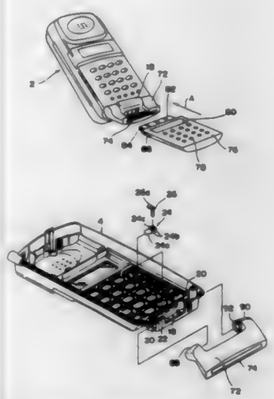


(c) initiating a new call over said virtual private line by sending an originating supervisory signal towards one of said stations while said stations are still off-hook.

5,303,291
PORTABLE TELEPHONE HAVING A DETACHABLE FUNCTIONAL MODULE

Hisamitsu Takagi, Inagi; Akihide Nishiyama, Yokohama, and Masashi Tomura, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 756,587, Sep. 9, 1991. This application Nov. 2, 1992, Ser. No. 970,467
Claims priority, application Japan, Sep. 7, 1990, 2-235660
Int. Cl.[5] H04M *11/00, 1/00*
U.S. Cl. 379—433 **1 Claim**



1. A portable telephone comprising:

a body having a speaker, a microphone, switch means, and a printed wiring board on which transmitting and receiving circuit parts and logic circuit parts are mounted;

a functional module mounting member rotatably mounted to said body and having a first connector;

a flexible printed wiring board for connecting said printed wiring board to said first connector;

holding means for rotatably holding said functional module mounting member to said body, said holding means including biasing means for exerting a biasing force to said functional module mounting member so as to maintain said functional module mounting member at a stable position when said functional module mounting member is rotated relative to said body, said holding means comprising:

a mounting projection integrally formed with said body and having a pair of holes formed therein;

a sleeve integrally formed with said functional module mounting member, said sleeve being rotatably inserted through one of said holes, said flexible printed wiring board being accommodated in said sleeve;

a shaft rotatably inserted through the other of said holes, said shaft having one end fixed to said functional module mounting member and having a plate portion formed adjacent the other end thereof; and

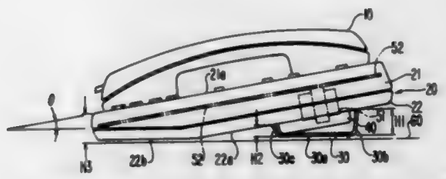
a U-shaped spring fixed to said body so as to nip said plate portion of said shaft; and

a functional module detachably mounted to said functional module mounting member, said functional module having a second connector adapted to engage said first connector.

5,303,292
LOW PROFILE TELEPHONE SET

Yoshiya Takahashi; Katsumi Itoyama, both of Hino; Kouichiro Sudo, Fuchu, and Yoshio Fujinami, Hachioji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 643,146, Jan. 18, 1991, abandoned, which is a continuation of Ser. No. 388,754, Aug. 3, 1989, abandoned, which is a continuation of Ser. No. 855,617, Apr. 25, 1986, abandoned. This application Mar. 9, 1992, Ser. No. 849,659
Claims priority, application Japan, Apr. 26, 1985, 60-90506
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—454 **9 Claims**



1. A telephone set for use as a table top model or a wall mount model, said telephone set comprising:

a casing having a top portion and a bottom portion, said bottom portion comprising a back bottom surface and a front bottom surface at a pre-determined angle to said back bottom surface, said front bottom surface being substantially parallel to said top portion;

a printed circuit board mounted within said casing with at least one electrical component;

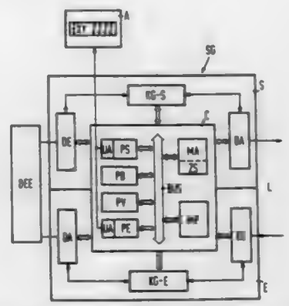
an auxiliary case projecting slightly from said front bottom surface, said auxiliary case permanently attached to said front bottom surface and completely covering said at least one electrical component; and

a holder which is detachably fixed to said front bottom surface of said casing when said telephone set is used as a table top model and which is detachably fixed to said back bottom surface of said casing when said telephone set is used as a wall mount model.

5,303,293
CRYPTOGRAPHIC DEVICE WITH A DISPLAY MEANS FOR IDENTIFICATION OF A DEFECTIVE FUNCTION IN THE CRYPTOGRAPHIC DEVICE

Helmut Bettenhausen, Cornberg Rockensuess, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE91/00550, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO92/02086, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 3, 1991, Ser. No. 946,488
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1990, 4023131
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—2 **6 Claims**



1. A unitary cryptographic device for use with a data terminal (DEE) in a data network, having

a transmission channel (S) with associated transmission cryptogrnerator (KG-S) for encoding transmitted data and corresponding data input and output equipment (DE,DA),

a reception channel (E) with associated reception cryptogenerator (KG-E) and corresponding data input and output equipment (DE, DA),

a control device (C) for controlling the reception and transmission channels (S, E),

an internal monitoring device (UA) assigned to the control device (C) for independent monitoring of the cryptographic device functions, and

a display means (A) linked to the monitoring device (UA) for identification of a defective function in the cryptographic device by alphanumeric representation of information about the defective function.

5,303,294
VIDEO THEATER SYSTEM AND COPY PREVENTIVE METHOD

Takayuki Kimoto, Hirakata; Toshimitsu Fujimori, Takatsuki; Toshikatsu Kawakami, Osaka, and Tatsuhiro Hosokawa, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 10, 1992, Ser. No. 896,674
Claims priority, application Japan, Jun. 18, 1991, 3-145818; Oct. 1, 1991, 3-253365
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—5 **10 Claims**

9. A video theater system comprising:

means for scrambling at least a component video signal of a video cassette recording, wherein said means for scrambling performs one of (1) line rotation and (2) line permutation;

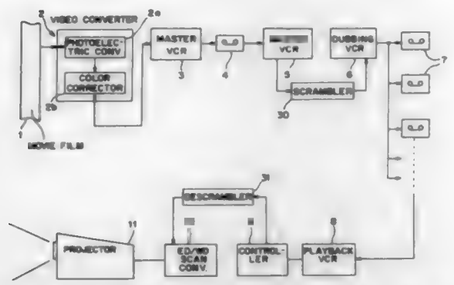
a video cassette recorder for reproducing the scrambled video cassette recording;

a tuner and an antenna for receiving an scrambled signal transmitted via a satellite;

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a controller device for controlling the video cassette recorder and the tuner;

means for descrambling the scrambled video signal; and



projector means for projecting a video image from the descrambled video signal.

5,303,295

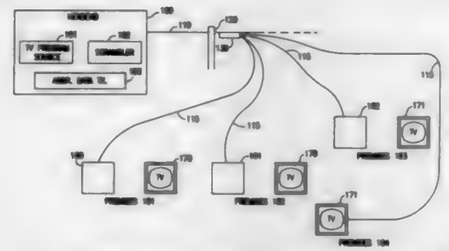
ENHANCED VERSATILITY OF A PROGRAM CONTROL BY A COMBINATION OF TECHNOLOGIES

Lamar E. West, Maysville, and Steve Nuaimallah, Alpharetta, both of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 492,909, Mar. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 166,302, Mar. 10, 1988, Pat. No. 4,912,760. This application May 20, 1992, Ser. No. 887,125

Int. Cl.[5] H04N *7/167*

U.S. Cl. 380—10 **5 Claims**



1. In a cable television system comprising a headend for transmitting programs over a cable television service spectrum to a plurality of subscribers and an off premises program control apparatus for selectively denying certain programs to the plurality of subscribers, said program control apparatus comprising:

a plurality of subscriber modules, each associated with one of the plurality of subscribers and selectively denying certain programs to the associated subscriber; and

at least two of said modules using a different program denial technology, wherein each program denial technology is chosen based on the selection of service level for the associated subscriber.

5,303,296

TELEPHONE SYSTEM

JoAnn Zucker, Tomkins Dr. P.O. Box 228, Tomkins Cove, N.Y. 10986

Filed Jan. 4, 1993, Ser. No. 390

Int. Cl.[5] H04M *1/64*

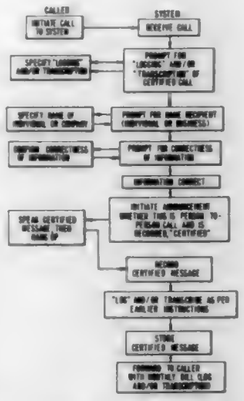
U.S. Cl. 379—67 **5 Claims**

1. A method for transmitting certified information by means of a telephone system from a caller to a recipient, comprising the steps of:

(a) the caller initiating the call by describing its nature as a certified call, providing the name, business, if any, and telephone number of the recipient, and indicating the name, business, if any, and phone number of the caller;

(b) the caller specifying whether or not a transcription should be made of the contents of the call;

(c) the caller and said system exchanging information as to whether or not the information provided is correct;



(d) the system providing an announcement to the recipient that the call is a certified call, that the call is being logged and whether or not the contents of the call are being recorded;

(e) the caller speaking the certified message;

(f) the system recording said message;

(g) the system transcribing the log of the call and providing a transcription of its contents if the instruction to do so has been provided by the caller in step (b);

(h) the system storing the message; and

(i) the system providing all transcriptions to the caller with billing information.

5,303,297

DYNAMIC PRICING METHOD AND APPARATUS FOR COMMUNICATION SYSTEMS

Durrell W. Hillis, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 25, 1991, Ser. No. 735,733

Int. Cl.[5] H04M *11/00*

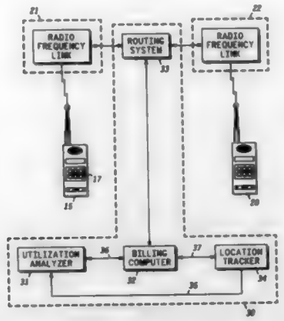
U.S. Cl. 379—63 **35 Claims**

1. A method for providing one or more mobile individual subscriber units (ISU) of a communication system with realtime information on the cost of a communication service, wherein the communication system has a realtime demand for communication services and includes a radio link, said method comprising steps of:

(a) determining a current loading of said communication system based on said realtime demand for communication services;

(b) dynamically computing a current calling rate by the communication system, the current calling rate based in part on said current loading of the communication system;

(c) sending the current calling rate to one of a calling and a called ISUs; and



(d) thereafter connecting or not connecting a call between the calling and the called ISU based on a response from one of the calling or the called ISUs.

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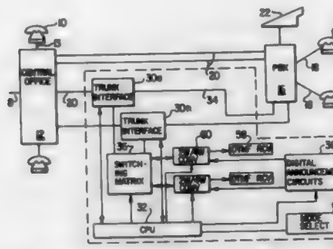
AUTOMATED ATTENDANT CALL PROCESSOR

Sanford J. Morganstein, Elgin, Ill.; Edward F. Tuck, West Covina, Calif.; Bakulesh A. Mehta, Bolingbrook, and Herbert B. Krakau, Elmhurst, both of Ill., assignors to Syntellect Acquisition Corporation, Phoenix, Ariz.

Continuation of Ser. No. 616,652, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 99,388, Sep. 21, 1987, Pat. No. 4,975,941, which is a continuation of Ser. No. 593,526, Mar. 26, 1984, Pat. No. 4,696,028. This application Sep. 14, 1992, Ser. No. 945,122

Int. Cl.[5] H04M *3/50, 7/14*

U.S. Cl. 379—67 **10 Claims**



1. A method for providing access to telephone subscriber sets connected to a telephone switching system of the type which typically provides access to such subscriber sets by a call completion assistant, comprising the steps of:

providing a call processor for responding to incoming directory number calls directed to the switching system and for communicating with a calling party initiating an incoming call for facilitating the completion of a call;

providing a local dedicated connection between the call processor and the switching system;

receiving a request for service by said call processor from the calling party directed to the switching system;

transmitting to the calling party by said call processor a voiced message content including (a) a request to input destination determining information and, (b) an association of pseudo telephone numbers with respective secondary destinations;

receiving from the calling party by said call processor a pseudo telephone number or the destination determining information;

translating the received pseudo telephone number into a telephone extension number if received from the calling party, and transmitting the translated extension number to the switching system; and

causing a communication path to be established between the calling party and (a) a destination selected by the calling party if the pseudo telephone number is received, or (b) a destination identified by the destination determining information if the destination determining information is received.

5,303,299

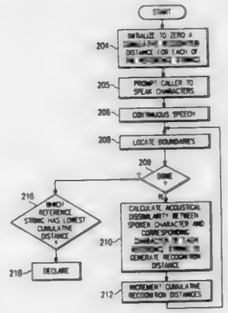
METHOD FOR CONTINUOUS RECOGNITION OF ALPHANUMERIC STRINGS SPOKEN OVER A TELEPHONE NETWORK

Alan K. Hunt, Carrollton, and Thomas B. Schalk, Dallas, both of Tex., assignors to VCS Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 566,519, Aug. 10, 1990, Pat. No. 5,125,022, which is a continuation-in-part of Ser. No. 523,486, May 15, 1990, Pat. No. 5,127,043. This application Jun. 22, 1992, Ser. No. 901,759

Int. Cl.[5] G10L *9/08;* **H04M** *1/66*

U.S. Cl. 379—88 **8 Claims**



1. A method, using a processing system, for recognizing character strings spoken by a caller over a telephone network, the processing system including a digital processor, means for interfacing to the telephone network and storage means for storing a predetermined set of reference character strings each having at least two characters, comprising the steps of:

(a) initializing a cumulative recognition distance for each of the reference character strings to zero;

(b) prompting the caller to speak characters in a character string to be recognized, the character string to be recognized having at least first and second characters;

(c) analyzing the character string spoken by the caller to locate a boundary between the first and second characters of the spoken character string;

(d) calculating a measure of acoustical dissimilarity between the spoken first character and the first character of each of the reference character strings to generate a recognition distance for each of the reference character strings;

(e) incrementing the cumulative recognition distance for each of the reference character strings by the recognition distance generated in step (d);

(f) calculating a measure of acoustical dissimilarity between the spoken second character and the second character of each of the reference character strings to generate a recognition distance for each of the reference character strings;

(g) incrementing the cumulative recognition distance for each of the reference character strings by the recognition distance generated in step (f);

(h) determining which of the reference character strings has a lowest cumulative recognition distance; and

(i) declaring the reference character string with the lowest

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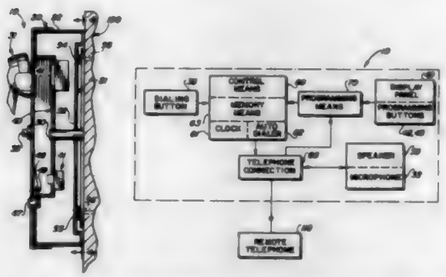
cumulative recognition distance to be the character string spoken by the caller.

5,303,300

SECURITY DOOR PHONE DEVICE

Donald Eckstein, 8125 SW. 205 Ter., Miami, Fla. 33189

Filed Jun. 29, 1992, Ser. No. 905,756
Int. Cl.[5] H04M *11/00;* **E05B** *45/06;* **A47B** *67/02*
U.S. Cl. 379—103 **5 Claims**



1. A security communication device interconnected with a telephone line for transmitting and receiveing telephone call signals, said device comprising:

a durable, weather resistant housing including a hingedly attached cover panel,

control means within said housing and interconnected with the telephone line and including memory means for storing a plurality of predetermined telephone numbers therein, each of said telephone numbers corresponding with a select time period,

said control means further including programming means structured and disposed to facilitate entering said plurality of predetermined telephone numbers and the corresponding select time period into said memory means, wherein said programming means includes a private access code to enable operation thereof and a default telephone number, said default telephone number being a phone number at a location where the device is being used,

dialing means for auto-dialing said predetermined telephone numbers,

said control means further including clock means for monitoring the select time period associated with each of said corresponding telephone numbers, said control means being structured and disposed to identify a telephone number corresponding with the select time period and activate the telephone number for dialing during the corresponding select time period,

a dialing button interconnected with said control means and structured to cause the activate telephone number to be accessed from said memory means and auto-dialed by said dialing means so as to transmit a call signal through said telephone line upon actuation of said dialing button,

telephone line connection means interconnecting said memory means with said telephone line, wherein said telephone line connection means includes an intercom-type connection when the calling said default telephone number, said intercom-type connection causing a distinctly identifiable ring of a phone connected to the telephone line associated with said default telephone number,

receiver means interconnected with said telephone line and including a speaker structured and disposed to audibly reproduce an audio signal received through said telephone line,

transmitting means including a microphone structured and disposed to facilitate transmission of an audio signal through said telephone line,

said programming means being operable from a remote telephone,

mounting means for mounting said housing to a wall surface, and

a recessed display panel having a plurality of programming buttons thereon structured and disposed to access said programming means,

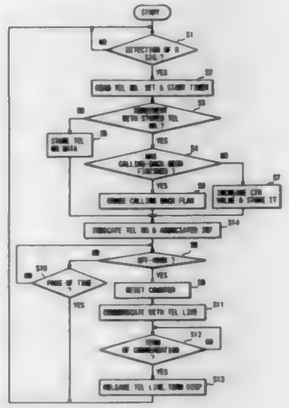
wherein said hingedly attached cover panel covers said recessed display panel, said cover panel having a lock to prevent unwanted access to said display panel, and wherein said mounting means includes a pair of brackets secured to said wall surface where said housing is to be mounted, said housing being securely locked to said brackets by a pivoting lock arm which is operably accessible for locking and unlocking movement thereof only through said display panel.

5,303,301

TELEPHONE APPARATUS WITH CALL-BACK INDICATION

Natsuko Takahata, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 20, 1992, Ser. No. 885,955
Claims priority, application Japan, May 22, 1991, 3-117267
Int. Cl.[5] H04M *15/00, 15/06, 3/42*
U.S. Cl. 379—142 **7 Claims**



7. A telephone apparatus comprising:

(a) operational key switch means for producing a key switch signal in response to a first manual operation of a user;

(b) first storing means responsive to said key switch signal for storing at least a telephone number in correspondence with said operational key switch in a first mode;

(c) dialing means for dialing in response to a dialing control signal;

(d) first control means responsive to said key switch signal for causing said first storing means to store said telephone number in said first storing means and for reading out telephone number data stored in said first mode and producing said dialing control signal in accordance with said stored telephone number in a second mode;

(e) telephone number data detection means for detecting telephone number data indicative of a telephone number of a calling party sent from a telephone line;

(f) second storing means for storing said detected telephone number data;

(g) third storing means for storing information;

(h) comparing means for comparing said telephone number data read from said first storing means by said first control means with said detecting telephone number data;

(i) second control means responsive to an output of said comparing means for causing said third storing means to store said information in association with said detected

telephone number data stored in the second storing means when said telephone number data read from said first storing means by said first control means agrees with said detected telephone number data stored in the second storing means, said information indicating that calling-back has been finished;

(j) indication means for indicating said telephone number data and said stored information; and

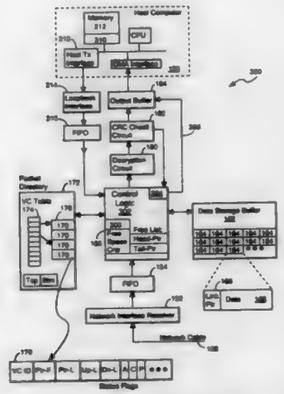
(k) third control means responsive to a second manual operation by said user for reading out said stored telephone data from said first storing means and said information from said second storing means and for causing said indication means to indicate said read out telephone number data and said stored information.

5,303,302

NETWORK PACKET RECEIVER WITH BUFFER LOGIC FOR REASSEMBLING INTERLEAVED DATA PACKETS

Michael Burrows, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 18, 1992, Ser. No. 900,844
Int. Cl.[5] H04L *9/00;* **H04J** *3/02*
U.S. Cl. 380—49 **11 Claims**



6. A network packet receiver, comprising:

receiver means for receiving interleaved streams of data cells, each stream of data cells comprising a data packet that includes encrypted data; each said data packet incorporating an embedded error checking value to enable error checking thereof;

a data buffer, coupled to said receiver means, for storing each distinct received stream of data cells as a separate linked list of data blocks;

logic means, coupled to said receiver means, for determining when a linked list of data blocks in said data buffer stores a complete data packet;

packet processing means, coupled to said data buffer and said logic means, for error checking the data blocks comprising a complete data packet and for transmitting the data packet to a host computer;

said logic means including space counting means for detecting when said data buffer has less than a threshold number of data blocks remaining for storing received data cells, and overflow prevention logic, responsive to said space counting means, for selecting a linked list of data blocks in said data buffer comprising an incomplete data packet and for transmitting said incomplete data packet to said host computer without error checking said incomplete data packet;

said logic means further including partial packet handling means for transmitting subsequent portions of said incomplete data packet to said host computer, without error checking said subsequent portions of said incomplete data packet, until said host computer receives a complete data packet; and

loopback means, coupled to said packet processing means, for receiving from said host computer said complete data packet, and for transmitting said complete data packet through said packet processing means back to said host computer;

said packet processing means including means for decrypting said retrieved complete data packet before transmitting the retrieved data packet to a host computer, and for decrypting data packets transmitted therethrough by said loopback means.

5,303,303

DATA COMMUNICATION SYSTEM USING ENCRYPTED DATA PACKETS

Andrew R. White, Harrow on the Hill, United Kingdom, assignor to GPT Limited, Coventry, England

PCT No. PCT/GB91/01207, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO92/02095, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 18, 1991, Ser. No. 988,112
Claims priority, application United Kingdom, Jul. 18, 1990, 9015795
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—49 **16 Claims**



16. A method of decrypting a packet received from a communications network, the packet comprising an unencrypted first header portion, an encrypted first data portion, and an unencrypted trailer portion, the encrypted first data portion comprising an encrypted further packet comprising an encrypted second header portion, an encrypted second data portion and an encrypted second trailer portion, the method comprising the steps of:

(a) extracting the encrypted first data portion from the packet to obtain the encrypted further data packet;

(b) decrypting the encrypted further data packet;

(c) generating a decrypted further packet comprising the unencrypted second header portion, the unencrypted second data portion, and the unencrypted second trailer portion.

5,303,304

CAMCORDER HAVING LOUDSPEAKER FUNCTION

Sang J. Lee, Kyungki-do, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 699,187, May 13, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,839
Claims priority, application Rep. of Korea, May 14, 1990, 6353/1990
Int. Cl.[5] H04R *5/00, 1/02, 25/00;* **H04N** *5/225*
U.S. Cl. 381—26 **8 Claims**

1. A camcorder having a recording device, comprising:

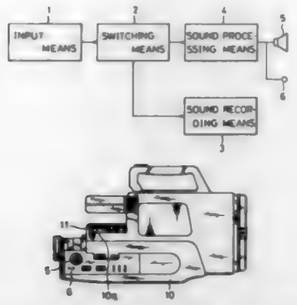
input means for receiving a first external sound when in a first position and coverting said first external sound into a first electrical signal, and for receiving a second external sound when in a second position and converting said second external sound into a second electrical signal;

sound processing means coupled to a speaker for amplifying a signal applied to an input thereof and outputting the amplified signal through said speaker; and

switching means operatively connected to the input means for sending said first electrical signal to the recording

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device when the input means is in the first position and for sending said second electrical signal to the input of the



sound processing means when the input means is in the second position.

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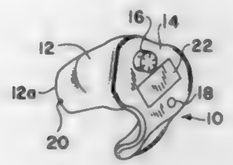
SOLAR POWERED HEARING AID

Robert W. Raimo, 748 Erie Blvd. West, Rome, N.Y. 13440, and Douglas R. Howard, 756 Rutger St., Utica, N.Y. 13501

Filed Apr. 18, 1986, Ser. No. 853,627

Int. Cl.[5] H02J *7/00*

U.S. Cl. 381—68 **10 Claims**



1. In an in-the-ear hearing aid of the type in which a case is shaped to fit in a wearer's outer ear, the case having a canal portion extending into the auditory canal of the wearer, and a back plate facing outward, comprising pickup transducer means in the case for converting ambient sounds to an electrical signal, electrical amplifier means within the case for amplifying said electrical signal, acoustical output transducer means in the canal portion of the case coupled to an output of the amplifier means for delivering amplified sound into the auditory canal of the wearer, and power cell means within the case for providing electrical power to said amplifier means; the improvement wherein said power cell means include a rechargeable storage cell permanently situated within the case below the back plate, and a photo cell carried on said back plate and having at least a photosensitive surface exposed, the photocell being connected in parallel with said storage cell and being of sufficient power capacity to power the amplifier means and at the same time to recharge the storage cell under average ambient sunlight conditions, the storage cell having a nominal capacity of between 10 and 30 milliampere hours to power the amplifier means for at least several hours under darkness conditions.

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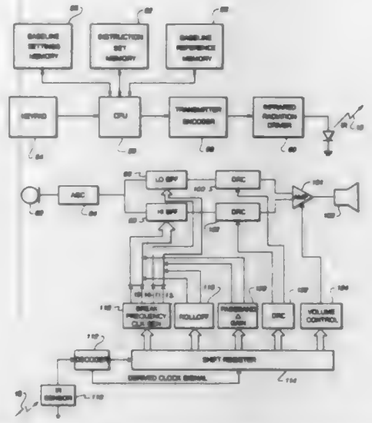
HEARING AID WITH PROGRAMMABLE REMOTE AND METHOD OF DERIVING SETTINGS FOR CONFIGURING THE HEARING AID

Bruce A. Brillhart, and Theodore P. Adams, both of Edina, Minn., assignors to AudioScience, Inc., Minnetonka, Minn.

Continuation of Ser. No. 362,827, Jun. 6, 1989, abandoned. This application Nov. 25, 1991, Ser. No. 796,659

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68 **19 Claims**



1. In combination a hearing aid and apparatus for controlling the hearing aid, comprising:

the hearing aid comprising:

a microphone producing a first signal;

a speaker;

first circuit means connected between the microphone and the speaker for processing the first signal;

radiation sensing means for sensing circuit setting data transmitted as radiation from a remote control, the radiation sensing means producing a second signal which corresponds to the circuit setting data transmitted;

second circuit means for processing the second signal and configuring the first circuit means in accordance with the circuit setting data transmitted by the remote control;

the remote control comprising:

a processor;

memory means holding a computer program;

memory means for holding baseline reference data, the baseline reference data comprised of a single set of baseline parameters, the baseline parameters providing data to configure the hearing aid for a particular sound environment;

a keypad containing a plurality of keys corresponding to a plurality of sound environments;

means for generating circuit setting data, corresponding to a modified set of baseline parameters computed for particular sound environment selected, at the time the sound environment is selected, the circuit setting data computed using the computer program which processes the baseline reference data, and modifies it to configure the hearing air for the sound environment corresponding to the key pressed, based on a key pressed on the keypad, the circuit setting data including all the information required to configure a circuit to a predetermined response;

a radiation transmitter for transmitting the processed circuit setting data as radiation to the hearing aid;

whereby when a key on the keypad is pressed the computer program processes the baseline reference data to produce the circuit setting data for a particular sound environment, the remote control transmits the circuit setting data to the hearing aid, which configure the first circuit means in accordance with the circuit setting data.

5,303,307

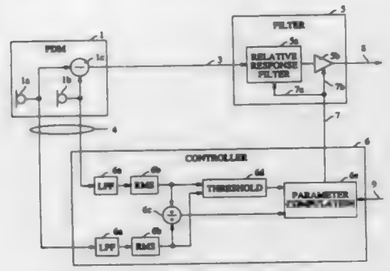
ADJUSTABLE FILTER FOR DIFFERENTIAL MICROPHONES

Gary W. Elko, Summit; Robert A. Kubli, Milford; Dennis R. Morgan, Morristown, and James E. West, Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 731,560, Jul. 17, 1991. This application Mar. 23, 1993, Ser. No. 35,551

Int. Cl.[5] H04R *3/00*

U.S. Cl. 381—92 **38 Claims**



1. A method for providing a differential microphone with a desired frequency response, the differential microphone coupled to a filter having a frequency response which is adjustable, the method comprising the steps of:

receiving one or more output signals from the differential microphone;

determining a distance between the differential microphone and a source of sound based on the received one or more output signals;

determining a filter frequency response, based on the determined distance, to provide the differential microphone with the desired response; and

adjusting the filter to exhibit the determined response.

5,303,308

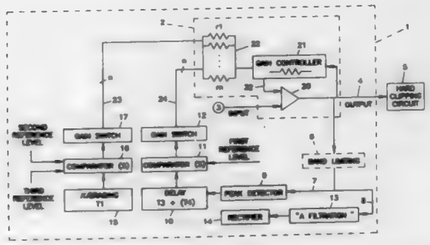
AUDIO FREQUENCY SIGNAL COMPRESSING SYSTEM

Leo Larsen, Kokkedal, and Jens Madsen, Ballerup, both of Denmark, assignors to GN Netcom A/S, Copenhagen NV, Denmark

Filed Jul. 7, 1992, Ser. No. 909,896

Int. Cl.[5] H03G *7/00, 3/00;* **A61F** *11/06;* **H04B** *1/64*

U.S. Cl. 381—106 **16 Claims**



1. An audio frequency signal compressing system comprising:

a) amplifier means for amplifying an input signal to provide a power output signal, wherein amplifier gain of the amplifier means varies according to a control voltage applied to the amplifier means;

b) gain controller means connected to the amplifier means, for modifying the control voltage;

c) feedback means, connected to the amplifier means, for deriving a feedback signal having a feedback signal amplitude from the power output signal;

d) first means, connected to the gain controller means and the feedback means, for reducing the amplifier gain, wherein the first means comprise a peak detector and a first comparator means, wherein the peak detector is connected to the feedback signal in order to detect peaks of the feedback signal and wherein the first comparator means is connected between the gain controller means and the peak detector in order to select a first reduced gain when the detected peak is above a first reference level;

e) second means, connected to the gain controller means and the feedback means, for varying the amplifier gain, wherein the second means comprise signal filer means for filtering the feedback signal and second comparator means, connected to the signal filter means and the gain controller means, for averaging the filtered feedback signal and for comparing the averaged filtered feedback signal to second and third reference levels to determine adjustments to the amplifier gain.

5,303,309

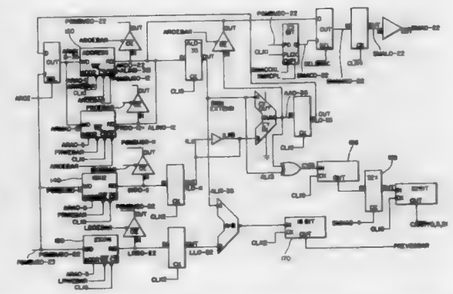
DIGITAL SAMPLING INSTRUMENT

David P. Rossum, LaSelva Beach, Calif., assignor to E-mu Systems, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 584,523, Sep. 18, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,439

Int. Cl.[5] G10D *5/00*

U.S. Cl. 381—118 **5 Claims**



1. A digital sampling instrument operating in successive clock cycles comprising

sound memory means for storing digital sound data in a plurality of accessible locations,

a digital to analog converter,

address generator means for generating address signals for accessing the stored digital sound data in said sound memory means in specified ones of said accessible locations, said address generator means including

address memory means for storing pointers to the current address and to the original or initial address of said sound data,

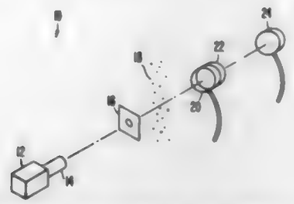
fraction memory means for storing a non-integer portion of the address of said sound data,

pipeline means for doubly incrementing said address and fraction memory means to provide an average of one clock cycle per operation,

means for outputting the accessed sound data to said digital to analog converter.

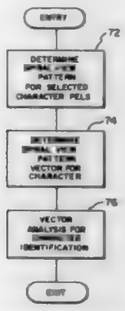
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,310
METHOD AND APPARATUS FOR IMAGE ANALYSIS OF COMPOSITE ORES
Richard D. Grove, Lakeland, Fla., assignor to IMC Fertilizer, Inc., Northbrook, Ill.
Filed Aug. 30, 1991, Ser. No. 753,348
Int. Cl.[5] G06K *9/00, 9/46;* **G01N** *21/00;* **H04N** *7/18*
U.S. Cl. 382—8 **10 Claims**



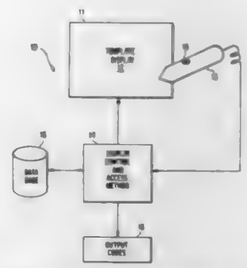
6. An apparatus for determining the relative concentrations of translucent and opaque particles in a particulate sample, said apparatus comprising:
a camera capable of capturing an image in frame intervals;
means for supplying a layer of particles along a path perpendicular to the viewing plane of the camera;
means for backlighting said layer of particles in synchronization with specified frame intervals of the camera wherein the illumination means comprises in combination a light source for providing diffused background light and a relatively brighter light source for illuminating said ore particles in stroboscopic synchronous accumulation of information by said camera;
means for storing images captured by the camera; and
means for calculating the concentration of translucent and opaque materials present in the sample feed stream from the stored images.

5,303,311
METHOD AND APPARATUS FOR RECOGNIZING CHARACTERS
Alec K. Epting, and Terry A. Will, both of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 491,895, Mar. 12, 1990, Pat. No. 5,105,470. This application Apr. 9, 1992, Ser. No. 865,608
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—10 **21 Claims**



1. A method for recognizing characters in a character recognition system having a scanner for scanning characters and generating a scanned image and an image digitizer for digitizing the scanned image into a character pattern of pels, said method comprising the steps of:
scanning a character with the scanner;
digitizing the scanned character with the digitizer;
determining a digital word including information indicative of a digitized view of strokes of the character for a plurality of radial view directions from a view pel and indicative of the length of a first stroke measured in a first radial view direction from the view pel relative to the length of the first stroke measured in a adjacent view direction, and indicative of the distance from the view pel to a remote stroke in the first direction relative to the distance to a remote stroke in the adjacent direction;
generating a character vector from a plurality of said digital words determined from various view pels in the character scanned by the recognition system; and
analyzing said character vector in a logical network to classify the scanned character and, based on the classification, to identify the scanned character as a character in a predetermined character set.

5,303,312
HANDWRITING RECOGNITION BY CHARACTER TEMPLATE
Liam D. Comerford, Carmel, and Stephen E. Levy, Thornwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 688,786, Apr. 19, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 942,118
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—13 **18 Claims**



1. A method of data entry using a graphic input and display tablet and a character recognition system including the steps of
displaying a template which defines strokes which can be recognized by said character recognition system,
inputting a locus on said graphic input and display tablet including a step of displaying said locus,
determining that entry of said locus is complete,
converting said locus to a glyph comprising one or more strokes of said template and displaying said strokes of said template corresponding to said locus while removing display of said locus,
determining that entry of said glyph is complete, and
generating a code corresponding to said one or more strokes in response to said step of determining said glyph is complete.

5,303,313
METHOD AND APPARATUS FOR COMPRESSION OF IMAGES
Peter B. Mark, and Stuart M. Shieber, both of Cambridge, Mass., assignors to Cartesian Products, Inc., Swampscott, Mass.
Filed Dec. 16, 1991, Ser. No. 808,539
Int. Cl.[5] G06K *9/36, 9/46*
U.S. Cl. 382—56 **92 Claims**

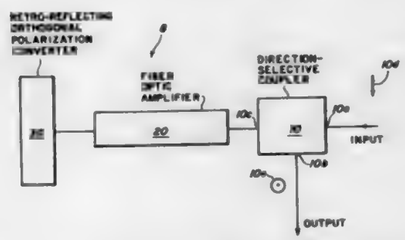
1. A method for compressing images comprising:
precompressing a first representation of an image, said first representation based on pixels of a first type and a second type, to generate a precompressed representation of said image,

identifying symbols in said precompressed representation of said image,
comparing a plurality of identified symbols to each of at least one template from a library of templates to match identified symbols to templates, and



generating a compressed representation of said image including a representation of templates, and an indication of a location and a template for symbols in said image.

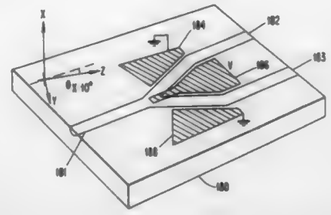
5,303,314
METHOD AND APPARATUS FOR POLARIZATION-MAINTAINING FIBER OPTICAL AMPLIFICATION WITH ORTHOGONAL POLARIZATION OUTPUT
Irl N. Duling, III, Round Hill, and Ronald D. Esman, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 15, 1993, Ser. No. 31,251
Int. Cl.[5] G02B *5/30*
U.S. Cl. 385—11 **27 Claims**



1. A single-polarization fiber optical amplifier comprising:
direction-selective coupling means for receiving an optical input of a first polarization state in one direction and outputting an optical output of a second polarization state orthogonal to the first polarization state in a second direction;
fiber optic amplifying means for optically amplifying the optical input in an optical fiber; and
retro-reflecting orthogonal polarization converting means for reflecting the amplifier optical input from said fiber optic amplifying means in a return direction through said fiber optic amplifying means and in an orthogonal polarization to the amplified optical input.

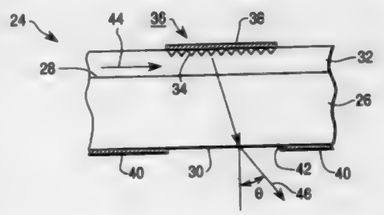
5,303,315
NEAR Z DIGITAL SWITCH
Per O. Granestrand, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sep. 1, 1992, Ser. No. 937,969
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—16 **52 Claims**

1. An optical switch, comprising:
an X-cut, mono-crystalline wafer of electro-optic material;
a first waveguide at an upper surface of said wafer, an axis of said first waveguide being near parallel to the Z-axis of said wafer;
a second and third waveguide at said upper surface of said wafer, wherein said first waveguide and said second and third waveguides intersect with an orientation of a leg and arms, respectively, of a Y-shape;
a first electrode adjacent to, and substantially bounded by, said second and third waveguides; and



second and third electrode adjacent to said second and third waveguides, and each being opposite to said first electrode relative to one of said second and third waveguides, wherein predetermined voltages applied to said first, second and third electrodes produce mode sorting in said waveguides such that said optical switch acts as a digital optical switch.

5,303,316
OPTICAL BEAM SCANNER
Jacob M. Hammer, Princeton, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.
Filed Dec. 22, 1989, Ser. No. 455,053
Int. Cl.[5] G02B *6/34*
U.S. Cl. 385—37 **7 Claims**



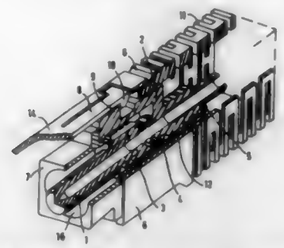
1. An optical device comprising:
a substrate having a surface;
a waveguide along and substantially parallel to said substrate surface;
a grating extending across said waveguide designed to deflect light substantially transversely out of the waveguide; and
means for varying the index of refraction of said waveguide so as to change the angle that the light is emitted from the waveguide.

5,303,317
CONNECTOR FOR AN OPTICAL FIBER
Silvio Marazzi, Cavigliano, Switzerland, assignor to Diamond SA, Losone, Switzerland
Filed May 11, 1993, Ser. No. 59,358
Claims priority, application Switzerland, May 20, 1992, 1627/92
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—78 **7 Claims**

1. Connector for an optical fiber having at least one connector pin (1) and a connector body (2), the connector pin being held int he connector body by a spring element (4) biasing the pin axially, wherein the spring element and at least one portion

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of the connector body are integrally formed, and further comprising a pin socket (3) in which the connector pin is held firmly, wherein the spring is a skeleton type spring having an



interrupted, hollow cylindrical receiving section, said section being formed integrally with said pin socket, and wherein the unit, comprising the pin socket, the spring element and the connector body, is manufactured from a plastic material.

5,303,318

HIGH POWER ACCEPTABLE OPTICAL FIBER AND FABRICATION METHOD THEREOF

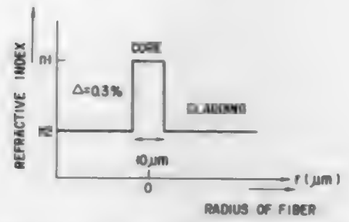
Mitsuhiro Tateda; Masaharu Ohashi, both of Mito; Katsusuke Tajima, Katsuta, and Kazuyuki Shiraki, Mito, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 967,816

Claims priority, application Japan, Nov. 1, 1991, 3-287643; Sep. 25, 1992, 4-256975

Int. Cl.[5] G02B *6/16*

U.S. Cl. 385—123 **6 Claims**



2. A high-power acceptable optical fiber comprising:

a core; and

cladding provided on the outer peripheral surface of the core, and forming the optical fiber together with the core, the concentrations of a dopant/dopants doped in the core and cladding changing in a direction of an axis of the optical fiber, respectively, the core having a same relative refractive index profile in any cross section thereof taken in a direction perpendicular to a direction of an axis thereof, the relative refractive index profile being normalized by the maximum refractive index of the core.

5,303,319

ION-BEAM DEPOSITED MULTILAYER WAVEGUIDES AND RESONATORS

Carol M. Ford, Columbia Heights; Theodore J. Podgorski, St. Paul; Randy J. Ramberg, Roseville, and Charles T. Sullivan, Burnsville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 28, 1992, Ser. No. 997,994

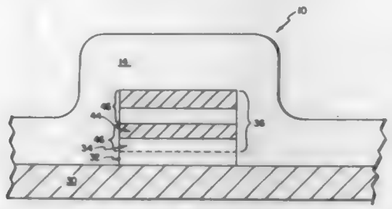
Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—131 **26 Claims**

1. An optical waveguide for the transmission of light beams, comprising:

a substrate having a planar surface;

a multilayer stack having a plurality of alternating layers of a first material and a second material attached to the substrate, each layer of material having parallel planar surfaces in contact with the adjoining layers, a first layer attached to the planar surface of the substrate such that the planar surface of the first layer is in contact with the planar surface of the substrate, the first material having a low optical index of refraction and the second material



having a high optical index of refraction, the first material and the second material both being attached to one another through the use of ion beam deposition; and

a topcoat of material attached to and covering a last layer of the multilayer stack, the topcoat made of a material with a low optical index of refraction, the topcoat being deposited onto the multilayer stack by ion beam deposition.

5,303,320

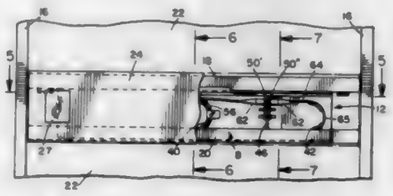
FIBER OPTIC SIGNAL DISTRIBUTION SYSTEM AND RACEWAY AND PANEL ASSOCIATED THEREWITH

David B. Duffie, 2142 Cambridge Ave., Cardiff, Calif. 92007, assignor to David B. Duffie and Renney E. Senn, both of San Diego, Calif.

Continuation-in-part of Ser. No. 948,163, Sep. 21, 1992, abandoned. This application Mar. 11, 1993, Ser. No. 29,698

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—135 **55 Claims**



1. Apparatus for dispersive routing of optical fibers of an optical fiber communication signal distribution system through partition members which comprises:

a panel having an interior bounded by front and rear surfaces joined by a plurality of edges;

an elongated raceway having an interior bounded by axial ends and top and bottom spaced apart substantially parallel structural members, said raceway cooperating with said panel;

first opening means in said raceway providing for passage of a plurality of optical fibers from an exterior location into said interior of said raceway;

an elongated U-shaped channel having a length not greater than the length of said raceway and a height and depth not greater than the height and depth of said interior of said raceway, such that said channel is adapted to be removably secured within said raceway;

fiber coupling means within and attached to an interior surface of said channel, said means comprising a coupling plate having a pair of apertures therethrough and an optical fiber coupler mounted in each aperture of said pair, each said coupler having an inlet end and an outlet end;

second opening means comprising an aperture in said raceway providing for passage of a plurality of optical fibers between said interior of said raceway and said interior of said panel;

third opening means comprising an aperture in at least one of said front and rear surfaces of said panel providing communication between said interior of said panel and the exterior of said front or rear surface; and

said second and third opening means cooperating to permit passage of a pair of optical fibers attached to said outlet end of a pair of said couplers from the interior of said raceway through said interior of said panel to the exterior of said panel.

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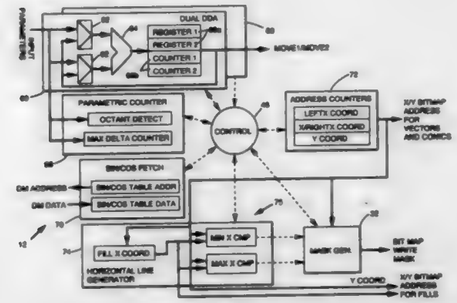
INTEGRATED HARDWARE GENERATOR FOR AREA FILL, CONICS AND VECTORS IN A GRAPHICS RENDERING PROCESSOR

John M. Peaslee, and Jeffrey C. Malacarne, both of Chino Hills, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 14, 1990, Ser. No. 582,728

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—143 **2 Claims**



1. An integrated hardware vector, conic and area fill primitive generator for generating digital primitive signals representative of vectors including primitive lines including polygons and conics primitives and area fills therefore, said primitive signals being used in a graphics display processor, said processor further including a display memory for storing system commands and instructions relating to the generation of said primitives, a host processor for generating said system commands, combinational means for acquiring said primitive signals and combining them with a second set of signal signals comprising symbols and a third set of digital signals comprising background and texturing signals to form a fourth digital signal comprising an output signal, said output signal being written in a predetermined address in a bit map memory of a graphics display, said primitive generator comprising:

input means for acquiring data and instructions to draw a primitive in said bit map memory; and

iterative means coupled to the input means for calculating and drawing said primitives relative to a first address in said bit map memory; said iterative means including

means for determining the number of iterations needed to generate a primitive line.

an address counter for storing the x and y coordinates of a pixel address in the bit map memory to which said primitive line is to be drawn;

a digital differential analyzer for accumulating components of x and y coordinate data, said analyzer comparing received x and y coordinate data with last previous x and y coordinate data stored in said analyzer and changing the x and y coordinates in said address counter when said x and y coordinates indicate that a pixel boundary has been crossed by said primitive vector line;

fetch means for acquiring sine and cosine data from said display memory for use in drawing curved primitive lines for conics primitives;

means for regulating the rates of x and y coordinate data input so that a curved primitive line is drawn;

line generator means for generating fill lines in the space bounded by drawn primitive lines; and

signal means for indicating when a drawn primitive line has reached a second address in said bit map memory and for resetting the iterative means to calculate and draw a new primitive line.

5,303,322

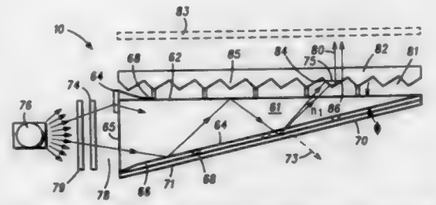
TAPERED MULTILAYER LUMINAIRE DEVICES

Roland Winston; Benjamin A. Jacobson, both of Chicago; Robert L. Holman, Naperville, and Neil A. Gitkind, Chicago, all of Ill., assignors to NiOptics Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 855,838, Mar. 23, 1992, Pat. No. 5,237,641. This application Mar. 11, 1993, Ser. No. 29,883

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—146 **69 Claims**



1. An optical device for collecting light from a source and for selectively outputting light, comprising:

a first layer capable of receiving light from said source and having an optical index of refraction n_1 and top and bottom layer surfaces converging to define at least one angle of inclination ϕ, said first layer including a back surface spanning said top and bottom layer surfaces and the light exiting said first layer when the light being reflected therein decreases its angle of reflection relative to a normal to at least one of said top and bottom layer surfaces and achieves an angle of reflection less than the critical angle θ_c relative to the normal;

layer means including an air gap underlying said bottom layer surface of said first layer and having an effective optical index of refraction n_2 for allowing transmission of light received form said first layer; and

light redirecting means at least one of overlying and underlying said layer means, said redirecting means allowing transmission of light across the thickness of said redirecting means for selectively redirecting light output from said layer means.

5,303,323

METHOD AND APPARATUS FOR MAKING ARBITRARILY SHAPED FIBER OPTIC BACKLIGHTING SUBSTRATES

George A. Mezei, Huntington Beach, Calif., assignor to Poly-Optical Products, Inc., Irvine, Calif.

Filed Oct. 16, 1992, Ser. No. 961,737

Int. Cl.[5] G02B *6/04*

U.S. Cl. 385—147 **9 Claims**

1. A method for fabricating an array of optical fibers from a strand of fiber having a predetermined diameter, comprising the steps:

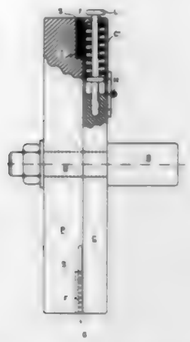
fabricating a winding mandrel with an outwardly opening circumferential groove having a lateral width greater than

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the fiber diameter and a radial depth substantially greater than twice the fiber diameter;

securing a strand of fiber to a bottom portion of the groove;

winding the fiber strand about the mandrel to form a spiral of coils inside the groove having a predetermined thickness substantially equal to said fiber diameter and a radial width determined by the number of revolutions the strand is wound about the mandrel;



fastening the fiber coils in at least a segment of the spiral to each other to form a fixed array;

opening at least a portion of the mandrel to provide access to the spiral;

removing the spiral from the groove; and

cutting the spiral radially to form a loose bundle of individual fibers leading to the fixed array.

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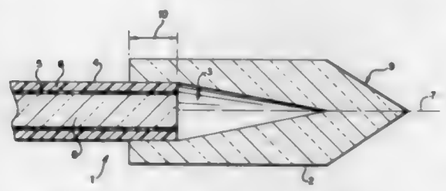
METHOD AND APPARATUS FOR PROVIDING CONTROLLED LIGHT DISTRIBUTION FROM A CYLINDRICAL FIBEROPTIC DIFFUSER

Scott Lundahl, Ridgewood, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Oct. 29, 1992, Ser. No. 968,140

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—147 **10 Claims**



1. A cylindrical fiberoptic diffuser comprising:

an optical fiber having an end portion for emitting light energy, and

a cylindrical tip enclosing said end portion,

said cylindrical tip having a tapered central hollow bore adjacent to the end portion of the optical fiber for emitting the light distribution in a cylindrical pattern.

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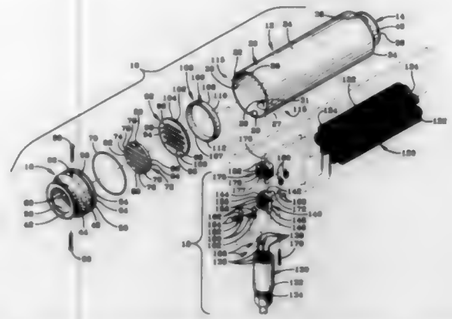
AIR HEATER

Timothy J. Pasternak, Lake Villa, Ill., and Wilson G. Zeitler, Westerville, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 13, 1992, Ser. No. 959,576

Int. Cl.[5] F24H *3/00*

U.S. Cl. 392—379 **14 Claims**



1. An air heater assembly adapted for connection to and use with an aseptic packaging system to make and maintain the same in a sterile condition, the air heater assembly comprising:

(a) a housing encasing a heating element, said heating element comprising a plurality of coiled members joined together, said coiled members each comprising a metallic heat conducting element retained within a metallic sheath;

(b) a connector assembly for electrically connecting said heater assembly to an electrical circuit, said connector assembly comprising a support bar having secured thereto a pair of connector plates, each of said connector plates also being secured to said metallic heat conducting element, said connector assembly also comprising a main plug, said main plug connected to said support bar and to said housing, said metallic sheath passing through said main plug; and

(c) an air flow entry member, said air flow entry member attached to said housing and communicating therewith upstream from the heating element, said air flow entry member comprising a fixed plate having formed therein a plurality of orifices, and a slidably cooperating plate having formed therein a plurality of orifices, said slidably cooperating plate being slidably adjustable relative to said fixed plate so as to vary the rate of the flow of air through said heater assembly without compromising the sterility of the aseptic packaging system.

5,303,326

BROADCAST DIGITAL SOUND PROCESSING SYSTEM

Gregory L. Dean, and Gordon L. Elliott, both of Overland Park, Kans., assignors to Computer Concepts Corporation, Lenexa, Kans.

Continuation of Ser. No. 503,444, Mar. 30, 1990, Pat. No. 5,129,036. This application Jul. 6, 1992, Ser. No. 909,183

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] G10L *5/00*

U.S. Cl. 395—2 **22 Claims**

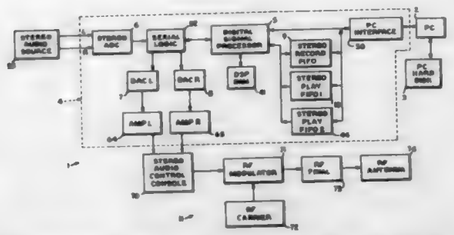
1. A method of recording and playing analog program signals using signal processor means, computer means and reconstruction means interfaced to said signal processor means, and a read/write computer data disk interfaced to said computer means, said method comprising the steps of:

(a) storing on said disk first digital program data and second digital program data representing respectively a first analog program signal and a second analog program signal;

(b) outputting from said reconstruction means at least one of said first analog program signal and said second analog program signal by the steps of:

(1) retrieving the program data corresponding to at least one of said program signals from said disk by cooperation of said computer means and said signal processor means; and

(2) reconstructing in said reconstruction means the analog program signal corresponding to the retrieved program data from said retrieved program data;



(c) selectively recording a third analog program signal by digitizing said third analog program signal to derive third digital program data and storing said third program data on said disk by use of said signal processor means;

(d) selectively outputting said first analog program signal substantially simultaneous with the outputting of at least a portion of said second analog program signal; and

(e) selectively recording said third analog program signal substantially simultaneous with the outputting of at least one of said first and second analog program signals.

5,303,327

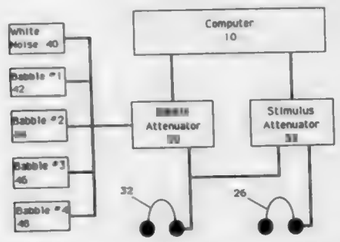
COMMUNICATION TEST SYSTEM

Raymond A. Sturner; James H. Heller, and Michael D. Feezor, all of Chapel Hill, N.C., assignors to Duke University, Durham, N.C.

Filed Jul. 2, 1991, Ser. No. 725,059

Int. Cl.[5] G10L *9/02*; G09B *7/04*

U.S. Cl. 395—2.79 **24 Claims**



1. A human communication test apparatus for screening hearing, speech, and language functions in a human subject, comprising:

(a) sound generator means for presenting verbal auditory stimuli to a subject, which stimuli may be vocalized by said subject;

(b) video generator means operatively associated with said sound generator means for presenting a plurality of visual scenes to said subject in conjunction with the presentation of any one of said verbal auditory stimuli, one of said scenes corresponding to said verbal auditory stimulus presented;

(c) first scoring means operatively associated with said video generator means for providing an evaluation of whether said subject can identify said scene corresponding to said verbal auditory stimulus;

(d) second scoring means operatively associated with said sound generator means for providing an evaluation of a vocalization by said subject of said verbal auditory stimulus presented; and

(e) second sound generator means for presenting masking noise concurrently with said verbal auditory stimulus to said subject.

5,303,328

NEURAL NETWORK SYSTEM FOR DETERMINING OPTIMAL SOLUTION

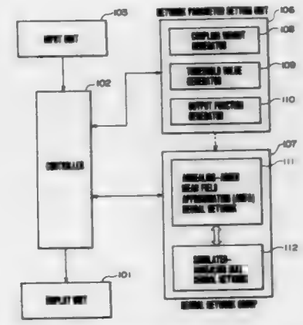
Hironari Masui, Kawasaki, and Ikuo Matsuba, Zama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,097

Claims priority, application Japan, Oct. 24, 1990, 2-284236

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—23 **25 Claims**



1. A neural network system comprising:

output means for outputting data supplied thereto;

network group means including first and second neural network means, wherein said first neural network means operates in accordance with a mean field approximation method to which annealing is added, said second neural network system operates in accordance with on a simulated annealing method, each of said first and second neural network means includes a plurality of neurons, and each of the neurons is connected to neurons via synapses for weighting outputs from the neurons depending on synapse weights and computes an output for a total of the weighted outputs from the neurons in accordance with its output function;

parameter setting means responsive to a parameter setting instruction, for generating for the plurality of neurons neuron parameters including synapse weights, threshold values, and an output function, setting the generated neuron parameters to said first neural network means, and selectively setting the generated neuron parameters to said second neural network means; and

operation control means responsive to an input of a problem, for analyzing the problem, for generating the parameter setting instruction in accordance with the analyzing result to output the instruction to said parameter setting means, for controlling, after said parameter setting means sets the neuron parameter an operation of said first neural network means in accordance with the analyzing result, for selectively outputting in accordance with the analyzing result, a result of the operation of said first neural network means to one of said output means and said second neural network means, for controlling an operation of said second neural network means in accordance with the analyzing result and the operation result of said first neural network means, and for outputting the operating result of the second neural network means to said output means.

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5,303,329

CONTINUOUS SYNAPTIC WEIGHT UPDATE MECHANISM

Carver A. Mead, Pasadena; Janeen D. W. Anderson, Fremont, and John C. Platt, Mountain View, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Filed Dec. 10, 1991, Ser. No. 805,324
Int. Cl.[5] G06G *7/12*; H03K *19/21*
U.S. Cl. 395—24 **34 Claims**



1. A continuous synaptic weight-update device comprising:
a single floating node having a capacitance associated therewith;
first and second signal input lines;
first and second error input lines;
electron tunneling means, connected to said floating node, for tunneling electrons from said floating node;
hot electron injecting means, connected to said floating node, for injecting hot electrons onto said floating node;
first driving means for driving voltages on said first signal input line and said first error input line in opposite directions with respect to a first reference voltage when it is desired to remove electrons from said floating node;
second driving means for driving voltages on said second signal input line and said second error input line in opposite directions with respect to a second reference voltage when it is desired to place electrons onto said floating node;
first control means, responsive to the product of said voltages on said first signal input line and said first error input line, for activating said electron tunneling means; and
second control means, responsive to the product of said voltages on said second signal input line and said second error input line, for activating said hot electron injecting means.

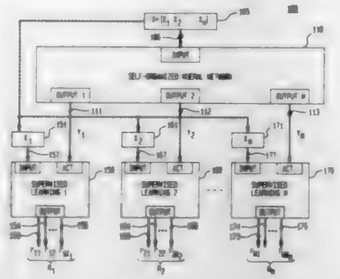
5,303,330

HYBRID MULTI-LAYER NEURAL NETWORKS

Marvin H. Gersho, Plainfield, and Randall R. Reiter, Upper Saddle River, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 709,652, Jun. 3, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 992,868
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—24 **14 Claims**

1. A neural network for retrieving information from a database, the neural network being trained to retrieve the contents of the database in response to a user input, the neural network comprising:
input means for receiving the user input and converting the user input to produce a first user query,
a self-organized neural network composed of neural nodes, said neural nodes being grouped into classes based on node activation resulting from training said self-organized neural network with reference to the contents of the database, said self-organized neural network including a plurality of outputs in correspondence to the number of classes,
said first user query serving as an input to each of said neural nodes, said self-organized neural network being responsive to said first user query so that one of said classes and, correspondingly, one of said outputs is activated as the result of the user input,
query means for receiving the user input and transforming the user input to produce a second user query different from but related to said first user query, and
a plurality of independently trained supervised learning networks, responsive to said query means and said self-organized neural network such that each of said outputs serves as an input to a corresponding one of said supervised learning networks, said learning networks being trained with reference to the contents of the database and arranged such that only one of said learning networks is activated in correspondence to said activation of said one of said classes, said activated one of said learning networks processing said second user query and emitting the retrieved information in response to the user input.

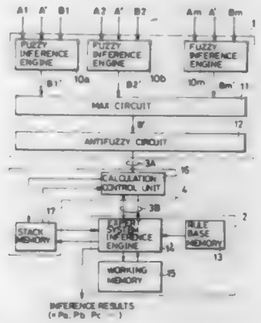


5,303,331

COMPOUND TYPE EXPERT SYSTEM

Yoichi Namba, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 19, 1991, Ser. No. 671,484
Claims priority, application Japan, Mar. 27, 1990, 2-78527; Feb. 28, 1991, 3-057842
Int. Cl.[5] G06F *7/12*
U.S. Cl. 375—51 **9 Claims**



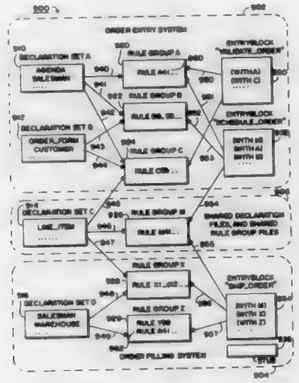
1. A compound type expert system comprising:
a first expert system for executing fuzzy rule-based inference according to a first rule set which permits describing information with ambiguity of language, and for outputting a definite value;
a second expert system for executing rule-based inference according to a second rule set which describes only information without ambiguity of language; and
a calculation control system arranged between said first expert system and said second expert system for calculating a plurality of control values on the basis of said outputted definite value and for activating said second expert system a number of times related to the number of said control values.

5,303,332

LANGUAGE FOR ECONOMICALLY BUILDING COMPLEX, LARGE-SCALE, EFFICIENT, RULE-BASED SYSTEMS AND SUB-SYSTEMS

Steven A. Kirk, Chelmsford; William S. Yerazunis, Marlboro; William Barabash, Acton, and Ken A. Gilbert, Harvard, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 30, 1990, Ser. No. 559,342
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—60 **2 Claims**



2. An expert system comprising:
a set of rules;
a memory;
means for organizing the set of rules into a plurality of disjoint rule groups;
means for storing said plurality of disjoint rule groups in the memory;
means for storing a plurality of entry blocks in the memory, each entry block defining a callable entry point to the set of rules;
means for associating a predetermined entry block with at least one predetermined disjoint rule group;
means for enabling, for said predetermined entry block; access to said at least one predetermined rule group; and
means for disabling, for said predetermined entry block, access to any of said plurality of disjoint rule groups not associated with said predetermined entry block.

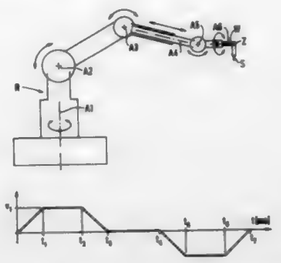
5,303,333

METHOD FOR CONTROLLING THE ACCELERATION AND VELOCITY OF AT LEAST ONE CONTROLLABLE AXIS OF A MACHINE TOOL OR ROBOT

Gerd Hoos, Erlangen-Kosbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 1, 1992, Ser. No. 861,911
Claims priority, application European Pat. Off., Apr. 2, 1991, 91105217.3
Int. Cl.[5] G05B *19/00*
U.S. Cl. 395—80 **12 Claims**

1. A method for performing an axial movement of a numerically controlled machine tool by controlling an acceleration and velocity of a controllable axis (A6) of the numerically controlled machine tool, comprising the steps of:
a) specifying a motion profile;
b) determining a plurality of path-time equations corresponding to a plurality of specifiable time intervals from a motion profile;
c) outputting a system cycle time (T) to a numerical controller for the axial movement;
d) calculating a sum ($\Sigma i = i_N$) of all previously output system cycle times;



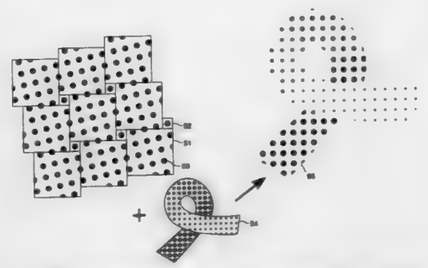
e) determining a motion segment for said controllable axis (A6) from a corresponding path-time equation corresponding to a particular time interval (t_0, t_1) in which said sum ($i_N T$) occurs;
f) controlling said controllable axis according to said motion segment; and
g) repeating steps b) through f) until a motion segment has been calculated for each time interval.

5,303,334

SYSTEM FOR GENERATING A RASTERIZED GRAPHIC IMAGE

Douglas E. Snyder, Sunnyvale; Daniel J. Clark, Los Gatos, and James McClure, Portola Valley, all of Calif., assignors to Adobe Systems Incorporated, Mountain View, Calif.

Filed Mar. 5, 1992, Ser. No. 846,547
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—109 **36 Claims**



14. A method for generating a rasterized graphic image having a region containing a plurality of device pixels, said region being described by two or more digital input commands, said digital input commands including a command to fill said region with a halftone screen pattern, said rasterized graphic image being in a form for display on a raster display device or raster marking engine, said method comprising the steps of:
receiving a first digital input command which describes said region;
receiving a second digital input command which specifies a mode for filling said region with device pixel data;
translating said first and second digital input commands into at least one internal command to be executed in parallel with a second internal command;
for each of a plurality of said device pixels, substantially simultaneously,
if said region is to be filled with a selected gray level,

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correlating each device pixel with a corresponding threshold value in a reference array of threshold values, said reference array of threshold values corresponding to an array of pixels in a halftone screen pattern,

comparing said selected gray level with said corresponding threshold value, and

rendering each device pixel by setting device pixel data for each device pixel according to its corresponding threshold value, said selected gray level and said second digital input command;

or if said region is to be filled with a solid color,

rendering each device pixel by setting device pixel data for each device pixel according to said solid color and said second digital input command; and

outputting said device pixel data in a form for display on a raster display device or a raster marking engine, whereby said region is filled with device pixel data to form a halftone screen pattern or a solid color.

5,303,335

IMAGE FORMING APPARATUS

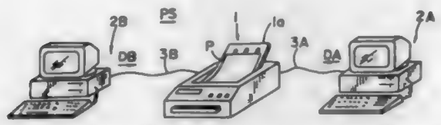
Yoichi Iwasaki; Akihiro Nishi, both of Kobe, and Satoshi Yoshida, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 30, 1991, Ser. No. 753,103

Claims priority, application Japan, Aug. 31, 1990, 2-231194

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—111 **7 Claims**



1. An image forming apparatus for forming images corresponding to image data transmitted from at least one external device onto recording paper, comprising:

receiving means for receiving image data from an external device,

memory means for storing the image data received by said receiving means by converting into bit form, and

control means for switching, when the image data is written to said memory means or when the image data is read out of said memory means, image orientation recorded on the recording paper with respect to a discharge direction thereof after completion of each unit of a printing job so as to distinguish each unit from other units.

5,303,336

PRINTING SYSTEM INCLUDING PRINT SERVER

Seiji Kageyama; Keiichi Nakane, both of Yokohama, and Chikahiko Nagata, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 699,660, May 14, 1991. This application Jan. 14, 1993, Ser. No. 4,496

Claims priority, application Japan, May 14, 1990, 2-123782

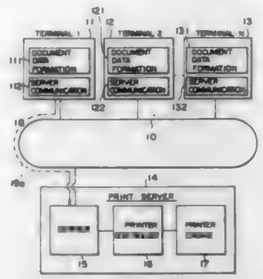
Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—114 **11 Claims**

1. A printing system having a plurality of terminals and a print server connected via a network to the plurality of terminals such that the print server is shared by the plurality of terminals to print document data including a string of printing commands produced by the terminals, the printing system comprising:

means, included in each of the plurality of terminals, for adding an identifier to the document data to be supplied to the print server, the identifier identifying a type of printing protocol thereof; and

means, included in the print server, responsive to the identifiers, for converting different printing protocols of the



plurality of terminals into a common printing protocol usable by the print server.

5,303,337

METHOD AND DEVICE FOR DETERMINING A VIEWING PERSPECTIVE FOR IMAGE PRODUCTION

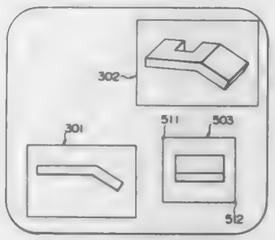
Tomotoshi Ishida, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 659,718

Claims priority, application Japan, Feb. 28, 1990, 2-045563

Int. Cl.[5] G06F *15/72, 15/60*

U.S. Cl. 395—119 **10 Claims**



1. For projecting and displaying a three-dimensional model representing a shape of a three-dimensional object on a two-dimensional image screen, a method of determining a viewing perspective for image production comprising the steps of:

projecting said three-dimensional model, based on a first predetermined viewing perspective to generate a first projected image;

displaying said first projected image at a predetermined position on said screen;

designating an arbitrary position on said screen by an operator;

generating information of a relative positional relationship between the display position of said first projected image on said screen and said designated arbitrary position;

computing a second viewing perspective which is formed when said first viewing perspective is rotated by a predetermined angle, based on said information of the relative positional relationship;

projecting said three-dimensional model based on said second viewing perspective to generate a second projected image; and

displaying said generated second projected image at said designated position on said screen.

5,303,338

COMPACT ELECTRONIC APPARATUS EQUIPPED WITH GRAPHIC REPRESENTING FUNCTION

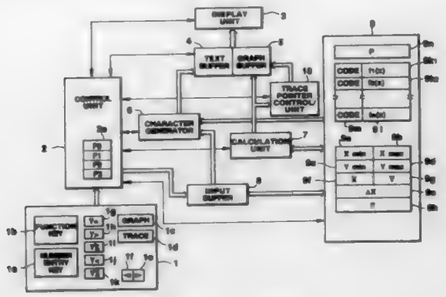
Akihiro Handa, Fussa, and Osamu Negishi, Akishima, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 777,675

Claims priority, application Japan, Oct. 18, 1990, 2-279924; Dec. 20, 1990, 2-404209; Dec. 26, 1990, 2-406446

Int. Cl.[5] G09F *1/14*

U.S. Cl. 395—140 **7 Claims**



1. An electronic apparatus comprising:

formula input means, comprising a keyboard having at least number keys and function keys, for entering a formula;

formula storage means for storing at least a formula entered through the formula input means;

display means, having an X-Y matrix type display screen, for displaying various data on the display screen;

graphic representing means for displaying at least a graph of the formula stored in the formula storage means on the display screen of the display means;

data entering means for entering an arbitrary selected value dX to set a trace pitch in an X-direction;

first storage means for storing the value dX entered through the data entering means;

second storage means for storing a value Xo relating an arbitrary point to be displayed on the display screen of the display means;

advancing means for changing a position of the point displayed on the display screen of the display means;

tracing means for repeatedly changing the position of the displayed point by the trace pitch for said selected value dX by, upon each operation of the advancing means, reading out the value dX from the first storage means and the value Xo from the second storage means, adding the value dX to the value Xo to obtain a sum value X1, calculating a value Y1 corresponding to the sum value X1 from the formula stored in the formula storage means, and for storing the sum value X1 in the second storage means in place of the value previously stored therein;

coordinate displaying means for displaying on the display screen of the display means (a) the values X1 and Y1 obtained by the tracing means, and (b) each point designated by the values X1 and Y1 due to operation of said advancing means.

5,303,339

THREE-DIMENSIONAL GRAPHIC PROCESSING APPARATUS

Nobuyuki Ikuma, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 26, 1990, Ser. No. 604,131

Claims priority, application Japan, Oct. 31, 1989, 1-281667

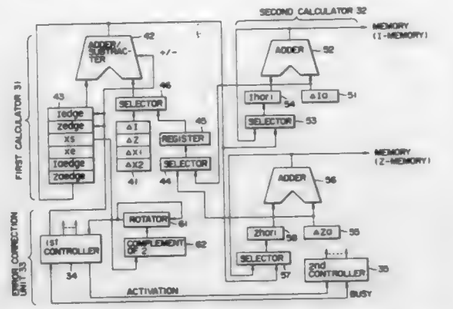
Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—132 **9 Claims**

1. A method of shading a graphic figure to be displayed on a graphics apparatus having a plurality of pixel locations, the method including the steps, performed by a processor, of:

generating a first signal representing a side of the graphic figure;

extracting a point from the first signal to produce an extracted point;



determining a luminance for the extracted point;

determining a pixel location corresponding to the extracted point; and

adjusting the luminance based on a spatial difference between the extracted point and the corresponding pixel location.

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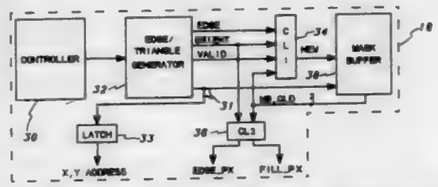
CONCAVE POLYGON DRAWING METHOD AND PROCESSOR FOR A COMPUTER GRAPHICS DISPLAY SYSTEM

Jorge Gonzalez-Lopez, Red Hook; Robert S. Horton, Hurley; Thomas P. Lanzoni, Lake Katrine, and William L. Luken, Jr., Ulster Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 425,888, Oct. 23, 1989. This application Feb. 16, 1993, Ser. No. 18,338

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—141 **25 Claims**



8. Display processor for a computer graphics display system having display means including a frame buffer for storing individual pixels for each of a plurality of lines to be displayed on a display monitor, said frame buffer being organized into an M×N plurality of addressable constituent blocks of pixels, said display processor being capable of drawing in said frame buffer a concave polygon, said display processor comprising:

edge/triangle generation means connected to receive signals from said controller;

first combinational logic means connected to receive signals from said edge/triangle generation means;

a mask buffer organized into an M×N plurality of constituent pixels, said mask buffer being connected to receive pixel values from said first combination logic means and address signals from said edge/triangle generation means, said pixel values from said first combinational logic means and said address signals from said edge/triangle generation means being used to create a mask of the boundary of said polygon during a first pass and a mask of the interior

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of said polygon while preserving said mask of said boundary of said polygon in said mask buffer during one or more subsequent passes; and

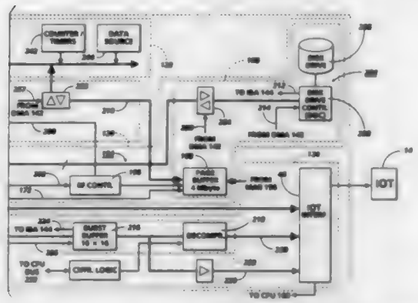
second combinational logic means connected to receive address signals from said edge/triangle generation means and pixel values from said mask buffer, said second combinational logic means outputting to said frame buffer one of an edge signal and a fill signal for each X,Y address processed, said edge signal corresponding to a boundary pixel of said polygon and said fill signal corresponding to an interior pixel of said polygon.

5,303,341

VIDEO PROCESSOR FOR A PRINTING APPARATUS

Isaak Rivshin, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1991, Ser. No. 784,481
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **16 Claims**



1. In a printing apparatus with a video processor adapted to transfer a first set of image data from an input device to an output device, said video processor including a controller for controlling operation of the input device and the output device as well as said video processor, said video processor having a first bus across which the first set of image data is transmitted, said video processor comprising:

an input buffer, communicating with the first bus and the input device, for buffering the first set of image data;

a page buffer, communicating with the first bus and said input buffer, for selectively storing the first set of image data, said page buffer including predesignated addresses at which the first set of image data is stored,

a second bus being coupled with the controller and said page buffer; and

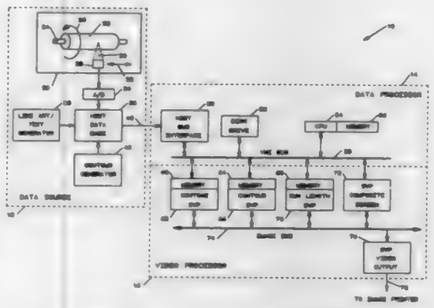
a programmable direct memory access apparatus being coupled with said input buffer, said page buffer and the controller, said programmable direct memory access apparatus being decoupled relative to said second bus and programmed with the controller for enabling transfer of the first set of image data from said input buffer to the predesignated addresses, wherein during a first time interval, the first set of image data is buffered in said input buffer while the controller communicates with said page buffer to transfer a set of data with said page buffer, and during a second time interval, the first set of image data is transferred to the predesignated addresses of said page buffer, with said programmable direct memory access apparatus, while the controller is using of the second bus.

5,303,342

METHOD AND APPARATUS FOR ASSEMBLING A COMPOSITE IMAGE FROM A PLURALITY OF DATA TYPES

Christopher J. Edge, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 553,175, Jul. 13, 1990, abandoned. This application Dec. 22, 1992, Ser. No. 64,362
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—164 **3 Claims**



1. A method for combining in real time a plurality of image data files of differing sizes, resolutions, and formats and for real time converting of said data into halftone pixel data for output on either single or multiple beam recording devices comprising:

receiving said plurality of image data files from a source;

reformatting each of said image data files as they are received into one of several possible formats, each format being determined by the original format of said image data file in conjunction with an image data conversion means, said reformatting being performed in real time while said data is being received at the maximum data rate of said source and which may include separating said image data file into multiple image data files according to color separation;

storing said reformatted data files, said storing being performed in real time while said data is being received at the maximum data rate of the source;

preparing a data map file to specify which portions of said plurality of different image files are to be retrieved from storage when the conversion from image data to halftone pixel data takes place, based on position coordinates for each image determined by an operator, in which said map file is optimized to permit maximum data retrieval rate from said storage;

retrieving and transferring said reformatted image data files according to said map file in which portions of variable size from each file are retrieved and placed in at least one data buffer of image data conversion means via high speed interface in response to a ready signal from said image data conversion means, said retrieval and transfer of data occurring iteratively until all image files have been converted;

converting in parallel said plurality of data types each of which may contain certain of said plurality of image data file portions into one output stream of high resolution halftone pixels via image data conversion means, said converting occurring in real time while said retrieval and transferring of reformatted image data files is being performed and in response to a ready signal transmitted from an output recording device; and,

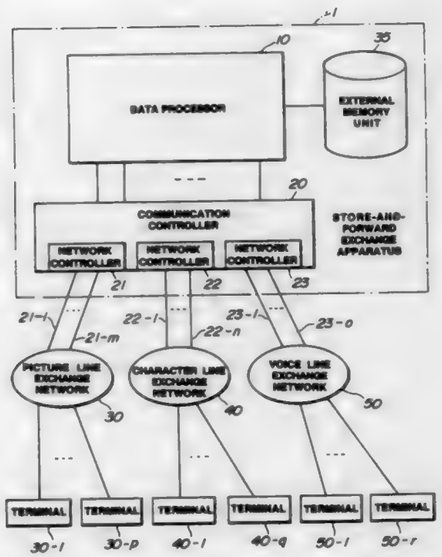
transmitting said high resolution halftone pixels also in response to said ready signal transmitted from said output recording device.

5,303,343

MULTI-MEDIUM STORE-AND-FORWARD EXCHANGE APPARATUS AND METHOD OF CONTROLLING THE APPARATUS

Kouichi Ohya, Kokubunji, and Hiroyuki Watanabe, Tachikawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1990, Ser. No. 585,705
Claims priority, application Japan, Sep. 27, 1989, 1-251654
Int. Cl.[5] G06F *15/16, 13/38*
U.S. Cl. 395—200 **23 Claims**



1. A multi-medium store-and-forward exchange apparatus comprising:

a first network controller, connected to a first line network having a plurality of lines for transmitting and receiving data of a first signal format;

a second network controller, connected to a second line network having a plurality of lines, for transmitting and receiving data of a second signal format different from said first signal format;

means for storing data of the first and second signal formats received by the first and second network controllers through the first and second line networks, respectively;

means for monitoring states of the lines of the first and second line networks and for judging the presence and absence of idle lines in each of the first and second line networks;

means for converting data of the first signal format to data of the second signal format when data of the first signal format stored in the storage means is to be transmitted and the monitoring means judges the absence of any idle line in the first line network and the presence of an idle line in the second line network; and

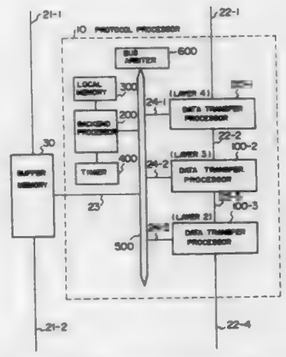
means for transmitting the data converted by the data conversion means through the second network controller to the idle line.

5,303,344

PROTOCOL PROCESSING APPARATUS FOR USE IN INTERFACING NETWORK CONNECTED COMPUTER SYSTEMS UTILIZING SEPARATE PATHS FOR CONTROL INFORMATION AND DATA TRANSFER

Tatsuya Yokoyama; Susumu Matsui; Matsuaki Terada; Tetsuhiko Hirata, all of Machida, and Mika Mizutani, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 489,243, Mar. 5, 1990, Pat. No. 5,056,038. This application Feb. 25, 1991, Ser. No. 659,705
Claims priority, application Japan, Feb. 23, 1990, 2-041005; Nov. 19, 1990, 2-311494
Int. Cl.[5] G06F *3/00, 15/16*
U.S. Cl. 395—200 **22 Claims**



1. A communication control equipment connected between a computer system and a network, comprising:

computer interface means, connected to said computer system, for communicating with said computer system;

network interface means, connected to said network, for communicating with said network;

buffer memory means, connected between said computer interface means and said network interface means through a first path for data transfer, for temporarily storing protocol data in association with communication data to be transmitted from said network interface means or received by said computer system; and

protocol processor means for performing protocol processing on said protocol data within said buffer memory, said protocol processor means being connected between said computer interface means and said network interface means through a second path for control information transfer and being connected to said buffer memory means through a third path to access said buffer memory means;

said protocol processor means comprising:

first processor means, connected to said second and third paths, for accessing said buffer memory means in response to said control information transferred through said second path, for executing a first category of protocol processing, necessary for normal data transfer of said communication data, on said protocol data stored in said buffer memory means, and for transferring said control information to said third path if protocol processing other than said first category of protocol processing is necessary for said protocol data; and

second processor means, connected to said third path, for accessing said buffer memory means in response to said control information received through said third path, and for executing protocol processing other than said first category of protocol processing on said protocol data stored in said buffer memory means;

wherein said network interface means includes means for reading out said communication data and said processed protocol data from said buffer memory means and for

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transmitting the communication data to said network in a predetermined format in response to the reception of control information for data transmission from said second path, and means for writing new communication data in association with new protocol data into said buffer memory means and for issuing new control information for data reception to said second path when the communication data is received in a predetermined format from said network.

5,303,345

METHOD FOR CONTROLLING DATA SENDING AND RECEIVING OPERATIONS OF A MICROPROCESSOR

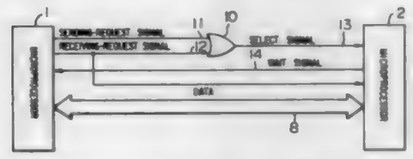
Kesayoshi Iguchi, Fujisawa; Takashi Kondoh, and Keiichi Nambu, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 25, 1991, Ser. No. 735,900

Claims priority, application Japan, Jul. 30, 1990, 2-202103

Int. Cl.[5] G06F *15/16, 13/00*

U.S. Cl. 395—200 **1 Claim**



1. A method of controlling data sending and receiving operations between first and second microprocessors, said method comprising the steps of:

(a) sending a selected signal which is one of a data sending request signal and a data receiving request signal from the first microprocessor to the second microprocessor;

(b) producing a resultant select signal based upon a result of a logical OR operation on the data sending request signal and the data receiving request signal;

(c) sending the resultant select signal to the second microprocessor;

(d) causing the second microprocessor to respond to the resultant select signal and the selected signal to determine if the selected signal signifies one of a data receiving request and a data sending request; and

(e) controlling data sending and receiving operations of the second microprocessor according to a determination result of step (d).

5,303,346

METHOD OF CODING 32-KB/S AUDIO SIGNALS

Peter Fesseler, Stuttgart, and Gebhard Thierer, Ditzingen, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 5, 1992, Ser. No. 924,922

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 4126581; Apr. 13, 1992, 4212339

Int. Cl.[5] G10L *9/02*

U.S. Cl. 395—2.39 **9 Claims**

1. A method of coding digitized audio signals, comprising the steps of:

dividing an audio signal, consisting of a continuous sequence of sample values, into successive blocks of equal length, and performing overlapping windowing;

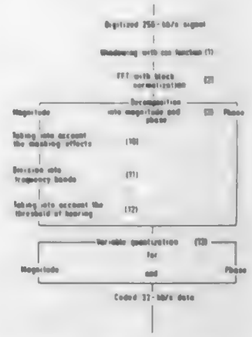
transforming the blocks into complex Fourier coefficients by means of a discrete Fourier transform;

decomposing the complex Fourier coefficients into magnitude values and phase values;

quantizing the phase values with a linear quantization characteristic which becomes coarser going from low toward high frequencies;

combining the magnitude values into frequency bands which are oriented with regard to predetermined critical bands and become wider toward high frequencies;

fixing quantization levels for each frequency band, taking into account a frequency-dependent, absolute threshold of hearing, such that a frequency range lying below the respective frequency-dependent, absolute threshold of hearing is disregarded, and taking into account a relative threshold of hearing, such that frequency ranges in the



immediate vicinity of frequencies with large magnitude values are taken into account to a reduced extent;

fixing a number of sub-bands consisting of single values of the frequency bands, and determining the greatest single magnitude value of each sub-band, and

performing variable quantization of each frequency band by quantizing the greatest magnitude value of a sub-band with a maximum available number of bits and all other magnitude values with a smaller number of bits.

5,303,347

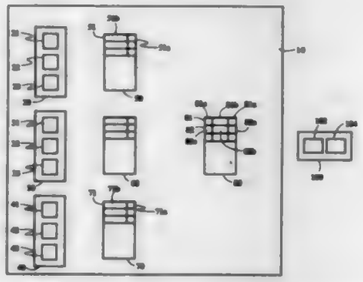
ATTRIBUTE BASED MULTIPLE DATA STRUCTURES IN HOST FOR NETWORK RECEIVED TRAFFIC

David A. Gagne, Goffstown, N.H., and Satish L. Rege, Groton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 27, 1991, Ser. No. 815,007

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—250 **47 Claims**



1. A method of storing packets of digital information, said packets having a plurality of attributes, comprising:

providing a plurality of sets of buffers, the buffers of each set being associated with a predetermined group of values of one of said attributes;

providing a corresponding receive ring for each set of buffers;

receiving a packet;

determining the value of a selected one of said attributes of the received packet;

selecting a receive ring corresponding to the set which is associated with values that include the value determined;

identifying one of said buffers of the set corresponding to the selected receive ring; and

storing the received packet in the identified buffer.

5,303,348

METHOD OF ARBITRATING ACCESS TO A DATA BUS AND APPARATUS THEREFOR

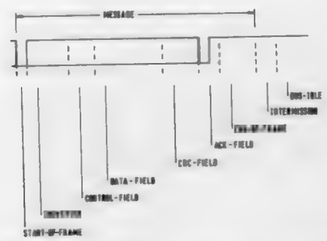
Wolfgang Botzenhardt, Göppingen; Siegfried Dais, Gerlingen; Uwe Kiencke, Ludwigsburg; Martin Litschel, Vaihingen/Enz, and Wolfgang Krampe, Renningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 511,080, Apr. 19, 1990, abandoned, which is a continuation of Ser. No. 831,475, Feb. 20, 1986, Pat. No. 5,001,642. This application Mar. 23, 1992, Ser. No. 856,430

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1985, 3506118

Int. Cl.[5] G06F *13/36, 15/20*

U.S. Cl. 395—325 **7 Claims**



1. A method of setting up messages for operating a data processing apparatus having a plurality of stations interconnected by a serial data bus for transmitting messages, the messages each having a head part and a data part as well as a data name and a priority for transferring messages to a plurality of the stations via the serial data bus, the method comprising the steps of:

generating a plurality of said messages in at least one of said stations;

connecting said plurality of stations to said serial data bus;

configuring the head part as an identifier of each message to define the contents of the data field by holding a name and a priority for determining accessibility to the data bus;

determining admission to the data bus by the priority fixed in the head part of the message by comparing on bit level the bit level each transmitting station transmits to the bus with the bit level it actually senses on the bus; and,

stopping transmission of the messages without destroying information on the bus if the bit levels are not identical and completing the transmission if the head part has the highest priority.

5,303,349

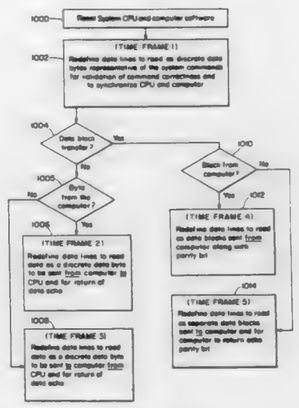
INTERFACE FOR ESTABLISHING A NUMBER OF CONSECUTIVE TIME FRAMES OF BIDIRECTIONAL COMMAND AND DATA BLOCK COMMUNICATION BETWEEN A HOST'S STANDARD PARALLEL PORT AND A PERIPHERAL DEVICE

R. John Warriner, Amherst, and Mark J. Lankarge, South Deerfield, both of Mass., assignors to Valitek, Inc., Amherst, Mass.

Filed Jun. 6, 1990, Ser. No. 534,042

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—275 **21 Claims**



1. A parallel port computer interface system for interconnecting a host computer and peripheral device by means of a standard parallel port, generally utilized for a printer interface, said standard parallel port comprising a group of parallel port lines having a plurality of fixed output lines, a plurality of fixed input lines, and a plurality of fixed bidirectional lines, said parallel port computer interface system comprising:

means for establishing a plurality of bidirectional communication cycles, each of said communication cycles having a plurality of consecutive time frames for said group of parallel port lines of said standard parallel port;

means for transferring command bytes to said peripheral device from said computer and from said peripheral device to said computer during at least some of said time frames of said communication cycle and data blocks to said peripheral device from said computer and from said peripheral device to said computer during at least some other of said time frames of said communication cycle;

means for designating a function of said group of parallel port lines as command byte parallel port lines and as data block parallel port lines when performing said transferring of said command bytes and said data blocks, respectively, wherein said command bytes and data in said data blocks required a different number of said parallel port lines;

means for dynamically redefining the functional designation of said group of parallel port lines during each of said consecutive time frames of each of said communication cycles to accommodate the transfers to and from said computer of said command bytes and to and from said computer of said data blocks in said plurality of communication cycles;

means for storing said command bytes and said data blocks be sent and received; and

means, responsive to said means for redefining, for conditioning said means for storing as a function of the designation of the group of parallel port lines during each of said time frames of each of said communication cycles.

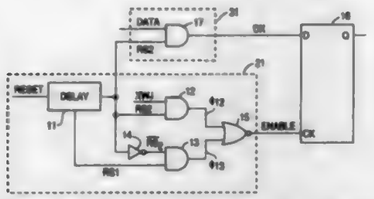
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5,303,350

CIRCUIT FOR INITIALIZING REGISTERS USING TWO INPUT SIGNALS FOR WRITING DEFAULT VALUE INTO D-LATCH AFTER A RESET OPERATION

Chieh-Chih Yu, and Hugn-Chyuan Hsieh, both of Taipei, Taiwan, assignors to Acer Incorporated, Taiwan

Filed Dec. 20, 1990, Ser. No. 632,172
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **9 Claims**



1. A circuit for initializing a register of an input/output system, formed on a single integrated circuit chip, said register being reset by a system reset signal from an electronic data processing system after completion of power-on of the electronic data processing system, the electronic data processing system outputting a system write control signal and a system data signal while writing a default value of data to the register, the register having at least one D-latch, said D-latch having a data input, a clock input and a data output, the circuit comprising:

a first logic means for generating an enable signal which is coupled to the clock input of the D-latch, said enable signal changing state from inactive to active at a first time t1 and from inactive to active again at a subsequent time t2, in response to the system write control signal addressed to the D-latch and the system reset signal;

a second logic means for generating a local data signal, having as inputs the system reset signal and the system data signal, any an output coupled to the data input of the D-latch;

wherein the D-latch is reset at substantially time t1, and the system data signal is strobed in the d-latch at substantially time t2 while the D-latch is addressed by the electronic data processing system.

5,303,351

ERROR RECOVERY IN A MULTIPLE 170 CHANNEL COMPUTER SYSTEM

Stefan P. Jackowski, and Ronald B. Jenkins, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 554,120, Jul. 18, 1990, which is a division of Ser. No. 292,279, Dec. 30, 1988. This application Mar. 23, 1992, Ser. No. 856,832
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—275 **5 Claims**

1. In a computer input/output (I/O) system for connecting a computer to a plurality of peripheral devices, said I/O system being of the type having:

(1) a plurality of ports, each port of said plurality of ports being disposed for connection through an I/O interface to one or more of said plurality of peripheral devices for transfer of information,

(2) a plurality of channels, each channel of said plurality of channels having:

(2.1) a channel busy means for indicating a channel busy or non-busy channel sate of said each channel,

(2.2) a plurality of port busy means, each port busy means of said plurality of port busy means being for indicating a port busy or port non-busy state of a corresponding one said port of said plurality of ports,

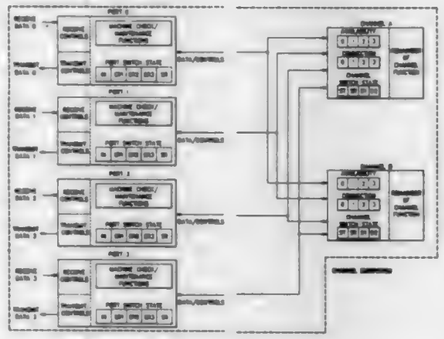
(2.3) connection means coupled to said channel busy means and said port busy means for connecting said each channel to one said port of said plurality of ports and for disconnecting said each channel from said one port of said plurality of ports in response to indication by said port busy means or said channel busy means of at least one said channel busy state, and

(2.4) check means coupled to said connection means for indicating one or more check conditions, said check conditions including channel check conditions in said each channel or port check conditions in any said port of said plurality of ports that is connected to said each channel or both, and

(3) recovery means coupled to said plurality of channels and to said plurality of ports for performing an error recovery process responsive to indication by said check means of at least one said check condition,

a method for error isolation and recovery, comprising the steps of:

(a) connecting a first port of said plurality of ports to at least one peripheral device of said plurality of peripheral devices and connecting a first channel of said plurality of channels to said first port for transfer of information between said first channel and said at least one connected peripheral device;



(b) initiating said transfer of information;

(c) providing a check indication at said check means in said first channel in response to said port check condition in said first port or said channel check condition in said first channel;

(d) in response to said check indication, transferring from said first channel through said first port to said at least one connected peripheral device an abort-end-of-frame delimiter for denoting abortion of said transfer of information;

(e) conditioning said channel busy means in said first channel to said channel busy state in response to said check indication;

(f) if said check indication denotes a port check condition, conditioning said port busy means in said first channel to said port busy state corresponding to said first port in response to said port check indication;

(g) disconnecting said first channel from said first port; and

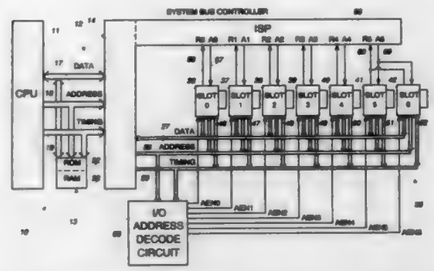
(h) initiating said error recovery process in said recovery means in response to said check indication.

5,303,352

DUAL CONNECTOR PORT FOR BUS MASTER CARD

Thomas N. Robinson, Lincoln Township, Berrien County; Mark D. Nicol, Stevensville; Anthony M. Olson, Stevensville, and Todd R. Witkowski, Stevensville, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Filed Nov. 6, 1989, Ser. No. 433,057
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **13 Claims**



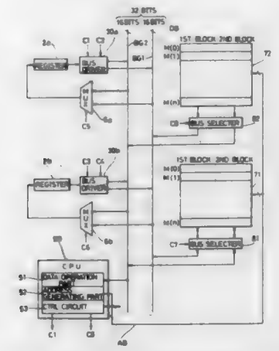
1. An apparatus comprising: a control circuit which carries out an operational sequence, which has a request input and which totally ignores signals present at said request input prior to a predetermined point in said operational sequence and responds to signals present at said request input after said predetermined point; a pair of connectors which each have a request terminal and can each removably receive a circuit card; and means electrically coupling said connectors to said control circuit, including said request terminal of each said connector being connected to said request input of said control circuit; wherein said control circuit includes checking means for detecting prior to said predetermined point in said sequence a condition in which said connectors each have therein a card having a request output line carrying a signal from a request circuit thereon and coupled to the request terminal of the connector, and includes inhibiting means responsive to detection of said condition for preventing said control circuit from reaching said predetermined point in said sequence.

5,303,353

DATA TRANSFER SYSTEM

Yoshinori Matsuura; Shinichi Uramoto, and Tetsuya Matsumura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 862,660
Claims priority, application Japan, Apr. 3, 1991, 3-071258
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—325 **5 Claims**



1. A data transfer system capable of simultaneously transferring data of multiple words, each of which consists of m bits, comprising:

a data bus set in which each data bus is divided into k bit groups each bit group having m bits, said number k being an integer of 2 or more, said data bus set being arranged to allow simultaneous transfer of k data words;

a plurality of register means for selecting a plurality of bit group for transfer from said data bus set, each of said register means having storage capacity of at least one word,

memory means connected to said register means through said data bus set and divided into k blocks, each of which has storage capacity of one word;

a plurality of read data supplying means, each of which is provided for each register means and selectively supplies data read from the corresponding register means to one of said bit groups;

a plurality of write data supplying means, each of which is provided for each register means, and supplies write data, which is transferred through one of said bit groups in said data bus, to a corresponding register means; and

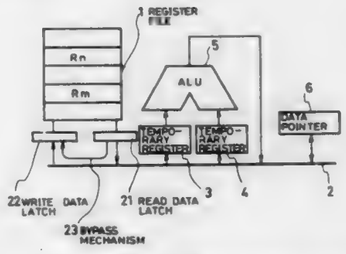
connecting means for connecting an arbitrary one of said blocks of said memory means to an arbitrary one of said bit groups of said data bus set.

5,303,354

DATA TRANSFER SYSTEM BETWEEN REGISTERS FOR MICROCOMPUTER

Ryohei Higuchi, and Shigeo Mizugaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,868
Claims priority, application Japan, Jul. 8, 1991, 3-193504
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—325 **7 Claims**



1. A data transfer system for transferring data between registers in a microcomputer, comprising:

a data bus;

a plurality of registers organized as a register file;

a read data latch coupling the data bus to a first selected register in the register file, the read data latch including a control input, wherein a read signal asserted on the control input of the read data latch causes the read data latch to apply contents of the first selected register to the data bus;

a write data latch coupling the data bus to a second selected register in the register file, the write data latch including a control input, wherein a write signal asserted on the control input of the write data latch causes the write data latch to apply contents of the data bus to the second selected register; and

bypass control means, coupled between the read data latch and the write data latch, for transferring the contents of the read data latch to the write data latch in response to a bypass signal, wherein said bypass control means bypasses the data bus in making the transfer.

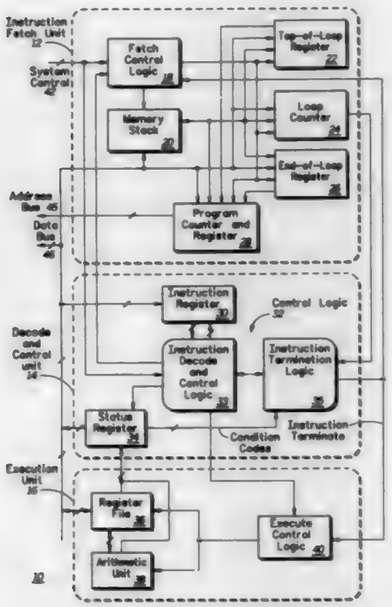
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5,303,355

PIPELINED DATA PROCESSOR WHICH CONDITIONALLY EXECUTES A PREDETERMINED LOOPING INSTRUCTION IN HARDWARE

Joseph P. Gergen, and Kin K. Chau-Lee, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1991, Ser. No. 675,834
Int. Cl.[5] G06F *9/00, 9/40*
U.S. Cl. 395—375 **16 Claims**



1. A pipelined data processor which conditionally executes a predetermined looping instruction in hardware, comprising:

a status register for receiving and storing a plurality of condition codes of the pipelined data processor in response to status modifying instructions;

instruction fetch means for selectively fetching a first instruction which is one of the status modifying instructions during a looping operation and fetching a second instruction, the first instruction selectively activating at least one of the plurality of condition codes, the instruction fetch means having a control input for receiving a control signal for modifying a predetermined order of instruction execution;

an instruction decode means for decoding instructions executed by the pipelined data processor and providing decoded control signals in response thereto, the instruction decode means selectively providing the control signal and controlling termination of the predetermined looping instruction by providing a termination control signal to the instruction fetch means which modifies an order of instruction fetching, in response to an activation of a predetermined one of the plurality of condition codes; and

an instruction execution means for receiving the decoded control signals and executing general data processing instructions;

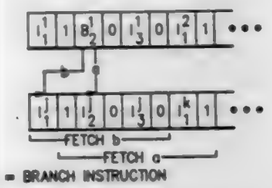
whereby the pipelined data processor selectively executes the second instruction in response to the activation of the predetermined one of the plurality of condition codes as selectively activated by the first instruction.

5,303,356

SYSTEM FOR ISSUING INSTRUCTIONS FOR PARALLEL EXECUTION SUBSEQUENT TO BRANCH INTO A GROUP OF MEMBER INSTRUCTIONS WITH COMPOUNDABILITY IN DICTATION TAG

Stamatis Vassiliadis, Vestal; Bartholomew Blaner, Newark Valley, and Thomas L. Jeremiah, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 519,384, May 4, 1990, abandoned, and a continuation-in-part of Ser. No. 543,458, Jun. 26, 1990, Pat. No. 5,197,135, and a continuation-in-part of Ser. No. 642,011, Jan. 15, 1991, and a continuation-in-part of Ser. No. 519,382, May 4, 1990, abandoned. This application Mar. 29, 1991, Ser. No. 677,685
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 **13 Claims**



1. A system mechanism for processing instructions including compoundable instructions which are comprised of a group of member units up to a maximum of member units which can be executed after issue in parallel as a compound instruction in a machine having a plurality of functional units for processing instructions concurrently with branching into the middle of a compound instruction set of member units which may be executed together in parallel as an executable compound instruction, comprising,

means for executing a branch instruction in one of the functional units; and

means for fetching for decoding an instruction string text including one or more compound instruction having one or more member units which can be addressed by a branch target address for potential execution;

decoding means for decoding a compound instruction contained in fetched instruction string text, said compound instructions comprising a string sequence of instructions to be executed by the machine and including of member units of a compound instruction that have an instruction format including an opcode and control bits associated with the member unit's instruction, said control bits indicating whether the associated member unit can be executed in parallel with a subsequent member unit as an executable compound instruction; and wherein said decoding means examines the opcode and appended control bits in an instruction format of said compound instruction member units which are relevant to the execution of a compound instruction, and determines if a member unit of the text begins a compound instruction or are a subsequent portion of an executable compound instruction; and

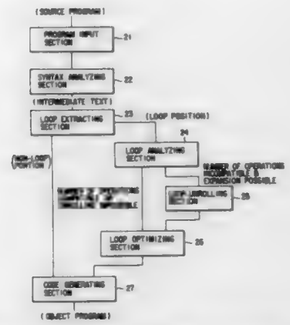
issuing means, responsive at least in part to the determination result of the decoding means, for issuing the member units of a compound instruction which includes a branch target addressed member unit to the functional units from a target addressed member unit at any sequential place in said string sequence to the end of the compound instruction containing the target addressed member unit for executing all of the member units of the executable compound instruction beginning with the target addressed member unit to a beginning member unit of a subsequent executable compound instruction so issued concurrently and maintaining the remainder of the text including the beginning member unit of a subsequent executable compound instruction for potential execution after the execution of the compound instruction has been initiated.

5,303,357

LOOP OPTIMIZATION SYSTEM

Atsushi Inoue, and Kenji Sirakawa, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 3, 1992, Ser. No. 863,709
Claims priority, application Japan, Apr. 5, 1991, 3-071979
Int. Cl.[5] G06F *9/45, 9/06*
U.S. Cl. 395—375 **7 Claims**



1. In an electronic computer that simultaneously executes a plurality of instructions in a program with a loop process containing an instruction sequence for performing operation or memory access, a loop optimization system for said loop process, comprising:

loop analyzing means for judging whether or not the process of expanding iterations of instructions in a loop into one iteration is performed based on at least one of the number of operations in each iteration in the loop and the number of the memory access instruction;

loop expanding means for converting a given number of iterations in an instruction sequence of the loop into an equivalent instruction sequence where those iterations are expanded into one iteration; and

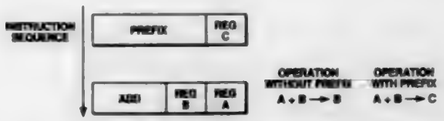
loop optimizing means for rearranging instructions in the developed loop so that different repetitious operations may be allocated to separate processing units for simultaneous execution.

5,303,358

PREFIX INSTRUCTION FOR MODIFICATION OF A SUBSEQUENT INSTRUCTION

Allen J. Baum, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 471,092, Jan. 26, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 4,627
Int. Cl.[5] G06F *9/30, 9/34*
U.S. Cl. 395—375 **4 Claims**



1. A method for operating a data processing device whose operation is controlled by execution of a programmed set of instructions comprising the steps of:

a) defining a first instruction for performing an operation, said operation having exactly two operands, said first instruction defined to access a first register as a storage location for a first of said two operands and a second register as a storage location for a second of said two operands, said first instruction further defined to store a result of said operation in the first register;

b) programming said data processing device to execute said first instruction;

c) executing a second instruction in advance of the first instruction, said second instruction designating a third register different from the first and second registers;

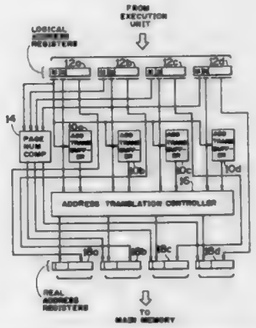
d) executing the first instruction modified by the second instruction such that the first instruction stores the result of said operation in the third register without modifying the first operand stored in the first register.

5,303,359

ARRANGEMENT FOR SIMULTANEOUSLY TRANSLATING LOGICAL PAGE ADDRESSES TO CORRESPONDING REAL ONES IN DATA PROCESSING SYSTEM

Katsuyuki Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1990, Ser. No. 631,002
Claims priority, application Japan, Dec. 19, 1989, 1-330829
Int. Cl.[5] G06F *12/10*
U.S. Cl. 395—100 **2 Claims**



1. An apparatus in a data processing system wherein a logical address space is divided into a plurality of (M+N) logical pages and is accessible by a program, said apparatus being provided for simultaneously translating a predetermined number of logical page addresses into corresponding real page addresses, said (M+N) logical pages being defined by (M+N) bits, each of said logical page addresses including upper M-bits and lower N-bits, said apparatus comprising:

first to 2^N-th logical address registers respectively storing the logical page addresses to be translated;

first to 2^N-th address translation buffers, each of said address translation buffers storing 2^M real page addresses, each of said address translation buffers corresponding to one of the numbers determined by said N-bits, each of said first to 2^N-th address translation buffers being coupled to receive the upper M-bits of said first logical address register and each said address translation buffer outputting a real page address therefrom;

first to (2^N-1)-th comparators coupled to said first to 2^N logical address registers, said comparators respectively comparing the upper M-bits applied from said first logical page address register with the upper M-bits applied from each of the second to (2^N)-th logical address registers, each of said first to (2^N-1)-th comparators generating a logical signal assuming one of a first and second logical value, respectively indicating the comparison result is coincidence and no coincidence;

first to 2^N-th selectors, each selector being coupled to receive outputs of said first to 2^N-th address translation

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buffers and each selector being coupled to respectively receive the N-bits of said first to 2^N-th logical address registers as selector control signals; and

first to 2^N-th real address registers each including an address translation flag portion and a real page portion and which are respectively coupled to receive, at the real page portions thereof, outputs of said first to 2^N-th selectors, the address translation flag portion of said first real address register storing a logical signal corresponding to said first logical value, the second to 2^N real address registers being coupled to respectively receive, at the translation flag portions thereof, said logical signals from said first to (2^N-1)-th comparators.

5,303,360

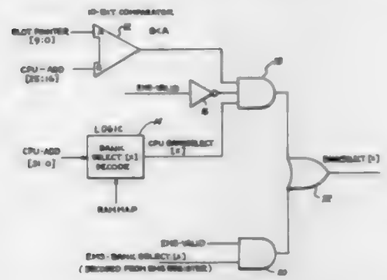
PROGRAMMABLE BOUNDARY BETWEEN SYSTEM BOARD MEMORY AND SLOT BUS MEMORY

William K. Hilton, Phoenix, and Charles R. Rimpo, Mesa, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 22, 1991, Ser. No. 659,588

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 **12 Claims**



1. Apparatus for allocating memory within a computer system to be accessible by both central processing unit addresses and expanded memory specification registers comprising 10-bit comparator means for comparing a central processing unit address with a predetermined address, said predetermined address having means for programming boundaries between said central processing unit addresses and said expanded memory specification registers, said comparing means causing a first signal to be transmitted to the memory if the central processing unit address is less than said pre-determined address and causing a signal to be transmitted to an expanded memory specification register if the central processing unit address is equal to or greater than said pre-determined address.

5,303,361

SEARCH AND RETRIEVAL SYSTEM

Steve Colwell, Rochester, N.Y.; Lawrence S. Gross, Santa Monica; William T. Gross, Montrose, both of Calif.; Lee Hasiuk, Rochester, N.Y., and David Rolfe, Pasadena, Calif., assignors to Lotus Development Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 436,146, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 336,963, Apr. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 298,366, Jan. 18, 1989, abandoned. This application Jan. 18, 1990, Ser. No. 466,750

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—425 **23 Claims**

MICROFICHE APPENDIX INCLUDED

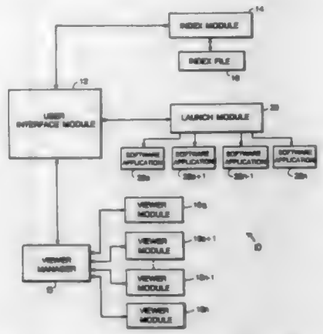
(22 Microfiche, 2084 Pages)

1. A text search and retrieval system, comprising:

(a) an index module connected to a plurality of stored files comprising means for generating an index file the contents of which are representative of the contents of said stored files;

(b) an interface module connected to said index file comprising means for accepting a search request from a user and applying said search request to said index file to determine a list of stored files the contents of which satisfy said search request;

(c) a viewer module connected to said interface module comprising means for simultaneously displaying said list



of stored files and the contents of a particular stored file which the user has selected from said list of stored files;

(d) a launch module connected to said viewer module comprising means for invoking a software application appropriate for manipulating said particular stored file being displayed by said view module; and

(e) means for displaying the contents of the selected stored file in a variable format appropriate to the application which created said particular selected stored file without, however, actually loading and running the application.

5,303,362

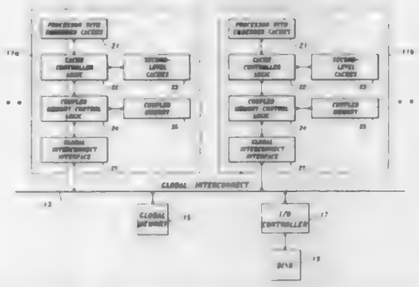
COUPLED MEMORY MULTIPROCESSOR COMPUTER SYSTEM INCLUDING CACHE COHERENCY MANAGEMENT PROTOCOLS

H. Bruce Butts, Jr.; David A. Orbits, both of Redmond, and Kenneth D. Abramson, Seattle, all of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 20, 1991, Ser. No. 673,766

Int. Cl.[5] G06F *12/06*

U.S. Cl. 395—425 **15 Claims**



1. A coherent coupled memory multiprocessor computer system comprising:

a global interconnect for interconnecting a plurality of processor modules; and

a plurality of processor modules, each of said processor modules including a processor, cache memory, coupled memory, coupled memory control logic and a global interconnect interface, said coupled memory control logic and said global interconnect interface of each of said processor modules coupling said global interconnect and the coupled memory and the cache memory of the processor modules such that said coupled memory can be accessed by the processor associated with the coupled memory without using said global interconnect and such that said coupled memory can be accessed by the processors of other processor modules via said global interconnect, said coupled memory control logic including means for maintaining coherency between data stored in the coupled memory of the associated processor module and data stored in the cache memory of the associated processor module and the cache memories of other processor modules.

5,303,363

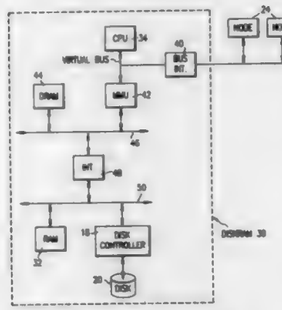
IMAGE PROCESSING APPARATUS HAVING DISK STORAGE RESEMBLING RAM MEMORY

Thomas N. Berarducci, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 457,054, Dec. 19, 1989, abandoned. This application Nov. 4, 1992, Ser. No. 971,680

Int. Cl.[5] G06F *13/12*

U.S. Cl. 395—425 **12 Claims**



1. A processing system, comprising:

a common memory bus;

processing nodes connected to said memory common bus, each of the nodes performing processing and requesting data by producing virtual memory addresses for memory accesses to random access type memory locations; and

a memory system connected to said common bus, receiving the memory accesses to the random access type memory locations over said common memory bus and comprising a single unit including:

a bus interface connected to said common memory bus;

a storage disk to store data;

a disk controller connected to the storage disk to control storage and retrieval of the data from the storage disk;

RAM memory connected to the disk controller;

a control processor coupled to said disk controller, said RAM memory and said bus interface sand controlling all virtual memory management to satisfy the memory accesses including movement of data between said RAM memory and said storage disk;

a virtual address bus coupled to said bus interface; and

a memory management unit coupled to said virtual address bus and said control processor and comprising means for receiving the virtual memory addresses from said virtual address bus and translating the virtual addresses into physical addresses.

5,303,364

PAGED MEMORY CONTROLLER

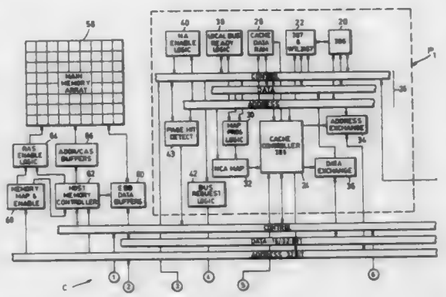
Dale J. Mayer, Houston; Paul R. Culley, Cypress, and Mark Taylor, Houston, all of Tex., assignors to Compaq Computer Corp., Houston, Tex.

Continuation of Ser. No. 431,670, Nov. 3, 1989. This application Dec. 30, 1992, Ser. No. 999,677

Claims priority, application Switzerland, Sep. 29, 1989, 614861

Int. Cl.[5] G06F *12/00, 13/00*

U.S. Cl. 395—425 **20 Claims**



11. A computer system, comprising:

a processor having address, data and control signals and using a clock cycle;

a cache controller having address and control signals;

a first bus formed of said address data and control signals of said processor and said address and control signals of said cache controller, said first bus connecting said processor and said cache controller;

a second bus having address, data and control signals; which define a plurality of memory cycles;

means controlled by signals from said cache controller for coupling said address, data and control signals of said first bus and said second bus, wherein said address and control signals are provided to said second bus from said first bus at least one clock cycle after being provided by said processor to said first bus;

page mode dynamic random access memory;

a memory controller having a memory page hit input and coupled to said second bus and said memory for controlling operation of said memory, wherein said memory controller is separate from said page mode dynamic random access memory and includes:

means for providing row address values to said memory;

means for providing column address values to said memory, wherein said column address values are latched during memory write cycles; and

means for coupling data from said second bus to said memory, wherein said data is latched during memory write cycles; and

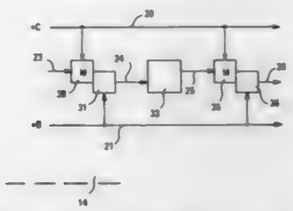
means connected to said address signals in said first bus needed to define a page in said page mode dynamic random access memory for detecting a memory page hit, wherein said means for detecting a memory page hit is separate from said memory controller and provides a signal to said memory controller memory page hit input.

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5,303,365
CLOCK GENERATION IN A MULTI-CHIP COMPUTERSYSTEM

Klaus J. Getzlaff, Schoenaich; Johann Hajdu, and Guenter Knauft, both of Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1991, Ser. No. 715,530
Claims priority, application European Pat. Off., Jun. 15, 1990, 90111294.6
Int. Cl.[5] G06F *1/04*
U.S. Cl. 395—550 **6 Claims**



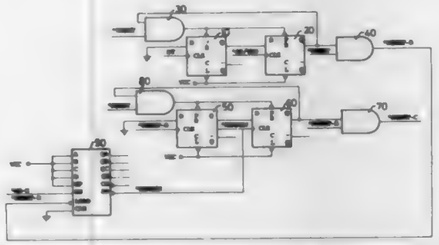
1. A computer system comprising:
a clock for generating a series of clock pulses, a period of the clock varying within a limited range;
an AND-gate having an input coupled to receive said series of clock pulses;
a DELAY-circuit coupled to receive and delay said series of clock pulses such that one-level pulses output from said DELAY-circuit overlap one-level pulses of said series of clock pulses input to said DELAY-circuit for all variations of said series of clock pulses, said output of said DELAY-circuit being supplied to another input of said AND-gate;
first and second master-slave latch circuits each comprising a master latch with a master latch clock input coupled to receive an output of said AND-gate, and a slave latch with a slave latch clock input coupled to receive said series of clock pulses; and
means for connecting a digital logic circuit between said first and second master-slave latch circuits for processing a data output of said first master-slave latch circuit and providing a data input resulting from said processing to said second master-slave latch circuit; and wherein
all of the latches are edge triggered and the slave latches are triggered at approximately the same time as the master latches such that said digital logic circuit has nearly one period of the clock to process the data output from said first master-slave latch circuit and provide the data input to said second master-slave latch circuit.

5,303,366
INTERFACE CARD FOR SCANNER

Tso S. Yang, 11th Fl., No. 11, Sec. 2, Nanking E. Rd., Taipei, Taiwan

Filed Sep. 30, 1991, Ser. No. 767,411
Int. Cl.[5] G06F *15/64*
U.S. Cl. 395—500 **1 Claim**

1. An interface card for a scanner comprising:
a central processing unit,
memory means connected to the central processing unit for storing data,
control register means connected to the central processing unit for storing control data,
status register means connected to the central processing unit for storing status information,
address decoder means for decoding address values from the central processing unit,
image data receiver means connected to the central processing unit for obtaining image data, and
serial-to-parallel converter means connected to the image data receiver means for converting serial data into parallel data used by the central processing unit,
means for deleting redundant data from the scanner including
a first AND gate, a second AND gate, a third AND gate, and a fourth AND gate,
a first flip-flop, a second flip-flop, a third flip-flop, and a fourth flip-flop,
a counter,
means for connecting an output of the first AND gate to a D-input of the second flip-flop,
means for connecting a positive output of the second flip-flop to an input of the first AND gate and to an input of the second AND gate,

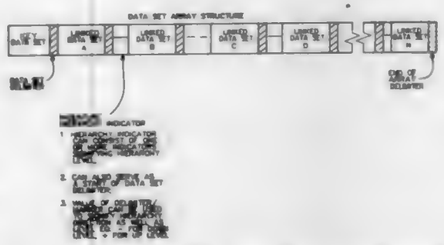


means for connecting an output of the first AND gate to a preset input of the first flop-flop and to a preset input of the second flip-flop,
means for connecting an output of the second AND gate to a clock-input of the third flip-flop and a load input of the counter;
means for connecting a positive output of the third flip-flop to a D-input of the fourth flip-flop;
means for connecting a positive output of the fourth flip-flop to an input of the third AND gate and the fourth AND gate; and
means for connecting an output of the fourth AND gate to a preset input of the third flip-flop and a preset input of the fourth flip-flop.

5,303,367
COMPUTER DRIVEN SYSTEMS AND METHODS FOR MANAGING DATA WHICH USE TWO GENERIC DATA ELEMENTS AND A SINGLE ORDERED FILE

Richard B. Loenstra, Sr., Bremerton, and Edwin H. Wurden, Poulsbo, both of Wash., assignors to Applied Technical Systems, Inc., Port Orchard, Wash.

Filed Dec. 4, 1990, Ser. No. 621,834
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **87 Claims**



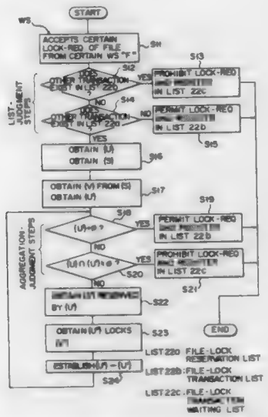
1. A method of employing a computer with input means, memory, and a data processing unit to manage data, said method comprising the steps of:

employing said computer to create an original array of data sets, each said data set having a data type element for differentiating one kind of subject matter from another and a data value element for differentiating data sets with the same data type element and said array containing a key data set and data sets related to said key data set;
employing said computer to link the related data sets in a hierarchy in which the related data sets are each in an indentured relationship to the key data set;
so employing the computer to invert the relationship between an indentured data set in the original array and the remaining data sets in said array as to create an inverted data set array having: (a) the data set entered in the original array as its key data set, and (b) all data sets higher in the hierarchy of the original data set linked to that key data set in inverted order; and
storing the original and inverted data set arrays in the memory of the computer.

5,303,368
DEAD LOCK PREVENTING METHOD FOR DATA BASE SYSTEM

Koji Kotaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1990, Ser. No. 486,352
Claims priority, application Japan, Feb. 28, 1989, 1-47204
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—650 **7 Claims**

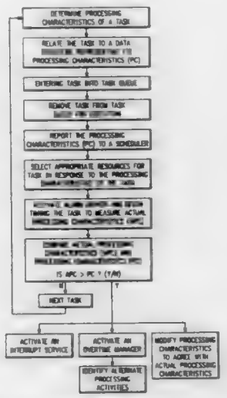


1. A method for preventing dead lock in a data base system having a plurality of files and workstations, comprising the steps of:
issuing, for one of said files, F, a file lock reservation request by a transaction, T, of one of said workstations, W;
determining, by W, if another of said workstations has locked F;
prohibiting, by a control means within W, said file lock reservation request if said step of determining if another of said workstations has locked F has determined that another of said workstations has locked F;
determining, by W, if another of said workstations has reserved F;
permitting, by said control means within W, said file lock reservation request if said step of determining if another of said workstations, has reserved F and said step of determining if another of said workstations has locked F have determined that F has not been reserved and not locked by another of said workstations, otherwise not permitting said file lock reservation request; and
performing, if said step of permitting said file lock reservation request does not permit said file lock reservation request, the following steps:
obtaining an aggregation {S} which includes files subject to the file lock reservation request of said transaction T;
obtaining an aggregation {V} which includes the files of the aggregation {S} which have been registered in a file lock transaction list;
obtaining an aggregation {U'} including transactions locking the file aggregation {V};
determining if {U'} is a zero aggregation; and
permitting said file lock reservation request if{U'} is determined to be a zero aggregation;
wherein when said filed lock reservation request is permitted by either of said permitting steps, said file lock reservation request is registered in the file lock transaction list.

5,303,369
SCHEDULING SYSTEM FOR MULTIPROCESSOR OPERATING SYSTEM

Mark A. Borcherding; J. Charles Kuhlman, both of Austin, and Steve Schneider, Cedar Park, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1990, Ser. No. 576,300
Int. Cl.[5] G06F *9/46, 9/40*
U.S. Cl. 395—650 **7 Claims**



1. A method for scheduling tasks to be performed by processors of a multi-tasking system, comprising the steps of:
running an application program that requires a plurality of tasks to be executed;
determining the processing characteristics of the plurality of tasks to be performed;
relating said plurality of tasks to a data structure representing said processing characteristics;
placing said plurality of tasks in a task queue;
dequeing a first task from the plurality of tasks for execution;
claiming said data structure representing processing characteristics of the first task to a schedular program;
selecting processing resources to be used for the first task, in response to said processing characteristics and available resources, using said scheduler program;
activating an alarm driver when said first task begins to use said processing resources and time said use to generate actual processing characteristics; and
activating an overtime manager if said actual processing characteristics exceed a predetermined value wherein the overtime manager stops execution of the task, diagnoses a processing status of the first task to determine if a problem is causing a delay, determines how to solve the delay, and determines if processing characteristics are incorrect.

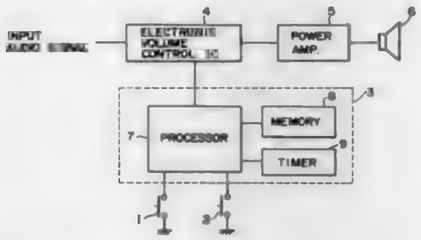
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,370
ANTI-COUNTERFEITING PROCESS USING LENTICULAR OPTICS AND COLOR MASKING
Scott Brosh, Arlington, and Timothy Wright, Lake Dallas, both of Tex., assignors to Score Group, Inc., Grand Prairie, Tex.
Filed Nov. 13, 1992, Ser. No. 976,196
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—51 **65 Claims**



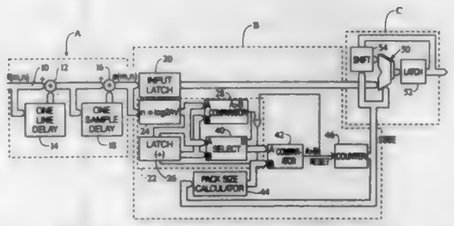
1. A method of authenticating the origin of an item comprising the steps of:
a. Selecting an indicium for identifying the origin of the item;
b. Creating an interlace-encrypted image of the identifying indicium by projecting a succession of images thereof through a lenticular array onto a recording medium for a predetermined exposure interval, and moving the recording medium relative to the lenticular array by a predetermined incremental scan distance between each exposure;
c. creating a color mask comprised of first and second intersecting elements each of a different color; and
d. printing the interlace-encrypted image and the color mask in superposition on the item.

5,303,371
ELECTRONIC VOLUME CONTROL SYSTEM
Yukihiro Nakajima, Yokohama, Japan, assignor to Shintom Co., Ltd., Kanagawa, Japan
PCT No. PCT/JP91/01492, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/08281, PCT Pub. Date May 14, 1992
PCT Filed Oct. 31, 1991, Ser. No. 863,302
Claims priority, application Japan, Oct. 31, 1990, 2-296453
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—109 **13 Claims**



1. An electronic volume control system comprising:
a first operation button for varying the level of volume in the positive direction;
a second operation button for varying the level of volume in the negative direction; and
control means for increasing or decreasing the level of volume by a given amount of volume change in response to the operation of one of said first and second operation buttons, said control means having a fine adjustment mode in which the level of volume can be increased or decreased by another amount of volume change less than said given amount of volume change, said control system being placed into said fine adjustment mode when a time interval, from a time point wherein one of said first and second operation buttons is turned off to another time point wherein one of said first and second operation buttons is turned on, is within a preset time period.

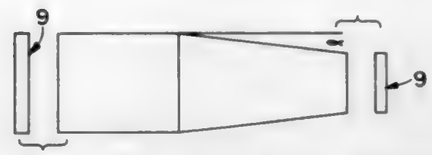
5,303,372
PIPELINED IMAGE DATA COMPRESSION SYSTEM
David C. Oliver, Maple Hts.; Micheal J. Petrillo, Euclid, and John F. Vesel, Willowick, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio
Filed Jun. 24, 1991, Ser. No. 719,969
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **8 Claims**



1. An apparatus for packing image data, the apparatus comprising:
a magnitude reduction means for sequentially receiving each pixel value of an image and pipeline processing each pixel value to generate a reduced value having the same or fewer bits than the corresponding received pixel value;
a packing means for serially receiving each reduced value and pipeline processing to determine how many of the serially received reduced values can be packed into an output word of a pre-selected length and providing an indication of a number and bit length of the reduced values to be packed in each output word;
a multiplexing means which has first and second inputs, the first input receiving each reduced value from the packing means;
a shifting means for controlling the multiplexing means for truncating and aligning each bit field of the multiplexing means, as necessary, such that each reduced value fills an allocated bit field; and
an output latch which receives the truncated reduced values from the multiplexing means and an indication of the size and number of the bit fields, the output latch being connected with the multiplexing means second input for selectively supplying the truncated values and the indications of the size and the number of bit fields thereto.

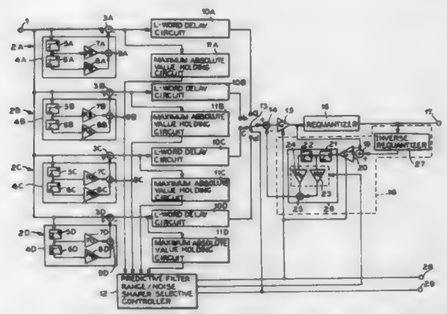
5,303,373
ANAMORPHIC FUSED FIBER OPTIC BUNDLE
Simon G. Harootian, Jr., Worcester, Mass., assignor to Schott Fiber Optics, Inc., Southbridge, Mass.
Filed Oct. 16, 1992, Ser. No. 961,799
Int. Cl.[5] G02B *6/06*
U.S. Cl. 385—115 **24 Claims**

1. An anamorphic, tapered fused fiber optic bundle having a longitudinal axis Z and two ends each having surfaces in a plane (X axis/Y axis) perpendicular to said Z axis, a first of said ends having cross-sectional dimensions X and Y and a second of said ends having cross-sectional dimensions X′ and Y′, at least X′ being smaller than X, and the ratio X′/X being different from the ratio Y′/Y,
wherein the X axis dimension of said fiber continuously



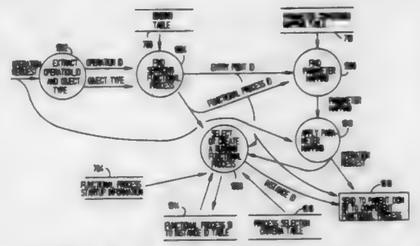
varies along said Z axis from the value X in said first end to the value X′ in said second end and wherein when an image is transferred therethrough from said end surface having the larger dimensions to said end surface having the smaller dimensions, said image is demagnified anamorphically in proportion to the ratios X′/X and Y′/Y.

5,303,374
APPARATUS FOR PROCESSING DIGITAL AUDIO SIGNAL
Satoshi Mitsuhashi, Tokyo, and Masayuki Nishiguchi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 15, 1991, Ser. No. 776,213
Claims priority, application Japan, Oct. 15, 1990, 2-273286
Int. Cl.[5] G10L *9/14*
U.S. Cl. 395—2.21 **4 Claims**



1. An apparatus for processing a digital audio signal, comprising:
predictive error generator means for generating predictive error data by processing input digital data to acquire a plurality of different frequency characteristics;
selector means for selecting a predetermined one of said plurality of predictive error data;
requantizer means for requantizing the predictive error data selected by said selector means;
corrector means for processing, with a predetermined frequency characteristic, the requantization error data induced during operation of said requantizer means, and correcting the requantization error data executed by said requantizer means;
frequency characteristic control means for selecting at least two or said predictive error data obtained with said frequency characteristics, then calculating the selected predictive error data and controlling the frequency characteristic in said corrector means in accordance with a result of the calculation wherein the calculation of said two selected predictive error data is executed by computing a ratio of respective absolute values of said predictive error data and comparing said ratio with a reference value; and
the frequency characteristic in said corrector means is controlled in accordance with a result of the comparison.

5,303,375
SYSTEM AND METHOD FOR FACILITATING SELECTION OF RUNNING FUNCTIONAL PROCESS IN OBJECT-ORIENTED ENVIRONMENTS
Timothy Collins, Concord, Mass.; Kevin G. Ewert, Fremont, Calif.; M. Colin Gerety, Ft. Collins, Colo.; Jon Gustafson, San Jose, Calif., and Ian Thomas, Mountain View, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 26, 1991, Ser. No. 691,926
Int. Cl.[5] G06F *15/16, 9/40*
U.S. Cl. 395—650 **6 Claims**



4. A method for the selection of instances of functional processes within an object-oriented computer environment system, data communications within said object-oriented environment being controlled by a communications manager, said object-oriented environment comprising first and second functional processes, said first process performing one or more services, said second process sending an operation request, said method performed by a computer sub-system and comprising the steps of:
(1) requesting an operation to be performed by said first functional process, said operation request being initiated by said second functional process and containing one or more specified fields;
(2) extracting an Operation ID and an object type from said operation request;
(3) binding said operation request to said first functional process using a binding table, wherein the Operation ID and object type extracted from said operation request are used to index said binding table;
(4) creating and maintaining a list of instances of said first functional process in a function process ID to instance ID table;
(5) creating and maintaining a process selection criteria table containing criteria corresponding to each instance in said list of instances;
(6) permitting an instance in said list of instances to service said operation request only if the value of one or more specified fields in said operation request matches said criteria for said instance in said list of instances; and
(7) creating a new instance of said first functional process when the criteria for none of said instances in said list of instances are met.

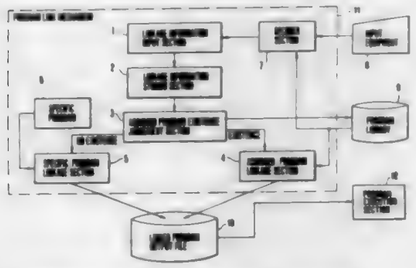
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,376

PROGRAM PARTIAL LINKING SYSTEM FOR LINKING A SPECIFIC PROGRAM PREPARED IN ADVANCE WHEN AN ASSIGNED PROGRAM IS NOT IN A PROGRAM LIBRARY

Hiroko Taki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 97,097, Sep. 16, 1987, abandoned. This application Feb. 26, 1990, Ser. No. 484,486
Claims priority, application Japan, Sep. 22, 1986, 61-224319
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—700 **2 Claims**



1. A program partial linking system, comprising:
program storing means for storing incomplete programs and additional programs, said incomplete programs requiring execution of at least a corresponding program of said additional programs for completion;
means for providing a single replacement program for all said additional programs;
input means requiring execution of said incomplete programs;
searching means, coupled to said input means and to said program storing means, responsive to said input means for searching for said additional programs in said storing means and providing a search result;
means, coupled to said searching means and to said means for providing, responsive to said search result including means responsive to an indication of non-existence of said corresponding program in said storing means for outputting said single replacement program from said means for providing said single replacement program;
wherein said means responsive to said search result includes means responsive to an indication of an existence of said corresponding program in said storing means for outputting said corresponding program; and
a linked program output file, coupled to said means for outputting said single replacement program and said means for outputting said corresponding program, for receiving said single replacement program from said means for outputting said single replacement program and said corresponding program from said means for outputting said corresponding program.

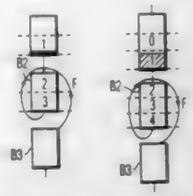
5,303,377

METHOD FOR COMPILING COMPUTER INSTRUCTIONS FOR INCREASING INSTRUCTION CACHE EFFICIENCY

Rajiv Gupta, Ossining, and Chi-Hung Chi, Croton-on-Hudson, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Mar. 27, 1990, Ser. No. 500,627
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—700 **19 Claims**

1. In a computer processing system for executing stored program instructions, a method of compiling said program instructions for improving instruction cache performance comprising the computer implemented steps of:
generating an initial sequence of execution of said program instructions;
arranging said program instructions in a program memory according to groups, at least one of the groups beginning with a jump entry point, said arranging step comprising:



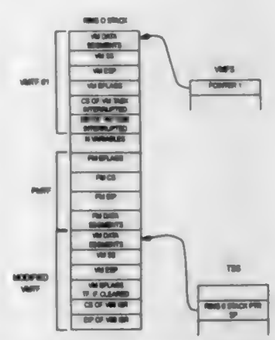
positioning the groups within the sequence so that a distance between a start of each nonterminal group and a start of a next group is an integral multiple of a distance between a first line and a last line in a cache memory; and
when the group does not have a length corresponding to an integer number of cache lines, storing position adjusting information at the end of the group.

5,303,378

REENTRANT PROTECTED MODE KERNEL USING VIRTUAL 8086 MODE INTERRUPT SERVICE ROUTINES

Leonardo Cohen, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed May 21, 1991, Ser. No. 703,499
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—700 **16 Claims**



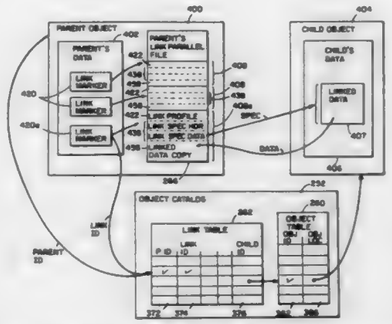
1. A method for servicing exceptional conditions in a computer system utilizing a microprocessor having data registers, a first privilege level and a second privilege level, each privilege level having an associated stack, the microprocessor executing tasks operating at each privilege level having respective task state information, the computer system having a secondary stack and a pointer which points to the top of the second privilege level stack, the method comprising:
(a) transitioning from the first privilege level to the second privilege level to execute the second privilege level task;
(b) retrieving the second privilege level stack top pointer after transitioning from the first privilege level to the second privilege level;
(c) placing the first privilege level task state information on top of the second privilege level stack after retrieving the second privilege level stack top pointer;
(d) placing a pointer to the first privilege level task state information on the secondary stack after placing the first privilege level task state information on the second privilege level stack;
(e) enabling interrupts and executing the second privilege level task after placing said first privilege level task state information pointer on the secondary stack;
(f) placing the second privilege level task state information on the second privilege level stack after an occurrence of an exceptional condition after enabling interrupts and beginning execution of the second privilege level task;
(g) executing an exception handler after placing said second privilege level task state information if said exceptional condition is an exception and returning to execution of said second privilege level task in step (e) after completion of said exception handler;
(h) saving certain data register values on the second privilege level stack after placing said second privilege level task state information if said exceptional condition is a hardware interrupt;
(i) retrieving the most recent first privilege level task state information pointer from the secondary stack after saving said certain data register values;
(j) copying the first privilege level task state information indicated by said most recent first privilege level task state information pointer to the top of the second privilege level stack after retrieving said most recent first privilege level task state information pointer;
(k) determining the entry address of an interrupt service routine required to handle said hardware interrupt after saving said certain data register values;
(l) modifying said copied first privilege level task state information to indicate execution at said entry address of said interrupt service routine after determining said entry address and copying said first privilege level task state information;
(m) modifying the second privilege level stack top pointer to point to said copied and modified first privilege level task state information after modifying said copied first privilege level task state information;
(n) beginning execution of said interrupt service routine at the first privilege level and removing said copied and modified first privilege level task state information from the second privilege level stack after modifying the second privilege level stack top pointer;
(o) executing said first privilege level interrupt service routine after beginning execution, during which execution interrupts may be enabled, whereupon an exceptional condition occurring requesting a second privilege level task causes steps (a) through (e) to be repeated;
(p) returning to the second privilege level after said interrupt service routine completes;
(q) modifying the second privilege level stack top pointer to the pointer value most recently placed on the secondary stack after returning to the second privilege level;
(r) retrieving the second privilege level task state information from the second privilege level stack after returning to the second privilege level;
(s) returning execution to the second privilege level task after retrieving the second privilege level task state information, whereupon an exceptional condition occurring causes steps (f) through (o) to be repeated;
(t) retrieving the most recent pointer from the top of the secondary stack upon completion of the second privilege level task; and
(u) returning to the first privilege level task or interrupt service routine using the first privilege level task state information on the second privilege level stack pointed to by said pointer retrieved from the secondary stack in step (t) upon completion of the second privilege level task.

5,303,379

LINK MECHANISM FOR LINKING DATA BETWEEN OBJECTS AND FOR PERFORMING OPERATIONS ON THE LINKED DATA IN AN OBJECT BASED SYSTEM

Dana Khoyi, Dracut; Marc S. Soucie, Tyngsboro; Carolyn E. Surprenant, Dracut; Laura O. Stern, Woburn, and Ly-Huong T. Pham, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Division of Ser. No. 681,435, Apr. 3, 1991, Pat. No. 5,206,951, which is a continuation of Ser. No. 88,622, Aug. 21, 1987, abandoned. This application Aug. 28, 1992, Ser. No. 937,911
Int. Cl.[5] G06F *15/82, 9/40*
U.S. Cl. 395—700 **4 Claims**



1. In a data processing system including means for storing data in objects, each object being of a type defined by the type of data stored in the object, and including at least one object manager for each type of object in the system for performing operations on the corresponding object types, a link mechanism for linking data from a first object into a second object, comprising:
(A) in the second object, a means for storing a link marker, wherein
(i) the link marker indicates the location in the second object of a link of data from the first object, and
(ii) the link marker includes a link identification identifying the link within the second object,
(B) a link means for storing information relating the link identification to an identification of the first object,
(C) a data identification means for storing information identifying the linked data in the first object, and
(D) an access means for accessing the link means and the data identification means, wherein
(i) an object manager corresponding to the second object is responsive to the link marker for providing the link identification to the access means and
(ii) the access means is responsive to the link identification for
(a) reading the identification of the first object from the link means and the linked data in the first object from the data identification means and
(b) providing the identification of the first object and the identification of the linked data in the first object to an object manager corresponding to the first object, and wherein
(iii) the object manager corresponding to the first object is responsive to the identification of the first object and to identification of the linked data in the first object for providing the linked data
so that the linked data appears to reside in the second object, and wherein
(F) the object manager corresponding to the second object includes means for requesting an operation to be performed with respect to the linked data by
(i) providing the link identification and

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(ii) an indication of the requested operation to the access means, and

the link mechanism further includes

(G) an object type means for storing information relating an identification of an object to an identification of the type of the object, and

(H) an object management means for storing information relating each type of object to an identification of the corresponding at least one object manager for performing operations on the type of object, and wherein

(i) the access means is responsive to the identification of the first object for

(a) reading from the object type means the identification of the type of the first object,

(b) reading from the object management means the identification of the at least one object manager for performing the requested operation on the objects of the type of the first object, and

(c) invoking the object manager for performing the requested operation on the objects of the type of the first object,

whereby the object manager for performing the requested operation on the objects of the type of the first object is responsive to the access means to perform the requested operation on the linked data.

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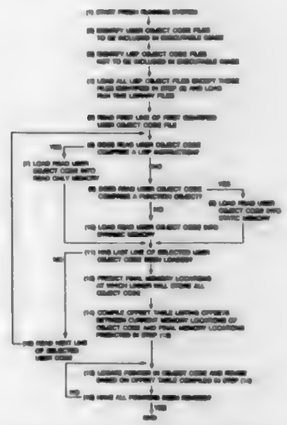
OBJECT CODE PROCESSING SYSTEM FOR FORMING AN EXECUTABLE IMAGE BY TRANSFORMING LISP-TYPE OBJECT FILES INTO A FORMAT COMPATIBLE FOR STORAGE BY A LINKER

J. David Tenny, Harvard; Jeff Piazza, Waltham; Gary L. Brown, Harvard; Paul C. Anagnostopoulos, Stow; Bruce A. Foster, Groton; Beryl E. Nelson, Acton, and Walter van Roggen, Stow, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 709,384, Jun. 3, 1991, abandoned, which is a division of Ser. No. 217,322, Jul. 11, 1988, Pat. No. 5,051,893. This application Mar. 25, 1993, Ser. No. 37,714

Int. Cl.[5] G06F *12/00, 9/45*

U.S. Cl. 395—700 **14 Claims**



1. A system for processing object code contained in one or more selected object files, before said object code is linked by a linker to form an executable image, said system comprising:

at least first and second storage means for storing said object code;

means for loading into said system said object files, said object files each comprising a plurality of objects, some of said object files comprising a LISP-type environment, and others of said object files comprising user code compiled by a LISP-type compiler into objects in a format not suitable for use by said linker;

means for evaluating each of said objects to determine in which of said storage means said each object should be stored;

means for transforming said each object into a form that said linker can properly link; and

means for directing said linker to store each said transformed object in one of said first and said second storage means, said means for directing operating in response to the determination by said evaluation means.

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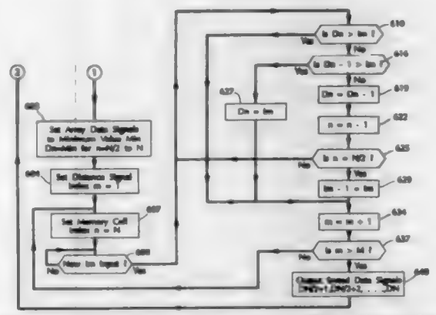
METHOD AND APPARATUS FOR SORTING SEQUENTIAL INPUT SIGNALS BY CONCURRENTLY COMPARING SUCCESSIVE INPUT SIGNALS AMONG SIGNALS IN FIRST AND SECOND MEMORY SECTIONS

Toshiaki Yagasaki, Irvine, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 554,384

Int. Cl.[5] G06F *7/06*

U.S. Cl. 395—800 **55 Claims**



1. In an apparatus having a memory partitioned into at least first and second memory sections of storage locations, a method for sorting input signals Im comprising the automated steps of:

storing a data signal having a predetermined extreme value in the storage locations of the first and second memory sections;

sequentially receiving input signals Im including a first input signal in successive time periods, each input signal Im having a value other than the predetermined extreme value; and

sorting the successively received input signals Im among the storage locations in said first and second memory sections of the memory in a prescribed order comprising:

in each time period, a first comparing step of comparing the value of the input signal Im received in the time period with the values of each of said data signals in the storage locations of the first memory section to store the input signal Im received in the time period in one of the storage locations according to its value among the data signals of the first memory section storage locations; and

in each time period, a second comparing step of comparing the value of an input signal Im−1 received in an immediately preceding time period with the value of each of said data signals in the storage locations of the second memory section to store the input signal Im−1 received in the immediately preceding time period in one of the storage locations according to its value among the data signals of the second memory section storage locations;

wherein the first input signal is stored so as to replace the predetermined extreme value stored in the last-compared storage location of the second memory section.

5,303,382

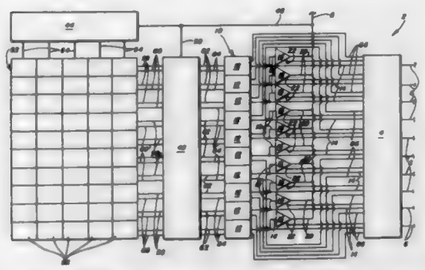
ARBITER WITH PROGRAMMABLE DYNAMIC REQUEST PRIORITIZATION

Bruce D. Buch, Westborough, and Cecil D. MacGregor, Milford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 410,615, Sep. 21, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 975,127

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—725 **7 Claims**



1. A programmable arbiter system for arbitrating a plurality of requests received from a plurality of requestors for a shared resource, each requester having a unique requestor identification (RID) which forms a portion of each request, comprising:

a priority bin array for storing said RIDs of said plurality of requestors, said priority bin array having a plurality of priority bins, each priority bin stores said RID for one of said requestors and corresponds to one of a plurality of priority levels in a RID prioritization order;

an array of storage registers for storing a plurality of groups of priority commands, each storage register storing one of said groups of priority commands, each of said groups of priority commands implements a corresponding arbitration priority algorithm, each priority command of each of said groups corresponds to one of said plurality of priority bins, each of said groups forming a priority template with said priority commands of each group arranged to form a RID prioritization pattern to implement said arbitration priority algorithm corresponding to each of said groups of priority commands;

a programmable random access memory having a plurality of addresses and being connected to said array of storage registers for selecting one of said groups forming said priority template for use as said RID prioritization pattern to implement said arbitration priority algorithm corresponding to said selected one of said groups, the number of said addresses being linearly scaled to the number of said requestors;

a bin shuffler connected to said array of storage registers and said priority bin array and responsive to said priority commands of each group for loading each priority bin according to said priority command of said selected one of said groups corresponding to said one of said plurality of priority bins being loaded to order said RIDs in said priority bin array according to said RID prioritization pattern;

a request prioritization and selection means for receiving a first plurality of requests from said plurality of requestors and responsive to the order of said RIDs in said priority bin array for selecting the RID of said requestors making said first plurality of requests with the highest priority level in accord with said RID prioritization order;

said programmable random access memory responsive to said selected RID with the highest priority level to select another one of said groups forming said priority template for use as a new RID prioritization pattern to dynamically implement said arbitration priority algorithm corresponding to said another one of said groups;

said bin shuffler responsive to said new RID prioritization pattern for reordering said RIDs in said priority bin array by loading each priority bin according to said priority command of said selected another one of said groups corresponding to said one of said plurality of priority bins being loaded; and

said request prioritization and selection means receiving another plurality of requests from said requestors and responsive to said order of said RIDs in said priority bin array for selecting the RID of said requestors making said another plurality of requests with the highest priority in said RID prioritization order.

5,303,383

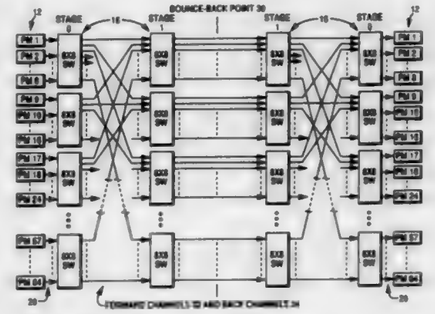
MULTIPROCESSOR COMPUTER SYSTEM

Philip M. Neches, Dayton, Ohio; Robert J. McMillen, Encinitas, Calif.; M. Cameron Watson, Los Angeles, Calif., and David J. Chura, Redondo Beach, Calif., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 694,110, May 1, 1991. This application Aug. 14, 1992, Ser. No. 900,731

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **6 Claims**



1. A multiprocessor system, comprising:

(a) a plurality of processors;

(b) a network for connecting the processors, wherein the network comprises a plurality of switch nodes arranged into more than $\lceil \log_b N \rceil$ switch node stages, wherein b is a total number of switch node input/output ports, N is a total number of network input/output ports, and $\lceil \log_b N \rceil$ indicates a ceiling function providing the smallest integer not less than $\log_b N$, the switch node stages thereby providing a plurality of paths between any network input port and network output port to enhance fault tolerance and lessen contention, the switch node stages being configured to provide a plurality of bounce-back points at a highest switch node stage of the network for directing transmissions of messages through the network, the bounce-back points logically differentiating between switch nodes that load balance messages through the network from switch nodes that direct messages to receiving processors;

(c) means for partitioning the processors into one or more superclusters comprising logically independent subsets of processors; and

(d) means for multicast communicating within superclusters by steering a multicast message to a particular bounce-back point in the network for subsequent routing to the processors in the supercluster, thereby preventing deadlock in the network by permitting only one multicast message through the particular bounce-back point at a time and preventing multicast messages to different superclusters from interfering with each other.

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5,303,384

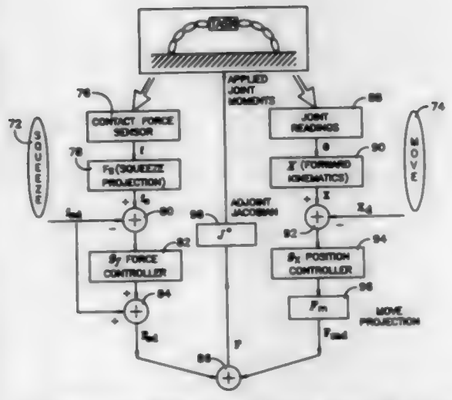
HIGH LEVEL LANGUAGE-BASED ROBOTIC CONTROL SYSTEM

Guillermo Rodriguez, La Canada; Kenneth K. Kreutz, San Diego, and Abhinandan Jain, Altadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 459,438, Jan. 2, 1990. This application Nov. 1, 1991, Ser. No. 786,499

Int. Cl.[5] G05B *19/00*

U.S. Cl. 395—99 36 Claims



1. A high level language-based control system for a robot which performs a set of movement functions comprising:

a) a digital control computer operably connected to the robot to control the movement functions thereof, said digital control computer including program execution means for executing control programs;

b) translator means for reading a set of robot control statement sequences and for generating control programs therefrom defining a set of robot control sequences, said translator means comprising:

(1) first translator means for accepting as inputs thereto statements in a high level spatial operator algebra language and for outputting machine language sequences reflecting said inputs to said first translator means and executable by said digital control computer, and

(2) second translator means for accepting as inputs thereto statements in a high level robot applications language and for outputting to said first translator means statements in said high level spatial operator algebra language reflecting said inputs to said second translator means;

c) means for inputting said control programs into said digital control computer for execution thereby; and

d) robot computer simulation means operably connected to said digital control computer for executing said control programs in a simulation mode prior to executing them to control the robot and for preventing said digital control computer from executing said control programs to control the robot if a problem is detected in said simulation mode.

5,303,385

CONTROL SYSTEM HAVING OPTIMALITY DECISION MEANS

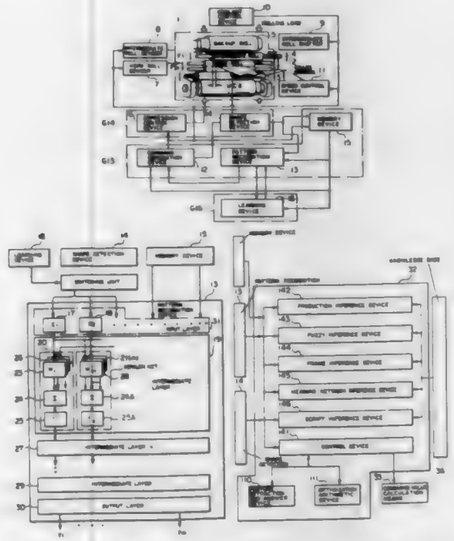
Satoshi Hattori, Hitachi; Shigeru Ueki, Tokyo; Yutaka Saito; Tetsuo Manchu, both of Hitachi; Yasunori Katayama, Mito; Yasuo Morooka, Hitachi; Hiroshi Matsumoto, Ibaraki, and Masaaki Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1990, Ser. No. 490,848

Claims priority, application Japan, Mar. 17, 1989, 1-063743; Mar. 20, 1989, 1-066229

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—22 16 Claims



1. A control system for controlling a plurality of control elements which are effective to control of a given controlled system, said control system comprising:

detection means for detecting a characteristic value representing the characteristic of a given controlled system to be controlled; and

an optimality decision unit for deriving respective manipulated variables of said plurality of control elements on the basis of said detected characteristic value, said optimality decision unit comprising:

means for setting a plurality of reference patterns representing different features of said characteristic value on the basis of a predicted value of said characteristic value;

means for deriving degree of conviction that said characteristic value detected by said detection means belongs to each of said reference patterns;

means for presetting rules whereby a manipulated variable of each of said plurality of control elements is determined when said detected characteristic value belongs to each of said plurality of reference patterns; and

means for deriving a manipulated variable of each control element on the basis of degree of conviction that said detected characteristic value belongs to each of said plurality of reference patterns and said manipulated variable determining rule preset with respect to each control element for each reference pattern.

5,303,386

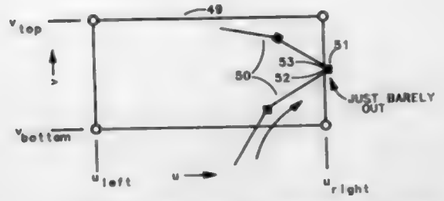
METHOD AND APPARATUS FOR TRIMMING B-SPLINE DESCRIPTIONS OF PATCHES IN A HIGH PERFORMANCE THREE DIEMENSIONAL GRAPHICS SYSTEM

James G. Fiasconaro, Loveland, Colo., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Division of Ser. No. 526,410, May 18, 1990, abandoned, which is a continuation of Ser. No. 11,667, Feb. 5, 1987, Pat. No. 4,999,789. This application Dec. 6, 1991, Ser. No. 803,503

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—119 3 Claims



1. In a graphics system where a portion of a subspan is trimmed away according to a trimming curve, a method of adjusting the intersection of the trimming curve with the subspan to compensate the errors of finite precision arithmetic, the method comprising the steps of:

detecting, for two different points along the trimming curve that are separated by an intervening point, for a first segment of the trimming curve between one of the two different points and the intervening point, and for a second segment of the trimming curve between the intervening point and the other of the two different points, that there obtain identically-valued points of intersection of the first and second segments of the trimming curve with a boundary of the subspan;

ignoring the intervening point and treating the identically-valued points of intersection as consecutive points along the trimming curve that lie upon the subspan when the intervening point is outside the subspan;

ignoring the identically-valued points of intersection and the intervening point when the intervening point is inside the subspan; and

displaying a visual image of a surface upon a graphic system in accordance with the trimming curve having an ignored intervening point.

5,303,387

ARRANGEMENT FOR UTILIZING A PASSIVE LINE CONCENTRATOR IN A MANAGED TOKEN RING NETWORK

Steven J. Millard, New Cumberland; Bret A. Matz, Harrisburg, both of Pa.; Hemant K. R. Kumar, Bangalore, and Kalampukattussery C. Babu, Kerala, both of India, assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 8, 1992, Ser. No. 881,012

Int. Cl.[5] H04L *12/42*

U.S. Cl. 395—200 6 Claims

1. In a token ring network, the combination of:

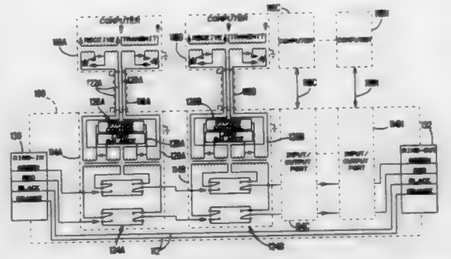
(a) a concentrator (**100**) of a first type including a ring-in port (**130**), a ring-out port (**132**), a plurality of station ports (**114**) and an internal loop (**112**) interconnecting all of said ports, each of said station ports having a multi-coil isolation transformer (**129**) and switching means (**124**) for selectively connecting a coil of the isolation transformer to the internal loop upon the detection of a station connected to each station port; and

(b) a concentrator (**10**) of a second type including an internal loop and a concentrator port (**200**) adapted for connection to the ring-in port of said first type of concentrator, said concentrator port including:

(1) a multi-coil isolation transformer(**206**);

(2) a relay having a coil (**244**) and a bank of contacts (**246**), said bank of contacts when in a first state due to the energization of said coil coupling the isolation transformer to the internal loop and said bank of contacts when in a second state due to said coil not being energized bypassing the isolation transformer from the internal loop;

(3) means (**202**) for providing direct current through a first coil of the isolation transformer of the concentrator port at a first wire (**208**) to the ring-in port of a first type of



concentrator connected to said concentrator port, said first type of concentrator being arranged to return said direct current at a second wire (**212**) of said concentrator port through a coil of at least one isolation transformer (**129**) within said first type of concentrator when at least one station port has connected thereto a respective station;

(4) first receiving means (**216, 218**) for receiving current from said second wire through a second coil of the isolation transformer of the concentrator port; and

(5) means (**222, 240, 242**) responsive to the presence of said direct current at said first receiving means for energizing said relay coil.

5,303,388

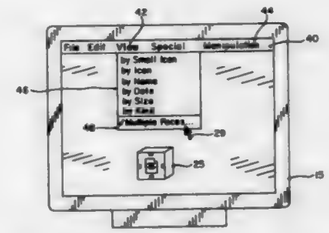
METHOD TO DISPLAY AND ROTATE A THREE-DIMENSIONAL ICON WITH MULTIPLE FACES

Kristee Kreitman, San Francisco, and Joy Mountford, Mountain View, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 521,067, May 9, 1990, abandoned. This application Apr. 23, 1993, Ser. No. 52,865

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—159 16 Claims



13. A method of manipulating a three-dimensional icon on a display screen of a computer system, wherein the three-dimensional icon includes a plurality of faces, each face containing at least one displayed item which is associated with an object stored in the computer system, the plurality of faces are joined together to form the three-dimensional icon, a first face con-

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taining a two-dimensional icon representing a folder or file stored in the computer system and other faces of the three-dimensional icon displaying attributes of said folder or said file, the method comprises the steps of:

(A) marking a first button marker on the first face of the plurality of faces of the three-dimensional icon, wherein the first marker associated with a second face of the plurality of faces of the three-dimensional icon, when the first face is displayed front most on the display screen and the first button marker is activated, the three-dimensional icon is rotated such that the second face is displayed front most on the display screen;

(B) rotating the three-dimensional icon by activating the first button marker to display the first face front most.

5,303,389

DATA PROCESSING SYSTEM FOR PROCESSING UNITS HAVING DIFFERENT THROUGHPUTS

Akihiko Hoshino, Mitaka; Mikio Itoh, Yokohama, and Nobuhiko Kuribayashi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

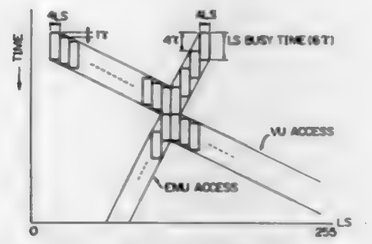
Continuation of Ser. No. 905,971, Sep. 11, 1986, Pat. No. 4,916,609. This application Oct. 31, 1989, Ser. No. 429,657

Claims priority, application Japan, Sep. 11, 1985, 60-200966; Sep. 19, 1985, 60-207537

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **2 Claims**



1. A data processing system, comprising:

a main storage unit comprising interleaved storage elements;

a first processing unit, connected to said main storage unit, for performing at a first speed sequential access of a data area in said main storage unit in ascending order of the storage elements; and

a second processing unit, connected to said main storage unit, for performing at a second speed, different from the first speed, sequential access of data in the data area simultaneously accessed by said first processing unit in said main storage unit in descending order of the storage elements, the data having a starting address and a number of elements, said second processing unit including means for calculating descending addresses by initially adding the starting address and the number of elements and subsequently decrementing by an amount of the data accessed until the starting address is reached.

5,303,390

MICROPROCESSOR AUXILIARY WITH COMBINED PIN FOR RESET OUTPUT AND PUSHBUTTON INPUT

Wendell L. Little, Denton, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Jun. 28, 1990, Ser. No. 546,213

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **9 Claims**

1. An integrated circuit, for performing power management functions, comprising:

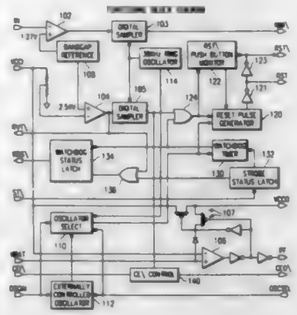
a voltage comparison circuit, connected to monitor the voltage of an external power supply node with reference to a reference-voltage source;

a watchdog timer circuit, connected to detect inactivity of more than a minimum duration on a predetermined input node;

reset control logic, connected to reset nodes;

interrupt generation logic, connected to an interrupt node;

and wherein said reset nodes include both an active-high reset node and an active-low reset node;



and further comprising a debounce circuit connected to said active-low reset node;

wherein when said watchdog timer circuit detects inactivity of more than a minimum duration said reset control logic generates a low pulse at said active-low reset node, and when said debounce circuit detects a low signal at said active-low reset node not generated by said reset control logic, said reset control logic generates a low pulse at said active-low reset node.

5,303,391

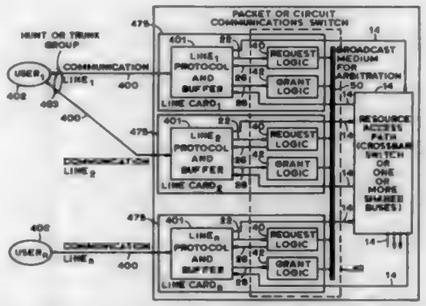
FAST ARBITER HAVING EASY SCALING FOR LARGE NUMBERS OF REQUESTERS, LARGE NUMBERS OF RESOURCE TYPES WITH MULTIPLE INSTANCES OF EACH TYPE, AND SELECTABLE QUEUING DISCIPLINES

Robert J. Simcoe, Westborough, and Robert E. Thomas, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 542,856, Jun. 22, 1990. This application Jan. 6, 1993, Ser. No. 1,006

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—725 **1 Claim**



1. A plug-in logic board for use in an arbitration mechanism, said arbitration mechanism having a plurality of request processing units, a plurality of grant processing units and a common broadcast medium, the plurality of request processing units and the plurality of grant processing units using the common broadcast medium to control the coupling order between a plurality of requesters and a plurality of resources in a first come, first served manner, which logic board comprises:

a request processing unit **40** coupled to the common broadcast medium;

a grant processing unit **42** coupled to the common broadcast medium;

an input/output unit **401** adapted to be coupled to an electronic operating device **402**, wherein said input/output unit inputs a resource type request signal **22** received from the electronic operating device **402** to the request processing unit **40** inputs a status signal **28** received from the electronic operating device **402** to the grant processing unit **42** and outputs a grant signal **26** received from the request processing unit to the electronic operating device; and

means, responsive to said resource type request signal **22**, said status signal **28**, and said grant signal **26**, for coupling a requester type electronic operating device to a resource type electronic operating device using a resource access path **14**.

5,303,392

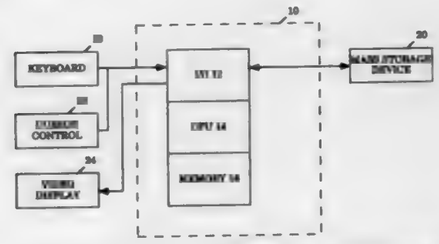
ACCESSING CURRENT SYMBOL DEFINITIONS IN A DYNAMICALLY CONFIGURABLE OPERATING SYSTEM

Michael W. Carney, Merrimacport, Mass.; William Shannon, Los Altos, Calif., and Joseph E. Provino, Cambridge, Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Feb. 27, 1992, Ser. No. 843,938

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—775 **13 Claims**



1. In a computer system comprising a central processing unit (CPU) executing an operating system and an application program loaded in a memory coupled to said CPU, wherein said operating system is dynamically configurable, a method for providing access to said application program to current symbol definitions of said operating system, said method comprising the steps of:

receiving an open request by said operating system to open a file containing current symbol definitions of said operating system from said application program;

inhibiting automatic unloading by said operating system of any relocatable segments of said operating system that are currently loaded in said memory, said dynamically configurable operating system comprising a root executable segment and a plurality of relocatable segments that are loaded and linked by said operating system on an as needed basis, said dynamically loaded and linked relocatable segments being automatically unloaded by said operating system when they are not being used;

creating said file by said operating system based on symbol definitions contained in said root executable segment and said relocatable segments that are currently loaded in memory; and

making said file available by said operating system to said application program.

5,303,393

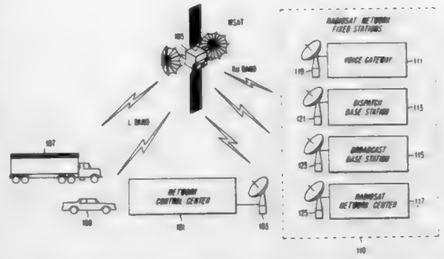
INTEGRATED RADIO SATELLITE RESPONSE SYSTEM AND METHOD

Gary Noreen, Pasadena, and Theodore R. Harper, Long Beach, both of Calif., assignors to Radio Satellite Corporation, La Canada Flintridge, Calif.

Continuation-in-part of Ser. No. 607,877, Nov. 6, 1990, abandoned. This application Apr. 12, 1991, Ser. No. 683,962

Int. Cl.[5] H04H *1/00*

U.S. Cl. 455—3.2 **14 Claims**



3. A mobile station for use with a broadcast station for broadcasting a program signal, a processing center and a plurality of mobile stations, said mobile station comprising:

a broadcast receiver for receiving the program signal;

interface means for communicating the program signal to a user;

controller means responsive to the program signal for processing program identification information from the program signal, responsive to a user input from the user for generating a user-input signal, and for combining the processed program identification information and the user-input signal as a user-data signal;

data-transmitter means responsive to the user-data signal for transmitting the user-data signal as a transmitted-data signal to said processing center; and

location means responsive to receiving the transmitted-data signal through at least two repeater means for detecting a location of said mobile station.

5,303,394

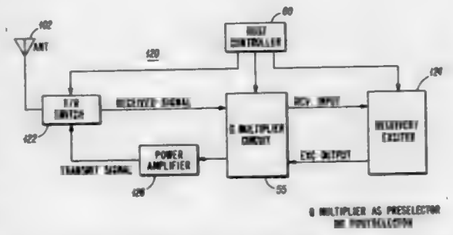
FEEDBACK STABILIZED Q MULTIPLIER FILTER CIRCUIT

Dennis J. Hrncirik, Hiawatha, Iowa, assignor to Rockwell International, Seal Beach, Calif.

Filed Aug. 9, 1991, Ser. No. 742,998

Int. Cl.[5] H04B *1/48, 1/10*

U.S. Cl. 455—84 **3 Claims**



1. A radio transmitter/receiver assembly enabling a single filter module to perform both preselection and postselection functions, comprising:

a Q multiplier circuit which is constructed and arranged for filtering communications signals received by said assem-

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bly at a first selectivity level when the assembly is in a receive mode and for filtering communications signals transmitted by said assembly at a second selectivity level when the assembly is in a transmit mode;

a receiver/exciter for receiving and processing communications signals from said Q multiplier circuit when the assembly is in a receive mode and for generating and supplying communications signals to said Q multiplier circuit when the assembly is in a transmit mode;

a transmit/receive switch for directing communications signals from an antenna to said Q multiplier circuit when the assembly is in the receive mode and directing communications signals from said Q multiplier circuit to an antenna when the assembly is in the transmit mode;

a controller for generating and supplying control signals to said Q multiplier circuit, said receiver/exciter and said transmit/receive switch whereby said assembly can be configured in either the receive or the transmit mode of operations with said Q multiplier circuit functioning either as a preselector or a postselector at different levels of selectivity.

5,303,395

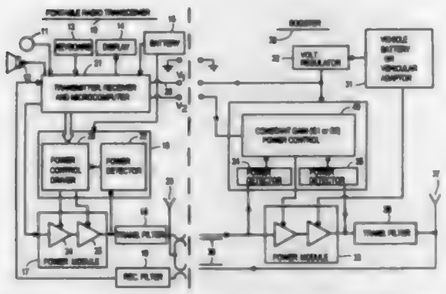
POWER CONTROL WITH A CONSTANT GAIN AMPLIFIER FOR PORTABLE RADIO TRANSCEIVERS

Oscar Dayani, Atlanta, Ga., assignor to Mitsubishi Consumer Electronics America, Inc., Braselton, Ga.

Filed Nov. 6, 1991, Ser. No. 788,477

Int. Cl.[5] H04B *1/40*

U.S. Cl. 455—127 **19 Claims**



1. A system for controlling the power level of RF signals output by a radio transmitter having a first amplifier stage, means coupled to the first amplifier stage for selecting one of a selectable set of power levels and a first voltage supply which provides power to said power level selecting means, said system comprising:

means for indicating when the radio transmitter is coupled to a second voltage supply;

means for providing a control signal when the radio transmitter is indicated to be coupled to the second voltage supply, the control signal being representative of a desired power level;

a second amplifier stage coupled to the first amplifier stage when the radio transmitter is coupled to the second voltage supply so as to receive RF signals at the selected power level; and

a constant gain control circuit which is coupled to the second amplifier stage and responds to the control signal by setting the gain of the second amplifier stage at one of at least two constant gain values so that the output RF signals are provided with the desired power level, said control circuit including a first feedback circuit for setting a first constant gain value, a second feedback circuit for setting a second constant gain value and switching means responsive to the control signal for coupling one of the first and second feedback circuits to the second amplifier stage.

5,303,396

DIVERSITY RECEPTION HAVING A PLURALITY OF ANTENNAS FOR USE WITH MOVING VEHICLES

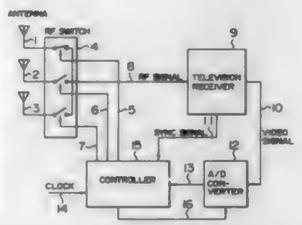
Kazuhiro Ooyagi, Yokohama; Nobutaka Hotta, Fujisawa, and Keiro Shinkawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Video & Information Systems, Inc., Yokohama and Hitachi Automotive Engineering Co., Ltd., Ibaraki, all of Japan

Filed Jun. 5, 1991, Ser. No. 710,811

Claims priority, application Japan, Jun. 13, 1990, 2-152792

Int. Cl.[5] H04B *17/02*

U.S. Cl. 455—134 **2 Claims**



2. A method of removing audio distortion from a diversity reception apparatus having a plurality of receiving antennas, said method comprising the steps of:

receiving an analog demodulated broadcasting signal from said receiving antennas into receiving means;

converting said analog demodulated signal into a digital signal;

selecting one of said plurality of receiving antennas;

connecting said selected receiving antenna to said receiving means;

generating a switch driving pulse;

sequentially selecting each of said plurality of receiving antennas according to said generated switch driving pulse;

comparing the digital signals with one another to thereby detect a receiving antenna corresponding to a demodulated signal of the highest level; and

controlling said selection of a receiving of antenna of said plurality of receiving antennas such that a receiving antenna corresponding to said demodulated signal of the highest level is selected for a period of time during which said switch driving impulse is absent, while a receiving antenna corresponding to said switch drive impulse is selected for a period of time during said switch driving pulse is received by said control means,

wherein a period of time for which one of said receiving antenna is selected in response to a corresponding switch drive impulse is no longer than three (3) microseconds.

5,303,397

SEMICONDUCTOR INTEGRATED CIRCUIT CONTAINING A CIRCUIT HAVING AN IMPEDANCE CIRCUIT EXTERNALLY ATTACHED THERETO

Hidehiko Aoki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, kawasaki, Japan

Filed Jul. 31, 1991, Ser. No. 738,440

Claims priority, application Japan, Aug. 1, 1990, 2-204540

Int. Cl.[5] H04B *17/02*

U.S. Cl. 455—142 **8 Claims**

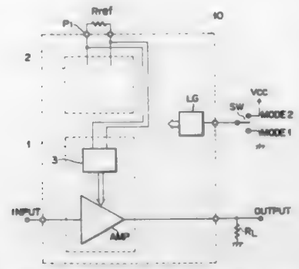
1. A semiconductor integrated circuit comprising:

first circuit means which is set into an operative state in a first mode and into a non-operative state in a second mode;

an impedance circuit included in said first circuit means and externally connected to a ship;

second circuit means set into an operative state in the second mode and into a non-operative state in the first mode;

resistor means included in said second circuit means and externally connected to said chip, wherein a transfer characteristic of said first circuit means depends on a ratio of an impedance of said resistor means to an impedance of said impedance circuit; and



third circuit means contained in said first circuit means, for keeping a DC voltage applied across said resistor means constant and deriving a direct current flowing in said resistor means in the first mode irrespective of the presence or absence and the magnitude of a voltage applied to one end of said resistor means.

5,303,398

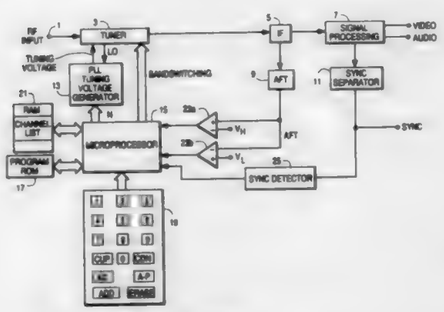
STABILITY DETECTION METHOD AND APPARATUS FOR A TUNING SYSTEM

Juri Tults, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 9, 1990, Ser. No. 488,645

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—182.1 **20 Claims**



1. A tuning system comprising:

means for providing an RF signal;

means for generating a local oscillator signal;

means for combining said local oscillator signal with said RF signal to produce an IF signal having a nominal frequency when a correct tuning condition exists;

means responsive to said IF signal for generating a signal having a characteristic indicative of the relationship of the frequency of said IF signal to said nominal frequency;

means for controlling said local oscillator signal generating means so as to change the frequency of said local oscillator signal from a first frequency to a second, predetermined frequency; said controlling means monitoring said IF frequency indicative signal and generating an indication of the stability of said local oscillator signal when said IF frequency indicative signal remains consistent for a first predetermined time period, and generating said stability indication after a second predetermined time period, longer than said first predetermined period, if said IF frequency indicative signal does not remain consistent for said first predetermined time period.

5,303,399

RADIO RECEIVER CAPABLE OF INDICATING CAPITAL AND SMALL LETTERS ON A DISPLAY

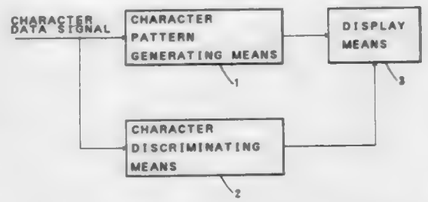
Hideaki Kobayashi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 833,704

Claims priority, application Japan, May 16, 1991, 3-110680

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—158.4 **5 Claims**



1. A radio receiver capable of extracting a character data signal which is multiplexed on a broadcast radio wave, said radio receiver comprising:

data extracting means for extracting the character data signal from the broadcast radio wave currently being received;

character pattern generating means coupled to said data extracting means for generating a character pattern common to both capital and small alphabetic letters of a language in accordance with said character data signal;

control means representing a character discriminating means coupled to said data extracting means for discriminating either a capital or small letter code in accordance with said character data signal to provide an output signal; and

display means for displaying said character pattern outputted from said character pattern generating means in different displaying modes depending on which of said capital and small alphabetic letters should be displayed in accordance with the output signal from said control means.

5,303,400

RADIO FREQUENCY RECEIVER INCLUDING DUAL RECEIVERS FOR INCREASING SCANNING SPEED

Kazuhiko Mogi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 5, 1991, Ser. No. 680,865

Claims priority, application Japan, Apr. 23, 1990, 2-105350

Int. Cl.[5] H03J *7/18*

U.S. Cl. 455—186.1 **4 Claims**

1. A radio receiver where the reception band is divided into a first region and a second region, comprising:

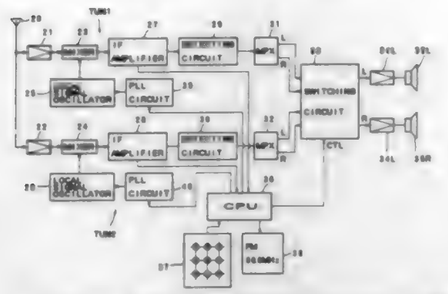
a first receiving means for sweeping frequencies of said first region to receive signals corresponding to frequencies of broadcasting stations transmitting within a frequency range of said first region;

a second receiving means for sweeping frequencies of said second region to receive signals corresponding to frequencies of broadcasting stations transmitting within a frequency range of said second region, wherein said first and second receiving means simultaneously sweep frequencies in said first region and said second region; and

a control means for storing frequencies of received broadcasting stations having a reception quality not less than a specified level obtained by sweeping frequencies in said first region and received broadcasting stations having a

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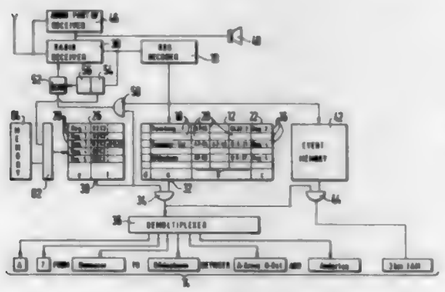
reception quality not less than said specified level obtained by sweeping frequencies in said second region into a memory means in the order of the height of reception quality level.



5,303,401
RDS RECEIVER WITH AUTOMATIC REGION RECOGNITION

Ralf Duckeck, and Peter Braegas, both of Hildesheim, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00794, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/07029, PCT Pub. Date May 16, 1991
PCT Filed Oct. 19, 1990, Ser. No. 834,294
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1989, 3936577
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—186.1 **3 Claims**

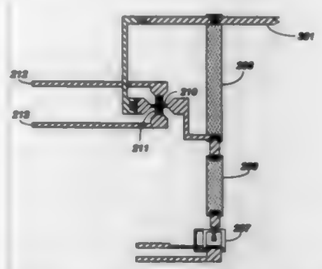


1. A receiver, having
means for simultaneously tuning and processing a signal intended for audio reproduction (**46**, **40**) and an auxiliary digital signal (**38**);
a decoder (**10**), coupled to an output of said tuning and processing means, for decoding digitally encoded traffic news contained in said auxiliary signal;
a memory device (**12**), coupled to an output of said decoder, and pre-programmed with a table associating highway numbers and highway access point numbers with specific respective geographic regions;
means (**34**) for filtering a stream of information from said decoder (**10**) and said pre-programmed memory device (**12**); and
means (**14**) for indicating to a user, by at least one of visual output and audio output, information selected by said filtering means (**34**);
further comprising, in accordance with the invention,
means (**52**), coupled to a control input of said tuning means, for directing a scan of a predetermined frequency band;
a rewritable scan memory (**54**), coupled to an output of said tuning means, storing frequencies of stations detected during said scan;
a further memory (**84**) which includes a list of geographic regions (**85**) and the frequencies (**86**) of stations receivable in each region;
a comparison device (**82**), coupled to respective outputs of said scan memory (**54**) and of said further memory (**84**), which compares the frequencies received during said scan with the frequencies (**86**) stored in said further memory, to find an at least partial match between the received and the stored frequencies, thereby automatically recognizing in which geographic region said scan was performed, and outputs, to said filtering means (**34**), a number identifying said recognized region;
said filtering means (**34**) subsequently limiting output of information via said indicating means (**14**), to traffic news relevant to said recognized region.

5,303,402
ELECTRICALLY ISOLATED METAL MASK PROGRAMMING USING A POLYSILICON FUSE

Kevin McLaughlin, Lake Worth, and Barry Herold, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 9, 1992, Ser. No. 848,559
Int. Cl.[5] H01H *85/04, 37/76*
U.S. Cl. 455—186.1 **14 Claims**



10. An integrated circuit in which a default operating condition of an electronic device is selectively programmed, the integrated circuit comprising:
a mask option programming link that determines the operating condition of the electronic device, the mask option programming link comprising:
a first conductor residing on a first layer, the first conductor having first and second programming contact terminals; and
a second conductor coupled to the electronic device for determining the operating condition associated therewith, the second conductor residing on a second layer that is electrically isolated from the first layer, and when sufficient programming bias is applied to the first and second programming contact terminals of the first conductor, energy dissipated by the first conductor eliminates the second conductor coupling to the electronic device, thereby changing the operating condition associated therewith.

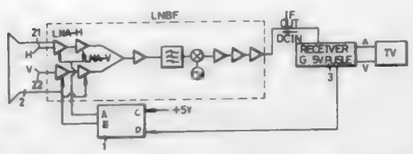
5,303,403
ELECTRONIC SWITCH FOR SELECTING SATELLITE POLARIZATION SIGNALS

Ioe-Heng Leong, Hsinchu, Taiwan, assignor to Microelectronics Technology, Inc., Hsinchu, Taiwan

Filed Jun. 16, 1992, Ser. No. 899,338
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—192.3 **3 Claims**

1. An electronic switch used in a low noise block down converter (LNB) for controlling the reception of satellite polarization signals, said electronic switch comprising:

a pulse width discriminator for comparing widths of an input signal with a reference width to output a pulse with a pre-determined frequency and a 0 V signal according to the comparison results, respectively;
a latching means for receiving said pulse with a predetermined frequency and said 0 V signal from said width discriminator to output a high voltage and a low voltage to a FET selection controller, respectively; and

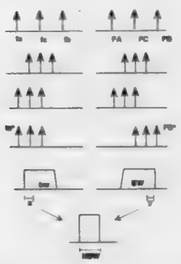


said FET selection controller comprising two switching FET circuits respectively connected with a horizontal probe and a vertical probe and a complementary element; said complementary element receiving the outputs of said latching means and outputting two complementary signals to said two switching FET circuits so that only one of said FET circuits is turned on at a time, whereby selecting a desired polarization signal.

5,303,404
ADJUSTABLE BANDWIDTH IN A RADIOTELEPHONE

Seppo K. Kivelä, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 17, 1991, Ser. No. 779,347
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—200.1 **10 Claims**

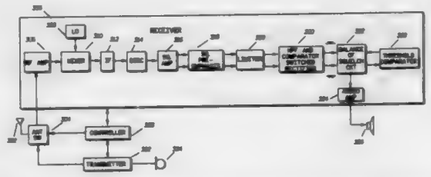


1. A method for adjusting the operating bandwidth of a radiotelephone receiver to operate selectively with a wide bandwidth and a narrow bandwidth when in a wide bandwidth system and a narrow bandwidth system, respectively, comprising the steps of:
when in a wide bandwidth system,
applying an input signal to a first mixer, said input signal having a desired signal and adjacent channel signals spaced on opposite sides of the desired signal by a wide channel spacing;
applying a first local frequency to the first mixer for producing a first intermediate frequency signal, including the desired signal, at the mixer output;
filtering the first intermediate frequency in a first bandpass filter with a characteristic bandwidth related to the wide channel spacing and centered on the frequency in the intermediate frequency signal that is related to the desired signal;
applying the filtered output to a second mixer;
applying a second local frequency to the second mixer for producing a second intermediate frequency signal, including the desired signal, said second local frequency being independent of said first local signal; and
filtering the second intermediate frequency in a second bandpass filter with a characteristic related to the wide channel spacing and centered on the frequency in the second intermediate frequency related to the desired frequency;
wherein the improvement comprises, when in a narrow bandwidth system;
receiving an input signal having at least a desired signal and adjacent channel signals spaced from each other by a narrow channel spacing;
selecting a first offset value based on the amount of the frequency difference between the wide and narrow channel spacing;
producing a new first local frequency by applying the first offset value to the first local frequency;
supplying the new first local frequency to the first mixer so as to generate a new first intermediate frequency;
filtering the new first intermediate frequency in the first bandpass filter, the first offset value being such that the desired signal passes through the first bandpass filter and at least one adjacent channel signal on one side of the desired signal is attenuated;
selecting a second offset value based on the difference between the wide and narrow channel spacings;
producing a new second local frequency by applying the second offset value to the second local frequency;
supplying the new second local frequency to the second mixer so as to generate a new second intermediate frequency; and
filtering the new second intermediate frequency in the second bandpass filter, the second offset value being such that the desired signal passes and at least one adjacent channel signal on the other side of the desired signal is attenuated.

5,303,405
COMPARATOR SWITCHED SQUELCH RECTIFIER

John W. Simmons, Tamarac, and Walter H. Kehler, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

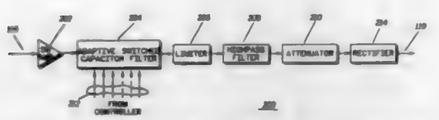
Filed Sep. 3, 1991, Ser. No. 753,775
Int. Cl.[5] H04B *1/16, 1/10*
U.S. Cl. 455—213 **11 Claims**



1. A receiver for receiving radio frequency signals, comprising:
a squelch circuit for squelching the receiver, including;
a programmable high pass filter having at least two poles for filtering the received signal to produce a filtered signal;
an integrated differential rectifier coupled to the filter for rectifying the filtered signal to produce a rectified signal, the differential rectifier comprises:
an amplifier having an output;
an inverter coupled to the output of the amplifier;
a first switch coupled to the output of the amplifier;
a second switch coupled to the inverter;
means for sensing when the rectified signal is above a threshold; and
squelch means responsive to the means for sensing to squelch the receiver.

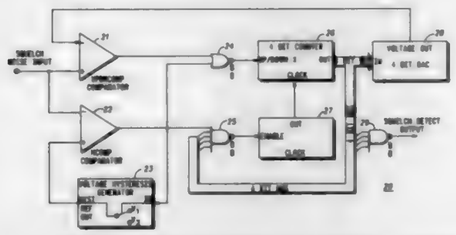
VOL 1161 ISS 2 AP 12 1994 UMI

5,303,406
NOISE SQUELCH CIRCUIT WITH ADAPTIVE NOISE SHAPING
Kenneth A. Hansen, Keller, Tex., and James D. Brake, Canton, Mich., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 29, 1991, Ser. No. 692,834
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—222 4 Claims



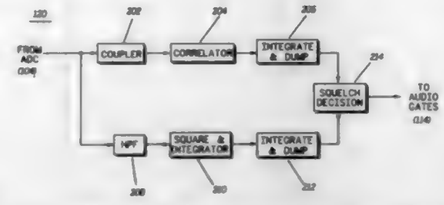
1. A noise squelch circuit for a radio receiver, comprising:
a demodulator for demodulating a received communication signal having a demodulator output;
a filter means for adaptively shaping frequency characteristics of noise present at the demodulator output in response to a control signal, wherein said control signal corresponds to channel spacing of the radio receiver; and
squelch means coupled to said filter means for squelching the radio receiver.

5,303,407
DIGITAL SQUELCH TAIL CIRCUIT FOR TWO-WAY RADIO COMMUNICATION SYSTEMS
Peter W. Juergensen, Fort Worth, Tex., and James D. Brake, Canton, Mich., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 4, 1991, Ser. No. 787,488
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—222 9 Claims



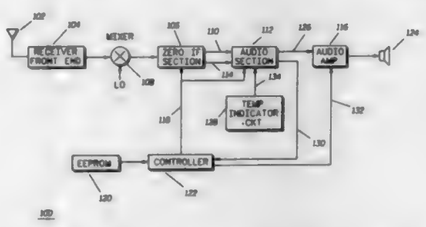
1. A radio squelch delay circuit for providing a variable squelch delay, such circuit comprising:
A) a digital to analog converter receiving an input from a counter and providing an output to a comparator comparing the digital to analog converter output with a squelch noise input signal to provide an up/down count control input to the counter for determining a squelch delay time based, at least in part, upon a magnitude of the squelch noise input signal;
B) means for entering the determined squelch delay time into a digital timer comprising the counter operatively coupled to a clock;
C) means for activating the timer upon loss of RF; and,
D) means coupled to an output of the digital timer for providing a squelch tail circuit output signal upon expiration of the squelch delay.

5,303,408
SQUELCH DETECTOR
Mansour Ghomeshi; Chin P. Wong, both of Ft. Lauderdale, and John W. Simmons, Tamarac, all of Fla., assignors to Motorola, Inc., Shaumburg, Ill.
Filed Apr. 3, 1992, Ser. No. 863,605
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—222 17 Claims



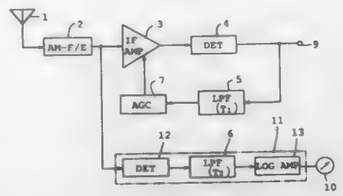
1. A communication device having an audio output device, comprising:
receiver means for receiving a signal to produce a received signal having a frequency spectrum;
a first means having a correlator and integrator and dump means for measuring a signal energy level in a first segment of the frequency spectrum of the received signal to determine a threshold;
second means for measuring a signal energy level in a second segment of the frequency spectrum of the received signal; and
third means for unmuting the audio output device when the signal level measured by the second means is below the threshold.

5,303,409
AUTOMATICALLY COMPENSATED SQUELCH CIRCUIT
Charles R. Ruelke, Davie, and Alexander Rodriguez, Hialeah, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 4, 1992, Ser. No. 894,132
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—219 17 Claims



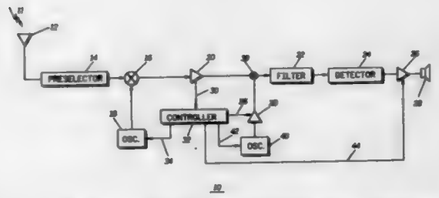
1. A receiver squelch circuit having a squelch setting, the receiver squelch circuit comprising:
an input means for receiving a channel spacing signal;
means for converting the channel spacing signal into an address word;
memory means responsive to the address word for providing a compensation word; and
compensation means for receiving the compensation word and automatically compensating the squelch setting.

5,303,410
SIGNAL STRENGTH METER CIRCUIT FOR RADIO RECEIVER
Fumihiko Horigome, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 26, 1991, Ser. No. 797,858
Claims priority, application Japan, Jun. 21, 1991, 3-55667
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—226.4 4 Claims



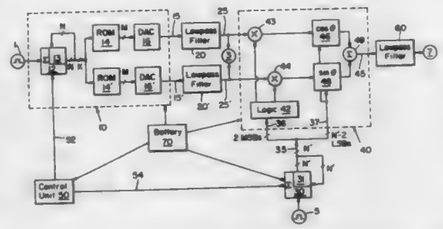
1. A signal strength meter circuit connected to a tuner having an intermediate-frequency amplifier and an automatic gain control loop including a first detector connected to an output of the intermediate-frequency amplifier, a first low pass filter having a first time constant and connected to an output of the first detector, and an automatic gain control provided between an output of the first low pass filter and an input of the intermediate-frequency amplifier, comprising:
a second detector connected to the tuner so as to be applied with a signal which is to be applied to the intermediate-frequency amplifier;
a second low pass filter having a second time constant shorter than the first time constant and connected to an output of the second detector so that the signal is converted into pulses;
a logarithmic amplifier provided between an output of the second low pass filter and a signal meter, such that the signal meter circuit produces an output for logarithmic display on the signal meter.

5,303,411
RECEIVER SENSITIVITY THRESHOLD EXTENDED WITH THE COMBINATION OF AN UNMODULATED SIGNAL WITH THE RECEIVED SIGNAL
Robert E. Stengel, Ft. Lauderdale, and Paul D. Marko, Pembroke Pines, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 728,861, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 343,320, Apr. 26, 1989, abandoned. This application May 11, 1992, Ser. No. 883,820
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—254 18 Claims



1. A method of receiving an information signal, comprising the steps of:
receiving said information signal;
mixing an injection signal, at an input injection node of a mixer, with said information signal to provide a received FM signal having a first signal-to-noise ratio, at the output of the mixer;
determining when said received FM signal has a signal strength below a signal threshold; and
adding an unmodulated signal, to a detector input of an FM detector, said unmodulated signal having a frequency substantially the same as the frequency of said received FM signal, at the output of the mixer, but different from the frequency of the injection signal, at said injection node, said unmodulated signal added with said received FM signal, when said signal strength is below said signal threshold, to increase the FM detector output signal amplitude for an improved FM receiver sensitivity of said information signal, in order to provide a greater signal-to-noise ratio than said first signal-to-noise ratio.

5,303,412
COMPOSITE DIRECT DIGITAL SYNTHESIZER
Lawrence J. Kushner, Andover, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Mar. 13, 1992, Ser. No. 851,481
Int. Cl.[5] H03D *7/16*
U.S. Cl. 455—260 59 Claims



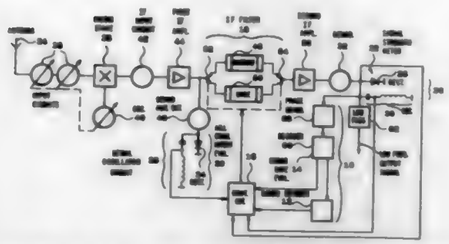
1. An apparatus for synthesizing an output frequency within an output frequency band, comprising:
a first circuit to provide an analog signal having a first frequency; and
a second circuit having a digital phase shifter with an input frequency to vector modulate the analog signal generated by the first circuit, the input frequency of the second circuit being greater than the first frequency, and the second circuit generating the synthesized output frequency within an output frequency band extending at least one octave.

5,303,413
AM RADIO RECEIVER WITH SWITCHABLE IF BANDWIDTH
Peter Braegas, Hildesheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 18, 1991, Ser. No. 657,399
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1990, 4005272
Int. Cl.[5] H04B *1/12*
U.S. Cl. 455—266 21 Claims

1. A method for IF bandwidth switchover in an AM radio receiver for receiving signals from respective transmitters which each modulate and transmit one of a normal narrow-bandwidth signal and an expanded or wide-bandwidth signal, in which the receiver has an adjustable IF filter and the transmitters broadcast supplemental AM information,
comprising the steps of
evaluating, in the AM radio receiver, a modulation bandwidth code contained in the supplemental AM information and an error rate of the supplemental AM information, and
selectively,
adjusting bandwidth of said IF filter (18) to a wide band-

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width if the modulation bandwidth indicated by said bandwidth code is expanded, and there is a low error rate, and



adjusting the bandwidth of said IF filter to a narrow bandwidth if the modulation bandwidth indicated by said bandwidth code is expanded, and there is a high error rate.

5,303,414

METHOD AND DEVICE FOR MINIMIZING INTERFERENCE, IN PARTICULAR IN CONNECTION WITH FM RECEPTION

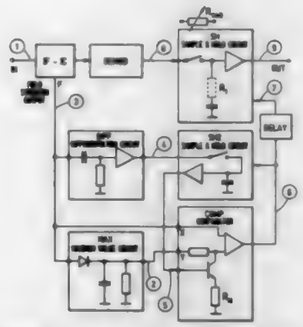
Stefan Brinkhaus, Hans Thoma Str. 13, D 7537 Remchingen, Fed. Rep. of Germany

Filed Sep. 11, 1991, Ser. No. 757,772

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028768

Int. Cl.[5] **H04B** *1/10*

U.S. Cl. 455—296 **10 Claims**



1. A method for suppressing periodic noise interference in a broadcast signal received by a receiver, in which, during reception of the broadcast signal a dip occurs in the amplitude of the received broadcast signal each time noise interference is present, each dip having a slope, comprising:

determining the value of the amplitude of the received signal;

setting a basic received signal threshold value which is less than the value of the received signal at a time when no noise interference is present;

during each occurrence of noise interference, increasing the threshold value by an amount proportional to the slope of the corresponding dip in the amplitude of the received signal; and

acting on the received signal to suppress noise interference during a time when the amplitude of the received signal is below the increased threshold value produced by said increasing step.

5,303,415

PULSE NOISE DETECTING CIRCUIT OF AM RECEIVER

Kazuo Takayama, and Hirokazu Matsunaga, both of Kobe, Japan, assignors to Fujitsu Ten Limited, Hyogo, Japan

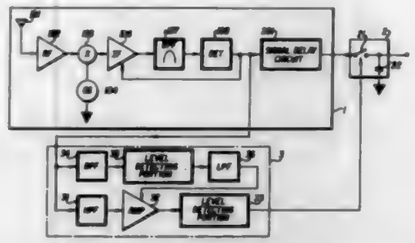
PCT No. PCT/JP92/00213, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992

PCT Filed Feb. 27, 1992, Ser. No. 938,147

Claims priority, application Japan, Feb. 27, 1991, 3-32635; Feb. 27, 1991, 3-32639

Int. Cl.[5] **H04B** *1/10*

U.S. Cl. 455—296 **7 Claims**



1. A pulse noise detecting system of an AM receiver having an envelope detecting circuit performing envelope detection of an intermediate frequency signal passing through a first band filter, the system further having a pulse noise removal circuit removing a pulse noise signal from an output signal of the envelope detecting circuit, the system provided with a pulse noise detecting circuit detecting the pulse noise signal and producing a gate signal to remove the pulse noise signal detected by the pulse noise removal circuit, the pulse noise detecting circuit comprising:

a high pass filter blocking an envelope detection signal from the envelope detecting circuit and extracting the pulse noise signal;

an amplifier amplifying the pulse noise signal extracted by the high pass filer;

a first level detecting circuit detecting a level of the pulse noise signal amplified by the amplifier and producing the gate signal, the gate signal output to said pulse noise removal circuit when the pulse noise signal attains a first predetermined reference level; and p1 the pulse noise detecting circuit further having a second band filter extracting the envelope detection signal of the envelope detecting circuit, a gain of the amplifier is adjusted in response to a level of the envelope detection signal extracted by the second band filter, the level of the envelope detection signal being detected by a second level detection circuit connected to an output of the second band filter and smoothed by a low pass filter connected to an output of the second level detection circuit, an output of the low pass filter connected to the amplifier to maintain the pulse noise signal at a constant level.

5,303,416

METHOD AND APPARATUS FOR ADJUSTING PEAK AND VALLEY ACQUISITION RATES OF A SIGNAL RECEIVED BY A RADIO COMMUNICATION DEVICE

Daniel A. Morera, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 21, 1993, Ser. No. 6,599

Int. Cl.[5] **H04B** *1/10;* **G08B** *5/22*

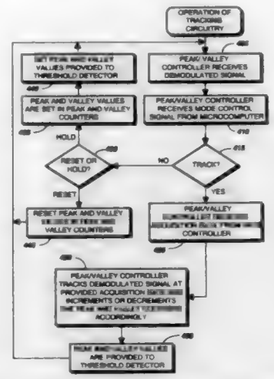
U.S. Cl. 455—296 **19 Claims**

1. A method, in a radio communication device for receiving a signal, for tracking the signal to acquire peak and valley values of the signal, the method comprising the steps of:

(a) determining a center threshold of the signal;

(b) determining a number of center transitions of the signal within a predetermined time period, wherein the number of center transitions is equivalent to the number of times the signal crosses the center threshold; and

(c) adjusting, in response to step (b), an acquisition rate at which the peak and the valley values of the signal are acquired from a first acquisition rate to a second acquisition rate in accordance with the number of center transitions occurring in the predetermined time period.



5,303,417

MIXER FOR DIRECT CONVERSION RECEIVER

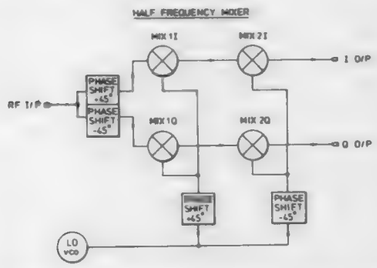
Peter G. Laws, Swindon, England, assignor to Plessey Semiconductors Ltd., England

Filed Aug. 6, 1991, Ser. No. 740,992

Claims priority, application United Kingdom, Aug. 8, 1990, 9017418

Int. Cl.[5] **H04B** *1/28*

U.S. Cl. 455—314 **7 Claims**



1. A mixer system for a direct conversion receiver comprising an RF input path for received signals modulated on a radio frequency carrier, means to divide said received signals into I and Q paths for demodulating from said received signals I and Q signals in phase quadrature, first and second serially coupled mixer means in said I path, third and fourth serially coupled mixer means in said Q path, local oscillator means to generate local oscillator signals at a frequency of one half of the frequency of said carrier, means to apply said local oscillator signals in phase quadrature to said first and second mixer means, means to apply said local oscillator signals in phase quadrature to said third and fourth mixer means, and means to derive said I and Q signals from outputs of said second and fourth mixer means respectively.

5,303,418

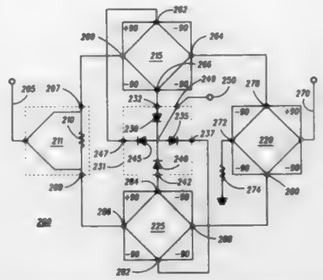
HIGH ISOLATION MIXER

Joseph Staudinger, and William B. Beckwith, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1991, Ser. No. 719,202

Int. Cl.[5] **H04B** *1/26*

U.S. Cl. 455—326 **23 Claims**



1. An apparatus for mixing electrical signals including in combination:

first four port phase shift means having a first input port, first and second output ports and a second input port, for receiving a first input signal at said first input port and providing first and second output signals differing in phase by 180 degrees at said first and second output ports, respectively;

second four port phase shift means having a first input port, first and second output ports and a second input port, for receiving the first input signal at said first input port of said second phase shift means and providing third and fourth output signals differing in phase by 180 degrees at aid first and second output ports of said second phase shift means, respectively;

five port mixer means having four input ports and a central node coupled to a fifth port, said five port mixer means for receiving said first and second output signals from said first phase shift means coupled to said first and second input ports of said five port mixer means and said third and fourth output signals from said second phase shift means coupled to said third and fourth ports of said five port mixer means;

third four port phase shift means having a first input port, first and second output ports and a second input port, for receiving a second input signal of at least a second input signal frequency at said first input port of said third phase shift means and providing fifth and sixth output signals differing in phase by 180 degrees at said second and third output ports, respectively, said fifth and sixth signals coupled to said second input ports of said first and second phase shift means, respectively; and

signal port means coupled to said central node of said five port mixer means for providing a third signal containing modulation products of the first and second input signals.

5,303,419

APERTURE-COUPLED MICROSTRIP LINE MAGIC-TEE AND MIXER FORMED THEREFROM

Apisak Ittipiboon, Kanata; Michel Cuhaci, Ottawa; Masahiro W. Katsube, and Yahia M. M. Antar, both of Kingston, all of Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Minister of Communications, Ottawa, Canada

Filed May 29, 1992, Ser. No. 890,262

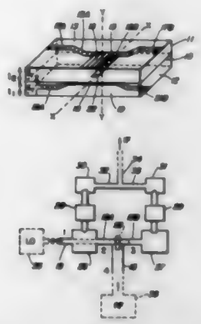
Int. Cl.[5] **H04B** *1/28;* **H01P** *5/20*

U.S. Cl. 455—327 **16 Claims**

14. A microwave integrated circuit comprising a multi-layer circuit board having a sandwich arrangement of a conductive ground plane layer and two dielectric layers, each dielectric

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layer having an innermost surface and an outermost surface, said ground plane being sandwiched between respective innermost surfaces, two microstrip Tee circuit elements disposed on the outermost surface of one of the two dielectric layers and a microstrip line conductor disposed on the outermost surface of the other of the two dielectric layers, a first one of the two microstrip Tee circuit elements comprising first and second branch arm conductors, respectively, joined together to define a Tee junction and a Tee leg conductor extending from said Tee junction, said Tee leg being symmetrical about a longitudinal axis thereof and having a width oriented transversely to said longitudinal axis, and an aperture disposed within said ground plane layer at a position between said Tee junction and



a part of said line conductor, said Tee junction, aperture and part of said line conductor being substantially in register in a direction perpendicular to said layers, said aperture having an axis of symmetry aligned with said longitudinal axis of said Tee leg, said Tee junction being aperture-coupled with said part of said line conductor through said aperture, a pair of oppositely-poled diodes coupling said branch arms of the first one of the two microstrip Tee circuit elements to respective branch arms of the other one of said two microstrip Tee circuit elements, means for applying local oscillator signals to said line conductor and means for applying radio frequency signal to said leg of the first Tee circuit element, the leg of said other of said microstrip Tee circuit elements having a Tee leg comprising an intermediate frequency output port.

5,303,420

CIRCUIT FOR STABILIZING THE BIAS OF A PAGING RECEIVER WITH POWER SAVING FUNCTIONS

Jong-Jin Jang, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1991, Ser. No. 737,377

Claims priority, application Rep. of Korea, Mar. 21, 1991, 1991-4499

Int. Cl.[5] **H04B** *1/16*

U.S. Cl. 455—343 **23 Claims**

1. A circuit for stabilizing the bias of a paging receiver for processing a message signal, comprising:

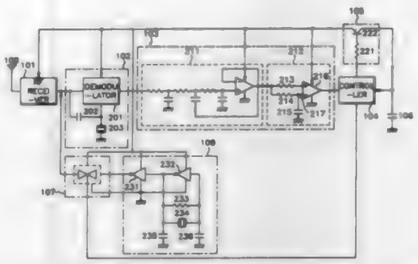
voltage source switch means for periodically supplying a voltage from a voltage terminal during first and second periods;

controller means connected to said voltage terminal, for generating an oscillation control signal during said first period;

oscillator means responsive to the supplied voltage, for generating an oscillation frequency signal in response to said oscillation control signal;

demodulation means responsive to the supplied voltage, for receiving the oscillation frequency signal of said oscillator means during said first period to generate a first demodulated signal having a voltage of said bias; and

waveform reshaping means responsive to the supplied voltage, for receiving the first demodulated signal of said



demodulation means during said first period to stabilize said bias.

5,303,421

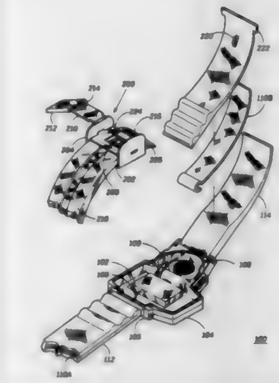
METHOD AND APPARATUS FOR COUPLING STRAPS OF A WRIST WORN DEVICE

Michael P. Goldenberg, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1992, Ser. No. 842,676

Int. Cl.[5] **H04B** *1/08*

U.S. Cl. 455—344 **14 Claims**



1. A clasp for securing first and second wrist straps, comprising:

a base member;

a pair of sides contiguous with said base member;

a first compression member located between and coupled to said pair of sides;

said base member and said first compression member coupled with the pair of sides engage the first wrist strap slidably therebetween;

a clasp cover including a second compression member coupled thereto, the clasp cover being transversely coupled to a first of said pair of sides for rotating between the pair of sides; and

said second compression member engages and compresses the second wrist strap between said first and second compression members when said clasp cover is transversely rotated between said pair of sides.

5,303,422

MOBILE AUDIO SYSTEM

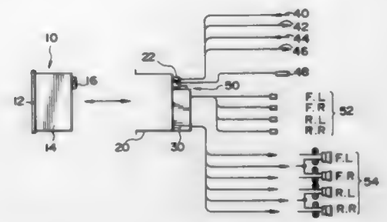
Masami Tsukuda, Yokohama, Japan, assignor to Shintom Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 468,099, Jan. 23, 1990, abandoned. This application Dec. 3, 1992, Ser. No. 985,452

Claims priority, application Japan, Jan. 31, 1989, 1-22084

Int. Cl.[5] **H04B** *1/06*

U.S. Cl. 455—346 **11 Claims**



1. A mobile audio system comprising:

a mobile audio instrument having a body capable of being detachably mounted on a vehicle and having a radio and a pre-amplifier therein, said instrument having no internal power amplifier, whereby said instrument outputs a weak pre-amplified audio signal;

a single first connector fixedly mounted on a back side of said mobile audio instrument, plural input and output contacts integrally provided in said single first connector, said input contacts including at least an antenna contact and said output contacts including at least line output contacts which carry said weak pre-amplified audio signal;

a mounting and demounting unit fixedly mounted on the vehicle and adapted to support said mobile audio instrument in a detachable manner;

a single second connector fixedly mounted on said mounting and demounting unit, plural second contacts integrally provided in said single second connector, each of said second contacts adapted to make an electric connection with the corresponding one of the contacts in said first connector when said mobile audio instrument is mounted in the vehicle; and

an external power amplifier fixedly mounted at the back of said mounting and demounting unit, electrically connected to said second connector and adapted to amplify line outputs from said second connector.

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DESIGN PATENTS

GRANTED APR. 12, 1994

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For CLASS	See PATENT NO.
006-634	D 345,439

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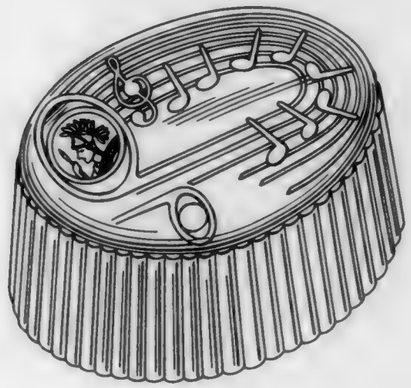
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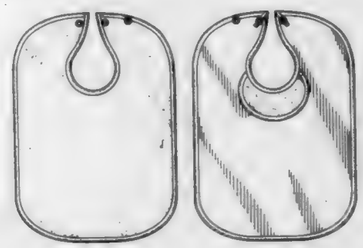
1994

UMI

345,851
CHOCOLATE HAVING A MUSIC DESIGN
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S. A. Confiserie Leonidas, Brussels, Belgium
Filed Apr. 20, 1992, Ser. No. 873,086
Claims priority, application World Int. Prop. O., Nov. 11, 1991, DM/021,093
Term of patent 14 years
U.S. Cl. D1—127



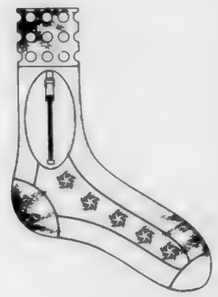
345,852
CHILD'S BIB
Elizabeth O'Brien Nelson, Walpole, Mass., assignor to Playskool Baby, Inc., Pawtucket, R.I.
Filed Sep. 17, 1992, Ser. No. 948,823
Term of patent 14 years
U.S. Cl. D2—861



345,853
SHOE WITH SIDE POCKET AND LATERAL POUCH
Jessica H. Blankenship, Rte. 2 Box 357, Washington, W. Va. 26181
Filed Feb. 12, 1992, Ser. No. 834,720
Term of patent 14 years
U.S. Cl. D2—905

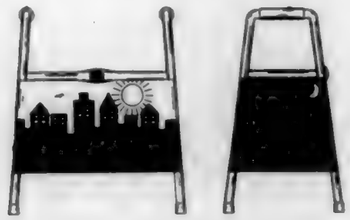


345,854
POCKET SOCK
Thomas F. Fritz, Jr., 4821 Bear Rd. - 9J, Liverpool, N.Y. 13088
Filed Sep. 28, 1992, Ser. No. 952,180
Term of patent 14 years
U.S. Cl. D2—980



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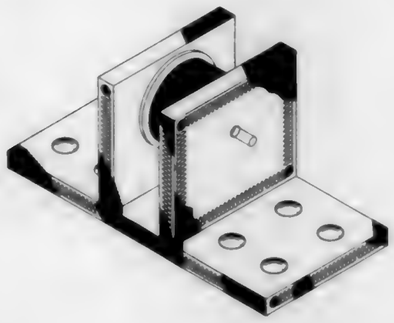
345,855
LIGHTED WALKER
Monya K. Greenway, 123 S. Dodd St., Northlake, Ill. 60164
Filed Nov. 18, 1991, Ser. No. 793,699
Term of patent 14 years
U.S. Cl. D3—9



345,856
BODY ATTACHABLE UMBRELLA SUPPORT
Torrance K. Johnson, 1250 NW. 191 St., Miami, Fla. 33169
Filed May 29, 1992, Ser. No. 889,760
Term of patent 14 years
U.S. Cl. D3—10



345,857
SPOOL HOLDER
Robert W. Franke, 750 Arncliffe Rd., Baltimore, Md. 21221
Filed Sep. 11, 1991, Ser. No. 757,509
Term of patent 14 years
U.S. Cl. D3—24



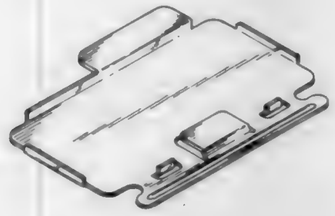
345,858
VCR CASSETTE CONTAINER
Janet L. Bauer, 902 W. Kensington Rd., Los Angeles, Calif. 90026
Filed Jul. 20, 1990, Ser. No. 554,829
Term of patent 14 years
U.S. Cl. D6—634



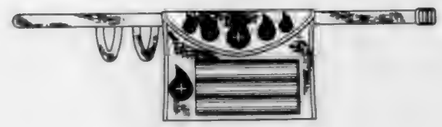
345,859
GOLF ACCESSORY ORGANIZER
Vladimir Gribovsky, 6301 Bayridge Rd., Mound, Minn. 55364
Filed Oct. 16, 1991, Ser. No. 777,606
Term of patent 14 years
U.S. Cl. D3—247



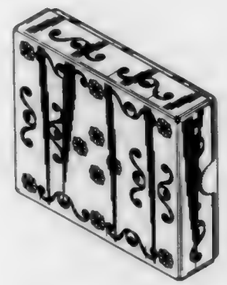
345,860
CARD HOLDER JACKET
Rodney G. Lacy, 1221 Heatherton Dr., Naperville, Ill. 60563
Filed Jul. 16, 1992, Ser. No. 913,617
Term of patent 14 years
U.S. Cl. D3—247



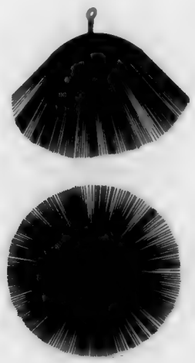
345,861
NURSE PURSE
Michael D. Knox, 8126 Brown Pelican Ave., and Margaret W. Glover, 8107 Brown Pelican Ave., both of New Port Richey, Fla. 34653
Filed Jul. 18, 1991, Ser. No. 731,885
Term of patent 14 years
U.S. Cl. D3—203



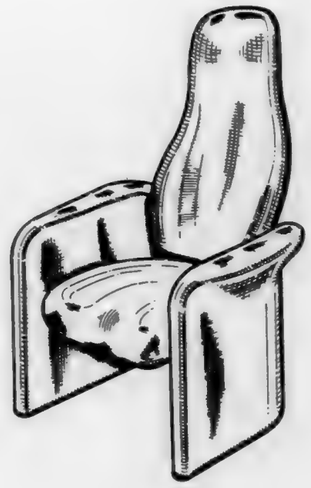
345,862
WATERPROOF CASE
Mary J. Skubensky, and Robert T. Skubensky, both of 852 Kilsyth Rd., Elizabeth, N.J. 07208
Filed Aug. 5, 1992, Ser. No. 924,666
Term of patent 14 years
U.S. Cl. D3—226



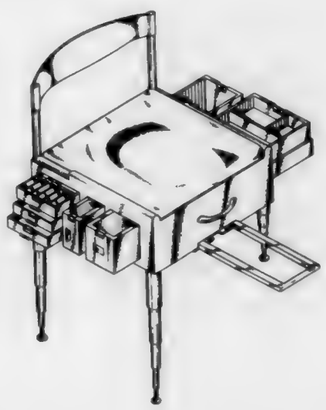
345,863
BRUSH
Don E. Heskett, Constantine, Mich., assignor to Global Environmental Technologies, Allentown, Pa.
Filed Jun. 5, 1991, Ser. No. 710,924
Term of patent 14 years
U.S. Cl. D4—131



345,864
CHAIR
Jocelyn Beaulieu, 156 Brammar St., Newmarket, Ontario, Canada
Filed Sep. 27, 1991, Ser. No. 766,148
Term of patent 14 years
U.S. Cl. D6—334

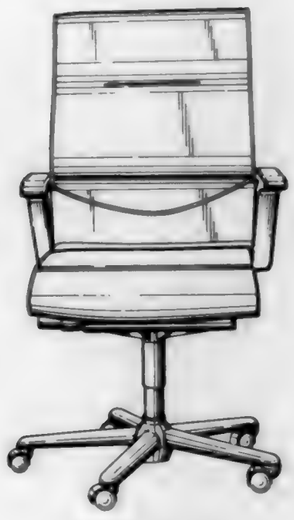


345,865
COMBINED SEAT AND FISHING TACKLE HOLDER
John Tintori, 2147 76th Ave., Elmwood Park, Ill. 60635
Filed Feb. 28, 1992, Ser. No. 844,378
Term of patent 14 years
U.S. Cl. D6—336



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345,866
CHAIR
David Barker, Marlow, England, assignor to President Office Furniture Limited, England
Filed Apr. 23, 1991, Ser. No. 690,232
Claims priority, application United Kingdom, Oct. 24, 1990, 2010459
Term of patent 14 years
U.S. Cl. D6—366



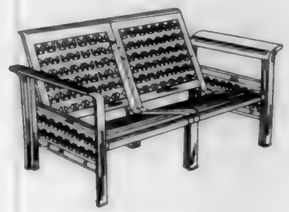
345,867
CHAIR
Tetsuya Narita, Funabashi, Japan, assignor to Okamura Corporation, Yokohama
Filed Sep. 3, 1991, Ser. No. 753,684
Claims priority, application Japan, May 20, 1991, 3-14417
Term of patent 14 years
U.S. Cl. D6—366



345,868
CHAIR
Elinor S. McGuire, San Francisco, Calif., and Alex W. Mitchell, Grand Rapids, Mich., assignors to The McGuire Furniture Company, San Francisco, Calif.
Continuation of Ser. No. 820,065, Jan. 9, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 12,827
Term of patent 14 years
U.S. Cl. D6—369



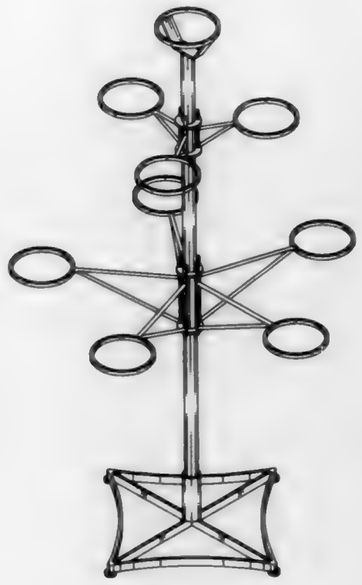
345,869
SOFA
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Oct. 31, 1990, Ser. No. 607,060
Claims priority, application World Int. Prop. O., Jun. 21, 1990, DMA/001260
The portion of the term of this patent subsequent to Nov. 30, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—381



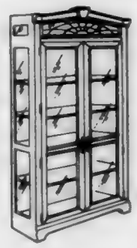
345,870
WATER FILLED COUCH
Larry P. Williams, Box 127, Greenbush, Va. 23357
Filed Jul. 20, 1992, Ser. No. 914,696
Term of patent 14 years
U.S. Cl. D6—381



345,871
PLANT STAND
Norman C. Anderson, S. 74 Sequoia Dr., Post Falls, Id. 83854
Filed Apr. 9, 1992, Ser. No. 866,332
Term of patent 14 years
U.S. Cl. D6—405



345,872
CURIO CABINET
H. Thomas Keller, High Point, N.C., assignor to Bernhardt Furniture Co., Inc., Lenoir, N.C.
Filed May 4, 1992, Ser. No. 877,031
Term of patent 14 years
U.S. Cl. D6—446



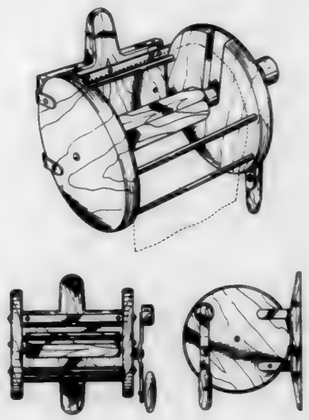
345,873
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 885,383
Term of patent 14 years
U.S. Cl. D6—480



345,874
ARM REST
Vlad Muller, 35 40th Street, Toronto, Ontario, Canada
Filed Sep. 27, 1991, Ser. No. 766,146
Term of patent 14 years
U.S. Cl. D6—501

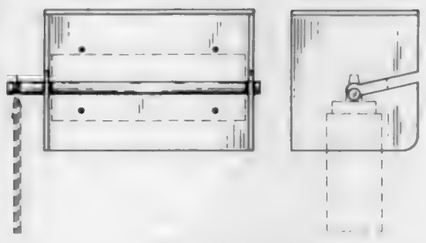


345,875
ROLLED PRODUCT DISPENSER
Joseph A. Thomason, 3723 Woodside Dr., Geneva, Ohio 44041
Filed Apr. 27, 1992, Ser. No. 874,428
Term of patent 14 years
U.S. Cl. D6—518

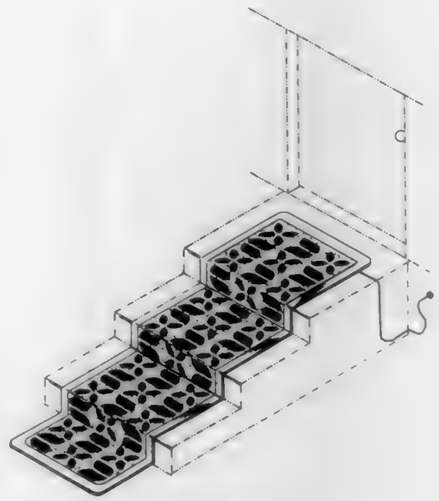


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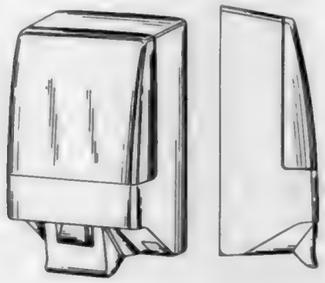
345,876
COMBINED ROLLED FILM AND HANGING SLEEVE DISPENSER
Joseph J. Massad, 2047 W. Edison, Tulsa, Okla. 74127, and Thomas M. Wright, 226 Adams Rd., Sand Springs, Okla. 74063
Filed May 6, 1992, Ser. No. 879,224
Term of patent 14 years
U.S. Cl. D6—518



345,878
CLEAR PATH CARPET
Steve W. Garon, 7 Gordon St., Hudson, N.H. 03051
Filed Jun. 14, 1991, Ser. No. 715,238
Term of patent 14 years
U.S. Cl. D6—583



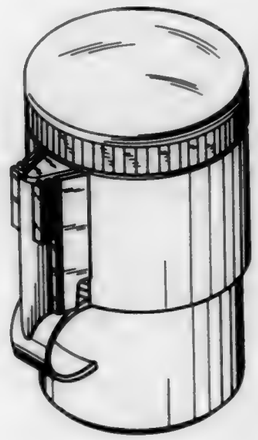
345,877
DUAL CARTRIDGE LIQUID SOAP DISPENSER
Allen E. Brandenburg, Austin, Tex., assignor to Scott Paper Company, Delaware County, Pa.
Filed Apr. 10, 1992, Ser. No. 866,610
The portion of the term of this patent subsequent to Apr. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—545



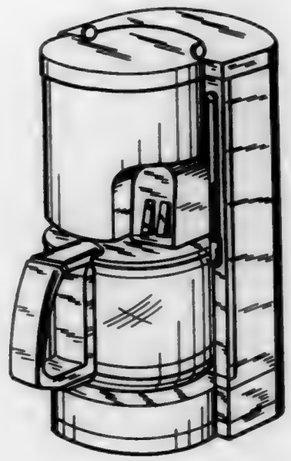
345,879
INSULATED CUSHION
James A. Garanin, 31 Greefield Rd., Montague, Mass. 01351
Filed Apr. 11, 1991, Ser. No. 683,666
Term of patent 14 years
U.S. Cl. D6—601



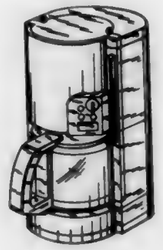
345,880
PORTABLE MACHINE FOR BREWING HOT BEVERAGES
Bernd Classen, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH. & Co. KG, Solingen, Fed. Rep. of Germany
Filed Feb. 11, 1992, Ser. No. 834,008
The portion of the term of this patent subsequent to May 11, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—305



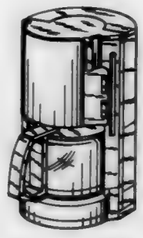
345,882
COFFEE MAKING MACHINE
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH & Co. KG., Solingen, Fed. Rep. of Germany
Filed Mar. 6, 1992, Ser. No. 847,813
Claims priority, application Int'l Pat. Institute, Oct. 25, 1991, DM/020977
Term of patent 14 years
U.S. Cl. D7—309



345,881
COFFEE MAKING MACHINE
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH. & Co. KG, Solingen, Fed. Rep. of Germany
Filed Mar. 6, 1992, Ser. No. 847,812
Claims priority, application Hague, Oct. 25, 1991, DM/020977
Term of patent 14 years
U.S. Cl. D7—309

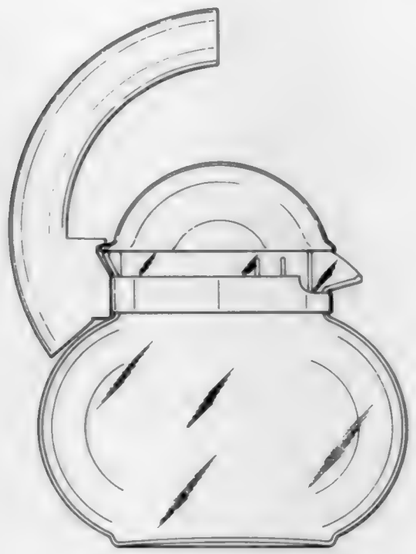


345,883
COFFEE MAKING MACHINE
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH. & Co. KG, Solingen, Fed. Rep. of Germany
Filed Mar. 6, 1992, Ser. No. 847,814
Claims priority, application Hague, Oct. 25, 1991, DM/020977
Term of patent 14 years
U.S. Cl. D7—309

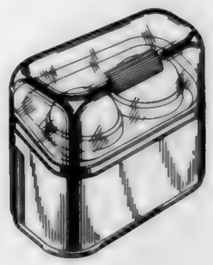


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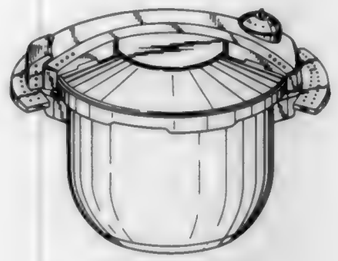
345,884
KETTLE
Ambrogio Rossari, Milan, Italy, assignor to Fratelli Cuzzini S.p.A., Recanati, Italy
Filed Aug. 10, 1992, Ser. No. 927,815
Claims priority, application Italy, Feb. 13, 1992, MI920 00078
Term of patent 14 years
U.S. Cl. D7—318



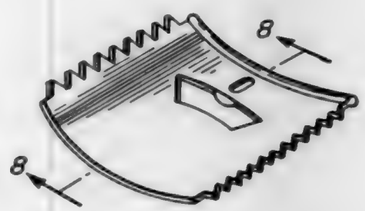
345,885
YOGHURT MAKER
Francis R. Bannigan, Huntingdale, Australia, assignor to Kambrook Distributing Pty. Ltd., Australia
Filed Jul. 1, 1992, Ser. No. 908,009
Term of patent 14 years
U.S. Cl. D7—323



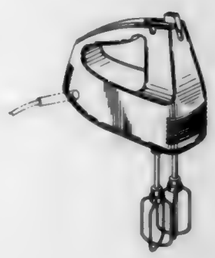
345,886
COOKING POT
Thomas Gingele, Simmersfeld-Ettmannsweiler, Fed. Rep. of Germany, assignor to Fissler GmbH, Idar-Oberstein, Fed. Rep. of Germany
Filed Jun. 17, 1992, Ser. No. 900,936
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1991, M 91 09 048.2
Term of patent 14 years
U.S. Cl. D7—360



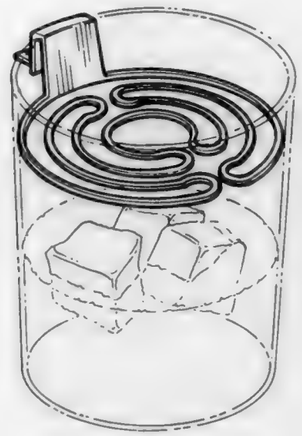
345,887
KITCHEN IMPLEMENT
Jakob Heiberg, Vesterfaelledvej, Denmark, assignor to Dart Industries, Inc., Deerfield, Ill.
Filed Sep. 4, 1991, Ser. No. 755,216
Term of patent 14 years
U.S. Cl. D7—376



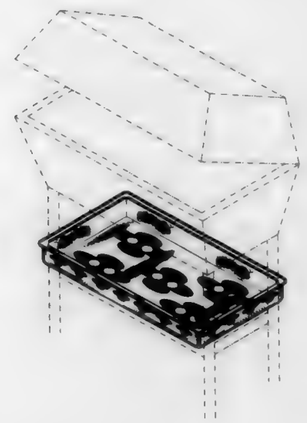
345,888
HAND MIXER
Michael S. Joss, Chicago, and Stanley T. Greseus, Homewood, both of Ill., assignors to Rival Manufacturing Company, Kansas City, Mo.
Filed Aug. 4, 1992, Ser. No. 925,585
Term of patent 14 years
U.S. Cl. D7—379



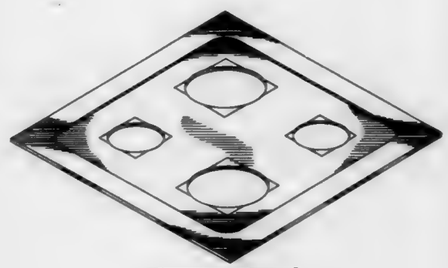
345,889
ICE CUBE RESTRAINER FOR A GLASS
Noble G. Herricks, 15650 El Monte, Lakeside, Calif. 92040
Filed Jul. 27, 1992, Ser. No. 919,126
Term of patent 14 years
U.S. Cl. D7—396.2



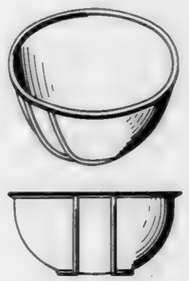
345,890
GRILL DRIP PAN
Reginald M. Majors, P.O. Box 1334, Front Royal, Va. 22630
Continuation-in-part of Ser. No. 216,245, Jul. 7, 1988, abandoned. This application Nov. 22, 1991, Ser. No. 796,230
Term of patent 14 years
U.S. Cl. D7—402



345,891
COOKING RANGE COVER
Jose E. Blanco, 7703 SW. 84th Pl., Miami, Fla. 33143
Filed Dec. 13, 1991, Ser. No. 806,466
Term of patent 14 years
U.S. Cl. D7—402



345,892
MIXING BOWL
Jakob Heiberg, Vesterfaelledvej; Stig Lillelund, Gardenhojvej, and Robert H. C. M. Daenen, Brusselbaan, all of Denmark, assignors to Dart Industries Inc., Deerfield, Ill.
Continuation of Ser. No. 755,215, Sep. 4, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 10,609
Term of patent 14 years
U.S. Cl. D7—543

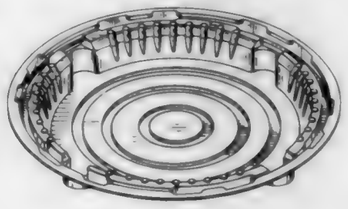


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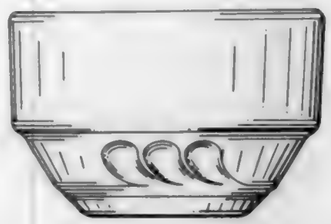
345,893
PLATE
Michele M. Jaworski, New Castle, Pa., assignor to The Pfaltzgraff Co., York, Pa.
Filed May 14, 1992, Ser. No. 881,551
Term of patent 14 years
U.S. Cl. D7—545



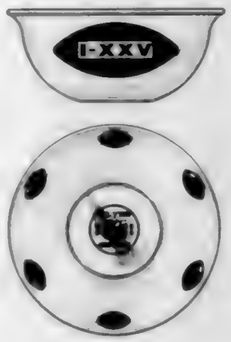
345,894
TRAY FOR BAKED GOODS
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Feb. 2, 1993, Ser. No. 4,349
Term of patent 14 years
U.S. Cl. D7—552



345,895
BOUILLON CUP
Michele M. Jaworski, New Castle, Pa., assignor to The Pfaltzgraff Co., York, Pa.
Filed May 14, 1992, Ser. No. 881,566
Term of patent 14 years
U.S. Cl. D7—560



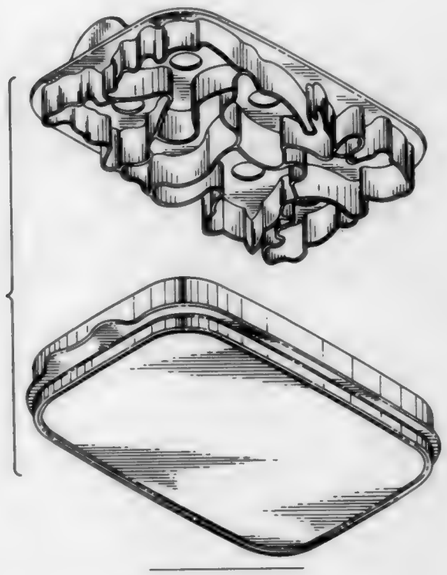
345,896
SILVER ANNIVERSARY SUPER BOWL
Phillip C. Matt, 10220 Benton St., Broomfield, Colo. 80020
Filed Jul. 1, 1991, Ser. No. 723,637
Term of patent 14 years
U.S. Cl. D7—564



345,897
COMBINED BEVERAGE CONTAINER AND CAN COOLER
David D. Vitez, Rte. 2 Box 78C, Accident, Md. 21520
Filed Apr. 3, 1992, Ser. No. 841,150
Term of patent 14 years
U.S. Cl. D7—608



345,898
FOOD MOLD
Brian L. Aiken, Orlando, Fla.; Dominick Loscalzo, Whitestone, and Bruce M. Scott, New York, both of N.Y., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 17, 1992, Ser. No. 948,966
Term of patent 14 years
U.S. Cl. D7—676



345,899
TOOL FOR HANDLING HANGING PLANTS
Joan Friend, P.O. Box 1987, Kamuela, Hi. 96743
Filed Oct. 8, 1992, Ser. No. 198
Term of patent 14 years
U.S. Cl. D8—14



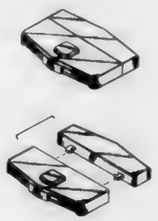
345,900
CABLE HANDLING TOOL
Andrew G. Andrews, 6770 44th St. North, Pinellas Park, Fla. 34665
Filed Dec. 4, 1992, Ser. No. 2,284
Term of patent 14 years
U.S. Cl. D8—14



345,901
DOOR HANDLE
Randall S. Fojtasek, Dallas; Don W. Blackwell, Grapevine, and Richard T. Abbott, Roanoke, all of Tex., assignors to The Atrium Door & Window Company, Dallas, Tex.
Filed Dec. 23, 1992, Ser. No. 2,974
Term of patent 14 years
U.S. Cl. D8—308

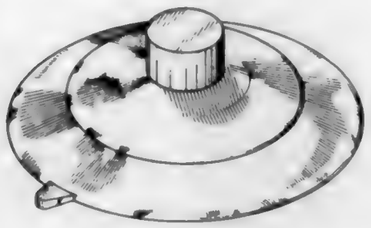


345,902
COMBINATION LOCK FOR A SUITCASE
Yung-Chang Kuo, Chang-Hua, Taiwan, assignor to Cedpo Metal Corporation, Chang Hua, Taiwan
Filed Mar. 24, 1992, Ser. No. 857,296
Term of patent 14 years
U.S. Cl. D8—330

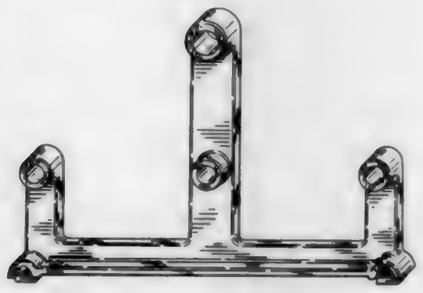


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345,903
SUCTION CUP
William E. Adams, and Marc Peoples, both of Portersville, Pa., assignors to Adams Mfg. Corp., Portersville, Pa.
Filed Sep. 3, 1991, Ser. No. 754,127
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—349



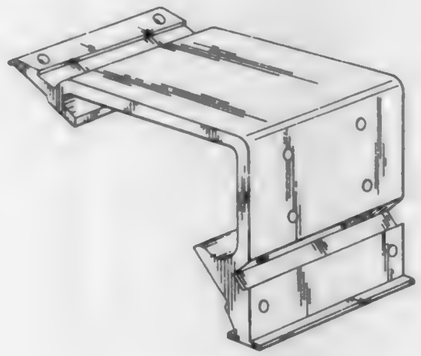
345,904
SUPPORT BRACKET FOR SPOOLED WIRE FEEDING
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Apr. 29, 1992, Ser. No. 875,704
Term of patent 14 years
U.S. Cl. D8—354



345,905
ADJUSTABLE MOUNTING SYSTEM FOR HOLDING AN OBJECT IN A DESIRED POSITION
Leander Hallgren, St. Paul, Minn., assignor to AbleNet, Inc., Minneapolis, Minn.
Filed Jan. 8, 1992, Ser. No. 817,845
Term of patent 14 years
U.S. Cl. D8—355



345,906
MOUNTING BRACKET
William P. Schmidt, 21000 Woodruff, Rockwood, Mich. 48173, and Hutchinson, Frank D., 28000 Beel Rd., New Boston, Mich. 48164
Division of Ser. No. 667,093, Mar. 11, 1991, Pat. No. Des. 338,826, which is a continuation-in-part of Ser. No. 361,334, Jun. 5, 1989, Pat. No. 5,005,963, which is a continuation-in-part of Ser. No. 254,027, Oct. 6, 1988, Pat. No. 4,938,578. This application Mar. 4, 1993, Ser. No. 6,421
Term of patent 14 years
U.S. Cl. D8—373



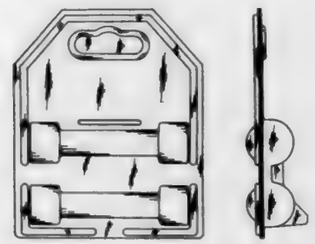
345,907
FOOD CONTAINING PACKAGE WITH INTEGRAL HANDLE
Vytautas Kupcikevicius, Oaklawn, Ill., assignor to Viskase Corporation, Chicago, Ill.
Filed Jul. 29, 1992, Ser. No. 921,494
Term of patent 14 years
U.S. Cl. D9—305



345,908
PACKAGE FOR FLOOR MATS
Stewart Wallach, Boca Raton, Fla., assignor to Sagaz Industries, Inc., Miami, Fla.
Filed Nov. 16, 1992, Ser. No. 1,569
Term of patent 14 years
U.S. Cl. D9—305



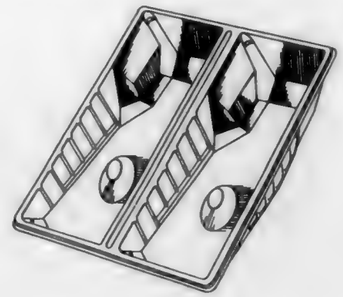
345,909
PRODUCT PACKAGE
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11753
Filed Jan. 29, 1993, Ser. No. 4,238
Term of patent 14 years
U.S. Cl. D9—415



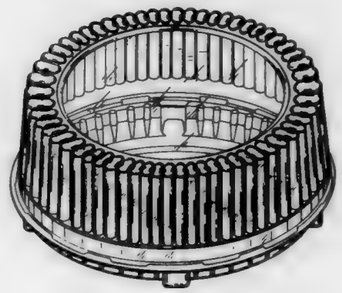
345,910
STORAGE CONTAINER FOR A HEART VALVE
Billie J. Millwee, Riverside; Luis Salazar, Rowland Heights, and Carol E. Eberhardt, Fullerton, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Jul. 7, 1992, Ser. No. 909,807
Term of patent 14 years
U.S. Cl. D9—418



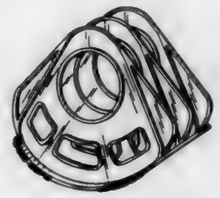
345,911
LOBSTER PACKAGING AND DISPLAY UNIT
Gabriel Elbaz, Montreal, Canada, assignor to Sogelco International Inc., Montréal, Canada
Filed Sep. 16, 1991, Ser. No. 760,202
Claims priority, application Canada, Jul. 17, 1991, 17-07-91-6
Term of patent 14 years
U.S. Cl. D9—425



345,912
CONTAINER FOR BAKED FOOD PRODUCTS
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Feb. 2, 1993, Ser. No. 4,352
Term of patent 14 years
U.S. Cl. D9—429



345,913
ROPE CONTAINER INSERT
David W. Upchurch, 190 Moffat-Box 143, Yampa, Colo. 80483
Filed Dec. 28, 1992, Ser. No. 3,034
Term of patent 14 years
U.S. Cl. D9—456



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345,914
COMBINED BOTTLE AND CLOSURE
Santo Fareri, Brooklyn, N.Y., and Arthur DeGaetano, Stanford, Conn., assignors to Revlon Holdings Inc., New York, N.Y.
Filed Aug. 29, 1991, Ser. No. 751,255
Term of patent 14 years
U.S. Cl. D9—521



345,915
COMBINED BOTTLE AND CLOSURE
Santo Fareri, Brooklyn, N.Y., and Arthur DeGaetano, Stanford, Conn., assignors to Revlon Holdings Inc., New York, N.Y.
Filed Aug. 29, 1991, Ser. No. 751,256
Term of patent 14 years
U.S. Cl. D9—521



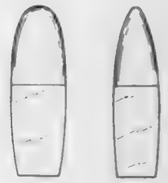
345,916
BOTTLE
Ronald Bondewel, Paris, France, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands
Filed Apr. 25, 1991, Ser. No. 691,598
Claims priority, application France, Oct. 26, 1990, 906722
The portion of the term of this patent subsequent to Nov. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—523



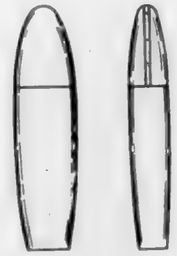
345,917
BOTTLE
Stuart H. Feen, Libertyville, and Ronald G. Lump, Des Plaines, both of Ill., assignors to Plastic Bottle Corporation, Libertyville, Ill.
Filed Oct. 13, 1992, Ser. No. 313
Term of patent 14 years
U.S. Cl. D9—523



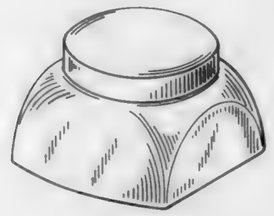
345,918
NAIL POLISH BOTTLE
Alain Chevassus, Sceaux, France, assignor to Societe Techpack International (S.A.), Parigne l'Eveque, France
Filed Jan. 31, 1991, Ser. No. 648,364
Claims priority, application France, Jul. 31, 1990, 904969
The portion of the term of this patent subsequent to Mar. 29, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—529



345,919
CONTAINER FOR A COSMETIC PRODUCT
Alain Chevassus, Sceaux, France, assignor to Societe Techpack International (S.A.), Parigne l'Eveque, France
Filed Jan. 31, 1991, Ser. No. 648,365
Claims priority, application France, Jul. 31, 1990, 904969
The portion of the term of this patent subsequent to Mar. 29, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—529



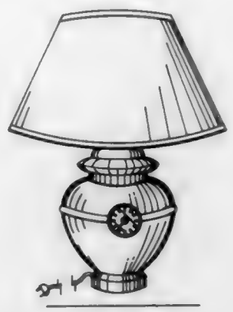
345,920
JAR WITH COVER
Marc Gobe, New York, N.Y., assignor to Victoria's Secret Stores, Inc., Reynoldsburg, Ohio
Filed Sep. 3, 1993, Ser. No. 12,536
Term of patent 14 years
U.S. Cl. D9—571



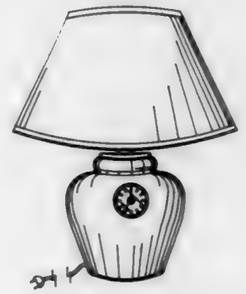
345,921
COMBINED BOTTLE AND CAP
Patricia C. Frank, West Chester, Ohio; Edward H. Meisner, Short Hills, N.J., and Roland Charriez, Cortlandt Manor, N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 8, 1992, Ser. No. 242
Term of patent 14 years
U.S. Cl. D9—574



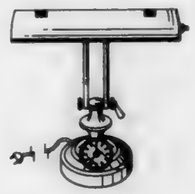
345,922
COMBINED CLOCK AND TABLE LAMP
Herman C. Clincy, 1498 Stigger Rd., Jackson, Miss. 39209-9802
Filed Feb. 21, 1992, Ser. No. 837,993
Term of patent 14 years
U.S. Cl. D10—5



345,923
COMBINED CLOCK AND TABLE LAMP
Herman C. Clincy, 1498 Stigger Rd., Jackson, Miss. 39209-9802
Filed Feb. 21, 1992, Ser. No. 837,994
Term of patent 14 years
U.S. Cl. D10—5



345,924
COMBINED CLOCK AND TABLE LAMP
Herman C. Clincy, 1498 Stigger Rd., Jackson, Miss. 39209-9802
Filed Feb. 21, 1992, Ser. No. 837,996
Term of patent 14 years
U.S. Cl. D10—5



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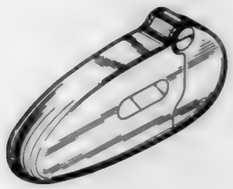
345,925
CLOCK
Richard Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Jan. 2, 1992, Ser. No. 816,068
Term of patent 14 years
U.S. Cl. D10—26



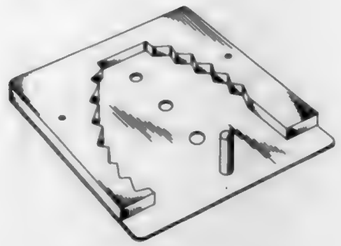
345,926
DIGITAL SPORTS WATCH
John T. Houlihan, Watertown, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Nov. 9, 1990, Ser. No. 610,875
Term of patent 14 years
U.S. Cl. D10—32



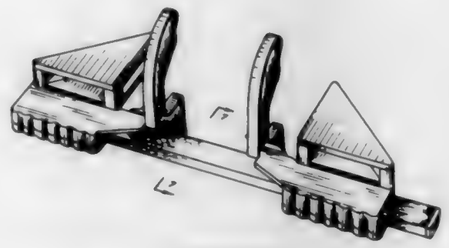
345,927
CASE FOR ELECTRONIC CLINICAL THERMOMETER
Hideo Yoshikawa, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 2,802
Claims priority, application Japan, Jul. 1, 1992, 4-19374
Term of patent 14 years
U.S. Cl. D10—60



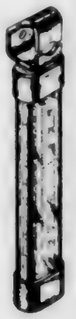
345,928
ORTHOPAEDIC GAUGE
Randall N. Allard, Plymouth, and Bradley T. Durcholz, Warsaw, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Apr. 15, 1993, Ser. No. 7,225
Term of patent 14 years
U.S. Cl. D10—64



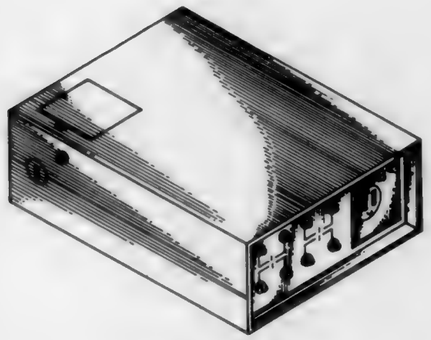
345,929
EXOPHTHALMOMETER
Thomas C. Naugle, Jr., 2633 Napoleon Ave., New Orleans, La. 70115
Filed Jul. 10, 1992, Ser. No. 911,645
Term of patent 14 years
U.S. Cl. D10—70



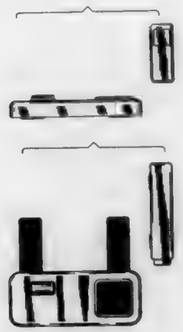
345,930
COMBINED CASING AND MOUNTING BRACKET FOR A THERMOMETER
Michael Lewis, Cherry Hill, and Joe Grato, Hamilton Township, Mercer County, both of N.J., assignors to Franklin Machine Products, Inc., Marlton, N.J.
Filed Dec. 17, 1990, Ser. No. 628,759
Term of patent 14 years
U.S. Cl. D10—74



345,931
BOAT MONITOR FOR DETECTING EMERGENCIES AND FOR SENDING SIGNALS TO REMOTE LOCATIONS
Lance Hallock, and Bill Graham, both of P.O. Box 358, Stonington, Me. 04681
Filed Mar. 23, 1993, Ser. No. 6,247
Term of patent 14 years
U.S. Cl. D10—104



345,932
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING A LOST REMOTE CONTROL SWITCH
Dwayne M. Fedalizo, 94-408 Awamoi St., Waipahu, Hi. 96797
Filed Mar. 5, 1993, Ser. No. 5,568
Term of patent 14 years
U.S. Cl. D10—106



345,933
RAILROAD HIGHWAY CROSSING SIGN
Martin A. Joyce, Jr., Parma, Ohio, assignor to Consolidated Rail Corporation, Philadelphia, Pa.
Filed Apr. 15, 1993, Ser. No. 7,125
Term of patent 14 years
U.S. Cl. D10—109



345,934
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,124
Term of patent 14 years
U.S. Cl. D10—126



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345,935
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,140
Term of patent 14 years
U.S. Cl. D10—126



345,936
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,408
Term of patent 14 years
U.S. Cl. D10—126



345,937
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,409
Term of patent 14 years
U.S. Cl. D10—126



345,938
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,410
Term of patent 14 years
U.S. Cl. D10—126



345,939
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,413
Term of patent 14 years
U.S. Cl. D10—126



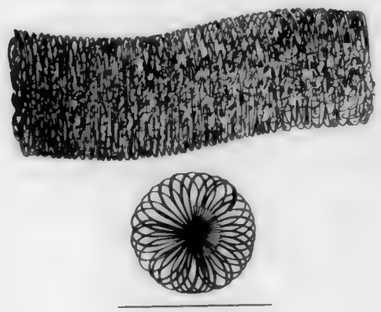
345,940
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,415
Term of patent 14 years
U.S. Cl. D10—126



345,941
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,416
Term of patent 14 years
U.S. Cl. D10—126



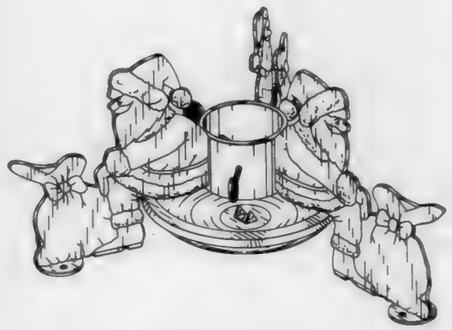
345,942
GARLAND
Kevin Young, Bensalem, Pa., assignor to F. C. Young & Co., Inc., Yardley, Pa.
Filed Mar. 17, 1992, Ser. No. 853,161
Term of patent 14 years
U.S. Cl. D11—119



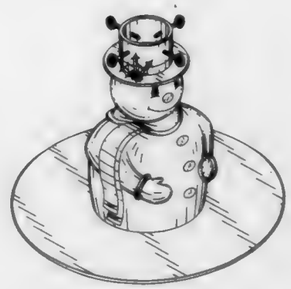
345,943
CHRISTMAS TREE STAND
Tommy V. Lujan, Jr., 5081 County 11th St., Yuma, Ariz. 85364
Filed Sep. 21, 1992, Ser. No. 948,957
Term of patent 14 years
U.S. Cl. D11—130.1



345,944
TREE STAND
Roman T. Starzak, 2530 Berryessa Rd., Suite 819, San Jose, Calif. 95132
Filed Dec. 15, 1992, Ser. No. 2,653
Term of patent 14 years
U.S. Cl. D11—130.1

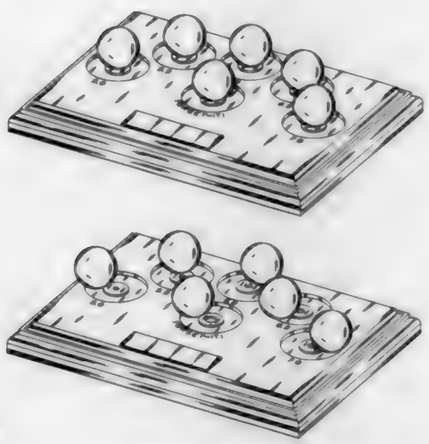


345,945
TREE STAND
Roman T. Starzak, 2530 Berryessa Rd., Suite 819, San Jose, Calif. 95132
Filed Dec. 15, 1992, Ser. No. 2,654
Term of patent 14 years
U.S. Cl. D11—130.1



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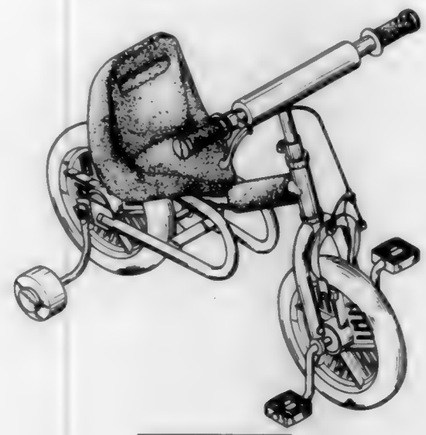
345,946
EARTHQUAKE MEASURING DESK ORNAMENT
Reed A. Palmer, Irvine, Calif., assignor to Tru Pro Co., Ltd., Montebello, Calif.
Filed Nov. 3, 1992, Ser. No. 1,107
Term of patent 14 years
U.S. Cl. D11—131



345,947
FLAG POLE
Shane A. Brown, 14 Cape Horn Road, Hillsborough, Auckland, and Christopher J. Smith, 80A Eskdale Road, Birkdale, Auckland 10, both of New Zealand
Filed Mar. 9, 1992, Ser. No. 848,398
Claims priority, application New Zealand, Sep. 10, 1991, 24050
Term of patent 14 years
U.S. Cl. D11—166



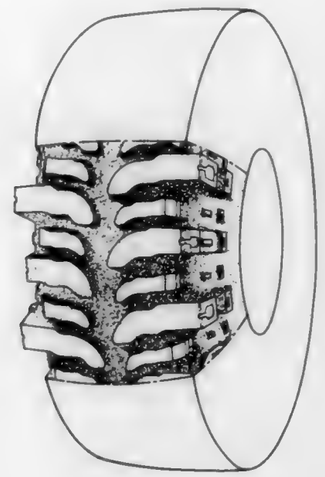
345,948
BICYCLE WITH TRAINING WHEELS
Ting-Hsing Chen, Kue Jin Hsiang, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Hsiang, Taiwan
Filed Jun. 16, 1992, Ser. No. 899,389
Term of patent 14 years
U.S. Cl. D12—112



345,949
TIRE
Bernard Graviere, Orcines, and Sylvain Leynaert, Les Martres d'Artieres, both of France, assignors to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France
Filed Oct. 23, 1992, Ser. No. 748
Claims priority, application France, Apr. 28, 1992, 274
Term of patent 14 years
U.S. Cl. D12—136



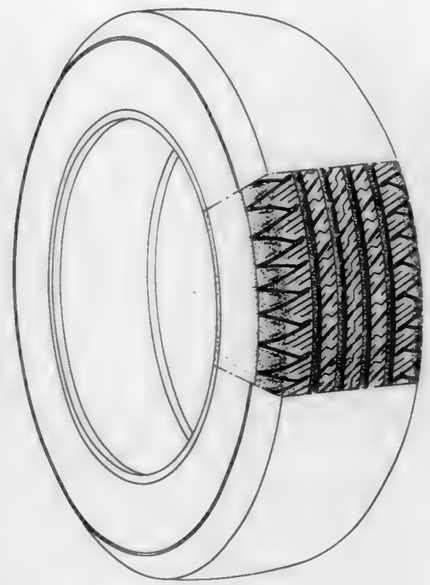
345,950
TIRE
Warren L. Guidry, Rayne, La., assignor to Interco Tire Corporation, Rayne, La.
Filed May 8, 1992, Ser. No. 880,338
Term of patent 14 years
U.S. Cl. D12—146



345,951
TIRE
James G. Guspodin, and John J. Regallis, both of Akron, Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Sep. 14, 1992, Ser. No. 948,712
Term of patent 14 years
U.S. Cl. D12—147



345,952
TIRE
Damon L. Christenbury, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Switzerland
Filed Nov. 25, 1992, Ser. No. 1,951
Term of patent 14 years
U.S. Cl. D12—147

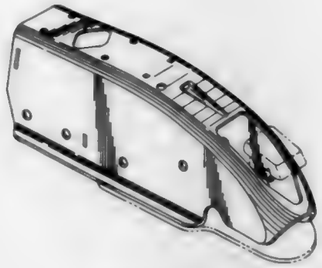


345,953
MOTORCYCLE TIRE
Atsushi Tomura, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 29, 1992, Ser. No. 3,130
Claims priority, application Japan, Jun. 30, 1992, 4-19286
Term of patent 14 years
U.S. Cl. D12—151

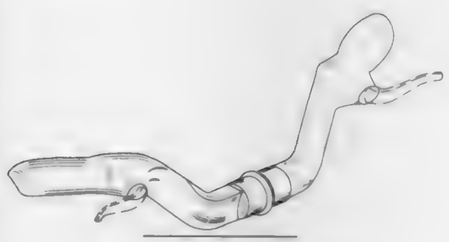


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345,954
TRAILER COUPLER HOUSING
Jeffrey D. Wallace, Des Moines, and Herbert O. Dixon, Jr., West Des Moines, both of Iowa, assignors to Dico, Inc., Des Moines, Iowa
Filed Dec. 3, 1991, Ser. No. 801,842
Term of patent 14 years
U.S. Cl. D12—162



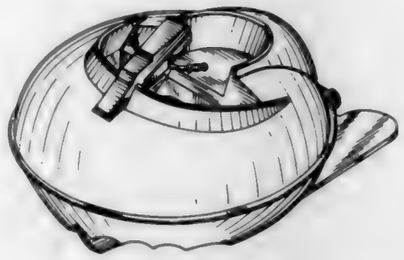
345,955
BICYCLE HANDLEBAR
David R. Jeshuran, 952 Ridgedale, Birmingham, Mich. 48009, and Joseph Toth, 2001 Burger, Dearborn, Mich. 48128, assignors to Weston Marsh; Vasanth Surath; David R. Jeshurun and Joseph Toth
Filed Nov. 24, 1992, Ser. No. 1,851
Term of patent 14 years
U.S. Cl. D12—178



345,956
AERO DEFLECTOR FOR VEHICLES
Douglas A. Turner, Costa Mesa, Calif., assignor to G.T. Styling, Inc., Costa Mesa, Calif.
Continuation-in-part of Ser. No. 962,838, Oct. 19, 1992. This application Oct. 30, 1992, Ser. No. 953
Term of patent 14 years
U.S. Cl. D12—181



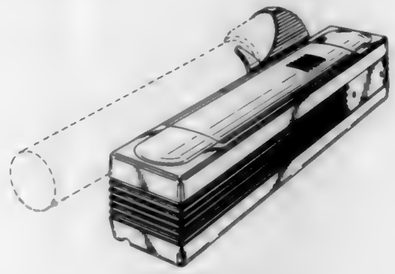
345,957
BOAT
Freddy Fleurbacy, Vuurkruisplein 12, Hoboken, Belgium
Filed Sep. 10, 1992, Ser. No. 943,466
Claims priority, application Benelux, Mar. 13, 1992, 22395
Term of patent 14 years
U.S. Cl. D12—307



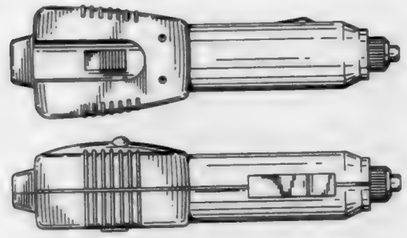
345,958
FLASHLIGHT BATTERY RECHARGER SYSTEM
Donald A. Keller, Irving; W. Clay Reeves, Dallas, and Michael Story, Arlington, all of Tex., assignors to The Brinkmann Corporation, Dallas, Tex.
Continuation of Ser. No. 612,900, Nov. 13, 1990, abandoned. This application Mar. 30, 1993, Ser. No. 6,472
Term of patent 14 years
U.S. Cl. D13—108



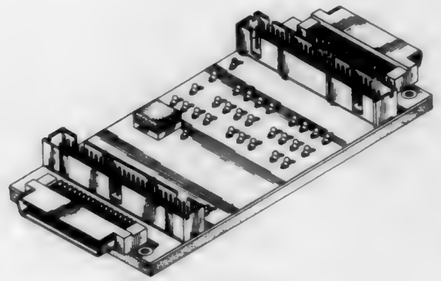
345,959
ELECTRONIC CIRCUIT HOUSING
David Cooper, Seattle, Wash., assignor to ELDEC Corporation, Lynnwood, Wash.
Filed Sep. 29, 1992, Ser. No. 954,930
Term of patent 14 years
U.S. Cl. D13—110



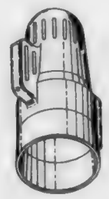
345,960
ELECTRICAL POWER PLUG
Edward L. Boyd, Wooster, Ohio; James M. Kerner, Chico, and Neil R. Taylor, Alameda, both of Calif., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 14, 1992, Ser. No. 930,218
Term of patent 14 years
U.S. Cl. D13—144



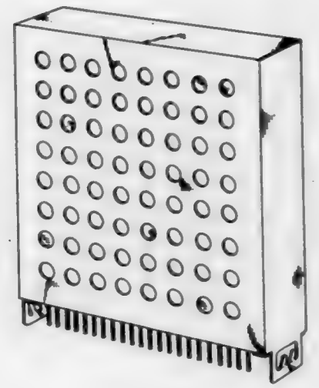
345,961
SCSI BUS MONITOR
Steven Bucher, Minnetonka, and Wayne A. Kosters, Eden Prairie, both of Minn., assignors to I-Tech Corp, Eden Prairie, Minn.
Filed Nov. 12, 1992, Ser. No. 1,376
Term of patent 14 years
U.S. Cl. D13—147



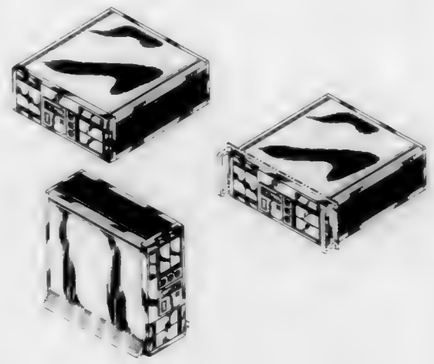
345,962
HARD SHELL, SOFT SKIRT, SPRING-TYPE, TWIST-ON, ELECTRICAL CONNECTOR
Richard B. Clifton, and Mark A. Burton, both of Leander, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 27, 1992, Ser. No. 1,993
Term of patent 14 years
U.S. Cl. D13—150



345,963
HYBRID INTEGRATED CIRCUIT
Masahito Kanaya; Masakazu Ueno, and Kenichi Kobayashi, all of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 29, 1992, Ser. No. 876,211
Claims priority, application Japan, Oct. 30, 1991, 3-33055
Term of patent 14 years
U.S. Cl. D13—182

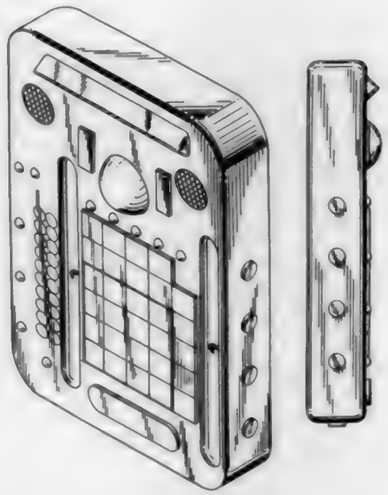


345,964
COMPUTER SYSTEM UNIT
Charles D. Hultgren, Sugar Land; James L. Schlemmer, Ft. Bend County; Dan G. Luce; John C. Leonardo, Jr., both of Harris County, and Lindsay Gupton, Travis County, all of Tex., assignors to Texas Microsystems, Inc., Houston, Tex.
Filed Oct. 18, 1991, Ser. No. 778,611
Term of patent 14 years
U.S. Cl. D14—100

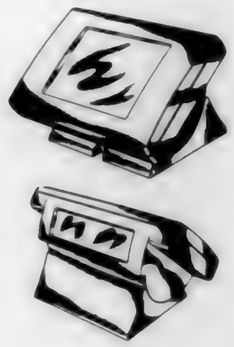


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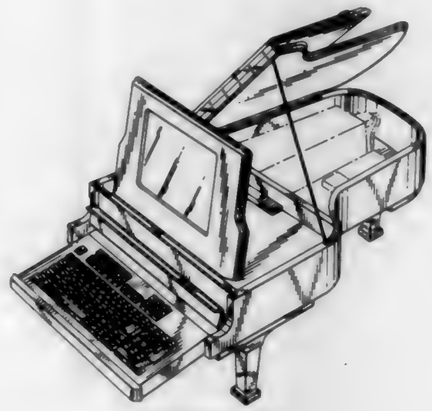
345,965
COMPUTER COMMUNICATOR USED TO TRANSMIT LANGUAGE CHARACTERS AND NUMERICAL SIGNALS TO A COMPUTER
Elmer J. Hankes, 1768 Colfax Ave. South, Minneapolis, Minn. 55403
Filed May 14, 1992, Ser. No. 881,568
Term of patent 14 years
U.S. Cl. D14—100



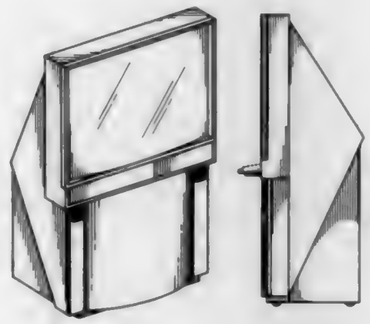
345,966
POINT OF SALE TERMINAL
Juan M. Perez, Austin, Tex., assignor to CompuAdd Corporation, Austin, Tex.
Filed Jul. 24, 1992, Ser. No. 919,200
Term of patent 14 years
U.S. Cl. D14—105



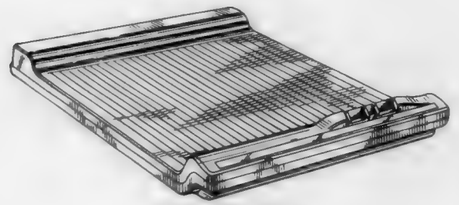
345,967
PERSONAL COMPUTER
Andreas Kromer, Eduard-Mörike-Strasse 45, W-7311 Ochsenwang, Fed. Rep. of Germany
Filed Aug. 16, 1991, Ser. No. 746,513
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, M9101229.5
Term of patent 14 years
U.S. Cl. D14—106



345,968
ENCLOSURE FOR A LARGE AREA DISPLAY
Richard H. Bruce, Los Altos; Scott A. Elrod, Redwood City; Thomas P. Moran, Palo Alto; Frank G. Halasz, Santa Cruz; Malcolm S. Smith, Palo Alto; Dallas R. Grove, Mountain View, and Richard J. Goldstein, San Francisco, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 3, 1992, Ser. No. 862,285
Term of patent 14 years
U.S. Cl. D14—113



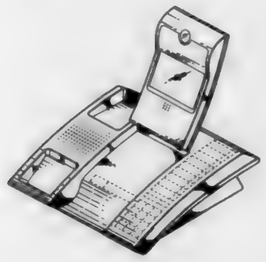
345,969
UNDER COMPUTER MONITOR POWER CONTROLLING BASE
William J. McKnight, 6665 Vin Strada, La Jolla, Calif. 92037, and Lonnie C. Pogue, 1736 W. Montecito Way, San Diego, Calif. 92103
Filed Jun. 13, 1991, Ser. No. 714,437
Term of patent 14 years
U.S. Cl. D14—114



345,970
TUNER FOR RECEIVING SATELLITE BROADCASTING
Kuniyuki Kawamoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 31, 1991, Ser. No. 648,446
Claims priority, application Japan, Aug. 15, 1990, 2-27642
Term of patent 14 years
U.S. Cl. D14—125



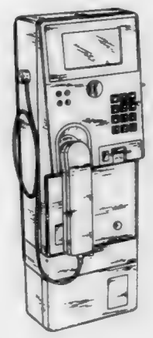
345,971
VIDEO TELEPHONE STATION
Anthony J. Grewe, Fishers, Ind.; John N. McGarvey, Drexel Hill, Pa., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 2, 1992, Ser. No. 2,075
Term of patent 14 years
U.S. Cl. D14—130



345,972
VIDEO TELEPHONE SET
Anthony J. Grewe, Fishers, Ind.; John N. McGarvey, Drexel Hill, Pa., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 3, 1992, Ser. No. 2,088
Term of patent 14 years
U.S. Cl. D14—130

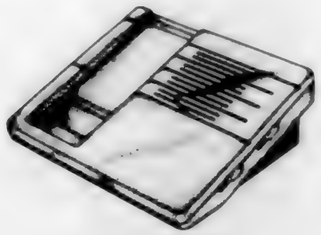


345,973
PUBLIC TELEPHONE
Sun H. Kwon; Eun H. Kim, and Byung W. Chin, all of Seoul, Rep. of Korea, assignors to Korea Telecommunications Authority, Seoul, Rep. of Korea
Filed Nov. 9, 1992, Ser. No. 1,293
Claims priority, application Rep. of Korea, May 8, 1992, 92-7352
Term of patent 14 years
U.S. Cl. D14—146

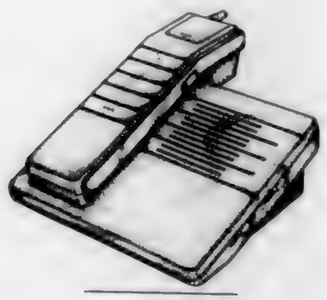


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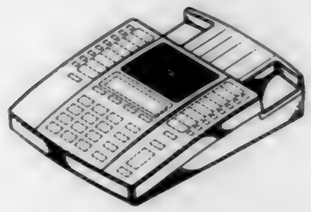
345,974
HOUSING FOR A HANDSET BASE
Daniel R. Biskup, Somerset; Carl W. Gomes, II, Ocean, and Michael P. Zambelli, Livingston, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 2, 1992, Ser. No. 1,058
Term of patent 14 years
U.S. Cl. D14—149



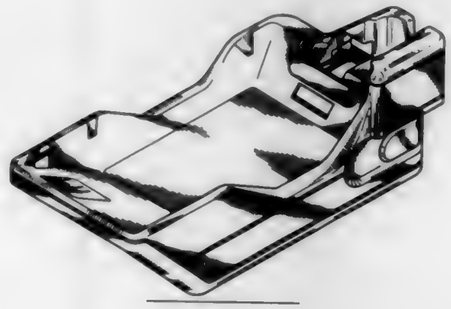
345,975
TELEPHONE SET
Daniel R. Biskup, Somerset; Carl W. Gomes, II, Ocean, and Michael P. Zambelli, Livingston, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 2, 1992, Ser. No. 1,060
Term of patent 14 years
U.S. Cl. D14—149



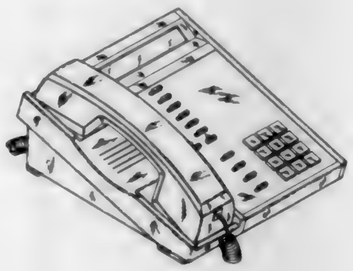
345,976
TELEPHONE BASE
Anthony D. Franks, New York, N.Y.; Anthony J. Grewe, Fishers; William J. McLaughlin, Indianapolis, both of Ind.; Michael P. Zambelli, Livingston, N.J., and Robert S. Zieles, Indianapolis, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 14, 1992, Ser. No. 2,513
Term of patent 14 years
U.S. Cl. D14—149



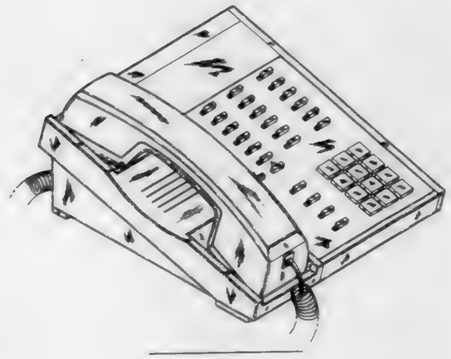
345,977
HANG-UP CUP
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 19, 1993, Ser. No. 5,034
Term of patent 14 years
U.S. Cl. D14—149



345,978
TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; David Bryant, Austin, Tex.; William McRight, Round Rock, Tex., and Pearce Jones, Austin, Tex., assignors to ROLM Company, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,898
Term of patent 14 years
U.S. Cl. D14—151



345,979
TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; David Bryant, Austin, Tex., and William McRight, Round Rock, Tex., assignors to ROLM Company, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,904
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—151



345,980
SELECTIVE CALL RECEIVER IN COMPUTER CARD FORMAT
William J. Scheid, Coral Springs, and John K. Capp, Lighthouse Point, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 19, 1992, Ser. No. 662
Term of patent 14 years
U.S. Cl. D14—191



345,981
HEADSET
Jonathan C. Burke, Larkspur, Calif., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Jun. 24, 1992, Ser. No. 903,620
Term of patent 14 years
U.S. Cl. D14—206

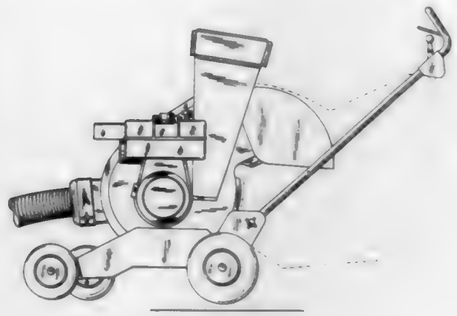


345,982
BROADBAND ANTENNA
Ed Lucey, Los Gatos, Calif., assignor to RDI Electronics, Incorporated, New Rochelle, N.Y.
Filed Jan. 31, 1992, Ser. No. 830,347
Term of patent 14 years
U.S. Cl. D14—230

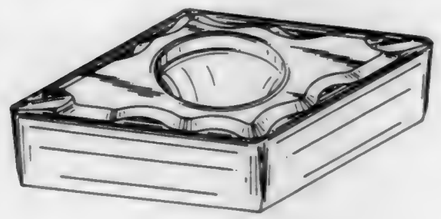


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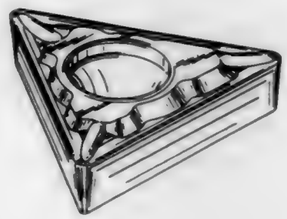
345,983
CHIPPER/SHREDDER WITH HOSE ATTACHMENT
Alfred J. Bold, Waterford; Kevin J. Connolly, Ballston Lake, and Steven E. Kodesch, Schenectady, all of N.Y., assignors to Garden Way Incorporated, Troy, N.Y.
Filed Sep. 10, 1991, Ser. No. 757,121
Term of patent 14 years
U.S. Cl. D15—10



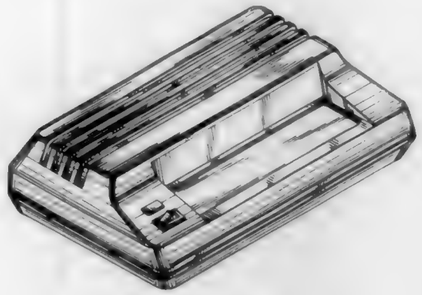
345,984
CUTTER INSERT
Youichi Ishikawa, and Osamu Ichinoseki, both of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Apr. 14, 1992, Ser. No. 869,149
Term of patent 14 years
U.S. Cl. D15—139



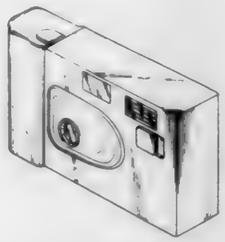
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CUTTER INSERT
Youichi Ishikawa, and Osamu Ichinoseki, both of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Apr. 14, 1992, Ser. No. 869,150
Term of patent 14 years
U.S. Cl. D15—139



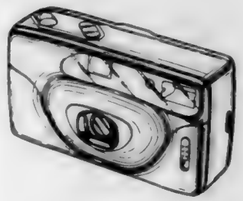
345,986
LAMINATING MACHINE
Ta K. Lim, Franklin Lakes, N.J., assignor to Royal Sovereign Corp., Englewood, N.J.
Filed Nov. 25, 1992, Ser. No. 1,946
Term of patent 14 years
U.S. Cl. D15—146



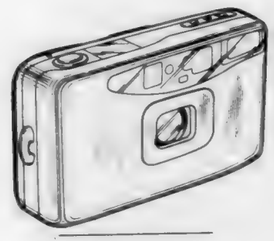
345,987
CAMERA
Kazuhiro Nihei, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed May 21, 1992, Ser. No. 886,776
Claims priority, application Japan, Nov. 26, 1991, 3-35415
Term of patent 14 years
U.S. Cl. D16—209



345,988
34 MM CAMERA
Akira Nojima, and Jun Konno, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Nov. 2, 1992, Ser. No. 1,076
Claims priority, application Japan, May 21, 1992, 4-14740
Term of patent 14 years
U.S. Cl. D16—209



345,989
CAMERA
Jun Akabane, Yokohama; Yasuki Nagaoka, Ohmiya, and Hideki Ito, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Dec. 28, 1992, Ser. No. 3,041
Claims priority, application Japan, Aug. 7, 1992, 4-23787
Term of patent 14 years
U.S. Cl. D16—209



345,990
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Hiroshi Nakatsuka, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,489
Claims priority, application Japan, Mar. 27, 1992, 4-8510
Term of patent 14 years
U.S. Cl. D17—1



345,991
COMBINED BALL-POINT PEN AND LAMP
Tsay Tzong-Taur, No. 11 Alley 103 Lane 39 Shih Chien St., Tainan, Taiwan
Filed Nov. 18, 1992, Ser. No. 1,629
Term of patent 14 years
U.S. Cl. D19—36



345,992
CAUTION TAG
Jafar Mohsen, 409 Honker La., Suisun, Calif. 94585
Filed May 13, 1993, Ser. No. 8,314
Term of patent 14 years
U.S. Cl. D20—22

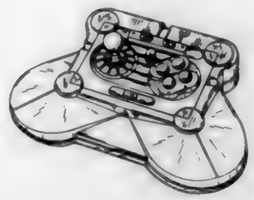


345,993
MINI-BOWLING GAME BOARD
Thomas Sweetland, 503-9800 Horton Road, Calgary SW, Alberta, Canada T2V 5B5
Continuation-in-part of Ser. No. 239,963, Sep. 2, 1988. This application Jul. 18, 1991, Ser. No. 731,953
Term of patent 14 years
U.S. Cl. D21—11

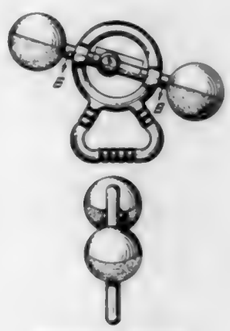


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345,994
JOYSTICK CONSOLE FOR VIDEO GAME
Shen-Yueh Shian, No. 108, Guo Jong Road, Yeong Her City, Taipei Hsien, Taiwan
Filed Aug. 31, 1992, Ser. No. 937,206
Term of patent 14 years
U.S. Cl. D21—48



345,995
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,717
Term of patent 14 years
U.S. Cl. D21—65



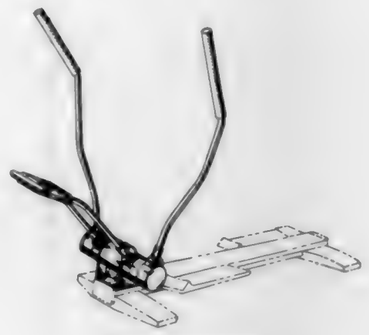
345,996
PUZZLE
Alfred R. Bates, Leicester, England, assignor to Ladybird Books Limited, Leicestershire, England
Filed Mar. 24, 1992, Ser. No. 856,490
Term of patent 14 years
U.S. Cl. D21—104



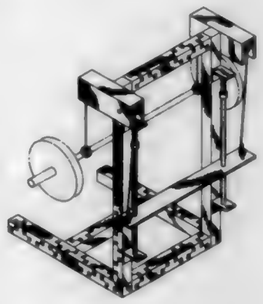
345,997
TOY TRAINS TRACK BED
Gary S. Vadasi, 5007 Highland, Willoughby, Ohio 44094
Filed Sep. 11, 1991, Ser. No. 760,260
Term of patent 14 years
U.S. Cl. D21—143



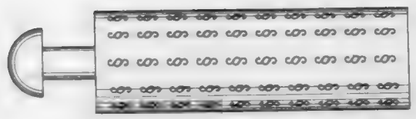
345,998
ARM MECHANISM FOR A SKI EXERCISER
James D. Gresko, Rochester, N.Y., assignor to Voit Sports, Incorporated, Fairport, N.Y.
Filed Aug. 11, 1992, Ser. No. 929,140
Term of patent 14 years
U.S. Cl. D21—191



345,999
WEIGHT LIFTING APPARATUS
Danny M. Adkins, 1127 8th St. NW., Canton, Ohio 44703
Continuation-in-part of Ser. No. 558,233, Jul. 26, 1990, abandoned. This application Aug. 1, 1991, Ser. No. 738,949
Term of patent 14 years
U.S. Cl. D21—195



346,000
EXERCISE WEIGHT
Abbas N. Enfaradi, P.O. Box 18927, Atlanta, Ga. 30326
Filed Jul. 20, 1990, Ser. No. 554,818
Term of patent 14 years
U.S. Cl. D21—197



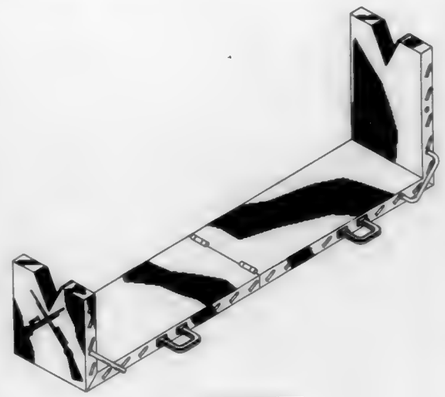
346,001
TOSSING BALL
Scott H. Stillinger, Monte Sereno; Thomas H. Grimm, Menlo Park; Christopher S. Page, and William A. Scott, both of Palo Alto, all of Calif., assignors to OddzOn Products, Inc., Campbell, Calif.
Filed Feb. 4, 1993, Ser. No. 4,428
Term of patent 14 years
U.S. Cl. D21—204



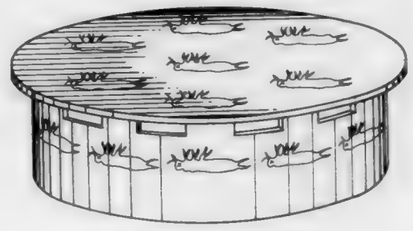
346,002
PUTTER HEAD
Charles Collins, 21710 Forest Glade, Humble, Tex. 77338
Filed Jan. 13, 1992, Ser. No. 821,591
Term of patent 14 years
U.S. Cl. D21—219



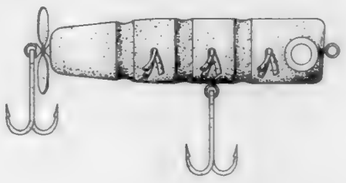
346,003
PORTABLE RIFLE REST
Wade H. Anderson, 205 Bellaire Dr., Moore, Okla. 73160-4615
Filed Oct. 7, 1991, Ser. No. 771,992
Term of patent 14 years
U.S. Cl. D22—108



346,004
EARWIG TRAP
Ian T. Allison, P.O. Box 1705, Santa Rosa, Calif. 95402
Filed Jul. 9, 1992, Ser. No. 911,038
Term of patent 14 years
U.S. Cl. D22—119

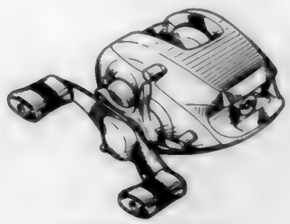


346,005
FISHING LURE
Rocky L. Franks, 8313 Arnie Ave., Garner, N.C. 27529
Filed Jul. 15, 1992, Ser. No. 913,544
Term of patent 14 years
U.S. Cl. D22—128



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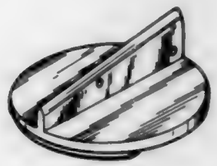
346,006
FISHING REEL
Tomoharu Sakurai, Wakayama, and Seiji Myojo, Sakai, both of Japan, assignors to Shimano Inc., Sakai, Japan
Filed Jul. 10, 1991, Ser. No. 728,992
Claims priority, application Japan, Jan. 16, 1991, 3-763
Term of patent 14 years
U.S. Cl. D22—140



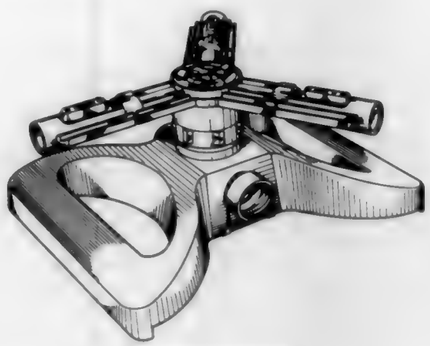
346,007
ILLUMINATING HANDLE FOR FISHING ROD
Richard H. Barkley, Jr., R.D. #8 Box 158, Johnstown, Pa. 15909
Filed Oct. 31, 1991, Ser. No. 786,104
Term of patent 14 years
U.S. Cl. D22—142



346,008
DIRECTIONAL DIVER
John E. Emory, Traverse City, Mich., assignor to Big Jon, Inc., Traverse City, Mich.
Filed Aug. 17, 1992, Ser. No. 930,181
Term of patent 14 years
U.S. Cl. D22—145



346,009
ROTARY SPRINKLER
Sergio G. Simonetti, Westport, Conn., and Paul C. Aquilina, Kitchener, Canada, assignors to Melnor Manufacturing, Ltd., Brantford, Canada
Filed Feb. 25, 1992, Ser. No. 841,735
Term of patent 14 years
U.S. Cl. D23—220



346,010
PULL STRAP FOR A COMMODE FLAPPER VALVE
James E. Conerly, 2210 Borona Way, Sacramento, Calif. 95833
Filed Jul. 8, 1991, Ser. No. 726,516
Term of patent 14 years
U.S. Cl. D23—236



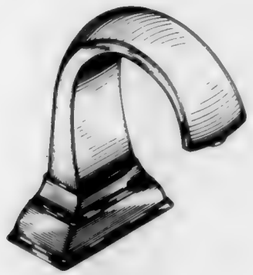
346,011
GANG VALVE
Larry G. Hawkins, 1538 Mitchell St., Escalon, Calif. 95320
Filed Feb. 15, 1990, Ser. No. 480,519
Term of patent 14 years
U.S. Cl. D23—245



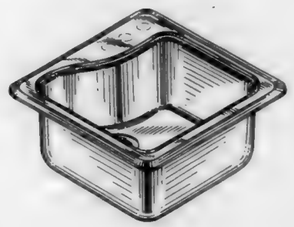
346,012
HANDLE
William C. McKeone, and Mary J. Reid, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 823,647
Term of patent 14 years
U.S. Cl. D23—252



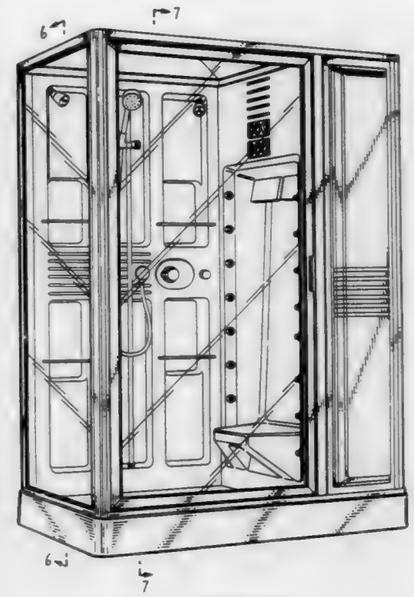
346,013
SPOUT
William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Division of Ser. No. 824,194, Jan. 22, 1992. This application Jul. 23, 1993, Ser. No. 11,018
Term of patent 14 years
U.S. Cl. D23—255



346,014
KITCHEN SINK
David R. Berge, Saint Lazare, and Jeff P. Walz, Toronto, both of Canada, assignors to American Standard Inc., New York, N.Y.
Filed Apr. 23, 1991, Ser. No. 691,589
Term of patent 14 years
U.S. Cl. D23—284



346,015
SHOWER STALL
Bruce W. Maskell, Suisin; Ralph D'Innocente, Benecia, and Roy A. Jacuzzi, Lafayette, all of Calif., assignors to Jacuzzi, Inc., Wainut Creek, Calif.
Filed Jan. 17, 1992, Ser. No. 822,578
Term of patent 14 years
U.S. Cl. D23—285

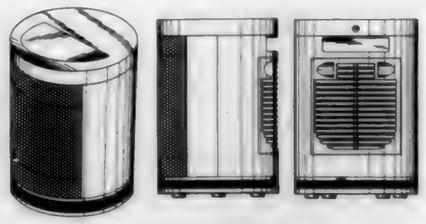


346,016
URINAL
Harold B. McClelland, 7 Durst St., Greenville, Pa. 16125
Filed Feb. 22, 1991, Ser. No. 659,122
Term of patent 14 years
U.S. Cl. D23—302

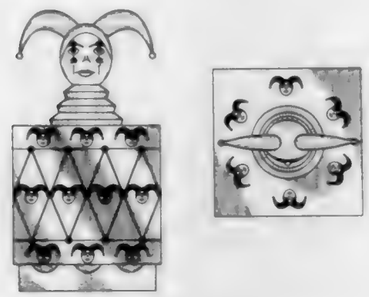


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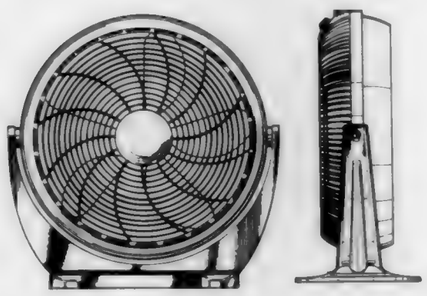
346,017
PORTABLE ELECTRIC HEATER
Ta K. Lim, Franklin Lakes, N.J., assignor to Royal Sovereign Corp., Englewood, N.J.
Filed Sep. 9, 1992, Ser. No. 942,070
Term of patent 14 years
U.S. Cl. D23—336



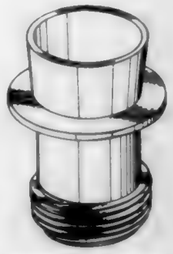
346,018
NOVELTY AIR FRESHNER
Wayne B. Kawakami, 2112 29th Ave. South, Seattle, Wash. 98144
Filed Oct. 16, 1992, Ser. No. 542
Term of patent 14 years
U.S. Cl. D23—367



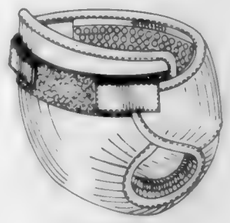
346,019
PORTABLE FAN
Edward P. Cheslock, 2050 Oxford Rd., Lincoln University, Pa. 19352, and Kurt F. Hafeken, 67 Mercer Dr., Newark, Del. 19713
Filed Feb. 16, 1993, Ser. No. 4,802
Term of patent 14 years
U.S. Cl. D23—382



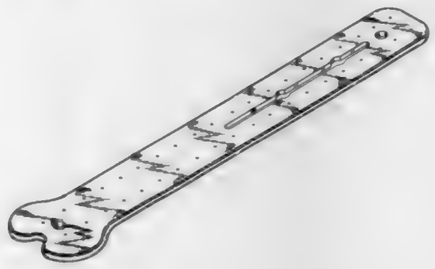
346,020
GAS INJECTION NOZZLE
Charles Kellogg, Warrington, and Charles Schmidt, Meadowbrook, both of Pa., assignors to Abar Ipsen Industries, Inc., Bensalem, Pa.
Filed Oct. 29, 1992, Ser. No. 931
Term of patent 14 years
U.S. Cl. D23—387



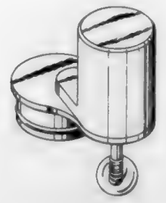
346,021
DIAPER COVER
David R. Liberman, and Jacqueline L. Liberman, both of Paradise Valley, Ariz., assignors to Bumkins International, Inc., Phoenix, Ariz.
Filed Jul. 30, 1991, Ser. No. 737,516
Term of patent 14 years
U.S. Cl. D24—126



346,022
ABDOMINAL RETRACTOR
Patrick C. Quigley, Cameron Park; Timothy C. Quigley, Grizzly Flats, and Bernard Goott, Del Mar, all of Calif., assignors to Adept-Med International, Inc., Cameron Park, Calif.
Filed Sep. 8, 1992, Ser. No. 942,498
Term of patent 14 years
U.S. Cl. D24—135



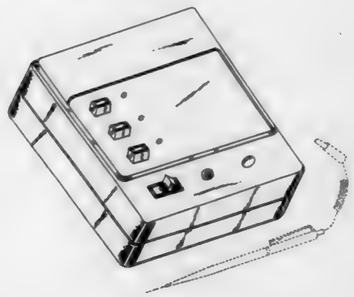
346,023
MANUALLY ACTUATED VACUUM PUMP FOR MALE SEXUAL DISFUNCTION
Edward T. Stewart, Sr., 107 Plaza Ter., Dodge City, Kans. 67801
Filed May 28, 1992, Ser. No. 891,456
Term of patent 14 years
U.S. Cl. D24—143



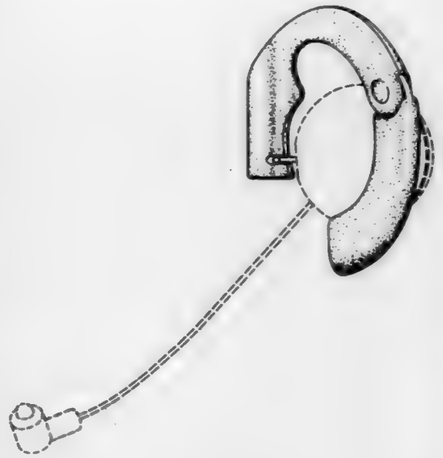
346,024
ULTRASONIC CUTTING TOOL FOR MEDICAL USE
Larry L. Hood, Laguna Hills, and Gregg Hughes, El Toro, both of Calif., assignors to Advanced Osseous Technologies, Inc., Aliso Viejo, Calif.
Filed Jun. 11, 1991, Ser. No. 714,090
Term of patent 14 years
U.S. Cl. D24—144



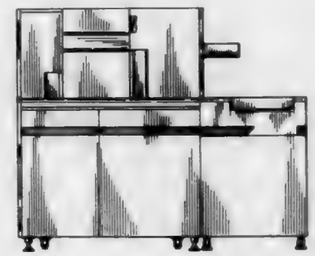
346,025
ELECTRONIC CONTROL HOUSING FOR A PIGMENT REMOVAL TOOL
Kuei C. Chou, Taipei, Taiwan, assignor to Mei-Chi-Na Hsinyen Co., Ltd., Taipei, Taiwan
Filed Jul. 24, 1992, Ser. No. 920,146
Term of patent 14 years
U.S. Cl. D24—170



346,026
EAR SUPPORT
Lawrence G. Shubert; Christopher O. Lada, both of Palo Alto; Christopher Loew, San Francisco, all of Calif., and John Ela, Atkinson, N.H., assignors to Unex Corporation, Chelmsford, Mass.
Filed Jun. 2, 1992, Ser. No. 892,373
Term of patent 14 years
U.S. Cl. D24—174



346,027
BLOOD ANALYZER
Hajime Kobayashi, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 2, 1992, Ser. No. 844,371
Claims priority, application Japan, Sep. 10, 1991, 3-27387; Sep. 10, 1991, 3-27388
Term of patent 14 years
U.S. Cl. D24—186

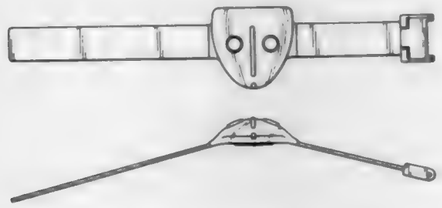


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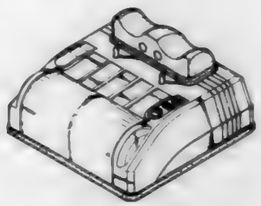
346,028
ORTHESIS
Gabor Lengyel, Altensteig, Fed. Rep. of Germany, assignor to Biedermann Motech GmbH, Schwenningen
Filed Jun. 4, 1992, Ser. No. 893,280
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, M9108696.5
Term of patent 14 years
U.S. Cl. D24—190



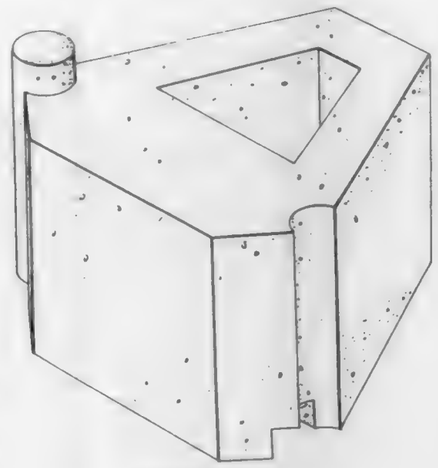
346,029
WRIST BAND FOR RELIEF OF STRESS
Ram Shalvi, Hong Kong, Hong Kong, assignor to Solar Wide Industrial Ltd., Hong Kong, Hong Kong
Filed Jun. 26, 1992, Ser. No. 905,027
Claims priority, application United Kingdom, Dec. 27, 1991, 2019546
Term of patent 14 years
U.S. Cl. D24—200



346,030
FOOT MASSAGER
Chin C. Tsai, No. 38, Lane 205, Hai Huan Street, Tainan, Taiwan
Filed Mar. 15, 1993, Ser. No. 5,873
Term of patent 14 years
U.S. Cl. D24—213



346,031
MODULAR BLOCK
Angelo Risi, and Antonio Risi, both of Richmond Hill, Canada, assignors to Rothbury Investments Limited, Thornhill, Canada
Filed Jun. 19, 1992, Ser. No. 903,802
Claims priority, application Canada, Dec. 19, 1991, 19-12-91-2
Term of patent 14 years
U.S. Cl. D25—114



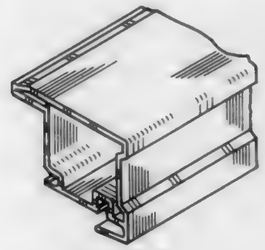
346,032
PLEAT SHAPED VERTICAL SUPPORT FOR A HORIZONTALLY EXTENDABLE AND RETRACTABLE PLEATED SHADE
Wendell Colson, Boulder, Colo., assignor to Hunter Douglas, Inc., Upper Saddle River, N.J.
Division of Ser. No. 105,845, Oct. 7, 1987, Pat. No. D. 324,108.
This application Sep. 16, 1991, Ser. No. 760,212
Term of patent 14 years
U.S. Cl. D25—119



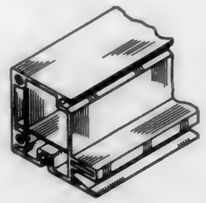
346,033
STRUCTURAL EXTRUSION
Robert J. Ehmke, Germantown, and Timothy J. Nolan, Grafton, both of Wis., assignors to Design Specialties, Inc., Milwaukee, Wis.
Filed Jun. 29, 1992, Ser. No. 905,851
Term of patent 14 years
U.S. Cl. D25—119



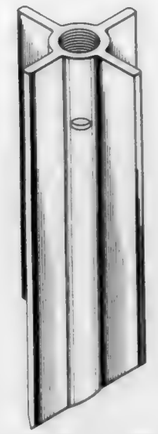
346,034
MOVING PANEL INTERLOCK JAMB
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,824
Term of patent 14 years
U.S. Cl. D25—124



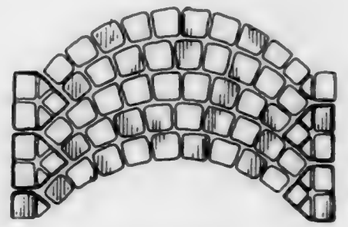
346,035
FIXED PANEL INTERLOCK JAMB
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,826
Term of patent 14 years
U.S. Cl. D25—124



346,036
GROUND STAKE
Thomas A. Garber, Hudson, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jul. 26, 1991, Ser. No. 738,736
Term of patent 14 years
U.S. Cl. D25—126



346,037
ARCHED PAVING
Niels I. Ingvorsen, Lonbjergparken 3, Roskilde, Denmark 4000
Filed Feb. 21, 1990, Ser. No. 483,423
Term of patent 14 years
U.S. Cl. D25—151

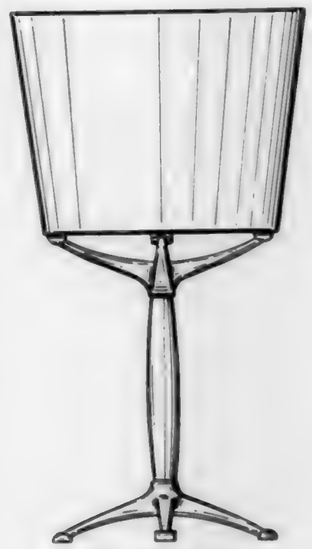


346,038
CANDLE
Kent Buttermann, Prescott, Ariz., assignor to Armadilla Wax Works, Inc., Prescott, Ariz.
Filed Oct. 29, 1992, Ser. No. 918
Term of patent 14 years
U.S. Cl. D26—6

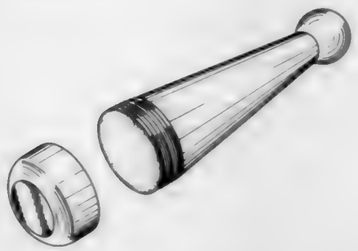


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346,039
TABLE LAMP
Rodolfo Dordoni, Milan, Italy, assignor to Artemide S.p.A., Milan, Italy
Filed Aug. 4, 1992, Ser. No. 924,825
Claims priority, application Italy, Feb. 4, 1992, T0920000019
Term of patent 14 years
U.S. Cl. D26—105



346,040
COMBINED POWDER DISPENSER AND APPLICATOR
Charlene Andregg, P.O. Box 881365, Steamboat Springs, Colo. 80488
Filed Oct. 9, 1991, Ser. No. 773,302
Term of patent 14 years
U.S. Cl. D28—7



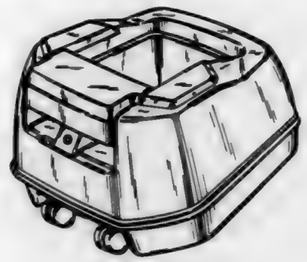
346,041
LOTION APPLICATOR
Andrew Trinkaus, 5617 S. Fox St. Apt. A, Littleton, Colo. 80120
Filed Nov. 4, 1991, Ser. No. 786,943
Term of patent 14 years
U.S. Cl. D28—7



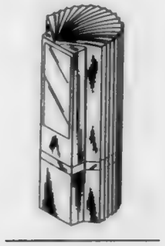
346,042
DISPOSABLE RAZOR
Steve Chu, 5481 Glen Erin Drive, Mississauga, Ontario, Canada L5M 5C8
Filed Apr. 30, 1992, Ser. No. 876,213
Term of patent 14 years
U.S. Cl. D28—46



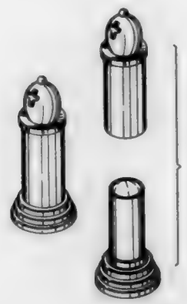
346,043
PORTABLE PEDICURE STATION
Joseph J. Galati, Jr., Brookfield; Lev Yakubovich, Milwaukee, and John Meyerovich, Fox Point, all of Wis., assignors to European Touch, Ltd. II, Brookfield, Wis.
Filed Apr. 28, 1992, Ser. No. 875,121
Term of patent 14 years
U.S. Cl. D28—61



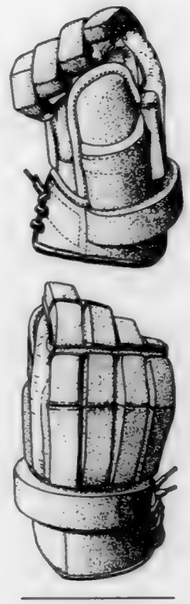
346,044
LIPSTICK CASE OR SIMILAR ARTICLE
Ching-Chun Chen, No. 48, Ta-Wei Rd., Ta-Li Hsiang, Taichung Hsien, Taiwan
Filed Oct. 8, 1991, Ser. No. 773,088
Term of patent 14 years
U.S. Cl. D28—87



346,045
LIPSTICK CASE
Shen-Shyong Yang, No. 227-17, Tay-Tzyy-Miaw, Tay-Tzyy Tsuen, Ren-Der Shiang Tainan Hsien, Taiwan
Filed Apr. 29, 1992, Ser. No. 875,138
Term of patent 14 years
U.S. Cl. D28—87



346,046
RIGHT HAND HOCKEY GLOVE
Georges L. Guilbault, Deauville, Canada, assignor to Sherwood Drolet Corporation Ltd., Sherbrooke, Canada
Filed Nov. 27, 1989, Ser. No. 441,440
Claims priority, application Canada, Aug. 4, 1989, 0408897
Term of patent 14 years
U.S. Cl. D29—22

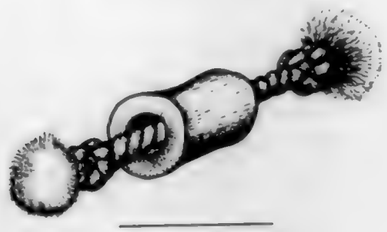


346,047
ANIMAL EXERCISING RUN
Clarence E. Peterson, 3745 E. County Line Rd., Hale, Mich. 48739
Filed Oct. 18, 1991, Ser. No. 778,623
Term of patent 14 years
U.S. Cl. D30—154

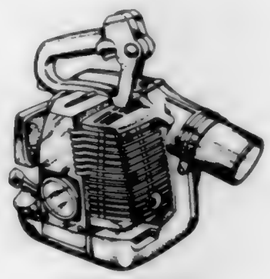


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346,048
A DOG CHEW TOY WITH EDIBLE BONE
Robert D. Jandebeur, P.O. Box 581172, Tulsa, Okla. 74158, and Joseph G. Parker, Tulsa, Okla., assignors to Robert D. Jandebeur, Tulsa, Okla.
Filed Apr. 15, 1991, Ser. No. 705,251
Term of patent 14 years
U.S. Cl. D30—160



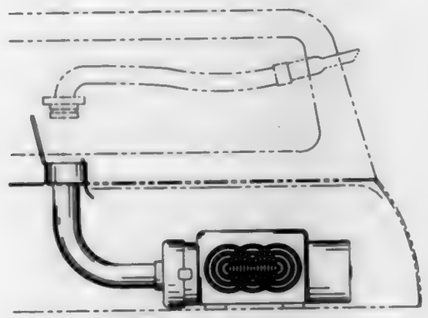
346,049
BODY OF POWER BLOWER
Yoshikazu Iida, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 914,695
Claims priority, application Japan, Jan. 24, 1992, 4-1423
Term of patent 14 years
U.S. Cl. D32—15



346,050
FLOOR POLISHER
Bo V. Lilja, Glindvägen 4, 183 63, Täby, Sweden
Filed Mar. 6, 1991, Ser. No. 665,180
Claims priority, application Sweden, Sep. 6, 1990, 90-1866
Term of patent 14 years
U.S. Cl. D32—19



346,051
VEHICLE VACUUM CLEANER
Austin L. Freiwald, and Ella M. Freiwald, both of 919 Yorkhaven Rd., Cincinnati, Ohio 45240
Filed Oct. 31, 1991, Ser. No. 785,705
Term of patent 14 years
U.S. Cl. D32—21



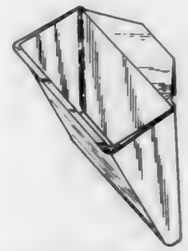
346,052
VACUUM CLEANER
Craig M. Saunders, Rocky River; Terry L. Zahuranec, Hudson; James J. Kopco, Mentor-on-the-Lake; Michael F. Wright, Cuyahoga Falls; Paul D. Stephens, Cleveland Heights, and Richard C. Farone, Wickliffe, all of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio
Filed Jan. 10, 1992, Ser. No. 818,986
Term of patent 14 years
U.S. Cl. D32—22



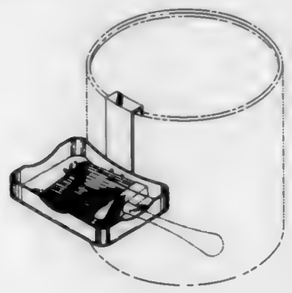
346,053
UPPER PORTION OF AN UPRIGHT VACUUM CLEANER
Kiyo Hoshino, Phoenix, Ariz., assignor to Ryobi Motor Products Corp., Easley, N.C.
Filed Jan. 10, 1992, Ser. No. 819,517
Term of patent 14 years
U.S. Cl. D32—31



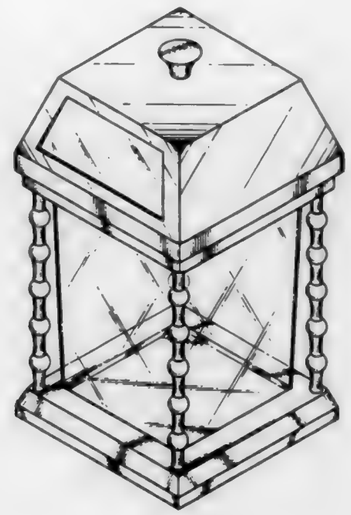
346,054
PAINT CAN SUPPORTED BRUSH HOLDER
Sheldon L. Spangler, 39125 Bud Ct., Fremont, Calif. 94538
Filed May 15, 1992, Ser. No. 883,967
Term of patent 14 years
U.S. Cl. D32—54



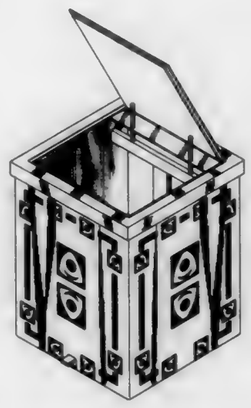
346,055
BRUSH CADDY
John V. Arano, 207 Sunset Dr., Forked River, N.J. 08731
Filed Oct. 22, 1992, Ser. No. 627
Term of patent 14 years
U.S. Cl. D32—54



346,056
TRANSPARENT GARBAGE CAN
James L. Keeney, R.D. #3 Box 782A, Felton, Pa. 17322
Filed Dec. 22, 1992, Ser. No. 2,912
Term of patent 14 years
U.S. Cl. D34—8



346,057
WOODEN PEDDLE TRASH CAN
Daniel T. Carreras, 3016 Fable Dr., Meraux, La. 70075
Filed Jan. 21, 1992, Ser. No. 823,555
Term of patent 14 years
U.S. Cl. D34—9



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346,058

ELECTRONIC EQUIPMENT CART

Eduard Samsó, Barcelona, Spain, assignor to Driade S.p.A., Fossadello Di Caorso, Italy

Filed Jul. 16, 1992, Ser. No. 915,911

Claims priority, application Italy, Jan. 17, 1992, MI920 000025

Term of patent 14 years

U.S. Cl. D34—21



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TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF APRIL, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Spencer, Ronald V.; and , 5,301,810, Cl. 209-11.000.

Aabel, Lasse, to Nomafa AB. Door. 5,301,732, Cl. 160-84.10E.

ABB Patnet GmbH: *See*—
Steinleitner, Gunther, 5,302,185, Cl. 75-592.000.

Abbott, Donald C.; and Frechette, Raymond A., to Texas Instruments Incorporated. Method of forming a coated plastic package. 5,302,553, Cl. 437-209.000.

Abbott Laboratories: *See*—
Hartung, Donald E.; and Sibley, Murray J., 5,302,323, Cl. 252-550.000.
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Sarin, Virender K.; Fox, Jack L.; Gupta, Shanker L.; and Absolom, Darryl R., 5,302,581, Cl. 514-12.000.

ABC Group: *See*—
Sadr, Changize; and Georgas, Douglas J., 5,302,783, Cl. 181-243.000.

Abe, Akira, to Seiko Epson Corporation. VCO having voltage-to-current converter and PLL using same. 5,302,919, Cl. 331-2.000.

Abe, Hidenori: *See*—
Sato, Takahiro; and Abe, Hidenori, 5,302,877, Cl. 310-313.00A.

Abe, Katsumi; and Mine, Takeshi, to U.S. Philips Corporation. Electric vacuum cleaner. 5,301,385, Cl. 15-319.000.

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Shoji, Yasuo; Shiino, Haruhiro; Yamaguchi, Norio; and Abe, Masami, 5,303,263, Cl. 375-11.000.

Abe, Tatsuhiko: *See*—
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Pereira, Abel G.; Gallagher, Kevin F.; Abend, Phillip G.; and Carson, John C., Jr., 5,302,377, Cl. 424-59.000.

Abendschein, Ulrich; and Schlegel, Friedrich, to International Business Machines Corporation. Guide means for conveying sheet-shaped media. 5,301,618, Cl. 109-55.000.

Abou-Gharbia, Magid A.: *See*—
Kao, Wenling; Abou-Gharbia, Magid A.; and Vogel, Robert L., 5,302,584, Cl. 514-80.000.

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DeBan, Abdou F.; Tumey, David M.; Reeves, Jonathon W.; McQuain, David B.; Reeves, William H.; Reeves, Carole C.; and Aboujaoude, Elias D., 5,301,681, Cl. 128-736.000.

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Lakso, Susan L.; Ceppetelli, Michael A.; Kroll, David M.; and Rose, Richard D., 5,302,970, Cl. 345-168.000.

Abraham, Bernard M.; Ketterson, John B.; Bohanon, Thomas M.; and Mikrut, John M., to Northwestern University. Method and apparatus for monitoring and measuring the surface tension of a fluid using fiber optics. 5,303,030, Cl. 356-345.000.

Abramson, Kenneth D.: *See*—
Butts, H. Bruce, Jr.; Orbits, David A.; and Abramson, Kenneth D., 5,303,362, Cl. 395-425.000.

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Sarin, Virender K.; Fox, Jack L.; Gupta, Shanker L.; and Absolom, Darryl R., 5,302,581, Cl. 514-12.000.

Abumehdi, Cyrus; Gilham, Dennis T.; Herbert, Raymond J.; and Jude, Rodney F., to Alcatel Business Systems Limited. Franking machine and method of forming franking impression. 5,302,825, Cl. 250-271.000.

Accon, Inc.: *See*—
Czipri, John, 5,301,627, Cl. 114-218.000.

Acer Incorporated: *See*—
Yu, Chieh-Chih; and Hsieh, Hugn-Chyuan, 5,303,350, Cl. 395-275.000.

Ach, Alexander: *See*—
Frische, Rainer; Volkheimer, Jurgen; Wollmann, Klaus; Schomann, Herrmann; Schneider, Judith; Ach, Alexander; Gross-Lannert, Renate; and Best, Bernd, 5,302,670, Cl. 525-444.500.

Achleitner, Erwin; Freudenberg, Hellmut; Wier, Manfred; and Elbe, Thomas, to Siemens Aktiengesellschaft. Ignition device for internal combustion engines. 5,301,649, Cl. 123-609.000.

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Ackler, Lynn L.: *See*—
Johnson, Kent; Ackler, Lynn L.; Jenkins, David C.; Barney, Howard H.; and Brooks, Chris A., 5,303,064, Cl. 358-406.000.

Acma Limited: *See*—
Morozov, Victor A., deceased; Kanachine, Serguei P.; Krasnochtchekov, Iouri I.; Makienko, Alexandre I.; Matveev, Valentine A.; Khriachtchey, Valeri G.; and Tan, Poi-Sik, 5,301,518, Cl. 62-305.000.

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Ricciardi, Ronald J., 5,301,844, Cl. 222-199.000.

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Adam, Jean-Marie; and Eichenberger, Thomas, to Ciba-Geigy Corporation. Azodyes containing a sulfoacetoacetic acid anilide coupling component. 5,302,704, Cl. 534-738.000.

Adams, Clifford G., Jr.; Beaudoin, Donald P.; and Ruiz-Miramontes, Arturo, to Ford Motor Company. Printed circuit board having a commonized mounting pad which different sized surface mounted devices can be mounted. 5,303,122, Cl. 361-767.000.

Adams, Jose A.: *See*—
Watson, Herman L.; Pak, Chu; Adams, Jose A.; and Meichner, William, 5,301,678, Cl. 128-721.000.

Adams, Theodore P.: *See*—
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Addison, Robert A.; and Berg, John P., to Greif Bros Corporation. Open top plastic drum with plastic cover. 5,301,853, Cl. 200-320.000.

Adelsys, Inc.: *See*—
Bahniuk, Douglas E.; and Valentino, Dominic, 5,301,915, Cl. 248-452.000.

Adfiltech Corporation: *See*—
Reichert, Ralph, 5,301,543, Cl. 73-64.450.

Adler, Thomas C.; McLarnon, Frank R.; and Cairns, Elton J., to University of California, The Regents of the. Rechargeable zinc cell with alkaline electrolyte which inhibits shape change in zinc electrode. 5,302,475, Cl. 429-207.000.

Admiraal, Anthonius S., to Holland Mechanics B.V. Apparatus for mounting spokes between a hub and rim of a spoke wheel. 5,301,731, Cl. 157-1.550.

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Snyder, Douglas E.; Clark, Daniel J.; and McClure, James, 5,303,334, Cl. 395-109.000.

AE Piston Products Limited: *See*—
Dearnley, Timothy; and Gazzard, Simon, 5,301,599, Cl. 92-222.000.

Aerospatiale Societe Nationale Industrielle: *See*—
Metivaud, Guy; and Auberon, Marcel, 5,302,338, Cl. 264-516.000.

Affymax Technologies N.V.: *See*—
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Agback, Hubert; Ahrgren, Leif; Berglindh, Thomas; Haraldsson, Martin; Smedegard, Goran; and Olsson, Lars-Inge, to Kabi Pharmacia AB. Compounds containing an amino salicylic acid moiety linked to a sulphapyridine moiety via stable bridge. 5,302,718, Cl. 544-235.000.

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Benker, Gerhard; Klueter, Ulrich; Muench, Reimund; Nagel, Erich; Nitsch, Wilhelm; Weinert, Volker; and Vedder, Hans-Joachim, 5,303,000, Cl. 355-41.000.

Agustsson, Agust; Wallers, Richard A.; and Agustsson, Tomas H., to Groundtech, Inc. Underground work chamber assembly and method for the construction thereof. 5,302,052, Cl. 405-133.000.

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Agustsson, Agust; Wallers, Richard A.; and Agustsson, Tomas H., 5,302,052, Cl. 405-133.000.

Ahn, Seung H., to Hyundai Electronics Industries Co., Ltd. Apparatus for sensing data in data bus lines. 5,302,867, Cl. 307-530.000.

Ahrgren, Leif: *See*—
Agback, Hubert; Ahrgren, Leif; Berglindh, Thomas; Haraldsson, Martin; Smedegard, Goran; and Olsson, Lars-Inge, 5,302,718, Cl. 544-235.000.

Aihara, Takashi: *See*—
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Bonner, Brian B.; and Garg, Diwakar, 5,302,213, Cl. 148-208.000.

Airtech International Inc.: *See*—
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Aisin AW Co., Ltd.: *See*—
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Aisin Seiki Kabushiki Kaisha: *See*—
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Ajioka, Masanobu: *See—*
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Miyake, Katsuya; Ogawahara, Tatsuo; Kunimi, Takashi; Kobayashi, Tadashi; Nezu, Masahiro; Takahashi, Kimio; Mori, Masatomo; and Kurosawa, Takashi, 5,302,008, Cl. 303-14.000.

Akebono Research and Development Centre Ltd.: *See—*
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Alcan-Tech Co., Inc.: *See—*
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Abumehdi, Cyrus; Gilham, Dennis T.; Herbert, Raymond J.; and Jude, Rodney F., 5,302,825, Cl. 250-271.000.

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Allard, John E., to Morton International, Inc. Piston driven cold gas air bag inflator. 5,301,979, Cl. 280.1-737.000.

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Anderson, Jerry D.; Johnson, Avery C.; and Manick Steve A., to Hughes Aircraft Company. Fault isolation diagnostics. 5,303,246, Cl. 371-22.300.

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Arneth, Reinhold; Hehl, Eberhard; Frass, Werner; and Jung, Guenter, to Hoechst Aktiengesellschaft. Negative-working photosensitive coating solution containing photohardenable diazo compound, polymeric binder and four component solvent. 5,302,487, Cl. 430-157.000.

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Aruga, Tomoe; and Yokouchi, Hideya, to Seiko Epson Corporation. Disk drive apparatus having carriage driving mechanism. 5,303,104, Cl. 360-106.000.

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Asao, Mitsunari; Hirano, Osamu; and Mikami, Hidenobu, to NTN Corporation. Grease-sealed rolling contact bearing. 5,301,923, Cl. 252-12.002.

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Miyake, Atsushi, to Casio Computer Co., Ltd. Digital recorder for reproducing only required parts of audio signals wherein a plurality of parts of audio signals are stored on a same track of a recording medium. 5,303,218, Cl. 369-48.000.

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Miyatake, Shigehiro; and Takada, Kenji, to Minolta Camera Kabushiki Kaisha. Charge coupled device for overcoming an output voltage difference between different shift registers. 5,303,053, Cl. 348-312.000.

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Ogura, Ken-ichi; Kawamura, Tomokazu; and Kanemitsu, Yukio, to Furukawa Aluminum Co., Ltd.; and Kabushiki Kaisha Kanemitsu. Lightweight V-grooved pulley. 5,302,157, Cl. 474-166.000.

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Ohnishi, Kenji; Washio, Isomi; and Nakano, Koji, to Amada Company, Ltd. Vibration prevention device for bandshaw machines. 5,301,586, Cl. 83-820.000.

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Tahmasebi, Farhad; and Tsai, Lung-Wen, to United States of America, National Aeronautics & Space Administration. Simplified and symmetrical five-bar linkage driver for manipulating a Six-Degree-of-Freedom Parallel "minimanipulator" with three inextensible limbs. 5,301,566, Cl. 74-479.00B.

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370.2 R 5,301,736
380 5,301,737

CLASS 162

5 5,302,242
5,302,243
6 5,302,244
8 5,302,245
29 5,302,246
42 5,302,247
70 5,302,248
135 5,302,249
353 5,302,250
358.4 5,302,251
358.5 5,302,252

CLASS 164

97 5,301,738
5,301,739
195 5,301,740
461 5,301,741
463 5,301,742

CLASS 165

12 5,301,743
16 5,301,744
47 5,301,745
113 5,301,746
166 5,301,747
173 5,301,748

CLASS 166

54 5,301,749
208 5,301,750
283 5,301,751
292 5,301,752
294 5,301,753
295 5,301,754
297 5,301,755

CLASS 169

24 5,301,756

CLASS 172

15 5,301,757

CLASS 174

52.4 5,302,778
92 5,302,779
102 R 5,302,780

CLASS 175

21 5,301,758
58 5,301,759
61 5,301,760
296 5,301,761
379 5,301,762
398 5,301,763

CLASS 177

4 B1 4,923,022

CLASS 180

65.2 5,301,764
68.5 5,301,765
168 5,301,617
197 5,301,766
219 5,301,767
249 5,301,768
5,301,769
268 5,301,772

CLASS 181

102 5,302,781
122 5,302,782
243 5,302,783

CLASS 182

128 5,301,770

CLASS 184

6.16 5,301,771

CLASS 187

88 5,301,773

CLASS 188

206 A 5,301,774
290 5,301,775
322.13 5,301,776
322.17 5,301,777

CLASS 191

64 5,301,778
70.17 5,301,780
70.2 5,301,779
85 R 5,301,781
5,301,783
89 BL 5,301,782

CLASS 193

35 R 5,301,785

CLASS 194

107 5,301,786

CLASS 196

132 5,302,253

CLASS 198

303 5,301,787
346.1 5,301,788
347.3 5,301,789
349 5,301,790
391 5,301,791
5,301,792
415 5,301,793
433 5,301,794
499 5,301,797
750 5,301,798
773 5,301,795
817 5,301,796

CLASS 200

146 AP 5,302,784
244 5,302,785
320 5,301,853
400 5,302,786
401 5,302,787
5,302,788
461 5,302,789

CLASS 201

21 5,302,254

CLASS 203

72 5,302,255

CLASS 204

86 5,302,257
129 5,302,258
131 5,302,259
144 5,302,260
146 5,302,261
153.12 5,302,262
157.43 5,302,277
157.62 5,302,263
180.1 5,302,264
181.5 5,302,265
192.12 5,302,266
224 R 5,302,267
228 5,302,268
252 5,302,269
265 5,302,270
298.41 5,302,271
299 R 5,302,272
5,302,273
412 5,302,274
424 5,302,275
429 5,302,276

CLASS 205

85 5,302,256
206 5,302,278

CLASS 206

1.7 5,301,799
45.26 5,301,800
63.300 5,301,801
217 5,301,802
232 5,301,803
271 5,301,804
273 5,301,805
278 5,301,806
290 5,301,807
5,301,808

CLASS 208

87 5,302,279
113 5,302,280
118 5,302,281
179 5,302,282

CLASS 209

3.1 5,301,809
11 5,301,810
44.2 5,301,811
284 5,301,813
326 5,301,814
365.4 5,301,815
616 5,301,816
714 5,301,812

CLASS 210

162 5,302,283
232 5,302,284
605 5,302,285
610 5,302,286
612 5,302,287
616 5,302,288
634 5,302,289
638 5,302,290
696 5,302,291
700 5,302,292
701 5,302,293
702 5,302,294
710 5,302,295
711 B1 5,039,428
718 5,302,296
5,302,297
748 5,302,298
767 5,302,299
774 5,302,300
787 5,302,301

CLASS 211

5 5,301,817
13 5,301,818
40 5,301,819
42 5,301,820
65 5,301,821
70.6 5,301,822
87 5,301,823
150 5,301,824

CLASS 215

11.1 5,301,825

CLASS 219

59.1 5,302,795
69.12 5,302,796
118 5,302,797
121.43 5,302,803
121.51 5,302,804
121.63 5,302,800
5,302,801
121.7 5,302,798
121.78 5,302,802
124.34 5,302,799
137.71 5,302,805
211 5,302,806
5,302,807
216 5,302,808
219 5,302,809
543 5,302,810
588 5,302,794
710 5,302,793
727 5,302,790
735 5,302,791
754 5,302,792

CLASS 220

4.26 5,301,826
221 5,301,828
257 5,301,827
521 5,301,829
669 5,301,830

CLASS 221

28 5,301,831
44 5,301,832
96 5,301,833
129 5,301,834

CLASS 222

78 5,301,836
83 5,301,837
95 5,301,835
5,301,838
5,301,839
109 5,301,840
135 5,301,841
137 5,301,842
192 5,301,843
199 5,301,844
211 5,301,845
5,301,846
309 5,301,847
321 5,301,852
389 5,301,851
494 5,301,850
517 5,301,849
613 5,301,848

CLASS 224

32 R 5,301,860
103 5,301,859
148 5,301,857
5,301,858
5,302,302
312 5,301,856
324 5,301,855

CLASS 225

34 5,301,854
96.5 5,301,868
104 5,301,867

CLASS 226

11 5,301,866
118 5,301,865
196 5,301,864

CLASS 228

33 5,301,863
43 5,301,862
121 5,301,861
147 5,301,869

CLASS 229

1.5 B 5,301,870
1.5 H 5,301,871
117.03 5,301,872

CLASS 235

381 5,302,811
462 5,302,812
5,302,813
463 5,302,814

CLASS 237

53 5,301,873

CLASS 239

94 5,301,875
95 5,301,876
154 5,301,877
338 5,301,878
408 5,301,879
557 5,301,880
585.4 5,301,874

CLASS 241

65 5,301,881
101.7 5,301,882

CLASS 241

7.09 5,301,884
7.21 5,301,885
35.6 R 5,301,886
5,301,887
55.18 5,301,889
55.2 5,301,888
56 R 5,301,890
58.5 5,301,891
67.2 5,301,892
67.3 R 5,301,883
107.4 A 5,301,893
107.4 B 5,301,894
150 M 5,301,895
5,301,896
204 5,301,897
233 5,301,898
288 5,301,899

CLASS 244

17.25 5,301,900
53 R 5,301,901
121 5,301,902
122 AG 5,301,903
129.1 5,301,904
134 F 5,301,905

CLASS 246

3 5,301,906

CLASS 248

74.1 5,301,907
74.2 5,301,917
118 5,301,908
146 5,301,909
166 5,301,910
218.4 5,301,911
221.3 5,301,912
231.4 5,301,913
430 5,301,914
452 5,301,915
475.1 5,301,916

CLASS 249

11 5,301,918

CLASS 250

201.1 5,302,815
206.2 5,302,816
214 VT 5,302,817
216 5,302,818
222.1 5,302,819
231.16 5,302,820
237 G 5,302,821
239 5,302,822
252.1 5,302,823
5,302,824
271 5,302,825
292 5,302,826
5,302,827
307 5,302,828
5,302,829
342 5,302,830
397 5,302,831
459.1 5,302,832
561 5,302,833
5,302,834
572 5,302,836
574 5,302,837

CLASS 251

30.02 5,301,919
30.04 5,301,920
129.08 5,301,921
283 5,301,922

CLASS 252

6.5 5,302,303
12.002 5,301,923
32.005 5,302,305
47 5,302,304
62.02 5,302,306
70 5,302,307
88 5,302,308
95 5,302,309
5,302,310
102 5,302,311
106 5,302,312
142 Re.34,584
171 5,302,313
174.23 5,302,314
182.14 5,302,315
183.11 5,302,316
299.6 5,302,317
301.4 R 5,302,318
314 5,302,319
356 5,302,320
396 5,302,321
547 5,302,322
550 5,302,323
626 5,302,324

CLASS 254

131 5,301,924

CLASS 256

13 5,301,925
24 5,301,926

CLASS 257

14 5,302,838
101 5,302,839
196 5,302,840
197 5,302,841
288 5,302,842
296 5,302,843
327 5,302,845
329 5,302,846
398 5,302,844
555 5,302,848
615 5,302,847
666 5,302,849
667 5,302,850
702 5,302,851
708 5,302,852
707 5,302,853
737 5,302,854
774 5,302,855
788 5,302,856

CLASS 261

76 5,302,325

CLASS 264

22 5,302,326
5,302,327
40.1 5,301,927
88 5,302,328
65 5,302,329
109 5,302,330
115 5,302,331
119 5,302,332
177.190 5,302,333
233 5,302,334
263 5,302,336
333 5,302,335
513 5,302,337
516 5,302,338
572 5,302,339

CLASS 266

225 5,301,928
252 5,301,929

CLASS 267

5 5,301,931
221 5,301,932

CLASS 269

73 5,301,933
222 5,301,934

CLASS 270

45 5,301,935

CLASS 271

9 5,301,936
204 5,301,937
245 5,301,938

CLASS 273

1.5 R 5,301,939
72 R 5,301,940
78 5,301,941
138 R 5,301,942
153 S 5,301,943
167 A 5,301,944
5,301,945
169 5,301,946
176 H 5,301,947
191 R 5,301,948
192 5,301,949
195 R 5,301,950
232 5,301,951
240 5,301,952
276 5,301,953
323 5,301,954
411 5,301,955
429 5,301,956

CLASS 277

58 5,301,957
103 5,301,958
104 5,301,959
229 5,301,960

CLASS 279

46.2 5,301,961
105.1 5,301,962

CLASS 280

30 5,301,963
87.021 5,301,968
210 B1 4,133,550
221 5,301,969
250.1 5,301,964
5,301,970
5,301,971
276 5,301,973
278 5,301,972
280 5,301,974
304.1 5,301,975
600 5,301,965
608 5,301,976
691 5,301,977
708 5,301,966
737 5,301,978
837 5,301,980

CLASS 281

43 5,301,967

CLASS 283

73 5,301,981
83 5,301,982

CLASS 285

10 5,301,983
55 5,301,984
79 5,301,985
367 5,301,986

CLASS 292

39 5,301,987
067 5,301,988
142 5,301,989

CLASS 293

107 5,301,990

CLASS 294

19.2 5,301,991

CLASS 296

37.1 5,301,992
65.1 5,301,993
97.2 5,301,994
100 5,301,995
180.1 5,301,996
183 5,301,997

CLASS 297

135 5,301,998
184.13 5,301,999
194 5,302,000
228.13 5,302,001
284.4 5,302,002
423.44 5,302,003

CLASS 299

18 5,302,004
91 5,302,005

CLASS 303

9.69 5,302,006
9.73 5,302,007
14 5,302,008
100 5,302,009
111 5,302,010
116.1 5,302,011

CLASS 305

56 5,302,012

CLASS 307

30 5,302,857
60 5,302,858
255 5,302,859
264 5,302,860
280 5,302,862
296.5 5,302,861
351 5,302,863
465 5,302,864
5,302,865
5,302,866
491 5,302,868
518 5,302,869
530 5,302,867
5,302,870
608 5,302,871

CLASS 310

12 5,302,872
5,302,873
90.5 5,302,874
156 5,302,875
5,302,876
313 A 5,302,877
360 5,302,878
361 5,302,879
370 5,302,880

CLASS 312

249.11 5,302,013
249.12 5,302,014
282 5,302,015
333 5,302,016

CLASS 315

111.21 5,302,881
5,302,882
149 5,302,883

CLASS 318

135 5,302,884
568.016 5,302,886
781 5,302,885

CLASS 320

32 5,302,887

CLASS 323

180 5,302,888
284 5,302,889

CLASS 324

142 5,302,890
158 F 5,302,891
158 R 5,302,892
207.16 5,302,894
207.21 5,302,893
220 5,302,895
307 5,302,896
5,302,897
316 5,302,898
318 5,302,899
321 5,302,900
322 5,302,901
434 5,302,902
446 5,302,903
536 5,302,904
613 5,302,905
650 5,302,906
655 5,302,907

CLASS 328

133 5,302,908
167 5,302,909

CLASS 329

336 5,302,910

CLASS 330

110 5,302,911
118 5,302,912
129 5,302,913
5,302,914
284 5,302,917
296 5,302,915

CLASS 331

1 A 5,302,916
2 5,302,919
101 5,302,918
45 5,302,920
67 5,302,921

CLASS 333

11 5,302,922
33 5,302,923
202 5,302,924

CLASS 335

17 5,302,925
210 5,302,927
216 5,302,928
229 5,302,929
253 5,303,012
278 5,302,930

CLASS 336

82 5,302,931
200 5,302,932

CLASS 338

18 5,302,933
22 R 5,302,934
34 5,302,935
47 5,302,936
160 5,302,937

CLASS 340

447 5,302,939
454 5,302,940
503 5,302,941
556 5,302,942
573 5,302,938
653 5,302,944
660 5,302,945
825.34 5,302,947
825.5 B1 4,560,985

CLASS 341

31 5,302,948
67 5,302,949
123 5,302,950
144 5,302,951
155 5,302,952

CLASS 342

37 5,302,953
44 5,302,954
59 5,302,955
70 5,302,956
125 5,302,957
157 5,302,958
372 5,302,959
5,302,960
427 5,302,961

CLASS 343

781 P 5,302,962
901 5,302,963

CLASS 345

7 5,302,964
31 5,302,965
76 5,302,966
88 5,302,946
131 5,302,967
5,302,968
168 5,302,969
5,302,970

CLASS 346

1.1 5,302,971
108 5,302,972
5,302,973
5,302,974
5,302,975
136 5,302,976
140 R

CLASS 348

14 5,303,042
31 5,303,051
40 5,303,043
211 5,303,050
231 5,303,049
299 5,303,052
312 5,303,053
443 5,303,045
445 5,303,044
503 5,303,046
589 5,303,040
590 5,303,041
607 5,303,047
5,303,048
708 5,303,038
5,303,039
761 5,303,055
766 5,303,054
836 5,303,057

CLASS 351

114 5,302,977
162 5,302,978
212 5,302,979
5,302,980
246 5,302,981

CLASS 353

30 5,302,982
99 5,302,983
103 5,302,984
122 5,302,985

CLASS 354

21 5,302,986
62 5,302,988
106 5,302,990
112 5,302,989
195.12 5,302,991
212 5,302,992
359 5,302,993
323 5,302,995
324 5,302,996
432 5,302,997
476 5,302,998

CLASS 355

1 5,302,999
41 5,303,000
53 5,303,001
5,303,002
300 5,303,003
5,303,004
202 5,303,005
208 5,303,006
211 5,303,007
215 5,303,008
219 5,303,009
245 5,303,010
246 5,303,011
271 5,303,013
273 5,303,014
285 5,303,015
288 5,303,016
318 5,303,017
326 R 5,303,018

CLASS 356

1 5,303,019
11 5,303,020
72 5,303,021
124 5,303,022
124.5 5,303,023
128 5,303,024
313 5,303,025
318 5,303,026
328 5,303,027
5,303,028
339 5,303,029
345 5,303,030
5,303,031
5,303,032
5,303,033
375 5,303,034
399 5,303,035
405 5,303,037
410 5,303,036

CLASS 358

261.1 5,303,058
310 5,303,059
5,303,060
320 5,303,061
335 5,303,062
5,303,063
350 5,303,056
405 5,303,064
409 5,303,065
434 5,303,066
442 5,303,067
444 5,303,068
455 5,303,069
474 5,303,070
519 5,303,071

CLASS 359

51 5,303,073
55 B1 4,596,446
58 5,302,987
59 5,303,072
5,303,074
73 5,303,075
78 5,303,076
123 5,303,077
139 5,303,078
188 5,303,079
196 5,303,080
213 5,303,081
371 5,303,082
495 5,303,083
503 5,303,084
631 5,303,085
633 5,303,086
708 5,303,087
753 5,303,088
814 5,303,089
883 5,303,090

CLASS 360

17 5,303,092
19.1 5,303,091
30 5,303,093
32 5,303,094
46 5,303,095
73.02 5,303,097
97.01 5,303,096
99.12 5,303,098
103 5,303,099
104 5,303,100
105 5,303,101
5,303,102
106 5,303,103
5,303,104
5,303,105
107 5,303,106
137 5,303,107
5,303,108
5,303,109

CLASS 361

18 5,303,110
19 5,303,111
67 5,303,112
93 5,303,113
101 5,303,114
106 5,303,115
111 5,303,116
233 5,303,117
502 5,303,118
749 5,303,119
760 5,303,120
5,303,121
767 5,303,122
783 5,303,123

CLASS 362

20 5,303,124
32 5,303,125
61 5,303,126
80 5,303,128
80.1 5,303,129
83.1 5,303,130
103 5,303,131
138 5,303,132
157 5,303,133
296 5,303,127
301 5,303,135
372 5,303,134
421 5,303,136

CLASS 363

16 5,303,137
21 5,303,138
63 5,303,139
132 5,303,140

CLASS 364

149 5,303,141
160 5,303,142
184 5,303,143
401 5,303,144
5,303,145
5,303,146
402 5,303,147
408 5,303,149
413.01 5,303,148
419.02 5,303,151
419.08 5,303,150
420 5,303,152
424.02 5,303,154
424.05 5,303,155
5,303,156
424.1 5,303,153
426.05 5,303,157
431.08 5,303,158
440 5,303,159
441 5,303,160
490 5,303,161
550 5,303,162
5,303,163
551.01 5,303,164
5,303,166
556 5,303,167
557 5,303,168
571.01 5,303,165
5,303,169
578 5,303,170
707 5,303,171
724.19 5,303,173
726 5,303,172
748 5,303,174
5,303,175
759 5,303,176
760 5,303,178
764 5,303,177
802 5,303,179

CLASS 365

63 5,303,180
90 5,303,181
145 5,303,182
149 5,303,183
193 5,303,184
5,303,185
5,303,186
5,303,187
189.05 5,303,188
189.06 5,303,189
189.11 5,303,190
194 5,303,191
200 5,303,192
201 5,303,193
203 5,303,194
205 5,303,195
206 5,303,196
210 5,303,197
218 5,303,198
225.7 5,303,199
230.05 5,303,200
236 5,303,201

CLASS 366

57 5,302,017
66 5,302,018
80 5,302,019
288 5,302,020
348 5,302,021

CLASS 367

13 5,303,202
75 5,303,203
099 5,303,204
108 5,303,205
127 5,303,206
134 5,303,207
153 5,303,208
174 5,303,209
181 5,303,210

CLASS 368

76 5,303,211
185 5,303,213

CLASS 369

13 5,303,212
34 5,303,214
44.13 5,303,216
44.25 5,303,215
48 5,303,217
5,303,218
54 5,303,219
71 5,303,220
112 5,303,221
116 5,303,222
215 5,303,223
275.1 5,303,224
275.3 5,303,225

CLASS 370

17 5,303,226
24 5,303,227
32.1 5,303,228
58.1 5,303,229
5,303,230
58.2 5,303,231
60 5,303,232
5,303,233
60.1 5,303,235
5,303,236
85.2 5,303,234
85.6 5,303,237
94.1 5,303,238
94.2 5,303,239
95.3 5,303,240
100.1 5,303,241
102 5,303,242

CLASS 371

9.1 5,303,243
10.1 5,303,244
22.3 5,303,246
37.1 5,303,245

CLASS 372

22 5,303,247
25 5,303,248
33 5,303,249
38 5,303,250
5,303,251
58 5,303,253
65 5,303,252
87 5,303,254
96 5,303,255
106 5,303,256

CLASS 374

44 5,302,022
46 5,302,023
122 5,302,024
131 5,302,025
135 5,302,026
139 5,302,027
156 5,302,028

CLASS 375

1 5,303,257
5,303,258
5,303,259
5,303,260
4 5,303,261
10 5,303,262
11 5,303,263
12 5,303,264
17 5,303,265
36 5,303,266
38 5,303,267
51 5,303,331
60 5,303,268
78 5,303,269
114 5,303,270

CLASS 376

249 5,303,271
261 5,303,272
5,303,273
283 5,303,274
352 5,303,275
442 5,303,276
451 5,303,277

CLASS 377

20 5,303,278
31 5,303,279

CLASS 378

132 5,303,280
134 5,303,281
147 5,303,282
202 5,303,283

CLASS 379

58 5,303,284
5,303,285
59 5,303,286
5,303,287
5,303,288
601 5,303,289
63 5,303,297
67 5,303,296
5,303,298
88 5,303,299
103 5,303,300
142 5,303,301
241 5,303,290
433 5,303,291
454 5,303,292

CLASS 380

2 5,303,293
5 5,303,294
10 5,303,295
89 5,303,302
5,303,303
51 5,303,370

CLASS 381

26 5,303,304
88 5,303,305
5,303,306
92 5,303,307
106 5,303,308
109 5,303,371
118 5,303,309

CLASS 382

8 5,303,310
10 5,303,311
13 5,303,312
56 5,303,313
5,303,372

CLASS 383

66 5,302,029

CLASS 384

18 5,302,030
449 5,302,031
454 5,302,032

CLASS 385

11 5,303,314
16 5,303,315
37 5,303,316
78 5,303,317
115 5,303,373
123 5,303,318
131 5,303,319
135 5,303,320
146 5,303,322
147 5,303,323
5,303,324

CLASS 392

379 5,303,325

CLASS 395

2 5,303,326
2.21 5,303,374
2.39 5,303,346
2.79 5,303,327
5,303,385
23 5,303,328
24 5,303,329
5,303,330
60 5,303,332
80 5,303,333
98 5,303,384
100 5,303,359
109 5,303,334
111 5,303,335
114 5,303,336
119 5,303,337
5,303,386
132 5,303,339
140 5,303,338
141 5,303,340
143 5,303,321
159 5,303,388
162 5,303,341
164 5,303,342
200 5,303,343
5,303,344
5,303,345
5,303,387
250 5,303,347
275 5,303,349
5,303,350
5,303,351
325 5,303,348
5,303,352
5,303,353
5,303,354
375 5,303,355
5,303,356
5,303,357
5,303,358
425 5,303,360
5,303,361
5,303,362
5,303,363
5,303,364
5,303,389
505 5,303,366
5,303,383
550 5,303,365
575 5,303,390
600 5,303,367
650 5,303,368
5,303,369
5,303,375
900 5,303,376
5,303,377

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	5,303,378
	5,303,379
	5,303,380
725	5,303,382
	5,303,391
775	5,303,392
[illegible]	5,303,381

CLASS [illegible]

54	5,302,033
120	5,302,034
124	5,302,035
229	5,302,036
489	5,302,040
586	5,302,037
615.2	5,302,038
692	5,302,041

CLASS [illegible]

74	5,302,042
208	5,302,043

CLASS [illegible]

218	5,302,039
291	5,302,044
322	5,302,045
370	5,302,046

CLASS [illegible]

6	5,302,047
11	5,302,048
42	5,302,049
53	5,302,050
84.1	5,302,051

CLASS [illegible]

133	5,302,052
154	5,302,053
186	5,302,055
274	5,302,054
288	5,302,056

CLASS 408

1 R	5,302,057
115 R	5,302,058
223	5,302,059
224	5,302,060

CLASS 409

134	5,302,061
231	5,302,062

CLASS 410

30	5,302,063
115	5,302,064

CLASS 411

85	5,302,065
181	5,302,066
281	5,302,067
402	5,302,068
429	5,302,069
437	5,302,070

CLASS [illegible]

376	5,302,071
387	5,302,072
421	5,302,073
427	5,302,074
428	5,302,075
[illegible]	5,302,076
[illegible]	5,302,077
786	5,302,078
[illegible]	5,302,079
[illegible]	[illegible]

CLASS [illegible]

55.1	5,302,081
121.1	5,302,082

CLASS [illegible]

3	5,302,083
17	5,302,084
[illegible] R	5,302,085
[illegible]	5,302,086

CLASS 417

53	5,302,087
182.5	[illegible]
199.1	[illegible]
[illegible]	5,302,090
[illegible]	5,302,091
[illegible]	5,302,092
476	5,302,093
517	5,302,094

CLASS [illegible]

57	5,302,095
[illegible]	5,302,096

CLASS [illegible]

45	5,302,340
65	5,302,341

CLASS 420

546	5,302,342
584.1	5,302,097

CLASS 422

23	5,302,343
26	5,302,344
[illegible]	5,302,345
36	5,302,346
67	5,302,347
73	5,302,348
82.08	5,302,349
86	5,302,350
[illegible]	5,302,351
146	5,302,352
171	5,302,353
177	5,302,354
[illegible]	5,302,355
186.3	5,302,356
219	5,302,357
[illegible]	5,302,358
[illegible]	5,302,359

CLASS 423

[illegible]	5,302,360
[illegible]	5,302,361
[illegible]	5,302,362
315	5,302,363
[illegible]	5,302,364
[illegible]	5,302,366
437	5,302,365
588	5,302,367
625	5,302,368

CLASS 424

1.29	5,302,369
1.53	5,302,370
7.1	5,302,371
9	5,302,372
49	5,302,373
52	5,302,374
53	5,302,375
59	5,302,376
	5,302,377
	5,302,378
[illegible]	5,302,379
63	5,302,380
66	5,302,381
78.03	5,302,382
[illegible]	5,302,383
85.2	5,302,384
92	5,302,386
93 C	5,302,388
93 L	5,302,387
[illegible]	5,302,389
94.66	5,302,390
195.1	5,302,391
409	5,302,392
423	5,302,393
440	5,302,394
[illegible]	5,302,395
465	5,302,396
473	5,302,397
474	5,302,398
[illegible]	5,302,385
493	5,302,399
[illegible]	5,302,400
501	5,302,401

CLASS [illegible]

58.1	5,302,098
[illegible]	5,302,100
84	5,302,099
116	5,302,101
135	5,302,102
[illegible]	5,302,103
[illegible]	5,302,104
190	5,302,105
[illegible]	5,302,106
[illegible]	5,302,107
[illegible]	5,302,108
595	5,302,109

CLASS [illegible]

129	5,302,402
134	5,302,403
271	5,302,405
[illegible]	5,302,406
433	5,302,407
[illegible]	5,302,408
633	5,302,409
637	5,302,410

CLASS 427

[illegible]	5,302,411
[illegible]	5,302,412
131	5,302,424
[illegible]	5,302,413
192	5,302,414
[illegible]	5,302,415
341	5,302,416
385.5	5,302,417
[illegible]	5,302,418
485	5,302,419
[illegible]	5,302,420
533	5,302,422
552	5,302,421
555	5,302,423

CLASS [illegible]

34	5,302,425
34.2	5,302,427
34.5	5,302,426
34.9	5,302,428
35.7	5,302,429
	5,302,430
	5,302,431
	5,302,686
36.1	5,302,432
42	5,302,433
[illegible]	5,302,434
167	5,302,435
195	5,302,404
	5,302,436
	5,302,437
	5,302,438
	5,302,439
[illegible]	5,302,440
211	5,302,441
213	5,302,442
224	5,302,443
228	5,302,444
[illegible]	5,302,445
[illegible]	5,302,446
[illegible]	5,302,447
[illegible]	5,302,448
336	5,302,449
357	5,302,450
364	5,302,451
	5,302,452
	5,302,453
[illegible]	5,302,454
403	5,302,455
407	5,302,456
411.1	5,302,457
429	5,302,458
447	5,302,459
[illegible]	5,302,460
472	5,302,461
[illegible]	5,302,462
517	5,302,463
551	5,302,464
552	5,302,465
573	5,302,466
626	5,302,467
[illegible]	5,302,468
694 T	5,302,469

CLASS 425

17	5,302,470
24	5,302,471
50	5,302,472
96	5,302,110
160	5,302,473
192	5,302,474
207	5,302,475
228	5,302,476

CLASS 430

5	5,302,477
53	5,302,478
[illegible]	5,302,479
[illegible]	5,302,481
115	5,302,482
126	5,302,483
127	5,302,484
	5,302,485
	5,302,486
137	5,302,487
157	5,302,488
190	5,302,489
191	5,302,490
271	5,302,491
311	5,302,492
314	5,302,493
321	5,302,494
325	5,302,495
330	5,302,496
[illegible]	5,302,498
399	5,302,499
[illegible]	5,302,500
512	5,302,497
537	5,302,501
[illegible]	5,302,502
552	5,302,503
558	5,302,504
567	5,302,505
572	5,302,506

CLASS 431

1	5,302,111
8	5,302,112
155	5,302,113
183	5,302,115
320	5,302,114

CLASS 432

14	5,302,118
77	5,302,119
[illegible]	5,302,120

CLASS 433

[illegible]	5,302,116
[illegible]	5,302,121
[illegible]	5,302,117
76	5,302,122
[illegible]	5,302,123
116	5,302,124
172	5,302,125
173	5,302,126
[illegible]	5,302,127
176	5,302,128
224	5,302,129

CLASS 434

55	5,302,130
156	5,302,132

CLASS 435

[illegible]	5,302,507
[illegible]	5,302,509
	5,302,510
7.21	5,302,511
7.25	5,302,512
15	5,302,513
22	5,302,514
[illegible]	5,302,515
41	5,302,516
69.1	5,302,517
	5,302,518
	5,302,519
[illegible]	5,302,520
115	5,302,521
127	5,302,522
172.1	5,302,523
240.54	5,302,524
252.1	5,302,525
252.33	5,302,526
254.5	5,302,527
[illegible]	5,302,528
320.1	5,302,529
	5,302,530

CLASS 436

74	5,302,531
528	5,302,532
537	5,302,533

CLASS 437

31	5,302,534
	5,302,535
[illegible]	5,302,536
	5,302,537
	5,302,538
41	5,302,539
47	5,302,540
52	5,302,541
	5,302,542
53	5,302,543
	5,302,544
	5,302,545
170	5,302,546
173	5,302,547
[illegible]	5,302,548
188	5,302,549
194	5,302,550
195	5,302,551
[illegible]	5,302,552
[illegible]	5,302,553
227	5,302,554
235	5,302,555

CLASS 439

127	5,302,131
157	5,302,133
247	5,302,134
263	5,302,135
376	5,302,136
403	5,302,137
527	5,302,138
546	5,302,139
557	5,302,140
[illegible]	5,302,141
762	5,302,142
	5,302,143
781	5,302,144
843	5,302,145
877	5,302,146

CLASS 440

77	5,302,147

CLASS 446

119	5,302,148

CLASS 482

135	5,302,149
138	5,302,150

CLASS 454

56	5,302,151
127	5,302,152
158	5,302,153

CLASS 459

3.2	5,303,393
84	5,303,394
127	5,303,395
134	5,303,396
142	5,303,397
158.4	5,303,399
182.1	5,303,398
186.1	5,303,400
	5,303,401
	5,303,402
192.3	5,303,403
200.1	5,303,404
213	5,303,405
219	5,303,409
222	5,303,406
	5,303,407
	5,303,408
226.4	5,303,410
254	5,303,411
260	5,303,412
266	5,303,413
296	5,303,414
	5,303,415
	5,303,416
314	5,303,417
326	5,303,418
327	5,303,419
343	5,303,420
344	5,303,421
346	5,303,422

CLASS 473

24	5,302,154

CLASS 474

[illegible]	5,302,155
148	5,302,156
[illegible]	5,302,157

CLASS 475

160	5,302,158
227	5,302,159
348	5,302,160

CLASS [illegible]

8	5,302,161
54	5,302,162
66	5,302,163
91	5,302,164
108	5,302,165

CLASS [illegible]

1	5,302,166

CLASS [illegible]

400	5,302,167

CLASS 501

12	5,302,556
19	5,302,557
80	5,302,558
86	5,302,559
88	5,302,560
89	5,302,561
99	5,302,562
111	5,302,563
127	5,302,564
141	5,302,565

CLASS [illegible]

8	5,302,566
67	5,302,567
331	5,302,568
342	5,302,569
401	5,302,570

CLASS [illegible]

221	5,302,571
227	5,302,572
	5,302,573
	5,302,574
	5,302,575
	5,302,576
	5,302,577

CLASS 504

117	5,302,578
206	5,302,579

CLASS 505

233	5,302,580

CLASS 514

12	5,302,581
23	5,302,582
[illegible]	5,302,583
80	5,302,584
81	5,302,585
	5,302,586
184	5,302,587
192	5,302,588
210	5,302,589
[illegible]	5,302,590
221	5,302,591
230.8	5,302,592
232.8	5,302,593
249	5,302,594
255	5,302,595
[illegible]	5,302,596
[illegible]	5,302,597
275	5,302,598
[illegible]	5,302,599
[illegible]	5,302,621
[illegible]	5,302,600
[illegible]	5,302,601
325	5,302,602
336	5,302,603
338	5,302,604
341	5,302,605
357	5,302,606
361	5,302,607
371	5,302,608
[illegible]	5,302,609
381	5,302,610
411	5,302,611
	5,302,612
451	5,302,613
471	5,302,614
	5,302,615
	5,302,616
573	5,302,617
635	5,302,620
718	5,302,619

CLASS 518

713	5,302,622

CLASS 521

38	5,302,623
81	5,302,624
146	5,302,625
156	5,302,626

CLASS 522

13	5,302,627

CLASS 523

105	5,302,628
111	5,302,629
118	5,302,630
[illegible]	5,302,631
213	5,302,632
218	5,302,633
219	5,302,634
348	5,302,635

CLASS 524

11	5,302,636
37	5,302,637
[illegible]	5,302,638
[illegible]	5,302,639
100	5,302,640
	5,302,641
	5,302,642
109	5,302,643
114	5,302,644
[illegible]	5,302,645
127	5,302,646
141	5,302,647
[illegible]	5,302,648
274	5,302,649
[illegible]	5,302,650
[illegible]	5,302,651
424	5,302,652
451	5,302,653
458	5,302,654
547	5,302,655
579	5,302,656
588	5,302,657
732	5,302,658
[illegible]	5,302,659
871	5,302,660

CLASS 525

[illegible]	5,302,661
[illegible]	5,302,662
67	5,302,663
	5,302,664
71	5,302,665
113	5,302,666
314	5,302,667
328.2	5,302,668
[illegible]	5,302,669
444.5	5,302,670
477	5,302,671
[illegible]	5,302,672
	5,302,673

CLASS 526

114	5,302,674
125	5,302,675
238.23	5,302,676
[illegible]	5,302,677
246	5,302,678
252	5,302,679
	5,302,680
340.2	5,302,681

CLASS 528

14	5,302,682
21	5,302,683
26	5,302,684
33	5,302,685
153	5,302,687
155	[illegible]
194	5,302,689
279	5,302,690
[illegible]	5,302,691
353	5,302,692
354	5,302,693
	5,302,694
[illegible]	5,302,695
[illegible]	5,302,696

CLASS [illegible]

325	5,302,697

350	5,302,698
371	5,302,699
391.5	5,302,700
399	5,302,701
	5,302,702
404	5,302,703

CLASS 534

738	5,302,704

CLASS 536

7.4	5,302,705
23.1	5,302,706
25.33	5,302,707

CLASS 540

123	5,302,708
131	5,302,709
140	5,302,710
215	5,302,711
222	5,302,712
230	5,302,713
472	5,302,714
[illegible]	5,302,715
519	5,302,716

CLASS 544

235	5,302,718
360	5,302,719

CLASS 546

216	5,302,720
226	5,302,717

CLASS 548

429	5,302,721
437	5,302,723
452	5,302,724
479	5,302,725
531	5,302,722
543	5,302,726

CLASS 549

22	5,302,727
349	5,302,729
378	5,302,728
389	5,302,730
394	5,302,731

CLASS 554

98	5,302,732

CLASS 556

11	5,302,733
[illegible]	5,302,734
419	5,302,735
430	5,302,736
436	5,302,737

CLASS 558

162	5,302,738
[illegible]	5,302,758
257	5,302,739
401	5,302,740

CLASS 560

7	5,302,741
[illegible]	5,302,742
49	5,302,743
75	5,302,744
126	5,302,745
[illegible]	5,302,746
265	5,302,747
	5,302,748
333	5,302,749

CLASS 562

401	5,302,751
496	5,302,752

CLASS 564

173	5,302,753
[illegible]	5,302,754
[illegible]	5,302,755
488	5,302,756

CLASS 568

58	5,302,757
366	5,302,759
[illegible]	5,302,760
726	5,302,761
727	5,302,774
[illegible]	5,302,762
909.5	5,302,750
934	5,302,763

CLASS 570

123	5,302,764
	5,302,765
151	5,302,766
184	5,302,767
185	5,302,768

CLASS 585

455	5,302,769
481	5,302,770
532	5,302,772
624	5,302,773
639	5,302,775
823	5,302,771

CLASS 600

3	5,302,168

CLASS 601

[illegible]	5,301,659
	5,301,660
84	5,301,661

CLASS 602

[illegible]	5,302,169
17	5,302,170
19	5,302,171

CLASS 604

20	5,302,172
338	5,302,173

CLASS 607

[illegible]	5,301,669
[illegible]	5,301,688
116	5,301,687

CLASSIFICATION OF DESIGNS

D1—	127	345,851
D2—	861	345,852
	[illegible]	345,853
	[illegible]	345,854
D3—	9	345,855
	10	345,856
	24	345,857
	203	345,861
	226	345,862
	247	345,859
		345,860
D4—	131	345,863
D6—	334	345,864
	336	345,865
	366	345,866
		345,867
	369	345,868
	381	345,869
		345,870
	405	345,871
	[illegible]	345,872
	[illegible]	345,873
	[illegible]	345,874
	518	345,875
		345,876
	545	345,877
	583	345,878
	601	345,879
	634	345,858
D7—	305	345,880
	309	345,881
		345,882
		345,883
	318	345,884
	323	345,885
	[illegible]	345,886
	376	345,887
	379	345,888
	396.2	345,889
	402	345,890
		345,891
	543	345,892
	545	345,893
	552	345,894
	560	345,895
	[illegible]	345,896
	[illegible]	345,897
	676	345,898
D8—	14	345,899
		345,900
	[illegible]	345,901
	330	345,902
	349	345,903
	354	345,904
	355	345,905
	373	345,906
D9—	305	345,907
		345,908
	415	345,909
	418	345,910
	425	345,911
	429	345,912
	456	345,913
	521	345,914
		345,915
	523	345,916
		345,917
	529	345,918
		345,919
	571	345,920
D10—	[illegible]	345,921
	[illegible]	345,922
		345,923
		345,924
	26	345,925
	32	345,926
	60	345,927
	[illegible]	345,928
	70	345,929
	74	345,930
	104	345,931
	106	345,932
	109	345,933
	126	345,934
		345,935
		345,936
		345,937
		345,938
		345,939
		345,940
		345,941
D11—	119	345,942
	130.1	345,943
		345,944
		345,945
	131	345,946
	[illegible]	345,947
D12—	112	345,948
	136	345,949
	146	345,950
	147	345,951
		345,952
	151	345,953
	162	345,954
	178	345,955
	181	345,956
	307	345,957
D13—	[illegible]	345,958
	110	345,959
	144	345,960
	147	345,961
	150	345,962
	182	345,963
D14—	100	345,964
		345,965
	105	345,966
	106	345,967
	113	345,968
	114	345,969
	125	345,970
	130	345,971
		345,972
	146	345,973
	149	345,974
		345,975
		345,976
		345,977
	151	345,978
		345,979
	191	345,980
	206	345,981
	230	345,982
D15—	10	345,983
	139	345,984
		345,985
	146	345,986
D16—	[illegible]	345,987
		345,988
		345,989
D17—	1	345,990
D19—	36	345,991
D20—	22	345,992
D21—	11	345,993
	[illegible]	345,994
	65	345,995
	104	345,996
	143	345,997
	191	345,998
	195	345,999
	197	346,000
	204	346,001
	219	346,002
D22—	[illegible]	346,003
	119	346,004
	128	346,005
	140	346,006
	142	346,007
	145	346,008
D23—	220	346,009
	236	346,010
	245	346,011
	252	346,012
	255	346,013
	[illegible]	346,014
	285	346,015
	[illegible]	346,016
	336	346,017
	367	346,018
	382	346,019
	387	346,020
D24—	126	346,021
	135	346,022
	143	346,023
	144	346,024
	170	346,025
	174	346,026
	[illegible]	346,027
	190	346,028
	200	346,029
	213	346,030
D25—	114	346,031
	119	346,032
		346,033
	124	346,034
		346,035
	126	346,036
	151	346,037
D26—	6	346,038
	105	346,039
D28—	7	346,040
		346,041
	[illegible]	346,042
	61	346,043
	87	346,044
		346,045
D29—	22	346,046
D30—	154	346,047
	[illegible]	346,048
D32—	15	346,049
	[illegible]	346,050
	21	346,051
	22	346,052
	31	346,053
	54	346,054
		346,055
D34—	8	346,056
	[illegible]	346,057
	21	346,058

CLASSIFICATION OF PLANTS

P.—	1	8,677	8,679	8,681	53.3	8,683	82.2	8,685	8,687
		8,678	[illegible]	8,682		8,684	87.1	8,686	

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PATENTS

01 :	5,301,918		5,301,692		5,302,448		5,303,134		5,301,513		5,302,083
	5,302,296		5,301,695		5,302,461		5,303,146		5,301,544		5,302,096
	5,302,799		5,301,703		5,302,474		5,303,159		5,301,578		5,302,110
	5,302,804		5,301,705		5,302,475		5,303,161		5,301,594		5,302,112
	5,302,805		5,301,710		5,302,477		5,303,185		5,301,663		5,302,175
04 :	5,301,384		5,301,733		5,302,491		5,303,187		5,301,741		5,302,180
	5,301,407		5,301,759		5,302,509		5,303,195		5,301,773		5,302,217
	5,301,420		5,301,765		5,302,516		5,303,220		5,301,801		5,302,224
	5,301,446		5,301,768		5,302,546		5,303,244		5,301,822		5,302,242
	5,301,606		5,301,778		5,302,551		5,303,246		5,301,857		5,302,265
	5,301,651		5,301,831		5,302,561		5,303,256		5,302,042		5,302,285
	5,301,701		5,301,832		5,302,579		5,303,269		5,302,266		5,302,319
	5,301,817		5,301,836		5,302,625		5,303,274		5,302,284		5,302,351
	5,302,356		5,301,853		5,302,649		5,303,275		5,302,292		5,302,426
	5,302,534		5,301,854		5,302,703		5,303,286		5,302,295		5,302,859
	5,302,780		5,301,856		5,302,707		5,303,302		5,302,378		5,302,929
	5,303,084		5,301,860		5,302,715		5,303,309		5,302,585		5,302,947
	5,303,214		5,301,861		5,302,726		5,303,320		5,302,679		5,302,963
	5,303,219		5,301,919		5,302,748		5,303,321		5,302,696		5,303,020
	5,303,297		5,301,945		5,302,781		5,303,323		5,302,785		5,303,043
	5,303,360		5,301,946		5,302,824		5,303,329		5,302,786		5,303,166
	5,303,418		5,301,955		5,302,826		5,303,334		5,302,789		5,303,181
05 :	5,301,398		5,301,963		5,302,828		5,303,358		5,302,833		5,303,227
	5,301,970		5,301,964		5,302,836		5,303,381		5,302,925		5,303,240
	5,302,234		5,301,973		5,302,861		5,303,384		5,303,012		5,303,248
06 :	5,301,375		5,301,975		5,302,865		5,303,388		5,303,113		5,303,300
	5,301,377		5,301,990		5,302,866		5,303,393		5,303,127		5,303,310
	5,301,382		5,301,991		5,302,890	08 :	5,301,388		5,303,136		5,303,402
	5,301,392		5,302,013		5,302,900		5,301,453		5,303,142		5,303,405
	5,301,416		5,302,015		5,302,905		5,301,557		5,303,165		5,303,408
	5,301,431		5,302,022		5,302,915		5,301,631	10 :	5,301,621		5,303,409
	5,301,433		5,302,039		5,302,936		5,301,664		5,301,719		5,303,411
	5,301,435		5,302,040		5,302,942		5,301,686		5,301,738		5,303,416
	5,301,436		5,302,052		5,302,946		5,301,902		5,301,823		5,303,421
	5,301,463		5,302,064		5,302,956		5,301,977		5,302,489	13 :	5,301,466
	5,301,471		5,302,067		5,302,959		5,302,198		5,302,532		5,301,517
	5,301,478		5,302,107		5,302,964		5,302,237		5,302,691		5,301,615
	5,301,481		5,302,130		5,302,978		5,302,273		5,302,756		5,301,669
	5,301,485		5,302,148		5,303,001		5,302,297		5,302,765		5,301,797
	5,301,498		5,302,164		5,303,002		5,302,409		5,302,766		5,301,812
	5,301,510		5,302,166		5,303,022		5,302,863	12 :	5,301,374		5,301,942
	5,301,543		5,302,168		5,303,023		5,302,870		5,301,448		5,301,960
	5,301,565		5,302,171		5,303,026		5,302,920		5,301,451		5,302,058
	5,301,588		5,302,264		5,303,035		5,303,034		5,301,460		5,302,227
	5,301,592		5,302,272		5,303,042		5,303,090		5,301,472		5,302,388
	5,301,613		5,302,286		5,303,064		5,303,121		5,301,527		5,302,403
	5,301,623		5,302,334		5,303,070		5,303,172		5,301,627		5,302,419
	5,301,624		5,302,349		5,303,083		5,303,265		5,301,628		5,302,958
	5,301,637		5,302,357		5,303,095		5,303,386		5,301,678		5,303,055
	5,301,657		5,302,387		5,303,101	09 :	5,301,402		5,301,820		5,303,295
	5,301,658		5,302,413		5,303,115		5,301,425		5,301,883		5,303,395
	5,301,662		5,302,434		5,303,124		5,301,457		5,301,921	15 :	5,302,003
	5,301,674		5,302,440		5,303,125		5,301,469		5,302,043		5,302,676

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	5,302,948		5,302,752		5,301,997		5,301,808		5,302,498		5,302,041
16 :	Re. 34,583		5,302,755		5,302,069		5,301,837		5,302,499		5,302,048
	5,302,233		5,302,763		5,302,073		5,301,840		5,302,544		5,302,078
	5,302,238		5,302,768		[illegible]		5,301,844		5,302,547		5,302,085
	5,302,239	23 :	5,301,704		5,302,081		5,301,888		5,302,562		5,302,086
	5,302,241		5,302,245		5,302,088		5,301,988		5,302,574		5,302,103
	5,302,891		5,303,204		5,302,095		5,302,037		5,302,598		5,302,151
17 :	5,301,396	24 :	5,301,381		5,302,119		5,302,082		5,302,629		5,302,200
	5,301,423		5,301,437		5,302,158		5,302,114		5,302,637		5,302,207
	5,301,475		5,301,488		5,302,215		5,302,117		5,302,662		5,302,231
	5,301,477		5,301,566		5,302,225		5,302,126		5,302,680		5,302,305
	5,301,519		5,301,685		5,302,269		5,302,163		5,302,702		5,302,339
	5,301,554		5,301,722		5,302,328		5,302,170		5,302,753		5,302,341
	5,301,558		5,301,770		5,302,337		5,302,279		5,302,757		5,302,392
	5,301,591		5,301,870		5,302,371		5,302,308		5,302,778		5,302,465
	5,301,601		5,301,904		5,302,379		5,302,325		5,302,812		5,302,466
	5,301,659		5,302,054		5,302,382		5,302,327		5,302,813		5,302,473
	5,301,690		5,302,165		5,302,450		5,302,330		5,302,851		5,302,652
	5,301,698		5,302,267		5,302,457		5,302,348		5,302,862		5,302,687
	5,301,711		5,302,302		5,302,493		5,302,373		5,302,912		5,302,760
	5,301,718		5,302,455		5,302,597		5,302,375		5,302,928		5,302,772
	5,301,721		5,302,510		5,302,599		5,302,377		5,302,935		5,302,934
	5,301,775		5,302,511		5,302,609		5,302,380		5,302,941		5,303,119
	5,301,859		5,302,515		5,302,613		5,302,381		5,302,955		5,303,128
	5,301,871		5,302,567		5,302,623		5,302,400		5,302,961		5,303,148
	5,301,873		5,302,830		5,302,627		5,302,405		5,302,973		5,303,152
	5,301,907		5,303,149		5,302,632		5,302,412		5,302,975		5,303,372
	5,301,941		5,303,208		5,302,658		5,302,418		5,302,977		5,303,383
	5,301,947		5,303,287		5,302,671		5,302,445		5,302,992	[illegible] :	5,301,483
	5,301,996	25 :	5,301,458		5,302,709		5,302,563		5,302,993		5,301,751
	5,302,012		5,301,511		5,302,773		5,302,590		5,302,996		5,301,829
	5,302,028		5,301,620		5,302,835		5,302,604		5,302,997		5,301,984
	5,302,059		5,301,673		5,303,036		5,302,624		5,303,003		5,302,205
	5,302,066		5,301,726		5,303,122		5,302,628		5,303,008		5,302,290
	5,302,068		5,301,891		5,303,133		5,302,716		5,303,014		5,302,366
	5,302,127		5,301,910		5,303,168		5,302,721		5,303,017		5,302,879
	5,302,137		5,301,969		5,303,171		5,302,750		5,303,028	41 :	5,301,683
	5,302,138		5,301,993		5,303,205		5,302,767		5,303,056		5,302,075
	5,302,193		5,302,025		5,303,288		5,302,769		5,303,065		5,302,122
	5,302,253		5,302,136		5,303,352		5,302,771		5,303,074		5,302,197
	5,302,280		5,302,139	27 :	5,301,378		5,302,803		5,303,080		5,302,210
	5,302,282		5,302,141		5,301,452		5,302,831		5,303,137		5,302,809
	5,302,304		5,302,191		5,301,467		5,302,842		5,303,141	42 :	5,301,408
	5,302,323		5,302,257		5,301,541		5,302,847		5,303,154		5,301,415
	5,302,361		5,302,271		5,301,580		5,302,902		5,303,157		5,301,424
	5,302,581		5,302,318		5,301,633		5,302,914		5,303,169		5,301,441
	5,302,583		5,302,320		5,301,677		5,302,917		5,303,170		5,301,443
	5,302,601		5,302,343		5,301,806		5,302,918		5,303,176		5,301,462
	5,302,732		5,302,344		5,301,826		5,302,966		5,303,196		5,301,479
	5,302,857		5,302,384		5,301,989		5,302,981		5,303,206		5,301,496
	5,302,868		5,302,386		5,302,000		5,303,078		5,303,282		5,301,545
	5,302,889		5,302,441		5,302,023		5,303,079		5,303,296		5,301,573
	5,302,982		5,302,446		5,302,026		5,303,116		5,303,305		5,301,574
	5,303,030		5,302,490		5,302,084		5,303,290		5,303,312		5,301,610
	5,303,054		5,302,526		5,302,124		5,303,307		5,303,340		5,301,734
	5,303,112		5,302,553		5,302,154		5,303,316		5,303,341		5,301,739
	5,303,132		5,302,723		5,302,161		5,303,324		5,303,351		5,301,802
	5,303,280		5,302,827		5,302,222		5,303,330		5,303,356		5,301,828
	5,303,289		5,302,848		5,302,307	35 :	5,301,430		5,303,361		5,301,863
	5,303,298		5,302,896		5,302,423		5,301,612		5,303,363		5,301,868
	5,303,322		5,302,897		5,302,431		5,302,881		5,303,377		5,301,906
	5,303,325		5,302,960		5,302,790		5,302,882	37 :	5,301,551		5,301,952
18 :	5,301,389		5,302,970		5,302,945	36 :	5,301,499		5,301,714		5,301,953
	5,301,422		5,303,031		5,303,096		5,301,505		5,301,958		5,301,983
	5,301,595		5,303,069		5,303,105		5,301,507		5,302,030		5,302,004
	5,301,654		5,303,207		5,303,167		5,301,514		5,302,172		5,302,005
	5,301,875		5,303,210		5,303,306		5,301,640		5,302,190		5,302,027
	5,301,876		5,303,235		5,303,319		5,301,655		5,302,300		5,302,056
	5,301,893		5,303,257		5,303,342		5,301,679		5,302,557		5,302,115
	5,302,140		5,303,266	28 :	5,301,626		5,301,680		5,302,589		5,302,125
	5,302,283		5,303,313	[illegible] :	5,302,051		5,301,684		5,302,643		5,302,134
	5,302,396		5,303,332		5,301,376		5,301,696		5,302,700		5,302,167
	5,302,531		5,303,349		5,301,490		5,301,771		5,302,731		5,302,177
	5,302,612		5,303,373		5,302,014		5,301,785		5,302,758		5,302,188
	5,302,711		5,303,375		5,302,153		5,301,791		5,302,853		5,302,213
	5,302,722		5,303,379		5,302,309		5,301,803		5,302,939		5,302,291
	5,302,724		5,303,380		5,302,363		5,301,818		5,303,160		5,302,303
	5,302,747		5,303,382		5,302,369		5,301,825		5,303,229		5,302,383
	5,302,823		5,303,391		5,302,610		5,301,827		5,303,237		5,302,394
	5,303,063		5,303,392		5,302,717		5,301,858		5,303,238		5,302,401
	5,303,163		5,303,412		5,302,938		5,301,892		5,303,311		5,302,429
	5,303,398		4,560,985	30 :	5,301,449		5,301,903		5,303,327		5,302,462
19 :	5,301,495	26 :	Re. 34,581	31 :	5,301,834		5,301,924	38 :	5,302,806		5,302,533
	5,301,607		5,301,421		5,302,517		5,301,938	39 :	Re. 34,584		5,302,555
	5,301,813		5,301,429		5,302,932		5,301,943		5,301,394		5,302,566
	5,301,848		5,301,455		5,301,965		5,301,981		5,301,395		5,302,584
	5,301,925		5,301,461	32 :	5,302,049		5,302,071		5,301,413		5,302,592
	5,302,402		5,301,533		5,302,350		5,302,159		5,301,500		5,302,600
	5,302,787		5,301,542		5,302,570		5,302,235		5,301,508		5,302,606
	5,303,394		5,301,563		4,133,550		5,302,246		5,301,509		5,302,614
20 :	5,301,798		5,301,567	33 :	5,301,405		5,302,247		5,301,630		5,302,616
	5,301,809		5,301,572		5,301,445		5,302,255		5,301,652		5,302,668
	5,302,072		5,301,749		5,301,609		5,302,278		5,301,681		5,302,916
	5,302,331		5,301,774		5,301,687		5,302,299		5,301,728		5,303,029
	5,303,057		5,301,783		5,301,838		5,302,345		5,301,744		5,303,261
	5,303,326		5,301,835		5,302,024		5,302,358		5,301,814		5,303,387
21 :	5,301,523		5,301,855		5,302,150		5,302,359		5,301,843	44 :	5,301,576
	5,302,133		5,301,872		5,302,944		5,302,362		5,301,889		5,301,699
	5,302,838		5,301,877		5,303,347		5,302,374		5,301,901		5,302,411
22 :	5,301,702		5,301,880		5,301,426		5,302,406		5,301,905		5,302,494
	5,301,799		5,301,913	34 :	5,301,524		5,302,420		5,301,915		5,302,688
	5,301,949		5,301,916		5,301,603		5,302,442		5,301,950	45 :	5,301,494
	5,302,113		5,301,954		5,301,608		5,302,467		5,301,957		5,301,596
	5,302,263		5,301,971		5,301,667		5,302,478		5,301,974		5,301,653
	5,302,733		5,301,987		5,301,671		5,302,485		5,301,995		5,302,223
	5,302,751		5,301,994				5,302,496		5,302,021		5,302,565

	5,303,276		5,301,948		5,302,874		5,301,688		5,301,761		5,303,362
47 :	5,301,584		5,301,992		5,302,888		5,301,737		5,301,787		5,303,367
	5,301,763		5,302,047		5,302,950		5,301,807		5,301,805	54 :	5,301,474
	5,301,895		5,302,087		5,302,952		5,301,900		5,301,967		5,301,729
	5,302,118		5,302,093		5,302,957		5,301,926		5,301,998		5,302,646
	5,302,129		5,302,116		5,302,985		5,301,939		5,302,250	55 :	5,301,373
	5,302,179		5,302,132		5,303,040		5,301,979		5,302,415		5,301,427
	5,302,219		5,302,204		5,303,123		5,302,211		5,302,451		5,301,553
	5,302,740		5,302,228		5,303,138		5,302,258		5,302,634		5,301,577
	5,302,744		5,302,287		5,303,145		5,302,385		5,302,692		5,301,616
48 :	5,301,442		5,302,293		5,303,180		5,302,395		5,302,729		5,301,643
	5,301,538		5,302,294		5,303,190		5,302,886		5,302,822		5,301,644
	5,301,560		5,302,352		5,303,191		5,303,085		5,303,314		5,301,793
	5,301,561		5,302,389		5,303,202		5,303,260	53 :	5,301,465		5,301,917
	5,301,706		5,302,436		5,303,203		5,303,281		5,301,629		5,301,982
	5,301,708		5,302,520		5,303,259	50 :	5,301,428		5,301,713		5,301,999
	5,301,709		5,302,539		5,303,267		5,301,532		5,301,764		5,302,017
	5,301,712		5,302,615		5,303,299		5,302,123		5,301,908		5,302,121
	5,301,723		5,302,667		5,303,355		5,303,179		5,302,162		5,302,174
	5,301,724		5,302,674		5,303,364	51 :	5,301,393		5,302,289		5,302,248
	5,301,750		5,302,675		5,303,369		5,301,450		5,302,410		5,302,288
	5,301,752		5,302,681		5,303,370		5,301,464		5,302,482		5,302,443
	5,301,754		5,302,695		5,303,378		5,301,491		5,302,519		5,302,449
	5,301,755		5,302,706		5,303,390		5,301,516		5,302,529		5,302,476
	5,301,756		5,302,714		5,303,406		5,301,647		5,302,923		5,302,530
	5,301,757		5,302,728		5,303,407		5,301,682		5,303,151		5,302,788
	5,301,760		5,302,737		5,039,428		5,301,693		5,303,200		5,302,858
	5,301,911		5,302,782	49 :	5,301,482		5,301,694		5,303,262		5,303,037
	5,301,944		5,302,849		5,301,668						

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04 :	345,943		346,022		345,865	27 :	345,859		345,983		346,007
	346,021		346,024		345,888		345,894		345,998		346,016
	346,038		346,026		345,904		345,905		346,055		346,019
	346,053		346,054		345,907		345,912	37 :	345,872		346,020
06 :	345,858	08 :	345,896		345,917		345,961		346,005		346,056
	345,868		345,913		345,977		345,965	39 :	345,875	45 :	345,873
	345,889		346,032	18 :	345,928	28 :	345,922		345,921		345,952
	345,910		346,040		345,971		345,923		345,933	48 :	345,877
	345,944		346,041		345,972		345,924		345,951		345,901
	345,945	09 :	345,926	19 :	345,954		346,034		345,960		345,958
	345,946		346,009	20 :	346,023		346,035		345,995		345,962
	345,956	12 :	345,856	22 :	345,929	33 :	345,878		345,997		345,964
	345,968		345,861		345,950	34 :	345,862		345,999		345,966
	345,969		345,891		346,057		345,930		346,036		346,002
	345,978		345,898	23 :	345,931		345,974		346,051	51 :	345,870
	345,979		345,900	24 :	345,857		345,975		346,052		345,890
	345,981		345,908		345,897		345,986	40 :	345,876	53 :	345,959
	345,982		345,980	25 :	345,852		346,017		346,003		346,018
	345,992	13 :	346,000		345,879	36 :	345,854		346,048	54 :	345,853
	346,001	15 :	345,899	26 :	345,863		345,909	42 :	345,893	55 :	346,012
	346,004		345,932		345,906		345,914		345,895		346,013
	346,010	16 :	345,871		345,955		345,915		345,903		346,033
	346,011	17 :	345,855		346,008		345,920		345,942		346,043
	346,015		345,860		346,047		345,976				

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12 :	8,685	55 :	8,683		8,684						

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
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Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 16, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,007,108 through 5,008,958
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 14, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,656,667 through 4,658,440
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 12, 1983 for which maintenance fees due at 11 years and six months may now be paid, the patents have patent numbers within the following ranges:

Utility Patents 4,379,349 through 4,380,089
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 6, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 33,223	07/144,801	05/29/90
(4,568,485)	(06/651,625)	(02/04/86)
Re 34,270	07/783,831	06/01/93
(4,899,237)	(07/366,366)	(02/06/90)
4,314,667	06/216,577	02/09/82
4,314,778	06/233,975	02/09/82
4,314,838	06/239,281	02/09/82
4,314,841	06/235,216	02/09/82
4,314,854	06/240,713	02/09/82
4,314,896	06/234,997	02/09/82
4,314,906	06/235,017	02/09/82
4,315,030	06/223,470	02/09/82
4,315,068	06/229,216	02/09/82
4,315,076	06/254,137	02/09/82
4,315,077	06/267,460	02/09/82
4,315,080	06/267,459	02/09/82
4,315,272	06/219,039	02/09/82
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4,567,679	06/689,612	02/04/86
4,567,681	06/555,786	02/04/86
4,567,682	06/575,459	02/04/86
4,567,686	06/682,097	02/04/86
4,567,688	06/652,310	02/04/86
4,567,689	06/567,419	02/04/86
4,567,694	06/558,266	02/04/86
4,567,695	06/591,769	02/04/86
4,567,700	06/478,308	02/04/86
4,567,702	06/519,196	02/04/86
4,567,705	06/443,470	02/04/86
4,567,706	06/519,867	02/04/86
4,567,707	06/598,490	02/04/86
4,567,709	06/463,346	02/04/86
4,567,712	06/654,361	02/04/86
4,567,714	06/539,550	02/04/86
4,567,718	06/720,940	02/04/86
4,567,720	06/637,124	02/04/86
4,567,722	06/647,236	02/04/86
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4,567,739	06/589,168	02/04/86
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4,567,770	06/477,448	02/04/86

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4,567,773	06/568,394	02/04/86
4,567,776	06/508,466	02/04/86
4,567,778	06/650,939	02/04/86
4,567,782	06/645,784	02/04/86
4,567,783	06/466,260	02/04/86
4,567,788	06/661,277	02/04/86
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Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,170,008, Re. S.N. 08/133,987, Oct. 18, 1993, Cl. 354/289.1, CAMERA WITH OPERATION SWITCH, Yoichi Tosaka, et. al., Owner of Record: *Inventors,* Attorney or Agent: Richard P. Baver, Ex. Gp.: 2101,

4,841,325, Re. S.N. 08/204,661, March 2, 1994, Cl. 354/402, AUTOMATIC FOCUSING DEVICE FOR CAMERA, Kunihisa Hoshino, (deceased), et. al., Owner of Record: *Nikon Corp., Tokyo, Japan,* Attorney or Agent: Nelson H. Sharpiro, Ex. Gp.: 2101

4,996,230, Re. S.N. 08/197,711, Feb. 17, 1994, Cl. 546/321, N-FLUOROPYRIDINIUM SALT AND PROCESS FOR PREPARING SAME, Teruo Umemoto, et. al., Owner of Record: *Onoda Cement Co., Ltd., Onoda City, Japan, Sagami Chemical Research Center, Tokyo, Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1201

5,029,554, Re. S.N. 08/088,525, July 9, 1993, Cl. 118/715, SEMICONDUCTOR MANUFACTURING APPARATUS INCLUDING A TEMPERATURE CONTROL MECHANISM, Naoto Miyashita, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan,* Attorney or Agent: Doris J. Johnson, Ex. Gp.: 1104

5,036,553, Re. S.N. 08/102,637, Aug. 5, 1993, Cl. 4/313, FULLY AUTOMATIC TOILET SYSTEM, Dilworth D. Sanderson, Owner of Record: *Inventor,* Attorney or Agent: Bernard Malina, Ex. Gp.: 2403

5,058,099, Re. S.N. 08/136,019, Oct. 14, 1994, Cl. 369/288, MAGNETO-OPTICAL MEMORY ELEMENT, Yoshiteru Murakami, et. al., Owner of Record: *Sharp Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Anthony L. Birch, Ex. Gp.: 2512

5,079,690, Re. S.N. 08/178,743, Jan. 7, 1994, Cl. 364/148, SELF-OPTIMIZING METHOD AND MACHINE, Chou H. Li, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 2306

5,088,595, Re. S.N. 08/200,178, Feb. 17, 1994, Cl. 198/750, WATERPROOF RECIPROCATING CONVEYOR, Olof A. Hallstrom, Jr., Owner of Record: Inventor, Attorney or Agent: Peter E. Heuser, Ex. Gp.: 3101

5,089,186, Re. S.N. 08/198,141, Feb. 17, 1994, Cl. 264/25, PROCESS FOR CORE REMOVAL FROM MOLDED PRODUCTS, Timothy M. Moore, et. al., Owner of Record: *Advanced Plastics Partnership, Moline, Ill.,* Attorney or Agent: Daniel M. Riess, Ex. Gp.: 1307

5,090,870, Re. S.N. 08/201,577, Feb. 25, 1993, Cl. 416/241R, METHOD FOR FLUENT MASS SURFACE TEXTURING A TURBINE VANE, Glenn R. Gillian, Owner of Record: *Inventor,* Attorney or Agent: Lowell Anderson, Ex. Gp.: 3401

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5,098,975, Re. S.N. 08/197,279, Feb. 16, 1994, Cl. 526/312, ANISOTROPIC LIQUID CRYSTALLINE POLYMER FILMS, Jurgen Omeis, et. al., Owner of Record: *Rohm GmbH Chemische Fabrik, Darmstadt, West Germany,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1505

5,122,829, Re. S.N. 08/202,204, Feb. 25, 1994, Cl. 354/414, CAMERA HAVING AN AUTOMATICALLY OPERATING BUILT-IN STROBE, Satoshi Takami, Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha,* Tokyo, Japan, Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2101

5,135,279, Re. S.N. 08/198,904, Feb. 18, 1994, Cl. 296/97.1, WINDSHIELD SHADE ASSEMBLY FOR MOTOR VEHICLES, Annetta Beatty, Owner of Record: *Inventor,* Attorney or Agent: Leonard Cooper, Ex. Gp.: 3102

5,136,647, Re. S.N. 08/156,120, Nov. 22, 1993, Cl. 380/49, METHOD FOR SECURE TIME-STAMPING OF DIGITAL DOCUMENTS, Stuart A. Haber, et. al., *Owner of Record:* Bell Communications Research, Inc., Livingston, N.J., Attorney or Agent: Lionel N. White, Ex. Gp.: 2202

5,173,970, Re. S.N. 08/203,026, Feb. 28, 1994, Cl. 2/410, COMBINED VISORED CAP TYPE PROTECTIVE HELMET AND POUCH FOR BICYCLIST OR THE LIKE, Roy Shifrin, Owner of Record: *Inventor,* Attorney or Agent: Donald E. Zinn, Ex. Gp.: 2407

5,193,375, Re. S.N. 08/197,201, Feb. 10, 1994, Cl. 72/53, METHOD FOR ENHANCING THE WEAR PERFORMANCE AND LIFE CHARACTERISTICS OF A BRAKE DRUM, Thomas J. Meister, Owner of Record: *Metal Improvement Company, Inc., Paramus, N.J.,* Attorney or Agent: Stefan J. Klauber, Ex. Gp.: 3201

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D 310,566, Reexam. No. 90/003,334, Feb. 14, 1994, Cl. D24/205, WHIRLPOOL BATHTUB, Remo C. Jacuzzi, Owner of Record: *Jason International, Inc., Little Rock,* Ariz., Attorney or Agent: Wegner, Cantor, Mueller & Player, Washington, D.C., Ex. Gp.: 2904, Requester: Melvin K. Silverman, c/o American Whirlpool Prod., Ft. Lauderdale, Fla.

4,551,810, Reexam. No. 90/003,327, Feb. 1, 1994, Cl. 364/474.24, METHOD AND APPARATUS FOR DESIGNING DUCT WORK AND FOR PRODUCING PATTERNS FOR CONDUIT SECTIONS IN THE DESIGNED DUCT WORK, Richard W. Levine, Owner of Record: *Construction Technology, Inc., Elmsford, N.Y.,* Attorney or Agent: Louis C. Dujmich, Ostrolenk, Faber, Gerb & Soffen, New York, N.Y., Ex. Gp.: 2306, Requester: Gregor N. Neff, Curtis, Morris & Safford, New York, N.Y.

4,687,663, Reexam. No. 90/003,324, Jan. 31, 1994, Cl. 424/052, DENTAL PREPARATION, ARTICLE AND METHOD FOR STORAGE AND DELIVERY THEREOF, Hans A. Schaeffer, Owner of Record: *Chesebrough Ponds, USA Co., Greenwich, Conn.,* Attorney or Agent: Adda Gorgoris, Darby & Darby, New York, N.Y., Ex. Gp.: 1205, Requester: Burton A. Amernick, Pollock, Vande Sande & Priddy, Washington, D.C.

4,839,039, Reexam. No. 90/003,323, Jan. 27, 1994, Cl. 210/143, AUTOMATIC FLOW-CONTROL DEVICE, Natan E. Parsons, et. al., Owner of Record: *Recurrent Solutions Limited, Partnership, Cambridge, Mass.,* Attorney or Agent: Joseph H. Born, Cesari & Born, Boston, Mass., Ex. Gp.: 1306, Requester: Toto, Ltd., Kitakuyushu-Shi, Japan

4,906,938, Reexam. No. 90/003,332, Feb. 8, 1994, Cl. 324/529, POWER CURCUIT LOCATOR, John G. Konopka, Owner of Record: *Zenith Electronics Corp., Glenview, Ill.,* Attorney or Agent: John H. Coult, Zenith Electronics Corp., Glenview, Ill., Ex. Gp.: 2607, Requester: Paul Craane, Cook, Egan. McFarron & Manzo, Chicago, Ill.

4,934,518, Reexam. No. 90/003,333, Feb. 11, 1994, Cl. 198/853, MODULAR CENTER DRIVE CONVEYOR, James M. Lapeyre, Owner of Record: *The Laitram Corp., Harahan, La.,* Attorney or Agent: James T. Cronvich, The Laitram Corp., Harahan, La., Ex. Gp.: 3101, Requester: KVP Systems, Inc., Rancho Cordova, Calif.

4,934,690, Reexam. No. 90/003,328, Feb. 2, 1994, Cl. 482/053, SHOCK-FREE AEROBIC AND ANAEROBIC EXERCISING MACHINE FOR USE IN THE STANDING POSITION, John W. Bull, Owner of Record: *Inventor, Irvine, Calif.,* Attorney or Agent: F. Eugene Logan, Tustin, Calif., Ex. Gp.: 3302, Requester: Nixon & Vanderhye, Arlington, Va.

5,069,622, Reexam. No. 90/003,331, Feb. 9, 1994, Cl. 433/173, SPACER, Bo Rangert, et. al., Owner of Record: *Nobelpharma, Goteburg, Sweden,* Attorney or Agent: George Vande Sande, Pollock, Vande Sande & Priddy, Washington D.C., Ex. Gp.: 3303, Requester: Owner

5,156,872, Reexam. No. 90/003,329, Feb. 2, 1994, Cl. 426/489, JUICE EXTRACTOR, Moon H. Lee, Owner of Record: *Inventor, Busan, Republic of Korea,* Attorney or Agent: Warren N. Low, Low & Low, Arlington, Va., Ex. Gp.: 1302, Requester: Paul F. Neils, Shugrue, Mion, Zinn, MacPeak & Seas, Washington, D.C.

5,193,102, Reexam. No. 90/003,330, Feb. 4, 1994, Cl. 375/001, METHOD AND APPARATUS FOR IMPROVING DETECTION OF DATA, Reuven Meidan, et. al., Owner of Record: *Motorola, Inc.,* Schaumburg, Ill.,Attorney or Agent: Donald B. Southard, Motorola, Inc., Schaumburg, Ill., Ex. Gp.: 2202, Requester: Warren J. Krauss, Sedgwick, Detert, Moran & Arnold, San Francisco, Calif.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED FEBRUARY 28, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
285,374	71/312,549	07/28/1931
303,301	71/323,091	05/23/1933
303,303	71/333,032	05/23/1933
303,340	71/333,035	05/23/1933
303,404	71/332,687	05/23/1933
303,405	71/332,821	05/23/1933
303,417	71/332,139	05/23/1933
303,423	71/323,930	05/23/1933
303,467	71/330,398	05/23/1933
303,494	71/335,527	05/23/1933
555,221	71/564,817	02/26/1952
567,632	71/589,297	12/09/1952
570,218	71/615,893	02/10/1953
570,756	71/614,693	02/17/1953

Reg. No.	Serial Number	Reg. Date
574,805	71/526,101	05/26/1953
574,809	71/547,195	05/26/1953
574,821	71/580,868	05/26/1953
574,822	71/580,934	05/26/1953
574,826	71/585,222	05/26/1953
574,833	71/591,280	05/26/1953
574,839	71/595,435	05/26/1953
574,845	71/598,348	05/26/1953
574,851	71/601,268	05/26/1953
574,856	71/605,160	05/26/1953
574,863	71/609,175	05/26/1953
574,864	71/610,200	05/26/1953
574,870	71/613,110	05/26/1953
574,878	71/616,628	05/26/1953
574,879	71/616,939	05/26/1953
574,895	71/619,268	05/26/1953
574,898	71/619,642	05/26/1953
574,908	71/621,257	05/26/1953
574,914	71/622,440	05/26/1953
574,919	71/623,039	05/26/1953
574,933	71/625,379	05/26/1953
574,937	71/625,624	05/26/1953
574,940	71/625,955	05/26/1953
574,946	71/626,587	05/26/1953
574,947	71/626,675	05/26/1953
574,950	71/627,396	05/26/1953
574,952	71/627,715	05/26/1953
574,955	71/628,180	05/26/1953
574,959	71/628,627	05/26/1953
574,963	71/628,874	05/26/1953
574,965	71/629,179	05/26/1953
574,966	71/629,335	05/26/1953
574,967	71/629,615	05/26/1953
574,978	71/631,147	05/26/1953
574,987	71/632,141	05/26/1953
574,989	71/632,460	05/26/1953
574,992	71/632,847	05/26/1953
574,995	71/632,879	05/26/1953
574,997	71/633,166	05/26/1953
575,002	71/633,433	05/26/1953
575,003	71/633,434	05/26/1953
575,017	71/634,710	05/26/1953
575,018	71/634,749	05/26/1953
575,020	71/634,814	05/26/1953
575,029	71/638,266	05/26/1953
575,030	71/640,222	05/26/1953
575,032	71/584,702	05/26/1953
575,054	71/632,243	05/26/1953
575,057	71/641,850	05/26/1953
575,058	71/610,541	05/26/1953
941,144	72/394,559	08/15/1972
950,379	72/401,333	01/09/1973
956,042	72/416,621	03/27/1973
959,132	72/395,604	05/22/1973
959,139	72/424,902	05/22/1973
959,140	72/427,364	05/22/1973
959,143	72/400,411	05/22/1973
959,144	72/402,796	05/22/1973
959,147	72/417,590	05/22/1973
959,148	72/422,081	05/22/1973
959,149	72/422,087	05/22/1973
959,150	72/423,552	05/22/1973
959,152	72/430,434	05/22/1973
959,154	72/383,828	05/22/1973
959,156	72/413,180	05/22/1973
959,167	72/408,812	05/22/1973
959,168	72/417,723	05/22/1973
959,169	72/418,815	05/22/1973
959,172	72/425,299	05/22/1973
959,174	72/431,240	05/22/1973
959,175	72/431,778	05/22/1973
959,181	72/394,637	05/22/1973
959,186	72/397,719	05/22/1973
959,187	72/419,869	05/22/1973
959,188	72/369,268	05/22/1973
959,189	72/384,003	05/22/1973
959,190	72/384,474	05/22/1973
959,192	72/407,185	05/22/1973
959,194	72/417,027	05/22/1973
959,196	72/443,298	05/22/1973
959,198	72/406,626	05/22/1973
959,200	72/344,255	05/22/1973
959,202	72/409,808	05/22/1973
959,209	72/425,965	05/22/1973
959,210	72/397,444	05/22/1973
959,213	72/412,734	05/22/1973
959,214	72/413,803	05/22/1973
959,218	72/426,174	05/22/1973
959,220	72/426,177	05/22/1973
959,227	72/408,201	05/22/1973
959,228	72/418,733	05/22/1973
959,229	72/421,628	05/22/1973
959,231	72/403,739	05/22/1973
959,232	72/404,703	05/22/1973
959,235	72/406,066	05/22/1973
959,236	72/406,621	05/22/1973
959,241	72/412,940	05/22/1973
959,246	72/393,477	05/22/1973
959,254	72/404,758	05/22/1973
959,255	72/404,810	05/22/1973
959,258	72/405,775	05/22/1973
959,261	72/406,392	05/22/1973
959,264	72/407,603	05/22/1973
959,266	72/410,452	05/22/1973
959,267	72/412,898	05/22/1973
959,271	72/416,386	05/22/1973
959,273	72/418,090	05/22/1973
959,275	72/428,841	05/22/1973
959,277	72/358,783	05/22/1973
959,285	72/413,999	05/22/1973
959,288	72/418,282	05/22/1973
959,295	72/395,395	05/22/1973
959,296	72/396,183	05/22/1973
959,300	72/400,435	05/22/1973
959,302	72/401,489	05/22/1973
959,304	72/401,668	05/22/1973
959,309	72/404,544	05/22/1973
959,314	72/410,413	05/22/1973
959,315	72/413,332	05/22/1973
959,317	72/418,220	05/22/1973
959,318	72/418,610	05/22/1973
959,319	72/419,638	05/22/1973
959,320	72/434,897	05/22/1973
959,321	72/426,045	05/22/1973
959,329	72/405,796	05/22/1973
959,330	72/406,620	05/22/1973
959,331	72/406,623	05/22/1973
959,334	72/407,609	05/22/1973
959,336	72/413,122	05/22/1973
959,337	72/428,360	05/22/1973
959,346	72/422,090	05/22/1973
959,347	72/422,138	05/22/1973
959,348	72/422,208	05/22/1973
959,350	72/424,482	05/22/1973
959,355	72/413,770	05/22/1973
959,356	72/413,773	05/22/1973
959,359	72/400,182	05/22/1973
959,360	72/403,418	05/22/1973
959,361	72/404,532	05/22/1973
959,366	72/410,268	05/22/1973
959,369	72/418,367	05/22/1973
959,371	72/426,093	05/22/1973
959,373	72/426,306	05/22/1973
959,375	72/429,158	05/22/1973
959,376	72/429,179	05/22/1973
959,382	72/430,260	05/22/1973
959,384	72/424,114	05/22/1973
959,386	72/404,560	05/22/1973
959,387	72/406,622	05/22/1973
959,389	72/416,806	05/22/1973
959,394	72/407,911	05/22/1973
959,400	72/406,754	05/22/1973
959,408	72/421,319	05/22/1973
959,409	72/422,992	05/22/1973
959,410	72/423,711	05/22/1973
959,411	72/423,712	05/22/1973

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Reg. No.	Serial No.	Reg. Date
959,412	72/423,731	05/22/1973
959,413	72/423,732	05/22/1973
959,414	72/423,956	05/22/1973
959,417	72/361,968	05/22/1973
959,418	72/379,933	05/22/1973
959,420	72/401,032	05/22/1973
959,421	72/402,397	05/22/1973
959,426	72/411,947	05/22/1973
959,434	72/418,919	05/22/1973
959,435	72/419,244	05/22/1973
959,436	72/419,278	05/22/1973
959,438	72/419,712	05/22/1973
959,443	72/421,774	05/22/1973
959,444	72/421,797	05/22/1973
959,445	72/421,870	05/22/1973
959,450	72/401,961	05/22/1973
959,457	72/413,300	05/22/1973
959,459	72/415,819	05/22/1973
959,463	72/417,110	05/22/1973
959,464	72/417,464	05/22/1973
959,465	72/417,517	05/22/1973
959,470	72/421,579	05/22/1973
959,473	72/422,193	05/22/1973
959,476	72/412,262	05/22/1973
959,478	72/414,004	05/22/1973
959,481	72/421,470	05/22/1973
959,482	72/421,712	05/22/1973
959,483	72/422,070	05/22/1973
959,484	72/409,351	05/22/1973
959,487	72/413,299	05/22/1973
959,488	72/413,308	05/22/1973
959,493	72/390,384	05/22/1973
959,499	72/399,598	05/22/1973
959,504	72/413,064	05/22/1973
959,505	72/418,790	05/22/1973
959,506	72/421,518	05/22/1973
959,509	72/426,380	05/22/1973
959,511	72/426,049	05/22/1973
959,513	72/413,244	05/22/1973
959,516	72/406,008	05/22/1973
959,519	72/417,660	05/22/1973
959,520	72/417,661	05/22/1973
959,522	72/420,139	05/22/1973
959,523	72/420,147	05/22/1973
959,528	72/416,391	05/22/1973
959,529	72/418,317	05/22/1973
959,530	72/418,318	05/22/1973
959,532	72/419,469	05/22/1973
959,535	72/421,912	05/22/1973
959,537	72/422,821	05/22/1973
959,540	72/422,724	05/22/1973
959,550	72/403,261	05/22/1973
959,551	72/404,861	05/22/1973
959,552	72/412,646	05/22/1973
959,559	72/428,595	05/22/1973
959,563	72/420,116	05/22/1973
959,573	72/343,104	05/22/1973
959,574	72/397,093	05/22/1973
959,575	72/398,790	05/22/1973
959,578	72/392,036	05/22/1973
959,586	72/383,221	05/22/1973
959,587	72/388,192	05/22/1973
959,591	72/403,482	05/22/1973
959,593	72/426,727	05/22/1973
959,594	72/375,377	05/22/1973
960,146	72/383,772	05/29/1973

In re Baird

The Patent and Trademark Office (PTO) has received a decision of the Court of Appeals for the Federal Circuit in *In re Baird*, ____ F.2d ____, 29 USPQ2d 1550 (Fed. Cir. 1994). In the opinion of the Commissioner of Patents and Trademarks, *Baird* was wrongly decided by the Court because an improper standard of patentability under 35 U.S.C. § 103 was applied in assessing the obviousness question before the Court.

The Court's decision in *Baird* is inconsistent with applicable binding precedent. The Board of Patent Appeals and Interferences (Board), in correctly deciding the case, applied and cited the proper binding precedent, which includes *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971), followed by the Federal Circuit in *Merck & Co. v. Biocraft Laboratories, Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989).

Ordinarily, where the Commissioner believes that the Federal Circuit has erroneously decided an appeal, it would be appropriate to ask for reconsideration or to ask the Solicitor General to file a petition for certiorari to seek review of the decision. However, in this case, the PTO has discovered additional reasons for reopening prosecution of the application. Under these circumstances, it would not be appropriate to burden the applicant or the courts with further pleadings when ultimately a rejection will be entered. *Compare In re Gould*, 673 F.2d 1385, 213 USPQ 628 (CCPA 1982) (remand to Board authorized even after appellant filed brief where Solicitor indicated that new rejection would be made if court reversed rejection on appeal).

In order to properly serve the public and patent applicants appearing before the PTO, it is imperative that the PTO apply a consistent standard of patentability in the examination of patent applications. *Baird* is inconsistent with applicable binding precedent. Accordingly, to maintain uniform standards in the examination of patent applications, patent examiners are directed to follow the *In re Susi* and *Merck* decisions rather than the *Baird* decision and to cite this notice as a full response to any applicant who may rely on the *Baird* decision in responding to rejections.

Should an issue similar to that raised in the *Baird* case come before the Federal Circuit in the future, the conflict between *Baird* and the above-noted binding precedent will be called to the Court's attention so that it may resolve any conflict.

March 22, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Carterfone Communications Corporation, Dallas, Tex., Reg. No. 1,414,808, for the mark "ADCOMM" (stylized), Canc. No. 21,110.

Sami Robbins Ltd., New York, N.Y., Reg. No. 1,435,747, for the mark "SAMI" stylized, Canc. No. 21,300.

Voicemail International, Inc., Cupertino, Calif., Reg. No. 1,171,584, for the mark "VOICEMAIL", Canc. No. 21,340.

Mego Corp., New York, N.Y., Reg. No. 1,059,983, for the mark "MICRONAUTS", Canc. No. 21,651.

Essilor of America, Inc., Glen Head, N.Y., Reg. No. 1,500,901, for the mark "GLARE FREE", Canc. No. 21,784.

CAI Computer Services Inc., Rochester, N.Y., Reg. No. 1,490,866, for the mark "ABRACADD", Canc. No. 21,908.

Kravex Manufacturing Corporation, Miami, Fla., Reg. No. 1,116,824, for the mark "SUPER STOCK", Canc. No. 21,952.

Jenifer House Acquisition, Inc., Hingham, Mass., Reg. No. 1,244,857, for the mark "JENIFER HOUSE" and design, Canc. No. 22,011.

The Pet-House, Inc., Indianapolis, Ind., Reg. No. 602,798, for the mark "PETJOY" and design, Canc. No. 22,115.

Alan Renshaw, San Francisco, Calif., Reg. No. 1,720,852, for the mark "THUNDERHEART", Canc. No. 22,215.

Pappas International Foods, Inc., Boston, Mass., Reg. No. 383,133, for the mark "ELENA", Canc. No. 22,284.

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For Robert M. Anderson
Acting Assistant Commissioner for Trademarks

Erratum

"Patent No. 5,272,637 to Haruo Urushidani, et. al., of Hitachi for `METHOD AND APPARATUS FOR CONTROLLONG THE SUPPLY OF FUEL TO A GAS TURBINE DURING LOAD REJECTION' issued and should have appeared in the *Official Gazette* of December 21, 1993."

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral, character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before June 3, 1994.

Barns, Stephen W., 2610 Indian Dr., #2D, Alexandria, Va., 22303

Beha, William H., 7906 Manor House Dr., Fairfax Station, Va., 22039

Charles, Michael E., 14 Thursfield Crescent, Toronto, Ont., M4G 2N5, Canada

Craig, Jerry D., 16900 Baederwood Ln., Derwood, Md., 20855

Serota, Saul I., 6891 Wilson Rd., Marshall, Va., 22151

March 23, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Correction for the Issue of April 19, 1994

B1 4,618,354	5,067,500	5,156,827	5,187,996
D 327,460	5,074,176	5,156,903	5,188,180
D 331,655	5,075,513	5,157,524	5,188,305
D 335,321	5,075,792	5,157,700	5,188,769
D 337,774	5,077,352	5,159,042	5,188,926
D 339,912	5,083,917	5,159,319	5,189,044
Re 34,152	5,084,323	5,159,701	5,189,105
Re 34,357	5,092,357	5,160,244	5,189,719
4,460,599	5,093,360	5,162,158	5,190,268
4,716,414	5,096,353	5,162,383	5,190,685
4,745,912	5,098,608	5,162,751	5,190,876
4,816,066	5,104,108	5,163,463	5,190,946
4,818,081	5,106,840	5,164,124	5,191,867
4,839,469	5,110,321	5,164,295	5,191,915
4,841,369	5,110,759	5,165,186	5,192,000
4,841,959	5,112,142	5,165,375	5,192,436
4,855,770	5,112,945	5,165,976	5,193,212
4,857,163	5,113,872	5,167,692	5,193,844
4,869,575	5,115,090	5,168,376	5,194,614
4,870,641	5,115,261	5,169,658	5,194,732
4,905,768	5,115,443	5,169,873	5,194,837
4,913,768	5,118,926	5,169,987	5,194,888
4,918,524	5,119,185	5,170,480	5,194,942
4,920,131	5,121,386	5,171,801	5,195,711
4,927,854	5,122,306	5,172,243	5,196,487
4,955,048	5,122,317	5,172,306	5,197,138
4,955,540	5,125,225	5,172,613	5,197,777
4,967,691	5,127,383	5,172,856	5,198,511
4,991,647	5,127,462	5,173,184	5,198,657
4,992,453	5,127,594	5,173,979	5,198,741
4,994,688	5,127,660	5,174,327	5,198,840
4,998,835	5,127,983	5,174,613	5,198,873
5,008,474	5,128,636	5,174,621	5,198,905
5,020,530	5,129,950	5,175,335	5,199,856
5,021,750	5,130,704	5,175,562	5,200,319
5,023,238	5,134,457	5,177,514	5,200,636
5,023,341	5,134,651	5,177,767	5,200,946
5,025,318	5,135,258	5,179,980	5,201,749
5,030,844	5,138,160	5,180,130	5,201,851
5,032,679	5,139,477	5,181,010	5,202,343
5,041,973	5,142,023	5,182,577	5,202,353
5,043,569	5,143,096	5,182,989	5,202,484
5,045,666	5,143,801	5,183,459	5,202,948
5,046,231	5,145,309	5,183,578	5,202,977
5,047,953	5,145,515	5,183,586	5,203,010
5,048,085	5,146,992	5,183,766	5,203,915
5,051,764	5,147,443	5,183,827	5,204,302
5,052,191	5,147,688	5,184,089	5,204,736
5,052,242	5,148,244	5,185,217	5,204,887
5,053,525	5,148,810	5,185,348	5,204,897
5,056,239	5,150,674	5,185,349	5,205,762
5,060,256	5,150,923	5,185,506	5,206,010
5,061,441	5,151,519	5,185,723	5,206,251
5,062,684	5,153,072	5,186,663	5,206,312

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5,206,498	5,218,169	5,227,442	5,234,601	5,240,869	5,247,207	5,255,469	5,261,201
5,206,605	5,218,206	5,227,743	5,234,665	5,241,331	5,247,221	5,255,470	5,261,258
5,206,806	5,218,376	5,227,746	5,234,667	5,241,635	5,247,502	5,255,565	5,261,566
5,208,083	5,218,501	5,228,169	5,235,195	5,241,752	5,247,590	5,255,599	5,261,701
5,208,202	5,218,541	5,228,358	5,235,386	5,241,829	5,248,086	5,255,688	5,261,853
5,208,542	5,219,140	5,228,859	5,235,501	5,241,868	5,248,115	5,255,747	5,262,011
5,208,614	5,219,303	5,228,890	5,235,519	5,241,936	5,248,207	5,255,779	5,262,042
5,208,627	5,219,405	5,228,926	5,235,525	5,242,015	5,248,616	5,255,780	5,262,103
5,209,061	5,220,143	5,229,201	5,235,574	5,242,054	5,249,041	5,256,245	5,262,105
5,209,518	5,220,265	5,229,207	5,235,692	5,242,258	5,249,063	5,256,290	5,262,107
5,209,646	5,220,573	5,229,679	5,235,695	5,242,475	5,249,199	5,256,337	5,262,120
5,209,929	5,220,629	5,230,013	5,235,997	5,242,574	5,249,597	5,256,699	5,262,188
5,209,966	5,220,645	5,230,317	5,236,244	5,242,623	5,249,701	5,256,704	5,262,337
5,210,579	5,220,657	5,230,319	5,236,395	5,242,696	5,249,904	5,257,237	5,262,454
5,211,014	5,220,820	5,230,341	5,236,694	5,242,700	5,250,074	5,257,270	5,262,562
5,211,439	5,220,855	5,230,395	5,236,796	5,242,873	5,250,194	5,257,469	5,262,612
5,211,634	5,220,966	5,230,425	5,236,873	5,243,174	5,250,302	5,257,639	5,263,078
5,212,043	5,221,026	5,230,579	5,237,113	5,243,286	5,250,338	5,257,722	5,263,107
5,212,523	5,221,610	5,230,800	5,237,249	5,243,326	5,250,348	5,257,798	5,263,153
5,212,798	5,221,793	5,231,032	5,237,483	5,243,412	5,250,452	5,258,154	5,263,318
5,213,046	5,221,880	5,231,081	5,237,534	5,243,459	5,250,765	5,258,282	5,263,459
5,213,101	5,221,935	5,231,203	5,237,677	5,243,509	5,251,135	5,258,413	5,263,665
5,213,382	5,222,060	5,231,430	5,237,751	5,243,892	5,251,452	5,258,516	5,263,713
5,213,715	5,222,747	5,232,438	5,238,363	5,243,950	5,251,644	5,258,653	5,264,088
5,213,771	5,222,850	5,232,470	5,238,470	5,244,161	5,251,802	5,258,821	5,264,132
5,213,776	5,222,897	5,232,530	5,238,482	5,244,317	5,252,043	5,259,095	5,264,231
5,213,835	5,223,048	5,232,669	5,238,606	5,244,511	5,252,119	5,259,107	5,264,305
5,214,063	5,223,249	5,233,146	5,238,930	5,244,578	5,252,158	5,259,146	5,264,912
5,214,190	5,223,406	5,233,251	5,239,154	5,244,935	5,252,301	5,259,193	5,265,218
5,214,204	5,223,754	5,233,279	5,239,257	5,245,002	5,252,308	5,259,231	5,265,394
5,214,406	5,224,082	5,233,307	5,239,271	5,245,122	5,252,595	5,259,252	5,265,738
5,214,876	5,224,515	5,233,405	5,239,307	5,245,177	5,252,766	5,259,453	5,265,788
5,215,523	5,224,883	5,233,414	5,239,398	5,245,367	5,252,969	5,259,508	5,266,024
5,215,598	5,225,289	5,233,432	5,239,530	5,245,485	5,253,095	5,259,555	5,266,025
5,216,276	5,225,490	5,233,586	5,239,775	5,245,668	5,253,355	5,259,596	5,267,090
5,216,530	5,225,766	5,233,632	5,239,892	5,246,039	5,253,558	5,259,925	5,267,110
5,216,659	5,225,775	5,233,835	5,240,138	5,246,342	5,253,569	5,260,027	5,267,198
5,217,245	5,225,860	5,233,862	5,240,189	5,246,593	5,253,667	5,260,096	5,267,245
5,217,532	5,225,875	5,233,956	5,240,192	5,246,740	5,253,762	5,260,122	5,267,350
5,217,538	5,225,881	5,234,049	5,240,244	5,246,781	5,254,469	5,260,189	5,267,618
5,217,611	5,226,642	5,234,152	5,240,250	5,246,852	5,254,752	5,260,445	5,269,232
5,217,725	5,226,928	5,234,253	5,240,349	5,247,024	5,254,779	5,260,499	5,272,941
5,217,895	5,227,154	5,234,433	5,240,831	5,247,089	5,254,925	5,260,826	5,292,115
						5,260,912	5,293,271

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

February 28 - March 4, 1994

Date Issued	Type of Proceeding[1]	Proceeding or Appl'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication	TTAB Decision
2-28	EX	74/253,170	Jimlar Corp.	2(d)		"YUKON SERIES" [boots and shoes]	"YUKON RESCUE TEAM" [jogging suits, sweatshirts, sweatpants, shorts, shirts, and jackets]	No	Refusal Affirmed
3-1	EX	74/148,239	Imperial Schrade Corp.	2(d)		"PARADISE" [plastic handled knives, forks, and spoons]	"PARADISE" [plastic food storage bins, plastic canisters, bowls, holders for kitchen utensils, plates, etc.]	No	Refusal Affirmed
3-4	EX	74/215,141	Global Zero L.P.	2(d)		"VIDEO PAPERBACK" [pre-recorded videocassettes featuring drama, comedy, music, action, etc.]	"ELECTRONIC PAPERBACKS" [tape recordings]	No	Refusal Affirmed
3-4	OPP	81,901	Procter & Gamble Co. v. Sentry Chemical Co.	2(d)	"MR. CLEAN" [sudsing cleaner, cleanser and detergent]	"CAPTAIN CLEAN" [all-purpose detergent]		No	Opposition Sustained
3-4	EX	74/241,115	Maund Richards & Associates, Inc.	2(e)(1)		"SMART TRACE" [electrical heating systems consisting of electrical resistance heaters and programmable controllers]		No	Refusal Reversed

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
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	Columbus: Ohio State University Libraries	(614) 292-6175
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Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
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Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
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	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Naprona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	4/10/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/28/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	11/27/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	11/27/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	7/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	9/15/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	8/28/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	4/13/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	8/19/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	8/22/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	11/17/91
MECHANICAL EXAMINING GROUPS		
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	11/13/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	1/05/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/08/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	6/03/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during March 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,009,494 to 4,015,293 inclusive
Plant Patents ..... 4,019 to 4,031

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of March 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/93	01/13/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	11/03/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/22/93	11/12/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/20/93	10/20/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	11/12/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/05/93	01/26/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	01/01/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/24/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/03/93	09/13/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	01/07/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/93	01/24/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/06/93	01/07/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	10/06/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

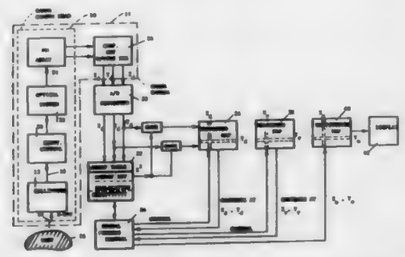
1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

APRIL 19, 1994

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,424,446 (2273rd)
GAMMA CAMERA CORRECTION SYSTEM AND METHOD FOR USING THE SAME
Dan Inbar; Giora Gafni, both of Haifa; Ernest Grimberg, Kiryat Bialick, and Jacob Koren, Haifa, all of Israel, assignors to Elscint, Ltd., Haifa, Israel
Reexamination Request No. 90/002,948, Jan. 28, 1993.
Reexamination Certificate for Patent No. 4,424,446, issued Jan. 3, 1984, Ser. No. 161,050, Jun. 19, 1980.
Int. Cl.[5] **G01T** *1/208*
U.S. Cl. 250—363.07



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** and **17–19** is confirmed.

Claim **14** is determined to be patentable as amended.

Claims **15** and **16**, dependent on an amended claim, are determined to be patentable.

7. A gamma camera system comprising:
(a) a gamma camera head having a plurality of photomultipliers for producing output signals in response to radiation stimuli which are emitted by a radiation field and interact with the head;
(b) coordinate computation circuitry responsive to said output signals for producing a pair of calculated coordinate signals;
(c) first storage means responsive to certain of said coordinate signals for storing a distorted representation of the image of the radiation field;
(d) second storage means for storing a plurality of sets of correction factors for each picture element of the distorted image; and
(e) correction means for correcting each picture element of the distorted image in accordance with the correction factors in the second storage means.

B1 4,570,739 (2274th)
PERSONAL MOBILITY VEHICLE
DuWayne E. Kramer, Mission, Kans., assignor to Burke, Inc., Mission, Kans.
Reexamination Request No. 90/002,216, Nov. 30, 1990.
Reexamination Certificate for Patent No. 4,570,739, issued Sep. 29, 1983, Ser. No. 537,297, Feb. 18, 1986.
Int. Cl.[5] **B62D** *61/08*
U.S. Cl. 180—216

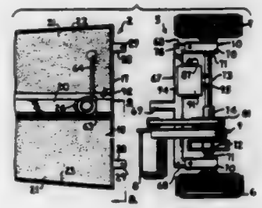
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–14 are confirmed.

Claims 15–17 were previously disclaimed.

New claims 18–29 are added and determined to be patentable.

1. A personal mobility vehicle comprising:
(a) a main frame unit including:
(1) a floor pan having a back end;
(2) a front wheel spindle pivotally connected to said pan.
(3) a front ground engaging wheel rotatably mounted on said spindle; and
(4) a steering tiller connected to said spindle;
(b) a rear drive unit including:
(1) a drive unit frame;
(2) a rear axle means rotatably mounted on said drive unit frame;



(3) a pair of spaced apart ground engaging rear wheels mounted on said rear axle means in spaced apart relation;
(4) a motor mounted on said frame;
(5) transmission means drivingly connecting said motor to said rear axle means; and
(6) frame connection means removably connecting said drive unit frame to said floor pan of said main frame unit with said floor pan back end adjacent said rear wheels;
(c) a seat unit including a seat member, said seat unit being connected to said floor pan of said main frame unit in proximity to said floor pan back end with said seat member in spaced relation to said pan;
(d) a battery unit including a battery member, said battery unit being removably positioned on said floor pan of said main frame unit in proximity to said back end thereof; and
(e) control means removably interconnecting said battery member with said motor to selectively operate said motor to propel said vehicle.

B1 5,040,408 (2275th)
SECONDARY CONTAINMENT SYSTEM USING FLEXIBLE PIPING
Michael C. Webb, Exton, Pa., assignor to Royal Bank Capital Corporation
Reexamination Request Nos. 90/003,029, Apr. 14, 1993 and 90/003,127, Jul. 15, 1993.
Reexamination Certificate for Patent No. 5,040,408, issued Aug. 20, 1991, Ser. No. 348,396, May 8, 1989.
Division of Ser. No. 254,021, Oct. 6, 1986, abandoned, and a continuation-in-part of Ser. No. 103,206, Oct. 1, 1987, Pat. No. 4,805,444
Int. Cl.[5] **B67D** *5/00*
U.S. Cl. 73—40.5 R

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AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 3–12 is confirmed.

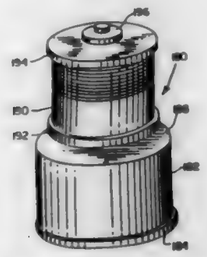
Claim 1 is determined to be patentable as amended.

Claim 2, dependent on an amended claim, is determined to be patentable.

New claims 13–19 are added and determined to be patentable.

1. A sump-riser apparatus for a pipeline system including a sump housed within said sump-riser apparatus, said apparatus comprising:

a) a hollow sump base including side walls and an upper surface having an opening therein;



b) a generally cylindrical riser extension removably mounted on the upper surface of said sump base in surrounding relationship thereto and including side walls, a lower opening in communication with said opening in said sump base, and an upper opening, *said side walls of said sump base having an outermost portion, said riser section being disposed inwardly of said outermost portion of said side walls along substantially its entire length*;

c) an access cover, mounted on the top of said riser extension over said upper opening and including an aperture therein, for enabling acces to the interior of said sump apparatus;

d) an access lid, mounted on said access cover over said aperture in said cover, for permitting observation of the interior of said sump apparatus, *said access cover and said access lid being adapted to be positioned below a manhole cover*;

e) said sump base includes an upstanding portion surrounding said opening therein and said riser extension includes a step portion at a lower edge thereof which fits over said upstanding portion.

B1 5,098,662 (2276th)

MODULAR SOLVENT EXTRACTORY CONCENTRATOR APPARATUS

Bruce A. Killough, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Reexamination Request No. 90/002,909, Dec. 8, 1992.
Reexamination Certificate for Patent No. 5,098,662, issued Mar. 24, 1992, Ser. No. 566,216, Aug. 10, 1990.
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–23 are cancelled.

[1. A kit for forming a modular solvent extractor apparatus comprising:

a) a container body for holding a sample to be treated with a solvent to render an extraction therefrom, the container body having a mouth, at least one solvent vapor port, and at least one solvent extract port;

b) an extract connecting tube having a disconnect joint at each end thereof;

c) a hollow vapor connecting arm having a disconnect joint at one or both ends thereof, a solvent extract inlet port being located at a preselected position along the vapor arm and having a disconnectjoint to accommodate one of the disconnect joints of the extract connecting tube;

d) a disconnect joint at the solvent vapor port to accommodate one of the disconnect joints of the vapor connecting arm; and

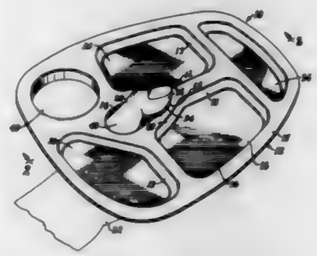
e) a disconnect joint the at least one solvent extract port to accommodate one of the disconnect joints of at least one the extract connecting tube.]

B1 5,152,398 (2277th)

CONVENIENCE TRAY

Robert J. Forestal, 2714 Coldstream La., Indianapolis, Ind. 46220, and H. Terrell Kays, 4321 N. 500 E., Danville, Ind. 46122

Reexamination Request No. 90/002,897, Nov. 30, 1992.
Reexamination Certificate for Patent No. 5,152,398, issued Oct. 6, 1992, Ser. No. 541,339, Jun. 21, 1990.
Int. Cl.[5] B65D *1/36*
U.S. Cl. 206—561



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–6 is confirmed.

New claims 7–17 are added and determined to be patentable.

1. A hand-holdable tray, particularly for snacks and/or liquids and/or cones, and/or other foodstuffs, for the user's partaking thereof when walking about or when seated as a place not having a table or other surface conveniently nearby for stable support of the tray;

the tray comprising a tray body having an area for providing support for snacks and/or liquids and/or cones and/or other foodstuffs, and the tray body having sufficient depth to provide significant rigidity for such a use;

and the tray body is provided with a hole extending fully from the lowermost through the upper portion of the tray body in the region of the hole;

the hole being large enough to accommodate a thumb of the user in a procedure of holding the tray body with the user's hand below the tray body, with the user's finger(s) and thumb base pushing upwardly against the tray body, and with the user's thumb passing through the hole, and the outer end of that thumb pressing downwardly onto the tray body and providing in effect a supportive and downwardly-forcing fulcrum between the upward forces of the user's finger(s) and thumb base;

the hole being provided at a location of the tray body such that the outer end of the user's thumb will be in a generally central location on the tray body, and thereby the user's thumb end will provide the said fulcrum effect in a central portion of the tray body even in an item-carrying procedure in which there is not a glass-base or other associated item carried in a position such that the glass-base or other associated item rather than the user's thumb-end is achieving the fulcrum effect in the central portion of the tray body;

in a combination in which the tray body is provided with a receiver hole through which may be passed the lower portion of a carried object whose lower portion is smaller in diameter than said receiver hole; and

in which the receiver hole is spaced transversely of the fore-and-aft axis of the tray body through the thumb hole sufficiently to provide, even if the receiver hole is carrying an object which extends through the hole, that the said receiver hole accommodates the adjacent portion of the user's hand even though the user's thumb is in tray-carrying position extending through the thumb hole as aforesaid.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,585

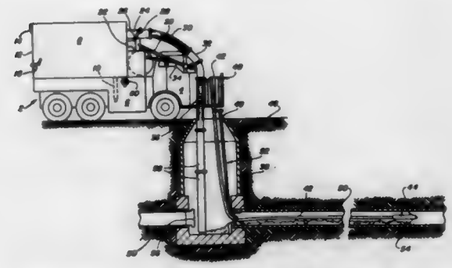
PIVOTING HOSE STORAGE REEL AND MOUNTING THEREOF

Ronald L. Schmidt, Jr., Hinsdale, and Timothy G. Mayer, Metamora, both of Ill., assignors to Peabody Myers Corporation, Streator, Ill.

Original No. 4,896,686, dated Jan. 30, 1990, Ser. No. 264,834, Oct. 31, 1988. Continuation of Ser. No. 681,114, Apr. 5, 1991, abandoned. Application for reissue Oct. 27, 1992, Ser. No. 967,552

Int. Cl.[5] B08B *9/06*

U.S. Cl. 134—167 C **45 Claims**



6. Apparatus for supporting a portable discharge hose storage reel from a vehicle, *the reel being rotatable about an axis of rotation,* comprising:

means for supporting [a] *the* discharge hose storage reel adjacent the frame of said vehicle [with said hose storage reel having an associated] *so that the reel and its axis of rotation are laterally movable toward and away from the vehicle; a* lateral positioner positioned below the frame of said vehicle [and said hose storage reel having rotational freedom of movement about the axis of said hose reel and along] *for selectively laterally moving the supporting means toward and away from the vehicle; and*

means for mounting the reel to the supporting means for pivoting the reel about a pivotal axis substantially transverse to and substantially intersecting said hose reel axis *of rotation* between the ends of said hose reel [; and

means for mounting said hose reel pivotal axis in a laterally displaceable position relative to said vehicular support platform].

Re. 34,586

SPRAY NOZZLE DESIGN

Donald R. Spink, and Edward F. Spink, both of Waterloo, Canada, assignors to Turbotak Inc., Waterloo, Canada

Original No. 4,893,752, dated Jan. 16, 1990, Ser. No. 190,828, May 6, 1988. Application for reissue Jul. 12, 1991, Ser. No. 729,165

Claims priority, application United Kingdom, May 6, 1987, 8710685

Int. Cl.[5] B05B *7/04*

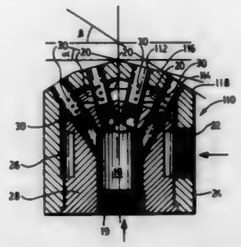
U.S. Cl. 239—427.3 **5 Claims**

1. A nozzle for the formation of an atomized spray of fine liquid droplets in a continuous gaseous phase or of fine gas bubbles in a continuous liquid phase, *said nozzle having a longitudinal axis,* which comprises:

first chamber means for communicating with a source of liquid,

second chamber means for communicating with a source of [gas,

a plurality of individual cylindrical mixing chamber means *each defined by a peripheral wall and* communicating with said first and second chamber means *at an upstream longitudinal end thereof and with said second chamber means through said peripheral wall* for mixing said gas and liquid to form a two-phase mixture of said gas and liquid in each of said individual cylindrical mixing chamber means for ejection from said nozzle, and



a plurality of cylindrical orifice means immediately downstream of, of the same diameter as and communicating with said plurality of individual cylindrical mixing chamber means with each combination of cylindrical orifice means and cylindrical mixing chamber means being arranged at a different angle with respect to each other *and to said longitudinal axis* for ejection of said two-phase mixture from each said individual mixing chamber to form said atomized spray.

Re. 34,587

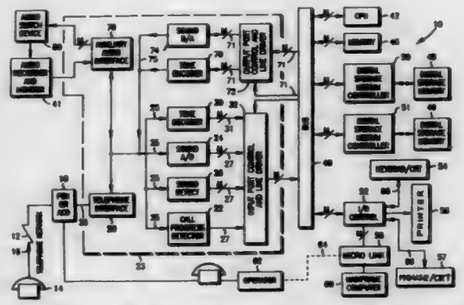
INTERACTIVE COMPUTERIZED COMMUNICATIONS SYSTEMS WITH VOICE INPUT AND OUTPUT

Michael B. Crane, Hollywood, Fla., and Neil W. Sullivan, deceased, late of Bettendorf, Iowa by Louise S. Sullivan , assignors to Call-It Co., Davenport, Iowa

Original No. 4,866,756, dated Sep. 12, 1989, Ser. No. 185,321, Apr. 19, 1988. Continuation of Ser. No. 852,878, Apr. 16, 1986, abandoned. Application for reissue Sep. 11, 1991, Ser. No. 761,170

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—88 **18 Claims**



16. A method for collecting input information from responses provided by a person through a telephonic dialogue between the person and a computerized communication system, with a system operating according to the method being capable of receiving only voice responses, comprising the steps of:

storing predetermined audio information in a digital memory,

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said audio information comprising questions and statements for carrying out said dialogue with the person;

providing with computer means a predetermined sequence of audio signals generated from said predetermined audio information;

providing a telephonic connection between the person and the computer means and providing an electronically modified form of the person's responses to the statements and questions to the computer means;

determining if the person has provided a complete response and if it is determined that the response is not complete, outputting selected audio message signals to the person responsive to the audio signals provided by the computer means, said step of outputting further including generating audio signals giving the person an option to selectively verify, correct, edit, and add to the input information; and

collecting the modified form of the input information in digital storage means from the person, and providing selected portions of the input information stored in the digital storage means to the person for giving the person the option to selectively verify, correct, edit, and add to the input information.

Re. 34,588

HYDROGEN STORAGE HYDRIDE ELECTRODE MATERIALS

Kuochih Hong, 4853 Gamber Dr., Troy, Mich. 48098

Original No. 4,849,205, dated Jul. 18, 1989, Ser. No. 122,042, Nov. 17, 1987. Continuation of Ser. No. 438,340, Nov. 16, 1989, abandoned. Application for reissue May 8, 1992, Ser. No. 882,233

Int. Cl.[5] C01B *6/00*; H01M *4/00*

U.S. Cl. 423—644 **29 Claims**

1. A material for hydride hydrogen storage and a hydride electrode, said material comprising the composition formula selected from the group consisting of:

$Ti_aZr_bNi_cCr_dM_eH_y$

where M equals any of Al, Si, V, Mn, Fe, Co, Cu, Nb, Ag, Pd, and rare earth metals, and where a, b, c, d, and x are defined by: $0.1 \leq a \leq 1.4$, $0.1 \leq b \leq 1.3$, $0.25 \leq c \leq 1.95$, $0.1 \leq d \leq 1.4$, $a+b+c+d=3$, $0 \leq x \leq 0.2$, and $y<0$ *wherein* $Ti+Zr \leq 1.2$;

$Ti_aCr_bZr_cNi_dV_{3-a-b-c-d}M_x$

and hydrides thereof,

where M equals any of Al, Si, Mn, Co, Cu, Fe, Nb, Ag, Pd and rare earth metals, and where a, b, c, d, and x are defined by: $0.1 \leq a \leq 1.3$, $0.1 \leq b \leq 1.2$, $0.1 \leq c \leq 1.3$, $0.2 \leq d \leq 1.95$, **[0.4]** *0.5* $\leq a+b+c+d \leq 2.9$, $0 \leq x \leq 0.2$, and for $x=0$, and $b=0.5$, then $a+c \neq 0.5$ and **[**$b \geq 0.25$**]** *wherein* $Ti+Zr \leq 0.80$ *and* $V \leq 1.4$**[**;

$Ti_aZr_bNi_cV_{3-a-b-c}M_x$

where M equals any of Al, Si, Cr, Mn, Fe, Co, Cu, Nb, Ag, Pd, and rare earth metals, and where a, b, c, and x are defined as: $0.1 \leq a \leq 1.3$, $0.1 \leq b \leq 1.3$, $0.25 \leq c \leq 1.95$, $0 \leq x \leq 0.2$, and $0.6 \leq a+b+c \leq 2.9$; and for $X=0$ then $a+b \neq 1$ and $0.24 \leq b \leq 1.3$; and

$Ti_aMn_bV_cNi_dM_x$

where M equals any of Al, Si, Cr, Fe, Co, Cu, Nb, Zr, Ag, Pd, and rare earth metals, and were a, b, c, d, and x are defined by: $0.1 \leq a \leq 1.6$, $0.1 \leq b \leq 1.6$, $0.1 \leq c \leq 1.7$, $0.2 \leq d \leq 2.0$, $a+b+c+d=3$, and $0 \leq x \leq 0.2$, and for $x=0$ then $b+d \neq 0.75$**]**

Re. 34,589

AQUEOUS SYNTHESIS OF 2-HALO-4,6-DINITRORESORCINOL AND 4,6-DIAMINORESORCINOL

Tyze-Kuan T. Yin, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Original No. 5,001,279, dated Mar. 19, 1991, Ser. No. 438,839, Nov. 17, 1989. Application for reissue Oct. 26, 1992, Ser. No. 966,663

Int. Cl.[5] C07C *205/26*

U.S. Cl. 568—709 **19 Claims**

1. A process for synthesizing 2-halo-4,6-dinitroresorcinol, said process comprising the step of contacting a 1,2,3-trihalo-4,6-dinitrobenzene with *at least about 6 moles of* hydroxide anions *per mole of 1,2,3-trihalo-4,6-dinitrobenzene* in an aqueous solution or slurry containing essentially no alkanol under conditions such that a 2-halo-4,6-dinitroresorcinol is formed in yields of at least about 75 percent.

PLANT PATENTS

GRANTED APRIL 19, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,688

ROSE PLANT 'AUSGOLD'

David C. H. Austin, Wolverhampton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Sep. 30, 1992, Ser. No. 954,964

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant of the *Rosa hybrida* class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its large flowers, bushy plant, and distinctive yellow flowers.

8,689

CLIMBING ROSE PLANT NAMED 'JACARCH'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 17, 1993, Ser. No. 18,761

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—3 **1 Claim**

1. A new and distinct variety of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, arching, climbing habit of growth; healthy, dark green, glossy foliage; recurrent bloom; resistance to disease; and ability to survive in Zone 5 of the U.S.D.A. Cold Hardiness Map.

8,690

MINIATURE ROSE PLANT NAMED 'MICDEB'

Michael C. Williams, P.O. Box 203, Cross Hill, S.C. 29332

Filed Dec. 21, 1992, Ser. No. 994,502

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as herein shown and described, characterized particularly by blooms of reddish-purple coloring, with slightly thick petals, borne freely on an upright plant with glossy greenish-purple new foliage and semi-glossy medium green old foliage said plant being easy to propagate from cuttings, and said blooms being long-lasting on the plant and as cut flowers.

8,691

MINATURE ROSE PLANT NAMED 'JACHILL'

William A. Warriner, deceased, late of Tustin, Calif. by Alene B. Warriner, legal representative , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 17, 1993, Ser. No. 23,882

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, dwarf and spreading growth; prolific and recurrent bloom; attractive, dark green, disease-resistant foliage; moderate fragrance; and ease of production from softwood cuttings.

8,692

FLORIBUNDA ROSE PLANT NAMED 'JACOUT'

William A. Warriner, deceased, late of Tustin, Calif. by Alene Beatrice Warriner, executor , assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 17, 1993, Ser. No. 23,881

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its strong flower fragrance; ease of production by softwood and hardwood cuttings and by budding; vigorous, upright and well-branched growth habit; and distinctive, deep pink flower color.

8,693

PLUM TREE NAMED 'SUMMER TREAT'

Elmer Nilsson, Chico, Calif., assignor to Nancy Nilsson, Chico, Calif.

Filed Nov. 5, 1992, Ser. No. 972,287

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—38.1 **1 Claim**

1. A new and distinct very late ripening variety of a clingstone plum tree having flesh of the amber yellow variety and substantially as herein shown and described, having firm, crisp flesh texture, the fruit having a sweet, rich flavor, being of medium to large size, deep mahogany to a lighter apple red in color with a range of shades in between, and by having a desirable symmetrical shape, where the plum ripens substnatially after other existing commercial varieties, typically in mid to late July and has an unusually long harvest season with fruit remaining on the tree until early September.

8,694

CHRYSANTHEMUM PLANT NAMED 'GOLDEN STATE'

Peter S. Hesse, Nipoma, Calif., assignor to Clearwater Nursery, Inc., Nipomo, Calif.

Filed Dec. 21, 1992, Ser. No. 995,298

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant, substantially as herein shown and described, and being characterized by its rich golden yellow ray floret color, full-crested anemone capitulum type, and its exceptional even flowering and spreading habit.

8,695

CHRYSANTHEMUM PLANT NAMED HONEY CHERIE

Susan M. Polya, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed May 17, 1993, Ser. No. 62,200

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named Honey Cherie, as described and illustrated.

8,696

ALSTROEMERIA NAMED MONTREUX

Cornelis T. J. de Jong, Roelofarendsveen, Netherlands, assignor to Agroplant-Select B.V., De Kwakel, Netherlands

Filed Mar. 24, 1993, Ser. No. 36,653

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinct cultivar of Alstroemeria named Montreux, as illustrated and described herein, characterized by its

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distinctive purple outer petals with moderate dark purple streaking and fine red-brown spotting in area around the green tips, and distinguished by the creamy-yellow and purple color with darker purple streaking of the two top inner petals.

8,697
ALSTROEMERIA PLANT MONACO
Cornelis T. J. de Jong, Roelofarendsveen, Netherlands, assignor to Agroplant-Select B.V., De Kwakel, Netherlands
Filed Mar. 24, 1993, Ser. No. 36,654
Claims priority, application Netherlands, Aug. 21, 1992, 12073
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinct cultivar of Alstroemeria named Monaco, as illustrated and described herein, characterized by its distinctive red-purple with darker reddish-purple blushes outer petals, and distinguished by the off-white, yellow, and purple coloring with dark purple streaking, which increase in length and width with increasing distance from the attachment points of the two top inner petals.

8,698
ALSTROEMERIA NAMED SANCERRE
Cornelis T. J. de Jong, Roelofarendsveen, Netherlands, assignor to Agroplant-Select B.V., De Kwakel, Netherlands
Filed Mar. 24, 1993, Ser. No. 36,655
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinct cultivar of Alstroemeria plant named Capri, as illustrated and described herein, having an unusually attractive predominantly white flower with outer petals having green tips and lavender-pink brush stroke patterns in the central basal portions and inner petals which are white with faintly lavender-pink shadings and patterns of numerous purple stripes on the top two inner petals, and few purple stripes confined to the apical portion of the bottom inner petal.

8,699
ASTROEMERIA PLANT NAMED CAPRI
Cornelis T. J. de Jong, Roelofarendsveen, Netherlands, assignor to Agroplant-Select B.V., De Kwakel, Netherlands
Filed Mar. 24, 1993, Ser. No. 36,656
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinct cultivar of Alstroemeria named Sancerre, as described and illustrated characterized by its attractive predominantly purplish-pink flowers with outer petals having green tips and substantially purplish-pink color and neither spots nor stripes; the top inner petals are purplish-pink at the base and apex and have a broad creamy-yellow band centrally; patterns of numerous purple elongated, conspicuous spots or stripes, on the top two inner petals; and, with the bottom inner petal being purplish-pink and having fewer purple stripes as compared to the top inner petal pair.

PATENTS

GRANTED APR. 19, 1994

ERRATA

For CLASS	See PATENT NO.
057-058	5,303,550
108-144	5,303,645
124-017	5,303,695
601-033	5,303,696
607-020	5,303,702
601-034	5,303,716
137-809	5,303,782
277-001	5,303,943
405-026	5,304,005
607-122	5,304,139
252-314	5,304,334
252-500	5,304,335
554-212	5,304,545
552-545	5,304,546
552-545	5,304,547
524-417	5,304,577
502-066	5,304,601
505-433	5,304,602
514-012	5,304,603
514-238	5,304,604
524-227	5,304,605
435-252	5,304,723
424-602	5,304,724
257-328	5,304,802
345-141	5,304,988
345-128	5,304,989

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ERRATA—CONTINUED

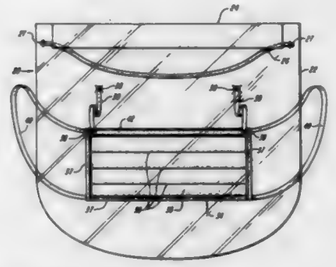
343-767	5,304,998
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343-786	5,305,001
343-788	5,305,002
345-174	5,305,017
348-651	5,305,084
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348-665	5,305,095
348-242	5,305,096
348-014	5,305,097
348-065	5,305,098
348-088	5,305,099
348-159	5,305,100
348-415	5,305,101
348-415	5,305,102
348-415	5,305,103
348-473	5,305,104
348-485	5,305,105
348-521	5,305,106
348-590	5,305,107
348-594	5,305,108
348-737	5,305,109
348-836	5,305,110
348-624	5,305,120
348-045	5,305,121
372-029	5,305,330

PATENTS

GRANTED APRIL 19, 1994

GENERAL AND MECHANICAL

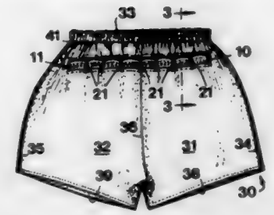
5,303,423
FACE SHIELD/MASK COMBINATION
Peter J. Gazzara, Reading, and John W. Burke, Jr., Melrose, both of Mass., assignors to Splash Shield, Limited Partnership, Woburn, Mass.
Continuation-in-part of Ser. No. 464,297, Jan. 12, 1990, Pat. No. 5,113,528. This application Jun. 7, 1991, Ser. No. 712,065
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] A42B *1/06*; A61F *9/04*
U.S. Cl. 2—9 **6 Claims**



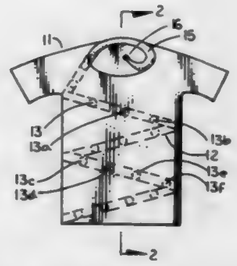
1. Face shield comprising:
a flexible, fluid impervious, transparent member sized to cover a human face;
a flexible barrier and spacer member affixed to a top portion of the transparent member, the barrier and spacer member substantially spanning the full extent of the transparent member and including
a foam plastic material,
a forehead engaging surface,
a plurality of scallops extending into the barrier and spacer member from the forehead engaging surface;
a mask structure affixed to the transparent member so that the nose and mouth of the human face is covered by the mask structure when secured to the human face; and
apparatus for securing the transparent member/barrier and spacer member combination to the human face so that the forehead engaging surface of the barrier and spacer member contacts the forehead of the face,
whereby when the transparent member/barrier and spacer combination is secured to the face, the scallops close so that the barrier and spacer member creates an air pervious and a substantially liquid impervious barrier between the forehead and the transparent member.

5,303,424
SWIMWEAR VENT FOR WATER SKIERS
Hendrick L. Cromartie, 2 Ridgewood Rd., Rome, Ga. 30165
Filed Sep. 24, 1991, Ser. No. 764,789
Int. Cl.[5] A41D *7/00*
U.S. Cl. 2—67 **5 Claims**

1. In a boxer-type swim suit having a waistband, a liner, and at least one rear panel, the liner being attached to the rear panel along an edge of the waistband, the suit having an elongated strip and a band, the elongated strip having an upper edge and a lower edge, the strip being attached at the upper edge to the rear panel and at its lower edge to the liner, the band being attached to the rear panel, the elongated strip and the elongated band being disposed generally parallel to said edge of the waistband and proximate thereto, the strip and the band defining opposing sides of a vent allowing the passage of fluid from interior of the rear panel to exterior of the rear panel.



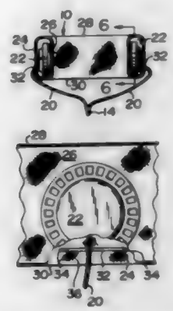
5,303,425
INFLATABLE CLOTHING APPARATUS
Peter C. Mele, P.O. Box 533, Crown Point, N.Y. 12928
Continuation-in-part of Ser. No. 900,660, Jun. 19, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,781
Int. Cl.[5] A41B *1/00*
U.S. Cl. 2—115 **4 Claims**



1. An inflatable clothing apparatus, for use by individuals active in outdoor pursuits, comprising:
an outer shell of clothing;
said outer shell of clothing comprising flexible material;
an inner tubular spiralled structure;
said inner tubular spiralled structure having expansion points at spaced apart intervals along said inner tubular spiralled structure;
flap means located under said expansion points located at the lower rear portion of said outer shell;
said expansion points lift said flap means when said expansion means are expanded for allowing ambient air to be introduced beneath said outer shell of clothing that convects upward and exits at the neck opening of said clothing;
said inner tubular spiralled structure having means for allowing air to be pumped into said inner tubular spiralled structure;
said inner tubular spiralled structure having means for retaining said air pumped into said inner tubular spiralled structure; and
said inner tubular spiralled structure further having means for releasing the air pumped into said inner tubular structure.

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5,303,426
SWEATBAND - EARPHONE SYSTEM
Christopher L. Jones, Hollywood, Fla., assignor to Marvelous Creations, Inc., Jackson, Mich.
Filed Apr. 19, 1993, Ser. No. 48,294
Int. Cl.[5] A42C 5/00
U.S. Cl. 2—181 6 Claims



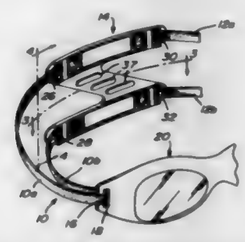
1. In combination, a headband comprising an annular flexible body at least partially formed of an elastic moisture absorbing fabric adapted to encircle the wearer's head and ears, a chamber defined within said body, an elongated opening defined within said body intersecting and providing access to said chamber, and an earphone within said chamber, said earphone being removably insertable into said chamber through said opening, said headband body maintaining said earphone adjacent the wearer's ear, said body being entirely formed of a tubular sheath of elastic fabric, the interior of said sheath defining said chamber, said earphone having a maximum dimension, said elongated opening defined within said sheath having a normal length less than said maximum dimension, the length of said opening being resiliently expandable to a dimension equal or greater than said maximum dimension whereby said earphone may be removably inserted into the interior of said sheath.

5,303,427
COMBINATION HAT AND BAG
Dina Fishbaine, 1228 Cambridge St., Apt. 3, Cambridge, Mass. 02139-1316
Filed Mar. 12, 1993, Ser. No. 30,821
Int. Cl.[5] A42B 1/00
U.S. Cl. 2—209.11 10 Claims



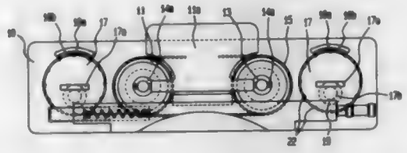
1. A hat/bag combination article comprising:
a tubular member having a body portion with a first closed end and an opening at an opposing second end, the body portion including a tubular sidewall formed from a plurality of elongated strips of pile fleece attached along their long edges, and the body portion further including a top wall attached to one end of the tubular sidewall and forming the first closed end, a drawstring attached to the tubular sidewall at the second end for adjusting the size of the opening, wherein the member functions as a hat with the body portion forming an adjustable crown and with sufficient body or stiffness for the tubular sidewall to be worn straight up or pushed down into a variety of styles, and the opening forming an adjustable rim, and the member also functions as a bag with the body portion forming a carrying compartment and the drawstring forming a handle and means of opening and closing the bag.

5,303,428
COMBINATION OF A STRAP AND OF A STRAP SPREADER
Martin Peraicka, St. Francois, Laval, Canada, assignor to Leader Industries, Inc., Boucherville, Canada
Filed Mar. 5, 1993, Ser. No. 26,875
Int. Cl.[5] A61F 9/02
U.S. Cl. 2—452 10 Claims



1. A combination of a strap and of a strap spreader for use in cooperation with goggles,
a) a strap being formed of a band having two front portions, each front portion being adapted to be mountable to one side of a pair of goggles and each having a rear portion displaying an upper and a lower band portion; and
b) a spreader having a rigid body defining a curved surface adapted to fit the contour of the back of a wearer's head, said surface defining vertically spaced upper and lower edges and including, adjacent said edges, on opposite sides of said body, upper and lower receiving means for said upper and lower band portions, which define a point of attachment for each of said upper and lower band portions said receiving means maintaining said band portions at a fixed distance from one another when said body is positioned on a wearer's head in combination with said strap and a pair of goggles.

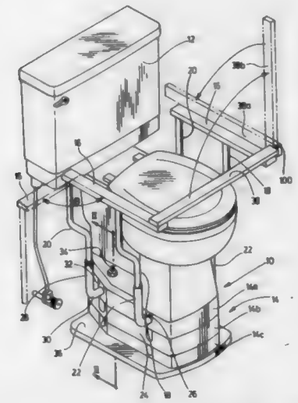
5,303,429
CONNECTING ELEMENT BETWEEN WC SEAT/LID AND WC BOWL
Norbert Nitzold, Felixweg 7, 8130 Starnberg, Fed. Rep. of Germany
PCT No. PCT/EP90/00834, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO90/15565, PCT Pub. Date Dec. 27, 1990
PCT Filed May 25, 1990, Ser. No. 778,932
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1989, 3919408
Int. Cl.[5] A47K 13/26
U.S. Cl. 4—237 10 Claims



1. A toilet seat including a connector assembly for detachably securing said toilet seat to a toilet bowl; comprising:

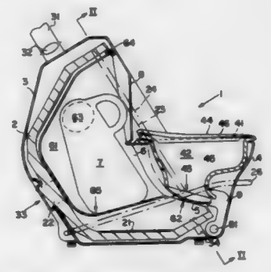
a base, plate fixedly securable to the seat and having a pair of first recesses and a pair of second recesses;
clamping means, received in each of said first recesses for engagement in a pair of aligned mounting holes of the bowl;
suction means received in each of said second recesses for detachably securing each said base plate to said bowl, said suction means including a suction element bearing upon said toilet bowl; and
actuating means operatively connected to each said suction element for creating within each said suction element an underpressure by which said base plate securely adheres to said toilet bowl.

5,303,430
CONVERSION KIT FOR ADJUSTING THE HEIGHT OF A FLUSH TOILET
Geoffrey R. Fernie, 29 Blaketon Road, Islington, Ontario, Canada M9B 4W4 ; Brian P. Doyle, 36 High Park Blvd., Toronto, Ontario, Canada M6R 1M8 , and David Khazanovich, 4866 Bathurst St. #508, North York, Ontario, Canada M2R 1X4
Filed Dec. 14, 1992, Ser. No. 991,532
Int. Cl.[5] E03D 11/00
U.S. Cl. 4—254 13 Claims



1. A conversion kit for raising the height of a flush toilet comprising:
a spacer having a upper surface for attaching to a bottom surface of a flush toilet and conforming thereto in shape and size, and a lower surface for fixing to a floor;
a soil pipe extension through the spacer from a first port in said upper surface to a second port in said lower surface, the first port being located for coincident with a discharge port of the flush toilet and the second port being located for coincidence with a floor port of a soil pipe;
bolt sockets provided through the spacer from top to bottom located to be coincident with bolt sockets of the flush toilet;
fixing bolts to bolt the flush toilet to the floor, each bolt having a shank having a length to pass through the bolt sockets of the spacer;
sealing rings to seal the first port of the soil pipe extension with the discharge port and to seal the second port of the soil pipe extension with the floor port of the soil pipe;
at least one open ended socket extending laterally into and through the spacer, at least one side rail support having a cross member to extend through said open ended socket and extend out of each end thereof, said cross member extends through said spacer from side to side forwardly of the soil pipe extension, a side rail support on each side of the toilet, adapted to be supported by a respective end of said cross member.

5,303,431
COMPOSTING TOILET
Lasse Johansson, 17740 Kasiniemi, Finland
PCT No. PCT/FI90/00308, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO91/09819, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 917,021
Claims priority, application Finland, Dec. 29, 1989, 896363
Int. Cl.[5] A47K 11/02
U.S. Cl. 4—449 8 Claims



1. A composting toilet comprising:
an outer shell, having an interior and an exterior;
a rotatable drum defining a composting space and having a side wall portion and a bottom portion with a hub disposed therein rotatably mounting said drum within said outer shell;
collection means for collecting solid toilet waste in said drum;
a toilet seat mounted in said outer shell and having liquids separation means for conducting liquids separately from solid waste;
a ventilation duct attached to the outer shell whereby the drum is thermally insulated;
a stationary wall attached to the interior of the outer shell, said stationary wall having a lower portion defining an inlet opening into said drum and disposed within said drum thereby defining a ventilation passage between said drum and said stationary wall communicating with said ventilation duct; whereby
the toilet seat with the liquids separation means is adapted in the outer shell at the location above the inlet opening in the lower portion of the stationary wall, so as to allow solid waste entering via the toilet seat to fall through said inlet opening in the lower portion of the stationary wall directly onto the inside surface of the drum and liquids to flow to a location outside said drum.

5,303,432
CONVERTIBLE FUTON FRAME
Dana W. Fitts, 375 College Ave., Excelsior, Minn. 55331
Filed Jan. 26, 1993, Ser. No. 9,097
Int. Cl.[5] A47C 17/17
U.S. Cl. 5—37.1 27 Claims

1. A convertible furniture frame capable of being converted between sitting and lying positions, comprising:
first and second end frame means, each adapted to rest stably on a support surface and each defining a front and back;
cross frame means for interconnecting the first and second end frame means in spaced relation;
substantially rigid seat and back members capable of being relatively disposed and moved between sitting and lying positions, each of said seat and back members comprising opposed front and rear sides and opposed ends and each

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defining a surface for supporting individuals in each of said sitting and lying positions;

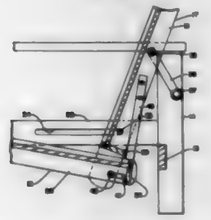
said cross frame means constructed and arranged to provide partial support to the seat member in the sitting and lying positions;

means for movably mounting the back member to and between the end frame means for movement between sitting and lying positions, comprising:

first connection means for permitting substantially horizontal linear movement on one of the opposed sides of the back member relative to said end frame means, said first connection means also permitting pivotal movement of the first back member relative to the end frame means substantially about said one opposed side; and

substantially rigid linkage means pivotally connected between each of said end frame means and an associated end





of the back member, the pivotal connection with said associated end being disposed below the pivotal connection with the

end frame means with the seat member in the lying position;

second connection means for pivotally connecting the back and seat members between respective front and rear sides thereof for relative rotational movement between said sitting and lying positions, and for permitting limited relative linear movement of the seat member relative to the back member between first and second linear positions respectively corresponding to the sitting and lying positions; and

means for preventing relative rotational movement between the seat and back members with the seat member in the first linear position, and for permitting relative rotational movement therebetween with the seat member in the second linear position.

5,303,433

CONVERTIBLE ROCKING CRADLE

Shuh Y. Jang, No. 24-2, Wann Nian Lane, Yuan Lin, Changhua, Hsien, Taiwan

Filed Jun. 25, 1993, Ser. No. 81,121
Int. Cl.[5] A47D *9/02, 9/04*
U.S. Cl. 5—109 **2 Claims**

1. A convertible rocking cradle, comprising:

a mounting base;

a cradle body;

a motor secured to the underside of said cradle body having a driving shaft with a gear attached to the front end thereof;

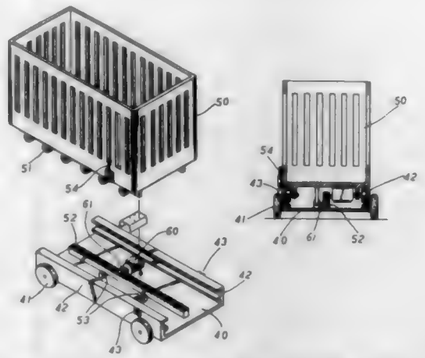
a rack disposed at the middle of said mounting base in the longitudinal direction;

said gear of said motor being in engagement with said rack;

a number of wheeling means associated with said mounting base so as to make the same ambulant;

a vertical F-shaped slide track disposed on each longitudinal side of said mounting base;

a plurality of rollers being disposed on each longitudinal side of said cradle body and engaged with said F-shaped slide track so as to permit said cradle body to be moved therealong;



a pair of reverse motion limit switches each disposed at a specific position from each end of said rack, permitting said motor to be reversely operated when actuated each time;

a latch means disposed on each side of said cradle body;

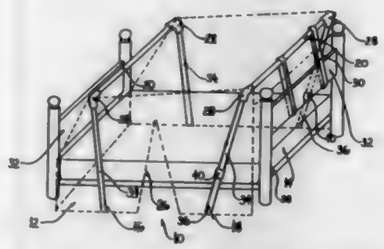
a locking retainer disposed on each side of said mounting base being selectively engaged with each said latch means so as to permit said cradle body and said mounting base to be combined together or not.

5,303,434

BED TENT

William T. Arnold, 400 Redrome Cir. East, Bridgeville, Pa. 15017

Filed Oct. 22, 1992, Ser. No. 964,764
Int. Cl.[5] A47C *29/00*
U.S. Cl. 5—414 **10 Claims**



1. A tent forming assembly for use with a conventional bed having a bed-frame supporting mattress, said tent forming assembly comprising:

(a) a pair of generally U-shaped frame members adjustably positioned beside the bed, each said frame member including a pair of leg members supported on a floor and a horizontal bar which is supported by said leg members in a position above the mattress of the bed;

(b) a canopy portion attached to and supported by said frame members forming an enclosed area above the mattress;

(c) attaching means for attaching said canopy portion to said frame members; and

(d) tensioning means attached to one of said frame members

and attached to the bed-frame for maintaining tension within at least a portion of said canopy portion;

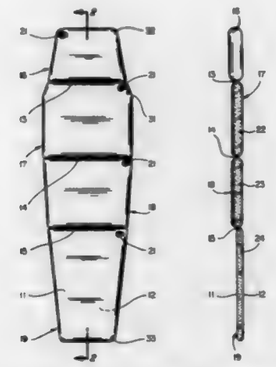
wherein said adjustability of said frame members allows for varying the position of said frame members longitudinally beside the bed and orientation of said frame members with respect to the bed to alter the height and overall configuration of said canopy portion and said enclosed area.

5,303,435

SELF-INFLATING CAMPING MATTRESS HAVING A TAPERED PROFILE

James M. Haar, and Charles P. Hall, both of 335-A O'Hair Ct., Santa Rosa, Calif. 95407

Filed Jan. 27, 1993, Ser. No. 11,648
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—450 **16 Claims**



3. A camping mattress, comprising upper and lower sheets of flexible air-impervious material, means sealing the sheets together along a plurality of transversely extending lines to form a plurality of chambers between head and foot ends of the mattress, the chambers closest to the head and foot ends being tapered in plan view so that the mattress is wider toward its center and narrower toward the head and foot ends, a body of resilient material in one of the chambers, and valve means controlling air flow into and out of the chamber with the resilient material to regulate expansion and compression of said material.

5,303,436

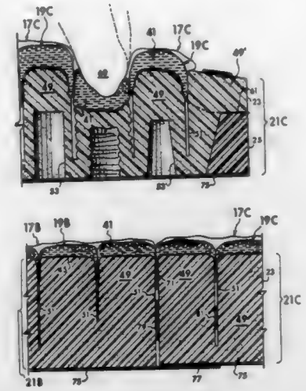
ANTI-DECUBING MATTRESS PAD

John C. Dinsmoor, III, Westminster; Grant C. Denton; Eric C. Jay, both of Boulder, and Richard R. Runkles, Englewood, all of Colo., assignors to Jay Medical, Ltd., Boulder, Colo.

Division of Ser. No. 756,320, Sep. 6, 1991, Pat. No. 5,201,780.
This application Jan. 13, 1993, Ser. No. 4,137
Int. Cl.[5] A47C *27/14, 27/18*
U.S. Cl. 5—481 **18 Claims**

1. A pad primarily intended for use as a hospital mattress to reduce the development of decubitus ulcers in patients using the pad, said pad including:

a first layer having a plurality of discrete spring elements, said spring elements being upstanding columns having free standing, upper end portions and being made of resilient foam wherein adjacent pairs of said spring elements have vertically extending gaps therebetween spacing said adjacent pairs apart and said spacing varies between respective pairs of said spring elements to vary the spring characteristics of said upstanding foam columns, each of said upstanding foam columns having a base and a free standing, upper end portion with an upper surface and sides extending between the base and upper surface of each foam column, said pad further including means to attach together side walls of adjacent columns at a locations along said side walls between the based and upper



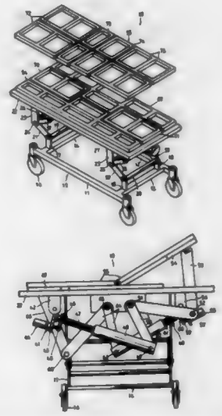
surfaces of the adjacent foam columns to vary the spring characteristics of said attached, adjacent foam columns.

5,303,437

MULTI-FUNCTION AND AUTOMATIC SICK BED

Yung-Feng Hung, 3 Fl.-2, No. 28, Pei Pin E. Rd., Taipei, Taiwan

Filed Dec. 16, 1992, Ser. No. 991,356
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—613 **1 Claim**



1. A multi-function and automatic sick bed which allows a patient to place his (or her) head, arms, legs, and feet at a most comfortable position comprising:

(a) a base frame comprising two longitudinal rods and two horizontal rods connected together to form a substantially rectangular frame having four corners, and four castors mounted under the four corners, respectively, of said base frame to provide said base frame with a mobil function;

(b) a bottom layer bed frame being mounted above said base frame by means of a plurality of first vertical supports, second vertical supports, and first connecting rods; said bottom layer bed frame being a rectangular rigid flat frame having a top portion, a middle portion and a bottom portion said first vertical supports being affixed to said base frame, said second vertical supports being affixed to

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said bottom layer bed frame, and said first vertical and second vertical supports being movably connected by said first connecting rods;

(c) a middle layer bed frame above said bottom layer bed frame comprising a left bed frame, a right bed frame, a rear bed frame and a front bed frame, wherein

(i) said left bed frame and said right bed frame being two opposite and symmetrical members; said left bed frame having an inner side and an outer side, the inner side of said left bed frame being pivotally connected to the middle portion of said bottom layer bed frame to allow the outer side of said left bed frame to pivot upward, said right bed frame having an inner side and an outer side, the inner side of said right bed frame being pivotally connected to the middle portion of said bed bottom layer bed frame to allow the outer side of said right bed frame to pivot upward,

(ii) each of said rear bed frame and said front bed frame having an inner and an outer side, the inner side of each said front bed frame and said rear bed frame being also hinged to the middle portion of said bottom layer bed frame so as to allow the outer side of each of said front and rear bed frames to be lifted upward;

(d) a top layer bed frame disposed vertically above said left and right bed frames and said front and rear bed frames, said top layer bed frame comprising two front frames, two mid-front frames, two mid-rear frames, and two rear frames, each pair of said two front frames, said two mid-front frames, said two mid-rear frames and said two rear frames are hinged together to allow pivotal movement therebetween, said two front frames and said two mid-front frames, and said two mid-rear frames and said two rear frames are also respectively hinged together to allow pivotal movement with respect thereto;

(e) a bed elevating mechanism mounted under said bottom layer bed frame comprising a first motor, a first screw rod, a pair of second connecting rods, a longitudinal rod and a first sleeve, said longitudinal rod is connected to said two second vertical supports through said pair of second connecting rods respectively, and said sleeve being adapted to cause a horizontal movement of said longitudinal rod, whereby when said first motor is actuated, said first screw rod and said first sleeve will cause a horizontal movement of said longitudinal rod so as to cause vertical movements of said second vertical supports, thus allowing said bottom layer, middle layer and top layer bed frames to be lifted upward or downward;

(f) a left elevating mechanism and a right elevating mechanism for tilting left side and right side, respectively, of said top layer and middle layer bed frames, said left and right elevating mechanisms being mounted under said bottom layer bed frame, and each of said left and right elevating mechanisms comprising a second motor, a second gear assembly, a second screw rod, a second sleeve and third and fourth connecting rods, said fourth connecting rod being affixed to said left or right frame, said second motor being connected to said left or right frame vin said second screw rod, said second sleeve, and said third and fourth connecting rods in such a manner that when said second motor is actuated, said fourth connecting rods will be lifted upward or downward to cause said left or right bed frame to pivot about the inner side thereof; and

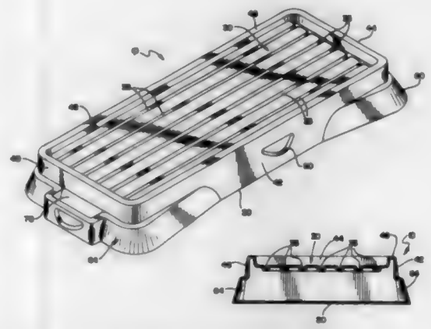
(g) a front elevating mechanism and a rear elevating mechanism for tilting front end and rear end, respectively, of said top layer and middle layer bed frames, said front and rear elevating mechanism being mounted under said bottom layer bed frame, and each of said front and rear elevating mechanisms comprising a third moter, a third gear assembly, a third screw rod, a third sleeve, and fifth and sixth connecting rods, said sixth connecting rod being affixed to said front or rear frame, and said third motor being connected to said top or rear frame of said middle layer bed frame via said third screw rod, said third sleeve, and said fifth and sixth connecting rods in such a manner that when said third motor is actuated, said sixth connecting will be lifted upward or downward to cause said front or rear bed frame to pivot about the inner side thereof.

5,303,438

INTEGRAL POLYETHYLENE ROTATION MOLDED CHILDREN'S COT

Leon Walker, 4819 S. Greenwood Ave., Chicago, Ill. 60615

Filed Feb. 23, 1993, Ser. No. 24,747
Int. Cl.[5] A47D *7/00*
U.S. Cl. 5—652 16 Claims



1. A one piece children's cot comprising:

a base;

a surface parallel to the base and supported above the base;

four side walls forming a substantially rectangular structure having rounded corners with flared supports; and

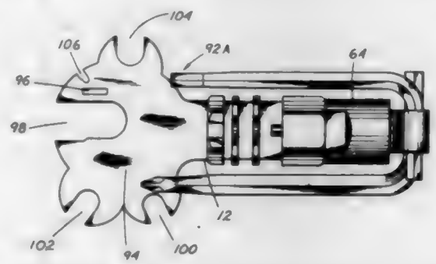
said surface containing at least one groove.

5,303,439

MULTIPURPOSE BICYCLE TOOL KIT

Robert L. Seals, 13524 Autumn La., Chico, Calif. 95926

Filed Jul. 8, 1993, Ser. No. 88,139
Int. Cl.[5] B25F *1/02*
U.S. Cl. 7—138 6 Claims



1. A multipurpose bicycle tool kit comprising in combination:

an elongated handle;

a plate-like web attached to and extending from a first end of said handle, said web having a plurality of sockets therein to provide means for grasping a variety of sizes of nuts and bolt heads;

a bicycle chain link remover attached to said handle, said bicycle chain link remover including a shaft guide head, at least one link support member, an anvil, and a threaded shaft formed into a link ejector rod at one end and being adapted for screw adjustment by manual rotation of a finger grip member affixed at an opposite end with said screw adjustment provided by a threaded bore centrally passaged through said shaft guide head;

said finger grip member being positioned at a second end of said handle, said finger grip member having at least two apertures sized to removably accept at least two different allen wrenches and to maintain said at least two different allen wrenches in fixed positions;

said at least two different allen wrenches each structured at one terminal end into a secondary tool;

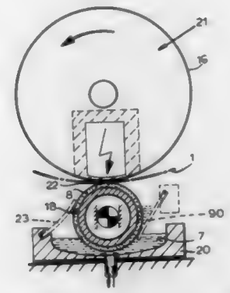
a socket having an interior bore opened therethrough adapting said socket for slide over storage on said threaded shaft of said bicycle chain link remover, said socket adapted by oppositely positioned flat side wall sections for gripping by at least one of said sockets in said plate-like web.

5,303,440

PROCESS FOR APPLYING, IMPRESSING OR REMOVING LIQUIDS OR SUBSTANCES

Johannes Zimmer, Ebentaler Str. 133, A-9020 Klagenfurt, Austria

PCT No. PCT/AT91/00094, § 371 Date Apr. 3, 1991, § 102(e) Date Apr. 13, 1992, PCT Pub. No. WO92/03605, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 14, 1991, Ser. No. 847,029
Claims priority, application Austria, Aug. 16, 1990, 1702/90
Int. Cl.[5] D06B *5/08*
U.S. Cl. 8—151 9 Claims



1. A process for controlling wetting of a web with a flowable substance, said process comprising the steps of:

(a) providing at least one roller with a body of a compressible material capable of absorbing a flowable substance adapted to wet a web upon relaxation of pressure upon said material and capable of releasing said flowable substance from said material upon compression and squeezing thereof, said body of compressible material being in contact with said web over an entire width thereof and forming a continuous periphery of said roller;

(b) rotating said roller in contact with said web and applying pressure between said web and said roller at a first location around said periphery of said roller where said body of said roller contacts said web sufficiently to controllably compress said body at said location;

(c) applying pressure to said body during rotation thereof at at least one further location about said periphery of said roller sufficiently to squeeze said flowable substance at least in part out of said body so that the pressure applied to said body at said locations controls a quantity of the flowable substance remaining on said web as said web passes said first location; and

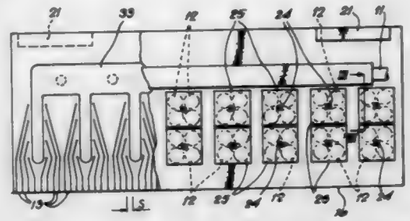
(d) impregnating said body with said flowable substance at a location upstream in rotation of said roller and said body of said further location, whereby a portion of the flowable substance is squeezed from said body at said further location and another portion of said flowable substance is transferred to said web by said body at said first location, the pressure applied to said body at said further location being applied by pressing a surface against said body defining with said periphery a wedge-shaped space, the impregnating of said body further comprising feeding said flowable substance to said wedge-shaped space.

5,303,441

METHOD AND APPARATUS FOR DELIVERING METERED QUANTITIES OF FLUID

Timothy L. Dawson, Stockport, and Henry Ellis, Macclesfield, both of Great Britain, assignors to Dawson Ellis Limited, Manchester, Great Britain

PCT No. PCT/GB90/01774, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO91/07536, PCT Pub. Date May 30, 1991
PCT Filed Nov. 16, 1990, Ser. No. 856,952
Claims priority, application United Kingdom, Nov. 18, 1989, 8926111
Int. Cl.[5] D06B *1/02*
U.S. Cl. 8—151 20 Claims



1. A method for delivering metered quantities of fluid, comprising:

supplying the fluid under pressure to a valve with a capillary outlet having a valve end and a delivery end, and

controlling the opening and closing of the valve to admit a succession of discrete quantities of the fluid to the valve end and to expel a like succession from the delivery end, such that the amount fluid admitted to and the amount of fluid expelled from the capillary outlet is linearly dependent on a time interval for which the valve remains open.

10. Apparatus for delivering metered quantities of fluid, comprising:

a pressure supply for supplying the fluid under pressure,

a valve with a capillary outlet having a valve end and delivery end, and

a mechanism for controlling the opening and closing of the valve to admit a succession of discrete quantities of the fluid to the valve end whereby to expel a like succession from the delivery end, wherein the amount of fluid admitted to and the amount of fluid expelled from the capillary outlet is linearly dependent only on a time interval for which the valve remains open.

5,303,442

MACHINE FOR LASTING SIDE PORTIONS OF SHOE UPPERS

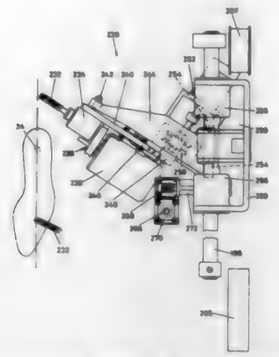
James R. Flanders; Richard E. Storer, and Frank Hartshorn, all of Leicester, England, assignors to British United Shoe Machinery Limited, Leicester, England

Filed Apr. 23, 1992, Ser. No. 872,590
Claims priority, application United Kingdom, Apr. 30, 1991, 9109270
Int. Cl.[5] A43D *21/00*
U.S. Cl. 12—8.3 15 Claims

11. A lasting roller comprising a cylindrical body which has a helical rib arrangement on the outer surface thereof whereby as the roller rotates while in contact with a lasting marginal portion of a shoe upper the helical rib arrangement can effect an inwiping movement on such lasting marginal portion, the

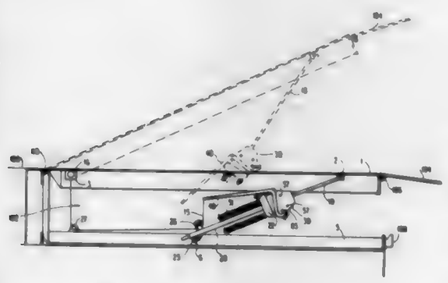
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helical rib arrangement comprising a single rib having a fixed pitch dimension, wherein the fixed pitch dimension lies in the



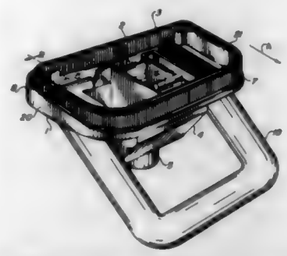
range 10 to 15 mm and the outside diameter of the roller lies in the range 15 to 25 mms.

5,303,443
DOCK LEVELER HOLD-DOWN SYSTEM
James C. Alexander, London, Canada, assignor to The Serco Corporation, London, Canada
Filed Apr. 2, 1992, Ser. No. 862,440
Int. Cl.[5] B65G *69/24*
U.S. Cl. 14—71.1 **20 Claims**



1. A dock leveler comprising:
a deck pivotedly connected to a stationary frame member to raise and lower with respect to said frame member,
a hold-down member coupled at one end to said deck and at the other end to a fixed member, said hold-down member comprising a pair elements telescoping relative to each other, spring means to bias said pair of elements into compression, a brake shoe movable relative to one of said pair of elements, means to bias said brake shoe into engagement with one of said pair of elements and release means to urge said brake shoe away from said one of said pair of elements.

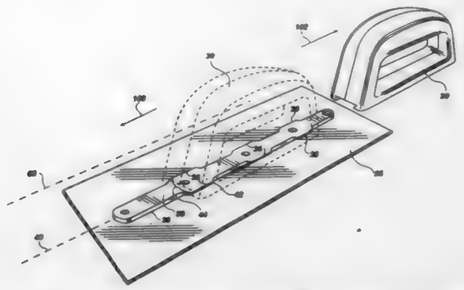
5,303,444
RIGID SKIRT FOR BRISTLES OF SUBMERSIBLE SUCTION CLEANER
Pavel Sebor, 45 Highcliff Way, Northcliff Extension 12, Johannesburg, Transvall, South Africa
Filed May 11, 1992, Ser. No. 880,664
Claims priority, application South Africa, Feb. 28, 1992, 92/1501
Int. Cl.[5] E04H *3/20*
U.S. Cl. 15—1.7 **4 Claims**



1. An automatic swimming pool cleaner comprising:
an elongated housing having spaced front and rear longitudinal sides and a top and bottom, said housing further having an internal suction chamber therein which fluidly communicates with an opening provided in said bottom and a coupling provided on said top, said coupling adapted for connecting the suction chamber to a suction source;
means pivotally mounted to the housing, within the suction chamber, responsive to a flow of water through said suction chamber, to thereby impart a jerking impact against the housing;
a continuous row of bristles extending laterally from the bottom of the housing, surrounding the opening;
an external skirt extending laterally from the bottom of the housing, surrounding said row of bristles and the opening;
said row of bristles extends to a greater length from said housing than said skirt; and
wherein the relative dimension between the extremity of the external skirt and the ends of the bristles decreases about the opening from the front side to the rear side.

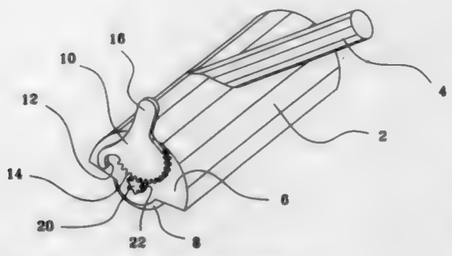
5,303,445
DETACHABLE HAND TROWEL
Lawrence G. Meyers, Layton, Utah, assignor to Meyer Products Group, Inc., Kaysville, Utah
Continuation of Ser. No. 629,388, Dec. 18, 1990, Pat. No. 5,193,244, which is a continuation-in-part of Ser. No. 321,193, Mar. 9, 1989, abandoned. This application Feb. 11, 1993, Ser. No. 16,283
Int. Cl.[5] B05C *17/10*
U.S. Cl. 15—235.4 **4 Claims**

1. A trowel comprising:
an elongated blade,
an elongate stiffener mounted on said blade to extend said side walls of the blade stiffener being tapered along the length of said elongate stiffener,
a handle having a downwardly directed elongate channel, said channel being tapered along its length, said channel having opposing side walls, said side walls being tapered along their length, said channel formed in the handle being configured to slidably receive the tapered side walls of the elongate stiffener to form a detachable union of said handle and said stiffener, said stiffener including a plurality of lateral extensions, each extension having the said tapered side walls and laterally extending from a respective sidewall of said elongated stiffener, and said tapered



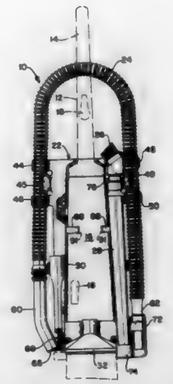
side walls of the extensions configured to engage within said handle channel to form the said detachable union.

5,303,446
MANUALLY ENGAGEABLE PAINT ROLLER
Joseph D. Maresh, 19919 White Cloud Cir., West Linn, Oreg. 97068
Filed Aug. 28, 1992, Ser. No. 936,626
Int. Cl.[5] B05C *1/08*
U.S. Cl. 15—230.11 **17 Claims**



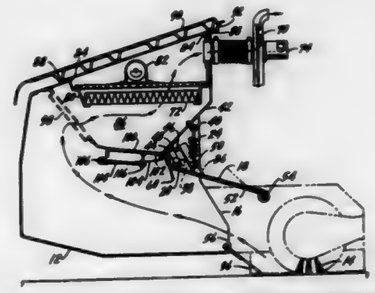
12. An improved paint roller comprising:
(a) a rotatable paint applicator;
(b) a hub fixed to an axial end of said applicator;
(c) a housing member to rotatably secure said hub member;
(d) a pinion gear fixed about center of said hub;
(e) a pinion gear rotational axis about which said pinion gear rotates;
(f) a drive gear rotatably secured to said housing member;
(g) a drive gear rotational axis about which said drive gear rotates;
(h) said drive gear attached to said housing member such that drive gear is rotated while a portion of said drive gears circumference is in contact with and causes rotation of said pinion;
(i) said pinion gear and said drive gear having axis center line spacing between them fixed;
(j) said drive gear having a portion of said circumference radially reduced toward said drive gear rotational axis to allow said pinion to rotate independently while said drive gear is stationary.

5,303,447
HOSE AND TOOL RACK FOR UPRIGHT VACUUM CLEANER AND METHOD FOR MOUNTING SAME
Darwin T. McKnight, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Continuation-in-part of Ser. No. 828,641, Jan. 30, 1992. This application Sep. 28, 1992, Ser. No. 952,664
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—323 **21 Claims**



1. A hose and tool rack for use with an upright vacuum cleaner, comprising:
a generally vertically elongated rectangular frame having a central aperture;
sidewardly mounted hose clips extending and opening outwardly from said rectangular frame for reception and maintenance of the hose loopingly around at least a portion of said frame;
at least one cleaning tool mounted on said frame and within a loop defined by the hose; and
means carried by said frame for engaging the vacuum cleaner and attaching the hose and tool rack thereto.

5,303,448
HOPPER AND FILTER CHAMBER FOR DIRECT FORWARD THROW SWEEPER
Robert D. Hennessey, Golden Valley, and Timothy G. La Rocque, Plymouth, both of Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Jul. 8, 1992, Ser. No. 910,634
Int. Cl.[5] E01H *1/08*
U.S. Cl. 15—340.3 **15 Claims**



1. In a direct forward throw sweeper having a debris hopper which in normal sweeping position is directly ahead of and adjacent a main sweeping brush, an opening in the hopper

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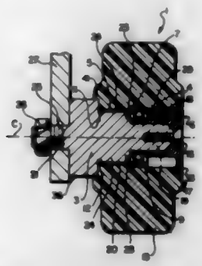
which in normal sweeping position is adjacent and faces the brush, said opening being that through which debris is swept directly by the brush into the hopper and emptied out of the hopper, a vacuum fan arranged to pull an air stream from around the brush, into and through the hopper, then through an air filter in an air filter chamber above the hopper in normal sweeping position, and then to exhaust said air stream to atmosphere, said air filter chamber having space below the filter in normal sweeping position for the accumulation of dust removed from the air stream, the hopper having at least one lift arm connected thereto and at least one powered actuator connected to the lift arm, the lift arm and actuator being operable to raise the hopper to a selected elevated height, a door hinged to the hopper adjacent the brush and located to close the aforesaid opening, said door being hinged proximate the edge of the opening which is the upper edge when the hopper is in the normal sweeping position, characterized by resilient means for opening said door and at least one powered actuator acting in opposition to the resilient means for closing the door.

5,303,449

THREAD INHIBITING CASTER ASSEMBLY

Dale A. Gray, Jackson, Mich., assignor to Albion Industries, Inc., Albion, Mich.

Filed Sep. 3, 1992, Ser. No. 940,064
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—18 CG **11 Claims**



1. A thread inhibiting caster assembly comprising:
an axle having a proximal end and a distal end, wherein said proximal end is attached to a caster leg;
a bearing rotatably mounted on the axle;
a wheel having a cylindrical bore wherein said bearing is mounted within the bore of said wheel;
a wheel retaining hub attached to the distal end of said axle for retaining the wheel on the axle; and
an "O" ring insert located inside said wheel and mounted within an axial "O" ring channel formed in said axle.

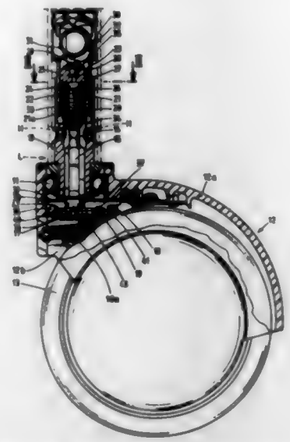
5,303,450

CASTER FOR USE ON MOBILE HOSPITAL BEDS AND THE LIKE

Hans-Willi Lange, Wermelskirchen, Fed. Rep. of Germany, assignor to Albert Schulte Sohne GmbH & Co., Wermelskirchen, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,010
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137757
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—35 D **14 Claims**

1. A caster comprising a support; a frame turnably mounted on said support; a wheel rotatably mounted in the frame; means for simultaneously releasably locking said frame and said wheel against turning relative to said support and against rotation relative to said frame in one position of an actuating means, said means for releasably locking having a biasing means; and coupling means for releasably holding said frame in a selected one of a plurality of different angular positions relative to said support in a second position of the actuating means while allowing rotation of the wheel relative to the



frame, wherein said biasing means is adjustable by means for varying the bias of the biasing means.

5,303,451

THERMOPLASTIC AND LOW MODULUS THERMOPLASTICS FOR APPLIANCE HANDLES

Kenton J. Gravius; James H. Harding; Scott A. Calvert, and Frank S. Pang, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 29, 1992, Ser. No. 952,972
Int. Cl.[5] A47B *95/02*
U.S. Cl. 16—125 **4 Claims**



1. A handle for operating a refrigerator door comprising:
an elongated stiffener member in the shape of an elongated open channel with a base and projecting sides, said channel including apertures spaced along its length;
said stiffener member including a pair of spaced apart pads adjacent its ends for engagement with the refrigerator door and a pair of tangs raised from said pads;
a body elastomeric material with a Shore A Durometer between about 20 and about 50 injection molded around said member; and

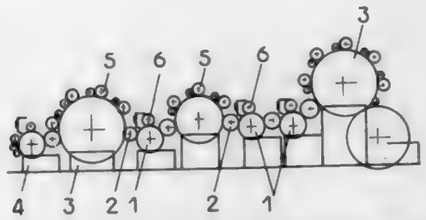
said body of elastomeric material extending through said apertures and surrounding said raised tangs to mechanically interlock said body of elastomeric material to said stiffener member while leaving the door side of said pads free of elastomeric material.

5,303,452

WOOL CARD

Henri Genevray, Guebwiller, France, assignor to N. Schlumberger Et Cie, S.A., Guebwiller, France

Filed Jun. 8, 1992, Ser. No. 894,945
Claims priority, application France, Jun. 7, 1991, 91 07111
Int. Cl.[5] D01B *1/00*
U.S. Cl. 19—84 **1 Claim**



1. A wool card comprising at least three Morel rollers (1), feeder rollers (2) between the Morel rollers and three large drums (3) between which the Morel rollers are disposed, the wool card being free from intermediate combs, the feeder rollers and the large drums having equal tangential velocities, a pair of said Morel rollers (1) being disposed in immediate sequence between two of said large drums with only one feeder roller between them, a third Morel roller being disposed on a side of one of said two large drums opposite said pair of Morel rollers and between one of said two large drums and the third large drum, the Morel rollers of said pair being spaced whereby all of the fiber web from one of said pair of Morel rollers passes over said one feeder roller and thence to the other of said pair of Morel rollers.

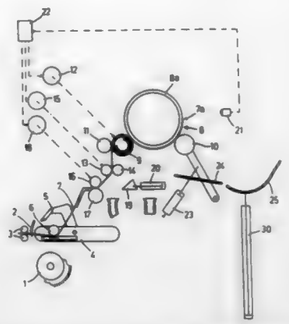
5,303,453

TEXTILE MACHINE

Helmuth Langel, Dubendorf; Heinz Clement; Gian-Carlo Mondini, both of Winterthur; Fredy Wichtermann, Effretikon, and Oliver Wuest, Seuzach, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 681,097, Apr. 5, 1991, Pat. No. 5,077,865, which is a division of Ser. No. 552,697, Jul. 16, 1990, Pat. No. 5,027,475, which is a continuation-in-part of Ser. No. 431,431, Nov. 3, 1989, Pat. No. 4,996,747. This application Jan. 6, 1992, Ser. No. 817,292
Claims priority, application Switzerland, Nov. 3, 1988, 04086/88-7
The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.
Int. Cl.[5] D01G *19/08*
U.S. Cl. 19—115 R **2 Claims**

2. A textile machine comprising
at least one lap processing unit;
a carrier means for supporting a roll of lap to be combed;
at least one drive means operable to drive said unit;
at least one drive means operable to drive said carrier means;
synchronizing means selectively operable to synchronize said drive means for said unit with said drive means for said carrier means; and



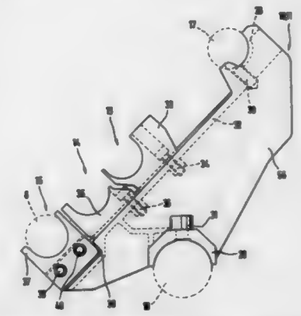
a suction take-up device operable to take up fiber material from a path between said carrier means and said lap processing unit.

5,303,454

TEXTILE MACHINE COMPRISING A PLURALITY OF DRAFTING UNITS ARRANGED NEXT TO ONE ANOTHER IN A ROW

Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, and Norbert Barauke, Donzdorf, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker, Bad Ueberkingen and Hans Stahlecker, Suessen, both of Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,240
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1992, 4205854
Int. Cl.[5] D01H *5/56*
U.S. Cl. 19—236 **22 Claims**



1. A textile machine comprising:
a machine frame having supports which extend in the longitudinal direction of the machine, the machine frame being divided in the longitudinal direction of the machine frame into several machine sections which each contain a plurality of roller stands, wherein the roller stands are fastened to the supports of the machine frame and contain bearing receiving devices;
a plurality of drafting units, each drafting unit containing a delivery bottom cylinder arranged stationarily in the machine frame and two bottom cylinders which are adjustable relative to one another and to the delivery bottom cylinder, each bottom cylinder in the longitudinal direction of the machine frame being formed of joined together cylinder sections and provided with a drive on at least one machine end;
roller bearings in the bearing receiving devices which hold the bottom cylinders in the bearing receiving devices;

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at least one of the roller stands in each machine section having a stationary bearing receiving device for a bearing of the delivery bottom cylinder, and a plurality of roller stands in each machine section having one adjustable bearing receiving device for a bearing of the delivery bottom cylinder;

wherein the adjustable bearing receiving devices are adjustably fixable to a position of the delivery roller cylinder predetermined by the stationary bearing receiving devices.

5,303,455

APPARATUS FOR MAKING A FIBER LAP

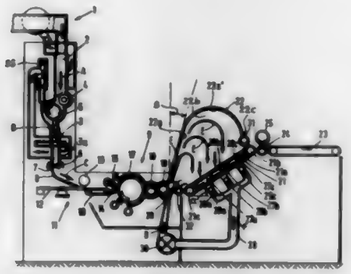
Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Nov. 13, 1991, Ser. No. 791,177

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1990, 4036014

Int. Cl.[5] D01G *23/00, 25/00;* B65G *53/00*

U.S. Cl. 19—304 **10 Claims**



1. An apparatus for forming a fiber lap from fiber tufts in combination with a fiber tuft feeder having an outlet; said apparatus comprising

(a) a fiber opener having an input formed of a fiber feeding mechanism and a series of sawtooth rolls through which the fiber material introduced by the fiber feeding mechanism consecutively passes in a direction of advance; said fiber feeding mechanism receiving fiber material from aid outlet;

(b) a pneumatic fiber stripping device including blowing means for directing an airstream toward the last sawtooth roll of the series as viewed in said direction of advance;

(c) a hood having an inner face defining a chamber situated above and downstream of said last sawtooth roll for receiving fiber material carried from the last sawtooth roll by the air stream of said fiber stripping device; said inner face having an inner wall surface portion extending upwardly from said last sawtooth roll at an oblique angle to the vertical;

(d) an air-pervious receiving member having an upper face and an underside; said receiving member being disposed in said chamber downstream of said last sawtooth roll; said inner wall surface portion extending over said upper face of the receiving member and being inclined at an acute angle to said receiving member; said blowing means and said inner wall surface portion being oriented such that the fiber material stripped from said last sawtooth roll is guided along said inner wall surface portion prior to the deposition of the fiber material on said upper face of said receiving member;

(e) means for continuously moving said receiving member;

(f) suction means facing said underside of said receiving member for generating an air stream passing through said receiving member in a direction from said upper face to said underside for drawing fiber material in said chamber onto said upper face of said receiving member for forming said fiber lap thereon;

(g) means for forming a preliminary fiber lap between said outlet and said fiber feeding mechanism; and

(h) a device for regulating a thickness of said preliminary fiber lap between said outlet and said fiber feeding mechanism.

5,303,456

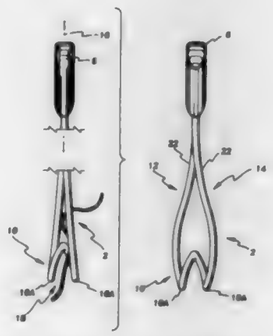
OPEN SPRING SAFETY PIN

Michal A. Mussell, 213 N. Lapham, Pittsburg, Kans.

Filed Feb. 2, 1993, Ser. No. 12,351

Int. Cl.[5] A44B *9/00*

U.S. Cl. 24—710 **1 Claim**



1. A safety pin, comprising in combination:

support rod means,

piercing rod means,

head means,

and coil spring means,

said support rod means connecting said head means in spaced relation to said coil spring means,

said piercing rod means being pivotally fixed to said coil spring means and separably engageable with said head means,

said coil spring means having an axis and defining arcuate sections therein, each said arcuate section being axially spaced apart from another said arcuate section, wherein each portion of said coil spring means is spaced apart from very other portion thereof,

said head means includes two substantially parallel sides, defining a major plane therebetween,

wherein said head means major plane is angled with respect to said coil spring means axis, whereby said support rod means diverges tangentially and perpendicularly from said coil spring means and said piercing rod means diverges from said coil spring means at an angle thereto, and both said support rod means and said piercing rod means are coplanar when retained within said head means, and

whereby the structural arrangement of said head means being angled with respect to the coil spring means and said piercing rod means and said support rod means occupy the head major plane whereby the damage to a fabric is reduced.

5,303,457

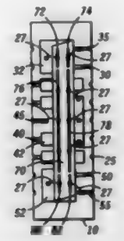
METHOD FOR PACKAGING MICROELECTRONIC FREQUENCY SELECTION COMPONENTS

Robert F. Falkner, Jr., Phoenix, and Russell T. Fiorenzo, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 650,117, Feb. 4, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 918,771

Int. Cl.[5] B65C *9/25*

U.S. Cl. 29—25.35 **11 Claims**



1. A method for packaging piezoelectric frequency selection component die comprising the steps of:

providing a package base having conductors disposed thereon;

providing a surface acoustic wave frequency selection component die comprising a piezoelectric substrate material;

disposing thermoplastic die attachment material between the package base and the die to form an assembly, wherein the thermoplastic die attachment material is selected from the group consisting of polyetherketone, polysulfone, polyethersulfone, polyetherimid, polybutyleneterepthalate and polycarbonate;

heating the assembly to a bonding temperature of the thermoplastic die attachment material;

cooling the assembly to effect a bond between the package base and the die by means of the thermoplastic die attachment material without scrubbing of the die relative to the package base;

forming electrical interconnections from the frequency component die to the package base; and

hermetically sealing a lid to the package base.

5,303,458

METHOD AND APPARATUS FOR DETECTING AND COMPENSATING THERMAL GROWTH IN MACHINE TOOLS

Terrence M. Sheehan, Elmira; Daniel P. Soroka, Horseheads; Takahiro Matsubara, Horseheads; Raymond C. Cady, Horseheads; Gregory Ayzenshtok, Horseheads, all of N.Y., and Gary L. Comstock, Gillett, Pa., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Mar. 31, 1992, Ser. No. 861,420

Int. Cl.[5] B23B *25/06*

U.S. Cl. 29—405 **32 Claims**

1. A thermal growth detector and compensator for detecting and compensating for relative movement between a front of a headstock of a machine tool and a tool holder, comprising:

an elongated rod having first and second spaced opposed ends;

said elongated rod comprising a material having a coefficient of thermal expansion of substantially zero;

means disposed at said first end of said elongated rod for connecting said rod to a part of the machine tool;

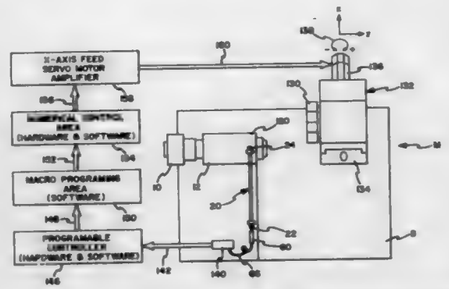
means disposed at said second end of said elongated rod for connecting said second end of said rod to the front of the headstock at a point vertically spaced apart from said first end of said rod;

means disposed at one of said first and second ends of said elongated rod for detecting movement of said rod; and

automatic compensation means operatively connected to the movement detection means for automatically moving the tool holder relative to the headstock as a function of the vertical movement of the rod detected by said movement detection means to compensate for movement of the front of the headstock relative to a part of the machine tool;

whereby, any vertical movement of the front of the headstock relative to the tool holder is detected and compensated for by moving the tool holder to compensate for movement of the front of the headstock relative to the part of the machine tool.

29. A method to permit immediate machining operation from start-up of a machine tool by detecting and compensating for movement of a work holder relative to the machine bed during the initial and subsequent thermal growth to constant dimension of the work holder by adjusting the tool holder on the machine bed during start-up and subsequent growth of the work holder relative to a work piece positioned in the work holder comprising the steps of:



a) providing a rod having a coefficient of thermal expansion of substantially zero and first and second ends;

b) mounting the first end of a rod to the front end of the work holder;

c) attaching the second end of the rod to the bed of the machine tool at a point vertically spaced apart from the first end of the rod;

d) providing a sensor for detecting vertical movement of the rod adjacent one of the first and second ends thereof for generating a correcting signal as a function of the vertical movement of the rod;

e) converting the signal to binary code decimal; and

f) providing a programmable controller for using the binary code decimal to control movement of the tool holder relative to the work holder to compensate for thermal growth of the work holder.

5,303,459

METHOD FOR MANUFACTURING PRECISELY FOCUSED COLLIMATOR

Tadakazu Kurakake, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,490

Claims priority, application Japan, Mar. 27, 1991, 3-063524

Int. Cl.[5] B23Q *17/00*

U.S. Cl. 29—407 **10 Claims**

1. A method of manufacturing a collimator, comprising the steps of:

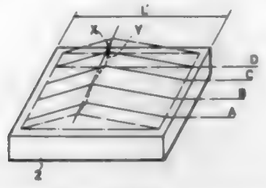
forming a collimator body by using a metal casting process;

measuring any existing displacement of a focal position of the collimator body formed at the forming step with respect to an intended focal position;

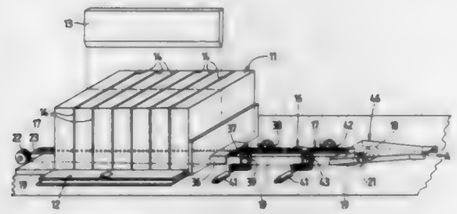
determining an adjustment size to minimize the displacement measured at the measuring step;

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changing a physical size of peripheral regions of the collimator body according to the adjustment size, determined at the determining step, so as to adjust the focal position of the collimator body.



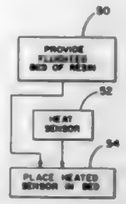
5,303,460
DEWIRING APPARATUS FOR BALES
Robert F. Neilsen, Birmingham, and Peter Hiebert, Helena, both of Ala., assignors to Neilsen & Hiebert Systems, Inc., Pelham, Ala.
Filed Oct. 26, 1992, Ser. No. 966,874
Int. Cl.[5] B65B *69/00*; B26D *1/08*
U.S. Cl. 29—564.3 **13 Claims**



1. Apparatus for removing strapping from bales which have been moved longitudinally along a conveyor to a terminal end thereof, comprising in combination:
(a) means located proximal a terminal end of said conveyor for severing a bale from top to bottom such that said strapping is severed atop the bale;
(b) means mounted proximal said terminal end for sequentially engaging said strapping subjacent said severed bale and urging said severed strapping laterally of said bale and conveyor; and
(c) means located laterally of said conveyor for removing said severed strapping from said sequential engaging means.

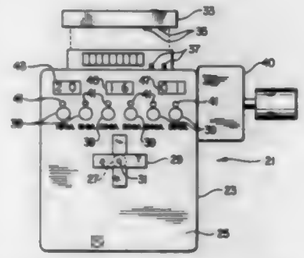
5,303,461
THERMAL PROTECTION FOR ELECTRICAL MACHINES
David W. Okey, Rockford, Ill.; Joseph F. Leicht, Placentia, Calif.; Francis T. Carriglitto, Rockford, Ill.; Colum O'Hare, San Diego, Calif.; Keith E. Garr, and Lawrence J. Kintz, Jr., both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Jan. 27, 1993, Ser. No. 9,822
Int. Cl.[5] H01H *11/00*
U.S. Cl. 29—622 **12 Claims**

12. A method of sealing and insulating a temperature sensor which includes the steps of:
a) providing a fluidized bed of electrically insulating resin particles;
b) disposing the sensor to be sealed in proximity to the bed;
c) causing particles of the resin from the bed to adhere to the sensor until a desired thickness of particles on the sensor is achieved; and



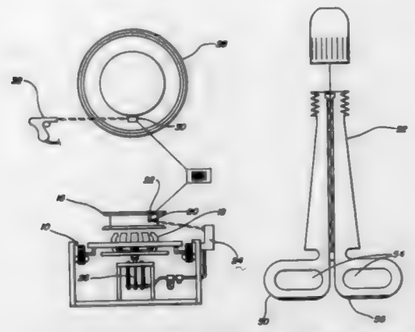
d) fusing the particles into a unitary mass to encapsulate the sensor.

5,303,462
WIRE CRIMPING MACHINE
Billie B. Chitwood, Fort Worth, and Carl A. Gilley, III, Grapevine, both of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.
Filed Oct. 26, 1992, Ser. No. 966,277
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—705 **17 Claims**



1. A machine for crimping an electrical contact onto an electrical wire comprising:
means for disposing said contact to receive an end portion of said wire;
means for crimping said contact onto said wire end portion;
means for actuating said crimping means when said wire end portion and said contact are suitably positioned for crimping;
a first light source/sensor pair disposed adjacent to said crimping means and substantially on a transverse axis of said wire end portion as said wire is inserted into said crimping means, said first light source/sensor pair being disposed on opposing sides of said wire end portion and directed theretoward;
a second light source/sensor pair disposed in substantially the same manner as said first light source/sensor pair, the first and second light source/sensor pairs being disposed relative to each other to simultaneously allow said wire end portion to eclipse a portion of the light beam from said second light source to said second light sensor and a portion of said wire immediately adjacent to said wire end portion to eclipse a portion of the light from said first light source to said first light sensor; and
a processing unit for receiving a signal from each light sensor, and signals being representative of the light received by the respective light sensors, and generating a first signal representing whether the wire is stripped of insulation and a second signal representing the size of said wire end portion; and
means for allowing said actuating means to function, said means being responsive to said first and second signals to allow said actuating means to function only if said wire end portion is stripped of insulation;
whereby said actuating means is allowed to function only if the wire size is the same as the desired wire size and the wire is stripped of insulation.

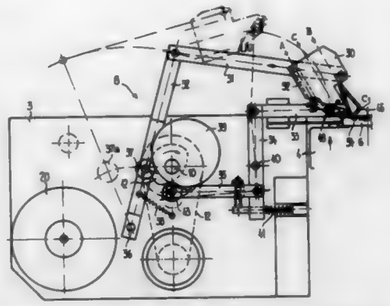
5,303,463
TIRE BALANCING SYSTEM
Douglas J. Pollard, 100 Riverfront Dr., #802, Detroit, Mich. 48226-4537
Filed Mar. 1, 1993, Ser. No. 21,270
Int. Cl.[5] B23Q *17/00*
U.S. Cl. 29—705 **12 Claims**



1. A system for assembling and balancing automotive wheels comprising:
a wheel rim having a valve stem opening,
a tire adapted to be mounted on said rim,
means for determining the circumferential position and magnitude of an imbalance of said tire,
a plurality of valve stems, said valve stems varying in weight from each other,
means for positioning said tire with respect to said rim so that the valve stem opening is substantially diametrically opposed to the circumferential position of said tire imbalance,
one valve stem having a weight substantially the same as said magnitude of said tire imbalance being positioned in said valve stem opening, and
means for inflating said tire thereby securing said tire and said rim together so that said valve stem offsets the tire imbalance.

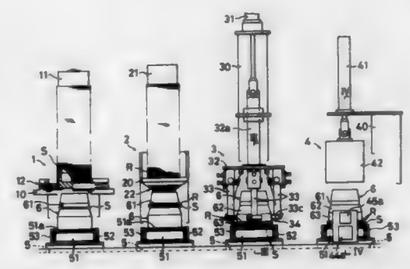
5,303,464
APPARATUS FOR REPLACEMENT OF RING TRAVELERS ON SPINNING OR TWISTING RINGS
Andreas Neff, Pfäffikon, Switzerland, assignor to Bräcker AG, Pfäffikon, Switzerland
Filed Mar. 2, 1992, Ser. No. 844,111
Claims priority, application Switzerland, Mar. 25, 1991, 00902/91
Int. Cl.[5] B23P *19/04*; B23Q *7/10*
U.S. Cl. 29—765 **13 Claims**

1. An apparatus for replacing ring travellers on spinning or twisting rings comprising:
a housing having two substantially parallel first and second walls defining substantially parallel first and second planes;
a lift-out device for lifting out a ring traveller, said lift-out device having:
a pin for supporting the ring traveller in a lift-out position thereof;
means for imparting a motion impulse to the ring traveller for positioning the ring traveller on said pin; and
an actuatable clamping organ for retaining the ring traveller on said pin;
first motion links movably supported in said housing and connected with said lift-out device, said motion links being movable in said first plane between an operations position and an off position thereof;
a device for attaching a new ring traveller, said attaching device being movable in said second plane between an operational position and an off position thereof and including:



a ring traveller magazine containing a plurality of strung ring travellers;
means for feeding an individual ring traveller from said magazine and for retaining the individual ring traveller at an end of said magazine;
stop means cooperating with said magazine for retaining the individual ring traveller at said end; and
second motion links movably supported in said housing and connected with said attaching device for moving said attaching device between operational and off positions thereof.

5,303,465
METHOD OF ASSEMBLING PISTON RING AND METHOD OF ASSEMBLING SET OIL RING AND APPARATUS FOR ASSEMBLING SET OIL RING
Shuzo Fujimoto; Hiroshi Ejiri; Yuji Tamai; Satoshi Takahashi, and Naofumi Nagata, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 20, 1993, Ser. No. 49,454
Claims priority, application Japan, Apr. 27, 1992, 4-108169; Apr. 27, 1992, 4-108171; Dec. 8, 1992, 4-328238
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—791 **9 Claims**



1. An apparatus for assembling a set oil ring into a piston ring groove of a piston, the set oil ring comprising a spacer ring and a pair of side rail rings to be placed on both sides of the spacer ring, said apparatus comprising:
a guide member which is larger in diameter than an outside diameter of the piston, a front end of said guide member

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being able to be positioned relative to the piston into a predetermined positional relationship with the piston ring groove, said guide member being able to mount on an outside thereof the spacer ring and the pair of side rail rings such that the spacer ring is positioned in a foremost side towards the front end of said guide member, followed by the pair of side rail rings;

pushing means for pushing, in sequence out of the front end of said guide member, the spacer ring and the pair of side rail rings; and

a restricting member which is movable back and forth in a radial direction relative to said guide member and which can be placed, relative to the front end of said guide member, with a clearance to be formed to open into that groove portion which is formed between that groove surface of the piston ring groove which is closer to said guide member and the spacer ring assembled into the piston ring groove.

5,303,466

METHOD OF MOUNTING SURFACE CONNECTOR

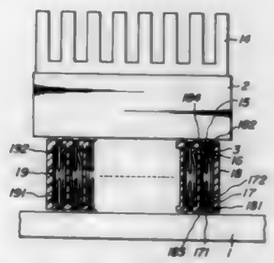
Kazuyuki Ozai; Tomonari Ohtsuki, and Takakatsu Inoue, all of Tokyo, Japan, assignors to Daiichi Denshi Kogyo Kabushiki Kaisha, Japan

Filed Mar. 23, 1992, Ser. No. 855,243

Claims priority, application Japan, Mar. 25, 1991, 3-082879; Feb. 14, 1992, 4-059268

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—837 **11 Claims**



1. A surface mounting method comprising the steps of:

(a) preparing a jig provided with dummy contacts whose size, number and arrangement are substantially the same as those of the contacts of an electronic part to be mounted on a circuit board,

(b) fitting the dummy contacts of the jig with mating contacts which are to be fitted with the contacts of the electronic part,

(c) mounting the jig provided with the dummy contacts fitted with the mating contacts onto the circuit board at a predetermined position thereon,

(d) mounting and fixing the mating contacts onto the circuit board,

(e) removing the jig from the circuit board,

(f) mounting an insulator having insert apertures for receiving the mating contacts onto the circuit board, and

(g) fitting the contacts of the electronic part with the mating contacts fixed to the circuit board.

5,303,467

METHOD OF ASEMBLING ROCKER ARMS

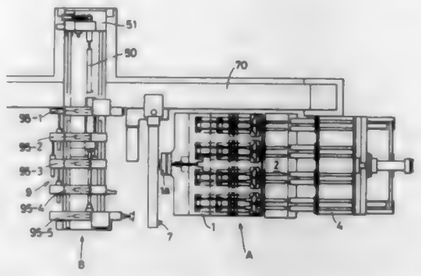
Yousuke Narita, and Kazutoshi Takada, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,304

Claims priority, application Japan, May 21, 1992, 4-129000; May 21, 1992, 4-129001; May 21, 1992, 4-129002

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—888.2 **11 Claims**



1. A method of assembling rocker arms in which a plurality of holder members are provided in series at a predetermined pitch and in which each of said rocker arms is assembled into a space between said respective holder members, said method comprising the steps of:

assembling rocker arm units by respectively inserting into each of said rocker arms a shaft which is longer than a distance between facing side surfaces of two adjoining pieces of said holder members;

setting each of said rocker arm units, while holding each of said shafts, into a space between said respective holder members which are provisionally set at a respective distance which is larger than said predetermined pitch, said setting being such that each of said shafts coincides with an axis of a bearing hole which is formed in each of said holder members; and

narrowing said distance between said respective holder members down to said predetermined pitch to thereby insert end portions of said shafts into said bearing holes.

5,303,468

METHOD OF MANUFACTURING A CRANKSHAFT

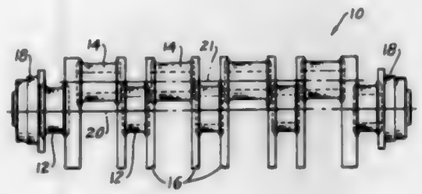
Anthony F. Cieszkiewicz, Metamora, and Thomas E. Clements, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/08885, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO93/11366, PCT Pub. Date Jun. 10, 1993

PCT Filed Dec. 2, 1991, Ser. No. 829,006

Int. Cl.[5] B23D *15/00*

U.S. Cl. 29—888.08 **10 Claims**



1. A method of manufacturing a crankshaft (10) comprising the steps of:

manufacturing a plurality of main bearing journal sections (12), each having engageable surfaces (27) including end surfaces (28) and inclined surfaces (30) on both ends (22,24);

manufacturing a plurality of connecting rod journal sections (14), each having engageable surfaces (27) including end surfaces (28) and inclined surfaces (30) on both ends (22,24);

manufacturing a plurality of counterweight web sections (16), each having a first annular groove (35) including an end surface and an inclined surface (38) on one side for receiving end surface (28) and inclined surface 30 of the engageable surface (27) of the main bearing journal (12) and a second annular groove)40) including an end surface and an inclined surface (40) on the opposite side for receiving end surface (28) and inclined surface 30 of the engageable surface (27) of the connecting rod journal (14);

manufacturing a pair of crankshaft ends (18), each having an annular groove (50) including an end surface and an inclined surface (54) on one end for receiving end surface (28) and inclined surface (30) of the engageable surface (27) of the main bearing journal section (12);

aligning the end surfaces (28) and inclined surfaces (30) of the engageable surfaces (27) of the journal sections (12,14) with the end surfaces and inclined surfaces (38,44,54) of the annular grooves (35,40,50) of the counterweight web sections (16) and the crankshaft ends (18); and

welding (19) together the separate components at the juncture of the engageable surfaces (27) with the annular groove (35,40,50).

5,303,470

MACADAMIA NUT OPENING MACHINE

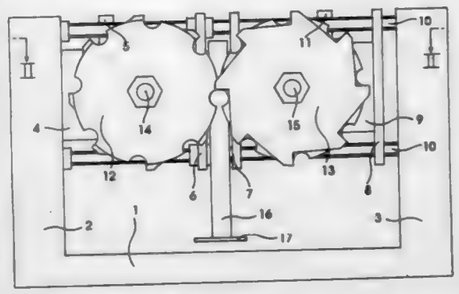
Henry G. Wakelam, P.D.C. Waipapa 0470, Kerikeri, New Zealand

Filed Jul. 6, 1992, Ser. No. 908,334

Claims priority, application New Zealand, Aug. 9, 1991, 239348

Int. Cl.[5] A47J *43/26*

U.S. Cl. 30—120.2 **1 Claim**



1. A machine assembly for opening shell fruit comprising:

a first substantially circular disc at the left side of the assembly rotating clockwise about a first axis int he form of a shaft and having in its periphery a plurality of curved recesses each incorporating a cutter and two shoulders and said disc having projections beyond and to one side of said periphery;

a second substantially circular disc at the right side of the assembly rotating anticlockwise about a second axis in the form of a shaft and having in its periphery a plurality of curved recesses each incorporating a cutter and two shoulders and said disc having projections beyond and to one side of said periphery;

said first and second circular discs being mounted at a distance from each other with the cutters on the same plane and rotating at the same speed in opposite direction so that the peripheral recesses are maintained in coinciding phase relationship which defines an approximately circular space at their coincidence said space being prior to the coincidence for receiving a single shell fruit being introduced in said space;

said second axis being parallel and alongside the first axis whereby during said opposite rotational movement of both discs at essentially the same speed the overall form of the cross section of each cutting space changes as a result of relative motion between said paired recesses during rotation of said discs wherein a fruit introduced into said space is cut and thence released; and

a fruit feed pipe for introducing one single fruit from the bottm of a column of fruit into the space between each individual pair of recesses during rotational movement of said discs at a position where said individual space has not yet reached its minimum overall size,

said feed pipe having at its lower extremity an opening facing and adjacent to the plane of the cutters and said opening being substantially above the middle of the line joining the centres of the two discs;

said lower opening of the feed pipe a spring loaded guide whereby the individual shell fruit at the bottom of the column of shell fruit is centralised by said guide in relation to said cutters;

said curved recesses incorporating cutters having concave cutting edges in the form of an arc of a circle a cutting edge being at right angle to the axis of the disc;

said counter rotating discs having concave shoulders at either side of the cutters a shoulder being in the form of an

5,303,469

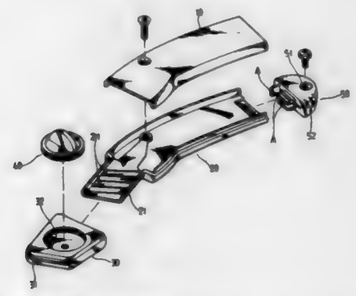
CUTTER KNIFE

Huang Yin-Han, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 15, 1993, Ser. No. 46,139

Int. Cl.[5] B23D *51/10*

U.S. Cl. 30—2 **1 Claim**



1. A cutter knife comprising:

an upper cover;

a lower cover engaged with said upper cover to form a handle with a longitudinal passage and having a protruded front end formed with a plurality of grooves;

a knife holder force-fitted with a front end of said lower cover and having a slit and a threaded recess;

a knife partly inserted into said knife holder through the slit of said knife holder;

a knob threadedly engaged with the threaded recess of said knife holder; and

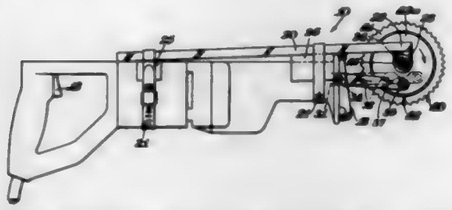
a tail seat having a plurality of tenons engageable with a rear end of said handle and having a slot for receiving the knife and a threaded hole; and

a screw engageable with the threaded hole of said tail seat.

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arc of a circle of greater radius than the radius of the cutting edge and being concentric to said cutting edge;
said counter rotating discs having at one side of and beyond the periphery of said discs and integral to sais disc projections which have one limit defined by a tangent of said curved shoulders;
said shafts having means to vary the distance between said shafts in order to modify the shape and size of the space defined by said coinciding recesses.

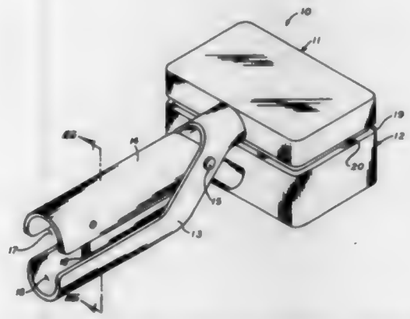
5,303,471
ATTACHMENT ARRANGEMENT FOR RECIPROCATING POWER SAW
Dante Liberatoscioli, 38 Greentree La., Malvern, Pa. 19355
Filed Jul. 8, 1992, Ser. No. 910,639
Int. Cl.[5] B25F *3/00*
U.S. Cl. 30—122 **8 Claims**



1. An attachment arrangement for a motor-driven reciprocating saw having a front face and a blade-attachment site, to adapt the saw for oscillatory circular cutting to a predetermined depth into a cuttable substrate, the attachment arrangement comprising:
a support arm rigidly attachable to the saw to extend outwardly from the front face of the saw;
a circular saw blade arrangement rotatably mounted to the support arm to position the circular saw blade arrangement outwardly from the front face of the saw;
hinged arm means having a first end attachable to the blade attachment site of the saw and a second end attached to the circular saw blade arrangement such that the reciprocating motion of the saw is converted to oscillating motion of the circular saw blade arrangement;
and wherein the circular saw blade arrangement comprises a circular saw blade and at least one disk-shaped circular sleeve member, the circular sleeve member having a diameter less than the diameter of the circular saw blade, the difference in diameter between the circular sleeve member and the circular saw blade defining the predetermined cutting depth, and wherein the second end of the hinged arm means is affixed to the circular sleeve member to rotate the circular sleeve member and the circular saw blade as an integral unit.

5,303,472
CARD DICER APPARATUS
Linus O. Mbanugo, Box 30321, Birmingham, Ala. 35237
Filed Jan. 26, 1993, Ser. No. 9,056
Int. Cl.[5] B26B *27/00*
U.S. Cl. 30—124 **3 Claims**

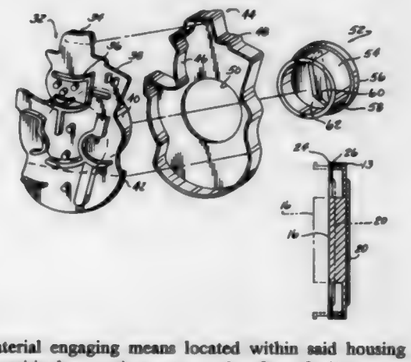
1. A card dicer apparatus, comprising,
a first anvil wall housing in facing relationship relative to a second anvil housing, wherein the first anvil housing includes a first anvil housing rear wall, the second anvil housing having a second anvil housing rear wall, a first handle fixedly mounted to the first anvil housing rear wall, a second handle fixedly mounted to the second anvil housing rear wall, with the first handle and the second handle arranged in a crossed relationship, and a handle axle directed through the first handle and the second handle parallel to the first anvil housing rear wall and the second anvil housing rear wall permitting pivoting of the first handle relative to the second handle, and
the first handle having a first handle groove, the second handle having a second handle groove, and a spring interposed within the first handle groove and the second handle groove to maintain spacing of the first handle relative to the second handle, and spacing of the first handle housing relative to the second handle housing, and
the first anvil housing having a first anvil housing punch wall with the second anvil housing having a second anvil housing cutter wall, the first anvil housing punch wall arranged in a confronting cooperative relationship relative to the second anvil housing cutter wall, wherein the first anvil housing punch wall and the second housing cutter wall are arranged in coextensive relationship, and
a matrix of parallel lug members fixedly mounted to the first housing punch wall in an orthogonal relationship extending beyond the first handle housing punch wall, and



the second anvil housing cutter wall includes a plurality of rows of first cutter blades orthogonally intersecting a plurality of further rows of second cutter blades, wherein the first cutter blades and the second cutter blades cooperate to define lug openings therebetween, wherein each of the lug members is arranged for reception within one of said lug openings on projection of the first housing punch wall towards the second housing cutter wall, and
the second housing includes a second housing front wall spaced from the second housing rear wall, and the second housing front wall includes at least one opening, and including a second housing floor extending between the second housing rear wall and the second housing front wall, wherein the at least one opening extends to the second housing floor, and a container arranged for sliding engagement with the second housing floor extending from the second housing front wall to the second housing rear wall.

5,303,473
COOKIE CUTTER
Robert F. Sadler, Rochester Hills, Mich., assignor to Superior Piston Ring Corporation, Detroit, Mich.
Filed Nov. 4, 1992, Ser. No. 971,349
Int. Cl.[5] B26F *1/38*; A21C *11/10*
U.S. Cl. 30—128 **11 Claims**

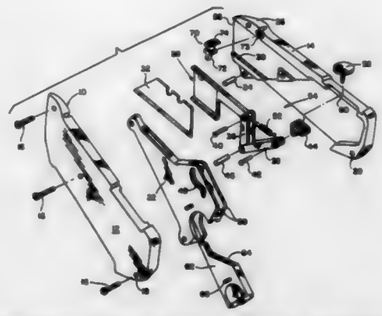
1. A device for cutting and engaging a material having a deformable consistency, forming a shape with a portion of said material, transferring said portion of said material from a first location to a second location and disengaging said portion of said material, comprising:
a housing with cutting means carried by said housing for cutting an outline of said shape in said material forming a separable, shaped, cut material portion;
material engaging means located within said housing for positively engaging an exposed surface of said cut material portion for disengaging said cut material portion from said housing for placement at said second location;
first imprinting means carried by and moveable relative to said housing for imprinting said exposed surface of said cut material portion while said housing is engaged with said cut material portion, said first imprinting means for imprinting an ornate design on said exposed surface;
handle means connected to said first imprinting means for manually actuating said first imprinting means; and
second imprinting means located on a surface of said handle means for imprinting independently from said first imprinting means.
10. A device for cutting and engaging a material having a deformable consistency, forming a shape with a portion of said material, transferring said portion of said material from a first location to a second location and disengaging said portion of said material, comprising;
a housing having cutting means carried by said housing for cutting an outline of said shape in said material forming a separable, shaped, cut material portion;



material engaging means located within said housing for positively engaging an exposed surface of said cut material portion for disengaging said cut material portion from said housing for placement at said second location;
first imprinting means carried by said material engaging means and moveable relative to said housing for imprinting said exposed surface of said cut material portion while said housing is engaged with said cut material portion, said first imprinting means for imprinting an ornate design on said exposed surface;
handle means connected to said material engaging means for disengaging said cut material portion from said housing; and
stopping means located on said material engaging means for holding said material engaging means and said housing together, said stopping means including a ridge formed on said housing and an outwardly extending bracket formed on said material engaging means, said bracket engageable with said ridge for limiting relative movement between said housing and said material engaging means.

5,303,474
SAFETY UTILITY KNIFE
Ronald Keklak, Ridge Spring, S.C.; Michael V. Couture, South Hadley, Mass., and John C. Whitehouse, Edgefield, S.C., assignors to PSI, Inc., South Hadley, Mass.
Filed Nov. 30, 1992, Ser. No. 983,175
Int. Cl.[5] B26B *1/08*
U.S. Cl. 30—162 **10 Claims**

1. A safety utility knife comprising a handle having
a cavity with a forward opening and a bottom opening,
an operating lever pivotally mounted to the handle and movable with respect to the handle within said bottom opening,
a blade holder slidably mounted within said forward opening,
a removable blade supported by the blade holder,
a toggle linkage including a pair of links, one of which is connected to the handle by a rearmost pin, the other of which is connected by a foremost pin to the blade holder, the links being interconnected by an intermediate hinge pin which is engaged in a groove in the operating lever, and



a spring biasing the blade holder rearward in the handle, the improvement, in combination therewith, comprising
a discrete mount connected to said one link by said rearmost pin, said mount being slidably mounted within said handle, and having an adjustable but normally fixed position within the handle, and
a threaded fastener engaged in said mount and protruding through an opening in the handle, whereby one can manually adjust and lock the position of said mount from outside the handle, thereby adjusting how far the blade protrudes from the forward opening when the lever is depressed toward the bottom opening of the handle.

5,303,475
FLEXIBLE DUCTING CUTTING TOOL
Michael E. Baker, Los Angeles, Calif., assignor to Flexcutter, Inc., Los Angeles, Calif.
Filed Aug. 21, 1992, Ser. No. 935,691
Int. Cl.[5] B26B *13/00, 13/04, 13/06*
U.S. Cl. 30—254 **8 Claims**



1. A hand-operated tool for cutting flexible ducting including a wire strand forming a part thereof, said tool comprising:
first and second elongated members each having a rearwardly extending handle portion and a forwardly extending cutting portion;
means interconnecting said members for relative rotation about a pivotal axel disposed between said handle and cutting portions;
each said cutting portion defining first and second angularly disposed cutting edges defining an obtuse included angle

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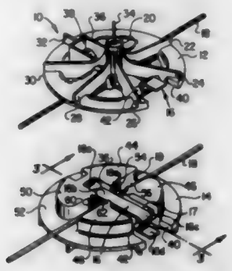
at a transition point therebetween, said first cutting edges disposed such that when said cutting portions are rotated toward each other said first cutting edges are brought into sliding overlapping contact for cutting said flexible ducting except for said wire strand, said second cutting edges disposed such that when said cutting portions are rotated toward each other said second cutting edges are brought into sliding overlapping contact for cutting said wire strand, said second cutting edges being disposed adjacent said pivotal axel, said transition point between said first and second cutting edges being disposed such that as said cutting portions are rotated toward each other said transition point is the first point of contact therebetween.

5,303,476

LINE HEAD FOR A ROTARY LINE TRIMMER

Lloyd H. Tuggle, Shreveport, La., assignor to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Oct. 29, 1992, Ser. No. 968,376
Int. Cl.[5] A01D *55/00*
U.S. Cl. 30—347 **8 Claims**



1. A line head for use with a rotary line trimmer, said line head comprising:
(a) a frame with a first and second side, said frame dimensioned to engage the rotary line trimmer, said second side being substantially smooth and having a perimeter with first and second channels defined therein, wherein the second channel is dimensioned to engage a length of cutting line;
(b) a lip across the first channel and recessed below the second side and inwardly of the perimeter;
(c) a generally rigid strap fastened at one end to said frame within the first channel, said strap rotatable between an open position and a closed position; and
(d) a clasp on the other end of the strap for removably engaging the lip, said clasp being elastically deformable outwardly to fit over the lip and to spring back inwardly to fit under the lip to securely grasp the lip.

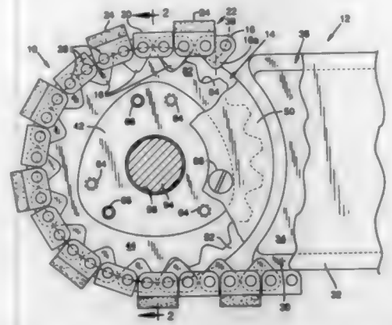
5,303,477

MULTI-RING SPROCKET

Eacho Kazarov, Milwaukie, Oreg., assignor to Blount, Inc., Montgomery, Ala.

Filed Nov. 10, 1992, Ser. No. 974,147
Int. Cl.[5] B23D *57/02*
U.S. Cl. 30—384 **17 Claims**

1. A sprocket comprising
a hub having a preselected axial thickness and a non-circular configuration as viewed axially of the hub, and
multiple substantially planar sprocket rings mounted on said hub, each ring having a thickness less than said preselected axial thickness and an aperture defined therein complementary to and in close fitting arrangement on said hub, each of said rings having sprocket teeth formed at its peripheral edge in the plane of and projecting radially outwardly from remainder portions of the ring, with the sprocket teeth being so configured and arrayed about the periphery of each ring that when the rings are mounted on the hub the teeth on adjacent rings are aligned axially of the sprocket, said rings nesting in face-to-face contiguous relationship on said hub to define a chain-receiving sprocket width substantially equal to the combined thicknesses of said rings and the contiguous teeth on said rings forming alternating chain-receiving radially-extending teeth and pockets extending fully across said chain-receiving sprocket width.

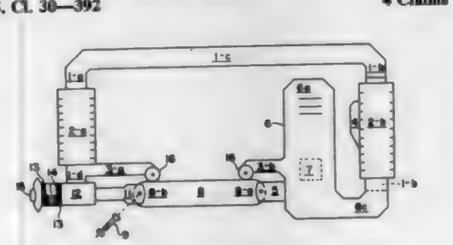


5,303,478

220 VOLT A.C. CORD-OPERATED, HAND-HELD PORTABLE HACK-SAW

Leslie H. Gugel, 2701 27th Crt., Jupiter, Fla. 33477

Filed Mar. 16, 1992, Ser. No. 851,576
Int. Cl.[5] B23D *49/12*
U.S. Cl. 30—392 **4 Claims**



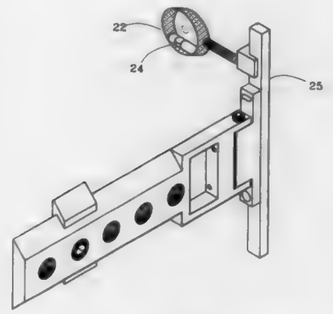
1. A powered hack-saw comprising:
a u-shaped mainframe,
a hack-saw blade removably and reciprocably mounted to said u-shaped main frame and including a proximal end and a distal end, said hack-saw blade including a rigid main body incapable of supporting itself during sawing without said distal end supported,
electric operated motor means mounted within said u-shaped mainframe and having a reciprocating output connected to said proximal end of said saw blade,
support means mounted to said u-shaped mainframe and extending outward therefrom being attached to and supporting said distal end of said saw-blade; and wherein,
said support means includes a generally c-shaped frame having a first leg with a first end portion thereon and a second leg with a second end portion thereon, said c-shaped frame further includes a lateral portion extending between said first leg and said second leg with said lateral portion spaced apart from said hack-saw blade and said second end portion attached to and supporting said distal end of said saw blade; and further comprising spring means mounted to said second end portion of said second leg and receiving said distal end of said saw blade, being operable to move said saw blade in a direction opposite to forced movement of said saw blade by said motor means; and wherein,
said spring means includes a first mount reciprocably mounted to said second end portion of said second leg with said distal end of said saw blade removably connected to said first mount,
said spring means further includes a spring connected to said first mount and operable to push said saw blade in a direction towards said motor means but yieldable to allow said motor means to push said first mount and said saw blade away from said motor means.

5,303,479

ADJUSTABLE VERTICAL AXIS ARCHERY BOW SIGHT MOUNT

Andrew T. Rudovsky, 124 Del Monte Dr., Pacifica, Calif. 94044

Filed May 1, 1992, Ser. No. 877,548
Int. Cl.[5] F41G *1/467*
U.S. Cl. 33—265 **16 Claims**



1. A mounting device for mounting an archery bow sight of the type comprising a leveling device onto an archery bow, said mounting device comprising:
a horizontal mounting arm having a proximal end and a distal end, said distal end of said mounting arm having a pivot means which has a vertical axis of rotation,
a bow sight mounting plate having means for attachment to said bow sight, said mounting plate being pivotally attached to said distal end of said mounting arm by said pivot means, and
a means for attaching said mounting arm to an archery bow, wherein said bow sight mounting plate has a planar surface oriented parallel to said vertical axis of said pivot means and an attachment means for attaching said bow sight to said planar surface such that said bow sight is mounted in an orientation parallel to said vertical axis of said pivot means.

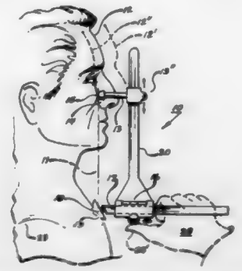
5,303,480

CRANIO-CERVICAL SAGITTAL-ALIGNMENT CALIPER AND UNIVERSAL MEASUREMENT SYSTEM

Paul W. Chek, 8308 (1-E) Regency Rd., San Diego, Calif. 92122

Filed Nov. 27, 1992, Ser. No. 984,230
Int. Cl.[5] A61B *5/103*; G01B *5/14*
U.S. Cl. 33—512 **7 Claims**

1. An inverted-T shaped anatomical caliper device, capable of measuring for possible sagittal cranio-cervical alignment deviation exhibited by any given human specimen, whereby a standardized technique is conveniently and accurately facilitated for determining critical cranio posture relative to said specimen's manubrium, simply by reading a display-scale; comprising:
a. a vertical stanchion member, serving as a common uniting structural element;
b. a built-in precision leveling means;
c. an upper/zygomatic-probe member, having adjustable means by which to be vertically translated relative to said stantion member;
d. a lower/sternal-probe beam like member, having adjustable means by which to be longitudinally translated relative to said stantion member, including a sagittal-deviation readout-scale fixedly arranged thereto;



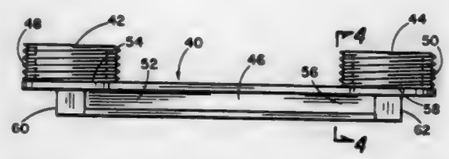
e. a sagittal-deviation readout-pointer fixedly arranged at the base of said stantion member, thereby facilitating visual readout of a reference measurement scale affixed to said lower/sternal-probe beam member.

5,303,481

GAS METER RISER ALIGNMENT DEVICE

Jim L. Russell, 5018 S. Irvington Ave., Tulsa, Okla. 74135

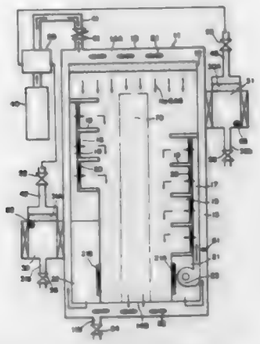
Continuation of Ser. No. 642,042, Jan. 16, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 982,017
Int. Cl.[5] G01B *3/30*
U.S. Cl. 33—529 **14 Claims**



1. For use in establishing or maintaining proper spacing between the meter swivels of consumer and supplier gas service risers to be connected to the inlet and outlet ports of a gas meter, a riser alignment device comprising:
first threaded nylon plug for connection with the meter swivel of and for stopping flow of gas through the supplier gas service riser;
second threaded nylon plug for connection with the meter swivel of and for stopping flow of gas through the consumer gas service riser;
means disposed between said first and second plugs for unchangeably rigidly spacing said first and second plugs at a distance substantially equal to the distance between the gas meter inlet and outlet ports; and
said first and second nylon plugs being fiberglass reinforced.

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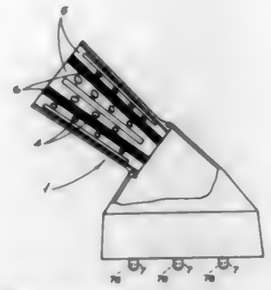
5,303,482
WAFER AIRTIGHT KEEPING UNIT AND KEEPING FACILITY THEREOF
Teppei Yamashita; Masanao Murata; Tsuyoshi Tanaka; Teruya Morita; Hitoshi Kawano; Atsushi Okuno; Masanori Tsuda; Mitsuhiro Hayashi, and Hiromi Morita, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jan. 28, 1992, Ser. No. 826,954
Claims priority, application Japan, Jan. 29, 1991, 3-009401; Jan. 29, 1991, 3-009404; Oct. 17, 1991, 3-269781
Int. Cl.[5] F26B *21/06*
U.S. Cl. 34—80 **12 Claims**



1. A wafer keeping facility comprising:
a wafer keeping box which includes wafer keeping shelves having filters at rear portions thereof, a loading apparatus having a vertically movable loading mechanism which is mounted thereon and travels along a rail disposed on a front passage before the wafer keeping shelves, a fluid circulating device for causing an inert gas to flow through the filters to the rear portion of the wafer keeping shelves and then to the front passage, and exhaust outlets;
first and second path boxes provided at taking-in-and-out outlet of the wafer keeping box;
a gas reservoir for storing a quantity of the inert gas therein;
a first gas supply pipe having a first valve, the first gas supply pipe extending from the gas reservoir toward the first pass box;
a second gas supply pipe having a second valve, the second gas supply pipe extending from the gas reservoir toward the second pass box; and
a fluid control device.

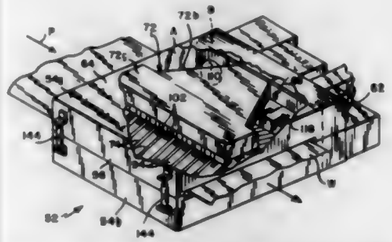
5,303,483
AIR DIFFUSERS
Wing-Kin Chan, Kowloon, Hong Kong, assignor to China Pacific Trade Limited, British Virgin Isls.
Filed Jul. 10, 1991, Ser. No. 727,912
Claims priority, application United Kingdom, Jul. 24, 1990, 9016236
Int. Cl.[5] A45D *20/00*
U.S. Cl. 34—97 **4 Claims**

1. An air diffuser for attachment to a handheld hairdryer, comprising:
a diffuser neck which is tapered in a direction of air flow down the diffuser neck;



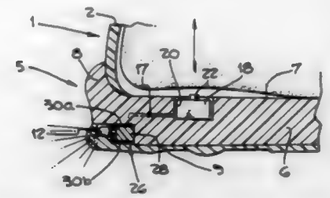
an angled diffuser head; and
a plurality of air vents provided in the diffuser neck.

5,303,484
COMPACT CONVECTIVE WEB DRYER
Kenneth G. Hagen, Cape Elizabeth, Me., and David A. Leeman, Worcester, Mass., assignors to Thermo Electron Web Systems, Inc., Auburn, Mass.
Filed Apr. 9, 1992, Ser. No. 866,150
Int. Cl.[5] F26B *13/00*
U.S. Cl. 34—155 **24 Claims**



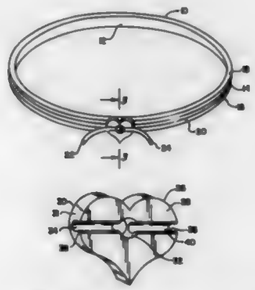
1. A convective dryer for drying a coated web moving along a path, said dryer having at least one equipment module arranged on one side of said path, said module including:
a housing interiorly subdivided into a first chamber opening towards said path and an enclosed second chamber adjacent thereto;
a plurality of mutually spaced nozzle assemblies extending laterally across and spaced along the length of said path within said first chamber, said nozzle assemblies being arranged to direct air against a web moving along said path;
a supply duct gradually diverging in width as measured in directions parallel to said path from a narrow inlet section communicating with said second chamber to a widened delivery end communicating with said nozzle assemblies at the approximate center of said web path;
recirculation means in said second chamber for withdrawing air from said first chamber and for directing the thus withdrawn air in a gradually diverging flow path through said supply duct for reintroduction into said first chamber via said nozzle assemblies; and
heater means for heating the air being directed to said supply duct by said recirculation means.

5,303,485
FOOTWEAR WITH FLASHING LIGHTS
Mark R. Goldston, Santa Monica; Jon L. Bemis, Rancho Palos Verdes, and Mariamia Godinez, Sherman Oaks, all of Calif., assignors to L.A. Gear, Inc., Santa Monica, Calif.
Filed Feb. 5, 1993, Ser. No. 13,839
Int. Cl.[5] A43B *23/00*
U.S. Cl. 36—137 **20 Claims**



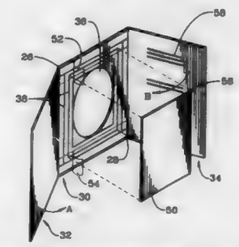
12. Footwear with means for increasing visibility of a wearer thereof, comprising:
a flexible upper for enclosing an upper portion of a wearer's foot;
a sole portion for underlying a lower surface of the wearer's foot and supporting the wearer's foot against the ground, said sole portion being attached to said upper portion and having an upper surface defining a footbed for supporting the lower surface of the wearer's foot, and an outsole surface for contacting the ground;
an electric light source mounted in said footwear such that light emitted from said source is visible exteriorly of said footwear;
a battery disposed in said footwear for energizing said light source;
an electrical circuit disposed in said footwear for connecting said battery to said light source; and
a pressure switch, disposed in said sole portion of said footwear between said footbed and said outsole surface for selectably connecting and disconnecting said light source to and from said battery, said pressure switch being in a normally closed state such that said light source is connected to said battery,
said pressure switch including means, operatively responsive to pressure of a predetermined level, for changing said pressure switch from said normally closed state to an open state, and for returning said pressure switch to the closed state when said pressure is reduced below said predetermined level.

5,303,486
QUILTING HOOP
Gay D. Dell, 911 City Park Ave., Columbus, Ohio 43206
Filed May 4, 1992, Ser. No. 877,751
Int. Cl.[5] D05C *1/04*
U.S. Cl. 38—102.2 **3 Claims**



1. A circular quilting hoop for mounting a piece of quilting material comprising an inside diameter surface and an outside diameter surface, a groove formed in said outside diameter surface and receiving a unitary, non-metallic, stretchable fastener having two ends which overlies said quilting material received in said groove, said fastener having an unstretched state when not in tension and a stretched state when placed in tension; securement means for receiving and securing each end of said fastener such that said fastener is held in tension and in a stretched state to secure said quilting material to said hoop when said fastener is mounted in said groove;
wherein said securement means has a body with a front face and a rear face, a lateral opening formed in said body which opens into said front and rear faces which receives both ends of said fastener and a pair of bores formed in said body which open into one face adapted to receive said ends of said fastener after said ends have passed through said bore to lock said fastener ends and prevent said fastener ends from pulling back through said bore when said fastener is in said stretched state.

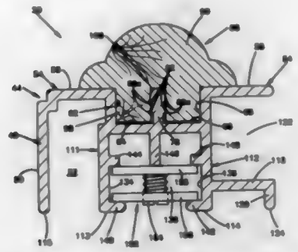
5,303,487
WINDOW DISPLAY CARD
Heidi S. Olson, 519 Beachview La., Barrington, Ill. 60010
Filed Nov. 9, 1992, Ser. No. 973,425
Int. Cl.[5] G09F *1/00*
U.S. Cl. 40—124.1 **10 Claims**



1. An improved window display card using commercially available two sided tape for use in securing personal items for display through a predefined window-frame providing a personalized greeting card, said display card comprising: a substantially rectangular single sheet of paper having two side surfaces, said sheet divided into three equally dimensioned sections by a first fold line and a second fold line defining a framing section, a backing section, and an indicia section; said framing section further defined by said first and second fold lines and two edges with a centrally disposed aperture therethrough; said backing section further defined by said first sold line and three edges; said indicia section further defined by said second fold line and three edges; wherein the improvement comprises a first transparent two sided pressure sensitive adhesive strip positioned cross an upper portion of one side surface of said framing section and a second transparent two sided pressure sensitive adhesive strip positioned across a lower portion of said one side surface of said framing section, said adhesive strips protected by removable cover sheets; and a means for aligning an item of display directly over said aperture of said framing section, a portion of said aligning means being covered by said adhesive strips; whereby removal of said cover sheets from said adhesive strips permits visual sighting of said means or aligning through said adhesive strips allowing an item of display to be properly positioned over said aperture and secured thereto, said backing section is then available to be folded at said first fold line sealing said items of display between said framing and backing sections for visual display through said aperture, said backing section and said indicia section foldable at said second fold line for use as a conventional greeting card.

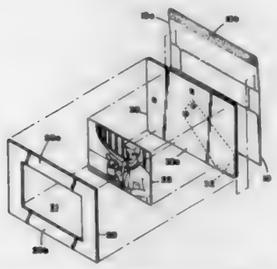
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,488
PICTURE FRAME
Harold F. Todd, Midland, and David C. LeFeaver, Toronto, both of Canada, assignors to Kleco Corporation, Brecksville, Ohio
Filed Apr. 8, 1991, Ser. No. 682,590
Int. Cl.[5] G09F *01/12*
U.S. Cl. 40—152 15 Claims



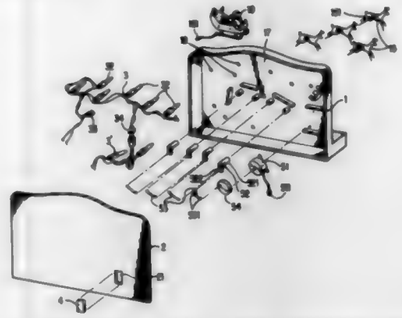
1. An apparatus for bordering a member, said apparatus comprising:
a first element for engagement with the member, said first element having an elongate recess; and
a second element having a different aesthetic appearance than said first element, said second element including a portion disposed within the recess,
said first element including means for lockingly engaging said portion disposed within the recess to prevent relative movement between said first and second elements, said means for lockingly engaging including means for penetrating said second element to lock said first and second elements together.

5,303,489
COMBINED MAGNETIC PICTURE FRAME AND GIFT/DISPLAY CARD
William E. Biegen, 20295 Manor Rd., Shorewood, Minn. 55331
Continuation-in-part of Ser. No. 847,115, Mar. 6, 1992, Pat. No. 5,261,174. This application Oct. 5, 1992, Ser. No. 956,745
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152 7 Claims



1. A combined permanent magnet picture frame and display card, comprising:
(a) a display card of magnetically attractive material having a front face, a rear face, and display card support means on said rear face;
(b) a removable picture frame, having frame members and a central opening, constructed from a permanent magnet sheet material and magnetically secured to said front face of said display card so that a photograph can be positioned therebetween for display through said opening, said removable frame being approximately the same size as said front face and being attachable to either said display card or to another metal surface.

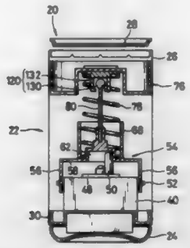
5,303,490
DISPLAY SHOWING MOVABLE ORNAMENTS
Steve Yang, 9 FL.-17, No. 3, Tien Mou W. Road, Shi-lin, Taipei, Taiwan
Filed Jun. 26, 1992, Ser. No. 904,542
Int. Cl.[5] G09F *19/08*
U.S. Cl. 40—414 6 Claims



1. A display means showing movable ornaments, comprising:
a formed housing in a shape suitable for standing alone, comprising a front panel having a picture provided thereon and a plurality of holes therein, stationary and movable ornaments and decorations provided on said front panel, and a rear panel;
at least one master light string provided behind said front panel of said housing, said master light string including bulbs passing through and projecting from said holes provided in said front panel and a plug extending out of said housing to plug in a socket for obtaining necessary power; and
a transmission mechanism including a light string AC motor connected to said master light string, and a plurality of transmission shafts driven by said light string AC motor, said transmission mechanism being connected with said movable ornaments for moving said movable ornaments;
the rear panel being in a configuration corresponding to the front panel and being attached thereto so that said master light string and said transmission mechanism are enclosed in said housing.

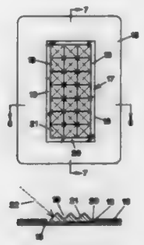
5,303,491
SIMULATED NOVELTY CONTAINER CAPABLE OF MOVEMENT
Yasuta Satoh; Yasuyuki Moriyama, both of Nagareyama; Hatsuo Ohkoshi, Narita; Masatoshi Sakurai, and Yukihiro Asami, both of Tokyo, all of Japan, assignors to Takara Co., Ltd., Tokyo, Japan
Division of Ser. No. 504,243, Apr. 4, 1990, Pat. No. 5,134,796. This application Jul. 31, 1992, Ser. No. 923,309
Claims priority, application Japan, Jun. 30, 1989, 1-78213; Aug. 29, 1989, 1-222490; Sep. 4, 1989, 1-103591; Dec. 5, 1989, 1-315534; Dec. 6, 1989, 1-317152; Dec. 28, 1989, 1-344479; Feb. 2, 1990, 2-13980.
The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.
Int. Cl.[5] G09F *19/08*
U.S. Cl. 40—414 9 Claims

1. A battery operated movable novelty device capable of simulating the appearance of a hand-held can container for the storage of a beverage comprising:
an upper lid member providing a circular configuration;
a lower lid member providing a circular configuration;
a battery member positioned adjacent the lower lid member;
a motor assembly mounted on the lower lid member and operatively connected to the battery member;
a flexible material cylindrical casing, shaped to simulate the container, the casing being attached to, respectively, the upper and lower lid members and enclosing the motor assembly and battery member;
means for positioning the upper and lower lid members a spaced distance away from each other to cause the flexible cylindrical casing to be capable of assuming an approximately cylindrical shape; and



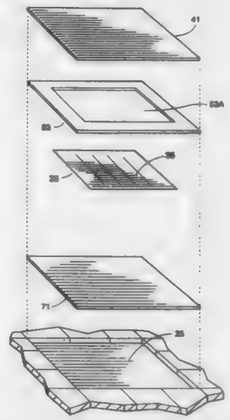
means, connected to the motor assembly, for relatively moving the upper and lower lid members to cause the flexible casing to be deformed from and returned to a cylindrical shape during a cycle of movement, whereby the novelty device appearance can amuse an observer by apparently deviating from its normally stationary solid configuration and returning to that configuration.

5,303,492
RETROFLECTIVE ROAD SIGN HAVING TRANSLUCENT BORDER AROUND LEGEND SEGMENTS
Dan Nishio, 190 Flying Cloud Isle, Foster City, Calif. 94404
Filed Oct. 21, 1992, Ser. No. 964,369
Int. Cl.[5] G09F *13/16*
U.S. Cl. 40—582 3 Claims



1. A sign, comprising:
a background sheet having a cutout of an outline of an informational legend, said background sheet having a front side and a rear side, said cutout having a perimeter,
a substantially retroreflective portion fitted within said cutout, said retroreflective portion having a periphery, said retroreflective portion being smaller than said cutout so that a substantial gap is formed between said perimeter of said cutout and said periphery of said retroreflective portion, said retroreflective portion having a front side for reflecting a substantial amount of a direct light striking said front side of said retroreflective portion, said retroflective portion having a rear side, and
a translucent sheet attached to said rear side of said background sheet and said rear side of said retroflective portion, so that said translucent sheet has a visible portion within said gap between said cutout and said retroreflective portion as seen from said front side of said background sheet, said visible portion of said translucent sheet having front and rear surfaces, such that when said rear surface of said visible portion is illuminated by a back light, said visible portion will transmit and diffuse said back light such that said front surface of said visible portion will glow.

5,303,493
FLOOR TYPE ADVERTISING APPARATUS
George W. Plumly, 3451 Boston Ave., Boston Building, Fort Worth, Tex. 76116
Continuation-in-part of Ser. No. 962,465, Oct. 16, 1992, which is a continuation-in-part of Ser. No. 707,695, May 30, 1991, Pat. No. 5,167,087, which is a continuation-in-part of Ser. No. 609,195, Nov. 5, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,501
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] G09F *7/04*
U.S. Cl. 40—600 6 Claims



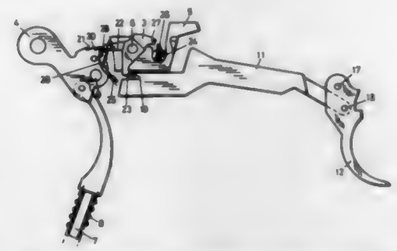
1. A floor type advertising apparatus comprising:
a floor,
a cavity formed in said floor and having a lower portion,
a thin lower layer located in and secured to the lower portion of said cavity,
said lower layer having an upper side,
a thin transparent layer of material located in said cavity and having a lower side facing said upper side of said lower layer, said lower side of said transparent layer having an edge portion surrounding a viewing portion,
adhesive material engaging said edge portion of said transparent layer and said upper side of said lower layer for securing said transparent layer to said lower layer, and
an advertising layer located between said transparent layer and said lower layer below said viewing portion to allow said advertising layer to be seen through said transparent layer from above.

5,303,494
HANDGUN HAVING A DECOCKING/SAFETY CONTROL DEVICE
Martin Tuma, Allmendstrasse 31 B, CH-4503 Solothurn, and Vaclav Brunclik, Lättenstrasse 106, CH-8142 Uitikon, both of Switzerland
Filed Sep. 17, 1992, Ser. No. 947,511
Claims priority, application European Pat. Off., Jul. 20, 1992, 92113406
Int. Cl.[5] F41A *17/62*
U.S. Cl. 42—70.04 5 Claims

1. A handgun, having a frame, a firing pin, a barrel mounted thereupon, a slide for sliding reciprocating movement on said frame, a trigger pivotally mounted upon the frame by a trigger

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pin, a trigger rod member pivotally connected to the trigger by means of a pin and having a control surface, a spring loaded sear pivotally mounted upon the frame by means of a sear pin, a hammer pivotally mounted to the frame by means of a hammer pin, a hammer spring acting onto the hammer for causing movement of said hammer along a path for firing the gun, which hammer includes a searing surface and a half-cocked notch, which sear includes a tang for engaging the searing surface of the hammer, and includes a control projection for engaging the control surface of the trigger rod member, which



sear is rotatable between a hammer locking position and a hammer release position,

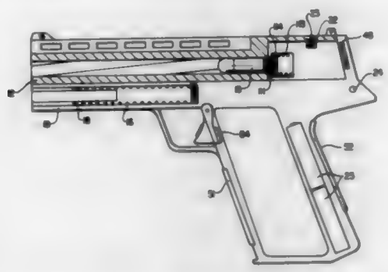
comprising a pivotable decocking/safety control device supported at the frame by means of a control device shaft member and having a first control member for cooperating with the sear and the hammer for causing said tang to engage said half-cocked notch for first initiating and then preventing movement of said hammer along said path for a decocking of the gun, and a second control member for cooperating with the sear for locking the gun.

5,303,495

PERSONAL WEAPON SYSTEM

Jerry D. Harthcock, 1301 N. Denton Dr., Carrollton, Tex. 75006

Filed Dec. 9, 1992, Ser. No. 987,788
Int. Cl.[5] F41A *9/62*
U.S. Cl. 42—84 **13 Claims**



5. A personal weapon system compriaing:

a firearm controlled by a microprocessor and comprising:

means within said firearm for storing a plurality of rounds of ammunition;

means for firing said rounds of ammunition;

means connected to said microprocessor for providing time and date information;

means connected to said microprocessor for providing muzzle-pointing azimuth information; and

means for recording said time and date information and said muzzle-pointing azimuth information for each of said rounds of ammunition fired from said firearm.

5,303,496

SCENT DISTRIBUTING METHOD FOR HUNTERS

David Kowalkowski, 8698 Wall Rd., Armstrong Creek, Wis. 54103

Filed Jan. 19, 1993, Ser. No. 5,677
Int. Cl.[5] A01M *31/00*
U.S. Cl. 43—1 **10 Claims**

1. A method for a person to attract animals to a desired location without human scent contamination of the desired location comprising the steps of:

(a) inserting a scent into a walled pellet for carrying the scent to the desired location;

(b) inserting the walled pellet into a projectile delivery means for discharging the walled pellet;

(c) discharging the walled pellet from the projectile delivery means at the desired location;

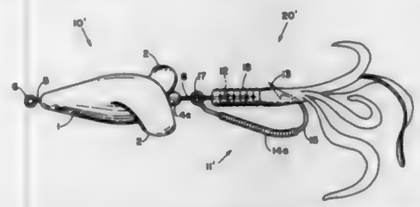
(d) whereby the walled pellet impacts upon the desired location, and breaks, depositing the scent in the desired location so that contamination of the area with human scent is avoided.

5,303,497

FLOATING IMPELLER LURE APPARATUS AND METHOD

Phillip A. Rabideau, 3605 Fawn Creek, Austin, Tex. 78746

Continuation of Ser. No. 828,304, Jan. 30, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 18,342
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.21 **8 Claims**



1. A floating, snag proof, buzzing, fishing impeller lure comprising:

a) a buoyant body means aerodynamically shaped so that said buoyant body means offers minimum air resistance when cast;

b) integral reaction blade means formed in said buoyant body means so that said buoyant body means rotates in water when retrieving said cast;

c) a countertorque means connected to a line and rotatably connected to said buoyant body means so that torque from said rotation is kept from said line;

d) a trailing lure dressing rotatingly connected to said countertorque means by a swivel means, said trailing lure dressing formed so as to lie flat on the surface of said water so that rotation is resisted; and

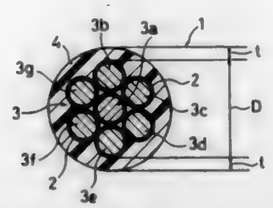
e) an in-line hook with a point, shank, and bend in said shank connected to said trailing lure dressing so that as said cast is retrieved, said bend and shank act as a keel and, in combination with said swivel and said floating lure dressing, keep said point in an upright position and free of snags.

5,303,498

FISHING LINE

Toshiaki Yutori, Takasago; Yutaka Kanetsuki; Masaaki Katsumata, both of Kobe, and Atsushi Kikuchi, Higashikurume, all of Japan, assignors to Kabushiki Kaisha Kobe Sekio Sho, Kobe and Daiwa Seiko, Inc., Tokyo, both of Japan

PCT No. PCT/JP90/01004, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO92/02132, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 6, 1990, Ser. No. 842,172
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—44.98 **1 Claim**



1. A fishing line comprising:

a stranded wire defined by a plurality of stranded steel wires, said stranded wire being coated with a synthetic resin;

wherein:

outer surfaces of said steel wires are coated with an anticorrosion metal by plating;

a strand pitch of the stranded wire is 13 to 20 times a diameter of the stranded wire;

a thickness of said synthetic resin is 4 μm or more; and

a knot strength of said fishing line is 50% or more of a strength of the stranded wire;

wherein said steel wires are two-phase structured low-carbon steel wires having a fibrous fine metallurgical structure and having a tensile strength of 300 to 600 kgf/mm^2.

5,303,499

FISHING DEVICE

Matthew A. Miller, 505 Fairway Ct., Broken Arrow, Okla. 74011

Filed Feb. 8, 1993, Ser. No. 17,421
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.15 **15 Claims**



1. A new fishing device for use with a fishing line, said device comprising:

a buoyant floatation member having both a forward end and an aft end;

a line guide means coupled to said floatation member for slidably coupling said fishing line thereto;

a connecting member coupled to both said forward end and said aft end of said floatation member and extending therebetween to form a V-shape;

a non-buoyant weight member having an upper end and a pointed end at respectively opposed ends thereof, and further having a deformable joint located between said upper end and said pointed end which allows said weight member to bend;

a connection means coupled to said connecting member proximate an apex of said V-shaped connecting member and further coupled to said upper end of said weight member and;

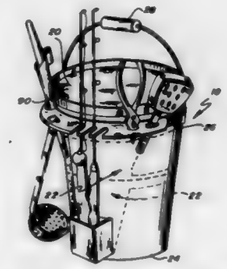
a deflector rod coupled to said forward end of said floatation member and extending downwardly therefrom, said deflector rod being operable to preclude said fishing device from becoming entangled in underwater obstacles.

5,303,500

ICE FISHING DEVICE

Leroy Luukonen, HCR 70, Box 173, LaPorte, Minn. 56461-9640

Filed Apr. 28, 1993, Ser. No. 54,681
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—54.1 **19 Claims**



1. An ice fishing device for carrying ice fishing apparatus comprising:

(a) a bucket having a base, an interior, and a handle;

(b) a plurality of trays for positioning within said interior of said bucket, each of said trays having a base, an exterior first wall, at least one interior second wall, and a plurality of sectional dividers extending between said exterior first walls and said interior second walls;

(c) a cover removably affixed to said bucket; and

(d) an apron affixed to said bucket comprising:

(i) a body having an adjustable strap for encircling said bucket;

(ii) a ledge extending outwardly from said body, said ledge having a plurality of grooves and apertures therethrough; and

(iii) a pocket extending outwardly from said body where said ledge and said pocket carry said ice fishing apparatus.

5,303,501

TRAINING AID FOR PEST CONTROL

Douglas L. Seemann, 11840 N. Gray Eagle Ave., Tucson, Ariz. 85737

Continuation of Ser. No. 7,485,671, Feb. 27, 1990, abandoned. This application May 12, 1992, Ser. No. 881,956
Int. Cl.[5] G09B *23/00*; A01M *1/14*
U.S. Cl. 43—114 **1 Claim**

1. A simulated monitoring trap consisting of a first wall having a first side, a second side, and a third side,

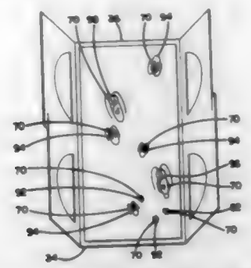
a second wall rotatably attached to said second side,

a third wall rotatably attached to said third side,

said second and third walls being rotatable to one another to form with said first wall, a triangular opening at said first side, and

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said first wall being generally planar and having generally planar visual representations of insects removably ad-



hered directly on and parallel with said first wall in an arrangement as they could appear when caught on the sticky trapping surface of a commercial monitoring trap.

5,303,502

METHOD AND ARTICLE FOR THE PREVENTIVE PROTECTION OF MATERIALS AGAINST SOIL-DWELLING PESTS

Wolfgang Metzner, Krefeld; Michael Pallaske, Kempen, and Hans-Werner Wegen, Krefeld, all of Fed. Rep. of Germany, assignors to Desowag Materialschutz GmbH, Duesseldorf, Fed. Rep. of Germany

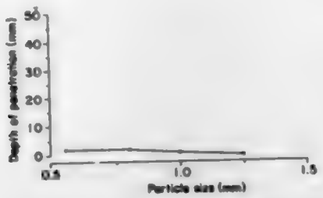
Division of Ser. No. 579,966, Sep. 10, 1990, Pat. No. 5,159,778. This application Sep. 30, 1992, Ser. No. 953,712

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1989, 3931303

The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.

Int. Cl.[5] A01M *1/20*

U.S. Cl. 43—121 **31 Claims**



1. A method for the protection of an object against soil-dwelling pests, comprising arranging around the object at least one barrier comprised of at least one type of particle selected fro the group consisting of sharp-edged inert particles having a particle size screened from about 0.001 to 30 mm and spherical inert particles having a diameter of about 0.5 to 5.0 mm, wherein the sharp-edged and spherical inert particles are selected from the group consisting of glass splinters, ground glass, glass tinsel, glass spangles and glass beads.

5,303,503

IRRIGATION AND FERTILIZATION SYSTEM

James A. Patterson, 2074 20th St., Sarasota, Fla. 34236

Continuation-in-part of Ser. No. 843,539, Feb. 28, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 141,819

Int. Cl.[5] A01G *29/00, 25/06;* **A01B** *79/02*

U.S. Cl. 47—48.5 **5 Claims**

1. A method of irrigating soil below the soil surface comprising the steps of:

A. placing a conduit formed of a length of flexible, pliable hollow tubular fiber in the soil with an axis of said conduit substantially parallel to the soil surface; said fiber having water permeable properties;

B. introducing ammonia hydroxide into said conduit for a period of time sufficient to dissolve at least a portion of a plasticizer within said fiber, said period of time also being sufficient to dissipate ammonia gas from said ammonium hydroxide from within said conduit into the soil leaving substantially only water within said conduit;

C. flushing said conduit with water to form a colloid of said dissolved plasticizer for removal;

D. introducing additional water into said conduit thereafter.

5,303,504

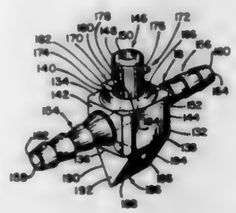
SYSTEM FOR HARVESTING MAPLE TREE SAP AND APPARATUS USED THEREIN

George L. Buzzell, R.F.D. No. 2, Newport, Vt. 05855

Division of Ser. No. 547,172, Jul. 6, 1990. This application Aug. 28, 1992, Ser. No. 936,669

Int. Cl.[5] A01G *23/10*

U.S. Cl. 47—52 **5 Claims**



1. A Tee-connector suitable for use in a sap collecting system comprising a body member defined by top and bottom, horizontally disposed, planar surfaces in parallel relationship to one another, planar, vertically disposed, parallel front and back surfaces, and first and second, vertically disposed, parallel sides intersecting with the planes defined by the said front back surfaces, first and second elongated fittings being provided on the said body member and in direct opposition to one another and extending from and connected respectively to said first and second, vertically disposed sides for connection of the ends of flexible, plastic tubing hereto, a horizontally disposed cylindrical-shaped passageway extending through said body member and said first and second, elongated fittings and terminating in and defining open end sin said fittings, a third, centrally disposed fitting being provided on said body member and extending outwardly therefrom a predetermined distance and being perpendicular to the said top, horizontally disposed, planar surface of said body member, an axial cylindrical-shaped passageway being provided in said third fitting and extending into said body member and intersecting with said horizontally disposed passageway, and a supporting member extending downwardly from the said bottoms surface of the said body member for detachably fastening the Tee-connector to the trunk of a tree from which sap is being collected, said downwardly extended supporting member being defined by planar front and back faces which taper downwardly and intersect with one another, and a parallel first and second, vertically disposed, planar sides, an opening being provided in said downwardly extending member and extending through said member from one planar tapered face to the other whereby a nail or like fastening means can be inserted for fastening said Tee-connector to a tree from which sap is being collected and whereby said third fitting on said Tee-connector will be directed away from the trunk of said tree and said third fitting will be directed vertically upwardly for connection of a drop line extending downwardly from a spout member.

5,303,505

SYSTEM FOR AUTOMATICALLY CULTIVATING CROPS IN A GREENHOUSE

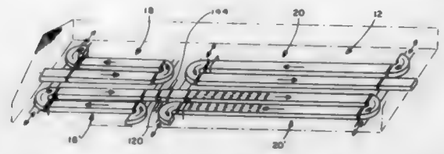
Yasuo Sumiyoshi; Masaaki Asazuma, both of Kobe; Nobuo Sakurai, Miki; Yoshinori Furukawa, and Hisaaki Omoto, both of Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Feb. 27, 1991, Ser. No. 661,912

Claims priority, application Japan, Feb. 27, 1990, 2-48795

Int. Cl.[5] A01G *31/02*

U.S. Cl. 47—65 **27 Claims**



1. A system for automatically cultivating crops, said system comprising:

first means for conveying seedlings in a first, predetermined, endless path to allow the seedlings to be treated under a first set of controlled growing conditions;

second means for conveying seedlings in a second, predetermined, endless path to allow seedlings to be treated under a second set of controlled growing conditions,

said first and second paths being substantially horizontal; and

means for selectively defining a third conveying path to permit seedlings on the first conveying means to be continuously conveyed in said third path onto the second conveying means for conveyance by the second conveying means,

said means defining the third conveying path comprising a horizontally extending conveying surface.

5,303,506

BASKET FLOWER POT WITH DECORATIVE COVER

Donald E. Weder, Highland, Ill.; Franklin J. Craig, Valley Park, Mo.; William F. Straeter, Breese, Ill.; Joseph G. Straeter, Highland, Ill., and John Bergstrand, Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 852,740, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 704,908, May 21, 1991, abandoned, which is a continuation of Ser. No. 398,779, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 365,767, Jun. 13, 1989, abandoned, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Oct. 13, 1992, Ser. No. 960,172

Claims priority, application Japan, Jul. 23, 1991, 3-182319; Oct. 31, 1991, 3-286562; Nov. 20, 1991, 3-304933; Dec. 12, 1991, 3-328779

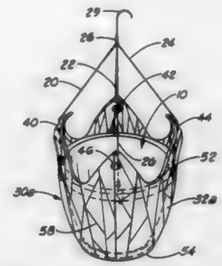
Int. Cl.[5] A01G *9/02*

U.S. Cl. 47—67 **6 Claims**

1. A decorative cover adapted to use with a hanging basket flower pot adapted to be hangingly supported from a support surface which as an outer peripheral surface, an upper end, a lower end and a pot opening extending through the upper end with the pot opening being sized and shaped for accommodating a floral grouping, the decorative cover comprising:

a thin, flexible sheet of material preformed into a predetermined shape of a pot cover having an upper end, a lower end and an object opening extending through the upper end thereof, the object opening being sized and shaped for receiving the flower pot and the flower pot being disposed in the object opening with the pot cover being disposed adjacent and extending about a substantial portion of the outer peripheral surface of the flower pot, the preformed pot cover having a plurality of overlapping folds extending at various angles and extending over various distances which are connected for cooperating in maintaining the sheet of material in the preformed shape of the pot cover, a plurality of spaced apart holes formed through the sheet of material, the lower end of the flower pot being disposed adjacent the lower end of the pot cover; and

a plurality of wire means, each wire means being connected to the flower pot and each wire means extending through one of the holes in the preformed sheet of material, each



wire means being connectable to the support surface for hangingly supporting the preformed sheet of material and the flower pot from the support surface and said wire means connecting the sheet of material to the flower pot via the connection made by said wire means extending through the holes in the sheet of material, and said wire means extending through said holes in the sheet of material providing the only connection between the sheet of material and the flower pot.

5,303,507

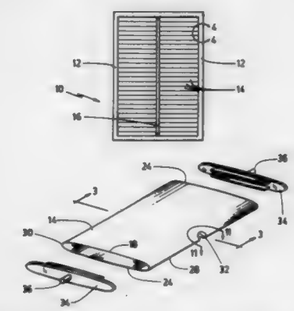
ADJUSTABLE SHUTTERS AND SLATS THEREFOR

Fred J. Oille, Mississauga, Canada, assignor to Fashion Fold Products Inc, Rexdale

Continuation-in-part of Ser. No. 970,424, Nov. 2, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 49,336

Int. Cl.[5] E05F *17/00*

U.S. Cl. 49—74.1 **20 Claims**



1. In combination, a shutter slat; elongated in a longitudinal direction and having a tubular wall defined in transverse cross section by a major axis and a minor axis;

said tubular wall having an opening therethrough concentered on said major axis; and

a plurality of longitudinally aligned splines depending from said tubular wall internally of said slat on opposed sides of said major axis adjacent said opening; and

coupling means for coupling said slat to an adjusting rod, said coupling means including a body portion having a forward end and a rearward end, and an axis therebetween, said body portion having a plurality of serrations transverse to said axis, and a hinge coupling element dis-

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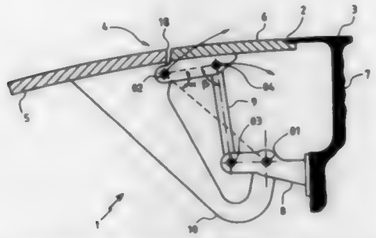
posed on the forward end of said body portion, said body portion being inserted through said opening in said slat to engage said serrations with said splines.

5,303,508

ACCESS DOOR, ESPECIALLY FOR AN AIRCRAFT ENGINE COWLING, PROVIDED WITH SYNCHRONIZED PIVOTING ARTICULATED FLAP

Alain Porte, Colomiers, France, assignor to Aerospatiale Societe Nationale Industrielle, France

Filed Feb. 26, 1992, Ser. No. 842,079
Claims priority, application France, Mar. 12, 1991, 91 02978
Int. Cl.[5] E05F *17/00*
U.S. Cl. 49—109 **24 Claims**



1. A device for tight closure of an opening in a wall supported by a frame such that said opening defines an edge of said wall, said device comprising:

first means for closing a portion of said opening, said first means being pivotably attached to said frame along one side of said opening by pivoting about a substantially fixed first axis, said first means having a closure edge such that said closure edge of said first means forms a gap with said edge of said wall when said first means is in a closed position;

second means pivotably attached to said first means for closing said gap, said second means being pivotable about a second axis at said closure edge of said first means for closing; and

at least one link pivotably attached to said second means at a fourth axis and pivotably attached about a substantially fixed third axis along said one side of said opening.

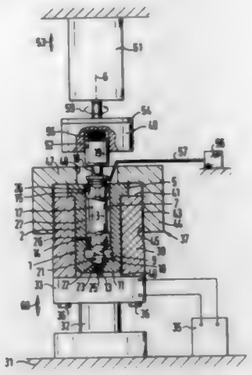
5,303,509

APPARATUS FOR PRODUCING SEALING FACES ON VALVES

Siegfried Schweizer, Bamberg, and Werner Sefx, Oberaurach-Trossenfurt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 394,035, Aug. 15, 1989, abandoned. This application Sep. 28, 1992, Ser. No. 952,076
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1988, 3828987; Jul. 28, 1989, 3925043
Int. Cl.[5] B24B *15/04*
U.S. Cl. 51—27 **5 Claims**

1. An apparatus for producing sealing faces of high surface quality of a complementary valve and a valve seat body which are to be used together, in fuel injection valves for internal combustion engines, which have at least one sealing seat provided on at least one movable valve element and at least one complementary valve seat face embodied on at least one valve seat body upon which said at least one sealing seat seats, which comprises a holder unit (37) for receiving and holding said at least one valve seat body in a fixed position, a rotary unit which rotates said at least one movable valve element in only one constant direction of rotation which rotatably engages said at least one valve seat face of said at least one valve seat body, a lapping medium supply apparatus for admitting a slurried, fine-grained lapping medium relative to said at least one valve seat face on said at least one seat body and said at least one sealing seat on said at least one movable element, and a vibration generator (33) which engages said holder unit (37), for generating an ultrasonic range high-frequency vibrational motion (60) which vibrates said at least one valve seat body (2)



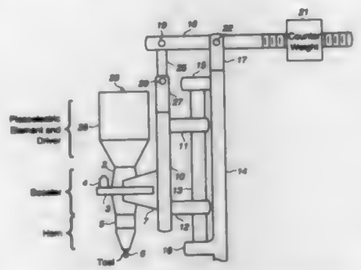
and via said at least one valve seat body vibrates said at least one movable valve element (3) to provide an axial motion to said at least one movable valve element and said at least one valve seat body.

5,303,510

AUTOMATIC FEED SYSTEM FOR ULTRASONIC MACHINING

Noel C. Calkins, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 11, 1990, Ser. No. 522,016
Int. Cl.[5] B24B *1/04*
U.S. Cl. 51—59 SS **7 Claims**



1. A method of ultrasonic machining comprising:

a. providing ultrasonic machining apparatus having an ultrasonic machining tool mounted in a tool assembly and disposed such that said tool assembly is movable in a vertical direction and a relatively small amount of force is required to overcome frictional force associated with vertical movement of said tool assembly;

b. directing a slurry stream comprised of abrasive particles in a liquid to a location on a workpiece from which material is removed by means of said tool and said abrasive particles;

c. providing adjustable counterbalance means effective to immobilize the tool assembly in its vertical travel when the tool is not vibrating; and

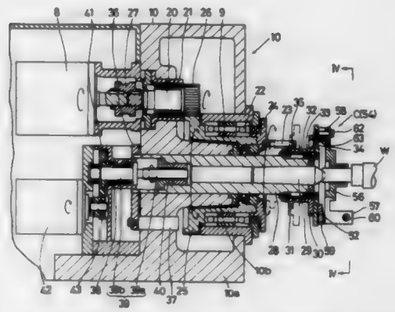
d. providing a force acting vertically downward on the tool assembly which is effective to cause downward movement of the tool assembly so that the tool is spaced apart from said workpiece by a vertical gap of such size that material is removed from the workpiece, where said downward force is less than a force which is effective to cause the tool to contact the workpiece.

5,303,511

SPINDLE APPARATUS FOR SUPPORTING AND ROTATING A WORKPIECE

Yukiharu Tsuchiya, Nagoya; Toshio Maruyama; Kenzaburo Oishi, both of Kariya; Masakazu Yamaguchi, Nagoya; Shoichi Sano, Gamagouri, and Makoto Nonoyama, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 690,618, Apr. 24, 1991, abandoned. This application Oct. 15, 1992, Ser. No. 962,006
Claims priority, application Japan, Apr. 27, 1990, 2-110254
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.75 **4 Claims**



1. A grinding machine for grinding a cylindrical workpiece comprising a bed, a spindle head mounted on the bed and having a spindle center, a tailstock mounted on the bed and having a tailstock center for supporting a workpiece together with the spindle center, and a wheel head carrying a grinding wheel,

wherein the grinding machine is further provided with a workpiece stand-by station arranged on the bed at a location between the spindle head and the tail stock for temporarily supporting the workpiece thereon,

wherein the spindle head comprises:

a workpiece spindle rotatably supported on the spindle head and driven for rotation by a motor, the workpiece spindle having a through bore;

a ram including a center for supporting the workpiece, the ram being supported within the through bore and axially slidable relative to the spindle in a direction parallel to the axis of the workpiece spindle;

a moving unit for moving the ram to an advanced position so as to support, via the center, the workpiece temporarily supported on the workpiece stand-by station and moving the ram to a retracted position so as to release the workpiece;

a drive member rotatably supported on a front end of the ram for axial movement with the ram and adapted to engage the workpiece in the direction of rotation when the ram is moved to the advanced position; and

a mechanism for transmitting rotation of the workpiece spindle to the drive member at any axial position of the ram;

and wherein said grinding machine further comprises:

a measuring device arranged on the bed for detecting the longitudinal position of the workpiece; and

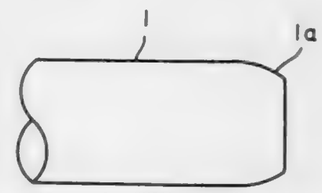
a controller comprising means responsive to the measuring device for actuating the moving unit until the ram is moved from the retracted position to the advanced position, and further actuating the moving unit until an output signal of the measuring device indicates that the workpiece is located at a predetermined position.

5,303,512

METHOD AND APPARATUS FOR GRINDING A CYLINDRICAL SURFACE OF A WORKPIECE BY TRAVERSE GRINDING

Toshio Tsujiuchi; Tomoyasu Imai, both of Kariya; Norio Ohta, Okazaki; Yukio Oda, Kariya; Ryohei Mukai, Nagoya; Hisashi Nakamura, Nagoya, and Takayuki Yoshimi, Toyohashi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 23, 1992, Ser. No. 902,822
Claims priority, application Japan, Jun. 25, 1991, 3-153039; Jun. 25, 1991, 3-153040; Sep. 24, 1991, 3-243714
Int. Cl.[5] B24B *5/04, 49/16*
U.S. Cl. 51—165.77 **10 Claims**



1. A method of grinding a cylindrical surface of a workpiece with a rotating grinding wheel having a grinding surface narrower than the axial length of the cylindrical surface, said method comprising the steps of: rotating said workpiece about the center axis thereof;

advancing said grinding wheel relative to said workpiece from an infeed start position toward one end of the cylindrical surface to grind the one end of the cylindrical surface into a predetermined intermediate diameter larger than a desired final diameter by a predetermined finish allowance;

effecting a first relative movement between said grinding wheel and said workpiece for moving said grinding wheel relative to said workpiece in a traverse direction parallel to the center axis of said workpiece toward the other end of the cylindrical surface to grind the wheel area of the cylindrical surface, said first relative movement continuing until at least a portion of said grinding wheel surface extends axially beyond the cylindrical surface, wherein the other end of said cylindrical surface is subject to excessive grinding;

advancing said grinding wheel toward the cylindrical surface to grind a part of the cylindrical surface into the desired final diameter; and

effecting a second relative movement between said grinding wheel and said workpiece for moving said grinding wheel relative to said workpiece in a traverse direction parallel to the center axis of said workpiece to grind the whole area of the cylindrical surface into the desired final diameter, said second relative movement continuing until at least a portion of said grinding wheel surface extends axially beyond the cylindrical surface,

and wherein the finish allowance is determined to be larger than an amount of the excessive grinding at the other end of the cylindrical surface during the first traverse movement of said grinding wheel.

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5,303,513

PORTABLE ABRADING HANDTOOL

Kenneth R. Spiegel, Dublin, Ohio, assignor to Honda of America Mfg., Inc., Marysville, Ohio

Filed Sep. 22, 1992, Ser. No. 948,322
Int. Cl.[5] B24B *23/02*
U.S. Cl. 51—170 T 10 Claims



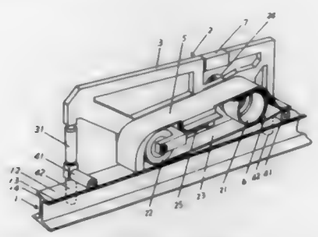
1. A portable handheld fluid actuated abrading tool comprising:
- housing means for being manipulated by a hand of an operator;
- fluid actuated driving means including a rotatable drive shaft within said housing means, said driving means being operable in response to fluid pressure acting thereupon for rotatably driving said drive shaft;
- abrading means coupled to said drive shaft for abrading a surface to be abraded;
- valve means relatively movable in said housing means and operable in response to engagement and disengagement of said abrading means with the surface to be abraded to move within said housing means between unblocking and blocking conditions to unblock and block respectively, the fluid pressure going to said driving means, whereby when in said unblocking condition the fluid pressure causes said driving means to rotatably drive said drive shaft and when said abrading means is disengaged from the surface to be abraded said valve means is in said blocking condition whereby rotation of said drive shaft ceases.

5,303,514

RAIL GRINDING APPARATUS

Hirotsugu Oishibashi, Tokyo; Soji Fujimori; Muneyuki Ohara, both of Musashino; Haruo Yokoyama, Kokubunji; Akihiro Hosokawa, Nishinomiya; Kosuke Nagai, and Hideshi Miyazaki, both of Osaka, all of Japan, assignors to Sumikin Osaka Plant Engineering Co., Ltd., Osaka; Railway Technical Research Institute, Tokyo and Sumitomo Metal Technology Inc., Hyogo, all of Japan

Continuation of Ser. No. 917,749, Jul. 24, 1992, abandoned, which is a continuation of Ser. No. 457,077, Dec. 26, 1989, abandoned. This application Jul. 30, 1993, Ser. No. 99,393
Claims priority, application Japan, Dec. 27, 1988, 63-169592[U]
Int. Cl.[5] B24B *23/00, 19/00*
U.S. Cl. 51—178 9 Claims



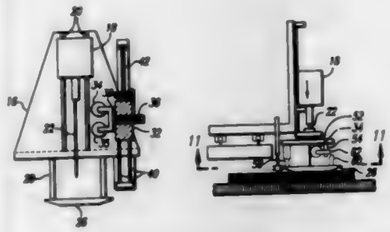
1. A rail grinding apparatus comprising:
- a frame;
- a rotary grinding device mounted on the frame for grinding rail surfaces in grinding planes corresponding to the top, gage corner, and upper lateral surfaces of the rail;
- first rollers rotatably mounted on the frame for rotation about first axes lying in a first plane parallel to the grinding plane to support the frame on a rail;
- second rollers rotatably mounted on the frame for rotation about second axes extending transversely with respect to the first axes, wherein the first and second axes are stationary relative to one another;
- means for adjusting the distance of the rotary grinding device from the first plane; and
- the first rollers and the second rollers are placed in such an arrangement that the frame can be tilted around the rail surfaces such that the grinding plane can be positioned to correspond to any one of the planes defined by the top, gage corner, and upper lateral surfaces of the rail in order to grind the top, gage corner, and upper lateral surfaces of the rail.

5,303,515

METHOD AND DEVICE FOR AUTOMATICALLY SHARPENING CUTTING BLADES

Jean Etcheparre, and Bernard Etcheparre, both of Bordeaux, France, assignors to Lectra Systems S.A., Cestas Bordeaux, France

Continuation-in-part of Ser. No. 888,402, May 21, 1992, abandoned, which is a continuation of Ser. No. 579,149, Sep. 6, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,913
Claims priority, application France, Sep. 15, 1989, 89 12147
Int. Cl.[5] B26D *7/12*
U.S. Cl. 51—285 9 Claims



3. A process for sharpening an elongated cutting blade rotatably supported by a blade-holder unit, said blade presenting a sharp edge which is rotated about a longitudinal axis of the blade and moved in a longitudinal direction along its longitudinal axis opposite a sharpening device comprising a plate including a guide for said blade, said plate supporting a grinding wheel, said grinding wheel being provided at least on a surface with abrasive material and having a cylindrical body presenting a V-section peripheral groove, wherein said abrasive material covers at least a portion of said V-shaped groove, said grinding wheel being mounted to rotate freely along with said longitudinal movement of said blade, and said grinding wheel being mounted to rotate about an axis inclined by a predetermined angle with respect to the normal to a median plane of the blade, said process comprising the following steps of:
- rotating the plate supporting the grinding wheel by rotating the blade;
- bringing said portion of said grinding wheel into contact with the sharp edge of the blade;
- moving one of said blade and said grinding wheel in said longitudinal direction to sharpen the blade; and
- preventing the blade from bending when it contacts the grinding wheel.

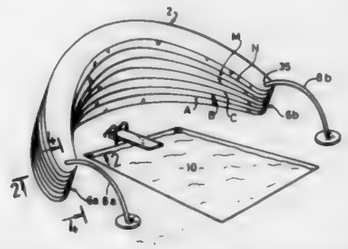
6. A device for sharpening an elongated cutting blade presenting a sharp edge, comprising at least two grinding wheels each provided at least on a surface thereof with abrasive material, each grinding wheel having a cylindrical body presenting a V-sectioned peripheral groove, wherein said abrasive material covers at least a portion of said V-shaped groove, said grinding wheel being supported by a carriage and mounted to rotate freely about an axis contained in a first plane generally parallel to the sharp edge of the blade and perpendicular to a median plane of the blade, and said axes being inclined relative to a second plane perpendicular to said first plane and to the median plane of the blade, said sharpening device comprising means for placing the blade and said portion of the V-shaped groove of the grinding wheels in contact and means for relative displacement of the blade and the grinding wheels in a linear direction parallel to and in line with the sharp edge of the blade, said grinding wheels being juxtaposed along said linear direction of the sharp edge of the blade and borne by at least one bifurcated support such that an amplitude of the relative displacement of the blade necessary for sharpening a predetermined length of the blade is thereby correspondingly reduced according to the number of said grinding wheels provided.

5,303,516

INFLATABLE VAULT WHICH CAN BE OPENED OUT AND COLLAPSED

Guy R. Delamare, Rueil, France, assignor to Spironef Industries, Rueil Malmaison, France

Filed Jun. 4, 1992, Ser. No. 894,278
Claims priority, application France, Jun. 4, 1991, 91 06755
Int. Cl.[5] E04H *15/20*
U.S. Cl. 52—2.11 21 Claims



1. A multi-lobed, double-walled inflatable vault operable to be opened and collapsed by inflation and deflation, said vault comprising:
- at least one member defining a path of opening and collapsing movement;
- a plurality of longitudinal beams disposed side by side and mounted to be guided for sliding movement along said path defining member;
- an inflating fluid supply connected to supply inflating fluid to said beams; and
- said path defining member extends entirely through each of the beams in a sealed manner.

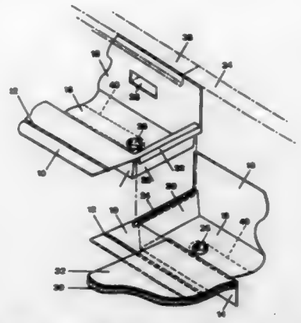
5,303,517

MODULAR STORMWATER GUTTER SYSTEM

Darwin R. Schneider, 1319 Orange Tree Dr., Edgewater, Fla. 32132

Filed Nov. 10, 1992, Ser. No. 974,848
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—11 9 Claims

1. A roof gutter assembly, rigidly formed and connected on all sides, comprising a plurality of structurally rigid, independent, elongated, monolithic, seamless, watertight, trough-like modules, formed of fiberglass reinforced polyester, each of said modules having first and second longitudinal sidewalls, a pair of end walls, a solid floor, and an open top said first sidewall having a scupper overflow aperture, said second sidewall being provided with an integral fin having a depressed groove, said solid floor being provided with an integrally encased heating element, and said solid floor being formed with at least two drain ports, whereby said drain ports are positioned in close proximity to said endwalls.

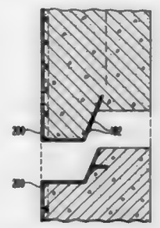


5,303,518

LINED MANHOLE ASSEMBLY AND LINER

James K. Strickland, Jacksonville, Fla., assignor to Strickland Industries, Inc., Jacksonville

Filed Feb. 11, 1993, Ser. No. 15,166
Int. Cl.[5] E04G *11/06;* E02D *29/14*
U.S. Cl. 52—21 13 Claims



1. A lined manhole assembly comprising:
- a base section comprising an interior floor surface and a wall, said base section wall comprising an interior wall surface, a first hole for connection to an outlet pipe, a second hole for connection to an inlet pipe, and a top surface, said interior floor surface comprising a channel for connecting sewage flow from said second hole to said first hole, and said interior floor surface being sloped downwardly toward a portion of said channel;
- an upper section vertically superimposed above said base section comprising a wall having an interior wall surface, a top surface, and a bottom surface, said bottom surface of said upper section being wider than the top surface of said upper section; and
- a plastic liner comprising means mechanically locking the liner to a manhole interior surface, said locking means comprising a plurality of longitudinally oriented laterally spaced raised projections, and wherein each projection including longitudinally spaced sections separated by gaps.

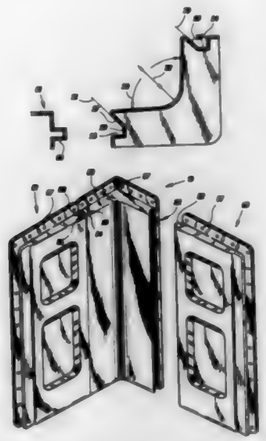
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,519

SHOWER STALL WITH MOLDED ANGLE PANEL

Robert J. Mustee, Middleburg Heights, and William E. Trsek, North Olmsted, both of Ohio, assignors to E. L. Mustee & Sons, Inc., Cleveland, Ohio

Filed Sep. 16, 1991, Ser. No. 760,372
Int. Cl.[5] E04B *1/00*; A47K *3/16*
U.S. Cl. 52—35 15 Claims



1. A molded angle panel for securing two adjacent sidewalls in place with respect to each other to form a corner, said angle panel defining an interior angle and comprising:

a. a panel face and a panel back;

b. first and second panel walls joined at a corner location, each panel wall having an edge portion extending away from said corner location;

c. sidewall mounting structure located at said edge portion of said first panel wall, said mounting structure comprising a first sidewall receiving groove having:

i. a first planar bearing surface forming one side of said groove; and,

ii. a first planar ramp surface whose plane intersects the plane of said first bearing surface, said ramp surface being located substantially adjacent said panel face; and,

d. second sidewall mounting structure at the extending edge portion of said second panel wall, said mounting structure comprising a second sidewall receiving groove having:

i. a second planar bearing surface forming one side of said groove; and,

ii. a second planar ramp surface whose plane intersects the plane of said second bearing surface, said ramp surface being located substantially adjacent said panel face;

wherein the planes of said first and second ramp surfaces extend in respective directions which do not diverge proceeding in the direction of a ray which bisects said interior angle such that the grooves and the panel face may be delineated by one section of a two-section mold.

5,303,520

BRACE FOR REINFORCING ROOF ATTACHMENT

George Goudziak, 22W511 S. 75th St., Naperville, Ill. 60540

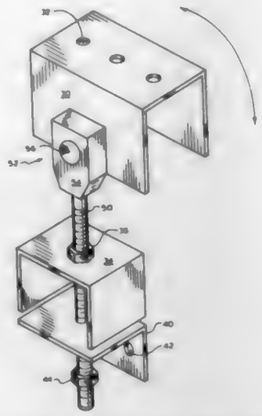
Filed Dec. 8, 1992, Ser. No. 986,780
Int. Cl.[5] E04B *1/38*, *7/04*
U.S. Cl. 52—92.2 2 Claims

1. Apparatus for reinforcing the attachment of a roof structural member to a wall structural member comprising:

a first bracket for attachment to said roof structural member;

a second bracket for attachment to said wall structural member, said second bracket comprising a metal channel member and a metal "L" bracket arranged to clamp said wall structural member therebetween; and

a pivotal joint for joining said first bracket to said second bracket, said pivotal joint comprising a block member rotatably mounted to said first bracket and a bolt member affixed to said block member and affixed to said second bracket.

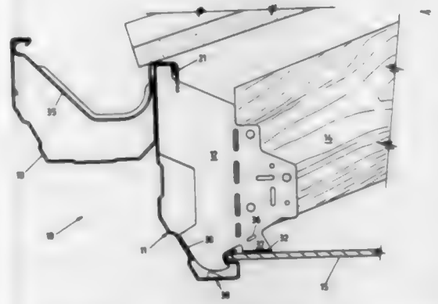


5,303,521

FASCIA PANEL

James M. Jansen, Gepps Cross, Australia, assignor to Stratco Metal Proprietary Limited, Gepps Cross, Australia

Filed Apr. 13, 1992, Ser. No. 867,815
Claims priority, application Australia, Apr. 12, 1991, PK5563
Int. Cl.[5] E04D *13/04*
U.S. Cl. 52—94 5 Claims



1. An improved fascia panel and mounting brackets for securing said fascia panel to the roof of a building, comprising an elongated fascia panel that, when secured to the roof of a building, comprises

a first substantially vertical planar portion having a front face;

a second substantially planar portion bent or formed away from the first portion at an oblique angle to the vertical, such that the lower edge of said second portion is rearward of the front face of said first portion;

a first attachment means along the upper edge of said first portion comprising a channel formed by a horizontal upper edge and a vertical outer edge; and

a second attachment means along the lower edge of said second portion comprising a substantially horizontal portion extending from the lower edge of said second portion, and an upstanding portion having an elongate projecting ridge formed therein that projects toward said second portion; and

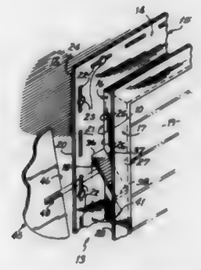
a plurality of mounting brackets, each securable to a building in a spaced manner around the roof of a building, having a projection over which said first attachment means locates, an angled edge against which said second planar portion abuts, and a recess within which said ridge locates, said recess being positioned such that said upstanding portion resiliently deforms to allow said ridge to locate in said recess, and once located, said upstanding portion remains resiliently deformed thereby positively holding said fascia panel to each said bracket.

5,303,522

INTERNALLY FLASHED SIDING CHANNEL

Michael Vagedes, 677 Sunnybrook Dr., Florence, Ky. 41042

Filed May 21, 1993, Ser. No. 65,623
Int. Cl.[5] E06B *7/14*
U.S. Cl. 52—97 13 Claims



1. An abutment channel for lapped siding comprising:

a first narrow planar strip, said first strip adapted to be nailed to the side of a building with a first side of said strip against said building;

a second narrow planar strip extending from an edge of said first strip whereby second said strip acts as an abutment for siding nailed to said building;

a rectangular tab having a first edge bonded to a second side of said first strip and a second adjacent edge bonded to a side of said second strip;

said tab extending at an angle away from said first strip towards an outer edge of said second strip.

5,303,523

PEST PREVENTER FOR LOCATION ON A STRUCTURAL FOUNDATION SUPPORT OR A STRUCTURE SUPPORTING A FOOD SOURCE

Herbert H. Hand, 233 Tram Rd., Columbia, S.C. 29210, and Herbert G. Hand, 5426 Richenbacher Ave. #301, Alexandria, Va. 22304

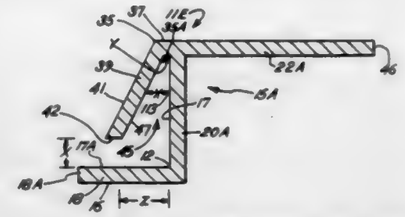
Continuation of Ser. No. 436,412, Nov. 14, 1989, Pat. No. 5,097,641, which is a continuation-in-part of Ser. No. 271,040, Nov. 15, 1988, Pat. No. 4,905,629, which is a continuation-in-part of Ser. No. 133,171, Dec. 11, 1987, Pat. No. 4,784,086, which is a continuation-in-part of Ser. No. 914,335, Oct. 2, 1986, abandoned. This application Mar. 23, 1992, Ser. No. 855,245
Int. Cl.[5] A01K *3/00*
U.S. Cl. 52—101 15 Claims

1. A pest preventer, for location on a structural foundation support which is disposed between ground and a structure to be protected, and which prevents a crawling pest of a predetermined size from reaching the structure via the foundation support, comprising;

a support member for receiving a structural foundation support in relative close fit relationship and having an outer surface, said outer surface having a ground side end and an upper end,

a flat planar projecting member extending outwardly from said outer surface of said support member, said projecting member having an underside surface and an edge surface and a topside surface which with said outer surface forming a first pathway leading from beneath said outer projecting member to the upper end of said surface; and

an obstacle member secured to said support member above said projecting member for blocking movement of a pest along said first pathway, said obstacle member having an inside surface ending in an edge separated from said topside surface by a distance greater than said predetermined size, said inside surface providing a second pathway leading in a direction away from said upper end of said outer surface and away from said first pathway, said inside surface of said obstacle member being disposed relative to said outer surface to form a phototactic barrier along said first pathway by shadowing thereof to discourage continued movement by a pest along said first pathway toward the structure to be protected.

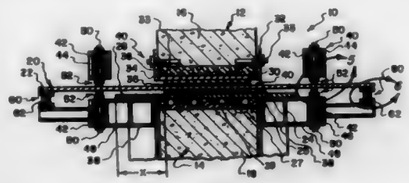


5,303,524

EARTHQUAKER PROTECTION SYSTEM AND METHOD OF INSTALLING SAME

Marc S. Caspe, 7522 Vista del Mar, Playa Del Rey, Calif. 90293

Filed Mar. 9, 1992, Ser. No. 848,666
Int. Cl.[5] E04H *9/02*
U.S. Cl. 52—167 DF 29 Claims



1. In a system for isolating a superstructure from its substructure to prevent damage to the superstructure from horizontal seismically induced inertial forces acting between the superstructure and the substructure, wherein a plurality of columns and/or walls support the superstructure above the substructure and each of the columns and/or walls is respectively detached from the substructure in an approximately horizontal plane thereby defining the superstructure above the locus of such detachment and the substructure below the locus of such detachment, the combination of:

sliding means disposed at the locus of detachment between the superstructure and the substructure, to permit relative horizontal movement therebetween, said sliding means including bearing plate means operably attached to either the superstructure or the substructure and sliding members operably attached to the other;

control means acting in series with sliding means between the superstructure and the substructure, at one or more contact points for each column or wall support, to exert an adjustable and calibratible range of horizontal drag force

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or opposite braking force, in opposition to any horizontal relative motion due to the relative velocity of the substructure with respect to the superstructure; and

biasing means in parallel and not in series with said control means with respect to said superstructure and said substructure, said biasing means acting as very low stiffness horizontal springs in opposition to any horizontal motion due to relative displacement of the substructure with respect to the superstructure, which stiffness is sufficiently high enough to urge the superstructure to near its original position relative to the substructure under the influence of continued shaking motions, while being sufficiently low enough, relative to the total building mass and the calibrated sliding friction force, that it limits or prevents the transmission of significant harmonic resonance from the substructure to the superstructure.

5,303,525

SIDING OR ROOFING EXTERIOR PANELS FOR CONTROLLED SOLAR HEATING

John A. Magee, Fayetteville, Ark., assignor to University of Arkansas, Little Rock, Ark.

Continuation of Ser. No. 524,975, May 18, 1990, abandoned, and a continuation-in-part of Ser. No. 779,646, Oct. 21, 1991. This application Sep. 21, 1992, Ser. No. 948,109

Int. Cl.[5] **E04B** *5/46*

U.S. Cl. 52—306 **20 Claims**



1. A building exterior panel for a controlled solar heating system comprising:

a rigid generally planar sheet of at least partially transparent material,

means for securing said sheet on the exterior surface of a building in spaced relation to said surface to provide a passageway for air along the inner side of sheet,

means at the top and bottom of said sheet for providing an overlapping seal between adjacent panels,

a multiplicity of lenses on the outer surface of said sheet with a pitch of no more than two millimeters for focusing solar radiation passing through said sheet, and

masking means in the path of solar radiation passing through said sheet with a reflecting portion of such radiation having a first direction relative to the plane of said sheet and having windows to permit radiation having a second direction to pass through said sheet, said masking means being spaced from said lenses at approximately the focal lengths thereof,

whereby solar radiation impinging on a building partially covered with such panels will selectively be transmitted for energy utilization and other light energy will be reflected.

5,303,526

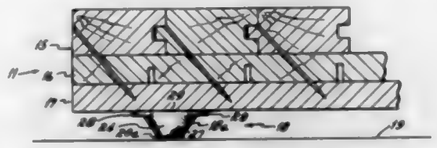
RESILIENT PORTABLE FLOOR SYSTEM

Michael W. Niese, Cincinnati, Ohio, assignor to Robbins, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 844,466, Mar. 2, 1992, which is a continuation-in-part of Ser. No. 769,157, Sep. 27, 1991, abandoned, which is a continuation of Ser. No. 459,198, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 308,243, Feb. 8, 1989, Pat. No. 4,890,434. This application Jan. 21, 1993, Ser. No. 8,721

Int. Cl.[5] **E04F** *13/08*

U.S. Cl. 52—393 **17 Claims**



1. A portable hardwood floor system adapted to overlay a substrate comprising:

a plurality of portable sections, each of the sections including means adapted for operatively interconnecting the sections together to form an interconnected floor system;

a plurality of mounting means attached to a bottom surface of each of the sections for supporting the respective floor section in spaced relation above a base; and

each of the mounting means including a glide member which is substantially non-compressible under normal floor loading conditions, each of the glide members having a relatively low coefficient of friction with respect to the base, thereby to enhance maneuverability in positioning and aligning the sections to facilitate interconnection thereof to form the floor system.

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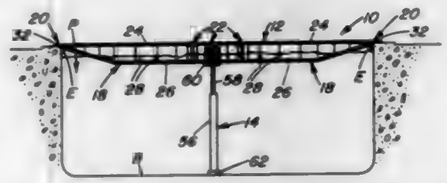
REMOVABLE POOL COVER SUPPORT APPARATUS

Ignacio Perez, and Alain M. Perez, both of 2835 SW. 6th St., Miami, Fla. 33135

Continuation of Ser. No. 795,063, Nov. 20, 1991, abandoned. This application May 14, 1993, Ser. No. 62,149

Int. Cl.[5] **E04C** *25/08*; **E04H** *4/00*

U.S. Cl. 52—632 **15 Claims**



15. An adjustable frame assembly of a support apparatus for use in spanning a pair of spaced locations, comprising:

(a) a pair of separate elongated spanning frame members placed in side-by-side relation such that said frame members together define the overall length of said frame assembly, said frame members being longitudinally displacable relative to one another to adjust the overall length of said frame assembly to match the distance between a pair of spaced locations in order that said frame assembly can fit across the space between the pair of locations, each of said separate frame members including upper and lower elongated span beams; and

(b) a plurality of adjustable attaching members for releasably securing said frame members to one another in said lon-

gitudinally-spaced side-by-side relation, each of said adjustable attaching members including

(i) a pair of elongated telescoping elements placed between said pair of upper span beams and said pair of lower span beams of a side-by-side positioned pair of said frame members, said telescoping elements being an externally-threaded stem and a hollow tube adapted to accommodate insertion and relative telescoping movement of an inner end portion of said stem within an inner end portion of said hollow tube,

(ii) a pair of upper and lower coupler elements having substantially the same configurations and being rigidly attached to opposite outer ends of said threaded stem and hollow tube, said upper coupler element being a U-shaped flange adapted to substantially underlie and releasably receive said pair of adjacent upper span beams therethrough and said lower coupler element being an inverted U-shaped flange adapted to substantially overlie and releasably receive said pair of adjacent lower span beams therethrough, and

(iii) an internally-threaded adjustment nut being separate from said hollow tube and threadably coupled over said stem and being threadably adjustable along said stem to engage said inner end portion of said hollow tube for causing movement of said threaded stem and hollow tube relative to one another in order to releasably secure said coupler elements of said attaching means to said pairs of upper and lower span beams of said pair of frame members.

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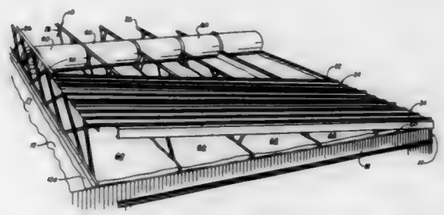
STANDING SEAM ROOF ASSEMBLY AND SUPPORT APPARATUS

Harold G. Simpson, Tulsa, Okla., and Leo E. Neyer, Spokane, Wash., assignors to Harold Simpson, Inc., Tulsa, Okla.

Division of Ser. No. 402,901, Sep. 1, 1989, Pat. No. 5,142,838, which is a division of Ser. No. 745,320, Jun. 14, 1985, abandoned, which is a continuation-in-part of Ser. No. 713,319, Apr. 22, 1985, Pat. No. 4,620,397, Ser. No. 698,082, Feb. 4, 1985, abandoned, Ser. No. 568,083, Jan. 4, 1984, Pat. No. 4,597,234, Ser. No. 503,299, Jun. 10, 1983, Pat. No. 4,534,148, Ser. No. 481,858, Apr. 4, 1983, Pat. No. 4,525,976, Ser. No. 481,844, Apr. 4, 1983, Pat. No. 4,700,522, Ser. No. 428,568, Sep. 30, 1982, Pat. No. 4,602,468, and Ser. No. 378,241, May 14, 1982, Pat. No. 4,528,789. This application Mar. 2, 1992, Ser. No. 846,278

Int. Cl.[5] **E04B** *1/32*

U.S. Cl. 52—640 **41 Claims**



1. A slope build-up system for roofs comprising:

a plurality of spaced, elongated spanning members adapted to be placed above an existing roof, and adapted to support structural members of a new roof;

independently, vertically adjustable stanchions supporting the spanning members at spaced intervals along their lengths whereby the spanning members can be held in the desired positions having a required degree of slope relative to the existing roof, each of said vertically adjustable stanchions comprising:

a pair of interfitting, elongated longitudinally adjustable channel sections; and

a device locking each of said interfitting, longitudinally adjustable channel sections at a location to establish the required and selected height for each of said stanchions.

5,303,529

ATTACHMENT OF OBJECTS ON AN INSULATION LAYER OF LOW MECHANICAL STRENGTH

Raffaele Guardia, Winterthur, Switzerland, assignor to Sap Baustoffe und Bauchemie AG, Freidorf, Switzerland

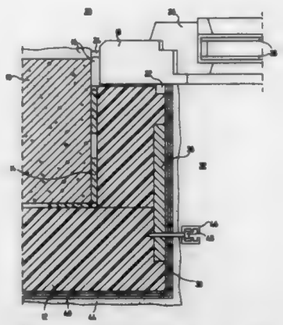
PCT No. PCT/CH89/00200, § 371 Date Jul. 16, 1990, § 102(e) Date Jul. 16, 1990, PCT Pub. No. WO90/05817, PCT Pub. Date May 31, 1990

PCT Filed Nov. 14, 1989, Ser. No. 543,723

Claims priority, application Switzerland, Nov. 17, 1988, 4268/88

Int. Cl.[5] **E04B** *1/00*

U.S. Cl. 52—745.15 **13 Claims**



1. Method for attaching mechanical devices for guiding, handing, holding or supporting objects on a building insulation layer lining masonry, which comprises:

providing an insulation layer lining masonry, wherein the insulation layer is provided on the outside of a building;

forming an elongated recess in the insulation layer in the region of at least one of a window and door opening, wherein at least one-third of the insulation layer remains between the recess and the masonry;

inserting at least one panel in the recess dimensioned to correspond to the recess, and bonding said panel into the recess over the whole extent of the recess, wherein at least the outermost of said panel is of high mechanical strength; and

anchoring at least one mechanical device in the bonded in panel.

5,303,530

SPRING UNIT ASSEMBLY

Paul Rodgers, Manchester, England, assignor to Slumberland PLC, Greenfield, England

Filed Apr. 17, 1992, Ser. No. 870,628

Claims priority, application United Kingdom, Oct. 18, 1989, 8923528

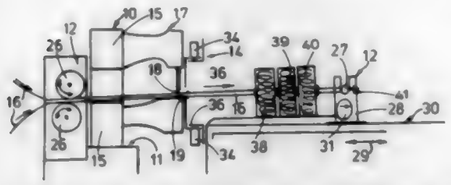
Int. Cl.[5] **B65B** *9/02, 61/24*

U.S. Cl. 53—114 **6 Claims**

1. Apparatus for encapsulating spring units between a pair of webs, comprising means for moving said webs in a first longitudinal direction through intermittent steps, an insertion device for holding said spring unit therein and for inserting a spring unit between said pair of webs, by linear movement in a second transverse direction normal to said first longitudinal direction, means for moving said insertion device through a linear path is said second transverse direction between a withdrawn spring unit receiving position spaced from said webs to receive a spring unit within said insertion device and an inserted position in which said insertion device is disposed between said webs, means for tightening or tensioning said webs around said

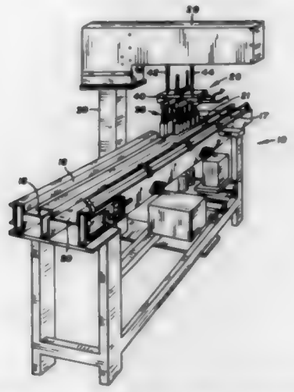
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spring insertion device, compression means outside of the webs for compressing said inserted spring unit within said webs into a compressed spring unit, means for withdrawing said insertion device from said inserted position to said withdrawn position



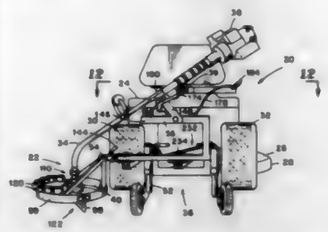
as said webs are tightened around said compressed spring unit to retain said spring unit between said webs, and securing means also movable in said second direction for securing said webs together in close proximity to said spring unit to encapsulate said spring unit.

5,303,531
PACKAGING MACHINE
Gane Senaratne, Rancho Palos Verdes, Calif., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.
Filed Feb. 14, 1992, Ser. No. 836,791
Int. Cl.[5] B65B *35/36*
U.S. Cl. 53—448 **15 Claims**



7. A method for packaging objects into packaging containers comprising the steps of:
(a) spacing a series of said objects in a predetermined, fixed orientation relative one to the other on a first conveyor;
(b) moving a series of packaging containers to a stop position on a second conveyor located laterally from first conveyor;
(c) lowering a plurality of finger-like bladders from a transport head assembly located above said first and second conveyors to a position proximate said objects on said first conveyor;
(d) inflating said plurality of bladders such that pairs of said bladders partially surround said objects to be packaged, said objects to be packaged being gripped by said bladders with an evenly applied low pressure;
(e) positioning said plurality of bladders with the objects to be packaged grasped thereby over one of said packaging containers on said second conveyor by vertical and lateral movement of said transport head assembly;
(f) lowering said plurality of bladders with objects to be packaged relative to said one packaging container; and
(g) deflating said plurality of bladders to release said objects to be packaged into said one packaging container.

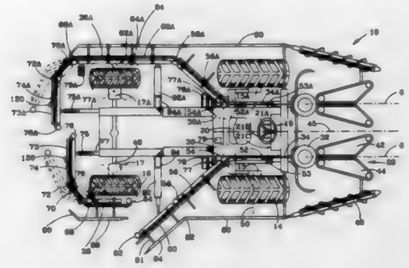
5,303,532
MOWER SUPPORT APPARATUS AND SYSTEM
Barry L. Phillips, 3620 Dixie Ct. SE., Cleveland, Tenn. 37323
Filed Jul. 28, 1992, Ser. No. 920,777
Int. Cl.[5] A01D *34/64*
U.S. Cl. 56—12.7 **14 Claims**



1. A support apparatus for a cutter adapted to cut grass when rotated and moved forwardly into cutting relationship with the grass and wherein the support apparatus is intended to be moved by a prime mover during use, the support apparatus comprising:
a frame for supporting the cutter for rotation and including guard means disposed on the forward side of the cutter, said frame including a main section disposed generally behind the prime mover when the frame is connected thereto and a boom section from which the cutter is suspended for rotation, said boom section being attached to the main section in a manner which accommodates an adjustment in position of the boom section relative to the main section to accommodate an adjustment in position of the cutter relative to the prime mover, each of the main section and the boom section including a tube member, and one tube member is positioned within the other of the tube member to accommodate a telescopic movement of the tube members relative to one another as the boom section is adjusted in position relative to the main section,
means for pivotally connecting the frame to the prime mover enabling the frame to be moved by the prime mover and to permit pivotal movement of the frame relative to the prime mover between an operative position at which the cutter is positioned for cutting grass and a deflected position so that when the frame is positioned in its operative position and the guard means is moved into contact with an upstanding object, the frame can be pivoted by the upstanding object toward its deflected position to accommodate the movement of the guard means past the object; and
means associated with the frame for biasing the frame from the deflected position toward the operative position so that when the frame is moved out of its operative position by an upstanding object and is subsequently advanced so that the guard means is moved past the object, the frame is returned to its operative position by the biasing means.

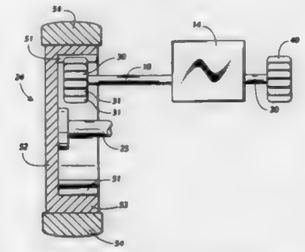
5,303,533
CANE HARVESTER AND METHOD
Kenneth G. Caillouet, Terrebonne Parish, La., assignor to La-Cane Manufacturing, Inc., Thibodaux, La.
Filed Feb. 26, 1993, Ser. No. 22,982
Int. Cl.[5] A01D *45/10*
U.S. Cl. 56—14.3 **31 Claims**

25. A method of simultaneously harvesting at least two rows of cane with a harvester, comprising:
propelling the harvester along first and second cane rows such that a pair of front harvester wheels are each positioned on opposite sides of the first and second cane rows;
collecting and positioning cane gathered from the respective first and second cane rows;
cutting a base of the collected and positioned cane while within the first and second rows to separate the cane from the ground;
carrying the cut cane rearward within the cane harvester while in a substantially erect position through respective first and second pathways each passing between the pair of front wheels and then outward between the respective front and rear wheels;
while a pair of side pilers are in a closed position, receiving cane from the respective first and second pathways and



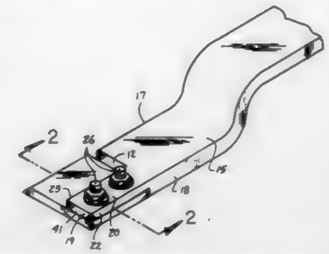
releasing the cut cane across a common heap row spaced between the first and second cane rows;
thereafter moving the side piles to an opened position to receive cane from the respective first and second pathways and release cane on a pair of existing cut cane rows each spaced outward from the respective front and rear wheels; and
while the pair of side pilers are in the open position, deactivating a pair of rear pilers for releasing the cut cane across the common heap row.

5,303,534
SEAL FOR DRIVE UNIT
Robert E. Gray, Conyers, Ga., assignor to Fuqua Industries, McDonough, Ga.
Filed Feb. 22, 1993, Ser. No. 23,787
Int. Cl.[5] A01D *34/00*
U.S. Cl. 56—17.5 **3 Claims**



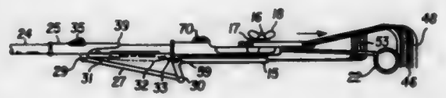
1. A self-propelled lawn mower, comprising:
a motor;
a blade driven by said motor;
a drive axle also driven by said motor, said drive axle having a first and a second end;
a ratchet mechanism mounted on said axles including a ratcheted pinion gear;
a ratchet mechanism seal; and
a seal retainer comprising said seal against said pinion gear.

5,303,535
LAWN MOWER BLADE AND INSERT CONSTRUCTION
Joseph L. Smith, Rt. 4, Box 502, Mocksville, N.C. 27028
Filed Apr. 19, 1993, Ser. No. 48,311
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 **2 Claims**



1. A lawn mower blade and insert construction, comprising,
an elongate blade plate having a blade first end wall spaced from a blade second end wall, and
a blade top wall spaced from a blade bottom wall, with the blade plate having a mounting bore directed through the blade plate extending from the blade top wall through the blade bottom wall and oriented between the blade first end wall and the blade second end wall, the blade plate further including a blade first side wall spaced from a blade second side wall, and
an individual support flange extending from said blade first end wall and said blade second end wall, with each support flange having a support flange top wall coplanar with the blade top wall, and
a support flange bottom wall spaced from the blade bottom wall, and
a support flange first side wall coplanar with a predetermined side wall of either said blade first side wall or said blade second side wall, and
the support flange further including a support flange second side wall orthogonally intersecting a respective end wall of said blade plate first end wall and said blade plate second end wall, and
at least one blade insert secured to said support flange in contiguous communication to said first end wall, wherein said at least one blade insert includes a blade cutting edge oriented in adjacency to said blade first side wall, and said at least one blade includes a plurality of mounting fasteners directed through said support flange and through said at least one blade insert, wherein said at least one blade insert extends from said support flange bottom wall to said blade bottom wall in a coplanar relationship, and a further blade insert secured to said support flange in contiguous communication to said second end wall.

5,303,536
LAWN RAKE WITH DEBRIS PILE CAPABILITY
Peter M. Tolliver, 42 Varinna Dr., Rochester, N.Y. 14618
Filed Aug. 3, 1992, Ser. No. 924,296
Int. Cl.[5] A01D *7/06*
U.S. Cl. 56—400.12 **11 Claims**



1. A rake having debris raking and debris pickup capabilities comprising:
an elongated handle;

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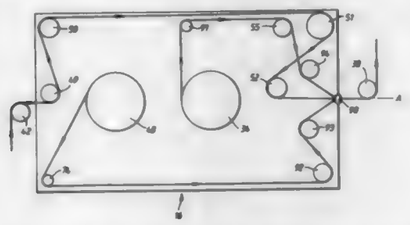
a mainframe base member secured to one end of the handle, the base member having a socket at one end secured to the one end of the handle and a flat section at the opposite end of the base member;
a substantially flat tine rack slidably mounted on the flat section of the base member for lengthening or shortening the position of the tines relative to the handle;
a screw means for releasably securing the flat section of the base member and the flat tine rack together in a selected tine position;
a prong rack pivotally mounted on the base member for movement relative to the tine rack between a closed position in which the prong rack engages the tine rack for debris raking, and an open position in which the prong rack cooperates with the tine rack to form a cavity for debris encirclement, grasping and pickup; and
a manually movable means on the handle coupled to the prong rack for operating the prong rack between its closed and open positions.

5,303,537

APPARATUS FOR MAKING METALLIC CORD

Kenneth M. Kot, Akron, Ohio, and Rene Seyll, Martelange, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 545,004, Jun. 28, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,529
Int. Cl.[5] D01H *7/90, 13/04*
U.S. Cl. 57—58.36 **11 Claims**



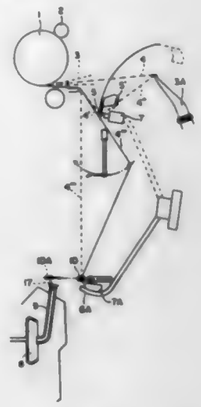
1. Apparatus for stranding together high tensile steel filaments to produce metallic cords adapted to be used as reinforcing elements in elastomeric structures, including
a first member comprising a flyer having an axis of rotation (A) and means for rotating said flyer about said axis;
a second member constituted by a non-rotating shuttle suspended from said flyer and comprising a set of spools supplying at least two filaments and rotatable pulleys for guiding the filaments until they reach a joining point forming a finished cord,
a means for collecting the finished cord and means for drawing the filaments supplied by said set of spools through the members of said apparatus;
a forming die having its drawing axis merged with the flyer axis; and
means for guiding the filaments supplied by said set of spools so that they are generally equiangularly spaced around the drawing axis and form with said drawing axis an angle—comprised between 35° and 60°.

5,303,538

DEVICE AND PROCEDURE FOR PREPARING THE THREAD END TO START OR RESUME OPEN-END SPINNING

Ernesto Pagura, Zoppola; Donato Castellarin, Zaxxxano Decimo, and Francesco Ferro, Pordenone, all of Italy, assignors to Savio S.p.A., Pordenone

Continuation of Ser. No. 659,040, Feb. 21, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,540
Claims priority, application Italy, Feb. 23, 1990, 19472 A/90
Int. Cl.[5] D01H *15/02*
U.S. Cl. 57—263 **10 Claims**



5. A device for preparing a thread end for starting or resuming spinning in an open-end spinning machine, wherein the open-end spinning machine has a thread reserve, a spinning rotor, and an end-introduction pipe, wherein the thread to be prepared is delivered from the thread reserve, and wherein the device comprises an integral catching, holding, and preparation means comprising a preparing means rotatable between a first position proximate the thread reserve and a second position opposite the thread introduction pipe, wherein the device includes:
a) catching and retaining means for catching the thread delivered from the thread reserve and for holding said caught thread as said integral catching, holding, and preparation means rotates from said first position to said second position, wherein said catching and retaining means comprises a first body with a longitudinal slot therein, a suction nozzle in said first body for catching the thread delivered form the thread reserve, a suction pipe connected to said suction nozzle, and wherein aid catching, holding, and preparation means further comprises a second body with a slot therein, and a channel positioned within said second body, wherein said second body slot is in a substantially traverse direction to said channel and opposite said longitudinal slot in said first body for receiving a thread therefrom;
b) clamping means for holding the end of said caught thread in position for preparation thereof;
c) cutting means or cutting said held end in said clamping means a predetermined distance from said clamping means for thereby providing a free thread end to be prepared;
d) feeding means for feeding at least a portion of said free thread end for preparation thereof; and
e) said preparing means for preparing said free thread end for starting or resuming open-end spinning, wherein said preparing means comprises:
1) a channel for recovering said portion of said free thread end from said feeding means;
2) means for supplying an air flow through said channel substantially parallel to the length of said free thread end; and

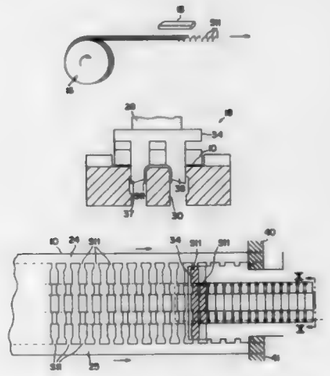
3) means for vibrationally impacting said free thread end in response to said air flow, whereby said free thread end is freed of short fibers, and is untwisted; and
wherein the device further comprises a thread diverting and tightening means positioned between said first and said second position of said thread catching, holding, and preparation means for making a fixed thread length when said catching, holding, and preparation means is positioned in said second position and before said clamping means holds the end of said caught thread, and wherein said fixed thread length is recovered when said prepared thread end is introduced into the end-introduction pipe of the open-end spinning machine.

5,303,539

STAPLE FORMING

Nicolae Neamtu, Quincy, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 29, 1993, Ser. No. 11,446
Int. Cl.[5] B21G *7/02*
U.S. Cl. 59—75 **10 Claims**



1. A method of manufacturing a staple comprising the steps of
providing a strip of flat material having opposite edges, said strip being in coiled condition;
unwinding a length of said coil and removing portions of said strip from between said opposite edges of said unwound length to produce an array of at opposite ends staples in planar form interconnected one to the other at opposite edges of said coil; and
rewinding said strip of staples while still in planar form to produce a second coil.

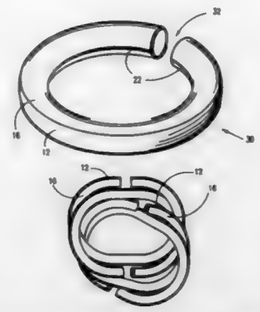
5,303,540

FINE JEWELRY DIAMOND CUT ROPE CHAIN AND METHOD OF MANUFACTURING SAME

David Rozenwasser, Savion, Israel, assignor to Avraham Moshe Rozenwasser, Savion, Israel

Filed Dec. 8, 1992, Ser. No. 987,744
Claims priority, application Israel, Oct. 1, 1992, 103324
Int. Cl.[5] B21L *5/02*
U.S. Cl. 59—80 **21 Claims**

1. A fine jewelry diamond cut rope chain comprising a double helix rope chain made from tightly interfitting links of precious metal link wire, each link having a small gap formed therein so as to enable one of said links to pass through the gap of another link, said links being intertwined to fit tightly one against another, at least some of the links of the chain having at least one high luster diamond cut surface provided in a shallow, generally elongate, outwardly open, diamond cut depression of a predetermined width formed in a link and extending along at least part of an outer perimeter of said link.

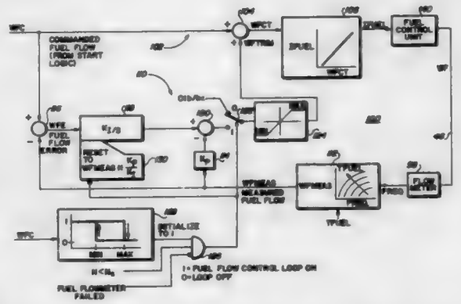


5,303,541

CLOSED LOOP FUEL CONTROL METHOD

Edward R. Goff, Phoenix, and Dennis L. Cannon, Scottsdale, both of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

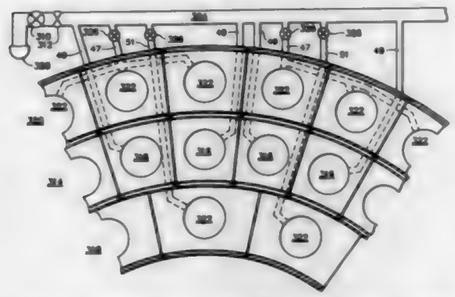
Division of Ser. No. 776,532, Oct. 11, 1991. This application Mar. 10, 1993, Ser. No. 29,094
Int. Cl.[5] F02C *7/26, 9/28*
U.S. Cl. 60—39.03 **8 Claims**



1. A method for regulating the flow rate of fuel to a gas turbine engine during the initial stages of startup comprising the steps of:
providing a fuel flow signal, from a preselected schedule, to a function generator that generates a control signal for a fuel control unit that regulates the flow of fuel to said gas turbine engine;
measuring the actual fuel flow from said fuel control unit to said engine, and generating a signal thereof;
producing a first trim signal having a magnitude proportionally related to the magnitude of said measured signal;
combining said measured signal with said scheduled signal to form an error signal;
producing a second trim signal having a magnitude related to the integral as function of time of said error signal;
combining said first and second trim signals to form a third trim signal;
combining said third trim signal with said scheduled signal before said function generator; and
repeating said previous steps until said third trim signal is substantially zero.

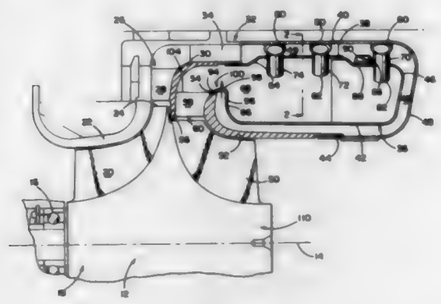
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5,303,542
FUEL SUPPLY CONTROL METHOD FOR A GAS TURBINE ENGINE
Robert J. Hoffa, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Nov. 16, 1992, Ser. No. 976,876
Int. Cl.[5] F02C *9/26*
U.S. Cl. 60—39.06 **5 Claims**



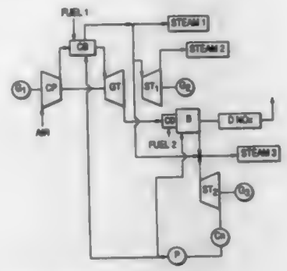
1. In a gas turbine engine including a triple annular combustor comprising a central ring of pilot fuel nozzles and inner and outer rings of main fuel nozzles, a method of increasing output power by the steps of:
a) opening said pilot fuel nozzles;
b) increasing fuel flow to the combustor at a rate sufficient to increase said output power;
c) measuring average flame temperature;
d) decreasing local fuel to air ratio to reduce said flame temperature to a predetermined minimum value when said flame temperature reaches a predetermined maximum value;
e) increasing local fuel to air ratio until said flame temperature reaches said predetermined maximum value;
f) repeat steps b through e until said output power reaches a predetermined level.

5,303,543
ANNULAR COMBUSTOR FOR A TURBINE ENGINE WITH TANGENTIAL PASSAGES SIZED TO PROVIDE ONLY COMBUSTION AIR
Nipulkumar Shah, and Jack R. Shekleton, both of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Feb. 8, 1990, Ser. No. 477,247
Int. Cl.[5] F02G *1/00*
U.S. Cl. 60—39.36 **13 Claims**



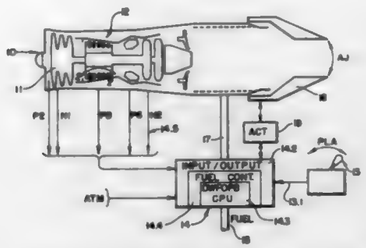
1. A gas turbine engine comprising;
a rotary compressor;
a turbine wheel coupled to said compressor to drive the same;
an annular nozzle in proximity to said turbine wheel and having a plurality of vanes disposed to direct gases of combustion at said turbine wheel, said vanes having leading edges remote from said turbine wheel and trailing edges adjacent said turbine wheel;
an annular combustor having a radially outer wall, a radially inner wall spaced therefrom and a radially extending wall interconnecting said inner and outer walls remote from said nozzle, said inner and outer walls, at a location remote from said radially extending wall defining an outlet throat opening to the leading edges of said vanes;
means for injecting fuel into the combustor;
a plurality of axially spaced rows of tangentially directed passages formed in said outer wall and in fluid communication with said compressor for introducing combustion air into the combustor, said passages being sized to provide substantially only combustion air to the substantial exclusion of dilution air into said combustor and said combustor otherwise being free of any inlets in fluid communication with said compressor; and
means at said throat and just upstream of said leading edges and in fluid communication with said compressor for introducing substantially all dilution air thereat in a high velocity stream directed across said throat to achieve necessary dilution thereat to allow the combustion flame zone of said combustor is maximized.

5,303,544
GAS TURBINE SYSTEM WITH A TUBE-NESTED COMBUSTION CHAMBER TYPE COMBUSTOR
Hiroshi Kobayashi; Yoshiharu Ueda; Masamichi Yamamoto; Keiryo Tou, all of Yasu; Seikan Ishigai, Ashiya; Sentaro Miura, and Kiyoshi Furushima, both of Tokyo, all of Japan, assignors to Hirakawa Guidom Corporation, Osaka, Japan
Filed Jul. 30, 1992, Ser. No. 922,461
Claims priority, application Japan, Sep. 3, 1991, 3-253025
Int. Cl.[5] F02C *3/30, 6/18*
U.S. Cl. 60—39.182 **12 Claims**



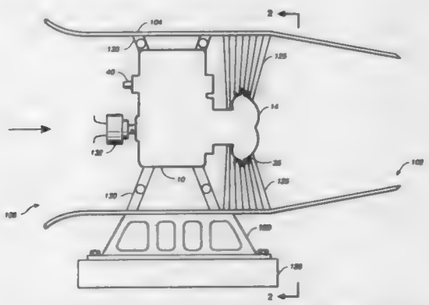
1. A gas turbine plant, comprising:
a gas turbine having a predetermined preferred operating temperature range;
a waste heat boiler connected to said gas turbine downstream thereof for using the waste heat of exhaust gases from said gas turbine to generate steam; and
a combustor, connected to said gas turbine upstream thereof, receiving fuel and combustion air and burning the fuel to generate combustion gases so as to drive said gas turbine with the combustion gases from said combustor, said combustor comprising a combustion chamber and a means for cooling the combustion gases to a temperature within said predetermined range prior to the combustion gases entering said gas turbine without feeding dilution air or cooling air into the combustion gases, said means comprising a heat-absorption water-tube in said combustion chamber.

5,303,545
PRESSURE BASED CLOSE LOOP THRUST CONTROL IN A TURBOFAN ENGINE
Louis J. Larkin, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 5, 1992, Ser. No. 956,205
Int. Cl.[5] F02C *9/28;* **F02K** *1/17*
U.S. Cl. 60—239 **10 Claims**



1. A gas turbine engine having an engine control that responds to a thrust required to control fuel flow to an engine burner that powers a fan, the engine control comprising signal processing means responsive to a plurality of engine operating parameters for controlling said fuel flow to control engine thrust, characterized in that said signal processing means comprises:
means responsive to the thrust control for producing a first signal manifesting a requested speed for the fan; for producing a second signal manifesting measured speed of the fan; for producing a third signal that manifests the difference between said first and second signals; for producing a fourth signal the magnitude of which is a calculated compressor pressure increase over a selected time interval following the production of said third signal; for producing a fifth signal that manifests measured compressor pressure; for producing a sixth signal that manifests the difference between said fourth and said fifth signals; and for adjusting fuel flow to the burner as a function of the magnitude of said sixth signal to achieve a compressor pressure manifested by said fourth signal.

5,303,546
OSCILLATING PISTON ENGINE FOR DRIVING A DUCTED FAN
Monti Farrell, 1942 Carpenter Canyon Rd., San Luis Obispo, Calif. 93401
Continuation-in-part of Ser. No. 918,374, Jul. 23, 1992, Pat. No. 5,222,463. This application Jun. 4, 1993, Ser. No. 72,239
Int. Cl.[5] F02K *5/00;* **F02B** *53/00*
U.S. Cl. 60—269 **12 Claims**



1. An internal combustion engine housed within a shroud to provide the motive power source for an aircraft comprising:
(a) a rotating annular cylinder,
(b) a plurality of pairs of oscillating pistons in said cylinder,
(c) means to oscillate said pistons so as to alternately move adjacent pistons apart from one another and toward one another for the respective strokes of the internal combustion engine,
(d) intake ports, exhaust ports and ignition means on said rotating annular cylinder for registry with the respective spaces between the adjacent pistons according to the firing order and cycle of said engine,
(e) a power take-off shaft in said engine,
(f) means to convert the oscillating of said pistons into rotation of said power take-off shaft,
(g) transmitting means between said power take-off shaft and said cylinder to rotate said annular cylinder in a predetermined ratio to the oscillation of said piston for registering said intake ports, exhaust ports and ignition means with the respective spaces between said oscillating pistons in a predetermined sequence,
(h) the ratio between the rotation of said shaft and the resulting angular oscillation of said pistons with respect to the rotating annular cylinder is one oscillation of each piston for each quarter of one revolution of said cylinder,
(i) the inner periphery of the cylinder being of circular cross-section and said pistons being also of circular cross-section, and piston rings on said pistons being in contact with the inner circular periphery of said cylinder.
(j) said means to convert said piston oscillation into rotation including concentric tubes journalled concentrically with said rotating cylinder,
(k) connecting means between the tubes and the power take-off shaft for converting oscillation of the tubes into rotation of the shaft,
(l) a crankcase,
(m) journal means on said crankcase to support said rotating cylinder in a generally horizontal plane,
(n) said oscillation converting means including connecting devices between the respective concentric tubes and said power take-off shaft for oscillating said tubes oppositely to one another during the rotation of said shaft,
(o) said inner tube being connected to a fuel vapor intake,
(p) an intake manifold on said rotating cylinder connected to the said intake ports, said inner tube discharging into said intake manifold,
(q) piston supporting torque disks being flanges extending from the respective concentric tube to the inner periphery of said rotating cylinder and to the adjacent pistons so that said pistons are directly connected alternately to each of the respective torque disks,
(r) a shroud having an air intake and an exhaust outlet in which said engine system is housed,
(s) fan blades operably mounted onto said rotating annular cylinder to provide the fan action thrust for the aircraft by a pumping action which draws air into the inlet of said shroud and exhausts the air and combusted fuel gases from said exhaust port to the exhaust outlet of said shroud,
(t) said torque disks being slidable relatively to one another according to relative turning movement of said concentric tubes and extending from the respective tubes to support said pistons in a balanced position in said cylinder,
(u) each of said pistons having a substantially cylindrical section which is operably seated against the walls of said cylinder and which is attached to each of the respective torque disks, and
(v) each of said connecting means between each of the concentric tubes and the power take-off shaft comprises an elongated arm having a circular aperture near one end thereof and through which one of the respective tubes passes and is fixedly attached thereto and having an elliptical aperture near the other end thereof operably connected to said power take-off shaft to transmit the axial oscillation of each of said torque discs and the back-and-forth oscillation into rotation of the power take-off shaft.

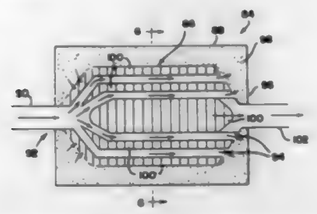
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5,303,547

EMISSIONS CONTROL SYSTEM AND METHOD

Rodney L. Mieville, Glen Ellyn; Ronald A. Dictor, Naperville; Eugene H. Hirschberg, Park Forest; Lawrence C. Robinson, Joliet; Don M. Washecheck, and Terrence A. Renner, both of Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Apr. 15, 1992, Ser. No. 869,028
Int. Cl.[5] F01N 3/10, 3/20, 3/28
U.S. Cl. 60—274 23 Claims



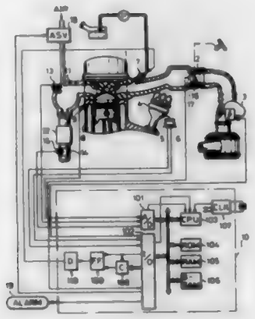
1. An emissions control system component for treating engine exhaust gas, comprising:
adsorber means for adsorbing hydrocarbons present in the exhaust gas following a cold engine start;
catalytic converter means operatively connected to the adsorber means downstream of the adsorber means for catalytically reacting hydrocarbons present in the exhaust gas; and
heat exchange means operatively connected to the adsorber means upstream of the adsorber means for transferring exhaust gas heat from the exhaust gas to the catalytic converter means, thereby warming the catalytic converter and lowering the exhaust gas temperature prior to the exhaust gas entering the adsorber means, said heat exchange means, the heat exchange means, catalytic converter means and adsorber means being contained within a single monolithic exhaust system component and wherein the exhaust gas flows first through the heat exchange means, then through the adsorber means, and then through the catalytic converter means.

5,303,548

DEVICE FOR DETERMINING DETERIORATION OF A CATALYTIC CONVERTER FOR AN ENGINE

Yasuhiro Shimizu, Nishikamo, and Nobuyuki Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 6, 1992, Ser. No. 957,037
Claims priority, application Japan, Oct. 11, 1991, 3-263859
Int. Cl.[5] F02B 19/00
U.S. Cl. 60—277 18 Claims



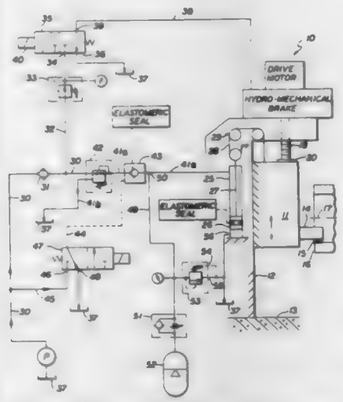
1. A device for determining a deterioration of a three-way catalyst disposed in an exhaust passage of an internal combustion engine, said engine comprising an upstream air-fuel ratio sensor disposed in the exhaust passage upstream of said three-way catalyst for generating an output signal corresponding to an air-fuel ratio of the exhaust gas upstream of said three-way catalyst, a downstream air-fuel ratio sensor disposed in the exhaust passage downstream of said three-way catalyst for generating an output signal corresponding to an air-fuel ratio of the exhaust gas downstream of said three-way catalyst, and a feedback control means for controlling the air-fuel ratio of the engine by feedback control, said device comprising:
a signal condition detecting means for detecting the condition that the output signal of said downstream air-fuel ratio sensor is being maintained at either a rich side air-fuel ratio or a lean side air-fuel ratio compared with a stoichiometric air-fuel ratio for more than a predetermined time during the feedback control of the engine by said feedback control means;
a means for calculating an area surrounded by the output signal response curve of said downstream air-fuel ratio sensor and a predetermined reference value line; and
a determining means for determining whether or not said three-way catalyst has deteriorated in accordance with said area when said signal condition detecting means detects that the output signal of said downstream air-fuel ratio sensor is being maintained at either said rich side or said lean side air-fuel ratio for more than said predetermined time.

5,303,549

COUNTERFORCE AND HOLDING DEVICE

Merrill E. Berchtold, Loveland, and Dean M. Valvano, Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 5, 1991, Ser. No. 740,280
Int. Cl.[5] F16B 31/02
U.S. Cl. 60—414 4 Claims



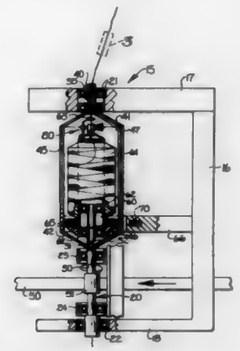
1. In a machine tool having a machine base, a machine slide vertically-movable on the machine base, and power means for moving the machine slide, an improved counterforce and holding device for use in controlling the machine slide, wherein the improvement comprises:
counterforce cylinder means for exerting an upward force on the machine slide, the counterforce cylinder means including a cylinder, having a cooperating fluid powered piston guided therein, wherein the piston has an elastomeric seal ring, and wherein one of said cylinder and piston is attached to the machine slide and the other of said cylinder and piston is attached to the machine base;
reducing and relief valve means for controlling fluid pressure and flow between at least two of its following three ports:
(1) a pressure port,
(2) a cylinder port, and
(3) an exhaust port,
said pressure port connected by a pressure line to a source of pressurized fluid, said cylinder port connected by a cylinder line to said counterforce cylinder means, and said exhaust port connected by an exhaust line to a fluid reservoir;
pilot-operated checkvalve means for selectively blocking flow of fluid from said counterforce cylinder to said fluid reservoir via said cylinder line, the checkvalve means including an elastomeric seal, and the checkvalve means being selectively operable between a normally-closed first position blocking unidirectional flow of fluid therethrough, and a powered-open second position permitting bidirectional flow of fluid therethrough; and
fluid accumulator means for storing pressurized fluid when said pilot-operated checkvalve means is in said second position, and for supplying pressurized fluid to said counterforce cylinder means when said pilot-operated checkvalve means is in said first position.

5,303,550

APPARATUS AND METHOD FOR FORMING ELASTIC CORESPUN YARN

Barry D. Setzer, Hickory, N.C., assignor to Regal Manufacturing Company, Inc., Hickory, N.C.

Continuation of Ser. No. 588,003, Sep. 25, 1990, abandoned. This application Mar. 3, 1992, Ser. No. 845,050
Int. Cl.[5] D02G 3/38, 3/28
U.S. Cl. 57—58.36 6 Claims



6. An apparatus for forming an elastic corespun yarn, said apparatus comprising,
a spindle holding frame,
a spindle rotatably mounted in vertical orientation on said frame for rotation about a longitudinal axis,
drive means operatively connected to said spindle for rotating said spindle about said axis,
means rotatably mounted on said spindle for supporting a core yarn package of relatively elastic yarn in vertical axial alignment therewith,
means for holding said rotatably mounted core yarn package support means stationary relative to said spindle as said spindle rotates,
a core yarn package of relatively elastic yarn mounted on said support means, said core yarn package comprising a longitudinally extending cylindrical spool oriented vertically so that the longitudinal axis defined by the core yarn package is oriented in axial alignment with the longitudinal axis defined by the spindle,
confinement means supported by said spindle and rotatable therewith, and enclosing said core yarn support mans and said core yarn package supported on said support means, and wherein said confinement mean sis a cylindrical member and aligned longitudinally along said vertically oriented axis,
a yarn tension applicator mounted on the top portion of the core yarn package and within the cylindrical member for receiving core yarn after withdrawal from said core yarn package and applying tension to the core yarn, and wherein the yarn tension applicator includes means for allowing free rotation of the yarn tension applicator relative to the core yarn package to facilitate withdrawal of the relatively elastic core yarn from the package as the core yarn is withdrawn circumferentially from around the package without having binding of the yarn as it is withdrawn,
means defining a yarn guide passageway in the lower portion of said spindle along the longitudinal axis thereof for a predetermined distance upwardly from the lower end of said spindle and radially outwardly to the periphery of said spindle into said cylindrical member, and means carried by said cylindrical member in the interior thereof for guiding the yarn from said first yarn guide passageway portion along the interior of the cylindrical member and in spaced relation to said core yarn package to a location above the core yarn package,
means for withdrawing an elastic core yarn from said core yarn package and for feeding the elastic core yarn through said yarn tension applicator and in a direction substantially along the spindle longitudinal axis thereof, and
means for withdrawing a nonelastic covering yarn from a supply package through said spindle and along said guide means of said cylindrical member into wrapping engagement with said elastic core yarn for forming an elastic corespun yarn,
whereby a covering yarn supply package of any desired size is utilized to produce elastic corespun yarn of a length limited only by the length of elastic core yarn which is supplied by the core yarn package, and whereby the covering yarn is confined in its path of travel around the core yarn package thereby preventing breakage due to centrifugal force and air resistance even at very high spindle speeds.

5,303,551

FLOW RATE CONTROL APPARATUS FOR OIL-HYDRAULIC PUMP

Jin-Han Lee, Chungchongnam-do, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Changwon, Rep. of Korea

Filed Nov. 25, 1992, Ser. No. 981,218
Claims priority, application Rep. of Korea, Nov. 30, 1991, 91-21924
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—431 3 Claims

1. A flow control system for controlling a discharge flow rate of hydraulic fluid discharged from hydraulic pumps comprising:
a motor with at least one of the pumps being a variable capacity hydraulic pump driven by the motor;
a manipulating unit for converting a quantity of work commanded by an operator into an electrical signal;
a plurality of hydraulic actuators driven in accordance with the discharge flow rate;
a plurality of flow control valves for adjusting a flowing direction and an amount of working hydraulic fluid transferred from the hydraulic pumps to the actuators;
an output selector provided with an electronic control device for selecting one of a plurality of output power levels corresponding to the power of the motor;
a first detector for detecting flow pressure of hydraulic fluid discharged form the respective hydraulic pumps;
a controller for receiving signals applied from the manipulat-

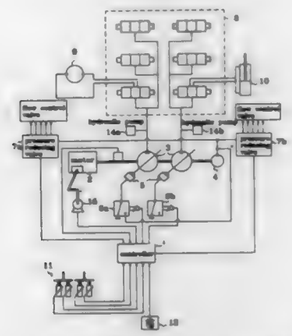
VOL 1161 ISS 3 APR 19 1994 UMI

ing unit, the output selector and the first detector and providing control signals to control the system;

at least one pressure reducing valve for generating a pilot pressure in response to one of the control signals from the controller and generating a regulator control signal, said pressure reducing valve having a plurality of electromagnetic proportional pressure reducing valves; and

a regulator for adjusting inclination of an inclined plate in the at least one hydraulic pump in response to the regulator control signal to control the flow rate of the hydraulic fluid to be discharged form the respective hydraulic pumps; and wherein

said controller comprises a first operation means for calculating an input required flow rate of said hydraulic pump based upon the electrical signal applied from the manipu-



lator, a second operation means for calculating a maximum dischargeable flow rate of said hydraulic pumps based upon the selected power level from said output selector and the flow pressure from said first detector, a comparator for comparing the input required flow rate with the maximum dischargeable flow rate, a first selector for selecting the maximum dischargeable flow rate as an output flow rate of the hydraulic pumps when the input required flow rate is greater than the maximum dischargeable flow rate, a second selector for selecting the input required flow rate as the output flow rate of the hydraulic pumps when the input required flow rate is less than or equal to the maximum dischargeable flow rate, and means for providing the output flow rate of the hydraulic pumps to said at least one pressure reducing valve.

5,303,552

COMPRESSED GAS BUOYANCY GENERATOR POWERED BY TEMPERATURE DIFFERENCES IN A FLUID BODY

Douglas C. Webb, 769 Palmer Ave., Falmouth, Mass. 02540

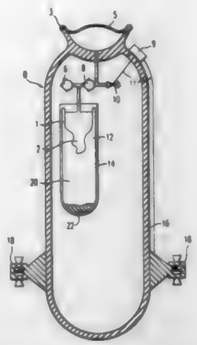
Filed Jul. 6, 1992, Ser. No. 909,212
Int. Cl.[5] F03C *5/00*
U.S. Cl. 60—496 **7 Claims**

1. A compressed gas buoyancy generator powered by temperature differences in a fluid medium having a thermal gradient, which comprises:

a body having an inflatable chamber connected thereto for rendering said body buoyant at a surface portion of said fluid medium;

a gas source;

an inflater connected to said body and in communication with said gas source for inflating said inflatable chamber with gas from said gas source by obtaining energy from said thermal gradient within said fluid medium wherein said inflator comprises an apparatus for absorbing heat at a surface portion of said fluid medium and for converting the absorbed heat at a predetermined depth of said fluid medium into mechanical work for inflating said inflatable



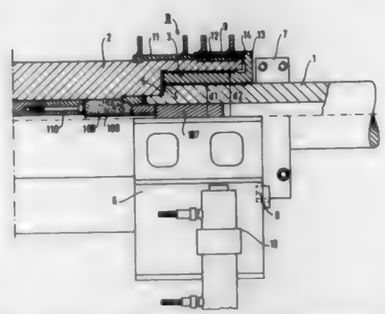
chamber when said body is at the surface portion of the fluid medium.

5,303,553

DEVICE FOR CONNECTING TUBES END-TO-END AND GAS LAUNCHER FITTED WITH SUCH DEVICES

Bernard Ollivaud, Le Cellier, and Jean-Marie Lebas, Basse Goulaine, both of France, assignors to ACB, Paris, France

Filed Aug. 19, 1992, Ser. No. 931,967
Claims priority, application France, Aug. 20, 1991, 91 10448
Int. Cl.[5] F16L *15/00*; F41F *1/00*
U.S. Cl. 60—632 **16 Claims**



9. Gas launcher comprising at least a compression system with a combustion chamber and a high-pressure chamber and a launch system wherein said combustion and high-pressure chambers are disconnectable, said compression system is movable longitudinally and said combustion and high-pressure chambers are connected by a device for connecting first and second tubes end-to-end, at least one of said tubes being movable longitudinally to be connected to the other, said device comprising a screwthreaded nut joining the two tubes and wherein:

the first tube has at an end thereof, an outside screwthread of diameter d1 and pitch p1,

the second tube has at an end thereof, an inside screwthread of diameter d2 greater than d1 and pitch p2 different than that p1 of said first tube,

one of said inside and outside screwthreads being continuous and the other screwthread discontinuous by virtue of longitudinal lands subtending an angle at the center of the tube equal to that of the screwthreaded longitudinal lands,

said nut comprises an inside first screwthread compatible with the outside screwthread of the first tube and an outside second screwthread compatible with the inside screwthread of the second tube, and

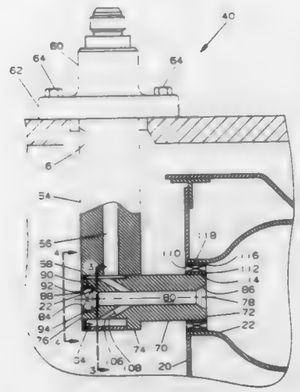
said device further comprising means for immobilizing said tubes against rotation and means for rotating said nut.

5,303,554

LOW NOX INJECTOR WITH CENTRAL AIR SWIRLING AND ANGLED FUEL INLETS

Robie L. Faulkner, Alpine, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Nov. 27, 1992, Ser. No. 983,062
Int. Cl.[5] F02C *7/22*
U.S. Cl. 60—737 **18 Claims**



1. A fuel injection nozzle comprising:

a housing having an outlet end, an inlet end positioned at an end opposite the outlet end, a central axis and a central bore, said bore extending between the outlet end and the inlet end and having an enlarged diameter portion near the inlet end;

a plurality of swirler vanes being positioned within the enlarged diameter portion and substantially filling the enlarged diameter portion;

an angled passage being positioned in the housing communicating with the bore;

a frustoconical blending portion extending between the bore and the enlarged diameter portion;

a means for supplying fuel to the fuel injection nozzle during operation of an engine, said means for supplying fuel including a plenum coaxially positioned about the bore and being near the inlet end; and

said angled passage extending generally axially from the plenum near the inlet end toward the outlet end and generally radially from the plenum near the inlet end inwardly toward the outlet end and intersecting the bore, said intersection being tangent to the bore.

5,303,555

ELECTRONICS PACKAGE WITH IMPROVED THERMAL MANAGEMENT BY THERMOACOUSTIC HEAT PUMPING

Gregory M. Chrysler, Poughkeepsie, and David T. Vader, New Paltz, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 29, 1992, Ser. No. 969,709
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 **19 Claims**

1. A thermoacoustic refrigeration unit for cooling an electronic chip comprising:

a tube having first and second ends and having an interior and an exterior;

an annular chamber surrounding said tube, said annular chamber comprising a regenerator chamber and a compression chamber;

said regenerator chamber communicatively connected to said tube at a first end of said tube;

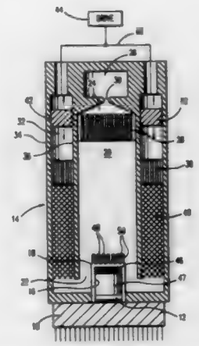
a compression means at least partially disposed within said compression chamber and at least partially moveable from a first position to a second position;

a surge reservoir communicatively connected to said tube at said second end of said tube;

said second end of said tube comprising a first heat exchanger;

said annular chamber containing and comprising a second heat exchanger;

said first end of said tube partially closed by a third heat exchanger extending into said tube and having a heat exchange surface thereon exposed to said tube interior,



said third heat exchanger comprising a surface exposed to the exterior of said tube;

a thermally conductive contacting means disposed in contact with said surface exposed to said exterior of said tube;

an electronic chip supported on a chip support substrate and disposed proximate said contacting means;

means for urging said contacting means against said electronic chip;

said compression chamber, said regenerator and said pulse tube containing a compressible gas;

whereby displacement of said plunger compresses and decompresses said gas to cool said first end of said tube and said third heat exchanger, and heats said second end of said tube and said first heat exchanger, thereby providing a cooled region of said first end to absorb and transfer heat from said electronic chip to said second end of said tube.

5,303,556

SINGLE COLUMN CRYOGENIC RECTIFICATION SYSTEM FOR PRODUCING NITROGEN GAS AT ELEVATED PRESSURE AND HIGH PURITY

James R. Dray, Kenmore; Mark J. Roberts; Dante P. Bonaquist, both of Grand Island; Harry Cheung, Williamsville; Paul L. Just, Tonawanda; James B. Mize, Williamsville, and John H. Royal, Grand Island, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jan. 21, 1993, Ser. No. 6,408
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **8 Claims**

1. A cryogenic rectification method for producing elevated pressure nitrogen gas comprising:

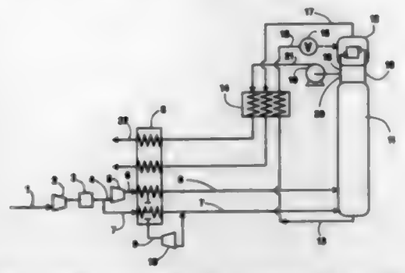
(A) compressing a feed comprising nitrogen and oxygen;

(B) cooling compressed feed and passing resulting cooled feed into a column;

(C) separating feed within the column by cryogenic rectifi-

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cation into nitrogen-rich vapor and oxygen-enriched liquid;
(D) vaporizing oxygen-enriched liquid by indirect heat exchange with nitrogen-rich vapor to produce nitrogen-rich liquid and oxygen-enriched vapor;



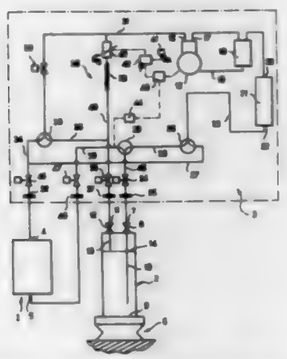
(E) increasing the pressure of nitrogen-rich liquid to produce elevated pressure nitrogen-rich liquid;
(F) vaporizing elevated pressure nitrogen-rich liquid by indirect heat exchange with compressed fluid to produce elevated pressure nitrogen gas; and
(G) recovering elevated pressure nitrogen gas as product.

5,303,557

METHOD AND APPARATUS FOR DETERMINING THE PHASE OF A FLUID

Michel Grabon, Villeurbanne, France, assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 12, 1993, Ser. No. 89,928
Claims priority, application France, Aug. 10, 1992, 92 09873
Int. Cl.[5] F17C *13/02*
U.S. Cl. 62—49.1 **14 Claims**



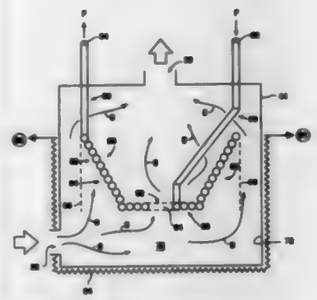
1. A method of determining whether fluid at a predetermined level (14) of a fluid storage container (2) is a liquid or a gas comprising the steps of:
withdrawing a sample of said fluid from said container at said level;
depressurizing said sample under conditions such that said fluid will become a gas if it is a liquid before such depressurization;
measuring the temperature (θ_G)of said fluid after depressurization;
establishing a reference temperature (θ_A) as a function of the temperature of said fluid in said container;
comparing said fluid temperature and said reference temperature;
concluding that said fluid is a gas or a liquid from the results of said comparing step based on the following criteria—
if said fluid temperature and said reference temperature are approximately equal, then said fluid is a gas at said level of said container but
if said fluid temperature is substantially lower than reference temperature, then said fluid is a liquid at said level of said container.

5,303,558

THERMAL TRAP FOR GASEOUS MATERIALS

Oscar L. Caton, Boerne; Craig A. Bellows, San Antonio; Curtis M. Hebert, Jr., San Antonio, and Steve J. Schaper, San Antonio, all of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jul. 30, 1992, Ser. No. 923,291
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 **15 Claims**



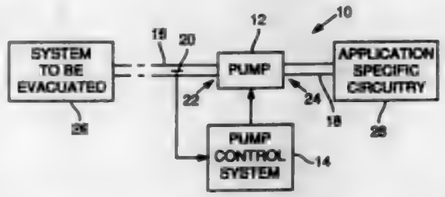
1. A thermal trap comprising:
an enclosure defining a trap chamber, said enclosure being provided with an inlet and an outlet;
a condensable-solid collection surface disposed within said trap chamber, said collection surface comprising a length of tubing formed into a conical coil having a small end and a large end, with said small end being positioned nearer said inlet than said large end; and
means for maintaining the temperature of said collection surface at or below the temperature at which a gas flowing into said inlet condenses into a solid form, wherein said means of maintaining the temperature of said collection surface comprises means for circulating a fluid through said tubing from said small end to said large end of said coil.

5,303,559

METHOD AND APPARATUS FOR REFRIGERANT RECOVERY

Christophe Jean-Paul Sevrain, Ridgefield, Wash., and Bonnie C. Lambert, Hood River, Oreg., assignors to Micropump Corporation, Vancouver, Wash.

Division of Ser. No. 999,606, Dec. 31, 1992, Pat. No. 5,235,821.
This application Apr. 2, 1993, Ser. No. 42,601
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—77 **22 Claims**



1. A method of removing refrigerant from a system, the method comprising the steps:

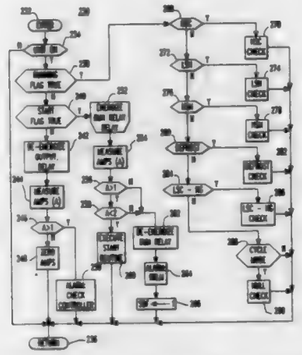
coupling the system to an inlet of a pump to provide refrigerant thereto;
sensing automatically whether the refrigerant provided to the inlet is in a liquid or gas phase; and
in response to the sensed refrigerant phase, operating the pump at a first capacity level if liquid phase refrigerant is sensed, and operating the pump at a second capacity level greater than the first if gas phase refrigerant is sensed.

5,303,560

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE OPERATION OF A REFRIGERATION UNIT

Jay L. Hanson, Bloomington, and Doyle G. Herrig, Elko, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Apr. 15, 1993, Ser. No. 46,314
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—126 **30 Claims**



1. A method of operating and monitoring a refrigeration unit which includes electrical control having a voltage source, a control circuit which includes a plurality of control devices, and a controller which selectively energizes and de-energizes the control devices via a plurality of control outputs, comprising the steps of:
determining if the refrigeration unit is running,
de-energizing the control outputs of the controller when the determining step finds the refrigeration unit is not running,
measuring the magnitude of the current draw of the control circuit from the voltage source with the control outputs of the controller de-energized,
providing a current reference value which indicates the maximum allowable current draw with the control outputs of the controller de-energized,
comparing the measured current draw with the reference value, and
providing an alarm which indicates the controller should be checked when the measured current draw exceeds the reference value.

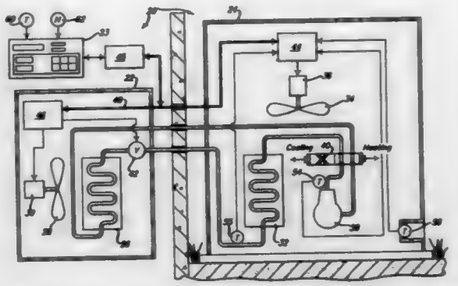
5,303,561

CONTROL SYSTEM FOR HEAT PUMP HAVING HUMIDITY RESPONSIVE VARIABLE SPEED FAN

Vijay Bahel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton, and Gregory P. Herroon, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Oct. 14, 1992, Ser. No. 961,139
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—186 **3 Claims**

1. An air-conditioning system comprising:
a heat pumping means having an outdoor heat exchanger, an indoor heat exchanger and a compressor;
an indoor fan for delivering air across said indoor heat exchanger for conditioning;
an adjustable speed motor means coupled to said indoor fan for driving said fan at least two different speeds;
first sensing means for measuring a parameter indicative of indoor air temperature;
second sensing means for measuring a parameter indicative of indoor humidity;



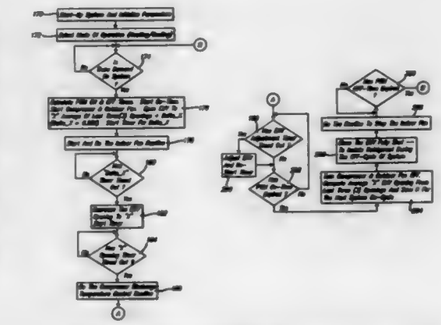
processor system coupled to said first and second sensing means and to said motor means having a comfort mode for selecting the speed of said indoor fan based on indoor air temperature and humidity and having an economy mode for selecting the speed of said indoor fan based on outdoor air temperature.

5,303,562

CONTROL SYSTEM FOR HEAT PUMP/AIR-CONDITIONING SYSTEM FOR IMPROVED CYCLIC PERFORMANCE

Vijay Bahel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton, and Gregroy P. Herroon, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jan. 25, 1993, Ser. No. 8,525
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—222 **14 Claims**

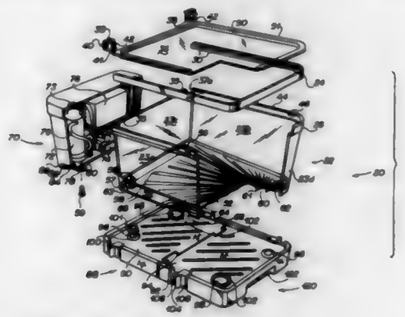


1. A method of improving cyclic performance in a heat pump system of the type employing an expansion valve capable of adjustably opening and closing to different orifice sizes to meter refrigerant between a condenser and an evaporator, comprising:
operating said heat pump system at steady state and causing the expansion valve to be adjusted to an opening in response to thermal demands on the heat pump system;
storing a value indicative of the average opening of said expansion valve at steady state;
terminating steady state operation by closing said expansion

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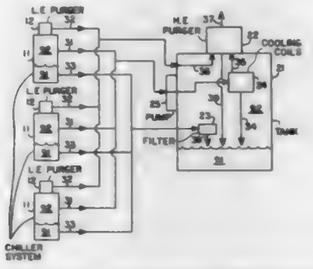
valve sufficient to substantially maintain a pressure differential between said evaporator and said condenser;
resuming operation by adjusting said expansion valve for a first predetermined time to an opening greater than said average opening;
further adjusting said expansion valve for a second predetermined time to an opening generally equal to said average opening.

5,303,563
VEGETABLE CRISPER
Jerry W. Bishop; Stephen W. Braun, and Lee Payne, Jr., all of Atlanta, Ga., assignors to Hydro-Crisper, Inc., Atlanta, Ga.
Filed Jul. 9, 1992, Ser. No. 911,186
Int. Cl.[5] F25D *25/02*
U.S. Cl. 62—382 **25 Claims**



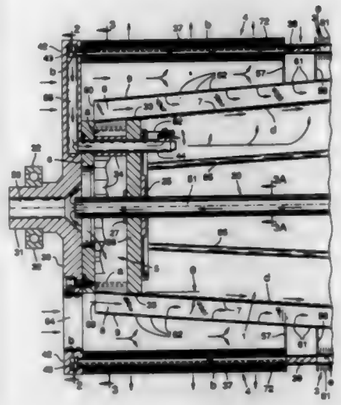
1. A vegetable crisper, comprising:
a chamber for holding vegetables;
a reservoir for a supply of fluid;
an elongated tube for passing the fluid from the reservoir to at least one orifice in the tube that attaches to an upper peripheral edge of the chamber; and
means for communicating the fluid under pressure to the tube for a predetermined period at a predetermined interval of time, whereby the fluid being communicated to the tube is emitted through the orifice into the chamber.

5,303,564
REFRIGERANT RECOVERY AND PURGE APPARATUS
Michael L. Britt, Christmas, Fla., assignor to Southeastern Refrigerant Management, Inc., Jacksonville, Fla.
Filed Jan. 25, 1993, Ser. No. 8,772
Int. Cl.[5] F25B *43/04*
U.S. Cl. 62—475 **19 Claims**



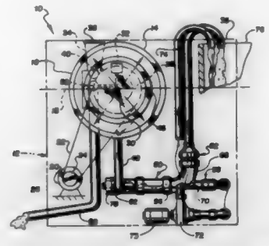
1. An apparatus for recovering, separating and recycling of refrigerant and non-condensable gases from one or more refrigerant chiller systems coupled with one or more low efficiency purgers, said apparatus comprising:
(A) a recovery tank to receive and contain refrigerant gas and refrigerant liquid from one or more refrigerant chiller systems, and to further receive and contain non-condensable gases and refrigerant gas from one or more low efficiency purgers;
(B) cooling coils to separate said refrigerant gas from said non-condensable gases in said recovery tank;
(C) a high efficiency purger connected to said recovery tank to further separate said refrigerant gas from said non-condensable gases within said recovery tank;
(D) pumping means to effect the transfer of said refrigerant gas and said refrigerant liquid between said one or more refrigerant chiller systems and said recovery tank;
(E) conduit means connecting said low efficiency purger to said recovery tank for transfer of said non-condensable gases and refrigerant gas;
(F) conduit means connecting said refrigerant chiller system to said recovery tank for transfer of said refrigerant gas;
(G) conduit means connecting said refrigerant chiller system to said recovery tank and to said pumping means for transfer of said refrigerant liquid, whereby said liquid refrigerant can be transferred from said refrigerant chiller system to either said recovery tank directly or through said pumping means; and
(H) valves to control the flowpaths of said conduit means.

5,303,565
ROTARY ABSORPTION HEAT PUMP OF IMPROVED PERFORMANCE
Milton F. Pravda, Towson, Md., assignor to Conserve Resources, Inc., Prescott, Wash.
Filed Mar. 11, 1993, Ser. No. 29,619
Int. Cl.[5] F25B *15/00, 3/00*
U.S. Cl. 62—476 **17 Claims**



1. A rotary absorption heat pump assembly comprising a generator (2), condenser (3), evaporator (4), absorbent cooler (5), and absorber (1) having infeed and outfeed ends, and means operatively associating the same to function as components of an absorption type heat pump, and
mounting means for mounting the heat pump components for rotation as a unit,
the absorber (1) comprising a hollow frustum of a right circular cone, outwardly tapering in the downstream direction and adapted to receive and process an absorbent solution in the form of a very thin film ("d") of substantially uniform thickness,
the absorber (1), absorbent cooler (5), and generator (2) being arranged centrally end-to-end and the condenser (3) and evaporator (4) being arranged end-to-end peripherally outside of the absorber and absorbent cooler, substantially concentric therewith.

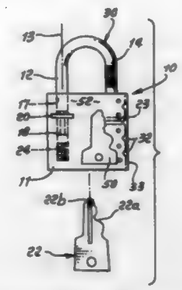
5,303,566
FRONT-LOADING WASHING MACHINE DRAIN SYSTEM
Joseph A. Wolney, 542 Summit St. NE., Columbia Heights, Minn. 55421, and Thomas A. Wolney, Sr., 2934 Irving Ave. N., Minneapolis, Minn. 55411
Filed Jul. 10, 1992, Ser. No. 911,739
Int. Cl.[5] D06F *39/08*
U.S. Cl. 68—208 **7 Claims**



7. A drain adaptor for use in combination with a front-loading washing machine which has an agitator drum disposed for rotation about a generally horizontally-oriented axis, means for driving the drum in rotation about the generally horizontally-oriented axis during wash, rinse, and drain/extraction cycles, and a drain pipe extending downward fro a bottom of the agitator drum and disposed to commonly convey a water/suds waste mixture, vacated from the agitator drum by gravity and centrifugal action, away from the agitator drum, comprising:
(a) a generally horizontally-oriented conduit having first and second ends, said first end of said conduit intersecting, and being in fluid communication with, a distal end of the drain pipe, wherein the water/suds waste mixture vacated from the agitator drum through the drain pipe is channeled and impelled into and through said conduit and separates into a water component and a suds component, floating on the water component, as the waste mixture is channeled and impelled through said conduit from said first end to said second end thereof;
(b) a water scavenger line extending from said second end of said conduit;
(c) a suds duct extending from said second end of said conduit;
(d) a baffle disposed proximate said second end of said conduit to permit the water component of the waste mixture to enter said water scavenger line ,and to divert the suds component of the waste mixture into said suds duct; and
(e) a pump interposed in said water scavenger line at a location spaced down-flow from said baffle.

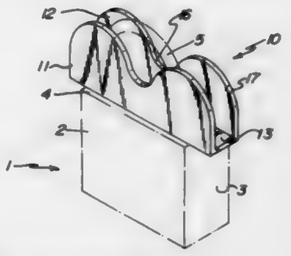
5,303,567
PADLOCK WITH KEY INDICATOR
Henry P. Nava, 443 Potrero Grande Dr., Monterey Park, Calif. 91754
Filed Dec. 21, 1992, Ser. No. 993,646
Int. Cl.[5] E05B *15/08*
U.S. Cl. 70—38 B **10 Claims**

1. In combination with a padlock having a body, a U-shaped keeper at one end of the body, and a key receptor at the opposite end of the body, the body containing a row of pins to be engaged by key teeth, the combination comprising:
a) an indicator device on the body,
b) said device having a location on the body relative to the pins to indicate the left or right directional orientation of key teeth insertion into said receptor, to effect opening of the padlock keeper, said indicator device having shoulders



presented in a row extending in the direction of key insertion.

5,303,568
PADLOCK PROTECTOR
Nate Wightman, Rte. 8, Box 140-E, Lubbock, Tex. 79407
Filed Dec. 7, 1992, Ser. No. 987,450
Int. Cl.[5] E05B *67/38*
U.S. Cl. 70—56 **6 Claims**



1. A padlock protector comprising:
a front, a back and a bottom; the front and the back being he same size and shape, the front and back having low center sections and raised lateral sections such that, when the padlock protector is placed upon a padlock having a top, a bottom, a front, a back, two sides, and a U-shaped shackle engageable with said padlock top, said shackle being made up of two vertical shafts and a curved central connector, the low center section will allow the shackle to engage a latch and the raised lateral sections will at least substantially cover the two vertical shafts of the shackle; said bottom having a hole of such size and shape as to allow one of the vertical shafts to pass through and having a slot of such size and shape extending along the bottom as to allow the other vertical shaft to pass through,
said bottom being spaced below the lowest point of said low center sections of said front and said back wherein the front, back and bottom define a U-shaped perpendicular to the plane of the U-shape defined by said shackle,
said bottom defining a distal end wall joining said front and said back and having first and second opposed edges orthogonally extending between said front and said back such that said distal end wall will engage said top of said padlock, said hole in said distal end wall being located intermedially of said first and second edges, said slot in said distal end wall having one end longitudinally spaced from said hole and having its opposed end intercepting said first edge of said distal end wall to provide an opening for said slot adapted to slidingly receive the two vertical shafts of said shackle therein whereby one of said vertical

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shafts may be inserted into said hole located intermedially of said distal end wall after said shackle is slidingly received within said slot.

5,303,569

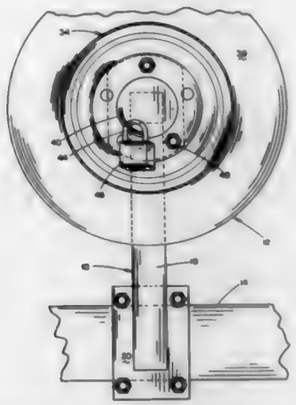
SPARE TIRE LOCKING DEVICE

John O. Wright, 814 Timberlane, Glenwood, Iowa 51534

Continuation of Ser. No. 932,240, Aug. 19, 1992, abandoned. This application May 18, 1993, Ser. No. 63,155

Int. Cl.[5] **E05B** *65/12*; **B62D** *43/02*

U.S. Cl. 70—259 **11 Claims**



1. A locking device for locking a spare tire on a vehicle, said spare tire including a tire mounted on a wheel having a hub with a hub opening and a plurality of lug openings formed therein, comprising;

a flat base plate having an outer surface;

means operatively connecting said base plate to said vehicle;

at least one threaded stud projecting transversely from said outer surface of said base plate, said stud adapted to threadably receive a lug nut thereon;

an arcuate bracket irremovably affixed to and extending transversely from said outer surface of said base plate;

said threaded stud extending through one of the lug holes in said spare tire, when the spare tire is positioned adjacent the outer surface of said base plate;

said arcuate bracket elongated and curved to an arcuate form following the curvature of the hub opening and extending through the hub opening in the spare tire closely adjacent the wheel when said spare tire is positioned adjacent the outer surface of said base plate;

said bracket having an opening formed therein for receiving the shackle of a padlock.

5,303,570

HYDROSTATICALLY DEFORMING A HOLLOW BODY

Wilhelm Kaiser, Sundern, Fed. Rep. of Germany, assignor to HDE Metallwerk GmbH, Menden, Fed. Rep. of Germany

PCT No. PCT/DE92/00060, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO92/13653, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 31, 1992, Ser. No. 927,398

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1991, 4103082

Int. Cl.[5] **B21D** *39/20, 26/02*

U.S. Cl. 72—62 **10 Claims**

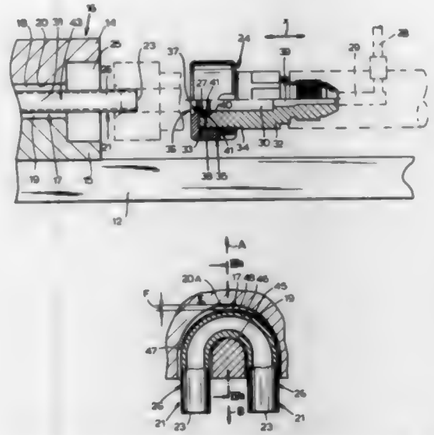
1. A method of pressure deforming a hollow metal workpiece having a tubular end portion, the method comprising the steps of:

mechanically bending the workpiece into an intermediate nonstraight shape such that the workpiece has thickened regions of substantially greater wall thickness than other less-thick wall regions;

fitting the workpiece into a die formed with a cavity adapted to receive the workpiece with the end portion of the workpiece projecting along an axis out of the die;

positioning the workpiece in the die such that the thickened regions are spaced further from a die inner surface than the other less-thick regions;

engaging over the projecting end portion of the workpiece a feed sleeve in a pressure-tight fit;



supporting the sleeve and workpiece relative to each other such that the end portion can slide in the sleeve and that the sleeve exerts substantially no axial force on the workpiece; and

pressurizing an interior of the workpiece through the sleeve and thereby deforming the workpiece outward against an inner surface of the die and axially sliding the workpiece end portion in the sleeve.

5,303,571

METHOD OF PRODUCING A ONE-PIECE BAND CLAMP

David N. Quinn, Lakewood; Glendon R. Kessler, Westminster, and Robert G. Hayden, Commerce City, all of Colo., assignors to Band-It-Idex, Inc., Denver, Colo.

Continuation of Ser. No. 755,872, Sep. 6, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 4,642

Int. Cl.[5] **B21D** *53/36, 28/32*

U.S. Cl. 72—336 **8 Claims**



1. A method for forming a band clamp comprising the steps of:

providing a band with a first face, a second face that is separated from said first face by a defined distance so that said band has a substantially uniform thickness, a first end, a second end, a substantially uniform width, and a longitudinal axis extending between said first end and said second end;

cutting a substantially longitudinally extending slit in said first end of said band, said slit having a first upper terminal point and a first lower terminal point;

providing a wedge with a tip portion having a first circumference and a base portion having a second circumference that is greater than said first circumference;

positioning said wedge so that said tip portion is adjacent to said slit and said base portion is spaced from said slit;

substantially establishing the final shape of a slot for receiving the said second end of said band by displacing at least one of said wedge and said band toward the other so that said tip portion extends increasingly beyond said slit and until a substantially four-pointed star-shaped slot is formed, as a result of contact with said base portion of said wedge, that has a first slot portion with a first major axis which is substantially parallel to said longitudinal axis, a first length that extends from said first upper terminal point to said first lower terminal point and a first width and a second slot portion with a second major axis that is substantially perpendicular to said first major axis of said first slot portion, a second length that extends from a second right terminal point to a second left terminal point, and a second width, said second length and said second width being sufficient to receive said second end of said band, said first width being substantially less than said second length, and said first upper and lower terminal points and said second right and left terminal points defining the four points of said four-pointed star-shaped slot, said step of displacing substantially avoiding any rotation of said wedge about an axis that is normal to said first face and said second face at the location of said slot in the forming of said slot; and

terminating said step of establishing the final shape of a slot for receiving said second end of said band once said substantially four-pointed star-shaped slot is formed.

5,303,572

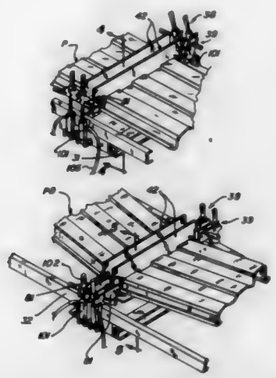
PANEL BENDING APPARATUS AND METHOD

Gary A. Knudson, 17356 W. 57th Ave., Golden, Colo. 80401

Filed May 7, 1992, Ser. No. 879,561

Int. Cl.[5] **B21D** *5/01, 5/16*

U.S. Cl. 72—385 **23 Claims**



1. Apparatus for bending a generally channel-shaped panel having a base wall and a pair of substantially parallel side walls arranged substantially perpendicular to said base wall with opposite panel faces and one of said faces defining a cavity comprising:

drive means,

stationary die means having a surface configuration to mate with the base wall and at least a portion of the side walls of the panel face defining said cavity, and

movable die means responsive to said drive means and having a base edge portion and a pair of opposed side edge portions substantially transverse to said base edge portion to provide a configuration mating with the base wall and at least a portion of the side walls of the other of said panel faces, said movable die means being movable past said stationary die means beyond a plane extending through the base wall and a portion of said side walls to form a crease in said panel that extends inwardly toward said cavity along said base wall and along at least a portion of both of said side walls to perform a bend in said panel.

5,303,573

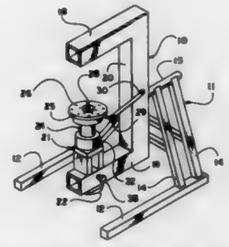
WHEEL STRAIGHTENING METHOD AND APPARATUS

Thomas E. Douglas, Suwanee, Ga., assignor to Wheel Wizard International, Inc., Chamblee, Ga.

Filed May 26, 1992, Ser. No. 888,871

Int. Cl.[5] **B21D** *3/14, 37/00*; **B21J** *13/04, 13/10*

U.S. Cl. 72—420 **8 Claims**



1. Wheel straightening apparatus, for straightening aluminum automobile wheels, said apparatus comprising wheel mounting means having a horizontal axle, said wheel mounting means being generally C-shaped and including an upper arm and a lower arm extending horizontally, a wheel support carried by said lower arm and including a vertical axle extending perpendicularly to said lower arm, a hub selectively fixable to said vertical axle for receiving the wheel to be straightened, and fastening means to fix said wheel to said hub, bearing means for receiving said horizontal axle, and a base for supporting said bearing means, gauge means carried by said wheel mounting means and disposable adjacent to said hub, said mounting means further including means for selectively locking said vertical axle against rotation, a latch pin mounted on said base, a latch plate on said wheel mounting device for cooperation with said latch pin for selectively preventing rotation of said wheel mounting means about said horizontal axle, and a plurality of tools for exerting forces on a wheel to be straightened mounted on said hub.

5,303,574

EVALUATION OF THE EXTENT OF WEAR OF ARTICLES

Jesse N. Matossian, Woodland Hills, Calif.; Paul H. Mikkola, Saint Charles, Mich., and John L. Bartelt, Camarillo, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif. and General Motors Corp., Detroit, Mich.

Continuation of Ser. No. 654,865, Feb. 12, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 988,397

Int. Cl.[5] **G01N** *3/56*

U.S. Cl. 73—7 **20 Claims**

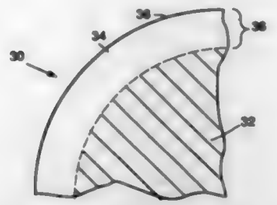
1. A process for evaluating the extent of wear of manufacturing tooling, comprising the steps of:

furnishing a substrate in the shape of a manufacturing tool and having an untreated working surface;

treating at least a portion of the untreated working surface of the substrate with an ion treatment so that the appearance

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of the treated surface after wear of more than a preselected amount is altered as compared with the appearance of the treated surface that is not worn by more than the preselected amount, the treated surface being at least as wear resistant as the untreated surface, the treated surface not being machined after the step of treating and before being used as tooling;



subjecting the treated surface of the tooling to conditions that produce wear of the surface; and

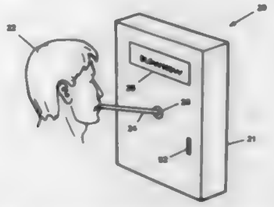
observing the worn surface to determine whether there is a change in appearance indicative of wear of more than the preselected amount.

5,303,575

APPARATUS AND METHOD FOR CONDUCTING AN UNSUPERVISED BLOOD ALCOHOL CONTENT LEVEL TEST

Gordon R. Brown, Toronto, and Gerald H. Herlinger, Bolton, both of Canada, assignors to Alcotech Research Inc., Mississauga, Canada

Filed Jun. 1, 1993, Ser. No. 69,862
Int. Cl.[5] G01N *33/497*
U.S. Cl. 73—23.3 **29 Claims**



1. An automated unsupervised apparatus for conducting a blood alcohol content level test on an individual user, and subsequently discerning and displaying a meaningful test result, said apparatus comprising:

alphanumeric display means for instructing said individual user to commence blowing into said apparatus so as to provide a breath sample;

pressure switch means for monitoring the gauge pressure of said individual user's breath sample in order to determine whether said gauge pressure is at or above a threshold value gauge pressure;

timer means for determining whether said gauge pressure of said individual user's breath sample remains at or above said threshold value gauge pressure for a predetermined length of time;

wherein, said alphanumeric display means also instructs said individual user to wait and blow again in the event that said gauge pressure does not remain at or above said threshold value for said predetermined length of time;

means for capturing a testing sample that is a representative portion of said individual user's breath sample subsequent to said individual user providing a breath sample at or above said threshold value for said predetermined length of time;

means for effecting an automated electrochemical analysis of said testing sample;

means for producing a measurement value of the alcohol content of said testing sample; and,

microprocessor means for calculating a numeric value derived from said measurement value, said numeric value thereby being related to said individual user's blood alcohol content level;

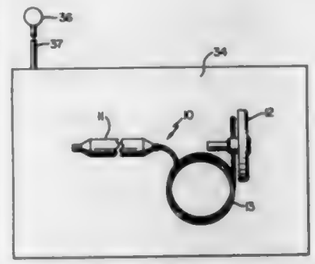
wherein, said alphanumeric display means also displays to said individual user one of either (1) the category corresponding to said numeric value as being one of "pass", "warn", and "fail" and (2) said numeric value derived from said measurement value.

5,303,576

METHOD OF TESTING FOR LEAKS IN A CLOSED FLUID FILLED SYSTEM AND SYSTEM TESTED BY SUCH METHOD

Joseph J. Erdelsky, Jeannette, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 29, 1992, Ser. No. 953,477
Int. Cl.[5] G01M *3/00*; H01H *37/40*
U.S. Cl. 73—40 **16 Claims**



1. In a method of testing for leaks in a closed fluid filled system that has a part thereof that expands outwardly from an at rest position that occurs when said system is sensing a temperature at or below an at rest temperature to various certain expanded positions in relation to various certain higher temperatures sensed thereby than said at rest temperature, the improvement comprising the steps of disposing said system in a chamber, diaposing a fluid in said chamber under a pressure that is greater than the fluid pressure in the closed volume of said system while sensing the particular temperature that exists in said chamber so that if at least one leak path of a certain size or larger exists in said system from the exterior thereof to the interior thereof a certain amount of said fluid of said chamber will be forced through said at least one leak path to change the fluid condition in said closed volume of said system, removing said system from said chamber after a certain time period, then subjecting said system to a certain pressure and temperature condition so that said part of said system will be in an adverse expanded position beyond its normal position for that said certain pressure and temperature if said at least one leak path of at least said certain size existed, and then detecting said adverse expanded position of said part of said system.

5,303,577

METHOD AND APPARATUS FOR DETECTING LEAKS IN LIQUID STORAGE TANKS

Joe M. Montgomery, R.R. 22 - Box 355, Springfield, Mo. 65803

Filed Apr. 9, 1993, Ser. No. 44,948
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 **10 Claims**

1. A method of detecting a leak in a liquid storage tank such as an underground storage tank for gasoline, the method comprising the steps of:

inserting a hollow sampling tube into the liquid in the tank;

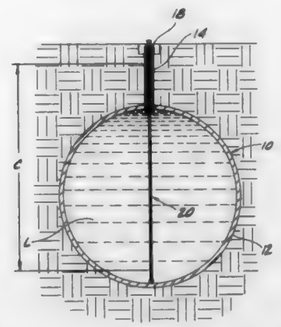
filling the tube with liquid from the tank until the level of liquid in the tube is substantially equal to the level liquid in the tank;

removing the tube from the tank along with a volume of liquid contained in the tube;

weighing the volume of liquid from the tube to establish a first reference weight;

returning all of the liquid to the tank;

reinserting the tube into the liquid in the tank;



refilling the tube with liquid from the tank until the level of liquid in the tube is substantially equal to the level of liquid in the tank;

removing the tube from the tank along with a volume of liquid contained in the tube;

weighing the volume of liquid from the tube to establish a second reference weight;

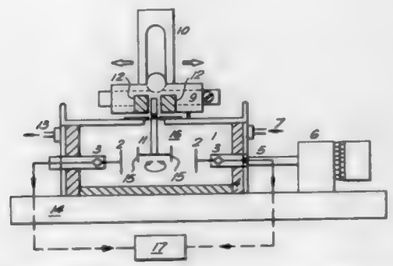
comparing the first reference weight to the second reference weight to determine whether a change in the amount of liquid in the tank occurred.

5,303,578

RHEOMETER

Phylip R. Williams, Penard, and David J. A. Williams, Swansea, both of United Kingdom, assignors to Carri-Med Limited, Surrey, United Kingdom

PCT No. PCT/GB90/01691, § 371 Date Jul. 3, 1992, § 102(e) Date Jul. 3, 1992, PCT Pub. No. WO91/06842, PCT Pub. Date May 16, 1991
PCT Filed Nov. 2, 1990, Ser. No. 867,665
Claims priority, application United Kingdom, Nov. 3, 1989, 8924851
Int. Cl.[5] G01N *11/14*
U.S. Cl. 73—54.24 **22 Claims**



1. Apparatus for investigating dynamic rheological properties of a viscoelastic medium, comprising:

(a) a container for the viscoelastic medium;

(b) a driving member ocsillatable about an axis;

(c) at least one shear wave generating surface supported on said driving member for generating shear waves in the viscoelastic medium upon oscillation of said driving member;

(d) a first shear wave receiving surface arranged to be capable of facing and being spaced a first distance from one of said at least one shear wave generating surface;

(e) a second shear wave receiving surface arranged to be capable of facing and being spaced a second distance from one of said at least one shear wave generating surface, said second distance being different from said first distance; and

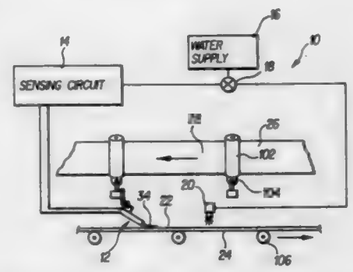
(f) a transducer connected to each wave receiving surface, for sensing variations in physical parameters affecting said wave receiving surfaces induced by oscillation of said driven member, and capable of generating an output signal.

5,303,579

CONVEYOR-BELT MOISTURE CONTROL SENSOR APPARATUS

Donald G. Smith, Jr., Tazewell, Va., assignor to MEFCOR, Inc., Bluefield, Va.

Filed Feb. 3, 1993, Ser. No. 12,643
Int. Cl.[5] B65G *49/00*; G01N *27/04*
U.S. Cl. 73—73 **18 Claims**



1. A moisture control sensor apparatus of a type including a sensing circuit coupled to a sensor device for sensing the relative moisture of a conveyor belt mounted on a conveyor-belt support frame, said sensor device comprising:

a single piece electrically-insulative block;

two adjacent electrodes extending from said electrically-insulative block, a connection end of each of said electrodes being mounted on said block;

at least two sensor wires mounted on said block, each of said sensor wires being attached to one of said connection ends of said electrodes and to a sensing circuit;

a hinge means attached to said electrically-insulative block and having a pivot mechanism located immediately adjacent said electrically insulative block for pivotally mounting said electrically-insulative block to said conveyor-belt support frame for allowing said electrically-insulative block to rotate at said pivot mechanism to thereby move said two adjacent electrodes relative to said conveyor-belt support frame for bringing said two adjacent electrodes into contact with said conveyor belt.

5,303,580

METHOD AND ARRANGEMENT FOR DETERMINING THE STATE OF DETERIORATION OF A CATALYZER

Erich Schneider, Kirchheim, and Eberhard Schnaibel, Hessmingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

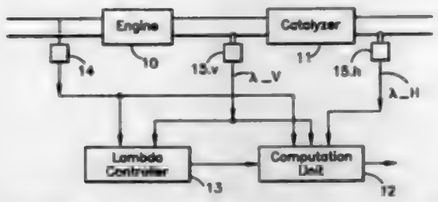
Filed Apr. 17, 1992, Ser. No. 870,264
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1991, 4112479
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **9 Claims**

1. A method of determining the performance loss of a cata-

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lyzer by using a deterioration variable indicative of said performance loss, the catalyzer is affected by operating conditions and is mounted in the exhaust gas flow of an internal combustion engine having a lambda controller operated to provide a two-level response, the method comprising the steps of:

obtaining measurement signal from a lambda probe mounted forward of the catalyzer and a test signal from a lambda probe mounted rearward of the catalyzer;



forming a relationship between said measurement and said test signals and computing the deterioration variable from said relationship;

measuring values of operating variables which affect oxygen storage processes in said catalyzer; and,

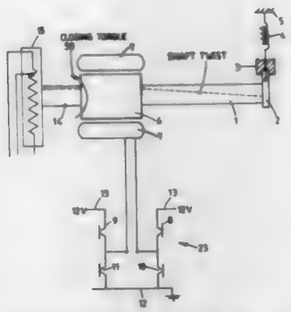
correcting said deterioration variable based on said values of said operating variables thereby reducing the influence of said operating conditions on said deterioration variable.

5,303,581

METHOD OF AND AN APPARATUS FOR DETECTING A FAULT IN A RETURN SYSTEM

Alastair M. McQueen, Solihull, England, assignor to Lucas Industries PLC, Solihull, England

Filed Oct. 27, 1992, Ser. No. 967,297
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **7 Claims**



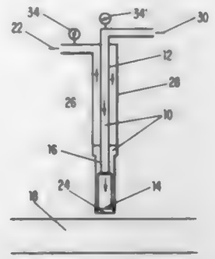
1. An apparatus for detecting a fault in a return system, comprising first return means for urging a mechanism of the system to a first return position, second return means for urging the mechanism to a second return position beyond the first return position, position determining means for determining the first and second return positions, and fault indicating means for indicating a fault if the second return position is not beyond the first return position.

5,303,582

PRESSURE-TRANSIENT TESTING WHILE DRILLING

Stefan Miska, Tulsa, Okla., assignor to New Mexico Tech Research Foundation, Socorro, N. Mex.

Filed Oct. 30, 1992, Ser. No. 969,100
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—155 **20 Claims**



1. A method of pressure-transient testing at the drilling stage of well development, the method comprising the steps of:

a) providing a well

b) creating a bottom hole pressure in the well lower than a formation pressure by inducing a drawdown comprising the steps of:

i) pumping down a drillpipe and up an annulus an inducing fluid with a density less than a density of a drilling fluid; and

ii) obtaining a predetermined amount of reservoir fluid from the annulus;

c) determining a formation fluid rate from drilling fluid flow rate and volume;

d) shutting-in the well;

e) determining the bottom hole pressure in the well; and

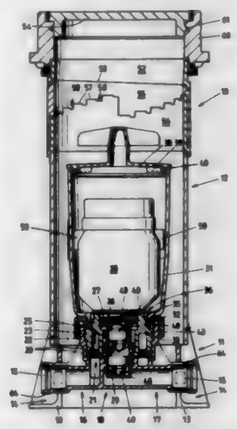
f) determining a reservoir inflow performance from the formation fluid rate and the bottom hole pressure.

5,303,583

METER BOUNDARY BOX

Wayne A. Harris, North Plympton, Australia, assignor to Philmac Pty, Ltd., North Plympton, Australia

Filed Jun. 28, 1991, Ser. No. 722,962
Claims priority, application Australia, Jun. 29, 1990, PK0921
Int. Cl.[5] G01F *15/18*
U.S. Cl. 73—201 **9 Claims**



1. A meter boundary box for housing a water meter of the

type having an externally threaded wall of a tail located radially between a water inlet port external of the tail and a water outlet port defined by the tail wall, comprising

a base having upwardly projecting surfaces defining a pair of conduit locating apertures,

a manifold having projecting inlet and outlet conduits located by the surfaces of respective said apertures, valve seat surfaces defining a valve seat opening at its upstream side to the inlet conduit, and a sleeve having an internal thread extending downstream of the valve seat,

a closure valve for controlling water flow from said inlet conduit to said outlet conduit, said closure valve comprising said valve seat and a valve member having an external thread for engaging the internal thread of the sleeve to thereby move the valve member axially with respect to the valve seat to open or close the closure valve, the valve member having an upwardly open internal thread of diameter and pitch to receive the threaded meter tail, the valve member having an internal wall surrounding an outlet passage open to the manifold outlet conduit, and

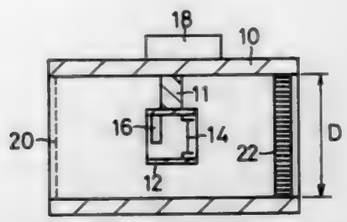
a tubular housing extending upwardly from the valve member and having its lower end sealably but releasably engaging the valve member, and a lid sealably engaging an upper end of the housing.

5,303,584

INTAKE AIR FLOW RATE MEASURING APPARATUS FOR INTERNAL COMBUSTION ENGINE, HAVING WATER-ABSORPTIVE POROUS PROTECTIVE MEMBER

Takayuki Ogasawara, and Toru Kikuchi, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 18, 1992, Ser. No. 992,921
Claims priority, application Japan, Dec. 24, 1991, 3-356935
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.21 **7 Claims**



1. An apparatus for measuring the flow rate of an intake air flowing through an air passage which communicates with an internal combustion engine, comprising:

a heat-generating resistor element disposed in said air passage for detecting the flow rate of the intake air in the air passage; and

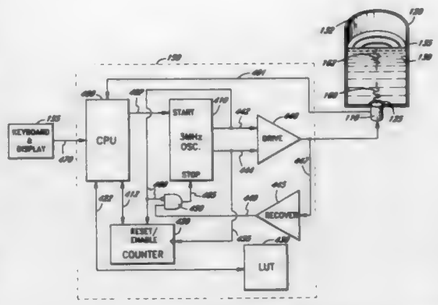
at least one protective member disposed on at least one of upstream and downstream sides of said heat-generating resistor element as viewed in an air flow direction in which the intake air flows through the air passage, so as to extend in a direction perpendicular to said air flow direction, said at least one protective member being formed of a water-absorptive porous material, each of said at least one protective member having a plurality of holes formed through the thickness thereof in said air flow direction.

5,303,585

FLUID VOLUME SENSOR

Leo J. Lichte, Riverside, Calif., assignor to JTL Medical Corporation, Riverside, Calif.

Filed Oct. 31, 1991, Ser. No. 785,792
Int. Cl.[5] G01F *23/28*
U.S. Cl. 73—290 V **9 Claims**



1. An adaptor for providing an interface between a container having a predetermined configuration and a transducer for generating an ultrasonic pulse, wherein:

said adaptor is formed to affix to said container of said predetermined configuration and to said transducer so that said adaptor may be used only to connect said container and said transducer, said transducer being in sonic communication with said container when said transducer is affixed to said container by way of said adaptor, wherein said transducer generates an ultrasonic signal through said liquid in order to measure the volume of said liquid in said container; and

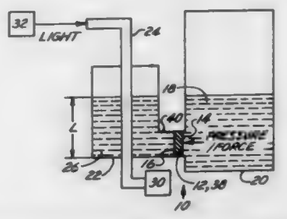
said adaptor includes an indicator which identifies said configuration of said container to which said adaptor connects, said indicator including circuitry which is capable of transmitting data for identifying said adaptor and said predetermined configuration of said container.

5,303,586

PRESSURE OR FLUID LEVEL SENSOR

Yang Zhao, Novi, and Qingfeng Tang, Detroit, both of Mich., assignors to Wayne State University, Detroit, Mich.

Filed Jan. 22, 1993, Ser. No. 7,672
Int. Cl.[5] G01B *11/00*; G01F *23/00*
U.S. Cl. 73—293 **11 Claims**



1. A sensor, adaptable for use in monitoring the level of fluid or material in a container, comprising:

a) a barrel having spaced apart first and second ends and a piston slidably received in said barrel;

b) said piston having one end facing said first end of said barrel and responsive to force exerted thereon by a material or fluid in a container in communication with said barrel and adjacent said first end of said barrel;

c) a reservoir open to said second end of said barrel and containing an optical fiber and a cladding medium surrounding

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said fiber; said piston serving as a free floating barrier separating the material or fluid in the container and said cladding medium in the reservoir, said piston, reservoir and barrel constructed and arranged so as to permit said piston to be urged toward said second end of said barrel as the force exerted by the fluid or material in the container increases, and to be urged toward said first end of said barrel as the force decreases, whereby in response to movement of said piston, the amount of said cladding medium in said reservoir changes, causing the level of said cladding medium surrounding said fiber to change; and

d) a light source at one end of said optical fiber and indicating means for sensing optical transmission through said fiber; said fiber, light source, and indicating means constructed and arranged so that changes in the level of said cladding medium modulate the transmission of light through said fiber as sensed by said indicating means.

5,303,587

DIVER'S DEPTH GAUGE

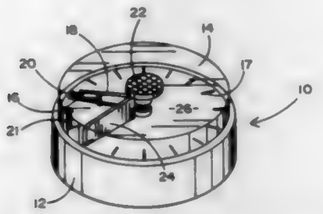
Dean R. Garraffa, and James T. Dexter, both of Huntington Beach, Calif., assignors to Under Sea Industries, Inc., Rancho Dominguez, Calif.

Filed Mar. 17, 1989, Ser. No. 324,815

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] G01L *7/04*; G01D *13/24*

U.S. Cl. 73—300 **1 Claim**



1. A fluid-filled depth gauge for divers, the gauge comprising:

a dial face;

a transparent cover enclosing said dial ace;

means disposed between said dial face and said cover for indicating a depth parameter;

a fluid barrier disposed between said dial face and said cover for blocking fluid flow therein;

said fluid barrier being affixed between said dial face and said cover;

said cover and said dial being of a substantially coaxial and equally sized circular configuration and said barrier extending radially from about their common axis to their periphery; and

said barrier being substantially perpendicular to said dial face.

5,303,588

SENSOR FOR DETERMINING ANGULAR VELOCITY

Hansjoachim Hamisch, and Manfred Boruschewitz, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00399, § 371 Date Dec. 18, 1990, § 102(e) Date Dec. 18, 1990, PCT Pub. No. WO90/15335, PCT Pub. Date Dec. 13, 1990

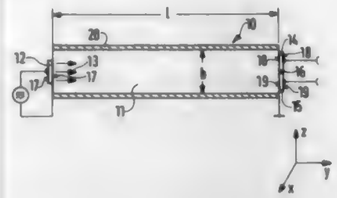
PCT Filed May 30, 1990, Ser. No. 623,925

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1989, 3917811

Int. Cl.[5] G01P *9/00*

U.S. Cl. 73—505 **10 Claims**

1. Sensor for determining an angular velocity, comprising: sound conducting medium having two opposite end faces at transitions to another medium; an ultrasonic transmitter arranged at one of said two end faces to radiate a transverse, bundled ultrasonic ray into said medium; at least two ultrasonic receivers arranged at the other of said two end faces, said receivers being separated by a narrow gap such that different



signals are detected by respective receivers due to deflection of the transmitted ultrasonic ray caused by a Coriolis force when the angular velocity is applied to said medium; and means for generating a difference signal from said detected signal to serve as measurement signals proportional to the angular velocity.

5,303,589

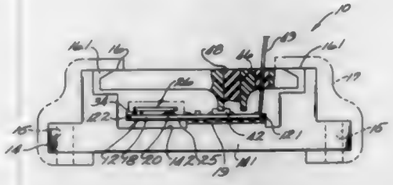
CAPACITIVE ACCELEROMETER WITH CANTILEVER MOUNT

Eric P. Reidemeister, Arlington; Steven Beringhause, N. Attleboro; Keith W. Kawate, Attleboro Falls, and Larry K. Johnson, No. Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 628,249, Dec. 17, 1990, Pat. No. 5,239,871. This application Mar. 17, 1993, Ser. No. 32,212

Int. Cl.[5] G01P *15/125*

U.S. Cl. 73—497 **8 Claims**



1. An accelerometer unit comprising a housing having a base and a base recess, and an accelerometer device having a first part secured to the base and a second part extending over the base recess cantilever mounted from the first part to isolate the second device part from thermal stress associated with mounting the device on the base, the accelerometer device comprising an electrically insulating substrate having electrically conductive portion thereon defining a capacitor detect plate and a capacitor source plate connector adjacent the detect plate in said second part of the device, and circuit path means for providing electric connection to the detect plate and the source plate connector to be connected in an electrical circuit, an electrically conductive metal plate member in said second part having an attachment plate portion secured in electrically conductive relation to the source plate connector, a capacitor source plate portion, and integral resilient beam means extending between the attachment plate portion and capacitor source plate portion of the member to dispose the capacitor plate portion of the member in spaced relation to the detect plate to form a capacitor normally having a selected capacitance and to permit movement of the source plate member portion to modify the capacitance in response to device acceleration, and electronic means connected to the circuit path means to provide an output signal corresponding to device acceleration.

5,303,590

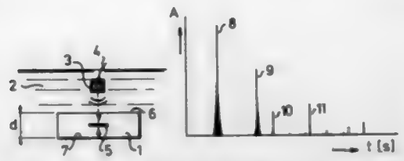
METHOD OF AND AN APPARATUS FOR FREQUENCY SELECTIVE ULTRASONIC INSPECTION OF MULTI-LAYERED STRUCTURES

Theodorus M. Modderman, Heemstede, and Wiebe F. Pronker, Roelofarendsveen, both of Netherlands, assignors to Fokker Aircraft, B.V., Schiphol-Oost, Netherlands

Filed May 27, 1992, Ser. No. 889,112

Int. Cl.[5] G01N *29/06, 29/08, 29/10*

U.S. Cl. 73—588 **20 Claims**



1. A method of ultrasonic inspection of a multi-layered structure having characteristic, ultrasonic transmission and reflection frequency bands related to physical parameters of said multilayer structure, said transmission band frequencies having high transmissivity through said multilayered structure and low reflectivity therefrom and said reflection frequency bands having high reflectivity from said multi-layered structure and low transmissivity therethrough to detect flaws in said structure, said method comprising subjecting said structure to ultrasonic signals, receiving ultrasonic signals modulated by said multi-layer structure, and comparatively analyzing said modulated, ultrasonic signals with respect to said characteristic frequency bands of said structure to distinguish modulating effects due to variations in said physical parameters from modulating effects due to said flaws.

5,303,591

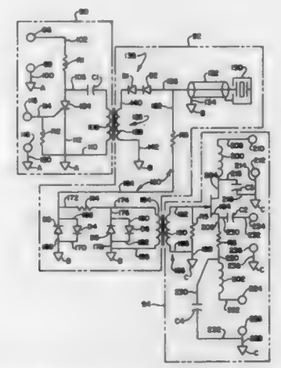
ULTRASONIC INSPECTION SYSTEM WITH IMPROVED PULSER AND RECEIVER CIRCUITS

Edward R. Dykes, and William F. Splichal, Jr., both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 2, 1991, Ser. No. 694,730

Int. Cl.[5] G01N *29/04*

U.S. Cl. 73—620 **9 Claims**



1. Inspection apparatus of a variety employing a transducer mounted with a manipulator to carry out the examination of a metal component within a facility having a first grounding path, and further having second grounding paths for instrumentation, comprising:

a transducer circuit coupled with said transducer connected during said examination with said first grounding path, having an input network for receiving an excitation drive signal to excite said transducer and an output network for providing a response signal;

a pulser network connected during said examination with a said second grounding path, and responsive to a trigger signal for generating an excitation signal;

first coupling means having a first winding coupled within said pulser network and a second winding coupled within said transducer circuit input network and responsive to said pulser network generated excitation signal for effecting the inductive conveyance thereof to said second winding to provide a corresponding said excitation drive signal; and

a receiver circuit responsive to said transducer circuit output network response signal for effecting the conveyance of a corresponding response output signal to a data acquisition facility.

5,303,592

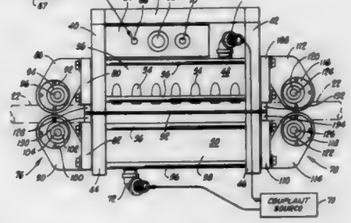
METHOD AND APPARATUS FOR COILED TUBING INSPECTION

Waylon A. Livingston, 2250 Industrial Blvd., Norman, Okla. 73069

Filed Dec. 5, 1991, Ser. No. 802,536

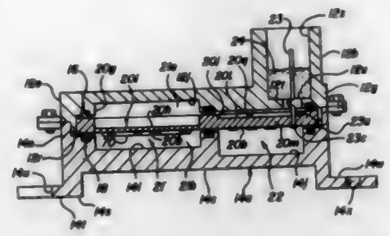
Int. Cl.[5] G01N *29/22*

U.S. Cl. 73—622 **31 Claims**



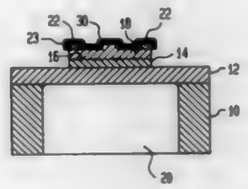
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5,303,593
STRAIN GAUGE DISTRIBUTION FOR RESISTIVE STRAIN GAUGE PRESSURE SENSOR
James R. Kremidas, Fenton, Mich., assignor to MacLean-Fogg Company, Mundelein, Ill.
Continuation-in-part of Ser. No. 711,947, Jun. 7, 1991, Pat. No. 5,174,158. This application Dec. 13, 1991, Ser. No. 808,157
Int. Cl.[5] G01L 7/08, 9/06, 19/04
U.S. Cl. 73—708 6 Claims



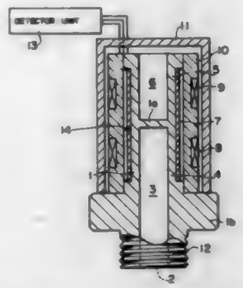
4. The resistive strain gauge pressure sensor including:
a diaphragm exposed to a pressure to be sensed and having a transverse midline passing through the center of the diaphragm, a central region positioned on the midline proximate the center of the diaphragm, a peripheral region surrounding the central region, and a neutral region between the central region and the peripheral region experiencing substantially no strain during flexing of the diaphragm;
a first pair of resistor members positioned side by side on the central region of the diaphragm;
a second pair of resistor members positioned side by side on the peripheral region of the diaphragm on one side of the transverse midline;
a thermistor positioned on the neutral region of the diaphragm; and
circuit means electrically interconnecting the resistor members and the thermistor and operative to generate an output signal in response to flexing of the diaphragm.

5,303,594
PRESSURE TRANSDUCER UTILIZING DIAMOND PIEZORESISTIVE SENSORS AND SILICON CARBIDE FORCE COLLECTOR
Anthony D. Kurtz, Teaneck, N.J., and Joseph S. Shor, Flushing, N.Y., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.
Filed Aug. 11, 1992, Ser. No. 928,840
Int. Cl.[5] G01L 7/08, 9/06
U.S. Cl. 73—727 18 Claims



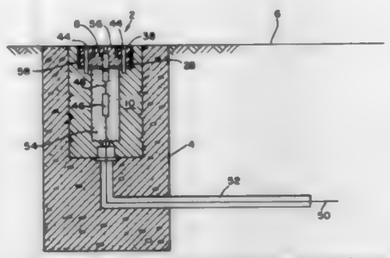
1. A pressure transducer, comprising:
a diaphragm of a predetermined thickness fabricated from silicon carbide, said diaphragm having a top and bottom surface;
a dielectric layer formed on said top surface of said diaphragm; and
at least one piezoresistive sensor fabricated from diamond formed on said dielectric layer.

5,303,595
PRESSURE SENSOR UTILIZING MAGNETOSTRICTION EFFECT
Rihito Shoji, Yawata; Hiroyuki Hase, Kyoto, and Masayuki Wakamiya, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 8, 1991, Ser. No. 789,333
Claims priority, application Japan, Nov. 19, 1990, 2-313520
Int. Cl.[5] G01L 9/16
U.S. Cl. 73—728 4 Claims



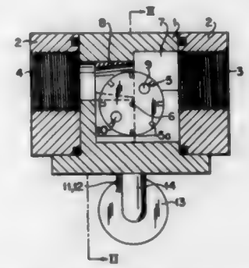
1. A pressure sensor comprising a cylindrical columnar hollow body with a pressure introducing opening, a deforming part of which body is distorted by a pressure introduced from said pressure introducing opening, said deforming part being a peripheral wall of said body, and a thin film made of an amorphous magnetic alloy having a magnetostriction property which is fitted around and bonded to said deforming part, wherein:
said film is curved to have a cylindrical shape and annealed to have a curvature different from a curvature of said cylindrical deforming part before it is provided around said cylindrical columnar deforming part.

5,303,596
PIEZOELECTRIC AIRBLAST GAGE MOUNTING DEVICE FOR USE IN HIGH SHOCK ENVIRONMENTS
Denis D. Rickman, Clinton, Miss., assignor to The United States of America as represented by the United States Army Corps of Engineers, Washington, D.C.
Filed May 21, 1993, Ser. No. 65,151
Int. Cl.[5] G01L 9/00
U.S. Cl. 73—754 7 Claims



1. A mounting assembly for a piezoelectric airblast gage and electronic circuitry, comprising
(a) a housing containing a longitudinal cylindrical chamber including an upper portion having a first diameter and a lower portion having a second diameter;
(b) a mounting insert arranged within said housing chamber upper portion, said insert containing an axial bore within which the gage is mounted, the upper end of the gage being flush with the upper surface of said insert and the electronics being suspended from the gage in said housing chamber lower portion;
(c) means for clamping said insert within said housing chamber upper portion; and
(d) means for mitigating mechanical shocks arranged in said housing chamber lower portion, whereby when said housing is fixed within a structure and an explosive is detonated in the vicinity of the gage, the mounting assembly isolates the gage and electronics from shockwaves produced by the detonated explosive enabling the gage to provide accurate airblast measurements without destruction in high shock environment.

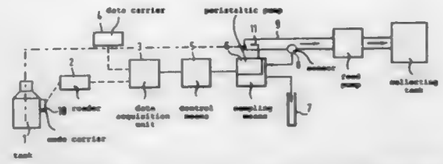
5,303,597
METHOD AND DEVICE FOR MEASURING THE DENSITY OF A FLOWING FLUID
Anders Noren, Fafnervagen 30, Djursholm, S-182 65, Sweden
Continuation-in-part of Ser. No. 689,841, May 23, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,555
Claims priority, application Sweden, Dec. 1, 1988, 8804353-4
Int. Cl.[5] G01F 1/00
U.S. Cl. 73—861.35 12 Claims



1. A method of determining the density of a fluid flowing in a closed passage which comprises:
(a) providing a bladed rotor in said passage such that the rotor is surrounded by the fluid in said passage and such that the rotor is rotated by a fluid flowing in said passage, the speed of rotation of the rotor being directly dependent on the flow rate of the fluid in the passage so that when a fluid flows at constant velocity through the flow passage, the rotor will rotate at constant velocity;
(b) causing a fluid to flow through said passage at an initial constant velocity to cause the rotor to rotate at an initial constant velocity;
(c) applying a predetermined braking force to the rotor to cause the rotor to rotate at a constant velocity which is reduced in relation to the initial constant velocity; and
(d) determining, from the difference between the initial and reduced constant velocities of the rotor, the density of said fluid.

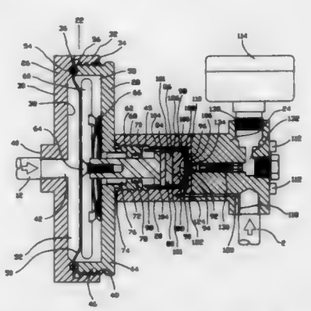
5,303,598
PROCESS AND APPARATUS FOR TAKING A REPRESENTATIVE MILK SAMPLE
Wilhelm Binder, Tiefenbach, and Gerhard Raudszus, Zachenberg, both of Fed. Rep. of Germany, assignors to Ultrakust Electronic GmbH, Gottenzell, Fed. Rep. of Germany
Filed Jun. 10, 1991, Ser. No. 711,535
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1990, 4018468
Int. Cl.[5] G01N 1/14
U.S. Cl. 73—863.01 13 Claims

1. A process for taking a representative milk sample during delivery of a milk charge from a tank into a collecting tank by a feed pump, comprising:
inputting supplier data and data for the milk charge into a data acquisition unit;
supplying the inputted data to a means for controlling a sampling means;
taking the representative milk sample using said sampling means and a peristaltic pump;
storing delivery capacity of the feed pump as an acceptance characteristic (A) of the milk charge to be accepted;
storing number of revolutions (n) of the peristaltic pump as a pumping characteristic (P) of the rotary velocity of the peristaltic pump for a volume (z) of the milk sample to be delivered;



wherein the delivery capacity of the feed pump during the acceptance of the milk charge is defined by the control means as a function of the volume of the milk charge to be accepted in view of the acceptance characteristic (A); and
wherein the number of revolutions of the peristaltic pump is controlled by the control means as a function of the rotary velocity in view of the pumping characteristic (P), and the rotary velocity of the peristaltic pump is defined as a function of the delivery capacity selected with respect to the acceptance characteristic (A).

5,303,599
MINIATURIZED SAMPLER
Brian H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.
Filed Jul. 29, 1992, Ser. No. 922,032
Int. Cl.[5] G01N 1/14
U.S. Cl. 73—863.84 9 Claims



1. A miniaturized natural gas sampler which pumps samples of natural gas from a pipeline into a sample cylinder comprising:
a diaphragm motor connected to a hollow body substantially closed at one end defining a sample chamber between said motor and said closed end, said body having an inlet passageway and an outlet passageway in communication with said sample chamber, said body connected to a base opposite said motor;
said base defining an inlet port and an intermediate inlet passageway in communication with said inlet port allowing fluid communication for the gas between the pipeline and said sample chamber via said inlet passageway, said base further defining a distribution chamber and an outlet port, allowing fluid communication for the gas between said sample chamber and the sample cylinder;

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a one-way check valve positioned in said distribution chamber to isolate said sample chamber from said sample cylinder;

an elongate piston connected on one end to said diaphragm motor and the other end abutting an elastomeric collection head having a concave surface directed towards the closed end of said sample chamber, said piston and said collection head reciprocating to and fro in said collection chamber in response to actuation of said diaphragm motor to pump samples of natural gas from said sample chamber through said outlet passageway past said one way check valve into said distribution chamber and said outlet port to the sample cylinder;

said elongate piston having a bore near said collection head, said bore extending through said elongate piston perpendicular to the longitudinal axis of said elongate piston;

a hollow cylindrical elongate shield being open on both ends, said shield enclosing said collection head and having an annular lip directed inward from the outer surface of said shield at the end of said collection head opposite said piston, said shield having a recess encircling said outer surface, with a pair of opposed holes positioned in said recess, said holes passing through said shield; said shield extending around a portion of said piston at the end opposite said diaphragm motor;

a pin having a length longer than the diameter of said piston, said pin placed through said opposed holes in said shield and said bore in said piston to releasably attach said collection head and said shield to said piston;

a split ring extending around said shield to cover and hold said pin in place, said split ring sized and dimensioned to fit snugly in said recess encircling said outer surface of said shield; and

said pair of opposed holes in said shield being elongated in a direction parallel to the axis of said piston, said pin contacting the end of said holes farthest from said collection head when said collection head is not compressed by said piston.

5,303,600

FLUID SAMPLING RESERVOIR AND METHOD

Richard F. Wood, Miami, and John I. Banu, Plantation, both of Fla., assignors to General Oceanics, Inc., Miami, Fla.

Filed Jan. 4, 1990, Ser. No. 532,444

Int. Cl.[5] G01L *1/04*

U.S. Cl. 73—864.62 **2 Claims**



1. A sampling system comprising, in combination,

a sampling array, said array including a hanger and a mount stand and upper adapter plates and lower adapter plates,

a plurality of samplers for mounting to said sampler array,

each of said samplers having a close/open/close valve assembly at two opposed ends,

a flexible housing secured to each of the close/open/close valve assemblies,

means for drawing a vacuum on the inner portion of the flexible housing to collapse the same,

and means for sequentially driving the valve assemblies from a closed position to an open position, and thereafter from the open position to a final closed position.

5,303,601

TORQUE WRENCH

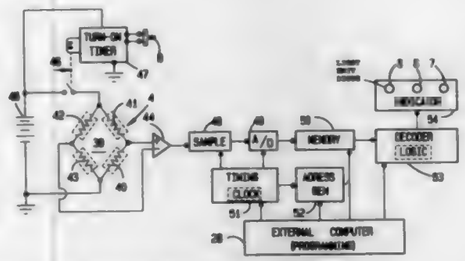
Heinz Schönberger; Frank Humme, both of Solingen, and Peter Wirtz, Remscheid, all of Fed. Rep. of Germany, assignors to Saltus-Werk Max Forst GmbH & Co., Solingen, Fed. Rep. of Germany

Filed Dec. 12, 1991, Ser. No. 806,903

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039794

Int. Cl.[5] G01L *5/00*

U.S. Cl. 73—862.23 **8 Claims**



1. A torque wrench comprising:

an electronic measuring device including strain gauges;

said strain gauges being operatively connected to the wrench, and said electronic measuring device providing measured values of torque by means of said strain gauges;

a memory for storing the measured values; and

an indicating device connected to an output of said memory and for indicating minimum and maximum amounts of the measured values; and

a button operative to actuate said measuring device and said memory for storing the measured values; and wherein

the torque wrench is operable with a separate programming device and has a variable wrench identification; and

a change in the wrench identification is effected by connection of said memory to said separate programming device.

5,303,602

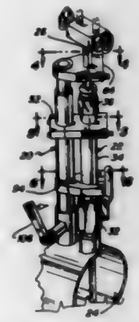
TOOL FOR INSERTING AND REMOVING A SENSING ELEMENT FROM A FLUID PIPELINE

Robert K. Morgan, Boulder, Colo., assignor to Veris, Inc., Boulder, Colo.

Filed Mar. 13, 1992, Ser. No. 850,760

Int. Cl.[5] G01F *15/00*

U.S. Cl. 73—866.5 **22 Claims**



20. An apparatus for inserting and removing an elongated sensing element into and from a chamber through an elongated access tube, an end of the access tube being in fluid communication with the chamber, said apparatus comprising:

actuator means including an outer stationary enclosing tube and an inner movable drive tube slidable along a longitudinal axis of said enclosing tube and drive means operatively connected thereto for moving said drive tube relative to said enclosing tube; and

first clamping means selectively connected to said actuator means and second clamping means selectively connected to a drive tube, both of said clamping means extending laterally away from said longitudinal axis for clamping said access tube and said sensing element respectively, whereby clamping said clamping means to said sensing element and said access tube and actuating said actuator means moves said sensing element relative to said access tube.

5,303,603

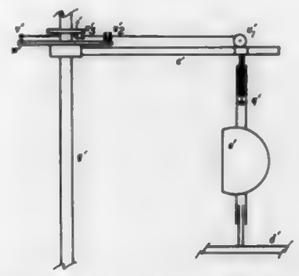
METHOD FOR IMPARTING CYCLIC VERTICAL MOTION TO CAROUSEL ANIMALS

David A. Boots, 555 Concord Rd., Sudbury, Mass. 01776

Filed Dec. 17, 1992, Ser. No. 991,968

Int. Cl.[5] F16H *19/06*; A63G *1/00*

U.S. Cl. 74—37 **1 Claim**



1. An arrangement of cables, pulleys and cams for use in a carousel structure, said arrangement providing a rotary motion into subsidiary, reciprocating up-down motion, said arrangement including at least one unit to be given an up-down motion, a cable having a first end being attached to said unit, said cable having a first direction around a pulley and a second cable portion extending in a second direction, which is substantially orthogonal to said first direction, a rotating structure having an axis of rotation, said cable having a second end attached to a point on said rotating structure opposite said unit whereby the length of the second cable portion is greater than the distance between the axis of said rotating structure and said pulley; a stationary cam which intercepts the cable means as it rotates around the axis causing the cable to be pushed aside thereby lengthening the second cable portion causing a corresponding shortening of the first cable portion and resulting in a motion of the unit in a first direction from a first position, and whereby continuation of said rotation releases the second cable portion from the stationary cain causing a shortening of said second cable portion thereby restoring said unit to its first position.

5,303,604

FEED SYSTEM

Ralph W. Mayfield, 557 Anna May Dr., Cincinnati, Ohio 45244

Filed Sep. 28, 1992, Ser. No. 952,038

Int. Cl.[5] F16H *27/02, 55/17*

U.S. Cl. 74—89.15 **7 Claims**

1. A feed system for relatively moving a machine member with respect to a reference base, comprising:

a feed screw mounted to the reference base;

a first thread portion formed on the feed screw along its longitudinal axis;

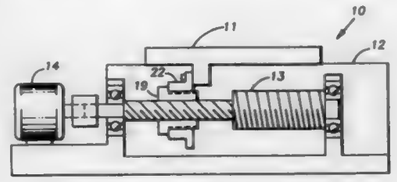
a second thread portion formed on the feed screw along its longitudinal axis, the second and first thread portions being of unequal form;

a first nut cooperatively engaged with the first thread portion of the feed screw;

a third thread portion formed on the first nut along its longitudinal axis, the third thread portion being of form substantially equal to the second thread portion;

a second nut cooperatively engageable with the second and third thread portions, the second nut being mounted to the machine member;

first engagement means for preventing relative rotation between the first nut and the feed screw;



second engagement means for preventing relative rotation between the first nut and the second nut; and

means for relatively rotating one of the second nut and feed screw with respect to the other to thereby relatively move the second nut in reverse directions along the longitudinal axis of the feed screw,

wherein as the second nut is relatively moved in one direction along the feed screw and the first engagement means is engaged, the second engagement means is disengaged, and

wherein as the direction of the second nut is reversed and the second engagement means is engaged, the first engagement means is disengaged.

5,303,605

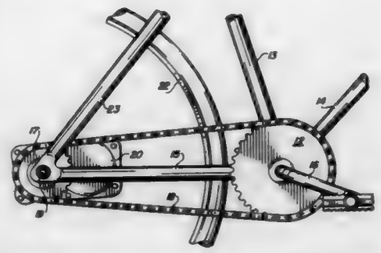
AUTOMATIC TRANSMISSION FOR BICYCLES

David S. Douglass, Mesa, Ariz., assignor to Automatic Bicycle Co., Mesa, Ariz.

Filed Feb. 5, 1993, Ser. No. 14,872

Int. Cl.[5] F16H *3/08*

U.S. Cl. 74—368 **12 Claims**



1. An automatic transmission for a bicycle, said transmission comprising:

(a) a drive shaft;

(b) a countershaft parallel with said drive shaft;

(c) at least two pairs of gears, wherein

(i) a first gear from each pair is mounted on said drive shaft,

(ii) a second gear from each pair is mounted on said countershaft, and

(iii) the first and second gears in each pair are in constant mesh;

(d) a centrifugal clutch mechanism interposed between said first gears and said drive shaft for selectively connecting

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one of said first gears to said drive shaft, said clutch mechanism including

a first annular disc concentric with a first gear from one of said pairs of gears,

a second annular disc concentric with a first gear from a second of said pairs of gears;

each of said discs having

(i) a peripheral notch for receiving a pawl;

(ii) a pawl located in said notch, said pawl having a mounting hole about which said pawl can rotate; and

(iii) a pin parallel to said drive shaft and extending through said mounting hole;

wherein the notches in adjacent discs face in different directions away from said drive shaft and wherein said pawls are rotated by centrifugal force as said discs rotate about said drive shaft whereby one of said first gears is engaged by said pawl depending upon the rotational speed of said discs.

5,303,606

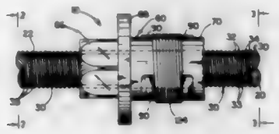
ANTI-BACKLASH NUT HAVING A FREE FLOATING INSERT FOR APPLYING AN AXIAL FORCE TO A LEAD SCREW

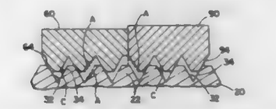
Mark A. Kokinda, 11 Hidden Creek Cir., Pittsford, N.Y. 14534

Filed Apr. 15, 1993, Ser. No. 48,354

Int. Cl.[5] F16H *57/12, 25/24*

U.S. Cl. 74—441 **23 Claims**





1. An anti-backlash nut for movement along a threaded screw, comprising:

(a) a nut body adapted to receive a length of the screw, the nut body including at least two radial apertures;

(b) an insert slideably received in each of the radial apertures, each insert having a threaded surface for operably engaging a length of the threaded screw; and

(c) a resilient member for urging the inserts radially inward to operably engage the inserts with the length of the screw.

5,303,607

BALL SCREW DEVICE

Masayuki Katahira, Machashi, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 988,316

Claims priority, application Japan, Dec. 13, 1991, 3-109966[U]

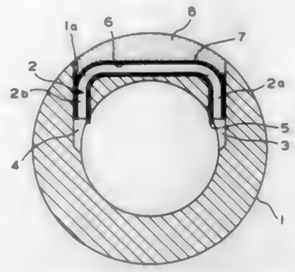
Int. Cl.[5] F16H *55/17*

U.S. Cl. 74—459 **5 Claims**

1. A ball screw device, comprising:

a ball screw shaft formed within a spiral groove on its outer periphery, a ball screw nut which envelopes said ball screw shaft and is formed with a spiral groove on its inner periphery and further with a pair of holes that open into said spiral grooves,

a ball returning tube which is covered with a heat shrinkable resin on its outer periphery and which has opposite ends thereof inserted in said holes formed in said screw nut wherein a passage is defined by said spiral grooves, and



a plurality of balls which rotatingly move and circulate in said passage and said ball returning tube.

5,303,608

BICYCLE SPEED CHANGE LEVER ASSEMBLY

Yoshihisa Iwasaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

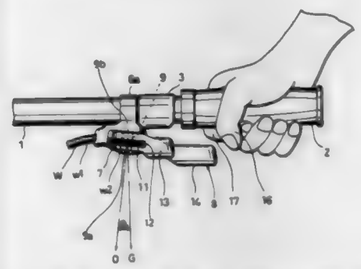
PCT No. PCT/JP91/00380, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO91/14614, PCT Pub. Date Oct. 3, 1991

Continuation of Ser. No. 773,907, Nov. 4, 1991, abandoned. This PCT application Mar. 22, 1991, Ser. No. 46,899

Claims priority, application Japan, Mar. 26, 1990, 2-31700[U]

Int. Cl.[5] F16C *1/10*

U.S. Cl. 74—502.2 **7 Claims**



1. The combination of a bicycle handlebar having two end grip portions and a speed change lever assembly, the lever assembly comprising:

a mounting bracket attached to the handlebar adjacent to an end grip portion thereof;

a lever shaft extending downwardly from the mounting bracket; and

a lever pivotally supported on the lever shaft, the lever including a tubular body rotatably fitted on the lever shaft, the lever further including a control arm extending radially outwardly from the tubular body;

wherein the mounting bracket has a forward extension located in front of the handlebar, the lever shaft being mounted on the forward extension of the mounting bracket to be positioned in front of the handlebar without horizontally overlapping the handlebar; and

pivots about the lever shaft in a plane which is non-parallel with respect to the axis of the adjacent end grip portion of the handlebar.

5,303,609

TOGGLE TYPE PARKING BRAKE LEVER APPARATUS

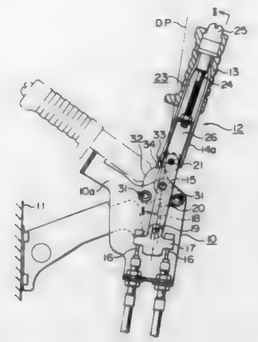
Yoshihisa Iwanaga, and Yoshitaka Koketsu, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 18, 1992, Ser. No. 900,988

Claims priority, application Japan, Jun. 25, 1991, 3-153202; Jun. 26, 1991, 3-154749

Int. Cl.[5] B60T *7/10;* **G05G** *5/06;* **F16C** *1/12*

U.S. Cl. 74—523 **3 Claims**



1. A toggle type parking brake lever apparatus comprising a lever bracket mounted on a vehicle, a brake lever having a first end part rotatably supported on said lever bracket, a hook movably coupled to said lever bracket and connected with a brake wire member, an over-center toggle mechanism including a link having a first end part journalled to said brake lever by a coupling pin and an opposite end part journalled to said hook, a stopper pawl pivotally attached to said brake lever, a stopper plate provided on said lever bracket and having an arcuate upper edge part on which is formed a single stopper face facing in the brake application direction adapted to be engaged, when said brake lever reaches a predetermined position between a brake application position and a dead center point of said toggle mechanism upon moving from the brake application position toward the dead center point, which a leading end part of said stopper pawl so as to inhibit said brake lever from being turned in a brake releasing direction past said predetermined position, and a stopper releasing rod having a push button at one end and disposed longitudinally of said brake lever, said rod being coupled thereto for pivoting said stopper pawl so as to disengage said stopper pawl from said stopper face, said brake lever having a second end part provided with a grip, and said stopper releasing rod is led through a pipe parallel to said brake lever, said push button projecting from an end of said grip, and a compression spring is disposed in said pipe, surrounding said stopper releasing rod and normally urging said push button so as to cause said stopper pawl to abut against said upper edge part of said stopper plate.

5,303,610

HANDBRAKE FOR A VEHICLE

Jean P. Noel, Saint-Die, and Bruno Gertsch, Epinal, both of France, assignors to Rockwell Body Component Systems, France en abrege

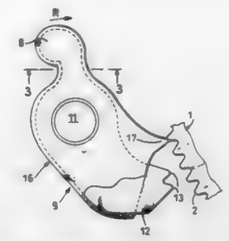
Filed Apr. 15, 1992, Ser. No. 868,928

Claims priority, application France, Apr. 15, 1991, 91 04587

Int. Cl.[5] G05G *1/04, 1/06*

U.S. Cl. 74—535 **1 Claim**

1. A handbrake for maintaining a parked vehicle stationary, suitable for being connected to a brake cable (6), comprising a toothed sector (1) which is intended to be fixed to the vehicle, a pawl (9) suitable for interacting with the toothed sector, and a manual hollow gripping lever (5) equipped with an internal push-button rod (7) whose end (7*a*) interacts with the pawl in order to keep locking teeth (13) of the latter in engagement with the toothed sector (1) due to the thrust of elastic means (14), the pawl being articulated about a pin (11) internal to the lever, characterised in that the pawl (9) interacts with a member arranged between locking teeth (13) and rotation pin (11)



and dimensioned in order to slide over the indentation (2) of the sector (1) while the gripping lever is being operated and further includes an additional tooth (17) forming part of a moulded-over plastic covering on a metal body (12) of the pawl (9).

5,303,611

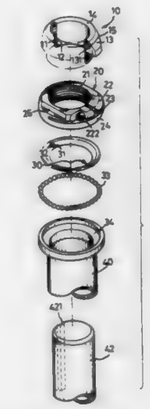
UPPER STEERING ASSEMBLY

Yi-Chen Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Sep. 2, 1993, Ser. No. 116,140

Int. Cl.[5] B62K *21/12;* **F16C** *11/06*

U.S. Cl. 74—551.1 **5 Claims**



1. An upper steering assembly for a bicycle comprising:

a head tube;

a steerer tube passing through the head tube;

a bearing assembly mounted on a top of the head tube and around the steerer tube;

a rotational socket having a threaded inner periphery and including an upper clamping portion and a lower skirt portion which has an annular groove in an underside thereof for retaining the bearing assembly;

a compression socket mounted around the steerer tube and having a longitudinal slit, the compression socket including an upper clamping section and a lower tubular section which has a threaded outer periphery for engaging with the inner periphery of the rotational socket, allowing an adjustment of vertical position of the rotational socket relative to the compression socket, and means on the

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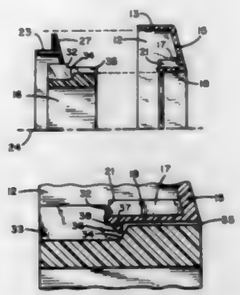
upper clamping section for adjusting a width of the longitudinal slit for releasably retaining the steerer tube.

5,303,612

INCREASED DIAMETER DETACHABLE THERMOSTAT KNOB ALLOWING EASIER THERMOSTAT USE

James A. Odom, Apple Valley, and Dale A. Lindaley, Hamel, both of Minn., assignors to Honeywell Inc., Minneaplis, Minn.

Filed Dec. 24, 1992, Ser. No. 996,462
Int. Cl.[5] G05G 1/10
U.S. Cl. 74—553 11 Claims



1. In a round thermostat of the type including a housing having a generally circular periphery with a central axis and for adjustment of the thermostat setting, a thermostat knob having an axis of rotation coinciding with the central axis and a predetermined external shape comprising a wall projecting from the housing, an improved knob accessory for the thermostat comprising in the thermostat, a first detent feature in the external shape of the thermostat knob forming a part of a detent mechanism and comprising at least one peripheral area having a radially extending recess, and wherein the knob accessory includes a cylindrical outer wall forming the knob accessory's periphery and a face portion joined to the outer wall and extending towards the center from the periphery, said face portion defining a central opening having a shape which mates wit the projecting wall of the thermostat knob, and adjacent said central wall, a second detent feature mating with the first detent feature to form therewith the detent mechanism when the knob accessory is mounted on the thermostat nob by mating the central opening with the wall of the thermostat knob and with the central wall of the knob accessory surrounding the wall of the thermostat knob, said second detent feature comprising a radially extending spring-loaded projection entering the recess in the thermostat knob when the knob accessory is mounted on the thermostat knob.

5,303,613

SHIFT CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION FOR VEHICLE

Takeshi Kitagawa; Hiroshi Takuma; Shoji Kan; Yoichi Furuichi, and Takahiro Taki, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

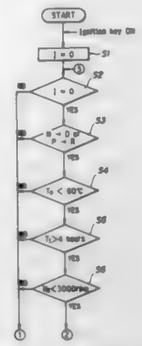
Filed Jul. 17, 1992, Ser. No. 917,169
Claims priority, application Japan, Jul. 31, 1991, 3-192357; Jun. 19, 1992, 4-160486
Int. Cl.[5] B60K 41/00
U.S. Cl. 74—866 5 Claims

1. In a shift control apparatus of an automatic transmission for a vehicle connected to a prime mover, having at least one frictional engaging element and hydraulic pressure control means for controlling hydraulic pressure supplied to said frictional engaging element, achieving a predetermined speed ratio by engaging said frictional engaging element, said shift control apparatus comprising:

shift detection means for detecting that the speed ratio of the automatic transmission for the vehicle is changed over from a neutral position to the predetermined speed ratio;

engine stop condition determination means for determining a standstill condition of the prime mover over an extended period of time;

engine start detection means for detecting a start of the prime mover; and



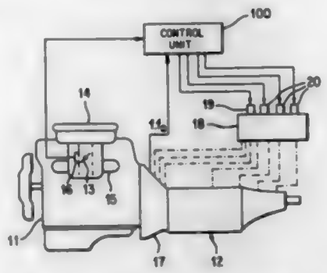
correction means for correcting said hydraulic pressure control means to correct the hydraulic pressure supplied to said frictional engaging element to a higher-pressure side only when a long standstill condition of the prime mover is determined and a speed shift from the neutral position to the predetermined speed ratio is first selected.

5,303,614

SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Minji Sakaki; Masaharu Sakoda, both of Hiroshima, and Kyosuke Mori, Kitakyushu, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 30, 1992, Ser. No. 952,402
Claims priority, application Japan, Sep. 30, 1991, 3-252440
Int. Cl.[5] F16H 59/16
U.S. Cl. 74—866 7 Claims



1. A shift control system for hydraulically operating an automatic transmission to shift in predetermined shift patterns according to vehicle operating conditions, said shift control system comprising:

hydraulic pressure control circuit means for providing a shift initiation line pressure and a shift termination line pressure to cause the automatic transmission to shift according to a specific pattern; and

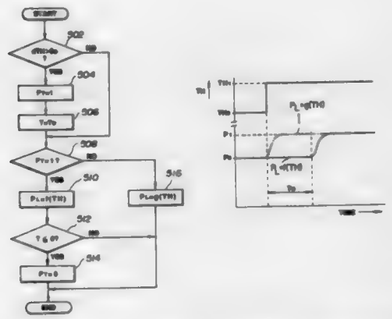
control means for detecting an initiation of shifting said automatic transmission according to said specific pattern of shifting and a termination of a decline in output torque of the automatic transmission, and for correcting said shift initiation line pressure so that a duration between said initiation of shifting of said automatic transmission according to said specific pattern and said termination of said decline in output torque falls within a predetermined shift initiation time period in a following shift control of the automatic transmission.

5,303,615

LINE PRESSURE CONTROL OF AUTOMATIC TRANSMISSION

Naonori Iizuka, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Continuation of Ser. No. 711,318, Jun. 6, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 32,568
Claims priority, application Japan, Jun. 8, 1990, 2-150755
Int. Cl.[5] F16H 5/60
U.S. Cl. 74—866 6 Claims



1. A system for controlling an automatic transmission of an automotive vehicle having an engine with a throttle valve which opens in degrees, wherein the automatic transmission is drivingly coupled with the engine and transmits the engine torque by a hydraulically actuable torque transmitting coupling which is hydraulically actuable by hydraulic fluid under a line pressure, the system comprising:

throttle opening degree sensor means for detecting an opening degree of the throttle valve and generating a throttle opening degree indicative signal indicative of said detected opening degree;

a control unit coupled with said throttle opening degree sensor means, said control unit including:

means for repeatedly comparing whether a first time of derivations of opening degree of the throttle valve is greater than a predetermined value or not and generating a comparison result signal when said change is greater than said predetermined value;

means for determining a value which the line pressure is to take in accordance with a first predetermined characteristic with respect to an opening degree of the throttle valve until said comparison result signal is generated;

means for determining a value which the line pressure is to take in accordance with a second predetermined characteristic upon generation of said comparison result indicative signal, said second predetermined characteristic being different from said first predetermined characteristic;

means for determining a value which the line pressure is to take in accordance with said second predetermined characteristic until expiration of a predetermined period of time initiated by generation of said comparison result signal; and

means for determining a value which the line pressure is to take in accordance with said first predetermined characteristic upon expiration of said predetermined period of time under a condition where said comparison result is absent; and

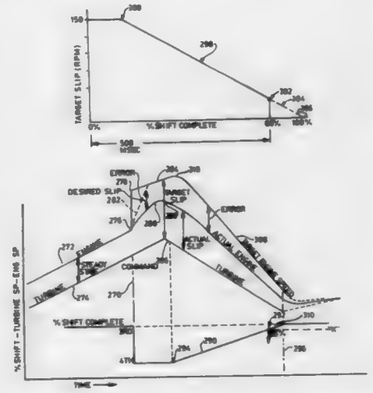
means for setting the line pressure at said determined value which the line pressure is to take.

5,303,616

ELECTRONICALLY CONTROLLED BYPASS CLUTCH BASED ON PERCENT-SHIFT-COMPLETION FOR A TORQUE CONVERTER

Bruce J. Palansky, Livonia; Thomas L. Greene, Plymouth; John A. Daubenmier, Canton, all of Mich.; Gavin F. McCall, Witham, England; Lawrence H. Buch, Farmington Hills, and Paul F. Smith, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 10, 1992, Ser. No. 927,046
Int. Cl.[5] F16H 45/02; F16D 47/02
U.S. Cl. 74—890 2 Claims



1. An automatic transmission for use in an automotive vehicle driveline for delivering torque from a throttle controlled engine to vehicle traction wheels comprising:

multiple ratio gearing establishing plural torque flow paths from said engine to said traction wheels and a hydrokinetic unit having an impeller connected to said engine and a turbine adapted to be connected to torque input elements of said gearing;

a fluid pressure operated friction bypass clutch situated in said hydrokinetic unit adapted to selectively connect said impeller and said turbine to establish a mechanical torque bypass flow path around said hydrokinetic unit;

clutch means and brake means for controlling gear ratio changes;

said bypass clutch having a clutch capacity control chamber which, when pressurized, determines the torque transmitting capacity of said bypass clutch;

a control valve circuit including a fluid pressure source and shift valve means communicating with said clutch means and said brake means and with said pressure source;

bypass clutch control valve means for effecting controlled pressure distribution to said clutch capacity control chamber;

shift solenoid valve means for selectively actuating said shift valve means for effecting gear ratio changes;

vehicle speed sensor means for developing a vehicle speed signal;

turbine speed sensor means for developing a turbine speed signal;

engine throttle position sensor means for developing a throttle position signal;

engine speed sensor means for developing an engine speed signal; and

electronic processor means for receiving said signals and for

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controlling operation of said shift solenoid valve means and said bypass clutch control valve means;

said processor means including means for modifying operation of said bypass clutch control valve means to effect a reduced bypass clutch capacity following a command of a ratio shift until said shift is completed;

said modifying means including means for developing a controlled increase in bypass clutch capacity following an initial bypass clutch capacity decrease during a shift, the amount of said controlled increase being functionally related to the percent of completion of said shift.

5,303,617

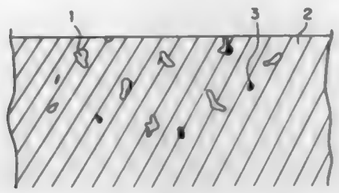
SLIDING MATERIAL

Eiji Asada, and Hiromi Ogino, both of Aichi, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Continuation of Ser. No. 661,021, Feb. 26, 1991. This application Nov. 3, 1992, Ser. No. 970,877

Int. Cl.[5] C22C *29/00*

U.S. Cl. 75—231 **5 Claims**



1. A sintered material sintered on a steel sheet and consisting essentially of from 0.1 to 15% of Sn, from 1 to less than 10% of Pb, from 0.1 to 30% of at least one hard matter which is selected from at least one of the groups (a), (b), (c) and (d), given below, the balance being essentially Cu, most of said hard matter being dispersed in Cu particles, grain boundaries between Cu particles, and between the Cu and Pb particles;

(a) Fe_2P, Fe_3P, FeB, Fe_2B and Mo

(b) Fe—Cr, Fe—Mn, Fe—Ni, Fe—Si, Fe—W, Fe—Mo, Fe—V, Fe—Ti, Fe—Nb, CuP, Cr, and W;

(c) SiC, TiC, WC B_4C, TiN, cubic BN, Si_3N_4, SiO_2, ZrO_2, and Al_2O_3; and

(d) Si—Mn, Cu—Si, and FeS.

5,303,618

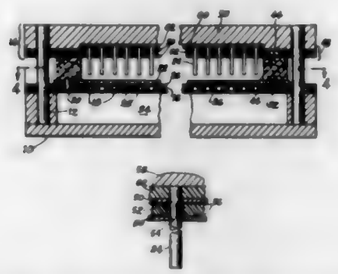
VIA HOLE PUNCH

Ronald A. Norell, 1529 Tamarack, Carlsbad, Calif. 92008

Filed Sep. 8, 1992, Ser. No. 942,040

Int. Cl.[5] B21K *5/20*

U.S. Cl. 76—107.1 **15 Claims**



1. A die for producing a multiplicity of minute via holes in a wafer comprising:

(a) a base for supporting a horizontal die plate and mounting vertically extended upright guide posts;

(b) a die set vertically slidable over said guide posts;

(c) said die plate having a pre-punched predetermined hole pattern of die holes therethrough and including a skin overlying said die plate having an identical pre-punched predetermined hole pattern of skin holes therein, but each skin hole being smaller than said die holes such that each die hole is overlaid by a smaller skin hole in said skin; and,

(d) said die set mounting a multiplicity of depending vertical punch pins arranged corresponding to said predetermined hole pattern and dimensioned to snugly slide into said skin holes and punch said predetermined hole pattern into a wafer positioned on said die plate.

5,303,619

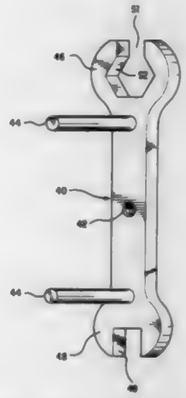
WRENCH ASSEMBLY FOR PROPANE TANKS AND GAS GRILLS

Wilbur C. Cole, Sr., 5300 W. Irlo Bronson Hwy. #422, Kissimmee, Fla. 34746

Filed Jul. 9, 1992, Ser. No. 910,210

Int. Cl.[5] B25B *13/58*

U.S. Cl. 81—180.1 **5 Claims**



1. An assembly for retaining a pair of propane tanks and a wrench for opening same in operative relationship, said assembly comprising:

a) a pair of propane tanks, each tank having a lower end and an upper end,

b) a fitting situated at the upper end of each tank,

c) a support extending horizontally beneath said tanks,

d) a bracket extending horizontally between the upper ends of said tanks to retain same in fixed position upon said support,

e) a rod extending vertically upwardly from said support,

f) said rod being threaded at its upper end,

g) said bracket having an aperture in its central section to allow the upper end of said rod to pass therethrough,

h) the invention being characterized by a wrench having a central body portion and different shaped openings at opposite ends thereof,

i) said openings being adapted to match said fittings,

j) said central body portion having a threaded opening defined therein,

k) the threaded opening in said wrench being complementary to the threaded upper end of said rod, so that said wrench can be rotated about said rod until said wrench is adjusted downwardly against said bracket arm, thereby defining a storage position for said wrench in proximity to said propane tanks.

5,303,620

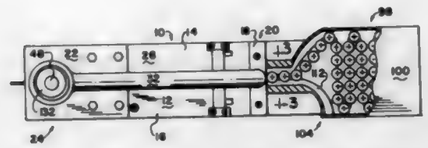
SCREW GUN

Guy R. Payne, Box 509, Anson, Tex. 79501, and Lorton E. Trent, 417 Crestover Cir., Richardson, Tex. 75080

Filed Jan. 7, 1993, Ser. No. 1,265

Int. Cl.[5] B25B *23/06*

U.S. Cl. 81—434 **18 Claims**



1. The method of attaching a work piece to a support comprising:

a) placing a work piece against the support,

b) placing a screw gun having a flat planar face with the flat planar face against the work piece,

c) pressing the flat planar face of the screw gun against the work piece,

feeding a screw within the screw gun to a screw holder which is a part of the sc responsive to said pressing the planar work face against the work piece,

e) then separating and independently of the pressing the screw gun against the work piece, engaging the screw with a rotating driver bit,

f) guiding the rotating driver by a guide which is a part of the screw gun, and

g) continuing to rotate the driver bit to drive the screw through the work piece and into the support.

5,303,621

CLAMPING DEVICE FOR A DEFINED CLAMPING OF WORKPIECES

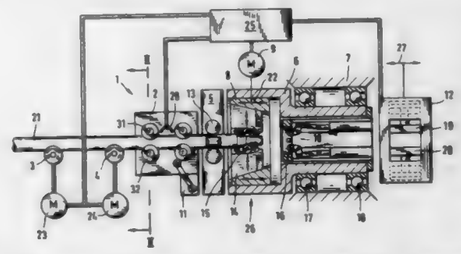
Bernhard Horlitz, Solingen; Reiner Glomb, Velbert; Peter Maresch, and Ralf Wagner, both of Solingen, all of Fed. Rep. of Germany, assignors to Th. Kieserling & Albrecht GmbH & Co., Solingen, Fed. Rep. of Germany

Filed Jan. 17, 1991, Ser. No. 716,670

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1990, 4019285

Int. Cl.[5] B23B *5/12*

U.S. Cl. 82—1.11 **27 Claims**



20. A method of centerless peeling of workpieces comprising

forming a first mobile clamping element with first rollers;

forming a second mobile clamping element with second rollers;

supporting the first mobile clamping element and the second mobile clamping element on a frame;

clamping a workpiece with the first rollers and the second rollers to clamp the workpiece at two oppositely disposed sides of the workpiece;

moving the first mobile clamping element with a first force and moving the second mobile clamping element with a second force for tightly engaging the workpiece with a force delivering and transmitting means mounted to the frame, wherein the first force is unequal to the second force;

transferring part of the clamping force with means for synchronization to one of the clamping elements;

synchronizing the motion of the first mobile clamping element and of the second mobile clamping element toward the workpiece with the means for synchronization such that part of the clamping force is transferred by the means for synchronization from said force delivering and transporting means to said first mobile clamping element for exerting equal clamping forces on the first clamping element and on the second clamping element;

moving the workpiece into an area of a hollow shaft following the mobile clamping elements in workpiece advance direction;

rotating a cutter head for engaging the workpiece and wherein the cutter head is disposed within the area defined by the interior of the hollow shaft;

peeling the workpiece with the rotating cutter head based on a milling of the workpiece with a knife of the cutter head.

5,303,622

DEVICE FOR PREVENTING DEFLECTION OF ELONGATED WORKPIECES

Hidemitsu Goda, 2-20-9, Oimazato, Higashinari-ku, Osaka-shi, Osaka, 537, Japan

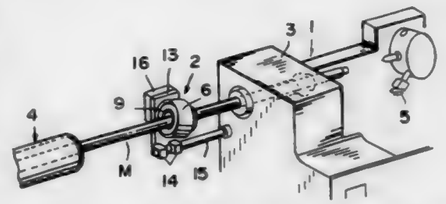
PCT No. PCT/JP88/00896, § 371 Date Mar. 22, 1990, § 102(e) Date Mar. 22, 1990, PCT Pub. No. WO90/02622, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 5, 1988, Ser. No. 474,750

The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.

Int. Cl.[5] B23B *13/10, 15/00*

U.S. Cl. 82—127 **14 Claims**



1. A device for preventing deflection of an elongated workpiece rotating about its longitudinal axis, comprising a housing in the form of a hollow cylinder, and a contact ring rotatably mounted on the housing for receiving the elongated workpiece inserted therethrough, the contact ring being rotatably fitted in the housing by a bearing, the housing being adjustably rotatable about a support shaft, the support shaft being perpendicular to the axis of rotation of the contact ring, the angle of inclination of the rotational axis of the elongated workpiece relative to the axis of rotation of the contact ring being variable by the rotation of the housing about the support shaft, the outer periphery of the elongated workpiece being rotatably supportable by the inner periphery of the contact ring at one axial end and at the other end thereof.

5,303,623

CLEARING DEVICE ASSOCIATED WITH A ROTARY CUTTING APPARATUS OF A WEB OF MATERIAL

Serge Chiloff, Loiret, France, assignor to A.T.N. French Societe Anonyme, Loiret, France

Filed Dec. 24, 1991, Ser. No. 813,077

Claims priority, application France, Dec. 26, 1990, 90 16263

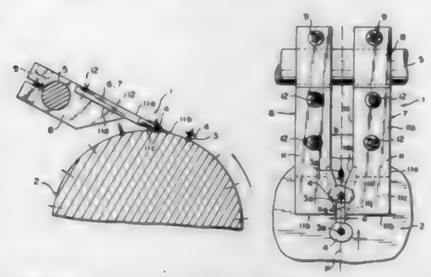
Int. Cl.[5] B26D *7/18*

U.S. Cl. 83—121 **4 Claims**

1. A clearing device associated with a rotary cutting appara-

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tus for cutting a web of material, such as a web of cardboard, said clearing device being comb-shaped and having a common base parallel to an axis of rotation of a cutting cylinder of said rotary cutting apparatus, and supporting a series of pairs of parallel arms or teeth extending towards said cutting cylinder and ending at an anterior portion in an immediate vicinity of a peripheral surface of said cutting cylinder, said pairs of parallel arms including a first and a second arm defining an interval therebetween, a series of piercing points rigidly connected to said peripheral surface of said cutting cylinder for transporting bits of said material in the form of a number of cutting scraps which have been cut from said web of material and are subsequently detached from the piercing points by said parallel arms



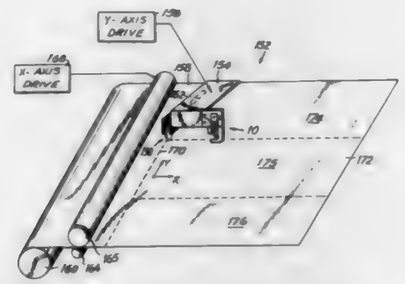
of said clearing device, and wherein said common base of said comb-shaped clearing device is a shaft which supports locking and adjusting means on each of said parallel arms for positioning each of said parallel arms on said shaft in preselected positions relative to one another and to said series of piercing points on said cutting cylinder such that said piercing points pass through said interval of said parallel arms during rotation of said cutting cylinder, wherein said two arms of each of said pairs are symmetrical with respect to a vertical plane of symmetry (P) passing between said two arms, said two arms having inner faces being directed toward one another and formed in such a manner as to define therebetween said interval having a width which increases moving in a rearward direction from the anterior portion of said parallel arms to said shaft.

5,303,624

APPARATUS FOR CUTTING SHEET MEDIA

John C. Ventham, Georgetown, and Ralph J. Lake, Jr., Austin, both of Tex., assignors to Summagraphics Corporation, Seymour, Conn.

Filed Mar. 30, 1992, Ser. No. 860,000
Int. Cl.[5] B26D *1/18, 1/30*
U.S. Cl. 83—202 **1 Claim**



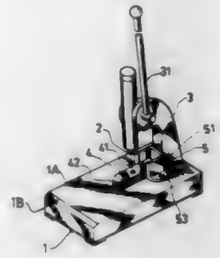
1. Apparatus for cutting sheet media compriaing:
a carriage mounted to move in a first (Y) direction relative to a sheet media, first means for moving the carriage in the first direction, and sheet media cutting apparatus mounted to said carriage, said cutting apparatus comprising:
a first sheet media cutting device mounted to said carriage in a fixed orientation relative to the first direction for cutting the media in the first direction when said carriage is moved in the first direction, said first cutting device comprising a circular rotatable cutting member adapted to contact and cut the media during rotation thereof;
a second sheet media cutting device mounted to said carriage in a fixed orientation relative to a second (X) direction orthogonal to said first direction for cutting, while said carriage is stationary, the media along any of a plurality of lines extending in the second direction dependent upon the position of said carriage along the first direction, said second cutting device comprising first and second cutting members at least one of which is moved at least angularly relative to the other, said cutting members cooperating to cut sheet media placed therebetween, and means for moving said at least one cutting member angularly;
said first moving means moving said carriage in the first direction to desired positions in said first direction to position the second cutting device into desired positions at different first direction locations of the media; and
second means for moving the media in the second direction while said carriage is stationary and said second cutting devices cuts the media in the second direction.

5,303,625

LAYER PIERCING PAPER PUNCH

Nui Hai-Shen, 16-2, Lane 91, Feng Jen Road, Wan Nai Tsun, Jen Wu, Kao Hsiung, Taiwan

Filed Jul. 31, 1992, Ser. No. 922,228
Int. Cl.[5] B26F *1/02*
U.S. Cl. 83—447 **6 Claims**



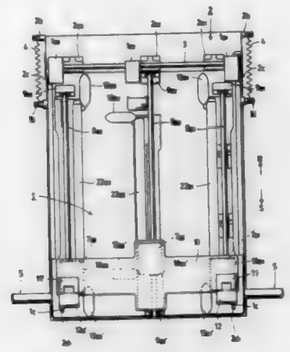
1. A paper punch comprising:
a base having a horizontal support surface and a lower hole formed therein,
a punching machine mounted on said base and including a cutter bar vertically movable to enter said lower hole;
a stack of plates normally seated on one another and resting on said support surface beneath said cutter bar, each plate having a secondary hole vertically aligned with said lower hole so that said cuter bar can pass through said secondary and lower holes, said plates including pointed front ends spaced from a peripheral edge of said support surface so that a pile of sheets can be positioned on said support surface in facing relationship to said stack of plates, said plates being freely vertically movable relative to one another and to said base in response to the pile of sheets being pushed against said front ends of said plates so that said plates divide the pile of sheets into vertically spaced groups of sheets to facilitate the passage of said cutter bar therethrough; and
plate-positioning means for guiding said plates for vertical movement relative to said base with said secondary holes maintained in vertical alignment with said lower hole.

5,303,626

CUTTING APPARATUS

Tsukasa Uehara, Kawasaki, and Masami Kojima, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1991, Ser. No. 788,988
Claims priority, application Japan, Nov. 9, 1990, 2-302740; Nov. 9, 1990, 2-302741; Nov. 9, 1990, 2-302742; Nov. 9, 1990, 2-302743; Nov. 9, 1990, 2-302744; Nov. 9, 1990, 2-302745; Nov. 9, 1990, 2-302746; Nov. 9, 1990, 2-302747
Int. Cl.[5] B26D *1/03*
U.S. Cl. 83—485 **20 Claims**



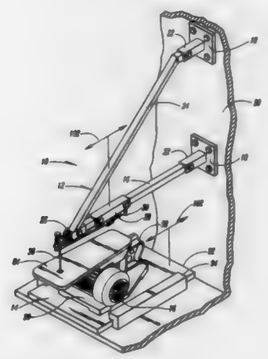
1. A sheet cutting apparatus, comprising:
a holding member for holding a sheet;
a plurality of cutting means for cutting the sheet held by said holding member, disposed to be shiftable in a first direction relative to the sheet, said plurality of cutting means being separated from each other in a second direction orthogonal to the first direction; and
shifting means for shifting said plurality of cutting means in the first direction to cause one of said plurality of cutting means to be offset from the remainder of said plurality of cutting means in the first direction, said shifting means causing said plurality of cutting means to form a plurality of parallel cuts in the sheet.

5,303,627

SCROLL SAW

Albert L. Shondel, 1510 S. 20th, Centerville, Iowa 52544

Filed Jul. 1, 1992, Ser. No. 907,174
Int. Cl.[5] B23D *51/00*
U.S. Cl. 83—777 **11 Claims**



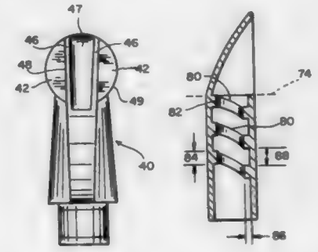
1. A scroll saw comprising,
pivotal upper and lower blade arms,
a blade interconnecting said upper and lower blade arms,
a power means connected to said lower arm for pivoting said lower arm and reciprocating said blade,
spring means connected to said upper blade arm for biasing it to maintain said blade taut,
said upper and lower blade arms being spaced apart, independently supported and interconnected only by said blade whereby work pieces of any desired length may be cut, and
a cushioned stop being positioned in the plane of said upper blade arm to limit its upward travel at its forward end upon the blade breaking.

5,303,628

MOUTHPIECE FOR A CLARINET AND A SAXOPHONE

Jorge R. Salazar, 115-17 123rd St., South Ozone Park, N.Y. 11420

Filed Apr. 2, 1993, Ser. No. 41,779
Int. Cl.[5] G10D *9/02*
U.S. Cl. 84—383 R **17 Claims**



1. A mouthpiece for a musical wind instrument having a reed, said mouthpiece comprising:
a tip;
a face having two spaced sides extending toward each other from said tip, said face having an opening adjacent said tip between said sides and a longitudinal bore communicating with the opening, said face being arcuately curved downwardly toward said tip, thereby forming a face gap distance between said face and a reed that may be selectively mounted to the mouthpiece in overlying relationship to the opening; and
a wing member extending from each of said sides away from the opening, so that the mouthpiece flares outwardly at said face to direct air into the opening.

5,303,629

ACOUSTIC DATA OUTPUT DEVICE HAVING SINGLE ADDRESSABLE MEMORY

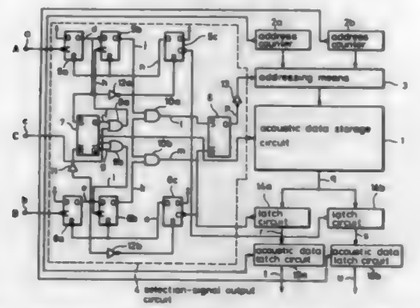
Kazuhiko Yokota; Kazuhisa Mito, and Yoshio Kimura, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 661,729
Claims priority, application Japan, Feb. 26, 1990, 2-45095
Int. Cl.[5] G10H *7/00, 1/18*
U.S. Cl. 84—615 **5 Claims**

1. An acoustic data output device comprising a single acoustic data storage means for storing acoustic data, a plurality of address counters each coupled to address the single acoustic data storage means, each capable of independently counting in response to a corresponding one of a plurality of clock signals, selection-single output means connected to receive the plurality of clock signals and deliver a selection signal indicating which of the plurality of address counters is to be selected, said selection-signal output means including means for determining which of the plurality of address counters is to be selected when the plurality of clock signals are supplied concurrently, addressing means connected to select one of the plurality of address counters in accordance with the output signal from the

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selection-signal output means and to address the acoustic data storage means with an address corresponding to the count of the selected address counter, and a plurality of acoustic data latch means corresponding to the plurality of address counters



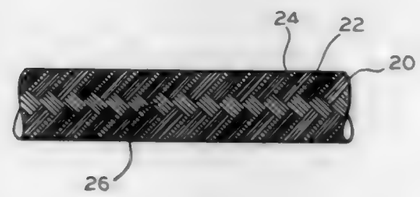
for temporarily storing the acoustic data held at the address specified by the addressing means and outputting the temporarily-stored acoustic data in synchronization with the clock signal corresponding to the address counter selected by the addressing means.

5,303,630

DOUBLE SERVE BRAIDING FOR JACKETED CABLE

Gerald W. Lawrence, Richmond, Ind., assignor to Belden Wire and Cable Company, Richmond, Ind.

Filed Apr. 28, 1992, Ser. No. 875,624
Int. Cl.[5] D04C *1/00*
U.S. Cl. 87—9 **5 Claims**



1. An improved double serve jacketed cable including a plurality insulated conductors disposed in an insulating core, said insulating core having a longitudinal axis, an inner metallic wire serve wound around said insulating core, an outer metallic wire serve wound around said inner serve, said inner serve and outer serve interconnected in a single weave forming a single longitudinally extending french braid to form a double serve, and an extruded insulating jacket encompassing and insulating the double serve.

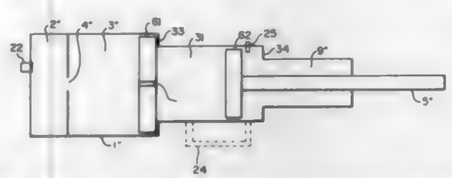
5,303,631

DAMPED-ACTION PYROTECHNIC ACTUATOR

Jean-Pierre Frehaut, Versailles, and Daniel Wisshaupt, Orleans La Source, both of France, assignors to Thomson-Brandt Armements, La Ferte Saint Aubin, France

Filed Dec. 23, 1992, Ser. No. 995,822
Claims priority, application France, Dec. 31, 1991, 91 16385
Int. Cl.[5] F01B *29/08*; B64D *1/04*
U.S. Cl. 89—1.14 **12 Claims**

1. A pyrotechnic actuator having a body containing a piston, a pyrotechnic material combustion chamber, and a counter pressure chamber between a piston head and a mobile end of the actuator, also including an intermediate compression chamber between the combustion chamber and the piston head, the intermediate compression chamber being connected to the combustion chamber by a hole, and a gas passage by-passing



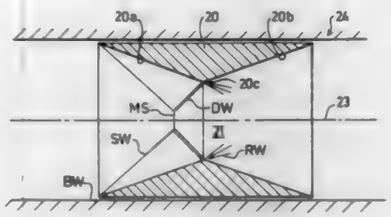
the piston head of the piston to connect the intermediate chamber to the counter pressure chamber.

5,303,632

PROJECTILE PROPELLING SYSTEM

Yosef Kivity, Haifa, Israel, assignor to The State of Israel-Ministry of Defence, Haifa, Israel

Filed Dec. 23, 1991, Ser. No. 814,225
Claims priority, application Israel, Mar. 1, 1991, 97388
Int. Cl.[5] F41F *1/00*
U.S. Cl. 89—7 **15 Claims**



1. A projectile propelling system, comprising: a gun barrel filled with a gaseous propulsive mixture, a projectile having a front cone wall and a rear cone wall, and a driver for initially propelling the projectile in the gun barrel to an initial velocity above the detonation velocity of the gaseous propulsive mixture to produce a shock wave at the front cone wall followed by a detonation wave resulting from the reflection of the shock wave inside the barrel, which detonation wave is applied to the rear cone wall to increase the velocity of the projectile; characterized in that:

said projectile is of tubular configuration and is formed with an axial bore;

said front cone wall of the projectile is defined by a first conical surface decreasing in diameter from the outer edge of the front end of the projectile towards said axial bore; and

said rear cone wall of the projectile is defined by a second conical surface increasing in diameter from the axial bore to the outer edge of the rear end of the projectile;

said front and rear conical surfaces of the projectile being effective to create, in the produced shock wave, a "mach stem" in the form of a disc normal to the longitudinal axis of the projectile, of sufficiently high pressure and temperature to ensure ignition of the gaseous propulsive mixture.

5,303,633

SHOCK COMPRESSION JET GUN

Michael J. Guthrie, Huntsville, Ala.; Thomas C. Powell, Tullahoma, Tenn., and Loren G. Mooney, Huntsville, Ala., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

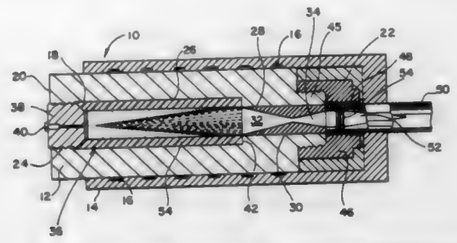
Division of Ser. No. 482,498, Feb. 21, 1990, Pat. No. 5,194,690. This application Jan. 4, 1993, Ser. No. 409
Int. Cl.[5] F41A *1/04*
U.S. Cl. 89—8 **26 Claims**

22. A shock compression jet gun, comprising:

a breech assembly having an internal conduit formed therein, with said conduit having a rearward end and a forward end, and said conduit including a first chamber adapted for receipt of an explosive charge assembly;

a projectile tube attached to said breech assembly; and

a casing in contact with said first chamber, said casing being



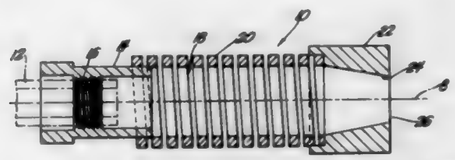
formed of a shock absorbing or cushioning material and said casing being structured and arranged specifically for a shock absorbing function whereby the casing is compressible and resilient so as to appreciably assist in reducing impact of an exploding charge on said breech assembly.

5,303,634

FLASH SUPPRESSOR

Joseph G. Warner, Sterling Heights, and Paul A. Petrovich, Fowlerville, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1993, Ser. No. 49,594
Int. Cl.[5] F41A *21/34*
U.S. Cl. 89—14.2 **11 Claims**



1. A device for dispersing flash from a muzzle of a gun, comprising:

mount means for attaching the device to the muzzle;

an exit end of the device;

an axis extending from the muzzle toward the exit end;

diffusion means for directing the flash into a cloud-like body around the device, the diffusion means comprising

a helical member connected between the mount means and the exit end,

an exterior surface of the device defined by the helical member,

the helical member bounding an interior space of the diffusion means, the interior space being disposed on the axis, and

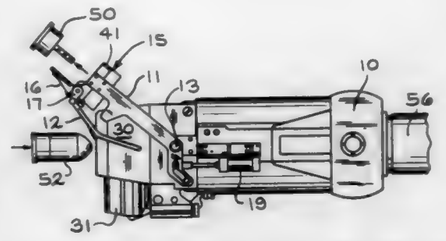
a continuous helical gap defined by the helical member and disposed immediately adjacently between the interior space and the exterior surface.

5,303,635

APPARATUS AND METHOD FOR ENTRAPPING AND DISCARDING SPENT ARTILLERY SHELLS

Ronald B. Kowalczyk, Coeymans Hollow, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1992, Ser. No. 952,381
Int. Cl.[5] F41A *9/56*
U.S. Cl. 89—33.4 **5 Claims**



1. In a military cannon wherein an ammunition stub case is ejected from the breech of said cannon after firing of an ammunition round, apparatus for capturing said stub case comprising:

a) main body means having a hollow cavity for receiving said stub case therein, said cavity having an axial centerline and opposite first and second openings at each end thereof, said hollow cavity centerline being axially aligned with the center line of said cannon whereby said first opening is adjacent the breech of said cannon,

b) door means closing off the second opening of said hollow cavity,

c) means within said hollow cavity for centering said stub case within said hollow cavity such that the axial center line of said stub case is coincident with the extended axial center line of said cannon, wherein said means for centering said stub case within said hollow cavity includes sensing means whereby the relative position of said stub case center line with respect to the center line of said cavity may be determined,

d) means for securing said stub case within said hollow cavity,

e) means for elevating said main body means at an angle of inclination with respect to the axial centerline of said cannon,

f) means for ejecting said stub case from said hollow cavity when said main body is at said angle of inclination.

5,303,636

FLUID CONTROLLER AND LOGIC CONTROL SYSTEM FOR USE THEREWITH

Dwight B. Stephenson, Savage, and James J. Hastreiter, Eden Prairie, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

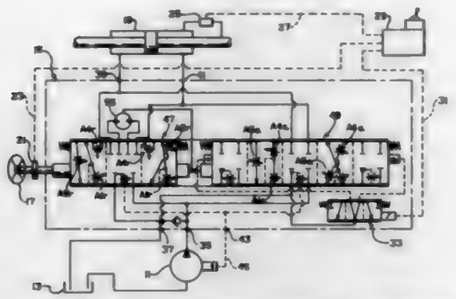
Division of Ser. No. 703,318, May 20, 1991, Pat. No. 5,115,640, which is a continuation-in-part of Ser. No. 513,366, Apr. 23, 1990, Pat. No. 5,016,672. This application Mar. 13, 1992, Ser. No. 850,712
Int. Cl.[5] F15B *9/09*
U.S. Cl. 91—471 **5 Claims**

1. A method of controlling the flow of fluid from a source of pressurized fluid through a fluid controller in response to the position and movement of an input device, to cause the position of a steering cylinder to conform to the position of said input device, said method comprising the steps of:

(a) providing said fluid controller with main valving operable to define a main fluid path, and control fluid flow therethrough, in response to the movement of said input device, and auxiliary valving operable to define an auxil-

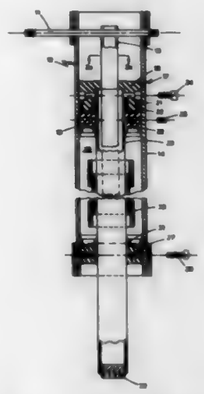
VOL 1161 ISS 3 AP 19 1994 UMI

iary fluid path, and control the fluid flow therethrough, in response to changes in a command signal;
(b) sensing the position of said input device, and generating an input position signal;
(c) sensing the position of said steering cylinder, and generating an output position signal;
(d) comparing said output position signal to said input position signal, and generating said command signal;



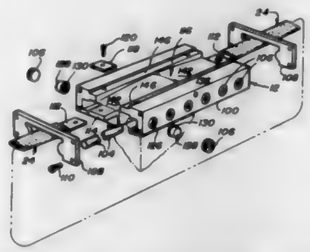
(e) transmitting a signal representative of said command signal to said auxiliary valving and modulating said auxiliary valve to drive said output position signal toward said input position signal, and
(f) sensing a vehicle status change, generating a status change signal in response to the sensing of a vehicle status change, and setting said command signal equal to said output position signal in response to the presence of said status change signal.

5,303,637
PISTON ASSEMBLY STRUCTURE FOR AN HYDRAULIC CYLINDER
John E. Nolan, 417 Dorsey Way, Louisville, Ky. 40223
Division of Ser. No. 393,682, Aug. 16, 1989, Pat. No. 4,996,728. This application Dec. 3, 1990, Ser. No. 790,121
Int. Cl.[5] F15B *15/00*
U.S. Cl. 92—13.41 **3 Claims**



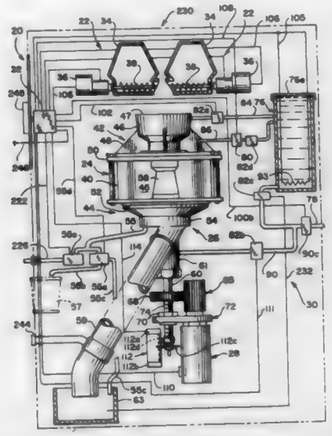
1. In a fluid pressure responsive longitudinally extending annular hydraulic cylinder having an inner chamber with a piston assembly disposed therein having spaced extremities extending longitudinally and coaxially within said cylinder to define a piston cavity between said spaced extremities and having means intermediate said spaced extremities to allow introduction and removal of hydraulic fluid into said piston cavity to provide reverse strokes of a piston of said piston assembly within said inner chamber, said piston assembly having secured to one end of said pistons separate adjacent, interrelated and cooperatively slidable upper and lower piston sections extending transversely and sealingly across said inner chamber to define at least one movable extremity of said piston cavity such that a lower face of said upper piston section and an upper face of said lower piston section are mated in an interfaced tapered cup and tapered seal dovetailed relation in a manner extending substantially across the interfacing of said piston sections to provide a tortuous seal over an extended area between said slidable facing sections to insure against leakage relative said piston cavity and against the introduction of ambient air into said piston cavity during fluid drainage therefrom and the escape of fluid during fluid introduction into said piston cavity.

5,303,638
RODLESS PISON AND CYLINDER ASSEMBLY FOR A RECIPROCATING CARRIAGE
Joseph H. Green, 36-8041 A Landmark Cir., Tampa, Fla. 33634
Filed Feb. 26, 1993, Ser. No. 22,984
Int. Cl.[5] F01B *29/00*
U.S. Cl. 92—88 **18 Claims**



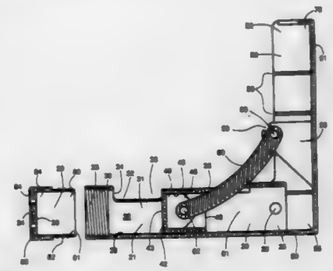
1. A rodless piston and cylinder assembly comprising:
an elongated cylinder;
a piston mounted for reciprocation in said cylinder;
a band connected to said piston and passing through seals located at opposed ends of said cylinder and engaging a carriage for reciprocation of said carriage on a guiding support;
said support having a pair of longitudinally extending parallel rails, each rail having an outwardly facing guide surface and an inwardly facing braking surface;
said carriage having a pair of spaced, longitudinally extending flanges which cooperate with the outwardly facing guide surfaces of said rail for guiding said carriage as it is reciprocated on said rails;
said carriage further having a centrally located, longitudinally extending brake bar located between said rails and containing a plurality of longitudinally spaced cylinder bores; and
a plurality of braking pistons located in said cylinder bores and being operable when fluid pressure is introduced into said cylinder bores to move outwardly against the inwardly facing braking surfaces of said rails.

5,303,639
AUTOMATIC BREWER
Arthur H. Bunn, Springfield; James H. Anson, Auburn, and David F. Ford, Springfield, all of Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Continuation-in-part of Ser. No. 946,960, Sep. 17, 1992, Pat. No. 5,230,278, which is a continuation-in-part of Ser. No. 818,850, Jan. 10, 1992, Pat. No. 5,255,593, which is a continuation-in-part of Ser. No. 683,285, Apr. 10, 1991, Pat. No. 5,134,925. This application Jan. 7, 1993, Ser. No. 1,468
Int. Cl.[5] A47J *31/54, 31/00*
U.S. Cl. 99—289 R **9 Claims**



1. An automatic beverage brewing apparatus for brewing large quantities of a brewed beverage and for conserving heated water, said automatic beverage brewing apparatus comprising:
an automatic beverage brewer for controllably brewing a selected quantity of a selected type of brewed beverage during a brew cycle upon activating said automatic beverage brewer, said beverage brewer having an aperture formed therein for receiving substances therethrough;
a dispensing line communicating with said beverage brewer for controllably dispensing a brewed beverage therefrom;
a heated water reservoir for retaining a predetermined quantity of water in a heated state for use in brewing beverages;
an unheated water fill line communicating with said heated water reservoir for controllably adding water to said heated water reservoir after water has been dispensed therefrom;
a pressure relief valve operatively coupled with said fill line for releasing water from said heated water reservoir when the pressure in the reservoir reaches or exceeds a predetermined level, said pressure relief valve releasing a quantity of water having a lower temperature than said heated water to prevent and reduce the loss of heated brewing water;
means for selectively combining two or more substances for brewing, flavoring, and mixing a brewed beverage including:
a plurality of controllable substance dispensers communicating with said beverage brewing means for controllably dispensing a substance into said aperture of said beverage brewing means, each of said plurality of controllable dispensers containing at least one substance;
means for selectively controlling said plurality of said controllable dispensers, said control means being coupled to each of said plurality of controllable dispensers and selectively dispensing a predetermined quantity of a selected type of substance from at least two of said controllable dispensers for producing a predetermined selected beverage;
at least one remote beverage container associated with said automatic beverage brewer, said at least one remote beverage container being independent from said automatic beverage brewer;
means for providing a beverage path from said beverage brewer to said remote beverage container;
a first end of said beverage path means removably attaching to said automatic beverage brewer for receiving a brewed beverage from said automatic beverage brewer; and
a second end of said beverage path means removably couplable with said remote beverage container for dispensing a beverage brewed by said automatic beverage brewer through said beverage path means into said remote beverage container.

5,303,640
FOOD PRESS
Ira Gaber, West Norwalk, Conn., and Cooper C. Woodring, Topeka, Kans., assignors to Better Mousetraps, Inc., West Norwalk, Conn.
Continuation-in-part of Ser. No. 763,434, Sep. 20, 1991. This application Nov. 13, 1992, Ser. No. 975,762
Int. Cl.[5] A47J *19/06, 42/34*; B30B *7/00, 9/02*
U.S. Cl. 99—495 **18 Claims**



1. A food press, comprising:
a body housing chamber means therein for receiving and pressing foodstuffs;
a perforated member releasably secured to said body and adjacent said chamber means for pressing foodstuffs therethrough;
a piston slidably fitted within said chamber means which linearly moves therein for moving and pressing the foodstuffs, wherein foodstuffs can be received by said chamber means when said piston is in one position within said chamber means and wherein said piston is adapted to press foodstuffs within said chamber means and through said perforations in said perforated member when said piston is in a second position within said chamber means;
a rotatable handle operatively connected to said member; and
linking means connected to said handle and to said piston, wherein when said handle is rotated in one direction said piston is moved to its one position and wherein said handle is rotated in the other direction said piston is moved to its second position in generally decreasing increments to thereby increase available piston force and pressure as foodstuffs are to be pressed through said perforations in said removable perforated member.

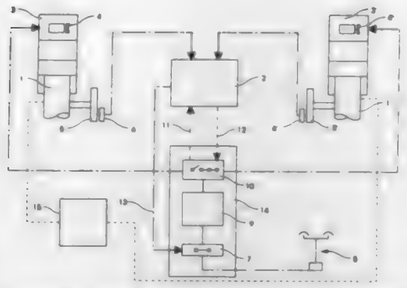
VOL 1161 ISS 3 APR 19 1994 UMI

5,303,641

METHOD FOR CHECKING THE DRIVING AND CONTROL SYSTEM OF HYDRAULIC PUNCH BRAKES

Jean-Pierre Gallandere, 1164 Buchillon, Switzerland

Continuation of Ser. No. 616,409, Nov. 21, 1990, abandoned.
This application Oct. 22, 1992, Ser. No. 965,056
Claims priority, application Switzerland, Nov. 22, 1989, 04193/89
Int. Cl.[5] B30B *13/00, 15/18*
U.S. Cl. 100—35 1 Claim



1. A method for checking the driving and control system of a hydraulic press brake having a sliding punch member actuated in a reciprocating motion by two hydraulic driving devices, each comprising at least one hydraulic cylinder, which driving devices are arranged on either side of said punch member and are operated under the control of a common control device, said press brake having means for sensing the position and the speed of said punch member independently on either side thereof, said method comprising the successive steps of delivering a stop order signal to the driving devices, sensing the stop position of said punch member by said means for sensing the position independently on either side thereof and comparing with preset reference values the time or the distance required by the punch member to come practically to a stop, and producing a fault signal when said times or distances on either of the sides of the punch member exceed said preset reference values, and monitoring for a possible further movement of said punch member after it has come to a stop, and comparing the further movements on both sides of said punch member by said means for sensing the position and the speed independently on either side of said punch member, any difference between the further movements on both sides of said punch member being indicative of an asymmetric leakage condition of said hydraulic driving devices.

5,303,642

SYSTEM FOR MONITORING TRASH COMPACTORS

Martin J. Durbin, Oak Forest, and Morris Simon, Northbrook, both of Ill., assignors to One Plus Corp., Northbrook, Ill.

Continuation-in-part of Ser. No. 959,709, Oct. 13, 1992. This application Jul. 2, 1993, Ser. No. 86,933
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[5] B30B *15/16, 15/26*
U.S. Cl. 100—50 7 Claims

1. A unit for monitoring a trash compactor of a type comprising a container, a ram operative in compacting strokes for compacting trash within the container, and means for applying force to drive the ram, the unit comprising

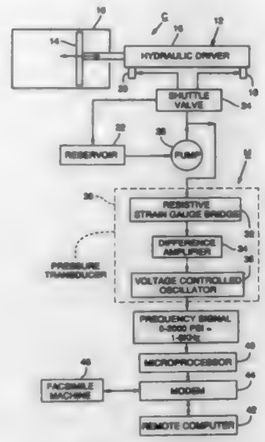
(a) means for sensing force applied to the ram at successive times during each compacting stroke,

(b) means for determining fullness of the container of the trash compactor by

(1) generating a series of signals having values representative of the sensed force at successive times during such compacting stroke,

(2) determining which generated signal value is the maximum generated value, and

(3) comparing the maximum generated signal value to a threshold value indicative of fullness of the container of the trash compactor, and



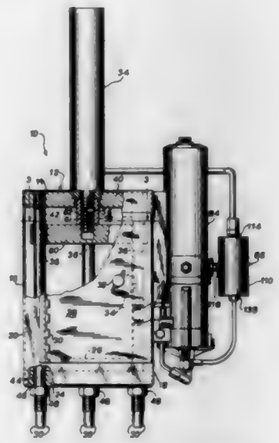
(c) means for sending a facsimile message from the unit to a facsimile machine when the fullness-determining means has determined that the container of the trash compactor is substantially full.

5,303,643

WASTE CONTAINER CRUSHER

Mark J. Fisher, Menomonee Falls, and Edward T. Arters, Milwaukee, both of Wis., assignors to Applied Power Inc., Butler, Wis.

Division of Ser. No. 772,985, Oct. 7, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 6,907
Int. Cl.[5] B30B *15/16, 9/02, 1/32*
U.S. Cl. 100—51 7 Claims



1. A waste container crusher, comprising:

a housing having a closeable door;

an anvil plate for supporting a container to be crushed within said housing;

a platen for crushing said container against said anvil plate;

a hydraulic cylinder for driving said platen against a container to be crushed supported on said anvil plate within said housing, said cylinder having a cylinder port;

an air powered hydraulic pump having a pneumatic port and a hydraulic port, said pump providing a supply of hydraulic fluid at said hydraulic port which can be compressed to a pressure limit which is proportional to a pressure of a compressed air supply provided at said pneumatic port;

a main air valve having a first port and a second port, said valve blocking said first port and venting said second port in an off state and connecting said first and second ports in an on state;

means communicating said hydraulic port and said cylinder port;

means communicating said second port of said main air valve and said pneumatic port;

means for providing a supply of compressed air at a certain pneumatic pressure to said first port of said main air valve; and

means for changing said main air valve between said on and off states including an interlock control actuated by closing said door such that said main air valve is turned on when said door is closed and is turned off when said door is opened;

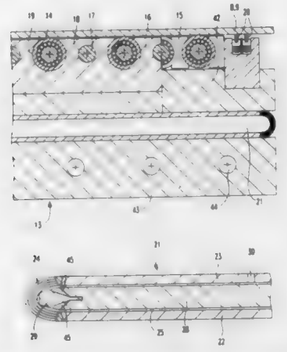
wherein when said door is closed, said pump drives said cylinder to said pressure limit, whereat said pump stalls, and said pump maintains the pressure of said cylinder at said pressure limit after said pump stalls until said door is opened.

5,303,644

CONTINUOUSLY OPERATING DOUBLE BAND PRESS WITH A SHAPE COMPENSATING PLATE STRUCTURE INCLUDING A DEFORMATION-LIMITING SUPPORTING PLATE

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Aug. 25, 1992, Ser. No. 935,092
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4128024
Int. Cl.[5] B30B *5/06, 15/34*
U.S. Cl. 100—93 P 27 Claims



1. A continuously operating double band press for the production of endless material webs including laminates, chipboards, fiberboards and plywood, comprising:

a rigid press frame;

two sets of bearing blocks on the press frame

two sets of reversing drums rotatably supported on the bearing blocks of the press frame;

an upper and a lower endless press band each guided over a set of said reversing drums arranged such that said press bands have opposite outer sides extending essentially parallel to one another;

a reaction zone formed between the outer sides of the press bands located opposite one another, wherein the material web is guided in the reaction zone;

a roller bed supported on said press frame adjacent at least one of said press bands so as to abut the side thereof opposite the parallel outer side thereof for applying pressure to the press band via said roller bed;

a shape compensating plate structure disposed in the press frame between said roller bed and said press frame, said plate structure comprising a cover plate on which said roller bed is mounted;

a base plate supported on said press frame in spaced relationship from said cover plate and connected to said cover plate at the edges thereof so as to enclose between said base and cover plates a chamber which is filled with a pressure-transmitting fluid, and a supporting plate disposed within said chamber for limiting deformation of said base and cover plates.

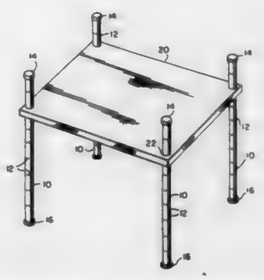
21. A shape compensating plate structure for disposition in a press comprising spaced base and cover plates connected to one another along their edges so as to define therebetween a closed chamber filled with pressure transmitting fluid and a supporting plate disposed in said chamber for limiting deformation of said base and cover plates, said base and cover plates of said shape compensating plate structure being joined at their edges by an elastic bellows of approximately semicircular cross-section.

5,303,645

ADJUSTABLE SHELVING SYSTEM HAVING FRICTION INCREASING MATING SURFACES

Thomas E. Meacham, Mountaintop, Pa., assignor to Intermetro Industries Corporation, Wilkes Barre, Pa.

Filed May 15, 1992, Ser. No. 883,176
Int. Cl.[5] A47B *9/00*
U.S. Cl. 100—144 13 Claims



1. An adjustable shelving system, comprising:

a plurality of shelf-supporting posts;

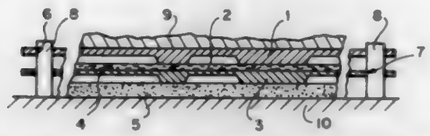
a plurality of tapered sleeves engageable at predetermined heights on said posts, each said sleeve having an exterior mating surface;

at least one plastic shelf having a plurality of tapered step holes each receiving one of said shelf-supporting posts fitted with one of said sleeves, with each of the step holes being defined by an interior mating surface; and

friction-increasing means provided on at least one of said exterior and interior mating surfaces by a spiral record-like groove.

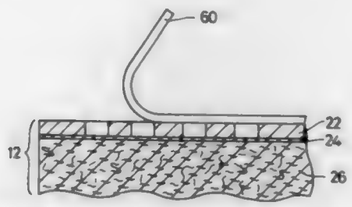
VOL 1161 ISS 3 APR 19 1994 UMI

5,303,646
RELIEF PRINTING METHOD AND APPARATUS FOR ITS IMPLEMENTATION
Rainer Melzer, and Roland Melzer, both of Schwelm, Fed. Rep. of Germany, assignors to Melzer Maschinenbau GmbH, Fed. Rep. of Germany
Filed Jan. 22, 1993, Ser. No. 7,616
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 4201756
Int. Cl.[5] B31F *1/07*
U.S. Cl. 101—32 **7 Claims**



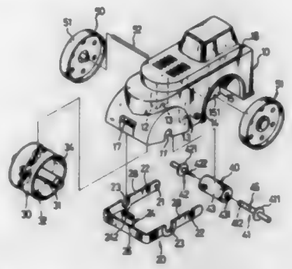
1. A relief printing method wherein a first stereotype block having an ink-carrying relief pattern is pressed against a material to be printed on, the method comprising the steps of:
providing a rigid support,
providing a resilient dressing web,
providing a first stereotype block having a relief pattern thereon,
providing a second stereotype block repeating the relief pattern of said first stereotype block,
combining said dressing web and said second stereotype block such that said relief pattern of said second stereotype block faces said dressing web, and
placing said combined dressing web and second stereotype block on said rigid support such that the relief patterns of said first and second stereotype blocks are in register with the relief patterns of both of said first and second stereotype blocks facing said dressing web.

5,303,647
PLATE FOR STENCIL PAPER PRINTING HAVING A RELEASABLE FILM
Keiji Seo, Nagoya, and Mikio Imaeda, Bisai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Apr. 23, 1993, Ser. No. 51,561
Claims priority, application Japan, May 27, 1992, 4-35340[U]; May 27, 1992, 4-135063
Int. Cl.[5] B41N *1/24*
U.S. Cl. 101—125 **20 Claims**



1. A stencil plate comprising:
a heat sensitive stencil paper sheet formed of a thermoplastic film and a porous support member adhered to the thermoplastic film;
an impregnated member impregnated with ink disposed on the heat sensitive stencil paper sheet adjacent to the porous support member;
an ink-impermeable base member on which the heat sensitive stencil paper sheet and the impregnated member are layered successively; and
a thin film peelably provided on a surface of the heat sensitive stencil paper sheet, said thin film having a high temperature heat resisting property higher than the thermoplastic film.

5,303,648
ROLLER STAMP
Shiny Shih, No. 31, Lane 349, Chung Cheng S. Rd., Yung Kang Hsiang, Tainan Hsien, Taiwan
Filed Feb. 8, 1993, Ser. No. 14,791
Int. Cl.[5] B41F *5/00*
U.S. Cl. 101—329 **2 Claims**

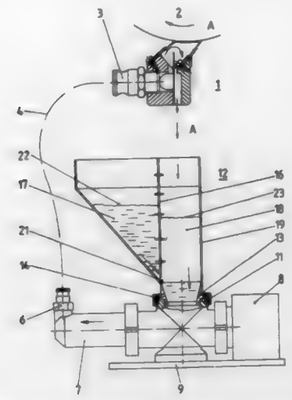


1. A stamping device comprising:
a housing having a lower open end, opposite sides, a positioning hole in a middle portion of each of said sides, a first arch in a front portion of each of said sides, and a second arch in each of said sides and between said positioning hole and said first arch thereof;
a rear wheel assembly mounted to a rear portion of said housing;
a front wheel assembly comprising a front wheel axle, a wheel mounted on said front wheel axle, and a stamping strip placed around and secured to a periphery of said wheel, said stamping strip having a desired pattern therein;
an ink pad means comprising an ink pad axle and an ink pad mounted on said ink pad axle, said ink pad axle comprising a first axle section with a bore and a second axle section with a pin for separably engaging with said bore, said ink pad contacting said pattern of said stamping strip; and
a substantially U-shaped bumper means for mounting said front wheel axle and said ink pad axle to said housing; said U-shaped bumper means comprising a bumper portion having two ends and an arm extending from each said end of said bumper portion, each said arm having a peg extending from a distal end thereof for engaging with said positioning hole of one of said sides of said housing, a first recess which cooperates with said first arch of said one side to rotationally hold said front wheel axle therein, and a second recess which cooperates with said second arch of said one side to rotationally hold said ink pad axle.

5,303,649
INK CONTAINER
Wolfgang O. Reder, Veitshoechheim; Dieter Reinhart, Hettstadt, and Georg Schneider, Würzburg, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany
Filed Aug. 10, 1992, Ser. No. 926,702
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126722
Int. Cl.[5] B41F *31/06;* **B41G** *27/10*
U.S. Cl. 101—363 **7 Claims**

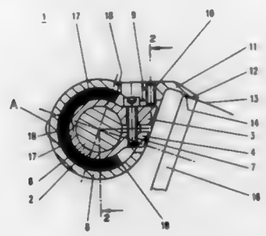
1. An ink container for an inking unit of an offset rotary printing press having a screened roller and a chambered doctor blade, said ink container comprising:
an ink reservoir chamber for receipt of new ink;
a feedback chamber for receipt of doctored off ink and dampening fluid;

a separating plate positioned within said ink container and dividing said ink container into said ink reservoir chamber and said feedback chamber; and
a flow passage defined in part by a lower end of said separating plate, said flow passage having a variable flow area and providing fluid communication between said ink



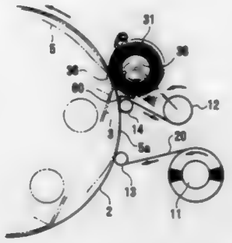
reservoir chamber and said feedback chamber, said separating plate being supported for pivotal movement at an upper end in several axles adjacent an open, upper end of said ink container, said pivotal movement of said separating plate shifting said lower end of said separating plate to vary said flow area of said flow passage.

5,303,650
SHEET GRIPPER ASSEMBLY
Erich G. Wieland, Wuerzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany
Filed Aug. 20, 1992, Ser. No. 932,582
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127713
Int. Cl.[5] B41F *1/30*
U.S. Cl. 101—409 **17 Claims**



1. A sheet gripper assembly for a sheet-fed rotary printing press, said sheet gripper assembly comprising:
a rotatable gripper shaft;
a gripper shaft clamping member secured to said gripper shaft;
a gripper housing including a gripper arm and a gripper finger supported by said gripper shaft clamping member; and
an elastic member interposed between and resiliently securing said gripper housing to said gripper shaft clamping member, said elastic member being concentric with said gripper shaft clamping member and said gripper housing.

5,303,651
PRINTING CYLINDER/ROLLER CLEANING APPARATUS FOR PRINTING PRESS
Hiroyuki Sugiyama, and Toshihiko Ebina, both of Ibaraki, Japan, assignors to Komori Corporation, Japan
Filed Jan. 25, 1993, Ser. No. 8,196
Claims priority, application Japan, Jan. 27, 1992, 4-034051
Int. Cl.[5] B41F *35/00*
U.S. Cl. 101—424 **4 Claims**



1. A cleaning apparatus for cleaning a printing cylinder/roller of a printing press, comprising:
a brush roller, intermittently rotated and pressed against a circumferential surface of said printing cylinder/roller having a gap in a part thereof, for scraping contamination therefrom;
a cleaning cloth, pressed against said circumferential surface of said printing cylinder/roller, for wiping scraped contamination;
said cleaning cloth being positioned to contact said cylinder/roller on the upstream side of the cylinder/roller relative to said brush roller;
positioning members for positioning said brush roller in a radial direction relative to said printing cylinder/roller, said positioning means moving said brush roller away from the gap;
a mechanism for rotating said brush roller toward and away from said printing cylinder/roller;
a cleaning cloth take-up mechanism for taking up said cleaning cloth;
a link member for coupling said mechanism for rotating with said cleaning cloth take-up mechanism so that rotation of said brush roller and taking-up of said cleaning cloth are performed substantially simultaneously; and
driving means for commonly driving both the cleaning cloth take-up mechanism and the brush roller mechanism through the link member.

5,303,652
SPRAY BLANKET CLEANING SYSTEM
Charles R. Gasparrini, Portchester, N.Y., and Carl Arnolds, Stamford, Conn., assignors to Baldwin Technology Corporation, Stamford, Conn.
Continuation of Ser. No. 836,183, Feb. 13, 1992, abandoned. This application Jan. 22, 1993, Ser. No. 48,342
Int. Cl.[5] B41F *35/06*
U.S. Cl. 101—425 **5 Claims**

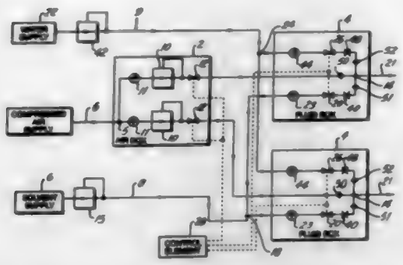
1. A spray blanket wash system, for applying a mixture of solvent and water to blanket cylinders of printing press units, said system comprising:
(a) a solvent supply means;
(b) a water supply means;
(c) an air supply means;
(d) a mixing tube for mixing solvent, water, and air separately supplied from said solvent supply means, said water supply means, and said air supply means;
(e) a solvent control means, connected with said solvent supply means, including solvent valve means for controlled dispensing of solvent into said mixing tube;
(f) a water control means, connected with said water supply

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means, including water valve means for controlled dispensing of air to said mixing tube;

(g) air control means, connected with said air supply means, including air valve means for controlled dispensing of air to said mixing tube;

(h) microprocessor control means, connected to said solvent, water and air control means, so as to permit specific



ratios of solvent and water to be delivered to said mixing tube, said solvent, water and air mixed in said mixing tube, and to permit controlled duration expulsion of said solvent and water by said air; and

(i) spray bar means connected to said mixing tube for receiving and distributing said solvent and water, said spray bar including a plurality of nozzles, for spraying said solvent and water and directing same onto said blanket cylinders.

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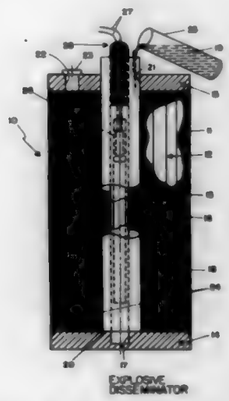
HIGH EXPLOSIVE DISSEMINATOR FOR A HIGH EXPLOSIVE AIR BOMB

John D. Sullivan, Edgewood, and Charles N. Kingery, Aberdeen, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 573,165, Jan. 23, 1984, abandoned. This application Sep. 29, 1986, Ser. No. 917,757

Int. Cl.[5] F42B *12/52*

U.S. Cl. 102—363 **14 Claims**



14. A method for disseminating a particulate high explosive (HE) into the atmosphere to produce an HE-air cloud, which comprises disposing a particulate high explosive charge around a burster charge for disseminating said high explosive into the atmosphere, and interposing between said high explosive charge and said burster charge a means for damping said burster charge to prevent the detonation of said high explosive charge by said burster charge.

5,303,654

COMBINATION PROJECTILE FOR COMBATTING ARMORED TARGETS

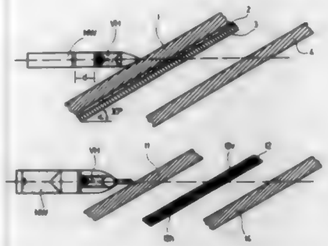
Manfred Held, Aresing, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG, München, Fed. Rep. of Germany

Continuation of Ser. No. 631,632, Nov. 10, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 858,286

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1974, 24529428

Int. Cl.[5] F42B *12/18*

U.S. Cl. 102—476 **2 Claims**



1. A combined projectile having a leading end and a trailing end and including at least two projectile parts in coaxial relation with one another with one of said projectile parts forming the leading end of said projectile and the other said projectile part located behind the one of said projectile parts, wherein the improvement comprises that the one of said projectile parts comprises a hollow charge part, means for effecting a predetermined retardation between the detonation of the one of said projectile parts and the movement of the other said projectile part along the path of the one of said projectile parts including at least first means for providing a defined constructional distance in the axial direction of the projectile between said two projectile parts and spacing apart the trailing end of the one of said projectile parts and the leading end of the other of said projectile parts for effecting a time delay between the detonation of the one of said projectile parts and the subsequent movement of the other said projectile part along the path of the one of said projectile parts so that in the use of the projectile against a selected multi-walled target the hollow charge part of the one of said projectile parts acts as a penetration member for penetrating at least a portion of the walls of the selected target for forming an opening therethrough whereupon after the hollow charge has completed its penetrating action the other said projectile part can penetrate unimpeded through the opening formed by said hollow charge into the target for providing the military effectiveness of the combined projectile against the target with said means being determined in accordance with the spaced arrangement of the walls in the target.

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AUTOMATIC STABILIZER UNIT FOR FREE TROLLEY HAVING VERTICALLY MOVABLE WHEELS RESONSIVE TO TRACKSIDE RAILS

Gareth D. Summa, Denver, Mo., and Darrel D. Heape, Olathe, Kans., assignors to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Sep. 28, 1992, Ser. No. 951,873

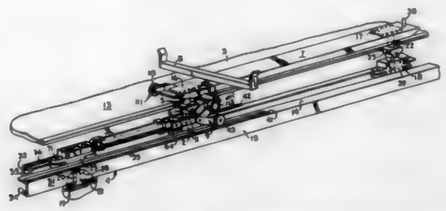
Int. Cl.[5] E01B *5/04*

U.S. Cl. 104—140 **13 Claims**

1. A stabilizer apparatus for a conveyor including a load carriage and comprising:

(a) stabilizing means connected to said load carriage, normally assuming a nonstabilizing position, and vertically movable, relative to said load carriage, to a stabilizing position; and

(b) actuating means being responsive to stabilizing rail means positioned at selected conveyor locations where stabilization is needed for causing said stabilizing means to move



to said stabilizing position to stabilize said carriage only at said selected locations.

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MONORAIL TRAMCAR TYPE CONVEYOR

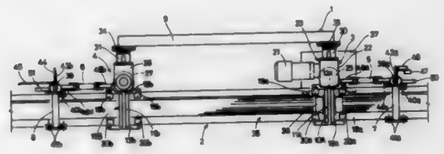
Katsuyoshi Makimura, and Tatsuya Sakagami, both of Kobe, Japan, assignors to Daifuku Ltd., Osaka, Japan

Continuation of Ser. No. 772,283, Oct. 7, 1991, abandoned. This application Oct. 2, 1992, Ser. No. 955,850

Claims priority, application Japan, Oct. 15, 1990, 2-108194; Oct. 15, 1990, 2-108198

Int. Cl.[5] B61B *13/00*

U.S. Cl. 105—144 **6 Claims**



1. A monorail tramcar type conveyor, comprising a guide rail having an upper face, a driven carriage with a driving wheel unit containing a drive wheel rotatable on said upper face, the driven carriage also having a first main body with the drive wheel unit being supported on the upper end of the first main body, a freely rolling carriage having a follower wheel unit which contains a follower wheel rotatable on said guide rail, the freely rolling carriage having a second main body which support the follower wheel unit supported on the upper end of the second main body, and a load platform on each carriage for supporting an article to be conveyed, said load platform having front and rear ends supported by respective tops of said carriages, the tops being rotatable about vertical support shafts, the first and second main bodies of the carriages each comprising a vertical support column on one side of the guide rail, and integral upper and lower cantilevering parts projecting outwardly from the respective upper and lower ends of said vertical support column respectively toward the upper and lower sides of the guide rail, with rollers having vertical axes adapted to roll along the respective upper and lower sides of the guide rail and being supported from the upper and lower projected parts, said upper projected part of each of the main bodies forming a substantially rectangular frame with an opening therein, the center of said frame being open in the vertical direction, said rollers with vertical axes being mounted in each of said main bodies surrounding the vertical opening, and the drive wheel and follower wheel are loosely fitted in said opening between the upper cantilevered parts of the frame of each main body.

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BOGIE FRAME OF ROLLING STOCK HAVING COMPOSITE HOLLOW BEAM CONSTRUCTION

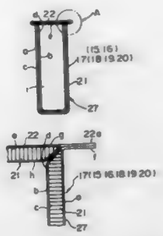
Kazuhiro Oda, Musashi-Murayama; Tetsujiro Fukui, and Yukio Minowa, both of Utsunomiya, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha and Railway Technical Research Institute, both of Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,642

Claims priority, application Japan, Aug. 5, 1991, 3-195518

Int. Cl.[5] B61F *5/52*

U.S. Cl. 105—206.1 **22 Claims**



1. A bogie frame apparatus, comprising:

a frame structure having spaced side beams and a cross beam integrally connected with said side beams, said side beams and said cross beam each comprising:

a trough-shaped part having opposite side walls and a bottom section which are arranged so as to provide an open upper end,

a reinforcing member secured to the trough-shaped part to cover and close said open upper end so as to form a closed box beam with a hollow,

said trough-shaped part having flanges and said reinforcing member having lateral edges, said flanges and said lateral edges being superposed and adapted for securement,

said trough-shaped part and said reinforcing member each including an outer sheathing of a fiber-reinforced plastic material, an inner sheathing formed of said fiber-reinforced plastic material and spaced from said outer sheathing so as to define a space therebetween, and a honeycomb structure disposed in said space and secured between said inner and outer sheathing, and

said flanges being defined by overlapping and bonded end parts of the outer and inner sheathings of said trough-shaped part.

5,303,658

CONSTRUCTION OF STRUCTURAL BODY

Hiroaki Kohira, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Mar. 16, 1993, Ser. No. 31,857

Claims priority, application Japan, Mar. 18, 1992, 4-61998

Int. Cl.[5] B61D *17/00*

U.S. Cl. 105—401 **13 Claims**

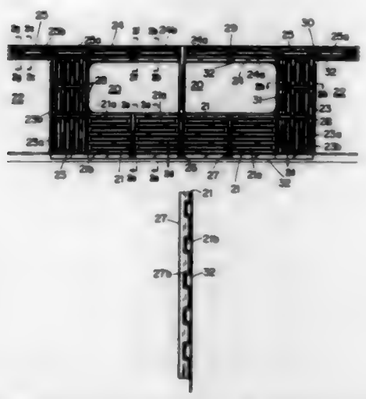
1. A construction of a body structure comprising:

a specified number of sections, each having a specified size and formed integrally of a corrugated plate material, said corrugated plate material having a plurality of ribs and a plurality of holes to reduce the weight of the corrugated plate material;

a plurality of reinforcement members provided to each of said sections, and oriented in a direction transverse to said ribs, said reinforcement members having recesses posi-

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tioned over said ribs to prevent interference with said ribs; and



an outside plate member lined over the surface of said sections joined together.

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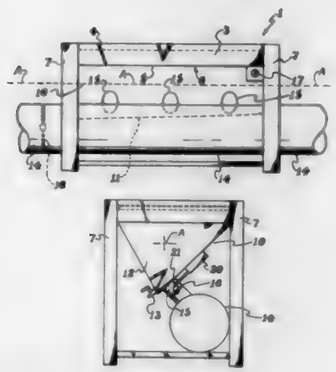
DOWN DRAFT WORK TABLE

Robert M. Berlin, Linwood; Richard L. Wendt; Warren L. Zeigler, both of Midland, and Wayne R. Zeigler, Freeland, all of Mich., assignors to Zeigler Enterprises, Midland, Mich.

Filed Jan. 10, 1992, Ser. No. 819,181

Int. Cl.[5] A47B *83/00*; F23J *11/00*

U.S. Cl. 108—50 **3 Claims**



1. A work table comprising:

a support structure including side members fastened together in an end to end relationship to form an open rectangular frame, said frame having a top, a bottom, an interior and an outside bottom edge;

a flat top detachedly fixed to the interior of the rectangular frame below the top of the frame, said top covering all of the opening provided by the rectangular frame, said top having a multiplicity of holes therethrough;

an open top V-bottomed downdraft chamber having upper edges and opposite ends, said chamber being attached by its upper edges to the outside bottom edge of the rectangular frame such that the V-bottom is the lowest point of the downdraft chamber;

said downdraft chamber being attached such that one end of the V-bottom is lower than the opposite end of the V-bottom;

said downdraft chamber having a main air duct situated adjacent to and parallel with a longitudinal axis of the downdraft chamber, said main air duct being connected to the V-bottom downdraft chamber by branch air ducts, there being at least two such branch ducts per main air duct;

said branch air ducts being surmounted near their ends opening to the downdraft chamber by a controlled gate for controlling the flow of gases therethrough.

5,303,660

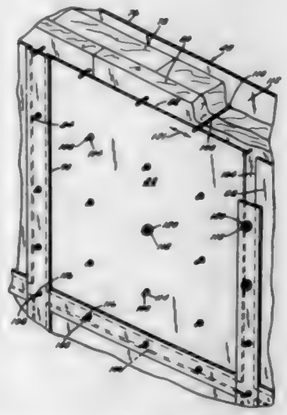
INDUSTRIAL OVEN WITH EXPANDABLE SURFACES

Duane H. Lauersdorf, Watertown, Wis., assignor to Wisconsin Oven Corporation, East Troy, Wis.

Division of Ser. No. 981,847, Nov. 25, 1992, Pat. No. 5,259,758. This application Aug. 16, 1993, Ser. No. 107,242

Int. Cl.[5] F27D *1/00*

U.S. Cl. 110—336 **6 Claims**



1. A wall for an oven having an interior chamber which is heated upon operation of said oven, said wall comprising:

(A) an outer shell;

(B) a layer of insulation disposed between said outer shell and said chamber;

(C) an inner shell including a plurality of generally planar metal plates disposed between said insulation layer and said chamber, wherein spaces are formed between all adjacent plates which permit expansion of said plates without mutual contact when said chamber is heated, and wherein each of said plates has a plurality of oversized holes formed therein; and

(D) a plurality of support pins, each of which includes a first end affixed to said outer shell, an elongated shank, a second end, and a head secured to said second end, said elongated shanks extending through said insulation layer and said holes and having diameters which are significantly smaller than those of said holes so as to permit movement of said plates relative to said pins upon expansion of said plates, said heads tensioning said plates towards said insulation layer, thereby holding said plates in position.

5,303,661

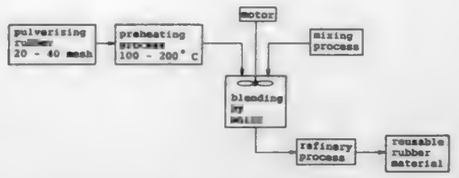
DRY PROCESS FOR SPEEDY AND CONTINUOUS RECYCLING DISCARDED RUBBER

Chun-An Yu, No. 114, Yuan Ta Rd., Sec. 2, Ta Pu Li, Yuan Lin Town, Changhua Hsien, and Chai-I Shiao, No. 7, Alley 64, Lane 247, Yuan Chi Rd., She Tow Ts;un, She Tow Hsiang, Changhua Hsien, both of Taiwan

Filed Jun. 4, 1993, Ser. No. 71,401

Int. Cl.[5] F23B *7/00*

U.S. Cl. 110—341 **1 Claim**



1. A dry process for speedy and continuous recycling discarded or used rubber waste, comprising the steps of:

indirectly preheating at the temperature between 100°–200° C. pulverized rubber waste in the dimension of 20–40 mesh in a dry and air tight vessel;

transmitting said preheated pulverized rubber waste by conveyor means into a fast reactor;

blending the same with additives in said reactor, such as process oil 5%–30% by weight which includes aromatic oil, anphthame oil and paraffine oil; and minerals 5%–20% by weight; and rosin 5%–20% by weight; and zeolite 1%–10% by weight; and the rest being discarded rubber;

stirring said mixture by way of a motor of said process oil which can get said rubber waste softened; and said minerals which are used as fillings; and rosin which increases stickness of said mixture; and said zeolite which permits said process oil to readily penetrate into said pulverized rubber waste so as to convert said discarded rubber waste into reusable rubber powder;

refining said recycled rubber powder into usable rubber material.

5,303,662

MINIMUM TILLAGE TOOL BAR AND METHOD FOR USING SAME

Denny Drake, R.R. 4, Box 164, Davenport, Iowa 52804

Continuation of Ser. No. 537,087, Jun. 11, 1990, abandoned, which is a continuation of Ser. No. 175,609, Mar. 25, 1988, abandoned, which is a continuation of Ser. No. 918,090, Oct. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 756,100, Jul. 17, 1985, Pat. No. 4,624,197, which is a continuation of Ser. No. 443,442, Nov. 22, 1982, abandoned. This application Feb. 21, 1991, Ser. No. 660,137

The portion of the term of this patent subsequent to Nov. 25, 2003, has been disclaimed.

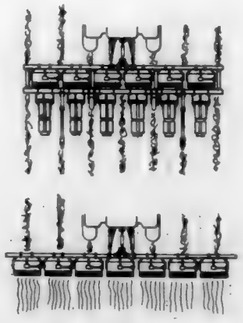
Int. Cl.[5] A01B *51/00*

U.S. Cl. 111—52 **18 Claims**

1. A method of minimum strip tillage utilizing farm implement for pulling by a tractor means and adapted for single pass seed bed preparation and planting of crop rows, as well as for operative connection or means for selective insecticide, herbicide and fertilizer application when in first mode, and having a second mode for use as a power cultivator in-between said crop rows, said implement comprising:

forming a tool bar frame comprised of detachable removable, interconnecting frame members and spaced apart front, and rear tool bars for attachment of a plurality of sets of ground working implements, said tool bars being detachably adjoined by said interconnecting frame members;

in said first mode connecting said tractor means by tractor connection means to a first position on said front tool bar and each said set of ground working implements being aligned in series along said front and rear tool bars for preparation of one crop row as follows, said front tool bar carrying individually powered, individually floating rototillers to prepare a strip tillage seed bed, and said rear tool bar carrying detachable planters; and



removing said rear tool bar by detaching said detachable interconnecting members at least from said front tool bar to leave only said front tool bar and power rototillers for use in a second mode, connecting said tractor means by said tractor connection means to a second position on said front tool bar offset from said first position on said front tool bar in a manner to allow operation of said implement is said second mode as in-between-row power cultivators.

5,303,663

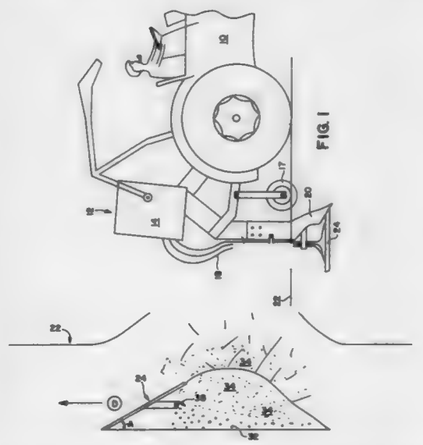
SUBSURFACE PARTICLE INJECTION METHODS

Ronald D. Salestrom, Tucson, Ariz., assignor to Soil Injection Layering Systems, Inc., Tucson, Ariz.

Filed May 8, 1992, Ser. No. 880,907

Int. Cl.[5] A01C *21/00*

U.S. Cl. 111—200 **25 Claims**



1. A method of treating soil to promote plant growth comprising:

(a) preparing for dispersion a quantity of dry particles including at least one water-absorbent polymer, at least 10 percent of which polymer particles, by weight, have grain sizes no greater than half a millimeter, and placing the particles in an applicator;

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(b) passing at least one plowblade coupled to the applicator in a plane substantially parallel to and below the surface of a planted field; and

(c) air-blowing a quantity of the particles including the polymer particles into a zone of soil below the field and adjacent to the plane of the plowblade.

5,303,664

THREAD CUTTER WITH THROUGH HOLE AND CUTOUT FOR SEWING MACHINE

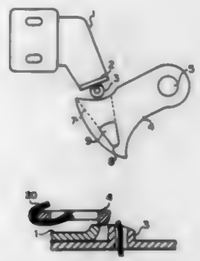
Tsutomu Imai; Minoru Wada, and Takashi Nitto, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 943,396

Claims priority, application Japan, Sep. 13, 1991, 3-074083

Int. Cl.[5] D05B *65/00*

U.S. Cl. 112—292 **3 Claims**



1. A thread cutting device for a sewing machine having a needle plate and a needle guide through which thread passes, comprising:

a stationary blade having a cutting edge which is disposed in the vicinity of the needle guide;

a shaft; and

a movable blade having a top surface and a bottom surface, and adapted to rotate about the shaft and pass over the needle guide and the stationary blade, the movable blade having a cutting edge, a cutout formed in the bottom surface opposite to the stationary blade adapted to engage the thread passing through the needle guide, and defining a through hole contiguous to the cutout, and the movable blade further being opposable to the needle guide and the cutting edge of the stationary blade when the movable blade is located above the stationary blade.

5,303,665

SEWING MACHINE

Erich Hausammann, Ermatingen, Switzerland, assignor to Fritz Gegauf AG Bernina-Nahmaschinenfabrik, Steckborn, Switzerland

Filed Feb. 13, 1991, Ser. No. 634,593

Claims priority, application Switzerland, Aug. 27, 1990, 02 782/90-7

Int. Cl.[5] D05B *3/02*

U.S. Cl. 112—445 **12 Claims**

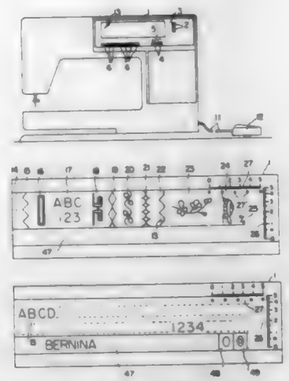
10. A sewing machine comprising:

an electro-optical display for displaying stitch pattern information;

means for selecting a piece of said stitch pattern information from the displayed pieces of stitch pattern information; a first memory for storing basic stitch pattern menus; and a second memory for storing individual stitch pattern menus;

a controller for hierarchically recalling said basic stitch pattern menus and said individual stitch pattern menus after selection by said selecting means and hierarchically displaying said basic stitch pattern menus and said individual stitch pattern menus on said electro-optical display thereby activating said selected piece of stitch pattern information;

means, connected to said controller, for driving a needle in accordance with said selected piece of stitch pattern information; whereby after selection of a basic stitch pattern from said basic stitch pattern menu, said controller recalls a corresponding individual stitch pattern menu from said second memory for display on said electro-optical display.



5,303,666

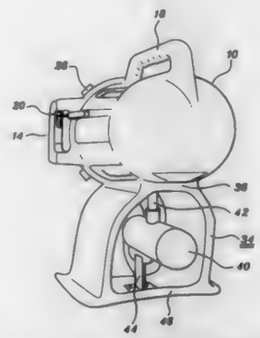
SUBMERSIBLE MARINE VESSEL

Albert DeSantis, Margate, and Morton Lashman, Fort Lauderdale, both of Fla., assignors to Mode Industries, Inc., Ft. Lauderdale, Fla.

Filed Oct. 9, 1992, Ser. No. 958,774

Int. Cl.[5] B63C *11/46*

U.S. Cl. 114—315 **10 Claims**



1. A submersible marine vehicle operable both upon and beneath water, comprising:

(a) a fluid-tight hull elongated along a longitudinal axis corresponding to an intended direction of travel, said hull having integral gripping means and including velocity control means proximal to each of said gripping means, said hull further including, internally therewithin, energy storage means including power control and transfer means therefore within an air space in said hull, said air space also comprising buoyancy means for said vehicle, said hull and said hand gripping means thereof defining a total longitudinal dimension co-linearly to said longitudinal axis of said hull;

(b) a single circumferentially integral propeller shroud depending integrally downwardly from a lower surface of said hull; along an axis transverse to said axis of said hull; and

(c) a propeller and motor therefor, said propeller mounted within said shroud parallel to said axis of said hull, said propeller having a diameter approximately equal to an interior diameter of said shroud, said propeller and motor defining an aggregate longitudinal dimension parallel to said axis of said hull, said aggregate dimension being generally equal to said total longitudinal dimension of said hull and handle gripping means, said motor in electrical communication with said power transfer means within said hull and subject to actuation by said velocity control means.

5,303,667

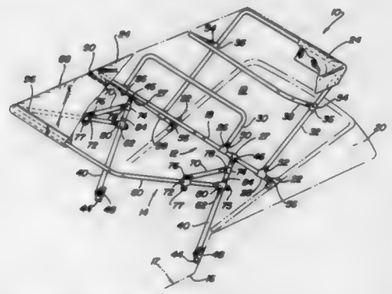
BOAT CAMPER SYSTEM AND METHOD

Donald A. Zirkelbach, Sarasota, and Dennis J. Parniske, Bradenton, both of Fla., assignors to Aldon Industries, Inc., Bradenton, Fla.

Filed Jul. 22, 1991, Ser. No. 733,739

Int. Cl.[5] B63B *17/00*

U.S. Cl. 114—361 **13 Claims**



1. A camper system comprising:

a link assembly pivotally mounted to a boat hull;

a first link having a first end and a second end, said first end being pivotally mounted to the boat hull a predetermined distance aft of said link assembly and said second end pivotally coupled to said link assembly;

a second link pivotally coupled to said first link between said first and second end; and

a strut having opposed ends with one of said opposed ends being pivotally coupled to said second link and said other opposed end being coupled to said first link between said first end and said second end.

5,303,668

SELF-STABLE, PORTABLE, FOLDABLE, EASILY ASSEMBLED ROAD WARNING SIGNAL

Andrew B. Huang, 28442 Lomo Dr., Rancho Palos Verdes, Calif. 90274

Filed Mar. 2, 1993, Ser. No. 24,744

Int. Cl.[5] G09F *13/16;* **B60Q** *7/00*

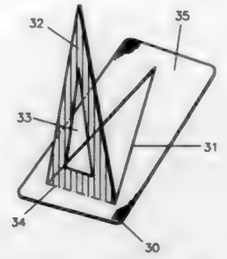
U.S. Cl. 116—63 P **6 Claims**

1. A self-stable, light weight, foldable and easily assembled road signaling device for disabled vehicle warning or the temporary channeling of traffic comprising:

a) a flat, unitary sheet with connecting cut line segments and an upright fold line enclosing an inner substantially large polygonal member of sufficient size to provide a visible sign;

b) said polygonal member when bent upright along the upright fold line becomes highly visible to oncoming traffic, at least one surface of said polygonal member having one of a luminescent and reflective material thereon;

c) said polygonal member being formed of a bendable flexible material that will permit said polygonal member to remain in an upright position when bent and allow said polygonal member to yield to wind and return to said upright position; and



d) a remaining portion of said unitary sheet forming a stable base for supporting said polygonal member.

5,303,669

TILES FOR PEDESTRIAN PLATFORMS AND WALKWAYS

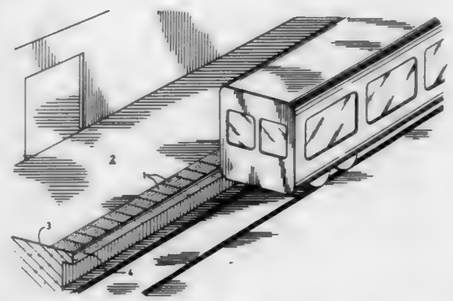
Kenneth E. J. Szekely, 5 Third Line, Oakville, Ontario, Canada L61L 3Z3

Continuation-in-part of Ser. No. 802,228, Dec. 4, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 953,983

Claims priority, application Canada, Dec. 18, 1990, 2032532

Int. Cl.[5] G09B *21/00;* **E04F** *15/00*

U.S. Cl. 116—205 **13 Claims**



1. A textured tile for installation on a platform or walkway surface, comprising a generally planar element with an upper surface and a lower surface, said upper surface having a plurality of upward projections therefrom to provide a distinctive texture relative to the surface of the platform or walkway, said tile having two opposite side edges intended for alignment with corresponding side edges of other tiles, and front and rear edges at least one of which faces oncoming pedestrian traffic, in which said upward projections adjacent each said traffic-facing edge are lower in height than said upward projections elsewhere on the tile, the tile thus presenting oncoming pedestrians with upward projections having a gradual height increase rather than a sudden height increase, thus decreasing the likelihood of tripping.

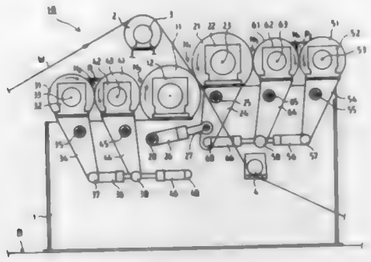
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,670

DEVICE FOR PROPORTIONING OF A COATING AGENT ONTO A MOVING BASE

Rauno Rantanen, Muurame, Finland, assignor to Valmet Paper Machinery Inc., Finland

Filed Oct. 4, 1991, Ser. No. 771,427
Claims priority, application Finland, Oct. 12, 1990, 905042
Int. Cl.[5] B05C *1/08*
U.S. Cl. 118—228 15 Claims



1. A device for metering a coating agent onto a moving base, such as a paper or board web, comprising

a frame,

first and second soft-faced applicator rolls defining a coating nip through which nip a web is passed, said first applicator roll being journalled as fixed on said frame, said second applicator roll being pivotally linked to said frame by an intermediate part of an applicator loading arm,

a first hard transfer roll defining a first transfer nip with said first soft-faced applicator roll,

a first soft metering roll, said first hard transfer roll defining a first metering nip with said first soft metering roll,

a first pond comprising a coating agent located at said first metering nip, said coating agent being transferred through said first metering nip onto a face of said first hard transfer roll and through said first transfer nip onto a face of said first applicator roll such that said coating agent is transferred onto said web in said coating nip,

said first soft-faced metering roll and said first hard transfer roll being pivotally linked to a same member of said frame; and

means for individually regulating linear loads in each of said coating, transfer and metering nips to enable adjustments of said linear loads in each nip without affecting the linear loads of said other nips.

5,303,671

SYSTEM FOR CONTINUOUSLY WASHING AND FILM-FORMING A SEMICONDUCTOR WAFER

Hiroshi Kondo, Tokyo, and Mitsuhiro Tachibana, Yamanashi, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,150
Claims priority, application Japan, Feb. 7, 1992, 4-057003; Feb. 7, 1992, 4-057004
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 12 Claims

1. A system for washing and film-forming a semiconductor wafer continuously comprising:

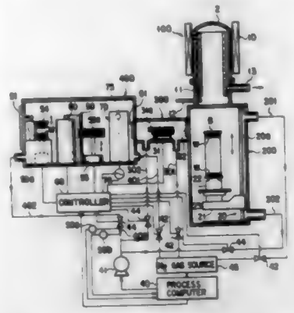
a washing section for removing native oxide from the surface of the semiconductor wafer, which is to be film-formed, while applying an intended solution to the wafer;

a load lock chamber located adjacent to the washing section and filled with an atmosphere of non-oxidizing gas;

a film-forming section having gate means and communicated with and shielded from the load lock chamber by the gate means to apply the film-forming process to that face of the wafer which is to be processed;

first transfer means for transferring the wafer between the washing section and the load lock chamber; and

second transfer means for transferring the wafer between the load lock chamber and the film-forming section;



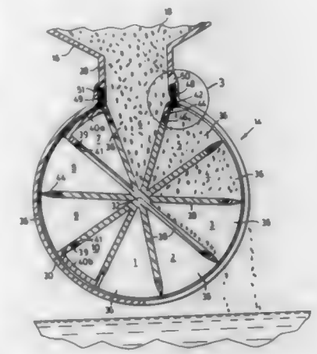
wherein the wafer is coated with a film in the film-forming section after the native oxide is removed from the wafer in the washing section.

5,303,672

FOOD DISPENSING APPARATUS FOR SMALL ANIMALS

Stephen Morris, 1541 Garnet Avenue, Mississauga, Ontario, Canada L5G 1C7

Continuation-in-part of Ser. No. 833,036, Feb. 10, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 19,806
Int. Cl.[5] A01K *5/02, 61/02*
U.S. Cl. 119—51.11 9 Claims



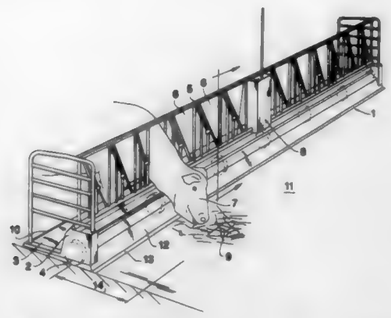
1. A dispensing device for metering out feed in a cyclical manner and at preselected time intervals over a given time period, comprising a timer including a slowly rotating axial component which completes one standard rotation in such time period, a dispenser anchored to said axial component and disposed outwardly from said timer for axial rotation upon rotation of said axial component and including a plurality of open compartments and at least one closed compartment presented transversely to said axial component and in a preselected arrangement for discharging feed under gravity from said open compartments upon appropriate rotation of said dispenser so as to meter out feed in a cyclical manner and at preselected time intervals during said time period, and a hopper including a discharge orifice for delivering feed to said open compartments of said dispenser.

5,303,673

DISPLACEABLE FEEDING FENCE

Johannes M. W. Weelink, No. 58, Tynaarlosestraat, NL-9481 ad Vries, Netherlands

Filed Dec. 16, 1992, Ser. No. 989,839
Claims priority, application Belgium, Dec. 17, 1991, 9101148
Int. Cl.[5] A01K *1/10*
U.S. Cl. 119—60 5 Claims



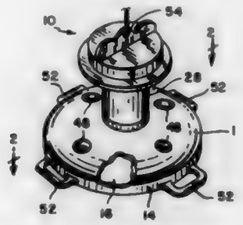
1. A displaceable feeding fence for cattle comprising an elongate frame having a front side, support means for supporting the frame for stable displacement over a ground surface comprising a floor plate having a rear side extending rearward of the frame, drive means for displacing the frame over the ground surface, a fence mounted on the frame with openings through which animals can place their head, a downward protruding scraping edge on the rear side of the floor plate, and a scraper plate having a downward protruding scraping edge on the front side of the frame.

5,303,674

HUMMINGBIRD FEEDER

Donald B. Hyde, Jr., Stow, Mass., assignor to Hyde's Inc., Waltham, Mass.

Filed Feb. 26, 1993, Ser. No. 23,691
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—77 6 Claims



1. A hummingbird feeder comprising:

a cup-shaped bottom cooperating with a dome-shaped top to define a liquid reservoir, said top and bottom having circular rims, one of said rims defining a channel in which the other of said rims is removably received;

a central aperture in said top;

a hollow neck formed integrally with and protruding vertically from said bottom through said central aperture and having an upper end extending above said top;

a collar removably seated on said top at a location surrounding the upper end of said neck;

a head threadedly engaged with the upper end of said hollow neck, said head being adapted to coact with said collar to urge said bottom and top into sealing interengagement along said circular rims; and

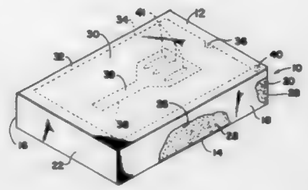
feeding ports providing access to liquid contained in said reservoir.

5,303,675

DISPOSABLE LITTER BOX HAVING LID WITH SEPARABLE UTENSIL

F. Andrew Van Den Bergh, 17509 Rockefeller Cir., Ft. Myers, Fla. 33912

Filed Apr. 12, 1993, Ser. No. 44,747
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—165 6 Claims



1. A disposable liter box product for a pet, said product comprising:

a box that includes spaced apart, generally flat top and bottom wall sections and a side wall section interconnecting said top and bottom wall sections; and

a quantity of pet liter disposed in said box;

at least one of said top and side wall sections of said box including a predetermined edge region that defines an opening into said box, a lid portion, and attachment means for separably joining said lid portion to said edge region such that said opening is provisionally blocked and said box is closed; said attachment means including a perforated pattern formed in at least one of said top and side sections between said edge region and said lid portion and allowing at least a part of said lid portion to be separated from said edge region to expose said opening and provide access into said box; said lid portion including a main body segment and a utensil segment that is integral with and selectively separable from said main body segment; said top wall section including means, spaced apart from said lid portion, for selectively forming an auxiliary slot in said top section, which slot is adapted for receiving and holding said utensil segment.

5,303,676

ANIMAL LITTERS CONTAINING A DEODORIZING ADDITIVE

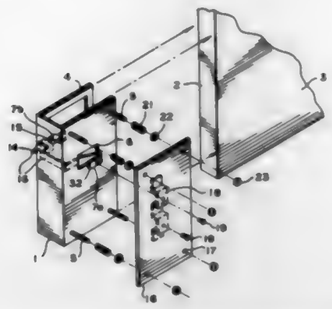
Frederick W. Lawson, Somerset, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 3, 1993, Ser. No. 56,629
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—173 17 Claims

1. An animal litter composition comprising 1) a particulate water-absorbent, clayey component containing at least one water swellable clay mineral and; 2) a solid particulate deodorizing additive component comprising sodium bicarbonate (SBC) or potassium bicarbonate (KBC), the particles of which are substantially coated with a mineral oil, mixed with a powdered siliceous material having a bulk density significantly lower than the density of said SBC or KBC, said coated particles of SBC or KBC being stably adhered to and agglomerated with particles of said siliceous material.

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5,303,677
PET ENTRANCE PAGER
George D. Jones, 9210 5th St., Lanaham, Md. 20706
Filed Mar. 31, 1993, Ser. No. 41,042
Int. Cl.[5] A01K *15/00*
U.S. Cl. 119—174 7 Claims



1. A pet entrance pager that attracts the attention of a person to allow an animal to gain access to the entrance of a building comprising:

A. a channel that fits tightly around the vertical edge of a door adjacent the side of the door that contains a handle, said door having an inner and an outer panel;

B. said channel having inner sides and an edge therebetween, outer sides and four corners respectively adjacent said inner and outer door panel, a non-skid rubber material bonded to said inner sides, said non-skid material frictionally adhering to said inner and outer door panels;

C. aligned front and rear slits in each of the channel sides, a first band of conductive material having a tab extending outwardly of the channel, said band having a hole in the tab and bent section that extends inwardly and skirts the sides of said channel legs and edge of the channel and emerges through said rear slit, a second conductive band in the form of an inverted "z" fastened below said rear slit and adjacent said first band, said bands being electrically connected to an alarm assembly;

D. said alarm assembly being encased in a housing having a flanged wall fastened to one of said outer sides of said channel on the inner door panel, said housing having a wall opposite said flange wall, said opposite wall having slits therein to aid in diffusion of sound when the alarm assembly is contacted; and

E. a plastic cover plate having an inner and outer side and spring mounted to said channel outer side away from said outer door panel, a contactor switch screwed to the inner side of said cover plate, said switch being fastened to said first conductive band having a tab, said contactor switch making electrical contact with said second adjacent band when said cover plate is pushed inwardly by said animal.

5,303,678
PROCESS FOR LOW-POLLUTANT COMBUSTION IN A POWER STATION BOILER
Jürgen Haumann, Rekingen, and Thomas Sattelmayer, Mandach, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland
Filed Oct. 26, 1992, Ser. No. 966,552
Claims priority, application Switzerland, Nov. 21, 1991, 3410/91-4
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—1 R 10 Claims

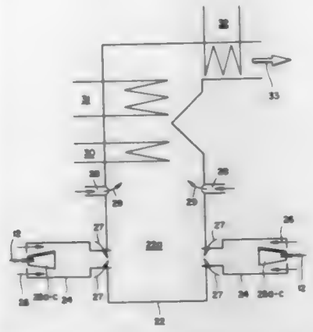
1. A process for low-pollutant combustion in a power station boiler, the boiler including at least one precombustion chamber acting on the boiler, and at least one heat exchanger being positioned in the boiler, comprising the steps of:

preheating primary combustion air;

feeding the preheated primary combustion air to a double cone premixing burner to provide a mixture of fuel and combustion air;

combusting the mixture to produce a flame at an outlet of the burner in the precombustion chamber;

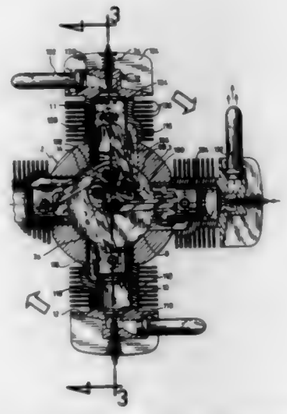
injecting secondary combustion air into the precombustion chamber in a conduit between the precombustion chamber and the boiler, the secondary air being injected at a speed sufficient to prevent formation of nitrogen compounds;



allowing heated gas from the precombustion chamber to flow into the boiler; and

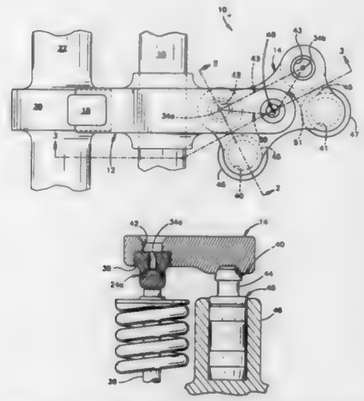
injecting tertiary combustion air into the boiler downstream of the precombustion chamber and upstream of the heat exchanger.

5,303,679
ROTARY INTERNAL COMBUSTION ENGINE
Vicente Gamon, 25 - 1°0, Irun, S.S., Spain
Filed Aug. 12, 1993, Ser. No. 105,117
Int. Cl.[5] F02B *57/00*
U.S. Cl. 123—44 C 17 Claims



1. A rotary internal combustion engine comprising a support and an engine block mounted on said support for rotation about an engine block rotation axis, said engine block defining a central chamber and at least one radial piston chamber outwardly protruding from said central chamber and communicating therewith at its radially inner end, a piston chamber head closing the radially outer end of said piston chamber and defining an explosion chamber with said piston chamber, a crank shaft rotatably mounted in said engine block, parallel to and radially offset from the engine block rotation axis, a drive train drivingly coupling said engine block and said crank shaft, said crankshaft and said engine block rotating in the same direction and at the same speed, a piston reciprocable within said piston chamber, a connecting rod pivotally connected to said piston and to a connecting point of said crank shaft which is radially spaced from the rotation axis of said crank shaft and angularly advanced in the direction of rotation of said engine block relative to the longitudinal axis of said piston chamber.

5,303,680
LASH ADJUSTING MECHANISM FOR MULTI VALVE ENGINE
Douglas L. Nielsen, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jun. 10, 1993, Ser. No. 74,188
Int. Cl.[5] F01L *1/24, 1/26*
U.S. Cl. 123—90.22 4 Claims

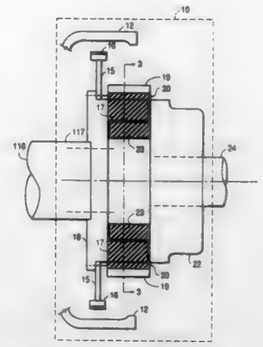


1. A valve operating system for an internal combustion engine comprising a first valve, a second valve, a first lash adjuster, a second lash adjuster, and a rocker arm pivotally mounted on said engine, said rocker arm having a cam follower means thereon; and a valve actuating member in contact with said rocker arm, said actuating member having a first valve contacting surface, a second valve contacting surface, a first lash adjuster contacting surface, and a second lash adjuster contacting surface formed thereon.

5,303,681
TORSIONAL TUNABLE COUPLING FOR A DIESEL ENGINE DRIVE SHAFT
John G. Crofts, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.
Continuation of Ser. No. 936,524, Aug. 28, 1992, abandoned.
This application Mar. 15, 1993, Ser. No. 32,414
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—192.1 30 Claims

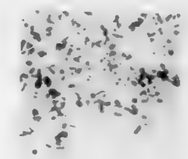
1. An improved coupling assembly for transmitting rotary power from a first end of a rotating crankshaft of an internal combustion engine to a driven shaft, said crankshaft being subjected to a plurality of orders of torsional vibration and having a second end engaged to a drive train, comprising:

a low inertia flywheel means having a mass so selected as to cause the node of the first crankshaft mode of torsional vibration to be located in the vicinity of the middle of said crankshaft along its axis of rotation, thereby reducing the amplitude of the torsional deflection at the second end of



the crankshaft and the amount of stress between said second end and said drive train.

5,303,682
CYLINDER BORE LINER AND METHOD OF MAKING THE SAME
Raymond J. Donahue, Fond du Lac; Terrance M. Cleary, Allenton; William G. Hesterberg, Rosendale, and Lawrence I. Toriello, Fond du Lac, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.
Filed Oct. 17, 1991, Ser. No. 778,012
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—193.1 3 Claims

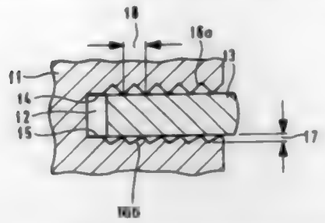




1. A cylinder bore liner for an engine block, comprising a cylindrical member to be disposed in a cylinder bore and composed of a hypereutectic aluminum-silicon alloy containing more than 12% silicon and containing precipitated particles of silicon, a portion of the radial wall thickness of said cylindrical member located adjacent the inner diameter surface having a higher volume fraction of silicon particles than the portion of said wall thickness located adjacent the outer diameter surface of said cylindrical member, the portion of the wall thickness adjacent the outer diameter surface being substantially free of silicon particles.

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second surfaces extending circularly around the axis, said plurality of profiles having a depth in the range of 0.003



mm to 0.015 mm and a width in the range of 0.02 mm to 0.2 mm.

5,303,684

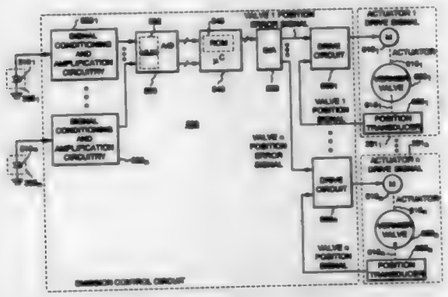
COMBUSTION CONTROL FOR PRODUCING LOW NO_x EMISSIONS THROUGH USE OF FLAME SPECTROSCOPY

Dale M. Brown, Schenectady, and Bernard Gorowitz, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 878,933, May 19, 1992, Pat. No. 5,257,496. This application Apr. 19, 1993, Ser. No. 47,936

Int. Cl.[5] F02P *5/10*; **F02D** *41/14*; **G01M** *15/00*; **G01L** *23/22*

U.S. Cl. 123—435 **16 Claims**



1. A method of reducing nitrogen oxide (NO_x) exhaust emissions resulting from combustion of a mixture of hydrocarbon fuel and air in an internal combustion engine comprising:

measuring intensity of a predetermined band of non-infrared spectral lines emanating from a combustion flame in said engine;

converting the measured intensity value of said predetermined band of non-infrared spectral lines into a corresponding value of an engine operating parameter; and

dynamically adjusting the fuel/air mixture for said engine such that the value of said engine operating parameter remains below a predetermined limit.

5,303,685

HOMOGENIZING FUEL PICKUP SYSTEM

Robert L. Forgacs, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 23, 1992, Ser. No. 857,567

Int. Cl.[5] F02M *37/04*

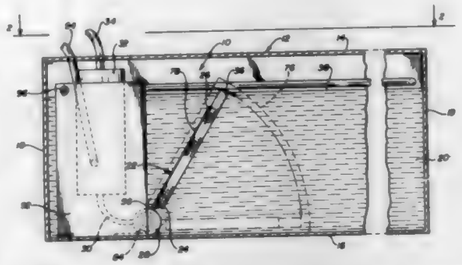
U.S. Cl. 123—510 **20 Claims**

1. A homogenizing fuel delivery system for a motorized vehicle having an engine and a fuel tank, said fuel tank having top, bottom, and side portions defining an internal chamber for containing fuel, said fuel having a plurality of layers, said delivery system comprising:

means for drawing fuel substantially equally from substantially all of said plurality of layers of fuel contained within said fuel tank, said fuel drawing means including a pivotal member having a first end and a second end, said first end being pivotably mounted inside of said fuel tank, said second end having means for causing said second end to reside at the surface of said fuel in said fuel tank, said fuel drawing means further including a valve positioned inside of said fuel tank, said valve being in fluid communication with said fuel delivering means and with said pivotal member, said first end of said pivotal member being pivotably mounted to said valve, and said pivotal member having a top surface and a bottom surface, said bottom surface having means disposed along substantially the entire length thereof to draw fuel substantially equally from substantially all of said plurality of layers of fuel contained within said fuel tank;

means for delivering fuel from said fuel drawing means to said engine;

whereby, the fuel delivered to said engine has a composition which is substantially equal to the average composition of said fuel in said fuel tank.



5,303,686

METHOD OF PURIFYING EXHAUST GASES OF AN OTTO-CYCLE ENGINE

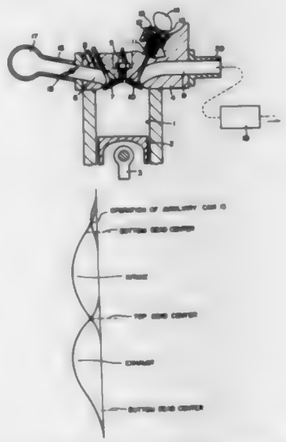
Hiroshi Kanesaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Kanesaka Gijitsu Kenkyusho, Japan

Filed Nov. 9, 1992, Ser. No. 973,766

Claims priority, application Japan, Nov. 13, 1991, 3-325225

Int. Cl.[5] F02M *25/07*; **F01N** *3/20*

U.S. Cl. 123—568 **4 Claims**



1. A method for efficiently heating a catalyst with exhaust gas from an Otto-cycle engine, said Otto-cycle engine having at least one cylinder with a piston disposed for reciprocating movement between a top dead center position and a bottom dead center position in said cylinder, an intake port for delivering fuel and air to said cylinder, an intake valve for selectively opening and closing said inlet port, a spark plug for igniting the fuel and air in the cylinder, an exhaust port extending from said cylinder to said catalyst for enabling a flow of exhaust gas substantially at atmospheric pressure to said catalyst and an exhaust valve for selectively opening and closing said exhaust port, said method comprising the steps of:

moving said piston toward said bottom dead center position, while closing said exhaust valve and opening said intake valve sufficiently for inducting fuel and air into said cylinder and for achieving below-atmospheric pressure in said cylinder;

opening said exhaust valve when said piston reaches said bottom dead center position for drawing exhaust gas away from said catalyst, through said exhaust port, and into said cylinder for increasing pressure and temperature in said cylinder;

closing said intake valve and said exhaust valve and moving said piston toward said top dead center position for further increasing pressure and temperature in said cylinder;

igniting said gases in said cylinder with said spark plug to drive said piston toward said bottom dead center position;

opening said exhaust valve and moving said piston toward said top dead center position for driving the heated exhaust gas through said exhaust port and to said catalyst, whereby the drawing of said exhaust gas away from said catalyst, through said exhaust port, and into said cylinder when said piston reaches said bottom dead center position increases temperature of gases in said cylinder and accelerates heating of said catalyst for more efficient purification of exhaust gases from said Otto-cycle engine.

5,303,687

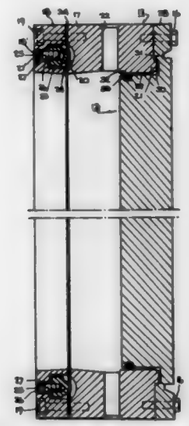
BLADE MOUNT FOR AN INNER DIAMETER SAW BLADE

Jr. Robert E. Steere, Boonton, N.J., assignor to Silicon Technology Corporation, Oakland, N.J.

Continuation-in-part of Ser. No. 665,410, Mar. 6, 1991, abandoned. This application Sep. 6, 1991, Ser. No. 756,322

Int. Cl.[5] B28D *1/12*

U.S. Cl. 125—13.02 **22 Claims**



18. In combination,

a wheelhead having a central axis of rotation, a radially extending flange, a shoulder adjacent said flange and an annular groove in said shoulder to separate a first portion of said wheelhead from a second portion of said wheelhead;

a first ring mounted on said shoulder;

a second ring coaxial of said first ring;

an inner diameter saw blade secured between said rings perpendicularly of said axis of rotation; and

means for adjustably moving selected circumferential sections of said first portion of said wheelhead relative to said second portion to effect deflection of respective sections of said blade into a plane perpendicular to said axis of rotation.

5,303,688

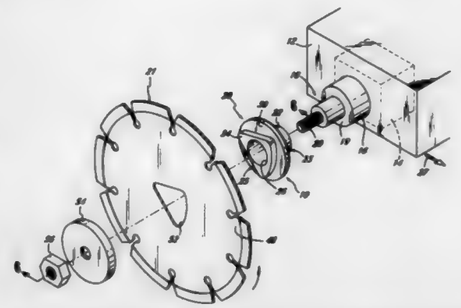
MOUNTING ARBOR FOR SAW CUTTING BLADES

Edward R. Chiuminatta, 16405 Everett, and Alan R. Chiuminatta, 16862 Mariposa Ave., both of Riverside, Calif. 92504

Filed Apr. 3, 1992, Ser. No. 863,708

Int. Cl.[5] B28D *1/12*

U.S. Cl. 125—15 **4 Claims**

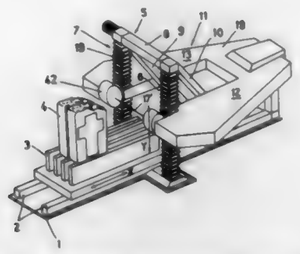


1. A cutting blade for use with a concrete cutting saw having a drive shaft with a blade mounting member for a rotating concrete cutting blade, said cutting blade having a first and second side, comprising:

a mounting hole at the center of the blade, said mounting hole having a shape which when viewed from the first side has a center point with a horizontal axis and vertical axis therethrough, a first corner with a radius of about 3.4 mm, said radius extending from a point located in front of the vertical axis and about 12.4 mm from the center point and at an angle of about 0 degrees from the horizontal axis, a second corner with a radius of about 4.1 mm, said radius extending from a point located behind the vertical axis and about 11.4 mm from the center point and at an angle of about 54 degrees above the horizontal axis, a third corner with a radius of about 3.6 mm, said radius extending from a point located behind the vertical axis and about 11.0 mm from the center point and at an angle of about 66 degrees below the horizontal axis, a first side which tangentially connects the outside of said first and second sides, a second side which tangentially connects the outside of said second and third sides, and a third side which is arcuate, having a radius of about 27.8 mm and which tangentially connects the outside of said first and third sides.

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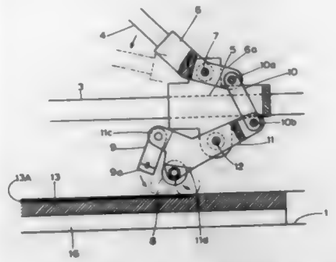
5,303,689
CONTOUR ROPE SAW FOR STONES OR SIMILAR WORKPIECES
Wolfgang Mayer, Nonntaler Hauptstrasse 102, A-5020 Salzburg, Austria
Filed Nov. 18, 1992, Ser. No. 977,906
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1991, 4138106
Int. Cl.[5] B28D *1/08*
U.S. Cl. 125—21 9 Claims



1. A contour rope saw for cutting and shaping stones and similar workpieces, the rope saw comprising:
a supporting structure;
a slide secured to said supporting structure for horizontally displacing a stone along a sliding axis;
an endlessly circulating rope with a horizontal cutting strand extending perpendicular to the sliding axis of the slide;
first and second guided deflection rollers that are movable vertically with respect to the supporting structure, the horizontal cutting strand extending between the first and second deflection rollers;
a planar frame extending from the supporting structure generally in a direction of the sliding axis for supporting the first and second deflection rollers;
a third deflection roller mounted on said frame and being spaced away from the supporting structure along the sliding axis of the slide, the first, second and third deflection rollers each having a rotational axis extending traverse to said frame;
a frame guide means slidably mounted on said supporting structure and pivotally secured to said frame for vertically moving the first and second deflection rollers with respect to the supporting structure, said frame being pivoted with respect to said frame guide means about a swiveling axis extending coincident with the horizontal cutting strand;
a ring member rotatably secured to said frame guide means and being rotatable about said swiveling axis; and
a rope guide roller fixedly secured to said ring member for taking up a cutting pressure exerted on the horizontal cutting strand.

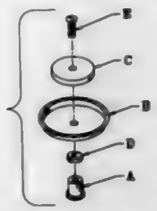
5,303,690
TILE CUTTER
Akinori Ishii, Hyogo, Japan, assignor to Kabushiki Kaisha Ishii Cheko Kogu Seisakusho, Hyogo, Japan
Filed Jun. 25, 1992, Ser. No. 903,892
Claims priority, application Japan, Jul. 2, 1991, 3-050841
Int. Cl.[5] B28D *1/24*
U.S. Cl. 125—23.2 6 Claims

1. A tile cutter comprising a generally horizontal base plate, a linear ridge fixed to the base plate, at least one guide rail mounted on said base plate and extending above and in parallel to said ridge, said base plate having a forward side and a rearward side and said linear ridge and said guide rail extending from said forward side to said rearward side a slider slidable on said rail, a manipulating lever including a main portion and an end portion, means for pivotably supporting said end portion on said slider on a first axis extending in parallel to the base plate and perpendicularly to said guide rail, said end portion extending toward said forward side from said first axis and said main portion extending toward said rearward side from said end portion and from said first axis, a lower link supported rotatably on said slider on a second axis which extends in parallel with said first axis and is between said first axis and said base plate, and an intermediate link interconnecting said end



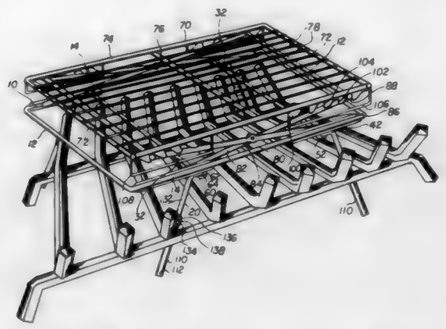
portion and said lower link, said intermediate link, having first and second pivotable connections with said end portion and one end of said lower link, respectively, said first and second pivotable connections being forwardly of said first and said second axes, and a cutting blade and press plates being attached to the other end said lower link.

5,303,691
PORTABLE MINIATURE CAMP STOVE
James H. Armistead, P.O. Box 2571, Sacramento, Calif. 95812
Filed Sep. 8, 1992, Ser. No. 941,782
Int. Cl.[5] F24C *1/16*
U.S. Cl. 126—9 R 6 Claims



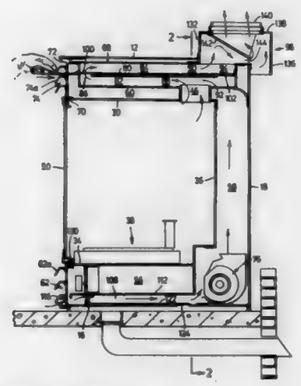
1. A portable, wind resistant, solid chemical burning camp stove apparatus comprising:
a. a cup shaped container fabricated from a heat resistant material;
b. said container having a closed bottom end and an open top end;
c. said container having a plurality of spacers secured to said top end which will support a cooking pot while providing an air gap between said top end and said cooking pot;
d. said container having a plurality of air intake holes above said bottom end;
e. said container having a sub-assembly burner secured inside said container;
f. said sub-assembly burner comprising a bottle cap like fuel holder,
a supporting member, and securing means, so that said sub-assembly may be secured on the inside of said container;
wherein, the improvement comprises a heat sinking means to cool said sub-assembly burner,
whereby; a high efficient, almost pint size stove may be constructed.

5,303,692
FIREPLACE BARBECUE GRILL-STAND
Jamal Shassd, 101 Oceano #12, Santa Barbara, Calif. 93109
Filed Dec. 4, 1992, Ser. No. 986,443
Int. Cl.[5] A47J *37/06*; F23H *13/00*
U.S. Cl. 126—506 5 Claims



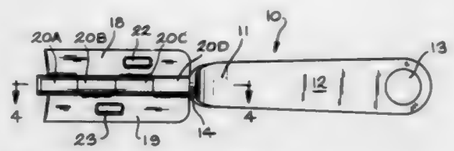
1. A foldable fireplace grill for use in a typical fireplace with a typical fireplace grate having openings and which rests upon the fireplace floor, comprising:
A horizontal grill of longitudinal and transverse members; at least three legs, sized and shaped to be capable of passing between the openings in the fireplace grate; mounting means permanently attached to the grill and movably mounting said legs for movement between a raised position, close to the grill, and a lowered position, with the lowered position of the legs located such as to allow the legs to pass through the openings of the grate, and with the legs long enough to extend so as to rest on the fireplace floor and support the grill above the grate; and locking means mounted to the grill for preventing the movement of the legs when the legs are in the lowered position, and resting on the fireplace floor.

5,303,693
SUMMER DAMPER FOR FIREPLACE
Wolfgang Schroeter, Midhurst, and Clifford Lilley, Anten Mills, both of Canada, assignors to Wolf Steel Ltd., Barrie, Canada
Filed Nov. 17, 1992, Ser. No. 977,454
Claims priority, application Canada, Nov. 13, 1992, 2082915
Int. Cl.[5] F24B *1/189*
U.S. Cl. 126—522 20 Claims



1. A fireplace comprising:
(a) a firebox having a bottom panel, a top panel, a rear panel and a flue;
(b) an outer casing having a top panel and a rear panel, said casing being spaced from and surrounding said firebox;
(c) combustion air feed means for supplying combustion air to said firebox;
(d) a heat exchanger located downstream from said flue for selectively receiving combustion gases and for transmitting the heat from said combustion gases to air to be heated;
(e) first passage means for conveying said combustion gases from said flue to a conduit means in communication with a source external to the room in which the fireplace is situated for exhausting the combustion gases from the fireplace, said first passage means including a first passage located downstream from said flue for conveying said combustion gases from said flue to said heat exchanger and a second passage located downstream from said heat exchanger for conveying said combustion gases from said heat exchanger to conduit means in communication with a source external to the room in which the fireplace is situated for exhausting the combustion gases from the fireplace, when said switching means is in said first position, said combustion gases pass through said first passage, said heat exchanger and said second passage before being vented to the outside, and when said switching means is in said second position, said combustion gases pass through said first and said second passage, by-passing said heat exchanger, and are vented to the outside;
(f) second passage means positioned between said outer casing and said firebox for circulation of said air to be heated along said heat exchanger; and,
(g) switching means for selectively coupling said heat exchanger in series with said first passage means, said switching means being operable between a first position in which said combustion gases pass through said heat exchanger before being vented to the outside and a second position in which said combustion gases pass through said first passage means, by-passing said heat exchanger, and are vented to the outside.

5,303,694
METHOD FOR PERFORMING HIP SURGERY AND RETRACTOR FOR USE THEREIN
W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623
Filed Feb. 9, 1993, Ser. No. 15,548
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 35 Claims



1. A surgical retractor comprising:
(a) a handle having a substantially planar end portion defining a first plane, a gripping portion disposed at an angle relative to said first plane and an intermediate portion between said end portion and said gripping portion;
(b) a hinge supported from said end portion and extending at substantially right angles to said end portion to a free end, said hinge lying in a second plane which is disposed at substantially right angles to said first plane and which extends through said end portion, said intermediate portion and said gripping portion; and
(c) a pair of wing members mounted on said hinge for pivotal movement thereabout and angular movement relative to one another, each of said wing members having a major

VOL 1161 ISS 3 AP 19 1994 UMI

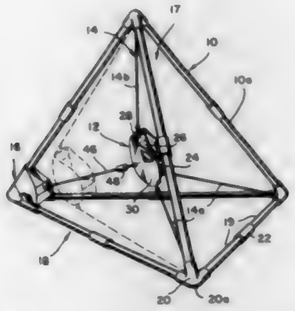
portion adjacent said hinge extending from a first end adjacent said handle end portion to a second end adjacent said free end and a plurality of fingers depending from said second end at an angle to said major portion.

5,303,695

HUMAN FREE-FLIGHT LAUNCHER

Noah Shopsowitz, 16 Snowden Avenue, Toronto, Ontario, Canada M4N 2A6

Filed Nov. 9, 1992, Ser. No. 973,763
Int. Cl.[5] F41B *7/00*
U.S. Cl. 124—17 **15 Claims**



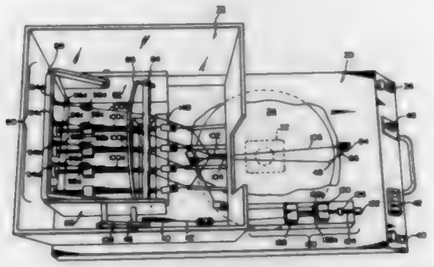
1. A free-flight launcher comprising a tetrahedrally shaped support frame, a cradle for releasably holding a person to be launched into free-flight, an elastic means for securing the cradle to each corner of one triangular face of the tetrahedrally shaped support frame, and means for retracting the cradle from a rest position to a launch position and thereby tensioning the elastic means, the arrangement being such that upon release of the cradle from the launch position, said cradle is propelled forward with the person contained therein being launched from the cradle when the elastic means reaches a maximum forward extension.

5,303,696

METHOD AND APPARATUS FOR IMPARTING CONTINUOUS PASSIVE MOTION TO JOINTS AND RELATED STRUCTURE

Steven D. Boice, 11607 Golden Given Rd. E., Tacoma, Wash. 98445

Continuation of Ser. No. 803,640, Mar. 9, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 95,154
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—33 **14 Claims**



1. A continuous passive motion apparatus for causing flexion and extension to a joint, ligament, or tendon comprising:
a housing;
an actuator;
a flexion/extension assembly having a support member pivotally attached to the housing and linked to the actuator by a first main cable, wherein the actuator imparts movement of the support member in a first direction;
means for connecting a distal portion of a joint to the support member, wherein the means for connecting comprises at least one flexion cable located intermediate the first main cable and the support member, the at least one flexion cable being attached at one end to the first main cable and attached at a second end to the support member;
a flexion control assembly having at least one cable adjusting means located intermediate the actuator and the flexion-/extension assembly for deflecting the at least one flexion cable from the effective travel path, thereby controlling the degree of motion of the support member; and
means for imparting movement of the support member in a second direction, wherein the second direction is substantially opposite the first direction.

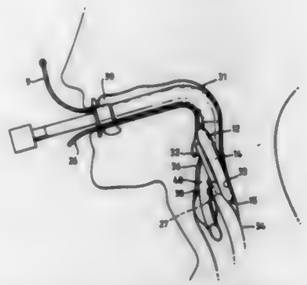
13. A method for imparting continuous passive motion to an injured or healing joint, ligament, or tendon using an apparatus including a flexion/extension assembly, a joint support surface, a support member, and an actuating cable, comprising the steps of:
a) positioning at least one joint on a support surface and generally immobilizing proximal structures associated with the at least one joint;
b) fixedly attaching distal structures associated with the at least one joint to a flexion/extension assembly having a moveable support member connected to an actuating cable, wherein the support member provides controlled motion of the distal structures of the at least one joint through an adjustable path;
c) oscillating the support member repeatedly to move the distal structures associated with the at least one joint through a predetermined path whereby the at least on joint and surrounding ligaments, tendons, and soft tissues are subjected to passive motion; and
d) altering, during oscillation, the degree of motion of the support member deflecting the actuating cable from its effective travel path.

5,303,697

ARTIFICIAL AIRWAY DEVICE

Archibald I. J. Brain, The Studio, St. Andrews, Abney Court Drive, Bourne End, Bucks SL8 5DL, United Kingdom

PCT No. PCT/GB92/00242, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992
PCT Filed Feb. 11, 1992, Ser. No. 869,491
Claims priority, application United Kingdom, Feb. 11, 1991, 9102821
Int. Cl.[5] A61M *16/00*; **A61B** *1/26*
U.S. Cl. 128—200.26 **11 Claims**



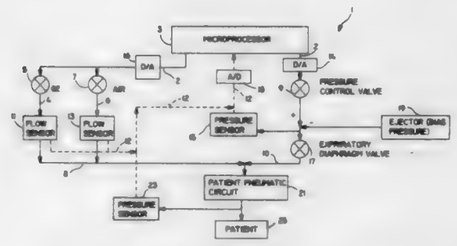
1. An artificial airway device to facilitate lung ventilation in an unconscious patient, comprising a substantially rigid airway tube and a mask attached to an end of the airway tube, said mask having a relatively stiff back-piece with an airway-tube portion secured to said substantially rigid airway tube, said mask also having an inflatable annular peripheral formation of roughly elliptical shape capable of conforming to, or readily fitting within, the actual and potential space behind the larynx so as to form a seal around the circumference of the laryngeal inlet without the device penetrating into the interior of the larynx, the annular peripheral formation surrounding a hollow interior space or lumen of the mask into which the airway-tube portion opens, said substantially rigid airway tube being curved to follow the airway of a patient, and said device further comprising a substantially rigid handle portion mounted to an end of the airway tube remote from the mask and extending in a direction away from the curve of said airway tube.

5,303,698

MEDICAL VENTILATOR

Ronald L. Tobia, Aberdeen; Russell J. Fischer, North Plainfield, and Robert T. Chilcoat, Bridgewater, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Aug. 27, 1991, Ser. No. 750,850
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.21 **59 Claims**



1. A medical ventilator for controlling the pressure of gas within a patient's respiratory tract, comprising:
(a) a source of inspiratory gas;
(b) an inspiratory conduit for directing the flow of said inspiratory gas from said source to said patient's mouth;
(c) inspiratory flow-control means for controlling the flow of said inspiratory gas within said inspiratory conduit;
(d) means for measuring the actual pressure of gas at a location such that the measurement is indicative of the actual pressure within said patient's respiratory tract;
(e) first comparator means for comparing said actual pressure with a desired pressure and for generating a first error signal indicative of the difference between said actual pressure and said desired pressure;
(f) processing means for processing said first error signal and for generating a first control-signal, in response to said first error signal, said processing means further comprising means for executing an inspiratory control function having a first time constant and for controlling said inspiratory flow-control means to cause said actual pressure to track said desired pressure; and
(g) time-constant updating means for updating the value of said first time constant.

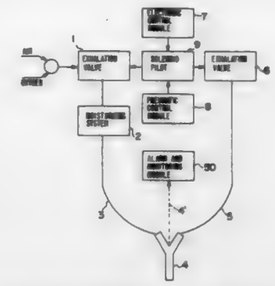
5,303,699

INFANT VENTILATOR WITH EXHALATION VALVES

Jorge Bonassa; Mario Amato, and Milton R. Salles, all of Sao Paulo, Brazil, assignors to Intermed Equipamento Medico Hospitalar Ltda., Sao Paulo, Brazil

Filed Nov. 18, 1991, Ser. No. 792,868
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.21 **13 Claims**

1. A ventilator device comprising:
an inspiratory tube;
an expiratory tube;
a "Y" connector having a first port leading to a patient, a second port connected to one end of said inspiratory tube, and a third port connected to one end of said expiratory tube;
a first valve coupled to the other end of said inspiratory tube and in fluid communication with a source of respiratory fluid, for controllably passing the fluid to the patient through said inspiratory tube; and
a second valve, coupled to the other end of said expiratory tube and in fluid communication with the environment for controllably passing exhaled fluid from the patient to the environment; wherein
said first valve includes means, responsive to fluid pressure in said inspiratory tube, for communicating said inspiratory tube to the environment when the pressure in said inspiratory tube exceeds a predetermined inspiratory pressure limit.

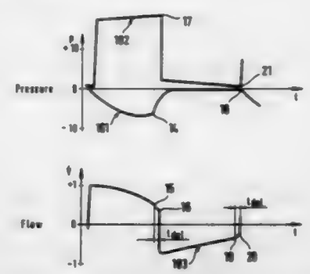


5,303,700

METHOD FOR DETECTING THE RESPIRATORY PHASES OF A PATIENT DURING AN ASSISTED VENTILATING PROCESS

Dieter Weismann, Grönau, and Marcel Baum, Oberhofen-Telfs, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Jul. 6, 1992, Ser. No. 908,972
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122069
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.23 **9 Claims**



1. A method for detecting the respiratory phases of a patient for controlling a ventilating apparatus, the method comprising the steps of:
determining the time-dependent trace of a signal supplied by a signal device with said signal representing a respiratory flow curve which crosses zero with each change in flow direction so as to provide sequential zero crossovers and which has a changing slope between each two successive ones of the zero crossovers;
determining a trigger criterium from said trace for switching over the ventilating apparatus from the expiration phase to the inspiration phase and/or from the inspiration phase

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to the expiration phase by examining said trace to locate a significant increase in the slope within each time interval having a start which lies after each one of said zero crossovers and which ends at the next zero crossover; and,

utilizing each of said significant increases in said slope as said trigger criterium.

5,303,701

BLOWER-SUPPORTED GAS MASK AND BREATHING EQUIPMENT WITH AN ATTACHABLE CONTROL PART

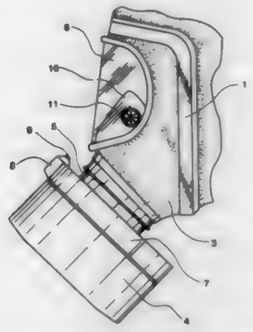
Bodo Heins, Bad Schwartau, and Torsten Birenheide, Krummesse, both of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Sep. 25, 1992, Ser. No. 952,683

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 4133235

Int. Cl.[5] A62B *7/10, 18/10, 23/02*

U.S. Cl. 128—206.17 10 Claims



9. A gas mask breathing equipment arrangement, comprising:

a mask body;

a respiration supporting blower unit directly connected to said mask body, said blower unit including electrical leads for electric power supply and having an upper curved surface defining a receiving part;

a filter connected to said blower unit;

a control unit formed as a housing module independent of said blower unit, said housing module having an external dimension corresponding to an external dimension of said blower unit and having a lower curved surface conformed to said upper curved surface of said receiving part, said control unit including switching elements for operation of said blower unit, said switching elements being brought into connection with said electrical leads via said electrical contact devices upon connection of said housing module with said receiving part.

5,303,702

AUTOMATIC ADJUSTMENT OF THE CONTROL FUNCTION FOR A RATE ADAPTIVE PACEMAKER

Jean-Luc Bonnet, Paris, and Odile Malherbe, Cachan, both of France, assignors to ELA Medical, Montrouge, France

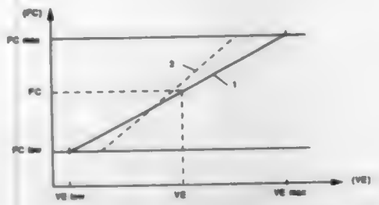
Filed Dec. 23, 1991, Ser. No. 813,204

Claims priority, application France, Dec. 27, 1990, 90 16293

Int. Cl.[5] A61N *1/362*

U.S. Cl. 607—20 60 Claims

1. A method for controlling a pacemaker having a control relation between the pacing rate (FC) and a monitored physiological parameter (X) of the patient, the control relation having coefficients defining the control relation of the pacing rate having a programmed minimum rate (FC low) and a programmed maximum rate (FC max), characterized by defining a linear control relation aX+b, calculating automatically a value X low and a value X max corresponding to a minimum activity and a maximum activity in response to a measure of the physiological parameter, and recalculating automatically the values X low and X max in response to a second obtained measure of



the physiological parameter so that the control relation is a line intersecting two pairs of values (FC low, X low) and (FC max, X max) and corresponds to the real needs of the patient.

5,303,703

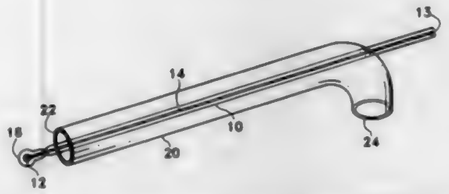
COMBINED NEUROEPITHELIAL SAMPLE DELIVERY ELECTRODE DEVICE AND METHODS OF USING SAME

Luis Monti-Bloch, Salt Lake City, Utah, assignor to Pherin Corporation, Menlo Park, Calif.

Filed Oct. 3, 1991, Ser. No. 771,414

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—642 34 Claims



1. A device for delivering a vapor to neuroepithelial tissue and measuring the neurophysiologic response of the tissue, said device comprising:

delivery means with an output end for continuously providing the vapor to a locus of neuroepithelial tissue; and

sensing means with a recording end proximal to the output end for simultaneously measuring bioelectrical potential from tissue within said locus.

5,303,704

MEDICAL ELECTRICAL LEAD

Richard L. Molacek, Maple Grove; Allan H. Jevne, Anoka; Peter J. Pohndorf, Stillwater; Kenneth E. Cobian, St. Anthony; Joseph F. Lessar, Coon Rapids, and James E. Upton, New Brighton, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 22, 1992, Ser. No. 994,756

Int. Cl.[5] A61B *5/04*

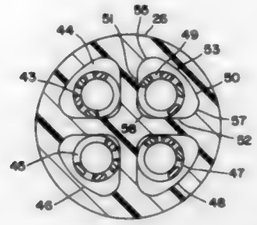
U.S. Cl. 128—642 9 Claims

1. A medical, electrical lead, comprising:

an elongated lead body having a first lumen, extending longitudinally along said lead body; and

a coiled conductor located loosely within and extending longitudinally along said lumen, the individual coils of said coiled conductor having a first radius of curvature, as measured in a cross section through said lead body; and

wherein said lumen has a plurality of longitudinally extending inner wall surfaces each having a radius of curvature in excess of said first radius of curvature, as measured in said cross section, joined to one another by longitudinally extending corner surfaces each having a radius of curva-



ture less than said first radius of curvature, as measured in said cross section.

5,303,705

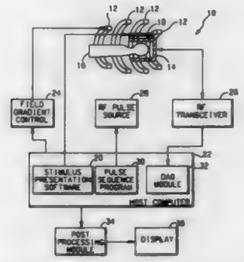
EVOKED 23NA MR IMAGING OF SODIUM CURRENTS IN THE BRAIN

Valeriy I. Nenov, 848 - 18th St., #5, Santa Monica, Calif. 90403

Filed May 1, 1992, Ser. No. 877,950

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 23 Claims



1. A method for measuring neuronal activity in a subject's brain, said method comprising the steps of:

a) causing said subject's brain to generate neuronal activity;

b) imaging sodium concentration in a portion of said brain using a nuclear magnetic resonance imaging (MRI) apparatus, said apparatus being adapted to produce sodium magnetic resonance images, wherein said magnetic resonance image is primarily a measure of the momentary extracellular sodium concentration in said portion of the subject's brain;

c) repeating said step of imaging a plurality of times after said step of causing said subject to produce neuronal activity, wherein, a plurality of said images are produced following the generation of said neuronal activity;

d) displaying said plurality of magnetic resonance images; and

e) measuring neuronal activity from the location of changes in the sodium concentration between successive magnetic resonance images which correlates with the location of said neuronal activity in the brain.

5,303,706

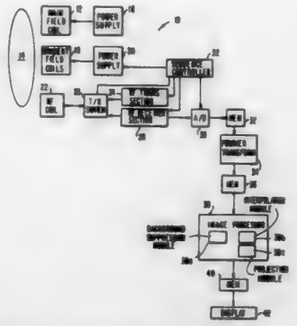
DIRECTIONAL INTERPOLATION FOR MAGNETIC RESONANCE ANGIOGRAPHY

Mehran Moshfeghi, White Plains, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed May 21, 1992, Ser. No. 886,679

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 20 Claims



1. An angiography method comprising:

inducing radiation to radiate from voxels of a region of a body under examination having intensities influenced by any flowing blood within said voxels, said flowing blood being in blood vessels, said voxels having center to center spacing in respective three orthogonal directions;

receiving and sampling the radiation radiating from the voxels of said region as a collection of signal samples;

converting said collection of signal samples into a three dimensional array of computed voxel intensities, each dimension of said array corresponding to a different one of said three orthogonal directions;

forming a preliminary two dimensional array of pixels as a function of the positions and intensities of the measured voxels; and

interpolating between first and second parallel lines of pixels in the preliminary two dimensional array, an additional line of interpolated pixels in forming an expanded two dimensional pixel array for display as an angiogram;

wherein said interpolating is carried out by determining for each pixel in said first line whether a pixel exists in said second line which corresponds in position to the pixel in the first line with respect to local intensity patterns, and by using a local direction of interpolation directed between the pixel in said first line and a pixel in the second line determined to correspond thereto, and in the absence of a pixel in the second line determined to correspond thereto using a local direction of interpolation along a perpendicular to said first and second lines;

whereby local directions of interpolation tend to be parallel to axes of proximate blood vessels.

5,303,707

MAGNETIC RESONANCE METHODS AND APPARATUS

Ian R. Young, Marlborough, England, assignor to Picker International, Ltd., Chelmsford, United Kingdom

Filed Oct. 26, 1992, Ser. No. 966,350

Claims priority, application United Kingdom, Nov. 8, 1991, 9123745

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 20 Claims

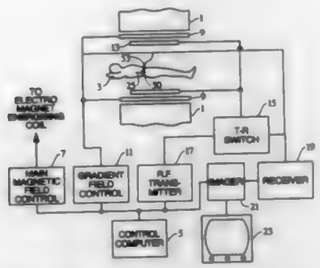
1. A magnetic resonance apparatus suitable for the microscopic examination of an internal region of a body including:

means for generating a static magnetic field in the region;

means for applying r.f. signals to the region to excite magnetic resonance therein;

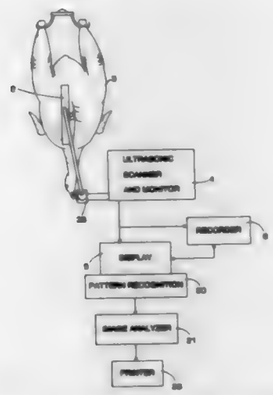
VOL 1161 ISS 3 AP 19 1994 UMI

means for imposing a gradient magnetic field in said region, said gradient magnetic field imposing means including;
a probe adapted to be located in said body adjacent said region during an examination;
an electric coil arrangement carried on said probe for location in the body adjacent said region, said coil arrangement comprising a coaxially spaced coil pair; and



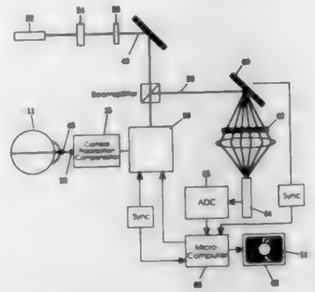
a gradient field controller connected to the electrical coil arrangement for energizing said coil arrangement to produce a magnetic gradient field in said region which serves to spatially encode r.f. signals resulting from excitation of magnetic resonance in said region;
means for detecting r.f. magnetic resonance signals emanating from the region;
means for processing the received r.f. signals into image signals representative of the region; and
means for visually displaying the image signals.

5,303,708
GRADING OF POULTRY CARCASSES WITH ULTRASOUND
James R. Stouffer, Ithaca, N.Y., assignor to Animal Ultrasound Services, Inc., Ithaca, N.Y.
Filed Jul. 27, 1992, Ser. No. 919,822
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 **9 Claims**



1. A method of grading a poultry carcass intended for human consumption, comprising:
a) providing an ultrasound machine, including a probe for transmitting and receiving ultrasound signals such that said machine is capable of producing a image of a breast muscle of said carcass;
b) positioning said probe on said carcass such that said image of said breast muscle of said carcass is detected by said ultrasound machine;
c) determining a breast muscle size indicator of said breast muscle from said detected image; and
d) calculating a grade for said carcass based upon a ratio of said indicator to a weight of said carcass.

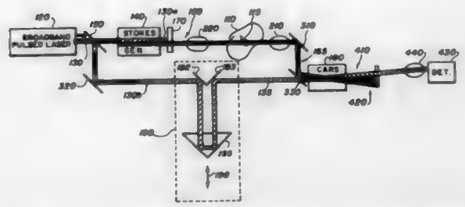
5,303,709
RETINAL EYE DISEASE DIAGNOSTIC SYSTEM
Andreas W. Dreher, P.O. Box 22858, San Diego, Calif. 92192, and Klaus Reiter, Ploeck II, W-6900 Heidelberg, Fed. Rep. of Germany
Filed Dec. 16, 1991, Ser. No. 808,479
Int. Cl.[5] A61B *6/00, 13/00, 5/103, 3/14*
U.S. Cl. 128—665 **24 Claims**



1. For an eye having an anterior segment which includes a cornea, a lens, and a pupil, and a fundus posterior to the anterior segment which includes a retina and a retinal nerve fiber layer, a method for detecting eye diseases by examining polarization properties of the fundus while substantially compensating for polarization effects of the anterior segment of the eye, comprising the following steps:
(a) illuminating the fundus including the retinal nerve fiber layer through the pupil and anterior segment including the cornea and lens, with at least partially polarized incident light in an incident diagnostic beam of a known polarization state;
(b) detecting reflected light reflected from the fundus from the incident diagnostic beam as a return diagnostic beam having a state of polarization with a polarization-sensitive detection device; and
(c) substantially compensating for the polarization effects of the anterior segment of the eye through which said diagnostic beams pass such that the state of polarization of said return diagnostic beam can be analyzed and compared to said known polarization state of the incident diagnostic beam to determine degree of alteration of the state of polarization of said return diagnostic beam due to a net polarization effect of the fundus, and determining said net polarization effect of the fundus from said degree of alteration from which an inference can be made regarding the presence and progress of certain eye diseases due to a net polarization effect of the fundus.

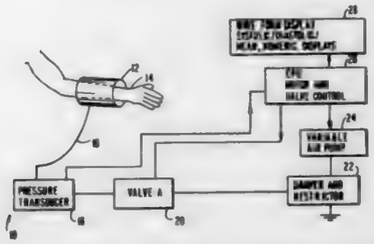
5,303,710
APPARATUS FOR IMAGING AN OBJECT IN OR THROUGH A SCATTERING MEDIUM USING COHERENT ANTI-STOKES RAMAN SCATTERING
Mark Bashkansky, and John F. Reintjes, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 3, 1992, Ser. No. 970,886
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—665 **20 Claims**

1. An apparatus for imaging an object that is part of, embedded in or viewed through a scattering medium, said apparatus comprising:
a first broadband beam generator providing a first broadband beam;
a second broadband beam generator generating a second broadband beam capable of amplitude correlation with the first broadband beam; and



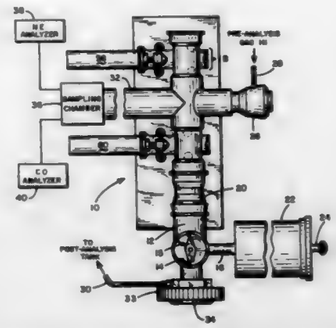
a coherent anti-Stokes Raman scattering material responsive to the first broadband beam and to the second broadband beam after dispersion in the scattering medium for producing a beam containing image information of the object in the scattering material.

5,303,711
NON-INVASIVE CONTINUOUS BLOOD PRESSURE MONITORING SYSTEM
Michael J. Sciarra, 55 Cove Rd., Southhampton, N.Y. 11968
Filed Jul. 9, 1991, Ser. No. 727,074
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—680 **6 Claims**



1. Apparatus for the continuous non-invasive monitoring of blood pressure comprising, an inflatable cuff adapted to surround a limb of a patient, transducer means for detecting pressure in the cuff and producing separate A.C. and D.C. signals respectively representing a) peaks and troughs of cuff pressure and b) static pressure in the cuff; means for initially inflating the cuff to a pressure sufficient to occlude blood flow in the limb, means for detecting systolic and diastolic blood pressure points of the patient; means for calculating mean blood pressure of the patient based on the detected systolic and diastolic pressures; means for reducing the pressure in the cuff to a predetermined pressure lower than diastolic occlusion pressure, means for assigning to the DC signal from the transducer means produced by said lower predetermined pressure the calculated mean blood pressure of the patient and means for monitoring the D.C. signal produced while the pressure in the cuff remains lower than said diastolic occlusion pressure to produce an output reading of the patient's blood pressure.

5,303,712
CALIBRATION METHOD FOR SINGLE-BREATH CARBON MONOXIDE LUNG DIFFUSING CAPACITY TEST SYSTEM
Albert P. Van Duren, North St. Paul, Minn., assignor to Medical Graphics Corporation, St. Paul, Minn.
Filed Jan. 25, 1993, Ser. No. 8,423
Int. Cl.[5] A61B *5/083*
U.S. Cl. 128—716 **2 Claims**



1. A method for calibrating a system used to measure single-breath carbon monoxide diffusing capacity of a patient's lungs (DL_{co}), said system being of the type including a multiport patient valve having a patient mouthpiece coupled to a first port, a source of a preanalysis gas mixture of a tracer gas, carbon monoxide and air in a known concentration of each constituent coupled to a second port and a patient circuit including a sampling chamber coupled to a third port and gas analyzing means coupled to said sampling chamber, comprising the steps of:
(a) drawing a known volume of said preanalysis gas mixture from a source through a first portion of said system into a syringe;
(b) retaining said known volume in said syringe for a predetermined time interval;
(c) introducing a bolus quantity of a postanalysis gas mixture of said tracer gas, carbon monoxide and air of a known concentration of constituents, said concentration being independent of any dilutional change and extent of mixing, through said patient circuit into said sampling chamber;
(d) allowing said gas analyzing means to measure said constituents of said postanalysis gas mixture contained within said sampling chamber to obtain DL_{co} and alveolar volume (V_A) readings; and
(e) comparing the results of steps of (d) with target DL_{co} and V_A values computed by using ambient barometric pressure, temperature, said known volume and concentration of preanalysis and postanalysis gas mixtures and said time interval to determine any differences between said readings and said target values.

5,303,713
BLOOD COLLECTING NEEDLE
Katsutoshi Kurose, Yamanashi, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 767,036, Sep. 24, 1991, Pat. No. 5,222,502. This application Mar. 18, 1993, Ser. No. 32,998
Claims priority, application Japan, Sep. 26, 1990, 2-256390; Nov. 26, 1990, 2-321490
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—763 **14 Claims**

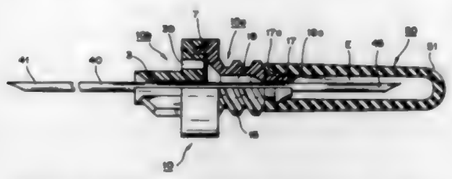
1. A blood collecting needle, comprising:
a hollow cannula, having opposite ends, both opposite ends having pointed tips; and

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a hub for holding a substantially center portion of the cannula;

said hub comprising:

a sheath which surrounds a portion of one end of the cannula in a liquid sealed state, and which projects from a back section of the hub, the sheath being formed of an elastic body fixedly mounted on the hub;



means for defining an air passage connecting a space between the sheath and the cannula with outside air, said air passage being provided outside of said cannula; and

a filter arranged at an end portion of the air passage, and said filter having small holes for permitting gases but not liquids to pass therethrough at said end portion of the air passage; and

wherein at least one of said hub and said sheath is formed of one of a transparent and semi-transparent material.

5,303,714

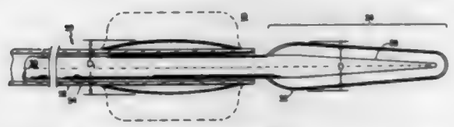
GUIDEWIRE FOR CROSSING OCCLUSIONS IN BLOOD VESSELS

John E. Abele, Concord, Mass.; Kevin R. Heath, Providence, R.I.; Mark S. Landman, Sharon, and Paul D. McLaughlin, Scituate, both of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation of Ser. No. 611,296, Nov. 9, 1990, abandoned. This application May 14, 1993, Ser. No. 62,050

Int. Cl.[5] A61M *25/00, 29/00*

U.S. Cl. 128—772 **33 Claims**



1. A medical guidewire comprising:

an elongated main guidewire body having selected stiffness characteristics along its length to allow the guidewire to be urged through a narrow, torturous body lumen by application of forces at a proximal end, and

a composite enlarged distal end portion comprised of an extension of said main guidewire body and a surrounding enlarged soft outer polymeric element having a diameter larger than the diameter of portions of said main guidewire body proximal of said enlarged distal end portion, the portion of said guidewire body in the distal part of said enlarged distal end portion being of smaller diameter than the portion of said guidewire body in the proximal part of said enlarged distal end portion, the flexibility of said enlarged distal end portion being determined over substantially all of its length predominantly by the respective portions of the guidewire body therewithin.

5,303,715

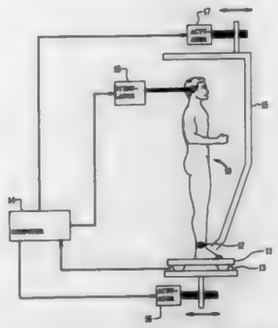
APPARATUS AND METHOD FOR DETERMINING THE PRESENCE OF VESTIBULAR PATHOLOGY

Lewis M. Nashner; F. Owen Black, and David J. Lilly, all of Portland, Oreg., assignors to NeuroCom International, Inc., Clackamas, Oreg.

Continuation of Ser. No. 426,463, Oct. 20, 1989, abandoned, which is a continuation of Ser. No. 600, Jan. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 895,783, Aug. 12, 1986, Pat. No. 4,830,024, which is a continuation-in-part of Ser. No. 873,125, Jun. 11, 1986, Pat. No. 4,738,269, which is a continuation of Ser. No. 408,184, Aug. 16, 1982, abandoned. This application Sep. 23, 1992, Ser. No. 951,042

Int. Cl.[5] A61B *5/10*

U.S. Cl. 128—782 **31 Claims**



1. A method for determining whether a subject placed in a position of equilibrium and maintaining this position while visual inputs are disrupted has an abnormal connection between the middle and inner ear space, such method comprising:

A. placing the subject on support surface and having the subject assume a position in equilibrium;

B. substantially surrounding the subject's field of view with a movable visual enclosure;

C. measuring one or more quantities related to the subject's displacement from the equilibrium position;

D. moving the visual enclosure in functional relation to one of the measured quantities;

E. introducing to the external canal of one ear a controlled change in air pressure;

F. determining whether the controlled change in pressure causes significant change in one or more of the measured quantities, the lack of such significant change indicating a normal connection between the middle and inner ear space.

5,303,716

PORTABLE DEVICE FOR REHABILITATIVE EXERCISE OF THE LEG

Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.

Filed Nov. 12, 1992, Ser. No. 974,980

Int. Cl.[5] A61H *1/02*

U.S. Cl. 601—34 **20 Claims**

13. A device for rehabilitating a leg joint of a patient positioned on a support surface comprising:

a track having a proximal end, a distal end and a longitudinal axis extending therebetween;

a leg support line;

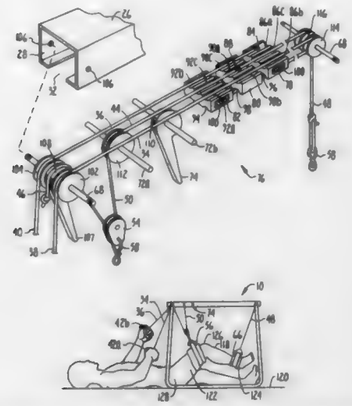
a support shuttle slidably retained along the longitudinal axis of said track and fixedly secured to said support line at a first point thereon;

a distal support line redirection member positioned at said distal end of said track slidably engaging said support line at a second point thereon; and

means for securing said support line at a third point thereon to said proximal end of said track;

a proximal support line redirection member distally positioned on the longitudinal axis of said track near said proximal end thereof and slidably engaging said support line at a fourth point thereon;

an upper leg cuff connected to said support line at a fifth point thereon between said third and fourth points;



a flexion shuttle slidably retained along the longitudinal axis of said track between said proximal end of said track and said support shuttle;

an extension shuttle slidably retained along the longitudinal axis of said track between said distal end of said track and said support shuttle;

means for driving said flexion shuttle in a distal direction along said track to displace said support shuttle in said distal direction, thereby flexing the leg joint; and

means for driving said extension shuttle in a proximal direction along said track to displace said support shuttle in said proximal direction, thereby extending the leg joint.

5,303,717

DEVICE FOR FIXING A CONTRACEPTIVE DEVICE TO THE WALL OF THE UTERUS

Dirk Wildemeersch, Vossenhul 8, Knokke-Heist, B-8300, Belgium

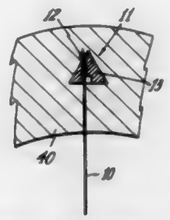
PCT No. PCT/BE90/00038, § 371 Date Nov. 22, 1991, § 102(e) Date Nov. 22, 1991, PCT Pub. No. WO91/00714, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 3, 1990, Ser. No. 777,365

Claims priority, application Belgium, Jul. 12, 1989, 8900760

Int. Cl.[5] A61F *6/06*

U.S. Cl. 128—830 **8 Claims**



1. A device for fixing a contraceptive device to the wall of a uterus, said device consisting of:

a thread of non-biodegradable material, designed to be attached to the contraceptive device, and

a retaining member implantable in the wall of the uterus and integral with the thread, characterized in that the retaining member implantable in the wall of the uterus consists of a permanent element, of now-biodegradable material, and a temporary element, of biodegradable material, the temporary element, of biodegradable material, the temporary element temporarily conferring to the implantable retaining member greater resistance to pulling out of the uterine wall than that of the permanent element alone.

5,303,718

METHOD AND DEVICE FOR THE OSTEOSYNTHESIS OF BONES

Milan Krajicek, No. 19, 5. Kvetna, 140 00, Praha 4, Czechoslovakia

Filed Jan. 15, 1992, Ser. No. 821,095

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—897 **22 Claims**



1. Device for the fixed osteosynthesis of bones by the intramarrowial method, comprising:

a tube (2) made of a non-elastic, strong but pliable and biologically inert, sterilizable material, adapted to be inserted into the marrow cavity of a bone (1), one end (2') being sealed, and the other end being open, and

a connection part (13), comprising:

fixation means (4) designed to be firmly inserted into the open end of the tube (2) to adaptively fixate the tube (2) to an access hole of the bone (1) to the marrow cavity and for a tight connection with the tube (2), and

vent means (12) designed to be firmly inserted into the fixation means (4) and for a tight connection therewith, and comprising a liquid passage through said vent means, means (8) for connecting a line (14) for introducing a pressurized biologically inert, sterilizable or sterilized liquid (10) into the tube (2) and for releasing the liquid from the tube through said liquid passage, and valve means (9) for opening and closing the liquid passage.

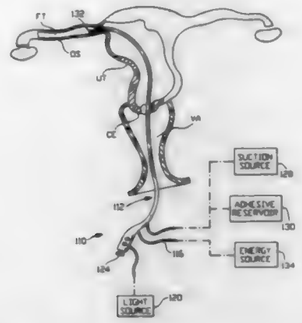
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,719

SURGICAL METHOD AND ASSOCIATED INSTRUMENT ASSEMBLY

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023, and Jonathan Tiefenbrun, 62 Country Rd., Mamaroneck, N.Y. 10543

Continuation-in-part of Ser. No. 930,159, Aug. 14, 1992. This application Jun. 25, 1993, Ser. No. 83,064
Int. Cl.[5] A61B *17/36*
U.S. Cl. 128—898 27 Claims



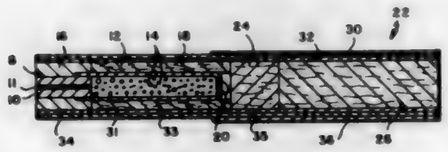
1. A surgical method comprising the steps of:
providing an elongate operating instrument assembly having a distal end portion;
inserting said distal end portion of said instrument assembly into a patient's Fallopian tube;
operating said instrument assembly to destroy cells along an inner surface of said Fallopian tube essentially throughout a segment thereof, while maintaining an outer surface of said Fallopian tube intact; and
upon operation of said instrument assembly to destroy cells along said inner surface, collapsing said Fallopian tube along said segment, thereby adhering said inner surface to itself to seal said Fallopian tube.

5,303,720

SMOKING ARTICLE WITH IMPROVED INSULATING MATERIAL

Chandra K. Banerjee, Pfafftown, N.C.; Richard L. Lehman, Belle Mead, N.J.; William C. Squires; Rhonda F. Hayden, both of Winston-Salem, N.C., and Debra L. Raynor, Greensboro, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 354,605, May 22, 1989, abandoned. This application May 14, 1992, Ser. No. 883,030
Int. Cl.[5] A24D *1/18*
U.S. Cl. 131—194 56 Claims



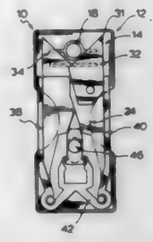
1. A smoking article comprising:
(a) a fuel element;
(b) a physically separate aerosol generating means including at least one aerosol forming material; and
(c) an insulating member having a thickness of at least about 0.5 mm, which circumscribes at least a portion of the fuel element, said insulating member comprising an inorganic fibrous material and a fibrillated cellulose-based fiber pulp having a Canadian freeness of less than about 500.

5,303,721

CIGARETTE SNIPPING DEVICE

Larry Bowen, Orangeville, and Benedict Keaveney, Rexdale, both of Canada, assignors to Rothmans, Benson & Hedges Inc., North York, Canada

Filed Mar. 26, 1993, Ser. No. 37,643
Int. Cl.[5] A24F *13/00*
U.S. Cl. 131—248 6 Claims



1. A cigarette snipping device, comprising:
a planar elongate housing having a hollow interior, an aperture formed through said housing adjacent one longitudinal extremity of said housing and dimensioned to receive a cigarette therethrough,
a pair of planar knife blades located within said housing and each movable between a rest position in which the respective knife blade is located on opposite sides of but not obstructing said aperture to a degree which would prevent a cigarette from being positioned extending therethrough and an operative position on which cutting edges of said knife blades overlap sufficiently to sever completely a cigarette positioned extending through said aperture,
a pair of elongate arms extending longitudinally within said housing one adjacent each lateral extremity thereof and connected one to each said knife blade normally biasing said pair of planar knife blades to said rest position, and
means to permit moving each said arms means inwardly towards each other to move each said knife blade from said rest position towards each other and into said operative position.

5,303,722

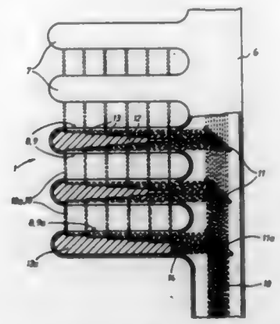
APPARATUS FOR BLEACHING HAIR UNDER THE INFLUENCE OF LIGHT

Robin E. Godfrey, Welwyn, Great Britain; Thomas Clausen, and Wolfgang R. Balzer, both of Alsbach, Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 691,051, Jun. 24, 1991, Pat. No. 5,246,019. This application Jan. 8, 1993, Ser. No. 1,799
Claims priority, application United Kingdom, Jan. 11, 1989, 89245815
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—219 11 Claims

1. Apparatus for bleaching hair with light, comprising a light comb having a comb back, a plurality of comb teeth extending from said comb back, means for guiding light from a light source through said comb back into said comb teeth, and means for radiating said light from said comb teeth and parallel

to said comb back, said means for radiating said light receiving said light from said means for guiding and being positioned



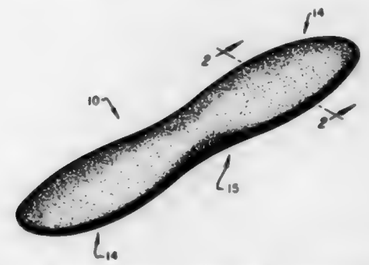
within said comb teeth so as to allow for uniform irradiation of all portions of said hair.

5,303,723

HAIR STYLING DEVICE

Denie Schach, Richardson, Tex., assignor to Angelhair, Ltd., Richardson, Tex.

Filed Sep. 13, 1993, Ser. No. 121,225
Int. Cl.[5] A45D *2/18*
U.S. Cl. 132—246 5 Claims



1. A hair styling device comprising a generally peanut-shaped outer covering of material capable of clinging to hair and providing a narrower waist portion to receive a larger mass of hair, at least one intermediate layer of a resilient film attached along its periphery to said outer covering to form a unitary structure, and deformable means in the interior of said device capable of being repeatedly bent to form said device into a variety of shapes.

5,303,724

HEAD COVER WITH BARRETTE ANCHORAGE MEMBER AND BARRETTE

Robert A. Anzivino, Somerset, N.J., assignor to Love Wigs, Inc. T/A Look of Love International, Piscataway, N.J.

Filed Jul. 27, 1992, Ser. No. 919,272
Int. Cl.[5] A45D *8/12*
U.S. Cl. 132—278 15 Claims

1. A device including a head cover with barrette anchorage member for securing the head cover to hair with a barrette, the device comprising:
a barrette including at least a base plate and a hair retainer each having opposing ends, said hair retainer being hinged to the base plate at a first end and releasably latched to the base plate at a second end distal the first end, said retainer releasably securing hair to which the barrette is to be secured between the base plate and retainer;
cover means for releasable placement over hair; and
a barrette anchorage member comprising a sleeve having opposing ends and secured to said head cover means, said member defining an elongated opening therein in communication with said ends, said opening being dimensioned for releasably receiving at least one of said base plate and retainer therethrough such that each opposing end of the at least one received base plate and retainer protrudes from the member for attachment to the other of said base

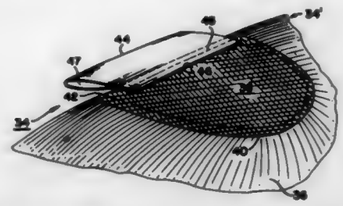


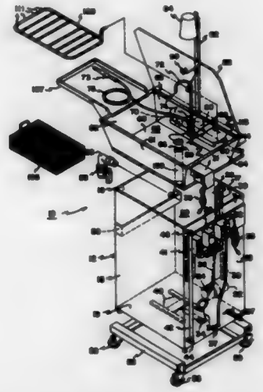
plate and retainer at said opposing ends, said member being further dimensioned relative to the dimensions of said barrette so that said member is secured in substantially fixed relation to said barrette and the anchorage member is substantially immobile relative to the barrette in the latched state of the barrette, said opening comprising a conduit through the sleeve, said conduit being dimensioned to receive the at least one received base plate and retainer, the barrette clamping the sleeve thereto when latched.

5,303,725

MACHINE PART CLEANING APPARATUS

Wallace L. Hilgren, Edina, Minn., assignor to Kleer-Flo Company, Eden Prairie, Minn.

Filed Feb. 18, 1993, Ser. No. 19,036
Int. Cl.[5] B08B *3/02, 13/00*
U.S. Cl. 134—56 R 8 Claims



1. An aqueous parts cleaning apparatus for cleaning parts contaminated with oil, said apparatus comprising:
a base having side walls and a floor joined to define a liquid-containing volume;
a basin sized to be received upon an upper end of said base, said basin having a drain disposed to empty into said base when said basin is received upon said base;
a pump having an inlet disposed to receive fluid from within said base;
an aqueous cleaning solution disposed within said base;
a first oil skimming weir disposed within said base having a drain for drawing oil from said weir and out of said base;

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a heating element disposed to heat said solution within said base;
a second oil skimming weir disposed within said basin; and
a conduit carried on said basin with means for connecting said conduit to an outlet of said pump to urge fluid from said base through said conduit and into said basin.

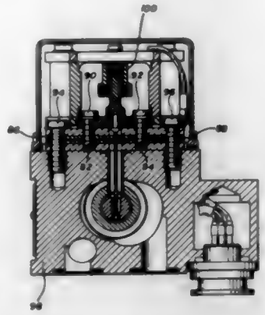
5,303,726
DEVICE TO HOLD A COVER
Timothy B. Merrill, 8433 SE. Murphy Ct., Clackamas, Oreg. 97015
Filed Feb. 4, 1993, Ser. No. 13,291
Int. Cl.[5] E04H *15/08*
U.S. Cl. 135—89 **4 Claims**



1. A device for supporting flexible fabric from a rigid structure, wherein the fabric has a hook-receiving opening therein, the device comprising:
a) an elongated tubular rod retainer having a front side, an inner back side, an inner front side, a longitudinal bore and an opening extending inwardly from the front side of the retainer to said bore,
b) a rod having a front side, said rod being supported slidably in the bore of said tubular rod retainer and having a threaded bore extending through said rod perpendicular to the longitudinal axis of said rod,
c) a hook member having a threaded shank extending through said opening in the tubular rod retainer and through the threaded bore in said rod into abutment with the inner back side of the tubular rod retainer, for pressing the front side of the rod against the inner front side of the tubular rod retainer, and
d) support means for interengaging the tubular rod retainer and a rigid structure, with the hook of the hook member positioned in a plane disposed substantially perpendicular to the longitudinal axis of the rod, for receiving a hook-receiving opening in a flexible fabric to be supported.

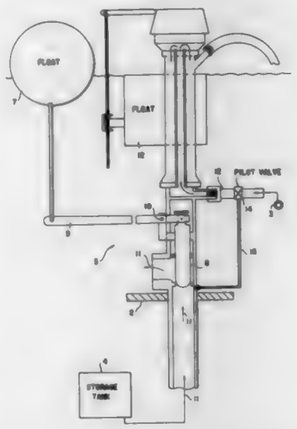
5,303,727
FLUIDIC DEFLECTOR JET SERVOVALVE
Samuel L. Wilson, Newhall, and Mario A. Rodriguez, Oxnard, both of Calif., assignors to HR Textron Inc., Valencia, Calif.
Filed Dec. 18, 1992, Ser. No. 993,264
Int. Cl.[5] F15B *13/043, 13/044*
U.S. Cl. 137—83 **7 Claims**

1. A deflector jet servovalve comprising:
a housing;
first means defining a fixed ejector and pair of receivers disposed opposed said ejector arranged to discharge a jet stream of fluid from said ejector to impinge said receivers mounted upon and affixed to said housing;
conduit means defined by said first means for supplying fluid under pressure to said ejector and for receiving any differential fluid output from said receivers;
said first means including a plurality of laminae stacked one upon the other and bonded together to form an integral laminated structure;
a movable deflector means disposed between said ejector and said receivers for deflecting said jet stream relative to said receivers; and



electrically activated motor means mounted upon and secured to said first means and coupled to said deflector means for moving said deflector means responsive to electrical signals applied to said motor means.

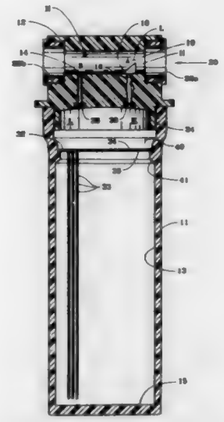
5,303,728
WATER CONSERVATION SYSTEM
Donald Senatore, 7390 NW. 5th St., Suite 8, Plantation, Fla. 33322
Filed Aug. 10, 1992, Ser. No. 927,462
Int. Cl.[5] E03C *1/32*
U.S. Cl. 137—113 **3 Claims**



1. A toilet, comprising a toilet bowl, a flushing water supply tank disposed above said toilet bowl, valve means disposed in said supply tank for filling said supply tank with flushing water from a fresh water source and from a recycled water source; said valve means including:
a first valve communicating with the fresh water source through a first pipe and being shiftable between a closed and an open position;
a second valve communicating with the recycled water source through a second pipe and being shiftable between a closed and an open position, said second valve allowing recycled water to enter said supply tank in the open position; and
means for turning off the fresh water source as long as recycled water is available from the recycled water source, regardless of whether said first valve is in the open or

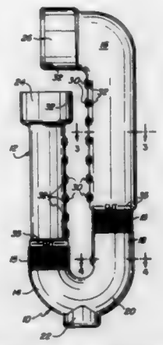
closed position, said turning-off means being a pilot valve disposed in-line in the first pipe and communicating with the second pipe for automatically closing the first pipe responsive to pressure in the second line.

5,303,729
LAWN CARE CHEMICAL DELIVERY DEVICE
Peter DeMarco, 4144 Cedar Creek Rd., Boca Raton, Fla. 33487
Filed Mar. 18, 1993, Ser. No. 32,974
Int. Cl.[5] B01D *11/02*
U.S. Cl. 137—268 **17 Claims**



1. An apparatus for automatically dispersing chemicals into a main water supply for dispersement in lawn care or pool care, comprising:
a container means for holding chemicals to be dispersed, said container having an open top end;
a partition means disposed in said container, said partition means dividing said container into an upper volume and lower volume;
a flow head means attached to said container for receiving water from the main water supply, said flow head means defining an intake port;
a mixing chamber defined by the space between the said flow head and said partition means;
said intake port for providing fluid communication between said flow head means and said mixing chamber such that a stream of water flowing through the flow head is diverted from said flow head into said mixing chamber through said intake port;
a siphoning means providing fluid communication between said container and said mixing chamber, wherein said siphoning means siphons chemicals from said container into said mixing chamber for mixing with water in said mixing chamber; and
a suction means disposed in said flow head means for sucking the solution from said mixing chamber into said flow head means, such that said flow head means dispersing the solution into the main water supply line.

5,303,730
P-TRAP PROTECTING SYSTEM
Steven R. Trueb, and Thomas W. Trueb, both of Ellington, Conn., assignors to Truebro, Inc., Ellington, Conn.
Continuation-in-part of Ser. No. 944,836, Sep. 14, 1992, Pat. No. 5,259,410, which is a continuation-in-part of Ser. No. 754,048, Sep. 3, 1991, Pat. No. 5,163,469, which is a continuation-in-part of Ser. No. 569,995, Aug. 20, 1990, Pat. No. 5,054,513. This application Apr. 8, 1993, Ser. No. 44,026
Int. Cl.[5] F16L *7/00, 9/22*
U.S. Cl. 137—375 **11 Claims**



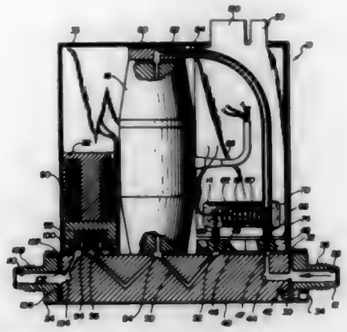
1. Thermal insulation for the piping of a sink or the like, comprising at least one elongate tubular piece of generally circular cross section fabricated from a resiliently yieldable material having thermal insulation properties, said piece having opposite ends and defining an internal passageway, from end-to-end therethrough, for the receipt of a piping section, said piece also having a multiplicity of integrally formed, resiliently yieldable rib formations projecting from the inside surface thereof inwardly into said passageway, said piece being slit along its length to permit spreading of marginal portions therealong, and having aperture-forming structure spaced along said slit for the receipt of fasteners for securing together said marginal portions, said aperture-forming structure providing pairs of laterally aligned apertures spaced along said slit, one aperture of each said pair being provided on each of said marginal portions and said apertures extending generally tangentially relative to the circumference of said passageway.

5,303,731
LIQUID FLOW CONTROLLER
Randall J. Vavra, Orange; Michael J. Doyle, Villa Park, and Kim N. Vu, Yorba Linda, all of Calif., assignors to Unit Instruments, Inc., Yorba Linda, Calif.
Filed Jun. 30, 1992, Ser. No. 906,922
Int. Cl.[5] G05D *7/06*
U.S. Cl. 137—468 **10 Claims**

1. A liquid flow controller for metering a flow of liquid comprising:
a liquid inlet for receiving the flow of liquid;
means coupled to said liquid inlet to receive the flow of liquid for providing a high resistance liquid flow path and for producing a laminar flow of liquid;
means for measuring a pressure drop across the high resistance liquid flow path means, the pressure drop resulting from the flow of liquid and for producing a liquid pressure drop signal in response to the pressure drop;
means for compensating for changes in the viscosity of the liquid and for producing a compensated liquid pressure drop signal in response thereto;
a valve connected to receive the flow of liquid from said high resistance liquid flow path means, said valve re-

VOL 1161 ISS 3 AP 19 1994 UMI

sponding to the compensated liquid pressure drop signal; and



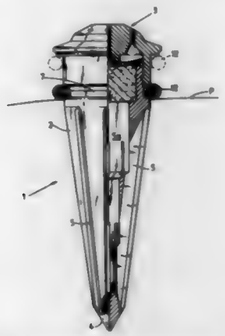
a liquid outlet connected to said valve for providing a metered flow of the liquid.

5,303,732

VALVE UNIT

Claes Jonsson, Björklinge, Sweden, assignor to Ekolag AB, Bjorklinge, Sweden

Filed Jun. 1, 1993, Ser. No. 69,505
Int. Cl.[5] B67B 7/48; F16K 51/00
U.S. Cl. 137—318 20 Claims



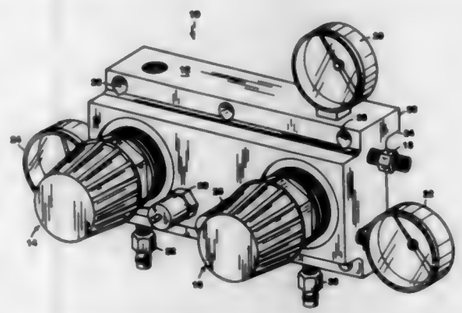
1. Valve unit (1) intended for puncturing a film (P), especially a plastic film, thereby creating a tight lead-through through the plastic film (P), which valve unit (1) comprises a first member (2) for puncturing the plastic film (P), which first member (2) has a hollow space (5a) and at least one opening (5) leading through between the outside of the first member (2) and said hollow space (5a), and further a second member (3), which is intended to be positioned on the side of the plastic film (P), which is opposite to the first member (2) when the valve unit (1) is attached to a plastic film (P), said second member being removably secured to said first member to provide a single unit for insertion into said film, said hollow space (5a) being in open connection with the surrounding atmosphere through the second member (3), a groove (7) extending around the circumference in the area between the first and the second members (2, 3) being disposed to receive the edge portion of the plastic film (P) around the valve unit (1), which has been pricked through the plastic film (P), and an annular, resilient element (12) being displaceable from a retracted position to a position, in which it is in close contact with the edge portion of the plastic film (P) at the groove (7) pressing this to a mechanical detainment and a sealing fit-up against the edge portion of the groove (7), said second member engaging said resilient element to hold said resilient element in said groove and against said film to provide said sealing, characterized in that the second member (3) comprises a release valve for release of overpressure and having a nonreturn function, said release valve being positioned in said second member in such a manner as to seat on an upper portion of said first member when said first member and said second member are secured together.

5,303,733

PRESSURE REGULATING UNIT FOR BEVERAGE DISPENSING SYSTEM

John Nelson, Durham, N.H., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 8, 1993, Ser. No. 14,843
Int. Cl.[5] F16K 11/18, 27/00; G05D 16/06
U.S. Cl. 137—505.38 19 Claims



1. A pressure regulating unit for providing controlled pressure for use in displacing syrups in a carbonated beverage dispensing system, said unit comprising

a block made of a single piece of metal and having mounting means integrally provided thereon and a high-pressure gas flow passage provided therein, said high-pressure gas flow passage having a high pressure inlet for connection to a source of high-pressure gas and a first port for connection to a pressure regulator, and

first and second pressure regulators that are supported on said block, said first regulator having a gas inlet communicating with said first port,

wherein said high-pressure gas flow passage has a second port, and said second regulator has a gas inlet communicating with said second port, and

wherein said block has an inlet valve passage and a reduced-pressure outlet chamber formed therein for each said pressure regulator, said inlet valve passages communicating with said first and second ports of said high-pressure gas flow passage, and wherein each said pressure regulator includes an inlet valve mounted within said inlet valve passage and a movable diaphragm sealably mounted over said outlet chamber, said block also having outlet ports formed therein communicating with respective said outlet chambers.

5,303,734

PRESSURE REGULATOR

Paul G. Eldamore, 1700 Granite Creek Rd., Santa Cruz, Calif. 95065

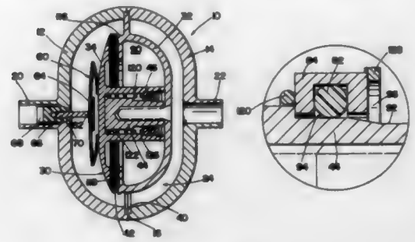
Filed Feb. 1, 1993, Ser. No. 12,299
Int. Cl.[5] G05D 16/02
U.S. Cl. 137—505.43 21 Claims

1. A pressure regulator comprising:

a housing having a chamber defined therein;

an inlet and outlet for communicating with the chamber; and

a pressure responsive member interposed between the inlet and outlet for regulating fluid communication therebetween, a first portion of the pressure responsive member being fixed relative to the housing and a second portion of the pressure responsive member being movable relative to the chamber in response to fluid pressure, the pressure responsive member including means for varying the freedom of movement thereof at different positions to allow freer movement of the pressure responsive member adjacent a shutoff position and a dampened range of move-



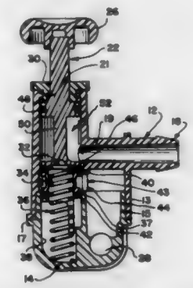
ment adjacent a full open position, the varying means including a resilient member interposed between the first and second portions that exerts a dampening force on the relative movement between the first and second portions and a tapered surface with which the resilient member cooperates to vary the dampening force.

5,303,735

VALVE ASSEMBLY

Joseph J. Cerola; Richard M. Davis, and Rowland W. Kanner, all of Guntersville, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Dec. 4, 1991, Ser. No. 802,309
Int. Cl.[5] F16K 11/22
U.S. Cl. 137—596.2 14 Claims



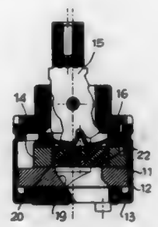
1. A valve assembly comprising: a housing including at least one valve orifice for fluid flow therethrough, a valve member which moves between a fully closed position and fully open position respectively closing and opening said valve orifice, control means for selectively limiting displacement of said valve member between said fully closed position and an intermediate position of said valve member, said intermediate position of said valve member partially obstructing said valve orifice to provide attenuated fluid flow communication through said valve orifice relative to fluid flow communication in said fully open position of said valve member, wherein said control means comprises a manually movable actuator projecting from said housing for said limiting displacement of said valve member and further comprises detent means extending from said housing for releasable interference preventing motion of said actuator and for maintaining said intermediate position of said valve member.

5,303,736

MIXER VALVE FOR HOT AND COLD WATER WITH SILENCER

Alessio Orlandi, Castiglione D/Stiviere, Italy, assignor to Galatron S.r.l., Castiglione D/Stiviere, Italy

Filed Mar. 23, 1992, Ser. No. 855,435
Claims priority, application Italy, Mar. 25, 1991, BS91 A 000032
Int. Cl.[5] F16K 11/06, 47/02
U.S. Cl. 137—625.4 2 Claims



1. A mixer valve for hot and cold water, comprising:

a cartridge type body; a fixed plate in said cartridge type body, said fixed plate having a hot water inlet, a cold water inlet and an outlet hole for the outlet of hot, cold or mixed water; a movable plate having an opening toward said fixed plate and being closed on an opposite side and having internal surfaces including a ridge separating a substantially vertical surface from an inclined surface portion, said inclined surface portion cooperating with said ridge to define a seat and said internal surfaces cooperating with said closed opposite side to define a mixing chamber, said movable plate being connected to a control rod for movement relative to said fixed plate; and anti-noise means including structure with a single layer net element completely overlying only said internal surfaces of said movable plate, said net element being shaped corresponding to said substantially vertical surface, said inclined surface portion and said ridge to maintain said net element on said seat with an outer side of said net element in contact with said internal surfaces, said internal surfaces defining an opening, coinciding with said opening of said movable plate for leaving said chamber opening free for passage of water therethrough.

5,303,737

SANITARY FITTING

Wilhelm Koch, Bongard, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

PCT No. PCT/EP91/01408, § 371 Date Jan. 27, 1993, § 102(e) Date Jan. 27, 1993, PCT Pub. No. WO92/02748, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 27, 1991, Ser. No. 969,839
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1990, 4023958
Int. Cl.[5] F16K 11/074, 47/08
U.S. Cl. 137—625.17 10 Claims

1. A sanitary fitting that can be mounted in a stationary mount comprising:

inlet channels;

an outflow channel;

a fitting body having an outlet channel;

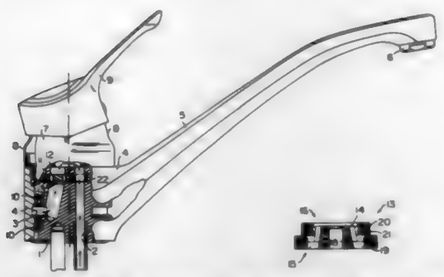
a sleeve disposed on said fitting body, said sleeve having swiveling capabilities;

an outlet arm hydrodynamically connected to said outflow channel, said outlet arm mounted on said sleeve and having swiveling capabilities;

an outlet mouthpiece disposed at the end of said outlet arm,

a valve unit mounted on said fitting body;

packing rings disposed adjacent said outflow channel and between said body and said sleeve; and



a flow stabilizer disposed in said outflow channel in the direction of flow in front of said packing rings, said flow stabilizer having an incoming flow side and an outlet flow side.

5,303,738

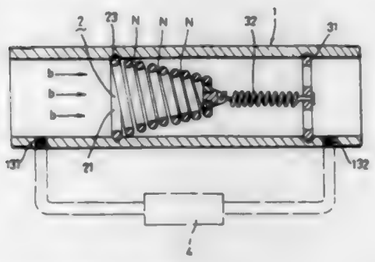
CONTROL VALVE

Wu-Ming Chang, No. 30, Alley 1, Lane 100, Ta-Ya Rd., Taichung City, and Hsueh-Sheng Liu, Tainan, both of Taiwan, assignors to Wu-Ming Chang, Taichung, Taiwan

Filed Apr. 21, 1993, Ser. No. 51,154

Int. Cl.[5] F61K *15/14*

U.S. Cl. 137—852 **3 Claims**



1. A control valve comprising:

a tubular member having a first open end, a second open end and a perforated disc fixed coaxially adjacent to said second open end;

a truncated conical helix spring having a truncated tapered open end and a diverging open end opposed to said truncated tapered open end, said truncated tapered open end having a plug member fixed therein in order to close said truncated tapered open end; and

a positioning spring interconnecting axially said plug member and the center of said perforated disc under tension, the pulling force of said positioning spring being smaller than that of said helix spring, said helix spring confining a truncated cone-shaped chamber and being formed of a plurality of turns which are wound in a watertight manner, said truncated conical helix spring extending and forming a plurality of clearances among said turns under a predetermined axial tension force, said helix spring being received in said tubular member with said diverging open end of said helix spring being fixed adjacent to said first open end of said tubular member.

5,303,739

FRESH WATER SUPPLY SYSTEM FOR AN AIRCRAFT

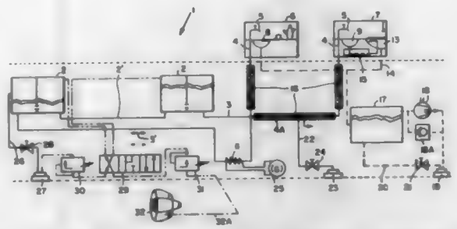
Hubert Ellgoth; Helge Frank, both of Hamburg; Gerd Grunwald, Neuenkirchen; Georg Mai, Bremen; Karolin Mau, and Ralf Schliwa, both of Hamburg, all of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,898

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1991, 4132491; Aug. 20, 1992, 4227518

Int. Cl.[5] E03B *7/07*

U.S. Cl. 137—899.2 **9 Claims**



1. A fresh water supply system in an aircraft, comprising at least one fresh water supply tank (2), at least one water tap (5), a main line (3) interconnecting said supply tank (2) and said water tap (5), water conveying means connected to said system for transporting water, a fresh water auxiliary tank (39) arranged in a vicinity of said water tap (5), a controllable first combination valve (40) connecting said auxiliary tank to said main line (3) near said water tap, control means connected to said water conveying means for controlling a water flow through said main line (3) during first time durations, said first combination valve (40) being connected to said main line (3) and responsive to said control means for venting said main line and said auxiliary tank (39), for permitting feeding pressurized air into at least portions of said system during second time durations between said firs time durations, said system further comprising a controllable second combination valve (51) connected to said main line (3) for feeding water into said main line (3) only during said first time durations and for feeding pressurized air into said main line (3) only during said second time durations in response to said control means, whereby said first and second combination valves (40 and 51) are controlled by said control means so that said main line is filled with water only during said first time durations when water is used and filled with air only during said second time durations for preventing freeze-up of said main line in said aircraft.

5,303,740

LINE BLIND ASSEMBLY HAVING DISC AND SPACER RING SELECTIVELY DISPOSABLE BETWEEN ENDS OF TUBULAR MEMBERS

Marius R. Junier, Houston, Tex., assignor to Triten Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 694,433, May 1, 1991. This application Oct. 29, 1992, Ser. No. 968,204

Int. Cl.[5] F15D *1/00*

U.S. Cl. 138—44 **12 Claims**

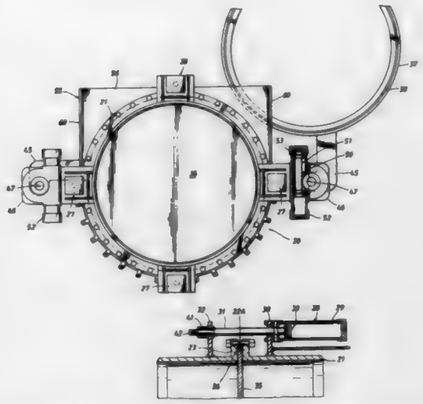
1. A line blind assembly, comprising

a pair of tubular members each having an outer end adapted to be connected in a flowline and an inner end with an annular sealing face,

a circle of bolts extending through the members outwardly of the sealing faces and nuts on the bolts to connect the members with sad sealing faces in opposed relation and permit the sealing faces to be moved toward or away from one another as the nuts are tightened and loosened on the bolts,

a series of circumferentially spaced, hydraulically operable extendable and retractable actuators each having one end connected to one tubular member and the other end connected to the other tubular member whereby the sealing faces may be moved toward or away from one another independently of the bolts and nuts,

a disc and a spacer ring each having annular sealing faces on the opposite sides and mounted on one of the members for movement between the members on one side thereof into and out of a position to dispose the annular sealing faces between the sealing faces on the members when the other is removed therefrom,



hydraulically operable means for so moving each of the disc and spacer ring,

the one end of each actuator on said one side of the body being releasable from its connection to the one tubular member, and being retractable, when so released, to a position in which, when the bolts are removed from extension thereacross said one side, the disc or spacer ring may be moved through said one side, and

remotely operable means by which the one end of each said actuator may be selectively connected to released to said one tubular member.

5,303,741

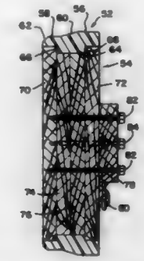
PLUG FOR TEMPORARILY SEALING THE END OF A PIPE

Michael Gauger, 21955 W. Brondale Dr., New Berlin, Wis. 53146

Continuation-in-part of Ser. No. 559,284, Jul. 30, 1990, abandoned. This application Jan. 14, 1992, Ser. No. 821,755

Int. Cl.[5] F16L *57/00*

U.S. Cl. 138—89 **5 Claims**



1. A temporary plug for the open end of a pipe, the pipe having a resilient gasket adjacent its open end, comprising a plug member adapted for placement fully into the open end of the pipe, the plug member including a solid generally cylindrical core and an outer peripheral sealing ring secured to the core and defining a sealing surface for engaging the resilient gasket to seal the open end of the pipe, the outer peripheral sealing surface including a peripheral flat front land, a peripheral flat rear land located rearwardly of the front land and having a greater transverse dimension than that of the front land, and an angled surface extending between the front land and the rear land, with the angled surface defining a narrowing transverse dimension in a direction toward the front land.

5,303,742

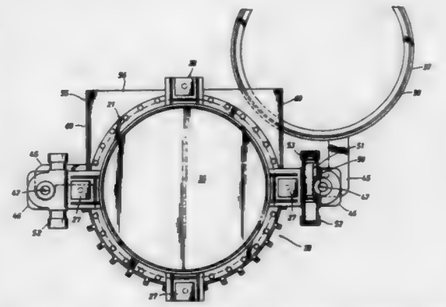
LINE BLIND ASSEMBLY HAVING INTERCHANGEABLE DISC

Marius R. Junier, Houston, Tex., assignor to Triten Corporation, Houston, Tex.

Division of Ser. No. 928,204, Oct. 29, 1992, and a continuation of Ser. No. 694,433, May 1, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 33,246

Int. Cl.[5] F16L *55/10*

U.S. Cl. 138—94.3 **5 Claims**



1. A line blind assembly, comprising a pair of tubular members each adapted to be connected in a flow line and having an end with an annular sealing face,

means connecting the tubular members with the sealing faces on their inner ends opposed to and spaced from one another,

remotely operable means for moving said tubular members toward and away from one another,

a disc and a spacer ring each having opposite sides with annular sealing faces and mounted on one of the members for movement between the members on one side of the members into and out of positions in which annular sealing faces on opposite sides of the spacer ring or disc are between the annular sealing faces on the members when the other is removed therefrom,

remotely operable means for so moving each of the disc and spacer ring, and

a shield which has a closed end mounted on the members to close the space between the sealing faces of the members on one side thereof and which has an open end extending from the closed end and beyond the outer peripheries of the sealing faces on opposite sides of the space between the members on the other side thereof so as to confine the flow of line fluid escaping therefrom.

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5,303,743

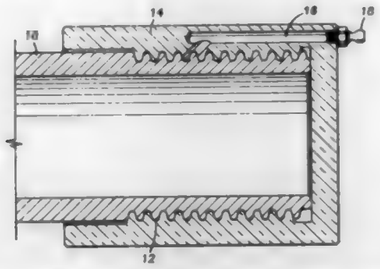
THREAD PROTECTION SYSTEM

Larry W. Vincent, 965 Lakeview, Montgomery, Tex. 77353

Continuation-in-part of Ser. No. 697,206, May 8, 1991, abandoned. This application Jan. 10, 1992, Ser. No. 819,476

Int. Cl.[5] B65D *59/00*

U.S. Cl. 138—96 T 13 Claims



1. In combination with an oil field tubular having a threaded end,

a corrosion inhibitor coating the threaded end, said corrosion inhibitor being transparent to discoloration caused by corrosion of the threaded end, and

a thread protector on said threaded end having a wall, including a cylindrical wall with threads engaged with the threads of the tubular, said wall having sufficient mechanical strength to protect the thread and the end of the tubular from impact damage during normal handling and transportation, said cylindrical wall also having sufficient transparency to permit viewing changes in color of the tubular threads engaged by the thread protector threads, and said cylindrical wall including means for maintaining said transparency for at least 60 days.

5,303,744

PIPING PROTECTION ASSEMBLY

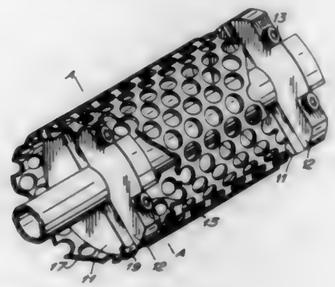
Juha Eriksson, Astorp, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Aug. 13, 1992, Ser. No. 929,684

Claims priority, application European Pat. Off., Sep. 27, 1991, 91116531.4

Int. Cl.[5] F16L *11/00*

U.S. Cl. 138—110 9 Claims



1. A piping assembly comprising:

a pipe;

at least two spacers which are positioned on the pipe and spaced apart one from another along a length of the pipe, each of which extends away from a perimeter of the pipe to a spacer perimeter surface interrupted by at least one gap defined by two spacer edges which extend towards the pipe perimeter from the spacer perimeter surface in a direction transverse to the spacer perimeter surface; and

a sleeve which has apertures therethrough which form a mesh and which is positioned on and circumscribes the spacer perimeter surfaces of at least two spacers and which has edges bent at positions to extend to the spacer edges so that the sleeve is held in position on the spacers.

5,303,745

WEAVING MACHINE WITH WEFT BREAK CLEARING DEVICES

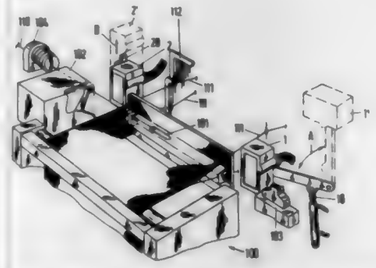
Josef Kaufmann, Elsau, and Heinz Pfenninger, Volketswil, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 7, 1992, Ser. No. 864,780

Claims priority, application Switzerland, Jun. 11, 1991, 01742/91

Int. Cl.[5] D03D *47/34*

U.S. Cl. 139—116.2 9 Claims



1. A weaving machine for weaving cloth formed of longitudinal warps and transverse weft yarn, the machine comprising a shed having an entrance and an exit, a weft yarn break clearing device positioned at at least one of the shed entrance and shed exit, and means for gripping and removing a broken weft yarn, including a flexible connecting tube for withdrawing the defective weft yarn from the machine.

5,303,746

METHOD FOR CONTROLLING WEFT THREAD TRANSFER FROM EMPTY TO FULL BOBBIN DURING WEFT INSERTION

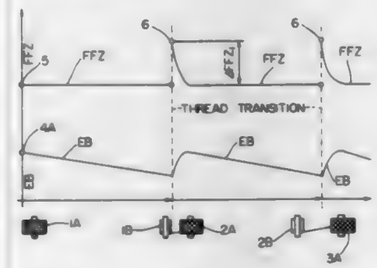
Adnan Wahhoud, Lindau, and Dieter Teufel, Langenargen, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Sep. 17, 1992, Ser. No. 946,884

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131474

Int. Cl.[5] D03D *47/30*

U.S. Cl. 139—435.2 11 Claims



1. A method for controlling a weft thread transfer from a now empty bobbin to a full bobbin during the insertion of a weft thread into a shed of an air nozzle weaving loom having a main nozzle and a plurality of relay nozzles, wherein said weft thread is supplied by several thread supply bobbins, comprising the following steps:

(a) determining a time period when a weft thread transfer is taking place from the empty to the full bobbin,

(b) interrupting a normal program controlled weft thread travelling pattern caused by said plurality of relay nozzles at least during a portion of said predetermined time period and interposing during said interrupting a weft thread transfer travelling pattern on said weft thread by respectively controlling an operation of said relay nozzles in accordance with said weft thread transfer travelling pattern,

(c) maintaining said weft thread transfer travelling pattern by said controlling of said relay nozzles for a length of time sufficient to assure a desired weft thread transport by said relay nozzles during said interrupting, said weft thread transfer travelling pattern controlling said relay nozzles whose activation time coincides with said time period of said weft thread transfer from said empty bobbin to said full bobbin, in such a manner that said weft thread transfer is further accelerated during said time period and the travelling speed of said weft thread is temporarily increased for reducing a transfer time, and

(d) resuming said normal program controlled weft thread travelling pattern when said weft thread transfer is completed, whereby a continuous, uniform weft thread insertion is assured.

5,303,747

WEAVING LOOM WITH A GUIDE FOR GUIDING A GRIPPER HEAD TRAVELLING THROUGH A SHED

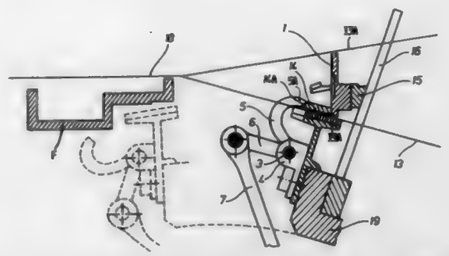
Stephan Arndt, and Rainer Finger, both of Lindau/B, Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau/B, Fed. Rep. of Germany

Filed Feb. 22, 1993, Ser. No. 21,154

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206212; Feb. 28, 1992, 4206213

Int. Cl.[5] D03D *47/00*

U.S. Cl. 139—449 6 Claims



1. A weaving loom, comprising a gripper head travelling through a shed in said weaving loom, a slay with a slay sole, said gripper head including a gripper head body having a main guide surface travelling on said slay sole, at least one additional longitudinal guide surface (14A, 17A) on said gripper head body, guide lever means (5) for temporarily contacting said at least one additional longitudinal guide surface as said gripper head moves through said shed, and a loom drive including drive means for moving said guide lever means into and out of a position in which said guide lever means contact said at least one additional longitudinal guide surface.

5,303,748

FENCING TOOL

Pol N. Haldemann, P.O. Box 879, Chinook, Mont. 59523

Filed Jan. 2, 1987, Ser. No. 122

Int. Cl.[5] B21F *9/00*

U.S. Cl. 140—123 5 Claims



1. A fencing tool comprising:

a first elongate portion having a working end and a handle end;

a second elongate portion having a working end and a handle end pivotally jointed to said first elongate portion between the working end and the handle end of both the first and second elongate portions; wherein said second elongate portion is provided with a fulcrum means and where said handle end of said first elongate portion and said handle end of said second elongate portion are both provided with gripping surfaces to grip a wire between said surfaces and wherein said first elongate portion working end is further provided with an aperture which telescopically co-acts with said fulcrum means.

5,303,749

GAS CYLINDER HANDLING PROCESS AND ASSEMBLY

James H. Stock, Wixom, Mich., and Philip C. Bettiker, Deerfield, Ill., assignors to Cylinder Laboratories, Romulus, Mich.

Filed Feb. 18, 1992, Ser. No. 837,043

Int. Cl.[5] B67B *7/24*

U.S. Cl. 141—4 22 Claims



1. A treatment assembly (10) of the type for treating fluid contained in a gas cylinder (12) of the type which comprises a cylinder body (14) and a removable fixture (16) sealing the cylinder body (14), said assembly (10) comprising:

a tubular housing (18) having an open end (20); gas cylinder support means (26) disposed within said tubular housing (18) for supporting the gas cylinder (12) at a predetermined position relative to said tubular housing (18);

said assembly (10) further comprising fixture removal means (68) for sealing said open end (20) and said tubular housing (18) and for enabling relative rotational movement between the cylinder body (14) and a removable fixture (16) from outside said tubular housing (18) to remove the

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fixture (16) from the cylinder body (14) and allow the fluid to exit the gas cylinder (12) into said tubular housing (18).

19. A method of treating fluid contained in a gas cylinder (12) of the type which includes a cylinder body (14) and a removable fixture (16) sealing the cylinder body (14) comprising the steps of:

supporting the cylinder (12) within a tubular housing (18) having an open end (20);

sealing the open end (20) of the tubular housing (18) with a fixture removal assembly (68); and

manipulating the fixture removal assembly (68) from outside the tubular housing (18) to impart relative rotational movement between the cylinder body (14) and the removable fixture (16) to remove the fixture (16) from the cylinder body (14) and allow the fluid to exit the gas cylinder (12) into the tubular housing (18).

5,303,750

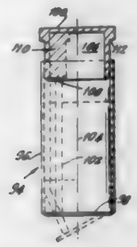
DRAIN CLEANER DISPENSER

Arthur Sternheimer, Spring Valley, N.Y., and Anthony Delia, W. Redding, Conn., assignors to Block Drug Company, Jersey City, N.J.

Division of Ser. No. 681,953, Apr. 8, 1991, Pat. No. 5,253,684. This application Aug. 23, 1993, Ser. No. 110,353

Int. Cl.[5] B67D *3/00*

U.S. Cl. 141—319 **4 Claims**



1. A container, comprising:

(A) a side wall, a central axis, a bottom end, and a top end;

(B) a bottom end wall which closes the bottom end;

(C) a movable stem for opening the bottom end wall, the stem extending upwardly within the container and having an upper end and a lower end, the lower end of the stem being connected to the bottom end wall, the stem being parallel to but off-center with respect to the central axis; and

(D) a plug which closes the top end, the plug having an open portion for receiving the upper end of the stem and an actuating portion for pushing the stem downwardly to open the bottom end wall, the plug being rotatable about the central axis between a first position in which the open portion is located above the stem and a second position in which the actuating portion is located above the stem.

5,303,751

SPIKED BAG PACKAGING SYSTEM

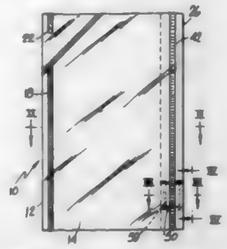
Glenn L. Slater, Ogden, Utah, and Pritpal Virdee, New Brunswick, N.J., assignors to Fresenius AG, Fed. Rep. of Germany

Filed Oct. 4, 1991, Ser. No. 772,086

Int. Cl.[5] B67C *3/00*; B65B *1/04, 3/00*

U.S. Cl. 141—329 **31 Claims**

1. A liquid packaging device for use with a spike tap, comprising: a flexible bag for containing the liquid, said bag including a wall penetrable by the spike; said bag forming a pocket around said wall so that the interior of said pocket is separated from the interior of said bag by said penetrable wall; and a fitting extending into and attached to the pocket and defining a channel to receive the spike, the channel extending from the exterior of the bag through the fitting to the interior of the



pocket for accessing the pocket interior with the spike to pierce said wall.

5,303,752

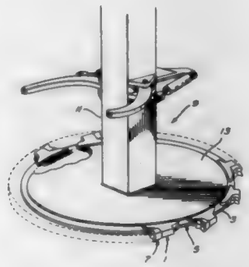
SAW TOOTH HOLDER

Charles D. MacLennan, Hudson Heights, Canada, assignor to Quadco Equipment Inc., St-Eustache, Canada

Filed Apr. 22, 1993, Ser. No. 50,642

Int. Cl.[5] A01G *23/08*; B27B *33/08*

U.S. Cl. 144—34 R **2 Claims**



1. A felling head having a main, vertical support having a bottom; a circular saw mounted at the bottom of the support for rotation about a vertical axis; the circular saw having a circular saw disk, a plurality of saw tooth holders mounted on the disk at spaced-apart locations on its periphery, at least one saw tooth mounted on each holder; each holder having a body portion and a pair of plate-like legs depending from one side of the body portion, the legs being parallel and defining a slot between them for snugly receiving a peripheral portion of the circular saw disk, one of the legs being longer than the other leg, the longer leg having at least two transverse through holes; the holes in the longer leg of each holder being aligned with corresponding the holes in the circular saw disk; bolts passing through the holes in each holder into the holes in the disk to securely connect the holders to the disk, each of the longer legs of the respective holders being adjacent a bottom surface of the disk; and a circular butt plate fixed to the support and lying closely adjacent to a top surface of the disk, the butt plate having a radius less than the radius of the saw disk and the shorter legs of the holders each having an edge defining an arc having a radius matching the radius of the butt plate, such that the arcuate edge of the shorter leg is in close proximity to the butt plate periphery and the shorter leg and butt plate are in the same plane above the disk.

5,303,753

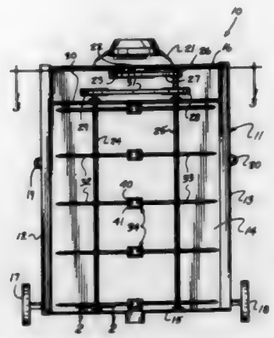
BUSH CUTTING APPARATUS

James A. Crandall, R.R. 1, Box 7A 3141 E. 1760 North, Sherrard, Ill. 61281

Filed Jun. 14, 1993, Ser. No. 75,606

Int. Cl.[5] A01G *23/08*

U.S. Cl. 144—34 R **9 Claims**



1. A bush cutting apparatus, comprising,

a housing, the housing including a first side wall spaced from, parallel to, and coextensive with a second side, and the housing having a semi-cylindrical rear wall extending from the first side wall to the second side wall interconnecting the first side wall and the second side wall, the housing further including a bottom wall and a top wall, and

a first shaft and a second shaft mounted within the housing in a parallel coextensive relationship relative to one another and to the respective first side wall and the second side wall, with the first shaft including a plurality of first rotary cutters, and the second shaft having a plurality of second rotary cutters, with each of the first rotary cutters arranged in a coplanar relationship with one of the second rotary cutters to define a cutter pair, and

drive means to effect simultaneous rotation of the first shaft, the second shaft, the first rotary cutters, and the second rotary cutters.

5,303,754

FASTENING SYSTEM FOR A RIP-SAW BLADE AND A CHIPPING EDGER

Kauko Rautio, SF-52700 Mäntyharju, Mäntyharju, Finland SF-52700

Filed Nov. 9, 1992, Ser. No. 973,446

Claims priority, application Finland, Nov. 18, 1991, 915440

Int. Cl.[5] B27G *13/00*

U.S. Cl. 144—237 **15 Claims**

1. In a fastening system having at least one rip-saw blade mounted adjacent at least one chipping edger on a turning arbor, the improvement comprising:

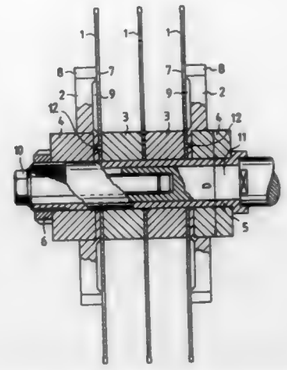
a plurality of rip-saw blades collinearly mounted on said arbor;

spacing sleeves provided between adjacent blades to space said blades along an axial direction of said arbor;

at least one chipping edger each mounted adjacent one of said blades on said arbor, said edger having at least one cutting edge and a recess formed on one side thereof between said arbor and said cutting edge,

wherein said edger is mounted on said arbor with said one side formed with said recess facing one side of said blade such that said recess permits said blade to yield laterally thereinto;

a tightening sleeve mounted adjacent each edger, wherein the outer radial dimensions of said tightening and spacing sleeves are substantially the same and wherein said recess extends substantially from said cutting edge of said edger to the outer dimension of said tightening and spacing sleeves; and



means for holding said blade and edger from moving relative to each other on said arbor.

5,303,755

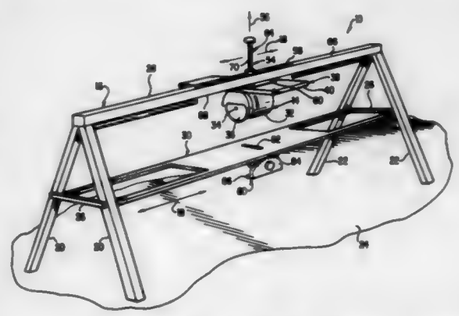
WORKBENCH SYSTEM

Douglas E. Poling, 515 Dorchester Rd., Catonsville, Md. 21228

Filed Aug. 5, 1993, Ser. No. 102,380

Int. Cl.[5] B25H *1/00*

U.S. Cl. 144—286 A **19 Claims**



1. A workbench system for cutting workpieces placed thereon with a portable power saw, comprising:

(a) a workbench frame having a plurality of leg members interfacing with a base surface and a workpiece positioning member extending in a longitudinal direction;

(b) power saw securement means releasably coupled to said workbench frame for predeterminedly mounting said power saw to said workbench frame;

(c) first power saw mounting means for adjustably and fixedly positioning said portable power saw above said workpiece positioning member; and,

(d) second power saw mounting means for adjustably and fixedly positioning said portable power saw at least partially below said workpiece positioning member.

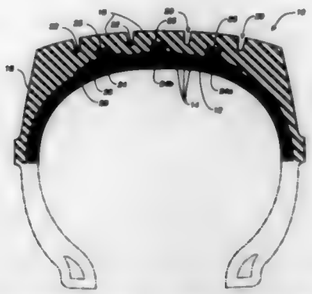
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5,303,756

TIRE FOR INDICATING TREAD WEAR AND METHOD OF MANUFACTURING THE SAME

James L. Hill, 301 Standiford Ave., Apt. 144, Modesto, Calif. 95350

Filed Sep. 30, 1991, Ser. No. 767,375
Int. Cl.[5] B60C *19/00*
U.S. Cl. 152—154.2 21 Claims



1. In a tire including a body formed by a plurality of body plies, and tire rubber vulcanized to said plies and molded to form a plurality of spaced apart land portions defined by grooves therebetween, the improvement comprising:

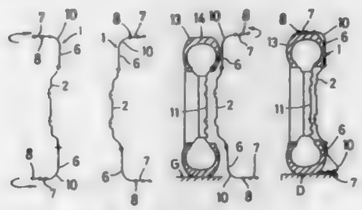
a plurality of circumferentially spaced apart wear indicating members each mounted in said tire rubber and secured to one of said body plies and each extending radially outward in said tire rubber to a desired wear-indicating position inwardly of an exterior surface of said tire, said wear indicating members each having a housing assembly formed of a housing material, and each housing assembly containing a visually distinctive material other than said housing material, said visually distinctive material being visually perceptible from the color of said tire rubber, and said housing assembly thermally insulating said visually distinctive material sufficiently during vulcanization of said tire to prevent thermal degradation of said visually distinctive material, so that, as said tread rubber wears down, said visually distinctive material is exposed and indicates tread wear.

5,303,757

ANTI-SKID DEVICE FOR TIRE

Tomio Wakatsuki; Toshitaka Nishi, and Satoru Ohto, all of Osaka, Japan, assignors to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan

Filed Apr. 14, 1993, Ser. No. 46,845
Claims priority, application Japan, May 1, 1992, 4-112829
Int. Cl.[5] B60C *27/02*
U.S. Cl. 152—216 10 Claims



1. A tire anti-skid device comprising:

a mounting member removably mounted on a side surface of a wheel of an automobile in such a manner as to be coaxial with said wheel;

a plurality of arms made of elastic bodies, which radially extend from said mounting member, said arms having base portions, leading ends and reversing portions therebetween and being connected to the mounting member at said base portions;

ground-contact portions, each being formed by bending a leading end of each of said arms, which are intended to be brought in contact with a tire tread surface;

a ground-contact ring for connecting said adjacent ground-contact portions with each other, which is intended to be brought in contact with said tire tread surface; and

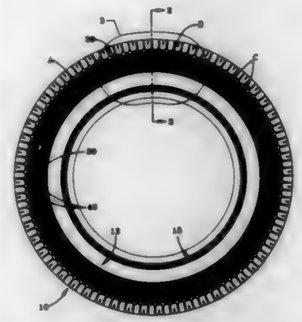
said reversing portions each being formed at a junction portion between the base portion of a respective said arm and said ground-contact portion thereof, said reversing portions being differently constructed relative to the remainder of the arms to facilitate reversal of said ground-contact portions in such a manner that the inner surfaces in contact with said tire tread surface becomes the outer peripheral surfaces.

5,303,758

TIRE SIDEWALL DESIGN PATTERNS

Michel Clementz, Arlon, Belgium; Gilbert Feller, Burden, and Raymond Merz, Junglinster, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 15, 1992, Ser. No. 898,595
Int. Cl.[5] B60C *13/02*
U.S. Cl. 152—523 11 Claims



1. A tire sidewall having an annular surface, the surface having a design pattern, the design pattern consisting of:

a) a first design pattern, a first pattern having a plurality of ridges of similar cross sectional shape, each ridge being substantially parallel to an adjacent ridge of the first pattern and inclined relative to the circumferential direction;

b) a second design pattern superimposed over a portion of the first design pattern, second pattern having a plurality of spaced ridges, each ridge being substantially parallel to an adjacent ridge of the second pattern and extending outwardly from the first pattern and in an angular direction between 45° and 90° relative to the ridges of the first pattern, and

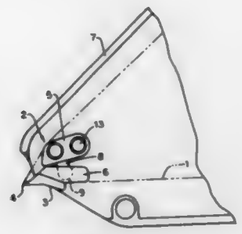
wherein when the first pattern appears shiny or highly light reflective, the second pattern appears dark, and conversely when the second pattern appears shiny or highly light reflective, the first pattern appears dark, yielding an inverse contrast between the first and second pattern which changes as a function of the observer's position relative to the tire.

5,303,759

DISPENSER FOR APPLYING AN ADHESIVE MATERIAL ONTO A SUBSTRATE

Manuel Czech, Donaustauf, Fed. Rep. of Germany, assignor to Czewo-Plast Kunststofftechnik GmbH, Neutraublin, Fed. Rep. of Germany

PCT No. PCT/EP90/02240, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO91/09805, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 19, 1990, Ser. No. 859,461
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 8915192; Feb. 15, 1990, 9001809
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—574 27 Claims



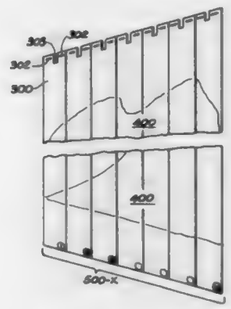
1. A dispenser for applying an adhesive material onto a substrate, comprising: a housing provided therein with a supply reel holding a carrier strip provided with an adhesive material layer, a take-up device for collecting the carrier strip, and an applicator device for the transfer of said adhesive material layer onto said substrate, said applicator device including a mounting body fixedly connected to said housing, and an applicator body mounted on said mounting body; wherein said applicator body in its entirety is supported on said mounting body by means of a mounting assembly comprising at least a concave sliding surface and a convex sliding surface, said mounting assembly enabling the whole applicator body to swivel relative to the mounting body.

5,303,760

BLIND COVERING APPARATUS AND METHOD FOR CHANGING DECOR ON VERTICAL WINDOW BLINDS

Joe A. Perez, 5525 S. Mission Rd. #5303, Tucson, Ariz. 85746-2281

Filed Feb. 22, 1993, Ser. No. 20,642
Int. Cl.[5] E06B *3/06*
U.S. Cl. 160—236 13 Claims



1. A method of charging the decor of an existing window blind arrangement, said method comprising the steps of:

(a) providing a window blind covering arrangement, said covering arrangement comprising a plurality of blind slat cover members sized for slipping over and attaching to an existing plurality of blind slat members, each blind slat cover member of said plurality of blind slat cover members having a code member that corresponds to a panoramic scene portion of a composite panoramic scene depicted on at least one combined exterior surface of said plurality of blind slat cover members, said composite panoramic scene producing said change in decor;

(b) providing decode information for displaying said composite panoramic scene; and

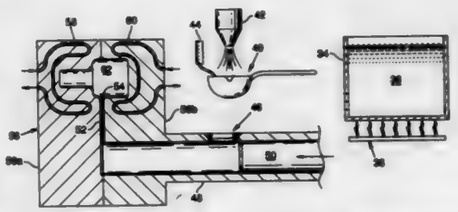
(c) selecting and installing said plurality of coded blind slat cover members over said existing plurality of blind slat members in accordance with said provided decode information to produce said composite panoramic scene and effect said change in decor in said existing window blind arrangement.

5,303,761

DIE CASTING USING CASTING SALT CORES

Thomas F. Fleasner, Olympia, and Christopher S. Marr, Tacoma, both of Wash., assignors to Puget Corporation, Tacoma, Wash.

Filed Mar. 5, 1993, Ser. No. 27,186
Int. Cl.[5] B22C *9/10*; B22D *29/00*
U.S. Cl. 164—15 5 Claims



1. A process for producing a core to be used for forming passages and cavities in a die casting process, said core being produced from a casting salt, said process comprising;

injecting molten die casting salt into a casting mold, and

applying heat to the walls of the casting mold to prevent solidification of the core exterior prior to solidification of the core interior.

2. A process for providing a core to be used for forming passages and cavities in a die casting process, said core being produced from a casting salt, said process comprising;

maintaining a vat of molten casting salt at a temperature that exceeds the melting temperature of the casting salt,

removing quantities of the molten casting salt to be transferred to a die casting shot sleeve,

cooling the molten casting salt to its liquidus temperature and thereby increasing its viscosity, and

transferring the casting salt in its cooled and liquified form to a die casting machine and injecting it into the die casting mold.

5,303,762

COUNTERGRAVITY CASTING APPARATUS AND METHOD

George D. Chandley, Amherst, N.H., assignor to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Jul. 17, 1992, Ser. No. 916,014
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] B22D *18/06*
U.S. Cl. 164—63 15 Claims

1. In a method for the countergravity casting of a melt, the steps of:

a) placing a mold in a vacuum chamber defined within a casting box, said mold having a mold cavity in melt flow communication with a melt inlet passage disposed below the mold cavity in the vacuum chamber and having a first

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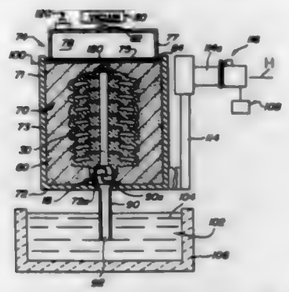
ascending passage section for communication with a fill tube, a descending passage section upstream of the first ascending passage section, and a second ascending passage section upstream of the descending passage section in communication with the mold cavity,

b) communicating said mold cavity through said melt inlet passage with a fill tube extending toward an underlying source of melt,

c) relatively moving the casting box having the mold therein and the source of melt to engage the fill tube and the source,

d) applying a differential pressure between the mold cavity and the source of melt to urge the melt upwardly through the fill tube and the melt inlet passage into the mold cavity,

e) relatively moving the casting box having the mold therein and the source of melt to disengage the fill tube and the source after the mold cavity is filled with the melt, and



f) rotating the casting box having the mold therein in a direction that the melt inlet passage prevents runout of melt from the mold cavity until the casting box and mold therein are inverted.

10. Differential pressure, countergravity casting apparatus, comprising:

a) a casting box defining a vacuum chamber therein and having a bottom opening,

b) a refractory mold disposed in the vacuum chamber, said mold including a mold cavity,

c) means disposed in the vacuum chamber for forming a melt inlet passage below the mold cavity and having a first ascending passage section for communication with a fill tube, a descending passage section upstream of the first ascending passage section, and a second ascending passage section upstream of the descending passage section in melt flow communication with the mold cavity, and

d) a fill tube disposed in the bottom opening for communicating the melt inlet passage to an underlying source of melt.

5,303,763

DIRECTIONAL SOLIDIFICATION OF METAL MATRIX COMPOSITES

Michael K. Aghajanian; Robert C. Kantner, both of Newark, Del.; John P. Biel, Jr., Elkton, Md., and Kurt J. Becker, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 520,927, May 9, 1990, Pat. No. 5,165,463, which is a continuation-in-part of Ser. No. 269,602, Nov. 10, 1988, Pat. No. 5,020,583. This application Nov. 23, 1992, Ser. No. 980,418

The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.

Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—97 8 Claims

2. A method of producing a metal matrix composite body comprising:

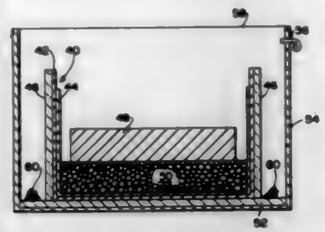
providing an aluminum alloy;

contacting said aluminum alloy with a permeable mass of filler material or a preform;

supplying at least about one weight percent magnesium to at least one of the aluminum alloy and the permeable mass of filler material or preform;

in the presence of a infiltrating atmosphere comprising from about 10 to 100 volume percent nitrogen, balance non-oxidizing gas, contacting said matrix aluminum alloy in a molten state with said permeable mass of filler material or preform, and infiltrating said permeable mass of filter material or preform with said molten matrix aluminum alloy, said infiltration of said permeable mass occurring spontaneously;

after a desired amount of infiltration of said permeable mass of filler material or preform has occurred, or during the spontaneous infiltration step, contacting said infiltrated



mass of filler material or infiltrated preform, or a setup containing said infiltrated mass of filler material or infiltrated preform, with a directional solidification means thereby causing said molten aluminum alloy to solidify directionally within said filler material or preform; and

heating said directionally solidified metal matrix composite to a temperature in excess of the liquids temperature of the matrix metal, and quenching said heated metal matrix composite, thereby forming a solid metal matrix composite structure embedding at least a portion of said filler material or preform, said directionally solidified and quenched metal matrix composite body exhibiting a flexural strength which is at least 1.5 times greater than the flexural strength of a metal matrix composite formed by substantially the same process steps except for said directional solidification, heating and quenching steps.

5,303,764

DIE FOR FORMING ALUMINUM SILICON ALLOY

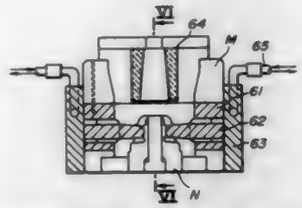
Masato Sasaki, and Yoshihiro Yamada, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Kanagawa, Japan

Division of Ser. No. 675,330, Mar. 26, 1991, Pat. No. 5,211,778. This application Dec. 21, 1992, Ser. No. 993,629

Claims priority, application Japan, Mar. 27, 1990, 2-75577; Nov. 20, 1990, 2-312851

Int. Cl.[5] B22D *17/04*

U.S. Cl. 164—312 2 Claims



1. A die for forming an aluminum-silicon alloy article comprising:

a mold formed of Cu-W of alloy material substantially removable of heat from a molten alloy poured thereinto;

cooling means for cooling said die and said molten alloy;

said mold corresponding to a substantially thick portion of an aluminum-silicon alloy article; and

said cooling means substantially uniformly cools said molten alloy.

5,303,765

ROLL CASTING MACHINE

William J. Pearson, Poole, and John D. Hunt, North Leigh, both of United Kingdom, assignors to Davy McKee (Poole) Limited, Dorset, England

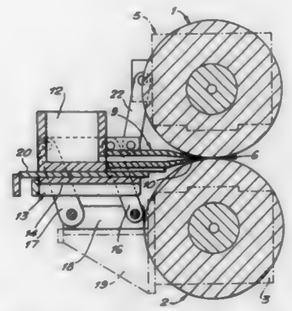
PCT No. PCT/GB91/00231, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/12101, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 15, 1991, Ser. No. 916,100

Claims priority, application United Kingdom, Feb. 19, 1990, 9003699

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—428 8 Claims



1. A roll caster comprising a pair of rotatable rolls (1, 2), means for moving one of the rolls (1) towards and away from the other roll (2) to adjust the gap (6) therebetween, a nozzle assembly having an outlet end (10) projecting into the gap (6) with clearance between the outlet end (10) of the nozzle and the rolls (1, 2); and means for causing the nozzle to be moved into and out of the gap (6) to maintain clearance between the nozzle and the rolls (1, 2) as the movable roll (1) is moved to adjust the gap (6) characterized in that said roll caster further comprises means for associating said nozzle and said movable roll such that the nozzle moving means is automatically responsive to the movement of the movable roll (1) to maintain the clearance.

5,303,766

APPARATUS AND METHOD FOR THE MANUFACTURE OF HOT-ROLLED STEEL

Pieter J. Kreijger, Castricum; Rein L. Huisman; Robert F. Gadelian, both of Beverwijk; Frans Hollander, and Leo A. Kuhry, both of Castricum, all of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed Mar. 16, 1992, Ser. No. 851,396

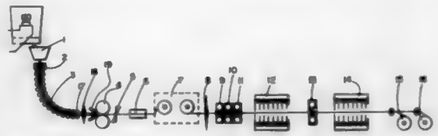
Claims priority, application European Pat. Off., Mar. 22, 1991, 91200691.3; Netherlands, May 28, 1991, 9100911

Int. Cl.[5] B22D *11/12;* B21B *1/46*

U.S. Cl. 164—476 25 Claims

1. Apparatus for the manufacture of hot-rolled steel strip, comprising a continuous casting machine for casting steel slab, reduction means comprising a two-high roll stand having a pair of rolls adapted for hot-rolling of said slab into strip, said two-high roll stand being incorporated in continuous line with said continuous casting machine to perform continuous rolling of said slab and reheating means for reheating of said strip after its rolling in said two-high roll-stand, said two-high roll stand being the sole means for reducing the thickness of said slab after full solidification of the slab and prior to entry of the strip into said reheating means.

12. Method for the manufacture of steel strip comprising the steps of (a)continuously casting steel into slab in a continuous



casting machine and (b) effecting hot-rolling reduction of said slab into strip by hot-rolling at least in the austenitic region, said hot-rolling reduction of the slab in the austenitic region comprising a single pass through a two-high roll stand having a pair of rolls adapted to effect reduction of the slab into strip.

5,303,767

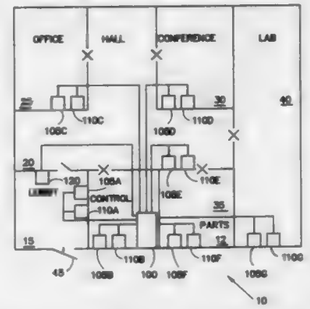
CONTROL METHOD AND SYSTEM FOR CONTROLLING TEMPERATURES

Thomas T. Riley, Palo Alto, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 22, 1993, Ser. No. 7,451

Int. Cl.[5] F24F *3/00*

U.S. Cl. 165—12 5 Claims



1. A method of operating a control system for controlling the temperature in a plurality of spaces within a building having an HVAC system connected to the control system, the HVAC system having first and second modes of operation, the control system including a controller and a first plurality of temperature sensors for determining an actual temperature of a space, the controller storing a second plurality of setpoints associated with the first plurality of temperature sensors, the controller further storing a list of priority spaces, comprising the steps of:

calculating Temperature Differences for each of the first plurality of sensors having a setpoint, said Temperature Difference being equal to the difference between said setpoint and said actual temperature;

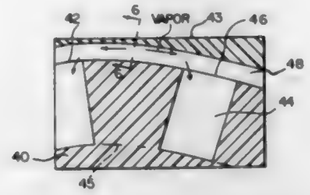
creating a sum of said Temperature Differences associated with said spaces on said list of priority spaces;

causing said HVAC system to operate in the first mode if said sum has a first relationship to a predetermined value;

causing said HVAC system to operate in the second mode otherwise.

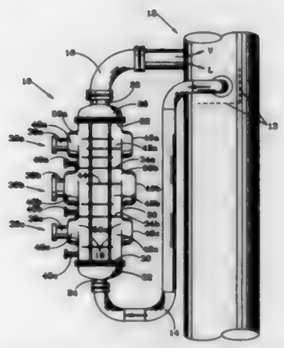
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,768
CAPILLARY PUMP EVAPORATOR
Joseph P. Alario; Fred Edelstein, both of Hauppauge; Robert L. Kosson, Massapequa, and Maria Liandris, Farmingdale, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Feb. 17, 1993, Ser. No. 18,536
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—104.26 9 Claims



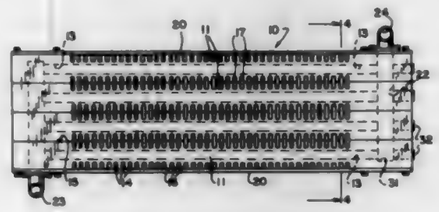
1. In a capillary pump loop, an evaporator comprising:
a tubular wick for containing working liquid flow centrally therein, the body of the wick being saturated with the liquid;
a tubular heat exchanger for tightly receiving the wick, the heat exchanger being subjected to ambient heat which causes liquid to undergo phase transformation to vapor at an interface between an outer surface of the wick and an inner surface of the heat exchanger;
a threaded groove circumferentially extending over the inner surface of the heat exchanger, about an axis of the heat exchanger, the groove opening onto the interface between the wick and the heat exchanger; and
axially oriented vapor channels extending along the entire length of the wick and opening onto the interface, wherein the channels intersect the circumferential grooves to form a shortened vapor outlet path from the interface.

5,303,769
INTEGRATED THERMOSIPHON HEAT EXCHANGER APPARATUS
Otto H. Hoegberg, Houston, Tex., assignor to The M. W. Kellogg Company, Houston, Tex.
Filed Sep. 25, 1992, Ser. No. 952,073
Int. Cl.[5] B01D *3/32*
U.S. Cl. 165—108 8 Claims



1. An integrated heat exchange apparatus for heating a tube-side fluid with a plurality of hot shell-side fluids comprising:
a shell;
a plurality of tubes extending vertically through the shell in fluid communication with upper and lower heads on either end thereof;
a thermosiphon feed line from a thermosiphon feed reservoir to the lower head;
a liquid-vapor return line from the upper head to the thermosiphon feed reservoir to complete the thermosiphon circuit;
upper and lower tube sheets sealingly engaging the tubes between the shell and the upper and lower heads, respectively;
at least one intermediate spaced-apart tube sheet sealingly engaging the tubes disposed between the upper and lower tube sheets to form a plurality of shell-side compartments; and
a hot fluid supply and return line for each of the compartments to circulate the hot fluid therethrough to heat and vaporize the tube-side fluid, wherein the hot fluid in one or more of the compartments comprises an overhead vapor from a fractionation column for providing at least a part of the reflux condensate for the column, and the hot fluid in at least one other of the compartments is steam for providing process control.

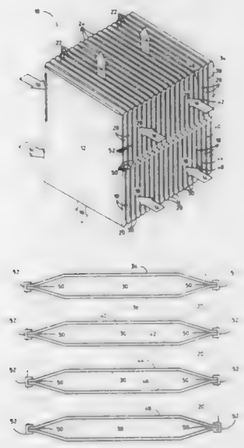
5,303,770
MODULAR HEAT EXCHANGER
Robert F. Dierbeck, 2707 Hall Rd., Hartford, Wis. 53027
Filed Jun. 4, 1993, Ser. No. 72,497
Int. Cl.[5] F28F *9/26*
U.S. Cl. 165—140 13 Claims



1. A modular heat exchanger for a fluid flow comprising:
a plurality of modules formed from elongate extruded aluminum blocks, each block having a generally rectangular cross section between planar opposite outer faces and a longitudinally extending through-bore having an elongate cross section defined by generally flat bore surfaces lying parallel to said planar opposite faces;
each module having a plurality of generally rectangular equally spaced parallel slots formed in said outer faces, said slots extending fully across said outer faces in a lateral direction with respect to the longitudinal axis of the throughbore and defining therebetween a series of parallel fine, said fins lying in planes generally perpendicular to the longitudinal axis of the throughbore, the outer edge surfaces of the fins on each face lying coplanar with the face of the block in which the fins are formed;

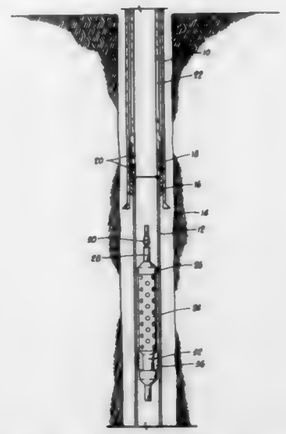
attachment means for securing the modules together in face-to-face contact with the outer edge surfaces of the fins on adjacent modules abutting one another to provide a series of uniformly sized air flow passages between and completely through each adjacent pair of modules; and,
fluid accumulation means on opposite ends of the attached modules for interconnecting the open ends of the throughbores on each of said opposite ends.

5,303,771
DOUBLE CROSS COUNTERFLOW PLATE TYPE HEAT EXCHANGER
Nicholas H. Des Champs, Fincastle, Va., assignor to Des Champs Laboratories Incorporated, Natural Bridge Station, Va.
Filed Dec. 18, 1992, Ser. No. 992,790
Int. Cl.[5] F28F *3/10*
U.S. Cl. 165—165 3 Claims



1. A heat exchanger comprising: a single continuous sheet of heat conductive material having first and second longitudinally extending edges, the sheet being folded upon itself in opposite directions alternately on fold regions which extend between a first fluid passageway and a second fluid passageway and transversely to the longitudinally extending edges to define between the fold regions a plurality of substantially parallel, mutually spaced sheet portions, space between the spaced sheet portions being free of a permanent internal frame which would interfere with heat exchange between the passageways and restrict fluid flow into the passageways,
first and second sheet portions having respective upper and lower portions with sealing means along a first longitudinally extending edge section thereof, and second and third sheet portions further having respective lower and upper portions with sealing means along a second longitudinally edge section thereof, the first and second longitudinally extending edge sections being spaced from respective opposed fold regions to produce a series of alternating flow passageways.

5,303,772
WELL COMPLETION APPARATUS
Kevin R. George, Columbus; Flint R. George, Katy, both of Tex., and Sherman C. Minni, Sauchen, Scotland, assignors to Halliburton Company, Houston, Tex.
Continuation of Ser. No. 695,478, May 3, 1991, Pat. No. 5,156,213. This application Aug. 14, 1992, Ser. No. 930,122
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] E21B *43/116*
U.S. Cl. 166—55.1 16 Claims



1. A completion system for installation in a well bore having fluid therein intersecting various formation containing fluids therein of the earth, said completion system comprising:
a string of well casing installed within a portion of said well bore;
a liner string of well casing installed within a portion of the string of well casing and installed within a portion of said well bore;
a polished bore receptacle installed near the upper end of the liner string of well casing;
a production pipe string extending into the string of well casing installed within a portion of said well bore;
a tie-back seal assembly having a plurality of seals therein for sealingly engaging the bore of the polished bore receptacle,
the tie back-seal assembly connected to one end of the production pipe string; and
perforating gun assembly releasably retained within the liner string of well casing, the perforating gun assembly having a lower portion thereof releasably engaging a portion of the liner string of well casing so that said perforating gun assembly rests on and is supported by said lower portion.

5,303,773
DEVICE FOR MONITORING A DEPOSIT FOR A PRODUCTION WELL
Jean Czernichow, Chateauy Malabry, and Jean Laurent, Orgeval, both of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France
Filed Sep. 17, 1992, Ser. No. 945,889
Claims priority, application France, Sep. 17, 1991, 91 11536
Int. Cl.[5] E21B *47/00*
U.S. Cl. 166—66 21 Claims

1. A device adapted to be installed in a well for monitoring an underground deposit, said device comprising a casing having a plurality of tubular sections and a plurality of tubular connectors for interconnected the tubular sections, said casing being maintained in place in the well by injection of cement

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into the annular space between the casing and the well, at least one tubular connector being positioned between two successive tubular sections of the well casing, said at least one tubular



connector comprising at least one sealed housing containing a principal monitoring module including sensitive sensors, and means for connecting said principal monitoring module to a central control and recording station on the surface.

5,303,774

RING SEAL PACKER

Jay C. Duhn; Rex E. Duhn; Kenneth D. Webster, and Aaron B. Speirs, all of Bakersfield, Calif., assignors to Duhn Oil Tool, Inc., Bakersfield, Calif. and Shell Western E & P, Inc., Houston, Tex.

Filed Dec. 11, 1992, Ser. No. 989,202
Int. Cl.[5] F21B *23/00, 23/02*
U.S. Cl. 166—191 **23 Claims**



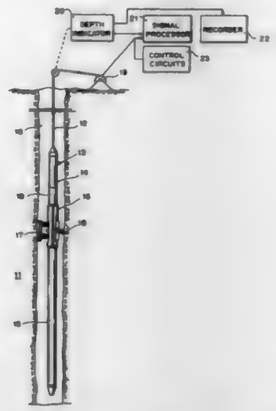
1. A ring seal packer comprising:
a tubular body;
a circumferential groove in an outside surface of the body;
a pair of rigid seal rings adjacent to each other in the groove, each of the rings having a longitudinally extending slot; and
means for preventing relative rotation between the rings for maintaining the slots in adjacent rings out of axial alignment with each other.

5,303,775

METHOD AND APPARATUS FOR ACQUIRING AND PROCESSING SUBSURFACE SAMPLES OF CONNATE FLUID

John M. Michaels, and John T. Leder, both of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Nov. 16, 1992, Ser. No. 976,488
Int. Cl.[5] E21B *49/00*
U.S. Cl. 166—264 **15 Claims**



1. A method of acquiring a phase intact connate fluid sample from a subsurface earth formation for subsequent analysis, by means of a formation testing instrument that incorporates a pressure containing sample tank having an internal fluid chamber, comprising:
(a) positioning said formation testing instrument within a wellbore and in fluid transferring communication with the formation;
(b) establishing a balanced pressure condition between said internal fluid chamber of said sample tank and the fluid in the wellbore at formation depth;
(c) transferring connate fluid from said formation into said sample tank while controlling the pressure of said connate fluid within a predetermined range appropriate to prevent phase separation thereof;
(d) removing said formation testing instrument from the wellbore; and
(e) analyzing said phase intact connate fluid sample contained within said fluid chamber of said sample tank.

5,303,776

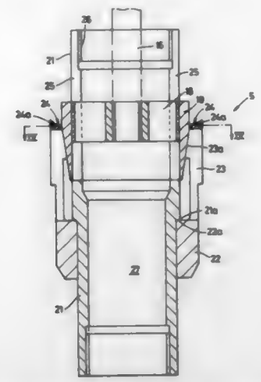
DEVICE FOR A DOWN-HOLE ASSEMBLY

Fred Ryan, Kinellar, Great Britain, assignor to Pipe Recovery Consultants Limited, Aberdeenshire, United Kingdom

PCT No. PCT/GB91/02085, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO92/09785, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 927,392
Claims priority, application United Kingdom, Nov. 27, 1990, 9025763
Int. Cl.[5] E21B *33/072*
U.S. Cl. 166—361 **14 Claims**

1. A wireline conveyable device for a fluid operable borehole tubing assembly comprising a tubular body having a first end intended to form the upper end when in the borehole and a second open end intended to form the lower end, the tubular body including at least one aperture in a wall thereof to facilitate passage of fluid through the tubular body, electrically actuable outwardly moving anchoring means attached to the tubular body for positively locating the tubular member at a predetermined position within the borehole tubing, in use, and

an electrically actuable sealing means attached to the tubular body and arranged, in use, for selectively sealing the space between the borehole tubing and the tubular body to divert



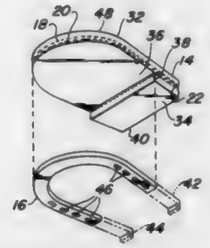
fluid through the tubular body to bypass the sealing means for driving fluid actuable means located adjacent said second lower end of the tubular body.

5,303,777

ECONOMICAL PADDED HORSESHOE AND METHOD

Ben B. Zook, R.D. #2, Box 84, Elverson, Pa. 19520

Filed Jun. 10, 1992, Ser. No. 896,249
Int. Cl.[5] A01L *3/00, 7/02*
U.S. Cl. 168—12 **20 Claims**



1. A horseshoe comprised of:
a reinforced belting material having at least one layer of reinforcing material in the plane of the belting material;
said belting material being comprised of used belting;
a toe portion of the turf side of said belting material being removed; and
a truncated metal horseshoe adhesively mounted on said belting material on said turf side of said belting material where said toe portion has been removed.

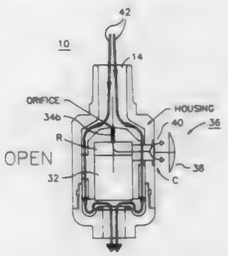
5,303,778

ON-OFF TYPE SPRINKLER

Peter Vari, 55 Kirkwood Dr., Newtown, Pa. 18940

Filed Mar. 16, 1992, Ser. No. 851,918
Int. Cl.[5] A62C *37/21*
U.S. Cl. 169—90 **30 Claims**

1. A sprinkler apparatus comprising:
a housing having an inlet opening, an outlet opening, and an intermediate region communicating said inlet opening with said outlet opening;
a reciprocating member mounted within said intermediate region and movable between a first position sealing said outlet opening and a second position displaced from said outlet opening;
a control opening communicating with said intermediate region; and
sensing means having a first condition normally sealing said control opening and a second condition unsealing said control opening responsive to a predetermined external condition;
said intermediate region having first and second fluid passageways to respectively deliver fluid entering said inlet opening to exert fluid pressure against an upper and a lower surface of said reciprocating member, said upper surface being adjacent said inlet opening and said lower surface being adjacent said outlet opening;
said control opening, when unsealed, enabling fluid contacting the upper surface of said reciprocating member to be diverted to and through said control opening reducing the fluid pressure applied to said upper surface at a flow rate



greater than a flow rate through said first passageway enabling said fluid pressure exerted on the lower surface of the reciprocating member adjacent said outlet opening to move said reciprocating member to said second position;
a portion of said intermediate region having a cross-sectional configuration conforming to an outer periphery of said reciprocating member;
a gap space region provided between the outer periphery of said reciprocating member and a conforming interior surface of said intermediate region being of a tight tolerance sufficient to prevent fluid flow in said gap space region while permitting said reciprocating member to move from said first position toward said second position responsive to a minimal fluid pressure necessary to open the sprinkler apparatus.

5,303,779

ROCKSHAFT CULTIVATOR FRAME

Terrance Friggstad, Saskatoon, Canada, assignor to Flexi-Coil Limited, Saskatoon, Canada

Filed Oct. 30, 1992, Ser. No. 969,380
Claims priority, application Canada, Mar. 24, 1992, 2067081
Int. Cl.[5] A01B *49/00*
U.S. Cl. 172—311 **3 Claims**

1. An agricultural cultivator frame comprising:
(a) a rectangular, planar, generally horizontal centre frame section, supported by
i) a pair of co-axial wheel means and
ii) hitch means adapted to be attached to a tractor or other farm implement,
(b) a pair of planar, rectangular wing frame sections,
i) each pivotally attached on a respective side of the centre section for rotation about first axes parallel to the direction of travel and
ii) supported by the said centre section and further wheel means,
(c) means to rotate each said wing frame section about its corresponding said first axis between:
i) a field position wherein the wing section is substantially coplanar with the centre section and

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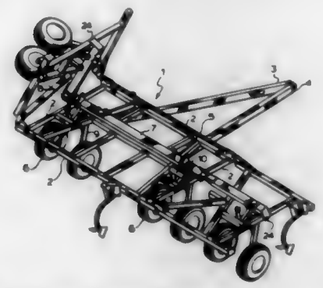
ii) a transport position wherein the wing section is substantially vertical,

(d) adjustment means to adjust the relative angle between the centre frame section and the said hitch means to permit the centre frame section to remain at a predetermined angle to the ground,

(e) first rockshaft means:

i) supporting the said centre frame section on said pair of co-axial wheel means and

ii) pivotally attached to said centre section at at least two locations for rotation about a transverse axis through the frame at a location offset from, and parallel to, the axis of the centreline along the length of the rockshaft,



(f) a pair of second rockshaft means:

i) each supporting respective ones of said wing sections on respective ones of said further wheel means and

ii) each pivotally attached to respective ones of said wing sections at a single location for rotation about said transverse axis through the frame,

(g) universal joint means having two axes of rotation at right angles to, and spaced from, one another interconnecting the said first and each of said second rockshaft means, and

(h) means to provide for relative transverse motion between said second rockshaft and corresponding ones of said wing sections.

5,303,780

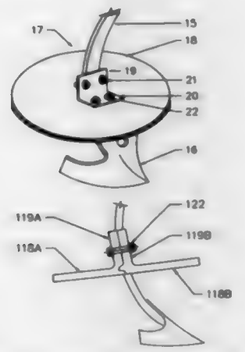
CULTIVATOR DEFLECTOR APPARATUS AND METHODS OF MAKING AND USING SAME

Duwayne E. Evenson, R.R. #1, Minnesota Lake, Minn. 56068

Filed May 14, 1991, Ser. No. 699,658

Int. Cl.[5] A01B *17/00*

U.S. Cl. 172—509 **44 Claims**



1. A multi-row agricultural field cultivator for row crops comprising:

at least one cultivator shovel sized and configured to penetrate the soil adjacent a crop row to a depth of between 1 and 3 inches with consequent upward flying movement of soil as the cultivator moves along the crop row during cultivating operations,

a substantially flat soil deflector plate,

and deflector plate attachment structure for attaching the deflector plate in a substantially horizontal position to cultivator structure at a position above the local ground surface level adjacent the cultivator shovel so that the deflector plate downwardly deflects flying soil thrown up by the cultivator shovel during cultivating operations to facilitate increased cultivator operating speeds with minimal crop damage caused by the flying soil at the increased cultivator operating speeds wherein said deflector plate exhibits an in-use operative soil deflecting surface which extends substantially farther at the rearward side of the cultivator shovel than at the forward side of the shovel.

5,303,781

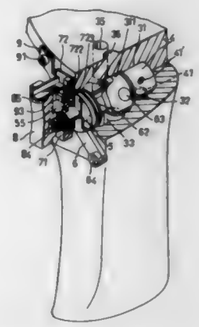
PNEUMATIC TOOL

Chen-Yang Lin, Tainan, Taiwan, assignor to Wunli Pneumatic Tools Co., Ltd., Tainan, Taiwan

Filed Jun. 10, 1993, Ser. No. 75,632

Int. Cl.[5] B23B *45/04*; **F16K** *11/14*

U.S. Cl. 173—169 **6 Claims**



1. A pneumatic tool comprising:

a tool housing including a hollow main body and an upright handle which extends downwardly from said main body and which has a front surface and a horizontal blind bore accessible from said front surface, said blind bore having an inner portion and an outer portion, said handle further having an air intake passage which extends downwardly from said inner portion of said blind bore, and two air holes communicating said outer portion of said blind bore and an interior of said hollow main body;

a pneumatic driving unit provided in said main body;

an air flow regulating ring disposed axially and fittingly inside said inner portion of said blind bore and formed with a plurality of differently-sized angularly spaced radial holes;

an air direction control unit including an annular member which is disposed axially and rotatably inside said blind bore and which has an inner end, an axial through hole, and a radial passage communicated with said axial through hole, said annular member further having an inner wall surface which defines said axial through hole, and an outer end that extends out of said blind bore and that is provided with an activating arm which is operable so as to rotate said control unit in order to align said radial passage and a selected one of said air holes and to block the other one of said air holes;

an elongated control rod extending into said axial hole and having a diameter-reduced first end portion extending into said regulating ring, said first end portion being provided with a piston and being coupled with said regulating ring,

said control rod further having a second end portion extending out of said axial hole of said control unit, said first end portion of said control rod and said inner wall surface of said annular member of said control unit cooperatively defining an annular clearance therebetween;

a rotary flow control knob sleeved on said control rod and operable so as to rotate said control rod in order to rotate correspondingly said regulating ring to align a selected one of said radial holes with said intake passage;

a trigger piece connected to said second end of said control rod and operable to move said piston away from said inner end of said control unit to permit air flow from said inner portion to said clearance; and

a spring unit disposed between said trigger piece and said control knob so as to bias said trigger piece to move said control rod in order to permit said piston to block normally said inner end.

5,303,782

FLOW CONTROLLING DEVICE FOR A DISCHARGE SYSTEM SUCH AS A DRAINAGE SYSTEM

Jorgen M. Johannessen, 6 Aspevej, Stroby Egede, DK-4600 Koge, Denmark

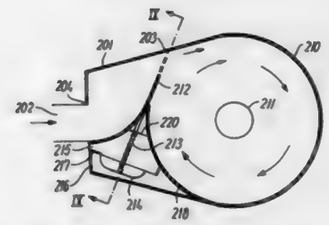
PCT No. PCT/DK91/00261, § 371 Date Mar. 9, 1993, § 102(e) Date Mar. 9, 1993, PCT Pub. No. WO92/04667, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 10, 1991, Ser. No. 988,915

Claims priority, application Denmark, Sep. 11, 1990, 2169/90; Jan. 15, 1991, 0072/91

Int. Cl.[5] F15C *1/16*

U.S. Cl. 137—809 **8 Claims**



1. A flow controlling device for a discharge system, such as a drainage system, comprising a first vortex chamber (**101, 201, 301, 401, 501**) with an inlet (**102, 202, 302, 402, 502**) and an outlet (**103, 203, 303, 403, 503**) and a second bigger vortex chamber (**110, 210, 310, 410, 510**) with a peripheral inlet and a central outlet axial in relation to a vortex in this chamber, said second vortex chamber being at the peripheral inlet connected to the outlet (**103, 203, 303, 403, 503**) of the first vortex chamber (**101, 201, 301, 401, 501***b*), wherein the first vortex chamber (**101, 201, 301, 401, 501**) is symmetrical with respect to a median plane perpendicular to a vortex axis (A), the direction of both the inlet (**101, 201, 301, 401, 501**) and the outlet (**103, 203, 303, 403, 503**) being parallel with said median plane, the first vortex chamber being asymmetric with respect to a plane parallel with the inlet direction and perpendicular to said median plane, the vortex axis (A) of the first vortex chamber (**101, 201, 301, 401, 501**) being perpendicular to a tangent of the second vortex chamber (**110, 210, 310, 410, 510**) at the peripheral inlet and the ratio between the diameters of the first vortex chamber and the second vortex chamber is less than 0.43:1.

5,303,783

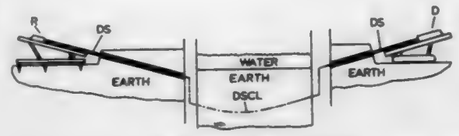
HORIZONTAL EARTH BORE TOOL

Rudy J. Begnaud, 126 Exploration Rd., Broussard, La. 70518, and Bradley Begnaud, Rte. 1, Box 89, Youngsville, La. 70592

Filed Mar. 1, 1993, Ser. No. 24,077

Int. Cl.[5] E21B *15/04, 3/00, 19/00*

U.S. Cl. 175—53 **20 Claims**



1. A receiving rig for handling the outcropping end of a drill string in earth surface to surface horizontal well bore operations, the rig comprising:

a) a base frame with means for anchoring to the earth, having a front end, a back end, side beams, and a general longitudinal center line;

b) a top frame for pipe handling comprising a front end, a back end, generally parallel side beams, parallel carrier rails extending the general length of said side beams, a frontal cross beam, and an operational center line above said side beams, hingedly attached to said base frame for tilting about a line generally transverse to a vertical plane containing said operational center line;

c) powered tilt means arranged to separate said base frame and said top frame at their back ends to align said operational center line with the drill string outcropping from the well bore;

d) swivel means mounted on said rails for longitudinal movement thereon, having an arbor, with a fluid conducting bore, extending forwardly therefrom bearingly supported for rotation about said operational center line and adapted for fluid tight attachment to a drill string extending forwardly along said operational center line, said swivel having plumbing to transport drilling fluid between said arbor bore and fluid handling plumbing from a remote fluid processing system;

e) at least one hydraulic thrust cylinder attached to said top frame and said swivel to move said swivel longitudinally along said rails;

f) at least two pipe tongs, with at least one tong powered, situated to apply break out and make up torque to tool joints when said tool joints are situated on said operational center line, said tongs arranged to be carried by said side beams of said top frame for limited longitudinal movement thereon;

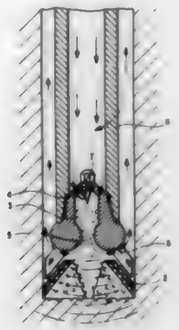
g) at least one stabilizing pipe guide, carried by said rails for longitudinal movement thereon, situated to laterally stabilize pipe attached to said arbor and extending along said operational center line;

h) pipe clamp means situated near the front of said top frame, attached thereto, to axially secure drill string extending along said operational center line;

i) at least one operator station attached to said rig with manual controls accessible to an operator in said station for controlling power available from a remote power source to control power to, at least, said tilt means, said hydraulic cylinder, said tongs, and said pipe clamping means.

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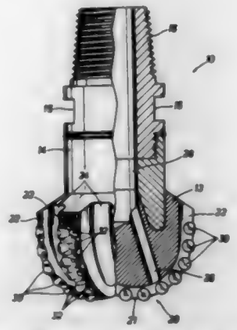
5,303,784
DRILLING APPARATUS
Wsewolod S. Awdujewski; Rifner W. Ganijew, both of Moskau; Robert S. Mufassalow, BaSSR, and Jurij P. Sacharow, Moskau, all of U.S.S.R., assignors to Wave Tec Ges.m.b.H., Laxenburg, Austria
Filed May 5, 1992, Ser. No. 878,474
Claims priority, application U.S.S.R., May 6, 1991, 4928471
Int. Cl.[5] E21B *7/24*
U.S. Cl. 175—56 4 Claims



1. Drilling apparatus, comprising:
a body with attached rock-destroying components;
a subassembly arranged within said body for generating hydrodynamic waves of varying intensity of fluid flow velocity in a fluid along a flow path outward thereof, said subassembly including
a turbulence chamber having substantially tangentially arranged entry channels for entry of fluid into a cavity thereof, and a conically tapered outlet channel with a rounded-off frontal surface for directing said hydrodynamic waves onto said rock-destroying components, and
a conical wave reflector arranged within an upper part of said turbulence chamber substantially in the direction of a longitudinal axis thereof, wherein the angle of inclination α of the generatrices of the conical surface of the wave reflector is below the critical value θ' of the angle of approach θ of a wave coming into the conical surface of the wave reflector.

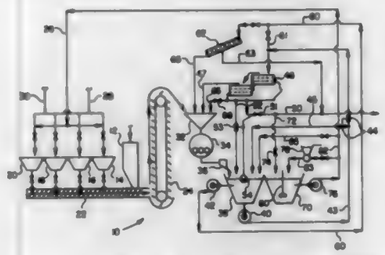
5,303,785
DIAMOND BACK-UP FOR PDC CUTTERS
Donald R. Duke, Spring, Tex., assignor to Smith International, Inc., Houston, Tex.
Filed Aug. 25, 1992, Ser. No. 934,978
Int. Cl.[5] E21B *10/52*
U.S. Cl. 175—57 8 Claims

1. A diamond drag bit for drilling a borehole in an earthen formation, said drag bit comprising:
a bit body forming a first open pin end adapted to be connected to a drill string and a second cutter end, said bit body forming a plenum chamber therein for receiving a source of drilling fluid transported through said drill string, one or more nozzles being formed by said cutter end of said body communicates with said plenum chamber and directs said fluid from said chamber to said borehole,
a face of said second cutter end forming a plurality of radially extended ribbed portions and valleys between said ribbed portions, a portion of said fluid being directed through said valleys and over said ribbed portions during operation of said drag bit in said borehole,
a multiplicity of diamond cutters are strategically positioned and fixedly attached on a first outer leading edge face of said raised rib portions, said cutters being retained in preformed sockets formed in said first leading edge face of the raised rib portions, and
a multiplicity of ultra-hard material segments having at least one flat surface are imbedded in a second outer surface formed by said raised rib portion, said segments of hard material are strategically positioned both rearwardly and laterally of each of said diamond cutters fixedly attached



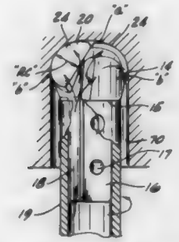
on said first outer leading edge face, each of said segments being fixedly secured with their flat surface substantially flush with said second outer surface formed by said raised rib portion, said multiplicity of ultra-hard material segments serve to protect a third trailing edge surface formed by said raised ribs behind said diamond cutters from abrading thereby minimizing cutter loss.

5,303,786
EARTH DRILLING CUTTINGS PROCESSING SYSTEM
Mark L. Prestridge, Anchorage; Theron W. Anderson; Mark W. Chadwell, both of Wasilla; Larry E. Ross, Anchorage, and Gary A. Smith, Wasilla, all of Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Sep. 16, 1992, Ser. No. 946,268
Int. Cl.[5] E21B *21/06*
U.S. Cl. 175—66 24 Claims



1. A system for reducing the particle size of drill cuttings and similar earth materials for inclusion in a disposal slurry, said system comprising:
hopper means for receiving said drill cuttings;
conveyor means for conveying said drill cuttings from said hopper means to a particle size reduction apparatus;
particle size reduction apparatus for reducing the particle size of said drill cuttings to about 200 microns or less;
first separator means for separating oversize particles from said slurry;
a first tank for receiving reduced particles of said drill cuttings;
first pump means for conveying said slurry to said first separator means;
means for returning said oversized particles to said particle size reduction apparatus;
first conduit means for conducting a slurry of reduced particles from said first separator means away from said system for disposal; and
second conduit means for conducting at least a portion of said slurry of reduced particles from said first separator means to said first tank.

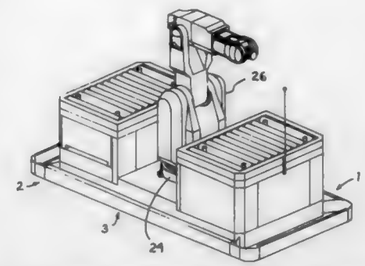
5,303,787
ROTARY MINING TOOLS
William J. Brady, 1767 Wishingwell Dr., Creve Coeur, Mo. 63141
Continuation-in-part of Ser. No. 704,885, May 23, 1991, Pat. No. 5,180,022. This application Jan. 14, 1993, Ser. No. 4,682
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] E21B *10/54*
U.S. Cl. 175—430 24 Claims



1. A non-coring rotary tool having a bit body with a shank portion constructed and arranged for attachment to a drill column for rotation on a central axis, and with a cutter head portion constructed and arranged for drilling and boring as in roof bolting operations in tunnel construction and mining;
a pair of cutter inserts formed from a polycrystalline diamond disc of predetermined diameter size to thereby define a curved outer cutting edge having a predetermined radial arc on each insert, said pair of cutter inserts also having substantially planar wear surfaces extending from the cutting edges thereof;
said pair of cutter inserts being mounted on said cutter head portion with said wear surfaces being oppositely oriented to face in the direction of rotation of said bit body, and with said wear surfaces being at a predetermined negative angle relative to an axial plane normal to the direction of rotation and extending across the diameter of the cutter head portion; and
said cutting edges of said pair of cutter inserts having outer gauge-cutting margins defining a predetermined bore diameter to be formed by the tool, and the cutting edges extending along reversely curving arcuate paths substantially continuously from the rotational axis of the tool to the gauge cutting margins.

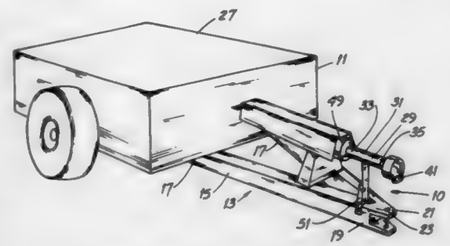
5,303,788
ROBOTIC VEHICLE HAVING FLEXIBLE CHASSIS
Roberto Muselli, Piacenza; Armando Neri, Bologna, and Gianluigi Orsi, Roveleto di Cadeo, all of Italy, assignors to Jobs S.p.A., Piacenza and G. D. S.p.A., Bologna, both of Italy
Filed Jan. 29, 1992, Ser. No. 827,371
Claims priority, application Italy, Feb. 12, 1991, PC 91 A 000003
Int. Cl.[5] B62D *57/00;* B25J *5/00*
U.S. Cl. 180—7.1 4 Claims

1. An automotive truck for a robot, the truck being able to move along an uneven surface, the truck comprising:
a chassis having an upper surface;
at least one platform movably mounted to the chassis;
a drive wheel rotatably mounted to the platform;
elastic means for pressing the drive wheel toward the surface;
a robot having a base and a body rotatably mounted to the base, the base mounted on the upper surface of the chassis, the base having a central portion, the robot being rotatable about the base at least 360°; and



motive means for rotating the robot, the motive means comprising a crown wheel mounted to the central portion of the base, a motor with cogwheel engaged to the crown wheel, a gear mounted at the central portion of the base and an encoder engaged with the gear.

5,303,789
MACHINE WITH PTO-SHAFT SUPPORT BRACKET
William H. Adamson, Lake Villa; L. Dale Baker, Naperville, both of Ill., and Paul Reilly, Manitowoc, Wis., assignors to Case Corporation, Racine, Wis.
Continuation of Ser. No. 891,647, May 29, 1992, abandoned.
This application Aug. 23, 1993, Ser. No. 111,272
Int. Cl.[5] B60K *17/28*
U.S. Cl. 180—53.1 7 Claims



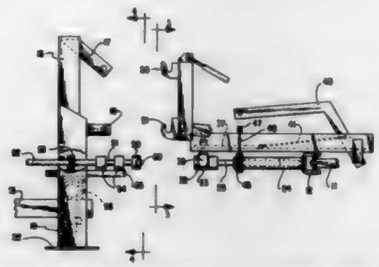
1. In a ground-travelling machine having a PTO shaft for connection to a power source, the improvement wherein:
the machine includes a bracket which, in an upright support position, supports the shaft when the shaft is disconnected from the power source; and,
when the shaft is connected to the power source, the bracket is in a folded repose position and the bracket and shaft are spaced from one another.

5,303,790
QUICK ATTACHING POWER TAKE OFF
Lyle W. Coleman, R.R. 1, Box 228, Springfield, S. Dak. 57062
Filed Jun. 2, 1992, Ser. No. 892,236
Int. Cl.[5] B60K *25/00;* A01B *59/043;* F16D *11/10*
U.S. Cl. 180—53.3 3 Claims

1. A connecting mechanism for providing powdered engagement between a self-propelled mobile power source and an implement adapted to be driven and pulled by said power source, said power source including a pulling hitch having a connecting socket, and said implement including a pulling tongue having a ball matched to said connecting socket and

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normally connected to said socket; said connecting mechanism comprising power take off means on said power source, driven shaft means on said implement, a hitch yoke on said pulling tongue and having bearings mounted thereon, said driven shaft means including an implement shaft adapted to drive said implement and an auxiliary driven shaft journalled in said bearings on said hitch yoke, flexible connection means between said implement shaft and said auxiliary shaft in the vertical plane of said connecting ball, whereby misalignment of said shafts will be accommodated when said socket moves relative to said ball, driven coupling means releasably engaged be-



tween said power take off means and said driven shaft means, said coupling means comprising two separable matching parts, a first part driven by said power take off means and a second part normally in driven engagement with said first part, said second part being attached to said auxiliary driven shaft, said power take off means including drive means in the form of a socket, a sliding shaft drivingly engaged by said drive means and slidably received in said socket, said first part of the coupling being mounted on said sliding shaft whereby sliding of said shaft within said socket causes disengagement of said two separable matching parts.

5,303,791

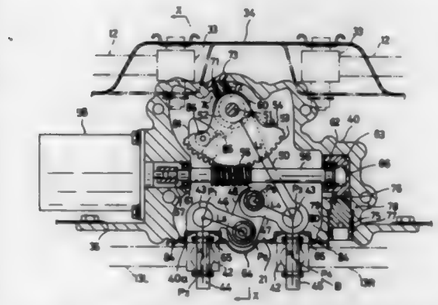
REAR WHEEL STEERING DEVICE FOR A VEHICLE

Hiroyuki Hayashi; Toshiro Kondo; Fumitaka Ando; Hirotaka Kanazawa; Takeshi Edahiro, and Ryuya Akita, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Sep. 30, 1991, Ser. No. 769,196

Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—79.1 **14 Claims**



1. A rear wheel steering device for steering left and right rear wheels symmetrically, comprising:

left and right suspension arm members supporting each rear wheel at each one end portion of the suspension arm members and extending in vehicle widthwise direction;

left and right support members each provided at other end portion of each suspension arm member, rotatably supporting each suspension arm member and supported swingably by a vehicle body through the medium of a support axis extending in up and down direction;

two lever parts, each secured to and extending from each support member in opposite direction to each other;

a link member interconnecting both lever parts; and

an actuator which revolves one of the left and right support members around said support axis.

5,303,792

AMORING STRUCTURE FOR CONSTRUCTION MACHINES

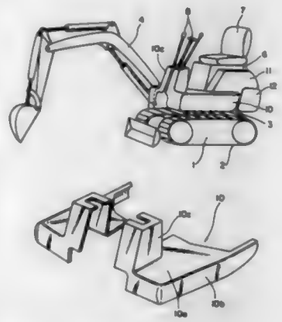
Yutaka Shimizu, Saitama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho and Komatsu Zenoa Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 848,975, Apr. 15, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 101,344

Claims priority, application Japan, Oct. 23, 1989, 1-123105[U]; Nov. 9, 1989, 1-130157[U]

Int. Cl.[5] B62D *25/20, 25/10*

U.S. Cl. 180—89.17 **2 Claims**



2. A construction machine comprising a lower crawler body propelled by a crawler belt, an upper swing body disposed on said lower crawler body for turning movement thereon and including an upstanding operating lever, an upper swing body cover bifurcated to comprise right and left molded plastic cover portions each having a floor plate portion, a lever cover portion that extends upwardly from the respective floor plate portion, and outer peripheral front and side frame portions that extend downwardly from the respective floor plate portion, said right and left cover portions being assembled on said upper swing body so that together the floor plate portions thereof cover an upper surface of said upper swing body, the lever cover portions thereof are disposed about said upstanding operating lever and said front and side frame portions thereof cover an outer front and side periphery of said upper swing body, and a working machine disposed at a front portion of said upper swing body.

5,303,793

STEERING APPARATUS

Kiyotaka Kato, Nishio; Shiro Takeuchi, Toyota; Masanori Natsume, Toyokawa; Seiji Kawakami, Susono; Ikuo Kushiro, Susono, and Satoru Niwa, Susono, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 26, 1992, Ser. No. 904,685

Claims priority, application Japan, Jun. 26, 1991, 3-183024; Aug. 26, 1991, 3-240398

Int. Cl.[5] B62D *3/02*

U.S. Cl. 180—132 **5 Claims**

1. A steering apparatus operable in response to the driver's steering effort applied thereto to steer steerable wheels, comprising:

an input shaft arranged to be rotated by the steering effort;

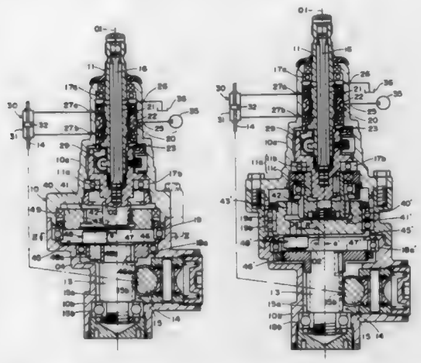
an output member operatively connected to the steerable

wheels by means of steering linkage and an interconnecting mechanism;

an intermediate rotary member disposed between said input shaft and said output member for rotation about an axis offset from the rotational axis of said output member;

a rotation transmitting mechanism comprising an elastic member and disposed between said input shaft and said intermediate rotary member for transmitting a rotational movement of said input shaft to said intermediate rotary member through said elastic member;

a cam groove formed on an end surface of one of said intermediate rotary member and said output member, said cam groove being extended in a radial direction;



a protrusion provided on an end surface of the other of said intermediate rotary member and said output member at a location radially offset from the respective rotary axes of said intermediate rotary member and said output member to be engaged with said cam groove;

assist force generating means operatively coupled to said output member for applying an assist force to said output member; and

a control mechanism for controlling the assist force generating means so as to control the assist force in accordance with the steering effort.

5,303,794

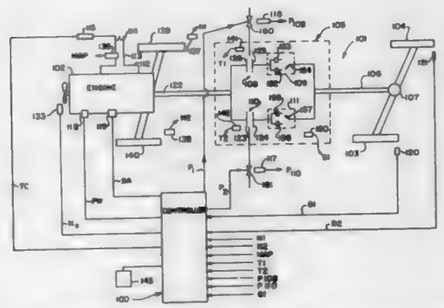
WHEEL SPIN CONTROL USING ELECTRONICALLY CONTROLLED CLUTCHES AND ENGINE CONTROLS

Davorin D. Hrovat, Dearborn, Mich., and Jeremy J. Main, Kent, Great Britain, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1991, Ser. No. 808,834

Int. Cl.[5] B60K *28/16*

U.S. Cl. 180—197 **25 Claims**



1. A wheel spin control system for a vehicle having an engine including an intake manifold, a transmission including first and second gear means and first and second clutch means, and at least one wheel driven through one of said first and second gear means and one of said first and second clutch means, said first gear means being operational when said first clutch means is engaged and said second gear means being operational when said second clutch means is engaged, the system comprising:

first sensor means for monitoring said at least one driven wheel and for generating a spin signal indicative of wheel spin;

means for monitoring said first and second gear means and for generating gear signals indicative of operation of one of said first and second gear means and thereby the engagement of one of said first and second clutch means; and

controller means responsive to said gear signals and said spin signal for partially engaging the other one of said first and second clutch means which is not engaged when said spin signal indicates wheel spin while maintaining the full engagement of said one of said first and second clutch means which is engaged to increase load torque on said engine and thereby reduce wheel spin.

5,303,795

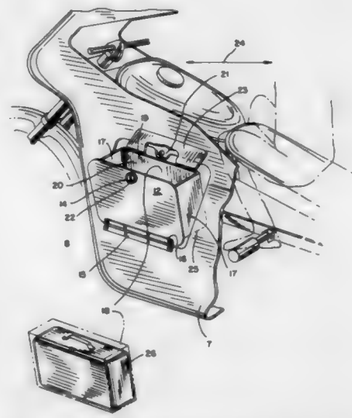
MOTORCYCLE LUGGAGE CARRIER

Erik Buell, Mukwonago, Wis., assignor to Buell Motor Company, Inc., Mukwonago, Wis.

Continuation of Ser. No. 908,481, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 645,219, Jan. 24, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,462

Int. Cl.[5] B62J *7/02*

U.S. Cl. 180—219 **3 Claims**



1. In a motorcycle of the type having front and rear wheels, a steering column connected to the front wheel, a seat for the operator, an engine disposed between the steering column and the seat, a fairing extending rearwardly around the steering column and enclosing the engine and a vertical center of gravity,

a pair of forwardly mounted main storage compartments disposed in said fairing generally midway between the front and rear wheels, forward of the seat and the vertical center of gravity, rearward of the steering column and substantially adjacent and on opposite sides of the engine with each of said compartments defined by a rear wall adjacent the engine, a front panel flush with the fairing, at least one side wall connecting the rear wall and the front panel and a compartment floor, with said front panel having a lower end pivotally attached to said fairing by a hinge extending generally horizontally along said lower end so that each of said compartments may be pivotally

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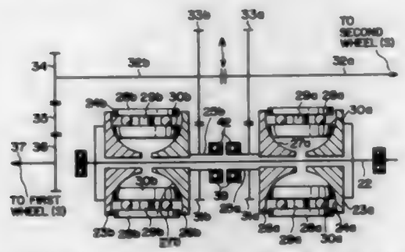
moved between a closed position in which said front panel is flush with the fairing and an open position in which said compartment is rotated away from the engine and access to said compartment is provided, said front panel having latching means to releasably maintain said front panel in said closed position and locking means combined with said latching means to prevent release of said latching means, said compartments being constructed and arranged to promote a stabilizing influence and maintain aerodynamic balance for said motorcycle.

5,303,796

TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Hirohisa Tanaka, Tokyo, and Takashi Imanishi, Yokohama, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 978,723
Claims priority, application Japan, Dec. 5, 1991, 3-348458
Int. Cl.[5] B60K *17/34*; B62D *11/10*; F16H *15/38*
U.S. Cl. 180—233 **5 Claims**



1. In a vehicle having first and second wheels to be driven with a speed difference therebetween, the improvement wherein said wheels are driven by a transmission which is effective to accommodate the speed difference without a separate differential for such purpose, said transmission being a toroidal type continuously variable transmission including an input shaft, a pair of input disks non-rotatably mounted to said input shaft and each having an arcuately concave engagement surface at an axial end thereof, a pair of output disks each corresponding to a respective one of said input disks and having an arcuately concave engagement surface facing that of the corresponding input disk, a first plurality of power rollers having respective convex peripheries engaging the engagement surfaces of one of said input disks and the corresponding output disk, a second plurality of power rollers having respective convex peripheries engaging the engagement surfaces of the other input disk and the other output disk, each power roller being rotatably mounted to a displaceable shaft by a corresponding trunnion which is pivotable on a pivot axis transverse to the axis of said input shaft, and output means for independently taking out rotating motions of said pair of output disks for transmission to said first and second wheels, respectively.

5,303,797

TORQUE DISTRIBUTION CONTROL DEVICE FOR FOUR-WHEEL DRIVE VEHICLE

Yasuhiro Nilkura, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

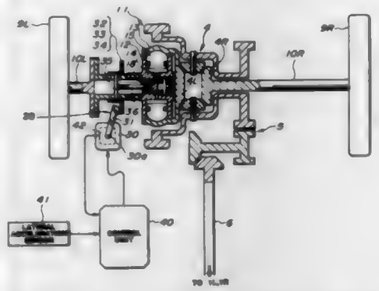
Filed Oct. 31, 1991, Ser. No. 785,789
Claims priority, application Japan, Nov. 13, 1990, 2-307512
Int. Cl.[5] B60K *17/348*
U.S. Cl. 180—248 **16 Claims**

1. A torque distribution control device for a four-wheel drive vehicle having a front wheel drive line and rear wheel drive line, comprising:

a rotational speed differential responsive control coupling disposed in one of the drive lines and having a rotor and cam ring rotatable relative to each other, hydraulic fluid discharge means responsive to a rotational speed differential between said rotor and said cam ring for discharging a quantity of hydraulic fluid proportional to said rotational speed differential, and variable orifice means for restricting discharge of said hydraulic fluid by said discharge means and thereby producing a transfer torque between said rotor and said cam ring;

actuator means for actuating said variable orifice means and thereby changing an orifice opening of said variable orifice means;

lateral acceleration detecting means for detecting a lateral acceleration of the vehicle and producing a signal representative thereof; and



control means for controlling an operation of said actuator means in response to the signal from said lateral acceleration detecting means for thereby controlling the orifice opening of said variable orifice means on the basis of the lateral acceleration of the vehicle;

wherein said one of the drive lines has a differential, and said control coupling is combined with the differential to constitute an assembled unit; and

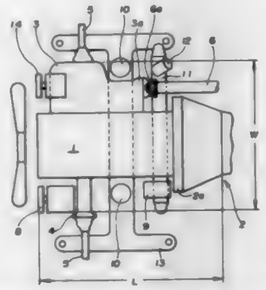
wherein the differential has a pair of side gears, and said one of the drive lines further has a pair of drive axles between which the differential is interposed, and said control coupling is interposed between one of the side gears and one of the drive axles.

5,303,798

MOUNTING ARRANGEMENT FOR AUTOMOTIVE ENGINE WITH LONGITUDINALLY ARRANGED CYLINDERS

Kazumi Nakamura; Suburo Yamasaki, both of Isehara, and Hitoshi Kokubun, Atsugi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 26, 1992, Ser. No. 887,748
Claims priority, application Japan, May 24, 1991, 3-148095
Int. Cl.[5] B60K *5/12*
U.S. Cl. 180—292 **3 Claims**



1. A mounting arrangement for an internal combustion engine with at least one row of cylinders arranged in a longitudinal direction of a four-wheel drive or a front-wheel drive automotive vehicle, which employs a front-wheel drive shaft and a front differential connected to said front-wheel drive shaft, comprising:

engine-body accessories attached to the engine and arranged in front of said front-wheel drive shaft;

a pair of transversely opposed engine mounts for mounting the engine, the engine mounts being arranged rearwardly of said front-wheel drive shaft; and

a suspension member having a high rigidity and on which said engine mounts are supported so that the engine mounts are closer to a bottom of the engine;

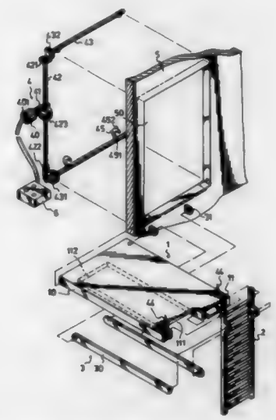
wherein said front-wheel drive shaft and said front differential are both arranged at a side of the engine in a vicinity of a front end of said engine and wherein at least one of said engine-body accessories is arranged substantially above said front differential.

5,303,799

EMERGENCY ESCAPE DEVICE

Hsin-Tan Tsai, No. 50-8, Fu-Hsing St., Hualien City, Taiwan

Filed May 25, 1993, Ser. No. 66,572
Int. Cl.[5] E06C *9/14*
U.S. Cl. 182—78 **3 Claims**



1. An emergency escape device for a building wall, characterized by:

a first emergency door mechanism including

a door panel having an upper end and a lower end which is mounted pivotally on said wall and which is displaced from a ground surface by a predetermined height, said door panel being movable relative to said wall between a closed position, wherein said door panel is flush with said wall, and an open position, wherein said door panel is perpendicular to said wall,

a ladder having an upper end connected pivotally to said upper end of said door panel and a lower end which extends to the ground surface when said door panel is located in said open position,

a rigid support arm mounted pivotally on said wall below said lower end of said door panel at one end and connected pivotally to said ladder at the other end thereof, said support arm preventing swaying of said ladder when said door panel is in said open position, and

a driving assembly which is operable to move said door panel between said closed and open positions and which includes a motor unit with a driving shaft, a vertical shaft which is disposed adjacent to one side of said door panel at an inner side of said door panel and which is driven rotatably by said driving shaft of said motor unit, two horizontal shafts which are adjacent to a respective one of said upper and lower ends of said door panel at said inner side of said door panel and which are driven rotatably by said vertical shaft, said driving assembly further including a string unit connected securely to an upper one of said horizontal shafts at one end and connected securely to said upper end of said door panel at the other end, rotation of said upper one of said horizontal shafts in one direction winding said string unit thereon to pull said door panel from said open position to said closed position, and a curved push rod having one end mounted securely on a lower one of said horizontal shafts and a distal end abutting against said door panel to push said door panel from said closed position to said open position; and

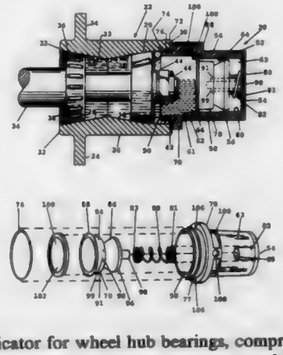
a control assembly connected electrically to said motor unit of said driving assembly and operable to activate said motor unit of said driving assembly.

5,303,800

CLOSED LUBRICATION SYSTEM FOR WHEEL HUB BEARINGS

Kenneth Persson, 161 Phillips La., Lake Mills, Wis. 53551

Filed Sep. 23, 1992, Ser. No. 950,439
Int. Cl.[5] F16C *1/24*
U.S. Cl. 184—5.1 **20 Claims**



1. A lubricator for wheel hub bearings, comprising:

a housing having a closed end, an open end spaced apart from said closed end, and a sidewall extending from said closed end to said open end, said open end sealingly engagable with a wheel hub;

a bellows having a peripheral edge, operatively disposed in said housing, for expansion and contraction responsive to changes in pressure in said wheel hub;

a spring positioned between said bellows and said closed end, for urging said bellows toward said open end upon contraction of said bellows;

a retaining ring fixed in said housing, for limiting movement of said bellows toward said open end and forming an air-tight seal with said peripheral edge of said bellows; and

a lubricant port disposed in said sidewall of said housing proximate said open end, for introducing a lubricant into said housing and said wheel hub.

11. A method for lubricating the bearings of a wheel hub having an outer end and an inner end, comprising:

sealingly engaging a lubricator cap with the wheel hub, said cap including a housing having a bellows compartment and a lubricant compartment, said lubricant compartment sealingly engagable with a wheel hub; a bellows disposed and restricted within said bellows compartment, for expansion and contraction responsive to changes in pressure in said wheel hub, a retaining ring fixedly attached to said housing of said cap, said bellows fixedly attached to said housing of said cap by said retaining ring, and a lubricant port disposed in a sidewall portion of said lubricant com-

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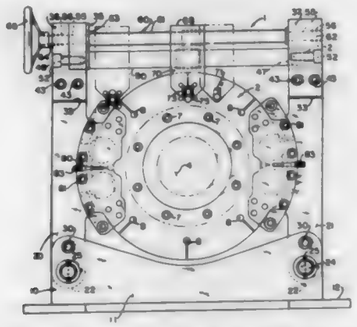
partment of said housing, for introducing a lubricant into said housing and said wheel hub;
filling said cap with a lubricant through said lubricant port; and
rotating said wheel hub wherein the centrifugal force so created forces said lubricant into the bearings.

5,303,801

BRAKE ASSEMBLY HAVING AN ADJUSTABLE YOKE

Richard P. Lindgren, Chester Springs, Pa., and Melbourne F. Giberson, 5 Spring Mill La., Haverford, Pa. 19041, assignors to Melbourne F. Giberson, Haverford, Pa.

Filed Feb. 11, 1993, Ser. No. 16,729
Int. Cl.[5] F16D *65/24*
U.S. Cl. 188—73.34 **8 Claims**



1. In a brake system for a boiler feed water pump driven by an output shaft of a fluid drive, wherein a brake disc with parallel flat sides is mounted on said output shaft, the improvement comprising a fixed base frame having a part extending substantially horizontally along a lower edge of said brake disc and having at each end, an elevated section; two arms, each hingedly mounted on a pivot pin mounted in said fixed base frame at a lower end of said arm for swinging between an upright position substantially perpendicular to said base frame, said arms facing each other on diametrically opposite sides of said disc, and a position at which the arms are swung outwardly with respect to one another, said base elevated sections and said arms having erecting pin passages above said pivot pins, in which erecting pins are mounted when the arms are in their upright position to hold the arms in upright position, a yoke extending between the upper ends of said arms, and means for selectively connecting said yoke to said arms in precisely determined relative position, each of said arms having an intermediate span contiguous said disc when said arm is in its upright position, and hydraulically operated caliper brake means mounted on said intermediate span and having calipers embracing a portion of both outer side surfaces of said disc when said arms are in upright position and swinging clear of said disc when said arms are swung away from said disc, the calipers of said two arms engaging the sides of said plate at diametrically opposite positions with respect to one another.

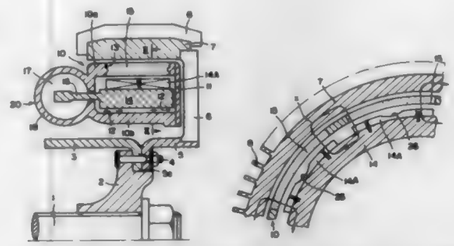
5,303,802

EDDY CURRENT BRAKING SYSTEM

Tohru Kuwahara, Kawasaki, Japan, assignor to Isuzu Motors Ltd., Tokyo, Japan

Filed Jun. 7, 1993, Ser. No. 73,408
Claims priority, application Japan, Nov. 8, 1991, 3-100234; Oct. 21, 1992, 4-307527[U]
Int. Cl.[5] B60L *7/28;* **H02K** *49/02*
U.S. Cl. 188—158 **14 Claims**

1. A vehicle braking system comprising:
a brake structure defining an annular surface means;
annular magnet support means disposed adjacent to said annular surface means;
a plurality of permanent magnets mounted on said magnet support means and circumferentially spaced apart thereon, the polarities of said plurality of permanent magnets alternating circumferentially and each said permanent magnet having circumferentially spaced apart end portions of substantially equal cross-sectional area joined by a middle portion of substantially smaller cross-sectional area;
annular pole piece support means;



a plurality of ferromagnetic pole pieces mounted on said pole piece support means and circumferentially spaced apart in positions between said annular surface means and said permanent magnets, each said pole piece having a circumferential length substantially equal to the circumferential length of a radially adjacent said permanent magnet; and
adjustment means for producing relative angular movement between said magnet support means and said pole piece support means so as to change the circumferential alignment between said pole pieces and said permanent magnets.

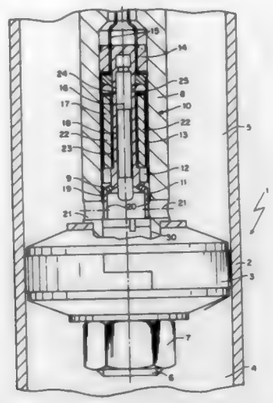
5,303,803

VARIABLE DASHPOT FOR MOTOR VEHICLES

Wolfgang Grün, Ennepetal; Reinhard Hölscher, Salzkotten, both of Fed. Rep. of Germany; Bodo Fütterer, Luzern, Switzerland; Jürgen Mayer, Sachseln, Switzerland, and Peter Wolf, Luzern, Switzerland, assignors to August Bilstein GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Apr. 5, 1991, Ser. No. 681,141
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1990, 4011358
Int. Cl.[5] F16F *9/46;* **B60G** *17/06*
U.S. Cl. 188—299 **9 Claims**

1. A variable dashpot for producing a damping effect in motor vehicles, comprising: a cylinder filled with vibration-suppressing fluid; a hollow piston with vibration-suppressing valves in said cylinder; a hollow piston rod fastened directly to said piston; said piston separating said cylinder into two compartments communicating through a bypass cross-section adjustable by adjusting means; an electrical motor with motor head held in said hollow piston rod and having a rotor and a stator with windings connected with said motor head; said adjusting means being actuated by said motor; said piston rod being comprised of magnetic material and having a recess for receiving said stator windings; said rotor having permanent magnets, said rotor being held in a bore in said stator, said adjusting means adjusting continuously said bypass cross-section to vary said damping effect, said piston rod of magnetic material being a magnetic path.

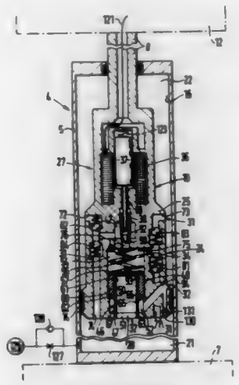


5,303,804

SHOCK ABSORBER FOR DAMPING COURSES OF MOTION OF A VEHICLE

Ewald Spiess, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 640,509, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 390,042, Aug. 7, 1992, abandoned. This application Feb. 5, 1993, Ser. No. 13,983
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1988, 3835705
Int. Cl.[5] F16F *9/00*
U.S. Cl. 188—319 **35 Claims**



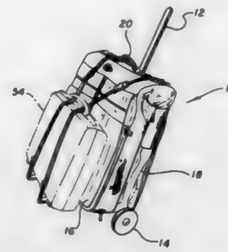
1. A shock absorber for damping courses of motion of two masses moving relative to one another at variable speeds, having a cylinder, a damper piston displaceable in said cylinder, said damper piston divides said cylinder into a first and a second work chamber, said cylinder and said damper piston are each connected to a respective one of said masses, at least one valve assembly (**24**), said at least one valve assembly including a first single valve (**27**) and a second single valve (**28**), said first single valve (**27**) is triggerable by control signals to influence a flow of a pressure fluid out of at least one of said first and second work chambers into the other of said first and second work chambers, wherein the flow of pressure fluid flowing through said first single valve (**27**) and said second single valve (**28**) is divided into a first partial flow path (**31**) and a second partial flow path (**32**), each of which connects the first and second work chambers to each other, said first single valve (**27**) is located in and controls fluid flow through said first partial flow path, and the second single valve (**28**) is located in and controls fluid flow through said second partial flow path (**32**), said first partial flow path (**31**) includes at least one one-way check valve (**81, 82, 83, 84, 109, 110**) disposed in a conduit (**71, 72, 73, 74, 106, 107**) through which fluid flows via said first single valve (**27**) such that fluid always flows through said first single valve (**27**) in only one direction from either of said two work chambers to the other of said two work chambers, said second single valve (**28**) via said second partial flow path (**32**) controls fluid flow in reversible directions between said two work chambers, and wherein the control signals control said first single valve (**27**) and the damping force directly as a function of control signals.

5,303,805

LUGGAGE BAG WITH COLLAPSIBLE INNER FRAME AND WHEELS

Stephen G. Hauser, 4133 Aleman Dr., Tarzana, Calif. 91356

Filed Jun. 1, 1992, Ser. No. 891,188
Int. Cl.[5] A45C *5/14, 7/00, 13/04*
U.S. Cl. 190—18 A **21 Claims**



17. A luggage bag, comprising:
a substantially flexible bag adapted to receive and contain personal items;
a rigidifying frame connected to the interior of said bag and including means movable between a relatively rigid state to place the bag in a substantially rigid configuration, and a relatively flexible state to place the bag in a relatively soft and deformable configuration;
said rigidifying frame comprising at least one elongated frame element connected to said bag at spaced positions, said frame element being deployable in the substantially rigid configuration and in the flexible state;
at least one caster member mounted on said bag for rolling support thereof;
actuator means comprising a handle on the exterior of the bag movable between a first position substantially flush with the bag exterior to place said frame in a relatively flexible state and a second position projecting outwardly from the bag to place said frame in the substantially rigid state, said handle in said second position being manually graspable for facilitated maneuvering of the bag on said caster member; and
pocket means for receiving said actuator means when said actuator means is in said first position.

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5,303,806

SPRING APPLIED-HYDRAULICALLY RELEASED CLUTCH DISC ASSEMBLY

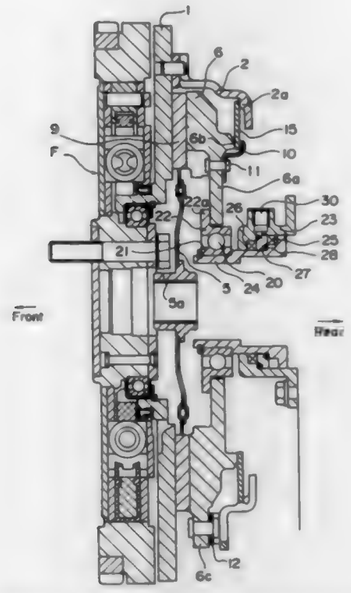
Kouji Kajitani; Minoru Abe, and Tetuji Takano, all of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Continuation of Ser. No. 820,691, Jan. 27, 1992, abandoned. This application Mar. 26, 1993, Ser. No. 37,533

Claims priority, application Japan, May 30, 1990, 2-142398

Int. Cl.[5] F16D *13/70, 25/08*

U.S. Cl. 192—70.27 **1 Claim**



1. A clutch unit having a flywheel adapted to be connected to an engine output shaft, a clutch cover secured to a rear face of said flywheel, a pressure plate mounted on said clutch cover and facing said flywheel and a clutch disc having a friction facing on its outer periphery disposed between said flywheel and said pressure plate for engagement and disengagement of said friction facing between said flywheel and said pressure plate by axially moving said pressure plate in a direction toward and away from said flywheel, said pressure plate having a projection extending radially inward of said pressure plate, spring means between said clutch cover and said pressure plate resiliently urging said pressure plate toward said flywheel for engaging said friction facing of said clutch disc between said pressure plate and said flywheel, a release bearing having a radially inner race and a radially outer race, said outer race having a radially outwardly extending projection in contact with said radially inward projection of said pressure plate and an inner race, a release sleeve supporting said inner race of said release bearing and movable in an axial direction toward and away from said clutch disc and a hydraulic cylinder for moving said release sleeve and said release bearing away from said clutch disc for axially moving said radial projection of said outer release bearing race and said pressure plate away from said pressure plate away from spring disposed in an oil chamber of said hydraulic cylinder and compressible in an axial direction as said spring means resiliently urges said pressure plate toward said flywheel when said hydraulic cylinder is deactivated.

5,303,807

ELECTROHYDRAULIC DEVICE FOR CONTROLLING THE ENGAGEMENT OF THE CLUTCH IN MOTOR VEHICLES AND THE LIKE

Fabio Domeneghini, Marcon Venezia, Italy, assignor to Fadiel Italiano S.R.L., Italy

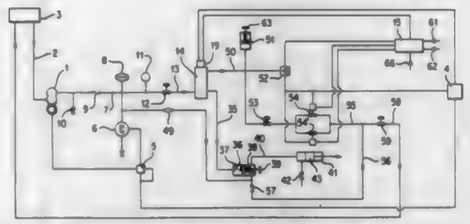
PCT No. PCT/EP90/01057, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO91/00441, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 2, 1990, Ser. No. 793,371

Claims priority, application Italy, Jul. 4, 1989, 84137 A/89

Int. Cl.[5] F16D *23/12*

U.S. Cl. 192—0.076 **25 Claims**



1. An electrohydraulic device for controlling clutch engagement in a motor vehicle provided with both an engine and a clutch, including a clutch lever, said clutch controllable by a clutch pedal actuated by a driver of said motor vehicle, comprising:

a) a hydraulic actuator including a piston and a piston rod, wherein said rod is connected to said clutch lever of said motor vehicle;

b) a hydraulic circuit for controlling said actuator via an interceptor means;

c) an electronic control means operatively connected to said interceptor means, to automatically command said interceptor means to both feed said hydraulic actuator thereby releasing said clutch lever, and to enable said hydraulic actuator discharge, when a predetermined engine operating condition exists;

d) at least one solenoid valve connected to the discharge circuit of said hydraulic actuator and caused to open by said electronic control means due to a sequence of pulses related to a R.P.M. of the vehicle engine;

e) a control hydraulic actuator is disposed between said interceptor means and said hydraulic actuator, said control hydraulic actuator being operatively connected to the piston with an opposing spring and means for adjusting a stroke of said hydraulic actuator according to an engagement stroke of the clutch, and with communicating means interposed between the hydraulic circuit connecting said hydraulic actuators and an outer hydraulic circuit and acting when the clutch is engaged.

5,303,808

COIN CHUTE ASSEMBLY WITH ANTI-PRY COIN SLIDE

John C. Hiortdahl, Lothian, Md., assignor to Hof Service Company, Inc., Silver Spring, Md.

Filed Mar. 20, 1992, Ser. No. 854,691

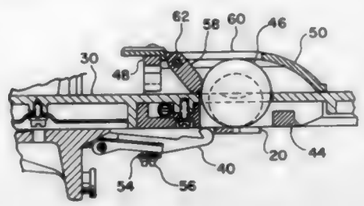
Int. Cl.[5] G07F *5/06*

U.S. Cl. 194—202 **24 Claims**

19. An anti-pry assembly adapted to be coupled to an existing coin slide, comprising

gate means, adapted to be movably coupled above a linear coin path of the coin slide, for preventing retraction of the coin slide by engaging a coin prior to discharge of the coin; and

mounting means for movably coupling said gate means to the coin slide for movement of said gate means upwardly out of the coin path upon engaging the coin to permit passage of the coin underneath said gate means in one direction along the coin path, and for movement of said gate means downwardly back into the coin path after the coin passes underneath said gate means to prevent passage



of the coin in the opposite direction along the coin path, said gate means and said mounting means being sized to be coupled to an existing coin slide.

5,303,809

TRANSPORTING SYSTEM WITH CYCLIC ADVANCE

Guenter Zeller, Donaueschingen-Grüningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

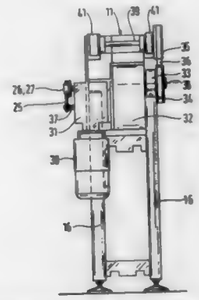
PCT No. PCT/DE91/00895, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO92/10417, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 16, 1991, Ser. No. 917,132

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1990, 4039265

Int. Cl.[5] B65G *43/00*

U.S. Cl. 198—341 **17 Claims**



1. A transporting system for supplying and/or discharging workpieces disposed on carriers to at least one processing unit, the system including a cyclic conveyor driven as a function of the work cycle, particularly a web belt or chain conveyor, which is equipped with cams that determine the position of each workpiece carrier in the conveying direction and enclose the workpiece carriers between them;

wherein a known stepping gear assembly is provided to drive the cyclic conveyor;

wherein a first signal generator is provided to detect the cyclic advance and a second signal generator to detect the cycle time;

wherein the drive for the stepping gear assembly is controlled by the signals of the signal generators in such a manner that the signal of the first signal generator switches off the drive as soon as the cyclic advance has been performed, and the signal of the second signal generator activates the drive at the end of the processing duration for a workpiece;

wherein the stepping gear assembly is a plate cam gear assembly; and

wherein the first signal generator is positioned in such a way that it switches when the cam plate of the plate cam gear assembly is in its cam track.

5,303,810

MAGAZINE RACK AND POSITIONAL ADJUSTMENT SYSTEM THEREFOR

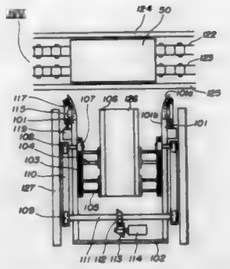
Okie Tani, Tokyo, Japan, assignor to Tani Electronics Industry Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,390

Claims priority, application Japan, Jan. 18, 1992, 4-010040[U]; Mar. 21, 1992, 4-028934[U]

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—345.3 **87 Claims**



1. A magazine rack and positional adjustment system therefor, comprising:

an essentially box-shaped magazine rack having opposing side wall portions, a base portion and accommodating portions arranged at the inner side of the wall portions;

a conveyer upon which said magazine rack is carried;

a lateral positional adjustment mechanism including at least a pair of arm members, a space between said arm members being substantially equal to a width of said magazine rack, said arm members having plane surface portions on facing surfaces thereof and outwardly curved portions at distal ends thereof; and

drive means drivable of said lateral positional adjustment mechanism in a direction toward said conveyer such that corners of the magazine rack, stopped by said conveyer at a predetermined position in front of said lateral positional adjustment mechanism, closest to the arm members contact said outwardly curved portions of said distal ends of said arm members, said drive means driving said arm members further in the direction of said conveyer until opposites sides of said magazine rack contact said plane surface portions of said arm members, said drive means then being operable to return the lateral positional adjustment mechanism to an initial state so as to be ready to perform adjustment operation for the next magazine rack on the conveyer.

5,303,811

SPACER SYSTEM FOR SURFACE CONVEYOR

Charles T. Haley, Bogart, Ga., assignor to Food Machinery Sales, Inc., Athens, Ga.

Filed Feb. 24, 1993, Ser. No. 21,779

Int. Cl.[5] B65G *47/29*

U.S. Cl. 198—419.1 **17 Claims**

1. A metering system for controlling the spaces between cookies moving along a surface conveyor means in parallel lines comprising:

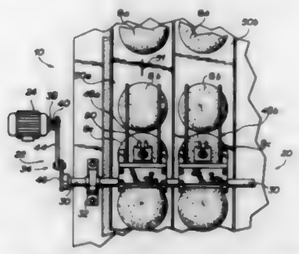
movable gate members positioned over each line of cookies on the surface conveyor means for moving into and out of blocking relationship with a line of cookies moving along the conveyor, said gate members each including fingers spaced laterally across a centerline of movement of the cookies for moving between adjacent ones of the cookies so that when a leading edge of an oncoming cookie engages a finger, the oncoming cookie tends to pivot against said finger into engagement with another finger to cause the cookie to be centered between the fingers,

means for moving all of said gate members in unison into and out of blocking relationship with all of the lines of cookies

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to retard the movements of the cookies and to form equal spaces between the cookies and to laterally align the cookies of each line of cookies until a slug of a predetermined number of cookies have been substantially equally spaced in each line of cookies, and for forming gaps between the slugs of cookies which are larger than the spaces between the cookies,

sensing means positioned upstream of said gate members for detecting the presence of cookies moving in each line of



cookies with surface conveyor means toward said gate members, and

control means responsive to the detection by said sensing means of less than a predetermined number of cookies moving in a line of cookies along the surface conveyor toward one of said gate members for moving one of said gate members into blocking relationship with respect to its line of cookies until several cookies have become blocked in edge-to-edge relationship with one another at said one gate member.

5,303,812

DEVICE FOR TRANSFERRING TRANSPORT CONTAINERS FROM A LOADING STATION TO AN UNLOADING STATION

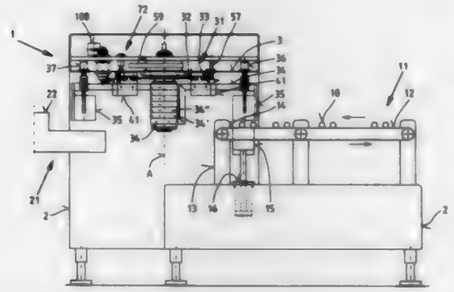
Karl-Heinz Strasser, Berg, and Martin Röck, Tettnang, both of Fed. Rep. of Germany, assignors to Handtmann A-Punkt Automation GmbH, Baienfurt, Fed. Rep. of Germany

Filed Mar. 19, 1993, Ser. No. 33,814

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1992, 4209238

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—465.2 **36 Claims**



1. A transport device for transferring transport containers in a controlled manner from a loading station to an unloading station, said device comprising:

a transport means for transporting the transport containers between the loading station and the unloading station, wherein the transport containers are controllably connected to said transport means, said transport means comprising a continuously rotatably driven transport wheel and a stationary brake ring positioned concentrically to said transport wheel, the transport containers alternately coupled to said brake ring and said transport wheel; and

support arms concentrically rotatably supported relative to said transport wheel, each said support arm carrying one of the transport containers.

5,303,813

SEALING APRON DEVICE FOR THE LOADING TROUGH OF A BELT CONVEYOR

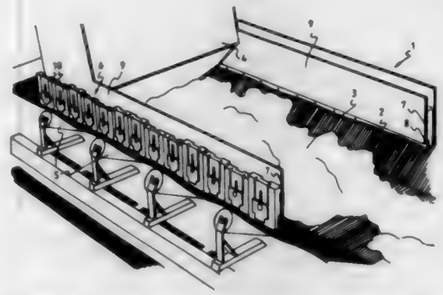
Johannes J. de Rooy, Cothen, Netherlands, assignor to Mass Flow Equipment B.V., Da Doorn, Netherlands

Filed Oct. 9, 1992, Ser. No. 958,900

Claims priority, application Netherlands, Oct. 10, 1991, 9101698

Int. Cl.[5] B65G *47/19*

U.S. Cl. 198—525 **8 Claims**



1. Sealing apron device for a moving conveyor belt or loading trough of a belt conveyor, having at least one mounting plate which is fitted above the belt and which bears a sealing apron in a vertically adjustable manner on a side wall, the underside of which apron can interact with the belt for sealing, and which sealing apron comprises a plurality of adjacent sections which are vertically slidable relative to each other on the mounting plate by means of slide guide means on the mounting plate and the apron sections respectively, each said apron section (**10**) fixed in such a way to the mounting plate (**7**) with a clamping plate or bracket (**15**) and fixing means (**13, 16** such that an apron section (**10**) is clamped between the clamping plate (**15**) and the mounting plate (**7**) and friction means between the clamping plate (**15**) and the sealing apron sections (**10**), for permitting a downward movement of the section (**10**) relative to the mounting plate (**7**), but the clamping plate (**15**) is U-shaped in cross-section with legs (**18**) which extend downward on either side in the direction at right angles to the cross-section, and can be accommodated in grooves (**17**) provided on either side of a longitudinal hole (**20**) in each apron section (**10**), and in that the two legs (**18**) of the U-shaped plate (**15**) and/or the grooves (**17**) in an apron section (**10**) are provided with friction means.

5,303,814

FLEXIBLE SCREW TYPE CONVEYOR SYSTEM

Masaaki Ohtsuji; Takahisa Ito, and Shuichiro Miyazaki, all of Amagasaki, Japan, assignors to Mitsubishi Cable Industries, Inc., Amagasaki, Japan

Filed May 11, 1993, Ser. No. 59,849

Claims priority, application Japan, May 26, 1992, 4-160449

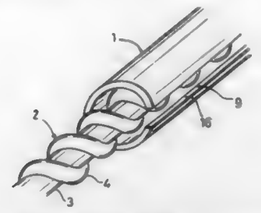
Int. Cl.[5] B65G *33/26*

U.S. Cl. 198—659 **12 Claims**

1. A flexible screw type conveyor system for transporting an object, comprising:

a tubular guide body having a longitudinal slit portion;

a flexible screw rotatably inserted in said tubular guide body, and brought into contact with a guiding portion of the object through the slit portion, to thereby convey the object longitudinally of the tubular guide body by rotation of said flexible screw about the axis thereof



wherein said flexible screw comprises a flexible shaft and a wire-type body spirally wound thereto, both said flexible shaft and said wire-type body respectively having first and second covering layers made of synthetic resin.

5,303,815

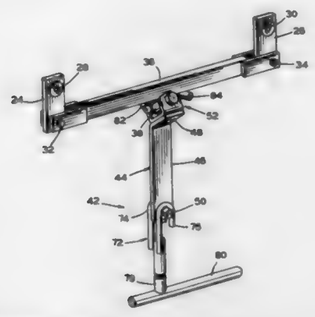
CONVEYOR RACK SYSTEM

Richard A. Dooley, 400 S. Westwood Ave., Toledo, Ohio 43609

Continuation-in-part of Ser. No. 965,866, Oct. 23, 1992, Pat. No. 5,226,525. This application Feb. 12, 1993, Ser. No. 16,952

Int. Cl.[5] B65G *17/32*

U.S. Cl. 198—680 **20 Claims**



1. A conveyor comprising an overhead conveyor rail having a generally horizontal portion and an angled portion, a generally cylindrical receptacle, a load bar movably carried below said rail and positioning said receptacle transversely to said rail with an axis of said receptacle forming a pivot angle with an intersecting horizontal line which is perpendicular to the rail, a rack hanger having an upper part with an upper angular end portion, said upper angular end portion carrying a bracket, fastener means connecting said bracket and said receptacle to enable said bracket to pivot relative to said receptacle, said hanger having a separate, lower part with a lower end connected to a rack, stop means associated with said load bar and said bracket for limiting transverse movement of said rack, and pivot means pivotally connecting an upper end portion of said lower part and a lower end portion of said upper part, said pivot means being separable to enable separation of said lower part of said rack hanger from said upper part.

5,303,816

SEAL STRIP FOR RECIPROCATING FLOOR CONVEYORS

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

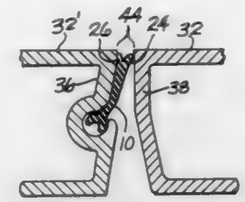
Filed Aug. 6, 1993, Ser. No. 103,415

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 **4 Claims**

1. In a reciprocating floor conveyor including elongated side-by-side floor members, each having a top and first and second downwardly-depending opposite sides, with the first side of a first floor member closely confronting the second side of an adjacent second floor member and forming therewith a gap between the floor members, and an elongated seal within the gap between the floor members, the elongated seal having a base portion connected to the first side of the floor member and an outboard portion extending upwardly in the gap and contacting the second side of an adjacent floor member, the first side of the floor members including a longitudinal groove for receiving the base portion of the elongated seals, each elongated seal comprising:

a split upper edge along the length of the elongated seal



including a first branch angled toward the second side of an adjacent floor member and a second branch angled toward and contacting the first side of the floor member to which the seal is mounted,

the gap between the adjacent sides of the floor members being sufficiently narrow to cause the first and second branches of the seal to be deflected toward each other so that resiliency of the seal biases the first branch against the second side of the floor member and the second branch against the first side of the floor member to which the seal is mounted.

5,303,817

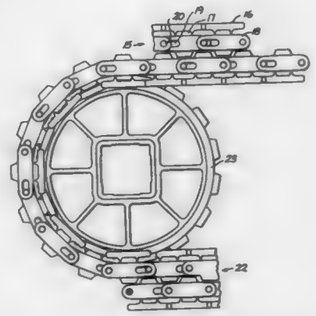
DRIVE SYSTEM FOR MODULAR LINK CONVEYOR BELTS

Darrell E. Kissee, Kenner, La., assignor to The Laitram Corporation, Harahan, La.

Filed Jun. 25, 1993, Ser. No. 82,444

Int. Cl.[5] B65G *23/14*

U.S. Cl. 198—833 **13 Claims**



1. A conveyor system comprising in combination:

a driving conveyor belt formed of pivotable modules into an endless loop assembly, said driving belt modules having extending appendages on opposite sides of the driving conveyor belt for respectively engaging a driven conveyor belt and a powered driving source,

a powered sprocket drive assembly for engaging the driving conveyor belt module appendages on a first side of the driving conveyor belt to move the driving conveyor belt about the endless loop,

a driven conveyor belt loop formed of pivotable modules

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and adapted to be driven by the driving conveyor belt module appendages on a second side of the belt, and

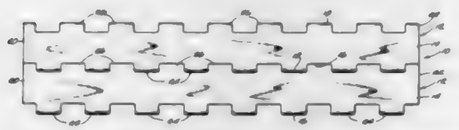
driving means for the driven conveyor belt positioning the driving conveyor belt inside the driven belt loop to engage the driven conveyor belt loop in a driving relationship by driving contact between a plurality of modules in the driving and driven belts along the length of the respective conveyor belt loops.

5,303,818

MODULAR CONVEYOR BELT

David R. Gruettner, Mequon, and Robert J. Gladczak, Milwaukee, both of Wis., assignors to UCC Corporation, New Berlin, Wis.

Continuation of Ser. No. 526,170, May 21, 1990, abandoned. This application Jan. 3, 1992, Ser. No. 817,943
Int. Cl.[5] B65G *17/06*
U.S. Cl. 198—850 **14 Claims**



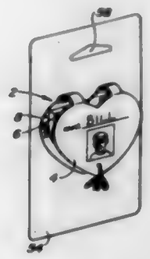
1. A conveyor belt module defining a substantially unbroken upper conveying surface and comprising a unitary structure having a forward end, a rearward end, two opposed sides, a plurality of spaced hinge barrels formed along said forward end and a plurality of spaced hinge barrels formed along said rearward end, at least one of said hinge barrels formed along said forward and rearward ends being elongated in the direction perpendicular to said forward and rearward ends to create thereby a substantially rectangular, substantially planar wear surface on the underside of each said hinge barrel, said wear surface being vertically spaced from said upper conveying surface by a predetermined distance so that height discontinuities between adjacent ones of said conveyor belt modules are substantially avoided.

5,303,819

DISPLAY HOLDER FOR TEETH

Eileen S. Goldberg, 4944 Palo Dr., Tarzana, Calif. 91356

Filed Feb. 17, 1993, Ser. No. 18,639
Int. Cl.[5] A61C *19/10*; A61B *19/02*
U.S. Cl. 206—83 **14 Claims**



1. A tooth holder comprising:

a casing including first and second support members and a hinge that pivotally couples said support member to one another, each support member having an outer surface and a substantially flat inner surface;

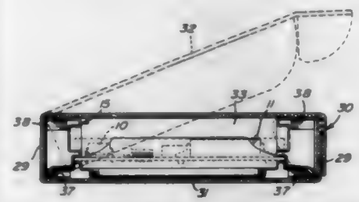
first and second generally U-shape storage members, each storage member including a generally U-shaped base member and a cover member, each base member having a plurality of receptacles formed therein and each cover member having a recess configured to receive one of said base members, each base member having a bottom portion secured to the inner surface of one of said support members and arranged such that a portion of each support member extends radially outward beyond a respective base member, said radially extending portions each forming a shelf for receiving indicia thereon.

5,303,820

PACKAGING FOR PROTECTING PRINTED CIRCUIT BOARD AND OTHER PRODUCTS

Claude Comtois, 451 Iles Bélair W., Rosemere, Canada J7A 1A5

Filed Jul. 28, 1992, Ser. No. 920,638
Int. Cl.[5] B65D *85/62, 73/02*
U.S. Cl. 206—328 **13 Claims**



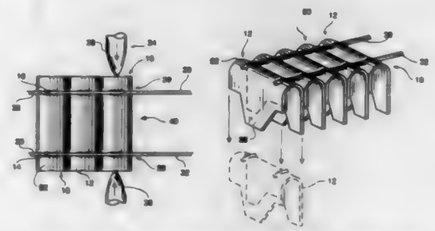
1. A printed circuit board support frame in combination with a shipping container for protecting and transporting a printed circuit board, said support frame being molded from plastics material and comprising a base wall section having elevated support means projecting from a top face thereof for supporting said circuit board elevated from said base wall section, said base wall section having a hinged retention side wall member formed along a pair of opposed parallel edges thereof; said retention side wall members, when hinged outwardly of said base wall section, permitting said circuit board to be positioned on said support means elevated from said base wall section; said retention side wall members having one or more clamping means to overlie opposed top side edge portions of said circuit board when said side wall members are maintained in a vertical position to clamp said circuit board over said support means, said side wall members being maintained in said vertical position by opposed vertical side walls of said shipping container, and arresting means to prevent said circuit board from displacement.

5,303,821

RESILIENT CLIP ASSEMBLY

Donald B. Ayres, 8501 Laramie, Skokie, Ill. 60077

Filed Nov. 6, 1992, Ser. No. 972,582
Int. Cl.[5] B65D *85/24*
U.S. Cl. 206—346 **18 Claims**



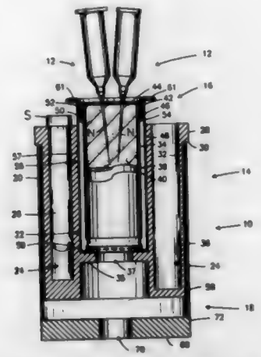
1. A resilient clip assembly comprising a plurality of U-shaped clips which are connected together by two non-metal, elongate, flexible members, each clip including a bight portion and spaced apart leg portions and having a first opening formed in the outer surface of the bight portion thereof and a second, spaced, opening formed in the outer surface of the bight portion thereof, with the clips aligned so that said spaced apart openings in each clip are aligned in a row with similar openings in adjacent clips, and with the pairs of openings in the row of clips being aligned to form two elongate troughs, a non-metal, elongate, flexible, member being received in each trough and thereby in each opening in each clip, the side edges of the bight portion of each clip having been pressed toward each other to cause the metal in the bight portion to be crimped against said non-metal elongate, flexible members resulting in a resilient clip assembly held together by the two non-metal, elongate, flexible members which are securely and mechanically gripped between the metal on each side of each opening in the bight portion of each clip.

5,303,822

RECEPTACLE TO SUPPORT AND RETAIN A PLURALITY OF USED HYPODERMIC NEEDLE AND SYRINGE COMBINATIONS

Mark D. Wengyn, 1543 Highcrest Cir., and Charles F. Brown, 2201 Cherokee Trail, both of Valrico, Fla. 33594

Continuation-in-part of Ser. No. 819,057, Jan. 10, 1992, Pat. No. 5,184,721. This application Jan. 25, 1993, Ser. No. 8,625
Int. Cl.[5] A61L *2/16*
U.S. Cl. 206—366 **32 Claims**



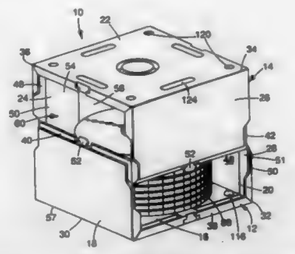
1. A receptacle to support and retain a plurality of used hypodermic needle and syringe combinations and a plurality of hollow tubes, said receptacle comprising an outer receptacle support including a canister recess housing a hollow inner canister and a plurality of peripherally-disposed tube recesses to house a corresponding plurality of hollow tubes such that body fluids drawn from a patient by a hypodermic needle and syringe combinations are injected into one or more of the hollow tubes for storage and transport, and a protective sleeve slidably disposed within said canister recess in surrounding relationship relative to said hollow inner canister and movable between a first position and second position such that when in said first position used hypodermic needle and syringe combinations are mounted on said receptacle by placing the needles of the used hypodermic needle and syringe combinations into said hollow inner canister and when in said second position the syringes of the used hypodermic needle and syringe combinations are at least partially disposed within said protective sleeve.

5,303,823

REUSABLE, TWO-PIECE STORAGE CONTAINER

Gerald J. Niles, and Davis W. Chamberlin, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 17, 1992, Ser. No. 915,126
Int. Cl.[5] B65D *85/02, 6/16*
U.S. Cl. 206—394 **38 Claims**



1. A parallelepipedal storage container comprising substantially identical first and second sections, wherein each section is rectangular and has a weakened portion to enable the section to fold into a central base wall and two adjacent side walls which can be oriented at right angles to the base wall to form a U shape, wherein each side walls has an end adjacent the base wall and a free end opposite the end adjacent the base wall, and wherein the storage container is formed by folding the first section into a U shape, folding the second section into a U shape, turning the second section upside down and rotating the second section 90° with respect to the first section, and mating the two sections so that the side edges of the side walls of the U shape on one section are disposed adjacent the side edges of the side walls of the other U shape to form edges of the storage container; and means, formed integrally as one piece with the sections, for guiding and securing the two sections together along respective edges to form the container, wherein the guiding and securing means guides the first section with respect to the second section during assembly of the two sections and secures the two sections together and comprises a first edge guide extending along the part of the length of each side edge of each side wall adjacent the base wall at a substantially right angle with the side wall, wherein the first edge guide and the side wall define a groove, and wherein the grove of one side wall on one of the sections receives the respective part of the side edge adjacent the free end of the adjacent side wall on the other section when the sections are mated.

5,303,824

SOLDER PREFORM CARRIER AND USE

Harold Kohn, Eadwell, N.Y., assignor to International Business Machines Corporations, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,397
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—449 **16 Claims**



1. A solder-preform holder comprising:

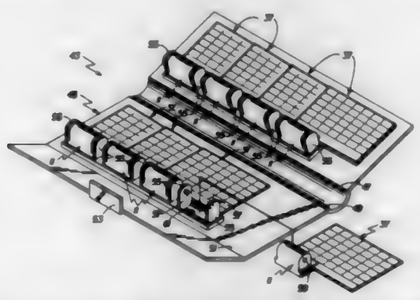
means for supporting multiple planar solder-preforms by their edges in horizontal position with no other surfaces in close proximity to major surfaces of the preform to prevent trapping liquid on the top or bottom surfaces of the preform and to allow air to circulate to both major sides of the preform and to prevent damage or contamination to a

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delicate layer of no-clean flux on the major surfaces of the preform;
means for horizontally positioning said support means for holding the multiple solder-preforms in a two-dimensional array within a horizontal plane;
means for positioning multiple preform holders in a vertical stack for maintaining sufficient horizontal spacing between the major surfaces of the preform and other surfaces to prevent trapping of liquid and allow circulation of drying air on the top and bottom surfaces of the preform and for maintaining the preforms in approximately horizontal position in relation to the plane of the preform array regardless of tilting or horizontal acceleration during transport;
means for circulating air from outside the holder across the bottom of the preforms in the preform holders.

15. A solder-preform carrier comprising:
means for supporting multiple planar solder-preforms by their edges in horizontal position with no other surfaces in close proximity to the major surfaces of the preforms to prevent trapping liquid on the top or bottom surfaces of the preforms and to allow air to circulate to both major sides of the preforms and to prevent damage or contamination to a delicate layer of no-clean flux on the major surfaces of the preforms;
means for horizontally positioning said supporting means for holding the multiple solder-preforms in a two-dimensional array within a horizontal plane;
means for vertically positioning multiple preform holders in an accurately spaced vertical stack for maintaining sufficient horizontal spacing between the major surfaces of the preform and other surfaces to prevent trapping liquid and provide circulation of air on the top and bottom surfaces of the preforms and for maintaining the preforms in approximately horizontal position in relation to the plane of the preform array regardless of tilting or horizontal acceleration during transport;
means for circulating air from outside the bottoms of the cavities across the bottom of the preforms in the preform holders;
means for horizontally positioning the holders in the vertical stack in relation to each other;
means for clamping the holders in the vertical stack rigidly together in compression; and
handle means for manually lifting the vertical stack.

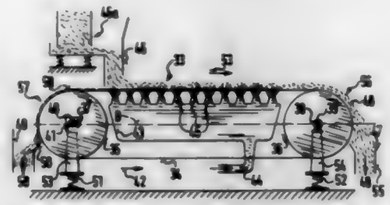
5,303,825
STORAGE ASSEMBLAGE FOR INDEX PRINT SHEETS AND CASSETTES
David E. Hansen, Fairport, N.Y., and William H. Valls, Harwinton, Conn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 12, 1993, Ser. No. 3,155
Int. Cl.[5] B65D *85/57, 85/671*
U.S. Cl. 206—232 **3 Claims**



1. A storage assemblage for cassettes each of which contains an image bearing medium having recorded images and for index print sheets each of which has printed pictures that match the images on the image bearing medium in one of the cassettes, said storage assemblage comprising:
respective holders for the cassettes each of which includes connection means for securing the holder to one of the index print sheets and fulcrum means engageable to permit the holder and an index print sheet secured to it to be pivoted at said fulcrum means; and
a binder for storing said holders and the index print sheets including fixed support means resiliently deformable for releaseably engaging said fulcrum means of each of the holders to store the holders and the index print sheets inside said binder and to permit one of the holders and an index print sheet secured to it to be pivoted away from the others to view the index print sheet and to be released from engagement with said fixed support means to obtain a cassette from the holder.

3. A storage assemblage for cassettes each of which contains an image bearing medium having recorded images and for index print sheets each of which has printed pictures that match the images on the image bearing medium in one of the cassettes, said storage assemblage comprising:
respective holders for the cassettes each of which includes connection means for securing the holder to one of the index print sheets and fulcrum means engageable to permit the holder and an index print sheet secured to it to be pivoted at said fulcrum means, and each of which is configured to hold one of the cassettes with a spool axis of the cassette located in alignment with said fulcrum means; and
a binder for storing said holders and the index print sheets including fixed support means for releaseably engaging said fulcrum means of each of the holders to store the holders and the index print sheets inside said binder and to permit one of the holders and an index print sheet secured to it to be pivoted away from the others to view the index print sheet and to be released from engagement with said fixed support means to obtain a cassette from the holder.

5,303,826
METHOD AND APPARATUS FOR SEPARATING DIFFERENT PLASTIC PRODUCTS
Heinrich Buxga, Grevenbroich, Fed. Rep. of Germany, assignor to REFAKT Anlagenbau GmbH, Willich, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 654,733, Feb. 13, 1991. This application Aug. 13, 1992, Ser. No. 929,317
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1990, 4004300
Int. Cl.[5] B07B *13/00*
U.S. Cl. 209—46 **15 Claims**



1. An apparatus for separating plastic particles based on differences in thermal plastification temperatures among the plastic particles comprising
an endless steel belt forming a support base;
heating means disposed inside of the endless steel belt;
a hopper disposed above the endless steel belt for supplying plastic particles to form a thin layer of plastic particles on the steel belt;
a vibrator attached to the steel belt for moving loose particles over the steel belt;

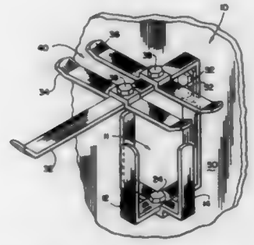
a first force means for separating loose particles from the support base;
a first catch bin disposed in the path of the separated loose plastic particles for collecting the loose plastic particles separated from the support base;
a scraper engaging the surface of the endless steel belt for removing and separating plastified plastic particles adhering to the steel belt;
a second catch bin disposed in the path of the separated plastified plastic particles for collecting the separated plastified plastic particles.

5,303,827
PLASTIC BAG DRYING RACK
Sheila M. Ross, 271 N. Vine Ave., Rialto, Calif. 92376
Filed Feb. 16, 1993, Ser. No. 18,156
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **3 Claims**



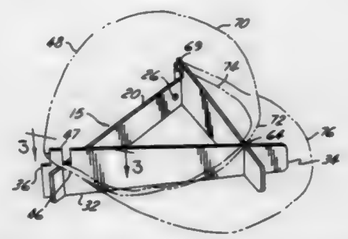
1. A plastic bag drying rack, comprising,
a base, the base having a support tube fixedly mounted to the base in an orthogonal relationship, and
the support tube including a first, second, and third rigid support rod integrally and orthogonally mounted to the support tube, with the first, second, and third support rods arranged in a parallel spaced relationship, with the first support rod including a first semi-circular rack rod fixedly mounted to the first support rod, a second semi-circular rack rod mounted to the second support rod, and a third semi-circular rack rod mounted to the third support rod, with each semi-circular rack rods including a concave surface and a convex surface, with each concave surface arranged in a facing relationship relative to the base.

5,303,828
SPORTS EQUIPMENT HOLDER
Lane A. Paullin, 1402 Edgewood Dr., Ashland, Ohio 44805
Filed Jul. 6, 1993, Ser. No. 85,834
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **7 Claims**



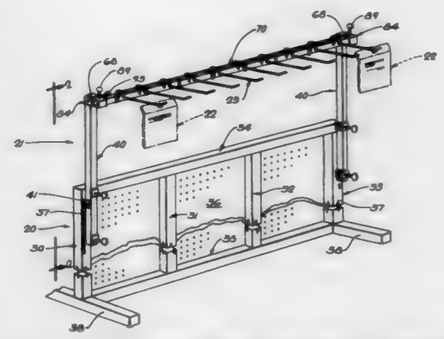
1. A baseball equipment holder, comprising:
two U-shaped brackets joined at the midpoints of their bottoms to provide four upwardly pointing fingers that are equidistant from their adjacent fingers and form a space in which balls may be stored in a column wherein said balls are removed for use from the top of the column;
a generally horizontally extending brace;
two crossbars joined at their midpoints to said brace, said crossbars being spaced to engage the narrow end of a baseball bat, and said crossbars being of sufficient length so that at least one bat may be stored on each side of said brace; and
means for connecting said brace to one of said U-shaped brackets and for positioning said brace to extend across the top of the column of balls.

5,303,829
BILLED CAP DISPLAY BRACKET
Susan B. Kennedy, 1007 Buckingham, Grosse Pointe Park, Mich. 48230
Filed Apr. 22, 1993, Ser. No. 52,082
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—30 **34 Claims**



1. A surface mountable cap support for a cap having a crown edge portion comprising:
a mount for mounting the cap support onto the surface;
at least one cap support member extending outwardly from spaced apart positions on the mount narrowing toward a common apex adapted to be spaced from the surface; and
retaining means on the at least one cap support member for retaining and positioning the cap on the cap support member by receiving at least a portion of the crown edge.

5,303,830
EXTENSION ASSEMBLY FOR MERCHANDISE DISPLAY RACKS
Derek N. G. Metcalf, LaGrange Park, Ill., assignor to Athena Industries, Inc., LaGrange, Ill.
Filed Jan. 15, 1993, Ser. No. 5,027
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—57.1 **10 Claims**



1. An extension assembly for attachment to a generally vertical merchandise display rack having two laterally spaced

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vertical uprights presenting a plurality of slotted openings for attaching horizontal crossbars thereto, comprising:

a pair of like tubular extension members each for increasing the height of a vertical display rack upright,

a single slot hanger fixed intermediate the ends of each extension member comprising a hook portion projecting outwardly of said each extension member and insertable into a selected slotted opening in an associated one of the display rack uprights for loosely attaching said extension member thereto whereby to extend the vertical height thereof;

and a pair of adjustment brackets secured to each extension member for adjusting movements toward and away said associated one of said uprights;

said brackets being located vertically above and below an associated said slot hanger and being independently operable to engage the said associated one of said uprights on opposite sides of said hook portion engaged therewith whereby adjustable movements of said brackets serve to pivotally orient said extension member about said hook portion and to secure the same parallel to the display rack upright to which it is attached.

5,303,831

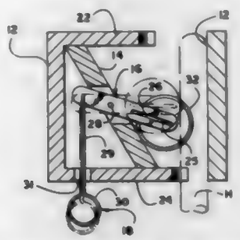
HOLDER FOR BROOMS AND THE LIKE

Carl Miller, 31 Redbud Trail, Newnan, Ga. 30263

Filed Aug. 19, 1993, Ser. No. 107,887

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—66 **4 Claims**



1. A broom holder for receiving and selectively holding a broom handle, said holder comprising a fixed vertical wall, an angular wall fixed adjacent to said vertical wall so that said vertical wall and said angular wall converge towards the lower ends of said walls, said angular wall and said vertical wall being spaced sufficiently to receive a broom handle therebetween, and a wedging member movably held between said angular wall and said vertical wall, said wedging member being movable by gravity to engage said angular wall and a broom handle disposed between said angular wall and said vertical wall, and further including a pivotal arm carrying said wedging member, and release means for pivoting said arm and for releasing said wedging member from said broom handle, said pivotal arm including a first end disposed between said angular wall and said vertical wall for carrying said wedging member, and a second end disposed on the opposite side of said angular wall, said release means being fixed to said second end, said arm being pivotally carried by said angular wall, said first end of said arm defining a slot therein for movably supporting said wedging member.

5,303,832

HANGER ASSEMBLY

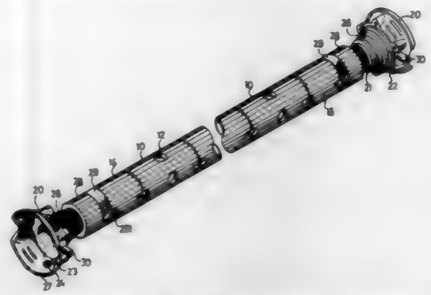
Wen-Wu Tu, No. 28, Alley 55, Lane 208, Sec. 3, Hsi Tun Rd., Taichung, Taiwan

Filed Mar. 10, 1993, Ser. No. 29,145

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—105.4 **4 Claims**

1. A hanger assembly comprising at least one tube including two ends each having a stub extended therefrom, an outer thread formed on each of said stubs, a sleeve including an inner thread for threadedly engaging with said outer thread of each of said stubs, a head including an extension threadedly engaged



to each of said sleeves and adjustable relative to said tube such that said heads are movable either axially outwards or inwards of said hanger assembly, and a barrel threadedly engaged on each of said extensions for fixing said extensions to said sleeves.

5,303,833

BLOW-MOLDED BOTTLE-SHAPED CONTAINER MADE OF SYNTHETIC RESIN

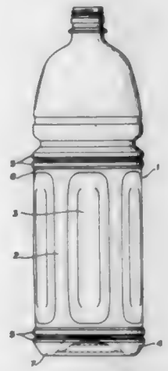
Yoshiaki Hayashi, Matsudo; Akiho Ota, Funabashi, and Hiroaki Sugiura, Itabashi, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 853,345, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 622,276, Dec. 6, 1990, abandoned, which is a continuation of Ser. No. 422,665, Oct. 17, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 3,952

Claims priority, application Japan, Apr. 20, 1988, 63-53138; May 24, 1988, 63-68530

Int. Cl.[5] B65D *23/00*

U.S. Cl. 215—1 C **5 Claims**



1. A biaxially blow-molded bottle-shaped container comprising:

a body with a plurality of longitudinally extending absorbing panel portions uniformly disposed about a circumference of the body and a lower end of the body between the body and a leg of the body, wherein

two circumferential ribs are provided and externally swelled on the lower end of the body thereby providing a largest diameter of the container, a diameter of said lower end of the body being smaller than the largest diameter;

upper and lower portions of the circumferential ribs comprise rib walls in a form of a tapered wall; and

said two circumferential ribs each have sufficient vertical

height such that when pressed against an adjacent container, at least a portion of the vertical height of at least one of the circumferential ribs is the only contact with said adjacent container, even if said adjacent container is slightly inclined and is a similarly shaped article.

5,303,834

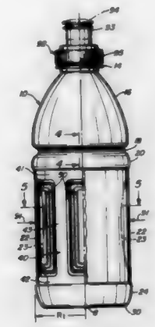
SQUEEZABLE CONTAINER RESISTANT TO DENTING

Suppayan M. Krishnakumar, Nashua; Wayne N. Collette, Merrimack, and David P. Piccioli, Auburn, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.

Continuation-in-part of Ser. No. 962,243, Oct. 16, 1992, which is a division of Ser. No. 842,228, Feb. 26, 1992, Pat. No. 5,178,289. This application Feb. 18, 1993, Ser. No. 19,023

Int. Cl.[5] B65D *1/02, 1/32*

U.S. Cl. 215—1 C **26 Claims**



1. A squeezable, dent resistant plastic container with panels, the container comprising:

a squeezable hollow plastic body having a resilient and substantially cylindrical side wall aligned along a vertical centerline, an open upper end for dispensing a product when the side wall is squeezed, and a closed bottom wall;

the side wall including a plurality of symmetrically arranged post walls disposed at a first distance D_1 from the vertical centerline;

the side wall further including a plurality of symmetrically arranged panels disposed between the post walls, each panel having a vertically elongated recess surrounding a central panel wall, the recess having a lowermost flex point disposed a second distance D_2 from the vertical centerline which is less than the first distance D_1, and the central panel wall being disposed at a distance from the vertical centerline which is greater than the second distance D_2; and the recess having a first connecting wall with at least one intermediate step between the lowermost flex point and central panel wall to increase the resistance of the squeezable side wall to permanent deformation.

5,303,835

LYOPHILIZATION CAP AND METHOD

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Jun. 24, 1992, Ser. No. 903,778

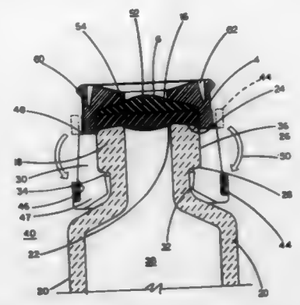
Int. Cl.[5] B65D *41/62, 55/02*

U.S. Cl. 215—247 **21 Claims**

1. A sealing cap for use with a pharmaceutical container of the type which undergoes lyophilization, the container having an interior terminating at an open mouth surrounded by a rim and having an outwardly extending mouth ring, the mouth ring having a shoulder facing away from the rim, the cap comprising:

a body including an outer end and an inner end, said outer end of the body including an external thread;

the body including a container engaging means, including at least one radially deflectable element, for mounting the cap to the container at a first, lyophilized position, at



which fluid flow through the mouth into and from the container interior is substantially unhindered, and a second, sealed position, at which the cap seals the mouth of the container; and

an axially movable lock ring which locks the cap to the container when the cap is at the second position.

5,303,836

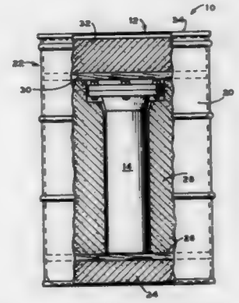
SHIPPING CONTAINER FOR HIGHLY ENRICHED URANIUM

Paul C. Childress, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 21, 1993, Ser. No. 95,642

Int. Cl.[5] G21F *5/00*

U.S. Cl. 220—1.5 **10 Claims**



1. A shipping container for highly enriched uranium, comprising:

a. a heavy duty drum;

b. insulation material received inside said drum, comprising:

i. a first layer of fiberboard sized to be received in said drum and positioned across the bottom of said drum;

ii. a first layer of plywood sized to be received in said drum and positioned across the top of said layer of fiberboard;

iii. a fiberboard cylinder open at each end and sized to be received inside said drum;

iv. a second layer of plywood sized to be received in said drum and positioned on top of said fiberboard cylinder; and

v. a second layer of fiberboard sized to be received in said drum and positioned across the top of said second layer of plywood;

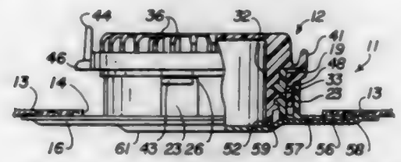
VOL 1161 ISS 3 APR 19 1994 UMI

c. an inner container having one open end and sized to be received in said fiberboard cylinder;
d. a closure lid sized to be received on said inner container;
e. means for attaching said closure lid to said inner container and forming a seal therebetween;
f. said inner container being provided with a test port; and
g. a cover sized to be received on said heavy duty drum.

5,303,837
ONE-PIECE FITMENT AND PLUG WITH TAMPER-EVIDENT BAND

Brian M. Adams, Newark, and Daniel Lach, Los Gatos, both of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 664,658, Mar. 5, 1991, abandoned, and a continuation-in-part of Ser. No. 780,774, Oct. 22, 1991, Pat. No. 5,174,465. This application Jan. 21, 1992, Ser. No. 823,200
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] B65D *47/10, 51/18, 55/02*
U.S. Cl. 220—254 **14 Claims**



1. In combination, a fitment and a plug therefor said fitment being shaped to seal around an aperture in a panel of a container, said panel having inside and outside surfaces around said aperture,

said fitment comprising an annular flange shaped to fit around said aperture having top and bottom surfaces, said top surface being dimensioned and shaped to be secured to said inside surface, a hole in said flange, a spout upstanding from said flange surrounding said hole, and first attachment means on said spout,

said plug having a top, a skirt depending from said top, second attachment means on said skirt cooperable with said first attachment means to detachably secure said plug on said fitment,

characterized by first tamper-evidencing means on said plug, second tamper-evidencing means on said fitment cooperable with said first tamper-evidencing means to prevent movement of said plug relative to said fitment so long as both said tamper-evidencing means are intact, and a seal member dimensioned larger than said flange secured to said bottom surface of said flange and dimensioned and shaped to be secured to said inside surface of said panel outside an outer edge of said flange, said seal member being unconnected to said panel except outside said flange.

5,303,838
FRANGIBLE FITMENT FOR CONTAINER

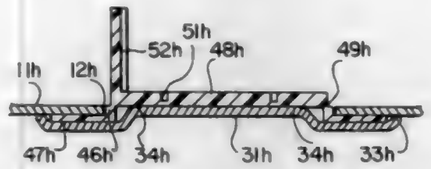
Daniel Lach, Los Gatos; Brian M. Adams, and Rawson Chenault, both of Newark, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Filed Sep. 30, 1992, Ser. No. 954,472
Int. Cl.[5] B65D *17/34, 17/40*
U.S. Cl. 220—270 **10 Claims**

1. In combination, a container having a wall said wall having an exterior and an interior and formed with an aperture,

a plastic member comprising a plastic disk exteriorly of said wall, a collar depending from a periphery of said plastic disk extending through said aperture, a flange integral with said collar and extending radially outwardly from said collar and disposed on said interior of said wall, means securing said flange to said wall surrounding said aperture,

a weakened annular connection between said collar and said periphery of said plastic disk, said disk being formed with a groove on a surface of said disk extending from said weakened annular connection generally radially inwardly

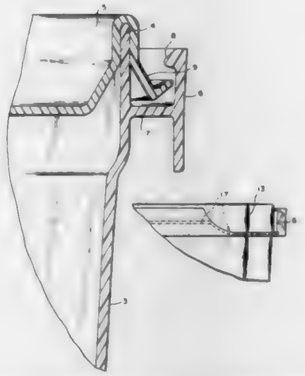


of said plastic disk, said groove and said annular connection meeting at a point and a pull tab extending upwardly from said periphery of said plastic disk and adjacent said point, whereby when said pull tab is pulled upwardly away from said plastic disk, said plastic disk fractures at said point and along said groove and said annular connection.

5,303,839
PLASTIC CONTAINER WITH LID

Marcus Blumenschein, Marienheide/Müllenbach, Fed. Rep. of Germany, assignor to Jokey Plastik Wipperfürth GmbH, Wipperfürth, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 982,296
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138879
Int. Cl.[5] B65D *41/16*
U.S. Cl. 220—306 **4 Claims**



1. A plastic container with a lid for holding granular, powdery, pasty or liquid materials, said container comprising;

at least one wall (3) having a top sealing edge (4);

an upper section of said at least one wall having a locating part (6);

a supporting flange (7) connecting said wall (3) adjacent to said sealing edge (4) to approximately a center of said locating part (6);

said supporting flange having a top surface,

an intermittent snap-on edge (8) on an inside of a top edge of said locating part (6);

said lid sealingly mountable below said snap-on edge on said sealing edge (4),

said top edge of said locating part (6) and said supporting flange (7) having an arced down region,

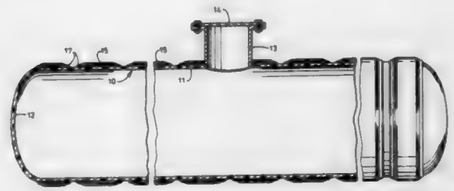
said arced down region of said top edge of said locating part (6) and said supporting flange (7) being formed when said top edge of said locating part and said top surface of said supporting flange coincide at a level substantially equal to a lower edge of said locating part (6);

wherein, said arced down region creates a recess and pourer which respectively allows grasping below a retaining fold (9) of said lid in place on said sealing edge and pouring of said materials from said container or located between said wall (3) and said locating part (6).

5,303,840
STORAGE TANKS HAVING STRENGTHENED WALLS

Bruce R. Sharp, 126 Leland Way, Marco Island, Fla. 33937

Continuation of Ser. No. 464,460, Jan. 12, 1990. This application Jun. 19, 1991, Ser. No. 717,686
The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.
Int. Cl.[5] B65D *88/76*
U.S. Cl. 220—469 **20 Claims**



1. A storage tank system having enhanced wall strength, said tank system comprising:

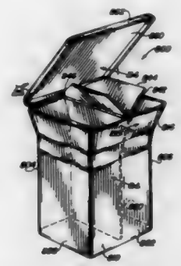
(a) an inner storage tank having a cylindrical-shaped main body and end walls; and

(b) a set of outer wall sections covering at least about seventy percent of the main body, wherein lengthwise edges of each outer wall section are attached to the cylindrical-shaped main body so that each outer wall section extends circumferentially around the cylindrical-shaped main body with a mid-portion thereof less than about one-half inch from the main body to form an annular containment area thereunder, further wherein each outer wall section is from about twelve inches to about sixty inches in width and is from about one-half inch to about six inches separated from an adjacent outer wall section.

5,303,841
WASTE COLLECTION SYSTEM FOR SEGREGATING SOLID WASTE INTO PRESELECTED COMPONENT MATERIALS

Armand G. Mezey, 2724 W. Palm La., Phoenix, Ariz. 85009

Continuation-in-part of Ser. No. 722,156, Jun. 27, 1991, Pat. No. 5,205,698, which is a division of Ser. No. 324,697, Mar. 17, 1989, Pat. No. 5,035,563. This application Nov. 13, 1992, Ser. No. 975,670
Int. Cl.[5] B65D *21/00*
U.S. Cl. 220—555 **7 Claims**



1. An on-site waste storage container for use with a system including a mobile waste collection device having a waste-receiving hopper for receiving waste emptied into said collection device, said collection device having partition means associated therewith separating the waste collection device into separate chambers for segregated storage and transportation of predetermined different types of waste, said collection device further including a lift assembly for releasably holding the container and for elevating the container from a lowered on-site location to a dump position in which the container is at least partially inverted over said hopper, said container comprising:

(a) a bottom and an upstanding wall defining an interior including divider means having an upper edge, said divider means forming at least two waste-receiving compartments therein for receiving predetermined different types of waste;

(b) said container being provided with a cover moveable between a closed position and an open position when partially inverted;

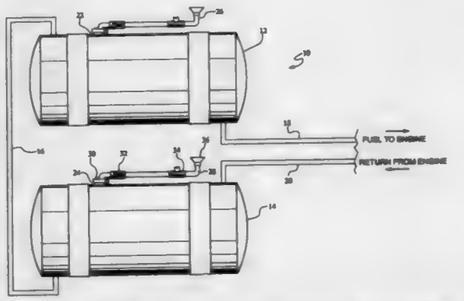
(c) diverter means associated with one of said cover and divider means which diverter means assumes a position generally aligned with the divider means in said hopper when said container is in the dump position, said diverter means assisting to cause the contents of the container compartments to be emptied into separate chambers of the waste collection device thereby segregating the waste into preselected types of waste in the waste collection operation; and

(d) wherein said diverter means comprises at least one panel hingedly secured to the said container divider means, said panel moveable between a position generally adjacent the divider means in the on-site position and a position extending from said divider in said dump position.

5,303,842
FUEL METER AND THEFT PREVENTION DEVICE

Tammie Harp, Rte. 2, Box 420 C-2, Lowell, Ark. 72745; Bobby Lewis, Rte. 1, Wesley, Ark. 72773, and James Miller, 1600 Ridgecrest, Springdale, Ark. 72764

Filed Jul. 23, 1992, Ser. No. 917,312
Int. Cl.[5] B65B *31/00*
U.S. Cl. 220—562 **19 Claims**



1. Tamper-proof fuel meter and theft prevention apparatus for a fuel tank having a fuel inlet comprising:

a tamper-proof cap for connection to the fuel tank inlet;

an in-line electronic fluid flow meter having an inlet, an outlet, non-resettable recording means for recording total liquid flow through said meter, and a fuel flow sensor, said flow meter outlet being permanently connected by a first conduit to said tank through said cap;

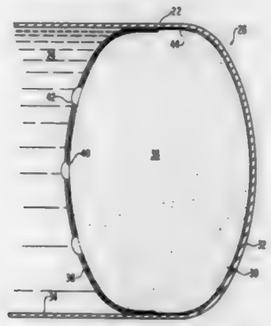
means for preventing tampering with said fuel flow sensor by causing liquid fuel flowing through said flow meter to be sensed and recorded by said fuel flow sensor;

a second conduit permanently connected at one end to said

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flow meter inlet and at another end to an outlet of said means for preventing flow tampering;
a third conduit having one end permanently connected to an inlet of said means for preventing tampering and having another end adapted to receive fuel; and
means for preventing siphoning of fuel from the fuel tank and for preventing activation of said flow sensor by high velocity gas injected into said third conduit whereby said apparatus provides for an accurate measurement of the fuel added to the fuel tank and prevents the siphoning of fuel from said fuel tank.

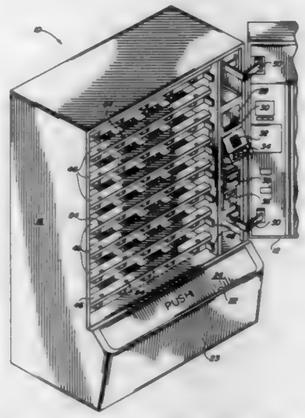
5,303,843
FLUID TRANSPORT APPARATUS WITH WATER HAMMER ELIMINATOR SYSTEM
Donald L. Zink, Billings, Mont.; Donald G. Zink, New Orleans, La., and John E. Schwartz, Billings, Mont., assignors to Montana Sulphur & Chemical Co., Billings, Mont.
Filed Oct. 9, 1990, Ser. No. 594,150
Int. Cl.[5] B65D *88/16, 90/04*
U.S. Cl. 220—563 **39 Claims**



1. A fluid transport apparatus comprising:
an elongated fluid transport vessel having a vessel interior, first and second vessel end walls, and first and second vessels ends within said vessel interior and generally adjacent said first and second vessel end walls, respectively; and
a partition in said vessel interior and at said vessel first end, said partition defining at least in part a compartment filled at least in part with a compressible fluid, said partition having a partition surface disposed generally away from said first vessel end wall and one or more rupture discs dispersed on said partition surface, said rupture discs, when said elongated fluid transport vessel is impacted, being adapted to break generally before said partition breaks by the surge of fluid in said vessel interior towards said first vessel wall thereby compressing said compressible fluid, dissipating the water hammer pressure in said vessel interior and preventing said first vessel end wall from failing.

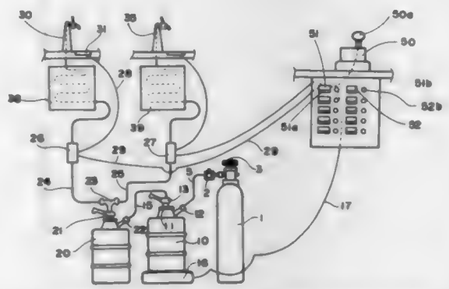
5,303,844
AUTOMATED APPARATUS, SYSTEM AND METHOD FOR RELIABLY VENDING ARTICLES OF INCREASED VALUE
Karl H. Muehlberger, Lakeland, Fla., assignor to Keyoak Corporation, Lakeland, Fla.
Filed Apr. 28, 1992, Ser. No. 876,075
Int. Cl.[5] G07F *11/36*
U.S. Cl. 221—1 **14 Claims**

14. A method for reliably vending articles, comprising the steps of:
providing an enclosure having plural article selection means along a front panel thereof, for permitting a customer to select one of a plurality of articles through initiation of a vend selection sequence;
removably installing within the enclosure plural independent article storing and dispensing means, each capable of storing a plurality of articles and then dispensing an individual article along a path within the enclosure toward a vend opening;
sensing when an individual article for each storage and dispensing means is moving along the path toward the



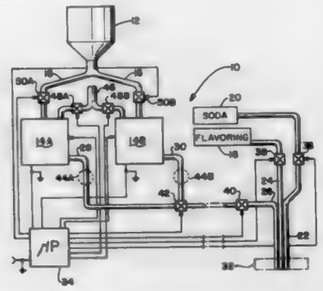
vend opening, and providing a first sensing output responsive thereto;
sensing when an individual article is discharged from a corresponding article storing and dispensing means, and providing a second sensing output responsive thereto; and
controlling the operation of the selected storage and dispensing means responsive to both the first and second sensor outputs to insure that a selected article is dispensed into the vend opening.

5,303,845
BEER SELF-SERVICE SYSTEM
Kokichi Osawa, Saitama, Japan, assignor to Yugen Gaisha Yakiniku Restaurant Daiko, Saitama, Japan
Filed Aug. 10, 1992, Ser. No. 927,597
Claims priority, application Japan, Aug. 14, 1991, 3-228789
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—1 **17 Claims**



1. A method for serving beer at a draft tower and at a selected CO_2 gas content and a serving temperature, comprising:
pressurizing a barrel containing beer using CO_2 at a selected pressure which is above 1.6 atmosphere and which is thus sufficient to supply the beer along a pipeline and through the draft tower which is connected to the barrel through the pipeline;
changing the temperature of the barrel to a selected temperature at which beer in the barrel retains the gas content under the selected pressure, the selected temperature being different from the serving temperature; and
cooling the beer to the serving temperature, adjacent the tower so that beer dispensed by the draft tower is at the serving temperature and has the selected CO_2 gas content.

5,303,846
METHOD AND APPARATUS FOR GENERATING AND DISPENSING FLAVORING SYRUP IN A POST MIX SYSTEM
Joseph W. Shannon, Kent, Ohio, assignor to ABCC/TechCorp., Akron, Ohio
Filed Sep. 17, 1990, Ser. No. 583,159
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—54 **16 Claims**

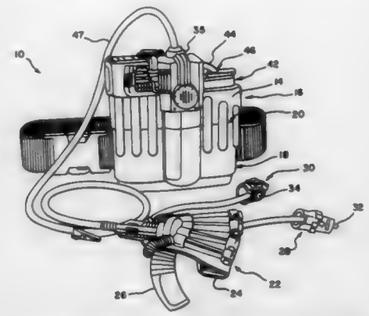


1. A system for generating flavoring syrup in a soft drink dispenser, comprising:
a source of sweetener;
a source of water;
first means connected to said sources of sweetener and water for receiving sweetener and water and generating a sweetening syrup therefrom;
a source of flavoring agent; and
second means interposed between said first means and said source of flavoring agent for combining said sweetening syrup and flavoring agent.

10. A method for dispensing a soft drink, comprising the steps of:
generating a sweetening syrup by dissolving sugar in water to obtain a saturated solution of sugar and water;
monitoring the temperature of said sweetening syrup;
dispensing said sweetening syrup;
dispensing a flavoring agent;
dispensing carbonated water; and
combining said sweetening syrup, flavoring agent, and carbonated water.

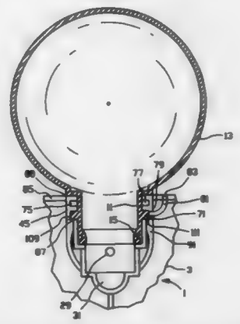
5,303,847
TOY DISPERSING WATER FROM FINGERTIP SHEATH
Sam Cottone, Chicago, Ill., assignor to Talk To Me Products, Inc., Syosset, N.Y.
Filed Apr. 5, 1993, Ser. No. 43,396
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—78 **7 Claims**

1. A device for selectively discharging a pressurized fluid from a user's fingertip comprising:
a housing adapted to be affixed to a user's body, said housing having a reservoir adapter to contain a fluid, an output port for the discharge of fluid from said housing, an electrically driven pumping means for conveying the fluid under pressure from the reservoir to the output port, and an electrical power supply for supplying power to the pumping means;
a glove adapted to be secured to the hand of a user, said glove being without portions receiving the lengths of a user's fingers;
a first sheath adapted to be secured to the tip portion of a first finger of the user, said first sheath including a nozzle



in communication with said output port for conveying fluid thereto;
an elongated flexible tube connected at one end thereof to said output port and connected at the opposite end thereof to said nozzle; and
actuating means electrically connected between the power supply and the pumping means, and operative for selectively actuating the pumping means.

5,303,848
DOUBLE POSITION BAYONET CONNECTION FOR PRESSURE TANK
Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889
Filed Jun. 28, 1993, Ser. No. 82,734
Int. Cl.[5] A63H *3/18*
U.S. Cl. 222—79 **20 Claims**



1. In a water gun having a housing, a barrel, at least one removable pressurizable air/water tank with a discharge orifice, a pressurizing mechanism, a channel of release for shooting water, and a release mechanism, the improvement which comprises:
a double position bayonet connection between said tank and housing, including:
a) a female, receiving collar, having a sidewall with an inside and an outside, an orifice surrounded by said sidewall and a circular channel about the inside of said sidewall, said channel having a top flange thereover, said top flange having drop-in cut-outs for insertion of a male protrusion counterpart, and said channel having a

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first predetermined depth along at least a first arc under said flange, and having a second, deeper, locking, predetermined depth along at least a second arc under said flange, whereby said female receiving collar includes a pressure release opening through said sidewall so as to eliminate pressurization of said tank, and said second arc includes a sealing means to permit pressurization of said tank; and,

b) a male protrusion collar, having an orifice and a circular segment with male flanges, said male flanges being the same size or smaller than the drop-in cut-outs of said female receiving collar and adapted to insert into said receiving collar so as to be rotatable with said male flanges tracking said first arc and then said second arc to removably interlock therewith and to seal said tank to said housing to permit pressurization of said tank;

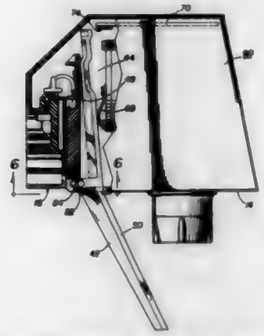
further wherein one of said female receiving collar and said male protrusion collar is located on said discharge orifice of said tank, and the other of said female receiving collar and said male protrusion collar is located on said housing.

5,303,849

LEVER ARM ASSEMBLY FOR A BEVERAGE DISPENSING VALVE

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed May 24, 1993, Ser. No. 66,954
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.1 **10 Claims**



1. A lever arm assembly for a beverage dispensing valve comprising:

(a) a beverage dispensing valve including a housing including a cover and a bottom plate, switch means inside of said cover for turning said valve on to dispense a beverage, said housing enclosing a lever arm chamber having a front wall and a rear wall, and a lever arm connected to said valve and adapted to actuate said switch means;

(b) said lever arm being movable between a rest position in which said switch means is not actuated and an actuating position in which said switch means is actuated;

(c) means in said chamber for removably holding said lever arm to its rest position;

(d) said lever arm including a cup contact portion extending down below said valve, a pivot pin, and a switch actuating portion extending above said pivot pin and inside said cover;

(e) said valve housing including a lever arm opening large enough to allow said actuating portion and said pivot pin to be pushed up through said opening into said chamber, said valve including a lever arm chamber large enough to receive said actuating portion and to allow it to move freely when said lever arm moves between said rest and said actuating position; and

(f) said valve including a pivot pin recess adjacent said opening adapted to receive and hold said pivot pin.

8. A method for installing a lever arm on a beverage dispensing valve comprising:

(a) providing a beverage dispensing valve with a housing surrounding said valve and enclosing a lever arm chamber having a front surface and a rear surface for accommodating an upper portion of a lever arm, said housing including a lever arm opening into said chamber adapted to receive a lever arm therethrough and into said chamber, and switch means adjacent said chamber for turning said valve on to dispense beverage therefrom;

(b) a lever arm having a switch actuating portion inserted into said chamber and including an intermediately located pivot pin and a lower cup contact portion;

(c) said valve including spring means mounted on adjacent said front surface for biasing said switch actuating portion of said lever arm against said rear surface;

(d) said housing having a pivot pin-receiving groove adjacent said opening and said pivot pin being positioned in said groove and said lever arm being removably held in place in said valve solely by said spring and groove such that said lever arm can be easily removed from said valve;

(e) said lever arm being pivotably movable between a rest position and an actuating position, said switch actuating portion moving against said spring means and toward said front surface in said actuating portion; and

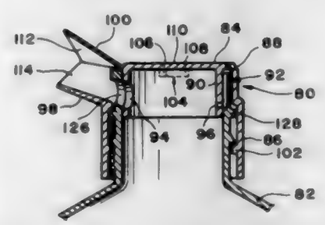
(f) said upper portion of said lever arm having means for actuating said switch means when said lever arm is in its actuating position.

5,303,850

DISPENSING CAP

Patrick Connan, Hoeilaart, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jul. 23, 1992, Ser. No. 918,991
Int. Cl.[5] B67D *5/32*; B65D *47/08*
U.S. Cl. 222—153 **22 Claims**



1. A closure for a bottle comprising in combination:

a cap member having a top end;

an outer annular exterior wall depending from said top end and extending toward an open bottom end of said cap opposite said top end;

an inner annular wall depending from said top end and extending toward said open bottom end concentric with said outer wall, said inner annular wall having a first dispensing outlet means;

a flexible spout integral with said cap, and being disposed to cooperate with said first dispensing outlet means, said flexible spout comprising first and second substantially triangular shaped panels coupled together along a first side edge of each panel by a common first hinge means, each panel having a second edge terminating at an apex with said first side, each said second edge being coupled to said cap by second hinge means, said spout being movable from an inwardly extending closed position to an outwardly extending open position;

detent means depending from said top end of said cap between said inner and outer walls and extending toward said open end, said detent means comprising a first leg

fixed to said top end and a second leg removably coupled to said top end and aligned adjacent said first leg, said second removable leg being removable through said top end;

a generally cylindrical bottle neck attached to a bottle, said neck having an annular top edge dimensioned to fit in an annular space defined by said inner annular wall and outer annular wall of said cap, said inner wall being dimensioned to seal against an inner surface of said neck, said neck having a second dispensing outlet means cooperating with said first dispensing outlet means;

a recess in said annular top edge of said neck, said recess being dimensioned to complement said detent means when said cap is assembled on said neck to substantially prevent rotation of said cap on said neck;

said second removable leg of said detent means being removable from said top end of said cap to allow limited rotational movement of said cap on said bottle with said first fixed leg of said detent means being received in said recess of said top edge of said neck; and

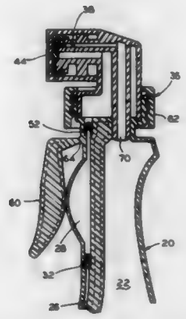
cam means on said upper annular edge of said neck operatively associated with said spout whereby rotation of said cap on said neck aligns said first and second dispensing outlet means and causes said cam means to cam said spout to said outward position.

5,303,851

SPRAY OR DISPENSING BOTTLE WITH INTEGRAL PUMP MOLDED THEREIN

Sidney M. Libit, Longboat Key, Fla., and Jeffrey M. Libit, 13244 Circulo Largo Ct., NE., Albuquerque, N. Mex. 87112, assignors to Jeffrey M. Libit, Albuquerque, N. Mex.

Filed Nov. 12, 1992, Ser. No. 974,561
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—207 **10 Claims**



1. A liquid dispensing or spraying, multi-chambered bottle, comprising an opening in said bottle for receiving liquids, said liquid initially entering a first chamber of said bottle, and a second chamber integrally formed and in communication with said first chamber for receiving liquid from said first chamber, said second chamber comprising a tube extending outside of said first chamber from an opening at a bottom of said first chamber to said liquid receiving opening, said tube having an area of enlarged volume forming a bladder area for squeezing in a direction transverse to a longitudinal dimension of said tube, at least said enlarged bladder area having a memory for causing it to return to its normal position when it is released after having been squeezed;

a first valve between said enlarged bladder and said first chamber for enabling liquid to flow from said first chamber to said enlarged bladder, but not in the reverse direction;

a cap covering said bottle opening, said cap having an opening with means for enabling air to enter but not to leave said first chamber; and

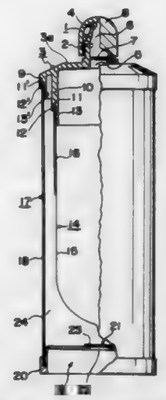
a second valve between said cap and said second chamber, said second valve enabling liquid to flow from said second chamber and out of said cap, said second valve preventing air from entering said second chamber.

5,303,852

VISCOUS LIQUID-DISPENSING CONTAINER HAVING A RESILIENT FOLLOWER

Akitoshi Yamawaki, Ikeda, and Kanetsugu Yoshiki, Takatsuki, both of Japan, assignors to Sunstar Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 993,076
Claims priority, application Japan, Dec. 20, 1991, 3-111737[U]
Int. Cl.[5] B65D *37/00, 5/42*
U.S. Cl. 222—209 **3 Claims**



1. A viscous liquid-dispensing container comprising:

a viscous liquid-dispensing section having an upstanding head and a mounting shoulder means radially extending from the lower end of the head, the head including an extracting opening at the upper end thereof, an introducing opening at the lower end thereof, means defining an extracting path for the viscous liquid between said openings, and a first check valve disposed in the extracting path to allow only extraction of the viscous liquid, the mounting shoulder means comprising a peripheral outer mounting portion and a depending annular inner mounting portion spaced radially inwardly from the outer mounting portion;

a tube-shaped inner container, for accommodating viscous liquid, comprising a lower bag made of a flexible thin film and an upper sleeve substantially uniformly harder than the lower bag and connected thereto, the upper end of the upper sleeve being connected with the depending annular inner mounting portion of the mounting shoulder means; and

an elastic outer container surrounding the inner container, the upper end thereof being connected with the peripheral outer mounting portion of the mounting shoulder means, the outer container having a second check valve capable of introducing external air to the inside of the viscous liquid-dispensing container;

wherein the mounting shoulder means comprises a first shoulder having the peripheral outer mounting portion and further comprises a second shoulder having the depending annular inner mounting portion, the second shoulder extending radially from the lower end of the head and being axially spaced downwardly from the first shoulder and being connected with the lower end of the

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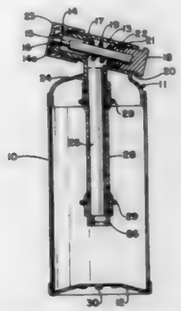
head such that the extracting path of the head communicates with the inside of the inner container.

5,303,853

PRESSURIZED LIQUID DISPENSING CONTAINER AND VALVE

Norman H. Nye, 1348 Highbridge Rd., Cuyahoga Falls, Ohio 44223

Continuation-in-part of Ser. No. 750,938, Aug. 28, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 6,463
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—212 **9 Claims**



1. A pressurized dispensing container assembly comprising a container having a nozzle attached and connected thereto for directing discharge of fluid from said container;

said nozzle having a discharge end, an annular side wall extending axially rearwardly from said discharge end, and an end wall extending radially inwardly from said side wall at said discharge end, said end wall having an inner surface, an outer surface which forms the outermost surface at said discharge end of said nozzle, said outer surface being outwardly convex or flat, and a frustoconical valve seat surface defining a central discharge opening extending axially through said end wall, said discharge opening have an inlet at said inner surface of said end wall and an outlet at said outer surface of said end wall and being of larger diameter at said outlet than at said inlet;

a valve at said discharge end comprising said valve seat and an axially moveable valve head, said valve head being of frustoconical shape and having an outer end surface and a frustoconical surface which matches the shape of the valve seat surface, said valve member being capable of fluid tight seating on said valve seat surface;

said outer end surface of said valve head and said outer surface of said end wall having the same curvature and being flush when said valve head is in closed position, and said outer surface of said end wall of said nozzle and said outer end surface of said valve member being devoid of recesses and being smooth, so as to facilitate easy cleaning;

means for causing relative axial movement between said valve head member and said valve seat surface to open and close said valve, said valve head opening axially outwardly so that said valve head has an inward position in which the valve is closed and an outward position in which the valve is open;

said valve head having essentially the same shape both as formed and in said closed position;

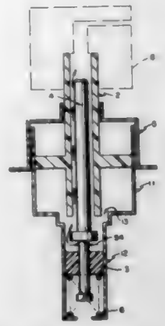
said pressurized dispensing container assembly further including a protective cap that contacts said valve head when said valve is closed and holds it tightly against the valve seat to prevent leakage of the contents of the container when said cap is in place.

5,303,854

PHARMACEUTICAL PUMP DISPENSER HAVING HYDRAULICALLY CLOSED OUTLET PORT

Miro S. Cater, Newtown, Conn., assignor to Spruhventile GmbH, Wyhl am Kaiser Stuhl, Fed. Rep. of Germany

Filed Mar. 8, 1993, Ser. No. 27,660
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—321 **8 Claims**



1. A finger actuated pump dispenser comprising:

a first upper hollow vertical cylinder with a first diameter and open upper and lower ends,

a second lower hollow vertical cylinder with a second and smaller diameter and a closed lower end with a central opening, the lower end of the first cylinder being joined to an open upper end of the second cylinder, the inner wall of the second cylinder having an enlarged horizontal annular recess at the junction of the first and second cylinders;

a first vertical hollow piston having openings in top and bottom ends and extending slidably above and within first cylinder, the first piston having an enlargement intermediate its ends peripherally engaging and defining a first unbroken seal with the inner surface of the first cylinder;

a second vertical piston having a central vertical bore extending therethrough and disposed slidably within the second cylinder, the second piston peripherally engaging and defining a second seal with the inner surface of the second cylinder, the second seal being unbroken except when the second piston is aligned with and spaced from the annular recess;

a vertical stem disposed slidably within the first piston with an outwardly extending central horizontal flange secured thereto intermediate its ends, the bottom opening of the first piston engaging and defining a third seal with the flange, the third seal being broken when the bottom opening of the first piston is separated from the flange, a portion of the stem below the flange extending vertically and slidably downwards through the central bore of the second piston, the portion engaging and defining a fourth unbroken seal with said bore; and

a spring extending within the second cylinder between its lower end and the lower end of the second piston.

5,303,855

HAIR ACCESSORY MODULAR ORGANIZER

Jane E. Veale, 43 Captains Dr., Alameda, Calif. 94501

Filed Jun. 25, 1993, Ser. No. 81,104
Int. Cl.[5] A47G *25/18*
U.S. Cl. 223—85 **6 Claims**

1. A modular organizer comprising:

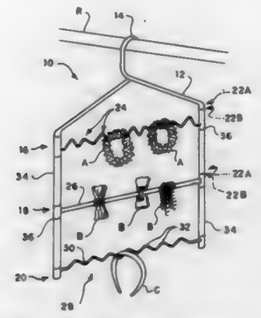
a hook member having

a hook for supporting said organizer by hanging, and manually attachable and detachable frictional connection

means for connecting at least one accessory supporting member thereto; and

a plurality of accessory supporting members vertically spaced apart from one another at predetermined separation dimensions, said plurality of accessory supporting members including:

at least one first accessory supporting member having a first accessory holder comprising a horizontally extending succession of projections inclined to lean alternately forwardly and backwardly, and having frictional connection means configured, dimensioned, and aligned to mate with other said frictional connection means;



at least one second accessory supporting member having a second accessory holder comprising a horizontally disposed linear member and having frictional connection means configured, dimensioned, and aligned to mate selectively with other said frictional connection means; and

at least one third accessory supporting member having a third accessory holder comprising a horizontally extend in succession of vertically extending projections having rounded ends, and having frictional connection means configured, dimensioned, and aligned to mate selectively with other said frictional connection means.

5,303,856

SOCK DONNING APPARATUS

Roger W. Weatherholt, Sr., Rte. 4, Box 494, Front Royal, Va. 22630

Filed May 3, 1993, Ser. No. 56,318
Int. Cl.[5] A47G *25/80*
U.S. Cl. 223—111 **5 Claims**

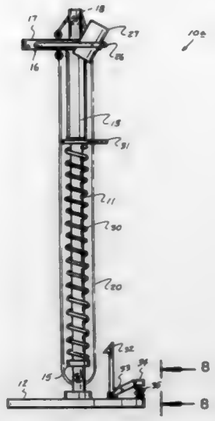
1. A sock donning apparatus, comprising,

a support post, the support post including a support post first end spaced from a support post second end, with a base plate mounted to the support post second end, and

a platform having a guide tube, with the platform having a platform top wall spaced from a platform bottom wall, and the guide tube mounted to the platform at the platform bottom wall, said support post slidably directed through said guide tube, and

drive means to permit reciprocation of the platform from a first position in adjacency to the post first end to a second position in adjacency with the support post second end, and

a support arm mounted to the platform extending laterally of the platform, the support arm having a U-shaped support plate fixedly mounted to the support arm in spaced adjacency to the platform, with the U-shaped support arm oriented at an obtuse angle relative to the platform top



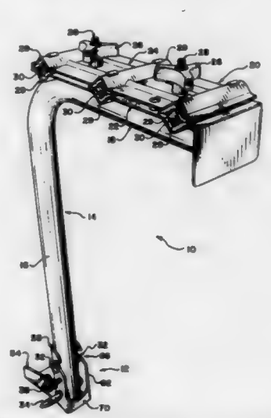
wall, with the support plate extending above and below the support arm and above and below the platform.

5,303,857

SWING-DOWN BICYCLE CARRIER FOR VEHICLES

Bruce C. Hewson, West Vancouver, Canada, assignor to Erling Peter Justesen, Langley, Canada

Filed Sep. 11, 1992, Ser. No. 944,219
Int. Cl.[5] B60R *9/06*
U.S. Cl. 224—42.03 B **1 Claim**



1. A bicycle carrier for mounting on a trailer hitch of a vehicle, said trailer hitch type having a removable ball secured to a threaded bolt portion, said carrier comprising:

a) bracket means for attachment to said trailer hitch;

b) an elongated generally L-shaped bicycle support means pivotally mounted at a first end thereof on said bracket means for movement from a fixed vertical position to unfixed rearward pivotal motion;

c) means on said bicycle support means for removably attaching a bicycle; and

d) means for releasably securing said support means in said fixed vertical position;

wherein said means for releasably securing said support means in said fixed vertical position comprises a pin which removably extends through a hole in said bracket means and a correspond-

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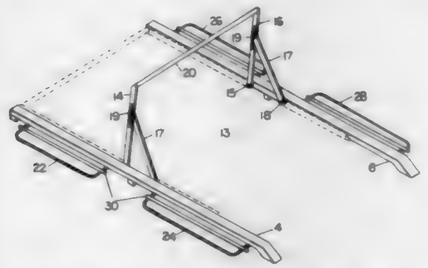
ing hole in said support means, wherein said support means is provided with axle means secured thereto and extending perpendicularly therefrom which extends into, rotates in and is movable along two parallel elongated slots in said bracket means, whereby said support means is rotatable in and vertically movable in said bracket means from a lower position in which said support is constrained in a fixed vertical position to an upper position in which said support is released for said rearward pivotal motion; and wherein said bracket comprises a generally horizontal planar element provided with a hole for receiving said bolt portion of said ball of said trailer hitch, and a second upstanding section which receives said support element and is provided with said elongated slots extending upwardly on either side thereof, said upstanding section being generally U-shaped in horizontal cross-section having a top, a rearward face and a forward face, said upstanding section being open on said top and along said rearward face to permit passage of said support element when said support element is in said upper position while being closed along said frontward face to prevent frontward pivotal movement of said support element when said support element is in said upper position.

5,303,858

CARGO RACK FOR PICKUP TRUCKS

Brent A. Price, 1211 Bonfoy Ave., Colorado Springs, Colo. 80909

Filed Feb. 10, 1993, Ser. No. 16,101
Int. Cl.[5] B60P *3/00*
U.S. Cl. 224—42.45 R **5 Claims**



1. A mounting rack for pickup trucks having a cargo bed with upstanding lateral side walls, comprising in combination,
first and second base forming rails adapted to be surmounted on the top fenders of the truck cargo bed;
first frame means attached centrally to the first base forming rail in a position upstanding from the side wall of the truck cargo bed;
second frame means attached centrally to the second base forming rail in a position upstanding from the side wall of the truck cargo bed;
at least one cross beam interconnecting the uppermost portions of the said first and second frame means;
first cargo support means carried by said first base forming rail and projecting laterally from the cargo bed of the truck, said first cargo support means having a first cradle thereon to support cargo; and
second cargo support means carried by said second base forming rail and projecting laterally from the cargo bed of the truck, said second cargo support means having a second cradle thereon to support cargo.

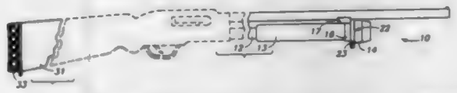
5,303,859

SHOTGUN SLING MOUNTING APPARATUS

Timothy J. Jenkin, 2319 Pershing Blvd., Clinton, Iowa 52732

Filed Apr. 22, 1993, Ser. No. 50,599
Int. Cl.[5] F41C *33/00*
U.S. Cl. 224—149 **5 Claims**

1. A shotgun sling mounting apparatus arranged for securement to an associated shotgun assembly, wherein the shotgun assembly includes a shotgun barrel, having a magazine tube extending in adjacency to the barrel, with the magazine tube including a stock member and a threaded end portion extending from the magazine tube beyond the stock member, with the shotgun assembly further having a shotgun butt stock, having a butt stock rear wall, wherein the apparatus comprises,
a first support ring, the first support ring having a first support ring central opening arranged for receiving the magazine tube threaded end portion therethrough, the first support ring including a first support ring lug, the first support ring lug having a concave barrel receiving top wall arranged to complementarily receive the shotgun barrel, with the first support ring having a first support ring front wall spaced from a first support ring rear wall, the first support ring front wall having at least one locking projection extending therefrom, and
a second support ring, the second support ring having a second support ring rear wall and a second support ring front wall, said second support ring rear wall arranged to receive said at least one locking projection, with a second



support ring central opening arranged in a coaxially aligned relationship relative to the first support ring central opening receiving the magazine tube threaded end portion therethrough, and
the second support ring rear wall arranged for engaging the first support ring front wall locking projection, the second support ring having a second support ring lug, with a second support ring lug opening arranged to accommodate a sling ring member, and
a mounting plate, the mounting plate having a mounting plate front wall and a mounting plate rear wall, the mounting plate front wall arranged for abutting engagement with the butt stock rear wall, and
the mounting plate including at least one mounting plate slot arranged to receive a fastener through the at least one slot into the butt stock, with the mounting plate having a mounting plate periphery, the mounting plate periphery including a mounting plate lug, the mounting plate lug including a mounting plate lug bore arranged to receive a further sling ring member.

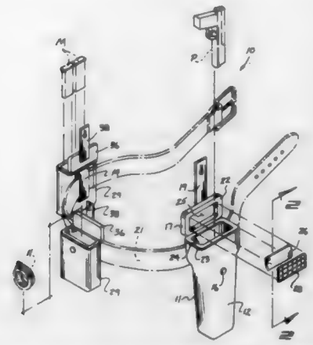
5,303,860

GUN HOLSTER ASSEMBLY

Frank V. Serafini, Jr., 8303 Coquina Ave., Fort Pierce, Fla. 34951

Filed Jan. 25, 1993, Ser. No. 8,151
Int. Cl.[5] F41C *33/02*
U.S. Cl. 224—238 **2 Claims**

1. A gun holster assembly, comprising,
a flexible support strap, and
a rigid first housing, a first housing having a first housing front wall spaced from a first housing rear wall, and
a first rigid boss mounted to the rear wall, and
a first flexible loop mounted to the rigid boss spaced from the first housing rear wall, and
a rigid first housing lid, the first housing lid including a first hinge, the hinge secured to the first lid in adjacency to the first housing rear wall, and
the first housing front wall including a first lug, and an elastomeric first strap mounted to the first housing lid for securement to the first housing front wall lug, and
the first housing lid includes a first lid top wall, wherein the elastomeric first strap includes a first strap first end secured to the first lid top wall, and a first strap second end extending to the first housing front wall, and
the first housing lid includes a lid lower perimeter wall, the first housing includes a first housing top wall, wherein the lid lower perimeter wall includes a continuous predetermined configuration, and the first housing top wall is oriented as said predetermined configuration for contiguous and coextensive communication with the lid lower perimeter wall, wherein the first housing lid is in engagement with the first housing top wall, and a continuous,



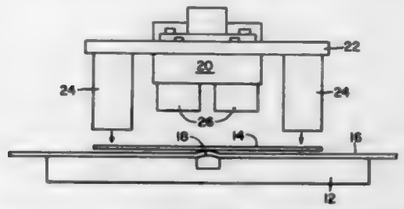
resilient elastomeric gasket mounted coextensively to the first housing top wall for sealing engagement with the lid lower perimeter wall, and
the lid lower perimeter wall is spaced from the first lid top wall, with a first lid cavity positioned within the first lid between the lid lower perimeter wall and the first lid top wall, and an anhydrous desiccant container positioned within the first lid cavity containing a powdered desiccant therewithin, and a screen grid frictionally positioned within said first lid cavity in adjacency to the lid lower perimeter wall.

5,303,861

SEPARATING SHEET GLASS

Roger A. Allaire, and William F. Pardue, Jr., both of Big Flats, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Sep. 1, 1992, Ser. No. 938,956
Int. Cl.[5] C03B *33/03;* **B26F** *3/00*
U.S. Cl. 225—2 **13 Claims**



6. An apparatus for separating a sheet of glass along a score line on the sheet, the apparatus comprising:
a support for the sheet, the support defining an axis of flexure to be aligned with the score line, at least one movable pressure member spaced above and at least to one side of the score line, means to move the pressure member into contact with the sheet of glass to prestress the sheet at the score line, and means for initiating a break at one end of the score line,
wherein there are two movable pressure members positioned above and on opposite sides of the score line and being a first set of pressure pads,
wherein the break initiating means is a second set of pressure pads so positioned and spaced as to be moved into contact with the glass sheet on opposite sides of the score line.

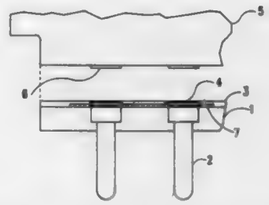
11. An apparatus for separating a sheet of glass along a score line on the sheet, the apparatus comprising:
a support for the sheet, the support defining an axis of flexure to be aligned with the score line, a single movable pressure member spaced above and to one side of the score line, the movable pressure member comprising suction cups which contact the glass sheet, means to move the pressure member into contact with the sheet of glass to prestress the sheet at the score line, and means for initiating a break at one end of the score line.

5,303,862

SINGLE STEP ELECTRICAL/MECHANICAL CONNECTION PROCESS FOR CONNECTING I/O PINS AND CREATING MULTILAYER STRUCTURES

Arthur Bross, Poughkeepsie, N.Y.; James J. Hedrick, Oakland; Robert D. Johnson, Morgan Hill, both of Calif.; Robert O. Lussow, Hopewell Junction, N.Y.; James R. Lyerla, Jr., San Jose, Calif.; Donald E. Myers, Poughkeepsie, N.Y.; Joseph D. Peruffo, Pleasant Valley, N.Y.; Krishna G. Sachdev, Hopewell Junction, N.Y., and Thomas J. Walsh, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,440
Int. Cl.[5] H05K *3/30*
U.S. Cl. 228—175 **10 Claims**



1. A method of electrically and mechanically joining together selected elements of an electronic device, comprising the steps of:
positioning a polymer layer between a first and second substrate, said polymer layer being made of a first material which will undergo transesterification chemistry with a second material in or on either or both said first and second substrate;
aligning one or more metallic elements on said first substrate with one or more metallic elements on said second substrate; and
simultaneously forming an electrical connection between said one or more metallic elements on said first substrate with said one or more metallic elements on said second substrate, and forming a mechanical connection between said first and second substrates using said polymer layer wherein said first material and said second material undergo transesterification to form a chemical bond therebetween.

5,303,863

BEVERAGE CARTON WITH INTEGRAL COOLER BIN

James D. Arasim, 5225 Richmond Dr., Racine, Wis. 53406

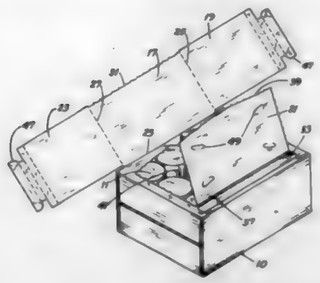
Filed Oct. 2, 1991, Ser. No. 771,311
Cl.[5] B65D *5/24*
U.S. Cl. 229—227 **19 Claims**

1. In a carton having a compartment for multiple containers of beverage and holding means for retaining a coolant in heat exchange relationship to the containers, having a repose position and having a utility position, the improvement wherein:
the compartment has a top wall with a lift-up panel;
the holding means includes three additional panels atop the

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wall and in stacked relationship to one another in said repose position; none of said lift-up or additional panels is coplanar with another panel in said repose position;

at least one of the three additional panels is unattached to any other additional panel in said repose position;



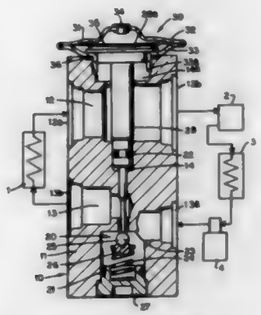
at least one of the three additional panels includes a panel holding tab; and,

at least one of the panels includes a slot for receiving a panel holding tab, the slot and the tab coacting for retaining all of the panels upright to define said utility position and forming an open-top ice bin atop the compartment.

5,303,864
EXPANSION VALVE

Hisatoshi Hirota, Hachioji, Japan, assignor to Deutsche Controls GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 882,850
Claims priority, application Japan, May 14, 1991, 3-108043; Dec. 2, 1991, 3-317726; Dec. 3, 1991, 3-318751; European Pat. Off., Apr. 22, 1992, 92106896.1
Int. Cl.[5] F25B *41/04*
U.S. Cl. 236—92 B **30 Claims**



1. An expansion valve for controlling the flow rate of a refrigerant supplied to an evaporator of a refrigerating system, comprising:

a housing;

a temperature-sensing chamber being located to sense the temperature of the refrigerant returning from said evaporator, said temperature-sensing chamber containing 1) a sealed charge of at least a saturated vapor gas, and 2) a displaceable diaphragm wall having an inside surface located inside said temperature-sensing chamber, said sealed charge being operable to convert sensed temperature changes into a pressure change within said temperature-sensing chamber, said diaphragm wall responding by displacement to said pressure changes within said temperature-sensing chamber;

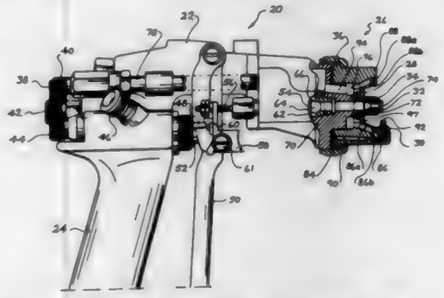
a valve mechanism located in a refrigerant supply passage of said housing, said valve mechanism being actuated by displacement of said diaphragm wall of said temperature-sensing chamber to open and to close said supply passage; and

an adsorption means, fixed to said inside surface of said diaphragm wall, for absorbing a liquefied part of said saturated vapor gas which is condensed and liquefied on said surface of said diaphragm wall and for holding said liquefied part on said inside surface of said diaphragm wall.

5,303,865
PLURAL COMPONENT EXTERNAL MIX SPRAY GUN AND METHOD

Jeffrey Bert, Boulder, Colo., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Jul. 26, 1990, Ser. No. 557,981
Int. Cl.[5] B05B *1/28, 7/06*
U.S. Cl. 239—9 **24 Claims**



1. A plural component spraying device comprising:

a fluid tip having an orifice;

means for pressure delivery of a first liquid to said fluid tip for emission from said orifice in a dense, narrow and expanding film of the first liquid that breaks up downstream from said fluid tip into an atomized spray independent of interaction of air therewith;

an injector nozzle having an orifice; and

means for delivering a second liquid to said injector nozzle for emission from said injector nozzle orifice in an unatomized stream that impinges against the first liquid downstream from said fluid tip, at a point where the first liquid is still a dense and narrow film that has not yet atomized into a spray, to admix the liquids.

5,303,866
INTEGRATED MODULAR SPRAYING SYSTEM

Bill J. Hawks, Jr., 8253 Greenbriar Ct., Wichita, Kans. 67226

Filed Sep. 11, 1992, Ser. No. 943,858
Int. Cl.[5] B65H *75/00*; B05B *9/04*
U.S. Cl. 239—142 **31 Claims**

1. An integrated modular delivery system to apply a chemical to a remote target comprising:

a) an elongate hose spool;

b) predetermined length of flexible hose which is removably wound about said hose spool;

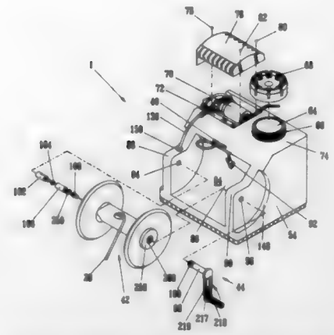
c) an integral thermoplastic tank capable of holding a predetermined amount of the chemical;

d) means for transferring the chemical from said tank through said hose for application to the remote target;

e) said tank including:

i) a well formed in a wall of said tank and further defined by a pair of opposing buttresses extending outwardly from said tank, said buttresses for mounting said hose spool enabling it to freely rotate in said well;

ii) a fillwell formed in said tank, allowing the chemical to be replenished in said tank; and

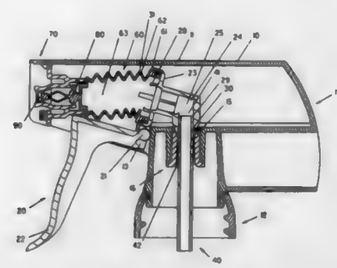


iii) a recess formed in a sidewall of said tank, said recess sized and dimensioned to receive and support said transfer means.

5,303,867
TRIGGER OPERATED FLUID DISPENSING DEVICE

Robert J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 24, 1993, Ser. No. 82,001
Int. Cl.[5] B65D *37/00*; B05B *9/043, 11/02*
U.S. Cl. 239—333 **23 Claims**



1. A trigger operated dispensing device for the discharge of fluids in response to manual depression of the trigger, said dispensing device comprising:

(a) a housing for sealingly mounting said dispensing device to a supply container;

(b) a trigger attached to said housing and connected to an inlet portion of a flexible pump means using a coupling means, said flexible pump means being directly in line with and adjacent to a discharge of said dispensing device, said flexible pump means having the inlet portion in fluid communication with said supply container and an outlet portion in fluid communication with said discharge of said dispensing device wherein rotational motion of said trigger results in rotational compression of said flexible pump means;

(c) a fluid conducting means for transferring fluid from said supply container to said flexible pump means;

(d) a fluid inlet valve and a fluid inlet valve retaining means located at the inlet portion of said flexible pump means wherein releasing said trigger opens said valve allowing fluid to enter said flexible pump means through said fluid conducting means, and depressing said trigger closes said valve preventing fluid inside said pump means from returning to said fluid conducting means;

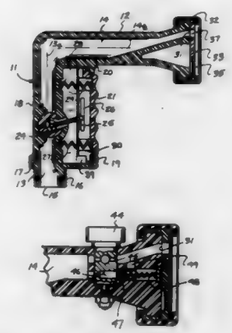
(e) a nozzle attached to said housing in fluid communication with the outlet portion of said flexible pump means comprising the dispensing device discharge and an outlet valve seat; and

(f) a biased fluid outlet valve contacting said discharge at one end, and contacting said outlet valve seat at the opposite end, wherein said end of the outlet valve in contact with the valve seat is displaced from said seat when the trigger is depressed thereby allowing the fluid in said flexible pump means to pass through said discharge.

5,303,868
HOSE NOZZLE

John E. Kroll, Rte. 1, Box 519, Frostburg, Md. 21532

Filed Apr. 12, 1993, Ser. No. 44,760
Int. Cl.[5] B05B *1/16, 9/01*
U.S. Cl. 239—394 **5 Claims**



1. A hose nozzle, comprising,

a unitary housing, including a handle housing in integral and orthogonal communication with a directional housing, the handle housing having a first conduit symmetrically oriented about a first axis, and the directional housing having a second conduit in fluid communication with the first conduit, with the second conduit symmetrically oriented about a second axis, the handle housing having a handle housing bottom wall, and the directional housing having a directional housing forwardmost end spaced from the handle housing, wherein the second conduit terminates in a second conduit exit end through the forwardmost end, and

the second conduit exit end is offset relative to the second axis, and

the forwardmost end including a cylindrical collar rotatably mounted about the forwardmost end orthogonally oriented relative to the second axis, and the cylindrical collar including a flow metering disc, the flow metering disc including at least a first and a second flow metering aperture matrix therethrough, wherein the first and second flow metering aperture matrix are oriented a predetermined spacing relative to the second axis, and wherein the second conduit exit end is offset relative to the second axis at said predetermined spacing to permit selective alignment of one of the first and second flow metering aperture matrix with said second conduit exit end, and

the first conduit includes a valve cylinder rotatably mounted within the first conduit, and the valve cylinder having a valve cylinder conduit directed diametrically through the valve cylinder permitting selective traversing of the valve cylinder conduit relative to the first conduit, and fluid flow communication of the valve cylinder conduit with the second conduit upon rotation of the valve cylinder relative to the first conduit, and

the valve cylinder includes a support plate fixedly, coaxially, and laterally offset relative to the valve cylinder oriented exteriorly of the first conduit such that the valve cylinder

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support plate includes an actuator link fixedly mounted to the valve cylinder support plate by having a first end of the actuator link secured to the valve cylinder support plate, and the actuator link having an actuator link second end arranged for rotative displacement relative to the first conduit.

5,303,869

MULTIPLE NOZZLE ON A FLEXIBLE STRAP FOR A GARDEN SPRAYER

Robert C. Hudson, Jr., Northbrook, Ill., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Jul. 19, 1993, Ser. No. 94,373
Int. Cl.[5] B05B *1/00*
U.S. Cl. 239—391 12 Claims



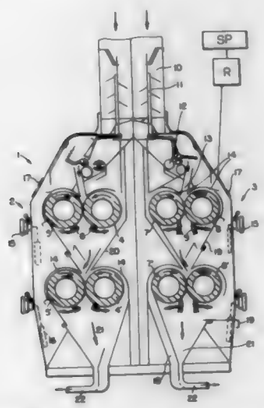
1. A multiple nozzle and strap assembly for coupling with a nozzle body of a sprayer comprising:
a flexible strap having a central portion and at least two strap arms extending outwardly from the central portion, an opening in the central portion for receiving the nozzle body; each strap arm having an outer free end; and
a nozzle on each of the strap arm free ends for coupling with the nozzle body for obtaining a selected discharge pattern, each nozzle is different and provides a different discharge pattern.

5,303,870

METHOD FOR THE PRODUCTION OF MILLED GRAIN PRODUCTS AND GRAIN MILLING SYSTEM

Werner Baltensperger, Oberuzwil, and Christian Lippuner, Niederuzwil, both of Switzerland, assignors to Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 728,621, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 350,557, Mar. 22, 1989, Pat. No. 5,100,062. This application Apr. 23, 1993, Ser. No. 52,868
Claims priority, application Switzerland, Oct. 6, 1987, 03893/87; PCT Int'l Appl., Oct. 6, 1988, PCT/CH88/00184
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] B02C *9/04*
U.S. Cl. 241—9 11 Claims



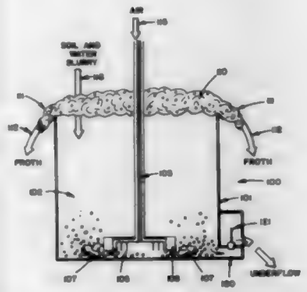
1. In a grain mill for producing milled grain products such as flour, semolina and middlings with a system of advanced milling having a plurality of single grinding passes with roll pairs and subsequent sifting passes with plansifters and sifter divisions respectively, the improvement comprising:
two grinding roll pairs arranged sequentially without sifting therebetween, thereby defining a double-grinding pass, and means for sifting directly following said double grinding pass, said grain mill employing a plurality of double grinding passes and single grinding passes in combination with a sifting pass being arranged after each double grinding pass or each single grinding pass, respectively, and wherein two double-grinding passes are constructed as an 8-roll mill unit, each of said two double grinding passes having two grinding roll pairs located one on top of the other.

5,303,871

PROCESS FOR TREATING CONTAMINATED SOIL

George F. Bateson, Fridley; Dennis D. Chilcote, Hibbing; Michael M. Martinson, Mound, all of Minn.; Steven B. Valine, Elma, N.Y., and Aldolfo R. Zambrano, Chanhassen, Minn., assignors to Biotrol, Incorporated, Eden Prairie, Minn.

Continuation of Ser. No. 398,082, Aug. 24, 1989, Pat. No. 5,115,986, which is a continuation-in-part of Ser. No. 388,748, Aug. 2, 1989, Pat. No. 4,923,125, which is a continuation of Ser. No. 153,240, Feb. 8, 1988, abandoned. This application May 14, 1992, Ser. No. 882,664
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] B02C *23/18*
U.S. Cl. 241—20 21 Claims



1. A process for treating soil contaminated with organic materials; said process including the steps of:
(a) conducting an attrition process on the contaminated soil, to break the soil into particles suspended in fluid; and
(b) conducting a continuous flow countercurrent classification process on the contaminated soil, for isolation and removal of a fine, contaminant-carrying soil component from a fraction containing relatively contaminant-free, coarser, soil particles.

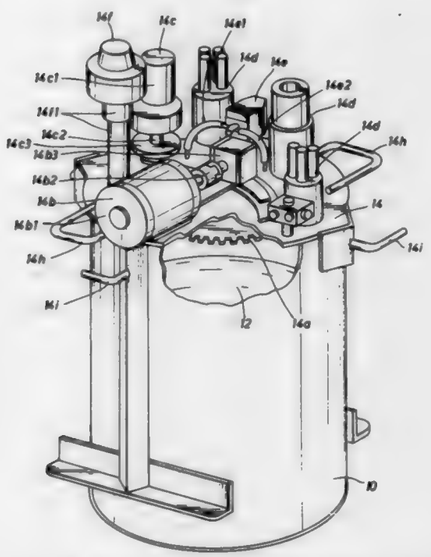
5,303,872

TRANSPORTABLE BATTERY DISPOSAL UNIT

Marvin Milewits, Sugar Land; Baldemar Fuentes, Brownsville, and Dinesh R. Patel, Sugar Land, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 714,957, Jun. 13, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 8,247
Int. Cl.[5] B02C *23/40*
U.S. Cl. 241—41 16 Claims

1. A transportable object disposal unit, comprising:
a container holding a fluid; and
a lid for said container, said lid including a plurality of holes for receiving a respective plurality of objects when said lid is disposed over said container, said lid being disposed in a first plane when said lid is disposed over said container, said plurality of holes lying in said first plane; and
breaking apparatus means disposed in a second plane which is located below said first plane and is substantially parallel to said first plane when said lid is disposed over said container for breaking said plurality of objects into pieces when the plurality of objects are received, respectively, in the plurality of holes in said lid and said lid is disposed over said container, said fluid in said container neutralizing said pieces of said objects broken by said breaking apparatus,
said breaking apparatus means including cutting means disposed in said second plane for cutting said objects into pieces, said cutting means including,
a cutting wheel disposed in said second plane which is located below said first plane and is substantially parallel to said first plane when said lid is disposed over said container, and
driving means operatively connected to said cutting wheel for driving said cutting wheel thereby cutting said objects



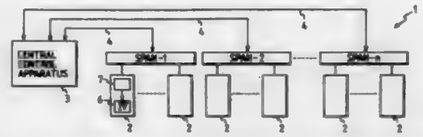
into said pieces, said driving means including rotating means for rotating said cutting wheel, and oscillating means for moving said cutting wheel transversely within said second plane in an oscillating manner along a path of travel when said rotating means is rotating said cutting wheel, said path of travel being defined by a path taken in said first plane by the plurality of objects when said objects are disposed through the holes in the lid,
a first one of said plurality of objects being disposed in said first plane at one point along said path of travel of said oscillating means in said second plane and a last one of said plurality of objects being disposed in said first plane at another point along said path of travel of said oscillating means in said second plane, said cutting wheel cutting said first one of said plurality of objects when said oscillating means moves said cutting sheet within said second plane along said path of travel to said one point along said path, said cutting wheel cutting said last one of said plurality of objects when said oscillating means moves said cutting wheel within said second plane along said path of travel to said another point along said path.

5,303,873

WINDING SPEED CONTROL METHOD OF AUTOMATIC WINDER

Hideyuki Oe, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 15, 1992, Ser. No. 945,027
Claims priority, application Japan, Sep. 17, 1991, 3-236291
Int. Cl.[5] B65H *54/40*
U.S. Cl. 242—36 5 Claims



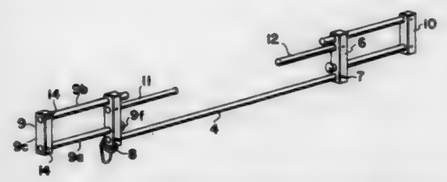
1. In an automatic winder comprising a plurality of winding units, each of the winding units having a drum for driving a winding package and a drum control means for controlling rotation of the drum, a winding speed control method comprising:
providing a common control unit for the plurality of winding units,
providing a plurality of acceleration instructions in the control unit corresponding to a plurality of different drum accelerations,
selecting an acceleration instruction for each of the winding units, and
transmitting the selected acceleration instruction to the drum control means of the winding unit.

5,303,874

DEVICE FOR ROLLING BED ROLLS

Kevin J. Le Masters, 8781 Evergreen Dr., Mentor, Ohio 44060

Filed Sep. 21, 1992, Ser. No. 948,242
Int. Cl.[5] B65H *18/00*
U.S. Cl. 242—68 6 Claims



1. Bed roll rolling apparatus comprising a main spacer bar having a longitudinal axis, finger support elements fixed at the ends of the bar, a roll starting finger extending toward each other from each element, and a handle unit mounted on each of said elements, each of said units being slidably engaged with its respective element between a retracted storage position and a use position in which the handle unit extends axially outwardly to facilitate rotation of the entire apparatus by rotating rolling action of the handle units by a user.

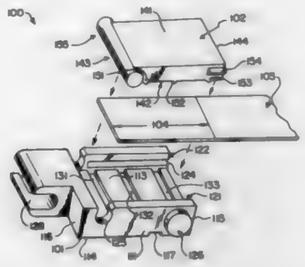
VOL 1161 ISS 3 APR 19 1994 UMI

5,303,875

LEADER BLOCK FOR MAGNETIC TAPE CARTRIDGE

David T. Hoge, Arvada, Colo.; Michael W. Johnson, Cottage Grove, Minn.; John C. Owens, Arvada, Colo.; George P. Rambosek, Shafer, Minn.

Filed Feb. 10, 1992, Ser. No. 833,350
Int. Cl.[5] G03B 1/04; G11B 15/32
U.S. Cl. 242—197 48 Claims



1. A leader block for a magnetic tape having a first end, comprising:

a substantially rectangular body means having top, bottom, front, back, first and second sides thereto, wherein said top and bottom include first and second tape guide projections, respectively, extending outward from said front, coplanar with said top and bottom sides, respectively, to form with said front a substantially U-shaped channel, open at one end to said first side, to receive said first end of said magnetic tape and align said first end of said magnetic tape coplanar with said front and juxtaposed thereto; and

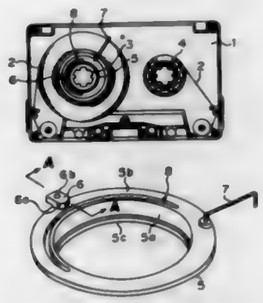
cover means latchably insertable into said substantially U-shaped channel of said body means to sandwich said first end of said magnetic tape between said cover means and said front of said body means to secure said first end of said magnetic tape in said U-shaped channel of said body means.

5,303,876

MAGNETIC TAPE CASSETTE

Hiroki Suzuki; Takateru Sato, both of Saku, and Haruo Shiba, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 929,020
Claims priority, application Japan, Aug. 20, 1991, 3-73002[U]; Sep. 4, 1991, 3-78723[U]
Int. Cl.[5] G11B 23/087
U.S. Cl. 242—199 13 Claims



1. A magnetic tape cassette which comprises:

a cassette casing;

a pair of reels, on which a magnetic tape is wound, which are received in the cassette casing in a rotatable manner; and

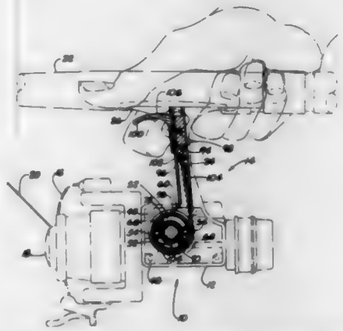
an interlocking plate mounted on either one of said reels, which is provided with an adjusting button and a control pin, wherein said adjusting button is directly interconnected with and immediately adjacent to the interlocking plate without any spacing between the adjusting button and interlocking plate, and wherein the interlocking plate and the adjusting button are formed of a flexible material.

5,303,877

LINEAR WINDING ASSEMBLY

Quintino M. Ciocca, 620 Saxonburg Blvd., Pittsburgh, Pa. 15238

Filed Apr. 30, 1992, Ser. No. 876,443
Int. Cl.[5] A01K 89/01
U.S. Cl. 242—256 15 Claims



1. A linear winding assembly installed within a fishing reel housing which is attached to a fishing rod by a stem, wherein the linear winding assembly is actuated by a user from a neutral position to an engaged position to rotate a main drive shaft which actuates a bail assembly, causing the line to be brought in, comprising:

a slider member slidably mounted to the stem of the reel and actuated for selective reciprocable upward and downward movement thereon;

a trigger mounted to the slider member and actuated by the user for reciprocable upward and downward movement;

a cylindrical pulley housing mounted on the main drive shaft and actuated by the reciprocable upward and downward movement of the trigger for rotatable and linear movement on the main drive shaft;

connection means for connecting the pulley housing to the slider member so that the upward movement of the trigger member actuates the pulley housing for rotatable and linear movement on the main drive shaft;

a circular pulley gear mounted within the pulley housing thereto, whereby the pulley gear moves in a rotatable and linear manner on the main drive shaft concomitant with the selective rotation of the pulley housing;

a driven gear mounted on the main drive shaft adjacent the pulley gear and which is selectively engaged by the pulley gear for actuating main drive shaft rotation, the driven gear in adjacent linear alignment concentric with the pulley gear; and

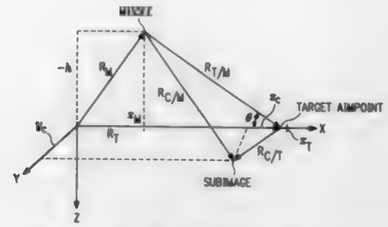
a cylindrical bearing mounted on the main drive shaft and circumjacently encompassed by and fitted within the driven gear whereby the bearing is capable of locking onto the main drive shaft for permitting one-direction rotation of the main drive shaft for bringing in the fishing line when the driven gear is actuated by the pulley gear.

5,303,878

METHOD AND APPARATUS FOR TRACKING AN AIMPOINT ON AN ELONGATE STRUCTURE

Joel K. McWilliams, Highland Village, and Don R. Van Rheeden, Lewisville, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1991, Ser. No. 752,740
Int. Cl.[5] F41G 7/30
U.S. Cl. 244—3.15 7 Claims



1. A method for estimating the location of an aimpoint on an elongate target comprising the steps of:

acquiring an aimpoint and a set of related subimages on an elongate target at a first time with a sensor;

calculating the normalized distance in a first dimension d_x and in a second dimension d_y from each subimage to the aimpoint;

at a second time reacquiring at least one of the subimages at an image position (x,y); and

estimating the position of the aimpoint at an aimpoint image position (x_A,y_A) wherein the position (x,y) of each subimage at the second time is related to the aimpoint position (x_A,y_A) by the formulas:

$$x=x_A+M_o d_x+bd_x d_y$$

$$y=y_A+M_o d_y+bd_y^2$$

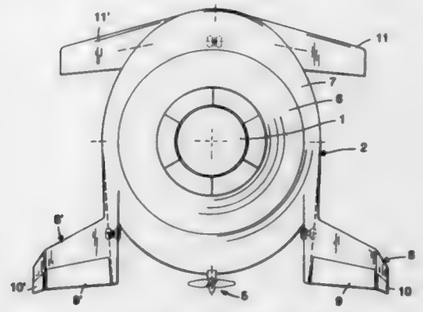
where M_o b are constants determined at each periodic time.

5,303,879

AIRCRAFT WITH A DUCTED FAN IN A CIRCULAR WING

Franz Bucher, Basel, Switzerland, assignor to Sky Disc Holding SA, Fribourg, Switzerland

Filed Jan. 26, 1993, Ser. No. 9,246
Claims priority, application Switzerland, Jan. 29, 1992, 258/92-5
Int. Cl.[5] B64C 29/00, 39/06
U.S. Cl. 244—23 C 21 Claims



1. An aircraft comprising a housing shaped as an essentially circular wing for generating an aerodynamic lift in a horizontal air flow,

means for generating a horizontal thrust in a principal forward direction,

at least one nonpivotal driven rotor with an essentially vertical axis of rotation for generating a rotor air stream, said rotor being arranged in said housing and designed for generating a lift exceeding the weight of said aircraft,

first air guiding means arranged within said rotor air stream adjustable for controlling said rotor air stream, said first air guiding means comprising radially extending vanes with pairs of adjacent vanes being adapted to be pivoted in opposite directions, said first air guiding means being capable of substantially preventing undesirable pitch of said aircraft during a portion of flight, and

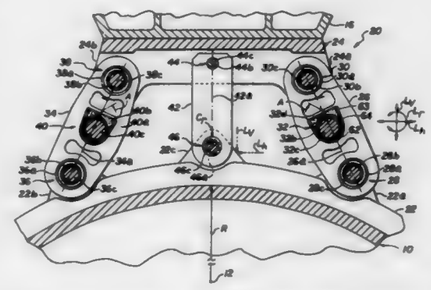
second air guiding means arranged outside a zone defined by said rotor air stream, which second air guiding means are shaped for influencing the pitch of the aircraft during flight along said principal forward direction.

5,303,880

AIRCRAFT ENGINE PIN MOUNT

James E. Cencula, Middletown; Donald L. Bellis, and Hahn M. Spofford, both of West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 28, 1992, Ser. No. 967,355
Int. Cl.[5] B64D 27/26
U.S. Cl. 244—54 9 Claims



1. A mounting pin assembly for supporting a gas turbine engine to an aircraft pylon, said mounting pin assembly comprising:

a generally annular outer bushing having an oppositely disposed set of axially extending outer flats having longitudinally extending widths on the inside diameter of said outer bushing, said outer bushing having an anti-rotation means to prevent said outer bushing from rotating within an aperture in a structural member used to mount the engine to the pylon;

a generally annular inner bushing disposed within said outer bushing and having an oppositely disposed set of axially extending inner flats having longitudinally extending widths on the outside diameter of said inner bushing,

an axially extending cylindrical mounting pin disposed within said inner bushing, and

said inner bushing and outer bushing sized for allowing displacement of said mounting pin in a direction normal to the axis of said mounting pin and parallel to said outer flats, wherein each of said outer flats of said outer bushing comprises a planer surface formed on the inside diameter of said outer bushing and each of said inner flats of said inner bushing faces a corresponding one of said planer surfaces.

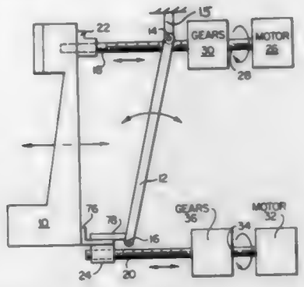
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,881

FORE AND AFT ARTICULATION ADJUSTMENT OF PILOT EJECTION SEAT

Armand J. Aronne, Massapequa, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 21, 1992, Ser. No. 933,089
Int. Cl.[5] B64D *11/06*
U.S. Cl. 244—122 R **4 Claims**



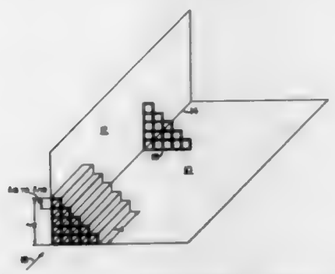
1. An adjustment mechanism for an ejection seat having seat and back sections, the mechanism comprising:
a plurality of threaded shafts threadingly engaging fittings respectively connected to the seat and back sections for adjusting the fore-aft position of the ejection seat;
gear means for rotating the threaded shafts;
motor means connected to the gear means for driving the gear means;
means connected to the gear means for limiting the fore-aft displacement of the ejection seat to positions behind a preselected seat ejection path; and
a seat support plate for absorbing ejection loads; the plate
(a) pivotally mounted at a first end thereof to a fixed pivot support; and
(b) an opposite end of the support plate is pivotally connected to a preselected section of the ejection seat for fore-aft movement therewith.

5,303,882

CORNER VORTEX SUPPRESSOR

Promode R. Bandyopadhyay, Providence, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1993, Ser. No. 20,940
Int. Cl.[5] B64C *23/00*
U.S. Cl. 244—130 **5 Claims**



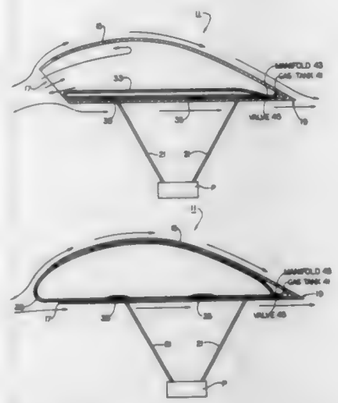
1. In combination, a structure having at least two angled surfaces that are oriented at a substantial angle relative to one another and that form a corner where said surfaces intersect one another, said surfaces provided in a moving fluid such that said structure surfaces are generally aligned with the direction of fluid flow and wherein the fluid has a free stream velocity V, said structure surfaces creating fluid boundary layers adjacent said structural surfaces to a depth δ, said boundary layer depth δ being measured normal to said structure surfaces to a point in the moving fluid where the velocity is at least 99 per cent of the free stream velocity V, and first means defining a plurality of fluid passageways parallel to said corner, at least one of said passageways provided adjacent said corner and defining at least two passageway sidewalls that define at least one corner of said one passageway, at least two other passageways arranged adjacent said one passageway and defined in part by said one passageway sidewalls, each of said at least two passageways defining at least two sidewalls that in turn define at least one passageway corner and at least two additional passageways arranged adjacent said at least two other passageways and defined in part by said at least two other passageway sidewalls, said at least two additional passageways defining at least two sidewalls that in turn define at least one additional corner, a majority of said passageways having identical cross sectional openings for the passage of fluid in the boundary layers, said passageway sidewalls of adjacent passageways being closely spaced to one another by a distance in the range δ/5 through δ/10 inclusively, said plurality of passageways being confined to the area of said boundary layer, no passageway being provided at a distance from either of the surfaces exceeding δ.

5,303,883

GLIDING DECELERATOR INCLUDING AN ASSEMBLY FOR IMPROVING THE LIFT TO DRAG RATIO ASSOCIATED THEREWITH

John C. Brewer, Norfolk, and James E. Sadeck, East Freetown, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 16, 1993, Ser. No. 94,671
Int. Cl.[5] B64D *17/02*
U.S. Cl. 244—145 **10 Claims**



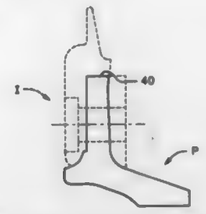
1. A gliding decelerator comprising:
(a) a wing-shaped canopy, said wing-shaped canopy being shaped to include an elongated hollow chamber having an open leading end; and
(b) an assembly for improving the lift to drag ratio associated with said wing-shaped canopy, said assembly including
(i) an inflatable bladder disposed within said chamber and being appropriately dimensioned, when inflated, to occupy said chamber in such a way as to provide some stiffening to said wing-shaped canopy and form a rounded end which closes and extends partially out of the leading end of said hollow chamber; and
(ii) an inflation mechanism for inflating said inflatable bladder.

5,303,884

INTERCHANGEABLE INSERT FOR RAILROAD SWITCHES

Arturo A. O. Rivas, Manuel Ma De Llano, No. 1104-D Ote, Monterrey, N.L., Mexico

Continuation of Ser. No. 705,184, May 24, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 499
Claims priority, application Mexico, Jun. 6, 1990, 21024
Int. Cl.[5] E01B *7/02*
U.S. Cl. 246—435 R **3 Claims**



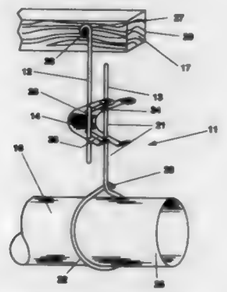
1. A method of forming an improved split switch for railroad tracks, the split switch being the combination of a switch point rail and an insert, the method comprising the steps of:
(a) forming on the switch point rail a flat upper portion being a specified height from a base portion of the switch point rail;
(b) machining a curved web portion of the switch point rail to a flat surface perpendicular to said flat upper portion of the switch point rail;
(c) forming a flat planar surface on the insert, said flat planar surface being tangent to the conventional radius of the curved web portion of the switch point rail and mating with said machined flat surface of the switch point rail;
(d) machining a right angle contact face on the insert at a right angle to said flat planar surface on the insert; and
(e) assembling the formed and machined insert and the formed and machined switch point rail together to form the split switch by securing in abutting engagement the flat upper portion of the switch point rail to the right angle contact face of the insert, and the flat surface of the switch point rail to the flat planar surface of the insert.

5,303,885

ADJUSTABLE PIPE HANGER

Lionel T. Wade, 141 Meadow View Rd., Orinda, Calif. 94563

Filed Dec. 14, 1992, Ser. No. 990,653
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—59 **19 Claims**



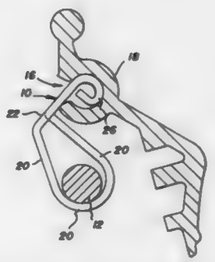
1. A pipe hanger assembly, including;
an upper member, means for securing said upper member to an existing structure;
a lower member, means for securing said lower member to a pipe;
said upper member including an upper rod-like portion extending vertically, said lower member including a lower rod-like portion extending vertically;
spring clip means for joining said upper and lower member in infinitely adjustable vertically spaced fashion, said spring clip means including means for engaging said upper and lower rod-like portions in infinitely adjustable vertically spaced fashion;
said means for engaging said upper and lower rod-like portions including two pair of arms, each pair of arms disposed generally in a V-like configuration, and means for linking together said two pairs of arms.

5,303,886

METHOD AND APPARATUS FOR SUPPORTING AN OBJECT FROM A CHANNEL

Salvatore C. DeFazio, Bergen, and Frederick J. Case, Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,317
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—62 **2 Claims**



1. A method of supporting an object from a channel utilizing a channel clip formed of a single elongated wire shaped piece of metal or plastic, said piece having first and second ends and being shaped to define a large cable receiving loop and two arms forming and extending away from said receiving loop in substantially the same direction and terminating at small retaining loops at each of said first and second ends, one arm being bent more than the other to position the receiving loop substantially to one side of the portions of the arms extending between the receiving loop and the retaining loops, said method comprising the steps of:
a) inserting the object to be supported into the receiving loop;
b) pressing the retaining loops together;
c) aligning the planes within which the retaining loops lie such that the planes are parallel with the channel;
d) inserting the retaining loops into the channel; and
e) rotating the channel clip about 90° to secure the retaining loops within the channel.

5,303,887

UNIVERSAL PIPE SUPPORT AND HANGER

William E. Hasty, deceased, late of Dallas, Tex.; by Melba F. Hasty, legal representative, 5230 Del Roy Dr., Dallas, Tex. 75229; Joseph P. Ismert, 606 E. 117th Terr., Kansas City, Mo. 64131; James M. Farnen, 9738 State Line Rd., Leawood, Kans. 66206, and Frank D. Julian, 2 Lone Pine, Cleveland, Mo. 64734

Filed Mar. 4, 1992, Ser. No. 845,610
Int. Cl.[5] F16L *3/22*
U.S. Cl. 248—68.1 **18 Claims**

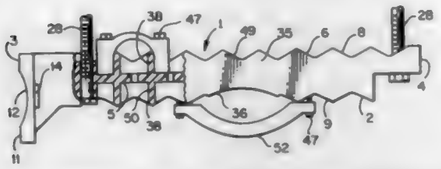
1. A universal pipe support and hanger system comprising:
a single support member, of generally I-shaped cross-section, elongated in a first direction between a proximate end and a distal end, said support member including an elongated central web integrally connected with mid-

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points of first and second flanges, said flanges extending substantially at right angles to the web, in a second direction, wherein

the proximate end has flange means for mounting the single support member against a surface in at least two orthogonal directions;

upper edges of each of said first and second flanges comprise a first plurality of recesses that define v-shaped cradles to support pipes extending in a third direction, substantially perpendicular to both said first and second directions, and



lower edges of each of said first and second flanges comprise a second plurality of recesses that define v-shaped cradles to support pipes extending in the third direction; and

a plurality of septa extend between opposed inner surfaces of said first and second flanges, on either side of the web, so as to define compartments, and at least one mounting means adapted to engage one of said compartments and extend through said web, so as to permit mounting of pipes, with varying outer diameters, against one or more of said v-shaped cradles.

5,303,888

GOLF BAG WITH SUPPORT STAND

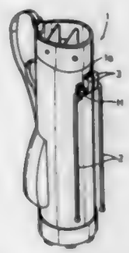
Maeng Seop, Hanyang Apt. 22-102, Songpa-Dong, Songpa-Ku, Seoul, Rep. of Korea

Filed Feb. 11, 1993, Ser. No. 16,512

Claims priority, application Rep. of Korea, Aug. 4, 1992, 14605/1992

Int. Cl.[5] **A63B** *55/00*

U.S. Cl. 248—96 **9 Claims**



7. A golf bag apparatus comprising:

a golf bag body;

means for pivotally securing a plurality of legs to said golf bag body;

means for supporting at least one golf club within said golf bag body, said golf club supporting means including a first portion which is fixedly secured to said golf bag body and a second portion which is movable therein; and

means for operatively connecting the movable portion of said golf club supporting means to an upper section of said legs;

wherein said legs are adapted to be moved between a retracted position and an extended position in response to the weight of the golf clubs within the golf club supporting means.

5,303,889

WIRE HOLDER FOR PLASTIC BAG

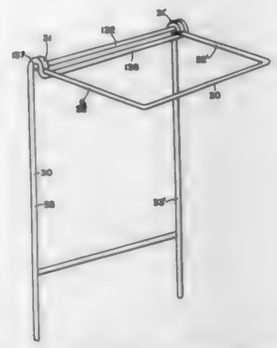
James J. Malik, Parma Heights, and George J. Theodore, Strongsville, both of Ohio, assignors to Eagle Wire Works, Cleveland, Ohio

Continuation-in-part of Ser. No. 718,636, Apr. 1, 1985, Pat. No. 5,014,944. This application Apr. 26, 1991, Ser. No. 692,318

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] **B65B** *67/00*

U.S. Cl. 248—97 **3 Claims**



2. A wire holder for a plastic bag for trash comprising a supporting frame, said supporting frame formed of a single piece of wire shaped generally into a "U" shape having a portion intermediate two sides with said portion being displaced in one direction in respect to the plane of the sides to form a lateral support strut, said lateral support strut extending between said two sides, the displacement of said lateral support strut defining a substantially "U" shaped pocket in said two sides respectively of said supporting frame, an uppermost member, said uppermost member extending between said "U" shaped pockets in said two sides, a bag holding frame, said bag holding frame formed of a single piece of wire shaped generally into a "U" shape having eyes formed in the ends thereof, said eyes of said bag holding frame loosely surrounding said uppermost member so as to allow said bag holding frame to rotate substantially 270° about said uppermost member from a storage position lying generally parallel to said sides of said supporting frame to a use position supported by the bottom edge of said uppermost member and the top edge of said lateral support strut to extend outwards of said supporting frame substantially perpendicular to said plane of said sides in a direction towards the direction said lateral support strut is displaced in respect to the plane of the sides, a stiffening strut, and said stiffening strut extending between said two sides affixed thereto.

5,303,890

CHIN REST APPARATUS

Thomas A. Carruth, R.R. 1, DeGraff, Minn. 56233

Filed Feb. 8, 1993, Ser. No. 14,740

Int. Cl.[5] **B68G** *5/00*; **B43L** *15/00*

U.S. Cl. 248—118 **1 Claim**

1. A chin rest apparatus, comprising,

a base housing, the base housing having a top wall, a bottom wall spaced from the top wall and coextensive therewith, a first end wall and a second end wall, with the first end wall and the second end wall arranged in a parallel relationship, and

at least a housing forward side wall, and

a first slot directed medially into the first end wall orthogonally oriented relative to the first end wall, and a second slot longitudinally aligned with the first slot orthogonally directed medially of the second end wall, and

a first leg tube, having a first leg tube first end received within the first slot, and a first fastener axle orthogonally directed into the housing forward side wall and the first slot and the first leg tube first end, and

a second leg tube having a second leg tube first end received within the second slot, with a second fastener axle orthogonally directed into the housing forward side wall directed orthogonally through the second slot and into the second leg tube first end, and

the first leg tube includes a first leg tube second end telescopingly receiving a first extension leg therewithin, and a third fastener directed into the first leg tube to selectively secure the first extension leg therewithin, and the second leg tube having a second leg tube second end, with a second extension leg telescopingly received within the second leg tube second end, and a fourth fastener directed into the second leg tube for securement of the second extension leg relative to the second leg tube, and

the first extension leg includes a first resilient foot pad at a free distal end of the first extension leg, and the second extension leg includes a second resilient foot pad mounted to a free end of the second extension leg for support to an underlying surface, and



the housing top wall includes a recess between the first slot and the second slot, and a resilient chin pad directed within the recess, and the resilient chin pad including a concave recess within the chin pad for alignment and receiving an individual's chin therewithin, and wherein the chin pad and the chin pad recess are of a generally elliptical configuration and

a planar replacement pad arranged for selective reception within the recess of the top wall upon removal of the chin pad, and

the housing includes a housing cavity oriented between the housing top wall and the housing bottom wall, the housing bottom wall including a housing bottom wall door, having a spring hinge mounted to the bottom wall door and the bottom wall to bias the bottom wall door in a coplanar relationship relative to the bottom wall in a first position, and a door handle mounted to the bottom wall door spaced from the spring hinge for pivoting the bottom wall door in a displaced orientation relative to the bottom wall in a second position, and wherein the bottom wall door includes an on/off switch member, a battery, and an illumination bulb each in electrical communication relative to one another for providing selective illumination of the illumination bulb, and wherein the housing forward side wall includes a transparent lens, and wherein the transparent lens is in alignment with the illumination bulb when the bottom wall door is in the first position.

5,303,891

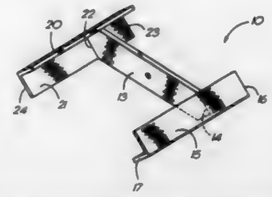
BRACKET FOR SUPPORTING A LENGTH OF LUMBER AND PROCESS FOR USING THE SAME

Bill Powers, 1676 Sunsetridge, Laguna Beach, Calif. 92651

Filed Oct. 4, 1991, Ser. No. 770,909

Int. Cl.[5] **A47B** *96/00*; **E04G** *3/00*

U.S. Cl. 248—218.4 **1 Claim**



1. A bracket for supporting parts or material such as a length of lumber adjacent a vertical member, said bracket comprising:

a first length of angle iron having a first or stud side, a second or lumber side, an inwardly facing surface and an outwardly facing surface;

a second length of angle iron also having a first or stud side, a second or lumber side, an inwardly facing surface and an outwardly facing surface; and

a central bar having a first end and a second end, said first end being unadjustably affixed at its first end to the inwardly facing surface of the stud and lumber sides of said first length of angle iron and being welded at its second end to the inwardly facing surface of the stud and lumber sides of said second length of angle iron and wherein said central bar has an opening to permit a fastener to pass therethrough.

5,303,892

PANEL FOR RECESSED MOUNTING OF A HOUSING

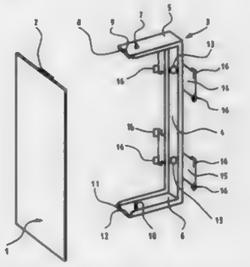
Urs Minder, Lazern, and Peter Achermann, Ebikon, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed May 27, 1993, Ser. No. 68,058

Claims priority, application Switzerland, May 27, 1992, 01726/92

Int. Cl.[5] **A47F** *5/08*

U.S. Cl. 248—231.9 **18 Claims**



1. A panel assembly for attachment to a recessed housing mounted in an aperture formed in a surface of a support structure comprising:

a generally planar panel having a rear surface with an encircling rim extending rearwardly from said rear surface and an encircling flange extending from said rim in a plane of said panel for closing an aperture formed in a surface of a support structure;

a retaining bracket for detachably connecting said panel to an associated recessed housing mounted in the aperture formed in the surface of the support structure, said retaining bracket having at least one spring plate for detachably

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engaging an interior surface of the housing and for permitting selective positioning of said panel relative to the surface of the support structure; and

means for detachably connecting said retaining bracket to said rim of said panel.

5,303,893

ROTARY COUPLING FOR CONNECTING A CONTROL DEVICE HOUSING TO A SUPPORT ARM OR AN ELBOW

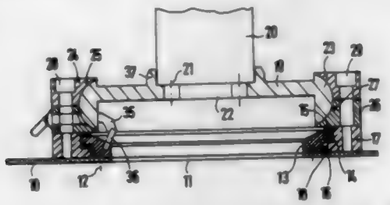
Matthias Schuler, Dietzholztal; Udo Muach, Sinn, and Wolfgang Reuter, Burbach, all of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 897,462

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119508

Int. Cl.[5] A47F *5/00*

U.S. Cl. 248—288.5 **20 Claims**



1. In a rotary coupling for connecting a control device housing to one of a support arm and an elbow of a support arm system, said rotary coupling having a rotating ring fixedly connected to the control device housing and partially rotatable in relation to a coupling piece which is connected to one of the support arm and the elbow,

the improvement comprising:

a coupling piece (**19**) having a peripheral bearing ring (**23**) with a convexly arched outwardly outer bearing surface, two shell rings (**24, 26**) with concavely arched inner bearing surfaces (**25,27**) adapted to receive and support said bearing ring, said shell rings (**24, 26**) connected to each other by connecting means;

the shell rings (**24, 26**) adjustably mounted on the bearing ring (**23**) of the coupling piece (**19**) by a clamping cheek means (**31**); and

a support ring (**17**) connected to the shell rings (**24,26**), the rotating ring (**13**) rotatably maintained on the shell rings (**24, 26**) by coacting means between said shell rings and said support ring (**17**).

5,303,894

ELECTRICAL FIXTURE HANGER

Bernard F. Deschamps; Henry J. Macuga, both of Ware, Mass., and Stuart S. Cox, Tallahassee, Fla., assignors to Eclipse Manufacturing, Inc., Ware, Mass.

Filed Jun. 2, 1992, Ser. No. 889,921

Int. Cl.[5] H02G *3/08*

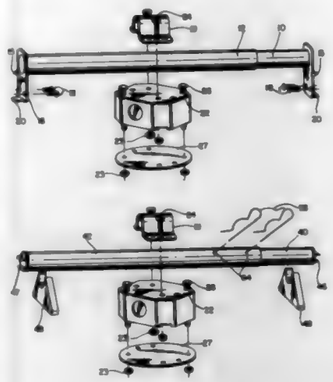
U.S. Cl. 248—343 **6 Claims**

1. A hanger assembly for an object to be mounted from a ceiling or wall, comprising:

a pair of freely slidable inner and outer telescope tubes, each tube having an outer end;

a pair of parallel end plates transverse to the axis of the tubes and attached to the outer ends of the tubes, each end plate having an edge, spikes for hammering in the end plate, and an out-turned lip at the edge of the end plate and transverse to the end plate for positioning the hanger by placing the out-turned lip in an adjacent joint edge, the lip being breakable for removal and bendable for applications where sheetrock is already in place;

an electrical outlet box supported by a strap plate cradling the outer tube, the box having a top with non-circular bolt holes, a non-circular top knockout, and side walls having a bottom edge; and



a support plate attached to the bottom edge of the box walls by carriage bolts, each bolt having a locknut.

5,303,895

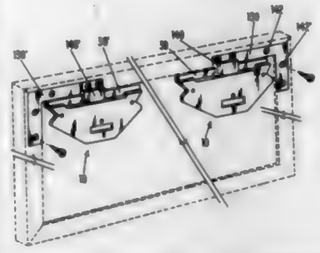
APPARATUSES AND METHODS FOR HANGING FRAMES

Hoyt E. Hart, 9740 Colonial Clr., NE., Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 822,061, Jan. 14, 1992, Pat. No. 5,209,449. This application Jun. 24, 1992, Ser. No. 904,000

Int. Cl.[5] A47F *7/14*

U.S. Cl. 248—475.1 **25 Claims**



1. An apparatus for hanging a frame on a surface, comprising:

a body having a front, a back, sides and a top;

means for aligning said body on the surface;

an elongated recession with a horizontal bottom, said recession disposed within on said back between said body and the surface;

an adapter bracket, comprising flange means horizontally slidably engageable with said horizontal bottom of said elongated recession, said adapter bracket attachable to the frame; and

means for providing attachment of said body to the surface.

5,303,896

MODEL AIRPLANE ENGINE MOUNTING SYSTEM

William E. Sterka, 3446 Anglin Dr., Sarasota, Fla. 34242

Filed Nov. 12, 1992, Ser. No. 974,537

Int. Cl.[5] B64D *27/00*

U.S. Cl. 248—557 **12 Claims**

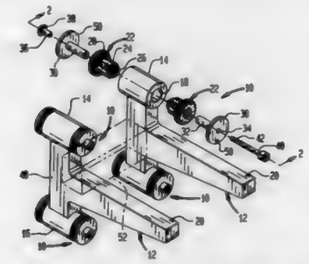
1. A model airplane engine mounting system for isolating vibration between a model airplane and a combustion-type model engine, said mounting system connectable to an upright fire wall panel of the airplane, comprising:

two rigid engine mounts each including an elongated main mount portion and elongated mounting fork having a flat mounting surface integral with an extending generally orthogonally from said elongated main mount portion;

each said main mount portion having two spaced rigidly connected elongated mounting bosses each having a mounting hole formed longitudinally therethrough generally parallel to said mounting surface;

an elastomer grommet formed of two halves each having a longitudinally fluted main body portion and an enlarged shoulder portion disposed at one end of said grommet half, and radially extending therefrom, said main body portion and said shoulder portion having an elongated longitudinal grommet hole formed centrally therethrough;

each said mounting hole sized to snugly receive said two grommet main body portions fitted into one said mounting hole from either end thereof, said two grommet main



body portions having a combined length generally equal to the length of each said mounting boss such that each said should portion fits against one end of one said mounting boss when said grommet main body portions are abutted end to end within said mounting boss;

a rigid spool formed of two spool halves each having a cylindrical main tubular portion and an enlarged flange radially extending from one end of each said main tubular portion;

each said grommet hole sized to snugly receive one said spool half fitted into one said grommet hole, said two spool halves having a combined length slightly shorter than the combined length of said grommets such that each said flange compresses one said grommet shoulder portion when said tubular portions are abutted together end to end within said grommet;

an elongated mounting bolt sized to fit through each said spool and to threadably engage into a blind nut connected to the fire wall.

5,303,897

ARRANGEMENT IN VALVE DAMPERS

Paul Tengesdal, Bjerkreim, and Tormod Strevåg, Strevåg, both of Norway, assignors to Covent AS, Bjerkreim, Norway

PCT No. PCT/NO91/00089, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO92/01180, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 21, 1991, Ser. No. 956,502

Claims priority, application Norway, Jul. 10, 1990, 903072

Int. Cl.[5] F16K *1/22*

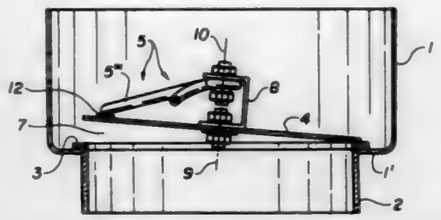
U.S. Cl. 251—85 **6 Claims**

1. A damper valve arrangement for use in a ventilating plant having a ventilating duct, said damper valve arrangement comprising:

a seat formed in said duct;

rotary damper blade means for opening and closing said duct;

an operating shaft having an axis of rotation which is eccentric with respect to the geometric center of said damper blade means; said damper blade means being mounted on said shaft and rotatable about said axis between a closed position wherein said damper blade means cooperates with said seat to obtain smoke-tight closure of said ventilating duct and at least one open position for opening said duct; and



resilient carrier means for connecting said damper blade means to said operating shaft, said resilient carrier means attached to said damper blade means at attachment points, said attachment points being displaced from said operating shaft axis.

5,303,898

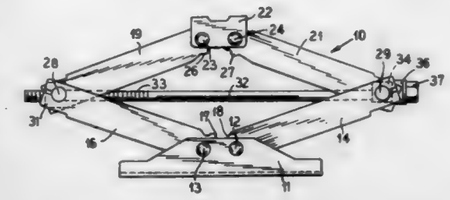
OPEN END CONSTRUCTION FOR JACK

Darryl L. Engel, LaOtto, and John R. Scoville, Butler, both of Ind., assignors to Universal Tool & Stamping Company, Inc., Butler, Ind.

Filed Mar. 17, 1993, Ser. No. 32,095

Int. Cl.[5] B66F *3/08*

U.S. Cl. 254—126 **3 Claims**



1. A scissors jack made by the following process comprising, a base member, first and second lower channel members with side planar surfaces and with their lower ends pivotally attached to said base member and said first and second channel members formed with meshing gears, a support member, first and second upper channel members with side planar surfaces and with their upper ends pivotally attached to said support member, a threaded trunnion formed with a first pivot pin, a plain trunnion formed with a second pivot pin, the upper end of said first lower channel member and the lower end of said first upper channel member pivotally mounted on said first pivot pin of said threaded trunnion and the upper end of said second lower channel member and the lower end of said second upper channel member pivotally mounted on said second pivot pin of said plain trunnion, a shaft which extends through said plain trunnion and has a threaded portion received in said threaded trunnion, and wherein the ends of said first and second upper and lower channel members are pivotally attached by the following process to said first and second pivot pins, forming pin receiving openings and adjoining tab portions (**47, 48**) that are bent ninety degrees relative to the side planar surfaces in the ends of said first and second upper and lower channel members, inserting said first and second pivot pins into said pin receiving openings, and then bending said tab portions (**47, 48**) so that they lie in the plane of said side planar surfaces of said first and second upper and lower channel members.

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5,303,899

APPARATUS FOR LIFTING CONSTRUCTION ELEMENTS

Jerome C. Palya, 3670 Glen Echo Ct., Reno, Nev. 89509

Filed Jun. 3, 1991, Ser. No. 709,494
Int. Cl.[5] B66D *1/36*; E04G *21/14*
U.S. Cl. 254—334 1 Claim



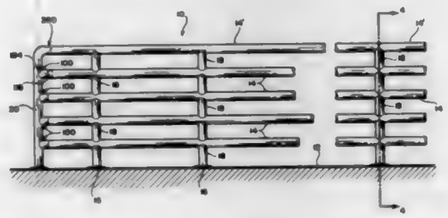
1. The apparatus for lifting construction elements comprising: a first elongated tubular frame member; a second elongated tubular frame member parallel to and at a spaced distance from said first tubular frame member; a first crossbar perpendicular to said tubular frame members and fastened at a first end to the first tubular frame member and fastened at a second end to the second tubular frame member; a second cross bar parallel to said first cross bar at a spaced distance therefrom and fastened at a first end to said first tubular frame member and fastened at a second end to the second tubular frame member; a first leg socket fastened to said first tubular frame member perpendicular to said first and second tubular frame members and said first and second crossbars; a second leg socket fastened to said first tubular frame member perpendicular to said first and second tubular frame members and said first and second crossbars and at a spaced distance from said first leg socket; a third leg socket fastened to said second tubular frame member perpendicular to said first and second tubular frame members and said first and second crossbars; a fourth leg socket fastened to said first tubular frame member perpendicular to said first and second tubular frame members and said first and second crossbars and at a spaced distance from said third leg socket; four support legs, one of which is removably mounted within each leg socket; a tubular leg pivotally fastened at a first end to the first cross bar at an equal distance from each of said tubular frame members and between them and detachably held at a second end by said second crossbar at an equal distance from each of the tubular frame members; a first telescoping member slidably mounted within said first tubular frame member at its second end; a second telescoping member slidably mounted within said second tubular frame member at its second end; a third telescoping member slidably mounted within said tubular leg at its second end; a first telescoping pulley support member slidably mounted with said first tubular frame member at its first end; a second telescoping pulley support member slidably mounted with said second tubular frame member at its first end; a third cross bar connected at a first end to a first end of said first pulley support member and at a second end to a first end of said second pulley support member in such manner that the third crossbar is exterior of the first ends of said tubular frame members when the pulley support members are telescoped within the frame members; pulley means suitable to carry a cable, fastened to the third cross bar at a position equally distant from its first and second ends and depending in a direction parallel said pulley support members; winch means suitable to impart movement to a cable carried by said pulley means fastened to said tubular leg at a position intermediate its first and second ends; construction element carrying means removably carried by the tubular leg; and cable means suitable to be used to impart movement to said construction element carrying means passing over said pulley means and fastened at a first end to said winch means and at a second end to said construction element carrying means; first wheel means fastened to said first tubular frame member adjacent its second end; and second wheel means fastened to said second tubular frame member adjacent its second end said first and second wheel means being suitable to support the entire apparatus upon and roll over a base support surface.

5,303,900

PLASTIC SECURITY HANDRAIL SYSTEM AND CONNECTORS THEREFOR

James E. Zulick, III, 9312 Cabot Ct., Baltimore, Md. 21237, and William F. Appler, 16 Shadowbrook Ct., Laurel, Md. 20723

Filed Mar. 2, 1992, Ser. No. 818,034
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—65 23 Claims



17. A rabbet joint connector for connecting linear sections of elongated tubing comprising:

a first section of tubing having an outer annular milled surface;

a second section of tubing having an inner annular milled surface, the diameter of the outer annular milled surface being complementary with the diameter of the inner annular milled surface whereby said first and second sections of tubing are telescopically fit together;

a first inner rigid reinforcing sleeve positioned within and reinforcing said first section of tubing and a second inner rigid reinforcing sleeve positioned within and reinforcing said second section of tubing, wherein said reinforcing sleeves function to provide bending strength; and

wherein said reinforcing sleeves having ends which abut one other when said sections are interconnected.

5,303,901

BLOWING LANCE WITH CYCLIC MODULATOR MEANS FOR VARYING FLOW RATE

Andre Bock, Beethovan; Robert Mousel, Dudelange, and Patrick Bintner, Luxembourg, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Oct. 30, 1992, Ser. No. 968,974
Claims priority, application Luxembourg, Oct. 30, 1991, 88023
Int. Cl.[5] C21C *5/32*
U.S. Cl. 266—225 21 Claims

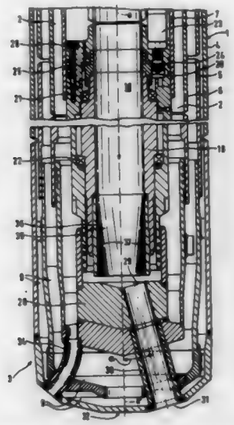
1. A blowing lance for refining metals comprising:

adjustable tuyere means for generating a supersonic refining gas flow having a flow rate and a speed which are independently adjustable;

blowing head means having a front dome;

a plurality of fixed tuyere means opening into said front dome of said blowing head means and dividing the refining gas flow into individual free jets;

cyclic modulator means for varying the flow rate of the refining gas through said fixed tuyere means, said cyclic modulator means being adapted for progressively obturating a first set of said fixed tuyere means for the passage of the refining gas and for simultaneously and progressively freeing a second set of said fixed tuyere means for the passage of the refining gas during a first part of a modulating cycle and during a second part of said modulation cycle and cyclic modulator means being adapted for progressively freeing said first set of said fixed tuyere means and for simultaneously and progressively obturating said second set of said fixed tuyere means; and



wherein said plurality of fixed tuyere means comprises a multiple of 2n of said fixed tuyere means, where n comprises an integer greater than or equal to two, said fixed tuyere means being arranged so as to produce 2n free jets, said 2n free jets defining an angle relative to a longitudinal axis of the blowing lance, said angle being substantially the same for each of said 2n free jets, and two successive said fixed tuyere means being spaced apart by an angle of 180/n degrees, said cyclic modulator being adapted to obturate to a maximum the passage through a first of two successive fixed tuyeres, when freeing at a maximum the second of said successive fixed tuyere.

5,303,902

SLAG CONTROL SHAPE RELEASE APPARATUS FOR MOLTEN METAL VESSELS

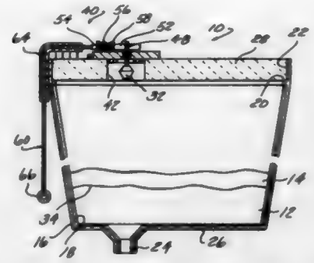
Gary L. Forte, Plymouth; James P. McGuire, Taylor, and Wayne Miler, Gibraltar, all of Mich., assignors to AJF, Inc., Plymouth, Mich.

Continuation-in-part of Ser. No. 898,014, Jun. 12, 1992, Pat. No. 5,249,780. This application Feb. 9, 1993, Ser. No. 15,559
Int. Cl.[5] B23D *41/14*
U.S. Cl. 266—230 35 Claims

1. A slag control shape release apparatus for a molten metal receptacle having an open top, side and bottom walls, an interior cavity containing a layer of slag covering a layer of molten metal, a discharge nozzle formed in the bottom wall, a cover removably closing the open top end of the receptacle, the cover having a bore extending therethrough and a slag control shape insertable into the receptacle, the apparatus comprising:

means, mounted on the cover, for releasably mounting the slag control shape adjacent to the cover;

means, connected to the mounting means, for actuating the mounting means to release the slag control shape from the mounting means on the cover and to allow the descent of the slag control shape by gravity into the molten metal receptacle, the actuating means being operable from a location remote from the cover mounted on the molten metal receptacle; and means, attached to the slag control



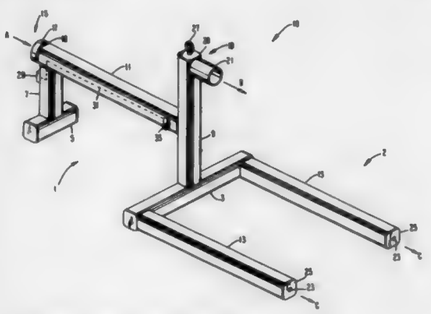
shape, for automatically controlling the rate of descent of the slag control shape into the molten metal receptacle after release of the slag control shape from the mounting means.

5,303,903

AIR COOLED MOLTEN METAL PUMP FRAME

Warren G. Butler, Rogersville; Henry C. Perkins, and Dale C. Hornsby, both of Florence, all of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 16, 1992, Ser. No. 991,624
Int. Cl.[5] C21C *5/42*
U.S. Cl. 266—239 14 Claims



1. A molten metal pump frame comprising:

a) a base frame; and

b) a molten metal pump supporting structure integrally attached to said base frame for supporting a molten metal pump, wherein said base frame and said molten metal pump supporting structure are sized to form a portable molten metal pump frame to facilitate positioning over a molten metal bath;

c) said base frame further comprising:

i) a first passageway therethrough;

ii) a cooling fluid inlet for receiving a source of forced cooling fluid, said inlet being in communication with said first passageway;

iii) means for connecting a source of electrical power to said molten metal pump;

iv) a first cooling fluid outlet to provide flow of cooling fluid to components of said molten metal pump, said first cooling fluid outlet being in communication with said first passageway;

d) said molten metal pump supporting structure further comprising a second passageway and a second cooling fluid outlet in communication with said second passageway to facilitate flow of cooling fluid through said molten

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metal pump frame, said second passageway being in communication with said first passageway.

5,303,904

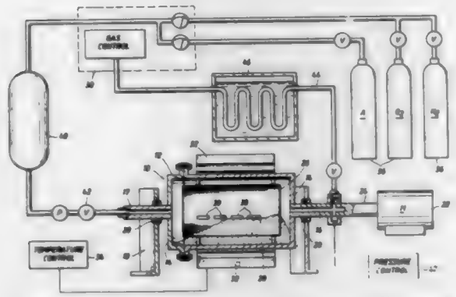
METHOD AND APPARATUS FOR CONTROLLING HEAT TRANSFER BETWEEN A CONTAINER AND WORKPIECES

Willard E. Kemp, Houston, Tex., assignor to Fike Corporation, Blue Springs, Mo.

Continuation-in-part of Ser. No. 763,339, Sep. 20, 1991, which is a continuation-in-part of Ser. No. 467,050, Jan. 18, 1990, abandoned. This application Jul. 9, 1992, Ser. No. 911,062

Int. Cl.[5] F27B *15/00*

U.S. Cl. 266—252 **10 Claims**



1. Heat transfer apparatus for transferring heat through particulate material to and from workpieces contacting the particulate material; said heat transfer apparatus comprising:

an enclosed substantially fluid tight container having the particulate material therein and including;

at least one workpiece contacted by particulate material within the enclosed container with the workpiece and particulate material occupying a substantial portion of the internal volume of said container;

means to vary the temperature of said container;

means to rotate said container to effect fluidizing of said particulate material to provide relative motion between the workpiece and particulate material over substantially the entire surface area of the workpiece to effect a transfer of heat between the workpiece and particulate material; and

means to control precisely the pressure within said enclosed fluid tight container.

5,303,905

REFRACTORY CERAMIC STOPPER, APPARATUS FOR SUPPORT THEREOF, AND ASSEMBLY THEREOF

Siegfried Pohl, Heidenrod-Springen; Dirk Masurat, WI.-Biebrich; Ernst Lährsen, Bad Schwalbach, and Gerd Bohndorf, Oberhausen, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 948,589

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138812; Apr. 14, 1992, 4212450

Int. Cl.[5] B22D *41/18*

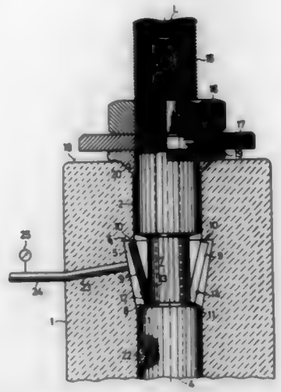
U.S. Cl. 266—271 **65 Claims**

1. An assembly comprising:

a refractory ceramic stopper having therein a recess including an outwardly enlarged portion defining a stop surface;

a stopper rod insertable into said recess in said stopper and having a support surface; and

plural spreadable members having opposite first and second ends and positioned about said stopper rod to be insertable therewith into said recess in said stopper, said spreadable members being spreadable and, as said stopper rod and spreadable members are inserted into said recess to a position whereat said first ends of said spreadable members reach said enlarged portion of said recess, operable to spread outwardly relative to said stopper rod, with said first ends of said spreadable members entering said enlarged portion of said recess and confronting said stop surface of said stopper and with said second ends of said spreadable members confronting said support surface of said stopper rod, thereby locking said stopper on said stopper rod.



5,303,906

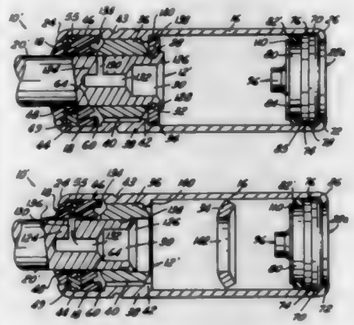
GAS SPRING

Jonathan P. Cotter, Dearborn, and Patrick J. Cotter, Plymouth, both of Mich., assignors to Diebolt International, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 865,956, Apr. 9, 1992, Pat. No. 5,275,387. This application Oct. 8, 1992, Ser. No. 958,554

Int. Cl.[5] F16F *9/02, 7/12*

U.S. Cl. 267—64.11 **21 Claims**



1. A gas spring comprising, an elongated tubular casing having a chamber therein for containing gas under pressure and an annular wall defining an opening at one end of said chamber, a bearing in said chamber adjacent said one end of said casing and having a through bore for slidably receiving a rod, a piston in said chamber and upstream of said bearing and having a central through hole, a rod received in said bore through said bearing for generally axial reciprocation therein and projecting from said chamber through said opening, and an enlargement connecting said rod with said piston for reciprocation in unison therewith and having an outside diameter larger than the diameter of said bore through said bearing and the diameter of said hole through said piston, overlapping said hole through said piston, and constructed and arranged so that if in use of the gas spring said piston separates from said rod said enlargement will pass through said piston and become embedded in said bearing to retain said rod, and a sealing ring of a flexible and compressible material downstream of said bearing and adjacent said one end of said casing and providing a seal between said casing and said rod to retain compressed gas in said chamber.

5,303,907

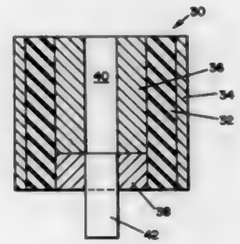
VARIABLE RATE ELASTOMERIC TORSION SPRING

John C. Holzheimer, Wilmington, N.C., assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 31, 1992, Ser. No. 937,567

Int. Cl.[5] F16F *1/38*

U.S. Cl. 267—281 **23 Claims**



1. A spring comprising:

a one piece elastomeric member having an outer surface and an inner surface which defines an inner shaft; and,

a plurality of generally cylindrical, axially aligned inner sleeves bonded to said inner surface, said inner sleeves having engagement means adapted for selectively engaging one or more of said inner sleeves for providing a multiplicity of rotational spring rates between said outer surface and said inner shaft.

5,303,908

DEVICE FOR RELEASABLY SECURING TWO OBJECTS TOGETHER

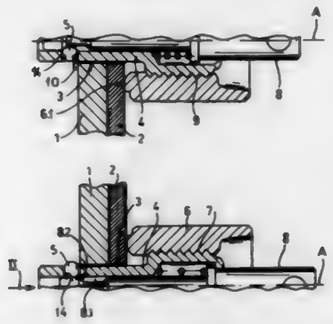
Werner Halder, Achstetten 3/Bronnen, Fed. Rep. of Germany, assignor to Erwin Halder KG, Achstetten-Bronnen, Fed. Rep. of Germany

Filed Apr. 2, 1993, Ser. No. 42,244

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 9204570[U]

Int. Cl.[5] B23Q *3/02*

U.S. Cl. 269—48.1 **13 Claims**



1. A device for clamping a workpiece formed with a throughgoing hole and having oppositely directed inner and outer faces to a support also formed with a throughgoing hole and also having oppositely directed inner and outer faces, the device comprising:

a tube engaged along an axis through both the holes in a position of the workpiece and support with the inner face of the workpiece bearing inwardly on the inner face of the support, the holes aligned, and the outer faces of the workpiece and support turned outwardly away from each other, the tube being formed with a radially throughgoing aperture opening outwardly of one of the outer faces and with a screwthread outward of the other outer face;

a retaining element radially displaceable in the aperture between an extended position projecting radially from the tube and engageable axially with the one outer face and a retracted position generally wholly recessed in the tube;

an actuating pin axially displaceable in the tube and engageable with the element to radially displace same into its extended position;

a nut threaded on the screwthread of the tube and having a face bearing axially inward on the other of the outer faces; and

a formation on the one outer face angularly engageable with the element in the extended position of the element immediately adjacent the hole of the support for preventing rotation of the tube in the holes.

5,303,909

PAPER WEB GUIDE ASSEMBLY WITH THREE FORMING LEVELS

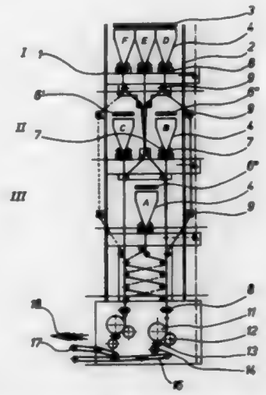
Edgar Mayländer, Estenfeld, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Aug. 25, 1992, Ser. No. 934,267

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128797

Int. Cl.[5] B41F *13/58, 11/00*

U.S. Cl. 270—5 **3 Claims**



1. A paper web guide assembly for use in a web-fed rotary printing press, said paper web guide assembly comprising:

an upper forming level having three upper longitudinal formers;

a first printed web having a six printing plate web width, said first printed web being divided into three first web segments which are formed by said three upper longitudinal formers in said upper forming level into three longitudinally folded first ribbons;

an intermediate forming level having at least one intermediate longitudinal former;

a lower forming level having at least one lower longitudinal

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former, there being a total of three longitudinal formers on said intermediate and lower forming levels; and

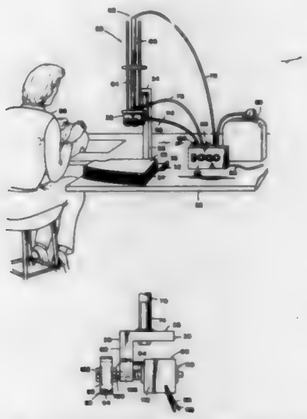
a second printed web having a six printing plate web width, said second printed web being divided into three second web segments each having a two printing plate web width, each of said three second web segments being longitudinally folded by a cooperating one of said three intermediate and lower longitudinal formers on said intermediate and lower forming levels into three longitudinally folded second ribbons, said three longitudinally folded first ribbons and said three longitudinally folded second ribbons being combinable after, in a direction of web segment travel, said lower forming level.

5,303,910

PICK-UP MEANS FOR USE WITH LIMP SHEET MATERIAL

Barry N. McGill, Mayaardville, and Moshe Shloush, Knoxville, both of Tenn., assignors to Tice Engineering & Sales, Incorporated, Knoxville, Tenn.

Filed Sep. 10, 1992, Ser. No. 943,334
Int. Cl.[5] B65H *3/30*
U.S. Cl. 271—21 **8 Claims**



1. A device for picking up a top layer from a lay-up of limp sheet material comprising:

means for gripping the top layer of a lay-up of limp sheet material;

the gripping means further comprising two cylindrical rollers in contact at their periphery, the periphery of each roller further comprising a high-friction material the axes of rotation of said rollers being fixed relative to each other;

means for moving the gripping means toward and away from the lay-up of limp sheet material;

a double-acting rotary actuator adapted to first rotate the rollers in opposite rotational directions relative to one another through a predetermined number of angular degrees so as to fold and nip the top layer of the lay-up between the rollers and then to rotate the rollers in the reverse rotational directions through the predetermined number of angular degrees so as to release the top layer so nipped;

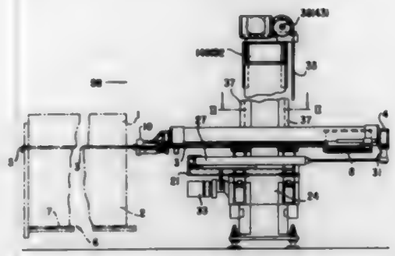
means for mounting the gripping means, moving means, and double-acting rotary actuator together as a single unit.

5,303,911

DEVICE FOR UNITING A RESIDUAL PILE OF SHEETS AND A MAIN PILE OF SHEETS

Erich M. Zahn, Eppelheim, and Gerhard Pollich, Heidelberg, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,452
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1991, 4129139
Int. Cl.[5] B65H *1/30*
U.S. Cl. 271—158 **3 Claims**



1. Device for uniting a residual pile of sheets and a main pile of sheets in a pile zone of a sheet feeder to form an aggregate pile wherein an uppermost sheet of the main pile of sheets has been brought into contact with a lowermost sheet of the residual pile of sheets, comprising a rake for underpinning and carrying the residual pile of sheets during given phases of a process for uniting the piles of sheets, said rake comprising mutually parallel, horizontal lattice bars, a displacement device for carrying and displacing said rake, said displacement device having means for horizontally displacing said rake in longitudinal direction of said lattice bars between a first position outside the pile zone and a second position inside the pile zone, wherein the residual pile of sheets is underpinned by said rake, means disposed in the pile zone for supporting respective ends of said lattice bars projecting beyond the residual pile of sheets, a lifting device carrying said displacement device for lowering said rake into a lower position and for raising said rake into an upper position, said lifting device having a horizontally disposed cross-member arrangement holding said displacement device and being oriented transversely to said lattice bars, a lifting cradle having vertically extending guideways, a first and a second end of said cross-member arrangement being guidable by said guideways, said lifting cradle being constituted by a gantry disposed outside the pile zone, and comprising a pair of columns respectively formed of a hollow section, and a compensation device comprising a respective counterweight dipping into said hollow section.

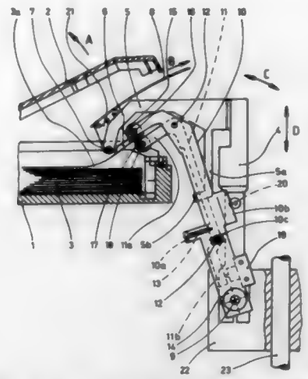
5,303,912

DEVICE FOR DETECTING DOUBLE SHEET FILMS

Kurt Blank, Stuttgart, and Friedrich Ueffinger, Schorndorf-Weiler, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/02155, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO92/09924, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 15, 1991, Ser. No. 915,713
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037377
Int. Cl.[5] B65H *7/12*
U.S. Cl. 271—263 **10 Claims**

1. A device for detecting double sheets in an apparatus for separating a sheet film from a sheet-film stack, preferably a stack contained in a supply magazine, having a suction device which separates the sheet film to be removed by bending a front area of the film which is engaged by the suction device, with respect to the sheet film plane, and for removing the front area film from the stack, characterized in that a thickness sensor (**10, 11, 15, 17, 19**) is moved into the bent front area of



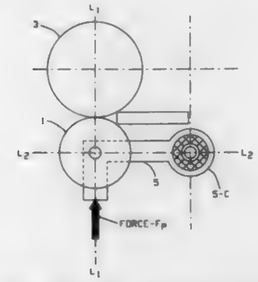
the sheet film (3*a*) to a sending position while said film is still located on the sheet-film stack (**3**).

5,303,913

DAMPED PINCH-ROLL FOR DOCUMENT FEED

Michael N. Trouquilla, Livonia, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 10, 1993, Ser. No. 76,292
Int. Cl.[5] B65H *5/02*
U.S. Cl. 271—274 **24 Claims**



1. A document feed array comprising pinch-roll means mounted to rotate about its center to engage prescribed documents, at a prescribed contact-site whereby to advance them, said roll means being mounted on cantilever-arm means pivoted at a pivot point at the arm means end distal from said center and including elastomer pivot pad means which, couples said arm means to its pivot point, said pad means comprising high-damping, durable elastomeric material adapted to provide torsional resilience.

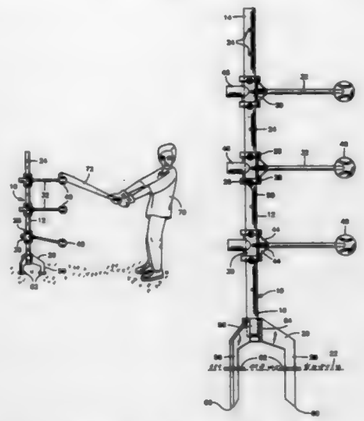
5,303,914

TRIPLE-ADJUSTABLE HEIGHT BATTING PRACTICE DEVICE

Dennis W. Cooksey, Houston, Tex., assignor to James N. Cooksey, Houston, Tex., a part interest

Filed Jul. 12, 1993, Ser. No. 89,099
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 E **10 Claims**

1. A multiple height batting practice device for children, said device including an upright standard having upper and lower ends, said lower end including base means for supporting said standard in an upright position from a horizontal surface, said standard including a plurality of pairs of vertically spaced apart circumferential, radially outwardly projecting abutment means thereon, a support sleeve journaled on said standard between each pair of abutment means, each of said sleeves including an elongated horizontal arm supported therefrom with a base end of each arm supported from the corresponding sleeve and a free end of each arm projecting generally radially outwardly of the corresponding sleeve, each of said free ends including a target member thereon to be swung



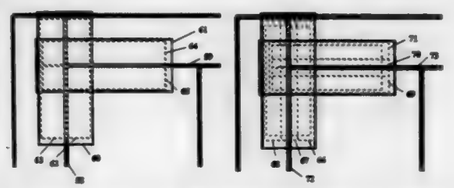
at with a bat member, each of said support sleeves including, on the side thereof opposite the side from which the corresponding support arm projects, an outwardly opening sleeve in which weight material is disposed for balancing said sleeve for rotation about said upright in a substantially balanced manner with said weight material at least substantially offsetting the weight of the corresponding support arm and target member.

5,303,915

TENNIS BALL TO LINE LOCATION

Bruce H. Candy, Basket Range, Australia, assignor to Caldone Pty Limited, Camden Park, Australia

PCT No. PCT/AU91/00278, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/00125, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 27, 1991, Ser. No. 960,368
Claims priority, application Australia, Jun. 27, 1990, PK0830
Int. Cl.[5] A63B *61/00, 71/06*
U.S. Cl. 273—31 **31 Claims**



1. An arrangement for detection of the location of a magnetically permeable tennis ball relative to a tennis court line including first transmit means adapted to create a first electromagnetic field or fields, second transmit means adapted to create a second electromagnetic field or fields which are distinguishable from the said first electromagnetic field or fields by reason of being of different frequency spectra and the first and second transmit means being each substantially uninfluenced by the field or fields created by the other, first receiving and second receiving means adapted to detect the first and the second electromagnetic fields respectively, and where both receiving means and both transmitting means include in each case at least

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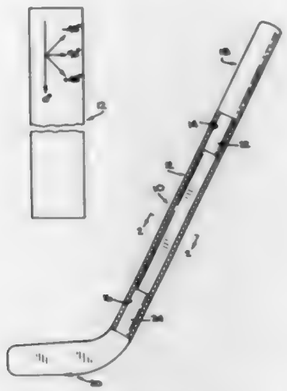
one coil which is located beneath intersecting boundary lines of a tennis court and are adapted to and located so that perturbations to the first and second electromagnetic fields resulting from the tennis ball moving within the influence of the fields produce a signal indicative of the location of the ball relative to the tennis court line.

5,303,916

HOCKEY STICK SHAFT

Aubrey Rodgers, Surrey, Canada, assignor to Loranzy Sports, Inc., New York, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,156
Int. Cl.[5] A63B *59/12*
U.S. Cl. 273—67 A **18 Claims**



1. A hockey stick shaft comprising,

a) an elongated tubular member of generally rectangular cross section having opposite open ends, an inside surface, and an outside surface,

b) said tubular member being formed as a plurality of discrete layers of bondable material in a layup comprising:

(i) at least one layer of random strand mat glass fibers,

(ii) at least two layers of glass fiber material selected from the group consisting of 0°/90° balanced plain weave glass fiber fabric, 0°/90° stitched layered glass fiber fabric, and mixtures thereof;

(iii) at least two layers of ±45° balanced stitched layered glass fiber fabric,

(iv) at least one layer of 0° unidirectional carbon fiber roving,

(v) at least one layer of 0° unidirectional glass fiber roving, wherein said layers are bonded together by a resin.

5,303,917

BAT FOR BASEBALL OR SOFTBALL

Alan K. Uke, 5980 Rancho Dieguene, P.O. Box 8531, Rancho Santa Fe, Calif. 92067

Filed Apr. 13, 1992, Ser. No. 867,495
Int. Cl.[5] A63B *59/06*
U.S. Cl. 273—72 R **30 Claims**

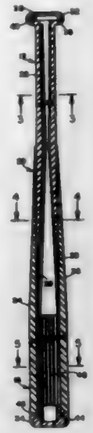
1. A bat for sporting games, comprising:

a first hollow tubular member having opposite outer and inner ends, the first member outer end being located at a first, butt end of the bat, the first tubular member extending from said butt end to form a handle region of a first diameter;

a second hollow tubular member having opposite outer and inner ends, the second member outer end being located at the opposite, barrel end of the bat, the second tubular member extending from said barrel end to form a barrel region of a second, larger diameter having a hollow core;

the inner end of said first member extending telescopically into the inner end of said second member to form a telescopically overlapping region extending at least along a mid-section of the bat extending between said barrel and handle regions;

the second member which is outermost in said mid-section being shaped to form a tapered transition zone between said different diameter handle and barrel regions, and said members being permanently secured together;



said second member extending up to a junction between said tapered transition zone and handle region, the inner end of said second member being located approximately at said junction; and

the first and second members being formed of different materials, the material forming said first member having a higher longitudinal flex modulus than that forming said second member.

5,303,918

GAME RACKET HAVING INNOVATIVE STRINGED SURFACE

Wen-Chung Liu, No. 18, Alley 15, Lane 192, Sec. 1, Tung Shan Road, Taichung City, Taiwan

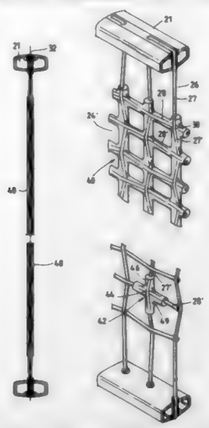
Filed Dec. 29, 1992, Ser. No. 998,028
Int. Cl.[5] A63B *51/10*
U.S. Cl. 273—73 D **11 Claims**

1. A game racket having innovative stringed surface, said racket comprising:

a head, a handle, and a shaft bridging said head and said handle, with said head having a ball-striking surface formed by a plurality of interlaced strings and provided with a predetermined number of intersections;

said ball-striking surface of said game racket having means for enhancing controllability of a ball hitting said ball-striking surface and preventing stacked strings from moving aside so as to absorb directly an impact of the ball, wherein said ball-striking surface is composed of at least an elastic covering comprising a predetermined number of covering bodies, each of which encloses therein two cross string segments and two longitudinal string segments and which further encloses an intersection formed by said cross string segments and said longitudinal string segments, so as to form a covering plane in said elastic covering of a network configuration;

wherein said elastic covering comprises a predetermined number of interconnected covering bodies, each of which covers an intersection and a longitudinal string segment adjacent to said intersection and a horizontal string segment adjacent to said intersection in a manner that said



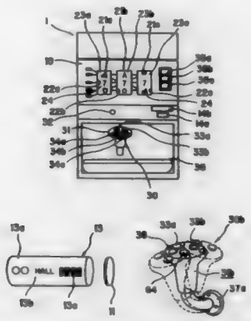
covering bodies are aligned with at least one side of said ball-striking surface.

5,303,919

SLOT MACHINE

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP91/01357, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO92/09341, PCT Pub. Date Jun. 11, 1982
PCT Filed Oct. 4, 1991, Ser. No. 910,122
Claims priority, application Japan, Nov. 29, 1990, 2-333223
Int. Cl.[5] G07F *17/34*
U.S. Cl. 273—143 R **25 Claims**



1. In a slot machine, wherein a plurality of indications of patterns are changed by a user inserting a game medium unit into a slot and manipulating a game initiation switch to initiate drive means causing movement of the patterns and wherein the respective indications are stopped at stop timings selected by manipulating a stop switch to stop the drive means and the related movement of patterns, an improvement comprising:

an operating means comprising a handle which includes said game initiation switch and said stop switch.

5,303,920

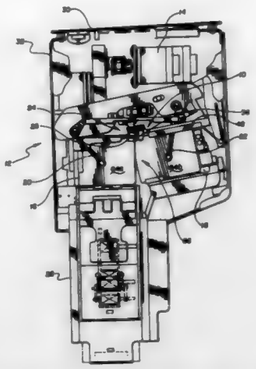
Patent Not Issued For This Number

5,303,921

JAMMED SHUFFLE DETECTOR

John G. Breeding, St. Louis Park, Minn., assignor to Shuffle Master, Inc., Eden Prairie, Minn.

Filed Dec. 31, 1992, Ser. No. 999,001
Int. Cl.[5] A63F *1/12*
U.S. Cl. 273—149 R **15 Claims**



2. A shuffling machine for shuffling playing cards and a jammed shuffle detecting means for detecting a jammed shuffle, wherein said shuffling machine comprises:

a carriage means for receiving a deck of cards, separating the deck into two deck portions, relatively rotating the deck portions to and from an angular relationship with a corner of each in close proximity, and for urging the deck portions generally toward each other; and

mandrel means for riffling the adjacent corners while said deck portions are being urged toward each other thereby interleaving the cards, wherein said jammed shuffle detecting means comprises:

a card contacting means for contacting an uppermost card of the playing cards being shuffled by said machine; and

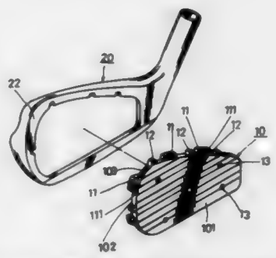
sensing means for sensing the position of said card contacting means.

5,303,922

COMPOSITE GOLF CLUB HEAD

Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tzu Hsiang, Taichung Hsien, Taiwan

Filed Apr. 22, 1993, Ser. No. 52,184
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—173 **2 Claims**



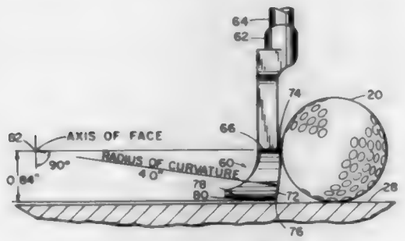
1. A composite golf head comprising a head portion with a striking face, and a striking plate affixed to said striking face of said head portion, said head portion being made of a carbon fiber composite material, said striking plate being made of a wear resistant material; the improvements comprising:

said striking plate having an inside face, an outside face and a peripheral edge which interconnects said inside and

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outside faces, and a plurality of first projections extending outwardly from said peripheral edge adjacent to said inside face of said striking plate, each of said first projections forming a shoulder portion and said peripheral edge, said head portion having a plurality of engaging grooves formed therein adjacent to said striking face of said head portion so that said first projections can be received and locked in their respective engaging grooves, and said peripheral edge has a plurality of second projections extending outwardly therefrom, each of said second projections having a thickness identical to said thickness of said peripheral edge.

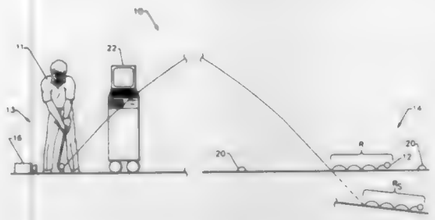
5,303,923
GOLF PUTTER
Larry Garcia, Oldsmar, Fla., assignor to Convex, Inc., Oldsmar, Fla.
Filed Aug. 24, 1992, Ser. No. 933,784
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—175 **4 Claims**



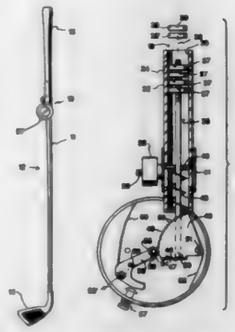
1. A golf putter comprising, in combination,
a shaft having a grip on its upper end, and
an elongated putter head having a heel area and a toe area, said putter head being formed with
a top portion including a flat top surface and means for coupling said shaft to said head,
a bottom portion having a centrally located bottom leading edge parallel to said top surface, and
a cylindrical ball-striking face extending downwards from said top portion to said bottom leading edge and laterally from said heel area to said toe area and having a radius of curvature of at least 2 inches and at most 6 inches about a horizontal axis lying in a plane parallel to said top surface and intermediate between said top surface and said bottom leading edge, wherein said plane is spaced at least 0.84 inches from said bottom leading edge.

5,303,924
GOLF GAME SIMULATING APPARATUS AND METHOD
James W. Kluttz, and Edgar P. Roberts, Jr., both of Winston-Salem, N.C., assignors to Accu-Sport International, Inc., Winston-Salem, N.C.
Filed Apr. 29, 1992, Ser. No. 875,752
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 R **25 Claims**

1. An apparatus for use at a golf practice range having a tee area and an adjacent target area positioned to provide sufficient distance to allow landing of a struck golf ball thereon at the end of the complete flight path thereof, said apparatus comprising:
first sensor means adapted to be associated with the tee area for sensing a golf ball striking time representative of the beginning of flight of the struck golf ball toward the target area;
second sensor means adapted to be associated with the target area for sensing the initial landing time and initial landing position of the struck golf ball on the target area thereby ending its flight;
a display; and
a processor operatively connected to said first sensor means, said second sensor means, and said display for indicating on said display a simulated golf shot total distance including a simulated golf ball roll distance, said roll distance being based upon a determined flight time of the struck golf ball and a determined initial landing position of same on the target area;
whereby a simulated golf shot total distance of improved accuracy is indicated.

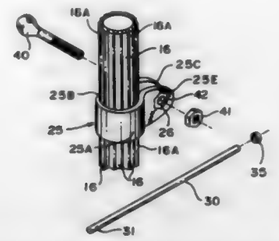


5,303,925
GOLF SWING GAUGE
Robert E. Rawson, 9521 Harriet La., Anaheim, Calif. 92804
Filed Dec. 28, 1992, Ser. No. 997,555
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **10 Claims**



1. A golf swing gauge attached to the shaft of a golf club, said golf club having a shaft, a handle and a club head, said gauge being attached below the handle, said gauge comprising:
a generally cylindrical, hollow support shaft having an outer surface, an inner surface, a central, longitudinal axis, and a side wall;
an upwardly-biased weight supporting shaft supported within said generally cylindrical, hollow support shaft said weight supporting shaft being supported along the central, longitudinal axis of said support shaft;
a plurality of weights, at least one of which is affixed to said weight supporting shaft;
gauge means for reading the downward axial deflection of said upwardly biased weight supporting shaft during a swing; and
means for resetting the gauge means in preparation for the next swing.

5,303,926
MULTI-USE GOLF TRAINING DEVICE
Charles A. Owens, 7691 Oakmont Dr., Lake Worth, Fla. 33467, and James A. Karr, III, 501 Lakewood Dr., Apt. 9B, Jupiter, Fla. 33458
Filed May 7, 1993, Ser. No. 57,978
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 **10 Claims**



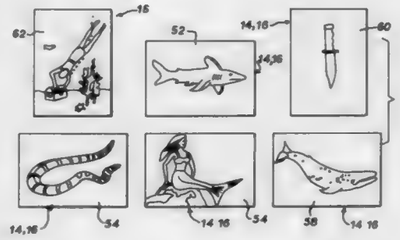
1. A portable golf swing practice device for selectively executing any one of a plurality of golf swings, said device comprising:
having a centrally located aperture therein;
a vertically extending guide post having a first end received in said centrally located aperture;
said guide post having an outer circumferential surface that is provided with friction increasing means formed by a plurality of abutting flute extending the full length of said guide post;
locking jaw means having a first portion which engages said outer circumferential surface of said guide post;
said locking jaw means further including ear portions which project outwardly from said guide post;
a positioning bar adjustably mounted between said ear portions of said locking jaw means whereby said positioning bar can be placed in any one of many positions to enable the user to practice a variety of golf swings.

5,303,927
GOLF SWING TRAINING DEVICE AND METHOD
Carl L. Perry, Lighthouse Point, and L. Gregory Johnson, Ft. Lauderdale, both of Fla., assignors to J. David Eller, Deerfield Beach, Fla., a part interest
Filed Oct. 23, 1992, Ser. No. 966,000
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—188 R **7 Claims**



1. A golf training device for a golf player comprising:
a hip belt having opposite belt ends,
belt closing means on the belt for holding the belt ends in joined position over the front abdominal area of the player,
an elastic cord having an upper end and a lower end,
a stirrup attached to said lower end of the elastic cord for receiving a foot of the player,
said elastic cord being attached to said belt at an attachment point on said belt located with respect to said closing means such that said attachment point is positioned over the lower back area and between the hips of the player when said closing means is positioned over said front abdominal area, the length of said cord being such that said elastic cord wraps laterally and upwardly from said stirrup receiving a foot of the player over the front and around to the rear of the player in a stretched condition creating a rotational torque at the hips of the player which assists the player in maintaining a proper body stance throughout the swing with a club and properly turning the hips as required for a proper swing.

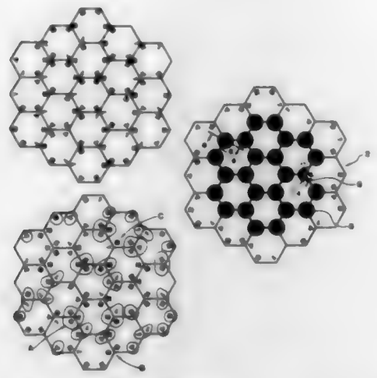
5,303,928
WINDSURFING BOARD GAME
Paul Scuderi, 111-½ North Park St., Merrill, Wis. 54452
Filed Mar. 31, 1993, Ser. No. 42,043
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—249 **4 Claims**



1. A method of playing a board game, comprising the steps of:
providing a game set including:
a game board having a shore area, a water area, and an island area, at least the water area being divided into a plurality of playing spaces;
a plurality of island cards defining playing spaces removably mountable on the island area of the game board, each island card defining a top surface and an undersurface;
a treasure indicia provided on the undersurface of one of the island cards;
a plurality of playing members representative of windsurfers;
a die; and
at least one set of chance cards including one or more favorable chance cards favorably affecting a player's progress in the game and one or more adverse chance cards adversely affecting a player's progress in the game;
utilizing the die to advance a playing member on the water area playing spaces toward the island area, and then on the island cards to locate the treasure indicia by exposing the undersurface of each island playing space landed upon by the playing member, and then returning from the island area through the water area playing spaces back toward the shore area; and
utilizing the chance cards along with the die to control the progress of the playing member during movement of the playing member from the shore area toward the island area and from the island area toward the shore area.

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5,303,929
NUMBER CARD GAME AND METHOD
Lowell Sandeen, Rte. 1, Box 159, McIntosh, Minn. 56556
Continuation-in-part of Ser. No. 610,847, Nov. 8, 1990, Pat. No. 5,112,058. This application May 11, 1992, Ser. No. 881,419
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—269 8 Claims



1. A game apparatus comprising:
a game card means, the game card means comprising a matrix with numerical indicia and blanks thereon, the matrix having a generally closed perimeter having therein a plurality of intersecting lines defining a plurality of interconnected two and three-line peripheral and three-line internal interstices, each of said interstices having a plurality of angular portions, said numerical indicia and blanks being randomly selected and disposed on the angular portions of each of said interstices, wherein each angular portion either carries a numerical indicia or a blank with no indicia, wherein any interstice forms a random combination of numbers and blanks.

5,303,930
BOARD FOR THE PLAYING OF MULTIPLE BOARD GAMES
Aurelio S. Saiz, Madrid, Spain, assignor to Ediciones Pleyades, S.A., Madrid, Spain
Filed Mar. 4, 1993, Ser. No. 26,482
Claims priority, application Spain, Mar. 4, 1992, 9200485
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—283 5 Claims

3	1	2	3	1	2	3	1	2
4	A	3	4	A	3	4	A	3
1	2	4	1	2	4	1	2	4
3	1	2	3	1	2	3	1	2
4	A	3	4	A	3	4	A	3
1	2	4	1	2	4	1	2	4
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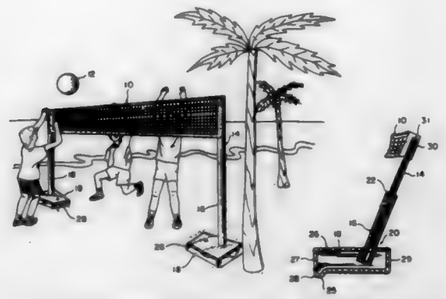
1. A board for playing multiple board games, comprising: a plurality of modules, each module including a number of blocks surrounding a center block, which represents the center of nucleus of each module, said modules being arranged in such a way that together they compose a geometric figure, said surrounding blocks exhibiting different colors that differentiate them by pairs of blocks not adjacent to one another, said center block also exhibiting another color or combination of colors differentiated from all the other colors, said surrounding blocks being arranged in each and every one of the modules in such a way that those having the same color always occupy the same position with respect to the center block, and said center block borders with at least two surrounding blocks of each color.

5,303,931
PORTABLE FLAG-TARGET FOR FLYING-DISC GAME AND METHOD OF MANUFACTURE THEREFOR
David C. Brown, 11020 N. 74th St., Scottsdale, Ariz. 85062
Filed Jun. 25, 1993, Ser. No. 81,114
Int. Cl.[5] A63B *67/06*; F41J *1/00*; G09F *17/00*; B21D *53/00*
U.S. Cl. 273—348 18 Claims



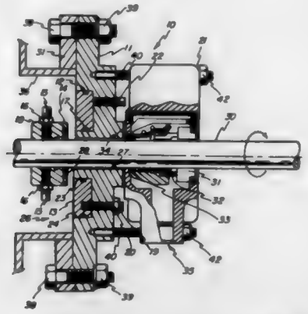
1. A method for manufacturing a flag-pole target for use with a flag of a predetermined height in a flying-disc game, comprising the following steps:
(a) cutting a length of plastic tubing to provide a lower section and an upper section of a flag pole, each of said sections having a top portion and a bottom portion;
(b) cutting the bottom portion of said lower section to form a pointed end;
(c) providing joining means for rigidly and removably connecting the top portion of said lower section to the bottom portion of said upper section;
(d) sliding a collar over the top portion of said upper section and attaching the collar thereto at a distance approximately equal to the height of the flag to be used in the game; and
(e) providing a cap conforming to the top portion of said upper section;
whereby the flag may be mounted over the top portion of said upper section and retained by removably placing said cap over the top portion of the upper section; the upper and lower sections may be removably connected by utilizing said joining means; and the flag pole so assembled may be planted into a supporting surface by inserting said pointed end therethrough.
16. A flag-pole target manufactured according to the process of claim 1.

5,303,932
GAME APPARATUS
Brian D. Kessler, Youngstown, Ohio, assignor to Maul Toys, Inc., Youngstown, Ohio
Filed Feb. 18, 1993, Ser. No. 19,561
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—411 18 Claims



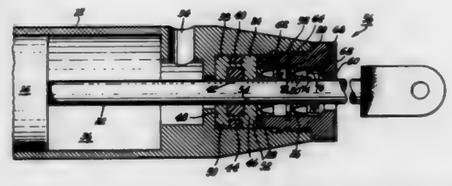
1. In a game apparatus comprising a net, a pair of upstanding standards each holding an end of said net, and a base for each standard, said base having an inside end and an outside end, the improvement wherein
each said base has a recess in an upper surface thereof into which a lower end of said standard fits, said standard extending upwardly from said base at an angle from vertical in a direction which increases away from said net from said base to an upper end of said standard, and means for elevating said inside end of said base.

5,303,933
SHUT-OFF SEAL FOR A ROTATABLE SHAFT
David J. Larkins, Brampton, Canada, assignor to Robbins & Myers, Inc., Dayton, Ohio
Filed Jul. 9, 1992, Ser. No. 911,278
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—9 3 Claims



1. For a rotatable shaft penetrating a fluid holding tank through an opening below the surface of a fluid maintained within said tank and being provided with rotary seal means external of said tank, a shut-off seal comprising:
flange means for covering said opening; said flange means being provided with a circular aperture for passage of said shaft, a sealing surface facing outwardly with respect to said fluid holding tank for sealing against said rotary seal means, and an annular channel facing inwardly with respect to said fluid holding tank having a first wall which is displaced radially outward of said aperture and a second wall which is displaced radially outward of said first wall,
an annular shut-off ring configured for reception by said annular channel,
channel sealing means for sealing said shut-off ring against said first and second walls,
collar means mounted upon said shaft at a point inside said tank; said collar means being sealed against said shaft and being provided with a shut-off surface displaced from said shut-off ring and extending parallel thereto for a distance reaching annularly beyond said first wall, and
positioning means for selectively moving said shut-off ring between a first position clear of said collar means and a second position in sealing engagement with said shut-off surface.

5,303,934
FLUIDIC ACTUATOR SCRAPER SEAL
Robert A. Elliott, Atkinson, N.H., assignor to General Electric Company, Cincinnati, Ohio
Continuation of Ser. No. 885,007, May 19, 1992, abandoned, which is a continuation of Ser. No. 658,263, Feb. 20, 1991, abandoned. This application May 24, 1993, Ser. No. 66,608
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—24 6 Claims



1. An apparatus for sealing between a high pressure zone and a contaminated lower pressure zone, comprising:
a closed cylindrical housing bounding said high pressure zone and having a wall with a releaseably attached cylindrical retainer, said retainer having an aperture therethrough;
a shaft of generally circular cross section and having a longitudinal axis extending through said aperture, moveable relative to said retainer along said longitudinal axis;
a seal means disposed between said wall and said shaft for preventing fluid flow from said high pressure zone to said lower pressure zone;
a first scraper means on a first side of said seal means proximate said lower pressure zone;
a second scraper means on said first side of said seal means aligned serially and unopposed with and spaced from said first scraper means for providing a contaminant retention zone therebetween, wherein said seal means and said first and second scraper means are disposed in axial alignment around the longitudinal axis of said shaft; and
wherein said first and second scraper means are first and second "U" cup seals which are disposed in a bore in said cylindrical retainer such that first and second respective openings of said first and second "U" cup seals are directed at said lower pressure zone; wherein each of said "U" cup seals comprises first and second substantially symmetrical annular sharp edged lips extending symmetrically from an annular backing ring which resiliently biases said first sharp edged lip radially inwardly and said second sharp edged lip radially outwardly into respective scraping and sealing relationship with proximate structure such that a cross-section of said "U" cup seal substantially forms a recumbent "U".

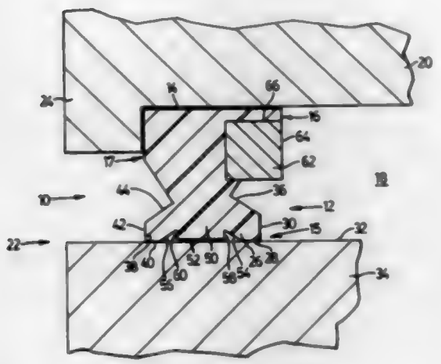
VOL 1161 ISS 3 19 1994 AP UMI

5,303,935

FLUID SEAL

John Saksun, Islington On, Canada, assignor to Saksun Holdings Limited, Toronto, Canada

Continuation-in-part of Ser. No. 847,408, Mar. 6, 1992, abandoned. This application Aug. 25, 1992, Ser. No. 935,094
Claims priority, application Canada, Feb. 3, 1992, 2060575
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—152 28 Claims



1. A fluid seal comprising:

(a) an annular body of an elastomeric material having a radially outer surface, a radially inner surface, and first and second opposite side faces;

(b) said outer surface being contoured to be insertable into a generally cylindrical opening;

(c) said inner surface having:

(i) a radially inwardly extending sealing lip having a sealing face for slidably engaging a generally cylindrical shaft in a fluidly sealing manner, said sealing face being generally coaxial with the fluid seal, and said sealing lip having an end surface generally perpendicular to the sealing face and adjacent the first side face; and

(iii) a radially inwardly extending wiping flap for slidably engaging the shaft, said wiping flap having a wiping face generally coaxial with the fluid seal and having an end surface generally perpendicular to the wiping face and adjacent the second side face, the width of the end surface of the sealing lip being greater than the width of the end surface of the wiping flap;

(d) a radially inwardly extending guide member adjacent said inner surface and axially spaced between the sealing lip and the wiping flap, said guide member having a guide face adapted to slidably engage the shaft for guiding the shaft through the seal, said guide face being substantially wider than said sealing face and said guide member being adapted to resist radial movement of said shaft, thereby to limit distortion of said sealing lip, said sealing lip and said guide member being separated by a first channel therebetween, said wiping flap and guide member being separated by a second channel, and said first and second channels extending radially outwardly of the inner surface of the seal and extending around the circumference of said inner surface;

(e) an annular washer or rigid material generally coaxial with the annular body and embedded in said body; and

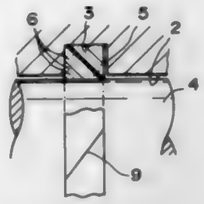
(f) a respective groove extending around each of the first and second side faces radially outwardly of the respective end surfaces.

5,303,936

SEAL RING

Toshihiko Kuroki, Nihonmatsu, Japan, assignor to NOK Corporation, Tokyo, Japan

Continuation of Ser. No. 946,147, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 634,915, Dec. 27, 1990, abandoned. This application Jul. 29, 1993, Ser. No. 104,921
Claims priority, application Japan, Dec. 28, 1989, 1-152368[U]; Dec. 21, 1990, 2-404380[U]
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—165 4 Claims



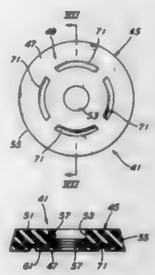
1. In a seal ring essentially composed of a seal ring body fitted into a groove formed in an inner periphery of a cylinder to thereby seal a space formed between the cylinder and a movable member inserted into the cylinder, the improvement in which the cylinder is made of a material selected from the group comprising aluminum and iron, the seal ring body is formed of a fluoride resin material capable of being injection molded, a filler mixed with the fluoride resin material so that the filler is oriented in an entirely circumferential direction of the seal ring body, the seal ring body has a thermal expansion coefficient smaller than that of PTFE a substantially equal to that of the cylinder, and the filler is made of carbon fiber having an aspect ratio of about 5 to 400.

5,303,937

SEAL HAVING A METALLIC INSERT

Howard D. Huss, Westmoreland City; William G. Greenaway, North Huntington, and Lawrence R. Streitman, Pittsburgh, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Division of Ser. No. 739,121, Jul. 31, 1991, Pat. No. 5,213,749. This application Jan. 8, 1993, Ser. No. 1,818
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—215 9 Claims



1. A rubber seal containing a metallic insert, said rubber seal comprising:

(a) a rubber ring including a body portion having a base, said base having a flat planar support surface, a substantially flat and uninterrupted top wall, an inner wall and an outer wall;

(b) a metallic insert embedded in said body portion in a plane parallel to said top wall and said flat planar support surface; and

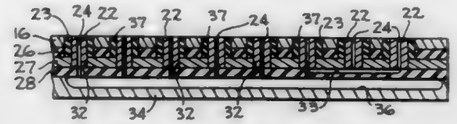
(c) at least four spaced aligned arcuate grooves provided in said flat planar support surface of said base of said body member extending inwardly towards said metallic insert.

5,303,938

KELVIN CHUCK APPARATUS AND METHOD OF MANUFACTURE

Donald C. Miller, 1139 Blair Ave., Sunnyvale, Calif. 94087, and George L. Isaac, 980 Kiely Blvd. #326, Santa Clara, Calif. 95051

Filed Mar. 25, 1993, Ser. No. 38,619
Int. Cl.[5] B25B *11/00*
U.S. Cl. 279—3 13 Claims



1. A chuck for use in securing and testing semiconductor circuits, comprising

a flat contact surface,

first contact means on said contact surface,

second contact means on said contact surface,

means for electrically isolating said first and second contact means,

said flat contact surface having at least one opening therein, and

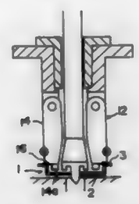
means in communication with said at least one opening for applying a vacuum thereto, whereby a semiconductor circuit is affixed to said flat contact surface in electrical contact with said first and second contact means.

5,303,939

APPARATUS FOR AND METHOD OF PICKING UP FLEXIBLE DISK CENTER HUB

Tsutomu Akashi, and Shuichi Imada, both of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 903,860
Claims priority, application Japan, Jun. 26, 1991, 3-154948
Int. Cl.[5] B23B *5/22*
U.S. Cl. 279—158 1 Claim



1. A center hub picking-up method used in manufacturing a flexible disk cartridge, the flexible disk cartridge containing a combination of a flexible disk and a center hub, the center hub having central and flange portions stepped with respect to each other, comprising the steps of:

first lowering a spindle having a centering pin provided at an end thereof until said pin projects into a central hole in the central portion of said center hub;

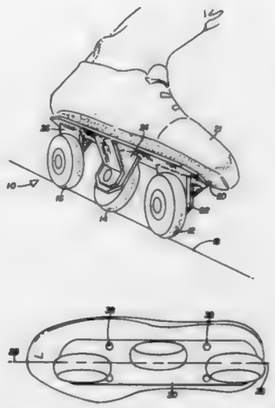
next lowering a collect chuck provided around said spindle movable relative to the latter until end claws of said collet chuck project into a concavity in the central portion of said center hub, while attracting said flange portion of said center hub by magnets buried in the outer end face portion of said collet chuck other than at said end claws; and then lifting said spindle, opening said collet chuck outwardly as said spindle rises, and pressing said end claws toward the circumferential wall of said concavity in the central portion of said center hub to thereby hold said center hub in a required position.

5,303,940

SKATE HAVING ANGULARLY MOUNTED WHEELS

Ernest E. Brandner, Orlando, Fla., assignor to Jeannette L. Brandner, Orlando, Fla.

Continuation of Ser. No. 685,545, Apr. 15, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,947
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.22 16 Claims



1. A roller skate utilizing angularly mounted wheels disposed generally in an in-line relationship, said skate comprising a mounting plate having a pair of oppositely disposed surfaces, with one of said surfaces being adapted to be fastened to the sole of a boot or shoe, means for mounting a plurality of angularly disposed wheels on said mounting plate, said wheels being affixed in a consistent, evenly-spaced relationship to the other surface of said mounting plate, along the longitudinal axis thereof, with the treads of at least three of said wheels disposed in alignment, each of said wheels of said skate being disposed at an angle between 11° and 21° to the vertical, with at least two of said angularly disposed wheels being inclined in the same direction with regard to a vertical plane passed along the longitudinal axis of said mounting plate, and an intermediate, angularly mounted wheel located an equal distance between said at least two angularly disposed wheels and inclined in an opposite direction with respect to said at least two angularly disposed wheels, the non-perpendicular relationship of said wheels to said other surface of the mounting plate enabling a user of the skate to achieve improved traction during a turn.

5,303,941

MOBILE TRIPOD SUPPORT DEVICE

Ralph A. Volper, and Joseph Guarino, both of Brick, N.J., assignors to Dream Jeans Productions, Inc., Brick, N.J.

Filed Dec. 16, 1991, Ser. No. 807,603
Int. Cl.[5] B62B *3/10*
U.S. Cl. 280—79.11 8 Claims

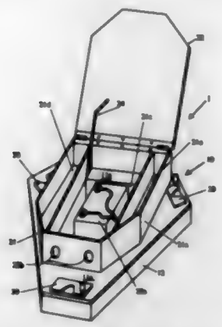
1. A mobile tripod support device comprising

a base component having tripod leg support means and ground-engaging wheel means, said base component including a substantially triangular base member having a top wall, a bottom wall, a peripheral side wall extending between said top wall and said bottom wall, an opening being formed in a central portion of said base member, said tripod leg support means being disposed in part in said top wall and said ground-engaging wheel means being attached to said bottom wall, said storage compartment

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being partially disposed in the opening of said base member; and

a storage compartment partially disposed within the base component, said storage compartment including electricity power source means, said storage compartment comprising a recessed bottom tray member and a storage compartment lid hingedly attached at one side to said



bottom tray member by lid hinge means, said bottom tray member being partially disposed below the top wall of said base component thereby exposing a portion of a side wall of the tray member above the top wall of the base component, said storage compartment lid being formed having an inside bottom surface and an outside top surface, said outside top surface having a recessed cavity formed therein.

5,303,942

SHIFTABLE PEDAL BEARING FOR A BICYCLE OR THE LIKE

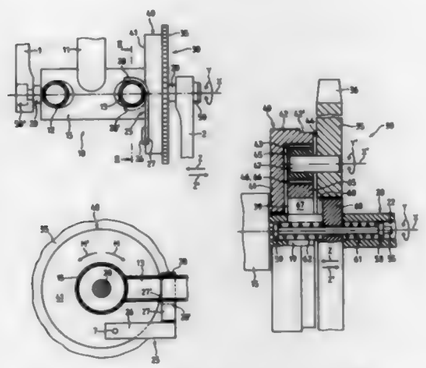
Florian Schlumpf, Dorfstrasse 10, 7324 Vilters, Switzerland

Filed Mar. 23, 1993, Ser. No. 35,453

Claims priority, application Switzerland, Mar. 25, 1992, 00934/92

Int. Cl.[5] B62M *11/14*

U.S. Cl. 280—239 **16 Claims**



1. A shiftable pedal bearing for a bicycle or the like, comprising:

a pedal bearing housing;

a crank axle axially traversing said pedal bearing housing and carrying a pedal crank at opposite axial ends;

a gearing having a gear casing with a chainwheel and a disk extending parallel to said chainwheel, each of said chainwheel and said disk being provided with circumferential recesses, with each recess being step-shaped to define a first recess section and a second recess section;

a coupler shiftable between two switching positions for selectively connecting said crank axle with said chainwheel and with said disk by respectively engaging said recesses of said chainwheel and said recesses of said disk in such a manner that said coupler in a first phase engages said first recess section with play and in a second phase snugly fits in said second recess section with no play; and

actuating means secured to said crank axle and operatively connected to said coupler for shifting said coupler between said switching positions.

5,303,943

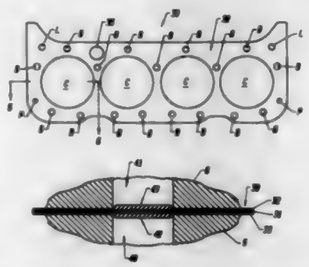
HEAD GASKET ASSEMNLY AND METHOD FOR SEALING AN INTERNAL COMBUSTION ENGINE

James M. Batty, Jr., 2325 Bluebell Ave., San Jose, Calif. 95122

Continuation of Ser. No. 486,903, Mar. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 292,251, Dec. 30, 1988, abandoned. This application Oct. 26, 1992, Ser. No. 966,604

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—1 **20 Claims**



1. A method of preventing the intermixing of coolant, lubricant and combustion gases in and reducing the engine temperature of a liquid-cooled internal combustion engine having a number of fluid passageways in a block and head assembly which are normally in fluid communication through openings therebetween, comprising the steps of:

inserting between said block and head assembly a lamination comprising a first sheet of material, a second sheet of material, and a sheet of nonmetallic material disposed between said first and said second sheets of material, said first and said second sheets of material comprising a material which extrudes into and closes off a majority of said openings so as to prevent a flow of fluid therefrom and reduce engine temperature when said block and head assemblies with said lamination disposed therebetween covering said majority of said openings are bolted together; and

bolting said block and head assemblies together with said lamination covering said majority of said openings so as to cause said sheets of metal to extrude into said majority of said openings.

5,303,944

BICYCLE RIDING TRAINING DEVICE

Allan L. Kalmus, 29424 Shenandoah, Farmington Hills, Mich. 48331

Filed Mar. 4, 1993, Ser. No. 26,543

Int. Cl.[5] B62K *9/00, 19/30*

U.S. Cl. 280—288.4 **8 Claims**

1. A device attachable to a bicycle seat assembly to support a rider seated thereupon the bicycle seat assembly, the device comprising:

(a) means for attaching the device to the bicycle seat assembly;

(b) a handle of an adjustable length releasably attachable to the means for attaching the device, the handle comprising:

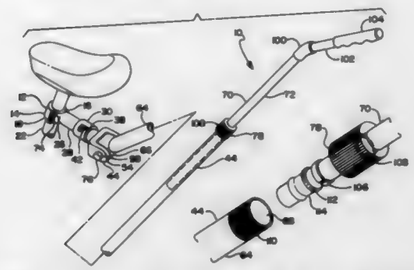
(i) a shaft portion having a forward end and a rearward end, the forward end being releasably connected to the means for attaching the device; and

(ii) a gripping portion connected to the rearward end of the shaft portion;

(c) means for altering the length of the handle, the means for altering comprising:

(i) a seating ring slidably disposed on the gripper portion for adjusting the length of the handle;

(ii) a lock ring slidably disposed on the gripping portion proximate the seating ring;



(iii) a locking cap circumferentially disposed around an outer surface of the gripping portion, the locking cap having a threading formed on an interior surface thereof;

wherein the shaft portion has a threading formed thereon at the rearward end thereof which threadingly engages the locking cap, the gripping portion being telescopingly projectable into the shaft portion, the seating ring being insertable into the shaft portion and engagable with an inner surface of the shaft portion; and

further wherein the locking cap threadingly engages the shaft portion over the lock ring, such that the lock ring and locking cap cooperate in conjunction with the seating ring to adjust the length of the gripping portion to a desired length.

5,303,945

ATTACHMENT FOR A WHEELCHAIR

Stuart G. Oxford, 13616 N. 78th St., Omaha, Nebr. 68122

Continuation-in-part of Ser. No. 669,507, Mar. 14, 1991, which is a continuation-in-part of Ser. No. 594,343, Oct. 9, 1990, Pat. No. 5,149,118, which is a continuation-in-part of Ser. No. 439,612, Nov. 20, 1989, Pat. No. 5,020,818, which is a continuation-in-part of Ser. No. 263,417, Oct. 27, 1988, Pat. No. 4,892,323. This application Oct. 7, 1992, Ser. No. 958,282

Int. Cl.[5] A61G *5/02;* **B62M** *1/16*

U.S. Cl. 280—304.1 **3 Claims**

1. In combination with a wheelchair including a frame, a pair of axles on the frame, a rear wheel operatively rotatably mounted on each of the axles, a pair of front wheels operatively rotatably and pivotally mounted on the frame, a seat on said frame between the rear wheels, and a foot rest positioned at the forward end of the frame, comprising,

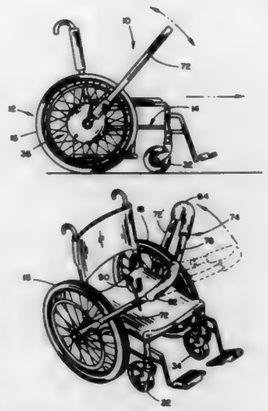
a first wheel drive assembly operatively secured to one of said rear wheels and having a first bolt head means provided thereon which is positioned horizontally outwardly of the axle for the wheel, the rotation of said first bolt head means causing said first wheel drive assembly to rotate said one wheel,

a second wheel drive assembly operatively secured to the other of said rear wheels and having a second bolt head means provided thereon which is positioned horizontally outwardly of the axle for the wheel, the rotation of said second bolt head means causing said second wheel drive assembly to rotate said other wheel,

a first ratchet wrench operatively secured to said first bolt head means for selectively rotating said first bolt head means so that said one rear wheel may be driven either forwardly or rearwardly,

a second ratchet wrench operatively secured to said second bolt head means for selectively rotating said second bolt head means so that said other rear wheel may be driven either forwardly or rearwardly,

a first elongated hollow pipe secured to said first ratchet wrench and extending upwardly therefrom, whereby the person in the wheelchair may grasp the same,



a second elongated hollow pipe secured to said second ratchet wrench and extending upwardly therefrom, whereby the person in the wheelchair may grasp the same, and

an inverted U-shaped member, having first and second legs and a base portion interconnecting the first and second legs, the legs of said inverted U-shaped member being received by the upper ends of said first and second pipes so that moving the U-shaped member when connected to the first and second pipes acts as a means of propelling the wheelchair.

5,303,946

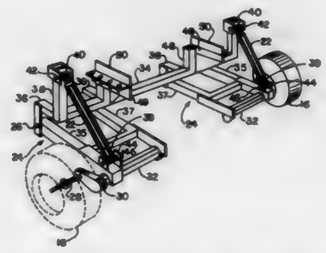
TAG AXLE WITH REARWARDLY EXTENDING SUPPORT FRAMEWORK

Gordon D. Youmans, and Audrey L. Youmans, both of Anderson, Calif., assignors to Prime Technologies, Inc., Reno, Nev.

Filed Dec. 4, 1992, Ser. No. 985,894

Int. Cl.[5] B60G *17/00*

U.S. Cl. 280—405.1 **24 Claims**

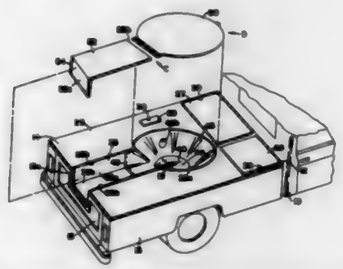


1. A load shifting tag axle for a vehicle having a load bed supported by a vehicle frame with a front and rear axle, each vehicle axle having opposed main wheels of a specified radial dimension comprising:

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an auxiliary frame connected to the vehicle frame at a mounting location rearward of the rear vehicle axle;
transversely extending torsion means for independently suspending a pair of vertically movable auxiliary wheels from said auxiliary frame; and
actuator means for raising and lowering said auxiliary wheels, wherein lowering said auxiliary wheels in a ground engaging position tilts the vehicle load bed forwardly such that a load carried on said bed is shifted toward the front vehicle axle.

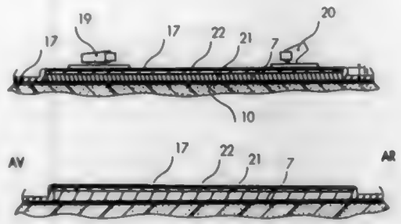
5,303,947
TRAILER HITCH AND TOWING VEHICLE ENCLOSURE APPARATUS
Charles C. Gerber, 1695 E. County Rd. D, Apt. 106, Maplewood, Minn. 55109
Filed Sep. 12, 1991, Ser. No. 757,974
Int. Cl.[5] B60P *7/04*
U.S. Cl. 280—423.1 **29 Claims**



1. In combination with a towing vehicle box structure of the type having a floor, front and opposed sidewalls extending upwardly from the floor and a tailgate all cooperatively defining an enclosable cavity therebetween, and a hitching mechanism mounted to the towing vehicle within the box structure located intermediate the tailgate and the front wall thereof, an enclosure apparatus, comprising:
(a) upper cover means sealingly connectable to the front, sidewalls and tailgate of the towing vehicle and defining a hitching access port therethrough continuously extending form a forward position adjacent the hitching mechanism and rearward to the tailgate;
(b) said tailgate being configured to define a tailgate access port therethrough that forms a part of the hitching access port; and
(c) lower enclosure means extending from said upper cover means and downward into the vehicle box structure for sealing said enclosable cavity along said cover access port in a manner such that an unobstructed access channel is provided through the enclosable cavity from the tailgate to the hitching mechanism.

5,303,948
SKI FOR WINTER SPORTS COMPRISING AN ASSEMBLY PLATFORM FOR THE BINDINGS
Jacques Le Masson, Cran-Gevrier, and Jean-Pierre Clement, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France
Filed Jan. 22, 1992, Ser. No. 824,164
Claims priority, application France, Feb. 8, 1991, 91 01703
Int. Cl.[5] A63C *5/00*
U.S. Cl. 280—607 **27 Claims**

1. A ski comprising:
a core;
an upper reinforcement positioned above the core;
a lower reinforcement positioned below the core;
a binding assembly zone located in an intermediate longitudinal zone of the ski;
an upper central reinforcement located in the binding assembly zone of the ski and extending continuously in the binding assembly zone of the ski;
at least one shock absorption element located in the binding assembly zone of the ski and positioned above the upper reinforcement and beneath the upper central reinforcement;



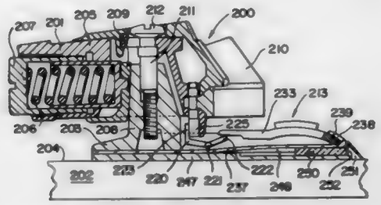
an upper superficial layer extending continuously within the binding assembly zone and covering the upper reinforcement beyond the binding assembly zone; and
screws for anchoring bindings onto the ski, wherein the screws are secured through both the upper reinforcement and the upper central reinforcement.

5,303,949
MULTI-EDGED DOWNHILL SNOW SKIS
Luke J. Harper, and Melvin L. Harper, both of 5345 Chambrey Ct., Colorado Springs, Colo. 80919
Filed Apr. 26, 1993, Ser. No. 51,869
Int. Cl.[5] A63C *5/04*
U.S. Cl. 280—608 **5 Claims**



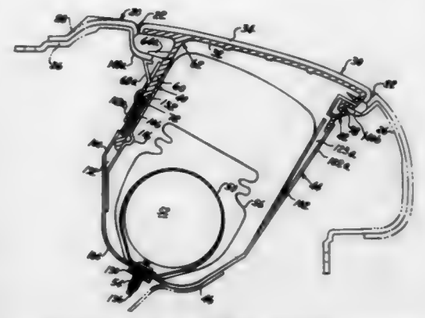
1. A downhill snow ski, one of an identical pair, having a shovel section separated from a heel section by a waist section extending along a longitudinal axis, on the top of which waist section boot bindings can be mounted, said waist section comprising:
(a) a bottom surface and a top surface;
(b) a first side and a second side;
(c) a first surface on each side extending vertically upward from the bottom surface, forming a first cutting edge along each intersection of said bottom surface and each first surface, said first cutting edges having first side cuts;
(d) a second surface on each side extending from the first surface on that side;
(e) a third surface on each side extending from the second surface on that side, forming a second cutting edge along each intersection of each second surface and the third surface extending from that second surface, said second cutting edges having second side cuts;
(f) wherein said first side cuts have a first radius of curvature and said second side cuts have a second radius of curvature;
(g) wherein said first radius of curvature on the first side of the waist section is smaller than said second radius of curvature on the first side of the waist section; and,
(h) wherein said first radius of curvature on the second side of the waist section is smaller than said second radius of curvature on the second side of the waist section.

5,303,950
SAFETY BINDING FOR ALPINE SKIS
Jean-Pierre Rigal, La Balme de Sillingy; Alain Berthet, Albertville, and Jean-Claude Brischoux, Annecy le Vieux, all of France, assignors to Salomon S.A., Annecy, France
PCT No. PCT/FR90/00910, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO91/08808, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 13, 1990, Ser. No. 859,500
Claims priority, application France, Dec. 18, 1989, 89 16867; Jan. 23, 1990, 90 00830
Int. Cl.[5] A63C *5/075, 9/085*
U.S. Cl. 280—636 **3 Claims**



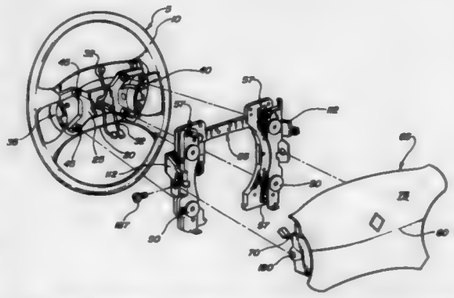
1. A safety ski binding for retaining a front end of a ski boot on a ski and for releasing the front end of the ski boot from the ski under a predeterminate force, said binding comprising:
(a) a base to be affixed to an upper surface of the ski;
(b) a retention element for engagement with a portion of the front end of the ski boot, said retention element being mounted for movement with respect to said base;
(c) means for biasing the retention element with a predeterminate biasing force against a releasing movement of the front end of the ski boot;
(d) a compensating mechanism comprising means for reducing said predeterminate biasing force is response to a downward force exerted by the ski boot, said compensating mechanism further comprising:
(i) a support element to be positioned between the boot and the ski and for supporting a front portion of a sole of the boot, said support element comprising a sensor having a support surface for engagement with the sole of the boot; and
(ii) means for mounting said support element to said base for vertical movement in response to the downward force exerted by the ski boot; and
(e) a quantity of shock-absorbing material positioned below and mounted to said base and above the upper surface of the ski for filtering vibrations transmitted by the ski to the ski boot and for absorbing stresses between the ski boot and the ski, while maintaining functioning of said compensating mechanism.

5,303,951
AIR BAG ASSEMBLY WITH HOUSING AND FASTENERLESS DEPLOYMENT DOOR
Gregory N. Goesteakors, Waterford; Daria J. Turner, Warren, and Mohamed Boumarafi, Rochester Hills, all of Mich., assignors to Allied-Signal Inc., Morristown, N.J.
Filed Oct. 30, 1992, Ser. No. 968,751
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **8 Claims**



1. An assembly for an air bag (56) adapted to fit within an opening (22) of a vehicle part (20) comprising:
a housing (44) comprising: a first wall (100) and an opposite second wall (102), a flexible wall member (106) secured to the first wall (100) defining a space (132) therebetween for receipt of a hinge flange, the first wall (100) including a plurality of first tabs (112) extending into the space (132), the second wall (102) including a plurality of second tabs (120) extending outwardly therefrom;
cover means (30, 40, 42) for enclosing the housing including means received in the space (132) including a hinge portion (40) engaged with the first tabs (112) to provide a snap connection therebetween and a seam portion (42) including first means engaged with the second tabs, the first means including a portion which tears apart in response to deployment forces generated by an inflating air bag.

5,303,952
ELECTRIC SIGNALLING IN A SUPPLEMENTAL VEHICLE RESTRAINT SYSTEM
Mark Shermetaro, Rochester; Joseph J. Mannino, Chesterfield; Robert P. Reighard, Petersburg; Kevin K. Ritter, Temperance, and Paul R. Chandler, Saline, all of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Dec. 23, 1992, Ser. No. 997,272
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—731 **21 Claims**



1. In a motor vehicle having electrical accessories and associated electrical accessory wiring, a supplemental restraint

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system comprising a module containing an air bag therein, said air bag module being mounted on at least one support bracket and at least one first electric switch actuated by depression of said air bag module for controlling the operation of said electrical accessories, said supplemental passenger restraint system also accommodating electric circuitry for providing electrical connections between said first electric switch and said electrical accesaory wiring and between said air bag module and said electrical accessory wiring, the improvement characterized by:

said first electric switch comprising a portion of a generally unitary, electric switching module;

said electric circuitry being substantially entirely embedded within said electric switching module and connected to said electric switch;

said support bracket with said air bag module, being mounted in said passenger compartment in overlying proximity to said electric switching module; and

said support bracket including means in alignment with said first switch for actuating said first switch when said air bag module is depressed.

5,303,953

INFLATABLE SEAT BELT APPARATUS

Misao Kamiyama, and Kazuo Zese, both of Hikone, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,335

Claims priority, application Japan, Oct. 21, 1991, 3-272600

Int. Cl.[5] B60R *21/18*

U.S. Cl. 280—733 **6 Claims**



1. An inflatable seat belt apparatus, comprising:

a webbing, at least part of a portion which comes into contact with a passenger is formed into a bag-shape, wherein the webbing is maintained in a belt-shape form during initial conditions and the bag-shape portion is inflated by gas from gas generating means at the time of vehicle collision;

a tongue provided on said webbing which is insertable into and lockable with a buckle to make possible restraint of the passenger;

an intermediate guide, which has a through-hole through which the webbing is passed, for guiding said webbing through the through-hole in a freely movable manner;

a through-hole opening-area control member movably provided on said intermediate guide and being movable between an opening-area reducing position and an opening-area enlarging position, said control member being held at said opening-area reducing position under initial conditions and being moved to said opening-area enlarging position in the event of a vehicle collision;

wherein when said control member is at said opening-area reducing position, an opening area of the through-hole is defined at least in part by said control member to be a first size which allows movement of said webbing therethrough while said webbing is maintained in the belt-shape form, but which will impede turning over and twisting of said webbing, and when said control member is at said opening-area enlarging position, said opening-area of the through-hole is defined at least in part by said control member to be a second size which is larger than said first size and which is sufficient to allow gas to readily penetrate the bag-shape portion; and

said control member remaining in said opening-area reducing position even during movement of said webbing through said through-hole and moving to said opening-area enlarging position when said bag-shape portion is inflated with gas from the gas generating means.

5,303,954

ATTACHMENT TO A SKI STICK

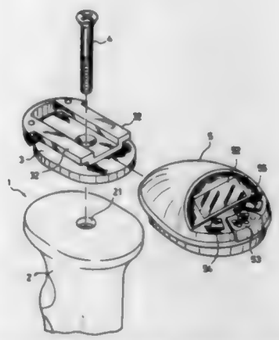
Hitoshi Suda, Fuchu, Japan, assignor to Kokusai System Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 47,594

Claims priority, application Japan, Oct. 19, 1992, 4-78390

Int. Cl.[5] A63C *11/22*

U.S. Cl. 280—819 **6 Claims**



1. An attachment to a ski stick having a top, comprising an adapter fixed onto the top of said ski stick, an instrument unit to be attached to said adapter and having a case, and engaging means for detachably fixing said instrument unit onto said adapter, said instrument unit including at least one of a measuring device and a warning device, and a switch operating unit, said engaging means being formed of coupling members each disposed on said adapter and said case of said instrument unit, said coupling members of said adapter and said instrument unit being detachably engaged with each other, said coupling member of said adapter being a pair of slide rails, and said coupling member of said instrument unit being a pair of slide retainers fitted to said slide rails.

5,303,955

IN-LINE ROLLER SKATE GUARD

Kai G. Zurnamer, Manhattan Beach, Calif., assignor to Manhattan Beach Blading Company, Los Angeles, Calif.

Filed Feb. 25, 1993, Ser. No. 22,193

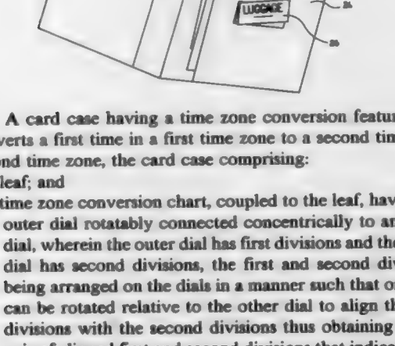
Int. Cl.[5] A63C *3/12*

U.S. Cl. 280—825 **22 Claims**

17. A wheel cover for an in-line roller skate having a series of in-line wheels, a wheel mounting frame and a boot above the wheels and secured to the frame, comprising:

a flexible generally envelope shaped cover body having left and right side panels, a bottom secured to the side panels and an open top, of a size to receive a series of skate wheels at the base of an in-line roller skate, and

securing means for closing the two side panels of the flexible body together so as generally to envelop the series of skate wheels,



whereby, with the wheel cover installed on a pair of in-line roller skates, a wearer can safely walk on inclines, steps or similar situations.

5,303,956

TIME ZONE CONVERSION CHART FOR CARD CASE, LUGGAGE TAG OR KEY CHAIN

Martin Zoland, Toorak, Australia, assignor to Cher (Intl.) Pty. Ltd., Australia

Filed Jul. 20, 1993, Ser. No. 95,670

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] B42D *15/00*

U.S. Cl. 281—31 **15 Claims**

1. A card case having a time zone conversion feature that converts a first time in a first time zone to a second time in a second time zone, the card case comprising:

a leaf; and

a time zone conversion chart, coupled to the leaf, having an outer dial rotatably connected concentrically to an inner dial, wherein the outer dial has first divisions and the inner dial has second divisions, the first and second divisions being arranged on the dials in a manner such that one dial can be rotated relative to the other dial to align the first divisions with the second divisions thus obtaining a first pair of aligned first and second divisions that indicates the first time in the first time zone and a second pair of aligned first and second divisions that indicates the second time in the second time zone.

5,303,957

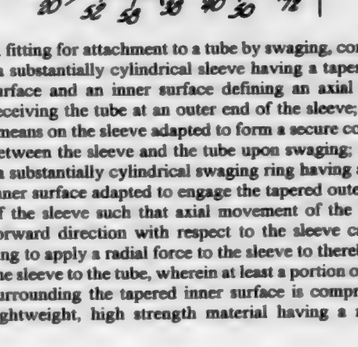
GREETING CARDS AND METHOD OF MAKING THEREOF

Robert Barreca, 306 Lamarck Dr., Snyder, N.Y. 14226, and Karen Hurley, 117 Chatham, Buffalo, N.Y. 14216

Filed Mar. 12, 1992, Ser. No. 849,951

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—117 **20 Claims**



1. A greeting card comprising message means in the form of a greeting, a face panel composed of opaque material and including means defining a pattern of cut-outs therein, and a panel of translucent material rearwardly of said face panel and having at least one light transmittable colored region aligned with said pattern of cut-outs to provide a stained-glass effect, the greeting card further comprising a protective back panel, said panel of translucent material being between said face panel and said back panel, and said back panel including cut-out means to allow unobstructed passage of light through said translucent material.

5,303,958

AXIALLY SWAGED FITTING WITH COMPOSITE SWAGING RING

Arthur J. Hyatt, Torrance; Bling-Kwang K. Hsieh, Garden Grove, and Charles W. Hensley, Jr., Anaheim, all of Calif., assignors to The Deutsch Company, Santa Monica, Calif.

Filed Oct. 31, 1991, Ser. No. 786,012

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—23 **29 Claims**

1. A fitting for attachment to a tube by swaging, comprising:

(a) a substantially cylindrical sleeve having a tapered outer surface and an inner surface defining an axial bore for receiving the tube at an outer end of the sleeve;

(b) means on the sleeve adapted to form a secure connection between the sleeve and the tube upon swaging; and

(c) a substantially cylindrical swaging ring having a tapered inner surface adapted to engage the tapered outer surface of the sleeve such that axial movement of the ring in a forward direction with respect to the sleeve causes the ring to apply a radial force to the sleeve to thereby swage the sleeve to the tube, wherein at least a portion of the ring surrounding the tapered inner surface is comprised of a lightweight, high strength material having a relatively

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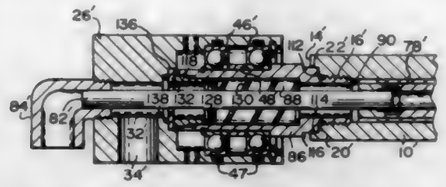
high tensile strength in a circumferential direction and a comparatively low tensile strength in an axial direction.

5,303,959

HIGH SPEED ROTARY JOINT

James A. Medsker, Lawton, Mich., assignor to The Johnson Corporation, Three Rivers, Mich.

Filed Feb. 1, 1993, Ser. No. 11,903
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—24 **9 Claims**



1. A high speed rotary joint for attachment to the end of a metal rotating journal having an axis of rotation and an end comprising, in combination, a threaded bore defined in the journal concentric to the journal axis and intersecting the journal end, a first circular recess reference surface defined on the journal intersecting the journal end and concentric to the journal axis, a second reference surface defined on the journal end radially and axially inward of said first surface and transversely related to and concentric to the journal axis, a rotary joint having a housing, at least one port defined in said housing, a tubular metal nipple having a axis and means rotatably mounting said nipple within said housing, said nipple being in communication with said port and having an outer end extending exteriorly from said housing, threads defined on said nipple outer end for mating with said journal threaded bore, a third circular reference surface defined on said nipple outer end concentric to said nipple axis complementary in configuration to said first reference surface, and a fourth reference surface defined on said nipple outer end radially inward and axially outward of said third surface and transversely related to and concentric to said nipple axis and complementary in configuration to said second reference surface, said first and third reference surfaces, and said second and fourth reference surfaces, respectively, engaging metal-to-metal upon said nipple outer end being fully threaded into said journal threaded bore to accurately co-align the axes of the journal and said nipple.

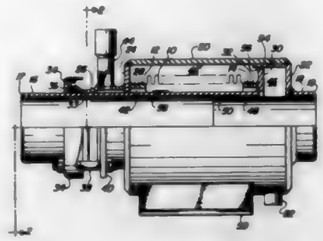
5,303,960

EXPANSION JOINT WITH LOW FRICTION PACKED SEAL

John T. Gaughan, Box 4131, Long Grove, Ill. 60047

Continuation-in-part of Ser. No. 671,008, Mar. 18, 1991, Pat. No. 5,232,251. This application Aug. 2, 1993, Ser. No. 101,382
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—93 **20 Claims**

1. An expansion joint comprising:
a first conduit extending from a first end of said joint;
a second conduit longitudinally aligned with said first conduit, extending from a second end of said joint and having an overlapping portion that surrounds said first conduit to form an annular opening between said first conduit and said second conduit;
a flexible sealing element having a first end fixed to said first conduit and a second end fixed to said second conduit;
a secondary seal for sealing said annular opening and permitting relative movement between said first conduit and said second conduit, said secondary seal comprising a combination of a packing material and a low friction surface on a portion of said first conduit in contact with said packing for relative sliding movement therewith said packing and surface together producing a maximum packing friction factor of 200 lbs/in of first conduit circumference, a sleeve portion of said second conduit adapted to receive said packing material, and a collar for urging said packing toward said sleeve, said packing forming a seal between



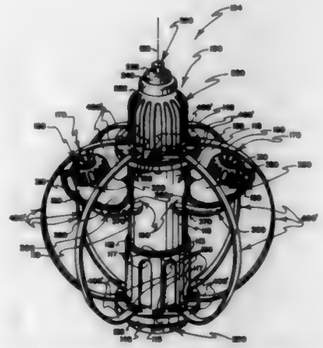
said first conduit and said sleeve portion of said second conduit, and;
means for urging said collar toward said sleeve portion, said packing, said sleeve portion and said low friction surface providing said expansion joint with a low break away force and low sliding friction.

5,303,961

SYSTEM FOR ENSURING READY ACCESS TO FIRE HYDRANT WITHOUT SACRIFICING ADJACENT PARKING SPACE FOR MOTOR VEHICLES

Nicholas B. Popil, 573 Woodlane Dr., Bay Village, Ohio 44140

Continuation-in-part of Ser. No. 779,634, Oct. 21, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,982
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—119 **17 Claims**



1. A system for enhancing utilization of parking space adjacent a fire hydrant wherein the fire hydrant has an upright tubular body and a laterally directed port along said body communicating at one end with the interior of the hydrant body and terminating at its other exterior end in coupling means for connection to a hose, comprising:
attachment means defining a tubular pipe elbow,
said elbow at one end thereof having coupling means for detachably securing the said elbow to said hydrant hose coupling means, and said elbow at the other end thereof having coupling means corresponding to those of said hydrant hose coupling means and such that said elbow may be coupled to the hydrant with said elbow other end directed upwardly at an angle,
said attachment means further including means defining a protective cage extending about said hydrant and said pipe elbow, said cage extending outwardly from said hydrant beyond said elbow, and,

means for connecting said protective cage to the hydrant, thereby to define a predetermined clearance space about said hydrant and said elbow pipe free from intrusion by large, objects, as automobiles, disposed proximate to said hydrant, and thus to facilitate access to said upwardly directed pipe other end in connecting a hose thereto irrespective of the proximity of such large objects.

5,303,962

CRIMPED HOSE COUPLING FOR REINFORCED HOSES

Eric D. Orcutt, Rockvale, and Steven R. Hoff, Franklin, both of Tenn., assignors to Dana Corporation, Toledo, Ohio

Filed Apr. 16, 1993, Ser. No. 47,082
Int. Cl.[5] F16L *33/207*
U.S. Cl. 285—259 **7 Claims**



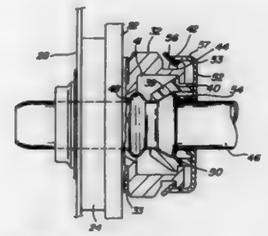
1. A hose coupling collar formed about an axis and having a first end through which a reinforced hose is inserted and a second end to which a nipple is attached, the collar being adapted to be crimped about a reinforced hose, wherein the reinforced hose has an outer layer of resilient material and an inner layer of resilient material with reinforcing material disposed therebetween and wherein the hose coupling collar includes a plurality of separate, non-spiral annular barbs for penetrating the outer layer and engaging the reinforcing layer upon crimping the hose coupling collar to urge the reinforced hose against a tubular extension of a nipple within the hose, the improvement comprising: for each barb a leading surface and a trailing surface joined by an edge surface, wherein the edge surface joins the leading and trailing surfaces and penetrates the outer layer of the hose, the leading surface and trailing surface converging toward one another and being joined to a cylindrical inner surface of the collar by cures of unequal radii and the reinforcing material being in the form of a non-spiral, steel mesh.

5,303,963

TUBE COUPLING WITH SECONDARY RETAINER CLIP

James McNaughton, Rochester, and David R. Helsing, Mt. Clemens, both of Mich., assignors to Bundy Corporation, Warren, Mich.

Filed Mar. 27, 1992, Ser. No. 858,826
Int. Cl.[5] A16L *21/08*
U.S. Cl. 285—319 **8 Claims**



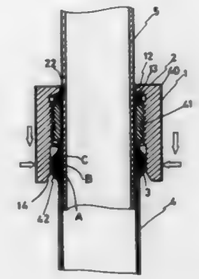
1. A tube coupling comprising:
a housing defining a bore extending axially inwardly into said housing, said bore having an entrance at an axially outer end of said bore, and an inner flange positioned axially inwardly of said entrance, wherein said inner flange is of greater radial dimension than said entrance;
a tube received within said bore, said tube having a first outer diameter over the majority of its axial length, and at least one upset portion of greater diameter than said first outer diameter;
a primary retainer positioned within said bore and having resilient legs extending between axially outer and axially inner ends, said axially outer ends of said legs abutting said inner flange to retain said primary retainer within said bore, and said axially inner ends of said legs abutting an axially outer surface of said at least one upset portion to retain said tube within said bore; and
a secondary retainer positioned axially outwardly of said primary retainer and having a radially outer clip portion and a radially inner leg portion, said clip portion engaging clip receiving means formed on an outer peripheral surface of said housing to retain said secondary retainer on said housing, and said leg portion abutting an axially outer surface of said at least one upset portion to retain said tube within said bore.

5,303,964

PIPE CONNECTOR

Lee M. Yi, Yen-Ping N. Rd., Taipei, Taiwan

Filed Jan. 25, 1993, Ser. No. 8,294
Int. Cl.[5] F16L *21/06*
U.S. Cl. 285—322 **1 Claim**



1. A pipe connector comprising: a thin wall main connecting pipe having a thickened upper side with an upper edge, said upper side formed with an inverted conical surface at said upper edge, a threaded portion at said upper side, and a raised annular portion formed in said thin wall extending radially outwardly from said main connecting pipe defining a groove on the interior of the pipe and located below said threaded portion; a leak-proof gasket mounted in said groove and formed with three different inner diameter portion; a locking nut provided with a surface having a smaller diameter than said raised annular portion, internal threads and a stop edge having a conical surface opposite to the inverted conical surface of said main connecting pipe; a split ring disposed between said locking nut and the inverted conical surface of said main connecting pipe and formed with internal threads; and a connecting pipe inserted into said main connecting pipe through said locking nut said locking ring deformed into biting engagement with said connecting pipe by coaction with said inverted conical section and said stop edge and said different diameter portions of said gasket deformed into sealing engagement with said connecting pipe by radial inward deformation of said raised annular portion by said locking nut surface as said locking nut is threaded onto said threaded portion.

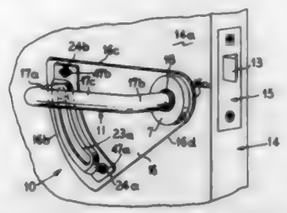
VOL 1161 ISS 3 AP 19 1994 UMI

5,303,965

VANDALISM-PROOF LEVER HANDLE SYSTEM FOR LOCKING OR LATCHING DEVICE

Ralph J. Meehan, Naperville, Ill., assignor to Folger Adam Company, Lemont, Ill.

Filed Aug. 21, 1992, Ser. No. 933,253
Int. Cl.[5] E05B *3/00*
U.S. Cl. 292—336.3 **12 Claims**



1. A vandalism-proof lever handle system for a building door, having a mounting surface comprising:

locking or latching device;

a U-shaped lever handle having first and second end portions;

means for attaching the second end portion for activating the locking or latching device as the lever handle is rotated about a rotational axis passing through the second end portion;

a retaining channel extending along a radial arc segment of a defined length adjacent the first end portion of the lever handle, said retaining channel having a ceiling portion for outward spacing from and facing said mounting surface and an arc-like slot in said ceiling portion defined by opposing arc-like slot side walls;

means for moveably securing the first end portion of the lever handle through the arc-like slot to an interior of the retaining channel, said arc-like slot in a region of opposite ends of the arc-like slot defining stop points for stopping rotational movement of the lever handle, and said means for moveably securing also restraining the first end portion of the lever handle to prevent rotational movement beyond said stop points and for restraining the lever handle against horizontal, vertical, inwardly and outwardly directed forces applied to the lever handle;

said means for moveably securing comprising a shoulder member having a first cylindrical relatively large diameter portion positioned within the interior of the retaining channel to be between said ceiling portion and said mounting wall, a connecting relatively small diameter cylindrical portion passing through the retainer channel slot between said opposing slot side walls, and means for attaching the relatively smaller diameter portion at an end face of said first end portion of said lever handle; and

mounting slots in the retaining channel for adjustably mounting the retaining channel relative to the first end portion of the lever handle so as to adjust a radial distance of the arc-like slot from the lever handle to the second end portion to permit accurate alignment between the arc-like slot and the first end portion and to permit placement of the arc-like slot dependent upon a length of the lever handle being employed.

5,303,966

TORQUE CONVERTER RETAINING TRANSMISSION TRANSPORT DEVICE

Larry M. Robinson, P.O. Box 354, Magnolia, Tex. 77355

Filed Sep. 20, 1991, Ser. No. 763,454
Int. Cl.[5] B65G *7/12*
U.S. Cl. 294—15 **7 Claims**

1. A device for retaining a torque converter within a bell housing of a transmission comprising:

a fixing member extending across the bell housing;

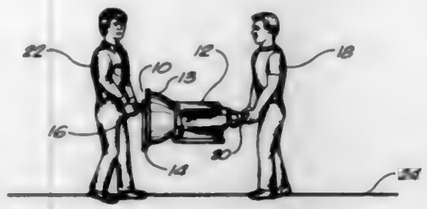
means for attaching said fixing member across the bell housing, said means for attaching comprising;

a first elongated slot formed through said fixing member adjacent an end of said fixing member;

a second elongated slot formed through said fixing member adjacent an opposite end of said fixing member;

a first threaded member extending through said first elongated slot and engaging an opening on the bell housing; and

a second threaded member extending through said second



elongated slot and engaging another opening on the bell housing, said first and second threaded members for affixing said fixing member to the bell housing; and

an abutment member connected to said fixing member and extending for an adjustable distance therefrom, said abutment member having an end surface abutting the torque converter so as to fix a position of the torque converter within the bell housing, said abutment member extending through a third elongated slot formed through said fixing member, said abutment member positioned generally centrally between said first and second elongated slots.

5,303,967

GOLF BALL RETRIEVING DEVICE

Irvine L. Dubow, 5901 Almaden Dr., Naples, Fla. 33999

Filed Feb. 22, 1993, Ser. No. 20,348
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **1 Claim**



1. A device for retrieving a golf ball from a water hole on a golf course, comprising

a handle having extensible segments,

a housing carrying a ball retrieving member at one end of said handle,

said member comprising a cage having an open side and consisting of a plurality of forwardly diverging prongs having inwardly angled ends,

said housing having a transverse slot therein,

a block member frictionally slidable in said slot extending outwardly thereof,

said block member having a front end portion including diverging grooves to receive said prongs,

said housing having a front end wall having diverging holes therein corresponding to said grooves,

a vertical bore in each groove to receive corresponding inner angled ends of said prongs,

means in said slot to hold said block member in any given position therein,

said means comprises a central maximum 9½ mm. height portion of said slot and a height of 8 mm. spaced inwardly from either end of said 9½ mm. height, and

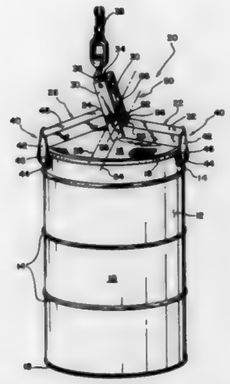
said block member has a height in excess of said 8 mm. height for frictional engagement in said slot in moving therein.

5,303,968

LOCKING MECHANISM FOR BARREL LIFTING APPARATUS

Ralph D. Trine, Fremont, Ind., assignor to Vestil Manufacturing Corporation, Angola, Ind.

Filed Feb. 26, 1993, Ser. No. 23,349
Int. Cl.[5] B66C *1/66*
U.S. Cl. 294—106 **12 Claims**



1. An apparatus for gripping and lifting a cylindrical barrel having a chime at one longitudinal end thereof, said apparatus including a first arm having a chime gripping arch attached at one end thereof and having a lifting portion at the other end thereof, said lifting portion being at an obtuse angle with respect to said first arm, a second arm having a chime gripping arch attached at one end thereof and pivotally connected at the other end thereof to said lifting portion at an acute angle with said first arm when said chime gripping arches are placed on said barrel longitudinal end, whereby placement of an apparatus on said barrel longitudinal end with said gripping arches on said barrel and pulling said lifting portion away from the barrel causes said chime gripping arches to be forced towards one another and towards said barrel, wherein the improvement comprises means for selectively locking said first and second arms with respect to each other and preventing radial movement thereof and of said chime gripping arches in a direction away from the barrel and, wherein said means for locking comprises a locking arm connected to said first arm at one end thereof and engagement means at the other end thereof for selectively engaging said other end of said second arm and preventing said radial movement relative to said first arm.

5,303,969

STORAGE DEVICE FOR A PICKUP TRUCK

Larry W. Simnacher, 1912 Sandlewood, Bay City, Tex. 77404-2217

Filed May 11, 1993, Ser. No. 59,306
Int. Cl.[5] B60R *11/06*
U.S. Cl. 296—37.6 **20 Claims**

1. A storage device for a bed of a pickup truck, the bed having a side wall with a wheel well formed therein, the storage device comprising:

a body having a storage area therein, said body having a door affixed thereto, said door for allowing access to said storage area; and

a fluid-activated lift means attached to said body at opposite ends of said body, said lift means for moving said body between a first position in juxtaposition to the bed of the truck and a second position above the side wall of the



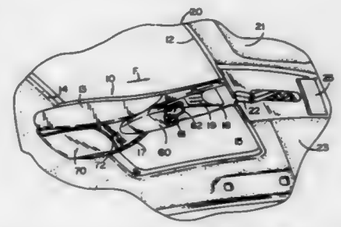
truck, said door positioned above the side wall in the second position.

5,303,970

OVERHEAD CONSOLE FOR A VEHICLE WITH A SUNROOF

Nathan W. Young; Robert B. Bieri; David B. Busch, all of Holland; Scott S. Bainbridge, Byron Center, and James T. Hotary, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Dec. 3, 1992, Ser. No. 985,621
Int. Cl.[5] B60R *7/00*; B60J *7/00*
U.S. Cl. 296—37.7 **22 Claims**



6. An accessory mounting system for mounting an accessory across an opening in a vehicle comprising:

a base including at least one vehicle accessory mounted thereto; and

a pair of spaced mounting sockets facing in opposed directions for engaging opposite edges of the opening, wherein said mounting sockets are adjustable with respect to one another with one of said sockets mounted in fixed relationship to said base and the other of said sockets adjustably mounted to said base, wherein said base includes a channel and wherein said other socket is mounted to a rail which is slidably mounted to said channel.

5,303,971

TAILGATE RELEASE HANDLE SECURITY DEVICE

Roger L. Johnsen, Houston, Tex., and Dimiter S. Zagoroff, Cambridge, Mass., assignors to Steadfast Corporation, Chelsea, Mass.

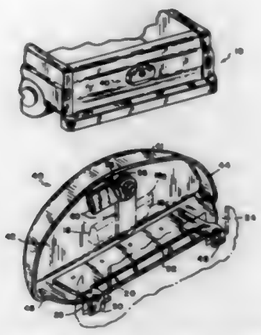
Filed Apr. 30, 1992, Ser. No. 876,868
Int. Cl.[5] B62D *33/037*
U.S. Cl. 296—50 **12 Claims**

1. A tailgate release handle security device for attachment to a tailgate that has an outer panel spaced apart from an inner panel, wherein said outer panel is indented to form a recess having a back wall and peripheral walls, the back wall having a pair of vertical apertures horizontally spaced from each other, each of said apertures accommodating an arm, said arms being connected to a latching mechanism and extending through said apertures to attach to a tailgate release handle having an upper edge and a bottom edge, the handle and the arms being capable of rotation about a horizontal axis to release the latching mechanism and thereby to permit opening of the

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tailgate, said handle moving upward and outward from said outer panel during said rotation such that the lateral outward component of the movement of the upper edge of the handle is less than that of the bottom edge, said security device comprising:

A. a cover shaped to accommodate the tailgate release handle;



B. means for hooking the lower portion of said cover to the tailgate; and

C. locking means mounted in said cover, said locking means having a locking dog which, when it is in a locked position, bears against the back of the handle substantially at said upper edge thereof.

5,303,972

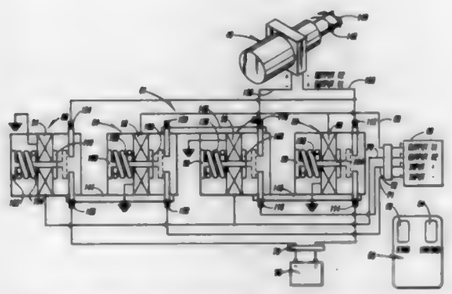
REMOTE CONTROL FOR BOX TOP CLOSURE

Merle J. Heider, 203-12th St. SW.; Dale J. Heider, 1108 Eighth Ave. SW.; Leon J. Heider, 1107 Third Ave. SW., and Craig J. Heider, 812 S. Taft St., all of Humboldt, Iowa 50548

Filed Jun. 4, 1992, Ser. No. 893,651

Int. Cl.[5] B60P *7/04*

U.S. Cl. 296—98 **3 Claims**



1. A top closure for a rectangular box having a pair of opposite end walls and a pair of opposite sidewalls, said box having a top opening adjacent the upper edges of said end and sidewalls, said top closure comprising:

a flexible sheet member having first and second opposite edges and being sized to fit in covering relation over said top opening, said first edge of said sheet member being attached to one of said sidewalls adjacent said upper edge thereof;

an elongated shaft having opposite ends, said shaft being attached to said second edge of said sheet member with said sheet member being wound around said shaft, said shaft being capable of turning in a first direction for unwinding said sheet member and being capable of turning in a second direction for winding said sheet member around said shaft;

a reversible motor connected to said shaft for causing rotation thereof, said motor having first and second terminals connectable to positive and a negative sources respectively of electricity for driving said shaft in said first direction, and being responsive to reversal of connection of said positive and negative sources of electricity to said first and second terminals of said motor for driving said shaft in said second direction;

an electrical power source having a positive terminal and a negative terminal;

electrical control means comprising first, second, third, and fourth relays, each having a relay switch associated therewith and each being normally in a deactuated condition wherein said relay switch associated therewith is in an open position, each of said relays being actuatable to cause said relay switch associated therewith to move to a closed position;

said relay switch associated with said first relay being connected between said positive terminal of said power source and said first terminal of said reversible motor;

said relay switch associated with said second relay being connected between said positive terminal of said power source and said second terminal of said reversible motor;

said relay switch associated with said third relay being connected between said negative terminal of said power source and said second terminal of said reversible motor;

said relay switch associated with said fourth relay being connected between said negative terminal of said power source and said first terminal of said reversible motor;

a remote transmitter capable of selective transmission of first and second signals;

a receiver connected to said first, second, third, and fourth relays, said receiver having means responsive to reception of said first signal from said transmitter to cause actuation of said first and third relays and closing of said relay switches associated therewith, and having means responsive to reception of said second signal from said transmitter to cause actuation of said second and fourth relays and closing of said relay switches associated therewith, whereby said first and second terminals of said reversible motor will be connected to said positive and negative terminals respectively of said power source in response to said receiver receiving said first signal, and said first and second terminals will be connected to said negative and positive terminals respectively, in response to said receiver receiving said second signal.

5,303,973

FRONT BODY STRUCTURE OF VEHICLE

Yoshio Fujii, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 852,961, Mar. 17, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 82,521

Claims priority, application Japan, Oct. 15, 1991, 3-265724; Mar. 28, 1992, 3-064961

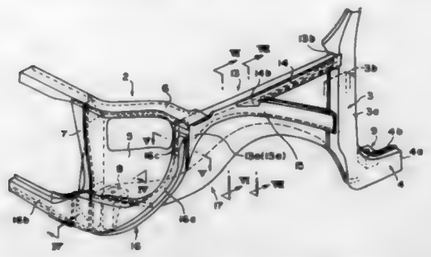
Int. Cl.[5] B62D *25/08*

U.S. Cl. 296—194 **3 Claims**

1. A front body structure of a vehicle formed separately from a chassis of the vehicle and mounted thereon, said front body structure comprising

a shroud panel which forms a side portion of a front portion of the front body structure, a wheel apron having a front portion thereof connected to the shroud panel, a body strength member which is connected to a rear portion of said wheel apron, an apron reinforcement extending in a longitudinal direction of the vehicle having a front portion thereof connected to said body strength member, a first mounting means for mounting the front body structure on the chassis, said first mounting means being provided in a lower portion of the shroud panel, a second mounting means for mounting the front body structure on the chassis, said second mounting means being provided near a connection between said body strength member and said wheel apron, and a frame extending along an outer side edge portion of said shroud panel to said body strength member,

said frame comprising a member which is connected to the shroud panel to form a closed cross section in conjunction with the shroud panel along the outer side edge portion of



the shroud panel, and a panel member having a front portion connected to the shroud panel and a rear portion connected to the body strength member,

said panel member constituting a part of the apron reinforcement and being connected to the wheel apron to form a closed cross section in conjunction with the wheel apron,

said frame being connected to a connection between said shroud panel and said apron reinforcement at an intermediate portion thereof.

5,303,974

TOP SLIDING ROOF FOR AUTOMOBILES

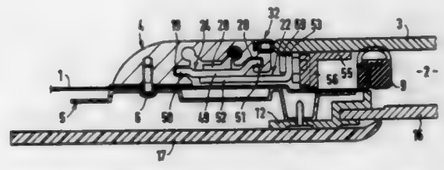
Albert Schlapp, Dreieich; Günter Pfeifer, Niedernberg; Ralf Heindl, Goldbach, and Bernhard Scheuermann, Mühlheim, all of Fed. Rep. of Germany, assignors to Rockwell Golde GmbH, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,336

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200726

Int. Cl.[5] B60J *7/047*

U.S. Cl. 296—216 **12 Claims**



1. Top sliding roof for automobiles, comprising a sliding lid slidably guided above a fixed roof surface by guide shoes on lateral guide rails, which in its closed position overlaps a roof opening on all sides and is slidable over the rear, fixed roof surface to expose the roof opening, wherein the sliding lid is surrounded at front and sides by an outer frame, opposite which is a counter-frame mounted underneath the fixed roof surface, and wherein a sealing profile bears from below against the sliding lid for the purpose of sealing the roof opening, characterized in that the outer frame (**4**) is constructed in one piece with integrated guide grooves and possesses a downwardly and inwardly open profiled channel (**18**) with said guide grooves (**19, 20**) disposed alongside each other for the guide shoes (**23, 24**), and that the outer frame (**4**) lies with its upper surface (**31**) flush with the upper surface of the sliding lid (**3**), with the interposition between them of an edge gap seal (**32**).

5,303,975

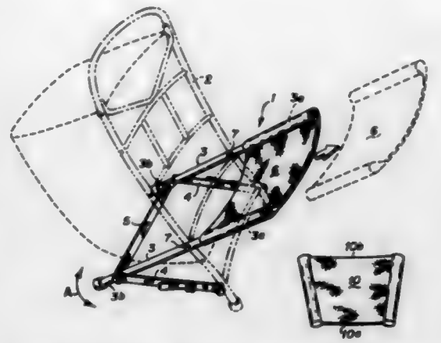
CONVERTIBLE BACKPACK CHAIR

Simon Asato, 328 Byron St., Palo Alto, Calif. 94301

Filed Jan. 24, 1992, Ser. No. 825,505

Int. Cl.[5] A45F *4/02*

U.S. Cl. 297—129 **10 Claims**



1. An improved chair conversion device for a backpack of the type having an external H-bar frame configuration which includes a pair of generally vertical tubular left and right side backpack frame members each side frame member having a plurality of spaced apart transverse through-holes disposed along a longitudinal axis thereof for receiving clevis pins or like hardware for retaining pack and back rest support members, the improvement comprising in operative combination:

a) a pair of generally straight tubular side members each of which being pivotally connected adjacent a middle portion thereof to existing transverse through-holes of corresponding left and right backpack frame side members of a provided backpack, said tubular side members swingable through an arcuate range of motion between a first generally upright, storage position and a second open, use position, each of said tubular side members includes:

i) a first forward end portion defining a chair seat side support member when said tubular side members are moved to said use position;

ii) a second rearward end portion defining a chair rear leg support member when said tubular side members are moved to said use position;

b) a pair of length adjustable side strap members, each of said side strap members connecting each of said rear leg support members to a corresponding bottom side portion of said backpack frame side members to form left and right side triangular leg supports for said backpack chair when said tubular side members are moved to said use position;

c) a removable transverse strap member connected to and extending between each of said chair rear leg support members;

d) a flexible seat member removably attachable to and for extending between said chair seat side support members when said tubular members are pivoted to said use position; and wherein

i) said flexible seat member is generally trapezoidal in plan view having a first short side edge and a second longer side edge; and

ii) said first short side edge is oriented adjacent said backpack and said second longer side edge forms a leading chair seat edge when said seat member is attached to said chair seat side supports to permit a substantially horizontal position for a user's legs when seated in said backpack chair.

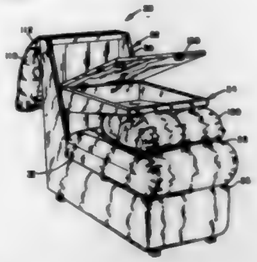
VOL 1161 ISS 3 APR 19 1994 UMI

5,303,976

SEATING UNIT WITH CONVERTIBLE STORAGE TABLE

Charles B. Nobile, Belden, and Robert E. Cook, New Albany, both of Miss., assignors to Mohasco Upholstered Furniture Corporation, Fairfax, Va.

Filed Aug. 20, 1992, Ser. No. 933,021
Int. Cl.[5] A47B 83/02
U.S. Cl. 297—146 17 Claims



1. A multi-functional furniture component, comprising:
a frame, the frame having a seat portion with a generally upwardly directed, upholstered occupant support surface and a backrest portion substantially upstanding from adjacent an edge of the seat portion;
first motion means connected to the frame;
a conversion member connected to the first motion means and having a first, upholstered side and a second, substantially planar having a tabletop-like surface side;
and wherein actuation of the first motion means enables at least a partially arcuate movement of the conversion member between a first orientation characterized by a substantially upstanding first side of the conversion member adjacent the backrest portion of the frame and in a position to serve as a backrest for an occupant seated on the occupant support surface and a second orientation characterized by a generally horizontal and upward facing second side of the conversion member in a position at least partially overlying the occupant support surface and wherein the backrest portion of the frame includes a pocket receptive of the conversion member in the first orientation and further includes an upholstery roll, generally horizontally oriented and connected to the backrest adjacent the upper terminus of the backrest by a live hinge and the upholstery roll connected to the backrest portion partially covers the pocket in a first orientation and exposes the pocket in an second orientation.

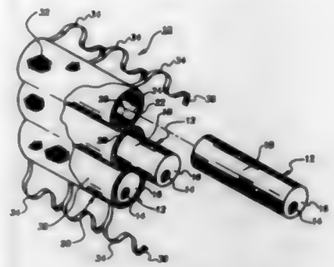
5,303,977

FLUID CUSHION SYSTEM

Joel L. Sereboff, 2215 Millridge Rd., Owings Mills, Md. 21117

Continuation-in-part of Ser. No. 847,169, Apr. 2, 1986, Pat. No. 4,761,011. This application Jun. 8, 1988, Ser. No. 204,001
The portion of the term of this patent subsequent to Aug. 2, 2005 has been disclaimed.
Int. Cl.[5] A47C 7/02
U.S. Cl. 297—230.1 1 Claim

1. A fluid cushion system comprising:
(a) at least one fluid casing member adapted to be at least partially filled with a liquid, said fluid casing member being formed of a material composition impervious to said liquid, said fluid casing member being formed in a substantially rectangular bag like contour, said fluid casing member including an internal fluid volume being interrupted in fluid communication, said resilient fluid casing member further including a pair of non-fluid contained sections having a longitudinally extended fluid communication conduit passing therebetween, said fluid communication conduit having a varying cross-sectional area dimension in said longitudinal direction for providing relief of pressure sensitive areas of a user; and,
(b) a resilient housing for providing individual structural support for said at least one fluid casing member substantially independent of a positional orientation thereof, said fluid casing member being received within said resilient housing, said fluid casing member being insertable and retractable from said resilient housing, said fluid cushion



system being adapted to be removably secured to a base surface, said resilient housing including means for structural support defined by housing walls being formed of a flexible open cell material composition in one piece formation.

5,303,978

REPLACEMENT SEAT AND BACK

Gordon W. Murrey, Torrance, Calif., assignor to GKM Int'l, Redondo Beach, Calif.

Filed Dec. 18, 1992, Ser. No. 993,131
Int. Cl.[5] A47C 7/14
U.S. Cl. 297—230.12 4 Claims



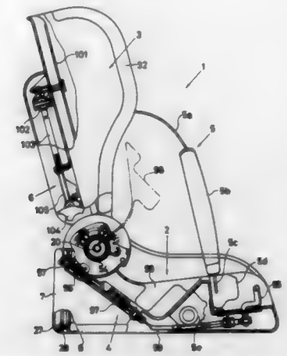
1. A covering for a chair seat and back comprising:
a unitary construction having a seat and a back;
an arcuate portion integrally connecting said seat with said back so that said back projects substantially normal to said seat;
said seat having a flat portion with a downwardly depending peripheral flange defining a space for the chair seat;
said back having an internal pocket cavity defined by a pair of spaced-apart front and rear panels with side panels securing said front and rear panels together to create an entrance leading into said pocket cavity adjacent to said arcuate portion; and
connection means carried on said peripheral flange for detachably connecting said seat; and
wherein said side panels and said peripheral flange are continuous at said arcuate portion.

5,303,979

APPARATUS FOR ADJUSTING FASTENING POSITION OF FASTENING MEANS IN SEAT BELT DEVICE

Toshiro Koyanagi; Yayoi Hashimoto, both of Hikone, and Haruyuki Takagi, Tokyo, all of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,412
Claims priority, application Japan, Dec. 5, 1991, 3-322099
Int. Cl.[5] A47D 15/00
U.S. Cl. 297—250.1 4 Claims



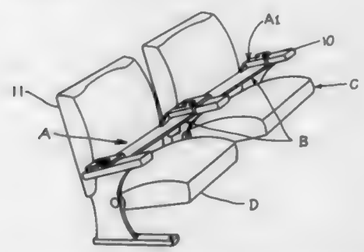
1. An infant-restraining protective seat having at least a seat portion for seating an infant, said protective seat being secured to a seat of a vehicle by fastening, within said seat portion, fastening means of a seat belt device installed in the seat of the vehicle and having at least said fastening means, such as a tongue and buckle, at least a portion of an upper part of said seat portion being tiltably provided so as to be capable of opening the interior of said seat portion.

5,303,980

CHILD THEATER BOOSTER SEAT

Terry W. Young, 1214 Moorehead Pl., Pendleton, S.C. 29670

Filed Jul. 14, 1993, Ser. No. 92,389
Int. Cl.[5] A47D 1/10
U.S. Cl. 297—251 20 Claims



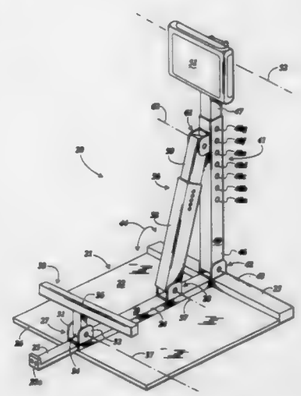
1. An assembly of children theater booster seats for facilitating the viewing of movies and the like by children or diminutive persons for use in a row of adult theater seats having spaced apart arm rests, said children theater booster seat assembly comprising:
a first child theater booster seat having a first seat platform for seating a first child;
a first plurality of side walls extending upwardly from opposing ends of said first seat platform;
a first plurality of support arms extending generally outward from said first plurality of side walls for overlapping said arm rests of a first adult theater seat and supporting said first seat platform whereby said first seat platform is suspended within said space separating said arm rests;
a second child theater booster seat having a second seat platform for seating a second child;
a second plurality of side walls extending upwardly from opposing ends of said second seat platform;
a second plurality of support arms extending generally outward from said second plurality of side walls for overlapping said arm rests of a second adult theater seat and supporting said second seat platform whereby said second seat platform is suspended within said space separating said arm rests;
a securing means for securing said first child theater booster seat with said second child theater booster seat.

5,303,981

STANDING AID FOR USE WITH A CHECKOUT COUNTER

William D. Wilder, and Roger D. Brown, both of Sylacauga, Ala., assignors to Madix Inc., Goodwater, Ala.

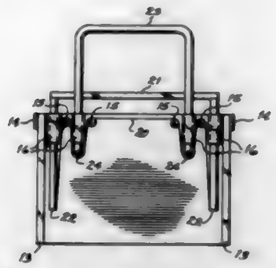
Continuation of Ser. No. 695,587, May 3, 1991, Pat. No. 5,199,763. This application Apr. 5, 1993, Ser. No. 42,830
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] A47C 1/02
U.S. Cl. 297—338 19 Claims



1. A standing aid for assisting an operator while standing on a floor, comprising:
a base frame comprising an elongated member having generally opposing first and second ends;
mounting means for securing said base frame in close proximity to said floor and for opposing tilting forces exerted against said base frame by said operator, said mounting means being situated substantially at said second end;
a first stanchion pivotally mounted to said base frame between said first and second ends, said first stanchion including a lower portion and an upper portion extendably mounted to said lower portion, said first stanchion capable of forward pivotal adjustment;
a second stanchion pivotally mounted at a lower portion thereof to said base frame substantially at said second end, said second stanchion including an upper portion extendably mounted to said lower portion, said second stanchion pivotally mounted at one end thereof to said first stanchion; and
a buttocks cushion pivotally mounted to said upper portion of said first stanchion.

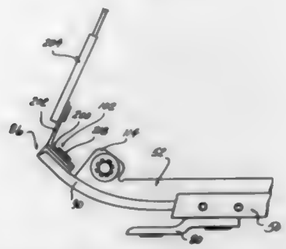
VOL 1161 ISS 3 APR 19 1994 UMI

5,303,982
USER-OPERATED SEAT UPLIFT APPARATUS
Gary L. Johnston, P.O. Box 183, Cowarts, Ala. 36321
Filed Sep. 13, 1991, Ser. No. 759,233
Int. Cl.[5] A47C *3/32*
U.S. Cl. 297—339 **30 Claims**



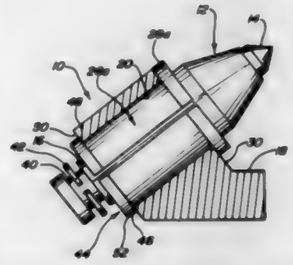
1. A seat lift apparatus, comprising:
a frame;
a seat mounted to a first member which is slidably coupled to said frame to allow movement of said seat in a substantially vertical direction with respect to said frame;
a hand engagement handle mounted to a second member for receiving downward force from the user, the second member also being slidably coupled to said frame to move independently of said first member in a substantially vertical direction with respect to said frame;
a power translating mechanism operatively connected between said first and second members for translating the downward force applied by the user on said hand engagement handle into an upward force on the seat thereby assisting the user into a raised position.

5,303,983
ROTATABLE SEAT BELT BUCKLE MOUNTING BRACKET FOR VEHICLE SEAT ADJUSTER
Derek K. Gauger, Ann Arbor; Stephen D. Crawford, Northville, and Jeffrey D. Ineich, Waterford, all of Mich., assignors to ITT Corporation, New York, N.Y.
Filed Apr. 30, 1992, Ser. No. 876,616
Int. Cl.[5] B60R *22/26*
U.S. Cl. 297—472 **12 Claims**



1. A track assembly for supporting a seat of a vehicle on the floor pan of the vehicle, the vehicle including a fixed seat belt buckle, the track assembly comprising:
a lower track adapted to be stationarily anchored to a floor pan of a vehicle;
an upper track adapted to support a vehicle seat, the upper track movably mounted on the lower track and having opposed first and second ends;
means for adjusting the upper track relative to the lower track for fore and aft movement of the upper track with respect to the lower track; and
seat belt buckle attachment means, mounted on the second end of upper track, for attaching a fixed seat belt buckle to the upper track, the seat belt buckle attachment means including:
a member having first and second angularly disposed legs;
the second leg adapted to be attached to a fixed seat belt buckle; and
means for fixedly attaching the first leg to the second end of the upper track in a first, fixed, normal operating position and for allowing rotation of the member to a second position relative to the upper track under a predetermined force applied to the member through the fixed seat belt buckle causing an upward bending of the second end of the upper track to place the first and second legs of the member in tension.

5,303,984
CUTTING BIT HOLDER SLEEVE WITH RETAINING FLANGE
Randall W. Ojanen, Bristol, Tenn., assignor to Valenite Inc., Troy, Mich.
Continuation-in-part of Ser. No. 976,741, Nov. 16, 1992. This application Jan. 22, 1993, Ser. No. 7,692
Int. Cl.[5] F21C *35/18*
U.S. Cl. 299—86 **3 Claims**

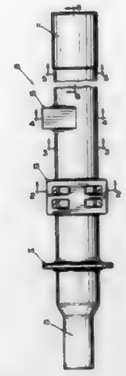


1. A bit holder for rotatably mounting a cutting bit, said cutting bit comprising: an elongated member having a cutting element at one end thereof and a substantially cylindrical shank at the other end thereof; said bit holder comprising a body having an axial bore therein having at least one given diameter and a particular inside surface configuration; and a non-rotatable, diametrically compressible sleeve mounted in said axial bore, said sleeve being mounted prior to the insertion of said cutting bit, a collar at one end thereof having a diameter much larger than said given diameter whereby said collar engages a face of said body and limits the axial penetration of said sleeve into said axial bore, and additional retaining means formed at an opposite end, said retaining means extending beyond said bore, said sleeve having an outer surface configuration intimately matching said particular inside configuration and substantially in engagement therewith over its length, said sleeve having a diameter larger than said given diameter before insertion into said axial bore and a compressed diameter substantially matching said given diameter after insertion into said axial bore, said sleeve being provided with an axial slot which runs its entire length, said slot having a width which decreases upon insertion into said axial bore and provides said compressed diameter.

5,303,985
CAST ONE-PIECE AXLE HOUSING
Mark C. Barnholt; John Oswald, and Ronald I. Rhoads, all of Fort Wayne, Ind., assignors to Dana Corporation, Toledo, Ohio
Filed Sep. 23, 1991, Ser. No. 763,901
Int. Cl.[5] B60B *35/08*
U.S. Cl. 301—124.1 **25 Claims**

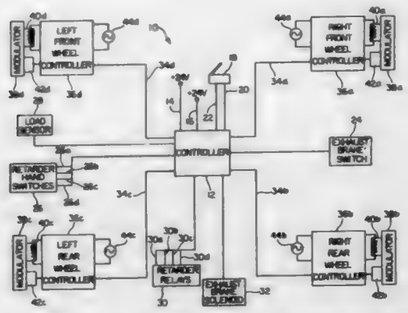
1. An axle housing tube comprising:

a hollow body having an upper portion, a lower portion, and a side portion;
a first portion defined in said side portion of said body having a first wall thickness; and



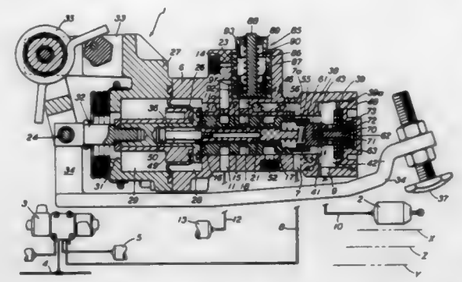
a second portion defined in one of said upper and lower portions of said body having a second wall thickness, said second wall thickness being greater than said first wall thickness.

5,303,986
ELECTROPNEUMATIC BRAKE CONTROL WITH RETARDER APPORTIONING
Patrick J. VanDeMotter, North Olmsted, Ohio, and Edward G. Shaw, Portishead, England, assignors to Allied-Signal Inc., Morristown, N.J. and Bendix Limited, Bristol, England
Filed Feb. 1, 1993, Ser. No. 12,075
Int. Cl.[5] B60T *13/74, 8/18*
U.S. Cl. 303—3 **18 Claims**



1. Apparatus for controlling retardation of a vehicle having a settable vehicle retarder separate from a vehicle fluid pressure braking system, said braking system including a fluid pressure operated brake controlling a wheel of the vehicle controlled by said retarder comprising operator-actuated means for generating a braking request signal as a function of the braking level requested by the vehicle operator, modulating means for setting a brake pressure level in said brake as a function of a brake pressure control signal, said retarder being set by a retarder control signal, and a microprocessor receiving said request signal and generating said brake pressure control signal as a function of the difference between said braking request signal and said retarder control signal.

5,303,987
EMPTY/LOAD CHANGEOVER VALVE FOR RAILWAY CAR
Albert A. McKay, Stoney Creek, Canada, assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Jul. 12, 1993, Ser. No. 88,953
Int. Cl.[5] B60T *8/18*
U.S. Cl. 303—22.2 **10 Claims**



1. For use in a railway vehicle brake control system including a brake pipe charged to a certain chosen pressure, a brake cylinder device, a brake control valve device via which fluid under pressure is supplied to said brake cylinder device and released therefrom in accordance with variation of the fluid pressure in said brake pipe, and sprung and unsprung members, an empty/load changeover valve device mounted on one of the sprung and unsprung members of said vehicle comprising:
(a) load sensing means engageable with the other of said sprung and unsprung members for measuring the distance therebetween to provide an empty setting and a load setting of said changeover valve device depending upon said distance being greater or less than a predetermined distance corresponding to the changeover point between said empty and load settings;
(b) an inlet connected to said control valve device and an outlet connected to said brake cylinder device;
(c) supply valve means including a valve member between said inlet and outlet via which fluid under pressure is conducted;
(d) a balance piston to which said valve member is connected having equal opposing pressure areas subject to the fluid pressure effective at said inlet in said load setting of said changeover valve;
(e) an equalizing reservoir;
(f) empty/load valve means operated by said load sensing means for de-pressurizing one of said opposing pressure areas in said empty setting of said changeover valve device to establish a differential pressure across said balance piston in the direction of closure of said valve member, said empty/load valve means in said empty setting further connecting said inlet to said equalizing reservoir; and
(g) regulating valve means for interrupting said fluid pressure communication between said inlet and said equalizing reservoir when the fluid pressure at said inlet is less than a predetermined value.

5,303,988
ANTI-LOCK CONTROL METHOD AND APPARATUS
Satomi Okubo, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 694,763, May 2, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 974,836
Claims priority, application Japan, May 9, 1990, 2-117684
Int. Cl.[5] B60T *8/62*
U.S. Cl. 303—103 **8 Claims**

1. An anti-lock control apparatus for preventing locking of automotive wheels during braking by using a plurality of brake

VOL 1161 ISS 3 APR 19 1994 UMI

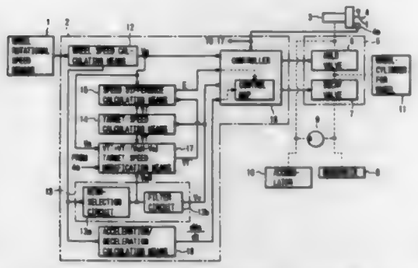
hydraulic pressure control channels for all said automotive wheels, comprising:

first circuit means for sensing wheel speeds of said automotive wheels;

second circuit means for setting system speeds for said control channels based on said wheel speeds;

third circuit means for setting an estimated vehicle speed based on a highest wheel speed among said wheel speeds;

fourth circuit means for setting a target speed to track said estimated vehicle speed with a predetermined speed difference therefrom;



fifth circuit means for determining if a speed difference exists between each of said systems speeds and said highest wheel speed when braking is initiated and modifying said target speed when a speed difference exists, said modification being defined as lowering said target speed by said speed difference; and

sixth circuit means for alternately increasing and decreasing brake hydraulic pressure to converge said system speed to said target speed through said control channels,

wherein said fifth circuit means continues to modify said target speed while said sixth circuit means is in operation.

5,303,989

VEHICLE DYNAMIC CHARACTERISTIC CONTROL APPARATUS

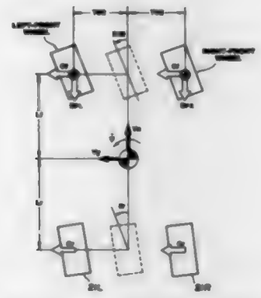
Yoshiki Yasuno, and Ken Ito, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 750,580, Aug. 27, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 106,774

Claims priority, application Japan, Sep. 18, 1990, 2-246027

Int. Cl.[5] B60K *31/00*; **B60T** *8/64*

U.S. Cl. 303—111 **6 Claims**



1. A vehicle dynamic characteristic control apparatus for use with an automotive vehicle having a steering wheel supported on a pair of front wheels and a pair of rear wheels, the apparatus comprising:

a first unit for controlling a steering angle of one of the wheel pairs;

a second unit for controlling braking forces to be applied to left and right wheels of at least one of the wheel pairs;

sensor means for sensing the steering angle of the steering wheel and vehicle speed of the vehicle and for providing sensor signals indicative of the sensed steering angle and the sensed vehicle speed; and

a third unit coupled to the sensor means for controlling the first and second units, the third unit including first means for calculating a target value for a dynamic parameter related to a motion of the vehicle based upon the sensed steering angle and vehicle speed, the first means controlling the first unit to bring the dynamic parameter to the target value, and second means operable in the presence of vehicle braking for calculating changes in cornering powers of the respective wheel pairs with respect to the cornering powers obtained in the absence of vehicle braking and for calculating a difference between the braking force applied to the left wheel and the braking force applied to the right wheel based upon the calculated cornering power changes, the second means controlling the second unit to provide the calculated difference so as to cancel an influence of the cornering power changes on the dynamic parameter.

5,303,990

BRAKE FLUID PRESSURE CONTROL APPARATUS

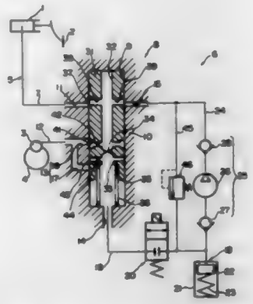
Hiromi Ando, and Satoru Suga, both of Yamanashi, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Division of Ser. No. 904,988, Jun. 26, 1992. This application Mar. 31, 1993, Ser. No. 40,658

Claims priority, application Japan, Jul. 3, 1991, 3-163118; Nov. 7, 1991, 3-291772; Dec. 16, 1991, 3-332296; Mar. 5, 1992, 4-48917; Mar. 5, 1992, 4-48918

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—117.1 **5 Claims**



1. A brake fluid pressure control apparatus possessing anti-skid control function which, in order to perform anti-skid control of vehicles, carries out in response to the behavior of the vehicle wheels, pressure decrease and pressure increase of brake fluid pressure supplied from a master cylinder, connecting to a brake pedal, to a wheel cylinder which performs braking of the vehicle wheels, said brake fluid pressure control apparatus provided between said master cylinder and said wheel cylinder and comprising:

a normally closed valve which opens when brake fluid pressure decreases and closes when brake fluid pressure increases,

a reservoir for receiving brake fluid during brake fluid pressure decrease,

a pump which intakes brake fluid inside of said reservoir and discharges this brake fluid,

a flow valve comprising:

A. a casing comprising:

i. master cylinder communication port communicating to said master cylinder,

ii. wheel cylinder communication port communicating to said wheel cylinder,

iii. reservoir communication port communicating to said reservoir and intake side of said pump via said normally closed value, and

iv. pump communication port communicating to a discharge side of said pump,

B. a spool provided movably inside said casing, said spool, at the time of anti-skid control, moves by means of a difference in pressure created on both sides of said spool due to opening of the normally closed valve, and together with limiting communication between said master cylinder communication port and said wheel cylinder communication port, said spool intakes brake fluid from said pump communication port which was discharged from said pump, and supplies this brake fluid to one of said wheel cylinder communication port and said reservoir communication port in an approximate fixed flow amount via an inner orifice provided on an inner portion of said spool,

wherein a groove portion, provided on the periphery of said spool, communicates to said pump communication port during anti-skid control by means of a part of said groove portion which lies opposite a direction of movement of said spool,

an axis of said pump communication port and an axis of said master cylinder communication port are arranged so that they are positioned on a plane which lies orthogonal to the direction of movement of said spool, and the diameter of said master cylinder communication port is formed smaller than the diameter of said pump communication port by a predetermined amount in a manner such that during anti-skid control said master cylinder communication port does not communicate directly with said groove portion.

5,303,991

Patent Not Issued For This Number

5,303,992

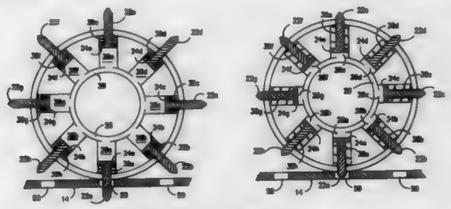
EXTENDABLE AND RETRACTABLE GROUND-ENGAGING PROJECTIONS FOR TRACKED VEHICLE

Guy B. Grainger, Huntsville, Ala., assignor to Teledyne Industries, Inc., Huntsville, Ala.

Filed Jul. 31, 1992, Ser. No. 922,790

Int. Cl.[5] B62D *55/26*

U.S. Cl. 305—46 **22 Claims**



1. An armored vehicle, comprising:

an endless track;

a wheel for supporting said vehicle, said wheel having an axis of rotation, and said wheel including grousers for increasing the traction of said armored vehicle; and

operating means for extending said grouser away from said axis of said wheel and through said track and for retracting said grousers toward said axis of said wheel, said operating means being operable from within said armored vehicle.

5,303,993

CONTAINER FOR A MAGNETIC TAPE CASSETTE

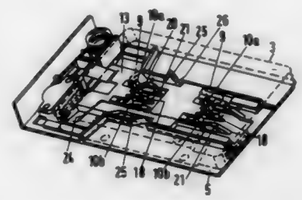
Christoph Stephan, deceased, late of Sindelfinger, Fed. Rep. of Germany, by Dorothea Stephan; by Otto Stehan; and by Ilse Stephan, heirs, assignors to Artur Fischer GmbH & Co. KG., Tumlingen, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,379

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1991, 4134812

Int. Cl.[5] B65D *85/672*; **A47B** *81/06*

U.S. Cl. 312—9.22 **3 Claims**



1. A container for magnetic tape cassettes, said container comprising a plurality of receiving compartments, each of the compartments being formed for longitudinal insertion of a magnetic tape cassette having two reel hubs; and each of said receiving compartments having a base plate, a lockable slider member mounted on the base plate, a spring element acting on the slider member to urge the slider member outwardly for unlocking, locking devices arranged on the slider member, said locking device being aligned in an insertion direction of the magnetic tape cassette and engaging the reel hubs of the magnetic tape cassettes, each of said locking devices being formed by two independently pivotable adjacent rocker arms, and a sliding element with wedge-like control members on the base plate and displacable transversely to the insertion direction of the magnetic tape cassette, said sliding element having a projecting ridge for each of the loading devices for locking into one of the two rocker arms of the locking devices, and wherein the slider member (**13**) is provided with centering elements (**32**) formed and positioned so that, when the slider member (**13**) is moved outward, the sliding element (**26**) is moved into a middle position, and, when the slider member is moved inward with the sliding element (**26**) remaining in the middle position, the projecting ridge (**18**) is insertable into a free space (**33**) formed between the two rocking arms (**10***a*, **10***b*) of the locking device.

5,303,994

DRAWER INTERLOCK

Michael D. Elsholz, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 5, 1992, Ser. No. 893,711

Int. Cl.[5] E05B *65/46*; **E05C** *7/06*

U.S. Cl. 312—221 **30 Claims**

1. An interlock mechanism for furniture units and the like of the type having first and second drawers, comprising:

first and second actuator pins adapted for connection with the first and second drawers respectively, and translating generally horizontally therewith between closed and open positions;

a vertically extending guide positioned adjacent to said first and second actuator pins;

a plurality of blocking elements disposed directly on top of one another in a vertical stack and slideably mounted in said guide for vertical translation therein; each of said blocking elements having a top edge, and a ramp-shaped lower edge;

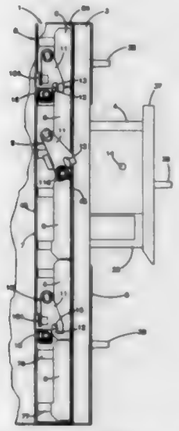
first and second block actuators associated with said first and second drawers respectively, and each including:

an arm having an upper portion thereof pivotally con-

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nected with said guide, and a lower portion thereof with a notch configured to selectively receive therein the actuator pin of an associated one of said first and second drawers, such that shifting said associated drawer between the closed and opened positions rotates said arm between corresponding unlocked and locked positions;

a wedge slidingly supported by said guide for generally horizontal reciprocation between unlocked and locked positions; said wedge, when in the unlocked position, being disposed alongside of and in horizontal alignment with the ramp-shaped bottom edge of a first one of said blocking elements, and the top edge of a second one of said blocking elements disposed vertically next adjacent thereto; said wedge being pivotally connected with the lower portion of said arm, such that rotation of said arm



positively extends and positively retracts said wedge into and completely out of the vertical stack of said blocking elements;

said wedge being shaped such that rotation of said arm by opening of an associated one of the first and second drawers shifts said wedge into the locked position by inserting the same inbetween the ramp-shaped bottom edge of said first blocking element and the top edge of said second blocking element, thereby positively preventing vertical movement of each of said blocking elements disposed below said wedge, and vertically shifting each of those blocking elements disposed above said wedge so that their ramp-shaped bottom edge is out of horizontal alignment with the associated wedge to thereby prevent opening of the other one of the first and second drawers.

5,303,995

DRAWER-CONTAINING APPARATUS

Kazumasa Kurihara, Utsunomiya, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jan. 9, 1992, Ser. No. 818,559
Claims priority, application Japan, Jan. 14, 1991, 3-014837
Int. Cl.[5] A47B *88/00*; B60R *5/00*
U.S. Cl. 312—319.1 **3 Claims**

1. A drawer-containing apparatus for a vehicle which comprises:

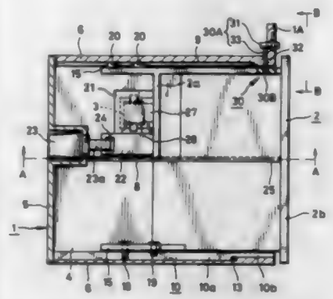
a box-like housing,

an accommodating case mounted within said housing for forward and backward movement through a front opening of said housing,

a biasing member provided between said accommodating case and said housing for urging said accommodating case toward a protruded position, and

a push-push locking mechanism interconnected between said accommodating case and said housing for locking said accommodating case at a retreated position in said housing against the biasing force of said biasing member, said push-push locking mechanism releasing said accommodating case from a locking action thereof to allow opening motion of said accommodating case by the biasing force of said biasing member when an ordinary force for opening is exerted on said accommodating case;

wherein, between said housing and said accommodating



case, a releasable safety lock mechanism is provided for engaging said accommodating case and preventing protrusion of said accommodating case due to release of said accommodating case from the locking action of said push-push locking mechanism caused by unintended exertion of a force such that said accommodating case is maintained in the retracted position

wherein said safety lock mechanism comprises:

a knob member mounted on said housing slidable in parallel with the front opening of the housing, and

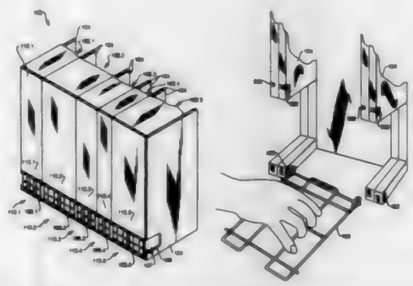
a stopper unified and movable together with said knob member, the stopper being inserted into an aperture bored in a side wall of the accommodating case for safety.

5,303,996

CABLE RETENTION METHOD AND APPARATUS FOR MODULAR COMPUTER CABINETS AND THE LIKE

Sawyer C. Hsu; James Fratis, both of San Diego; Robert W. Fischer, Jr., Lakeside; Sidney L. Valentine, Poway, and Carlo V. Daleo, San Diego, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 24, 1990, Ser. No. 633,567
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—328 **18 Claims**



1. A cable retention apparatus for retaining interconnect cables in a void of a cabinet, said cabinet having a first receiving hole and a second receiving hole, said cable retention apparatus comprising:

a frame member having at least a first resilient cantilever position; and

at least a first strut connected to at least a point of said frame member, but not on said cantilever portion, said first strut protruding from said frame member;

said first strut terminating at a first tip and a second tip thereof;

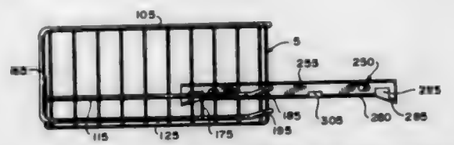
wherein insertion of said cable retention apparatus is effected by inserting said first tip of said first strut into said first receiving hole in said cabinet, and applying pressure substantially normal to said first receiving hole upon said frame member at a point other than said cantilever portion to provide a clearance for said second tip of said first strut to fit into said second receiving hole in said cabinet, and releasing said frame member.

5,303,997

SLIDABLE AND VERTICALLY ADJUSTABLE REFRIGERATOR/FREEZER BASKET AND MOUNTING ARRANGEMENT THEREFOR

Keith E. Kropf, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Filed Oct. 6, 1992, Ser. No. 956,959
Int. Cl.[5] F47B *88/00*
U.S. Cl. 312—334.4 **20 Claims**



1. A basket and mounting arrangement for an open front refrigerator storage compartment defined by top, bottom and opposite side walls, the arrangement comprising:

a) a pair of guide members for attachment to the opposite side walls of the storage compartment;

b) a basket including a bottom wall and means extending generally perpendicular to the bottom wall to form a front wall, a rear wall, and first and second side walls for defining a basket storage area;

c) first and second pairs of support members attached to the first and second side walls of the basket and extending substantially from the front to the rear of the basket, with the first and second pairs of support rails being vertically spaced one above the other for permitting the basket to be selectively mountable for sliding movement in a plurality of vertical positions by engaging either pair of support rails with the pair of guide members.

5,303,998

METHOD OF MIXING AND MANAGING OIL AND GAS WELL DRILLING FLUIDS

Blake Whitlatch, 6067 Chateau Loire, Mandeville, La. 70448, and David A. Barrow, 10622 Allyson, Baton Rouge, La. 70815

Filed May 19, 1992, Ser. No. 885,947
Int. Cl.[5] B28C *5/06*
U.S. Cl. 366—3 **9 Claims**

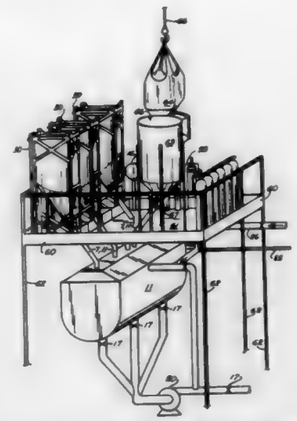
1. A method of mixing oil and gas well drilling products, including hydrophilic dry products and fluids, at a drill site comprising the steps of:

a) transporting multiple sealed silo assemblies to the drill site silo having each a larger upper end portion and a smaller, generally cone-shaped lower end portion and each silo containing a dry, hydrophilic oil well drilling mud additive product;

b) maintaining the dry product within each silo in a dry and in a positive pressurized condition wherein the inside of each silo includes the dry product and a dry pressurizing gas product;

c) discharging the dry product from selected ones of the multiple silos into a mixer at the well drilling site using a combination of gravity flow and the positive pressure within each silo;

d) maintaining positive pressure in each silo at least until the silo is substantially empty;



e) maintaining the mixer in a sealed environment until mixing is completed; and

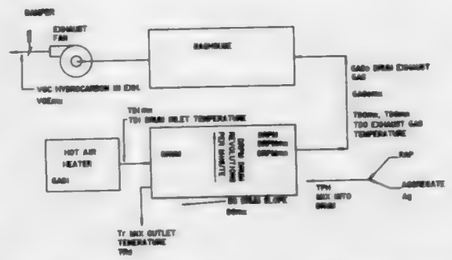
f) wherein in step "e" the mixer combines the dry hydrophilic product with a liquid.

5,303,999

APPARATUS FOR CONTROL OF RECYCLED ASPHALT PRODUCTION

Robert H. Nath, Austin; John Wiley, Leander; Robert Erickson, Georgetown; Carl R. Hutchison, Austin, and Mike Miles, Georgetown, all of Tex., assignors to Cyclean, Inc., Round Rock, Tex.

Continuation-in-part of Ser. No. 754,264, Aug. 29, 1991, which is a continuation-in-part of Ser. No. 387,160, Jul. 31, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 803,642
Int. Cl.[5] B28C *5/46*
U.S. Cl. 366—25 **14 Claims**



1. An apparatus for controlling the production rate in a drum plant for producing asphalt from recycled asphalt pavement comprising in combination:

means for sensing tons per hour (TPHa) being produced by said plant;

means for comparing said tons per hour (TPHa) with a desired tons per hour (TPHd);

means for sensing drum inlet gas temperature (TDI) when (TPHd) is less than (TPHa);

means for comparing said drum inlet gas temperature (TDI) to a maximum drum inlet gas temperature (TDImax);

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means for increasing the drum inlet gas temperature (TDI) when the drum inlet gas temperature (TDI) is less than the drum inlet gas temperature maximum (TDI max), and

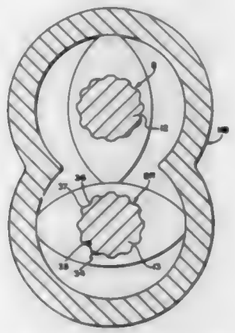
means for increasing the tons per hour (TPHa) when the drum inlet gas temperature (TDI) is increased.

5,304,000

METHODS OF CONSTRUCTING PADDLE AND SHAFT ASSEMBLIES FOR TWIN SCREW MIXER AND/OR PROCESSORS AND THE RESULTING APPARATUS

James E. Kowalczyk, and Bernard A. Loomans, both of Saginaw, Mich., assignors to APV Chemical Machinery Inc., Saginaw, Mich.

Filed Jul. 28, 1993, Ser. No. 98,134
Int. Cl.[5] B29B *1/06*
U.S. Cl. 366—97 **19 Claims**



1. In a method of constructing or reconstituting a shaft and paddle assembly for mixers and processors wherein radially aligned paddles on parallel shafts, revolving at the same speed in the same direction of rotation, both co-wipe and wipe the interior of the barrel of the mixer or processor which has a mixer chamber comprising interconnecting cylindrical bores; the steps of:

(a) forming co-wiping paddles with paddle bores of a configuration comprising alternating lobular projections and root recesses, and arcuate corner portions on the lobular projections and root recesses, the arcuate corner portions of said projections being tangential to the arcuate corner portions of said root recesses;

(b) forming a pair of shafts with intermeshing matching projections and root recesses and mounting said paddles on said shafts with the lobes and root recesses of the paddles and shafts in intermeshing relation; and

(c) installing said shafts in spaced apart parallel relation concentrically in the mixer barrel bores with axes spaced apart to provide a predetermined center-to-center distance between them to achieve complete mixer chamber wiping with said paddles.

5,304,001

METHOD AND APPARATUS FOR METERING AND MIXING NON-COMPRESSIBLE AND COMPRESSIBLE FLUIDS

Alex C. Kuo; Kenneth A. Nielsen, both of Charleston; James A. Condron, Hurricane, and Kenneth L. Hoy, St. Albans, all of W. Va., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

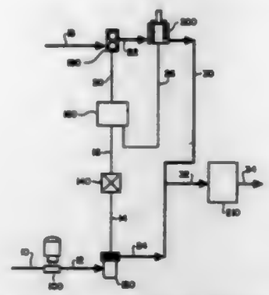
Continuation of Ser. No. 413,517, Sep. 27, 1989. This application Apr. 24, 1992, Ser. No. 873,675
Int. Cl.[5] B01F *15/04*
U.S. Cl. 366—132 **11 Claims**

1. An apparatus for mixing a substantially compressible fluid and a substantially non-compressible fluid in a predetermined proportion which consisting essentially of:

a) means for supplying substantially compressible fluid;

b) instantaneously measuring the mass flow rate of the substantially compressible fluid at a point prior to mixing with said non-compressible fluid through the use of a Coriolis mass flow meter;

c) means for generating a signal in response to the measured mass flow rate of the substantially compressible fluid;



d) means for supplying substantially non-compressible fluid;

e) means for controlling the flow rate of the substantially non-compressible fluid responsive only to the signal generated in (c); and

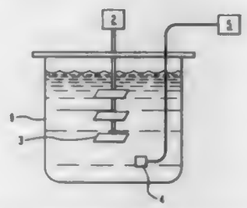
f) means for forming a mixture of the measured compressible fluid and the controlled non-compressible fluid in the predetermined proportionation.

5,304,002

METHOD OF DETERMINING BLEND TIME IN STIRRED TANKS

Carl R. Shervin, Warrington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 605,632, Oct. 30, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 875,496
Int. Cl.[5] B01F *15/04*
U.S. Cl. 366—349 **9 Claims**



1. A method of determining blend time of liquids comprising:

(a) locating one or more conductivity sensors within a vessel adapted for stirring liquids, the conductivity sensors being functionally connected to a dielectrometer,

(b) adding liquids to be mixed to the vessel,

(c) stirring the liquids, and

(d) measuring the rate of change in dielectric loss as detected by the sensors while stirring to determine the degree of mixing.

5,304,003

STICK-ON AQUARIUM THERMOMETERS AND THE LIKE

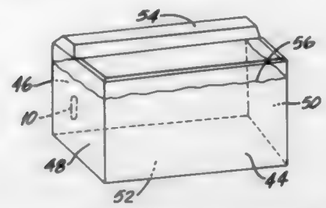
Allan H. Winninger, Franklin Lake, N.J., assignor to Willinger Bros., Inc., Oakland, N.J.

Filed Jun. 23, 1993, Ser. No. 81,652
Int. Cl.[5] G01K *1/14, 11/12, 13/00*
U.S. Cl. 374—150 **9 Claims**

1. A liquid crystal thermometer for use in an aquarium, the aquarium having at least a front wall portion, a rear wall portion, and a side wall portion, with water therebetween, the thermometer comprising:

a front and rear face with visual material on the front face for viewing through the aquarium; and

a transparent wetting material over the front face of the thermometer and covering the visual material, so that the



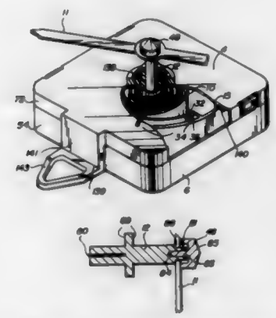
thermometer may be secured to the exterior of the rear or side wall of the aquarium with the visual material directed to the interior of the aquarium, said wetting material forming a substantially airtight coupling to the rear or side wall portions so that the visual material may be clearly viewed through the front of the aquarium and through the aquarium water.

5,304,004

THERMOMETER MOVEMENT CAP NUT ASSEMBLY

Brendon G. Nunes, 467 Westney Rd., South, Unit 3, Ajax, Ontario, Canada L1S 6V7

Filed Feb. 5, 1993, Ser. No. 14,234
Int. Cl.[5] G01K *1/14, 5/70*
U.S. Cl. 374—208 **14 Claims**



1. An assembly for an instrument having an indicator hand, comprising:

a plastic arbor;

a plastic cap nut;

the indicator hand being held in a predetermined position by said arbor and said cap nut; and

non-threaded engagement means of said arbor and said cap nut for holding said arbor and cap nut together, to in turn hold said indicator hand in place.

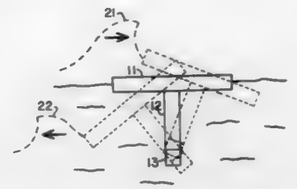
5,304,005

FLOATING DYNAMIC BREAKWATER

Federico Loeffler-Lenz, Rte. 2, Box 1440, Palatka, Fla. 32177

Filed Nov. 25, 1992, Ser. No. 981,269
Int. Cl.[5] E02B *3/04*
U.S. Cl. 405—26 **19 Claims**

11. A floating dynamic breakwater device for damping oncoming waves, the device having a generally T-shaped cross-sectional configuration comprising a generally horizontal platform beam having a rectangular surface configuration and a longitudinal centerline, a keel member and a vertical beam connecting said keel member to said platform beam along said longitudinal centerline, said platform beam and said vertical beam having a density of less than approximately 1.0 g/ml and said keel member having a density of greater than approximately 2.5 g/ml, and where said device responds to said oncoming waves with a pivoting motion whereby said platform member and said vertical member move while said keel member remains relatively motionless, said pivoting motion creating anti-waves in the direction opposite to said oncoming waves.

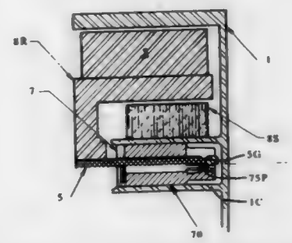


5,304,006

SELF POSITIONING BEAM MOUNTED BEARING AND BEARING AND SHAFT ASSEMBLY INCLUDING THE SAME

Russell D. Ide, 641 Arnold Rd., Coventry, R.I. 02816

Continuation-in-part of Ser. No. 572,015, Aug. 24, 1990, Pat. No. 5,102,237, which is a continuation-in-part of Ser. No. 563,242, Aug. 6, 1990, which is a continuation-in-part of Ser. No. 516,781, Apr. 30, 1990, Pat. No. 5,054,938, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989. This application Mar. 5, 1992, Ser. No. 846,790
Int. Cl.[5] F16C *17/10*
U.S. Cl. 384—110 **24 Claims**



1. A shaft and bearing combination, adapted to be mounted in a housing; the shaft comprising a generally cylindrical elongated element having at least one radially inwardly extending circumferential groove formed therein, the groove having at least one surface which extends at a predetermined angle to the surface of the elongated element; the bearing comprising:

a plurality of shaft support pads, each of the pads including a shaft support surface, at least a portion of the shaft support surface of the pads extending at an angle which is complementary to the angle of the angled surface of the groove formed in the shaft;

a support structure for supporting the bearing pads, the support structure comprising a base member having an outer periphery in contact with the housing and a plurality of cantilevered beams, each of the beams having first and second opposed longitudinal ends and being radially spaced from both the shaft and the housing, the first end of the cantilevered beams connected to and supporting the bearing pads and the second end of the cantilevered beams being connected to the base member, the cantilevered

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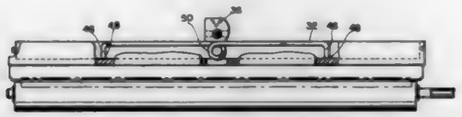
beams supporting the pads such that the pads can be resiliently deflected radially outward.

5,304,007

THERMAL PRINTHEAD BALANCED SPRING MOUNT

Edmund P. Flanagan, East Greenwich, R.I., assignor to Gulton Industries, Inc., East Greenwich, R.I.

Filed May 5, 1991, Ser. No. 696,249
Int. Cl.[5] B41J *2/32*
U.S. Cl. 400—120 **17 Claims**



1. In a spring mount for a printing apparatus having a printhead for printing graphic information on a recording medium and a platen for supporting said medium against said printhead along a printing line direction, the improvement comprising:

a carrier attached on a first side thereof to said printhead and movably attached to said printing apparatus, said carrier having a width along said printing direction, said carrier being substantially stationary along said printing direction with respect to said platen;

a spring abutting said carrier on a second side of the carrier opposite said first side at two points, said two points being substantially equidistant from the center of said carrier along said direction and said two points being positioned at substantially one-quarter and three-quarters of the width of said carrier in said direction whereby said printhead is biased toward said medium with even pressure over the entire printhead; and

a cam abutting said spring at one area of said spring over said center of said carrier, said cam selectively deflecting said area of said spring toward said first side such that said carrier and said printhead are biased toward said medium.

5,304,008

INK RIBBON CASSETTE WITH A FRICTIONING MEMBER FOR IMPARTING VARIABLE TENSION TO AN INK RIBBON

Osamu Azukura, Tokyo; Yoshio Uchikata, Yokohama; Kenji Kawazoe, and Yuji Kanome, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 663,587, Mar. 1, 1991, abandoned, which is a division of Ser. No. 553,370, Jul. 17, 1990, Pat. No. 5,017,942, which is a continuation of Ser. No. 158,671, Feb. 22, 1988, abandoned. This application Oct. 5, 1992, Ser. No. 956,574
Claims priority, application Japan, Feb. 27, 1987, 62-043091; Jun. 26, 1987, 62-159428; Dec. 4, 1987, 62-307326; Dec. 4, 1987, 62-307327; Dec. 4, 1987, 62-307328
Int. Cl.[5] B41J *33/52*
U.S. Cl. 400—234 **9 Claims**

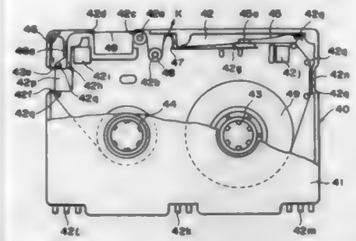
1. An ink ribbon cassette adapted to be loaded in a recording apparatus having a recording head, comprising:

a cassette case for housing an ink ribbon, said cassette case defining a recessed portion formed along a feed path of the ink ribbon fed from a supply end to a take-up end, with the recessed portion being capable of receiving the recording head;

ink ribbon guiding means, including a guide member, for guiding the ink ribbon as it fed through the feed path; and

a cantilevered spring member disposed at an intermediate portion of the feed path of the ink ribbon, said cantilevered spring member having a frictioning portion for imparting a smaller tension to the ink ribbon when the ink ribbon is fed from the supply end to the take-up end, while imparting a greater tension to the ink ribbon when the ink ribbon is fed from the take-up end to the supply end, said spring member being provided at its free end with said frictioning portion and is bent at its intermediate portion such that a supported end of said spring member and said free end thereof face each other, wherein

a wall surface is provided on said cassette case and the ink



ribbon is pressed against said wall surface by said frictioning portion, and said guide member presses the ink ribbon more strongly onto said frictioning portion when the ink ribbon is fed from the supply end to the take-up end than when the ink ribbon is fed from the take-up end to the supply end.

5,304,009

DISPOSABLE TOOTH BRUSH

Jeweral E. Marshall, P.O. Box 57, Oldtown, Md. 21555

Filed Mar. 8, 1993, Ser. No. 27,640
Int. Cl.[5] A46B *11/00*
U.S. Cl. 401—268 **5 Claims**



1. A disposable toothbrush for use in oral hygiene, comprising, an upper member and a lower member, said upper member including at one end a head portion including bristle means extending perpendicularly from one side of said head portion, said bristle means having a first supply of a dehydrated dentifrice imprignated therein, said upper member having at a distal end a threaded stem portion, said lower member comprising a pliable tubular toothbrush handle containing a second supply of a liquid dentifrice in its interior, said lower member having an opening leading to said second supply of liquid dentifrice at its top end, said opening internally threaded so as to readily attach to and detach from said threaded stem portion of said upper member, said lower member having a plurality of fork members protruding radially outward from its outer surface, said lower member having a toothpick means carrying a predetermined supply of dental floss detachably wedged in between said plurality of fork members, wherein said lower member forms the handle of said toothbrush when it is threaded to said upper member, and whereby said lower member may be compressed to release said second supply of liquid dentifrice when said lower member is detached from said upper member.

5,304,010

TOOTHBRUSH WITH AUTOMATIC WATER SUPPLY

Chu Hsing-San, 2F. No. 5, Lane 38, Sec. 2, Pao-Yuan Road, Shin-Diann City, Taiwan

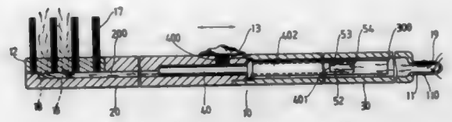
Filed Apr. 23, 1993, Ser. No. 52,148
Int. Cl.[5] A46B *11/06*
U.S. Cl. 401—289 **1 Claim**

1. A toothbrush with automatic water supply comprising:

a hollow body comprising a front shank portion and a rear shank portion, said hollow body being of suitable size and length to be hand-held, and said body including a water inlet at a first end thereof;

said hollow body further including a water controller near it midpoint to control water flow to a brush portion of said toothbrush so that clean water can be flushed upwardly through said brush portion;

said water controller comprising an inner pipe and an outer sleeve, said outer sleeve being inserted into a central hole



of said rear shank portion, an axial water controlling slot being provided on the wall of said outer sleeve, said slot differing in width at a front end and a rear end thereof;

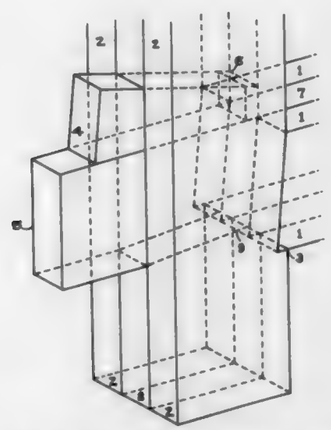
said inner pipe is inserted into said outer sleeve, a neck sheet portion being provided on said inner pipe for providing thereon a water controlling push button, said neck sheet portion being clamped between a plurality of clamping grooves provided on said front an rear shank portions, the end of said inner pipe being movable to different positions to control the flow of water.

5,304,011

WEDGELOCK LAMINATED JOINT

Jon Seeders, 1080 A 14th St., Arcata, Calif. 95521

Filed Feb. 10, 1992, Ser. No. 834,144
Int. Cl.[5] F16B *2/14*
U.S. Cl. 403—253 **1 Claim**



1. A wedgelock laminated joint for joining a structural joint to a vertical post held secure by a wedge in building structures comprising:

a vertical post member, said vertical post member comprising a plurality of substantially vertical post center lamination sections, and

a pair of exterior post laminations, wherein said vertical post center lamination sections are located intermediate said pair of exterior post laminations, and

wherein one of said vertical post center laminations is located substantially adjacent another of said vertical post center laminations so as to form an aperture in the form of a wedge-shaped keyway, and

wherein said wedge-shaped keyway is defined by interior portions of said pair of exterior post laminations and interior portions of said vertical post center lamination sections, and

wherein an interior portion of one of said vertical post center lamination sections defines a lock notch, said lock notch comprising a beveled surface on an interior surface of said one of said vertical post center lamination sections, and

wherein said lock notch further comprises a post notch on an interior surface of said one of said vertical post center lamination sections, said post notch comprising a substantially horizontal planar surface in substantial abutment with a vertical planar surface, wherein said vertical planar surface is in substantial abutment with said beveled surface,

wherein said another of said vertical post center lamination sections comprises an interior surface defining said aperture in which said interior surface of said another of said vertical post center lamination sections is bevelled,

the joint further comprising a joist member, said joist member comprising a substantially horizontal joist center lamination having an end surface, and a pair of substantially horizontal exterior joist laminations having end surfaces,

wherein said joist center lamination is located intermediate said pair of exterior joist lamination that said end surface of said joist laminations such may protrude from said end surfaces of said pair of exterior joist laminations,

wherein said end surfaces of said pair of exterior joist laminations are bevelled, and

wherein a portion of said horizontal joist center lamination is beveled to correspond with and to rest on said bevelled surface on said interior surface of one of said vertical post center lamination sections, and

wherein said joist center lamination and said pair of exterior joist laminations are adapted to rest on said post notch,

the joint further comprising a wedge member adapted to fit into said wedge-shaped keyway, said wedge member comprising a first bevelled outer surface adapted to contact a bevelled interior surface of said another of said vertical center lamination sections, and

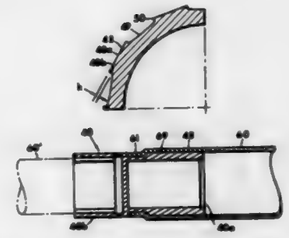
the wedge member comprising a second surface adapted to contact said horizontal joist center lamination.

5,304,012

DRIVE SHAFT FITTING OR COUPLING

Eric Wendling, Verona, N.J., assignor to Curtiss Wright Flight Systems Inc., Fairfield, N.J.

Filed Jul. 1, 1992, Ser. No. 906,400
Int. Cl.[5] B23P *11/00*
U.S. Cl. 403—274 **7 Claims**

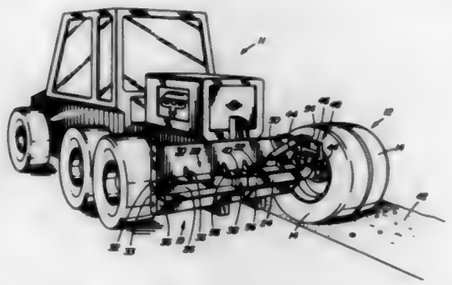


1. A metal tubular fitting for a drive shaft, with the fitting being capable of transmitting high drive torque and having multiple longitudinally disposed, spaced apart splines radially extending from a surface of said tubular fitting; each of said splines being configured with substantially flat lateral surfaces, substantially perpendicular to said surface of the tubular fitting; and wherein spacings, between adjacent splines, have radiused bases into said surface terminating in defined lower corners at the point of intersection with the lateral surfaces of

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the adjacent splines, said splines being adapted to engage mating sections of the drive shaft to effect said transmission of high drive torque between the fitting and the drive shaft.

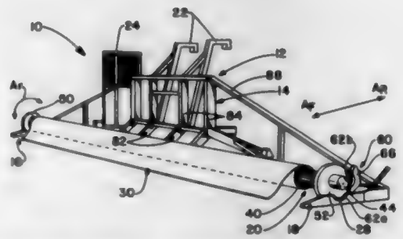
5,304,013
ROAD SHOULDER COMPACTING APPARATUS
Harold Parsons, 6195 Cottonwood Street, Delta, B.C., Canada V4E 3K5
Filed Jul. 10, 1992, Ser. No. 911,721
Int. Cl.[5] E01C *19/26*
U.S. Cl. 404—127 **6 Claims**



1. A road shoulder compacting apparatus, comprising:
a rotatable ground engagement member for rolling compacting engagement with the ground;
said ground engagement member having an axle;
a support structure for supporting said ground engagement member on a vehicle;
a raising and lowering structure for raising and lowering said support structure relative to the vehicle;
a support arm;
a first pivotal connection between one end of said support arm and said support structure, said first pivotal connection having a substantially vertical axis of pivotation and allowing pivotation of said support arm through an angle of 180° between end positions in which said support arm extends transversely of the apparatus;
a second pivotal connection between the opposite end of said support arm and said axle, said second pivotal connection having a substantially horizontal axis of pivotation; and
a hydraulic actuator for pivoting said ground engagement member about said second axis of pivotation relative to said support arm;
said hydraulic actuator being mounted on said support arm for movement therewith; and
said support arm having a length sufficient to locate said ground engagement member at a lateral spacing from said support structure, on pivotation of said support arm into its end positions, for compacting a road shoulder.

5,304,014
APPARATUS FOR LAYING OUT AND TAKING UP A LONG LENGTH, WIDE WIDTH FLEXIBLE SHEETING
John D. Slutz, Canton, Ohio, assignor to JMW Welding & Manufacturing, Inc., Canton, Ohio
Filed Feb. 25, 1993, Ser. No. 22,517
Int. Cl.[5] E02B *3/12*
U.S. Cl. 405—129 **22 Claims**

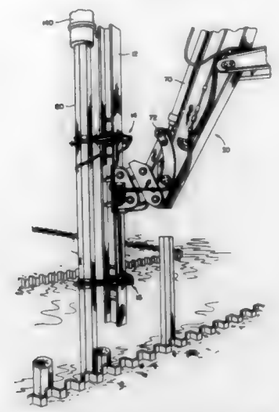
1. An apparatus for use in conjunction with a powered vehicle to lay out and take up a long length, wide width flexible sheeting material comprising in combination:
a framework adapted for mounting engagement on a powered vehicle such as to be carried over a ground surface by the vehicle, the framework having a transversely positioned framework arm extending outwardly at each end thereof;
pivot means attaching each arm to the framework;
means associated with each of the framework arms for journal-mounting a shaft between them;
an arbor assembly including a cylindrical mandrel having each of its ends journalled to a framework arm so as to be rotatable about a longitudinal axis, said mandrel adapted for carrying a long length, wide width flexible sheeting material thereon in a wrapped and layered orientation about its surface extent;
means rotating the arms about the pivot means to a lowered position for loading and unloading the mandrel and to a raised position for rotating the mandrel; and
a hydraulic system to power and control the rotation for wrapping flexible sheeting material onto the mandrel and in an opposite direction of rotation for unwrapping sheeting material from the mandrel;
the wrapping and unwrapping of the flexible sheeting material being accomplished as the powered vehicle is moved to travel over a ground surface area;



the hydraulic system comprising: a hydraulically operated motor mounted on at least one end of the arbor assembly and having a drive shaft engageable with the mandrel, a means to provide hydraulic fluid pressure, a reservoir to provide a source of hydraulic fluid, a hydraulic valve control means to switch hydraulic fluid pressure from the means providing said pressure to the motor driving the mandrel and to return the hydraulic fluid to the reservoir, and a hydraulic fluid circuit comprising a pair of hydraulic fluid pressure lines interconnecting the control means with the motor driving the mandrel, a hydraulic fluid pressure line interconnecting the control means with the means providing the hydraulic fluid pressure, a hydraulic fluid line interconnecting the control means with the reservoir, and a hydraulic fluid line interconnecting the reservoir with the means providing the hydraulic fluid pressure.

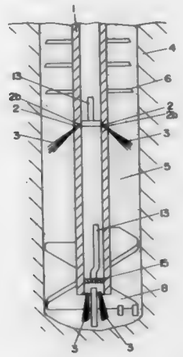
5,304,015
PILE GRABBER APPARATUS
Roy N. Sonomura, 35 Terrace Cir., Hilo, Hi. 96720
Filed Feb. 17, 1993, Ser. No. 18,518
Int. Cl.[5] E02D *7/06*
U.S. Cl. 405—232 **14 Claims**

1. An apparatus for grabbing and positioning a pile for insertion into the ground, the apparatus adapted to attach to a movable arm forming part of a mobile excavating apparatus, comprising:
an elongated support member;
clamping means comprising first and second clamping members each capable of adopting a closed position to grab a pile and securely hold a pile both horizontally and vertically, and an open position for releasing from a pile;
means for attaching the first and second clamping members onto the support member spaced apart from one another;
link plate support means secured to the support member for connecting the support member to a moveable arm of a mobile excavating apparatus; and
control means secured to the support member for controlling the position of the clamping members, said control means controlling the first and second clamping members each for clamping onto a horizontally disposed pile and for orienting the pile vertically, and said control means



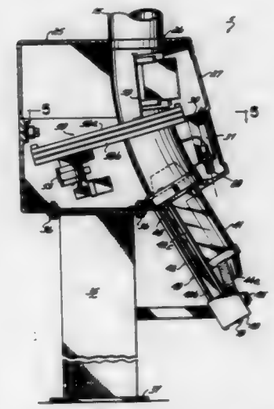
further releasing slightly the first and second clamping members from the pile while force is applied to the pile from above to drive the pile into the ground.

5,304,016
METHOD FOR FORMING A PILLAR IN AN EARTHEN FOUNDATION
Mitsuhiro Kunito, Kishiwada, Japan, assignor to Kabushiki Kaisha Ask Kenkyusho, Osaka, Japan
Filed Feb. 5, 1993, Ser. No. 14,166
Claims priority, application Japan, Nov. 10, 1992, 4-299558
Int. Cl.[5] E02D *5/46, 3/12*
U.S. Cl. 405—233 **11 Claims**



1. A method for forming a pillar in an earthen foundation comprising:
excavating the earthen foundation with a bit provided on a lower end of a rotating shaft, while jetting a consolidating fluid downwardly from a bottom nozzle of the bit; and
stirring and mixing an excavated soil of the earthen foundation with said consolidating fluid jetted in a direction including at least one diagonal direction from side nozzles provided in said rotating shaft and spaced upwardly of the bit;
wherein a rotating speed of said rotating shaft is made faster for clayish soil than for sandy soil, a pressure of said consolidating fluid from said side nozzles is made higher for the clayish soil than for the sandy soil, and a penetration speed of said rotating shaft is made slower for the clayish soil than for the sandy soil.

5,304,017
PNEUMATIC TRANSMISSION SYSTEM
Victor J. Vogel, Oak Ridge; Robert M. O'Connor, Jersey City, and Robert D. Smith, Jr., Wantage, all of N.J., assignors to Mosler, Inc., Hamilton, Ohio
Filed Jul. 16, 1992, Ser. No. 914,885
Int. Cl.[5] B65G *51/34*
U.S. Cl. 406—111 **12 Claims**



1. A pneumatic transmission system comprising:
a customer terminal;
a teller terminal;
a pneumatic transmission tube connecting said customer and teller terminals, said tube having two vertical sections each of which extends upwardly from one of said customer and teller terminals and a horizontal section connecting said two vertical sections;
said customer and teller terminals and transmission tube being free of the presence of carrier sensing devices;
a pair of blowers one of which is disposed in said pneumatic transmission tube at each point where said tube transitions generally from horizontal to vertical;
each said customer and teller terminal having gate means for selectively opening and closing said transmission tube, and catch means disposed below said gate means for catching a pneumatic carrier; and
a controller means for facilitating transmission of the carrier from one of said terminals to another of said terminals, said controller means opening said gate means of said one terminal, closing said gate means of said other terminal, and energizing one of said blowers remote from said one terminal thereby creating a vacuum between said one blower and the carrier to transmit the carrier from said one terminal to said other terminal, thereafter de-energizing said one blower after the carrier has passed said one blower, the carrier coming to rest on said gate means of said other terminal, and finally opening said gate means of said other terminal to enable said carrier to drop onto said catch means of said other terminal.

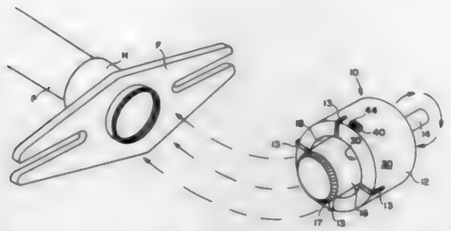
VOL 1161 ISS 3 APR 19 1994 UMI

5,304,018

PLUNGE CUTTING DEVICE AND METHOD FOR PLASTIC PIPE MEMBERS SUCH AS PIPE COUPLINGS, FLANGES, HUBS, AND THE LIKE

Wayne N. LaVanchy, 5116 Peyton Place Ct., St. Louis, Mo. 63128, and Darrell G. Stack, 3111C Broken Oak Dr., St. Louis, Mo. 63129

Filed Mar. 20, 1992, Ser. No. 854,586
Int. Cl.[5] B23B *5/16*
U.S. Cl. 408—1 R **28 Claims**



1. A device for plunge cutting plastic pipe members carried by a pipe end portion comprising:
a cylindrical body having an annular section having a front face, said annular section being of selected length and thickness, said annular section defining an inner annular surface and an outer annular surface, said cylindrical body having at least one slot extending axially from said front face to a selected depth, each slot being defined by a leading wall and a trailing wall, said trailing wall lying in a radius of said cylindrical body;
a cutter for said at least one slot;
positioning means for securing each cutter in a respective slot, said positioning means permitting the cutter to project forwardly from the front face of said annular section;
pilot means for guiding said cylindrical body relative to a pipe end portion, said pilot means being dimensioned to journal within the pipe end portion and being disposed co-axially of said annular section and secured to said cylindrical body; and
drive coupling means for coupling said cylindrical body to a source of rotational energy to cause said cylindrical body to rotate about its axis relative to the exposed pipe portion.

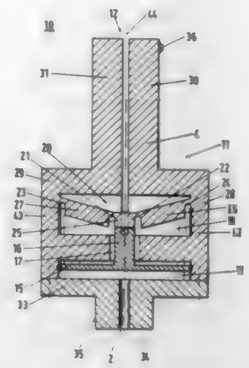
5,304,019

ROTATING DRILL HEAD WITH A BORING BAR WHICH IS PIVOTABLE BY A SLIGHT DISTANCE TRANSVERSELY TO THE AXIS OF ROTATION BY FLUIDIC MEANS

Gerhard Klee, Frankfurt, and Wilfried Gerk, Roedermark, both of Fed. Rep. of Germany, assignors to Samson AG, Frankfurt, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 61,862
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1992, 4218492
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—156 **9 Claims**

1. In a cutting chisel holder with a cutting chisel which can be clamped in, particularly a rotating drill head which can be precisely adjusted by hydraulic means, with a base, a driven member which is movable relative to the base, a fluid pressure medium chamber having a fluid inlet and arranged between the base and driven member, and with gearing members which are associated with the driven member and can be moved by the driven member in such a way that the cutting chisel is moved by small amounts around a curved path extending transversely to the rotational axis, and with a compensating member which compensates for the unbalance occurring during the deflection of the tool carrier by means of a symmetrical, but oppositely directed, movement, the improvement comprising that the tool carrier and said compensating member are connected via a spring-jointed expanding lever gearing, said gearing having a



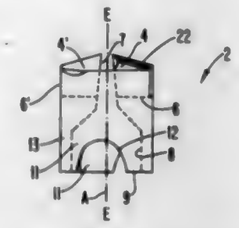
central member connecting the leg members which is acted upon by the driven member.

5,304,020

CUTTING TOOL FOR MAKING CYLINDRICAL BORES

Helmut Reccius, Munich, Fed. Rep. of Germany, assignor to Dornier Luftfahrt GmbH, Fed. Rep. of Germany

Filed Feb. 10, 1993, Ser. No. 15,988
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 4204428
Int. Cl.[5] B23B *51/04*
U.S. Cl. 408—205 **9 Claims**



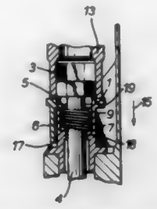
1. A cutting tool for making cylindrical bores, comprising:
at least two cutting inserts having approximately radially directed blades which in use leave an uncut core;
chip removal devices extending in an axial direction of the cutting tool;
wherein the cutting tool comprises at least two coaxial parts, a first of said parts forming a cutting crown including the cutting inserts and a second of said parts forming a support for the cutting crown including a clamping shank; and
wherein the chip removal devices extend axially along both parts and lead radially to the outside of the cutting tool.

5,304,021

SCREW THREADED LOCKING BOLT ASSEMBLY

David J. Oliver, and David P. Halliday, both of Preston, Great Britain, assignors to British Aerospace Public Limited Company, London, United Kingdom

Filed Oct. 2, 1992, Ser. No. 956,858
Claims priority, application United Kingdom, Oct. 2, 1991, 9120908
Int. Cl.[5] F16B *39/10, 39/24*
U.S. Cl. 411—121 **6 Claims**



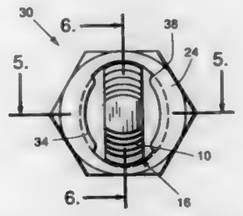
1. A locking bolt assembly comprising:
bush means for axially supporting a threaded bolt of said assembly, said bush means being adapted to be fixed in use with respect to a structure which said bolt is to be engaged;
socket means carried on said bush means and being internally dimensioned for rotational locking engagement of a head of said threaded bolt and comprising locking means, said locking means including at least one recess in said bush means and corresponding longitudinally extending tang means on said socket means for engagement in use with at least one recess for preventing rotation of said socket means on the bush but permitting limited longitudinal movement thereon, said head of said threaded bolt being correspondingly dimensioned for rotational locking engagement within said socket; and
resilient means for urging said head and said socket means into said rotational locking engagement;
wherein said socket means may be moved longitudinally with respect to said bush means against the action of said resilient means from a position in which said head and said socket means are rotationally locked, to a position in which said head is freed for rotation and engagement with a co-operation nut of said assembly fixedly mounted on said structure.

5,304,022

TAPERED THREADED BOLT WITH OVAL NUT

Paul Huska, 739 Moreno Ave., Los Angeles, Calif. 90049

Filed Apr. 6, 1993, Ser. No. 43,218
Int. Cl.[5] F16B *21/00, 37/16, 35/00*
U.S. Cl. 411—366 **13 Claims**



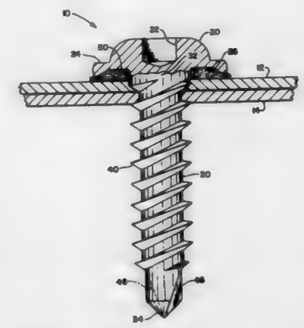
1. A fastener for quick and accurate insertion and subsequent engagement with an aperture in a workpiece comprising: a bolt having an engagement end and a shank end, wherein said shank end including threading of a predetermined radius and spacing along a portion of said shank end, and wherein said engagement end including oppositely adjacent flat surfaces and additional threading adjoining said flat surfaces; said additional threading having leading thread edges, wherein the radius of said leading thread edges sized smaller than the radius of threading on said shank; and said flat surfaces dimensioned to allow said engagement end with said leading thread edges to readily engage the aperture in the workpiece upon insertion thereto, whereby the bolt is quickly and accurately insertable into the workpiece and provide for rapid and accurate engagement thereto.

5,304,023

METAL PANEL FASTENER

Alex S. Toback, West Hartford, Conn., and Stanley W. Choiniere, Southwick, Mass., assignors to Metaltite Corporation, West Hartford, Conn.

Filed Oct. 23, 1992, Ser. No. 965,238
Int. Cl.[5] F16B *25/00*
U.S. Cl. 411—387 **23 Claims**



1. A fastener for fastening a pair of metal panels comprising:
head means comprising a top portion and an underside and recess means for defining a recess at said underside; and
shank means integrally extending from said underside at a proximal end and terminating at a distal tip and defining an axis thereof, said recess surrounding said shank means at said proximal end, said shank means having a spiral buttress thread extending from a location adjacent said proximal end and defining a first support surface which is oriented at an angle between 0 degrees and 15 degrees to a normal line to the axis of said shank and a second surface which is inclined to said normal line at an angle between 25 and 65 degrees, said shank means comprising self-drilling means adjacent said distal tip for self-drilling into a metal panel, whereby said buttress thread is engageable against said metal panels to clamp said metal panels against said head means.

5,304,024

SCREW, METHOD AND ROLLING DIE FOR THE PRODUCTION THEREOF

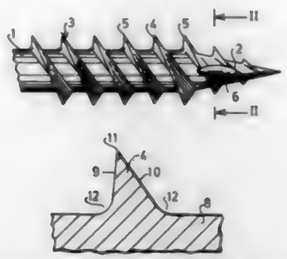
Armin Schuster, Forchtenberg, Fed. Rep. of Germany, assignor to Adolf Wurth GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 19, 1992, Ser. No. 933,050
Claims priority, application Hague, Mar. 17, 1992, 92104533.2
Int. Cl.[5] F16B *35/04*
U.S. Cl. 411—418 **11 Claims**

1. A screw with a screw shank having a screw thread, a screw head with a drive and a screw tip, said screw thread having at least one thread course, said thread course having a front flank facing the screw tip and an adjoining rear flank facing the screw head, wherein the transitions between the front and rear flanks of the thread course of the thread and the shank are rounded, the thread over at least part of the shank length having an asymmetrical shape in such a way that the

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rear flank of the at least one thread course is angled steeper with respect to a radial plane perpendicular to the longitudinal



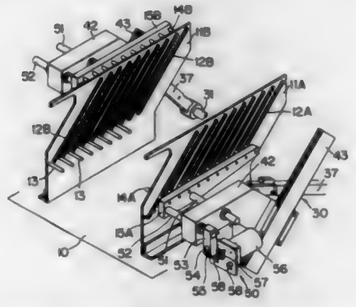
axis of the shank than the front flank, and wherein the thread is less asymmetrical in the vicinity of the screw tip than in the remaining portion of said shank.

5,304,025

SECTION FEEDER FOR BOOK BINDING MACHINE

Yoshiyuki Horii, Kyoto, Japan, assignor to Horizon International Inc., Shiga, Japan

Filed May 13, 1993, Ser. No. 61,216
Claims priority, application Japan, May 18, 1992, 4-169827
Int. Cl.[5] B42B *9/00*; B42C *1/12*; B65G *49/00*
U.S. Cl. 412—9 **8 Claims**



1. A section feeder for a book binding machine provided with a book production line on which a number of clamps are continuously moved, said section feeder being adapted for successively receiving sections from a collator at a section supply station positioned below said book production line and conveying said sections from said supply station to a section delivery station positioned downstream from said section supply station on said book production line, and supplying said sections to the clamps having arrived at said section delivery station, said section feeder comprising:

a pair of guide plates attached substantially perpendicular to a base and arranged in parallel with each other at a spacing corresponding to the thickness of the sections in order to form a section conveying path within said spacing, said section conveying path extending from said section supply station to said section delivery station;

a plurality of parallel guide slits formed on at least one of said guide plates, said plurality of parallel guide slits slantingly extending from said section supply station to said section delivery station, a lower end of each of said guide slits being at the same level or a level lower than said section supply station and an upper end of each of said guide slits being at the same level or a level higher than said section delivery station;

an elevating rod horizontally extending from an area outside of said at least one of said guide plates into said section conveying path through each of said plurality of guide slits and being guided for upward and downward movement along respective guide slits; and

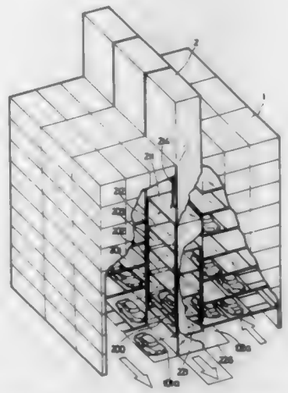
drive means for reciprocating said elevating rods all at once along said guide slits in such a manner that said sections are successively lifted without tilting by a flat section support surface formed on said elevating rods from said section supply station to said section delivery station.

5,304,026

MULTI-STORY, TRANSVERSE SHIFTING TYPE AUTOMATIC PARKING DEVICE

Robert Liaw, 1F, No. 4, Chie-Shang Street, Shin Tan City, Taipei; Timothy Fu, Taipei; K. M. Ling, Taipei, and Adam Wu, Taipei, all of Taiwan, assignors to Robert Liaw, Taipei, Taiwan

Filed Oct. 24, 1991, Ser. No. 782,230
Int. Cl.[5] E04H *6/12*
U.S. Cl. 414—257 **5 Claims**



1. A multi-story transverse shifting type automatic parking device comprising:

a multi-story parking building, each floor of which being divided into at least one row of equal sized parking units, an elevator passageway centrally located within the building extending upwardly through each floor and having at least two parking units in each row on opposite sides of the passageway;

at least one lifting gear mainframe respectively installed in said elevator passage way in said multi-story parking building and driven to move horizontally from one row to another when a plurality of rows are disposed on each floor, said at least one lifting gear mainframe comprising a mother elevator driven to move vertically within said passageway, and a multi-story daughter elevator driven to move vertically in said mother elevator, said multi-story daughter elevator having a predetermined number of floors and a spare floor disposed at the lowest level thereof;

a plurality of pairs of transverse shifting mechanisms respectively mounted on each floor in said multi-story parking building, one of each said paris being mounted adjacent said elevator passageway both said opposite sides thereof in each of said rows;

a plurality of carriers respectively placed on each of the parking units on each floor in said multi-story parking building and on the spare floor of said multi-story daughter elevator; and

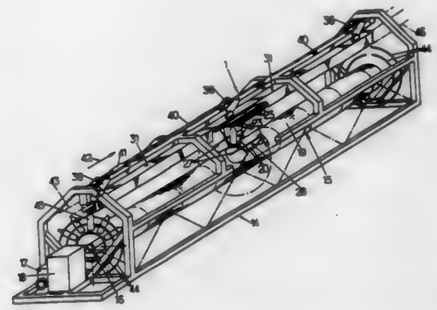
means for moving said mother and daughter elevators and said transverse shifting mechanisms to carry a car to be parked to any parking unit on any floor in the multi-story parking building and to take a car from a specific parking unit on any floor in the multi-story parking building to the elevator passageway and to the ground floor of said building; said building further including on the ground floor at two opposite sides adjacent to the elevator passageway traffic lanes for the cars to be parked.

5,304,027

BUFFER STORAGE MACHINE FOR CONTAINER CONVEYOR LINE

Paul La Barre, Sainte-Adresse, and Jacques Le Guyader, Le Havre, both of France, assignors to Sidel, Le Havre Cedex, France

Filed Mar. 23, 1993, Ser. No. 35,692
Claims priority, application France, Mar. 24, 1992, 92 03518
Int. Cl.[5] B65G *1/10*
U.S. Cl. 414—331 **6 Claims**



1. A buffer storage apparatus for containers, in particular bottles (**26**) or the like, the apparatus being adapted to be incorporated between a beginning-of-line machine (**2**) and an end-of-line machine (**4**) in order to regulate a transport feed rate of containers circulating from the beginning-of-line machine to the end-of-line machine in the event that either of the machines is slowed or briefly stopped, the buffer storage apparatus comprising:

a) an elongated frame (**14**);

b) an elongated drum (**15**) capable of being driven in rotation around a longitudinal axis, the drum being supported as it rotates by the frame;

c) a plurality of axially parallel transport slots (**30**) provided on the drum and uniformly spaced around a periphery thereof, the slots being configured to receive containers extending substantially radially while retaining the containers in succession one after the other;

d) drive means (**17**) for rotatably indexing the drum position by position around its axis to bring a selected slot to a position between stationary container feed and stationary container removal means, said feed and removal means being aligned in conjunction parallel to the axis of the drum and supported on opposite ends of the frame; and

e) container transport means (**31**) for moving the containers (**26**) in a selected slot brought into a position coincident with the feed and removal means,

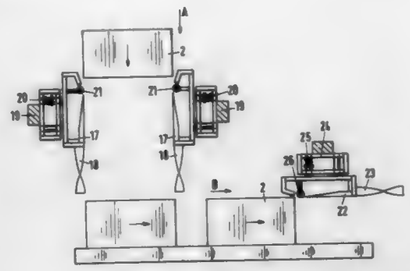
f) wherein said container transport means are pneumatic means for acting on necks of the containers, said pneumatic means being supported on the frame and being movable radially to selectively occupy a lowered position radially close to the drum and surrounding the necks of the containers located in a selected slot brought into position between the feed and removal means to move the containers forward in said slot, and a raised position radially away from the drum to release the necks of the containers in the slot extending between the feed and removal means and permit rotation of the drum.

5,304,028

METHOD AND APPARATUS FOR THE DEJACKETING OF FLAT PARALLELIPIPEDIC DEEP-FROZEN BLOCKS PACKED IN ONE-PIECE FOLDING CARTONS

Jörg Rosenberger, Haltern-Flaesheim, and Franz Book, Haltern, both of Fed. Rep. of Germany, assignors to Heinz Nienstedt Maschinenfabrik GmbH, Haltern, Fed. Rep. of Germany

Filed Nov. 18, 1991, Ser. No. 793,783
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1990, 4038457
Int. Cl.[5] B65B *69/00*
U.S. Cl. 414—412 **8 Claims**



1. A method for dejacketing a parallelipipedic deep-frozen block which is packed in a one-piece folding carton, said carton having overlapping flaps on first, second, and third narrow sides, said first and second narrow sides being opposite to each other, said method comprising:

conveying said block along a first linear direction,

while said block is being conveyed along said first linear direction, unfolding said overlapping flaps on said first and second narrow sides by inserting unfolding tools between said overlapping flaps on said first and second narrow sides and said block,

conveying said block along a second linear direction which is at a right angle to said first linear direction,

while said block is being conveyed along said second linear direction, unfolding said overlapping flaps on said third narrow side by inserting an unfolding tool between said overlapping flaps on said third narrow side and said block,

conveying said block along a third linear path which is at a right angle to said second linear path,

while said block is being conveyed along said third linear path, seizing a lower flap of said third narrow side and pulling it downward and stripping an upper flap of said third narrow side thereby removing said one-piece folding carton from said block.

5,304,029

LAMINATION SEPARATION PROCESS

Donald P. Wells, Racine, Wis., assignor to Emerson Electric Co., Inc., Racine, Wis.

Filed Nov. 6, 1992, Ser. No. 972,613
Int. Cl.[5] B21D *31/06*
U.S. Cl. 414—788 **18 Claims**

1. A process for separating individual laminations comprising:

positioning a row of the laminations against a supporting surface,

engaging the opposite ends of said row between platens which are oriented parallel to each other at a first angle relative to the axis of said row,

holding the row between said platens,

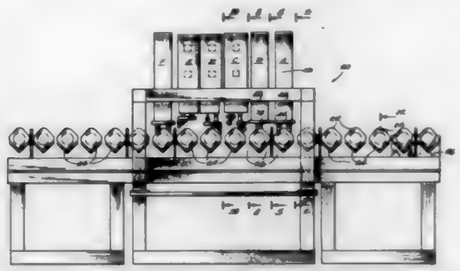
applying a force against a side of said row to compact the same against said supporting surface while said row is held between said platens,

releasing said force and said platens,

engaging the opposite ends of said row between platens

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which are oriented parallel to each other but at a second angle relative to the axis of said row,
compressing the row between said platens,
compacting said row between a compacting surface and said supporting surface while held between said platens,



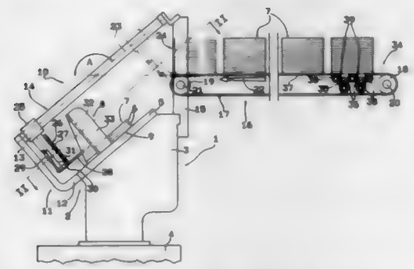
releasing said compacting surface and said platens from said row,
at least one of said first and second angles being an oblique angle.

5,304,030

DEVICE FOR THE AUTOMATIC FEEDING OF STACKS OF CUTOUTS TO A USER MACHINE

Armando Neri, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy

Filed Sep. 9, 1991, Ser. No. 756,704
Claims priority, application Italy, Sep. 11, 1990, 3649 A/90
Int. Cl.[5] B65H *1/22*
U.S. Cl. 414—795.8 11 Claims



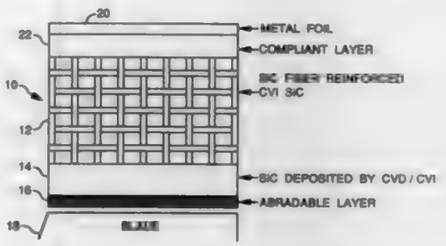
4. An apparatus for the automatic feeding of cutouts to a user machine, said device comprising a supporting plate on said user machine, conveyor means defining a loading plane and a loading station at one end thereof near said supporting plate of said user machine and, at said supporting plate at a distance from said conveyor means, an unloading station defining an unloading plane parallel to said supporting plate, said unloading plane being inclined with respect to said loading plane, said unloading station being arranged at an input station of said user machine, said unloading station having a stacks receiving tower structure for receiving stacks of cutouts for input to said user machine at said input station thereof, said device further comprising guide means, stack transfer means including a carrying mechanism movable along said guide means and carrying said stack transfer means for moving said stack transfer means above and at least in the reach of said unloading and said loading stations, thereby to transfer said stacks of cutouts from said loading station to said stacks receiving tower structure of said unloading station for input to said user machine, said guide means extending in a longitudinal direction above said user machine and parallel to said unloading plane, said transfer means having supporting means defining a supporting surface area with a selected width perpendicular to said longitudinal direction for supporting thereon said stacks of cutouts loaded thereon at said loading station and backing means defining a backing surface area for backing said stacks of cutouts supported on said supporting surface area, said supporting surface area extending transverse from said backing surface area in the direction towards said loading station to form thereby a take-up member for said stacks of cutouts, said supporting means and said backing means being adjustable with respect to said carrying mechanism, said transfer means comprising actuator means for adjusting the angle between said supporting means and the supporting surface area thereof and said carrying mechanism from a loading angular position in which said supporting surface area is parallel to said loading plane when said stacks of cutouts are loaded thereon to an unloading angular position in which said supporting surface area is parallel to said unloading plane when said stacks of cutouts are taken up by said transfer means and delivered to said stacks receiving tower structure of said unloading station.

5,304,031

OUTER AIR SEAL FOR A GAS TURBINE ENGINE

Sudhangshu Bose, Manchester, Conn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 25, 1993, Ser. No. 28,771
Int. Cl.[5] F01D *11/08*
U.S. Cl. 415—173.4 16 Claims



1. An uncooled seal for high temperature turbine blades of a gas turbine engine, said seal comprising:
a composite layer comprising a ceramic material reinforced with refractory fibers; and
a monolithic layer of said ceramic material chemically deposited on said composite layer; and
an abradable layer on said monolithic layer, said abradable layer being located for contact with said turbine blades during the operation of said gas turbine engine.

5,304,032

ABRADABLE NON-METALLIC SEAL FOR ROTATING TURBINE ENGINES

Alexander A. Bosna, 135 Summit Rd., Malvern, Pa. 19355, and Louis M. Riccio, P.O. Box 81, DeVault, Pa. 19432

Filed Jul. 22, 1991, Ser. No. 733,559
Int. Cl.[5] F03B *3/16*
U.S. Cl. 415—200 12 Claims



1. In an turbine engine having an interior housing and an annular abradable seal on the interior, a rotor, rotating turbine blades on said rotor engaging said annular abradable seal, the improvement wherein said abradable seal comprises a resin, fractured hollow inorganic non-metallic microspheres forming nooks, crannies and undercuts in said resin and a solid lubricant in said resin and in the nooks and crannies and undercuts formed by said fractured hollow non-metallic microspheres.

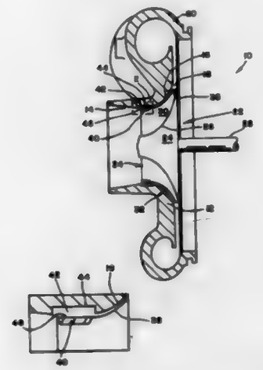
2. The invention defined in claim 1 wherein said interior surface of said housing has a set of fixed turbine blades secured thereto and having an annular relation to said rotating turbine blades, and a rotatable annular abradable seal, said rotatable annular abradable seal being on said rotor with said fixed turbine blades engaging said rotatable annular abradable seal, said rotatable annular abradable sea comprising a mix of a resin, a solid lubricant and fractured hollow non-metallic microspheres.

5,304,033

ROTARY COMPRESSOR WITH STEPPED COVER CONTOUR

Peter Y. Tang, Torrance, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Jul. 20, 1992, Ser. No. 916,660
Int. Cl.[5] F04D *1/00*
U.S. Cl. 415—206 2 Claims



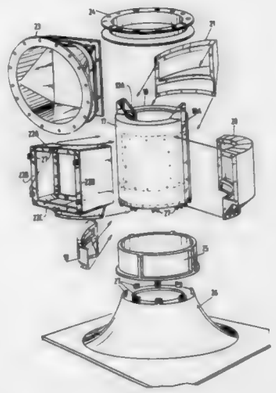
1. Compressor assembly comprising a housing, an impeller rotatably mounted in said housing, said impeller including a hub rotatable about an axis of rotation and blades extending from said hub, said blades having a free edge, said free edge having an inlet edge portion, an exit edge portion, and a connecting edge portion extending between the inlet edge portion and the exit edge portion, said housing including a conforming portion conforming generally to said connecting edge portion of said free edge and cooperating with the latter to define a first clearance therebetween, a ring circumscribing said free edge of said blades adjacent the inlet edge portion and rotatable with said blades relative to said housing, said conforming portion extending across said ring to define a flowpath around said ring communicating with said first clearance, said housing defining a circumferentially extending groove circumscribing said ring, said groove cooperating with said ring to define a second clearance therebetween, said second clearance being larger than said first clearance, wherein said groove and said ring have a length extending parallel to the axis of rotation of said hub, the length of said groove being sufficiently greater than said ring to permit gas to flow around said ring through said second clearance.

5,304,034

METHOD FOR CONSTRUCTING A PUMPING INSTALLATION

Matheus A. M. Bouwman, Hengelo, Netherlands, assignor to Stork Pompen B.V., Hengelo, Netherlands

Continuation of Ser. No. 473,406, Feb. 1, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,582
Claims priority, application Netherlands, Feb. 2, 1989, 8900260
Int. Cl.[5] F01D *25/24*
U.S. Cl. 415—214.1 7 Claims



1. A method for constructing a pumping installation at a building site having a prefabricated pump lock with chosen dimensions, comprising the steps of:
(a) manufacturing a plurality of prefabricated modules at a site other than the building site, said modules including a pump house and a suction box wherein manufacturing of the pump house comprises the following steps:
forming a cylindrical casing for the pump area;
forming a volute casing around said cylindrical casing;
forming a discharge casing;
attaching an annular discharge ring to said discharge casing;
attaching an underside casing to a bottom portion of said cylindrical casing;
casting concrete around said casings;
removing said cylindrical casing in the vertical direction after the setting of said concrete defining a cylindrical passageway;
removing said volute casing inwardly and then vertically through the cylindrical passageway; and
removing the bottom section downwardly;
(b) attaching a foundation ring to the pump house;
(c) transporting said modules to said building site;
(d) manufacturing a workfloor on a building site;
(e) placing said modules on said workfloor;
(f) coupling said modules to said workfloor; and
(g) installing a pump to said pump house.

5,304,035

PORTABLE NECKLACE FAN

C. Michael Carter, St. Louis, Mo., assignor to Great Idea Products Company, St. Louis, Mo.

Filed Oct. 22, 1992, Ser. No. 964,744
Int. Cl.[5] F04D *29/64, 29/00*
U.S. Cl. 416—63 10 Claims

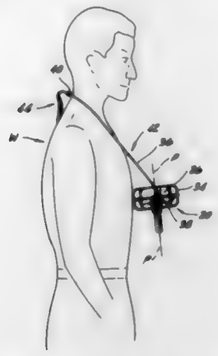
1. A portable fan adapted to be worn in a self-oriented position on the wearer for directing a current of cooling air toward the wearer, the fan comprising:
a housing made of lightweight material;

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a lightweight electric motor in the housing powered by a source such as a battery so that the motor does not require physical connection to a fixed location remote from the wearer;

means for moving air comprising a shaft connected to the motor, a hub on the shaft and a plurality of vanes projecting radially outwardly from the hub, the shaft, hub and vanes being made of a lightweight material;

a shroud made of lightweight material connected to the



housing a substantially enclosing said air moving means; and,

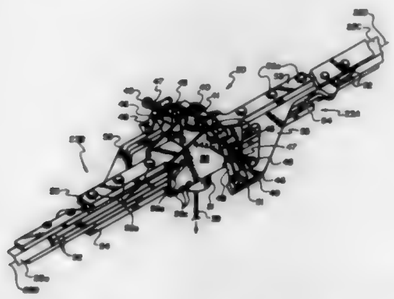
a cord attached to one of the housing or the shroud of the fan and forming a loop adapted to extend around the wearer's neck for supporting the fan below the wearer's face against the wearer's torso in an orientation wherein the fan tilts towards the wearer's body and said moving means directs a current of air upwardly toward the wearer's face without being manually held, the fan being free of support structure separate and apart from the housing and shroud.

5,304,036

AUTOGYRO AIRCRAFT

Henry J. Groen, and David L. Groen, both of Salt Lake City, Utah, assignors to Sego Tool, Incorporated, Salt Lake City, Utah

Filed Dec. 12, 1990, Ser. No. 626,972
Int. Cl.[5] B64C *27/43, 27/59*
U.S. Cl. 416—102 **16 Claims**



1. A rotor system for an autogyro aircraft that includes a frame with a fixed upright mast having a head end with a rotor system mounted thereon in freewheeling arrangement and with horizontal thrust provided to the aircraft by an engine turning a propeller, said rotor system comprising:

a spindle journaled to said head end of said fixed upright mast for rotation with respect to said mast, said spindle having an axis;

cheek plate means pivotably mounted to said spindle for sustaining non-symmetric lift forces;

left and right rotor blades, each having a leading edge, a longitudinal axis and a root end, each said rotor blade being pivotably mounted at said root end to said cheek plate means to extend away therefrom for creating lift, each said rotor blade being selectively tiltable about its respective said longitudinal axis to move said leading edge through an arc between a no-lift and a maximum lift attitude;

linkage means connected to said root ends for pivoting said left and right rotor blades equally;

a collective cable having a proximal end and a distal end, said distal end being connected to said linkage means for movement thereof in response to tension in said collective cable; and

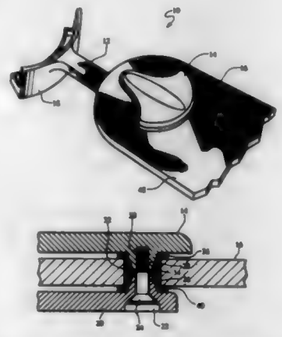
adjustment means attached to said collective cable for selectively applying and releasing said tension in said collective cable.

5,304,037

CEILING FAN BLADE VIBRATION ISOLATION SYSTEM

Robert L. Scofield, Cordova, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.

Filed Apr. 14, 1993, Ser. No. 48,282
Int. Cl.[5] F04D *29/66*
U.S. Cl. 416—134 R **9 Claims**



1. A blade iron assembly for use is securing a blade to a ceiling fan motor, said blade having generally planar front and back sides and a plurality of mounting holes formed through a proximate end thereof, said assembly comprising:

an arm member having a proximate end adapted for attachment to said motor and a distal end extending radially from said motor, said distal end having a plurality of bosses formed therein equal in number and alignable with said mounting holes in said blade, each said boss having a through hole formed therein;

a medallion member having a plurality of bosses formed therein equal in number and alignable with said mounting holes, each said boss having a threaded receptacle formed therein;

a plurality of screws, equal in number to said mounting holes, said medallion member and said arm member being securable to the front and back sides of said blade by aligning said bosses of said arm member with said bosses of said medallion member, with said mounting holes aligned therebetween, inserting said screws through said through holes in said arm member, and engaging said screws with said threaded receptacles in said medallion member; and

isolation means insertable in said mounting holes, operative

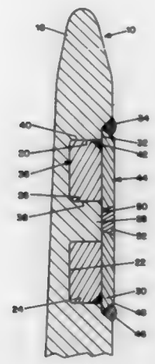
to prevent said arm member and said medallion member from contacting either said front or back side of said blade.

5,304,038

BUILT-UP MARINE PROPELLER BLADE BALANCING

Peter J. MacMurray, Holliston, Mass., assignor to Bird-Johnson Company, Walpole, Mass.

Continuation-in-part of Ser. No. 817,476, Jan. 3, 1992, abandoned. This application Jun. 16, 1992, Ser. No. 897,996
Int. Cl.[5] B64C *11/26*
U.S. Cl. 416—144 **14 Claims**



1. In a dynamically balanced, built-up marine propeller having a hub and a multiplicity of individually fabricated propeller blades mounted on the hub body, the improvement in which each blade has a cavity that is located proximate to the blade tip and has an opening at a face of the blade, each blade being dynamically balanced by having been subjected to a spin-balancing test in which only it and a calibration blade having a weight not less than the maximum weight of the heaviest blade of the propeller were mounted in diametrically opposed relation on a dummy hub to produce substantially identically balanced blades, a balance member of a predetermined weight is received in the cavity of at least one blade and is affixed to the blade, said predetermined weight being calculated from the spin-balancing test of said at least one blade, and a cover plate is received in the cavity opening of each blade, is secured to the blade in sealed relation and has an external surface fair to the profile of the blade face adjacent the cavity opening.

5,304,039

METHOD FOR PROVIDING AN EXTENSION ON AN END OF AN ARTICLE AND EXTENDED ARTICLE

Reed R. Corderman, Wyoming, and Kevin G. McAllister, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 30, 1992, Ser. No. 922,447
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[5] B22D *19/10*
U.S. Cl. 416—241 R **16 Claims**

1. In a method for providing an extension on an end of an article having an outer cross-sectional shape and a directionally oriented microstructure, the combination of steps of:

providing a molten material having a chemical composition compatible with a chemical composition of the article;

providing a die having an internal wall defining a die opening therethrough matched in cross-section with the article outer cross-sectional shape;

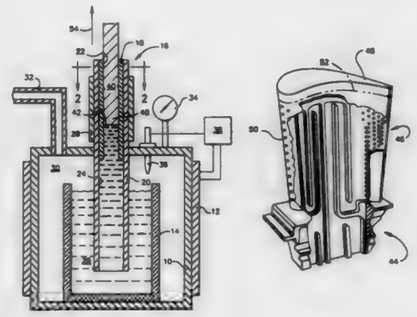
providing a die extension having a hollow interior defined by an extension wall disposed between and in communication with the die internal wall on a first extension end and with the molten material on a second extension end;

applying fluid pressure to the molten material to force the molten material into the die extension hollow interior through the second extension end;

passing an end of the article through at least a portion of the die opening and into contact with the molten material;

holding the article end in contact with the molten material for a time sufficient for a portion of the article end to interact with the molten material, the article end being a directionally oriented microstructure growth seed; and then,

withdrawing the article end through the die opening at a rate which allows the molten material to directionally solidify in the die opening on the article end as an extension of and integral with the article end and with a directionally oriented crystal structure substantially continuous with the article directionally oriented microstructure.



7. An article having a directionally oriented crystallographic structure comprising:

a body portion having a directionally oriented first crystal structure, said first crystal structure including the size, shape, spacing and composition of precipitates, phases, inclusions and dendrites, and a first chemical composition; and

an extension integral with an end of the body portion, the extension having a directionally oriented second crystal structure compatible with an extending continuous with the body first crystal structure, said second crystal structure including the size, shape, spacing and composition of precipitates, phases, inclusions and dendrites, distinguishable from the size, shape, spacing and composition of precipitates, phases, inclusions and dendrites distinguishable from the first crystal structure, and a second chemical composition.

5,304,040

TRI-POD PORTABLE FAN

Jui-Shang Wang, Taipei, Taiwan, assignor to Duracraft Corporation, Sudbury, Mass.

Filed Jul. 8, 1991, Ser. No. 726,676
Int. Cl.[5] F01D *25/00*
U.S. Cl. 416—247 R **14 Claims**

1. An air blower comprising:

rear housing means defining a plurality of air inlet openings;

front housing means comprising an annular peripheral portion secured to said rear housing means, a central support portion within said peripheral portion and including a rear surface facing said rear housing means and an oppositely directed front surface, and a grillwork portion extending between said peripheral portion and said support portion;

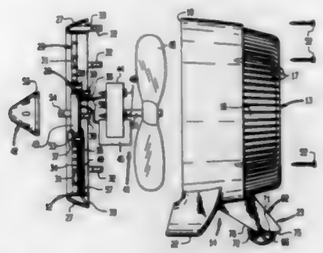
a fan assembly secured to said rear surface and projecting toward said rear housing means, said fan assembly comprising an electrical motor and a fan blade rotatably cou-

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pled therewith, an electrical switch operatively connected to said motor, and an actuator operatively coupled to said electrical switch;

a base means adapted to support said air blower on a support surface, said base means comprising three legs, one of said legs comprising a stem portion having a pair of spaced apart brackets and a pivot means comprising a pivot pin extending between said brackets; and



adjustment means comprising a rotary member having an eccentric hole rotatably coupled to said pivot means and adapted to engage the support surface, said rotary member being disposed between said brackets and defining rotation limiting stop surfaces adapted for engagement therewith for selectively altering the orientation of said blower and for changing the spacing between said one leg and the other two of said three legs.

5,304,041

METHOD AND DEVICE FOR DOSING PUMPING

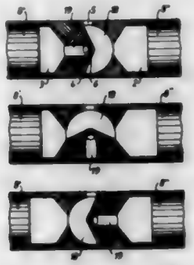
Paolo Fontanazzi, Modena, and Alberto Fini, Carpi, both of Italy, assignors to Tetra Dev-Co, Modena, Italy

Filed Aug. 21, 1992, Ser. No. 933,084

Claims priority, application Italy, Aug. 27, 1991, MI 91 A 2291

Int. Cl.[5] F04B *13/00*

U.S. Cl. 417—53 **14 Claims**



1. A method of pumping a product with a pump unit having a first and a second chamber and a first and a second reciprocating piston movable in the respective first and second chambers, the first and second chambers alternatingly communicating with inlet and outlet passages, comprising the steps of:

displacing the first piston in the first chamber through a first piston suction stroke;

displacing the second piston in the second chamber through a second piston suction stroke;

controlling the timing of the first and second piston suction strokes so that least an initial portion of the second piston suction stroke and at least a final portion of the first piston suction stroke occur at the same time;

opening the inlet passage such that, while the first piston is displaced through the final portion of the first piston suction stroke and while the second piston is displaced through the initial portion of the second piston suction stroke, the inlet passage is fully open to both the first and second chambers.

5,304,042

VARIABLE DISPLACEMENT COMPRESSOR

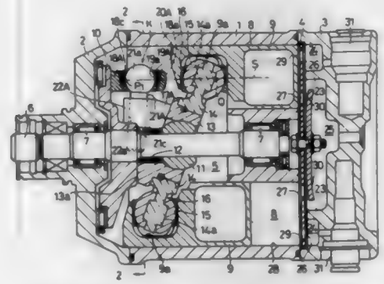
Hiroaki Kayukawa; Kazuya Kimura; Shigeyuki Hidaka; Toru Takeichi, and Kenji Takenaka, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 939,116, Sep. 2, 1992. This application Apr. 6, 1993, Ser. No. 43,282

Claims priority, application Japan, Apr. 10, 1992, 4-91106

Int. Cl.[5] F04B *1/12*

U.S. Cl. 917—222.1 **19 Claims**



1. A variable displacement compressor, comprising:

a) a housing having a plurality of cylinder bores disposed therein;

b) a plurality of pistons reciprocatively disposed in said cylinder bores;

c) a drive shaft rotatively supported in said housing along an axis thereof;

d) a lug plate having a support arm disposed along an arc centered on said axis of said drive shaft, said lug plate being in rotative communication with said drive shaft;

e) a swash plate member slidably and tiltably mounted on said drive shaft and operatively connected with said pistons, said swash plate member including a swash plate and a rotary journal having at least one bracket; and

f) a hinge mechanism for rotatively coupling said lug plate with said swash plate member, said hinge mechanism including a pin having first and second end portions, said first end portion being connected to the rotary journal bracket and said second end portion being connected to said support arm of the lug plate.

5,304,043

MULTIPLE AXIS ROTARY COMPRESSOR

Thomas Shilling, Englewood, Colo., assignor to AvMed Compressor Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 953,989, Sep. 29, 1992, abandoned. This application Oct. 28, 1992, Ser. No. 967,810

Int. Cl.[5] F04B *1/22, 27/08*

U.S. Cl. 417—269 **25 Claims**

1. An axial piston gas compressor comprising:

a stationary spindle assembly;

said stationary spindle assembly further comprising an axial piston spindle having a central axis and a cylinder spindle having a central axis;

said cylinder spindle central axis obliquely disposed to said axial piston central axis;

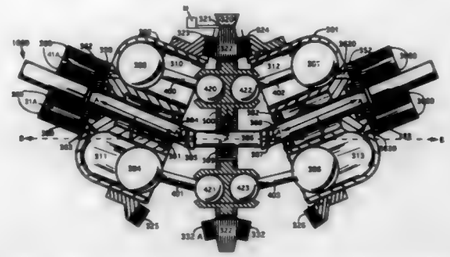
a rotating piston disk rotatably mounted on said axial piston spindle;

a rotating cylinder housing rotatably mounted on said cylinder spindle;

said rotating cylinder housing having an axial limit disposed entirely above the central axis of the axial piston spindle;

means for synchronously rotating said rotating piston disk and said rotating cylinder housing;

said rotating piston disk having a connection means to a piston;



said rotating cylinder housing further comprising a cylinder slidingly engaged with said piston;

means for input of the gas into said cylinder; and

means for output of the gas from said cylinder.

5,304,044

HERMETIC COMPRESSOR

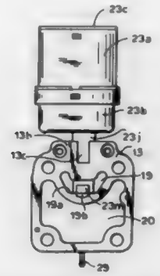
Satoshi Wada; Toshihiro Yamada, both of Kanagawa; Shuichi Yakushi, Yokohama, and Hideki Otori, Kanagawa, all of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Filed Mar. 6, 1991, Ser. No. 665,414

Claims priority, application Japan, Mar. 6, 1990, 2-55269

Int. Cl.[5] F04B *39/00*

U.S. Cl. 417—312 **12 Claims**



1. A compressor for compressing a fluid comprising:

(A) a compressor unit including a cylinder assembly having a suction port formed therein;

(B) an integral unitary metallic cylinder head secured to said compressor unit and including an insertion hole, a suction chamber communicating with said insertion hole and said cylinder assembly, and a discharge chamber communicating with said cylinder assembly; and

(C) a suction muffler secured to said cylinder head and formed of a material of low thermal conductivity for receiving the fluid to be compressed through a fluid inlet port, said suction muffler having a single communicating duct extending through said insertion hole, partially disposed within said suction chamber, and terminating within said suction chamber adjacent said suction port for leading the fluid to be compressed into said cylinder assembly; said communication duct having a sidewall and defining a terminal portion disposed within said suction chamber adjacent said suction port for leading the fluid to be compressed into said cylinder assembly, said terminal portion within said suction chamber adjacent said suction port defining an aperture in said duct sidewall facing said suction port so that the fluid to be compressed is more likely to flow into said suction port than to directly fill up said suction chamber.

5,304,045

CLOSED TYPE MOTOR-DRIVEN COMPRESSOR, A SCROLL COMPRESSOR AND A SCROLL LAP MACHINING END MILL

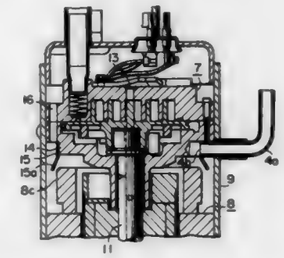
Nobutoshi Hoshino, Imaichi; Kazuo Ikeda, Tochigi; Kooichi Inaba, Tochigi; Shigeya Kawaminami, Tochigi; Atushi Shimada, Tochigi; Tatuya Wakana, Tochigi; Nobuo Abe, Tochigi; Kunio Fukami, Tochigi; Hidenari Takada, Tochigi; Masanori Wakaizumi, Tochigi; Mitsuaki Haneda; Keiji Taguchi, both of Ibaraki; Toshio Yamanaka, Yokohama; Tatuo Horie, Tochigi, and Masami Masuda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 942,022

Claims priority, application Japan, Oct. 3, 1991, 3-255625; Jan. 10, 1992, 4-003129; Jan. 13, 1992, 4-003885

Int. Cl.[5] F04C *29/02*

U.S. Cl. 417—372 **5 Claims**



1. A closed type motor-driven compressor comprising:

a closed container;

a motor accommodated in said closed container;

a compression means in said container;

a crankshaft for connecting said motor to said compression means, said compression means including a frame disposed in said closed container adjacent said motor and dividing the interior of said closed container into first and second spaces, said compression means having a discharge port through which a mixture of compressed gas and atomized lubricant oil is discharged into said first space, said motor being disposed in said second space, said frame including a bearing portion through which said crankshaft rotatably extends, said frame having formed thereon a passage communicating said first space with said second space adjacent a peripheral wall of said container so that the mixture of the compressed gas and the atomized lubricant oil flows from said first space through said passage into a first zone of said second space radially outwardly remote from said bearing portion of said frame; and

a discharge pipe having an inlet positioned in said second space in said closed container and extending outwardly from said closed container to allow the compressed gas to be discharged from said second space, an amount of lubricating oil being contained in a bottom portion of said closed container,

wherein a substantially annular shielding member is disposed in said second space between said compression means and said motor and has an axial end connected to said frame of said compression means and extends therefrom into said second space substantially towards said bottom portion of said container to substantially shield a second zone of said second space radially inwardly of said first zone of said second space, said inlet of said discharge pipe is positioned in said second zone of said second space, said passage has an end open to said first zone of said second space whereby a flow of the atomized lubricant oil contained in

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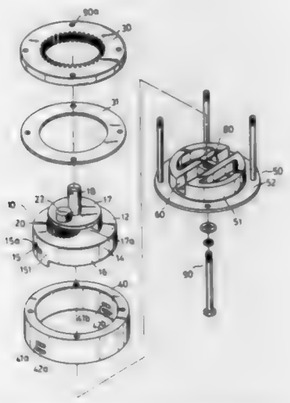
the mixture flowing from said first space through said passage into said first zone of said second space is minimized from said open end of said passage into said second zone of said second space and thus to said inlet of said discharge pipe.

5,304,046

FLUID TRANSPORT DEVICE

Gene-Huang Yang, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung Taiwan, Taiwan

Filed Jun. 14, 1993, Ser. No. 76,237
Int. Cl.[5] F04C *21/00*
U.S. Cl. 417—519 **6 Claims**



1. A fluid transport device for compressing or pumping a work fluid comprising;

a rotatingly supported coupling defining a first rotational axis;

a first gear of predetermined pitch diameter rotatingly secured to said coupling, the rotational axis of said first gear being parallel with said first rotational axis and offset therefrom by half the pitch diameter of said first gear;

a stationery internal second gear parallel engaged with said first gear and having a pitch diameter twice that of said first gear;

a housing means defining aligned first and second chambers;

a piston means slidingly engaged in said first and second chambers;

a connecting means for engaging said piston means with said first gear, said connecting means defining a second rotational axis parallel with the rotational axis of said first gear and tangent to the pitch circle thereof, whereby the rotation of said coupling about said first rotational axis effects a to and fro sliding motion of said piston means in said first chamber and said second chamber;

a driver means for delivering torque to said coupling means;

at least one aperture in communication with said first chamber and at least one aperture in communication with said second chamber, for the passage of said working fluid;

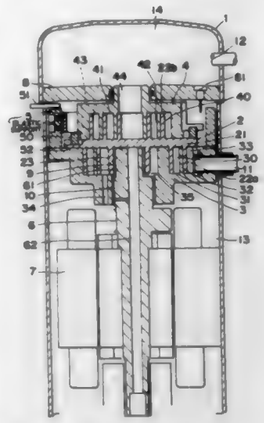
a valve means for directing an egress of said working fluid from said first chamber or said second cylinder via a corresponding said at least one aperture to an outlet conduit and directing an ingress of said working fluid into said first chamber or said second chamber via a corresponding said at least one aperture from an inlet conduit.

5,304,047

SCROLL COMPRESSOR OF TWO-STAGE COMPRESSION TYPE HAVING AN IMPROVED VOLUMETRIC EFFICIENCY

Yoshitaka Shibamoto, Sakai, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Filed Aug. 28, 1992, Ser. No. 936,664
Claims priority, application Japan, Aug. 30, 1991, 3-220169
Int. Cl.[5] F04C *18/04, 23/00*
U.S. Cl. 418—5 **10 Claims**



1. A scroll compressor comprising:

a first scroll having a flat plate and first and second spiral ridges provided on opposite faces of the flat plate, said first scroll being drivably mounted on a drive shaft connected to a motor;

a second scroll having an end plate with a flat face and a spiral ridge provided on the flat face of the end plate, the second scroll being placed on one side of the first scroll so that the flat face of the end plate is opposed to one face of the flat plate of the first scroll and that the spiral ridge of the second scroll is meshed with the first spiral ridge of the first scroll; and

a third scroll having an end plate with a flat face and a spiral ridge provided on the flat face of the end plate of the third scroll, the third scroll being placed on the other side of the first scroll so that the flat face of the end plate of the third scroll is opposed to the other face of the flat plate of the first scroll and that the spiral ridge of the third scroll is meshed with the second spiral ridge of the first scroll; and

a casing accommodating the first, second and third scrolls and having an internal space therein;

a suction passage for introducing a fluid to be compressed into the casing; and

a discharge passage for discharging the fluid out of the casing after the fluid is compressed, characterized in that:

a lower-stage compression part provided with a suction port and a discharge port is formed between the first and second scrolls, the suction port of the lower-stage compression part being formed in the vicinity of external end portions of the first spiral ridge of the first scroll and the spiral ridge of the second scroll and communicating with the suction passage;

a higher-stage compression part provided with a suction port and a discharge port is formed between the first and third scrolls, the suction port of the higher-stage compression part being formed in the vicinity of the external portions of the second spiral ridge of the first scroll and the spiral ridge of the third scroll, the discharge port of the higher-stage compression part being formed in the vicinity of internal end portions of the second spiral ridge of the first scroll and the spiral ridge of the third scroll and communicating with the discharge passage; and

a discharge port of the lower-stage compression part communicates with the suction port of the higher-stage compression part,

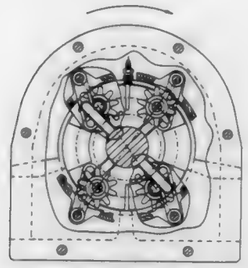
whereby the fluid is first compressed to a predetermined intermediate pressure at the lower-stage compression part and then the fluid is further compressed to a higher pressure at the higher-stage compression part.

5,304,048

SCISSOR-ACTION PISTON ROTARY ENGINE WITH DISTRIBUTIVE ARMS

Charles C. Huang, 4968 McCoy Ave., San Jose, Calif. 95130, assignor to Charles Chao-peng Huang, San Jose, Calif.

Filed Oct. 15, 1991, Ser. No. 775,477
Int. Cl.[5] F02B *53/00*
U.S. Cl. 418—36 **4 Claims**



1. A scissor-action piston, rotary four-stroke, internal combustion engine comprising a series of stationary parts housing a main shaft and a rotor assembly, said series of stationary parts comprising a cylinder block with an inner cylinder bore, a front cylinder cover, a rear cylinder cover, a front gear box, a rear gear box, a front end cover having a sun gear thereon, a rear end cover having a sun gear thereon, bolts and nuts which cluster and fasten said series of parts in queue to form a rigid housing, said rotor assembly comprising a pair of identical co-axial rotors with each rotor having a pair of diametrically opposed sector shape pistons, an axially extended sleeve and a center hole, said rotor assembly is centered and supported by said main shaft through said center holes and journaled in said cylinder bore, with the pistons of one rotor intermediately interlaced with the pistons of the other to form an alternate piston-space-piston arrangement, each of said sleeves extends outwardly from said cylinder bore in opposite directions, two planet gear housings with each housing connected through a key and keyway to each of said extended sleeves, said main shaft extended axially forward and backward, fitted and journalled within the center holes of said end covers, two keys and two keyways are furnished at both ends of the main shaft for power output, means joining said main shaft to said sleeves for reciprocating said rotors with respect to each other as said rotor assembly rotates with respect to said cylinder, said means comprising four planet gears with each gear having an eccentric and a crank arm thereon, said planet gears are installed to said planet gear housings and are drivingly engaged with said sun gears of said end covers, the gear ratio between said sun gears and said planet gears is 2:1, two pairs of axially offset torque transmission arms are mounted to said main shaft, each of said torque transmission arms is set diametrically apart by 90°, intermediate means comprising four sets of distributive arms connect said crank arms to said torque transmisstion arms, each distributive arm is pivoted on said planet gear housing and has an elongated slot for accommodating the eccentric pin of said crank arm and the pin of said torque transmission arm, the arrangement stated above along with a spark plug, an intake port and an exhaust port around the cylinder wall, thereby effecting rotational reciprocated movement between said rotors and thereby the pistons attached thereon for providing compression and expansion spaces between said pistons and establishing intake, compression, ignition, expansion and exhaust processes of the four stroke internal combustion engine while said main shaft is rotated uniformly.

5,304,049

FRICTIONLESS ROTARY PUMP-MOTOR-METER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 375,466, Jul. 5, 1989, Pat. No. 5,051,078. This application Jun. 1, 1990, Ser. No. 531,853
Int. Cl.[5] F01C *1/44*; G01F *3/08*
U.S. Cl. 418—257 **18 Claims**



1. An apparatus for handling fluid comprising in combination:

a) a body including a cylindrical cavity having a smooth cylindrical wall;

b) a rotor assembly including a shaft with at least one hub member and a plurality of flaps disposed about the shaft, each of the plurality of flaps having a cross section including a round first edge disposed adjacent to the shaft and a crescent second edge, and supported by said at least one hub member in a pivotable arrangement about each of a plurality of pivot axes disposed parallel to and about the shaft in an axisymmetric arrangement and coinciding with the center of radius of the round first edge thereof, wherein the round first edges belonging to adjacent flaps of said plurality of flaps are disposed in a closely adjacent relationship therebetween in an arrangement substantially free of any extensions of rotary members supported by the shaft extending radially from said shaft and extending into and through space between the round first edges belonging to the adjacent flaps, said rotor assembly disposed within said cylindrical cavity in a parallel and eccentric relationship in a rotatable arrangement about the central axis of said shaft;

c) at least one rotary cam guide of a circular geometry disposed on a plane substantially perpendicular to the shaft in a rotatable arrangement about a cam axis parallel and eccentric to said shaft and to the geometrical central axis of said cylindrical cavity, said rotary cam guide guiding a plurality of cam followers following a circular path coaxial to said cam axis, wherein at least one each of the plurality of cam followers is secured to each of said plurality of flaps in an off-set relationship to the pivot axis of said one each of the plurality of flaps in such a way that the second crescent edges of said plurality of flap slide on the cylindrical wall of said cylindrical cavity under a controlled pressure therebetween; and

d) a first and second port openings respectively open to two opposite halves of said cylindrical cavity respectively located on two opposite sides of a hypothetical plane generally including the central axis of said shaft and the geometrical central axis of said cylindrical cavity.

VOL 1161 ISS 3 APR 19 1994 UMI

5,304,050

MACHINE FOR MOLDING BONDED PLASTICS MATERIAL

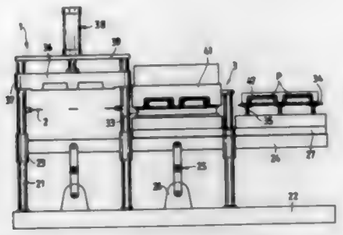
Mario Vismara, Casatenovo, Italy, assignor to Devi S.p.A., Besana Brianza, Italy

Filed Apr. 30, 1992, Ser. No. 876,384

Claims priority, application Italy, May 3, 1991, MI91 A 001214

Int. Cl.[5] B29C 39/10, 45/14

U.S. Cl. 425—4 R 18 Claims



1. A machine for forming and molding plastic material to form bonded molded articles comprising:

a frame;

a preforming station, a molding station and a discharge station in spaced relationship on said frame;

a half-mold movably mounted on said frame for movement into and between said preforming and molding stations;

preforming mold means mounted on said frame in cooperating relationship with said half-mold in said preforming station for forming at least one portion of a plastic sheet material therebetween;

means for feeding said plastic sheet material into a forming position between said half-mold and said preforming mold means;

separating means mounted on said preforming mold means and cooperating with said half-mold for separating at least one formed portion of said plastic sheet material from said plastic sheet material to produce at least one preformed piece in said preforming station;

molding mold means mounted on said frame in said molding station in cooperating relationship with said half-mold in said molding station for providing a mold cavity between said half-mold and said molding mold for molding foamable plastic material onto said at least one preformed piece positioned by said half-mold in said mold cavity;

means for feeding said foamable plastic material to said mold cavity;

means for applying steam in the form of steam pulses to said mold cavity for sintering said foamable plastic material and bonding said foamable plastic material to said at least one preformed piece in said mold cavity to form at least one final molded article;

half-mold positioning means for moving said half-mold between said preforming and molding stations;

mold displacing means for relatively displacing said half-mold and said preforming mold means with respect to each other between a closed forming position and an open position and for relatively displacing said half-mold and said molding mold means with respect to each other between a closed molding position and an open position; and

means for removing said at least one final molded article from said machine;

said means being synchronously operable so that said half-mold and said preforming mold means are in said open position when said plastic sheet material and said half-mold are in said forming position in said preforming station and at least one previously made final molded article is retained in said molding mold means, said half-mold and said preforming mold means are in said closed position for forming and separating said at least one preformed piece when said at least one previously made final molded article is released from said molding mold means, said half-mold and said preforming mold means are in said open position in said preforming station when at least one preformed piece is retained on said half-mold and said at least one previously made final molded article is removed from said molding mold means, said half-mold and said molding mold means are in said open position when said half-mold is in said molding station and said at least one previously made final molded article is in said discharge station, said half-mold and said molding mold means are in said closed position when said foamable plastic material and said steam are fed to said mold cavity and said at least one previously made final molded article is discharged from said discharge station, said half-mold and said molding mold means are in said open position thereof when said half-mold is in said molding station and said at least one final molded article is retained on said molding mold means, and said final molded article is retained on said molding means when said half-mold is moved to said preforming station and said plastic sheet material is fed to said forming position in said preforming station to begin another cycle.

5,304,051

PLASTICISING UNIT FOR A SCREW INJECTION MOULDING MACHINE HAVING IMPROVED VOLUME ADJUSTMENT MEANS

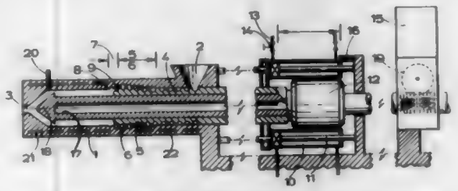
Paul Meyer, Ascona, Switzerland, assignor to Frenkel C-D Aktiengesellschaft, Basel, Switzerland

Filed Jun. 24, 1991, Ser. No. 720,070

Claims priority, application United Kingdom, Mar. 26, 1991, 9106384

Int. Cl.[5] B29C 45/77

U.S. Cl. 425—145 4 Claims



1. A plasticizing unit for plasticizing material, comprising:

a barrel having a plasticizing zone portion of a substantially constant inner diameter, an inlet, an outlet axially spaced from the inlet, a generally cylindrical reservoir zone portion axially intermediate the plasticizing zone portion and the outlet, a continuous helical groove formed in the plasticizing zone portion which varies from zero area to full area in the axial direction toward the outlet, and a flow channel communicating the continuous helical groove in the plasticizing zone portion with the reservoir zone portion for flow of plasticized material from the continuous helical groove into the reservoir zone portion;

a screw disposed in the barrel and having a substantially constant outer diameter portion in which a continuous helical groove is formed, the continuous helical groove varying in cross-section from full area to zero in the axial direction toward the outlet;

means for selectively axially moving the screw relative to the barrel between a plasticizing axial position in which the continuous helical grooves of the barrel and the screw cooperate with one another to transfer material between one another and thereby effect plasticizing of the material and a material ejection axial position in which the screw is axially closer to the outlet than in its plasticizing axial position, the screw being axially movable from its plasticizing axial position to its material ejection axial position to thereby displace plasticized material out of the reservoir zone portion through the outlet; and

means for adjustably varying the volumetric capacity of the reservoir zone portion while the screw is maintained in its plasticizing axial position, whereby the volume of plasticized material which is received in the reservoir zone portion can be selectively controlled to a desired shot volume of plasticized material which is subsequently displaced from the reservoir zone portion by the screw.

5,304,052

SPINNING BLOCK

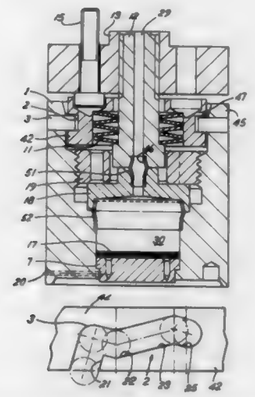
Heinz D. Schroeder, Frankfurt am Main; Rainer Tietze, Gross-Gerau, and Guenter Koschinek, Dietzenbach, all of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 62,121

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1992, 4239560

Int. Cl.[5] B29C 47/30

U.S. Cl. 425—192 S 8 Claims



1. A spinning block for melt spinning polymers comprising two main parts, one of these parts surrounding the other collar-like, and consisting of a nozzle block casing including a filter element and a spinning nozzle plate, and of a coupling connected to said nozzle block casing, further including a central melt channel extending through said coupling and into said casing to supply polymer to said spinning nozzle plate, an expandable bushing disposed in said melt channel at an interface between said casing and said coupling and locking means for detachably securing said casing to said coupling, said locking means comprising

at least two bolts secured to one of said two main parts, said bolts being disposed radially with respect to the axis of said melt channel,

at least two grooves within the second of said two main parts for receiving and guiding each of said bolts

each said groove being positioned concentrically with respect to said axis and having a curved configuration extending from an inlet aperture to a groove end, said configuration comprising four segments disposed at different angles inclined with respect to a plane perpendicular to said axis and parallel to said interface at the level of said inlet aperture, said angles being defined as follows:

a first segment, adjacent said inlet aperture disposed at an angle of between 70° and 90°,

a second segment disposed at an angle between 10° and 20° inclined toward said plane,

a third segment disposed at an angle between 10° and 20° inclined away from said plane,

a fourth segment disposed at an angle of 0° to 20° inclined toward said plane

whereby as said casing and said coupling are rotated with respect to each other, said bolts slide within said grooves to draw said casing and coupling together, to expand said bushing to seal the melt channel at said interface and to lock said coupling and said casing together.

5,304,053

APPARATUS FOR EXTRUSION OF PLASTIC AND/OR RUBBER MIXTURES

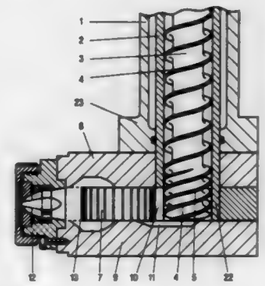
Hans-Joachim Gohlisch, Hanover, and Wilfried Baumgarten, Pattensen, both of Fed. Rep. of Germany, assignors to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Filed May 8, 1992, Ser. No. 880,232

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115246

Int. Cl.[5] B29C 47/00

U.S. Cl. 425—204 4 Claims



1. Apparatus for extrusion of viscous material selected from the group consisting of plastic material and elastomeric material comprising

a gear pump comprising a housing having a gear chamber, an inlet passage opening into said gear chamber and a discharge passage opening out of said gear chamber, two intermeshing gears rotatable in said gear chamber about parallel axes, said intermeshing gear wheels having an inlet bight opening into said inlet passage and a discharge bight opening into said discharge passage, said housing having a blind cylindrical bore which extends into said housing parallel to said axes of said gear wheels and has an inner end closed by a wall of said housing, said cylindrical bore communicating with said inlet passage of said housing,

a screw extruder comprising an extruder cylinder, a cylindrical bushing in said cylinder and an extruder screw rotatable in said bushing, said extruder screw having at least one continuous helical flight through its length,

said screw extruder being assembled with said gear pump with an end portion of said cylindrical bushing extending into said cylindrical bore of said gear pump housing and with an axis of rotation of said extruder screw parallel to and spaced laterally from said axes of rotation of said gears of said gear pump.

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5,304,054

PLASTICIZING SECTIONS OF COLD FEED RUBBER EXTRUDERS

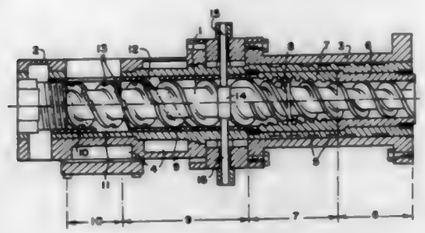
Paul Meyer, Ascona, Switzerland, assignor to Frenkel C-D Aktiengesellschaft, Basle, Switzerland

Continuation-in-part of Ser. No. 694,713, May 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 691,268, Apr. 25, 1991, Pat. No. 5,215,374. This application Oct. 27, 1992, Ser. No. 967,959

Claims priority, application United Kingdom, Apr. 19, 1991, 91084R97

Int. Cl.[5] B29C *47/00*

U.S. Cl. 425—208 **4 Claims**



1. An extruder with a screw rotatably mounted and driven to coact with a barrel, said extruder comprising an inlet, a compression section having at least one screw flight therein, a plasticizing section and an exit section, said plasticizing section embodying a Transfermix geometry, said plasticizing section following said compression section and including a plurality of helical grooves in the screw which vary in cross section from full area to zero area and substantially correspond to the length of the plasticizing section, a plurality of opposite-handed helical grooves in the barrel which correspondingly vary from zero area to full area, whereby in operation material is transferred from the screw to the barrel while being mixed and plasticized, the portion of said screw located immediately upstream of said plasticizing section comprising a circumferential cut extending substantially to the bottoms of said helical grooves of said screw, and said barrel, at a position therein corresponding to said cut, having a set of flow interrupters fixedly attached thereto, said flow interrupters being substantially equally spaced around the circumference of said screw, having sharp cutting edges directed into the flow of material coming from the flight of the screw in the compression section, and extending to a depth substantially equal to the bottoms of said helical grooves in said screw, said flow interrupters loosely fitting into said cut in said screw, said flow interrupters being provided with separate heating means to operate at a temperature in excess of that of the barrel.

5,304,055

APPARATUS AND METHODS FOR THE PRODUCTION OF THREE-DIMENSIONAL FOOD PRODUCTS

Bernhard H. Van Lengerich, Ringwood; Denise Thornley, Maywood, both of N.J.; John Palermo, Crestwood, N.Y., and Daniel A. Koppa, Bloomfield, N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Filed Nov. 27, 1991, Ser. No. 799,259

Int. Cl.[5] B29C *47/30*; A21C *11/10, 11/16*

U.S. Cl. 425—225 **16 Claims**

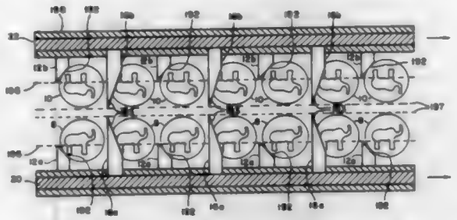
1. Apparatus for the production of three-dimensional food products comprising:

a. means for feeding a food composition to a plurality of dies,

b. a plurality of dies for receiving said food composition and shaping it into at least one shape conforming to the orifices of the dies, whereby a shaped extrudate rope is obtained from each die,

c. first cutting means which passes across only a portion of the orifices of a plurality of said dies to only partially cut each of a plurality of the shaped extrudate ropes, and

d. second cutting means which passes across the entire orifices of a plurality of said dies to completely cut each of a plurality of the shaped extrudate ropes to obtain three-dimensional food pieces, wherein each of said first and second cutting means are attached to a continuous moving band or chain.



5,304,056

APPARATUS FOR SEALING EDGES OF CORRUGATED PLASTIC MATERIAL

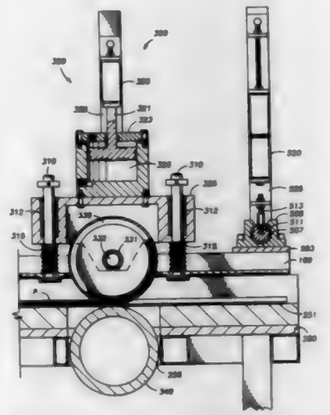
Gary W. Fetterhoff, Broken Arrow, Okla., assignor to James M. Park, Broken Arrow, Okla.

Continuation-in-part of Ser. No. 686,036, Apr. 16, 1991, Pat. No. 5,183,672. This application Jul. 23, 1992, Ser. No. 919,353

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] B29C *59/04*

U.S. Cl. 425—304 **12 Claims**



1. An apparatus for embossing onto a length of material moving along a linear path at least one seal line pattern, located at or substantially near the edge of the material, and comprising a series of generally parallel grooves, the apparatus comprising:

a frame;

a means for moving said material along a linear path;

a means for feeding said material, said feeding means being situated at an upstream end of the conveyor system and located to position the said material on the moving means;

a means for heating said material, said heating means being situated downstream of the feeding means and located to heat the area to be embossed with the seal line pattern to a temperature sufficient to form the seal line pattern; and

a means for embossing said plastic material, said embossing means comprising a knurled flat roller and a cooperating embossing roller comprising a series of ridges suitable for embossing the seal line pattern; and

a means for trimming excess material away from the seal line.

5,304,057

APPARATUS FOR SIMULTANEOUSLY MOLDING PORTIONS OF SEPARABLE ARTICLE

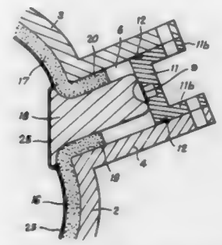
Eric P. G. Celerier, Gennevilliers, and Philippe Henrio, Lardy, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Jun. 2, 1993, Ser. No. 70,672

Claims priority, application France, Jun. 3, 1992, 92 06697

Int. Cl.[5] B29C *33/00*

U.S. Cl. 425—389 **12 Claims**



1. Apparatus for simultaneously molding portions of a separable article having a plurality of separable portions comprising:

a) a first mold portion having a first flange extending outwardly therefrom, said first mold portion and first flange defining a first portion of a molding cavity;

b) a second mold portion having a second flange extending outwardly therefrom, said second mold portion and second flange defining a second portion of a molding cavity;

c) connection means for connecting the first and second mold portions together such that the first and second flanges are separated so as to define a space therebetween greater than twice the thickness of molding material placed against the flanges; and

d) a silicone bead element located in the space between the first and second flanges adapted to exert a compressive force on molding material urging it into contact with the first and second flanges.

5,304,058

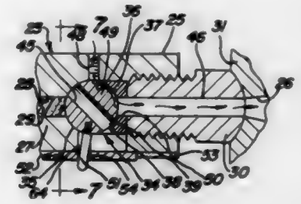
INJECTION NOZZLE

Antony Gill, Rochester, Mich., assignor to Automotive Plastic Technologies, Sterling Heights, Mich.

Filed Jun. 12, 1991, Ser. No. 714,118

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—562 **8 Claims**



1. A nozzle for use in injection molding machines, said nozzle including;

a) a nozzle body having an upstream end for communication with an end of an associated injection molding machine, and a downstream end for fluid communication with a sprue of an associated mold body, said nozzle body including:

i) an axially extending bore for establishing a flow path,

ii) a valve chamber provided in said axially extending bore and in fluid communication therewith, and

iii) a second bore in fluid communication with said valve chamber;

b) a spherical valve mounted in said valve chamber for rotation between a first position and a second position, wherein when said valve is in said first position, a first flow path is established between said upstream end and said downstream end of said nozzle body, and when said spherical valve is in its second position, a second flow path is established which provides fluid communication between said second bore and said downstream end of said nozzle body, while blocking said first flow path, and wherein said spherical valve includes a sphere, said sphere including:

i) a diametral bore used to establish fluid communication between said upstream end and said downstream end of said nozzle body when said spherical valve is in said first position, and

ii) an arcuate recess provided in the surface of said sphere to provide communication between said second bore and said downstream end of said nozzle body when said spherical valve is in said second position,

c) a sealing member sealingly mounting said spherical valve in said valve chamber, said sealing member having a bore therein to allow fluid communication between said valve chamber and said downstream end of said nozzle body,

d) means to activate said spherical valve, and

e) said second bore adapted for communication with a pressurized gas source.

5,304,059

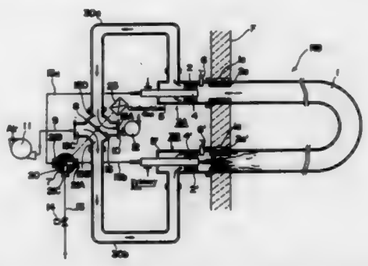
BURNER DEVICE OF REGENERATIVE AND ALTERNATE COMBUSTION TYPE

Ryoichi Tanaka, and Masao Kawamoto, both of Yokohama, Japan, assignors to Nippon Furnace Kogyo Kaisha, Ltd., Kanagawa, Japan

Continuation of Ser. No. 33,859, May 6, 1993. This application Jun. 15, 1993, Ser. No. 79,071

Int. Cl.[5] F23D *21/00*

U.S. Cl. 431—170 **7 Claims**



1. A burner device of regenerative and alternative combustion type including a pair of burners and a regenerative bed, wherein a combustion air is supplied through said regenerative bed to said burners and a combustion gas generated therefrom is exhausted through said regenerative bed, and wherein both said combustion air and a fuel are alternately supplied to either of said pair of burners, so that a combustion is performed in one of said burners, while not being performed in another of said burners, said regenerative heating burner device comprising:

a combustion air supply system which is connected via said

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regenerative bed to said pair of burners and further connected to a combustion air supply source;

a fuel supply system which is connected to said pair of burners and further to a fuel supply source;

an exhaust system for exhausting said combustion gas generated from said one of said pair of burners;

a four-way valve means which are connected to said combustion air supply system and said exhaust system and further to said pair of burners via said regenerative bed, said four-way valve means being so arranged as to selectively change over a flow passage of said combustion air sent from said combustion air supply source to one of said pair of burners, while simultaneously feeding said combustion gas to said exhaust system;

a three-way valve means provided in said fuel supply system, said three-way valve means being so arranged as to selectively change over a flow passage of said fuel sent from said fuel supply source to one of said pair of burners, thereby supplying said fuel thereinto; and

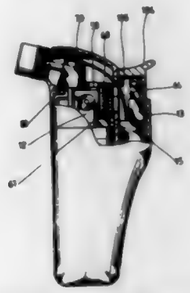
one drive means for causing an interlocking operation of said drive means for causing said two valve means to be actuated simultaneously, so as to effect their respective said selective flow passage changeover actions at the same time, whereby both said combustion air and fuel may be alternately supplied to either one of burners or another of burners while providing a lead time for the prior supply of said combustion air to the selected one of said burners and thus a delay time for delaying supply of said fuel thereto.

5,304,060

HANDY TORCH

Arlo H. T. Lin, No. 5, lane 25, TaTung Rd., Wu Fong Hsiang, Taichung Hsien, Taiwan

Filed Apr. 30, 1993, Ser. No. 55,502
Int. Cl.[5] F23Q *7/12*
U.S. Cl. 431—255 **4 Claims**



1. A torch apparatus comprising a holder adapted to accommodate a lighter therein and a torch body detachably mountable on said holder for holding the lighter in said holder, wherein said torch body is comprised of two opposing half shells abutted against each other to define a narrow, horizontal clamping space between vertically spaced clamping strips thereon, in which a heat-insulation partition board is retained to hold a torch nozzle bearing block.

5,304,061

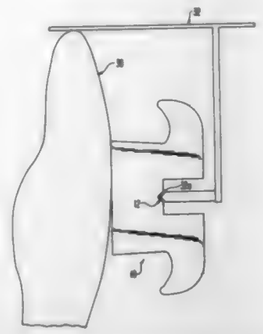
BRACKET HEIGHT POSITIONING DIMPLE

Edward J. Nelson, 1907 N. Quincy St., Arlington, Va. 22207

Filed Jun. 1, 1992, Ser. No. 876,334
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—8 **9 Claims**

1. An orthodontic bracket comprising:

a base; projections extending from said base; an arch wire slot formed in said projections; and a cutout means formed in said base for receiving a portion of a measuring instrument and facilitating positioning of said bracket at a desired position on a tooth.

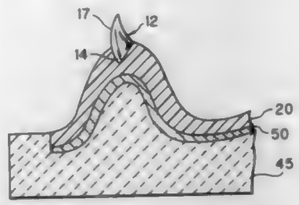


5,304,062

PROSTHETIC DENTURE PRECURSOR AND METHOD

Yoshihiro Saitoh, Neyagawa; Masaki Tamura, and Norikazu Kitamura, both of Hirakata, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Sep. 30, 1992, Ser. No. 952,405
Claims priority, application Japan, Oct. 1, 1991, 3-320842; Oct. 4, 1991, 3-323595; Oct. 4, 1991, 3-323596
Int. Cl.[5] A61C *13/00, 13/08, 13/10*
U.S. Cl. 433—171 **2 Claims**



1. A method for manufacturing and using a prosthetic denture precursor comprising:

a. manufacturing a denture precursor including the steps of:

placing a photopolymerizable material and at least one artificial tooth having a root portion in at least one mold, said photopolymerizable material being deformable; and

forming said photopolymerizable material into a denture base having said at least one tooth embedded therein to form a denture precursor and removing said denture precursor from the mold;

b. using said denture precursor including the steps of:

placing said denture precursor in contact with a spacer which is in contact with a custom mold;

adjusting said at least one tooth to a dentally operative position;

irreversibly hardening said denture base by exposure to light so that said at least one tooth is rigidly fixed to the hardened denture base;

removing the spacer from the custom mold to form a recess therein and placing a resin material into the recess which was occupied by the spacer so that said resin material conforms to both the custom mold and said denture base in said denture precursor; and

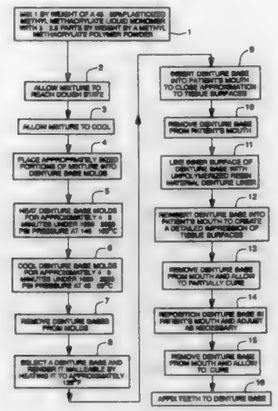
hardening said resin material so that said resin material integrates into said denture base.

5,304,063

METHOD OF PRODUCING AND FITTING COMPLETE DENTURES

Stephen J. Ginsburg, 9 Everett St., Wellesley, Mass. 02181

Filed Sep. 29, 1992, Ser. No. 954,533
Int. Cl.[5] A61C *13/00*
U.S. Cl. 433—199.1 **11 Claims**



1. A method of producing and fitting a modular denture from component parts, said method comprising the steps of:

providing a thermally-deformable denture base having an inner surface and an outer surface, said base configured to approximate the edentulous ridge and the surrounding interior contours of a patient's mouth, said base being made from a mixture comprising 1 part by weight of a plasticized liquid monomer and 3–3.5 parts by weight of a methyl methacrylate polymer powder;

heating the denture base to above about 135° F. to render said base malleable;

inserting the denture base in the patient's mouth and applying pressure to create a close approximation of the edentulous ridge and the surrounding interior contours of the patient's mouth in the denture base;

removing the denture base from the patient's mouth;

conforming an unpolymerized resin material denture liner to the inner surface of the denture base;

inserting the lined denture base in the patient's mouth and applying pressure to create a final detailed impression of the edentulous ridge and the surrounding interior contours of the patient's mouth;

removing the denture base from the patient's mouth;

curing the lined denture base so as to polymerize the liner;

affixing teeth to the outer surface of the denture base.

5,304,064

EDUCATIONAL GAME FOR TEACHING FREEHAND DRAWING

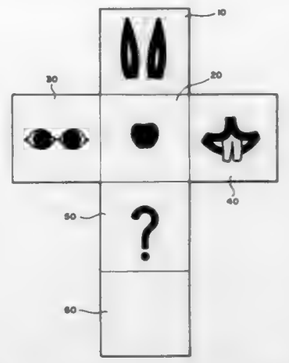
Suzanne Atkinson, 25 Oregon Ave., Mount Laurel, N.J. 08054

Filed Nov. 12, 1992, Ser. No. 974,926
Int. Cl.[5] G09B *11/00, 19/22*; A63F *9/04*
U.S. Cl. 434—85 **4 Claims**

1. A method of teaching freehand drawing skills and relationships using a selection device, a drawing area and a drawing implement, comprising the steps of:

A. manipulating the selection device to determine a selected pictorial image to be drawn on the drawing area;

B. identifying the selected pictorial image; and



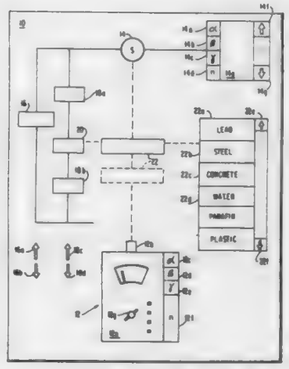
C. drawing, in freehand, the selected pictorial image in the appropriate location on the drawing area.

5,304,065

INSTRUMENT SIMULATOR SYSTEM

G. Samuel Hurst; Harvel A. Wright, and John D. Morris, all of Knoxville, Tenn., assignors to Consultec Scientific, Inc., Knoxville, Tenn.

Filed Nov. 13, 1992, Ser. No. 974,754
Int. Cl.[5] A61B *6/00*
U.S. Cl. 434—218 **17 Claims**



1. A health physics instrument simulator system permitting an operator to simulate measurement of radiation levels of a plurality of radiation types, said system comprising:

a memory for storing first data corresponding to an n-dimensional training space representing a predetermined physical location, second data defining at least one source including source strength, source type and source location with respect to said training space stored in said memory and radiation intensity data based on said second data, each of said radiation intensity data corresponding to a respective location in said training space;

a selecting device for selecting one of a plurality of predetermined simulated radiation sensing instruments;

a pointing device for identifying a location within said training space defining a current location of a selected one of said simulated radiation sensing instruments; and

a display for displaying both an instrument display corre-

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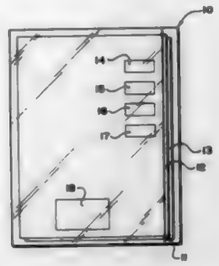
sponding to said selected one of said simulated radiation sensing instruments and radiation intensity data corresponding to said current location in said training space.

5,304,066

MACHINE SHOP MANAGEMENT SYSTEM

Walter A. Sontag, Box 70, R.R. #2, Dugald, Manitoba, Canada R0E 0K0

Filed Oct. 13, 1992, Ser. No. 959,724
Int. Cl.[5] G09F *3/00*
U.S. Cl. 434—219 **12 Claims**



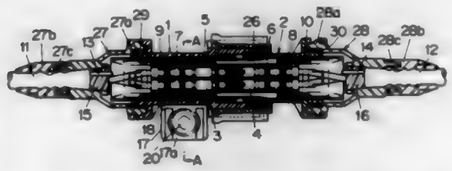
1. A method of managing work progress of separate work jobs in a machine shop having a plurality of separate machining functions, the method comprising providing a plurality of coloured labels, each separate machining function having associated therewith a specific individual colour of the labels visually distinct from the colours of the labels of the other separate machining functions, forming for each separate job an order document having written instructions thereon for the separate machining functions required for that separate job, applying to the separate job a plurality of said plurality of coloured labels so as to be carried thereby and to be visually apparent thereon, labels applied to the separate job being selected from said plurality of coloured labels such that the labels are applied to the separate job in an order corresponding to the separate machining functions required for that separate job, selecting for each separate machining function a separation job from the plurality of jobs to be effected by visual inspection of the coloured labels, effecting each required machining function in turn to the separate job and, after completion of each machining function, removing the coloured label associated with that machining function from the order of the labels.

5,304,067

SHIELDED CONNECTOR

Shigemitsu Inabe; Toru Nagano; Satoshi Yamada, and Hiroki Kondo, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 928,777
Claims priority, application Japan, Sep. 13, 1991, 3-073979[U]
Int. Cl.[5] H01R *13/648, 658*
U.S. Cl. 439—98 **13 Claims**



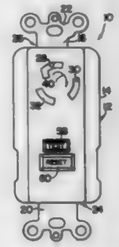
1. A shielded connector comprising:
an insulating inner housing accommodating a terminal;
an insulating outer housing accommodating the inner housing;
a metal shell for shielding, interposed between the inner housing and the outer housing, the outer housing extending substantially over an entire length of the metal shell; and
a metal clamp for grounding, connected to the metal shell, a portion of the metal clamp extending radially outwardly from the outer housing, the metal clamp for fixing to a grounding body by a fastening means such that the metal clamp directly supports the connector in position, and
wherein an opening is formed in the outer housing through which the metal clamp projects, and is filled with a waterproof sealing material.

5,304,068

GROUND FAULT INTERRUPTOR ELECTRICAL CONNECTOR FOR TWIST-LOCK PLUG

John Welch, South Windsor, Conn., assignor to William C. Welch, South Windsor, Conn.

Filed Nov. 23, 1992, Ser. No. 980,264
Int. Cl.[5] H01R *13/652*
U.S. Cl. 439—106 **1 Claim**



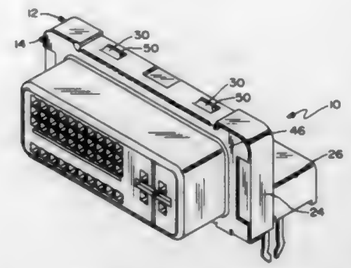
1. A ground fault interruption (GFI) electrical connector receptacle device for use with a twist-lock, multi-prong plug, said device comprising:
a housing having ground fault interruption circuit means responsive to the detection of a ground fault said ground fault interruption circuit means having first terminal means defining an input power side and second terminal means defining a load side;
a plurality blades circumaxially arranged and carried by said housing in a spaced relationship with respect to one another, each of said blades being located along a radial line separated by 120° from a radial line passing through an adjacent one of said blades;
grounding strap means for carrying and mounting said housing in an electrical outlet service box;
a first one of said blades being electrically and physically coupled to said grounding strap;
a second one of said blades being electrically and physically coupled to one line of the load side of said GFI circuit means;
a third one of said blades being electrically and physically coupled to a second line of the load side of said GFI circuit means, said second and third blades being electrically disconnected from said GFI circuit means in response to said GFI circuit means detecting a ground fault;
said housing having a face plate with a plurality of passages therethrough and each in registration with said one of said plurality of blades, one of said passages in registration with said first blade being L-shaped for axially receiving a correspondingly shaped grounding prong of a twist-lock plug, said second and third passages being in registration with said second and third blades, respectively; said blades providing an electrical and physical connection to respective prongs of a twist-lock plug axially inserted through said passages and received within said blades, said respective prongs of said twist-lock plug being retained within said respective corresponding blades when said twist-lock plug is rotated so as to engage a portion of said L-shaped prong with the rear surface of said face plate.

5,304,069

GROUNDING ELECTRICAL CONNECTORS

David L. Brunker; Gary S. Manchester, both of Naperville, and Richard A. Nelson, Glen Ellyn, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 22, 1993, Ser. No. 96,117
Int. Cl.[5] H01R *13/652*
U.S. Cl. 439—108 **6 Claims**



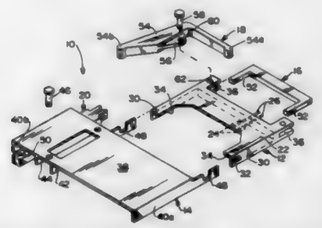
1. In an electrical connector system which includes a shielded connector for mating with a complementary connector along a mating axis, the shielded connector having a dielectric housing, and an outer conductive shield member generally surrounding a mating portion of the dielectric housing, wherein the improvement comprises an opening in said housing and a grounding terminal module adapted to be inserted into the opening, the module including a ground member clamped by and between a pair of dielectric terminal blocks, and at least one terminal mounted in each terminal block.

5,304,070

EJECTING MEANS IN AN IC PACK CONNECTOR APPARATUS

Dominique Bertho, Singapore, Singapore, and Paul M. O'Brien, Knockerra, Ireland, assignors to Molex Incorporated, Lisle, Ill.

Filed Nov. 25, 1992, Ser. No. 981,675
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 91121499
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—157 **8 Claims**



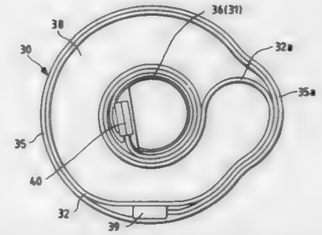
1. A connector apparatus for providing an interconnection between two IC packs and a single printed circuit board, said connector apparatus comprising:
a pair of vertically stacked headers (70) having a given overall thickness, each including a dielectric housing having an IC pack receiving opening, and each mounting a plurality of terminals adapted for interconnection of one IC pack to electrical traces on the printed circuit board,
each of said IC packs being inwardly and outwardly movable within the respective headers between an inserted position wherein the IC pack electrically mates with the terminals and an ejected position wherein a portion of the IC pack extends outside the opening;
an ejector mechanism for selectively moving the IC packs from the inserted position to the ejected position, said ejector mechanism being configured to lie substantially within the thickness profile of the vertically stacked headers, and having two ejector arms defining a pair of levers (78, 80) pivotally interconnected intermediate their ends in a scissors fashion; and
a manually manipulatable actuator (74) slidably mounted within one of the housings and associated with the ejector arms to move the IC packs simultaneously outwardly to the ejected position,
whereby when said IC packs are in the inserted position and the actuator is moved in the direction of insertion of the IC packs, one end (78*b*, 80*b*) of each lever respectively effects ejection of one IC pack, and the opposite end (78*a*, 80*a*) of each lever is engageable with the actuator.

5,304,071

CLOCK SPRING

Hiroyuki Bannai, Furukawa, and Hironori Kato, Sendai, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 939,568, Sep. 3, 1992, which is a continuation of Ser. No. 714,283, Jun. 12, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,693
Claims priority, application Japan, Apr. 14, 1990, 2-62195[U]
Int. Cl.[5] H01R *35/04*
U.S. Cl. 439—164 **1 Claim**



1. In a clock spring including a fixed member, a movable member rotatably mounted on said fixed member with a cable accommodating portion defined therebetween, and a cable accommodated in said cable accommodating portion, said cable having one end fixed to said fixed member and led out of said fixed member and having the other end fixed to said movable member and led out of said movable member; the improvement wherein one of said fixed member and said movable member is provided with an inner cylindrical portion, and the other of said fixed member and said movable member is provided with an outer cylindrical portion, one portion of said cable being wrapped in one direction on an outer surface of said inner cylindrical portion, and the other portion of said cable being wrapped in the opposite direction reverse to said one direction on an inner surface of said outer cylindrical portion, whereby an inverted portion of said cable is formed between said one portion and said other portion, at least one of said said outer surface of said inner cylindrical portion and said inner surface of said outer cylindrical portion being formed with a radially expanded portion, said inverted portion being positioned within said radially expanded portion in a rotationally neutral condition of said movable member.

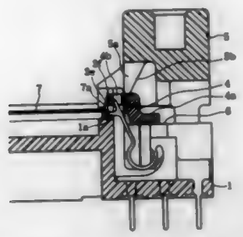
VOL 1161 ISS 3 APR 19 1994 UMI

5,304,072

SOCKET FOR ELECTRIC PART

Shunji Kunioka, Yokohama; Hideki Sagano, Kawasaki, and Kazumi Uratsuji, Tokyo, all of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,313
Claims priority, application Japan, Oct. 15, 1991, 3-296337
Int. Cl.[5] H01R *13/635*
U.S. Cl. 439—266 5 Claims



1. A socket for an electric part having a main body and a plurality of leads mounted to the main body, said socket comprising:

a base having a central accommodation portion for accommodating the main body of the electric part supported along a predetermined plane, a peripheral portion disposed peripherally outwardly of said central accommodation portion in an outward direction therefrom parallel to said predetermined plane, and a seat disposed between said central accommodation portion and said peripheral portion for receiving the leads of the electric part;

a plurality of contacts mounted to said base, each of said contacts including a spring portion and a contact nose portion extending from said spring portion, said contact nose portion being movable between an inward position in which it presses against said seat of said base and is adapted to contact a respective one of the leads of the electric part, and an outward position spaced outwardly of said inward position;

shifting means for shifting said contact nose portions of said contacts between said inward and outward positions thereof, said shifting means comprising a slider movable in said outward direction and in an inward direction opposite said outward direction between a first position and a second positibn spaced outwardly of said first position;

guide means disposed on said base for guiding said slider to move in said inward and said outward directions; and

wherein said shifting means is operable to shift said contact nose portions inwardly from said outward positions to said inward positions when said slider moves inwardly from said second position to said first position, and to shift said contact nose portions outwardly from said inward positions to said outward positions when said slider moves outwardly from said first position to said second position.

5,304,073

ELECTRICAL CONNECTOR AND PUMP ASSEMBLY UTILIZING SAME

Lloyd D. Golobay, Huntington Beach; William B. Stucker, La Mirada, and Taner Bayraktaroglu, Westminster, all of Calif., assignors to Carr-Griff, Inc., Santa Ana, Calif.

Filed Jun. 5, 1992, Ser. No. 893,729
Int. Cl.[5] H01R *13/52, 13/56*
U.S. Cl. 439—282 21 Claims

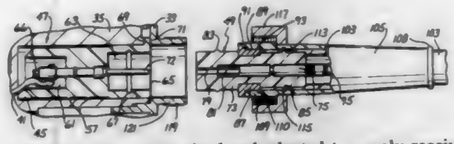
1. An electrical connector for connecting first and second conductors of a cable to first and second electrically conductive leads comprising:

a first connector member including a connector body and first and second conductive members carried by the connector body, said conductive member being couplable to the first and second leads, each of said conductive members having a terminal;

a second connector member including a connector body and first and second conductive members carried by the connector body of the second connector member, each of said conductive members of the second connector member having a terminal;

means for coupling the conductive members of the second connector member to the first and second conductors of the cable, respectively;

a flexible, elastic inner sleeve sized and adapted to snugly receive a proximal region of the connector body of the second coanector member and a distal region of the cable, said coupling means being receivable in the inner sleeve;



a flexible outer sleeve sized and adapted to snugly receive the inner sleeve, said outer sleeve being less flexible than said inner sleeve;

one of the connector bodies having a recess and the other of the connector bodies having a projection receivable in the recess to define a connected position in which said terminals are in electrical contact; and

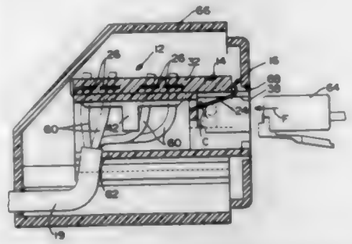
the connector body of the second connector member including a main body and a ring on said main body, said ring having a circumferentially extending annular groove and the outer sleeve having an annular rib receivable in the groove.

5,304,074

MODULAR ELECTRICAL CONNECTOR

Marcel D. Andre, Vert Saint Denis, and Christophe Bouchan, Longjumeau, both of France, assignors to Molex Incorporated, Lisle, Ill.

Filed May 3, 1993, Ser. No. 56,106
Claims priority, application European Pat. Off., Jun. 24, 1992, 92110606.8
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—417 19 Claims



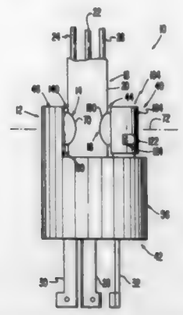
1. In a modular telephone connector which includes a housing defining a standard telephone jack, and a plurality of stamped metal terminals each having a resilient cantilever jack contact portion and a wire insulation displacement portion, wherein the improvement comprises said housing being a one-piece structure overmolded about portions of the stamped metal terminals with the wire insulation displacement portions thereof exposed for receiving insulated telephone wires, the housing including a cavity for receiving a standard telephone plug, and the cantilever jack contact portions of the terminals being exposed by the overmolded housing adjacent the cavity whereby the contact portions can be bent into the cavity.

5,304,075

CABLE CLAMP WITH STRESS DISTRIBUTING GRIP

Ernest G. Hoffman, Middlefield, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed May 18, 1993, Ser. No. 62,533
Int. Cl.[5] H01R *13/595*
U.S. Cl. 439—472 14 Claims



1. An electrical wiring device, the combination comprising:

a housing having first and second ends, and a passageway for receiving an electrical cable having a longitudinal axis thereon;

a first clamping member having a first annular gripping surface whose central axis is normal to the longitudinal axis of the cable;

a second clamping member having a second annular gripping surface whose central axis is normal to the longitudinal axis of the cable; and

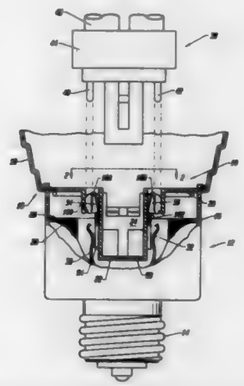
means for rigidly coupling said first and second clamping members to said housing with said electrical cable located between and engaged by said first and second annular gripping surfaces to clamp the electrical cable and to secure the electrical cable to said housing.

5,304,076

LAMP ELECTRICAL CONTACT

Bruce A. Pelton, Manteca, Calif.; Peter E. Lowe, Knoxville, Tenn., and Randy J. Bleske, San Jose, Calif., assignors to Lumatech, Emeryville, Calif.

Filed Apr. 24, 1992, Ser. No. 873,099
Int. Cl.[5] H01R *33/76*
U.S. Cl. 439—683 7 Claims



1. An electrical contact for a lamp having at least one electrical jack and being employed in conjunction with a lamp housing and an electrical conductor,

comprising:

a. a body element having a first end portion, a second end portion, and an intermediate turned portion connecting said first and second end portions, said body element being constructed of a flexible electrically conductive material such that said first and second end portions are bendable relative to one another;

b. a pair of flexible resilient flanges extending from said first end portion of said body element, said pair of flexible flanges being spaced apart to form a channel for the lamp electrical jack and to contact the lamp electrical jack, said pair of flexible flanges further including at least one edge portion capable of scraping the lamp electrical jack, said pair of flexible resilient flanges being capable of exerting pressure toward one another;

c. means for electrically connecting said second end portion of said body element to the electrical conductor; and

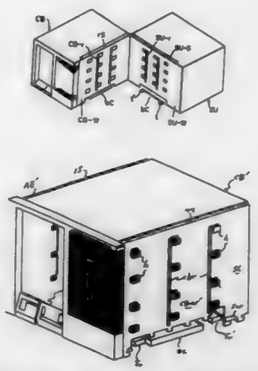
d. means for holding said body element to the lamp housing.

5,304,077

COUPLING COMPUTER MODULES

Ronald A. Provenzale, Fremont, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 746,456, Nov. 12, 1991, Pat. No. 5,267,873.
This application Jan. 15, 1993, Ser. No. 4,031
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[5] H01R *13/62;* F16B *12/00*
U.S. Cl. 439—347 26 Claims



1. In a system having first and second computer modules, each module having at least one coupling-face and associated electrical connector means thereat, these connector means being arranged and adapted to interfit, the combination therewith of a separate, thin planar one-piece coupling structure for effecting removable engagement of the modules by removably inter-coupling said modules when said connector means are engaged, each said coupling face being arranged to exhibit an array of engagement members carried thereon; said coupling structure having opposed like first and second engagement surfaces, each said surface presenting an array of catch members for each engaging a respective one of said engagement members.

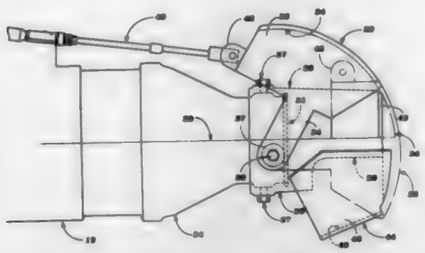
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,078

REVERSE THRUST BUCKET FOR JET DEVICE

Yoshiyuki Kaneko, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 7, 1992, Ser. No. 909,621
Claims priority, application Japan, Jul. 15, 1991, 3-173922
Int. Cl.[5] B63H 11/11
U.S. Cl. 440—41 30 Claims



1. A reverse thrust arrangement for a water jet propulsion unit comprising a discharge nozzle having a discharge opening through which water from said jet propulsion unit is discharged, a reverse thrust bucket supported for movement relative to said discharge nozzle between a forward drive position generally above said discharge opening wherein the flow of water from said discharge opening is substantially unobstructed for establishing a forward drive mode and the flow of water through said reverse thrust bucket is substantially unrestricted by said thrust bucket and a reverse drive position wherein water flowing from said discharge opening is redirected for generating a reverse drive thrust, said reverse thrust bucket being defined by a first portion having a generally continuous and unobstructed arcuate surface adapted to be brought into facing relationship with said discharge opening for redirecting said water only when said reverse thrust bucket is in its reverse thrust position and a pair of side portions extending along opposite sides of said discharge nozzle, said first portion and said side portions defining a generally forwardly facing opening through which water may pass unobstructedly when said reverse thrust bucket is in its forward drive mode and for precluding any flow resistance against movement of said reverse thrust bucket, and means on said discharge nozzle for forming a seal with said arcuate surface and said side portions of said reverse thrust bucket when aid reverse thrust bucket is in its reverse drive position for precluding water leakage from between said reverse thrust bucket and the upper portion of said discharge nozzle.

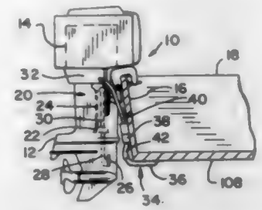
5,304,079

SUPPLEMENTAL REMOTE MOUNTED MARINE ENGINE COOLING SYSTEM

Michael A. Karls, Hilbert, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 17, 1993, Ser. No. 63,004
Int. Cl.[5] B63H 21/10
U.S. Cl. 440—88 23 Claims

17. A remote mounted water pickup for a marine engine cooling system on a boat having a lower hull and a rear transom, comprising a tube slicing out a core of water along the underside of said hull with minimum drag, wherein said tube extends forwardly longitudinally along the underside of said hull and slices out said core with minimal turbulence, and



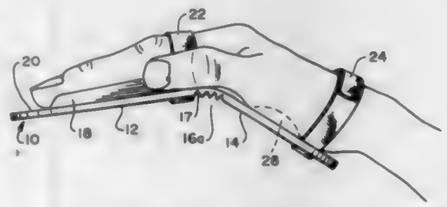
wherein said tube has a forward leading inlet slanted sharply rearwardly and downwardly.

5,304,080

SWIM PADDLE

Christopher J. Dilger, 3191 S. Brockway St., Palatine, Ill. 60067

Filed Oct. 25, 1993, Ser. No. 143,076
Int. Cl.[5] A63B 31/10
U.S. Cl. 441—58 7 Claims



1. A swim paddle for use on a swimmer's hand comprising:
a substantially flat anterior portion having a back side and an opposite facing side;
a substantially flat posterior portion having a back side and an opposite facing side;
articulation means interposed between and connecting the anterior and posterior portions;
a plurality of ridges extending substantially perpendicularly from the back side of the anterior portion and in a substantially longitudinal direction parallel to the axis of a swimmer's fingers when the paddle is mounted on the swimmer's hand, said ridges spaced approximately evenly across the back side; and
a raised portion disposed on the back side of the posterior portion such that the raised portion fits inside the hollow area of the swimmer's hand; and
fastening means connected to the anterior and posterior portions for releasably securing the paddle to the swimmer's hand.

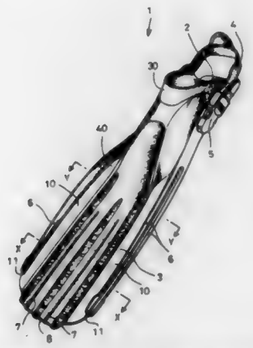
5,304,081

SWIM FIN

Ryoji Takizawa, Tokyo, Japan, assignor to Tabata Co. Ltd., Tokyo, Japan

Filed Feb. 8, 1993, Ser. No. 14,860
Claims priority, application Japan, Feb. 14, 1992, 4-13970
Int. Cl.[5] A63B 31/11
U.S. Cl. 441—64 5 Claims

1. A swim fin integrally molded to form adjacent sections composed of (a) a hard type elastic material and (b) a soft-type elastic material that is softer than said hard-type elastic material, said fin comprising
(1) a foot insertion pocket,
(2) a propulsion blade extending outwardly from said foot insertion pocket, said blade having a forward end (8), two spaced apart lateral edges (11), an underside and an upper side,
(3) a side rail (6) located adjacent each of said lateral edges (11), each said side rail extending both upwardly from the upper side of said blade and downwardly from the underside of said blade,
(4) a plurality of grooves (15, 16) in said blade that are located inwardly of said lateral edges (11) and which extend from the forward end (8) of the blade toward said foot insertion pocket, said grooves including a middle groove (15) which extends along the middle of said blade and at least one side groove (16) located on each side of said middle groove (15) at a spaced distance therefrom, said grooves (15, 16) being partially curved convexly from the upper side of said blade to the underside of said blade, each side groove (16) having an inner side edge (13) and an outer side edge (12), each inner side edge (13) being closer to said middle groove (15) than each outer side edge (12),



(5) the outer areas (10) of the blade that extends between said lateral edges (11) of each blade and the outer side edge (12) of each side groove (16) consisting of hard-type elastic material so as to offer high deformation resistance,
(6) said grooves (15, 16) and the intermediate areas of the blade extending between said grooves (15, 16) consisting of at least one material selected from the group consisting of
(a) a soft-type elastic material, and
(b) a laminate of a soft-type elastic material and hard type elastic material,
whereby said grooves and said intermediate areas of the blade offer less deformation resistance than said outer areas (10) of the blade to thereby assure that the blade will be smoothly incurvated as a swimmer downkicks and the shape of the incurvation is sufficiently stable to be free from undesirable distortion that would disturb a water stream thrust downward.

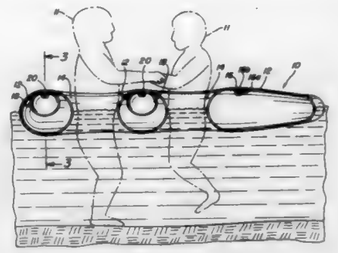
5,304,082

RECREATIONAL FLOATATION DEVICE

Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.

Filed Jul. 9, 1993, Ser. No. 89,728
Int. Cl.[5] B63B 7/08
U.S. Cl. 441—129 14 Claims

1. A recreational flotation device, comprising:
an inflatable main body having an elongated horizontal axis and a flattened configuration, said main body having at least two openings, each sized to receive a user, and positioned a predetermined distanced along said horizontal axis;
a main body valve secured on said main body; and
at least two inflatable bladders are positioned along said horizontal axis adjacent to said openings, each of said bladders having a bladder valve secured on said main body, wherein said main body and said bladders are inflatable through said main body and bladder valves, respectively, and said main body has an encompassing relationship with respect to said bladders,
said main body, when gas inflated, having a buoyancy in water sufficient to support a plurality of users.

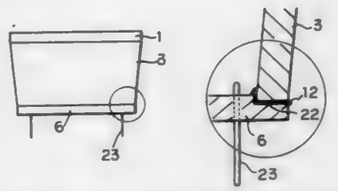


5,304,083

METHOD OF FORMING A LIGHT EMITTING DEVICE

Sashiro Uemura; Yoshiyuki Nishii; Isamu Kanda; Kazunori Tatsuda; Yukiharu Seko; Hiroshi Kamogawa; Tokuhide Shimojyo, all of Mie; Zenichiro Hara, Nagasaki; Nobuo Terazaki, Nagasaki; Shunichi Futatsuishi, Nagasaki; Kozaburo Shibayama, Nagasaki, and Shuji Iwata, Hyogo, all of Japan, assignors to Ise Electronics Corporation and Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1992, Ser. No. 851,462
Claims priority, application Japan, Jul. 16, 1991, 3-174899
Int. Cl.[5] H01J 9/26
U.S. Cl. 445—25 3 Claims



1. A method for fabricating a light emitting device including a front panel on which fluorescent elements are arranged in a matrix form, a rear panel on which cathodes are arranged in a corresponding relation to said fluorescent elements, said cathodes emitting thermoelectrons for causing the fluorescent elements to emit light, and a square frame-like spacer, one opening portion of said spacer being covered with said front panel and the other opening portion thereof covered with said rear panel, said method including the steps of:
molding frit glass into a shape which permits the molded frit glass to be placed on each bonding surface of said spacer without protrusion from the bonding surface;
assembling said rear panel, two frames of the molded frit glass, said spacer and said front panel in such a manner that one frit glass frame is placed between the rear panel and the spacer and the other placed between the front panel and the spacer; and
heating the frit glass frames for bonding between said front panel and said spacer and also between said rear panel and said spacer.

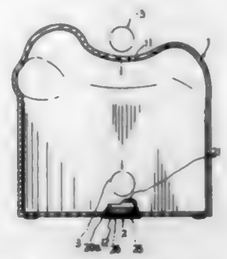
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,084

AUDIBLE COIN BANK

Fu-Chiang Liao, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Nov. 2, 1992, Ser. No. 970,173
Int. Cl.[5] G11B *31/00*; A45C *1/12*
U.S. Cl. 446—9 **2 Claims**



1. An audible coin bank comprising:

a hollow container having a dropping slot formed in an upper portion of the container and a bottom hole formed in a bottom portion of said container; and

an audio-actuating means powered by a power source of at least a battery and encased by a casing plugged in the bottom hole of said container operatively receiving a sound signal caused by a coin impacting on a sensor of said audio-actuating means and caused by mutual impacting between coins in the container when dropping a coin therein for producing output audio signals of voice and music melody by an audio-producing integrated circuit of said audio-actuating means; said audio-actuating means including: said casing formed as a bottom plug plugged in the bottom hole of the container, said sensor formed on an upper portion of the casing for receiving the sound signal caused by a dropping coin impacting upon the sensor and impacting the other coins deposited in the container, a sound-signal filter electrically connected to the sensor for filtering any unexpected interfering sound signals other than a coin impacting sound, and amplifier operatively amplifying the sound signal as filtered from the filter, said audio-producing integrated circuit operatively receiving and processing the sound signal amplified from the amplifier for producing voice and music, a speaker for outputting the voice and music outwardly, and said power source of at least a battery stored in the casing having a battery cover openable from a bottom of the casing for replacing said battery in the casing.

5,304,085

TOY BUBBLE KIT

Patricia M. Novak, 9406 Fullerdale Ave., Baltimore, Md. 21234

Filed Dec. 18, 1992, Ser. No. 993,374
Int. Cl.[5] A63H *33/28*
U.S. Cl. 446—15 **3 Claims**

1. A toy bubble kit, comprising,

a container, the container including a container side wall and the side wall having a side wall upper distal end, and

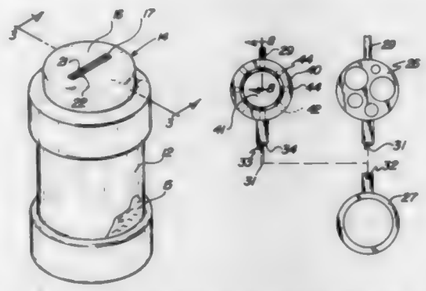
a container lid arranged for securement to the upper distal end, the lid including a lid top wall, and the lid top wall having a slot directed therethrough, the slot having a slot length equal to a predetermined length, and

a bubble distribution member, with the bubble distribution member having a handle plate, the handle plate including a plate first end and a plate second end, the plate first end having a first loop, the plate second end having a second loop, the first loop having a first diameter less than the predetermined length, and the second loop having a second diameter less than the first diameter, and

the slot includes a first resilient flap and a second resilient flap mounted within the slot, with the first resilient flap and the second resilient flap coextensive with the slot, and having an interface medially and longitudinally of the slot, and

the first resilient flap includes a plurality of first digits, and the second resilient flap includes a plurality of second digits, and the interface is interdigited in registration of the first digits relative to the second digits at the interface of the first resilient flap and the second resilient flap, and

the handle plate is separable and includes a first end wall arranged for engaging a second end wall, and the first loop, the second loop, and the handle plate are coplanar relative to one another, with the first end wall having an L-shaped latch rod, and an alignment lug spaced from the latch rod, and the second end wall includes a latch rod



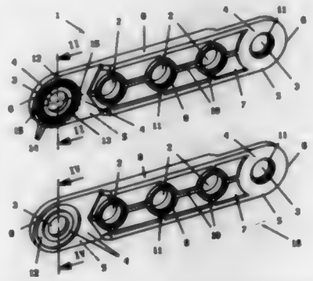
receiving cavity directed into the second end wall, and a second end wall cavity positioned within the handle plate in communication with the latch rod receiving cavity, and a button member reciprocatably mounted within the second end wall cavity, and having a spring positioned within the second end wall cavity biasing the button member, with the button member further including an abutment lug, the abutment lug arranged for engagement with the L-shaped latch rod when the L-shaped latch rod is directed within the latch rod receiving cavity to displace the latch rod relative to a locking lug positioned within the second end wall cavity for permitting separation of the first end wall relative to the second end wall.

5,304,086

TOY CONSTRUCTION ELEMENT

Peter Bolli, Steinhausen, and Heinz Looser, Baar, both of Switzerland, assignors to INTERLEGO A.G., Baar, Switzerland

Continuation of Ser. No. 582,962, Oct. 11, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 899,012
Claims priority, application Switzerland, Feb. 24, 1989, 679/89
Int. Cl.[5] A63H *33/10*
U.S. Cl. 446—108 **18 Claims**



1. A construction element for a toy-construction set, said element having a middle portion, and an end portion with a

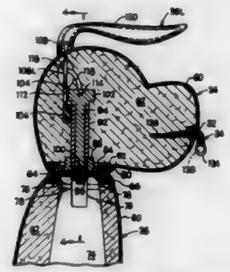
throughgoing hole having an axis and extending between opposed first and second plane supporting faces which are perpendicular to said axis and which serve as abutments for other construction elements of the set, an annular recess extending from said first supporting face coaxial to said axis, a toothed rim extending coaxially with said axis from a base of said recess, radial teeth of said rim extending to at least half their axial length within said recess and projecting with at most half their axial length above said first supporting face wherein the element is a rod and said hole is a cylindrical boring, wherein said rod comprises a plurality of cylindrical further borings with parallel further axes, all axes laying in a common plane and being equidistantly spaced by a spacing equal to an integer multiple of a distance between said first and second supporting faces, wherein said middle portion has a thickness, said thickness being larger than said distance.

5,304,087

SOFT STUFFED TOY WITH MANUALLY DRIVEN HEAD, EARS AND/OR TONGUE

Rouben T. Terzian, and Shari L. Smith, both of Chicago, Ill., assignors to Breslow, Morrison, Terzian & Associates, Inc., Chicago, Ill.

Filed Feb. 7, 1992, Ser. No. 832,739
Int. Cl.[5] A63H *3/20, 3/36, 3/02, 3/46*
U.S. Cl. 446—340 **13 Claims**



1. A soft stuffed toy comprising in combination:

a body;

a head mounted atop the body for relative rotational movement;

means anchored in the body and extending into the head for connecting the head to the body;

flexible ears mounted on the head for relative movement with respect to the head;

a pair of members carried within the head with a respective one of the members extending into each of the ears; and

the means anchored in the body effecting driven movement of the members and ears in response to rotational movement of the head relative to the body.

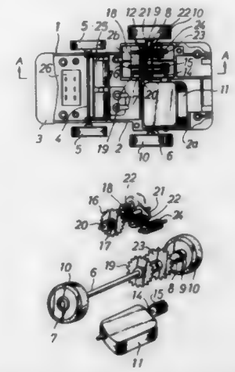
5,304,088

DRIVE APPARATUS FOR VEHICLE TOY

Yoshio Suimon, Tokyo, Japan, assignor to Kabushiki Kaisha Hanzawa Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 45,634
Claims priority, application Japan, Aug. 31, 1992, 4-231012
Int. Cl.[5] A63H *29/00, 17/36*
U.S. Cl. 446—443 **1 Claim**

1. A drive apparatus for a vehicle toy comprising an electric motor capable of rotating normally and reversely, a transmission gear unit adapted to transmit the driving force of said electric motor to a left-hand and a right-hand drive shaft, and a pair of driving wheels, one each firmly secured to one end of said drive shafts, said transmission gear unit comprising a large gear engaged with a drive gear which is firmly secured to one end of a rotary shaft which supports said electric motor, a left-hand and a right-hand small gear respectively disposed at both sides of said large gear and integral with said large gear, two driven gears disposed one at said left-hand drive shaft and the other at said right-hand drive shaft, one of said driven gears disposed at either of said left-hand and said right-hand drive shaft being in constant direct engagement with either one of said corresponding left-hand and said right-hand small gears, a switch arm rotatably supported on a shaft which rotatably supports said large gear and said left-hand and right-hand small gears, and a swing gear rotatably supported on the switch arm in such a manner as to be capable of turning about a shaft of said switch arm and engaged with the other of the right-hand and left-hand small gear, said swing gear being selectively



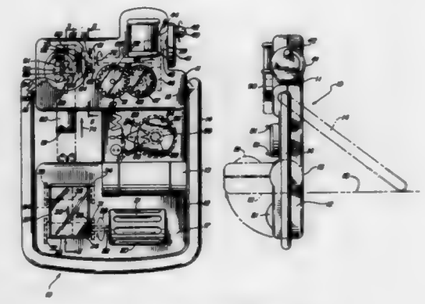
disposed between the other driven gear attached to the other drive shaft and, selectively, an intermediate gear rotatably engaged with said other driven gear, wherein when said electric motor is rotating normally, said switch arm will swing into a first position, thereby bringing said swing gear into engagement with said intermediate gear, thereby causing said pair of driving wheels to be driven in a same direction, and when said electric motor is rotating reversely, said switch arm will swing into a second position, thereby bringing said swing gear into direct engagement with said other driven gear and bypassing said intermediate gear, thereby causing said pair of driving wheels to be driven in opposite directions.

5,304,089

TOY SEWING MACHINE

Armen V. Danielian, Sherman Oaks, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Feb. 5, 1993, Ser. No. 14,292
Int. Cl.[5] A63H *33/30*
U.S. Cl. 446—474 **14 Claims**



1. A toy sewing machine comprising:

an upper housing defining an upper cavity;

a lower housing defining a lower cavity;

a hinge coupling joining said upper and lower housings pivotable between a coplanar position and a right angle operative position;

a vertically movable foot supported by said upper housing;

foot drive means for moving said foot in reciprocal motion; and

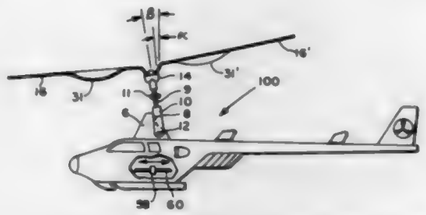
a spring coupler interposed between said foot drive means and said foot to limit the force coupled between said foot drive means and said foot.

5,304,090

TOY HELICOPTER HAVING FORWARDLY INCLINED ROTOR SHAFT

Robert R. Vanni, 701 Tuxedo Ave., Brooklyn Heights, Ohio 44131

Filed Jan. 19, 1993, Ser. No. 9,248
Int. Cl.[5] A63H *27/127, 27/00, 27/26*
U.S. Cl. 446—36 **12 Claims**



1. A toy helicopter including in combination a fuselage member having a front portion and a rear portion respectively having an upper side and an under side,

means on the under side of one of said front and rear portions for launching the helicopter into flight,

a balance weight secured to the under side of the front portion,

a support member on the upper side of the front portion, said support member having a rotor shaft support surface extending forwardly away from the front portion at a predetermined acute angle from a vertical defined above the fuselage when the fuselage is horizontal,

a rotor shaft pivotally connected to the support member at a pivotal connection such that a portion of the rotor shaft is able to engage the rotor shaft support surface,

a rotor rotatably carried by the rotor shaft, said rotor having at least two diametrically opposed rotor blades connected thereto that are respectively adapted to spread from a folded launch position at which the rotor blades are in general parallel alignment with the rotor shaft to a flight position, said flight position commencing at an apex of flight after said helicopter is launched at which the rotor blades are in general transverse relationship with the rotor shaft, said rotor shaft operable to pivot about a pivotal axis of the pivotal connection from the launch position to the flight position at which the rotor shaft engages the rotor shaft surface,

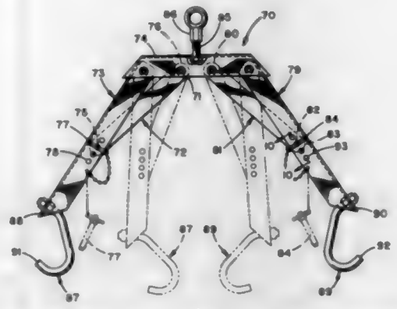
and said balance weight positioned along the under side of the front portion such that the combination of the acute angle of the rotor shaft and the balance weight position enhances forward movement of the helicopter during flight.

5,304,091

SELF-SPREADING GAMBREL FOR SUPPORTING SLAIN ANIMALS

David A. Wilkinson, 168 Kirk Dr., Newport News, Va. 23602

Filed Mar. 1, 1993, Ser. No. 24,376
Int. Cl.[5] A22C *15/00*
U.S. Cl. 452—192 **4 Claims**



1. An apparatus for supporting slain animals comprising:

(a) a suspension member;

(b) one end of a first linking member pivotally connected to the suspension member;

(c) a first side frame member pivotally connected to the suspension member;

(d) another end of the first linking member selectingly and lockingly connected in at least one locking notch in a locking channel in the first side frame member;

(e) a second side frame member pivotally connected to the suspension member;

(f) one end of a second linking member pivotally connected to the suspension member;

(g) another end of the second linking member selectingly and lockingly connected in at least one locking notch in a locking channel in the second side frame member;

(h) a hanger adjustably connected to the suspension member;

(i) an adjustment means on the hanger;

(j) at least one first support means adjustably connected to an end of the first side frame member to attach the slain animal; and

(k) at least one second support means adjustably connected to one end of the second side frame member to attach the slain animal.

5,304,092

COIN FEEDING APPARATUS

Nobushige Horiguchi, Kitamoto, and Katsuyoshi Miyamoto, Kawaguchi, both of Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1992, Ser. No. 891,041
Claims priority, application Japan, Jun. 7, 1991, 3-042798[U]; May 15, 1992, 4-123877
Int. Cl.[5] G07D *9/04*
U.S. Cl. 453—18 **7 Claims**

1. A coin feeding apparatus for a coin handling machine comprising;

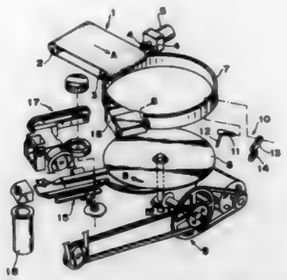
a rotary disk for feeding coins into a coin passage one by one;

a coin amount detecting means for outputting a trigger signal when an amount of coins less than a predetermined amount is detected as present on the rotary disk;

a conveyor belt means for feeding coins deposited into the coin handling machine onto the rotary disk;

a conveyor belt drive means for driving the conveyor belt means in response to the trigger signal from the coin amount detecting means;

a drive period control means for controlling a drive period during which the conveyor belt drive means drives the conveyor belt means, the drive period control means being capable of controlling different drive periods in accordance with each denomination of coins to be fed;



a memory means for storing the different drive periods which are predetermined for each denomination of coins to be fed; and

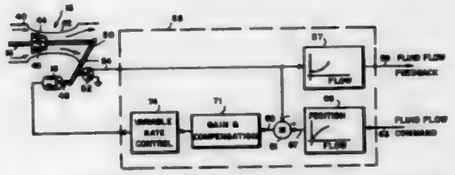
wherein said different drive periods are generally shorter in duration for coins of smaller diameter as compared to coins of larger diameter.

5,304,093

METHOD AND APPARATUS FOR CONTROLLING A FLUID FLOW VALVE

Gordon P. Sharp, Newton; Rodney R. Stewart, Littleton, and Alexander Dolgin, Lexington, all of Mass., assignors to Phoenix Controls Corporation, Newton, Mass.

Filed Jan. 17, 1992, Ser. No. 822,088
Int. Cl.[5] B06B *15/02*
U.S. Cl. 454—61 **30 Claims**



16. A controller for a fluid flow valve, the valve having a movable element and having a characteristic such that the percentage change in fluid flow for a given distance movement of the element is substantially constant regardless of the fluid flow and element positions, the controller comprising:

means for generating a first signal indicative of element position;

means for generating a second signal indicative of a desired fluid flow;

means for linearizing said first signal by operating on it with the valve characteristic;

means for generating an error signal proportional to the difference between the second signal and the linearized first signal;

means for determining the ratio of the error signal and at least one of the linearized first signal and the second signal, said means including means for generating at least one output the value of which varies as a function of the determined ratio;

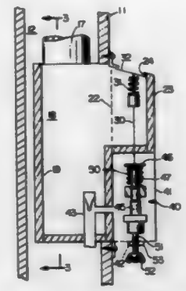
and means for moving said element at one of at least two different rates in response to the value of said output signal.

5,304,094

METHOD OF MIXING COLD INTRODUCED AIR WITH WARMER ROOM AIR

Calvin D. MacCracken, 325 Morrow Rd., Englewood, N.J. 07631

Filed Jul. 23, 1992, Ser. No. 917,420
Int. Cl.[5] F24F *7/06*
U.S. Cl. 454—258 **3 Claims**



3. A method of mixing introduced relatively cold air with warmer ambient air in a room which comprises

a) conveying the introduced air through a duct within a wall of the room at a velocity of at least approximately 1,000 feet per minute,

b) passing the introduced air from the duct through silencer means,

c) directing the introduced air from the silencer means into the room at a temperature at least about 30° F. colder than the air in the room through at least one jet orifice on the room wall approximately at adult eye level in a high-velocity stream in excess of approximately 2,000 feet per minute substantially upwardly along but slightly away from the wall toward the ceiling of the room,

d) said air stream after leaving the orifice then mixing with room air and slowing until after about four feet of travel from the orifice the air stream velocity reduces to a maximum of about thirty feet per minute and the temperature differential between the air stream and room air reduces to a maximum of about 2° F., and

e) varying the volume of air introduced into the room to cause desired changes in ambient room temperature.

5,304,095

ROOF VENTILATOR HAVING LONGITUDINALLY ALIGNED FOLDING SECTIONS

Richard J. Morris, Prior Lake, Minn., assignor to Liberty Diversified Industries, Inc., New Hope, Minn.

Filed Sep. 24, 1993, Ser. No. 126,371
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—365 **6 Claims**

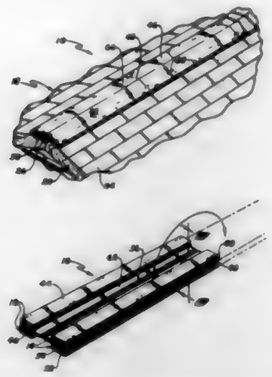
1. A roof ventilator for mounting on a peak of a roof having a roof opening, said roof ventilator having a plurality of vent parts each defining a multiplicity of air passages communicating with said roof opening, said roof ventilator comprising:

a first section, said first section having a first top panel and a first pair of vent parts; and

a second section, said second section having a second top panel and a second pair of vent parts, said first section being hingedly interconnected to said second section along a hingeline such that said first section and said second section may be pivoted to a folded position whereat said first top panel and said second top panel are in generally parallel relation to one another, and to an unfolded position whereat said first section and said section are generally longitudinally aligned with one another, wherein the first pair of vent parts being each disposed on

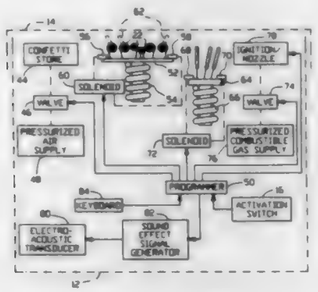
VOL 1161 ISS 3 AP 19 1994 UMI

opposing sides of the opening and the second pair of vent parts being each disposed on opposing sides of the opening



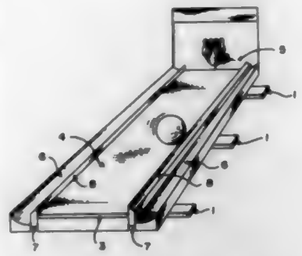
when the first section and the second section are generally aligned with one another in the unfolded position.

5,304,096
ENTERTAINMENT SYSTEM AND ASSOCIATED METHOD
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023
Filed Sep. 10, 1992, Ser. No. 943,392
Int. Cl.[5] A63H *13/16*
U.S. Cl. 472—137 24 Claims



1. An entertainment system comprising:
a housing;
first ejection means in said housing for ejecting a first entertainment device from said housing;
second ejection means in said housing for ejecting a second entertainment device from said housing, said second ejection means being different from said first ejection means; and
control means operatively connected to said first ejection means and said second ejection means for operating said second ejection means a predetermined interval after operating said first ejection means to product a three-dimensional entertainment display which varies over a significantly extended time period.

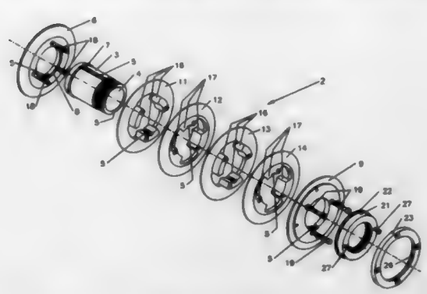
5,304,097
CONVERTIBLE, CONVENTIONAL OR BUMPER, BOWLING LANE
N. R. Duff, 207 Lafitte Ave., Lafayette, La. 70506
Filed Jan. 19, 1993, Ser. No. 5,957
Int. Cl.[5] A63D *5/00*
U.S. Cl. 473—113 2 Claims



1. An improved bowling lane, convertible for use in either conventional bowling or bumper bowling, comprising:
a) an upper surface comprising an approach zone, a foul line, an elongated bowling bed having a lateral edge on each side, and a pin zone having a lateral edge on each side;
b) a plurality of underlying cross-members disposed perpendicularly to and supporting the elongated bowling bed;
c) an elongated, concave gutter disposed parallel to and abutting each lateral edge of said bowling bed and the pin zone;
d) a hollowed, elongated channel, disposed within each gutter, parallel to the lateral edges of the bowling bed, at a distance from the nearest edge of the bed which is less than the radius of a smallest bowling ball to be used on the improved bowling lane; and,
e) elongated rigid rail members, slidably disposed within each said channel, wherein said elongated rigid rail members have a lower surface comprised of a plurality of notched sections, a plurality of unnotched sections, and a plurality of inclined sections disposed between said notched sections and said unnotched sections, wherein said notched sections rest on the underlying cross-members when the rigid rail members are in a lowered position, said unnotched sections rest on the underlying cross-members when the rigid rail members are in an elevated position and said inclined sections slidably override the underlying cross-members to elevate or lower the rigid rail member, in cam-follower fashion, responsive to longitudinal movement of the rigid rail member within the elongated channels.

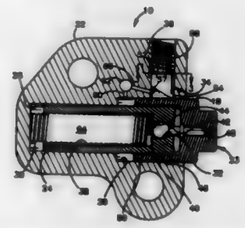
5,304,098
ADJUSTABLE SHEAVE
Gregory J. Smith, Maysville; Harry T. Appleg, Tollesboro, and Bill C. Reeder, Maysville, all of Ky., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 28, 1992, Ser. No. 967,771
Int. Cl.[5] F16H *9/12*
U.S. Cl. 474—25 11 Claims

1. An adjustable sheave comprising:
a rotatable central hub support adapted to be connected to a drive shaft to be driven thereby;
at least one pair of mating annular discoidal flange members oppositely disposed on said hub support for rotation therewith, said discoidal flange members serving to matingly define a belt groove therebetween with at least one annular discoidal flange member of said pair being axially shiftable relative said opposed discoidal flange member on said hub support to vary the breadth of said defined belt groove;
a sole unitary annular adjusting ring member threadedly mounted on said rotatable central hub support for axial movement relative said hub support upon threaded rotation of said sole adjusting ring member about said hub support to effect shifting of at least one annular discoidal flange member of said pair of annular mating discoidal flange members to vary the breadth of said defined belt groove;
a retaining member operatively connecting said unitary annular adjusting ring member to one of said belt groove defining annular mating discoidal flange members; and,



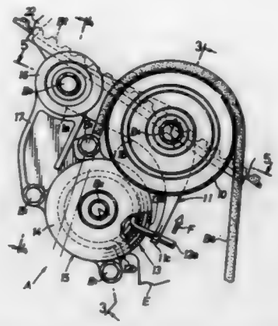
a locking means extending parallel the rotational axis of said hub support and operatively connected with said sole annular unitary adjusting ring member to adjustably engage and abut in cooperative balanced relation with one of said annular mating discoidal flange members to tighten and lock bind the threads of said annular sole unitary adjusting ring member relative said rotatable central hub support to lock said annular unitary adjusting ring member in preselected position on said central hub support.

5,304,099
HYDRAULIC CHAIN TENSIONER
David W. Deppe, and Richard L. Madden, both of Marshall, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 12, 1993, Ser. No. 31,188
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—110 9 Claims



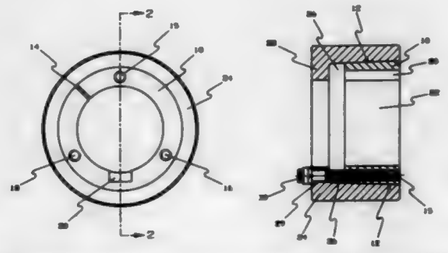
1. In a hydraulic tensioner for an internal combustion engine comprising a housing; a hydraulic tensioner module received within said housing, said module including an axially extendible and retractable output member operatively engageable with an endless drive element of said engine; inhibiting means engageable with said output member to inhibit retraction of said output member; and means for disengaging said inhibiting means when said engine is operating.

5,304,100
AUTOMATIC TENSIONER APPARATUS
Moriyoshi Awasaka, and Yoshio Kadoshima, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1992, Ser. No. 872,091
Claims priority, application Japan, Apr. 25, 1991, 3-095571
Int. Cl.[5] F16H *7/12*
U.S. Cl. 474—135 16 Claims



1. An automatic tensioner apparatus comprising an idler pulley engaging a transmission belt of a first wrapping connector type transmission mechanism, an arm for swingably supporting the idler pulley with respect to a predetermined supporting surface, and a resilient member for exerting a resilient force for swinging the arm and the idler pulley in a direction to engage the transmission belt in order to apply a predetermined tension to said transmission belt, wherein
said apparatus further includes a casing secured to said supporting surface for accommodating said resilient member, and an arm pivot-supporting portion for swingably supporting a base portion of said arm, said arm pivot-supporting portion being integrally provided on the casing in such a manner that the arm pivot-supporting portion is offset relative to said resilient member in a direction along said supporting surface and relative to said resilient member in a direction away from said supporting surface.

5,304,101
SHAFT MOUNTABLE BUSHING AND HUB FOR INDUSTRIAL POWER TRANSMISSIONS
Lewis E. Baer, Chambersburg, Pa., assignor to T. B. Wood's Sons Company, Chambersburg, Pa.
Filed Jul. 27, 1992, Ser. No. 919,223
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—170 3 Claims

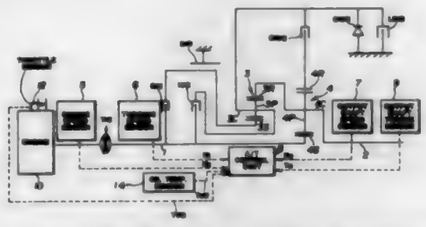


1. A shaft mountable structure comprising: a bushing having a longitudinally extending outer surface and split longitudinally on one of its radii to allow easy mounting upon a shaft, the bushing being provided with a plurality of openings for

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receiving screws; means for clamping the bushing in fixed position upon the shaft; a bushing engaging hub having a tapered bore for fitting over the tapered outer surface of the bushing, the hub having a radially inwardly extending annular flange, the annular flange having openings, either the openings in the bushing or the openings in the annular flange being threaded to receive screws for threading into the threaded openings to draw the hub upon the bushing and provide a press fit of the hub upon a shaft.

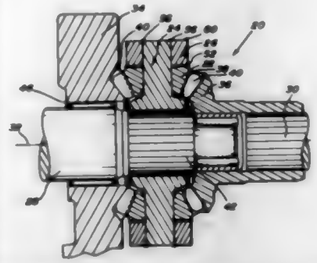
5,304,102
CONTROL FOR SHIFT IN AUTOMATIC TRANSMISSION
Yasushi Narita, and Yusuke Minagawa, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Feb. 21, 1992, Ser. No. 838,667
Claims priority, application Japan, Feb. 21, 1991, 3-27068; May 31, 1991, 3-156126
Int. Cl.[5] F16H *59/16*
U.S. Cl. 475—125 **11 Claims**



1. A method of shift control for an automatic transmission having an input shaft, an output shaft and a plurality of friction elements, the automatic transmission effecting an upshift from one gear ratio wherein the output shaft rotates at one speed ratio with regard to the input shaft to another gear ratio wherein the output shaft rotates at another speed ratio, higher than the one speed ratio, with regard to the input shaft, the plurality of friction elements including one which serves as a release element during the upshift and another which serves as an apply element during the upshift, the method comprising the steps of:
supplying hydraulic fluid to initiate progress of engagement of the apply element;
detecting a torque to which the output shaft is subject;
determining whether said detected torque reaches a predetermined value; and
releasing the release element upon determining said detected torque reaching said predetermined value.

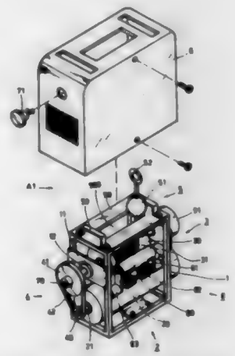
5,304,103
PINION MATE RETAINING ASSEMBLY
Kraig J. Schlosser, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Dec. 11, 1992, Ser. No. 989,269
Int. Cl.[5] F16H *1/38*
U.S. Cl. 475—230 **14 Claims**

1. A differential assembly for a vehicle axle, comprising:
a differential frame having a center hub plurality of stub shafts extending radially outwardly of said center hub;
a pinion gear received upon each of said stub shafts, said pinion gears being rotatable about said stub shafts; and
a retaining cap force fitted to an end of each of said stub shafts, each pinion gear being disposed on one of said stub shafts between said center hub of said differential frame and said retaining cap, each retaining cap being solely



supported by said differential frame and having a free outer peripheral surface and a free axial end surface.

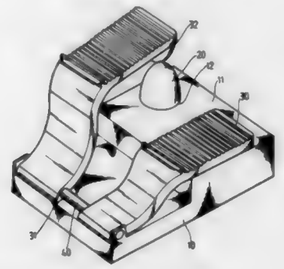
5,304,104
DYNAMIC RESISTANCE DEVICE FOR A PHYSICAL EXERCISER
Wu H. Chi, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan
Filed Jun. 10, 1993, Ser. No. 74,382
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—1 **10 Claims**



1. A dynamic resistance system for an exercise machine comprising:
(a) a bracket frame;
(b) a winch mounted within said bracket frame including a winding drum and a cable, said winding drum having a first and second rotating shaft extending coaxially from opposing sides of said winding drum, said cable having one end coupled to said winding drum and matingly in contact with said winding drum within a helically contoured slot formed within an outer surface thereof;
(c) actuation means secured to said bracket frame for applying a resistive force load to a second end of said cable responsive to said cable being unwound from said winding drum, said actuation means including a motor having a motor output shaft extending therefrom;
(d) speed reduction means for reducing a rotative speed of said motor output shaft, said speed reduction means including a first and second timing wheel rotatively coupled each to the other by an endless timing belt, said first timing wheel being coupled to said motor output shaft and said second timing wheel being coupled to said first rotating shaft of said winding drum;
(e) cable guiding means for directionally guiding said second end of said cable responsive to a rotative displacement of said winding drum, said cable guiding means including a

stop plate member having a longitudinally directed slot formed therethrough for passage therethrough of said cable, said slot having a predetermined width dimension, said second end of said cable having an elastic sphere mounted thereon, said elastic sphere having a diameter greater than said width dimension of said slot;
(f) a cover housing mounted over said bracket frame for substantially enclosing said bracket frame; and,
(g) means for maintaining a force load on said cable within said helically formed slot of said winding drum when said cable is being wound and unwound from said winding drum.

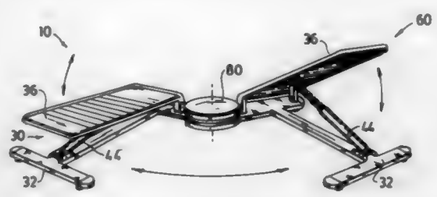
5,304,105
EXERCISE STAIR DEVICE
Kuo C. Hsieh, P.O. Box 82-144, Taipei, Taiwan
Filed Mar. 22, 1993, Ser. No. 35,322
Int. Cl.[5] A63B *21/008*
U.S. Cl. 482—53 **1 Claim**



1. An exercise stair device comprising:
a base having cavity at the bottom and a raised portion with two recesses thereon, each of said recesses being formed with a hole;
two inflatable balls each disposed in a corresponding one of said recesses and being communicated with each other via a U-shaped tube;
a cover engaged with the cavity of said base; and
two pedals pivotally mounted on said base and each having spherical protuberance at the bottom adapted to be received in the corresponding one of the recesses of said base;
whereby when one of said pedals is pressed downward on the corresponding inflatable ball, the inflatable ball will be squeezed by the pedal thereby forcing the air in the inflatable ball to go into the other inflatable ball and therefore lifting the other one of the pedals.

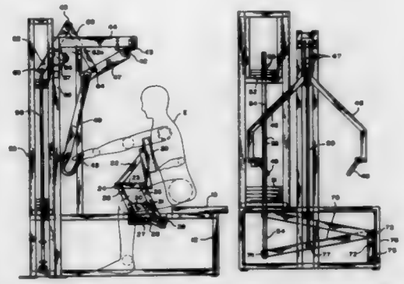
5,304,106
EXERCISE APPARATUS HAVING RECIPROCATING PLATFORMS MOVABLE BETWEEN A PARALLEL POSITION AND AN OPPOSED POSITION
James D. Gresko, Rochester, N.Y., assignor to Voit Sports, Incorporated, Fairport, N.Y.
Filed Feb. 8, 1993, Ser. No. 14,647
Int. Cl.[5] A63B *22/04, 23/08*
U.S. Cl. 482—53 **8 Claims**

1. A stepper exercise apparatus for simulating a stepping action, comprising:
(a) first stepper means movable between an upper position and a lower position for yieldably resisting motion from the upper position to the lower position;
(b) second stepper means movable between an upper position and a lower position for yieldably resisting motion from the upper position to the lower position; and
(c) pivot means interconnecting the first and the second stepper means for orienting the first and the second step-



per means in a first substantially parallel relationship and a second substantially opposed relationship.

5,304,107
EXERCISE MACHINE
Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670
Continuation-in-part of Ser. No. 947,284, Sep. 15, 1992. This application Jan. 4, 1993, Ser. No. 145
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—98 **17 Claims**



1. A rowing exercise machine comprising in combination, a seat extending in a generally horizontal plane for receiving an exerciser, a movement arm pivotable about a generally horizontal axis and having a pair of laterally spaced handles for receiving the hands of the exerciser for pivoting the movement arm about said axis, said movement arm having a position with the handles spaced forwardly of an exerciser's outstretched arms such that when the exerciser pivots the movement arm by drawing the movement arm towards the exerciser it will simulate a rowing movement, resistance means including at least one weight for opposing pivotal movement of the movement arm in one direction about said axis, transmission means connecting the weight and the movement arm such that when the movement arm is pivoted about said axis towards the exerciser the weight will be lifted and when the movement arm pivots in an opposite direction away from the exerciser the weight will be lowered, said transmission means including a generally vertically extending drive member, a first linkage interconnecting the movement arm and the drive member, and a second linkage located below said plane and interconnecting the drive member and the weight and wherein said second linkage includes a main lever pivotally connected to the resistance weight and further being pivotally interconnected at an intermediate location to said drive member, said lever also being pivotally mounted to a fixed frame and wherein there is further included an idler lever pivotally mounted to the fixed frame, and said main lever is pivotally connected to said idler lever.

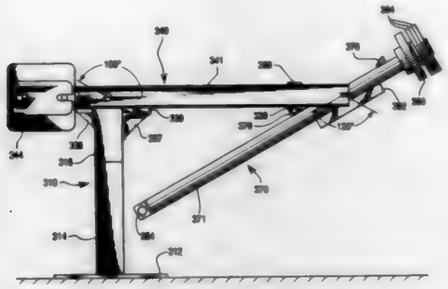
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,108

RESIST/ASSIST EXERCISER AND ITS USE

Craig Denega, 13063 Townsend Rd., Philadelphia, Pa. 19154, and John F. Dalton, 329 Devonshire Rd., Devon, Pa. 19333

Filed Jan. 14, 1991, Ser. No. 640,988
Int. Cl.[5] A63B *21/22, 21/08*
U.S. Cl. 482—110 **14 Claims**



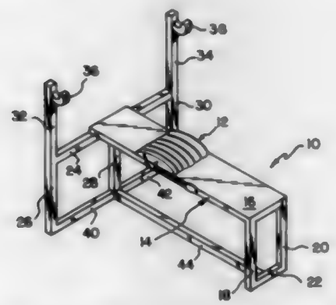
5. An exercise apparatus comprising:
(a) a thrust receiver adapted to receive a thrust applied by a user at the beginning of a three-dimensional compound exercise stroke;
(b) a torsion bar having a first end and a second end, the first end being driven by the thrust receiver, and the second end being in a driving relationship with means for storing said user-applied thrust as inertia;
(c) means for transferring all of said stored inertia to said user by the end of said exercise stroke; and
(d) an articulated framework adapted for three-dimensional movement that constrains the motion of the thrust receiver and constrains the torsion bar from independent curvilinear motion, said framework being adapted to provide for independent rotational motion of the torsion bar.

5,304,109

INFLATABLE SUPPORT

Ronnie W. Shockley, 8715 E. 21st St., Tucson, Ariz. 85710

Filed Jan. 22, 1993, Ser. No. 7,784
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—142 **4 Claims**



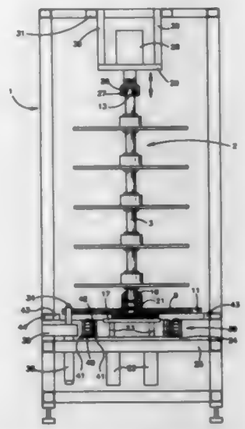
1. A new and improved support apparatus for use by a weightlifter comprising:
a surface adapted to support a weightlifter during weightlifting exercises,
an inflatable bladder on said surface, and
means for selectively pressurizing said inflatable bladder to provide a supporting cushion for an individual engaged in weightlifting exercises on said surface,
wherein said means for selectively pressurizing includes manually activatable squeezable bulb means, and conduit means connecting said bulb means to said inflatable bladder,
wherein said surface is a table and said table includes means for adjustably positioning said inflatable bladder on said table,
wherein said means for adjustably positioning said inflatable bladder on said table includes a carriage adapted for slidable movement on said table, said inflatable bladder being mounted on said carriage, said carriage having guide means cooperating with said table, locking means coupled to said guide means, and selectively activatable means connected to said locking means, said selectively adjustable means extending laterally with respect to said table whereby said guide means may be locked in an adjusted position on said table by manual activation of said selectively activatable means by a user when the user is lying on said table surface,
wherein said table further includes a longitudinally extending slot therein, said slot having an extent defining the range of adjustment of said carriage on said table, and said guide means is movable in said slot, and
wherein said locking means coupled to said guide means includes means for engaging said table and locking said guide means in said slot in a selectively adjusted position, said means for engaging being operatively coupled to said selectively activatable means.

5,304,110

MAGAZINE FOR TOOLS AND/OR WORKPIECES

Basil Obrist, Gontenschwil, Switzerland, assignor to Erowa AG, Reinach, Switzerland

Filed Jun. 3, 1992, Ser. No. 892,763
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1991, 4118074
Int. Cl.[5] B23Q *3/157, 41/02*
U.S. Cl. 483—14 **10 Claims**



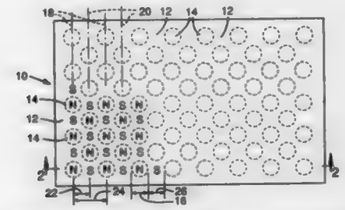
1. A magazine for tools and/or workpieces and for fixedly positioning in a manufacturing plant having at least one machining device and a handling device associated with the machining device, said magazine comprising:
means for cooperating with the at least one machining device and the handling device to automatically exchange tools and/or workpieces on the machining device;
a stationary part;
a rotating rack being a separate constructional unit and being exchangeably inserted in said stationary part, said rotating rack having a rotating support and a plurality of bearers stacked on said rotating support, said rotating support having opposite ends;
said stationary part comprising means for rotating said rotating rack inserted in said stationary part; and
said stationary part comprising a stand including disengageable first and second clutch means for bearing and driving said rotating rack, said first clutch means being located at one end of said rotating support of said rotating rack and said second clutch means being located at the other end of said rotating support of said rotating rack and cooperating with said first clutch means to enable rotation of said rotating rack on said rotating support.

5,304,111

THERAPEUTIC MAGNETIC SHEET WITH REPEATED CURVED MAGNETIC AREAS

Hiroyuki Mitsuno, Okiahoma City, Okla., and Alexander C. Johnson, Jr., Portland, Oreg., assignors to Nikken, Inc., Los Angeles, Calif.

Filed Jun. 19, 1992, Ser. No. 901,601
Int. Cl.[5] A61N *1/00*
U.S. Cl. 600—9 **10 Claims**



1. A flexible magnetic sheet for therapeutic use by application to a body surface location, comprising:
a flexible sheet composed of a synthetic material having imbedded particles of a permanent magnetic material therein and including a planar skin compatible surface;
the magnetic material being integrally magnetized in an orientation normal to the planar surface and in first polarity in a contiguous first area and in a second polarity opposite the first polarity in a plurality of second areas spaced apart within the first area;
each of the second areas being shaped magnetically as a circle bounded by the first area.

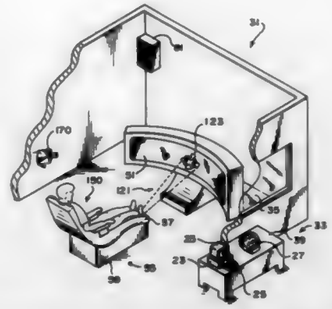
5,304,112

STRESS REDUCTION SYSTEM AND METHOD

Theresia A. Mrklas, 715 High St., Bedford, Ohio 44146; Maurice B. Daniel, Alexandria, Va., and William B. Daniel, Twinsburg, Ohio, assignors to Theresia A. Mrklas, North Olmsted, Ohio

Filed Oct. 16, 1991, Ser. No. 777,203
Int. Cl.[5] A61M *21/00*
U.S. Cl. 600—27 **25 Claims**

1. A stress reduction system comprising:
stress detection means for sensing physiological indications of stress in a human subject and producting signals related to the subject's stress level;
computing means connected to the stress detection means for receiving the stress level signals and processing the signals to determine the subject's stress level and product an output signal indicative of the present subject stress level;
output indicating means connected to the computing means for providing a continuous visual indication of the present subject stress level to the subject using a visual display pattern having a visually perceived pattern complexity which at any given instant is related to the stress level;
sensory stimulation means for selectively providing at least two diverse types of relaxing stimuli to the subject during an operational session of the system;



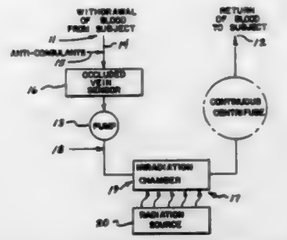
control means comprising controlling circuits connected to the computing means and to the sensory stimulation means for selecting activating the computing and sensory stimulation means to orchestrate a relaxation session.

5,304,113

METHOD OF ERADICATING INFECTIOUS BIOLOGICAL CONTAMINANTS

Fritz Sieber, Brookfield, and Orla M. Smith, Milwaukee, both of Wis., assignors to The MCW Research Foundation, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 477,285, Feb. 8, 1990, Pat. No. 5,039,483, which is a continuation-in-part of Ser. No. 24,150, Mar. 10, 1987, Pat. No. 4,915,683, which is a continuation-in-part of Ser. No. 933,697, Nov. 21, 1986, Pat. No. 4,775,625. This application Nov. 2, 1990, Ser. No. 608,458
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **11 Claims**



1. A method for eradicating infectious pathogenic biological contaminants from body fluids outside the body prior to introduction of the decontaminated body fluids into the body of a patient, said method comprising:
admixing an effective, non-toxic amount of a photoactive compound with the body fluid to product a resulting body fluid, the photoactive compound having an affinity to be selectively bound to the contaminants;
passing the resulting fluid under flow conditions through a cell assembly having a predetermined flow path; and
irradiating the resulting fluid in the cell assembly as same passes through the flow path with an effective level of radiation in the region of the visible spectrum, with a wavelength range above 400 nm to about 1000 nm, for an effective period of time such that the radiation penetrates the resulting fluid and exposes the photoactive-compound-bound contaminants to the radiation so as to eradicate such contaminants while maintaining the viability of said body fluids to produce viable decontaminated body fluids.

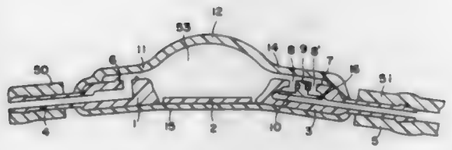
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,114

SHUNT VALVE SYSTEM

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178, and Michael A. Arnold, 4 Rag Rock Dr., Woburn, Mass. 01801

Filed May 15, 1991, Ser. No. 700,689
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—8 10 Claims



1. A shunt valve for the shunting and pressure regulation of cerebrospinal fluid from the ventricles of the brain, said shunt valve comprising:

A. a proximal end portion and a distal end portion;

B. a proximal body at the proximal end portion adapted for connection to a proximal catheter, said proximal body having a proximal port;

C. a distal body at said distal end portion of said shunt valve device adapted for connection to a distal catheter, said distal body having a distal port;

D. a flexible housing having:

(i) a proximal section located over said proximal port and cooperatively configured relative to said proximal port so that deflection of said proximal section will occlude said proximal port

(ii) a distal section located over said distal port and cooperatively configured relative to said distal port so that deflection of said distal section will occlude said distal port and,

(iii) a flexible middle section positioned between said proximal section and said distal section to form a chamber;

said flexible housing, said distal body, and said proximal body being cooperatively configured and so adapted to form a fluid channel between said proximal end portion and said distal end portion, and so that said proximal port will occlude said fluid channel when said flexible housing proximal section is deflected, and so that said distal port will occlude said fluid channel when said flexible housing distal section is deflected; whereby the overall shape of said shunt valve can change upon implantation of the shunt valve to conform to the contours of the body in which it is implanted; and,

E. a pressure control element having:

(i) a substantially planar diaphragm which deflects with change in fluid pressure of fluid in said fluid channel across said substantially planar diaphragm; and,

(ii) an opposing occluding element with a non-planar occluding surface in the regions where said opposing occluding element contacts said substantially planar diaphragm for a pre-determined pressure relationship of said fluid on opposing sides of said substantially planar diaphragm.

5,304,115

ULTRASONIC ANGIOPLASTY DEVICE INCORPORATING IMPROVED TRANSMISSION MEMBER AND ABLATION PROBE

Pflueger, Russell, Newport Beach; Henry Nita, Lake Forest; Steven Bacich, Laguna Niguel; Robert Siegel, Venice, all of Calif.; Geoffrey Boad, Lakewood, and Eugene DeCastro, Jamestown, both of N.Y., assignors to Baxter International Inc., Deerfield, Ill. and SonicStar International, Ltd., Jamestown, N.Y.

Filed Jan. 11, 1991, Ser. No. 640,190
Int. Cl.[5] A61B *17/70*
U.S. Cl. 604—22 35 Claims



1. An ultrasonic angioplasty device of the type wherein an elongate ultrasound transmission member has a proximal end attached to an ultrasound transducer and a distal end for applying ultrasonic energy to an occlusive lesion, the improvement comprising:

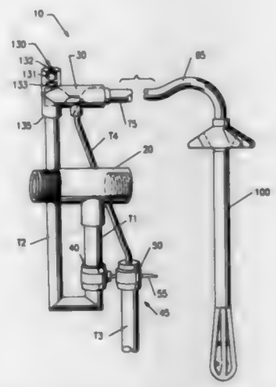
the ultrasound transmission member having a distal head at the distal end and being tapered in the direction extending proximally from the distal head.

5,304,116

VAGINAL CLEANSING DEVICE

Harold E. Cornelius, 2904 Loveland Ct., Bakersfield, Calif. 93309

Filed Jun. 5, 1992, Ser. No. 894,088
Int. Cl.[5] A61M *3/02*
U.S. Cl. 604—39 3 Claims



1. A vaginal cleansing device comprising a T-shaped coupling, a venturi, a floating ball vacuum breaking device, a concentrate reservoir, an internal tubing network, a first valve, a second valve, a solution delivery tube, an applicator nozzle, and a casing assembly;

the T-shaped coupling being adapted to be interposed between a shower head and an associated water source line for providing a flow of water to the shower head, and the T-shaped coupling being adapted to divert a portion of the water flowing from the source line to the first valve through a first tubing member of the internal tubing network;

the first valve being adapted to control the flow of water through the cleansing device and being in fluid communication with the venturi through a second tubing member of the internal tubing network

the venturi being in fluid communication with the solution delivery tube through a third tubing member of the internal tubing network and being adapted to draft a concentrate solution from the concentrate reservoir through a fourth and a fifth tubing member of the internal tubing network;

the second valve being deployed between the fourth and fifth tubing members and adapted to control the flow of concentrate solution from the concentrate reservoir to the venturi;

the first and second valves comprising a unitary valve assembly and being controlled by a common stem, the first valve comprising a first half turn valve which is fully open when the common stem is turned from 90 to 180 degrees, and the second valve comprising a second half turn valve which is fully open only when the common stem is turned to 180 degrees;

the solution delivery tube being in fluid communication with the applicator nozzle for delivering a cleansing solution comprising either water or a mixture of water and concentrate from the venturi to the applicator nozzle;

the applicator nozzle being adapted to pass the cleansing solution;

the casing assembly having a plurality of compartments, a first compartment of which comprises an enclosed area for storing the applicator nozzle and solution delivery tube, and a second compartment of which comprises the concentrate reservoir; and

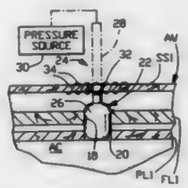
the floating ball vacuum breaking device being deployed adjacent to an inlet port of the venturi and adapted to allow air to enter the cleansing device and to prevent the drafting of concentrate solution by the venturi when the first valve is positioned in a closed position or when the flow of water from the water source line is interrupted.

5,304,117

CLOSURE METHOD FOR USE IN LAPAROSCOPIC SURGERY

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Nov. 27, 1992, Ser. No. 982,394
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—49 15 Claims



1. A method for use in laparoscopic surgery, comprising the steps of:

disposing a laparoscopic trocar sleeve in an abdominal wall of a patient so that said sleeve traverses an opening in an abdominal skin surface of the patient and also traverses an underlying aperture in a peritoneum of the patient;

providing a closure device having an elongate shaft, said closure device also having a distal end portion made of bioabsorbable material;

removing said sleeve from the abdominal wall of the patient;

inserting at least part of said closure device through said opening so that said distal end portion is partially disposed proximately to said aperture;

at least partially closing said opening subsequently to said steps of removing and inserting; and

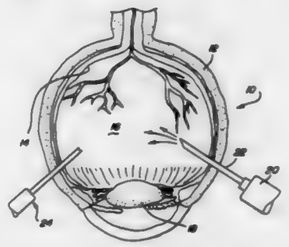
subsequently to said step of closing, maintaining said closure device at least partially traversing the abdominal wall of the patient so that said distal end portion remains partially disposed proximately to said aperture so as to block entry of an abdominal organ into said aperture.

5,304,118

METHOD FOR PERFORMING A VITRECTOMY ON AN EYE

Michael T. Trese, 3675 Franklin Rd., Bloomfield Hills, Mich. 48302; George A. Williams, 1009 Three Mile Dr., Grosse Pointe Park, Mich. 48230, and Michael Hartzer, 300 Arizona Ave., Rochester Hills, Mich. 48309

Filed Dec. 16, 1992, Ser. No. 991,253
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 7 Claims



1. A method of performing a vitrectomy on an eye having vitreous humor comprising the steps of:

introducing plasmin into the vitreous humor in an amount sufficient to induce posterior vitreous detachment,

thereafter removing the vitreous humor.

5,304,119

INSTRUMENT FOR INJECTING IMPLANTS THROUGH ANIMAL HIDE

Stephen M. Balaban, Chesterfield, and Jonathan P. Smith, Pacific, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 24, 1993, Ser. No. 80,857
Int. Cl.[5] A61M *31/00, 29/00, 16/00*
U.S. Cl. 604—51 20 Claims



1. An injection instrument comprising:

an injector having a tubular body with longitudinally opposite first and second ends, the body having at least two longitudinally adjacent coaxial segments and a hollow interior bore extending longitudinally through the body between the first and second ends;

the first segment of the body being adjacent the body first end;

the second segment of the body being adjacent the body second end and having a generally tapering configuration toward the body second end, the second segment of the body being formed as a pair of laterally adjacent tines that

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extend longitudinally from adjacent the body first segment to the body second end, each of the tines has laterally opposite side edges that converge toward each other as the tines extend longitudinally from adjacent the body first segment toward the body second end, the pair of tines have mutually opposed interior surfaces between their laterally opposite side edges, and the laterally opposite side edges and portions of the interior surface of one tine of the pair extend around and overlap the laterally opposite side edges of a second tine of the pair; and,

a push rod having opposite first and second ends and an exterior configuration that enables the push rod to be inserted through the interior bore of the injector body to the body second end and force the pair of tines radially away from each other for pushing an implant through the interior bore before the push rod and out the body second end.

5,304,120

ELECTROPORATION METHOD AND APPARATUS FOR INSERTION OF DRUGS AND GENES INTO ENDOTHELIAL CELLS

Lois J. Crandell, and Gunter A. Hofmann, both of San Diego, Calif., assignors to BTX Inc., San Diego, Calif.

Filed Jul. 1, 1992, Ser. No. 907,322
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—52 **18 Claims**



1. An in vivo method of introducing macromolecules into endothelial cells of a patient for therapeutic purposes, comprising the steps of:

selecting a catheter device having a distal inflatable balloon portion, a plurality of spaced pairs of electrodes mounted on the distal inflatable balloon portion and infusion passages extending along the catheter device and terminating to the exterior of said device proximal said distal inflatable balloon portion;

implanting said catheter device having said plurality of spaced pairs of electrodes into a selected blood vessel of the patient, inflating said distal inflatable balloon portion so that the electrodes contact an inner wall of said blood vessel at spaced positions therein for generating an electric field adjacent said inner wall of the selected blood vessel at a preselected location to be treated;

infusing preselected macromolecules via said infusion passages into the selected blood vessel at the selected location; and

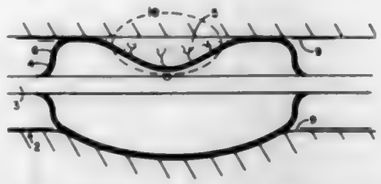
applying a predetermined electric signal to the electrodes to repeatedly subject a plurality of endothelial cells at the predetermined location in the selected blood vessel to electric fields of a predetermined amplitude and duration in order to make the walls of the endothelial cells transiently permeable to permit the macromolecules to enter the endothelial cells without killing said cells.

5,304,121

DRUG DELIVERY SYSTEM MAKING USE OF A HYDROGEL POLYMER COATING

Ronald Sahatjian, Lexington, Mass., assignor to Boston Scientific Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 635,732, Dec. 28, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 795,976
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—53 **55 Claims**



1. A method for rapidly delivering a dose of a preselected aqueous-mobile drug into tissue or occlusive formation at a desired location of the wall of a vascular lumen, comprising:

providing a catheter constructed for insertion into a vascular lumen having a catheter shaft and an expandable portion mounted on said catheter shaft, said expandable portion being expandable in response to controlled inflation pressure to fill the cross-section of the vascular lumen and engage the tissue or occlusive formation of said vascular lumen, at least a portion of the exterior surface of the expandable portion being defined by a coating of a tenaciously adhered swellable hydrogel polymer, having said dose of said aqueous-mobile drug incorporated therein said hydrogel polymer selected to cause the coating to reach a characteristic swollen state of a thickness a number of times thicker than the thickness of the coating in its dry state as a result of absorption of aqueous fluid, and, when in said swollen state, said coating having characteristic compressibility, in response to compressive pressure within said expandable portion elevated above said inflation pressure, to squeeze the coating against said tissue or occlusive formation sufficiently to immediately, substantially, reduce the coating thickness, and force a substantial portion of said dose of said aqueous-mobile drug into said tissue or occlusive formation,

preparing said expandable portion by introducing said drug to said hydrogen polymer coating,

swelling said hydrogel polymer coating,

positioning said expandable portion in said lumen at the point of desired drug application,

expanding said expandable portion to cause immediate delivery of said drug by compression of said hydrogel polymer coating against the wall of said body lumen or said occlusive formation for a brief interval, during which said dose of said preselected drug is rapidly squeezed from said hydrogel coating and delivered to said tissue;

deflating said expandable portion, and

removing said catheter from said body lumen.

5,304,122

METHOD FOR PROVIDING A RESTENOSIS MODEL IN PORCINE CORONARY ARTERIES

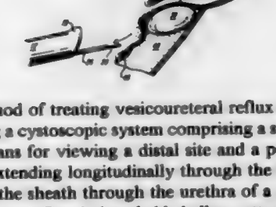
Robert S. Schwartz; Joseph G. Murphy, both of Rochester; Rodney G. Wolff, Minnetonka Beach, and Vincent W. Hull, Ham Lake, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 655,912, Feb. 14, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 981,959
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—53 **5 Claims**

1. A method of modeling the treatment of proliferative human restenosis in a porcine blood vessel comprising the steps of:

(a) introducing a balloon catheter having an expandable wire stent over the deflated balloon of the catheter into the lumen of the blood vessel of choice in a live pig and advancing the balloon to a selected location;

(b) inflating the balloon to a pressure and a size sufficient to



distort and fracture the internal elastic lamina of the blood vessel wall and force the wire stent through the elastic lamina into the media;

(c) deflating and withdrawing the balloon catheter;

(d) applying a selected anti-restenosis treatment to the pig; and

(e) examining the selected location in the lumen of the treated pig for restenosis.

5,304,123

DETACHABLE BALLOON CATHETER FOR ENDOSCOPIC TREATMENT OF VESICOURETERAL REFLUX

Anthony Atala, Newton, and James Mandell, Brookline, both of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Filed Oct. 24, 1991, Ser. No. 782,058
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—54 **19 Claims**



1. A method of treating vesicoureteral reflux comprising;

providing a cystoscopic system comprising a sheath, a viewing means for viewing a distal site and a positioning element extending longitudinally through the sheath:

inserting the sheath through the urethra of a patient;

passing an uninflated, detachable balloon attached to a catheter through a lumen of the positioning element to a subureteral region of a reflux-prone bladder; and

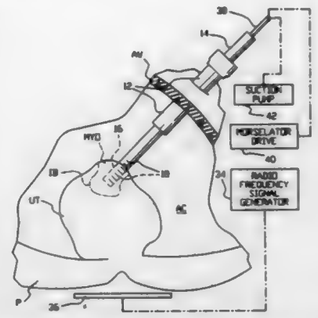
inflating and detaching the balloon from the catheter in place such that the ureter is repositioned to provide a competent ureterovesical junction while endoscopically visualizing the compressive effect of the balloon on the surrounding tissue.

5,304,124

MYOMA REMOVAL TECHNIQUE

Mitchell N. Essig, 227 High Brook Ct., Pelham, N.Y. 10803, and Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Jun. 7, 1993, Ser. No. 72,769
Int. Cl.[5] A61M *31/00*; **A61B** *17/20, 17/36*
U.S. Cl. 604—55 **16 Claims**



1. A method for removing a myoma, comprising the steps of:

providing a laparoscopic trocar sleeve and a tubular member provided along a distal edge with a cauterizing element;

lifting a woman's abdominal wall;

disposing said trocar sleeve in the lifted abdominal wall;

inserting said tubular member through said trocar sleeve so that said distal end contacts a myoma in the woman's uterus;

upon contact of said distal edge with said myoma, moving said tubular member further in a distal direction and into said myoma, thereby forming a core of myoma tissues inside said tubular member;

during said step of moving, energizing said cauterizing element to enable said cauterizing element to cut through said myoma;

upon attaining a predetermined depth in said myoma, terminating said steps of moving and energizing; and

upon termination of distal movement of said tubular member, removing said core of myoma tissues in a proximal direction through said tubular member and said trocar sleeve.

5,304,125

APPARATUS FOR ADMINISTERING SOLID PARTICULATE AEROSOLS TO THE LUNGS

David H. Leith, Chapel Hill, N.C., assignor to The University of North Carolina, Chapel Hill, N.C.

Continuation of Ser. No. 593,219, Oct. 5, 1990. This application Mar. 23, 1993, Ser. No. 35,916
Int. Cl.[5] A61M *31/00, 11/00*
U.S. Cl. 604—57 **16 Claims**

9. An apparatus for administering an aerosol of solid particulate amiloride to the lungs of a patient in need of such treatment, the apparatus comprising:

(a) a solid particulate amiloride aerosol generator which generates an aerosol of solid particular amiloride for delivery to the lungs of a patient; and

(b) an impactor assembly for removing large particles of amiloride from said aerosol, said impactor assembly comprising:

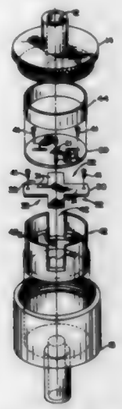
(i) an enclosed chamber having an inlet opening and an outlet opening formed on opposite sides thereof, with said inlet opening having an area of from about 50 to about 150 square millimeters, and with said aerosol generator connected to said inlet opening; and

(ii) first and second impactor plates positioned in said chamber in spaced relation to one another, with said first impactor plate adjacent said inlet opening;

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said first impactor plate having an uninterrupted primary impaction surface formed thereon, said primary impaction surface substantially axially aligned with said inlet opening and having a diameter not less than said inlet opening, with said primary impaction surface spaced away from said inlet opening a distance of from about 2 to 15 millimeters, and with said first impactor plate having at least one jet opening formed therein having a total area of from about 50 to about 150 square millimeters;

said second impactor plate having an uninterrupted secondary impaction surface formed thereon substantially parallel to each of said at least one jet opening each of said



secondary impaction surfaces axially aligned with each of said at least one jet opening and having a width not less than each of said at least one jet opening, with each of said secondary impaction surfaces spaced apart form said corresponding jet opening a distance of from about 2 to 15 millimeters, and with said second impactor plate having at least one exhaust opening formed therein in fluid communication with said outlet opening;

wherein the solid particulate amiloride is propelled from the inlet opening through the outlet opening and into the oral cavity of a patient through either the inhalation of a patient or the propulsion of the amiloride through the impactor assembly by the aerosol generator.

5,304,126

INFUSION SYSTEM HAVING PLURAL FLUID FLOW LINES

Paul Epstein, Brookline; Harry Petschek, Lexington, both of Mass.; Eric LaWhite, South Royalton, Vt.; Clair Strohl, Norfolk, Mass.; Henry Coyne, Framingham, Mass.; Edward Kaleskas, Jefferson, Mass., and George Adaniva, Swampscott, Mass., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 353,035, May 16, 1989, Pat. No. 5,100,380, which is a continuation of Ser. No. 62,064, Jun. 11, 1987, abandoned, which is a continuation of Ser. No. 873,478, Jun. 11, 1986, Pat. No. 4,696,671, which is a continuation of Ser. No. 578,180, Feb. 8, 1984, abandoned. This application Dec. 31, 1990, Ser. No. 636,059

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—67 **11 Claims**

1. An infusion system for infusing fluids into a patient comprising:

a housing;

a controller within the housing for control of an infusion through selectable plural fluid input channels;

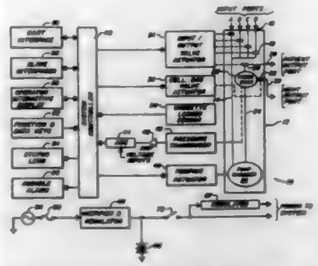
a disposable cassette structure releasably mounted to the housing and having:

a fluid input port and a fluid output port;

a first rigid portion having at least one surface, a fluid channel recessed in the surface and extending from the input port to the output port, a pump chamber, and a pressure chamber integrally formed in the fluid channel;

a second rigid portion attached to the first rigid portion over the surface; and

a resilient diaphragm disposed between the first and sec-



ond rigid portions to overlay the fluid channel, and including a first portion over the pump chamber and a second portion over the pressure chamber; and

a pressure sensing member operatively connected to the controller and mounted in alignment with the pressure chamber to sense pressure variations in the pressure chamber.

5,304,127

INFUSION APPARATUS ABLE TO RECOGNIZE AN APPROPRIATE TIME FOR SERVICING

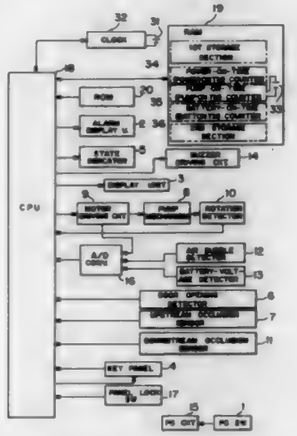
Masafumi Kawahara, Nara, Japan; Joseph B. Matthews, Grayslake, and Thomas Callaghan, Algonquin, both of Ill., assignors to Sharp Kabushiki Kaisha, Osaka, Japan and Baxter International Incorporated, Deerfield, Ill.

Filed Apr. 2, 1993, Ser. No. 42,014

Claims priority, application Japan, Apr. 3, 1992, 4-081956

Int. Cl.[5] A61M *31/00, 1/00*

U.S. Cl. 604—65 **4 Claims**



1. An infusion apparatus which is operated on alternating current power source and includes a pump mechanism for transferring a fluid through an administration tube by repetitively pressing a portion of the administration tube in a peristaltic manner in a direction of transferring the fluid and a battery for backing up the alternating current power source, the infusion apparatus comprising:

first clock means for clocking a period of time in which power is supplied to the infusion apparatus from the alternating current power source or the battery for backing up the alternating current power source;

first storage means for storing the period of time clocked by the first clock means;

second clock means for clocking a period of time in which power is supplied to the infusion apparatus from the battery;

second storage means for storing the period of time clocked by the second clock means;

third clock means for clocking a period of time in which the pump mechanism operates;

third storage means for storing the period of time clocked by the third clock means;

display means; and

means for calling up the period of time stored in each of the first, second and third storage means to display the period of time on the display means.

5,304,128

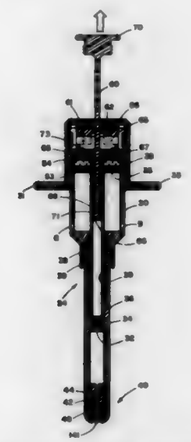
GAS POWERED SELF CONTAINED SYRINGE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Sep. 22, 1992, Ser. No. 949,168

Int. Cl.[5] A61M *5/30*

U.S. Cl. 604—68 **14 Claims**



1. A syringe comprising a piston housing having distal and proximal ends; a piston in said piston housing adapted for reciprocal movement therein, said piston having a central opening and a co-axially aligned elongated tubular portion extending out of the lower end of said piston housing adapted to be inserted into a syringe cartridge to expel medication therefrom, a power cap on the proximal end of said piston housing having a central opening; a step passing through the central opening in said power cap and the central opening in said piston, said stem being disconnectably connectable to said piston for moving said piston in said piston housing; a reagent means which can be rapidly converted to gas located in said power cap adjacent to the proximal end of said piston housing for driving said piston down said piston chamber; and a means for activating said reagent means to gas when said stem is disconnected from said piston.

5,304,129

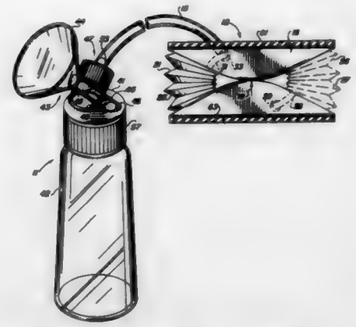
PIVOTABLE FOOT OPERATED BREAST PUMP

Suzanne E. Forgach, 8621 E. Mabel Pl., Tucson, Ariz. 85715

Filed Jul. 12, 1993, Ser. No. 89,498

Int. Cl.[5] A61M *1/06*

U.S. Cl. 604—74 **12 Claims**



1. A foot operated breast pump comprising:

(a) a reservoir including a first fitting for placement on a woman's breast and a second fitting for attachment to a source of vacuum;

(b) a bi-directional pump including

(i) a platform,

(ii) a treadle resting on said platform, and

(iii) a variable displacement chamber connected between said treadle and said platform;

(c) a hose connecting said chamber to said second fitting; and

wherein motion of said treadle in a first direction relative to said platform causes said chamber to increase in volume and decrease the pressure in said reservoir, and motion of said treadle in a second direction relative to said platform causes said chamber to decrease in volume and increase the pressure in said reservoir.

5,304,130

CONTAINER FOR THE CONTROLLED ADMINISTRATION OF A BENEFICIAL AGENT

Kathryn M. Button, Ingleside; Steven C. Jepson, Palatine; Birendra K. Lal, Glendale Heights; Douglas W. Reitz, Arlington Heights; James Richardson, Schaumburg; Richard A. Rollins, Mundelein; Paul J. Soltys, Lake Zurich, and Thomas E. Dudar, Palatine, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Feb. 26, 1992, Ser. No. 841,957

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—85 **29 Claims**

1. A container for housing a solid beneficial agent comprising:

a body defining an interior including a chamber having a length for housing a solid beneficial agent, the chamber having a first opening and a second opening, the interior also including a channel defined by at least a portion of the body extending along at least a portion of the perimeter along the length of the chamber and being separated by a wall from the chamber for at least a portion of the length of the chamber, the channel at a first end being in fluid communication with the first opening and at a second end terminating in a channel opening; and

a member extending from a bottom of the body and defining a first fluid flow path and a second fluid flow path, the first fluid flow path being in fluid communication with the first opening and the second fluid flow path being in fluid communication with the second opening of the chamber,

VOL 1161 ISS 3 AP 19 1994 UMI

the first and second fluid flow paths being separated by a wall from each other and terminating in separate openings

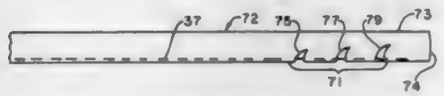


in fluid communications with an environment outside the container.

5,304,131
CATHETER

Larry D. Paskar, 14337 Stablestone Ct., Chesterfield, Mo. 63017

Continuation-in-part of Ser. No. 730,120, Jul. 15, 1991. This application Feb. 11, 1992, Ser. No. 834,007
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **10 Claims**

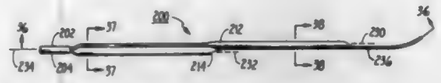


1. A combination catheter comprising:
a catheter tube having a wall and an internal lumen extending substantially through the length of the catheter tube, said catheter tube having an outside diameter sufficiently small so that the catheter tube may be inserted into the human body, said catheter tube having a proximal end and a distal end;
at least one wire running from the proximal end of the catheter tube to the vicinity of the distal end of the catheter tube, said wire being connected to the catheter tube adjacent the distal end so as to allow the distal tip of the catheter tube to be deflected upon movement of said wire;
said catheter tube having a substantially uniform transverse cross section throughout a substantial part of its length, the catheter tube wall adjacent the distal end of the catheter tube having therein on one side of the longitudinal axis of the catheter tube a predetermined region of weakness, whereby upon tension being applied to the wire the distal end of the catheter tube bends in the direction of the predetermined region of weakness;
an inner surgical element disposed in the lumen of the catheter tube, said inner surgical element being rotationally and axially movable in the lumen of the catheter tube, said inner surgical element being sufficiently pliable to bend upon bending of the catheter tube; and
manually operable means for fixing the inner element in desired rotational positions with respect to the catheter tube;
said predetermined region of weakness being formed by gaps in the wall of the catheter tube, at least some of the gaps having a generally crescent moon shape.

5,304,132
LIMACON GEOMETRY BALLOON ANGIOPLASTY CATHETER SYSTEMS AND METHOD OF MAKING SAME

G. David Jang, 636 Golden West Dr., Redlands, Calif. 92373

Continuation-in-part of Ser. No. 389,356, Aug. 3, 1989, Pat. No. 5,071,406, which is a continuation of Ser. No. 47,049, May 6, 1987, Pat. No. 4,958,634. This application Dec. 10, 1991, Ser. No. 805,207
The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.
Int. Cl.[3] A61M *29/00*
U.S. Cl. 604—96 **13 Claims**



1. An angioplasty device which comprises:
a catheter shaft having a distal segment and a proximal segment, said shaft defining an axis;
at least two independently inflatable and independently deflatable angioplasty balloons operatively engaged with said distal segment of said catheter shaft, each said balloon defining respective axes and having respective walls, respective lengths, respective predetermined maximum inflated diameters, and respective longitudinal positions on said catheter shaft, each said axis of each said balloon being distanced from the other said balloon axes, and provided that when one said balloon is positioned at the same longitudinal position as any other said balloon, the lengths of said balloons are different.

5,304,133

Patent Not Issued For This Number

5,304,134
LUBRICIOUS YET BONDABLE CATHETER CHANNEL SLEEVE FOR OVER-THE-WIRE CATHETERS

Jeff L. Kraus, and Nitin Matani, both of San Jose, Calif., assignors to Danforth Biomedical, Inc., Menlo Park, Calif.

Filed Jan. 17, 1992, Ser. No. 822,291
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **10 Claims**



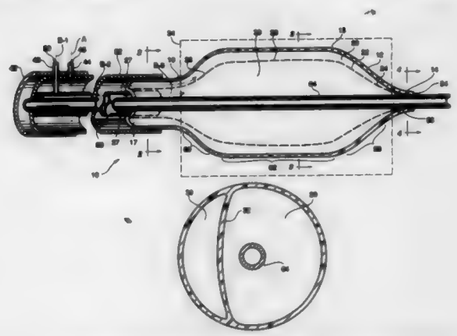
1. In a catheter body for use in an over-the-wire catheter guidewire system in conjunction with a guidewire having a terminal segment whose exterior is other than a smooth metallic surface, said catheter body comprising
an outer tubular member terminating in a balloon formed of a material selected from the group consisting of polyethylene terephthalate, nylon, and combinations thereof, and
an inner tubular member defining an inflation lumen between said inner tubular member and said outer tubular member and a guidewire lumen inside said inner tubular member for advancement over said guidewire, said inner tubular member extending substantially the length of said outer tubular member and terminating at an orifice at the

distal end of said balloon, said orifice sealed around said inner tubular member to isolate said balloon from said guidewire lumen,
the improvement in which said inner tubular member is comprised of a proximal segment formed entirely of a lubricious polymer joined to a distal segment formed entirely of a material selected from the group consisting of polyamide-based polymers, polyurethane-based polymers and blends of a polyamide and a polyurethane, the length of said distal segment being less than the length of said terminal segment of said guidewire.

5,304,135
AXIAL MULTI-CHAMBER ANGIOPLASTY BALLOON ASSEMBLY

Robert S. Shonk, Davie, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Aug. 13, 1992, Ser. No. 929,092
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—101 **18 Claims**



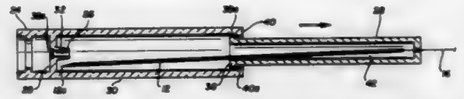
1. An axial multi-chamber angioplasty balloon assembly for insertion into a blood vessel comprising:
a primary elongated, elastic, inflatable balloon having a first Young's Modulus, a distal portion, a proximal portion and an intermediate portion having a first diameter therebetween, defining a first chamber;
a secondary elongated, elastic, inflatable balloon having a second Young's modulus, a distal portion, a proximal portion and an intermediate portion having a second diameter therebetween, defining a second chamber; said intermediate portions of the primary and the secondary balloons being attached in common;
said first and said second chambers defining a variable dilation device for dilating an anatomical stricture having a first diameter-pressure characteristic curve defined by said primary balloon's Young's modulus, a second diameter-pressure characteristic curve defined by said secondary balloon's Young's modulus and a third diameter-pressure characteristic curve defined by a combined Young's modulus of said primary and secondary balloons.

5,304,136
NEEDLE SHEATH

Timothy J. Erskine, Salt Lake City, and Christopher P. Steinman, Sandy, both of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Feb. 7, 1992, Ser. No. 832,241
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **22 Claims**

1. An apparatus for shielding a needle comprising: containment means for containing said needle, wherein said containment means comprises:
a first telescopic member comprising a front wall, said front wall having a first orifice;
a second telescopic member having a rear wall such that said first telescopic member and said second telescopic member form a chamber to accommodate a needle and such that said first orifice is dimensioned to permit said needle

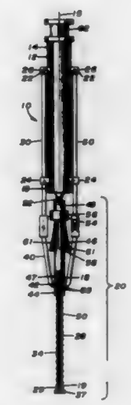


to enter said chamber through said first orifice, wherein said rear wall has a second orifice dimensioned such that said needle cannot pass through said second orifice.

5,304,137
SAFETY SYRINGE

Gary L. Fluke, 16824 Broadway, Snohomish, Wash. 98290

Filed May 7, 1993, Ser. No. 59,325
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **13 Claims**



1. A safety syringe, comprising:
a. a syringe body having a distal end, a proximal end, and a longitudinal axis, said syringe body also including a plunger capable of pushing fluid contained inside said syringe body through said distal end;
b. a needle coupled to said distal end of said syringe body, said needle having an exposed distal end capable of being inserted into the skin;
c. a sleeve assembly attached to said syringe body and disposed longitudinally over said needle, said sleeve assembly includes a longitudinally aligned, slidingly connected receiver and sleeve member, said receiver being fixed at one end to said distal end of said syringe body, said sleeve member having a distal end, said sleeve member capable of being slidingly disposed into a first position over said needle so that said distal end of said needle is covered by said sleeve member, said sleeve member also capable of being slidingly disposed into a second position over said needle so that said distal end of said needle is exposed;
d. A biasing means attached to said sleeve assembly which forcibly disposed said sleeve member in said first position over said needle when said syringe is not in use, and;
e. finger activated releasing means disposed between said syringe body and said sleeve assembly, said finger activated releasing means capable of automatically locking said sleeve member in said first position over said needle when said syringe is not in use, said finger activated releasing means also capable of being activated by said user to

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enable said sleeve member to be slidingly disposed in said second position over said needle by pressing said distal end of said sleeve member against said skin and forcing said syringe body toward said skin to insert said distal end of said needle therein.

5,304,138

SINGLE USE, DESTRUCTIBLE MEDICAL SYRINGE

Alexander D. Mercado, Hicksville, N.Y., assignor to Advanced Safety Technology, Hicksville, N.Y.

Filed Sep. 18, 1992, Ser. No. 947,131
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **10 Claims**



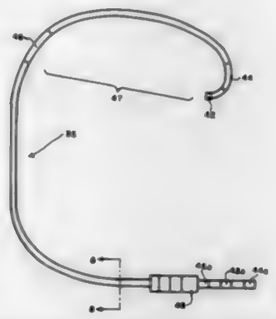
1. A single use, destructible medical syringe comprising a barrel provided with a needle or adapted for connection to a needle at one end, an opposite open end, and a plunger disposed in said barrel, said plunger provided with a cap at the end thereof nearest the open end of said barrel and a frangible seal attached to the opposite end, said barrel having a countersunk portion extending from the vicinity of the open end towards the needle-bearing end thereof, and means for preventing withdrawal of said plunger intact from said barrel comprising a boss extending around the internal surface of said barrel above said countersunk portion, bearing against said seal to break the seal upon withdrawal of the plunger, whereby after initial use further use of said syringe is prevented.

5,304,139

IMPROVED LEAD CONFIGURATION FOR AN ATRIAL DEFIBRILLATOR

John M. Adams, Issaquah, and Clifton A. Alferness, Redmond, both of Wash., assignors to InControl, Inc., Redmond, Wash.

Division of Ser. No. 685,130, Apr. 12, 1991, Pat. No. 5,282,837. This application Aug. 3, 1992, Ser. No. 924,109
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—122 **5 Claims**



3. A lead for use in association with an atrial defibrillator of the type arranged to cardiovert the atria of the human heart, said lead comprising:

a distal end and a proximal end;

a first cardioverting electrode; and

a second cardioverting electrode proximal to said first electrode,

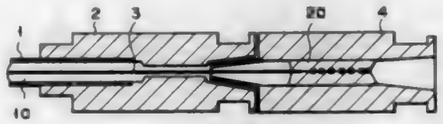
said lead being flexible so as to be arranged to be passed down the superior vena cava of the heart, into the right atrium, into the coronary sinus ostium, and advanced into the coronary sinus or great cardiac vein, and wherein said electrodes are spaced apart such that when said first electrode is within the coronary sinus or great cardiac vein adjacent the left atrium, said second electrode is within the right atrium or the superior vena cava and wherein the distal end of said lead beyond said second electrode is preshaped to generally conform to the shape of the coronary sinus of the heart.

5,304,140

CATHETER FOR INTRODUCTION INTO BLOOD VESSEL

Takahiro Kugo, and Kazuhito Ishihara, both of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP88/00851, § 371 Date Feb. 26, 1990, § 102(e) Date Feb. 26, 1990, PCT Pub. No. WO89/01799, PCT Pub. Date Mar. 9, 1989
PCT Filed Aug. 26, 1988, Ser. No. 465,164
Claims priority, application Japan, Aug. 28, 1987, 62-214338
Int. Cl.[5] A61M *25/00, 5/178*
U.S. Cl. 604—281 **5 Claims**



1. A catheter for introduction into a blood vessel, comprising:

a catheter body having a lumen opening at a distal end of said catheter and provided at its proximal end with a first hub, said catheter body being covered on the outer surface thereof with a water-soluble high molecular weight material; and

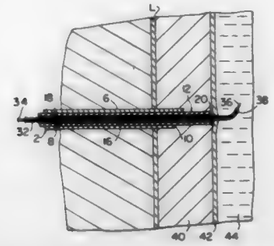
a super-elastic wire detachably inserted in said lumen of the catheter body and extended to reach a distal end region of the catheter body, said lumen having a diameter larger than said wire thereby defining a space around said wire for passage of a medical liquid through said lumen, and said wire being attached to a second hub which is detachably fitted in said first hub of the catheter body and has a passage therethrough in communication with said space for introducing a medical liquid through said first and second hubs, said space, and out of said opening, said super-elastic wire being covered with a synthetic resin layer having an X-ray non-transmission material mixed therein, and with a water-soluble high molecular weight material covering said synthetic resin layer.

5,304,141

METHOD AND APPARATUS FOR INDUCING ANESTHESIA

Mark D. Johnson, Weymouth, Mass., and Vladimir Bittner, Bern, Switzerland, assignors to Brigham and Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 448,321, Dec. 11, 1989, abandoned. This application Dec. 31, 1990, Ser. No. 624,750 The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—158 **23 Claims**



1. An apparatus for administering fluid into the subarachnoid space of a patient, comprising:

a first needle having a lumen and a pointed tip, said first needle being of a first length for insertion into the epidural space of the patient without penetration of the dura;

an introducer having a hollow shaft and a non-piercing tip, said introducer having an exterior diameter smaller than the interior diameter of said lumen of said first needle, such that said introducer is removably inserted through said lumen of said first needle, said introducer being of a second length longer than said first length of said first needle such that the tip of said introducer extends beyond the tip of said first needle to press against the wall of the dura without penetration thereof to place the dura in tension;

means for maintaining the non-piercing tip of said introducer extended beyond the pointed tip of said first needle as the non-piercing tip of said introducer presses against the wall of the dura, such that the pointed tip of said first needle is prevented from contacting and penetrating the dura; and

a fluid carrying means for transporting fluid into the dura of said pointed, said fluid carrying means being of a diameter smaller than that of the interior diameter of said introducer such that said fluid carrying means is removably inserted through said hollow shaft of said introducer and wherein said fluid carrying means has a penetrating point to penetrate the dura for administering fluid thereto.

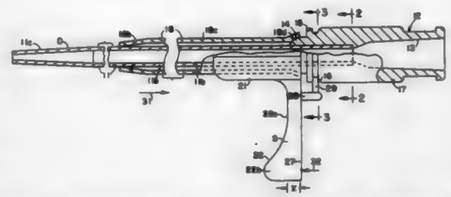
5,304,142

DILATOR - INTRODUCER LOCKING HUB AND SHEATH VALVE APPARATUS

David A. Liebl, Saint Louis Park, and Bruce L. Funk, Maplewood, both of Minn., assignors to Medamicus, Inc., Minneapolis, Minn.

Filed Aug. 4, 1992, Ser. No. 925,092
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—167 **18 Claims**

14. An introducer that is usable with a dilator, comprising an axially elongated tubular portion having a central axis of elongation, a distal end portion and a proximal end portion, said tubular portion proximal end portion having a proximal terminal peripheral edge, a radially elongated tab, means for joining the tab to the tubular portion proximal end portion, and a slider means mounted to the tab for radial slidable movement between a position at least substantially out of axial alignment with the terminal peripheral edge for permitting axial movement of the dilator to extend through the terminal peripheral edge and into the proximal end portion, and a valve closed position in abutting relationship to the terminal peripheral edge. For blocking any significant fluid flow through the tubular member.

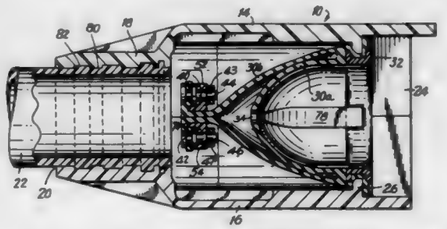


5,304,143

VALVE SYSTEM FOR INTRODUCING OBJECTS INTO ANATOMICAL BODY PORTIONS

David T. Green, Westport, and Henry Bolanos, East Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 711,756, Jun. 7, 1991, Pat. No. 5,180,373. This application Dec. 17, 1992, Ser. No. 992,143
Int. Cl.[5] A61M *8/00*
U.S. Cl. 604—167 **37 Claims**



1. Valve assembly for sealed reception of an elongated object, which comprises:

a) valve body defining a longitudinal axis and having at least one opening configured and dimensioned to permit entry of the elongated object;

b) flexible resilient valve member defining an aperture positioned in general alignment with said at least one opening; and

c) means associated with said flexible resilient valve member to facilitate expansion of said aperture to permit entry of the elongated object therethrough in sealed engagement therewith, said means to facilitate expansion of said aperture adapted for radial displacement relative to said longitudinal axis and positioned to expand said aperture upon contact with the elongated object as the elongated object is at least partially inserted into said at least one opening of said valve body.

5,304,144

CATHETER INTRODUCER WITH ENHANCED NEEDLE GRIPPING

Greg L. Brimhall, West Jordan, Utah, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 17, 1993, Ser. No. 32,948
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—177 **19 Claims**

1. A catheter introducer set comprising:

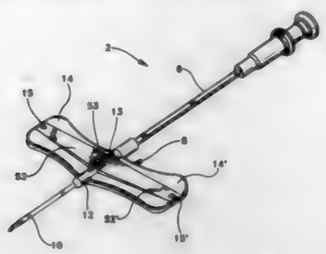
a tube having a first internal lumen;

a cannula having a first end for introducing into a blood vessel and a second end, the cannula having a second internal lumen between the first and second ends;

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an intermediate member linking the cannula and the tube, the intermediate member comprising a generally cylindrical section, the generally cylindrical section being radially elastically deformable;

a needle comprising a sharp tip, the needle being disposable lengthwide in the first and second lumens such that at least part of the needle lies within the intermediate member;



gripping means for squeezing the intermediate member such that the part of the needle lying within the intermediate member can be gripped by the intermediate member;

wherein the intermediate member is provided with an elongate indentation in the generally cylindrical section, the indentation being substantially parallel to the lumen of the cannula to facilitate gripping of the needle by the intermediate member.

5,304,145

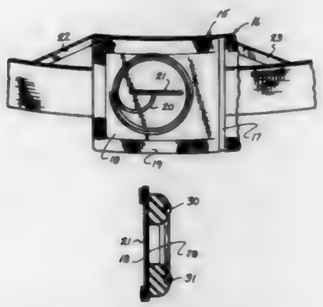
GASTRONOMY TUBE HOLDER

Jacqueline E. Blair, 85 Homeward Ave., Uxbridge, Mass. 01569

Filed Mar. 8, 1993, Ser. No. 27,434

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—179 **1 Claim**



1. A gastronomy tube holder, comprising,

a belt member, the belt member having an interior surface and an exterior surface, with the exterior surface including a support plate fixedly mounted to the exterior surface, and

a cover plate, and

a hinge, with the hinge interconnecting the support plate to the cover plate, wherein the cover plate is arranged in a coextensive relationship relative to the support plate in a first position and displaced relative to the support plate in a second position, and

the support plate having a support plate front surface and a support plate rear surface, the support plate rear surface mounted to the belt exterior surface, and the support plate front surface including a first hook and loop fastener strip, the cover plate including a cover plate front surface and a cover plate rear surface, the cover plate rear surface including a second hook and loop fastener strip arranged for securement to the first hook and loop fastener strip, and

a slot directed through the support plate, and

a gastronomy tube positioned about the slot on the support plate front surface, and

a first support rib and a second support rib fixedly mounted on opposed sides of the support plate extending from the support plate to the belt, and

the cover plate rear surface includes a flexible pocket member, and

a lift flange is fixedly mounted to the cover plate extending beyond the cover plate for ease of manual grasping of the lift flange for displacement of the cover plate to the second position, and

an annular resilient ring is arranged in surrounding relationship relative to the slot, with the resilient ring mounted to the support plate rear surface, and

the resilient ring includes a continuous annular groove for reception of an inert sealing cream therewithin.

5,304,146

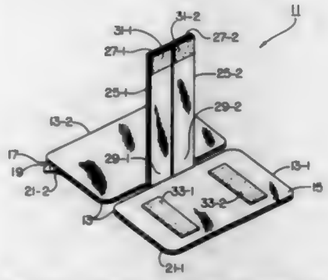
MEDICAL APPLIANCE SECURING DEVICE

Melissa C. Johnson, 758 Main St., Leominster, Mass. 01453; Philip E. Baker, 5 Fox Hill La., Norfolk, Mass. 02056, and Joseph Giovino, 545 Goodrich St., Lunenburg, Mass. 01462

Filed Oct. 23, 1992, Ser. No. 965,748

Int. Cl.[5] A61M *25/02*

U.S. Cl. 604—180 **17 Claims**



1. A device for securing a generally tubular member of a medical appliance to a support surface, said device comprising:

a) an anchoring patch, said anchoring patch having a top surface and a bottom surface, said bottom surface being coated with an adhesive for attaching said anchoring patch to the support surface, said anchoring patch also including a first segment and a second segment, said first segment and said second segment each having an inner edge;

b) a pair of flexible retaining tabs, each of said flexible retaining tabs being independently operable and having a first end and a second end, said first ends being connected to said anchoring patch and wherein said flexible retaining tabs interconnect and extend from said inner edges of said first segment and said second segment; and

c) first fastening means secured to said second ends of said flexible retaining tabs and complementary fastening means secured to said top surface of said anchoring patch, said first fastening means and said complementary fastening means being positioned so that their joinder forms a pair of separable loops within which the generally tubular member of the medical appliance may be retained.

5,304,147

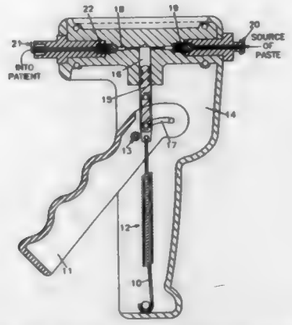
INJECTION SYRINGE

Thomas R. Johnson, Milford, and Andrew L. Cote, Sr., Peterborough, both of N.H., assignors to Johnson Medical Development Corp., Milford, N.H.

Continuation-in-part of Ser. No. 750,416, Aug. 27, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,612

Int. Cl.[5] A61M *5/178, 5/315*

U.S. Cl. 604—183 **45 Claims**



1. An injection syringe for the injection of high viscosity paste or liquid, comprising a frame, a pair of handles mounted to said frame, at least one of which handles is a lever pivotally mounted to said frame incorporating a piston advancing means, an upper and lower cylinder chamber providing fluid connection therebetween, said upper chamber containing an inlet and outlet port, a one way ball-bearing inlet valve seated at the inlet port, a one way ball-bearing outlet valve seated at the outlet port, said lower cylinder chamber containing a piston having means connecting the piston to the piston advancing means on the lever pivot arm, wherein the inlet and outlet ball-bearings have durometers which are chosen to regulate the maximum internal delivery pressure in said upper cylinder chamber, wherein the piston advancing means comprises a semi-circular cam track slidably engaging the piston connecting means for upwardly advancing said piston into said lower piston cylinder chamber as the piston connecting means slides along said cam track so that substantially all of the liquid or paste in the cylinders is forced through the one-way valve in the outlet cylinder chamber.

5,304,148

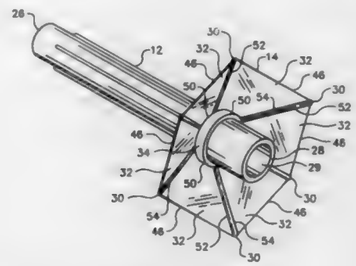
NEEDLE CAP AND SHIELD

Randy J. Lannoye, and Floyd D. Lannoye, both of 12436 SE. 248th St., Kent, Wash. 98031

Filed Jan. 17, 1992, Ser. No. 822,621

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **21 Claims**



1. A needle cap and shield, comprising:

(a) a housing comprising

(i) a sidewall, said sidewall having an interior and an exterior, and

(ii) a frontal opening, said opening adapted to receive a needle;

(b) a continuous flexible shield portion, said portion extending upward away from said exterior sidewall, said continuous shield portion further comprising a plurality of spaced panels extending upward from said exterior sidewall, wherein adjacent panels have interior edges therebetween, and wherein said interior edges are shaped for defining generally stiff projections to integrally support the said panels out of contact with said exterior sidewall.

5,304,149

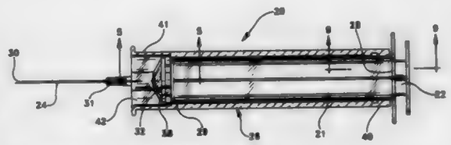
MEDICAL DEVICE WITH A LOCKABLE NEEDLE SHIELD

Adriano Morigi, Rutherford, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 12, 1992, Ser. No. 897,632

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—192 **9 Claims**



1. A medical device comprising:

a barrel having proximal and distal ends;

a needle extending from the distal end of the barrel and terminating in a point;

a shield coxially and rotationally mounted on said barrel, said shield being axially movable between a retracted position in which said needle point is exposed and an extended position in which said needle point is covered;

means associated with said barrel and said shield and responsive to a combined rotational is axially distal movement of said shield, when said shield is at an extended and unlocked position, for locking said shield on said barrel at said extended position and for preventing subsequent rotational and axial movement of the shield on the barrel, said means including a collar at the distal end of the barrel, said collar forming a raised annulus around an outside surface of the barrel, said collar having a first locking surface and a second locking surface and at least one slot extending through said collar between said surfaces, said means further including at least one locking protuberance extending inwardly from an interior surface of said shield, said protuberance being sized to pass through the slot in said collar when the shield is in said extended position and, upon rotation of said shield, said protuberance being adapted to engage the first locking surface of said collar thereby preventing retrograde axial movement of said shield with respect to said barrel;

means associated with the shield for guiding the movement of the shield from the retracted to the extended position and for facilitating the function of the means for locking the shield on said barrel at said extended position; and

means associated with the shield for preventing movement of the shield from its retracted position toward the extended position but being responsive to rotation of said shield with respect to said barrel for permitting such movement, said means for preventing including a locking projection extending inwardly from the interior of said shield and spaced rotationally from said means for guiding, said projection adapted to engage said slot when the shield is in its retracted position and, upon rotation of said shield with respect to said barrel, to become removed

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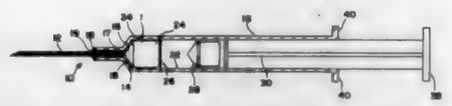
from said slot whereby said shield is unlocked for movement to its extended position.

5,304,150

RETRACTABLE NEEDLE FOR USE WITH SYRINGE

Nancy Duplan, and Carlton E. Duplan, both of San Marcos, Calif., assignors to Duplan Industries, San Marcos, Calif.

Filed Jun. 24, 1992, Ser. No. 903,617
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—195 12 Claims



1. A retractable needle for use with a hypodermic syringe which syringe includes (i) a substantially cylindrical barrel and (ii) a plunger having a compressible, substantially cylindrical sealing portion, said needle comprising:

a needle support means comprising a forward end, a rearward end configured to engage the sealing portion of the plunger, an exterior surface configured to provide slidable sealing engagement with the inner surface of the syringe barrel and an interior surface which defines an interior region of said needle support means, which region is configured to engage with and retain the sealing portion of the plunger in a frictional engagement; and

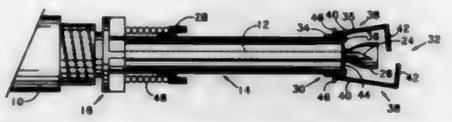
a hypodermic needle mounted on said needle support in a fluid-communicating relationship with said interior region of said needle support means but not extending into said interior region.

5,304,151

ADD-ON FAIL-SAFE SAFETY CAP FOR PASSIVE SLIDING-SLEEVE NEEDLE PROTECTORS

Thomas C. Kuracina, Ojai, Calif., assignor to InjectiMed, Inc., Ventura, Calif.

Continuation-in-part of Ser. No. 49,260, Apr. 16, 1993. This application Apr. 22, 1993, Ser. No. 51,020
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—198 15 Claims



1. In a retracting protective sleeve for a hypodermic needle having an outer end with a bore therethrough though which a tip portion of the needle passes and further having a spring-biased locking collar which moves to a locked position adjacent said outer end, an add-on fail-safe safety cap comprising:

a) an annular collar concentrically positioned around the sleeve adjacent the outer end;

b) at least one tip shield carried by said annular collar, each said tip shield having an arm portion hingedly attached to said collar on an inner end, an activating tab portion adjacent said inner end, and a tip protector portion at an outer end of said arm portion, each said tip shield being hingedly moveable between a retracted position with its said tip protector out of a path of movement of the tip portion of the needle and a protecting position with its said tip protector covering the tip portion of the needle; and,

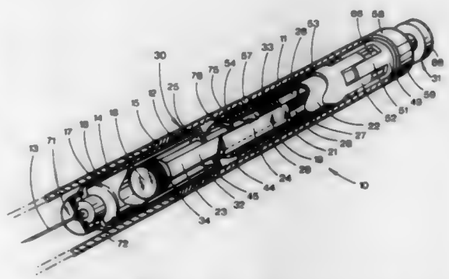
c) biasing means for biasing said tip protector to said retracted position whereby when the locking collar is retracted from the locked position said tip protector is in said retracted position and when the locking collar is in the locked position said tip protector is pushed to said retracted position by the locking collar pushing on said activating tab portion.

5,304,152

DISPENSING DEVICE

Bernard Sams, 103 Friern Barnet Road, London, United Kingdom N11 3EU

PCT No. PCT/GB91/00489, § 371 Date Nov. 27, 1991, § 102(e) Date Nov. 27, 1991, PCT Pub. No. WO91/14467, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 28, 1991, Ser. No. 773,610
Claims priority, application United Kingdom, Mar. 29, 1990, 9007113
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—207 14 Claims



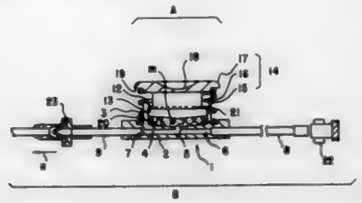
1. A device for dispensing controlled doses of fluid from a container having a piston movable axially in increments thereby to dispense doses of fluid from an outlet of the container, which device comprises a main body having at one end means to connect the device to a container, a plunger mounted for sliding movement within said main body and engageable with the container piston, a fixed stop disposed within the main body adjacent the container connection means and a dose setting and dispensing arrangement disposed within the main body and having first and second threaded members, the first member being fixed in relation to the main body and the second member being mounted for rotation about the first member and having threads engageable with those of the first member, said plunger being mounted within the first member for sliding movement with respect to the main body and having a portion engageable with the threads of the second member, and the second member being rotatable to any one of a plurality of settings where its threads are engaged with said portion of the plunger but free of the first member whereby the second member and plunger may slide axially relative to the first member, movement of the second member in a direction towards the container connection means being limited by said fixed stop, the device further comprising dosage indicator means connected to the second member and arranged to indicate an ascending series of measured doses as the second member is rotated to move along the threads of the first member away from said fixed stop whilst the plunger remains stationary, and for each indicated dose the second member is disposed in one of its said settings relative to the first member where axial movement of the second member is permitted, the second member during such movement driving the plunger to act on the piston of a connected container and the dose expelled thereby being controlled by the axial distance of travel of the second member to the fixed stop from the position to which said member has been turned to indicate a desired dose.

5,304,153

APPARATUS AND SYSTEM FOR THE SELF-DOSING OF A LIQUID MEDICINE

Hajime Tsujikawa, Osaka, Japan, assignor to Nissho Corporation, Osaka, Japan

Filed Jul. 10, 1992, Ser. No. 910,886
Claims priority, application Japan, Jul. 10, 1991, 3-195709
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—132 2 Claims



1. An apparatus for the self-dosing of a liquid medicine, comprising:

a casing formed with a chamber for receiving the liquid medicine and with an inlet port and an outlet port in fluid communication with the chamber,

a piston liquid-tightly and slidably fitted in the chamber,

a push button attached to the piston and capable of being pressed by a patient using the apparatus to move the piston from a home position to a pressed position, a one-way check valve communicating with said outlet port and

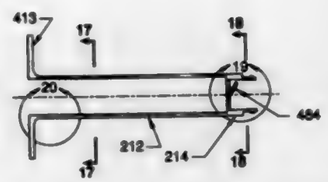
a spring which cooperates with the push button and urges the piston towards its home position to enable rapid refilling of the chamber with fresh liquid medicine, wherein said check valve allows only a forward flow and inhibits a backward flow of the liquid medicine.

5,304,154

RETRACTABLE SYRINGE

Walter W. Gloyer, Tomball, and Frederick G. Bright, Mag., both of Tex., assignors to Retrax, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 592,623, Oct. 4, 1990, Pat. No. 5,112,315. This application Oct. 4, 1991, Ser. No. 771,761
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—240 7 Claims



1. A mounting mechanism for attaching a hypodermic needle cartridge to a retractable syringe, said syringe including a barrel having a proximal end and a distal end, the distal end of the barrel telescopingly receiving a piston plunger therewithin, comprising:

a mounting collar located at the proximal end of the barrel with a bore having a wall;

a needle carrier including a body having a proximal end and a distal end;

means disposed on said body and engageable in contact with an interior portion of the mounting collar for releasably latching said body in the wall of the mounting collar bore, said distal end of said body having means engageable with the piston plunger for retracting said body into the barrel; and

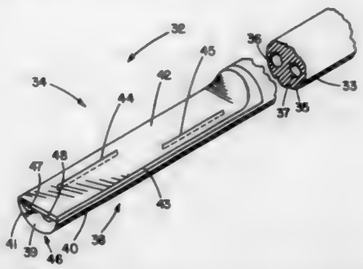
needle cartridge attachment means disposed on said proximal end of said body for releasably attaching the hypodermic needle cartridge thereto.

5,304,155

VALVED CATHETER

Chun K. Lui, Monroeville, Pa., assignor to Cook Pacemaker Corporation, Leechburg, Pa.

Continuation-in-part of Ser. No. 913,243, Jul. 14, 1992, Pat. No. 5,261,885. This application Jul. 12, 1993, Ser. No. 87,644
Int. Cl.[5] A61M 1/00, 5/00; F16K 15/14
U.S. Cl. 604—247 26 Claims



18. A valved catheter (10) comprising an elongated tubular member (11) with a longitudinal passage (14) extending therethrough, a lateral facing valve (12) in the region of the distal end of the catheter, said passageway communicating with said valve

CHARACTERIZED IN THAT

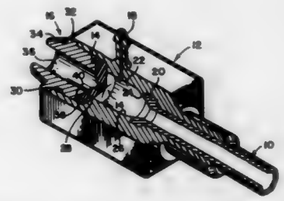
the tubular member in the said region of the distal end is of reduced cross section and has a planar surface (21), and in that a valve (20) is formed in said planar surface.

5,304,156

SELF-SEALING GUIDEWIRE AND CATHETER INTRODUCER

John T. Sylvanowicz, Andover, and George W. Bourne, IV, N. Chelmsford, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 674,707, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 550,454, Jul. 10, 1990, abandoned, which is a continuation of Ser. No. 397,761, Aug. 23, 1989, abandoned, which is a continuation of Ser. No. 201,538, Jun. 2, 1988, abandoned. This application Jan. 2, 1992, Ser. No. 817,941
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—256 6 Claims



1. An introducer adapted to be inserted into a patient's blood vessel comprising:

a housing having an introducer sheath extending from an end of the housing, the sheath being adapted to be inserted into a patient's blood vessel, the housing having an opening at the other end;

a self-sealing one piece gasket mounted in the housing and being exposed at the opening, the gasket having a central aperture in its outwardly facing surface, the aperture depth being substantially equal to one-half the thickness of

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the gasket, the inwardly facing surface of the gasket being formed with at least three radially extending slits, the depth of the slits being greater than one-half of the thickness of the gasket so that the slits extend into the surrounding radial wall defining the central aperture, the central region of the slits overlapping the central aperture and defining a plurality of flaps normally closing the aperture, the gasket being adapted to receive a guidewire or a catheter extended therethrough;

the radius of the central aperture being substantially smaller than the radius defined by each of the slits; and,

the central aperture and the slits being dimensioned to seal a wide range of guidewires or catheters having differing diameters extended therethrough.

5,304,157

MEDICO-SURGICAL COLLECTION BAGS

Kenneth J. Brooks, Lancing, and David Cross, Rustington, both of England, assignors to Smiths Industries Public Limited Company, London, England

Filed Mar. 17, 1993, Ser. No. 32,320

Claims priority, application United Kingdom, Mar. 28, 1992, 9207007

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—333 **15 Claims**



1. A medico-surgical collection bag comprising: a rear wall; a front wall sealed around an edge to the rear wall; a first opening by which discharged material from a user enters through the rear wall of the bag; a second, vent opening through which gas can escape from the bag; an adhesive area around the vent opening; and a non-adhesive filter that can filter gas escaping from the bag, the filter including a disc-shape filter element, said filter element being selectively displaceable between a first position in which a gas permeable first region of the filter is releasably secured to the adhesive area in overlay relation to the vent opening to allow passage of gas into the filter element so that gas can escape from the bag through the vent opening into the filter element and pass outwardly through the filter element, and a second position in which a non-permeable second region of the filter is releasably secured to the adhesive area in overlay relation to the vent opening to block gas flow from the bag through the vent opening.

5,304,158

DISPOSABLE DIAPER SYSTEM

Joseph A. Webb, 4650 Glen Oaks Cir., Beaumont, Tex. 77708

Filed Jan. 19, 1993, Ser. No. 5,745

Int. Cl.[5] A61F *13/16*

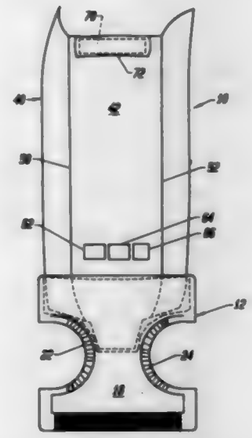
U.S. Cl. 604—385.1 **3 Claims**

1. A disposable diaper system comprising, in combination:

a diaper body having a flexible diaper front wall and rear wall sealed together and having attached to the rear wall a plastic sheet defining a pouch having a pouch interior and an opening communicating with said pouch interior;

a changing pad connected to said diaper body at the rear wall and selectively manually movable relative to said diaper body between a first position wherein said changing pad is substantially disposed within said pouch interior to a second position wherein said changing pad is substantially removed from said pouch interior for positioning on a support surface to present a planar surface shield extending away from said diaper body, said changing pad including a flexible, substantially liquid impermeable sheet folded along a plurality of folds defining a plurality of layers in at least partial registry when the changing pad is in said first position;

at least one container connected to said flexible, substantially liquid impermeable sheet at a first predetermined location on said flexible, substantially liquid impermeable sheet for containing a personal care product, said at least one container being located within said pouch interior when said changing pad is in said first position and located externally of said pouch interior on said support surface when said changing pad is in said second position whereby the personal care product in said at least one container may be



readily manually accessed when the changing pad is in said second position; and

disinfectant means connected to said flexible, substantially liquid impermeable sheet at a second location on said flexible substantially liquid impermeable sheet spaced from said first location, said disinfectant means being located within said pouch interior when said changing pad is in said first position and located externally of said pouch interior when said changing pad is in said second position, a plurality of layers of said flexible, substantially liquid impervious sheet being disposed between said disinfectant means and said flexible diaper wall and between said disinfectant means and said at least one container when said changing pad is in said first position, and said disinfectant means being spaced from said diaper body a greater distance than said at least one container is spaced from the diaper body when the changing pad is in said second position, said disinfectant means for positioning in said flexible, substantially liquid impermeable sheet along with said diaper body when the diaper body is wrapped in said flexible, substantially liquid impermeable sheet for disposal whereby the disinfectant means disinfectant the diaper when wrapped.

5,304,159

DISPOSABLE DIAPERS

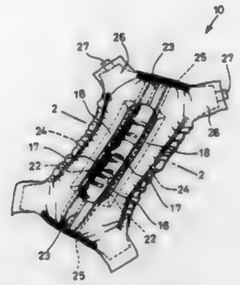
Hiroyuki Tanji; Ichiro Wada; Yoshio Ono, and Hiroyuki Soga, all of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Apr. 7, 1993, Ser. No. 43,751

Claims priority, application Japan, Apr. 21, 1992, 4-101340

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.2 **3 Claims**



1. A disposable diaper comprising:

(a) a liquid-permeable first topsheet (**11**), a liquid-impermeable backsheet (**12**), and a liquid-absorbant core (**13**) sandwiched between said first topsheet (**11**) and said backsheet (**12**),

(b) a liquid-resistant second topsheet (**14**) overlying a large portion of said first topsheet (**11**), said second topsheet (**14**) comprising a pair of adjacent sheet members (**14*a***, **14*b***) having facing inner sides and spaced apart outer sides,

(1) the outer side of each sheet member (**14*a***, **14*b***) being bonded to an outer side of said first topsheet (**11**),

(2) a portion of the facing inner sides of said sheet members (**14*a***, **14*b***) being spaced apart from each other along a central zone of the diaper so as to form an opening (**16**) that allows access to said underlying first topsheet (**11**),

(3) the remaining portions of the facing inner sides of said sheet members (**14*a***, **14*b***) being separably adhered to each other along longitudinal lines (**23**) extending outwardly from both ends of said opening (**16**),

(4) each sheet member (**14*a***, **14*b***) consisting of a single continuous sheet of material that extends from an outer side of said diaper inwardly toward said opening (**16**) and in the area adjacent said opening (**16**) forms a single flap member extending above from said first topsheet (**11**), each flap member comprising a first flap section (**17**) located closest to the center of said opening (**16**) and a second flap section (**18**) located immediately adjacent said first flap section (**17**) and laterally outwardly therefrom, each first flap section (**17**) being only attached to a portion of each adjacent second flap section (**18**) and being unattached to said first topsheet (**11**), said flap members forming a pocket which extends under said flap members and above said first topsheet (**11**).

5,304,160

DISPOSABLE DIAPERS

Takamitsu Igaue, and Hiroyuki Tanji, both of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Continuation of Ser. No. 863,019, Apr. 3, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 20,357

Claims priority, application Japan, Apr. 10, 1991, 3-032167

Int. Cl.[5] A61F *13/18*

U.S. Cl. 604—385.2 **1 Claim**

1. A disposable diaper comprising an integral laminate of

(a) a liquid-permeable first topsheet (**11**) having opposite longitudinal side portions, a liquid impermeable backsheet (**12**), and a liquid absorbent core (**13**) sandwiched between said first topsheet (**11**) and said backsheet (**12**),

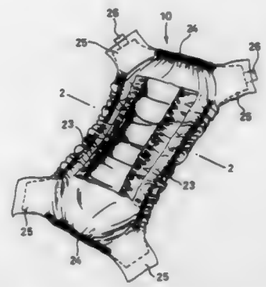
(b) a second topsheet (**14**)

(1) consisting of a single sheet of material,

(2) having a surface area which is substantially coextensive with the surface area of said first topsheet (**11**) except for a centrally located first opening (**16**) formed entirely within the outer periphery of said second topsheet (**14**), said first opening (**16**) having two spaced apart lateral sides and two spaced apart end sides, and

(3) being bonded adjacent its outer periphery to the periphery of said first topsheet (**11**),

(c) elastic members (**23**) provided between said opposite longitudinal side portions of said first topsheet (**11**) and said second topsheet (**14**), said elastic members (**23**) being stretchable longitudinally,



(d) a pair of spaced apart flaps (**17**) having opposite inner side edges (**17*a***), and opposite outer side portions (**17*b***) and extending partially into said first opening (**16**), said pair of flaps (**17**) extending inwardly from the undersides of said spaced apart lateral sides of said first opening (**16**), respectively so that said opposite inner side edges (**17*a***) of said pair of flaps (**17**) define between them a second opening (**18**), longitudinally opposite ends of each of said pair of flaps (**17**) extending under said spaced apart end sides of said second topsheet (**14**), respectively said outer side portions (**17*b***) of said pair of flaps (**17**) being bonded to the underside of said second topsheet (**14**), and

(e) elastic members (**19**) encased in said opposite inner side edges (**17*a***), respectively along lines which are adjacent to and generally parallel to said two spaced apart lateral sides of said first opening (**16**), said elastic members (**19**) being stretchable longitudinally.

5,304,161

ABSORBENT ARTICLE HAVING RAPID ACQUIRING, MULTIPLE LAYER ABSORBENT CORE

John R. Noel, and Nicholas A. Ahr, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 637,090, Jan. 3, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 931,122

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—378 **10 Claims**

1. An absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

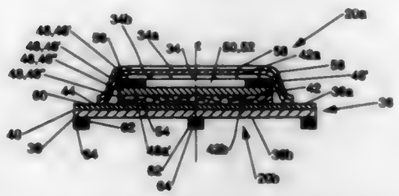
a multiple layer absorbent core positioned between said topsheet and said backsheet, said multiple layer absorbent core comprising at least two pairs of layers, wherein each pair of layers comprises an acquisition/distribution layer and a storage layer, each pair of layers being arranged so that a storage layer is positioned between each acquisition/distribution layer and said backsheet, wherein

the acquisition/distribution layer in at least one of said pairs of layers has a fluid acquisition/distribution rate of

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at least about 4 cubic centimeters of synthetic urine per second when said acquisition/distribution layer is placed under a pressure of about 28 grams per square centimeter;

the storage layer at least partially comprises an absorbent gelling material which can absorb synthetic urine at



such a rate that said absorbent gelling material reaches at least about 40% of its absorptive capacity in less than or equal to about 10 seconds; and

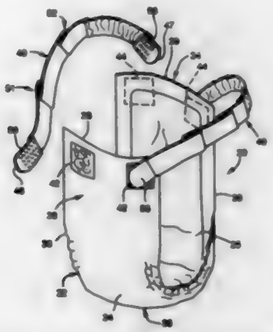
each acquisition/distribution and storage pair of layers is in fluid communication with each adjacent acquisition/distribution and storage pair of layers.

5,304,162

GARMENT AND PLEATED, ADJUSTABLE STRAP MEMBER THEREFOR

David A. Kuen, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 30, 1992, Ser. No. 998,696
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—391 **25 Claims**



1. A strap member for use in securing a garment to a wearer, the strap member comprising:

a first strap end;

an opposite second strap end;

means for attaching the strap member adjacent its first strap end to the garment;

means for attaching the strap member adjacent its second strap end to the garment;

an elastic region located between the first and second strap ends; and

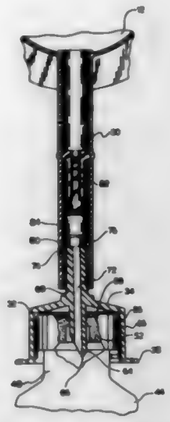
a pleated region located between the first and second strap ends, the pleated region comprising a first Z-fold that is maintained with a releasable bond which remains intact at forces less than about 3 pounds.

5,304,163

INTEGRAL RECONSTITUTION DEVICE

Paul J. Bonnici, Bolton; H. Edward Chase, Toronto, and Douglas S. Sommerville, Newmarket, all of Canada, assignors to Baxter International Inc., Deerfield, Ill.

Filed Jan. 29, 1990, Ser. No. 471,573
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—403 **10 Claims**



1. A device for reconstituting a drug contained in a drug vial having a mouth with a stopper contained therein, the device comprising:

a flexible container defining an interior and having at least two ports in fluid communication with the interior thereof;

one of the ports including a breakaway valve contained therein, the breakaway valve including valve housing permanently secured to the port;

a sheath permanently connected to the valve housing, the sheath being adapted to be secured to the drug vial, the sheath further including a hollow cannula disposed therein, the hollow cannula being adapted to pierce the drug vial stopper when the sheath is secured thereto; and

the hollow cannula being in fluid communication with the breakaway valve such that when the breakaway valve is closed, fluid communication between the hollow cannula and the interior of the flexible container is prevented while when the breakaway valve is open, fluid communication between the hollow cannula and the interior of the flexible container is allowed.

5,304,164

QUICK-CHANGEOVER BLOOD HANDLING APPARATUS

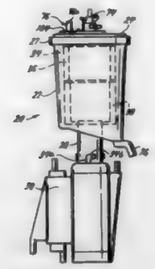
Erin J. Lindsay, Dexter, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 493,286, Mar. 14, 1990, Pat. No. 5,149,318. This application Mar. 20, 1992, Ser. No. 856,574
Int. Cl.[5] A61B *19/00*; **F16B** *7/20*
U.S. Cl. 604—403 **8 Claims**

1. A blood handling system comprising first blood handling apparatus and second blood handling apparatus, with the first blood handling apparatus being adapted to be mounted on the second blood handling apparatus; the first blood handling apparatus having a first mounting section and the second blood handling apparatus having a second mounting section, the first mounting section having at least one generally L-shaped slot, the second mounting section having at least one projecting pin, each L-shaped slot having an outer reach extending generally axially of the first mounting section and an inner reach extending generally circumferentially of the first mounting section,

the L-shaped slot defining a tab extending generally parallel with the inner reach of the slot, the tab including a projection for engaging and retaining a pin in the inner reach of the slot, and being sufficiently flexible that it can be bent until the projection disengages the projecting pin and allows the pin to be manipulated out of the slot;

the blood handling system further comprising audible means for providing a positive audible indication upon proper seating of the pin in the slot to indicate that the first blood handling apparatus is securely mounted on the second



blood handling apparatus, the audible means comprising the tab having sufficient resilience such that the tab springs back to an unbiased position when the pin passes by the projection of the tab into the inner reach of the slot;

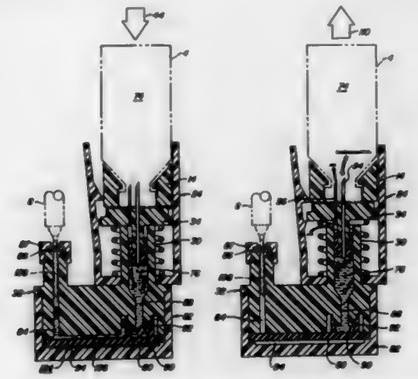
the first mounting section having an elongate slit extending generally parallel to the slot defining the tab to facilitate flexing of the tab, the slit having a narrower cross section than the cross section of the slot; the blood handling system further comprising a finger grip extending from the tab for facilitating manual movement of the tab to release a pin engaged in the inner reach of the slot.

5,304,165

SYRINGE-FILLING MEDICATION DISPENSER

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Dec. 9, 1991, Ser. No. 805,503
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—411 **18 Claims**



1. A medication dispenser, for use with a container containing a liquid medication and a syringe of the type including a needle cannula, a barrel and a plunger, the dispenser comprising:

a body to which the container and the syringe are mountable;

a dual port means for providing gas and liquid ports into the interior of the container;

and a reciprocating pump assembly having a cylinder and a piston, the pump assembly fluidly coupled to the container by the liquid port and spaced apart from, and fluidly coupled to the syringe by a fluid path, the piston being movable from a first position to a second position to withdraw the liquid medication from the container, through the liquid port and into the cylinder, the withdrawn liquid medication being substantially simultaneously replaced with a gas which passes into the container through the gas port, the piston being movable from the second position back towards the first position to force a predetermined volume of the liquid medication along the fluid path and into the needle cannula of the syringe.

5,304,166

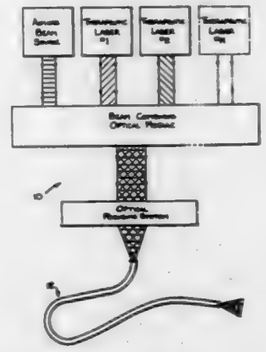
Patent Not Issued For This Number

5,304,167

MULTIWAVELENGTH MEDICAL LASER METHOD

Robert J. Freiberg, Mission Viejo, Calif., assignor to Premier Laser Systems, Inc., Irvine, Calif.

Division of Ser. No. 754,327, Sep. 4, 1991, Pat. No. 5,139,494, which is a continuation of Ser. No. 634,933, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 269,501, Nov. 10, 1988, abandoned. This application Jul. 17, 1992, Ser. No. 917,589
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—3 **15 Claims**



1. A surgical method, comprising:

generating a first beam of pulsed electromagnetic energy having a first wavelength of approximately three microns;

generating a second beam of electromagnetic energy having a second wavelength in a visible portion of the optical spectrum;

coupling the electromagnetic energy of the first and second wavelengths to a fluoride optical fiber such that said first and second wavelengths are simultaneously transmitted through said fiber;

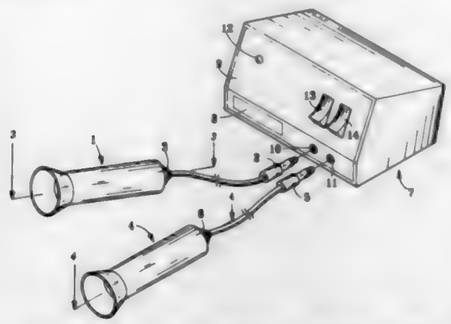
directing energy from a distal end of the fluoride optical fiber into an optically transparent member comprised of material different than said optical fiber;

using said optically transparent member to focus the first beam of energy; and

placing said optically transparent member into contact with tissue and using the energy at the first wavelength to perform surgery on the tissue.

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5,304,168
REAL IMAGE/RED RAY PULSE AND BEEP TYPE AMBLYOPIA CURING DEVICE
Han-Jun Sun, Chung Ching, China, assignor to Pei-Chang Cheng, Taiwan
Filed Jan. 4, 1993, Ser. No. 21
Claims priority, application China, Jan. 9, 1992, 92 1 00012.3
Int. Cl.[5] A61F *9/00*
U.S. Cl. 606—4 **5 Claims**



1. Apparatus for treating amblyopia, comprising: a red ray projector; a real image projector; and a main frame containing an electronic circuit to which lamps positioned in the red ray projector and real image projector are connected, said electronic circuit including a power supply circuit, a speaker circuit, and a circuit for energizing the respective lamps positioned in the red ray projector and the real image projector, said energizing circuit selectively connecting an oscillation circuit to the lamp positioned in the red ray projector and a power supply to the lamp positioned in the real image projector, said electronic circuit further comprising a real image/red ray selector switch, wherein the real image projector includes one or more lenses arranged to provide parallel rays generated by the lamp positioned therein for creating a real image of an object located at a center of a surface of the lens, the red ray lamp being installed within the red ray projector, said energizing circuit forming means for causing the real image projector to project a steady real image at which a patient stares for a predetermined period of time to release a Y-channel's competitive suppression against an X-channel in the patient's eye, said switch forming means for enabling the red ray lamp to be turned on to stimulate the nervous tissue at the periphery of the X-channel following said competitive suppression in order to maximize stimulation of the X-channel.

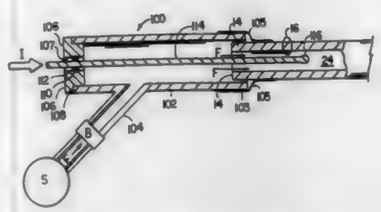
5,304,169
METHOD FOR COLLAGEN SHRINKAGE
Bruce J. Sand, Hidden Hills, Calif., assignor to Laser Biotech, Inc., Los Angeles, Calif.
Continuation of Ser. No. 771,547, Oct. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,252, Jun. 29, 1990, Pat. No. 5,137,530, which is a continuation-in-part of Ser. No. 374,958, Jun. 30, 1989, Pat. No. 4,976,709, which is a continuation-in-part of Ser. No. 285,379, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 170,070, Mar. 14, 1988, abandoned, and a continuation of Ser. No. 67,381, Jun. 24, 1987, abandoned, and a continuation of Ser. No. 914,169, Oct. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 781,225, Sep. 27, 1985, abandoned. This application Aug. 17, 1992, Ser. No. 930,973
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—5 **37 Claims**

1. A method for shrinking collagen tissue, comprising the application of a reagent to the tissue to reduce threshold shrinkage temperature, followed by irradiation of the tissue with energy having a wavelength in the range of about 1.80 to about 2.55 microns.

5,304,170
METHOD OF LASER-INDUCED TISSUE NECROSIS IN CAROTENOID-CONTAINING SKIN STRUCTURES
Howard A. Green, 293 Temple St., #301, West Roxbury, Mass. 02132
Filed Mar. 12, 1993, Ser. No. 31,242
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—9 **13 Claims**

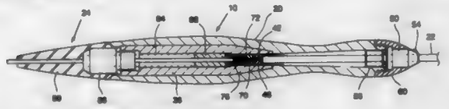
13. A method for treating dermatological skin disorders in a mammal which method comprises:
a) identifying an area of skin within a region of mammalian skin, which area is characterized by a concentration of a beta-carotene compound;
b) increasing the concentration of the beta-carotene compound within said area of skin by administration of a pharmaceutically-acceptable form of said carotene compound to the mammal;
c) directing a beam of pulsed laser light radiation having an energy of between about 0.10 and 10 joules per square centimeter and a wavelength of about 504 nanometers from a pulsed dye laser at said area of skin; and
d) exposing said area of skin to the beam of pulsed laser light radiation for a sufficient period of time to cause thermal coagulation necrosis within the area of skin and thereby to treat the skin disorder.

5,304,171
CATHETER DEVICES AND METHODS FOR DELIVERING
Kenton W. Gregory, Six Marlborough St., Boston, Mass. 02116, and R. Rox Anderson, Seven Campbell Park, Somerville, Mass. 02144
Continuation of Ser. No. 627,257, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 600,014, Oct. 18, 1990. This application Feb. 2, 1993, Ser. No. 12,789
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 **45 Claims**



1. A flowing fluid laser catheter for delivering laser energy from a laser generating device to a target location within a mammalian body, said catheter comprising:
an elongate flexible catheter body having a distal end, a proximal end, an outer surface and a hollow lumen defined by a luminal surface extending longitudinally therethrough;
a laser transmitting optical fiber disposed within a proximal portion of said catheter lumen such that the proximal and of said fiber is coupleable to a said laser generating device and such that the distal end of said fiber terminates within the catheter lumen at a launch point proximal to the distal end of said catheter lumen;
a liquid inflow opening proximal to said launch point for infusing a laser transmitting liquid through said catheter lumen;
a liquid outflow opening formed distal to said launch point for permitting said laser transmitting liquid to flow out of said catheter lumen;
a fluid flow restricting endcap positioned on the distal end of said catheter lumen, said end cap having said liquid outflow opening formed therein, the size of said liquid outflow opening being smaller than the transverse dimension of said catheter lumen so as to restrict the outflow of liquid from the distal end of said catheter lumen; and
whereby laser energy is transmitted from said laser generating device, through said optical fiber, and into a flow of laser transmitting liquid being infused through said lumen and out of said outflow opening.

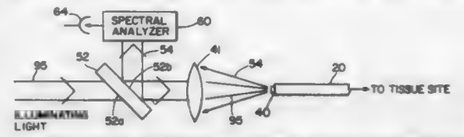
5,304,172
FIBER OPTIC PROBE
Nubar Manoukian, Sunnyvale; Kalman Kele, Scotts Valley, and James R. Kermode, Sunnyvale, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.
Filed Feb. 11, 1993, Ser. No. 16,768
Int. Cl.[5] A61B *5/0215*
U.S. Cl. 606—15 **25 Claims**



1. A fiber optic probe comprising:
an elongated handpiece having front and rear ends and an axial channel formed therein and extending between said ends, said channel including a mating region spaced from said front end;
a tip piece including a first elongated optical fiber, with one end of the first fiber being mounted in a first ferrule; and
a tail piece including a second elongated optical fiber, with one end of the second fiber being mounted in a second ferrule, and with a portion of said tip piece being mounted within said channel from the front end of the handpiece and the tail piece being mounted into said channel from the rear end of the handpiece in a manner such that the first and second ferrules are positioned within said mating region of the channel and in abutting relationship and with the portion of the tip piece extending between said one end of the fiber and the front end of the handpiece being at least twenty five percent of the length of the remaining portion of the tip piece that extends beyond the front end of the handpiece whereby efficient optical coupling between the ends of the optical fibers can be maintained as force is exerted on the tip piece during use.

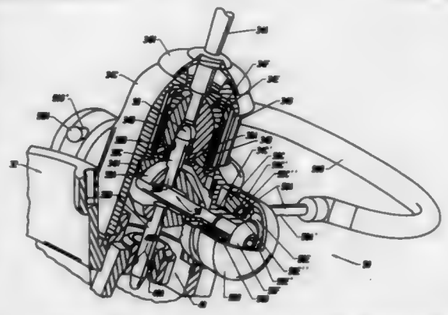
5,304,173
SPECTRAL DIAGONOSTIC AND TREATMENT SYSTEM
Carter Kittrell, Cambridge, Mass.; Robert M. Cothren, Jr., Beatrice, Nebr., and Michael S. Feld, Waban, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation of Ser. No. 905,101, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 827,990, Jan. 29, 1992, which is a continuation of Ser. No. 420,135, Oct. 11, 1989, Pat. No. 5,104,392, which is a continuation of Ser. No. 58,675, May 26, 1987, Pat. No. 4,913,142, which is a continuation of Ser. No. 715,239, Mar. 22, 1985, abandoned. This application Jul. 20, 1993, Ser. No. 94,584
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—15 **13 Claims**

1. A method of surgically removing unwanted material from tissue comprising:
irradiating material to be removed from tissue with irradiating light having a given spectral range;
separating optical radiation returning from the material in response to the irradiating light into a plurality of wavelengths;
electronically sensing selected separated wavelengths of fluorescent or Raman scattered radiation returning from the material and generating an electronic signal representative of the selected separated wavelengths of fluorescent or Raman scattered radiation, said separated wavelengths being obtained in the separating step;
electronically comparing the generated electronic signal



with a stored reference signal such that the comparison results in a relationship between the electronic signal and the reference signal; and
based upon the relationship, directing radiant energy onto the material to be removed from tissue, the radiant energy having a wavelength and energy density sufficient to remove a portion of the material from the tissue.

5,304,174
MICROMANIPULATOR APPARATUS FOR SURGICAL LASER
Robert B. Estrada, Redwood City, and David Trost, San Francisco, both of Calif., assignors to Coherent, Inc., Santa Clara, Calif.
Division of Ser. No. 841,427, Feb. 26, 1992, Pat. No. 5,207,380. This application Aug. 2, 1993, Ser. No. 100,722
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—18 **2 Claims**



1. A linkage assembly for a surgical laser manipulating apparatus, said linkage permitting spherical motion, comprising:
a first pin member;
a second member having a spherical recess; and
an o-ring positioned within said recess receiving said pin member, said recess acting to constrain said o-ring and said pin member from transverse motion but allowing said o-ring and said pin member to pivot with respect to said recess in any transverse direction, and said recess acting in cooperation with said o-ring allowing axial translation of said pin member with respect to said recess.

5,304,175

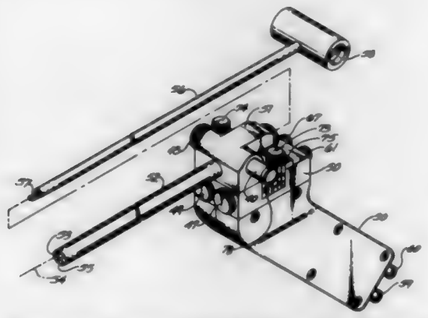
Patent Not Issued For This Number

5,304,176
TOOL FOR LAPAROSCOPIC SURGERY
Edward H. Phillips, 712 N. Roxbury Dr., Beverly Hills, Calif. 90210
Division of Ser. No. 528,954, May 25, 1990, Pat. No. 5,195,958. This application Jan. 13, 1993, Ser. No. 4,053
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—41 **1 Claim**

1. An electrocautery tool comprising:

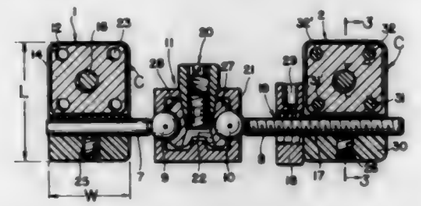
VOL 1161 ISS 3 AP 19 1994 UMI

(a) a metallic tube member having a longitudinal axis and a proximate end and a distal end;
(b) a hook member in electrical communication with said metallic tube carried by said tube at the distal end thereof and extending distally and axially from said tube;
(c) a conductive metal bushing member carried by said metallic tube member at the proximate end of said tube and extending axially and proximately therefrom and mounted to said metallic tube in fixed relationship to the proximate end of said tube where said conductive metal bushing is in electrical communication with said tube member and adapted for communication with an electrical power source;
(d) an insulative material axially and radially surrounding



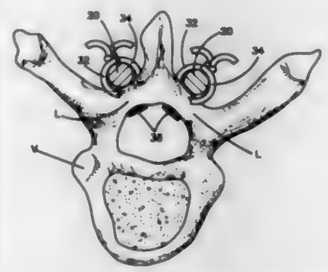
the peripheral surface of said tube member and at least in part axially and radially surrounding the peripheral surface of said metal bushing member at the junction of said tube member and said metal bushing end of said metallic tube member;
(e) a generally cylindrically shaped insulating bushing member having a lateral axis and mounted to said conductive metal bushing member in fixed space relationship to the proximate end of said metallic tube member and extending proximately therefrom, where the peripheral outer surface of said insulating bushing member is at least in part surrounded axially and radially by an insulating material, said insulating bushing member having a receptacle to permit electrical communication between said power source and said metal bushing member.

5,304,177
AUXILIARY DEVICE FOR OSTEOSYNTHESIS
Dietmar Pennig, Hans-Driesch-Strasse 12, 5000 Cologne, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 58,502, May 5, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 77,803
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4220936
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—58 **23 Claims**



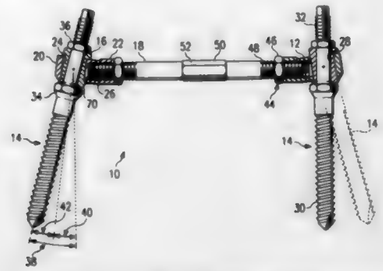
1. An auxiliary osteosynthesis device for fastening spaced portions of a fractured bone via two clamping units (1, 2) each of which is adapted for mounted reception of at least two spaced bone-anchoring pins or screws (4, 5), the said clamping units being adjustably spaced and interconnected by a twin ball-joint assembly (3) that can be releasably locked in desired position and by an elongate carrier rod (7, 8) that is associated with each of the respective ball joints, each of said clamping units (1, 2) comprising at least two plates having flat surfaces in face-to-face adjacency and each of said plates having a set of bores; transverse to the adjacent plate surfaces, the set of bores of one plate being in alignment with respect to the set of bores of an adjacent plate for the mounted reception of said at least two spaced bone-anchoring pins or screws and selectively operable means reacting between said adjacent plates for incrementally displacing said one plate with respect to said adjacent plate for developing misalignment of the bores of each set and thereby developing a clamped engagement of said adjacent plates to said at least two spaced bone-anchoring pins or screws.

5,304,178
SUBLAMINAR WIRE
Terrence Stahurski, Rocky River, Ohio, assignor to AcroMed Corporation, Cleveland, Ohio
Filed May 29, 1992, Ser. No. 889,818
Int. Cl.[5] A61B *17/56, 17/58*
U.S. Cl. 606—61 **7 Claims**



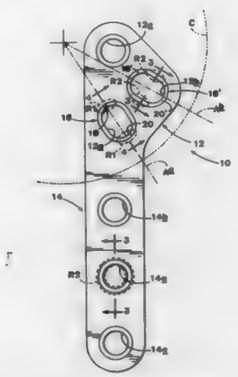
1. An apparatus for use in retaining spinal elements in a desired spatial relationship comprising:
a longitudinal member positionable along the spinal column; and
a sublaminar wire having first and second end portions extending around and engaging at least a portion of said longitudinal member, each of said first and second end portions having a circular cross-section lying in a plane extending perpendicular to the longitudinal axis of said sublaminar wire and a center portion interconnecting said first and second end portions and adapted for engaging a lamina of the spinal column, said center portion being an elongated flat planar member having a rectangular cross-section lying in a plane extending perpendicular to the longitudinal axis of said sublaminar wire and a larger cross-sectional area than each of the cross-sectional areas of said first and second end portions;
said center portion including first and second major side surfaces substantially parallel to each other and first and second minor side surfaces interconnecting said first and second major side surfaces, said first and second major side surfaces being spaced apart by a first distance, said first and second minor side surfaces being spaced apart by a second distance, said first distance being smaller than said second distance, a substantial length of one of said first and second major side surfaces adapted for engaging the lamina of the spinal column.

5,304,179
SYSTEM AND METHOD FOR INSTALLING A SPINAL FIXATION SYSTEM AT VARIABLE ANGLES
Erik J. Wagner, Allen, Tex., assignor to AMEI Technologies Inc., Wilmington, Del.
Filed Jun. 17, 1993, Ser. No. 79,150
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—61 **21 Claims**



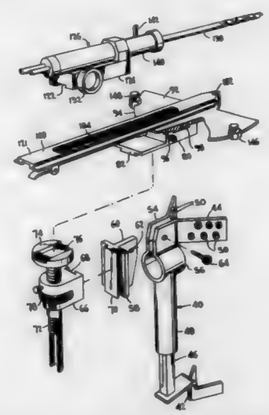
1. A spinal fixation system for fusing selected portions of a patient's spine comprising:
an instrumentation;
a plurality of connectors for attaching the instrumentation to the selected portions of the patient's spine;
each connector having a body with a first opening extending radially therethrough and a second opening extending at least partially therethrough;
the first opening having an axis formed at an angle relative to an axis of the second opening;
a bushing within the first opening and having a bore extending longitudinally therethrough;
the bore having an axis disposed at an angle relative to the first opening axis;
a pedicle screw within the bore of the bushing; and
a fastening assembly engaging the second opening of the connector with the instrumentation.

5,304,180
TIBIAL OSTEOTOMY FIXATION PLATE
D. Barclay Slocum, 241 Spy Glass Dr., Eugene, Oreg. 97401
Continuation of Ser. No. 822,402, Jan. 17, 1992, abandoned. This application May 4, 1993, Ser. No. 57,422
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—69 **16 Claims**



1. A fixation structure for fixing two segments of a whole wherein the segments are produced by a curvilinear cut, the structure comprising:
first subframe means including plural elongate drive apertures defining angle-differentiated cut-radial drive axes oriented generally normal to such curvilinear cut at different locations therealong, each of said apertures having differentiated-direction, selectable drive-interaction means; and
second subframe means joined to and operable as a unit with said first subframe means including an anchor aperture;
each of said drive-interaction means of said structure including a fastener element received within and through each of said aperture and anchored to one of such segments, and being operable, depending on the location of such element within said drive aperture, selectively and independently to urge compression and distraction of such segments along said corresponding axis.

5,304,181
METHODS AND APPARATUS FOR ARTHROSCOPIC PROSTHETIC KNEE REPLACEMENT
Richard B. Caspari, 2192 Sheppard Town Rd., Maidens, Va. 23102; Jeffrey G. Roberts, 3688 Montclair Dr., Palm Harbor, Fla. 34684, and James T. Treace, 2701 Bluffs Dr., Largo, Fla. 34640
Division of Ser. No. 462,529, Jan. 8, 1990. This application Oct. 9, 1991, Ser. No. 773,213
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—80 **14 Claims**



1. Apparatus for resecting bone in the body of a patient comprising
a rotatable elongate milling cutter having a body terminating at a distal end, a plurality of radially extending end cutting edges disposed on said distal end and a plurality of side cutting edges extending along said milling cutter body for resecting bone externally of said milling cutter body whereby bone chips are produced externally thereof, and an interior passage in said milling cutter body; and
means on said milling cutter for evacuating bone chips from externally of said milling cutter body to said interior passage for evacuation from the patient's body through said passage.

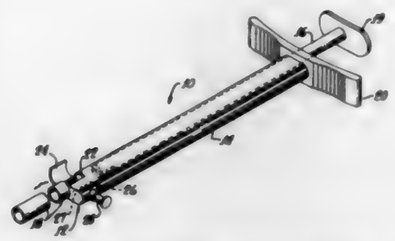
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,182

APPARATUS AND METHOD FOR CURLING AND INSERTING FLEXIBLE INTRAOCULAR LENSES

Robert S. Rheinish, Huntington Beach; Allan R. Tonks, Fontana, and Thomas P. Richards, Los Angeles, all of Calif., assignors to Kabi Pharmacia Ophthalmics, Inc., Monrovia, Calif.

Filed Sep. 23, 1992, Ser. No. 950,077
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—107 11 Claims



1. An apparatus for preparing a flexible intraocular lens for insertion into an eye, said apparatus comprising a lens loading and folding head having an inlet end and an outlet end, said loading and folding head including:

a loading chamber having first and second opposed walls joined by a generally planar base surface and dimensioned to receive an intraocular lens, each of said walls having an arcuate inner surface and said first wall arcuate inner surface provided with a lens-retaining lip disposed longitudinally above said planar base surface;

a laterally displaceable, tubular lens-curling member disposed within said loading chamber adjacent to said arcuate inner surface of said second wall, said lens-curling member having an arcuate lens-engaging inner surface with a longitudinal lens-receiving aperture disposed adjacent said planar base surface and dimensioned to engage said lens-retaining lip; and

means for sliding said lens-curling member laterally along said planar base surface from a first position adjacent said second wall to a second position adjacent said first wall, thus engaging said lens retaining lip.

5,304,183

TETHERED CLAMP RETRACTOR

Stuart J. Gourlay, Pinole; Terry Buelna, Rancho Santa Margarita; Wayne A. Noda, Mission Viejo, and Paul Lubock, Laguna Niguel, all of Calif., assignors to Laparomed Corporation, Irvine, Calif.

Filed Mar. 23, 1992, Ser. No. 855,766
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—142 39 Claims



1. A tissue manipulation system comprising:

a clamp having a pair of movable jaws, a pair of levers connected to the jaws for closing and opening the jaws and a hinge disposed between the levers and the jaws;

means for applying the clamp through a percutaneous cannula to a first tissue site, said means for applying having a tubular portion for sealing within the cannula; and

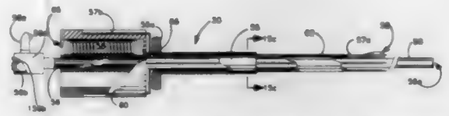
a flexible tether having a first end attached to the clamp and a free end opposite the first end for remotely manipulating the clamp.

5,304,184

APPARATUS AND METHOD FOR POSITIVE CLOSURE OF AN INTERNAL TISSUE MEMBRANE OPENING

David Hathaway, Indianapolis; Brian Patton, Thorntown, and Keith March, Carmel, all of Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Oct. 19, 1992, Ser. No. 963,053
Int. Cl.[5] A61B 17/04
U.S. Cl. 606—144 36 Claims



1. A method for closure of an opening in a tissue membrane located beneath the skin of a patient, the tissue membrane having a distal side and a proximal side, comprising the steps of:

providing a tubular member having a lumen therein beneath the skin of the patient and in close proximity to the opening in the tissue membrane;

inserting a first, distal end of a retrieval assembly through said lumen and past the opening to a location on the distal side of the tissue membrane;

providing needle means for penetrating through the tissue membrane and for carrying at least two lengths of suture material from the proximal side to the distal side of the tissue membrane;

advancing said needle means through the tissue membrane from the proximal side to the distal side of the tissue membrane adjacent but spaced from the opening at two separate suture locations, the needle means carrying the suture material through the tissue membrane at the two separate suture locations;

grabbing the suture material with the distal end of said retrieval assembly at the location on the distal side of the tissue membrane;

retrieving said suture material through the opening by withdrawing the distal end of said retrieval assembly out through the opening; and,

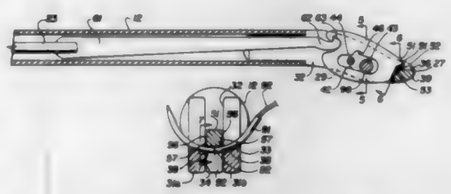
drawing the suture locations together with said suture material passing through the suture locations.

5,304,185

NEEDLE HOLDER

Charles S. Taylor, San Francisco, Calif., assignor to Unisurge, Inc., Cupertino, Calif.

Filed Nov. 4, 1992, Ser. No. 971,279
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—147 17 Claims



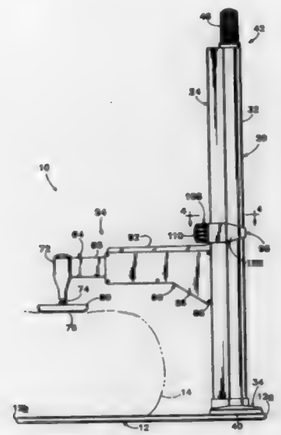
1. In a needle holder for use with a curved surgical needle, an elongate tubular member serving as a shaft having a bore extending therethrough and having proximal and distal extremities, a push-pull rod slidably mounted in the bore in the tubular member and having proximal and distal extremities, first and second jaws carried by the distal extremity of the elongate tubular member, means securing the first jaw to the distal extremity of the tubular member in a fixed position, means connecting said second jaw to said push-pull rod to cause the second jaw carried thereby to be moved between a closed needle-clamping position and an open position upon relative movement between said push-pull rod and said tubular member, one of said first and second jaws consisting of first and second jaw portions having a slot extending therebetween, said first and second jaw portions having arcuate needle-engaging surfaces which in cross-sections conform to the curvature of curved surgical needle, the other of said first and second jaws overlying and being disposed in said slot and having first and second corners in close proximity to the arcuate needle engaging surfaces of the first and second jaw portions and actuation means secured to said tubular member and to said push-pull rod for causing said relative movement between the push-pull rod and the tubular member.

5,304,186

ARTERY CLAMP

Herbert J. Semler; Shirley L. Semler, both of 9155 SW. Barnes Rd., Portland, Oreg. 97225, and Richard N. Meyer, 2076 SE. Hanover Ct., Hillsboro, Oreg. 97123

Filed Jun. 23, 1992, Ser. No. 903,528
Int. Cl.[5] A61B 17/12
U.S. Cl. 606—151 16 Claims



1. An improved artery clamp comprising:

a pressure pad (76);

a base (12);

an elongate rod (18) having one end (18a) thereof mounted on said base (12) normal thereto;

an elongate sleeve (20) having a central bore (22) and a channel (24) extending the length thereof, said rod (18) being received in said central bore (22) to allow rotation of said sleeve relative to said rod, said channel (24) having an axially extending slot (26) along at least a portion of its length; and

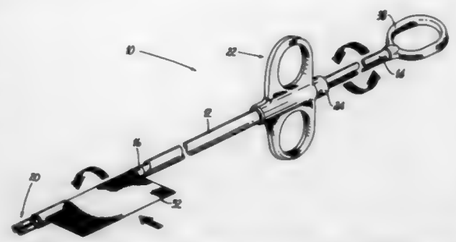
an arm structure (54) extending laterally outwardly from said sleeve (20), said arm structure (54) including a mounting portion (56) which receivable in said channel (24) and vertically slidable along the length thereof, a receiver portion (60) attached to said mounting portion (56), and an extensible portion (64) which is received in said receiver portion (60) and is laterally adjustable relative thereto, said extensible portion (64) including means (72) for carrying said pressure pad (76) thereon.

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SURGICAL ELEMENT DEPLOYMENT APPARATUS

David T. Green, Westport, Conn., and Boris Zvenyatsky, Bronx, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 30, 1992, Ser. No. 906,588
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—151 38 Claims



1. An apparatus for deploying rolled surgical elements which comprises:

housing means having a proximal end, a distal end and a longitudinal slot extending along at least a portion of an outer wall thereof, said housing means having a return member positioned therein to releasably receive a surgical element through said longitudinal slot and to releasably maintain the surgical element in a rolled configuration substantially within said housing means; and

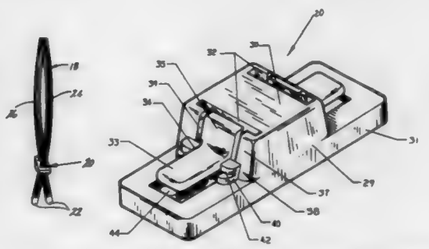
means at least partially positioned within said housing means for ejecting said surgical element from said distal end of said housing means.

5,304,188

SURGICAL CLAMP AND METHOD

Joseph B. Marogil, 2151 Robinson Road, SE., Grand Rapids, Mich. 49506-1876

Filed Jan. 26, 1993, Ser. No. 9,125
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—157 17 Claims



1. A surgical clamp for clamping off a portion of an organ to restrict bleeding during a surgical procedure while permitting normal blood flow to other portions of such organ, said surgical clamp comprising an elongated flexible plastic strap having two ends facilitating the encirclement of a portion of an organ, and a separately formed clip having a body portion with two adjacent openings therethrough receiving end portions of the strap and a spring-loaded latch member in each of the openings for latching end portions of the strap, each of the latch members being L-shaped in cross section with one leg extending along the strap and having a strap-engaging distal end portion and another leg extending rearwardly away from the strap, the latch members being relatively rigid so that each latch member moves as a unit;

each of the latch members being mounted at a central portion to the body through torsion bars which extend later-

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ally of the latch members and which bias the strap-engaging distal end portions of the latch members against the strap to resiliently prevent reverse movement of the strap through the body;

whereby the strap can be quickly secured in place around an organ by encircling the organ with the strap, threading the ends of the strap through the openings in the clip and pulling the clip tightly against the organ, and whereby the strap can be quickly disengaged from the organ by pressing the other leg of at least one of the latch members and drawing at least one of the ends of the strap from the openings in the clip.

5,304,189

VENOUS VALVE CUTTER FOR IN SITU INCISION OF VENOUS VALVE LEAFLETS

Mark Goldberg, Boston, Mass.; Alexander Poloyko, Morton Grove, Ill.; Edward M. Goldberg, Glencoe, Ill., and Lev Melinyshyn, Buffalo Grove, Ill., assignors to Lafeber Company, Odell, Ill.

Filed Apr. 9, 1992, Ser. No. 865,850
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **24 Claims**



1. In a venous valve cutter for rendering venous valve leaflets incompetent having a cutter head with a forward circular cutting edge disposed in the direction of the intended movement of the cutter through the vein to render the valve leaflets incompetent, the improvement comprising:

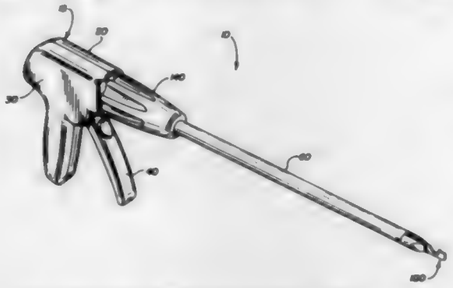
a plurality of proximally directed prongs in the circular cutting edge presenting sharp edges, said prongs having flat leading edges and being separated by slots similarly presenting sharp edges, said cutting head having a continuous cutting surface in multiple planes running along the entire forward edge of the cutting head.

5,304,190

ENDOSCOPIC CUTTING APPARATUS

Jerome E. Reckelhoff, Blue Ash; Mark Davison, Mason; William D. Kelly, Mason, and Rudolph H. Nobis, Mason, all of Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Filed May 8, 1992, Ser. No. 881,003
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—170 **6 Claims**



1. An endoscopic cutting apparatus comprising

an elongate frame having a proximal end and a distal end;

a handle attached to the proximal end of said frame;

hook means for engaging tissue or blood vessels mounted to the distal end of said frame, said hook means having track means;

cutting blade means mounted to said frame and movable, axially, within said track means;

actuating means mounted to said frame for moving said blade means in said track means axially through said hook means for cutting tissue or blood vessels engaged by said hook means; and

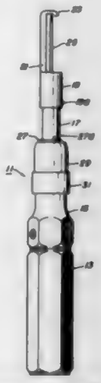
rotation means allowing the hook means to rotate with respect to the frame.

5,304,191

SURGICAL INSTRUMENT WITH ROTATABLE INDEXING FOOTED ATTACHMENT

Norman J. Gosselin, Eagle Mtn. Lake, Tex., assignor to Midas Rex Pneumatic Tools, Inc., Fort Worth, Tex.

Filed Feb. 12, 1993, Ser. No. 17,021
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—172 **13 Claims**



1. In a surgical instrument including a motor, a dissecting tool coupled to the motor for rotation about an axis of the motor, the motor further including a base at an end thereof, the improvement comprising:

an elongate member extending from the base and parallel to the axis, the elongate member having a terminal end;

a foot member extending laterally from the terminal end of the elongate member for protecting selected portions of tissue form exposure to the dissecting tool;

indexing means to permit selective rotation of the elongate member relative to the base from one of a plurality of angular positions to another of the plurality of angular positions, and to secure the elongate member in a selected angular position; and

a cam means for selectively actuating the indexing means from a locked position to an unlocked position in response to movement of the ca means relative to the elongate member.

5,304,192

LANCET WITH LOCKING COVER

Roger L. Crouse, Ormond Beach, Calif., assignor to Sherwood Medical Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 960,074, Oct. 13, 1992. This application Jan. 8, 1993, Ser. No. 2,298
Claims priority, application Japan, Jan. 16, 1992, 4-005928
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—181 **40 Claims**

1. A lancet device comprising:

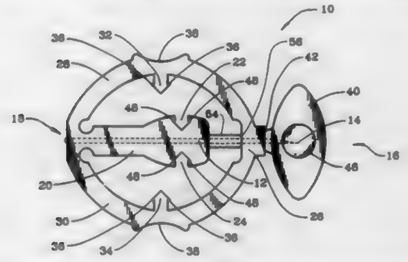
a) a lancet needle having a distal and a proximal end, said proximal end of said lancet needle having a sharpened tip;

b) a distal needle piece encasing said distal end of said lancet needle and a portion of said lancet needle proximal to said distal end of said lancet needle;

c) a proximal needle piece enclosing a portion of said lancet needle at said proximal end of said lancet needle, said proximal needle piece enclosing said lancet needle along less of said lancet needle than said distal needle piece encases said lancet needle;

d) a pair of opposed bowed flexible arms connecting said distal needle piece to said proximal needle piece along opposite sides of said lancet needle, said arms having a rigidity so that as said arms are moved towards each other pressure is exerted by said arms on said distal needle piece and said proximal needle piece to move said proximal needle piece away from said distal needle piece along said lancet needle to a position to cover and enclose said lancet tip;

e) means for locking said proximal needle piece in a position covering and enclosing said lancet tip, said means for locking including said arms having at least one means for contacting said distal needle piece when said arms are moved toward said distal needle piece and said distal needle piece having means for retaining said means for contacting to lock said corresponding arms in contact with said distal needle piece thereby locking said proximal



needle piece in position over said lancet tip, said means for contacting comprising a protrusion extending from said arms towards said lancet needle and said means for retaining including said distal needle piece having a deformable recess in corresponding shape to said protrusion so that said protrusion is moved into said recess as said arms are moved toward said lancet needle and said recess deforms around said protrusion to retain said protrusion therein;

f) a rigid connecting means having opposed ends, said rigid connecting means extending along said lancet needle between said distal needle piece and said proximal needle piece, one of said opposed ends of said rigid connecting means being rigidly attached to said distal needle piece and the other said opposed end of said rigid connecting means frangibly attached to said proximal needle piece;

g) a removable cap encasing and enclosing said lancet tip, said cap being integrally attached to said proximal needle piece by a frangible connection so that twisting said cap relative to said proximal needle piece causes said cap to become separated from said proximal needle piece; and,

h) a pair of finger pads attached to the outer surface of said arms opposite said lancet needle to allow said arms to be grasped and pinched between fingers of a user's hand towards said lancet needle.

5,304,193

BLOOD LANCING DEVICE

Sam Zhadanov, 100 Prospect St., Metachin, N.Y. 08840

Filed Aug. 12, 1993, Ser. No. 105,131
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—182 **13 Claims**

1. A blood lancing device, comprising

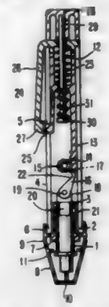
a lancet longitudinally displaceable in a first direction to puncture a skin of a patient and then into a second opposite direction out of the punctured skin;

spring means having an action stroke in said first direction;

a toothed rack longitudinally displaceable in said first direction under the action of said active stroke of said spring means;

a toothed pinion engageable with said toothed rack and rotatable by the letter during said longitudinal displacement of said toothed rack in said first direction;

a lever having a first end connected with said pinion and a second end connected with said lancet so that during the rotation of said pinion by said toothed rack activated by said spring means said lever by said second end moves said



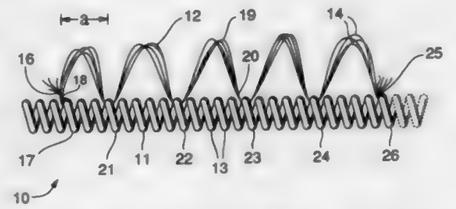
lancet first in said first direction and thereafter in said second direction.

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VASOOCCLUSION COIL WITH ATTACHED FIBROUS ELEMENT(S)

U. Hiram Chee, Palo Alto, and Mike Mariant, Santa Clara, both of Calif., assignors to Target Therapeutics, Fremont, Calif.

Continuation-in-part of Ser. No. 771,013, Oct. 2, 1991, Pat. No. 5,226,911. This application Oct. 2, 1992, Ser. No. 956,724
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—191 **16 Claims**



1. A vasoocclusive device comprising:

(a) a helical coil for occluding blood flow having a multiplicity of windings extending between a first end and a second end, said helical coil being from 2 to 100 cm in length and from 0.05 to 0.2 cm in diameter; and

(b) at least one fibrous element having a first end and a second end, with the portion of the element intermediate said ends extending axially along the coil in a generally serpentine configuration composed of a plurality of loops having maxima that extend radially outwardly and minima that extend radially inwardly and are threaded about individual windings at spaced intervals along the coil.

5,304,195

DETACHABLE PUSHER-VASOOCCLUSIVE COIL ASSEMBLY WITH INTERLOCKING COUPLING

Robert H. Twyford, Jr., Palo Alto; Erik T. Engelson, Mountain View; Uriel H. Chee, Palo Alto, and Michael J. Mariant, Santa Clara, all of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

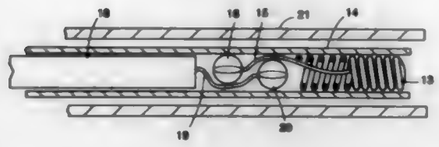
Continuation of Ser. No. 806,979, Dec. 12, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,375
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—191 **10 Claims**

1. A detachable pusher-vasoocclusive coil assembly for use in occluding a selected site within a vessel comprising in combination:

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(a) a vasoocclusive coil having a proximal end that carries a first radial protuberance;
(b) a pusher having a distal end and having an affixed, distally-extending radially biased member that carries a second radial protuberance located distally on the radially biased member, said second radial protuberance axially overlapping and interlocking with the first radial protuberance; and



(c) means carried coaxially about the pusher and coil that is axially movable relative to the coil and pusher from a first position at which the means enclosed the overlapped, interlocked protuberances to prevent said protuberances from substantial radial movement relative to each other to a second position at which the means does not enclose the protuberance and the protuberances are free to disengage, wherein the radially biased member on the pusher causes disengagement of the pusher from the vasoocclusive coil upon axial movement of the means carried about the pusher and coil from the first position to the second position.

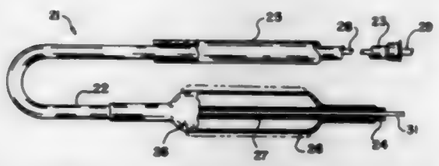
5,304,196

Patent Not Issued For This Number

5,304,197
BALLOONS FOR MEDICAL DEVICES AND FABRICATION THEREOF

Leonard Pinchuk, Miami; Robert S. Shonk, Davie, and Thomas Trotta, Miami, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 561,747, Aug. 2, 1990, Pat. No. 5,156,612, which is a continuation of Ser. No. 452,713, Dec. 19, 1989, Pat. No. 5,108,415, which is a division of Ser. No. 384,723, Jul. 24, 1989, Pat. No. 4,906,244, which is a continuation-in-part of Ser. No. 253,069, Oct. 4, 1988, abandoned. This application Oct. 7, 1992, Ser. No. 958,033
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—194 **15 Claims**

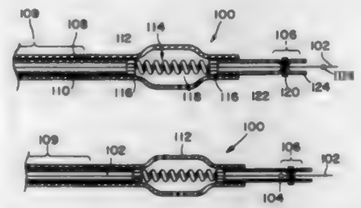


1. A balloon for a medical device, the balloon comprising:
a length of tubing made of a nylon material or of a polyamide material, said length of tubing having been formed into the balloon during a balloon forming procedure including inflating at least a section thereof with a pressurized fluid in order to radially expand said length of tubing to at least double its outer diameter;
said balloon has a non-distended working profile having a predetermined size to which the balloon inflates without significant stretching thereof, and said balloon has an expansion profile having a maximum inflated size to which the balloon stretches without bursting during use, said maximum inflated size being greater than said predetermined size of the non-distended working profile; and
said expansion profile of the balloon has been tailored whereby said balloon has a maximum inflated size selected from a range of maximum inflated sizes that are a function of balloon processing conditions.

5,304,198
SINGLE-LUMEN BALLOON CATHETER HAVING A DIRECTIONAL VALVE

Gene Samson, Milpitas, Calif., assignor to Target Therapeutics, Fremont, Calif.

Filed Nov. 13, 1992, Ser. No. 976,197
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—194 **24 Claims**



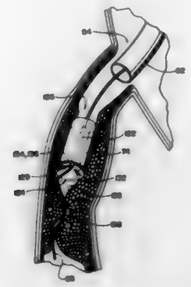
1. A single-lumen balloon catheter assembly comprising a catheter body having proximal and distal ends, a single lumen extending between those proximal and distal ends, an inflatable balloon having proximal and distal ends disposed in the distal region of the catheter body, a valve seat disposed between the distal end of the inflatable balloon and the distal end of the catheter body, which valve seat is formed by a circumferential band cinching a portion of the catheter body forming distal and proximal valve surfaces, and allows passage of a control wire therethrough, and is adapted to engage and seal said lumen, both on its distal and proximal valve surfaces, with a valve plug disposed on a control wire.

5,304,199
APPARATUS FOR ARTERIAL TOTAL OCCLUSION PLAQUE SEPARATION

Gene E. Myers, Sarasota, Fla., assignor to Gene E. Myers Enterprises, Inc., Sarasota, Fla.

Filed Jan. 4, 1993, Ser. No. 822
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—194 **6 Claims**

5. A balloon catheter for creating a cleft through a total blockage within a vascular structure presenting an internal vascular wall, comprising:
a catheter forwardmost elastomeric balloon member having a blunt, expandable distal end positionable within one millimeter adjacent said total blockage, an opposed, rearward, expandable proximal end portion, and a generally tubular outer balloon surface extending between said proximal end portion and said distal end, the inflated diameters presented by said outer balloon surface at said distal end and said proximal end portion being greater than the normal lumen diameter of said vascular structure;
an inner, generally tubular, wire receiving member carried within said balloon member presenting a wire receiving member distal end oriented internally of said outer balloon surface and rearwardly of said balloon member distal end, and the balloon member including an outwardly flared mouth surface operably coupling and extending between said interventional apparatus receiving member distal end and said outer balloon surface at said balloon member distal end; and
said proximal end portion comprising a rear wall operably coupling and extending between said interventional apparatus receiving member and said outer balloon surface, the functionally acutely angled junction of said rear wall and said outer balloon surface forming a rearmost balloon member peripheral rim area in substantial engagement with said vascular wall whereby said rim area engages said vascular wall in a biting fit thereby discouraging retrograde expulsion of said balloon member from the position adjacent said total blockage.



5,304,200
WELDED RADIALLY EXPANDABLE ENDOPROSTHESIS AND THE LIKE

Ronald N. Spaulding, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Continuation of Ser. No. 706,964, May 29, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 4,179
Int. Cl.[5] A61F *2/06*
U.S. Cl. 606—198 **12 Claims**

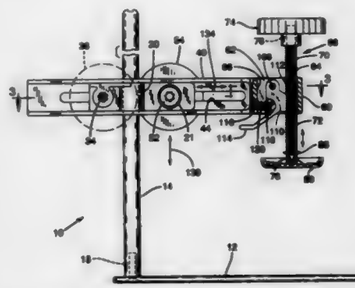


1. A radially expandable endoprosthesis, comprising:
a plurality of generally circumferential sections, including end and intermediate generally circumferential sections, said end and intermediate generally circumferential sections being substantially adjacent to one another and generally parallel to each other in order to thereby substantially define an endoprosthesis having a longitudinal axis along which each of said generally circumferential sections are substantially axially spaced;
each of said generally circumferential sections includes an expandable segment that imparts radial expandability to said generally circumferential section whereby said section has an unexpanded insertion circumference and an expanded implantation circumference which is greater than said unexpanded insertion circumference;
said expandable segment of each generally circumferential section is a member that is bendable between a generally closed orientation and a generally opened orientation so as to impart radial expandability to the generally circumferential section;
said generally circumferential sections form a continuous helix-like structure that defines an axially extending endoprosthesis, the helix-like structure having terminal portions of said end sections;
each of said terminal portions of the end sections is welded to an adjacent one of said intermediate sections, thereby avoiding presentation of loose ends on the endoprosthesis, each of said welds directly securing the terminal portion to a bendable portion of the adjacent intermediate section, each of said welds has a generally tapering configuration having a feathered edge structure; and
each said weld is a laser-formed weld made while the endoprosthesis is encased within an enclosed welding compartment filled with an inert gas and substantially free of oxygen, the laser-formed weld having been formed by directing a laser beam through a wall of the enclosed welding compartment, which wall retains inert gas within the enclosed welding compartment and permits the laser beam to pass therethrough to form the laser-formed weld;
whereby the weld of the endoprosthesis exhibits substantial reduction of embrittlement and cracking, and the weld has significantly greater tensile strength, all when compared with an otherwise identical weld formed under a steam of the same inert gas and without the endoprosthesis being in the enclosed welding compartment.

5,304,201
RADIAL ARM QUICK ADJUSTING ARTERY CLAMP

Delbert L. Rice, Vancouver, Wash., assignor to Rice Mold Design Service, Inc., Vancouver, Wash.

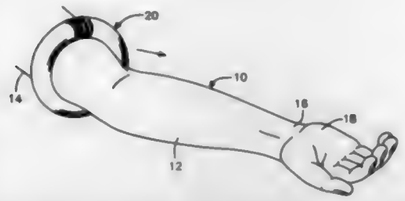
Filed Sep. 11, 1992, Ser. No. 944,183
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—201 **7 Claims**



1. An artery clamp for applying pressure to an artery of a member of a patient, comprising:
a base;
a column extending upwardly and fixedly attached to the base;
an arm extending from said column adapted to overlie the member of the patient resting on said base;
a carrier including a rod, said arm provided with a configured guide opening mated to said rod and permitting vertical sliding axial movement only of said rod whereby the carrier is adjustably mounted to the arm overlying said member and adjustably movable toward and away from said member;
a pressure pad on a lower end of said rod to be moved by said rod into engagement with said member;
an adjusting mechanism mounted to said arm and in engagement with said rod for controlling adjustment of said carrier relative to said arm;
said adjusting mechanism having mutually exclusive dual adjusting functions including a first adjusting function for controlled adjustment of the pressure pad toward and away from the member and a second adjustment function manually engageable to release and first adjustment and provide rapid adjustment of the pressure pad.

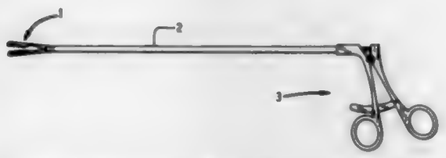
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,202
METHOD AND APPARATUS FOR ENABLING INTRAVENOUS THERAPY WHEN CARDIAC OUTPUT IS LESS THAN USUALLY NECESSARY
Daniel A. Stahl, 7471 Fillmore St., Hollywood, Fla. 33024
Filed Mar. 18, 1993, Ser. No. 33,553
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—203 **8 Claims**



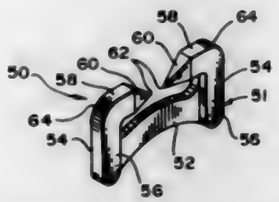
1. A tourniquet for initial securement about proximal portion of a body limb and gradual rolling down along the limb, said tourniquet comprising an elongated, generally straight, cylindrical member having opposite ends and constructed of flexible, elastic material and having circumferentially joined exterior longitudinal wall portions, the longitudinal ends of said cylindrical member being provided with coacting connecting end fittings for releasably connecting said ends together in end aligned relation, said longitudinal wall portions of said annular member being generally straight and of substantially the same length when said longitudinal wall portions are relaxed in their static state, said cylindrical member consisting of a longitudinally straight internal body of radially inwardly and longitudinally compressed resilient foam material and a lengthwise and radially outwardly stretched flexible and resilient covering tube forming said wall portions disposed over said body, the opposite ends of said body having said coacting end fittings mounted thereon and to which the opposite ends of said covering tube are anchored, said fittings being releasably engageable with each other when said tourniquet is manipulated into a generally annular configuration with said fittings being operable to releasably secure the opposite ends of said body together in axially aligned relation.

5,304,203
TISSUE EXTRACTING FORCEPS FOR LAPAROSCOPIC SURGERY
Amin El-Mallawany, Pepper Pike, and Jan J. Lewandowski, South Euclid, both of Ohio, assignors to NuMed Technologies, Inc., Independence, Ohio
Filed Oct. 20, 1992, Ser. No. 963,718
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—207 **12 Claims**



1. A surgical instrument for laparoscopic procedures comprising:
a distal portion, an intermediate portion, and a proximal portion;
the distal portion comprising first and second pivotally connected arms connected at one end to a lever means, the first and second pivotally connected arms also having unattached ends with opposing faces;
the intermediate portion comprising an actuating rod having a distal end and a proximal end and a rigid tube having a distal tip and a proximal tip, the actuating rod being slidably located inside the rigid tube;
the proximal portion comprising first and second handle means;
the distal end of the actuating rod being connected to the lever means;
the first handle means immovably connected to the rigid tube;
the second handle means pivotally coupled to the proximal end of the actuating rod;
the first handle means pivotally connected to the second handle means;
the first and second handle means operable to remotely cause the unattached ends of the first and second pivotally connected arms to move angularly toward and away from each other into closed and opened positions; and the surgical instrument further comprising
a rigid tubing extension having a distal tip and a proximal tip, the proximal tip of said rigid tubing extension being removably engaged to the distal tip of the rigid tube; and
an actuating rod extension for connecting the distal end of the actuating rod to the lever means, the actuating rod extension having a proximal tip and a distal tip;
the distal end of the actuating rod being removably engaged with the proximal tip of the actuating rod extension.

5,304,204
RECEIVERLESS SURGICAL FASTENERS
Michael F. Bregen, Lebanon, N.J., assignor to Ethicon, Inc., Somerville, N.J.
Filed Feb. 9, 1993, Ser. No. 15,707
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—219 **22 Claims**



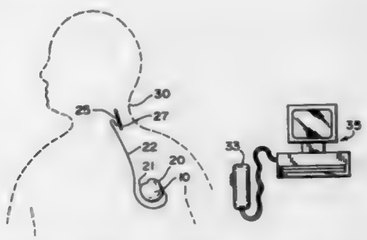
1. A surgical fastener, comprising:
a fastener body including a bridge member and at least two tines extending from opposite ends of said bridge member, said tines each having a distal end for penetrating tissue;
said tines being resiliently deformable from a normally closed position with said distal ends of said tines pointing toward each other to an open position with said distal ends of said tines extending substantially parallel to each other for penetrating into the tissue; and
said tines being resiliently returnable to said closed position with said distal ends of said tines pointing toward each other to secure said fastener body to the tissue.

5,304,205
SURGICAL FILAMENT
Hosei Shinoda; Masami Ohtaguro, and Shigeru Iimuro, all of Aichi, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Continuation-in-part of Ser. No. 625,899, Nov. 29, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,200
Claims priority, application Japan, Dec. 11, 1989, 1-318822; Feb. 27, 1991, 3-032839
Int. Cl.[5] A61L *17/00*; **A61B** *17/04*
U.S. Cl. 606—230 **12 Claims**



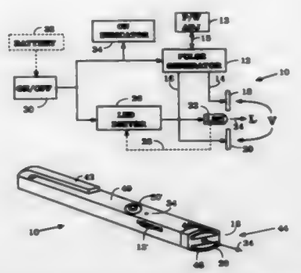
1. A surgical filament comprising a surface coated with at least one N-long chain monoacylated basic amino acid which has an aliphatic acyl group of from 6 to 22 carbon atoms.

5,304,206
ACTIVATION TECHNIQUES FOR IMPLANTABLE MEDICAL DEVICE
Ross G. Baker, Jr.; Reese S. Terry, Jr., both of Houston, and Alan Adkins, Angleton, all of Tex., assignors to Cyberonics, Inc., Webster, Tex.
Filed Nov. 18, 1991, Ser. No. 793,842
Int. Cl.[5] A61N *1/08*
U.S. Cl. 607—2 **13 Claims**



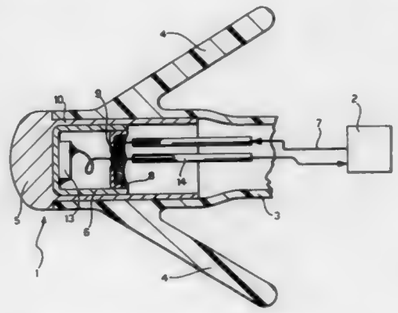
1. A medical device for treating a disorder of a patient, comprising:
implantable electronic means operative when activated for developing a predetermined therapy to treat the disorder,
implantable delivery means connectable to the electronic means for delivering said therapy to a selected region of the patient's body, and
activation means responsive to a signal initiated by the patient for activating the electronic means to cause the delivery of the therapy by the delivery means, when connected to the electronic means, to the selected body region and thereby to treat the disorder, the activation means including
detection means responsive to tapping by the patient in at least one coded sequence of taps on the skin adjacent the implanted electronic means for manual activation thereof, and
adjustment means for varying a preselected parameter of the therapy in response to another coded sequence of taps.

5,304,207
ELECTROSTIMULATOR WITH LIGHT EMITTING DEVICE
Merrill Stromer, 8924 N. 65th St., Paradise Valley, Ariz. 85253
Filed Feb. 5, 1992, Ser. No. 831,163
Int. Cl.[5] A61N *1/00, 1/18, 1/40*
U.S. Cl. 607—3 **18 Claims**



1. A non-incapacitating electrostimulator apparatus, comprising:
a housing;
first and second electrodes supported by and exposed on the housing so as to be spaced apart a predetermined fixed distance;
electrical signal generating means supported by the housing for providing varying electrical signals to said spaced apart electrodes, said electrical signals having an amplitude of no greater than approximately 150 volts; and
light emitting means supported by the housing for focusing a beam of light in a region traversed by a line passing between said spaced apart electrodes.

5,304,208
CARDIOSTIMULATOR DEVICE OF THE RATE-RESPONSIVE TYPE
Bruno Inguaggiato, Milan, and Giorgio Corbucci, San Giovanni in Persiceto, both of Italy, assignors to Sorin Biomedica S.p.A., Saluggia, Italy
Filed May 20, 1992, Ser. No. 886,073
Claims priority, application Italy, May 21, 1991, TO91A000376
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—17 **13 Claims**



1. A cardiac stimulator device, comprising:
a) means for detecting a natural heart acceleration of a user and for generating a signal representative thereof; and
b) means for stimulating the heart of the user as a function of said natural heart acceleration signal.

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5,304,209

REMOTE-CONTROL TEMPORARY PACEMAKER

Theodore P. Adams, Edina; Gene M. Berghoff, Eden Prairie, and Scott T. Latterell, Minneapolis, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Sep. 24, 1991, Ser. No. 764,626
Int. Cl.[5] A61N *1/372*
U.S. Cl. 607—30 11 Claims



1. A remotely programmable temporary pacemaker system for a patient, said pacemaker system comprising;

a. a sealed external pacemaker having coupling means for removably attaching said pacemaker externally to the body of said patient;

b. lead means coupled to said pacemaker for providing percutaneous electrical communication between the heart of said patient and said externally attached pacemaker, wherein said lead means comprises a jack, and wherein said lead means is coupled to said pacemaker by means of a custom connector on said pacemaker configured to receive said jack; and

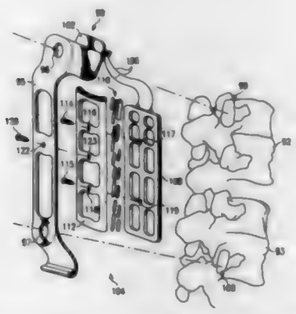
c. remote programming means for altering pacing parameters of said pacemaker.

5,304,210

APPARATUS FOR DISTRIBUTED BONE GROWTH STIMULATION

David F. Crook, Garland, Tex., assignor to AMEI Technologies Inc., Wilmington, Del.

Filed Jan. 28, 1992, Ser. No. 827,002
Int. Cl.[5] A61N *1/18*
U.S. Cl. 607—51 34 Claims



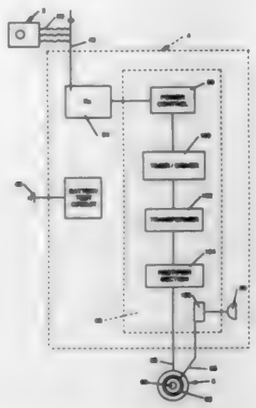
1. Apparatus for bone fusion comprising a cage means for substantially enclosing a bone graft at a bone injury site and said cage means adapted to be mounted directly against the bone injury site.

5,304,211

APPARATUS FOR ADMINISTERING ELECTRICAL AVERSIVE STIMULUS AND ASSOCIATED METHOD

Matthew L. Israel, Newton, Mass., and David Marsh, Harmony, R.I., assignors to Behavior Research Institute, Providence, R.I.

Filed Nov. 25, 1991, Ser. No. 796,713
Int. Cl.[5] A61N *1/08, 1/38*
U.S. Cl. 607—58 32 Claims



1. Apparatus for administering electrical aversive stimulus to an individual, comprising:

a transmitter for generating an electromagnetic signal, said transmitter having switch means for turning said signal on and off;

a receiver/stimulator for receiving said signal from said transmitter and generating an electrical stimulus pulse in response to receiving said signal, said electrical stimulus pulse having a peak current value, a duty cycle value, a pulse repetition frequency value, and a pulse train duration value;

an electrode electrically connected to said receiver/stimulator for transmitting said electrical stimulus pulse to the individual; and

stimulation indicator means responsive to said electrical stimulus pulse for indicating when said electrical stimulus pulse passes from said electrode to the individual.

5,304,212

ASSESSMENT AND MODIFICATION OF A HUMAN SUBJECT'S CIRCADIAN CYCLE

Charles A. Czeisler; Richard E. Kronauer, both of Cambridge, Mass., and James S. Allan, Pittsburgh, Pa., assignors to Brigham and Women's Hospital, Boston, Mass.

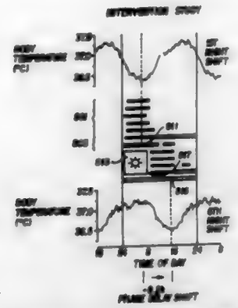
Continuation of Ser. No. 521,041, May 9, 1990, Pat. No. 5,167,228, and Ser. No. 365,949, Jun. 15, 1989, Pat. No. 5,176,133, each is a continuation-in-part of Ser. No. 66,677, Jun. 26, 1987, Pat. No. 5,163,426. This application Jan. 10, 1992, Ser. No. 819,403
Int. Cl.[5] A61N *5/06*
U.S. Cl. 607—88 39 Claims

11. A method of facilitating the physiological adaptation of a human subject to a reoccurring activity/rest-leisure schedule requiring said subject to be active during a portion of conventional sleep hours, comprising the steps of:

selecting a substantial episode of time during the activity portion of said subject's activity/rest schedule to apply a light stimulus; and

applying, at said selected time episode, said light stimulus consisting of an episode of enhanced illumination;

whereby the physiological adaptation of said subject to a reoccurring activity/rest schedule requiring said subject



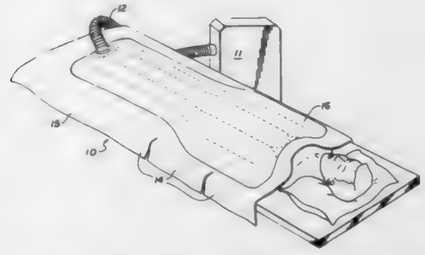
to be active during a portion of said conventional sleep hours if facilitated.

5,304,213

HYPER-HYPOTHERMIA BLANKET WITH FILTRATION PROPERTIES

Leonard D. Berke, and Michael C. Molloy, both of Cincinnati, Ohio, assignors to Cincinnati Sub-Zero Products, Inc., Cincinnati, Ohio

Filed Jun. 14, 1993, Ser. No. 75,362
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—104 18 Claims



1. A light-weight disposable convective hyper-hypothermia blanket for use in controlling a patient's body temperature whereby a substantially uniform temperature stratum of air is forced onto the patient, said blanket comprising:

(a) a bottom layer of air pervious non-woven material which filters air as it passes therethrough and acts as a bacteria barrier, said bottom layer of air pervious material dimensioned to overlie at least a portion of the patient's body;

(b) a top layer of air impervious material overlying the bottom layer of air pervious material and sealed at its edges thereto to form an air receiving chamber from which said air is forced onto the patient, further wherein the top layer of air impervious material is selectively sealed to the bottom layer to form at least three longitudinal air flow channels comprising outermost air flow channels and an innermost air flow channel, the air channels running substantially the length of the chamber and to form a manifold within the chamber at one end thereof; and

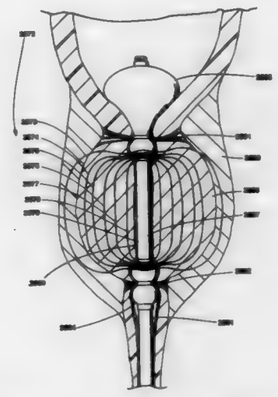
(c) a reinforcing collar with a receptacle opening in the top layer of air impervious material to detachably receive an air hose from a heat or cooling source, said receptacle opening positioned centrally and in communication with the manifold of the chamber whereby temperature controlled air from the heat or cooling source is initially directed into the manifold of the chamber and then directed primarily to the outermost air flow channels and then to the innermost air flow channel such that a build up of pressurized controlled temperature air within the chamber occurs until the pressurized air is forced through the bottom layer of air pervious material as the substantially uniform temperatured stratum of air onto the patient.

5,304,214

TRANSURETHRAL ABLATION CATHETER

John A. DeFord, Lafayette; Joseph F. Ely, and Neal E. Fearnot, both of West Lafayette, all of Ind., assignors to MED Institute, Inc., West Lafayette, Ind.

Filed Jan. 21, 1992, Ser. No. 823,318
Int. Cl.[5] A61F *7/12*
U.S. Cl. 607—105 38 Claims



1. A transurethral ablation catheter for ablating prostatic tissue about a prostatic urethra positioned between internal and external sphincters, comprising:

an elongated member having a distal portion, a proximal portion, and an intermediate portion, said intermediate portion being positioned between said distal and proximal portions and shaped and sized for intimate contact with said prostatic urethra, at least one of said distal and proximal portions including fixation means positionable about at least one of said internal and external sphincters, respectively, for maintaining longitudinally said intermediate portion in said prostatic urethra; and

a thermally conductive heat-emitting element positioned in said intermediate portion and responsive to energy supplied thereto for producing a predetermined thermally conductive heat distribution in said tissue to ablate said tissue.

5,304,215

THERMAL HEAT PACK FOR BREAST

Virginia MacWhinnie, and John V. MacWhinnie, both of R.R. 519-Deerfield Rd., Water Mill, N.Y. 11976

Filed Dec. 21, 1992, Ser. No. 995,509
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—106 9 Claims

1. A thermal heat pack adapted to closely correspond to the contours of various sized female breasts to heat the adjacent skin area; said thermal heat pack comprising:

a generally flattened cylindrical conforming member;

a bottom foundation member forming one side of said thermal heat pack;

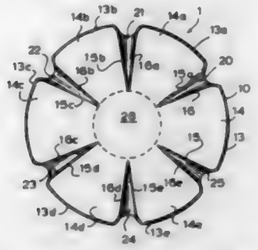
said flattened cylindrical conforming member including a plurality of generally triangular segmented portions radi-

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ating from a common central portion within said flattened cylindrical conforming member;

said conforming member including pliant heat conducting material, said heat pack capable of corresponding to the contour of said breast, such that said bottom foundation member is removably adjacent to said breast, thus permitting uniform application of heat to said breast,

wherein said conforming member further comprises a plurality of tapered separations between each paid of said adjacent triangular segmented portion; each said adjacent



triangular segmented portions being spaced apart from adjacent said triangular segmented portions and,

each said triangular segmented portion includes at least two non-parallel walls and a generally curved outer wall extending about a portion of a circumference of said conforming member of said heat pack; and

said heat pack defining a fluid flow chamber therebetween; said chamber including a plurality of segmented recesses positioned within said heat pack for the circulation of the said pliant heat conducting material within said heat pack.

5,304,216

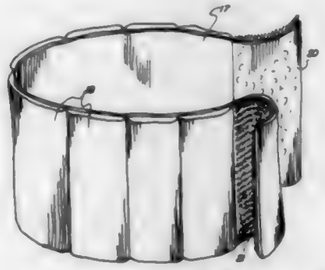
ICE PACK APPARATUS

Robert B. Wallace, 4760 College Ave., San Diego, Calif. 92115

Filed Jan. 26, 1993, Ser. No. 9,149

Int. Cl.[5] A61F *7/00*

U.S. Cl. 607—112 **3 Claims**



1. An ice pack and housing apparatus, comprising, at least one therapeutic wrap, having a flexible base web, the base web including a top surface spaced from a bottom surface, a first end spaced from a second end, and spaced side walls, and a polymeric foam web mounted coextensively between the side walls and spaced from the first end and the second end, with the foam web mounted to the bottom surface, and

at least one flexible refrigerant housing mounted to the top surface positioned over the foam web, the refrigerant housing including a refrigerant gel therewithin, and

a first hook and loop fastener patch mounted to the base web, and a second hook and loop fastener patch mounted to the base web, with the first fastener patch and the second fastener patch arranged for securement relative to one another about an individual, and

the first hook and loop fastener patch is mounted to the bottom surface between the foam web and the first end coextensive therebetween, and the second hook and loop fastener patch arranged coextensively between the foam web and the second end and mounted to the top surface, and

a support housing, the support housing including a first floor, and a first side wall mounted about the first floor, and second floor positioned above the first floor in a parallel relationship, and a second cylindrical side wall mounted to the second floor extending from the second floor, wherein the second side wall is defined by a second diameter, the first side wall defined by a first diameter, wherein the second diameter is less than the first diameter, and the first side wall is orthogonally oriented relative to the second floor, and the first side wall extends to a third floor, wherein the third floor is parallel to the second floor, and a third side wall orthogonally mounted to the third side wall, wherein the third side wall is defined by a third diameter less than the second diameter and extends orthogonally between the third floor and a top wall, with the top wall oriented parallel to the third floor, and the top wall is spaced from the second floor a predetermined height, and a lid, the lid having a lid side wall, the lid side wall having a lid height equal to the predetermined height, and a lid top wall arranged for abutment with the top wall, wherein the lid is mounted upon the second floor.

5,304,217

METHOD OF CONTROLLING AIR FLOW FROM AN INFLATED BLANKET

James G. Stephenson; Eugene L. Kilbourn, both of Marshall, and Peter C. Kempf, Dexter, all of Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Division of Ser. No. 915,254, Jul. 20, 1992, Pat. No. 5,246,656. This application Jun. 21, 1993, Ser. No. 78,842

Int. Cl.[5] A61F *7/00*

U.S. Cl. 607—114 **1 Claim**



1. The method of controlling the flow of air from an inflated blanket to be placed upon a patient's body engaged by the blanket wherein the blanket includes a thin flexible material having a body engaging surface, the body engaging surface including a plurality of bulbous projections separated by recesses, the projections engaging the patient's body, comprising the steps of:

a) forming a plurality of spaced orifices in the blanket thin flexible material through the body engaging surface substantially over the area thereof by slitting the blanket thin flexible material in such a manner that the orifice are each defined by a plurality of slits which form a plurality of flexible valve flaps at each orifice, and

b) inflating the blanket whereby air flows from the blanket through said orifices toward the patient's body, the valve flaps of the orifices on the projections engaging the patient's body being closed by the patient's body to restrict air flow therethrough, and the valve flaps of the orifices within the recesses being opened by the air flow through the associated orifice to permit air to flow toward the patient's body.

5,304,218

CARDIAC LEAD IMPLANTING ARRANGEMENT AND METHOD

Clifton A. Alferness, Redmond, Wash., assignor to InControl, Inc., Redmond, Wash.

Filed Jun. 2, 1992, Ser. No. 892,177

Int. Cl.[5] A61N *1/05*

U.S. Cl. 607—122 **12 Claims**



1. An arrangement to facilitate the implantation of an electrode of an endocardial or intravenous lead at an implantation site within a human body, said arrangement comprising:

a guide wire formed of flexible material and arranged to be fed along a predetermined path within the body, said predetermined path including said implantation site; and

a lead formed of flexible material, said lead including a proximal end, a distal end, and an electrode to be implanted, said electrode to be implanted including follower means for slidingly engaging said guide wire whereby,

after said guide wire is fed to extend along said predetermined path, said follower means is engaged with said guide wire to permit said lead to be guided along said predetermined path until said electrode to be implanted resides at said implantation site whereupon, said guide wire is retracted from said follower means and along said predetermined path to cause said electrode to be implanted to remain at said implantation site.

5,304,219

MULTIPOLAR IN-LINE PROXIMAL CONNECTOR ASSEMBLY FOR AN IMPLANTABLE STIMULATION DEVICE

Edward Chernoff, Frazier Park; Harry W. Fletcher, Panorama City; Jeryle L. Walter, Newhall, and James E. Barcel, Simi Valley, all of Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 716,032, Jun. 14, 1991, Pat. No. 5,267,567. This application Jun. 5, 1992, Ser. No. 894,395

Int. Cl.[5] A61N *1/05*

U.S. Cl. 607—122 **7 Claims**



1. An implantable stimulation lead having a proximal end and a distal end having at least tip and ring electrodes and a sensor for sensing a physiological parameter of the body, the sensor having a first and second sensor terminal, the tip and ring electrodes and the first and second sensor terminals being coupled to at least a first, a second, a third and a fourth conductor, respectively, the implantable stimulation lead further comprising:

a pin terminal at the proximal end;

at least a first, second and third ring terminal at its proximal end;

at least a first, second and third conductive rod, each rod having a proximal end in electrical contact with only one of the ring terminals without touching the other of the ring terminals, each rod having a distal end electrically connected to a respective one of the second, third and fourth conductors;

a conductive tube electrically connected to the pin terminal, the conductive tube being shaped to avoid electrical contact with the ring terminals and their respective rods, the conductive tube being electrically connected to the first conductor; and

a plurality of prefabricated insulating spacers, each spacer having mechanical joining means for slidably joining, while electrically insulating, one pair of adjacent proximal terminals;

whereby the sensor is electrically connected between the second and third ring terminals and electrically isolated from the tip and ring electrodes.

5,304,220

METHOD AND APPARATUS FOR IMPLANTING A GRAFT PROSTHESIS IN THE BODY OF A PATIENT

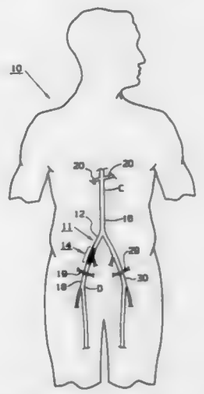
Thomas J. Maginot, 741 Meadow La., Crown Point, Ind. 46307

Continuation-in-part of Ser. No. 725,597, Jul. 3, 1991, Pat. No. 5,211,683. This application May 3, 1993, Ser. No. 56,371

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] A61F *2/06*; A61B *19/00*

U.S. Cl. 623—1 **13 Claims**



1. A method of implanting a graft prosthesis in the body of a patient to bypass a segment of a blood vessel, comprising the steps of:

making an incision in the body;

positioning a graft so that one end of the graft is located substantially adjacent the blood vessel at a site upstream of the segment and a second end of the graft is located substantially adjacent the blood vessel at a site downstream of the segment, wherein the positioning step includes the step of placing the graft into the body through the incision, and further wherein the positioning step is performed while the upstream site is covered by a substantially intact portion of the epidermis of the body;

isolating a region of the area within the blood vessel substantially adjacent the upstream site from fluid communication with the rest of the area within the blood vessel, wherein the upstream isolating step is performed while the upstream site is covered by the substantially intact portion of the epidermis of the body;

making an arteriotomy in a sidewall of the blood vessel substantially adjacent the upstream site to create a communicating aperture between the upstream isolated region and an area outside of the blood vessel, wherein the upstream arteriotomy making step is performed while the upstream site is covered by the substantially intact portion of the epidermis of the body;

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forming an anastomosis between the one end of the graft and the blood vessel substantially adjacent the upstream site, wherein the upstream anastomosis forming step is performed while the upstream site is covered by the substantially intact portion of the epidermis of the body, and further wherein the upstream anastomosis forming step includes the step of suturing the one end of the graft to the blood vessel;

isolating a region of the area within the blood vessel substantially adjacent the downstream site from fluid communication with the rest of the area in the blood vessel;

making an arteriotomy in the sidewall of the blood vessel substantially adjacent the downstream site to create a communicating aperture between the downstream isolated region and the area outside of the blood vessel; and

forming an anastomosis between the second end of the graft and the blood vessel substantially adjacent the downstream site.

5,304,221

REACTIVE DYESTUFF MIXTURES

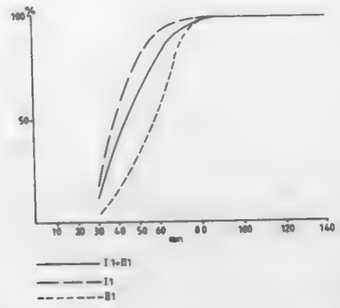
Max Schwarz, Leverkusen; Joachim Grütze, Odenthal; Dietrich Hildebrand, Odenthal; Joachim Wolff, Odenthal, and Frank Stöhr, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellshaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,975

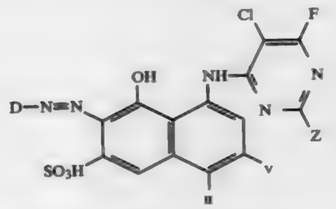
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140541

Int. Cl.[5] **C09B** *42/00*

U.S. Cl. 8—549 **7 Claims**

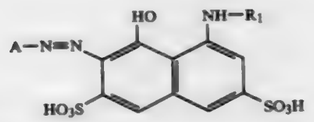


1. Dyestuff mixture of at least two reactive dyestuffs, comprising at least one fluoropyrimidine dyestuff of the formula (I)



(I)

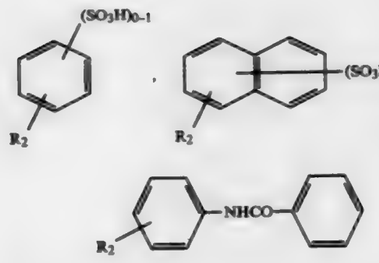
and a vinylsulfonyl dyestuff of the formula (II)



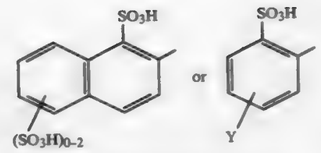
(II)

in which

A denotes



D denotes

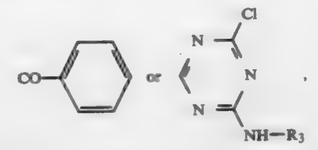


each Y denotes, independently of the others, H, $—SO_2—C_2H_4—O—SO_3H$ or $—SO_2—CH=CH_2$,

Z denotes F or H,

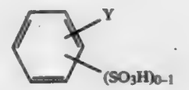
u and v denote H or SO_3H, u being different from v,

R_1 denotes $CO—CH_3$,



R_2 denotes $HO_3SOCH_2—CH_2—O_2S—$ or $—SO_2—CH=CH_2$ and

R_3 denotes



5,304,222

MONOAZO BENZOTHIAZOLE DISPERSE DYE MIXTURE

Ryouichi Sekioka, and Kouichi Seto, both of Kitakyushu, Japan, assignors to Hoechst Mitsubishi Kasei Co., Ltd., Tokyo, Japan

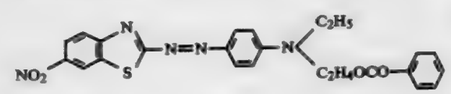
Filed Jun. 17, 1992, Ser. No. 899,701

Claims priority, application Japan, Jun. 18, 1991, 3-146314

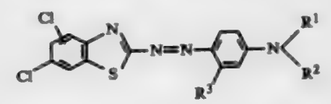
Int. Cl.[5] **C09B** *29/045, 67/22, 67/48, 67/38*

U.S. Cl. 8—639 **4 Claims**

1. A disperse dye mixture comprising from 20 to 80% by weight of a red disperse dye of the following formula (A) and from 20 to 80% by weight of a red disperse dye of the following formula (B):



(A)

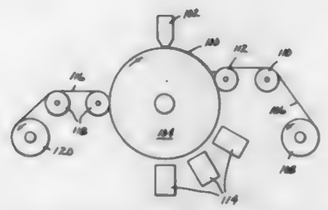


(B)

wherein R^1 is $—C_2H_5$ or $—C_2H_4OCOCH_3$, R^2 is $—C_2H_4OCOCH_3$ or $—C_2H_4CN$, and R^3 is hydrogen or $—CH_3$.

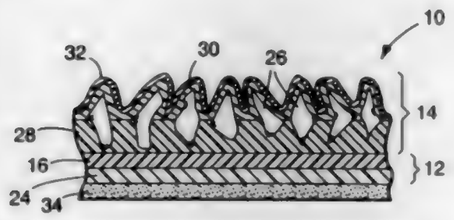
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,223
STRUCTURED ABRASIVE ARTICLE
Jon R. Pieper, Lindstrom; Richard M. Olson, Stillwater, both of Minn.; Michael V. Mucci, Hudson, Wis.; Gary L. Holmes, Vadnais Heights, Minn., and Robert V. Heitl, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 921,905, Jul. 29, 1992, abandoned, which is a division of Ser. No. 651,660, Feb. 6, 1991, Pat. No. 5,152,917. This application Mar. 8, 1993, Ser. No. 29,302
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **14 Claims**



1. A method of making a coated abrasive article compriaing the steps of:
(1) introducing a slurry containing a mixture of a binder and a plurality of abrasive grains onto a production tool;
(2) introducing a backing to the outer surface of the production tool such that the slurry wets one side of the backing to form an intermediate article;
(3) at least partially curing or gelling the binder before the intermediate article departs from the outer surface of the production tool to form a coated abrasive article; and
(4) removing the coated abrasive article from the production tool.

5,304,224
COATED ABRASIVE ARTICLE HAVING A TEAR RESISTANT BACKING
Kimberly K. Harmon, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 1, 1992, Ser. No. 955,329
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—295 **43 Claims**



1. A tear resistant coated abrasive article comprising:
a backing which comprises a film having at least three layers situated one on the other in a parallel array, the layers occurring essentially randomly in the array and being individually selected from a stiff polyester or copolyester and a ductile sebacic acid based copolyester; and
an abrasive layer on a surface of the backing.

5,304,225
BINDER MIXTURE
Arno Gardziella, Radinghausen; Karl-Heinz Schwieger, Iserlohn; Peter Adolphs, Menden-Halingen; Josef Suren, Haaren, and Bertold E. Meier, Menden, all of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany
PCT No. PCT/EP91/00850, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991
PCT Filed May 6, 1991, Ser. No. 773,895
Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015440
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—298 **19 Claims**

1. Carbon-forming binder mixture for the production of thermostable molding materials, characterized in that it contains a mixture of phenol resin and resinous residues from bisphenol-A production.

5,304,226
ABRASIVE GRAIN AND MANUFACTURE FOR THE SAME
Mitsuru Hasegawa; Tadashi Hiraiwa, and Tetsuo Hatanaka, all of Shiojiri, Japan, assignors to Showa Denko K.K., Tokyo, Japan
Division of Ser. No. 845,828, Mar. 6, 1992, Pat. No. 5,192,339, which is a continuation of Ser. No. 474,041, Apr. 25, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,339
Claims priority, application Japan, Aug. 25, 1988, 63-211087
Int. Cl.[5] C09C *1/68*
U.S. Cl. 51—309 **2 Claims**

1. A process for manufacturing an alpha-Al_2O_3 abrasive grain comprising the steps of:
adding particles of at least one compound selected from the group consisting of Ti_2O_3, MgO·TiO_2, FeO·TiO_2, NiO·TiO_2, CoO·TiO_2, MnO·TiO_2, ZnO·TiO_2, V_2O_3, Ga_2O_3, and Rh_2O_3, wherein the particles have an alpha-Al_2O_3 structure and a size of substantially less than 2 microns, into an alumina sol;
gelling the sol; and
sintering the gel at a temperature of 1000° C.–1400° C.

5,304,227
ELECTRET FILTERS
Satoshi Matsuura; Tsuneo Kishiba, and Yoshio Shinagawa, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Continuation of Ser. No. 798,743, Nov. 27, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 53,517
Claims priority, application Japan, Nov. 30, 1990, 2-334302
Int. Cl.[5] B01D *39/04*
U.S. Cl. 55—524 **7 Claims**

1. An electret filter made of a resin composition, said resin composition having an angle of contact upon wetting with pure water of no smaller than 95 degrees, said resin composition comprising
a resin having an angle of contact upon wetting with pure water of less than 95 degrees, and
0.05–5 wt % of a silicone oil.

5,304,228
METHOD FOR MAKING OPTICAL FIBER WITH ATRAUMATIC ROUNDED END FOR USE IN LASER ANGIOPLASTY
Martin R. Prince, 71 Fulkerson St. #306, Cambridge, Mass. 02141
Division of Ser. No. 484,181, Feb. 23, 1990, Pat. No. 5,133,709. This application Jul. 23, 1992, Ser. No. 919,150
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—3.11 **11 Claims**

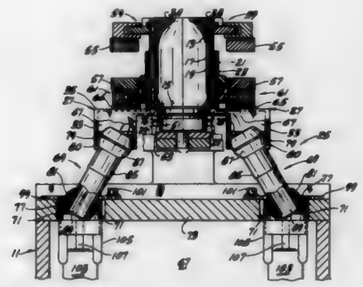
2. A method for manufacturing an optical fiber having a rounded end with a taper portion formed between the fiber and the rounded end so that radiation can be irradiated at an area

on the rounded end portion that is approximately equal to the diameter of the core of the optical fiber plus two times the length of the taper portion times the numerical aperture divided by the optical fiber core index of refraction, said method comprising the steps of:
(a) heating a mid-portion of the fiber for a long enough period of time to allow the natural surface tension of the



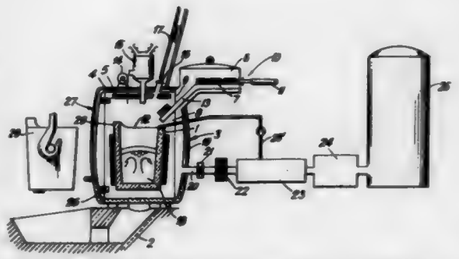
fiber to expand the fiber diameter, thereby forming a bulge in the fiber in the region being heated said heating occurring while rotating the fiber;
(b) moving the source of the heat along the longitudinal axis of the optical fiber to expand the bulge into the desired taper shape and length; and,
(c) heating the end of the optical fiber to form a rounded end portion of the desired diameter, adjoining the taper.

5,304,229
GLASSWARE FORMING MACHINE WITH COOLING SYSTEM
Edward R. Swanfeld, Vineland, N.J., assignor to I.M.T.E.C. Enterprises, Inc., Tulsa, Okla.
Continuation of Ser. No. 612,833, Nov. 13, 1990, abandoned. This application Sep. 10, 1991, Ser. No. 757,133
Int. Cl.[5] C03B *9/38*
U.S. Cl. 65—265 **6 Claims**



1. A glassware forming machine comprising:
a pair of carriers each pivoted on a generally vertical axis for swinging movement toward and away from each other between an open position and a closed position;
a plurality of mold members carried by each carrier, each mold member on each carrier being related to a mold member on the other so that, with the carriers in their said closed position, each mold member on one carrier mates with a mold member on the other to define a mold cavity for molding an item of glass;
each mold member having air passages extending therethrough for passage of air for cooling;
a plenum carried by each carrier for delivering air to the air passages of the mold members carried by the carrier, the plenum having ports at the top for flow of air up into the passages in the mold members and thence through and out of said passages and having an opening at the bottom;
means providing a chamber below said carriers for air to be blown into the plenums and thence up through said air passages, and
means for delivery of air from said chamber means to each plenum allowing swinging of said carriers and comprising, for each carrier:
a first annular bearing member mounted in an opening at the top of the chamber;
a second annular bearing member mounted in said opening at the bottom of the plenum;
each bearing member being mounted in its respective opening with its axis generally vertical so that each is open from bottom to top;
each bearing member having a part-spherical internal surface;
one of said annular bearing members having a part-spherical knuckle mounted for universal movement therein with a substantially air-tight seal between the part-spherical external surface of the knuckle and the part-spherical internal surface of the bearing member;
said knuckle having a diametrical opening therein extending from bottom to top thereof;
a tubular member constituting a conduit for flow of air from the chamber to the plenum having one end thereof slidable in the diametrical opening in the knuckle with a substantially air-tight sliding sealing fit therein and having at the other end thereof an external part-spherical formation mounted for universal movement in the other bearing member with a substantially air-tight seal between said external part-spherical end formation on the conduit and the part-spherical internal surface of said other bearing member;
said conduit extending up from the chamber to the plenum and being open at its lower end for entry of air thereinto from the chamber and open at its upper end for exit of air therefrom into the plenum;
the universal mounting of the knuckle in the one bearing member in conjunction with the sliding of the conduit at its said one end in the knuckle and the universal mounting of the conduit at its said other end permitting the swinging of the carrier for the plenum.

5,304,230
METHOD OF DISPOSING OF ORGANIC AND INORGANIC SUBSTANCES AND A PLANT FOR CARRYING OUT THE METHOD
Johannes Steins, Gallneukirchen; Harald Berger, Linz, and Otto Köller, Leoben, all of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria
Filed Oct. 21, 1992, Ser. No. 964,501
Claims priority, application Austria, Oct. 24, 1991, 2123/91
Int. Cl.[5] C01B *13/11*
U.S. Cl. 75—403 **23 Claims**



1. In a method of disposing of organic and inorganic substances by melting the inorganic substances and pyrolysing the organic substances, said method including collecting, purifying and separating the off-gases formed the improvement comprising:
charging said organic and inorganic substances into an in-

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duction furnace kept under negative pressure and containing a metal alloy selected from the group consisting of molten ferrous alloys, molten nonferrous alloys, solid ferrous alloys and solid non ferrous alloys, and

melting said inorganic substances and gasifying and pyrolyzing said organic substances in said induction furnace close to the temperature of the molten metal alloy while substantially preventing gaseous O_2 from entering.

5,304,231

METHOD OF REFINING OF HIGH PURITY STEEL

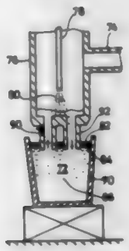
Yoshiei Kato; Tadasu Kirihara; Seiji Taguchi; Tetsuya Fujii, all of Chiba; Shigeru Omiya, and Masahito Suito, both of Kurashiki, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Dec. 18, 1992, Ser. No. 993,388

Claims priority, application Japan, Dec. 24, 1991, 3-340674; Feb. 4, 1992, 4-019065; Feb. 19, 1992, 4-031863; Feb. 26, 1992, 4-039454; Apr. 14, 1992, 4-094175; Apr. 14, 1992, 4-094176; Jun. 12, 1992, 4-153450

Int. Cl.[5] C21C *7/02*

U.S. Cl. 75—528 **12 Claims**



1. A method of refining a high purity steel comprising the steps of:

adding a reducing agent and a flux on a bath surface within a ladle containing molten steel decarburized in a converter, thereby adjusting the composition of slag formed on the bath surface;

setting the ladle in an RH vacuum degassing unit; and

blowing a reducing agent and a powder flux with a carrier gas through a lance onto the bath surface within the RH vacuum degassing unit in order to lower effectively impurities in the molten steel to respective ultra-low regions.

5,304,232

FUMELESS CUPOLAS

David R. Westley, West Midlands, England, assignor to The BOC Group plc

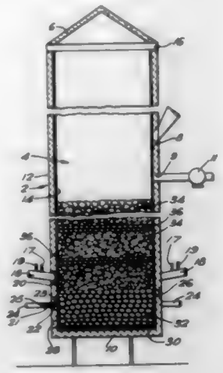
Filed Jan. 13, 1993, Ser. No. 3,899

Claims priority, application United Kingdom, Jan. 31, 1992, 9202073

Int. Cl.[5] C21C *1/08*

U.S. Cl. 75—571 **10 Claims**

1. A method of operating a vertical shaft furnace, comprising establishing a hot coke bed in a bottom region of the furnace; introducing into the furnace a charge comprising metal to be melted and coke material; burning at least one stream of fuel with a stoichiometric excess of oxygen over that required for complete combustion of the fuel and thereby forming a hot gas mixture including oxygen; introducing the hot gas mixture into the shaft furnace and allowing it pass upwardly through the charge in the furnace, oxygen in the hot gas mixture thereby reacting with the coke material such that a part of the coke material is consumed, heat being provided to the metal by the hot gas mixture and by the said reaction between the oxygen and the coke material being sufficient to melt the metal without there being an air blast supplied to the furnace, and the molten metal so formed flowing downwardly under gravity through the hot coke bed; introducing into the said coke bed at least one jet of oxygen or oxygen-enriched air other than the source of combustion oxygen so as to maintain the bed at a



temperature sufficient to superheat the molten metal as the molten metal passes through the hot coke bed; and discharging superheated molten metal form the furnace.

5,304,233

RECOVERY OF PLATINUM GROUP METALS (PGM) FROM ACIDIC SOLUTIONS BY REDUCTION PRECIPITATION WITH SODIUM BOROHYDRIDE

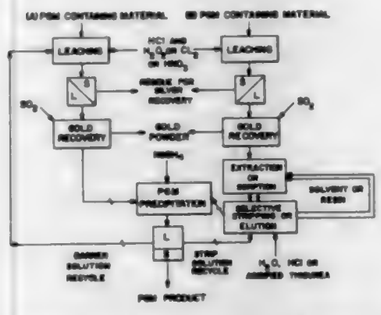
Farouk T. Awadalla, Hull; Ronald E. Molnar, Ottawa, and Gordon M. Ritcey, Nepean, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Canada

Filed Jan. 30, 1991, Ser. No. 647,988

Claims priority, application Canada, May 10, 1990, 2016492

Int. Cl.[5] C22B *3/22*

U.S. Cl. 75—741 **26 Claims**



1. A method for the direct recovery of a platinum group metal (PGM) from a highly acidic aqueous solution resulting from the acid leaching of precious metal bearing material, which comprises adding stabilized alkali metal borohydride to the solution at ambient temperature and pressure to effect reduction precipitation of the PGM from solution, separating the precipitated platinum group metal values from the residual solution by filtration, and optionally recycling the barren aqueous solution to the upstream process.

5,304,234

GAS SEPARATION PROCESS AND UNIT THEREFOR

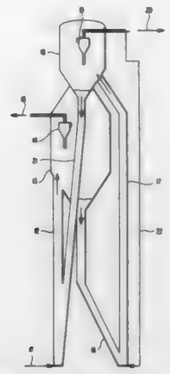
Toru Takatsuka; Ryuichiro Kajiyama; Yoshimi Okada; Seiya Hirohama, all of Kanagawa; Tetsuo Shibagaki, and Toshio Kushida, both of Toyama, all of Japan, assignors to Chiyoda Corporation, Kanagawa, Japan

Filed Aug. 31, 1992, Ser. No. 937,107

Claims priority, application Japan, Aug. 30, 1991, 3-220371

Int. Cl.[5] B01D *53/08*

U.S. Cl. 95—106 **10 Claims**



1. A gas separation process which comprises the steps of:

introducing a gas consisting of two or more components into an adsorption system in which adsorbent particles circulate in a fluidized state, thereby to allow, at atmospheric pressure or an elevated pressure, said adsorbent particles to adsorb a gas component to be separated from the gas;

transferring sad adsorbent particles adsorbing said gas component to a desorption system;

desorbing said gas component from said adsorbent particles in said desorption system which is regulated to have either a lower pressure or a lower pressure and a higher temperature than said adsorption system; and then

introducing part of the desorbed gas component into a line for transferring said adsorbent particles from said adsorption system to said desorption system, in a direction opposite to the direction of the adsorbent particles.

5,304,235

CANISTER

Hideo Watanabe; Masatoshi Udagawa; Naritoshi Muramatsu; Hideki Hoshino; Kazumi Yamazaki; Hideo Moriwaki, all of Wako; Atsushi Suzuki, Hamamatsu; Tsutomu Mori, Tenryu, and Takenori Suzuki, Hamamatu, all of Japan, assignors to Toyo Roki Seizo Kabushikikaisha, Shizuoka and Honda Giken Kogyo Kabusiki Kaisha, Tokyo, both of Japan

Filed Apr. 2, 1992, Ser. No. 862,460

Claims priority, application Japan, Apr. 4, 1991, 3-021609[U]; Apr. 4, 1991, 3-021610[U]; Apr. 4, 1991, 3-021611[U]; Dec. 28, 1991, 3-113447[U]; Dec. 28, 1991, 3-113448[U]

Int. Cl.[5] B01D *53/04*

U.S. Cl. 96—144 **10 Claims**

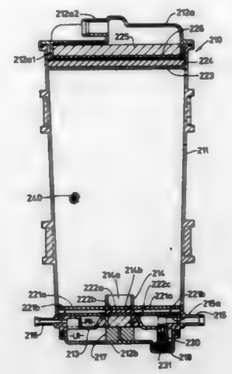
1. A canister comprising:

a) a casing;

b) a fuel reserve well formed by the bottom of the casing, the fuel reserve well having an inlet communicating with a fuel system of an engine and a vapor port;

c) an adsorbent layer provided in the casing for adsorbing fuel vapor, the fuel reserve well communicating with a region of the lower portion of the adsorbent layer through the vapor port, the adsorbent layer communicating with an atmosphere at the upper portion thereof; and

d) a purge chamber provided between the adsorbent layer and the fuel reserve well, the purge chamber having an outlet communicating with an intake system of the engine and a purge port communicating with a region of the



lower portion of the adsorbent layer other than the region of the lower portion thereof with which the fuel reserve well communicates.

5,304,236

COMPOSITION OF MATTER FOR LINING, COATING OR MANUFACTURING UNDERWATER STRUCTURES TO PREVENT LIVING MARINE ORGANISMS ADHERING TO OR BUILDING UP ON EXPOSED SURFACES

Clois D. Fears, 487 Cole Rd., Murrsyville, Pa. 15668

Filed Apr. 22, 1992, Ser. No. 872,017

Int. Cl.[5] C09D *5/14*

U.S. Cl. 106—15.05 **13 Claims**

1. A composition of matter specifically formulated for use in at least one of lining and coating an exposed surface area of an existing underwater structure therewith and manufacturing entirely therefrom an underwater structure which, during a normal use thereof, will be exposed to Zebra Mussels which can both detrimentally adhere to and buildup on these exposed surface areas, said composition of matter being capable of substantially minimizing this detrimental adherence to and buildup of Zebra Mussels on these exposed surface areas of underwater structures, said composition of matter comprising:

(a) a first percent by volume, on a dry basis, of cement, said first percent by volume of said cement being present in said composition of matter in an amount of between about 20.0 percent to about 25.0 percent which is sufficient to provide said composition of matter a requisite amount of both adhesion capability during curing thereof and rigidity after curing of said composition of matter;

(b) a second percent by volume, on a dry basis, of sand, having a particle size distribution in which 100 percent passes a No. 4 mesh, 99 percent passes a No. 8 mesh, 24 percent passes a No. 100 mesh and 1 percent passes a No. 200 mesh screen, said second percent by volume of said sand being present in said composition of matter in an amount of between about 60.0 percent to about 75.0 percent which is sufficient to provide said composition of matter a requisite amount of bonding sites for said cement and at least some strength to said composition of matter after curing; and

(c) a third percent by volume, on a dry basis, of an anti-fouling agent, said third percent by volume of said anti-fouling agent being present in said composition of matter in an amount which is at least sufficient to provide said composition of matter a capability of substantially minimizing both any detrimental adherence to and buildup of said Zebra Mussels on said exposed surface areas of said under water structure.

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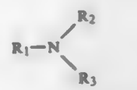
5,304,237

CHROMIUM-FREE WOOD PRESERVATIVES

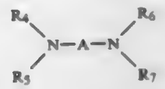
Volker Barth, Ladwigshafen, and Helmut Hartner, Weinheim, both of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,454
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4204540
Int. Cl.[5] C09D *5/14*; A01N *55/02*; B27K *3/52*
U.S. Cl. 106—18.3 10 Claims

1. A water-soluble chromium-free wood preservative comprising at least one copper salt and an alkanolamine and a polymeric quaternary ammonium borate formed by simultaneous reaction of (A) an amine selected from the group consisting of



I



II

wherein R_1 is alkyl or alkenyl of 8 to 22 carbon atoms or when R_2 and R_3 are $—(C_2H_4O)_x—H$ or $—(C_3H_6O)_x—H$, R_1 is alkyl of 1 to 22 carbon atoms, R_2 is selected from the group consisting of hydrogen, alkyl of 1 to 22 carbon atoms, $—(C_2H_4O)_x—H$, $—(C_3H_6O)_x—H$ and $—CH_2—CH_2—NH_2$, R_3 is selected from the group consisting of hydrogen, $—(C_2H_4O)_x—H$, $—(C_3H_6O)_x—H$ and $CH_2—CH_2—CH_2NH_2$, R_4 and R_6 are individually alkyl of 1 to 4 carbon atoms or $—(C_2H_4O)_x—H$ or $(C_3H_6O)_x—H$, R_5 and R_2 are individually $—(C_2H_4O)_x—H$ or $—(_3H_6O)_x—H$, A is selected from the group consisting of $—(CH_2)_n—$, $—(CH_2—CH_2OCH_2)_n—$ and $—(CH_2CH_2NHCH_2CH_2)_n—$, x is an integer of 1 to 55 and n is an integer of 1 to 20,(B) 2 to 20 moles of ethylene oxide or propylene oxide and (C) 0.6 to 1.5 moles of a member of the group consisting of boric acid, boric acid salts and boric acid esters per mole of nitrogen equivalent of (A).

5,304,238

PLASTICIZED SULFUR COMPOSITIONS AND METHOD OF MANUFACTURING SAME

Charles G. Willis, Austin; Barry R. Miller, Dallas, both of Tex., and Stanley J. Marwil, Bartlesville, Okla., assignors to Kwik-Mark Joint Venture, Dallas, Tex.

Filed Feb. 7, 1992, Ser. No. 832,363
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—19 F 8 Claims

1. A sulphur-based composition comprising plasticized sulphur and elemental sulphur in a ratio of about one part plasticized sulphur to three parts elemental sulphur by weight with the aggregate amount of said plasticized sulfur and said elemental sulfur being about 60% by weight of the composition, said composition further including solid filler in an amount of about 40% by weight of the composition, said solid filler including approximately equal amounts by weight of an arylide yellow pigment and titanium dioxide.

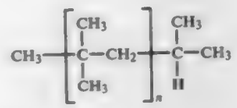
5,304,239

DENTAL INVESTMENT COMPOUNDS IN THE FORM OF A POWDER WITH IMPROVED FLOW PROPERTIES

Peter Schwabe, Leverkusen; Karl-Wilhelm Theis, Leichlingen; Reiner Voight, Leverkusen, and Jens Winkel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 5, 1991, Ser. No. 681,239
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1990, 4011871
Int. Cl.[5] A61K *6/00*
U.S. Cl. 106—35 3 Claims

1. An investment compound suitable for use in the lost wax process, which is free of an anionic surface-active agent and consists essentially of plaster or phosphate, and an iso-paraffin of the formula



in which a denotes 2, 3, 4 or 5.

5,304,240

METHOD OF PRODUCING A TOTALLY WATER-BASED PAINT PRODUCT WITH DISPERSED PARTICLES AND A PAINT PRODUCT WHICH CAN BE PRODUCED BY THE METHOD

Gilli Alberto, Via V. Emanuele 75, 10020 Andezeno (Torino), Italy

Filed Nov. 2, 1992, Ser. No. 970,296
Claims priority, application Italy, Jan. 27, 1992, TO91A000054
Int. Cl.[5] C09D *1/00*
U.S. Cl. 106—217 11 Claims

1. A method of producing a paint product with dispersed particles, comprising the steps of:

forming a first intermediate product including an aqueous colloidal solution of a non-ionic colloid, a pigment, sodium acetate, and an inorganic compound in the form of acicular particles;

adding the first intermediate product to a first aqueous solution of a precipitating agent which contains boron and can precipitate the colloid solution, thus forming a second intermediate product;

adding a second solution to the second intermediate product to stabilise the product and correct its viscosity, thus forming a third intermediate product, and

adding a water-based mixture containing a resin having film-forming properties to the third intermediate product.

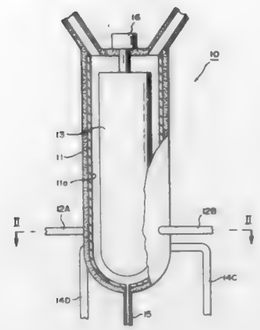
5,304,241

ELECTRONIC COMPONENT SEALING FILLER

Yoji Nagano; Takashi Ueno, and Toshiaki Maeda, all of Tokyo, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 896,843
Claims priority, application Japan, Jun. 28, 1991, 3-185471
Int. Cl.[5] C04B *14/04*
U.S. Cl. 106—482 3 Claims

1. A filler to be dispersed, as an inorganic material, in a thermosetting resin to produce an electronic component sealing agent, wherein the filler comprises crystalline silicon dioxide particles, and not less than 70 wt-% of the crystalline silicon dioxide particles have a major-to-minor-axis ratio in a range of 1.20–1.40 and a circularity in a range of 0.75–0.90.



5,304,242

COLOUR DEVELOPER COMPOSITION

David J. Taylor, Monks Risborough, England, assignor to The Wiggins Teape Group Limited, Basingstoke, England

Filed May 13, 1992, Ser. No. 882,555
Claims priority, application United Kingdom, May 16, 1991, 9110608
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—483 18 Claims

1. A process for the production of a colour developer composition comprising both a hydrated silica/hydrated alumina composite in which hydrated silica predominates and an inorganic pigment extender, said process comprising the steps of:

a) gradually adding a metal silicate solution to a solution of an aluminum salt which is initially at a pH below 4 until the pH of the resulting mixture is approximately 4, thereby to induce some precipitation and to form a sol;

b) gradually adding alkali to said sol to raise the pH to approximately 7, thereby to induce further precipitation and gel the sol or further gel the sol, said gelled sol being a hydrated silica/hydrated alumina composite;

c) separating the resulting product from the aqueous medium and washing to remove dissolved salts; and

d) drying the washed product and reducing it in particle size;

wherein said process the inorganic pigment extender is present during precipitation of the hydrated silica/hydrated alumina composite from the metal silicate and aluminum salt precursor solutions and forms part of the product which is subsequently separated, washed, dried and reduced in particle size.

5,304,243

METHOD OF PRODUCING ORGANIC GROUP MODIFIED SILICA PARTICLES

Muneaki Yamaguchi, Ikeda; Yuko Tanaka, Kawanishi, and Hiromasa Ogawa, Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Division of Ser. No. 712,427, Jun. 10, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 984,735
Claims priority, application Japan, Sep. 4, 1990, 2-234867
Int. Cl.[5] C03B *8/02*, *3/00*; C01B *3/18*
U.S. Cl. 106—490 3 Claims

1. A method of producing silica particles modified by an amino- or epoxy-substituted alkyl group, exhibiting high dispersibility and having a uniform particle size, comprising the steps of:

preparing an alcohol solution compatible with water and containing as reactants (1) ethylsilicate and (2) 0.5 to 3.0 parts by weight, based on 100 parts by weight of said ethylsilicate, of an alkoxy silane having attached to silicon of the alkyoxysilane an amino- or epoxy-substituted alkyl group of a carbon number 1 to 6, with 10 to 30% by weight of combined concentration of said ethylsilicate and said alkoxy silane in said alcohol solution;

preparing an alcohol ammonia water solution consisting essentially of (a) water in an amount required to completely hydrolyze the alkoxy groups of said alkoxy silane, (b) alcohol compatible with water, and (c) ammonia with alcohol concentration in the range of 50 to 70% by weight and ammonia concentration in the range of 2.5 to 6.0% by weight;

adding said alcohol solution dropwise into said alcohol ammonia water solution, thereby hydrolyzing the alkoxy groups of said reactants to precipitate said modified silica particles; and

filtering out, washing and drying the precipitated modified silica particles.

5,304,244

ZWITTERIONIC PIGMENTS

Jürgen Goldmann, Münchenstein, and Bansi L. Kaul, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 825,363, Jan. 24, 1992, abandoned. This application Feb. 17, 1993, Ser. No. 18,616
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102333
Int. Cl.[5] C08K *5/23*
U.S. Cl. 106—493 12 Claims

1. A pigment of the formula

$$(^{\ominus}O_3S—)_m—F—R_n$$

wherein

F is the residue of a dye,

each R is a group containing an aliphatic-, cycloaliphatic-or aliphatic-heterocyclic-bound protonated sterically hindered amine group and

m and n are both 1 or both 2,

or a pigment containing at least two recurring units of said formula, wherein the protonated group of one unit is associated with the $—SO_3^{\ominus}$ group of another unit.

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5,304,245
COATING COMPOSITION

Akimitsu Mochizuki, and Michichika Hikosaka, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 45,948
Claims priority, application Japan, Apr. 17, 1992, 4-124302
Int. Cl.[5] C08K 5/42, 5/07
U.S. Cl. 106—493 8 Claims

1. A coating composition comprising a pigment composition containing 100 parts by weight of a pigment and 0.5 to 30 parts by weight of a sulfonic acid group-containing anthraquinone compound or its metal salt, and an acid-curing paint varnish.

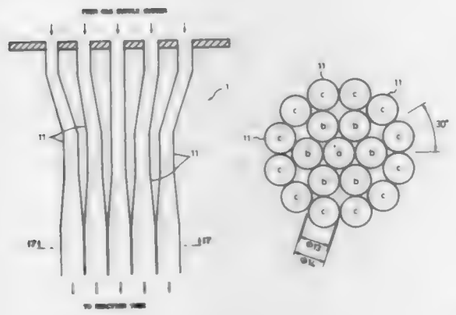
5,304,246

Patent Not Issued For This Number

5,304,247
APPARATUS FOR DEPOSITING COMPOUND SEMICONDUCTOR CRYSTAL

Makoto Kondo, and Hiroshi Sekiguchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/01262, § 371 Date May 21, 1992, § 102(e) Date May 21, 1992, PCT Pub. No. WO92/05577, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 858,981
Claims priority, application Japan, Sep. 21, 1990, 2-252335
Int. Cl.[5] C23C 16/00
U.S. Cl. 118—715 9 Claims



1. An apparatus for depositing a crystal of a compound semiconductor on a substrate positioned in a substantially horizontal plane on a susceptor within a reaction enclosure of a reaction chamber of a reaction system, by utilizing a depositioning as containing at least two material cases of the constituent elements of the compound semiconductor crystal to be deposited, the reaction system including means for heating the substrate when positioned on the susceptor within the reaction enclosure and a gas exhaust system for exhausting spent deposition gas, containing a bi-product of a pyrolysis reaction of the material gases, from within the reaction enclosure to the outside of the reaction chamber, the apparatus comprising:

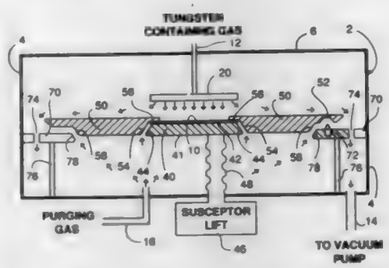
a gas supply system which supplies the deposition gas in a plurality of flow paths defining a corresponding plurality of gas streams o the deposition gas and which further comprises a plurality of control means, respectively associated with the plurality of flow paths, for individually adjusting the respective flow rates of the plurality of deposition gas steams in the respectively associated plurality of flow paths; and

a gas injector comprising a plurality of gas jet ports respectively associated with and connected to the plurality of deposition gas flow paths for producing a corresponding plurality of gas jets, the gas jet ports being arranged in a two-dimensional array with the gas jet ports vertically oriented and each contiguous to adjacent jet ports of the array and disposed within the reaction enclosure so as to produce a corresponding two-dimensional pattern of gas jets which are directed vertically onto and substantially uniformly cover the main surface of the substrate on which the crystal is to be deposited.

5,304,248
PASSIVE SHIELD FOR CVD WAFER PROCESSING WHICH PROVIDES FRONTSIDE EDGE EXCLUSION AND PREVENTS BACKSIDE DEPOSITIONS

David Cheng, Sunnyvale, and Mei Cheng, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 622,664, Dec. 5, 1990, abandoned. This application Jan. 22, 1992, Ser. No. 823,942
Claims priority, application Japan, Dec. 4, 1991, 3-320551
Int. Cl.[5] H01L 21/00
U.S. Cl. 118—728 40 Claims



1. Vacuum deposition apparatus for vacuum processing of a workpiece which comprises:

a) a vacuum deposition chamber;

b) a workpiece support means within said chamber about the same size or slightly smaller than the workpiece to be processed;

c) a port for process gas in a wall of said chamber;

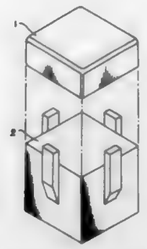
d) moving means for moving said support means into and out of a deposition position in said chamber; and

e) shield means for said workpiece moveable so as to engage the top and side edges of said workpiece and extending beyond the periphery of said workpiece during vacuum processing thereof to prevent deposition of materials on said top and side edges.

5,304,249
SUSCEPTER DEVICE FOR THE PREPARATION OF A DIAMOND FILM-COATED BODY

Munehiro Chosa, Sodegaura, Japan, assignor to Idemitsu Petrochemical Company Limited, Tokyo, Japan

Division of Ser. No. 705,690, May 24, 1991, abandoned. This application Jun. 15, 1992, Ser. No. 899,023
Claims priority, application Japan, May 25, 1990, 2-135686; Nov. 22, 1990, 2-320147
Int. Cl.[5] C23C 16/00
U.S. Cl. 118—728 27 Claims



1. A suscepter for placing a substrate with a diamond film coated on a surface and corner portions thereof, comprising:

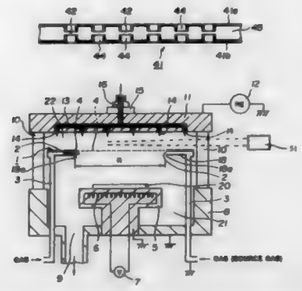
a top surface formed substantially equal to or smaller than a bottom surface of a body having at least one corner portion, so as to allow the body to be coated with the diamond film at its at least one corner portion; and

engagement means for engaging with non-corner portions of the body to be coated with the diamond film.

5,304,250
PLASMA SYSTEM COMPRISING HOLLOW MESH PLATE ELECTRODE

Toshiyuki Sameshima; Masaki Hara; Naoki Sano, and Setsuo Usui, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jul. 7, 1992, Ser. No. 909,660
Claims priority, application Japan, Jul. 11, 1991, 3-196097
Int. Cl.[5] C23C 16/50
U.S. Cl. 118—723 ER 13 Claims

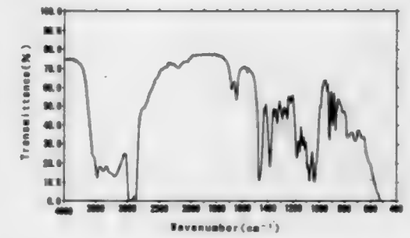


1. A plasma system characterized in that provision is made, between a plasma generation chamber and a substrate treatment chamber, of a mesh plate for plasma separation having a plurality of holes and source gas supply ports made near the holes of the mesh plate and in that a high frequency electrical field is applied between an upper electrode in the plasma generation chamber and the mesh plate, which is arranged in parallel facing said upper electrode, so as to disassociate a plasma forming gas by electrodischarge so plasma is generated, the plasma and a source gas supplied from said source gas supply ports being made to react near each of the holes, whereby the reaction product is made to deposit on a substrate placed in the substrate treatment chamber, further characterized in that the mesh plate is a hollow unit having a front surface on a side closest to said upper electrode and a rear surface on a side closest to said substrate treatment chamber, said holes through said mesh plate being formed as through-holes having cylindrical side walls extending between said front and rear surfaces, and said source gas supply ports comprising clearance portions formed between the rear surface and the cylindrical side walls of the holes of the mesh plate.

5,304,251
CRYSTALLINE LACTULOSE TRIHYDRATE AND A METHOD FOR ITS MANUFACTURE

Mamoru Tomita; Seiichi Shimamura; Yoshitaka Tamura; Teruhiko Mizota; Satoshi Nakano, and Itsuko Suzawa, all of Kanagawa, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Aug. 10, 1992, Ser. No. 926,308
Claims priority, application Japan, Aug. 9, 1991, 3-200928
Int. Cl.[5] C13F 3/00; C07H 3/00; C08B 37/00
U.S. Cl. 127—42 3 Claims



3. A method for the manufacture of crystalline lactulose trihydrate, comprising the steps of;

concentrating a lactulose syrup, which contains lactulose to the content of 70–90% by weight of the total solid matters, to ensure the total solid content up to 65–75% by weight and the ratio of lactose to water by weight less than 10%,

cooling the concentrate to a temperature at 2° to 20° C.,

seeding the concentrate with lactulose crystals,

forming a crystalline lactulose trihydrate by stirring, and

separating the crystalline lactulose trihydrate.

5,304,252
METHOD OF REMOVING A PERMANENT PHOTOIMAGABLE FILM FROM A PRINTED CIRCUIT BOARD

Richard C. Condra, Highland Village; Paul C. Healey, Dallas; Michael R. Cochren, Garland, and Eddie L. Wright, Ennis, all of Tex., assignors to Oliver Sales Company, Dallas, Tex.

Continuation of Ser. No. 334,374, Apr. 6, 1989, abandoned, and a continuation of Ser. No. 520,758, May 9, 1990, abandoned, and a continuation of Ser. No. 724,842, Jul. 2, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 936,789
Int. Cl.[5] B08B 3/08
U.S. Cl. 134—2 12 Claims

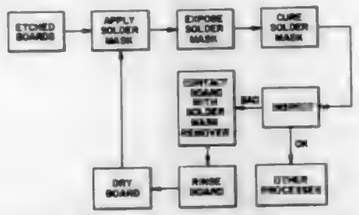
1. A method for removing a epoxy acrylic copolymer photoimagable solder mask of a negative resist simultaneously from the insulating laminate and conductive metal braces of a printed circuit board comprising the steps of:

(a) contacting the permanent photoimagable solder mask on the insulating laminate and conductive metal traces of the printed circuit board with solder mask removing solution containing water and an activator compound chosen from a group consisting of a hydroxide or alkali metal silicate and of a concentration greater than twelve pars per hundred by weight;

(b) heating the solder mask removing solution to a temperature between 140 and 210 degrees Fahrenheit;

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(c) allowing the solder mask removing solution to continue contact with the permanent photoimagable solder mask for a period of time of one hour to soften the permanent photoimagable solder mask; and



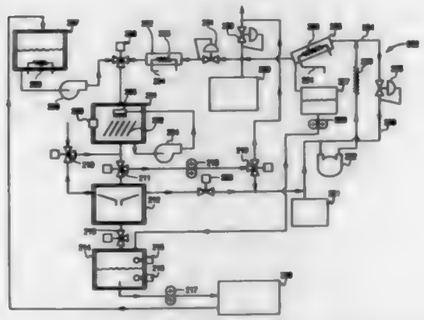
(d) removing the solder mask removing solution and softened permanent photoimagable solder mask from the laminate and conductive metal traces on the circuit board.

5,304,253

METHOD FOR CLEANING WITH A VOLATILE SOLVENT

David C. H. Grant, Selbyville, Del., assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 581,020, Sep. 12, 1990, Pat. No. 5,106,404. This application Feb. 25, 1992, Ser. No. 842,002
Int. Cl.[5] B08B *3/00, 3/02, 5/00, 5/04*
U.S. Cl. 134—26 32 Claims



1. A method for cleaning an article with a solvent having a boiling point such that the solvent is a gas at room temperature and one atmosphere pressure, which comprises:

(A) disposing the article in a chamber and sealing the chamber;

(B) introducing said the solvent into the chamber so that the solvent contacts the article;

(C) pressurizing the sealed chamber so that the solvent is in a liquid state and removes contaminants from the article;

(D) purging the chamber to remove the solvent; and

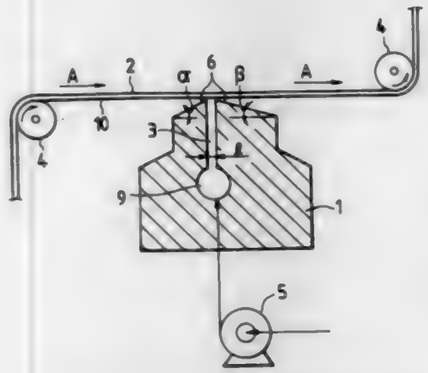
(E) removing the treated article from the chamber.

5,304,254

METHOD OF REMOVING DUST FROM A WEB INVOLVING NON-CONTACT SCRAPING AND BLOWING

Naoyoshi Chino; Yasuhito Hiraki; Hiromu Ueha, and Tsunehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 358,767, May 30, 1989, abandoned. This application Jul. 26, 1991, Ser. No. 735,667
Claims priority, application Japan, May 30, 1988, 63-130209
Int. Cl.[5] B08B *7/04, 1/02*
U.S. Cl. 134—37 5 Claims



1. A method for removing dirt from a web, comprising the steps of:

providing a blow-off nozzle having a slit extending over the width of a web; setting an edge of said nozzle at an end thereof close to one surface of said web, said web being maintained separated from said edge by a distance of about several microns; and blowing air through said nozzle while said web is being moved past said nozzle at a predetermined speed so that deposits which are relatively large in size with respect to said distance are removed from a surface of said web with said edge while said web is maintained in a floating, non-contacting state separated from said nozzle;

wherein, in said step of blowing air through said nozzle, a pressure of a stream of air produced by said nozzle is in a range of 0.01 to 5 kg/cm^2; and

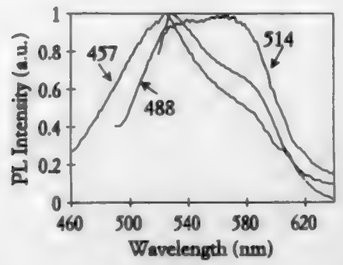
further wherein an angle α, which is formed between a surface forming a part of said edge on an upstream side in a direction of conveyance of said web and a plane perpendicular to said slit, is 5°; and an angle β, which is formed between a surface forming an opposite part of said edge on a downstream side thereof and said plane, is 4.5°.

5,304,255

PHOTOVOLTAIC CELL WITH PHOTOLUMINESCENT PLA5MA POLYMERIZED FILM

Guifang Li; Jeffrey A. Tobin, and Denice D. Denton, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 5, 1993, Ser. No. 955
Int. Cl.[5] H01L *31/055*
U.S. Cl. 136—257 3 Claims



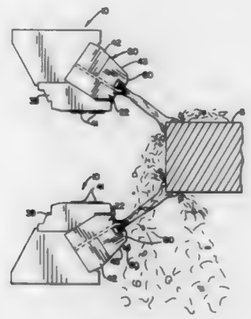
1. A photovoltaic cell having interposed in its light path a wavelength-transformer comprising a photoluminescent plasma polymerized organic film which transforms blue, violet, and ultraviolet light rays into green and yellow light rays.

5,304,256

SCARFING METHOD

Michael S. Showalter; John G. Dawson, Jr., both of Florence, and Frank J. Gusky, Quinby, all of S.C., assignors to ESAB Welding Products, Inc., Florence, S.C.

Continuation-in-part of Ser. No. 805,111, Dec. 9, 1991, Pat. No. 5,234,658. This application Sep. 21, 1992, Ser. No. 948,027
Int. Cl.[5] B23K *7/06*
U.S. Cl. 148—202 18 Claims



1. A method for thermochemically scarfing a metal workpiece comprising the steps of

preheating an area on the surface of a stationary workpiece, and including directing a preheating gas stream toward said area, said preheating gas stream comprising a high speed central stream of oxidizing gas and a concentric stream of fuel gas coaxially about the central stream so as to be essentially parallel to the flow of the central stream and thereby permit the momentum of the central stream to be substantially maintained, and thereafter

directing a stream of scarfing oxidizing gas at an acute angle toward the preheated area of said workpiece, and while causing relative movement between said workpiece and said stream of scarfing oxidizing gas so as to produce a scarfing cut.

5,304,257

TRIVALENT CHROMIUM CONVERSION COATINGS FOR ALUMINUM

Fred Pearlstein, Philadelphia, and Vinod S. Agarawala, Warminster, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 27, 1993, Ser. No. 126,869
Int. Cl.[5] C23C *22/56*
U.S. Cl. 148—265 8 Claims

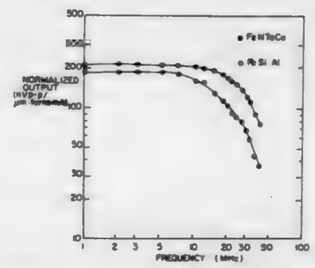
1. A process for preparing a corrosion-resistant trivalent chromium coating on aluminum and aluminum-alloy substrates which comprises treating said substrates with an acidic aqueous solution free of hexavalent chromium and contains from about 0.2 to 3.0 grams per liter of a water soluble trivalent chromium compound, from about 0.05 to 1.5 grams per liter of a water soluble fluoride compound and a sufficient amount of an alkaline reagent to maintain the aqueous solution at a pH ranging from about 4.0 to 5.5 to form the trivalent-chromium coating on said aluminum substrates.

5,304,258

MAGNETIC ALLOY CONSISTING OF A SPECIFIED FETAN AG OR FETANCU COMPOSITION

Nobuyuki Ishiwata, and Chizuko Wakabayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 688,407
Claims priority, application Japan, Apr. 20, 1990, 2-104952
Int. Cl.[5] H01F *1/00*
U.S. Cl. 148—306 2 Claims



1. A magnetic alloy material having the composition of $(Fe_xM_yN_z)_aL_b$, where M is at least one metal selected from a group of Zr, Nb, Hf, Ta, Mo, and Ti, L is Cu and/or Ag, x, y, z, a, and b represent atomic percentages, $70.5 \leqq x \leqq 84$, $7 \leqq y \leqq 14$, $9 \leqq z \leqq 15.5$, $x+y+z=100$, $95 \leqq a \leqq 99.5$, $0.5 \leqq b \leqq 5$, and $a+b=100$,

wherein said magnetic alloy material is $(Fe_{79}Ta_8N_{13})_{99.5}Ag_{0.5}$.

5,304,259

CHROMIUM CONTAINING HIGH STRENGTH STEEL SHEET EXCELLENT IN CORROSION RESISTANCE AND WORKABILITY

Katsuhisa Miyakusu, Yamaguchi; Masayuki Kinugasa, Hiroshima; Yoshihiro Uematsu, Yamaguchi; Takashi Igawa, Yamaguchi, and Hiroshi Fujimoto, Yamaguchi, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 907,512, Jul. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 811,376, Dec. 20, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,520
Claims priority, application Japan, Dec. 28, 1990, 2-415495
Int. Cl.[5] C22C *38/20, 38/24*
U.S. Cl. 148—325 3 Claims

1. A high strength chromium containing steel sheet having a tensile strength of at least 40 kgf/mm^2, which comprises, by weight,

C: up to 0.030%,

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Si: up to 2.30%,
Mn: up to 3.0%,
P: more than 0.005% and not more than 0.150%,
S: up to 0.010%,
Ni: up to 2.0%,
Cr: not less than 5.0% and less than 10.0%,
N: up to 0.030%,
V not less than 0.01% and not more than 0.10%,
Cu: more than 0% and not more than 2.0%, the amounts of Si, Mn, P, Ni and Cu being adjusted so that the relation:

$$Si+Mn+10P+Ni+Cu>1.0\%$$

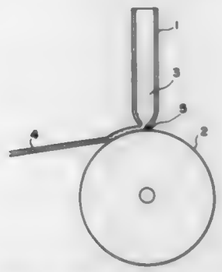
may be satisfied, the balance being iron and unavoidable impurities.

5,304,260

HIGH STRENGTH MAGNESIUM-BASED ALLOYS

Kazuo Aikawa, Namerikawa, and Katsuyuki Taketani, Kawasaki, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 544,844, Jun. 27, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 931,655
Claims priority, application Japan, Jul. 13, 1989, 1-179139
Int. Cl.[5] C22C *45/00, 23/02*
U.S. Cl. 148—403 **11 Claims**



9. A high strength magnesium-containing alloy consisting essentially of a fine crystalline structure of a supersaturated solid solution comprising a magnesium matrix; or a mixed phase of a magnesium matrix phase and a stable or metastable intermetallic phase, said fine crystalline structure having been formed by cooling at a rate of from 10^3 to 10^5 degrees K/sec and said magnesium-containing alloy consisting of a composition represented by general formula (IV):

$$Mg_aX_cM_dL_{n_e} \qquad (IV)$$

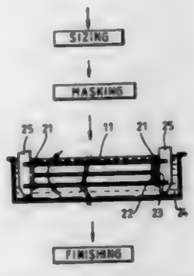
wherein:
(1) X is at least one element selected from the group consisting of Cu, Sn and Zn;
M is at least one element selected from the group consisting of Si and Ca;
Ln is at least one element selected from the group consisting of Y, La, Ce, Nd, Sm and Mm (misch metal), and
a, c, d and e are, in atomic percent,
$40 \leqq a \leqq 91$, $5 \leqq c \leqq 35$, $1 \leqq d \leqq 25$ and $3 \leqq e \leqq 25$, respectively;
(2) X is at least one element selected from the group consisting of Cu, Ni and Sn;
M is Al;
Ln is at least one element selected from the group consisting of Y, La, Ce, Nd, Sm and Mm (misch metal); and
a, c, d and e are, in atomic percent,
$40 \leqq a \leqq 91$, $5 \leqq c \leqq 35$, $1 \leqq d \leqq 25$ and $3 \leqq e \leqq 25$, respectively;
(3) X is at least one element selected from the group consisting of Cu, Ni, Sn and Zn;
M is Al and at least one element selected from the group consisting of Si and Ca;
Ln is at least one element selected from the group consisting of Y, La, Ce, Nd, Sm and Mm (misch metal), and a, c, d and e are, in atomic percent,
$40 \leqq a \leqq 91$, $5 \leqq c \leqq 35$, $1 \leqq d \leqq 25$ and $3 \leqq e \leqq 25$, respectively;
(4) X is Zn and at least one element selected from the group consisting of Cu, Ni and Sn;
M is at least one element selected from the group consisting of Al, Si and Ca;
Ln is at least one element selected from the group consisting of Y, La, Ce, Nd, Sm and Mm (misch metal), and a, c, d and e are, in atomic percent,
$40 \leqq a \leqq 91$, $5 \leqq c \leqq 35$, $1 \leqq d \leqq 25$ and $3 \leqq e \leqq 25$, respectively.

5,304,261

METHOD OF FABRICATING A CHANNEL BOX OR OTHER PART FOR A NUCLEAR REACTOR

Nobukazu Yamamoto; Kouichi Matsumoto; Junjiro Nakajima, all of Hitachi; Hideo Maki, Katsuta; Hiromasa Hirakawa, Hitachi; Masahisa Inagaki, Hitachi; Iwao Takase, Toukai; Nobuhiro Okazaki, Hitachi; Hideaki Ishizaki, Mito, and Toraki Sakuma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,468
Claims priority, application Japan, Jul. 15, 1991, 3-173595
Int. Cl.[5] C23F *1/02*
U.S. Cl. 148—519 **36 Claims**



26. A method of fabricating a channel box for use in a nuclear reactor, comprising the steps of:
(i) bending two flat plates of Zr-alloy sheet material into U-section shaped pieces,
(ii) welding said U-section shaped pieces together at edges thereof to form a hollow tubular body having sides and corners,
(iii) performing a solution heat treatment of said hollow tubular body including quenching it from a temperature at which β-phase is present
(iv) thinning selected portions of said sides of said hollow tubular body after step (ii) by chemical etching.

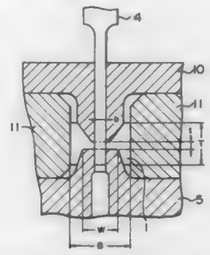
5,304,262

TWO-PIECE OIL RING FOR USE IN INTERNAL COMBUSTION ENGINE, STEEL WIRE OF MODIFIED CROSS-SECTION FOR USE AS MATERIAL OF THE OIL RING AND METHOD OF PRODUCING THE STEEL WIRE

Takao Kansoke, Shimane; Ken Nakamura, and Iwao Kashiwagi, both of Yasugi, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 822,209
Claims priority, application Japan, Jan. 19, 1991, 3-019302; May 8, 1991, 3-102597
Int. Cl.[5] C21D *8/00*; C22C *38/18*; B23P *15/06*; F16J *9/20*
U.S. Cl. 148—589 **13 Claims**

4. A two-piece oil ring for use in an internal combustion engine, made from a base material consisting essentially of more than 0.8 wt % but less than 0.95 wt % of C, not more than 1.0 wt % of Si, not more than 1.0 wt % of Mn, from 15.0 wt % to 20.0 wt % of Cr, 0.5 to 3.0 wt % of one or both of Mo and W in terms of (Mo+W/2), 0.05 to 2.0 wt % of one or both of V and Nb in terms of (V+Nb/2) and the balance substantially Fe and incidental impurities, said base material having been subjected to hardening and tempering so as to exhibit a hardness ranging from HV300 to HV450, said oil ring having a substantially H- or X-shaped cross-section defined by radially inner and outer circumferential grooves formed therein, a web portion interconnecting left and right halves of the H- or X-shaped cross-section having a thickness which is not greater than 0.3 in terms of a ratio to a total thickness of said left and right halves, said oil ring further having a plurality of oil passage holes formed in said web portion at a spacing from one another in a circumferential direction and a nitrided layer formed on at least a sliding surface thereof which makes a



sliding contact with an inner surface of a cylinder of said internal combustion engine, and wherein at least one of said grooves has a substantially flat bottom, and wherein the following conditions are met:

$$W-b \geqq 1.4\,t,$$

$$C \geqq t,$$

wherein:
W=a width of said substantially flattened bottom of the circumferential groove,
b=a breadth of said oil passage hole,
t=a height of a breadthwise wall surface of said oil passage hole, and
c=the spacing between adjacent oil passage holes.

5,304,263

TITANIUM ALLOY PART

Bernard Champin, Saint Jorioz, and Bernard Prandi, Seythenex, both of France, assignors to Compagnie Europeenne Du Zirconium Cezus, Courbevoie, France

Division of Ser. No. 882,900, May 14, 1992, Pat. No. 5,264,055. This application Jun. 30, 1993, Ser. No. 83,508
Int. Cl.[5] C22F *1/00*
U.S. Cl. 148—671 **2 Claims**



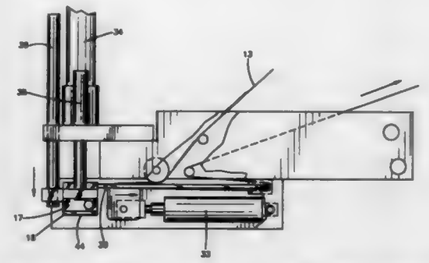
1. A part formed of titanium alloy and comprising:
A) structure comprising ex-beta acicular grains and with equi-axial alpha phases gathered in a plurality of rows at boundaries of the grains;
B) a composition, in % by weight, comprising Mo=2 to 5, Al=3.5 to 6.5, Sn=1.5 to 2.5, Ar=1.5 to 4.8, Fe≦1.5, Mo+V+Cr=4 to 12, Ti and impurities=the balance; and
C) mechanical properties such that Rm longitudinally≧1300 MPa, $R_{p0.2}$ longitudinally≧1230 MPa, A % longitudinally≧8, K_{1c} at 20° C.≧50 MPa.√, and Creep at 400° C. below 600 MPa: 0.2% at more than 60 hrs.

5,304,264

ITEM APPLICATOR AND METHOD

Rick S. Wehrmann, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Nov. 5, 1991, Ser. No. 787,836
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—64 **35 Claims**



18. In a machine having a mechanism for delivering workpieces to a workstation sequentially and one at a time, for applying pressure-sensitive items such as labels or hangers to such workpieces sequentially one at a time, an improved item applicator assembly comprising:
a) housing and frame structure delineating supply and take-up stations, the supply and take-up stations respectively having supply and take-up spool supports for respectively supporting supply and take-up spools;
b) the housing and frame structure including components delineating a path of strip travel from a supply spool on the supply spool support to a take-up spool on the take-up spool support;
c) a reciprocatable strip support having an end portion which is projectable into and retractable from a dispensing position in a labeling station, the strip support including a beak forming a part of the end portion, and opposed supply and exit surfaces extending from the beak in a direction away from the labeling station, the exit surface extending from the beak to and around an opposed end portion of the strip support, the supply and exit surfaces and the beak delineating a section of such strip path of travel;
d) a pick-up head including a perforate item-engaging surface and a communicating vacuum passage;
e) a vacuum source coupled to the vacuum passage;
f) a prime mover connected to the head to shift the head between retracted and label-applying positions, the head also having a pick-up position intermediate the retracted and label-applying positions;
g) vacuum control means operably connected to the vacuum supply and vacuum passage for applying vacuum to the perforate portion at least from when the head is in its item pick-up position until the head has moved to its label applicating position; and
h) strip feed control means operably connected to the supply and take-up stations to cause the feed of strip in coordination with the reciprocation of the strip support to its label-delivery position and to retard the feed of strip as the label supply structure is retracted from its delivery position.

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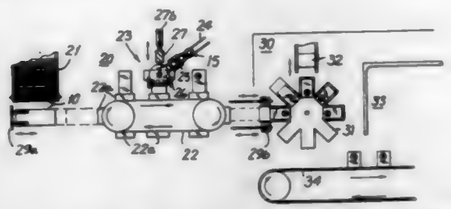
IN-LINE FITMENT SEALING APPARATUS AND METHOD

Donald E. Keeler, Sussex, N.J., assignor to International Paper Company, Purchase, N.Y.

Division of Ser. No. 572,068, Aug. 24, 1990, Pat. No. 5,110,041. This application Feb. 26, 1992, Ser. No. 841,960

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—64 **18 Claims**



1. A method for sealing of spout filaments to carton blanks comprising the steps of:

supplying a series of carton blanks, each having a wall defining at least an open top end thereof, a spout hole cut through the carton wall at a selected spout position in the vicinity of the open top end, and an extrusion layer applied on at least an external side of the carton wall around the spout hole;

intermittently advancing each one of the series of carton blanks in turn to a sealing station;

supplying a series of fitments to an escapement position;

intermittently releasing each fitment in turn from said escapement position whereby each fitment displaces under the influence of gravity;

guiding each displacing fitment released from said escapement position to a position in registration with the spout hole on the external side of the wall of a carton blank advanced to said sealing station and retaining said fitment at said registration position, said guiding and retaining step being performed in part by a surface of a first member in a first position;

moving an anvil into the open top end adjacent the spout hole position on an internal side of the wall of a carton at said sealing station;

intermittently moving and retracting the anvil into and from the open top end of a carton blank advanced to said sealing station;

moving a sealing head to press a fitment retained at said registration position in contact with the extrusion layer on the external side of the wall of a carton blank at said sealing station, and also indirectly against said anvil on the internal side thereof, and sealing the fitment to the carton blank in registration with the spout hole;

intermittently moving and retracting said sealing head to and from the carton blank in timed relation with said anvil;

moving said first member to a second position for releasing the fitment at said registration position in conjunction with movement of said sealing head to press and seal the fitment to a carton blank at said sealing station; and

advancing each carton blank fitted with a respective fitment from said sealing station to an output.

5,304,266

CONTINUOUS LOOP RIBBON WELDING SYSTEM

Paul E. Becking, 13795 Vista Dorada, Salinas, Calif. 93908

Division of Ser. No. 594,659, Oct. 9, 1990, Pat. No. 5,207,854. This application Nov. 4, 1992, Ser. No. 971,361

Int. Cl.[5] B65H *69/02*; **B32B** *31/00*

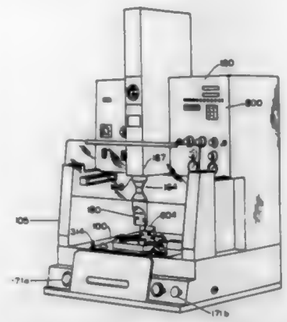
U.S. Cl. 156—64 **2 Claims**

1. A method for adjoining two segments of a ribbon made of a fusible material, comprising:

securing the two ribbon segments in overlapping position;

selecting the optimum fusing tension for at least one of the secured ribbon segments;

adjusting the tension on said one ribbon segment to apply the optimum tension; and



fusing the two ribbon segments together within the overlapped portions while the optimum tension is being applied.

5,304,267

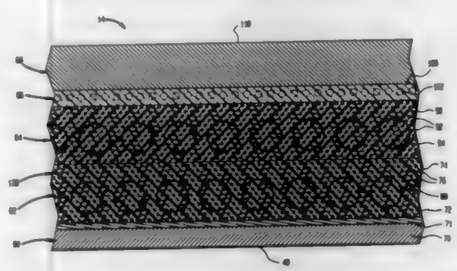
METHOD OF MAKING A GAPLESS TUBULAR PRINTING BLANKET

James B. Vrotacoe, Dover; Glenn A. Guaraldi, Kingston, both of N.H.; James R. Carlson, Racine, and Gregory T. Squires, Union Grove, both of Wis., assignors to Heidelberg Harris GmbH, Kurfursten-Anlage, Fed. Rep. of Germany

Division of Ser. No. 699,668, May 14, 1991. This application Jan. 27, 1993, Ser. No. 10,068

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—86 **11 Claims**



1. A method of manufacturing a tubular printing blanket for use on a blanket cylinder in an offset printing press, said method comprising steps of:

forming a first layer of said tubular printing blanket by embedding compressible microspheres in a first batch of elastomeric material to form a compressible composite material, and applying said compressible composite material in a seamless tubular form over a cylindrical sleeve;

forming a second layer of said tubular printing blanket by applying a second batch of elastomeric material in a seamless tubular form over said first layer, and embedding a circumferentially inextensible material in said second batch of elastomeric material; and

forming a printing layer of said tubular printing blanket by applying a third batch of elastomeric material in a seamless tubular form over said second layer, and forming a continuous cylindrical printing surface on said printing layer.

5,304,268

METHOD FOR PRODUCING ADHESIVE CARPET PADS

Merle R. Hoopengardner, Lafayette, Calif., assignor to Step Loc Corporation, Lafayette, Calif.

Division of Ser. No. 243,606, Sep. 13, 1988, Pat. No. 5,160,770, which is a continuation-in-part of Ser. No. 882,173, Jul. 7, 1986, Pat. No. 4,797,170, and a continuation-in-part of Ser. No. 147,214, Jan. 22, 1988, abandoned. This application May 26, 1992, Ser. No. 887,799

Int. Cl.[5] B32B *33/00*

U.S. Cl. 156—90 **7 Claims**



1. A method for forming a carpet cushion having preapplied pressure sensitive adhesive on at least one surface, comprising,

forming a carpet pad in sheet-like form, the carpet pad being of such thickness, density and compressibility to serve as a carpet cushion,

applying onto the sheet of carpet pad a hot melt pressure sensitive adhesive on at least one surface of the carpet pad, said one surface being porous, unsealed, and of a strong liquid wicking characteristic such that a liquid pressure sensitive adhesive would wick into the surface to an objectionable extent,

including the step of applying the hot melt pressure sensitive adhesive at an elevated temperature, above the flow point temperature of the hot melt pressure sensitive adhesive, and

including controlling the temperature of the hot melt pressure sensitive adhesive during applying of the adhesive such that the adhesive cools somewhat on contact with the carpet pad and congeals onto and strongly adheres to the extremity of the porous surface of the carpet pad, to an extent that the hot melt pressure sensitive adhesive substantially does not wick into the porous carpet pad surface.

5,304,269

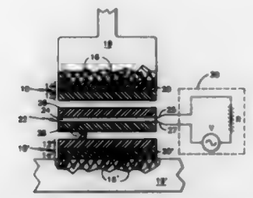
BONDING OF THERMOSET COMPOSITE STRUCTURES

Gary J. Jacaruso, Milford; Geoffrey C. Davis, Madison, and Allen J. McIntire, Ansonia, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 628,245, Dec. 17, 1990. This application Sep. 16, 1992, Ser. No. 946,253

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—94 **9 Claims**



1. A method for bonding a thermoplastic adhesive strip to an uncured thermoset composite member to provide a cured thermoset composite member having a thermoplastic bonding surface, comprising the steps of:

(A) preparing said thermoplastic adhesive strip, said preparation step including the substeps of

(A1) partially embedding a layer of dry fiber reinforcement into a layer of thermoplastic material so that a portion of said dry fiber reinforcement layer is exposed, and

(A2) applying thermoset resin to coat said exposed portion of said partially embedded dry fiber reinforcement layer to form said thermoplastic adhesive strip;

(B) laying up said thermoplastic adhesive strip on the uncured thermoset composite member so that said resin-coated exposed portion of said thermoplastic adhesive strip abuts the uncured thermoset composite member; and

(C) curing said layed-up thermoplastic adhesive strip to the uncured thermoset composite member to provide the cured thermoset composite component having said thermoplastic adhesive strip anchored thereto, said thermoplastic material layer of said anchored thermoplastic adhesive strip defining said thermoplastic bonding surface of the cured thermoset composite member.

5. A method for reversibly bonding thermoset composite structures together, comprising the steps of:

(A) providing a bonding surface on each of first and second uncured thermoset composite structures to be reversibly bonded together, said bonding surface providing step including the substeps of

(A1) partially embedding a layer of dry fiber reinforcement into a layer of thermoplastic material so that a portion of said dry fiber reinforcement layer is exposed,

(A2) applying thermoset resin to coat said exposed portion of said partially embedded dry fiber reinforcement layer to form a thermoplastic adhesive strip,

(A3) laying up said thermoplastic adhesive strip on each the first and second uncured thermoset composite structures, respectively, so that said resin-coated exposed portion of each said thermoplastic adhesive strip abuts the respective first and second uncured thermoset composite structures, and

(A4) curing each said layed-up thermoplastic adhesive strip to the respective first and second uncured thermoset composite structures to provide first and second cured thermoset composite structures each having said thermoplastic adhesive strip anchored thereto, said thermoplastic material layer of said anchored thermoplastic adhesive strips defining said bonding surface for the first and second cured thermoset composite structures, respectively;

(B) pressing said bonding surfaces of the first and second cured thermoset composite structures together wherein said abutting bonding surfaces define a bonding joint between the first and second cured thermoset composite structures;

(C) applying heat to said bonding joint to fuse said thermoplastic material layers of said thermoplastic adhesive strips of the first and second cured thermoset composite structures to form a bond layer of thermoplastic material therebetween; and

(D) cooling said bond layer of thermoplastic material wherein the first and second thermoset composite structures are reversibly bonded together; and wherein

said bond layer between the first and second thermoset composite structures is reversible by heating said bonding joint to melt said bond layer so that the first and second cured thermoset composite structures are separable with said respective thermoplastic adhesive strips anchored thereto.

5,304,270

TIRE MANUFACTURING PROCESS

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 966,977

Claims priority, application Italy, Oct. 31, 1991, TO91A 000820

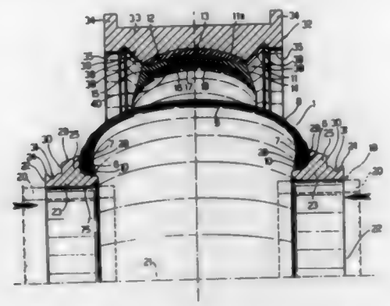
Int. Cl.[5] B29D *30/20*

U.S. Cl. 156—127 **7 Claims**

1. A process for manufacturing road vehicle tires comprising

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a first stage carcass having two bead portions, and a second state outer annular tread assembly; comprising the steps of fitting each bead portion of the first stage carcass to a respective inner circular annular support; producing a finished green tire by fitting the first stage carcass to a respective said outer annular tread assembly located inside an outer annular body constituting a first portion of an annular tire forming mold, said inner annular supports constituting a second portion of said



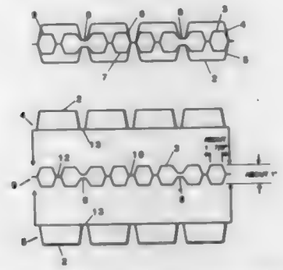
forming mold; locking said two inner annular supports in relation to said outer annular body and in relation to each other, via first clamping means located between inner annular support and the outer annular body; curing said green tire in said forming mold; and maintaining said annular supports connected to said respective bead portions; post-inflating said cured tire while said annular supports are connected to respective bead portions; and disconnecting said annular supports from respective bead portions after post-inflation.

5,304,271

METHOD OF MAKING A FLUID CUSHION

Ignaty Gusakov, 1361 Underhill Rd., East Aurora, N.Y. 14052

Division of Ser. No. 863,923, Apr. 6, 1992, Pat. No. 5,243,722.
This application Apr. 29, 1993, Ser. No. 53,751
Int. Cl.[5] B32B *31/04*; A47C *27/08*
U.S. Cl. 156—145 **4 Claims**



1. A method of manufacturing a cushion comprising

forming a first pair of material layers having first preformed cells therein and a first seal line pattern between cells, respectively,

forming a second pair of material layers having second preformed cells therein smaller than said first preformed cells, and a second seal line pattern between cells,

joining said second pair of material layers in abutting and complementary relation along said second seal line pattern to form middle cells with fluid trapped therein, and at the same time, forming cell interconnects between selected adjacent middle cells to allow trapped fluid to flow laterally in the plane of said adjacent middle cells when external pressure is applied to an interconnected cell,

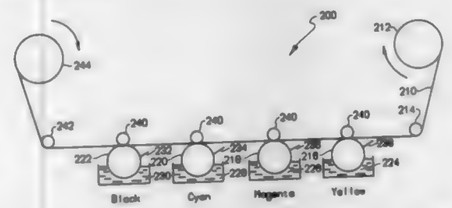
joining one of said first pair of material layers to one side of said middle cells along said first seal line such that a first cell therein encompasses a plurality of said middle cells and has a fluid trapped therein, and joining the other one of said first pair of material layers to the other side of said middle cells along said first seal line such that said first cells therein are congruent with said first cells in said one of said first pair of material layers and has a fluid trapped therein.

5,304,272

METHOD FOR MANUFACTURE OF PROCESS PRINTED SURFACE COVERING

Peter J. Rohrbacker, Bordentown, and Martin J. Dickson, Newfield, both of N.J., assignors to American Biltrite, Inc., Lawrenceville, N.J.

Filed Aug. 12, 1991, Ser. No. 743,548
Int. Cl.[5] B31F *1/22*
U.S. Cl. 156—209 **9 Claims**



1. A method for manufacturing a printed surface covering comprising the steps of:

process printing a design on a continuous opaque polymer web of uniform color; and

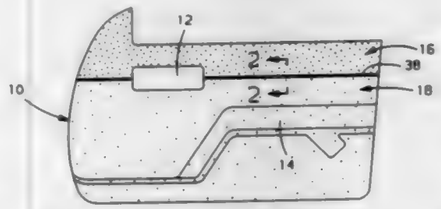
laminating said printed polymer web onto a continuous base web to form a composite web, said base web being positioned atop a moving support surface and comprising a vinyl material which is compatible with said polymer web.

5,304,273

METHOD FOR MANUFACTURE OF TWO-TONE VEHICLE TRIM PANEL

Paul Kenrick, Sterling Heights; Kuen C. Leung, Rochester Hills; Mark W. Fero, Mt. Clemens; Arthur C. Stein, Grosse Ile, and Timothy W. Hill, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 21, 1992, Ser. No. 947,813
Int. Cl.[5] B29C *39/12*
U.S. Cl. 156—219 **2 Claims**



1. Method of manufacturing a vehicle trim panel having regions of differing aesthetic characteristic, comprising:

cutting to shape two pieces of flexible sheet cover material having the different aesthetic characteristics desired in the manufactured trim panel,

bonding the two pieces together edge-to-edge to form a composite flexible sheet cover material,

draping the composite flexible sheet cover material over a mold having a blade projecting from the mold surface,

installing retainer means to attach the composite flexible sheet to the blade to hold the flexible sheet in place with the bond between the two sheets located on the blade;

draping a sheet of reinforcing material over the composite flexible sheet and retainer means;

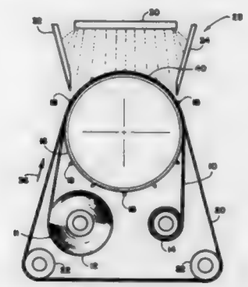
closing the mold and pouring urethane against the composite sheet to encapsulate the retainers and adhere to the composite flexible sheet to thereby provide a flexible sheet covered trim panel with the bond between the two sheets concealed from view at the bottom of the crevice defined by the blade.

5,304,274

METHOD FOR MANUFACTURING ELECTRODES FOR MULTILAYER CERAMIC CAPACITORS

Joseph W. Crownover, La Jolla; Ben B. Meckel, Encinitas, and Aubrey M. Burer, El Cajon, all of Calif., assignors to BMC Technology Corporation, San Diego, Calif.

Continuation of Ser. No. 610,780, Nov. 8, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 925,295
Int. Cl.[5] B44C *1/165*; B29C *47/00*; C23C *14/00*
U.S. Cl. 156—230 **26 Claims**



1. The method of manufacturing conductor sheets suitable for use in monolithic capacitors which comprises the steps of:

providing a carrier film;

forming a thin, smooth, layer of a pressure sensitive resin film on said carrier film, said pressure sensitive film having a slightly tacky free surface;

placing a stencil web in contact with said slightly tacky free surface to form a first sandwich, said stencil web having a plurality of rows and columns of openings, each opening surrounded by said web and corresponding to a desired conductor area;

moving said first sandwich through a sputtering region past a spluttering target wherein atoms emitted by said sputtering target space said stencil web;

moving said sandwich through said sputtering region at a rate which will permit a metal electrode layer of selected thickness to build up on said pressure sensitive resin film within each stencil opening;

removing said stencil from said slightly tack free surface; and

forming a layer of dielectric ceramic material on the surface from which the stencil was removed and the surface of said electrode layers to form a unitary sandwich;

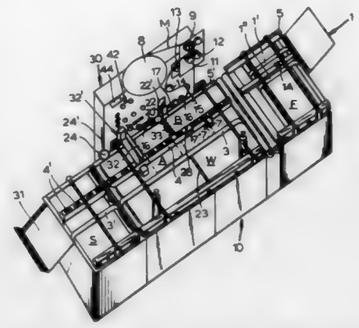
removing said carrier film from said unitary sandwich whereby a conductor sheet having conductor layers with very smooth surfaces results.

5,304,275

APPLYING A REINFORCEMENT FILM TO SHEETS

William Lowe, Bridgehampton, N.Y., assignor to E-Z Machine Corp., Farmingdale, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,981
Int. Cl.[5] B26D *5/00*
U.S. Cl. 156—270 **11 Claims**



1. A method of applying a reinforcing strip to sheets, the method comprising the steps of sequentially:

a) longitudinally advancing a leading sheet while the strip is adhered to it along a travel path to a downstream stop station and thereby drawing the strip from a supply and extending it longitudinally through an upstream stop station while simultaneously adhering the strip to the full length of the leading sheet;

b) arresting the leading sheet in the downstream stop station;

c) longitudinally advancing a trailing sheet upstream of the arrested leading sheet until a leading edge of the trailing sheet engages an upstream stop in the upstream station immediately upstream of a trailing edge of the leading sheet;

d) arresting the trailing sheet with its leading edge engaging the upstream stop immediately upstream of the trailing edge of the leading sheet;

e) generally simultaneously adhering the strip upstream of the upstream stop to the trailing sheet starting at its leading edge and severing the strip at the upstream stop between the leading and trailing sheets;

f) longitudinally advancing the leading sheet downstream away from the upstream stop;

g) moving the upstream stop out of the path and longitudinally advancing the trailing sheet downstream while the strip is adhered to it to the downstream stop station while drawing the strip from the supply and extending the strip through the upstream stop station; and

h) repeating steps b) through g) with the trailing sheet taking the place of the leading sheet and with another sheet following the trailing sheet and taking its place.

5,304,276

METHOD AND APPARATUS FOR RECLAIMING GYPSUM FROM WASTE WALLBOARD

Bruce C. MacLeod, Vancouver, and Keith A. Burley, Surrey, both of Canada, assignors to G. P. Research Ltd., Canada

PCT No. PCT/CA91/00006, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/00152, PCT Pub. Date Jan. 9, 1992
PCT Filed Jan. 8, 1991, Ser. No. 962,580
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—344 **16 Claims**

1. A method for separating paper laminate from paper laminated gypsum core wallboard having a first paper laminate side and a second paper laminate side opposite the first paper lami-

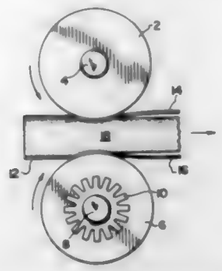
VOL 1161 ISS 3 AP 19 1994 UMI

nate side sandwiching the gypsum core between the two paper laminates, comprising:

passing the paper laminated gypsum core wallboard through an aperture comprising:

(a) a first roller means which contacts the first paper laminate side of the wall board;

(b) a second means spatially disposed from the first roller means to create an aperture which is less than the thickness of the wallboard to be treated, said second means



contacting the second paper laminate side of the wallboard; and

(c) rotating the first roller means relative to the spatially disposed second means as the wallboard is passed through the aperture, to thereby impart a compression force on the first paper laminate side, said force crushing an interface between the first paper laminate side and an adjacent portion of the gypsum core to thereby cause the first paper laminate to separate from the gypsum core while leaving the gypsum core substantially intact.

5,304,277

PLASMA PROCESSING APPARATUS USING PLASMA PRODUCED BY MICROWAVES

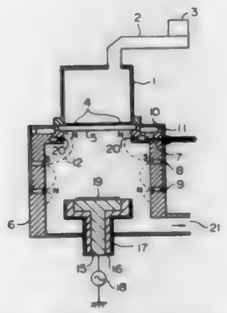
Kazuhiro Ohara, Yokohama; Toru Otsubo, Fujisawa, and Ichirou Sasaki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,798

Claims priority, application Japan, Sep. 28, 1990, 2-256893

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—345 **9 Claims**



1. A microwave plasma processing apparatus comprising:

a microwave generation source;

a waveguide for supplying the microwave from the microwave generation source;

a cavity resonator coupled to said waveguide for resonating the microwave supplied from the waveguide so as to increase the amplitude thereof, said cavity resonator including slits provided in a wall thereof;

a plasma processing chamber coupled with said cavity resonator through a microwave introducing window and for producing plasma by the microwave supplied from said slits of said cavity resonator through said window and by internally introduced processing gas so as to enable processing of a specimen by the plasma in said plasma processing chamber; and

a plurality of magnets provided at a periphery of said plasma processing chamber for forming a multi-pole cusp magnetic field in the vicinity of an interior of a wall portion of said plasma processing chamber at least proximate to said microwave introducing window where plasma is provided and along the interior of said wall portion of said plasma processing chamber to reduce diffusion of the plasma to said wall portion of said plasma processing chamber and providing an amplitude of the magnetic field in the vicinity of said specimen which does not influence the diffusion of said plasma in the vicinity of said specimen.

5,304,278

APPARATUS FOR PLASMA OR REACTIVE ION ETCHING AND METHOD OF ETCHING SUBSTRATES HAVING A LOW THERMAL CONDUCTIVITY

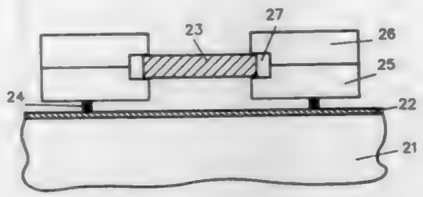
Johann Bartha; Thomas Bayer, both of Sindelfingen; Johann Greschner, Pliezhausen, all of Fed. Rep. of Germany; Dieter Kern, Amawalk, N.Y.; Volker Mattern, Boeblingen, and Roland Stoehr, Nufringen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 422,928, Oct. 17, 1989, abandoned. This application Aug. 24, 1992, Ser. No. 935,661

Claims priority, application European Pat. Off., Oct. 19, 1988, 88117372.8

Int. Cl.[5] B05C *1/00*

U.S. Cl. 156—345 **9 Claims**



1. A vacuum reactor for etching a substrate to a high degree of etch rate uniformity, said substrate having a low thermal conductivity and being sensitive to temperature, said vacuum reactor comprising a process chamber, means for introducing a process gas into said process chamber, means for connecting a vacuum pump to said process chamber, an electrode, having upper and lower surfaces, mounted in said process chamber, a counterelectrode in said process chamber, a substrate holder associated with said electrode for supporting a substrate to be etched and an energy source for applying RF energy to said electrode or said counterelectrode, wherein said substrate holder is arranged at a predetermined spacing above the upper surface of said electrode, said predetermined spacing ranging from about 0.2 mm to about 3 mm from the upper surface of said electrode to allow substrate cooling by heat removal by radiation during etching, and wherein the upper surface of said electrode, which surface is opposite said substrate holder, is provided with a radiation-absorbing layer to remove by radiation heat formed during etching.

5,304,279

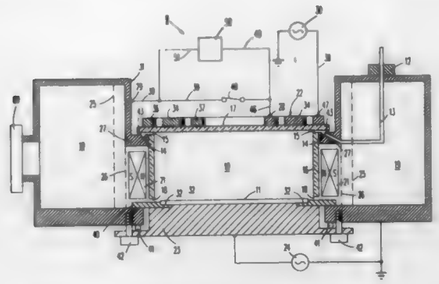
RADIO FREQUENCY INDUCTION/MULTIPOLE PLASMA PROCESSING TOOL

Dennis K. Coultas, Hopewell Junction, and John H. Keller, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 565,851, Aug. 10, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 951,978

Int. Cl.[5] H01L *21/00*; **H01J** *7/24*

U.S. Cl. 156—345 **25 Claims**



1. A plasma dry processing apparatus comprising

a) a chamber for plasma processing having an external wall, said chamber containing at least one work piece having a surface to be processed in a plasma,

b) induction means for providing a radio frequency induction field within said chamber for generating a plasma within said chamber, said induction means comprising a planar induction coil located at an end of said chamber spaced from said work piece, and

c) confining means for providing a surface magnetic field for confining said plasma within said chamber,

i) said confining means comprising multiple magnetic dipoles with their fields directed inwardly towards the interior of said chamber with alternating north and south poles in a magnetic confinement cylindrical pattern with their fields directed at right angles towards the vertical axis of said chamber, and

ii) said surface magnetic field being substantially confined to the space adjacent to said external wall with said surface magnetic field extending from the exterior of said chamber to provide magnetic field cusps proximate to the periphery of the interior of said external wall,

whereby said induction coil generates a plasma in said chamber and electrons are repelled to the interior of said chamber from motion towards the walls thereof to produce greater uniformity of said plasma near said work piece.

5,304,280

METHOD AND APPARATUS FOR RE-EPOXYING RADIATOR HEADER PLATE TO CORE TUBES

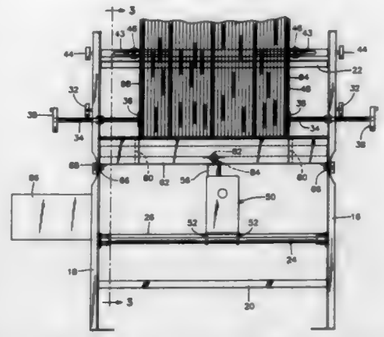
Dyrell K. Stokes, Rte. 3 Box 1354, and Bennie J. Stokes, 1031 W. Verdine, both of Sulpur, La. 70663

Filed Feb. 25, 1993, Ser. No. 22,292

Int. Cl.[5] B32B *35/00*; **B23P** *15/26*; **F24J** *3/00*

U.S. Cl. 156—584 **12 Claims**

1. A radiator support for supporting a radiator in upstanding position while performing repair work thereon, said support including an elongated generally horizontal upwardly opening channel shaped oven, a generally horizontal support member mounted within said oven spaced below the open upper portion thereof for supporting, from beneath, a lower radiator header plate within said oven and with corresponding core tubes projecting upwardly from the header plate and expoxied thereto by epoxy surrounding the core tube lower ends above and bonded to the header plate, said oven including opposite ends and opposite longitudinal upstanding side walls, closure door means supported from an upper marginal portion of at least one of said side walls above said support member and adjustable inwardly thereof, a pair of opposite end pieces disposed within said channel shaped oven below said closure door means and adjustable therealong to adjust the effective length thereof to substantially the width of said radiator, and heating means operative to admit heating air into the interior of



said channel shaped oven beneath said closure door means and between said end pieces, only, whereby said header plate, core tube lower ends and epoxy may be heated for sufficient softening of the latter to enable mechanical removal thereof from said header plate and core tube lower ends, said oven including restricted heated air outlet means below said open upper portion thereof.

5,304,281

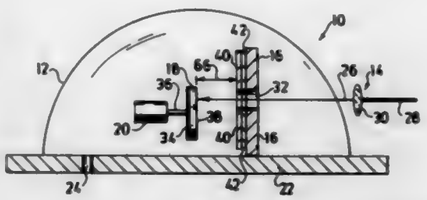
LASER DEPOSITION OF CUBIC CADMIUM SULFIDE FILMS

Xingwu Wang, Alfred, N.Y., assignor to Alfred University, Alfred, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,217

Int. Cl.[5] C30B *30/00*

U.S. Cl. 156—614 **18 Claims**



1. A process for preparing a film consisting of at least about 90 weight percent of cubic cadmium sulfide, comprising the steps of:

(a) providing a cadmium sulfide target with a density of at least about 3.8 grams per cubic centimeter;

(b) providing a heated substrate which is at a temperature of from about 50 to about 300 degrees Centigrade;

(c) disposing said heated substrate at a distance of from about 2 to about 10 centimeters from said cadmium sulfide target;

(d) subjecting said heated substrate and said target to a pressure of from about 10^{-4} to about 10^{-9} Torr; and

(e) contacting said cadmium sulfide target with a continuous wave laser beam with a wavelength of from about 100 nanometers to about 30 microns, an energy of at least about 1.0 watt, and a beam width of less than about 5 millimeters while rotating said target at a rate of from about 1 to about 10 revolutions per minute.

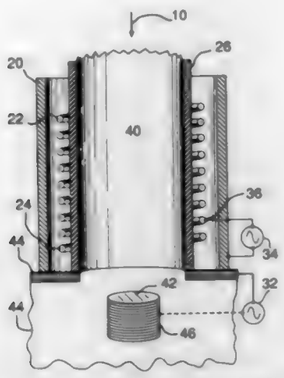
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5,304,282

PROCESSES DEPENDING ON PLASMA DISCHARGES SUSTAINED IN A HELICAL RESONATOR

Daniel L. Flamm, 476 Green View Dr., Walnut Creek, Calif. 94596

Filed Apr. 17, 1991, Ser. No. 686,763
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 18 Claims



1. A process for fabricating a device comprising the steps of subjecting a substrate to a composition of entities and employing the resulting substrate for completion of said device, characterized in that one of said entities emanates from a species generated by a gaseous discharge within a helical resonator having an outer shield, said helical resonator having a spiral coil with a mean diameter at least 0.669 times the inside diameter of the outer shield.

5,304,283

PROCESS FOR PRODUCING A BURIED STRIPE SEMICONDUCTOR LASER USING DRY ETCHING FOR FORMING SAID STRIPE AND LASER OBTAINED BY THIS PROCESS

Nouredine Bouadma, Gentilly, France, assignor to France Telecom Etablissement Autonome De Droit Public, Paris, France

Filed Feb. 24, 1992, Ser. No. 840,299
Claims priority, application France, Feb. 26, 1991, 91 02272
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 6 Claims

1. A process for producing a buried stripe semiconductor laser in which:

a heterostructure is formed by a first epitaxy during which successive deposition takes place on a substrate of a first confinement layer having a first doping type, an active layer and a protection layer,

using a dry etching procedure, the protection layer and the active layer are etched down to the first confinement layer, so as to form a stripe from the active layer and

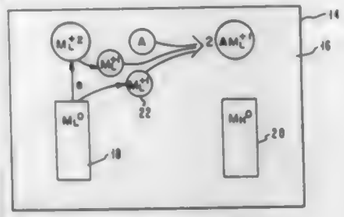
the stripe is buried by a second epitaxy in a semiconductor layer having a second doping type opposite to the first, forming a second confinement layer, and also forming a contact layer having the same doping type as the second confinement layer upon said second confinement layer, a conductive layer being formed on said contact layer, and the protection layer and the active layer are etched by reactive ion beam etching using a gaseous mixture of argon, methane and hydrogen, said reactive ion beam etching comprising a prior masking stage, using a photoresist layer, of part of the protection layer located above a zone of the active layer corresponding to the stripe to be formed, said photoresist layer being removed by means of hydrofluoric acid in an ultrasonic tank following said beam etching.

5,304,284

METHODS FOR ETCHING A LESS REACTIVE MATERIAL IN THE PRESENCE OF A MORE REACTIVE MATERIAL

Rangarajan Jagannathan, Hopewell Junction; Sampath Purushothaman, Yorktown Heights, both of N.Y., and Scott A. Sikorski, Cambridge, Mass., assignors to International business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1991, Ser. No. 785,445
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—666 22 Claims



1. A method comprising:

providing a body of a first material and a body of a second material in a substantially non-aqueous solution;

said first material contains first constituents having a lower and a higher oxidation state;

said second material contains second constituents having an oxidation state of energy greater than the lower oxidation state of said first constituents;

providing in said solution first cations energetically disposed to receiving electrons from said first constituents but not energetically disposed to receiving electrons from said second constituents;

electrons transfer from said first constituents to said first cations to form second cations of lower oxidation state, resulting in said first body releasing into said first lower oxidation state and resulting in etching of the first material; and

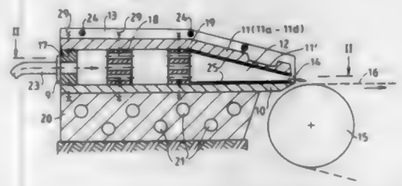
providing in said solution an agent which consumes said second cations and said third cations thereby permitting release into said solution additional ones of said third cations resulting in said first body being preferably etched with respect to said second body.

5,304,285

STOCK-INLET FOR PAPERMAKING MACHINE

Albrecht Meinecke, and Dieter Egelhof, both of Heidenheim, Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Fed. Rep. of Germany

PCT No. PCT/EP87/00464, § 371 Date Jan. 25, 1989, § 102(e) Date Jan. 25, 1989, PCT Pub. No. WO88/01318, PCT Pub. Date Feb. 25, 1988
PCT Filed Aug. 19, 1987, Ser. No. 327,917
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1986, 3628699
Int. Cl.[5] D21F *1/02*
U.S. Cl. 162—339 21 Claims



1. A stock inlet for a papermaking machine, comprising:

a first and a second stock flow guidance wall which are spaced apart and converge to define an outlet channel between them, the outlet channel terminating at a downstream end in an outlet gap for the stock; the flow guidance walls, and the outlet channel defined by the first and second walls and the outlet gap all extending the width of the machine; opposite lateral walls at the opposite lateral sides of the first and second walls closing the channel between the walls;

means for supplying stock into the channel between the first and second flow guidance walls upstream of the outlet gap;

across the width of the outlet channel, each of the first and the second flow guidance walls comprises a respective plurality of non-overlapping wall sections, the wall sections of each of the first and the second walls being arranged in a row over the width of the outlet channel; means connecting adjacent wall sections of the first wall to each other and of the second wall to each other in liquid tight fashion and also connecting the outermost wall sections of the first and second walls to the lateral walls in liquid tight fashion;

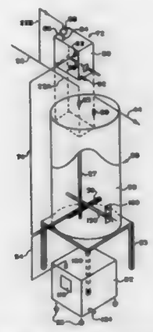
a rear supporting element located toward the upstream end of the channel with respect to the direction of flow of stock and between the first and second walls for supporting and spacing apart the first and second walls, and as seen in longitudinal sections through the outlet channel, one respective wall section of the first wall and one respective wall section of the second wall together with the rear supporting element define a respective outlet channel section which opens toward the downstream end of the channel toward the outlet gap, the outlet channel section is generally C-shaped, the channel sections also extending in a row across the with of the machine; the rear supporting element cooperating with the respective wall sections of the first and second walls to define a rigid clamp assembly capable of withstanding the internal pressure within the outlet channel and at the outlet gap.

5,304,286

WATER SUPPLY SYSTEM

David G. Palmer, 3334 Woodsshire Pkwy., Lincoln, Nebr. 68502

Division of Ser. No. 30,359, Mar. 26, 1987, Pat. No. 4,906,337.
This application Nov. 1, 1989, Ser. No. 430,236
Int. Cl.[5] B01D *3/02, 3/42;* C02F *1/04*
U.S. Cl. 202—167 17 Claims



1. A water heating and distillation apparatus comprising:

a water heating tank including means for admitting feed water to said tank;

a water distillation unit including steam generating means for converting water into steam and a condenser connected with said steam generating means for condensing steam produced by said steam generating means into distilled water; and

said condenser including an elongated heat transfer surface positioned substantially entirely within a bottom portion of said tank and oriented substantially horizontally to enhance heat exchange between the steam in said condenser and water in the tank and to promote convective circulation of water in the tank.

5,304,287

MICRODISTILLATION METHOD

Scott Stieg, Milwaukee, Wis., assignor to Lachat Instruments, Milwaukee, Wis.

Division of Ser. No. 408,681, Sep. 18, 1989, Pat. No. 5,022,967.
This application Feb. 7, 1991, Ser. No. 652,186
Int. Cl.[5] B01D *3/00*
U.S. Cl. 203—1 15 Claims



1. A method for the microdistillation of liquids containing volatile analyte compounds, which comprises the steps of:

placing a volumetric sample of a liquid in a sample tube, said sample tube having an open top end;

fitting said open top end of said sample tube to an open bottom end of a collector tube, said bottom end of said collector tube being fitted with at least one hydrophobic, porous membrane;

positioning a capping member proximate the top end of said collector tube;

volatilizing at least a portion of said volumetric sample such that said volatilized sample passes through said membrane; condensing said volatilized sample in said collector tube; retaining the condensate over said membrane; and chemically analyzing said condensate.

9. A microdistillation method for purging and trapping volatile analyte compounds from a volumetric sample containing the volatile analyte compounds, said method comprising the steps of:

placing the volumetric sample in a microdistillation column including a collector tube having a top end and an open bottom end, a sample tube having means for holding the volumetric sample and an open top end, said open top end of said sample tube being fitted to said open bottom end of said collector tube, and at least one hydrophobic, porous membrane interposed above said top end of said sample tube in close proximity to said bottom end of said collector tube in spaced relation from the volumetric sample;

volatilizing at least a portion of said volumetric sample such that said portion passes through said membrane and condenses in said collector tube, said membrane retaining substantially all condensate of said portion of the volumetric sample volatilized;

placing a trapping medium in said collector tube above said hydrophobic membrane, wherein when said volatilizing step is carried out, said membrane permits said end portion of volumetric sample to pass through thereby conveying the purged analyte to said trapping medium, said membrane further preventing reverse transmission of said

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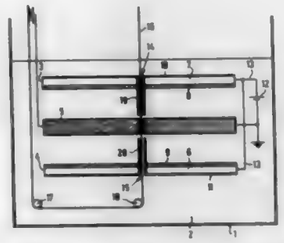
trapping medium and said condensate; and chemically analyzing said condensate.

5,304,288

METHOD OF AND DEVICE FOR THE SPARK EROSION OF HARDMEAL OBJECTS

Hans De Beurs, and Antonius T. Rekers, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 7,042, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 741,280, Aug. 7, 1991, abandoned.
This application Jul. 20, 1993, Ser. No. 94,587
Claims priority, application Netherlands, Aug. 8, 1990, 9001787; Feb. 25, 1991, 9100326
Int. Cl.[5] B23H *7/02, 11/00*
U.S. Cl. 204—129.1 11 Claims



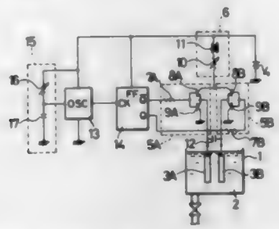
1. A method of machining a hardmetal object by means of spark erosion in an aqueous solution, said method comprising measures which counteract corrosion of said object, including the step of protecting the object cathodically during the spark-erosion process with a protective electrode which is present in the solution and which is electrically connected to the object via an external power source.

5,304,289

METHOD AND APPARATUS FOR TREATING WATER

Hideo Hayakawa, 2656-12, Moriya-ko, Moriya-machi, Kitasoma-gun, Ibaraki-ken, Japan

Filed Mar. 23, 1993, Ser. No. 35,962
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—149 3 Claims



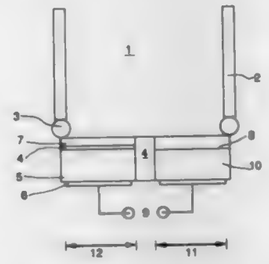
1. A method of treating water, comprising the steps of:
providing a DC voltage source with a low current-and-output voltage setting unit connected thereto with an alternate switching circuit having first and second switching sections connected to the DC voltage source via the low current-and-output voltage setting unit, and a high-frequency oscillator connected to the DC voltage source, with the high-frequency oscillator being equipped with frequency setting means;
providing an alternate switching commander circuit responsive to high-frequency signals from the high-frequency oscillator, said commander circuit supplying a series of rectangular wave signals to control the first and second switching sections in the alternate switching circuit, with a capacitor connected between the output terminals of the first and second switching sections for receiving the DC voltage from the DC voltage source and alternately reversing polarity by control signals fed from the alternate switching commander circuit to the first and second switching sections, thereby producing saw-tooth voltage at high-frequency;
providing first and second electrodes, said first and second electrodes being disposed in water and connected to said capacitor; and
applying said saw-tooth AC voltage to said electrodes, said AC voltage ranging from 0.3 to 100 Vpp at a frequency ranging from 1 to 500 KHz.

5,304,290

CAPACITIVELY MEASURING CHEMICAL SENSOR SYSTEM

Bernd F. W. Hoffmann; Rainer Erbach, both of Karlsruhe; Gerhard Wegner, Mainz-Drais; Harald Fuchs, Carlsberg; Wolfgang Schrepp, Heidelberg, and Matthias Schaub, Mainz, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 907,990
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122408
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—418 9 Claims



1. A miniaturizable, capacitively measuring chemical semiconductor-based sensor system, consisting of a sensor and a reference element which are to be brought into contact with an electrolyte solution, wherein the reference element is connected in series with the sensor, the reference element consisting of a highly doped semiconductor substrate or metal/semiconductor substrate which is covered with a membrane, and the sensor consisting of an insulator/semiconductor substrate which is coated with a sensitive membrane, and the sensitive membrane of the sensor being more sensitive than that of the reference element.

5,304,291

METHOD OF PREPARING 9BETA, 10ALPHA-5,7-DIENE STEROIDS

Berthus Bout, and Ronald Voorhaar, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Feb. 24, 1993, Ser. No. 21,902
Claims priority, application European Pat. Off., Feb. 27, 1992, 92200564.0
Int. Cl.[5] C07G *13/00*
U.S. Cl. 204—157.6 10 Claims

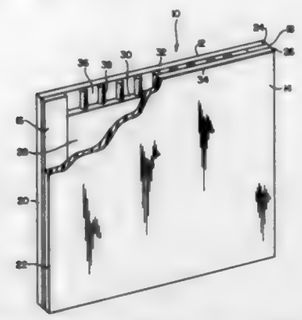
1. A method of preparing a 9β,10α-5,7-diene steroid comprising irradiating the corresponding 9α,10β-5,7-diene steroid or seco-steroid with filtered ultraviolet light, said irradiation being carried out with an indium lamp.

5,304,292

ELECTROPHORESIS GELS

Michael Jacobs, East Norwalk, and George T. Leka, Trumbull, both of Conn., assignors to Jule, Inc., New Haven, Conn.

Filed Oct. 29, 1992, Ser. No. 968,296
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R 13 Claims



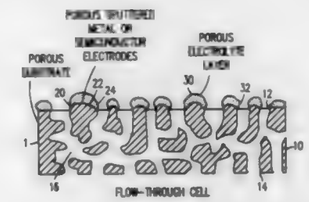
1. An electrophoresis device, comprising, in combination:
a pair of electrically-insulating, liquid impermeable sheets disposed in opposing relationship to one another;
means for separating said sheets a predetermined distance from one another;
a gel membrane disposed between said sheets acting as an electrophoresis medium, said gel membrane having a substantially flat surface thereon disposed a distance from an edge of said sheets defining together with said sheets an elongated slot of predetermined thickness communicating with said gel membrane; and
at least one liquid impermeable, elastomeric, compliant cylinder disposed within said slot in contact with said sheets and said flat surface of said gel membrane forming at least one sample well bound by said cylinder, said flat surface of said gel membrane and both of said sheets, said cylinder being at least slightly compressed between said sheets and against said flat surface of said gel membrane, thereby substantially immobilizing said cylinder within said slot and providing a liquid-tight seal around said sample well.

5,304,293

MICROSENSORS FOR GASEOUS AND VAPOROUS SPECIES

Michael J. Tierney; Arvind Jina, both of Redwood City; Jose Joseph, Menlo Park, and Marc Madou, Palo Alto, all of Calif., assignors to Teknekron Sensor Development Corporation, Menlo Park, Calif.

Filed May 11, 1992, Ser. No. 882,459
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—414 18 Claims



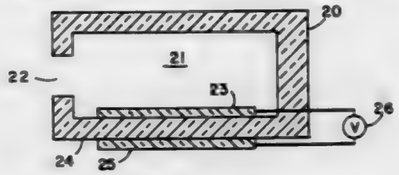
1. A sensor for gaseous and vaporous species, comprising:
a gas and vapor permeable substrate with a top and bottom surface, said surfaces generally facing away from one another;
a porous electrode located on said top surface of said substrate; and
a porous electrolyte medium in contact with said electrode and said top surface of said substrate covering only a portion of said electrode.

5,304,294

METHOD AND APPARATUS FOR SENSING NOX

Da Y. Wang, Lexington; Daniel T. Kennedy, Burlington, both of Mass., and Burton W. MacAllister, Jr., Hudson, N.H., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 843,877, Feb. 27, 1992, Pat. No. 5,217,588.
This application Nov. 10, 1992, Ser. No. 974,051
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—426 7 Claims



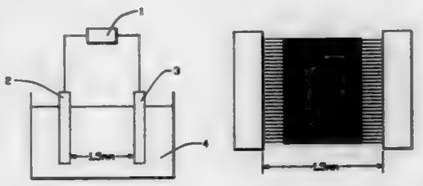
1. NOx-sensing apparatus comprising
a body of an electrolyte material;
a first electrode attached to said body;
a second electrode attached to said body;
said first and second electrodes having different NO_x decomposition characteristics; and
means for measuring the electrical differential between the two electrodes when the electrodes are exposed to a test gas.

5,304,295

HIGH MOLECULAR HUMIDITY SENSOR AND MANUFACTURING METHOD THEREOF BY ELECTROCHEMICAL METHOD

Chung Y. Kim; Hee-Woo Rhee; Inseok Hwang, and Jai K. Kim, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 644,304, Jan. 19, 1991, Pat. No. 5,122,237.
This application Jul. 31, 1991, Ser. No. 738,791
Claims priority, application Rep. of Korea, Jul. 27, 1990, 11492/1990
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—430 5 Claims



2. A sensor having a structure comprising a polypyrrole doped with dodecylsulfate anion DS^- formed on a surface of a fine electrode and cations Na^+ or K^+ permeating said polypyrrole which forms an ionically conductive salt having a humidity sensibility in a region of 10^4-10^6 Ω, said sensor formed by electric polymerizing and then reducing where, said electric polymerizing includes,
placing a structure in an electrolyte polymerizing solution as a positive electrode, said electrolytic polymerizing solution formed by a monomer pyrrole in a solution including a dopant dodecylsulfate anion DS^- of large molecular weight,
having a negative electrode in the solution,

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applying a direct current between the electrodes whereby polypyrrole doped with said anion DS^- is formed as a film on said positive electrode, said reducing includes,

placing the positive electrode in an electrolytic aqueous solution containing cations Na^+ or K^+,

having a negative electrode in the electrolytic aqueous solution,

applying a reversing polarity direct current to said positive electrode and negative electrode whereby said Na^+ or K^+ cations permeate said polypyrrole and said salt is formed producing ionic conductivity.

5,304,296

GLASS PH ELECTRODES

Derek Midgley, Leatherhead, United Kingdom, assignor to National Power PLC, Swindon, United Kingdom

PCT No. PCT/GB91/00948, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/01220, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 13, 1991, Ser. No. 961,935

Claims priority, application United Kingdom, Jul. 12, 1990, 9015307

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—433 **5 Claims**

1. A sensor which includes an external reference electrode and a glass pH electrode, the glass pH electrode comprising a silver-silver chloride or a mercury-mercurous chloride inner electrode and an electrode filling solution for the inner electrode, characterized in that the electrode filling solution is a zwitterionic buffer solution containing chloride ions which is chosen so as to substantially satisfy one of the following

a) when the inner electrode is a silver-silver chloride electrode and the external reference electrode is a non-isothermal calomel reference electrode the solution fulfills the requirement that $\partial pK_a/\partial T = -0.0053 \pm 0.0034$; or

b) when the inner electrode is a mercury-mercurous chloride electrode and the external reference electrode is a non-isothermal calomel reference electrode the solution fulfills the requirement that $\partial pK_a/\partial T = -0.0088 \pm 0.0034$;

where pKa is the negative logarithm of the dissociation constant of the zwitterionic buffer, T is the absolute temperature and the filling solution for the external reference electrode is 3 mol l^{-1} KCl.

5,304,297

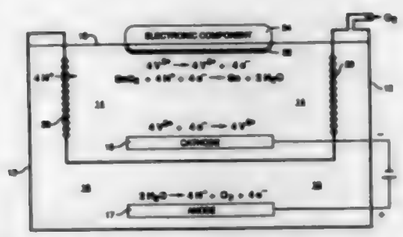
REDUCING AGENT REGENERATION SYSTEM

D. Morgan Tench, Ventura; Dennis P. Anderson, Newbury Park, and Leslie F. Warren, Jr., Camarillo, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 26, 1993, Ser. No. 23,653

Int. Cl.[5] C25D *5/02, 17/00*

U.S. Cl. 205—101 **18 Claims**



1. A reducing agent regenerating system, comprising:

a vessel having two compartments;

a catholyte solution contained in a first of said compartments, said catholyte including a reducing agent subject to being oxidized in the course of a chemical or electrochemical process;

a cathode placed in said catholyte, said cathode comprising a material having a high hydrogen overvoltage;

an anolyte solution contained in a second of said compartments;

an inert anode placed in said anolyte;

a semipermeable ionic barrier separating said first and second compartments, said ionic barrier allowing migration of protons from said anolyte to said catholyte but opposing migration and diffusion of cations from said catholyte to said anolyte; and

said cathode electrochemically regenerating the reducing agent after it has been oxidized.

5,304,298

PROCESS FOR ROUGHENING ALUMINUM OR ALUMINUM ALLOYS

Michael Brenk, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 937,680

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1991, 4129909

Int. Cl.[5] C25F *1/02, 3/04*; C25D *11/08, 11/24*

U.S. Cl. 205—106 **21 Claims**

1. A process for roughening an aluminum or aluminum alloy support material useful for printing plates comprising

a) a first electrochemical roughening step carried out in an electrolyte containing an acid selected from the group consisting of hydrochloric, nitric, and sulfuric acid; and chloride or nitrate ions,

b) a second electrochemical roughening step following step a) carried out in an electrolyte containing an acid selected from the group consisting of hydrochloric, nitric, and sulfuric acid; and chloride or nitrate ions, and in which the concentrations of the additives are the same as or different from those in the first electrochemical roughening step, and

c) a purely chemical pickling step in an acid or alkaline bath following step b), which removes undesirable layers which make the surface of the support non-uniform and dark.

17. A process as claimed in claim 1, further comprising a step of anodic oxidation of the roughened support material, wherein the anodic oxidation is carried out using direct current or alternating current or using a combination of direct current with superimposed alternating current.

5,304,299

CATALYTIC CRACKING CATALYSTS AND ADDITIVES

Ranjit Kumar, Columbia, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 874,451, Apr. 27, 1992, Pat. No. 5,194,413. This application Oct. 26, 1992, Ser. No. 966,631

Int. Cl.[5] C10G *11/05*

U.S. Cl. 208—120 **8 Claims**

1. A method for the catalytic cracking of hydrocarbons which comprises reacting a hydrocarbon in the presence of a catalyst which comprises a zeolite-containing cracking catalyst admixed with a composition comprising discrete particles of a rare-earth compound selected from the group consisting of rare-earth oxalate, oxide, oxychloride and mixtures thereof dispersed in a clay/alumina matrix under catalytic cracking conditions.

5,304,300

RV WATER FILTER APPARATUS

Charles F. Parsons, 1120 Audrey Way, Roseville, Calif. 95661

Filed Aug. 13, 1992, Ser. No. 929,128

Int. Cl.[5] B01D *35/02, 27/08, 35/30*

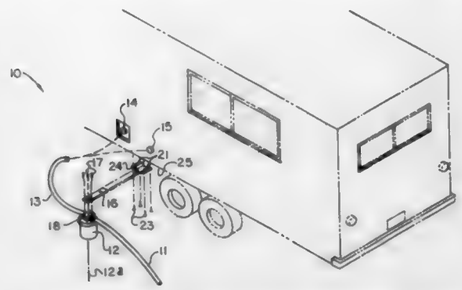
U.S. Cl. 210—86 **2 Claims**

1. An RV fluid filter apparatus in combination with a recreational vehicle, with the recreational vehicle having a side wall and a bottom wall, the side wall including a fluid coupling, wherein the apparatus further comprises,

a first fluid supply conduit, and a filter canister, with the first fluid conduit having a first end secured to the filter canister, and a second fluid supply conduit, wherein the second fluid supply conduit includes a second conduit first end, and the second conduit first end secured to the filter canister, and the second supply conduit having a second supply conduit second end, and the second supply conduit second end secured to the fluid coupling, and

a flange plate, the flange plate defined by a predetermined width having a flange plate first end and a flange second end, and the flange plate including a plurality of flange plate apertures directed through the flange plate adjacent the first end, and

a plurality of flange plate fasteners directed through the flange plate apertures and the flange plate fasteners received within the canister, and the canister having a canister axis and the flange plate orthogonally oriented relative to the canister axis, and



a unitary mounting plate, the unitary mounting plate including mounting plate spaced, parallel, and coplanar mounting plate flanges,

said mounting plate further including a mounting plate connecting flange connected to each of said spaced mounting plate flanges and oriented below and parallel to the spaced mounting plate flanges, and

a plurality of mounting plate apertures directed through each of the mounting plate flanges, and a plurality of mounting plate fasteners directed through the mounting plate apertures and received within the recreational vehicle bottom wall, and the connecting flange defined by a connecting flange width equal to the predetermined width, and the flange plate second end slidably received over the connecting flange between the mounting plate flanges and below the recreational vehicle bottom wall.

5,304,301

APPARATUS FOR THE INJECTION OF COMPRESSED AIR INTO A LIQUID

Hans Schmidt, Liebenburg, Fed. Rep. of Germany, assignor to Berthold Schreiber, Hannover and Erhard Schreiber, Langenhagen, both of Fed. Rep. of Germany

Filed Oct. 23, 1991, Ser. No. 780,751

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1990, 4033814; Dec. 3, 1990, 4038504

Int. Cl.[5] B01F *3/04*

U.S. Cl. 210—220 **25 Claims**

1. Apparatus for injecting compressed air into a liquid, said apparatus comprising:

(a) means for supplying compressed air for injecting into the liquid;

(b) a hollow tubular basic body, said basic body having:

(i) an exterior surface along at least a portion of which compressed air is distributed into the liquid;

(ii) an interior surface;

(iii) a first open end through which compressed air is received from said compressed air supply means;

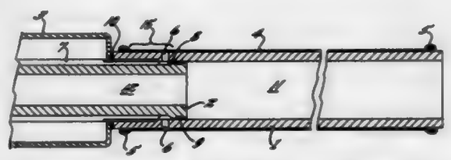
(iv) one or more radial openings in said basic body spaced from said first open end for the passage of compressed air from said interior surface to said exterior surface; and

(v) a second open end opposite said first open end through which is received the liquid into which said apparatus is placed;

(c) a flexible membrane having perforations through which compressed air is distributed into the liquid as fine bubbles, said membrane surrounding at least a portion of said exterior surface of said basic body including said one or more radial openings adjacent said first open end through which said membrane receives compressed air, said flexible membrane closely enveloping said basic body in the absence of compressed air, thereby substantially preventing liquid from penetrating into said perforations;

(d) means for supporting said basic body and for connecting said basic body to said compressed air supply means, said supporting and connecting means being of a substantially cylindrical configuration and in axial alignment with said basic body, said supporting and connecting means having:

(i) a first portion engaging said basic body at said first open end of said basic body, said first portion extending inwardly of said basic body toward said second open end thereof and beyond said one or more radial openings of said basic body and sealingly engaging said interior surface of said basic body at a location adjacent to and beyond said one or more radial openings, thereby defining a flooding zone between said sealingly engaged interior surface and said second open end of said basic body;



(ii) a second portion engaging said compressed air supply means; and

(iii) a means for the passage of compressed air from said compressed air supply means through said first open end of said basic body to said radial openings in said basic body, said compressed air passage means including at least one substantially longitudinal passageway extending from said second portion of said supporting and connecting means into to said first portion, said compressed air passage means also including at least one substantially annular passageway connected to said longitudinal passageway and communicating with said radial openings in said basic body; and

e) means for sealing said compressed air passage means from the liquid into which said apparatus is placed, said sealing means and said sealingly engaged inner surface of said basic body defining therebetween a compressed air zone that is separated from said flooding zone and the surrounding liquid into which said apparatus is placed.

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5,304,302

APPARATUS FOR TREATING A LIQUID WITH ALTERNATING MAGNETIC AND ELECTRIC FIELDS

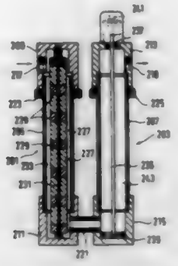
Karl Bossert, Villingen, Fed. Rep. of Germany, assignor to Gerdi Bossert, Villingen, Fed. Rep. of Germany

Filed Jan. 15, 1991, Ser. No. 641,503

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 9004033; Aug. 10, 1990, 9011686; European Pat. Off., Oct. 19, 1990, 90120134

Int. Cl.[5] C02F *1/48*

U.S. Cl. 210—222 10 Claims



1. An apparatus for treating liquids which are moving along a flow path, comprising:

a plurality of treatment means successively arranged in the direction of the flow path, the plurality of treatment means further comprising:

first means arranged in the flow path of the liquid for exposing the liquid to a magnetic field while in the flow path;

second means for exposing the liquid to an electrical field, the second means including a tubular metal housing having opposed ends, each said end including means defining an aperture leading from an interior of said housing to an exterior of said housing;

a substantially rod-shaped electrode arranged coaxially in the tubular housing and supported on insulating spacers;

voltage source means connected between the tubular housing and the electrode;

a tubular housing of said first means, said housing having opposed ends, each said end including means defining an aperture leading from an interior of said housing to an exterior of said housing;

a plurality of permanent magnets disposed in a row in the axial direction of the tubular housing of said first means and disposed next to one another and having alternating polarity;

a throughflow space formed between the permanent magnets or between the permanent magnets and the tubular housing; and

a tube, wherein the tubular housings of the first means and second means are disposed axially parallel with and beside one another one of said apertures of said first means being connected to one of said apertures of said second means by said tube so that the tubular housings are combined into a single structural unit.

5,304,303

APPARATUS AND METHOD FOR SEPARATION OF IMMISCIBLE FLUIDS

Andrew F. Kozak, III, 900 N. Jackson St., Media, Pa. 19063

Continuation-in-part of Ser. No. 816,126, Dec. 31, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 975,613

Int. Cl.[5] C02F *1/40*

U.S. Cl. 210—242.3 8 Claims

1. A fluid separator for separating two immiscible fluids having different specific gravities which comprises:

a first reservoir which contains a first fluid which has a higher specific gravity than a second fluid;

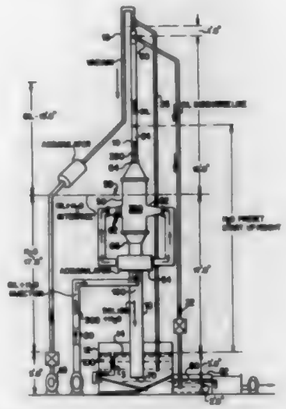
a vertical column having its lower end immersed in said first fluid in said first reservoir;

a separation vessel disposed within said column so as to lay situate around the interface of the two fluids;

an inlet conduit operably connected to said separation vessel;

an evacuation tube operably connected to said vertical column; said evacuation tube being positioned above said inlet conduit;

means for creating a partial vacuum connected to the upper end of said vertical column; and



means for producing a siphon effect in said evacuation tube whereby, in operation the said vacuum means maintains a column of fluid in said vertical column and wherein a mixture of said first and second fluids is injected into the column through said inlet conduit and wherein separation of said fluids occurs in said separation vessel and said vertical column, said first fluid descending into said reservoir and said second fluid rising in the column and being withdrawn therefrom from said evacuation tube by said siphon effect.

5,304,304

FILTER CLOTH ARRANGEMENT IN A ROTATING FILTER

Folke Jakobson, Hagvägen 8, S-183 30 Täby, Sweden, and Harry Nilsson, Hauptstrasse 58, CH-8274 Tägerwilen, Switzerland

PCT No. PCT/SE91/00356, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO91/17806, PCT Pub. Date Nov. 28, 1991

PCT Filed May 17, 1991, Ser. No. 949,868

Claims priority, application Sweden, May 18, 1990, 9001807

Int. Cl.[5] B01D *33/23*

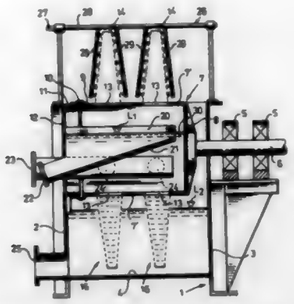
U.S. Cl. 210—331 10 Claims

1. A filter cloth device for rotating filters, said device comprising:

a filter sector skeleton (34, 35, 36, 45) able to be carried by a filter rotor (15);

a filter cloth, said filter cloth (18) being arranged outside said filter sector skeleton;

at least one bending resistant element (37–42) extending through a pocket (49, 50) connected to the filter cloth (18) to restrain bulging of the filter cloth due to forces perpendicular to the plane of the filter cloth, said filter sector skeleton (34, 35, 36, 45) having radially outer support and guide means (43, 44) and radially inner support and guide means (45, 46; 73, 74) parallel thereto, said bending resistant element (37–42) at its ends being detachably engageable with said support and guide means such that the ends



are undisplaceably perpendicularly fixed to the support and guide means (43–47; 73, 74) only by compression.

5,304,305

FILTER FOR FLUIDS

Robert Lehrer, Wilmington, Del., assignor to Robert Lehrer Associates, Inc., Wilmington, Del.

Filed Feb. 19, 1993, Ser. No. 19,709

Int. Cl.[5] B01D *24/00, 29/00, 39/00*

U.S. Cl. 210—346 32 Claims

1. A fluid treating member comprising a pair of layers of material joined together to form a laminate having a peripheral edge, said laminate having a fluid contacting surface, a plurality of spaced pockets between said layers of said material in said fluid contacting surface, said pockets being spaced from each other and spaced from said edge, said layers of material completely surrounding each of said pockets to define the limits of each of said pockets and to isolate said pockets from said edge and to form closed pockets, said layers of material being fluid permeable at said pockets whereby fluid may flow through said laminate at said pockets, said fluid contacting surface being fluid impermeable except at said pockets to require the fluid passing through said laminate to be confined to flowing through said pockets in paths of flow spaced from said edge, fluid treating media in said pockets for treating the fluid passing through said member, and said paths of flow being confined to first passing through one of said layers of said laminate where said one layer is fluid permeable and then through said pockets in contact with said fluid treating media and then through the other of said layers of said laminate where said other layer is fluid permeable.

5,304,306

REVERSE FILTER CENTRIFUGE

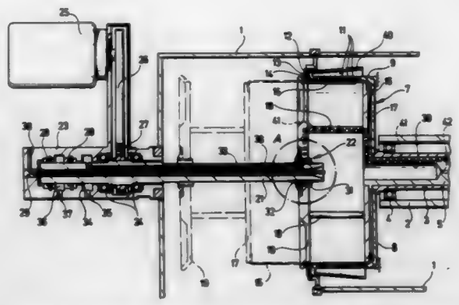
Hans Gerteis, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Heinkel Industriezentrifugen GmbH & Co., Bietigheim-Bissingen, Fed. Rep. of Germany

PCT No. PCT/EP90/01617, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/04982, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 24, 1990, Ser. No. 987,261

Int. Cl.[5] B01D *33/067*

U.S. Cl. 210—380.3 10 Claims



1. An invertible filter centrifuge comprising a self-supporting drum (7) rotatably mounted in a housing (1), said drum having radial filtrate passages (11) and being capable of receiving an overpressure or underpressure, a lid (19) closing a free end face of the drum, said drum and lid being axially movable relative to one another, a feed opening (22) for suspension to be filtered arranged in the lid and a feed pipe (21) sealingly inserted through the feed opening, the improvement comprising that the feed pipe (21) is rotatably mounted around its longitudinal axis and is rotatable together with the drum (7) around this axis.

5,304,307

CHARGEDASYMMETRIC MOSAIC MEMBRANCES

Charles Linder, Rehovot; Mara Nemas, Neve Monoson; Mordechai Perry, Petach Tikva, and Reuven Ketraro, Rishon Letzion, all of Israel, assignors to Aligena AG, Basel, Switzerland

Filed Dec. 3, 1991, Ser. No. 801,859

Claims priority, application United Kingdom, Dec. 3, 1990, 9026219

Int. Cl.[5] B01D *13/00*

U.S. Cl. 210—490 13 Claims

1. A semipermeable mosaic polymer membrane with a macroscopic distribution of the mosaic-forming anionic and cationic charges which comprises an asymmetric structure of a matrix formed by at least one optionally charged polymer and at least one charged polymer dispersed therein.

5,304,308

CONTROL METHOD IN DOUBLE-TANK-TYPE INTERMITTENT AERATION ACTIVATED SLUDGE PROCESS

Kazushi Tsumura, Kyoto; Yasuji Yamamoto, Nara; Kosei Sasaki, and Shigeru Hatsumata, both of Kanagawa, all of Japan, assignors to Fuji Electric Co., Ltd., Kanagawa and Unitika Ltd., Hyogo, both of Japan

Filed Apr. 27, 1993, Ser. No. 53,018

Claims priority, application Japan, Jun. 8, 1992, 4-146054; Sep. 2, 1992, 4-233953

Int. Cl.[5] C02F *3/30*

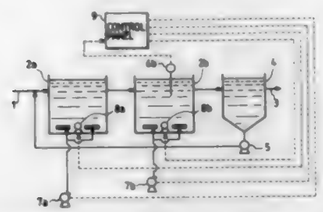
U.S. Cl. 210—614 11 Claims

1. A control method in an intermittent aeration activated sludge process for eliminating nitrogen and phosphorus from sewage in which the sewage is input to an aeration tank where

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it is subjected to an aerobic condition under aeration and to an anaerobic condition under agitation with the aeration stopped that are alternately repeated, and the processed sewage is output via a settling tank with part of sedimented sludge removed as excess sludge and the remaining sedimented sludge returned to the aeration tank, said control method comprising the steps of:

preparing a first aeration tank for receiving sewage and a second aeration tank connected in series to the first aeration tank and having an ORP meter applied thereto;



in the first aeration tank, performing aeration for a first predetermined period and then stopping the aeration and starting agitation;

in the second aeration tank, controlling a sum of an aeration period and an agitation period to a second predetermined period longer than the first predetermined period based on a time when a bending point appeared on an ORP curve detected by the ORP meter in a previous cycle; and

simultaneously transferring operations of the first and second aeration tanks from the agitation to the aeration based on detection of the bending point.

5,304,309

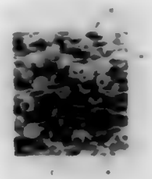
CYCLIC PROCESS FOR SELECTIVE COAGULANT RECOVERY FROM CLARIFIER SLUDGE

Arup K. Sengupta, Bethlehem, Pa., assignor to Lehigh University, Bethlehem, Pa.

Filed Jun. 24, 1992, Ser. No. 904,434

Int. Cl.[5] B01D *65/02*

U.S. Cl. 210—636 **31 Claims**



1. A cyclic process for selective coagulant recovery from clarifier sludge in water treatment plants comprising the steps of:

(a) adjusting the pH of said clarifier sludge to about 3.5;

(b) providing a composite membrane having a weak acid chelating exchanger enmeshed in porous polymeric thin sheets;

(c) placing said composite membrane in contact with said acidified sludge for selectively sorbing metal ion from said acidified sludge onto said composite membrane;

(d) withdrawing said composite membrane, carrying said metal ion, from contact with said acidified sludge;

(e) introducing said composite membrane, carrying said metal ion. into a stirred regeneration tank containing acid to regenerate said chelating exchanger of said composite membrane by desorbing said metal ion, thereby recovering said coagulant substantially devoid of organic material and undesirable heavy metals;

(f) recycling said regenerated composite membrane into contact with said acidified sludge; and

(g) recirculating, concurrently with said step of recycling, said acid through said regeneration tank.

5,304,310

METHOD FOR CONCENTRATING AND PURIFYING HIRUDIN FROM LEECHES

Kurt Lang, Penzberg, and Andreas Kreimeyer, Roemerberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP91/02269, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO91/10677, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 20, 1990, Ser. No. 910,320

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1990, 4001238

Int. Cl.[5] B01D *11/02;* **A61K** *35/62*

U.S. Cl. 210—639 **2 Claims**

1. A method of concentrating a hirudin-containing mixture which comprises: forming a solution of the hirudin-containing mixture in a mixture of water and a solvent selected from the group consisting of 1-propanol, 2-propanol, n-butanol and acetone and mixtures thereof; adjusting the pH of the solution to from about 4.0 to 7.0; adding sodium chloride to the solution to form separate phases, one being an aqueous phase containing the hirudin, and separating off the aqueous phase containing hirudin.

5,304,311

METHOD FOR REMOVING HYDROCARBON PRODUCTS FROM THE SURFACE OF AN AQUEOUS MEDIUM

Stelio Codiglia, Ferrara, Italy, assignor to Enichem Elastomeri S.r.L., Milan, Italy

Filed Jun. 30, 1992, Ser. No. 906,739

Claims priority, application Italy, Jul. 4, 1991, MI 91 A/001856

Int. Cl.[5] C02F *1/28, 1/40;* **B01D** *15/00*

U.S. Cl. 210—693 **12 Claims**

1. A method for removing hydrocarbon products from the surface of an aqueous medium, comprising the steps of:

(a) absorbing the hydrocarbon products using the steps consisting of:

(i) bringing the hydrocarbon products into contact with a solid, sub-divided ethylene/alpha olefin copolymer elastomeric material or a solid, sub-divided ethylene/alpha olefin/diene terpolymer elastomeric material and (ii) allowing the elastomeric material to absorb the hydrocarbon products and form a layer of a homogeneous jelly-like mass on the surface of the aqueous medium, the jelly-like mass consisting of the elastomeric material containing the absorbed hydrocarbon products;

(b) mechanically removing the jelly-like mass from the surface of the aqueous medium.

5,304,312

FILTER ASSEMBLY INCLUDNG FILTER UNIT HAVING DEFORMABLE SEALING END CAPS

Donald M. Forster, Penfield, and Peter J. Despard, Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1992, Ser. No. 920,403

Int. Cl.[5] B01D *43/00*

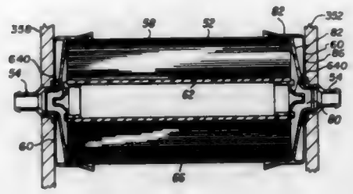
U.S. Cl. 210—808 **26 Claims**

23. A method of filtering solutions comprising the steps of

(A) providing first and second fluid connectors on a filter holder;

(B) mounting first and second end caps of a filtration unit having a filter element sealed to said end caps on said first and second fluid connectors such that sealed connections are forced between said fluid connectors and said end caps;

(C) conveying fluid into said first fluid connector, through said first end cap and said filter element, and out of said second fluid connector; and



(D) axially deforming said end caps by fluid pressure in said filter unit, thereby forcing said end caps into tighter engagement with said fluid connectors and improving said sealed connections.

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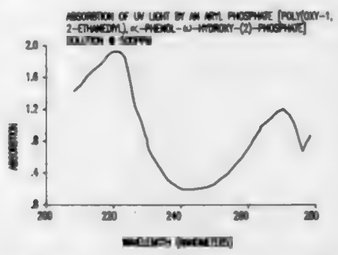
CHEMICAL COMPOSITIONS AND METHODS OF USING THEM IN SPRAYING TO FIGHT FIRES AND TO COOL HEATED SURFACES RAPIDLY

Paul H. Berger, Rome, N.Y., assignor to Metro Fire & Rescue, Inc., Lynchborg, Va.

Continuation of Ser. No. 775,288, Oct. 11, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,390

Int. Cl.[5] A62D *1/00;* **C09K** *5/00*

U.S. Cl. 252—3 **4 Claims**



1. A composition of matter, comprising agents that have molecules that rapidly absorb high energy radiant emission produced during combustion, said agents comprising a mixture of a surfactant and an aryl phosphate, wherein said surfactant is nonylphenolethoxylate and said aryl phosphate is poly(oxy-1,2-ethanediyl), α-phenol-ω-hydroxy-(2)-phosphate, said surfactant and said aryl phosphate being present in such amounts in a solution that said solution extinguishes a fire or cools a hot surface rapidly.

5,304,314

SULFUR-CONTAINING ESTER DERIVATIVES OF ARYLAMINES AND HINDERED PHENOLS AS MULTIFUNCTIONAL ANTIWEAR AND ANTIOXIDANT ADDITIVES FOR LUBRICANTS

Shih-Ying Hsu, Morrisville, Pa., and Andrew G. Horodysky, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 27, 1991, Ser. No. 815,011

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] C10M *129/10, 159/16*

U.S. Cl. 252—47.005 **17 Claims**

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor proportion of from about 0.001 to about 10% by weight based upon the total weight of the composition of a multifunctional antiwear, antioxidant additive product of reaction prepared by reacting arylamines, hindered phenols, sulfur-containing compounds and hydrocarbyl acid anhydrides in molar rations varying respectively from about 1:1:1:1 to (1-4):(1-4):(1-4):(1-4) moles, at temperatures varying from 50° C. to about 250° C., under pressures varying from ambient to about 500 psi for a time sufficient to obtain the desired additive product of reaction.

5,304,315

PREVENTION OF GEL FORMATION IN TWO-CYCLE OILS

William H. Stover, Sarnia Ontario, Canada, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 15, 1992, Ser. No. 869,284

Int. Cl.[5] C10M *145/16, 149/00*

U.S. Cl. 252—51.5 A **22 Claims**

1. A two-cycle oil additive comprising a nitrogen-containing dispersant (I) which is the reaction product of (A) at least one polyalkylene polyamine (B) at least one monocarboxylic acid acylating agent and optionally (C) at least one high molecular weight carboxylic acid acylating agent; and (II) a wax crystal modifier which is co-polymer of (A) a mono or di-n-alkyl ester of a monoethylenically unsaturated C_4 to C_8 mono or dicarboxylic acid or anhydride wherein the number of carbon atoms in the n-alkyl groups is 14 and (B) at least one other unsaturated monomer.

5,304,316

DEINKING AGENT FOR REGENERATING WASTE PRINTED PAPER COMPRISING REACTION PRODUCT OF COMPOUND HAVING AN OH GROUP, A DICARBOXYLIC ACID, OR AN ANHYDRIDE THEREOF

Hideaki Urushibata; Koji Hamaguchi; Akio Kimura, and Shigetoshi Suzue, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 632,271, Dec. 21, 1990, abandoned. This application Sep. 18, 1992, Ser. No. 946,777

Claims priority, application Japan, Dec. 22, 1989, 1-333293

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—60 **2 Claims**

1. A deinking agent for regenerating waste paper, which comprises a reaction product obtained by reacting (a) a compound having an OH group, which is represented by the following compound (A) or incomplete ester (B) or a mixture thereof, with (b) a dicarboxylic acid or an anhydride thereof as an active ingredient, wherein said dicarboxylic acid anhydride is selected from the group consisting of maleic anhydride, succinic anhydride, glutaric anhydride and phthalic anhydride and approximately 1 mole of said dicarboxylic acid is used per residual OH group of compound (A) or incomplete ester (B):

(A) a compound obtained by adding ethylene oxide and propylene oxide to a higher fatty acid having 8 to 22 carbon atoms in such a manner as to control the molar ratio of ethylene oxide/propylene oxide to from 1 to 4 and to control the total amount of the added ethylene oxide and propylene oxide to from 10 to 50 moles on average; and

(B) an incomplete ester of a polyhydric alcohol, said polyhydric alcohol is selected from the group consisting of ethylene glycol, propylene glycol, glycerol, diglycerol, triglycerol, trimethylolpropane, pentaerythritol and sorbitol, to which ethylene oxide and propylene oxide have been added in such a manner as to control the molar ratio of ethylene oxide/propylene oxide to from 1 to 4 and to control the total amount of the added ethylene oxide and propylene oxide to from 10 to 50 moles per OH group on average, and a higher fatty acid having 8 to 22 carbon atoms,

wherein the compound (A) and the incomplete ester (B) have a molecular weight of from 800 to 40,000 and the incomplete ester (B) has a degree of esterification of from 30 to 90%.

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5,304,317

FROTH FLOTATION OF FINE PARTICLES

Christopher H. Barwise, Fording Bridge, and John Wilson, Swanwick, both of England, assignors to Foseur Limited, Derby, United Kingdom

Division of Ser. No. 857,408, Mar. 25, 1992, Pat. No. 5,217,604.
This application Nov. 23, 1992, Ser. No. 979,918
Claims priority, application United Kingdom, Mar. 28, 1991, 9106747
Int. Cl.[5] B03D *1/016, 1/02*
U.S. Cl. 252—61 3 Claims

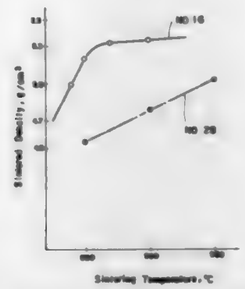
1. An additive composition for use in separating particles of a desired material from particles of an undesired material in a froth flotation process, said additive composition comprising about 0.2% to about 20% by weight of an alkylated polymer of vinylpyrrolidone and a carrier liquid therefor, said carrier liquid comprising about 50% to about 90% by weight of a collector and about 10% to about 30% by weight of a frother.

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SINTERED FERRITE MATERIALS AND CHIP PARTS

Hideo Watanabe, Chiba; Takashi Suzuki, and Kikuko Yoshizoe, both of Ichikawa, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 305,021, Feb. 2, 1989, abandoned. This application Mar. 25, 1993, Ser. No. 37,673
Claims priority, application Japan, Feb. 3, 1988, 63-23469
Int. Cl.[5] C04B *35/26*
U.S. Cl. 252—62.61 6 Claims



1. A chip element comprising a sintered ferrite material produced by the process comprising:

mixing 45 to 52 mol % calculated as Fe_2O_3 of iron oxide, a mixture of 25 to 35 mol % copper oxide and 15 to 25 mol % zinc oxide, calculated as CuO and ZnO, respectively, 0.01 to 5.0 mol % calculated as Li_2O of lithium oxide, 0.01 to 0.5 mol % as $M(IV)O_2$ of an oxide of a tetravalent metal M(IV) wherein M(IV) is at least one element selected from the group consisting of titanium, tin and germanium, and

sintering the ferrite material at a temperature of up to 950° C.,

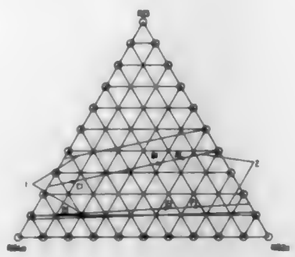
wherein the final composition has a spinel structure, and an electrode comprised of Ag.

5,304,319

WORKING FLUID

Yuji Yoshida, Itami; Koji Arita, Osaka, and Masami Funakura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 620,888, Nov. 29, 1990, abandoned.
This application Feb. 24, 1992, Ser. No. 839,700
Claims priority, application Japan, Nov. 30, 1989, 1-311153; Nov. 30, 1989, 1-311156; Nov. 30, 1989, 1-311158; Nov. 30, 1989, 1-311160
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 8 Claims



1. A working fluid which consists essentially of 1 to 95% by weight of tetrafluoroethane, 1 to 90% by weight of 1,1- difluoroethane and one fluorinated hydrocarbon having a boiling point of not higher than −40° C. under atmospheric pressure, selected from the group consisting of 5 to 50% by weight of trifluoromethane, 20 to 60% by weight of difluoromethane, and 55 to 80% by weight of 1,1,1-trifluoroethane, which has a composition in a range between phase equilibrium lines which are obtained when 0° C. is specified as a temperature and the same vapor pressure as that of chlorodifluoromethane at 0° C. is specified as a vapor pressure or a range between phase equilibrium lines which are obtained when 50° C. is specified as a temperature and the same vapor pressure as that of chlorodifluoromethane at 50° C. is specified as a vapor pressure.

5,304,320

COMPOSITIONS COMPRISING A FLUORO ETHER AND USE OF THESE COMPOSITIONS

Pierre Barthélemy, Jodoigne, and Mireille Paulus, Brussels, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Aug. 17, 1992, Ser. No. 929,952
Claims priority, application Belgium, Aug. 19, 1991, 09100755
Int. Cl.[5] C09K *5/04, 3/18;* C08J *9/14;* C11D *7/50*
U.S. Cl. 252—67 11 Claims

1. A virtually constant boiling point composition consisting essentially of a binary mixture of approximately 5 to 95% by weight of difluoromethoxy-2,2,2-trifluoroethane and of 95 to 5% by weight of one compound selected from the group consisting of 2,2-dichloro-1,1,1-trifluoroethane and 1,1-dichloro-1-fluoroethane, said composition having a boiling point at atmospheric pressure of approximately 26.7°±0.7° C. when the compound is 2,2-dichloro-1,1,1-trifluoroethane and of 28.5°±1° C. when the compound is 1,1-dichloro-1-fluoroethane.

5,304,321

CLEANING COMPOSITIONS, FORMED OF HYDROGEN-CONTAINING FLUOROCHLOROHYDROCARBONS AND PARTIALLY FLUORINATED ALKANOLS

Hans Buchwald, Ronnenberg; Andreas Brackmann, Hanover, and Boleslaus Raszkowski, Wiedensahl, all of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Division of Ser. No. 611,884, Nov. 5, 1990, Pat. No. 5,135,676.
This application Mar. 13, 1992, Ser. No. 850,854
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1989, 3936887; May 31, 1990, 4017492
Int. Cl.[5] C11D *7/30, 7/50;* C23G *5/028*
U.S. Cl. 252—171 18 Claims

1. A composition consisting essentially of an azeotrope-like composition of 98.5 to 96.5% by weight 1,1-dichloro-2,2,2-trifluoroethane (R123) and 1.5 to 3.5% by weight 2,2,3,3,3-pentafluoropropanol, with the sum of the constituents being 100% by weight, and having a boiling point in the range from 27° to 30° C. at atmospheric pressure.

3. A composition consisting essentially of an azeotrope-like composition of 44.0 to 49.0% by weight 1,1-dichloro-2,2,2-trifluoroethane (R123), 53.0 to 46.0% by weight 1,1-dichloro-1-fluoroethane (R141b) and 3.0 to 5.0% by weight 2,2,3,3,3-pentafluoropropanol, with the sum of the constituents being 100% by weight, and having a boiling point in the range from 30° to 33° C. at atmospheric pressure.

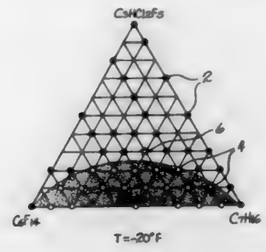
5. A composition consisting essentially of an azeotrope-like composition of 98.0 to 96.0% by weight 1,1-dichloro-2,2,3,3,3-pentafluoropropane (R225ca) and 2.0 to 4.0% by weight 2,2,3,3-tetrafluoropropanol, with the sum of the constituents being 100% by weight, and having a boiling point in the range from 49.5° to 53° C. at atmospheric pressure.

5,304,322

CLEANING SOLVENT FOR AIRCRAFT HYDRAULIC FLUID

Ronald J. Kuse, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 15, 1992, Ser. No. 888,992
Int. Cl.[5] C11D *7/30, 7/50;* C23G *5/028;* B08B *3/04*
U.S. Cl. 252—172 2 Claims



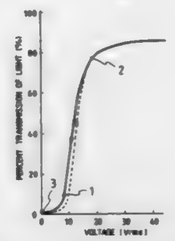
1. An environmentally compliant solvent blend for cleaning aircraft hydraulic fluid consisting essentially of from about 25 to 35 volume percent of C_6F_{14}; from about 25 to 35 volume percent pentafluorodichloropropane consisting essentially of one or more constituents selected from the group consisting of 1,1,1,2,2-pentafluoro-3,3-dichloropropane and 1,1,2,2,3-pentafluoro-1,3-dichloropropane; each said halogenated hydrocarbon substantially not catalyzing ozone depletion reactions in the upper atmosphere, and the balance normal heptane with naturally occurring amounts of one or more distillation by-products selected from the group consisting of 2-methylhexane; 3-methylhexane; 2,3-dimethylpentane; 3,3-dimethylpentane; 2,4-dimethylhexane; 2,2-dimethylhexane; dimethylcyclopentane, methylcyclohexane, and ethylpentane.

5,304,323

LIQUID CRYSTAL DEVICES AND PROCESS FOR PRODUCING THE SAME

Yoshi Arai; Toru Fujisawa, both of Saitama; Kiyohumi Takeuchi; Haruyoshi Takatsu, both of Tokyo; Koichiro Adachi; Hiroshi Ogawa, both of Chiba, and Kazunori Maruyama, Tokyo, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo and Kawamura Institute of Chemical Research, Sakura, both of Japan

Continuation of Ser. No. 759,766, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 259,635, Oct. 19, 1988, abandoned. This application Dec. 1, 1992, Ser. No. 984,279
Claims priority, application Japan, Oct. 20, 1987, 62-264533; Apr. 1, 1988, 63-80439; Sep. 19, 1988, 63-234383; Sep. 22, 1988, 63-238184
Int. Cl.[5] C09K *19/54, 19/52;* G02F *1/13*
U.S. Cl. 252—299.5 10 Claims



1. A liquid crystal device comprising a pair of substrates, at least one of them being transparent, and a light-control layer supported between the substrates prior to curing, wherein said light-control layer after curing comprises a liquid crystal material showing positive dielectric anisotropy and a transparent solid substance, said liquid crystal material forming a continuous phase throughout the light-control layer, and said transparent solid substance existing in said liquid crystal continuous phase in the form of a solid three-dimensional network having a uniform mesh size and constituting a light-scattering interface within the liquid crystal continuous phase.

5,304,324

MONODISPERSED GLYCOL SUSPENSION OF FINE INORGANIC OXIDE PARTICLES HAVING EXCELLENT DISPERSION STABILITY

Tadahiro Yoneda, Ibaraki; Saburo Nakahara, Takatsuki; Mitsuo Takeda, Suita, and Midori Kamo, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 793,324, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 350,777, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 21,791, Mar. 4, 1987, abandoned. This application Aug. 10, 1992, Ser. No. 925,424
Claims priority, application Japan, Mar. 7, 1986, 61-48456; Sep. 12, 1986, 61-213725; Sep. 25, 1986, 61-224838; Jan. 22, 1987, 62-11248
Int. Cl.[5] B01J *13/00*
U.S. Cl. 252—309 5 Claims

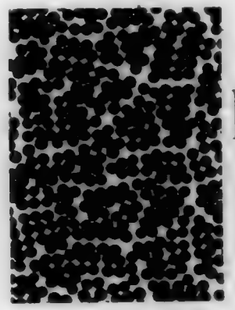
1. A substantially agglomerate free monodispersed glycol suspension having excellent dispersion stability, comprising a monodispersed suspension in a glycol of spherical fine particles of an amorphous inorganic oxide having an average particle diameter of 0.15 to 5 micrometers and a relative particle size standard deviation of 1.0 to 1.3 and containing glycol bonded to its surface, the amount of the bonded glycol being 0.003 to 5 millimoles per gram of the fine oxide particles, and said monodispersed glycol suspension being obtained by the steps of:

(a) preparing a suspension of fine particles of an amorphous hydrated inorganic oxide in an aqueous monohydric alco-

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holic solvent by hydrolyzing a hydrolyzable organometallic compound in the aqueous monohydric alcoholic solvent;

(b) preparing a glycol suspension of fine inorganic oxide particles from the suspension of step (a) by substituting a glycol for the monohydric alcoholic solvent; and



(c) preparing a monodispersed glycol suspension of fine inorganic oxide particles by heat-treating the suspension of step (b), wherein the heat-treatment temperature (T° C.) is $70 \leqq T \leqq TB+10$ in which TB represents the boiling point (°C.) of the glycol under the pressure at which the heat-treatment is carried out, and $TB \geqq 70$.

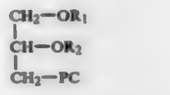
5,304,325

EMULSIONS CONTAINING ALKYL- OR ALKYLGLYCEROPHOSPHORYL CHOLINE SURFACTANTS AND METHODS OF USE

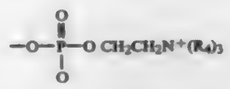
Robert J. Kaufman, and Thomas J. Richard, both of University City, Mo., assignors to HemaGen/PFC, St. Louis, Mo.

Filed Nov. 13, 1991, Ser. No. 791,420
Int. Cl.[5] B01J *13/00*; A61K *9/107*
U.S. Cl. 252—312 **17 Claims**

1. An emulsion comprising a fluorochemical, water and a surfactant having a general structure of



where R_1 and R_2 are a C_{14}–C_{18} saturated or unsaturated aliphatic group and PC is the phosphoryl choline group or salt thereof represented by the structure



where R_4 is hydrogen or lower alkyl from the group consisting of methyl, ethyl and propyl.

5,304,326

THERMOPLASTIC ELASTOMER COMPOUNDS

Kohei Goto; Motokazu Takeuchi, and Takumi Miyachi, all of Tokyo, Japan, assignors to Hyperion Catalysis International, Inc., Cambridge, Mass.

Continuation of Ser. No. 511,780, Apr. 18, 1990, abandoned. This application Dec. 17, 1992, Ser. No. 995,916
Claims priority, application Japan, Apr. 19, 1989, 1-99195
Int. Cl.[5] H01B *1/04*; H01C *1/04*
U.S. Cl. 252—511 **12 Claims**

1. A crosslinked thermoplastic elastomer composition comprising:

(a) 100 weight parts of at least one thermoplastic elastomer;

(b) Greater than 0 and less than 200 weight parts of a non-thermoplastic elastomer rubber per 100 weight parts of the thermoplastic elastomer, and

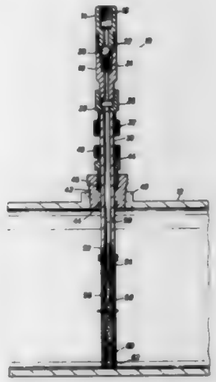
(c) 1–50 weight parts of ultra-fine carbon fibrils whose diameter is 3.5–70 nm and whose aspect ratio is greater than 5 per 100 weight parts of the combined mixture of said thermoplastic elastomer and said rubber.

5,304,327

MERCAPTAN INJECTION APPARATUS FOR USE WITH A PIPELINE

Brian H. Welker; Thomas S. Green, both of Sugarland, Tex., and Richard O. Lee, Chelsea, Mich., assignors to Welker Engineering, Inc., Sugarland, Tex.

Filed Jul. 13, 1992, Ser. No. 882,046
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—66 **8 Claims**



1. A liquid mercaptan dispensing apparatus for installation to odorize flowing natural gas in a pipeline comprising:

(a) a remote fitting adapted to be connected with a supply of liquid mercaptan delivered through a supply line;

(b) an elongate hollow tubular member connected with said fitting and adapted to direct liquid mercaptan flow axially through a passage in said member;

(c) means for supporting said elongate member mounted relative to a pipeline delivering natural gas wherein said means supports the distal end of said member interiorly of the pipeline;

(d) a serially arranged check valve in said supply line path for delivery of flowing liquid mercaptan so that said check valve provides a controlled back pressure to the liquid flow thereof; and

(e) an elongate hollow chamber means for receiving liquid mercaptan through said elongate tubular member, said chamber means having multiple perforations therein so that, when positioned within the pipeline at a transverse position with respect to flow in the pipeline, flowing natural gas vaporizes liquid mercaptan therein, and wherein said chamber means is filled with particulate material to thereby provide an enlarged surface area for supporting liquid mercaptan.

5,304,328

PACKING ELEMENT

Michael J. Dolan, Brecksville, Ohio, assignor to Norton Chemical Process Products Corporation, Worcester, Mass.

Filed Jan. 27, 1993, Ser. No. 9,525
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—94 **4 Claims**



1. A metal strip adapted to be formed into a cylindrical packing element, said strip having first and second end zones adjacent the ends thereof, adapted to be bent into a generally cylindrical form to produce a packing element; wherein the first end zone is provided with a bend such that, when the element is formed, the end of the strip is within the cylinder and the first end zone is further provided, in the vicinity of the bend, with one or more slots; and in which the second end zone is provided with one or more tabs projecting from the end of the strip and adapted to engage with the slots in the first end zone so as to lock the ends together when the strip is formed into a cylindrical packing element.

5,304,329

METHOD OF RECOVERING RECYCLABLE UNSINTERED POWDER FROM THE PART BED OF A SELECTIVE LASER-SINTERING MACHINE

Elmer D. Dickens, Jr., Richfield; Glenn A. Taylor, Twinsburg; Frederic W. Kunig, Akron; Angelo J. Magistro, Brecksville; Eric M. Weissman, Chagrin Falls, and Timothy R. Hradek, Cleveland, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Nov. 23, 1992, Ser. No. 980,003
Int. Cl.[5] B29C *35/08*
U.S. Cl. 264—25 **22 Claims**

1. A process for forming a sintered part from a laser-sinterable powder of a thermally degradable material contained in a part bed of a selective laser sintering machine, and recovering a recyclable powder reusable in said machine, comprising,

(a) maintaining a quiescent bed of said laser-sinterable powder in said part bed;

(b) flowing a stream of a cooling gas downwardly through the upper surface of said bed at superatmospheric pressure in the range from 105 kPa–120 kPa with a pressure drop in the range from 3–12 kPa, a temperature below said powder's softening temperature T_s at a flow rate insufficient to disturb particles at or near the surface of the bed, or to cause channeling in the bed;

(c) withdrawing said cooling gas from said part bed's lower portion at a temperature no higher than the caking temperature T_c of said powder;

(d) spreading powder from a feed bed onto said part bed as a first layer in the range from about 50μm to 180μm thick at a temperature near said T_s;

(e) directing a laser beam in a pattern obtained from a two-dimensional section of a three-dimensional model, with sufficient energy to form a first sintered slice without permitting said first slice to curl;

(f) depositing a second layer of said powder from said feed bed over said first slice and forming a second slice sintered to said first slice;

(g) again directing said laser beam to sinter regions of said powder in said part bed, said beam being patterned for a successive two-dimensional section;

(h) transferring a third layer of said powder from said feed bed and depositing said third layer over said second slice without permitting said second slice to curl;

(i) repeating the foregoing steps seriatim, until all layers have been deposited and sequentially sintered into slices corresponding to successive sections of said part's three-dimensional model;

(j) forming a sintered three-dimensional part embedded in said part bed without forming a growth of powder on surfaces of said sintered part;

(k) maintaining a positive temperature gradient from said part bed's upper surface to a maximum temperature of powder in a horizontal plane through a zone of maximum temperature in said part bed, no higher than the caking temperature T_c of said powder; and, maintaining a negative temperature gradient from said maximum temperature to said part bed's bottom; and,

(l) recovering a distortion-free sintered part and a freely flowable unsintered powder.

5,304,330

PREPARATION OF MIXED FIBER COMPOSITE STRUCTURES

Bruce J. Tatarchuk; Millard F. Rose; Gopal A. Krishnagopalan, all of Auburn, Ala.; John N. Zabasajja, and David A. Kohler, both of Baton Rouge, La., assignors to Auburn University, Auburn University, Ala.

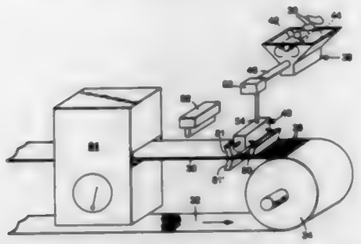
Continuation-in-part of Ser. No. 356,861, May 24, 1989, Pat. No. 5,080,963, and a continuation-in-part of Ser. No. 435,167, Nov. 13, 1989, Pat. No. 5,102,745. This application Aug. 21, 1991, Ser. No. 748,032
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—61 **29 Claims**



1. A method of making a composite comprising the steps of forming a dispersion comprising carbon fibers, metal fibers, and cellulose in an unreactive liquid medium, collecting the resulting wet dispersion, removing the unreactive liquid medium from the wet dispersion to afford a dried preform, heating the dried preform in an atmosphere containing hydrogen at a temperature effective to volatilize at least 90 weight percent of the cellulose and fuse the metal fibers, with a weight loss of under about 25 weight percent of carbon fibers, and recovering the resultant composite.

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5,304,331
METHOD AND APPARATUS FOR EXTRUDING BINGHAM PLASTIC-TYPE MATERIALS
William K. Leonard, River Falls, Wis.; Donley D. Rowenhorst, Maplewood, Minn.; Jerald A. Scherger, Hudson, Wis., and Donald R. Winberg, St. Paul Park, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 918,360, Jul. 23, 1992, and Ser. No. 919,179, Jul. 23, 1992, Pat. No. 5,201,916, and Ser. No. 919,180, Jul. 23, 1992. This application Dec. 17, 1992, Ser. No. 991,996
Int. Cl.[5] B29B *9/10*
U.S. Cl. 264—141 **19 Claims**



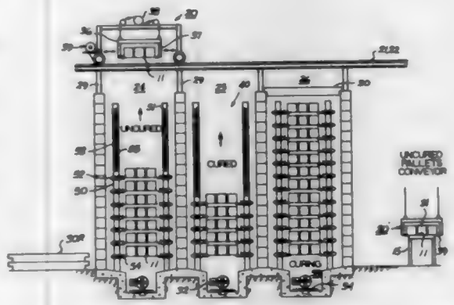
1. A method of extruding a Bingham plastic-type material, comprising the steps of:
(a) providing a die body having a longitudinal bore including a longitudinal axis, and a feed port communicating the exterior of the die body with the bore, the die body including a die passageway formed therein and communicating with the bore along the length thereof;
(b) providing at least one die opening communicating the die passageway with the exterior of the die body;
(c) rotationally supporting an auger within the bore, the rotational axis of the auger parallel to the longitudinal axis of the bore, the auger adapted to convey said material from the feed port to the die passageway and to maintain on average a zero pressure gradient along the longitudinal axis of the bore to provide a flow of material through said passageway;
(d) supplying said material under pressure through the feed port and into the bore;
(e) rotating the auger with respect to the die body to advance said material along the length of the auger, through the die passageway, and uniformly through the die opening;
(f) conveying an endless belt adjacent the die opening such that said material is uniformly extruded onto the belt, the belt having a plurality of shaped apertures therein;
(g) urging said material against the belt to depress said material into the apertures;
(h) heating said material within the belt to form a plurality of particles; and
(i) removing the particles from the belt.

5. An apparatus for receiving and extruding a Bingham plastic-type material, comprising:
(a) a die body having a longitudinal bore and a feed port communicating the exterior of said die body with said bore,
(b) a supply of Bingham plastic-type material communicating with said feed port;
(c) a die passageway formed in said die body and communicating with said bore along the length thereof;
(d) least one die opening communicating said die passageway with the exterior of said die body;
(e) auger means rotationally supported within said bore for conveying said material from said feed port to said die passageway and through said die opening responsive to rotation of the auger means with respect to the die body, said auger means further adapted to maintain on average a zero pressure gradient along the longitudinal axis of the bore to provide a uniform flow of material through said passageway and through said opening;
(f) an endless belt having a plurality of shaped apertures formed therein, said belt supported adjacent said die opening for receiving said material within said apertures;
(g) means for urging said material into the apertures; and
(h) means for heating said material within the belt to form a plurality of particles.

5,304,332
IN-MOLD COATINGS WITH IMPROVED PERFORMANCE
Douglas S. Richart, Reading, Pa., assignor to Morton International, Inc., Chicago, Ill.
Filed Mar. 24, 1992, Ser. No. 857,031
Int. Cl.[5] B29C *43/18*
U.S. Cl. 264—255 **8 Claims**

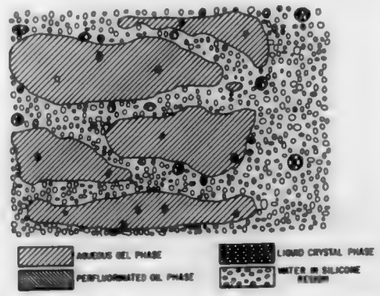
1. A method for forming a molded article having a cured, hardened, unsaturated polyester coating on a cured, unsaturated polyester fill resin, said method comprising providing an unsaturated polyester coating powder composition comprising from about 20 to about 100 parts by weight of at least one unsaturated polyester resin; from 0 to about 80 parts by weight of at least one copolymerizable monomer or oligomer; melamine and/or benzoguanamine as a surface hardening agent; and an initiator; providing a mold surface having a temperature of from about 260° F. to about 340° F.; applying the coating powder to that surface; maintaining the mold surface at said temperature until the powder melts, flows and coalesces to form a partially cross-linked coating on the surface, said coating having an outer surface against said mold surface and an opposed inner surface; contacting said inner surface with a partially cross-linked unsaturated polyester fill resin; and continuing the contacting under pressure until the coating and fill resin cross-link across the interface between them.

5,304,333
CONCRETE PRODUCT MOLDING AND CURING PLANT METHODS AND APPARATUS
Francisco Trevino-Gonzales, 5a Ave. 609 Cumbres, 1er Sector, Monterrey N.L., Mexico 64610
Filed Oct. 23, 1992, Ser. No. 966,003
Int. Cl.[5] B28B *11/00*; F26B *3/00, 19/00, 25/06*
U.S. Cl. 264—234 **19 Claims**



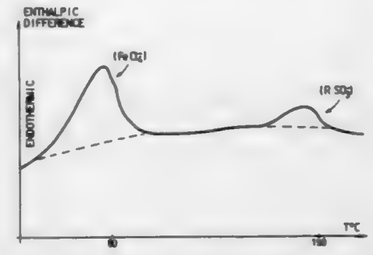
1. Apparatus for processing concrete products in a curing kiln, comprising in combination,
a curing kiln,
input means for positioning pallets containing green concrete products into single layered sets of pallets in end to end relationship,
output means for receiving the sets of pallets from the kiln with the products having been cured,
a set of kiln compartments with removable top cover plates for providing an access opening dimensioned for receiving and removing the sets of pallets arranged in end to end relationship vertically inside the kiln,
pallet supporting means inside the kiln compartments for disposing the single layered pallet sets in spaced vertical layers during curing of the green concrete products without interfering with vertical positioning of pallets in the spaced vertical layers, and
transport means for moving the sets of pallets into the kiln compartments into position on the pallet supporting means and out of the kiln compartments after curing of the green concrete products from the curing position on said pallet supporting means
wherein the pallet supporting means further comprises a set of movable support segments for movement into and out of position for supporting the sets of pallets in the spaced vertical layers, and reciprocal positioning means for moving the support segments into and out of position respectively for supporting the sets of pallets and for moving the sets of pallets out of the kiln compartments.

5,304,334
METHOD OF PREPARING A MULTIPHASE COMPOSITION
Konstantinos M. Lahanas, Hackensack, N.J.; Tracy N. Keeler, Northport, N.Y.; Andrew J. Bevacqua, East Setauket, N.J., and George Ciocs, Lake Grove, N.Y., assignors to Estee Lauder, Inc., New York, N.Y.
Filed Apr. 28, 1992, Ser. No. 874,933
Int. Cl.[5] A61K *31/78, 31/785*; B01J *13/00*; C09K *19/36*
U.S. Cl. 252—314 **27 Claims**



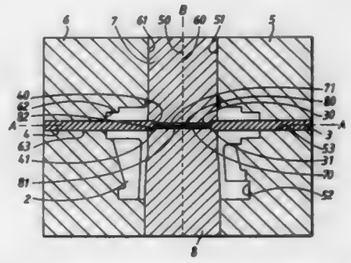
1. A method of forming a stable, multiphase composition comprising:
(a) mixing an aqueous solution of a water-soluble polymeric emulsifier, a silicone-based emulsifier and an oleophobic, hydrophobic silicone fluid in amounts effective to form a stable water-in-silicone emulsion;
(b) mixing said water-in-silicone emulsion with a hydrophilic gel comprising a homogeneous mixture of water and a sufficient amount of at least one viscosity-enhancing, water-soluble polymer, said emulsion and gel being combined in amounts effective to form a dispersion in which said gel is dispersed in said emulsion; and
(c) adding to said dispersion a thermotropic liquid crystal and a perfluoropolyether in amounts effective to form a stable, multiphase composition comprising a continuous phase of silicone fluid and independent, polydisperse phases of water, gel, liquid crystal and perfluoropolyether.

5,304,335
METHOD FOR THE OBTAINING OF POLYMERS WITH THERMALLY STABLE CONDUCTIVITY
Olivier Sagnes, Corbreuse, and Philippe Michel, Paris, both of France, assignors to Thomson-CSF, Puteaux, France
Filed Feb. 19, 1992, Ser. No. 836,852
Claims priority, application France, Feb. 19, 1991, 91 01931
Int. Cl.[5] H01B *1/00*
U.S. Cl. 252—500 **8 Claims**



1. A method for obtaining a conductive polymer which exhibits a stabilized and increased conductivity, consisting of the steps of:
chemically polymerizing a monomer which forms said conductive polymer in the presence of an oxidizing salt and a codopant salt, said oxidizing salt initiating the polymerization reaction and said codopant salt not being responsible for polymerization but being responsible for stabilizing electron defects in the conductive polymer obtained; and
thermally treating the conductive polymer obtained which contains oxidizing anions from said oxidizing salt and codopant anions from said codopant salt at a temperature which expels oxidizing ions from the polymer matrix, but lower than the temperature at which codopant anions would be expelled from the polymer matrix.

5,304,336
METHOD OF PRODUCING A VOLUMETRIC FLOW CONTROL VALVE
Jan Karlsson, Västra Frölunda, and Jan Dahlgren, Gothenburg, both of Sweden, assignors to AB Volvo, Sweden
Filed Oct. 15, 1991, Ser. No. 776,799
Claims priority, application European Pat. Off., Oct. 24, 1990, 90850355.0
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—242 **12 Claims**



1. A method of producing a flow control valve including a valve housing, a channel extending through said valve housing and defining a boundary surface, and a valve body rotatably arranged in said channel about an axis of rotation and having a peripheral surface, said peripheral surface and said boundary surface together forming an interengaging pair of surfaces in a predetermined at least partially closed position of said valve

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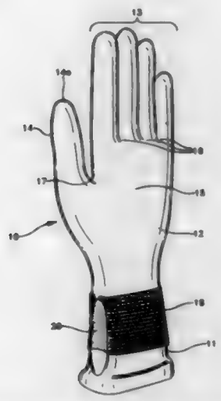
body, said method comprising the steps of molding said valve housing from a first moldable material and molding said valve body in said predetermined position from a second moldable material which does not bond to said first moldable material, said step of molding one of said vale housing and said valve body including the step of molding one of said interengaging surfaces using another of said interengaging surfaces as a mold.

5,304,337

GLOVE FORMING METHOD

Fung-Bor Chen, Sandy; Wu-Nan Huang, Salt Lake City, both of Utah, and Carl M. Rogers, Ware Shoals, S.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 35,824, Apr. 8, 1987, Pat. No. 4,809,365. This application Dec. 27, 1988, Ser. No. 289,528
Int. Cl.[5] B29C *41/14*; B29L *31/48*
U.S. Cl. 264—303 **6 Claims**



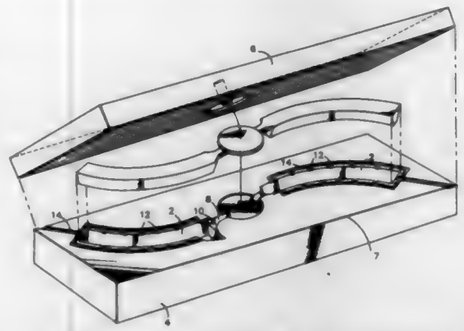
1. A method for forming a glove with the following steps:
providing clean but powder lubricated forms configured to make a glove with a single flute extending from the base of the thumb across the cuff and having a rib-like lateral semi-circumferential area about the cuff from one side of the flute to the other,
dipping the forms into a coagulant bath,
restraining the off flow during the dripping of the dipped coagulant across the rib-like lateral semi-circumferential area about the cuff for forming a greater thickness in the area,
drying the dipped forms in air,
dipping the dried coagulant film covered forms into a latex bath,
restraining the off flow during the dripping of the dipped latex across the rib-like lateral semi-circumferential area about the cuff for forming a greater thickness in the area,
drying the dipped forms and film layers in air thus shrinking and stretching film material deposited in the flute during the dipping,
creating a space between the glove and the flute on each form,
leaching the forms and film layers in water dip,
dipping film covered forms in powder lubricant,
drying the powdered film in hot air,
curing the powdered film in hot air, and
stripping the film from each of the glove forms by grasping within the space and pulling slightly outwardly and longitudinally away from the base to evert the glove.

5,304,338

CARBON FIBER REINFORCED POLYIMIDE COMPOSITES

Christopher J. Hertel, Glastonbury; Charles R. Watson, Windsor, and Jeffrey S. LeShane, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1992, Ser. No. 862,663
Int. Cl.[5] B29C *45/02*
U.S. Cl. 264—328.4 **8 Claims**



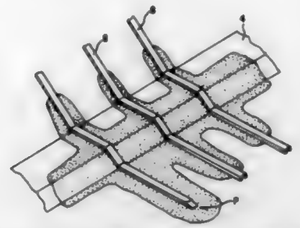
1. A method of making substantially microcrack-free and blister-free composites by transfer molding, comprising the steps of:
(a) drying a molding compound that comprises a mixture of a partially imidized polyimide resin and a plurality of carbon reinforcing fibers that are less than 3 mm long to remove excess moisture,
(b) heating a transfer molding apparatus to a molding temperature sufficient to cure the molding compound into a desired composite, wherein the transfer molding apparatus includes a material reservoir, a transfer ram, and a molding tool that has a plurality of vents connected to a passage that permit volatiles in the molding tool to escape from the molding tool,
(c) placing the molding compound into the heated material reservoir to heat the molding compound to a temperature at which the molding compound softens into a viscous material, wherein the temperature at which the molding compound softens into a viscous material is less than the molding temperature,
(d) transferring the viscous molding compound from the material reservoir to a mold cavity in the heated molding tool with the heated transfer ram to establish a molding pressure in the mold cavity sufficient to cure the molding compound into the desired composite within a convenient time, wherein the viscous molding compound is transferred to the mold cavity such that the viscous molding compound is heated to the molding temperature at a rate of at least about 85° C./min,
(e) maintaining the molding preasure and temperature in the mold cavity for a time sufficient to cure the molding compound into the desired composite, wherein volatiles produced while the molding compound cures are removed through the vents in the molding tool,
(f) cooling the cured composite to a temperature suitable for starting a post-cure procedure,
(g) heating the cured composite to a suitable post-cure temperature at a rate sufficient to permit residual volatiles in the composite to diffuse from the composite,
(h) maintaining the cured composite at the post-cure temperature for a time sufficient to ensure that residual volatiles are removed from the composite, and
(i) cooling the cured composite.

5,304,339

METHOD FOR MANUFACTURING A LARGE-SIZED OBJECT OF FIBER REINFORCED SYNTHETIC RESIN

Adolf Le Comte, 101 Harbor La. West, New Rochelle, N.Y. 10805

Continuation-in-part of Ser. No. 527,450, May 23, 1990, Pat. No. 5,096,651. This application Dec. 11, 1991, Ser. No. 804,759
Int. Cl.[5] B29C *43/20*
U.S. Cl. 264—511 **29 Claims**



1. In a method of manufacturing a large-sized, thin walled, elongated molding of fiber reinforced, hardenable synthetic resin, wherein at least one layer of reinforcing fiber is laid against a form-retaining, rigid inner mold part such that the fiber layer is substantially co-extensive with the inner mold part, an outer mold part is placed against the fiber layer so as to form a mold cavity between the mold parts with the fiber layer disposed within the mold cavity, a liquid, hardenable synthetic resin is flowed into the mold cavity through one or more openings in at least one of the mold parts to at least substantially fill the mold cavity, and a reduced pressure is induced within the mold cavity by means of at least one vent communicating with the mold cavity in at least one of the mold parts being connected to a vacuum source sufficient to remove air from the mold cavity, the improvement comprising:
(1) placing a non-form-retaining, flexible outer mold part against said fiber layer, which outer mold part is a flexible film;
(2) applying at least one multi-cannelled elongated core to said fiber layer, with the core extending at least along substantially the entire length of the molding in the longitudinal direction, said core having a plurality of interconnected channels on at least one side thereof;
(3) flowing the liquid, hardenable resin into the mold cavity such that resin flows in said channels in substantially both the longitudinal and transverse directions of said core;
(4) connecting the said at least one vent to a vacuum source to provide a vacuum sufficient to cause said flexible outer mold part to be tightly drawn against said fiber layer and toward said inner mold part, air to be removed from within the resin, mold cavity and fiber layer, wherein said resin is caused to flow into said fiber layer and mold cavity and a high fiber-to-resin content molding is produced;
(5) substantially filling said mold cavity with said resin and stopping the flow of resin; and,
(6) maintaining said vacuum through said vent until said resin has sufficiently hardened as to be shape sustaining.

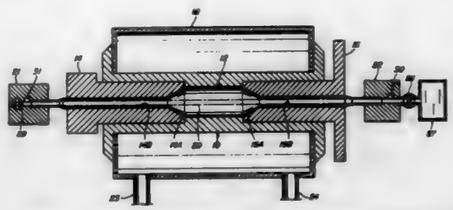
5,304,340

METHOD OF INCREASING THE TENSILE STRENGTH OF A DILATATION BALLOON

Wolcott M. Downey, Melrose, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 755,696, Sep. 6, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 43,409
Int. Cl.[5] B29C *49/08*, *49/64*
U.S. Cl. 264—521 **25 Claims**

1. A method of making a thin wall dilatation balloon having a high percentage of the maximum tensile strength of the balloon material, the method compriaing the steps of:
heating a thin wall, tubular parison of a biaxially orientable polymer by flowing a heated fluid through the interior of the parison to achieve a radially decreasing temperature gradient across the sidewall of the parison going from the inner to the outer surface of the parison, the outer surface being heated to a temperature no lese than the orientation temperature of the polymer and the parison having a wall thickness of no greater than about 25 mils;
axially drawing and circumferentially expanding the parison while subject to said temperature gradient, said circumferential expansion being achieved by sealing one end of the parison and injecting a heated fluid to expand the parison; and
wherein the temperature gradient is selected to compensate for differing degrees of stretch across the sidewall and produce the thin wall dilatation balloon having a substantially uniform and relatively high degree of orientation across the sidewall and thus a high average tensile strength.

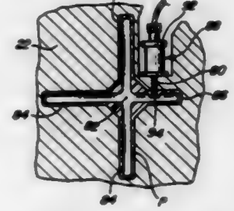


5,304,341

INJECTION MOLDING APPARATUS AND METHOD HAVING IN-CAVITY CONTROL OF PLASTICS AND GAS FLOW RATES

Suresh D. Shah, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1992, Ser. No. 990,139
Int. Cl.[5] B29C *45/00*, *45/03*
U.S. Cl. 264—572 **11 Claims**



1. A method of injection molding hollow plastics articles from plastics material utilizing separable mold tool parts to define a contoured mold cavity therebetween when operatively interfaced with at least first and second channels and with the first channel having a volume greater than the volume of said second channel, said method comprising the steps of:
injecting a short shot of hot and moldable plastics material into the mold cavity under pressure causing the material to flow into and partially fill each of the channels;
injecting pressurized gas into the cavity causing the plastics material to flow as a continuous layer against the contour provided by the cavity walls;
moving a retractable plastics flow restricting element to a selected position within said cavity to partially block the flow of plastics material entering into said second channel during the material and gas injection steps to reduce the flow rate of plastics material entering into the second channel and thereby maintaining a predetermined flow

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balance of said plastics material between each of the channels so that said plastics material forms a hollow plastics article having a wall having a predetermined thickness range and conforming to said cavity including each of said channels;

cooling the plastics material so that it solidifies to form the molded hollow article;

opening the mold tool parts and removing the hollow article from the mold cavity.

5,304,342

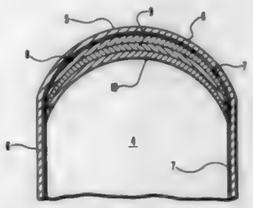
CARBIDE/METAL COMPOSITE MATERIAL AND A PROCESS THEREFOR

H. Tracy Hall, Jr., 634 N. 550 East, Orem, Utah 84057, and David R. Hall, 738 E. 2680 North, Provo, Utah 84604

Filed Jun. 11, 1992, Ser. No. 897,311

Int. Cl.[5] B22F *3/14, 7/06*

U.S. Cl. 419—11 **26 Claims**



1. A method of forming a sintered product which comprises:

providing a substantially uniform mixture comprising a hydrogen-reducible compound of a carbide-forming refractory metal and a carbon source material comprised substantially of diamond,

subjecting said mixture to hydrogen reduction at an elevated temperature conducive to the reduction of said compound, thereby producing a reduced mixture comprising particles of reduced refractory metal and particles of said diamond,

forming a dense compact of said reduced mixture,

subjecting said compact to sintering in the presence of an iron-group binder metal at a temperature at which a liquid phase forms comprising said iron-group binder metal, said carbide-forming refractory metal, and carbon, and at a pressure at which diamond is stable,

continuing said sintering to form by reaction refractory metal carbide in situ,

said liquid phase being distributed through said compact during said sintering,

and cooling said compact to provide a sintered product comprising particles of said in situ produced refractory metal carbide and said binder metal.

5,304,343

ALUMINUM-ALLOY POWDER, SINTERED ALUMINUM-ALLOY, AND METHOD FOR PRODUCING THE SINTERED ALUMINUM-ALLOY

Shin Miura; Youichi Hirose; Yoshio Machida, and Mitsuaki Sato, all of Saitama, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 635,444, Dec. 28, 1990, Pat. No. 5,176,740.

This application Oct. 19, 1992, Ser. No. 962,906

Claims priority, application Japan, Dec. 29, 1989, 1-342931; Aug. 7, 1990, 2-207496

Int. Cl.[5] B22F *3/12*

U.S. Cl. 419—39 **18 Claims**

1. A method for producing a sintered aluminum-alloy comprising compressing a mixed, aluminum-alloy starting powder which consists of a mixture of a first aluminum-alloy starting powder consisting of from 0.1 to 3.0% by weight of Cu and Al and unavoidable impurities in balance, and at least one second aluminum-alloy starting powder selected from (1) a aluminum alloy starting powder consisting of from 4 to 20% by weight of Mg, from 12 to 30% by weight of Si, and Al and unavoidable impurities in balance, and (2) an aluminum-alloy starting powder consisting of from 0.1 to 20.0% by weight of Mg, from 1 to 20% by weight of Si, from 30 to 50% by weight of Cu, and Al and unavoidable impurities in balance, in such an amount that a composition of the mixture is from 0.1 to 2.0% by weight of Mg, from 0.1 to 2.0% by weight of Si, from 0.2 to 6% by weight of Cu, and Al and unavoidable impurities in balance, said compressing being at a pressure of from 2 to 8 ton/cm^2 and then sintering the compress powder in a vacuum or inert atmosphere.

5,304,344

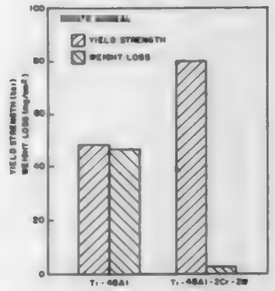
GAMMA TITANIUM ALUMINUM ALLOYS MODIFIED BY CHROMIUM AND TUNGSTEN AND METHOD OF PREPARATION

Shyh-Chin Huang, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 2, 1989, Ser. No. 360,664

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—418 **16 Claims**



9. A chromium and tungsten modified titanium aluminum alloy consisting essentially of titanium, aluminum, chromium, and tungsten in the following approximate atomic ratio:

$$Ti_{52-44}Al_{46-50}Cr_{1-3}W_{1-3},$$

said alloy having been prepared by ingot metallurgy, and said alloy being given a heat treatment between 1250° C. and 1350° C.

5,304,345

HYDROGEN ABSORBING ALLOY

Shin Fujitani; Ikuo Yonezu, both of Hirakata; Koichi Nishimura, Suita; Toshihiko Saito, Kyoto, and Akio Furukawa, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 708,599, May 30, 1991, abandoned.

This application Oct. 19, 1992, Ser. No. 963,030

Claims priority, application Japan, May 31, 1990, 2-142300

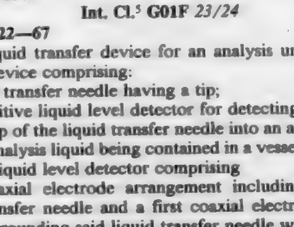
Int. Cl.[5] C22C *19/03*

U.S. Cl. 420—455 **2 Claims**

1. A hydrogen absorbing alloy having an hexagonal $CaCu_5$ crystal structure, said alloy consisting of

$$LRM_{1-x}Y_x(Ni_{5-y}G_y)_z$$

wherein LRM is lanthanum-rich misch metal comprising at least 80 weight % of La and up to 5 weight % of Ce, Y is yttrium, Ni is nickel, G is at least one element selected from the group consisting of Al, Cr, Mn and Co, and x, y and z are in the



ranges of $0.05 \leqq x \leqq 0.6$, $0.05 \leqq y \leqq 1$ and $0.8 < z \leqq 1.2$, respectively.

5,304,346

WELDING MATERIAL FOR LOW COEFFICIENT OF THERMAL EXPANSION ALLOYS

David B. O'Donnell, and Robert A. Bishel, both of Huntington, W. Va., assignors to INCO Alloys International, Inc., Huntington, W. Va.

Continuation of Ser. No. 773,234, Oct. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 645,822, Jan. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,578, Oct. 26, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,514

Int. Cl.[5] C22C *38/08*

U.S. Cl. 420—580 **13 Claims**

1. A welding material useful for welding iron containing low coefficient of thermal expansion alloys consisting essentially of by weight percent about 25–55% nickel, about 0–30% cobalt, at least 0.12% carbon to a maximum of 0.5% carbon, about 0.25–5% of niobium and tantalum, about 0–0.5% element selected from the group consisting of magnesium, zirconium and cerium, less than about 0.1% sulfur, less than about 1% silicon, less than about 0.1% phosphorous and balance iron with incidental impurities.

5,304,347

LIQUID TRANSFER DEVICE FOR AN ANALYSIS UNIT

Karl-Heinz Mann, Weilheim; Leonhard Geissler, and Andrea Sigl, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,271

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203638

Int. Cl.[5] G01F *23/24*

U.S. Cl. 422—67 **24 Claims**

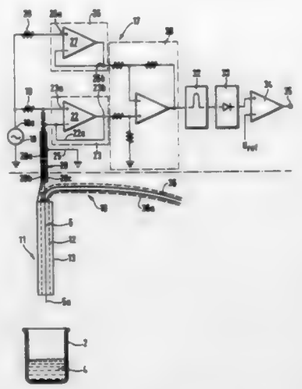
1. A liquid transfer device for an analysis unit, the liquid transfer device comprising:

a liquid transfer needle having a tip;

a capacitive liquid level detector for detecting a dipping of the tip of the liquid transfer needle into an analysis liquid, the analysis liquid being contained in a vessel, said capacitive liquid level detector comprising

a coaxial electrode arrangement including said liquid transfer needle and a first coaxial electrode coaxially surrounding said liquid transfer needle with the exception of the tip which projects therefrom, said first coaxial electrode being electrically insulated from said liquid transfer needle, wherein said liquid transfer needle and said first coaxial electrode of said coaxial electrode arrangement are coupled to a detection circuit comprising isolation amplifier circuit means for producing an output signal which corresponds to the input signal in phase and level, wherein an output side internal resistance of said isolation amplifier circuit means is lower than an input resistance thereof; said liquid level detector further comprising

an a.c. voltage source connected to an input of said isolation amplifier circuit means and one of said first coaxial electrode and said liquid transfer needle, said one of the liquid transfer needle and said coaxial electrode forming a signal electrode,



wherein the other of said liquid transfer needle and said first coaxial electrode is coupled to an output of said isolation amplifier circuit means and forms a compensating electrode.

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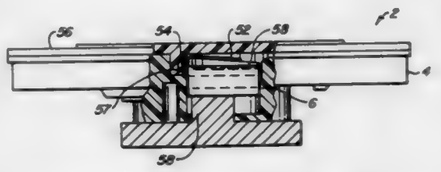
REAGENT CONTAINER FOR ANALYTICAL ROTOR

Tammy L. Burd, Fremont, and Carol T. Schembri, San Mateo, both of Calif., assignors to Abaxis, Inc., Sunnyvale, Calif.

Filed Feb. 11, 1992, Ser. No. 833,689

Int. Cl.[5] G01N *9/30;* **B04B** *7/00*

U.S. Cl. 422—72 **15 Claims**



1. An analytical rotor for use with a centrifuge, the rotor comprising:

a rotor body having an axis of rotation, a top surface, and a bottom surface;

a receptacle on a surface of the rotor body for receiving a post on the centrifuge;

a container holding a liquid and comprising a seal, wherein the container is movably positioned in a chamber of the body adjacent to the receptacle;

means for engaging and holding a portion of the seal against displacement relative to the chamber such that insertion of the post into the receptacle displaces the container to open the seal and releases the liquid.

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5,304,349

APPARATUS FOR DISINFECTION OF HEMODIALYSIS DEVICES WITH A POWDERED CONCENTRATE

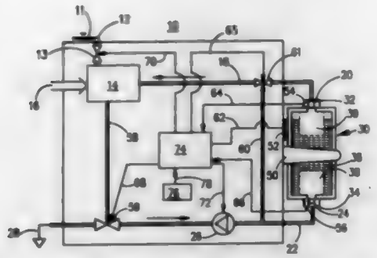
Hans-Dietrich Polaschegg, Oberursel, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg v.d.H., Fed. Rep. of Germany

Filed Oct. 22, 1992, Ser. No. 966,098

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1991, 4138140

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—101 **20 Claims**



1. Apparatus for dialysis (10) comprising water supply (11), dialysis fluid supply container (14), supply line (18) having a first end and a second end, the first end of said supply line (18) being connected to said dialysis fluid supply container (14), a first connector (20) mounted to the second end of said supply line (18), said second end of said supply line (18) being selectively connected to a dialyzer by means of said first connector (20), discharge line (22) having a first end and a second end, a second connector (24) mounted to the first end of said discharge line (22), said first end of said discharge line (22) being selectively connected to said dialyzer by means of said second connector (24), said second end of said discharge line (22) leading to discharge line (28), and disinfection apparatus connected during disinfection cycle both to said dialysis fluid supply container (14) through said supply line (18) and to discharge line (22), said discharge line (22) can be selectively connected to supply container (14) through a recirculating line (58) to permit recirculating operation, wherein during said disinfection cycle a bypass valve (61) in said supply line (18) can be selectively activated through a connecting line (65) to allow for disinfection of the entire dialysis apparatus characterized in that:

(a) said disinfection apparatus comprises container (30) having a first end and a second end to hold a predetermined quantity of disinfectant (36),

(b) a third connector (32) mounted to said container (30) at the first end thereof and connected in fluid-tight relationship to said first connector (20) at the second end of said supply line (18),

(c) a fourth connector (34) mounted to said container (30) at the second end thereof and connected in fluid-tight relationship to said second connector (24) at the first end of said discharge line (22).

5,304,350

SLIDE TYPE ANALYTIC DEVICE, METHOD, AND PREPARATION APPARATUS

Peter M. Meserol, Montville, N.J., assignor to Kloehn Instrument Inc., Brea, Calif.

Filed Jan. 16, 1992, Ser. No. 821,708

Int. Cl.[5] B01L *9/00*

U.S. Cl. 422—104 **4 Claims**

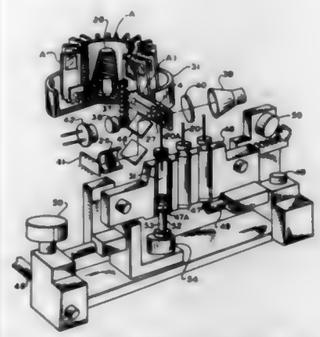
2. An analytic implement comprising:

a frame;

a pair of opposed, spaced apart, parallel transparent rigid planar plates mounted in said frame and providing a cavity therebetween for receiving a test specimen, said specimen occupying less than the entirety of said cavity;

one of said plates mounted slidably in said frame for exposing the inner surface of the opposing panel upon relative movement therebetween;

at least one channel molded into said frame for providing fluid communication with said cavity, said frame including opposed ends, one of said ends provided with rotational engagement means for positioning said analytic



implement in a predetermined position and an aperture for permitting ingress of a fluid into said channel, and the other of said ends provided with at least one aperture permitting egress of said fluid from said channel;

said frame including a side provided with an opening for permitting egress and ingress of a computer controlled tubular probe into and out of said cavity for the purpose of depositing reagent directly on said specimen residing in said cavity.

5,304,351

SEMI-OVAL SHAPED CARRIER HAVING EXCELLENT THERMAL STRESS RESISTANCE AND THERMAL FATIGUE RESISTANCE FOR AUTOMOBILE EXHAUST GAS-PURIFYING CATALYST

Takashi Tanaka; Mikio Yamanaka, both of Futtsu; Yutaka Sadano, Hikari; Kouki Yotsuya, Chiyoda; Yasushi Ishikawa, Tokai, and Toshihiro Takada, Toyota, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Nov. 12, 1991, Ser. No. 790,497

Claims priority, application Japan, Nov. 13, 1990, 2-306832

Int. Cl.[5] F01N *3/15, 3/28*

U.S. Cl. 422—180 **6 Claims**



1. A metallic carrier with an oval type transverse cross-section having an excellent thermal stress resistance and thermal fatigue resistance used for an automobile exhaust gas-purifying catalyst, comprising:

a metallic honeycomb body having a lateral face constituted by superimposing flat metal foils and corrugated metal foils one on the other and then winding them together and a metallic jacket enclosing the lateral face of said honeycomb body, the metallic carrier being composed of the metallic honeycomb body joined to the metallic jacket, the transverse cross section of said metallic carrier constituting parallel portions and semi-circular arc portions wherein said honeycomb body is joined to said jacket substantially only at said semi-circular arc portions of said honeycomb body.

5,304,352

ATMOSPHERIC ULTRA-VIOLET LASER OZONOGENESIS

Arturo G. Bellettini, 1301 Stonehenge Rd., Charleston, W. Va. 25314, and Richard J. Bellettini, 330 N. Cordova St., Burbank, Calif. 91505

Filed Jan. 13, 1992, Ser. No. 819,989

Int. Cl.[5] C01B *13/10;* **B64G** *1/10*

U.S. Cl. 422—186 **1 Claim**

1. A method for generating ozone in the upper atmosphere consisting essentially of:

mounting a laser on a high altitude platform selected from either a satellite or an aircraft,

and passing laser light through said atmosphere, wherein said laser light is capable of producing ozone from oxygen.

5,304,353

APPARATUS FOR INCREASING THE YIELD AND THE PRODUCTION POTENTIAL OF UREA REACTORS

Mario Dente, and Sergio Bozzano, both of Milan, Italy, assignors to Urea Casale S.A., Lugano, Switzerland

Filed Jan. 15, 1992, Ser. No. 821,428

Claims priority, application Switzerland, Jan. 15, 1991, 00103/91

Int. Cl.[5] B01J *8/04;* **B01D** *3/14;* **C07C** *273/00*

U.S. Cl. 422—193 **10 Claims**



1. A reactor for producing urea from ammonia and carbon dioxide at high pressure and temperature, said reactor having;

an internal space for containing cocurrent upward flow of a continuous liquid phase and a dispersed gas phase, said internal space being divided into a plurality of compartments to avoid excessive mixing of the liquid phase and to intermittently redistribute the gas phase in bubbles of a size suitable for increasing heat and mass transfer between the liquid phase and the gas phase means for introducing ammonia and carbon dioxide into a lower part of said internal space, and means for withdrawing urea containing product from an upper part of the internal space;

a plurality of baffles creating said compartments, each baffle comprising a plate, a plurality of elements having one of a rectangular cross section and a trapezoidal cross section trapezoidal cross-sections, said elements extending upwardly from said plate and being open at the bottom, each said element having:

two perforated side walls defining a first area containing apertures of predetermined size for flow of the liquid phase substantially free of gas bubbles, and

a perforated top wall defining a second area containing apertures of predetermined size for flow of the gas phase substantially free of the liquid phase,

all said perforations in the side wall being larger in size than the perforations in the top wall.

5,304,354

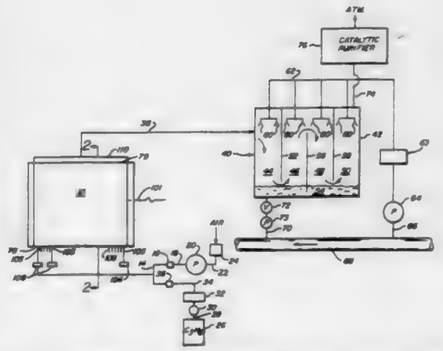
CATALYTIC CHEMICAL REACTION ASSEMBLY

Charles M. Finley, Arcadia, and Charles L. Kissel, Anaheim, both of Calif., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 625,302, Dec. 7, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,242

Int. Cl.[5] B01J *8/06*

U.S. Cl. 422—196 **14 Claims**



1. A reaction assembly for the production of reaction products selected from the group consisting of acrolein, methacrolein, and acrylonitrile absorbed and carried in a carrier fluid, comprising:

A) a source of first reactant gas, the first reactant gas selected from the group consisting of air and ammonia;

B) a source of hydrocarbon-containing second reactant gas, the second reactant gas selected from the group consisting of propylene and isobutylene;

C) a fixed bed reactor for holding a catalyst suitable to facilitate a chemical reaction between the first reactant gas and the second reactant gas to produce a reaction product, comprising:

1) at least one plate presenting a generally planar face and first and second generally parallel ends;

2) a plurality of reaction chambers in the plate presenting interior surfaces made of a metal selected from the group consisting of aluminum, tantalum, titanium, tungsten, niobium and mixtures thereof, with each chamber having a porous bed of catalyst materials contained therein and a pair of porous end caps in each chamber for holding the catalyst bed in the chamber in a compacted state while enabling the flow of gases through the chamber, said chambers extending within the plate with their longitudinal axes generally parallel to each other from inlet ports generally adjacent the first end of the plate for receiving reactant gases to outlet ports generally adjacent the second end of the plate for discharge of reaction products as produced in the chambers; and

3) at least one heating panel generally adjacent and parallel to the planar face of the plate;

D) an absorber receiving reaction products from said reactor and carrier fluid from a source thereof, said absorber exposing the reaction products to the carrier fluid for

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enabling at least some of the reaction products to be absorbed into the carrier fluid; and

E) a conduit in fluid communication with the absorber for flow of carrier fluid with reaction products absorbed therein from the reaction assembly.

5,304,355

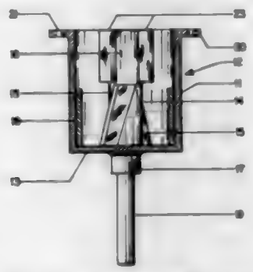
MIXER-REACTOR EQUIPMENT FOR TREATING FINE SOLIDS WITH GASEOUS REAGENTS

Robert E. Yant, Medina; Richard J. Galluch, Hudson, and Mark E. Piechuta, Alliance, all of Ohio, assignors to Quantum Technologies Inc., Twinsburg, Ohio

Filed Sep. 8, 1992, Ser. No. 941,805

Int. Cl.[5] B01F *5/00*

U.S. Cl. 422—225 **20 Claims**



1. Mixer-reactor apparatus especially suited for mixing a particulate solid material with a reactive gas comprising a housing having a generally cylindrical inside wall integrally connected at one end to a rigid closure piece and with a suitably sealed drive shaft extending through said closure piece in concentric alignment with said cylindrical inside wall; said cylindrical inside wall having a length to diameter ratio substantially greater than 0.5 with a plurality of uniformly shaped, coaxial, equally spaced, elongated baffles mounted on that portion of said inside wall which is adjacent said closure piece, said portion representing not substantially more than half of the total length of said inside wall and leaving the remainder of said inside wall free of baffles; and mounted on said drive shaft a rotor equipped with a two-stage, multibladed, impeller having a different set of agitator blades within the unbaffled portion of said wall compared to that within the baffled portion thereof characterized in that the outermost radius of the blades in said unbaffled portion is at least 15% larger than that of the blades in said baffled portion and the cumulative vertical height of the blades in said two-stage impeller is substantially coextensive with the full length of said inside wall.

5,304,356

METHOD FOR THE FIXATION OF CARBON DIOXIDE, APPARATUS FOR FIXING AND DISPOSING CARBON DIOXIDE, AND APPARATUS FOR THE TREATMENT OF CARBON DIOXIDE

Masaki Iijima; Masakazu Yamada; Fumio Tomikawa, all of Tokyo; Masaaki Negoro; Masaki Minemoto, both of Takasago, and Hisao Haneda, Kobe, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 615,691, Nov. 20, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 790,148

Claims priority, application Japan, Nov. 21, 1989, 1-300807; Dec. 4, 1989, 1-313485; Apr. 9, 1990, 2-92115; Sep. 7, 1990, 2-35754

Int. Cl.[5] B01F *5/00*

U.S. Cl. 422—226 **4 Claims**

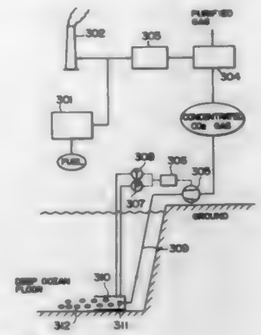
1. An apparatus for reducing the amount of carbon dioxide released into the atmosphere by fixing and dumping carbon dioxide which is disposed in seawater or fresh water satisfying certain temperature and pressure conditions for the formation of carbon dioxide hydrate or its clathrate comprising:

a) a transport pipeline equipped with a compressor;

b) a carbon dioxide source connected to said transport pipeline upstream of said compressor;

c) a plurality of ejector nozzles disposed at one end of the pipeline;

d) a reaction housing which allows seawater or fresh water and carbon dioxide to react with each other and form the carbon dioxide hydrate or its clathrate;



e) a dispersing propeller;

wherein the reaction device is provided with the ejector nozzles and the dispersing propeller at the inlet portion of the device; the concentration of the carbon dioxide is supplied into the pipeline and is discharged by the compressor into the reaction housing from the ejector nozzles under pressure to form the carbon dioxide hydrate or its clathrate; the thus produced hydrate or its clathrate is dispersed by the propeller out of the reaction housing to the deep bottom of the sea.

5,304,357

APPARATUS FOR ZONE MELTING RECRYSTALLIZATION OF THIN SEMICONDUCTOR FILM

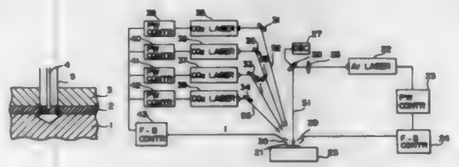
Yukito Sato; Mitsugu Irinoda, both of Sendai; Kouichi Ohtaka, Miyagi; Takeshi Hino, and Masafumi Kumano, both of Sendai, all of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,755

Claims priority, application Japan, May 15, 1991, 3-139814

Int. Cl.[5] H01L *21/268*

U.S. Cl. 422—250 **17 Claims**



1. An apparatus for producing a thin film semiconductor element by heating to recrystallise a composite of insulating substrate and semiconductor layer thereon, comprising:

first heating means for emitting a first laser beam, which the semiconductor layer can absorb, to heat said semiconductor layer;

second heating means for emitting a second laser beam, which the insulating layer can absorb and which the semiconductor layer can transmit, to heat said substrate; and

temperature controlling means for controlling said first and second heating means such that a predetermined temperature profile is formed in the composite to fuse and then recrystallise said semiconductor layer so as to obtain a

semiconductor single crystal layer therein having a (100) orientation plane or a (111) orientation plane.

5,304,358

AIR FRESHENER DEVICE

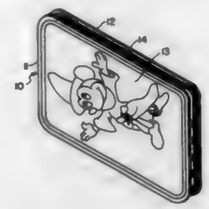
Earl Hoyt, Franklin Lakes, N.J., and Ralph Muniz, Ste. 3317, 256 S. Robertson, Beverly Hills, Calif. 90211, assignors to Ralph Muniz, Beverly Hills, Calif.

Filed Aug. 31, 1992, Ser. No. 937,118

The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.

Int. Cl.[5] A61L *9/12*

U.S. Cl. 422—305 **4 Claims**



1. An airfreshener device utilizing high strength-to-weight ratio materials formed into a unitary panel comprising:

a pair of members composed of high strength-to-weight ratio materials joined together to define an internal storage cavity between their opposing surfaces;

graphic indicia disposed on at least one exterior face of said joined pair of members;

each of said members having an exterior continuous peripheral wall defining an exteriorly open recess;

a display medium carried by at least one of said members in said exteriorly open recess exposing indicia carried on said display medium;

a pad disposed in said internal storage cavity holding a quantity of a scented substance;

a wall structure disposed on said pair of members cooperating when joined together to isolate said scented substance from said display medium;

means internally communicating said scented substance exteriorly of said joined pair of members about the periphery thereof;

said communicating means comprises a plurality of open-ended passageways extending between said internal storage cavity and edge marginal regions of said joined pair of members;

said plurality of passageways are defined between opposing surfaces of said members and aligned opposing surfaces of a plurality of raised islands disposed on each of said members;

said raised islands constitute spaced-apart islands in fixed relationship having top surfaces engageable with the opposing surface of said member opposite to said member carrying said islands;

said member opposite to said member provided with said islands includes a continuous sidewall defining a cavity insertably receiving said islands and said sidewall having a plurality of vents at the end of each of said passageways for discharging said scented substance;

raised projections on each of said members extending into said internal storage cavity engaging with opposite sides of said pad to retain said pad therein;

means integrally disposed on each of said members releasably coupling said pair of members together in a snap-lock relationship;

said wall structure constitutes a watertight and moisture barrier isolating said scented pad from said display medium.

5,304,359

DISSOLUTION OF PLATINUM GROUP METALS FROM MATERIALS CONTAINING SAID METALS

Willem D. C. Duyvesteyn, San Jose; Houyuan Liu, Sunnyvale, both of Calif., and Saskia Duyvesteyn, Cambridge, Mass., assignors to BHP Minerals International Inc., Reno, Nev.

Filed Mar. 3, 1992, Ser. No. 845,068

Int. Cl.[5] C01G *55/00*; C22B *11/00*

U.S. Cl. 423—22 **10 Claims**

6. A method for the dissolution of at least one platinum group metal selected from the group consisting of platinum, palladium, rhodium and ruthenium which comprises:

subjecting a material containing at least one of platinum group metals to dissolution with a sulfuric acid solution containing bromide ions and maintained at a pH of less than about 1 sufficient to complex said at least one platinum group metal with bromide ions in the presence of bromine as an oxidizing agent,

the amount of bromide ions being at least sufficient to form a soluble complex predominantly of said at least one platinum group metal plus a stoichiometric excess of at least about 0.01 molar of said bromide ions,

said bromine being an amount at least sufficient to provide a redox potential of at least about 700 mv determined with reference to a standard calomel electrode (SCE) to maintain said at least one platinum group metal in an ionic form conducive to forming a soluble bromide complex thereof.

5,304,360

PEROXOACID MANUFACTURE

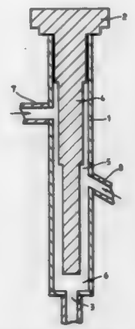
John R. G. Lane, Liverpool; Colin F. McDonogh, Warrington, and Stephen E. Woods, Wirral, all of England, assignors to Interox Chemicals Limited, London, United Kingdom

Filed Oct. 2, 1991, Ser. No. 769,803

Claims priority, application United Kingdom, Oct. 27, 1990, 9023433

Int. Cl.[5] C01B *17/98, 17/48*

U.S. Cl. 423—521 **18 Claims**



1. A continuous process for manufacturing peroxomonosulphuric acid by reaction between concentrated sulphuric acid and concentrated hydrogen peroxide which is characterised by introducing the acid and peroxide under pressure into a closed tubular reaction chamber having an inlet for the sulphuric acid solution at or adjacent to one end, an outlet for the reaction mixture at the end that is distant from the sulphuric acid inlet and an inlet for the hydrogen peroxide solution that is positioned intermediate between the sulphuric acid inlet and the reaction mixture outlet whereby the hydrogen peroxide solution is introduced into a flow of sulphuric acid solution, said reaction chamber being so dimensioned relative to the flow rates of the acid and peroxide that the through-put per minute is at least about 20 times its internal volume measured between the inlet for the hydrogen peroxide solution and the outlet.

13. Apparatus for the continuous generation of Caro's acid

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solution comprising a tubular reaction chamber having an inlet for a sulphuric acid solution at or adjacent to one end, an outlet for a reaction mixture at the end that is distant from the inlet and a transversely pointing inlet for a hydrogen peroxide solution that is positioned intermediate between the sulphuric acid inlet and the outlet, said reaction chamber comprising an annular zone extending longitudinally in the vicinity of the hydrogen peroxide inlet of the reagents, whereby in operation hydrogen peroxide solution introduced through its inlet is directed transversely to sulphuric acid solution flowing longitudinally through the annular zone towards the reaction mixture outlet, said reaction chamber having a relatively narrow width in the vicinity of the sulphuric acid inlet and relatively wide width in the vicinity of the hydrogen peroxide inlet.

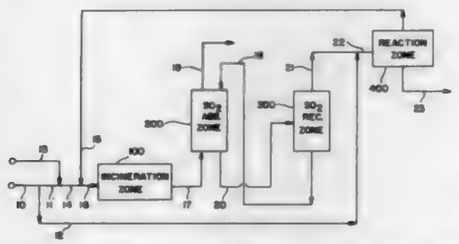
14. Apparatus for the continuous generation of Caro's acid solution comprises a tubular reaction chamber having an inlet for a sulphuric acid solution at or adjacent to one end, an outlet for a reaction mixture at the end that is distant from the inlet and a transversely pointing inlet for a hydrogen peroxide solution that is positioned intermediate between the sulphuric acid inlet and the reaction mixture outlet, said reaction chamber comprising an annular zone extending longitudinally in the vicinity of the hydrogen peroxide inlet, whereby in operation hydrogen peroxide solution introduced through its inlet is directed transversely to sulphuric acid solution flowing longitudinally through the annular zone towards the reaction mixture outlet, the annular zone of the reaction chamber being formed by insertion of a mandrel inside a cylindrical chamber.

5,304,361

REMOVAL OF HYDROGEN SULFIDE

Paul J. Parisi, Saint Lambert, Canada, assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 26, 1992, Ser. No. 905,037
Int. Cl.[5] C01B *17/16*
U.S. Cl. 423—220 **10 Claims**



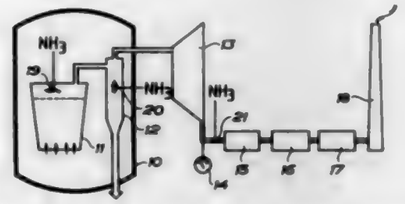
1. A process for removing hydrogen sulfide from a feed stream comprising:
(a) dividing the feed stream into a first split stream and a second split stream;
(b) passing the first split stream and an oxidation stream comprising oxygen and nitrogen to an incineration zone wherein hydrogen sulfide is converted to sulfur dioxide and water in the presence of oxygen at a temperature of about 1000° to 1400° F. and withdrawing an incineration product stream comprising sulfur dioxide, water and nitrogen;
(c) passing the incineration product stream to an absorption zone wherein sulfur dioxide is separated from the incineration product stream by absorption with a solvent comprising a water soluble half-salt of a diamine having a molecular weight of less than about 300 grams/gram mole in free-based form and a pKa value of about 4.5 to 7.3 for the free nitrogen atom in half-salt form and withdrawing a rich solvent stream comprising sulfur dioxide and a waste stream comprising water and at least about 80% of the nitrogen from the incineration product stream;
(d) passing the rich solvent stream to a regeneration zone wherein sulfur dioxide is desorbed from the rich solvent and withdrawing a sulfur dioxide product stream comprising sulfur dioxide and a lean solvent stream comprising the solvent;
(e) recycling the lean solvent stream to the absorption zone;
(f) combining the second split stream with the sulfur dioxide product stream to form a reactor inlet stream comprising hydrogen sulfide and sulfur dioxide;
(g) passing the reactor inlet stream to a sulfur reaction zone comprising more than one catalytic zone wherein hydrogen sulfide and sulfur dioxide are converted to elemental sulfur and water and withdrawing a sulfur product stream comprising elemental sulfur and a tail-gas stream comprising water and said feed impurity or a derivative thereof; and
(h) recycling at least a portion of the tail-gas stream to the incineration zone or the sulfur dioxide recovery zone.

5,304,362

METHOD IN CLEANING FLUE GAS IN A PFBC PLANT INCLUDING A GAS TURBINE DRIVEN THEREBY

Peder Madsen, Västerås, Sweden, assignor to ABB Carbon AB, Finspang, Sweden

PCT No. PCT/SE90/00755, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO91/07219, PCT Pub. Date May 30, 1991
PCT Filed Nov. 20, 1990, Ser. No. 858,977
Claims priority, application Sweden, Nov. 20, 1989, 8903891
Int. Cl.[5] B01J *8/00*; C01B *17/00*
U.S. Cl. 423—239.1 **2 Claims**



1. Method for removing NO_x from flue gas of a pressurized boiler from a PFBC plant having a gas turbine associated with the plant which consists essentially of:
(a) combusting a particulate solid fuel in a pressurized boiler of a PFBC plant thereby producing flue gas containing NO_x;
(b) obtaining flue gas which contains NO_x from a PFBC plant pressurized boiler in continuous manner;
(c) injecting ammonia into the flue gas at a point within the pressurized boiler;
(d) passing the flue gas containing ammonia and NO_x into a gas turbine;
(e) subjecting the flue gas exhausted from the gas turbine to an injection of additional ammonia whereby the NO_x content of the flue gas is reduced by thermal reduction; and
(f) passing the flue gas exhausted from the gas turbine into a catalytic reduction zone whereby the NO_x content of the flue gas is further reduced by catalytic action
(g) measuring the NO_x content of the flue gas at a point downstream from the gas turbine; and,
(h) controlling the amount of ammonia being injected into the flue gas flow in the pressurized boiler and the amount of ammonia being injected in the exhausted flue gas from the gas turbine in dependence upon the measured amount of NO_x.

5,304,363

POROUS MATERIALS

Jeffrey S. Beck, Lawrenceville, N.J.; Charles T. Kresge, West Chester; Sharon B. McCullen, Newtown, both of Pa.; Wieslaw J. Roth, Sewell, N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 735,000, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 625,245, Dec. 10, 1990, Pat. No. 5,098,684, which is a continuation-in-part of Ser. No. 470,008, Jan. 25, 1990, Pat. No. 5,102,643. This application Jul. 2, 1992, Ser. No. 907,941
The portion of the term of this patent subsequent to Apr. 17, 2009, has been disclaimed.
Int. Cl.[5] C01B *33/26*
U.S. Cl. 423—328.1 **16 Claims**

1. A composition of matter comprising an inorganic, porous material exhibiting, after calcination, an X-ray diffraction pattern according to Table 1 with no peaks at positions less than about 10 Angstroms d-spacing with relative intensity greater than 20% of the strongest peak.

5,304,364

METHOD FOR PREPARING SPHERICAL INORGANIC OXIDE-BASED MATERIALS HAVING MONOMODAL PARTICLE SIZE DISTRIBUTION

Lorenzo Costa, Sommo Lomellina; Giulio Boara, Crema, and Guido Cogliati, Rome, all of Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Filed Oct. 14, 1992, Ser. No. 960,797
Claims priority, application Italy, Oct. 17, 1991, MI91 A 002743
Int. Cl.[5] C01B *33/16*
U.S. Cl. 423—338 **18 Claims**

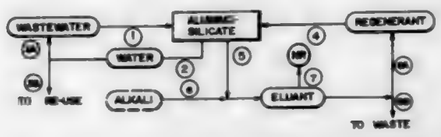
18. A method for preparing porous spherical silicon dioxide particles, consisting essentially of the steps:
(1) hydrolyzing a silicon alkoxide to form a silicon dioxide sol;
(2) adding to said sol a first solvent immiscible with said sol to obtain a two-phase mixture;
(3) finely dispersing said sol in a microfluidizer to form a fine dispersion of silicon dioxide particles;
(4) adding a second solvent immiscible with said sol containing a gelling agent to said fine dispersion of silicon dioxide particles to form a diluted dispersion;
(5) increasing the size of said particles in said diluted dispersion by coalescence to obtain a dispersion of coalesced particles and gelling said dispersion of coalesced particles; and
(6) removing said first and second solvents and drying to obtain dried porous spherical silicon dioxide particles.

5,304,365

TREATING WASTEWATER WITH ALUMINOSILICATES WITH MODIFIED CATION AFFINITY

Petr Taborsky, 14535 Bruce B. Downs Blvd., Tampa, Fla. 33613

Division of Ser. No. 771,389, Oct. 3, 1991, Pat. No. 5,162,276, which is a division of Ser. No. 294,160, Jan. 6, 1989, Pat. No. 5,082,813. This application Jul. 2, 1992, Ser. No. 907,813
Int. Cl.[5] C02F *1/42*
U.S. Cl. 423—352 **6 Claims**



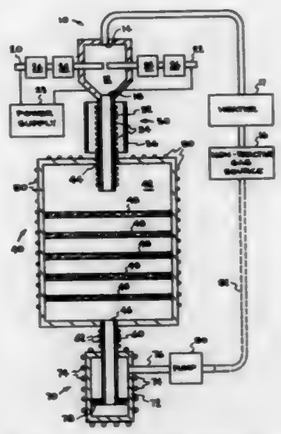
1. In a process of recovering ammonia as ammonium from aqueous liquid containing divalent calcium by using a mineral aluminosilicate as an ion-exchange medium,
the improvement comprising the steps of
preheating the aluminosilicate in dry condition between about 750° and 900° C. to reduce the subsequent takeup of calcium ions relative to the takeup of ammonium ions thereby,
contacting the aluminosilicate with the aqueous liquid at an ammonium-conducive pH determined from the NH_3/NH_4^+ equilibrium, and
displacing ammonium from the aluminosilicate by an aqueous wash containing alkali metal ions during subsequent regeneration at an ammonia-conducive pH determined from the $NH_3/NH_4^{\pm}$ equilibrium.

5,304,366

PROCESS AND APPARATUS FOR PRODUCING AND SEPARATING FULLERENES

Donald C. Lorents, Palo Alto, and Ripudaman Malhotra, San Carlos, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Dec. 24, 1991, Ser. No. 814,721
Int. Cl.[5] C01B *31/02*; C09C *1/44*
U.S. Cl. 423—445 B **29 Claims**



1. A process for making fullerenes which comprises:
a) producing an impure mixture containing one or more fullerenes in a first zone;
b) collecting said impure mixture of fullerenes from said first zone by flowing a non-reactive gas through said first zone to vaporize any unvaporized fullerenes produced in step a);
c) purifying said vaporized impure mixture of fullerenes by separating out solid impurities from said fullerenes in a separation zone; and
d) recovering one or more of said purified fullerenes from said gas in a condensation zone.

5,304,367

IN VIVO BRAIN IMAGING AGENT AND METHOD FOR DIAGNOSIS OF PSYCHIATRIC DISORDERS

Anat Biegon, New York, N.Y., assignor to New York University, New York, N.Y.

Filed Nov. 16, 1990, Ser. No. 614,434
Int. Cl.[5] A61K *49/02*
U.S. Cl. 424—1.11 **4 Claims**

1. A method for radioimaging beta adrenergic receptors in brain tissue of a live animal comprising:
(a) administering intravenously an in vivo beta adrenergic imaging agent comprising an ^{124}I or ^{123}I radioisotope of iodopindolol and an administering medium;
(b) allowing a sufficient amount of time for both (i) said

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imaging agent to enter the brain tissue to be imaged and (ii) a detectable portion of said compound to become selectively bound to said adrenergic receptors in said brain tissue; and

(c) recording a radioimage of said adrenergic receptor containing brain tissue using a radioimaging technique selected from positron emission tomography when said I^{123} or I^{124} is used or single photon emission computed tomography when said I^{123} is used.

5,304,368

NON-FOAMING, NON-VISCOUS, ALCOHOL-FREE, WATER-BASED, PRESSURIZED HAIR SPRAY PRODUCT

Stephen L. Shernov, Long Valley, N.J.; Robert J. Marsh, Malvern, Pa., and Albert Saferstein, Armonk, N.Y., assignors to American Telecast Corporation, Paoli, Pa.

Filed Feb. 19, 1993, Ser. No. 19,630

Int. Cl.[5] A61K *7/11*

U.S. Cl. 424—47 **11 Claims**

1. A non-foaming, non-viscous, alcohol-free, water-based, pressurized hair-fixative spray product, including a hair spray composition and a valve-actuated aerosol container having a vapor tap dimension of 0.013 to 0.020 inches, a stem orifice dimension of 0.010 to 0.014 inches and a nozzle orifice dimension of 0.018±10% inches, wherein said hair spray composition has a pH of about 9 and consists essentially of:

(a) shellac having a molecular weight of about 300 to 3,000, in the amount of about 0.5 to about 8.0 weight % of the total fill;

(b) a synthetic resin which is an octylacrylamide/acrylate/-butyl-aminoethyl methacrylate copolymer in the amount of about 0.5 to about 8.0 weight % of the total fill;

(c) a neutralizer for said shellac and resin selected from ammonia, morpholine, dodecylamine, triisopropanolamine, 2-amino-2-methyl-1-propanol, aminomethylpropanediol, aminoethylpropanediol and borax in the amount of about 0.5 to about 3 weight % of the total fill;

(d) dimethyl ether in the amount in excess of 35 weight % of the total fill; and

(e) water in the amount of the rest of the total fill;

the presence of said excess dimethyl ether providing a source of propellant vapor to deliver a fine, relatively dry spray of substantially uniform particle size and composition from substantially the entire fill contents in the container.

5,304,369

CHLOROHEXIDINE ADDUCT AND METHOD OF PREPARING SAME

Volker Rheinberger, Vaduz, Liechtenstein; Ulrich Salz, Weissenberg, Fed. Rep. of Germany, and Peter Burtscher, Nüttziders, Austria, assignors to Ivoclar AG, Schaan, Liechtenstein

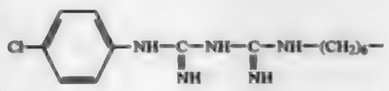
Filed Oct. 23, 1992, Ser. No. 965,019

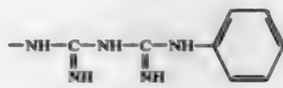
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135397

Int. Cl.[5] C07C *279/18;* **A61K** *7/18, 31/155*

U.S. Cl. 424—52 **4 Claims**

1. Chlorohexidine adduct having the following formula





.6HF

and its hydrates

5,304,370

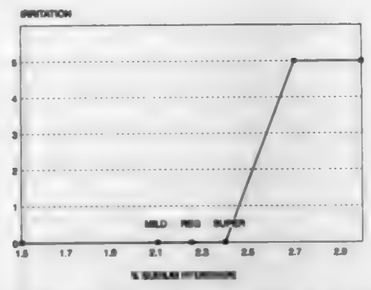
HAIR RELAXER COMPOSITION AND ASSOCIATED METHODS

Geoffrey R. Hawkins, Jacksonville; Clyde B. Simpson, Jr., Jacksonville Beach, both of Fla., and Gustave J. Klein, Great Neck, N.Y., assignors to Revlon Consumer Products Corporation

Filed Jun. 9, 1992, Ser. No. 895,951

Int. Cl.[5] A61K *7/09, 7/06*

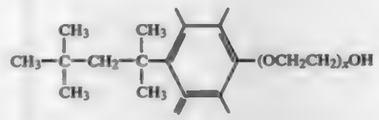
U.S. Cl. 424—71 **6 Claims**



1. A method for manufacturing a relaxer for human hair comprising combining the following components (a) and (b) immediately prior to use:

a) 40–90 parts of a base composition comprising 35–50% by weight of the base composition of an oil phase, 1–20% by weight of the base composition of a surfactant selected from the group consisting of Octyoxynol 1–70, stearic acid, Polysorbate 20–100, PEG 2–150 stearate, Steareth 2–100, Laneth 5–75, PEG 1–100 lanolin, or mixtures thereof, and 35–50% by weight of the base composition of a water phase containing 40–60% by weight of the water phase of sodium hydroxide;

b) 10–60 parts of an oil in water additive composition consisting essentially of, by weight of the additive composition, 0.1–70% water, 30–90% of an oil selected from the group consisting of oleyl alcohol, mineral oil, PEG-75 lanolin, or mixtures thereof, and 0.01–35% of a surfactant which is an octylphenoxyethanol of the formula



wherein x is 1–50,

to yield a finished relaxer composition comprising 35–45% water, 55–60% oil, and 0.01–35% sodium hydroxide.

5,304,371

PEPTIDE FOR DIAGNOSING AND IMMUNIZING AGAINST *T. CRUZI* INFECTION

Steven G. Reed, Bellevue, Wash., assignor to Lasys Corporation, Seattle, Wash.

Filed Feb. 14, 1992, Ser. No. 836,642

Int. Cl.[5] A61K *39/005, 37/02;* **C07K** *5/00, 15/00*

U.S. Cl. 424—88 **5 Claims**

1. A major antigenic epitope of a 260 Kd *T. cruzi* antigen, comprising the amino acid sequence Ala Glu Pro Lys Xaa Ala Glu Pro Lys Xaa Ala Glu Pro Lys Xaa (SEQ ID NO:1), wherein Xaa is Pro or Ser and when Xaa in position 5 is Ser, Xaa in position 10 is Pro and Xaa in position 15 is Ser, or when Xaa in position 5 is Pro, Xaa in position 10 is Ser and Xaa in position 15 is Pro.

5,304,372

PROCESS FOR PREPARING A HUMAN THROMBIN CONCENTRATE INTENDED FOR THERAPEUTIC USE

Catherine Michalski, Lille, and Dominique Dernis, Marquette lez Lille, both of France, assignors to Association Pour l'Essor de la Transfusion Sanguine Dans la Region du Nord, Lille, France

Filed Jul. 17, 1992, Ser. No. 913,933

Claims priority, application France, Jul. 18, 1991, 91 09075

Int. Cl.[5] A61K *35/14;* **C07K** *3/00, 13/00*

U.S. Cl. 424—94.64 **8 Claims**

1. A process for preparing a human thrombin concentrate for therapeutic use comprising:

(a) removing fibrinogen and prothrombin activation inhibitors from an initial PPSB fraction of human plasma by washing said fraction with sodium chloride;

(b) activating prothrombin to produce thrombin in a solution by recalcifying said washed PPSB fraction by adding to the solution $CaCl_2$ at a concentration of 5 to 10 mM, subjecting the resulting mixture to an initial incubation period of about 2 hours at an initial incubation temperature of about 37° C. and subjecting this initially incubated mixture to a second incubation period of about 16 hours at about 24° C.;

(c) purifying the activated, recalcified PPSB fraction by chromatographing on a strong cation exchange gel in the presence of sodium gluconate, to obtain purified human thrombin concentration.

5,304,373

ANTITUMOR ANTIBIOTIC

Daniel R. Schroeder, Higganum; Kin S. Lam, North Haven, and Jacqueline M. Veitch, East Haven, all of Conn., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Filed Oct. 22, 1991, Ser. No. 780,516

Int. Cl.[5] C12R *21/04, 1/06;* **C12P** *1/03*

U.S. Cl. 424—121 **5 Claims**

1. A compound BMY-46164 isolated from a fermentation product of Actinomadura strain Q473-8, which compound has an empirical formula of $C_{40}H_{43}N_2O_{12}Cl$, a molecular weight of 778, and the following spectral properties:

(a) Mass Spectrum: FABMS: 778.2527, with prominent fragment ions at 294.1139 and 149.0603;

(b) Ultraviolet Spectrum: A neutral 1.0 mg/100 ml methanol solution had absorption maximum $\lambda_{max}^{nm}(E^{1\%}_{1cm})$: 278 (635);

(c) Infrared Spectrum: KBr pellet, cm^{-1}: 3424, 3076, 2934, 2838, 2170, 1640, 1578, 1520, 1490, 1462, 1424, 1376, 1292, 1248, 1184, 1156, 1112, 1072, 1046, 952, 900, 880, 832, 810, 754, 682, 666, 648, 576, 524;

(d) 125 MHz ^{13}C NMR: Bruker Model AM-500 Spectrometer, Proton decoupled spectrum. Dual carbon-proton probe, 5mm. Solvent d_6-DMSO. Observed chemical shifts (ppm): 168.4, 168.1, 153.3, 152.8, 139.3, 138.5, 133.0, 131.4, 131.3, 131.0, 130.8, 126.8, 124.7, 124.3, 122.5, 122.1, 121.0, 109.2, 97.5, 95.7, 94.3, 94.2, 93.3, 90.1, 74.0, 73.2, 70.9, 69.8, 69.6, 66.3, 62.5, 55.4, 54.4, 52.3, 43.2, 37.5, 33.6, 22.7, 19.5, 16.1;

(e) 500MHz ^1H-NMR: Bruker Model AM-500 Spectrometer. Dual carbon-proton probe, 5mm. Solvent d_6-DMSO. Observed chemical shifts (ppm): 9.18 (br. 5, 1H), 8.09 (dd, 1H), 7.40 (d, 1H), 7.25 (d, 1H), 6.97 (d, 1H), 6.81 (d, 1H), 6.58 (d, 1H), 6.37 (t, 1H), 5.41 (s, 1H), 5.37 (dd, 1H), 5.27 (m, 1H), 5.13 (br. s, 1H), 4.91 (s, 1H), 4.89 (m, 1H), 4.65 (d, 1H), 4.22 (br. d. 1H), 4.13 (ddd, 1H), 3.94 (m, 1H), 3.80 (dd, 1H), 3.54 (s, 3H), 3.46 (dd, 1H), 3.21 (dd, 1H), 3.12 (s, 3H), 2.94 (ddd, 1H), 2.73 (m, 1H), 2.71 (dd, 1H), 2.58 (dd, 1H), 2.31 (dd, 1H), 2.19 (s, 3H), 2.10 (s, 3H), 1.26 (s, 3H)

or pharmaceutically acceptable acid or base addition products thereof.

5,304,374

PROCESS FOR ENHANCING THE HYPOCHOLESTEROLEMIC EFFECT OF EDIBLE PULP AND THE PRODUCT OBTAINED THEREBY

Frederic A. Graves, Ham Lake, and Ani Huang, Fridley, both of Minn., assignors to Humanetics Corporation, Chaska, Minn.

Division of Ser. No. 682,567, Apr. 9, 1991, Pat. No. 5,202,122, which is a continuation-in-part of Ser. No. 664,490, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 479,964, Feb. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 429,166, Oct. 30, 1989, abandoned. This application Jan. 29, 1993, Ser. No. 11,001

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 **37 Claims**

1. A process for producing a human consumable comestible having a superior hypocholesterolemic capacity which comprises the steps of (i) treating edible pulp with an aqueous calcium ion source at a pH of less than about 7 so as to effect chemical coupling of calcium ions onto the pulp, and (ii) drying the treated edible pulp to a moisture content of less than about 10 wt %; wherein the process is effected at a temperature of less than about 150° C. and yields a bland palatable human consumable comestible.

5,304,375

SPERMICIDAL COATING COMPOSITION

Gerwig Marquardt, Odenthal, and Peter Preiss, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 6, 1991, Ser. No. 695,854

Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015543

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—405 **3 Claims**

1. A spermicidal coating composition for coating latex materials consisting essentially of Nonoxinol-9 as the spermicidal agent, and further characterized in that it contains organopolysiloxane compounds having hydroxyalkyl groups or polyether functions attached to Si wherein the hydroxyalkyl group functionality or polyether alkoxy chain length of said organopolysiloxane is such as to solubilize Nonoxyinol-9 without turididity.

5,304,376

FUNGICIDAL COMPOSITION

Edmund Friedrichs, Ober-Hilbersheim, and Guido Albert, Hackenheim, both of Fed. Rep. of Germany, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Jan. 23, 1990, Ser. No. 468,895

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1989, 3903247

Int. Cl.[5] A01N *25/08;* **A61K** *9/16*

U.S. Cl. 424—409 **5 Claims**

1. A method for the treatment of a fungal disease on a plant, comprising the steps of applying to said plant a fungicidally effective amount of a composition in particulate or powder form wherein each particle thereof comprises the active ingredient 3-(3,4-dimethoxyphenyl)-3-(4-chlorophenyl)-acrylic acid morpholide dispersed in a polymer material having a melting point below the degradation temperature of said active ingredient, said polymer material being selected from the group consisting of polyester, polyether, polyurethane, polyketone, polylactide, polylactic acid, polyacrylate, polycarbonate, polyamide, natural or synthetic rubber, natural or synthetic wax or resin, cellulose or cellulose derivative, homocellulose or lignin.

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5,304,377

PROLONGED RELEASE PREPARATION AND POLYMERS THEREOF

Minoru Yamada; Seiko Ishiguro, both of Kawanishi, and Yasuaki Ogawa, Otokuni, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 777,170, Oct. 16, 1991, abandoned.
This application Dec. 7, 1992, Ser. No. 986,299
Claims priority, application Japan, Oct. 16, 1990, 2-278037; Aug. 28, 1991, 3-217045
Int. Cl.[5] A61K *9/22, 9/52, 31/74*
U.S. Cl. 424—426 17 Claims

9. A prolonged release preparation which comprises a water-soluble drug being dispersed in a polymer composition for a prolonged release preparation comprising

(A) a polylactic acid having a molecular weight peak value between 5,000 to 30,000 Daltons as determined by Gel Permeation Chromatography and

(B) a copolymer having a molecular weight peak value between 5,000 to 20,000 Daltons as determined by Gel Permeation Chromatography of 40 to 70 mole % glycolic acid and 60 to 30 mole % of a hydroxycarboxylic acid of the formula

wherein R stands for an alkyl group having 2 to 8 carbons, wherein the weight ratio of (A) and (B) is in the range of 10/90 through 90/10.

5,304,378

WOUND DRESSING MATERIAL

Joichi Koga; Koichi Nomura, both of Sakai, and Hiroshi Hojo, Kounan, all of Japan, assignors to Niigata Hi-Spinners Ltd., Iwafune, Japan

Filed Jul. 26, 1991, Ser. No. 736,143
Claims priority, application Japan, Jul. 26, 1990, 2-198672
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—445 2 Claims

1. A wound dressing material made of animal-fibered fabric, wherein keratin layers of the surfaces of the animal fibers are stripped off through a chemical treatment to expose the non-keratin protein in the underlayers, whereby the surfaces of the animal fibers are modified to be hydrophilic, wherein said chemical treatment comprises

(i) placing said animal fibers in an aqueous solution comprising water and an electrophilic reagent,

(ii) applying a mechanical strain consisting essentially of rapid bending and stretching to said animal fibers which is effective to selectively swell non-keratin protein located beneath the surfaces of said animal fibers.

(iii) applying an oxidizing agent to said animal fibers in an amount effective to remove said keratin layers.

5,304,379

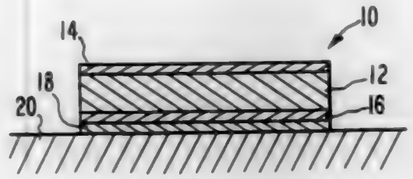
METHOD FOR REDUCING SENSITIZATION OR IRRITATION IN TRANSDERMAL DRUG DELIVERY AND MEANS THEREFOR

Michel J. N. Cormier, Palo Alto; Philip W. Ledger, Mountain View; Alfred Amkraut, Palo Alto, all of Calif., and Jean P. Marty, Sceaux, France, assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 642,691, Jan. 7, 1991, abandoned, which is a continuation of Ser. No. 391,805, Aug. 8, 1989, abandoned, which is a division of Ser. No. 162,777, Mar. 1, 1988, Pat. No. 4,885,154. This application Nov. 3, 1992, Ser. No. 945,205
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—449 10 Claims

1. A device for the transdermal administration at a therapeutically effective rate, of a drug which is susceptible in metabolism by an enzyme present in the skin or mucosa and formation of a sensitizing or irritating drug metabolite when the drug is transdermally administered to a human in need thereof, which device comprises:

(a) a reservoir comprising a drug tetracaine in an amount and in a form sufficient to provide transdermal administration in a therapeutically effective amount over a predetermined period of time at a selected skin or mucosa site and a metabolic modulator selected from the group consisting of tranylcypromine and phenyl alcohols having the structure (C_6H_5)—R—OH, where R is selected from the group consisting of: $-(CH_2)_nCH_2-$ where n=0-4, and



—CH—$CHCH_2$— capable of inhibiting the monoamine oxidase enzyme that metabolizes the drug, in an amount and in a form sufficient to inhibit the metabolism of the drug by the enzyme at the selected site during all of the predetermined period of time during which the drug is transdermally administered, and thereby inhibit the formation of the sensitizing or irritating drug metabolite;

(b) a backing on the skin or mucosa-distal surface of the reservoir; and

(c) means for maintaining the reservoir in drug and metabolic modulator transmitting relationship to the skin or mucosa.

5,304,380

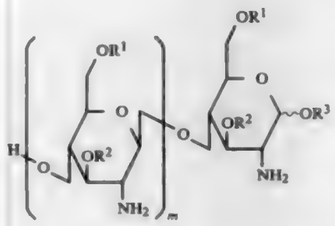
GLUCOSAMINE DERIVATIVE AND LIPOSOME CONTAINING THE SAME AS MEMBRANE CONSTITUENT

Koichiro Miyajima, and Kaoru Fuji, both of Uji, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Continuation of Ser. No. 720,479, Jul. 9, 1991, abandoned. This application Jun. 8, 1992, Ser. No. 895,444
Claims priority, application Japan, Nov. 9, 1989, 1-289933; Oct. 22, 1990, 2-281988; Oct. 22, 1990, 2-281989
Int. Cl.[5] B01F *17/56;* A61K *9/127;* B01J *13/02;* C07H *13/06, 15/104*
U.S. Cl. 424—450 9 Claims

1. A glucosamine derivative represented by the following formula (I) or a pharmacologically acceptable salt thereof:

(I)



wherein R^1, R^2, R^3, and m represent the following

R^1 and R^2;

a hydrogen atom or a $-CO(CH_2)_nCH_3$ group, n representing an integer from 10 to 22 and R^1 and R^2 being not simultaneously hydrogen atoms

R^3;

an alkyl group having 1 to 4 carbon atoms and

m;

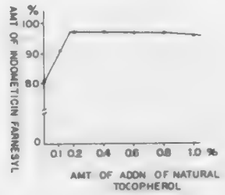
an integer from 0 to 3.

5,304,381

STABILIZATION OF POLYPRENYL COMPOUND

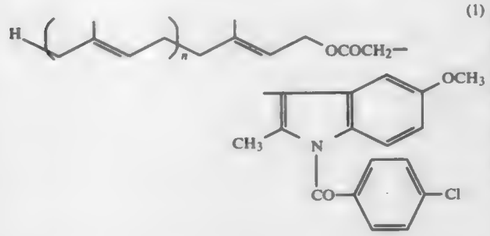
Keizo Uesugi; Nobutaka Noda, both of Aichi; Michiru Tanaka, Tokyo, and Masanori Kayano, Saitama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1990, Ser. No. 487,665
Claims priority, application Japan, Mar. 17, 1989, 1-65384; Mar. 17, 1989, 1-65385
Int. Cl.[5] A61K *47/22, 47/12, 47/22, 9/48*
U.S. Cl. 424—484 11 Claims



1. A method for stabilizing a polyprenyl compound of formula (1), comprising the step of mixing said compound with one or more stabilizing agents selected from the group consisting of 0.001 to 0.01 part by weight dl-α-tocopherol and 0.0005 to 0.004 part by weight of an organic acid selected from the group consisting of citric acid and tartaric acid:

(1)



in which n is an integer of 1 to 3 and said part by weight is based on the weight of the polyprenyl compound.

5,304,382

FERRITIN ANALOGS

Bruce F. Monzyk, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

PCT No. PCT/US90/04348, § 371 Date Mar. 26, 1992, § 102(e) Date Mar. 26, 1992, PCT Pub. No. WO91/02704, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 3, 1990, Ser. No. 835,935
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—489 3 Claims



1. A method of preparing particles comprising:

(a) combining apoferritin with a medium comprising non-ferrihydrite-forming solute,

(b) allowing sufficient solute to permeate said apoferritin to form ferritin analogs comprising apoferritin shell surrounding cores substantially devoid of ferrihydrite,

(c) subjecting said ferritin analog to a disassembling environment to provide apoferritin subunits and cores, and

(d) recovering said cores as spherules.

5,304,383

PHARMACEUTICAL PREPARATION BASED ON LYS-PLASMINOGEN

Johann Eibl, Vienna; Anton Philapitsch, Ebenfurt, and Hans P. Schwarz, Vienna, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Oct. 8, 1991, Ser. No. 773,103
Claims priority, application Austria, Oct. 11, 1990, 2045/90
Int. Cl.[5] A61K *9/14, 37/47, 37/02, 37/64*
U.S. Cl. 424—499 13 Claims

1. A pharmaceutical preparation comprising Lys-plasminogen and a serine protease inhibitor in an amount of from 0.5 to 30 nmol of the inhibitor per mg Lys-plasminogen.

5,304,384

IMPROVEMENTS IN PRODUCTION OF FERMENTED MALT BEVERAGES

Cameron R. Murray, and William J. Van der Meer, both of London, Canada, assignors to Labatt Brewing Company Limited, London, Canada

Filed Mar. 23, 1993, Ser. No. 35,805
Int. Cl.[5] C12H *1/00*
U.S. Cl. 426—16 10 Claims

1. A process for preparing a fermented malt beverage wherein brewing materials are mashed with water, the resulting mash is heated and wort separated therefrom, said wort is boiled, cooled and fermented to produce a beer, comprising, subjecting the beer to a cold stage comprising rapidly cooling said beer to a temperature of about its freezing point in such a manner that ice crystals are formed therein only in minimal amounts, treating by mixing said cooled beer for a short period of time with a beer slurry containing ice crystals without any appreciable increase in the amount of ice crystals in the resulting mixture, and extracting so treated beer from said mixture.

5,304,385

METHOD FOR MAKING A COOKED FOOD USING SHIRRED CASING HAVING AN ETHYLENIC POLYMER OUTER LAYER WITH AN EXTERNAL NON-OIL BASED LUBRICANT

Darrel L. Wilhoit, Plainfield, and Jeffery A. Oxley, Naperville, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 584,563, Sep. 18, 1990, Pat. No. 5,256,458. This application Jun. 15, 1993, Ser. No. 76,888
Int. Cl.[5] A22C *11/00, 13/00;* A23L *1/317;* B65B *29/08*
U.S. Cl. 426—412 15 Claims

1. A method for manufacturing a processed food comprising the steps of:

(a) providing a shirred thermoplastic casing comprising an ethylene polymer film having a substantially oil-free liquid coating on the casing outside surface and in contact with said ethylene polymer film in a loading of at least about 1 g/m^2, based on the total coating weight, and having a viscosity of at least about 2 centipoise wherein said coating comprises a lubricant wherein said lubricant is selected from the group consisting of lecithin, a polyol, a water-soluble sugar, or mixtures thereof;

(b) deshirring said casing and stuffing processable food therein to form a food package comprising a foodstuff inside said casing;

(c) thermally processing said food package; and

(d) removing said casing from the thermally processed foodstuff, said coating comprising said lubricant being present in an amount sufficient to provide adequate lubrication of said casing outer wall during manufacture of said pro-

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ceased food sufficient to prevent breakage or tearing of said casing.

5,304,386

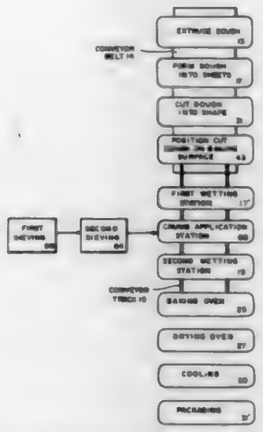
EDIBLE CONTAINER AND PROCESS FOR THE FABRICATION THEREOF

Jeffrey J. Dugas, and Pammie L. Dugas, both of Box 1356 Garsey Rd., Brookfield, Mass. 03872

Continuation of Ser. No. 707,693, May 30, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 978,155

Int. Cl.[5] A21D *8/02*

U.S. Cl. 426—94 **13 Claims**



1. A process for forming an edible container comprising the steps of:

(a) configuring the dough into a generally continuous sheet;

(b) cutting the sheet of dough into a plurality of dough pieces, each dough piece having a predetermined shape;

(c) positioning the dough piece onto a baking surface to form a generally continuous covering of dough on the baking surface, said dough piece having a contacting surface in contact with the baking surface;

(d) baking the dough piece while it is positioned on the baking surface until the dough piece can retain its shape without the baking surface;

(e) removing the shaped baked dough piece from the baking surface to expose any moisture trapped between the baked dough piece and the baking surface during the baking step;

(f) introducing the baked dough piece into a drying oven in a manner such that the contacting surface is exposed, thereby facilitating removal of the moisture trapped between the contacting surface and the baking surface; and

(g) heating the shaped baked dough piece at a temperature substantially less than that of the baking step to remove the moisture trapped between the contacting surface and the baking surface.

5,304,387

METHOD OF MAKING A HIGH MOISTURE NON-FAT CHEESE SAUCE

William S. Hine, Evanston, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.

Filed Jun. 1, 1992, Ser. No. 891,732

Int. Cl.[5] A23C *19/09*

U.S. Cl. 426—582 **11 Claims**

1. A method for producing a high moisture, non-fat cheese sauce comprising

(a) heating a mixture comprising skim milk cheese having from about 40% to about 60% moisture and a milk protein source having from about 3% to about 70% moisture to an elevated temperature of from about 160° F. to about 190° F. with agitation so as to form a homogeneous mixture of said cheese and said protein source;

(b) continuing said agitation at said elevated temperature while adding a polyphosphate salt, starch and a gum to said heated mixture;

(c) continuing said agitation at said elevated temperature for a period of time sufficient to gelatinize said starch and permit said polyphosphate salt to interact with the casein of said cheese and said protein source and form a stable, high moisture, non-fat cheese sauce having from about 70% to about 90% by weight of water; and

(d) packaging said cheese sauce while the temperature of said cheese sauce is above about 100° F.

5,304,388

METHOD FOR MANUFACTURING POWDERY CRYSTALLINE MALTITOL

Ryuzo Ueno, Nishinomiya; Tomoe Kanno, Ushiku; Yuji Kunimi, Ushiku, and Akihiko Tabata, Ushiku, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyuio, Osaka, Japan

Filed Mar. 17, 1993, Ser. No. 32,785

Claims priority, application Japan, Mar. 17, 1992, 4-60129

Int. Cl.[5] A23L *1/09;* **A61K** *31/70*

U.S. Cl. 426—658 **6 Claims**

1. A method for manufacturing powdery or granular crystalline maltitol, which comprises adding seed crystals of maltitol at a temperature lower than the melting point of the seed crystals of maltitol to an aqueous solution of maltitol with 1–15% by weight of moisture content; kneading the mixture in the presence or absence of additives selected from the group consisting of a fat, an oil and a surface-active agent; and continuously applying a shearing force to the kneaded mass.

5,304,389

NON-HYGROSCOPIC ICING COMPOSITION

Tsutomu Kondo, Kanagawa, and Akio Nishimura, Tokyo, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 722,463, Jun. 27, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 985,956

Int. Cl.[5] A23G *3/00*

U.S. Cl. 426—659 **9 Claims**

1. A non-hygroscopic icing composition comprising sugar, fat and an emulsifier as the main components, wherein 80% by weight or more of said sugar is particles passing through a 63 μm mesh size sieve and 50% by weight or more of said sugar is particles having a size of from 45 μm to 63 μm and the sugar content in the icing is 50% by weight or more.

5,304,390

SUPERCRITICAL RATIO CONTROL SYSTEM UTILIZING A SONIC FLOW VENTURI AND AN AIR-DRIVEN POSITIVE DISPLACEMENT PUMP

James A. Condron, Hurricane; Edmond J. Derderian, Charleston, both of W. Va., and Alan E. Wang, Chicago, Ill., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 30, 1992, Ser. No. 906,705

Int. Cl.[5] B05D *1/02;* **B05C** *11/00*

U.S. Cl. 427—8 **5 Claims**

1. A process for delivering a ratio of a compressible fluid and non-compressible fluid composition onto a substrate which comprises the steps of:

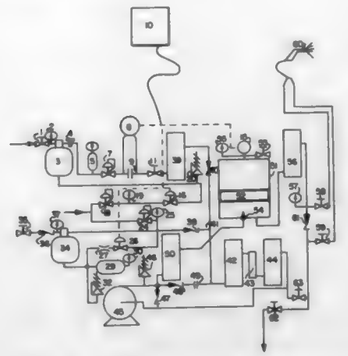
a) providing a compressible fluid;

b) measuring the flow rate of the compressible fluid;

c) activating an air-driven positive displacement pump, through the use of a sonic venturi, based upon the flow rate of the compressible fluid;

d) pumping a non-compressible fluid with the air-driven positive displacement pump;

e) mixing the compressible fluid and non-compressible fluid composition; and



f) depositing the compressible fluid and non-compressible fluid onto a substrate.

5,304,391

METHOD FOR REGULATION OF THE MOISTURE PROFILE OF A PAPER OR BOARD WEB IN A FILM SIZE PRESS

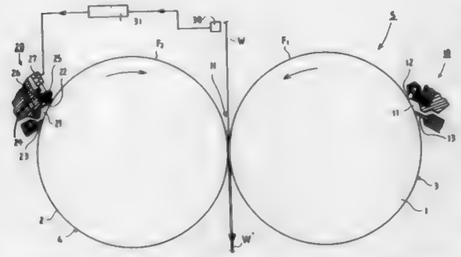
Rauno Rantanen, Muurame, Finland, assignor to Valmet Paper Machinery Inc., Finland

Division of Ser. No. 590,481, Sep. 28, 1990, Pat. No. 5,159,893. This application Sep. 21, 1992, Ser. No. 948,160

Claims priority, application Finland, Oct. 9, 1989, 894790

Int. Cl.[5] B05D *1/28*

U.S. Cl. 427—8 **5 Claims**



1. A method for regulating the moisture profile of a paper or board web in a film size press, said method comprising the steps of:

feeding a coating agent into a pressurized coating agent chamber in a first coating device;

applying a first film of coating agent of substantially constant profile from said chamber in said first coating device to a first press roll in a film size press;

feeding a coating agent into a second pressurized coating agent chamber in a second coating device;

applying a second film of coating agent of variable profile from said second chamber in said second coating device to a second press roll in said film size press;

regulating the profile of said second film of coating agent in accordance with a desired moisture profile of said web;

passing said web through a press nip formed by said first and second press rolls whereby said web emerging from said nip has substantially said desired moisture profile;

measuring the moisture profile of the web at a location in the path of the web before the web reaches said press nip; and

adjusting the variable profile of said second coating device in relation to the measured moisture profile of the web such that the moisture profile of the web at said nip remains substantially invariable.

5,304,392

METHOD OF MANUFACTURING PRINTED WIRING BOARD

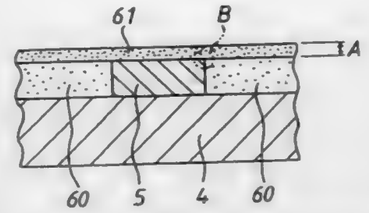
Masuo Matsumoto, Saitama, Japan, assignor to Nippon CMK Corp., Japan

Filed Jan. 6, 1992, Ser. No. 820,291

Claims priority, application Japan, Jul. 24, 1991, 3-207612

Int. Cl.[5] B05D *5/12;* **B44C** *1/22*

U.S. Cl. 427—96 **18 Claims**



1. A method of manufacturing a printed wiring board, comprising the sequentially performed steps of: forming a wiring circuit in a pattern by etching a layer of copper foil disposed on an insulating board; printing a solder resist layer over said wiring circuit while leaving a portion of the etching resist used at the time of etching said copper foil on said wiring circuit; removing said solder resist while removing said etching resist disposed on said wiring circuit after said solder resist printing step so as to form an even surface having solder resist remaining between wiring lines of the wiring circuit, the even surface being effective to facilitate the formation of a second layer of solder resist by silk screening; and forming a second layer of solder resist by silk-screening over the even surface leaving a portion of the wiring circuit exposed to form a solder land.

5,304,393

METHOD FOR MANUFACTURING MAGNETIC RECORDING MEDIUM

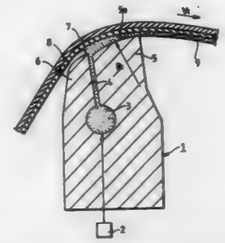
Norio Shibata; Shinsuke Takahashi, and Akihiro Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 20, 1992, Ser. No. 932,688

Claims priority, application Japan, Aug. 23, 1991, 3-235684

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—130 **4 Claims**



1. A magnetic recording medium manufacturing method for use with an extrusion-type coating apparatus that coats a web with a magnetic coating solution, said web having a wet first layer of coating serving as a base for the magnetic coating solution, the manufacturing method comprising the steps of:

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continuously extruding a magnetic coating solution to coat said web; and

applying said magnetic coating solution thus extruded as a second layer of coating solution on said web as said web is continuously conveyed to said coating apparatus, wherein said coating solution is applied to said first layer of coating solution while said first layer of coating solution is still wet, and wherein a stretch flow coefficient ϵ of said magnetic coating solution is 600 or less, as determined by the equation

$$\epsilon = V/v,$$

where V is the velocity of conveyance of said web, and v is the average linear velocity of said magnetic coating solution.

5,304,394

TECHNIQUE FOR FORMING, BY PYROLYSIS IN A GASEOUS PROCESS, A COATING BASED ESSENTIALLY UPON OXYGEN AND SILICON

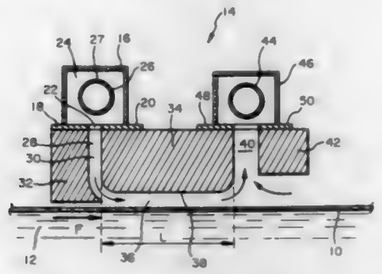
Vincent M. Sauvinet, Copenhague, Denmark, and Jean-Francois M. Oudard, Compiegne, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Jun. 12, 1992, Ser. No. 897,782

Claims priority, application France, Jun. 14, 1991, 91 07284

Int. Cl.[5] B05D *5/06*; C23C *16/00*

U.S. Cl. 427—166 **7 Claims**



1. A pyrolytic method for forming an interferential coating based on silicon, oxygen and carbon, and having a refractive index of between 1.45 and 2 and a thickness of at least 70 nm, on a float glass ribbon substrate, comprising the steps of:

contacting a moving glass ribbon substrate in a float bath with a precursor gaseous mixture including a silane and an ethylenic compound, said mixture excluding an oxidizing component; and

maintaining the moving glass substrate in contact with the precursor gaseous mixture for a contact time period, wherein said contact time period is greater than a time period necessary for the deposition onto the substrate of a gaseous mixture which is identical to said precursor gaseous mixture but includes an oxidizing agent,

wherein the contact time agent is controlled by controlling the length L of a deposition zone over which the precursor gaseous mixture flows in contact with the substrate, and wherein length L of the deposition zone, expressed in meters, is at least equal to 1.5 times the velocity of the glass substrate, expressed in meters per second.

5,304,395

METHOD FOR COATING INORGANIC AND ORGANIC PIGMENT OR COLORANT PARTICLES WITH A PLASTIC DISPERSION

Dick A. Pons, Maasluis, and Monique van der Berg, Zwolle, both of Netherlands, assignors to Stamicarbon B.V., Netherlands

Division of Ser. No. 642,311, Jan. 18, 1991, abandoned. This application Dec. 31, 1991, Ser. No. 815,587

Claims priority, application Netherlands, Jan. 26, 1990, 9000194

Int. Cl.[5] B01J *13/02*

U.S. Cl. 427—213.3 **1 Claim**

1. A method of coating pigment or colorant particles consisting essentially of:

i) forming a plastic dispersion comprising a polymer based on

a) a vinyl aromatic monomer,

b) (C_1–C_{12}) alkyl(meth)acrylate, (C_1–C_{12}) dialkylitaconate, (C_1–C_{12}) dialkylfumarate, (C_1–C_{12}) dialkylmaleate and a mixture thereof,

c) a monomer containing sulphonic acid groups, or a corresponding salt of said monomer,

d) 0–0.3% (wt) organic unsaturated monocarboxylic acid, dicarboxylic acid and a mixture thereof; and

ii) mixing said particles with said dispersion in order to form coated particles.

5,304,396

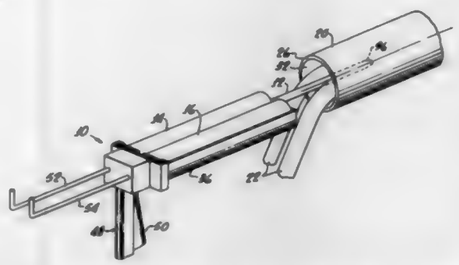
METHOD FOR SEALING CABLE CONDUITS

William J. Lund, Stockton, Calif., assignor to Vernon Auten, Stockton, Calif.

Division of Ser. No. 787,122, Nov. 4, 1991. This application Aug. 11, 1992, Ser. No. 927,977

Int. Cl.[5] B05D *7/22*

U.S. Cl. 427—230 **6 Claims**



1. A method for applying a foam for sealing cable conduits, said method comprising the steps of:

commingling a first and a second chemical composition, said first and second chemical compositions being selected so that chemical reaction therebetween produces a foam;

introducing the commingled first and second chemical composition into said cable conduit at a point inside an end of said cable conduit and between cables disposed therein in a manner causing circumferential wetting of an inner surface of the cable conduit with commingled composition before foaming occurs;

moving the point of introduction of commingled composition from inside of the conduit cable end toward the conduit cable end while continuously introducing commingled composition into the cable conduit between the cables therein without moving the cable conduit; and

allowing the commingled first and second chemical compositions to foam and then seal to both the cable conduit inner surface and cables therein.

5,304,397

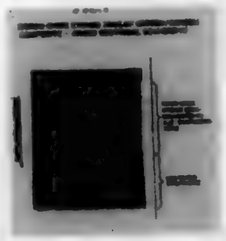
OXIDATION RESISTANT CARBON AND METHOD FOR MAKING SAME

Robert A. Holzl, LaCanada, Calif.; Benjamin H. Tilley, Eugene, Oreg.; Robert E. Benander, Sylmar, Calif.; Vincent L. Magnotta, Coopersburg, Pa., and Paul N. Dyer, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 873,004, Jun. 11, 1986, which is a continuation-in-part of Ser. No. 654,329, Sep. 24, 1984, abandoned. This application Dec. 3, 1987, Ser. No. 131,480

Int. Cl.[5] C23C *16/30*

U.S. Cl. 427—249 **13 Claims**



1. A method for the manufacture of a coated carbon body having improved resistance to high temperature oxidation comprising:

providing a carbon body,

contacting said carbon body with gaseous boron oxide at an elevated temperature sufficient to cause reaction between the carbon body and the boron oxide thereby forming a converted porous layer containing interconnecting interstices in said body, which layer contains boron carbide,

applying an intermediate glass forming coating over said converted layer, and

applying an outer refractory coating over said intermediate coating.

5,304,398

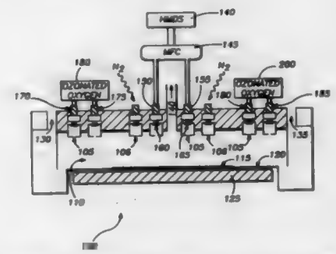
CHEMICAL VAPOR DEPOSITION OF SILICON DIOXIDE USING HEXAMETHYLDISILAZANE

Wilbur C. Krusell, San Jose; James P. Garcia; Daniel M. Dobkin, both of Sunnyvale; Frederick F. Walker, Ben Lomond, and Jose F. Casillas, San Jose, all of Calif., assignors to Watkins Johnson Company, Palo Alto, Calif.

Filed Jun. 3, 1993, Ser. No. 71,516

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—255.3 **5 Claims**



1. A method for thermal chemical vapor deposition of silicon dioxide on a surface positioned within a reaction chamber, comprising:

directing into said chamber and toward said surface a first gas stream including ozone and oxygen;

directing into said chamber and toward said surface a second gas stream including hexamethyldisilazane (HMDS); and

directing into said chamber and toward said surface a stream of a nitrogen-containing separator gas, said stream of said nitrogen-containing separator gas being introduced into said chamber between said first and second gas streams, said first and second gas streams interacting proximate said surface to deposit a layer of silicon dioxide on said surface.

5,304,399

METHOD OF PRODUCING EPOXY RESIN FILM

Katsuji Shibata, Shimotsuma; Kazuhito Kobayashi, Yuki; Nozomu Takano, Shimodate; Masami Arai, Shimodate, and Ikuo Hoshi, Shimodate, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 757,587, Sep. 11, 1991, Pat. No. 5,225,268. This application Feb. 25, 1993, Ser. No. 22,271

Claims priority, application Japan, Sep. 11, 1990, 2-240546; Sep. 11, 1990, 2-240547; Sep. 12, 1990, 2-242236

Int. Cl.[5] B05D *1/18*

U.S. Cl. 427—386 **9 Claims**

1. A method of producing an epoxy resin film which is made of a high molecular weight epoxy resin, the high molecular weight epoxy resin being insoluble in methyl ethyl ketone and having a substantially linear structure, and the epoxy resin film having a tensile strength of not less than 10 MPa and an elongation of not less than 10%, comprising

applying a solution of the high molecular weight epoxy resin, having a reduced viscosity (η sp/c) of at least 0.6 dl/g as measured in N,N-dimethylacetamide at a concentration of 0.3 g/dl at 30° C., dissolved in an aprotic polar solvent at a concentration of at most 50% by weight to a plate having a release surface to coat the release surface with the solution of the high molecular weight epoxy resin, the high molecular weight epoxy resin being prepared by polymerizing a difunctional epoxy resin having two epoxy groups per molecule and a dihydric phenol in an aprotic polar solvent, at a reaction temperature ranging from 80 to 130° C., in the presence of a catalyst selected from the group consisting of an alkali metal compound, an alkyl phosphine and an aliphatic cyclic amine, the difunctional epoxy resin and the dihydric phenol being used in quantities which provide a ratio of phenolic hydroxyl groups to epoxy groups of from 1:0.9 to 1:1.1 and a proportion of the total of the difunctional epoxy resin and the dihydric phenol of at most 50% by weight based on the total of the difunctional epoxy resin, the dihydric phenol and the aprotic polar solvent and

removing the aprotic polar solvent from the solution of the high molecular weight epoxy resin applied to the release surface of the plate, to form epoxy resin film having a thickness of not more than 100 μm; the aprotic polar solvent being an amide solvent selected from the group consisting of N-methylformamide, N,N-dimethylformamide, acetamide, N-methylacetamide, N,N-dimethylacetamide, N,N,N',N'-tetramethylurea, 2-pyrrolidone, N-methylpyrrolidone and a carbamate.

5,304,400

PROCESS FOR COATING HEAT RESISTANT SUBSTRATES WITH TWO COMPONENT STOVING COMPOSITIONS

Rolf Dhein, Krefeld-Bockum; Knud Reuter; Burkhard Köhler, both of Krefeld, all of Fed. Rep. of Germany; Rainer Rettig, Amagasaki, Japan, and Lothar Bäcker, Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1992, Ser. No. 821,093

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1991, 4101696

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—388.4 **5 Claims**

1. A process for preparing a coated, substrate which comprises

I) coating the substrate with a coating composition comprisin

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a) a solution or dispersion containing

a1) 100 parts by weight of at least one hydroxyl-functional polyacrylate resin in dissolved or dispersed form, wherein the resin has a hydroxyl value of 15 to 200 mg KOH/G solid resin, an acid value of 5 to 250 mg KOH/G solid resin and a total content of chemically incorporated carboxylate and/or sulfonate groups of 8 to 450 milliequivalents per 100 g of solids,

a2) 25 to 395 parts by weight of water and

a3) 5 to 125 parts by weight of at least one organic solvent having a boiling point or boiling point range at 1013 mbar of 100° to 300° C. and

b) at least one organic polyisocyanate in a quantity corresponding to an equivalent ratio of isocyanate groups of component b) to isocyanate-reactive groups of component a1) of 0.7:1 to 3:1, and

II) curing the coating composition at a temperature of 40° to 160° C. to form a bubble-free coating.

5,304,401

METHOD OF PRODUCING ORGANIC COMPOSITE-PLATED STEEL SHEET

Yoshio Shindou; Motoo Kabeya, and Fumio Yamazaki, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,244
Claims priority, application Japan, Nov. 14, 1990, 2-305962
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—410 **6 Claims**

1. A method for producing a corrosion resistant organic composite-plated steel sheet which is inhibited from liberation of chromium, which comprises coating with an aqueous bath composition comprising a chromate bath composition (A), to form a first layer having 5–150 mg/m^2 solids on a surface of a zinc or zinc alloy-plated or electro-dispersion-plated steel sheet, and then coating on the first layer an organic solvent coating composition (B) to form a second layer having a dry thickness of 0.3–5 μm:

(A) comprising chromate bath composition:

(1) Cr^{6+}: 1–30 g/l,

(2) Cr^{3+}: 1–30 g/l,

(3) Cr^{6+}/Cr^{3+} weight ratio 0.1–2.0,

(4) $HF+H_3PO_4$: 1–60 g/l,

(5) $HF+H_3PO_4/Cr^{3+}$ weight ratio: 0.5–3.5, and

(6) silane coupling agent/Cr^{6+} molar ratio: 0.05–0.3

(B) organic solvent coating composition comprising:

(a) a bisphenol epoxy resin having a number-average molecular weight of 300–100,000 in an amount of 30% by weight or more based on a solids content of the organic solvents coating composition;

(b) at least one curing agent selected from the group consisting of polyisocyanate compounds and blocked polyisocyanate compounds at 1/10–20/10 in a weight ratio to a solids content of the bisphenol epoxy resin;

(c) fumed silica of 0.1–100 mμin an average particle size in an amount of 5–50% by weight based on the solids content of the coating composition;

(d) a ketone organic solvent in an amount of 40% by weight or more based on the weight of the coating composition; and the solids content of the coating composition being 10–50% by weight.

5,304,402

CURTAIN COATING METHOD WITH REDUCED NECK-IN

Shouji Nishida; Yoshinobu Kategiri, and Yasushi Suga, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1992, Ser. No. 889,922
Claims priority, application Japan, Jun. 3, 1991, 3-157430
Int. Cl.[5] B05D *1/30*
U.S. Cl. 427—420 **7 Claims**



1. A curtain-film coating method for applying a coating solution onto a support member, said method comprising the steps of:

providing a solution injector having at two side ends thereof an edge guide for supporting the coating solution to apply the coating solution onto said support member as a freely falling curtain of coating film; and

forming a solution contacting surface of said edge guide to have one of a radius r greater than 1.0 mm and a width d greater than 0.7 mm when said coating solution has at least one of a viscosity μ greater than 45 cp and a dynamic/-static surface tension difference $\Delta\sigma$ greater than 8 dyne/cm,

wherein said solution contacting surface is narrowed to have a radius r less than 1.0 mm or a width d less than 0.7 mm when said coating solution has at least one of a viscosity less than 45 cp and a dynamic/static surface tension difference $\Delta\sigma$ less than 8 dyne/cm.

5,304,403

ZINC/NICKEL/PHOSPHORUS COATINGS AND ELECROLESS COATING METHOD THEREFOR

Mordechay Schlesinger, Windsor, Canada, and Dexter D. Snyder, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1992, Ser. No. 941,277
Int. Cl.[5] C23C *26/00*
U.S. Cl. 427—437 **16 Claims**

1. A method for electrolessly depositing a sacrificial, corrosion-protective zinc-based alloy coating onto a clean or chemically etched metal substrate, by the steps of:

a) forming a deposition solution comprising: i) a zinc salt and a nickel salt each in an amount sufficient to provide a weight ratio of zinc salt to nickel salt of at least about 10 to 1 ii) a phosphorus-containing reducing agent in an amount sufficient to cause reduction of said salts of the corresponding zinc and the nickel metals thereof, iii) sufficient complexing agent to maintain the nickel ions and the zinc ions in solution, and iv) a buffer in an amount sufficient to achieve a basic pH of at least about 12; and ithen

b) contacting the substrate with sufficient deposition solution for a time and at a temperature sufficient to electrolessly deposit a solid coating containing at least about 60 atomic percent zinc, and also containing nickel, and phosphorus onto the substrate.

5,304,404

METHOD FOR GRAFTING HYDROPHILIC MONOMERS CONTAINING DOUBLE BONDS ONTO FORMED BODIES WITH POLYMER SURFACES

Marco Morra, Cortiglione; Ernesto Occhiello, and Fabio Garbassi, both of Novara, all of Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Filed Oct. 1, 1992, Ser. No. 955,055
Claims priority, application Italy, Oct. 2, 1991, MI91A002607
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—512 **7 Claims**

1. A method for grafting hydrophilic monomers containing double bonds onto formed bodies with polymer surfaces, comprising:

a) dissolving in water at least one hydrophilic monomer containing double bonds to obtain a solution with a concentration exceeding 0.2 moles/liter;

b) dispersing in the obtained solution a solid polymerization photoactivator which is insoluble in water and has a particle size distribution such as to give a suspension stable for at least one day;

c) immersing the formed body in the solution/suspension obtained in this manner;

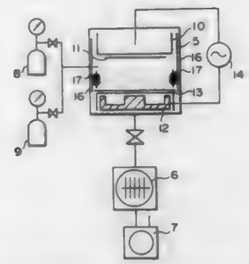
d) irradiating the formed body and the solution/suspension with ultraviolet radiation.

5,304,405

THIN FILM DEPOSITION METHOD AND APPARATUS

Masahiko Kobayashi, and Kenji Numajiri, both of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Dec. 13, 1991, Ser. No. 806,225
Claims priority, application Japan, Jan. 11, 1991, 3-002211
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—534 **9 Claims**



1. A thin film deposition method including a cleaning process executed in a first vacuum vessel provided exclusively for an etching process prior to depositing a thin film on a wafer in a second vacuum vessel provided exclusively for a deposition process, said method comprising the steps of:

(a) cleaning a downward oriented surface of a fixed number of wafers by etching with an inert gas which is introduced into said first vacuum vessel and afterward transformed into a plasma therein;

(b) checking a number of particles on the surface of a simulation wafer which is set in said first vacuum vessel after said fixed number of said wafers are cleaned;

(c) determining whether the number of said particles exceeds a standard number;

(d) if the number of said particles exceeds the standard number, gasifying said particles and deposited films in said first vacuum vessel without heating said first vacuum vessel by using a reactive gas which is introduced into said first vacuum vessel and afterward transformed into a plasma therein; and

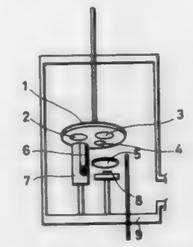
(e) evacuating a gas generated by said gasifying in said first vacuum vessel, said first vacuum vessel comprising shield plates disposed in the vicinity of walls on which films are deposited, wherein the shield plates are heated up to about 100° C., and the internal pressure of said first vacuum vessel is reduced to a reference pressure.

5,304,406

METHOD FOR FORMING AN ORGANIC FILM

Masashi Hongo, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 737,032, Jul. 26, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 928,098
Claims priority, application Japan, Jul. 27, 1990, 2-200075
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—554 **11 Claims**



1. A method for forming an organic film comprising the steps of:

purifying an organic material; and

depositing the purified organic material on a substrate by subliming the purified organic material

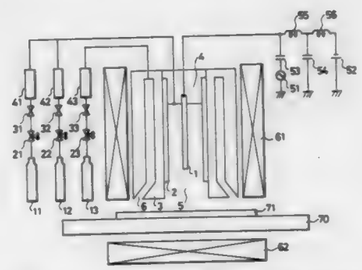
wherein both said purifying step and said depositing step are performed in the same chamber.

5,304,407

METHOD FOR DEPOSITING A FILM

Shigenori Hayashi, Kanagawa, and Shunpei Yamazaki, Tokyo, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 803,217, Dec. 6, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 22,759
Claims priority, application Japan, Dec. 12, 1990, 2-418075
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—569 **21 Claims**



1. A method for depositing a film comprising the steps of:

forming a reaction space by flowing a shield gas intervening between said reaction space and atmosphere outside said reaction space;

introducing carrier gas and a reactive gas into said reaction space;

activating said reactive gas by glow or corona discharge by the use of an electromagnetic energy in said reaction space; and

depositing the activated material on a substrate.

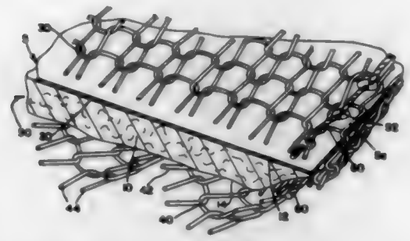
VOL 1161 ISS 3 APR 19 1994 UMI

5,304,408

FIRE BARRIER INSULATION

Gregory J. Jarosz, Downers Grove, and Kevin J. Hawks, Carpentersville, both of Ill., assignors to Transco Inc., Chicago, Ill.

Filed Aug. 17, 1992, Ser. No. 931,215
Int. Cl.[5] B32B *1/04*
U.S. Cl. 428—75 18 Claims



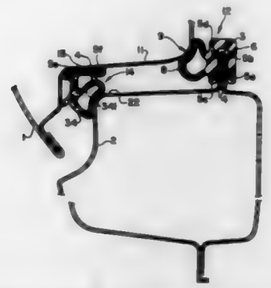
1. An insulation blanket comprising:
a flexible and continuous aluminum-silica layer having upper and lower surfaces;
a flexible thermal reflective sheet covering and attached to said upper surface of said aluminum-silica layer, said aluminum-silica layer and said thermal reflective sheet forming a thermal barrier; and,
a flexible knitted wire mesh having interlocking loops surrounding said barrier and holding said barrier together, said wire mesh having first and second wire mesh sheets, said first wire mesh sheet covering said thermal reflective sheet and said second wire mesh sheet covering said lower surface of said aluminum-silica layer, both said wire mesh sheets being joined to one another.

5,304,409

WEATHER STRIPPING

Masahiro Nozaki, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Inazawa, Japan

Filed Mar. 4, 1992, Ser. No. 844,485
Claims priority, application Japan, Mar. 5, 1991, 3-064099
Int. Cl.[5] B32B *7/02*; B60R *13/04*; E06B *7/23*
U.S. Cl. 428—122 6 Claims



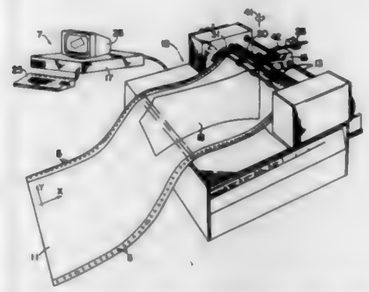
1. An automotive weather stripping for sealing an interface between two structures, said weather stripping being comprised of:
a tubular sealing portion made of sponge rubber; and
a hardened rubber fixing portion operatively connected to one of the two structures,
said hardened rubber fixing portion including:
an adhesive portion having an adhesive to adhere the fixing portion to one of the two structures; and
at least one embedded hardened area of a second harder rubber extending linearly along a length and width of said weather stripping and positioned on said fixing portion at a point of compression to the connection with said one of the two structures, said point receiving a peeling force when an external force is applied to said tubular portion, whereby external pressure applied to the at least one hardened area is transmitted to a discrete portion of the fixing portion and in turn to a discrete portion of the adhesive portion to adhere the fixing portion to the structure to which the fixing portion is tightly connected, preventing the peeling of said adhesive portion.

5,304,410

CUTTING CLOTH WEB HAVING MOUNTED BACKING MATERIAL AND RELATED METHOD

Ronald B. Webster, Vernon, Conn., assignor to Gerber Scientific Products, Inc., Manchester, Conn.

Filed May 2, 1991, Ser. No. 694,792
Int. Cl.[5] B32B *3/00*; B26D *1/00*
U.S. Cl. 428—40 27 Claims



1. A cutting cloth web having a multilayer construction, said web comprising:
a generally elongate base layer of material selected from the group consisting of polycarbonate or heavy paper of a weight between 80–100 pound having a first surface disposed on one side and having a second surface disposed on its side facing oppositely thereof;
a generally elongate sheet of fabric material having a first uncovered exposed surface disposed on one side thereof and a second surface disposed on its opposite side and facing said base layer second surface;
said base layer taken relative to the fabric material sheet being formed such that it resists cutting through by a cutting tool that cuts through the fabric material sheet superimposed on it; and
holding means disposed uniformly across said base layer second surface and interposed between said second surface of said fabric material sheet and said second surface of said base layer for releasably holding the fabric material sheet in registry with the base layer such that a closed shape may be cut in the fabric material sheet without disrupting the registration between the base layer and the sheet of fabric material as provided for by the holding means, said web having two marginal side edges engagable with an automated sign maker having a cutting tool to drive the web in coordinated movement relative to the cutting tool.

5,304,411

CHEMICAL EMBOSSED POLYVINYL CHLORIDE FILM

George Rusincovitch, Jr., Worthington, Ohio, assignor to Borden, Inc., Columbus, Ohio

Filed May 13, 1992, Ser. No. 882,509
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—141 14 Claims

1. A chemically embossed polyvinyl chloride article comprising:

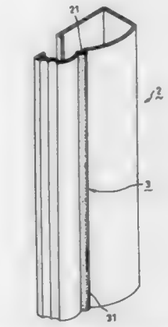
A. a cured top coat film derived from a fluid, curable coating composition in contact with the polyvinyl chloride and forming a coating thereover, said film being the cured residue of said coating composition after exposure to vaporous tertiary amine catalyst, said coating composition comprising an aromatic-hydroxyl functional polyester and a curing agent comprising a multi-isocyanate; and
B. a vinyl ink composition pattern of lines or ticks in contact with said polyvinyl chloride and forming a pattern thereover said vinyl ink composition containing from about 2.5% to 5% of silicone oil by weight of the composition and wherein the pattern is free from having the top coat thereover.

5,304,412

EXTRUDED PLASTIC ARTICLE WITH A DECORATIVE PLASTIC STRIP

David Wang, Kaohsiung Hsien, Taiwan, assignor to Eli Plastics Industrial Co., Ltd., Taiwan, Taiwan

Filed Nov. 17, 1992, Ser. No. 977,565
Int. Cl.[5] B32B *1/00*; A47G *35/00*
U.S. Cl. 428—174 5 Claims



1. An extruded plastic article comprising:
an extruded, elongated plastic frame member, said frame member being hollow and having a relatively thin front wall with a front surface formed with a longitudinally extending convex projection, and
a decorative plastic strip having a concave rear face and a convex front face, said front face being decorative and having a metallic luster, said concave rear face of said decorative plastic strip being bonded to said convex projection on said plastic frame member.

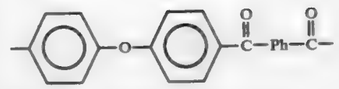
5,304,413

MOLDED PVF LAMINAR STRUCTURES

Joy S. Bloom, and Robert F. Davis, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 29, 1992, Ser. No. 875,462
Int. Cl.[5] B32B *7/02*, *27/08*
U.S. Cl. 428—215 9 Claims

1. A molded laminar structure comprising, and bonded together in the order specified,
(a) at least one layer of polyvinyl fluoride film having a thickness of about from 12.5 to 200 micrometers;
(b) at least one layer bonded to (a) having a thickness of about from 25 to 500 micrometers and consisting essentially of at least one substantially amorphous polymer selected from
(i) polycarbonate
(ii) polyaryletherketoneketone consisting essentially of repeating units of the formula:



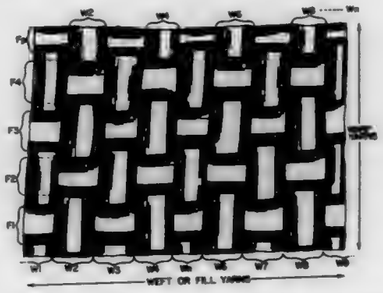
wherein Ph is either the 1,4-phenylene, the 1,3-phenylene group or mixtures thereof, the ratio of 1,4-phenylene groups to 1,3-phenylene groups being about from 70:30 to 0:100;
(iii) polyarylate and
(iv) polyvinyl chloride alloy; and
(c) a polymeric substrate having thickness of at least about 500 micrometers, and a processing temperature of at least about 200° C., layer (c) having been bonded to a laminate of layer (a) adhesively bonded to layer (b).

5,304,414

NON-LAMINATED WOVEN SAILCLOTH

Robert H. Bainbridge, South Windsor; Terry L. Cronburg, Coventry, both of Conn., and Harry Pattison, Laguna Niguel, Calif., assignors to Challenge Sailcloth, Vernon, Conn.

Filed Dec. 17, 1991, Ser. No. 808,683
Int. Cl.[5] D04B *1/00*
U.S. Cl. 428—229 12 Claims



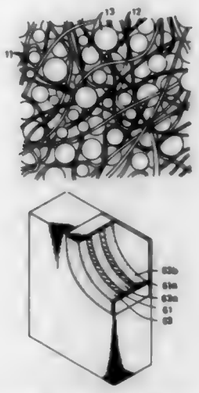
1. An improved sailcloth comprising a single non-laminated ply, said ply having woven warp and weft yarns, a majority of said warp and weft yarns having a tensile modulus in the range of 20–100 grams per denier, every Nth warp yarn being a reinforcing yarn having a tensile modulus above 500 grams per denier.

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5,304,415
SOUND ABSORPTIVE MATERIAL

Yoshitaka Kurihara; Yuzo Okudaira; Hideyuki Ando; Wakio Yamada; Kazunori Umeoka, and Takashi Nakai, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 14, 1992, Ser. No. 868,130
Claims priority, application Japan, Apr. 15, 1991, 3-082674; Jul. 24, 1991, 3-184873
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—328 20 Claims

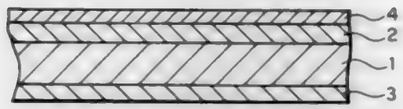


1. A sound absorptive material comprising at least one layer of powder particles having a sound absorption coefficient in a frequency range below about 500 Hz supported in a vibratable state by at least one porous support.

5,304,416
MAGNETIC RECORDING MEDIUM

Narito Goto; Katsuyuki Takeda; Kunitsuna Sasaki, and Nobuyuki Sekiguchi, all of Hino, Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 717,918, Jun. 20, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 995,925
Claims priority, application Japan, Jun. 29, 1990, 2-172994
Int. Cl.[5] B32B 5/16; G11B 5/66
U.S. Cl. 428—329 10 Claims



1. An 8 mm video magnetic recording medium comprising a non-magnetic support having thereon a plurality of magnetic layers coated by a wet-on-wet coating process, said magnetic layers including:

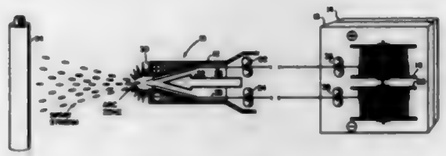
an uppermost layer containing a magnetic metal powder and a polyurethane binder containing a polar group selected from the group consisting of $—SO_3M$, —COOM, and $—PO(OM')_2$, wherein M is hydrogen or an alkali metal and M' is an alkali metal or a hydrocarbon residual group, a water content of said uppermost layer being 0.2 to 1.5 wt. % based on said magnetic powder, said magnetic powder having a BET value of 56 to 80 m^2/g, a thickness of said uppermost layer being less than 1.5 μm, and

a layer other than said uppermost layer containing a cobalt-containing magnetic iron oxide particle, and a binder having a polar group selected from the group consisting of a sulfonic radical, —COOM, and $—PO(OM')_2$, wherein M represents hydrogen or an alkali metal and M' represents an alkali metal or a hydrocarbon residual group, a coercive force of said layer other than said uppermost layer being 500 to 1200 Oe, and a thickness of said layer other than said uppermost layer being 1.5 to 4.0 μm, said layer other than said uppermost layer being positioned adjacent to said uppermost layer.

5,304,417
GRAPHITE/CARBON ARTICLES FOR ELEVATED TEMPERATURE SERVICE AND METHOD OF MANUFACTURE

Zbigniew Zarecki, Macungie; Edward A. Hayduk, Jr., Blandon; John G. North, Pottstown; Robert B. Swan, Bath, and David L. Mitchell, Jr., Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 2, 1989, Ser. No. 360,564
Int. Cl.[5] C04B 41/06
U.S. Cl. 428—336 2 Claims



1. An article of manufacture having at least one surface with improved elevated temperature oxidation and mechanical wear properties comprising in combination:

a substrate selected from the group consisting of electrodes for use in electric arc furnace melting, and electrical contact devices consisting essentially of carbon or graphite;

a carbide free coating at least 0.002 inches thick of substantially titanium nitride having a ratio of titanium to nitrogen of between 1 to 2 deposited on said one surface of said substrate, said coating applied by electric arc thermal spraying of titanium wire in ambient air using nitrogen gas as the atomizing/propelling gas.

5,304,418
DICING-DIE BONDING FILM

Yuzo Akada; Koji Akazawa, and Keiji Nakamoto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Dec. 30, 1992, Ser. No. 998,847
Claims priority, application Japan, Dec. 30, 1991, 3-358886
Int. Cl.[5] B32B 7/12; C09J 7/02; H01L 21/58
U.S. Cl. 428—345 3 Claims



1. A dicing-die bonding film comprising an ultraviolet-transmitting substrate having provided thereon an ultraviolet-curable pressure-sensitive adhesive layer and an adhesive layer in this order, said pressure-sensitive adhesive layer having been partly ultraviolet-cured to have cured parts and uncured parts,

wherein said ultraviolet-curable pressure-sensitive adhesive layer comprises a pressure-sensitive adhesive containing an acrylic polymer, a photopolymerizable compound, and a photopolymerization initiator,

wherein said photopolymerizable compound and photopolymerization initiator are present in amounts of from 10 to 500 parts by weight and from 0.05 to 20 parts by weight, respectively, per 100 parts by weight of said acrylic polymer, and

wherein the area ratio of said cured parts is from 5 to 95% of the total area.

5,304,419
MOISTURE AND PARTICLE GETTER FOR ENCLOSURES

A. Andrew Shores, 212 Carroll Canal, Venice, Calif. 90291

Continuation of Ser. No. 549,054, Jul. 6, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 848,232
Int. Cl.[5] B32B 7/12; C09K 3/10
U.S. Cl. 428—355 14 Claims

11. A hermetically sealed enclosure housing an electronic device and having an inner surface at least some portion of which is provided with a coating of a pressure sensitive adhesive which is effective to maintain an environment within the enclosure substantially devoid of free solid particulate contaminants, said coating having a thickness of 1–25 mil and containing a finely particulated solid desiccant having an average particle size of 0.2–100 micrometer in an amount effective to maintain said environment substantially moisture-free.

5,304,420
VINYL ALCOHOL UNIT-CONTAINING POLYMER FIBERS HAVING HIGH MOISTURE ABSORPTION AND HIGH WATER ABSORPTION

Kiyoshi Hirakawa; Kazuhiko Tanaka; Masao Kawamoto, and Tomoyasu Tsuda, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Okayama and Yunitika Ltd., Hyogo, both of Japan

Filed Aug. 20, 1992, Ser. No. 932,878
Claims priority, application Japan, Aug. 22, 1991, 3-233759
Int. Cl.[5] D02G 3/00; C08K 5/04; C08L 29/04
U.S. Cl. 428—373 7 Claims

1. Composite fibers comprising

(a) a phase of a vinyl alcohol unit-containing polymer comprising vinyl alcohol units whose alcoholic hydroxyl group is modified with at least one of the groups represented by the formulas

$$>CH—CH_2—C(R^1)(R^2)—COOA \quad (I)$$

and

$$>CH—C(R^3)(R^4)—COOA \quad (II)$$

wherein A denotes a hydrogen atom or a salt-forming cation R^1, R^2, R^3 and R^4, independently from each other, denote a hydrogen atom or an alkyl group, and at least one of R^1 and R^2 and at least one of R^3 and R^4 are alkyl groups, via an oxygen atom of the alcoholic hydroxyl group, and

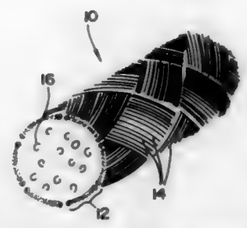
(b) a fiber-forming polymer phase other than component (a).

5,304,421
SYNTHETIC RESIN SPECTACLE FRAME COMPONENT, AND METHOD OF MANUFACTURING IT

Marc Lamy, Morbier, and Jean-Philippe Caspar, Les Rousses, both of France, assignors to L'Amy S.A., Morez, France

Filed Mar. 4, 1992, Ser. No. 845,968
Claims priority, application France, Mar. 6, 1991, 91 02882
Int. Cl.[5] D02G 3/00
U.S. Cl. 428—377 20 Claims

1. A spectacle frame component comprising fiber-reinforced, synthetic resin comprising a single tubular braid comprising a taffeta weaving stitch from long reinforcing fibers, said tubular braid comprising from 4 to 8 threads at an angle



between 15 and 45 degrees to a longitudinal axis of the component.

5,304,422
LOW FRICTION POLYAMIDE, POLYETHYLENE, P.T.F.E. RESIN

Takayoshi Tanabe; Takatoshi Ishigaki; Shuji Tsuchikawa, and Shinichi Kimura, all of Tokyo, Japan, assignors to Bando Chemical Industries, Ltd., Japan

Filed Sep. 19, 1990, Ser. No. 585,001
Int. Cl.[5] C08L 69/00; B32B 9/00; D02G 32/00
U.S. Cl. 428—392 14 Claims

1. A polyamide resin composition comprising:

(a) 100 parts by weight of nylon 46,

(b) from about 1 part to about 80 parts by weight of a aromatic polyamide fiber,

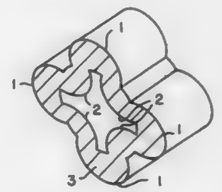
(c) from about 3 parts to about 80 parts by weight of a polytetrafluoroethylene, and

(d) from about 1 part to about 20 parts by weight of high-density polyethylene.

5,304,423
PACKING ELEMENT

Hassan Niknafs, Stow, and Henry G. Lex, Jr., Hudson, both of Ohio, assignors to Norton Chemical Process Products Corp., Worcester, Mass.

Continuation-in-part of Ser. No. 914,671, Jul. 16, 1992, abandoned. This application Feb. 4, 1993, Ser. No. 13,675
Int. Cl.[5] F02M 17/28
U.S. Cl. 428—402 6 Claims



1. A mass transfer element having a generally deformed cylindrical structure in which the cylinder wall has been inwardly deformed at opposed ends of mutually perpendicular diameters to provide a cross-section with external lobes, in which the ratio of the lengths of the mutually perpendicular diameters after said deformation is from about 2:1 to about 4:1.

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5,304,424

HIGH THERMAL CONDUCTIVITY DIAMOND/NON-DIAMOND COMPOSITE MATERIALS

John A. Herb, Palo Alto; John M. Pinneo, Redwood City, and Clayton F. Gardinier, San Francisco, all of Calif., assignors to Crystallume, Menlo Park, Calif.

Division of Ser. No. 789,732, Nov. 8, 1991, which is a continuation-in-part of Ser. No. 704,997, May 24, 1991, which is a continuation of Ser. No. 413,114, Sep. 27, 1989, Pat. No. 5,075,095, which is a continuation of Ser. No. 204,058, Jun. 7, 1988, Pat. No. 4,882,138, which is a continuation of Ser. No. 32,169, Mar. 30, 1987, abandoned. This application Sep. 30, 1992, Ser. No. 954,354
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—403 12 Claims



1. An article comprising:

a plurality of diamond particles preformed into a desired shape, each of said particles having first surface regions in contact with immediately adjacent other ones of said particles, each of said particles further having second surface regions spaced apart from said immediately adjacent other ones of said particles, said second surface regions of said particles defining boundaries of inter-particle voids between said immediately adjacent ones of said particles,

infiltrated high thermal conductivity CVD diamond material continuously coating said second surface regions of said particles and comprising merged growth fronts from said second surface regions of individual immediately adjacent ones of said particles into said inter-particle voids, said high thermal conductivity CVD diamond material having an average crystallite size greater than about 15 microns, having an intensity of diamond-Raman-peak-to-photoluminescence background intensity greater than about 20, a maximum intensity of the diamond Raman peak in counts/sec divided by the intensity of photoluminescence at 1270 cm^{-1} greater than about 3, a Raman sp^3 full width half maximum less than about 6 cm^{-1} and a diamond-to-graphite Raman ratio greater than about 25.

5,304,425

COMPOSITION AND METHOD FOR PRESERVING AND RESTORING DE-ICER SURFACES

Timothy A. Padgett, Rte. 1, Box 31-6A, Rhome, Tex. 76078

Continuation-in-part of Ser. No. 711,617, Jun. 5, 1991, abandoned. This application Mar. 19, 1992, Ser. No. 853,898
Int. Cl.[5] B32B *9/04*; C08K *5/05*; C08J *3/00*; C09K *3/18*
U.S. Cl. 428—484 16 Claims

1. A chemical composition of matter comprising: a mixture of styrene acrylic emulsion comprising from about 40% to about 60% by weight of the composition; a polyolefin emulsion comprising from about 5% to about 9% by weight of the composition; and an alcohol comprising from about 1% to about 6% by weight of the composition, said alcohol selected from the group consisting of dihydric and polyhydric alcohols, in an aqueous carrier.

5,304,426

BERYLLIUM-BERYLLIUM OXIDE COMPOSITES

Fritz C. Grensing, Perrysburg, Ohio, assignor to Brush Wellman Inc., Cleveland, Ohio

Continuation of Ser. No. 654,328, Feb. 12, 1991, Pat. No. 5,124,119. This application Aug. 17, 1992, Ser. No. 823,987
Int. Cl.[5] B22F *7/00*
U.S. Cl. 428—552 9 Claims

1. A composite composition which comprises a beryllium metal matrix phase having dispersed therein from about 10% to about 70% by volume beryllium oxide particles.

5,304,427

COMPOSITE STRUCTURE WITH NBTIA1CRHF ALLOY MATRIX AND NIOBIUM BASE METAL REINFORCEMENT

Mark G. Benz, Burnt Hills; Melvin R. Jackson, Schenectady, and John R. Hughes, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 2, 1992, Ser. No. 907,949
Int. Cl.[5] B22F *1/00*
U.S. Cl. 428—567 9 Claims



1. A metal-metal composite structure adapted to use at temperature above 1,000 degrees centigrade which comprises

a body of a matrix alloy having a composition in atom percent according to the following expression:

$$Nb—Ti_{27\text{-}40.5}—Al_{4.5\text{-}10.5}—Hf_{1.5\text{-}5.5}Cr_{4.5\text{-}8.5}V_{0\text{-}6}$$

where each metal of the metal/metal composite has a body centered cubic crystal structure, and

wherein the ratio of concentrations of Ti to Nb(Ti/Nb) is greater than or equal (≧) to 0.5, and

wherein the maximum concentration of the Hf+V+Al+Cr additives is less than or equal (≦) to the expression:

$$16.5+5\times Ti/Nb,$$

said body having distributed therein a multitude of ductile reinforcing strand structures of a niobium base metal having a body centered cubic crystal form to form a composite, and

said composite being ductile and having higher tensile and rupture strength at temperatures above 1,000 degrees centigrade than that of the matrix alloy.

5,304,428

COPPER FOIL FOR PRINTED CIRCUIT BOARDS

Masato Takami, Uji, Japan, assignor to Fukuda Metal Foil and Powder Co., Ltd., Japan

Division of Ser. No. 800,927, Dec. 4, 1991, Pat. No. 5,234,573. This application Feb. 2, 1993, Ser. No. 12,173
Int. Cl.[5] B32B *15/20*
U.S. Cl. 428—607 1 Claim

1. A copper foil for printed circuit boards comprising:

a copper foil layer, and

a barrier layer provided on at least one side of the copper foil layer, the barrier layer comprising 49.8–85 weight percent



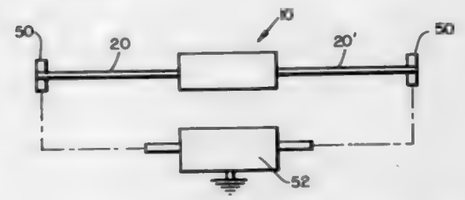
copper, 15–50 weight percent zinc and 0.2–5 weight percent nickel.

5,304,429

SEMICONDUCTOR DEVICES HAVING COPPER TERMINAL LEADS

Salvatore J. Acello, St. James, N.Y., assignor to General Instrument Corporation, Hatboro, Pa.

Filed Mar. 24, 1992, Ser. No. 856,715
Int. Cl.[5] H01L *23/28*, *23/49*
U.S. Cl. 428—620 5 Claims



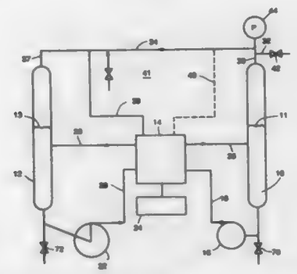
1. A semiconductor device comprising a copper terminal lead brazed to a member of the device, the device being made by a process including heating the lead to a temperature sufficient to cause annealing of the lead, and thereafter applying a tensile force along substantially the entire length of the lead and between it and the member to which it is brazed for stretching the lead to beyond its elastic limit for causing stiffening of the lead.

5,304,430

ACID-BASE CONCENTRATION CELL FOR ELECTRIC POWER GENERATION

Frank A. Ludwig, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 22, 1993, Ser. No. 21,417
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—17 29 Claims



1. An electric power system for generating electrical power, said system comprising:

(a) an acid electrolyte reservoir containing an acid electrolyte having a first pH;

(b) a base electrolyte reservoir containing a base electrolyte having a second pH, wherein the difference between said first pH and said second pH is sufficient to produce a cell voltage;

(c) an acid-base depolarized hydrogen-ion concentration power cell comprising:

(1) an anode compartment containing said base electrolyte;

(2) a cathode compartment containing said acid electrolyte;

(3) a hydrogen-ion reacting cathode located within said cathode compartment wherein hydrogen ions are consumed and hydrogen gas or other reduced species and spent acid solution are produced at said cathode during generation of said electrical power;

(4) a hydrogen-consuming anode located within said anode compartment wherein hydrogen ions or other oxidized species and spent base solution are produced at said anode during generation of said electrical power, and wherein said cathode and anode are connectable externally of said cell for generation of electrical current therebetween;

(5) an ion exchange membrane located between said anode compartment and said cathode compartment;

(6) an acid electrolyte inlet through which said acid electrolyte is introduced into said cathode compartment from said acid electrolyte reservoir;

(7) a base electrolyte inlet through which said base electrolyte is introduced into said anode compartment from said base electrolyte reservoir;

d) means for transferring acid electrolyte from said acid electrolyte reservoir to said acid electrolyte inlet;

e) means for transferring base electrolyte from said base electrolyte reservoir to said base electrolyte inlet;

f) means for transferring spent acid solution from said cathode compartment back to said acid solution reservoir;

g) means for transferring spent base solution from said anode compartment back to said base solution reservoir;

h) means for transferring said hydrogen gas from said cathode to said anode; and

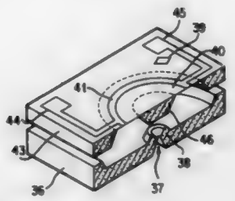
i) means for transferring electric power generated in said cell to an external system.

5,304,431

FLUID DEPOLARIZED ELECTROCHEMICAL BATTERY WITH AUTOMATIC VALVE

Brooke Schumm, Jr., 31220 Lake Rd., Bay Village, Ohio 44140

Filed May 20, 1992, Ser. No. 886,513
Int. Cl.[5] H01M *2/00*
U.S. Cl. 429—27 40 Claims



1. A battery comprising:

at least one gas depolarized electrochemical cell having an interior and at least two electrodes wherein said interior of said cell is enclosed within a container which includes inlet means for funneling depolarizing gas into said interior of said cell and wherein one of said at least two electrodes is an active cathode;

at least one resealable, electrically activated and thermally responsive valve means for placement inside of said container to allow entry of depolarizing gas into said cell through said inlet means and then into said interior of aid cell only when said cell is operating to supply energy to an electrical device which said cell is connected to as a

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power source, said valve means being comprised of shunt resistance means between two terminals located on means for deforming upon application of power to said shunt resistance means; and

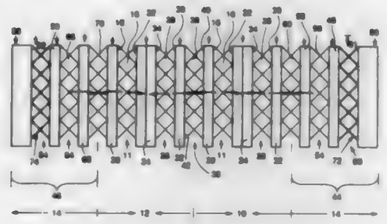
means for actuating said valve means by closing an electrical circuit which includes said cell to thus permit entry of depolarizing gas to said interior of said cell.

5,304,432

MEMBRANE FLOW CELL BATTERY

Carl W. Townsend, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 13, 1992, Ser. No. 959,587
Int. Cl.[5] H07M *10/36*
U.S. Cl. 429—50 20 Claims



1. A rechargeable battery for generating electrical potential by acidic fluid electrolytes and basic fluid electrolytes flowing in fluid flow channels between ionic membranes, said rechargeable battery comprising:

a) a bipolar stack of at least one membrane flow cell, wherein ionic charges moving across said ion membrane provide membrane potentials, said membrane flow cell comprising:

an acidic electrolyte inlet through which acidic electrolyte is introduced into an acidic fluid flow channel formed by a first surface of an anion membrane and a first surface of bilayer membrane;

a basic electrolyte inlet through which basic electrolyte fluid is introduced into a basic fluid flow channel formed by a first surface of a cation membrane and a second surface of a bilayer membrane; and

a salt outlet through which salt solution is transferred from a salt solution fluid flow channel formed by a second surface of said anion membrane and a second surface of said cation membrane;

b) a cathode flow compartment wherein hydrogen gas is generated from said membrane potential, said cathode flow compartment located at one end of said bipolar stack and comprising:

a cathode electrolyte inlet through which cathode electrolyte fluid is introduced into a cathode fluid flow channel formed by a cathode anion membrane and a fuel cell cathode; and

a hydrogen outlet through which hydrogen flows from a first hydrogen flow channel formed by said fuel cell cathode and a first battery endplate;

c) an anode flow compartment wherein hydrogen is consumed to form said voltage, said anode compartment located at a second end of said bipolar stack and comprising:

an anode electrolyte inlet through which anode electrolyte fluid is introduced into an anode fluid flow channel formed by an anode cation membrane and a fuel cell anode; and

a hydrogen inlet through which hydrogen is introduced into a hydrogen flow channel formed by said anode and a second battery end plate;

d) means for transferring hydrogen from said hydrogen outlet to said hydrogen inlet; and

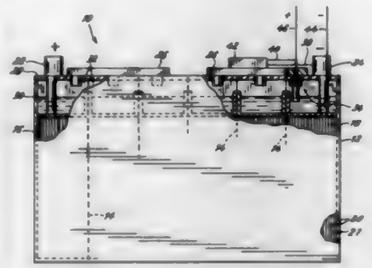
e) means for transferring said electrical potential from said rechargeable battery to an electric load.

5,304,433

CAPACITY INDICATOR FOR LEAD-ACID BATTERIES

Jing-Yih Cherng, Eagan, Minn., assignor to GNB Battery Technologies Inc., Meadota Heights, Minn.

Filed Sep. 28, 1992, Ser. No. 952,358
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—91 14 Claims



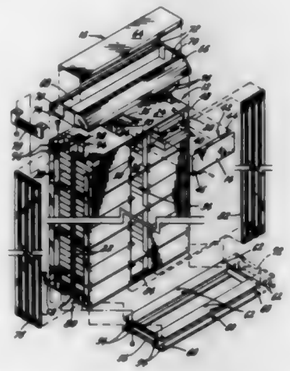
1. A lead-acid battery having a capacity indicator which comprises a container, at least one partition dividing the container into cells, each of said cells including positive and negative plates and it separator positioned therebetween, one of said cells using the negative terminal cell and one being the positive terminal cell, a cover attached to said container and having at least one hole providing access to at least one of said cells, a positive terminal electrically connected to the positive plates in the positive terminal cell, a negative terminal electrically connected to the negative plates in the negative terminal cell, electrolyte contained in said cells, a reference electrode in electrical contact with the electrolyte, and electrical contact means allowing the voltage between the reference electrode and the negative plates in one cell to be determined, said voltage being indicative of the capacity of said lead-acid battery.

5,304,434

MODULAR CABINET FOR LARGE-SIZED SEALED LEAD-ACID CELLS

Bradley W. Stone, Elgin, Ill., assignor to GNB Industrial Battery Co., Lombard, Ill.

Filed Jun. 15, 1992, Ser. No. 898,147
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—99 17 Claims



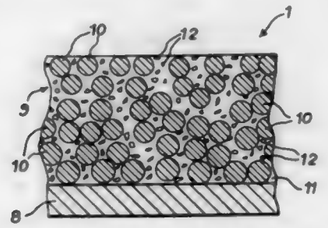
1. A cell-receiving module for a cell rack assembly capable of housing a plurality of cells having one terminal on one end and the other terminal on the other end, said cell-receiving module having a top plate, a bottom plate, and upstanding support members connecting said top and said bottom plates and defining side-by-side cell-receiving areas and a central access area between said cell-receiving areas, a set of cell covers each having a cell-retaining area capable of accepting part of a plurality of cells and retaining the cells in position and an attachment area for mounting said cell covers on said upstanding support members, each cell-receiving area being sized to accept at least one set of said cell covers, and at least one of said top and bottom plates having means for attaching said module to another.

5,304,435

PRESSURE VESSEL CONSTRUCTION FOR A METAL OXIDE-HYDROGEN BATTERY

Kenneth R. Jones, Oconomowoc, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 7, 1992, Ser. No. 927,072
Int. Cl.[5] H01M *10/34, 10/50*
U.S. Cl. 429—101 13 Claims



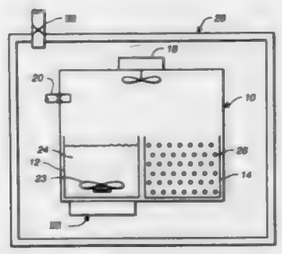
1. In a metal oxide-hydrogen battery, an outer sealed pressure vessel, a plurality of cell modules disposed within said vessel, each cell module including a positive electrode and a negative electrode, said pressure vessel including an inner liner impervious to the passage of hydrogen gas and including an outer layer disposed in contact with the outer surface of said inner liner, said outer layer being composed of substantially continuous filaments disposed in superimposed layers on said liner and bonded by a thermosetting resin, said outer layer also including a plurality of finely divided particles of a material having a high coefficient of thermal conductivity, said particles bridging said filaments and increasing the rate of heat transfer through said vessel to the exterior.

5,304,436

METHOD AND APPARATUS FOR DRYING A NON-AQUEOUS LIQUID ELECTROLYTE

On-Kok Chang, San Jose, Calif., assignor to Valence Technology Inc., San Jose, Calif.

Filed Oct. 29, 1992, Ser. No. 968,194
Int. Cl.[5] H01M *6/14;* B01D *3/34, 3/00*
U.S. Cl. 429—194 7 Claims



1. An apparatus for removing water from a nonaqueous liquid electrolyte, comprising:

a closed container system having,

a first chamber for a liquid,

a second chamber for a desiccant,

a means for circulating an inert gas between said first chamber and said second chamber comprising a wet gas pipe to carry gas from said first chamber to said second chamber and a dry gas pipe to return gas from said second chamber to said first chamber,

a means for stirring a liquid in said first chamber, and

a means for introducing said inert gas into said closed container system;

a dry box chamber wherein the atmospheric water content is in the range of 1 to 50 ppm containing said closed container system; and

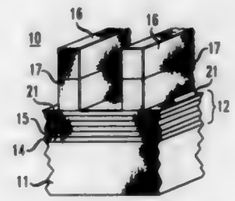
a means for introducing said inert gas into said dry box chamber.

5,304,437

MASK FOR X-RAY PATTERN DELINEATION

Donald M. Tennant, Freehold, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 3, 1992, Ser. No. 862,684
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 10 Claims



1. Fabrication of a reflecting mask for use with delineating radiation in the x-ray spectrum entailing (a) construction of a multilayer reflector, bared regions of such reflector yielding "pass regions" of such mask, (b) construction of a patterned absorber layer, patterned regions defining "blocking regions" of such mask,

characterized in that there is a barrier layer intermediate such absorber layer and such multilayer reflector during fabrication including patterning of the said absorber layer, said barrier layer protecting the multilayer reflector during patterning of the absorber layer, and (c) said barrier layer being patterned to, in turn, reveal bared multilayer reflector.

5,304,438

CHARGE IMAGE RECORDING MEDIUM

Toshio Konno, Yokohama; Tadayuki Shimada, Yokosuka, and Atsushi Nakano, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 538,068, Jun. 14, 1990, abandoned.
This application Jul. 20, 1992, Ser. No. 915,388
Claims priority, application Japan, Jun. 16, 1989, 1-153761; Jun. 16, 1989, 1-153762
Int. Cl.[5] C09K *19/00*
U.S. Cl. 430—20 12 Claims

1. A laminated charge recording device comprising:

a substrate;

an electrode having first and second surfaces wherein one of said first and second surfaces if laminated to said substrate;

an insulating polymer film layer having first and second surfaces wherein one of said first nd second surfaces of said insulating film is laminated on the other of said first and second surfaces of said electrode and;

a film of a fatty acid or a metal salt of a fatty acid positioned on the other of said first and second surfaces of said insulating polymer film layer.

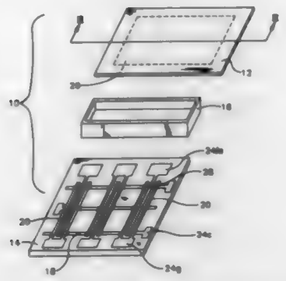
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5,304,439

METHOD OF MAKING AN ELECTROPHORETIC DISPLAY PANEL WITH INTERLEAVED LOCAL ANODE

Frank J. Disanto, North Hills; Denis A. Krusos, Lloyd Harbor, and Frederic E. Schubert, Shoreham, all of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Division of Ser. No. 746,854, Aug. 19, 1991, Pat. No. 5,216,416.
This application Jan. 21, 1993, Ser. No. 6,471
Int. Cl.[5] G02F *1/03*
U.S. Cl. 430—20 13 Claims



1. A method for fabricating the cathode/grid/local anode matrix on the cathode faceplate of a dual anode electrophoretic display comprises performing, in substantially the order shown, the steps of:

(a) forming a plurality of cathode lines on said cathode faceplate;

(b) depositing a first layer of photoresist over said cathode lines;

(c) coating said first layer of photoresist with a conductor material;

(d) coating said conductor material with a second layer of photoresist;

(e) masking said second layer of photoresist with a mask corresponding to the shape of a plurality of grid lines interleaved with a plurality of local anode lines;

(f) exposing said second layer of photoresist through said mask;

(g) developing said second layer of photoresist

(h) acid etching said conductor material coating where not covered by said second layer of photoresist remaining after developing; and

(i) plasma etching said first and said second layers of photoresist where not covered by said conductor material remaining after said step of acid etching.

5,304,440

OPTICAL DISK

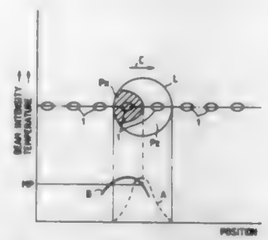
Masumi Ono; Atsushi Fukumoto, and Kouichi Yasuda, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 951,844
Claims priority, application Japan, Sep. 27, 1991, 3-249511
Int. Cl.[5] G11B *7/24*
U.S. Cl. 430—21 8 Claims

1. An optical disk, comprising:

a transparent substrate having stored therein optically readable information in the form of phase pits; and

a layer of phase changeable material overlying the phase pits, the phase changeable material capable of being melted upon illumination by a suitable light source and crystallizing after such melting, such that a portion of said phase changeable material illuminated by said light source exhibits a lower reflectivity than a surrounding area



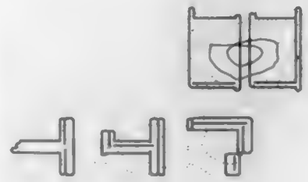
thereby to allow a phase pit underlying said illuminated portions to be read therethrough.

5,304,441

METHOD OF OPTIMIZING EXPOSURE OF PHOTORESIST BY PATTERNING AS A FUNCTION OF THERMAL MODELING

Donald J. Samuels, Yorktown Heights, and Roger J. Yerdon, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,439
Int. Cl.[5] G03F *7/02, 7/20*
U.S. Cl. 430—30 5 Claims



1. A method of adjusting exposure dose of an energy beam in a process for patternwise exposing a lithographic resist sensitive to said energy beam, wherein said process is characterized by individually exposing in sequence a plurality of areas of said resist, said method comprising

a. adjusting the exposure dose for each of said plurality of areas as a function of proximity to other areas,

b. determining an individual exposure dose for each of said plurality of areas,

c. determining where in a pattern to be exposed the thermal energy level will exceed a critical level after exposure to said individual exposure dose, and

d. adjusting the pattern and level of exposure of said resist to a lower level equal to or less than said critical level with repeated exposures of said pattern in areas where said critical level is exceeded.

5,304,442

METHOD FOR ELECTROPHOTOGRAPHIC IMAGE FORMATION

Hajime Murakami, Kusatsu, and Mizuho Okada, Moriyama, both of Japan, assignors to Ishihara Sangyo Kaisha, Ltd.

Continuation of Ser. No. 560,742, Jul. 31, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,306
Claims priority, application Japan, Aug. 2, 1989, 1-200900
Int. Cl.[5] G03G *15/01*
U.S. Cl. 430—45 11 Claims

1. A method for forming an electrophotographic color image comprising the steps of:

forming a static latent image on a photoreceptor via charging and exposing and then developing,

maintaining maximum image density of the toned image constantly via measuring the surface potential of the latent image of the maximum image density portion just before development but after charging and exposing, and

setting the developing bias potential based on said measured surface potential so that a difference between said surface potential and a developing bias potential is constant.

5,304,443

OFFSET LITHOGRAPHIC PLATE

Murray Figov, Raanana, Israel, assignor to Plazer Ltd., Ramat Gan, Israel

Filed Aug. 24, 1992, Ser. No. 933,370
Claims priority, application Israel, Aug. 6, 1992, 102746
Int. Cl.[5] G03G *13/28*
U.S. Cl. 430—49 27 Claims

1. A lithographic plate blank for imaging on a laser printer, comprising a sheet of flexible electrically non-conductive material and an image receiving etchable layer coating bonded on a surface thereof, said coating comprising zinc oxide, a resin binder, and an electrical property regulating agent and being effective to provide said plate with a surface resistance of between 10^{11} and 10^{14} ohms per square combined with a dark decay rate of at least 15 volts per second.

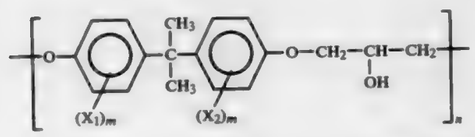
5,304,444

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY COMPRISING ORGANIC PHOTOCONDUCTIVE SUBSTANCES IN A BINDER POLYMER HAVING AROMATIC RINGS, OH GROUPS AND BROMINE JOINED AT THE AROMATIC RING OR RINGS

Sohji Tsuchiya, Kanagawa; Atsushi Omote, Kawasaki; Yoshimasa Ito, Tokyo; Kenji Akami, Kawasaki, and Mutsuaki Murakami, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 705,981, May 28, 1991, abandoned.
This application Apr. 12, 1993, Ser. No. 45,286
Claims priority, application Japan, May 25, 1990, 2-135914; May 25, 1990, 2-135915; May 25, 1990, 2-135916; Nov. 7, 1990, 2-303619; Nov. 7, 1990, 2-303620; Nov. 7, 1990, 2-303621
Int. Cl.[5] G03G *5/05, 5/06*
U.S. Cl. 430—58 23 Claims

1. A photosensitive material for electrophotography which comprises a conductive support and a layer structure formed on the support, said layer structure being made of a dispersion of an organic photoconductor in a mixture of a thermally curable binder polymer which has recurring units of the following general formula



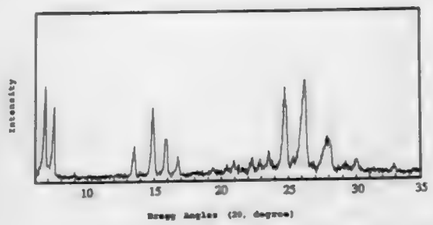
wherein each m is individually from 0 to 4, but at least one m is not 0, X_1 and X_2 are bromine atoms and n is an integer of from 20 to 1000, and from 2 to 30 weight percent, based on the binder polymer, of an aromatic carboxylic acid having at least one ring selected from the group consisting of a benzene ring, a naphthalene ring, an anthracene ring and a phenanthrene ring.

5,304,445

PHTHALOCYANINE COMPOSITION, PROCESS FOR PREPARING THE SAME AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME

Mikio Itagaki; Shigeru Hayashida; Megumi Matsui; Hiroko Ishikawa, all of Ibaraki; Yoshii Morishita, Tochigi, and Takayuki Akimoto, Ibaraki, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,836
Claims priority, application Japan, Feb. 12, 1992, 4-025215; Apr. 17, 1992, 4-097815; Oct. 6, 1992, 4-266420
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—59 4 Claims



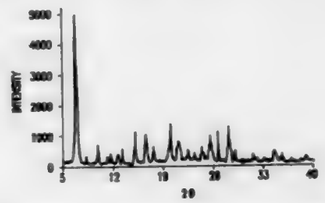
1. An elecrophotographic photoreceptor having a photoconductive layer containing an organic photoconductive substance on a conductive substrate, charaterized in that said organic photoconductive substance is a phthalocyanine composition having main diffraction peaks at 7.5°, 22.5°, 24.3°, 25.3° and 28.6° of Bragg angles (2θ±0.2°) in an X-ray diffraction spectrum with Cu Kα, prepared by mixing a titanylphthalocyanine and a halogenated metal phthalocyanine in which a central metal is trivalent to prepare a phthalocyanine mixture, making the mixture amorphous by an acid pasting method, washing the amorphous mixture with water until a washing water after washing has a pH of 3 to 6 and a conductivity of 10 to 300 μS/cm, and then treating the mixture with an organic solvent to convert a crystal form of the composition.

5,304,446

HYDROXYINDIUM PHTHALOCYANINE CRYSTALS AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Katsumi Daimon; Katsumi Nukada; Akira Imai; Masakazu Iijima, and Toru Ishii, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,546
Claims priority, application Japan, Apr. 22, 1991, 3-116633
Int. Cl.[5] G03G *5/00, 15/00*
U.S. Cl. 430—78 15 Claims



1. Hydroxyindium phthalocyanine crystals having distinct diffraction peaks at 6.9°, 9.8°, 14.9°, 16.3°, 19.8°, 25.4°, 26.6° and 28.1° of the Bragg angle (2θ±0.2) in the X-ray diffraction pattern.

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5,304,447

PLATEABLE TONER AND METHOD FOR PRODUCING THE SAME

Leo G. Svendsen, Redwood City, and Geoffrey J. Holland, Danville, both of Calif., assignors to ELF Technologies, Inc., Foster City, Calif.

Filed Feb. 11, 1992, Ser. No. 834,055
Int. Cl.[5] G03G 9/093
U.S. Cl. 430—109 29 Claims

1. A method for making a plateable toner particle comprising:

providing a toner core having a size of 5–20 μ and comprising at least one polymer selected to enhance a chemical or physical property of a plateable toner;

applying an effective amount of a shell onto the core from a solution which comprises at least one binding compound, at least one catalyzing and/or activating compound for electroless plating and a surfactant for enhancing the contact angle between the catalyzing and/or activating compound and an electroless plating solution, wherein the toner core is devoid of catalyzing and/or activating compounds, sensitizing compounds and the surfactant.

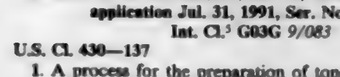
5,304,448

ENCAPSULATED TONER COMPOSITIONS

Barkev Keoshkerian, Thornhill; Beng S. Ong, Mississauga, and Padam K. Angra, Brampton, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 15, 1992, Ser. No. 898,669
Int. Cl.[5] G03G 9/093
U.S. Cl. 430—109 10 Claims

1. An encapsulated toner composition consisting essentially of a core consisting essentially of a polymer binder and pigment encapsulated in a shell consisting essentially of the polycondensation product of a polyisocyanate and an amino acid with an amide functionality and wherein the amino acid selected is represented by the formula:



where R represents a trivalent aliphatic or trivalent aromatic group.

5,304,449

TONER AND DEVELOPER COMPOSITIONS WITH PYRIDINIUM COMPOUNDS AND TETRASUBSTITUTED AMMONIUM SALTS AS CHARGE ENHANCING ADDITIVES

William H. Hollenbaugh, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1992, Ser. No. 983,192
Int. Cl.[5] G03G 9/08
U.S. Cl. 430—110 31 Claims

1. A toner comprising a toner resin and from about 0.35% to about 0.65% by weight of at least one pyridinium compound or its hydrate and from about 1% to about 2% by weight of at least one tetrasubstituted ammonium salt.

5,304,450

PROCESSES FOR THE PREPARATION OF TONER COMPOSITIONS

Anthony J. Paine, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 386,386, Jul. 28, 1989, abandoned. This application Jul. 31, 1991, Ser. No. 738,413
Int. Cl.[5] G03G 9/083
U.S. Cl. 430—137 14 Claims

1. A process for the preparation of toner with an average volume diameter of from about 0.1 micron to about 200 microns consisting essentially of dissolving in a first solvent from about 1 to about 100 parts of a homopolymer selected from the group consisting of polyesters, poly(*n*-butyl methacrylate), poly(2-ethylhexyl methacrylate), poly(*n*-lauryl methacrylate), poly(stearyl methacrylate), poly(eicosane), copolymers thereof, and copolymers thereof with styrene or butadiene together with from about 0.01 to about 10 parts of a block or graft stabilizer with A or A-compatible segments chemically bonded to B segments in 100 parts of the first solvent at a temperature of from about 0° to 100° C., and agitating vigorously while from about 10 to about 10,000 parts of a second nonsolvent for polymer A, which is a solvent for polymer B, is added at a rate of from about 0.01 to about 10,000 parts per minute, and wherein said stabilizing block copolymer is of the formula AB, ABA, or BAB wherein A and B represent polymer segments of styrene isoprene copolymers, diblock and triblock copolymers of styrene-butadiene-styrene, styrene-/ethylene-co-butylene, styrene-isoprene-styrene, hydrogenated materials thereof, ethylene oxide/propylene oxide block copolymers or polystyrene-*b*-polyethylene oxide; subsequently isolating the polymer particles and admixing therewith pigment or dye components.

5,304,451

METHOD OF REPLENISHING A LIQUID DEVELOPER

Thomas Felder, Pannal, United Kingdom; Ronald Koch, and Lalit M. Bhaila, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,660
Int. Cl.[5] G03G 9/12
U.S. Cl. 430—137 20 Claims

1. A method of replenishing toner solids in a liquid electrostatic developer in a liquid electrostatographic printing machine, comprising adding dry toner particles comprising a friable thermoplastic resin and a colorant to a toner solids depleted liquid electrostatic developer in said machine.

5,304,452

HEAT SENSITIVE DIAZO TYPE RECORDING MATERIAL UTILIZING MICROENCAPSULATED DIAZO COMPOUND AND A COUPLING COMPONENT

Makoto Ohno; Akihiro Shimomura, and Toshiharu Tanaka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 9, 1992, Ser. No. 958,751
Claims priority, application Japan, Oct. 9, 1991, 3-290852
Int. Cl.[5] G03C 5/18; G03F 7/021
U.S. Cl. 430—138 10 Claims

1. A recording material comprising a support having coated thereon a photosensitive layer comprising:

(a) a photosensitive diazo compound enclosed in microcapsules, said microcapsules being formed by forming an organic solution containing said diazo compound and a wall monomer, emulsifying said organic solution in an aqueous solution containing an anionic surface-active agent and polyvinylpyrrolidone to produce oil droplets containing said wall monomer, and polymerizing said wall monomer to form a wall around said oil droplets; and,

(b) a coupling component, wherein said coupling component reacts with said diazo compound to form a color upon application of heat to said photosensitive layer under alkaline conditions.

5,304,453

METHOD FOR PREPARING RESIST PATTERNS THROUGH IMAGE LAYER TRANSFER TO A RECEIVER SUBSTRATE, VIA A PHOTO-HARDENING ORGANIC LIQUID ADHESIVE, WITH SUBSEQUENT OXYGEN REACTIVE ION ETCHING

Dhei-Jhai Lin, Taoyuan, Taiwan, assignor to Industrial Technology Research Institute, Taiwan, China

Division of Ser. No. 729,881, Jul. 11, 1991, abandoned. This application May 4, 1993, Ser. No. 56,490
Int. Cl.[5] G03F 7/30, 7/36, 7/40
U.S. Cl. 430—252 12 Claims

1. A method of forming a resist pattern on a substrate comprising the steps of

(a) forming a non-etch resistant photoresist layer on a transparent flat carrier substrate, wherein said non-etch resistant photoresist is selected form the group consisting of diazoquinone/novolak and diazoquinone/polyvinylphenol type photoresists;

(b) creating a latent pattern in the non-etch resistant photoresist layer by imagewise exposure to photoradiation;

(c) imagewise depositing an etch resistant compound in said latent pattern to make the latent pattern an etch resistant pattern;

(d) laminating the transparent flat carrier substrate with the non-etch resistant photoresist layer with the etch resistant pattern formed therein to an etch resistant receiver substrate using a photo-hardenable organic liquid adhesive, such that the non-etch resistant photoresist layer with the etch resistant pattern formed therein faces the receiver substrate;

(e) flood exposing said laminate to photoradiation from the carrier substrate side to harden the adhesive;

(f) peeling off the carrier substrate; and

(g) forming a pattern on the receiver substrate by removing the non-etch resistant photo resist layer not covered by the etch resistant pattern and the underlying adhesive material using oxygen reactive ion etching.

6. A method of forming a resist pattern on substrate comprising the steps of:

(a) forming a non-etch resistant photoresist layer on a transparent flat carrier substrate;

(b) creating an explicit resist pattern in the non-etch resistant photoresist by imagewise exposure to photoradiation followed by wet developing in an appropriate solvent;

(c) laminating the resist pattern to a receiver substrate using a photo-hardenable organic liquid adhesive with the resist pattern side facing the receiver substrate;

(d) flood exposing the laminate to photoradiation from the carrier substrate side to harden the adhesive;

(e) peeling off the carrier substrate to leave a flat surface with said resist pattern embedded in the hardened adhesive layer;

(f) selectively depositing an etch resistant organometallic compound in the exposed adhesive area not covered by the resist pattern; and

(g) removing the materials not covered by the now etch resistant adhesive pattern by oxygen reactive ion etching to form a reverse pattern on the receiver substrate.

5,304,454

IMAGE FORMING METHOD USING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Hiroaki Yokoya; Keiji Takeda; Osami Tanabe, and Katsuji Kitatani, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 6, 1992, Ser. No. 878,996
Claims priority, application Japan, May 7, 1991, 3-131791
Int. Cl.[5] G03C 5/54
U.S. Cl. 430—255 17 Claims

1. An image forming method comprising the steps of (1), (2), (3) and (4):

(1) imagewise exposing to light a light-sensitive material comprising a support and the light-sensitive polymerizable layer which contains silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound or-/and a cross-linkable polymer and a colorant;

(2) developing the light-sensitive polymerizable layer to harden the ethylenically unsaturated polymerizable compound or/and the cross-linkable polymer within the exposed area or, in the alternative, within the unexposed area; and then



(3) placing the surface of the light-sensitive polymerizable layer in contact with a removing sheet and peeling the sheet to remove the unhardened area or, in the alternative, the hardened area with the sheet to obtain a hardened image whereby a color image is formed; and

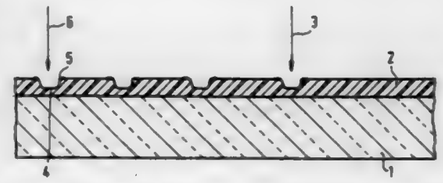
(4) placing the light-sensitive material in contact with an image receiving material whereby the color image is transferred to the image receiving material.

5,304,455

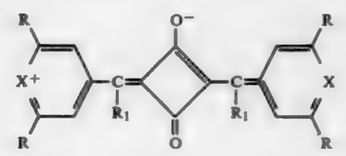
MASTER DISC

Johannes P. J. G. van Liempd, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1991, Ser. No. 797,573
Claims priority, application Netherlands, Nov. 28, 1990, 9002594
Int. Cl.[5] G11B 7/24
U.S. Cl. 430—270 6 Claims

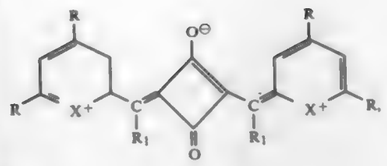


1. A master disc for the manufacture of copies which in turn are used for the manufacture of further copies in the form of optically readable information carriers, said master disc comprising a substrate disc having an optical recording layer which comprises a nitrocellulose binder as well as a dye which is dissolved or finely dispersed in said binder, characterized in that the dye is a squarylium dye in a quantity of 1–15 wt. % of the binder and the squarylium dye corresponds to formula (2)


(2)

or to formula (3)

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(3)

where
X is an oxygen or sulpher atom,
R_1 is a hydrogen atom, and
R is an alkyl group.

5,304,456

NEGATIVE PHOTORESIST COMPOSITION

Yuji Ueda, Izumi; Hiromi Ueki, Osaka; Naoki Takeyama, Osaka, and Takehiro Kusumoto, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

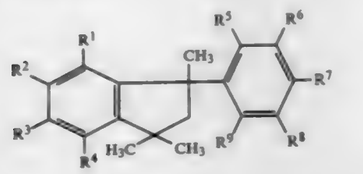
Filed Jan. 29, 1992, Ser. No. 827,423

Claims priority, application Japan, Jan. 31, 1991, 3-010772; Mar. 29, 1991, 3-066215; Apr. 12, 1991, 3-079742; Sep. 26, 1991, 3-247396

Int. Cl.[5] C08L *61/10, 61/28, 61/34;* **G03F** *7/004*

U.S. Cl. 430—270 **21 Claims**

1. A negative photoresist composition comprising an alkali-soluble resin obtainable through a condensation reaction of an aldehyde with a phenol compound containing a compound of the general formula:



(1)

wherein R^1 to R^9 are independently a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted alkylcarbonyl group, a halogen atom or a hydroxyl group, provided that at least one of R^1 to R^9 is a hydroxyl group and, at the ortho- or para-position to said hydroxyl group, at least two hydrogen atoms are present; a cross linking agent; and a photo-acid generator.

5,304,457

COMPOSITION FOR PHOTO IMAGING

Richard A. Day, Whitney Point, N.Y.; Jeffrey D. Gelorme, Plainville, Conn.; David J. Russell, Apalachin, N.Y., and Stephen J. Witt, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 632,032, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 318,536, Mar. 3, 1989, Pat. No. 5,026,624. This application Oct. 5, 1992, Ser. No. 956,836

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[5] G03C *1/725*

U.S. Cl. 430—280 **14 Claims**

1. A photosensitive cationically polymerizable epoxy based imaging system comprising:
an epoxy based resin system having solids consistent essentially of between about 10% and about 80% by weight of a polyol resin having epoxy functionality and said polyol resin having a molecular weight of from about 40,000 to about 130,000;
between about 20% and about 90% by weight of an epoxidized bromonated bisphenol A resin to impart flame resistance having a molecular weight of from about 4,000 to about 10,000;
an effective amount up to about 50% by weight of an epoxidized bromonated bisphenol A resin having a molecular weight of from about 600 to about 2,500 to impart flame resistance;
from about 0.1 to about 15 parts by weight of a cationic photoinitiator capable of initiating polymerization in said epoxidized resin system upon exposure to actinic radiation;
said resin system being further characterized by having an absorbance of light in the 330 to 700 nm region of less than 0.1 for a 2.0 mil thick film.

5,304,458

MULTIBLOCK COPOLYMERS FOR FLEXOGRAPHIC PRINTING PLATES

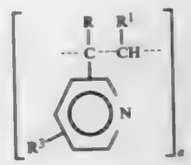
Arthur L. Berrier, and Rustom S. Kanga, both of Ellicott City, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 8, 1992, Ser. No. 941,486

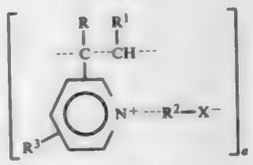
Int. Cl.[5] G03C *1/68, 1/72;* **G03F** *7/004, 7/028*

U.S. Cl. 430—281 **6 Claims**

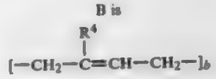
1. Method of preparing a photosensitive flexographic printing plate comprising coating a flexographic plate backing with a formulation comprising
1) block polymer of the structure where A is A'B, CBA' or CBCA'



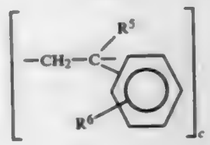
A' is



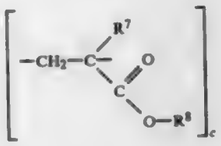
B is



C is



or



X is a leaving group;
R, R^1, R^3, R^4, R^5 and R^6 and R^7 are independently H or 1–8 carbon alkyl;
R^2 is H, 1–8 carbon alkyl, or aralkyl;
R^8 us 1–8 carbon alkyl;
a has a value in the range of about 50–5,000;
b has a value in the range of about 500–10,000;
c has a value in the range of about 25–500;
2) photosensitive unsaturated compound; and
3) photoinitiator.

5,304,459

AT-CUT CRYSTAL OSCILLATING REED AND METHOD OF ETCHING THE SAME

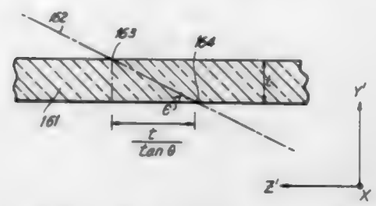
Hideaki Nakamura, and Eiji Karaki, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 691,888, Apr. 26, 1991, abandoned. This application Jun. 19, 1992, Ser. No. 901,287

Claims priority, application Japan, Apr. 27, 1990, 2-114686; Sep. 19, 1990, 2-249649; Sep. 19, 1990, 2-249650; Sep. 19, 1990, 2-249651; Sep. 19, 1990, 2-249652; Sep. 21, 1990, 2-252260; Sep. 21, 1990, 2-252261

Int. Cl.[5] G03C *5/00;* **H01L** *41/04*

U.S. Cl. 430—311 **11 Claims**



1. A method of etching an AT-cut crystal oscillating reed, comprising:
providing an AT-cut crystal wafer having a front and back surface with a rotational parallel cut obtained by rotating a parallel cut by an angular degree of $\theta°$ relative to the X-axis of the wafer;
forming corrosion resisting films on the front and back surfaces of the crystal wafer, said corrosion resisting films having gaps at the portion of the wafer to be etched for forming the AT-cut crystal segment;
etching the wafer to form at least one side edge of an AT-cut crystal segment, said at least one side edge being at an angle of about 90° from the front or back surface of the AT-cut crystal oscillating reed;
removing the corrosion resisting films;
forming at least one layer of metal film on the crystal segment;
coating the at least one layer of metal film with a photoresist material;
placing a photomask with the desired exciting electrode patterns on the photoresist material;
exposing the photoresist material to light;
developing the photoresist material;
etching the at least one layers of metal film to shape the at least one layer of metal film into exciting electrodes; and
removing the photoresist material.

5,304,460

ANISOTROPIC CONDUCTOR TECHNIQUES

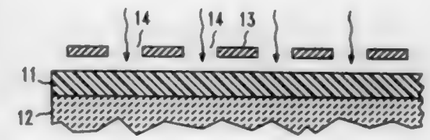
Joe A. Fulton, Ewing, N.J., and Hung N. Nguyen, Bensalem, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1992, Ser. No. 954,190

Int. Cl.[5] G03C *5/00;* **H01L** *21/70*

U.S. Cl. 430—311 **29 Claims**

1. A method for interconnecting a first conductor array of an electronic device to a second conductor array of a first substrate comprising the steps of:
using photolithographic masking and etching to make an array of substantially uniformly spaced apertures in a mask;
locating the mask over a second substrate;
using the apertures of the mask to form an array of substantially uniformly spaced metal particles, each particle being substantially coextensive with a corresponding aperture;
joining the metal particles with insulative material, thereby to form a layer of anisotropic conductive material;



removing the layer of anisotropic conductive material from the second substrate;
locating conductors of the first conductor array in alignment with conductors of the second conductor array;
and compressing the layer of anisotropic conductive material between the first and second conductor arrays and causing individual particles of the layer of anisotropic conductive material to make simultaneous contact with conductors of the first and second conductor arrays to interconnect the electronic device to the first substrate.

5,304,461

PROCESS FOR THE SELECTIVE DEPOSITION OF THIN DIAMOND FILM BY GAS PHASE SYNTHESIS

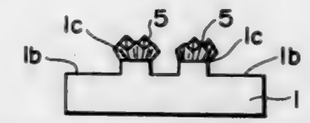
Takayoshi Inoue; Hiroyuki Tachibana; Akimitsu Nakaue; Kazuo Kumagai; Koichi Miyata, all of Kobe, and Koji Kobashi, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 462,548, Jan. 9, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 845,790

Claims priority, application Japan, Jan. 10, 1989, 1-4092; Dec. 11, 1989, 1-322259

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—323 **11 Claims**



1. A process for selective deposition of a second diamond film by gas phase synthesis, by deposition of diamond onto deposition regions of a substrate surface of a substrate at a higher deposition rate than onto non-deposition regions of the substrate surface, comprising the steps of:
preparing the substrate surface to have a uniform diamond nucleation site density; then
selectively reducing the density of diamond nucleation sites available for gas phase synthesis in non-deposition regions of the substrate surface, wherein the substrate surface is not a diamond surface and the step of selectively reducing the nucleation site density further comprises the steps of depositing a non-diamond first material which has a low diamond nucleation site density onto the entire substrate surface, removing the first material from the non-deposition regions of the substrate surface, then subjecting the non-deposition regions of the substrate surface to an etch to reduce the density of diamond nucleation sites on the

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non-deposition region, and then removing the first material from the deposition regions, thereby exposing the high density of diamond nucleation sites of the deposition regions; and then

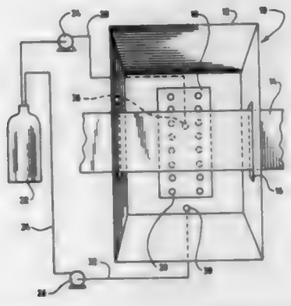
exposing the substrate to a gas phase environment suitable for diamond deposition so that diamond is preferentially deposited on the deposition regions and forms said second diamond film.

5,304,462

COMPOSITION FOR AND METHOD OF CLEANING CONTINUOUS, NONREPLENISHED FILM DEVELOPERS AND REPLENISHED FILM DEVELOPERS

Donald H. Kloaterboer, and Jerry M. Owens, both of San Diego, Calif., assignors to Anacomp, Inc., Poway, Calif.

Filed Jul. 20, 1992, Ser. No. 916,658
Int. Cl.[5] G03C *5/305, 5/31*
U.S. Cl. 430—399 **6 Claims**



1. A process for solubilizing oily dye residues in a recirculating photodeveloper solution comprising combining triazinylaminostilbene with a photodeveloping solution used to develop a direct positive silver halide film to produce a substantially nonfoaming recirculating photodeveloper solution having about 0.2 gram to about 1 gram of triazinylaminostilbene per gallon of said photodeveloper solution; developing said film in said photodeveloper solution while said film releases oily yellow to greenish-brown dye residues into said photodeveloper solution; and substantially solubilizing said oily dye residues in said photodeveloper solution.

5,304,463

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Takehiko Sato, and Nobuo Seto, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

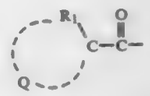
Filed May 28, 1992, Ser. No. 889,374
Claims priority, application Japan, May 28, 1991, 3-152346
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—503 **25 Claims**

1. A silver halide color photographic material having photosensitive layers of yellow color-forming layer, magenta color-forming layer, and cyan color-forming layer, and non-photosensitive layers adjacent to said photosensitive layers on a base, which comprises, in the said yellow color-forming photosensitive layer, at least one coupler selected from an acylacetamide yellow dye-forming coupler represented by the following formula (I), a nondiffusible yellow dye-forming coupler represented by the following formula (II), and a non-diffusible yellow dye-forming coupler represented by the following formula (III), and in at least one layer selected from yellow color-forming photosensitive layers and non-photosensitive layers adjacent thereto, at least one compound represented by the following formula (IV):

Formula (I)

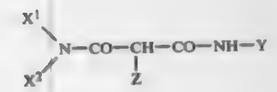


wherein R^1 represents a monovalent group, Q represents a group of non-metallic atoms required to form together with the C a substituted or unsubstituted 3- to 5-membered cyclic hydrocarbon group or a substituted or unsubstituted 3- to 5-membered heterocyclic group that has in the group at least one heteroatom selected from a group consisting of N, S, O, and P, and Y_R represents a residue remaining after removing the acyl group

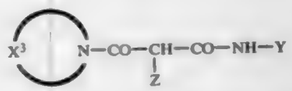


at the α position of the acetamide moiety from the acylacetamide yellow dye-forming coupler represented by formula (I), provided that R_1 is not a hydrogen atom and does not bond to Q to form a ring.

Formula (II)



Formula (III)



wherein X^1 and X^2 each represent an alkyl group, an aryl group, or a heterocyclic group, X^3 represents an organic residue required to form a nitrogen-containing heterocyclic group together with the >N—, Y represents an aryl group or a heterocyclic group, and Z represents a group capable of being released upon a coupling reaction of the coupler represented by said formula with the oxidized product of a developing agent,

Formula (IV)



wherein R_{41} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkenyl group, or a substituted or unsubstituted heterocyclic group; R_{42} represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkenyl group, or a substituted or unsubstituted heterocyclic group, and n is an integer of 0 to 4, provided that R_{41} and R_{42} may together form a 5- to 7-membered ring.

5,304,464

PROTEIN COMPLEX ENHANCING SPERM MOTILITY

Eva Åkerlöf, Midgardsvägen 13, S-141 39 Huddinge, and Åke Pousette, Mickelsbergsvägen 113, S-125 32 Älvsjö, both of Sweden, assignors to Eva Åkerlöf, Huddinge; Åke Pousette, Älvsjö, both of Sweden and Applied Research Systems ARS Holding N.V., Curacao, Netherlands

PCT No. PCT/SE90/00213, § 371 Date Nov. 27, 1991, § 102(e) Date Nov. 27, 1991, PCT Pub. No. WO90/12032, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 2, 1990, Ser. No. 777,277
Claims priority, application Sweden, Mar. 31, 1989, 8901127
Int. Cl.[5] A01N *1/02;* **A61K** *37/10*
U.S. Cl. 435—2 **5 Claims**

1. A protein macromolecule comprising, an essentially pure protein complex of apolipoprotein and immunoglobulin having a molecular weight of about 180,000 to 250,000 Daltons and which is capable of activating sperm motility.

5,304,465

ENZYME ASSAY METHOD USING SURFACE PLASMON RESONANCE SPECTROSCOPY

Peter B. Garland, Old Bosham, and Philip G. Malan, Hearne, both of England, assignors to Amersham International plc, Buckinghamshire, United Kingdom

PCT No. PCT/GB90/00898, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/15983, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 11, 1990, Ser. No. 768,211
Claims priority, application United Kingdom, Jun. 12, 1989, 8913474
Int. Cl.[5] C12Q *1/00;* **G01N** *1/22, 21/55;* **G01J** *3/30*
U.S. Cl. 435—4 **5 Claims**

1. A method of performing an assay for an enzyme comprising:

providing a solid surface carrying an immobilized reagent which is capable of being released by the enzyme;

contacting the immobilized reagent with a fluid sample under conditions such that the enzyme, if present in the fluid sample, catalyzes release of the immobilized reagent from the solid surface; and

detecting release of the immobilized reagent from the solid surface by surface plasmon resonance spectroscopy thereby determining the presence of the enzyme, wherein the solid surface is a metallic layer applied to a block of material transparent to electromagnetic radiation.

5,304,466

HIV-3 RETROVIRUS AND ITS USE

Robert De Leys, Grimbergen; Bart Vanderborght, Geel; Eric Saman, St. Niklaas, and H. Van Heuverswyn, Laarne, all of Belgium, assignors to Innogenetics N.V., Belgium

PCT No. PCT/EP89/00643, § 371 Date Mar. 23, 1990, § 102(e) Date Mar. 23, 1990, PCT Pub. No. WO89/12094, PCT Pub. Date Dec. 14, 1989
PCT Filed Jun. 8, 1989, Ser. No. 460,913
Claims priority, application European Pat. Off., Jun. 9, 1988, 88109200.1
Int. Cl.[5] C12Q *1/70;* **C12P** *21/06;* **C12N** *15/00, 7/00*
U.S. Cl. 435—5 **19 Claims**

1. A method for detecting antibodies against HIV-3 retrovirus in a body fluid comprising:

(a) contacting body of a person to be diagnosed with a composition comprising at least one antigen of said HIV-3 retrovirus, said retrovirus having the morphological and immunological properties of any of the retroviruses deposited at the European Collection of Animal Cell Cultures (ECACC) under N V88060301, including the characteristics that:

the virus exhibits a tropism for T4 lymphocytes;

the virus is cytotoxic for the lymphocytes that it infects;

the virus has a diameter of approximately 120 nm;

the virus possesses a magnesium dependent reverse transcriptase activity;

the virus can be cultivated in T4 receptor-bearing immortalized cell lines;

lysates of the virus contain a p25 protein which is immunologically distinct from the p19 protein of HTLV-I by Western blot analysis;

the lysates of the virus contains in addition a glycoprotein with a molecular weight of 40,000–45,000; and

the genomic RNA of HIV-3 hybridizes neither with the sequences of HIV-1 nor with the sequence of HIV-2 under stringent hybridization conditions; and

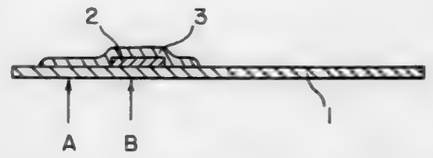
(b) detecting an immunological complex formed between said anti-HIV-3 antibodies and the antigen used.

5,304,467

DEVICE FOR ASSAY OF LIQUID SAMPLE

Hisashi Sakamoto, Yawata; Shigeki Yamada, Joyo, and Hiroshi Taniguchi, Kyoto, all of Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 675,049, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 442,635, Nov. 29, 1989, abandoned. This application Dec. 18, 1991, Ser. No. 809,253
Claims priority, application Japan, Nov. 30, 1988, 63-157143[U]
Int. Cl.[5] G01N *31/22;* **C12Q** *1/28, 1/54, 1/62*
U.S. Cl. 435—14 **14 Claims**



1. A device for colorimetric assay of at least one component in a liquid sample, which device comprises:

a transparent support,

a reagent layer formed on a part of one surface of the support wherein the reagent layer contains at least one reagent which reacts with a component in a sample to be analyzed to develop a specific color which is measured colorimetrically, and

a sample-receiving layer which covers at least a part of the reagent layer and at least a part of the support surface adjacent said reagent layer, wherein the sample-receiving layer comprises a porous material portion of filter paper, woven fabric or non-woven fabric which covers part of said support and part of said reagent layer, and comprises a mesh portion which covers said porous material portion, said reagent layer and said support, whereby the timing of the sample application onto the device is accurately determined by directly comparing the reflectance of said sample-receiving layer with the reflectance of the reagent layer.

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5,304,468

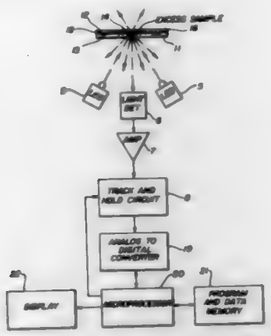
REAGENT TEST STRIP AND APPARATUS FOR DETERMINATION OF BLOOD GLUCOSE

Roger Phillips, Palo Alto; Geoffery McGarraugh, Scotts Valley; Franklin A. Jurik, San Mateo, and Raymond D. Underwood, Red Bluff, all of Calif., assignors to Lifescan, Inc., Mountain View, Calif.

Continuation of Ser. No. 819,431, Jan. 10, 1992, which is a division of Ser. No. 187,602, Apr. 28, 1988, Pat. No. 5,179,005, which is a continuation-in-part of Ser. No. 896,418, Aug. 13, 1986, Pat. No. 4,935,346. This application Jan. 26, 1993, Ser. No. 9,179

Int. Cl.[5] C12Q *1/54;* **G01N** *21/00, 21/75*

U.S. Cl. 435—14 **3 Claims**



1. A reagent test strip for use in an apparatus for determining the blood glucose concentration of a sample of whole blood, said apparatus comprising optical means for detecting intensity of light at wavelengths of about 635 nm and about 700 nm reflected from at least a portion of said strip by reading the reflectance of at least a portion of said strip;

said strip having a porous portion disposed near a distal end of said strip such that the porous portion generally registers with the optical means of the apparatus when the strip is retained by the apparatus during determination of said blood glucose concentration, said porous portion having a sample receiving surface for receiving a sample of whole blood and a testing surface, said porous portion further comprising reagent means for indicating the concentration of blood glucose in said whole blood sample in the presence of optically visible hemoglobin by creating a change in reflectance at said testing surface indicative of the concentration of glucose present in said sample, said reagent means comprising chemical reagents selected to produce said change dependent upon the glucose concentration wherein said chemical reagents comprise a dye precursor forming a chromophore indicative of the concentration of glucose present in said sample, said chromophore absorbing light at about 635 nm but not to any significant extent at about 700 nm.

5,304,469

PROPYLENE GLYCOL AS AN ACTIVATOR FOR PHOSPHOENOLPYRUVATE CARBOXYLASE

Charlie W. Wilson, III, N. Richland Hills, Tex., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 17, 1989, Ser. No. 422,873

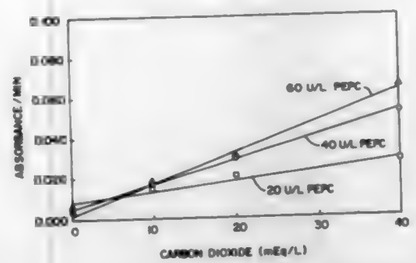
Int. Cl.[5] C12Q *1/00, 1/54, 1/48, 1/34*

U.S. Cl. 435—25 **22 Claims**

1. In a method for measuring the total carbon dioxide content of a test sample, comprising the steps of:

adding a reagent solution of phosphoenolpyruvate and phosphoenolpyruvate carboxylase (PEPC) to the sample to form a reaction mixture, wherein said phosphoenolpyruvate reacts with carbon dioxide contained in the sample to produce oxaloacetate; and

measuring the quantity of or the rate at which oxaloacetate is formed in said mixture;



the improvement comprising adding to said reagent solution an amount of a solvent sufficient to increase the activity of said PEPC while maintaining a pH of about 6.0 to about 7.0, wherein said solvent is propylene glycol.

5,304,470

PROCESS FOR THE ENZYMATIC PREPARATION OF PROTECTED AND UNPROTECTED DI- AND OLIGOPEPTIDES IN AQUEOUS SOLUTIONS

Andreas Fischer, Bonn, Fed. Rep. of Germany; Alexander Schwarz, Rehovot, Israel; Christian Wandrey, Juelich, Fed. Rep. of Germany; Guenter Knaup, Bruchkoebel, Fed. Rep. of Germany; Andreas Bommarius, Frankfurt, Fed. Rep. of Germany, and Karl-Heinz Drauz, Freigericht, Fed. Rep. of Germany, assignors to Forschungszentrum Juelich GmbH, Juelich and Degussa AG, Frankfurt am Main, both of Fed. Rep. of Germany

Filed Jan. 23, 1992, Ser. No. 823,956

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1991, 4101895

Int. Cl.[5] C12P *21/00;* **C07K** *01/14, 01/06*

U.S. Cl. 435—68.1 **20 Claims**

1. A process for the preparation of protected dipeptides or oligopeptides, comprising the steps of

(A) reacting, in an aqueous solution in the presence of a protease of the group E.C. 3.4 and in a concentration greater than 100 mM, a compound of the Formula I

$$X—E—R^1 \quad (I)$$

as an electrophile, wherein E is an amino acid, dipeptide or oligopeptide, and where E is N-terminally substituted with X and C-terminally substituted with R^1, R^1 is an alkoxy group with 1–4 C atoms or an aryl alkoxy group and X is a protective group with carries a charge in the aqueous solution,

with a compound of the Formula II

$$H_2N—Q—R^2 \quad (II)$$

as a nucleophile, wherein Q is selected from the group consisting of (i) a residue of an amino acid (ii) a residue of a dipeptide or oligopeptide and (iii) a residue of an amino-acid, dipeptide or oligopeptide derivative, where R^2 is selected from the group consisting of a hydroxy group, an alkoxy group with 1–4 C atoms, an aryl alkoxy group and NR^3R^4, where R^3 and R^4 are each, independently of one another, hydrogen, a C_1–C_4-alkyl radical, an aryl radical or an aryl alkyl radical and wherein the molar ratio of said nucleophile of said Formula II to said electrophile of Formula I is less than 1.5.

5,304,471

PROCESS FOR PRODUCING FOREIGN PROTEIN IN *ESCHERICHIA COLI*

Toshitada Noguchi, Choshi, and Hideo Takahashi, Nagareyama, both of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Feb. 8, 1991, Ser. No. 653,225

Claims priority, application Japan, Feb. 9, 1990, 2-31123

Int. Cl.[5] C12P *21/02;* **C12N** *7/01, 15/70, 15/00*

U.S. Cl. 435—69.1 **5 Claims**

1. A process for producing a foreign protein in *Escherichia coli* comprising the steps of:

(A) ligating operably a DNA fragment encoding the foreign protein downstream of a transcription initiation signal and a translation initiation signal both derived from a uvsY promoter of a T4 phage and inserting the resulting DNA fragment into a plasmid replicable in *E. coli* to construct a hybrid plasmid;

(B) transforming *E. coli* with the hybrid plasmid obtained in step (A);

(C) proliferating the transformant obtained in step (B) in a medium in which said transformant can proliferate and infecting the transformant with T4dC phage at a multiplicity of infection of 0.01 to 1;

(D) culturing the phage-infected transformant obtained in step (C) to express the foreign protein; and,

(E) recovering the cultured transformants in step (D) to harvest the desired foreign protein.

5,304,472

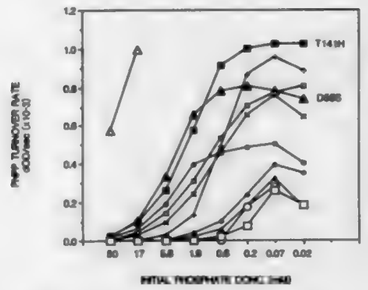
METHOD OF CONTROLLING POLYPEPTIDE PRODUCTION IN BACTERIAL CELLS

Steven Bass, Redwood City, and James R. Swartz, Menlo Park, both of Calif., assignors to Genentech, Inc., S. San Francisco, Calif.

Filed Nov. 20, 1992, Ser. No. 989,845

Int. Cl.[5] C12N *1/00, 15/08, 15/31, 15/67*

U.S. Cl. 435—69.1 **20 Claims**



1. An isolated nucleic acid molecule encoding an *E. coli* PstS variant selected from the group consisting of T10F PstS, T10L PstS, T10M PstS, T10Y PstS, T10A PstS, T10C PstS, TLOG PstS, D56V PstS, D56A PstS, D56L PstS, D56S PstS, S139T PstS, S139P PstS, S139L PstS, and T141H PstS.

5,304,473

A-C-B PROINSULIN, METHOD OF MANUFACTURING AND USING SAME, AND INTERMEDIATES IN INSULIN PRODUCTION

Rama M. Belagaje, Indianapolis; Richard D. DiMarchi, Carmel; William F. Heath, Jr., Indianapolis, and Harlan B. Long, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 11, 1991, Ser. No. 715,183

Int. Cl.[5] C12P *19/34;* **C12N** *1/20;* **A61K** *37/02;* **C07K** *5/00*

U.S. Cl. 435—69.7 **41 Claims**



1. A Polypeptide compound of the formula:

$$Met_x—A—C—B$$

wherein:

Met=the amino acid methionine,

x=0 or 1,

A=the A chain of insulin or a functional derivative thereof,

B=the B chain of insulin or a functional derivative thereof,

C=the C peptide of insulin or a peptide of the formula:

$$X_1—X_2—P—X_3—X_4,$$

wherein:

X_1, X_2, X_3, and X_4 are basic amino acids,

X_1, X_2, X_3, and X_4 are the same or different, and,

P is a peptide of from 4 to 35 amino acids which does not contain a cysteine residue,

and pharmaceutically acceptable salts thereof.

5,304,474

HYDROPHOBIC PEPTIDE ESTERS AND AMIDES

Peter E. Lipsky, Dallas, and Dwain L. Thiele, Coppell, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 324,151, Mar. 14, 1989, Pat. No. 5,068,223, which is a continuation-in-part of Ser. No. 168,177, Mar. 15, 1988, Pat. No. 5,047,401, which is a continuation of Ser. No. 774,051, Sep. 9, 1985, Pat. No. 4,752,602. This application Apr. 11, 1991, Ser. No. 684,010

Int. Cl.[5] C12P *21/00*

U.S. Cl. 435—101 **4 Claims**

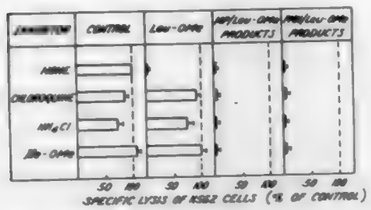
2. A process for production of a membranolytic substance, the process comprising the steps of:

obtaining an alkyl ester, alkaryl ester, amide or N-aryl substituted amide of a dipeptide comprising at least one amino acid having a hydrophobic side chain and which is converted by dipeptidyl peptidase I to a membranolytic alkyl ester, alkaryl ester, amide or oligopeptide N-aryl substituted amide of an oligopeptide; and

preparing a quantity of said membranolytic alkyl ester, alka-

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ryl ester, amide or N-aryl substituted amide of an oligopeptide by conversion of the alkyl ester, alkaryl ester,



amide or N-aryl substituted amide of said dipeptide with dipeptidyl peptidase I.

5,304,475

METHOD FOR PRODUCTION OF L-PHENYLALANINE BY RECOMBINANT *E. COLI*

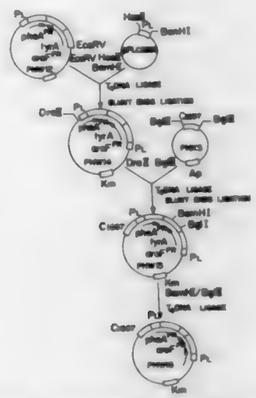
Hwa Y. Kim; Hong Rhym; Dong J. Lee; Chan H. Won; Byung L. Lim, and Hong G. Choi, all of Seoul, Rep. of Korea, assignors to Miwon Co., Ltd., Dobong-ku, Rep. of Korea

Filed Mar. 12, 1992, Ser. No. 851,682

Claims priority, application Rep. of Korea, Sep. 12, 1991, 91-15909

Int. Cl.[5] C12P *15/22*; C12N *15/73, 1/21*

U.S. Cl. 435—108 **7 Claims**



1. A replicable recombinant plasmid, comprising DNA encoding two promoters and a temperature-sensitive repressor for expressing a pheA^{FR} gene which codes for chorismate mutase p-prephenate dehydratase and an aroP^{FR} gene which codes for 3-deoxy-D-arabinoheptulosonate.7-phosphate synthase, said recombinant plasmid being plasmid pMW 16 contained in *E. coli* MWPWJ 304 (KCCM 10,013).

5,304,476

PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION EMPLOYING A MICROORGANISM RESISTANT TO ACYL-LYSINE OR METHYLATED ACYL-LYSINE

Manabu Yokomori; Kazuhiko Totsuka; Yoshio Kawahara; Harufumi Miwa, all of Kawasaki, and Tsuyoshi Osumi, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,139

Claims priority, application Japan, Mar. 6, 1991, 3-123285

Int. Cl.[5] C12P *13/08*; C12N *01/20*

U.S. Cl. 435—115 **4 Claims**

1. A process for producing L-lysine, comprising culturing a L-lysine producing microorganism belonging to *Corynebacterium glutamicum* or in a *Brevibacterium lactofermentum* nutrient medium containing assimilable sources of carbon, nitrogen, and inorganic salts until a sufficient amount of L-lysine is produced and recovering said L-lysine, wherein said L-lysine producing microorganism exhibits a relative growth rate of at least 50 in the presence of 25 mg/l of a compound selected from the group consisting of acyl-lysine, methylated acyl-lysine, and mixtures thereof, based on a growth rate of 100 in the absence of said compound.

5,304,477

PROCESS FOR PRODUCING HARD FATS USING 1,3-SPECIFIC LIPASE AND MIXTURE OF PALMITIC, LAURIC AND BEHEMIC ACIDS

Atsushi Nagoh, Kaizuka; Masaaki Miyabe, Sennan, and Yoshitaka Ebihara, Sakai, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 907,850

Claims priority, application Japan, Jul. 8, 1991, 3-194857

Int. Cl.[5] C12P *7/64*; C12N *9/20, 1/14*

U.S. Cl. 435—134 **4 Claims**

1. A process for producing hard fats comprising reacting a 1,3-specific with a mixture of

an oil having a palmitic acid content of at least 30%,

an oil having a lauric acid content of at least 30%, and

free behenic acid or its ester with a monohydric or polyhydric alcohol, said mixture having a fatty acid composition of 6–25% lauric acid, 23–48% palmitic acid and 0.5–5% behenic acid, based on the weight of the mixture to produce said hard fat and recovering the hard fat.

5,304,478

MODIFICATION OF CAROTENOID PRODUCTION IN TOMATOES USING PTOM5

Colin R. Bird, Berkshire; Donald Grierson, Loughbrough, and Wolfgang W. Schuch, Crowthorne, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 625,664, Dec. 13, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 995,950

Claims priority, application United Kingdom, Dec. 13, 1989, 8928179

Int. Cl.[5] C12N *15/29, 15/22*; A01H *4/00*

U.S. Cl. 435—172.3 **6 Claims**

1. A process for modifying the production of carotenoids in tomato plants which comprises transforming such plants with a DNA construct adapted to modify carotenoid biosynthesis, growing such transformed plants or their descendants and selecting tomato plants having plant parts of modified carotenoid content, said construct comprising a DNA sequence encoded by the clone pTOM5, preceded by a transcriptional initiation region operative in plants, so that the construct can generate mRNA in plant cells.

5,304,479

PHENCYCLIDINE COMPOUNDS AND ASSAYS FOR ITS DETERMINATION

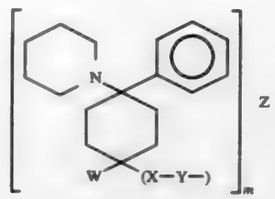
Cheng-I Lin, Cupertino, and Yuh-geng Tsay, Los Altos Hills, both of Calif., assignors to Diagnostic Reagents, Inc., Santa Clara, Calif.

Filed Dec. 6, 1991, Ser. No. 803,057

Int. Cl.[5] C12N *9/96*; C07K *17/06*; C07D *211/06*

U.S. Cl. 435—188 **23 Claims**

1. A compound of the formula



wherein:

Y is a bond or a linking group;

X is $(CH_2)_a$ where a=1-10, NR where R is H, C_{1-6} alkyl or said linking group Y, or S;

W is H or C_{1-8} alkyl;

Z is hydroxy, C_{1-6} alkoxy, an oxy group forming an activated ester reactive with amine groups of a poly(amino acid) or Z is a poly(amino acid);

m=1 when Z is hydroxy, alkoxy or said oxy group, and m is an integer from 1 to the molecular weight of Z divided by 500 when Z is a poly(amino acid).

5,304,480

CLONING AND EXPRESSING XHOII RESTRICTION ENDONUCLEASE AND M.XHOII MODIFICATION METHYLASE FROM XANTHOMONAS

Deb K. Chatterjee, N. Potomac, Md., assignor to Life Technologies, Inc., Gaithersburg, Md.

Division of Ser. No. 866,362, Apr. 10, 1992, Pat. No. 5,231,021. This application Mar. 19, 1993, Ser. No. 34,402

Int. Cl.[5] C12N *9/10, 9/22, 15/54, 15/59*

U.S. Cl. 435—193 **21 Claims**

1. An isolated gene encoding an XhoII restriction endonuclease or an M.XhoII modification methylase, which recognizes the palindromic sequence:

5′ R ↓ GATC Y 3′
3 G CTAG ↑ R 5′

wherein said endonuclease cleaves said sequence between the first R and G residues from the 5′ end, producing a four-base 5′ overhang, wherein said R represents either deoxyadenosine or deoxyguanosine and said Y represents either deoxythymidine or deoxycytosine.

5,304,481

PLANT THIOESTERASE HAVING PREFERENTIAL HYDROLASE ACTIVITY TOWARD C12 ACYL-ACP SUBSTRATE

Huw M. Davies, and Michael R. Pollard, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation of Ser. No. 514,030, Apr. 26, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 973,935

Int. Cl.[5] C12N *9/16*; C12P *7/62*

U.S. Cl. 435—196 **11 Claims**

1. A plant thioesterase being substantially purified from other proteins of said plant and having preferential hydrolase activity toward C12 acyl-ACP substrate.

5,304,482

SERINE PROTEASE MUTANTS OF THE CHYMOTRYPSIN SUPERFAMILY RESISTANT TO INHIBITION BY THEIR COGNATE INHIBITORS

Joseph F. Sambrook; Edwin L. Madison; Elizabeth J. Goldsmith, and Maryjane H. Gething, all of Dallas, Tex., assignors to The Board of Regents of the University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 434,748, Nov. 13, 1989, which is a continuation-in-part of Ser. No. 319,212, Mar. 6, 1989, abandoned. This application Sep. 28, 1990, Ser. No. 589,554

Int. Cl.[5] C12N *9/64, 15/00, 15/58*

U.S. Cl. 435—226 **4 Claims**

1. A mutant of t-PA, wherein said mutant, the phenylalanine at position 305 of t-PA has been replaced by a basic amino acid, and the alanine at position 292 of t-PA has been replaced by serine.

5,304,483

CONTROLLING CULTIVATION CONDITIONS FOR ANIMAL CELLS

Kouji Takeuchi, Nagareyama; Hideo Kawaguchi, Hachioji; Tadashi Ishibashi, Kodaira, and Norio Shimizu, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1990, Ser. No. 493,369

Claims priority, application Japan, Mar. 14, 1989, 1-59721; Jul. 14, 1989, 1-180196

Int. Cl.[5] C12N *5/00, 5/02, 5/06*

U.S. Cl. 435—240.25 **11 Claims**

1. A process for controlling culture conditions for animal cells in a culture medium containing glucose, comprising:

measuring the lactic acid concentration in the culture medium of animal cells;

measuring the glucose concentration in the culture medium; and

controlling at least one of the dissolved oxygen concentration and glucose concentration in the culture medium when the ratio of the formed lactic acid to the consumed glucose (L/G) obtained from said steps of measuring is outside a fixed range from greater than 0 to 0.6 to return the ratio L/G to the fixed range.

5,304,484

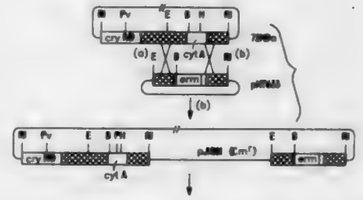
NON-HEMOLYTIC MOSQUITOCIDAL MICROORGANISMS

Armelle Delecluse, Thiers Sur Theve; Andre Klier, Neuilly S/Marne, and Georges Rapoport, Paris, all of France, assignors to Institut Pasteur, Paris, France

Filed Sep. 13, 1991, Ser. No. 760,075

Int. Cl.[5] C12N *15/32, 15/75, 1/21*

U.S. Cl. 435—252.31 **7 Claims**



1. An isolated and purified recombinant molecule comprising a nucleic acid that encodes on expression all of the polypeptides displaying mosquito larvicidal activity expressed in a wild type *Bacillus thuringiensis* subtype and wherein all DNA sequences encoding polypeptides displaying hemolytic activity have been disrupted or eliminated.

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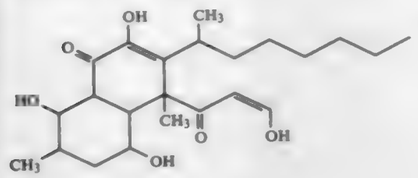
5,304,485

ANTIBIOTIC PRODUCING MICROORGANISM

Gerald F. Bills, Cranford, N.J., and Fernando Peláez, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 19, 1992, Ser. No. 962,548
Int. Cl.[5] C12N *1/14*; C12P *7/26*
U.S. Cl. 435—254.1 **2 Claims**

2. A biologically pure culture of *Sporormiella australis* ATCC 74157 which is capable of producing a compound represented by the formula:



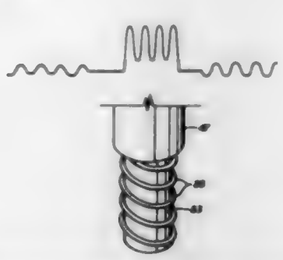
(IA)

5,304,486

METHOD OF AND APPARATUS FOR CELL PORTION AND CELL FUSION USING RADIOFREQUENCY ELECTRICAL PULSE

Donald C. Chang, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 238,670, Aug. 30, 1988, Pat. No. 4,970,154, which is a continuation-in-part of Ser. No. 106,282, Oct. 9, 1987, Pat. No. 4,822,470. This application Jul. 19, 1990, Ser. No. 555,873
Int. Cl.[5] C12M *1/42*; C12N *13/00, 15/00, 15/87*
U.S. Cl. 435—287 **12 Claims**



1. A device for the poration and fusion of biological particles comprising:

a container, including a non-conducting material capable of holding liquid and said biological particles;

electrodes positioned equidistant from each other in said container; and

a high power function generator, attached to said electrodes for generating a high intensity electric field, including a pulsed radiofrequency having a frequency range of 1 KHz to 100 MHz, a pulse width range of 1 μsec to 100 msec, and a pulsed amplitude range of about 0.2 KV/cm to 20 KV/cm.

5,304,487

FLUID HANDLING IN MESOSCALE ANALYTICAL DEVICES

Peter Wilding, Paoli; Larry J. Kricka, Berwyn, and Jay N. Zemel, Jenkintown, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed May 1, 1992, Ser. No. 877,536
Int. Cl.[5] G01N *31/00*
U.S. Cl. 435—291 **26 Claims**

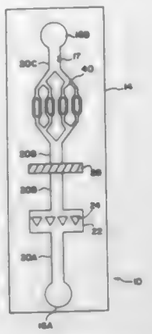
1. A device for analyzing a fluid, cell-containing sample, the device comprising:

a solid substrate microfabricated to define:

a sample inlet port; and

a mesoscale flow system comprising:

a sample flow channel extending from said inlet port; and



a cell handling region for treating cells disposed in fluid communication with said flow channel, said cell handling region comprising a cell lysing structure; and

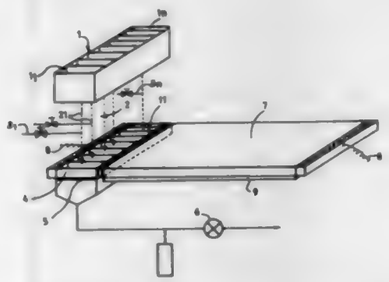
means for detecting an analyte in a fluid sample in said flow system.

5,304,488

INSTALLATION FOR OBTAINING PLASMIDS AND COSMIDS

Daniel Cohen, Saint-Mandé; Frédéric Dufau, La-Celle-Saint-Cloud, and Jean Hache, Voisins-le-Bretonneux, all of France, assignors to Bertin & Cie, Plaisir, France

Division of Ser. No. 477,806, Mar. 19, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,815
Claims priority, application France, Jun. 21, 1988, 88 08306
Int. Cl.[5] C12M *1/12, 1/34, 1/18, 1/14*
U.S. Cl. 435—291 **12 Claims**



1. An apparatus for obtaining whole plasmids and cosmids present in bacterial cells comprising:

(a) at least one lysis, solubilization and inclusion tank for lysing, solubilizing and including bacterial cells in an inclusion gel, the bottom of said at least one tank being in the form of a membrane having a porosity for the separation of molecules of molecular weight higher than 80 kDa for separating said bacterial cells from their culture medium, said at least one tank having four walls at least one, one of said four walls being removable and/or extractable;

(b) a pump operably connected to said at least one tank for sucking and removing culture medium through said membrane;

(c) a set of introduction means located in flow communication with said at least one tank for introducing lysis and solubilization reagents and hot inclusion gel to said at least one tank;

(d) at least one electrophoresis gel, adjacent and in communication with said at least one tank; said at least one tank being placed in communication with said at least one electrophoresis gel by said removable and/or extractable wall placed in position between said at least one tank and said at least one electrophoresis gel, for the flow of the gel into said at least one tank; and

(e) at least one means for applying an electric field across the at least one electrophoresis gel, causing electrophoretic migration of the bacterial cells.

5,304,489

DNA SEQUENCES TO TARGET PROTEINS TO THE MAMMARY GLAND FOR EFFICIENT SECRETION

Jeffrey M. Rosen, Houston, Tex., assignor to GenPharm International, Inc., Mountain View, Calif.

Continuation of Ser. No. 14,952, Feb. 17, 1987, abandoned. This application Oct. 24, 1990, Ser. No. 602,066
Int. Cl.[5] C12N *15/00*; C07H *21/00*
U.S. Cl. 435—320.1 **14 Claims**

1. A recombinant DNA complex to provide preferential mammary gland expression and secretion of a selected polypeptide comprising:

(a) a casein promoter;

(b) a transcribable DNA segment coding for said selected polypeptide, wherein said promoter does not naturally control the transcription of said DNA segment; and

(c) secretory DNA encoding a signal peptide functional in mammary secretory cells operably linked between said promoter and said DNA segment to facilitate secretion of said selected polypeptide,

(d) a casein enhancer sequence capable of conferring enhanced preferential transcription of said recombinant DNA complex in mammary secretory cells when said complex is integrated into the genome of a non-human mammal, and

(e) an intron from a casein gene.

5,304,490

DNA CONSTRUCTS CONTAINING FRUIT-RIPENING GENES

Colin R. Bird, Berkshire; Ruper G. Fray, Nottingham; Donald Grierson; Grantley W. Lycett, both of Loughborough; John A. Ray, Bracknell, and Wolfgang W. Schuch, Crowthorne, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 23, 1991, Ser. No. 748,761
Claims priority, application United Kingdom, Aug. 24, 1990, 9018612
Int. Cl.[5] C12N *15/82*
U.S. Cl. 435—320.1 **3 Claims**

1. DNA constructs comprising a DNA sequence capable of encoding a fruit-ripening gene and contained in either of the clones pTOM136 or pTOM66, preceded by a transcriptional initiation region operative in plants, so that the construct can generate RNA in plant cells.

5,304,491

STABLE HEMOGLOBIN REFERENCE SOLUTION

Ching Chiang, Acton, and Stanley M. Liffmann, Andover, both of Mass., assignors to Bionostics, Inc., Acton, Mass.

Continuation-in-part of Ser. No. 328,622, Mar. 27, 1989, Pat. No. 5,045,529. This application Jun. 11, 1992, Ser. No. 897,316
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[5] G01N *33/49, 33/487, 33/00*
U.S. Cl. 436—11 **24 Claims**

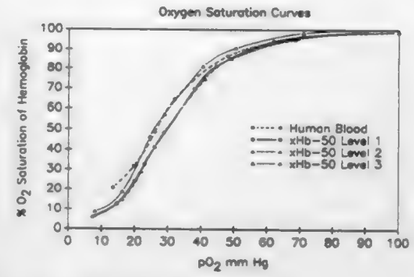
1. A stable hemoglobin reference solution comprising an aqueous solution containing:

a) hemoglobin;

b) a source of bicarbonate ions;

c) a source of thio functional groups;

d) a source of metal ion catalyst;



e) at least one organic polyphosphate;

f) a source of electrolytes; and

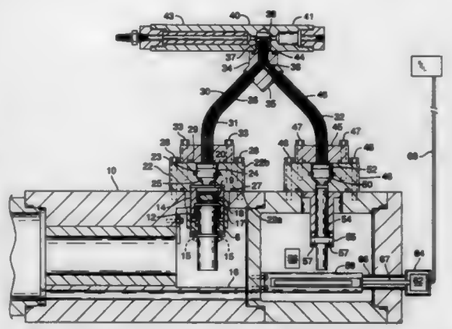
g) an organic buffer.

5,304,492

SPECTROPHOTOMETER FOR CHEMICAL ANALYSES OF FLUIDS

Gary Klinkhammer, Corvallis, Oreg., assignor to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, Eugene, Oreg.

Filed Nov. 26, 1991, Ser. No. 798,119
Int. Cl.[5] G01N *21/64, 21/80*
U.S. Cl. 436—52 **30 Claims**



1. A method for detecting and quantifying the amount of manganese (II) ion contained in a fluid, the method comprising the steps of:

(a) immersing an analytical device in a fluid wherein the analytical device comprises a pulsed light source, a light detector, first and second bifurcated optic fibers, and a flow-through cell comprising a plurality of tubes removably attached to each other and defining a volume which acts as a passageway to conduct a stream of fluid, the first optio fiber transmitting light from the pulsed light source to the flow-through cell, and the second optical fiber transmitting light emitted in the flow-through cell to the detector;

(b) passing a stream of the fluid through a potassium periodate such that potassium periodate is transferred to the fluid;

(c) passing the fluid which results from step (b) through a second tube which contains a source of N,N-diethylaniline such that N,N-diethylaniline is transferred to the fluid;

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(d) irradiating the fluid which results from step (c) with excitation light; and

(e) comparing the intensity of the fluorescent light emission detected in the flow-through cell following oxidation of the N,N-diethylaniline by manganese (II) to the intensity of a standard fluorescent signal for the fluid containing just N,N-diethylaniline to determine the decrease in fluorescent intensity; and

(f) converting the decrease in intensity of the fluorescent signal to a manganese (II) ion concentration.

5,304,493

METHOD FOR DETECTING A MARKER DYE IN AGED PETROLEUM DISTILLATE FUELS

Anthony V. Nowak, Fullerton, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 22, 1993, Ser. No. 7,412

Int. Cl.[5] G01N *35/08*

U.S. Cl. 436—56 11 Claims

1. A method for determining the presence of an anthraquinone marker dye in petroleum distillate fuels, including diesel fuel and naval distillate fuel, said method comprising the steps of:

passing a sample of fuel suspected of containing said marker dye through a solid phase extraction column containing unbonded silica; and

determining a change in color said column to detect the presence of said marker dye by comparing said column with one of an unused test column containing unbonded silica, a neutral background and uncolored material in said column.

5,304,494

METHOD OF ANALYZING HYDROCARBON OIL MIXTURES USING GEL-PERMEATION CHROMATOGRAPHY

Pierre Eisenmann, Paris, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Apr. 9, 1992, Ser. No. 865,438

Claims priority, application France, Apr. 11, 1991, 91-04405

Int. Cl.[5] G01N *33/26, 30/02, 30/86*

U.S. Cl. 436—60 8 Claims

1. A method of characterizing a hydrocarbon oil mixture comprising a known first hydrocarbon oil and an unknown second hydrocarbon oil having unknown composition and components, the method comprising the steps of:

separating the hydrocarbon oil mixture into first hydrocarbon fractions of different molecular sizes by gel-permeation chromatography;

for each of said first separated fractions, producing a signal that is representative of the number of C—H bonds in the fraction by infrared detection of said first separated fractions;

in response to said signals, determining a first fingerprint which is a characteristic of the mixture and which represents a molecular size distribution function of the first fractions;

separating the known first hydrocarbon oil into second hydrocarbon fractions by gel-permeation chromatography, producing signals representative of the number of C—H bonds by infrared detection of said second separated fractions and determining a second fingerprint which is a molecular size distribution function of said known first oil under the same conditions as for the determination of said first fingerprint; and

correlating said first and second fingerprints to determine the concentration of the known first oil in the mixture.

5,304,495

METHOD FOR DETERMINING FLUSH INTERFERENCE IN MEASUREMENT OF CHEMICAL AND PHYSICAL PARAMETERS WITH INDWELLING PROBE

Jeffrey B. Yim, Honolulu, Hi., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 29, 1992, Ser. No. 997,863

Int. Cl.[5] G01N *25/20, 33/48, 33/50;* A61B *5/02*

U.S. Cl. 436—68 16 Claims

1. A method for detecting an interference during an in vivo measurement of at least one parameter sensed by an indwelling probe, where the interference is caused by introducing a flush fluid proximate said probe, comprising the steps of:

(a) periodically measuring at least one parameter using the indwelling probe, an accuracy with which said parameter is measured being affected by the flush fluid, wherein the step of measuring at least one parameter comprises measurement of at least a pH and a pCO_2;

(b) determining a time rate of change of the measured parameter, wherein the step of determining a time rate of change comprises the step of determining a time rate of change of a base excess value calculated using the measured pH and the measured pCO_2;

(c) comparing the time rate of change of the measured parameter with a predefined threshold time rate of change; and

(d) activating a warning device if the time rate of change of the measured parameter exceeds the predefined threshold time rate of change to indicate that the flush fluid has substantially affected the accuracy with which the parameter has been measured.

5,304,496

BIOLOGICAL REGULATION OF MINERALIZATION

John Hoyer, Wynnewood, Pa.; John Sinclair, and Leszek Borysiewicz, both of Cambridgeshire, United Kingdom, assignors to Children's Hospital of Philadelphia, Philadelphia, Pa.

Filed Jun. 10, 1991, Ser. No. 712,476

Int. Cl.[5] G01N *33/53;* A61K *37/02;* C07K *7/10, 7/08*

U.S. Cl. 436—86 10 Claims

1. A composition for treating kidney stone disease comprising an amount of a peptide effective for treating kidney stone disease consisting of the peptide of SEQ ID NO 4, natural genetic variants thereof, or active portions thereof, in combination with a pharmaceutically acceptable carrier or diluent.

5,304,497

METHOD OF FORMING N-PROTECTED AMINO ACID THIOHYDANTOINS

Victoria L. Boyd, San Carlos; MeriLisa Bozzini; Piotr J. Guga, both of San Mateo, and Gerald Zon, San Carlos, all of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

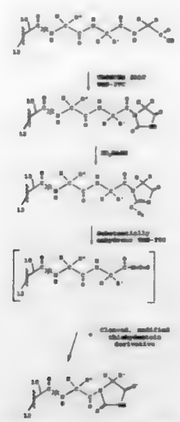
Continuation-in-part of Ser. No. 775,771, Oct. 15, 1991, Pat. No. 5,185,266. This application Jul. 15, 1992, Ser. No. 914,280

Int. Cl.[5] C07K *1/02*

U.S. Cl. 436—89 14 Claims

1. A method of converting an N-protected amino acid to the corresponding amino acid thiohydantoin, comprising

reacting the N-protected amino acid, in the presence of a base, with (a) a uronium compound selected from the group consisting of a halouronium, pseudohaluronium, tosyl uronium, triflate uronium, and sulfonyl uronium, or (b) a phosphonium compound selected from the group consisting of a halophosphonium, tosyl phosphonium, triflate phosphonium, and sulfonyl phosphonium, to form an activated carboxylate ester, and reacting said activated



ester with a thiocyanate reagent under conditions effective to form an amino acid thiohydantoin.

5,304,498

METHOD AND COMPOSITION FOR FREE LIGAND ASSAY

Roger P. Ekins, 56 Winchester Street, London, England

PCT No. PCT/GB83/00078, § 371 Date Sep. 23, 1983, § 102(e) Date Sep. 23, 1983, PCT Pub. No. WO83/03306, PCT Pub. Date Sep. 29, 1983

Continuation of Ser. No. 569,378, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 290,819, Dec. 22, 1988, abandoned, which is a continuation of Ser. No. 784,712, Oct. 4, 1985, abandoned, which is a continuation of Ser. No. 548,886, Sep. 23, 1983, abandoned. This PCT application Mar. 17, 1983, Ser. No. 707,434

Claims priority, application United Kingdom, Mar. 19, 1982, 8208043

Int. Cl.[5] G01N *33/566, 33/53, 33/543, 33/551*

U.S. Cl. 436—501 17 Claims

1. A method for determining the amount of free thyroxine in a test sample where the thyroxine is also present bound to endogenous receptors, comprising:

a. combining the test sample, thyroxine antibody, labelled anti-thyroxine antibody, and unlabelled thyroxine analogue absorbed onto the wall of plastic container, said analogue comprising thyroxine covalently conjugated to a protein in such a fashion that the analogue binds substantially to the thyroxine antibody but binds insubstantially to the endogenous receptors;

b. incubating to permit the thyroxine and unlabelled thyroxnie analogue to compete for a limited amount of thyroxine antibody;

c. separating the thyroxine analogue from the residual sample and soluble reagents;

d. determining the amount of labelled antibody bound to the thyroxine analogue; and

e. correlating the amount of labelled antibody to the amount of free thyroxine present in the test sample.

2. A method for determining the amount of free ligand in a test sample where the ligand is also present bound to one or more endogenous receptors, comprising:

a. combining the test sample, ligand receptor and unlabelled differential binding ligand analogue, which analogue is insolubilized and which analogue binds substantially with the ligand receptor but binds insubstantially with endogenous ligand receptors;

b. incubating said components to permit the free ligand and unlabelled differential binding ligand analogue to compete for the ligand receptor;

c. separating the unlabelled differential binding ligand analogue;

d. determining the amount of ligand receptor bound to the ligand or to the unlabelled differential binding ligand analogue; and

e. correlating the amount of bound ligand receptor to the amount of free ligand present in the test sample.

5,304,499

METHODS OF MAKING PN CDTE/CDS THIN FILM SOLAR CELLS

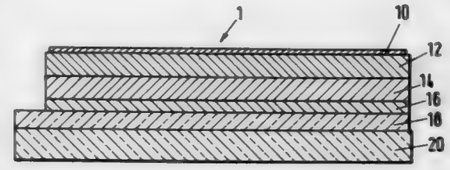
Dieter Bonnet, Friedrichsdorf; Beate Heurichs, Eschborn; Karlheinz Jager, Kronberg, and Hilmar Richter, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 28, 1992, Ser. No. 929,514

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1991, 4132882

Int. Cl.[5] H01L *31/18, 31/072*

U.S. Cl. 437—5 10 Claims



1. A method of making a pn CdTe/CdS thin film solar cell, in which a transparent substrate is provided with a transparent, electrically conducting TCO layer and an n-doped CdS layer, on which a CdTe layer is deposited in an inert atmosphere free of oxygen according to the close-spaced sublimation method from a CdTe source and is provided with an electrically conducting back contact,

characterized in that,

a substrate of soda-lime glass is used, the substrate is provided with the TCO layer, and the CdS layer is brought to a temperature between approximately 480° C. and 520° C. before coating with the CdTe layer, said temperature being maintained during the CdTe coating.

5,304,500

METHOD OF MAKING ELECTRO-OPTICAL DETECTOR ARRAY

Harold A. Timlin, Mason, and Charles J. Martin, West Chester, both of Ohio, assignors to Cincinnati Electronics Corporation, Mason, Ohio

Division of Ser. No. 609,678, Nov. 6, 1990, Pat. No. 5,227,656. This application Jul. 12, 1993, Ser. No. 89,461

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—5 10 Claims

1. A method of making a semiconductor optical detector array comprising

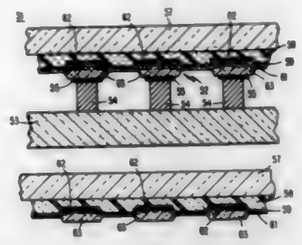
forming an array of P-N junctions on a bulk semiconductor substrate of a first conductivity type close to a surface of the bulk semiconductor, each of the junctions being between the first conductivity type bulk semiconductor and semiconductor regions of a second conductivity type,

metallizing a portion of the semiconductor regions so the metallized portions of the semiconductor regions are electrically connected together,

bonding the semiconductor regions of the second conductivity type to an optically transparent non-metallic mechanical support backing so that an optical path subsists

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through the backing to at least a segment of the semiconductor regions of the second conductivity type, and reducing the thickness of the bulk substrate while the semiconductor regions are bonded to the backing



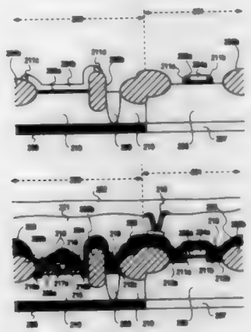
so there is formed an array of semiconductor diode islands on the backing, each of the islands including a corresponding region of the bulk semiconductor, one of said junctions and one of the second conductivity type semiconductor regions.

5,304,501

BICMOS PROCESS WITH LOW BASE RECOMBINATION CURRENT BIPOLAR TRANSISTORS

Paul C. F. Tong, San Jose, Calif., assignor to Samsung Semiconductor Corporation, San Jose, Calif.

Continuation of Ser. No. 613,191, Nov. 14, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 873,484
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **16 Claims**



7. A process for manufacturing a semiconductor structure having field effect and bipolar transistors formed in the respective active areas, said bipolar transistor active area comprising a base-emitter junction area and a base-collector junction area, comprising the steps of:

forming a protective structure over said base-emitter junction area of said bipolar transistor active area suitable for preventing subsequent formation of oxide between said protective structure and said base-emitter junction area of said bipolar transistor active area;

forming a layer of oxide on the surface of said semiconductor structure; and

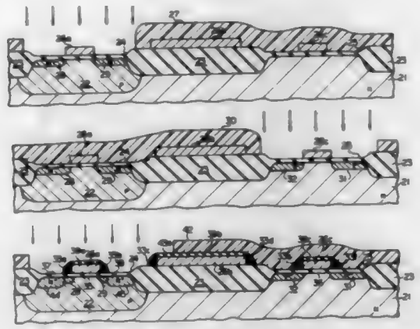
removing said protective structure to expose the surface of said base-emitter junction area of said bipolar transistor active area prior to formation of the base of said bipolar transistor.

5,304,502

PROCESS OF FABRICATING SEMICONDUCTOR INTEGRATED CIRCUIT HAVING CONDUCTIVE STRIPS USED AS RESISTOR AND GATE ELECTRODE OF COMPONENT TRANSISTOR

Osamu Hanagasaki, Shizuoka, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 441,911, Nov. 28, 1989, abandoned. This application May 26, 1992, Ser. No. 887,657
Claims priority, application Japan, Nov. 8, 1988, 63-281987
Int. Cl.[5] H01C *21/266*
U.S. Cl. 437—41 **4 Claims**



1. A process of integrating a circuit on a semiconductor substrate, comprising the steps of:

a) preparing a semiconductor substrate of a first conductivity type;

b) providing a thick field oxide film to define a first active area of a second conductivity type opposite to said first conductivity type and a second active area of said first conductivity type;

c) forming first oxide films on said first and second active areas;

d) forming first and second gate electrodes of lightly doped polysilicon on said first oxide films and a resistor of the lightly doped polysilicon on said thick field oxide film;

e) forming lightly doped source and drain regions of said first conductivity type in a self aligned manner with said first gate electrode;

f) forming lightly doped source and drain regions of said second conductivity type in a self aligned manner with said second gate electrode;

g) covering said first and second gate electrodes with second oxide films and said resistor with a third oxide film;

h) forming a first patterned photoresist layer for covering a part of said third oxide film on said resistor and said second active region and exposing said first active area and the rest of said third oxide film on said resistor;

i) forming heavily doped source and drain regions of said first conductivity type partially overlapped with said lightly doped source and drain regions in said first active area by using an ion implantation, thereby forming composite source and drain regions in said first active area;

j) removing said first oxide film, said second oxide film and said rest of said third oxide film from surfaces of said heavily doped source and drain regions in said first active area, a surface of said gate electrode and a portion of said resistor to thereby expose said portion of said resistor corresponding to said rest of said third oxide, respectively, and leaving said part of said third oxide film on a surface of said resistor;

k) removing said first patterned photoresist layer;

l) forming a second patterned photoresist layer covering said part of said third oxide film on said resistor, said portion of said resistor and said first active area, and exposing said second active area;

m) forming heavily doped source and drain regions of said second conductivity type partially overlapped with said lightly doped source and drain regions in said second active area by using an ion implantation, thereby forming composite source and drain regions in said second active area;

n) removing said first and second oxide films from surfaces of said heavily doped source and drain regions in said second active area and a surface of said second gate electrode, respectively, and leaving said third oxide film on the surface of said resistor;

o) removing said second patterned photoresist layer;

p) forming silicide films on the exposed source and drain regions, surfaces of said first and second gate electrodes and said portion of said resistor; and

q) providing interconnections for said circuit.

5,304,503

SELF-ALIGNED STACKED GATE EPROM CELL USING TANTALUM OXIDE CONTROL GATE DIELECTRIC

Euisik Yoon, Sunnyvale; Albert M. Bergemont, San Jose, and Ronald P. Kovacs, Mountain View, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 747,663, Aug. 20, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,665
Int. Cl.[5] H01L *27/115, 21/265*
U.S. Cl. 437—43 **12 Claims**



1. A method of fabricating an EPROM cell array in a silicon substrate, the method comprising the steps of:

forming a layer of floating gate oxide on the surface of the substrate in the cell array;

forming a first polysilicon layer (poly1) on the surface of the floating gate oxide in the cell array;

forming an oxide/nitride/oxide (ONO) layer on the surface of the first polysilicon layer in the cell array;

patterning the ONO layer and the underlying first polysilicon layer to define stripes of composite ONO/poly1 on the surface of the floating gate oxide in the cell array;

growing thermal oxide on exposed poly1 sidewalls of the composite ONO/poly1 stripes;

introducing n-type dopant material into the silicon substrate between the composite ONO/poly1 stripes to define n+ bit lines in the cell array;

growing a differential oxide over the n+ bit lines in the cell array;

stripping the ONO from the composite ONO/poly1 stripes in the cell array to expose poly1 stripes in the cell array portion;

depositing tantalum oxide over the poly1 stripes in the cell array portion; and

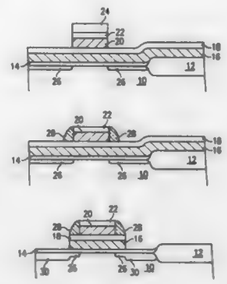
depositing conductive material over the tantalum oxide.

5,304,504

METHOD OF FORMING A GATE OVERLAP LDD STRUCTURE

Che-Chia Wei, Plano, and Ravishankar Sundaresan, Garland, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 809,309, Dec. 18, 1991. This application Jun. 2, 1993, Ser. No. 71,563
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—44 **13 Claims**



8. A method of forming a gate overlap LDD structure of an integrated circuit, comprising the steps of:

forming an oxide layer over a substrate;

forming a first polysilicon layer over the oxide layer; forming a first conductive layer over the first polysilicon layer;

forming a second polysilicon layer over the first conductive layer;

forming a second conductive layer over the second polysilicon layer;

patterning and etching the second conductive and polysilicon layers to expose a portion of the underlying first conductive layer;

forming lightly doped drain regions in the substrate adjacent to the second conductive and polysilicon layers;

forming sidewall oxide spacers on the sides of the second conductive and polysilicon layers and on top of the first conductive layer;

etching the first conductive and polysilicon layers exposing a portion of the oxide layer; and,

forming source/drain regions in the substrate under and adjacent to the first conductive and polysilicon layers.

5,304,505

PROCESS FOR EEPROM CELL STRUCTURE AND ARCHITECTURE WITH INCREASED CAPACITANCE AND WITH PROGRAMMING AND ERASE TERMINALS SHARED BETWEEN SEVERAL CELLS

Emanuel Hazani, 1210 Sesame Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 377,311, Jul. 10, 1989, Pat. No. 5,099,297, and a continuation-in-part of Ser. No. 613,235, Nov. 14, 1990, Pat. No. 5,162,247, which is a division of Ser. No. 326,924, Mar. 22, 1989, Pat. No. 5,040,036, Ser. No. 377,311, Jul. 10, 1989, Pat. No. 5,099,297, which is a continuation-in-part of Ser. No. 327,663, Mar. 22, 1989, Pat. No. 5,047,814. This application Dec. 23, 1991, Ser. No. 813,374
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **34 Claims**

1. A process for fabricating a floating gate memory array in a semiconductor memory device having a substrate of a first conductivity type that has a major surface comprising the steps of:

forming continuous, elongated, spaced apart, parallel first strips over first regions of said substrate and in a first direction, said first strips comprising a first thin dielectric layer having a first thickness disposed on said substrate, a first conductive layer disposed on said first thin dielectric and a second dielectric layer disposed on said conductive

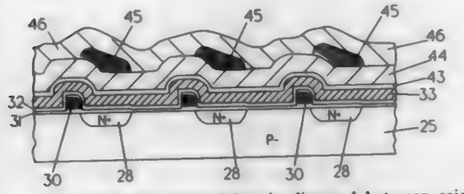
VOL 1161 ISS 3 AP 19 1994 UMI

layer, said first strips defining elongated, parallel, spaced-apart second regions of said substrate between said first strips;

forming first impurity regions of a second conductivity type at said second regions of said substrate between said first strips to be self-aligned with said first strips;

treating the resulting structure to diffuse said impurities into said second substrate regions and into a portion of said first substrate regions so that at least one of said first impurity regions along each of said associated one of said first strips forms plurality of spaced-apart second conductivity type substrate regions under and along a portion of the width of said associated first strip;

growing an oxide at said second regions of said substrate to a second thickness while substantially retaining the thickness of said first thin dielectric diaposed between said second conductivity type diffusion regions in said first substrate regions and said first conducive layer;



removing said second dielectric from said first strips to form second strips over said first regions of said substrate comprising said first thin dielectric and said first conductive layer;

forming a plurality of first gate members from each of said second strips; and

forming elongated second gate members from a second conductive layer, said second gate members being formed over said first gate members, said second gate members being generally parallel to a second direction that is perpendicular to said first direction of said first and second regions along said major surface of said substrate.

5,304,506

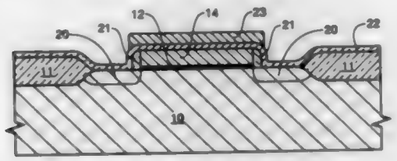
ON CHIP DECOUPLING CAPACITOR

Stephen R. Porter, and Navjot Chhabra, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Mar. 10, 1993, Ser. No. 29,088

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—60 **14 Claims**



1. A method for forming a decoupling capacitor structure comprising a first decoupling capacitor and a second decoupling capacitor fabricated on a conductive substrate surface comprising the steps of:

a) forming a first insulating layer over said conductive substrate surface;

b) forming a first conductive layer over said first insulating layer;

c) patterning said first conductive layer and said first insulating layer thereby resulting in patterned edges on said first conductive layer and said first insulating layer, said patterning further forms said first decoupling capacitor, wherein said conductive substrate serves as a first capacitor plate, said first conductive layer serves as a second capacitor plate and said first insulating layer serves as an insulator therebetween;

d) forming diffusion areas aligned to the patterned edges of said first conductive layer and said insulating layer;

e) forming insulating spacers adjacent said patterned edges;

f) forming a second insulating layer over the patterned first conductive layer;

g) forming a second conductive layer over said second insulating layer; and

h) patterning said second conductive layer and said second insulating layer to form a second decoupling capacitor, wherein said first capacitor's second plate serves as a first capacitor plate to said second decoupling capacitor, said second conductive layer serves as said second decoupling capacitor's second capacitor plate and said second insulating layer serves as an insulator therebetween.

5,304,507

PROCESS FOR MANUFACTURING SEMICONDUCTOR LASER HAVING LOW OSCILLATION THRESHOLD CURRENT

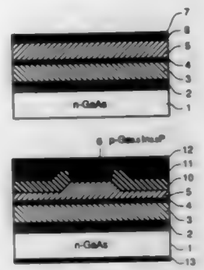
Kousei Unozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,304

Claims priority, application Japan, Jan. 14, 1992, 4-4388

Int. Cl.[5] H01L *21/205*

U.S. Cl. 437—129 **12 Claims**



1. A process for manufacturing a semiconductor laser, comprising the steps of sequentially stacking a first conductivity type of $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ clad layer $(0.5<y<1)$, an undoped $(Al_zGa_{1-z})_{0.5}In_{0.5}P$ active layer forming a light emission region $(0<z<0.3)$, a second conductivity type of $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ clad layer $(0.5<y<1)$, a second conductivity type of $Ga_{0.5}In_{0.5}P$ layer, and a first conductivity type of semiconductor layer, in the named order on an upper surface of a GaAs subatrate, said upper surface being inclined at an X degree from a (1 0 0) plane toward a (0 1 1) plane $(0<X<16)$, removing said first conductivity type of semiconductor layer, selectively removing said second conductivity type of $Ga_{0.5}In_{0.5}P$ layer and said second conductivity type of $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ clad layer so that a ridge stripe extending in a [0 −1 1] direction is formed of the remaining second conductivity type of $Ga_{0.5}In_{0.5}P$ layer and the remaining second conductivity type of $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ clad layer, and the second conductivity type of $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ clad layer having a reduced thickness remains at both sides of said ridge stripe, forming a current block layer on the second conductivity type of $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ clad layer at both sides of said ridge stripe, and forming a second conductivity type of GaAs contact layer on said ridge stripe and said current block layer.

5,304,508

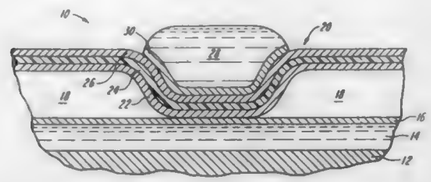
METHOD OF MAKING ELECTRICALLY PROGRAMMABLE LINK STRUCTURES

Simon S. Cohen, Burlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 735,427, Jul. 25, 1991, Pat. No. 5,258,643. This application Jun. 1, 1993, Ser. No. 68,798

Int. Cl.[5] H01L *21/479*

U.S. Cl. 437—170 **20 Claims**



1. A method of producing an interlayer conductive path in an integrated circuit structure, the method comprising:

depositing a lower conductive element;

depositing a transformable insulator material comprising a layer of silicon rich silicon oxide over the lower conductive element;

depositing an upper conductive element over the insulator material; and

applying a voltage between said upper and lower conductive elements across at least one selected region of said insulator material, such that the insulator material is replaced by conductive material in such region due to the applied voltage in order to form a conductive path between said upper and lower conductive elements.

5,304,509

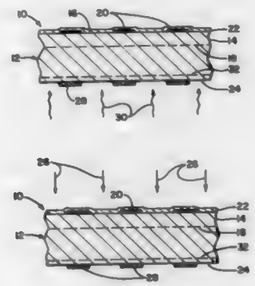
BACK-SIDE HYDROGENATION TECHNIQUE FOR DEFECT PASSIVATION IN SILICON SOLAR CELLS

Bhushan L. Sopori, Denver, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Aug. 24, 1992, Ser. No. 934,025

Int. Cl.[5] H01L *21/26, 31/18*

U.S. Cl. 437—173 **7 Claims**



1. A method of hydrogenating a silicon substrate, wherein said silicon substrate has a front side and a back side and includes a plurality of defects and impurities, comprising the steps of:

bombarding the back side of the silicon substrate with hydrogen ions with sufficient intensity and for a sufficient time to implant an amount of hydrogen atoms into the silicon substrate sufficient to potentially passivate substantially all of the defects and impurities in the silicon substrate; and

illuminating the silicon substrate in a low-power stage with electromagnetic radiation having a low-power intensity for a sufficient time to activate the hydrogen atoms in the substrate and passivate substantially all of the defects and impurities in the substrate, but not drive the hydrogen atoms out of the substrate, and then illuminating the silicon substrate in a high-power stage having a higher power intensity sufficient to annihilate substantially all hydrogen-induced defects.

5,304,510

METHOD OF MANUFACTURING A MULTILAYERED METALLIZATION STRUCTURE IN WHICH THE CONDUCTIVE LAYER AND INSULATING LAYER ARE SELECTIVELY DEPOSITED

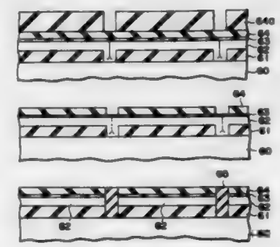
Kyoichi Suguro, Yokohama, and Haruo Okano, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 654,895, Feb. 13, 1991, Pat. No. 5,192,714. This application Nov. 25, 1992, Ser. No. 981,427

Claims priority, application Japan, Feb. 14, 1990, 2-32689; Feb. 7, 1991, 3-016586

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—195 **26 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulating layer having an opening on a substrate;

selectively forming a first conductive layer in said opening;

making insulative a surface of the part of said first conductive layer except for that portion on which a second conductive layer is to be formed;

selectively forming a second insulating layer on said first insulating layer and that surface of said first conductive layer which is made insulative; and

forming a second conductive layer on that portion of said first conductive layer which is not made insulative so as to be electrically connected to said first conductive layer.

5,304,511

PRODUCTION METHOD OF T-SHAPED GATE ELECTRODE IN SEMICONDUCTOR DEVICE

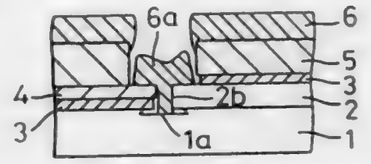
Masayuki Sakai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,115

Claims priority, application Japan, Sep. 29, 1992, 4-285006

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—203 **6 Claims**



1. A method for producing a T-shaped gate electrode of a semiconductor device comprising:

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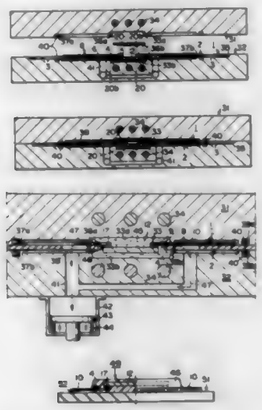
forming an insulating film on a semiconductor substrate and forming a first aperture by etching away a prescribed region of said insulating film which exposes part of said semiconductor substrate and leaving a sidewall of said insulating film transverse to said semiconductor substrate;
depositing a thin metal film having a prescribed thickness on said semiconductor substrate and said insulating film including the sidewall;
forming a first photoresist film on all of said thin metal film and removing a portion of said photoresist film, leaving a portion of said first photoresist film in the first aperture;
forming a second photoresist film on the remaining portion of said first photoresist film and said thin metal film and patterning said second photoresist film to form a second aperture exposing part of said thin metal film and the first photoresist film in the first aperture at the sidewall of said insulating film;
etching away said metal film at and adjacent to the sidewall of said insulating film using said first and second photoresist films as a mask to expose a portion of said semiconductor substrate;
depositing a gate metal on said semiconductor substrate, said first and second photoresist films, and said insulating film and removing said first and second photoresist films and said gate metal disposed on said second photoresist film by lift-off; and
etching away portions of said thin metal film remaining on said semiconductor substrate and said insulating film, leaving a T-shaped gate electrode.

5,304,512

PROCESS FOR MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, AND MOLDING APPARATUS AND MOLDING MATERIAL FOR THE PROCESS

Katsuo Arai, Takasaki; Sumio Okada, Chigasaki; Takashi Ooba, Takasaki; Kazuya Takahashi, Isesaki, and Mayumi Kaneko, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,888
Claims priority, application Japan, Dec. 25, 1991, 3-357062
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—211 **61 Claims**



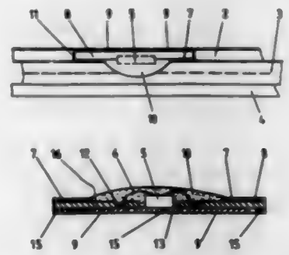
1. A process for manufacturing a semiconductor integrated circuit device, comprising:
providing into a mold cavity of a mold a semiconductor chip having a plurality of semiconductor elements and a plurality of electrode pads, and a plurality of leads electrically connected with the electrode pads;
introducing a molding material into the mold cavity and thereafter clamping the mold closed;
thereafter melting the molding material into a liquid state in the mold cavity to fill up the inside of the mold cavity; and
thereafter setting the liquid state molding material integrally in the mold cavity to form a resin-sealed package sealing the semiconductor chip and leads.

5,304,513

METHOD FOR MANUFACTURING AN ENCAPSULATED SEMICONDUCTOR PACKAGE USING AN ADHESIVE BARRIER FRAME

Yahya Haghiri-Tehrani, München, and Renée-Lucia Barak, Unterhaching, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 713,093, Jun. 11, 1991, abandoned, which is a division of Ser. No. 581,394, Sep. 12, 1990, Pat. No. 5,027,190, which is a continuation of Ser. No. 218,273, Jul. 13, 1988, abandoned. This application May 13, 1993, Ser. No. 60,704
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1987, 3723547
Int. Cl.[5] H01L *21/52, 21/58, 21/56, 21/60*
U.S. Cl. 437—214 **6 Claims**



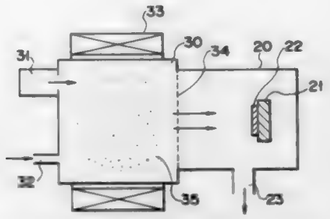
1. A method of making a carrier element including an integrated circuit device mounted on a substrate with terminals connected to contact pads by leads and having an adhesive layer on one side of the carrier element for enabling the carrier element to be bonded to a separate core layer, comprising the steps of:
providing a carrier substrate with contact pads having an aperture for receiving an integrated circuit device;
mounting an integrated circuit device having terminals in the aperture;
providing leads connecting the pads to the terminals;
providing a layer of a heat activatable adhesive film substantially covering one surface of the substrate except the substrate aperture, said adhesive film layer surrounding said substrate aperture at a distance therefrom on the substrate and defining by its thickness a barrier frame adjacent and surrounding said substrate aperture; and
depositing uncured liquid casting compound into the aperture so that it covers the integrated circuit device, its terminals and leads, and said one substrate surface only up to the adhesive film layer barrier frame and curing the casting compound while it is retained against flow away from said aperture solely by said barrier frame while leaving the adhesive film unactivated.

5,304,514

DRY ETCHING METHOD

Tohru Nishibe, Tokyo; Shinya Nunoue, Ichikawa, and Atsushi Kurobe, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 19, 1991, Ser. No. 687,569
Claims priority, application Japan, Apr. 19, 1990, 2-103541; Aug. 20, 1990, 2-218595; Aug. 20, 1990, 2-218596
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—225 **17 Claims**



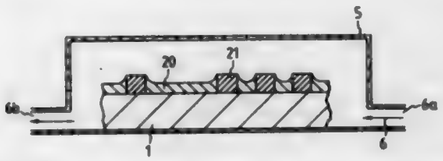
1. A dry etching method comprising the steps of:
introducing an inert gas into a plasma chamber for generating a plasma, followed by exciting the inert gas so as to generate ionized particles;
irradiating a compound semiconductor substrate made of a combination of at least two elements selected from the group consisting of In, Ga, As, and P and having a hetero-junction formed therein, adjacent layers forming the hetero-junction differing from each other in composition, with the ionized particles so as to elevate the temperature of the compound semiconductor substrate;
stopping the inert gas introduction;
introducing a reactive gas or a mixed gas containing an inert gas and a reactive gas, followed by exciting the introduced gas so as to generate ionized particles; and
irradiating the compound semiconductor substrate with the ionized particles so as to carry out etching at the elevated temperature of the compound semiconductor substrate, the partial pressures of the inert gas and the reactive gas being controlled so as to achieve the same etching rate in each layer of the hetero-junction.

5,304,515

METHOD FOR FORMING A DIELECTRIC THIN FILM OR ITS PATTERN OF HIGH ACCURACY ON SUBSTRATE

Kiyoyuki Morita, and Takeshi Ishihara, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 689,730, Apr. 24, 1991, Pat. No. 5,185,296, which is a continuation of Ser. No. 384,593, Jul. 25, 1989, abandoned. This application Aug. 7, 1992, Ser. No. 925,675
Claims priority, application Japan, Jul. 26, 1988, 63-184627; Oct. 24, 1988, 63-266187
Int. Cl.[5] H01L *21/469*
U.S. Cl. 437—231 **14 Claims**



1. A method for forming a dielectric thin film which comprises:
providing a substrate;
forming on one side of the substrate a thin film of a dielectric inorganic material obtained from an organic material, said thin film of a dielectric inorganic material containing an organic component selected from the group consisting of organic matter, organic functional groups, and mixtures thereof; and
contacting the substrate with a super critical fluid or liquefied gas to remove the organic component from the film, thereby obtaining a dielectric thin film.

5,304,516

GLAZE COMPOSITIONS

John F. Clifford, Sydenham, United Kingdom, assignor to Cookson Group PLC, London, England

Filed Apr. 16, 1992, Ser. No. 869,299
Claims priority, application United Kingdom, Apr. 17, 1991, 9108257
Int. Cl.[5] C03C *8/00, 8/02, 8/04, 8/08*
U.S. Cl. 501—21 **14 Claims**

1. A glaze composition which is essentially free from lead and cadmium and which consists essentially of the following components:

SiO_2	45 to 75%
Bi_2O_3	0.1 to below 5%
Al_2O_3	0.1 to 20%
B_2O_3	2 to 20%
at least one of CaO, MgO, SrO, BaO or ZnO	2 to 22%
at least one of Li_2O_3, Na_2O, K_2O	1 to 10%
at least one of La_2O_3, MoO_3, WO_3	0.1 to 10%
TiO_2	0 to 10%
ZrO_2	0 to 10%
P_2O_5	0 to 5%
V_2O_5	0 to 1%

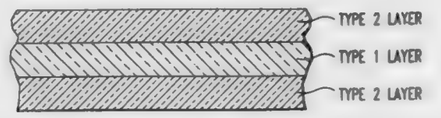
all percentages being percentages by weight based on the total weight of the glaze composition, the glaze composition containing La_2O_3, MoO_3 and/or WO_3 in a total amount of up to 10% by weight, with the proviso that the amount of each of WO_3 and MoO_3 is less than 5% by weight, and with the proviso that BaO is not contained in an amount of more than 2% by weight, the glaze composition having a firing temperature of 950° C. to 1250° C., and having a coefficient of thermal expansion of 50 to 100×10^{-7}°C.

5,304,517

TOUGHENED GLASS CERAMIC SUBSTRATES FOR SEMICONDUCTOR DEVICES SUBJECTED TO OXIDIZING ATMOSPHERES DURING SINTERING

Jon A. Casey; Sylvia M. DeCarr, both of Poughkeepsie; Srinivasa S. N. Reddy, LaGrangeville; Subhash L. Shinde, Croton-on-Hudson; Vivek M. Sura, and Rao R. Tummala, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,577
Int. Cl.[5] C03C *14/00, 8/18*
U.S. Cl. 501—32 **7 Claims**



1. A cordierite glass-ceramic substrate comprising a glass ceramic material and an alloy selected from a group of alloys consisting of:

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Fe—Cr	Cu—Ti
Fe—Cr—Ni	Ag—Ti
Cr—Al	Nb—Al
Ni—Cr	Cu—Al
Ni—Al	Cu—Al—Cr
Fe—Al	

said selected alloy being in the range from about 2 to about 20 volume percent and dispersed within said cordierite glass ceramic material.

5,304,518

HYBRID PACKAGE, GLASS CERAMIC SUBSTRATE FOR THE HYBRID PACKAGE, AND COMPOSITION FOR THE GLASS CERAMIC SUBSTRATE

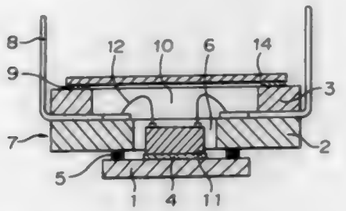
Kazuo Sunahara; Naoai Irisawa; Katumasa Nakahara; Kazunari Watanabe, and Mitsuo Takabatake, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Division of Ser. No. 436,738, Nov. 15, 1989, Pat. No. 5,057,376. This application Jun. 18, 1991, Ser. No. 717,275

Claims priority, application Japan, Nov. 15, 1988, 63-286664; Sep. 8, 1989, 1-231399

Int. Cl.[5] **C03C** *3/105, 3/091*

U.S. Cl. 501—62 **2 Claims**



1. A composition for glass-ceramic substrate for a hybrid package, which comprises inorganic components consisting essentially of from 61 to 91% by weight of alumina, from 5 to 30% by weight of SiO_2, from 3 to 20% by weight of PbO, from 0 to 15% by weight of B_2O_3, from 0.5 to 15% by weight of an alkaline earth metal oxide and from 0 to 6% by weight of oxides of at least one of Ti, Zr and Hf, and, as a filler, from 0.05 to 10% by weight, based on the total amount of the inorganic compounds of at least one oxidizing agent selected from the group consisting of Cr_2O_3, V_2O_5, CeO_2 and CoO.

5,304,519

POWDER FEED COMPOSITION FOR FORMING A REFRACTION OXIDE COATING, PROCESS USED AND ARTICLE SO PRODUCED

John E. Jackson, Brownsburg, Ind.; Hideo Nitta, Higashi-Matsumaya, Japan; Katoh Shoichi, Okegawa, Japan; Masahiko Amano; Yasushi Kurisu, both of Futtsu, Japan, and Keiichiro Ohno, Kimitsu, Japan, assignors to Praxair S.T. Technology, Inc., Danbury, Conn.

Filed Oct. 28, 1992, Ser. No. 967,334

Int. Cl.[5] **C04B** *35/48*

U.S. Cl. 501—103 **2 Claims**

1. A thermal spray powder feed composition comprising particles of zircon and yttria mixed with particles of zirconia at least partially stabilized with yttria.

5,304,520

POROUS CERAMIC COMPOSITE WITH DENSE SURFACE

Ratnesh K. Dwivedi, Wilmington, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 699,403, May 13, 1991, Pat. No. 5,139,977, which is a continuation of Ser. No. 414,183, Sep. 28, 1989, Pat. No. 5,015,610, which is a division of Ser. No. 908,119, Sep. 16, 1986, Pat. No. 4,956,137. This application Aug. 17, 1992, Ser. No. 931,184

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] **C04B** *35/71, 35/02*

U.S. Cl. 501—127 **7 Claims**



1. A method for making a self-supporting ceramic composite article having a porous core bearing a dense surface layer formed integrally with said core, comprising the steps of:

a) preparing a preform comprising filler material and parent metal distributed through said filler material and wherein the volume percent of parent metal is sufficient to form a volume of oxidation reaction product exceeding the total spatial volume available within said preform;

b) melting said parent metal in the presence of at least two oxidants and reacting the resultant molten parent metal on contact therewith to form an oxidation reaction product;

c) transporting said molten parent metal within said oxidation reaction product towards said oxidant to continue forming oxidation reaction product within said preform thereby substantially filling said total spatial volume, and concurrently forming voids substantially throughout said preform which at least partially inversely replicate the geometry of said parent metal;

d) continuing said reaction for a time sufficient to transport molten parent metal through said oxidation reaction product towards said oxidant and to at least one surface of said preform to form a dense surface layer of oxidation reaction production said at least one surface, said dense surface layer being substantially free of voids; and

e) recovering said ceramic composite article.

5,304,521

DIELECTRIC CERAMIC COMPOSITION CONTAINING ZNO-B_2O_3-SiO_2 GLASS, METHOD OF PREPARING THE SAME, AND RESONATOR AND FILTER USING THE DIELECTRIC CERAMIC COMPOSITION

Masahiro Abe; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 948,585, Sep. 23, 1992, Pat. No. 5,264,403. This application Aug. 4, 1993, Ser. No. 102,059

Claims priority, application Japan, Sep. 27, 1991, 3-276587; Mar. 18, 1992, 4-092180; Mar. 18, 1992, 4-092182; Mar. 25, 1992, 4-098862; Sep. 21, 1992, 4-276594; Sep. 21, 1992, 4-276595; Sep. 21, 1992, 4-276596

Int. Cl.[5] **C04B** *35/46*

U.S. Cl. 501—139 **9 Claims**

1. A dielectric ceramic composition which consists essentially of: a main ceramic composition containing barium oxide, titanium oxide and rare earth oxide as major components, which composition is represented by $xBaO.yTiO_2.zRE_2O_3$ where RE represents at least one rare earth metal, $0.10 \leqq x \leqq 0.20$, $0.60 \leqq y \leqq 0.75$, $0.10 \leqq z \leqq 0.25$, and $x+y+z=1$; and a glass composition composed of ZnO, B_2O_3 and SiO_2,

which is represented by k(wt. %)ZnO. m(wt. %)B_2O_3.n(wt. %)SiO2 where $30 \leqq k \leqq 85$, $5 \leqq m \leqq 50$, $2 \leqq n \leqq 40$, $k+m+n=100$, said glass composition being contained in an amount of 0.1~18 parts by weight per 100 parts by weight of said main ceramic composition.

5,304,522

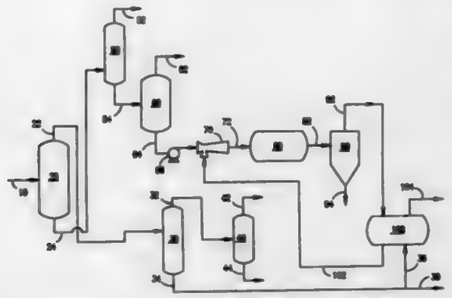
LIQUID ACID REGENERATION METHOD

Rafi Jalkian, Mantua, and Tomas R. Melli, Sewell, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 1, 1993, Ser. No. 69,486

Int. Cl.[5] **B01J** *20/34;* **B01D** *15/04;* **C01B** *7/19;* **C07C** *2/60*

U.S. Cl. 502—22 **15 Claims**



1. A process for regenerating a spent liquid acid catalyst comprising the steps of:

(a) providing a spent liquid acid catalyst comprising HF, sulfolane, and conjunct polymeric byproducts formed during the HF-catalyzed reaction of isoparaffin and olefin to form isoparafinnic alkylate;

(b) providing a finely divided solid sorbent, wherein said solid sorbent preferentially and reversibly sorbs said conjunct polymeric byproducts from a mixture containing HF and sulfolane;

(c) mixing said spent liquid acid catalyst of step (a) with said solid sorbent of step (b) by charging said spent liquid acid catalyst to the driving fluid inlet of an eductor and drawing a stream containing said solid sorbent into said eductor;

(d) holding said mixture of step (c) in contact for time sufficient for said solid sorbent to preferentially sorb at least a portion of said conjunct polymeric byproducts from said spent liquid acid catalyst to produce a conjunct polymer-enriched sorbent and to regenerate said liquid acid catalyst; and

(e) separating said conjunct polymer-enriched sorbent from said regenerated liquid acid catalyst;

(f) soaking said conjunct polymer-enriched sorbent in a solvent to desorb said conjunct polymeric byproducts; and

(g) recycling said solid sorbent to said mixing step (c).

5,304,523

PROCESS AND CATALYST FOR PRODUCING CRYSTALLINE POLYOLEFINS

Abbas Razavi, Pâturage, Belgium, assignor to Fina Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 419,157, Oct. 10, 1989, Pat. No. 5,162,278, which is a continuation-in-part of Ser. No. 220,007, Jul. 15, 1988, Pat. No. 4,892,851. This application Aug. 5, 1992, Ser. No. 925,950

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] **C08F** *4/64, 4/68, 4/00*

U.S. Cl. 502—152 **17 Claims**

1. A catalyst for use in the stereospecific propagation of a polymer chain comprising stereorigid metallocene characterized by a metallocene ligand having ring structures joined to a coordinating transition metal atom, each of said ring structures being a substituted cyclopentadienyl ring and each said ring structures being in a stereorigid relationship relative to said coordinating metal atom to prevent rotation of said ring structure, said stereorigid relationship being imparted by the substituent groups on said ring structure.

5,304,524

ASYMMETRIC HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANORUTHENIUM CATALYST

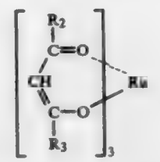
W. Dirk Klobucar; Charles H. Kolich; Thanikavelu Manimaran, and Tse-Chong Wu, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 716,006, Jun. 17, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,525

Int. Cl.[5] **B01J** *31/00*

U.S. Cl. 502—167 **5 Claims**

1. An asymmetric hydrogenation catalyst composition comprising of mixture of (i) chiral phosphine compound, (ii) ruthenium compound of the formula



and (iii) optionally an organic amine and optionally hydrogen, wherein the chiral phosphine is BINAP and R2 and R3 are the same and are methyl.

5,304,525

CATALYST FOR THE PREPARATION OF ANILINE

Otto Immel, Krefeld; Helmut Waldmann, Leverkusen; Rudolf Braden, Odenthal-Scheuren; Christian Fröhlich, Krefeld; Gerhard Friedhofen, Krefeld, and Wilfried Niemeier, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 797,875, Nov. 26, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 50,752

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039026

Int. Cl.[5] **B01J** *21/18, 23/40*

U.S. Cl. 502—185 **7 Claims**

1. A catalyst comprising a graphite or graphite-containing coke having a BET surface area of 0.2–10 m^2/g, as a support, impregnated with from 0.001 to 1.5% by weight of Pd, said catalyst having been prepared by impregnating said support with said Pd in the form of a salt which salt is reduced to elemental Pd upon activation of the catalyst.

5,304,526

SILICA BAYERITE/ETA ALUMINA

Norman R. Laine, Rockville; John A. Rudesill, Columbia, and Wu-Cheng Cheng, Ellicott City, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 780,680, Oct. 18, 1991, Pat. No. 5,147,836. This application Jan. 28, 1992, Ser. No. 827,119

Int. Cl.[5] **B01J** *21/00, 21/12*

U.S. Cl. 502—235 **14 Claims**

1. A composition comprising bayerite and 0.5 to 10 weight percent silica wherein the silica is uniformly distributed throughout the bayerite.

2. The composition of claim 1 which contains up to about 2 weight percent magnesia.

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8. A method for preparing silica-containing bayerite which comprises:

(a) reacting aqueous solutions of sodium aluminate, sodium silicate and aluminum sulfate at a pH of 10.5 to 11.5; and

(b) recovering precipitated silica-containing bayerite from the reaction mixture

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5,304,527

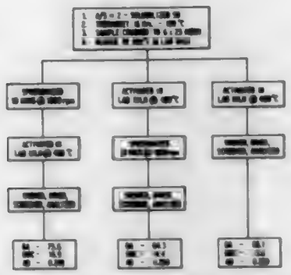
PREPARATION FOR HIGH ACTIVITY, HIGH DENSITY CARBON

Mitchell S. Dimitri, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Nov. 16, 1992, Ser. No. 977,010

Int. Cl.[5] C01B *31/12*; B01J *20/20*; B01D *53/04*

U.S. Cl. 502—425 **3 Claims**



1. An improved process for preparing an activated carbon comprising pre-heating a phosphoric acid activating agent to from about 70° to about 130° C., blending lignocellulosic material fragments with said agent, heating the blended material at a temperature of from about 35° to about 95° C. for one hour to result in a plasticized product, shaping the product, and subjecting the shaped material to activation temperatures of from about 450° to about 590° C. wherein the improvement comprises producing an activated carbon characterized by a butane working capacity of from greater than about 15 to about 25 g/100 cm^3, a mesopore volume of greater than 50% and a macropore volume of less than 20%, based on total pore volume, and a density of from about 0.25 to about 0.40 g/cm^3 by blending the agent and lignocellulose fragments in a ratio of ≧1.6:1, respectively, conducting the plasticization step with addition of sufficient moisture to maintain fluidity of the blended material and to the point at which the individual fragments are degraded and the blend is converted to a viscous fluid which is dried and heated to its transition point from plastic to thermoset, granulating the dried product in a blender to 6×25 mesh size prior to shaping, and shaping the granulated product in a spheronizer.

5,304,528

HEAT TRANSFER SHEET

Jumpei Kanto; Hitoshi Saito; Kosei Kafuku; Masayuki Nakamura, and Hiroshi Eguchi, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 623,442, Dec. 14, 1990, Pat. No. 5,223,476. This application Feb. 17, 1993, Ser. No. 22,413

Claims priority, application Japan, May 2, 1989, 1-111969; Jul. 24, 1989, 1-190868; Aug. 31, 1989, 1-223277

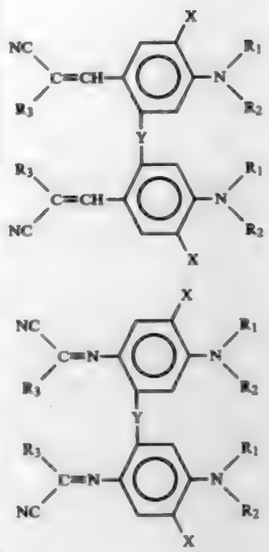
Int. Cl.[5] B41M *5/035*, *5/38*

U.S. Cl. 503—227 **3 Claims**

1. A heat transfer sheet comprising:

a substrate sheet; and

a dye carrier layer formed on one side of said substrate sheet and comprising a sublimable dye and a binder, said sublimable dye comprising a compound selected from the group consisting of general formula (IV) and general formula (V):



(IV)

(V)

wherein:

groups R_1 and R_2, which may be identical with or different from each other, each represent a hydrogen atom or a substituted or unsubstituted alkyl, cycloalkyl, aralkyl or aryl group, or may form together a five- or six-membered ring which may contain an oxygen, nitrogen or sulfur atom;

groups R_3, which may be identical with or different from each other, each denote an electron attractive group;

a group Y indicates a divalent linking group; and

groups X each stand for a hydrogen atom or an atom or atomic group which forms a five-or six-membered ring together with R_1.

5,304,529

SYNERGISTIC MIXTURE OF BIOREGULATOR COMPOUNDS AND METHOD OF THEIR USE

Henry Yokoyama; James H. Keithly, both of Pasadena, Calif., and Harold W. Gausman, Amarillo, Tex., assignors to Tropicana Products, Inc., Bradenton, Fla. and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

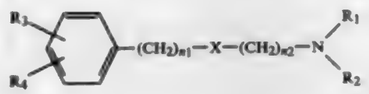
Continuation-in-part of Ser. No. 860,413, Mar. 30, 1992, and a continuation-in-part of Ser. No. 954,726, Sep. 30, 1992. This application Sep. 30, 1992, Ser. No. 954,725

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl.[5] A01N *33/08*

U.S. Cl. 504—148 **23 Claims**

1. A mixture of chemical compositions suitable for use as bioregulatory agents for plants comprised of a mixture of compounds of the structure:



Wherein

X is either oxygen or sulfur,

R_1 and R_2 are lower alkyl groups containing 1 to 6 carbon atoms, n_1 and n_2 being integers from 1 to 6, n_1 and n_2 being

independent of each other, with R_1, R_2, n_1, and n_2 containing identical or dissimilar chemical structures, R_3 and R_4 are independently hydrogen, chlorine, bromine, fluorine, iodine, lower alkyl containing 1 to 6 carbon atoms, lower alkoxy containing 1 to 6 carbon atoms, lower alkoxy groups containing 1 to 6 carbon atoms, or

condensed mono and polycyclic aromatic ring systems, and wherein:

if R_3 and R_4 are 3,5,-substituents, then the lower alkyl or alkoxy group must contain 3 to 6 carbon atoms; and wherein:

if R_3 is hydrogen, then R_4 must be a 4-substituent, with the proviso that R_4 is other than hydrogen.

5,304,530

ACRYLATE FUNGICIDES

Geoffrey R. Cliff, Whittlesford, and Ian C. Richards, Keddington, both of England, assignors to Schering Agrochemicals Limited, England

Division of Ser. No. 216,831, Jul. 8, 1988, Pat. No. 5,192,357. This application Jan. 19, 1993, Ser. No. 5,284

Claims priority, application United Kingdom, Mar. 29, 1988, 88/07388; Jul. 11, 1988, 87/16392

Int. Cl.[5] A01N *43/00*; A61K *31/425*; C07D *265/30*, *277/62*, *333/02*, *317/00*

U.S. Cl. 504—266 **16 Claims**

1. A compound of formula I

(I)

wherein either

A) W is CQ, in which either

a) Q is hydrogen, R^3 is hydrogen or alkyl, p is 1 and

(i) n is 1, m is 0, X is S, O, SO, SO_2, NR^4, $Si(OR^2)R^2$, $Si(R^2)_2$ or $Si(OR^2)_2$ and R^1 is R^5, where R^5 is optionally substituted heteroaryl, optionally substituted heterocyclyl, optionally substituted heterocyclyl(thio)carbonyl, substituted heterocyclylidenemethyl; or

(ii) n is 0, m is 1 to 18, X is S and R^1 is R^5 or is optionally substituted aryl; or

b) Q and R^3 form part of a optionally substituted five or six membered ring p is 0 or 1, m and n are 0 to 18, at least one of m, n and P being greater than 0; X is S, O, SO, SO_2, NR^2, $Si(OR^2)R^2$, $Si(R^2)_2$ or $Si(OR^2)_2$ and R^1 is R^5 or is hydrogen, optionally substituted alkyl or optionally substituted aryl; or

B) W is N, in which case R^3 is hydrogen or alkyl, m is 0, p and n are 1, X is O, S, NR^2, $Si(OR^2)R^2$, $Si(R^2)_2$ or $Si(OR^2)_2$ and R^1 is R^5;

R^2 is alkyl;

R^4 is alkyl or is a bond linked to R^1 and the ring D is optionally substituted; and acid addition salts of any compounds which are basic and basic addition salts of any compounds which are acidic.

5,304,531

NITRODIPHENYL ETHER HERBICIDES

Wayne O. Johnson, 346 Centennial Rd., Warminster, Pa. 18974

Continuation of Ser. No. 104,598, Dec. 17, 1979, abandoned, and a continuation-in-part of Ser. No. 39,471, May 16, 1979, abandoned. This application Dec. 19, 1984, Ser. No. 705,406

Int. Cl.[5] A01N *37/38*; C07C *205/00*, *205/06*

U.S. Cl. 504—316 **12 Claims**

1. The compound named 2-chloro-4-trifluoromethyl-3'-[1-(carboethoxy)ethoxycarbonyl]-4'-nitrodiphenyl ether.

5,304,532

HERBICIDAL COMPOUNDS

David Munro, Maidstone, and Bipin Patel, Sittingbourne, both of England, assignors to Shell Research Limited

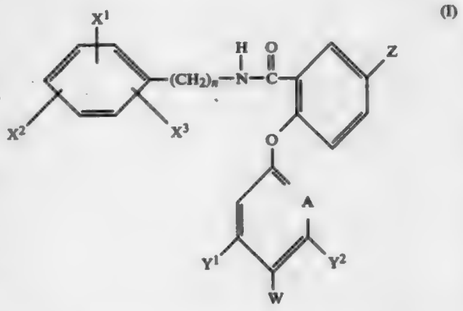
Filed May 29, 1991, Ser. No. 707,026

Claims priority, application United Kingdom, Jul. 17, 1990, 9015638

Int. Cl.[5] C07C *235/64*, *235/60*, *323/22*; C07D *213/643*

U.S. Cl. 504—337 **8 Claims**

1. A compound of the formula



(I)

wherein X^1, X^2 and X^3 each independently represents a hydrogen or halogen atom or an alkyl group; Z represents a hydrogen or halogen atom, or an amino, alkyl, haloalkyl, alkylthio or alkoxy group or a phenoxy group optionally substituted by haloalkyl; Y^1 and Y^2 each independently represents a hydrogen or halogen atom, or an alkyl, haloalkyl, alkoxy or haloalkoxy; and W represents a hydrogen atom or, when at least one of Y^1 and Y^2 is other than a hydrogen atom, W represents a hydrogen or halogen atom.

5,304,533

PROCESS FOR PRODUCING AN OXIDE SUPERCONDUCTOR FROM ALKOXIDES

Toshio Kobayashi; Fusaoki Uchikawa; Kenji Nomura; Fumio Fujiwara; Sigeru Matsuno; Masao Morita, and Shouichi Yokoyama, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1988, Ser. No. 235,551

Claims priority, application Japan, Aug. 24, 1987, 210923; Aug. 24, 1987, 210924; Aug. 24, 1987, 210927; Aug. 24, 1987, 210928; Aug. 24, 1987, 210929; Aug. 24, 1987, 210930; Aug. 24, 1987, 210931; Aug. 24, 1987, 210933; Aug. 24, 1987, 210934; Aug. 24, 1987, 210939; Aug. 24, 1987, 210946; Mar. 31, 1988, 81715; Apr. 18, 1988, 96277

Int. Cl.[5] C01B *33/12*; B05D *5/12*

U.S. Cl. 505—440 **10 Claims**

1. A process for producing an oxide superconductor, which comprises uniformly mixing metal elements for constituting the oxide superconductor in the form of alkoxides, at least a part of the alkoxides having CN^-, X^-, wherein X is a halogen atom and /or an amine, with the rest, if any, being in the form selected from the group consisting of acetylacetonates, carboxylates, carbonates, sulfates, hydroxides, sulfides and mixtures

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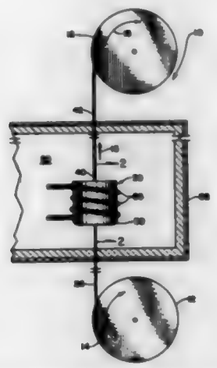
thereof, to obtain a homogeneous mixture, dissolving the alkoxides to form a solution of said alkoxides, hydrolyzing the alkoxides in said solution and sintering the resulting hydrolyzate, wherein the metal elements for constituting the oxide superconductor are at least one element selected from the group consisting of Mg, Ca, Sr and Ba of Group IIa of the Periodic Table, at least one element selected from the group consisting of Sc, Y and lanthanoids of Group IIIa of the Periodic Table, and Cu.

5,304,534

METHOD AND APPARATUS FOR FORMING HIGH-CRITICAL-TEMPERATURE SUPERCONDUCTING LAYERS ON FLAT AND/OR ELONGATED SUBSTRATES

Theodore F. Ciszek, Evergreen, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 7, 1989, Ser. No. 432,938
Int. Cl.[5] C30B *15/02*
U.S. Cl. 505—434 **26 Claims**



1. The method of fabricating elongated, flexible members of crystalline, superconductive compound coated on a substrate, comprising the steps of:

mixing powders of the metal oxide constituents;

heating said mixture to a temperature high enough to result in a liquid melt of said mixture of said metal oxide constituents;

immersing an elongated, flexible substrate in said melt and withdrawing it from the melt at a rate conducive to crystal growth of the metal oxides on the emerging surface of the substrate to thereby create a crystalline coating of the superconductive compound on the substrate; and

cooling the coated substrate.

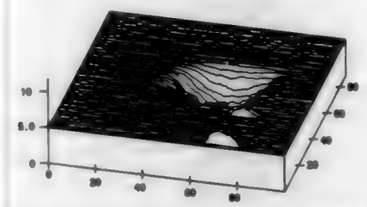
5,304,535

ETCHING OF NANOSCALE STRUCTURES ON HIGH TEMPERATURE SUPERCONDUCTORS

Mark A. Harmer, Wilmington, and Bruce A. Parkinson, Hockessin, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1990, Ser. No. 604,981
Int. Cl.[5] H01L *21/00*
U.S. Cl. 505—410 **13 Claims**

1. A process for controlled etching of a structure using a scanning tunneling microscope comprising scanning the microscope tip over a high temperature superconductor having three dimensional bonding at a voltage of from about −5 to less than +2.0 volts excluding zero volts and a current of less than 10 nanoamps to generate the continuous controlled ablation of one or more layers of the superconductor, wherein the



etched structure can be viewed simultaneously with the ablation.

5,304,536

PROCESS FOR MAKING SUPERCONDUCTOR POWDER

Harold S. Horowitz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 197,961, May 31, 1988, Pat. No. 5,061,683, which is a continuation-in-part of Ser. No. 59,848, Jun. 9, 1987, abandoned. This application Jul. 9, 1991, Ser. No. 725,147
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—445 **20 Claims**

1. A process for preparing a superconducting composition of the formula

$$Bi_2Sr_2CuO_x$$

wherein x is a numerical value from about 6 to about 6.5, comprising

(a) forming a suspension by either

(i) mixing strontium hydroxide and Bi_2O_3 with an aqueous solution of a cupric carboxylate or cupric nitrate at a temperature from about 50° C. to about 100° C. or

(ii) mixing strontium hydroxide with an aqueous solution of a cupric carboxylate or cupric nitrate and a bismuth carboxylate or bismuth nitrate at a temperature from about 50° C. to about 100° C. to obtain a suspension having Bi:Sr:Cu present in an atomic ratio of about 2:2:1.;

(b) producing a powder precursor by (i) drying the suspension formed in step (a) by freeze-drying or spray-drying or (ii) further heating the suspension formed in step (a) to form a precursor solid and gently milling the precursor solid; and

(c) heating the precursor powder in an oxygen-containing atmosphere at a temperature from about 850° C. to about 875° C. for a time sufficient to form $Bi_2Sr_2CuO_x$ powder.

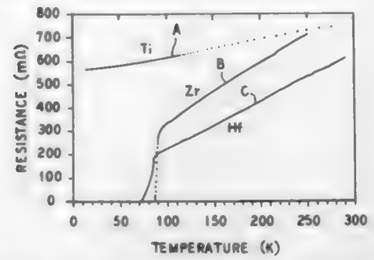
5,304,537

M-TL-BA-CU-O HIGH TEMPERATURE SUPERCONDUCTORS WHEREIN M IS SELECTED FROM THE GROUP CONSISTING OF TI, ZR AND HF

Zhengzhi Sheng, Fayetteville, Ark., assignor to The University of Arkansas, Little Rock, Ark.

Filed Feb. 18, 1992, Ser. No. 836,378
Int. Cl.[5] C01G *3/02, 15/00;* H01B *1/08;* H01L *39/12*
U.S. Cl. 505—120 **5 Claims**

1. A superconducting compound having a phase with the approximate composition $ZrTl_2Ba_2CuO_6$ and a tetragonal unit cell with lattice parameters of a=3.874 Å and c=23.199 Å,



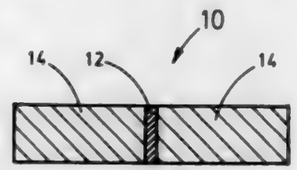
wherein said composition has a T_c of at least approximately 90 K.

5,304,538

EPITAXIAL HETEROJUNCTIONS OF OXIDE SEMICONDUCTORS AND METALS ON HIGH TEMPERATURE SUPERCONDUCTORS

Richard P. Vasquez, Altadena; Brian D. Hunt, Pasadena, and Marc C. Foote, Montrose, all of Calif., assignors to The United States of America as repeated by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 11, 1992, Ser. No. 852,620
Int. Cl.[5] H01L *39/22;* B05D *5/12;* H01B *12/00*
U.S. Cl. 505—190 **22 Claims**



1. A superconducting device comprising:

a first high temperature superconductor;

a barrier layer epitaxially grown on said first superconductor; and

a second high temperature superconductor epitaxially grown on said barrier layer;

said barrier layer being composed of a material selected from a group consisting of noninsulator metallic perovskite structures, transition metal bronzes, and WO_3.

5,304,539

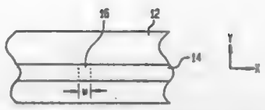
METHOD FOR FABRICATING INTEGRATED MICROELECTRONIC ASSEMBLY COMPRISING PHOTOCONDUCTOR WITH OXIDE SUPERCONDUCTING LEADS

Silas J. Allen, Summit, and Robert R. Krchnavek, Bridgewater, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Division of Ser. No. 782,881, Oct. 17, 1991, Pat. No. 5,140,001, which is a continuation of Ser. No. 593,789, Oct. 5, 1990, abandoned. This application May 12, 1992, Ser. No. 881,841
Int. Cl.[5] B05D *5/06, 5/12;* H01L *39/12*
U.S. Cl. 505—473 **7 Claims**

1. A method of fabricating a microelectronic assembly comprising a photoconducting device comprising the steps of

depositing an elongated electrical lead comprising an oxide superconducting material on the top surface of a substrate,



and irradiating the entire lateral width of a portion of said lead to destroy the superconducting property of said portion and to render said portion photoconductive.

5,304,540

PHARMACEUTICAL BACTERIOCIN COMPOSITIONS AND METHODS FOR USING THE SAME

Peter Blackburn; Steven J. Projan, both of New York, N.Y., and Edward B. Goldberg, Newton, Mass., assignors to Applied Microbiology, Inc., Brooklyn, N.Y.

Continuation of Ser. No. 866,135, Apr. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 822,433, Jan. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 317,626, Mar. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 209,861, Jun. 22, 1988, abandoned. This application Jul. 6, 1993, Ser. No. 85,690
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—2 **37 Claims**

1. A method of preventing or treating gastrointestinal bacterial infection due to the presence of pathogenic bacteria comprising contacting the bacteria with an effective amount of a lanthionine-containing bacteriocin in a suitable carrier and a chelator.

5,304,541

METHODS USING NOVEL CHIMERIC TRANSFORMING GROWTH FACTOR-β1/β2

Anthony F. Purchio; Linda Madisen, both of Seattle, Wash., and June R. Merwin, Clinton, Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 667,246, Mar. 8, 1991, Pat. No. 5,244,793, which is a continuation of Ser. No. 284,972, Dec. 15, 1988, abandoned. This application Mar. 14, 1991, Ser. No. 669,171
Int. Cl.[5] C07K *13/00*
U.S. Cl. 514—12 **2 Claims**

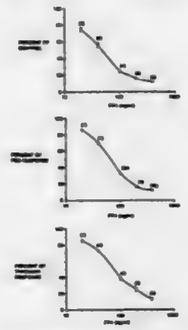
1. A method of inhibiting the proliferation of vascular endothelial cells comprising contacting the cells with chimeric transforming growth factor TGF-5β consisting of amino acids 279 to 390 as given in FIG. 1.

5,304,542

USE OF PLATELET FACTOR 4 TO INHIBIT OSTEOBLAST PROLIFERATION

Dimitris N. Tatakis, Louisville, Ky., assignor to University of Louisville Research Foundation, Inc., Louisville, Ky.

Filed Aug. 28, 1992, Ser. No. 938,026
Int. Cl.[5] A61K *37/00, 45/05*
U.S. Cl. 514—12 **8 Claims**



1. A method for inhibiting proliferation of osteoblasts in a

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mammal in need of such inhibition comprising administering an effective amount of platelet factor 4 to said mammal.

5,304,543

Patent Not Issued For This Number

5,304,544

ANTI-PLANT PATHOGEN MATERIALS AND METHODS

Satoshi Ohki, Miharamachi, Japan; Tsuneya Ohno, and Masaki Terada, both of Boston, Mass., assignors to Nissin Shokuhin Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1992, Ser. No. 862,335

Int. Cl.[5] A61K *31/70, 35/78;* **A01N** *3/02*

U.S. Cl. 514—23 **10 Claims**

1. A method for inhibiting the infection of plants by viruses comprising the step of treating said plants with a composition comprising from 1 μg/ml to 50 mg/ml caramel and a physiologically acceptable diluent, adjuvant or carrier.

5,304,545

PROCESS OF REFINING MIXTURES OBTAINED FROM TREATMENTS OF FATTY MEDIA WITH CYCLODEXTRIN AND CONTAINING COMPLEXES OF CYCLODEXTRIN WITH LIPOPHILIC COMPOUNDS OF THE FATTY ACID TYPE

Léon Mentink, Estaires, and Michel Serpelloni, Beuvry Les Bethune, both of France, assignors to Roquette Freres, France

Filed Jan. 29, 1991, Ser. No. 647,050

Claims priority, application France, Jan. 29, 1990, 9001008

Int. Cl.[5] A01N *43/04;* **A01K** *31/715;* **C09F** *5/10*

U.S. Cl. 554—212 **10 Claims**

1. In a method for removing cyclodextrin from complexes of cyclodextrin and fatty acids by the heat treatment of said complexes in the presence of water, the improvement which comprises effecting said treatment at a temperature above 100° C., in a proportion of complex to water of between 0.02:1 and 4:1 parts by weight on dry matter, and for a time sufficient to dissociate cyclodextrin from said complexes and recovering said cyclodextrin.

5,304,546

PROCESS OF REFINING MIXTURES OBTAINED FROM TREATMENTS OF FATTY MEDIA WITH CYCLODEXTRIN AND CONTAINING COMPLEXES OF CYCLODEXTRIN WITH LIPOPHILIC COMPOUNDS

Serge Comini, La Gorgue, and Léon Mentink, Estaires, both of France, assignors to Roquette Freres, France

Filed Jan. 29, 1991, Ser. No. 647,051

Claims priority, application France, Jan. 29, 1990, 90 01009

Int. Cl.[5] A01N *43/04;* **A61K** *31/715;* **C09F** *5/10*

U.S. Cl. 552—545 **5 Claims**

1. The method of removing cyclodextrin from complexes of cyclodextrin with steroids, fatty acids vitamins or compounds of aromas, which comprises subjecting the said complexes to a treatment in substantially anhydrous conditions with more than about 70% by weight based on the dry weight of the complexes of anhydrous polar solvent selected from the group consisting of ethanol, methanol, isopropanol, n-propanol, n-butanol, acetone and their mixtures for a time sufficient to dissociate cyclodextrin from said complexes and recovering said cyclodextrin.

5,304,547

PROCESS OF REFINING MIXTURES OBTAINED FROM TREATMENTS OF FATTY MEDIA WITH CYCLODEXTRIN AND CONTAINING COMPLEXES OF CYCLODEXTRIN MAINLY WITH LIPOPHILIC SUBSTANCES OTHER THAN FATTY ACIDS

Léon Mentink, Estaires, and Michel Serpelloni, Beuvry Les Bethune, both of France, assignors to Roquette Freres, France

Filed Jan. 29, 1991, Ser. No. 647,059

Claims priority, application France, Jan. 29, 1990, 90 01007

Int. Cl.[5] A01N *43/04;* **A61K** *31/715;* **C09F** *5/10*

U.S. Cl. 552—545 **8 Claims**

1. The method of removing cyclodextrin from complexes of cyclodextrin with steroids, vitamins or compounds of aromas, which comprises subjecting the said complexes to heat treatment in the presence of water, at a temperature between 100° and 150° C., the proportions of complexes treated to said water being between 0.02:1 and 4:1 parts by weight on dry matter for a time sufficient to dissociate cyclodextrin from said complexes and recovering said cyclodextrin.

5,304,548

BIVALENT LIGANDS EFFECTIVE FOR BLOCKING ACAT ENZYME FOR LOWERING PLASMA TRIGLYCERIDES AND FOR ELEVATING HDL CHOLESTEROL

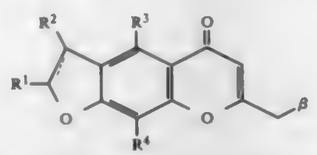
Ronald B. Gammill, Portage, and Frank P. Bell, Vicksburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 697,301, May 7, 1991, Pat. No. 5,180,717, which is a continuation-in-part of Ser. No. 651,334, Feb. 8, 1991, abandoned, and Ser. No. 486,648, Feb. 28, 1990, abandoned, which is a continuation of Ser. No. 232,931, Aug. 16, 1988, abandoned. This application Sep. 29, 1992, Ser. No. 953,419

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—63 **17 Claims**

1. A bivalent ligand α-β-α wherein α is structurally represented by the formula



or a pharmaceutically acceptable salt thereof wherein:

R^1 and R^2 are independently:

a) H,
b) halo,
c) C_{1-8} alkyl,
d) $-(CH_2)_p-CO_2R^6$,
e) $-(CH_2)_p-CONR^7R^8$,
f) $-Si(R^9)$,
g) $-(CH_2)_n-NR^7R^8$,
h) $-(CH_2)_n-OR^{10}$,
i) $-CF_3$, or
j) $-(CH_2)_n-SR^6$, $-(CH_2)_n-SOR^6$, $-(CH_2)_n-SO_2R^6$;

R^3 is

a) $OCH_2CH=CH_2$,
b) $OCH_2CH(OH)CH_2NHR^6$,
c) $-O-C_{1-8}$ alkyl,
d) $-O-(CH_2)_n-CO_2R^6$, or
e) $-O-(CH_2)_n-CONR^7R^8$;

R^4 is

a) hydrogen,
b) halo,
c) NO_2,
d) NH_2
e) CF_3,

f) C_{1-8} alkyl,
g) (C_6 or C_{10}) aryl,
h) $-S-C_{1-8}$ alkyl or $-S-$(C_6 or C_{10}) aryl,
i) $-SO-C_{1-8}$ alkyl or $-SO-$(C_6 or C_{10}) aryl,
j) $-SO_2-C_{1-8}$ alkyl or $-SO_2-$(C_6 or C_{10}) aryl,
k) R^3, or
l) $-(CH_2)_n-NR^7R^8$;

R^6 is H, CF_3, C_{1-8} alkyl or (C_6 or C_{10}) aryl, Li^+, Na^+, K^+, Ca^{2+} and other pharmaceutically acceptable counter ions for carboxylic acids;

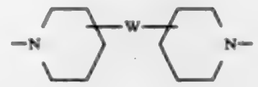
R^7 and R^8 are H, CO-alkyl, C_{1-8} alkyl, cycloalkyl, heteroalkyl, or R^7 and R^8 can be taken together to form a piperidine ring or morpholine ring, where heteroalkyl is an alkyl of 2 to 8 carbon atoms, with 1 to 2 heteroatoms, the heteroatoms being one N, O, S or two N atoms, having a minimum of 2 carbon atoms between the heteroatoms;

R^9 is an C_{1-8} alkyl;

R^{10} is H, CF_3, C_{1-8} alkyl; and

n is 0–5 and p is 0–8; and

β is



wherein:

W is $-(CH_2)_n$,

where n is 0–5.

5,304,549

AMINO ACID DERIVATIVES

Michael J. Broadhurst, Royston; Paul A. Brown, Hitchin; William H. Johnson, Hitchin, and Geoffrey Lawton, Hitchin, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 21, 1992, Ser. No. 823,212

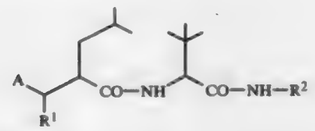
Claims priority, application United Kingdom, Feb. 1, 1991, 9102194; Oct. 31, 1991, 9123162

Int. Cl.[5] C07F *9/28, 9/06;* **C07C** *93/10, 259/04, 259/06;* **A61K** *31/675, 31/16, 31/185*

U.S. Cl. 514—80 **45 Claims**

1. A compound of the formula

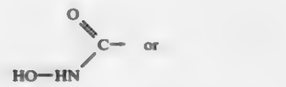
(I)



wherein

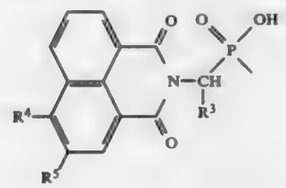
A is the group

(a)



or

(b)



R^1 is hydrogen, amino, protected amino, acylamino in which acyl is derived from an alkanoic acid which contains a maximum of six carbon atoms, or from a benzoic or naphthoic acid which is optionally substituted with halogen, lower alkyl, halogenated lower alkyl, lower alkoxy or phenyl or from an aryl-substituted alkanoic acid which contains a maximum of six carbon atoms, lower alkyl or lower alkyl substituted by aryl, hydroxy, protected hydroxy, amino, protected amino, acylamino in which acyl is derived from an alkanoic acid which contains a maximum of six carbon atoms, or from a benzoic or naphthoic acid which is optionally substituted with halogen, lower alkyl, halogenated lower alkyl, lower alkoxy or phenyl of from an aryl-substituted alkanoic acid which contains a maximum of six carbon atoms, maleimido, succinimido, naphthalimido, 2,3-dihydro-1,3-dioxo-1H-benz[d,e]-isoquinol-2-yl, carboxy, protected carboxy, carbamoyl, mono(lower alkyl)carbamoyl, di(lower alkyl)carbamoyl, di(lower alkyl)amino, carboxy-lower alkanoylamino, pyrrolidino or morpholino;

R^2 is hydrogen, lower alkyl or lower alkyl substituted by aryl, amino, protected amino, di(lower alkyl)amino, guanidino, carboxyl, protected carboxyl, carbamoyl, mono(lower alkyl)carbamoyl, di(lower alkyl)carbamoyl, di(lower alkoxy)phosphinyl, dihydroxyphosphinyl, pyrrolidino, piperidino or morpholino;

R^3 is hydrogen, lower alkyl or lower alkyl substituted by hydroxy, protected hydroxy, amino or protected amino;

R^4 is hydrogen, hydroxy, lower alkoxy or benzyloxy; and

R^5 is hydrogen or halogen;

or a pharmaceutically acceptable salt thereof.

5,304,550

DRUG EFFECT-ENHANCING AGENT FOR ANTITUMOR DRUG

Shin-ichi Akiyama, Kagoshima; Ryozo Sakoda; Kiyotomo Seto, both of Funabashi, and Norimasa Shudo, Shiraoka, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 865,489, Apr. 9, 1992, which is a division of Ser. No. 729,904, Jul. 15, 1991, Pat. No. 5,130,303, which is a continuation of Ser. No. 386,254, Jul. 28, 1989, abandoned. This application May 7, 1993, Ser. No. 57,902

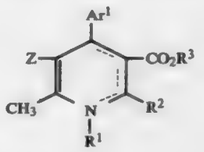
Claims priority, application Japan, Aug. 2, 1988, 63-193002; Jun. 30, 1989, 1-168549

Int. Cl.[5] A61K *31/44, 31/55, 31/535, 31/675*

U.S. Cl. 514—85 **2 Claims**

1. A method for enhancing the antitumor effect of an antitumor drug, comprising administering to a patient in need thereof an effective amount of a compound of the formula I:

(I)



wherein

Ar^1 is phenyl, pyridyl, furyl or 2,1,3-benzoxadiazol-4-yl, which may be substituted by one or more substitutents selected from the group consisting of NO_2, CF_3, Br, Cl, F, R^6 (wherein R^6 is C_1–C_4 alkyl), OH, OR^6, $OCHF_2$, $COOR^6$, NH_2, NHR^6, NR^6R^7 (wherein R^7 has the same meaning as R^6), $CONH_2$, $CONHR^6$, $CONR^6R^7$, $COSR^6$, SR^6, $S(O)R^6$, $S(O)_2R^6$, $S(O)_2R^6$, SO_3H, SO_3R^6, SO_2NH_2, SO_2NHR^6, $SO_2NR^6R^7$, CN and phenyloxy;

the nitrogen-containing hetero ring portion represents a 1,4-dihydropyridine ring;

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Z is a group of the formula II:



(II)

wherein each of R^4 and R^5 which may be the same or different is OH, C_1–C_{12} linear or branched primary or secondary alkyloxy, C_3–C_6 linear or branched unsaturated alkyloxy, C_3–C_6 cycloalkyloxy, C_1–C_6 alkoxy substituted by C_3–C_6 cycloalkyl, OAr^2 (wherein Ar^2 is phenyl which may be substituted by halogen, C_1–C_3 alkyl or C_1–C_3 alkoxy), $OANR^6R^7$ (wherein A is C_2–C_6 alkylene, which may be substituted by C_1–C_3 alkyl or Ar^2), $OAN(C\text{-}H_2Ar^2)R^6$, $OAOR^6$, OACN, NH_2, NHR^6, NR^6R^7, 1-piperidinyl or 1-pyrrolidinyl, or R^4 and R_5 together form OY (wherein Y is C_2–C_4 linear saturated or unsaturated alkylene which may substituted by R^6, CO_2R^6, OR^6, or A), NHYO, R^6NYO, NHYNH, R^6NYNH or R^6NYNR^7;

R^1 is hydrogen, R^6, ANR^6R^7, $AN(CH_2CH_2)_2O$, AOR^6 or CH_2phenyl;

R^2 is R^6, Ar^2, $Ar^2CH{=}CH$, $Ar^2CH(OH)CH_2$, CHO, CN, CH_2OH, CH_2OR^6, $CH_2CH_2N(CH_2CH_2)_2NR^6$, NH_2, or NHR^6;

R^3 is hydrogen, C_1–C_{12} linear or branched alkyl, C_3–C_6 linear or branched unsaturated alkyl, C_3–C_6 cycloalkyl, C_1–C_6 alkyl substituted by C_3–C_6 cycloalkyl, AOR^6, $AO(CH_2)_mAr^2$ (wherein m is an integer of from 0 to 3), $(CH_2)_mAr^2$, ANH_2, $ANHR^6$, ANR^6R^7, $ANR^6(CH_2\text{-})_mAr^2$, $AN\{(CH_2)_mAr^2\}\{(CH_2)_mAr^3\}$ (wherein n has the same meaning as m, and Ar^3 has the same meaning as Ar^2), the 1-benzyl-4-piperidinyl, 1-benzyl-2-piperidinyl, 2-pyridinylmethyl, 3-pyridinylmethyl, AQ (wherein Q is pyrrolidine or piperidine which may be substituted by $(CH_2)_mAr^2$), 4-R^6-1-piperazinyl, 4-Ar^2-1-piperazinyl, 4-$(Ar^2)_2$CH-1-piperazinyl or 4-$(Ar^2)_2$CH-1-(1,4-diazacyclopheptyl);

or a pharmaceutically acceptable salt of the compound.

5,304,551

ANTI-FUNGAL COMPOUNDS

Brian A. Marples, and Reginald J. Stretton, both of Loughborough, England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB91/00710, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO91/16898, PCT Pub. Date Nov. 14, 1991

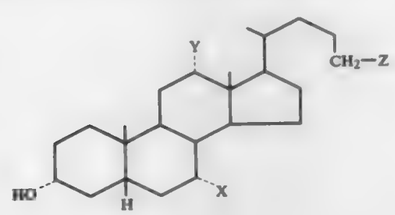
PCT Filed May 3, 1991, Ser. No. 941,098

Claims priority, application United Kingdom, May 4, 1990, 9010087

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—182 **5 Claims**

1. A method of treatment of a fungal infection by a dermatophyte of the genus Trichophyton or Microsporum in a human patient in need of such treatment, which method comprises the step of administering topically to the patient a therapeutically effective amount of a compound of formula (7)



(7)

wherein X is a hydrogen atom or a hydroxyl group, Y is a hydrogen atom or a hydroxyl group and at least one of X and Y is a hydroxyl group and Z is a hydroxyl group or a methylol ($—CH_2OH$) group, provided that the compound wherein X and Y are hydroxyl and Z is methylol is used only for treatment of a fungal infection by a *Microsporum dermatophyte.*

5,304,552

AZA-BICYCLO-TERMINATED ALKYLAMINO ETHYNYL ALANINE AMINO DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

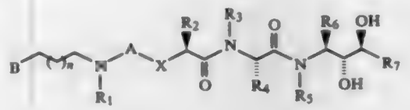
Gunnar J. Hanson, Skokie, Ill., assignor to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 930,061, Aug. 14, 1992, Pat. No. 5,212,185. This application Apr. 16, 1993, Ser. No. 48,623

Int. Cl.[5] A61K *31/55;* **C07D** *223/16*

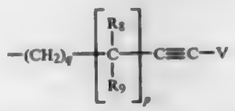
U.S. Cl. 514—216 **26 Claims**

1. A compound of Formula I:



(I)

wherein A is selected from CO and SO_2; wherein X is selected from oxygen atom and methylene; wherein R_1 is selected from hydrido and alkyl; wherein B is a heterocyclic ring system of seven to ten ring members with one ring member being a nitrogen atom, that is a ring member of a seven to ten membered ring wherein said ring system may be monocyclic or bicyclic and may be fully saturated or partially saturated and may be fused to a benzene or cyclohexane ring, wherein the point of attachment of B to the backbone of the structure of Formula I may be through a bond to any substitutable position on said heterocyclic ring system of B and wherein any substitutable position of B may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, alkynyl, halo, trifluoromethyl, oxo, cyano and phenyl, and wherein the said heterocyclic ring nitrogen atom may be combined with oxygen to form an N-oxide; wherein R_2 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl and naphthylalkyl, and wherein the cyclic portion of any of said phenylalkyl, cycloalkylalkyl and naphthylalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_3 and R_5 is independently selected from hydrido and alkyl; wherein R_4 is selected from



wherein V is selected from hydrido, alkyl, benzyl and phenyl; wherein each of R_8 and R_9 is a radical independently selected from hydrido, alkyl, alkenyl and phenyl; wherein R_6 is selected from alkyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy and alkoxy; wherein R_7 is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl and alkenyl; wherein p is a number selected from zero through five, inclusive; wherein q is a number selected from zero through five, inclusive; and wherein n is a number selected from zero through five, inclusive; or a pharmaceutically-acceptable salt thereof.

5,304,553

1,4-DIAZEPINE DERIVATIVE AND ITS PHARMACEUTICAL USE

Kazuo Okano; Shuhei Miyazawa; Richar S. J. Clark; Shinya Abe; Tetsuya Kawahara; Naoyuki Shimomura; Osamu Asano; Hiroyuki Yoshimura; Mitsuaki Miyamoto; Yoshimori Sakuma; Kenzo Muramoto; Hiroshi Obaishi; Koukichi Harada; Hajime Tsunoda; Satoshi Katayama; Kouji Yamada; Shigeru Souda; Yoshimasa Machida; Kouichi Katayama, and Isao Yamatsu, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

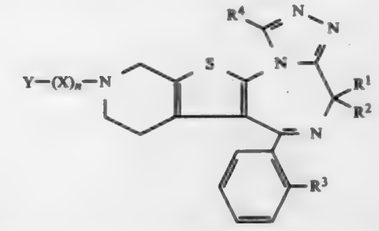
Division of Ser. No. 751,632, Aug. 26, 1991, which is a continuation of Ser. No. 506,928, Apr. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 421,929, Oct. 16, 1989, abandoned. This application May 28, 1993, Ser. No. 68,349

Claims priority, application Japan, Oct. 31, 1988, 63-275460; Nov. 24, 1988, 63-297068; Dec. 16, 1988, 63-318016; Dec. 28, 1988, 63-331622

Int. Cl.[5] A61K *31/55;* **C07D** *495/22*

U.S. Cl. 514—219 **17 Claims**

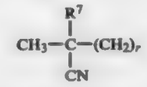
1. A triazolo-1,4-di-azepine compound or pharmacologically acceptable salt theroef, having the formula:



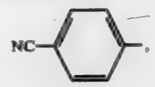
wherein R^1 is hydrogen and R^2 is a lower alkyl group having 1 to 6 carbon atoms, R^3 represents a hydrogen atom or a halogen atom, R^4 represents a hydrogen atom or a lower alkyl group, X represents: a group of the formula,



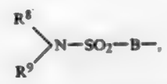
n is 1 and Y represents
(1) a cycloalkyl group,
(2) a cycloalkylalkyl,
(3) an alkynyl group,
(4) a group of the formula,



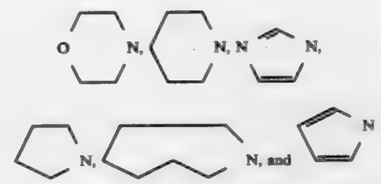
in which R^7 is hydrogen or methyl and r is zero, 1 or 2,
(5) a group of the formula, $NC—(CH_2)_p—$, wherein p is an integer of from 1 to 6,
(6) a group of the formula $A—(CH_2)_q—$ wherein A represents a group selected from a pyridyl group, a pyranyl group and a morpholino group and q is an integer of from 0 to 6,
(7) an alkynyl group having from 1 to 6 atoms wherein a phenyl group or a cycloaklyl group is joined to any carbon atom,
(8) a group of the formula,



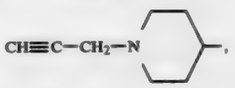
(9) a group of the formula,



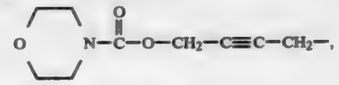
wherein R^8 and R^9 are the same or different and represent a hydrogen atom, a lower alkyl group, a pyridylmethyl group or a cycloalkyl group or R^8 and R^9 may be joined along with a nitrogen atom to form a ring selected from the group consisting of



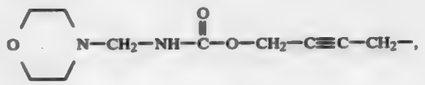
and B represents a phenylene group or a lower alkylene group having from 1 to 3 carbon atoms,
(10) a group of the formula,



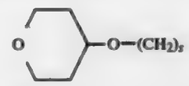
(11) a group of the formula,



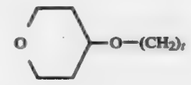
(12) a group of the formula,



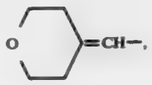
(16) a cycloalkyalkenyl group,
(17)



in which s is 1 or 2,
(18)



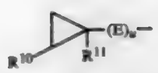
in which t is 1 or 2,
(19)



(20) an arylalkyl,
(21) an arylalkenyl,

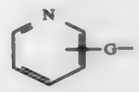
VOL 1161 ISS 3 AP 19 1994 UMI

(22)



in which R^{10} is hydrogen or phenyl, R^{11} is hydrogen or a lower alkyl, E is an alkenylene and u is zero or 1 with the proviso that R^{10} and R^{11} are not both hydrogen at the same time, or

(23)



in which G is an alkenylene or —J—$(CH_2)_k$—, wherein J is oxygen or sulfur, and k is zero 1 or 2.

14. A method for treating a disease against which anti-PAF activity is effective, which comprises administering to a patient in need thereof a pharmacologically effective amount of the compound or the salt thereof as defined in claim 1.

5,304,554

4-[(ALKYL OR DIALKYL)AMINO]QUINOLINES AND THEIR METHOD OF PREPARATION

Lucjan Strekowski, Stone Mountain; Roman L. Wydra, Atlanta; Steven E. Patterson, Norcross, and Raymond F. Schinazi, Decatur, all of Ga., assignors to Emory University and Georgia State University Research Fouadation, Atlanta, Ga.

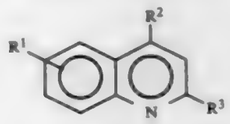
Continuation of Ser. No. 515,869, Apr. 27, 1990, abandoned. This application Mar. 11, 1992, Ser. No. 849,790

Int. Cl.[5] **A61K** *31/54, 31/535, 31/495, 31/50*

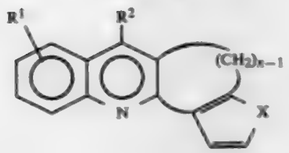
U.S. Cl. 514—228.2 **9 Claims**

1. 4-[(alkyl or dialkyl)amino]quinolines of the formulas:

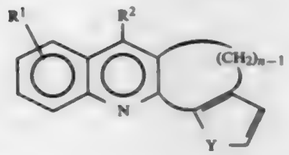
(I)



(II)



(III)



wherein:

R^1 is H, 2-chloro, 3-chloro, 4-chloro, 5-chloro, 3-methoxy, 4-methoxy, 5-methoxy, or 4-methylthio (numbering scheme based on parent aniline);

R^2 is selected from the group consisting of alkylamino; dialkylamino; N,N-dialkylethylenediamino; N-alkylethylenediamino; 4-alkylpiperazino; piperazino; morpholino; thiomorpholino; 1,2,3,4-tetrahydroisoquinolin-2-yl and piperidino;

R^3 is 2,2-dialkylvinyl, 2-pyridinyl, 3-pyridinyl, 4-pyridinyl, 2-furanyl, 2-thienyl, 2-thiazolyl, 3-thienyl, 2-benzofuranyl, 2-quinolinyl, 1-isoquinolinyl, 4-isoquinolinyl, 3-isoquinolinyl, 3-quinolinyl, 4-quinolinyl, 3-furanyl, 2-benzothienyl, or 3-benzothienyl groups; n is 2or 3; and X and Y are N=CH, CH=N, O, or S.

5,304,555

PYRIMIDINES AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF USEFUL IN TREATMENT OF NEUROLOGICAL DISORDERS

Akira Awaya, Yokohama; Kazutoshi Horikomi, Mobara; Tadayuki Sasaki, Mobara; Hisashi Kobayashi, Mobara; Akira Mizuchi, Mobara; Takeo Nakano, Yokohama; Ikuo Tomino, Ohtake; Shintaro Araki, Yamaguchi; Mitsuyuki Takesue, Iwakuni; Koji Kato, Yamaguchi, and Keiichi Yokoyama, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and Mitsui Pharmaceuticals, Inc., both of Tokyo, Japan

Continuation-in-part of Ser. No. 347,892, Apr. 25, 1989, abandoned. This application Oct. 19, 1990, Ser. No. 600,171

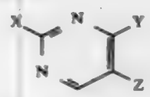
Claims priority, application Japan, Aug. 26, 1987, 62-210170

Int. Cl.[5] **C07D** *279/12;* **A61K** *31/54*

U.S. Cl. 514—228.5 **24 Claims**

1. A pyrimidine compound represented by the following formula (I)

(I)



wherein X represents

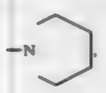
(i) a group of the following formula (I)-1

(I)-1

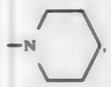


wherein R^1 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R^2 represents a cyclohexyl, phenyl, benzyl or piperidyl group which may be substituted by C_{1-4} alkyl group, or an alkyl group having 1 to 4 carbon atoms which may be substituted by a piperidino group or R^1 and R^2 together with the nitrogen atom to which they are bonded form a heterocyclic ring selected from the group consisting of

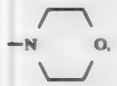
(a)



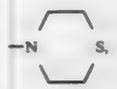
(b)



(c)

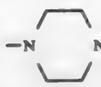


(d)



and

(e)

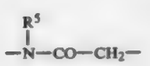


wherein R^3 represents an alkylaminocarbonyl group mono- or di-substituted by a C_{1-6} alkyl group, and the heterocyclic group may optionally be mono- to penta-substituted by a C_{1-4} alkyl group, or substituted by a C_{3-5} polymethylene group on the adjoining ring-member carbons, or

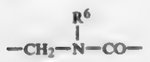
(ii) a group represented by the following formula (I)-2

—S—R^4 (I)-2

wherein R^4 represents an alkyl group having 1 to 4 carbon atoms, Y represents an amino group or a substituted amino group mono- or di-substituted by a C_{1-4} alkyl group, and Z represents a lower alkoxycarbonyl group having 2 to 5 carbon atoms, or Y and Z together form a divalent group —Y—Z— of the following formula

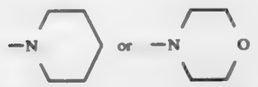


wherein R^5 represents an alkyl group having 1 to 4 carbon atoms, or a group of the following formula



wherein R^6 represents an alkyl group having 1 to 4 carbon atoms,

or its pharmaceutically acceptable salt with the proviso that X is



when Y is an amino group or an amino group mono- or di-substituted by C_{1-4} alkyl group.

5,304,556

BENZA-TRIAZINONE DERIVATIVES

Akihiro Yamamoto; Shuji Morita, both of Yokohama; Yoshio Hayashi, Ushiku; Noboru Yamada, Yamato, and Toshihito Kitamura, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 993,044

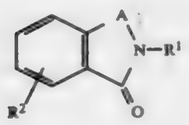
Claims priority, application Japan, Dec. 25, 1991, 3-343687; Nov. 16, 1992, 4-305574

Int. Cl.[5] **A61K** *31/53;* **C07D** *253/10*

U.S. Cl. 514—243 **8 Claims**

1. A benzamide derivative of the following formula (I):

(I)



wherein:

R^1 represents a group of the following formula (II)

(II)



(in the above formula (II), n represents an integer from 0 to 2, B and D each independently represent hydrogen atom or C_1–C_4 alkyl group, E represents a heterocyclic group selected from the group consisting of thienyl, furyl, imidazolyl, pyrazolyl, pyridyl, N-oxypyridyl, and pyrimidyl groups, which is unsubstituted or substituted by a C_1–C_4 alkyl group or a C_1–C_4 alkyoxy group),

R^2 represents C_6–C_{12} aryl group, C_6–C_{12} aryloxy group, C_6–C_{12} arylthio group, benzyloxy group or C_7–C_{13} arylcarbonyl group, which is unsubstituted or substituted, or a group of the following formula (III):

R^3R^4N (III)

(in the above formula (III), R^3 represents C_6–C_{12} aryl group which is unsubstituted or substituted and R^4 represents C_6–C_{12} aryl group which is unsubstituted or substituted, hydrogen atom, C_1–C_4 alkyl group or C_3–C_8 cycloalkyl group) or a group of the following formula (IV):

R^5R^6CH (IV)

(in the above formula (IV), R^5 represents C_6–C_{12} aryl group which is unsubstituted or substituted, and R^6 represents C_6–C_{12} aryl group which is unsubstituted or substituted, hydrogen atom, C_1–C_4 alkyl group or C_3–C_8 cycloalkyl group), and

A represents —N=N— and

optical antipodes thereof or pharmacologically acceptable salts thereof.

5,304,557

SUBSTITUTED OXOOPHTHALAZINYL ACETIC ACIDS AND ANALOGS THEREOF

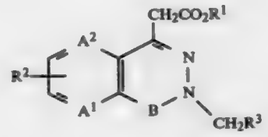
Banavara L. Mylari, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 30, 1992, Ser. No. 854,984

Int. Cl.[5] **C07D** *231/56, 403/06, 471/04;* **A61K** *31/415*

U.S. Cl. 514—248 **12 Claims**

1. A compound of the formula



wherein

A^1 and A^2 are independently N or CH;

B is a covalent bond or C=O;

R^1 is hydrogen or C_1–C_6 alkyl;

R^2 is hydrogen, fluorine, chlorine, bromine, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, or C_1–C_4 alkylthio;

R^3 is



wherein R^4 is phenyl optionally independently substituted by one or two of fluoro, chloro, bromo, trifluoromethyl,

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trifluoromethylthio, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, or nitro; with the proviso that when R^4 is disubstituted phenyl, the substitution is at the 3 and 4, or the 3 and 5, or the 2 and 5 positions in the phenyl;

X is oxygen or sulphur;

Y is hydrogen; or Y, together with the nitrogen atom to which it is attached, forms an indole group with the carbon on the ortho position of the phenyl in R^4; or a pharmaceutically acceptable base salt thereof when R^1 is hydrogen;

with the proviso that when B is a covalent bond, A^1 and A^2 are each CH.

5,304,558

DIPHENYLMETHYL PIPERAZINE DERIVATIVES

Noboru Kaneko; Makoto Takeishi, both of Tokyo; Tatsushi Oosawa, Gunma; Kouji Akimoto, Gunma; Hideo Oota, Gunma, and Tatsuo Nakajima, Gunma, all of Japan, assignors to Kirin Brewery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00924, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/00962, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 10, 1991, Ser. No. 958,366

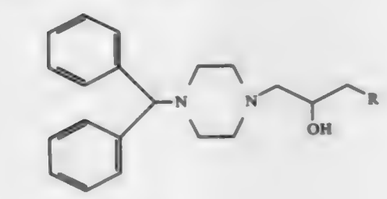
Claims priority, application Japan, Jul. 10, 1990, 2-182095

Int. Cl.[5] A61K *31/495;* **C07D** *211/52, 217/04, 401/00*

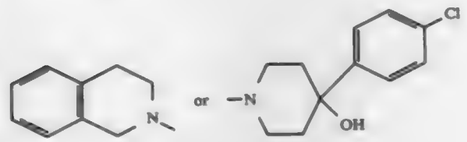
U.S. Cl. 514—253 **15 Claims**

1. A diphenylmethyl piperazine derivative represented by the following Formula [I]:

(I)



wherein R represents



or a pharmaceutically acceptable salt thereof.

5,304,559

COMPOSITIONS CONTAINING A 4-QUINOLONE DERIVATIVE COMPLEXED WITH A DIVALENT METAL ION

Annoak Roxier, Clermont-Ferrand, France, assignor to Laboratoires Merck Sharp & Dohme Chibret, Paris, France

Filed Aug. 9, 1991, Ser. No. 742,989

Claims priority, application France, Aug. 10, 1990, 90 10254

Int. Cl.[5] A61K *31/495, 31/50, 31/445*

U.S. Cl. 514—255 **10 Claims**

1. In a fluid pharmaceutical composition intended to be brought into contact with a physiological fluid, said composition containing, as active principle, a pharmaceutically effective amount of at least one 4-quinolone derivative in suspension in a fluid dispersant, the improvement wherein the 4-quinolone derivative is complexed with a divalent metal ion selected from Cu++, ZN++ and Mg++, said complex being in the form of particles of a size compatible with parenteral or ophthalmic administration and not being subject to a crystalline growth phenomenon during storage of the said composition.

5,304,560

QUINAZOLINE DERIVATIVES AND THEIR PREPARATION

Norihiko Shimazaki; Hitoshi Yamazaki; Takumi Yatabe, all of Tsukuba, and Hirokazu Tanaka, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

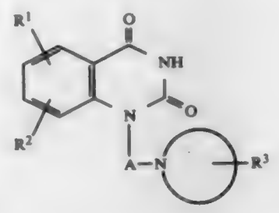
Continuation of Ser. No. 770,871, Oct. 4, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,315

Claims priority, application United Kingdom, Oct. 15, 1990, 9022306; Aug. 27, 1991, 9118337

Int. Cl.[5] A61K *31/505, 31/495;* **C07D** *239, 96, 241/04*

U.S. Cl. 514—259 **11 Claims**

1. A compound of the formula:



in which

R^1 and R^2 are each hydrogen, halogen, nitro, amino, protected amino, hydroxyamino, lower alkoxy, lower alkyl, hydroxy, sulfamoyl, carboxy, protected carboxy, carbamoyl, mercapto, lower alkylthio or imidazolyl,

R^3 is aryl which is unsubstituted or substituted by a substituent selected from the group consisting of halogen, lower alkyl, nitro and amino,

A is lower alkylene, and the formula:



is N-containing heterocyclic group selected from the group consisting of unsaturated 5- or 6-membered hetereomonocyclic group containing 1 to 4 nitrogen atom(s), unsaturated 5- or 6-membered heteromonocyclic group containing 1 to 2 oxygen atoms(s) and 1 to 3 nitrogen atoms(s), saturated 5- or 6-membered heteromonocyclic group containing 1 to 2 oxygen atom(s) and 1 to 3 nitrogen atom(s), unsaturated 5- or 6-membered heteromonocyclic group containing 1 to 2 sulfur atom(s) and 1 to 3 atom(s), and saturated 5- or 6-membered heteromonocyclic group containing 1 to 2 sulfur atom(s) and 1 to 3 nitrogen atom(s), or pharmaceutically acceptable salts thereof.

5,304,561

NEW CONCEPT IN GLAUCOMA TREATMENT

Faezeh Sarfarazi, 25 Wiswall Rd., Newton Center, Mass. 02159

Filed Jul. 24, 1992, Ser. No. 919,597

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—274 **9 Claims**

1. A method for stimulating healing of a damaged group of trabecular meshwork cells comprising the step of:

exposing said cells to a dosage of an antimitotic, said dosage being in a concentration low enough to stimulate healing of said cells.

5,304,563

2-SUBSTITUTED QUINOLINES, AND THEIR USE IN MEDICAMENTS

Siegfried Raddatz, Cologne; Klaus-Helmut Mohrs; Michael Matzke, both of Wuppertal; Romanis Fruchtmann, Cologne; Armin Hatzelmann, Constance; Christian Kohlsdorfer, Erftstadt; Reiner Müller-Peddinghaus, Bergisch Galdbach, and Pia Theisen-Popp, Aachen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 834,734, Feb. 12, 1992. This application Oct. 28, 1992, Ser. No. 967,881

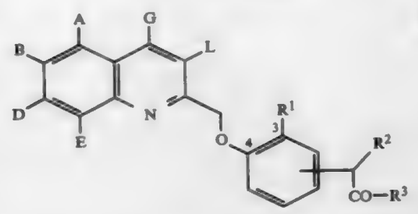
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1991, 4105551; Aug. 12, 1992, 4226649

Int. Cl.[5] C07D *403/06, 215/48;* **A61K** *31/47, 31/505*

U.S. Cl. 514—311 **15 Claims**

1. 2-substituted quinolines of the formula

(I)



in which

A represents hydroxyl, halogen, cyano, carboxyl, nitro, trifluoromethyl, trifluoromethoxy or

represents straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms, or represents aryl having 6 to 8 carbon atoms, which is optionally substituted by halogen, hydroxyl, nitro or cyano,

R^1 represents halogen, cyano, nitro, azido, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, or

represents straight-chain or branched alkoxy or acyl each having up to 8 carbon atoms, or

represents straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by hydroxyl or alkoxy having up to 6 carbon atoms, or

represents aryl having 6 to 10 carbon atoms, or

represents straight-chain or branched alkenyl having up to 6 carbon atoms, or represents a group of the formula $—NR^4R^5$, in which

R^4 and R^5 are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, phenyl, acetyl or benzoyl, or

R^1 represents a member selected from the group consisting of pyrryl, pyrazolyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, furyl and thienyl,

R^2 represents cycloalkyl or -alkenyl having 3 to 12 carbon atoms,

R^3 represents a radical of the formula $—OR^6$ or $NR^7—SO_2—R^8$,

in which

R^6 denotes hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, or phenyl,

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5,304,562

17 β-SUBSTITUTED AZA-ANDROSTANE DERIVATIVES

Michel Biollaz, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

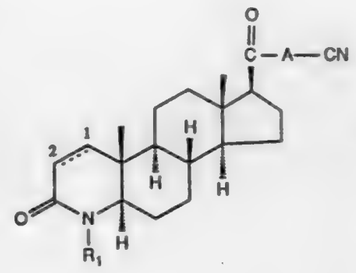
Filed Sep. 30, 1992, Ser. No. 954,081

Claims priority, application Switzerland, Oct. 9, 1991, 2978

Int. Cl.[5] C07D *221/02*

U.S. Cl. 514—284 **10 Claims**

1. A compound of the formula:



(I)

wherein carbon atoms 1 and 2 are linked by a single bond or a double bond, R_1 is hydrogen, methyl or ethyl, and A is a group of the formula $—N(—R_3)—X—$; a group of the formula $—N(—R_3)—Y—Phe—$; a group of the formula —O—X—; wherein X is as defined above, or a group —O—Y—Phe—; wherein Y and Phe are as defined above

R_3 is hydrogen or C_1–C_4alkyl;

X is C_3–C_6cycloalkylidene;

Y is a direct bond or C_1–C_6alkylene; and

Phe is

(a) a phenylene radical which is unsubstituted or substituted, in addition to the cyano group, by one, two or three further substituents selected from the group consisting of halogen, C_1–C_4alkyl, C_1–C_4alkoxy and cyano;

(b) a phenylene radical which is substituted, in addition to the cyano group, by one, two or three hydroxy groups;

(c) a phenylene radical which is substituted, in addition to the cyano group, by one hydroxy group and one or two further substituents selected from the group consisting of halogen, C_1–C_4alkyl and cyano groups;

(d) a phenylene radical which is substituted, in addition to the cyano group, by two hydroxy groups and one halogen, C_1–C_4alkyl or cyano group;

(e) a phenylene radical which is substituted, in addition to the cyano group, by one or two nitro groups;

(f) a phenylene radical which is substituted, in addition to the cyano group, by one nitro group and one or two further substituents selected from the group consisting of halogen, C_1–C_4alkyl, C_1–C_4alkoxy and cyano groups;

(g) a phenylene radical which is substituted, in addition to the cyano group, by two nitro groups and one halogen, hydroxy, C_1–C_4alkyl, C_1–C_4alkoxy or cyano group;

(h) a phenylene radical which is substituted, in addition to the cyano group, by one nitro group and one or two hydroxy groups;

(i) a phenylene radical which is substituted, in addition to the cyano group, by one, two or three alkoxycarbonyl groups;

(j) a phenylene radical which is substituted, in addition to the cyano group, by one alkoxycarbonyl group and one or two further substituents selected from the group consisting of halogen, C_1–C_4alkyl, C_1–C_4alkoxy, nitro and cyano groups; or

(k) a phenylene radical which is substituted, in addition to the cyano group, by two alkoxycarbonyl groups and one halogen, C_1–C_4alkyl, C_1–C_4alkoxy, nitro or cyano group.

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R^7 denotes hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, and

R^8 denotes aryl having 6 to 10 carbon atoms, which is optionally mono- or disubstituted by identical or different substituents from the series comprising halogen, cyano, hyroxyl, nitro, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, or by straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms, or denotes straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by phenyl, which in turn can be substituted by halogen, cyano, nitro, trifluoromethyl, trifluoromethoxy, trifluoromethylthio or hydroxyl, or by straight-chain or branched alkyl or alkoxy each having up to 6 carbon atoms,

and their physiologically acceptable salts.

5,304,564

INSECTICIDAL GUANIDINE DERIVATIVES

Shin-ichi Tsuboi; Koichi Moriya, both of Tochigi; Yumi Hattori; Shinzaburo Sone, both of Ibaragi, and Katsuhiko Shibuya, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

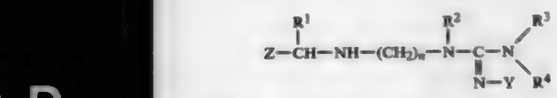
Filed Dec. 7, 1992, Ser. No. 987,510

Claims priority, application Japan, Dec. 17, 1991, 3-352861

Int. Cl.[5] C07D *213/61;* A01N *43/40*

U.S. Cl. 514—332 **8 Claims**

1. A guanidine derivative of the formula



(I)

wherein

Z is 2-chloro-5-pyridyl,

R^1 is hydrogen or C_{1-4} alkyl,

R^2 is hydrogen, C_{1-4} alkyl, C_{3-4} alkynyl, C_{3-4} alkenyl or 2-chloro-5-pyridylmethyl,

R^3 is hydrogen, halogen, C_{1-4} alkyl, C_{3-4} alkynyl, C_{3-4} alkenyl, benzyl or Z—C(R^1)H—,

R^4 is hydrogen, halogen, C_{1-4} alkyl, C_{3-4} alkynyl, C_{3-4} alkenyl, benzyl or Z—C(R^1)H—,

n is 2 or 3, and

Y is nitro or cyano.

5,304,565

NITROGEN CONTAINING HETEROCYCLIC COMPOUNDS, THEIR PRODUCTION AND USE

Akira Morimoto, Osaka, and Kohei Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

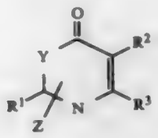
Filed Mar. 7, 1991, Ser. No. 666,037

Claims priority, application Japan, Mar. 7, 1990, 2-56205; Mar. 7, 1990, 2-56206; Mar. 20, 1990, 2-71051

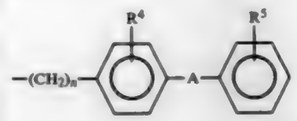
Int. Cl.[5] A61K *31/44, 31/505;* C07D *213/63, 239/90*

U.S. Cl. 514—340 **23 Claims**

1. A compound of the formula:



wherein Y is CH; R^1, optionally bound through a hetero atom, is (i) a hydrocarbon residue which may be substituted or (ii) a heteroaryl group; R^2 and R^3 which are the same or different, are each independently hydrogen, cyano, nitro, optionally substituted lower alkyl, or —COD wherein D is alkoxy, hydroxy, halogen, or optionally substituted amino; the dotted line is a chemical bond; Z is bound to a hetero nitrogen atom and is a group having the formula:



wherein R^4 is hydrogen, halogen or nitro, and R^5 is a residue capable of forming an anion or a residue convertible into an anion; A is a direct bond or a spacer having atomic length of two or less between the phenylene group and the phenyl group; and n is an integer of 1 or 2; or a pharmaceutically acceptable salt thereof.

5,304,566

PYRIDINE COMPOUNDS WHICH HAVE USEFUL INSECTICIDAL UTILITY

Keiichi Ishimitsu; Junji Suzuki; Haruhito Ohishi; Tomio Yamada; Renpei Hatano; Nobuo Takakusha, and Jun Mitsui, all of Odawara, Japan, assignors to Nippon Soda Co., Ltd, Chiyoda, Japan

PCT No. PCT/JP90/01282, § 371 Date Jul. 9, 1991, § 102(e) Date Jul. 9, 1991, PCT Pub. No. WO91/04965, PCT Pub. Date Apr. 18, 1991

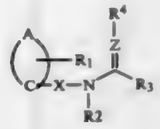
PCT Filed Oct. 4, 1990, Ser. No. 700,165

Claims priority, application Japan, Oct. 6, 1989, 1-259666; Dec. 27, 1989, 2-56611; May 2, 1990, 2-115246; Jul. 26, 1990, 2-196258

Int. Cl.[5] C07D *213/36;* A01N *43/36*

U.S. Cl. 514—357 **16 Claims**

1. An insecticidal compound of the formula



wherein

A completes a 5 or 6 membered aromatic ring having one heteroatomic ring member comprising nitrogen, provided, however, that the ring is not unsubstituted 2-pyridyl;

R_1 is hydrogen or C_{1-5}alkyl; C_{1-5}haloalkyl, C_{1-5}alkoxy, C_{1-5}alkylthio, C_{1-5}alkylsulfonyl, cyano, halogen, or C_{1-5}dialkylamino;

X is C_{1-3}alkylene or C_{1-3}alkylidene;

R_2 is hydrogen, carbamoyl, monoalkylcarbamoyl, C_{1-5}dialkylcarbamoyl, thiocarbamoyl, monoalkylthiocarbamoyl, sulfamoyl, monoalkylsulfamoyl, C_{1-5}dialkylsulfamoyl, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkenyl, aryl, or the radical

—Y—R_5

wherein

Y is 0, $S(O)_n$, CO, CS or CO_2, n is 0, 1 or 2,

R_5 is hydrogen, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkenyl, or aryl;

R_3 is hydrogen, C_{1-5}alkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{3-8}cycloalkyl, or C_{3-8}cycloalkenyl;

R_4 is cyano or nitro;

Z is CH or N;

and an insecticidal acceptable salt thereof.

5,304,567

BIOCIDAL COMBINATIONS CONTAINING 4,5-DICHLORO-2-CYCLOHEXYL-3-ISOTHIAZOLONE AND CERTAIN COMMERCIAL BIOCIDES

Jemin C. Hsu, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 52,014, Apr. 22, 1993, Pat. No. 5,273,987, which is a division of Ser. No. 964,233, Oct. 21, 1992, Pat. No. 5,236,888, which is a division of Ser. No. 844,254, Mar. 2, 1992, Pat. No. 5,185,355, which is a division of Ser. No. 625,281, Dec. 10, 1990, Pat. No. 5,157,045. This application Oct. 5, 1993, Ser. No. 131,814

Int. Cl.[5] A01N *37/34, 43/36, 43/80, 47/10*

U.S. Cl. 514—372 **9 Claims**

1. A microbicidal composition comprising a synergistic mixture, the first component of which is 4,5-dichloro-2-cyclohexyl-3-isothiazolone and one or more of the second component of which is selected from the group consisting of: 3-iodo-2-propynylbutylcarbamate, 1,2-dibromo-2,4-dicyanobutane, tetrachloroisophthalonitrile and 2-n-octyl-3-isothiazolone, wherein the weight ratio of first component to second component is in the range of from about 8:1 to about 1:4000.

5,304,568

ETHYL-TRIAZOLYL DERIVATIVES

Jürgen Scherkenbeck, Leverkusen; Michael Lindemann, Hamm-/Sieg; Stefan Dutzmann, Hilden, and Heinz-Wilhelm Dehne, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

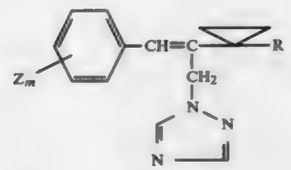
Division of Ser. No. 42,339, Apr. 2, 1993, Pat. No. 5,266,584. This application Aug. 6, 1993, Ser. No. 103,872

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1992, 4212424; Dec. 4, 1992, 4240867

Int. Cl.[5] A01N *43/653;* C07D *249/08*

U.S. Cl. 514—383 **8 Claims**

1. An ethyl-triazolyl derivative of the formula



in which

R represents halogen,

Z represents halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halogenoalkyl having 1 or 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy having 1 or 2 carbon atoms and 1 to 5 halogen atoms, phenyl, phenoxy, nitro or alkoximinoalkyl having 1 to 4 carbon atoms in the alkoxy moiety and 1 to 4 carbon atoms in the alkyl moiety and

m represents the numbers 0, 1, 2 or 3,

or an addition product thereof with an acid or metal salt.

5,304,569

COMPOSITIONS AND THEIR USE IN LOWERING INTRAOCULAR PRESSURE

Risto Lammintausta, Turku; Arto Karjalainen, Oulu; Ewen MacDonald; Arto Urtti, both of Kuopio; Raimo Virtanen, Rusko, all of Finland, and Thomas Yorio, Burleson, Tex., assignors to Orion-yhtyma Oy, Espoo, Finland

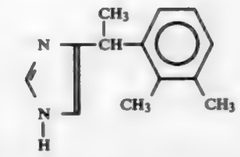
Filed Oct. 31, 1990, Ser. No. 607,398

Claims priority, application United Kingdom, Nov. 13, 1989, 8925618; Dec. 14, 1989, 8928288

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—396 **5 Claims**

1. A method of lowering intraocular pressure in a mammal comprising administering to a subject in which such pressure lowering is desired, a compound of the formula:



(I)

or a stereoisomer or pharmaceutically acceptable salt thereof in an amount sufficient to achieve the desired lowering in pressure.

5,304,570

PHARMACEUTICAL COMPOSITION USEFUL FOR THE TREATMENT OF CARDIOVASCULAR DISEASES

Cesare Casagrande, Arese, and Luciano Licciardello, Monza, both of Italy, assignors to Zambon Group S.P.A., Vicenza, Italy

Filed Jul. 11, 1989, Ser. No. 378,036

Claims priority, application Italy, Jul. 15, 1988, 21369

Int. Cl.[5] A61K *31/40;* C07D *207/00*

U.S. Cl. 514—423 **2 Claims**

1. (S,S)-N-(3-(4-methoxybenzoylthio)-2-methyl-propionyl)-proline.

5,304,571

UNBUFFERED PREMIXED RANITIDINE FORMULATION

Douglas G. Johnson, Grayslake, and Allan E. Titus, Round Lake, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 793,043, Nov. 15, 1991, Pat. No. 5,169,864. This application Jul. 8, 1992, Ser. No. 910,467

Int. Cl.[5] A61K *31/34;* A61L *2/00*

U.S. Cl. 514—471 **4 Claims**

1. A sterile pharmaceutical composition comprising:

a sterile premixed unbuffered aqueous formulation containing an effective amount of ranitidine for the treatment of conditions mediated through histamine H_2 receptors, said formulation not having added, prior to administration or dispensing, any added buffer and the composition being sterile filled into a container.

5,304,572

N-ACETONYLBENZAMIDES AND THEIR USE AS FUNGICIDES

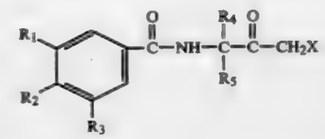
Enrique L. Michelotti, Fort Washington, and David H. Young, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 1, 1992, Ser. No. 984,137

Int. Cl.[5] A01N *47/46, 47/48;* C07C *331/12, 331/20*

U.S. Cl. 514—514 **30 Claims**

1. A compound of the formula:



wherein,

R_1 and R_3 are each independently halo or (C_1–C_4) alkyl;

R_2 is (C_1–C_4)alkyl, (C_2–C_4)alkenyl, (C_2–C_6)alkynyl, (C_1–C_4)alkoxy, or cyano;

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R_4 and R_5 are each independently (C_1–C_4)alkyl, provided that at least one of R_4, R_5 is (C_2–C_4)alkyl; and

X is halo, thiocyano or isothiocyano;

or an agronomically acceptable salt thereof.

5,304,573

HYDRAZONE DERIVATIVES, PROCESSES FOR PRODUCTION THEREOF, AND USES THEREOF

Tomokazu Hino, Ibaraki; Nobuharu Andoh, Osaka; Hiroshi Hamaguchi, Kyoto, and Atsushi Kanaoka, Kawachinagano, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

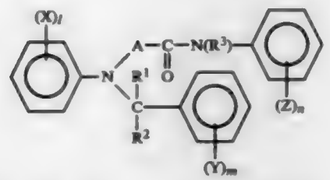
Filed Nov. 13, 1991, Ser. No. 791,227

Claims priority, application Japan, Nov. 17, 1990, 2-312414; Nov. 30, 1990, 2-334471

Int. Cl.[5] A01N *37/34*; C07C *255/50, 255/51*

U.S. Cl. 514—522 13 Claims

1. A hydrazone derivative represented by the general formula (I):



(I)

wherein each of R^1, R^2 and R^3 independently represents a hydrogen atom, or an alkyl group having 1 to 5 carbon atoms; A represents —N=C(R^4)— or —NH—CH(R^4)— (wherein R^4 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms); X, which may be the same or different, represents a halogen atom, nitro group, an alkyl group having 1 to 5 carbon atoms, a haloalkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an alkylthio group having 1 to 5 carbon atoms, an alkylsulfinyl group having 1 to 5 carbon atoms, or an alkylsulfonyl group having 1 to 5 carbon atoms; Y, which may be the same or different, represents a halogen atom, cyano group, nitro group, an alkyl group having 1 to 5 carbon atoms, a haloalkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a haloalkoxy group having 1 to 5 carbon atoms, an alkylthio group having 1 to 5 carbon atoms, an alkylsulfinyl group having 1 to 5 carbon atoms, an alkylsulfonyl group having 1 to 5 carbon atoms, a haloalkylthio group having 1 to 5 carbon atoms, a haloalkylsulfinyl group having 1 to 5 carbon atoms, a haloalkylsulfonyl group having 1 to 5 carbon atoms, an alkynyl group having 2 to 5 carbon atoms, or an alkoxycarbonyl group having 1 to 5 carbon atoms; Z, which may be the same or different, represents a halogen atom, nitro group, cyano group, an alkyl group having 1 to 5 carbon atoms, a haloalkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a haloalkoxy group having 1 to 5 carbon atoms, an alkylthio group having 1 to 5 carbon atoms, a haloalkylthio group having 1 to 5 carbon atoms, an alkylsulfinyl group having 1 to 5 carbon atoms, a haloalkylsulfinyl group having 1 to 5 carbon atoms, an alkylsulfonyl group having 1 to 5 carbon atoms, a haloalkylsulfonyl group having 1 to 5 carbon atoms, a haloalkylsulfonyloxy group having 1 to 5 carbon atoms, an alkylcarbonyl group having 1 to 5 carbon atoms, or phenoxy group; l, m and n each represents 0 or an integer of 1 to 5, said compound containing at least one cyano group.

5,304,574

METHODS OF TREATMENT OF CLINICAL CONDITIONS USING PANTOTHENIC ACID

Lit-Hung Leung, Room 502, Dragon Seed Building, 39 Queen's Road Central, Hong Kong, Hong Kong

Continuation of Ser. No. 713,965, Jun. 11, 1991, abandoned. This application Aug. 7, 1992, Ser. No. 927,189

Claims priority, application United Kingdom, Feb. 11, 1991, 9102830

Int. Cl.[5] A01N *37/12, 37/44*; A61K *31/195*

U.S. Cl. 514—563 7 Claims

1. A method for treating a human being suffering from chronic bronchial asthma, acute rhinitis, disseminated lupus erythematosus or neurodermatitis which comprises administering to said human being a therapeutically effective amount of pantothenic acid or a derivative thereof which is converted to pantothenic acid in the body.

5,304,575

USE OF BEZAFIBRATE FOR TREATING DIABETES

Walter Beck, Mannheim, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim-Waldhof

Continuation of Ser. No. 238,930, Aug. 31, 1988, abandoned. This application Dec. 17, 1992, Ser. No. 993,525

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1987, 3729209

Int. Cl.[5] A61K *31/195, 31/175, 49/00*

U.S. Cl. 514—563 3 Claims

1. A method for reducing the insulin level in normolipidaemic patients suffering from diabetes mellitus type II, which method comprises orally administering to said patient an effective amount of bezafibrate.

5,304,576

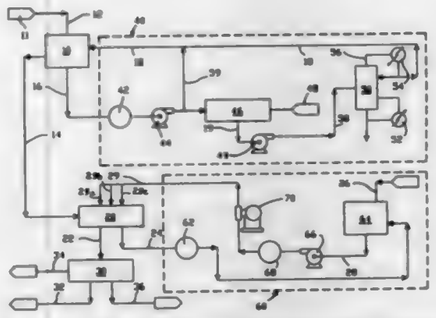
WASTE TIRE DISPOSAL AND RECYCLING

David F. Martinez, Houston, Tex., assignor to Southwestern Laboratories, Inc., Houston, Tex.

Filed Aug. 14, 1992, Ser. No. 930,071

Int. Cl.[5] C08J *11/04*

U.S. Cl. 521—41 10 Claims



1. A method for recycling a used tire comprising natural or synthetic vulcanized rubber reinforced with reinforcing fiber that does not devulcanize the rubber, said method comprising the steps of:

soaking the tire in a composition comprising an organic solvent for a time sufficient to swell the vulcanized rubber and reduce the tensile strength of the vulcanized rubber by at least about 50%;

applying a force to the soaked tire to disintegrate the vulcanized rubber from the reinforcing fiber; and

sorting the disintegrated vulcanized rubber from the reinforcing fiber.

5,304,577

MEDICAL OR DENTAL HARDENING COMPOSITIONS

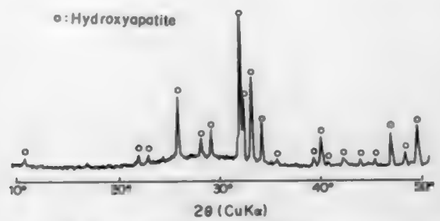
Norifumi Nagata; Takayuki Yogoro, both of Sakura; Sadayuki Yuhda, and Masahiko Ueda, both of Kawanishi, all of Japan, assignors to Onoda Cement Co., Ltd. and Sankin Kogyo Kabushiki Kaisha, Japan

Filed May 1, 1992, Ser. No. 877,895

Claims priority, application Japan, May 1, 1991, 3-100216; Jul. 19, 1991, 3-179916

Int. Cl.[5] C08K *3/32*; C03C *10/02*

U.S. Cl. 524—417 11 Claims



1. A hardening cementitous composition for prosthetic and filling usage in dental and medical applications comprising a devitrified glass-ceramic powder wherein a ceramic phase is present in a glass matrix phase which powder is dispersed in an aqueous liquid,

said ceramic phase being comprised of a material selected from the group consisting of calcium phosphate apatite, strontium substituted apatite, strontium phosphate and mixtures thereof,

said powder having been prepared by the steps of:

(a) melting at a temperature in the range of about 1400° to about 1650° C. a starting mixture comprising on a 100 weight percent basis:

0–60 weight percent CaO

3–55 weight percent SrO

5–32 weight percent P_2O_5

15–30 weight percent SiO_2

3–37 weight percent Al_2O_3

1–10 weight percent F_2

0–2 weight percent of a material selected from the group consisting of M_gO, Na_2O, B_2O_3 and mixtures thereof, provided that:

when CaO is present without SrO, the amount of CaO present is at least about 20 weight percent, and

when CaO and SrO are both present their total amount is not more than about 60 weight percent, and also the amount of CaO is not more than about 40 weight percent;

(b) quench cooling the resulting melt to a solid; and

(c) grinding said solid into a powder having an average particle size that is below about 100 micrometers.

5,304,578

PROCESS FOR PRODUCING URETHANE FOAM HAVING A HIGH DENSITY SKIN LAYER

Yutaka Tamano, Tokuyama, and Shuichi Okuzono, Kudamatsu, both of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,691

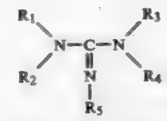
Claims priority, application Japan, Mar. 6, 1992, 4-82925; Feb. 23, 1993, 5-32893

Int. Cl.[5] C08J *9/34*

U.S. Cl. 521—51 18 Claims

1. A process for producing a polyurethane foam having a high-density skin layer, comprising the steps of:

reacting a polyol with a polyisocyanate in the presence of a blowing agent and a catalyst, wherein said blowing agent consists of water, and said catalyst is an acid addition salt of an amine having formula (I) below with an organic acid having an acid dissociation constant pKa of from 3–6:



(I)

wherein R_1, R_2, R_3, and R_4 are, independently, an alkyl group of 1 to 12 carbon atoms, or R_1 and R_2, and/or R_3 and R_4 together with the adjacent nitrogen atom form a ring; and R_5 is hydrogen, an alkyl group of 1 to 12 carbon atoms, a phenyl group, or a cycloalkyl group.

5,304,579

METHOD FOR MOLDING POLYPROPYLENE RESIN

Takahisa Hara, Kawanishi; Masahito Matsumoto, Ibaraki; Nobuhiro Usui, Takatsuki, and Shigeyoshi Matubara, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 770,924, Oct. 4, 1991, Pat. No. 5,252,269. This application Jul. 20, 1993, Ser. No. 93,684

Claims priority, application Japan, Oct. 5, 1990, 2-269203

Int. Cl.[5] B29C *67/22*

U.S. Cl. 521—51 9 Claims

1. A foamed article of a polypropylene resin produced by a method comprising steps of:

providing a pair of male and female molds (3,4) which are slidably moved at an engaged part (5) and in which a cavity clearance (t) is freely set,

starting supply of a melt of a polypropylene resin (8) containing a chemical blowing agent through a resin melt conduit (7) which is provided in one of said male and female molds when said cavity clearance (t) is 1.0 mm or less,

moving at least one of said male and female molds to increase said cavity clearance (t) during said supply of said polypropylene resin melt (8) so that a pressure on said resin melt in said mold cavity is adjusted in a range between 5 kg/cm^2 and 100 kg/cm^2,

forming a skin layer by applying a pressure of from 5 kg/cm^2 to 100 kg/cm^2 on said resin melt (8) as soon as said resin supply is finished,

further increasing said cavity clearance (t) to form a foamed core layer and

cooling a foamed article in said molds.

5,304,580

EXPANDABLE POLYOLEFIN RESIN COMPOSITIONS

Koichi Shibayama; Masao Ogasa, both of Osaka; Toshihiro Arai, Saitama, and Eiichi Takahashi, Hasuda, all of Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan

Filed Jun. 25, 1992, Ser. No. 903,585

Claims priority, application Japan, Jun. 27, 1991, 3-156807

Int. Cl.[5] C08F *36/00*

U.S. Cl. 521—150 9 Claims

1. An expandable polyolefin resin composition comprising:

(a) 40 to 100 wt. % of a polypropylene resin having a melt index of 0.5 to 12,

(b) 0 to 60 wt. % of a polyethylene resin having a melt index of 2 to 50,

(c) 0.5 to 10 parts by weight of the di(meth)acrylate of an aliphatic dihydric alcohol having a methylene group with 2 to 18 carbon atoms between the (meth)acryloyloxy groups at both ends per 100 parts by weight of the combination of the polypropylene resin (a) and the polyethylene resin (b), and

(d) 1 to 50 parts by weight of a thermally decomposable blowing agent.

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5,304,581

PROCESS FOR MOLDING MICROCELLULAR ELASTOMERIC POLURETHANE ARTICLES AND MICROCELLULAR ELASTOMERIC POLYURETHANES THEREFOR

Maurtzio Spagnoli, and Elio Scarnato, both of Cremona, Italy, assignors to C.O.I.M. Chimica Organica Industriale Milanese S.p.A., Milan, Italy

PCT No. PCT/EP91/01803, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO92/11305, PCT Pub. Date Jul. 9, 1992

PCT Filed Sep. 21, 1991, Ser. No. 915,686

Claims priority, application Italy, Dec. 24, 1990, 22534 A/90

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—159 **9 Claims**

1. In a process for molding microcellular elastomeric polyurethane articles wherein reactants are brought together in a mixing head according to known methods, the improvement comprising:

reacting a first type quasi-polyurethane having a molecular weight of from 600 to 2200 and a free isocyanate group percent content of from 14 to 3.8, with at least one of a second type of quasi-polyurethane, having a molecular weight of from 3000 to 8000 and a free hydroxyl group percent content of from 1.13 to 0.48, and a glycol and optionally in the presence of water.

5,304,582

PROCESS FOR PRODUCING POLYACETYLENE OR POLYACENE TYPE LONG CONJUGATED POLYMERS

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 926,381, Aug. 10, 1992, Pat. No. 5,248,526, which is a continuation of Ser. No. 561,595, Aug. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 342,883, Apr. 25, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 959,431

Claims priority, application Japan, Apr. 28, 1988, 63-106309; Apr. 28, 1988, 63-106310

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C08J *3/28*

U.S. Cl. 522—148 **1 Claim**

1. A process for producing a polyacetylene conjugated polymer which comprises dipping a substrate having a hydrophilic surface into a solution of a substance having a diacetylenic group $(C{\equiv}C)_2$ and SiCl group in a first nonaqueous organic solvent to form a monomolecular film of said substance on said substrate by chemical adsorption and then dipping the substrate on which said monomolecular film is deposited into a second organic solvent containing a metallic catalyst selected from the group consisting of $MoCl_5$, WCl_6, $NbCl_5$, $TaCl_5$, $Mo(CO)_5$, $W(CO)_6$, $Nb(CO)_5$, and $Ta(CO)_5$ to polymerize one of the acetylenic groups in the diacetylenic group part of said monomolecular film, and thereafter irradiating it with a high energy beam to polymerize the other acetylenic group.

5,304,583

PROCESS FOR PRODUCING POLYACETYLENE OR POLYACENE TYPE LONG CONJUGATED POLYMERS

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 926,381, Aug. 10, 1992, Pat. No. 5,248,526, which is a continuation of Ser. No. 561,595, Aug. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 342,883, Apr. 25, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 959,432

Claims priority, application Japan, Apr. 28, 1988, 63-106309; Apr. 28, 1988, 63-106310

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] C08J *3/28*

U.S. Cl. 522—148 **1 Claim**

1. A process for producing a polyacene conjugated polymer which comprises spreading on a water surface a solution of a substance having a diacetylenic group $-(-C{\equiv}C-C{\equiv}C-)-$ which substance is dissolved in an organic solvent, vaporizing off the organic solvent, gathering the molecules of the substance having a diacetylenic group remaining on the water surface by means of a barrier in the direction of the water surface, forming a built-up monomolecular film on a substrate by the Langmuir-Blodgett method, dipping the substrate on which the monomolecular film has been cumulated into an organic solvent containing a metallic catalyst selected from the group consisting of $MoCl_5$, WCl_6, $NbCl_5$, $TaCl_5$, $Mo(CO)_5$, $W(CO)_6$, $Nb(CO)_5$, and $Ta(CO)_5$ to polymerize one of the acetylenic groups in the diacetylenic group part of the monomolecular film, and irradiating it with a high energy beam to polymerize the other acetylenic group.

5,304,584

SOFT, HIGH OXYGEN PERMEABILITY OPHTALMIC LENS

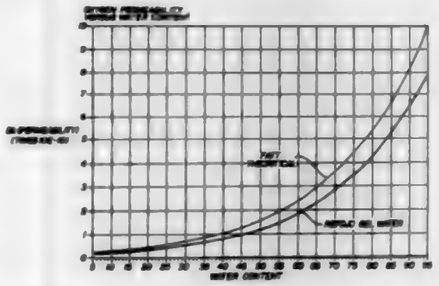
Ivan M. Nunez, Jacksonville; James D. Ford, and Frank Molock, both of Orange Park, all of Fla., assignors to Vistakon, Inc., Jacksonville, Fla.

Continuation of Ser. No. 777,767, Oct. 15, 1991, Pat. No. 5,196,458. This application Nov. 23, 1992, Ser. No. 979,969

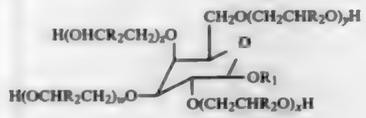
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] C08F *24/00*

U.S. Cl. 523—106 **8 Claims**



1. A method of making a prepolymer comprising the step of reacting an alkoxylated glucose of the formula:



wherein

R_1 is one of the group consisting of N-aliphatic and branched aliphatic chains having between 1 and 7 carbon atoms,

R_2 is either of the group consisting of CH_3 and H, and

$5 \leqq w+x+y+z \leqq 50$

with the reaction product of:

a) an intermediate made from reacting a UV-curable isocyanate with a polyalkylether, and

b) a diisocyanate.

5,304,585

DENTIN AND ENAMEL ADHESIVE

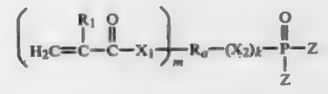
James E. Bunker, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.

Division of Ser. No. 500,683, Mar. 28, 1990, Pat. No. 5,177,121, which is a division of Ser. No. 328,753, Mar. 23, 1987, Pat. No. 4,929,746, which is a continuation of Ser. No. 33,520, Apr. 1, 1987, abandoned, which is a division of Ser. No. 665,960, Oct. 29, 1984, Pat. No. 4,669,983, which is a division of Ser. No. 234,560, Feb. 13, 1981, abandoned. This application Sep. 3, 1992, Ser. No. 940,051

Int. Cl.[5] C08F *130/02*

U.S. Cl. 523—116 **9 Claims**

1. An adhesive which comprises a polymerizable composition consisting of (a) 1 part by weight of a monomer represented by the formula



where R_1 denotes H or CH_3; R_a denotes a C_{6-40} organic residue having a valence of m+1: X_1 and X_2 denote O, S or NR', (where R' denotes H or a C_{1-6} hydrocarbon group), two of X_1 may be different from each other when m is 2; z denotes a halogen; and m is 1 or 2 and k is 0 or 1, and (b) up to 199 parts by weight of a monomer selected from the group consisting of mono-, di-, tri-, and tetrafunctional (meth)acrylates, styrene, divinyl benzene, p-chloro-styrene, (meth)acrylamide or derivatives thereof, N-(hydroxymethyl)acrylamide, (meth)acrylic acid, isobutylvinyl ether, vinyl acetate, diethyl fumarate, diethyl maleate, maleic anhydride, methyl vinyl ketone, allyl chloride, vinyl naphthalene and vinylpyridine or combinations thereof.

5,304,586

RADIOPAQUE FLUORIDE RELEASING VLC DENTAL COMPOSITES AND THE USE OF SPECIFIC FILLERS THEREIN

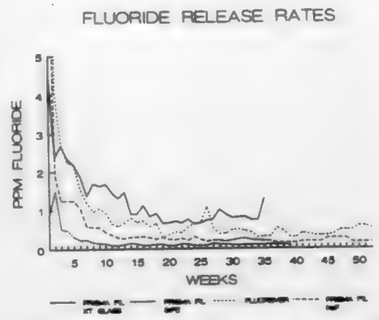
Paul D. Hammesfahr, Wyoming, Del.; Paul S. Danielson, Corning, N.Y., and Robert C. Campbell, Harrington, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Continuation-in-part of Ser. No. 304,043, Jan. 30, 1989, abandoned. This application Aug. 2, 1991, Ser. No. 739,946

Int. Cl.[5] A61K *6/06, 6/08*

U.S. Cl. 523—117 **29 Claims**

1. A dental composite composition comprising; photoactivated resin suitable for a dental restorative and translucent, phase separated, fluoride-containing glass wherein the phase separated droplets do not exceed about 1400 angstrom in size and wherein upon exposure to an aqueous environment, fluoride ions will be released therefrom at a controlled, relatively constant rate over a substantial period of time, but with essentially no development of porosity or other physical breakdown effect, and which can be melted and formed with relatively low volatilization of fluorine, said glass being essentially free of alkali metal oxides and heavy toxic metals and consisting essentially, expressed in terms of weight percent of: SiO_2: 40–56;



BaO: 15–35; Al_2O_3: 4–12; B_2O_3: 5–12: F: 2–20; ZrO: 0–7; SrO: 0–18.

5,304,587

WATER RESISTANT SECURITY INK COMPOSITION

Thomas R. Oswald, Grand Island, and James M. Raby, Youngstown, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,132

Int. Cl.[5] B42D *15/00;* **C09D** *11/00, 11/10;* **B44F** *1/12*

U.S. Cl. 523—161 **30 Claims**

1. A leach resistant ink composition comprising a resin, a glycol ether and a diphenyl guanidine compound, said composition being initially colorless but capable of exhibiting color upon contact with oxidizing agents and also being capable of resisting leaching in the absence of a complexing agent for said diphenyl guanidine compound.

5,304,588

CORE-SHELL RESIN PARTICLE

Robert L. Boysen, Lebanon; Cliff R. Mure, Highland Park; Leonard S. Scarola, Union, and Aaron S. Rhee, Belle Mead, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 639,015, Jan. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 413,704, Sep. 28, 1989, Pat. No. 4,994,534. This application May 21, 1992, Ser. No. 886,188

Int. Cl.[5] C08K *9/10, 9/02*

U.S. Cl. 523—204 **7 Claims**

1. A resin particle comprising an outer shell having a mixture of an inert particulate material and a sticky polymer said inert particulate material being present in said outer shell in an amount higher than 75% by weight based on the weight of said outer shell, and an inner core having a mixture of said sticky polymer and said inert particulate material said sticky polymer being present in said inner core in an amount higher than 90% by weight based on the weight of said inner core, said resin particle being produced by a fluidized bed polymerization process at temperatures at or above the softening point of said sticky polymers.

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5,304,589

STABILIZED POLYMERS AND THEIR PREPARATION

Neil S. Davidson; Hilda A. Leiper, both of Stirling; Colette A. A. Di Murro, Edinburgh, and Kenneth Wilkinson, Dunblane, all of Scotland, assignors to BP Chemicals Limited, London, United Kingdom

Filed Jan. 18, 1991, Ser. No. 643,723

Claims priority, application United Kingdom, Jan. 20, 1990, 9001367

Int. Cl.[5] C08K 5/57, 5/58; C08F 8/00, 279/02

U.S. Cl. 524—178 15 Claims

1. An oxidatively stabilized melt processable polymer composition comprising an olefin polymer and an antioxidant which comprises a polymer of dicyclopentadiene and a phenolic compound, said antioxidant having been reacted with said olefin polymer so that at least some of the antioxidant is in a form non-extractable with cyclohexane.

5,304,590

ACRYLONITRILE POLYMER COMPOSITIONS AND ARTICLES AND METHODS FOR THEIR PREPARATION

Edmund H. Merz, Melbourne Beach, Fla.; Roy A. White, Somers, Conn.; John P. Fouser, San Francisco, and Norman Fishman, Menlo Park, both of Calif., assignors to Solcas Polymer, Inc., San Francisco, Calif.

Filed Jan. 21, 1992, Ser. No. 822,288

Int. Cl.[5] C08F 20/44; C08J 9/12

U.S. Cl. 524—235 20 Claims

1. A method of making an extrudable polymer comprising polyacrylonitrile comprising:

(a) forming a free-flowing particulate polymer compriaing polyacrylonitrile and having from about 3 percent to about 30 percent by weight of an absorption aid therein;

(b) mixing a liquid fugitive plasticizer with the particulate polymer wherein the amount of the plasticizer is from about 30 percent to about 50 percent based on the weight of polymer and the plasticizer is uniformly absorbed in the particulate polymer; and

(c) removing at least a portion of the absorption aid from the particulate polymer formed in step (b) thereby producing a free-flowing particulate polymer containing the uniformly distributed plasticizer.

5,304,591

BLENDS OF STYRENE-ACRYLONITRILE POLYMER, STYRENE-METHYL METHACRYLATE-MALEIC ANHYDRIDE TERPOLYMER AND GLASS FILLER

Bernhard H. Nowakowsky, Speyer; Rainer Theysohn, Frankenthal; Rainer Bueschl, Roedersheim-Gronau; Klaus Muehlbach, Gruenstadt, and Graham E. McKee, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 30, 1992, Ser. No. 876,166

Claims priority, application Fed. Rep. of Germany, May 2, 1991, 4114248

Int. Cl.[5] C08J 5/08; C08K 3/40; C08L 51/06

U.S. Cl. 524—494 4 Claims

1. A thermoplastic molding composition consisting essentially of, based on the total of A, B, C and D,

A: 40–95% by weight of a copolymer A composed of, in each case based on A,

a_1: 90–50% by weight of styrene, α-methylstyrene, a nuclear-substituted styrene derivative or mixtures of these monomers and

a_2: 10–50% by weight of acrylonitrile,

B: up to 50% by weight of a graft copolymer B

b_1: prepared either by emulsion polymerization of, based on B, 20–80% by weight of a monomer mixture based either on

b_{11}: styrene/acrylonitrile in the ratio from 9:1 to 4:6 or

b_{12}: styrene/acrylonitrile/methyl methacrylate in the ratio from 19:1:1 to 8:6:6 onto 80–20% by weight of a latex, obtained as emulsion, of an elastomer based on butadiene or acrylic ester as grafting base; or by

b_2: solution polymerization of 20–80% by weight of a monomer mixture based on either

b_{21}: styrene/acrylonitrile in the ratio from 9:1 to 4:6 or

b_{22}: styrene/acrylonitrile/methyl methacrylate in the ratio from 19:1:1 to 8:6:6 onto 80–20% by weight of an elastomer, prepared in solution, based on butadiene or acrylic ester as grafting base;

C: 1–50% by weight of a reinforcing agent C based on an inorganic glass and

D: 0.1–50% by weight of a terpolymer D based on styrene/-methyl methacrylate/maleic anhydride, with or without other comonomers, with in each case 1–15% by weight of styrene and maleic anhydride and a styrene/maleic anhydride ratio of from 5:1 to 1:5.

5,304,592

MINERAL-LIKE PLASTICS

Akbar Ghahary, 64 Ricker Dr., Ringwood, N.J. 07456

Continuation-in-part of Ser. No. 788,982, Nov. 7, 1991. This application May 14, 1992, Ser. No. 882,839

Int. Cl.[5] C08K 3/10; C08G 63/48, 63/91

U.S. Cl. 524—437 13 Claims

1. A simulated mineral article which comprises a plastic material suspended within a thermoplastic matrix, the plastic material and the thermoplastic matrix being visually differentiatable, substantially immiscible and substantially isopycnic in density, the plastic material comprising both a thermoplastic and a thermoset plastic, the thermoplastic matrix consisting essentially of a thermoplastic.

5,304,593

BLENDS OF DISPERSING PHASE OF POLYPHENYLENE ETHER, A CRYSTALLINE THERMOPLASTIC MATRIX RESIN AND A MUTUAL COMPATIBILIZER

Taichi Nishio; Takashi Sanada; Satoru Hosoda, all of Chiba; Kenji Nagaoka, Osaka, and Takayuki Okada, Chiba, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 380,031, Jul. 14, 1989, abandoned, which is a division of Ser. No. 102,528, Sep. 29, 1987, abandoned. This application Sep. 30, 1992, Ser. No. 953,240

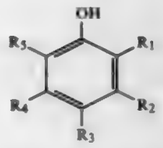
Claims priority, application Japan, Sep. 30, 1986, 61-233721

Int. Cl.[5] C08K 7/14; C08L 23/16, 71/12

U.S. Cl. 524—451 13 Claims

1. A thermoplastic resin composition comprising:

(A) a dispersing phase of 1–65 percent by weight of polyphenylene ether having a reduced viscosity of 0.4–0.60 measured in chloroform solution at 25° C. obtained by oxidation polymerization of at least one phenyl compound represented by the formula:



wherein R_1, R_2, R_3, R_4 and R_5 each represent a hydrogen atom, a halogen atom or a substituted or unsubstituted hydrocarbon residue, provided that at least one of R_1, R_2, R_3, R_4 and R_5 is a hydrogen atom and that the average particle size diameter of said dispersing phase (A) is 0.01–10 microns;

(B) a matrix phase of 35–98% by weight of crystalline thermoplastic resin, said matrix phase (B) comprising at least one resin selected from the group consisting of polyethylene, polypropylene, thermoplastic polyester, polacetal, polyphenylene sulfide and polyether ether ketone;

(C) 0.1–50% by weight of a mutual compatibilizer compatible with (A) and/or (B), wherein said mutual compatibilizer (C) is at least one member selected from the group consisting of (C)(1) a monomeric compound containing, in the molecule, at least one carboxyl group, acid anhydride group, acid amide group, imide group, carboxylate group, epoxy group, amino group, isocyanate group, oxazoline ring-containing group or hydroxy group, (C)(2) epoxy compound and (C)(3) rubber material modified with at least one compound selected from the group consisting of (C)(1) and (C)(2), wherein said rubber material is a natural or synthetic polymer material which is elastic at room temperature; and

1–50 parts by weight of (D) a fibrous reinforcing composite material having an aspect ratio of 10 or more in a shaped article, based on 100 parts by weight of said (A) and (B).

5,304,594

RESIN COMPOSITION FOR RESIN-BANDED BEARING

Katsuyuki Saitoa, Kanagawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 845,952, Mar. 4, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 124,565

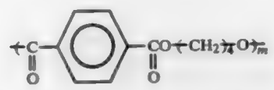
Claims priority, application Japan, Mar. 5, 1991, 3-038532

Int. Cl.[5] C08J 5/10; C08K 3/04; C08L 31/08

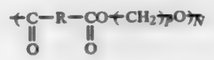
U.S. Cl. 524—495 6 Claims



1. A resin composition for a resin-banded bearing consisting essentially of (a) from 25 to 65% by weight of an aromatic polyester-aliphatic polyester type thermoplastic polyester elastomer resin polymerized by block copolymerization of polymeric 1,4-butylene terephthalate derived from aromatic dicarboxylic acids and butylene glycols having the general formula (i):



and aliphatic polyester derived from non-cyclic aliphatic dicarboxylic acids and non-cyclic aliphatic diols having the general formula (ii):



wherein R is a non-cyclic aliphatic hydrocarbon and m, n, p and R are selected such that the aromatic polyester-aliphatic polyester type thermoplastic polyester elastomer resin has a melt index according to ASTM-D-1238 of 10 to 20 g/10minutes at 230° C., (b) from 70 to 20% by weight of a thermoplastic aromatic polyester resin, and (c) from 5 to 15% by weight of a filler, based on the total amount of the aromatic polyester-aliphatic polyester type thermoplastic polyester elastomer resin, the thermoplastic aromatic polyester resin and the filler.

5,304,595

COLLAGEN-POLYMER CONJUGATES

Woonza Rhee, Palo Alto; Donald G. Wallace, Menlo Park, both of Calif.; Alan S. Michaels, Boston, Mass.; Ramon A. Burns, Jr., Fremont, Calif.; Louis Fries, Los Altos, Calif.; Frank DeLustro, Belmont, Calif., and Hanne Bentz, Newark, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Division of Ser. No. 930,142, Aug. 14, 1992, which is a division of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Dec. 30, 1992, Ser. No. 998,802

Int. Cl.[5] C08G 63/48, 63/91

U.S. Cl. 525—54.1 15 Claims

1. A pharmaceutically acceptable composition for replacing or augmenting cartilage, which composition comprises:

an effective amount of atelopeptide collagen crosslinked with a hydrophilic synthetic polymer, the composition having a density of about 0.5 to about 1.5 g/cm^3.

5,304,596

POLYOLEFIN RESIN COMPOSITIONS CONTAINING A CYCLOOLEFIN RESIN AND PROCESSES FOR THE PREPARATION THEREOF

Satoru Moriya; Akio Ishimoto, and Mamoru Takahashi, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed May 23, 1991, Ser. No. 704,888

Claims priority, application Japan, May 25, 1990, 2-135994

Int. Cl.[5] C08L 23/08, 45/00

U.S. Cl. 525—66 20 Claims

1. A polyolefin resin composition containing

(a) at least one cycloolefin resin selected from the group consisting of

(a-1) a copolymer of ethylene and cycloolefin represented by the following formula (I),

(a-2) a ring opening homopolymer of cycloolefin represented by the following formula (I),

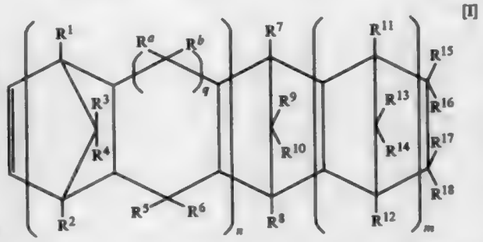
(a-3) a ring opening copolymer of at least two different cycloolefins represented by the following formula (I), and

(a-4) a hydrogenation product of the above-mentioned (a-2) or (a3),

(b) a graft modification product of the above-mentioned (a-1), (a-2), (a-3) or (a-4) with an unsaturated carboxylic acid or a derivative thereof,

(c) an α-olefin copolymer graft modified with an unsaturated carboxylic acid or a derivative thereof and having a tensile modulus at 23° C. of 0.1–2000 kg/cm^2, and

(d) polyamide, said components (a), (b), (c) and (d) amounting, based on 100 parts by weight of the composition, to 0–59.5 parts by weight, 0.5–60 parts by weight, 2–30 parts by weight and 20–60 parts by weight, respectively;



wherein n is 0 or 1, m is 0 to 3, q is 0 or 1, R^1 to R^{18}, R^a and R^b independently represent an atom or a group selected from the group consisting of hydrogen atom, halogen atom and hydrocarbon group, wherein the hydrocarbon group is selected from the group consisting of alkyl containing 1 to 6 carbon atoms and cycloalkyl containing 3 to 6 carbon atoms, R^{15} to R^{18} may be bonded together to

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form a monocyclic group or a polycyclic group which optionally has one or more double bonds.

5,304,597

THERMOPLASTIC COMPOSITIONS BASED ON A VINYL AROMATIC GRAFT COPOLYMER AND A POLYAMIDE

Dario Ghidoni; Gian C. Fasulo; Anna G. Rossi; Luigi Bonetti, all of Mantova, and Italo Borghi, Ferrara, all of Italy, assignors to ECP Enichem Polimeri S.R.L., Milan, Italy

Continuation of Ser. No. 727,900, Jul. 10, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 87,469

Claims priority, application Italy, Jul. 12, 1990, 20921 A/90

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—66 **11 Claims**

1. A thermoplastic composition, having improved mechanical properties, comprising:

(A) from 10 to 90% by weight of an impact-resistant graft copolymer consisting of

(a) a vinyl aromatic monomer

(b) an ethylenically unsaturated nitrile monomer of the formula CH_2═CR—CN, wherein R is hydrogen or C_{1-5} alkyl, the weight ratio of (a):(b) being from 90:10 to 50:50, and

(c) an ethylenically unsaturated monomer in an amount of 0.1 to 1.0% by weight, based on (A), containing a carboxylic acid group or an anhydride, amide or an ester thereof in the molecule,

said monomers being at least partially grafted on 10 to 40% by weight, based on the total weight of (A), of an ethylene-propylene-unconjugated diene rubber; and

(B) from 90–10% by weight of a polyamide resin.

5,304,598

POLYMERIC COMPOSITIONS AND METHOD FOR PREPARING THEM

Sergio Castro, Ravenna, and Alessandro Zazzetta, Cesena, both of Italy, assignors to Enichem Elastomeri S.p.A., Palermo, Italy

Continuation of Ser. No. 674,784, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 448,886, Dec. 12, 1989, abandoned. This application Apr. 24, 1992, Ser. No. 873,404

Claims priority, application Italy, Dec. 23, 1989, 23088 A/88

Int. Cl.[5] C08F *212/08, 236/06;* **C08L** *53/02*

U.S. Cl. 525—89 **2 Claims**

1. A polymeric composition comprising:

(a) from 40% to 90% by weight of a linear block copolymer having four alternating blocks, which is represented by the formula B_1-T-A_1-B_2-A_2, wherein:

A_1 and A_2 are polyvinylaromatic blocks;

B_1 and B_2 are polydiene blocks;

T is a copolymeric chain portion formed by randomly conjugated monomer units and vinylaromatic monomer units, wherein said linear block copolymer having four alternating blocks has a weight average molecular weight of from 50,000 to 300,000 and

(b) from 10% to 60% by weight of a linear block copolymer, which is represented by the formula B_3-T-A_3, wherein:

A_3 is a polyvinylaromatic block, and

B_3 is a polydiene block and T is the same as defined hereinabove wherein said linear block copolymer has a weight average molecular weight of 20,000 to 150,000.

5,304,599

LOW STRESS RELAXATION EXTRUDABLE ELASTOMERIC COMPOSITION

Glenn R. Himes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

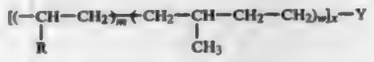
Division of Ser. No. 513,417, Apr. 23, 1990, Pat. No. 5,093,422. This application Sep. 27, 1991, Ser. No. 766,373

Int. Cl.[5] C08L *53/00*

U.S. Cl. 525—98 **8 Claims**

1. An elastomeric composition for extrusion into an elastic sheet having a stress relaxation of less than about 30 percent consisting of:

(a) an elastomeric polymer selected from the group consisting of styrene-poly(ethylene-propylene)-styrene elastomeric block copolymer and a mixture of at least 55 parts by weight of styrene-(ethylene-propylene)-styrene block copolymers per 100 parts by weight of elastomeric polymer and styrene-poly(ethylene-butylene)-styrene elastomeric block copolymers wherein the styrene-poly(ethylene-propylene)-styrene elastomeric block copolymer has the formula:



wherein m is an integer from about 38 to about 337; w is an integer from about 250 to about 930; R is selected from the group consisting of phenyl groups and substituted phenyl groups; x is an integer from about 2 to about 30; Y is coupling agent; and the weight ratio of polystyrene endblocks to poly(ethylene-propylene) endblocks ranges from about 10:90 to about 25:75; and

(b) no less than 15% by weight and no more than 28% by weight of a tackifying resin.

5,304,600

PROCESS FOR PREPARATION OF MODIFIED POLYPHENYLENE ETHER OR RELATED POLYMERS AND THE USE THEREOF IN MODIFIED HIGH TEMPERATURE RIGID POLYMER OF VINYL SUBSTITUTED AROMATICS

Laurentius N. I. H. Nelissen; Henricus C. M. Timmermans, both of Eindhoven, and Johannes M. Zijderveld, Breda, all of Netherlands, assignors to Shell Research Limited, United Kingdom

Continuation of Ser. No. 501,811, Mar. 30, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 953,267

Claims priority, application United Kingdom, Apr. 7, 1989, 8907833; Dec. 8, 1989, 8927869

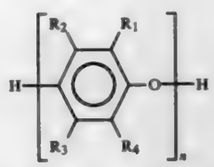
Int. Cl.[5] C08L *71/12*

U.S. Cl. 525—132 **16 Claims**

1. Process for the manufacture of modified high temperature rigid poly(vinyl substituted aromatic) compositions, comprising

(A) reacting to substantial completion of a compound of the formula:

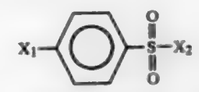
(I)



wherein R_1 and R_4 each may represent hydrogen, halogen, a phenyl group, alkenyl group, alkadienyl group, an aryloxy group, or wherein R_1 and R_4 each may represent an alkyl group or an alkoxy group, each of the latter containing 12 or less carbon atoms and each optionally substituted by halogen, cyano, hydroxy, phenyl or amino, whereas alkyl or alkoxy groups attached to the terminal phenol nucleus of the chain may be substituted by an amino, dialkylamino or a di(alkanoyl)amide, wherein the alkyl groups each contain 4 or less carbon atoms, wherein R_2 and R_3 each may represent hydrogen, halogen, a phenyl group, alkenyl group, alkadienyl group, aryloxy group, or wherein R_2 and R_3 each may represent a primary or secondary alkyl group or alkoxy group as defined for R_1 and R_4, optionally substituted by halogen, cyano,

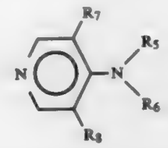
hydroxy, phenyl, and wherein R_1, R_2, R_3 and R_4 may represent different or the same groups in one repeating unit, and n represents an integer having a value of at least 50, with a para substituted phenylsulphonyl halide of the general formula:

(II)



wherein X_1 represents halogen or an alkyl group containing 1–4 carbon atoms, and which may optionally be substituted by halogen, and wherein X_2 represents halogen in the presence of a catalyst of the formula

(III)



wherein R_5 and R_6 both represent in general non-electron withdrawing groups such as alkyl groups containing from 1 to 4 carbon atoms, optionally substituted by at most one phenyl group and wherein R_7 and R_8 represent hydrogen, halogen or lower alkyl, while R_5, R_6, R_7 and R_8 may represent different or the same groups in one molecule, and an acid neutralizing agent, and in the vinyl substituted aromatic monomer as solvent; and

(B) polymerizing the vinyl substituted aromatic monomer.

5,304,601

CATALYSTS BASED ON A FAUJASITE AND ITS APPLICATION

Thierry Des Courieres, Lyon; Jean-Louis Guth, Brunstatt; Joël Patarin, Mulhouse, and Catherine Zivkov, Orthez, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR91/00287, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO91/15293, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 8, 1991, Ser. No. 777,298

Claims priority, application France, Apr. 9, 1990, 90 04502

Int. Cl.[5] B01J *29/06, 29/08*

U.S. Cl. 502—66 **12 Claims**

1. A catalyst comprising, by weight y% of an inorganic binder and z% of at least one zeolite selected from the group consisting of faujasites with a synthesis Si:Al ratio of at least 3 and dealuminated, Si:Al ratio of at least 3, faujasites, y and z being number such that $1 \leqq y \leqq 99$ and $1 \leqq z \leqq 99$ with $y+z=100$, the zeolite exhibiting an Si:Al ratio of from 3 to 30 and a parameter a_o of its cubic lattic such that 2.42 nm$\leqq a_o \leqq$2.48 and having a formula which, normalized to a cubic lattice, is

$$(uM_1^{q+})\ (vM^{n+})\ [(SiO_2)_{192-x}(AlO_2)_x]^{x-}(tH_2O)$$

wherein, M^{n+} denotes cations of at least one element of a valency n selected from the group consisting of H, B, Al, Ga, In, rare earth metals and transition metals, M_1^{q+} denotes cations of at least one metal of valency of q selected from the group consisting of alkali metals and alkaline-earth metals, and u, v, x and t denote numbers such that $t \geqq 0$ and is dependent on a degree of hydration of the zeolite, $t=0$ in the case of a completely anhydrous zeolite, and $qu+vn \geqq x$ and $0.5 x \leqq vn \leqq x$ and $6<x \leqq 48$.

11. The catalyst according to claim 1, wherein in addition to the binder and to the zeolite, it contains up to 10% by weight of the binder and zeolite combined, of at least one catalytically active metal present in the elemental state or in the form of a metal compound and selected from the group consisting of platinum, palladium, rhodium, iridium nickel, cobalt, tungsten, molybdenum and gallium.

5,304,602

PROCESS FOR PRODUCING SINTERED CERAMIC WIRE

Susumu Yamamoto; Teruyuki Murai; Nozomu Kawabe; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

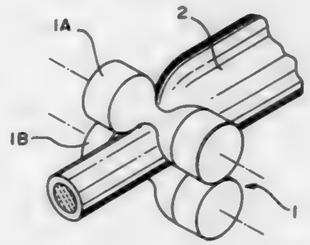
Filed Apr. 18, 1988, Ser. No. 182,489

Claims priority, application Japan, Apr. 16, 1987, 62-93972; May 2, 1987, 62-109417

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] H01L *39/12, 39/24*

U.S. Cl. 505—433 **18 Claims**



1. A process for producing a sintered composite wire, comprising:

(a) filling a metal pipe with a ceramic powder;

(b) wire-drawing the metal pipe filled with said ceramic powder using roller dies;

(c) subjecting said drawn composite to intermediate sintering;

(d) further drawing the sintered composite, using roller dies;

(e) repeating steps (b), (c) and (d) at least twice; and

(f) subjecting the composite to a heating operation to sinter said ceramic powder.

5,304,603

LEYDIG CELL STIMULATOR

C. Yan Cheng, Staten Island, and C. Wayne Bardin, New York, both of N.Y., assignors to The Population Council, New York, N.Y.

Filed Jun. 18, 1991, Ser. No. 715,904

Int. Cl.[5] A61K *37/00, 37/38*

U.S. Cl. 514—12 **12 Claims**

1. A Leydig cell stimulator comprising:

a polypeptide having a Mr of between about 17,000 and about 20,000 as determined by SDS-PAGE when measured under reducing and non-reducing conditions characterized by the ability to stimulate at least about a 200 percent increase in androgen secretion by Leydig cells as compared to said cells' basal androgen secretion level, said leydig cell stimulator being in substantially pure and isolated form.

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5,304,604

HYDROXAMIC ACID COLLAGENASE INHIBITORS

Alan H. Davidson, Witney; Jonathan P. Dickens, High Wycombe, and Michael J. Crimmin, Ascot, all of England, assignors to British Bio-technology Limited, Oxford, England

PCT No. PCT/GB89/01398, § 371 Date Apr. 15, 1991, § 102(e) Date Apr. 15, 1991, PCT Pub. No. WO90/05716, PCT Pub. Date May 31, 1990

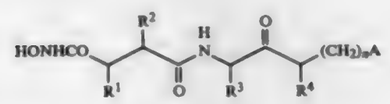
PCT Filed Nov. 23, 1989, Ser. No. 674,363

Claims priority, application United Kingdom, Nov. 23, 1988, 8827308

Int. Cl.[5] C07C *259/06*; C07D *207/335*; A61K *31/395, 31/13*

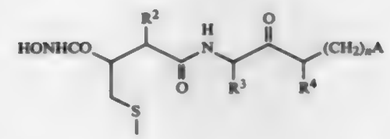
U.S. Cl. 514—238.2 **12 Claims**

1. A compound of general formula I:



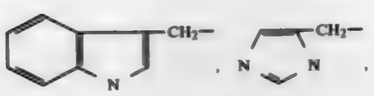
wherein:

R^1 represents a hydrogen atom or a C_1–C_6 alkyl, C_2–C_6 alkenyl, phenyl, phenyl(C_1–C_6)alkyl, C_1–C_6 alkylthiomethyl, phenylthiomethyl, phenylthiomethyl substituted with 1 to 4 substituents, each of which independently is C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, thiol, C_1–C_6 alkylthiol amino, fluoro, chloro, bromo, iodo, trifluoromethyl, or nitro; or phenyl(C_1–C_6)alkylthiomethyl pyridine-2-thiomethyl, pyridine-4-thiomethyl, thiophene-2-thiomethyl or pyrimidine-2-thiomethyl group; or R^1 represents —SR^x wherein R^x represents a group



R^2 represents a hydrogen atom or a C_1–C_6 alkyl, C_1–C_6 alkenyl, phenyl(C_1–C_6) alkyl, C_3–C_8 cycloalkyl(C_1–C_6)alkyl, or C_3–C_8 cycloalkenyl(C_1–C_6)alkyl;

R^3 represents hydrogen, methyl, isopropyl, 2-methylpropyl, 1-methylpropyl, benzyl, para-hydroxybenzyl, hydroxymethyl, 1-hydroxyethyl, $HSCH_2$, $CH_3SCH_2CH_2$, NH_2COCH_2, $NH_2COCH_2CH_2$, $NH_2CH_2CH_2CH_2CH_2$, $NH_2C(NH)NHCH_2CH_2CH_2$, $(COOH)CH_2CH_2$, $(COOH)CH_2$,



C_1–C_6 alkyl, benzyl, (C_1–C_6)alkoxybenzyl, benzyloxy(C_1–C_6)alkyl or benzyloxy benzyl group;

R^4 represents a hydrogen atom or a methyl group;

n is an integer from 1 to 6; and

A represents the group —NH_2, a substituted acyclic amine of the form —$N(R^A)R^B$, wherein one of R^A and R^B is a C_1–C_6 alkyl group and the other is hydrogen or a C_1–C_6 alkyl group; or A represents the group pyridyl, imidazolyl, oxazolyl, thiazolyl, benzthiazolyl, benzoxazolyl, morpholinyl, pyrrolidinyl or piperidinyl;

or a salt or N-oxide or (where the compound is a thio-compound) a sulphoxide or sulphone thereof.

5,304,605

BLOOD SEPARATION COMPOSITION

Kazunori Murakami, Kusatsu, and Tetsuo Takuchi, Yao, both of Japan, assignors to Nissho Corporation, Osaka and Hokoku Oil Mill Co., Ltd., Yao, both of Japan

Filed Jun. 25, 1992, Ser. No. 904,325

Claims priority, application Japan, Jun. 25, 1991, 3-153236

Int. Cl.[5] C08K *5/20*

U.S. Cl. 524—227 **7 Claims**

1. In a blood separation composition comprising:

a gel-like material as a main ingredient and a thixotropic agent added to and blended with the gel-like material; the improvement wherein the thixotropic agent is a fatty acid amide or a mixture of fatty acid amides.

5,304,606

THERMOPLASTIC RESIN COMPOSITION

Yohzoh Yamamoto, Yamaguchi, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 821,053, Jan. 16, 1992, Pat. No. 5,262,485. This application Mar. 15, 1993, Ser. No. 31,491

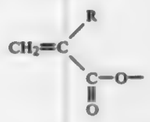
Claims priority, application Japan, Jan. 16, 1991, 3-3178; Dec. 17, 1991, 3-333721

Int. Cl.[5] C08L *33/06*

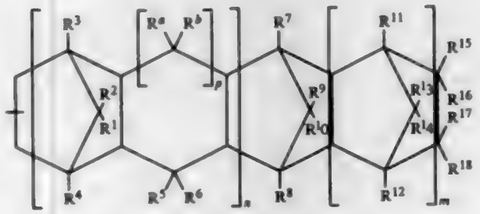
U.S. Cl. 525—210 **13 Claims**

1. A moldable thermoplastic resin composition having high heatresistance, rigidity, dimension accuracy and impact resistance, said composition consisting essentially of:

(A) a polymer comprising recurring units derived from a polycyclic (meth)acrylate represented by the following formula (I)



(I)



wherein m is 0 or a positive integer, n is 0 or 1, m+n≧1 R is hydrogen or methyl, R^1–R^{18} are each independently selected from the group consisting of hydrogen atom, halogen atom and hydrocarbon groups, or R^{15}–R^{18}, linked together, form a monocyclic or polycyclic group which may have a double bond, or R^{15} and R^{16}, or R^{17} and R^{18} form an alkylidene group, p is 0 or 1, and when p is 1, R^a and R^b each independently represent a hydrogen atom or a hydrocarbon group, and

(B) at least one soft polymer having a glass transition temperature of not higher than 0° C., an intrinsic viscosity (η) as measured in decalin at 135° C., of 0.01 to 10 dl/g, and a crystallinity index as measured by x-ray diffraction of 0 to 10% wherein said at least one soft polymer is selected from the group consisting of:

(a) an aromatic vinyl hydrocarbon/conjugated diene soft polymer, a hydrogenated product thereof, a graft modified product thereof;

(b) a homopolymer of an alkyl (meth)acrylate having 2 to 14 carbon atoms; and

(c) a copolymer of an alkyl (meth) acrylate having 2 to 14 carbon atoms,

such that the proportion by weight of the (A) polymer to the (B) soft polymer of 93:7 to 60:40.

5,304,607

COATING COMPOSITIONS

Alastair R. Marrion, Northumberland, United Kingdom, assignor to Courtaulds Coatings (Holdings) Limited, London, United Kingdom

PCT No. PCT/GB90/01027, § 371 Date Dec. 31, 1991, § 102(e) Date Dec. 31, 1991, PCT Pub. No. WO91/00321, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 3, 1990, Ser. No. 781,230

Claims priority, application United Kingdom, Jul. 4, 1989, 8915356

Int. Cl.[5] C08L *31/00, 35/00, 71/02*

U.S. Cl. 525—186 **7 Claims**

1. A coating composition, comprising:

(A) An anhydride-functional polymer containing at least two cyclic carboxylic acid anhydride groups per molecule, and

(B) an amine-functional polymer, wherein the amine-functional polymer (B) contains at least two secondary amine groups per molecule, and wherein in said amine-functional polymer (B) the alpha and beta positions with respect to the amine nitrogen atoms are substantially free from hydroxy and ether oxygen atoms and from amino nitrogen atoms, and wherein in said amine-functional polymer (B) the carbon atoms directly bonded to the amine nitrogen atoms are not tertiary carbon atoms.

5,304,608

TWO PIECE GOLF BALL

Yoshikazu Yabuki, and Seiichiro Endo, both of Akashi, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Oct. 30, 1992, Ser. No. 968,675

Claims priority, application Japan, Nov. 1, 1991, 3-287495

Int. Cl.[5] C08F *279/02*; A63B *37/00, 37/02*

U.S. Cl. 525—274 **4 Claims**

1. A two piece golf ball comprising a core and a cover, wherein the core has a compression deformation of 3.7 to 4.5 mm caused by applying from 10 kg of an initial load to 130 kg of a final load, wherein the core is prepared from a rubber composition comprising 100 parts by weight of a cis-1,4-polybutadiene rubber and 20 to 30% by weight of a Group IIA or IIB metal salt of (meth)acrylic acid, and wherein the cover has a stiffness modulus of 3,700 to 4,500 kg/cm^2 and a thickness of 2.2 to 2.9 mm.

5,304,609

GRAFT COPOLYMERS HAVING IMPROVED PHASE BINDING BETWEEN THE GRAFT BASE AND THE GRAFTED-ON POLYMER PHASE

Klaus Kohlhammer, Marktl; Hermann Petersen, Burghausen, and Walter Dobler, Tann, all of Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 28, 1993, Ser. No. 967,662

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1991, 4135984

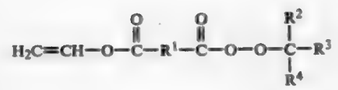
Int. Cl.[5] C08F *263/04*

U.S. Cl. 525—309 **3 Claims**

1. Graft copolymers having improved phase binding between a graft base and a grafted-on polymer phase, prepared from

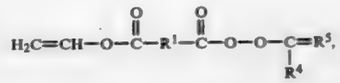
a) a grafted-on polymer phase containing one or more monomers selected from the group consisting of (meth)acrylates of alcohols having 1 to 10 carbon atoms, vinyl esters of saturated aliphatic carboxylic acids having 2 to 10 carbon atoms, olefins, vinyl halides, styrene and styrene derivatives, and

b) a peroxy group-containing copolymer phase containing from 0.01 to 20% by weight of an olefinically unsaturated peroxy compound of the general formula I or II



(I)

or



(II)

where R^1 is a single bond or a linear or branched alkyl chain having 1 to 10 carbon atoms or a cycloalkyl group having 3 to 10carbon atoms, R^2 and R^3 are an alkyl group having 1 to 4 carbon atoms, R^4 is an alkyl group or an alkyl-substituted phenyl group having 1 to 12 carbon atoms or a cycloalkyl group having 3 to 12 carbon atoms, and R^5 is a cycloalkyl group having 3 to 12 carbon atoms and, from 80 to 99.9% by weight of at least one comonomer selected from the group consisting of the (meth)acrylates of selected alcohols having 1 to 10 carbon atoms, vinyl esters of saturated aliphatic carboxylic acids having 2 to 10 carbon atoms, olefins, vinylaromatic compounds, vinyl halides and vinyl ethers.

5,304,610

AMPHOTERIC COPOLYMER DERIVED FROM VINYLPYRIDINE AND ACETOXYSTYRENE

Apurba Bhattacharya; Kenneth G. Davenport; Michael T. Sheehan, and James R. Sounik, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Summerville, N.J.

Division of Ser. No. 3,350, Jan. 12, 1993. This application Apr. 2, 1993, Ser. No. 42,358

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] C08F *26/06*

U.S. Cl. 525—327.1 **1 Claim**

1. An amphoteric polymer produced by the process which comprises reacting vinylpyridine with acetoxystyrene and then subjecting the resultant polymer to hydrolysis, said amphoteric polymer further characterized by containing from about 1 to about 99 weight percent of the vinylpyridine and from about 1 to about 99 weight percent of the acetoxystyrene.

5,304,611

COPOLYMERS OF VINYL DIOXOLANES AND IMIDIZED DERIVATIVES OF MALEIC ANHYDRIDE

Richard W. Blevins, Rochester, and S. Richard Turner, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,304

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—327.2 **7 Claims**

1. A copolymer comprising polymerized repeating monomeric units of (a) a 4-vinyl-1,3-dioxolane reactant, and (b) an imidized derivative of maleic anhydride.

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5,304,612

PLURAL LIQUID PACK TYPE HEAT CURABLE POLYISOCYANATE-GLYCIDYL ACRYLATE COMPOUND RESINOUS COMPOSITION AND PROCESS FOR PRODUCING SHAPED RESIN ARTICLE THEREFROM

Hiroyuki Umetani, and Takeyoshi Yamada, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 17, 1991, Ser. No. 812,058

Claims priority, application Japan, Dec. 25, 1990, 2-412881; Mar. 20, 1991, 3-80374; Apr. 30, 1991, 3-124417

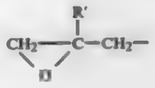
Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—528 **4 Claims**

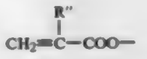
1. A plural liquid pack-type heat-curable polyisocyanate-glycidyl acrylate compound resinous composition comprising:

(A) a first individual liquid component comprising (a) at least one polyisocyanate compound having at least two isocyanate groups; and

(B) a second individual liquid component comprising (b) at least one glycidyl acrylate compound having a group of the formula:



and a group of the formula:



in which formulae, R′ and R″ respectively and independently represent a member selected from the group consisting of a hydrogen atom and a methyl group, and (B) further comprises at least one member selected from the group consisting of (e) polyol compounds having at least two hydroxyl groups and (f) polyepoxy compounds having at least two epoxy groups; and

(c) a cyclization catalyst,

at least one of the first and second individual liquid components (A) and (B) containing (d) a radical catalyst, and wherein he hydroxyl groups of the polyol compound (e) in the second individual liquid component (B) are present in an amount of 5 to 75 equivalents per 100 equivalents of a difference between the amounts in equivalent of isocyanate groups of the polyisocyanate compound (a) in the first individual liquid component (A) and the total epoxy groups of the glycidyl acrylate compound (b) and the polyepoxy compound (f) in the second individual liquid component (B).

5,304,613

POLYANILINE DERIVATIVE CONTAINING AT LEAST A 2-BUTENYLENE STRUCTURE

Osamu Oka, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

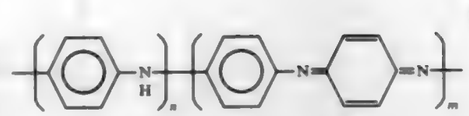
Filed Sep. 30, 1992, Ser. No. 953,826

Claims priority, application Japan, Oct. 3, 1991, 3-282007; Oct. 8, 1991, 3-287213

Int. Cl.[5] C08G *73/00*

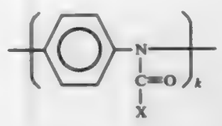
U.S. Cl. 525—540 **5 Claims**

1. A polyaniline derivative comprising at least one structural unit of formula (I)



(I)

wherein m is an integer of 0 or greater, and n is an integer of 2 or greater, and at least one structural unit of formula (II)



(II)

wherein k is an integer from 1 to 2,500, and X is a group having at least a 2-butylene structure.

5,304,614

PROCESS FOR THE PREPARATION OF AN OLEFIN POLYMER USING METALLOCENES HAVING SPECIFICALLY SUBSTITUTED INDENYL LIGANDS

Andreas Winter, Glashütten/Taunus; Martin Antberg, Hofheim am Taunus; Volker Dolle; Jürgen Rohrmann, both of Kelkheim, and Walter Spaleck, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

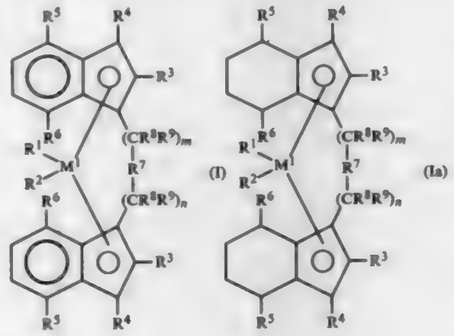
Filed Oct. 14, 1992, Ser. No. 960,893

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134088

Int. Cl.[5] C08F *4/42*

U.S. Cl. 526—127 **8 Claims**

1. A process for the preparation of an olefin polymer by polymerization or copolymerization of an olefin of the formula R^a—CH=CH—R^b, in which R^a and R^b are identical or different having 1 to 14 carbon atoms, or R^a and R^b, together with the atoms joining them, can form a ring, at a temperature of −60° to 200° C., under a pressure of 0.5 to 100 bar, in solution, in suspension or in the gas phase, in the presence of a catalyst which is formed from the components comprising a metallocene as the transition metal compound and a cocatalyst, wherein the metallocene is a compound of the formula I or Ia



(I) (Ia)

in which

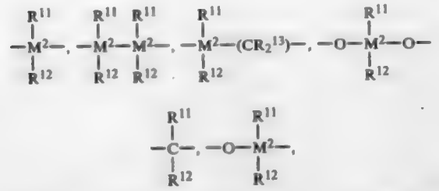
M^1 is a metal of group IVb, Vb or VIb of the periodic table,

R^1 and R^2 are identical or different and are a hydrogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

R^3 and R^4 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group or an $—NR_2^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, in which R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^5 and R^6 are identical or different and have the meaning given for R^3 and R^4, with the proviso that R^5 and R^6 are not hydrogen,

R^7 is



$=BR^{11}$, $=ALR^{11}$, —Ge—, —Sn—, —O—, S—, $=SO$, $=SO_2$, $=NR^{11}$, $=CO$, $=PR^{11}$ or $P(O)R^{11}$,

in which

R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-aryl group, a C_6–C_{10}-fluoroaryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12} or R^{11} and R^{13}, in each case with the atoms joining them, form a ring, and

M^2 is silicon, germanium or tin,

R^8 and R^9 are identical or different and have the meaning given for R^{11} and

m and n are identical or different and are zero, 1 or 2, m plus n being zero, 1 or 2.

5,304,615

PREPARATION OF BUTENE POLYMERS USING AN IONIC LIQUID

Philip W. Ambler, Bracknell; Philip K. G. Hodgson, Walton-on-Thames, and Nevin J. Stewart, Guildford, all of England, assignors to BP Chemicals Limited, London, England

Filed Feb. 4, 1993, Ser. No. 13,752

Claims priority, application United Kingdom, Feb. 19, 1992, 9203515; Oct. 2, 1992, 9220779

Int. Cl.[5] C08F *4/52, 4/12, 10/08*

U.S. Cl. 526—189 **9 Claims**

1. A process for the polymerization of an olefinic feed stock comprising one or more of butene-1, butene-2 and iso-butene, said process comprising bringing the feedstock into contact with an ionic liquid comprising

a) an aluminium compound of the formula R_nAlX_{3-n} wherein R is a C1–C6 alkyl radical, X is a halogen atom and n is 0, 1 or 2, and

b) a substituted hydrocarbyl imidazolium and/or a substituted hydrocarbyl pyridinium halide such that the melting point of the ionic liquid is below the reaction temperature, said reaction temperature being in the range −50° C. to +100° C. to obtain a polymer product which as a molecular weight of at least 600.

5,304,616

DENTURE STABILIZING COMPOSITIONS HAVING IMPROVED HOLD

Jayanth Rajaiah, Bridgeport; Abel Saud, Milford, both of Conn., and Bruce J. MacKay, Guilford, Conn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

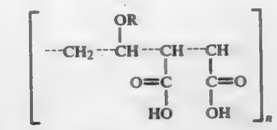
Continuation of Ser. No. 712,831, Jun. 10, 1991, abandoned.

This application Oct. 22, 1992, Ser. No. 966,120

Int. Cl.[5] C08F *30/04, 8/44*

U.S. Cl. 526—240 **18 Claims**

1. The mixed partial salt of a lower alkyl vinyl ether-maleic acid copolymer consisting essentially of the repeated structural unit:



(I)

wherein R represents a C_1 to C_4 alkyl radical, n is an integer greater than one representing the number of repeated occurrences of said structural unit in a molecule of said copolymer and n is large enough to characterize said copolymer as having a specific viscosity larger than 1.2, the specific viscosity being determined in methyl ethyl ketone at 25° C., said partial salts containing from about 15% to about 40% free acid, and as the cationic salt function:

(a) from about 0.1% to about 80% strontium cations; and

(b) from about 0.1% to about 65% zinc cations of the total initial carboxyl groups reacted.

5,304,617

FLUORINE-CONTAINING COPOLYMER AND PROCESS FOR ITS PRODUCTION

Shun-ichi Kodama; Motoi Kamba, both of Yokohama; Isao Kimura, Urayasu, and Kazunori Chiba, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

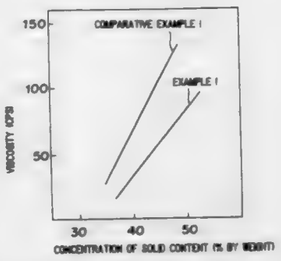
PCT No. PCT/JP90/01427, § 371 Date Jul. 22, 1991, § 102(e) Date Jul. 22, 1991, PCT Pub. No. WO91/06584, PCT Pub. Date May 16, 1991

PCT Filed Nov. 2, 1990, Ser. No. 720,437

Claims priority, application Japan, Nov. 2, 1989, 1-285009

Int. Cl.[5] C08F *12/20*

U.S. Cl. 526—255 **7 Claims**

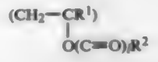


1. A fluorine-containing copolymer comprising polymer units represented by the formulas a), b) and c), respectively in amounts of from 40 to 60 mol%, from 25 to 55 mol% and from 5 to 25 mol%, respectively, and having an intrinsic viscosity of from 0.01 to 0.05 dλ/g as measured in an uncured state at 30° C. in tetrahydrofuran, the ratio of the weight-average molecular weight and the number-average molecular weight measured by a gel permeation chromatography being not more than 2.0:

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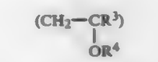
a) (CF_2— CFX) X is fluorine, chlorine or a perfluoroalkyl or perfluoroalkoxy group having 1 to 3 carbon atoms,

b)



R^2 is hydrogen or a methyl group, R^2 is an unsubstituted or fluorine-substituted straight-chain, branched-chain or alicyclic alkyl group having 1 to 12 carbon atoms, and λ is 0 or 1, and

c)



R^3 is hydrogen or a methyl group, R^4 is an unsubstituted or fluorine-substituted straight-chain, branched-chain or alicyclic alkyl group having a hydroxyl group.

5,304,618

POLYMERS OF BROMINATED STYRENE

Ray W. Atwell, West Lafayette; Harry A. Hodgen, Battle Ground; William R. Fielding, West Lafayette; Nicolai A. Favstritsky, and Enrico J. Termine, both of LaFayette, all of Ind., assignors to Great Lakes Chemical Corporation, W. Lafayette, Ind.

Filed Jul. 22, 1993, Ser. No. 95,865

Int. Cl.[5] C08F *12/16, 14/16*

U.S. Cl. 526—293 **16 Claims**

1. A process for the polymerization of brominated styrenes, comprising the steps of:

(a) providing an essentially solventless blend of:

(i) monomers of brominated styrenes; and

(ii) a polymerization initiator;

(b) feeding the monomer/polymerization initiator blend into a reaction vessel;

(c) reacting the monomer/polymerization initiator blend under conditions effective to polymerize at least about 80% of the monomers in a time of between about 1 minute and about 20 minutes; and

(d) removing the polymerized bromostyrene from the reaction vessel.

5,304,619

ETHYLENE POLYMERS OR COPOLYMERS HAVING IMPROVED INSULATING PROPERTIES, COMPOSITIONS, AND POWER CABLES MADE THEREFROM

Junichi Yokoyama, Yokohama; Hideo Kawabata, Kawasaki; Masaaki Ikeda, Tokyo; Katsufumi Suga, and Masayoshi Kariya, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Filed Jun. 4, 1991, Ser. No. 709,887

Claims priority, application Japan, Jun. 4, 1990, 2-145604

Int. Cl.[5] C08F *20/42, 20/44*

U.S. Cl. 526—311 **4 Claims**

1. In an electrical insulation material, the improvement wherein said material comprises a polar group-containing ethylene polymer or copolymer containing 20 to 8000 ppm of a polar group having a dipole moment of more than 0.8 debye and which is selected from the group consisting of nitrile and nitro groups.

5,304,620

METHOD OF CROSSLINKING CELLULOSE AND GUAR DERIVATIVES FOR TREATING SUBTERRANEAN FORMATIONS

Marlin D. Holtmyer; Charles V. Hunt; Mary A. H. Laramay; Alireza B. Rahimi, all of Duncan, Okla., and Murray G. Clark, Conroe, Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 994,248, Dec. 21, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,945

Int. Cl.[5] C09K *7/00;* **E21B** *43/04, 43/25, 43/26*

U.S. Cl. 527—310 **19 Claims**

1. A method of treating a subterranean formation using a crosslinked cellulose ether, guar or hydroxypropyl guar derivative comprising:

admixing a polymer derivative comprising a reaction product produced by the reaction of (i) a hydroxyalkyl cellulose having a molar substitution of from about 1.5 to about 3, the alkyl being selected from the group of ethyl and propyl, (ii) guar or (iii) hydroxypropyl guar and a vinyl phosphonic acid in the presence of a redox system at a temperature in the range of from about 20° to about 60° C. with a sufficient quantity of an aqueous fluid containing at least a trace amount of at least one divalent cation to form a base gel;

admixing a sufficient quantity of a crosslinking activator comprising a Lewis base or Bronsted-Lowry base which is substantially free of polyvalent metal ions with said base gel to initiate crosslinking of said polymer derivative; and

introducing said base gel containing the crosslinking activator into a subterranean formation to treat said formation.

15. A method for crosslinking a cellulose ether derivative for use in treating a well comprising:

preparing a base gel, with or without a particulate agent, by admixing an aqueous liquid containing at least a trace amount of at least one divalent cation with a cellulose ether derivative that is chemically modified by reacting a hydroxyalkyl cellulose with a vinyl phosphonic acid in the presence of a redox system; and

admixing a sufficient quantity of a crosslinking activator comprising a Lewis base or Bronsted-Lowry base, which is substantially free of polyvalent metal ions, with said base gel to effect crosslinking of said gel.

5,304,621

ORGANO(POLY)SILOXANES CONTAINING TERMINAL SILOXANE UNITS HAVING ORGANYLOXY AND HYDROGEN GROUPS

Gerhard Staiger, Altoetting; Rudolf Braun, Kastl; Johann Mueller; Michael Stepp, both of Burghausen; Werner Brennenstuhl, Burgkirchen, and Petra Absmaier, Emmerting, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

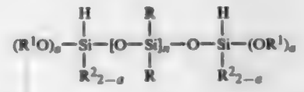
Filed Dec. 7, 1992, Ser. No. 938,212

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013281; Aug. 9, 1990, 4025281; Sep. 17, 1990, 4029481

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—12 **15 Claims**

1. An organo(poly)siloxane which contains organyloxy groups and hydrogen atoms in the terminal siloxane units having the general formula



(I)

in which R, R^1 and R^2, each represent a monovalent unsubstituted hydrocarbon radical, or a monovalent substituted hydrocarbon radical, n is an integer of at least 2 and a is 1 or 2.

5,304,622

PROCESS FOR PRODUCING POLYSILANES

Keizo Ikai, Hayama; Masaki Minami, and Mitsuo Matsuno, both of Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

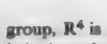
Filed Dec. 30, 1992, Ser. No. 998,626

Claims priority, application Japan, Jan. 8, 1992, 4-18429; Jan. 8, 1992, 4-18431

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—16 **2 Claims**

1. A process for producing polysilanes, which comprises dehydrocondensing hydrosilanes selected from the group consisting of hydromonosilanes, hydrodsilanes, hydrotrisilanes and mixtures thereof in the presence of a catalyst comprising a mixture of (A) a metallocene compound represented by formula (1)



(1)

wherein M denotes Ti, Zr or Hf, L and L′ are each selected from unsubstituted cyclopentadienyl, cyclopentadienyl substituted with an alkyl group having 1 to 6 carbon atoms, cyclopentadienyl substituted with a silyl group represented by formula (2)



(2)

wherein R^1, R^2 and R^3 are each selected from hydrogen, an alkyl group having 1 to 12 carbon atoms, an aralkyl group or an aryl group having 6 to 12 carbon atoms, and they may be the same or different,

unsubstituted indenyl, indenyl substituted with an alkyl group having 1 to 6 carbon atoms or indenyl substituted with the silyl group of formula (2), and L and L′ may be the same or different and may be crosslinked with alkylene having 1 to 4 carbon atoms or silylene represented by formula (3)



(3)

wherein R^7 and R^8 each denote hydrogen, an alkyl group having 1 to 12 carbon atoms, an aralkyl group or an aryl group having 6 to 12 carbon atoms, and they may be the same or different, and

(B) a silyl compound represented by formula (4)



(4)

wherein R^9, R^{10} and R^{11} are each selected from a linear or branched alkyl group having 1 to 12 carbon atoms, an aralkyl group, an aryl group having 6 to 12 carbon atoms or a silyl group represented by formula (5)



(5)

wherein R^{12}, R^{13} and R^{14} are selected from an alkyl group having 1 to 8 carbon atoms or an aryl group, and they may be the same or different, and A denotes Li, Na or K.

5,304,623

ONE-PACK TYPE HEAT PRECURABLE MOISTURE-CURING SEALANT COMPOSITION COMPRISING ISOCYANATE CONTAINING COMPONENT AND SILOXANE CONTAINING POLYOL

Masahiro Ito, Mishima; Yoshihiro Nakata, Takatsuki, and Yukio Hayashi, Kyoto, all of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 850,298, Mar. 12, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 3,814

Claims priority, application Japan, Mar. 29, 1991, 3-066068

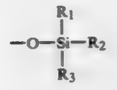
Int. Cl.[5] C08G *18/10, 18/80*

U.S. Cl. 528—28 **20 Claims**

1. A one-pack type heat precurable moisture-curing sealant composition which comprises as the main component:

(A) a urethane prepolymer having a content of an active free isocyanate group (NCO) of 1 to 6 % by weight which is prepared by reacting a polyol and an excess amount of a polyisocyanate compound,

(B) a vinyl polymer containing a siloxy group of the formula:



wherein R_1, R_2 and R_3 are the same or different and are each a C_1–C_4 alkyl or phenyl, in the molecule and having a number average molecular weight of 3,000 to 30,000, and

(C) a partially inactivated solid polyisocyanate compound which is prepared by inactivating 0.2 to 10 % by weight of the isocyanate groups by reacting a solid polyisocyanate compound with an inactivating agent.

5,304,624

EPOXY RESIN DERIVED FROM THE HIGHLY PURE COMPOUND AND METHOD FOR PREPARING THE RESIN AND COMPOSITION

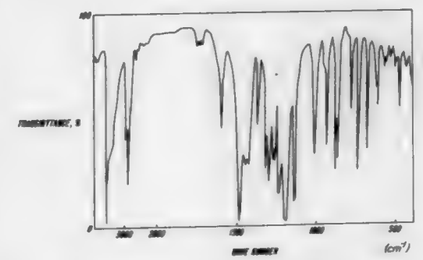
Naru Koike; Shigeru Iimuro, and Mizuo Ito, all of Aichi, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 796,440, Nov. 22, 1991, Pat. No. 5,157,165. This application Jul. 9, 1992, Ser. No. 910,209

Claims priority, application Japan, Nov. 26, 1990, 2-317846

Int. Cl.[5] C08G *59/00*

U.S. Cl. 528—98 **1 Claim**



1. A method for preparing an epoxy resin comprising the steps of subjecting two molecules of bis(3,5-dimethyl-4-hydroxyphenyl)methane to dehydration-condensation under oxidizing conditions to give highly pure 1,1,2,2-tetrakis(4-hydroxy-3,5-dimethylphenyl)ethane and then epoxidating the resulting compound with an epihalohydrin at a temperature ranging from 40° to 120° C. in the presence of a hydrogen halide acceptor.

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5,304,625

PHOSPHAZENE-CONTAINING AMINE AS CURING AGENT FOR PHTHALONITRILE-BASED POLYMER

Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

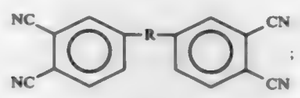
Division of Ser. No. 670,096, Mar. 15, 1991, Pat. No. 5,208,318. This application Feb. 19, 1993, Ser. No. 19,956

Int. Cl.[5] C08G *79/02*

U.S. Cl. 528—168 **15 Claims**

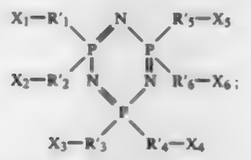
1. Curable mixture comprising:

a phthalonitrile, said phthalonitrile having the formula:



and

a linear poly(amine-substituted phosphazene) produced by ring-opening polymerization of a phosphazene-containing amine monomer having the formula:



in an amount effective to significantly accelerate the heat-curing rate of said phthalonitrile;

where R is an organic divalent radical, linking the terminal phthalonitrile moieties, which does not interfere with thermal cure of said phthalonitrile by the curing agent; each of $X_{1\text{-}6}$ is a hydrogen, an unsubstituted amine group, or an amine group substituted with C_1–C_{12} alkyl groups or aromatic groups; at least one of $X_{1\text{-}6}$ is an amine group; and each of $R'_{1\text{-}6}$ is an alkylene, aromatic, or alkyl-substituted aromatic moiety.

5,304,626

POLYIMIDE COPOLYMERS CONTAINING 3,3',4,4'-TETRACARBOXYBIPHENYL DIANHYDRIDE (BPDA) MOIETIES

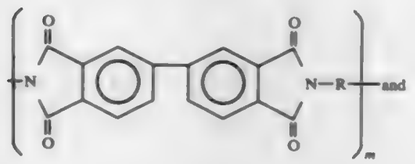
Marvin J. Burgess, Lisle; Douglas E. Fjare, and Herbert J. Neuhaus, both of Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 463,147, Dec. 22, 1989, Pat. No. 5,089,593, which is a continuation-in-part of Ser. No. 212,511, Jun. 28, 1988, abandoned. This application Sep. 13, 1991, Ser. No. 759,426

Int. Cl.[5] C08C *69/26, 73/10*

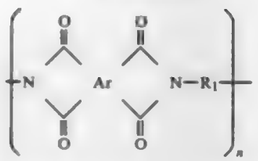
U.S. Cl. 528—353 **9 Claims**

1. A composition comprising recurring units selected from the group consisting of Formula I and Formula II

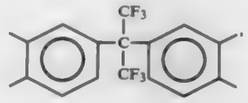


I

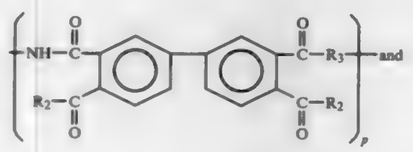
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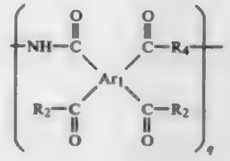
wherein Ar is a tetravalent aromatic nucleus comprising at least one mole percent



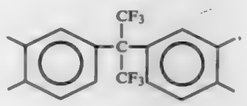
R and R_1 are independently selected from divalent hydrocarbon radicals, and



II



wherein Ar_1 is a tetravalent aromatic nucleus comprising at least one mole percent



R_3 and R_4 are independently selected from divalent hydrocarbon radicals, R_2 is independently selected from halogen, —OH, and —OR_5 where R_5 is an alkyl group of 1 to 4 carbon atoms, and wherein the molar ratio of m plus p to n plus q is from about 1:9 to about 99:1, with the proviso that Ar and Ar_1 are not 3,3',4,4'-tetracarboxybiphenyl dianhydride (BPDA) moiety and with the further proviso that said composition contains less than about 10 mole percent siloxane linkages derived from siloxane diamine.

5,304,627

POLYIMIDES CONTAINING PENDENT SILOXANE GROUPS

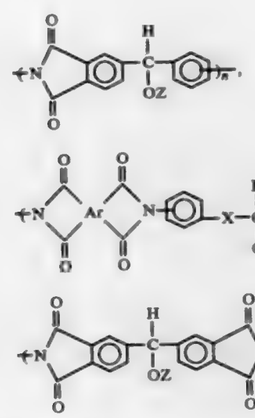
John W. Connell, Yorktown; Terry L. St. Clair, Poquoson, and Paul M. Hergenrother, Yorktown, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 2, 1992, Ser. No. 970,755

Int. Cl.[5] C08G *73/10, 69/26*

U.S. Cl. 528—353 **11 Claims**

1. A polyimide containing siloxane groups and having repeating units selected from the group consisting of

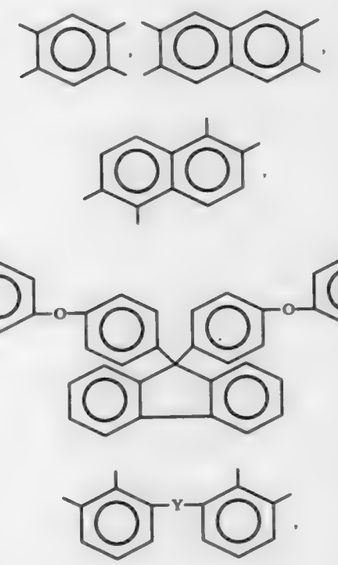


(A)

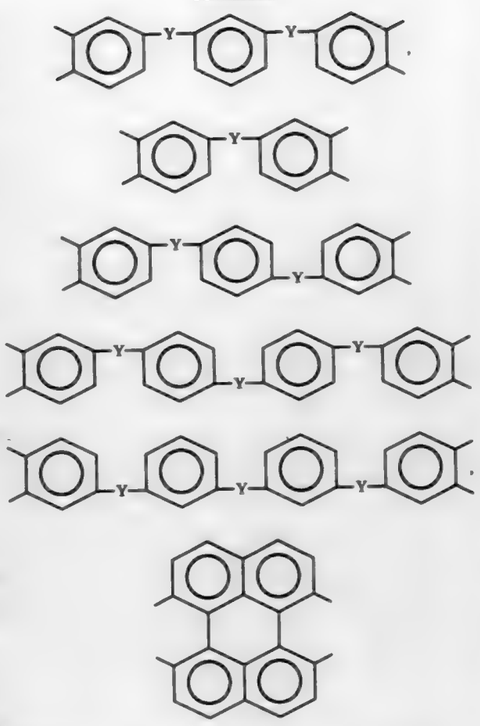
(B)

(C)

wherein the catenation of the nitrogen group is selected from the group consisting of: (A) meta and para, (B) meta-meta, para-para, and meta-para and (C) as shown; and wherein Ar is a radical selected from the group consisting of:



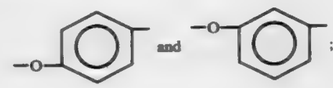
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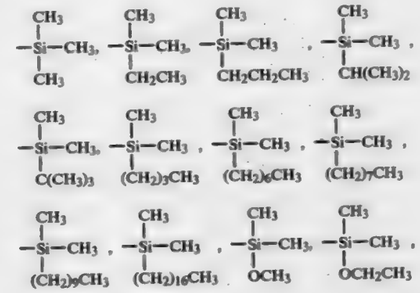
wherein Y is a band or is a substituent selected from the group consisting of:

O, S, SO_2, CH_2, O=C, $C(CH_3)_2$, $C(CF_3)_2$, $Si(CH_3)_2$, $Si(CH_2CF_2CF_3)_2$;

wherein X is a bond or is a substituent selected from the group consisting of:

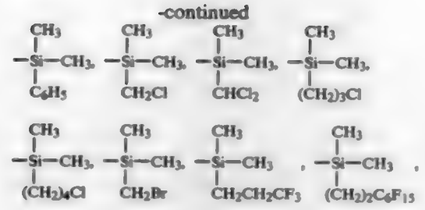


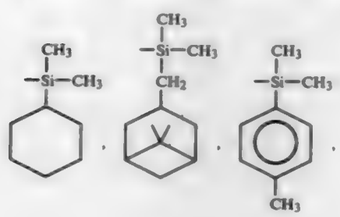
wherein Z is a substituent selected from the group consisting of:

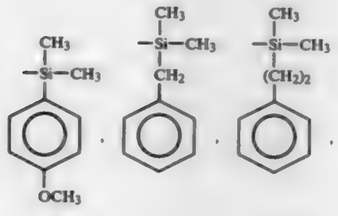


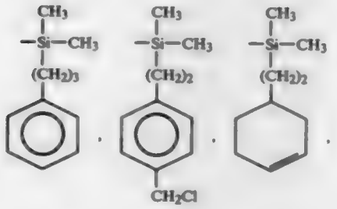
VOL 1161 ISS 3 AP 19 1994 UMI

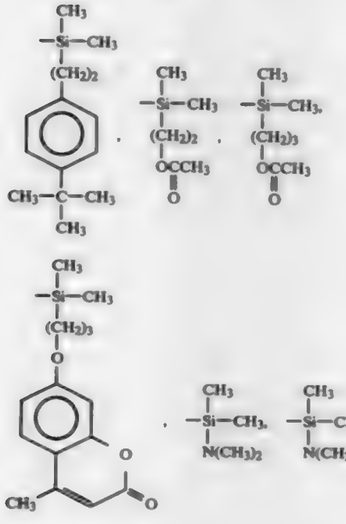
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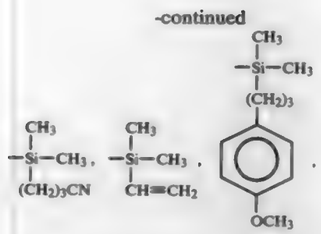


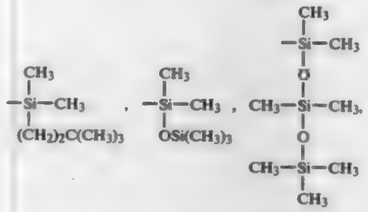


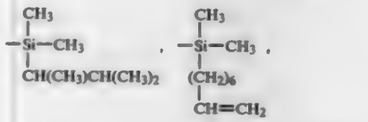


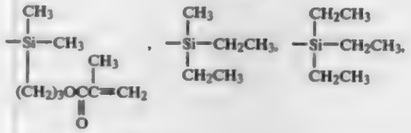


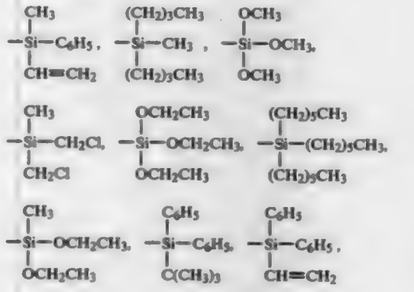
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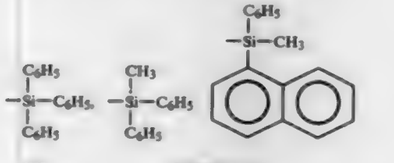


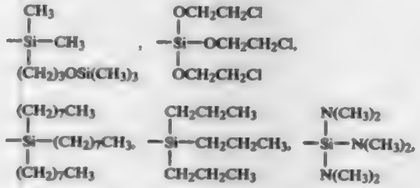








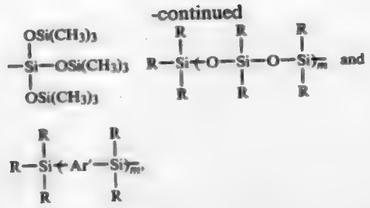








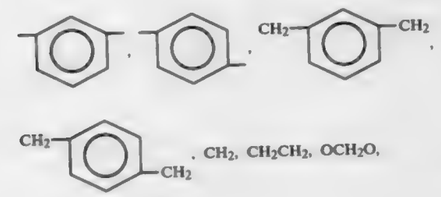
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wherein R is a substituent selected from the group consisting of:

CH_3, CH_2CH_3, $(CH_2)_2CH_3$, $CH(CH_3)_2$, C_6H_5, $(CH_2)_2CF_3$;

wherein Ar' is a substitute selected from the group consisting of:



CF_2, CF_2CF_2, OCF_2O;

wherein n is an integer between 1 and 1000; and wherein m is an integer between 1 and 1000.

5,304,628

RADIATION-CURING RESIN COMPOSITION

Masashi Kinoshita, Tokyo, and Hidenobu Ishikawa, Chiba, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Aug. 4, 1992, Ser. No. 924,748
Claims priority, application Japan, Aug. 5, 1991, 3-195340
Int. Cl.[5] C08F *2/50*; C08G *63/52, 18/00*
U.S. Cl. 528—370 **2 Claims**

1. A radiation-curing resin composition comprising, as essential components,

(A) a resin having a carboxylic acid group and an unsaturated double bond, said resin being a reaction product obtained from a compound containing an epoxy group, a compound containing a reactive unsaturated double bond, and a compound containing an acid anhydride group, and

(B) a compound containing a cyclocarbonate group.

5,304,629

PRODUCTION PROCESSES OF ARYLENE THIOETHER OLIGOMER AND COPOLYMER

Hiroyuki Sato; Mitsuru Hoshino, and Yuichika Kawakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 858,735, Mar. 27, 1992, Pat. No. 5,262,517.
This application Aug. 30, 1993, Ser. No. 113,472
Claims priority, application Japan, Apr. 9, 1991, 3-103750
Int. Cl.[5] C08G *75/14*
U.S. Cl. 528—388 **5 Claims**

1. A process for the production of an arylene thioether copolymer, which comprises forming a carboxylated arylene thioether oligomer by

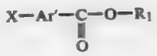
(1) first causing an alkali metal sulfide to act on a poly(arylene thioether) having recurring units represented by the general formula (I):



(I)

wherein Ar is an arylene group, in a water-containing polar organic solvent to depolymerize the poly(arylene thioether), thereby preparing an oligomer having at least one alkali thiolate group; and

(2) second causing a carboxylating agent represented by the general formula (II):



(II)

wherein X is a halogen atom, R_1 denotes a hydrogen atom, an alkyl group having 1–4 carbon atoms, an aryl group or an alkali metal atom, and Ar' is an arylene group, to act on the alkali thiolate-containing oligomer obtained in the first step, thereby forming the carboxylated arylene thioether oligomer; and

reacting (A) a carboxylic acid component consisting of the carboxylated arylene thioether oligomer alone, or a mixture of the carboxylated oligomer in an amount of at least 50 wt. % and another carboxylic compound in an amount less than 50 wt. % with (B) an alkylenediol and (D) a lactone.

5,304,630

PRODUCTION PROCESSES OF ARYLENE THIOETHER OLIGOMER AND COPOLYMER

Hiroyuki Sato; Mitsuru Hoshino, and Yuichika Kawakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 858,735, Mar. 27, 1992, Pat. No. 5,262,517.
This application Aug. 30, 1993, Ser. No. 113,474
Claims priority, application Japan, Apr. 9, 1991, 3-103750
Int. Cl.[5] C08G *75/14*
U.S. Cl. 528—388 **5 Claims**

1. A process for the production of an arylene thioether copolymer, which comprises forming a carboxylated arylene thioether oligomer by

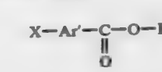
(1) first causing an alkali metal sulfide to act on a poly(arylene thioether) having recurring units represented by the general formula (I):



(I)

wherein Ar is an arylene group, in a water-containing polar organic solvent to depolymerize the poly(arylene thioether), thereby preparing an oligomer having at least one alkali thiolate group; and

(2) second causing a carboxylating agent represented by the general formula (II);



(II)

wherein X is a halogen atom, R_1 denotes a hydrogen atom, an alkyl group having 1–4 carbon atoms, an aryl group or an alkali metal atom, and Ar' is an arylene group, to act on the alkali thiolate-containing oligomer obtained in the first step, thereby forming the carboxylated arylene thioether oligomer; and

reacting (A) a carboxylic acid component consisting of the carboxylate arylene thioether oligomer alone, or a mixture of the carboxylated oligomer in an amount of at least 50 wt. % and another carboxylic compound in an amount less than 50 wt. % with (B) an alkylenediol and (C) a polyester.

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5,304,631

SYNTHETIC HELIZYME ENZYMES

John M. Stewart, Denver; Karl W. Hahn, Englewood, and Wieslaw A. Klis, Denver, all of Colo., assignors to University of Colorado Foundation, Inc., Boulder, Colo.

Filed Jan. 16, 1990, Ser. No. 464,932
Int. Cl.[5] C07K *7/02, 7/00;* C12N *9/76, 9/18*
U.S. Cl. 530—323 5 Claims

1. A helizyme molecule having the primary structure



5,304,632

NEUROPEPTIDES OF THE TACHYKININ FAMILY

Hubert Vaudry, Mont-Saint-Aignan, France, and J. Michael Conlon, Omaha, Nebr., assignors to Creighton University, Omaha, Nebr. and Centre National De La Recherche Scientifique, Paris, France

Filed Sep. 3, 1991, Ser. No. 753,909
Claims priority, application France, Jun. 4, 1991, 91 06759
Int. Cl.[5] A61K *37/02;* C07K *5/00;* A23J *1/14;* C07H *21/04*
U.S. Cl. 530—327 7 Claims

1. A peptide, characterized in that it corresponds to the following sequence of amino acids:

Lys Pro Asn Pro Glu Arg Phe Tyr Gly Leu Met.

5,304,633

FRAGMENTS OF LACTOFERRIN HAVING POTENT ANTIMICROBIAL ACTIVITY

Mamoru Tomita, Kanagawa; Kohzo Kawase; Mitsunori Takase, both of Saitama; Wayne R. Bellamy, Kanagawa; Kohji Yamauchi, Kanagawa, and Hiroyuki Wakabayashi, Kanagawa, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,161
Claims priority, application Japan, Sep. 7, 1990, 2-238364; Jul. 25, 1991, 3-186260
Int. Cl.[5] A61K *37/02;* C07K *5/12, 7/10, 7/08*
U.S. Cl. 530—326 7 Claims

1. A substantially purified and isolated peptide having antimicrobial activity which consists of an amino acid sequence selected from the group consisting of SEQ ID NO. 1 and 2.

5,304,634

INHIBITORS FOR THE FORMATION OF TUMOR NECROSIS FACTOR

Ulrich F. Schade, Wardersee, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 9, 1991, Ser. No. 773,502
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1990, 4032354
Int. Cl.[5] C07K *3/00, 15/00;* A01N *37/18;* C12P *21/02*
U.S. Cl. 530—350 3 Claims

1. An inhibitor of the formation of tumor necrosis factor which has a molecular weight of from 40,000 to 80,000 obtainable by cultivation of macrophages or mononuclear phagocytes from lipopolysaccharide-tolerant vertebrates.

5,304,635

ANTIGEN SPECIFICALLY EXPRESSED ON THE SURFACE OF B CELLS AND HODGKIN'S CELLS

Ashraf Imam, North Hollywood, and Clive R. Taylor, South Pasadena, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation of Ser. No. 492,542, Mar. 12, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 994,082
Int. Cl.[5] C07K *15/00;* A61K *35/14*
U.S. Cl. 530—350 2 Claims

1. A substantially pure B lymphocyte antigen (BLA-36) that is expressed on the cell membrane of Hodgkin's cells, Reed-Sternberg cells, and B cells and is characterized as having a molecular weight of 36 kD as assessed by SDS-PAGE and is immunoreactive with anti-BLA-36 monoclonal antibody derived from mice exposed to HDLM-3 cells.

5,304,636

RECEPTOR FOR THE HUMAN RHINOVIRUS MINOR GROUP

Dieter Blaas; Ernst Kuechler, both of Vienna; Harald Mischak, Poelten, and Christoph Neubauer, Vienna, all of Austria, assignors to Boehringer Ingelheim International GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 294,512, Feb. 14, 1989, abandoned. This application Jul. 22, 1993, Ser. No. 95,246
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1987, 3712678
Int. Cl.[5] C07K *3/02, 3/20, 15/06, 15/14*
U.S. Cl. 530—350 3 Claims



1. A substantially pure receptor with binding activity for rhinoviruses of the small receptor group, said receptor having the following characteristics:

(a) a molecular weight of 120 kD on a polyacrylamide gel in the presence of SDS;

(b) a sedimentation constant, determined by sucrose gradient centrifugation in the presence of detergents, corresponding to about 28.4 S;

(c) is bound by *Lens culinaris* lectin;

(d) is not bound by heparin-Sepharose;

(e) binds irreversibly to an anion exchanger;

(f) has binding activity which is insensitive to neuroaminidase;

(g) consists of sub-units connected by intermolecular disulphide bridges;

(h) shows no binding activity to rhinoviruses in the presence of EDTA; and

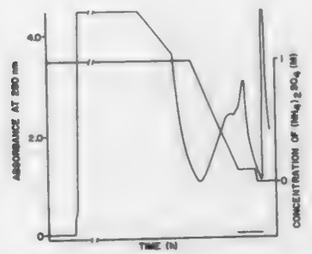
(i) has a binding activity to rhinoviruses which is only slightly influenced by iodacetamide.

5,304,637

EXPRESSION AND PURIFICATION OF HUMAN INTERLEUKIN-3 AND MUTEINS THEREOF

Lambertus C. J. Dorssers, Randwijk; Gerard Wagemaker, Den Haag; Yvonne J. Vos, Capelle a/d IJssel; Robert W. Van Leen, Nijmegen, and Maria L. N. Persoon, NA Leiden, all of Netherlands, assignors to Gist-brocades N.V., Delft, Netherlands

Continuation-in-part of Ser. No. 249,184, Aug. 16, 1988, abandoned. This application Mar. 13, 1990, Ser. No. 494,182
Claims priority, application Netherlands, Jul. 13, 1987, 87201322.2
Int. Cl.[5] C07K *3/28*
U.S. Cl. 530—351 18 Claims



1. A method of substantially purifying a protein having human IL-3 activity from a crude protein product obtained from a recombinant cell expressing a DNA sequence encoding a protein having the biological activity of human IL-3 said method comprising:

(a) performing hydrophobic interaction chromatography on said protein product and collecting fractions comprising a protein having human IL-3 activity; followed by

(b) performing ion exchange chromatography on the fractions collected in step (a) and collecting fractions comprising a protein having human IL-3 activity; followed by

(c) performing gel filtration chromatography on the fractions collected in step (b) to yield a substantially pure potential having human IL-3 activity.

5,304,638

PROTEIN SEPARATION MEDIUM

Philip J. Marshall, Huntingdon, and Christopher R. Lowe, Saffron Walden, both of England, assignors to Central Blood Laboratories Authority, Elstree, England

PCT No. PCT/EP90/00910, § 371 Date Dec. 4, 1991, § 102(e) Date Dec. 4, 1991, PCT Pub. No. WO90/14886, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 8, 1990, Ser. No. 777,531
Claims priority, application United Kingdom, Jun. 8, 1989, 8913183
Int. Cl.[5] A61K *35/14;* B01D *15/08*
U.S. Cl. 530—383 23 Claims

1. A separation medium for use in protein separation comprising a water-insoluble matrix carrying a plurality of polyamine groupings, said polyamine groupings each having at least 3 basic nitrogen atoms, said basic nitrogen atoms being separated from each other by a chain of at least two intervening carbon atoms, there being a total of 5 such intervening carbon atoms when there is a total of three nitrogen atoms in each polyamine grouping.

5,304,639

METHOD FOR PREPARATION OF GLYCOSIDES

Michael W. Gibson, Fairfield, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed May 28, 1992, Ser. No. 890,520
Int. Cl.[5] C07H *15/04;* C07G *3/00*
U.S. Cl. 536—18.6 10 Claims

1. A method for reducing the content of fatting alcohol in a mixture of fatty alcohol and fatty glycoside product which comprises:

a) continuously introducing a first mixture comprising fatty alcohol and fatty glycoside product into a forced circulation evaporation zone operated at a temperature of from abut 140° C. to about 220° C. and a pressure of from about 1.0 millimeter Hg absolute to about 100 millimeters Hg absolute to remove fatty alcohol from the first mixture and produce a mixture comprising fatty alcohol and fatty glycoside product with reduced fatty alcohol content; and

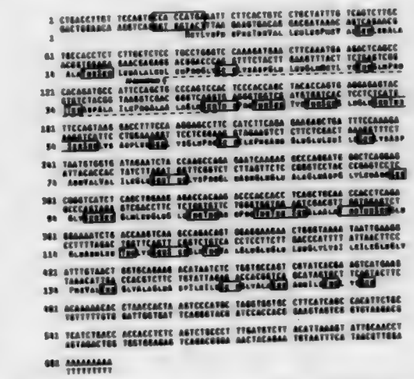
b) passing the mixture comprising fatty alcohol and fatty glycoside product with reduced fatty alcohol content continuously from the forced circulation evaporization zone into a wiped film evaporization zone operated at a temperature of from 140° C. to about 240° C. and a pressure of from about 0.1 millimeter Hg absolute to about 90 millimeters Hg absolute to remove fatty alcohol and produce a fatty glycoside product containing less than about 5% by weight of fatty alcohol.

5,304,640

DNA SEQUENCE ENCODING A SELECTIN LIGAND

Laurence A. Lasky, Sausalito; Yasuyuki Imai; Steven D. Rosen, both of San Francisco, and Mark S. Singer, Berkeley, all of Calif., assignors to Genentech, Inc., So. San Francisco and Regents of the University of California, Alameda, both of Calif.

Continuation-in-part of Ser. No. 695,805, May 6, 1991. This application Feb. 13, 1992, Ser. No. 834,902
Int. Cl.[5] C12N *15/12, 5/10, 15/85*
U.S. Cl. 536—23.5 20 Claims



1. An isolated nucleic acid molecule comprising a nucleotide sequence able to hybridize under low stringency conditions to the complement of a nucleotide sequence encoding a protein having the amino acid sequence shown in FIG. 4, and encoding a protein possessing an effector function or antigenic property of a naturally occurring selection ligand.

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5,304,641

PROCESS FOR THE SYNTHESIS OF EXOMETHYLENECEPHAMS

Walter Cabri, Rozzano; Ilaria Candiani, Busto Arsizio, and Angelo Bedeschi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

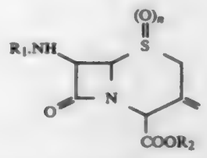
Filed Feb. 16, 1993, Ser. No. 21,174

Claims priority, application United Kingdom, Feb. 17, 1992, 9203327

Int. Cl.[5] C07D *501/02*

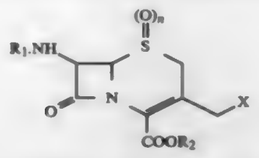
U.S. Cl. 540—215 **5 Claims**

1. A process for preparing a compound of formula I



I

wherein n is 0 or 1, R_1 is hydrogen atom, linear or branched C_1–C_5 alkanoyl group; a benzoyl group, in which the phenyl ring is optionally substituted by one or more substituents chosen from: 1) C_1–C_4 linear or branched alkyl group, ii) NO_2, iii) C_1–C_4 linear or branched alkoxyl group, iv) a halogen atom; an optionally substituted, as defined above, phenyl-(linear or branched)-C_2–C_4-alkanoyl group; an optionally substituted, as defined above, phenoxy-(linear or branched)-C_2–C_4-alkanoyl group; a phthalimido group; a linear or branched C_6–C_{10} thienylalkanoyl group; or linear or branched C_4–C_8 (1,3,4,-thiodiazolyl)thioalkanoyl residue: a linear or branched C_1–C_4 alkoxycarbonyl group; an optionally substituted, as defined above, phenoxycarbonyl group; an optionally substituted, as defined above, phenyl-(linear or branched)-C_1–C_4-alkoxycarbonyl group or a C_1–C_4 trihaloalkoxycarbonyl group, and R_2 is a carboxy protecting group chosen from linear or branched C_1–C_4 alkyl, a linear or branched C_1–C_4 trihaloalkyl group, and optionally substituted as defined above, benzyl, a trialkylsilyl, an optionally substituted, as defined above, diphenyl methyl, or a linear or branched C_2–C_4 alkenyl group, which process comprises reacting a compound of formula II



II

wherein X is halogen atom and R_1, n and R_2 are as defined above with a lanthanide complex chosen from samarium and ytterbium complexes, wherein the reaction is carried out in a solvent with up to 4 molar equivalents of the lanthanide complex at a temperature of from −100° C. to the solvent reflux temperature for a period of from a few minutes to one day and the resultant reaction mixture is quenched with a protic agent.

5,304,642

PRISTINAYMCINIA OR VIRGINIAMYCIN DERIVATIVES AND THEIR PREPARATION

Jean-Pierre Bastart, Lesigny; Jean-Marc Paris, Vaires S/Marne, and Xavier Radisson, Lyon, all of France, assignors to Rhone Poulenc Sante, France

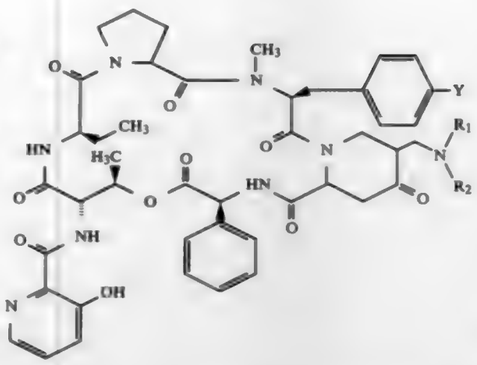
Continuation of Ser. No. 629,758, Dec. 5, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,928

Claims priority, application France, Dec. 5, 1989, 89 16030

Int. Cl.[5] C07D *267/00*

U.S. Cl. 540—455 **20 Claims**

1. A derivative of formula:



in which R_1, R_2 and Y are defined in its epimeric forms or the mixtures thereof.

5,304,643

PROCESS FOR PRODUCING EPSILON-CAPROLACTAM

Hiroshi Kajikuri; Masaru Kitamura, and Yasuhiko Higashio, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 25, 1992, Ser. No. 981,474

Claims priority, application Japan, Nov. 27, 1991, 3-312491

Int. Cl.[5] C07D *201/04*

U.S. Cl. 540—336 **17 Claims**

1. A process for producing ε-caprolactam which comprises subjecting cyclohexanone oxime in a gas phase to catalytic reaction using zeolite catalysts in the presence of water and at least one compound selected from alcohols and ether compounds.

5,304,644

1-,2-,3-,4-,5-,6-,7-,8- AND/OR 9 SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS FOR TREATING PAIN

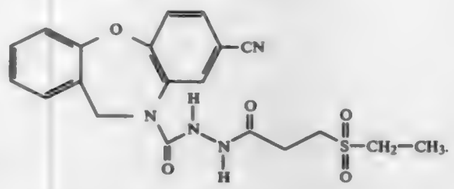
Robert K. Huss, Vernon Hills; Michael F. Rafferty, Buffalo Grove; Timothy J. Hagen, Glenview, and E. Ann Hallinan, Evanston, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 15, 1992, Ser. No. 869,563

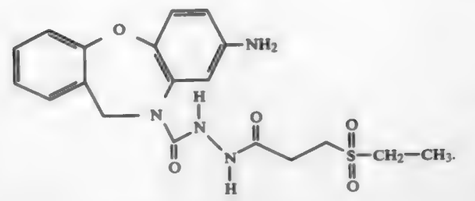
Int. Cl.[5] C07D *267/20*

U.S. Cl. 540—547 **3 Claims**

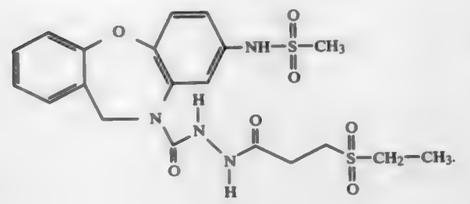
1. A compound of having the structure:



2. A compound having the structure:



3. A compound having the structure:



5,304,645

RESORUFIN DERIVATIVES

Christian Klein, Weilheim; Hans-Georg Batz, Tutzing, and Rupert Herrmann, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 504,323, Apr. 3, 1990, abandoned, which is a division of Ser. No. 889,676, Jul. 24, 1986, Pat. No. 4,954,630. This application Mar. 28, 1991, Ser. No. 758,288

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1985, 3526565

Int. Cl.[5] A61K *31/435, 31/495*

U.S. Cl. 544—10.2 **8 Claims**

1. A colored or fluorescent resorufin derivative designated resorufin-4-carboxylic acid piperazide or 8-chlororesorufin-4-carboxylic acid piperazide.

5,304,646

AMELINIC COMPOUNDS

Roberto Cipolli, Novaro; Gilberto Nucida, Milan; Enrico Masarati, Piacenza; Roberto Oriani, and Mario Pirozzi, both of Milan, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

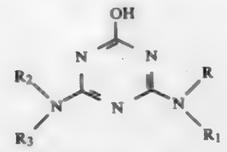
Continuation of Ser. No. 756,920, Sep. 9, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 50,987

Claims priority, application Italy, Sep. 11, 1990, 21422 A/90

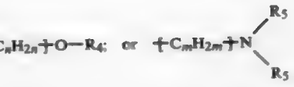
Int. Cl.[5] C07D *251/48*

U.S. Cl. 544—204 **3 Claims**

1. Amelinic compounds of general formula (I):



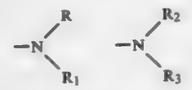
wherein R is hydrogen;
and at least one of radicals from R_1 to R_3 is:



with:
n=integer comprised between 2 and 8;
m=integer comprised between 2 and 6;
the other radicals from R_1 to R_3, equal or different among them are: H; (C_1–C_{18})-alkyl; (C_2–C_8)-alkenyl; (C_6–C_{16})-cycloalkyl or (C_6–C_{16})-alkylcycloalkyl, optionally substituted by a hydroxyl or (C_1–C_4)-hydroxyalkyl function;
R_4=H; (C_1–C_8)-alkyl; (C_2–C_6)-alkenyl; $[C_pH_{2p}]O—R_6$, wherein p is an integer comprised between 1 and 4 and R_6 is H or (C_1–C_4)-alkyl; (C_6–C_{12})-cycloalkyl or (C_6–C_{12})-alkylcycloalkyl;
radicals R_5, equal or different between them, are H; (C_1–C_8)-alkyl; (C_2–C_6)-alkenyl; (C_6–C_{12})-cycloalkyl or (C_6–C_{12})-alkylcycloalkyl; (C_1–C_4)-hydroxyalkyl; or the group:



is replaced by aziridino, pyrrolidino, piperidino, morpholino, thiomorpholino, piperazino, 4-methylpiperazino or 4-ethylpiperazino;
or in the general formula (I) at least one of groups:



is replaced by aziridino, pyrrolidino, piperidino, morpholino, thiomorpholino, piperazino, 4-methylpiperazino, 4-ethylpiperazino, 2-methylpiperazino, 2,5-dimethylpiperazino, 2,3,5,6-tetramethylpiperazino, 2,2,5,5-tetramethylpiperazino, 2-ethylpiperazino or 2,5-diethylpiperazino provided that when R_2 and R_3 are equal to H, R_1 is different from 2-hydroxyethyl.

5,304,647

METHOD OF PREPARATION OF HALOGENATED DIAZINES

Lucjan Strekowski, Stone Mountain; Maria Mokrosz, Decatur, and Donald B. Harden, Atlanta, all of Ga., assignors to Georgia State University Foundation, Inc., Atlanta, Ga.

Division of Ser. No. 400,502, Aug. 30, 1989, Pat. No. 4,963,676, which is a division of Ser. No. 153,998, Feb. 9, 1988, Pat. No. 4,929,726. This application Aug. 24, 1990, Ser. No. 572,676

Int. Cl.[5] C07D *239/30, 237/12, 239/72*

U.S. Cl. 544—235 **8 Claims**

1. A method of modifying a halogenated aromatic 1,2- or 1,3-diazine, comprising:
reacting the halogenated diazine with an organolithium reagent in an organic solvent to form an addition product;
quenching the reaction with a compound selected from the group consisting of water, alcohol, and aqueous acid solutions;
adding a quinone to dehydrogenate the addition product without prior isolation of the addition product;
removing the hydroquinone formed during dehydrogenation of the addition product; and
recovering the resulting product.

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5,304,648

PYRAZINE PREPARATION

Teh-Kuei Chen, Gaylordsville, Conn., assignor to Nestec S.A., Vevey, Switzerland

Filed Sep. 29, 1992, Ser. No. 953,466
Int. Cl.[5] C07D *241/02, 405/06*
U.S. Cl. 544—410 **11 Claims**

1. A process for obtaining pyrazine compounds comprising heating and refluxing an aqueous medium containing ammonium ions, an aldehyde and a 1-hydroxy-2-ketone wherein the ketone is introduced into the refluxing aqueous medium dropwise for reacting the ketone with the ammonium ions and aldehyde to obtain a reaction medium containing pyrazine compounds and then isolating the compounds from the reaction medium.

5,304,649

HYDROXY-PEROXIDES USEFUL AS POLYMERIZATION INITIATORS

Jose Sanchez, Grand Island, and Arthur L. Baron, Getzville, both of N.Y., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation of Ser. No. 528,265, May 23, 1990, abandoned, which is a continuation of Ser. No. 303,415, Jan. 30, 1989, abandoned. This application Jan. 8, 1993, Ser. No. 1,921
Int. Cl.[5] C07D *211/46*; C07C *69/017*
U.S. Cl. 546—242 **7 Claims**

1. A hydroxy-peroxide having Structure A:

$$HO—R_{11}—X—OO—R \quad (A)$$

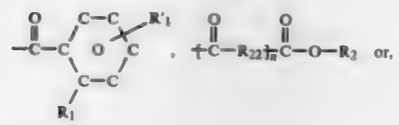
wherein X is a direct bond or the diradical:

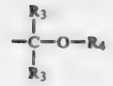


and wherein:

I. when X is a direct bond:

R is selected from the structures:



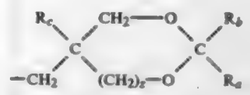


wherein:

R_1 is a lower alkyl radical of 1 to 4 carbons, an alkoxy radical of 1 to 4 carbons, a phenyl radical, an acyloxy radical of 2 to 8 carbons, a t-alkylperoxycarbonyl radical of 5 to 9 carbons, hydroxy, fluoro, chloro or bromo, R'_1 is H or is selected from the same radicals as R_1, and may be the same as or different than R_1;

n is 0 or 1;

R_2 is a substituted or unsubstituted alkyl radical of 1 to 18 carbons, substituents being one or more alkyl radicals of 1 to 6 carbons, t-alkylperoxy radicals of 4 to 8 carbons, alkoxy radicals of 1 to 6 carbons, aryloxy radicals of 6–10 carbons, hydroxy, chloro, bromo or cyano; or R_2 is a substituted or unsubstituted cycloalkyl radical of 5 to 12 carbons, a substituted or unsubstituted 4-piperidinyl radical, or a substituted or unsubstituted 1,3-dioxan-5-yl radical, with substituents for the cycloalkyl, piperidinyl or dioxanyl radicals being one or more lower alkyl radicals of 1 to 4 carbons, or R_2 is the radical:



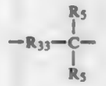
wherein

z is 0 or 1, R_a, R_b and R_c are the same or different and are H or alkyl radicals of 1 to 8 carbons, or R_a and R_b can be connected forming together with the carbon atoms to which they are attached a substituted or unsubstituted ring containing 5–12 carbons, substitutuents being one or more alkyl radicals of 1 to 5 carbons or phenyl radicals;

R_{22} is a substituted or unsubstituted alkylene diradical of 2 to 3 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons, or a substituted or unsubstituted 1,2-phenylene diradical, substituents being one or more lower alkyl radicals of 1 to 4 carbons, chloro, bromo, nitro or carboxy;

R_3 is a lower alkyl radical of 1 to 4 carbons, or the two R_3 radicals can be connected together forming together with the carbon atom to which they are attached a ring containing 5 to 6 carbons;

R_4 is a lower alkyl radical of 1 to 4 carbons; the R_{11} diradical is the structure,

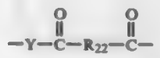


wherein

R_5 is a lower alkyl radical of 1 to 4 carbons; and

R_{33} is a substituted or unsubstituted alkylene diradical of 2 to 4 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons, with the proviso that when n is 0 and R_{33} is an alkylene diradical of 2 carbon atoms substituted with methyl on the C atom alpha to the hydroxy group, R_2 is not an unsubstituted alkyl radical of 1 to 9 carbon atoms or an alkyl radical of 1 to 9 carbon atoms substituted with one or more lower alkyl radicals of 1 to 6 carbon atoms; and

II. when X is the diradical:



Y is oxy or $—NR_6—$, wherein R_6 is H or a substituted or unsubstituted alkyl radical of 1 to 8 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons or hydroxy, and R_{22} is as defined above;

R is a substituted or unsubstituted t-alkyl radical of 4 to 12 carbons, a cumyl radical, or a cumyl radical substituted with lower alkyl radicals said lower alkyl radicals totaling 1 to 4 carbon atoms, substituents for the t-alkyl radical being lower alkyl radicals of 1 to 4 carbons or a t-alkylperoxy radical of 4 to 8 carbons; and

R_{11} is a substituted or unsubstituted alkylene diradical of 2 to 8 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons, lower hydroxyalkyl radicals of 1 to 4 carbons or hydroxy.

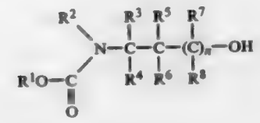
5,304,650

PROCESS FOR THE PREPARATION OF ALKYL N-(HYDROXYALKYL)-CARBAMATES

Andreas Krebs, Odenthal-Holz, and Bernd-Wieland Krüger, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 1, 1992, Ser. No. 955,003
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133516
Int. Cl.[5] C07D *211/60*; C07C *261/00*
U.S. Cl. 546—245 **9 Claims**

1. Process for the preparation in relatively high yield and purity of alkyl N-(hydroxy-alkyl)-carbamates of the formula (I)



(I)

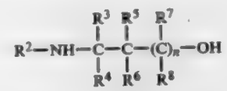
in which

R^1 represents alkyl

the radicals R^2 to R^8 represent hydrogen, methyl or ethyl or the radicals R^2 and R^3 together with the atoms to which they are bonded stand an unsubstituted ring having 5 to 7 atoms, and n denotes 0 or 1

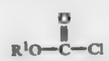
n denotes 0 or 1,

by reacting amino alcohols of the formula (II)



(II)

in which R^2 to R^6 and n have the abovementioned meaning, with chloroformates of the formula (III)



in which R^1 has the abovementioned meaning,

characterised in that the reaction is carried out in the presence of aqueous alkali metal hydroxide solutions and, if appropriate, in the presence of an organic solvent at temperatures between 30 and 110° C.

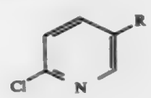
5,304,651

PROCESS FOR THE PREPARATION OF 5-SUBSTITUTED 2-CHLOROPYRIDINES

Reinhard Lantzsch, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 984,745, Dec. 3, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,766
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141188; May 22, 1992, 4217021
Int. Cl.[5] C07D *213/08*
U.S. Cl. 546—250 **6 Claims**

1. A process for the preparation of a 5-substituted 2-chloropyridine of the formula

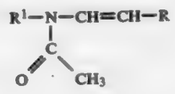


(I)

in which

R is optionally halogen-substituted alkyl or arylalkyl,

which comprises combining about 1 to 10 moles of a chlorinating agent selected from the group consisting of phosphoryl chloride, phosgene and oxalylchloride with at least an equal molar amount from about 1 to 20 moles of dimethylformamide at a temperature of about 0° to 20° C., adding thereto about one molar amount of an acetenamide of the formula



(II)

in which

R' is optionally halogen-substituted alkyl or arylalkyl,

and maintaining the mixture for a period of time at about 80° to 120° C.

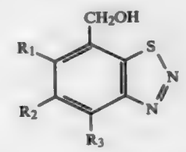
5,304,652

COMPOSITIONS FOR PROTECTING PLANTS FROM DISEASES

Walter Kunz, Oberwil, and Rolf Schurter, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 845,518, Feb. 27, 1992, Pat. No. 5,229,384, which is a continuation of Ser. No. 586,095, Sep. 19, 1990, abandoned. This application May 4, 1993, Ser. No. 57,073
Claims priority, application Switzerland, Sep. 26, 1989, 3480/89; Jul. 25, 1990, 2483/90
Int. Cl.[5] C07D *285/14*
U.S. Cl. 548—126 **2 Claims**

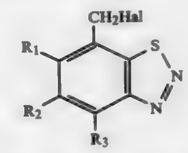
1. A compound of the formula V



(V)

in which: R_1, R_2 and R_3 independently of one another are hydrogen, halogen, methyl, methoxy or methylthio.

2. A compound of the formula VI



(VI)

in which: R_1, R_2 and R_3 independently of one another are hydrogen, halogen, methyl, methoxy or methylthio and Hal is halogen.

5,304,653

ALPHA-METHYLENE-5-THIAZOLACETIC ACID ESTERS

Jean-Louis Brayer, Nanteuil Le Haudoin; Jean-Pierre Demoute, Neuilly Plaisance, and Gilles Mourioux, Gemenos, all of France, assignors to Roussel-Uclaf, France

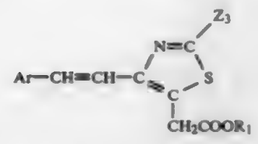
Division of Ser. No. 851,926, Mar. 16, 1992, Pat. No. 5,210,093. This application Oct. 6, 1992, Ser. No. 957,284

Claims priority, application France, Mar. 21, 1991, 91 03432

Int. Cl.[5] C07D *777/30*

U.S. Cl. 548—193 **1 Claim**

1. A compound of the formula



wherein Ar is phenyl optionally substituted with at least one member of the group consisting of halogen, methylenedioxy, phenyl, phenoxy, —CF_3 and alkyl, alkoxy and alkylthio of 1 to 6 carbon atoms, Z_3 is an alkoxy of one to 6 carbon atoms, R_1 is alkyl of 1 to 6 carbon atoms.

5,304,654

FLUORINE-CONTAINING NITROIMIDAZOLE COMPOUNDS

Tsutomu Kagiya; Mitsuyuki Abe, both of Kyoto; Seiichi Nishimoto, Nara; Yuta Shibamoto, Kyoto; Kazuhiro Shimokawa, Osaka; Yorisato Hisanaga, Osaka; Tatsuo Nakada, Osaka, and Toru Yoshizawa, Osaka, all of Japan, assignors to Yasunori Nishijima, Kyoto and Daikin Industries, Ltd., Osaka, both of Japan

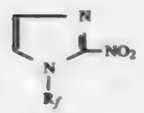
Continuation of Ser. No. 281,855, Dec. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 204,367, Jun. 9, 1988, Pat. No. 4,927,941. This application Sep. 9, 1991, Ser. No. 759,118

Claims priority, application Japan, Jun. 10, 1987, 62-147459; Jun. 24, 1987, 62-156787; Sep. 26, 1987, 62-241574; Dec. 10, 1987, 62-314686; Jan. 29, 1988, 63-20456; Mar. 31, 1988, 63-79230

Int. Cl.[5] C07D *233/91*; A61K *31/415*

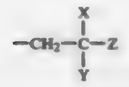
U.S. Cl. 548—327.5 **1 Claim**

1. A 2-nitroimidazole derivative of the formula:



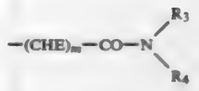
(i)

wherein R_f is a group of the formula:



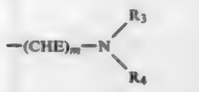
(ii)

wherein X is a fluorine atom; Y is a fluorine atom, a chlorine atom, a trifluoromethyl group, a methyl group or a hydroxyl group, or X and Y together represent =O; Z is a group of the formula:



(v)

wherein R_3 and R_4 are the same or different and are each a hydrogen, a hydroxy group a C_1–C_5 alkyl or fluoroalkyl group, a hydroxy group or a C_1–C_5 alkoxy group substituted C_1–C_5 alkyl or fluoroalkyl group, or R_3 and R_4 forms a 3 to 6 member ring together with the nitrogen atom to which R_3 and R_4 bond, E is a hydrogen atom or a fluorine atom and m is 0 or 1, or



(vi)

wherein R_3, R_4, E and m are the same as defined above.

5,304,655

N'-SUBSTITUTED N-AMINO-3,4,5,6-TETRAFLUOROPHTHALIMIDES, AND PROCESSES FOR THEIR PREPARATION

Theodor Papenfuhs, Frankfurt am Main, and Ralf Pfirmann, Griesheim, both of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

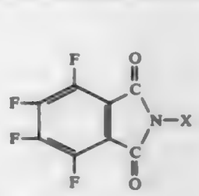
Division of Ser. No. 872,058, Apr. 23, 1992, Pat. No. 5,274,115. This application Sep. 24, 1993, Ser. No. 126,794

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 4113461

Int. Cl.[5] C07D *209/48*

U.S. Cl. 548—461 **13 Claims**

1. A process for the preparation of a compound of the formula (I)

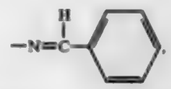


(I)

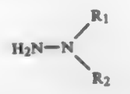
in which X is the radical



where R_1 and R_2 are in each case a hydrogen atom, an alkyl-(C_1–C_{10}) group, aryl group, alkyl(C_1–C_6)-CO group or aryl-CO group, where the aryl or aryl-CO groups in the case of R_1 and R_2 can be substituted on the aromatic ring by fluorine and/or chlorine atoms and/or alkyl(C_1–C_4) groups, or R_1 and R_2 together are a phthaloyl radical which can be substituted on the aromatic ring by 4 chlorine atoms or 4 fluorine atoms, or in which X is the radical

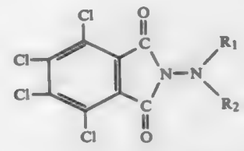


which can be substituted on the aromatic ring by fluorine and/or chlorine atoms and/or alkyl(C_1–C_4) groups, which comprises reacting 1 mol of 3,4,5,6-tetrachlorophthalic anhydride with an at least equimolar amount of a nitrogen compound of the formula (2)



(2)

in which R_1 and R_2 have the abovementioned meanings, in an aqueous/alcoholic medium, in glacial acetic acid, in approximately 90 to 100% strength sulfuric acid or in oleum at temperatures (depending on the medium used) of approximately 100° to approximately 200° C., to give the corresponding N'-substituted-N-amino-3,4,5,6-tetrachlorophthalimide of the formula (3)



(3)

in which R_1 and R_2 have the abovementioned meanings, and reacting the resulting imide with potassium fluoride, rubidium fluoride or cesium fluoride or mixtures of these at temperatures of approximately 50° to approximately 230° C. in the presence or absence of a phase-transfer catalyst, in a polar aprotic solvent, directly or after prior reaction with an at least equimolar amount of benzaldehyde which can be substituted on the aromatic ring by fluorine and/or chlorine atoms and/or alkyl(-C_1–C_4) groups to give the corresponding benzal compound, or after prior acylation with an alkyl (C_1–C_6)-CO halide, carboxylic anhydride of the formula alkyl(C_1–C_6)-CO—O—OC-(C_1–C_6)alkyl, aryl-CO halide or phthalic anhydride which can be substituted on the aromatic ring by 4 chlorine atoms or 4 fluorine atoms.

5,304,656

PROCESS FOR PREPARING ALKYLENE SULFIDES

Hitoshi Yano; Yoshinari Yamaguchi; Kimio Ariyoshi; Yuuji Shimasaki, all of Suita; Ryuichi Ishikawa, Sakai, and Michio Ueshima, Takarazuka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

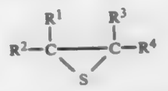
Filed Nov. 23, 1992, Ser. No. 980,009

Claims priority, application Japan, Nov. 29, 1991, 3-316657; Nov. 29, 1991, 3-316658

Int. Cl.[5] C07D *331/02*

U.S. Cl. 549—1 **9 Claims**

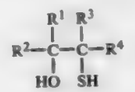
1. A process for preparing alkylene sulfides of the formula



(I)

wherein R^1, R^2, R^3 and R^4 are respectively selected from the group consisting of a hydrogen atom, an alkyl group with 1–4 carbon atoms, a phenyl group, and a benzyl group, comprising:

carrying out the intramolecular dehydration reaction of mercaptoalkanols of the formula



(II)

wherein R^1, R^2, R^3 and R^4 are as defined above, in a gaseous phase at a reaction temperature in the range from 180° C. to 350° C., in the presence of catalysts of the formula

$$M_aX_bY_cO_d \quad \text{(III)}$$

wherein M represents at least one element selected from the group consisting of alkali metals, alkaline earth metals and thallium; X represents at least one element selected from the group consisting of aluminum, boron, silicon and phosphorous; Y represents at least one element selected from the group consisting of lanthanides, IIIA group, IVA group, VA group, IIIB group, IVB group, VB group and VIB group, excluding an element contained in M or X; O represents oxygen; and subscripts a, b, c and d respectively represent composition ratios of the elements; a and b are numerical values not equal to 0; b=0.2–100 and c=0–50 when a=1; and d is a numerical value which is consistent with the valency of a, b and c so as to give a neutrally charged catalyst moiety.

5,304,657

HYDRAZINE COMPOUNDS USESFUL AS PESTICIDES

Tadaaki Toki; Toru Koyanagi; Kiyomitsu Yoshida; Kazuhiro Yamamoto, and Masayuki Morita, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

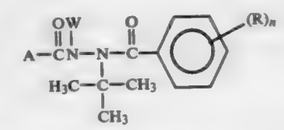
Filed Oct. 10, 1991, Ser. No. 774,786

Claims priority, application Japan, Oct. 29, 1990, 2-291107

Int. Cl.[5] C07D *333/68, 333/70*

U.S. Cl. 549—57 **6 Claims**

1. A hydrazine compound of the formula (I) or its salt:



(I)

wherein A is a benzothienyl group which may be substituted, a thienothienyl group which may be substituted, a dihydrocyclopentathienyl group which may substituted, a tetrahydrobenzothienyl group which may be substituted, W is a hydrogen atom, R is a halogen atom or an alkyl group which may be substituted by a halogen atom, n is 1 or 2, provided that when n is 2, the plurality of R may be the same or different.

5,304,658

QUINONE DERIVATIVES, THEIR PRODUCTION AND USE

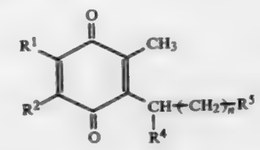
Shinji Terao, Toyonaka, and Yoshitaka Maki, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 1,893, Jan. 9, 1987, Pat. No. 5,180,742, which is a continuation-in-part of Ser. No. 823,298, Jan. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 760,504, Jul. 30, 1985, abandoned. This application Aug. 3, 1992, Ser. No. 923,598

Int. Cl.[5] C07C *50/02, 50/10*

U.S. Cl. 549—80 **15 Claims**

1. A compound of the formula



wherein

R^1 and R^2 are the same or different, and independently are

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methyl or methoxy, or R^1 and R^2 together represent —CH=CH—CH=CH—,

R^4 is (a) a phenyl, (b) a naphthyl, (c) a thienyl or (d) a furyl, each of (a), (b), (c) or (d) being unsubstituted or substituted by 1 to 5 substituents selected from the group consisting of hydroxyl, a halogen, an alkyl having 1 to 3 carbon atoms, an alkoxy having 1 to 3 carbon atoms, acetyl, phenyl, p-tolyl, m-tolyl, a pyridyl, 3-pyridlmethyl, benzoyl, methylenedioxy, trimethylene, 1-imidazolyl and 1-imidazolylmethyl,

R^5 is

methoxy,
hydroxymethyl,
nitroxymethyl,
aminocarbonyloxymethyl,
methylaminocarbonyloxymethyl,
ethylaminocarbonyloxymethyl,
dimethylaminocarbonyloxymethyl,
phenylaminocarbonyloxymethyl,
morpholinocarbonyloxymethyl,
piperidinocarbonyloxymethyl,
aminocarbonyl,
a mono- or di-alkylaminocarbonyl having 2 to 4 carbon atoms,
benzylaminocarbonyl,
α- or β-phenethylaminocarbonyl,
1-(α-naphthyl)ethylaminocarbonyl,
aminocarbonyl substituted by phenyl or naphthyl, whose phenyl or naphthyl may be further substituted by hydroxy, amino, nitro, halogen, methyl or methoxy,
hydroxyaminocarbonyl,
N-hydroxy-N-methylaminocarbonyl,
N-hydroxy-N-phenylaminocarbonyl,
an amino acid residue-carbonyl whose amino acid is one selected from the group consisting of glycine, arginine, histidine, aspartic acid, proline, phenylalanine, methionine, alanine, and leucine, or
a cyclic aminocarbonyl, selected from the group consisting of morpholinocarbonyl, piperidinocarbonyl, piperazinocarbonyl and pyrrolidinocarbonyl, the cyclic aminocarbonyl being unsubstituted or substituted by methyl, ethyl, propyl, pyrrolidinecarbonylmethyl, 4-fluorophenylcarbonylpropyl, phenyl, naphthyl, 2-methoxyphenyl, 4-methylphenyl, 4-bromophenyl, benzyl, 2-phenylethyl, 4-fluorophenylmethyl, 4-methoxyphenylmethyl, 3,4,5-trimethoxyphenylmethyl, diphenylmethyl, aminocarbonyl, 6-(9-β-D-ribofuranoside)adenyl or 4-amino-6,7-dimethoxyquinazolinyl,

and

n is an integer of 2 to 10,

or the hydroquinone form of said compound.

5,304,659

PREPARATION OF POLYCYCLIC DYES

David J. Milner, Whitefield, England, assignor to Zeneca Limited, London, England

Filed May 7, 1993, Ser. No. 57,806

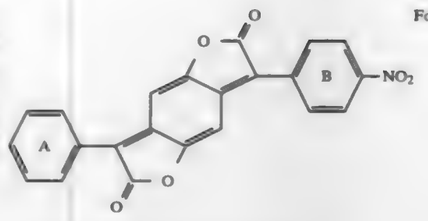
Claims priority, application United Kingdom, May 7, 1992, 9209870

Int. Cl.[5] C07D *307/77*

U.S. Cl. 549—299 **5 Claims**

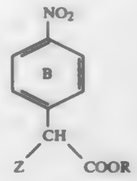
1. A process for the preparation of a polycyclic dye of Formula (1):

Formula 1



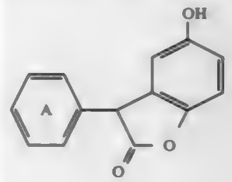
by reacting a compound of Formula (2):

Formula (2)



with a benzofuranone of the Formula (3):

Formula 3



wherein:

Ring A is unsubstituted or is substituted by from one to three groups;

Ring B is unsubstituted, apart from the nitro group, or is substituted by one or two further groups;

R is H, optionally substituted alkyl or optionally substituted aryl; and

Z is an oxyammonium group.

5,304,660

PYRAN DERIVATIVES

Stanley F. Clark; Ronald H. Jones, and Christopher G. Newton, all of Dagenham, United Kingdom, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

PCT No. PCT/EP91/00012, § 371 Date Aug. 11, 1992, § 102(e) Date Aug. 11, 1992, PCT Pub. No. WO91/10672, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 7, 1991, Ser. No. 867,708

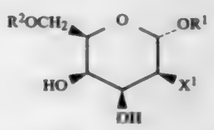
Claims priority, application United Kingdom, Jan. 8, 1990, 9000372; Jan. 16, 1990, 9000890

Int. Cl.[5] C07D *309/10*

U.S. Cl. 549—417 **8 Claims**

1. A compound of the general formula:

(I)



wherein R^1 represents a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, R^2 represents an acid-labile protecting group and X^1 represents a halogen atom.

5,304,661

SUBSTITUTED-ACYCLIC TERPENE COMPOUND

Hisao Takayanagi; Yasunori Kitano, both of Yokohama, and Yasuhiro Morinaka, Tsuchiura, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 962,016, Oct. 15, 1992, Pat. No. 5,245,085, which is a continuation of Ser. No. 786,071, Oct. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 730,811, Jul. 25, 1991, abandoned. This application Apr. 9, 1993, Ser. No. 44,602

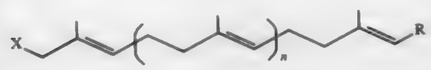
Claims priority, application Japan, Nov. 29, 1989, 1-309797; Jun. 20, 1990, 2-126439

Int. Cl.[5] C07D *315/00*; C07C *255/07*

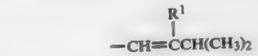
U.S. Cl. 549—426 **1 Claim**

1. An acyclic terpene compound of the formula (I):

(I)



wherein R is a group of the formula:



wherein R^1 is a cyano group of formyl group; X is a hydrogen atom, a halogen atom, or a group of the formula: $—OR^5$ or $—OSO_2R^6$ wherein R^5 is a hydrogen atom, 1-alkoxyalkyl group, tetrahydrofuryl group or tetrahydropyranyl group, a silyl group substituted with a C_1–C_5 alkyl group or a phenyl group; R^6 is a C_1–C_4 alkyl group optionally substituted with a halogen atom, or a phenyl group optionally substituted with a C_1–C_4 alkyl group; and n is an integer of 0 to 2, with the proviso that when R^1 is a formyl group, X is not a halogen atom or $—OSO_2R^6$.

5,304,662

POLYGLYCIDYL COMPOUNDS

Michael R. Thoseby, Cambridge, England, and Bryan Dobinson, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 6, 1993, Ser. No. 900

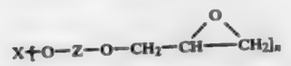
Claims priority, application United Kingdom, Jan. 11, 1992, 9200566

Int. Cl.[5] C07D *303/12, 303/34*; C08G *59/00*

U.S. Cl. 549—556 **6 Claims**

1. A compound having the formula (I):

I



in which n is an integer ranging from 2 to 6; X is the residue of an optionally substituted primary or secondary aliphatic or cycloaliphatic polyol of formula II:

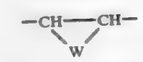
II

$X(OH)_n$

in which X and n have their previous significance; and Z is a group of formula:

$—CH_2—CH(CH_2OY)—$

in which Y is the residue of an optionally substituted primary or secondary alkanol or cycloalkanol, or Z is a group of formula:



in which W is an optionally substituted aliphatic carbon chain which may contain one or more heteroatoms, or Z is a group of formula $—CH_2—CH(T)—$ in which T is an aliphatic or cycloaliphatic residue.

5,304,663

PROCESS FOR THE PREPARATION OF SUBSTITUTED PENTAALKYLCHROMENES

David Laffan, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland and Sankyo Company Ltd., Tokyo, Japan

Division of Ser. No. 977,157, Nov. 16, 1992. This application Sep. 15, 1993, Ser. No. 120,789

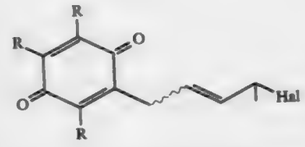
Claims priority, application Switzerland, Nov. 20, 1991, 3392/91

Int. Cl.[5] C07C *50/06*

U.S. Cl. 552—310 **2 Claims**

1. A quinone of the formula:

V



wherein R denotes a lower alkyl group having 1 to 4 C atoms and Hal denotes chlorine, bromine or iodine.

5,304,664

PROCESS FOR THE PRODUCTION OF HIGHLY SULFATED FATTY ACIDS AND FATTY ACID DERIVATIVES

Reinmar Peppmöller, Krefeld, and Kurt Dahmen, Mönchengladbach-Rheydt, both of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

PCT No. PCT/EP89/01257, § 371 Date Apr. 5, 1991, § 102(e) Date Apr. 5, 1991, PCT Pub. No. WO90/04586, PCT Pub. Date May 3, 1990

PCT Filed Oct. 20, 1989, Ser. No. 681,495

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1988, 3836447

Int. Cl.[5] C07C *303/00*

U.S. Cl. 554—98 **13 Claims**

1. A process for the production of a highly sulfated fatty acid, hydroxy fatty acid or oxyalkylated hydroxy fatty acid consisting essentially of

sulfating at least one of an unsaturated fatty acid ester and a saturated or unsaturated hydroxy fatty acid ester or oxyalkylated saturated or unsaturated hydroxy fatty acid ester,

neutralizing the reaction mixture,

optionally separating the resulting brine,

diluting the neutral or alkaline stabilized ester sulfate with water,

adding lye in an amount which is at most equimolar to the organically bonded sulfuric acid content,

hydrolyzing the alkaline solution at a temperature between 20° C. and 160° C.,

separating the resulting oil-phase which substantially consists of non-sulfated starting product from the aqueous phase which comprises the highly sulfated fatty acids, and

isolating and highly sulfated fatty acid.

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5,304,665

PROCESS FOR THE PREPARATION OF HIGHLY ESTERIFIED ALKOXYLATED POLYOL COMPOSITIONS

Charles F. Cooper, Paoli, Pa.; Bernard C. Sekula, High Bridge, N.J., and Stephen D. Harper, West Chester, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del. and CPC International, Inc., Englewood Cliffs, N.J.

Filed Apr. 5, 1993, Ser. No. 43,431

Int. Cl.[5] C07C *51/367*

U.S. Cl. 554—149 **20 Claims**

1. A process for preparing a highly esterified alkoxylated polyol composition having a degree of esterification greater than 0.90, said process comprising

(a) contacting an epoxide, an aliphatic polyalcohol, and a triglyceride in the presence of a catalytic amount of a catalyst selected from alkali metals and alkaline earths for a time and at a temperature of from 50° C. to 200° C. to accomplish ring-opening of the epoxide and formation of a partially esterified alkoxylated polyol composition, wherein the molar ratio of epoxide: (triglyceride+aliphatic polyalcohol) is from 1:1 to 65:1 and the molar ratio of triglyceride: aliphatic polyalcohol is at least 1:3/m wherein m is the number of hydroxy groups in the aliphatic polyalcohol and is a integer of from 2 to 8; and

(b) contacting the partially esterified alkoxylated polyol composition with a fatty acid for a time and at a temperature effective to provide the highly esterified alkoxylated polyol composition, the number of moles of fatty acid being at least equal to the number of moles of hydroxy groups in the partially esterified alkoxylated polyol composition.

5,304,666

PROCESS FOR MAKING SUPERCONDUCTORS AND THEIR PRECURSORS

Stephan J. McLain, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 586,856, Sep. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 214,702, Jul. 1, 1988, abandoned. This application Apr. 7, 1992, Ser. No. 864,955

Int. Cl.[5] C07F *1/08*

U.S. Cl. 556—21 **6 Claims**

1. A compound of the formula $Cu(OCH_2CH_2NR_2)_2$ wherein R is an alkyl group, said compound having a solubility of more than 0.1 g/mL in toluene or in tetrahydrofuran.

3. A compound of the formula $Cu(OCH_2CH_2SR_2)_2$ wherein R is a lower alkyl group of at least C4.

5. A compound of the formula $Cu(OCH_2CH_2PR_2)_2$ wherein R is a phenyl group, a substituted phenyl group, or a lower alkyl group of at least C4.

5,304,667

CYCLOSILOXANES CONTAINING MESOGENIC SIDE GROUPS

Norman Haeberle, Munich; Wolfgang Haas, Germering, and Franz-Heinrich Kreuzer, Martinsried, all of Fed. Rep. of Germany, assignors to Consortium für elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 728,479, Jul. 11, 1991. This application Mar. 29, 1993, Ser. No. 38,312

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1990, 4022151

Int. Cl.[5] C07F *7/04, 7/08, 7/21*

U.S. Cl. 556—413 **5 Claims**

1. A cyclic siloxane which has at least one group of the formula

$$-(CH_2)_x-R''-[-L-A-]_y-(L)_z-T \quad (1)$$

bonded to a silicon atom in which x is an integer having a value of from 2 to 10, R'' is selected from the group consisting of a chemical bond, and a divalent radical selected from the group consisting of the formulas —COO—, —OOC—, —CH_2—CH_2—, —CH=CH—, —C≡C—, —N=N—, —N=N(O)—, —CH=N—, —N=CH— and —$Si(R)_2$—, where the radical R is selected from the group consisting of a hydrocarbon radical having from 1 to 18 carbon atoms and a substituted hydrocarbon radical having from 1 to 18 carbon atoms, L is selected from the group consisting of the 1,4-phenylene and the 1,4-cyclohexylene radicals which may be optionally substituted at the 2-, 3-, 5- and/or 6 position by at least one radical Q, Q is selected from the group consisting of hydrogen, fluorine, chlorine, cyano, methyl and trifluoromethyl groups, A is a radical selected from the group consisting of the divalent radicals R'', radicals of the formula —CH_2—O— and —O—CH_2—, y is an integer having a value of from 0 to 10, z is an integer having a value of from 0 to 10, with the proviso that the sum y+z is at least 1, and T is a cholesteryl radical.

5,304,668

BIS-[4-(2,6-DI-ALKYL)PHENOLISILANE DERIVATIVES AS ANTIATHEROSCLEROTIC AGENTS

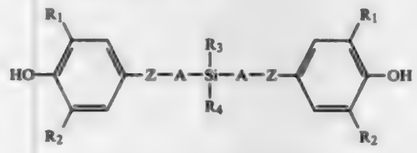
Roger A. Parker, Cincinnati, and Simon J. T. Mao, Loveland, both of Ohio, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

Division of Ser. No. 939,561, Sep. 2, 1992, which is a continuation of Ser. No. 696,684, May 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 548,051, Jul. 5, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 77,619

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—449 **8 Claims**

1. A compound of the formula



wherein

R_1, R_2, R_3 and R_4 are each independently a C_1–C_6 alkyl group;

Z is a methylene group; and

A is a C_1–C_4 alkylene group.

5,304,669

PROCESS FOR THE PRODUCTION OF ALKYL SULFATE PASTES HAVING IMPROVED FLOW PROPERTIES

Frank Wangemann, Mettmann; Rainer Hofmann, Duesseldorf; Bernd Fabry, Korschenbroich, and Fritz Lange, Essen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01913, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/06952, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 8, 1991, Ser. No. 39,367

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1990, 4032909

Int. Cl.[5] C07C *303/42, 303/28*

U.S. Cl. 558—41 **8 Claims**

1. A process for the production of alkyl sulfate pastes having improved flow properties comprising the steps of: (1) contacting a mixture comprising: (a) from about 50% to about 99% by weight of at least one aliphatic primary alcohol containing 6 to 22 carbon atoms and, (b) from about 1% to 50% by weight of at least one unsaturated fatty acid glyceride ester derived from fatty acids containing 16 to 22 carbon atoms and 1, 2 or 3 double bonds with gaseous sulfur trioxide to produce a sulfonated product; (2) neutralizing and hydrolyzing said sulfonated product to form a paste having a solids concentration of from about 30% to about 80% by weight.

5,304,670

PROCESS FOR THE ENANTIOSELECTIVE PREPARATION OF PHENYLISOSERINE DERIVATIVES

Arlene G. Correa, Grenoble; Jean-Noel Denis, and Andrew E. Greene, both of Uriage, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

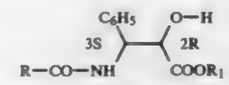
Continuation of Ser. No. 803,725, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 569,442, Aug. 20, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,199

Claims priority, application France, Aug. 23, 1989, 89 11162; Oct. 2, 1989, 89 12825

Int. Cl.[5] C07C *227/04, 227/10, 229/34*

U.S. Cl. 560—39 **6 Claims**

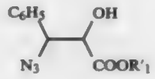
1. Process for the enantioselective preparation of phenylisoserine of formula:



(I)

in which R represents a phenyl radical and R_1 represents an alkyl radical containing 1 to 4 carbon atoms comprising;

reacting benzoyl chloride with a hydroxy azide of formula:



in which R'_1 represents a C_1–C_4 alkyl radical in the presence of an organic base and an activating agent, adding methanol to form a reaction mixture, and further reacting the reaction mixture, without isolation of intermediate reaction products, in a hydrogen atmosphere in the presence of a hydrogenation catalyst, in an inert organic solvent at a temperature of between 0° and 40° C.

5,304,671

METHOD FOR RECOVERY OF ALPHA-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER, L-PHENYLALANINE AND L-ASPARTIC ACID

Sou Abe; Shinichi Kishimoto; Tadashi Takemoto; Toshihisa Kato, and Satoshi Kumon, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,039

Claims priority, application Japan, Aug. 5, 1991, 3-195404

Int. Cl.[5] C07C *229/34*

U.S. Cl. 560—41 **15 Claims**

1. A method for the recovery of α-L-aspartyl-L-phenylalanine methyl ester, L-phenylalanine and L-aspartic acid which comprises

concentrating all or part of the mother liquor obtained by the solid-liquid separation of a suspension of α-L-aspartyl-L-phenylalanine methyl ester crystals without desalting to provide a concentrate,

either adding a mineral acid and methanol to a part of said non-desalted concentrate or mixing a part of said non-desalted concentrate with a solvent comprising a mineral acid, methanol, water and, optionally, α-L-aspartyl-L-phenylalanine methyl ester to precipitate the acid salt,

recovering α-L-aspartyl-L-phenylalanine methyl ester as its acid salt,

neutralizing said acid salt and recovering α-L-aspartyl-L-phenylalanine methyl ester,

hydrolyzing the remaining concentrate with a mineral acid and

recovering L-phenylalanine or L-phenylalanine and L-aspartic acid.

5,304,672

METHOD FOR THE PREPARATION OF SUBSTITUTED 1,4-DIHYDRO-4-OXO-CINNOLINE-3-CARBOXYLIC ACID, ESTERS AND SALTS THEREOF, AND INTERMEDIATES USED IN THEIR PREPARATION

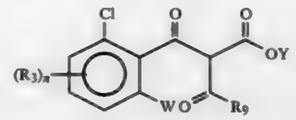
Jeffrey Labovitz, Palo Alto; William J. Guilford, San Leandro; Lawrence Fang, Foster City, and Yi Liang, San Jose, all of Calif., assignors to Orsan and Orsem, both of Paris, France

Division of Ser. No. 434,077, Nov. 9, 1989, Pat. No. 5,183,891. This application Nov. 9, 1992, Ser. No. 973,629

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—51 **6 Claims**

1. A compound of the formula



wherein

W is F or Cl;

n is an integer from 0 to 3;

each R_3 independently represent a C_1–C_4 alkyl or haloalkyl, C_1–C_4 alkoxy or haloalkoxy, C_1–C_4 alkanoyl, cyano, nitro, hydroxy, or halo substituent;

R_9 is an alkyl or alkenyl group containing 10 or fewer carbons; and

Y is hydrogen, a stable organic group that forms an ester with the adjacent COO group, or a metal ion.

5,304,673

PROCESS FOR RECOVERING DIMETHYL TEREPHTHALATE AND ETHYLENE GLYCOL

Paul M. Hermanson, Oak Lawn, Ill., assignor to Enviropur Waste Refining And Technology, Inc., McCook, Ill.

Filed Jan. 29, 1993, Ser. No. 11,411

Int. Cl.[5] C07C *67/62, 27/26*

U.S. Cl. 560—78 **11 Claims**

1. A process for separating substantially pure dimethyl terephthalate from an aqueous stream that contains dimethyl terephthalate and ethylene glycol, which comprises:

adding a diamine dispersing agent to an aqueous stream that contains dimethyl terephthalate and ethylene glycol in an amount effective to produce a pH in the range of about 8.5 to about 9.5;

cooling said aqueous stream sufficiently to precipitate particulate dimethyl terephthalate; and

filtering said aqueous stream to recover said particulate dimethyl terephthalate.

5,304,674

PREPARATION OF ALKANEDIOIC DERIVATIVES

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1993, Ser. No. 82,212

Claims priority, application European Pat. Off., Jun. 29, 1992, 92201943.7

Int. Cl.[5] C07C *67/39, 51/14*

U.S. Cl. 560—204 **9 Claims**

1. A process for the preparation of alkanedioic derivatives comprising reacting an aliphatic conjugated diene with carbon monoxide and a hydroxyl group-containing compound in the presence of a catalyst system comprising:

a) a source of cationic palladium,

b) a first bidentate diphosphine ligand having electron-withdrawing substituents on the phosphorus atoms,

c) a second bidentate diphosphine ligand having electron-releasing substituents on the phosphorus atoms, and

d) a source of an anion.

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5,304,675

ESTER DERIVATIVES OF LOWER ALKENE OLIGOMERS

Catherine S. H. Chen, Berkeley Heights, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 467,437, Jan. 19, 1990, Pat. No. 4,982,031. This application Dec. 11, 1990, Ser. No. 625,404

Int. Cl.[5] C07C *67/02*

U.S. Cl. 560—265 14 Claims

1. A process for the production of ester product from a mixture of near linear mono-olefinic oligomers having six to twenty carbon atoms, wherein at least 20 weight percent of the mono-olefin oligomers comprise at least twelve carbon atoms having an average of 0.80 to 2.0 methyl side groups per carbon chain, said oligomer containing internal olefinic unsaturation, comprising;

reacting said oligomer with H_2 and CO mixture in contact with a hydroformylation catalyst under hydroformylation conditions sufficient to convert said oligomer to aliphatic 1-alkanol, said alkanol having a methyl to methylene branch ratio equal to or less than said oligomer; and

converting said 1-alkanol to an ester under esterification conditions in contact with aliphatic acylating agent.

5,304,676

PROCESS FOR THE PRODUCTION OF TEREPHTHALIC ACID

Eric Hindmarsh, North Yorkshire; John A. Turner, and David Parker, both of Middlesbrough, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 30, 1992, Ser. No. 827,205

Claims priority, application United Kingdom, Feb. 5, 1991, 9102393

Int. Cl.[5] C07C *51/215, 51/487*

U.S. Cl. 562—414 8 Claims

1. A process in which terephthalic acid is produced of oxidizing para xylene to terephthalic acid in a liquid reaction medium which comprises acetic acid and in which terephthalic acid is separated from the liquid reaction medium as a crude solid, dissolved in a liquid comprising water to produce a solution and purified by a process which comprises contacting the solution under reducing conditions with hydrogen and a heterogenous catalyst for the reduction of at least some impurities, the solution is cooled after said reduction to precipitate solid purified terephthalic acid, aqueous mother liquor is separated from the precipitate wherein;

a) the aqueous mother liquor is treated to produce a less pure precipitate comprising terephthalic acid and a second mother liquor;

b) the less pure precipitate is returned directly or indirectly to the reaction medium; and

c) at least part of the said second mother liquor is, directly as such or indirectly after treatment, used to dissolve the crude solid.

5,304,677

METHOD FOR PRODUCING 2,6-DIHYDROXYBENZOIC ACID

Toshio Nakanatsu; Yasuhiro Nishida, both of Hyogo, and Norio Konetani, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited and Sumika Fine Chemicals Co., Ltd., both of Osaka, Japan

Filed Jan. 22, 1993, Ser. No. 7,782

Claims priority, application Japan, Jan. 23, 1992, 4-9906

Int. Cl.[5] C07C *65/01*

U.S. Cl. 562—476 7 Claims

1. A method for producing 2,6-dihydroxybenzoic acid, which comprises heating an aqueous solution which contains a mixture of 2,6-dihydroxybenzoic acid and 2,4-dihydroxybenzoic acid and has a pH value of 4 or more at a temperature of 60° C. or more, to selectively decompose 2,4-dihydroxybenzoic acid, and separating 2,6-dihydroxybenzoic acid from the decomposition reaction mixture.

5,304,678

ACETIC ACID FROM ETHYLENE

Michael F. Lemanski, Hull, Great Britain; Joseph B. Hazen, Garfield Heights, and Patricia R. Blum, Macedonia, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1990, Ser. No. 625,191

Int. Cl.[5] B01J *27/185;* C07C *51/16*

U.S. Cl. 562—548 16 Claims

1. A process for making acetic acid which comprises reacting in a reaction zone ethylene and molecular oxygen in the presence of a solid catalyst containing the elements and proportions indicated by the empirical formula

$$Pd_aM_bTiP_cO_x \qquad \text{(formula 1)}$$

where

M is selected from Cd, Au, Zn, Tl, alkali metals and alkaline earth metals,

a is from 0.0005 to 0.2

b is from zero to 3a

c is 0.5 to 2.5, and

x is a value sufficient to satisfy the valence requirements of the other elements present, and

wherein said catalyst contains crystalline TiP_2O_7.

5,304,679

COMPOSITIONS AND METHODS FOR INHIBITING BROWNING IN FOODS

Arthur J. McEvily, Weston; Radha Iyengar, Belmont, and Akiva Gross, Newton, all of Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

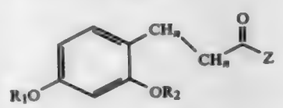
Division of Ser. No. 537,361, Jun. 13, 1990, Pat. No. 5,059,438, which is a continuation-in-part of Ser. No. 475,150, Feb. 5, 1990, abandoned. This application Oct. 21, 1991, Ser. No. 780,721

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

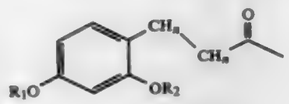
Int. Cl.[5] C07C *233/05*

U.S. Cl. 564—158 1 Claim

1. An enzymatic browning inhibitor suitable for use in foods and beverages having the formula:



wherein n=2, R_1 and R_2 are both H and Z is selected from the group consisting of $NH(CH_2)_xNH_2$, $NH(CH_2)_xNH(CH_2)_yNH_2$, $NH(CH_2)_xNHR_4$ and $NH(CH_2)_xNH(CH_2)_yNHR_4$ wherein x and y independently can be an integer from 2 to 5; and R_4 has the following formula:



wherein n, R_1 and R_2 are as defined above.

5,304,680

PROCESS FOR THE PREPARATION OF AROMATIC AMINES WHICH ARE SUBSTITUTED BY C_1–C_4-ALKOXY IN THE P-POSITION

Heinz Landscheidt, Duisburg; Alexander Klausener, Stolberg, and Heinz U. Blank, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

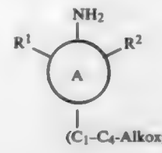
Filed Jul. 10, 1991, Ser. No. 728,909

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1990, 4023056

Int. Cl.[5] C07C *209/36*

U.S. Cl. 564—417 14 Claims

1. A process for the preparation of an aromatic amine which is substituted by C_1–C_4-alkoxy in the p-position of the formula

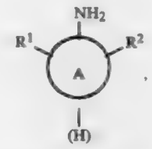


in which

A represents the benzene or the naphthalene ring,

p indicates the p-position with respect to the amino group and

R^1 and R^2, independently of one another, denote hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen, by catalytic hydrogenation of an aromatic nitro compound in a reaction medium comprising sulphuric acid and a C_1–C_4-alcohol at elevated temperature, wherein the nitro compound which is reacted under elevated pressure of which the hydrogen partial vapor pressure is 6 to 100 bar in the presence of non-deactivated catalysts from the platinum metal group is one of the formula



in which A, p, R^1 and R^2 have the above meaning.

5,304,681

TERT-BUTYLAMINE SYNTHESIS OVER MONTMORILLONITE CLAYS

John F. Knifton, and Neal J. Grice, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Division of Ser. No. 561,408, Aug. 1, 1990, Pat. No. 5,107,027. This application Nov. 22, 1991, Ser. No. 894,841

Int. Cl.[5] C07C *209/60*

U.S. Cl. 564—485 10 Claims

1. A method for preparation of alkylamines comprising reacting ammonia and a monounsaturated olefin containing 2 to 10 carbon atoms per molecule, in the presence of a catalyst comprising a heteropoly acid on an inert support.

5,304,682

METHOD OF MAKING 1,1'-SULFONYLBIS[3-NITRO-5-(TRIFLUOROMETHYL)-BENZENE]

Jeffrey S. Stults, and Henry C. Lin, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 17, 1989, Ser. No. 394,988

Int. Cl.[5] C07C *315/02*

U.S. Cl. 568—30 4 Claims

1. A method of making 1,1'-sulfonylbis[3-nitro-5(trifluoromethyl)benzene] comprising reacting 1,1'-thio-bis(3-trifluoromethyl)benzene with a mixture of at least about 4 equivalents fuming nitric acid and at least about 4 equivalents fuming sulfuric acid at a temperature below 20° C., until the sulfide link is oxidized to form 1,1'-sulfoxylbis[3-(trifluoromethyl)benzene], then raising the temperature to above 20° C. until said 1,1'-sulfonylbis[3-nitro-5-(trifluoromethyl)benzene] is formed.

5,304,683

CONVERSION OF ALKYL MERCAPTAN TO DIALKYL SULFIDE AND CATALYST THEREFOR

Willaim E. Sattich, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 2, 1992, Ser. No. 908,103

Int. Cl.[5] C07C *319/18*

U.S. Cl. 568—59 14 Claims

1. A process for converting an alkyl mercaptan to a dialkyl sulfide comprising contacting said alkyl mercaptan with a catalyst, in the presence of an alkene, wherein said alkyl mercaptan has 1 to 20 carbon atoms; said catalyst consists essentially of a gamma-alumina; said alkene has 1 to 20 carbon atoms; and said process is carried out at a temperature in the range of from about 200° C. to about 600° C., at a feed rate in the range of from about 0.5 to about 10 g of said alkyl mercaptan per g of said catalyst per hour, and under a pressure of from about 10 atmospheres to about 200 atmospheres.

5,304,684

PROCESS FOR PRODUCING PHENOL AND METHYL ETHYL KETONE

Hiroshi Nishida; Kazuo Kimura, both of Ichihara; Shouji Hamada, Misawa; Masaaki Toma, Ichihara, and Hirooki Nagaoka, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jul. 7, 1993, Ser. No. 86,896

Claims priority, application Japan, Jul. 7, 1992, 4-179711; Dec. 24, 1992, 4-344333; Mar. 5, 1993, 5-04493

Int. Cl.[5] C07C *45/53*

U.S. Cl. 568—385 7 Claims

1. A process for producing phenol and methyl ethyl ketone from sec-butylbenzene used as the starting material which comprises the following steps:

an oxidation step (A): a step of oxidizing sec-butylbenzene to obtain an oxidation reaction liquid comprising sec-butylbenzene hydroperoxide as the main component,

a concentration step (B): a step of concentrating the oxidation reaction liquid by distillation to obtain from the column bottom a bottom liquid comprising sec-butylbenzene hydroperoxide as the main component and from the column top a distillate comprising sec-butylbenzene as the main component, and recycling the distillate to the oxidation step (A),

a decomposition step (C): a step of bringing the bottom liquid of the concentration step (B) into contact with an acidic catalyst to decompose sec-butylbenzene hydroperoxide thereby to obtain a decomposition liquid containing phenol and methyl ethyl ketone,

the first neutralization step (D): a step of neutralizing the decomposition liquid with an aqueous alkali solution, separating the resulting liquid mixture into an oil layer and

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an aqueous layer, and recycling a part of the aqueous layer to the neutralization step (D),

the first distillation step (E): a step of subjecting the oil layer obtained in the first neutralization step (D) to distillation to obtain a bottom liquid comprising phenol as the main component and a distillate comprising methyl ethyl ketone as the main component,

an alkali-washing step (F): a step of washing the distillate obtained in the first distillation step (E) with an aqueous alkali solution to remove carboxylic acids, carboxylic acid esters, unsaturated ketones, and aldehydes, and then separating the resulting liquid mixture into an oil layer and an aqueous layer,

the second neutralization step (G): a step of neutralizing the oil layer obtained in the alkali-washing step (F) and then separating the resulting liquid mixture into an oil layer and an aqueous layer, the first purification step (H): a step of subjecting the oil layer obtained in the second neutralization step (G) to distillation to obtain a bottom liquid comprising methyl ethyl ketone as the main component and an overhead liquid containing water, and

the second purification step (I): a step of distilling the bottom liquid obtained in the first purification step (H) to recover methyl ethyl ketone as a bottom liquid and recycling a overhead liquid to the alkali-washing step (F).

5,304,685

PREPARATION OF 3-(HYDROXYPHENYL)PROPIONALDEHYDES AND THEIR HYDROGENATION TO 3-(HYDROXYPHENYL)PROPANOLS

Franz Merger, Frankenthal, and Martin Schmidt-Radde, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,881

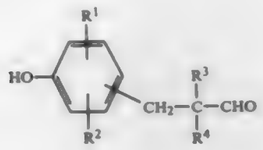
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213750

Int. Cl.[5] **C07C** *45/00, 29/14*

U.S. Cl. 568—433 **7 Claims**

1. A process for preparing 3-(hydroxyphenyl)propionaldehydes of the formula I

(I)



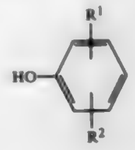
where

R^1, R^2, R^3 and R^4 are each hydrogen, C_1–C_{20}-alkyl, C_3–C_{20}-cycloalkyl, C_4–C_{20}-alkylcycloalkyl, C_4–C_{20}-cycloalkylalkyl or C_5–C_{20}-alkylcycloalkylalkyl,

R^3 and R^4 are each aryl, C_7–C_{20}-aralkyl, heterocycloalkyl or C_3–C_{20}-heterocycloalkylalkyl, which comprises

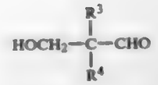
a) reacting phenols of the formula III

(III)



where R^1 and R^2 have the abovementioned meanings, with 3-hydroxypropionaldehydes of the formula IV

(IV)



where R^3 and R^4 have the abovementioned meanings, in the presence of a basic catalyst at from 90° to 230° C. and under from 0.01 to 50 bar.

5,304,686

PROCESS FOR MAKING 3-HYDROXYPROPANAL AND 1,3-PROPANEDIOL

Lynn H. Slaugh, Houston, and Juan P. Arhancet, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 13, 1993, Ser. No. 91,107

Int. Cl.[5] **C07C** *47/19*

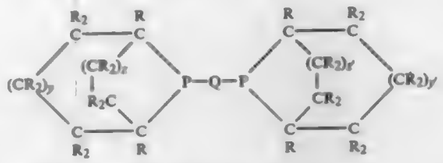
U.S. Cl. 568—496 **20 Claims**

1. A process for making 3-hydroxypropanal which comprises intimately contacting

(a) ethylene oxide,

(b) ditertiary phosphine-modified cobalt carbonyl catalyst, said phosphine being of the formula

(I)



where Q represents hydrocarbylene of up to 30 carbon atoms; y and z represent zero or positive integers whose sum is from 2 to 7; y' and z', independent of the values of y and z, represent zero or positive integers whose sum is from 0 to 7; and R independently represents hydrogen and hydrocarbyl of from 1 to 30 carbon atoms,

(c) catalyst promoter comprising an acid and a metal salt promoter selected from a salt of a metal of Group IIA, Group IIB, Group IIIB and the Rare Earth Series of the Periodic Table of the Elements (CAS version),

(d) carbon monoxide, and

(e) hydrogen, the molar ratio of carbon monoxide to hydrogen being from about 4:1 to about 1:6,

in liquid-phase solution in an inert reaction solvent, at a temperature of from about 30° C. to about 150° C. and a pressure of from about 50 psi to about 10,000 psi.

5,304,687

MORPHOLINYL DERIVATIVES OF DOXORUBICIN AND PROCESS FOR THEIR PREPARATION

Alberto Bargiotti; Maria Grandi; Antonino Suarato, all of Milan, and Daniela Faiardi, Pavia, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

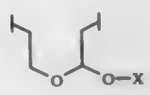
Continuation of Ser. No. 741,539, Aug. 14, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,684

Claims priority, application United Kingdom, Dec. 19, 1989, 9928654; Apr. 3, 1990, 9007513

Int. Cl.[5] **C07C** *43/313, 43/30*

U.S. Cl. 568—604 **2 Claims**

1. A diiodo compound of the formula:



wherein X represents a linear or branched C_1–C_6 alkyl group, said diiodo compound having an (S)-configuration at the 2-position.

5,304,688

PROCESS FOR THE PREPARATION OF BISHYDROXY AROMATIC COMPOUNDS

Robert G. Bowman, and Muthiah N. Inbasekaran, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 13, 1993, Ser. No. 46,696

Int. Cl.[5] **C07C** *39/16*

U.S. Cl. 568—727 **20 Claims**

1. A process of preparing a bishydroxy aromatic compound comprising contacting an aliphatic, alicyclic, alkaryl, or aromatic ketone with unsubstituted or substituted phenol, provided that the ketone does not further contain a carboxylic acid or aldehyde functionality and provided that the substituted phenol is not substituted with a cyano, nitro, caroxylic acid, or aldehyde functionality, the contacting occurring in the presence of a mercaptan cocatalyst and a solid superacid catalyst selected from the group consisting of metal sulfates, sulfated metal oxides, sulfated metal oxyhydroxides, sulfated metal oxysilicates, superacid metal oxides, and mixtures thereof, the superacid catalyst being characterized as having an acid strength H_O stronger than about −13.0, and the contacting of the ketone with the phenol being conducted under reaction conditions such that a bishydroxy aromatic compound is formed.

5,304,689

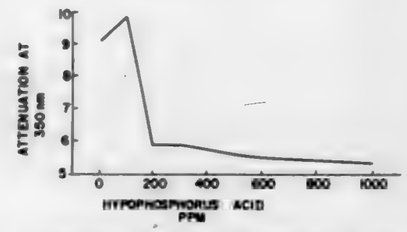
STABILIZATION OF COLOR IN PRODUCTION OF PARACUMYLPHENOL USING HYPOPHOSPHOROUS ACID

Gaylord M. Kissinger, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 891,025, Jun. 1, 1992, Pat. No. 5,185,475. This application Apr. 5, 1993, Ser. No. 42,976

Int. Cl.[5] **C07C** *37/14, 37/68, 39/14*

U.S. Cl. 568—748 **19 Claims**



1. A continuous process for manufacturing paracumylphenol comprising the steps of:

reacting a stream of a purified phenol and alpha-methylstyrene in the presence of an acidic catalyst to form a first effluent stream;

adding an effective amount of hypophosphorous acid to the effluent stream for stabilizing color of the para-cumylphenol product;

stripping bulk phenol from the effluent stream in a stripper column operating at a selected temperature and pressure; and

desorbing residual phenol in the effluent stream in a desorbing column employing an inert gas as a desorbing agent.

5,304,690

PROCESS FOR THE PREPARATION OF SALTS OF 4-HYDROXYSTYRENE

George Kvakovszky; James H. Rea; Michael I. Sheehan, all of Corpus Christi, Tex., and Brad L. Smith, Matthews, N.C., assignors to Hoechst Celanese Corporation, Sommerville, N.J.

Division of Ser. No. 940,424, Sep. 3, 1992, Pat. No. 5,256,809, which is a continuation-in-part of Ser. No. 614,766, Nov. 16, 1990, Pat. No. 5,241,098. This application Jun. 22, 1993, Ser. No. 80,897

Int. Cl.[5] **C07C** *39/20, 69/96*

U.S. Cl. 568—780 **14 Claims**

1. A method of preparing a salt of 4-hydroxystyrene, comprising the step of reacting 4-acetoxystyrene with a base in an organic solvent.

5,304,691

PROCESS FOR MAKING 1,3-PROPANEDIOL AND 3-HYDROXYPROPANAL

Juan P. Arhancet, Katy, and Lynn H. Slaugh, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 13, 1993, Ser. No. 91,108

Int. Cl.[5] **C07C** *27/20, 27/00*

U.S. Cl. 568—867 **11 Claims**

1. A process for making 1,3-propanediol and 3-hydroxypropanal which comprises intimately contacting

(a) ethylene oxide,

(b) tertiary phosphine-complexed cobalt carbonyl catalyst

(c) ruthenium catalyst,

(c) carbon monoxide, and

(d) hydrogen, the molar ratio of carbon monoxide to hydrogen being from about 4:1 to about 1:6,

in liquid-phase solution in an inert reaction solvent, at a temperature of from about 30° C. to about 150° C. and a pressure of from about 50 psi to about 10,000 psi.

5,304,692

CATALYST COMPOSITION FOR DISPROPORTIONATION OF OLEFINS AND PROCESS FOR DISPROPORTIONATION OF OLEFINS USING THE SAME

Takao Yamada; Goro Sawada, both of Ichihara, and Eiji Takahashi, Chiba, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,970

Claims priority, application Japan, Oct. 17, 1991, 3-298435

Int. Cl.[5] **C07C** *6/04*

U.S. Cl. 585—646 **11 Claims**

1. A process for disproportionation of olefins characterized by contacting one or more olefin hydrocarbons having 3 to 12 carbon atoms or a mixture of said olefins and ethylene with a disproportionation catalyst comprising

(a) the first catalyst component which comprises a silica gel having a SiO_2 purity of 99% by weight or higher and a specific surface area of 100 m^2/g or more, as a carrier, carrying thereon tungsten oxide or its precursor in an amount of 1 to 10% by weight calculated as oxide of the total amount of said first catalyst component and a Group I metal oxide or a compound convertible to the Group I metal oxide in an amount of 0.01 to 2 % by weight calculated as oxide of the total amount of said first catalyst component and

b) the second catalyst component which comprises an alumina having a specific surface area of 20 to 120 m^2/g and carrying thereon either (i) a Group I metal oxide or a compound convertible to the Group I metal oxide in an amount of 0 to 3.0% by weight calculated as oxide of the total amount of said second catalyst component or (ii) a Group III metal oxide or a compound convertible to the Group III metal oxide in an amount of 0 to 5.0% by weight calculated as oxide of the total amount of said second catalyst component, in an amount of 8 to 75 parts

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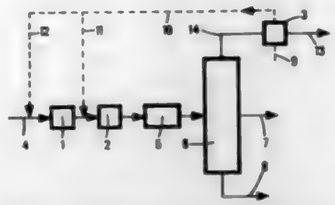
by weight per 1 part by weight of said first catalyst component.

5,304,693

PROCESS FOR ELIMINATING MERCURY FROM STEAM CRACKING INSTALLATIONS

Jean-Paul Bottiaux, Poissy, and Patrick Sarrazin, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Aug. 28, 1991, Ser. No. 751,008
Claims priority, application France, Aug. 29, 1990, 90 10846
Int. Cl.[5] B01D *53/02*; C07C *4/04, 7/12*; C10G *67/02*
U.S. Cl. 585—648 **10 Claims**



1. In a process comprising providing a hydrocarbon charge contaminated with mercury, passing the mercury-contaminated hydrocarbon charge through at least one demercurizing mass upstream of a steam cracking zone, passing the resultant mercury-depleted hydrocarbon charge to said steam cracking zone so as to crack said hydrocarbon charge, and separating a gaseous hydrocarbon effluent from said steam-cracking zone, the improvement comprising passing said gaseous hydrocarbon effluent through at least one regenerable demercurizing mass downstream of said steam cracking zone so as to remove residual mercury from said effluent, passing a heated regeneration gas through said downstream regenerable demercurizing mass, thereby obtaining a gaseous regenerating effluent containing mercury, and passing at least part of said gaseous regenerating effluent into at least one upstream demercurizing mass.

5,304,694

ISOBUTENE AND ISOAMYLENE PRODUCTION

Ralph M. Dessau, Edison, and Quang N. Le, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 418,377, Oct. 6, 1989, Pat. No. 5,192,728, which is a division of Ser. No. 211,198, Jun. 24, 1988, Pat. No. 4,990,710. This application May 15, 1992, Ser. No. 883,638
Int. Cl.[5] C07C *5/333*
U.S. Cl. 585—662 **32 Claims**

1. A process for catalytically converting a C_2–C_5 alkane to a C_2–C_5 alkene, comprising

heating an aromatic recycle stream, and passing the heated aromatic recycle stream to a catalyst bed in which the catalyst is non-acidic and comprises a Group VIA or Group VIII metal and a non-acidic microporous material wherein the amount of Group VI or Group VIII metal in the catalyst can range from 0.1 to 30 weight percent

contacting a C_2–C_5 alkane containing feed with the catalyst bed in a reactor maintained at a catalytic conversion temperature ranging from 350° to 600° C., in the presence of said aromatic recycle stream to produce a product effluent;

stripping, from the product effluent resulting from said contacting, at least a portion of said aromatic recycle stream; and

wherein the product effluent contains an amount of C_2–C_5 alkene which exceeds the amount of C_2–C_5 alkene in the feed.

5,304,695

DOUBLE BOND ISOMERIZATION OF OLEFIN-CONTAINING FEEDS WITH MINIMAL OLIGOMERIZATION USING PERMANENTLY SURFACE ACIDITY DEACTIVATED ZEOLITE CATALYSTS

Werner O. Haag, Lawrenceville, N.J., and Jose G. Santiesteban, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 22, 1993, Ser. No. 20,947
Int. Cl.[5] C07C *5/25*
U.S. Cl. 585—666 **20 Claims**

1. A method for double bond isomerization of terminal double bond olefin-containing feedstock which comprises contacting said feedstock under double bond isomerization conditions at temperatures of 20° to 150° C. with a double bond isomerization catalyst comprising a zeolite capable of sorbing 30 to 55 mg n-hexane at 90° C., 83 torr, and 15 to 40 mg 3-methylpentane at 90° C., 90 torr, per g dry zeolite in the hydrogen form; whose surface has been at least partially deactivated for acid catalyzed reactions by treatment with a chelating agent capable of forming a chelate-Al complex, said chelating agent possessing an average cross section diameter greater than that of the zeolite pores.

5,304,696

PROCESS FOR OLEFIN ISOMERIZATION

Gyanesh P. Khare, and Iqbal Ahmed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 15, 1993, Ser. No. 47,665
Int. Cl.[5] C07C *5/23, 5/25*
U.S. Cl. 585—668 **11 Claims**

1. A process for the double bond isomerization of an olefinic compound containing 4 to 30 carbon atoms, comprising contacting the olefinic compound and a sulfated zirconia catalyst under conditions sufficient to produce double bond isomerization;

wherein said contacting is conducted at a temperature in the range of from about 20° C. to about 250° C., and

wherein said sulfated zirconia catalyst contains from about 0.5 to about 20 weight percent sulfate based on the total composition of the catalyst.

5,304,697

PROCESS FOR UPGRADING A PARAFFINIC FEEDSTOCK

Danny G. R. Peferoen; Krijn P. de Jong; Jean-Pierre Gilson; Willem H. J. Stork; Swan T. Sie, and Carolus M. A. M. Mesters, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 6, 1993, Ser. No. 43,422
Claims priority, application European Pat. Off., Apr. 8, 1992, 92201015.2
Int. Cl.[5] C07C *2/62, 2/58*
U.S. Cl. 585—720 **14 Claims**

1. An alkylation process for a paraffinic feedstock comprising

a) supplying the feedstock and an olefins-containing stream at a paraffin to olefin volume ratio greater than 2 to a reactor containing a zeolite-beta catalyst and

b) removing the product comprising alkylate, wherein the process is operated at an olefin conversion of at least 90 mol % in an external circulation reactor having an extent of external circulation of liquid reactor content expressed as

$$\frac{\phi/vc + \phi/v}{\phi/v}$$

of greater than 50 wherein ϕ/v is the volumetric flow rate of feedstock and olefins-containing stream and ϕ/vc is the volumetric external circulation flow rate and wherein said catalyst has a catalyst life in excess of 7 kg/kg.

5,304,698

SOLID CATALYZED SUPERCRITICAL ISOPARAFFIN-OLEFIN ALKYLATION PROCESS

Altaf Husain, Marlton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 10, 1992, Ser. No. 927,753
Int. Cl.[5] C07C *2/58*
U.S. Cl. 585—722 **3 Claims**

1. A method for increasing olefin conversion in the catalytic alkylation of an olefin with an isoparaffin comprising contacting an olefin-containing feed with an isoparaffin-containing feed with a crystalline microporous material selected from the group consisting of MCM-22, MCM-36, and MCM-49 as defined herein under alkylation conversion conditions of temperature at least equal to the critical temperature of the principal isoparaffin component of the feed and pressure at least equal to the critical pressure of the principal isoparaffin component of the feed.

5,304,699

PROCESS FOR THE REMOVAL OF GREEN OIL FROM A HYDROCARBON STREAM

Christopher D. W. Jenkins, Elwood, Australia; Michel H. Masson, Lillebonne, France, and Richard A. Reitz, Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 812,507, Dec. 20, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,242
Int. Cl.[5] C07C *7/08*
U.S. Cl. 585—810 **22 Claims**

1. A process for recovering butadiene from a hydrocarbon stream comprising, butadiene, other hydrocarbon components having volatilities in the range of lower to higher than the volatility of butadiene, and contaminants, wherein the contaminants comprise oligomers of butadiene, the process comprising:

(a) contacting the hydrocarbon stream with a water soluble polar solvent;

(b) separating the contacted product of step (a) into a light stream and a solvent stream, wherein the light stream comprises at least 70 weight percent of the other hydrocarbon components of the hydrocarbon stream having a higher volatility than butadiene, and the solvent stream comprises at least 70 weight percent of: the butadiene, solvent, contaminants, and other hydrocarbon components of the hydrocarbon stream having a volatility about that of butadiene or lower;

(c) separating the solvent stream of step (b) into a butadiene stream and a stripped solvent stream, wherein the butadiene stream comprises at least 70 weight percent of: the butadiene of the solvent stream and other hydrocarbon components of the solvent stream, and the stripped solvent steam comprises at least 70 weight percent of: the solvent of the solvent stream and the contaminants of the solvent stream;

(d) recycling at least a portion of the stripped solvent stream of step (c) to step (a) wherein it comprises at least a portion of the solvent in step (a);

(e) contacting in a first water wash step, the light stream and the stripped solvent stream of step (c) not recycled in step (d), with an aqueous solution to form a solvent and water phase and a contaminant containing hydrocarbon phase; and

(f) recovering a solvent and water stream and a contaminant containing hydrocarbon stream from the first water wash of step (e).

5,304,700

SEPARATION OF METHYLENE CHLORIDE FROM N-PENTANE BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 South Third Ave., Bozeman, Mont. 59715, and Zuyin Yang, Bozeman, Mont., assignors to Lloyd Berg, Bozeman, Mont.

Filed Jul. 22, 1993, Ser. No. 94,698
Int. Cl.[5] C07C *7/00*; C01B *31/00*
U.S. Cl. 585—864 **2 Claims**

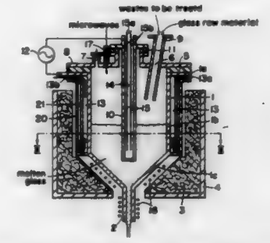
1. A method for recovering n-pentane from a mixture of n-pentane and methylene chloride in the presence of about one part by weight of an extractive agent per part of n-pentane-methylene chloride mixture, recovering n-pentane as overhead product and obtaining the methylene chloride and the extractive agent as bottoms product, wherein said extractive agent consists of one material selected from the group consisting of methyl acetate, ethyl acetate, n-propyl acetate, isopropyl acetate, n-butyl acetate, isobutyl acetate, n-amyl acetate, isoamyl acetate, vinyl acetate, methyl vinyl acetate, methyl ethyl ketone, 3-pentanone, methyl isobutyl ketone, 2-pentanone, dioxane, 4-methyl-2-pentanone, 3-methyl-2-butanone, 2,4-pentanedione, methyl propionate, 2,2-dimethoxypropane, ethyl propionate, ethyl butyrate, vinyl butyl ether, pyridine, ethyl valerate, propyl butyrate, 1-methoxy-2-propanol and isopropanol.

5,304,701

MELTING FURNACE FOR TREATING WASTES AND A HEATING METHOD OF THE SAME

Hiroshi Igarashi, Katsuta, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 416,525
Claims priority, application Japan, Oct. 21, 1988, 63-265530
Int. Cl.[5] C03B *5/027*
U.S. Cl. 588—201 **6 Claims**



1. A melting furnace for treating wastes, comprising:

a container having at the top thereof a feed port for a glass raw material and wastes to be treated, and at the bottom thereof a discharge port for molten glass containing the wastes, said container having a wall made of an electrically conductive heat resistant alloy and having an inner surface adapted to contact molten glass inside said container during operation of said surface, and said container further having a wall having a cylindrical side wall portion and a conical bottom wall portion with an inclination of 30° to 60° extending toward said discharge port, said container wall being made of an electrically conductive heat resistant alloy and having an inner surface adapted to contact molten glass inside said container during operation of said surface;

at least one heating electrode positioned in said container spaced from said container wall, said container wall being a counter electrode for said heating electrode;

forced air cooling means disposed at the outer surface of said side wall portion for forcibly air cooling said side wall portion to a temperature no lower than a temperature at which glass within said container will remain molten;

a power source electrically connected between said container wall and said heating electrode for supplying elec-

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tric power to glass between said heating electrode and said container wall; and

heating means disposed around said discharge port for the molten glass and the outer surface of said conical bottom wall portion.

5,304,702

PROCESS OF DECOMPOSING CHLOROFLUOROHYDROCARBONS

Wilfried Weiss, Oberursel, and Klaus Kobele, Dietzenbach, both of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 13, 1992, Ser. No. 850,741

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109639

Int. Cl.[5] A62D *3/00*

U.S. Cl. 588—206 **9 Claims**

1. In the decomposition of a chlorofluorohydrocarbon by reacting it with a metal-containing material, the improvement which comprised decomposing said chlorofluorohydrocarbon dissolved or suspended in a hydrocarbon with a strongly basic hydrocarbon-soluble lithium compound.

5,304,703

PROCESS FOR DISPOSAL OF VOLATILE HAZARDOUS WASTES

Neil W. Pohl, New Richmond, Wis., assignor to Cal-Sine Environamental, Inc., New Richmond, Wis.

Filed Jul. 27, 1992, Ser. No. 920,256

Int. Cl.[5] A62D *3/00*

U.S. Cl. 588—223 **4 Claims**

1. A method of disposing of hazardous metal compound containing volatile liquid organic waste materials consisting essentially of:

providing a dry, free flowing solid material consisting essentially of a mixture of lime or calcium carbonate and an organic salt of calcium, magnesium or aluminum having between 10 and 22 carbon atoms,

stirring a volatile organic liquid waste material therein to form a non-aqueous paste,

allowing said paste to harden into a solid form that does not release said volatile liquid organic waster material when 100 grams thereof are placed in a 400 micron conical paint filter for five minutes, and

burning said resultant solid whereby said volatile liquid organic waste material is burned and the residue of said solid material remains as an ash.

5,304,704

METHOD AND APPARATUS FOR SOIL REMEDIATION

Norman Kammerzad, 6923 48th Ave., Hudsonville, Mich. 49426

Filed Apr. 7, 1992, Ser. No. 864,568

Int. Cl.[5] B08B *7/00;* **B01D** *43/00*

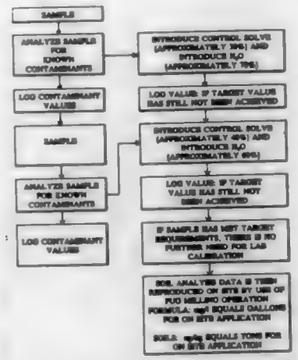
U.S. Cl. 588—249 **19 Claims**

1. A process for treating a process stream having a soil matrix containing aromatic organic chemical contaminants comprising the steps of:

introducing an encapsulation solution into contact with the process stream, said encapsulation solution capable of preferential attraction to the aromatic organic chemical contaminants contained in the soil matrix of the process stream such that at least a portion of the aromatic organic chemical contaminants are rendered susceptible to degradative interaction with natural biological and chemical constituents, said encapsulation solution consisting essentially of an effective amount of non-ionic surfactant material and water;

removing a first portion of said introduced encapsulation solution from contact with the process stream after an interval sufficient to initiate interaction between said encapsulation solution and said aromatic organic chemical contaminants;

retaining a second portion of said introduced encapsulation solution in contact with the process stream; and



removing the process stream and said second portion of said encapsulation solution to a post-treatment staging area.

5,304,705

DEPOSITORY FOR STORING RADIOACTIVE WASTE

Max Himmelbeber, Saarstrasse 7, 7292 Baiersbronn, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,467

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123034

Int. Cl.[5] B09B *1/00*

U.S. Cl. 588—252 **18 Claims**



18. An above ground depository for storing radioactive waste, comprising:

a construction body comprised of a plurality of individual building blocks made of at least one of the materials selected from the group consisting of natural rock and agmatic rock, said material being substantially weather- and erosion-resistant;

said building blocks safely connected to one another and forming an interior storage chamber within said construction body;

said construction body having a size that corresponds at least to the size of a single family home and a wall thickness preventing emission of radioactive radiation during a projected storage time of several thousand years; and

said construction body having a shape of an equilateral tetrahedron with a planar outer support surface designed to provide a free, stable support on a concave to flat ground surface without being fastened thereto such that said construction body, when tectonic movements of the earth's crust occur, exhibits free movability relative to the ground surface by providing at the same time an absolute stable and balanced position.

5,304,706

FIXING AGENT FOR FIXING ORGANIC AND INORGANIC IMPURITIES CONTAINING MATERIAL, METHOD FOR FIXING SUCH MATERIAL AND A SYNTHETIC CLAY MATERIAL

Carel W. J. Hooykaas, Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Rotterdam, Netherlands

Filed Mar. 4, 1993, Ser. No. 26,494

Claims priority, application Netherlands, Mar. 9, 1992, 9200430

Int. Cl.[5] B09B *3/00;* **E02D** *3/12*

U.S. Cl. 588—252 **25 Claims**

12. A method for fixing organic and inorganic impurities containing material to an at least partially organophilic clay material in an aqueous medium, and, if desired, hardening the resulting material using an inorganic reagent and, where appropriate, a hardening activator, wherein the organic and inorganic impurities containing material is also fixed to and/or enclosed in clay material to be formed in situ.

5,304,707

METHOD FOR SOLIDIFICATION AND ENCAPSULATION USING CORE-SHELL POLYMER PARTICLES

Robert M. Blankenship; Clarence Neyhart, both of Harleysville, and Ronald W. Novak, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 118,102, Nov. 6, 1987, abandoned. This application Apr. 16, 1993, Ser. No. 47,342

Int. Cl.[5] G21F *9/16*

U.S. Cl. 588—255 **10 Claims**

1. A method of solidification of industrial effluent waste compositions for disposal containing a substantially continuous aqueous phase and dissolved or suspended materials comprising;

1) uniformly incorporating into said waste compositions polymer particles having a core component and a shell component, wherein a) said core component is prepared by emulsion polymerizing one or more monoethylenically unsaturated core monomers having a —CH═C< group, and at least about 5% or more by weight of said core monomer have a carboxylic acid group, b) said shell component is prepared by emulsion polymerizing in the presence of said core component one or more monoethylenically unsaturated shell monomers having a —CH═C<- group, and less than about 10% by weight of said shell monomers have a carboxylic acid group, c) said shell component has a glass transition temperature from about −40° C. to about 100° C. and the amount of said shell monomers having a carboxylic acid group is less than about ½ the amount thereof in said core monomers, d) the weight ratio of said core component to said shell component is about 1:3 to about 1:20; e) said shell component is permeable to organic or inorganic bases, and f) said polymer particles are insoluble in said waste compositions; and

2) neutralizing said polymer particles by incorporating into said waste compositions containing said polymer particles an organic or inorganic base so as to swell said polymer particles and to absorb into said polymer particle substantially all of said aqueous phase.

5,304,708

ALLOYING METAL HYDROXIDE SLUDGE WASTE INTO A GLASS MATERIAL

Marvin L. Buehler, Orange, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 14, 1992, Ser. No. 913,265

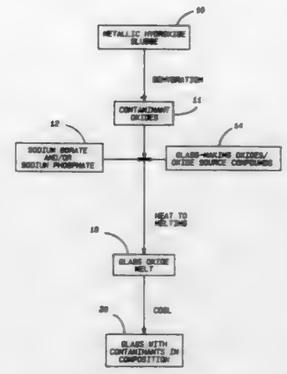
Int. Cl.[5] B09B *3/00*

U.S. Cl. 588—256 **11 Claims**

1. A method for chemically stabilizing a waste material comprising the steps of:

providing a waste material having at least one hydroxide, each hydroxide having a contaminant;

forming a glass-compatible mixture containing each contaminant from each hydroxide; and



alloying each contaminant from the glass-compatible mixture within a glass composition.

5,304,709

HAZARDOUS WAST DISPOSAL METHOD AND COMPOSITION

H. Nash Babcock, Old Greenwich, and Edward Holub, Trumbull, both of Conn., assignors to Nomix Corporation, Fairfield, Conn.

Continuation-in-part of Ser. No. 518,040, May 2, 1990, which is a continuation of Ser. No. 199,556, May 27, 1988, Pat. No. 5,108,790, which is a continuation-in-part of Ser. No. 101,908, Sep. 28, 1987, Pat. No. 4,839,115, which is a division of Ser. No. 53,561, May 21, 1987, Pat. No. 4,732,782, which is a continuation-in-part of Ser. No. 843,316, Mar. 24, 1986, abandoned, said Ser. No. 518,040, is a continuation-in-part of Ser. No. 168,715, Mar. 16, 1988, Pat. No. 5,219,222, which is a continuation-in-part of Ser. No. 53,561, May 21, 1987, Pat. No. 4,732,782, which is a continuation-in-part of Ser. No. 843,316, Mar. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 49,906, May 15, 1987, Pat. No. 4,747,878, which is a division of Ser. No. 843,316, Mar. 24, 1986, abandoned. This application Feb. 28, 1991, Ser. No. 662,470

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[5] C04B *18/04, 18/18*

U.S. Cl. 588—257 **27 Claims**

1. A method of immobilizing a hazardous waste comprising:

(a) providing a dry cementitous composition in the form of finely divided particles, the cementitious composition having a set time and including at least one cement binder;

(b) providing a volume of water containing an amount of hazardous waste;

(c) adding an amount of dry cementitious composition into the volume of water without any type of physical mixing of the cementitious composition and water other than the action which occurs merely by applying the cementitious composition into the water, the volume of water being greater than the amount necessary for hydration of the amount of the cementitious composition,

the water contacts the particles of the cementitious composition and hydrate the particles, and

the major portion of the particles of the cementitious composition have approximately the same drop rate through the volume of water;

(d) allowing the cementitious composition to drop through the water without any type of physical mixing of the cementitious composition and water other than the action which occurs merely by adding the cementitious composi-

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tion into the water, displacing the excess water as a result of the dropping of the cementitious composition; and

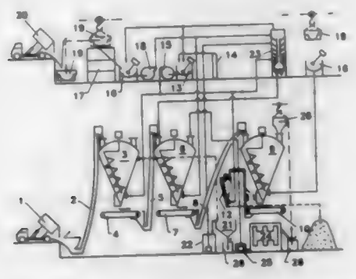
(e) allowing the hydrated cementitious composition to form into a cured substantially non-segregated mass immobilizing the amount of hazardous waste.

5,304,710

METHOD OF DETOXIFICATION AND STABILIZATION OF SOILS CONTAMINATED WITH CHROMIUM ORE WASTE

Mark Y. Kigel, East Brunswick; John F. Shultis, Plainsboro; Eric S. Goldman, Metuchen, and Mark K. Demytrk, North Bergen, all of N.J., assignors to Envar Services, Inc., Cranford, N.J.

Filed Feb. 18, 1993, Ser. No. 19,089
Int. Cl.[5] B09B *3/00*
U.S. Cl. 588—257 11 Claims



1. A method of detoxification, fixation, immobilization and stabilization of soils contaminated with chromium ore waste comprising the steps of:

a. grinding the contaminated soil;

b. pre-activating the soil treated in step (a.) with an aid of an acidic solution to reach a pH of less than or equal to about 3.0 to enhance subsequent chromium detoxification;

c. detoxifying hexavalent chromium, wherein a valiancy of the hexavalent chromium is reduced to a trivalent state in an admixture with a detoxifying agent;

d. fixing and immobilizing trivalent chromium in a form of insoluble chromium hydroxide by adding an alkalifying agent;

e. neutralizing the processed soil by adding an acid solution to reach a pH of 7.5 to 8.2; and

f. stabilizing the processed soil by adding a stabilizing agent.

5,304,711

MEDICAL WASTE DISPOSAL APPARATUS

Masaya Tanaka; Koichi Murata, both of Tokyo; Mitsuru Ikeda, Kyoto; Kiyoyuki Ikuma, Kyoto, and Kazuaki Jotaki, Kyoto, all of Japan, assignors to Fuji Medical Systems Co., Ltd., Tokyo and Imsec Corporation, Kyoto, both of Japan

Filed May 28, 1992, Ser. No. 889,430
Claims priority, application Japan, May 29, 1991, 3-152265
Int. Cl.[5] B09B *3/00*
U.S. Cl. 588—258 12 Claims

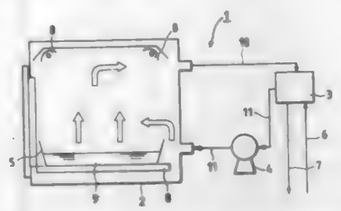
1. A medical waste disposal apparatus for heating medical waste to thereby sterilize said waste, comprising:

a heater body for heating said waste;

a hydrodynamic exhaust scrubber including a water sprinkler for sprinkling water in an atomized or spouted state, said water being recovered by said scrubber after said sprinkling;

forward and backward passages connecting said heater body and said hydrodynamic exhaust scrubber; and

means for directing a gaseous pyrolytic product and steam, generated during said heating of said waste, through said forward and backward passages, said product being dissolved in said water, said steam being cooled by said



water, so as to collect and remove said dissolved product and said steam.

5,304,712

INBRED CORN LINE LH206

David C. Harper II, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Oct. 19, 1990, Ser. No. 599,836
Int. Cl.[5] A01H *5/00, 4/00;* C12N *5/04*
U.S. Cl. 800—200 7 Claims

1. Inbred corn seed designated LH206 having ATCC accession No. 40784.

5,304,713

INBRED CORN LINE LH181

Donald G. Eggerling, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Nov. 30, 1990, Ser. No. 620,486
Int. Cl.[5] A01H *5/00, 4/00, 1/00*
U.S. Cl. 800—200 10 Claims

1. Inbred corn seed designated LH181 having ATCC accession No. 40923.

5,304,714

INBRED CORN LINE LH164

Richard J. Miller, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Sep. 30, 1991, Ser. No. 767,319
Int. Cl.[5] A01H *5/00, 4/00;* C12N *5/04*
U.S. Cl. 800—200 6 Claims

1. Inbred corn seed designated LH164 having ATCC accession No. 75113.

5,304,715

INBRED CORN LINE LH199

David C. Harper II, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Dec. 6, 1991, Ser. No. 801,784
Int. Cl.[5] A01H *5/00, 4/00, 1/00;* C12N *5/04*
U.S. Cl. 800—200 9 Claims

1. Inbred corn seen designated LH199 having ATCC accession No. 75159.

5,304,716

INBRED CORN LINE LH197

David C. Harper, II, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Dec. 6, 1991, Ser. No. 801,785
Int. Cl.[5] A01H *5/00, 4/00, 1/00;* C12N *5/04*
U.S. Cl. 800—200 10 Claims

1. Inbred corn seed designated LH197 having ATCC accession No. 75157.

5,304,717

INBRED CORN LINE LH198

Richard J. Miller, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Dec. 6, 1991, Ser. No. 801,786
Int. Cl.[5] A01H *5/00, 4/00, 1/00;* C12M *5/04*
U.S. Cl. 800—200 9 Claims

1. An inbred corn said designated LH198 having ATCC accession No. 75158.

5,304,718

CYTOPLASMIC MALE STERILE QUINOA

Sarah M. Ward, and Duane L. Johnson, both of Fort Collins, Colo., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Feb. 3, 1992, Ser. No. 829,650
Int. Cl.[5] A01H *5/00, 5/10, 1/00*
U.S. Cl. 800—200 13 Claims

11. A hybrid quinoa plant having Apelawa male sterile cytoplasm wherein said Apelawa male sterile cytoplasm is derived from a female-designated cytoplasmic male sterile quinoa plant produced from a quinoa seed assigned ATCC accession no. 75154.

5,304,719

INBRED CORN LINE PHT47

Robert L. Segebart, Shelbyville, Ill., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1992, Ser. No. 831,032
Int. Cl.[5] A01H *5/00, 4/00;* C12N *5/04*
U.S. Cl. 800—200 8 Claims

1. Inbred corn seed designated PHT47 and having ATCC Accession No. 75610.

5,304,720

INBRED CORN LINE PHHV4

Robert D. Strohbehn, Beadle County, S. Dak., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1992, Ser. No. 831,224
Int. Cl.[5] A01H *5/00, 4/00;* C12N *5/04*
U.S. Cl. 800—200 8 Claims

1. Inbred corn seed designated PHHV4 and having ATCC Accession No. 75611.

5,304,721

METHOD FOR THE PRODUCTION OF HIGH PROPORTIONS OF HOMOKARYONS IN BREEDING STOCK OF THE MUSHROOM *AGARICUS BISPORUS*

Richard W. Kerrigan, Worthington, and Mark C. Spear, Cabot, both of Pa., assignors to Sylvan Spawn Laboratory Incorporated, Kittanning, Pa.

Filed Jun. 18, 1992, Ser. No. 900,546
Int. Cl.[5] A01H *15/00, 1/00;* A01G *1/04*
U.S. Cl. 800—200 46 Claims

31. Homokaryons carrying at least one gene which determines the trait for the production of mushrooms which produce basidia, among which basidia bearing at least three spores predominate, produced from homokaryotic basidiospores on hybrid mushrooms, said hybrid mushrooms formed by providing a first strain of *Agaricus bisporus* with tetrasporic parentage carrying at least one gene which determines the trait for production of mushrooms which produce basidia, among which basidia bearing at least three spores predominate; and crossing said first strain with at least a second strain of *Agaricus bisporus* to form at least one hybrid heterokaryotic culture; said at least one hybrid heterokaryotic culture being capable of producing said hybrid mushrooms and their homokaryotic descendants which carry said at least one gene.

5,304,722

HYBRID RICE PRODUCTION UTILIZING PERENNIAL MALE STERILE RICE PLANTS

Li Qinxiu, and Alfonso G. Calub, both of East Bernard, Tex., assignors to Ring Around Products, Inc., Prattville, Ala.

Division of Ser. No. 550,952, Jul. 11, 1990, Pat. No. 5,158,879.
This application Jun. 30, 1992, Ser. No. 906,664
Int. Cl.[5] A01H *5/00, 1/00*
U.S. Cl. 800—200 11 Claims



1. An *Oryza sativa* seed product consisting essentially of seeds which upon growth yield perennial female fertile cytoplasmically male sterile rice plants having exserted stigmas, flag leaves which in the absence of cutting generally extend upwardly to a lesser maximum height than the tips of the panicles whereby said panicles are well disposed to receive pollen from nearby plants and the disposition of said flag leaves below the tips of the panicles is attributable to recessive genes, and the ability to form seeds which exhibit a visible dominantly inherited genetic marker on or about the rice hull.

5,304,723

BIOLOGICALLY PURE CULTURE OF MALTOPENTAOSE FORMING AMYLASE PRODUCING ALKALOPHILIC BACTERIA

Gerhard Schmid; Anton Candussio, both of Munich, and August Bock, Kaltenberg, all of Fed. Rep. of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 706,699, May 29, 1991, Pat. No. 5,204,254.
This application Dec. 29, 1992, Ser. No. 998,931
Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017595
Int. Cl.[5] C12N *1/12, 9/28;* C12P *19/14*
U.S. Cl. 435—252.1 1 Claim

1. A biologically pure culture of alkalophilic bacteria having all of the identifying properties of isolate 163-26 having the accession number DSM 5853.

5,304,724

TISSUE IRRIGATING SOLUTION

Walter A. Newton, Lenoir, N.C., assignor to Entravision, Inc., Lenoir, N.C.

Continuation-in-part of Ser. No. 577,306, Sep. 4, 1990, Pat. No. 5,104,663, which is a division of Ser. No. 243,085, Sep. 9, 1988, Pat. No. 4,975,419. This application Feb. 19, 1992, Ser. No. 837,759
Int. Cl.[5] A61K *33/42, 33/14, 37/00, 31/16*
U.S. Cl. 424—602 14 Claims

1. A powderous composition for subsequent mixture with a conventional I.V. solution containing therapeutically effective amounts of sodium salts to form a tissue irrigating solution, said powderous composition comprising:

a. a lyophilized powder containing sodium bicarbonate and glutathione;

b. calcium salts, magnesium salts, potassium salts, dextrose, being added to said lyophilized powder, said lyophilized powder additionally including amounts of sodium salts where said I.V. solution does not contain sufficient sodium salts as required for said tissue irrigating solution;

c. whereby said lyophilized powder exhibits the characteris-

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tics of extended shelf life and when mixed with said conventional I.V. solution forms a solution for irrigating body tissues during surgery.

5,304,725
ELITE WHITE SPRUCE HYBRIDS AND METHOD OF PRODUCTION

Neil D. Nelson, Rhinelander, Wis., assignor to Forgene, Inc., Rhinelander, Wis.

Continuation of Ser. No. 418,571, Oct. 10, 1989, abandoned. This application Jul. 7, 1992, Ser. No. 911,264
Int. Cl.[5] A01H *5/00, 1/02, 1/00*; C12N *5/00*
U.S. Cl. 800—200 **45 Claims**



1. A process for producing elite white spruce hybrids, comprising:

(a) selecting from a group consisting of genetically superior white spruce trees a female parent and a male parent, the group of trees being superior in height growth rate, volume growth rate and diameter growth rate;

(b) crossing the trees selected as parents by pollinating female strobili on a tree selected as the female parent with pollen from male strobili from a tree selected as the male parent, wherein the step of pollinating includes installing isolation bags on the female parent such that the female strobili are isolated from contamination with foreign pollen from non-selected male trees;

(c) recovering high purity hybrid seeds from the trees used as female parent trees;

(d) germinating the seeds in a growing medium such that each of the seeds forms a plantlet;

(e) micropropagating the plantlet of step (d) in a cytokinin-containing basal medium to develop additional plantlets by tissue culture propagating techniques;

(f) developing additional plantlets from the plantlet of step (d) by vegetative propagation; and

(g) growing the plantlets into spruce trees of a size and form suitable for planting in vivo.

28. Hybrid seeds produced by the process of claim 1 wherein the seeds are selected from the following female parent and male parent cross 4596-10-4×4612-8-1.

5,304,726
INBRED CORN LINE LH167

Richard J. Miller, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Dec. 4, 1992, Ser. No. 984,116
Int. Cl.[5] A01H *5/00, 4/00, 1/00*; C12N *5/04*
U.S. Cl. 800—200 **10 Claims**

1. Inbred corn seed designated LH167 having ATCC accession No. 75364.

5,304,727
INBRED CORN LINE LH217

David C. Harper, II, Williamsburg, Iowa, assignor to Holden's Foundation Seeds Inc., Williamsburg, Iowa

Filed Dec. 4, 1992, Ser. No. 985,785
Int. Cl.[5] A01H *5/00, 4/00, 1/00*; C12N *5/04*
U.S. Cl. 800—200 **9 Claims**

1. Inbred corn seed designated LH217 having ATCC accession No. 75367.

5,304,728
SOYBEAN CULTIVAR 9202709

William H. Eby, Adel, Iowa, assignor to Stine Seed Farm Inc., Adel, Iowa

Filed Jun. 1, 1993, Ser. No. 69,471
Int. Cl.[5] A01H *5/00*
U.S. Cl. 800—200 **5 Claims**

1. A soybean seed designated 9202709 having ATCC accession No. 75466.

5,304,729
SOYBEAN CULTIVAR 9211713

William H. Eby, Adel, Iowa, assignor to Stine Seed Farm, Inc., Adel, Iowa

Filed Jun. 3, 1993, Ser. No. 70,836
Int. Cl.[5] A01H *5/00*
U.S. Cl. 800—200 **5 Claims**

1. A soybean seed designated 9211713 having ATCC accession No. 75467.

5,304,730
VIRUS RESISTANT PLANTS AND METHOD THEREFORE

Edgar C. Lawson, Labadie; James D. Weiss, High Ridge; Cynthia L. Hemenway, St. Louis, and Nilgun E. Tumer, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 3, 1991, Ser. No. 753,738
Int. Cl.[5] A01H *5/00*; C12N *15/29, 15/40, 15/00*
U.S. Cl. 800—205 **48 Claims**

1. A modified DNA sequence encoding a potato leafroll virus coat protein which comprises a native potato leafroll virus coat protein DNA sequence having at least one internal translation initiation codon in a different reading frame than said native potato leafroll virus coat protein DNA sequence altered to a non-initiator codon.

43. A potato plant comprising the DNA sequence of claim 1.

5,304,731
VECTOR

Chikara Masuta; Yoichi Takanami, and Akira Koiwai, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Continuation of Ser. No. 390,990, Aug. 9, 1989, abandoned. This application Sep. 11, 1992, Ser. No. 944,710
Claims priority, application Japan, Aug. 17, 1988, 63-203119
Int. Cl.[5] A01H *1/04*; C12N *15/00, 7/00*; C12P *19/34*
U.S. Cl. 800—205 **11 Claims**

1. A method for transforming a plant which method comprises simultaneously inoculating said plant with a recombinant RNA vector and CMV helper virus to introduce an exogenous gene into cells of said plant, wherein said RNA vector comprises an exogenous gene integrated into CMV satellite RNA.

11. A plant into which has been introduced CMV helper virus and an infectious recombinant RNA vector selected from the group consisting of (i) RNA vector comprising (a) RNA corresponding to an exogenous gene, said exogenous gene comprising a 120 bp CMV RNA4 cDNA BamHI/StyI fragment and (b) RNA corresponding to pIBI 31-MC lacking a 90 bp StyI/AsuII fragment of plasmid pIBI 31-MC and (ii) RNA vector comprising (a) RNA corresponding to an exogenous

gene, said exogenous gene comprising a 120 bp cDNA fragment of potato virus Y (T strain) and (b) RNA corresponding

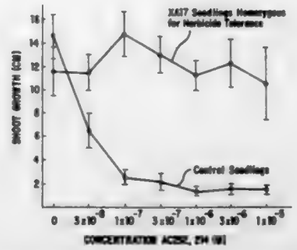


to pIBI 31-MC lacking a 90 bp StyI/AsuII fragment of plasmid pIBI 31-MC.

5,304,732
HERBICIDE RESISTANCE IN PLANTS

Paul C. Anderson, Minneapolis, and Kenneth A. Hibberd, Falcon Heights, both of Minn., assignors to MGI Pharma, Inc., Minneapolis, Minn.

Continuation of Ser. No. 900,960, Aug. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 639,321, Aug. 10, 1984, Pat. No. 4,761,373, which is a continuation-in-part of Ser. No. 586,802, Mar. 6, 1984, abandoned. This application Oct. 3, 1990, Ser. No. 592,420
The portion of the term of this patent subsequent to Aug. 2, 2005, has been disclaimed.
Int. Cl.[5] A01H *1/06, 1/02*
U.S. Cl. 800—235 **20 Claims**



11. A maize plant, the growth of which is resistant to inhibition by a 1,2,4-triazolo[1,5-a]pyrimidine-2-sulfonamide herbicide, or an herbicidal derivative thereof, at levels of said herbicide or derivative which normally inhibit the growth of maize plants by inhibiting the activity of acetohydroxyacid synthase, wherein said resistance is conferred by an altered acetohydroxyacid synthase whose activity is resistant to inhibition by said herbicide or derivative at levels of said herbicide or derivative which normally inhibit the activity of an unaltered acetohydroxyacid synthase.

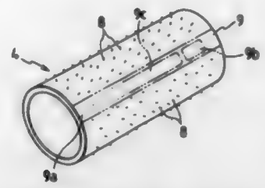
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5,304,733

MUSIC BOX ROTATING DRUM BODY

Shigeaki Hiraide, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Aichi, Japan

Filed Nov. 17, 1992, Ser. No. 977,835
Claims priority, application Japan, Nov. 19, 1991, 3-303543
Int. Cl.[5] G10F *01/06*
U.S. Cl. 84—96 10 Claims



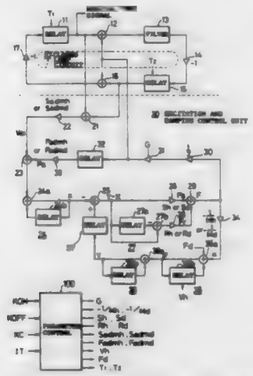
1. A music box rotating drum body comprising:
a rotating drum made by a pipe material planted with a plurality of pins for flicking vibrating valves in accordance with a music program, said rotating drum having formed therein a silent area in which no pins are planted therein, said silent area having a character portion in which characters are formed by combinations of character holes formed therein, wherein said character holes have a different depth than that of pinholes provided for the planting of said pins.

5,304,734

MUSICAL SYNTHESIZING APPARATUS FOR PROVIDING SIMULATION OF CONTROLLED DAMPING

Toshifumi Kunimoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jun. 19, 1991, Ser. No. 717,380
Claims priority, application Japan, Jun. 20, 1990, 2-161864
Int. Cl.[5] G10H *5/00, 1/12;* H03H *7/01*
U.S. Cl. 84—661 8 Claims



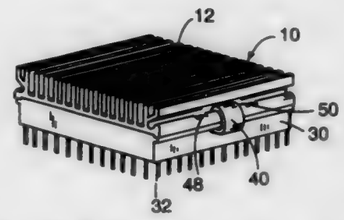
1. A musical tone synthesizing apparatus which synthesizes musical tones comprising:
a) a closed loop circuit which contains at least a delay element, said closed loop circuit having a specific resonance characteristic corresponding to the pitch of a tone signal to be generated;
b) excitation signal generating means for generating an excitation signal which is input into said closed loop circuit, said excitation signal corresponding to an excitation parameter signal supplied to the excitation signal generating means; and
c) damping means for receiving an output signal from said closed loop circuit and subjecting it to a predetermined process corresponding to a damping parameter signal supplied to the damping means, the signal resulting therefrom being supplied to said closed loop circuit as a feedback signal.

5,304,735

HEAT SINK FOR AN ELECTRONIC PIN GRID ARRAY

George F. Earl, Meredith; Jeffrey J. Panek; Jack Churchill, both of Laconia, and Henry F. Villaume, Intervale, all of N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.

Continuation of Ser. No. 835,773, Feb. 14, 1992, abandoned.
This application Dec. 29, 1992, Ser. No. 998,877
Int. Cl.[5] H05K *7/20*
U.S. Cl. 174—16.3 4 Claims



1. A heat sink for attaching to a pin grid array comprising:
a heat dissipating portion, and
a base having sides,
said heat dissipating portion being integrally connected to said base, said base having at least two lips, each said lip being adjacent to a different side of said base, each said lip forming a groove between said lip and the remainder of said base, each said groove receiving a means for attaching said heat sink to a pin grid array, each said groove including at least one indentation, said indentation at least partially blocking said groove so that said indentation operates to hold said means for attaching in said groove so that said heat sink and said means for attaching may be held as a single unit for assembly and disassembly with the pin grid array.

5,304,736

ELECTRICAL CORD HOUSING

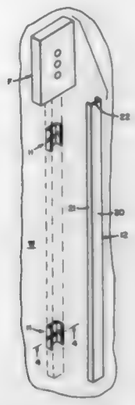
Van Halfacre, P.O. Box 1438, Manila, Ark. 72442

Filed Jul. 21, 1992, Ser. No. 915,656
Int. Cl.[5] H02G *3/26*
U.S. Cl. 174—48 14 Claims

1. A housing assembly for covering an electrical cord extending along a structural wall to a fixture or appliance comprising an elongated cover having a generally U-shaped cross section, said cover having a front wall and opposite side walls, said side walls of said cover having inner and outer surfaces, at least one wall mounting bracket having a base portion and opposite side walls extending outwardly therefrom, said side walls of said bracket having inner and outer surfaces, means for securing said base to the structural wall, a barb protruding outwardly from each of said outer surfaces of said side walls of said bracket, said barbs being engageable with said inner surfaces of said side walls of said cover, and said mounting bracket being formed of a first material having a first degree of hardness and said cover being formed of a second material having

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a second degree of hardness which is less than said first material so that said barbs of said bracket will bite into the second material of said cover when said cover is mounted in overlying engagement with said bracket.



5,304,737

SEMICONDUCTOR PACKAGE

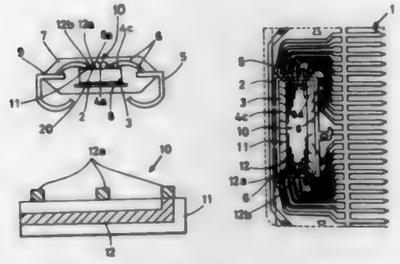
Jin Sung Kim, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Oct. 2, 1992, Ser. No. 955,676

Claims priority, application Rep. of Korea, Oct. 15, 1991, 17136/1991

Int. Cl.[5] H01L *23/02, 23/28*

U.S. Cl. 174—52.4 7 Claims



1. A semiconductor package comprising a lead frame having a paddle and a plurality of inner leads and a semiconductor chip having a plurality of chip pads electrically connected with the corresponding inner leads of the lead frame, the semiconductor chip being molded together with the inner leads, the semiconductor package further comprising:
a connection pad device for electrically connecting at least a portion of the plurality of chip pads of the semiconductor chip with the corresponding inner leads of the lead frame, said connection pad device comprising:
a film as a connection pad device body;
a plurality of copper foil wirings each having one end positioned to correspond to each chip pad of the semiconductor chip and the other end positioned to correspond to each inner lead of the lead frame;
a plurality of first jumper pads protruded from the film, each first jumper pad being connected to one end of each corresponding copper foil wiring and wire-bonded to each corresponding chip pad; and
a plurality of second jumper pads protruded from the film, each second jumper pad being connected to the other end of each corresponding copper foil wiring and wire-bonded to each corresponding inner lead.

5,304,738

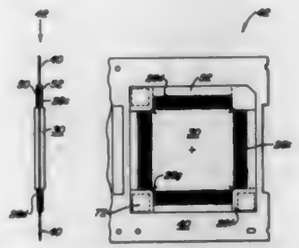
SYSTEM FOR PROTECTING LEADS OF A SEMICONDUCTOR CHIP PACKAGE DURING TESTING, BURN-IN AND HANDLING

Jon M. Long, Livermore, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 723,134, Jun. 28, 1991, Pat. No. 5,221,812. This application Mar. 24, 1993, Ser. No. 36,421

Int. Cl.[5] H01L *23/02;* H01R *43/00*

U.S. Cl. 174—52.4 8 Claims



1. A method for packaging a semiconductor die, comprising:
providing a leadframe, said leadframe having supporting rails and leads with proximal ends close to the die for connection to the die, other ends and intermediate portions connecting the proximal ends and other ends;
placing the die onto the leadframe and electrically connecting the proximal ends of the leads to the die;
enclosing the other distal ends in a protective body; and
thereafter, removing the protective body without removing any portion of the leadframe.

5,304,739

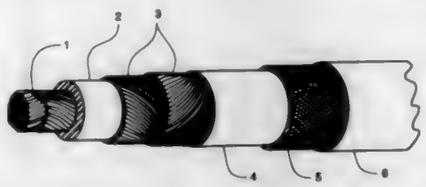
HIGH ENERGY COAXIAL CABLE FOR USE IN PULSED HIGH ENERGY SYSTEMS

Reja B. Klug, 30 Bay Dr. SE., Fort Walton Beach, Fla. 32548; Richard D. Ford, 117 Lake Lorraine Cir., Shalimar, Fla. 32579; Keith A. Jamison, 137 Indian Bayou Dr., Destin, Fla. 32541, and Ronald E. Stearns, 2 Caswell Cir., Mary Esther, Fla. 32569

Filed Dec. 19, 1991, Ser. No. 810,252

Int. Cl.[5] H01B *9/02*

U.S. Cl. 174—102 R 3 Claims



1. A high energy coaxial cable for use in pulsed high energy systems, comprising:
a center conductor comprising bundles of nickel plated fine copper wire, with bundles counter-wound in layers;
an outer conductor comprised of two counter-wound layers of stranded nickel plated fine copper wire, the cross-sectional area of the outer conductor being approximately equal to that of the inner conductor;
an inner dielectric between the center and outer conductors, the dielectric being of insulating materials capable of reliable operation to 260° C.;
an outer dielectric over the outer conductor for holding the outer conductor in place, the dielectric being of insulating materials capable of reliable operation to 260° C.;
a reinforcing mesh woven as a braid over the outer dielectric for aiding in the containment of magnetic burst forces, the mesh being manufactured from a high strength reinforcing material, with braid angles kept high for maximizing strength in the radial direction and maintaining tightness during manufacture; and
an outer jacket made of insulating material.

5,304,740

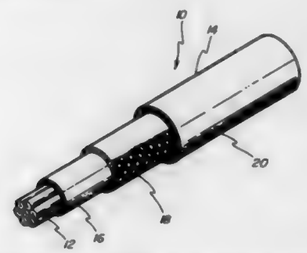
FUSIBLE LINK WIRE

David A. Bozell, Ft. Wayne, and Eric W. Bates, Lafayette, both of Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Nov. 20, 1991, Ser. No. 796,049

Int. Cl.[5] H01B *7/00*

U.S. Cl. 174—110 PM 9 Claims



1. A fusible link wire for use in an electric circuit comprising:
a fusible conductor for opening the electric circuit in response to a given current level;
an inner electrical insulation layer surrounding said fusible conductor, said inner electrical insulation layer comprising a crosslinked polyethylene compound having a temperature rating of at least 105 C. and a limiting oxygen index of at least 27;
a braided sheath positioned over said inner electrical insulation layer for increasing the structural strength of said inner electrical insulation layer; and
an outer protective coating surrounding said sheath and said inner electrical insulation layer for securing said sheath in position, said outer protective coating comprising a polyvinyl chloride having a limiting oxygen index of at least 27.

5,304,741

SPEAKER CABLE

Robert A. Proulx, Natick, Mass., assignor to Temp-Flex Cable, Inc., S. Grafton, Mass.

Filed Aug. 10, 1992, Ser. No. 927,467

Int. Cl.[5] H01B *7/08*

U.S. Cl. 174—117 FF 4 Claims



1. A ribbon connector for loud speaker systems which comprises:
a first set of flat conductors arrayed in parallel spaced apart relationship and encapsulated in fluorinated ethylene polypropylene;
a second set of flat conductors arrayed in parallel relationship, one to the other, the conductors of second set parallel to the conductors of the first set, said second set encapsulated in fluorinated ethylene polypropylene, a medium strip integrally formed between said first and second sets said first and second sets spaced apart by a width greater than the width between adjacent conductors in a set such that the first set of conductors may be separated from the second set of conductors to form first and second conductive sets electrically isolated from one another, said connector having a capacitance of 6.0 pF/ft. or less, an inductance of 0.09 μH/ft.

5,304,742

STRAIN RELIEF DEVICE

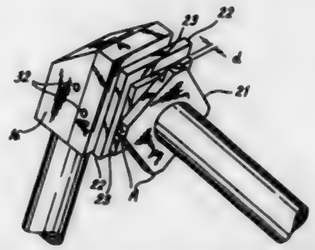
Jacques Filbert, Longueuil, Canada, assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 615,208, Nov. 19, 1990, abandoned, which is a continuation of Ser. No. 510,372, Apr. 17, 1990, abandoned, which is a continuation of Ser. No. 364,734, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 269,844, Nov. 19, 1988, abandoned, which is a continuation of Ser. No. 170,491, Mar. 10, 1988, abandoned, which is a continuation of Ser. No. 764,121, Aug. 12, 1985, Pat. No. 4,857,674. This application Aug. 7, 1992, Ser. No. 927,247

The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.

Int. Cl.[5] H02G *15/007, 3/22*

U.S. Cl. 174—135 3 Claims



1. A flexible strain relief device for installing wire or cable into a square aperture disposed in a panelling plate comprising a flexible one piece body, said body having an entrance at a bottom portion thereof for a wire or cable supporting conduit, and said body having an exit for said conduit at a rear portion thereof, said body having first and second approximately square flange sections dispose at said rear portion, said flange sections being spaced apart by at least a thickness of said panelling plate and each having an orientation of approximately 45-degrees with respect to each other measured about a central axis in said body, wherein insertion of said strain relief device in said square aperture of said panelling plate is achieved by orienting said body at approximately 45-degrees with respect to an upright position such that said first flange section passes through said square aperture in said panelling plate, and then rotating said strain relief device approximately 45-degrees back to said upright position, wherein said first flange section becomes locked behind said panelling plate, and said panelling plate is disposed between said first and second flange section;
an approximately square spacer portion, at least as thick as the panelling plate and slightly smaller than the square aperture, located between said first and second flanges, said first flange and said spacer portion having an orientation of approximately 45-degrees with respect to each other as measured about a central axis in said body;
said first and second flange sections being separated by a groove having an equal to or slightly greater than the thickness of said plate, said groove extending from the periphery of said spacer portion to the peripheries of said first and second flange sections;
said body having a snubbed-nose portion comprising a top portion extending outward at a downward slope from said

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panelling plate when mounted thereon, and a bottom portion extending downward from said top portion in a direction substantially parallel to said panelling plate for protecting said wire or cable from shock forces;

a plurality of ramps, at the corners of said first flange, recessed within the surface that is facing the rearward surface of said second flange;

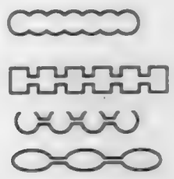
each ramp opening to a radial edge of said first flange for receiving said panelling plate, and to a radial edge of said spacer portion for delivering said panelling plate, and having its ramping surface angled such that camming forces upon said first and second flanges and said spacer portion are applied annularly and such that minimal force is applied on said first flange and said spacer portion corners radially toward the central axis, said spacer portion positioned in said square aperture in said panelling plate to prevent rotation of said strain relief after said strain relief is properly positioned in said square aperture.

5,304,743

MULTILAYER IC SEMICONDUCTOR PACKAGE

Bidyut K. Sen, Milpitas, and Eric S. Tosaya, Fremont, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed May 12, 1992, Ser. No. 881,955
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—262 **7 Claims**



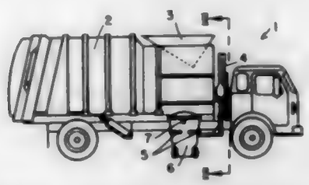
1. An improved multilayer integrated circuit package, said package having a plurality of layers of conducting leads, at least one of said leads in a first layer connected to a lead in a second layer by a metal via, the improvement comprising said via having a cross-section such that said via is much larger in a first direction than in a second direction perpendicular to said first direction and said via cross-section is in the shape of overlapping circles.

5,304,744

METHOD OF COLLECTING AND RECORDING REFUSE

Asger R. Jensen, Frugthaven 37, DK-5462 Morud, Denmark

Continuation of Ser. No. 839,587, Feb. 21, 1992, Pat. No. 5,209,312. This application Feb. 17, 1993, Ser. No. 18,791
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] G01G *19/08*; B65G *69/00*; B65F *3/02*
U.S. Cl. 177—136 **22 Claims**



1. A method of collecting and recording parameters concerning refuse involving placing said refuse in a small collection container, lifting the collection container into a refuse collection truck, and dumping the refuse from the collection container into a refuse container of the truck, wherein the dumping step comprises: leading the refuse from the collection container to a weighing container suspended in weighing cells on the truck;

weighing and recording the weight of the refuse; and

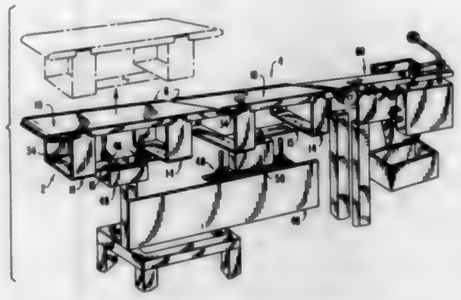
discharging the refuse from the weighing container into a compressor which moves the refuse into a storage chamber of the refuse container.

5,304,745

MODULAR CHECKWEIGHER AND GRADING SYSTEM

Frank J. Rusk; Alec T. Douglas, both of St. Johnsbury; Walter W. Sevigny, Danville, and Harry J. Keen, St. Johnsbury, all of Vt., assignors to Fairbanks Inc., Kansas City, Mo.

Filed Dec. 3, 1992, Ser. No. 985,634
Int. Cl.[5] G01G *19/52, 23/00*; B07C *5/16*
U.S. Cl. 177—50 **7 Claims**



1. A modular weighing system which comprises:

feed conveyor means,

a weighing conveyor for receiving an object from said feed conveyor means and for weighing said object, said weighing conveyor comprising a platform having upper and lower surfaces, and ends, each end having a roller rotatably mounted thereto, at least one of said rollers being outwardly movable from said platform responsive to an adjustable tensioning means, said adjustable tensioning means applying an outward pressure to said movable roller in a tensioned position, and releasing said movable roller in a released position, said platform and rollers being located inside a belt, said belt extending around said rollers and said platform, said adjustable tensioning means applying outward pressure to said movable roller and thereby applying tension to said belt in said tensioned position and said belt contacting said upper and lower surfaces of said platform, said adjustable tensioning means releasing said movable roller and said belt slackening around said rollers and platform in said released position, said platform further comprising a downwardly extending support bracket,

motor means, driven by a supply of power, securely mounted to said platform for engaging a drive means securely mounted to an end of one of said rollers, said roller rotating responsively to rotational movements of said motor means, and said roller driving said belt;

said weighing conveyor downwardly extending support bracket being securely mounted to a load cell, the weight of said weighing conveyor being applied to said load cell, said load cell generating an electrical output corresponding to the sum of the weight of said weighing conveyor and the weight of said object;

said load cell being releasably secured to a frame by easily releasable clamp means having open and locked positions, said load cell and weighing conveyor being removable in said open position, said load cell and weighing conveyor being secured to said frame in said locked position,;

said supply of power being connected to said motor means by quick release connections, and said load cell electrical output being fastened to said load cell by a quick release connector;

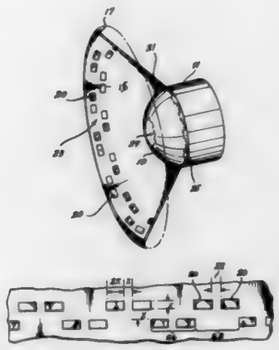
wherein the weight to be measured by said load cell includes the weight of said weighing conveyor to eliminate errors due to belt slinging, and said weighing conveyor and load cell being easily removable and modular for reduced down-time and simplified maintenance of said weighing system.

5,304,746

REDUCTION OF STANDING WAVES AND INTERMODULATION DISTORTION IN ELECTRO-ACOUSTIC TRANSDUCER

Harold O. Purvine, 7602 NE. 140th St., Bothell, Wash. 98011

Continuation-in-part of Ser. No. 540,582, Jun. 19, 1990, abandoned. This application Nov. 14, 1991, Ser. No. 792,010
Int. Cl.[5] H05K *5/00*; H04R *7/00*
U.S. Cl. 181—148 **19 Claims**



1. In combination with an electro-acoustic transducer having an active surface for radiating or reflecting acoustic energy, said active surface having a discontinuity, the improvement comprising a plurality of features positioned in a pattern on the active surface, each feature comprising a portion of the active surface having a height different than the height of the portions of the active surface surrounding the feature, the features being grouped into pairs, each feature being separated from each adjacent feature by a gap, the width of said gap being approximately one half the width of the adjacent features, and the features in the pattern extending along and adjacent to at least a substantial portion of said discontinuity

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5,304,747

SPEAKER WITH MOTOR-CONTROLLED INTERNAL BAFFLE

Richard L. Hale, II, Rte. 11, Box 530, Elizabethton, Tenn. 37643

Filed Feb. 12, 1993, Ser. No. 17,269
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—156 **6 Claims**

1. A new and improved speaker apparatus comprising:

an enclosure defining a chamber, said enclosure having at least one pair of orthogonally related intersecting walls forming a corner thereof,

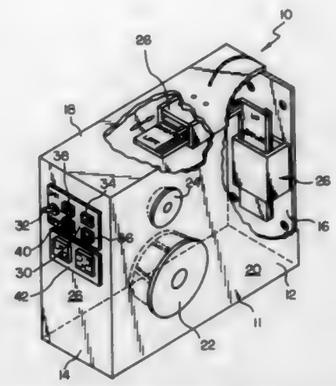
speaker means mounted in a portion of said enclosure and adapted to radiate sound outwardly of said enclosure,

baffle means mounted on an inside surface of said enclosure,

means for moving said baffle means relative to said inside surface of said enclosure between first and second positions, and

manually activatable control means coupled to said means for moving mounted outside said enclosure whereby said baffle means may be caused to move between said first and second positions to selectively alter the resonant frequency of said speaker system,

wherein said baffle means comprises a pair of motor-driven baffle elements orthogonally supported relative to each other inside said enclosure adjacent said at least pair of intersecting walls, respectively, and



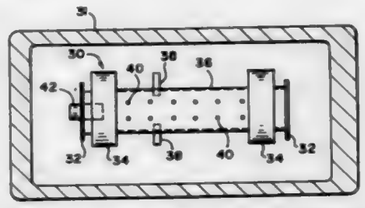
wherein said control means includes means for causing said motor-driven baffle elements to travel toward each other independently and form a corner inside said enclosure adjacent said corner formed by said at least pair of orthogonally related intersecting walls.

5,304,748

METHODS AND APPARATUSES FOR MUFFLING POWER PLANT STEAM EXHAUST

Marvin L. Hansen, Jr., Friendswood, and Jesse D. Frederick, Houston, both of Tex., assignors to Destec Engineering, Inc., Houston, Tex.

Filed Jan. 6, 1992, Ser. No. 817,436
Int. Cl.[5] F01N *1/14, 3/04*
U.S. Cl. 181—262 **6 Claims**



1. A muffling system for muffling steam exhausted from a power plant and reducing noise level of the steam by at least 55 decibels comprising

a water reservoir,

a steam flow line between the plant steam outlet and the muffling system,

a hollow pipe submerged in the water reservoir and with a steam flow channel therethrough defined by an interior surface of a pipe wall and having an inner diameter, a pipe inlet at a first end of the pipe, and a distal end wall closing off a second end of the pipe spaced apart from the first end and the pipe connected to the steam flow line for receiving the steam,

three hollow water eduction tubes having an inner diameter and mounted to the pipe, the tubes in fluid communication with the pipe's interior and disposed so that steam flowing through the pipe causes water to be sucked through the tubes into the pipe, the tubes spaced apart by about at least

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90 degrees of arc of the pipe as viewed from its end, the pipe filled with water prior to flowing of steam therethrough, and

a plurality of holes spaced-apart along the pipe.

5,304,749

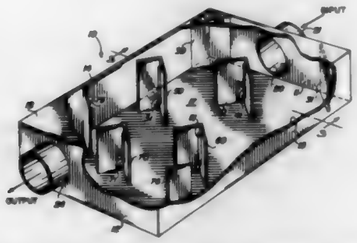
MUFFLER FOR INTERNAL COMBUSTION ENGINE

Rodney Crandell, 4567 New River Stage 2, Phoenix, Ariz. 85027

Continuation of Ser. No. 760,568, Sep. 16, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,707

Int. Cl.[5] F01N *1/08*

U.S. Cl. 181—264 **17 Claims**



1. An improvement in a muffler for an internal combustion engine, where the muffler has a casing with a pair of end walls interconnected with first and second sides and with an inlet opening on one end wall and an outlet opening on the opposite end wall, said improvement including in combination:

a first exhaust pulse splitting means located in said casing near said inlet opening a first predetermined distance from said one end wall for splitting exhaust flowing into said casing from said inlet opening into separate first and second parallel flowing exhaust streams directed toward said first and second sides, respectively;

a second exhaust pulse splitting means in said casing in the path of said first parallel exhaust stream a second predetermined distance from said one end wall and located nearer said first side than said second side for further splitting said first exhaust stream into third and fourth parallel flowing exhaust streams;

a third exhaust splitting means in said casing in the path of said second parallel exhaust stream a third predetermined distance from said one end wall and located nearer said second side than said first side for further splitting said second exhaust stream into fifth and sixth parallel flowing exhaust streams, said third predetermined distance being greater than said second predetermined distance, so that said second exhaust pulse splitting means is located nearer to said first exhaust pulse splitting means than said third exhaust pulse splitting means is located to cause said exhaust streams from said second and third exhaust pulse splitting means to be out of phase with one another; and

combining means for mixing together said third, fourth, fifth and sixth exhaust streams from said second and third exhaust pulse splitting means for supplying exhaust to said outlet opening.

5,304,750

ABSORBER FOR ELECTROMAGNETIC AND ACOUSTIC WAVES

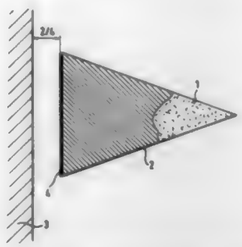
Rolf Schubert, Absteinach, and Christian Körner, Weinheim-Rippenweiher, both of Fed. Rep. of Germany, assignors to G + H Montage GmbH, Burgermeister, Fed. Rep. of Germany

Filed Aug. 4, 1989, Ser. No. 389,672

Int. Cl.[5] E04B *1/74;* **H05K** *9/00*

U.S. Cl. 181—294 **12 Claims**

1. An absorber for electromagnetic and acoustic waves consisting essentially of a mass of mineral wool material impregnated throughout with a binder having particles of a conductive material admixed therewith, said mineral wool mass being contained in an enclosure.



5,304,751

ELEVATOR HORIZONTAL SUSPENSIONS AND CONTROLS

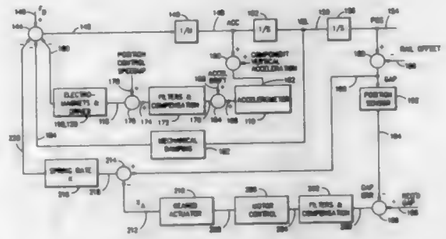
Clement A. Skalski, and Boris G. Traktovenko, both of Avon, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 731,185, Jul. 16, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 21,649

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] B66B *1/44*

U.S. Cl. 187—115 **23 Claims**



9. A second horizontal suspension having a pair of secondary suspensions, each for connection to an elevator car and to an associated one of a pair of opposed primary suspensions for guiding said car with respect to an associated pair of opposed hoistway rails, comprising:

first and second gap sensors for respectively providing first and second gap signals having magnitudes indicative of the distance of said car from said rails;

means responsive to said first and second gap signals for providing a first difference signal having a magnitude and sign indicative of the difference therebetween;

steering means, responsive to said first difference signal for providing said first difference signal and a return to zero signal, respectively, at first and second output signal ports in the presence of a positive difference signal and for providing said return to zero signal and said difference signal, respectively at said first and second output signal ports in the presence of a negative difference signal;

first and second position sensors, respectively responsive to the positions of first and second actuators for providing first and second position signals having magnitudes indicative thereof;

first and second summing means, respectively responsive to output signals from said first and second output ports and respectively responsive to said first and second position signals for respectively providing first and second actuation signals; and wherein said

first and second actuators are respectively responsive to said first and second actuation signals for alternately being positioned for actuation or being restored to a selected position for maintaining at least a selected force on an associated one of said primary suspensions.

5,304,752

ELEVATOR CALL ALLOCATION SYSTEM BASED UPON PASSENGER WAITING TIME

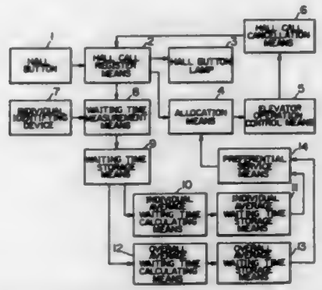
Yuichiro Hayashi, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,104

Claims priority, application Japan, Sep. 18, 1991, 3-238239

Int. Cl.[5] B66B *1/20*

U.S. Cl. 187—126 **8 Claims**



1. An elevator allocation system comprising:

an individual identifying device provided in each elevator hall and adapted to identify individual passengers;

measurement means for measuring each individual's waiting time between the moment a hall call is registered and the moment a car reaches the relevant hall on the basis of an output from said individual identifying device;

first memory means for storing waiting times measured by said measurement means;

first computation means for obtaining each individual's average waiting time on the basis of the output of said first memory means;

second memory means for storing individuals' average waiting times obtained by said first computation means;

second computation means for obtaining an average of the waiting times of all passengers on the basis of the output of said first memory means;

third memory means for storing the average of the waiting times of all passengers obtained by said second computation means; and

a preferential service means which preferentially allocates, on the basis of the outputs of said second and third memory means, a car to a hall call registered by any passenger who has had an individual average waiting time that is longer than the average waiting time of all passengers.

5,304,753

ELECTRIC SWITCH WITH WELDED CONTACT SENSOR LOCKOUT

Timothy L. Parrish, Kenly, and Tony O. Woodard, Pine Level, both of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 29, 1993, Ser. No. 84,385

Int. Cl.[5] H01H *15/06*

U.S. Cl. 200—16 B **16 Claims**

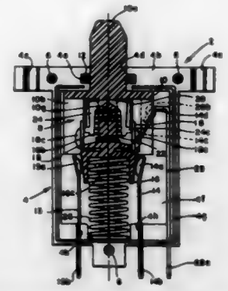
1. An electric switch comprising:

stationary contact means;

a movable switch mechanism comprising movable contact means;

means biasing said movable switch mechanism to a first position, said mechanism being movable to a second position by application of an operating force to said mechanism in opposition to said biasing means;

said movable contact means comprising first contact means engaging said stationary contact means in said second position of said mechanism completing a circuit through said switch, and second contact means normally closed on



said first contact means and in said circuit with said first contact means and said stationary contact means; and

means effecting separation of said second contact means from said first contact means and opening of said circuit upon welding of said first contact means to said stationary contact means and removal of said operating force from said mechanism.

5,304,754

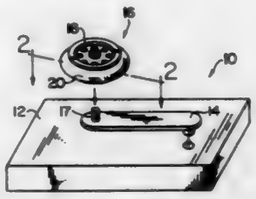
CAM FOLLOWER

Beryl F. M. Marsh, Unionville, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Aug. 3, 1992, Ser. No. 924,265

Int. Cl.[5] H01H *3/16*

U.S. Cl. 200—47 **11 Claims**



1. A cam follower disposed on a limit switch for use in an elevator system to indicate location of said elevator if a cam disposed on said elevator comes into contact with said cam follower wherein said limit switch includes a box-like enclosure and an arm protruding from said box-like enclosure being attached thereto on one end and having a protruding spindle on another end, said cam follower comprises:

a tire means for absorbing the impact shock and minimizing the impact noise, said tire means having a torus and a web, said web having a disk-like shape having a first outer diameter, said torus having a substantially round shape formed radially around said first outer diameter of said web, and

a hub means for retaining said tire means and cooperating with said tire means such that said torus and said web move relative to said hub means in a radial direction, thereby absorbing the impact shock with minimal deformation and production of noise.

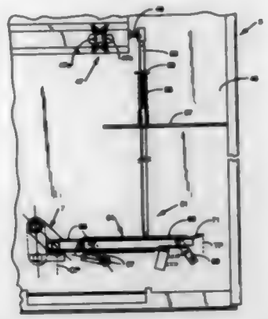
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5,304,755

RETAINER FOR MECHANISM OPERATED CELL SWITCH IN METAL-CLAD SWITCH GEAR

Joseph V. Romano, Center Township; Beaver County, and Ronald E. Vaill, Penn Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1992, Ser. No. 983,487
Int. Cl.[5] H01H *33/48*
U.S. Cl. 200—50 AA 14 Claims



1. A circuit interrupter apparatus comprising:
a cabinet;
a main circuit breaker movable into said cabinet and having an external auxiliary switch operating member movable between a closed position when said main circuit breaker is closed and an open position when said main circuit breaker is open;
auxiliary switch means mounted within said cabinet and having a contact actuating member;
motion transfer means movably mounted in said cabinet and interconnected with said auxiliary switch actuating member, said motion transfer means including a channel in which said auxiliary switch operating member is received as said main circuit breaker moves into said cabinet, said motion transfer means translating movement of said auxiliary switch operating member between said open and closed positions into actuation of said contact actuating member; and
retainer means comprising an elongated retainer member mounted to said auxiliary switch operating member and which extends along said channel with said auxiliary switch operating member received in said channel.

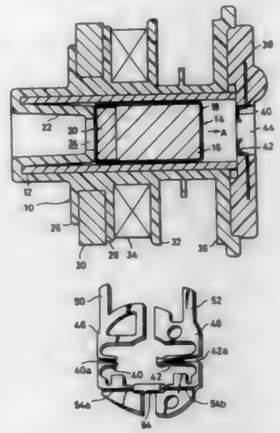
5,304,756

ACCELERATION SENSOR WITH DIAGNOSTIC RESISTOR FOR DETECTING BROKEN CONTACTS

Shigeru Shimozono; Kazuo Yoshimura, and Ryo Satoh, all of Kanagawa, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,341
Claims priority, application Japan, Dec. 25, 1990, 2-405803
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 M 3 Claims

1. An acceleration sensor comprising:
a cylinder made of a conductive material;
a magnetized inertial member mounted in the cylinder so as to be movable longitudinally of the cylinder;
a conductive member mounted on at least one end surface of the magnetized inertial member which is located on a side of one longitudinal end of the cylinder;
a pair of first and second electrodes which are disposed at said one longitudinal end of the cylinder and which, when the conductive member of the magnetized inertial member makes contact with the electrodes, are caused to conduct via the conductive member; and
an attracting member disposed near the other longitudinal end of the cylinder and made of a magnetic material, the attracting member magnetically attracting the inertial member;
each of said first and second electrodes having an end portion communicating to a terminal connected to a conductive wire and a front portion which said conductive member make contact with;
each of said first and second electrodes being provided with a slit extending from said end portion toward said front portion, wherein one half of each electrode divided by the slit is integral with said terminal,
said sensor further comprises a resistor through which the other halves of the electrodes are electrically connected together,
said resistor having enough high resistance to allow weak current to flow therethrough so that breakage of the front portion of said electrode can be detected by detecting cut-off of said weak current.

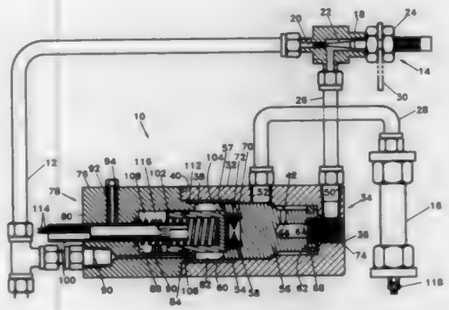


5,304,757

COMBINATION DIFFERENTIAL AND STATIC PRESSURE SWITCH

Frederick W. Hensel, Butler, Pa., assignor to Tech Team, Inc., Butler, Pa.

Filed Mar. 26, 1992, Ser. No. 858,069
Int. Cl.[5] H01H *35/38*
U.S. Cl. 200—82 R 10 Claims



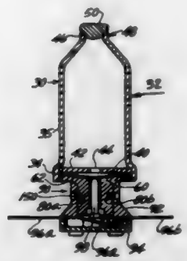
1. A combination differential and static pressure switch for detecting a differential pressure condition occurring in a test system, comprising:
a first tubular-shaped member closed at a first end and having an elongated cavity extending substantially therethrough from an annular seat at the closed first end to an open annular second end;
a second tubular-shaped member axially aligned with and adapted for removable securement to the first tubular-shaped member;
the second tubular-shaped member further characterized by having a substantially closed distal end, an elongated passage extending from the distal end substantially into the second tubular-shaped member concentric thereto, an annular rim having a smaller diameter than the second tubular-shaped member and projecting axially from the second tubular-shaped member opposite the distal end, the annular rim adapted to slidably fit within the open annular second end of the first tubular-shaped member, and a cylindrical chamber located between the elongated passage and the annular rim;
a pre-set piston positioned within the second tubular-shaped member and disposed for slidable axial movement therein, the pre-set piston capable of registering a minimum predetermined static pressure within the test system;
a differential piston having a face end and an opposite seating end slidably disposed within the inner bore and axially aligned with the pre-set piston, the differential piston detecting a differential pressure occurring within the test system;
a magnet mounted to the face end of the differential piston for producing a local magnetic field;
a cylindrical, elongated support member for removable and adjustable placement within the elongated passage of the second tubular-shaped member projecting into the cylindrical chamber and encompassed by the pre-set piston;
an electrical signaling means emplaced within the elongated support member actuated by the proximity of the magnetic field to a conducting and signaling on state; and
the electrical signaling means further disposed to a nonsignaling, nonconducting off state when the magnetic field moves away from the electrical signaling means.

5,304,758

TEMPERATURE COMPENSATED LOW PRESSURE SWITCH FOR HYBRID INFLATORS

Robert J. Bishop, Mt. Clemens; Richard L. Frantom, Richmond; Robert M. Kremer; Klaus F. Ocker, both of Fraser, all of Mich.; Roy G. Brown, Hot Springs, Ark.; Teresa L. Bazel, Annadale, Va., and Donald W. Renfroe, Haymarket, Va., assignors to Bendix Atlantic Inflator Company, Sterling Heights, Mich.

Filed Apr. 30, 1992, Ser. No. 876,241
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 J 5 Claims



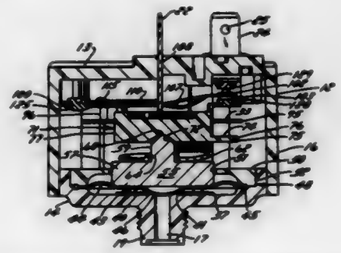
1. A pressure switch assembly (30) adapted to be placed within a pressurized chamber for generating a logical signal when the pressure within the chamber reduces to a determinable pressure P_1, the pressure switch (30) comprising:
a pressure vessel (32) sealed at one end (34) by a snap action diaphragm (40) and filled to a determinable pressure P_2 less than the pressure P_1 of the pressure chamber;
inner stop means (42) and outer stop means (60, 62) respectively positioned on opposing sides of the diaphragm (40) for limiting diaphragm motion, the inner stop means (42) comprising a flat plate having an opening (44) therethrough;
the outer stop means comprising
an arcuate top surface (62) conformed with the shape of the diaphragm when in its outward extending condition,
a first cylindrical portion (78) below the top surface (62),
a first pair of parallel slots (80*a*, *b*) formed therein and a through bore (70, 72, 74) extending therethrough;
a switch assembly (90) comprising an upper housing member (92), a lower housing member (94), first and second electrical contacts (96*a*, 96*b*) and an activation pin (98);
the upper housing member (92) comprising a hollow cylindrical portion (100) adapted to be slid over first cylindrical portion (78) including a second pair of opposing slots (112*a*,*b*), the first and second cylindrical portions (78, 100) are loosely secured together by a clip (150) fitted within the first and second pair of slots (80*a*,*b*; 112*a*,*b*), the upper housing member further including opposingly positioned first and second notches (110*a*,*b*) and two sets of outwardly extending, oppositely positioned locating pins (108*a*–*d*);
the first electrical contact including a first contact portion and an extending first crossbar having first openings near each end thereof, the first contact portion received through a first one of the notches of the upper housing member and the openings of the first crossbar received about a first set of locating pins;
the second electrical contact (96*b*) including a second contact portion and an extending second crossbar having second openings near each end thereof, the second contact portion received through a second one of the notches (110*a*, *b*), the second openings received about a second of the sets of locating pins, the second electrical contact spaced from the first electrical contact,
the activation pin (98) loosely received through the through bore (70, 72, 74), the first electrical contact (96*a*) lightly biasing the activation pin (98) against the diaphragm (40), the activation pin moveable in response to the motion of the diaphragm (40) in response to the pressure differential thereacross, the activation pin urging the first electrical contact (96*a*) away from closure with the second electrical contact (96*b*) in response to the snap action of the diaphragm (40).

5,304,759

DIRECT MOUNT PRESSURE CONTROL WITH A FIELD ADJUSTABLE TRIP POINT AND RESET POINT

Robert Doherty, New Hudson, Mich., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 15, 1992, Ser. No. 969,861
Int. Cl.[5] H01H *35/40*
U.S. Cl. 200—83 SA 19 Claims

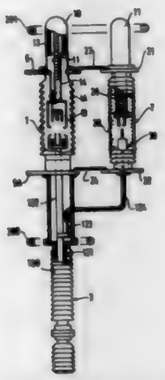


1. A pressure switch comprising:
a body having an opening communicating with the pressure to be sensed;

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a blade within the body being normally biased to a first position;
an actuator within the body for moving the blade from its first to a second position when the sensed pressure exceeds a first preselected level;
means for changing the first preselected level;
means for returning the blade to its first position from the second position when the sensed pressure falls below a second preset level;
a cam surface on the actuator, the returning means contacting the cam surface; and
means for moving the cam surface for changing the second preselected level.

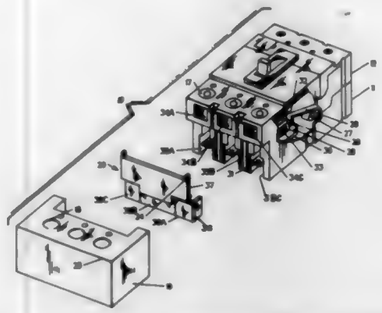
5,304,760
ULTRA-HIGH-TENSION CIRCUIT-BREAKER
Van Doan Pham, and Joseph Martin, both of Meyzieu, France, assignors to GEC Alsthom SA, Paris, France
Filed Sep. 30, 1992, Ser. No. 954,030
Claims priority, application France, Oct. 2, 1991, 91 12118
Int. Cl.[5] H01H *33/16*
U.S. Cl. 200—144 AP **6 Claims**



1. In an ultra-high-tension interrupting chamber including a main interrupting chamber comprising a first plate connected to a first terminal, a second plate connected to a second terminal and an insulating case between said plates and containing permanent contacts, arcing contacts and two closing resistors and a make switch device operatively coupled to said two resistors and having means for inserting one of said two resistors into operation before a second of said two resistors, the improvement comprising an auxiliary chamber connected in parallel with the main interrupting chamber and mechanically to said first and second plates, said auxiliary chamber including an insulating casing containing an opening varistor and a break switch connected to one of said plates and having a slow-release opening mechanism situated inside the casing of the auxiliary chamber and operatively connected to said opening varistor.

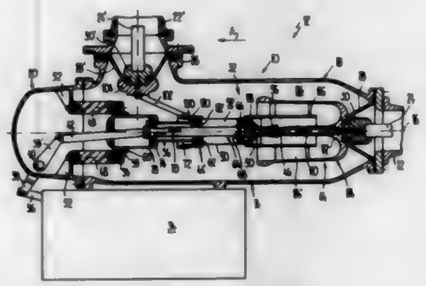
6. An SF_6 multi-interruption ultra-high-tension circuit-breaker, including both main and auxiliary interrupting chambers which are connected together in series, which are disposed vertically in columns, and which are equipped with distribution capacitors, with one main interrupting chamber per support column, wherein the interrupting chambers are interrupting chambers according to claim 1.

5,304,761
ARC-PROOF MOLDED CASE CIRCUIT BREAKER
Louis A. Rosen, Hartford; Timothy W. Webber, Bristol, and Louis M. Frutuoso, Newington, all of Conn., assignors to General Electric Company, New York, N.Y.
Filed Feb. 18, 1992, Ser. No. 836,573
Int. Cl.[5] H01H *9/30, 33/00*
U.S. Cl. 200—144 R **17 Claims**



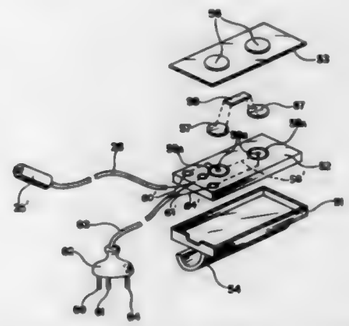
12. An arc proof circuit breaker comprising in combination:
a plastic cover attached to a plastic case enclosing circuit breaker operating components;
line lug compartments arranged at one end of said case and including a plurality of line lugs arranged for connection with electric power distribution cables; and
an exhaust arc gas deflector arranged partially within said line lug compartments, said deflector having top and bottom interconnected parts, top means extending from said top part arranged for attaching said top part to a circuit breaker arc shield, and bottom means extending from said bottom part arranged for attaching said bottom part to a circuit breaker line lug compartment.

5,304,762
NOVEL GAS-BLAST CIRCUIT BREAKER
Hugo Hiltbrunner, Vicques, Switzerland, assignor to Sprecher Energie AG, Oberentfelden, Switzerland
Filed Feb. 5, 1993, Ser. No. 13,833
Claims priority, application Switzerland, Feb. 6, 1992, 00348/92-6
Int. Cl.[5] H01H *33/90*
U.S. Cl. 200—148 A **9 Claims**



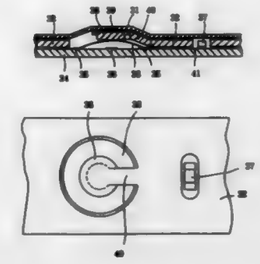
1. A gas-blast circuit breaker comprising:
a housing and first and second switching elements within a surrounding space adapted for containing a quenching gas and defined by the housing,
the first switching element comprising a stationary contact piece, and
the second switching element comprising a stationary tube, a pump piston connected to the stationary tube at a first end closest to the first switching element, and a moving contact piece arranged to move coaxially along and partially within the stationary tube, the moving contact piece comprising:
a quenching tube defining an axial passage,
a free end and a blowing nozzle at the free end into which the stationary contact piece passes in a switched-on position,
a pump cylinder surrounding the quenching tube and slidingly contacting the pump piston such that the pump cylinder, quenching tube and pump piston define a pump space which can be subjected to pressure during a switching-off stroke,
a blow-out piston mounted on the quenching tube and slidingly contacting the stationary tube in a region remote from the free end such that the blow-out piston, pump piston, quenching tube and stationary tube define a blow-out space, the volume of which is enlarged during a switching-off stroke,
and communication means for allowing quenching gas to move between the blow-out space, the pump space and the surrounding space during switching-on and valve means for opening and closing the communications means, the communications means having a first passage means between the pump space and the surrounding space and a second passage means between the blow-out space and one of the group consisting of the pump spaced and surrounding space, the valve means comprising a first valve adapted for opening and closing the first passage means and a second valve adapted for opening and closing the second passage means, the valve means responding to overpressure in the pump space to act on a valve body of the first valve in the closing direction, and overpressure in the blow-out space to act on a valve body of the second valve in the opening direction, the valves being spring loaded in the closing direction and coupled to one another to hold the second valve closed when the first valve is closed.

5,304,763
FINGER SWITCH FOR ELECTROSURGICAL HANDPIECE
Alan Ellman, and Jon C. Garito, both of 1135 Railroad Ave., Hewlett, N.Y. 11557
Division of Ser. No. 711,860, Jun. 7, 1991, Pat. No. 5,196,007.
This application Dec. 16, 1992, Ser. No. 991,879
Int. Cl.[5] H01H *13/04*
U.S. Cl. 200—295 **11 Claims**



1. An electrical device for energizing an electrosurgical handpiece, comprising:
a finger switch having a housing containing a printed circuit board,
at least one finger actuator means accessible on the outside of the housing and when depressed establishing via the printed circuit board an electrical connection between first and second conductors on the printed circuit board,
a first electrical cable connected to the finger switch and its first conductor for supplying electrosurgical energy,
a second electrical cable connected to the second conductor and having means for electrical connection to the electrosurgical handpiece, whereby electrosurgical energy will be made available at an electrode mounted in the handpiece in response to actuation of the finger actuator means on the finger switch,
means for removably mounting the finger switch on an object.

5,304,764
FLAT KEYBOARD SWITCH
Makio Kobayashi, Tokyo, Japan, assignor to Nec Corporation
Filed Feb. 19, 1992, Ser. No. 838,051
Claims priority, application Japan, Feb. 21, 1991, 3-48898
Int. Cl.[5] H01H *9/16*
U.S. Cl. 200—314 **12 Claims**



1. A keyboard switch for providing an open and closed state between at least two of a plurality of fixed contacts in response to pressure on a surface sheet, said keyboard switch comprising:
a printed circuit board having said fixed contacts and a light emitting element provided thereon;
a diaphragm being disposed above said fixed contacts and serving as a movable contact for electrically connecting said fixed contacts to each other, said closed state occurring at least in response to pressure on said surface sheet causing an electrical connection between said at least two fixed contacts;
said surface sheet having an indicium at a portion thereof above said diaphragm, said indicium including a material having a light transmitting property;
a light transmission assembly formed as a unitary member for transmitting light from said light emitting element toward said indicium, said light transmission assembly comprising:
a light introducing plate for scattering light emitted from said light emitting element toward a light introducing member;
said light introducing member receiving and scattering light emitted from said light introducing element toward a movable element; and
said movable element being disposed between said diaphragm and said surface sheet;
wherein at least when said diaphragm is in said closed state, said movable element, said light introducing member and said light introducing plate are in substantial alignment, generally along a common plane, thereby providing efficient light transmission through said light transmission assembly.

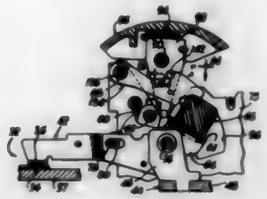
VOL 1161 ISS 3 APR 19 1994 UMI

5,304,765

CIRCUIT BREAKER POSITIVE OFF INTERLOCK

David A. Parks, Baden; Thomas A. Whitaker, North Huntingdon, and Yu W. Chou, Coraopolis, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 503,812, Apr. 3, 1990, Pat. No. 5,142,112.
This application Aug. 21, 1992, Ser. No. 934,042
Int. Cl.[5] H01H 3/00
U.S. Cl. 200—401 1 Claim



1. A molded case circuit breaker comprising:
a base;
a pair of separable main contacts including a pivotally mounted contact carried by an operating arm disposed within said base;
a crossbar rigidly attached to said operating arm;
an operating mechanism mechanically coupled to said crossbar for operating said operating arm;
an operating handle rigidly attached to a handle yoke defining a pair of depending arms for selectively allowing said pair of separable main contacts to be placed in an off position and an on position;
sideplate means for carrying a portion of said operating mechanism; and
means for preventing said operating handle from being moved out of an on position during a predetermined condition, wherein said preventing means includes an arm pivotally mounted about a fixed pivot point on said side plate means and formed with an L-shaped portion and a stop surface, wherein said preventing means further includes a pin rigidly attached to said pair of depending arms of said handle yoke which cooperates with said stop surface to prevent rotation of said handle yoke out of an on position during said predetermined condition.

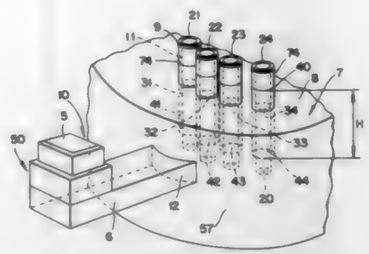
5,304,766

METHODS AND APPARATUS FOR SIMULTANEOUSLY TREATING A PLURALITY OF SAMPLES IN A MOIST MEDIUM

Jean-Jacques Baudet, Briare, and Patrick Jacquault, Sevres, both of France, assignors to Prolabo, Paris, France

Filed Jan. 27, 1992, Ser. No. 826,536
Claims priority, application France, Jan. 25, 1991, 91 01064; Sep. 17, 1991, 91 11706
Int. Cl.[5] H05B 6/64
U.S. Cl. 219—687 30 Claims

1. Apparatus for treating a plurality of samples simultaneouly in a moist medium, comprising:
a housing having a side wall, an upper wall, and a lower wall defining a cylindrical cavity having a vertical longitudinal axis, said upper wall including a plurality of apertures each sized to receive a receptacle in which a sample is to be introduced,
microwave supplying means comprising a microwave generating means for generating microwaves, and a waveguide for guiding the microwaves into said cavity, said waveguide having a longitudinal axis and configured to guide the microwaves in a direction parallel to said axis, and
a chimney extending coaxially from each of said apertures, and being of a predetermined height determined as a function of both a frequency of the microwaves and a cross-sectional area of the respective aperture, for forming an absorption barrier opposing a propagation of microwaves from said cavity, said chimney being configured to receive a respective receptacle.

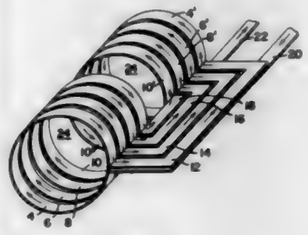


5,304,767

LOW EMISSION INDUCTION HEATING COIL

Thomas H. McGaffigan, Half Moon Bay; Frank A. Doljack, Pleasanton, and Cristian C. Filimon, Sunnyvale, all of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Nov. 13, 1992, Ser. No. 974,734
Int. Cl.[5] H05B 6/40
U.S. Cl. 219—674 6 Claims



1. A coil structure comprising
a plurality of turns of an electrical conductor arrayed in groups of conductors,
with the turns of one group of conductors interconnected serially on a one for one basis with the turns of the other group of conductors,
said interconnections being such that each turn of one group of conductors is connected to a turn of the other group of conductors with currents flowing in opposite directions in each of the turns of the different groups and each turn of the same group having current flowing in the same direction as the other turns of that group,
said groups of conductors being located to magnetically interact with one another,
said turns of said conductors and the interconnection of the turns of said groups of conductors reducing the magnetic leakage flux from the coil.

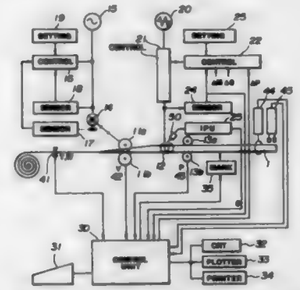
5,304,768

WELDING MANAGEMENT APPARATUS

Yuji Ishizaka, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,494
Claims priority, application Japan, Apr. 16, 1991, 3-083917
Int. Cl.[5] B23K 13/08
U.S. Cl. 219—61.2 4 Claims

1. A welding management apparatus for use with a tube production machine including first means for forming a workpiece fed from a roll of metal strip in a tubular formation having side surfaces opposite to each other, second means for providing an upsetting pressure to joint the opposite side surfaces of the workpiece at a jointing point, and third means for supplying a high frequency power to the workpiece to weld the opposite side surfaces at a welding point so as to produce a metal tube member, the welding management apparatus comprising:
a camera positioned to have a visual field including the jointing and welding points for producing a video signal indicative of an image of the visual field;
an image processor for converting the video signal into a luminance distribution pattern; and
a control unit responsive to the luminance distribution pattern for controlling the third means to adjust the high frequency power, the control unit including means for converting the luminance distribution pattern into a first electric signal indicative of an intensity of welding heat



generated at the welding point, means responsive to the first electric signal for controlling the third means to adjust the high frequency power, means sensitive to at least one of tube producing conditions for producing a second electric signal indicative of a sensed tube producing condition, means for storing membership functions defining each of first fuzzy sets provided for the welding heat intensity indicated by the first electric signal, means for storing membership functions defining each of second fuzzy sets provided for the tube producing condition indicated by the second electric signal, means for detecting one of the first fuzzy sets in which the welding heat intensity indicated by the first electric signal is classified, means for detecting one of the second fuzzy sets in which the tube producing condition indicated by the second electric signal is classified, means for inferring a cause of defective welding as a function of the selected fuzzy sets, and means for outputting the inferred cause.

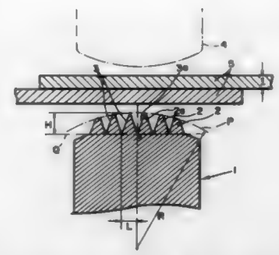
5,304,769

ELECTRODE FOR RESISTANCE WELDING

Kiyoshi Ikegami; Teruaki Yoshida; Mitsuo Kuwabara; Tamotsu Harada, and Yukihiro Yaguchi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 905,119
Claims priority, application Japan, Jun. 27, 1991, 3-156754; Jun. 27, 1991, 3-183021; Sep. 30, 1991, 3-251108
Int. Cl.[5] B23K 11/30, 35/04
U.S. Cl. 219—119 11 Claims

1. An electrode for use in resistance-welding workpieces of metal by being pressed against superposed regions of the workpieces and supplying an electric current to the superposed regions to heat the superposed regions due to an electric resistance of the workpieces, said electrode comprising:
a body having a tip end for pressed engagement with one of the workpieces; and
a matrix of tapered teeth disposed on said tip end of said body except for a center of said tip end with recesses defined between said tapered teeth, one of said recesses being positioned at the center of said tip end, each of said teeth having respective heights defined from a base of the teeth to respective tips of the teeth, said heights of said teeth becoming progressively higher from an outer circumferential edge of said tip end toward said center thereof.

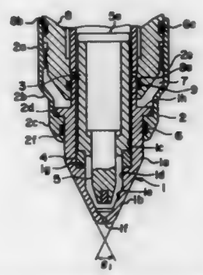


5,304,770

NOZZLE STRUCTURE FOR PLASMA TORCH

Yuichi Takabayashi, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 14, 1993, Ser. No. 62,071
Int. Cl.[5] B23K 9/00, 10/00
U.S. Cl. 219—121.5 18 Claims



1. A nozzle structure for a plasma torch, comprising:
an electrode having an upper portion and a lower portion;
an annular nozzle having an upper portion and a lower portion, with the lower portion of said nozzle converging downwardly and inwardly, said nozzle surrounding at least the lower portion of said electrode, the lower portion of said nozzle having a lower end containing a hole formed therein for jetting a plasma arc outwardly from the plasma torch, said upper portion of said nozzle having a flange extending outwardly therefrom, said flange having a lower surface which faces downwardly; and
an annular cap having an upper portion and a lower portion, said lower portion of said cap having a lower end and an upper end with an upwardly facing internal shoulder formed at the upper end of the lower portion of said cap, wherein said cap surrounds an upper part of the upper portion of said nozzle with said lower surface of said flange being in close contact with said upwardly facing internal shoulder of said cap;
wherein a lower part of said upper portion of said nozzle extends downwardly beyond the lower end of said lower portion of said cap so that said lower part of said upper portion of said nozzle, along with said lower portion of said nozzle, form a portion of exterior surface of the plasma torch when the plasma torch is in operation such that the portion of exterior surface of the plasma torch formed by said lower portion of said nozzle defines an apex angle for the nozzle structure of less than about 60°.

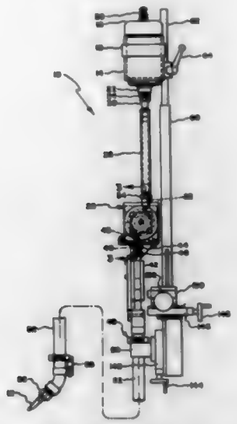
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5,304,771

APPARATUS FOR PRECISELY METERING POWDER FOR WELDING

Robert Griffin, Orchard Park; James H. Downey, Williamsville, and Frederick K. McGee, Hamburg, all of N.Y., assignors to D. A. Griffin Corporation, West Seneca, N.Y.

Filed Feb. 18, 1992, Ser. No. 837,492
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 20 Claims



1. Powder feed apparatus for welding comprising powder containing means, nozzle means for depositing the powder into the path of a welding energy source, means for metering flow of the powder to said nozzle means, and means for flowing the powder from said containing means to said metering means, said metering means comprising a housing, at least one wheel rotatable within said housing and having a peripheral edge, at least one plurality of cavity means in said wheel peripheral edge, said plurality of cavity means being substantially evenly spaced entirely about the wheel periphery and being sized to hold substantially equal volumes, inlet means in said housing for delivering the powder from said containing means to said cavity means, outlet means in said housing for delivering the powder from said cavity means to said nozzle means, said wheel peripheral edge having a close clearance with said housing whereby to entrap for delivery to said outlet means discrete precise quantities of the powder in said cavity means respectively, and a velocity feed-back controlled motor connected to said wheel whereby the flow rate of the powder to said nozzle means may be precisely controlled, wherein said nozzle means has a tip means defining an outlet therefrom, the apparatus further comprising means for tri-axially positioning said tip means.

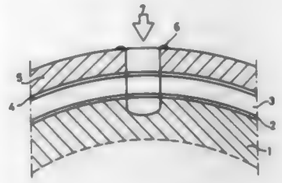
5,304,772

PROCESS FOR THE PRODUCTION OF A METAL SCREEN, AND DEVICE FOR THE PRODUCTION THEREOF

Johannes T. Snakenborg, Dieren, Netherlands, assignor to Stork Screens B.V., Boxmeer, Netherlands

Continuation of Ser. No. 635,127, Mar. 8, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 998,637
Claims priority, application Netherlands, Jul. 29, 1988, 8801913
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.71 22 Claims

1. A process for the production of a metal-containing screen which comprises irradiating with high energy, focused radiation, one or more metal-containing basic layers to be perforated to form a screen, wherein at least one metal-containing basic layer is brought into intimate contact on both its opposite surfaces during the irradiation with a covering element, each covering element adapted to the shape of the basic layer, placing a release layer between the covering elements and the



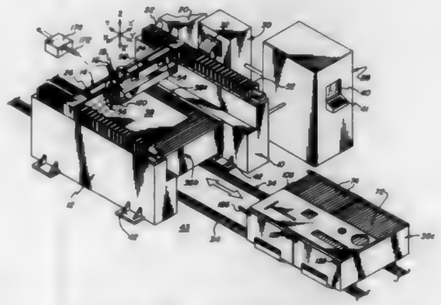
respective surfaces of the basic layer and, after perforation by irradiating, removing the covering elements and the release layers.

5,304,773

LASER WORK STATION WITH OPTICAL SENSOR FOR CALIBRATION OF GUIDANCE SYSTEM

Friedrich Kilian, Avon; Stephen R. Bolton, Bristol, and Joseph J. Troiani, Burlington, all of Conn., assignors to Trumpf Inc., Farmington, Conn.

Filed Feb. 19, 1992, Ser. No. 841,661
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.78 20 Claims



1. A laser work station enabling precise positioning of a workpiece relative to its X-Y guidance system, the workpiece having a reference formation with at least one edge, said work station comprising:

(a) a base member;

(b) a workpiece support;

(c) a laser head spaced above said workpiece support;

(d) a laser head support member mounted on said base member for movement of said laser head relative to said base member, said laser head being movable thereon in X, Y and Z axes relative to the workpiece support;

(e) movement means for moving said laser head in said X, Y and Z axes;

(f) a guidance system connected to said movement means for effecting precision movement of said laser head in said X, Y and Z axes to permit said laser head to direct a laser beam onto an associated workpiece supported on said workpiece support;

(g) an optical sensor assembly comprising (i) a light source for directing onto an associated workpiece on said workpiece support a light beam parallel to the Z-axis of movement of said laser head and (ii) light sensors about said light source for detecting light reflected from the surface of the associated workpiece upon which said light beam impinges, said sensor assembly being operable to detect

reference formations on an associated workpiece carried by said workpiece support;

(h) sensor assembly mounting means mounting said sensor assembly on said laser head for movement therewith in X-Y axes relative to an associated workpiece on said workpiece support; and

(i) position determining means cooperating with said sensor assembly and said guidance system to:

(i) index said laser head and sensor assembly to a preselected X-Y position relative to the approximate position of a reference formation on the associated workpiece;

(ii) move said laser head and sensor assembly in a predetermined path from said preselected position to sense passage of the beam over an edge of a reference formation; and

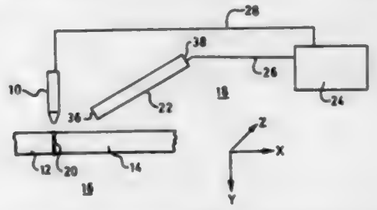
(iii) use data obtained form such sensing of the passage of the beam over an edge of the reference formation to adjust the coordinates of said guidance system to reflect the actual position of the associated workpiece on said workpiece support.

5,304,774

METHOD AND APPARATUS FOR MONITORING WELD QUALITY

Brent A. Durheim, Peoria, Ill., assignor to Caterpillar, Inc., Peoria, Ill.

Filed May 17, 1993, Ser. No. 62,266
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 11 Claims



1. A method of monitoring welding of a workpiece comprising:

during welding, selecting light of a predetermined wavelength emitted from plasma at a desired location adjacent the workpiece;

generating signals indicative of the intensity of the selected light; and

correlating said signals with the cross-sectional area of the weld at the desired location.

5,304,775

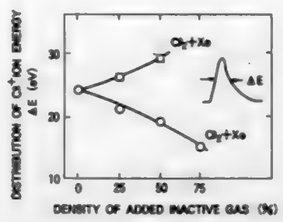
METHOD OF ETCHING A WAFER HAVING HIGH ANISOTROPY WITH A PLASMA GAS CONTAINING HALOGENS AND IN INERT ELEMENT

Nobuo Fujiwara; Kyusaku Nishioka, and Teruo Shibano, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1991, Ser. No. 710,988
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.43 25 Claims

1. A method for performing etching upon a semiconductor wafer in a reaction chamber, comprising the steps of:

applying microwaves and a magnetic field to said reaction chamber while injecting a reaction gas, which contains halogen, into said reaction chamber, forming a gas plasma of said reaction gas by electron cyclotron resonance and subjecting said semiconductor wafer to an etching process with said gas plasma, said method being characterized in that, prior to injection, said reaction gas is formed by mixing halogen ions, which contribute to said etching process, and ions of a light element, wherein a mass of each ion of said light element is smaller than a mass of



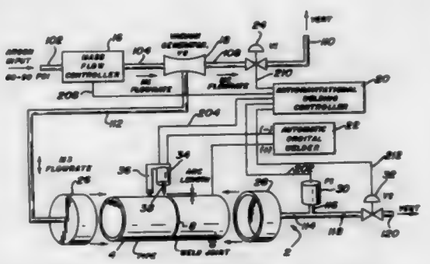
each of said halogen ions and wherein said light element does not react with said semiconductor wafer.

5,304,776

SYSTEM FOR WELDING PIPES

Steven R. Buerkel, 1336 Mark Dr., Westchester, Pa. 19380, and Victor Ballard, Westchester, Pa., assignors to Steven R. Buerkel, Westchester, Pa.

Filed Mar. 24, 1993, Ser. No. 36,298
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—125.11 62 Claims



1. A system for welding pipes comprising a source of gas, an orbital welding means having a welding torch which orbits said pipes during welding operations, means, responsive to the orbital position of the welding torch, for producing a variable pressure within said pipes to minimize the gravitational effects on the weld produced by said orbital welding means, said means for producing said variable pressure comprising means for controlling the rate of the gas flow of said source of gas, and means for producing a continuously variable positive or negative pressure within said pipes as a function of said rate of gas flow, said pressure producing means including means for increasing said pressure proportionally from approximately zero when said welding torch is at the 9 o'clock position to a predetermined positive value when said welding torch is approximately at the 12 o'clock position and decreasing proportionally from said predetermined positive value when said welding torch is at said 12 o'clock position to approximately zero when said welding torch is at said 3 o'clock position, and proportionally decreasing said pressure from approximately zero when said welding torch is at said 3 o'clock position to a predetermined negative value when said welding torch is at the 6 o'clock position, and increasing said preasure from said predetermined negative value at said 6 o'clock position to approximately zero when said welding torch is at said 9 o'clock position, as said welding torch orbits said pipes.

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5,304,777

METHOD OF CONNECTING A MANGANESE STEEL PART TO ANOTHER CARBON STEEL PART AND ASSEMBLY THUS OBTAINED

Fernand Pons, Alissy; André M. J. Spolidor, Pont-de-l'Arche, and Daniel L. Seillier, Saint-Martin-les-Boulogne, all of France, assignors to Manoir Industries, France

Filed Apr. 24, 1992, Ser. No. 874,171
Claims priority, application France, Apr. 24, 1991, 91 05067
Int. Cl.[5] B23K *9/23*
U.S. Cl. 219—137 WM **16 Claims**



1. A method of connecting a manganese steel part to a carbon steel part, comprising

depositing an austeno-ferritic stainless steel at an end of at least one carbon steel part and

welding the end of the carbon steel part with the deposit thereon to the manganese steel part,

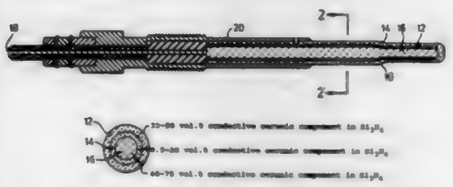
said austeno-ferritic stainless steel having a composition comprising 0.025–0.035% by weight carbon, 6–11% by weight manganese, 0.5–1.5% by weight silicon, 5–8% by weight nickel, 17.5–20% by weight chromium, 0.25–0.35% by weight niobium, less than 0.5% by weight molybdenum, less than 0.030% by weight phosphorus and sulfur, and residual amounts of nitrogen up to 700 ppm, and the delta ferrite content of said austeno-ferritic stainless steel as measured by counting is from about 5% to about 15% by volume.

5,304,778

GLOW PLUG WITH IMPROVED COMPOSITE SINTERED SILICON NITRIDE CERAMIC HEATER

Sankar Dasgupta; James K. Jacobs; Stephen Radmacher, all of Toronto, and Marek Sobczyk, Weston, all of Canada, assignors to Electrofuel Manufacturing Co., Toronto, Canada

Filed Nov. 23, 1992, Ser. No. 979,911
Int. Cl.[5] H05B *3/00*; F23Q *7/00*; F02P *19/02*
U.S. Cl. 219—270 **9 Claims**



1. In a glow plug for a diesel engine, said glow plug having a metallic housing for supporting a ceramic heater and providing electrical contact means for the ceramic heater, said ceramic heater comprising an electrically resistive ceramic member and a ceramic insulator member, said housing being connectable to an electrical power source, the improvement comprising,

that said ceramic heater is essentially consisting of silicon nitride containing an electrically conductive ceramic component selected from the group consisting of titanium nitride, titanium carbonitride and molybdenum disilicide;

said electrically resistive ceramic member comprised by said ceramic heater further comprises a cylindrical ceramic tube having a closed end and an inner surface, and a ceramic rod, said ceramic rod being integrally sintered to said inner surface in the proximity of said closed end, thereby forming an annular space between said ceramic rod and said inner surface of said ceramic tube,

said cylindrical ceramic tube having the composition of silicon nitride containing 33–50 vol. % electrically conductive ceramic component,

said ceramic rod having the composition of silicon nitride containing 46–75 vol. % said electrically conductive ceramic component, such that the conductivity of said ceramic rod per unit volume exceeds the conductivity of said cylindrical ceramic tube per unit volume, and

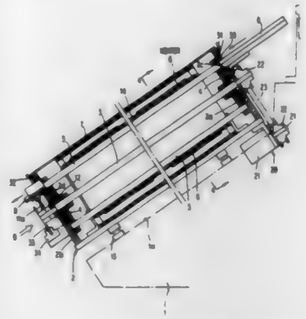
said ceramic insulator member comprised by said ceramic heater is a tubular member inserted and subsequently sintered to said cylindrical ceramic tube in said annular space, said ceramic insulator member having the composition of silicon nitride containing 0.5–28 vol. % said electrically conductive ceramic component.

5,304,779

SEMICONDUCTOR PREHEATER WITH INCLINED ROTARY FEED

Yong G. Sung, Kyungsangbook, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook, Rep. of Korea

Filed May 11, 1992, Ser. No. 880,773
Claims priority, application Rep. of Korea, May 13, 1991, 7691/1991
Int. Cl.[5] H01L *21/00*
U.S. Cl. 219—388 **4 Claims**



1. A semiconductor device preheating apparatus, comprising:

a base having a slanted surface;

a frame mounted on said slanted surface;

a rotary shaft provided between support plates of said frame, said rotary shaft having opposite ends;

two rotary disks, wherein one of said two rotary disks is fixed at each of said opposite ends of said rotary shaft;

storage chutes radially provided and extending between said two rotary discs;

a heater for heating said storage chutes;

a heat chamber for condensing the heat from said heater toward said storage chutes;

means for driving said rotary shaft to rotate the storage chutes;

means for sensing the supply or the discharge of semiconductor devices to or from the storage chutes and the amount of rotation of the storage chutes; and

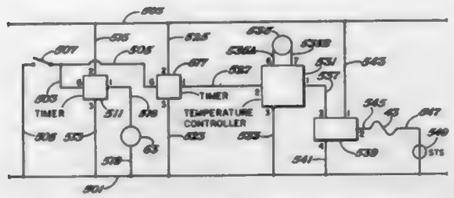
means for discharging consecutively semiconductor devices contained and preheated in the storage chutes.

5,304,780

INCINERATOR TOILET, ASH PAN AND CONTROL CIRCUIT

Ernest B. Blankenship, Dallas, Tex., assignor to Research Products/Blankenship Corp., Dallas, Tex.

Division of Ser. No. 659,827, Feb. 22, 1991, Pat. No. 5,153,942, which is a continuation-in-part of Ser. No. 643,784, Jan. 22, 1991, Pat. No. 5,123,122. This application Sep. 9, 1992, Ser. No. 942,762
Int. Cl.[5] A47K *11/02*; H05B *1/02*
U.S. Cl. 219—492 **2 Claims**



1. A circuit for controlling a blower and a heater of an incinerator toilet comprising:

first and second electrical timers coupled to said circuit

each of said timers having an input terminal and an output terminal wherein the timer produces an electrical output when the output terminal is coupled to an electrical load and an electrical input is applied to the input terminal,

an electrical blower fan coupled to the output terminal of said first timer and to said circuit,

an electrical temperature controller coupled to said circuit and having an input terminal and an output terminal,

an electrical heater coupled to said circuit,

an electrical relay coupled to said circuit and having an input terminal coupled to the output terminal of said temperature controller and an output terminal coupled to said electrical heater,

a thermocouple coupled to said temperature controller for controlling said temperature controller,

means for coupling the output terminal of said second timer to the input terminal of said temperature controller,

switch means coupled to said circuit for simultaneously applying electrical energy to the input terminals of said first and second timers for actuating said first and second timers and hence said blower fan and said temperature controller to allow said temperature controller to actuate said relay to apply electrical energy to said electrical heater,

said first timer having a longer timing duration than said second timer whereby said blower fan will continue to operate for a given time duration after said second timer times out,

said thermocouple sensing the temperature of said electrical heater to control said temperature controller during the time that said second timer is actuated.

5,304,781

TWO TERMINAL LINE VOLTAGE THERMOSTAT

Kevin J. Stalsberg, 2829 N. Riviera Dr., White Bear Lake, Minn. 55110

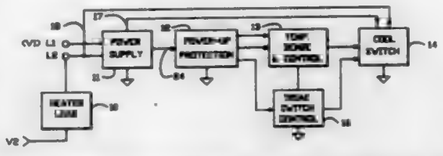
Filed Nov. 24, 1992, Ser. No. 980,983
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—501 **6 Claims**

1. A two terminal line voltage thermostat including a switch for connecting said line voltage across a heater load connected to one of its terminals with the other of the two terminals connected to said line voltage said thermostat comprising:

a transformer having voltage and current primary windings and a secondary winding said switch in its closed condition energizing only said current winding and in said open condition energizing both of said primary windings;

a relay coil for actuating said switch and connected to said current winding;

blocking capacitor means connected to said voltage winding for providing a high impedance series circuit to said heater load with said switch open;



triac switch means connected across said switch for arc suppression, said switch being single pole-single throw;

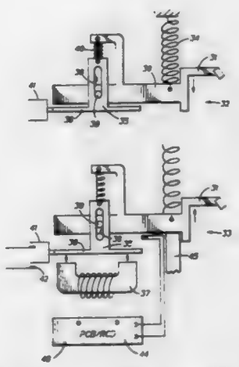
and temperature responsive means receiving power from said secondary winding for actuating said relay coil.

5,304,782

PROTECTION CIRCUIT FOR ELECTRIC TOASTER

John D. McNair, Olinda, and Alk P. Cheah, Clayton South, both of Australia, assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 5, 1993, Ser. No. 26,959
Claims priority, application Australia, Mar. 6, 1992, PL1236
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—518 **16 Claims**



1. An electric toaster comprising a toasting compartment, electrically operated heating element means adapted to direct heat to said toasting compartment when activated, electric power supply means including switch means adapted to provide power to said heating element means during a toasting cycle, product supporting carriage means adapted to move a product to be toasted into said toasting compartment, latching means to retain said carriage means in a toasting position during said toasting cycle, said carriage means including an auxiliary member carried thereby, said auxiliary member being adapted to activate said switch means to close said switch means upon moving in a first direction and to open said switch means upon moving in a second direction, and sensor means adapted to detect any abnormal condition during said toasting cycle in response thereto move said auxiliary member in said second direction to open said switch means.

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5,304,783

MONOLITH HEATING ELEMENT CONTAINING ELECTRICALLY CONDUCTIVE TIN OXIDE CONTAINING COATINGS

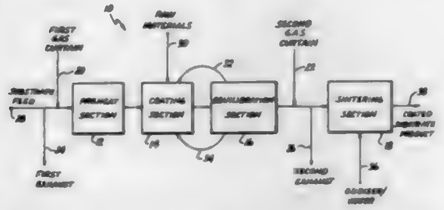
Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Nsum Pisuky, Thousand Oaks, all of Calif., assignors to Enscl, Inc., Pismo Beach, Calif.

Continuation-in-part of Ser. No. 714,242, Jun. 12, 1991, Pat. No. 5,039,845, which is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and a continuation-in-part of Ser. No. 272,539, Nov. 17, 1988, which is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Oct. 3, 1991, Ser. No. 770,625

The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.

Int. Cl.[5] H05B *3/34*

U.S. Cl. 219—543 36 Claims



1. A heating element comprising an inorganic three-dimensional multi-channel monolith substrate having at least partially shielded surfaces associated with at least a plurality of said channels and having a coating containing electrically conductive tin oxide on at least a plurality of said channels and said shielded surfaces thereof, said coated substrate being adapted and structured to provide heat in response to the presence of one or more electrical currents therein.

5,304,784

HEATER FOR SHEET MATERIAL

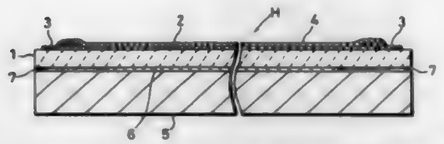
Fumiaki Tagashira; Shigeo Ota; Shinya Yukawa, and Shingo Ooyama, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 23, 1992, Ser. No. 995,888

Claims priority, application Japan, Dec. 28, 1991, 3-359321

Int. Cl.[5] H05B *3/16*

U.S. Cl. 219—543 11 Claims



1. A heater for heating a moving sheet material by contact therewith comprising:
- an electrically insulating substrate having a surface formed with a striplike heating element;
- a support plate supporting the insulating substrate;
- a first filled intervening layer formed between the substrate and the support plate at a longitudinally intermediate portion of the heating element; and
- a second intervening layer formed between the substrate and the support plate at each of longitudinally opposite end portions of the heating element;
- wherein the second intervening layer has a lower thermal conductivity than the first intervening layer.

5,304,785

COMBINATION INSTRUMENT FOR VEHICLE

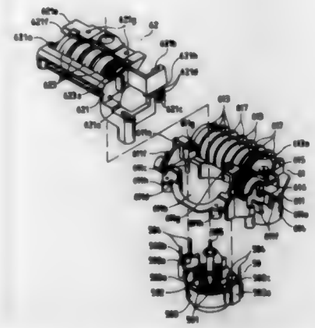
Yukio Ohike, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 25, 1991, Ser. No. 782,554

Claims priority, application Japan, Nov. 2, 1990, 2-114714[U]; Nov. 2, 1990, 2-114715[U]

Int. Cl.[5] G01C *22/00*

U.S. Cl. 235—95 R 12 Claims



1. A combination meter for vehicle, comprising:
- counter means, for displaying a distance traveled by said vehicle, including a frame and a plurality of numeral wheels rotatably juxtaposed to said frame, said frame having a measuring dial attached thereto which displays a measuring scale of a vehicle parameter;
- drive means for driving a pointer which, in combination with said measuring scale, indicates said vehicle parameter;
- coupling means, integral to said frame of said counter and to said drive means, for fixedly securing said frame of said counter means to said drive means;
- wherein said coupling means includes a fitting hole and an engaging portion formed in said drive means, and a positioning pin received in said fitting hole and a resilient engaging piece, for engaging said engaging portion, formed in said frame of said counter means.

5,304,786

HIGH DENSITY TWO-DIMENSIONAL BAR CODE SYMBOL

Theodosios Pavlidis, Setauket; Yajium P. Wang, Port Jefferson Station, and Jerome Swartz, Old Field, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Jan. 5, 1990, Ser. No. 461,881

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 70 Claims



1. A method of generating a signal representative of information encoded in a machine-readable label,
- (A) said machine-readable label including at least two rows of codewords, one row adjacent to and beneath another
- (B) each said codeword representing at least one information-bearing character and being selected from among a set of detectable mark/space patterns,
- (C) each said mark/space pattern having a determinable discriminator function value and comprising a pattern of marks and spaces, each said mark and space being representative of one of a plurality of different states,
- (D) each said row having codewords selected from one of a plurality of subsets of said mark/space patterns, each said subset comprising mark/space patterns having discriminator function values that are mutually exclusive of discriminator values corresponding to the mark/space patterns comprising any other subset, said method including the steps of:
- (a) scanning the codewords;
- (b) computing the discriminator function value for each of the scanned codewords;
- (c) determining, from the value of the computed discriminator function, the row containing each of the scanned codewords;
- (d) decoding each of the scanned codewords to obtain a plurality of corresponding symbolic values; and
- (e) generating a signal representative of the presence of each of said corresponding symbolic values in the determined row.

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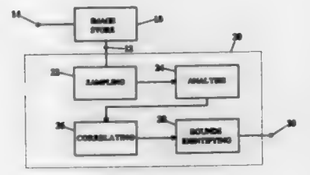
LOCATING 2-D BAR CODES

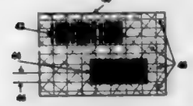
Yajiun P. Wang, Stony Brook, N.Y., assignor to Metamedia Corporation, Port Jefferson, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,546

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 11 Claims





1. A method for locating and determining the bounds of a two-dimensional bar code image including identifiable start and stop patterns, comprising the steps of:
- (a) providing a stored image representing a scanned image area which may include said two-dimensional bar code image;
- (b) sampling said stored image along spaced parallel scan lines in a first direction across a potential bar code image location included in said image area, to provide scan line samplings;
- (c) repeating said step (b) sampling in at least one additional direction having an angular separation from said first direction, to provide additional scan line samplings;
- (d) analyzing scan line samplings provided in steps (b) and (c) to identify bar code start and stop pattern traversals where said samplings cross said patterns;
- (e) correlating said bar code start and stop patterns as representative of a common bar code image (i) when two start patterns, or two stop patterns, are identified in scan line samplings taken along parallel scan lines having not more than a predetermined lateral spacing, and (ii) when a start pattern and a stop pattern are identified in the same scan line sampling with said start and stop patterns having not more than a predetermined separation, to identify correlated start and stop pattern traversals representative of said bar code image;
- (f) utilizing said correlated start and stop pattern traversals representative of said bar code image to identify a nominally rectangular area bounding said bar code image; and
- (g) making available data representative of the location of said nominally rectangular area within said scanned image area.

5,304,788

LASER DIODE SCANNER WITH ENHANCED VISIBILITY AT AN AIMING DISTANCE RELATIVE TO THE READING DISTANCE

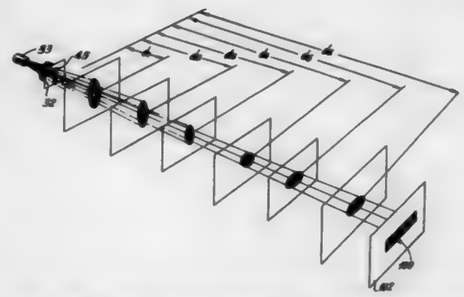
Boris Metlitsky, Hauppauge, and Jerome Swartz, Setauket, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 706,246, May 28, 1991, abandoned, which is a continuation of Ser. No. 265,149, Oct. 31, 1988, abandoned. This application Apr. 9, 1992, Ser. No. 865,728

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—467 46 Claims



24. A laser scanning system for reading indicia having portions of different light reflectivity, comprising:
- (a) a housing movable relative to indicia to be read;
- (b) a light source for generating a laser beam of at least marginal visibility to a system operator;
- (c) optical means for optically modifying the laser beam to form at a first plane relative to the housing a reading spot for reading indicia, said reading spot being not readily visible to the system operator, and to form at a second plane, spaced further away from the housing than the first plane, an aiming spot from the same incident laser beam, said aiming spot being more visible to the system operator than the reading spot, thereby enabling the system operator, to see and position the aiming spot on the indicia prior to reading the indicia with the reading spot; and
- (d) means for scanning the reading spot over the indicia in a range of working distances at the first plane to read the indicia.

5,304,789

MULTILAYER CARD-SHAPED DATA CARRIER AND METHOD FOR PRODUCING SAME

Erwin Lob; Hansjürgen Merkle; Alexander Hierweger; Wolfgang Killar, all of München, and Wittlich Kaule, Emmering, all of Fed. Rep. of Germany, assignors to Gesellschaft Fur Automation Und Organisation mbH(GAO), Machen, Fed. Rep. of Germany

Filed Oct. 15, 1991, Ser. No. 776,155

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033300

Int. Cl.[5] G06K *19/00, 19/06;* B42D *15/00*

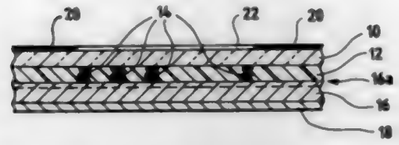
U.S. Cl. 235—487 16 Claims

1. A multilayer card-shaped data carrier comprising:
- a cover layer;
- layers disposed below said cover layer, one of said layers disposed below said cover layer appearing black in the

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visible wavelength spectrum and being transparent or permeable to electromagnetic radiation in the invisible wavelength spectrum outside the wavelengths substantially between about 400 and 700 nanometers;

one of said layers disposed below said cover layer being absorbent to focused electromagnetic radiation in said invisible wavelength spectrum; and



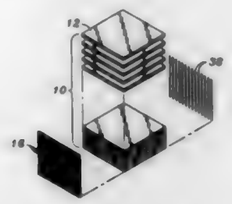
a data marking produced by said focused electromagnetic radiation in said invisible wavelength spectrum disposed in said absorbent layer, said black layer camouflaging said data marking so as to render said data marking invisible in the visible wavelength spectrum substantially between about 400 and 700 nanometers.

5,304,790

APPARATUS AND SYSTEM FOR CONTROLLABLY VARYING IMAGE RESOLUTION TO REDUCE DATA OUTPUT

Jack Arnold, Costa Mesa, Calif., assignor to Irvine Sensors Corporation, Costa Mesa, Calif.

Filed Oct. 5, 1992, Ser. No. 956,914
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **11 Claims**



1. A system for controllably varying the resolution of a sequence of image events to conserve data output by varying the size of the instantaneous field of view (IFOV) comprising:

a) a multiplicity of detectors, each producing an electrical signal in response to an external stimulus;

b) busing circuitry for receiving individual and combined signals from said detectors;

c) a circuit connecting each of said detectors in parallel to said busing circuitry;

d) switching means in each of said circuits for making and breaking said circuit between said detector and said busing circuitry; and

e) logic and control means for said switching means to open and complete said parallel circuits by opening and closing said switches in a desired combination and sequence;

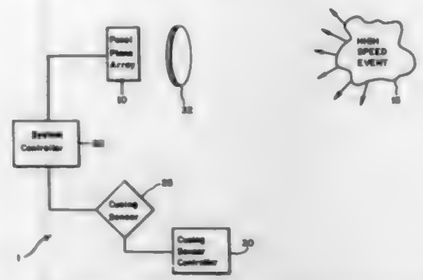
whereby signals from said detectors are combined at said busing circuitry to controllably enlarge and decrease the IFOV depending upon the number of detector signals which are combined.

5,304,791

APPARATUS FOR DETECTING HIGH SPEED EVENTS

Richard A. Migliaccio, Copiague, N.Y., assignor to All Systems, Inc., Deer Park, N.Y.

Filed Jul. 23, 1992, Ser. No. 919,136
Int. Cl.[5] H01T *40/14*
U.S. Cl. 250—214 VT **14 Claims**



1. Apparatus for detecting and locating high speed photon emitting events comprising:

a) a focal plane array having a plurality of detector elements for accumulating incident photon energy, the focal plane array having an input port which receives an input signal, the focal plane array also having an output port;

b) a control circuit coupled to the focal plane array, the control circuit providing a control signal to the input port of the focal plane array which regulates the operation of the focal plane array, the control circuit alternately instructing the focal plane array to accumulate incident photon energy and to discharge accumulated photon energy; and

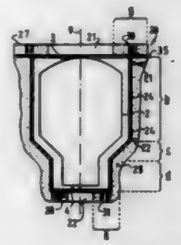
c) a cueing sensor coupled to the control circuit, the cueing sensor having a plurality of detector elements and generating a cueing sensor detection signal upon detection of a high speed photon emitting event, the cueing sensor detection signal being provided to the control circuit, the cueing sensor detection signal instructing the control circuit to maintain a current state of the focal plane array and to read out the photon energy accumulated by the focal plane array.

5,304,792

X-RAY IMAGE INTENSIFIER TUBE CASING

Maurice Verat, Saint Martin le Vinoux, and Serge Cozzi, Moirans, both of France, assignors to Thomson Tubes Electroniques, Velizy, France

Filed Oct. 27, 1992, Ser. No. 967,045
Claims priority, application France, Oct. 31, 1991, 91 13488
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT **23 Claims**



1. An X-ray image intensifier tube casing comprising:

a jacket;

a screen for absorbing x-radiation generated in the x-ray image intensifier tube;

a shielding from outside magnetic fields;

wherein the jacket is at least partially made of a thermoplastic material charged with a powder of a material that absorbs x-radiation, so that said absorbing screen is comprised of at least partially of the jacket; and

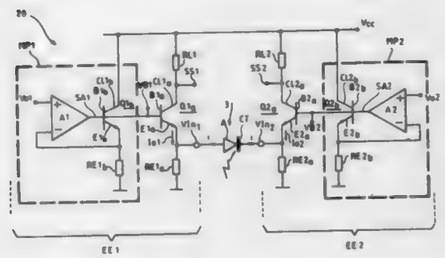
means to electrically connect the shielding to an outside of the jacket.

5,304,793

LIGHT SIGNAL RECEIVER WITH PREAMPLIFICATION FUNCTION AND DUAL POLARIZATION MEANS

Jean-Charles Grasset, Fontaine, France, assignor to Thomson Composants Militaires et Spatiaux, Courbevoie, France

Filed Nov. 30, 1992, Ser. No. 983,369
Claims priority, application France, Nov. 29, 1991, 91 14812
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **15 Claims**



1. A light signal receiver comprising:

a light-sensitive device delivering an electric current in response to detected light signals;

a preamplifier having a first input which receives the electric current output from the light-sensitive device, the preamplifier comprising:

at least one input transistor having an emitter connected to said first input of the preamplifier, wherein the at least one input transistor is of a bipolar NPN type;

at least one polarization means connected to a base of the at least one input bipolar transistor to impose a fixed potential on this base;

a collector of the at least one input transistor being connected to a first feed potential by a load resistance;

the emitter of the at least one input transistor being further connected to a second feed potential by a first emitter resistance; and

wherein the collector delivers voltage signals as a function of the electric current output from the light-sensitive device.

5,304,794

METHOD FOR MIXING OPTICAL AND MICROWAVE SIGNALS USING A GAAS MESFET

Steven A. Malone, Eatontown, and Arthur C. Paolella, Howell, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 25, 1993, Ser. No. 66,750
Int. Cl.[5] H01J *41/14*
U.S. Cl. 250—214 R **8 Claims**

1. A monolithic microwave integrated circuitry optical-electrical signal mixer comprising:

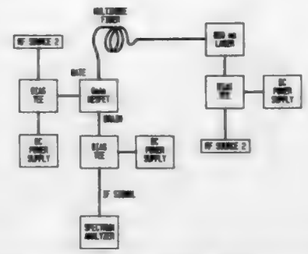
a metal-semiconductor field effect transistor (MESFET) having source, gate and drain electrodes;

a first RF source;

an optical signal source electrically coupled to the first RF source and optically coupled to the MESFET such that an RF modulated optical signal may be delivered to the MESFET;

a second RF source electrically coupled to the gate of the MESFET; and

means to bias the MESFET across the source and gate electrodes;



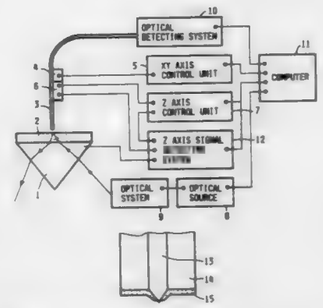
wherein the RF modulated optical signal is mixed with the second RF source due to modulations of a potential barrier of the MESFET and an IF signal is output through the drain electrode of the MESFET.

5,304,795

HIGH RESOLUTION OBSERVATION APPARATUS WITH PHOTON SCANNING MICROSCOPE

Masamichi Fujihira, Yokohama; Tatsuaki Ataka, and Toshihiro Sakuhara, both of Tokyo, all of Japan, assignors to Seiko Instruments Inc. and Masamichi Fujihira, both of Japan

Filed Sep. 30, 1992, Ser. No. 954,317
Claims priority, application Japan, Oct. 3, 1991, 3-256817
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—234 **17 Claims**



1. A high resolution observation apparatus with a photon scanning microscope comprising:

an optical device having a surface on which a sample to be observed is coated;

an optical source for generating an incident light of a predetermined wavelength to be incident to the sample through the optical device at a total reflection angle which is defined by refraction indices of the optical device and the sample;

an optical detecting probe having an opening at a tip of the probe for receiving a sample light emitted from the sample surface in response to the incident light;

an optical detecting system for detecting the sample light received by the optical detecting probe having different wavelengths than the predetermined wavelength of the incident light;

an x and y-axis control unit for moving the optical detecting probe to scan the sample surface over a two-dimentional area to be observed; and

a z-axis control unit for positioning the optical detecting

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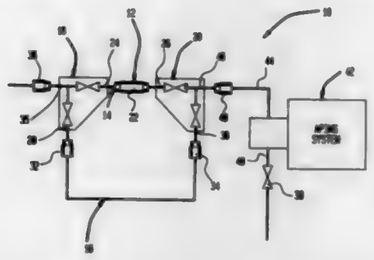
probe at a distance above the sample surface close enough to detect the sample light and for controlling a position of the optical detecting probe so as to keep a positioning signal detected by the optical detecting system constant during a course of scanning the sample surface over the two-dimensional area to be observed.

5,304,796

ATMOSPHERIC PRESSURE IONIZATION MASS SPECTROSCOPY METHOD INCLUDING A SILICA GEL DRYING STEP

Kevin L. Siefering, Cary, and Walter H. Whitlock, Chapel Hill, both of N.C., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Mar. 25, 1992, Ser. No. 858,388
Int. Cl.[5] B01D *59/44*
U.S. Cl. 250—282 **3 Claims**



1. In a method of analyzing a gas sample for trace impurity concentration by atmospheric pressure ionization mass spectroscopy, the improvement comprising:
removing moisture without removing the trace impurity from the gas sample before analyzing the gas sample by passing the gas sample through a bed of silica gel; and
before passing the gas sample through the bed of silica gel, sufficiently drying the bed of silica gel so that remaining moisture present in the gas sample after passage through the bed of silica gel is at a sufficiently low concentration such that the trace impurity concentration as analyzed by atmospheric pressure ionization mass spectroscopy is not effected by the remaining moisture.

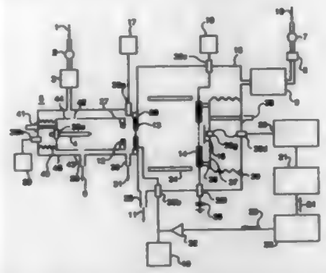
5,304,797

GAS ANALYZER FOR DETERMINING IMPURITY CONCENTRATION OF HIGHLY-PURIFIED GAS

Takashi Irie, Kokubunji; Yasuhiro Mitsui, Fuchu, and Keiji Hasumi, Iruma, all of Japan, assignors to Hitachi, Ltd. and Hitachi Tokyo Electronics, Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,534
Claims priority, application Japan, Feb. 27, 1992, 4-041330
Int. Cl.[5] H01J *49/40*
U.S. Cl. 250—287 **22 Claims**

1. A gas analyzer, comprising:
an ion source having a first chamber for containing a sample gas having main component molecules and impurity molecules;
means for ionizing the sample gas in the first chamber to produce main component ions from the main component molecules;
ion species separating means, having a second chamber, for drifting and separating the main component ions of said sample gas from impurity ions formed by reactions between the impurity molecules and the main component ions; and
signal processing means for analyzing the impurity concentration of the sample gas, including means for detecting the main component ions and the impurity ions, and for controlling the residence time of the main component ions in said second chamber to be shorter than the mean reaction time of the main component ions with the impurity molecules in the second chamber.

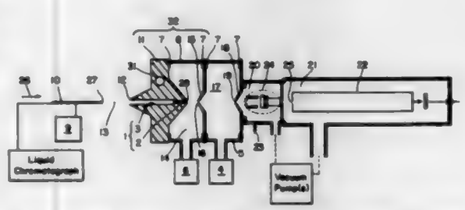


5,304,798

HOUSING FOR CONVERTING AN ELECTROSPRAY TO AN ION STREAM

Michael J. Tomany, Groseenordale, Conn., and Joseph A. Jarrell, Newton Highlands, Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Apr. 10, 1992, Ser. No. 866,618
Int. Cl.[5] H01J *49/04*
U.S. Cl. 250—288 **7 Claims**



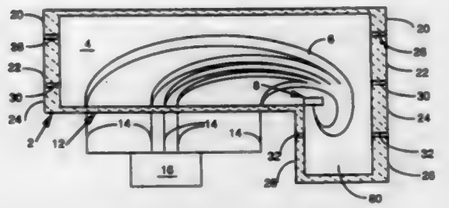
1. Apparatus for converting a solution containing a solute sample into ionized molecules for analysis of the sample which comprises
a first passageway having an orifice for passing said solution therethrough,
said first passageway having an exit to discharge said solution from said first passageway in the form of an electrospray,
a voltage source connected to said first passageway orifice,
an analytical apparatus for measuring charge and mass of ionized molecules,
an electrically and thermally conductive housing interposed between said first passageway orifice and said analytical apparatus, so that said electrospray passes directly from said exit into a heated second passageway in said housing,
said housing including said heated second passageway extending through the thickness of said housing to effect conversion of said electrospray to a desolated ion stream,
said housing having dimensions to form part of a chamber maintained under vacuum and said chamber including a skimmer interposed between said housing and said analytical apparatus.

5,304,799

CYCLOIDAL MASS SPECTROMETER AND IONIZER FOR USE THEREIN

Lutz Karzweg, Pittsburgh, Pa., assignor to Monitor Group, Inc., Cheswick, Pa.

Continuation-in-part of Ser. No. 915,590, Jul. 17, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 20,089
Int. Cl.[5] H01J *49/00*
U.S. Cl. 250—296 **58 Claims**



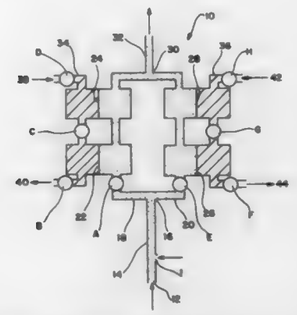
1. A cycloidal mass spectrometer comprising,
a housing defining an ion trajectory volume,
magnetic field generating means for establishing a magnetic field within said ion trajectory volume,
ionizer means for receiving a gaseous specimen to be analyzed and converting the gaseous specimen into ions which are discharged therefrom,
collection means for simultaneously receiving a plurality of ions of different mass to charge ratios with the position of the ion impingement on said collector means being related to the ion mass,
said housing having a first portion within which said collection means are disposed of a first dimension and a second portion of a second dimension greater than said first dimension within which said ionizer means is disposed, and
processing means responsive to said collection means for determining the mass distribution of said ions.

5,304,800

LEAK DETECTION AND RESPONSIVE TREATMENT IN INDUSTRIAL WATER PROCESSES

John E. Hoots, St. Charles; Brian V. Jenkins, LaGrange Park, both of Ill.; Philip M. Eastin, Chesterfield, Mo., and Eric R. Brundage, St. Charles, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 10, 1992, Ser. No. 974,144
Int. Cl.[5] G01N *21/90*
U.S. Cl. 250—302 **22 Claims**



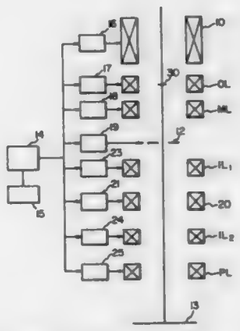
1. A process for detecting leakage from a process fluid to a temperature-conditioning fluid in an industrial process wherein said industrial process includes a process fluid and a temperature-conditioning fluid and said temperature-conditioning fluid receives heat from or transfers heat to said process fluid by an indirect contact method, comprising:
maintaining in said process fluid at least one specie of tracer chemical, which specie of tracer chemical is not a normal component of said temperature-conditioning fluid;
subjecting at least one of said process fluid and said temperature conditioning fluid to at least one analysis at at least one site; and
wherein said analysis at least detects the presence of said specie of tracer chemical when said fluid subjected to said analysis is temperature-conditioning fluid, and wherein said analysis at least determines the concentration of said specie of tracer chemical when said fluid subjected to said analysis is said process fluid.

5,304,801

ELECTRON MICROSCOPE

Yoshihiro Arai, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 972,176
Claims priority, application Japan, Nov. 14, 1991, 3-298776
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—311 **1 Claim**



1. An electron microscope comprising:
an objective lens which forms a first diffraction image at the back focal plane of the objective lens;
a selected area diaphragm located behind said objective lens;
auxiliary lens which is located between said objective lens and said selected area diaphragm, said auxiliary lens being excited in such a way that said auxiliary lens produces a second diffraction image at the position of said selected area diaphragm, the object plane of said auxiliary lens being located at the position of said first diffraction image;
an intermediate lens located behind said selected area diaphragm;
a lens system located behind the intermediate lens;
an intermediate lens-exciting means which, when the mode of operation of the electron microscope has been set to a TEM image observation mode, excites said intermediate lens in such a way that the object plane of said intermediate lens is located at a TEM image produced by both said objective lens and auxiliary lens and which, when the mode of operation of the microscope has been set to a diffraction image observation mode, excites said intermediate lens in such a way that the object plane of said intermediate lens is located at said second diffraction image;
a lens system-exciting means which, when the mode of operation has been set to the TEM image observation mode, excites said lens system in such a way that a TEM image produced by said intermediate lens is magnified and projected onto a detection screen by said lens system and which, when the mode of operation has been set to the diffraction image observation mode, excites said lens sys-

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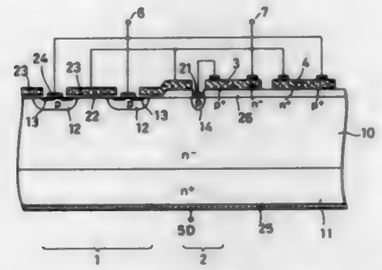
tem in such a way that a diffraction image produced by said intermediate lens is magnified and projected onto the detection screen by said lens system.

5,304,802

SEMICONDUCTOR DEVICE INCLUDING OVERVOLTAGE PROTECTIVE CIRCUIT

Naoki Kumagai, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 5, 1993, Ser. No. 697
Claims priority, application Japan, Jan. 6, 1992, 4-000357
Int. Cl.[5] H01L *29/10, 29/78, 29/06*
U.S. Cl. 257—328 **8 Claims**



1. A semiconductor device including an overvoltage protective circuit, the semiconductor device comprising:

a semiconductor switching device including a drift layer with relatively high specific resistance, through which a depletion layer spreads while said semiconductor switching device is in a non-conducting voltage blocking state, said drift layer being provided for establishing a withstanding voltage of said semiconductor switching device;

an avalanche device generating an avalanche current when a load voltage applied to said semiconductor switching device exceeds a predetermined voltage, said avalanche device comprising a PN junction formed in said drift layer, a curvature of said PN junction being smaller than that of a PN junction of said semiconductor switching device formed in said drift layer, said avalanche device sharing said drift layer with said semiconductor switching device; and

driving means for driving a gate of said semiconductor switching device in response to said avalanche current.

5,304,803

INFRARED IMAGING ARRAY

Go Sakaino, and Yasuaki Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 34,124
Claims priority, application Japan, Aug. 11, 1992, 4-236555
Int. Cl.[5] H01L *31/0224*
U.S. Cl. 250—332 **6 Claims**

1. An infrared imaging array comprising:

a substrate;

a plurality of photodetectors arranged in a two-dimensional array of rows and columns for producing electrical charges in response to incident light;

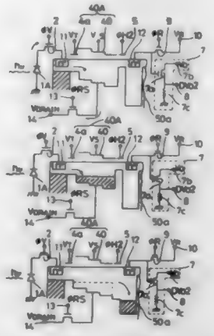
a vertical scanner for generating first charge read-out clock pulses;

a first charge read-out gate associated with each photodetector for reading out electrical charges from the associated photodetector upon receiving first charge read-out clock pulses from said vertical scanner;

charge storage means connected to each column of said photodetectors and including a storage gate opposite which a potential well is formed in said substrate for storing electrical charges read out from said photodetectors in the potential well;

a horizontal scanner for generating second charge read-out clock pulses;

a second charge read-out gate associated with each charge storage means for transferring electrical charges stored in the associated charge storage means to an output diode upon receiving second charge read-out clock pulses from said horizontal scanner; and



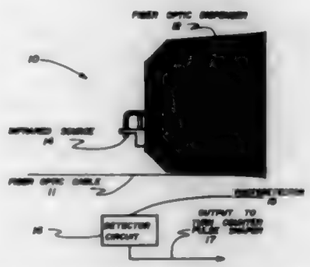
an output signal generating circuit for generating an output signal in accordance with the quantity of electrical charges transferred to said output diode wherein the potential well created opposite said storage gate in said substrate has a depth that increases in a charge transfer direction.

5,304,804

TURNS COUNT ANOMALY DETECTOR

James C. Holt, Fayetteville, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1992, Ser. No. 970,205
Int. Cl.[5] G01B *11/16*
U.S. Cl. 250—338.1 **4 Claims**



1. A turns count anomaly detector for detecting of any anomalies in the turns count payout data for a fiber optic cable being peeled off from a fiber optic cable dispenser comprising:

(i) an infrared source for radiating light on a fiber optic cable and a photodetector, said infrared source mounted for constantly radiating said fiber optic cable and said photodetector as said fiber optic cable as peeled off from a bobbin of a fiber optic cable dispenser;

(ii) a photodetector for receiving infrared light radiating from said infrared source;

(iii) a detector circuit connected to said photodetector for receiving, storing data, and outputing signal relative to turns counts pulses resulting from any anomaly of said fiber optic cable being peeled off from said bobbin of a fiber optic dispenser;

(iv) a turns counter pulse shaper comprising means for inverting said signal from said detector circuit and means

for receiving, converting said signal to a digital format, and transmitting said digital signal to a transistor transistor logic one-shot circuitry; and

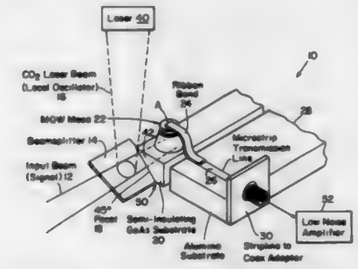
(v) a transistor transistor logic one-shot circuitry for receiving said digital signal and outputing a logic low if said one-shot circuitry as not reset within a certain time period, said time period is a time set by the calibration of an external timing capacitor and resistor of said transistor transistor logic one-shot circuitry.

5,304,805

OPTICAL-HETERODYNE RECEIVER FOR ENVIRONMENTAL MONITORING

Elliott R. Brown, Billerica, and K. Alexander McIntosh, Groton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 26, 1993, Ser. No. 37,239
Int. Cl.[5] G01J *5/02*
U.S. Cl. 250—338.1 **19 Claims**



1. A receiver for detecting infrared emission or absorption signals comprising:

a) a local oscillator for generating a plurality of coherent local oscillator emissions at separate frequencies;

b) a combiner for combining the infrared signals with the local oscillator emissions to produce a combined optical beam; and

c) an optical mixer having a bandwidth as wide as the separation between said local oscillator emissions for mixing the infrared signals with the local oscillator emissions in the combined beam to produce intermediate electrical frequency signals.

5,304,806

APPARATUS AND METHOD FOR AUTOMATIC TRACKING OF A ZOOMED SCAN AREA IN A MEDICAL CAMERA SYSTEM

Horace H. Hines, San Jose; Brian J. Walsh, Danville; Ronald Koops, San Leandro, and Steven M. Jones, Pleasanton, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Filed Nov. 25, 1992, Ser. No. 981,367
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—369 **36 Claims**

1. An apparatus for increasing image resolution of an object in a nuclear imaging camera system comprising:

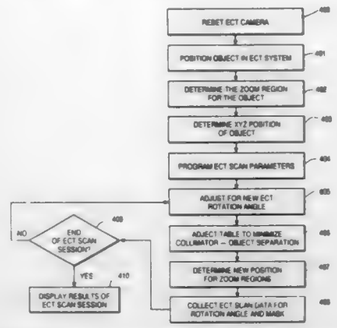
an imaging surface for performing imaging operations by rotating through a plurality of angles about said object;

means for rotating said imaging surface about said object during a scanning operation, said means for rotating coupled to said imaging surface;

means for minimizing separation between said object and said imaging surface causing movement of said object relative to said imaging surface;

means for determining a zoom region associated with a portion of said imaging surface, said zoom region having an associated zoomed field of view aligning with said object; and

means for adjusting locations of said zoom region with respect to said imaging surface so that said associated zoomed field of view of said zoom region remains aligned with said object in response to movement of both said means for minimizing separation and said means for rotating said image surface.

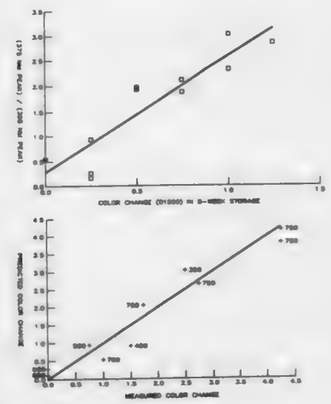


5,304,807

METHOD FOR DETERMINING THE DEGRADATION OF FUEL OIL BY UV ABSORPTION

Fan-Nan Lin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 25, 1992, Ser. No. 981,623
Int. Cl.[5] G01N *33/22, 21/17*
U.S. Cl. 250—373 **14 Claims**



1. A method comprising:

(a) measuring the absorption of ultraviolet light by a sample of a distillate fuel oil at only one wavelength between about 360 and about 385 nm to obtain a first measurement; and

(b) determining from said first measurement the amount of degradation of said distillate fuel oil after a period of time.

5,304,808

METHOD AND APPARATUS FOR DATA SAMPLING

Daniel M. C. Odell, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 8, 1993, Ser. No. 14,916
Int. Cl.[5] G01T *1/17*
U.S. Cl. 250—395 **19 Claims**

1. A method for use with a detector that produces a time-

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varying signal output representing events, said method comprising the steps of:

sampling said output at a preselected rate to produce a sequential stream of samples including event samples and only non-event samples, said only non-event samples not representing events;



converting each sample of said sequential stream of samples to a digital value to produce a sequential stream of digital values from said sequential stream of samples; and then

identifying said only non-event samples from said sequential stream of digital values by evaluating each digital value of said sequential stream of digital values.

5,304,809

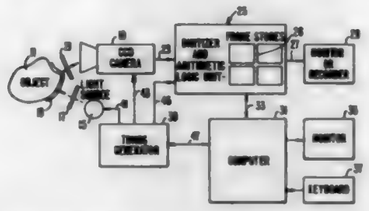
LUMINESCENT DECAY TIME MEASUREMENTS BY USE OF A CCD CAMERA

Kenneth A. Wickersheim, Menlo Park, Calif., assignor to Luxtron Corporation, Santa Clara, Calif.

Filed Sep. 15, 1992, Ser. No. 945,229

Int. Cl.[5] G01K *11/00;* **G01N** *21/64*

U.S. Cl. 250—458.1 **22 Claims**



18. An imaging device, comprising:

a video camera including a two-dimensional array of charge coupled device elements that are individually characterized by generating, after repetitively occurring frames, a signal that is related to an integrated value of electromagnetic radiation striking the element during the preceding frame,

means including a timing circuit for controlling the timing of said camera frames,

a source of excitation radiation for a luminescent material,

means synchronized with said camera frame controlling means for causing said radiation source to emit a sequence of pulses with time durations therebetween, and

means receiving the individual element signal outputs for comparing successively occurring pairs of such signals therefrom.

5,304,810

CONFOCAL SCANNING OPTICAL MICROSCOPE

William B. Amos, Cambridge, United Kingdom, assignor to Medical Research Council, London, United Kingdom

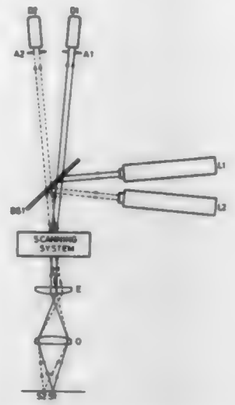
PCT No. PCT/GB91/01176, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/01966, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 16, 1991, Ser. No. 972,462

Claims priority, application United Kingdom, Jul. 18, 1990, 9015793

Int. Cl.[5] G01N *21/00, 21/63*

U.S. Cl. 250—458.1 **10 Claims**



1. A confocal scanning optical microscope comprising:

an optical scanning system;

means for simultaneously generating two or more input beams of optionally different spectral composition and of differing orientations such that after passage through the scanning system a specimen under test is scanned with two or more distinct and separate elemental areas of illumination; and

two or more detectors respectively for receiving two or more output beams after de-scanning by the scanning means, each detector receiving an output beam substantially restricted to output light derived from one of the illuminated elemental areas.

5,304,811

LITHOGRAPHY SYSTEM USING CHARGED-PARTICLE BEAM AND METHOD OF USING THE SAME

Akio Yamada; Yoshihisa Oae; Satoru Yamazaki, and Tomohiko Abe, all of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Jun. 11, 1992, Ser. No. 897,050

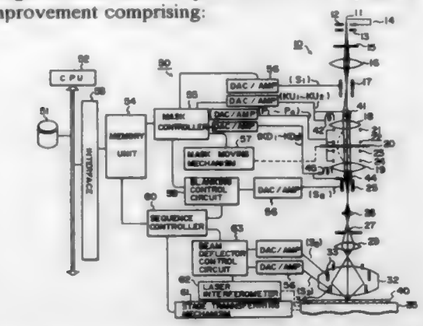
Claims priority, application Japan, Aug. 9, 1991, 3-200479; Nov. 6, 1991, 3-290232

Int. Cl.[5] H01J *37/00*

U.S. Cl. 250—492.22 **18 Claims**

1. An improved lithography system, comprising a source for generating a charged-particle beam, a stencil mask having a plurality of blocks of stencil pattern, first and second mask inlet deflectors arranged on the upstream side of the stencil mask, first and second mask outlet deflectors arranged on the downstream side of the stencil mask, and a lens system including first and second magnetic lenses arranged respectively on the upstream and downstream sides of the stencil mask, whereby said charged-particle beam is deflected from the axis onto a selected block of stencil pattern by said first and second mask inlet deflectors, and said charged-particle beam, outline of which is shaped to the stencil

pattern due to the beam penetration, is deflected back to the axis by said first and second mask outlet deflectors and finally the charged-particle beam forms an image of said stencil pattern on an objective, the improvement comprising:



at least one compensation coil disposed on the upstream side of said stencil mask, thereby aberration of the incident charged-particle beam onto said stencil mask being corrected forming a sharp image of an aperture pattern on the stencil mask.

5,304,812

OPTOELECTRONIC DEVICE, INFORMATION APPARATUS AND DATA TRANSMISSION SYSTEM USING OPTOELECTRONIC DEVICE FOR SIMPLIFYING WIRINGS AND REDUCING SIZE, AND METHOD OF CONTROLLING THE OPTOELECTRONIC DEVICE

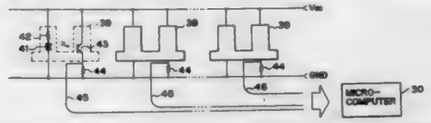
Zenpei Tani, Tondabayashi; Kiyoshi Ebina, Kashihara; Yukihisa Oda, Kitakatsuragi; Nobumasa Ono, Hashimoto; Masahiro Morita, Gose; Mitsuo Kobachi, Ayama; Kazuhito Nagura, Gose; Hajime Kashida, Nara; Hirohumi Sindo, Naga; Mitsuru Hosoki, Kitakatsuragi; Kiyoshi Kumata, Tsuzuki; Atsushi Murayama, Nabari, and Seiichiro Kihara, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 18, 1991, Ser. No. 792,527

Claims priority, application Japan, Nov. 21, 1990, 2-319792; Nov. 21, 1990, 2-319793; Nov. 21, 1990, 2-319794; Nov. 29, 1990, 2-333757; Nov. 30, 1990, 2-338576; Feb. 22, 1991, 3-28298; Feb. 26, 1991, 3-30712; Jun. 26, 1991, 3-154299

Int. Cl.[5] G06F *7/00;* **H04Q** *9/00*

U.S. Cl. 250—551 **71 Claims**



1. An optoelectronic device adapted to be incorporated in an electronic circuit of an electronic apparatus such as a printer, a copying machine, a facsimile or the like, said device comprising:

at least one of a light emitting element for emitting light and a light receptacle element for receiving light and outputting a signal according to the received light;

means for storing a self identification code of said device;

means, responsive to a control signal applied to said device, connected to said storing means, for determining a coincidence between said self identification code stored in said storing means and an identification code on the control signal; and

means connected to said determining means for driving at least one of said elements when said self identification code coincides with said identification code in accordance with a determined result of said determining means; and

means for outputting a signal associated with at least one of said elements when at least one of said elements is driven by said driving means.

5,304,813

APPARATUS FOR THE OPTICAL RECOGNITION OF DOCUMENTS

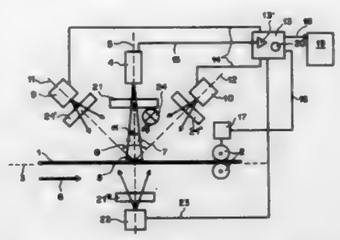
Ivo De Man, Gland, Switzerland, assignor to Landis & Gyr Betriebs AG, Zug, Switzerland

Filed Oct. 6, 1992, Ser. No. 957,222

Claims priority, application Switzerland, Oct. 14, 1991, 03005/91

Int. Cl.[5] G06K *5/00*

U.S. Cl. 250—556 **10 Claims**



1. Apparatus for the optical recognition of documents (1) comprising

a plurality of photoelectric elements regularly arranged in at least one row and separated by a predetermined sensor distance between adjacent photoelectric elements,

means for transferring a document having a transfer plane (3) on which said document is placed, said transfer plane (3) geometrically dividing the space in which it is contained into an upper semi-space and a lower semi-space,

a plurality of light sources (27,28) arranged to form light lines (9,10) for illuminating a strip region (8) on said transfer plane, said plurality of light sources being subdivided according to their emission spectra into different color groups with the spectra of emission of the sources being identical within a group,

a controller for controlling the energization of said light sources by short energization pulses,

an evaluation unit for processing sensor signals received from said photoelectric elements, said photoelectric elements being configured so that their optical axes are disposed to be perpendicular to said transfer plane (3) and thereby form a sensor plane (5) in which light reflected from said document is gathered under a first acceptance angle (α) which determines the width of said strip region, and is gathered under a second acceptance angle (β) which determines the amount of overlap of two sections of said strip region, said light lines forming light planes which are inclined relative to said sensor plane and are located in said upper semi-space, whereby said apparatus is configured so that the shortest distance between said light sources in each light line is smaller than the shortest distance between said photoelectric elements in each row.

5,304,814

SENSOR CIRCUIT AND METHOD FOR DETECTING THE PRESENCE OF A SUBSTANCE SUCH AS INK EJECTED FROM A THERMAL INK EJECTING PRINT HEAD, OR THE LIKE

Roger G. Markham, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1993, Ser. No. 23,434

Int. Cl.[5] G01D *15/16;* **G01N** *15/06*

U.S. Cl. 250—573 **25 Claims**

1. A sensor circuit for detecting the presence of a substance having a flow that can be turned on and off, comprising:

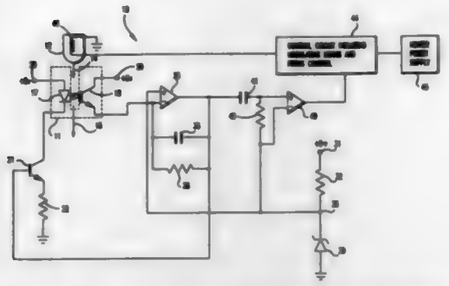
means for turning on and off the flow of the substance at a predetermined frequency;

an optical sensor for producing a sensor output signal, said optical sensor being located to have a light path that is at

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least partially interrupted by the substance when the substance traverses the light path;

an integrator for integrating the output of the sensor output signal to produce an integrated output signal; and



a high gain amplifier to amplify the integrated output signal to provide a sensor circuit output signal.

5,304,815

ELECTRON EMISSION ELEMENTS

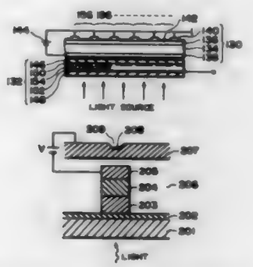
Akira Suzuki, Yokohama; Takeo Tsukamoto, Atsugi; Akira Shimizu, Inagi; Masao Segata, Yokohama; Isamu Shimoda, Zama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 759,200, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 595,668, Oct. 11, 1990, abandoned, which is a continuation of Ser. No. 298,308, Jan. 18, 1989, abandoned, which is a continuation of Ser. No. 94,429, Sep. 9, 1987, abandoned. This application Jul. 21, 1993, Ser. No. 94,404

Claims priority, application Japan, Sep. 11, 1986, 61-212821; Oct. 3, 1986, 61-234501; Dec. 1, 1986, 61-284240; Dec. 16, 1986, 61-297683; Jan. 30, 1987, 62-018191

Int. Cl.[5] H01L *27/14, 31/00;* **H01J** *29/12*

U.S. Cl. 257—10 **12 Claims**



1. An electron emission device comprising:

an electron emitting element for emitting electrons and including a semiconductor body capable of generating photo-excited electrons, a pair of electrodes connected to said semiconductor body, an electron emitting surface and a light incident surface;

a light source; and

a shutter element disposed between said light incident surface and said light source for regulating transmittance of a light incident on the light incident surface from the light source, so as to transmit light from said light source to said light incident surface and to shield said light incident surface from light irradiated by said light source, said shutter element being operated by an electric signal,

wherein a voltage is applied between said electrodes and said semiconductor body is irradiated with light through said shutter element to emit the electrons from said electron emitting surface, based on the photo-excited electrons.

5,304,816

ARTICLE COMPRISING A "BALLISTIC" HETEROJUNCTION BIPOLAR TRANSISTOR

Anatoly A. Grinberg, Plainfield, and Serge Luryi, Bridgewater, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 25, 1992, Ser. No. 981,588

Int. Cl.[5] H01L *29/70*

U.S. Cl. 257—26 **7 Claims**



1. An article comprising a heterojunction bipolar transistor comprising first, second and third semiconductor regions, to be referred to as emitter, base and collector, respectively, and further comprising means for electrically contacting said emitter, base and collector, respectively, the base being intermediate the emitter and collector and having a width W_B, the emitter and collector each comprising semiconductor material of a first conductivity type, and the base comprising material of a second conductivity type that differs from the first conductivity type, associated with the transistor being a unilateral power gain (U), a common emitter current gain (β), conventional cut-off frequencies f_{max} and f_T, a minority carrier average injection energy Δ and a minority carrier average ballistic base transit time τ_B, and associated with the material of the base is an optical phonon frequency ν_{opt};

CHARACTERIZED IN THAT

a) $kT < \Delta < h\nu_{opt}$, where T is the transistor absolute operating temperature, k is Boltzmann's constant, and h is Planck's constant;

b) W_B is at least 100 nm;

c) the transistor is an abrupt junction transistor selected such that, at temperature T, $\Delta\tau_B$ is less than about $0.5\,\tau_B$; where $\Delta\tau_B$ is the variance of τ_B; and further is selected such that

d) at temperature T, the absolute value of U is greater than unity at least at one frequency above f_T.

5,304,817

SUPERCONDUCTIVE CIRCUIT WITH FILM-LAYERED JOSEPHSON JUNCTION AND PROCESS OF FABRICATION THEREOF

Ichiro Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,949

Claims priority, application Japan, May 24, 1991, 3-119677

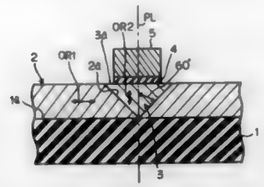
Int. Cl.[5] H01L *39/22*

U.S. Cl. 257—31 **7 Claims**

1. A superconductive circuit fabricated on a substrate with a major surface, comprising:

a) a wiring layer formed on the major surface of said substrate and formed of first superconductive oxide with the a-b plane orientation substantially parallel to the major surface of said substrate, and having a hollow space open at an upper surface thereof and defined by an oblique surface with respect to said major surface; and

b) a film-layered Josephson junction having b-1) a lower electrode filling said hollow space of said wiring layer, and formed of second superconductive oxide with the a-b plane orientation substantially perpendicular to said a-b plane orientation of said first superconductive oxide, b-2)



a barrier film covering said lower electrode, and b-3) an upper electrode formed on said barrier film.

5,304,818

LEAD FRAME

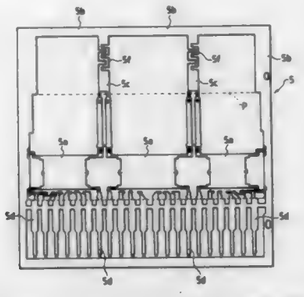
Hisao Go, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 670,421, Mar. 18, 1991, abandoned. This application Jul. 24, 1992, Ser. No. 917,747

Claims priority, application Japan, Mar. 16, 1990, 2-66179

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—81 **3 Claims**



1. A lead frame used as a component in a multi-core module having optical connectors and electronic circuit elements, said lead frame comprising:

a frame portion;

a plurality of substrate portions on which said electronic circuit elements are to be mounted; and

at least one support portion disposed between said optical connectors for securing said plurality of substrate portions to said frame portion, said support portion having a plurality of separated end portions connected to said respective substrate portions in a manner that secures said substrate portions in place, at least two of said separated end portions combining into one body, said one body being directly connected to said frame portion, and said support portion for sufficiently insulating said plurality of substrate portions from one another upon trimming said separated end portions after molding of said lead frame,

wherein said lead frame is an integral component for producing said multi-core optical module, in which said lead frame, optical connectors and optical operation elements are integrally molded into one body with a mold resin material.

5,304,819

LIGHT-ACTIVATED SEMICONDUCTOR DEVICE HAVING LIGHT-EMITTING ELEMENTS, LIGHT-RECEIVING ELEMENTS AND OUTPUT ELEMENTS

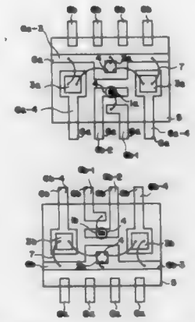
Hiroyasu Torazawa; Kenji Mizuuchi, and Kazuo Hagimura, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Minato, Japan

Filed Jun. 25, 1993, Ser. No. 81,124

Claims priority, application Japan, Jun. 29, 1992, 4-171226; Jan. 18, 1993, 5-005999

Int. Cl.[5] H01L *31/12, 31/16*

U.S. Cl. 257—82 **18 Claims**



10. A light-activated semiconductor device comprising:

at least one light-emitting element activated to emit light and disposed on a first plane;

light-receiving elements comprising,

a first light-receiving element responsive to said light to produce a first driving voltage, said first light-receiving element being disposed in opposing relationship to said light-emitting element on a second plane opposed to the first plane, and

a second light-receiving element responsive to said light to produce a second driving voltage, said second light-receiving element being disposed in opposing relationship to said first light-receiving element on the first plane; and

output elements comprising,

a pair of first output elements activated in response to the first driving voltage and disposed on the second plane, and

a pair of second output elements activated in response to the second driving voltage and disposed in opposing relationship to said pair of first output elements on the first plane.

5,304,820

PROCESS FOR PRODUCING COMPOUND SEMICONDUCTOR AND SEMICONDUCTOR DEVICE USING COMPOUND SEMICONDUCTOR OBTAINED BY SAME

Hiroyuki Tokunaga, Kawasaki; Kenji Yamagata, and Takao Yonehara, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 515,327, Apr. 30, 1990, abandoned, which is a division of Ser. No. 174,511, Mar. 28, 1988, abandoned. This application Mar. 13, 1992, Ser. No. 851,238

Claims priority, application Japan, Mar. 27, 1987, 62-073522; Mar. 27, 1987, 62-073523

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—88 **4 Claims**

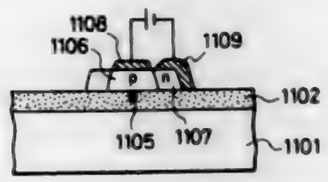
1. A semiconductor device employing a compound semiconductor obtained by a process for producing a compound semiconductor, which comprises applying a crystal forming treat-

VOL 1161 ISS 3 APR 19 1994 UMI

ment on a substrate having a free surface comprising a non-nucleation surface (S_{NDS}) with a smaller nucleation density and an amorphous nucleation surface (S_{NDL}) arranged adjacent thereto having a sufficiently small area so as to form a single nucleus from with a single crystal is grown and a larger nucleation density (ND_L) than the nucleation density (ND_S) of said non-nucleation surface (S_{NDS}), so as to form only a single nucleus from which a single crystal is grown, by exposing the substrate to either of the gas phases:

(a) gas phase (a) containing a starting material (II) for feeding the group II atoms of the periodic table and a starting material (VI) for feeding the group VI atoms of the periodic table; and

(b) gas phase (b) containing a starting material (III) for feeding the group III atoms of the periodic table and a



starting material (V) for feeding the group V atoms of the periodic table, thereby forming a single nucleus on said nucleation surface (S_{NDL}) and permitting a monocrystal of the compound semiconductor to grow only from said single nucleus, characterized in that a semiconductor junction is formed in said monocrystal by feeding a starting material (Dn) for feeding a dopant for controlling to a first electroconduction type and a starting material (Dp) for feeding a dopant for controlling to a second electroconduction type opposite to said first electroconduction type with change-over to one another into said gas phase, during said crystal forming treatment, said semiconductor junction intersection both the free surface of said substrate and a free surface of said compound semiconductor opposite to the free surface of said substrate.

5,304,821

MOS-GATE-TURNOFF THYRISTOR

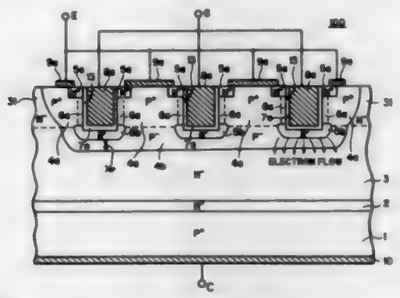
Hiroyasu Hagino, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,480

Claims priority, application Japan, Oct. 8, 1990, 2-270733

Int. Cl.[5] H01L *29/74, 29/10, 27/02, 29/747*

U.S. Cl. 257—133 **10 Claims**



1. A semiconductor device comprising:

a first semiconductor layer of a first conductivity type having upper and lower major surfaces;

a second semiconductor layer of a second conductivity type formed on said upper major surface of said first semiconductor layer;

a third semiconductor layer of the first conductivity type formed in a top surface of said second semiconductor layer;

at least one fourth semiconductor layer of the second conductivity selectively formed and buried in said third semiconductor layer;

at least one fifth semiconductor layer of the second conductivity type selectively formed in a top surface of said third semiconductor layer, said fifth semiconductor layer being displaced above said fourth semiconductor layer, wherein at least one trench extending from a top surface of said fifth semiconductor layer to said fourth semiconductor layer through said third and fifth semiconductor layers;

an insulating layer formed on an inner wall of said trench;

a control electrode formed on said insulating layer in said trench;

a first main electrode layer being in contact with both said top surface of said third semiconductor layer and said top surface of said fifth semiconductor layer; and

a second main electrode layer formed on said lower major surface of said first semiconductor layer.

5,304,822

STATIC INDUCTION TYPE SEMICONDUCTOR DEVICE WITH MULTIPLE SOURCE CONTACT REGIONS

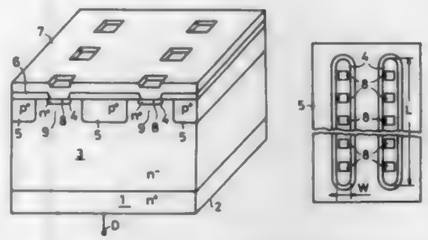
Haruo Takagi; Shinobu Aoki, both of Kariya; Yukihiko Watanabe, Kasugai, and Hiroshi Tadano, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagakute, both of Japan

Filed May 1, 1992, Ser. No. 877,700

Claims priority, application Japan, May 10, 1991, 3-106080

Int. Cl.[5] H01L *29/74*

U.S. Cl. 257—136 **8 Claims**



1. A static induction type semiconductor device comprising:

a semiconductor layer having an upper surface;

a source region provided on said upper surface of said semiconductor layer;

a gate region provided on said upper surface of said semiconductor layer surrounding said source region;

a drain region provided in said semiconductor layer;

a channel region provided between said drain region and said source region, whereby carrier movement occurs via said channel region between said source region and said drain region when a bias voltage is applied between said gate region and said source region;

a source electrode provided on said semiconductor layer; and

a plurality of separate source contact regions extending from said source electrode toward said source region for establishing separate spaced apart regions of electrical coupling to said source region with said regions of electrical coupling encompassing a total area that is less than the area of said source region.

5,304,823

AN EQUIPMENT PROTECTION SEMICONDUCTOR INTEGRATED CIRCUIT

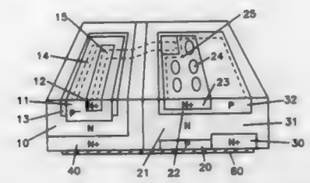
Stephen W. Byatt, Bromham, United Kingdom, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1992, Ser. No. 941,005

Claims priority, application United Kingdom, Dec. 30, 1991, 9127476

Int. Cl.[5] H01L *29/74, 29/72*

U.S. Cl. 257—146 **17 Claims**



1. A semiconductor integrated circuit including a PNPN device of opposite conductivity N-type and P-type materials having an outer surface N-type region, an inner P-type region contained within the PNPN device, an inner N-type region contained within the PNPN device and an outer surface P-type region and a junction bipolar transistor of opposite conductivity N-type and P-type materials having a collector region, a base region and an emitter region with base-collector and base-emitter junctions, said junction bipolar transistor having a current gain of at least 10 and the base-collector and the base-emitter junctions with reverse breakdown voltages of at least 50 volts, means connecting the collector region of the bipolar transistor to that outer surface region of the PNPN device which is of the opposite conductivity type to the collector region of the bipolar transistor, means connecting the emitter region of the bipolar transistor to that inner region of the PNPN device which is of the opposite conductivity type to the emitter region of the bipolar transistor, means connected to the base region of the bipolar transistor for forming a control electrode terminal for the integrated circuit, and means connected to the respective outer surface P-type and N-type regions of the PNPN device for forming an input and an output terminal for the integrated circuit.

5,304,824

PHOTO-SENSING DEVICE

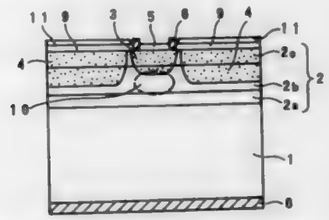
Ichiro Tonai, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 751,188, Aug. 29, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 50,720

Claims priority, application Japan, Aug. 31, 1990, 2-230206

Int. Cl.[5] H01L *31/10*

U.S. Cl. 257—183 **15 Claims**



1. A photo-sensing device for receiving light on a top surface thereof, said device comprising:

a compound semiconductor substrate;

a cathode electrode provided on a main surface of said compound semiconductor substrate;

a compound semiconductor layer of a first conductivity type provided on another main surface of said compound semiconductor substrate;

a first region of a second conductivity type provided in said compound semiconductor layer, a pn junction area being formed by said compound semiconductor layer and said first region, said pn junction functioning as a photo-sensing region;

a second region of said second conductivity type surrounding said first region and being spaced from said first region, said second region absorbing carriers generated near said second region in response to incident light; and

an anode electrode provided on said first region and electrically connected thereto.

5,304,825

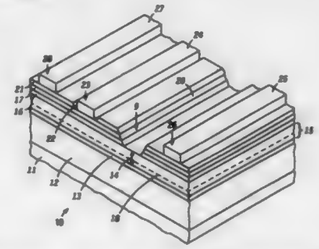
LINEAR HETEROJUNCTION FIELD EFFECT TRANSISTOR

Rimantas L. Vaitkus, Paradise Valley; Saied N. Tehrani, Scottsdale; Vijay K. Nair, Mesa, and Herbert Goronkin, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 20, 1992, Ser. No. 932,526

Int. Cl.[5] H01L *31/072, 31/109, 31/0328, 31/0336*

U.S. Cl. 257—192 **16 Claims**



1. A linear heterojunction field effect transistor, comprising:

a source region contacting a source electrode, a drain region contacting a drain electrode, and a gate region therebetween, the gate region contacting a gate electrode; p1 a channel layer ohmically coupled to the source and drain electrodes and electrically separated from the gate electrode by a Schottky barrier; and

asymmetric channel restriction means adjacent a drain side of the gate region and absent from a source side of the gate region which cooperates with the channel layer to limit a flow of drain current.

5,304,826

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Yoshihiro Ichikawa; Seiji Watanabe, both of Yokohama; Takashi Saigo, Ebina, and Tsutomu Umetsu, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 762,178, Sep. 20, 1991, abandoned, which is a continuation of Ser. No. 585,680, Sep. 20, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 951,336

Claims priority, application Japan, Sep. 22, 1989, 1-245296; Nov. 22, 1989, 1-303805

Int. Cl.[5] H01L *27/10, 27/15*

U.S. Cl. 257—202 **16 Claims**

1. A semiconductor integrated circuit device comprising:

a plurality of cell rows, each cell row having a load capacity and including

a plurality of standard cells, and

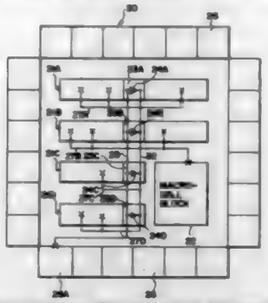
a signal amplifying cell including a signal amplifier having an input, and an output for generating an amplified signal, the signal amplifier being characterized by a drive ability, and

a cell-row wiring layer, coupled to the signal amplifier output, for supplying the amplified signal to the standard cells; and

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a cell-column wiring layer coupled to a plurality of the signal amplifier inputs,

wherein the drive ability of each signal amplifier is substantially matched with the corresponding load capacity such that



a phase difference among the outputs of the plurality of signal amplifiers is suppressed, the drive ability of the signal amplifier of a first one of the plurality of cell rows is different than the drive ability of the signal amplifier of a second one of the plurality of cell rows, and a plurality of the signal amplifier outputs are interconnected by a cell-column wiring layer.

5,304,827

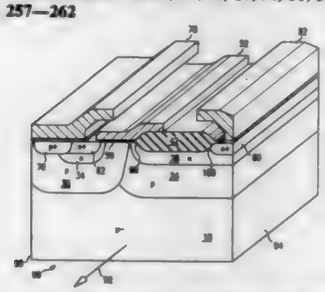
PERFORMANCE LATERAL DOUBLE-DIFFUSED MOS TRANSISTOR

Satwinder Malhi, Garland, and Wai T. Ng, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 776,102, Oct. 15, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,713

Int. Cl.[5] H01L *29/80, 29/76, 29/94, 31/062*

U.S. Cl. 257—262 **11 Claims**



1. A transistor having a large breakdown voltage and adaptable to carry a large amount of current, and formed at a face of a semiconductor layer doped to have a first conductivity type, said transistor comprising:

a JFET gate region of said first conductivity type formed in said layer, a dopant concentration of said JFET gate region being substantially higher than the dopant concentration of said layer;

a drift region of a second conductivity type opposite that of said first conductivity type and formed at said face to be laterally within said JFET gate region;

a thick insulator region formed at said face on said drift region;

an IGFET body of said first conductivity type formed at said face adjacent said JFET gate region;

a source region formed at said face to be of said second conductivity type and formed to be laterally within said IGFET body and spaced from said drift region, said source region having first and second subregions, said first subregion laterally and downwardly enclosing said second subregion and having less dopant concentration of said second conductivity type than said second subregion;

a drain region formed to be of said second conductivity type and adjoining said drift region and spaced from said IGFET body;

a back gate connection region formed to be of said first conductivity type and adjoining said IGFET body; and

a conductive gate extending over said face between said source region and said thick insulator region, a thin gate insulator spacing said gate from said IGFFET body.

5,304,828

SILICON LAYER HAVING INCREASED SURFACE AREA AND METHOD FOR MANUFACTURING

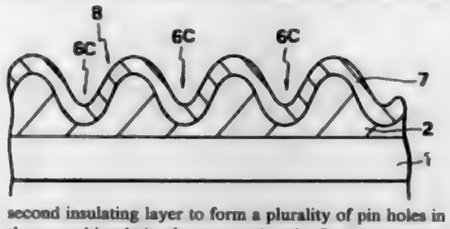
Jae K. Kim, and In S. Chung, both of Kyungki, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyungki, Rep. of Korea

Division of Ser. No. 716,901, Jun. 18, 1991, Pat. No. 5,149,676. This application Jun. 16, 1992, Ser. No. 899,332

Claims priority, application Rep. of Korea, Jun. 22, 1990, 90-9260

Int. Cl.[5] H01L *29/68, 27/02, 29/06, 27/12*

U.S. Cl. 257—309 **3 Claims**



1. A silicon layer having a highly granulated surface for use in a semiconductor device, said silicon layer comprising:

a first insulating layer formed on a substrate for electrical insulation; and

a first silicon layer formed on said first insulating layer and having a highly granulated surface prepared by depositing a second insulating layer on the substrate, performing an ion-implanting process on the second insulating layer, depositing a second silicon layer on the second insulating layer which simultaneously unevenly etches away the second insulating layer to form a plurality of pin holes in the second insulating layer exposing the first silicon layer thereunder at each pin hole, etching the second silicon layer to expose the second insulating layer and the first silicon layer exposed at each pin hole of the plurality of pin holes formed in the second insulating layer, etching the first silicon layer exposed by the plurality of pin holes in the second insulating layer to form a plurality of cavities in the first silicon layer, and removing the second insulating layer while simultaneously deepening each cavity of the plurality of cavities.

5,304,829

NONVOLATILE SEMICONDUCTOR DEVICE

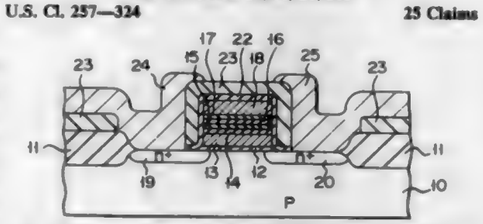
Selichi Mori, and Kuniyoshi Yoshikawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 463,547, Jan. 11, 1990, abandoned. This application Jul. 16, 1991, Ser. No. 730,704

Claims priority, application Japan, Jan. 17, 1989, 1-8006

Int. Cl.[5] H01L *29/68, 21/265*

U.S. Cl. 257—324 **25 Claims**



1. A nonvolatile semiconductor memory device with a first gate structure and a second gate structure, the first gate structure being an electrically insulated floating gate into which charges are injected, comprising:

a first gate electrode;

a second gate electrode; and

an interlayer insulating film provided between the first and second gate electrodes, the interlayer insulating film having a four-layer structure wherein a first silicon nitride film, a first silicon oxide film, a second silicon nitride film and a second silicon oxide film are formed in that order on the first gate electrode.

5,304,830

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE FOR BI-CMOS CONFIGURATION FREE FROM NOISES ON POWER VOLTAGE LINES

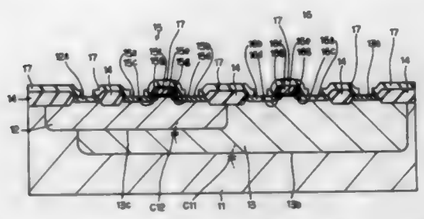
Masaharu Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,133

Claims priority, application Japan, Feb. 27, 1992, 4-041477

Int. Cl.[5] H01L *29/76, 29/94, 29/00*

U.S. Cl. 257—338 **6 Claims**



1. A complementary inverter circuit fabricated on a semiconductor substrate of a first conductivity type, comprising:

a) a first field effect transistor of one channel conductivity type having source and drain regions of a second conductivity type formed in a first well of said first conductivity type defined in a surface portion of said semiconductor substrate, and a first gate structure on a surface of said first well, said first conductivity type being opposite to said second conductivity type, said first well being biased with a first power voltage;

b) a second field effect transistor of the opposite channel conductivity type having source and drain regions of said first conductivity type formed in a second well of said second conductivity type defined in another surface portion of said semiconductor substrate, and a second gate structure on a source of said second well, said second well being deeper than said first well and partially overlapping said first well to allow a portion of said first well to remain in contact with said semiconductor substrate, said second well being biased with a second power voltage different from said first power voltage; and

c) a wiring network selectively interconnecting said source and drain regions of said first field effect transistor, said source and drain regions of said second field effect transistor, a source of said first power voltage and a source of said second power voltage for achieving a complementary switching action of said complementary inverter circuit.

5,304,831

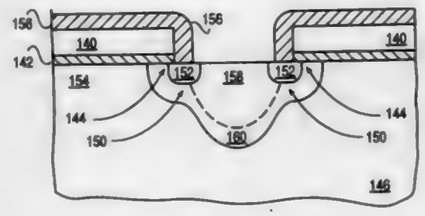
LOW ON-RESISTANCE POWER MOS TECHNOLOGY

Hamza Yilmaz, Saratoga; Fwu-Iuan Hshieh, San Jose; Mike Chang, Cupertino; Jun W. Chen, Saratoga; King Owyang, Atherton; Dorman C. Pitzer, San Ramon, and Jan Van Der Linde, Saratoga, all of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Continuation-in-part of Ser. No. 631,573, Dec. 21, 1990, abandoned. This application May 12, 1992, Ser. No. 881,589

Int. Cl.[5] H01L *27/01*

U.S. Cl. 257—341 **21 Claims**



1. A power MOSFET comprising:

a semiconductor body comprising an epitaxial layer and a substrate layer, said semiconductor body having an active area and a termination area, said semiconductor body having an upper surface;

a first insulating layer substantially laterally disposed on said upper surface of said semiconductor body, said first insulating layer having a plurality of openings located over said active area, said first insulating layer having an opening located over said termination area;

a first polysilicon layer disposed on said first insulating layer and located over said active area, said first polysilicon layer having a plurality of openings located over said active area which correspond with said plurality of openings in said first insulating layer located over said active area, said first polysilicon layer having an upper surface;

a second polysilicon layer disposed on said first insulating layer and located over said termination area, said second polysilicon layer being laterally spaced from said first polysilicon layer so that neither said first nor said second polysilicon layer overlays said opening in said first insulating layer located over said termination area, said second polysilicon layer having an upper surface;

a third polysilicon layer disposed on said first insulating layer and located over said termination area, said third polysilicon layer being laterally spaced from said first and said second polysilicon layers;

a second insulating layer overlaying at least part of said first polysilicon layer and overlaying at least part of said second polysilicon layer;

a source electrode overlaying said second insulating layer, said source electrode making contact with said upper surface of said semiconductor body through said plurality of openings in said first insulating layer, said source electrode also making contact with said upper surface of said semiconductor body through said opening in said first insulating layer located over said termination area, said source electrode also making contact with said upper surface of said second polysilicon layer through a first opening in said second insulating layer;

a gate electrode overlaying said first polysilicon layer and making contact with said upper surface of said first polysilicon layer through a second opening in said second insulating layer; and

a drain electrode contacting said semiconductor body.

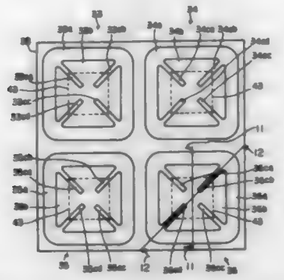
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5,304,832

VERTICAL POWER FIELD EFFECT TRANSISTOR HAVING BASE REGION INWARDLY PROJECTING FROM CORNERS THEREOF INTO SOURCE REGION

Mitsuasa Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,903
Claims priority, application Japan, Mar. 9, 1992, 4-050202
Int. Cl.[5] H01L 29/10, 29/06
U.S. Cl. 257—342 2 Claims



1. A vertical field effect transistor fabricated on a semiconductor substrate structure of a first conductivity type serving as a drain region, comprising:

a) a generally rectangular base region formed in a major surface portion of said drain region, and having a second conductivity type opposite to said first conductivity type;

b) a generally rectangular source region formed in a surface portion of said generally rectangular base region, and having said first conductivity type;

c) base contact regions projecting radially inwardly from the four corners of said generally rectangular base region into said generally rectangular source region;

d) a gate insulating film covering a surface of said generally rectangular base region between a surface of said drain region and a surface of said generally rectangular source region;

e) a gate electrode provided on said gate insulating film;

f) a source electrode held in contact with said base contact regions and with said generally rectangular source region; and

g) a drain electrode provided on a reverse surface of said semiconductor substrate structure.

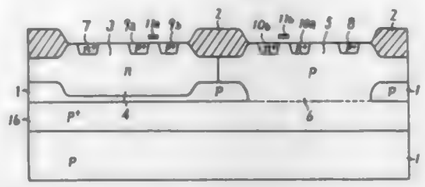
5,304,833

COMPLEMENTARY MOS SEMICONDUCTOR DEVICE

Komori Shigeki, and Mitsui Katsuyoshi, both of Hyogo, Japan, assignors to Mitsubishi Electric Corporation, Kanagawa, Japan

PCT No. PCT/JP90/01151, § 371 Date May 13, 1991, § 102(e) Date May 13, 1991
PCT Filed Sep. 10, 1990, Ser. No. 700,180
Claims priority, application Japan, Sep. 12, 1989, 1-236269
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] H01L 29/76, 29/94, 31/062, 31/119
U.S. Cl. 257—372 5 Claims

1. A complementary MOS semiconductor device comprising: a semiconductor substrate of a first conduction type; a high concentration buried layer of the first conduction type having an impurity concentration higher than said semiconductor substrate; a well region of the first conduction type formed on one main surface of said semiconductor substrate located on upper side of said high concentration buried layer and in which an MOS transistor of a second conduction type is formed; and a well region of the second conduction type formed on said one main surface of the semiconductor substrate located on an upper side of said high concentration buried layer and in which an MOS transistor of the first conduction type is formed, at least one of said well regions being



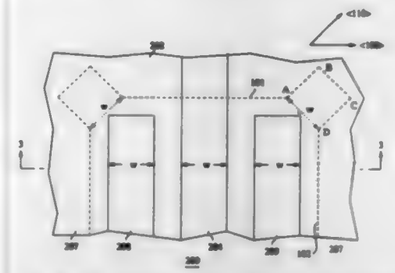
separated from said high concentration buried layer by said semiconductor substrate.

5,304,834

SELECTIVE EPITAXY OF SILICON IN SILICON DIOXIDE APERTURES WITH SUPPRESSION OF UNWANTED FORMATION OF FACETS

William T. Lynch, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 704,749, May 23, 1991. This application Jan. 15, 1993, Ser. No. 6,094
Int. Cl.[5] H01L 27/01, 27/13, 29/18
U.S. Cl. 257—374 11 Claims



1. A selectively epitaxially grown semiconductor region, the region being located in a window and in an auxiliary window region both etched in a masking layer, the window having a virtual corner defined by a virtual intersection of a first and a second major edge of the window, the semiconductor region and the masking layer being located on a major surface of a monocrystalline semiconductor body, the auxiliary window region being located adjacent to and outside the window, the window and the auxiliary window region penetrating through the masking layer to the major surface of the semiconductor body, whereby the semiconductor region is decorated by the auxiliary window region.

5,304,835

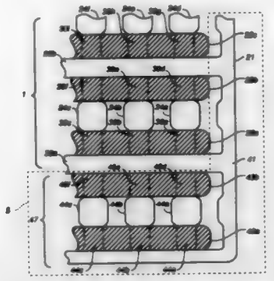
SEMICONDUCTOR DEVICE

Kaori Imai, and Noboru Itomi, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP91/00935, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO92/02044, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 11, 1991, Ser. No. 838,783
Claims priority, application Japan, Jul. 18, 1990, 2-189681
Int. Cl.[5] H01L 27/10, 27/15
U.S. Cl. 257—390 21 Claims

1. A semiconductor device having a plurality of transistors arranged at least along one dimension, said transistors being formed by patterning of a first plurality of impurity regions, said semiconductor device comprising a dummy region for holding the shape of said patterned impurity region, said

dummy region being formed adjacent to and outside terminal regions of said transistors, wherein a second plurality of impurity regions are formed in said dummy region at substantially the same impurity density as that of said first plurality of impu-



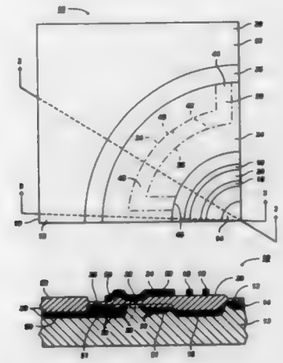
rity regions and wherein at least a portion of said second plurality of impurity regions is of a conductivity type different from the conductivity type of said first plurality of impurity regions.

5,304,836

HIGH VOLTAGE FIELD EFFECT TRANSISTOR HAVING A SMALL RATIO OF CHANNEL WIDTH TO CHANNEL LENGTH AND METHOD OF MANUFACTURE

Guillermo Lao, Hawthorne; Dale Sumida, Los Angeles, and Anh K. Hoang-Le, Danville, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 4, 1992, Ser. No. 878,081
Int. Cl.[5] H01L 29/06
U.S. Cl. 257—399 10 Claims



1. A high voltage field effect transistor constructed on the major surface of a substrate of a first conductivity type, including:

a drain region of a second conductivity type located in the major surface;

a generally annular drift region of the second conductivity type, located in the major surface and outside of the drain region;

a generally annular gate located on the major surface and outside of the drift region;

a generally annular source region located in the major surface and outside of the gate;

a first channel stop located in the major field surface and outside of the source region;

a second channel stop located in the major surface and beneath the gate, having at least two portions in close proximity to each other; and

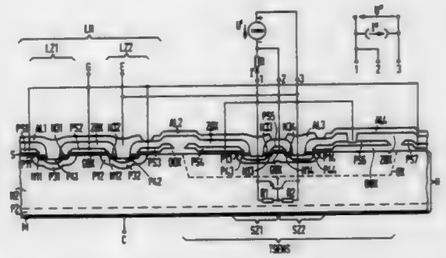
a channel region located in the major surface and between the two second channel stop portions, the second channel stop blocking communication between the source region and the drift region except through the channel region.

5,304,837

MONOLITHICALLY INTEGRATED TEMPERATURE SENSOR FOR POWER SEMICONDUCTOR COMPONENTS

Christofer Hierold, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich

Filed Nov. 6, 1992, Ser. No. 972,549
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1992, 4200291
Int. Cl.[5] H01L 23/58, 29/66
U.S. Cl. 257—470 7 Claims



1. A semiconductor device, comprising:

a temperature sensor monolithically integrated on a semiconductor body together with a vertical power semiconductor structure;

the power semiconductor structure comprising a first terminal, a second terminal, and a gate terminal, and having a plurality of power cells;

the temperature sensor comprising two sensor cell portions;

both of the two sensor cell portions as well as the plurality of power cells each comprising a lightly doped well of a first conductivity type and the respective lightly doped well containing at least one highly doped well of a second conductivity type;

the two sensor cell portions and the plurality of power cells being introduced into a common substrate of the second conductivity type;

both in the sensor cell portions as well as in the power cells, the highly doped well of the second conductivity type being respectively directly connected to a respective contact and the lightly doped well of the first conductivity type being connected to said respective contact via a respective intermediate region;

the two sensor cell portions lying in close proximity side-by-side such that the lightly doped wells of the two sensor cell portions merge into one another and only a narrow, lightly doped region of the first conductivity type remains between the highly doped wells of the second conductivity type;

the contact of the first sensor cell portion being connected to a first sensor terminal and the contact of the second sensor cell portion being connected to a second sensor terminal; and

an electrical resistance occurring between the first and the second sensor terminals being dependent on a temperature of the plurality of power cells.

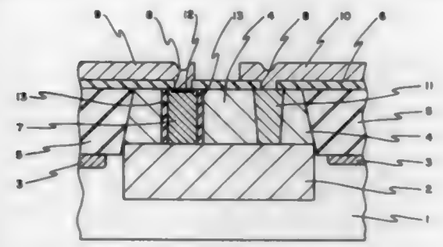
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5,304,838

VERTICAL RESISTIVE ELEMENT FOR INTEGRATED CIRCUIT MINIATURIZATION

Tadashi Ozawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 29, 1991, Ser. No. 751,788
Claims priority, application Japan, Aug. 31, 1990, 2-231651
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—542 **6 Claims**



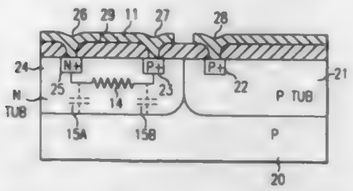
1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
an epitaxial layer of a second conductivity type formed on said semiconductor substrate;
an impurity diffusion layer of said second conductivity type embedded between said semiconductor substrate and said epitaxial layer and having an impurity concentration greater then that of said epitaxial layer;
a resistance region formed in said epitaxial layer and reaching said impurity diffusion layer from a surface of said epitaxial layer and extending substantially vertically to said surface of said epitaxial layer;
an insulating film defining said resistance region by enclosing a portion of said epitaxial layer; and
a lead region selectively formed between said surface of said epitaxial layer and said impurity diffusion layer.

5,304,839

BIPOLAR ESD PROTECTION FOR INTEGRATED CIRCUITS

Che-Tsung Chen, Allentown; Thaddeus J. Gabara, North Whitehall Township, Lehigh County; Bernard L. Morris, Allentown, and Yehuda Smooha, South Whitehall Township, Lehigh County, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 623,876, Dec. 4, 1990, abandoned. This application Mar. 6, 1992, Ser. No. 847,438
Int. Cl.[5] H01L *29/06, 29/78, 29/72, 29/02*
U.S. Cl. 257—546 **3 Claims**



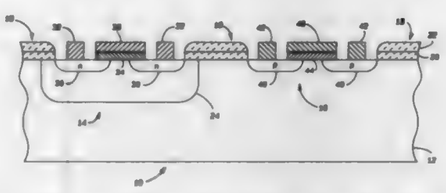
1. An integrated circuit formed in a semiconductor body, and having a conductive bondpad that is coupled to at least one of input or output circuitry, wherein an electrostatic discharge (ESD) protection means is connected to said bondpad for conducting an electric charge from said bondpad to a negative (V_{SS}) power supply conductor on said integrated circuit when the positive voltage on said bondpad exceeds a given limit,
characterized in that said electrostatic discharge protection means comprises a pnp bipolar transistor having:
an n-type base region located in an n-type tub region that is located in a p-type substrate;
a heavily doped p-type emitter region formed directly in said n-type tub and connected to said bondpad through a conductor formed in a window in an overlying dielectric;
and a p-type collector region that is connected to said negative power supply conductor;
wherein said pnp bipolar transistor has its collector formed in a p-type tub region located adjacent to said n-type tub region in said semiconductor body;
wherein said base is connected to said bondpad by means comprising a heavily doped n-type contact region formed in said n-type tub region;
whereby a delay means is formed comprising a resistance in said n-type tub between said contact region and said emitter, and also comprising a capacitance between said n-type tub and said p-type substrate;
and whereby said bipolar transistor become highly conducting during a positive voltage ESD event, and becomes significantly less conducting when normal operating voltages are applied to said bondpad.

5,304,840

CRYOGENIC RADIATION-HARD DUAL-LAYER FIELD OXIDE FOR FIELD-EFFECT TRANSISTORS

James S. Cable, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 24, 1992, Ser. No. 919,659
Int. Cl.[5] H01L *29/34, 27/02*
U.S. Cl. 257—640 **17 Claims**



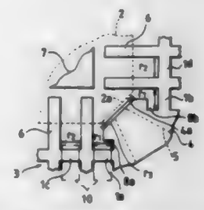
1. A cryogenic radiation-hard dual-layer field oxide, comprising;
a thin lower dielectric layer of reoxidized nitrided oxide, said lower dielectric layer having a thickness; and
an upper deposited dielectric layer that remains charge neutral, said upper dielectric layer having a thickness.

5,304,841

LEAD FRAME

Atsuhito Negoro, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 12, 1993, Ser. No. 45,892
Claims priority, application Japan, Aug. 10, 1992, 4-235259
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—667 **2 Claims**



1. A lead frame for a rectangular flat package having lead terminals extending outwardly through the peripheral sides of a resin body comprising a lead frame having a rectangular

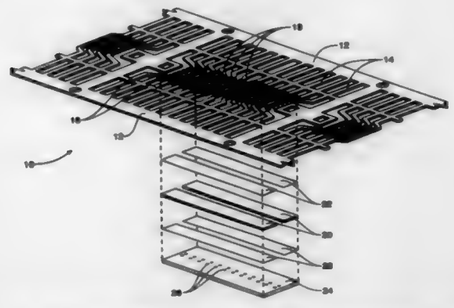
array of lead terminals and a plurality of dam bars connecting adjacent lead terminals along each side of the lead frame, and dam bar coupling portions at the corners of the array connecting the dam bars at the ends of adjacent sides of the lead frame, at least one of the dam bar coupling portions being formed with notches at the locations where adjacent dam bars are connected to it so that the length of the dam bars connected by that coupling portions is equal to the length of each of the dam bars connecting adjacent lead terminals.

5,304,842

DISSIMILAR ADHESIVE DIE ATTACH FOR SEMICONDUCTOR DEVICES

Warren M. Farnworth, Nampa; Rockwell D. Smith, and Walter L. Moden, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 688,023, Apr. 19, 1991, Pat. No. 5,140,404, which is a division of Ser. No. 602,990, Oct. 24, 1990, Pat. No. 5,177,032. This application Jun. 26, 1992, Ser. No. 904,785
Int. Cl.[5] H01L *23/48, 29/44, 21/56, 21/58*
U.S. Cl. 257—668 **20 Claims**



11. An encapsulated semiconductor memory device, comprising:
a) a semiconductor die having a major surface with bond pads located thereon;
b) a lead frame having lead fingers, each lead finger having an end which terminates proximally to said die;
c) a carrier material having first and second major surfaces;
d) a first adhesive material which attaches said first major surface of said carrier material with said lead frame;
e) a second adhesive material which attaches said second major surface of said carrier material with said die,
wherein after the assembly is assembled said second adhesive softens at a lower temperature than said first adhesive, said softening of said second adhesive relieving stress between said die and said second adhesive, and said first adhesive providing a solid attachment at said second adhesive softening temperature between said lead frame and said carrier material.

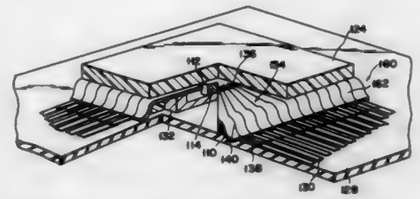
5,304,843

SEMICONDUCTOR DEVICE USING FILM CARRIER

Chiaki Takubo, Yokohama; Hiroshi Tazawa; Yoshiharu Tsuboi, both of Tokyo, and Masao Mochizuki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 707,766, May 30, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 947,969
Claims priority, application Japan, Jun. 1, 1990, 2-141304; Sep. 25, 1990, 2-251990
Int. Cl.[5] H01L *23/48, 21/56*
U.S. Cl. 257—670 **27 Claims**

1. A semiconductor device using a film carrier, said device comprising:
a semiconductor element with a plurality of terminals;
a resin film with a first surface and a second surface, said film having a hole in which the semiconductor element is mounted, said film being curved so that the hole is at a different level with a periphery of said resin film;
a plurality of lead wires formed on the first surface of the resin film, each lead wire having an inner lead, an intermediate lead and an outer lead, said inner lead being situated adjacent to the hole and connected to a corresponding one of the terminals of the semiconductor element, said outer



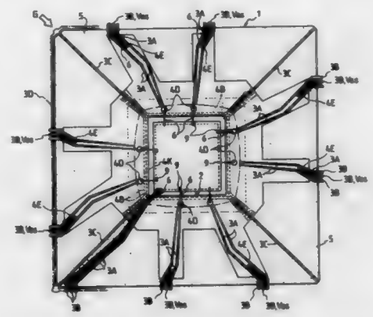
lead being situated on or adjacent to the periphery of said resin film and connected to a corresponding external electrode, said intermediate lead being situated between the inner lead and the outer lead, at least said intermediate lead being formed on the first surface of the film; and
means for impedance-controlling each outer lead and that portion of the intermediate lead close to the outer lead with such a structure that an end portion of the periphery of said resin film is substantially on a level with the external electrode.

5,304,844

SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING THE SAME

Osamu Horiuchi, Akishima; Gen Murakami, Machida; Hiromichi Suzuki, Tokorozawa; Hajime Hasebe, Hakodate; Kanji Otsuka, Higashiyamato; Yuuji Shirai, Kodaira; Takayuki Okinaga, and Takashi Emata, both of Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Continuation of Ser. No. 692,717, Apr. 29, 1991, which is a continuation of Ser. No. 510,844, Apr. 18, 1990, Pat. No. 5,032,895. This application May 28, 1992, Ser. No. 889,397
Claims priority, application Japan, Apr. 27, 1989, 1-105863
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] H01L *23/48, 29/44, 29/52*
U.S. Cl. 257—676 **11 Claims**



1. A semiconductor device, comprising:
a semiconductor pellet having tetragonal shaped main surface and having pluralities of first and second bonding pads on said main surface thereof;
a metal plate having a first portion and second portions

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arranged contiguously with said first portion, said first portion having inner edges respectively extending near and along outer peripheral edges of said main surface and said second portions, respectively, being extended to radiate outwardly from an outer periphery of said first portion with respect to a plan view of the main surface of said semiconductor pellet;

a resin molded body sealing said semiconductor pellet and said metal plate, and having four end sides in plan view;

first leads being arranged for electrical connection to said first bonding pads, each one of said first leads having a first end and a second end and being extended through a respective one of said four end sides of said resin molded body, said first end of a first lead being located outside of said resin molded body, and said second end thereof being located in said resin molded body and near an associated one of said first bonding pads;

second leads being arranged for effecting electrical connections to said metal pate, each one of said second leads having a first end and a second end and being extended through a respective one of said four end sides of said resin molded body, said first end of a second lead being located outside of said resin molded body, and said second end thereof being located in said resin molded body near an associated one of said four end sides of said resin molded body and being spaced apart from an associated one of said second bonding pads by a substantially greater distance than that between said second end of said first lead and said associated one of said first bonding pads;

first bonding wires for electrically connecting said second end of said each first leads and associated ones of said first bonding pads;

second bonding wires for electrically connecting said first portion of said metal plate and each of said second bonding pads; and

third bonding wires for electrically connecting said second portions of said metal plate and said second end of each one of said second leads, respectively,

wherein each one of said second portions of said metal plate is greater in width than said second leads, respectively, and

wherein each second portion is associated with a respective second lead and two first leads, said two first leads are respectively extended to orthogonally overlie said second portion with respect to a plan view thereof, and said second lead is disposed between said two first leads.

5,304,845

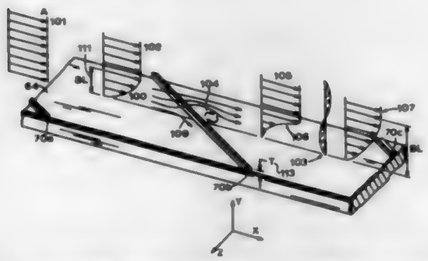
APPARATUS FOR AN AIR IMPINGEMENT HEAT SINK USING SECONDARY FLOW GENERATORS

Stephen E. Lindquist, Boylston, and Douglas A. Bailey, Concord, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 682,772, Apr. 9, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,608

Int. Cl.[5] H01L *23/04*

U.S. Cl. 257—722 **20 Claims**



1. A heat sink for cooling an integrated circuit component, said heat sink cooled by a moving fluid having a characteristic boundary layer of a predetermined thickness, said boundary layer formed in said moving fluid by the flow of said moving fluid over surfaces of said heatsink, said boundary layer adjacent to said surfaces, the thickness of said boundary layer proportional to the velocity of said fluid and the area of said surfaces, and the thickness of said boundary layer inversely proportional to the Reynolds number of said fluid, said heatsink comprising:

a thermally conductive mounting base in heat transfer contact with said component;

at least one thermally conductive fin on said mounting base and said fin having oppositely facing surfaces, said moving fluid flowing over said oppositely facing surfaces;

thermally conductive rib means formed on said oppositely facing surfaces, said rib means dimensioned, configured and arranged for displacing said boundary layer to improve heat flow from said fin to said moving fluid by creating secondary flows in said boundary layer, said rib means having a thickness less than the thickness of said boundary layer and intersecting the direction of flow of said moving fluid.

5,304,846

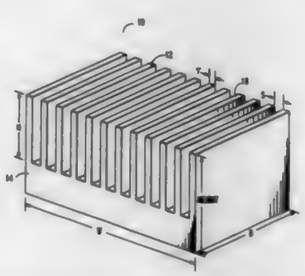
NARROW CHANNEL FINNED HEAT SINKING FOR COOLING HIGH POWER ELECTRONIC COMPONENTS

Kaveh Azar, Westwood, Mass., and Richard E. Caron, Salem, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 807,687, Dec. 16, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 69,683

Int. Cl.[5] H01L *23/02, 25/04*

U.S. Cl. 257—722 **11 Claims**



1. A heat sink comprising:

a plurality of rectangular fins, each having a predetermined thickness and a predetermined height; and

at least one channel of a predetermined width between the fins;

in which a ratio of the predetermined thickness to the predetermined height is from about 0.005 to about 0.055; and

in which a ratio of the predetermined width to the predetermined height is from about 0.030 to about 0.130.

5,304,847

DIRECT THERMOCOMPRESSION BONDING FOR THIN ELECTRONIC POWER CHIPS

Constantine A. Neugebauer, Schenectady; Homer H. Glascock, II, Scotia; Kyung W. Paik, Clifton Park, and James G. McMullen, Pattersonville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

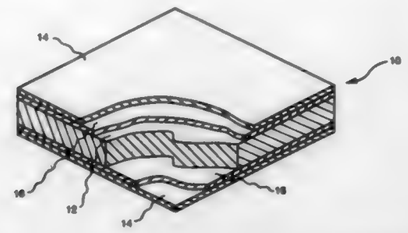
Division of Ser. No. 950,553, Sep. 25, 1992, Pat. No. 5,206,186, which is a division of Ser. No. 603,495, Oct. 26, 1990, Pat. No. 5,184,206. This application Jan. 21, 1993, Ser. No. 7,300

Int. Cl.[5] H01L *23/48, 29/40*

U.S. Cl. 257—762 **3 Claims**

1. A low resistance and inductance laminar metallic connector for thermocompression bonding to an aluminum surface on

an electronic semiconductor device, comprising a copper foil coated on at least one side with a first coating of chromium and a second coating of gold over said first coating, wherein when



said second coating of gold is bonded to an aluminum surface, said second coating of gold and said aluminum surface form an aluminum-gold intermetallic layer overlying said aluminum surface.

5,304,848

DRIVE UNIT FOR VEHICLES DRIVEN ON RAILS

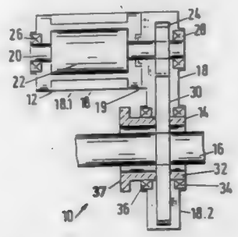
Lutz Schwendt, Vellmar, Fed. Rep. of Germany, assignor to ABB Patent GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 975,661

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137263

Int. Cl.[5] B61C *9/38, 9/00*

U.S. Cl. 290—45 **3 Claims**



1. A drive unit for vehicles driven on rails, comprising:

an electric drive motor having a rotor shaft with first and second ends;

a rotor disposed on said rotor shaft between said first and second ends;

a pinion selected to said rotor shaft toward said first end;

a transmission connected to and acted upon by said drive motor for driving a wheel set;

a common housing for said drive motor and said transmission; and

first and second step bearings supporting said rotor shaft in said housing, said first step bearing being disposed in said housing at said first end of said rotor shaft, for supporting said rotor shaft toward said pinion with said pinion being secured on said rotor shaft between said rotor and said first step bearing, and said second step bearing being disposed in said housing at said second end of said rotor shaft.

5,304,849

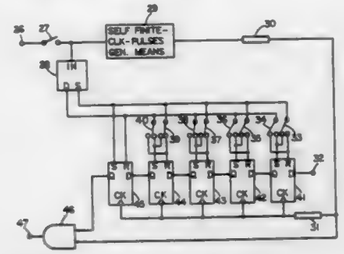
METHOD AND APPARATUS FOR AUTOMOBILE SECURITY SYSTEM

Haw-Reun Chen, and Feichu H. Chen, both of 4057 Little Hollow Pl., Moorpark, Calif. 93021

Continuation of Ser. No. 765,502, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 363,859, Jun. 9, 1989, abandoned. This application Sep. 8, 1992, Ser. No. 943,122

Int. Cl.[5] B60R *25/04*

U.S. Cl. 307—10.5 **13 Claims**



1. An electrical security system for an automobile comprising a DC-signal/sequential-code conversion means, which comprises a state initializaiton means, a self finite-clock-pulses generation means, and a signal code generation means for generating a sequential signal code, and a signal code detection means, which comprises a state initialization means, latch-type means, and signal time-delay means for detecting said sequential signal code, whereby said automobile can be started only as said sequential signal code generated by said DC-signal/sequential-code conversion means matches a predetermined code in said signal code detection means.

5,304,850

POWER LINE CARRIER FREQUENCY BREAKER

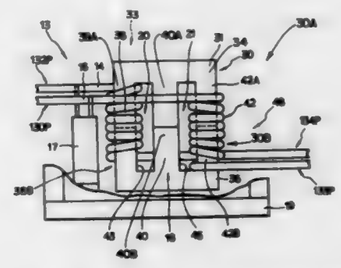
Young T. Yoon, deceased late of Seoul, Rep. of Korea Kyong-Sun Jun, executor, assignor to Kyong Sun Jun, Seoul, Rep. of Korea

Filed Oct. 8, 1991, Ser. No. 773,147

Claims priority, application Rep. of Korea, Jan. 18, 1991, 91-825

Int. Cl.[5] H02J *3/00*

U.S. Cl. 307—30 **8 Claims**



1. A power line carrier frequency breaker for use with a first and a second power supply line, said breaker comprising:

a core member having a first side and a second side, a top section and a bottom section, with a first leg, a second leg and a third leg extending between said top section and said bottom section with each leg being spaced apart from each other and each leg having a first portion and a second portion, respectively, to enable said top section, which includes said first leg portions and together define a top core section, to be separable from said bottom section, which includes said second leg portions and together

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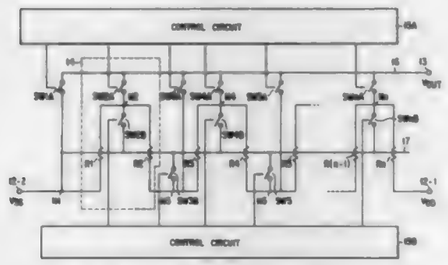
define a bottom core section, to permit, in use, the first power supply line to enter said core member from one of said sides of said core member and be wound around said first leg of said core member in a first direction and exit from said same side as entering said core member to form a first coil winding and the second power supply line to enter said core member from the remaining of said sides of said core member and is wound around said third leg of said core member in a second direction which is opposite said first direction and exits from said same side as entering said core member to form a second coil winding and with said lines then being connected to a power line carrier frequency generator of a home automation appliance whereby the power line carrier frequency entering said first coil and said second coil from said power supply lines is blocked and the power line carrier frequency inputted by said home automation appliance is blocked.

5,304,851

VOLTAGE DIVIDING CIRCUIT CAPABLE OF FREELY DIVIDING VOLTAGE

Kiyohisa Kuwana, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 20, 1992, Ser. No. 837,959
Claims priority, application Japan, Feb. 22, 1991, 3-028795
Int. Cl.[5] H01H *9/00*
U.S. Cl. 307—113 **23 Claims**



1. A voltage dividing circuit comprising:
a plurality of resistors series-connected between first and second terminals between which a voltage to be divided is applied, having such plane patterns that current conduction paths thereof are set in parallel to one another;
first switching means connected between at least one of connection nodes of said plurality of resistors and an output terminal, for selectively changing a connection between said plurality of resistors and said output terminal, and for outputting the selectively connected node voltage to said output terminal; and
second switching means connected between at least one of connection nodes of said plurality of resistors and said second terminal, for selectively changing a connection between said plurality of resistors and said second terminal, and for changing a series resistance of resistors connected between first and second terminals.

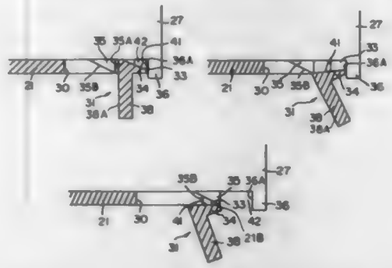
5,304,852

FLUD DROP DETECTING RESERVOIR TANK

Reiji Hiraga, Nirasaki, and Yoshihiro Nakamura, Nakakoma, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Apr. 30, 1992, Ser. No. 875,806
Claims priority, application Japan, Apr. 30, 1991, 3-39693[U]
Int. Cl.[5] H01H *35/18*
U.S. Cl. 307—118 **6 Claims**

1. A fluid drop detecting reservoir tank having a float with a magnet which is guided so as to move down together with a drop in a level of a fluid in a reservoir tank, said magnet causing a magnetically operated switch means, disposed below a bottom wall of said reservoir tank, to close when said fluid in the reservoir tank reaches a predetermined level so as to detect a predetermined volume drop of the fluid, said fluid drop detecting reservoir tank comprising:
a generally parallelepiped mount casing formed integrally with said bottom wall of said reservoir tank;
a switch casing shaped complementarily to said generally parallelepiped mount casing and having said magnetically operated switch means encased therein, said switch casing being capable of being inserted into and withdrawn from said generally parallelepiped mount casing; and
retainer means for holding said switch casing in said generally parallelepiped mount casing so as to prevent said switch casing from being withdrawn from said generally parallelepiped mount casing, said retainer means comprising a quadrangular opening formed in a bottom wall of said generally parallelepiped mount casing, a retainer, extending in a direction in which said switch casing is



inserted into said generally parallelepiped mount casing, said retainer extending within said quadrangular opening and from said bottom wall of said generally parallelepiped mount casing and being elastically changeable between positions within and out of said quadrangular opening, and a stopper projection integrally formed with and extending downward from said generally parallelepiped switch casing, said retainer being initially engaged and forced by said stopper projection so as to be displaced out of said quadrangular opening and then disengaged from said stopper projection so as to return into said quadrangular opening as said switch casing is inserted into said generally parallelepiped mount casing, said retainer thereby being engageable with said stopper projection within said quadrangular opening in a direction in which said switch casing is withdrawn from said generally parallelepiped mount casing.

5,304,853

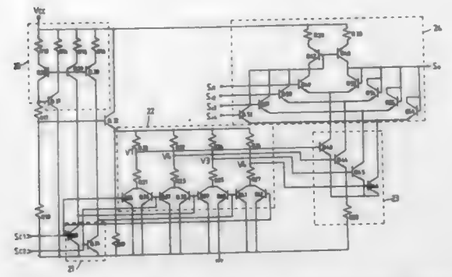
MULTIPLEXER

Young S. Choi, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Apr. 20, 1992, Ser. No. 871,090
Claims priority, application Rep. of Korea, May 31, 1991, 91-8053
Int. Cl.[5] H03K *17/56, 19/086, 17/60*
U.S. Cl. 307—241 **20 Claims**

1. A multiplexer, which receives control signals and a plurality of input signals, and selectively outputs a different input signal for each possible combination of control signals, said multiplexer comprising:
a NOR logic section, having a plurality of NOR gates therein, for generating a binary logic signal in accordance with said control signals;
a selection signal supplying section for generating a selection signal in accordance with the binary logic signal generated by said NOR logic section; and

an inverter section for supplying said control signals to said plurality of NOR gates, such that one NOR gate generates



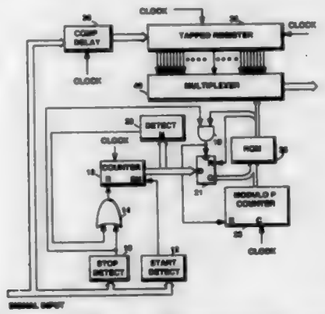
a logic signal having a first state and the remaining NOR gates generate logic signals having a second state.

5,304,854

SIGNAL TRANSIENT IMPROVEMENT CIRCUIT

Kazuyo Aoki, Omiya, and Tomoki Saeki, Yokohama, both of Japan, assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Feb. 3, 1992, Ser. No. 829,836
Int. Cl.[5] H03K *5/12, 6/04*
U.S. Cl. 307—263 **6 Claims**



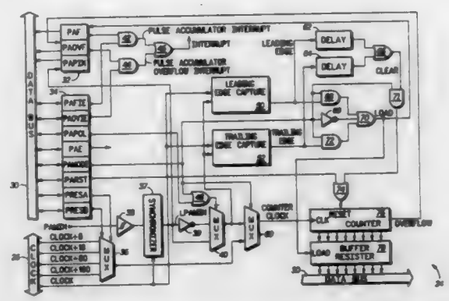
1. Apparatus for enhancing signal transitions, comprising:
a signal input terminal for receiving an input signal;
a signal output terminal;
delay means, coupled to said input terminal for providing a plurality of delayed signals, each of said delayed signals representing said input signal delayed by a different interval;
multiplexing means, having a plurality of input terminals coupled to receive respective ones of said delayed signals, and responsive to control signals, for selectively coupling ones of said delayed signals to said signal output terminal;
means coupled to said input terminal for detecting the occurrence of transitions in said input signal, and for measuring a feature of respective transitions for generating control values; and
a memory means programmed with a plurality of tables of codewords, each table containing a coupling sequence, each codeword in respective tables containing an instruction for conditioning said multiplexing means to couple one of its input terminals to said output terminal, said memory means having a first partial address bus coupled to receive said control values for selecting respective tables, and a second partial address bus coupled to receive address values for sequencing through codewords in respective tables; and
means for applying sequential address values to said second partial address bus.

5,304,855

BI-LEVEL PULSE ACCUMULATOR

Naji C. Naufel, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 8, 1992, Ser. No. 941,603
Int. Cl.[5] H03K *5/26*
U.S. Cl. 307—265 **25 Claims**



1. A pulse accumulator for measuring a length of a plurality of pulses of an input signal, comprising:
a clock interface for providing a clock signal;
a leading edge capture circuit having a first input for receiving the input signal and a second input for receiving the clock signal, the leading edge capture circuit providing a leading edge signal to indicate a rising edge of the input signal;
a trailing edge capture circuit having a first input for receiving the input signal and a second input for receiving the clock signal, the trailing edge capture circuit providing a trailing edge signal to indicate a falling edge of the input signal;
first logic means for logically combining the leading edge signal and the trailing edge signal to provide both a load signal and a reset signal, wherein the load signal is provided before the reset signal;
a counter having both a first input coupled to the clock interface for receiving the clock signal and a second input coupled to the first logic means for receiving the reset signal, the counter accumulating a count value in response to the clock signal, the counter being initialized to a predetermined value when the reset signal is asserted; and
a buffer register having both a first input coupled to the counter for receiving the count value and a second input coupled to the first logic means for receiving the load signal, the buffer register storing the count value in response to the load signal, the count value being stored in the buffer register before the counter is initialized to the predetermined value.

5,304,856

ARTICLE COMPRISING A BALANCED DRIVER CIRCUIT WITH LESS POWER DISSIPATION THAN CONVENTIONAL CIRCUIT

Attilio J. Rainal, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 17, 1992, Ser. No. 992,514
Int. Cl.[5] H01P *5/00*
U.S. Cl. 307—270 **10 Claims**

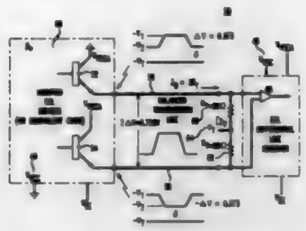
1. An article comprising a circuit for driving electrical signal output leads of an integrated circuit comprising:
first and second transistor output stages each having an output terminal;
first and second transmission lines, serially connected to said

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first and second output terminals, respectively, each of said transmission lines having an output end;

first and second termination resistors connected serially between said first and second transmission line output ends;

a voltage supply having a voltage V_T approximately in the range of 1.0 to 1.5 volts connected between said first and second termination resistors; and



a receiver connected between said first and second transmission line output ends;

wherein the circuit has a voltage swing, $\Delta V = V_2 - V_1$, approximately in the range of 0.125 to 0.375 V, and voltage levels, V_1, V_2 which result in a significant reduction in power dissipated by the circuit compared to analogous conventional balanced or unbalanced driver circuits.

5,304,857

PULSE GENERATING CIRCUIT FOR SEMICONDUCTOR DEVICE

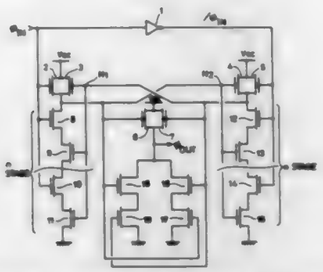
Kenji Tokami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,178

Claims priority, application Japan, Jan. 31, 1992, 4-16362

Int. Cl.[5] H03K *3/284, 3/355*

U.S. Cl. 307—273 **5 Claims**



1. A pulse generating circuit for use in a semiconductor device responsive to change in the level of an input signal for generating a one shot pulse, comprising:

a first switching circuit responsive to an input signal for switching a first node to a first logic level;

a second switching circuit responsive to an inverted signal of said input signal for switching a second node to a second logic level;

a first transistor of first type conductivity having its input electrode connected to said first node and its first electrode provided with a first reference potential;

a second transistor of the first type conductivity having its input electrode connected to said second node, its first electrode provided with said first reference potential, and its second electrode connected to a second electrode of said first transistor, for generating said one shot pulse from said second electrode;

a third transistor of second type conductivity having its input electrode connected to said first node and its first electrode connected to the second electrodes of said first and second transistors;

a fourth transistor of the second type conductivity having its input electrode connected to said second node and its first electrode connected to the second electrodes of said first and second transistors;

a fifth transistor of the second type conductivity having its input electrode connected to said first node, its first electrode connected to a second electrode of said fourth transistor, and its second electrode connected to the second reference potential; and

a sixth transistor of the second type conductivity having its input electrode connected to said second node, its first electrode connected to a second electrode of said third transistor, and its second electrode connected to said second reference potential.

5,304,858

APPARATUS FOR MAINTAINING A LOW POWER LOSS WITHIN AN INPUT STAGE FOR DIGITAL SIGNALS

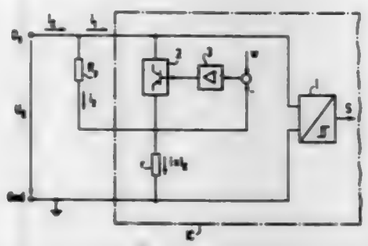
Herbert Heitzer, Kaemmersbruck, and Gerhard Rumold, Bubesreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,112

Claims priority, application European Pat. Off., Jul. 25, 1991, 91112521.9

Int. Cl.[5] H03K *3/313, 3/15*

U.S. Cl. 307—290 **12 Claims**



1. An apparatus including an integrated circuit, said apparatus comprising:

a) an input stage having a Schmitt trigger disposed within the integrated circuit for receiving an input voltage, wherein said input stage outputs a signal representing an ON state when the input voltage exceeds a predetermined value;

b) a two-terminal network having a negative resistance characteristic, being disposed within the integrated circuit and being coupled in parallel with the input stage; and

c) a first resistor being disposed outside of the integrated circuit, and being coupled in parallel with the input stage, whereby the two-terminal network maintains a current flowing through the input stage at an approximately constant value so that as the input voltage increases increasing power loss is developed externally to the integrated circuit in the first resistor rather than in the input stage.

5,304,859

SUBSTRATE VOLTAGE GENERATOR AND METHOD THEREFOR IN A SEMICONDUCTOR DEVICE HAVING INTERNAL STEPPED-DOWN POWER SUPPLY VOLTAGE

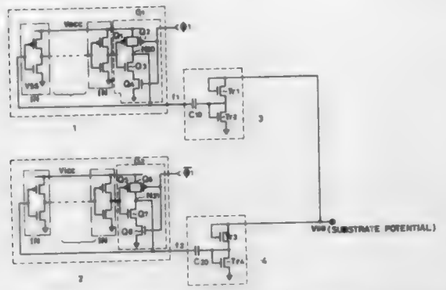
Kazutami Arimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 617,728, Nov. 26, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 974,840

Claims priority, application Japan, Apr. 6, 1990, 2-92546

Int. Cl.[5] H03K *3/01*

U.S. Cl. 307—296.2 **51 Claims**



1. A substrate voltage generator in a semiconductor device having a voltage down converter for stepping down an externally applied power supply voltage to a prescribed voltage and generating an internal stepped-down power supply voltage, said semiconductor device being formed on a semiconductor substrate, said substrate voltage generator comprising:

first substrate voltage applying means operating with said externally applied power supply voltage as an operation power supply voltage for applying a first bias voltage to said semiconductor substrate;

second substrate voltage applying means operating with said internal stepped-down power supply voltage as an operating power supply voltage for applying a second bias voltage to said semiconductor substrate;

stable state detecting means for detecting whether said internal stepped-down power supply voltage is in a stable state or not; and

selective activation means for selectively activating said first and second substrate voltage applying means in response to an output of said stable state detecting means, wherein said selective activation means activates the second substrate voltage applying means when the stable state detection means detects the stable state of said stepped-down power supply voltage.

5,304,860

METHOD FOR POWERING DOWN A MICROPROCESSOR EMBEDDED WITHIN A GATE ARRAY

Laurin R. Ashby, Mesa, Ariz., and Franz Steininger, Munich, Fed. Rep. of Germany, assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 875,508, Apr. 29, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,637

Int. Cl.[5] H03K *19/177*

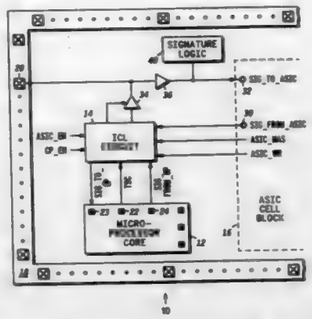
U.S. Cl. 307—296.3 **2 Claims**

1. A method for providing a power down mode for a microprocessor embedded within a gate array, the microprocessor having a plurality of inputs and a plurality of outputs, the gate array also including an ASIC cell block which remains active when the microprocessor is powered down, the method comprising the steps of:

providing separate and independent power supply means for the microprocessor and the ASIC cell block;

isolating the microprocessor from the ASIC cell block;

removing power to the microprocessor during the power down mode; and



maintaining the plurality of inputs and the plurality of outputs of the microprocessor at predetermined logic voltage levels during the power down mode.

5,304,861

CIRCUIT FOR THE DETECTION OF TEMPERATURE THRESHOLD, LIGHT AND UNDULY LOW CLOCK FREQUENCY

Serge Fruhauf, Peynier, and Michel Martin, Marseille, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

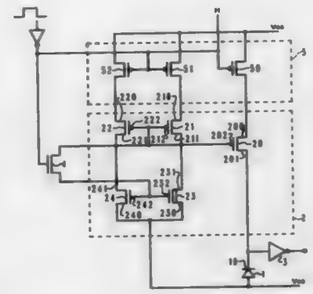
PCT No. PCT/FR90/00655, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO91/04473, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 12, 1990, Ser. No. 838,301

Claims priority, application France, Sep. 12, 1989, 89 11881

Int. Cl.[5] H03K *3/26;* **G11C** *11/00*

U.S. Cl. 306—296.4 **14 Claims**



1. A detection circuit, comprising:

an input for connection to a first voltage level;

an output for connection to a second voltage level;

a semiconductor diode for providing a detecting element, connected to the output at a first terminal;

a current generator having an input node connected to the input and an output node connected to a second terminal of the semiconductor diode for supplying a constant current to reverse bias the semiconductor diode, the constant current being substantially independent of changes within a range in the voltage difference between the first and second voltage levels;

the current generator comprising a current mirror formed by first and second MOS transistors with conductive channel zones of the same type, N or P, with the first MOS transistor supplying current to the output node of the current generator and its source or its drain, depending on whether it has a P type or N type channel zone,

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being connected to the second terminal of the semiconductor diode; and

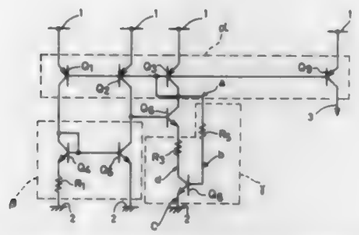
the output node connected to the second terminal of the semiconductor diode supplying a voltage signal for indicating the reverse conductivity of the semiconductor diode.

5,304,862

CONSTANT CURRENT CIRCUIT

Yunichi Memida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1993, Ser. No. 42,003
Claims priority, application Japan, Apr. 2, 1992, 4-110900
Int. Cl.[5] G05F *3/02*
U.S. Cl. 307—296.6 **8 Claims**



1. A constant current circuit providing a constant current, comprising:

a power supply node for receiving a power supply potential;

a first current mirror circuit for supplying an output current;

a second current mirror circuit for determining a reference current of said first current mirror circuit;

a feedback transistor means for generating current feedback for controlling the output current of said first current mirror circuit to match said reference current; and

a starting circuit coupled between said feedback transistor means and said first current mirror circuit for starting said first current mirror circuit and said feedback transistor means,

said starting circuit including

a ground node for receiving a ground potential, and

a switching element having a pair of current flow conducting electrodes coupled between at least said first current mirror circuit via said feedback transistor means and said ground node, and a current flow control electrode coupled to said first current mirror circuit for starting current flow between said pair of electrodes in response to said power supply potential being applied to said power supply node.

5,304,863

TRANSFORMER DRIVER HAVING UNLIMITED DUTY CYCLE CAPABILITY BY INSERTING NARROW PULSES DURING UNLIMITED DUTY CYCLES

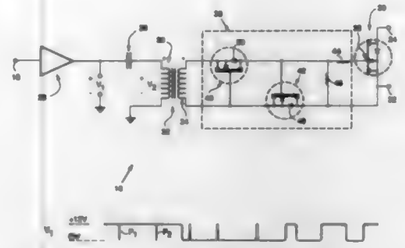
Donald R. Cargille, Culver City, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 733,936, Aug. 30, 1991, abandoned.
This application Sep. 2, 1992, Ser. No. 939,562
Int. Cl.[5] H03K *3/45, 3/30*
U.S. Cl. 307—314 **8 Claims**

1. A method for driving an electrical power switch using a driver circuit having a transformer and a transistor isolation network wherein the power switch is coupled to the secondary windings of the transformer through the transistor isolation network, the method comprising:

bringing the power switch to a first state;

applying a narrow electrical pulse of a first voltage polarity to the primary windings of the transformer, the pulse being narrow enough not to saturate the transformer, to compensate for any leakage in the driver circuit and the power switch and maintain the power switch in the first state; and



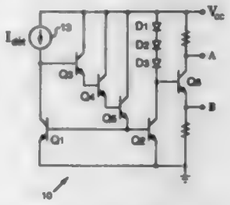
repeating the step of applying a pulse to maintain the power switch in the first state until a change of power switch state is desired.

5,304,864

ANALOG MAXIMUM/MINIMUM SELECTOR CIRCUIT

John H. Hong, Moorpark, and Nan-Lei Wang, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Aug. 7, 1992, Ser. No. 927,899
Int. Cl.[5] H03K *5/153, 5/22*
U.S. Cl. 307—351 **19 Claims**



1. An electronic circuit, comprising:

a first comparator stage having a plurality of emitter-coupled bipolar transistors for receiving a plurality of input signals, said signals having differences in strength;

means for amplifying said input signals, thereby amplifying said differences in strength; and

means for determining the one of said amplified input signals that has the greatest strength.

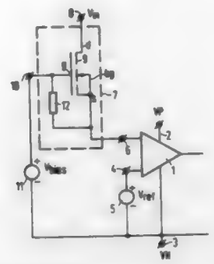
5,304,865

COMPARATOR CIRCUIT COMPRISING INPUT SIGNAL ATTENUATOR

Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1993, Ser. No. 10,229
Claims priority, application European Pat. Off., Feb. 3, 1992, 92200297.7
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—362 **5 Claims**

1. A comparator circuit comprising: a comparator which includes a first and a second supply terminal for connection to a supply voltage, a first input terminal for connection to a reference voltage, and a second input terminal connected via an attenuation means to a signal terminal for connection to an input voltage, characterized in that the attenuation means comprises a resistor, a bias voltage terminal for connecting a bias voltage, and a MOS transistor having a gate, backgate, source and drain, the drain being connected to the signal terminal, the source and the backgate being connected to the second input terminal, the gate being connected to the bias voltage



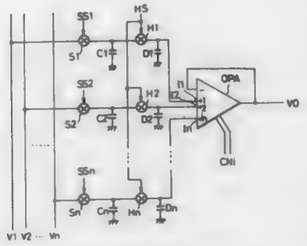
terminal and the resistor being inserted between the gate and the source.

5,304,866

SAMPLE-AND-HOLD CIRCUIT

Shinichi Uranaka, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1992, Ser. No. 868,213
Claims priority, application Japan, Apr. 15, 1991, 3-082396
Int. Cl.[5] H03K *5/159, 5/153*
U.S. Cl. 307—353 **8 Claims**



1. A sample-and-hold circuit comprising:

a plurality of first capacitors, respectively connected to a plurality of input signal lines through respective first analog switches, for sampling input signal voltages;

a plurality of second capacitors, respectively connected to said plurality of first capacitors through respective second analog switches, for holding the sampled voltages; and

a single operational amplifier having a plurality of inputs respectively connected to ends of said second capacitors, a control signal input receiving a control signal supplied thereto, and selectively connecting means for selectively connecting said amplifier with one of said plurality of inputs in response to said control signal such that said amplifier receives one of the voltages held in said plurality of second capacitors, said amplifier amplifying and outputting the received voltage at an output thereof.

5,304,867

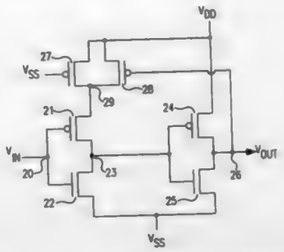
CMOS INPUT BUFFER WITH HIGH SPEED AND LOW POWER

Bernard L. Morris, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 12, 1991, Ser. No. 806,890
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—443 **11 Claims**

1. An integrated circuit having an input buffer comprising an input inverter having a p-channel field effect transistor serially connected with an n-channel field effect transistor that are coupled to receive an input signal, and an output inverter coupled to a buffer output node,

Characterized in that said buffer further comprises a current-limiting transistor biased to conductor and directly connected in series between a controlled electrode of a first



one of the complementary transistors of said input inverter and a power supply conductor;

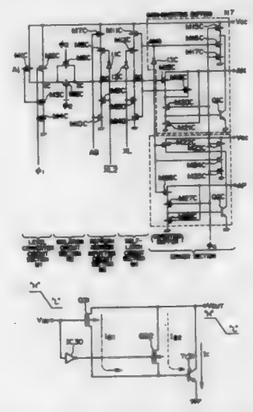
and still further comprises a shunt transistor having controlled electrodes connected in parallel with said current-limiting transistor and having a control electrode coupled to said buffer output node.

5,304,868

NON-INVERTING BUFFER CIRCUIT DEVICE AND SEMICONDUCTOR MEMORY CIRCUIT DEVICE

Yuji Yokoyama, Hitachi; Kazuyuki Miyazawa, Iruma; Hitoshi Miwa, Ome, and Shoji Wada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Filed Oct. 29, 1991, Ser. No. 783,781
Claims priority, application Japan, Nov. 1, 1990, 2-293727
Int. Cl.[5] H03K *19/02*; G11C *8/00*
U.S. Cl. 307—446 **21 Claims**



1. A non-inverting buffer circuit device in which at least a MOS transistor at an input stage drives a bipolar transistor to produce an output, comprising:

signal inverting means for producing an inverted signal of an input digital signal;

a bipolar transistor having an emitter grounded, a base and a collector;

an n-channel MOS transistor connected in parallel between the base and the collector of said bipolar transistor, said n-channel MOS transistor being on-off controlled by said inverted signal; and

a p-channel MOS transistor connected in parallel between

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the base and the collector of said bipolar transistor, said p-channel MOS transistor being on-off controlled by the non-inverted signal of the input digital signal,

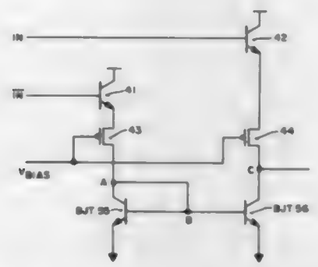
thereby providing the collector potential of said bipolar transistor as an output digital signal of said device.

5,304,869

BICMOS DIGITAL AMPLIFIER

Jeffrey K. Greason, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 17, 1992, Ser. No. 870,568
Int. Cl.[5] H03K *19/08*; H03F *3/16*
U.S. Cl. 307—446 **12 Claims**



1. A BiCMOS circuit architecture for amplifying the difference voltage between first and second input signals having an input level;

first and second emitter followers coupled to an operating potential, wherein the bases of said first and second transistors are connected to the first and second input signals respectively, wherein a current gain is provided, such that the circuit operates at low voltages, wherein said first and second emitter followers generate first and second currents respectively in response to said first and second input signals respectively; and

third and fourth transistors cascode connected to said first and second transistors to receive the first and second currents, wherein said third and fourth transistors are biased by a first potential independent of the input level of the first and second input signals, and wherein the gate-to-source voltage over each of said third and fourth transistors is increased by lowering the first potential, said third and fourth transistors producing third and fourth currents respectively in response to the first and second currents;

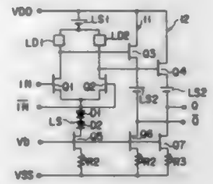
current source means coupled to said third and fourth transistors for providing an output in response to said third and fourth currents, wherein said current source means includes fifth and sixth transistors coupled as a current mirror having an input and an output, wherein the drain and the gate of said fifth transistor and the gate of said sixth transistor are connected directly to said input of said current mirror without any intervening elements and said sources of said fifth and sixth transistors coupled to a first potential, and further wherein said current mirror is coupled to said third and fourth p-channel MOS transistors and said drain of said sixth transistor is coupled to said output, wherein the output is the fourth current less the third current.

5,304,870

SOURCE ELECTRODE-CONNECTED TYPE BUFFER CIRCUIT HAVING LDD STRUCTURE AND BREAKDOWN VOLTAGE PROTECTION

Hironori Nagasawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 5, 1992, Ser. No. 846,162
Claims priority, application Japan, Mar. 6, 1991, 3-40153
Int. Cl.[5] H03K *19/017, 19/094*
U.S. Cl. 307—448 **8 Claims**



1. A buffer logic circuit having a lightly doped drain structure, comprising:

a power source potential;

a ground potential;

first and second field effect transistors (FETs) having drain electrodes, the first FET having a gate electrode supplied with a first input signal and the second FET having a gate electrode supplied with a second input signal, and the first and second FETs having source electrodes being connected to each other, wherein the drain electrodes of the first and second FETs generate output signals corresponding to the first and second input signals, respectively;

a first electric load having an end connected to the drain of the first FET and another end connected to the power source potential; and

a second load having an end connected to the drain of the second FET and another end connected to the power source potential; and

means, coupled between the source electrodes of the first and second FETs and the ground potential, for supplying a constant-current regulated power supply; and

means, coupled between the source electrodes of the first and second FETs and the constant-current regulated power supply means, for reducing a potential of the constant-current regulated power supply means.

5,304,871

PROGRAMMABLE INTERCONNECT ARCHITECTURE EMPLOYING LEAKY PROGRAMMABLE ELEMENTS

Kuthanur R. Dharmarajan, Sunnyvale; Khaled A. El-Ayat, Cupertino, and Gregory W. Bakker, Sunnyvale, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Jul. 24, 1992, Ser. No. 919,605
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **4 Claims**

1. In a user-programmable interconnect architecture disposed on an integrated circuit and including an array of functional circuit modules each having at least one input line and at least one output line, a plurality of general interconnect conductors insulated from and intersecting said input lines, and a plurality of normally-open user-programmable interconnect elements selectively connected between said inputs, said outputs, and ones of said interconnect conductors, apparatus for terminating unused ones of said inputs to one of a first voltage potential and a second voltage potential, comprising:

at least one first tie-off conductor insulated from and intersecting said input lines, said first tie-off conductor divided into at least two first segments;

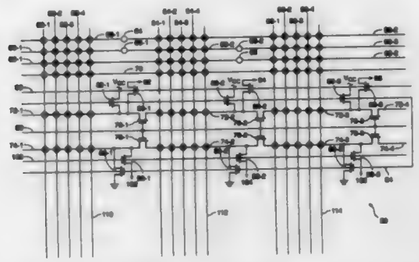
at least one second tie-off conductor insulated from and intersecting said input lines, said second tie-off conductor divided into at least two second segments;

a plurality of first termination transistors, each of said first termination transistors having a gate, a drain, and a source, each one of said first termination transistors having its drain connected to a voltage rail for said first voltage potential and its source connected to a different one of said first segments;

a plurality of second termination transistors, each of said second termination transistors having a gate, a drain, and a source, each one of said first termination transistors having its source connected to a voltage rail for said first voltage potential and its drain connected to a different one of said second segments;

a termination transistor gate line connected to the gates of each of said first and second termination transistors;

a plurality of programming transistors, each of said programming transistors having a gate, a drain, and a source, each one of said programming transistors having its drain



connected to a different one of said first and second segments;

a programming transistor gate line connected to the gates of each of said programming transistors;

programming means, connected to said programming transistor gate line, for selectively turning on the gates of said programming transistors during a programming operation, for selectively connecting a programming voltage potential to the drain of a selected one of said programming transistors while simultaneously connecting a potential substantially equal to one half of said programming voltage potential to the drains of all programming transistors except for said selected one;

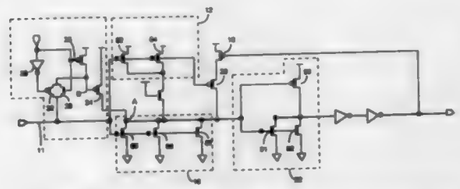
operation enable means, connected to said termination transistor gate line, for turning on said first and second termination transistors during an operating mode of said integrated circuit.

5,304,872

TTL/CMOS INPUT BUFFER OPERABLE WITH THREE VOLT AND FIVE VOLT POWER SUPPLIES

Avi Avraham; Dror Avni, and Daniel G. Genossar, all of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 10, 1992, Ser. No. 927,593
Int. Cl.[5] H03K *19/0185*
U.S. Cl. 307—475 **15 Claims**



1. A dual mode input buffer having two modes of operation, a first mode which provides first CMOS level outputs from TTL level inputs while operating at a first voltage level, and a second mode of operation which provides second CMOS level outputs from TTL level inputs while operating at a second voltage level, said dual mode input buffer comprising:

a first input for providing input data to said input buffer, said first input capable of providing said TTL level inputs;

a first stage comprising:

a first pull-up transistor, the gate of said first pull-up transistor coupled to said first input, the channel of said first pull-up transistor coupled between a supply voltage and the channel of a level shifting transistor;

a first pull-down transistor, the gate of said first pull-down transistor coupled to said first input, the channel of said first pull-down transistor coupled between ground (V_{SS}) and said level shifting transistor, wherein said first pull-up transistor and said first pull-down transistor are coupled to opposite ends of the channel of said level shifting transistor, the coupling between said first pull-down transistor and said level shifting transistor forming an output node of said first stage;

said level shifting transistor having its gate coupled to said supply voltage;

a trip point shifting circuit comprising:

a second pull-up transistor, the channel of said second pull-up transistor coupled between said supply voltage and said output node of said first stage;

circuit means for coupling said first input to the gate of said second pull-up transistor when said dual mode input buffer is operated at said second voltage level, and for turning off said second pull-up transistor when said dual mode input buffer is operated at said first voltage level; and

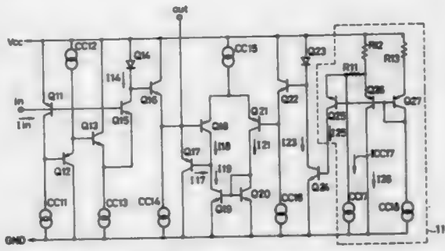
an output serially coupled to said output node of said first stage, said output capable of providing said first CMOS level outputs and said second CMOS level outputs.

5,304,873

LOG COMPRESSING CIRCUIT PROVIDING CAPABILITY OF KEEPING CLAMP LEVEL INDEPENDENT OF VARIETY OF AMPLIFICATION FACTOR

Masanori Inamori, Tenri, and Toshihide Miyake, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1992, Ser. No. 994,789
Claims priority, application Japan, Dec. 28, 1991, 3-360150
Int. Cl.[5] G06G *7/24*; H03D *1/00*
U.S. Cl. 307—492 **8 Claims**



1. A log compressing circuit for log-compressing input current, comprising:

a first transistor, for amplifying a current input to the log compressing circuit, having a base connected to an input terminal of the log compressing circuit;

a compressing diode for log-compressing the amplified current into a log-compressed voltage; and

a clamp circuit for clamping the log-compressed voltage at a clamp voltage if the log-compressed voltage exceeds a predetermined clamp voltage, said clamp circuit including

a clamp voltage generating diode serving as a source for generating the clamp voltage,

a second transistor having the same form as said first

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transistor and having a collector connected to a cathode of said clamp voltage generating diode, and

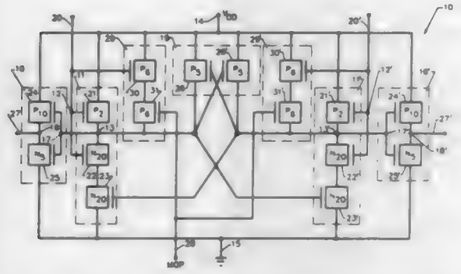
a constant current source for feeding constant current to a base of said second transistor.

5,304,874

DIFFERENTIAL LATCHING INVERTER AND RANDOM ACCESS MEMORY USING SAME

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Filed May 31, 1991, Ser. No. 708,459
Int. Cl.[5] G11C *7/00*; H03F *3/45*
U.S. Cl. 307—530 **13 Claims**



1. A Field Effect Transistor (FET) Differential Latching Inverter (DLI) circuit for sensing signals on first and second bit lines of a memory, comprising:

first and second complementary FET inverters, each of which is connected between first and second reference voltages, and each of which includes a first input, a second input and an output;

wherein said first complementary FET inverter comprises a first inverter FET of a first conductivity type, and second and third inverter FETs of a second conductivity type, the first, second and third FETs being serially connected between said first and second reference voltages, the controlling electrodes of said first and second FETs being connected together to form the first input of said first inverter, the controlling electrode of said third FET forming the second input of said first inverter;

wherein said second complementary FET inverter comprises a fourth inverter FET of said first conductivity type, and fifth and sixth inverter FETs of said second conductivity type, the fourth, fifth and sixth FETs being serially connected between said first and second reference voltages, the controlling electrodes of said fourth and fifth FETs being connected together to form the first input of said second inverter, the controlling electrode of said sixth FET forming the second input of said second inverter;

the controlling electrode of said third FET being connected to a node which connects said fourth FET to one of said fifth and sixth FETs, the controlling electrode of said sixth FET being connected to a node which connects said first FET to one of said second and third FETs;

the FETs of each of said first and second complementary inverters producing an inverter transfer function which is skewed toward one of said first and second reference voltages;

the second input of said first inverter being connected to the output of said second inverter, and the second input of said second inverter being connected to the output of said first inverter;

the first bit line being connected to the first input of said first inverter and the second bit line being connected to the first input of said second inverter; and

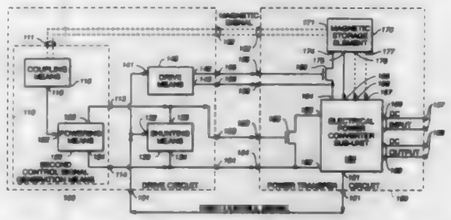
the outputs of said first and second complementary FET inverters producing output signals for said DLI circuit the product of the square channel saturation current and the ratio of channel width to length of the second, third, fifth and sixth inverter FETs being greater than the product of the square channel saturation current and the ratio of channel width to length of said first and fourth inverter FETs, to produce said skewed inverter transfer function.

5,304,875

EFFICIENT TRANSISTOR DRIVE CIRCUIT FOR ELECTRICAL POWER CONVERTER CIRCUITS AND THE LIKE

David A. Smith, Kowloon, Hong Kong, assignor to Astec International, Ltd., Hong Kong

Filed Apr. 28, 1992, Ser. No. 875,753
Int. Cl.[5] H03K *3/01*; H02M *3/335*
U.S. Cl. 307—571 **15 Claims**



1. In a power tranfer circuit having a first switching transistor, a second switching transistor, a magnetic storage element electrically coupled to said first switching transistor, and means for generating a first control signal for driving said first switching transistor, said first control signal having a first state and a second state, said first control signal alternating between its said first state and second state, each said switching transistor having a first conduction terminal, a second conduction terminal, a control terminal, a conductive state where current may be conducted between the first and second conduction terminals, and a non-conductive state where current is prevented from being conducted between the first and second conduction terminals, a drive circuit for driving said first and second switching transistors in an anti-phase relationship comprising:

drive means for coupling said first control signal to said control terminal of said first switching transistor, said first control signal causing said first switching transistor to be conductive when said first control signal is in its said first state and to be non-conductive when said first control signal is in its said second state, said magnetic storage element being responsive to the conductive state of said first switching transistor such that the magnitude of the magnetic flux of said magnetic storage element increases when said first switching transistor is conductive and decreases when said first switching transistor is non-conductive;

means for generating a second control signal responsive to the magnetic flux of said magnetic storage element, said second control signal having a first state and a second state, said second control signal being in said first state when the magnitude of the magnetic flux of said magnetic storage element is increasing and in said second state when the magnitude of the magnetic flux of said magnetic storage element is decreasing, said second control signal causing said second switching transistor to be conductive when said second control signal is in its second state; and

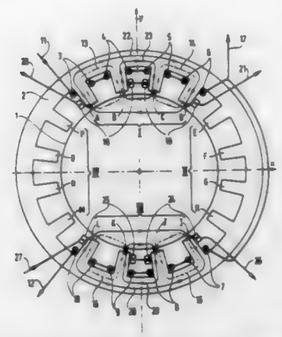
shunting means coupled to said second switching transistor and responsive to said first control signal for causing said second switching transistor to be non-conductive when said first control signal is in its first state.

5,304,876

ELECTROMAGNETIC BEARING

Guy Lemarquand, Villaz; Didier Pierrejean, Sevrier, and Denis Perrillat-Amede, Annecy, all of France, assignors to Alcatel Cit, Paris, France

Filed Feb. 4, 1993, Ser. No. 13,048
Claims priority, application France, Feb. 5, 1992, 92 01278
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 **6 Claims**



1. In an electromagnetic bearing for radially suspending a rotor in a stator, the bearing including a magnetic circuit comprising a rotor first portion integral with said rotor, and a stator second portion integral with said stator, said stator portion including a plurality of magnetic cores facing the rotor first portion and equipped both with position-detection electric coils, powered by a detection AC electric current, and also with suspension electric windings powered by power currents, the improvement wherein said stator portion of the magnetic circuit includes sixteen of said magnetic cores divided into four groups of four consecutive cores, the four groups being referred to respectively as group I, group II, group III, and group IV and succeeding one another in that order, groups I and III corresponding to radial action along a Y-axis and in respective opposite directions, and groups II and IV corresponding to radial action along an X-axis perpendicular to the Y-axis and in respective opposite directions, each core in each group being equipped with said position-detection electric coil, the coils on the four cores in anyone group being connected together in series, and the respective winding directions of the coils on the cores being such that, at any determined time, the magnetic flux produced by the AC powering current is in opposite directions in the first two cores of the group, and also in opposite directions in the following two cores, and wherein each group is further equipped with said suspension electric windings disposed on the cores of the group such that, at any determined time, the magnetic flux produced by the powering current is in the same direction in the first two cores of the group, and in the opposite direction in the following two cores, and wherein the windings in each group are powered separately, whereby said position-detection electric coils are not influenced by the magnetic flux of the suspension electric windings.

5,304,877

ROTOR OF A CANNED MOTOR FOR A CANNED MOTOR PUMP

Woo S. Baek, Busan, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

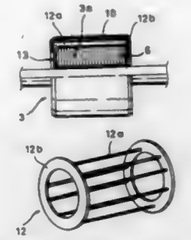
Filed Mar. 20, 1992, Ser. No. 855,756
Int. Cl.[5] H02K *15/12*
U.S. Cl. 310—45 **28 Claims**

1. A rotor of a motor in a pump for pumping fluid, comprising:

a core assembly including a plurality of cores with a plurality of slots and a hole for a shaft therein, said slots being arranged circumferentially and said hole being located centrally;

a conductor portion having a plurality of rotor bars penetrating said slots respectively and a pair of end rings disposed at a pair of end planes of said core assembly respectively, said rotor bars and said end rings being formed integrally; and

a fluid-proof coating film formed on outer surfaces of said core assembly and said conductor portion for preventing fluid inside said pump from permeating into said core assembly.

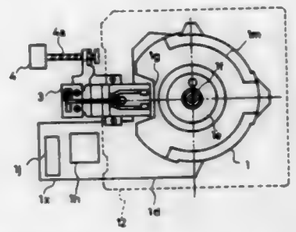


5,304,878

ELECTRONIC PARTS AND CONNECTOR MOUNTING STRUCTURE OF DISK UNIT

Kazuya Oda; Takeshi Sato, both of Fukushima, and Kazuo Hasegawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,569
Claims priority, application Japan, Nov. 29, 1990, 2-332233
Int. Cl.[5] H02K *7/14*, *11/00*; G11B *5/016*
U.S. Cl. 310—67 R **6 Claims**



1. In a disk unit including a motor having a rotor and stator, the motor for rotating a magnetic recording medium disposed to one side of the rotor and stator, a head carriage guided in a radial direction relative to the magnetic recording medium, and at least one electronic part, a mounting structure comprising:

a motor substrate mechanically supporting the rotor and stator and the electronic part, the motor substrate further electrically interconnecting the electronic parts, and the motor substrate including an extension portion extending beyond the magnetic recording medium and containing the electronic part.

5,304,879

OUTER ROTOR MOTOR

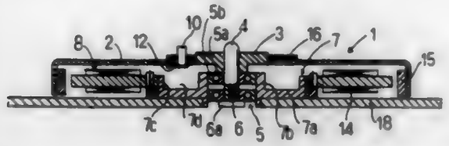
Yazuru Suzuki, Sizuoka; Sakae Fujitani, Hamamatsu, and Masaaki Inagaki, Sizuoka, all of Japan, assignors to Minebea Kabushiki-Kaisha (Minebea Co., Ltd), Nagano, Japan

Filed Dec. 7, 1992, Ser. No. 986,581

Claims priority, application Japan, Dec. 7, 1991, 3-108944[U]; Dec. 7, 1991, 3-108945[U]

Int. Cl.[5] H02K *11/00*; **G11B** *23/00*

U.S. Cl. 310—67 R **5 Claims**



1. An outer rotor motor for driving a magnetic disk comprising

(a) a rotatable spindle (**4**),

(b) a bearing housing (**7**) which surrounds the lower part of said spindle (**4**) and supports said spindle for rotation, the bearing housing (**7**) comprising an inner portion (*7b*) that contains ball bearings (**5**),

(c) a print board (**18**) extending outwardly from the lower part of said bearing housing (**7**),

(d) a ring-like rib (*7c*) located at a spaced distance outwardly from said inner portion (*7b*) of the bearing housing so as to thereby establish a circumferential groove (*7d*) between said inner portion (*7b*) and said ring-like rib (*7c*),

(e) a hub base (**3**) mounted on the upper portion of said spindle (**4**) above said bearing housing (**7**) and which is fixed on said spindle so as to rotate with said spindle (**4**),

(*f*) a chucking magnet (**16**) mounted on and outwardly from said hub base (**3**) so as to rotate with both said hub base (**3**) and said spindle (**4**), said chucking magnet being adapted to support a magnetic disc on its upper surface, said chucking magnet containing a hole that is adapted to receive a pin (**10**),

(g) a rotor yoke (**2**) joined to and extending outwardly from said hub base (**3**) so that it also rotates with said spindle (**4**), said rotor yoke (**2**) containing a hole that is adapted to receive a pin (**10**),

(h) a stator (**8, 14**) mounted outwardly of said ring-like rib (*7c*),

(i) a leaf spring (**12**) mounted on the lower surface of either said rotor yoke (**2**) or said hub base (**3**), the leaf spring (**12**) having one end that is fixed and one end that is free, and

(j) a drive pin (**10**) mounted above said circumferential groove (*7d*) on said free end of said leaf spring (**12**) and positioned so that the pin (**10**) will be resiliently biased upwardly through said aligned holes in said rotor yoke (**2**) and chucking magnet (**16**).

5,304,880

WIRE CONNECTION STRUCTURE OF ELECTRIC ROTATING MACHINERY

Masahiko Hisada, Hekinan, and Kazuaki Tsujita, Kosai, both of Japan, assignors to ASMO Co., Ltd., Kosai, Japan

Filed May 14, 1993, Ser. No. 60,968

Claims priority, application Japan, May 14, 1992, 4-38927

Int. Cl.[5] H02K *11/00*; **H01J** *5/00*

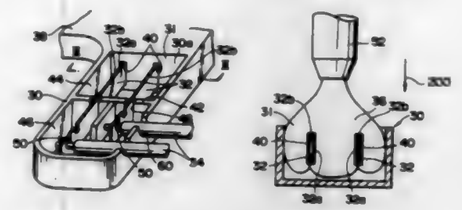
U.S. Cl. 310—71 **18 Claims**

1. An electric rotating machine having a wire connector to external wires, said wire connector comprising:

a connection box formed in a housing of the electric rotating machine, said connection box including an opening for receiving a poured filler into the connection box;

a plurality of terminal fittings each having a first end connected to an internal circuit of the electric rotating machine and a second end extending into the connection box through apertures formed in a wall of said connection box, the second end of each of said terminal fittings being connected to a respective one of the external wires; and

a waterproofing and insulating filler poured into and solidified in said connection box through said opening;



wherein:

each of said terminal fittings comprise wide and narrow side faces, with said wide side faces being positioned parallel to a direction of flow of said poured filler.

5,304,881

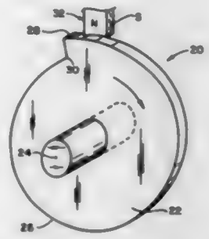
MEANS FOR PRODUCING ROTARY MOTION

Charles J. Flynn, Kansas City, and David M. Flynn, Sikeston, both of Mo., assignors to Magnetic Revolutions, Inc., St. Louis, Mo.

Filed Mar. 13, 1989, Ser. No. 322,121

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **15 Claims**



3. Means for converting magnetic force to mechanical force comprising a shaft rotatable about an axis thereof, a disk member mounted on said shaft for rotation therewith, said disk member having a peripheral portion formed of a permanently magnetized material, said peripheral portion varying in thickness entirely around the peripheral portion of the disk member, a magnetic member positioned adjacent to the peripheral portion in position to be magnetically coupled thereto and means to reduce the magnetic coupling force at a time when it acts to retard motion of the disk.

5,304,892

VARIABLE RELUCTANCE MOTORS WITH PERMANENT MAGNET EXCITATION

Thomas A. Lipo, and Yuefeng Liao, both of Madison, Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 11, 1992, Ser. No. 881,202

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **22 Claims**

1. A permanent magnet reluctance motor comprising:

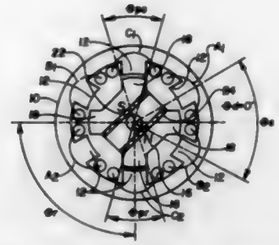
a stator having a plurality of salient poles spaced at equal angular intervals around a central axis;

a plurality of stator windings, one each of said windings being coiled on one each of said stator salient poles;

a rotor mounted within said stator for rotation around said central axis, said rotor further comprising,

a plurality of rotor salient poles spaced at equal angular intervals around said central axis, said rotor salient poles being arranged with respect to said stator salient poles to provide a constant air-gap reluctance during rotation of said rotor within said stator,

a plurality of permanent magnets embedded in said rotor in two parallel planes on opposing sides of said central axis to



serve as a source of flux for magnetizing said rotor salient poles, said magnets being so polarized as to magnetize as south magnetic poles the ones of said rotor salient poles lying on the same side of said central axis as one of said planes and to magnetize as north magnetic poles the ones of said rotor salient poles lying on the same side of said central axis as the other of said planes.

5,304,883

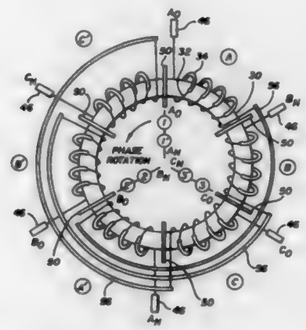
RING WOUND STATOR HAVING VARIABLE CROSS SECTION CONDUCTORS

Joseph Denk, Los Angeles, Calif., assignor to AlliedSignal Inc, Morris Township, Morris County, N.J.

Filed Sep. 3, 1992, Ser. No. 939,788

Int. Cl.[5] H02K *1/00, 1/12*

U.S. Cl. 310—180 **28 Claims**



15. An electrical machine, comprising:

a magnet;

a flux collector ring encircling said magnet, opposing surfaces of said flux collector ring and said magnet defining a magnetic air gap; and

windings that are toroidally wound around said flux collector ring, a first portion of said windings being located within said magnetic air gap, and a second portion of said windings being located outside said magnetic air gap, said windings of said first portion having a smaller cross-sectional area than said windings of said second portion.

5,304,884

MOLDED ARMATURE

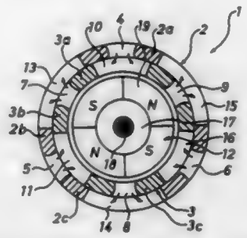
Goro Kitajima; Naohiro Hansoka, both of Hachiohji, and Mitsuo Nasu, Tachikawa, all of Japan, assignors to Olympus Optical Company Limited, Japan

Continuation of Ser. No. 257,470, Oct. 13, 1988, abandoned. This application Jul. 1, 1992, Ser. No. 908,774

Claims priority, application Japan, Jan. 19, 1988, 63-9244

Int. Cl.[5] H02K *3/00*

U.S. Cl. 310—198 **11 Claims**



1. A coreless armature which is formed by placing coils with a given phase in at least two layers along a circumference and molding the coils with resin into a cylindrical shape and defining a pole pitch, wherein each coil has coil pieces defining an internal space therebetween and a coil pitch in each of said layers of no greater than 125% of the pole pitch, wherein the coils of each layer have a gap between the coil pieces thereof wherein the gap is placed so as to oppose the internal space of each of the coils in an adjacent layer and each of the coil pieces overlap a coil piece and an internal space of each adjacent layer.

5,304,885

ELECTRIC MOTOR ARMATURE WITH WINDING END PROTECTION

Chi-Nung Wong, and Kam-Shing Mok, both of Hong Kong, Hong Kong, assignors to Johnson Electric S.A., Switzerland

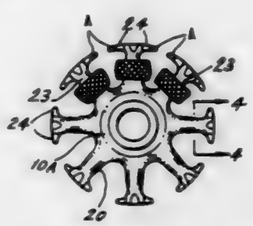
PCT No. PCT/GB91/01174, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO92/02069, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 16, 1991, Ser. No. 849,012

Claims priority, application United Kingdom, Jul. 16, 1990, 9015604

Int. Cl.[5] H02K *1/06*

U.S. Cl. 310—216 **13 Claims**



1. An armature, for an electric motor, including a rotary shaft, the armature being supported on the shaft and having a lamination stack, the stack comprising a plurality of T-shaped steel laminations stacked one against another, each lamination having radially extending stems with arms which extend circumferentially, with respect to the rotational axis of the shaft, from each side of the stems, armature windings wrapped around the stems of the stack, a spider located at one end of the stack positioned inside the armature windings and formed of electrically insulating material and having a plurality of pro-

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filed spokes, the spokes each having one surface which overlies and fits against a respective stem of the stack and an opposing arcuate surface to form a central upstanding profile extending to a point which is adjacent a radially remote end of the respective spoke, and spider arms extending circumferentially from each side of the spoke at the end of the spoke to overlie respective arms of the stack, each of said spokes being partly defined by spaced radially extending first and second edges, said arcuate surface being defined by a curve that extends from the first edge to the second edge.

5,304,886

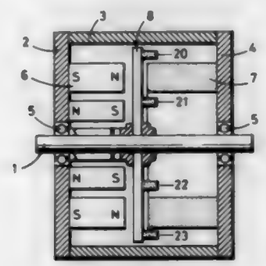
PRINTED CIRCUIT MOTOR

Tai-Her Yang, 5-1 Taipin Street, Si-Hu Town, Dzan-Hwa, Taiwan

Continuation-in-part of Ser. No. 598,260, Oct. 15, 1990, abandoned, which is a division of Ser. No. 258,088, Oct. 17, 1988, Pat. No. 4,962,583, which is a continuation of Ser. No. 426,188, Sep. 28, 1982, abandoned. This application Sep. 11, 1992, Ser. No. 944,046

Int. Cl.[5] H02K *1/22*

U.S. Cl. 310—268 **5 Claims**



1. A printed circuit stepping motor, comprising:

a stator, said stator further including,

a housing,

a plurality of permanent magnets mounted within said housing on one side thereof,

a ring-shaped magnet core mounted within said housing opposite said permanent magnets; and

a rotor, said rotor further including,

an axle rotatably seated in said housing,

a flat insulating disk attached to said axle within said housing for rotation between said permanent magnets and said magnet core,

a first printed circuit configured in a plurality of first coil windings, said first coil windings being evenly spaced apart and circularly arranged on one surface of said disk, said first coil windings being interconnected to generate poles of alternate polarities when current is applied to said first printed circuit,

a first pair of conductive slip rings on said disk connected to said first printed circuit for supplying current to said first printed circuit;

a second printed circuit configured in a plurality of second coil windings, said second coil windings being evenly spaced apart and circularly arranged on the surface of said disk opposite said one surface thereof, said second coil windings being interconnected to generate poles of alternate polarity when current is applied to said second printed circuit, each said second coil winding of said second printed circuit being angularly displaced midway between adjacent ones of said first coil windings of said first printed circuit, and

a second pair of conductive slip rings on said disk connected to said second printed circuit for supplying current to said second printed circuit;

a first pair of brushes mounted on said stator for maintaining continuous electrical contact with said first pair of slip rings;

a second pair of brushes mounted on said stator for maintaining continuous electrical contact with said second pair of slip rings;

whereby said rotor rotates in a stepwise manner when a DC pulse input is sequentially applied to said first printed circuit and then to said second printed circuit through said first and said second pair of brushes, respectively.

5,304,887

CRYSTAL RESONATOR DEVICE

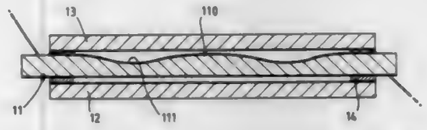
Rudolf A. H. Heinecke, and Roger J. Williamson, both of Harlow, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 28, 1992, Ser. No. 920,807

Claims priority, application United Kingdom, Oct. 19, 1991, 9122245

Int. Cl.[5] H01L *41/09, 41/18*

U.S. Cl. 310—361 **2 Claims**



1. A packaged quartz crystal resonator device, including a resonator element and first and second housing members, the resonator element comprises a quartz plate formed from SC-cut material and having a contoured central portion surrounded by an annular recess whereby vibrational energy is trapped in the central portion, wherein said housing members comprise each a flat quartz plate of AT-cut material secured to the respective surface of the resonator element at its periphery via a low-melting-point glass or a low-melting-point alloy, wherein said housing members are aligned with respect to their crystal orientation with the resonator element so as to minimise thermal mismatch therebetween, wherein both the surfaces of the resonator element and the inwardly facing surfaces of the housing members are coated with gold, and wherein the outer surface of one or both said housing members is provided with an acoustic absorbing layer.

5,304,888

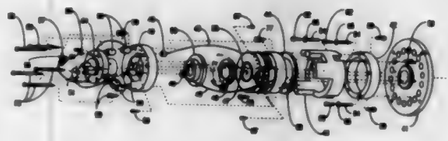
MECHANICALLY STABLE FIELD EMISSION GUN

Mark A. Gesley, Oakland, and Daniel B. DeBra, Los Altos, both of Calif., assignors to ETEC Systems, Inc., Hayward, Calif.

Filed Jan. 24, 1992, Ser. No. 828,538

Int. Cl.[5] H01J *7/24, 25/02*

U.S. Cl. 313—359.1 **7 Claims**



1. A mechanically stable emissive gun assembly including a particle beam source and a lens comprising:

a cylindrical annular source support attached at one end to the source, and defining a central cavity for accommodating the lens;

a source-motion ring attached to the other end of the source support;

means for providing translation motion of the source with respect to the lens; and

a base plate attached to the source-motion ring, the baseplate supporting the lens.

5,304,889

COLOR CATHODE-RAY TUBE, AND SURFACE-TREATED PHOSPHOR AND METHOD FOR ITS PRODUCTION

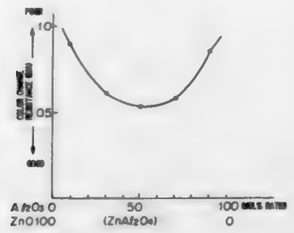
Hideo Tono; Masaru Naito, and Tomohiro Miyazaki, all of Odawara, Japan, assignors to Kasei Optonix Ltd., Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,028

Claims priority, application Japan, May 18, 1990, 2-126816

Int. Cl.[5] H01J *29/20*

U.S. Cl. 313—467 **13 Claims**



1. In a color cathode-ray tube having a fluorescent screen comprising red-, blue- and green-emitting phosphors as image elements of a fluorescent layer, the improvement wherein at least one of said phosphors is coated with a double oxide of zinc and aluminum.

5,304,890

CATHODE RAY TUBE DEVICE HAVING REINFORCING FRAME

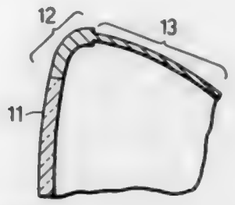
Keitaro Tsukui; Junko Itoh; Kenichi Umino, all of Amagasaki; Kouji Nakamura, and Tesshin Yazu, both of Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1991, Ser. No. 815,188

Claims priority, application Japan, Jan. 16, 1991, 3-003276; Jun. 24, 1991, 3-151727; Sep. 24, 1991, 3-243002

Int. Cl.[5] H01J *29/86, 29/87*

U.S. Cl. 313—477 R **33 Claims**



1. A CRT comprising:

a glass faceplate forming an image display surface;

a frame-shaped metal skirt connected to the outer periphery of said faceplate;

a metal funnel having one end connected to said skirt and forming a side wall;

a neck connected to another end of said funnel; and

an electron gun disposed in said neck facing said faceplate;

wherein said skirt is thicker than said funnel and at least part of said skirt extends longitudinally from said faceplate in the same direction of the curvature of said faceplate.

5,304,891

CATHODE-RAY TUBE DISPLAY DEVICE

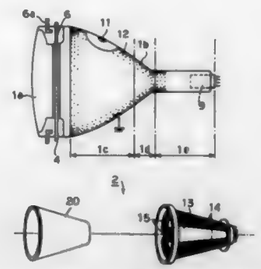
Hiroshi Otsuka, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1992, Ser. No. 888,121

Claims priority, application Japan, Jun. 28, 1991, 3-184056

Int. Cl.[5] H01J *31/00*

U.S. Cl. 313—479 **15 Claims**



1. A cathode-ray tube display device wherein an electron beam emitted from an electron gun provided in the interior of a neck portion of a cathode-ray tube comprising a panel portion, a funnel portion, a cone portion, and said neck portion, is deflected in at least one direction by means of an electrostatic deflection type deflecting coil unit disposed exteriorly near said neck portion and is then radiated to a fluorescent screen of said panel portion to render the fluorescent screen luminous for the display of images, said cathode-ray tube display device comprising:

a resistance material provided continuously on outer surfaces of said funnel portion, cone portion and neck portion; and

an insulator provided between an inner surface of said deflecting coil unit and said neck portion.

5,304,892

DOUBLE-ENDED HIGH-PRESSURE DISCHARGE LAMP

Bernd Lewandowski, Feldafing; Dieter Franke, Munich; Walter Kiele, Munich; Juergen Begemann, Munich, and Joern Dierks, Penzing, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Sep. 26, 1991, Ser. No. 766,001

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1990, 4031117

Int. Cl.[5] H01J *61/36*

U.S. Cl. 313—623 **8 Claims**

1. A double-ended, high-pressure discharge lamp, capable of carrying lamp currents above 20 A, having

a discharge vessel (2) of quartz glass defining a generally rotation-symmetrical discharge space therein;

two lamp necks (3,4) extending coaxially from opposite axial ends of the rotation-symmetrical discharge vessel (2) and melt-sealed to the discharge vessel;

two electrodes (5, 6, 29) each having an electrode shaft (30) located partly within the discharge space and having a shaft portion extending into the respective neck (3, 4);

two external current supply leads (23, 35) each extending into the respective neck (3, 4) and electrically connected to a respective base (9, 10); and

a fill, including a noble gas, and optionally mercury, and a metal halide within the discharge space,

said lamp comprising

a high current carrying sealing and electrical connection arrangement between each of the electrodes (5, 6, 29) and the current supply leads (23, 35) including

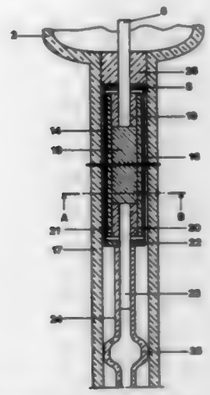
a first metal disk (7, 8; 31) electrically and mechanically secured to an end region of the respective electrode (5, 6, 29);

VOL 1161 ISS 3 APR 19 1994

a second metal disk (22, 34) electrically and mechanically secured to an end region of the respective current supply lead (23, 35);

at least two elongated sealing foils (11–16, 27; 32, 33, 47, 48) extending between said first and second disks and within the respective neck, spaced from each other;

a quartz glass filling within said respective necks, embedding said at least two sealing foils, said first and second disks and ends of the electrode shafts (30) and of the current supply leads (23, 35), being melt-sealed to the respective neck, said necks, together with the quartz glass filling, forming solid quartz glass cylinders in which said sealing foils are melt-sealed; and



means for thermally isolating the interior of the discharge vessel from the sealing and electrical connection arrangement, and for centering the electrode shaft (30) of the respective electrode, including

a plug element (26, 40) formed with an aperture, fitted and melt-sealed into a respective transition region of the neck adjacent the discharge vessel, the respective electrode shaft passing through the aperture of the plug element, said plug element, in operation of the lamp, separating the first metal disk (7, 8; 31) from the fill in the discharge vessel.

5,304,893

DISCHARGE TUBE HAVING CUP SHAPE GLOW DISCHARGE ELECTRODE

Yoriyuki Nieda, Kamakura, Japan, assignor to Tokyo Densoku Kabushiki Kaisha, Kanagawa and Noritake Co., Limited, Nagoya, both of Japan

Division of Ser. No. 729,425, Jul. 12, 1991, Pat. No. 5,214,351. This application Oct. 27, 1992, Ser. No. 967,102

Claims priority, application Japan, Jul. 19, 1990, 2-191695; Nov. 22, 1990, 2-318277

Int. Cl.[5] H01J *17/06, 61/06*

U.S. Cl. 313—631 **4 Claims**



1. In a discharge tube comprising a tubular body having an interior which defines a discharge space; and a pair of electrode devices mounted in said discharge space in opposition to each other, each of said pair of electrode devices compriaing an arc discharge electrode and a glow discharge electrode, and an electron-emitting substance associated with said arc discharge electrode;

the improvement wherein said arc discharge electrode is composed of a cylindrical sintered body containing said electron-emitting substance therein, and said glow discharge electrode is cup-shaped and coaxially surrounds said cylindrical sintered body, said glow discharge electrode being formed of a pipe made of aluminum, nickel or iron and wherein said cup-shaped glow discharge electrode has a cylindrical shape and forms a uniformly thin annular gap with said arc discharge electrode.

5,304,894

METALLIZED GLASS SEAL RESISTOR COMPOSITION

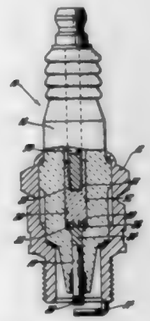
Grant L. Stimson, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 2, 1992, Ser. No. 939,741

The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.

Int. Cl.[5] H01J *7/44*

U.S. Cl. 315—58 **4 Claims**



1. A metal-glass seal resistor composition for use between a terminal member and an electrode member in a resistor spark plug, such composition being adapted to provide a narrow range of electrical resistance upon glass sealing in the spark plug and to provide resistance stability thereafter during spark plug use, the composition comprising by weight of 24 to 33 percent glass, 18 to 25 percent mullite, 36 to 49 percent zirconia, 0.5 to 1.6 percent carbon black, 0 to 2.0 percent bentonite, 0.3 to 0.8 percent sucrose, 0.8 to 1.2 percent lithium carbonate, 0.5 to 1.3 percent antimony and 0.5 to 1.3 percent silicon, the glass content of the seal initially comprising by weight about 25 to 50 percent borosilicate glass and about 50 to 75 percent strontium borate glass.

5,304,895

ELECTROLUMINESCENT DISPLAY PANEL

Takashi Ujihara, Yamagata, Japan, assignor to Pioneer Electronic Corporation, Tokyo and Tohoku Pioneer Electronic Corporation, Tendo, both of Japan

Filed Jul. 2, 1992, Ser. No. 907,979

Claims priority, application Japan, Oct. 17, 1991, 3-298140

Int. Cl.[5] G09G *3/10*

U.S. Cl. 315—72 **2 Claims**

1. An electroluminescent display panel, comprising:

a plurality of insulating substrates which are aligned side by side;

each of the substrates having an elongated first side surface, an opposite second side surface, and an end surface, with a plurality of discrete electrodes formed on the first side surface and aligned in a longitudinal direction of the first side surface, a common electrode formed on the second side surface, a plurality of luminescent elements formed on the end surface of the substrate, and a plurality of through-holes formed in the substrate, each throughhole passing through one of said discrete electrodes and said substrate;

each luminescent element of said plurality of luminescent elements comprising a metal electrode connected to a corresponding one discrete electrode of said plurality of discrete electrodes, a luminescent layer disposed on the metal electrode, and a transparent electrode on the luminescent layer, said transparent electrode being connected to said common electrode;

wherein corresponding discrete electrodes of the adjacent substrates of said plurality of substrates form rows of discrete electrodes of separate substrates, and wherein discrete electrodes in a same row are electrically connected with each other by a lead penetrating each throughhole corresponding to discrete electrodes in the same row.

5,304,896

LIGHTING SYSTEM FOR USE IN CABIN OF AUTOMOTIVE VEHICLE

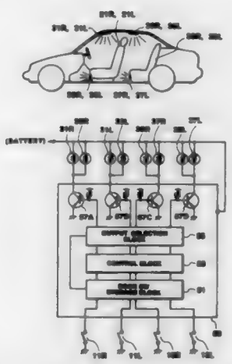
Tetsuya Asada, and Osamu Kawanobe, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2, 1992, Ser. No. 892,302

Claims priority, application Japan, Jun. 10, 1991, 3-137983

Int. Cl.[5] B60Q *7/00;* **B60L** *1/14*

U.S. Cl. 315—84 **7 Claims**



1. A method of controlling a lighting system for use in a cabin having a plurality of doors, the lighting system including a plurality of lamps arranged to correspond to the plurality of doors, the method comprising the steps of:

storing a value corresponding to a first one of the plurality of doors which is closed and generating a first door value indicative signal;

starting a gradual light reduction of a first one of the plurality of lamps corresponding to said first one of the plurality of doors;

storing a value corresponding to a second one of the plurality of doors which is opened and generating a second door value indicative signal;

determining whether or not said first door value indicative signal is identical to said second door value indicative signal and generating a door value identical indicative signal when said first door value indicative signal is identical to said second door value indicative signal; and

continuing said gradual light reduction of said first one of the plurality of lamps when said door value identical indicative signal fails to be generated.

5,304,897

DEVICE FOR INITIATING DISCHARGE OF COLD-CATHODE DISCHARGE TUBE

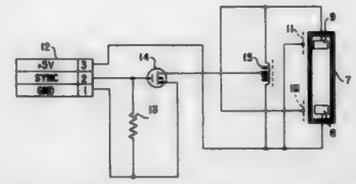
Takeshi Sano, Hirakata, and Masaharu Shinohara, Higashi-osaka, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 969,673

Claims priority, application Japan, Nov. 7, 1991, 3-291599; Dec. 3, 1991, 3-319196

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **6 Claims**



6. A device for initiating discharge of a cold-cathode discharge tube having a discharge tube body internally coated with a fluorescence, and a cathode and an anode arranged as opposed to each other inside the tube body at opposite sides thereof, the discharge initiating device having a proximity conductor provided outside the tube body and disposed between the cathode and the anode, the proximity conductor being constricted at its central portion or at a portion thereof closer to the anode, the proximity conductor being connected to the cathode or the anode.

5,304,898

HIGH VOLTAGE GENERATING CIRCUIT

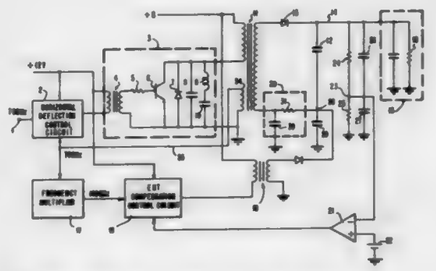
Rieko Kataoka, Yamato, and Masaki Kobayashi, Machida, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1992, Ser. No. 984,193

Claims priority, application Japan, Dec. 4, 1991, 3-320230

Int. Cl.[5] H01J *29/70*

U.S. Cl. 315—411 **6 Claims**



1. A high voltage generating circuit, comprising:

a flyback transformer having a primary winding and a secondary winding;

a means for supplying pulses of first frequency to said primary winding;

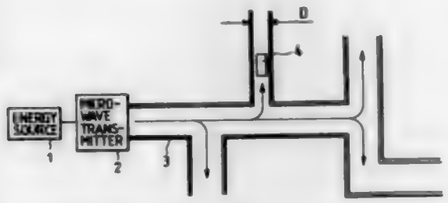
a smoothing capacitor connected across said secondary winding;
an output line connected to one terminal of said smoothing capacitor;
a detection means for detecting a variation of high voltage on said output line, said detection means generating compensating voltage pulses of a second frequency which is higher than said first frequency;
said detection means coupled to a second terminal of said smoothing capacitor to supply said compensating voltage pulses to said second terminal for compensating said variation of high voltage.

5,304,899

ENERGY SUPPLY SYSTEM TO ROBOT WITHIN PIPE

Kunihiko Sasaki, Chiryu; Masao Kodera, and Tadashi Hattori, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 28, 1992, Ser. No. 936,385
Claims priority, application Japan, Aug. 30, 1991, 3-220179
Int. Cl.[5] H02J *17/00*
U.S. Cl. 318—16 **13 Claims**



1. A system for supplying energy into a piping system made of a conductive material, comprising:
a robot adapted to operate within said piping system;
transmission means for transmitting microwaves into said piping system, said microwaves being in a transmission mode having a uniform electromagnetic energy distribution within a surface perpendicular to an axis of a pipe of said piping system and in a circumferential direction, and being of a frequency higher than a cut-off frequency determined by an inner diameter of said pipe;
converting means provided in said robot for receiving said microwaves and for converting the received microwaves into an electric power; and
driving means provided in said robot for driving said robot by said electric power.

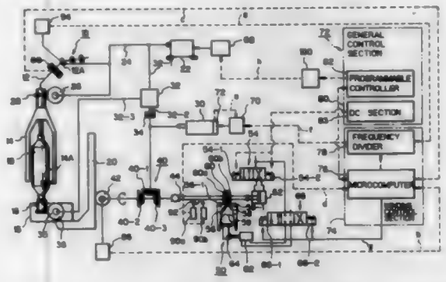
5,304,900

SPINNING FRAME

Isao Hayazaki, Ogaki; Makoto Ohmori, Tsushima, and Shigeki Sekiya, Kuwana, all of Japan, assignors to Howa Machinery, Ltd., Aichi, Japan

Filed Jul. 22, 1992, Ser. No. 916,621
Claims priority, application Japan, Jul. 31, 1991, 3-215815
Int. Cl.[5] H02P *7/74;* **H02J** *9/00*
U.S. Cl. 318—34 **12 Claims**

1. A spinning frame comprising:
a drafting unit for drafting a fiber assembly;
a bobbin for receiving the drafted fiber assembly;
means for applying a rotational movement to the bobbin;
means for obtaining layers of a fiber assembly wound on the bobbin;
first AC motor means for generating a rotational movement;
second AC motor means for generating a rotational movement used for obtaining a variable speed of the rotating movement of the bobbin, which allows a desired winding condition of the layers of the fiber assembly wound of the bobbin to be obtained;
said first AC motor means being used for obtaining the rotating movement of other parts and not for obtaining said variable speed of the rotating movement to the bobbin;
a controller for controlling the operation of the spinning frame, the controller being divided into a winding control section operated by a DC alone for controlling the winding operation, including the variable speed control of the second AC motor means and said layer forming means, and a general control section for obtaining various control operations other than said winding operation;
inverter means arranged between an outside AC power source and the first AC motor means for obtaining the rotation of the first AC motor means by the outside Ac power source;



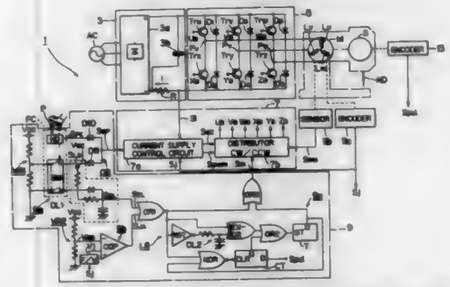
means, arranged between the inverter and the second AC motor means, for obtaining the rotation of the second AC motor means by the DC current induced by the inverter means;
an AC to DC converter arranged between the outside AC power source and the winding control section of the controller, for usually supplying the winding control section by the outside AC power source, and;
means, upon a power failure, for connecting the inverter to said winding control section of the controller, which allows a regenerating current in said inverter to be supplied to the winding control section to thus continue to execute a winding operation until a stoppage of the spinning frame.

5,304,901

ROTATION CONTROL DEVICE FOR SEWING MOTOR

Shushin Mori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 10, 1992, Ser. No. 896,432
Claims priority, application Japan, Nov. 28, 1990, 2-331902
Int. Cl.[5] D05B *69/18*
U.S. Cl. 318—164 **10 Claims**



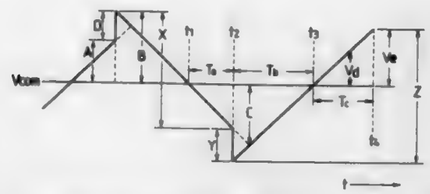
1. A rotation control device for a sewing machine, the sewing machine being driven within a predetermined range between a minimum driving speed and a maximum driving speed, comprising:
a sewing motor rotatable at a speed in both first and second directions opposite to each other;
rotational sped controlling means for controlling a rotational speed of said sewing motor in response to a speed instruction;
direction instructing means for instructing a rotational direction of said sewing motor;
detecting means for detecting the rotating speed of said sewing motor and outputting a speed signal indicative of the detected rotating speed;
decision means for deciding whether the detected rotating speed of said sewing motor is lower than a minimum rotating speed of said sewing motor determined based on the minimum driving speed of the sewing machine and outputting a decision signal indicative of the decision made by said decision means and said decision means further comprising:
comparison means for comparing the rotating speed detected by said detecting means with a predetermined speed lower than the minimum rotating speed of the sewing motor; and
reversing/repeating means responsive to the decision signal for controlling said direction instructing means so that the rotational direction of said sewing motor is alternately reversed at a predetermined time interval.

5,304,902

APPARATUS FOR DRIVING A BRUSHLESS DC MOTOR

Yasuhiro Ueki, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 706,594, May 30, 1991, Pat. No. 5,192,900. This application Dec. 24, 1992, Ser. No. 996,436
Claims priority, application Japan, Jun. 5, 1990, 2-146590
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] H02P *6/00*
U.S. Cl. 318—254 **52 Claims**



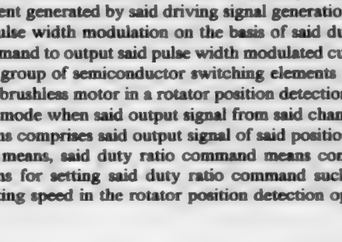
1. An apparatus for driving a brushless dc motor having polyphase stator windings and a rotor, the polyphase stator windings having first ends and second ends, the first ends being connected in common at a common junction, means for selecting two of the polyphase stator windings and supplying a drive current to the selected two stator windings via the second ends of the selected two stator windings, and means for sequentially changing the selected two stator windings among the polyphase stator windings to rotate the rotor; the improvement comprising:
means for measuring a voltage at the common junction;
means for detecting an interval between a first moment at which the voltage measured by the measuring means becomes equal to a predetermined reference voltage and a subsequent second moment at which the voltage measured by the measuring means becomes again equal to the predetermined reference voltage;
means for outputting a control signal at a third moment which follows the second moment by an interval approximately equal to a half of the interval detected by the detecting means; and
means for controlling the changing means to control said changing the selected two stator windings among the polyphase stator windings in response to the control signal outputted by the outputting means.

5,304,903

BRUSHLESS MOTOR DRIVING METHOD AND APPARATUS

Mitsuhisa Nakai; Shiro Maeda, and Toshiaki Yagi, all of Kusatsu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 768,544, Sep. 30, 1991, abandoned. This application May 6, 1993, Ser. No. 59,348
Claims priority, application Japan, Feb. 14, 1990, 2-34320
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—254 **2 Claims**



1. An apparatus for driving a brushless motor having a three-phase armature winding connected with an ungrounded neutral point and a magnet rotator, said apparatus comprising:
a group of semiconductor switching elements for passing/interrupting a pulse width modulated current to said armature winding,
start command means for outputting a start command,
synchronizing signal generation means for outputting a synchronizing signal in accordance with said start command from said start command means,
rotating magnetic field generation means for generating a rotating magnetic field in said armature winding in response to said synchronizing signal to drive said brushless motor in a synchronized operation mode,
position detection means for detecting a relative position of said armature winding and said magnet rotator in accordance with a voltage signal that is induced in said armature winding in response to said rotating magnetic field,
change-over means for providing an output signal comprising either one of an output signal of said rotating magnetic field generation means and an output signal of said position detection means in a selectively changing-over manner,
change-over command means for issuing a change-over command to said change-over means,
driving signal generating means for generating a driving current for said group of semiconductor switching elements in response to said output signal of said change-over means,
duty ratio command means for outputting a duty ratio command, and
pulse width modulation means for subjecting said driving current generated by said driving signal generation means to pulse width modulation on the basis of said duty ratio command to output said pulse width modulated current to said group of semiconductor switching elements to drive said brushless motor in a rotator position detection operation mode when said output signal from said change-over means comprises said output signal of said position detection means, said duty ratio command means comprising means for setting said duty ratio command such that a rotating speed in the rotator position detection operation

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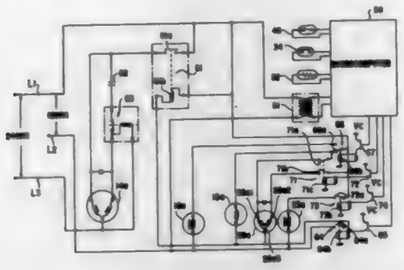
mode is equal to or lower than a rotating speed in the synchronized operation mode.

5,304,904

START-UP CONTROL APPARATUS FOR ICE MAKING MACHINE

Tadashi Sakai, Toyoake, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Aug. 17, 1992, Ser. No. 930,627
Claims priority, application Japan, Aug. 15, 1991, 3-229386
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—484 **2 Claims**



1. An electric control apparatus for an ice making machine mounted on an ice storage bin to store therein ice cubes formed at its ice making cycle of operation and released at its defrost cycle of operation, the ice storage bin having an ice detection switch of the normally open type arranged to issue an electric signal therefrom when closed by engagement with the ice cubes fully stored in the ice storage bin, comprising:

means for maintaining the ice making machine inoperative when applied with the electric signal from said ice detection switch immediately after being connected to an electric power source;

means for activating the ice making machine after lapse of a predetermined time when said ice detection switch is opened in a condition where the ice making machine is maintained inoperative; and

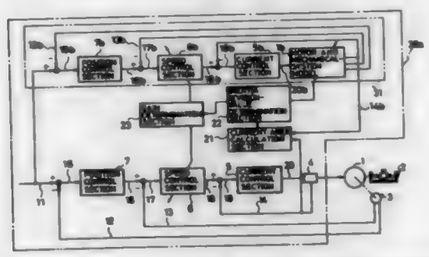
means for deactivating the ice making machine after lapse of a predetermined time when applied with the electric signal from said ice detection switch during operation of the ice making machine.

5,304,905

MOTOR SERVO-SYSTEM CONTROLLER HAVING COMPARISON OF DETECTED CURRENT WITH MODEL CURRENT INTEGRATIONS

Takashi Iwasaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 874,262
Claims priority, application Japan, Apr. 25, 1991, 3-095126
Int. Cl.[5] G05B *13/04*
U.S. Cl. 318—561 **6 Claims**



1. A motor servo-system controller for feedback-controlling a control object consisting of a motor and a mechanical system mounted on the motor, comprising:

a first current control means coupled to said motor, a first speed control means coupled to said current control means and a first position control means coupled to said speed control means;

current detection means, coupled to said motor, for detecting the current flowing through the motor;

a servo-system simulation means comprising a motor and mechanical system model having at least a first adjustable parameter, for outputting a model current value, a second current control means, coupled to said motor and mechanical system model, substantially identical to said first current control means, a second speed control means, coupled to said second current control means, substantially identical to said first speed control means and a second position control means, coupled to said second speed control means, substantially identical to said first position control means;

time integral means, coupled to said current detection means and said servo-system simulation means for time-integrating the detected current value and the model current value;

identification means, coupled to said time integral means, for identifying the magnitude of the load inertia of the control object in accordance with the time-integrated value by comparing the time-integrated value of the detected current with the time-integrated value of the model current;

means, coupled to said motor and mechanical system model, for adjusting said first adjustable parameter in said motor and mechanical system model until it is determined that said time-integrated value of the detected current is within a predetermined difference from said time-integrated value of the model current; and

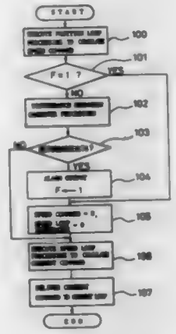
gain adjustment means for adjusting the gains in the feedback control loop and in the servo-system simulation in accordance with the identified value.

5,304,906

COLLISION DETECTING METHOD USING AN OBSERVER

Soichi Arita; Tetsuaki Kato, and Osamu Yoshida, all of Yamanashi, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 752,648, Aug. 23, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 46,896
Claims priority, application Japan, Dec. 26, 1989, 1-334967
Int. Cl.[5] G05D *3/00, 1/02;* B25J *19/06*
U.S. Cl. 318—568.16 **2 Claims**



1. A collision detecting method executed in a data processor for use in a machine in which a driven body is driven by means of a servomotor controlled by a servo system, comprising the steps of:

estimating a disturbance acting on the servo system using an observer based on velocity information; and

discriminating a collision of the driven body with an obstacle when a preset threshold value is exceeded using the disturbance estimated,

wherein said estimating the disturbance is performed according to:

$$(\dot{\theta}-V)\cdot(K4/S)\cdot J,$$

where

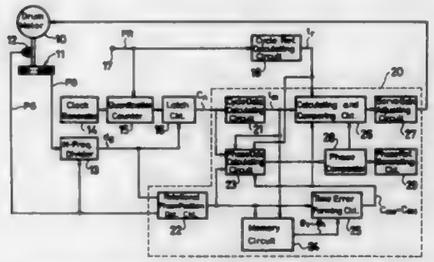
$$V=\{I\cdot(K_t/J)+(\dot{\theta}-V)+(K4/S)\}\cdot(1/S).$$

5,304,907

SERVO SYSTEM THAT CONTROLS A MOTOR AND COMPENSATES FOR SYSTEM IRREGULARITIES

Fumiyoshi Abe; Takayuki Horikoshi, and Akira Hasegawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 334,532, Apr. 7, 1989, abandoned. This application Nov. 15, 1991, Ser. No. 795,223
Claims priority, application Japan, Apr. 7, 1988, 63-085750; Apr. 8, 1988, 63-086460
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—611 **10 Claims**



1. A servo system for a motor having a rotor comprising:

phase detector means for detecting a rotational phase of said rotor and for defining a plurality of angular positions of said rotor during one complete rotation thereof, each angle between adjacent said angular positions being nominally of the same size;

rotating means for rotating said rotor at a predetermined constant rotational speed;

speed detector means for detecting a rotational speed of said rotor at each of said angular positions, said speed detector means being subject to the possibility of making detection errors of respectively different and irregularly changing magnitudes at each of said angular positions when sad rotor is rotated at said predetermined constant rotational speed;

error detector means for detecting said detection errors of said speed detector means at each of said angular positions when said rotor is rotated at said predetermined constant rotational speed;

memory means for storing said detection errors at each of said angular positions; and

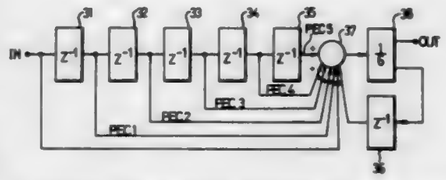
servo means responsive to said memory means and to said speed detector means for controlling a rotational speed and/or phase of said rotor in accordance with the rotational speed detected by said speed detector means and said respective detection errors read from said memory means in such a manner as to compensate separately for each of said respective detection errors.

5,304,908

QUANTIZING ERROR REMOVING CIRCUIT FOR A ROTATIONAL CONTROL DEVICE

Young G. Oh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 993,269
Claims priority, application Rep. of Korea, Dec. 19, 1991, U91-22843
Int. Cl.[5] H02P *5/00;* G05B *11/26*
U.S. Cl. 318—629 **4 Claims**



1. Quantizing error removing circuit for a rotational control device comprising:

a rotation detecting means for detecting the rotational speed of a motor, thereby generating a speed detecting pulse and a phase detecting pulse;

a speed error processing means for detecting the speed error of said motor by utilizing said speed detecting pulse outputted from said rotation detecting means, and for outputting a speed control signal according to said detection;

a phase error processing means including a phase detecting means for detecting the phase error of said motor by utilizing said speed detecting pulse and said phase detecting pulse outputted from said rotation detecting means; a phase control filter for receiving the output of said phase detecting means and outputting a phase error control signal: and a moving average filter for removing a rotational period component and its higher harmonic component included in the phase error control signal outputted from said phase control filter, said moving average filter comprising:

a) a predetermined number of delay elements connected in series to each other in order to delay by a predetermined set time in turn in said phase error control signal outputted from said phase control filter;

b) a summer for summing each output signal of said phase control filter and said delay elements;

c) a divider for dividing the summed output value of said summer by the number of said summing signals, thereby outputting the divided quotient as a phase control signal; and

d) another delay element for delaying the remainder value resulting from dividing said summed output value of said summer by said predetermined set time and for feeding said delayed remainder value back to said summer: wherein said remainder value fed back from said other delay element to said summer is summed with the summed value of said summer at a next sampling time point;

a second summer for summing said speed control signal outputted from said speed error processing means and said phase control signal outputted from said divider; and

a digital/analog converter for converting the output of said second summer into an analog signal, thereby outputting a motor driving control signal.

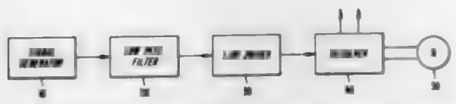
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5,304,909

RESOLVER EXCITATION SIGNAL GENERATING APPARATUS

Sang-Hyun Jin; Sang-Gwon Lim, both of Suwon, and Jin-Won Lee, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 23, 1992, Ser. No. 824,534
Claims priority, application Rep. of Korea, Jan. 26, 1991, 91-1346
Int. Cl.[5] G05B 19/31; H02P 5/16
U.S. Cl. 318—661 7 Claims



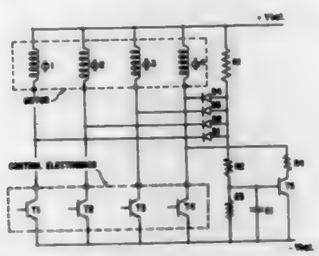
1. A resolver-excitation signal generating apparatus for generating an excitation signal of a resolver attached to a motor, said apparatus comprising:
- a signal generator for generating a one-phase reference excitation signal;
- a low pass filter for removing harmonic components contained in the one-phase reference signal generated by said signal generator to obtain a harmonic component-removed signal; and
- a line driver for the harmonic component-removed signal at a normal signal level without attenuation of the harmonic component-removed signal, said line driver comprising a plurality of amplifiers and feed-back circuit means connected between one input of a first amplifier and an output of a last amplifier of said plurality of amplifiers.

5,304,910

DEVICE FOR CONTROLLING THE ELECTRICAL POWER SUPPLY OF A STEPPING MOTOR AND STEPPING MOTOR EQUIPPED WITH SUCH A DEVICE

Jean-Pierre Loncle, Muret, and Michel A. Pournain, Leguevin, both of France, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/00149, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO91/11851, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 25, 1991, Ser. No. 916,135
Int. Cl.[5] H02P 8/00
U.S. Cl. 318—696 15 Claims



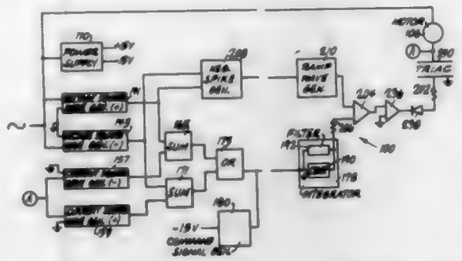
1. Device for controlling the electrical power supply of a stepping motor having a rotor and a stator with a plurality of phases, comprising a plurality of switches each controlling a power supply from an electrical energy source to a respective phase of the stator, detecting means for detecting a simultaneous ceasing of conduction in all of the phases, and controlling means operatively connected to and excited by said detecting means, said controlling means causing conduction of one of the phases for holding the rotor with a predetermined holding torque established by the one phase.

5,304,911

POWER CONTROL SYSTEM FOR AN A.C. INDUCTION MOTOR

Nicholas Anderson, 15-36 208th St., Bayside, N.Y. 11360

Filed Dec. 14, 1992, Ser. No. 990,565
Int. Cl.[5] H02P 7/36
U.S. Cl. 318—729 18 Claims



1. A power control system for an A.C. induction motor, comprising:
- a voltage/current phase difference generator for determining a difference in phase between a voltage applied to the motor and a current drawn by the motor, and for generating a phase difference signal as a function of the determined difference in phase; and
- an integrator, the integrator receiving the phase difference signal and generating an error signal for controlling an amount of power supplied to the motor as a function of the phase difference signal;
- the integrator including a feedback filter having first and second feedback paths, the first feedback path including a first polarized capacitor, the second feedback path including a second polarized capacitor and a resistor.

14. A power controller for an A.C. induction motor, comprising:
- a voltage/current phase difference generator for generating a phase difference signal indicative of a difference in phase between a voltage applied to the motor and a current drawn by the motor; and
- an integrator coupled to the voltage/current phase difference generator for controlling an amount of power consumed by the motor as a function of the phase difference signal, the integrator including a feedback filter having at least one polarized capacitor.

5,304,912

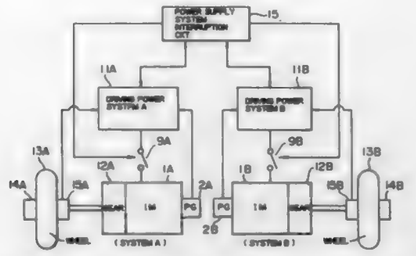
CONTROL APPARATUS FOR INDUCTION MOTOR

Kenzo Kajiwara, Hitachi; Hiroshi Hamano, Katsuta; Hirohisa Yamamura, Hitachiota, and Ryoso Masaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,480
Claims priority, application Japan, Sep. 21, 1991, 3-268167
Int. Cl.[5] H02P 1/30; H02H 5/04
U.S. Cl. 318—802 14 Claims

1. A control apparatus for an induction motor, comprising:
- an inverter for supplying a drive current to said induction motor on the basis of a predetermined control signal;
- a rotational speed sensor for detecting a rotational speed of said induction motor;
- a V/f control circuit for generating a control signal for said inverter in response to a predetermined speed command inputted to said V/f control circuit;
- a vector control circuit for generating a control signal for said inverter on the basis of said speed command signal and a rotational speed signal supplied from said rotational speed sensor;
- an abnormality detecting circuit having an input supplied with an output signal of said rotational speed sensor for detecting abnormality of said rotational speed sensor; and

- a change-over circuit having inputs supplied with the output signals of said V/f control circuit and said vector control circuit, respectively, for selecting the control signal from said V/f control circuit when abnormality of said rotational speed sensor is detected by said abnormality detection circuit, while selecting the control signal from said vector control circuit when no abnormality is detected in said rotational speed sensor, said selected control signal being output to said inverter.

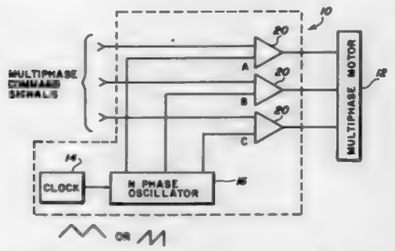


5,304,913

MULTIPHASE PULSE WIDTH MODULATOR FOR A MULTIPHASE MOTOR

Robert B. Anticole, Bradford Woods, Pa., assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed Oct. 5, 1990, Ser. No. 593,120
Int. Cl.[5] H02P 5/40
U.S. Cl. 318—811 11 Claims



1. A multiphase motor having a corresponding number of windings to the number of phases and a multiphase pulse width modulator in communication with the motor, said modulator allowing for continuous conduction of current through each winding in a multiphase motor at all times of the motor's operation.

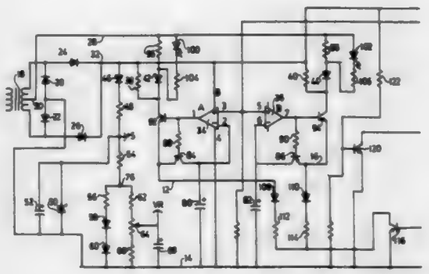
5,304,914

PROCESS FOR CHARGING A BATTERY

Robert S. Feldstein, Pelham Manor, N.Y., assignor to Batonex Inc., Buffalo, N.Y.

Filed Jan. 27, 1992, Ser. No. 826,002
Int. Cl.[5] H02J 7/04
U.S. Cl. 320—3 21 Claims

1. A process for charging a zinc-manganese dioxide primary cell, comprising the steps of:
- (a) connecting a discharged zinc-manganese dioxide primary cell to a battery charger, wherein said battery charger is comprised of means for comparing the voltage of said cell at the termination of a discharge interval with a specified reference voltage, means for periodically discharging said cell, and means for periodically producing direct current charging pulses with a duration of at least 1 millisecond and an average value which does not exceed 40 percent of the initial capacity of the cell;
- (b) periodically withdrawing discharging pulses of direct current from said cell during a discharge interval, wherein:
  1. said discharging pulses of direct current have a duration of from 5 to 35 percent of the duration of said direct current charging pulses, and
  2. said discharging pulses of direct current have a current value during discharge of from 10 to 25 percent of the average current value of said direct current charging pulses;
- (c) delivering said direct current charging pulses to said cell whenever said voltage of said cell at the end of said discharge interval is less than said specified reference voltage; and
- (d) preventing the delivery of said direct current charging pulses to said cell whenever said voltage of said cell at the end of said discharge interval is greater than said specified reference voltage.

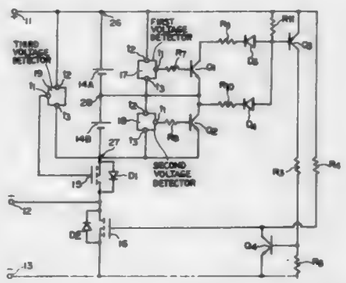


5,304,915

OVERCHARGE PREVENTING DEVICE AND OVERDISCHARGE PREVENTING DEVICE FOR A SECONDARY BATTERY

Akira Sanpei, Fukushima, and Kanji Murano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 872,986
Claims priority, application Japan, Apr. 26, 1991, 3-097734
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—14 3 Claims



1. An overcharge preventing device for a battery having a battery voltage changing with a battery capacity, the improvement comprising:
- voltage detecting means for detecting a voltage between opposite terminals of said battery; and
- switch means provided in series with said battery between said battery and a charge terminal, wherein when said

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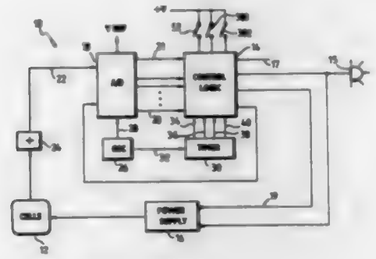
voltage between said opposite terminals of said battery exceeds a predetermined value during charging of said battery, said switch means is turned off in response to an output from said voltage detecting means to cut off a charging current wherein said switch means comprises an n-channel FET and a parasitic diode.

5,304,916

BATTERY CHARGER

Hung Q. Le, Houston, and Dean P. Perkins, Tomball, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Apr. 11, 1990, Ser. No. 508,236
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—23 **10 Claims**



1. A battery charger, comprising:

a battery;

means coupled to said battery for monitoring the voltage of said battery, said voltage monitoring means including:

an analog-to-digital converter coupled to said battery to detect analog voltage across said battery and to provide a digital voltage signal correlative to said detected analog voltage; and

a voltage averager coupled to said digital voltage signal for sampling said digital voltage signal a plurality of times providing a plurality of corresponding digital voltage values, said voltage averager storing said plurality of corresponding digital voltage values and providing an averaged digital voltage signal which is the average of said plurality of digital voltage values;

means coupled to said voltage monitoring means for providing a boost charge signal if the voltage of said battery is below a first predetermined voltage level;

means coupled to said boost charge signal for charging said battery at a first preselected rate in response to said boost charge signal;

a timer; and

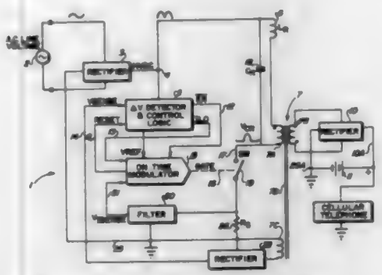
means coupled to said timer, said charging means and said voltage monitoring means for terminating the charging of said battery at said first preselected rate and for indicating a fault condition if the voltage of said battery is not greater than said first predetermined level after said battery has charged at said first preselected rate for a first predetermined time period.

5,304,917

COMPACT LOW NOISE LOW POWER DUAL MODE BATTERY CHARGING CIRCUIT

Thomas A. Somerville, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 850,286, Mar. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 621,014, Nov. 30, 1990, Pat. No. 5,111,131. This application May 11, 1993, Ser. No. 63,163
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—33 **32 Claims**



1. A battery charger comprising in combination:

(a) a first rectifier receiving a line voltage and producing a rectified sinusoidal voltage;

(b) a transformer having a primary winding coupled to receive the rectified sinusoidal voltage and a secondary winding, a second rectifier being coupled between terminals of the secondary winding and terminals of a battery;

(c) a switch coupled in series relation with a terminal of the primary winding;

(d) means coupled to the switch for producing a signal indicative of current flowing through the switch and primary winding;

(e) battery condition means for producing a battery condition voltage representative of a voltage between the terminals of the battery;

(f) peak detect and hold means coupled to receive the voltage proportional to the battery condition voltage and detect and hold a peak value thereof;

(g) voltage droop measuring means for comparing an output voltage of the peak detect and hold means with the voltage proportional to the battery condition voltage to produce a voltage droop signal when the voltage proportional to the battery condition voltage falls a predetermined threshold voltage below the output voltage of the peak detect and hold means; and

(h) modulating means coupled to receive a signal representative of the voltage droop signal and the signal indicative of current flowing through the primary winding for producing a control signal applied to the switch to control flow of current through the primary winding in accordance with the battery condition voltage, the modulating means including means for producing a turn off time for the switch equal to a predetermined proportion of a resonant period of the primary winding and means for varying turn on time for the switch in response to the signal indicative of current flowing through the primary winding.

5,304,918

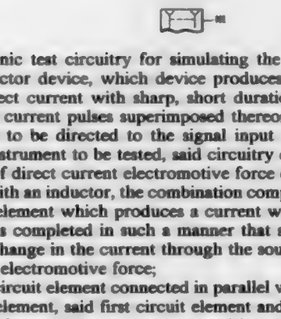
REFERENCE CIRCUIT FOR HIGH SPEED INTEGRATED CIRCUITS

Cong Khieu, San Jose, Calif., assignor to Samsung Semiconductor, Inc., San Jose, Calif.

Filed Jan. 22, 1992, Ser. No. 823,787
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—315 **24 Claims**

1. A reference circuit, comprising:

means for supplying an output current, said means for supplying comprising a first current mirror having a first current path and a second current path, a first current flowing in said first current path, said output current flowing in said second current path, a magnitude of said first current being related to a magnitude of said output current;



means for increasing said magnitude of said first current when a temperature increases, said means for increasing comprising a second current mirror; and

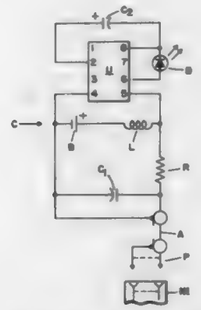
means for decreasing said magnitude of said first current when a supply voltage increases.

5,304,919

ELECTRONIC CONSTANT CURRENT AND CURRENT PULSE SIGNAL GENERATOR FOR NUCLEAR INSTRUMENTATION TESTING

Roger A. Brown, Amsterdam, N.Y., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 12, 1992, Ser. No. 897,409
Int. Cl.[5] G01R *35/00*; H03K *3/00*
U.S. Cl. 324—74 **8 Claims**



1. Electronic test circuitry for simulating the output of a nuclear detector device, which device produces a relatively constant direct current with sharp, short duration, unidirectional direct current pulses superimposed thereon, said simulated output to be directed to the signal input of a nuclear electronic instrument to be tested, said circuitry comprising:

a source of direct current electromotive force connected in series with an inductor, the combination comprising a first circuit element which produces a current when a closed circuit is completed in such a manner that said inductor resists change in the current through the source of direct current electromotive force;

a second circuit element connected in parallel with said first circuit element, said first circuit element and said second circuit element so connected comprising collectively a third circuit element,

said second circuit element comprising a flasher circuit means for producing sharp, short duration, unidirectional pulses of current with fixed period of time between pulses, whereby the inductor in the first circuit element resists changes in the direct current drawn through the direct current electromotive force so that the flasher circuit means produces sharp, short duration, unidirectional pulses of current, not substantially drawn through the source of direct current electromotive force because of the resistance of the inductor to change in the current, when a closed circuit is completed;

a resistance, simulating the internal resistance of said nuclear detector device, connected in series with said third circuit element, the combination comprising a fourth circuit element;

a capacitance simulating the internal capacitance of said nuclear detector device, connected in parallel with said fourth circuit element, the combination comprising a fifth circuit element; and

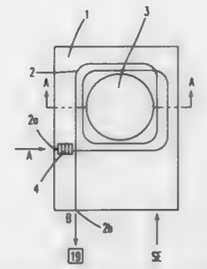
a means of connecting the terminals of said fifth circuit element by cable to said nuclear electronic instrument.

5,304,920

OPTICAL CURRENT TRANSFORMER

Roland Stierlin, Grünichen, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 27, 1991, Ser. No. 766,325
Claims priority, application European Pat. Off., Sep. 28, 1990, 90118643.7
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—96 **17 Claims**



1. An optical current transformer which makes use of the Faraday effect for the purpose of measuring an externally generated current, comprising:

a flat substrate having an opening situated at a center of said substrate, said opening provided for passing the current to be measured, said substrate further including an optical entrance (A) for coupling in light and at least one optical exit (B) for coupling light out, an integrated-optics polarizer embedded into the substrate and coupled to the optical entrance, an annular waveguide which encloses the opening and therefore the current to be measured and has a first end optically coupled to the optical entrance via said polarizer and a second end optically coupled to at least one optical exit, said waveguide designed as an integrated-optics single-mode waveguide monolithically embedded in the substrate and surrounding the opening in at least one winding; and

means coupled to said optical exit for measuring the magneto-optical rotation of the plane of polarization of the light in the waveguide.

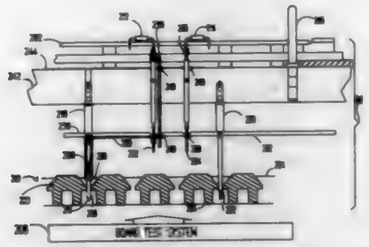
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,921

ENHANCED GROUNDING SYSTEM FOR SHORT-WIRE LENGTHED FIXTURE

Stephen J. Cook, and Ronald K. Kerschner, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1991, Ser. No. 741,719
Int. Cl.[5] G01R 31/02, 1/06
U.S. Cl. 324—158 F 20 Claims



1. A ground system in a test fixture for minimizing ground bounce between a board test system and a circuit board under test, comprising:

a probe plate located in the test fixture;

alignment means located in the test fixture and spaced apart from said probe plate, said alignment means having a conductive surface which is electrically connectable to ground potential;

an internal ground plane located in the test fixture and interposed between said probe plate and said alignment means, said internal ground plane having a conductive surface facing the conductive surface of said alignment means;

at least one signal pin extending from said internal ground plane through said probe plate and electrically connectable with an electronic component mounted on the circuit board under test;

at least one coax assembly extending between said alignment means and said internal ground plane, the coax assembly having an outer conductor electrically connected to the conductive surfaces of said internal ground plane and said alignment means, and an internal conductor electrically isolated from said external conductor and from said conductive surface of said alignment means and said internal ground plane, said internal conductor being electrically connected to said signal pin and to the board test system; and

at least one ground pin extending from said internal ground plane through said probe plate, said ground pin being electrically connected to the conductive surface of said internal ground plane and electrically connectable to the ground of the electronic component mounted on the circuit board under test.

5,304,922

ELECTRICAL CIRCUIT WITH RESILIENT GASKET SUPPORT FOR RAISED CONNECTION FEATURES

Robert K. Betz, Long Beach, and Blake F. Wolth, Orange, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 749,770, Aug. 26, 1991, abandoned. This application Jan. 26, 1992, Ser. No. 904,740
Int. Cl.[5] G01R 1/073
U.S. Cl. 324—158 P 9 Claims

1. A test probe comprising:

a test membrane having a plurality of membrane traces,

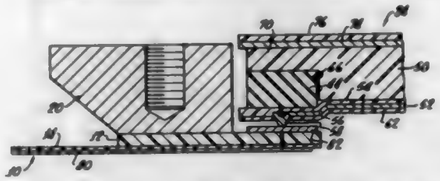
a membrane annulus supporting said membrane and having a plurality of contact pads connected with said membrane traces,

a multi-layer circuit card for detachable connection to said test membrane, said circuit card comprising:

a rigid dielectric layer of a first thickness having an annular rebated edge portion defining an annular cutaway lip that forms a gasket support element,

a plurality of circuit card traces on said rigid dielectric layer having contact portions extending beyond said lip, said circuit card traces having contacts projecting from said contact portions,

an annular elastomeric gasket positioned at and supported by said cutaway lip of said rigid dielectric layer, underlying said contact portions and projecting contacts, and



being laminated to said dielectric layer and said circuit card traces, and

a flexible dielectric layer secured to said rigid dielectric layer and to said gasket and extending over said gasket, said gasket having an unstressed thickness greater than said first thickness and being resiliently compressed between said flexible dielectric layer and cutaway lip, and

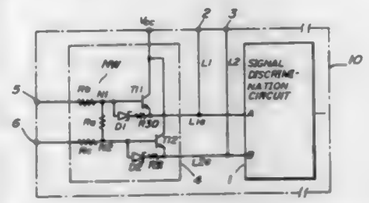
means for pressing said circuit card against said membrane annulus so as to press said projecting contacts against said contact pads.

5,304,923

INTEGRATED CIRCUIT DEVICE HAVING SIGNAL DISCRIMINATION CIRCUIT AND METHOD OF TESTING THE SAME

Masahiro Tanaka, Kawasaki; Kazuhiro Tomita, Kasugai, and Kazumi Ogawa, Komaki, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Division of Ser. No. 789,878, Nov. 12, 1991, Pat. No. 5,168,219, which is a continuation of Ser. No. 429,501, Oct. 31, 1989, abandoned. This application Sep. 14, 1992, Ser. No. 944,767
Claims priority, application Japan, Oct. 31, 1988, 63-275280; Dec. 23, 1988, 63-325412; Jan. 11, 1989, 1-4400
Int. Cl.[5] G01R 31/28
U.S. Cl. 324—158 R 3 Claims



3. An integrated circuit device formed on a chip and having first and second power source terminals for connection to respective first and second power sources, the first power source supplying a ground potential reference comprising:

a first signal input terminal for receiving a data signal and a second signal input terminal for receiving a reference signal, the data and reference signals defining respective potential differences relative to the ground potential reference;

signal discriminating means, connected to the first and second power source terminals and having third and fourth signal input terminals respectively coupled to said first and second signal input terminals, for respectively receiving and comparing said data signal and said reference signal, as received by said first and second signal input terminals, and for determining whether or not the level of said data signal, relative to the ground potential reference, is higher than the level of said reference signal, relative to the ground potential reference;

voltage dividing means, connected between the first and second power supply terminals and having fifth and sixth input terminals respectively receiving test data and test reference signals defining respective potential differences relative to the ground potential reference, the test data and test reference signals having a selected voltage difference therebetween and defining a first voltage difference test signal across said fifth and sixth input terminals and having first and second output terminals respectively coupled to said third and fourth signal input terminals of said signal discriminating means, for producing a second voltage difference test signal which is smaller by a selected ratio as defined by said voltage dividing means than said first voltage difference test signal across said first and second output terminals, said second voltage difference test signal being supplied to said third and fourth signal input terminals of said signal discriminating means;

said voltage dividing means further comprising a resistor network composed of a plurality of resistors connected is series between said first and second power supply terminals and defining first and second nodes across which said second voltage difference test signal is generated; and

coupling means, connected between said first and second nodes of said resistor network and said respective, third and fourth signal input terminals of said signal discriminating means, for coupling said first and second nodes to said respective, third and fourth signal input terminals and thereby supplying said second voltage difference test signal to said signal discriminating means;

said coupling means comprising first and second transistors each having a base, a collector and an emitter, the bases of said first and second transistors being connected respectively to the first and second nodes of said resistor network, the collectors of said first and second transistors being connected in common to the first power supply terminal, and the emitters of said first and second transistors being connected respectively to said third and fourth signal input terminals of said signal discriminating means, and said coupling means further comprising a first circuit composed of a first resistor and a first Schottky diode connected in series between the emitter and base of said first transistor and a second circuit composed of a second resistor and a second Schottky diode connected in series, and wherein said first circuit is connected between the emitter and base of said first transistor, and said second circuit is connected between the emitter and the base of said second transistor.

5,304,924

EDGE DETECTOR

Akihiko Yamano, Yokohama; Hiroyasu Nose, Zama; Toshimitsu Kawase, Atsugi; Toshihiko Miyazaki, Isehara, and Takahiro Oguchi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

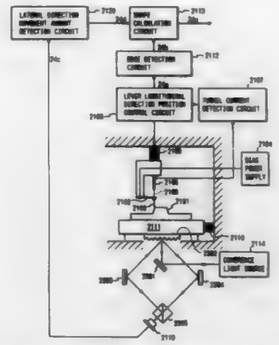
Continuation of Ser. No. 752,203, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 500,477, Mar. 28, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 979,472
Claims priority, application Japan, Mar. 29, 1989, 1-74979; Apr. 26, 1989, 1-104519; Apr. 26, 1989, 1-104520
Int. Cl.[5] G01R 11/00
U.S. Cl. 324—158 R 51 Claims

1. An apparatus for detecting at least one interval between a plurality of edge portions present on a tested surface, said apparatus comprising:

a probe for relatively moving along the tested surface;

detection means for detecting one of a working force and a tunnel current generated between said probe and the tested surface and for producing a detection output;

edge detection means comprising means for receiving the detection output signal, and means for detecting edge portions on the tested surface according to one of the working force and the tunnel current detected by said detection means and for producing an edge detection output; and



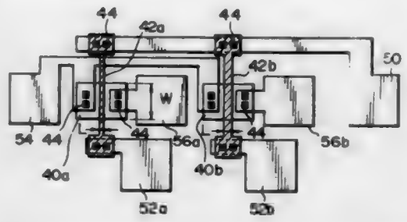
edge interval detection means comprising means for receiving the edge detection output and means for detecting at least one edge interval between the edge portions detected by said edge detection means, said edge interval detection means being distinct from said edge detection means.

5,304,925

SEMICONDUCTOR DEVICE

Akihiko Ebina, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,141
Claims priority, application Japan, Nov. 28, 1990, 2-328045
Int. Cl.[5] G01R 31/26
U.S. Cl. 324—158 T 7 Claims



1. A semiconductor device having a test circuit formed on the surface of a semiconductor substrate for evaluating characteristics of components, the test circuit comprising:

a plurality of MOS field effect transistors, each transistor having a gate, the gates having equal width in a longitudinal direction between first and second ends of said gates but different lengths in a traverse direction;

each of said first and second ends of each of said gates in said longitudinal direction being connected to one of a plurality of gate measuring electrodes; and

said gate measuring electrodes adapted to be contacted with probes for providing electrical contact with said test circuit.

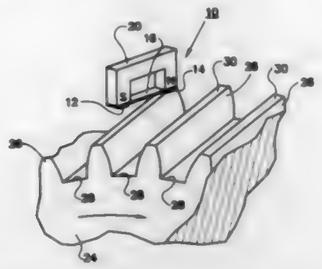
VOL 1161 ISS 3 AP 19 1994 UMI

5,304,926

GEARTOOTH POSITION SENSOR WITH TWO HALL EFFECT ELEMENTS

M. T. Wu, Madison, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 8, 1992, Ser. No. 865,010
Int. Cl.[5] G01B 7/30
U.S. Cl. 324—207.2 8 Claims



1. A sensor, comprising:

a first magnetically sensitive device having a first output signal that is representative of the magnitude and direction of a magnet field in which said first magnetically sensitive device is disposed;

a second magnetically sensitive device having a second output signal that is representative of the magnitude and direction of a magnetic field in which said second magnetically sensitive device is disposed;

means, associated with said first and second magnetically sensitive devices, for disposing said first magnetically sensitive device in a magnetic field of a first direction and for disposing said second magnetically sensitive device in a magnetic field of a second direction; and

means for adding said first and second output signals algebraically to form a third output signal, said sensor being disposed proximate a rotatable member having a surface with at least one discontinuity with said first and second magnetically sensitive devices being positioned to be sequentially proximate said discontinuity in response to movement of said rotatable member.

5,304,927

METHOD AND APPARATUS FOR MONITORING A SERIES OF PRODUCTS

Neil E. Thomas, St. Albans; Clive F. Kittel, Kimpton; Robert M. Averill, Irthlingborough; Christopher Marcus, Egham, and Ian W. D. Cox, Gerrards Cross, all of Great Britain, assignors to Cintex Limited, Surrey, Great Britain

PCT No. PCT/GB90/00469, § 371 Date Feb. 4, 1991, § 102(e) Date Feb. 4, 1991, PCT Pub. No. WO90/12316, PCT Pub. Date Oct. 18, 1990
PCT Filed Mar. 29, 1990, Ser. No. 623,425
Claims priority, application United Kingdom, Mar. 30, 1989, 8907229
Int. Cl.[5] G01N 27/72; G01R 33/12
U.S. Cl. 324—233 10 Claims

8. An apparatus for monitoring a series of products, comprising:

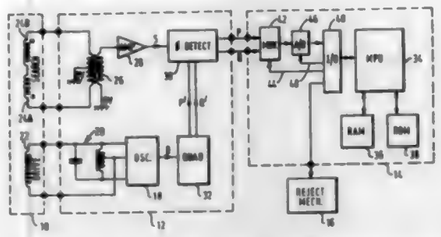
means for generating an alternating magnetic field in a monitoring zone;

means for detecting a magnetic field in the monitoring zone;

means for storing a value;

means for comparing an output of the detecting means with the stored value and producing a non-zero output signal in dependence upon a result of the comparison for a product containing or not containing an impurity, with the output from the detecting means providing information on both the product and any impurity therein; and

means for updating the stored value in dependence upon the result of the comparison and the output of the detecting



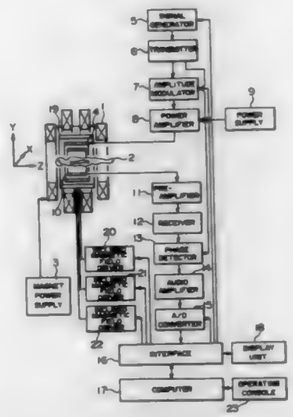
means, the stored value being updated only when an acceptable product is detected.

5,304,928

METHOD OF MAGNETIC RESONANCE IMAGING

Ryuzaburo Takeda, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,013
Claims priority, application Japan, Mar. 20, 1991, 3-056965
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—309 6 Claims



1. A method of magnetic resonance imaging comprising the steps of:

(a) synthesizing a plurality of frequency components corresponding to a plurality of slice sections respectively and generating and applying a single high-frequency magnetic field signal to a subject;

(b) applying an inclined magnetic field for slicing and a phase encode pulse along the direction (z axis) perpendicular to each slice section;

(c) applying a phase encode pulse and a frequency encode pulse at right angle to each other along the direction parallel to each slice section; and

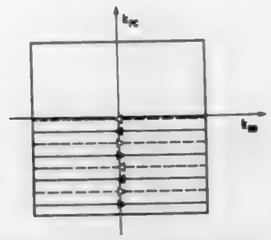
(d) subjecting the resulting measurement signal to two-dimensional Fourier transformation and determining a resonance signal corresponding to each of a plurality of slice sections.

5,304,929

NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS OPERABLE WITH A PULSE SEQUENCE ACCORDING TO THE ECHO PLANAR METHOD

Ming Fang, Plainsboro, N.J.; Ralf Ladebeck, Erlangen, Fed. Rep. of Germany; Franz Schmitt, Erlangen, Fed. Rep. of Germany, and Michael Stehling, Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 27, 1992, Ser. No. 982,444
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1991, 4139509
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—309 5 Claims



1. A method for operating a nuclear magnetic resonance tomography apparatus with a pulse sequence according to a modified echo-planar imaging method, comprising the steps of:

generating a radio frequency excitation pulse which causes nuclear magnetic resonance signals to arise in an examination subject;

after each radio frequency pulse, generating a read-out gradient consisting of a plurality of sub-pulses having alternating polarity and generating a phase-coding gradient;

acquiring said nuclear magnetic resonance signals in the presence of said read-out gradient and said phase-coding gradient and digitizing the acquired nuclear magnetic resonance signals;

entering the acquired nuclear magnetic signals in respective rows of a raw data matrix in the k-space per pulse of said read-out gradient and ordering said rows according to phase factors defined by said phase-coding gradient; and

scanning only a portion of said k-space in the phase-coding direction per signal acquisition by selecting said phase-coding gradient so that regions of said k-space interleaved relative to each other are scanned in the phase-coding direction in successive signal acquisitions.

5,304,930

REMOTELY POSITIONED MRI SYSTEM

Christopher W. Crowley, San Diego, and Freeman H. Rose, Del Mar, both of Calif., assignors to Panacea Medical Laboratories, Carlsbad, Calif.

Filed Feb. 1, 1993, Ser. No. 12,053
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—309 20 Claims

1. A remotely positionable device for the magnetic resonance imaging of nuclei using an external magnetic field which comprises:

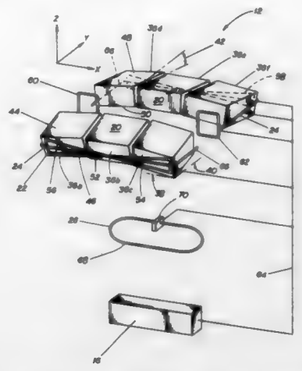
means for creating a measurement surface within a nonhomogeneous magnetic field, said measurement surface being characterized by a static magnetic field having a substantially constant magnitude and a substantially constant field gradient in a direction normal to said measurement surface;

means for initially tilting said nuclei in said measurement surface;

encoding means for imparting a predetermined transverse phase pattern on said tilted nuclei to encode said nuclei;

means for refocussing said tilted nuclei at a rate proportional to said field gradient, while maintaining said predetermined transverse phase pattern, to generate encoded spin echo signals;

means for receiving said encoded spin echo signals; and



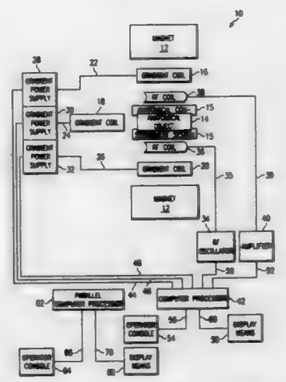
means for converting said encoded spin echo signals into an image of effective nuclei density in said measurement surface.

5,304,931

MAGNETIC RESONANCE IMAGING TECHNIQUES

Duane P. Flamig, 1411 Scottsboro La., Richardson, Tex. 75082, and Steven E. Harms, 3100 Beverly Dr., Dallas, Tex. 75205

Continuation-in-part of Ser. No. 743,523, Aug. 9, 1991, Pat. No. 5,202,631. This application Feb. 9, 1993, Ser. No. 15,563
Int. Cl.[5] G01V 3/00
U.S. Cl. 324—309 58 Claims



1. A method of producing an image of an object, comprising the steps of:

selecting first and second pulse sequences for waveform and phase components of an RF signal, said first pulse sequence being a sinusoidal function and said second pulse sequence being a step function;

generating said RF waveform and RF phase components of said RF signal, said generated RF signal producing transverse magnetization in said object;

receiving, in response to the repeated generation of said RF signal in the presence of first, second and third changing magnetic fields, a series of echoes; and

producing an image of said object from said received series of echoes.

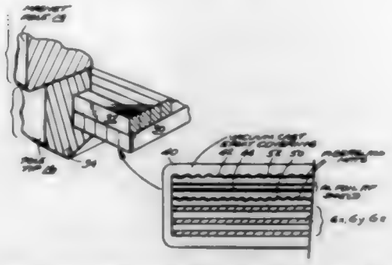
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5,304,932

APPARATUS AND METHOD FOR SHIELDING MRI RF ANTENNAE FROM THE EFFECT OF SURROUNDING OBJECTS

Joseph W. Carlson, Kensington, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Nov. 5, 1990, Ser. No. 608,807
Int. Cl.[5] G01V 3/00
U.S. Cl. 324—318 18 Claims



1. In an MRI system having a static magnet and a set of gradient magnetic coils used to create a sequence of controlled MRI magnetic fields within an MRI imaging volume that is coupled to at least one MRI RF coil, the improvement comprising:

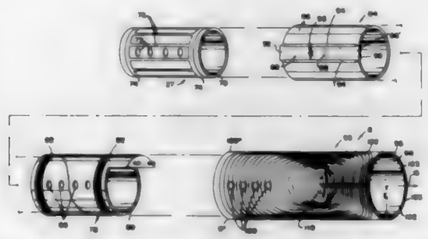
an RF shield interposed between said RF coil and said static magnet, said shield including a conductive layer of thickness less than three skin depths at the MRI RF operating frequencies of said RF coil thereby shielding the RF coil from the static magnet while also limiting eddy currents induced in the shield by the gradient magnetic coils.

5,304,933

SURGICAL LOCAL GRADIENT COIL

Robert M. Vavrek, Waukesha, and Christopher C. Myers, Milwaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 1, 1991, Ser. No. 738,970
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—318 4 Claims



1. In an MRI system producing an image of an imaged object held within a bore, a local gradient coil assembly comprising:

a coil form within the bore for defining a local imaging volume immediate to the image object, and having a first port therein for the insertion of a stereotaxic device into a portion of the local imaging volume;

an alignment means having a locked and unlocked mode for holding the imaged object, in the local imaging volume, in a fixed position with respect to the coil form when the alignment means is in the locked mode;

a gradient coil having windings affixed to the coil form for imposing a predetermined magnetic gradient within the local imaging volume, and having a second port corresponding in position to the first port;

wherein the coil form includes a bearing means for moving the coil form and gradient coil and first and second ports with respect to the imaged object when the alignment means is in the unlocked mode to change the portion of the imaging volume over which the first and second ports are positioned and, the bearing means also permitting rotation of coil form and gradient coils and first and second ports with respect to the imaged object when the alignment means is in the unlocked condition;

a pulse control module connected to the gradient coil generating a gradient signal received by the gradient coil;

an encoder in communication with the bearing means for providing an angle signal indicative of the rotation of the coil form with respect to the alignment means; and

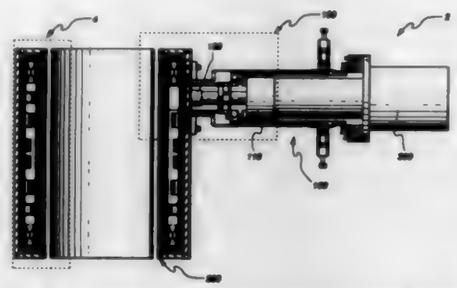
wherein the angle signal is received by the pulse control module for controlling the gradient signal to correct for rotation of the coil form.

5,304,934

SUPERCONDUCTING MAGNET FOR IMAGING HUMAN LIMBS

Evangelos T. Laskaris, Schenectady; Bizhan Dorri, Clifton Park, and Kenneth G. Herd, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1993, Ser. No. 302
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—318 11 Claims



1. An eddy-current free, superconducting imaging magnet for imaging human limbs, wherein said magnet is comprised of:

a superconducting coil means operatively connected to a cartridge means;

a thermal shield means operatively connected to and substantially surrounding said cartridge means;

a vacuum enclosure tube means which includes a bore tube and substantially surrounds said thermal shield means;

a gradient coil/passive shimming means operatively connected to said bore tube means;

a RF shield means operatively connected to said gradient coil/passive shimming means;

a RF coil means located at a predetermined distance away from said RF shield means such that said RF coil means substantially surrounds a relatively small imaging volume;

a cooling means operatively connected to said cartridge means and said thermal shield means; and

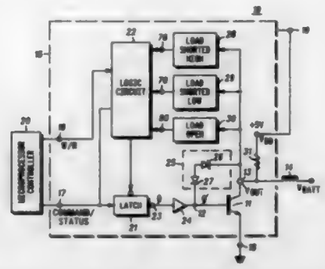
a superconducting lead means for energizing said magnet.

5,304,935

LOAD DRIVER AND SYSTEM WITH FAULT DETECTION APPARATUS FOR PROVIDING A SEQUENCE OF FAULT DETECTION LOGIC STATES

William M. Rathke, Arlington Heights; Jean M. Villevieille, Palatine, and William J. McGraw, Mundelein, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1991, Ser. No. 809,685
Int. Cl.[5] G01R 31/02
U.S. Cl. 324—415 23 Claims



1. Load driver with fault detection apparatus, comprising:

semiconductor switch having a control electrode for receiving a switch control signal which determines on and off modes of operation of the switch, said switch having an output electrode for connection to an associated electrical load;

W/R terminal for receiving a write/read control signal;

C/stat terminal for receiving a command signal;

circuit means coupled between said semiconductor switch and said W/R and C/stat terminals for providing said switch control signal to said semiconductor switch in accordance with said write/read signal and said command signal; and

fault diagnostic circuit means coupled to said semiconductor switch and at least one of said W/R and C/stat terminals for monitoring operation of said semiconductor switch and its associated load and for providing, at said one terminal, a timed sequence of at least three predetermined logic states indicative of said monitored switch/load operation, each of said predetermined logic states indicative of, respectively, switch/load operation at sequential times (a) after said switch control signal attempts to turn said switch on and when said switch is supposed to be on, (b) at a first time after said switch control signal attempts to turn said semiconductor switch off, and (c) at a second time when said switch is supposed to be off, later than said first time, after said switch control signal attempts to turn said semiconductor switch off, a particular sequence of said three logic states indicating proper switch/load operation and each of three other sequences of said three logic states indicative of a different operational fault of said switch/load.

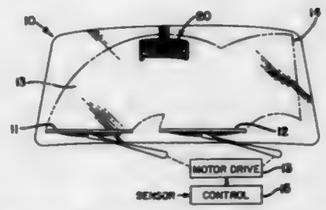
5,304,936

ELECTRICAL WATER DROP SENSOR WITH VARYING GAP WIDTH

Jeffrey J. Buschur, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 811,424, Dec. 20, 1991, abandoned.
This application Jan. 24, 1993, Ser. No. 82,146
Int. Cl.[5] B60S 1/08
U.S. Cl. 324—689 4 Claims

1. A vehicle window mounted electrical sensor for sensing rain drops of diameter on the outer surface thereof varying through a range of diameters of substantially 1 to 3 millimeters typical of rain drops, the sensor having a resistance suitable for cycle rate control of a window wiper system effective to repeatedly cycle a wiper element through a wipe area on the window with the cycle rate a function of the varying rain drop size, the sensor comprising a pair of adjacent electrically conducting electrodes insulated from each other and disposed in association with a portion of a surface of the vehicle window within the wipe area, one of the pair of electrodes comprising a first vertical lead portion extending downward over a top middle portion of the window into the wipe area, a first half length horizontal extending portion extending from a lower end of the first vertical lead portion horizontally toward a first side of the window, a first vertical edge connecting portion extending downward from an outer end of the first half length horizontal extending portion and a first plurality of vertically spaced fingers extending from the first vertical edge connecting portion horizontally toward a second side of the window past the center of the window, the other of the pair of electrodes comprising a second vertical lead portion extending downward over a top middle portion of the window into the wipe area parallel to the first vertical lead portion, a second half length horizontal extending portion extending from a lower end of the second vertical lead portion horizontally toward the second side of the window, a second vertical edge



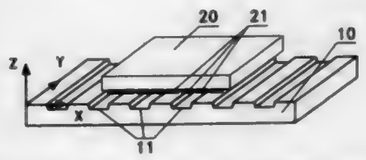
connecting portion extending downward from an outer end of the second half length horizontal extending portion and a second plurality of vertically spaced fingers extending from the second vertical edge connecting portion horizontally toward the first side of the window past the center of the window and being interdigitated with the first plurality of vertically spaced fingers, the first plurality of vertically spaced fingers having a first radius of curvature and the second plurality of vertically spaced fingers having a second radius of curvature different from the first radius of curvature such that adjacent ones of the first plurality of vertically spaced fingers and the second plurality of vertically spaced fingers define gaps varying in width from each horizontal end thereof to the middle of the window at least between 1 and 3 millimeters but much smaller than their length, the first and second radii of curvature being substantially similar to that of a line traced by a point on the wiper element during a wipe cycle, whereby the sensitivity of the sensor increases with water drop diameter within the range of diameters.

5,304,937

CAPACITIVE POSITION SENSOR WITH AN ELECTRODE ARRAY CURSOR AND TOPOGRAPHICALLY FEATURED SCALE

Hans U. Meyer, 42, rue de Lausanne, 1110 Morges, Switzerland

Filed Sep. 4, 1992, Ser. No. 941,223
Claims priority, application Switzerland, Oct. 15, 1991, 03017/91
Int. Cl.[5] G01B 7/22; G08C 19/10
U.S. Cl. 324—686 22 Claims



1. In a capacitive position sensor comprising a cursor (20)

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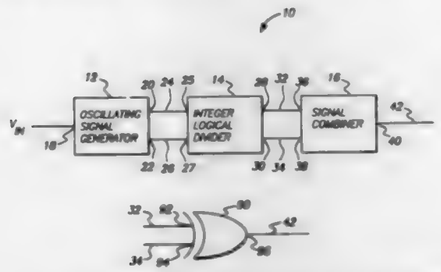
and a scale (10) separated from each other by a predetermined distance (H) and displaceable relative to each other along at least one measuring path (x), the cursor comprising at least two transmitting electrodes (21*a*, 21*b*) and at least one receiving electrode (21*c*) a first means (629) for generating electrical signals to be applied to the transmitting electrodes, second means (623, 624) for evaluating the signal picked up by the receiving electrodes so as to determine the relative position of the cursor (20) relative to the scale (10); the improvement wherein the scale (10) is nonconductive and comprises at least one raised or hollow nonconductive topographical feature (11), said second means processing the signals coupled from the transmitting electrodes (21*a*, 21*b*) to the receiving electrode (21*c*) on the cursor, the topographical feature (11) of the scale (10) being conformed so as to influence said signals coupled to the cursor by modifying mutual coupling capacitances (Cac, Cbc) between said receiving electrodes on said cursor (20) and said transmitting electrodes on said cursor (20) when cursor (20) and scale (10) are displaced relative to each other along the measuring path (x), said mutual capacitances (Cac, Cbc) being indicative of a position of said cursor (20) relative to said scale (10).

5,304,938

METHOD AND APPARATUS FOR PROVIDING A LOWER FREQUENCY SIGNAL WITH REFERENCE TO A HIGHER FREQUENCY SIGNAL

Paul Gregory, Capitola; Oskar Leuthold, and Nigel Bleasdale, both of Santa Cruz, all of Calif., assignors to GEC Plessey Semiconductors, Inc., Scotts Valley, Calif.

Filed Nov. 18, 1992, Ser. No. 978,113
Int. Cl.[5] H03B *19/00*
U.S. Cl. 328—15 **16 Claims**



1. An apparatus for providing a lower frequency signal with reference to a higher frequency signal, said apparatus comprising:

a signal generator for providing a first oscillating signal having a first frequency, and a second oscillating signal having said first frequency said second oscillating signal being out of phase with said first oscillating signal by substantially ninety degrees;

a divider for receiving said first and second oscillating signals, said divider providing a first output divided signal representative of said first oscillating signal having a frequency equal to said first frequency divided by a selected integer, and a second output divided signal representative of said second oscillating signal having a frequency equal to said first frequency divided by said selected integer, said second divided signal being out of phase with said first divided signal by substantially ninety degrees; and

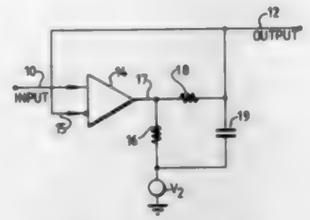
a signal combiner for receiving said first and second divided signals, and performing an exclusive-OR operation on said first and second divided signals to produce a combined output signal having a frequency equal to said first frequency divided by a selected factor

5,304,939

TRACKING PEAK DETECTOR

David C. Davies, Chelmsford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 723,083
Int. Cl.[5] H03K *5/153, 5/08*
U.S. Cl. 328—151 **12 Claims**



1. A peak detector circuit comprising:

(a) a differential amplifier having first and second inputs and an output; said first input being connected to a signal input, said second input being connected to an output node;

(b) a capacitor connected between said output node and a reference input of non-zero voltage;

(c) a first resistor connecting said output to said reference input of non-zero voltage;

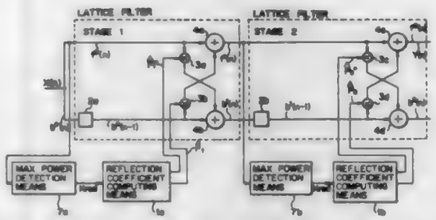
(d) a second resistor connecting said output to said output node.

5,304,940

UNWANTED SIGNAL SUPPRESSION DEVICE

Yasuhiro Harasawa; Tetsuo Kirimoto, and Yoshimasa Oh-Hashi, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,566
Claims priority, application Japan, Jun. 28, 1991, 3-158007
Int. Cl.[5] H04K *3/00*; H03K *13/00*
U.S. Cl. 328—167 **14 Claims**



1. An unwanted signal suppression device for suppressing unwanted signals from input signals which include desired signals and the unwanted signals, comprising:

a power detection means for sampling the input signals at specified time intervals, each sample being a signal segment, said power detection means having means for detecting the signal segment which exhibits at least the maximum power and having means for providing a maximum power segment signal which indicates the signal segment which exhibits the maximum power,

a reflection coefficient computing means for computing reflection coefficients, said reflection coefficient computing means receiving the maximum power segment signal, said reflection coefficient computing means computing the reflection coefficients based on the signal segments except for the signal segment corresponding to the maximum power segment signal, and

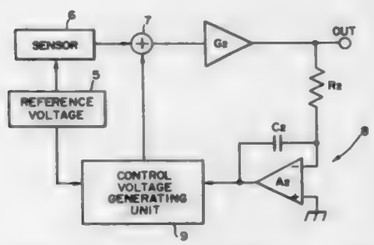
a lattice filter for suppressing said unwanted signals and for generating said desired signals, said lattice filter receiving said reflection coefficients and said input signals.

5,304,941

SENSOR DETECTION SIGNAL EXTRACTING CIRCUIT WITH OFFSET VOLTAGE CANCELLING ABILITY

Tetuo Tateishi, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 8, 1993, Ser. No. 1,794
Claims priority, application Japan, Jan. 8, 1992, 4-001780
Int. Cl.[5] H03F *1/32*
U.S. Cl. 328—164 **5 Claims**



1. A sensor detection signal extracting circuit having a sensor to which a voltage is applied by a source of operating voltage, comprising:

a control voltage generator having a first input terminal to which is coupled said source of operating voltage,

an adder having a first adder input coupled to said sensor for receiving a signal from said sensor and having a second adder input coupled to an output of said control voltage generator, said adder having an output for outputting a sensor detection signal after offsetting with a signal from said control voltage generator an offset voltage in the output of said sensor,

an amplifier coupled thereto for amplifying the output of said adder and for outputting an amplified signal to an output terminal, and

a low-pass filter coupled for receiving said amplified signal from said output terminal and applying it to another input terminal of said control voltage generator.

5,304,942

EXTENDED INTERACTION OUTPUT CIRCUIT FOR A BROAD BAND RELATIVISTIC KLYSTRON

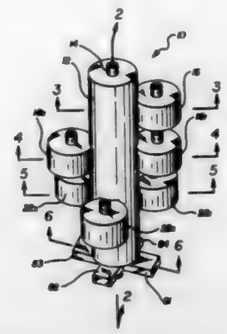
Robert S. Symons, Los Altos, and Syeda Begum, Sunnyvale, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 12, 1992, Ser. No. 881,813
Int. Cl.[5] H03F *3/56*
U.S. Cl. 330—45 **30 Claims**

29. An extended interaction output circuit for interacting with a modulated electron beam and for outputting RF electromagnetic energy, said circuit comprising:

a plurality of linearly disposed cavities, each adjacent pair of said linearly disposed cavities being coupled by at least one side cavity;

wherein, said linearly disposed cavities act as an RF filter having successively tapered impedances to reduce reflections of said electromagnetic energy propagating through said circuit.

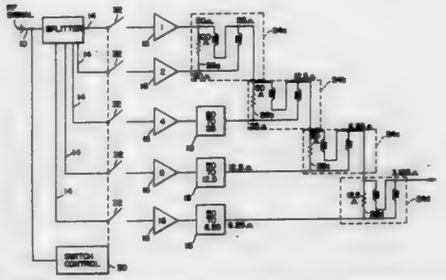


5,304,943

IN-PHASE COMBINER AND RF RECOVERY SYSTEM

Floyd A. Koontz, Holcomb, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 16, 1992, Ser. No. 977,044
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—51 **11 Claims**



2. A system for amplifying high frequency RF signals, comprising:

a signal splitter for splitting an input RF signal into plural RF signals related to the input RF signal;

plural amplifying networks, each network operatively connected to one of said plural RF signals through one of plural digitally controlled switches;

plural in-phase system combiners, one of said system combiners combing the signals from two of said amplifying networks and the remaining said combiners combining the signals from one of said amplifying networks and one of said combiners to provide an output RF signal; and

switch control means to selectively provide one of the RF signals to each of the plural amplifying networks.

5,304,944

HIGH FREQUENCY LINEARIZER

Wilbert Copeland, Los Angeles, and Russ Reisner, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 9, 1992, Ser. No. 958,619
Int. Cl.[5] H03F *1/32*
U.S. Cl. 330—149 **24 Claims**

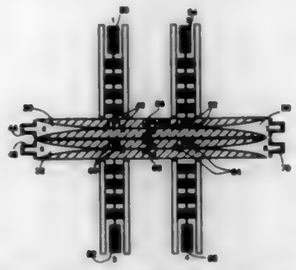
1. A predistortion amplifier linearizer comprising:

a signal splitter for receiving a signal to be linearized, for

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splitting the signal into a linear portion and a nonlinear portion and for transmitting the linear and nonlinear portions to a linear output port and a nonlinear output port, respectively;

a first finline transmission line having an input coupled to the linear output port and an output, a first finline path between the input and the output, a first attenuator having a first diode element coupled to the finline path, and a phase shifter having a second diode element coupled to the finline path;



a second finline transmission line having an input coupled to the nonlinear output port and an output, a second finline path between the input and the output, a passive limiter having a third diode element coupled to the finline path, and a second attenuator having a fourth diode element coupled to the finline path; and

a signal combiner for receiving the signals from the first and second transmission line outputs and combining them to render a predistorted output signal.

5,304,945

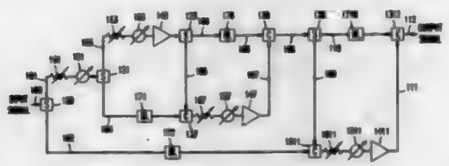
LOW-DISTORTION FEED-FORWARD AMPLIFIER

Robert E. Myer, Denville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 19, 1993, Ser. No. 49,780

Int. Cl.[5] H03F *1/32*

U.S. Cl. 330—149 **8 Claims**



1. An amplifier comprising:

a first splitter (**120**) for creating a first signal based on an input signal, for putting said first signal onto a first signal path (**101**), for creating a second signal based on said input signal, and for putting said second signal onto a second signal path (**102**);

a second splitter (**121**) for receiving said first signal from said first signal path (**101**), for creating a third signal based on said first signal, for putting said third signal onto third signal path (**103**), for creating a fourth signal based on said first signal, and for putting said fourth signal onto a fourth signal path (**104**);

a first amplifier (**143**) in said third signal path (**103**) for amplifying said third signal;

a third splitter (**123**) for receiving said third signal from said third signal path (**103**), for creating a fifth signal based on said third signal, for putting said fifth signal onto a fifth signal path (**105**), for creating a sixth signal based on said third signal, and for putting said sixth signal onto a sixth signal path (**106**);

a first combiner (**137**) for receiving said fourth signal from said fourth signal path (**104**) and said fifth signal from said fifth signal path (**105**), for creating a seventh signal based on said fourth signal and said fifth signal, and for putting said seventh signal onto a seventh signal path (**107**);

a second amplifier (**147**) in said seventh signal path (**107**) for amplifying said seventh signal;

a second combiner (**138**) for receiving said sixth signal from said sixth signal path (**106**) and said seventh signal from said seventh signal path (**107**), for creating an eighth signal based on said sixth signal and said seventh signal, and for putting said eighth signal onto an eighth signal path (**108**);

a fourth splitter (**128**) for receiving said eighth signal from said eighth signal path (**108**), for creating a ninth signal based on said eighth signal, for putting said ninth signal onto a ninth signal path (**109**), for creating a tenth signal based on said eighth signal, and for putting said tenth signal onto a tenth signal path (**110**);

a third combiner (**1311**) for receiving said second signal from said second signal path (**102**) and said ninth signal from said ninth signal path (**109**), for creating an eleventh signal based on said second signal and said ninth signal, and for putting said eleventh signal onto an eleventh signal path (**111**);

a third amplifier (**1411**) in said eleventh signal path (**111**) for amplifying said eleventh signal; and

a fourth combiner (**1312**) for receiving said tenth signal from said tenth signal path (**110**) and said eleventh signal from said eleventh signal path (**111**), and for creating an output signal based on said tenth signal and said eleventh signal.

5,304,946

AMPLIFIER CIRCUIT HAVING AN OPERATION POINT MAINTAINING INPUT AND OUTPUT VOLTAGES CONSTANT EVEN IF A GAIN THEREOF IS VARIED

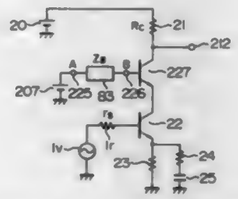
Yuji Sano, Zushi, and Michitaka Ohsawa, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 779,236

Claims priority, application Japan, Oct. 19, 1990, 2-278986

Int. Cl.[5] H03G *3/14*

U.S. Cl. 330—254 **43 Claims**



16. An amplifier circuit comprising voltage generation means having a terminal maintained to a predetermined potential and being connected to a base of a transistor constituting a grounded-base circuit through a circuit including a negative impedance.

5,304,947

ARRANGEMENT FOR ELIMINATING OFFSET ERRORS IN A POWER CONTROL CIRCUIT OF A PULSED TRANSMITTER FINAL AMPLIFIER

John T. Carlsson, Lund, Sweden, assignor to Ericsson Ge Mobile Communications, Inc., Research Triangle, N.C.

Filed Mar. 12, 1993, Ser. No. 30,725

Claims priority, application Sweden, Mar. 17, 1992, 9200819-2

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—279 **3 Claims**

1. An arrangement for eliminating offset errror in a power control circuit for a pulsed transmitter final amplifier comprising:

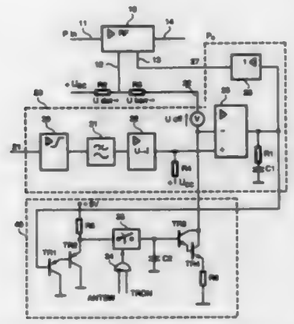
a differential amplifier having a first input, a second input and an output,

said differential amplifier first input being electrically connected to receive a level control signal, said level control signal being provided substantially during transmitter pulses to allow determination of a power output level of said transmitter final amplifier,

said differential amplifier second input being electrically connected to receive a power output signal, and

said differential amplifier output being electrically connected to a power control input on said transmitter final amplifier;

a memory circuit to allow storage of a magnitude representing an electrical signal;



a correction circuit electrically connected to measure a signal from said differential amplifier output during pauses between transmitter pulses and store a magnitude representing said differential amplfiier output signal in said memory circuit; and

said correction circuit further electrically connected to generate a correction voltage controlled by said stored magnitude during at least one transmitter pulse, wherein said correction voltage is electrically connected to compensate for an offset voltage in the control circuit and produce said differential amplifier output signal despite the absence of said level control signal and said power output signal.

5,304,948

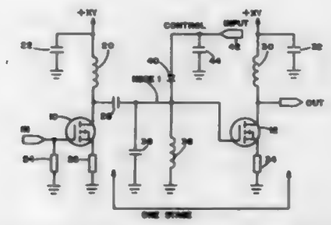
RF AMPLIFIER WITH LINEAR GAIN CONTROL

Lars H. Mucke, San Diego, Calif., assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Dec. 11, 1992, Ser. No. 989,116

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—284 **8 Claims**



1. A circuit for amplifying an input radio frequency (RF) band of signals, wherein signal gain in decibels (dB) is a linear function of the logarithm of a control signal, said circuit comprising:

a first transistor amplifier stage having an output node exhibiting a first RF complex admittance within said frequency band of signals;

a second transistor amplifier stage having a control electrode, a second electrode coupled to a power supply and a third electrode coupled through a resistance to a common potential, said control electrode coupled to said output node and exhibiting a second RF complex admittance within said frequency band of signals;

PIN diode means connected between a control signal input and said output node and responsive to a control signal to reflect a given RF admittance, said PIN diode means further connected via an RF path to said common potential; and

RF reactance means shunt connected with respect to said PIN diode means, between said common potential and said output node, said RF reactance means having a third RF complex admittance that is chosen to negate imaginary portions of said first and second complex admittances, whereby any admittance seen by said PIN diode means is substantially real within said frequency band of signals.

5,304,949

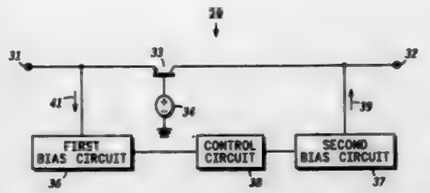
COMMON BASE AMPLIFIER

Christopher K. Y. Chun, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 14, 1992, Ser. No. 989,671

Int. Cl.[5] H03F *3/08*

U.S. Cl. 330—296 **15 Claims**



8. A buffer circuit having an input and an output comprising:

a first transistor of a first conductivity type having a control electrode coupled for receiving a reference voltage, a first electrode coupled to the output of the buffer circuit, and a second electrode coupled to the input of the buffer circuit;

a second transistor of a second conductivity type for providing a first bias voltage having a control electrode and first electrode coupled in common, and a second electrode coupled for receiving a first supply voltage;

a third transistor of said first conductivity type for providing a second bias voltage having a control electrode and first electrode coupled to said control electrode of said second transistor, and a second electrode coupled for receiving a second supply voltage;

a first bias circuit for providing a first bias current to said first electrode of said first transistor, said first bias circuit being responsive to said first bias voltage; and

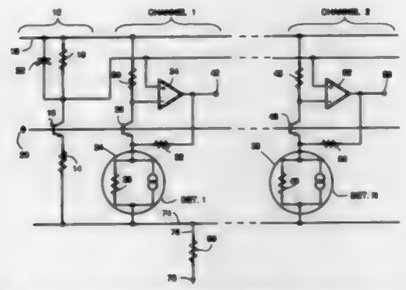
a second bias circuit for providing a second bias current to said second electrode of said first transistor, said second bias circuit being responsive to said second bias voltage.

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5,304,950
LOW POWER, LOW NOISE PREAMPLIFIER WITH OFFSET VOLTAGE CANCELLATION

Mark V. Martin; David L. LeFevre, both of Redondo Beach, and Raymond Kwok, Walnut, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 30, 1992, Ser. No. 921,679
Int. Cl.[5] H03F 3/08
U.S. Cl. 330—308 **10 Claims**

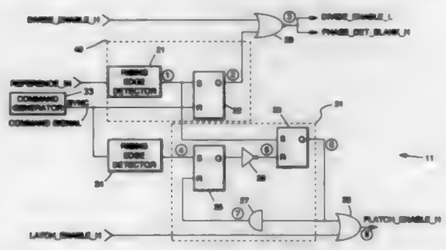


10. A system for use with an amplifier, comprising:
first circuit means for generating a first differential signal;
an array of second circuits, including means for generating a second differential signal for each of said second circuits, such that said second differential signals are at desired levels with respect to said first differential signal, each of said second circuits having means for providing input signals to said second circuits to produce changes in said second differential signals in response to changes in said input signals, said means for providing input signals including a detector array, wherein each detector of said detector array is coupled at a first end to a detector ground bus and at a second end to one of said second circuits, said amplifier having a system ground in addition to said detector ground bus, further comprising means for reducing cross-talk between said second differential signals; and
means for comparing said first differential signal with each of said second differential signals to provide resultant signals associated with each of said second circuits based upon said comparisons.

5,304,951
DIVIDER SYNCHRONIZATION CIRCUIT FOR PHASE-LOCKED LOOP FREQUENCY SYNTHESIZER

Albert E. Cosand, Agoura Hills, Calif., assigner to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 31, 1992, Ser. No. 829,183
Int. Cl.[5] H03L 7/18
U.S. Cl. 331—1 A **7 Claims**

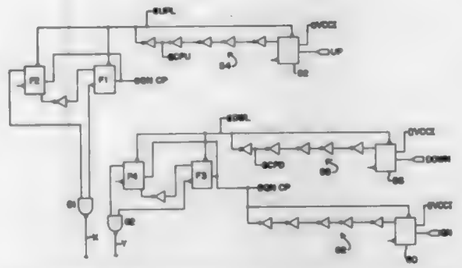


1. A divider synchronization circuit for use with a phase-locked loop frequency synthesizer (10) comprising a programmable divider (16) and a phase detector (17), said divider synchronization circuit comprising:
detection means (21, 22, 23, 24, 25) for receiving a reference frequency signal input, and a synchronizing signal that comprises a command signal that causes a frequency change to occur, for detecting a time at which the reference frequency signal makes a transition that is used as a phase reference against which the output of the programmable divider (16) is compared;
a first gate (28) having first and second inputs and an output, and having its first input coupled to a first output of the detection means (21, 22, 23, 24, 25) and its second input adapted to receive a latch enable signal, and having its output adapted to provide a latch enable signal for use by the programmable divider that is adapted to latch its programming inputs while the startup time of the divider (16) is adjusted so that its output is in phase with the reference frequency signal input to the phase detector (17); and
a second gate (29) having first and second inputs and an output, and having its first input coupled to a second output of the detection means (21, 22, 23, 24, 25) and its second input adapted to receive a divide enable signal, and having its output adapted to provide divide enable and phase detector blanking signals for use by the programmable divider (16) and phase detector (17), respectively, that is adapted to reset the divider (16) and blank the phase detector (17);
and whereby the divide enable signal is adapted to cause the interruption of the divider (16) while its program is being changed and then restart the divider (16), and wherein the outputs of the phase detector (17) are blanked using the phase detector (17) blanking signal during the time that the divider (16) is interrupted, and whereby the startup time of the divider (16) is adjusted so that the output of the divider (16) is substantially in phase with the reference frequency signal input to the phase detector (17).

5,304,952
LOCK SENSOR CIRCUIT AND METHOD FOR PHASE LOCK LOOP CIRCUITS

Duane G. Quiet, Gorham, and Ray A. Mentzer, Portland, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 10, 1993, Ser. No. 60,100
Int. Cl.[5] H03L 7/089, 7/095
U.S. Cl. 331—1 A **20 Claims**



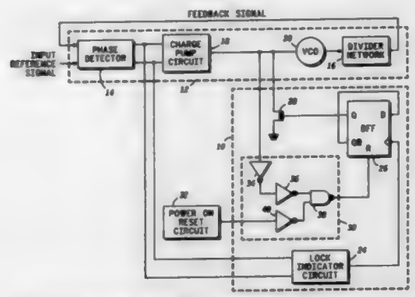
1. A method for detecting and indicating occurrence of a phase lock condition for output signals at the output of a phase lock loop (PLL) circuit when the PLL output signals are phase locked to a reference signal, and for detecting and indicating an unlock condition, said PLL circuit comprising a phase and frequency detector (PFD) having a reference signal input (REF IN) coupled to a reference signal source and a feedback signal input (VCO FBK IN) coupled to the output of the PLL circuit, said PFD having an up output (UP) and a down output (DOWN) for delivering output up and down signals according

to whether the reference signal leads or lags the feedback signal, said phase lock condition being characterized by random mixed output up and down signals centering the PLL output signal on the reference signal, comprising:
counting the number of successive output down signals without an intervening output up signal from the PFD and generating an unlock condition indicator signal if the number of successive output down signal counts without an output up signal count exceeds a specified number;
counting the number of successive output up signals without an intervening output down signal from the PFD and generating an unlock condition indicator signal if the number of successive output up signal counts without an output down signal count exceeds said specified number;
and generating a lock condition indicator signal if no unlock conditions are detected.

5,304,953
LOCK RECOVERY CIRCUIT FOR A PHASE LOCKED LOOP

Barry B. Heim; Michael W. Hodel, both of Mesa, and Paul T. Hu, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1993, Ser. No. 80,012
Int. Cl.[5] H03L 7/095, 7/10
U.S. Cl. 331—1 A **4 Claims**



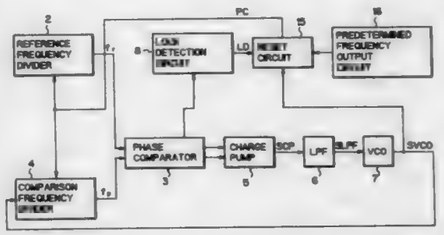
4. A method for allowing a phase locked loop to recover lock, the phase locked loop includes a phase detector, a charge pump circuit and a voltage controlled oscillator, the method comprising the steps of:
detecting when the phase locked loop loses lock;
decreasing a voltage appearing at an input of the voltage controlled oscillator when the phased locked loop looses lock thereby allowing the phase locked loop to recover lock;
detecting when said voltage appearing at said input of the voltage controlled oscillator falls below a predetermined threshold; and
discontinuing decreasing said voltage appearing at said input of the voltage controlled oscillator circuit when said voltage falls below said predetermined threshold.

5,304,954
PLL SYNTHESIZER HAVING FREQUENCY DIVIDERS WITH RESET CONTROL

Shinji Saito, and Akira Kobayashi, both of Kasugai, Japan, assignors to Fujitsu Limited, Kasugai, Japan

Continuation of Ser. No. 925,768, Aug. 7, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,644
Claims priority, application Japan, Aug. 8, 1991, 03-199182
Int. Cl.[5] H03L 7/089, 7/095, 7/18
U.S. Cl. 331—1 A **5 Claims**

1. A PLL synthesizer circuit of the type in which a reference signal (fr) output from a reference frequency divider (2) and a comparison signal (fp) output from a comparison frequency divider (4) are input to a phase comparator (3); said phase comparator (3) outputs output signals (ϕR, ϕP) having pulse widths thereof increasing or decreasing on the basis of the phase difference between both of said signals (fr, fp); said output signals (ϕR, ϕP) of said phase comparator (3) are converted to an analog voltage signal (SCP) by a charge pump (5), an output signal (SCP) of said charge pump (5) is output to a voltage controlled oscillator (7) through a low-pass filter (6), and an output signal (SVCO) of said voltage controlled oscillator (7) is output to said comparison frequency divider (4), so as to effect a negative feedback operation and bring the frequency and phase of said reference signal (fr) into conformity with the frequency and phase of said comparison signal (fp), and a lock detection circuit (8) connected to said phase comparator (3) does not output a lock signal (LD) when the pulse widths of



said output signals (ϕR, ϕP) of said phase comparator (3) are above predetermined values but outputs said lock signal (LD) when the pulse widths are below the predetermined values;
characterized in that there is disposed a reset circuit (15) for outputting a reset signal (PC) when the frequency of said output signal (SVCO) of said voltage controlled oscillator (7) coincides with or approaches a set frequency when said lock detection circuit (8) does not output said lock signal (LD), and said reset signal (PC) is output to said reference frequency divider (2) and to said comparison frequency divider (4) so as to forcibly bring the phase of said reference signal (fr) into conformity with the phase of said comparison signal (fp).

5,304,955
VOLTAGE CONTROLLED OSCILLATOR OPERATING WITH DIGITAL CONTROLLED LOADS IN A PHASE LOCK LOOP

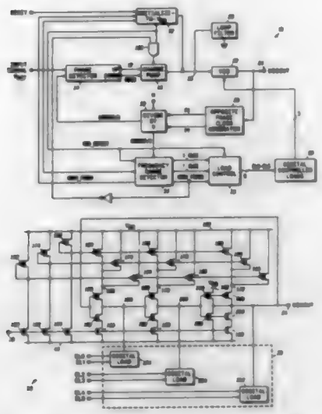
Ahmad H. Atriss, Chandler; Benjamin C. Peterson, Tempe, and Lanny L. Parker, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 19, 1992, Ser. No. 978,538
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[5] H03L 7/00; H03B 21/00
U.S. Cl. 331—1 R **17 Claims**

1. A phase lock loop, comprising:
first means for comparing a phase difference of first and second input signals and generating an output signal to charge and discharge a loop node;
a VCO having an input coupled for receiving said output signal of said first means and having an output for providing an oscillator signal;
second means for dividing down said oscillator signal into first and second divided oscillator signals, said first divided oscillator signal operating as said second input signal of said first means;
third means coupled for receiving said second divided oscillator signal and said first input signal and generating a first load control signal when said second divided oscillator signal changes logic state more than a predetermined

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number of times during a first logic state of said first input signal; and



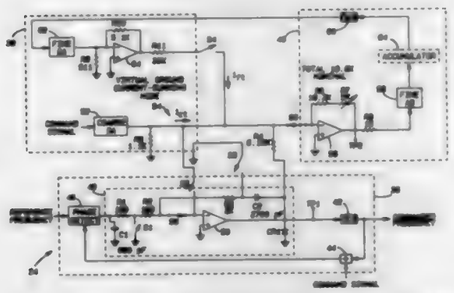
a first load circuit coupled to said output of said VCO and operating in response to said first load control signal to increase loading at said output of said VCO.

5,304,956

LOW NOISE HIGH SPEED FREQUENCY SYNTHESIZER EMPLOYING A LEARNING SEQUENCE

William F. Egan, Cupertino, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 17, 1992, Ser. No. 916,295
Int. Cl.[5] H03L *7/189*
U.S. Cl. 331—10 **22 Claims**



19. A method of high speed tuning to a commanded frequency, said method comprising the steps of:

providing a frequency synthesizer means for generating the commanded frequency;

high speed tuning the frequency synthesizer means to the commanded frequency with a high speed tuning means;

substantially isolating the high speed tuning means from the frequency synthesizer means after high speed tuning to the commanded frequency has occurred;

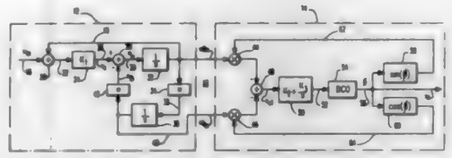
learning a correctional signal to subsequently enable the high speed tuning means to more accurately high speed tune the frequency synthesizer means to substantially the commanded frequency, said correctional signal being generated by the frequency synthesizer means and being representative of the difference between the commanded frequency as tuned by the step of high speed tuning and a more accurate frequency.

5,304,957

LOW JITTER PHASE LOCKED LOOP FOR SINGLE PHASE APPLICATIONS

Charles W. Edwards, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 1, 1992, Ser. No. 955,553
Int. Cl.[5] H03L *7/06*
U.S. Cl. 331—12 **6 Claims**



1. A circuit comprising:

a phase shift generator for receiving a single phase input signal and for generating a quadrature signal and a direct signal in response to said input signal; and

a phase locked loop coupled to said phase shift generator for generating an output signal in response to said quadrature and direct signals, said output signal being phase locked with said input signal;

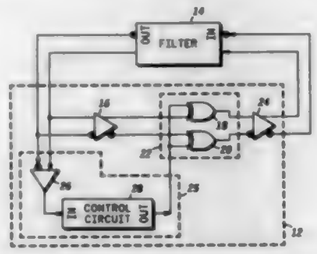
where said phase shift generator comprises means for combining said single phase input signal and a selected one of said direct and quadrature signals to produce a first error signal; means for deriving a first feedback signal from said selected one of said direct and quadrature signals; means for combining said first error signal with said first feedback signal to produce a second error signal; and means for producing said selected one of said direct and quadrature signals in response to said second error signal.

5,304,958

SAW OSCILLATOR GAIN AMPLIFIER WITH AUTO PHASE SHIFT

Paul B. Sofianos, Mesa; Phuc C. Pham, Chandler, and Dwight D. Esgar, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1992, Ser. No. 979,677
Int. Cl.[5] H03B *5/12*
U.S. Cl. 331—107 A **7 Claims**



1. A gain stage circuit for providing an automatic phase shift of a differential input signal with respect to a differential output signal, the differential input signal appearing at first and second inputs, the differential output signal appearing at first and second outputs, comprising:

a first amplifier having first and second inputs and first and second outputs, said first and second inputs of said first amplifier being respectively coupled to the first and second inputs of the gain stage;

a second amplifier having first and second inputs and first and second outputs, said first and second outputs of said second amplifier being respectively coupled to first and second outputs of the gain stage;

a detection circuit having a first and second inputs and an output, said first and second inputs of said detection circuit being coupled to said first and second inputs of said first amplifier, said output of said detection circuit providing a logic control signal; and

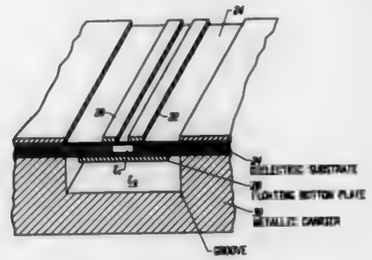
a phase shift circuit having a plurality of inputs and first and second outputs, first and second ones of said plurality of inputs of said phase shift circuit being respectively coupled to said first and second outputs of said first amplifier, third and fourth ones of said plurality of inputs of said phase shift circuit being coupled to said output of said detection circuit to receive said logic control signal, said first and second outputs of said phase shifter being respectively coupled to said first and second inputs of said second amplifier.

5,304,959

PLANAR MICROSTRIP BALUN

David S. Wisherd, Sunnyvale; Joseph M. O'Reilly, Mountain View, and Brian L. Baskin, Cupertino, all of Calif., assignors to Spectrian, Inc., Mountain View, Calif.

Filed Oct. 16, 1992, Ser. No. 961,995
Int. Cl.[5] H01P *5/10*
U.S. Cl. 333—26 **9 Claims**



1. A planar balun comprising:

a dielectric substrate having a thickness, t1, and a dielectric coefficient, ϵ_r, said substrate having first and second surfaces,

a first elongated conductor and a second elongated conductor formed on said first surface in spaced parallel relationship, said conductors having a length, L, and a spacing, d_2,

a third elongated conductor formed on said second surface opposite from said first and second conductors, the spacing from the outer edge of each of said first and second conductors to the outer edge of said third conductor being d1 with d1 being greater than t1,

a balanced input at one end of said first and second conductors,

an unbalanced output at another end of said first and second conductors, and

a ground plane spaced from said third conductor by a distance, t2, in an atmosphere having a dielectric coefficient, ϵ_0, wherein, to minimize coupling,

$$t2 > \left(\frac{10}{\epsilon 1} + 1\right) \cdot t1, \text{ assuming } \epsilon_0 = 1.$$

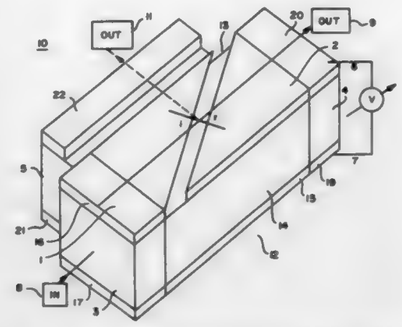
where $\epsilon 1$ is the dielectric coefficient of said dielectric substrate.

5,304,960

FERROELECTRIC TOTAL INTERNAL REFLECTION RF SWITCH

Satyendranath Das, P.O. Box 6223, Washington, D.C. 20015

Filed Apr. 1, 1993, Ser. No. 41,205
Int. Cl.[5] H01P *1/10*
U.S. Cl. 333—101 **10 Claims**



1. A ferroelectric total internal reflection RF switch having an input and output and comprising of:

a body of ferroelectric material having a top and bottom surface and a permittivity and refractive index that are functions of an electric field in which it is immersed;

the said body of ferroelectric material being formed into input and output prismatic structures by placing conductive coatings, separated by an appropriate uncoated area, on the top surface;

a first RF transmission means for coupling RF energy into said body;

a second RF transmission means for coupling RF energy from said body when the applied bias voltage is substantially zero and the switch is OFF;

voltage means for applying an electric field to the output prismatic structure of the said body to reduce the permittivity and the refractive index of the output prismatic structure to obtain total internal reflection of input RF energy at the interface between the input and the output prismatic structures; and

a third RF transmission means for coupling energy from the input prismatic structure of the said body when the applied bias voltage is sufficiently high and the switch is ON.

5,304,961

IMPEDANCE TRANSFORMING DIRECTIONAL COUPLER

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1992, Ser. No. 859,743
Int. Cl.[5] H01P *5/16*
U.S. Cl. 333—112 **19 Claims**

7. A lumped element impedance transforming four-port directional coupler comprising:

a first reactive element;

a second reactive element coupled to the first reactive element at a first node;

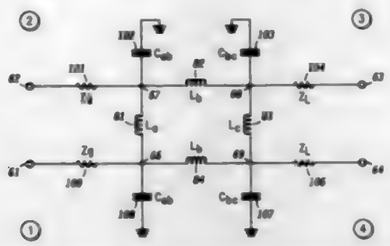
a third reactive element coupled to the second reactive element at a second node;

a fourth reactive element coupled to the third reactive element at a third node and to the first reactive element at a fourth node, such that the first reactive element is coupled between the first and fourth nodes, the second reactive element is coupled between the first and second nodes, the third reactive element is coupled between the second and third nodes, and the fourth reactive element is coupled between the third and fourth nodes;

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the first, the second, the third, and the fourth nodes each coupled through a first, a second, a third, and a fourth capacitor, respectively, to an electrical ground; and

a first port, a second port, a third port, and a fourth port coupled through a first lumped element impedance, a second lumped element impedance, a third lumped element impedance, and a fourth lumped element impedance, respectively, to the first node, the second node, the third node and the fourth node, respectively, to provide impedance transformation for the four-port directional coupler, wherein each of the first and second lumped element impedances have a first impedance value.



5,304,962

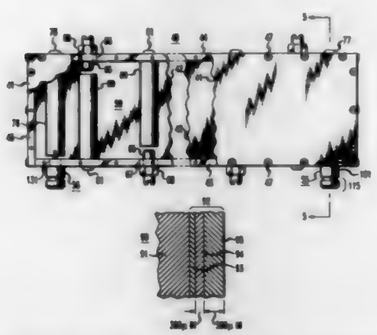
MICROWAVE TRANSMISSION MEANS WITH IMPROVED COATINGS

Omar J. Bobadilla, Parsippany, and Andy Y. Ng, Edison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 11, 1992, Ser. No. 928,559

Int. Cl.[5] H01P *5/12, 1/205*

U.S. Cl. 333—134 **8 Claims**



1. The improvement in an interdigital filter for microwaves comprising: a longitudinally elongated rectangular wave guide having top and bottom walls, side walls and end walls together enclosing an interior dielectric filled region, a pair of feed rods dispersed transversely in, and at opposite ends of, said region, a pair of coaxial fittings received at said opposite ends in receptacles therefore in an apertured one of said walls to be coupled to corresponding ones of said feed rods so as to provide input to and output from said region for said microwaves, an array of longitudinally spaced resonator rods disposed transversely in said region longitudinally between said feeds rods, and an array of tuning screws respectively corresponding to, and disposed in said region in coaxial transversely spaced relation with said resonator rods to each be adjustable in spacing relative to the corresponding rod so as, by individual adjustments of all said screws, to render said wave guide a band pass filter for said microwaves, said filter comprising a plurality of parts of said walls and rods having aluminum interiors and having respective portions which bound said region to be susceptible to exposure to microwaves therein, and said improvement being that said portions of said parts include composite coatings boded to the aluminum interior of said parts and extending outward from said interior to the outermost surface of said portions, said composite coating consisting entirely of nonferromagnetic materials, and said coating included in each said portion of each said part comprising a zinc layer outward of said aluminum interior of said part, a copper layer outward of said zinc layer and a silver layer outward of said copper layer.

5,304,963

FILTER CIRCUIT FOR AN ELECTROMAGNETIC PICKUP

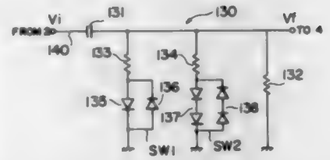
Izuru Shinjo, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,993

Claims priority, application Japan, Oct. 4, 1991, 3-257610

Int. Cl.[5] H03H *7/06, 3/013*

U.S. Cl. 333—172 **6 Claims**



1. A filter circuit for filtering noise components superposed on an output signal from an electromagnetic pickup, said filter circuit comprising:

a low-pass filter (2) connected to receive the output signal of said electromagnetic pickup for filtering therefrom high-frequency noise components having frequencies higher than a first predetermined value; and

a high-pass filter (130) connected in series with said low-pass filter for filtering low frequency noise components contained in the output signal of said electromagnetic pickup, said low frequency noise components having frequencies lower than a second predetermined value which is less than said first predetermined value, and said high-pass filter including means for automatically controlling the second predetermined value as a function of voltage such that the second predetermined value increases in accordance with an increase in an output voltage of said electromagnetic pickup.

5,304,964

ELECTRICAL CONNECTOR INCORPORATING GROUND SHIELD SPACER

Mario DiMarco, Scottsdale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 8, 1993, Ser. No. 1,995

Int. Cl.[5] H03H *7/01;* **H01R** *13/66*

U.S. Cl. 333—181 **9 Claims**

1. An electrical connector receptacle for allowing connection of electronic apparatus contained within a shielded enclosure to a multi-conductor wiring harness terminating in an plug of the type having a plurality of male pins arranged in a grid of rows and columns, the connector receptacle comprising:

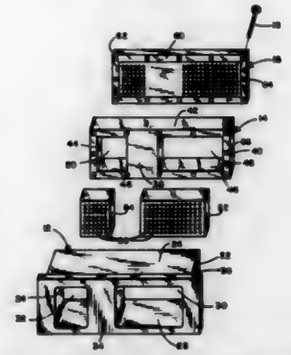
(a) a conductive shell defining a housing cavity having open front and rear faces, the housing cavity dimensioned to receive the plug when inserted through the open front face;

(b) a ground EMI/RFI shield spacer in the form of an open faced frame member having a conductive surface and removably attached to the shell proximate the open rear face of the shell and having substantially parallel opposed major peripheral front and rear surfaces containing cutouts arranged to include the grid areas of the pattern of rows and columns of connectors;

(c) a multi-coplanar capacitor board having a surface abutting the rear surface of the ground shield spacer and removably attached thereto having a plurality of socket contacts arranged to receive the connector pins of the male plugs and having ground planes connected to a common ground conductor attached to the surface abutting the ground shield spacer;

(d) a plurality of terminal pins joined to the socket contacts and the multi-coplanar capacitor board; and

(e) wherein the connector receptacle forms a structure which provides a grounded EMI/RFI barrier.



5,304,965

SURFACE WAVE TRANSDUCER, ESPECIALLY OF SPLIT FINGER DESIGN, WITH SUPPRESSION OF REFLECTIONS OF TERMINAL TRANSDUCER FINGERS

Oswald Männer, Vienna, Austria, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

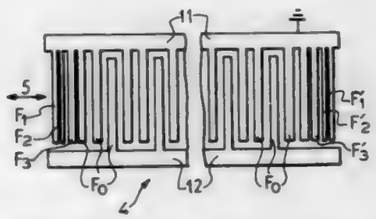
PCT No. PCT/DE91/00277, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/15897, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 28, 1991, Ser. No. 927,499

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010310

Int. Cl.[5] H03H *9/00*

U.S. Cl. 333—194 **2 Claims**



1. A surface wave transducer having measures for suppressing internal reflections on terminal fingers of a transducer having other transducer fingers, which are arranged interdigitally adjacent to said terminal fingers, are arranged corresponding to a specified acoustic wavelength of the transducer at intervals specified by a predetermined scheme, and are designed with finger widths that are likewise specified by the predetermined scheme, comprising: terminal fingers on each end of the transducer and on each end of the transducer, only a plurality of terminal fingers which are connected to one busbar of the transducer, are positioned deviating from said scheme for positionings and finger widths of the other transducer fingers and are positioned deviating in their finger strip width, such that phases and amplitudes of wave components, which would otherwise be reflected by said terminal transducer fingers and by an adjacent final transducer finger of the other transducer fingers, which corresponds to the scheme of the transducer, are modified such that said wave components intrinsically interfere destructively with one another.

5,304,966

METHOD OF ADJUSTING A FREQUENCY RESPONSE IN A THREE-CONDUCTOR TYPE FILTER DEVICE

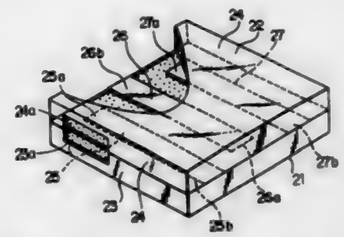
Seigo Hino, and Kenji Ito, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed May 11, 1993, Ser. No. 59,280

Claims priority, application Japan, May 13, 1992, 4-148143

Int. Cl.[5] H01P *1/203*

U.S. Cl. 333—204 **5 Claims**



1. A method of adjusting a frequency response of a filter device of a three-conductor structure type including a pair of dielectric substrates each having a peripheral and outer surfaces provided with an external ground conductor layer, and a plurality of stripline resonator conductor layers sandwiched between the dielectric substrates, each resonator conductor layer having a short circuit end connected to the ground conductor layer on one lateral surface of each substrate and an open circuit end spaced from the ground conductor layer on the opposite lateral surface of each substrate, wherein said method comprises the step of partially removing the external ground conductor layer on the peripheral surface of each substrate at a portion which corresponds to a longitudinal side edge of each resonator conductor layer to form a ground conductor removed portion partially extending along the portion between the open circuit end and the short circuit end of each outer resonator conductor layer, thereby tuning the filter device for a desired frequency response.

5,304,967

MULTI-LAYER CIRCUIT BOARD DIELECTRIC FILTER HAVING A PLURALITY OF DIELECTRIC RESONATORS

Katsuhiko Hayashi, Chiba, Japan, assignor to TDK Corporation, Tokyo, Japan

PCT No. PCT/JP92/00060, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO92/14275, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 24, 1992, Ser. No. 927,401

Claims priority, application Japan, Feb. 5, 1991, 3-035490; Jul. 24, 1991, 3-207370; Aug. 16, 1991, 3-229609

Int. Cl.[5] H01P *1/205;* **H05K** *3/46*

U.S. Cl. 333—206 **11 Claims**

1. A dielectric filter, comprising:

a plurality of dielectric resonators;

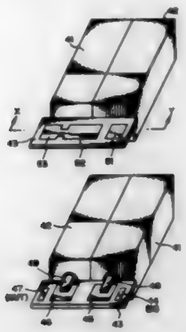
a multi-layered circuit board operatively connected to said plurality of dielectric resonators, said circuit board including at least first and second dielectric substrate layers;

a first capacitor electrode pattern formed on a top outer surface of the first substrate layer and having at least one top capacitor electrode;

a second capacitor electrode pattern formed on a top inner

surface of the second substrate layer and having at least one bottom capacitor electrode; and

a connector pattern formed on a bottom outer surface of the second substrate layer so as to operatively connect said circuit board to said plurality of dielectric resonators, said connector pattern having at least corresponding resonator connector electrodes formed therein,



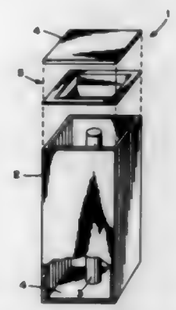
said first and second capacitor electrode patterns and said connector pattern being operatively connected to each other via a plurality of blind through-hole electrodes formed in the first and second substrate layers of said circuit board, both ends of each of said through-hole electrodes being connected to at least one of said first and second capacitor electrode patterns and said connector pattern.

5,304,968

TEMPERATURE COMPENSATED RESONATOR

Jorma Ohtonen, Oulu, and Kimmo Ervasti, Oulunsalo, both of Finland, assignors to LK-Products OY, Kempele, Finland

Filed Oct. 28, 1992, Ser. No. 971,530
Claims priority, application Finland, Oct. 31, 1991, 915156
Int. Cl.[5] H01P *1/30, 7/04*
U.S. Cl. 333—222 **7 Claims**



1. A temperature compensated radio frequency resonator, comprising:

an electrically conducting housing provided with a side surface, a bottom surface and a top surface;

a conductive post inside the housing and having one end electrically connected to the bottom surface and another end spaced from the top surface;

a compensation plate within said housing and having a center part spaced from the top surface, said center part rigidly attached to at least at two opposite edge parts which are attached to said top surface,

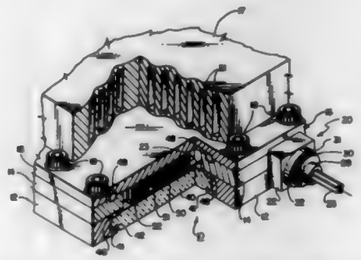
said compensation plate having a coefficient of thermal expansion that is less than a coefficient of thermal expansion of the top surface, whereby in response to a rise in temperature, the center part of the compensation plate is urged towards the top surface so as to counter capacitive change effects occurring as a result of said rise in temperature.

5,304,969

APPARATUS AND A METHOD FOR AN ELECTRICAL TRANSMISSION-LINE INTERFACE

Lawrence Jacobowitz, and Mario E. Ecker, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 693,971, Apr. 29, 1991, Pat. No. 5,173,668. This application Sep. 25, 1992, Ser. No. 951,741
Int. Cl.[5] H01P *1/00, 3/06*
U.S. Cl. 333—260 **54 Claims**



1. An apparatus for an electrical transmission-line interface comprising:

a) a substrate,

b) at least one electrical contact pair in direct electrical contact with at least one electrical component on at least one surface of said substrate,

c) at least a portion of at least one transmission-line electrically communicating with said at least one electrical contact pair,

d) a housing protecting said at least one electrical contact pair and said substrate,

e) means in said housing for communicating an electrical signal through said housing to said electrical contact pair via said at least one transmission-line, and

f) wherein at least a portion of said transmission-line inside said housing is attached to a bellows to provide strain relief to said transmission-line, while at least a portion of said bellows is secured to at least a portion of said housing.

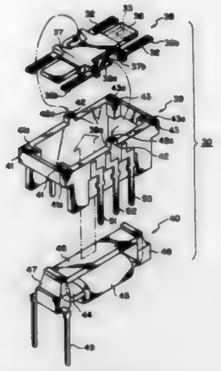
5,304,970

SEESAW BALANCE TYPE MICROMINIATURE ELECTROMAGNETIC RELAY AND METHOD OF PRODUCING THE SAME

Yoshio Okamoto; Takashi Miura; Takanori Tanaka; Ikuhiro Andoh; Hajime Tsuboi, and Koji Hanada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 18, 1992, Ser. No. 900,728
Claims priority, application Japan, Jun. 18, 1991, 3-145115; Feb. 10, 1992, 4-023121
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **6 Claims**

1. An electromagnetic relay including an armature unit consisting of two movable contact springs and having a pivot arm formed at the center thereof and contacts formed at the ends thereof, an armature having a protrusion on the back side thereof for pivotal movement, and an insert-molded insulator, a substrate unit consisting of a terminal for mounting the pivot arm electrically connected to a terminal pin, a pair of switching terminals having fixed contacts for connecting the contacts electrically connected to the terminal pins, and an electromagnet unit consisting of a yoke, an exciter coil wound on the yoke having a start and an end, a flat shaped permanent magnet provided between the ends of the yoke, and two terminal pins electrically connected to the start and the end of the exciter coil, respectively, characterized in that,



the pivot arm extending from the center part of the movable contact spring is U-shaped and

a positioning member is provided at the free edge thereof or at the common terminal for mounting the pivot arm.

5,304,971

HIGH SPEED MINIATURE SOLENOID

Oded E. Sturman, 3973 Santa Monica Ct., Newbure Park, Calif. 91320; Benjamin Grill, 9819 Etiwanda Ave., Northridge, Calif. 91329, and Walter L. Harrison, 23554 Cherry St., Newhall, Calif. 91321

Division of Ser. No. 733,733, Jul. 22, 1991. This application Dec. 7, 1992, Ser. No. 986,263
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—126 **4 Claims**



1. A solenoid, comprising:

a housing;

an armature within said housing;

a first magnetic core coaxial with and adjacent to said armature, said first magnetic core having a first end and a second end, said second end having an outer seat;

a coil wrapped around said first magnetic core, said coil being constructed to emit a magnetic flux;

a second magnetic core coaxial with said armature, said second magnetic core having a first end connected to said first end of said first magnetic core and a Z shaped second end spaced from said second end of said first magnetic core, said second end having an inner seat; and,

a first bushing between said first and second magnetic cores, said first bushing having an inner seat which sits within said outer seat of said first magnetic core and an outer seat that cooperates with said inner seat of said second magnetic core so that said first bushing is captured by said first and second magnetic cores;

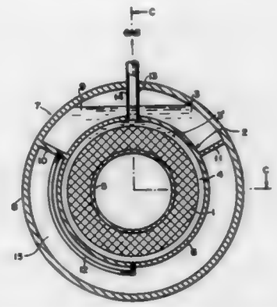
a magnetic plate adjacent to said second ends of said first and second magnetic cores and attached to said armature, such that when said coil emits said magnetic flux said magnetic plate moves toward said magnetic cores, wherein said armature moves within said housing from a first position to a second position.

5,304,972

SUPERCONDUCTING MAGNET APPARATUS HAVING CIRCULATING PATH FOR COOLANT

Akio Sato, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1991, Ser. No. 711,203
Claims priority, application Japan, Jun. 7, 1990, 2-147473
Int. Cl.[5] H01L *39/00;* **H01F** *7/22*
U.S. Cl. 335—216 **7 Claims**



1. A superconducting magnet apparatus having a superconducting coil shaped annularly, the coil having an axis substantially perpendicular to the line of a direction in which gravity acts, the apparatus comprising:

a first coolant vessel having a receiving space defined therein and conforming in shape to the superconducting coil, the receiving space of said first coolant vessel receiving the coil and a coolant of extremely low temperature for cooling the coil;

a second coolant vessel arranged outside the first coolant vessel and coaxial therewith, and having a receiving space separated therein by wall means located above or at a level of the axis of the coil, the receiving space of the second coolant vessel being located above the axis of the coil, for receiving the coolant, wherein an axis of the second coolant vessel coincides with an axis of the first coolant vessel; and

a coolant communication pipe communicating a bottom region of the receiving space of the second coolant vessel with a bottom region of the receiving space of the first coolant vessel.

5,304,973

COIL FOR ELECTROMAGNETICALLY ACTUATING A SWITCHING DEVICE

Helmuth Baldauf, Weiden; Gert Fischer, Amberg; Franz Mende, Geberbach, and Norbert Zimmermann, Sulzbach-Rosenberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 9, 1992, Ser. No. 910,969
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 9110706
Int. Cl.[5] H01F *1/00, 15/10;* **H01H** *47/00*
U.S. Cl. 335—219 **7 Claims**

1. In a coil for electromagnetically actuating a switching device an improvement comprising:

a) a coil flange, said coil flange

(i) including a cut-out; and

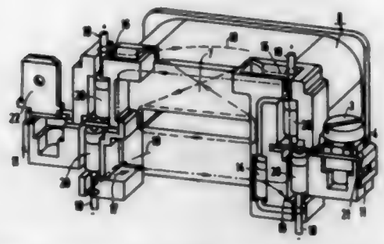
(b) a terminal connector, said terminal connector including

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(i) two diodes, each of said two diodes including two ends, and

(ii) a joint bar, said joint bar serving as a holding device for one end of each of said two diodes,

wherein said two diodes form part of a rectifier bridge and said terminal connector is insertable into said cut-out of said coil flange; and



wherein said joint bar of said terminal connector further includes an outer part, said outer part being oriented perpendicular to said joint bar and wherein said coil flange further includes an extension such that said outer part and said extension mate with a positive fit when said terminal connector is inserted into said cut-out of said coil flange.

5,304,974

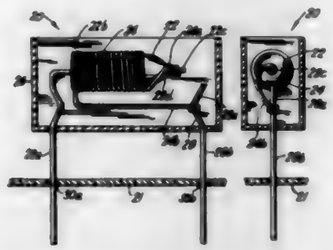
LOW PROFILE THERMAL CUT-OFF RESISTOR

Monte Denton, Cedar Crest, N. Mex., assignor to Siemens Stromberg-Carlson, Boca Raton, Fla.

Filed Sep. 30, 1992, Ser. No. 954,446

Int. Cl.[5] H01H *85/00*

U.S. Cl. 337—4 **22 Claims**



1. A thermal cut-off resistor, comprising:

a. an elongated thermal cut-off fuse having first and second electrical conductor leads extending from respective ends of the fuse;

b. an electrically-insulated wire-shaped resistor that is tightly coiled around the fuse, said resistor having a first non-insulated end that is connected to the second conductor lead and a second non-insulated end so that the fuse and the resistor are in an electrical series arrangement; and

c. an electrically-insulated heat-resistant casing that contains the fuse and resistor therein and that is configured so that the first conductor lead of the fuse and the second non-insulated end of the resistor protrude from the casing to enable the lead and the end to be electrically connected to respective electrical contacts formed on a printed circuit board and the casing to be secured lengthwise to said board, the profile of the casing being approximately the width of the fuse.

5,304,975

MAGNETORESISTANCE EFFECT ELEMENT AND MAGNETORESISTANCE EFFECT SENSOR

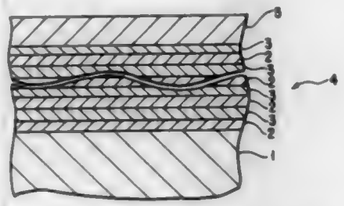
Yoshiaki Saito, Yokohama; Susumu Hashimoto, Ebina; Koichiro Inomata; Hitoshi Iwasaki, both of Yokohama; Reiko Kondoh, Yokohama; Junichi Akiyama, Kawasaki; Yuichi Ohsawa, and Toshihiko Ohto, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 22, 1992, Ser. No. 965,073

Claims priority, application Japan, Oct. 23, 1991, 3-275231; Dec. 3, 1991, 3-318851; Jan. 27, 1992, 4-11573; Mar. 31, 1992, 4-76783

Int. Cl.[5] H01L *43/08*; **G01R** *33/02*

U.S. Cl. 338—32 R **21 Claims**



1. A magnetoresistance effect element comprising:

a multilayer obtained by stacking magnetic and nonmagnetic layers to exhibit a magnetoresistance effect; and

a reversal assist layers, formed in contact with said multilayer, to assist reversal of a magnetic moment of said magnetic layer.

5,304,976

CONTACT COMBUSTION TYPE CARBON MONOXIDE SENSOR

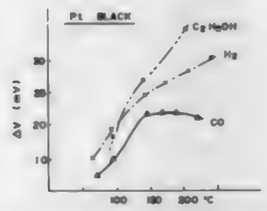
Yoshio Ono, 2-23-7, Ooza Tanaka, Matsubase-cho, Kitakatsushika-gun, Saitama Prefecture, Japan, assignor to Mori Seisakusho Co., Ltd.; Masami Numata, both of Chiba and Yoshio Ono, Saitama, all of Japan

Filed Sep. 2, 1993, Ser. No. 115,845

Claims priority, application Japan, Sep. 14, 1992, 4-271213

Int. Cl.[5] H01C *7/00*; **G01N** *31/12*

U.S. Cl. 338—34 **4 Claims**



1. A contact combustion type carbon monoxide sensor characterized in that a coil of each of the active portion and a dummy portion is made of a Fe.Pd system alloy wire material having a thickness of 15 to 40 μm, a specific resistance ρ_{20} of 35 to 46 μΩcm, a Vickers' hardness Hv of 200 to 300 and a temperature coefficient T.C.R of 7,000 to 8,500 ppm/°C. in the range of 0° C. to 100° C., a catalyst formed at the active portion comprises at least Cu_2O, ZnO, MnO_2 and Pt black, and a catalyst formed at the dummy portion comprises at least CuO and Cr_2O_3.

5,304,977

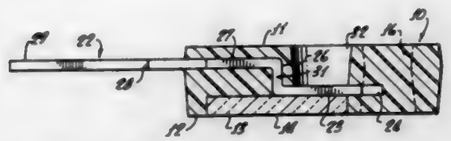
FILM-TYPE POWER RESISTOR COMBINATION WITH ANCHORED EXPOSED SUBSTRATE/HEATSINK

Richard E. Caddock, Jr., Winchester, Oreg., assignor to Caddock Electronics, Inc., Riverside, Calif.

Continuation-in-part of Ser. No. 758,599, Sep. 12, 1991, abandoned. This application Apr. 6, 1992, Ser. No. 863,851

Int. Cl.[5] H01C *1/034*

U.S. Cl. 338—275 **17 Claims**



1. A film-type electrical power resistor, which comprises:

(a) a flat nonmetal chip having an upper surface and a lower surface, having a high dielectric strength, and having relatively high thermal conductivity for a nonmetal,

(b) a resistive film applied to said upper surface of said chip,

(c) terminals connected mechanically to said upper surface of said chip and connected electrically to said resistive film, said terminals being such that said chip with said film thereon may be positioned by said terminals in a predetermined position in a mold cavity, during manufacture of the power resistor, prior to introduction of synthetic resin into said mold cavity,

(d) a molded electrically insulating body embedding those portions of said terminals that are relatively adjacent said chip, and also embedding only the upper portion and edge portions of said chip,

said molded body not having any mold cup therearound.

said lower chip surface and said body being so related to each other that said lower surface may be engaged in flatwise relationship to a flat region of a chassis or heatsink,

said chip serving as a substrate for said film, as a heatsink for heat generated by said film, as an insulator maintaining said film electrically insulated from said chassis, and as a spacer maintaining said terminals spaced from said chassis,

said resistor not containing any metal layer that is either in an electric circuit or projects outwardly relative to the edges of said chip, and

(e) a bolthole extended through said body for clamping of said resistor in effective heat-transfer relationship to said flat region of said chassis or heatsink.

5,304,978

RESISTOR GRID ASSEMBLY HAVING "U" BEND RESISTOR ELEMENTS

Robert Cummins; William Benson, both of Pittsburgh, Pa., and Victor V. Kirilloff, Lincoln, Nebr., assignors to Mosebach Manufacturing Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 927,452, Aug. 10, 1992. This application Jan. 13, 1993, Ser. No. 3,591

Int. Cl.[5] H01C *3/00*

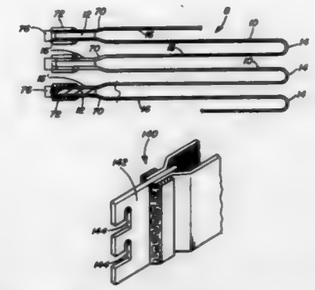
U.S. Cl. 338—280 **54 Claims**

1. A fabricated resistor grid including a frame having space apart first and second insulating members supporting a zigzag resistor, said zigzag resistor comprising:

a plurality of resistor elements formed of sheet metal having at least one "U" shaped bend and not more than four "U" shaped bends in each element, said resistor elements being connected by welded joints to each other to form said zigzag resistor,

a first type of connecting means connecting said "U" shaped bends to said first and second insulating members,

a second type of connecting means connecting said welded joints of said zigzag resistor to said first and second insulating members whereby said continuous zigzag resistor is



supported between said first and second insulating members.

5,304,979

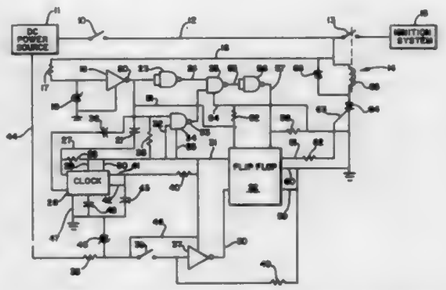
VEHICLE ANTITHEFT SYSTEM

Robert J. Lima, 3937 Townbluff, Plano, and Jack F. Smith, 409 Ridgeview, Richardson, both of Tex. 75080

Filed Jul. 8, 1992, Ser. No. 910,730

Int. Cl.[5] B60R *25/10*

U.S. Cl. 340—428 **7 Claims**



1. A vehicle antitheft ignition lock out circuit comprising: a dc power source; a vehicle ignition system; a line from dc power source to said vehicle ignition system; an ignition switch in said line and an ignition cut off relay switch in said line; a relay having a relay coil and a solenoid core connected to said ignition cut off relay switch for opening and closing said ignition cut off relay switch with activation and deactivation of said relay; circuit path means connected to said line between said ignition switch and said ignition cut off relay switch as a dc power source, when said ignition switch is closed, for said relay coil; and control circuit means including control switch means for activating a current on-off dc conduction device controlling on-off conduction of dc current through said current on-off dc conduction device; wherein said current on-off dc conduction device is a silicon controlled rectifier having anode connection to said relay coil, a cathode connection to a voltage potential reference source, and a control electrode connected to said control circuit means; said ignition cut off relay switch is a normally open switch that is closed for through flow of dc to said vehicle ignition upon initiation of current flow through said relay coil; said control switch means is a normally open switch circuit connected to said dc power source; and with said normally open switch connected through intervening circuit means to a flip flop control means circuit having a controlling output connection to said control electrode of said silicon controlled rectifier for controlled setting of said silicon controlled rectifier when said control switch means is closed transmitting a voltage signal

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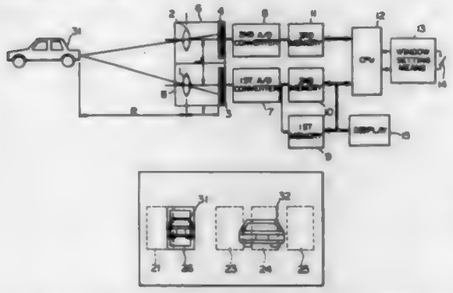
state to said flip flop control means circuit; said intervening circuit means includes an inverter circuit; said control switch means is located in a hidden non obtrusive place in the vehicle; and wherein a logic circuit is connected to said line from dc power source to said vehicle ignition system between said ignition switch and said ignition cut off relay switch; said logic circuit inverter circuit having an output connection to a capacitor also connected to a timing circuit activating terminal; said logic circuit inverter circuit output also being connected to a set input terminal of said flip flop control circuit means, and to two inputs of an "and" circuit in logic circuitry of said control circuitry; and with the said flip flop control circuit means in the set state said control switch means when closed passing a signal through intervening circuitry to an enable terminal of said flip flop control circuit means to produce an output to the control electrode of said silicon controlled rectifier for current flow therethrough and through the relay coil for closing of said relay switch.

5,304,980

DISTANCE DETECTING APPARATUS FOR A VEHICLE

Hiroko Maekawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,468
Claims priority, application Japan, Jan. 24, 1991, 3-022715
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—435 **4 Claims**



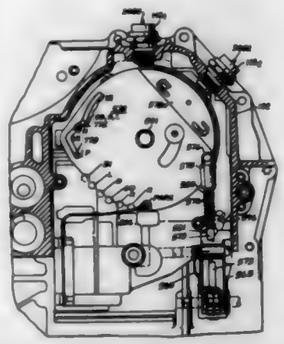
1. A distance detecting apparatus for a vehicle comprising:
a pair of optical sensing means for individually optically sensing a plurality of objects and generating corresponding image signals;
first memory means for storing an output image signal from one of said optical sensing means as a first image signal;
second memory means for storing an output image signal from another one of said optical sensing means as a second image signal;
a display having a screen for displaying images of said objects as sensed by said pair of optical sensing means;
window setting means for successively setting an image-following window on the screen of said display at a location enclosing a target preceding vehicle as well as a plurality of distance-measuring windows at predetermined locations on the screen of said display;
distance calculating means for comparing images of said objects associated with said respective windows and stored in said first memory means with corresponding images of said objects stored in said second memory means so as to detect deviations therebetween, said distance calculating means individually calculating the distance to an object associated with each window based on the detected deviations; and
image-following-window updating means for successively comparing at predetermined intervals an image in said image-following window, which is currently sensed by one of said optical sensing means and stored in said first memory, with an image of said target vehicle, which was previously sensed by said one of said optical sensing means and stored in said first memory, so as to update the image-following window at a location which provides a best match therebetween.

5,304,981

METHOD OF DETERMINING THE DRIVER SELECTED OPERATING MODE OF AN AUTOMATIC TRANSMISSION SYSTEM

Maurice B. Leising, Clawson, and Keith B. Carle, Hartland, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 189,553, Apr. 29, 1988, abandoned.
This application Dec. 21, 1992, Ser. No. 995,939
Int. Cl.[5] B60Q *1/00*
The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.
U.S. Cl. 340—456 **8 Claims**



1. A method of determining the manually drive-selected operating mode of a vehicle transmission by a plurality of contact switch sensors and a lever actuated in response to a manual input, said method comprising the steps of:
actuating a lever to a predetermined position which is one of a plurality of driver-selected modes of the transmission;
reading a plurality of contact switch sensors by a controller to determine whether the contact switch sensors are or are not grounded to the lever based on the predetermined position of the lever;
reading a plurality of reverse contacts by the controller to determine whether the reverse contacts are opened or closed by the contact switch sensors;
generating a binary code by the contact switch sensors and reverse contacts; and
determining the driver-selecting operating mode of the transmission by the controller based on whether the contact switch sensors are or are not grounded and whether the reverse contacts are opened or closed.

5,304,982

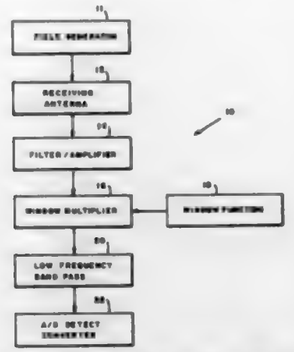
APPARATUS AND METHOD FOR DETECTING MAGNETIC ELECTRONIC ARTICLE SURVEILLANCE MARKERS

Robert A. Cordery, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 3, 1992, Ser. No. 940,275
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—551 **4 Claims**

1. A method for detecting the presence of a soft ferromagnetic marker in a dual frequency interrogation zone, the steps comprising:
receiving a signal from the interrogation zone,
filtering the signal to remove noise, and limit the signal bandwidth,
amplifying the filtered signal,

deriving a window function based upon the derivative of the filtered signal,
selecting time windows at the expected pulse locations of the signal and multiplying the filtered/amplified signal at the selected time windows by the window function,



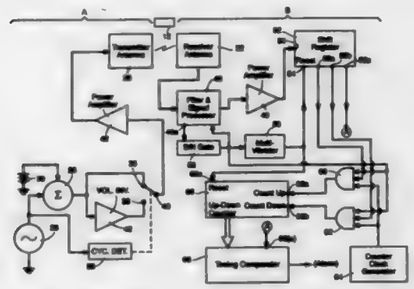
averaging the product of the filtered/amplified signal times the window function over each time window to produce a demodulated signal, and
determining the presence of a marker in the interrogation zone by detecting the demodulated signal at the lower frequency of the dual frequency interrogation zone.

5,304,983

MULTIPLE PULSE RESPONDER AND DETECTION SYSTEM AND METHOD OF MAKING AND USING SAME

Peter Y. Zhou, Smithtown; John Dunn, Merrick, both of N.Y.; Charles D. Graham, Ardmore, and Kyung-Ho Shin, Philadelphia, both of Pa., assignors to Knogo Corporation, Hauppauge, N.Y.

Filed Dec. 4, 1991, Ser. No. 803,330
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—572 **18 Claims**



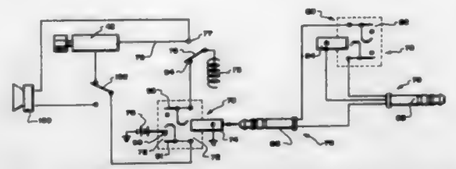
1. A method for making a responder for an electronic article surveillance system, said method comprising the steps of providing a first layer of an alloy of ferromagnetic material characterized by a magnetic coercivity less than three oersteds and subjecting said first layer to oxidation to form thereon a second layer which is exchange coupled with said first layer thereby providing an easily saturable low magnetic coercivity magnetic element, providing a plurality of so formed elements and mounting said elements in closely spaced relationship on an article to be protected so that when said elements are subjected to a changing magnetic field, each element will be driven from magnetic saturation in one direction to magnetic saturation in the opposite direction at a different time.

5,304,984

BELT TENSION SIGNALLING DEVICE

Eduardo L. Roldan, 4188 Greystone Dr., Yorba Linda, Calif. 92686

Filed Apr. 2, 1990, Ser. No. 503,265
Int. Cl.[5] G08B *23/00, 25/08*
U.S. Cl. 340—573 **19 Claims**



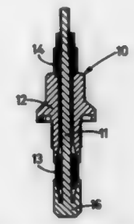
1. In a signalling device to be worn around or near a person's waist or abdominal region to indicate expansion of said region, the combination of: belt means having first and second ends and extending around said abdominal region of the wearer; housing means attached to said first end of said belt means; vibration-producing means operably associated with said housing means; indicator means operably associated with said housing means and with said vibration-producing means; and switch means operably associated with said indicator means and said second end of said belt means, whereby when said abdominal region is expanded beyond a selected dimension, said switch means activates said indicator means, alerting said person that said expansion has occurred; in which said indicator means is constituted by means for interrupting the vibration of said vibration-producing means.

5,304,985

HIGH PRESSURE, HIGH TEMPERATURE SEALING ARRANGEMENT

Harry F. Cosser, 16 Tavistock Road, Fleet, Hampshire, United Kingdom GU13 8EH

Filed Apr. 16, 1992, Ser. No. 869,504
Claims priority, application United Kingdom, Apr. 17, 1991, 9108148
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—620 **11 Claims**



1. In an electrical water level sensing probe comprising an end body, a mounting body having a through passage formed therein and which is to be mounted in a side of a pressure vessel so that the end body is within the pressure vessel, a tubular ceramic insulator by which the end body and the mounting body are interconnected, the interior of the tubular insulator communicating with the through passage, and a central electrode which is mounted on the end body and which extends through the interior of the tubular insulator and through the through passage of the mounting body with clearance therearound, there being a high pressure, high temperature sealing arrangement between the insulator and each of the end body and the mounting member, wherein the improvement comprises:
the tubular ceramic insulator having a shallow external taper formed on it at either end and being in direct contact with

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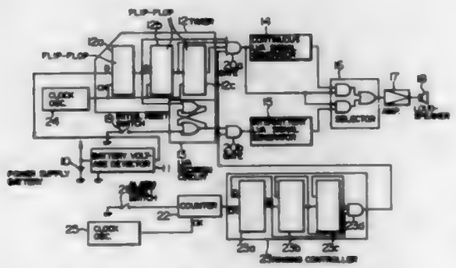
and force fitted into a respective cavity which is formed in the respective one of the end body and the mounting body that are interconnected by the tubular ceramic insulator, each cavity being formed with a complementary taper such that there is an elastic strain of the respective one of the end and mounting bodies on assembly and the ceramic insulator is locked within the cavity of the respective body by directly contacting and interengaged tapered surfaces, the force fit being such as to cause sufficient elastic strain of the material of the respective body on assembly for the ceramic insulator to remain locked therein at the designed high operating temperature despite the thermal expansion of the bodies being greater than that of the ceramic insulator.

5,304,986

BATTERY VOLTAGE ALARM APPARATUS

Takamasa Motegi, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 920,907
Claims priority, application Japan, Aug. 21, 1991, 3-209181
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—636 **15 Claims**



1. A battery voltage alarm apparatus comprising:

means for determining when a battery voltage is below a predetermined voltage level and for generating a first control signal anytime that said battery voltage is below said predetermined voltage level and a second control signal only when the battery voltage remains below said predetermined voltage level for a predetermined period of time;

first alarm generation means, to be driven by the first control signal, for generating a first alarm; and

second alarm generation means, to be driven by the second control signal, for generating a second alarm.

5,304,987

BOARD REMOVAL DETECTION CIRCUIT

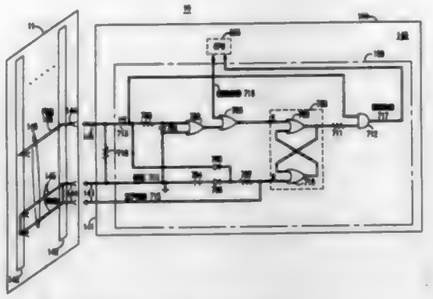
Gordon R. Brunson, Broomfield, and David J. Marinelli, Denver, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 16, 1992, Ser. No. 869,413
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—654 **14 Claims**

1. A circuit for use with a circuit module disconnectably connectable to a source of power, comprising:

circuit means for detecting a power outage on the circuit module;

circuit means capable of determining that the circuit module has been physically disconnected from the power source and also capable of determining that the circuit module has not been physically disconnected from the power source, said determining circuit means responsive to the detection of a power outage for determining whether the cause of the detected power outage is that the circuit module has been physically disconnected from the power source; and



means responsive to the determination for indicating the determination.

5,304,988

CHARACTER PROCESSING METHOD

Kunio Seto, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1991, Ser. No. 739,993
Claims priority, application Japan, Aug. 3, 1990, 2-206621
Int. Cl.[5] G09G *1/14*
U.S. Cl. 341—141 **2 Claims**



1. A character procesaing apparatus having means for performing each of the following functions:

recognizing coordinate information expressing a character, an exterior outline, an interior outline, a horizontal line and a vertical line;

classifying the coordinate information expressing the character, the exterior outline, the interior outline, the horizontal line and the vertical line, and then determining band information in accordance with said classifying;

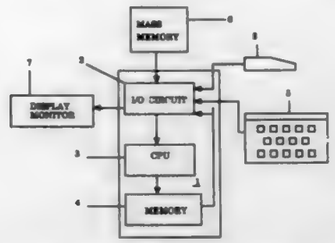
setting a skipping order at the time of a low pixel so as to be converted into character data for a bit map development composed of a control point coordinate for expressing the outline of the character on the basis of the determined band information.

5,304,989

METHOD AND APPARATUS FOR MINIMIZING THE VISUAL DEGRADATION OF DIGITAL TYPEFACES-VERTICAL ADJUSTMENT

Eduardo Martinez, Palo Alto, and May Kao, Cupertino, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 263,043, Oct. 26, 1988, abandoned. This application Mar. 5, 1992, Ser. No. 846,586
Int. Cl.[5] G09G *5/26*
U.S. Cl. 345—128 **58 Claims**



1. In a computer system comprising a display for displaying characters of a digital typeface, a method of adjusting in a vertical direction at least one character of the digital typeface, said method comprising the steps of:

identifying Y strokes as strong Y strokes if the ratio of the length of the stroke and the thickness of the stroke is greater than a predetermined amount indicative of a strong stroke, said Y strokes indicative of important visual elements of a character with respect to Y coordinates of frame points of frames representing the character, said Y strokes defined by said frame points, said frame points having X-Y coordinates, said character being defined by a plurality of control points having X-Y coordinates, said frame points forming a polygon and having determinable geometric relationships with said control points based on their coordinates;

constructing a Y main street comprising non-vertically overlapping strong Y strokes, prioritized in order of length, said Y main street indicative of high priority visual components of a character;

globally adjusting the thicknesses of the Y strokes of the typeface relative to all strokes of the typeface thereby regularizing the thicknesses of the Y strokes;

forming at least one top extreme cluster comprising a set of consecutive Y coordinate values of top extremes of characters of the typeface wherein no two consecutive Y coordinate values are more than a predetermined distance apart;

forming at least one bottom extreme cluster comprising a set of consecutive Y coordinate values of the bottom extremes of the characters of the typeface wherein no two consecutive Y coordinate values are more than a predetermined distance apart;

determining which top clusters are important top clusters and which bottom clusters are important bottom clusters, the importance of the clusters being dependent on the number of extremes which comprise each cluster;

identifying those Y main street strokes which comprise at lenst one segment which is black convex and within the Y coordinate limits of an important cluster of the same type;

adjusting the Y coordinate of the segment which is black convex and within an important cluster of the same type by a Y alignment process wherein the Y coordinate of the segment is horizontally aligned with the proximate Y coordinates of other segments of characters of the typeface;

if one segment of a Y main street stroke was adjusted by a Y alignment process, adjusting the Y coordinate of the other segment according to the thickness of the stroke;

adjusting the Y white space between Y main street strokes, said adjustment of Y white space dependent upon preserving the height of the character;

adjusting the Y coordinates of the Y main street strokes not adjusted according to a Y alignment process, said Y coordinates adjusted relative to the adjusted Y main street strokes;

identifying those Y strokes not on Y main street which comprise at least one segment which is black convex and within the Y coordinate limits of an important cluster of the same type;

adjusting the Y coordinate of the segment which is black convex and within an important cluster of the same type by a Y alignment process wherein the Y coordinate of the segment is horizontally aligned with the proximate Y coordinates of other segments of characters of the typeface;

if one segment of a Y stroke not on main street was adjusted by a Y alignment process, adjusting the Y coordinate of the other segment according to the thickness of the stroke;

adjusting the Y coordinates of the remaining unadjusted strokes relative to the adjusted Y main street strokes;

identifying those Y segments which did not form a stroke which comprise at least one segment which is black convex and within the Y coordinate limits of an important cluster of the same type;

adjusting the Y coordinate of the segment which is black convex and within an important cluster of the same type by a Y alignment process wherein the Y coordinate of the segment is horizontally aligned with the proximate Y coordinates of other segments of characters of the typeface; and

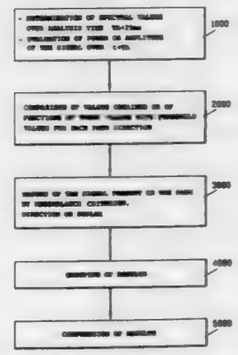
adjusting the Y coordinates of the remaining unadjusted segments relative to the adjusted Y main street strokes.

5,304,990

MODULAR ANALYZER OF DIGITAL SIGNAL TRAFFIC

Jean-Claude Rebourg, Rambouillet; Serge JeanClaude, Villeneuve-la-Garenne, and Philippe Ezran, Elancourt, all of France, assignors to France Telecom, Paris, France

Filed May 22, 1992, Ser. No. 887,026
Claims priority, application France, May 24, 1991, 91 06286
Int. Cl.[5] G05B *23/02*; H04M *15/00*
U.S. Cl. 340—825.06 **11 Claims**



1. A traffic-analyzing system for one or more digital signal multipath transmission channels comprising a plurality of paths, said signals consisting of successive digital samples, said system comprising:

means, coupled to at least one transmission channel comprising a plurality of paths, for acquiring and storing said samples, and for discriminating between synchronizing signals transmitted over one path and other signals transmitted over other paths, said samples being stored as

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stored samples of a signal to be analyzed, and said acquiring and discriminating being performed over an analysis time period TA during which parameters of said signals are substantially steady;

means for processing said stored samples, said processing means including at least one dedicated discrimination circuit per signal type travelling over said at least one transmission channel for delivering, as a function of the signal type travelling over said at least one channel, discriminated parameter signal; and

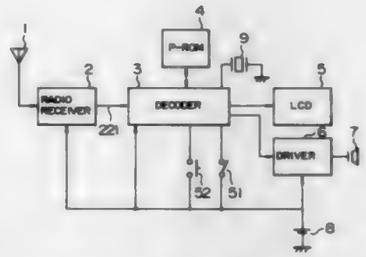
means for compressing said discriminated parameter signals and for thus permitting, for a set of said parameters signals over an elementary time period TE which is a multiple of said analysis time period TA, the distribution of said parameter signals, as a function of the signal type or of a temporal mode of analysis of said paths comprising the transmission channel, with respect to at least one channel, as resultant signals, thereby allowing said traffic analyzing system to operate in real time mode.

5,304,991

SELECTIVE CALL RADIO PAGING RECEIVER HAVING DISPLAY FUNCTION AND REDUCED CONTROL INPUTS

Takamasa Motegi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 596,368, Oct. 12, 1990, abandoned. This application May 26, 1992, Ser. No. 890,378
Claims priority, application Japan, Oct. 18, 1989, 1-270633
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.44 **8 Claims**



1. A selective call paging receiver, comprising:

(a) a first switch for generating a first signal when actuated;

(b) a second switch for generating a second signal when actuated;

(c) a memory means for receiving and accumulating therein message information representing plural messages each succeeding a paging code signal assigned to said receiver, said memory means being enabled to store said message information in response to said first signal; and

(d) a control means or controlling said memory means, said control means comprising:

(i) first circuit means for outputting a first-level signal in response to said first signal;

(ii) a first timer for counting up a first predetermined time period in response to said first signal and for causing said first circuit means to cease outputting said first-level signal and to output a second-level signal when said first predetermined time period is counted up;

(iii) a first AND gate receiving an output from said first circuit means and said second signal;

(iv) second circuit means for outputting a said first-level signal in response to a high output from said first AND gate except when said second switch is in a non-actuated state;

(v) a second timer for counting up a second predetermined time period in response to a high output from said first AND gate;

(vi) a second AND gate receiving an output from second circuit means and an output from said second timer when said second predetermined time period is counted up;

(vii) a third timer for counting up a third predetermined time period in response to said output from said second timer;

(viii) a third circuit means for outputting a said first-level signal in response to a high output from said second AND gate until said third timer provides an output when said third predetermined time period is counted up;

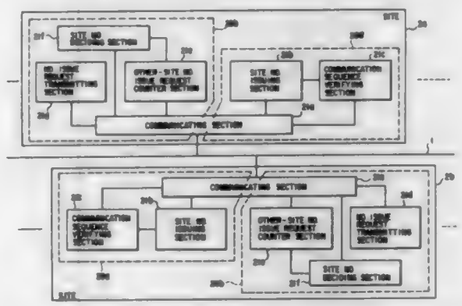
(ix) a third AND gate receiving said second signal and an output from said third circuit means and, when an output of said third AND gate is high, providing a control signal to said memory means to erase said message information accumulated in said memory means.

5,304,992

METHOD OF ALLOCATING IDENTIFIERS AND APPARATUS FOR THE SAME

Shuuji Harashima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 14, 1991, Ser. No. 791,306
Claims priority, application Japan, Nov. 16, 1990, 2-311199
Int. Cl.[5] H04Q *11/08*; H04J *3/24*; H04L *29/06*; G08C *15/06*
U.S. Cl. 340—825.52 **11 Claims**



1. A method of allocating identifiers to individual newly participating sites in a communication system where a plurality of existing sites are connected to each other through a communication line and a communication between the sites using exclusively said communication line is carried out by specifying an object site using a unique identifier allocated to said object site, the method comprising the steps of:

broadcasting an identifier issue request on said communication line by each newly participating site;

receiving said identifier issue request on said communication line by said existing sites;

broadcasting an identifier string of unique identifiers not yet allocated and arranged in transmission order of said identifier issue requests on said communication line by one of said existing sites;

counting the number of identifier issue requests broadcasted from other new sites by each new site during the time from when that new site broadcasts said identifier issue request until it receives said identifier string; and

selecting the unique identifier allocated to itself from said identifier string based on the count by each new site.

5,304,993

RETRACTABLE BOAT SIGNALING MEANS

Jerrold L. Handsaker, 62 Smith Cir., Algona, Iowa 50511

Filed Apr. 3, 1992, Ser. No. 863,069
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—984 **13 Claims**



1. A vehicle and retractable signaling means in combination comprising,

a vehicle having a body having an outer wall and an interior chamber,

a signaling unit mounted in said interior chamber and having telescopic sections movable upwardly through said outer wall between raised and lowered positions, a signaling transmitter mounted on the upper end of the uppermost telescopic section,

a drive cord positioned in and extending along the axial center of said telescopic sections extending from the uppermost section to said interior chamber where it is coiled on a takeup reel, said cord including a pair of electrical conductors connected to one end to said signaling transmitter and at the other end to a pair of terminal rings mounted on said reel to rotate therewith, said drive cord having sufficient stiffness and strength to act in compression and tension to push said telescopic sections upwardly to said raised position and pull said telescopic sections down to said lowered position upon operation of said takeup reel,

an electrical source including a pair of stationary electrical conductors in electrical contact with said pair of terminal rings whereby said signaling transmitter and electrical source are adapted to be continuously electrically interconnected between and during retracted and raised positions of said telescopic sections, and

said electrical source electrical conductors being in electrical contact with said pair of terminal rings through a pair of brushes in frictional contact with said pair of terminal rings.

5,304,994

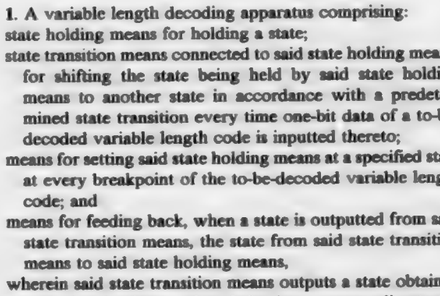
MINIMAL DELAY LEADING ONE DETECTOR WITH RESULT BIAS CONTROL

Craig Heikes, Fort Collins, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Jun. 9, 1992, Ser. No. 896,529
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—50 **20 Claims**

1. A circuit comprising:

a) encoder means having inputs for receiving an n-bit binary word and for simultaneously operating upon all bits of the n-bit binary word in groups of W-bits, where W is less than n, the encoder means being operative to provide at outputs thereof indications of whether any one of the bits in each group of W-bits has a selected characteristic, and if so, for providing an indication of the position of the bit having the selected characteristic within its corresponding group of W-bits; and



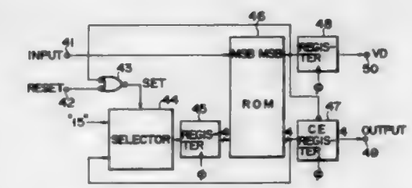
b) multiplexer means having inputs receiving the outputs from the encoder means and simultaneously operating thereupon to provide an output indicative of the position of a first occurrence of the bit having the selected characteristic in the n-bit binary word.

5,304,995

VARIABLE LENGTHCODING APPARATUS AND VARIABLE LENGTH DECODING APPARATUS

Kenshi Dachiku, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 15, 1991, Ser. No. 729,545
Claims priority, application Japan, Jul. 18, 1990, 2-190062
Int. Cl.[5] H03M *7/40, 7/42*
U.S. Cl. 341—67 **5 Claims**



1. A variable length decoding apparatus comprising:

state holding means for holding a state;

state transition means connected to said state holding means, for shifting the state being held by said state holding means to another state in accordance with a predetermined state transition every time one-bit data of a to-be-decoded variable length code is inputted thereto;

means for setting said state holding means at a specified state at every breakpoint of the to-be-decoded variable length code; and

means for feeding back, when a state is outputted from said state transition means, the state from said state transition means to said state holding means,

wherein said state transition means outputs a state obtained at the breakpoint as a decoded value corresponding to the variable length code every time there is a state transition.

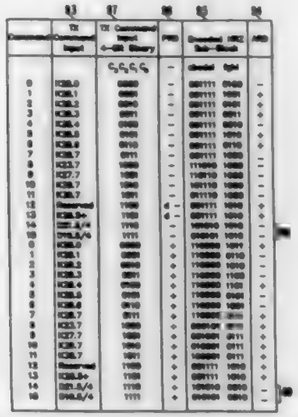
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5,304,996

8B/10B ENCODER PROVIDING ONE OF PAIR OF NONCOMPLEMENTARY, OPPOSITE DISPARITY CODES RESPONSIVE TO RUNNING DISPARITY AND SELECTED COMMANDS

Arthur Hsu, San Jose, and Yun-Che Wang, Los Altos, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 21, 1992, Ser. No. 839,604
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—95 **11 Claims**



1. In an 8B/10B command encoder having a combinatorial logic circuit for converting a set of digital m bit inputs representing command codes into a set of output digital codes having 10 bits, wherein $m<10$ and where said output codes and complements thereof are valid, if and only if, disparity is +2, 0 or −2, including means to maintain running disparity after the issuance of said output code to be equal to +1 or −1, the improvement comprising,

means in said combinatorial logic circuit responsive to both (a) the value of running disparity and (b) a particular set of input n digital bits for generating either a first or second output digital code, wherein said first and second output digital codes are not complement forms of one another.

5,304,997

8-BIT DATA WORD TO 15-BIT CODEWORD CONVERTER UTILIZING PERIODICALLY VARYING DIGITAL SUM VARIATION

Ichiro Kouno, Chiba, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1992, Ser. No. 856,984
Claims priority, application Japan, Mar. 29, 1991, 3-066963
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—95 **17 Claims**

1. A digital modulating method for a magnetic medium for converting a 8-bit data word sequence into a 15-bit codeword sequence, comprising the steps of:

(a) assigning a plurality of 15-bit codewords to each 8-bit data word so that a number of continuous identical bits is not less than 2 and not more than 8 in the 15-bit codeword sequence, and

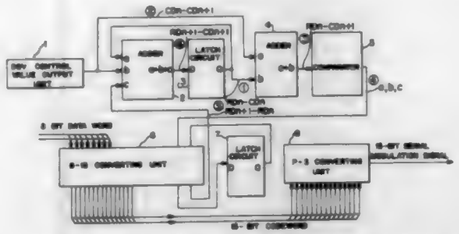
(b) selecting one of the plurality of 15-bit codewords assigned to each 8-bit data word so that a digital sum variation of a last bit of each of the plurality of 15-bit codewords periodically changes, wherein

said assigning step (a) includes the sub-steps of,

(a) (1) producing a plurality of first code pairs, each including a 15-bit codeword with a codeword digital sum of +3 and a 15-bit codeword with a codeword digital sum of −1 and a plurality of second code pairs, each including a 15-bit codeword with a codeword digital sum of +1 and a 15-bit codeword with a codeword digital sum of −3,

(a) (2) assigning one of said plurality of first code pairs and one of said plurality of second code pairs to each 8-bit data word, and

(a) (3) selecting one of the plurality of first code pairs and



one of the plurality of second code pairs assigned to each 8-bit data word so that the number of continuous identical bits is not less than 2 and not more than 8 in the 15-bit codeword sequence,

wherein said selecting sub-step (a) (3) further includes,

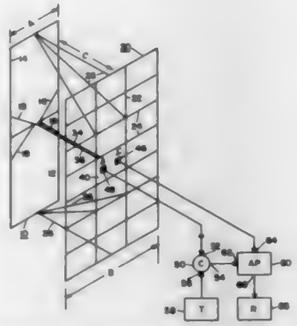
(a) (3) (A) selecting one of the two 15-bit codewords included in the selected code pair so that the digital sum variation of the last bit of each 15-bit codeword periodically varies.

5,304,998

DUAL-MODE COMMUNICATION ANTENNA

Alfred R. Lopez, Commack, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed May 13, 1992, Ser. No. 882,393
Int. Cl.[5] H01Q *13/10*
U.S. Cl. 343—767 **20 Claims**



1. In an antenna of the type wherein a panel member in the form of a continuous metallic band having first and second opposed side sections is supported in front of a substantially planar back reflector having a width greater than said panel member, the improvement enabling dual-mode operation, comprising:

first transmission line means, coupled to said first side section of said panel member, for coupling a first received signal;

second transmission line means, coupled to said second side section of said panel member, for coupling a second received signal;

signal combiner/divider means, coupled to said first and second transmission line means, for combining portions of said first and second received signals in a first phase relationship to provide a received normal mode signal and for combining portions of said first and second received signals in a second phase relationship to provide a received difference mode signal; and

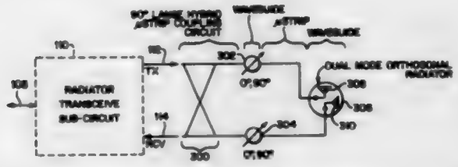
normal mode and difference mode terminal means, coupled to said signal combiner/divider means, for respectively coupling said received normal mode and received difference mode signals to enable processing of said signals, and for selectively coupling input signals to enable use of said antenna on a reciprocal basis for dual-mode reception and transmission of signals.

5,304,999

POLARIZATION AGILITY IN AN RF RADIATOR MODULE FOR USE IN A PHASED ARRAY

Roger G. Roberts, Auburn, and Thomas E. Sharon, Alpharetta, both of Ga., assignors to Electromagnetic Sciences, Inc., Norcross, Ga.

Filed Nov. 20, 1991, Ser. No. 795,026
Int. Cl.[5] H01Q *3/36;* **H01P** *1/161, 5/16, 1/18*
U.S. Cl. 343—778 **25 Claims**



1. A polarization agile RF radiator module for use in a phased array, said module comprising:

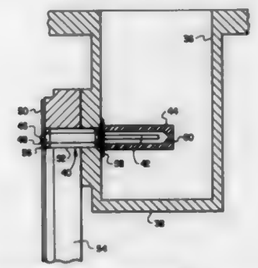
an RF radiator structure capable of supporting at least two orthogonal modes of RF propagation and coupled to an arrangement of (i) a pair of parallel latchable hybrid phase shifters in series with (ii) a 90° Lange hybrid microstrip coupling circuit.

5,305,000

LOW LOSS ELECTROMAGNETIC ENERGY PROBE

James M. Harris, Terrell, Tex., assignor to Gardiner Communications Corporation, Garland, Tex.

Continuation of Ser. No. 563,430, Aug. 6, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,298
Int. Cl.[5] H01Q *13/080, 1/400;* **H01P** *5/103*
U.S. Cl. 343—786 **5 Claims**



1. A waveguide coupler comprising:

a waveguide having a closed end and an aperture spaced from the closed end;

a transmission line;

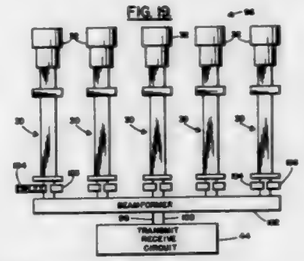
a probe assembly connected to the transmission line and mounted in the aperture of the waveguide comprising a probe, a low-loss dielectric sleeve, and a probe spacer for centering the probe within the dielectric sleeve, the dielectric sleeve surrounding but not contacting the probe and providing an air gap between the probe and the dielectric sleeve along the length of the probe thus reducing electrical losses for the coupler, wherein the transmission line is a coaxial transmission line comprising an inner conductor and an outer conductor, the inner conductor having two ends, the first end of the inner conductor electrically connected to one end of the probe and the second end electrically connected to a low-noise amplifier and the outer conductor surrounding the inner conductor and electrically connected to and extending from a printed circuit board on which the low noise amplifier is mounted to an inner wall of the waveguide without touching the waveguide.

5,305,001

HORN RADIATOR ASSEMBLY WITH STEPPED SEPTUM POLARIZER

Mon N. Wong, and Gregory D. Kroupa, both of Torrance, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 29, 1992, Ser. No. 906,162
Int. Cl.[5] H01P *1/16*
U.S. Cl. 343—786 **11 Claims**



1. A horn radiator assembly comprising:

a waveguide section having a front end and a back end and being of square cross-section, said waveguide section having a top wall and a bottom wall, there being a middle portion of said waveguide section located between said front end and said back end;

a septum upstanding from said bottom wall within said waveguide section, said septum extending from said middle portion of said waveguide section in longitudinal direction toward said back end and increasing in height stepwise with progression toward said back end, a maximum height of said septum extending from said bottom wall to said top wall enabling said septum to bisect a portion of said waveguide section into first and second waveguide ports of rectangular cross section;

a circular cylindrical horn having a front end and a back end spaced apart along a longitudinal axis of said horn, a radiating aperture being located at said front end of said horn, said back end of said horn being coupled to said front end of said waveguide section; and

wherein a circularly polarized wave entering said radiator assembly via said horn exits said radiator assembly as a linearly polarized wave via said first port for right-handed circular polarization and via said second port for left-handed circular polarization of said circularly polarized wave.

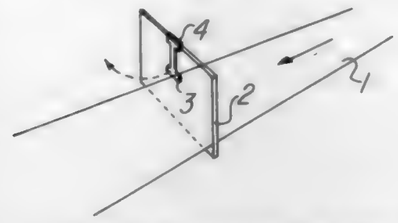
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,002

HINGED READ-OUT ANTENNA SYSTEM

George Holodak, Houston, Tex., and Lock D'Hont, Almelo, Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 23, 1992, Ser. No. 824,417
Claims priority, application Netherlands, Jan. 23, 1991, 9100111
Int. Cl.[5] H01Q 7/08
U.S. Cl. 343—788 9 Claims



1. An antenna system for interrogation and identification of a transponder, wherein the transponder moves along an interrogation path comprising:

a frame antenna, having a top and a bottom portion, disposed around said interrogation path for interrogating said transponder moving along said interrogation path;

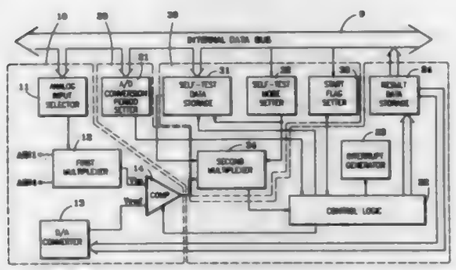
a separate reading antenna for receiving an identification code signal from said transponder located with hinged suspension from said top portion of said frame antenna.

5,305,003

TEST DEVICE OF ANALOG/DIGITAL CONVERTER

Dae K. Han, Kyungki-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed May 11, 1992, Ser. No. 880,772
Claims priority, application Rep. of Korea, May 13, 1991, 6771/1991
Int. Cl.[5] H03M 1/10
U.S. Cl. 341—120 15 Claims



1. A test device of an A/D converter contained in a microcomputer comprising:

a) analog processing means for selecting an analog input signal, on the basis of analog input select data from the microcomputer, converting reference data into a reference voltage and comparing the selected analog input signal with the reference voltage via a comparator;

b) digital processing means for controlling enabling of the comparator on the basis of analog/digital conversion period select data from the microcomputer, outputting the reference data for generating the reference voltage, converting an output signal from the analog processing means into digital data, storing the digital data as result data, and generating an interrupt signal after completion of 8-bit conversion, so as to enable the microcomputer to read the result data; and

c) self-test data loading means for setting a self-test mode on the basis of data from the microcomputer, storing self-test data, selecting the self-test data in the self-test mode in place of the output signal from the analog processing means, loading the selected self-test data in the digital processing means, so as to verify a failure in a digital part of the A/D converter, wherein the self-test data loading means comprises

i) a self-test mode setter for receiving test mode data from the microcomputer via the internal data bus and setting the self-test mode,

ii) a self-test data storage for receiving the clock signal from the control logic of the digital processing means, storing the self-test data received from the microcomputer via the internal data bus therein and outputting the stored self-test data,

iii) a start flag setter for setting a start flag upon receiving an A/D conversion start signal from the microcomputer via the internal data bus and outputting a control signal to the digital processing circuit and

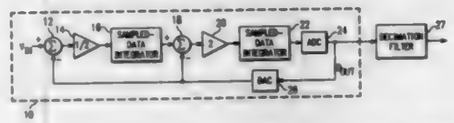
iv) a second multiplexer being switchable according to a mode set by the self-test mode setter, to select output signal from the comparator or output data from the self-test data storage.

5,305,004

DIGITAL TO ANALOG CONVERTER FOR SIGMA DELTA MODULATOR

John W. Fattaruso, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 29, 1992, Ser. No. 954,195
Int. Cl.[5] H03M 1/10
U.S. Cl. 341—120 20 Claims



1. A digital to analog converter for converting a digital signal, comprising:

a plurality of storage elements, each storage element representing a separate value of said digital signal;

dynamic element matching circuitry to randomly select among said storage elements, wherein said dynamic element matching circuitry includes a series of butterfly networks for switching input signals corresponding to said digital signal onto control lines for activating said storage elements; and

self calibration circuitry to match said storage elements to each other such that said storage elements have identical values.

5,305,005

ANALOG TO DIGITAL CONVERTER SYSTEM

Shiro Nakagawa, Chiba; Atsuko Tsuchida, Saitama, and Eiji Takahashi, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

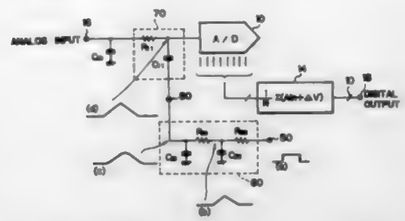
Filed Jun. 11, 1992, Ser. No. 897,152
Claims priority, application Japan, Jun. 27, 1991, 3-181623; Sep. 27, 1991, 3-275047
Int. Cl.[5] H03M 1/20
U.S. Cl. 341—131 7 Claims

1. An A/D converter system comprising:

an A/D converter element which provides a digital output signal having a first predetermined number of bits for an input analog signal;

linear potential muans for providing potential which changes linearly;

addition means for adding an output of said linear potential means to an output analog signal relatively to a reference potential of said A/D converter element wherein said addition means is a time constant circuit which operates as an integrator for an analog input signal, and operates as a differential circuit for slope potential,



amplitude of said slope potential being essentially equal to a minimum resolution of said A/D converter element; and

a calculator for providing an average of a plurality of digital output signals of said A/D converter element with accuracy of second predetermined number of bits,

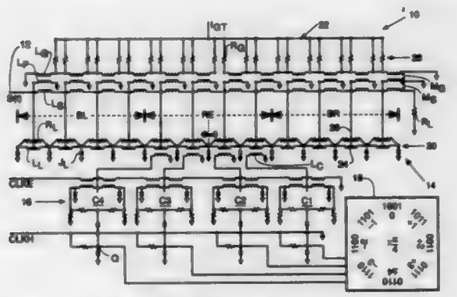
wherein said second predetermined number is larger than said first predetermined number.

5,305,006

SOLITON-PHASE ANALOG-TO-DIGITAL CONVERTER

Gregory S. Lee, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 936,196, Aug. 26, 1992. This application May 25, 1993, Ser. No. 67,327
Int. Cl.[5] H03M 1/00
U.S. Cl. 341—155 10 Claims



1. An analog-to-digital converter comprising:

input means for receiving an input signal having a time-variable signal value;

a phase sampler for digitally representing a phase of a periodic soliton by generating a series of sampling events, each sampling event providing a respective digital representation of said phase; and

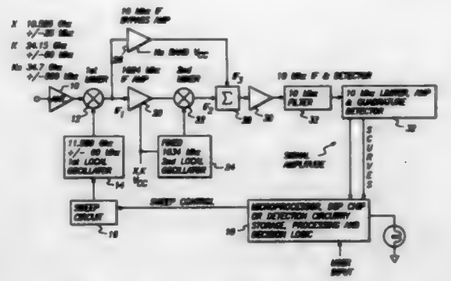
a soliton generator for generating said periodic soliton, said periodic soliton having a respective phase for each sampling event, said soliton means being coupled to said input means so that said phase varies as a function of said signal value, said soliton means being coupled to said sampling means to provide for sampling of said periodic soliton.

5,305,007

WIDEBAND RADAR DETECTOR

Steven K. Orr, Loveland, and John R. Kuhn, West Chester, both of Ohio, assignors to Cincinnati Microwave Corporation, Cincinnati, Ohio

Filed Apr. 13, 1993, Ser. No. 48,128
Int. Cl.[5] G01S 7/40
U.S. Cl. 342—20 11 Claims



1. A method for discriminating between valid and invalid wide Ka band police radar signals with a radar detection apparatus, wherein the radar detection apparatus includes an antenna for receiving an incoming signal, a voltage controlled oscillator for generating a sweeping signal, a mixer for mixing the incoming signal with the sweeping signal to form an intermediate signal, a down converter and a demodulator for processing the intermediate signal and thereby generating an output signal for any incoming signal that falls within a predetermined frequency range, wherein the output signal is a pair of single cycle sinusoids having a characteristic time spacing therebetween, and a processor for evaluating the output signal and generating an alarm signal, said method comprising the single step of evaluating the time spacing between sinusoids, wherein a valid wide Ka band signal is present when one pair of single period sinusoids are present in the predetermined range and an invalid wide Ka band signal is present when multiple pairs of single period sinusoids are present in the predetermined range, said multiple pairs of sinusoids having time spacings that correspond to harmonic frequencies of incoming signals other than wide Ka band signals.

5,305,008

TRANSPONDER SYSTEM

Leigh H. Turner, Newton, and Peter H. Cole, West Lakes Shore, both of Australia, assignors to Integrated Silicon Design Pty. Ltd., Australia

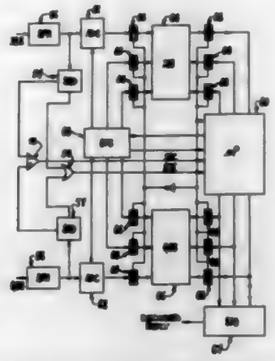
Continuation-in-part of Ser. No. 741,408, Aug. 12, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 941,322
Int. Cl.[5] G01S 13/80
U.S. Cl. 342—44 44 Claims

9. An interrogator for an identification and telemetry system, said interrogator comprising:

an antenna for transmitting an interrogation signal incorporating amplitude modulated radio frequency energy at an interrogation frequency, said radio frequency energy including a modulation waveform having during a first period a first amplitude and during a second period a second and lesser amplitude; means connected to said antenna for generating said interrogation signal; an antenna for receiving from a signal responding label, during said first period, an analog reply signal containing information and forming a complete reply message; means for separating the interrogation and analog reply signals; means for converting said separated analog reply signal to a lower frequency band; and means for processing the separated analog reply signal to extract the label reply information, the improvement wherein the first period is of a length sufficient to receive from the label the com-

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plete reply message, and wherein said processing means includes: means for sampling the converted analog reply signal at a rate sufficient to detect significant components thereof; means for further converting the sampled values of the lower frequency band signal to digital form; means



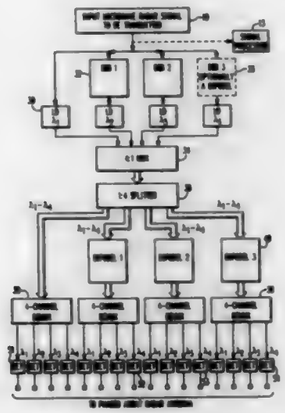
for storing the converted sampled values to create a digital record of the analog reply signal received during the first period, said digital record comprising the complete label reply message; and means for decoding the stored sampled values during the second period to extract said label reply information from said record.

5,305,009

HYBRID ELECTRONIC-FIBEROPTIC SYSTEM FOR PHASED ARRAY ANTENNAS

Anastasios P. Goutzoulis, Pittsburgh; David K. Davies, Churchill Borough; Casey J. Coppock, Greensburg, and John M. Zomp, North Huntingdon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 10, 1992, Ser. No. 988,609
Int. Cl.[5] H01Q *3/38*
U.S. Cl. 342—157 **6 Claims**



1. An improved phased array radar system of the type comprised of a plurality of transmit/receive cells partitioned into N cell sets, and at least one of input means for inputting to the transmit/receive cells a radar signal to be transmitted and processing means for processing radar signals received from the transmit/receive cells wherein the improvement comprises:

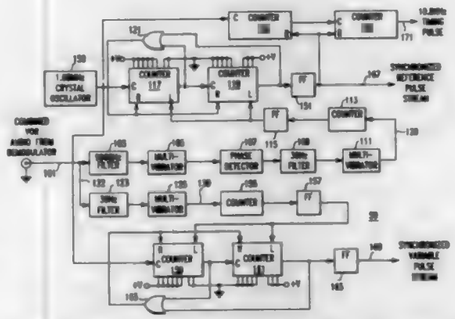
a) a plurality of demultiplexers, one demultiplexer connected to each cell set;
b) N−1 binary fiber optic delay lines each connected to a different cell set;
c) a splitter connected to the binary fiber optic delay lines and one demultiplexer;
d) a multiplexer connected to the splitter;
e) a plurality of laser diodes connected to the multiplexer, one laser diode for each cell set and one of the laser diodes connected to at least one of the input means and the processing means; and
f) N−1 electronic binary delay lines connected to at least one of the input means and the processing means each of said lines connected to a laser diode.

5,305,010

CRYSTAL OSCILLATOR SYNCHRONIZED DIGITAL VERY HIGH FREQUENCY OMNI-RANGE (VOR) INSTRUMENTATION UNIT

Eldon F. Davidson, Folsom, Calif., assignor to Wayne C. Clemens, Santa Ana, Calif.

Filed Mar. 12, 1993, Ser. No. 30,666
Int. Cl.[5] G01S *1/44, 5/04*
U.S. Cl. 342—401 **16 Claims**



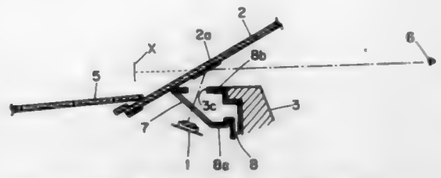
1. In a very high frequency omni-range (VOR) receiver of the type wherein an incoming VOR signal is comprised of both a reference signal and a variable signal, apparatus for producing navigation information in response to said reference and variable signals comprising:
a crystal oscillator for producing a crystal oscillator signal;
first means for generating, in response to said reference signal and said crystal oscillator signal, a synchronized reference pulse stream being in substantially phase synchronized relationship with said crystal oscillator signal;
second means for generating a stream of timing pulses which are in a substantially phase synchronized relationship to said synchronized reference pulse stream;
means for producing, in response to said timing pulses and to said synchronized reference pulse stream, a stream of OBS pulses which are phase-shifted by an amount representative of a preselected radial emitted by a predetermined VOR station; and
third means for generating, in response to said variable signal and said crystal oscillator signal, a synchronized variable pulse stream being in substantially phase synchronized signal relationship with said crystal oscillator signal;
means, operative in response to said timing pulses, said OBS pulse stream, and said synchronized variable pulse stream, for producing a voltage indicative of course deviation between an actual course and said preselected radial.

5,305,011

AUTOMOTIVE DISPLAY APPARATUS

Yoshiyuki Furuya, and Tadashi Iino, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 861,689
Claims priority, application Japan, Apr. 5, 1991, 3-021715[U]
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—7 **7 Claims**



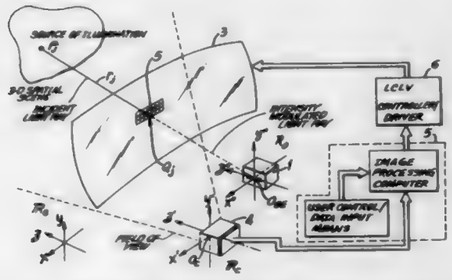
1. An automotive display apparatus comprising:
an indicator installed in a dashboard for displaying information on driving conditions;
a defroster duct defining a defrost air passage and installed within the dashboard for defrosting a windshield;
wherein the dashboard has an opening provided therethrough, said opening defining one end of said defroster duct and constructed for opening in said dashboard and for allowing light from the display of the indicator to pass out of said defroster duct through said opening in said dashboard such that both the defrost air and light from the display of the indicator pass from said opening in said dashboard so as to be reflected by the surface of the windshield, with the indicator light being reflected toward a viewing point of a driver so that the driver can see a virtual image of the display at a location in front of the windshield; and
means for passing light from said indicator to the windshield surface via said defrost air passage, said passing means comprising a transparent face plate disposed upstream from said opening through the dashboard and is arranged between the indicator and the defrost air passage such that the face-plate constitutes part of the defroster duct, the display apparatus constructed such that defroster air in the defrost duct ascends along the surface of the face-plate and is blown at the surface of the windshield via the opening through the dashboard.

5,305,012

INTELLIGENT ELECTRO-OPTICAL SYSTEM AND METHOD FOR AUTOMATIC GLARE REDUCTION

Sadeg M. Faris, Hawthorne, N.Y., assignor to Reveo, Inc., Hawthorne, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,566
Int. Cl.[5] G09G *1/00*
U.S. Cl. 345—7 **42 Claims**



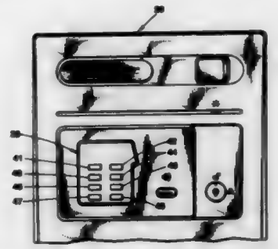
1. Apparatus for automatically reducing glare produced from a three-dimensional spatial scene by reducing the intensity of light rays propagating from points in the three-dimensional spatial scene towards an optical element having a field of view, said apparatus comprising:
an electro-optical element having an optically transparent surface including a plurality of pixels through which the field of view of said optical element passes, each said pixel having a controllable light transmittance for selectively reducing the intensity of incident light rays propagating from one or more points in the three-dimensional spatial scene, through said pixel, then towards said optical element;
image acquisition means for acquiring one or more images of said three-dimensional spatial scene within the field of view of said optical element;
image processing means for processing said one or more acquired images and determining at which pixels the light transmittance is to be actively controlled in order to reduce the intensity of incident light rays by a selected amount before reaching said optical element; and
control means for actively controlling the light transmittance of the determined pixels so that after incident light rays propagate through said determined pixels, said incident light rays propagate towards said optical element with an intensity reduced by said selected amount, so that glare produced from the three-dimensional spatial scene is automatically reduced.

5,305,013

DISK DRIVE STATUS GRAPHICAL DISPLAY

George R. Daniels, Houston, Tex., assignor to Compaq Computer Corp., Houston, Tex.

Filed Nov. 13, 1990, Ser. No. 612,134
Int. Cl.[5] G09G *3/32*
U.S. Cl. 345—82 **6 Claims**



1. A graphical display for communicating disk drive status located on a unit having a first number of disk drive locations physically arranged in a first type format, wherein each of the disk drive locations may include a disk drive having a drive status, the graphical display comprising:
a first number of light emitting diodes, each of said light emitting diodes having a one-to-one correspondence with a disk drive location; and
means surrounding said light emitting diodes having substantially the same outline as a view of the unit,
wherein said light emitting diodes are arranged within said surrounding means and with respect to each other light emitting diode so that said light emitting diodes are in the same arrangement as the disk drive locations to which they correspond.

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5,305,014

OPERATOR-SENSED FEEDBACK VEHICLE COMPONENT OPERATING CONTROL

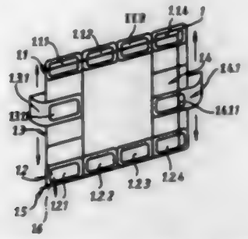
Jürgen Mutschler, An am Rhein; Gerd Seidenfaden, Leonberg; Johann Tomforde, Sindelfingen, and Wilhelm Seeger, Nagold, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Continuation of Ser. No. 706,927, May 31, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 95,999

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1990, 4017897

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—173 **9 Claims**



1. A control arrangement, comprising a display, a plurality of operating controls, each having an associated operating part and being operatively arranged at peripheral portions of the display such that a selected vehicle components from among a group of vehicle components is switched on by operating the one of the operating parts, whereupon the selected vehicle component switched on produces a symbolic representation on the display, the symbolic representation containing functions to be adjusted for the vehicle component switched on and supplying information on current adjustment, and additional functions to be adjusted for other vehicle components each being represented at separate locations of the display such that the additional functions to be adjusted for the other vehicle components are each represented by additional symbolic representations at the separate locations on the diaplay and have a defined association with a respective one of the other operating parts, wherein the operating controls are each mounted at a location on the display at which the additional symbolic representations of each of the additional functions to be adjusted is produced on the display, each operating part having an associated viewing window surrounding the symbolic representation for a respective one of the functions, such that when a selected one of the operating parts is operated, a feedback for the response of a switch of the respective function to be adjusted is sensed by an operator, and the respective function to be adjusted by the associated operating part and symbolically represented on the display is visible through the associated viewing window to minimize the amount of the area of the display covered by the at least one operating control.

5,305,015

LASER ABLATED NOZZLE MEMBER FOR INKJET PRINTHEAD

Christopher A. Schantz, Foster City; Eric G. Hanson, Burlingame; Si-Ty Lam, Pleasanton, all of Calif.; Paul H. McClelland, Monmouth, Oreg.; William J. Lloyd, Pigeon, Mich.; Laurie S. Mittelstadt, Belmont, and Alfred I. Tsong Pan, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 849,650, Mar. 9, 1992, which is a continuation of Ser. No. 568,000, Aug. 16, 1990. This application Apr. 2, 1992, Ser. No. 864,889

Int. Cl.[5] B41J *2/05, 2/16*

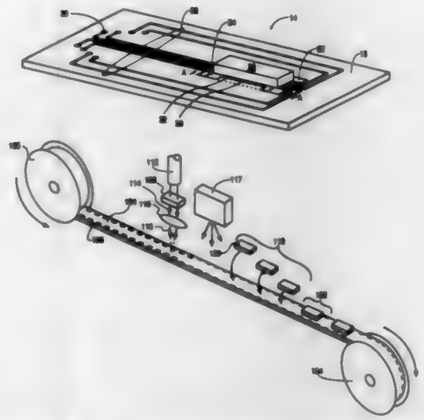
U.S. Cl. 346—1.1 **13 Claims**

11. A process for forming an inkjet printhead, comprising the steps of:

forming a plurality of conductor sections on a length of flexible tape, each of said conductor sections including an identical pattern of electrical conductors formed on said tape;

forming a plurality of nozzle sections on said length of flexible tape, each of said nozzle sections having formed in it an identical pattern of ink orifices,

wherein each of said nozzle sections are adjacent to an associated one of said conductor sections such that first ends of said conductors in said associated one of said conductor sections lead to an associated nozzle section for conducting electrical signals for selectively energizing ink



ejection elements proximate to each of said ink orifices in said associated nozzle section, remote second ends at said conductors in said associated one of said conductor sections for receiving electrical signals from an inkjet printer;

mounting a plurality of substrates to a surface of said flexible tape, each of said substrates being aligned with respect to one of said nozzle sections; and

separating a portion of said length of flexible tape containing only a single nozzle section, an associated one of said conductor sections, and an associated substrate from said length of flexible tape, said portion for use as a single printhead in an inkjet printer.

5,305,016

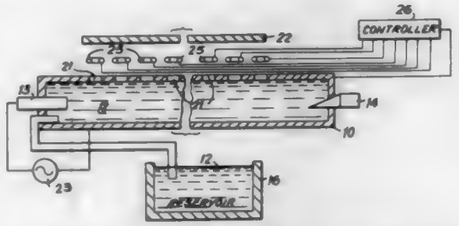
TRAVELING WAVE INK JET PRINTER WITH DROP-ON-DEMAND DROPLETS

Calvin F. Quate, Stanford, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1991, Ser. No. 801,978

Int. Cl.[5] G01D *15/16*

U.S. Cl. 346—140 R **8 Claims**



1. An ink jet printer of the traveling wave droplet generator type, comprising a n ink channel formed by an elongated tube having orifices and having at one tube end an acoustic wave generator and having at the opposite tube end an acoustic

wave absorber, means for establishing adjacent each orifice an electric field exerting a pulling force on ink in the orifice, and means for applying a parametric time varying force to the ink surface synchronized so as to reinforce and amplify the pulling force of the electric field so as to selectively eject ink droplets from one or more of the orifices.

5,305,017

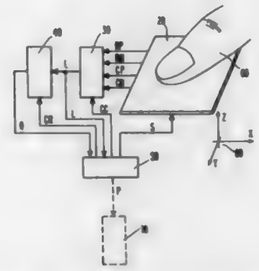
METHODS AND APPARATUS FOR DATA INPUT

George E. Gerpheide, 3481 S. Monte Verde Dr., Salt Lake City, Utah 84109

Continuation of Ser. No. 754,329, Sep. 4, 1991, which is a continuation of Ser. No. 394,566, Aug. 16, 1989. This application Jul. 13, 1992, Ser. No. 914,043

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—174 **17 Claims**



1. Apparatus for data input through sensing the position of a passive object relative to the apparatus comprising:

pad means for sensing the object's position, the pad means having

a plurality of first electrode strips spaced apart in a first array,

one or more second electrode strips disposed in proximity to the first electrode strips to cross thereover for establishing electric fields, including fringe electric fields, between the second electrode strip and selected first electrode strips, to thereby develop capacitive balances in the pad means,

wherein the object perturbs a fringe electric field when the object comes in proximity to the pad means, thereby changing the capacitive balances; and

measurement means operatively coupled to the pad means for measuring the capacitive balances in the pad means to thereby determine the position of the object relative to the pad means, said measurement means including

synthesis means responsive to control signals for selecting first electrode strips which, along with the second electrode strip, will develop electric fields,

control means for supplying control signals to the synthesis means to designate the selected first electrode strips,

means for causing development of electric fields between the selected first electrode strips and the second electrode strip, and

means for detecting the changes in capacitive balances in the pad means and the locations of such changes.

5,305,018

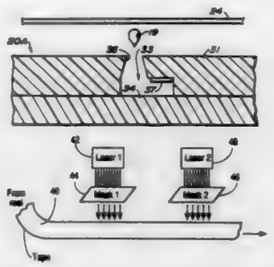
EXCIMER LASER-ABLATED COMPONENTS FOR INKJET PRINTHEAD

Christopher A. Schantz, Redwood City, Calif.; William Lloyd, Tokyo, Japan, and Eric Hanson, Burlingame, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 568,000, Aug. 16, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 849,650

Int. Cl.[5] B41J *2/16*

U.S. Cl. 346—1.1 **3 Claims**



1. A step-and-repeat process for forming a nozzle member for an ink printer comprising the steps of:

forming ink orifices in a strip of flexible tape using laser ablation; and

forming a fluid communication channel in said flexible tape, using laser ablation, through only a portion of a thickness of said flexible tape to enable fluid communication between said ink orifices and an ink reservoir,

wherein said step of forming said ink orifices comprises the steps of:

unreeling said strip of flexible tape from a reel to be in a predetermined position relative to a source of laser radiation;

providing a first masking means between said source of laser radiation and said tape, said first masking means including a pattern corresponding to said ink orifices;

exposing said tape to laser radiation through said first masking means, said first masking means being physically spaced from said tape;

and wherein said step of forming said fluid communication channel comprises the steps of:

providing a second masking means between a source of laser radiation and said tape, said second masking means including a pattern corresponding to vaporization chambers, each vaporization chamber being associated with an ink orifice; and

exposing said tape to laser radiation through said second masking means, said vaporization chambers extending through only a portion of a thickness of said tape.

5,305,019

IMAGING SYSTEM FOR A PRINTING PRESS

Kevin W. Orth, Des Plaines; Walter J. Pelczarski, Downers Grove, and Garry F. Tupek, Naperville, all of Ill., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Mar. 2, 1992, Ser. No. 845,297

Int. Cl.[5] G11B *9/00;* **B41F** *1/18;* **G03G** *13/28*

U.S. Cl. 346—74.2 **14 Claims**

1. An imaging system for a printing press, comprising:

an imaging cylinder having a magnetically addressable outer surface;

a magnetically permeable film;

means for passing the film over at least a portion of the outer surface of said imaging cylinder;

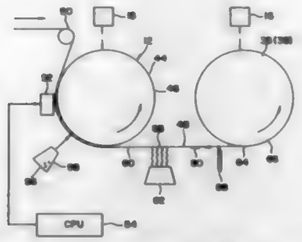
means for writing magnetic information through said film onto the outer surface of the imaging cylinder;

means for passing a magnetic particulate material onto the

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VOL 1161 ISS 3 APR 19 1994

film over the magnetic information on the cylinder to form an image of the particulate material on the film;
means for bonding the particulate material onto the film;
a print roll separate from the imaging cylinder and having an outer surface; and



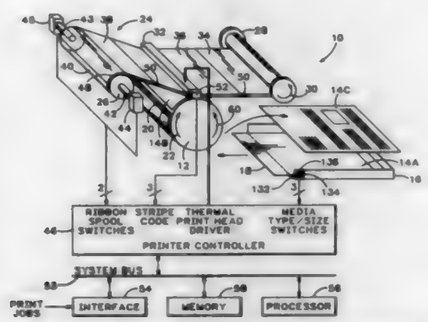
means for placing and securing a segment of the film containing the bonded particulate material onto the outer surface of the print roll for use in forming a repetitive image onto a sheet by the press.

5,305,020

THERMAL TRANSFER PRINTER HAVING MEDIA PRE-COAT SELECTION APPARATUS AND METHODS

Randel L. Gibbons, Lake Oswego; Lynd L. Wiesman, Portland, and Suresh C. Paranjpe, Lake Oswego, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Dec. 21, 1992, Ser. No. 994,383
Int. Cl.[5] B41J *2/325*
U.S. Cl. 346—76 PH **16 Claims**



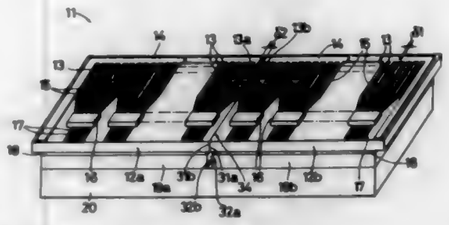
1. In a thermal transfer printer having first and second media trays, a thermal transfer ribbon, and a processor, an apparatus for selectively applying a pre-coat material to a print medium received from the first media tray in response to a print job request, comprising:
a ribbon sensor communicating to a printer controller that the thermal transfer ribbon includes the pre-coat material;
a first media sensor coupled to the first media tray communicating to the printer controller that the first media tray contains a paper-type print medium; and
the processor in data communications with the print job request and the printer controller causes the thermal transfer printer to apply the pre-coat material to the print medium received from the first media tray.

5,305,021

THERMAL HEAD

Shigenori Ota; Kenji Nakai, and Akihiro Kawata, all of Kagoshima, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 738,224, Jul. 30, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 44,548
Claims priority, application Japan, Jul. 31, 1990, 2-204238
Int. Cl.[5] B41J *2/335*
U.S. Cl. 346—76 PH **14 Claims**



1. A thermal head comprising:
a plurality of head substrates, each of said head substrates having a thermal expansion coefficient and also having numerous heating resistance elements arranged on a top surface thereof and having an end face, said head substrates being arrayed along a direction in which said heating resistance elements are arranged with the end faces of adjacent head substrates opposing one another;
a plurality of radiator members, each of said radiator members having an end face and being attached to a bottom surface of each of said head substrates so that the end face of the associated head substrate protrudes from the end face of the attached radiator member by a predetermined amount, and each of said radiator members having a thermal expansion coefficient greater than that of each of said head substrates; and
a support member for mounting thereon said radiator members in such a manner as to allow relative contact or separation between said head substrates and between said radiator members;
wherein said predetermined amount of protrusion is determined as a function of the thermal expansion coefficients of each of said head substrates and each of said radiator members and is determined in a manner that a spacing between opposing end faces of adjacent two of said head substrates is always smaller than a spacing between opposing end faces of adjacent two of said radiator members attached thereto.

5,305,022

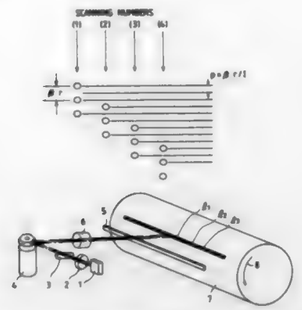
INTERLACED MULTI-BEAM SCANNING TYPE RECORDING APPARATUS

Takeshi Ota, and Masao Ito, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 860,755
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 **4 Claims**

1. A recording apparatus comprising a light source unit having n light sources capable of being driven independently and arranged at an interval r, for emitting n light beams; a photosensitive medium; an optical system having a lateral magnification β in an arrangement direction of the n light sources, for forming spots of the n light beams on a surface of the photosensitive medium; and a deflector for deflecting the n light beams to a direction substantially perpendicular to the arrangement direction of the n light sources, to scan the surface of the photosensitive medium simultaneously with the n light beams, wherein:
said n is selected to be an integer not less than 3; and

an interlacing period I, which is defined as $I=\beta r/p$ where p is an interval of adjacent scanning lines on the surface of



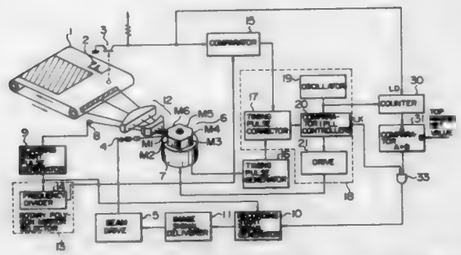
the photosensitive medium, is selected to be an integer in a range of $2 \leqq I \leqq (n-1)$ and prime to said n.

5,305,023

MULTICOLOR PRINTING APPARATUS

Fumio Fukushige, and Masakazu Mizusaki, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 684,234, Apr. 12, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 28,272
Claims priority, application Japan, Apr. 17, 1990, 2-101303
Int. Cl.[5] H04N *1/21;* **B41J** *2/435*
U.S. Cl. 346—108 **13 Claims**



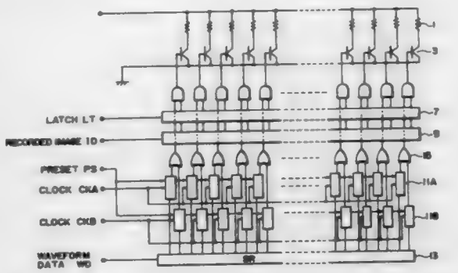
1. A multicolor printing apparatus for printing a color picture having a plurality of color components on a transfer medium by forming an electrostatic latent image corresponding to one of said plurality of color components by a laser beam, developing the electrostatic latent image to produce a developed image, superimposing the developed image on said transfer medium, and iterating for all others of said plurality of color components to form the color picture, said multicolor printing apparatus comprising:
a rotatable photosensitive medium for forming an electrostatic latent image of one after another of said plurality of color components of said picture on a same position at every new rotation;
light emitting means for emitting said laser beam;
a rotary polygon mirror having a plurality of plane mirror surfaces for scanning the laser beam from said light emitting means in a direction orthogonal to a direction of rotation of said photosensitive medium;
first detection means for detecting a first timing when said photosensitive medium reaches a predetermined position;
second detection means for detecting a second timing when a predetermined one of said plurality of plane mirror surfaces of said rotary polygon mirror reflects said laser beam, said second detection means including a photosensor located at a fixed position for sensing laser beams reflected from said plurality of plane mirror surfaces to provide a sensing signal and means for recognizing said second timing based on said sensing signal; and
control means for controlling a rotation speed of said rotary polygon mirror in accordance with a difference between said first and second timings so that the laser beam for the first scanning line in every one of said plurality of color components of the picture is reflected on a same lane mirror surface.

5,305,024

RECORDING HEAD AND RECORDING APPARATUS USING SAME

Haruhiko Moriguchi, and Nobuhiko Takekoshi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1991, Ser. No. 649,732
Claims priority, application Japan, Feb. 2, 1990, 2-022189
Int. Cl.[5] B41J *2/005*
U.S. Cl. 346—140 R **41 Claims**



12. A recording apparatus using thermal energy to eject ink, said apparatus comprising:
a recording heat including a plurality of heat generating elements for producing thermal energy in response to driving signals to cause a change of state in the ink to eject the ink; waveform storing means for storing waveform data for at least one driving signal applied to a predetermined number of said heat generating elements, the predetermined number being at least one, wherein the waveform data defines a width of the at least one driving signal to control a quantity of the ink ejected; counting means for counting a period in accordance with the waveform data; and driving signal applying means for applying to each of the predetermined number of said heat generating elements the at least one driving signal on the basis of the period counted by said counting means, in accordance with at least one record image signal;
transferring means for transferring the at least one record image signal to said driving signal applying means; and
control means for controlling timing of the application of the at least one drive signal.

5,305,025

ELASTICA COUNTER ELECTRODE FOR AN ELECTROSTATIC RECORDER

Stephen D. White, Santa Clara; Keith E. McFarland, Woodside, and Lorin K. Hansen, Fremont, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1992, Ser. No. 888,692
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—155 **13 Claims**

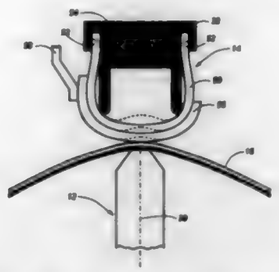
1. In an electrostatic recorder for applying electrical charges, in image configuration, upon a movable image recording member, said recorder including a stylus electrode array and a counter electrode assembly being aligned with one another, and urged together, and between which an image recording member may be moved, and being positioned so as to

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extend transversely to a direction of movement of an image recording member, said counter electrode assembly comprising

a support member,

elastica sheet anchored to said support member and bowed away therefrom toward said image recording member and



said stylus electrode array, said bowed portion of said elastica sheet being deflected in a non-linear manner in response to a load imposed upon said sheet by said stylus electrode array, and

an electrically resistive member urged by said elastica sheet toward said image recording member and said stylus electrode array.

5,305,026

IMAGE RECORDING APPARATUS HAVING TONER PARTICLE CONTROL MEMBER

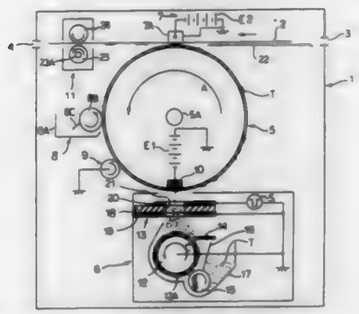
Sangyoji Kazuo, Nagoya, and Tetsuya Kitamura, Gifu, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 21, 1992, Ser. No. 933,194

Claims priority, application Japan, Oct. 17, 1990, 2-27842

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—159 **21 Claims**



1. An image recording apparatus for recording an image on a rigid recording medium, comprising:

toner particle supply means for supplying toner particles charged to a first polarity;

control means for controlling toner particles supplied by said toner particle supply means according to an image to be recorded, said control means having at least one aperture allowing said charged toner particles to pass therethrough;

an intermediate recording member for attracting the toner particles controlled by said control means through said at least one aperture and for forming a toner image thereon;

transfer means for transferring the toner image formed on said intermediate recording member to the rigid recording medium, said transfer means being located on a side of the intermediate recording member opposite to the control means;

a sheet inlet and a sheet outlet arranged to define a linear feed path for the rigid recording medium, said feed path passing between the intermediate recording member and the transfer means; and

fixing means for fixing the toner image, which is transferred to the rigid recording medium by said transfer means, on the rigid recording medium.

5,305,027

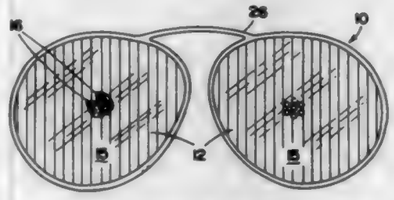
METHOD AND APPARATUS FOR ENHANCED VISUAL TRAINING

Kip E. Patterson, 1030 Holly St., Lake Charles, La. 70601

Filed Jan. 28, 1992, Ser. No. 826,973

Int. Cl.[5] G02C *7/10*

U.S. Cl. 351—44 **15 Claims**



10. A vision training device in the form of eyewear useful for hand-eye coordination exercises comprising:

a frame, first and second translucent lenses secured to said frame wherein each of said lenses is red in color and has a clear target sight in the form of a plurality of ellipsoidal apertures positioned on each red lens.

5,305,028

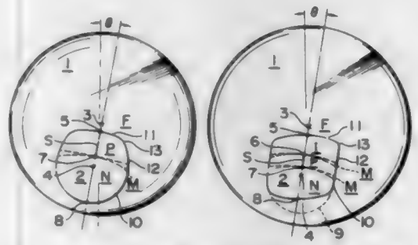
MULTIFOCAL LENS PROVIDED WITH PROGRESSIVE FOCAL SEGMENT

Hitoshi Okano, 17-45, Izumi 4-Chome, Suginami-Ku, Tokyo 168, Japan

Continuation of Ser. No. 474,115, Apr. 24, 1990, abandoned. This application Jan. 9, 1993, Ser. No. 74,267

Int. Cl.[5] G02C *7/06*

U.S. Cl. 351—169 **7 Claims**



1. In a multifocal lens having a non-progressive, unifocal main lens (1) and a clearly sectioned segment (2) thereon for additional surface refracting power, the improved segment comprising:

a first unifocal area (N) on said segment (2) and a low-astigmatism progressive focal area (P) on said segment, the progressive focus being provided only within said progressive focal area (P), and said areas (N, P) being continuous to avoid a sudden image change.

5,305,029

PROJECTOR

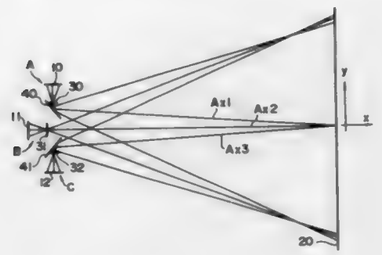
Kazushi Yoshida; Yasuyuki Tejima; Satoru Tachihara, and Nobutaka Minefuji, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 617,509, Nov. 23, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 17,406

Claims priority, application Japan, Nov. 22, 1989, 1-304196; Apr. 5, 1990, 2-91234; Apr. 5, 1990, 2-91235; Apr. 20, 1990, 2-105640; Apr. 20, 1990, 2-105641

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—37 **23 Claims**



5. A projector comprising:

projecting optical systems including means for forming images and projecting lenses for projecting said images onto a screen having a side nearer said projecting optical systems, wherein said projecting optical systems are arranged so that the optical axes of said projecting lenses intersect at a point substantially short of said screen;

at least one of said projecting optical systems including a mirror disposed between said image forming means and said point to deflect the optical axis toward said screen so that said optical axes intersect with each other substantially on said side nearer said projecting optical systems.

5,305,030

COMBINATION OF WATER-PROOF CAMERA CASE AND DETACHABLE HAND GRIP ASSEMBLY

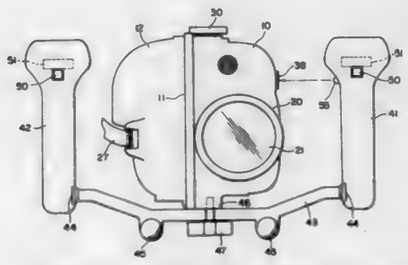
Hiroshi Yokoyama, Chiba, and Tetsuro Fukumoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,939

Claims priority, application Japan, Apr. 15, 1991, 3-109900

Int. Cl.[5] G03B *17/08*

U.S. Cl. 354—64 **5 Claims**



1. A combination of a camera case adapted to accommodate a camera therein in a waterproof state, and a detachable hand grip assembly, comprising:

means for detachably fixing said hand grip assembly to said camera case;

a first operating button provided on said camera case for operating said camera in said camera case; and

a second operating button provided on a hand grip of said hand grip assembly to perform the same function as said first operating button.

5,305,031

SEALED CASE

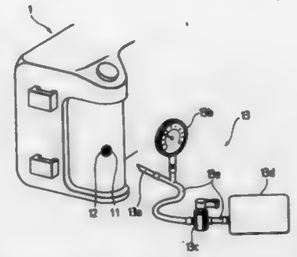
Masahiro Hayakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,262

Claims priority, application Japan, Oct. 3, 1991, 3-88873[U]

Int. Cl.[5] G03B *17/08*

U.S. Cl. 354—64 **10 Claims**



1. A sealed case having an outer wall for protecting an inside of the case from an outside environment, said outer wall including a communication hole for communicating the inside and outside of said case, and a self-sealing seal member closing said communication hole, said seal member being formed of a highly-restorable elastic member which is substantially impermeable to air,

wherein, upon penetration of said seal member by a penetration member to form a penetration hole in said seal member and subsequent withdrawal of said penetration member, said seal member self-seals, thereby closing said penetration hole and retaining its substantial impermeability to air.

5,305,032

SEALING MEMBER FOR WATERPROOF CAMERA

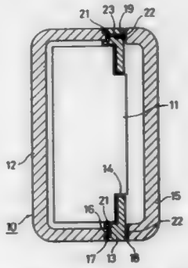
Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 785,924, Oct. 31, 1991, abandoned. This application May 3, 1993, Ser. No. 55,775

Claims priority, application Japan, Nov. 19, 1990, 2-120998[U]

Int. Cl.[5] G03B *17/08*

U.S. Cl. 354—64 **11 Claims**



1. A waterproof device for a cover having an opening in which a camera body is housed, closing off an inside and an outside of said cover in a watertight manner, said cover including a cover member, said cover member including first and second opposed surfaces and at least one through hole being separate from said opening and extending within and through

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said cover member from said first surface to said second surface, and said waterproof device comprising:

a first sealing member disposed between said cover member and a first member provided at said first surface of said cover member;

a second sealing member disposed between said cover member and a second member provided at said second surface of said cover member, said cover member, said first member, and said second member forming said opening; and

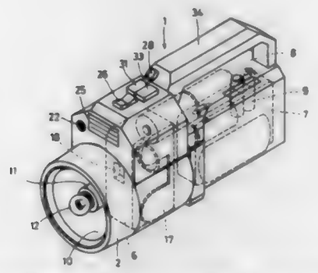
a third sealing member extending through said at least one through hole formed in said cover member and connecting said first sealing member and said second sealing member, with said third sealing member, said first sealing member and said second sealing member being formed as one body.

5,305,033

COMBINATION CAMERA AND FLASHLIGHT

Masami Takahashi, 164 Aza Moto-machi, Terano, Shinkawa-cho, Nishikasugai-gun, Aichi-ken, and Kuniaki Aoki, Shizuoka, both of Japan, assignors to Masami Takahashi, Aichi, Japan

Filed Jan. 4, 1993, Ser. No. 244
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—76 **13 Claims**



1. A combination camera and flashlight comprising:

a flashlight illumination means including an illumination bulb, a power supply means for powering the illumination bulb and a reflecting mirror arranged about the illumination bulb for directing light emanating from the illumination bulb in a generally forward direction;

camera means for recording visual information, the camera means including an aperture and a shutter arranged to open and close the aperture;

a casing for enclosing the camera means and the illumination means, the casing having a forward facing first opening;

a substantially transparent protecting plate that covers said first casing opening, the protecting plate being positioned generally forward of the illumination bulb for protecting the illumination bulb;

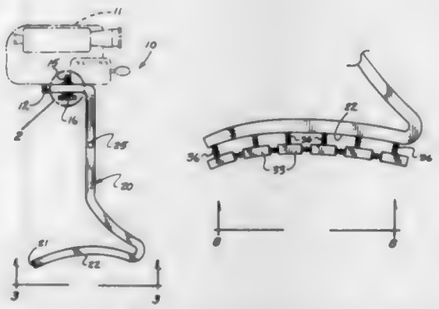
cutout means for actuating the shutter and automatically turning of the illumination bulb when the shutter is actuated.

5,305,034

CAMERA SHOULDER REST HAVING A MATRIX OF SPRING CONNECTED PLATES FOR CUSHIONING SUPPORT

Lance I. Aratani, 102 Hillside Drive, Old Hickory, Tenn. 37138

Filed Apr. 19, 1993, Ser. No. 47,980
Int. Cl.[5] G03B *17/00, 29/00*
U.S. Cl. 354—82 **1 Claim**



1. A camera shoulder rest for accommodating a camera rotatably thereon, wherein the rest comprises,

a support plate, the support plate including a top wall spaced from and parallel a bottom wall, and

a support plate bore orthogonally directed through the support plate extending through the top wall and through the bottom wall, and

a fastener rod rotatably mounted within the support plate bore, the fastener rod including a fastener rod handle positioned in adjacency relative to the support plate bottom wall, with the fastener rod extending through the support plate beyond the top wall terminating in a threaded portion, with the fastener rod having a first collar positioned in adjacency to the top wall, and the fastener rod having a second collar positioned in adjacency to the bottom wall to rotatably position the fastener rod relative to the support plate, and

a connecting plate fixedly and orthogonally mounted to the support plate extending from the support plate, and

an arcuate saddle plate, with the connecting plate fixedly mounted to the arcuate saddle plate, with the connecting plate positioned intermediate the support plate, and the saddle plate having a concave support surface, and a convex top surface, with the connecting plate oriented medially of the convex support surface, and

including cushioning means mounted to the concave support surface for accommodating an individual's shoulder within the cushion means, and

the connecting plate includes connecting plate side walls, wherein each of the connecting plate side walls includes an internally threaded bore, with a plurality of support legs, wherein one of said support legs is mounted to one of said internally threaded bores, and

each of the support legs includes a base tube, the base tube having a base tube fastener and an extension leg telescopingly received within the base tube, with the base tube fastener arranged for engagement of the extension leg, and a connecting leg, with a pivotal locking joint positioned intermediate the base tube and the connecting leg, with the pivot locking joint including a bifurcated support mounted to the base tube and a connecting flange mounted to the connecting leg, wherein the connecting flange is positioned within the bifurcated support, and

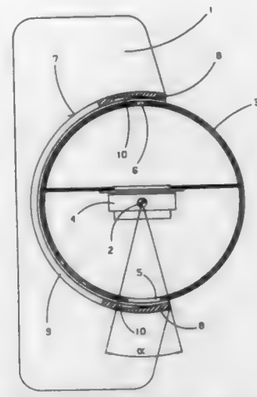
the cushion means includes matrix of plate members, and adjacent plate members of the plate members each including facing side walls, wherein a first spring is mounted between the adjacent plate members extended between said facing side walls, and each of the plate members includes a second spring, with the second spring interconnecting each of said plate members to said concave support surface.

5,305,035

PANORAMIC CAMERA WITH OBJECTIVE DRUM

Hans-Jörg Schönherr; Hans Zimmet, both of Dresden; Jürgen Krase; Michael Lenk, both of Pirna; Siegfried Hainy, and Karl-Heinz Werner, both of Dresden, all of Fed. Rep. of Germany, assignors to Kamerawerke Noble GmbH, Dresden, Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 100,542
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1992, 4226286
Int. Cl.[5] G03B *37/00*
U.S. Cl. 354—96 **7 Claims**



1. A panoramic camera, comprising a camera housing having a cylinder segment provided with an image window; an objective drum which is rotatable relative to said cylinder segment about a rotary axis, said cylinder segment having segment flanks located laterally near said image window, said segment flanks being provided with light catching grooves extending parallel to said rotary axis of said objective drum and ending at an angular distance from the outer edges of said cylinder segment, covered by a curvature of said drum.

5,305,036

FOCUSING TORQUE CONTROL DEVICE FOR LENS BARREL

Hitoshi Tanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,882
Claims priority, application Japan, May 21, 1991, 3-068921[U]
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.1 **21 Claims**

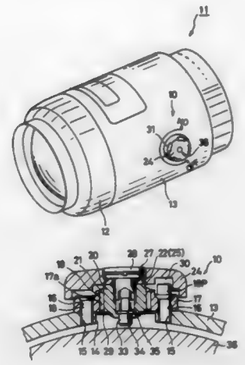
1. A focusing torque control device for a lens barrel, said device comprising:

rotating means rotatably disposed in said lens barrel to move a lens housed in said lens barrel along an optical axis of said lens barrel;

an engaging member able to be engaged with said rotating means;

means for mounting said engaging member for movement between positions engaging said rotating means and spaced from said rotating means; and

frictional force control means for adjustably controlling a frictional force between said rotating means and said



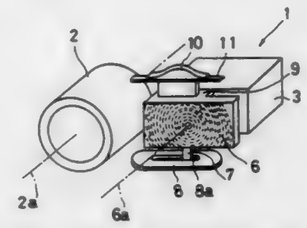
engaging member by controlling a pressure by which said engaging member is pressed against said rotating means.

5,305,037

STROBE DEVICE OF CAMERA

Hirotaka Noguchi, and Yuichi Kurosawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 825,338, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 557,072, Jul. 25, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 38,048
Claims priority, application Japan, Aug. 2, 1989, 1-200999; Aug. 2, 1989, 1-201000
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.1 **21 Claims**



1. A strobe device comprising a light emitting unit comprising a light source which emits strobe light:

a condenser lens which projects said strobe light from said light emitting unit onto an object to be taken by a photographic lens; and

means for moving one of said light emitting unit and said condenser lens between a normal illuminating position, in which the direction of illumination of said strobe light, as defined by a direction of a central axis of said strobe light, is parallel with an optical axis of said photographing lens and a macro-illuminating position, in which the direction of illumination of said strobe light is inclined towards the optical axis of said photographing lens and wherein said condenser lens is movable in a direction perpendicular to said central axis between said normal illuminating position, in which the direction of illumination of the strobe light is parallel with the optical axis of said photographing lens, and said macro-illuminating position, in which the direction of illumination of said strobe light is inclined towards the optical axis of said photographing lens.

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5,305,038

ZOOM LENS CAMERA

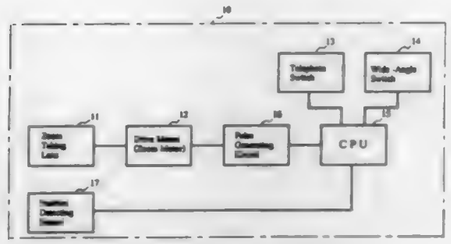
Makoto Mogamiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,125

Claims priority, application Japan, Jul. 30, 1991, 3-214777; Jul. 30, 1991, 3-214778

Int. Cl.[5] G03B *1/18, 13/18;* **H02P** *1/00*

U.S. Cl. 354—195.12 **13 Claims**



1. A zoom lens camera comprising:

a zoom taking lens having a zooming function;

a drive means for driving the zoom taking lens;

a telephoto switch which is actuated to effect the drive means to drive the zoom taking lens in a manner that increases the focal length thereof;

a wide angle switch which is actuated to effect the drive means to drive the zoom taking lens in a manner that decrease the focal length thereof; and

a zooming speed varying means for varying a zooming speed of the zoom taking lens through the drive means when a predetermined condition is satisfied during a zooming operation when one of the telephoto switch or the wide angle switch is being actuated, wherein the predetermined condition occurs when one of the wide angle switch or telephoto switch is actuated while the other of the telephoto or wide angle switch is being actuated, respectively.

5,305,039

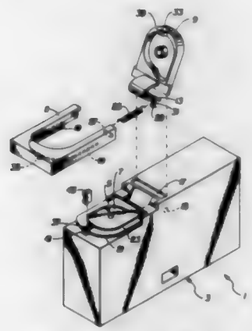
PHOTOGRAPHIC CAMERA WITH LIGHT SEAL/LATCH DEVICE FOR LOADING DOOR

William F. Dassero, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1993, Ser. No. 46,061

Int. Cl.[5] G03B *17/02, 17/26*

U.S. Cl. 354—288 **7 Claims**



1. A photographic camera comprising a camera body, a cartridge receiving chamber located inside said camera body, a door connected to said camera body for closing and opening movement to cover and uncover said chamber, and latching means connected to said camera body for locking and unlocking movement to lock said door closed and to unlock the door, is characterized in that:

actuating means connects said door and said latching means for initiating opening movement of the door in response to unlocking movement of the latching means and for initiating locking movement of the latching means in response to closing movement of the door.

5,305,040

APPARATUS FOR DRIVING BLUR CORRECTING LENS IN CAMERA

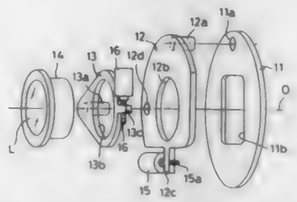
Shigeo Enomoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 92,211

Claims priority, application Japan, Jul. 20, 1992, 4-192021

Int. Cl.[5] G03B *5/02, 5/04*

U.S. Cl. 354—202 **16 Claims**



1. A blur correcting lens driving apparatus in a blur correcting apparatus of a camera including a blur correcting lens which is moved in a direction which prevents movement, due to camera shake, of an object image on a picture plane, comprising;

a first rotating member provided on an immovable part of the camera and having a first shaft parallel to an optical axis of the camera;

a second rotating member provided on the first rotating member and having a second shaft parallel to the optical axis of the camera, said blur correcting lens being supported by the second rotating member;

said first and second shafts being initially located on two orthogonal axes passing through the optical axis of the camera;

a first drive source provided on the immovable part of the camera to rotate the first rotating member about the first shaft; and,

a second drive source provided on the first rotating member to rotate the second rotating member about the second shaft.

5,305,041

REMOTELY CONTROLLABLE CAMERA SYSTEM

Yuichi Ichikawa; Masahiro Hayakawa, and Kosei Kosako, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 790,352, Nov. 12, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,866

Claims priority, application Japan, Nov. 16, 1990, 2-119982[U]

Int. Cl.[5] G03B *17/38, 39/00, 15/03*

U.S. Cl. 354—266 **9 Claims**

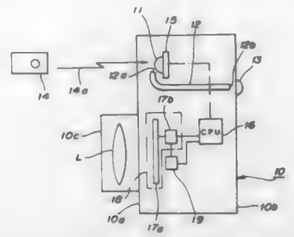
1. A camera system comprising:

a camera housing having first and second panels;

a photodetector mounted in said camera housing and facing said first panel, for detecting an external optical command signal beam applied through said first panel;

optical guide means for guiding an external optical command signal beam applied through said second panel toward said photodetector;

a controllable mechanism disposed in said camera housing; and



control means for controlling said controllable mechanism in response to the external optical command signal beam detected by said photodetector.

5,305,042

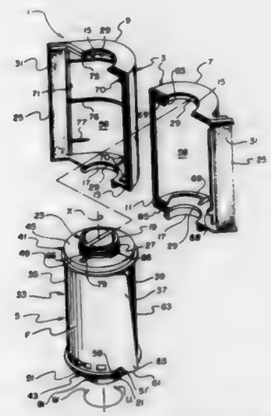
FILM CASSETTE

John J. Niedospial, Jr., Princeton Junction, N.J.; Christopher T. Mattson, Rochester, N.Y.; Russell J. Butler, Dansville, N.Y., and Christopher McCormick, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1993, Ser. No. 41,062

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—275 **5 Claims**



1. A film cassette comprising a cassette shell, a spool core supported inside said cassette shell for rotation in an unwinding direction to advance a filmstrip coiled about said spool core out of the cassette shell and in a winding direction to draw said filmstrip into the cassette shell, at least one flange coaxially coupled with said spool core to prevent said filmstrip from uncoiling about the spool core and to permit said flange and the spool core to be rotated relative to each other in the unwinding and winding directions, and cooperating means located on said spool core and said flange for fixing the flange and the spool core to each other to make the flange rotate with the spool core in the unwinding direction but releasing the flange to permit it and the spool core to be rotated relative to each other in the winding direction, is characterized in that:

stop means are connected to said cassette shell; and

said flange has engageable means for being engaged by said stop means when the flange is rotated with said spool core in the winding direction to prevent the flange from further rotating in that direction, whereby said flange will impose a frictional drag on said filmstrip as the filmstrip is wound onto said spool core to cause the filmstrip to be wound tightly to the spool core.

5,305,043

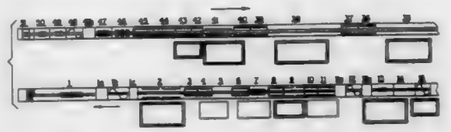
METHOD OF AND APPARATUS FOR PRODUCING A STRIP OF LEAD FRAMES FOR INTEGRATED CIRCUIT DIES IN A CONTINUOUS SYSTEM

Frank J. Johnson, Santa Cruz, Calif., assignor to Amkor Electronics, Inc., West Chester, Pa.

Division of Ser. No. 629,440, Dec. 18, 1990, Pat. No. 5,183,724. This application Aug. 27, 1992, Ser. No. 936,927

Int. Cl.[5] G03B *19/00*

U.S. Cl. 354—354 **13 Claims**



1. Automatic apparatus for continuously producing a strip of lead frames for integrated circuit dies, said apparatus comprising

means for feeding continuously a flexible strip of platable selected metal material to serve as a substrate,

means for selectively spot plating said continuously-fed substrate with a metal at predetermined precise locations,

means for laminating a photosensitive film to both faces of said spot plated continuously-fed substrate,

means for positioning a specific opaque design in registry on both faces of said laminated continuously-fed substrate,

means for exposing to high intensity light the photosensitive film having an opaque design positioned thereon,

means for applying development chemical to said film,

means for washing away the non-exposed, non-developed portion of film to expose selected unwanted areas of metal plating and the substrate,

and means for removing the exposed metal plating and said substrate to form lead frames.

5,305,044

AUTOFOCUSING SYSTEM FOR A CAMERA

Nobuo Suzuki; Shigeo Toji, both of Tokyo, and Masahiro Kawasaki, Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,733, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 414,478, Sep. 29, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 918,147

Claims priority, application Japan, Sep. 29, 1988, 63-245682

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—400 **19 Claims**

1. A photographic lens system capable of being selectively set in a zoom mode or in a macro mode, said system comprising:

a first lens group driven for focusing both in said zoom and macro modes, said first lens group being driven in a predetermined movable range;

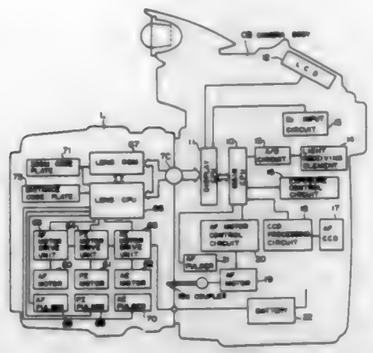
a second lens group driven for zooming in said zoom mode;

determining means for determining whether an object image can be focused on a predetermined image plane, while said system is in said macro mode, by driving said first lens group; and

means for driving said second lens group so that the object image is focusable on said predetermined image plane by

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driving said first lens group, while said system is in said macro mode, when it is determined by said determining



means that said object image cannot be focused merely by driving said first lens group.

5,305,045

CAMERA HAVING TILTABLE FOCUSING LENS, POSITIONAL/DEPTH DISPLAY AND COOPERATING FLASH ASSEMBLY

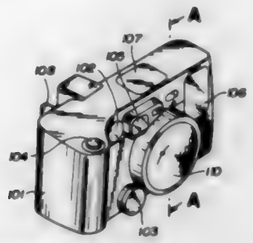
Hiroshi Terada, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,871

Claims priority, application Japan, Aug. 22, 1991, 3-211041; Dec. 27, 1991, 3-346596

Int. Cl.[5] G03B *13/36, 15/03, 17/20*

U.S. Cl. 354—400 **71 Claims**



1. A camera, comprising:

a distance measuring means for measuring distances to subjects existent in specific areas within a photographic angle of view;

a storing means for storing distance information representing measured distances from said camera to at least two subjects existent at different distances said distance measuring means provides;

a specifying means for specifying positional relationships of at least said two subjects relative to said camera;

a displaying means interlocked with specification of said specifying means and helping a user recognize said positional relationships said specifying means provides;

an arithmetic logic means receiving said distance measurement information and said positional relationships to calculate an inclination of a tiltably mounted photographic optical system necessary for producing an image on an image plane in which said at least two subjects are in focus; and

a driving means for tilting said photographic optical system relative to said image plane according to an output of said arithmetic logic unit.

5,305,046

MULTI-POINT DISTANCE MEASUREMENT APPARATUS

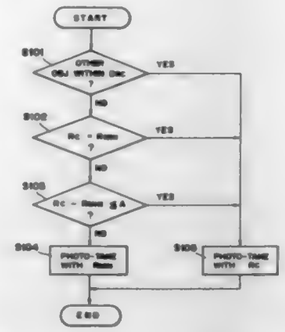
Shigemasa Sato, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 10, 1991, Ser. No. 774,193

Claims priority, application Japan, Oct. 15, 1990, 2-275716

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—402 **16 Claims**



1. A multi-point distance measurement apparatus comprising:

distance measurement means for measuring distances to first and second points of an object field to produce distance information;

difference determining means for determining a difference between the distances to the first point and the second point based on the distance information from said distance measurement means; and

photographing distance selection means for comparing the difference with a predetermined value, selecting a smaller one of the distances to the first and second points as a photographing distance when the difference is larger than the predetermined value, and selecting the distance to the first point as the photographing distance when the difference is smaller than the predetermined value.

5,305,047

PATTERN PROJECTOR HAVING A MULTI-PORTION PROJECTION LENS AND CAMERA COMPRISING THE SAME

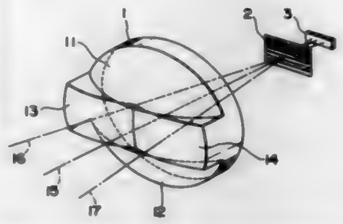
Shingo Hayakawa, Yokohama; Yasuo Suda, Kawasaki, and Takeshi Koyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 772,128, Oct. 9, 1991, abandoned, which is a continuation of Ser. No. 418,556, Oct. 10, 1989, abandoned. This application May 18, 1993, Ser. No. 62,711

Claims priority, application Japan, Oct. 11, 1988, 63-256312; Oct. 11, 1988, 63-256313

Int. Cl.[5] G03B *13/36;* **G01J** *1/20*

U.S. Cl. 354—403 **12 Claims**



1. A pattern projection apparatus for projecting a pattern

onto an object to detect a focusing state of an objective lens directed toward the object with a passive focusing apparatus, comprising:

a chart having a pattern to be projected,

an illumination device for illuminating said chart; and

a lens assembly for projecting said pattern, said lens assembly comprising a first lens portion having a first optical axis, and second and third lens portions respectively having second and third optical axes which are inclined at a predetermined angle in opposite directions with respect to said first optical axis, said second lens portion including an intersection point of a lens surface of said second lens portion and said second optical axis, and said third lens portion including an intersection point of a lens surface of said third lens portion and said third optical axis, said first lens portion having a optical characteristic which is different than refractive characteristics of said second and third lens portions.

5,305,048

A PHOTO TAKING APPARATUS CAPABLE OF MAKING A PHOTOGRAPH WITH FLASH BY A FLASH DEVICE

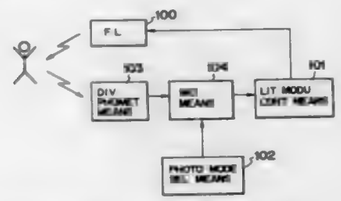
Shinichi Suzuki, Tokyo; Seiichi Yasukawa, Kawasaki; Toshihiro Sato, Yokohama, and Tsutomu Narisawa, Saitama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,719

Claims priority, application Japan, Feb. 12, 1991, 3-40923

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—416 **4 Claims**



1. A photo-taking apparatus capable of making a photograph with flash by a flash device, comprising:

photographing mode setting means for selectively setting any one of a plurality of different photographing modes in which optimal exposure is obtained in conformity with an object;

divisional photometry means for dividing the object field into a plurality of areas, metering through said photo-taking lens light emitted from said flash device and reflected by the object, and outputting photometric values;

weighting means for determining an amount of weighting for each of said photometry areas of said divisional photometry means in conformity with the photographing mode set by said photographing mode setting means, and weighting each of said photometric values on the basis of said amount of weighting; and

light modulation control means for stopping the light emission of said flash device when the sum total of said weighted photometric values reaches a predetermined level.

5,305,049

CAMERA HAVING IN-EXPOSURE ZOOMING MECHANISM

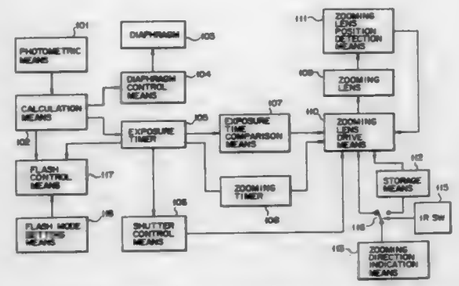
Satoshi Miyazaki, Tokyo; Kazuya Tsukamoto, Hachioji, and Shinya Takahashi, Kodaira, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 734,132, Jul. 22, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 74,981

Claims priority, application Japan, Aug. 17, 1990, 2-215893; Mar. 6, 1991, 3-039845

Int. Cl.[5] G03B *7/00, 7/083, 3/02*

U.S. Cl. 354—412 **32 Claims**



1. A camera having an in-exposure zooming mechanism for performing a zooming operation, said camera, comprising:

a zoom lens barrel capable of varying a focal length of a taking lens;

a motor for changing the focal length of said taking lens;

luminance measurement means for measuring a luminance of an object;

mode setting means for setting an in-exposure zooming mode;

shutter speed calculation means for, when the in-exposure zooming mode is selected by said mode setting means, calculating a shutter speed suitable for the in-exposure zooming mode on the basis of an output from said luminance measurement means;

shutter release means for executing a shutter opening operation in accordance with an operation of a shutter release button, a time period corresponding to said shutter speed being started upon execution of said shutter opening operation;

counter means for outputting a timing signal when said time period has elapsed;

judgment means for, when the timing signal is output from said counter means, judging whether or not the in-exposure zooming mode is set by said mode setting means;

drive control means for, when said judgment means determines that the in-exposure zooming mode is set by said mode setting means, driving said motor to change the focal length of said taking lens; and

shutter closing means for executing a shutter closing operation upon completion of the zooming operation.

5,305,050

CAMERA CAPABLE OF SLOW SYNCHRO PHOTOGRAPHING

Takashi Saegusa, and Masaharu Hara, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 28, 1991, Ser. No. 751,342

Claims priority, application Japan, Aug. 30, 1990, 2-90997[U]; Sep. 4, 1990, 2-92475[U]; Sep. 25, 1990, 2-99037[U]

Int. Cl.[5] G03B *7/00, 17/18, 15/03*

U.S. Cl. 354—420 **10 Claims**

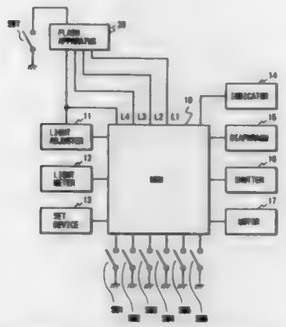
1. A camera comprising:

a shutter speed setting mode changeover means for changing

VOL 1161 ISS 3 AP 19 1994 UMI

over a shutter speed manual setting mode capable of manually setting a shutter speed, and a shutter speed auto setting mode capable of setting the shutter speed on the basis of a luminance value of a subject;

a synchro mode changeover means for changing over a normal synchro mode capable of setting the shutter speed within a range of shutter speeds all of which are faster than a predetermined shutter speed at which hand deflection camera-shake affects photographing and for actuating a flash apparatus to perform flash photographing, and a slow synchro mode capable of setting a shutter speed within a range of shutter speeds including shutter speeds



slower than said predetermined shutter speed and for actuating said flash apparatus to perform flash photographing;

an indication means for effecting a slow synchro indication for showing that said slow synchro mode is set by said synchro mode changeover means; and

an indication control means for permitting said indication means to effect said indication when said shutter speed auto setting mode is set by said shutter speed setting mode changeover means and for inhibiting said indication means from effecting said indication when said shutter speed manual setting mode is set by said shutter speed setting mode changeover means.

5,305,051

CAMERA HAVING A VARIABLE PHOTOGRAPHING APERTURE AND CONTROL METHOD THEREOF

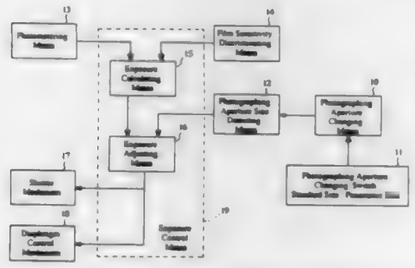
Hideyuki Irie, and Hiroshi Kurei, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,396

Claims priority, application Japan, Feb. 12, 1992, 4-005176

Int. Cl.[5] G03B *7/08, 17/02*

U.S. Cl. 354—441 **9 Claims**



1. A camera having a variable photographing aperture, comprising:

means for changing a size of a photographing aperture;

means for calculating exposure factors, including a diaphragm value and a shutter speed, in accordance with brightness of an object to be photographed; and,

means for adjusting the exposure factors when the photographing aperture size is changed by the photographing aperture size changing means.

5,305,052

IMAGE FORMING APPARATUS

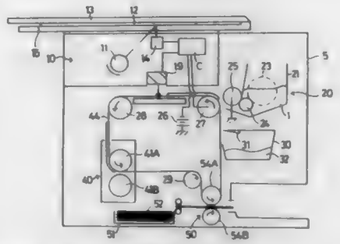
Yoshiyasu Honma, Katano, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 5, 1992, Ser. No. 956,177

Claims priority, application Japan, Oct. 16, 1991, 3-267549; Oct. 30, 1991, 3-285007; Nov. 7, 1991, 3-291677

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—27 **23 Claims**



1. An image forming apparatus comprising:

image supporting medium having a first surface and microcapsule toner particles coated thereon, each said microcapsule toner particle comprising a microcapsule wall and flowable contents contained therein;

image recording medium having a second surface, said first surface being rougher than said second surface;

exposure mechanism forming a latent image of an original on said image supporting medium by hardening selected microcapsule toner particles corresponding to the latent image; and

pressure developing mechanism causing said first surface to confront said second surface and applying pressure to said image supporting medium to rupture non-hardened microcapsule toner particles, transfer the flowable contents to said image recording medium, and mechanically adhere the hardened microcapsules and ruptured microcapsule walls onto said image supporting medium.

5,305,053

IMAGE FORMING APPARATUS

Yasuhiro Hattori, Nagoya, and Masashi Tsuda, Haguri, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 22, 1993, Ser. No. 20,392

Claims priority, application Japan, May 14, 1992, 4-121822; May 25, 1992, 4-132361

Int. Cl.[5] G03B *27/32, 27/52*

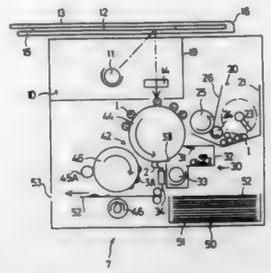
U.S. Cl. 355—27 **26 Claims**

1. An image forming apparatus using photosensitive microcapsules consisting of an outer shell and a core substance encapsulated in the outer shell, the core substance containing an image forming material and a photocuring substance, the image forming material being selected from the group consisting of a dye precursor, a dye and a pigment, the photocuring substance being polymerizable to be cured by application of light having a predetermined wave length thereto, said image forming apparatus comprising:

a support member which is capable of supporting the photosensitive microcapsule thereon;

exposure means for exposing to light having a image information the photosensitive microcapsules provided on said support member in order to selectively change the mechanical hardness of the photosensitive microcapsules;

pressure applying means for rupturing unhardened photosensitive microcapsules after exposure to light by said exposure means to discharge the core substance from the unhardened photosensitive microcapsules;



re-exposure means for re-exposing and hardening material remaining which includes at least some core substance existing on said support member in order to harden the material remaining;

removing means for removing the hardened material remaining on said support member; and

recovery means for recovering the hardened material remaining removed by said removing means.

5,305,054

IMAGING METHOD FOR MANUFACTURE OF MICRODEVICES

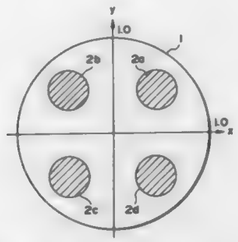
Akiyoshi Suzuki, and Miyoko Noguchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 836,509

Claims priority, application Japan, Feb. 22, 1991, 3-028631; Apr. 30, 1991, 3-128446

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **59 Claims**



1. An imaging method for imaging a fine pattern having linear features extending along orthogonal first and second directions, said method comprising:

providing a light source having decreased intensity portions at a center thereof and on first and second axes defined to intersect with each other at the center and defined along the first and second directions, respectively; and

illuminating the pattern with light from the light source.

5,305,055

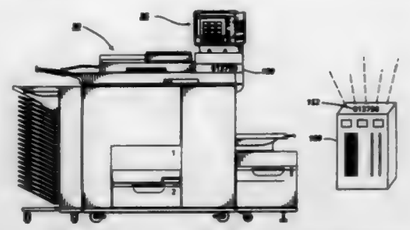
AUTOMATIC CALL TO SELECTED REMOTE OPERATORS IN RESPONSE TO PREDETERMINED MACHINE CONDITIONS

Fritz F. Ebner, Rochester, and Andrew J. Aikens, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1992, Ser. No. 991,600

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **11 Claims**



4. In an image processing apparatus having image processing components for forming images on a medium, a controller for directing the operation of the image processing components including a machine monitoring element to sense predetermined machine conditions and an operator interface connected to the controller, the method of automatic notification to a selected remote station in response to the machine conditions detected by the machine monitoring element comprising the steps of:

selectively programming the image processing apparatus for notification to the selected remote station,

monitoring the operation of the image processing apparatus relative to forming images on the medium,

detecting a machine condition,

determining the machine condition to be a condition to require a notification to the remote location, and

automatically initiating a notification to the remote location, the notification including a designation of the image processing apparatus and the type of machine condition.

5,305,056

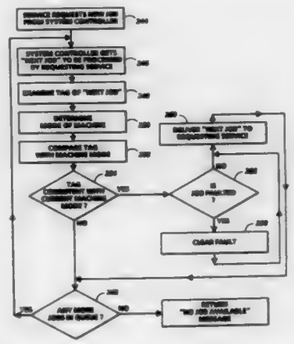
METHOD OF CONTROLLING DIAGNOSTICS IN A PRINTING SYSTEM

David L. Salgado, Victor, and Nicholas P. Osadciw, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1993, Ser. No. 75,990

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—202 **20 Claims**



1. A method of performing a service on a job with a printing system in which the printing system is selectively operable in a

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first system mode and a second system mode, comprising the steps of:

programming the job with instructions for directing the printing system to perform a selected service on the job, said programming step being performed in a selected one of the first system mode and the second mode;

providing the job with a job tag for indicating the system mode in which the job was programmed;

determining in which system mode the printing system resides; and

comparing the job tag with the determined system mode prior to performing a print-related service on the job.

5,305,057

IMAGE FORMING APPARATUS HAVING CORRECTION MEANS FOR MODIFYING IMAGE DENSITY SIGNALS ACCORDING TO A GRADATION CORRECTION TABLE

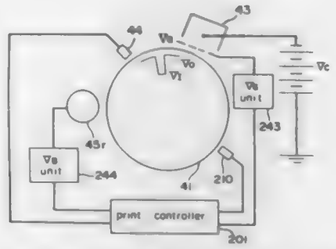
Yoshihiro Hattori; Suguru Hamamichi, both of Toyokawa; Hideaki Kodama, Okazaki; Yoshikazu Naito, and Takeru Kinoshita, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 907,671

Claims priority, application Japan, Jul. 5, 1991, 3-164879; Jul. 5, 1991, 3-165663

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—203 **49 Claims**



1. An electrophotographic image forming apparatus, comprising:

a photoconductor;

a charger for sensitizing the photoconductor at a desired initial potential;

an exposure means for exposing the photoconductor having been sensitized at the initial potential to form an electrostatic latent image;

a developer for developing the electrostatic latent image on the photoconductor to form a toner image;

a memory means for storing a gradation correction table for modifying image density signals of each pixel of an image according to image density levels;

an amendment means for correcting the gradation correction table by adding a common amendment amount to the gradation correction table in a prescribed range;

a correction means for modifying the image density signals according to the gradation correction table which is corrected by said amendment means; and

an exposure control means for controlling the exposure amount on the photoconductor by the exposure means according to the image density signals modified by the correction means.

5,305,058

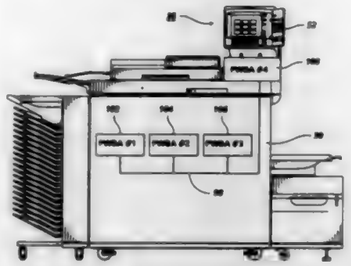
PROGRESSIVE LEVELS OF AUTOMATIC MACHINE QUALITY ADJUST

Shelly D. Sulenski, Walworth, and Fritz Ebner, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1992, Ser. No. 940,257

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—208 **13 Claims**



1. In an image processing apparatus having image processing components for forming images on a medium, a controller for directing the operation of the image processing components including an image quality monitoring element for checking the operation of the machine in relation to image quality standards, the method of automatically adjusting the quality of the image processing apparatus, the image processing apparatus having a hierarchy of quality adjustments, comprising the steps of:

initially determining whether or not the quality has deteriorated to a first level of deviation from the image quality standards,

in response to initially determining the first level of deviation from image quality standards making an immediate copy quality adjustment to the image processing apparatus

determining the quality has deteriorated to a second level of deviation from the image quality standards, and

responding to a determination of a second level of deviation from the image quality standards to schedule a delay of a copy quality adjustment to the image processing apparatus, the delay being a variable of said second level of deviation, the delay being dependent upon the number of required jobs.

5,305,059

IMAGE FORMING APPARATUS

Norio Kurosawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 9, 1992, Ser. No. 960,479

Claims priority, application Japan, Oct. 17, 1991, 3-269515

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **3 Claims**

1. An image forming apparatus comprising:

means for detecting a density of an image on an original document;

means for storing a first image forming condition as a reference image forming condition:

means for manually setting a second image forming condition;

first generating means for generating a third image forming condition corresponding to the density of the image on the original document and the reference image forming condition;

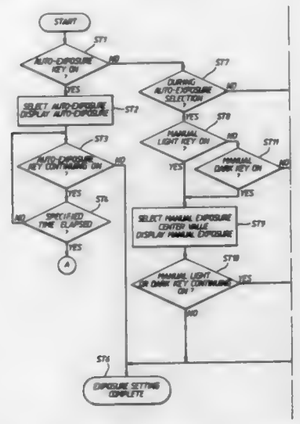
means for changing the first image forming condition stored in the storing means to the second image forming condition set by the manual setting means;

means for forming an image in accordance with the image on the original document under a predetermined image forming condition;

first setting means for setting an automatic image forming mode;

second setting means for setting a manual image forming mode;

means for controlling the image forming means to form an image in accordance with the image on the original document under the third image forming condition when the automatic image forming mode is set by the first setting means, and controlling the image forming means to form an image in accordance with the image on the original



document under the second image forming condition when the dual image forming mode is set by the second setting means;

second generating means for generating a signal when the first setting means is operated for longer than a specified time; and

means for causing the changing means to change the reference image forming condition to the second image forming condition in response to the signal generated by the second generating means.

5,305,060

IMAGE FORMING APPARATUS HAVING CONTROL MEANS FOR CONTROLLING IMAGE FORMING CONDITION

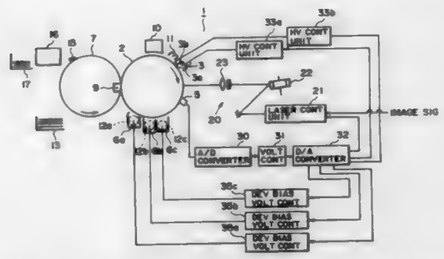
Satoru Fukushima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 52,531

Claims priority, application Japan, Apr. 30, 1992, 4-139767

Int. Cl.[5] G03G *15/00, 15/02*

U.S. Cl. 355—208 **10 Claims**



1. An image forming apparatus comprising:

an electrophotographic photosensitive member exhibiting non-linear relation between charge amount thereof and a potential of an electrostatic latent image formed thereon;

developing means for developing the electrostatic latent image;

latent image forming condition setting means for automatically setting the latent image forming condition in accordance with an ambient condition;

said setting means including input means for inputting information relating to a target latent image potential preset in accordance with the ambient condition;

wherein when the latent image forming condition is determined on the basis of the non-linear property which is stored, a latent image is actually formed on said photosensitive member with charging conditions which are away in opposite detections from a charging condition calculated from the ambient condition, and a relation between the charge amount of the photosensitive member and the potential of the electrostatic latent image is determined by line approximation on the basis of measurement in the actual latent image formation, and then the charge amount is determined from the linear approximation.

5,305,061

IMAGE FORMING APPARATUS HAVING A CONTACT CHARGING DEVICE THAT EXHIBITS UNIFORM CHARGING THROUGH REDUCED RESIDUAL TONER ADHESION

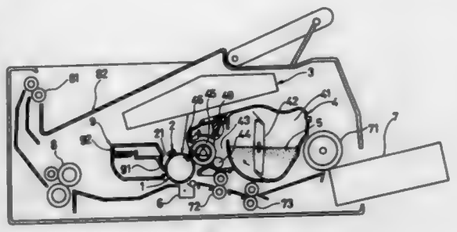
Masaaki Takama, Takatsuki; Junji Machida, Toyonaka, and Akihito Ikegawa, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1991, Ser. No. 808,618

Claims priority, application Japan, Dec. 21, 1990, 2-413198; Dec. 21, 1990, 2-413199; Dec. 21, 1990, 2-413200

Int. Cl.[5] G03G *15/02, 15/00*

U.S. Cl. 355—219 **24 Claims**



1. An image forming apparatus comprising:

an image carrier for carrying an electrostatic latent image on its surface, said image carrier being moved at a speed of 5 to 60 mm/sec relative to a charging brush that is pressed into contact with the surface of the image carrier to charge the image carrier to a predetermined polarity, said charging brush having a width of contact with the image carrier of 2 to 20 mm in the direction of movement of the image carrier and containing a plurality of fibers with a density of 50,000 to 200,000 fibers/in^2 and a length of contact with the image carrier of 0.2 to 5 mm;

latent image forming means for forming an electrostatic latent image corresponding to image information on the surface of the charged image carrier; and

a developing device containing toner including toner particles not less than 90% of which have a shape factor SF−1 of not more than 160 and less than 1% of which have a shape factor SF−1 of not less than 170 so as to develop the electrostatic latent image formed on the surface of the image carrier into a toner image, wherein the shape factor SF−1 is defined as follows:

$$SF-1=(L^2/S)\times\pi/4\times100$$

where S is the area indicating the average value of the pro-

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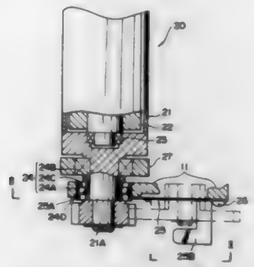
jected areas of the toner, and L is the average value of the maximum lengths in a projected image of the toner.

5,305,062

CONDUCTIVE STRUCTURE FOR ELECTROPHOTOGRAPHIC IMAGING DEVICE

Tsutomu Sato, Tokyo, and Satoru Morisawa, Kita, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,892
Claims priority, application Japan, Oct. 15, 1990, 2-107807[U]
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—245 **14 Claims**



1. A structure for electrically connecting a rotatable member with a terminal member, said rotatable member being rotatably supported by a fixed member, said structure comprising:
- a first member secured to said rotatable member, to be rotated with said rotatable member;
- a second member secured to said fixed member;
- said first and second members being conductive and being electrically connected with each other;
- wherein said terminal member is engaged with said second member so that said terminal member is electrically connected to said rotatable member via said first and second members, said terminal member being disengagable from said second member independently of said second member;
- said first and second members comprising inner and outer ring members of a ball bearing unit, respectively, wherein said ball bearing unit is provided with a plurality of balls made of conductive material disposed between said inner and outer ring members, and said terminal member comprising a substantially C-shaped contact plate member and said outer ring member is formed with a groove along the circumferential surface thereof so that said C-shaped contact plate member can be fitted in said groove.

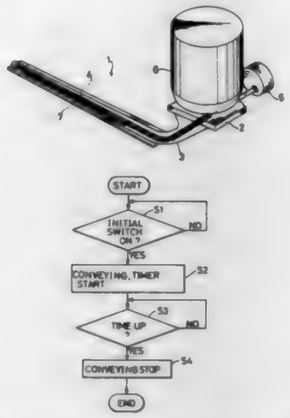
5,305,063

TONER SUPPLY DEVICE MOUNTED WITH A REPLACEABLE TONER CARTRIDGE

Takeshi Marumoto, Nara, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 26, 1992, Ser. No. 966,810
Claims priority, application Japan, Nov. 5, 1991, 3-288483
Int. Cl.[5] G03G *21/00, 15/06*
U.S. Cl. 355—260 **4 Claims**

1. A toner supply device attachable to a developing device, comprising:
- mount means on which a toner cartridge is replaceably mountable and the toner is accumulated;
- outlet means in communication with the developing device for discharging the toner to the developing device;
- conveyance path means provided between the mount means and outlet means for connecting the mount means with the outlet means;
- conveying means for conveying the toner from the mount means to the outlet means, said conveying means including a conveying member provided in the conveyance path means and drive motor means for driving the conveying member;
- discriminator means for providing an indication that a fresh toner cartridge is mounted on the mount means;
- memory means for storing a conveyance time of the toner from the mount means to an initial position located at an upstream vicinity position of the outlet means in accordance with a toner conveying speed of the conveying member; and



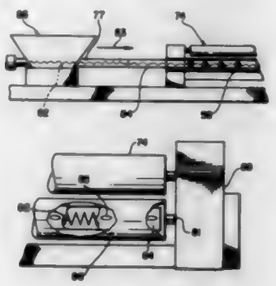
- control means connected to the discriminator means and the memory means, and responsive to the discriminator means, for controlling driving of the conveying member for the conveyance time, to convey the toner from the mount means to the initial position when said indication is provided that a fresh toner cartridge is mounted on the mount means.

5,305,064

COMPACT SINGLE COMPONENT DEVELOPMENT SYSTEM WITH MODIFIED TONER AGITATOR AND TONER DISPENSE AUGER DISPOSED THEREIN

Robert E. Trott, Webster; Lawrence Floyd, Jr., Rochester, and John F. Knapp, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 20, 1993, Ser. No. 64,250
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **8 Claims**



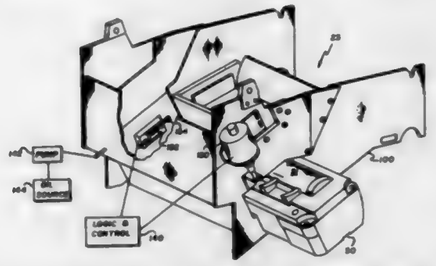
1. An apparatus arranged for use in an electrophotographic printing machine for moving single component toner particles from a toner storage container to a developer housing chamber and therein to provide means for immediate preload of toner particles onto a donor roller which transports the toner particles from the developer housing chamber to a photoreceptor, comprising:
- a stationary drop tube connecting said toner storage container to said developer housing chamber and extending across said developer housing chamber where said stationary drop tube terminates at a side of said developer housing chamber farthest away from said toner storage container;
- means for moving toner particles from the toner storage container to the developer housing chamber and laterally across the developer housing chamber along a longitudinal axis thereof, said moving means being rotatably mounted interiorly to said stationary drop tube;
- an elongated member rotatably mounted in said developer housing chamber and positioned such that said stationary drop tube is disposed interiorly thereto and extending laterally across said developer housing chamber, said elongated member comprising a hollow rod having a plurality of apertures therein with said apertures being spaced apart uniformly and arranged in a plurality of rows, wherein said elongated member rotates during operation to fluidize the toner particles in the developer housing chamber, thereby enabling immediate pre-load of toner particles onto said donor roller.

5,305,065

TONER IMAGE FUSER AND CARTRIDGE FOR IMAGE-FORMING APPARATUS

Linn C. Hoover, and Ralph E. Williams, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1992, Ser. No. 830,048
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **33 Claims**



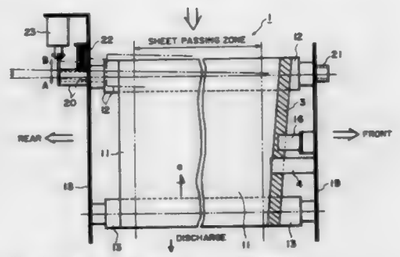
1. A fuser for fixing a toner image to a receiving sheet, said fuser comprising:
- a pressure roller,
- a fusing roller cartridge having,
  - a housing having an access opening,
  - a fusing roller mounted for rotation in
- said housing about an axis of rotation, and
  - a cover movable between a position covering said access opening and a position uncovering said access opening permitting access to said fusing roller, and
- receiving means for receiving said cartridge in said fuser by movement of said cartridge generally parallel to the axis of rotation of the fusing roller into said receiving means, said receiving means including means for opening said cover in response to such movement into said receiving means.

5,305,066

IMAGE HEATING DEVICE EMPLOYING ENDLESS BELT

Shokyo Koh, Kawasaki; Koki Kuroda, Tokyo; Tamotsu Okada, Kawasaki; Hironobu Nakai, and Takehito Utsunomiya, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,499
Claims priority, application Japan, Aug. 6, 1991, 3-220957; Aug. 6, 1991, 3-220958; Aug. 6, 1991, 3-220959; Aug. 6, 1991, 3-220960; Oct. 4, 1991, 3-285570; Oct. 4, 1991, 3-285572; Oct. 4, 1991, 3-285575; Nov. 20, 1991, 3-332537
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—289 **20 Claims**



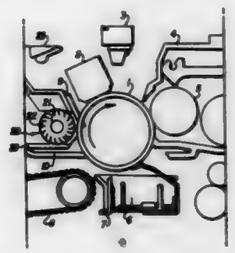
1. An image heating device comprising:
- a heater;
- an endless belt movable together with a recording material carrying an image, wherein the image carried upon the recording material is heated through said endless belt by heat from said heater;
- position detecting means for detecting a position in a lateral direction of said endless belt;
- lateral shift controlling means for controlling a lateral position of said endless belt by reciprocating said endless belt in the lateral direction in a predetermined range by changing a lateral shifting direction of said endless belt; and
- lateral shifting range controlling means for controlling said predetermined range by changing a position where the lateral shifting direction is changed.

5,305,067

PHOTOSENSITIVE DRUM SURFACE CLEANING DEVICE FOR ELECTROCOPYING MACHINE

Yong I. Song, Yuoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Japan

Filed Jun. 29, 1993, Ser. No. 82,946
Claims priority, application Rep. of Korea, Jun. 30, 1992, 92-11755
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—297 **4 Claims**



1. A photosensitive drum surface cleaning device for an electrocopying machine including a photosensitive drum, a discharge plate and a waste toner power removing blade both arranged around the photosensitive drum, said device being

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positioned around and near the photosensitive drum, to clean a surface of the photosensitive drum, the device comprising:

a filter unit disposed between said discharge plate and said blade and having a suction fan and a duct connected to said suction fan at its one end, for sucking waste toner powder and separating a copied sheet from the photosensitive drum;

a roller disposed between said filter unit and the blade and adapted to be supplied with a cleaning agent, said roller having, at its circumferential portion, radially extending removal fibers with a predetermined length;

means for supplying said cleaning agent from an external cleaning agent source to the roller;

a contact portion provided at the other end of said duct and having an inclined end; and

a filter disposed at a middle portion of the duct.

5,305,068

CONTINUOUS PAPER FEED PREVENTION LOCK MECHANISM FOR PRINTER

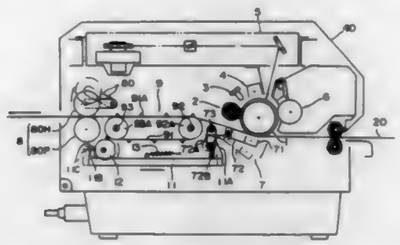
Tsutomu Sato; Masatoshi Takano, both of Tokyo; Taizo Saito, Okayama, and Hiroyuki Yamaguchi, Tokyo, all of Japan, assignors to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,834

Claims priority, application Japan, Apr. 23, 1991, 3-185946; Oct. 31, 1991, 3-097914; Nov. 6, 1991, 3-319862; Nov. 22, 1991, 3-104087; Apr. 15, 1992, 4-141255

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—309 **93 Claims**



1. A paper feed lock mechanism adapted to be used with a printer for printing continuous recording paper, said paper feed lock mechanism comprising recording paper movement regulation means for regulating movement of said continuous recording paper during predetermined times when no printing operation is performed by said printer, said regulation means comprising means for applying a load to said continuous recording paper for preventing movement of said continuous recording paper, said regulation means regulates movement of the continuous recording paper when a fixing roll is separated from the continuous recording paper.

5,305,069

TWO COLOR IMAGE FORMING APPARATUS

Masao Nakano, Kamakura, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 53,677

Claims priority, application Japan, Apr. 30, 1992, 4-139770

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **6 Claims**

1. An image forming apparatus comprising:

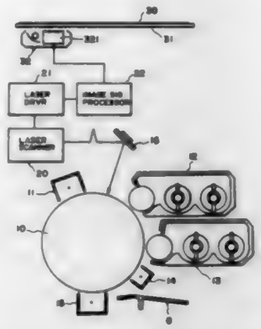
an electrophotographic photosensitive member;

charging means for electrically charging said photosensitive member;

one information light source for emitting light information to said photosensitive member, said light source being actuatable by electric power supply;

light quantity control means for controlling said light source to produce a controlled quantity of light from said light source in accordance with image information;

developing means for developing an electrostatic latent image formed on said photosensitive member, said developing means comprises first developing means for developing it with first toner, and second developing means for developing it with second toner having a color different from that of the first toner;



wherein said control means comprises a reference current source for supplying a predetermined reference current, and a color current source for supplying currents predetermined for respective colors, and wherein in exposure for a pixel, said light source is supplied with a current which is a sum of a current from the reference current source and a current from the color current source, so that an electrostatic latent image having different potentials in accordance with colors of the image information is formed by a single image information exposure step.

5,305,070

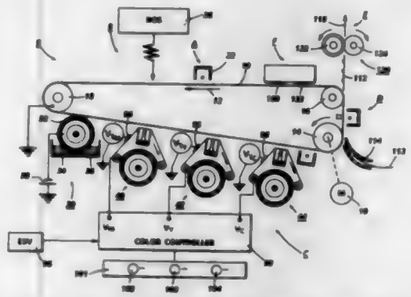
COLOR SELECT DEVELOPMENT AND SYSTEM APPLICATION

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 75

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **10 Claims**



1. Apparatus for creating color images in a single pass of a charge retentive surface past a plurality of process stations, said apparatus comprising:

a charge retentive surface;

means for forming latent electrostatic images on said charge retentive surface;

a plurality developer structures, each including a donor member for conveying charged toner particles of a different color from the other developer structures for depositing toner particles in a spot on spot manner onto said latent electrostatic images;

means for electrically biasing each of said developer structures;

means for controlling the electrical bias for each developer structure at different voltage levels whereby varying amounts of toner may be deposited on said latent electrostatic images from each of said developer structures in accordance with the color of the image to be created;

means for generating signals representative of the surface potential of the donor member for each of said developer structures; and

means responsive to said signals for adjusting the biases applied to said developer structures for compensating for the effects of said surface potential on each development structure.

5,305,071

DIFFERENTIAL REFRACTOMETER

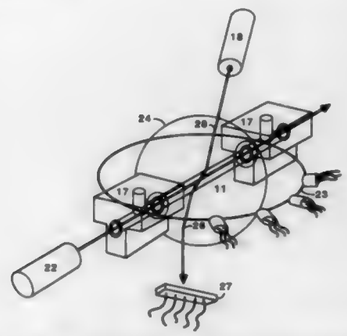
Philip J. Wyatt, Santa Barbara, Calif., assignor to Wyatt Technology Corporation, Santa Barbara, Calif.

PCT No. PCT/US89/02255, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO90/04165, PCT Pub. Date Apr. 19, 1990

Continuation-in-part of Ser. No. 252,331, Oct. 3, 1988, Pat. No. 4,952,055. This PCT application May 25, 1989, Ser. No. 499,479

Int. Cl.[5] G01N *21/41, 21/49*

U.S. Cl. 356—73 **34 Claims**



1. A differential refractometer for measuring the refractive index change of a fluid, caused by a change in the concentration of a solute dissolved therein, comprised of

A. a fluid bearing capillary lying along a diameter of a spherical transparent medium, said medium being of a refractive index greater than that of said capillary borne fluid;

B. a light source producing a fine light beam coplanar with said capillary, said beam being directed to pass through said transparent medium and to intersect said fluid bearing capillary causing thereby said light beam to pass from said transparent medium into said capillary borne fluid and then back out into said transparent medium after thereby having been twice refracted by said fluid in said fluid bearing capillary;

C. a refracted beam detector element receiving said twice refracted beam and which is responsive to the displacement of said twice refracted beam caused by refractive index change of said fluid due to said dissolved solute and producing a signal corresponding to said displacement;

D. conversion means whereby said refracted beam displacement signal may be converted into a direct numerical or analog representation of dn/dc where dn is the refractive index change of said fluid caused by a concentration change dc of said solute within said fluid.

5,305,072

LASER SCATTERING PARTICLE-SIZE DISTRIBUTION ANALYZER WITH IMPROVED SAMPLE CONTAINER DISCHARGE

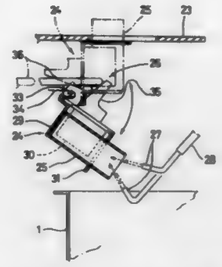
Yoshiyuki Sawada, and Toshiya Itoh, both of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Aug. 12, 1992, Ser. No. 928,988

Claims priority, application Japan, Aug. 17, 1991, 3-073029

Int. Cl.[5] G01N *15/02, 1/10*

U.S. Cl. 356—336 **17 Claims**



1. In a laser scattering particle-size distribution analyzer having means for supplying a sample to a sample cell, the improvement comprising;

at least one sample cup;

a support member for movably supporting the sample cup;

a sample cup holer pivotally mounted on the support member with a cam surface;

means for inverting the sample cup to discharge the sample to introduce it to the supplying means, including a push rod for contacting the cam surface; and

means for spraying the inverted sample cup to ensure a full discharge of the sample.

5,305,073

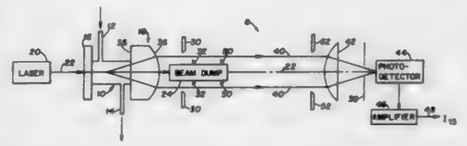
METHODS AND APPARATUS FOR MOLECULAR CHARACTERIZATION

Norman C. Ford, Jr., Amherst, Mass., assignor to Precision Detectors, Inc., Amherst, Mass.

Filed Feb. 12, 1992, Ser. No. 834,415

Int. Cl.[5] G01N *15/06*

U.S. Cl. 356—338 **26 Claims**



1. A molecular characterization detector comprising:

a scattering cell containing a sample or molecular characterization;

means for directing a light beam through said cell so that the light beam is scattered by said sample, said light beam defining an optical axis;

means for selecting from the scattered light a measurement beam comprising light from the light beam that is scattered by said sample from a predetermined portion of said scattering cell in a predetermined range of angles relative to said optical axis, said means for selecting a measurement beam comprising means including a first iris and a second iris for defining an annular aperture for passing said measurement beam, optical means for focusing light scattered by said sample on said annular aperture, a third iris having a circular outside diameter centered on said optical axis and a fourth iris having a circular inside diameter centered

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on said optical axis, said third iris and said fourth iris being located downstream of said annular aperture and being axially spaced apart, said third iris and said fourth iris selecting light that is scattered by said sample in a predetermined portion of said scattering cell; and

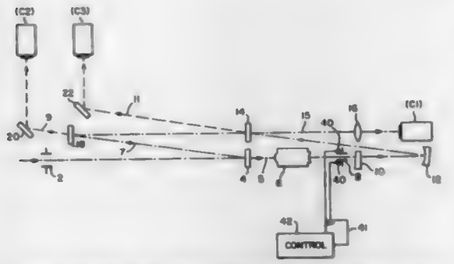
means for detecting said measurement beam and providing an output electrical signal representative of said measurement beam for characterization of said sample.

5,305,074

ACHROMATIC SELF-REFERENCING INTERFEROMETER

Mark Feldman, Pleasanton, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1992, Ser. No. 914,345
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **26 Claims**



1. An achromatic self-referencing Mach-Zehnder interferometer for measuring wavefronts of an input beam, including:

a reference arm, including a transmissive wedge plate for compensating for off-axis aberrations in a reference beam as the reference beam propagates along the reference arm through the wedge plate;

a measurement arm along which a measurement beam propagates;

an input beamsplitter positioned for directing a portion of the input beam to the reference arm as said reference beam, and a second portion of the input beam to the measurement arm as said measurement beam;

a recombining beamsplitter positioned for producing a recombined beam by recombining collimated reference beam radiation from the reference arm with measurement beam radiation from the measurement arm; and

a detector for registering a first interferogram indicative of the recombined beam.

5,305,075

MAGNETOSTRICTIVE TRANSDUCER SYSTEM HAVING A THREE DUAL-STRIP FIBER OPTIC MAGNETOSTRICTIVE TRANSDUCERS BONDED INTO A SINGLE FIBER MACH-ZEHNDER INTERFEROMETER

Frank Bucholtz, Crofton, Md.; Kee P. Koo, Alexandria, Va., and Dominique M. Dagenais, Chevy Chase, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

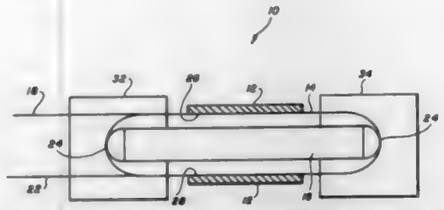
Filed Jan. 29, 1993, Ser. No. 12,140
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **18 Claims**

1. A dual-strip fiber optic magnetostrictive transducer system comprised of:

a predetermined length of optical fiber wound in a circular form;

a rectangular bobbin having a first and a second end with rounded edges and a vertical first and second sides within the circular optical fiber thereby forming a first and second horizontal linear portions of the optical fiber;

a two-point mounting scheme formed by securing the optical fiber at the first and second rounded ends of the bobbin;



a first and second field-annealed magnetostrictive glass strip secured to the first and second horizontal linear portion, respectively, of the optical fiber;

end plates attached at the first and second ends of the bobbin on the first and second sides of the bobbin to form mounting surfaces; and

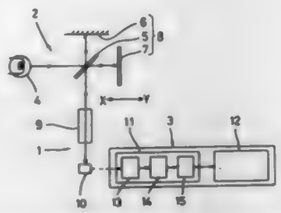
a mounting structure wherein the bobbin is mounted.

5,305,076

QUANTITATIVE ANALYTICAL METHOD AND APPARATUS FOR SPECTROMETRIC ANALYSIS USING WAVE NUMBER DATA POINTS

Kaori Inoue, Hirakata; Yutaka Yamagishi, Yasu, and Masayuki Adachi, Kyoto, all of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Feb. 14, 1992, Ser. No. 836,786
Claims priority, application Japan, Feb. 16, 1991, 3-044166; Feb. 16, 1991, 3-044167; Feb. 21, 1991, 3-048864; Feb. 23, 1991, 3-050853
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **8 Claims**



1. A method of determining the constituent ingredients in a sample by spectroscopy comprising the steps of:

securing data of a power spectrum of a sample;

securing data of a power spectrum of a reference;

deriving an absorption spectrum of the sample from the respective data of the power spectrum of the sample and the reference;

selecting a set of wave number points across the absorption spectrum of the sample that exhibit a predetermined linearity characteristic between peak and valley values of the absorption spectrum, and

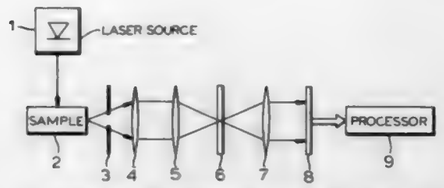
utilizing the absorption spectrum values corresponding to the set of wave number points to calculate the concentrations of the constituent ingredients.

5,305,077

HIGH-RESOLUTION SPECTROSCOPY SYSTEM

Giorgio Grego, Venaria, and Luigi Tallone, Paesana, both of Italy, assignors to CSELT-Centro Studi E Laboratori Telecomunicazioni S.p.A., Torino, Italy

Filed Mar. 30, 1992, Ser. No. 859,822
Claims priority, application Italy, Jun. 28, 1991, 91 A 000492
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **5 Claims**



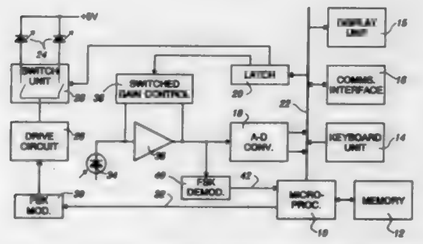
1. A system for the spectral analysis of light radiation, comprising a source of radiation to be analyzed, means for the photoelectric conversion of said radiation, an interference filter arranged between the source and the photoelectric conversion means for selecting different wavelength intervals in said radiation and separately supplying the conversion means with the radiation portions corresponding to the different wavelength intervals, and a measuring and data processing device, connected to the conversion means, which memorizes intensity values of signals outgoing from the conversion means as the wavelength interval selected changes and yielding spectral information from said signal, the interference filter being associated with a first optical system focusing the radiation to be analyzed onto said filter, and with a second optical system, said second optical system receiving radiation outgoing from the filter at different angles and collimating the radiation outgoing from the filter, thereby sending the radiation portions which were outgoing from the filter at different angles to different points of a detection plane at which the conversion means are located, the measuring and data processing device being arranged to obtain spectral density values relevant to the various wavelengths by processing the intensity values of the signals outgoing from the conversion means with the transfer function of the interference filter.

5,305,078

MEASUREMENT OF ATTENUATION OF OPTICAL FIBERS USING TRANSMITTED WAVELENGTH AND POWER INFORMATION

Joseph E. G. Lamonde, St. Nicolas, Canada, assignor to EXFO Electro-optical Engineering Inc., Vanier, Canada

Filed Jan. 21, 1992, Ser. No. 822,785
Int. Cl.[5] G01N *21/59*
U.S. Cl. 356—73.1 **6 Claims**



1. A method of measuring attenuation of an optical fiber, comprising the steps of: at a transmitter:

transmitting an optical signal having a predetermined wavelength to the fiber; and

modulating the optical signal with information identifying the wavelength and a transmitted power of the optical signal; and, at a receiver:

detecting the optical signal received from the fiber;

demodulating the detected optical signal to recover the wavelength and transmitted power information;

reading stored wavelength-dependent detection sensitivity information in dependence upon the recovered wavelength information;

monitoring a received power level of the optical signal; and

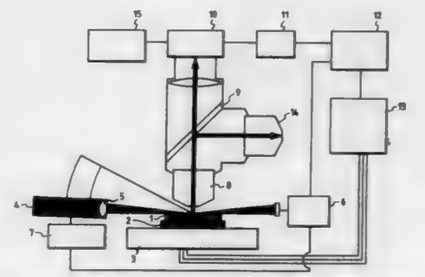
determining attenuation of the optical fiber at the predetermined wavelength from the recovered transmitted power information, the monitored received power level, and the detection sensitivity information, wherein the optical signal is transmitted as a continuous wave signal following the modulation with said information, and the monitoring step comprises monitoring a received power level of the continuous wave signal.

5,305,079

NONDESTRUCTIVE METHOD FOR DETECTING DEFECTS IN THIN FILM USING SCATTERED LIGHT

Otto Albrecht, Atsugi, and Ken Eguchi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,160
Claims priority, application Japan, Jun. 24, 1991, 3-178686
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—237 **6 Claims**



1. A method for detecting defects in a film structure of a thin film formed on a substrate, comprising the steps of:

projecting a light flux in a direction precisely parallel or substantially parallel to the face of the substrate:

separating a reflected light from the thin film and the substrate from a scattered light caused by a defect in said thin film;

collecting the scattered light toward the direction precisely perpendicular or substantially perpendicular to the face of the substrate and introducing said collected scattered light into an imaging means; and

reading information only of said collected scattered light.

5,305,080

APPARATUS FOR INSPECTING SURFACE OF A FACE PLATE FOR A CATHODE RAY TUBE

Sangsoo Lee; Nagkeun Seong; Sangkeun Jeong; Boghyeon Yoo; Koonseon Oh; Jeongin Seo, and Jaekyeong Rho, all of Kyunggi, Rep. of Korea, assignors to Samsung Corning Co., Ltd., Kyunggi, Rep. of Korea

Filed Jun. 19, 1992, Ser. No. 901,888
Claims priority, application Rep. of Korea, Jun. 19, 1991, 91-10259; May 26, 1992, U.M.92-9143
Int. Cl.[5] G01N *21/00*; B65B *37/00*
U.S. Cl. 356—237 **11 Claims**

1. An apparatus for inspecting a surface of a face plate for a cathode ray tube, said apparatus comprising

a frame;

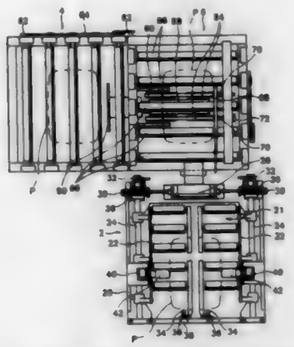
a gate conveyor mounted on said frame for conveying a face

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plate thereon, said conveyor having a pair of sections for receiving a face plate thereon, each said section being pivotally mounted on said frame to move between a conveying position with the face plate thereon and a retracted position spaced from the face plate;

a pair of chucking cylinders mounted on opposite sides of said frame, each said cylinder having a reciprocally mounted rotatable piston therein for movement between a retracted position and an extended position;

a pair of pads, each pad being mounted on a respective



piston to engage a side of a face plate on said gate conveyor with said sections of sad conveyor in said conveying positions thereof and to rotate the face plate about an axis coincident with said pads with said sections of said conveyor in said retracted positions thereof; and

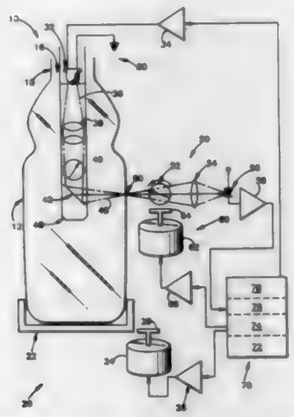
a contact switch for sensing the positioning of a face plate on said gate conveyor in a position to be engaged by said pads and emitting a signal to activate said cylinders to move said pistons thereof to said extended positions thereof and to said conveyor to move said sections thereof into said retracted positions thereof.

5,305,081

BOTTLE STRESS ANALYSIS SYSTEM

Jan W. Gooch, Atlanta, and James W. Larsen, Douglasville, both of Ga., assignors to Coastar Plastics Inc., Atlanta, Ga.

Filed Aug. 27, 1992, Ser. No. 936,902
Int. Cl.[5] G01N *21/21, 21/90*
U.S. Cl. 356—240 **17 Claims**



1. A bottle stress analysis system using polarized light for determining stress levels of a transparent plastic bottle, the transparent plastic bottle having a bottle wall that defines a bottle cavity, the bottle stress analysis system comprising

a rotation assembly for rotating the bottle,

a polarized light source assembly insertible into the bottle cavity to direct plane polarized light through the bottle wall

an analyzer assembly positioned outside the bottle for measuring intensity of light passing through the bottle wall, the analyzer assembly having a polarization analyzer positioned to transmit the light to a photodetector,

means for rotating one of the polarized light source and the analyzer to determine maximum and minimum polarized light iatensity at the photodetector, and

means for correlating stress levels from the maximum and minimum polarized light intensity measurements, the correlating means comprising means for determining change in polarization Rp(i) for each measurement and means for determining high frequency components of Rp(i) to determine annealing conditions of the bottle.

5,305,082

HIGH SPATIAL RESOLUTION IMAGING SPECTROGRAPH

Georges G. Bret, Sunnyvale, Calif., assignor to Chromax, Inc., Albuquerque, N. Mex.

Filed Jan. 8, 1992, Ser. No. 819,368
Int. Cl.[5] G01J *3/18, 3/36*
U.S. Cl. 356—328 **20 Claims**



1. A spectrograph comprising:

a first spherical mirror;

a second spherical mirror;

an optical grating with an opening therein positioned to receive and direct radiation from said first spherical mirror to said second spherical mirror;

a turning mirror positioned adjacent said opening and at the focus of the said second spherical mirror to receive radiation from the said second spherical mirror;

a third spherical mirror to receive radiation from said turning mirror; and

light detection means;

whereby incoming radiation from an object positioned at the focus of said first spherical mirror passes through said opening to illuminate said first spherical mirror, which reflects the said radiation onto the said optical grating, which diffracts the said radiation onto the said second spherical mirror, which focuses the said radiation onto the said turning mirror, which reflects the said radiation onto the said third spherical mirror, which focuses the said radiation to form a spectral image on said light detection means.

5,305,083

RANDOM ACCESS MONOCHROMATOR

Charles G. J. Marianik, Lawrenceville, N.J.; Carlos Zarate, and Gilbert M. Levy, both of Ontario, Canada, assignors to ML Technology Ventures, L.P., Menlo Park, Calif.

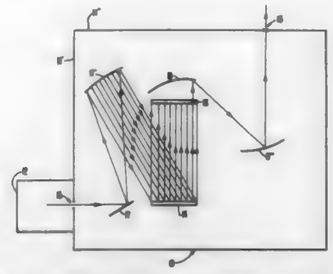
Filed Oct. 16, 1990, Ser. No. 598,560
Int. Cl.[5] G01J *3/14, 3/18*
U.S. Cl. 356—332 **14 Claims**

1. A random access monochromator, comprising:

means for splitting light into various wavelengths;

a micro shutter system for randomly selecting at least one wavelength of the thus-split light,

means for directing the selected wavelength(s) to another area of the monochromator; and



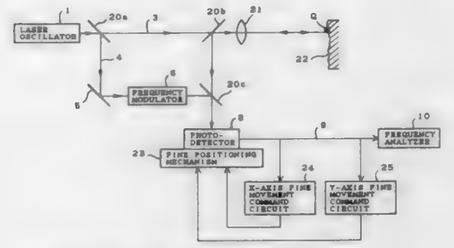
means for passing the selected wavelength(s) to a location outside the monochromator.

5,305,084

HETERODYNE INTERFEROMETER

Hiroshi Doi, and Mitsuhito Kamei, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,969
Claims priority, application Japan, Sep. 2, 1991, 3-221378
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—349 **8 Claims**



1. A heterodyne interferometer comprising:

a laser oscillation means for producing a laser beam;

a means for splitting the laser beam into two beams and causing the beams to have different frequencies;

a heterodyne detection means which conducts the two laser beams so that at least one beam is reflected or transmitted by an object under test, and thereafter composes both beams and produces an interference signal from the composed laser beam by means of a photodetector included in it;

a frequency analysis means which reveals the Doppler frequency component of the interference signal; and

a photodetector positioning means which detects the amplitude of the component of the interference signal and positions the photodetector so that the amplitude is at a maximum.

5,305,085

RADIO FREQUENCY EXCITED RING LASER GYROSCOPE WITH COMMON INDUCTION COIL

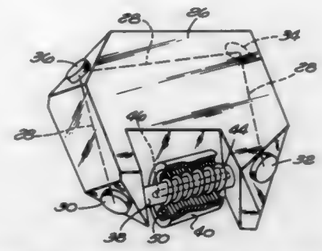
Tae W. Hahn, Chatsworth, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Sep. 22, 1988, Ser. No. 253,094
Int. Cl.[5] G01B *9/02*; H01S *3/083*
U.S. Cl. 356—350 **7 Claims**

1. A split gain multi-mode ring laser gyroscope, including a monolithic frame having a closed cavity therethrough, said cavity defining a non-planar configured closed optical pathway formed between each two of a plurality of mirrors affixed to said frame, said ring laser gyroscope comprising:

means for producing at least four modes of electromagnetic radiation by excitation of a gain medium within said cavity;

mode suppression means for suppressing any lasing action of selected modes of radiation within said cavity;



means for providing DC and AC signals by electromagnetic induction to said mode suppression means and said means for producing electromagnetic radiation by gain medium excitation, respectively, said induction means being common to both said mode suppression and gain medium excitation means;

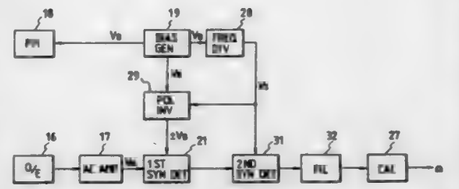
whereby, both mode suppression and gain medium excitation may be accomplished through a common device.

5,305,086

TWO STEP DEMODULATION SYNCHRONOUS DETECTOR

Motohiro Ishigami, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,519
Claims priority, application Japan, Feb. 27, 1991, 3-033169
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **3 Claims**



1. A synchronous detector comprising:

first local signal generating means for generating a first local signal of a frequency of;

second local signal generating means for generating a second local signal of a frequency lower than one-half said frequency of;

polarity inverting means for outputting polarity-inverted and non-inverted versions of said first local signal alternately in synchronization with said second local signal;

first synchronous detecting means for synchronously detecting an input signal by the output of said polarity inverting means; and

second synchronous detecting means for synchronously detecting the output of said first synchronous detecting means by said second local signal.

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5,305,087

OPTICAL RING RESONATOR SENSOR

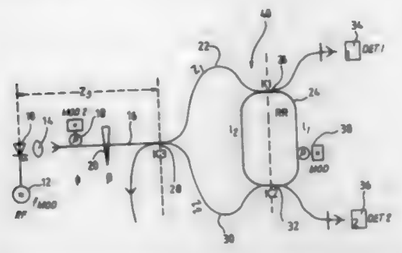
Walter Bernard, Duisendorf, France; Götz Geister, Salem Mimmenhausen, and Michael Raab, Salem, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Fed. Rep. of Germany

Filed Mar. 5, 1992, Ser. No. 846,024

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1991, 4107915

Int. Cl.[5] G01C 19/72

U.S. Cl. 356—350 11 Claims



1. A sensor for measuring a physical quantity wherein said quantity causes a non-reciprocal effect in an optical ring resonator, comprising:

(a) an optical ring resonator characterized by a free spectral range (FSR) and a resonance frequency defining a first direction of light propagation and a second direction of light propagation therein and a first optical path length and a second optical path length associated with said first and second directions of light propagation, respectively, and wherein said first and second optical path lengths are varied differently depending on said physical quantity when said optical ring resonator is exposed to said physical quantity to cause said non-reciprocal effect;

(b) a semiconductor laser for generating a laser light wave;

(c) an energizer for directly energizing said semiconductor laser so that said semiconductor laser is further characterized by a semiconductor laser frequency and wherein said semiconductor laser frequency depends on the degree of energization by said energizer;

(d) a modulator for controlling said energizer to modulate said laser light wave of said semiconductor laser at a modulation frequency $f_{mod}=j/k * FSR$, wherein j and k are integers and FSR is the free spectral range of said optical ring resonator, whereby a carrier frequency and sidebands further characterized by sideband frequencies are generated in said laser light wave;

(e) a first light guide for coupling a part of said laser light wave into said optical ring resonator to provide a first circulating light wave circulating in said optical ring resonator in said first direction of light propagation;

(f) a second light guide for coupling a part of said laser light wave into said optical ring resonator to provide a second circulating light wave circulating in said optical ring resonator in said second direction of light propagation;

(g) a first detector and a second detector:

(h) a first light director for directing part of said first circulating light wave onto said first detector resulting in a first detector signal;

(i) a second light director for directing part of said second circulating light wave onto said second detector resulting in a second detector signal;

(j) a frequency controller for maintaining said carrier frequency at a first resonance frequency of said optical ring resonator and for maintaining at least one of said sideband frequencies at a second resonance frequency of said optical ring resonator, said carrier frequency and said at least one sideband frequency being spaced by +/− m * FSR, wherein m is an integer; and

(k) a signal processor for determining the difference between said first and second detector signals, said difference providing a measure of said physical quantity.

5,305,088

LASER INTERFEROMETRIC MEASURING MACHINE

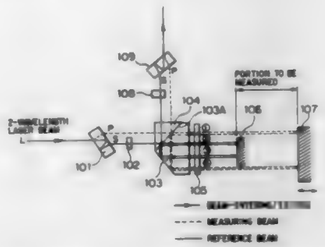
Shigeru Hosoe, Sagamihara, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 624,345, Dec. 7, 1990, abandoned. This application Jun. 7, 1993, Ser. No. 73,292

Claims priority, application Japan, Dec. 11, 1989, 1-320939; Apr. 18, 1990, 2-102739

Int. Cl.[5] G01B 9/02

U.S. Cl. 356—351 19 Claims



1. A laser interferometric measuring apparatus for measuring the position of an article, comprising:

means for emitting a polarized reference beam and a polarized measuring beam;

optical means for receiving the measuring beam and the reference beam from the emitting means and for transmitting the measuring and reference beams in a measuring direction;

movable reflecting means movable in the measuring direction locatable at the position of an article, for reflecting the measuring beam into the optical means;

fixed reflecting means located at a predetermined position in the measuring direction, for reflecting the reference beam into the optical means;

the optical means including a first surface to selectively reflect or transmit the measuring beam and the reference beam therethrough in accordance with the polarization condition of the measuring and reference beams and a second surface to completely reflect the measuring and reference beams,

each one of the first and second surfaces of the optical means being positioned so as to face both the movable and the fixed reflecting means so that each one of the first and second surfaces receives both the measuring beam from the movable reflecting means and the reference beam from the fixed reflecting means or reflects the measuring and reference beams in the measuring direction without the measuring and reference beams being reflected on an intermediate surface between each one of the first and second surfaces and each one of the movable and fixed reflecting means,

the first surface and the second surface inclined at an angle to the measuring direction, and the first and second surfaces constructed forming an angle therebetween so that each one of the first and second surfaces receives beams reflected from the other one of said first and second surfaces, whereby,

when the first surface receives the measuring beam reflected from the movable reflecting means and the reference beam reflected from the fixed reflecting means, the first surface selectively reflects the beams into the second surface or transmits the beams into detecting means depending on the polarization condition of the beams,

when the first surface receives the measuring beam and the reference beam reflected from the second surface, the first surface selectively reflects the beams in the measuring direction or transmits the beams into the detecting means depending on the polarization condition of the beams,

when the second surface receives the measuring beam reflected from the movable reflecting means and the reference beam reflected from the fixed reflecting means, the second surface reflects the beams into the first surface, and

when the second surface receives the measuring beam and the reference beam reflected from the first surface, the second surface reflects the beams in the measuring direction; and

detecting means for receiving the measuring beam and the reference beam transmitted through the first surface and for comparing the beams to detect the position of the article.

5,305,089

LASER INTERFEROMETER INCLUDING AN OPTICAL UNIT HAVING A CORNER CUBE PRISM, A PARALLELOGRAM PRISM, A TRIANGLE PRISM, AND A POLARIZING PLATE INTERGRATED TO FORM ONE BODY

Shigeru Hosoe, Sagamihara, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,061

Claims priority, application Japan, Mar. 11, 1991, 3-044890

Int. Cl.[5] G01B 9/02

U.S. Cl. 356—356 12 Claims



1. A laser interferometer for measuring the position of an object, comprising:

a beam generator to emit a laser beam;

an optical unit having an incident surface to receive the laser beam form the beam generatory, a split surface at which the laser beam is split into a measuring beam and a reference beam in accordance with the polarization condition thereof, a transmitting surface through which the measuring beam is emitted to a movable mirror and is reflected back to the optical unit and the reference beam is emitted to a fixed mirror and is reflected back to the optical unit, wherein the reflected measuring beam and the reflected reference beam are combined at the split surface so as to form a output beam carrying measurement information of optical path length difference between the reflected measuring beam and the reflected reference beam, and an exit surface through which the output beam is outputted to a measuring device;

the movable mirror located at the position of the object;

the fixed mirror located at a predetermined position;

the measuring device to analyze the output beam and to determine the position of the object;

the optical unit including

a corner cube prism having a coated surface to selectively reflect or pass a beam therethrough in accordance with the polarization condition of the beam, a reflection surface to completely reflect a beam and a base surface, wherein the coated surface and the reflection surface form the apex of the corner cube prism and the corner cube is arranged so that the coated surface is used as the split surface, the base surface is used as the transmission surface and the reflection surface relays the measuring beam and the reference beam between the split surface and the transmission surface,

a parallelogram prism attached tot he coated surface of the corner cube prism,

a triangle prism attached to the coated surface of the corner cube prism, the triangle prism positioned next to the parallelogram prism on the apex side of the corner cube prism, and

a polarizing plate sandwiched between the parallelogram prism and the triangle prism, wherein the corner cube prism, the parallelogram prism, the triangle prism and the polarizing plate are integrated to form one body, and wherein when the parallelogram prism is used to form the incident surface, the triangle prism is used to form the exit surface, alternatively, when the triangle prism is sued to form the incident surface, the parallelogram prism is sued to form the exit surface.

5,305,090

BIREFRINGENT INSPECTION POLARSCOPE

Henry C. Kowalski, Grand Blanc, Mich., assignor to GMI Engineering and Management Institute, Flint, Mich.

Filed Dec. 11, 1991, Ser. No. 805,079

Int. Cl.[5] G01J 4/00

U.S. Cl. 356—366 12 Claims



1. A polariscope for inspecting relatively transparent objects for defects, the polariscope comprising:

a base;

a housing mounted on the base;

a polarizer frame mounted on the housing;

a support post having an upper and a lower end, the lower end being mounted on the housing, the upper end extending generally upwardly away from the housing;

an analyzer frame mounted to the upper end of the support post;

a source of white light mounted at least partially within the housing and disposed to emit light along a path generally parallel to the support post;

a first circular polarizer fixedly mounted at least partially within the polarizer frame for receiving and circularly polarizing light emanating from the source of white light;

a second circular polarizer fixedly mounted at least partially within the analyzer frame for receiving circularly polarized light emanating from the first circular polarizer, an examination area being defined in the path of light between the first and second circular polarizers, proximate the first circular polarizer, for receiving an object to be examined;

a half-wave polarizer mounted on the support in the path of light between the first and second polarizers, the half-wave polarizer being displaceable between a first position, wherein the half-wave polarizer does not intercept the path of light, and a second position, wherein the half-wave polarizer intercepts the path of light, thereby darkening the background surrounding an image formed by light emanating from the second circular polarizer; and

a magnifying lens mounted at least partially within the analy-

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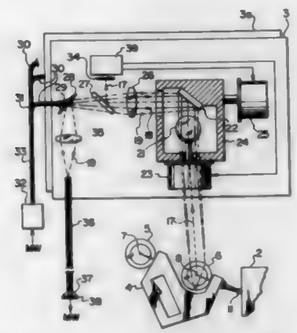
zer frame for magnifying images formed by light emanating from the second circular polarizer.

5,305,091

OPTICAL COORDINATE MEASURING SYSTEM FOR LARGE OBJECTS

Daniel Gelbart, and Michel G. Laberge, both of Vancouver, Canada, assignors to Oreo Products Inc., Burnaby, Canada

Filed Dec. 7, 1992, Ser. No. 987,976
Int. Cl.[5] G01B 11/14, 11/02
U.S. Cl. 356—375 7 Claims



1. A three dimensional coordinate measuring system comprising:

a plurality of optical transmitter-receivers (transceivers) mounted at accurately known locations on a fixed and stable reference frame;

a freely moveable probe containing a tip and at least two reference points, the distance from the tip to said reference points accurately known and each of said reference points being within line-of-sight to at least three of said transceivers regardless of the position of said tip;

an omnidirectional retroreflector located at each of said reference points;

a laser modulated by a plurality of accurately known frequencies and coupled to said transceivers using optical fibers, said transceivers including optical means of forming output of said fibers into a collimated light beam steerable in two dimensions, said collimated beam can be independently steered in each one of said transceivers;

means of tracking said retroreflectors with said collimated light beams and means of collecting the retroreflected light of each one of said beams and focusing it onto a separate photo-detector;

means of measuring the phase shift of the output of each one of said photo-detectors relative to the phase of said accurately known frequencies and means of converting this phase shift into distance information, the plurality of said accurately known frequencies used to resolve the ambiguity in the valve of said distance present when only a single frequency is used;

means of computing the location of each retroreflector from its distance to at least three of said transceivers;

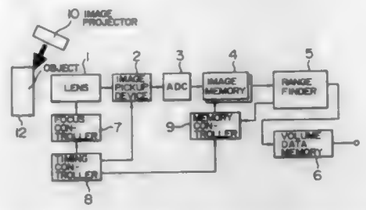
and means of computing the location of the said probe tip from the computed location of said retroreflectors.

5,305,092

APPARATUS FOR OBTAINING THREE-DIMENSIONAL VOLUME DATA OF AN OBJECT

Itaru Mimura, Sayama, Japan, and Tsuneya Kurihara, Preverenges, Switzerland, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,463
Claims priority, application Japan, Sep. 3, 1991, 3-222697
Int. Cl.[5] G01B 11/24
U.S. Cl. 356—376 6 Claims



1. An apparatus for obtaining three-dimensional volume data of an object comprising:

image projector means for projecting a two-dimensional reference optical image containing spatial high-frequency components to said object;

two-dimensional image pickup means for picking up the image of said object on which said two-dimensional reference optical image is projected, while a focal plane is being shifted;

range finder means for extracting the high-frequency components of an image signal of a very small region including each of a plurality of detection points on the image picked up by said image pickup means and detecting the best focal plane position where an in-focus condition is given to each of said plurality of detection points, from the change of the high-frequency components with the shift of said focal plane; and

memory means for storing data of the said best focal plane detected at each of said detection points as three-dimensional volume data;

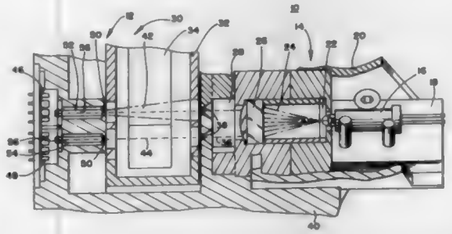
wherein said image projector means comprises means for generating a high-frequency signal, two-dimensional display means for converting said high-frequency signal into a two-dimensional image, and an optical system for projecting said two-dimensional image on said object.

5,305,093

SPECTROMETER FOR CONDUCTING TURBIDIMETRIC AND COLORMETRIC MEASUREMENTS

Andrew J. Dosmann, Mishawaka, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Oct. 31, 1991, Ser. No. 785,987
Int. Cl.[5] G01N 21/00, 21/27
U.S. Cl. 356—435 3 Claims



1. A dual beam spectrophotometer for conducting turbidimetric and colorimetric measurements having dual apertures

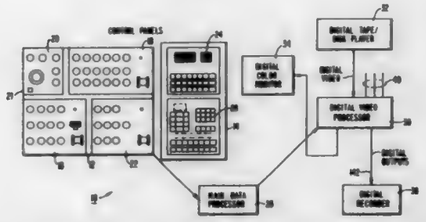
for forming a monochromatic beam of light into a sample light beam and a reference light beam and a detector assembly for separately detecting the sample light beam and the reference light beam; said dual beam spectrometer having aperture tubes for transmitting the sample light beam after the sample light beam passes through a sample and the reference light beam after the reference light beam passes through air, respectively, directly to the detector assembly; said aperture tubes consisting essentially of tubes having an inside diameter of about 0.065 inch and a length of about 0.6 inch wherein light entering said tubes from angles exceeding 5 degrees is prevented from passing down the tubes to said detector assembly.

5,305,094

DIGITAL VIDEO SIGNAL COLOR DETECTOR, CORRECTOR AND METHOD

Armand Belmares-Sarabia, Catskill, N.Y., and Stanley J. Chayka, Parsippany, N.J., assignors to Inprop, Inc., Morris Plains, N.J.

Continuation of Ser. No. 815,892, Dec. 30, 1991, which is a continuation of Ser. No. 502,057, Mar. 30, 1990. This application May 19, 1992, Ser. No. 887,235
Int. Cl.[5] H04N 9/64
U.S. Cl. 348—651 26 Claims



1. A digital video color corrector comprising means for receiving digital video input signals representing pixels of a video picture, digital detecting means for detecting the color of each of said video signals and for producing corresponding digital color signals, and generating means for receiving said color signals and for generating digital output signals, said generating means including digital computer means, responsive to operator control signals, with look-up table means for storing values which are a function of the phase angle of the color detected, and for producing corresponding modification signals, and digital combining means for combining said color and modification signals to produce digital output signals whose hue and/or saturation is different from those characteristics of the corresponding input signals.

5,305,095

METHOD AND CIRCUIT FOR ENCODING COLOR TELEVISION SIGNAL

Tong-Ill Song, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 631,995, Dec. 21, 1990, Pat. No. 5,208,662. This application May 3, 1993, Ser. No. 55,253
Claims priority, application Rep. of Korea, Dec. 22, 1989, 19320/1989
Int. Cl.[5] H04N 9/78, 9/67, 9/77
U.S. Cl. 348—665 17 Claims

1. A circuit for encoding a composite image signal in a color television having gamma correction matrix means, first and second low pass filters, quadrature phase modulator means and mixer means, comprising:

a luminance signal from said gamma correction matrix means is coupled to an input terminal of first filter means, and color-difference signals from said gamma correction matrix means are coupled to input terminals of said first and second low pass filters;

outputs from said first and second low pass filters are coupled to input terminals of second and third filter means;

a pattern value and a motion value are detected from said luminance signal by pattern and motion detecting means;

the output from said pattern and motion detecting means is applied to said first, second and third filter means;

the output from said first filter means is coupled to said mixer means; and

the outputs from said second and third filter means are coupled to said quadrature phase modulator means, and the output of said quadrature phase modulator means is coupled to said mixer means to provide an encoded video signal, and

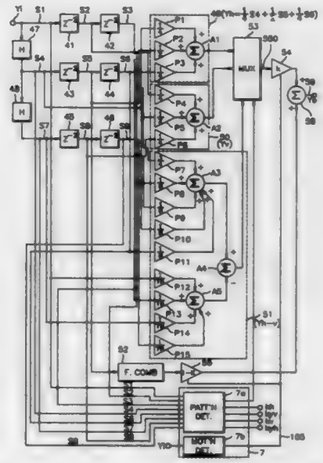
said first, second and third filter means comprise:

first and second clock delay means coupled in series to receive said luminance signal;

first horizontal delay means coupled to receive said luminance signal;

third and fourth clock delay means coupled in series to receive the output of said first horizontal delay means;

second horizontal delay means coupled to receive the output of said first horizontal delay means;



fifth and sixth clock delay means coupled in series to receive the output of said second horizontal delay means;

horizontal filter means coupled to receive the outputs of said first horizontal delay means and said third and fourth clock delay means;

vertical filter means coupled to receive the outputs of said first, third, and fifth clock delay means;

horizontal-vertical filter means coupled to receive the outputs of said first and second horizontal delay means, and said first, second, third, fourth, fifth and sixth clock delay means;

multiplexer means for selecting one the outputs of said vertical, horizontal, and horizontal-vertical filter means according to a first output signal of said pattern and motion detecting means;

first gain controller means for controlling amplitude gains of the output of frame comb filter means;

second gain controller means for controlling amplitude gains of the output of said multiplexer means; and

mixer means for mixing the output of said first gain controller means and the output of said second gain controller means according to a second output signal of said pattern and motion detecting means.

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5,305,096

IMAGE SIGNAL PROCESSING APPARATUS USING COLOR FILTERS AND AN IMAGE PICK-UP DEVICE PROVIDING, INTERLACED FIELD SIGNALS

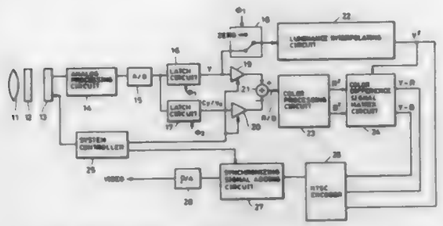
Taku Yamagami; Takashi Sasaki, both of Yokohama, and Akira Suga, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1991, Ser. No. 735,793

Claims priority, application Japan, Jul. 31, 1990, 2-204776; Jul. 31, 1990, 2-204777; Jul. 31, 1990, 2-204784

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—242 **23 Claims**



1. Image signal processing apparatus comprising:

an image pick-up device for providing an image signal in interlaced fields in response to an optical image incident thereon, said image pick-up device comprising color filter means including luminance portions disposed in an offset manner, with respect to each other, between interlaced lines; and

signal processing means for processing the image signal to compensate for the consequences in the image signal of characteristics of the color filter means by combining, in a single signal, image signal portions from different said interlaced fields, said signal processing means comprising storage means.

5,305,097

COMMUNICATING APPARATUS HAVING A CALLING PARTY NUMBER DISPLAY DEVICE

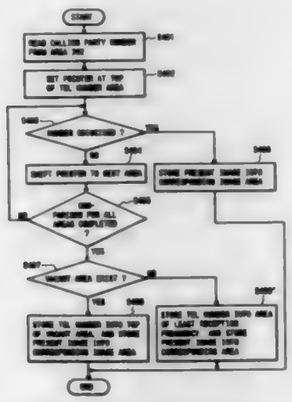
Ryoichiro Sato, and Shuichi Kadowaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1990, Ser. No. 628,178

Claims priority, application Japan, Dec. 20, 1989, 1-332424; Sep. 21, 1990, 2-253415

Int. Cl.[5] H04M *11/00*; H04N *7/14*

U.S. Cl. 348—14 **12 Claims**



1. A communication apparatus comprising:

receiving means for receiving image data sent from a communication partner apparatus;

memory means for storing the image data received by said receiving means during a communication with the communication partner apparatus and ID data in correspondence with the image data sent from the communication partner apparatus, the ID data indicating the communication partner apparatus;

display means for receiving the ID data upon reception from the communication partner apparatus and for reading out the image data from said memory means corresponding to the received ID from said memory means and for displaying the image data;

means for selecting a storing operation of the image data into said memory means, and wherein when the storing operation is selected by said selecting means, said memory means stores the image data which is being received;

wherein said memory means stores a plurality of image data from a plurality of communication apparatuses in correspondence with a plurality of ID data;

and wherein said memory means further comprises a plurality of storage areas, and wherein when the storing operation is selected by said selecting means and all said storage areas in said memory means contain data, the ID data and the image data in a predetermined storage area are erased and the ID data of the communication partner apparatus during communication and the image data from the communication partner apparatus are newly stored into a predetermined storage area;

and wherein the predetermined storage area from which the ID data and the image data are erased is an area in which the image data from the communication apparatus having a small reception frequency has been stored.

5,305,098

ENDOSCOPE IMAGE PROCESSING SYSTEM WITH MEANS FOR DISCRIMINATING BETWEEN ENDOSCOPE IMAGE AREA AND CHARACTER IMAGE AREA

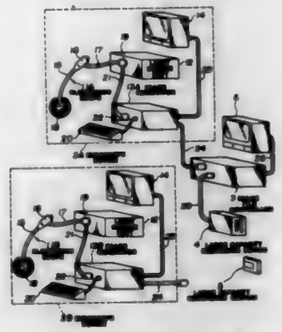
Kenji Matsunaka, and Yoshitaka Miyoshi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,872

Claims priority, application Japan, Apr. 11, 1991, 3-078982; Mar. 9, 1992, 4-050859

Int. Cl.[5] A61B *1/04*; H04N *7/18*

U.S. Cl. 348—65 **25 Claims**



1. The endoscope image processing system comprising:

an endoscope having an insert section to be inserted into a body cavity or the like and an image sensor for photoelectrically converting an optical image obtained through an object lens provided at a distal end of said insert section;

a video signal generating means for generating a video signal which contains an endoscope image produced through signal processing for said image sensor and image information different in quantity of information per unit from said endoscope image;

information generating means provided in said video signal generating means for automatically generating information corresponding to an area arrangement for respective signal areas of said endoscope image and said image information contained in said video signal; and

an image processing unit connected to said information generating means via communication means, through which said information is transmitted, for carrying out image processing in different manners for said endoscope image and said image information contained in said video signal based on said information transmitted via said communication means.

5,305,099

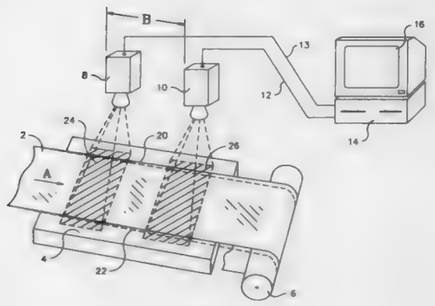
WEB ALIGNMENT MONITORING SYSTEM

Joseph A. Morcos, 997 Old Eagle School Rd., Ste. 205, Wayne, Pa. 19087, assignor to Joseph A. Morcos

Filed Dec. 2, 1992, Ser. No. 984,916

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—88 **13 Claims**



1. Apparatus for detecting a lateral alignment of a longitudinally moving web comprising:

first means, responsive to a lateral positioning of the web at longitudinally spaced locations along a path of movement of the web, for generating plural signals, each of said signals representing a lateral position of the web at one of said spaced locations; and

second means, connected to said first means, for receiving said signals and responsive to said signals for indicating lateral displacement of one portion of the web relative to another.

5,305,100

BIDIRECTIONAL COMMUNICATION SYSTEM FOR CCTV

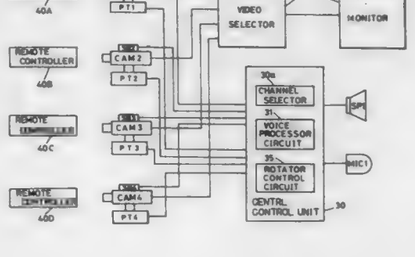
Hyeon J. Choi, Kyungsangbook, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 997,242

Claims priority, application Rep. of Korea, Dec. 27, 1991, 24556/1991

Int. Cl.[5] H04N *7/10*

U.S. Cl. 348—159 **6 Claims**



1. A bidirectional communication system for a CCTV in a monitoring system having a plurality of monitoring cameras, comprising:

a plurality of rotators, each for rotating a corresponding one of said plurality of cameras in vertical and horizontal directions in response to upward, downward, left and right rotation control signals;

a plurality of voice transmission and reception means, each mounted to a corresponding one of said plurality of cameras, for transmitting and receiving a voice signal;

a plurality of remote control means, each having a transmitter and a receiver for transmitting and receiving the voice signal remotely through a corresponding one of said plurality of voice transmission and reception means;

video selecting means for selecting a desired one of video signals from said plurality of cameras;

channel selecting means for selecting a desired channel for voice communication and camera rotation control;

voice processing means for performing transmission and reception of the voice signal through said plurality of voice transmission and reception means; and

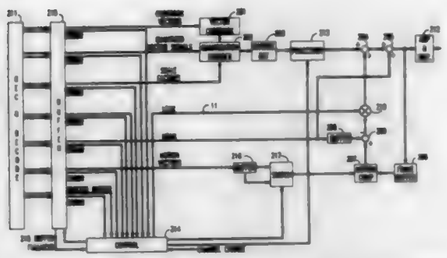
rotator control means for generating the upward, downward, left and right rotation control signals for controlling actuation of said plurality of rotators, thereby to control projection angles of said plurality of cameras.

5,305,101

Patent Not Issued For This Number

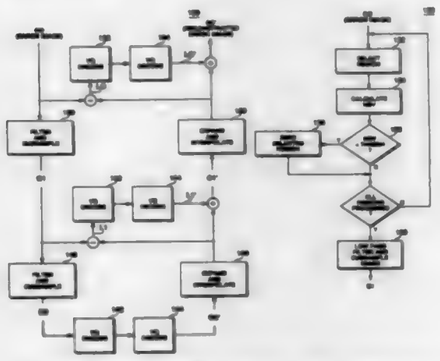
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,102
HDTV RECEIVER
Scott C. Knaur, Mountainside; Kim N. Matthews, Watchung; Arun N. Netravali, Westfield; Eric D. Petajan, Watchung, and Robert J. Safranek, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 27, 1992, Ser. No. 919,802
Int. Cl.[5] H04N 7/133, 7/137
U.S. Cl. 348—415 10 Claims



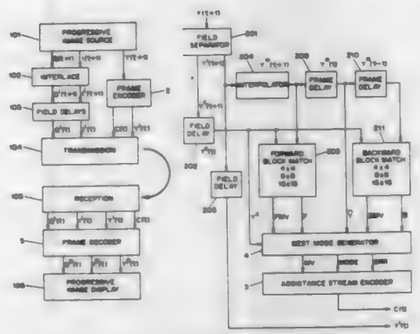
1. A decoder including means for receiving incoming signals and developing therefrom displaced frame difference signals and leak factor signals, an adder for combining signals related to the displaced frame difference signals with prediction signals, a buffer for storing signals responsive to the adder, and means for altering signals outputted by the buffer in response to the leak factor signals to develop thereby the prediction signals, wherein the improvement comprises:
error detection means for developing an error signal that identifies errors in the displaced frame difference signals, and
first means for modifying the leak factor signals applied to the means for altering based on the error signal.

5,305,103
METHOD AND APPARATUS FOR IMPROVED PYRAMIDAL IMAGE ENCODING
Stuart J. Golin, East Windsor, N.J., assignor to Intel Corporation, Santa Clara, Calif.
Continuation-in-part of Ser. No. 813,884, Dec. 23, 1991. This application Jul. 9, 1993, Ser. No. 89,807
Int. Cl.[5] H04N 7/13
U.S. Cl. 348—415 11 Claims



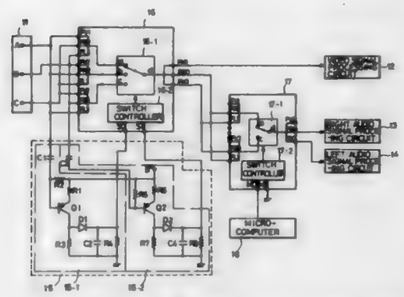
1. A method for encoding an original image comprising the steps of:
(a) dividing said original image into a plurality of regions;
(b) selecting a region from said plurality of regions;
(c) determining a region energy value in accordance with the magnitudes of the pixels in said selected region;
(d) comparing said region energy value to a threshold;
(e) forming a filtered image by selectively zeroing said selected region in accordance with said comparison;
(f) resolving said filtered image into at least one lower resolution image;
(g) encoding said at least one lower resolution image;
(h) forming an expanded image from the result of step (g), said expanded image being of the same level of resolution as said original image;
(i) encoding an image representative of the difference between said original image and said expanded image.

5,305,104
DIGITALLY ASSISTED MOTION COMPENSATED DEINTERLACING FOR ENHANCED DEFINITION TELEVISION
Daryl K. Jensen, New York, N.Y., and Dimitris Anastassiou, Tenafly, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.
Filed Jul. 27, 1992, Ser. No. 919,857
Int. Cl.[5] H04N 7/08
U.S. Cl. 348—473 14 Claims



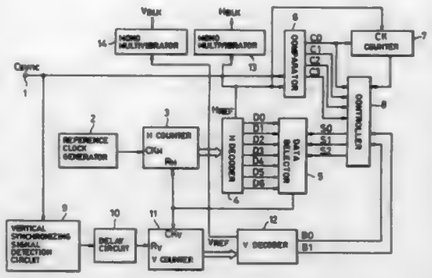
1. A method for transmitting a sequence of progressive image frames in an interlaced field format for deinterlacing by a receiver to provide a sequence of interpolated progressive image frames, the method comprising:
deriving, for each one of the progressive image frames, (i) signals representing a corresponding interlaced image field and (ii) an associated assistance signal related to an interpolation process used to derive the associated missing interlaced image field from a corresponding progressive image frame, and specifying one of at least two predetermined deinterlacing modes for providing a corresponding interpolated progressive image frame from the signals; and
transmitting the signals representing each respective interlaced image field and the associated assistance signal to the receiver.

5,305,105
AUDIO/VIDEO SIGNAL INPUT TERMINAL CIRCUIT WITH AUTOMATIC SWITCHING FUNCTION
Man H. Heo, Daegu, Rep. of Korea, assignor to Gold Star Co., Ltd., Rep. of Korea
Filed Mar. 11, 1993, Ser. No. 29,464
Claims priority, application Rep. of Korea, Mar. 11, 1992, 3911/1992
Int. Cl.[5] H04N 5/268, 5/60
U.S. Cl. 348—485 6 Claims
1. An audio/video signal input terminal circuit comprising:
input terminal means having three input terminals comprising first to third input terminals for inputting a video signal and right and left audio signals irrespective of signal lines, respectively,
select control signal generating means for detecting the presence of a synchronous signal at two of said three input terminals of said input terminal means and for generating first and second select control signals in accordance with a result of said detecting, the first and second select control signals containing information regarding one of said first to third input terminals through which the video signal is inputted;
audio/video input switching means having first to third input port sets and video and right and left audio signal output ports, said audio/video input switching means selecting one of said first to third input port sets inputting the video signal in response to the first and second select



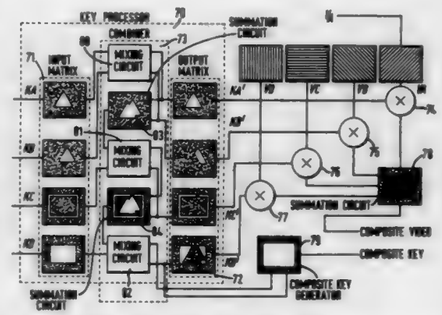
control signals from said select control signal generating means, outputting the video signal inputted through the selected input port set to video signal processing means through said video signal output port and outputting the right and left audio signals inputted through the other input port sets through said right and left audio signal output ports, respectively; and
audio input switching means having first and second input port sets and right and left audio signal output ports, said audio input switching means selecting one of said first and second input port sets in response to a select control signal which is generated from a microcomputer according to a user's selection and outputting the right and left audio signals inputted through the selected input port set to right and left audio signals processing means through said right and left audio signals output ports, respectively.

5,305,106
IMAGE SIGNAL REPRODUCING APPARATUS HAVING A SYNCHRONIZING SIGNAL GENERATOR
Nobuo Fukushima; Shigeo Yamagata, both of Yokohama, and Makoto Ise, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 20, 1990, Ser. No. 585,527
Claims priority, application Japan, Sep. 20, 1989, 1-245590; Sep. 20, 1989, 1-245591; Sep. 20, 1989, 1-245592; Sep. 20, 1989, 1-245593
Int. Cl.[5] H04N 5/04, 5/06
U.S. Cl. 348—521 8 Claims
1. A synchronizing signal generator for forming various kinds of timing signals synchronized with an input synchronizing signal, comprising:
(A) a clock signal generator for generating clock signals;
(B) a counter for counting the clock signals generated by said clock signal generator in accordance with a count period and for outputting the result of count;
(C) a timing signal generator for generating various kinds of timing signals including a pseudo-vertical-synchronizing signal in accordance with the result of count by said counter; and
(D) a phase control circuit for comparing a phase of at least one of the timing signals generated by said timing signal generator with a phase of the input synchronizing signal



and for controlling said count period in said counter in accordance with the result of comparison.

5,305,107
COMBINING DIGITAL VIDEO KEY SIGNALS
Timothy K. Gale; Mukundbhai C. Patel, and Peter Smith, all of Newbury, England, assignors to Alpha Image Limited, England
Filed Sep. 20, 1991, Ser. No. 763,114
Claims priority, application United Kingdom, Apr. 12, 1991, 9107851.9
Int. Cl.[5] H04N 5/262
U.S. Cl. 548—590 8 Claims



1. Video signal processing apparatus having means for manipulating digital video signals and digital key signals, including means for combining said digital key signals to form a composite digital key signal, comprising:
selection means;
first switchable inverting means;
second switchable inverting means;
third switchable inverting means;
means for supplying a first digital key signal to said first selection means via said first switchable inverting means;
means for supplying a second digital key signal to said first selection means via said second switchable inverting means;
comparison means;
means for supplying said first digital key signal via said first switchable inverting means to said comparison means;
means for supplying said second digital key signal via said second switchable inverting means to said comparison means to produce a selection signal;
said selection means operating in response to said selection signal to produce a composite digital key signal, said composite digital signal being supplied to said third switchable inverting means to produce an output signal.

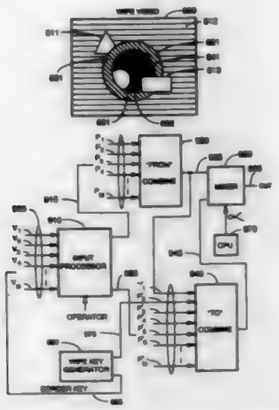
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5,305,108

SWITCHER MIXER PRIORITY ARCHITECTURE

David E. Trytko, Foster City, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.

Filed Jul. 2, 1992, Ser. No. 908,204
Int. Cl.[5] H04N 5/262
U.S. Cl. 348—594 10 Claims



1. A method for creating a special image effect, the method comprising the steps of:
receiving a plurality of input image signals;
prioritizing the input image signals according to a first priority;
combining the first prioritized ordering of the input signals;
prioritizing the input image signals and the combined first prioritized ordering of the input signals according to a second priority;
combining the second prioritized ordering of the input signals; and
mixing the combined first prioritized ordering of the input signals with the combined second prioritized ordering of the input signals.

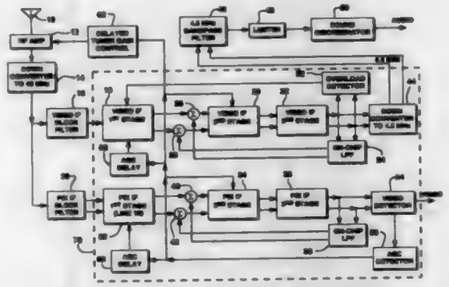
5,305,109

PARALLEL UNTUNED VIDEO IF AMPLIFIERS SUPPLIED SIGNALS FROM TV 1ST DETECTOR VIA RESPECTIVE INPUT FILTERS

Jack R. Harford, Flemington, N.J., assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Continuation-in-part of Ser. No. 940,220, Sep. 8, 1992. This application Jan. 24, 1993, Ser. No. 80,705
Int. Cl.[5] H04N 5/52, 5/62
U.S. Cl. 348—737 18 Claims

1. In a television receiver, a combination comprising:
a radio-frequency amplifier for receiving a television signal having a radio-frequency picture carrier wave with an amplitude-modulation sideband and having a radio-frequency sound carrier wave with frequency-modulation sidebands, said radio-frequency amplifier being gain-controlled responsive to a respective control signal;
a downconverter for generating an intermediate-frequency response to said television signal;
first, second, third and fourth gain-controlled amplifiers each exhibiting a respective voltage gain adjustable in response to a respective control signal thereof, said third gain-controlled amplifier being similar to said first gain-controlled amplifier in structure and in gain control characteristics, said fourth gain-controlled amplifier being similar to said second gain-controlled amplifier in structure and in gain control characteristics;
means for filtering the intermediate-frequency response to said television signal to separate therefrom the intermediate-frequency response to a portion of said television signal comprising the sound carrier wave and its frequency-modulation sidebands;
a first IF amplifier chain for generating an amplified response to the separated intermediate-frequency response to the portion of said television signal comprising the sound carrier wave and its frequency-modulation sidebands, said first IF amplifier chain comprising said first gain-controlled amplifier followed in cascade connection by said second gain-controlled amplifier;
means for filtering the intermediate-frequency response to said television signal to separate therefrom the intermediate-frequency response to a portion of said television signal essentially consisting of said picture carrier wave and its amplitude-modulation sideband;
a second IF amplifier chain for generating an amplified response to the separated intermediate-frequency response to the portion of said television signal essentially consisting of said picture carrier wave and its amplitude-modulation sideband, said second IF amplifier chain comprising said third gain-controlled amplifier followed in cascade connection by said fourth gain-controlled amplifier;
means for further down-converting the amplified intermediate-frequency response to the portion of said television signal comprising the sound carrier wave and its frequency-modulation sidebands, as supplied from said first IF amplifier chain, to generate a sound intermediate frequency response;



means for detecting sound-descriptive information contained in the frequency modulation of the sound intermediate frequency response, which means includes
means for suppressing response of said means for detecting sound-descriptive information to variations in the amplitude of the sound intermediate frequency response;
a video detector for detecting the amplified intermediate-frequency response to the portions of said television signal essentially consisting of said picture carrier wave and its amplitude-modulation sideband, as supplied from said second IF amplifier chain, to generate a video signal including synchronizing pulses;
an AGC detector for detecting the peaks of the synchronizing pulses included in said video signal to develop an automatic gain control signal;
means for applying said automatic gain control signal to said second and fourth gain-controlled amplifiers as their said respective control signals, so said respective control signals of said second and fourth gain-controlled amplifiers are the same as each other;
means for delaying said automatic gain control signal in similar amounts as applied to said first and third gain-controlled amplifiers as their said respective control signals, so said respective control signals of said first and third gain-controlled amplifiers are the same as each other; and
means for delaying said automatic gain control signal for application to said RF amplifier as its said respective control signal.

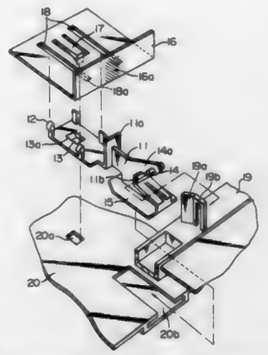
10. In combination:
first and second terminals for receiving an operating supply potential therebetween;
detection circuitry having an input connection and having an output connection for supplying an automatic gain control voltage;
first and second amplifier chains of similar construction and operating characteristics, which amplifier chains have respective balanced input connections and respective balanced output connections and are connected for responding similarly to said automatic gain control voltage; and
means for applying signal appearing at the balanced output connection of said first amplifier chain to the input connection of said detection circuitry for supplying an automatic gain control voltage—said first amplifier chain comprising:
first means for dividing said operating supply potential received between said first and second terminals, said first means for dividing said operating supply potential comprising a first voltage dropping element having a first end connected to said first terminal and having a second end at which a first intermediate voltage is provided responsive to said operating supply potential being received between said first and second terminals, a second voltage dropping element haivng a first end connected to the second end of said first voltage dropping element and having a second end at which a second intermediate voltage is provided responsive to said operating supply potential being received between said first and second terminals, and means for conducting a direct bias current between the second end of said second voltage dropping element and said second terminal responsive to said operating supply potential being received between said first and second terminals;
a first voltage follower, responsive to voltage supplied to an input connection thereof from said first means for dividing said operating supply potential, for supplying from an output connection thereof a voltage equal to said second intermediate voltage;
a first resistive element having a first end at the output connection of said first voltage follower and having a second end;
means responsive to said automatic gain control voltage approaching the voltage at said first terminal more closely than said second intermediate voltage for causing current flow through said first resistive element via its second end;
first and second gain-controlled amplifiers each exhibiting a respective voltage gain between a respective balanced input connection and respective balanced output connection thereof, which respective voltage gain is adjustable in response to a respective control signal differentially applied between first and second control connections thereof, said first gain-controlled amplifier having voltage at the second end of said first resistive element applied to its first control connection and having said first intermediate voltage applied to its second control connection, said second gain-controlled amplifier having voltage at the second end of said first resistive element applied to its first control connection and having said second intermediate voltage applied to its second control connection; and
means for direct coupling the balanced output connection of said first gain-controlled amplifier to the balanced input connection of said second gain-controlled amplifier.

5,305,110

CHASSIS APPARATUS

Naoya Taki, Toyonaka, and Osamu Ogasawara, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1991, Ser. No. 782,592
Claims priority, application Japan, Nov. 9, 1990, 2-305121
Int. Cl.[5] H04N 5/645
U.S. Cl. 348—836 7 Claims



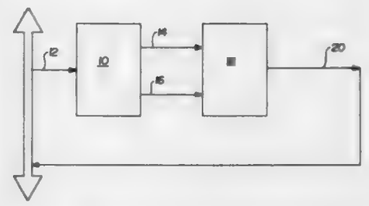
1. A chassis apparatus for electronic means, comprising:
a chassis connection apparatus having connection means for connecting with a chassis section in one end of said chassis connection apparatus and mounting means which is capable of sliding on an operation section within a certain range in the other end of said chassis connection apparatus,
wherein the operation section is releasably mounted on an engagement section of a chassis housing via the chassis connection apparatus and engaged.

5,305,111

RUN LENGTH ENCODING METHOD AND SYSTEM

Rui-Fu Chao, Hsin-Chu; Yu-Cherng Chen, Chia-Yi, and Ming-Hsu Tu, Tai-Chung, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Dec. 11, 1990, Ser. No. 626,103
Int. Cl.[5] H04N 1/41
U.S. Cl. 358—261.1 1 Claim



1. A run length encoder for converting bi-level image data made up of white and black representative pixel values to a run length code to be used by a vector processor, comprising:
a transition detector for receiving said image data, said transition detector detecting the transition of inputted image data values from either white to black or black to white;
means for addressing said inputted image data, pixel by pixel, along a scanned line of a video image;
means for storing the address value of the addressing means, said address storing means being responsive to said transition detector detecting a white to black transition of said image data;

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means for counting said black pixels of said image data, said counting means being responsive to said transition detector and counting pixels after said transition detector detects said white to black transition of said image data;
means for storing said count value of said counting means, said count storing means being responsive to said transition detector detecting a black to white transition of said image data, wherein said stored address value and said stored count value represent said run length code of said image data and are sent to said vector processor in response to said end-of-line detection means detecting the end of a scanned line of video image data;
means for resetting said counter in response to said detection of a black to white transition;
means for detecting the end of a scanned line of said video image data;
wherein said resetting means is also responsive to said end-of-line detection means detecting the end of a scanned line of said video image data; and
wherein said addressing means is reset in response to said end-of-line detection means detecting the end of a scanned line of said video image data.

5,305,112

VIDEO SIGNAL RECORDING/REPRODUCING SYSTEM FOR RECORDING AND REPRODUCING VIDEO SIGNALS IN HIGH QUALITY PICTURE TELEVISION SYSTEM

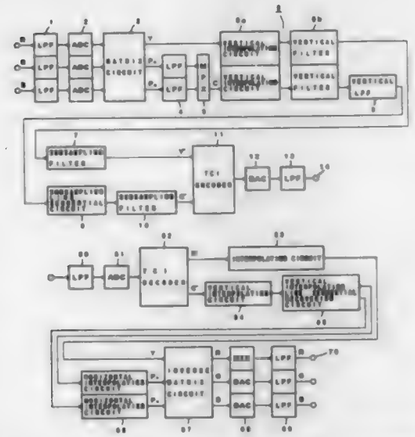
Yukinori Yamamoto; Masahiro Araya; Hiroshi Iwamura, and Takehiko Shioda, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 26, 1991, Ser. No. 721,867

Claims priority, application Japan, Jun. 29, 1990, 2-169841; Jul. 9, 1990, 2-179581; Jul. 16, 1990, 2-185349; Jul. 16, 1990, 2-185350

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—310 **12 Claims**



1. A video signal reproducing system for reproducing a video signal that is received from an external source, said external source comprising a median filter for extracting from an input signal a median value from among a first picture element in a first scanning line in a first field, a second picture element in a second scanning line preceding the first scanning line corresponding to said first picture element, and a third picture element in a third line in a second field preceding the first field, the third line being positioned between the first scanning line and the second scanning line; and a video subsampling means for reducing the amount of data, said video signal reproducing system comprising:
means for receiving the video signal from said external signal source;
a TCI decoder for separating the video signal having line-sequential scanning lines into a brightness signal and a color signal, each of said line-sequential scanning lines being previously compressed in terms of time and time-division multiplexed and having picture elements previously subsampled, said TCI decoder expanding said brightness signal and said color signal relative to time;
first interpolating means for recovering said picture elements from said brightness signal; and
second interpolating means for recovering said picture elements from said color signal, and separating said multiplexed color signal into two color-difference signals; and a horizontal interpolation circuit, coupled to outputs of said second interpolating means, for horizontally interpolating each of said two color-difference signals.

5,305,113

MOTION PICTURE DECODING SYSTEM WHICH AFFORDS SMOOTH REPRODUCTION OF RECORDED MOTION PICTURE CODED DATA IN FORWARD AND REVERSE DIRECTIONS AT HIGH SPEED

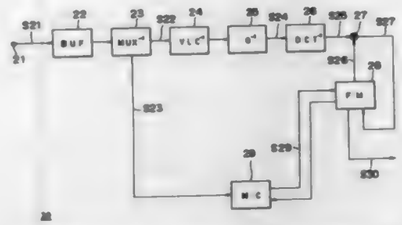
Ryuichi Iwamura, Tokyo, and Yoshiyuki Akiyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 981,178

Claims priority, application Japan, Nov. 30, 1991, 3-342412

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—312 **7 Claims**



1. A motion picture decoding system for decoding a motion picture coded data including at least picture data and motion vector data between a series of pictures, which are recorded on a recording medium, and more particularly wherein the motion picture coded data includes intra-frame data, in which image data only in a frame is compressed, predict frame data, which contains data of a prediction of motion in one direction from a frame which is either prior in time or a frame which is after in time from a current frame, and bidirectional frame data, which contains data of a prediction of motion in both directions from a frame which is prior in time and a frame which is after in time from a current frame, the decoding system comprising:
a data input means for writing the motion picture coded data, which is reproduced from the recording medium, into a buffer memory at a variable rate, in a variable speed reproducing mode;
a demultiplexing means for reading out the motion picture coded data from the buffer memory, dividing the read out data into I-frame picture data and P-frame picture data, and discarding B-frame picture data at predetermined intervals of frames and separating at least the picture data and the motion vector data for a first predetermined picture;
an inverse orthogonal transforming means for inverse orthogonal transforming the picture data of the first predetermined picture which is obtained from said demultiplexing means and producing a decoded data;
a motion predictive picture data generating means for generating a motion predictive picture data from at least said motion vector data of the first predetermined picture which is obtained from said demultiplexing means and from motion vector data of a second predetermined picture which is prior in time to the first predetermined picture in the series of pictures; and
an original picture image data generating means for obtaining an original image picture from the decoded data which is obtained from said inverse orthogonal transforming means and said motion predictive picture data which is obtained from said motion predictive picture data generating means.

5,305,114

ELECTRONIC BLACKBOARD APPARATUS

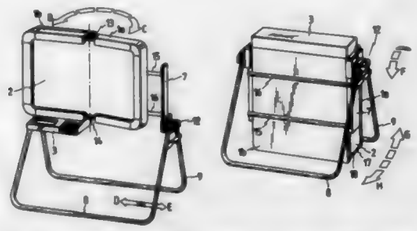
Yasuo Egashira, Miyaki; Koji Hisasue, and Izumi Fukuda, both of Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 907,563

Claims priority, application Japan, Jul. 12, 1991, 3-054223[U]; Jul. 12, 1991, 3-054224[U]; Jul. 12, 1991, 3-172360; Sep. 26, 1991, 3-247566

Int. Cl.[5] H04N *1/23;* **B43L** *1/08;* **A47B** *97/08;* **F16M** *11/26, 11/38*

U.S. Cl. 358—401 **27 Claims**



1. A blackboard having a copying means, comprising:
a blackboard framework horizontally extending and having a writing surface on which a writing sheet is to be mounted;
means for enabling said blackboard framework to be folded about essentially the centerline in the length of the writing surface so that the writing sheet is inside said blackboard framework in a folded position;
means for reading a writing on said writing sheet, said reading means constituting part of the copying means; and
means for supporting said blackboard framework, a size of said supporting means being reducible in response to a length of said blackboard framework in a folded position, said supporting means including a leg capable of standing on a support floor, the leg including opposite standing portions and a crossbar assembly extending between the opposite standing portions of the leg, the crossbar assembly being movable lengthwise of said blackboard framework to be extended and contracted.

5,305,115

HIGHLY EFFICIENT PICTURE CODING METHOD WITH MOTION-ADAPTIVE ZONAL SAMPLING ENABLING OPTIMIZED IMAGE SIGNAL COMPRESSION

Toshiya Takahashi, and Toshihide Akiyama, both of Takatsuki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 564,763, Aug. 3, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,092

Claims priority, application Japan, Aug. 5, 1989, 1-203372; Aug. 18, 1989, 1-213381

Int. Cl.[5] H04N *1/415*

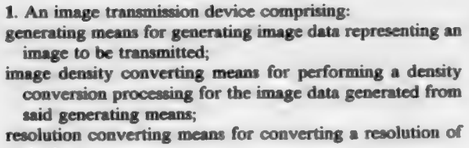
U.S. Cl. 358—432 **22 Claims**

1. A picture coding method comprising the steps of:
receiving an uncompressed image signal;
translating a sample point in the uncompressed image signal from each of at least K-frames into a 3-dimensional block in the form of an M×N×K sample point containing horizontal, vertical, and time-base components, in which the sample point which is a 3-dimensional block and represent by

$$f(x, y, t)\ (x=0 \text{ to } M-1,\ y=0 \text{ to } N-1,\ t=0 \text{ to } K-1)$$

is orthogonally transformed to a transform coefficient of 3-dimension expressed as

$$F(u, v, w)\ (u=0 \text{ to } M-1,\ v=0 \text{ to } N-1,\ w=0 \text{ to } K-1);$$



calculating the movement of the 2-dimensional block which is a part of the 3-dimensional block during a period of time between t=0 and t=K−1;
determining whether or not the transform coefficient is to be coded based on the calculated movement; and
outputting a compressed image signal in accordance with the coded transform coefficients, wherein spatial resolution is reduced and the time resolution is increased in regions where the calculated movement is high and wherein the spatial resolution is increased and the time resolution decreased in regions where the calculated movement is low.

5,305,116

IMAGE TRANSMISSION DEVICE

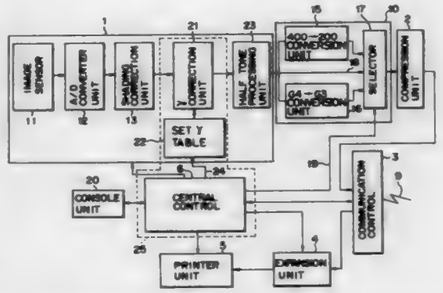
Naoto Kagami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 679,944

Claims priority, application Japan, Apr. 6, 1990, 2-90380; Apr. 6, 1990, 2-90381

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—448 **14 Claims**



1. An image transmission device comprising:
generating means for generating image data representing an image to be transmitted;
image density converting means for performing a density conversion processing for the image data generated from said generating means;
resolution converting means for converting a resolution of the image;
transmission means for transmitting with one of plural transmission resolutions the image data subjected to the density

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conversion processing by said image density converting means; and

modification means for modifying a parameter for the density conversion processing by said image density converting means in accordance with the transmission resolution by said transmission means,

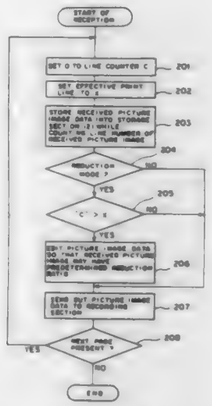
wherein said image density converting means comprises binarizing means for binarizing the image data in accordance with the parameter.

5,305,117

FACSIMILE APPARATUS WITH IMPROVED PRINT REDUCTION MODE

Fumiyo Oshita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1991, Ser. No. 729,207
Claims priority, application Japan, Oct. 31, 1990, 2-96352
Int. Cl.[5] H04N *001/393*
U.S. Cl. 358—451 **1 Claim**



1. A facsimile apparatus including a recording section in which a regular size record sheet is used, comprising a storage section for storing received picture image data therein, reduction mode setting means, comparing means for comparing a received line number of a page with an effective print line number of said record sheet on a page by page basis, and controlling means for producing, when a reduction mode is set and reduction is judged necessary in accordance with a result of comparison by said comparing means for each received line number of each page, reduced picture image data at a predetermined reduction ratio from the data stored in said storage section and sending out the thus produced reduced picture image data to said recording section for each record sheet;

said facsimile apparatus further comprising another storage section having areas of a counter to which a count value of said received line number is set and a register to which different effective print line numbers individually corresponding to a plurality of different reduction ratios are set; and

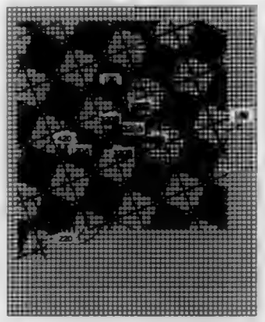
wherein said comparing means compares said count value of said counter with said different effective print line numbers stored in said register after completion of reception of data for said page and, when the count value is higher than one of the effective print line numbers but lower than another one of the effective print line numbers, said controlling means determines that reduction should be performed at a reduction ratio corresponding to the latter effective print line number.

5,305,118

METHODS OF CONTROLLING DOT SIZE IN DIGITAL HALFTONING WITH MULTI-CELL THRESHOLD ARRAYS

Stephen N. Schiller, Menlo Park, and Donald E. Knuth, Stanford, both of Calif., assignors to Adobe Systems Incorporated, Mountain View, Calif.

Continuation of Ser. No. 652,941, Feb. 8, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 109,398
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **19 Claims**



1. A method of displaying a high quality image on a raster display device having predetermined gray levels made up of halftone dots of substantially equal shape and size in a supertile that includes K digital cells, each supertile having a geometric center of gravity, K corresponding ideal cells each having geometric centers and a plurality of pixels having coordinates to reproduce the image by applying a spot function selected from a wide range of spot functions to the coordinates of a selected list of pixels, comprising the steps of:

a) creating a list of pixels in a digital cell;

b) determining the x and y coordinates in cell space of the pixels in the said digital cell;

c) determining an offset vector having x and y coordinates to be applied to said pixel coordinates in cell space of that digital cell;

d) adding said offset vector to the coordinates of said pixels in said list;

e) selecting a spot function from a wide variety of spot functions;

f) ranking said pixels in said list according to the value resulting from applying said selected spot function to their coordinates;

g) selecting pixels for display according to the results of said ranking in order to properly reproduce said predetermined gray levels of the image being reproduced; and

h) displaying a high quality image including the pixels that have been selected for display using a ranking resulting from applying a spot function selected from a wide range of spot functions.

5,305,119

COLOR PRINTER CALIBRATION ARCHITECTURE

Robert J. Rolleston, Penfield; Martin S. Maltz, and Judith E. Stinehour, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

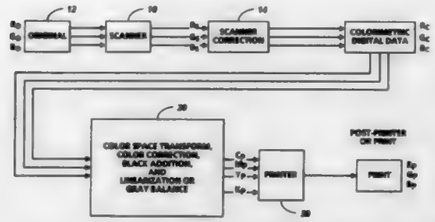
Filed Oct. 1, 1992, Ser. No. 955,075
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—522 **2 Claims**

1. A method of printing in a calibrated color printer so that scanned color images defined in terms of colorimetric color signals may be printed on a color printer responsive to printer colorant signals to render a color print with a set of three primary colorants and black on a substrate, and including

undercolor removal, the printing method comprising the ordered steps of:

scanning an image to derive a set of device independent colorimetric color signals;

using a three dimensional look up table stored in device memory, converting said colorimetric color signals into device dependent primary colorant signals, each primary colorant signal defining a density of colorant to be used in rendering a color print, said conversion derived with a calibration process in which colorimetric color signals are mapped to primary colorant signals using a calibration



pattern including black, so that values output from said three dimensional look up table reflect future black addition;

determining, for a density of the combination of primary colorant signals a black colorant signal, to add black colorant to the color print;

linearizing each primary colorant signal and black to generate a set of corresponding printer colorant signals to control the printer; and

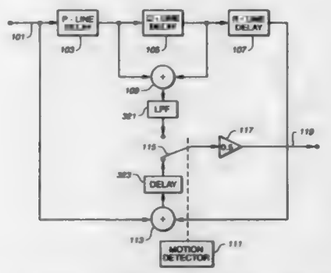
using said printer colorant signals to control the printer to produce an image colorimetrically matching the scanned image.

5,305,120

TELEVISION CROSS COLOR SUPPRESSION AND CHROMINANCE NOISE REDUCTION

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022

Filed Apr. 24, 1992, Ser. No. 874,190
Int. Cl.[5] H04N *9/64, 9/77, 9/78*
U.S. Cl. 348—624 **21 Claims**



1. In a quadrature-amplitude modulated subcarrier color television receiver receiving a composite color television signal, apparatus for suppressing cross color in the television picture produced by said receiver, comprising

chroma demodulator means for providing demodulated baseband chroma in response to said composite color television signal,

motion detector means for detecting motion in the received television signal,

inter-frame means for deriving inter-frame signal samples from said demodulated baseband chroma in successive television frames by averaging or recirculation techniques,

intra-field means for deriving intra-field signal samples from said demodulated baseband chroma in successive television lines by averaging or recirculation techniques,

selection means for selecting a combination of inter-field signal samples and intra-field signal samples in response to motion detected by said motion detector means.

5,305,121

STEREOSCOPIC ENDOSCOPE SYSTEM

Frederic H. Moll, San Francisco, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.

Filed Jun. 8, 1992, Ser. No. 895,128
Int. Cl.[5] A61B *1/04;* H04N *13/02*
U.S. Cl. 348—45 **21 Claims**



1. An endoscope for providing a view of a surgical cavity on a display means, comprising

a first lens means for focusing a first image of a viewed region of said surgical cavity onto a first image plane;

a second lens means for focusing a second image of said viewed region of said surgical cavity onto a second image plane;

a first means for transmitting said first image to said display means;

a second means for transmitting said second image to said display means, said display means providing a stereoscopic display of said region of said surgical cavity,

an elongated housing, said elongated housing having a longitudinal axis, an extracorporeal end, an intracorporeal end, and an interior width, and

a means for moving said first and second lens means between a retracted configuration wherein said first and second lens means are located inside said elongated housing and an extruded configuration wherein said first and second lens means are located outside said elongated housing and separated by a distance greater than said interior width of said elongated housing.

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5,305,122

IMAGE READING AND PROCESSING APPARATUS SUITABLE FOR USE AS A COLOR HAND-HELD SCANNER

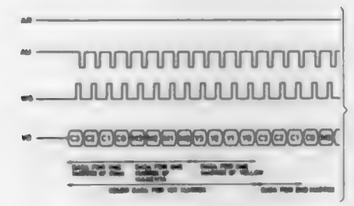
Toshio Hayashi, Kawasaki, and Kiyoharu Yoshioka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

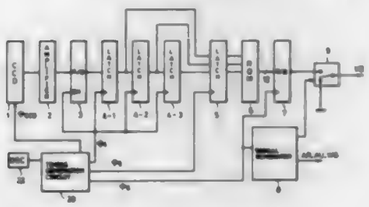
Continuation of Ser. No. 397,892, Aug. 24, 1989. This application Dec. 16, 1991, Ser. No. 807,654

Claims priority, application Japan, Aug. 31, 1988, 63-216940; Aug. 31, 1988, 63-216941; Sep. 2, 1988, 63-219969; Sep. 2, 1988, 63-219970

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—530 14 Claims





10. A color handy scanner comprising:

a) photoelectric conversion means for converting an object color image into color image signals;

b) serial conversion means for converting the color image signals provided by said photoelectric conversion means into a serial signal;

c) first outputting means for outputting the serial signal from said serial conversion means;

d) second outputting means for outputting a synchronizing signal in parallel with the serial signal, said synchronizing signal having a frequency equal to that which a synchronizing signal for monochrome signal would have; and

e) a case containing said photoelectric conversion means, said serial conversion means, said first outputting means and said second outputting means.

5,305,123

LIGHT CONTROLLED SPATIAL AND ANGULAR ELECTROMAGNETIC WAVE MODULATOR

Lev S. Sadovnik, Los Angeles; Tomasz P. Jannson, Torrance, and Vladimir Manassen, Los Angeles, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Filed Jan. 9, 1992, Ser. No. 818,805

Int. Cl.[5] G02F *1/03, 1/29;* G03H *5/00, 1/00*

U.S. Cl. 359—4 14 Claims

1. A multi-dimensional modulator for spatially modulating an electromagnetic wave with a controlling light wave, the modulator comprising:

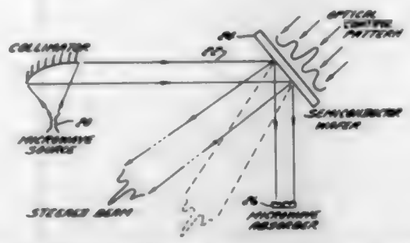
a semiconductor material having an absorption band;

a first source of light having a wavelength spectrum located within the absorption band of said semiconductor material;

means for spatially modulating said light with information in the form of a 2-D pattern to generate said controlling light wave;

means for delivering said controlling light wave onto the surface and into the volume of said semiconductor material, said controlling light wave generating a 2-D distribution of the complex permitivity of said semiconductor material which follows the pattern of said controlling light wave;

a second source of said electromagnetic wave, said second source having a different wavelength spectrum than said



first source and outside said absorption band, said second source arranged so that said electromagnetic wave is incident upon said semiconductor material and is directly spatially modulated in accordance with the changing complex permitivity of said semiconductor material generated by said controlling light wave.

5,305,124

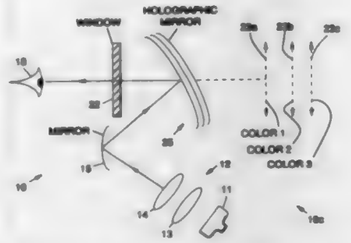
VIRTUAL IMAGE DISPLAY SYSTEM

Mao J. Chern, Rancho Palos Verdes, Calif.; Steve A. Stringfellow, Oakland, Mich., and Howard S. Newberg, Los Angeles, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,861

Int. Cl.[5] G02B *5/32, 27/10*

U.S. Cl. 359—13 3 Claims



1. A virtual image display system for displaying a relatively large virtual image to a user, said system comprising:

a relatively small image source for providing an image that is to be viewed by the user;

a concave reflecting mirror;

a lens group for amplifying the image provided by the image source, and for projecting the image by way of the concave reflecting mirror at a comfortable viewing distance relative to the user; and

a magnifying optical system comprising the concave reflecting mirror and further comprising a holographic mirror wherein the holographic mirror comprises two holographic mirror elements having respective predetermined optical powers for different wavelength to provide for a three dimensional display system.

5,305,125

METHOD OF RECORDING HOLOGRAMS FOR USE IN OPTICAL SCANNERS

Ke-Ou Peng, Delft, Netherlands, assignor to Opticon Sensor Europe B.V., Hoofddorp, Netherlands

Filed Jan. 13, 1993, Ser. No. 4,116

Claims priority, application European Pat. Off., Jan. 28, 1992, 92200240.7

Int. Cl.[5] G02B *5/32, 26/10;* G03H *1/04*

U.S. Cl. 359—17 7 Claims



1. A scanning device comprising:

a first mirror means drivingly connected to a motor by a hollow shaft;

a light source to generate a light beam and to direct said light source to the first mirror means through said hollow shaft;

stationary holographic means comprising at least one stationary holographic facet,

wherein, during operation, the first mirror means is rotated by the motor and said light beam is reflected by said rotating mirror means to sweep across each stationary holographic facet to generate a scanning pattern of at least one line, and

wherein each holographic facet is produced by means of at least the following process steps:

a. generating a reference beam by means of a reference source,

b. generating an object beam, which is focused to a line focus by appropriate focusing means, which line focus is then diverged in a first direction and is non-diverged in an orthogonal second direction, and

c. illuminating a photosensitive surface with both said reference beam and said object beam.

5,305,126

POLYMER-DISPERSED LIQUID CRYSTAL MATERIAL WITH IN SITU POLYMERIZED LIQUID CRYSTAL POLYMER GRAINS DISPERSED IN A LAYER OF LIQUID CRYSTAL MATERIAL SEALED BETWEEN SUBSTRATES AND FIELD ELECTRODES

Hidekazu Kobayashi; Kiyohiro Sumizu, and Jin-Jei Wu, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,478

Claims priority, application Japan, Nov. 26, 1990, 2-321779; Feb. 12, 1991, 3-18750; Feb. 20, 1991, 3-26024; Feb. 20, 1991, 3-26025; Mar. 22, 1991, 2-59126; May 23, 1991, 3-118619; Jun. 7, 1991, 3-136170; Jun. 12, 1991, 3-140008; Jun. 17, 1991, 3-144583; Jun. 25, 1991, 3-153116; Jul. 9, 1991, 3-167972; Aug. 9, 1991, 3-200716; Sep. 3, 1991, 3-222982; Oct. 29, 1991, 3-282703

Int. Cl.[5] G02F *1/133*

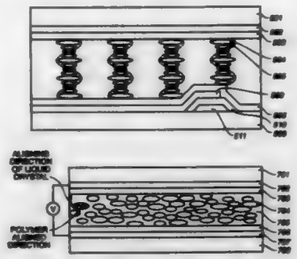
U.S. Cl. 359—52 95 Claims

1. A method of fabricating a polymer dispersed liquid crystal display having a polymer dispersed liquid crystal medium formed in a gap portion in said display comprising the steps of:

forming a mixture of liquid crystal material and thermoplastic polymer to cause said liquid crystal material and polymer to be soluble in one other;

injecting said soluble mixture in the gap portion,

aligning the liquid crystal material and polymer in a predetermined direction while said mixture remains in its soluble state; and



causing said mixture to bring about a phase separation between the liquid crystal material and the polymer forming polymer grains dispersed throughout the liquid crystal material retaining their original alignment in said predetermined direction.

14. A polymer dispersed liquid crystal device comprising a mixture of in-situ fixation of pre-aligned polymer grains dispersed in a layer of liquid crystal medium sealed by at least one substrate in contact with said mixture.

5,305,127

FERROELECTRIC LIQUID CRYSTAL DEVICE WITH AN AC ELECTRIC FIELD PRODUCING A HELICAL STRUCTURE AND/OR COLOR CONTROL

Toshimitsu Konuma, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Nov. 18, 1991, Ser. No. 793,539

Claims priority, application Japan, Nov. 19, 1990, 2-313102

Int. Cl.[5] G02F *1/1343, 1/137, 1/13*

U.S. Cl. 359—56 18 Claims

1. A ferroelectric liquid crystal device comprising:

a ferroelectric liquid crystal layer;

means for applying electric fields to said ferroelectric liquid crystal layer;

a pair of substrates supporting said ferroelectric liquid crystal layer therebetween;

a uniaxial orientation control means provided on one of said substrates and contiguous to said ferroelectric liquid crystal layer; and

a non-uniaxial orientation control means provided on the other one of said substrates and contiguous to said ferroelectric liquid crystal layer,

wherein said ferroelectric liquid crystal layer forms a helical structure in response to an alternating electric field while said liquid crystal layer does not form the helical structure in the absence of said alternating electric field.

14. A method of driving a ferroelectric liquid crystal device comprising a ferroelectric liquid crystal, means for applying electric fields to said liquid crystal, a pair of substrates for supporting said ferroelectric liquid crystal between contiguous surfaces of said substrates, said surfaces having different influences upon said liquid crystal, said method comprising:

applying an alternating electric field to said ferroelectric liquid crystal with light incident on one of said substrates; and

controlling the frequency and magnitude of said alternating electric field applied to said liquid crystal in order to control the color of said light passing through said ferroelectric liquid crystal by scattering of said light.

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5,305,128

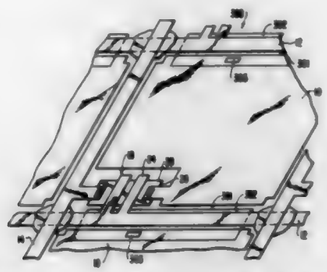
ACTIVE MATRIX ELECTRO-OPTIC DISPLAY DEVICE WITH STORAGE CAPACITORS AND PROJECTION COLOR APPARATUS EMPLOYING SAME

Edward H. Stupp, Chestnut Ridge, and Babar A. Khan, Ossining, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 921,953, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 725,368, Jun. 27, 1991, abandoned, which is a continuation of Ser. No. 456,026, Dec. 22, 1989, abandoned. This application Jul. 28, 1993, Ser. No. 98,662

Int. Cl.[5] **G02F** *1/13*

U.S. Cl. 359—59 **8 Claims**



1. An active matrix electro-optic display device comprising a pair of walls each having an inner and an outer surface, at least one of which is optically transparent, the walls defining a space between them, an array of pixel electrodes, an array of TFT switches associated with the pixel electrodes, and an array of orthogonally related row and column electrodes, the row electrodes interconnecting the TFT gate electrodes, the column electrodes interconnecting the TFT source electrodes, and the pixel electrodes each connected to an associated TFT drain electrode, the arrays arranged on the inner surface of one of the walls, a counter electrode on the inner surface of the other wall, orienting layers overlying the arrays and the counter electrode on the walls, and an electro-optic material filling the space between the walls and contacting the orienting layers, characterized in that the display includes an array of storage capacitors comprised of islands of degeneratively doped electrically conductive material, each in electrical contact with a pixel electrode, and a layer of a dielectric material between the islands of conductive material and the overlying row electrodes, the islands underlying the row electrodes adjacent the pixels.

5,305,129

LIQUID CRYSTAL DISPLAY DEVICE OF OPTICAL WRITING TYPE HAVING A CARBON DISPERSED LIGHT ABSORBING LAYER AND A CHOLESTERIC REFLECTOR

Sayuri Fujiwara, and Naofumi Kimura, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 24, 1991, Ser. No. 764,519

Claims priority, application Japan, Sep. 26, 1990, 2-255980

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] **G02F** *1/1335, 1/135, 1/13*

U.S. Cl. 359—67 **9 Claims**

1. A liquid crystal display element of optical writing type, comprising:

a first transparent subatrate;

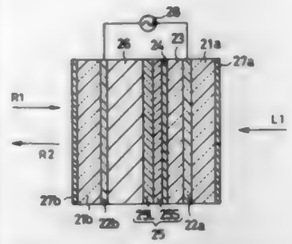
a first transparent electrode layer formed on said first transparent substrate;

a photoconductive layer formed on said first transparent electrode layer;

a light absorbing layer formed on said photoconductive layer and composed of a coating material of a carbon dispersed type;

a light reflecting layer for reflecting light of a predetermined wavelength formed on said light absorbing layer and comprising a macro molecular film of cholesteric liquid crystal

a second transparent substrate;



a second transparent electrode layer formed on said second transparent substrate; and

a liquid crystal layer disposed between said second transparent electrode layer and said light reflecting layer.

5,305,130

CONNECTING TAPE, FILM CARRIER TYPE IC FOR DRIVING A LIQUID CRYSTAL DISPLAY PANEL AND METHOD FOR MAKING WIRING INTERCONNECTIONS

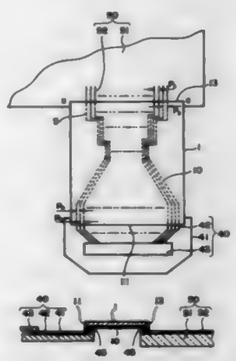
Tatsushi Yamawaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 27, 1993, Ser. No. 53,884

Claims priority, application Japan, Apr. 28, 1992, 4-109420

Int. Cl.[5] **G02F** *1/13*

U.S. Cl. 359—88 **8 Claims**



1. A connecting tape for interconnecting wiring lines on a liquid crystal display panel and those on a driver IC, said connecting tape being constituted by an insulating tape having wiring layers provided on said insulating tape, said wiring layers comprising:

a plurality of first pitch group wiring layers on an upper surface of one of end sides of said insulating tape; and

a plurality of second pitch group wiring layers on an upper surface of the other of the end sides of said insulating tape, said second pitch group having pitches different from those of said first pitch group wiring layers,

said first pitch group wiring layers on the upper surface of said one of the end sides of said insulating tape being adapted to be aligned and connected with wiring lines of said liquid crystal display panel which lines are arranged in the same pitches as those of said first pitch group wiring layers, and said second pitch group wiring layers provided on the upper surface of the other of the end sides of said insulating tape being adapted to be aligned and connected with wiring lines of said driver IC.

5,305,131

LIQUID CRYSTAL COMPOSITION HAVING AN IMPROVED TEMPERATURE DEPENDENCE OF RESPONSE SPEED, LIQUID CRYSTAL DEVICE AND DISPLAY APPARATUS

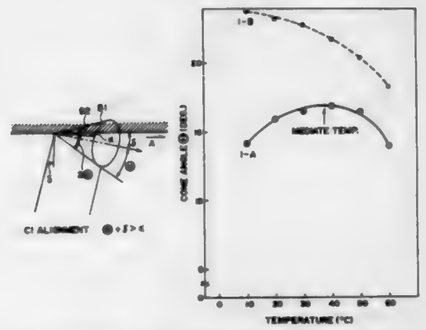
Masahiro Terada, Atsugi; Masataka Yamashita, Hiratsuka; Kazuharu Katagiri, Tama; Akio Yoshida, Hiratsuka; Shosei Mori, and Syuji Yamada, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 979,812

Claims priority, application Japan, Nov. 22, 1991, 3-307802; Nov. 22, 1991, 3-307803; Jan. 30, 1992, 4-038391; Jan. 30, 1992, 4-038392

Int. Cl.[5] **G02F** *1/133*

U.S. Cl. 359—104 **65 Claims**



1. A liquid crystal composition having a temperature range where the composition assumes chiral smectic C phase, said temperature range including:

a) a first temperature range where the liquid crystal composition shows a cone angle in chiral smectic C phase which increases on temperature decrease down to a mediate temperature, and

b) a second temperature range, below the first temperature range, where the liquid crystal composition shows a cone angle in chiral smectic C phase which decreases on further temperature decrease below the mediate temperature.

5,305,132

OPTICAL WAVELENGTH COMMUNICATION SYSTEM AND METHOD OF USING SAME

Kenneth R. Fasen, San Diego; Michael A. Menadier, Vista, and Michael A. Williams, San Diego, all of Calif., assignors to H. M. Electronics, Inc., San Diego, Calif.

Continuation of Ser. No. 692,590, Apr. 29, 1991, abandoned, which is a continuation of Ser. No. 326,225, Mar. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 132,345, Dec. 14, 1987, Pat. No. 4,882,770. This application Jun. 10, 1992, Ser. No. 896,334

The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.

Int. Cl.[5] **H04B** *10/24*

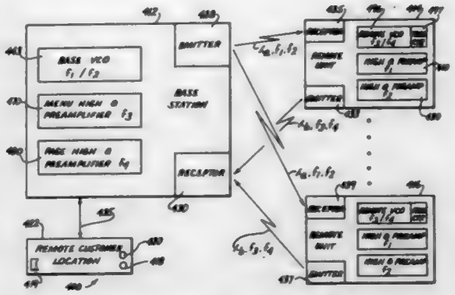
U.S. Cl. 359—113 **28 Claims**

1. A non-time division multiplexed wireless optical communication system comprising:

a base unit for transmitting and receiving an optical message carrying beam having a predetermined wavelength;

at least one remote unit for transmitting and receiving an optical message carrying beam having another predetermined wavelength;

said base unit and said remote unit each including means for converting a message into an electrical message carrying signal, means for encoding a message carrying signal on a selected one of a plurality of subcarrier signals, control means for selecting a given one of said plurality of subcarrier signals for encoding purposes, communication means for transmitting an encoded message carrying signal on an optical message carrying beam, means for receiving an encoded message carrying signal on another optical carrying beam, conversion means for decoding said another optical message carrying beam when its associated subcarrier signal has been generated by some other unit.



5,305,133

TWO-WAY OPTICAL COMMUNICATIONS SYSTEM

Anthony J. Cooper; Andrew R. Hunwicks, and Lawrence Bickers, all of Ipswich, United Kingdom, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB90/00157, § 371 Date Aug. 16, 1991, § 102(e) Date Aug. 16, 1991, PCT Pub. No. WO90/09709, PCT Pub. Date Aug. 23, 1990

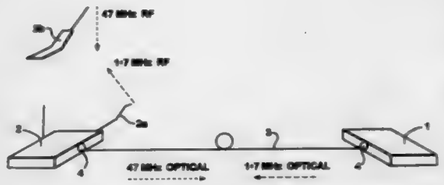
Continuation of Ser. No. 743,313, Aug. 16, 1991, abandoned.

This PCT application Feb. 2, 1990, Ser. No. 32,195

Claims priority, application United Kingdom, Feb. 16, 1989, 8903568

Int. Cl.[5] **H04B** *10/24, 10/00*

U.S. Cl. 359—152 **12 Claims**



9. An optical signal transceiver system including a first transceiver comprising:

an optical fibre input/output port connectable to receive optical signals having information modulated on a carrier frequency f2;

an optical signal source optically coupled to said input/output port and electrically modulated with first information on a first carrier frequency f1 for transmitting via said fibre optical signals having information modulated on said carrier frequency f1;

an optical signal detector optically coupled to said input-/output port through said optical signal source so as to detect both signals generated by the source and signals received via the optical fibre input/output port through the source and providing composite electrical signals including both (a) said first information modulated on said first carrier frequency f1 and (b) second information re-

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ceived via said input/output port modulated on a second carrier frequency f2; and

an electrical signal frequency-selective filter coupled to receive said composite electrical signals and to output frequency-filtered signals representing said second information modulated on said second carrier frequency f2 while substantially rejecting and not outputting signals representing said first information modulated on said first carrier frequency f1.

5,305,134

OPTICAL FREQUENCY DIVISION MULTIPLEXING TRANSMITTER AND OPTICAL FREQUENCY DIVISION MULTIPLEXING TRANSMISSION APPARATUS

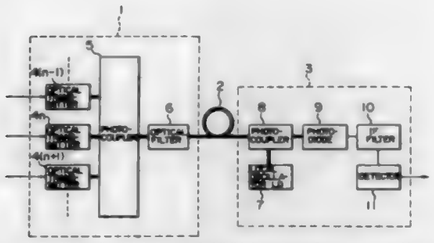
Hideaki Tanshima, Hachioji; Shinya Sasaki, Kodaira; Shigeki Kitajima, Kokubunji, and Kiichi Yamashita, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1990, Ser. No. 574,086

Claims priority, application Japan, Aug. 30, 1989, 1-221437

Int. Cl.[5] H04B *14/02, 10/06*

U.S. Cl. 359—192 **7 Claims**



1. An optical frequency division multiplexing apparatus for a heterodyne or homodyne optical receiver, comprising:

a plurality of optical transmitters for outputting FSK (Frequency Shift Keying) optical signals having different optical frequencies with a transmitting-channel spacing, each of the FSK optical signals comprising a mark component and a space component;

an optical combiner for multiplexing the FSK optical signals and providing a multiplexed FSK optical signal comprising mark components and space components; and

an optical filter coupled to the optical combiner for outputting either the mark components or the space components of the multiplexed FSK optical signal;

wherein the transmitting-channel spacing is a sum of a received-channel spacing in the heterodyne or homodyne optical receiver and two times a central frequency of a received channel in the heterodyne or homodyne optical receiver.

5,305,135

UNDERWATER VIEWING SYSTEM FOR REMOTE PILOTED VEHICLE

Joseph L. Chovan, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Mar. 4, 1992, Ser. No. 845,684

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—202 **11 Claims**

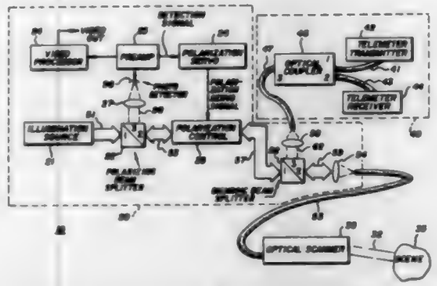
1. A viewing system for illuminating an object with illumination energy and for detecting energy reflected from the object, comprising:

first scanning means for scanning the illumination energy in a first predetermined direction to form first scanned illumination energy;

second scanning means for scanning the first scanned illumination energy in a second predetermined direction to form second scanned illumination energy, the second direction different from the first direction;

projection means for directing the second scanned illumination energy toward the object and for receiving energy reflected from the object;

detector means optically coupled to the projection means, the detector means for detecting the received energy; and



polarization control means disposed in optical flow communication between the projection means and the detector means, the polarization control means for controlling the polarization of the received energy for maximizing the amount of received energy provided to the detector means.

5,305,136

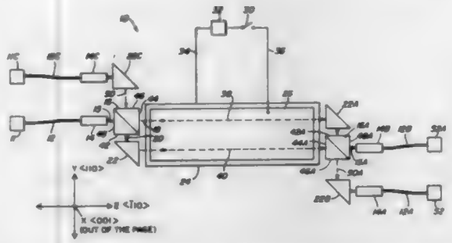
OPTICALLY BIDIRECTIONAL FAST OPTICAL SWITCH HAVING REDUCED LIGHT LOSS

Malcolm C. Smith, Holliston, Mass., assignor to Geo-Centers, Inc., Newton Centre, Mass.

Filed Mar. 31, 1992, Ser. No. 860,700

Int. Cl.[5] G02F *1/035*

U.S. Cl. 359—247 **11 Claims**



1. An optically bidirectional electrically-controlled optical switch comprising:

at least one electro-optic crystal having one set of fast and slow optical axes, two ends, and two light paths extending through the at least one crystal from one of the two ends to the other of the two ends, the at least one electro-optic crystal exhibiting electric field induced birefringence such that a light beam passing through the at least one crystal along a light path and having a plane of polarization oriented in a first direction may have its plane of polarization switched from the first direction to a plane of polarization oriented in a second direction;

a beam splitting polarizer, disposed at each of the two ends and optically aligned with the two light paths, combining two light beams having planes of polarization oriented in the first and second directions into a single beam of light when receiving light beams from the two light paths and splitting a single beam of light into two light beams having planes of polarization oriented in the first and second directions when transmitting light to the two light paths;

wherein the fast and slow optical axes are orthogonal to each other;

wherein the first and second directions are parallel to each other;

wherein the at least one electro-optic crystal is a rectangular parallelepiped crystal wherein the two light paths extend through the at least one electro-optic crystal parallel to each other along a <110> crystal direction;

wherein the fast optical axis is disposed at $\pi/4$ with respect to a <100> crystal direction;

wherein the slow optical axis is disposed at $\pi/4$ with respect to a <110> crystal direction;

wherein the planes of polarization corresponding to the first and second directions are disposed at $\pi/4$ with respect to the fast and slow optical axes;

a first right angle prism, disposed between one of the beam splitting polarizers and one of the light paths, directing a light beam from the beam splitting polarizer to one of the light paths of the at least one electro-optic crystal or from one of the light paths of the at least one electro-optic crystal to the beam splitting polarizer;

a second right angle prism, disposed between the other beam splitting polarizer and the other one of the light paths, directing a light beam from the other beam splitting polarizer to the other light path of the at least one electro-optic crystal or from the other light path of the at least one electro-optic crystal to the other beam splitting polarizer;

a third right angle prism directing a light beam to or from one of the beam splitting polarizers;

a fourth right angle prism directing a light beam to or from the other one of the beam splitting polarizers; and

light transmission means for coupling light to the two beam splitting polarizers, the third right angle prism, and the fourth right angle prism.

5,305,137

OPTICAL ISOLATOR AND METHOD FOR FABRICATING THE SAME

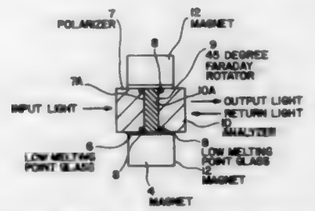
Kazuhide Ohkawara, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed May 11, 1992, Ser. No. 881,257

Claims priority, application Japan, May 10, 1991, 3-105842

Int. Cl.[5] G02B *1/08, 5/30*

U.S. Cl. 359—281 **2 Claims**



1. A method for fabricating an optical isolator, comprising the steps of:

providing a polarizer substrate, a Faraday rotator substrate, and an analyzer substrate;

providing first and second grid shaped glass tablets which are halfly sintered;

forming grooves on a surface of said polarizer and a surface of said analyzer substrate, said grooves coinciding with a pattern of said grid shaped glass tablets, and said surfaces of said polarizer substrate and said analyzer substrate being in contact with said Faraday rotator substrate;

interposing said first grid shaped glass tablet between said polarizer substrate and said Faraday rotator substrate, and said second grid shaped glass tablet between said Faraday rotator substrate and said analyzer substrate, said first and second grid shaped glass tablets being positioned in said grooves on said surfaces of said polarizer substrate and said analyzer substrate, thereby fixing said polarizer substrate, said Faraday rotator substrate, and said analyzer substrate to provide an assembled structure by melting said first and second grid shaped glass tablets;

cutting said assembled structure along said grooves by a cutting margin narrower than a width of said grooves to provide a plurality of optical isolator elements, each of said optical isolator elements being composed of a polarizer, a Faraday rotator and an analyzer, at least one of outer peripheries of each of said polarizer substrate and said Faraday rotator substrate being fixed on glass cut from said first grid shaped glass tablet, and at least one of outer peripheries of each of said Faraday rotator substrate and said analyzer substrate being fixed on glass cut from said second grid shaped glass tablet; and

providing a magnet on an outer periphery of said Faraday rotator of said optical isolator element.

5,305,138

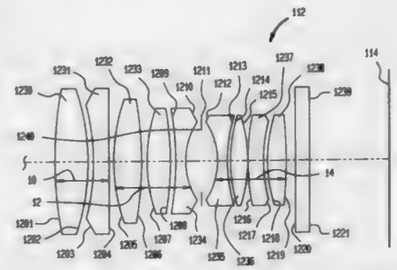
SUPERACHROMATIC UV AND VISIBLE FOCUSING OBJECTIVE LENS

Candace J. Freedenberg, Holly Ridge, N.C.; Frederick A. Herring, Wappingers Falls, and Uldis A. Ziemins, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,283

Int. Cl.[5] G02B *13/14, 13/00, 9/08, 9/12*

U.S. Cl. 359—355 **14 Claims**



1. A superachromatic objective lens system comprising:

a) a stop,

b) a reverse modified gauss lens system disposed on one side of said stop,

c) a modified gauss lens system disposed on the other side of said stop,

d) an achromatic lens system disposed on the opposite side of said modified gauss lens system, and thereby forming said superachromatic lens system where each of said lens system comprises UV transmitting elements of crystalline structure.

5,305,139

ILLUMINATION SYSTEM AND METHOD FOR A HIGH DEFINITION 3-D LIGHT MICROSCOPE

Gary Greenberg, Los Angeles, Calif., assignor to Unimat (USA) Corporation, formerly United Holdings, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 688,170, Apr. 19, 1991. This application Jan. 10, 1992, Ser. No. 819,140

Int. Cl.[5] G02B *21/06, 21/18*

U.S. Cl. 359—390 **8 Claims**

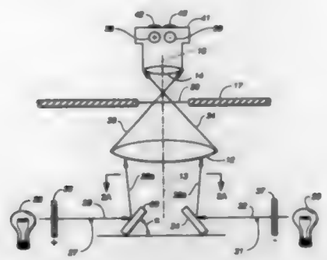
1. An illumination system for a transmitted light microscope including a condenser lens means having an optical axis, and an objective lens means having an optical axis, comprising in combination:

light beam source means for providing two independent light beams along different source beam paths which are non-coincident with the optical axis of the condenser lens means;

light beam shift means operable to shift the path of a source

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means light beam and redirect it along an incident path that passes through the condenser lens means, and an exit path from the condenser lens means that passes through the objective lens means, wherein the exit path is oblique to the optical axis of the objective lens means;



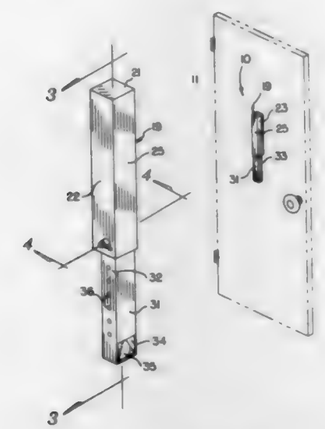
means for supporting a speciment at a specimen plane between the condenser means and the objective means; and said shift means disposed relative to one another so as to establish light beam paths which at the specimen plane are between 90 and 180 degrees apart.

5,305,140

DOOR VIEWING APPARATUS

Luis A. Eloy, and Andrea Eloy, both of 7419 2nd Ave. 2nd Flr., North Bergen, N.J. 07047

Filed Nov. 23, 1992, Ser. No. 980,350
Int. Cl.[5] G02B *23/08*
U.S. Cl. 359—402 **4 Claims**



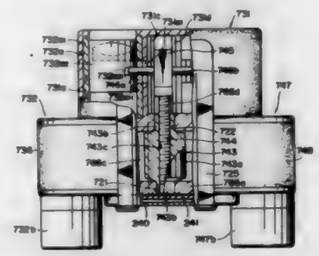
1. A door viewing apparatus arranged for mounting to a door, with the door having a peep sight directed therethrough, with the apparatus comprising,
a mounting housing, the mounting housing including a mounting housing first wall spaced from a mounting housing second wall, and mounting housing first and second spaced side walls, and including a mounting housing top wall, with a first wall opening directed through the mounting housing first wall in adjacency to the mounting housing top wall, and,
a mounting housing second wall opening directed through the mounting housing second wall, with the mounting housing first wall opening aligned with and coextensive the mounting housing second wall opening, and,
a second wall slot directed along the mounting housing second wall parallel between the mounting housing side walls extending from the first wall opening, and,
a periscope assembly having a first housing and a second housing, with the second housing telescopingly received within the first housing, and the first housing having a first housing first side wall spaced from a first housing second side wall, a first housing rear wall spaced from a first housing front wall, and a first housing top wall, with a first housing parallelepiped cavity directed into the first housing from a lower distal end of the first housing, and the second housing telescopingly received within the first housing cavity, and the first housing rear wall including a dove tail projection slidably received within the second wall slot of the mounting housing, and,
the mounting housing rear wall including a rear wall opening coextensive with and aligned relative to the mounting housing first wall opening and the mounting housing second wall opening for viewing of the door peep sight by the periscope assembly.

5,305,141

BINOCULAR INCLUDING A PREASSEMBLED FOCUSING UNIT

Keiichi Hotta, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha and Petori Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 648,141, Jan. 30, 1991, Pat. No. 5,196,959, which is a continuation of Ser. No. 546,702, Jul. 2, 1990, Pat. No. 5,071,242, which is a continuation of Ser. No. 225,749, Jul. 29, 1988, abandoned. This application Dec. 10, 1992, Ser. No. 988,805
Claims priority, application Japan, Apr. 26, 1988, 63-55267; Apr. 26, 1988, 63-55268; Apr. 29, 1988, 63-58089; Apr. 30, 1988, 63-57336; Apr. 30, 1988, 63-57337; Apr. 30, 1988, 63-57338; Apr. 30, 1988, 63-57339; Apr. 30, 1988, 63-57340
Int. Cl.[5] G02B *7/06, 7/12, 23/00, 23/18*
U.S. Cl. 359—416 **6 Claims**



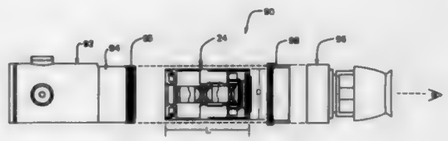
1. A binocular comprising:
a binocular body having end surfaces and an outer upper surface;
a pair of objective lenses and a pair of eyepiece lenses mounted to said binocular body, respective optical axes of said pair of objective lenses extending between said end surfaces of said binocular body;
focusing means mounted to said binocular body for adjusting a distance between said objective lenses and said eyepiece lenses;
wherein said outer upper surface is formed with receiving means and an upwardly open accommodating space adjacent said receiving means, said receiving means comprising a pair of upwardly open aligned and spaced bearing recesses; and
wherein said focusing means includes a shaft received in said bearing recesses for movement about an axis of said shaft, an operating means accommodated in said accommodating space and mounted to said shaft for movement therewith about the axis of said shaft, means for adjusting the distance between said objective lenses and said eyepiece lenses, said adjusting means moving in response to the movement of said operating means, said shaft, said operating means, and said adjusting means being formed as a preassembled single unit and inserted into said accommodating space from above, and retaining means mounted to the outer upper surface of said binocular body for preventing said shaft from coming out of said receiving means.

5,305,142

REPLACEMENT ASSEMBLY FOR AN IMAGE INTENSIFIER TUBE

Earle N. Phillips, and Charles Naselli, both of Roanoke, Va., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 6, 1992, Ser. No. 847,185
Int. Cl.[5] G02B *23/00, 13/14;* H01J *31/50*
U.S. Cl. 359—435 **17 Claims**



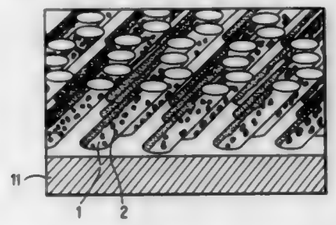
1. An image intensifier assembly comprising:
a Generation III image intensifier tube located at one end of said assembly; and
an invertor lens arrangement for inverting an image produced by said Generation III image intensifier tube, said invertor lens arrangement having substantially no optical power and being adjustably positionable, within said assembly, relative to said Generation III image intensifier tube.

5,305,143

INORGANIC THIN FILM POLARIZER

Yasunori Taga; Motofumi Suzuki, and Tadayoshi Itoh, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Aug. 9, 1991, Ser. No. 743,190
Claims priority, application Japan, Aug. 9, 1990, 2-212125
Int. Cl.[5] G02B *5/30*
U.S. Cl. 359—488 **14 Claims**



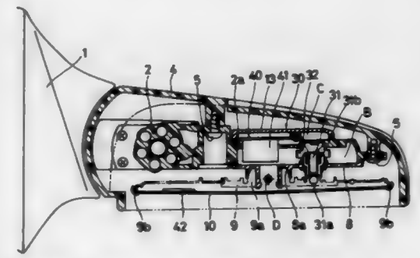
1. An inorganic thin film polarizer comprising:
i) a substrate which is transparent in a desired wavelength region of light;
ii) fine columns of an inorganic substance which is transparent to said desired wavelength region of light and having a substantially circular cross-section,
said fine columns being arranged on said substrate at a constant angle with respect to a surface normal to said substrate and having anisotropy in density; and
iii) light absorbing portions provided on said fine columns, said light absorbing portions being made of an inorganic substance having a light extinction coefficient larger than that of said fine columns in said desired wavelength region of light,
wherein said fine columns with said light absorbing portions provided thereon are arranged at a spacing of from 0.2 to 20 times the diameter or width of each of said fine columns.

5,305,144

MIRROR APPARATUS

Keiji Mori, Kariya, and Hidekazu Kokita, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Apr. 26, 1990, Ser. No. 514,890
Claims priority, application Japan, Apr. 28, 1989, 1-110827
Int. Cl.[5] B60R *1/06;* G02B *5/08, 7/18*
U.S. Cl. 359—507 **13 Claims**



1. A mirror apparatus comprising:
a base for fixedly mounting to a side of a vehicle body;
a frame rotatably mounted on said base, said frame having a wall portion;
a first case secured to one side of said frame and spaced from said wall portion, said wall portion and said first case defining a first space between said frame and said first case;
a mirror movably mounted on the exterior of said first case and rotatable about a central pivot point;
adjusting means engaging said mirror for adjusting the position of the mirror, said adjusting means being mounted in said first space;
a second case secured fluid tight to another side of the frame, said second case being spaced from the wall portion and having a hollow cup-shaped configuration defining a second space between said frame and said second case, said frame having an opening therethrough laterally spaced from the adjusting means, the first space being in communication with the second space through said opening; and
a control circuit including a circuit board having electrical components mounted in the second space and extending into the first space through the opening in the frame.

5,305,145

WATERPROOF LENS

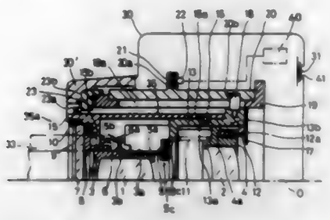
Hitoshi Tanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,807
Claims priority, application Japan, Jul. 4, 1991, 3-080991[U]
Int. Cl.[5] G02B *7/02, 23/22;* G03B *17/08*
U.S. Cl. 359—513 **20 Claims**

1. A waterproof lens comprising;
a lens barrel having an inner peripheral flange;
a lens frame located within said lens barrel;
a tubular member which occupies a space between said inner peripheral flange and said lens frame and which is detachably mounted to said inner flange;

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a transparent member positioned in front of said inner peripheral flange and said tubular member; and



means for sealing the transparent member and the inner peripheral flange in a watertight manner.

5,305,146

TRI-COLOR SEPARATING AND COMPOSING OPTICAL SYSTEM

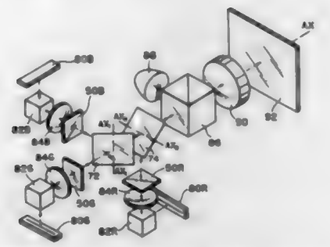
Shintaro Nakagaki, Miura; Tsutou Asakura, Yokohama; Ryusaku Takahashi; Tetsuji Suzuki, both of Yokosuka, and Fujiko Tatsumi, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 24, 1992, Ser. No. 903,564

Claims priority, application Japan, Jun. 26, 1991, 3-057617[U]; Jan. 29, 1992, 4-008464[U]

Int. Cl.[5] G02B *27/14, 5/30*

U.S. Cl. 359—634 **2 Claims**



1. Color separating or composing optical system having an optical axis, comprising two color filters being placed on said optical axis to perform color separation or composition by color-selective reflection and passing of reading lights for reading color images written separately on respective light modulators, one of said light modulators having a photoconductive layer with a higher sensitivity in a first wavelength range, said two color filters are arranged in such a manner that a polarization of one of said reading lights impinging on said one of said light modulators, is selected to have a wavelength range which is substantially shifted from said first wavelength range so that an overlap between the wavelength range of said one of the reading lights and said first wavelength range, is minimized.

5,305,147

EYEPIECE LENS SYSTEM FOR ENDOSCOPES

Akira Hasegawa; Tsutomu Igarashi; Shinichi Nakamura, and Kimihiko Nishioka, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1991, Ser. No. 747,007

Claims priority, application Japan, Aug. 20, 1990, 2-216976; Mar. 4, 1991, 3-061073; Apr. 16, 1991, 3-109524

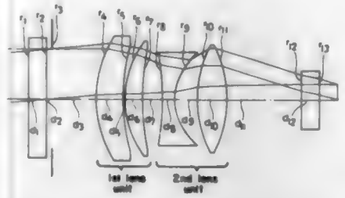
Int. Cl.[5] G02B *9/10, 9/14*

U.S. Cl. 359—644 **14 Claims**

1. An endoscope observation system comprising an image guide and an eyepiece lens system, said eyepiece lens system comprising, in order from the eye side:

a first lens unit having a positive refractive power, and

a second lens unit having a negative refractive power;



wherein said second lens unit comprises a concave aspherical surface satisfying the following condition, and said second lens unit satisfies one of the conditions (A) and (B):

$$x = Cy^2/\{1 + \sqrt{1 - PC^2y^2}\} + By^2 + Ey^4 + Fy^6 + Gy^8 + \dots$$

(A) $(N - N')A_n < 0$

(B) $(N - N')B_n < 0, A_n = 0$

wherein an optical axis of the eyepiece lens system is taken as the x axis, a direction perpendicular to the optical axis is taken as the y axis, an intersection between the aspherical surface and the optical axis is taken as an origin on a coordinate system, the reference symbol C represents curvature on a spherical surface in contact with the aspherical surface on the optical axis, the reference symbol P designates a conical coefficient, the reference symbols B, E, F, G, . . . denote aspherical surface coefficients of the second order, fourth order, sixth order, eighth order, . . . , the reference symbol N represents a refractive index of a medium located on the eye side of the aspherical surface, the reference symbol N' designates a refractive index of a medium located on the object side of the aspherical surface, the reference symbol A_n denotes any one of aspherical surface coefficients of the fourth and higher orders, and the reference symbol B_n represents an aspherical surface coefficient of the second order, the suffix n having a meaning that the aspherical surface coefficient relates to an aspherical surface having a concave shape.

5,305,148

COMPACT VARIFOCAL LENS

Keiji Ikemori; Kouji Oizumi, and Yoshinori Itoh, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 608,400, Nov. 2, 1990, abandoned. This application Jan. 12, 1993, Ser. No. 3,668

Claims priority, application Japan, Nov. 8, 1989, 1-290464; Nov. 17, 1989, 1-299175; Dec. 15, 1989, 1-325015; Mar. 9, 1990, 2-059612; Aug. 3, 1990, 2-206414

Int. Cl.[5] G02B *15/14, 13/18*

U.S. Cl. 359—689 **47 Claims**

1. An image forming system comprising:

from front to rear,

a first lens unit having a negative refractive power;

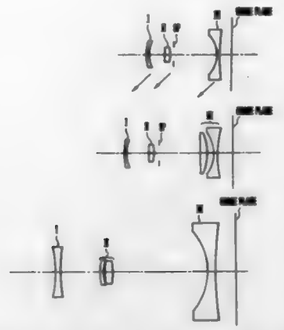
a second lens unit having a positive refractive power;

a third lens unit having a negative refractive power,

wherein at least one lens unit of said first lens unit and said second lens unit consists of a cemented lens or single lens, with variation of the focal length of the entire image forming system being performed by varying each of the air separation between said first lens unit and said second lens unit and the air separation between said second lens unit and said third lens unit, and an object in front of said first lens unit results in an effective image frame behind said third lens unit, and

wherein said image forming system satisfies the following conditions:

$0.1 < \Sigma d/fw < 0.5$



wherein Σd is the sum of the axial thickness of said first, second, and third lens units, and fw is the shortest focal length of the entire image forming system.

5,305,149

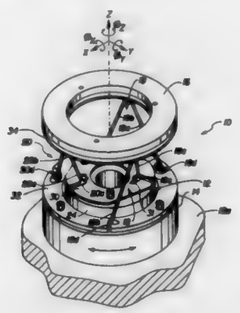
ZOOM LENS DRIVE MECHANISM

Peter A. Newman, Rochester, and William L. Burnham, Leroy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1993, Ser. No. 35,004

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—694 **6 Claims**



1. A zoom lens drive mechanism for a zoom lens system having an optical axis, the drive mechanism comprising:

a base ring member and a drive ring member concentrically positioned about the optical axis of the zoom lens system, the drive ring member being rotatable with axial constraint about the base ring member;

a translatable lens subgroup ring member; and

at least three pairs of pivotable rods adapted for suspension of the translatable ring member from the base and drive ring members concentric with the optical axis, each rod pair being comprised of first and second rods having first ends thereof pivotally coupled to the base and drive ring members and second ends thereof pivotally coupled at a generally common pivot point on the translatable ring member;

whereby the suspended translatable ring member is held and drivingly translated concentric with the optical axis constrained against lateral displacement and tilting rotation from the optical axis.

5,305,150

LASER BEAM EXPANDER: 10×

Paul N. Robb, Santa Clara, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Nov. 20, 1992, Ser. No. 979,016

Int. Cl.[5] G02B *9/12*

U.S. Cl. 359—784 **3 Claims**



1. A lens system operative at a common focal position over a wavelength range from 0.365 micron to 1.3 micron for expanding an optical beam by ten times in diameter, said lens system comprising a plurality of lens elements, all of said lens elements being made of optical glass, said lens elements remaining at fixed positions with respect to each other for operation of said lens system over said wavelength range, said lens system being substantially diffraction limited over said wavelength range.

5,305,151

OBJECTIVE LENS DRIVER

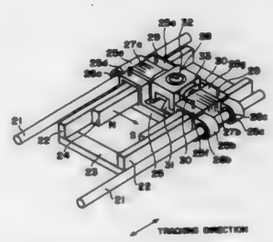
Hiroaki Kakimoto, and Masahiko Chaya, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 790,513, Nov. 12, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,843

Claims priority, application Japan, Nov. 14, 1990, 02-309759; Mar. 29, 1991, 03-066235; Jun. 28, 1991, 03-158479

Int. Cl.[5] G02B *7/02*

U.S. Cl. 359—814 **14 Claims**



1. An objective lens driver comprising:

first and second permanent magnets disposed in opposed relationship with each other such that surfaces thereof, which oppose each other, have different magnetic poles;

first and second yokes for supporting said first and second permanent magnets, respectively;

an objective lens supporting member movably provided on said movable member and disposed in the magnetic gap;

seeking coil means provided on said movable member and wound about said first and second permanent magnets and said first and second yokes for moving said objective lens supporting member in a tracking direction; and

a focusing coil provided on said supporting member and disposed in the magnetic gap for moving said objective lens supporting member in a focusing direction.

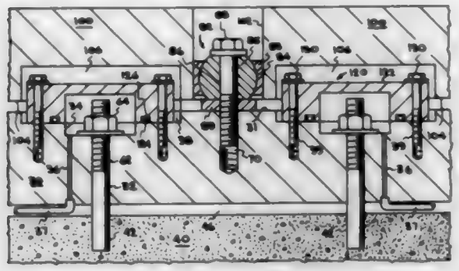
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5,305,152

EVACUATED OPTICAL STRUCTURE COMPRISING OPTICAL BENCH MOUNTED TO SIDEWALL OF VACUUM CHAMBER IN A MANNER WHICH INHIBITS DEFLECTION AND ROTATION OF THE OPTICAL BENCH

Joel M. Bowers, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 9, 1993, Ser. No. 72,309
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—896 **20 Claims**



20. An evacuated optical structure comprising:

a) a vacuum vessel having a sidewall thereon having a thickness of at least about 2 inches;

b) four groups of mounting means extending through said sidewall to mount said vacuum vessel to a support wall, each of said mounting groups symmetrically spaced apart from one another a distance of from about 27 to about 29 inches, each of said groups of mounting means comprising four mounting means symmetrically positioned in a circle around a threaded central bore in said sidewall, said circle having a diameter of from about 7 to about 9 inches;

c) means for individually sealing each of said mounting means comprising:

i) cover means secured to an inner surface of said sidewall over each of said mounting means;

ii) an o-ring seal surrounding said mounting means and mounted between said inner surface of said sidewall and the undersurface of said cover means to seal said mounting means from the remainder of said vacuum vessel; and

iii) vented securement means comprising a bolt with a central venting bore therein for securing said cover means to said inner surface of said sidewall whereby gases will not be trapped in said securement means;

d) means for detecting leaks in said mounting means from a rear surface of said sidewall comprising:

i) venting bore means to communicate between said mounting means in said sidewall and said rear surface of said sidewall facing said support wall; and

ii) tube means, extending beyond an end edge of said sidewall, and in communication with said venting bore means;

whereby access is provided to said rear surface to facilitate testing said mounting means for leaks to said rear surface of said sidewall;

e) an optical bench having a minimum thickness of about 2 inches; and

f) four fastening means pivotally attached to said optical bench at symmetrically spaced apart points, each of said fastening means further comprising:

i) spherical bearing means received in a bore in said optical bench; and

ii) threaded shaft means passing through said spherical bearing means and received in one of said threaded central bores;

whereby said optical bench is symmetrically mounted to said sidewall of said vacuum vessel in a manner which will minimize any deflection or rotation of said optical bench within said vacuum vessel.

5,305,153

ANGULAR OPTICAL VIEWING DEVICE

Paul J. Kochocki, 2990 McKoon Ave., Niagara Falls, N.Y. 14305

Filed May 18, 1992, Ser. No. 885,293
Int. Cl.[5] B60R *1/10*; G02B *5/08, 7/18*
U.S. Cl. 359—842 **12 Claims**



1. An optical viewing device in combination with the handle bars of a bicycle upon which the device is mounted for enabling a bicycle rider observer when looking in a downward direction to view objects in front of him directly as they are rather than as reverse images and to broaden his field of view in both the horizontal and vertical directions, wherein the optical viewing device comprises curved complementary primary and secondary surfaces which are in or comprise a single casing, wherein said single casing includes possesses a top transparent window and a front transparent window, wherein incoming light rays enter the front transparent window and are received by a primary reflective curved surface and reflected to the secondary reflective curved surface and thence exit through the top transparent window of the viewing device as an image or as images of the objects in front of the bicycle rider.

5,305,154

COLOR FILTER WITH A POROUS ACTIVATED FILM LAYER HAVING DYES FIXED IN THE MINUTE PORES TO FORM A COLOR PATTERN

Takao Sumi, Kyoto; Tenri Isoda, Otsu; Yoshihide Inako, Nishinomiya, and Masahiro Nishida, Ibaraki, all of Japan, assignors to Nissha Printing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 713,598, Jun. 11, 1991, abandoned, which is a continuation of Ser. No. 275,179, Sep. 27, 1988, abandoned. This application Nov. 4, 1992, Ser. No. 971,262
Claims priority, application Japan, Jan. 28, 1987, 62-17788
Int. Cl.[5] G02B *5/20, 5/22*
U.S. Cl. 359—885 **2 Claims**



1. A color filter which comprises:

a transparent substrate;

a transparent porous activated film layer of activated alumina or activated silica which is formed by coating alumina colloid, silica colloid or a mixture thereof on said transparent substrate and calcining the colloid at 350°–850° C., said activated film layer having a color layer formed in patterns on said transparent substrate, said patterns being formed by permeating dyes into said activated film layer;

a black mask made of a thin metal film layer produced by electroless plating and anchored in the fine holes of the porous activated film layer to form a pattern on a boundary between adjacent patterns of said color layer; and

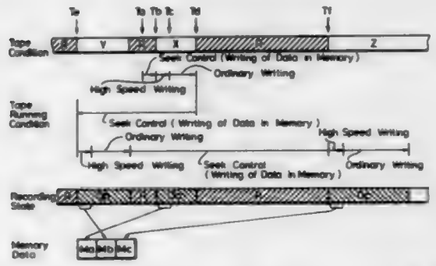
an overcoating layer formed on said activated film layer and covering said activated film layer and said black mask.

5,305,155

DIGITAL DATA REPRODUCING APPARATUS

Kenzo Akagiri, and Yoshiaki Oikawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1992, Ser. No. 820,518
Claims priority, application Japan, Jan. 21, 1991, 3-041415
Int. Cl.[5] G11B *5/00, 5/09*
U.S. Cl. 360—32 **7 Claims**



1. A digital data reproducing apparatus for reproducing continuous digital data from a recording medium on which said continuous digital data is divided into at least first and second portions which are respectively recorded at first and second locations of said recording medium which are spaced apart from each other, said digital data reproducing apparatus comprising:

(a) searching means for searching a beginning part of at least said second portion when said recording medium is installed in said reproducing apparatus and for generating a detected output when the beginning part is found;

(b) memory means for storing the digital data;

(c) memory control means for controlling said memory means such that the beginning part of at least said second portion is written in said memory means when said detected output is generated;

(d) reproducing means for reproducing said first portion of said continuous digital data by a reproducing head;

(e) moving means for moving said reproducing head and said recording medium relative to each other so that said reproducing head relatively moves from said first location to said second location; and

(f) means for reading out the beginning part of said second portion from said memory means while said reproducing head relatively moves from said first location to said second location, whereby said first and second portions of said continuous digital data are reproduced continuously.

5,305,156

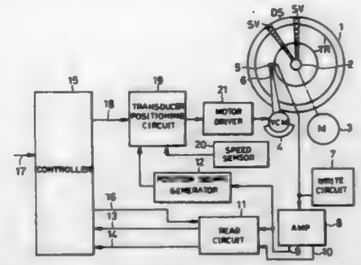
DIGITAL DATA STORAGE APPARATUS COMPRISING CIRCUIT FOR REDUCING READ ERRORS

Masao Takei, Hachioji, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 961,091
Claims priority, application Japan, Oct. 18, 1991, 3-298200
Int. Cl.[5] G11B *5/09, 20/14, 20/16*
U.S. Cl. 360—40 **4 Claims**

1. A digital data storage apparatus comprising:

(a) a transducer for data transfer with a record medium on which digital data is recorded in such a manner that, on reading the data, the transducer produces a waveform having a positive peak followed by negative peak for each bit representative of one of a logic one and a logic zero of the data and puts out no voltage for the other of the logic one and the logic zero of the data; and



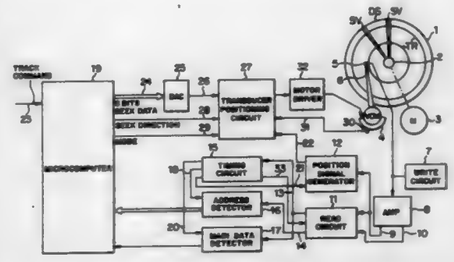
(b) a read circuit connected to the transducer for recreating the one of the logic one and the logic zero of the data on the basis of the negative peak of the output waveform of the transducer representative of each bit of the one of the logic one and the logic zero of the data.

5,305,157

READ CIRCUIT PROVIDING TWO DIFFERENT REFERENCE LEVELS FOR READING THE SERVO SECTORS AND DATA SECTORS OF A ROTATING DATA STORAGE DISK

Sumio Wada, Koga, and Keishi Ueno, Fuchu, both of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,797
Claims priority, application Japan, Oct. 25, 1991, 3-306779
Int. Cl.[5] G11B *5/09, 5/02*
U.S. Cl. 360—53 **6 Claims**



1. An apparatus have a transducer for data transfer with a rotating disk having a multiplicity of annular tracks arranged concentrically thereon, each track being divided into a plurality of data sectors for the storage of main data and a plurality of servo sectors for the storage of control data comprising track addresses, wherein the improvement resides in a system for producing read pulses indicative of peaks of a waveform produced by the transducer on reading the disk, comprising:

(a) reference circuit means for providing a reference signal;

(b) reference signal setting means for setting the reference signal at a first predetermined magnitude when the transducer output waveform represents the main data, and at a second magnitude, different from the first magnitude, when the transducer output wave-form represents the control data, the reference signal setting means being connected to the reference circuit means;

(c) comparator means connected to the transducer and the reference circuit means for comparing the transducer output waveform with the reference signal and for producing output pulses indicative of whether the transducer

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output waveform is greater than the reference signal, the output pulses of the comparator means having either of two different durations depending upon whether the reference signal has the first or the second magnitude; and

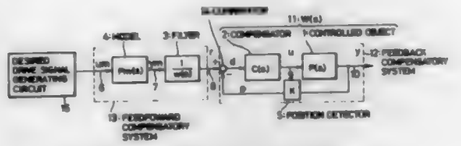
(d) circuit means connected to the comparator means for producing read pulses from the output pulses of the comparator means.

5,305,158

POSITIONING CONTROL APPARATUS

Takaharu Ueda; Shigeki Mizuno, and Tetsu Yamamoto, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,812
Claims priority, application Japan, Jun. 4, 1990, 2-146998
Int. Cl.[5] G11B *21/02*; G05D *23/275*
U.S. Cl. 360—75 **5 Claims**



1. A positioning control apparatus comprising:

a feedback compensatory system comprising:

detecting means for detecting a position of a controlled object whose position is to be controlled; and

a compensator, operably connected to and for controlling said controlled object, connected to an output of the detecting means through a comparator;

a feedforward compensatory system, operably connected to said feedback compensatory system, comprising:

a first filter means having characteristics reverse to that of the feedback compensatory system; and

a second filter means having characteristics reverse to that of the object; and

a desired drive signal generating means supplying the feedforward compensatory system with a desired drive signal having a frequency spectrum having a minimum at the mechanical resonance frequency of the controlled object, wherein said detecting means is operably connected to said controlled object and said first and second filters are operably interconnected.

5,305,159

MAGNETIC DISK APPARATUS

Yuji Sakai, Yokohama; Takehito Yamada, Kawasaki, and Katsuyoshi Kitagawa, Urayasu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 6, 1991, Ser. No. 741,069
Claims priority, application Japan, Aug. 8, 1990, 2-208038; Aug. 8, 1990, 2-208039; Aug. 8, 1990, 2-208040; Nov. 5, 1990, 2-297237
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.02 **7 Claims**

1. A disk system comprising:

a disk as a recording medium, and

a disk recording/reproducing apparatus for recording and reproducing data by a head radially movable across said disk by a head moving mechanism;

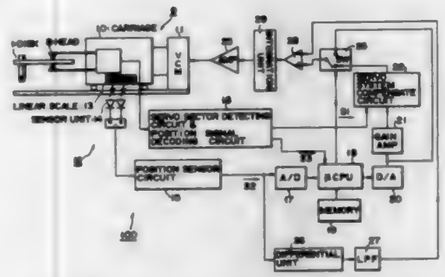
said disk comprises a first region formed with first servo sectors having first servo information along a data track for recording and reproducing data on said disk, second regions having second servo sectors having second servo information along a servo track, a number of second servo sectors in the second region being equal to a positive integer multiplied by a number of first servo sectors in the first region, and

said disk recording/reproducing apparatus comprises;

position detecting means, placed on a moving portion of said head moving mechanism, for detecting a position of said head and for outputting a position signal representing the position of said head in the radial direction of said disk,

determining means, connected to said position detecting means, for determining "head follow-up information" using said position signal;

memory means for storing said determined "head follow-up information" when said head is passed between the first servo sectors of the first region, and



means for generating "first track follow-up error information" using servo information read from said first servo sector immediately after said head is passed over said first servo sector when said head is positioned on said data track,

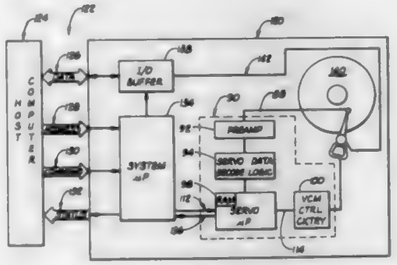
means for generating "second track follow-up error information" using a difference between said determined "head follow-up information" determined using said position signal and the "head follow-up information" stored in said memory means, means for controlling said head to follow-up to the data track using said "first track follow-up error information", and said "second track follow-up error information".

5,305,160

COMPENSATING FOR VARIATIONS IN TORQUE CAPABILITY OF VOICE COIL MOTORS

Otis L. Funches, Oklahoma City; Randall D. Hampshire, Edmond, and Vladimir Kovner, Oklahoma City, all of Okla., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 31, 1991, Ser. No. 738,793
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—78.07 **2 Claims**



1. A method for compensating for variations in an actual torque constant K_T from a nominal torque constant, K_{nom}, in an actuator for moving read/write heads across the surface of discs in a disc drive, comprising the steps of:

(a) dividing the disc surface into a number of zones, each of said zones containing a known number of tracks;

(b) energizing the actuator so that the read/write heads are

disposed substantially stationary at the outer track of one of the zones;

(c) applying a fixed DC voltage, V_{DC}, of a first polarity to the actuator to move the heads toward the inner track of the zone for a time interval, T, sufficient to allow movement of the heads across a known number of tracks, t_k, if the actual torque constant, K_T, is equal to K_{nom};

(d) reading the number of the track over which the heads are positioned at the end of the time interval T and placing the actuator into normal seek mode to move the heads to the innermost track of the zone;

(e) subtracting the track number of the outermost track in the zone from the number read in step (d) to obtain a number of tracks crossed moving inward, t_{in}, during the time interval T;

(f) applying the fixed DC voltage in a second polarity opposite the first polarity, $-V_{DC}$, to the actuator to move the heads toward the outer track of the zone for the time interval T;

(g) reading the number of the track over which the heads are positioned at the end of the time interval T, and placing the actuator into normal seek mode to move the heads to the outer track of the zone;

(h) subtracting the number read in step (g) from the track number of the inner track of the zone to obtain a number of tracks crossed moving outward, t_{out}, during the time interval T;

(i) adding t_{in} and t_{out} and dividing this sum by two to obtain an average number of tracks, t_{avg}, crossed during the time interval T;

(j) comparing t_{avg} to the known number of tracks t_k to derive a compensation torque factor K_{tx} for the zone;

(k) saving the zone compensation torque factor K_{tx} in a look-up table;

(l) repeating steps (b) through (k) for each zone; and

(m) applying the zone compensation torque factors from the look-up table during subsequent seek and track following operations.

5,305,161

ADAPTIVE TRACK SEEKING FOR DISK DRIVES

Matthew F. Giovanetti, Northborough; Kenneth F. Veseskis, Hudson; Fernando A. Zayas, Stow, and Bernardo Rub, Shrewsbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 546,355, Jun. 29, 1990, abandoned.
This application Nov. 23, 1992, Ser. No. 980,308
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—78.06 **1 Claim**

1. A method of operating a disk drive having a read/write head controlled by an actuator, comprising the steps of:

determining a terminal velocity Vt of said actuator to be used in generating a seek velocity profile associated with said read/write head;

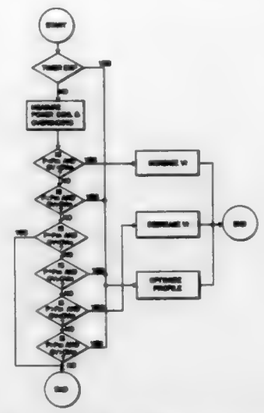
generating said seek velocity profile based on the determined Vt;

continually monitoring the power dissipation P of said actuator during normal operation of said disk drive by tracking the level of an actuator current signal associated with said actuator;

tracking the number of track-seeking overshoots OV of said read/write head during each of consecutive periodic update intervals of normal disk drive operation by tracking the level of a head position signal associated with said read/write head;

increasing Vt when P is less than a predetermined maximum actuator power dissipation Pm and OV is less than a predetermined maximum number of track-seeking overshoots OVm;

decreasing Vt when P is greater than Pm and OV is less than OVm; and



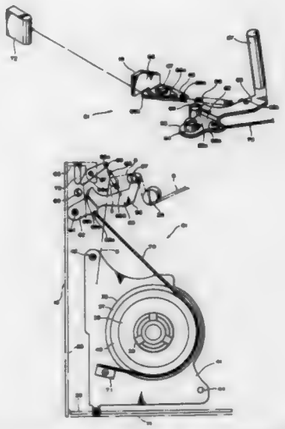
updating said seek velocity profile based on Vt at least once during each of said update intervals and also whenever OV is greater than OVm during normal operation.

5,305,162

TAPE TENSIONING MECHANISM WITH TAPE LOADING-ACTIVATED TENSIONING PIN

Sunao Kushiro, Chiba; Masato Yamaguchi, Kanagawa; Keisuke Ikegami, Tokyo, and Kenichi Fukahori, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,564
Claims priority, application Japan, Jun. 28, 1991, 3-184046
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **4 Claims**



1. A tape tensioning mechanism for tensioning a tape drawn out of a tape cassette, comprising:

a fixed chassis;

a movable chassis movably mounted on said fixed chassis and movable in a forward and rearward direction with respect to said fixed chassis, said rearward direction being a retracted position;

guide means on said fixed and movable chassis for defining a predetermined tape path to load said tape therein when

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said movable chassis is moved in said rearward direction into said retracted position;

a tensioning arm rotatably mounted on said movable chassis and having a tensioning pin mounted thereon for contacting said tape to tension said tape when said tape has been loaded in said predetermined tape path defined by said movable chassis moving rearwardly into said retracted position;

a tightening lever rotatably supported on said movable chassis for bringing said tensioning arm in contact with said tape;

a tension spring for urging said tensioning arm in a direction to bring said tensioning pin into contact with said tape, said tension spring having one end coupled to said tensioning arm and an opposite end coupled to said tightening lever; an

pushing means mounted on said fixed chassis for engaging and rotating said tightening lever to tighten said tension sprig as said tape is loaded in said predetermined tape path when said movable chassis is moved into said retracted position, and for releasing said tightening lever to looseen said tension spring when said movable chassis is out of said retracted position, wherein said pushing means comprises a pusher fixedly mounted on said fixed chassis and positioned to push an end of said tightening lever not coupled to said tension spring to rotate the tightening lever to tighten said tension spring when said movable chassis is moved into said retracted position.

5,305,163

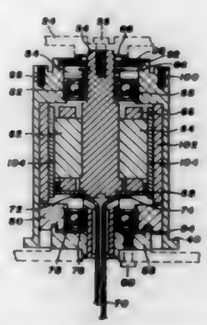
STATIONARY ANGULARLY ALIGNED STATIONARY SPINDLE SHAFT

A. W. Holm, Minneapolis, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 636,483, Dec. 31, 1990, abandoned. This application Mar. 2, 1993, Ser. No. 25,717

Int. Cl.[5] G11B *17/02*

U.S. Cl. 360—98.01 **29 Claims**



1. An apparatus for supporting data storage discs with respect to a disc drive housing for rotating the discs in concert relative to the housing, including:

an elongate spindle shaft with a longitudinal spindle axis, an internal passage extended longitudinally along at least a portion of the shaft length, an entry to the internal passage from the spindle exterior, and an exit from the internal passage including two apertures extended radially outward from the internal passage and angularly spaced apart 180 degrees, each aperture being open to the internal passage and open to the spindle exterior;

a fastening means for mounting the spindle shaft integrally with respect to a disc drive housing in a predetermined angular alignment with the disc drive housing to orient an axial plane bisecting the apertures to within 30 degrees of parallelism with a direction of maximum expected operational vibration;

a stator surrounding the spindle shaft and integral with the shaft;

a hub assembly mounted on the spindle shaft for rotation relative to the spindle shaft about a spindle axis, said hub assembly including a hub and a rotor surrounding and radially spaced apart from the stator, and a plurality of data storage discs mounted to the hub for rotation with the hub responsive to an electrical current in the stator;

a conducting means for providing electrical current to the stator for rotating the hub assembly, said conducting means comprising a plurality of sets of electrically conductive lines, each of the electrically conductive lines being electrically coupled to the stator, wherein all of the sets of lines extend into the internal passage through the entry and are contained within the internal passage, and wherein said sets of lines further extend out of the internal passage through the exit toward the stator, each of the sets of lines being contained within a different one of the apertures.

5,305,164

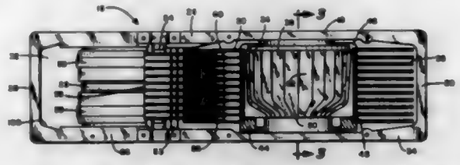
DISK DRIVE HUB ASSEMBLY WITH AIR FLOW GUIDE PASSAGES

John W. Elsing, Edina, Minn., assignor to Seagate Technology Inc., Scotts Valley, Calif.

Continuation of Ser. No. 941,628, Sep. 8, 1992, abandoned, which is a division of Ser. No. 560,747, Jul. 31, 1990. This application Jun. 11, 1993, Ser. No. 76,362

Int. Cl.[5] G11B *17/02*

U.S. Cl. 360—98.07 **14 Claims**



1. A spindle and disk assembly for storing data, including:

an elongate spindle shaft rotatable on a spindle axis;

a hub secured concentrically on the spindle shaft for rotation therewith, said hub including a plurality of projections elongate in the axial direction and arranged substantially symmetrically about the periphery of the hub, said projections being spaced apart from one another to define a plurality of flutes elongate in the axial direction, one flute disposed between each pair of adjacent projections, said flutes converging in the axial direction from one end of the hub to the other, while the projections diverge in said axial direction from said one end;

a plurality of data storage disks and a plurality of annular disk spacing members, said disks and spacing members being stacked in an alternating arrangement of the hub and secured to the hub for rotation therewith and surrounding the hub with respective inner rims of the disks and spacing members being contiguous with radially outward surfaces of the projections; and

a plurality of openings through each of the spacing members, said openings at least generally aligned with the flutes, for permitting the passage of air from the flutes, radially outwardly of each spacing member into an adjacent space between the pair of disks adjacent to the spacing member.

5,305,165

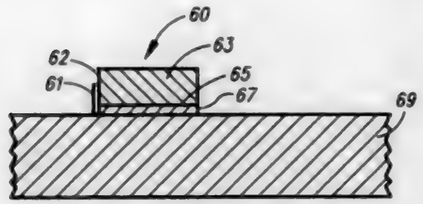
TRIBO-ATTRACTIVE CONACT DATA STORAGE SYSTEM

Blasius Breznczky, and Hajime Seki, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1991, Ser. No. 814,124

Int. Cl.[5] G11B *15/64, 5/187*

U.S. Cl. 360—103 **12 Claims**



1. A magnetic disk storage system comprising:

a magnetic storage medium comprising a rigid substrate having a layer of magnetic storage material thereon;

a magnetic transducer and a contact slider for supporting said magnetic transducer in physical contact with said magnetic storage medium, said contact slider comprising an amorphous fused quartz having a high resistivity and a low coefficient of friction and a load versus friction characteristic that is non-linear in the negative load region; and

means coupled to said magnetic storage medium for rotating said magnetic storage medium and producing relative motion between said magnetic storage medium and said contact slider up to a selected operating speed sufficient to generate a restoring force responsive to said load versus friction characteristic of said contact slider, said restoring force having a magnitude sufficient for maintaining a surface of said contact slider in substantially physical contact with said magnetic storage medium at said selected operating speed, whereby said magnetic transducer is maintained in close proximity to said magnetic storage medium and data can be written or sensed without excessive ear to either said contact slider or said magnetic storage medium.

5,305,166

MAGNETIC HEAD SLIDER

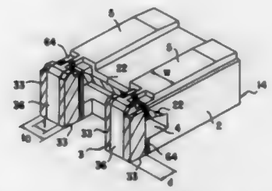
Atsushi Inoue, Yao; Fumio Kameoka, Daito; Hiroyasu Egashira, Shijonawate; Satoru Ota, Hirakata; Yoshifumi Fukumoto, Daito, and Masanori Hongo, Shijonawate, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 968,891

Claims priority, application Japan, Oct. 31, 1991, 3-286003; Oct. 9, 1992, 4-271263

Int. Cl.[5] G11B *5/60*

U.S. Cl. 360—103 **5 Claims**



1. A magnetic head slider of the floating type comprising a slider body made of a ferromagnetic oxide and having an air bearing portion, and a winding portion made of a ferromagnetic oxide and bonded to the slider body with a gap spacer provided therebetween, the winding portion including a winding yoke, a winding groove being formed at the junction between the slider body and the winding yoke, a track portion being formed in an upper surface of the slider and including a gap spacer bonded portion, the yoke being smaller than the air bearing portion in width and being covered over one side face or both side faces thereof with a nonmagnetic material bonded to the yoke and the slider body.

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MAGNETIC DISK APPARATUS HAVING MAGNETIC HEAD INSULATED FROM METAL HEAD CARRIAGE

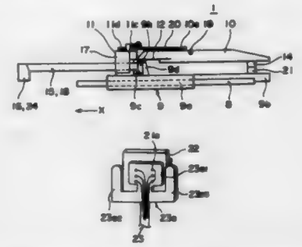
Fumio Nagase, Tama, and Jiro Ueki, Fuchu, both of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 780,033

Claims priority, application Japan, Oct. 22, 1990, 2-110396[U]

Int. Cl.[5] G11B *15/48*

U.S. Cl. 360—104 **10 Claims**



1. A magnetic disk apparatus having an electrically conductive moving unit configured so as to be freely movable in a direction substantially parallel to a magnetic disk surface, a magnetic head that records and/or reproduces signals on and/or from one surface of said magnetic disk supported on an electrically conductive flexible member, and a wiring plate configured from a wiring portion formed on said flexible member and electrically connected to said magnetic head and an insulated member sandwiched between said moving unit and said flexible member.

5,305,168

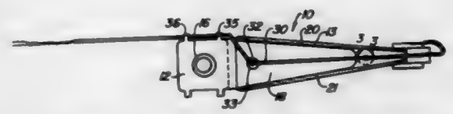
THIN FILM TRANSDUCER SUSPENSION ASSEMBLY WITH FLEXURO MOUNTED BOOSTER ELEMENT

Fong-Jei Lin, and Shengbo Zhu, both of San Jose, Calif., assignors to Magnex Corporation, San Jose, Calif.

Filed Mar. 5, 1992, Ser. No. 847,770

Int. Cl.[5] G11B *5/48*

U.S. Cl. 360—104 **12 Claims**



1. In a magnetic transducer suspension assembly having a slider mounted on one end of a flexure member, a transducer carried by the slider, and a plurality of conductive elements electrically coupled to the transducer and extending along the flexure member between the slider and the other end of the flexure member, the end of the conductive elements adjacent the other end of the flexure member comprising the output end thereof; the improvement comprising a signal booster element electrically coupled to said plurality of conductive elements and located in the region between said one end and said other end of said flexure member.

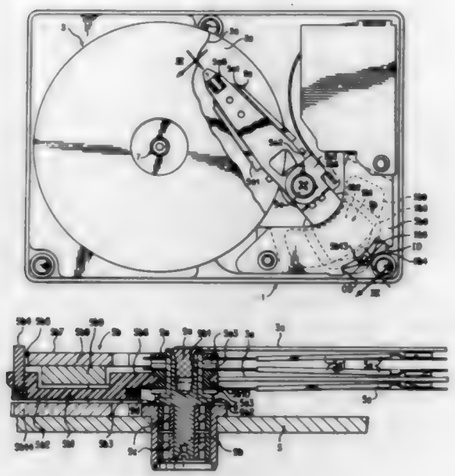
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,169

ROTARY ACTUATOR DISK DRIVE

James C. Anderson, Eagle, and Jeffrey S. McAllister, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 4, 1992, Ser. No. 893,304
Int. Cl.[5] G11B *5/54*; H02K *33/00*
U.S. Cl. 360—105 1 Claim



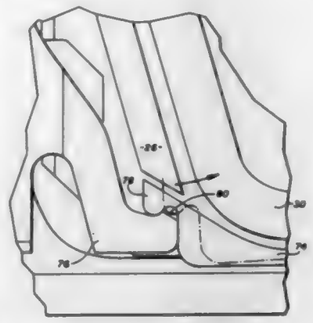
1. A disk drive, comprising:
a. a support;
b. a disk assembly comprising at least one disk rotatably mounted for rotation about an axis on said support;
c. a rotary actuator bearing hub;
d. means rotatably mounting said bearing hub on said support for rotation about a bearing hub axis on said support substantially paralleling said disk axis;
e. a transducer arm stack comprising at least one transducer arm secured to said bearing hub, said transducer arm having a distal end disposed adjacent a surface of said at least one disk;
f. a transducer mounted on said distal end of said at least one transducer arm;
g. an arm of electrical insulating material having a mounting end and having a distal end;
h. a metallic mounting fitting insert molded in said mounting end of said arm;
i. a latch pin of magnetic material insert molded in said distal end of said arm;
j. a motor coil on said arm, said coil being a substantially flat coil and defining a plane substantially perpendicular to the longitudinal axis of said latch pin;
k. means securing said metallic mounting fitting to said bearing hub, positioning said arm substantially diametrically opposite to said arm stack with the plane of said coil substantially perpendicular to said bearing hub axis and the axis of said latch pin substantially parallel to said bearing hub axis;
l. at least one permanent magnet on said support disposed in flux linkage with said coil and having latch surfaces disposed on opposite sides of said latch pin to engage said latch pin thereby limit movement of said arm,
m. said insulating material of said arm extends over one side of said latch pin in a position to engage one latch surface of said permanent magnet to thereby minimize magnetic coupling of said latch pin with said permanent magnet to avoid magnetic latching of said arm at that location.

5,305,170

LOCKING ASSEMBLY FOR THE ACTUATOR ARM OF A HARD DISK DRIVE

F. Eugene Dion, Longmont, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Nov. 13, 1992, Ser. No. 975,656
Int. Cl.[5] G11B *21/22*
U.S. Cl. 360—105 1 Claim



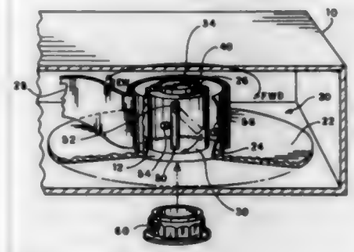
1. A hard disk drive assembly, comprising:
a housing;
a magnetic disk operatively connected to said housing, said magnetic disk having a data and a landing zone;
an actuator arm assembly pivotally connected to said housing, said actuator arm assembly having a first detent with a first cantilevered tooth; and,
a voice coil motor which provides a torque that moves said actuator arm assembly from said data zone to said landing zone when power to the assembly is terminated and which moves said actuator arm assembly from said landing zone to said data zone when power is supplied to the assembly;
a second detent mounted to said housing and having a second cantilevered tooth that interlocks with said first tooth and secures said actuator arm assembly in said landing zone when said voice coil motor moves said actuator arm assembly from said data zone to said landing zone, said first and second detents having a stiffness that allows said first and second teeth to be deflected and detached by said torque of said voice coil motor when said voice coil motor moves said actuator arm assembly from said landing zone to said data zone.

5,305,171

TAPE CASSETTE SPEED-RELEASE CLUTCH

Alfred J. Wolfson, 325 E. 21st St., #13, New York, N.Y. 10010

Continuation-in-part of Ser. No. 611,838, Nov. 13, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 802,616
Int. Cl.[5] G11B *23/08*
U.S. Cl. 360—132 8 Claims



4. A cassette of the type having a housing,

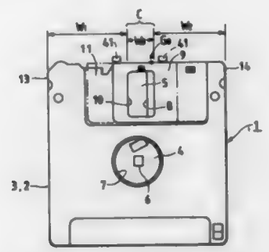
a reel disposed within said housing,
an information storage tape having two ends, one of said ends fixed to said reel, and
an opening through said housing adjacent said reel, said opening adapted to accept therethrough a capstan, whereby said capstan may intrude through said openings to engage said reel,
wherein said improvement comprises:
a clutch positioned at the center of said reel including:
a spindle positioned above said opening and pivotally joined to said reel for receiving the drive capstan when intruded through said opening,
a cylindrical sleeve positioned about said spindle and fixedly joined to said reel,
a drive stud fixedly joined to said cylindrical sleeve and extending inwardly toward said spindle, and
a swinging arm pivotally joined to said spindle for engaging said drive stud,
said clutch adapted to prevent relative rotation of said reel and said capstan in a forward direction at low rotational speeds,
said clutch further adapted to allow relative rotation of said reel and said capstan in a forward direction at high rotational speeds.

5,305,172

SYNTHETIC RESIN DISC CARTRIDGE SHUTTER HAVING NON-ENGAGING RAISED GATE MARK

Tsutomu Sugizaki; Kazutoshi Machida; Ikuo Taki; Naoyoshi Chino, and Tadashi Irie, all of Kanagawa, Japan, assignors to Fjui Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 757,422, Sep. 10, 1991. This application Nov. 19, 1992, Ser. No. 978,854
Claims priority, application Japan, Sep. 11, 1990, 2-94734[U]; Oct. 19, 1990, 2-282813
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—133 3 Claims



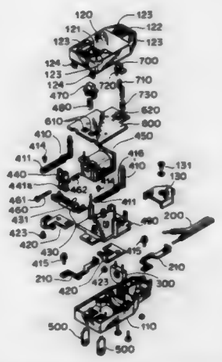
1. In a disc cartridge including case having a disc-shaped recording medium received therein so as to allow predetermined information signals to be recorded and reproduced, and a shutter injection-molded from a synthetic resin to slidably open and close an opening portion formed on said cartridge case so as to allow at least a part of said disc-shaped recording medium to be exposed to the outside, the improvement wherein said shutter comprises an upper main plate, a lower main plate, and a coupling plate connecting said upper main plate to said lower main plate via said coupling plate in an integrally molded state, said shutter having a U-shaped cross-section contour to hold said cartridge case in a clamped state, a raised gate mark created by an injection molding operation that forms said shutter, said raised gate mark being formed on an outer surface of said coupling plate, so that a distance from said raised gate mark to points on right halves of said upper and lower main plates which are farthest from said raised gate mark being substantially equal to a distance from said raised gate mark to points on left halves of said upper and lower main plates which are farthest from said raised gate mark, said opening portion having a width dimension parallel to a length dimension of said coupling plate wherein when said width dimension is orthogonally projected onto said coupling plate it defines a linear region along said length dimension of said coupling plate, the position of said raised gate mark being confined within said linear region of said coupling plate such that the gate mark remains opposite said opening portion as said shutter slidably opens and closes said opening portion, said region defining an effective opening region.

5,305,173

ELECTRICAL CONNECTOR WITH BREAKING CURRENT FOR LEAK

Toshio Kakuta, Higashiosaka; Hiroyuki Nagano, Kadoma, and Masaru Imamura, Osaka, all of Japan, assignors to Hosiden Corporation, Osaka, Japan

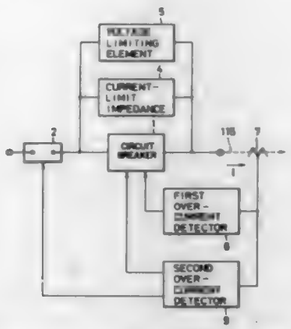
Filed Feb. 19, 1992, Ser. No. 836,899
Claims priority, application Japan, Mar. 4, 1991, 3-019126[U]
Int. Cl.[5] H02H *3/16*
U.S. Cl. 361—45 2 Claims



1. An electrical connector for the instantaneous breaking of a current in response to the detection of a leak, comprising:
a current supply cord for connecting a load to a source;
a pair of plug blades connectable electrically with the current supply cord and projected out of a connector body;
a sensor mounted in the connector body for detecting a current leak;
a breaker device for breaking the connection between the plug blades and the current supply cord in response to a detection by the leak detection sensor;
said breaker device including a pair of movable strips each having a portion thereof fixed to the connector body and a free end, a pair of stationary strips connected to the plug blades, a holder attached to the free ends of the movable strips, a lifter for pulling the holder such that the movable strips are contractual with the stationary strips in resistance to a spring action, a solenoid for being excited in response to a detection by the leak detection sensor, a reset switch pivotally connected to the lifter with the lifter pivoting around a pivot point provided on said reset switch, a plunger having a head which is engageable with the lifter for disengaging an engagement between the lifter and the holder by pivoting the lifter in response to excitement of the solenoid, a spring for biasing the reset switch such that the movable strips tend to contact the stationary strips, a nail of the lifter being engageable with an engaging mate portion of the holder by pushing the reset switch.

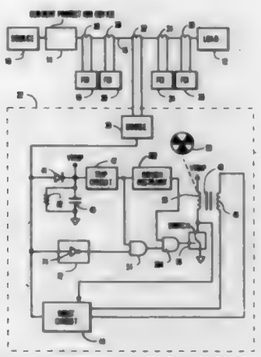
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,174
METHOD OF AND DEVICE FOR PROTECTING ELECTRICAL POWER SYSTEM
Masao Morita, Aichi; Toshiaki Ueda, Nagoya; Yukio Kurosawa, Hitachi; Hiroshi Arita, Mito, and Tokio Yamagiwa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Chubu Electric Power Co., Ltd., Nagoya, both of Japan
Filed Sep. 3, 1991, Ser. No. 753,945
Claims priority, application Japan, Sep. 3, 1990, 2-232709
Int. Cl.[5] H02H 3/08
U.S. Cl. 361—63 24 Claims



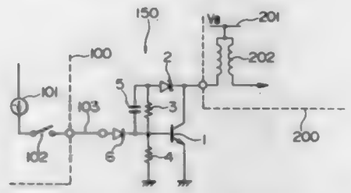
1. A method of protecting a power system having a plurality of power lines, comprising: commutating, when a fault current is detected in a power line, the current in said power line from a normal circuit of said power line to a current limiting circuit, thereby limiting said current, to a level which is higher than a minimum level of an operation current required for operating a momentary element of an over-current relay which activates a protection equipment of a downstream sub-system connected to said power line.

5,305,175
FAULTED CURRENT INDICATOR WITH PROTECTION AGAINST TEMPORARY OVERLOADS AND TRANSIENTS
Thomas Yeh, South Weymouth, Mass., assignor to Pacific Scientific Company, Weymouth, Mass.
Continuation of Ser. No. 438,631, Nov. 17, 1989, Pat. No. 5,136,456. This application Jun. 8, 1992, Ser. No. 894,806
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] H02H 9/02
U.S. Cl. 361—63 6 Claims



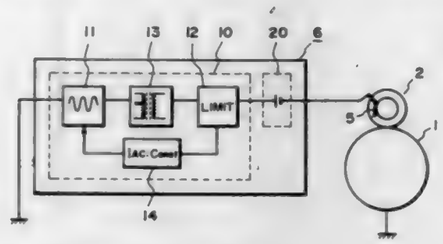
1. A faulted current indicator, comprising:
distinguishing means for distinguishing between a first condition in which an electrical current in a cable drops below a first value within a given time after reaching a second value, and a second condition in which the current in the cable fails to drop below the first value within the given time, and
trip signal means responsive to said distinguishing means for producing trip signals only in response to the first condition and disabling the trip signals at all other times.

5,305,176
INDUCTIVE LOAD DRIVE CIRCUIT
Yoshihiro Hirota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 9, 1991, Ser. No. 774,720
Claims priority, application Japan, Oct. 12, 1990, 2-274789
Int. Cl.[5] F02P 3/00
U.S. Cl. 361—205 3 Claims



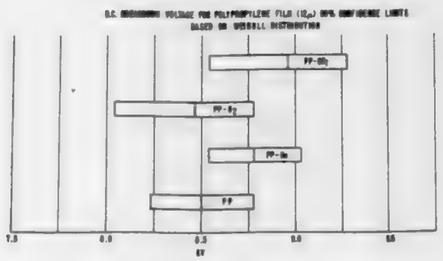
1. An inductive load drive circuit including a transistor having a collector and emitter current path interposed between and inductive load and a constant current source;
a feed back circuit including a Zener diode and a resistor which are in series connected with each other, said feed back circuit being connected between the collector and the base of said transistor; and speed-up capacitor connected in parallel with the resistor, said speed-up capacitor being in series connected with a base-emitter of said transistor so as to enable said transistor to suppress overvoltage in said collector when a high voltage is generated across said inductive load.

5,305,177
CHARGING DEVICE AND IMAGE FORMING APPARATUS
Fumitaka Aoki, Tokyo; Yasushi Sato, Kawasaki; Norio Hashimoto, Tokyo; Tetsuo Saito, Sagamihara; Hirokazu Ikenoue, Inagi; Kenji Nagata, Tachikawa, and Toshihiko Yamanaka, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 1, 1991, Ser. No. 786,557
Claims priority, application Japan, Nov. 2, 1990, 2-298418
Int. Cl.[5] G03G 15/00
U.S. Cl. 361—225 19 Claims



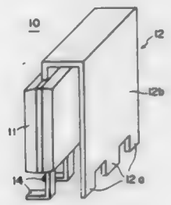
1. A charging device, comprising:
a charging member contactable to a member to be charged;
voltage application means for applying a voltage between said charging member and the member to be charged, said voltage having an oscillating component;
control means for causing the oscillating component to be at a predetermined level; and
limiting means for limiting the voltage within a predetermined amplitude.

5,305,178
CAPACITOR WITH INCREASED ELECTRICAL BREAKDOWN STRENGTH AND METHOD OF FORMING THE SAME
Michael Binder, Brooklyn, N.Y.; Robert J. Mammone, South Plainfield, and Bernard Lavene, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 743,660, Aug. 12, 1991, abandoned, and Ser. No. 829,194, Feb. 3, 1992, abandoned. This application Aug. 18, 1992, Ser. No. 931,618
Int. Cl.[5] H01G 4/08, 7/00
U.S. Cl. 361—323 33 Claims



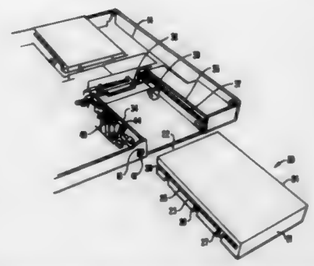
1. A method of producing a capacitor with increased dielectric breakdown strength, comprising the steps of:
providing a nonconductive dielectric;
providing a metal film;
exposing at least one of the nonconductive dielectric and the metal film to a gas plasma; and
placing the nonconductive dielectric and the metal film together to form the capacitor;
wherein at least one of the nonconductive dielectric and the metal film are exposed to said gas plasma for a time period effective to increase dielectric breakdown strength of said capacitor.

5,305,179
SURFACE-MOUNTING TYPE SEMICONDUCTOR PACKAGE HAVING AN IMPROVED EFFICIENCY FOR HEAT DISSIPATION
Michio Sono; Junichi Kasai; Kouji Saito; Kazuhiko Mitobe, and Masanori Yoshimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 16, 1992, Ser. No. 899,270
Claims priority, application Japan, Jun. 17, 1991, 3-144895; Jul. 17, 1991, 3-176821; Oct. 2, 1991, 3-255414
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—718 16 Claims



1. A semiconductor device comprising:
first and second semiconductor chips that are separate from each other;
a first resin package body accommodating said first semiconductor chip, said first resin package body having a lower edge;
a second resin package body accommodating said second semiconductor chip, said second resin package body having a lower edge;
a first group of interconnection leads provided on said first package body and projecting outwardly from said first package body at said lower edge thereof, said first group of interconnection leads including a plurality of leads each having an inner lead part held inside the first package body and connected electrically to said first semiconductor chip, and an outer lead part located outside and said first resin package body for engagement with a substrate;
a second group of interconnection leads provided on said second package body and projecting outwardly from said second package body at said lower edge thereof, said second group of interconnection leads including a plurality of leads each having an inner lead part held inside the second resin package body and connected electrically to said second semiconductor chip, and an outer lead part located outside the package body for engagement with said substrate; and
a heat dissipation lead connecting said first resin package body and said second resin package body with each other, said heat dissipation lead comprising a first stage part embedded within said first resin package body and holding said first semiconductor chip thereon, a second stage part embedded within said second resin package body and holding said second semiconductor chip thereon, and a heat sink part located outside said first and second resin package bodies bridging said first stage part and said second stage part;
each lead forming said first group of interconnection leads having said outer lead part at a level substantially flush with each said outer lead part of said second group of interconnection leads such that said semiconductor device is held upright on the substrate by said outer lead parts of said first and second group interconnection leads.

5,305,180
DISK DRIVE EJECTOR MECHANISM WITH LATCH AND EJECTOR AND STANDBY SWITCH
Dennis R. Mitchell, San Jose, and Steve D. Friend, Cupertino, both of Calif., assignors to GRiD Systems Corporation, Fremont, Calif.
Filed Jun. 6, 1991, Ser. No. 711,523
Int. Cl.[5] H05K 7/14; H01R 13/639; G06F 1/00
U.S. Cl. 361—685 20 Claims



1. In a portable computer having a housing, a removable disk drive receiver comprising:
guide means in the housing for supporting a removable disk drive;
latch means in the housing adjacent the guide means and engageable by a removable disk drive for retaining a

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removable disk drive after insertion of the drive into the guide means;

control means in the housing adjacent the latch means and engageable therewith for retracting said latch means to enable removal of the disk drive from the guide means; and

switch means coupled to said latch means for generating a standby signal in response to movement of the latch means caused by the insertion of a removable disk drive into the guide means or the retraction of the latch means by the control means so that the portable computer can assume a standby mode in response to the standby signal.

5,305,181

ARM OR WRIST MOUNTED TERMINAL WITH A FLEXIBLE HOUSING

Darald R. Schultz, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 364,902, Jun. 8, 1989, abandoned, and a continuation-in-part of Ser. No. 812,767, Dec. 23, 1991, abandoned, and a continuation-in-part of Ser. No. 364,594, Jun. 7, 1989, abandoned, and a continuation-in-part of Ser. No. 364,904, May 15, 1989, abandoned, and a continuation-in-part of Ser. No. 674,756, Mar. 25, 1991, abandoned, and a continuation-in-part of Ser. No. 660,615, Feb. 25, 1991, Pat. No. 5,218,187, and a continuation-in-part of Ser. No. 816,705, Jan. 2, 1992, abandoned. This application Apr. 23, 1992, Ser. No. 872,717

Int. Cl.[5] G06F *1/16*

U.S. Cl. 361—680 **6 Claims**



1. Apparatus comprising:

a flexible housing means for conforming to the shape of a users body part to which it is to be attached, said housing having a top side and a bottom side;

terminal means operably attached to said flexible housing means for receiving and storing information;

key means operably attached to said flexible housing whereby flexing of said housing will move some of said key means with respect to other parts of said key means;

display means operatively attached to the top side of said flexible housing means and extending above said top side for displaying information from said terminal means; and

means for operatively attaching said flexible housing means to a user's wrist or arm whereby said flexible housing means will be held wrapped at least partially around the user's wrist or arm.

5,305,182

READ/WRITE UNIT FOR TWO INTEGRATED CIRCUIT CARDS

Teng-Ka Chen, No. 302, Chang-Hsing Road, Pa-Teh Hsiang Tao-Yuan Hsien, Taiwan

Filed Oct. 14, 1992, Ser. No. 960,804

Int. Cl.[5] H05K *7/10*

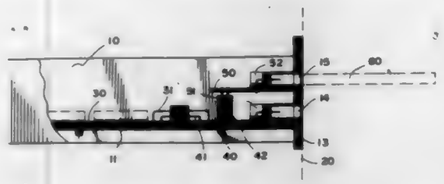
U.S. Cl. 361—684 **6 Claims**

1. An integrated circuit read/write unit comprising:

(a) a housing installed in a main body of a computer, said housing being formed at a covering panel thereof with a first aperture and a second aperture both for receiving integrated circuit cards;

(b) a main board having two end sides, one of which is closer than the other to said first and second apertures, said main board being situated in said housing and having a first connecting means at said end side of the main board which is closer to said first and second apertures;

(c) a first secondary board situated in said housing and having a second connecting means at an end side thereof, a third connecting means in a position adjacent to said second connecting means, and a first seat aligned with said first aperture of said housing at an external end side thereof for receiving a first integrated circuit card; and



(d) a second secondary board situated in said housing a certain distance from a base panel of said housing and having a fourth connecting means at an end side thereof, and a second seat aligned with said second aperture of said housing at an external end side thereof for receiving a second integrated circuit card, wherein said first and second connecting means are for electrically connecting circuits on said main board with circuits on said first secondary board, and said third and fourth connecting means are for electrically connecting circuits on said first secondary board with circuits on said second secondary board.

5,305,183

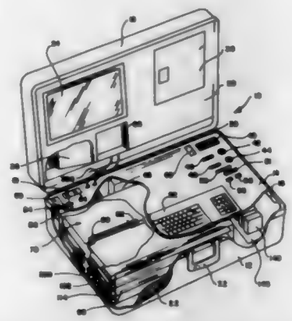
PORTABLE PERSONAL COMPUTER WITH PASSIVE BACKPLANE HAVING A DOUBLESIDED STAGGERED CONNECTOR ARRAY

Richard R. Teynor, Pickerington, Ohio, assignor to Edison Welding Institute, Columbus, Ohio

Filed Jul. 9, 1991, Ser. No. 727,823

Int. Cl.[5] H05K *7/10, 7/16*

U.S. Cl. 361—686 **30 Claims**



1. A portable, personal computer system comprising:

a. a portable, carry-on luggage case comprising;

1) a base section;

2) a lid section;

3) means for joining said base section and said lid section to form said portable case and to allow easy access to computer components mounted therein;

4) means attached to said portable case for carrying said case;

b. operator input means mounted in said portable case;

c. operator output means mounted in said portable case;

d. a passive backplane mounted in said case and having a first side and a second side;

e. a plurality of backplane connectors alternatingly mounted on said first side and said second side of said backplane in a staggered array one to the next;

f. circuit means for connecting said backplane connectors to each other;

g. a plurality of circuit boards each having connection means at one edge thereof adapted to and engaged in said backplane connectors so that said circuit boards are perpendicular to said backplane and parallel to each other.

h. means for mounting said backplane in said portable case and means for supporting said circuit boards;

i. a programmable, digital computer contained in said portable case, said computer comprising:

1) a central processing unit mounted on at least one of said circuit boards;

2) connection means for linking said operator input means to said central processing unit;

3) connection means for sensor input means connected to said central processing unit;

4) connection means for linking said operator output means to said central processing unit;

5) media storage means including random access memory connected to said central processing unit; and

6) program means for programming said central processing unit;

j. means for connecting said computer to a power source; and

k. means for cooling said computer contained in said portable case.

5,305,184

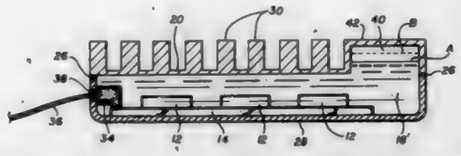
METHOD AND APPARATUS FOR IMMERSION COOLING OR AN ELECTRONIC BOARD

Rolf Andresen; Robert J. Bellar; Sung J. Kim, and Alan L. Murphy, all of Tucson, Ariz., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 16, 1992, Ser. No. 992,287

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—699 **7 Claims**



1. Liquid heat sink apparatus for cooling electronic components mounted on a printed circuit board, comprising:

(a) a cold plate mounted opposite said electronic components and substantially parallel to said printed circuit board;

(b) means for containing a liquid coolant between said printed circuit board and said cold plate;

(c) said liquid coolant contained between said printed circuit board and said cold plate and in thermal contact with said printed circuit board said electronic components mounted thereon, and said cold plate,

wherein said cold plate is maintained a distance d from said electronic components sufficient to provide a Rayleigh number of at least 1700 in the equation

$$Ra = \frac{g\beta(T_2 - T_1)d^3}{\nu\alpha},$$

where g is the acceleration of gravity, β is the volumetric coefficient of expansion of said liquid coolant, T_1 is the temperature of said cold plate, T_2 is the temperature of the component to be cooled, ν is the kinematic viscosity of said liquid coolant, and α is the thermal diffusivity of said liquid coolant;

(d) means for maintaining said cold plate said distance d from said printed circuit board, comprising a sealed housing supporting said cold plate and surrounding said printed circuit board and attached thereto to thereby provide a sealed space for maintaining said liquid coolant herein; and

(e) said sealed housing including means for accommodating expansion of said liquid coolant during thermal cycling.

5,305,185

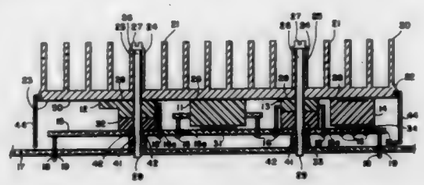
COPLANAR HEATSINK AND ELECTRONICS ASSEMBLY

Victor M. Samarov, 36 Russell St., Carlisle, Mass. 01741; Joseph A. DeCarolis, 117 West St., Lunenburg, Mass. 01462; Raoji Patel, 90 Flanagan Dr., Framingham, Mass. 01701; Gerald J. Piche, 54 Clark Rd., Milford, N.H. 03055; Glenn R. Skutt, 700 Burruss Dr., Blacksburg, Va. 24060, and Steve W. Norris, 541 Gov. Chittondon Rd., Williston, Vt. 05495

Filed Sep. 30, 1992, Ser. No. 954,548

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—704 **4 Claims**



1. An apparatus, for providing a coplanar heatsink and electronics assembly, comprising:

a substantially planar substrate;

heat generating components of different heights positioned on one side of said substrate, each of said components including a heat-removal surface on one side thereof;

at least one spacer positioned between said heat generating components and said substrate, each of said spacers dimensioned in relation to the height of its associated heat generating component such that said heat removal surfaces of said heat generating components are substantially coplanar with one another;

a heatsink having a substantially planar heat-acquiring surface on one side thereof, said heat-acquiring surface positioned on said heat-removal surfaces of said components; and

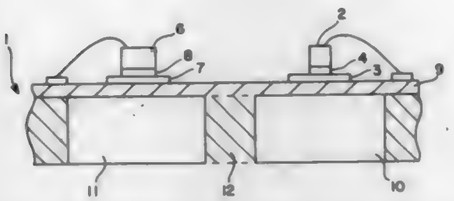
means for fastening said heatsink to said substrate to compress said spacers, thereby urging said heat-removal surfaces against said heat acquiring surfaces.

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5,305,186
POWER CARRIER WITH SELECTIVE THERMAL PERFORMANCE

Bernd K. Appelt, Apalachin; Irv Memis, Vestal; Richard A. Schumacher, Endicott, and John M. Lauffer, Waverly, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 27, 1993, Ser. No. 9,958
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—704 **16 Claims**



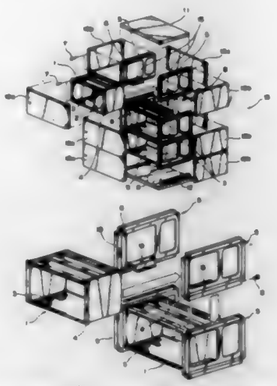
1. A microelectronic package comprising a single circuit carrier, a power chip for powering an active integrated circuit carried by said single circuit carrier, an active integrated circuit carried by said single circuit carrier, and thermal conduction means for carrying heat away from said microelectronic package which thermal conductive means comprises a first heat dissipation back plate means connected to said power chip and a second heat dissipation back plate means connected to said active integrated circuit, and wherein said first heat dissipation back plate means and said second heat dissipation back plate means are electrically isolated from each other by electrical isolation located therebetween, and wherein the heat dissipation capacity of said first heat dissipation back plate means differs from the heat dissipation capacity of said second heat dissipation back plate means so that the temperature of the power chip during operation is higher than the temperature of said active integrated circuit during operation.

5,305,187
BUILDING BOX TYPE PLUG-IN MODULAR RACK STRUCTURE FOR ELECTRONIC EQUIPMENT

Mitsuhiro Umezu, and Kazuo Ikeda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 47,704
Claims priority, application Japan, Apr. 15, 1992, 4-095125
Int. Cl.[5] H05K 1/14; H02B 1/01
U.S. Cl. 361—784 **3 Claims**

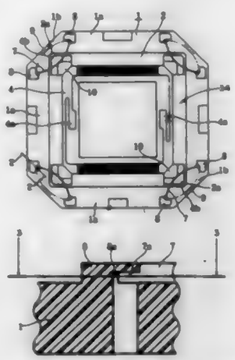
1. A building box type plug-in modular rack structure comprising:
- a box-like shelf for accommodating a plurality of printed circuit boards therein;
- a pair of side frames symmetrical in a right-and-left direction and each having a recess at an upper end and a projection at a lower end for respectively mating with a projection and a recess of adjoining side frames;
- a framework consisting of said pair of side frames and said shelf interposed between said pair of side frames; and
- covers covering outer periphery of said framework;
- wherein a plurality of said frameworks are stacked and connected together by said recesses and said projections of said side frames, a top cover and a bottom cover respectively being fitted on the top and the bottom of the stack of said plurality of frameworks.



5,305,188
ELECTRIC PART HOLDING DEVICE

Masaaki Kubo, Tokyo, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,706
Claims priority, application Japan, Oct. 23, 1991, 3-303996
Int. Cl.[5] H01R 23/68
U.S. Cl. 361—787 **6 Claims**

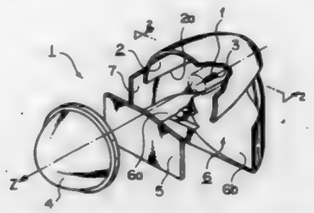


1. An electric part holding device for holding an electric part comprising:
- a base having a polygonal electric part means accommodation portion for receiving the electric part therein, said accommodation portion having at least two opposing angular corner portions; and
- a plurality of semi-elliptic springs, one mounted on said base at each opposing corner portion of said accommodation portion, each spring being resiliently movable between an outwardly convexly curved shape and an inwardly convexly curved shape, each spring in the outwardly convexly curved shape lying across an upper surface of said base at the corresponding corner portion for leaving said accommodation portion open for insertion and removal of the electric part, and in the inwardly convexly curved shape extending across said accommodation portion at the corresponding corner portions for being engaged with a corner of the electric part positioned in said accommodation portion.

5,305,189
PROJECTOR TYPE LIGHTING DEVICE

Tsuneo Sekiguchi, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1993, Ser. No. 75,034
Claims priority, application Japan, Jun. 12, 1992, 4-46817[U]
Int. Cl.[5] B60Q 1/04
U.S. Cl. 362—61 **4 Claims**



1. In a projector type lighting device for a vehicle including a reflective mirror having a revolving parabolic surface, a light source located at one focus of said reflective mirror, a shading plate for determining light distribution properties of said projector type lighting device, and a projecting lens located at the foremost end of said projector type lighting device, the improvement comprising;
- a cutout portion formed at the lower part of said reflective mirror corresponding to a part of the light beam reflected from said reflective mirror and shaded by said shading plate,
- a first reflective plane consisting of a lefthand reflective plane half and a right-hand reflective plane half and disposed below said reflective mirror, said left-hand reflective plane half extending in the leftward horizontal direction along a first cylindrical parabolic surface so as to allow a large part of the light beam emitted directly from said light source to converge in the vertical direction, and said right-hand reflective plane half extending in the rightward horizontal direction along a second cylindrical parabolic surface so as to allow a large part of the light beam emitted directly from said light source to likewise converge in the vertical direction, and
- a second reflective plane disposed behind said first reflective plane within the area range defined by a certain angle relative to the main irradiating direction of said projector, type lighting device based on said light distribution properties of said projector type lighting device and extending along a third cylindrical parabolic surface with a vertical attitude at a right angle relative to said first reflective plane while surrounding said first reflective plane so as to allow a large part of the light beam reflected from said first reflective plane to be reflected again at said second reflective plane to converge in the horizontal direction.

5,305,190
LIGHTING DEVICE FOR WINDSHIELD WIPER ARMS

George W. Clement, 1408 Rosebank, Nashville, Tenn. 37216

Filed Jun. 19, 1991, Ser. No. 717,362
Int. Cl.[5] B60Q 1/26
U.S. Cl. 362—83.3 **6 Claims**

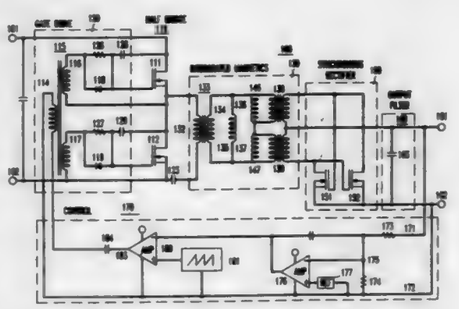
1. A system for lighting a windshield wiper having an arm comprising:
- a. an electro-luminescent lamp strip;
- b. means for attaching said electro-luminescent lamp strip to said arm; and
- c. wherein said means for attaching said electro-luminescent lamp strip to said arm comprises a strap partially encircling said windshield wiper arm; and a removable housing placed on said windshield wiper arm.



5,305,191
DRIVE CIRCUIT FOR ZERO-VOLTAGE SWITCHING POWER CONVERTER WITH CONTROLLED POWER SWITCH TURN-ON

Thomas P. Loftus, Jr., Garland, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 20, 1992, Ser. No. 871,370
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—17 **5 Claims**



1. A DC-DC power converter comprising:
A power switching stage,
an input for coupling a DC voltage to the power switching stage
a power transformer having a primary and secondary winding;
An FET power switch for coupling the input to the primary winding;
a drive circuit for the FET power switch including:
a drain, a source and a gate electrode;
a drain-source parasitic capacitance;
a circuit arrangement utilizing feedback of the current output of the discharging drain source parasitic capacitance to generate a voltage drop across a resistor connected to the gate electrode to clamp the gate electrode below a turn-on voltage of the FET power switch.

5,305,192
SWITCHING REGULATOR CIRCUIT USING MAGNETIC FLUX-SENSING

Anthony K. Boate, Campbell, and Carl T. Nelson, San Jose, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Filed Nov. 1, 1991, Ser. No. 786,718
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—21 **16 Claims**

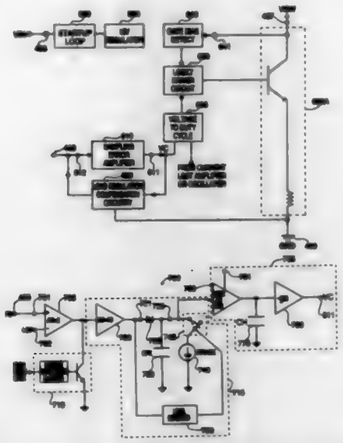
1. A circuit for use in a switching voltage regulator circuit, the switching voltage regulator circuit having a switching element, control circuitry which turns the switching element on and off, a transformer-coupled output circuit, and a feedback circuit for providing a magnetic flux-sensed feedback

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signal indicative of the switching voltage regulator circuit output voltage, the circuit comprising:

a feedback terminal for accepting the magnetic flux-sensed feedback signal;

means connected to the feedback terminal for generating a tracking voltage which tracks an amplified representation of the difference between the voltage waveform on the



feedback terminal and an internal reference signal during a portion of each off cycle of the switching element, and for sampling and storing an instantaneous value of the tracking voltage responsive to a transition in the magnetic flux-sensed feedback signal; and

means for varying the on and off cycle of the switching element as a function of the magnitude of the stored instantaneous value of the tracking voltage.

5,305,193

ADAPTIVE APPARATUS

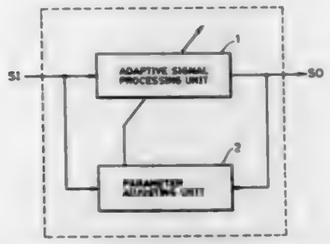
Shinji Shinnaka, Yokohama; Mikio Sato, and Masahiro Morisada, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1990, Ser. No. 469,375

Claims priority, application Japan, Jan. 25, 1989, 1-16552; Jan. 25, 1989, 1-16553

Int. Cl.[5] G05B *13/02;* **G06F** *15/46*

U.S. Cl. 364—151 **10 Claims**



1. An adaptive apparatus for processing a signal on the basis of a system parameter adjusted in an adaptive manner, comprising:

adaptive processing means for performing an adaptive processing of an input signal from a system and controlling the system by outputting an output signal obtained through the adaptive processing to the system;

first input means for inputting both the input and the output signals of said adaptive processing means

first signal generating means for generating a first signal in a form of a vector from the input signal and the output signal;

second signal generating means for generating a second signal in a form of a scaler from the input signal and the output signal;

deriving means for deriving an error signal from the first signal, the second signal, and a preceding value of the system parameter;

second input means for inputting a third signal in a form of a scaler;

gain input means for inputting a first gain in a form of a scaler function employing time as a variable;

gain generating means for generating a second gain, in a form of a matrix function employing time as a variable, from the first signal, the third signal, the first gain and a feedback output of the gain generating means;

adjustment means for estimating the system parameter by integrating a product of the first gain, the second gain, the first signal and the error signal, and adjusting the system parameter to the estimate thereof; and

outputting means for outputting the adjusted system parameter to the adaptive processing means, the adaptive processing means performing the adaptive processing in response to the adjusted system parameter received from the outputting means.

5,305,194

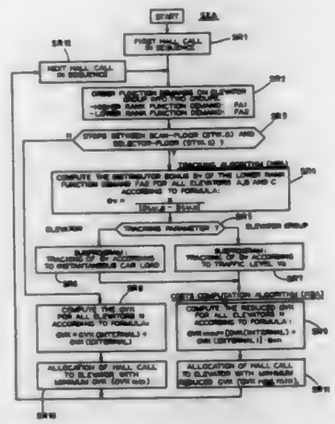
METHOD AND APPARATUS FOR PREVENTING LOCAL BUNCHING OF CARS IN AN ELEVATOR GROUP WITH VARIABLE TRAFFIC FLOW

Robert MacDonald, West Caldwell, N.J., assignor to Inventio AG, Hergiswil, Switzerland

Filed Apr. 10, 1991, Ser. No. 683,348

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—400 **9 Claims**



1. A method for preventing local bunching of elevator cars in an elevator group with variable traffic flow level in which functioning of the elevator group is optimized by a suitable allocation of hall calls to the elevator cars which can serve the hall calls with regard to a function profile defined by a desired combination and weighting of elements from a predetermined set of function requirements (FA1, FA2, ...) and in which the suitable allocation of the hall calls is determined and executed by an allocation algorithm (SZA) based on an allocation criterion (ZTK) with regard to an allocation parameter (ZTP) modifying bonuses (B) and penalties (M) according to a special

strategy, wherein a first function requirement (FA1) is introduced into the allocation algorithm (SZA) through the allocation criterion (ZTK) with regard to an allocation parameter (ZTP) and at least a second function requirement (FA2) is also taken into consideration through modification of the allocation parameter (ZTP) by one of a bonus (B) for promotion of a corresponding function feature and a penalty (M) for inhibition of a corresponding complementary function feature and wherein the second function requirement (FA2) consists of keeping the local bunching of cars small and is assured through allocation of neighboring stops to a single car by a distributor bonus (BV), comprising the steps of:

a. determining a plurality of function requirements (FA1, FA2, ...) which define a method of operation of an elevator group for allocation of registered hall calls to elevator cars of the elevator group;

b. responding to a registered hall call by ordering said function requirements hierarchically and dividing said function requirements into at least two groups, higher ranking function requirements and lower ranking function requirements;

c. defining hall calls as one of said higher ranking function requirements for serving the registered hall calls with minimum estimated lost time costs (GVKmin) regarding all of the elevator cars, wherein said estimated lost time costs (GVK) of each individual one of the elevator cars serve as an allocation parameter (ZTP) and an allocation criterion (ZTK) minimizes the estimated lost time costs (GVK) associated with serving the registered hall calls;

d. defining as one of said lower ranking function requirements minimizing local bunching of the elevator cars and allocating closely neighboring ones of the registered hall calls to one of the elevator cars by providing a distributor bonus (Bv) which reduces the estimated lost time costs in an allocation algorithm (SZA);

e. readjusting said distributor bonus (Bv) as a variable distributor bonus (Bvn) for minimizing the local bunching of the elevator cars to follow a traffic flow level of the elevator group;

f. utilizing the variable distributor bonus (Bvn) as one of a subtrahend and a multiplier on the estimated lost time costs to reduce the estimated lost time costs subtractively and multiplicatively respectively; and

g. controlling the elevator car having the lowest estimated lost time costs to travel to and stop at a floor associated with the selected registered hall call.

5,305,195

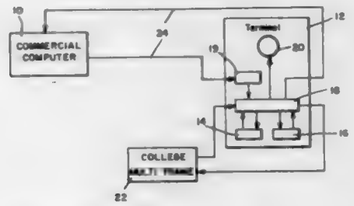
INTERACTIVE ADVERTISING SYSTEM FOR ON-LINE TERMINALS

Arthur J. Murphy, Northridge, Calif., assignor to Gerald Singer, Torrance, Calif., a part interest

Filed Mar. 25, 1992, Ser. No. 856,250

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **24 Claims**



1. A system for inputting and accessing information comprising:

a terminal comprising in part a video display unit for storing and displaying full motion video sequences;

means remote to said terminal for imputting changeable full motion video sequences of advertising information to said video display for storage and display at the terminal;

said terminal connected to other on-line services;

means for selecting desired information offered by said on-line services at the terminal;

printing means for printing the information selected at the terminal on a hard copy in man readable form,

means responsive to a delay in displaying the desired information at said terminal for generating an interrupt signal, and

means for controlling the display of said stored full motion video sequences of advertising information at said terminal with said interrupt signal.

5,305,196

CHECK TRANSACTION PROCESSING, DATABASE BUILDING AND MARKETING METHOD AND SYSTEM UTILIZING AUTOMATIC CHECK READING

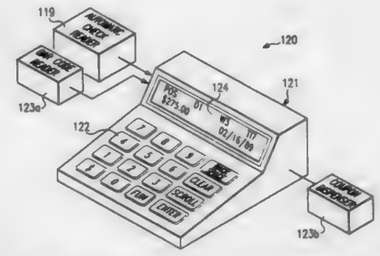
David W. Deaton, and Rodney G. Gabriel, both of Abilene, Tex., assignors to Credit Verification Corporation, Abilene, Tex.

Continuation-in-part of Ser. No. 826,255, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 345,475, May 1, 1989, abandoned. This application May 19, 1992, Ser. No. 886,382

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—401 **29 Claims**



1. A method for building a database for use in a retail store marketing program comprising:

scanning a customer's check which has been received at the retail store to detect a checking account identification number, said checking account identification number providing a unique customer identification code to distinguish between a plurality of customers using a plurality of different banking institutions;

transmitting said detected unique customer identification code to a data processor which includes a stored database of unique customer identification codes;

comparing said unique customer identification code against said stored database;

detecting the occurrence of a match between information in said stored database and said detected unique customer identification code;

when a match occurs, determining if predetermined identification criteria related to said detected unique customer identification code is in said stored database;

if said predetermined identification criteria is found in said stored database, transmitting a signal from said data processor to the location of said check scanning to indicate that the customer record is complete and that no further data is required;

if said predetermined identification criteria is not found in said stored database, transmitting a signal to the location of said check scanning to indicate that insufficient identification criteria exists such that steps may be initiated to input required additional identification criteria into said database, and;

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entering said additional identification criteria into said database for storage in conjunction with said unique customer identification code.

5,305,197

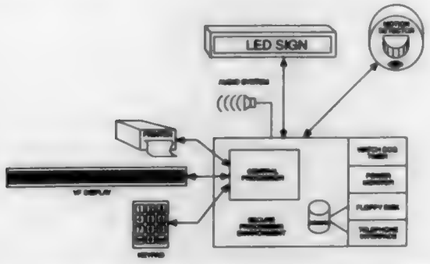
COUPON DISPENSING MACHINE WITH FEEDBACK

Mark W. Axler, Troy; Anthony L. Nansour, Clawson, and Donald J. Zink, Berkley, all of Mich., assignors to IE&E Industries, Inc., Ferndale, Mich.

Filed Oct. 30, 1992, Ser. No. 969,022

Int. Cl.[5] **G06F** *15/22, 15/24;* **G06G** *7/52, 7/48;* **G07G** *1/12*

U.S. Cl. 364—401 **20 Claims**



1. A system for printing consumer selected items comprising:

a central computer, a keyboard, a printer, a display of various items to be selected by a consumer, a sensor interfaced with said computer to sense the presence of a consumer in the vicinity of said system, and a consumer attractant system;

said computer interfaced to receive inputs from said keyboard, and causing particular consumer items to be printed by said printer in response to said keyboard signal, said keyboard being keyed to correspond to various items displayed on said display, said sensor sensing the presence of consumers in the immediate vicinity of said system, and said computer receiving signals from said sensor and controlling said consumer attractant system in response to said sensed presence of consumers in the immediate vicinity.

5,305,198

METHOD AND APPARATUS FOR THE IMMEDIATE ALLOCATION OF TARGET CALLS IN ELEVATOR GROUPS BASED UPON OPERATING COSTS AND VARIABLE BONUS AND PENALTY POINT FACTORS

Joris Schroder, Luzern, and Paul Friedli, Remetschwil, both of Switzerland, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Feb. 20, 1991, Ser. No. 659,022

Claims priority, application Switzerland, Feb. 22, 1990, 00570/90

Int. Cl.[5] **G05B** *13/00;* **B66B** *1/24*

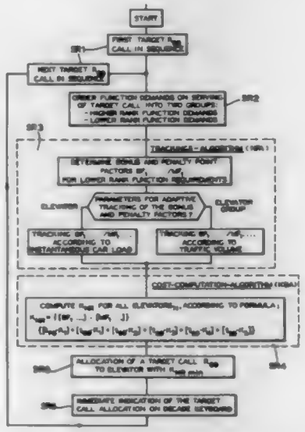
U.S. Cl. 364—402 **13 Claims**

1. A computer implemented method for immediately allocating target calls to elevator cars in an elevator group, the elevator group including an elevator control responsive to an entry of a target call for allocating the target call immediately after entry to an individual elevator car of the elevator group by calculating operating costs ($K_{N/R}$) associated with each elevator car of the elevator group from elevator related operating parameter data for each elevator car and the target call, the operating costs being formed as a multipart operating cost sum of partial operating costs (K_1 to K_n), the operating costs associated with all the elevator cars being compared one with the other and the target call being immediately allocated to the elevator car having a smallest sum of the associated operating costs, the method comprising the steps of:

a. determining a plurality of function demands which define a method of operation of an elevator group for allocation of a target call to one elevator car of the elevator group and storing a first plurality of bonus point factor values ($BF_1 \ldots$) and a second plurality of penalty point factor values ($MF_1 \ldots$) in a memory, each said value being related to a corresponding operating parameter data for an elevator car in the elevator group, each said bonus point factor value being within a range between a minimum value BF_{min} and "1" wherein $0 < BF_{min} < 1$ and each said penalty point factor value being within a range between a maximum value MF_{max} and "1" wherein $MF_{max} > 1$;

b. responding to entry of a target call for the elevator group by ordering said function demands into at least two groups, higher ranking function demands and lower ranking function demands;

c. representing said higher ranking function demands by corresponding partial operating costs (K_1 to K_n) and said lower ranking function demands by corresponding ones of



said bonus point factors ($BF_1 \ldots$) and said penalty point factors ($MF_1 \ldots$) according to the corresponding operating parameter data for each elevator car in the elevator group;

d. reading from the memory and applying said bonus point factor values ($BF_1 \ldots$) and said penalty point factor values ($MF_1 \ldots$) as multipliers to at least one of said partial operating costs (K_1 to K_n) and calculating a multipart sum of said partial operating costs and said multipliers representing an operating cost sum for each of the elevator cars;

e. comparing said operating cost sums for the elevator cars to one another and immediately allocating said target call to the elevator car having the lowest one of said operating cost sums; and

f. controlling the elevator car having the lowest one of said operating cost sums to travel to and stop at a floor associated with said target call.

5,305,199

CONSUMABLE SUPPLIES MONITORING/ORDERING SYSTEM FOR REPROGRAPHIC EQUIPMENT

Martin F. LoBiondo, Penfield, N.Y., and Paul A. Baiter, Huntsville, Ala., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1992, Ser. No. 967,475

Int. Cl.[5] **G06F** *15/00*

U.S. Cl. 364—403 **11 Claims**

1. A consumable supplies monitoring, locating and ordering system comprising:

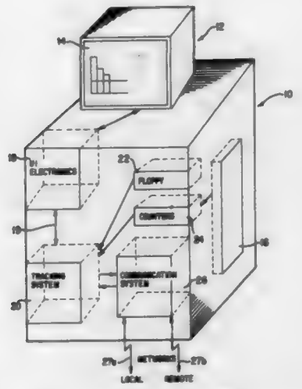
a plurality of reprographic machines arranged in a network;

an inventory tracking system in communication with the network of reprographic machines for tracking an inventory of at least one consumable material consumed by said plurality of reprographic machines;

a plurality of usage means, one usage means being disposed in each of the reprographic machines for determining usage information relating to the at least one consumable material;

means for supplying said usage information from each of the usage means to the inventory tracking system;

the inventory tracking system including a determining means for determining a projected reordering point for the at least one consumable material based on the usage information from the plurality of usage means and determining a customized inventory threshold for each of the plurality of reprographic machines to accommodate differences in the usage information generated by each of the plurality of usage means;



a user interface associated with at least one of said reprographic machines;

means for displaying information from the inventory tracking system on the user interface when at least one of the projected reordering point and customized inventory threshold for the at least one consumable material being tracked is reached, or in response to operator commands; and

means for ordering a resupply of the at least one consumable material when at least one of the projected reordering point and customized inventory threshold is reached.

5,305,200

FINANCIAL EXCHANGE SYSTEM HAVING AUTOMATED RECOVERY/ROLLBACK OF UNACKNOWLEDGED ORDERS

Richard Hartheimer, Morris Plains, N.J.; Michael Coleman, Sydney, Australia; Chris Klepka, Parsippany, N.J., and Geoffrey Poole, Sydney, Australia, assignors to Foreign Exchange Transaction Services, Inc., Long Island City, N.Y.

Filed Nov. 2, 1990, Ser. No. 608,643

Int. Cl.[5] **G06F** *15/21;* **G07G** *1/12*

U.S. Cl. 364—408 **11 Claims**

1. In an on-line automated trading system for facilitating a negotiated transaction between a maker and a taker, wherein a completed transaction includes an offer, an acceptance, and a confirmation that the acceptance was received before the offer was withdrawn:

a communication network comprising:

a maker node,

a taker node, and

a communications link connecting the maker node with the taker node;

a maker workstation connected to said maker node;

a taker workstation connected to said taker node;

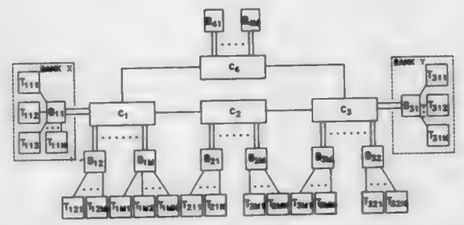
offer means for transmitting an offer message from the maker workstation to the taker workstation via the communications network;

offer interruption means for transmitting an interrupt message from the maker workstation to the taker workstation indicating that a previously transmitted offer message is no longer valid;

acceptance means for transmitting an acceptance message from the taker workstation to the maker workstation via the communications network;

confirmation means for transmitting a confirmation message from the maker workstation to the taker workstation via the communications network indicating that a corresponding acceptance message was received at the maker workstation prior to any offer interrupt message being transmitted from the maker workstation;

first electronic storage means connected to said taker node for storing an electronic transaction log of all said acceptance messages prior to transmission to the maker workstation, and of any corresponding said interrupt or confirmation messages after they are received by the taker workstation;



second electronic storage means connected to said maker node for storing an electronic transaction log of any said confirmation messages prior to transmission to the taker workstation;

taker transaction log monitoring means for automatically monitoring the first electronic storage means and identifying any doubtful transaction log entry for which no corresponding confirmation or interrupt message has been logged in the first electronic storage means within a predetermined interval of time following the logging of an acceptance message; and

recovery means responsive to the taker transaction log monitoring means for automatically attempting to access the second electronic storage means and for updating the doubtful transaction log entry in the first electronic storage means to reflect receipt of a confirmation message if a corresponding confirmation message has been logged in the second electronic storage means.

5,305,201

IMPROVED SYSTEM FOR MONITORING PLAY OF A GOLFER

Gordon Matthews, 100 Westlake Dr., Austin, Tex. 78746

Continuation-in-part of Ser. No. 464,897, Jan. 16, 1990, Pat. No. 5,097,416. This application Jan. 24, 1992, Ser. No. 825,519

Int. Cl.[5] **G06F** *15/28;* **G08B** *23/00;* **A63B** *67/02*

U.S. Cl. 364—410 **39 Claims**

1. A system for monitoring a golfer's play within a golf course, comprising:

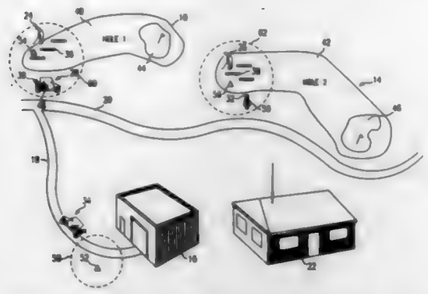
a mobile transmitter carried in association with the golfer for transmitting an identification signal associated therewith;

a plurality of location receivers each proximate to a corresponding golf hole within said golf course and each operable to receive said identification signal in response to the golfer being proximate to said corresponding golf hole;

a plurality of location transmitters each operable to transmit

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a play monitoring signal in response to a polling signal, said play monitoring signal indicating whether the golfer is proximate to said corresponding golf hole during a time period in response to a number of times an associated one of said location receivers receives said identification signal during said time period; and



means for determining whether the golfer plays one of said corresponding golf holes within a predetermined length of time in response to said play monitoring signals transmitted from said location transmitters.

5,305,202

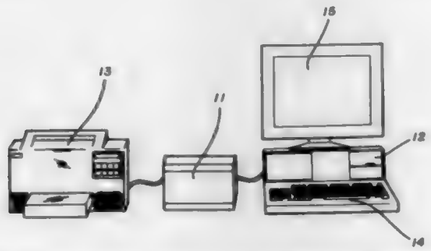
AMBULATORY ECG ANALYSIS SYSTEM

Stuart L. Gallant, Owings Mills; Paul R. Caron, Laurel; Walter E. Palmer, Catonsville, all of Md., and David J. Lubocki, Bellevue, Wash., assignors to Quinton Instrument Company, Seattle, Wash.

Filed Nov. 12, 1991, Ser. No. 790,045

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.06 **23 Claims**



1. An ambulatory ECG monitoring system comprising:

playback means for downloading ECG data from a data storage medium, said playback means including an analog circuit board means, a digital circuit board means including a microprocessor, and a data storage medium interface means, said analog circuit board means, said digital circuit board means and said data storage medium interface means being operatively associated with each other and positioned in structurally cooperative relationship with each other within said playback means.

processor means for analysis, manipulation, and editing of data received from said playback means, and

playback/processor linking means for linking said playback means and said processor means for transfer of information between said playback means and said processor means,

whereby said digital circuit board means said analog circuit board means are electrically isolated from each other to prevent operation of said digital circuit board means from causing electrical interface with data manipulation operations of said analog circuit board means.

5,305,203

COMPUTER-AIDED SURGERY APPARATUS

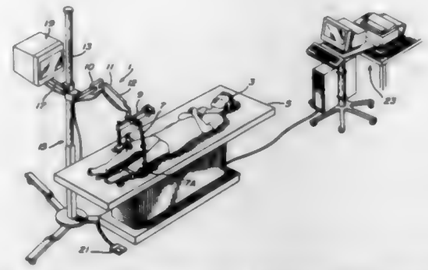
Simon Raab, Lorraine, Canada, assignor to Faro Medical Technologies Inc., Lake Mary, Fla.

Division of Ser. No. 230,588, Aug. 10, 1988, abandoned. This application Oct. 2, 1990, Ser. No. 593,469

Claims priority, application Canada, Feb. 1, 1988, 557814

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.13 **10 Claims**



1. A method for aiding a medical practitioner in positioning and orienting a surgical instrument or implant, which surgical instrument or implant is manipulated by said medical practitioner while performing medical procedures on a portion of a patient, the position and orientation of said instrument or implant being determined in a three-dimensional co-ordinate system relative to a reference point and the position and orientation of said portion being determined in said three-dimensional co-ordinate system relative to said reference point, said reference point being disposed outside of and apart from said patient:

comprising:

continuously electronically sensing, or determining by 2- or 3-dimensional imaging techniques, the position and orientation of said portion in said three-dimensional co-ordinate system to obtain three-dimensional target data of the position and orientation of said portion in said three-dimensional co-ordinate system relative to said reference point;

converting said target to target signals for presenting the position and orientation of said portion on a display means;

providing said target signals to a display device whereby a target display of the position and orientation of said portion is presented on said display device;

continuously electronically sensing the position and orientation of said surgical instrument or implant in said three-dimensional co-ordinate system to obtain three-dimensional instrument data of the position and orientation of said instrument or implement in said three-dimensional co-ordinate system relative to said reference point;

means for converting said instrument data to instrument signals for presenting the position and orientation of said instrument or implant on said display means;

providing said instrument signals to said display device whereby an instrument display of the position and orientation of said instrument or implant is presented on said display device;

wherein, as the instrument or implant is manipulated by said medical practitioner, said instrument data changes in accordance with changes in the position and orientation of said instrument, and said instrument display changes in accordance with the changes in said instrument data;

whereby, the position and orientation of said instrument or implant, relative to said portion, is dynamically displayed on said display device;

and further including the step of providing a known physical relationship between said portion on said patient and said reference point;

and still further including displaying a main menu on said display means, said main menu including a plurality of sub-menus;

selecting a sub-menu of interest, said sub-menu including a plurality of instruction steps; and

performing the steps as presented on the sub-menu.

5,305,204

DIGITAL IMAGE DISPLAY APPARATUS WITH AUTOMATIC WINDOW LEVEL AND WINDOW WIDTH ADJUSTMENT

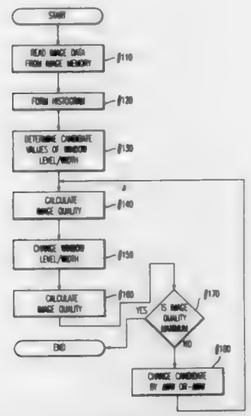
Akinami Ohhashi, Washimiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 16, 1990, Ser. No. 552,520

Claims priority, application Japan, Jul. 19, 1989, 1-186819; Mar. 16, 1990, 2-66695; Mar. 16, 1990, 2-66696; Mar. 16, 1990, 2-66697

Int. Cl.[5] G06F *15/42, 15/68*

U.S. Cl. 364—413.13 **36 Claims**



1. A digital image display apparatus, comprising:

means for calculating a frequency distribution of a plurality of pixel values corresponding to digital image data;

means for calculating a plurality of image qualities for each of said plurality of pixel values, said image qualities indicating clarity of a display image based on the calculated frequency distribution when the digital image data is to be displayed in accordance with a plurality of pixel value-to-brightness conversion modes;

means for selecting one of said plurality of pixel value-to-brightness conversion modes on the basis of said plurality of image qualities; and

means for displaying the digital image data in accordance with pixel value-to-brightness conversion mode selected by said selecting means.

5,305,205

COMPUTER-ASSISTED TRANSCRIPTION APPARATUS

Maria L. Weber, and Joseph Weber, both of 46 Hyslop Rd., Brookline, Mass. 02146

Filed Oct. 23, 1990, Ser. No. 602,004

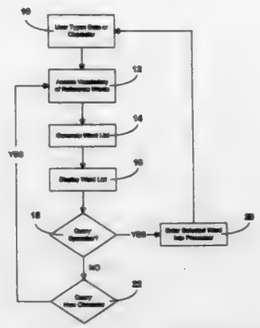
Int. Cl.[5] C06F *15/38*

U.S. Cl. 364—419.1 **8 Claims**

1. A data processor system, said data processor system including an alphanumeric character data entry device and a display screen, and said data being representative of words from a predetermined set of alphanumeric vocabulary words, comprising:

A. storage means for storing vocabulary data representative of said vocabulary words, and for storing associated frequency data representative of a predetermined frequency of occurrence for each of said vocabulary words,

B. list means responsive to the entry of a succession of characters by said data entry device on a character by character basis for determining a succession of ordered lists of candidate words from said vocabulary words, each word in said list having an initial character sequence corresponding to the succession of characters entered at said data entry device, wherein said candidate words in said list are ordered in decreasing order of frequency of occurrence as determined by said stored frequency data,



C. display means for displaying at least a portion of said list on said display screen, and

D. entry means for selecting one of the candidate words from said list.

5,305,206

APPARATUS FOR PRODUCING AN OPERATION MANUAL FOR USE WITH A HOST SYSTEM

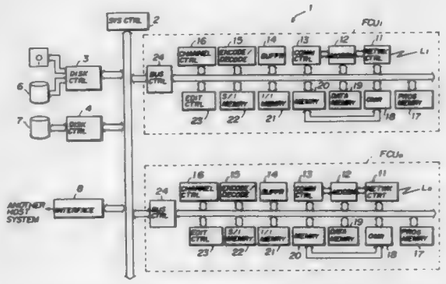
Takashi Inoue, Asaka; Kanji Kanai, Yokohama; Ikuo Yoshida, Hiratsuka; Akio Kizawa, Urayasu; Tadaaki Sakashita, Tokyo, and Yoshitaka Hori, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 22, 1991, Ser. No. 644,238

Claims priority, application Japan, Jan. 26, 1990, 2-16365

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—419.1 **20 Claims**



1. An operations manual generating and editing system for use with a host system, said system comprising:

input means for receiving ordering data input when an ordering is made by an operator following a prescribed procedure for requesting an operations manual from the host system;

first memory means for storing first information needed to prepare the operations manual requested by the operator, the first information being derived from the ordering data received from the input means;

second memory means for storing instruction information

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including a first set of guidance text data describing a minimum number of operating steps that need to be carried out by an operator, in order for the host system to execute a desired function chosen from among a plurality of different functions that can be executed by the host system;

edit control means for analyzing the first information stored in the memory means to select a suitable combination of guidance text data from the instruction information stored in the second memory means, to create an operations manual appropriate for guiding the operator in requesting the desired function of the host system in a minimum number of operating steps; and

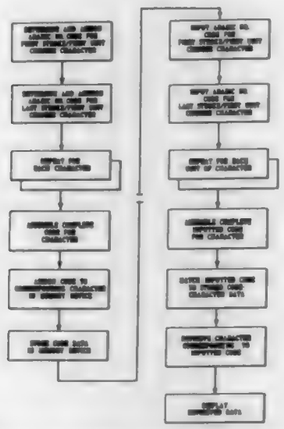
output means for supplying the created operations manual in a prescribed form and layout.

5,305,207

GRAPHIC LANGUAGE CHARACTER PROCESSING AND RETRIEVING METHOD

Jen-Hwa Chiu, No. 116, Hsin I Road, Section 3, Taipei, Taiwan

Filed Mar. 9, 1993, Ser. No. 28,278
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.09 **6 Claims**



1. A method for identifying a character of a character language stored in a memory device for retrieval from the memory device, the characters having at least one unit formed of a first stroke and a last stroke, the first stroke having a finite number of variations; the second stroke having a finite number of variations, said method comprising the steps of:

assigning a number to each of the variations of the first stroke;

assigning a number to each of the variations of the second stroke;

determining for the first stroke of a given character unit the number corresponding to the first stroke;

determining for the last stroke of the character unit, the number corresponding to the last stroke of the given character unit;

assembling a numerical group for the character comprised of the numbers corresponding to the first and last strokes of the units of the character; and

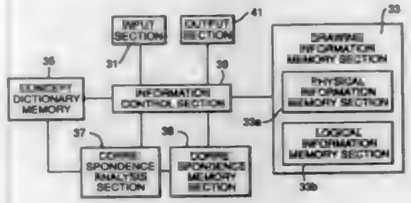
assigning the numerical group to the character in the memory device.

5,305,208

DATABASE RETRIEVAL SYSTEM FOR EFFECTIVELY DISPLAYING DIFFERENCES BETWEEN ELEMENTS OF PLURAL DRAWINGS

Miwako Doi; Mika Fukui; Akio Okazaki; Hideo Numagami, all of Kanagawa; Yasukazu Okamoto, Chiba; Hiroyuki Tsuboi; Hideki Hirakawa, both of Kanagawa, and Yuuichi Kurosawa, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Aug. 6, 1991, Ser. No. 740,901
Claims priority, application Japan, Sep. 27, 1990, 2-255074
Int. Cl.[5] G09G *1/06*
U.S. Cl. 364—419.19 **20 Claims**



1. A drawing information presentation apparatus, comprising:

a drawing information memory means for storing a plurality of drawing records comprising data representing drawings including drawing elements, the drawing elements including character terms;

a concept dictionary memory for storing data representing connection relations between character terms;

a correspondence analysis means for calculating correspondence relation values between data representing elements of first and second ones of the drawing records, in accordance with data stored in the concept dictionary memory; and

a display means for presenting a display of a drawing represented by the first drawing record, the display discriminating those elements of the first drawing which have a correspondence relation value above a predetermined threshold value for at least one element of the second drawing from elements of the first drawing which do not have a correspondence relation value above the threshold value for at least one element of the second drawing.

5,305,209

METHOD FOR CHARACTERIZING SUBTERRANEAN RESERVOIRS

Michael H. Stein, Houston, Tex., and Francis M. Carlson, Broken Arrow, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 31, 1991, Ser. No. 649,646
Int. Cl.[5] G01V *1/00*
U.S. Cl. 364—420 **10 Claims**



1. A method of enhanced hydrocarbon recovery from multilayer subterranean reservoirs, the reservoir being penetrated by at least one injection well and at least one production well, the at least one injection well and at least one production well having a spacing there-in-between and a pattern of injection well and production well placement, the method comprising the steps of:

a) forming a single layer reservoir model having a set of assumed flow parameters representative of a multilayer reservoir of interest and having at least one injection well and at least one production well, the at least one injection well and the at least one production well having a first set of injection and production well operating conditions;

b) developing at least one predicted injection well flow rate and at least one predicted production well flow rate for the single layer reservoir model;

c) scaling the predicted flow rates developed in step b) to obtain dimensionless flow rates for the single layer reservoir model;

d) obtaining a set of estimated flow rates for each layer of the multilayer reservoir from the dimensionless flow rates of step c);

e) minimizing differences between the set of estimated flow rates obtained in step d) and actual multilayer reservoir flow rates to obtain a measure of the flow parameters of each layer of the multilayer reservoir, the measure including layer permeability; and

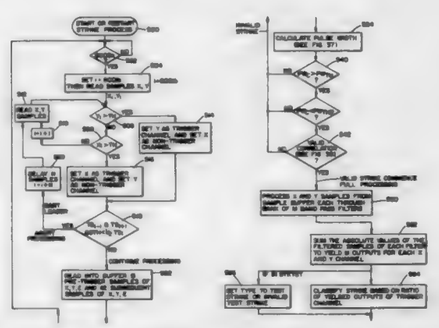
f) utilizing the measure of the flow parameters for each layer of the multilayer reservoir to optimize at least one of the spacing and the pattern of the at least one injection well and the at least one production well and improve the recovery of hydrocarbons from the multilayer reservoir.

5,305,210

SAMPLED DATA LIGHTNING STRIKE DETECTION AND MAPPING SYSTEM CAPABLE OF EARLY DETECTION OF AN INVALID STRIKE FROM SAMPLED DATA AND QUICK RESUMPTION OF MONITORING AN INCOMING SIGNAL

Joseph G. Kuzma, Dublin; Kenneth Ostrander, Columbus; Randolph L. Moses, Worthington, and Billie M. Stevens, Jr., Westerville, all of Ohio, assignors to B. F. Goodrich Flight Systems, Inc., Columbus, Ohio

Filed Apr. 29, 1992, Ser. No. 876,009
Int. Cl.[5] G06F *15/31;* **G01S** *3/02;* **G01W** *1/16*
U.S. Cl. 364—420 **26 Claims**



1. A sampled data lightning strike detection and mapping system comprising:

means for receiving a signal waveform representative of a lightning strike;

means for sampling the received signal waveform and for digitizing said samples to generate a train of digital data samples;

monitoring means operative to monitor the digital data samples of said train until a sample which exceeds a predetermined threshold is identified as a trigger sample;

processing means governed by said trigger sample to commence processing of the digital data samples of said train for detection and mapping of the lightning strike; and

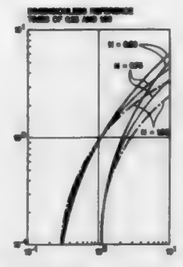
aborting means for aborting processing of said processing means upon determination of an invalid lightning strike from the digital data samples of said train and for resuming operation of the monitoring means until a next trigger sample is identified.

5,305,211

METHOD FOR DETERMINING FLUID-LOSS COEFFICIENT AND SPURT-LOSS

Mohamed Y. Soliman, Lawton, Okla., assignor to Halliburton Company, Houston, Tex.

Continuation-in-part of Ser. No. 585,439, Sep. 20, 1990, abandoned. This application Jul. 30, 1991, Ser. No. 737,615
Int. Cl.[5] G06F *15/20;* **E21B** *49/08*
U.S. Cl. 364—422 **8 Claims**



1. A method for determining fracture parameters of a subterranean formation comprising the steps of:

(a) injecting fluid into a wellbore penetrating said subterranean formation to generate a fracture in said formation;

(b) measuring the pressure of the fluid in said fracture over time;

(c) calculating a leakoff exponent, n, that characterizes a rate at which fluid leaks off into the formation;

(d) determining a match pressure, P^*, based on type curve matching;

(e) determining an observed fracture closure time, t_c, from field data that characterizes the time in which a fracture in the subterranean formation achieves substantially zero width;

(f) determining a spurt-loss volume per unit area, S_p, and fluid-loss coefficient, C_{eff}, from formation equations of the type;

$$C_{eff} = \frac{h_f P^*}{H_p t_o^{1-n}} \beta_s M'$$

$$\beta_s M' = \frac{q t_o E' (1-n)(2-n)}{2 P^* (1+f_x)}$$

$$f_x = \frac{C_{eff} t_o^{1-n} (g_c - g_o)}{Sp + C_{eff} t_o^{1-n} g_o}$$

$$q t_o = 2 Sp A_f \frac{H_p}{h_f} + 2 C_{eff} A_f f_p t_o^{1-n} g_c$$

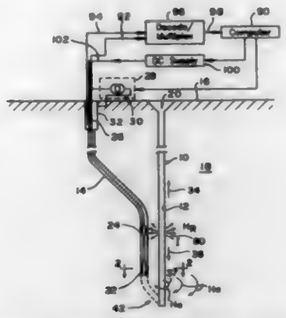
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5,305,212

ALTERNATING AND STATIC MAGNETIC FIELD GRADIENT MEASUREMENTS FOR DISTANCE AND DIRECTION DETERMINATION

Arthur F. Kuckes, Ithaca, N.Y., assignor to Vector Magnetics, Inc., Ithaca, N.Y.

Filed Apr. 16, 1992, Ser. No. 868,859
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—422 16 Claims



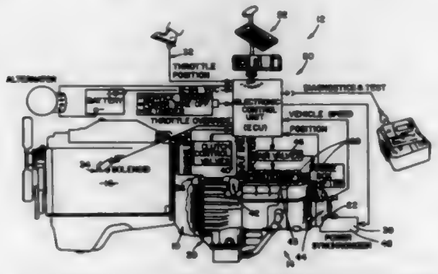
1. Apparatus for determining the distance and direction of a first well with respect to a second nearby well, comprising:
- a sensor tool located in a first well, said sensor tool having an axis extending along the length of said first well;
- means producing at least one static magnetic field having its origin at said second well and extending radially from said second well at least to said first well;
- sensor means comprising two ring core fluxgate magnetometers located at diametrically opposite sides of said sensor tool, said magnetometers measuring corresponding magnetic field vectors of said at least one magnetic field for measuring a field gradient of said magnetic field perpendicular to said sensor tool axis; and
- means for determining the orientation of said sensor tool with respect to said magnetic field, the measured gradient of said field corresponding to the distance between said first and second wells and said determined orientation of said sensor corresponding to the direction to said second well from said first well.

5,305,213

DRIVELINE TORQUE LIMIT CONTROL STRATEGY-USING SAE J1922 TYPE ENGINE CONTROL

Mark D. Boardman, Portage, and Robert M. Langbo, Three Rivers, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 9, 1991, Ser. No. 698,017
Int. Cl.[5] B60K *41/04*
U.S. Cl. 364—424.1 14 Claims



1. A method for controlling a vehicular automated mechanical transmission system (12) for use in a vehicular driveline having known vehicular driveline characteristics, said system comprising a multiple ratio mechanical transmission (14) having an input shaft (72) and an output shaft (22), each of said ratios having a known mechanical ratio (gear_ratio) between said input and output shafts, a fuel controlled engine (16), a torque converter (20) having a known torque ratio (torque_ratio) and capacity factor (K factor) drivingly interposed the engine and the transmission, said torque converter having an input element (54) rotating in a known manner with said engine and an output element (60) rotatable in a known manner with said transmission input shaft (72), an operator set throttle control device (32), a fuel control system (34) effective in at least one mode of operation to fuel the engine to rotate at a desired rotational speed regardless of the operator's setting of the throttle control device and a central control unit (50) effective to receive input signals indicative of a status of the transmission system including at least signals indicative of (i) engine speed (ES), (ii) input shaft speed (IS) and (iii) engaged gear ratio (GR) and to process same in accordance with predetermined logic rules to issue command output signals to a plurality of system actuators including at least a fuel control system actuator, said method characterized by:
- determining a maximum desirable output shaft torque (max_OS_torq) as a function of said vehicular driveline characteristics;
- determining a maximum engine speed (ES_max) as a function of (i) maximum desirable output shaft torque, (ii) sensed input shaft speed, (iii) mechanical ratio (gear_ratio) of engaged gear ratio, (iv) torque converter torque ratio (torque_ratio) and (v) torque converter capacity factor (K factor) and
- comparing current engine speed to said maximum engine speed and, if said current engine speed exceeds said maximum engine speed, issuing command output signals to said full control system to fuel said engine for an engine speed (ES) not exceeding said maximum engine speed (ES_max).

5,305,214

DATA RECORDING METHOD AND DEVICE

Toshio Komatsu, Shimada, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 651,830, Feb. 7, 1991, Pat. No. 5,239,470.
This application May 21, 1993, Ser. No. 64,649
Claims priority, application Japan, Feb. 8, 1990, 2-27192; Mar. 14, 1990, 2-61218
Int. Cl.[5] G06F *15/74*
U.S. Cl. 364—424.04 2 Claims



1. In a speed data recording method including the steps of sampling speed data to be recorded at a predetermined period, calculating a permissible error range with respect to the speed data at each sampling timing, deciding a longest straight line intersecting said permissible error range calculated, and recording a length of said straight line represented by a sampling number and the speed data at an end point of said straight line,

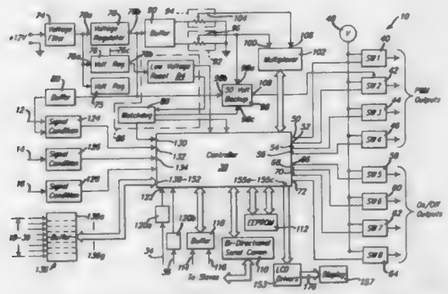
whereby compression processing of the speed data sampled is carried out, and the speed data compressed is recorded into a recording medium; the improvement wherein said recording step comprises the steps of:
- recording said speed data as a binary number by using a first byte and a part of a second byte; and
- recording said sampling number as a binary number by using the remaining part of said second byte when the number of digits of said sampling number is not greater than the number of bits of the remaining part of said second byte, while recording low-order digits of said sampling number as a binary number by using all the remaining part of said second byte and recording high-order digits of said sampling number and information for indicating record of said high-order digits of said sampling number by using a third byte when the number of digits of said sampling number becomes greater than the number of bits of the remaining part of said second byte.

5,305,215

EXPANDABLE, MOBILE, MODULAR MICROCOMPUTER SYSTEM FOR AN OFF-ROAD VEHICLE

Kevin L. Brekkestran, Fargo; Barry D. Batcheller, West Fargo; Adrian G. Kallis, and Charles D. Needham, both of Fargo, all of N. Dak., assignors to Phoenix International Corporation, Fargo, N. Dak.

Filed May 15, 1991, Ser. No. 700,629
Int. Cl.[5] G06F *15/20*; B60K *41/18*
U.S. Cl. 364—424.1 10 Claims



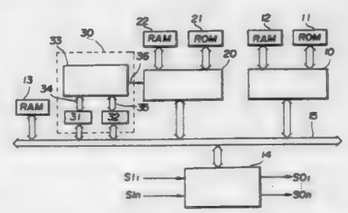
1. An expandable, mobile, field reprogrammable modular microcomputer system for controlling a powershift transmission of an off-road vehicle, said system comprising:
- a microcomputer for receiving a plurality of analog input signals and a plurality of digital input signals and generating in response thereto a plurality of pulse-width modulated control signals and a plurality of on/off control signals;
- a first voltage regulator for supplying a regulated supply voltage to said microcomputer to thereby power said microcomputer;
- a second voltage regulator for supplying current to a controller coupled to at least one of said analog or digital inputs of said microcomputer;
- means for providing communication between said microcomputer and said controller;
- a first plurality of switching circuits responsive to said pulse-width modulated control signals of said microcomputer and operable to generate a plurality of independent, pulse-width modulated drive signals;
- a watchdog circuit for monitoring said microcomputer and resetting said microcomputer when spurious operation of said microcomputer is detected;
- an independent back-up voltage supply circuit for powering at least one of said first switching circuits in the event of spurious operation of said first voltage regulator;
- a bi-directional serial communications interface in communication with said microcomputer for enabling serial communication between said microcomputer and a reprogramming device such that reprogramming device can reprogram said microprogram while said off-road vehicle is at a work site; and
- display means responsive to said microcomputer for displaying information associated with the operation of said system.

5,305,216

EVENT DETECTOR USED VEHICLE CONTROL APPARATUS

Kazuma Okura, and Akito Yamamoto, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 31, 1991, Ser. No. 784,937
Claims priority, application Japan, Nov. 1, 1990, 2-293585
Int. Cl.[5] G06F *7/70*
U.S. Cl. 364—424.01 7 Claims



1. An apparatus for controlling an automative vehicle, comprising:
- first means sensitive to vehicle operating parameters for producing signals having values sensed for the respective vehicle operating parameters;
- a transition detector, coupled to said first means, including a first memory for storing predetermined threshold values specified for the respective vehicle operating parameters, and means for comparing the sensed values with the respective threshold values in a predetermined sequence to provide at least one signal indicative of a sensed transition in one of the vehicle operating parameters when the value sensed for the one vehicle operating parameter is in a range defined by a threshold value specified for the one vehicle operating parameter;
- an event detector coupled to the transition detector for detecting a specified at least one of said sensed transitions to produce an event signal indicative of a sensed event; and
- control means responsive to the event signal for controlling the automotive vehicle in response to the sensed event.

5,305,217

METHOD AND SYSTEM FOR CONTROLLING AUTOMATIC GUIDED VEHICLE

Katsunari Nakamura; Tadae Kita; Kenzi Asano; Tsunezi Shimizu, and Motozo Kawakami, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

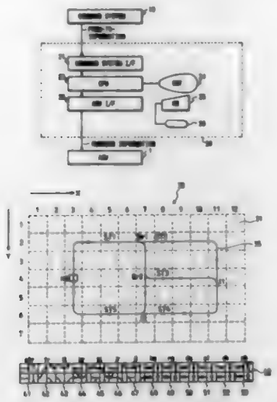
Filed Jul. 1, 1991, Ser. No. 723,614
Claims priority, application Japan, Jul. 3, 1990, 2-174451
Int. Cl.[5] G06F *15/50*; G08G *1/123*
U.S. Cl. 364—424.02 14 Claims

1. A method of controlling a guided vehicle to run along a desired running route comprising the steps of:
- dividing a display screen into a predetermined grid, wherein said display screen corresponds an area occupied by the running route;
- establishing a plurality of symbol blocks, each symbol block representing a running route segment having a predeter-

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mined characteristic, said characteristic being visually represented on said display screen and electronically represented by symbol block data;

producing a layout diagram corresponding to the running route by entering a selected pattern of symbol blocks into the display screen grid;



extracting electronic symbol block data for each selected symbol block entered and storing the electronic symbol block data; and

producing map information corresponding to the stored electronic symbol block data, such that the guided vehicle is controlled along the running route by said map information.

5,305,218

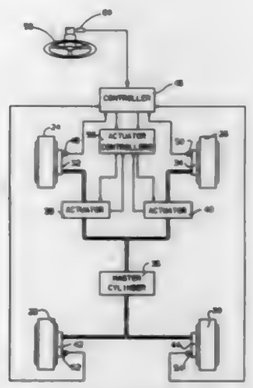
VEHICLE HANDLING CONTROL FOR WHEEL SLIP CONTROL SYSTEMS

Youssef A. Ghoneim, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 720,071, Jun. 24, 1991, Pat. No. 5,258,912. This application Nov. 2, 1992, Ser. No. 970,422

Int. Cl.[5] B60T *8/58*

U.S. Cl. 364—426.02 **5 Claims**



1. A wheel slip control system for controlling the slip of a left wheel and a right wheel of an axle of a vehicle having a steering wheel positionable by a vehicle operator, the system comprising:

means for measuring a steering angle of the steering wheel and supplying a steering angle signal as an indication of the steering angle;

means for measuring right and left wheel speeds and supplying wheel speed signals ω_r and ω_l as indications of said right and left wheel speeds, respectively;

means for determining a desired turning radius R_d in response to the steering angle signal;

means for determining a desired ratio D of the left and right wheel speeds to establish the desired turning radius R_d;

means for comparing the desired ratio of the left and right wheel speeds and an actual ratio of the left and right wheel speeds indicated by the wheel speed signals ω_r and ω_l; and

means for controlling wheel slip, the means for controlling wheel slip including:

means for determining an open loop wheel slip limit value and

means for limiting the wheel slip of the left and right wheels by (A) limiting the slip of one of the right and left wheels at the open loop wheel slip limit and (B) limiting the slip of the other one of the left and right wheels at a slip limit at which the actual ratio of the left and right wheel speeds is equal to the desired ratio.

5,305,219

VEHICLE MOVEMENT DATA ANALYZING APPARATUS

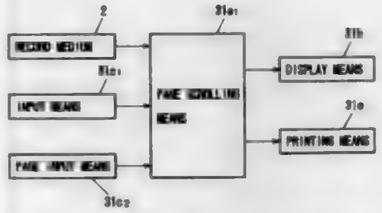
Wataru Ishibashi, and Akihiro Suzuki, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 29, 1991, Ser. No. 692,432

Claims priority, application Japan, May 15, 1990, 2-122985

Int. Cl.[5] G06F *15/419*

U.S. Cl. 364—424.04 **4 Claims**



1. A vehicle movement digital data analyzing apparatus for processing moving conditions of a vehicle momentarily varying with time which are recorded and collected in a record medium, and said vehicle movement digital data analyzing apparatus capable of converting a portion of said moving conditions into an enlarged graph to be displayed on a display means, said vehicle movement digital data analyzing apparatus comprising:

input means for inputting information for determining starting time of a graph of said moving conditions to be displayed on said display means and one of time span and scale of enlargement of said graph of said moving conditions to be displayed on said display means;

page specifying input means for specifying the graph of said moving conditions on a preceding page and the graph of said moving conditions on a next page adjacent to a graph of said moving conditions currently displayed on said display means; and

page scrolling means for performing a graph conversion turning said starting time of said graph currently displayed on said display means into said terminating time of a converted graph when said graph on said preceding page is specified by said page input means and for performing a graph conversion turning said terminating time of said graph currently displayed on said display means into said starting time of said converted graph when said graph on said next page is specified by said page input means.

5,305,220

APPARATUS FOR ELECTRONICALLY MEASURING THE SPEED OF INTERNAL COMBUSTION ENGINES AND METHOD OF OPERATING SUCH APPARATUS IN MONITORING AN INTERNAL COMBUSTION ENGINE

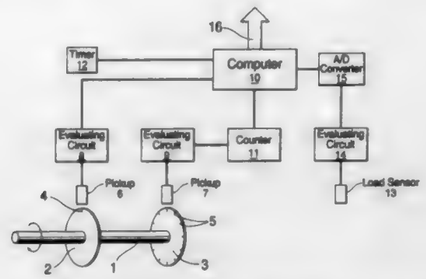
Peter Schöggl, Eggenbergergürtel 13, A-8020 Graz, Austria

Filed May 17, 1991, Ser. No. 702,073

Claims priority, application Austria, May 23, 1990, A 1139/90

Int. Cl.[5] F02P *5/06*; **G06F** *15/48*

U.S. Cl. 364—431.03 **2 Claims**



1. An apparatus for electronically measuring rotational characteristics of a rotating part that rotates with a crankshaft of an internal combustion engine, the rotating part having reference marks and measuring scale marks thereon, the apparatus comprises:

a first pick up for detecting the passage of the reference mark as the rotating part rotates;

a second pick up for detecting the passage of the measuring scale marks as the rotating part rotates;

a counter connected to said second pick up for counting the detected measuring scale marks;

a timer for controlling the stage of said counter;

a load sensor for detecting the load on the engine;

a computer connected to said first pick up, said counter, said timer, and said load sensor, wherein said computer calculates the instantaneous rotational speed of the rotating part by differentiating the counts obtained by said timer during instantaneous counter stages, said computer including decision logic with a predetermined threshold value;

said computer measuring the speed of the rotating part during a counter stage that lasts at least several rotations of said rotating part when said computer detects an engine load below said predetermined threshold value; and

said computer selectively measuring the number of rotations, the rotational speed, and the change in rotational speed of said rotating part during predetermined angles of rotation of the rotating part during counter stages lasting less than one revolution of the rotating part when said computer detects one of an engine load greater than said predetermined threshold value and a changing engine load.

5,305,221

REAL WORLD MODELING AND CONTROL PROCESS FOR INTEGRATED MANUFACTURING EQUIPMENT

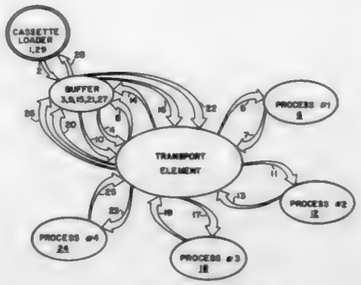
Robert W. Atherton, 1694 Miller Ave., Los Altos, Calif. 94024

Filed May 4, 1990, Ser. No. 518,953

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **31 Claims**

1. A process for modeling production integrated processing equipment (PIPE), which comprises identifying sufficient physical elements within the PIPE between which parts move while within the PIPE so that the parts within the PIPE may be attributed to one of the physical elements at all times while the parts are within the PIPE, constructing a data structure representing the physical elements, listing events occurring in the physical elements, mapping each event onto the data structure, defining the generation of dynamic events, including new events from old events, inputting PIPE specific data, implementing the dynamic events using discrete-event simulation, collecting statistics on performance variables to define and refine the operating rules and buffer dynamics which specify



how the parts interact with the physical elements in actual operation of the PIPE, using a resulting model to simulate operation of the PIPE, comparing predictions obtained with the simulation with observed trends in the PIPE, and using the comparison to further refine the choice of fundamental rules and parameters.

5,305,222

PATTERN FORMING SYSTEM

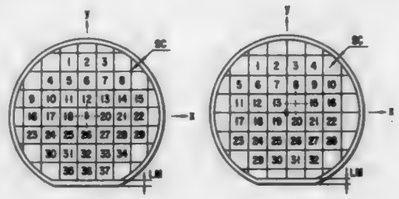
Hatsuo Nakamura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 16, 1991, Ser. No. 807,205

Claims priority, application Japan, Dec. 19, 1990, 2-403792

Int. Cl.[5] G03B *27/32*

U.S. Cl. 364—468 **5 Claims**



1. A pattern forming system comprising:

a reticule on which a pattern is formed of one or more chips;

arranging means for preliminarily arranging a plurality of shot regions on a main surface of a wafer in a matrix arrangement where each shot region is formed by one shot of the pattern formed on the reticule, the matrix arrangement including a basic shot region positioned proximate the center of the matrix arrangement wherein the basic shot region has a central point;

calculating means for calculating the number of the shot regions which constitute said matrix arrangement by sequentially moving the matrix arrangement on the main surface of the wafer to move the central point of the basic shot region in a two-dimensional coordinate system comprised of an X axis and an Y axis having an origin defined at a center of the wafer, wherein each sequential movement of the matrix arrangement moves the central point of the basic shot region in a range of

$$-S_x/2 \leq x \leq S_x/2,$$

and

$$-S_y/2 \leq y \leq S_y/2,$$

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where S_x is a size of each shot region in a direction along the X axis, and S_y is a size of each shot region in a direction along the Y axis,

said calculating means further calculating the number of the chips to be completely formed on said main surface of said wafer by each sequential movement of the matrix arrangement;

selecting means for selecting a case in which the number of shot regions constituting said matrix arrangement is smallest and the number of chips to be completely formed on said main surface of said wafer is largest; and

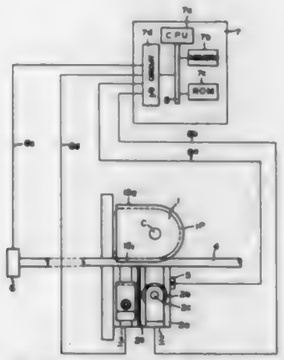
forming means for forming said pattern, which is formed on said reticule, on the main surface of the wafer for each shot region of the matrix arrangement.

5,305,223

TUBE BENDING MACHINE

Shigeru Saegusa, Sunto, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Sep. 5, 1990, Ser. No. 577,890
Claims priority, application Japan, Sep. 7, 1989, 1-232550
Int. Cl.[5] B21D *7/04*
U.S. Cl. 364—472 **10 Claims**



1. A tube bending machine having a memory wherein a program for bending a tube is stored, a gripping device which grips said tube at an end and selectively moves the tube in the axial direction of the tube and around the axis of the tube according to the program read out from said memory, and tube bending devices which bends the tube by a prescribed amount at a predetermined position on said tube, said machine comprising:

a bending die having a peripheral surface in contact with said tube,

a pushing die device capable of turning around a pivot shaft and capable of moving toward and away from the bending die and the tube in contact with the bending die, such that movement of the pushing die device toward the bending die engages the tube and such that the turning o the pushing die device around the pivot shaft is operative for bending said tube along the peripheral surface of said bending die,

a photoelectric sensor which is installed on said pushing die device and detects said tube when the pushing die device is turned around the pivot shaft a sufficient amount for alignment of the photoelectric sensor with the tube, and

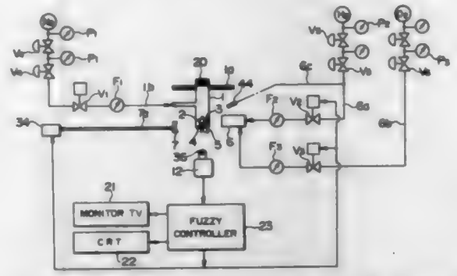
a controlling unit to cause said pushing die device to be set according to said program, to be turned around said pivot shaft, ad to bend said tube so that the position of said tube detected by said sensor is brought close to a given value, whereby the pushing die device is turned around the pivot shaft with the pushing die device away from the tube such that the photoelectric sensor can detect the position of the tube, and whereby the controlling unit compares the detected position of the tube with the given value and determines whether additional bending by the pushing die device is required.

5,305,224

FUZZY CONTROL FOR A LAMP GLASS PIPE SEALING PROCESS

Masahiko Hishida; Terukuni Yokoyama; Yoshihiro Atsumi, all of Tokyo; Motonobu Masui, and Yasuo Ban, both of Kumagaya, all of Japan, assignors to Mitsubishi Gasshiryoku Kogyo Kabushiki Kaisha and Iwasaki Electric Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,153
Claims priority, application Japan, Sep. 24, 1991, 3-243665
Int. Cl.[5] G06F *15/46;* **G05B** *13/02*
U.S. Cl. 364—473 **5 Claims**



1. A fuzzy controller for sealing a glass pipe for a lamp by heating an end portion of the glass pipe with burner flame to soften the end portion and by thereafter pressing the softened end portion, said fuzzy controller comprising:

a camera device for forming an image of the state of the burner flame and the softened state of the glass pipe; and

a fuzzy control processor including image processing means for processing and calculating image information obtained by said camera device as a softened state change value of the glass pipe and a combustion state value of the burner flame based on image processing data, and fuzzy control means for calculating and outputting, with respect to a result of the calculation performed by said image processing means, a suitable control value for controlling at least one parameter relating to the burner flame by fuzzy inference and based on fuzzy control data including a predetermined fuzzy rule and a membership function.

5,305,225

CHARGED PARTICLE LITOGRAPHY METHOD AND APPARATUS

Toshio Yamaguchi, Tokyo; Satoshi Yamasaki, Yokohama, and Takayuki Abe, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 30, 1992, Ser. No. 876,426
Claims priority, application Japan, Apr. 30, 1991, 3-99161
Int. Cl.[5] G06F *15/46;* **H01J** *37/304*
U.S. Cl. 364—474.02 **9 Claims**

8. A charged particle lithography apparatus for drawing a desired pattern on a sample by irradiating the sample with a charged particle beam, comprising

means for storing the following independent three data;

(1) figure data representing the shape of at least one elemental figure constructing a pattern to be drawn,

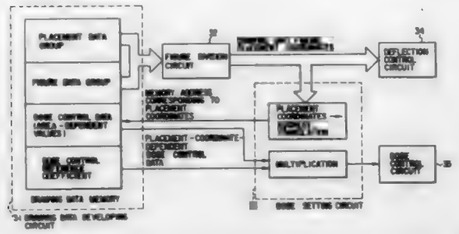
(2) placement data representing the position in which the figure data is to be placed, and

(3) dose control data representing dose for each of areas which are obtained by dividing a drawing area which are smaller than the broadening of backscattering of a charged particle beam;

means for generating a unit figure from said figure data and placement data, in which the position of the unit figure is to be drawn is determined from said figure data and said placement data and the size of the unit figure to be drawn is determined from said figure data;

means for determining a represented position of the unit figure according to its size determined by said unit figure generating means and determining coordinates of the represented point of the unit figure from said position of the unit figure; and

means for determining dose of the unit figure from the coordinates of the represented point of the unit figure determined by said coordinate determining means and said dose control data.

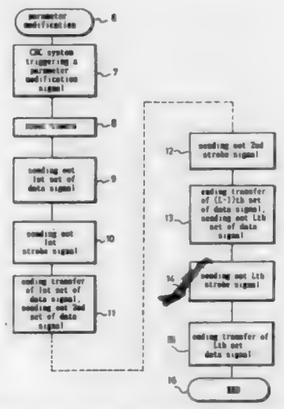


5,305,226

METHOD FOR TRANSFERRING WORKING CONDITIONS PARAMETERS OF COMPUTER NUMERICAL CONTROL ELECTRIC DISCHARGE MACHINING DEVICES

Yung-Feng Nien, Kaohsiung, and Chang-Fang Su, Hsinying, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan, Taiwan

Filed Sep. 20, 1991, Ser. No. 763,323
Int. Cl.[5] G06F *15/46;* **B23P** *1/08*
U.S. Cl. 364—474.04 **3 Claims**



1. A method for transferring working conditions parameters of computer numerical control electric discharging machining devices comprising the steps:

inputting a number of working conditions parameters to a programmable logic controller, each of said working conditions parameters having a plurality of variations thereof;

editing said programmable logic controller to construct a set of data signals and a set of strobe signals corresponding to said working conditions parameters; and

transmitting said data signals and strobe signals in combination, via an I/O port having a number of output terminals, to a receiving device to effect an on-line transfer of said working conditions parameters, for controlling said electric discharge machining devices, and including the step of transmitting one of the set of strobe signals to identify an end of each of the set of data signals;

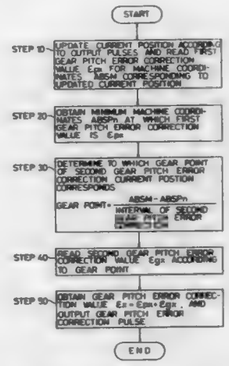
wherein the number of output terminals of the data signals and strobe signals is determined by the number of said working conditions parameters and said variations thereof processed by said programmable logic controller.

5,305,227

GEAR PITCH ERROR CORRECTING SYSTEM FOR NUMERICAL CONTROL APPARATUS

Takao Sasaki, Hachioji; Kentaro Fujibayashi, Musashino; Toshiaki Otsuki, Hino, and Ryouji Eguchi, Yamanashi, all of Japan, assignors to Fanuc Limited, Yamanashi, Japan

Filed Nov. 26, 1991, Ser. No. 776,379
Claims priority, application Japan, Apr. 5, 1990, 2-91314
Int. Cl.[5] G06F *11/30*
U.S. Cl. 364—474.35 **6 Claims**



1. A gear pitch error correcting system for a numerical control apparatus for a machine tool including at least two gears provided in a transmission line transmitting a rotating force of a servomotor to a driven member, comprising:

a nonvolatile memory storing pitch error correction data related to the respective at least two gears, the pitch error correction data for each of the respective gears including gear pitch error correction values, each of the gear pitch error correction values corresponding to a predetermined gear angle and collectively representing one rotation of a corresponding gear;

a current position register, operatively connected to said nonvolatile memory, for storing data representing a current position of the driven member;

pitch error computing means for reading the data stored in said current position register and superimposing the gear pitch error correction values of respective gears, corresponding to rotational angles of the respective gears, determined in dependence upon the read data representing a current position of the driven member, to obtain a superimposed pitch error correction value for the current position of the driven member;

interpolating means for outputting an interpolation pulse for deriving a corrected position of the driven member; and

an adder, operatively connected to said pitch error computing means and said interpolating means, for adding the superimposed pitch error correction value to the interpolation pulse to derive the corrected position of the driven member.

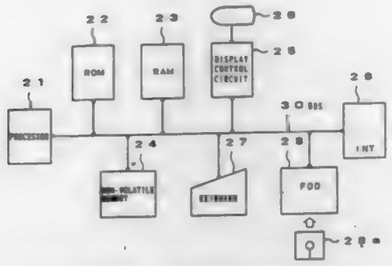
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,228

TOOL AXIS DIRECTION CALCULATION METHOD

Masaki Seki, Suginami, and Osamu Hanaoka, Minamitsuru, both of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP91/00996, § 371 Date Mar. 16, 1992, § 102(e) Date Mar. 16, 1992, PCT Pub. No. WO92/02869, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 24, 1991, Ser. No. 838,732
Claims priority, application Japan, Sep. 8, 1990, 2-210989
Int. Cl.[5] G05B *19/18*
U.S. Cl. 364—474.29 3 Claims



1. A tool axis direction calculation method for determining a direction vector of a tool axis when a side of a workpiece is cut by a 5-axes numerically controlled machine tool, comprising the steps of:

determining a first normal vector at a first dividing point located between an upper surface and a curved surface of said workpiece;

determining a second normal vector at a second dividing point located between a lower surface and said curved surface of said workpiece;

determining an intermediate vector having a direction between said first normal vector and said second normal vector and a size equal to a radius of a tool;

determining a first offset point from said first dividing point and said intermediate vector;

determining a second offset point from said second dividing point and said intermediate vector;

determining a vector connecting said first offset point and said second offset point to be said direction vector of said tool axis; and

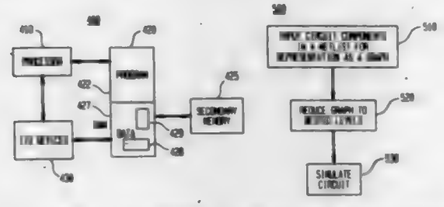
using said direction vector of said tool axis by said 5-axes numerically controlled machine tool.

5,305,229

SWITCH-LEVEL TIMING SIMULATION BASED ON TWO-CONNECTED COMPONENTS

Sanjay Dhar, Long Valley, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Sep. 6, 1991, Ser. No. 756,078
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—489 6 Claims



1. A method of simulating a circuit of transistors and reference terminals and determining driving-point resistances in linear time and space, said method comprising the steps, executed by a data processor having memory means, of

generating a model of the transistor circuit as an RC-network representation of the transistor circuit, said representation being other than an RC-tree network and comprising a plurality of switches each corresponding to a different one of the transistors and each of the switches containing a gate and two nodes connected by a corresponding channel having a resistance value such that each channel is considered conducting or nonconducting according to the state of the corresponding gate;

storing in said circuit memory means said representation of the transistor circuit including said resistance value for each of said channels;

defining a state configuration for a given state of the RC-network representation, the defined state configuration containing channels which would be considered conducting in that given state and nodes connected to the conducting ones of the channels;

determining, from the resistance values for the channels in the defined state configuration, the driving point resistances between each of the nodes in the defined state configuration and the reference terminals; and

each of said nodes having a corresponding capacitance value, determining the delay for the transition from the given state tot he next state from the driving point resistances in the defined state configuration and from the capacitance values of the nodes contained in the defined state configuration;

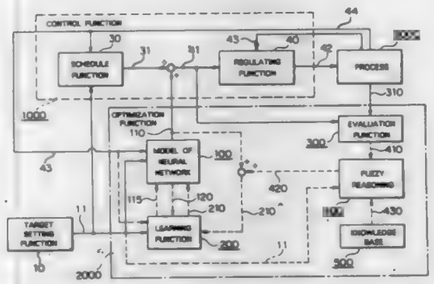
whereby the time required for said method is essentially proportional to the number of nodes and the circuit memory means required for said method is also essentially proportional to the number of nodes.

5,305,230

PROCESS CONTROL SYSTEM AND POWER PLANT PROCESS CONTROL SYSTEM

Hiroshi Matsumoto, Ibaraki; Makoto Shimoda, Katsuta; Masahide Nomura, Hitachi; Tadayoshi Saito, Hitachiota; Hiroshi Yokoyama; Akira Kaji, both of Hitachi; Hisanori Miyagaki, Hitachiota; Seiitsu Nigawara, Hitachi, and Hiroshi Hanaoka, Mito, all of Japan, assignors to Hitachi, Ltd., Chiyoda, Japan

Filed Nov. 20, 1990, Ser. No. 615,868
Claims priority, application Japan, Nov. 22, 1989, 1-302171
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—495 22 Claims



1. A process control system comprising:

target setting means for setting an operation target of a process to be controlled;

control means for receiving a signal indicating an operation target thus set from said target setting means and for outputting a controlled variable to operate said process;

evaluating means for quantitatively evaluating operation characteristics corresponding to said operation target of said process operated on the basis of a signal indicating the controlled variable supplied from said control means and for deriving an evaluated value thereby;

modification means for extracting an optimum operation process, qualitatively squaring or conforming with the evaluated value derived by said evaluation means, from a modification rule predetermining operation means in qualitative relation between the operation characteristics and the operation target of said process and for determining a modification rate of said control means; and

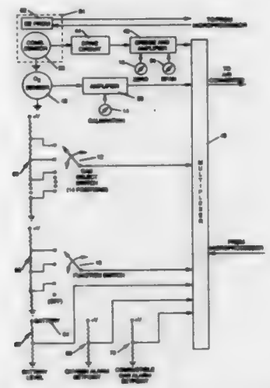
storage means for storing a relation between the modification rate derived by said modification means and said operation target.

5,305,231

MULTIPLE K FACTOR, SELECTABLE GAS DETECTOR

Mark J. Coppler, Kennedy Township, Butler County; Robert L. Novack, Cranberry Township, Butler County; John E. Tozier, Allegheny County, and Peter M. Noble, Adams Township, Butler County, all of Pa., assignors to Bacharach, Inc., Pittsburgh, Pa.

Filed Feb. 13, 1992, Ser. No. 835,627
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—497 51 Claims



1. Gas detecting apparatus for determining the concentration, in a gas sample, of a selected one of a plurality of predetermined gases, said apparatus comprising:

sampling means for obtaining said gas sample;

a single gas sensor connected to said sampling means for generating a gas output signal related to the concentration of said selected predetermined gas in said gas sample;

drive means for supplying controlled electrical power to said gas sensor;

K factor storage means associated with said gas sensor for storing at least one K factor, unique to and generated by using said gas sensor, for each of said plurality of predetermined gases;

gas selector means for generating a selected gas signal representing the particular selected gas to be detected;

a processor means for selecting, in response to the selected gas signal and gas output signal, the K factor or factors from said K factor storage means for the selected gas and for calculating, in accordance with a predetermined process stored in said processor means, a concentration signal representing the concentration of the selected gas in said gas sample; and

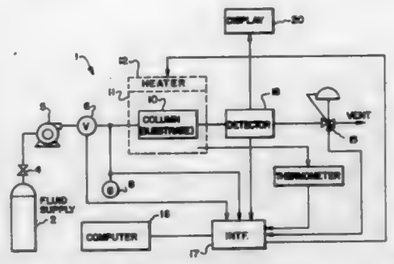
display means responsive to said concentration signal for displaying the concentration of said gas to be detected in said gas sample.

5,305,232

CHROMATOGRAPHY SYSTEM

Eldred H. Chimowitz, Brighton, N.Y., and Frank VanPuyvelde, Tielt, Belgium, assignors to The University of Rochester, Rochester, N.Y.

Filed May 13, 1992, Ser. No. 882,321
Int. Cl.[5] B01D *15/08*
U.S. Cl. 364—498 21 Claims



1. The system for chromatographic analysis comprising:

(a) a column having a stationary substrate phase therein;

(b) said column also having a mobile transport phase having a capacity factor representing the ability of the mobile phase to transport a species under analysis through said column;

(c) detector means for dynamically measuring the time of migration of said species through said column;

(d) reporting means responsive to said dynamic migration time measurements for providing a chromatogram having data corresponding to said species; and

(e) computer means for processing said data for optimizing the relationship between resolution of the chromatogram provided by said reporting means and time; said computer means comprising

(i) means responsive to said chromatogram for calculating the capacity factor for each of the species under analysis, and

(ii) means responsive to the capacity factor and physical parameters of the system including the column length and type of substrate and properties of the mobile transport phase selected from the group consisting of density, temperature and composition of the mobile phase.

5,305,233

SPECTROPHOTOMETER FOR ACCURATELY MEASURING LIGHT INTENSITY IN A SPECIFIC WAVELENGTH REGION

Nobukazu Kawagoe, Toyonaka; Masahito Inaba, Ikeda, and Masami Sugiyama, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 697,928, May 2, 1991, Pat. No. 5,175,697, which is a continuation of Ser. No. 395,201, Aug. 15, 1989, abandoned, which is a continuation of Ser. No. 57,517, Jun. 1, 1987, abandoned. This application Sep. 25, 1992, Ser. No. 951,732
Claims priority, application Japan, Jun. 2, 1986, 61-129013; Jun. 2, 1986, 61-129014; Jun. 2, 1986, 61-129015; Jun. 9, 1986, 61-133442
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] G01J *3/28*
U.S. Cl. 364—526 2 Claims

1. A spectrophotometer for measuring the light intensity of each wavelength of light received from a test piece, said spectrophotometer comprising:

a light source for irradiating the test piece;

first splitting means for splitting light coming from the test piece into its different wavelengths;

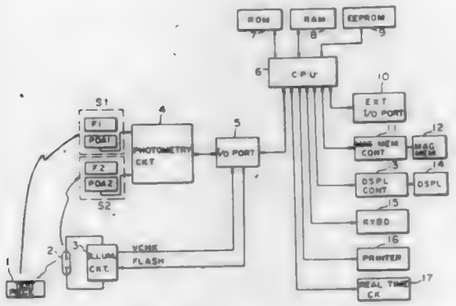
a first array of light-receiving elements for receiving the

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wavelengths of light from said first splitting means and generating spectral light intensity values for each wavelength of light received;

second splitting means for splitting light emitted from said light source into its different wavelength;

a second array of light-receiving elements for receiving the wavelengths of light from said second splitting means and for generating spectral light intensity values for each wavelength of light received, wherein the pitch of the wavelengths of light to be measured by the second light-receiving element array in combination with the second



splitting means is larger than that of the light to be measured by the first light-receiving element array in combination with the first splitting means;

an analog-to-digital converter for converting the spectral light intensity values for each wavelength output from both the first and second light-receiving element arrays into digital form; and

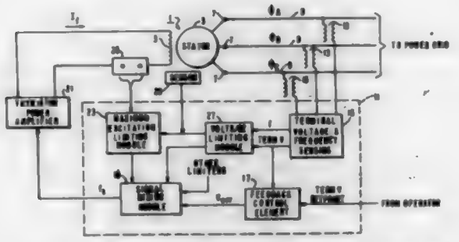
calculating means for calculating the ratios of the spectral light intensity values for each wavelength from the first light-receiving element array to the spectral light intensity values for each wavelength from the second light-receiving element array.

5,305,234

THERMAL PROTECTION APPARATUS FOR A SYNCHRONOUS MACHINE

David R. Markus, Monroeville; Kenneth M. Eichler, Murrysville, both of Pa.; Donald S. Kimmel, Fletcher, N.C.; Gerhard K. Kasprowicz, Ancaster, and Robert S. Murray, Caledonia, both of Canada, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 31, 1991, Ser. No. 815,678
Int. Cl.[5] H02H 7/06
U.S. Cl. 364—550 16 Claims



1. Apparatus for protecting a synchronous machine from overheating, said apparatus comprising:

means measuring the value of a selected electrical parameter of said synchronous machine;

processor means comparing the value of said selected electrical parameter to a thermal threshold value, and generating a limit signal when the value of said selected electrical parameter remains above said thermal threshold value for a time interval, said time interval being an inverse function of an amount by which the value of said selected electrical parameter exceeds said thermal threshold value, said time interval also being a direct function of time representative of cooling of said synchronous machine since the value of said selected electrical parameter previously exceeded said thermal threshold value; and

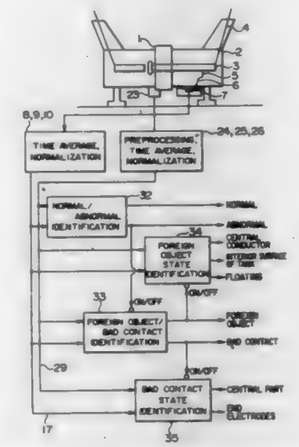
means responsive to the limit signal to adjust operation of said synchronous machine to correct the value of said selected electrical parameter below said thermal threshold, in order that said synchronous machine continues operation at a safe level of said selected electrical parameter.

5,305,235

MONITORING DIAGNOSIS DEVICE FOR ELECTRICAL APPLIANCE

Yoshio Izui, Amagasaki; Yoshiakira Akimoto, Yokohama; Hideo Tanaka, and Hiromi Ogi, both of Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and The Tokyo Electric Power Company, both of Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,068
Claims priority, application Japan, Jul. 10, 1991, 3-169587
Int. Cl.[5] G06F 15/20
U.S. Cl. 364—551.01 5 Claims



1. A monitoring diagnosis device for an electrical appliance, comprising:

sensor means for detecting a parameter of the electrical appliance and generating an output corresponding to the parameter indicative of a cause of abnormality of the electrical appliance said sensor means including a partial discharge sensor;

a neural network means including an input layer, an intermediate layer, and an output layer, the input layer, intermediate layer, and output layer each consisting of a plurality of neural elements each simulating a living neuron, wherein the neural elements of the input layer are coupled to the neural elements of the intermediate layer via respective connection weights, and the neural elements of the intermediate layer are coupled to the neural elements of the output layer via respective connection weights, and wherein said connection weights between the input layer and intermediate layer and between the intermediate layer and the output layer are adjusted on the basis of learning data consisting of causes of abnormality and instances of the output of said sensor means, such that a neural element of the output layer corresponding to a cause of abnormality has a high logic output in response to the output of said sensor means indicative of the existence of an abnormality while other neural elements of the output layer have a low logic output;

a preprocessor means for preprocessing output waveform samples of the output of said sensor means to obtain characteristic waveforms consisting of peaks each corresponding to an abrupt variation in the waveform samples;

an averaging means for averaging the characteristic waveforms to obtain an average characteristic waveform; and

normalizer means for normalizing a peak level of the averaged characteristic waveform to unity and dividing a time interval of the waveform into a plurality of subintervals, to obtain a characteristic waveform histogram;

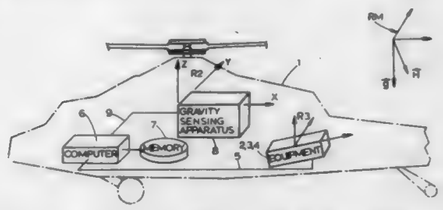
wherein levels of said characteristic waveform histogram are input to corresponding neural elements of the input layer of said neural network means.

5,305,236

METHOD AND SELF-CONTAINED SYSTEM FOR HARMONIZING EQUIPMENTS ON BOARD A VEHICLE, USING MEANS OF MEASURING THE EARTH'S GRAVITATIONAL FIELD

Serge A. Germanetti, Marseille, France, assignor to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Feb. 25, 1992, Ser. No. 841,385
Claims priority, application France, Mar. 7, 1991, 91 02721
Int. Cl.[5] G01C 21/00
U.S. Cl. 364—559 10 Claims



1. A method for harmonizing an equipment (2) relative to a vehicle (1), said equipment (2) being installed fixedly on board said vehicle (1) which, relative to a first absolute reference system (RM), has an orientation defined by a second reference system (R2) tied to said vehicle (1), said equipment (2) being subjected to the earth's gravitational field represented by a gravity vector $\vec{g}$ oriented along its gradient, and the orientation of said equipment (2) being defined, relative to said first absolute reference system (RM), by a third reference system (R3), said equipment (2) comprising a device (3, 4) for measuring the components of said gravity vector fixed to said equipment (2); and said vehicle (1) carrying a computer (6); a memory (7) associated with said computer (6); and a first link (5) connecting the equipment (2) to said computer (6) and to said memory (7), said method comprising the following steps:

disposing, fixedly on board the vehicle (1), a gravity-sensing apparatus (8) harmonized relative to the vehicle and connected to said computer (6) and to said memory (7) by a second link (9);

placing the vehicle (1) in a first fixed position relative to the ground, corresponding to a first positioning (R21) of said second reference system (R2) relative to said first absolute reference system (RM);

measuring, with the gravity-sensing apparatus (8), first values representative of the components of a vector $\vec{g}11$ representing the earth's gravitational field $\vec{g}$ sensed by the gravity-sensing apparatus (8) in the second reference system (R2), and transforming said first values into first data indicative of said first values;

transmitting said first data to the memory (7), via said second link (9) connecting the gravity-sensing apparatus (8) to said memory (7), and storing said first data in said memory (7);

measuring with said equipment (2), second values representative of the components of a vector $\vec{g}21$ representing the earth's gravitational field $\vec{g}$ sensed by the equipment (2) in the third reference system (R3), and transforming said second values into second data indicative of said second values;

transmitting said second data to the memory (7), via said first link (5), and storing said second data in said memory (7);

placing the vehicle (1) in a second fixed position relative to the ground, corresponding to a second positioning (R22) of said second reference system (R2) relative to said first absolute reference system (RM);

measuring with the gravity-sensing apparatus (8), third values representative of the components of a vector $\vec{g}12$ representing the earth's gravitational field $\vec{g}$ sensed by the gravity-sensing apparatus (8) in the second reference system (R2), and transforming said third values into third data indicative of said third values;

transmitting said third data to the memory (7), via said second link (9) connecting the gravity-sensing apparatus (8) to said memory (7), and storing said third data in said memory (7);

measuring with the equipment (2), fourth values representative of the components of a vector $\vec{g}22$ representing the earth's gravitational field $\vec{g}$ sensed by the equipment (2) in the third reference system (R3), and transforming said fourth values into fourth data indicative of said fourth values;

transmitting said fourth values to the memory (7), via said first link (5), and storing said fourth values in said memory (7);

calculating a first rotation operator R1, in the computer (6), from said first data, second data, third data and fourth data, to correct the angular errors of harmonization of the measurements made in said third reference system (R3) of said equipment (2) relative to those made in said second reference system (R2) of said vehicle (1), according to the relationships:

$$\begin{vmatrix} 11 \\ 12 \end{vmatrix} = \begin{vmatrix} R1[(\alpha,\beta,\Gamma)] & 0 \\ 0 & R1[(\alpha,\beta,\Gamma)] \end{vmatrix} \times \begin{vmatrix} 21 \\ 22 \end{vmatrix}$$

storing in the computer (6) the rotation operator R1; and

applying the rotation operator R1 to angles $\phi 2$, $\theta 2$, $\Omega 2$) determined subsequently, by the computer (6), from subsequent measurements, respectively representative of the angles of roll, of pitch attitude and of heading which are measured by said equipment (2) to give subsequent values measured by said equipment (2) according to its third reference system (R3).

5,305,237

METHOD AND APPARATUS FOR MONITORING A FLOWABLE MATERIAL IN A TRANSPORTABLE VESSEL

Thomas H. Dalrymple, Crown Point, Ind.; Buford R. Jean, Round Rock; Tom L. Erb, and Frederick L. Whitehead, both of Austin, all of Tex., assignors to Union Tank Car Company, East Chicago, Ind.

Filed Jul. 12, 1991, Ser. No. 729,457
Int. Cl.[5] G01F 23/00
U.S. Cl. 364—562 34 Claims

18. A separable microwave assembly for use in monitoring selected ones of the level and quantity of flowable material contained in each of a plurality of transportable vessels, said assembly comprising:

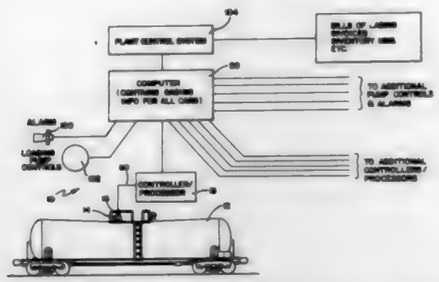
(a) a microwave lens/seal support means adapted to be permanently mounted to each of a plurality of vessels,

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each of said support means including a lens/seal means in sealing relationship with an opening in one said vessel in facing relationship with the surface of the material contained in said vessel; and

(b) a microwave transceiver means adapted to be releasably



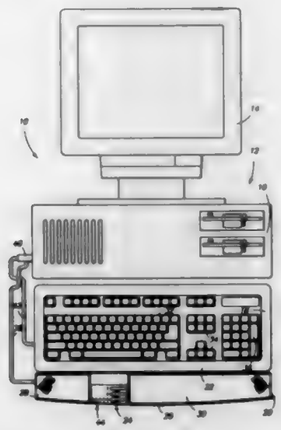
connected and disconnected to said support means of each of a plurality of vessels for emitting microwave signals through said lens/seal means toward the surface of the material and for receiving reflected microwave signals from the surface of the materials through said lens/seal assembly.

5,305,238

DATA INPUT MONITOR AND INDICATOR FOR MANAGING WORK PACE AND REST PERIODS

Henry W. Starr, III, Coeur d'Alene, Id., and Norman V. Morse, Spokane, Wash., assignors to Key Tronic Corporation, Spokane, Wash.

Filed Nov. 3, 1992, Ser. No. 971,393
Int. Cl.[5] B41J *29/00*
U.S. Cl. 364—569 **51 Claims**



1. A data input monitor for use with a data input device that enters data into a computer, the data input monitor comprising:

monitoring means for measuring an amount of data entered from the data input device to the computer;

determination means for establishing intermittent rest periods in accordance with the amount of data entered from the input device; and

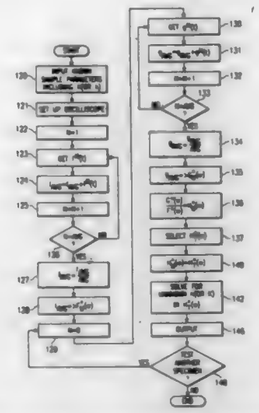
means for informing a user to rest during the rest periods.

5,305,239

ULTRASONIC NON-DESTRUCTIVE EVALUATION OF THIN SPECIMENS

Vikram K. Kinra, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Oct. 4, 1989, Ser. No. 416,889
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—507 **21 Claims**



1. A method for non-destructively evaluating a material, comprising the steps of:

transmitting an ultrasonic wave having a frequency within a predetermined frequency range into said material;

receiving said ultrasonic wave from said material;

measuring a frequency response of said material at frequencies within said predetermined frequency range from said received ultrasonic wave; and

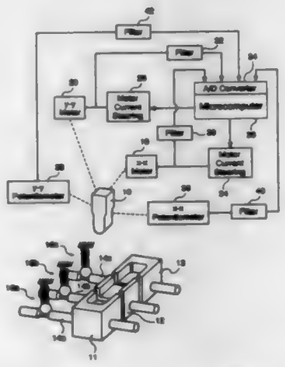
determining a frequency-dependent normalized wavenumber in said material from said frequency response.

5,305,240

COMPUTER CONTROLLED METHOD OF CALIBRATING AN X-Y SHIFTER

Alan R. Davis, Plainwell; Daniel P. Janecke, Kalamazoo; Leo A. Kominek, Portage, all of Mich., and Chiau-Chieh Ong, Kokomo, Ind., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 25, 1992, Ser. No. 982,308
Int. Cl.[5] B60K *20/10*
U.S. Cl. 364—571.01 **7 Claims**



1. A computer controlled method of calibrating the neutral position of an electrically actuable X-Y shifting mechanism for a transmission,

said shifting mechanism including a plurality of shift rails each having a shift block associated therewith, a shift finger movable left and right in an X—X direction for selecting one of said shift rails and movable in the Y—Y direction substantially transverse to said X—X direction for contacting forward and rearward inner wall surfaces of the shift block associated with the selected shift rail, motor means for moving said shift finger,

said method comprising the steps of;

a. applying control signals to said motor means to move said shift finger to the current neutral position of each rail in a predetermined sequence and while at each neutral position to move said shift finger forward and rearward from the neutral position until the forward and rearward inner wall surfaces of each of the shift blocks is touched,

b. storing the shift finger positions when touching the inner wall surfaces specified in step a.

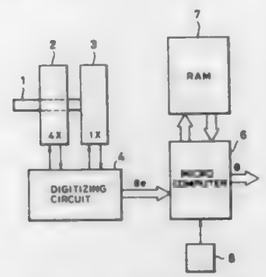
c. calculating a new neutral position of said rails by averaging the forward direction position of said shift finger in step a. and the rearward direction position of said shift finger in step a. which are closest together.

5,305,241

ERROR CORRECTING APPARATUS IN POSITION DETECTION

Yasukazu Hayashi, and Shinji Shibata, both of Niwa, Japan, assignors to Okuma Corporation, Aichi, Japan

Filed Sep. 10, 1991, Ser. No. 757,462
Claims priority, application Japan, Sep. 17, 1990, 2-246834
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—576 **3 Claims**



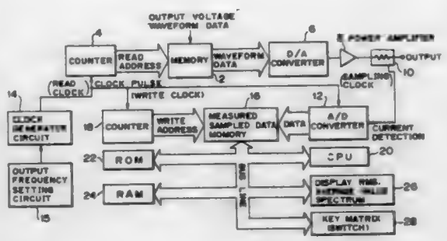
1. An error correcting apparatus in position detection for correcting a position detection error contained in an output position detection value from a position detector, said error correcting apparatus comprising: a non-volatile memory for storing in advance, each Fourier periodic component of said position detection error, which is obtained by transforming said position detection error to Fourier series having basic periods of integer multiplications of an absolute position detection range of said position detector; a converting means for operating, upon activation of said error correcting apparatus, an inverse Fourier transform by reading out each periodic component of said position detection error from said non-volatile memory; a random access memory for storing the position detection error converted by said converting means; and a correcting means for reading out of said random access memory said position detection error corresponding to the output position detection value from said position detector so as to correct said position detection value.

5,305,242

AC POWER SUPPLY APPARATUS AND LOAD CURRENT MEASUREMENT METHOD IN AC POWER SUPPLY APPARATUS

Noriyoshi Kikuchi, Kawasaki, and Masayuki Suetomi, Yokohama, both of Japan, assignors to Kikusui Electronics Corporation, Kanagawa, Japan

Filed May 27, 1993, Ser. No. 67,920
Claims priority, application Japan, May 29, 1992, 4-139186; Mar. 26, 1993, 5-068191
Int. Cl.[5] G06J *1/00*
U.S. Cl. 364—602 **8 Claims**



1. An AC power supply apparatus comprising:

clock generator means for generating a clock pulse train;

a first address counter receiving the clock pulse train for generating read addresses;

a waveform memory previously stored with amplitude data of one period of a predetermined voltage waveform;

a D/A converter for converting the memory data which is read from said waveform memory to an analog signal in response to the read addresses outputted from said first address counter;

a power amplifier for amplifying the output of said D/A converter to supply a load with an AC voltage;

current detection means for converting the current flowing through said load to an analog voltage;

an A/D converter for outputting current data by sampling the output of said current detection means using the clock pulse train or a signal associated with the clock pulse train as sample clock pulses;

a second address counter for converting the clock pulse train or the signal associated with the clock pulse train to write addresses;

a sampled data memory for storing said current data in response to the write addresses;

FFT processing means for performing the Fourier transformation on the current flowing through said load using data stored in said sampled data memory; and

display means for displaying the output of said FFT processing means.

5,305,243

METHOD AND DEVICE FOR COMPARING TWO VARIABLE ANALOGUE SIGNALS

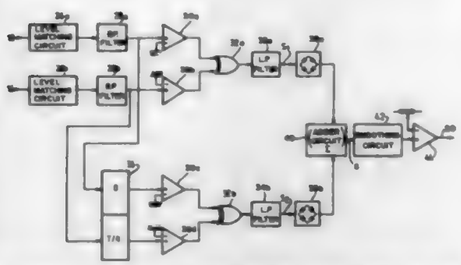
Michel Ayraud, Nice; Mario D'Amico, Puyricard, and Gérard Pelous, Aix-en-Provence, all of France, assignors to Bertin & Cie, Plaisir Cedex, France

PCT No. PCT/FR90/00863, § 371 Date Sep. 10, 1991, § 102(e) Date Sep. 10, 1991, PCT Pub. No. WO91/08493, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 28, 1990, Ser. No. 741,391
Claims priority, application France, Dec. 1, 1989, 89 15906
Int. Cl.[5] G06J *1/00*
U.S. Cl. 364—604 **14 Claims**

8. A device for comparing two variable analogue signals covering a preset frequency band, the device comprising two parallel channels for processing the analogue signals, one of said channels comprising means for introducing a time shift on one analogue signal with respect to the other, this shift being

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equal to a ½ period at the center frequency of the above-mentioned frequency band, each of said parallel channels including transforming circuits for transforming said analogue signals into binary logic signals, an exclusive OR logic circuit, connected to said transforming circuits, a summing circuit connected to said exclusive OR logic circuit for establishing one of



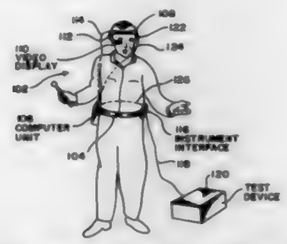
said first and second correlation signals respectively, and an absolute value circuit connected to said summing circuit for establishing absolute values of said correlation signals; and an adder circuit for adding said absolute values obtained from said first and second correlation signals and producing a third correlation signal that is substantially independent of any time shift between the analogue signals.

5,305,244

HANDS-FREE, USER-SUPPORTED PORTABLE COMPUTER

Edward G. Newman, Fairfax; Gil S. Christian, Stephens City; Michael D. Jenkins, Manassas, all of Va., assignor to Computer Products & Services, Inc., Fairfax, Va.

Filed Apr. 6, 1992, Ser. No. 863,619
Int. Cl.[5] **G06F** *1/00, 3/00*
U.S. Cl. 364—708.1 **13 Claims**



1. A compact, self-contained portable computing apparatus for being completely supported by a user for hand-free retrieval and display of information for the user comprising:

a housing having securing means for removably mounting the housing on a user for being carried without hands by the user;

storage means mounted in the housing for storing previously entered information including an electronic technical manual and a preprogrammed vocabularly model of a plurality of words and phrases;

processor means mounted in the housing and communicating with the storage means for receiving, retrieving and processing information and user commands in accordance with a stored program;

audio transducer and converter means in communication with the processor means for receiving audio commands from the user, for converting the received audio commands into electrical signals, and for sending the converted electrical signals to the processor means, the audio transducer and converter means being supported hands-free by the user;

said processor means including means for recognizing a command in the converted electrical signals and responding to the recognized command by retrieving and outputting corresponding information from the electronic technical manual stored in the storage means;

said recognizing means including means for defining a subset of the plurality of words and phrases in the preprogrammed vocabulary model according to a current context of the stored program and for matching the converted electrical signals against the defined subset to recognize the command;

computer display means in communication with the processor means for receiving the outputted information from the processor means and for displaying the received information for the user; and

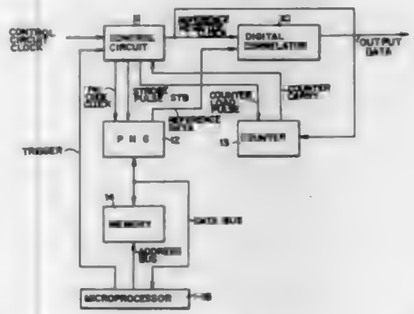
means for mounting the computer display means on the user such that the computer display means is carried hands-free in a portion of the view of the user whereby the computing apparatus is capable of being operated to display the received information in a hands-free manner utilizing only the audio commands.

5,305,245

DIGITAL CORRELATING DEVICE

Takao Kurihara, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,254
Claims priority, application Japan, Nov. 20, 1991, 3-332633
Int. Cl.[5] **G06F** *15/336, 1/02*
U.S. Cl. 364—728.03 **4 Claims**



1. A digital correlating device comprising:

a PN code generator, to which a PN code clock is inputted and which generates reference data after setting of initial information and input of a strobe signal;

a counter, which counts reference register clocks after input of a load signal to output a count value;

a digital correlator, to which said reference data are inputted in response to said reference register clocks, said digital correlator producing a correlation output; and

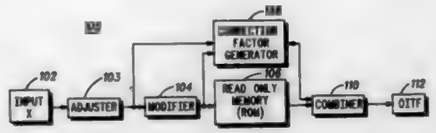
a control circuit, which supplies said strobe signal to said PN code generator, supplies said load signal to said counter, supplies said PN code clock to said PN code generator, supplies said reference register clocks to said digital correlator, and which controls said PN code clock, said reference register clocks and said counter based on the counter output.

5,305,246

DEVICE AND METHOD FOR EVALUATING INVERSE TRIGONOMETRIC FUNCTIONS

Brett L. Lindsley, 242 North Ave., Highwood, Ill. 60040, and Darleen J. Stockley, Rte. #2, Earlville, Ill. 60518

Continuation of Ser. No. 924,354, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 555,324, Jul. 19, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,853
Int. Cl.[5] **G06F** *15/31*
U.S. Cl. 364—729 **33 Claims**



1. A device for processing an input value to provide at least one inverse trigonometric function value of the input value, compriaing:

A) modification means responsive to the input value for determining an approximation value of the input value;

B) error generating means responsive to the modification means and the input value for generating an error value;

C) a read-only memory (ROM) responsive to the modification means for generating at least a first scaling factor, the first scaling factor being substantially equal to

$$\frac{1}{\sqrt{1-a^2}}$$ where a is the approximation value;

where a is the approximation value;

D) function generating means responsive to the modification means for determining an intermediate value;

E) correction factor generating means responsive to the error generating means, the modification means, and the read-only memory for determining at least one correction value; and

F) first combining means responsive to the function generating means and correction factor generating means for determining at least one output inverse trigonometric function value of the input value.

5,305,247

METHOD AND PROCESSOR FOR HIGH-SPEED CONVERGENCE FACTOR DETERMINATION

Brett L. Lindsley, Highwood, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 806,778, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 715,003, Jun. 13, 1991, abandoned, which is a continuation of Ser. No. 458,915, Dec. 29, 1989, abandoned. This application Oct. 2, 1992, Ser. No. 956,446
Int. Cl.[5] **G06F** *7/38*
U.S. Cl. 364—748 **17 Claims**

1. A numeric processor comprising:

a processing platform for processing convergence factors utilizing an input signal value having other than $\pm\infty$, ± 0, or Not-a-Number (NaN), for a mathematical determination of an electrical output signal, being convergent division determination/square root determination, wherein the input value is modified to a value X, such that X is limited to a range with a lower limit greater than or equal to 0.5 and an upper limit β determined, at least in part, by the mathematical determination invoked and such that X is defined as $X=2^e * f$, said platform comprising:

A) electrical first selecting means operably coupled to receive the input signal value for selecting an input signal value other than $\pm\infty$, ± 0, or NaN;

B) electrical input signal value altering means being one of:

B1) a read-only memory (ROM), and

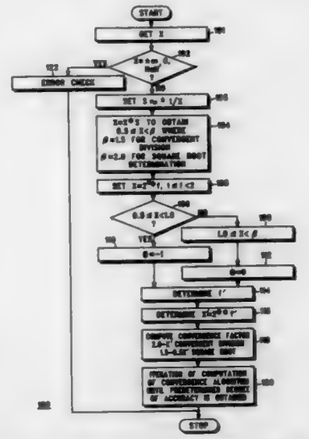
B2) an arithmetic logic unit (ALU), operably coupled to the first selecting means for converting a selected input signal value to a value X such that $0.5 \leqq X < \beta$, the respective value of β being a constant value related to the mathematical determination;

C) electrical exponent means of a read-only memory (ROM) and an arithmetic logic unit (ALU), operably coupled to the input signal value altering means for selecting a value for an exponent e;

D) electrical first determining means of a read-only memory (ROM) and an arithmetic logic unit (ALU), operably coupled to the input signal value altering means and the exponent means for determining a value for f, wherein $f=X/2^e$ such that $1 \leqq f < 2$ and f is represented by a series of binary bits consisting of a most significant binary bit and remaining binary bits;

E) electrical locating means, operably coupled to the first determining means for placing the most significant binary bit of f, being 1, to the immediate left of a binary point with the remaining binary bits of f located to the right of the binary point;

F) electrical second selecting means of a read-only memory (ROM) and an arithmetic logic unit (ALU), operably coupled to the locating means and the first determining



means for selecting binary bits to the right of the binary point in accordance with the value of X and the mathematical determination;

G) electrical complementing means being one of:

G1) a read-only memory (ROM), and

G2) an arithmetic logic unit (ALU), operably coupled to the second selecting means for determining a one's complement of the selected binary bits to the right of the binary point;

H) electrical combining means being one of:

H1) a read-only memory (ROM), and

H2) an arithmetic logic unit (ALU), operably coupled to the complementing means for combining the most significant bit of f, being 1, with the one's complement of the selected binary bits, thereby determining f', a new value for f;

I) electrical second determining means being one of:

I1) a read-only memory (ROM), and

I2) an arithmetic logic unit (ALU), operably coupled to the combining means for determining X', a new value for X, in electrical form such that $X'=2^e * f'$; and

J) electrical third determining means being one of:

J1) a read-only memory (ROM), and

J2) an arithmetic logic unit (ALU), operably coupled to the second determining means for generating a conver-

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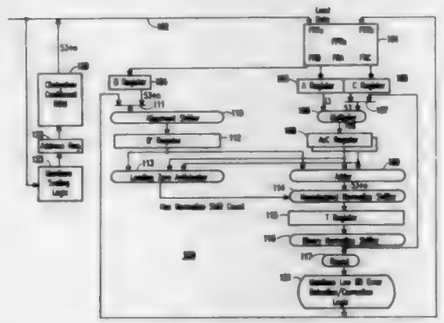
gence factor in electrical form such that $X'=2.0-X$ being a new convergence factor for convergent division and $X'=1.5-0.5X$ being a new convergence factor for square root determination.

5,305,248

FAST IEEE DOUBLE PRECISION RECIPROCALS AND SQUARE ROOTS

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Filed Apr. 23, 1993, Ser. No. 53,035
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **20 Claims**



1. A floating point unit (FPU) in a computer for calculating a mathematical function f(m), where f(m) is a reciprocal or square root function, said FPU having a pipelined multiply accumulate function and further comprising:

read only memory (ROM) for storing a plurality of Chebyshev coefficients;

scaling logic means for scaling mantissas m′ of floating point numbers, said mantissas m being scaled based on splitting the mantissas into 2^n intervals i, thereby allowing Chebyshev polynomials of few terms to approximate each interval, as:

$$m'=2N\times m-(2N+2i+1),$$

where N is a power of 2;

addressing means responsive to said scaling logic for selecting a set of stored coefficients from said read only memory to compute the polynomial using a predetermined number of high bits of a mantissa, a selected set of coefficients being supplied to said FPU; and

said FPU performing a plurality of multiply accumulates using said multiply accumulate function to compute the polynomial approximation of the function f(m), which approximation differs from a correct answer by no more than 1 bit:

$$f(m)=c_0+m'\times(c_1+m'\times(c_2+m'\times(c_3+\ldots+m'\times c_n)))),$$

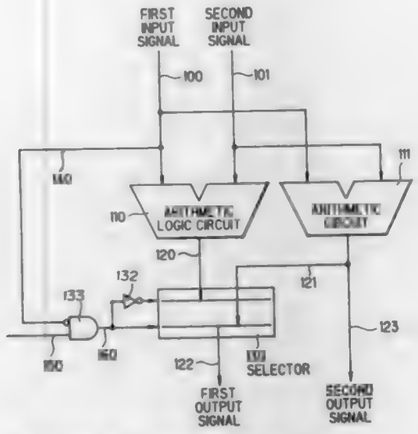
where $c_0 \ldots c_n$ are the set of coefficients selected by the addressing means using the high bits of the mantissa.

5,305,249

DIGITAL SIGNAL PROCESSOR FOR VIDEO SIGNALS

Akio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 736,585, Jul. 26, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 38,558
Claims priority, application Japan, Jul. 27, 1990, 2-199550
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—768 **8 Claims**



1. A digital signal processor, comprising:

an arithmetic logic circuit for receiving first and second input signals, each of said first and second input signals being a complement of 2 consisting of plural bits, said arithmetic logic circuit performing one of a plurality of arithmetic operations selected from an addition of said first and second input signals, a first subtraction of said second input signal from said first input signal, and a second subtraction of said first input signal from said second input signal;

an arithmetic circuit for receiving said first and second input signals, said arithmetic circuit performing one of the arithmetic operations of an addition of said first and second input signals and a subtraction of said first input signal from said second input signal;

selector means being responsive to a sign bit of said first input signal for selecting one of output signals from said arithmetic logic circuit and said arithmetic circuit; and

an output circuit having first and second output terminals, an output signal of said selector being directly obtained at said first output terminal, and an output signal of said arithmetic circuit being directly obtained at said second output terminal, said output signal of said selector at said first output terminal and said output signal of said arithmetic circuit at said second output terminal being obtained in parallel;

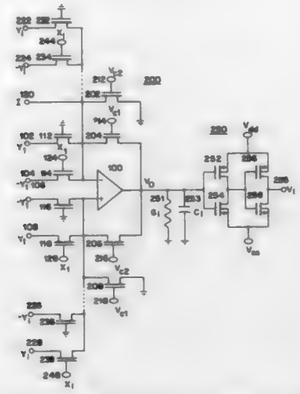
wherein said arithmetic logic circuit carries out said first subtraction, said arithmetic circuit carries out said addition of said first and second input signals, and said selector means selects an output signal of said arithmetic circuit in a first case that said first input signal is positive, and an output signal of said arithmetic logic circuit in a second case that said first input signal is negative, so that a result of said addition is obtained at said first output terminal in said first case. and a result of said first subtraction is obtained at said first output terminal in said second case, when a calculation of addition and subtraction with selection is instructed.

5,305,250

ANALOG CONTINUOUS-TIME MOS VECTOR MULTIPLIER CIRCUIT AND A PROGRAMMABLE MOS REALIZATION FOR FEEDBACK NEURAL NETWORKS

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Filed May 5, 1989, Ser. No. 348,309
Int. Cl.[5] G06G *7/12, 7/163*
U.S. Cl. 364—807 **5 Claims**



1. An analog multiplier/summer circuit for providing an output voltage proportional to sum of the respective products of a plurality of sets of a first multiplicand voltage and a second multiplicand voltage comprising:

an operational amplifier having an inverting input, a noninverting input and an output, said output of said operational amplifier producing an output voltage being the output of the multiplier/summer circuit;

a first resistance having a predetermined resistance value connected between said inverting input of said operational amplifier and said output of said operational amplifier;

a second resistance having said predetermined resistance value connected between said noninverting input and a predetermined reference voltage;

a plurality of sets of depletion mode multiplication field effect transistors, each set including

a first multiplication field effect transistor having a source-drain path connected between the corresponding first multiplicand voltage and the inverting input of said operational amplifier, and a gate connected to said predetermined reference voltage,

a second multiplication field effect transistor having a source-drain path connected between the negative of the corresponding first multiplicand voltage and the inverting input of said operational amplifier, and a gate connected to the corresponding second multiplicand voltage,

a third multiplication field effect transistor having a source-drain path connected between the negative of the corresponding first multiplicand voltage and the noninverting input of said operational amplifier, and a gate connected to the said predetermined reference voltage,

a fourth multiplication field effect transistor having a source-drain path connected between the corresponding first multiplicand voltage and the noninverting input of said operational amplifier, and a gate connected to the corresponding second multiplicand voltage;

said first and second multiplicand voltages of each set are restricted such that said first multiplicand voltage is less than or equal to the minimum of the difference between said second multiplicand voltage and the threshold voltage of said first, second, third and fourth multiplication field effect transistors of that set and the negative of the threshold voltage of said first, second, third and fourth multiplication field effect transistors of that set; and

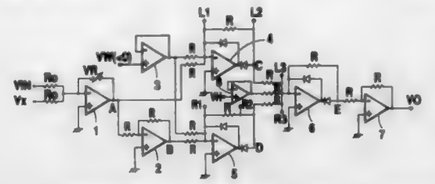
a double inverter circuit having an input connected to the output of said operational amplifier and an output, said double inverter consisting of two CMOS field effect transistor inverter circuits disposed in tandem.

5,305,251

MEMBERSHIP FUNCTION GENERATOR

Fumiaki Shigeoka, and Masanari Oh, both of Fukuoka, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 6, 1993, Ser. No. 86,120
Claims priority, application Japan, Jul. 10, 1992, 4-184153
Int. Cl.[5] G06G *7/00*
U.S. Cl. 364—807 **7 Claims**



1. A membership function generator where a membership value is represented by an analog voltage, said membership function generator comprising:

a first side generation circuit which is responsive to a gradient and center position of a membership function given from an external system for generating one side of the membership function;

a second side generation circuit which folds back the side of the membership function generated by said first side generation circuit symmetrically with a center position as a center for generating another side of the membership function;

first and second clip circuits which shift both sides of the membership function generated by said first and second side generation circuits in a height direction of the membership function in response to a value given from the external system and clip them at predetermined values;

a combining circuit which combines both sides of the membership function generated by said first and second clip circuits into one form; and

a height adjustment circuit which is responsive to a value given from the external system for adjusting the height of the membership function whose sides are combined by said combining circuit.

5,305,252

SEMICONDUCTOR MEMORY DEVICE HAVING MEMORY CELL MATRIX OBLIQUELY ARRANGED WITH RESPECT TO BIT LINES

Takanori Saeki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 726,663, Jul. 8, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 119,531
Claims priority, application Japan, Jul. 6, 1990, 2-178850
Int. Cl.[5] G11C *13/00;* **H01L** *27/10, 29/68*
U.S. Cl. 365—63 **7 Claims**

1. A semiconductor memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of first word line pairs each formed by adjacent two first word lines;

b) a plurality of first bit lines respectively paired with a plurality of second bit lines for forming a plurality of bit line pairs respectively coupled with a plurality of first sense amplifier circuits located on one side of said plurality of bit line pairs;

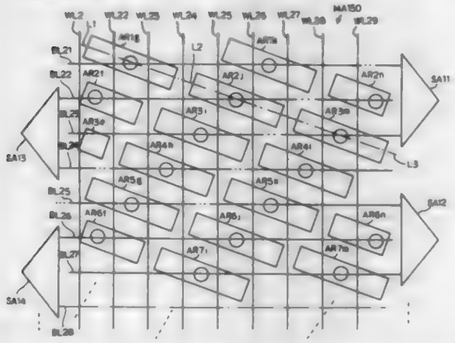
c) a plurality of first memory cell pairs arranged in rows and columns, said rows of said plurality of first memory cell pairs being selectively coupled to said first and second bit lines, said columns of said plurality of first memory cell pairs being respectively formed in a plurality of generally rectangular first active areas having respective longitudi-

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nal directions obliquely extending with respect to longitudinal directions of said associated first and second bit lines, respectively, said longitudinal directions of said generally rectangular first active areas being substantially in parallel to one another;

d) one of said adjacent two word lines of one of said plurality of first word line pairs and one of said adjacent two word lines of another of said plurality of first word line pairs adjacent to each other forming a second word line pair, so that said word lines of said plurality of first word line pairs are rearranged into a plurality of second word line pairs;

e) a plurality of third bit lines respectively paired with a plurality of fourth bit lines for forming a plurality of second bit line pairs respectively coupled with a plurality of second sense amplifier circuits located on an opposite side of said plurality of first sense amplifier circuits, said third and fourth bit lines being interdigitated between said first and second bit lines so as to form a folded-bit-line configuration; and



f) a plurality of second memory cell pairs arranged in rows and columns, said rows of said second memory cell pairs being interdigitated with said rows of said first memory cell pairs, said rows of said second memory cell pairs being coupled with said plurality of second word lien pairs for selectively conducting with said third and fourth bit lines, said second memory cell pairs being respectively formed in a plurality of generally rectangular second active areas having respective longitudinal directions obliquely extending with respect to longitudinal directions of said associated third and fourth bit lines, respectively, said longitudinal directions of said generally rectangular second active areas being substantially in parallel to one another and substantially aligned with said longitudinal directions of said generally rectangular first active areas in such a manner that said generally rectangular first active areas and said generally rectangular second active areas are alternately arranged, the oblique angle between said longitudinal directions and said bit lines being adjusted in such a manner that each of said word lines extends over a field insulating film between one of said generally rectangular first active areas and one of said generally rectangular second active areas adjacent to each other in said longitudinal directions thereof.

5,305,253

ZERO FALL-THROUGH TIME ASYNCHRONOUS FIFO BUFFER WITH NONAMBIGUOUS EMPTY-FULL RESOLUTION

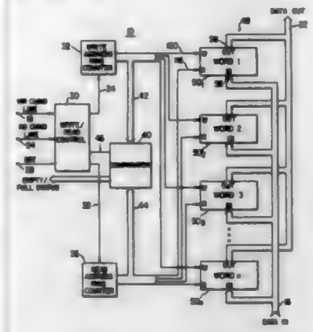
Morris D. Ward, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 746,920, Jun. 20, 1985, abandoned.
This application Jun. 11, 1993, Ser. No. 75,846
Int. Cl.[5] G11C *7/00, 19/00*
U.S. Cl. 365—73 **22 Claims**

1. A method of determining the status of a shift register memory performing read and write operations, comprising the steps of:

(a) maintaining an account of the last memory read and write operation;

(b) comparing the current shift register address of the memory write operation with a current address of a memory read operation; and



(c) providing an indication of the status of the memory upon the equality of the current address of a memory read operation with respect to the current address of memory write operation, wherein:

i. the status of said memory is determined as being full when the last memory operation was a write operation and

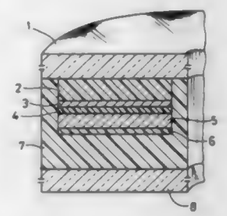
ii. the status of said memory is determined as being empty when said last memory operation was a read operation.

5,305,254

MAGNETO-OPTIC MEMORY DEVICE

Yoshiteru Murakami, Nishinomiya; Junichiro Nakayama, Nara; Ichiro Hiramatsu, Nara; Akira Takahashi, Nara; Kenji Ohta, Nara; Kazuo Van, Nara, and Hiroyuki Katayama, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 875,606, Apr. 28, 1992, abandoned.
This application Dec. 17, 1992, Ser. No. 993,517
Claims priority, application Japan, Dec. 15, 1987, 62-317757; Dec. 15, 1987, 62-317759
Int. Cl.[5] G11C *13/04*
U.S. Cl. 365—122 **19 Claims**



1. A magneto-optic memory device comprising:

a pair of opposed substrates, at least one of which is transparent;

a magneto-optic memory layer comprising a dielectric film, a rare earth-transition metal alloy thin film, and a light reflecting film in this order at least on the surface of the transparent substrate opposed to the other substrate; and

an adhesive layer, including a polymer resin formed on a nitride film, covering the memory layer and bonding the transparent substrate to the other substrate;

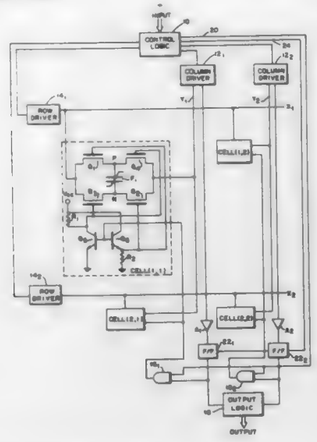
said nitride film being made of a member of the group consisting of silicon nitride, aluminum nitride, and silicon-aluminum nitride and interposed between the light reflecting film of the memory layer and the adhesive layer.

5,305,255

NON-DESTRUCTIVE READOUT FERROELECTRIC MEMORY CELL

Tzvi Rubinstein, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 18, 1989, Ser. No. 451,700
Int. Cl.[5] G11C *11/22*
U.S. Cl. 365—145 **17 Claims**



1. A memory cell comprising:

a) means for storing a bit of information, said means having two terminals and said means being adapted to store information in response to an electrical signal applied between the two terminals;

b) means for sensing the value of the bit of information in the storing means, said means comprising

(i) means for applying a voltage of a first polarity to the storing means;

(ii) means for producing an indication of the value of the bit at a time t_1 after the voltage is applied to the storing means; and

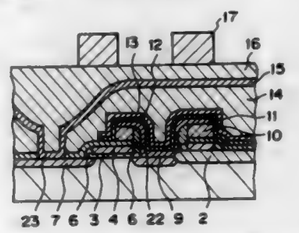
(iii) means, responsive to the sensing means, for changing the polarity of the voltage applied to the storing means when the bit of information has a predetermined value, said means operating to change the polarity at the time t_1 after the voltage is applied by the sensing means.

5,305,256

SEMICONDUCTOR MEMORY DEVICE HAVING STACKED CAPACITOR CELL

Takaho Tanigawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,825
Claims priority, application Japan, May 21, 1991, 3-115158
Int. Cl.[5] H01G *4/06*
U.S. Cl. 365—149 **4 Claims**



1. A semiconductor memory device having a stacked capacitor cell, comprising:

a semiconductor substrate;

a field oxide film and a gate oxide film which are formed on said semiconductor substrate;

a gate electrode which is formed on each of said field oxide film and said gate oxide film;

impurity diffusion layers which are formed in said semiconductor substrate and which, together with said gate electrode, form a MOS transistor;

an insulation layer which partly covers said MOS transistor and has a window;

a storage electrode with a storage electrode contact is in contact with said window, said storage electrode having, as a part thereof, a first electroconductive film which surrounds said window circumferentially and, as another part thereof, a second electroconductive film which is in contact with said first electroconductive film at least on its inside portion and also with said window; and

a side wall of an oxide film which is in contact with said window receiving said storage electrode, with each of side portions of said gate electrode and with an inner periphery of said first electroconductive film surrounding said window circumferentially and forming the part of said storage electrode,

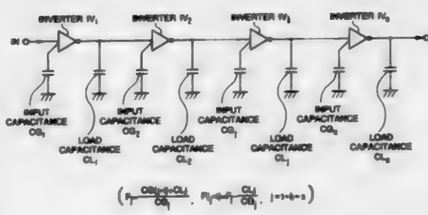
wherein said storage electrode contact is self-aligned with respect to said gate electrode.

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SEMICONDUCTOR INTEGRATED CIRCUIT

Shingo Aizaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,208
Claims priority, application Japan, Aug. 26, 1991, 3-212557
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—149 **5 Claims**



1. A semiconductor integrated circuit, comprising: "n" cascaded basic unitary circuits each formed of MOS transistors, each of the unitary circuits having an input terminal having a predetermined input capacitance and an output terminal having a predetermined output capacitance, wherein a size of an input side MOS transistor and a size of an output side MOS transistor of each of the unitary circuits are determined by selecting MOS transistors satisfying the following relationships:

ti $F_j=(CG_{(j+1)}+CL_j)/CG_j$

$$F_{(j+1)}=F_j-(CL_j/CG_j)$$

where j is an integer having a value in a range between 1 and "n", inclusive;

where F_j and $F_{(j+1)}$ are fan out of a (j)th and a (j)th unitary circuits, respectively;

where CG_j is said input capacitance of each of said unitary circuits; and

where CL_j is a load capacitance which is the sum of the output capacitance of the (j)th unitary circuit and an output parasitic capacitance other than the input capacitance of the (j+1)th unitary circuit having the input terminal connected to the output terminal of the (j)th unitary circuit.

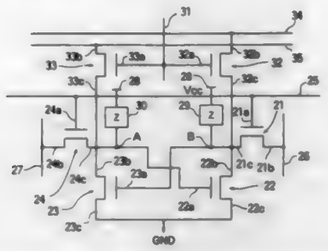
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5,305,258

SEMICONDUCTOR MEMORY AND MEMORY CELL

Atsuo Koshizuka, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 29, 1991, Ser. No. 751,535
Claims priority, application Japan, Aug. 30, 1990, 2-229766
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—189.01 **5 Claims**



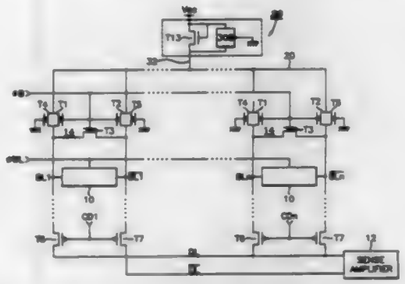
1. A semiconductor memory including a plurality of semiconductor memory cells and comprising:
a first select line for providing a first select signal to access a selected memory cell;
a second select line for providing a second select signal to access a selected memory cell, said second select signal being independent from said first select signal;
a first transmission line for coupling an information with the memory cell synchronizing to said first select signal;
a second transmission line for coupling an information with the memory cell synchronizing to said second select signal; and
each memory cell of said plurality of semiconductor memory cells including:
a storage element for storing an information, having at least one input-output terminal;
at least one input-output section including:
a first input-output control element having a control electrode connected to said first select line, a first input-output electrode connected to said input-output terminal of the storage element, and a second input-output electrode connected to said first transmission line, said first input-output control element transmitting signals between said first input-output electrode and said second input-output electrode when said control electrode is activated with said first selected signal; and
a second input-output control element having a control electrode connected to said second select line, a first input-output electrode connected to said input-output terminal of the storage element, and a second input-output electrode connected to said second transmission line, said second input-output control element transmitting signals between said first input-output electrode and said second input-output electrode when said control electrode is activated with said second select signal;
said storage element being formed of a flip-flop circuit having a first input-output terminal and a second input-output terminal, said second input-output terminal bearing a complementary signal to a signal borne by said first input-output terminal;
said first transmission line comprising a first conductor for carrying a first signal and a second conductor for carrying a second signal complementary to the first signal;
said second transmission line comprising a third conductor for carrying a third signal and a fourth conductor for carrying a fourth signal complementary to the third signal; and
said semiconductor memory cell comprising two of said input-output sections including a first input-output section and a second input-output section;
wherein said first input-output section is connected to said first input-output terminal of said flip-flop circuit with said first input-output electrodes, to said first conductor with said second input-output electrode of said first input-output control element, and to said third conductor with said second input-output electrode of said second input-output control element; and
wherein said second input-output section is connected to said second input-output terminal of said flip-flop circuit with said first input-output electrodes, to said second conductor with said second input-output electrode of said first input-output control element, and to said fourth conductor with said second input-output electrode of said second input-output control element, respectively.

5,305,259

POWER SOURCE VOLTAGE TRACKING CIRCUIT FOR STABILIZATION OF BIT LINES

Byung-Yoon Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co. Ltd., Kungki, Rep. of Korea

Filed May 31, 1989, Ser. No. 359,274
Claims priority, application Rep. of Korea, May 2, 1989, 1989-5915
Int. Cl.[5] G11C *7/00*; H03K *3/01*; G05F *3/04, 3/08*; H02J *1/14*
U.S. Cl. 365—189.09 **23 Claims**



1. A power source voltage tracking circuit, comprising:
a first node for receiving a power source voltage;
a second node;
an output line;
load means coupled between said first node and output line to charge said output line with a first voltage lower in value than the power source voltage, said load means is a diode-connected MOS FET transistor coupled between said first node and output line;
means coupled between said first and second nodes for charging said second node with a second voltage, said charging means is coupled in the form of a parallel connection between a plurality of series coupled diode-connected MOS FET transistors and a capacitor; and
means for discharging said output line in response to said second voltage on said second node.

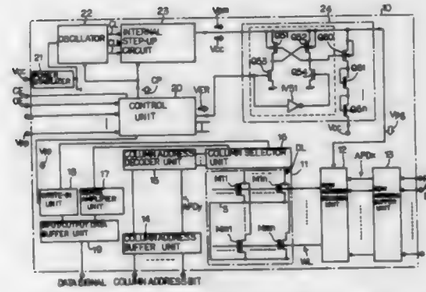
5,305,260

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY DEVICE VERIFIABLE WITH STANDARD EXTERNAL POWER VOLTAGE LEVEL

Kazuhisa Ninomiya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,312
Claims priority, application Japan, Feb. 28, 1992, 4-042696
Int. Cl.[5] G11C *7/00, 16/00*
U.S. Cl. 365—189.09 **3 Claims**

1. An electrically erasable and programmable read only memory device selectively entering an erasing mode, a programing mode, a verifying mode and a read-out mode of operation, comprising:
a) a plurality of electrically erasable and programmable memory cells having respective accumulating electrodes for accumulating carriers, and respective control electrodes associated with said accumulating electrodes for producing respective conductive channels between respective source nodes and respective drain nodes under the influence of said accumulating electrodes, and each selectively entering an erased state and a programmed state depending upon the amount of said carriers accumulated in the accumulating electrode;
b) a plurality of word lines selectively coupled with said control electrodes of said plurality of electrically erasable and programmable memory cells;
c) a plurality of digit lines selectively coupled with said drain nodes of said plurality of electrically erasable and programmable read only memory cells;
d) a word line selecting means coupled with said plurality of work lines, and supplying a read-out voltage to one of said plurality of work lines in said read-out mode and a verify voltage higher than said read-out voltage in said verifying mode;
e) a verify voltage producing circuit operative to produce said verify voltage rom a power voltage supplied from the outside of said electrically erasable and programmable read only memory device in said verifying mode, and supplying said verify voltage to said word line selecting



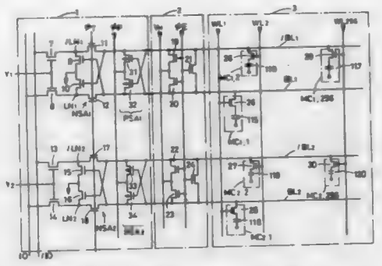
means, said verify voltage producing circuit comprising an oscillator for producing clock signals from said power voltage, a bootstrapping circuit responsive to said clock signals for producing a boosted voltage, and a voltage clamping circuit for producing said verify voltage from said boosted voltage;
f) a sense amplifier unit operative to check an electrically erasable and programmable read only memory cell selected from the said plurality of electrically erasable and programmable read only memory cells to be whether in said erased state or in said programed state;
g) a write-in unit supplying a write-in voltage to an electrically erasable and programmable read only memory cell selected from said plurality of electrically erasable and programmable read only memory cells for injecting said carriers into said accumulating electrode;
h) a column selecting means operative to couple one of said plurality of digit lines to said sense amplifier unit in said verifying mode and said read-out mode and to said write-in unit in said programming mode; and
i) a data buffer unit coupled with said sense amplifier unit and said write-in unit, and operative to supply a write-in data signal to said write-in unit in said programming mode and to produce a read-out data signal in said verifying mode and said read-out mode.

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SEMICONDUCTOR MEMORY DEVICE AND METHOD OF TESTING THE SAME

Kiyohiro Furutani; Michihiro Yamada, and Shigeru Mori, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 873,431
Claims priority, application Japan, Sep. 2, 1991, 3-221863
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.01 **33 Claims**



1. A semiconductor memory device, comprising:
a memory cell array including a plurality of memory cells arranged in rows and columns;
a plurality of pairs of bit lines provided corresponding to said columns of said array for having memory cells on a corresponding column coupled thereto;
a plurality of first sense amplifier means provided for each respective pair of bit lines and for sensing and amplifying a potential difference between an associated pair of bit lines, each said first sense amplifier means including a sensing node for sensing a potential difference between the associated pair of bit lines and an output node for supplying an output indicative of thus sensed potential difference;
data transfer bus for transferring data;
a plurality of column select gates responsive to a column select signal for connecting said output node of the first sense amplifier means provided corresponding to a selected pair of bit lines designated by said column select signal to said data transfer bus; and
operation control means responsive to an isolation control signal for disabling an amplification operation of each said first sense amplifier means while enabling a sensing operation of each said sense amplifier means.

5,305,262

SEMICONDUCTOR INTEGRATED CIRCUIT

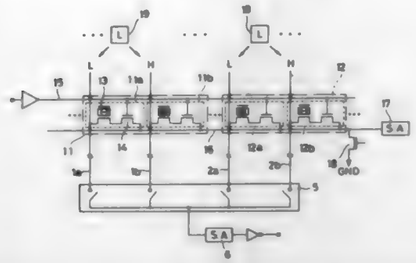
Masato Yoneda, Tokyo, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Filed Sep. 9, 1992, Ser. No. 942,469
Claims priority, application Japan, Sep. 11, 1991, 3-231986; Jan. 10, 1992, 4-003403
Int. Cl.[5] G11C *15/04*
U.S. Cl. 365—189.05 **17 Claims**

6. A semiconductor integrated circuit comprising a first memory cell for defining the electrical connection or the nonconnection between a first data line and a match line, a second memory cell for defining the electrical nonconnection or the connection between a second data line and said match line, a selective transistor for making and breaking the connection between each of said first and said second data lines and said match line in accordance with the definition of the connections

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of said first and second memory cells, means for electrically connecting a selective word line connected to a gate electrode



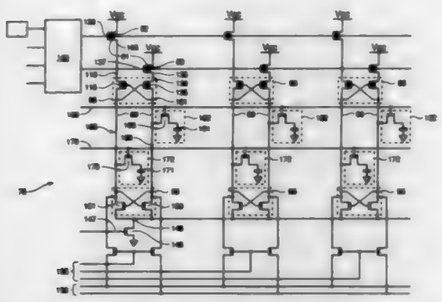
of said selective transistor to said match line, and means for making said selective word line afloat.

5,305,263

SIMPLIFIED LOW POWER FLASH WRITE OPERATION

Donald M. Morgan, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 12, 1991, Ser. No. 713,902
Int. Cl.[5] G11C *7/00, 8/00, 11/24*
U.S. Cl. 365—190 **24 Claims**



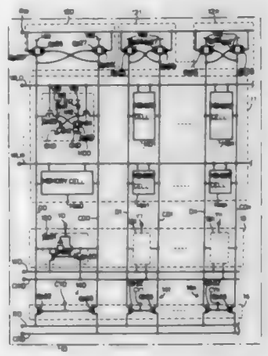
1. A memory circuit comprising:
a) a first node connectable to a first potential corresponding to a first logic state;
b) a second node connectable to a second potential corresponding to said first logic state;
c) a third node connectable to a third potential corresponding to a second logic state;
d) a first input/output line (**186A**) for accepting electrical input data and for providing electrical output data;
e) a first memory storage cell (**171**) for storing said electrical input data and said electrical output data;
f) a first digit (**165**) line for transferring said electrical input data and said electrical output data between said first input/output line (**186A**) and said first memory storage cell (**171**), said first input/output line (**186A**) electrically coupled to said first digit line (**165**);
g) a second input/output line (**186B**) for accepting a complement of said electrical input data and for providing a complement of said electrical output data;
h) a second memory storage cell (**181**) for storing said complement of said electrical input data and said complement of said electrical output data;
i) a second digit line (**160**) for transferring said electrical input data and said electrical output data between said second input/output line (**186B**) and said second memory storage cell (**181**), said second input/output line (**186B**) electrically coupled to said second digit line (**160**);
j) a first switching device (**82, 301**) electrically interposed between said first node and said first digit line (**165**);
k) a first switching device (**82, 301**) electrically interposed between said second node and said second digit line (**160**);
l) a third switching device (**145, 303**) electrically interposed between said third node and said first digit line (**165**) and electrically interposed between said third node and said second digit line (**160**);
m) a first sense circuit (**85**) electrically coupled between both said first (**165**) and said second (**160**) digit lines, said first sense circuit (**85**) capable of electrically isolating said first digit line (**165**) from said first switching device (**82, 301**) and capable of electrically isolating said second digit line (**160**) from said second switching device (**83, 302**), said first sense circuit capable of sensing and latching said first and second digit lines to potentials having said first and second logic states; and
n) a second sense circuit (**95**) electrically coupled between both said first (**165**) and said second (**160**) digit lines, said second (**95**) sense circuit capable of electrically isolating said first digit line (**165**) and said second (**160**) digit line from said third switching device (**145, 303**), said second sense circuit (**95**) capable of sensing and latching said first (**165**) and second (**160**) digit lines to potentials having said first and second logic states.

5,305,264

STATIC TYPE RANDOM ACCESS MEMORY DEVICE EQUIPPED WITH VARIABLE LOAD CIRCUITS FOR DIGIT LINE PAIRS

Hiroyuki Takahashi, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 929,126
Claims priority, application Japan, Aug. 19, 1991, 3-232305
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—190 **8 Claims**



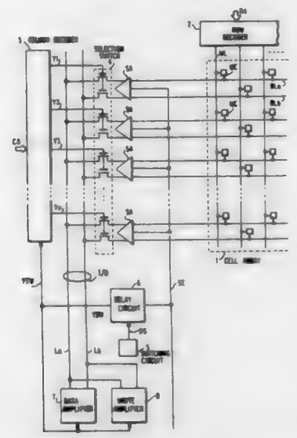
1. A static type random access memory device selectively entering a read-out phase and a write-in phase of operation, comprising:
a) a plurality of memory cells arranged in rows and columns, and having pairs of memory nodes each storing a data bit in the form of differential voltage level;
b) a plurality of word lines respectively coupled with the rows of said plurality of memory cells;
c) a plurality of first digit lines paired with a plurality of second digit lines for providing a plurality of digit line pairs respectively coupled with the columns of said plurality of memory cells;
d) column selector means coupled between a data bus and said plurality of digit line pairs for selectively coupling therebetween, and comprising d-1) a plurality pairs of switching transistors selectively coupling said plurality of digit line pairs with said data bus in said write-in phase of operation, and d-2) a plurality of balancing transistors coupled between said first digit lines and said second digit lines, respectively, and operative to conduct first and second digit lines of digit line pairs selected from said plurality of digit line pairs when said digit line pairs are non-selected in said write-in phase of operation; and
e) a plurality of load circuits associated with said plurality of digit line pairs, and coupled between a source of current and said associated digit line pairs, each of said plurality of load circuits comprising e-1) a pair of first charging transistors responsive to a charging signal indicative of said read-out phase for coupling the associated digit line pair with said source of current, and e-2) a charging means activated in said write-in phase of operation, and responsive to a write-in data bit for selectively supplying current to either first or second digit line of the associated digit line pair.

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SEMICONDUCTOR MEMORY DEVICE HAVING COLUMN SELECTION CIRCUIT ACTIVATED SUBSEQUENTLY TO SENSE AMPLIFIER AFTER FIRST OR SECOND PERIOD OF TIME

Tadahiko Sugibayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,239
Claims priority, application Japan, Jul. 17, 1990, 2-188530
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—194 **6 Claims**



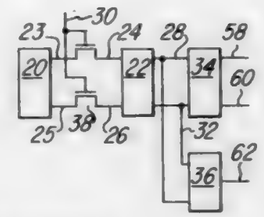
1. A semiconductor memory device, comprising: a memory cell array including a plurality of word lines, a plurality of bit lines and a plurality of memory cells each connected to one of said word lines and one of said bit lines, a plurality of sense amplifiers each coupled to an associated one of said bit lines and activated by a sense-enable signal to amplify a potential appearing on said associated bit line, a data line through which a read-data signal read out of said memory cell array is transferred in a data read mode and a write-data signal to be written into said memory cell array is transferred in a data write mode, a selection circuit provided between said data line and each of said sense amplifiers and activated by a select-enable signal to form an electrical path between said data line and a selected one of said sense amplifiers, and a delay circuit receiving said sense-enable signal and a control signal and producing said selection-enable signal, said delay circuit delaying said sense-enable signal by a first period of time to produce said select-enable signal when said control signal takes a first logic level and delaying said sense-enable signal by a second period of time to produce said select-enable signal when said control signal takes a second logic level, said first period of time being different from said second period of time.

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HIGH SPEED PARALLEL TEST ARCHITECTURE

Robert N. Rountree, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 22, 1991, Ser. No. 673,905
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **18 Claims**



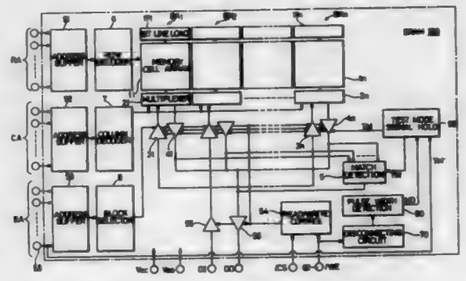
11. A circuit comprising:
a. a plurality of memory cells;
b. a plurality of sense amplifiers;
c. a plurality of bitlines, each of said bitlines selectively connecting a portion of said plurality of memory cells to a said sense amplifier;
d. a plurality of block amplifiers;
e. a plurality of first connection means for selectively connecting said plurality of sense amplifiers to one of said block amplifiers;
f. a local amplifier; and
g. a second connection means for simultaneously connecting said plurality of block amplifiers to said local amplifier.

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SEMICONDUCTOR MEMORY DEVICE ADAPTED FOR PREVENTING A TEST MODE OPERATION FROM UNDESIRABLY OCCURRING

Yoshiyuki Haraguchi, and Yutaka Arita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,405
Claims priority, application Japan, Jun. 25, 1992, 4-166475
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **10 Claims**



1. A semiconductor memory device, comprising:
a first terminal for receiving an externally applied pulse signal;
a second terminal for receiving an externally applied test mode signal;
pulse width detecting means for detecting that the pulse

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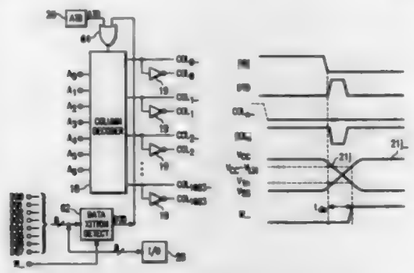
signal applied through said first terminal has a pulse width exceeding a predetermined time length;
test mode signal holding means responsive to said pulse width detecting means for holding the test mode signal applied through said second terminal;
test circuit means responsive to the test mode signal held in said test mode signal holding means for performing a test in said semiconductor memory device; and
disabling means for disabling a detecting operation by said pulse width detecting means when the test should not be carried out by said test circuit means.

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SEMICONDUCTOR MEMORY WITH COLUMN EQUILIBRATE ON CHANGE OF DATA DURING A WRITE CYCLE

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 13, 1990, Ser. No. 627,049
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 18 Claims



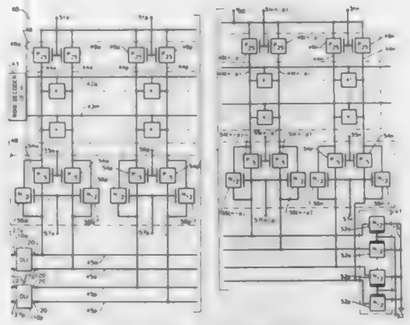
1. A memory in an integrated circuit, comprising:
an array of memory cells arranged in rows and columns;
a plurality of pairs of bit lines, each pair associated with one of said columns, for communicating a differential signal;
a plurality of precharge transistors, each precharge transistor associated with one of said bit lines, each of said precharge transistors having a conduction path connected between its associated bit line and a precharge voltage, and having a control terminal;
a first input terminal for receiving input data;
a write circuit coupled between said first input terminal and said array, for communicating input data to the bit lines of a selected column during a write operation;
a write enable terminal for receiving a write enable signal enabling a write operation;
a data transition detection circuit, having a first input coupled to said first input terminal, for detecting a transition of the input data at the first input terminal; and
means for controlling the control terminals of said precharge transistors responsive to said data transition detection circuit in such a manner that the precharge transistors of said selected column are conductive responsive to a transition of the input data occurring during receipt of the write enable signal at said write enable terminal for a period of time prior to said write circuit communicating, to the bit lines of the selected column, input data corresponding to the input data received at said first input terminal after said transition.

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DIFFERENTIAL LATCHING INVERTER AND RANDOM ACCESS MEMORY USING SAME

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 708,459, May 31, 1991. This application Aug. 7, 1991, Ser. No. 742,649
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 24 Claims



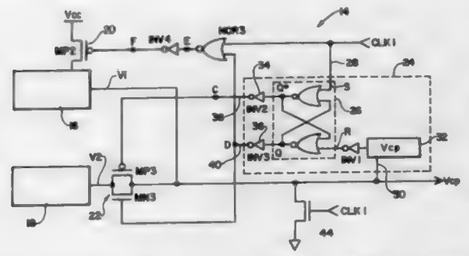
1. A Random Access Memory (RAM) for storing therein binary data during a write operation, for maintaining stored binary data therein during an idle operation, and for accessing binary data stored therein during a read operation, said RAM comprising:
an array of memory cells arranged in a plurality of rows and a plurality of columns, each of said memory cells adapted for storing therein a binary digit;
a plurality of word lines, each of which is connected to a respective row of said memory cell array;
a plurality of pairs of primary bit lines, each pair being connected to a respective column of said memory cell array;
a plurality of pairs of signal bit lines, each pair being connected to at least one respective pair of said primary bit lines at one end of said primary bit lines;
a plurality of sensing means, each being connected to a respective pair of signal bit lines, for reading the binary digit stored in a selected one of said memory cells;
first means for coupling said primary bit lines to a first reference voltage during an idle operation and during a read operation, and for decoupling a selected pair of said primary bit lines from said first reference voltage during a write operation;
second means for coupling said signal bit lines to a second reference voltage during an idle operation, and for decoupling a pair of said signal bit lines which is connected to said selected pair of primary bit lines from said second reference voltage during a read operation, and for decoupling only a first signal bit line of said pair of said signal bit lines which is connected to said selected pair of primary bit lines from said second reference voltage during a write operation; and
third means for coupling said selected pair of said primary bit lines to said pair of said signal pair lines which are connected to said selected pair of primary bit lines during a read operation, to thereby cause current to flow from said selected pair of said primary bit lines to said pair of said signal bit lines which are connected to said selected pair of primary bit lines while said primary bit lines are coupled to said first reference voltage, and for coupling said pair of signal bit lines to said selected pair of primary bit lines during a write operation, to thereby clamp a first one of said selected pair of primary bit lines which is coupled to a second signal bit line of said pair of said signal bit lines to said second reference voltage, and for decoupling said primary bit lines and said signal bit lines from one another during an idle operation;
said first coupling means and said third coupling means both being connected to said primary bit lines at said one end.

5,305,270

INITAL SETUP CIRCUIT FOR CHARGING CELL PLATE

Toe H. Kim, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Oct. 13, 1992, Ser. No. 960,146
Claims priority, application Rep. of Korea, Oct. 10, 1991, 91-16701
Int. Cl.[5] G11C 7/00, 5/14
U.S. Cl. 365—203 29 Claims



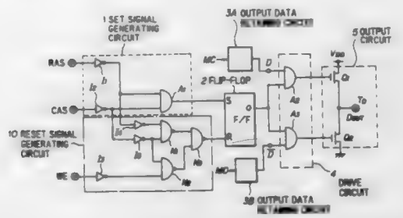
1. An initial set-up circuit for providing a charging voltage to the plate electrodes of a plurality of memory cell capacitors, comprising:
first voltage means for generating a voltage to charge the plate electrodes, the first voltage means having a first current driving capacity;
second voltage means for generating a voltage to charge the plate electrodes, the second voltage means having a second current driving capacity; and
switching control means coupled to the first and second voltage means and the plate electrodes for:
initially enabling the first voltage means to charge the plate electrodes; and
disabling the first voltage means and enabling the second voltage means when the voltage level of the plate electrodes reaches a predetermined threshold.

5,305,271

CIRCUIT FOR CONTROLLING AN OUTPUT OF A SEMICONDUCTOR MEMORY

Hiroshi Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1991, Ser. No. 650,604
Claims priority, application Japan, Feb. 6, 1990, 2-27605
Int. Cl.[5] G11C 7/00, 8/00
U.S. Cl. 365—205 14 Claims



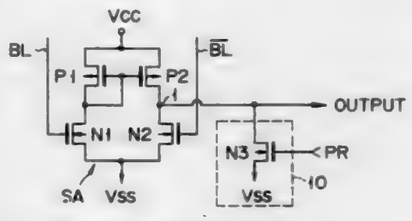
1. A circuit for controlling an output of a semiconductor memory comprising:
a set signal generating circuit for generating a set signal having a logical level dependent on a row address strobe (RAS) signal and a column address strobe (CAS) signal;
a reset signal generating circuit for generating a reset signal having a logical level dependent on said RAS signal, said CAS signal, and a write enable (WE) signal;
a flip-flop coupled to said set signal generating circuit and to said reset signal generating circuit and being set by said set signal and reset by said reset signal;
an output data retaining circuit coupled to a semiconductor memory cell for retaining data read from the semiconductor memory cell;
an output circuit, coupled to said output data retaining circuit, for outputting said data read from said semiconductor memory cell; and
a drive circuit, coupled to the flip-flop, said output data retaining circuit, and said output circuit, for controlling said output circuit to output data from said semiconductor memory cell when said flip-flop is set and for controlling said output circuit to be in a high impedance state regardless of a content of said data when said flip-flop is reset.

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SENSE AMPLIFIER CIRCUIT

Kenji Matsuo; Yasukazu Noine; Kazuhiko Kasai, all of Yokohama; Yoshihiro Kato, Kawasaki, and Kazuaki Umetsu, Kitakami, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 588,102, Sep. 25, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 111,738
Claims priority, application Japan, Sep. 28, 1989, 1-253569
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—208 4 Claims



1. A sense amplifier circuit comprising:
a first bit line supplied with a signal;
a second bit line supplied with a signal complementary to said signal supplied to said first bit line;
a circuit output terminal;
a first transistor of a first conductivity type, having a gate and a current path, the gate being connected to said first bit line, and one terminal of the current path being connected to a first power source;
a second transistor of said first conductivity type, having a gate and a current path, the gate being connected to said second bit line, and one terminal of the current path being connected to said first power source;
a third transistor of a second conductivity type, having a gate and a current path, the gate and one terminal of the current path being connected to another terminal of said current path of said first transistor of the first conductivity type, and the other terminal of the current path being connected to a second power source;
a fourth transistor of said second conductivity type, having a gate and a current path, one terminal of the current path being connected to another terminal of said current path of said second transistor of the first conductivity type and said circuit output terminal, the other terminal of the current path being connected to said second power source, and the gate being connected to the gate of said third transistor of the second conductivity type; and
an output potential setting circuit for setting a potential on said circuit output terminal before data read access so that an output logic level of the circuit output terminal be-

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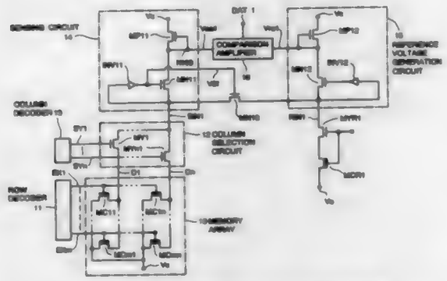
comes a logic level appearing on the circuit output terminal when the sense amplifier circuit presents a worst-pass operation, the output potential setting circuit comprising a fifth transistor of said first conductivity type, having a gate and a current path, the current path being connected between said circuit output terminal and said first power source, and the gate being supplied with a precharge signal of said bit lines to render the fifth transistor conductive so that said circuit output terminal is set to a potential of said first power source before data read access.

5,305,273

SEMICONDUCTOR MEMORY DEVICE

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Filed Sep. 10, 1992, Ser. No. 942,606
Claims priority, application Japan, Oct. 9, 1991, 3-258410
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—210 **5 Claims**



1. A semiconductor memory device comprising:

memory cells in matrix connection with a plurality of column and row lines to form a channel between one of the column lines and a voltage source corresponding to a specified status, a column selection means to select any of said column lines, a row selection means to select any of said row lines, a sensing means for connecting an output node thereof with the input node thereof, said sensing means input node indicating the specified status of a memory cell selected by selection of said column and row lines, a reference voltage generation means for connecting an input node thereof, said reference voltage generation means input node being also connected to a reference memory cell through a reference memory cell selection circuit, with an output node thereof and for generating a reference voltage at said output node, and a comparison means to compare the voltage at the output node of said sensing means with the reference voltage at the output node of said reference voltage generating means and to issue a signal indicating the specified status of the selected memory cell, characterized by that

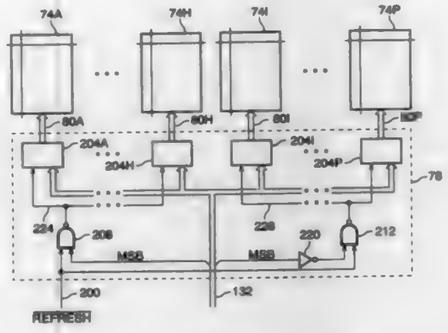
a first transistor under gate control by a voltage inverse to the voltage on the input node of said sensing means, is connected between the output and input nodes of said sensing means and that a second transistor under gate control by said inverse voltage is connected between the input node of said sensing means and the input node of said reference voltage generation means.

5,305,274

METHOD AND APPARATUS FOR REFRESHING A DYNAMIC RANDOM ACCESS MEMORY

Robert J. Proebsting, 27800 Edgerton Rd., Los Altos Hills, Calif. 94022

Filed Sep. 16, 1992, Ser. No. 945,563
Int. Cl.[5] G11C *11/401*
U.S. Cl. 365—222 **16 Claims**



1. An apparatus for refreshing a DRAM having a plurality of rows of memory cells comprising:

cycle initiating means for initiating one of a normal cycle or a refresh cycle;

mode control means, coupled to the cycle initiating means, for generating a normal mode signal when the normal cycle is initiated and for generating a refresh mode signal when the refresh cycle is initiated;

row address means, coupled to the mode control means, for addressing a first number of rows of memory cells in response to the normal mode signal and for addressing a second number of rows of memory cells in response to the refresh mode signal;

wherein the first number of rows is less than the second number of rows;

row strobe receiving means for receiving a row address strobe signal;

column strobe receiving means for receiving a column address strobe signal;

wherein the mode control means is coupled to the row strobe receiving means and to the column strobe receiving means for generating the normal mode signal when the row address strobe signal is received before the column address strobe signal is received and for generating the refresh mode signal when the row address strobe signal is received not before the column address strobe signal is received;

external address input means for receiving an external address;

wherein the row address means is coupled to the external address input means for addressing the first number of rows of memory cells using the external address in response to the normal mode signal;

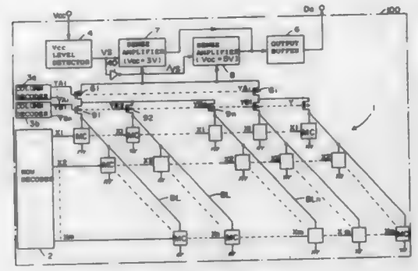
wherein the mode control means generates an incrementing signal when the row address strobe signal is received not before the column address strobe signal is received; wherein the row address means further comprises a counter, coupled to the mode control means, for storing a counter value, the counter value being incremented in response to the incrementing signal; and wherein the second number of rows of data are addressed using the counter value as an address in response to the refresh mode signal.

5,305,275

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF CORRECT READING OF DATA UNDER VARIABLE SUPPLY VOLTAGE

Masayuki Yamashita; Tatsuki Furusho, and Yasuhiro Kouro, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,315
Claims priority, application Japan, Feb. 5, 1992, 4-020140
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—226 **23 Claims**



1. A semiconductor memory device operable under an externally applied variable supply voltage, comprising:

a memory cell array including a plurality of memory cells disposed in rows and columns;

first and second sense amplifiers, each including an input node and connected to receive a data signal provided from said memory cell array through the corresponding input node;

said first sense amplifier having sensing characteristics suitable for sensing said data signal in a predetermined lower range of said supply voltage;

said second sense amplifier having sensing characteristics suitable for sensing said data signal in a predetermined higher range of said supply voltage;

supply voltage level detecting means for detecting in which of said predetermined lower range and said predetermined higher range a level of said externally applied supply voltage exists; and

selectively enabling means for selectively enabling one of said first and second sense amplifiers in response to said supply voltage level detecting means.

5,305,276

NON-VOLATILE IC MEMORY

Hiromi Uenoyama, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

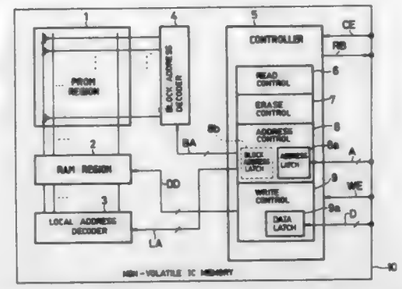
Filed Sep. 11, 1992, Ser. No. 943,559
Claims priority, application Japan, Sep. 11, 1991, 3-259605
Int. Cl.[5] G11C *8/00, 7/00*
U.S. Cl. 365—230.01 **17 Claims**

1. A non-volatile IC memory comprising:

a PROM region which is divided into blocks having block addresses;

a RAM region of capacity corresponding to at least the largest one of said blocks; and

a memory write controller which performs a memory write cycle that transfers all data stored in one of the blocks in said PROM region, which block is designated by a block address portion of an address sent out from the outside, to said RAM region, thereafter rewrites a part of the data in a corresponding portion in said RAM region designated by a local address portion of the address with data sent out from the outside, and thereafter writes all of the data in said RAM region that corresponds to the one of said blocks into the corresponding one of said blocks of said PROM.

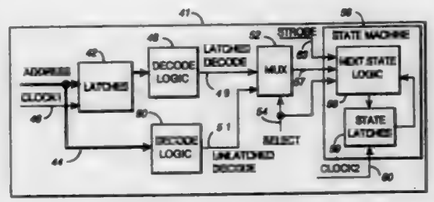


5,305,277

DATA PROCESSING APPARATUS HAVING ADDRESS DECODER SUPPORTING WIDE RANGE OF OPERATIONAL FREQUENCIES

Michael T. Derwin, Delray Beach; Brenda M. Ozaki, Deerfield Beach, and William A. Wall, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1991, Ser. No. 690,738
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.02 **7 Claims**



1. A data processing system operable at a predetermined system frequency including an addressable device, an address bus for transmitting address signals to said device, and a decoder connected between said address bus and said device for decoding unlatched address signals directed to said addressable device, said decoder comprising:

latch means having first inputs connected to receive unlatched address signals from said address bus and a second input for receiving a clock signal for latching addresses on said first inputs into said latch means, said latch means outputting latched address signals;

decoding means comprising first and second decode logic circuits, said first decode logic circuit having an input connected to received unlatched address signals from said address bus and produce an unlatched decode signal, said second decode logic circuit being connected to receive latched address signals from said latch means and produce a latched decode signal;

a multiplexer connected to receive said decode signals from said decode logic circuits, said multiplexer receiving a binary control input where said decoder is selectively operable in a latched mode of operation and in an unlatched mode of operation; and

control means connected to said multiplexer generating said binary control input selectively settable to two values, one value causing said decoding means to produce an unlatched decode signal based on said unlatched address

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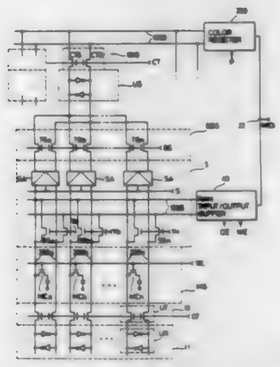
signals when said system frequency is below a predetermined frequency, and another value causing said decoding means to produce a latched decode signal based on said latched address signals when said system frequency is above said predetermined frequency.

5,305,278

SEMICONDUCTOR MEMORY DEVICE HAVING BLOCK WRITE FUNCTION

Kazunari Inoue, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1991, Ser. No. 801,809
Claims priority, application Japan, Dec. 18, 1990, 2-403380
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.03 **14 Claims**



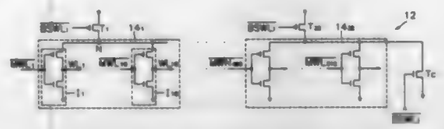
1. A semiconductor memory device comprising:
an input node for receiving data to be written;
a memory cell array including a plurality of memory cells arranged in a matrix of rows and columns, said memory cell array including a plurality of memory cell blocks each including a plurality of columns of memory cells in said matrix;
sense amplifiers provided for each respective column for detecting and amplifying signals on corresponding columns, said sense amplifiers having a first driving ability;
memory cell selecting means receiving an address signal and for selecting a memory cell corresponding to said received address signal in said memory cell array;
data writing means coupled to said input node for writing said data to be written into the memory cell selected by said memory selecting means;
block selecting means responsive to said address signal and a block write designation signal for selecting a memory block and a row in said memory cell array; and
block write means coupled to said input node and provided independently of said data writing means, and in response to said block write designating signal for writing said data to be written into memory cells on the row in the memory block selected by said block selecting means, said block write means having a second driving ability larger than the first driving ability in order to modify the signals amplified by said sense amplifiers in the selected memory block into signals corresponding to the data to be written;
data transferring path of said data writing means being different from data transferring path of said block write means.

5,305,279

SEMICONDUCTOR MEMORY DEVICE HAVING WORD LINE SELECTION LOGIC CIRCUITS

Hee-Choul Park; Seong-Jin Han, and Byeong-Yun Kim, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Mar. 23, 1992, Ser. No. 855,556
Claims priority, application Rep. of Korea, Aug. 27, 1991, P 91-14873
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.03 **6 Claims**



1. A semiconductor memory device having memory blocks made up of a plurality of memory cells arranged in a matrix, a row decoder outputting a selection signal for selecting word lines within the memory blocks, and a memory block selection decoder for selecting each of a plurality of memory blocks, each memory block including word line selection logic circuits for selecting word lines in the memory in response to an output signal from said row decoder and said memory block selection decoder, said word line selection logic circuits dividing word lines into blocks and thereby form a plurality of word line blocks each having inverters for inverting an output signal from said row decoder to supply the corresponding inverted signal to each word line, said word line blocks further including switching means for selecting a memory block in response to an output signal from said memory block selection decoder for controlling activation of said inverters, said switching means includes PMOS and NMOS type transistors, one type of said PMOS and NMOS type transistors being connected to a plurality of word line blocks and supplied with a power source for response to an output signal from the block selection decoder, and a second type of said PMOS and NMOS type transistors being connected between said first type and ground whereby only the NMOS and PMOS transistor with a common interconnection turns ON and OFF in response to an output signal from said block selection decoder.

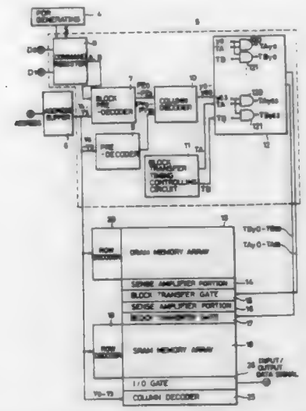
5,305,280

SEMICONDUCTOR MEMORY DEVICE HAVING ON THE SAME CHIP A PLURALITY OF MEMORY CIRCUITS AMONG WHICH DATA TRANSFER IS PERFORMED TO EACH OTHER AND AN OPERATING METHOD THEREOF

Kohji Hayano, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 862,499
Claims priority, application Japan, Apr. 4, 1991, 3-071746
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.03 **10 Claims**

1. A semiconductor memory device, comprising:
a first memory array formed on a semiconductor substrate, said first memory array including first memory cells arranged in a plurality of columns;
a second memory array formed on the same semiconductor substrate as said first memory array, said second memory array including second memory cells arranged in a plurality of columns corresponding to said plurality of columns of said first memory array;
a plurality of first bit lines provided corresponding to said plurality of columns of said first memory array;
a plurality of second bit lines provided corresponding to said plurality of columns of said second memory array;
a plurality of switching means provided, respectively between said plurality of first bit lines and said plurality of second bit lines, said plurality of switching means being divided into a plurality of blocks;
means for receiving an external signal designating the number of blocks;
block selecting means for simultaneously selecting blocks of the number designated by said external signals out of said plurality of blocks, said block selecting means comprising:
holding means for taking in and holding said external signal; and



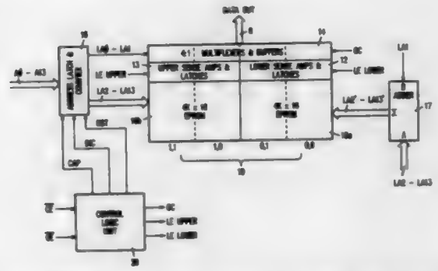
decoding means for decoding a signal held by said holding means and an address signal indicating any of said plurality of columns in said first memory array or said second memory array; and
control means for simultaneously turning on said switching means included in the blocks selected by said selecting means.

5,305,281

MULTIPLE ARRAY MEMORY DEVICE WITH STAGGERED READ/WRITE FOR HIGH SPEED DATA ACCESS

Paul R. Lubeck, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 6, 1992, Ser. No. 926,483
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.04 **8 Claims**



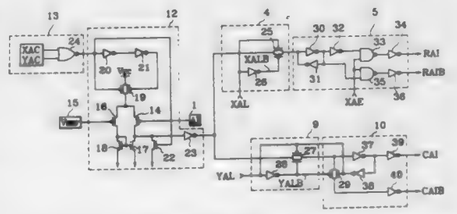
1. A multiple array memory device including memory and a data transfer path and formed on a single chip for allowing high speed transfers of a series of data between the memory and the data transfer path, comprising:
the memory having a plurality of groups of memory arrays;
means, coupled to said memory, for holding data to be transferred between said memory and the data transfer path; and
means, coupled to said memory and said holding means, for controlling said memory and said holding means for transferring data between said memory and the data transfer path so that data transfers with respect to a selected number of sequential memory locations in said memory can be performed alternately between said memory and said holding means and between said holding means and the data transfer path wherein the data transfers with respect to said selected number of sequential memory locations are performed alternately on a group-by-group basis, thereby allowing sequential transfers of the series of data between said selected number of sequential memory locations and the data transfer path and wherein in a read cycle said controlling means causes data in said memory to be internally read into said holding means and on an alternate basis said controlling means causes data in said holding means to be output to the data transfer path, so that when data received from a group of arrays and held in said holding means are output to the data transfer path, sequential data in another group of arrays are internally read into said holding means if said sequential data are not being held in said holding means, whereby said controlling means can cause any desired number of sequential data to be output from said memory to the data transfer path at high speed.

5,305,282

ADDRESS INPUT BUFFER

Do-chan Choi, Seoul, Rep. of Korea, assignor to Samsung Electric Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Apr. 24, 1992, Ser. No. 873,189
Claims priority, application Rep. of Korea, Oct. 31, 1991, 91-19331
Int. Cl.[5] G11C *17/00*; H03K *3/286*
U.S. Cl. 365—230.08 **9 Claims**



1. An address input buffer in a semiconductor memory device comprising:
an address input terminal for receiving non-buffered row and column address signals;
input buffer means, connected to said address input terminal, for outputting a buffered column address signal when an input first control signal is in a first logic state and for outputting a buffered row address signal when an input second control signal is in a second logic state;
row address switching means for transmitting the buffered row address signal to a row address latch means in response to a first signal transmitting to the second logic state before the first control signal transits to the second logic state;
said row address latch means transmitting said buffered row address signal from said row address switching means, to an output terminal thereof, in response to a second signal transitting to the first logic state after said first signal has transitted to the second logic state;
column address switching means for transmitting said buffered column address signal to a column address latch means in response to a third signal transitting to the second logic state after said second control signal has transitted to the first logic state; and
said column address latch means transmitting said buffered column address signal from said column address switching

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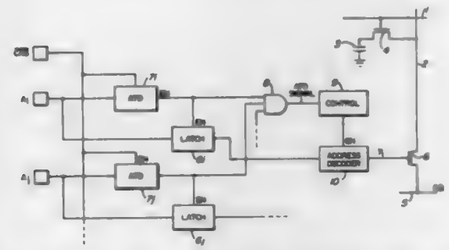
means, to an output terminal thereof, after and in response to said first signal having transitted to the second logic state and after said second signal has transmitted to the first logic state, such that said buffered column address signal is output from said column address latch means after said buffered row address signal is first output from said row address latch means.

5,305,283

DRAM COLUMN ADDRESS LATCHING TECHNIQUE

Gregg M. Shimokura, Ottawa, and Peter B. Gillingham, Kanata, both of Canada, assignors to Mosaid, Inc., Kanata, Canada

Filed Apr. 5, 1991, Ser. No. 680,993
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.08 **4 Claims**



1. A dynamic random access memory (DRAM) having row lines (rows) and column lines (columns), memory cells associated with the rows and columns, and means for addressing the columns comprising:
(a) means for receiving DRAM column select and column address input signals,
(b) means for enabling detection and indication, by generating an indication signal, of the presence of each column address input signal, in the presence of a column select signal,
(c) means for logically ANDing said indication signals to provide logic signals, and
(d) means for latching each of said column address input signals by said logic signals whereby a DRAM column can be addressed upon enabling by said logic signals.

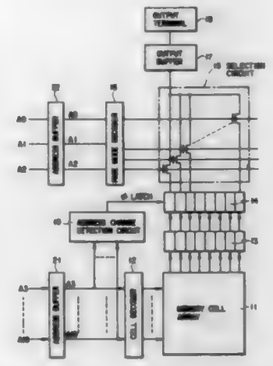
5,305,284

SEMICONDUCTOR MEMORY DEVICE

Taira Iwase, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 19, 1992, Ser. No. 979,054
Claims priority, application Japan, Nov. 21, 1991, 3-305971
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—238.5 **6 Claims**

2. A semiconductor memory device comprising:
a memory cell array;
a cell decoder connected to inputs of the memory cell array, said cell decoder for selecting a cell of the memory cell array from which page data are to be read out, in accordance with an address indicated by cell address signals; p1 a sense amplifier group connected to outputs of the memory cell array, said sense amplifier group comprising a plurality of sense amplifiers for sensing the page data read out from the memory cell array;
a latch circuit group connected to outputs of the sense amplifier group, said latch circuit group comprising a plurality of latch circuits for latching, in response to input of a latch signal, the page data output from the sense amplifier group;
a selection group connected to outputs of said latch circuit group, said selection group comprising a plurality of selection circuits for selecting the data latched by the latch circuit group;
a page mode decoder connected to inputs of said selection group, said page mode decoder for sequentially selecting the plurality of selection circuits in accordance with page address signals;
an output buffer circuit connected to an output of said selection group, said output buffer circuit for supplying an



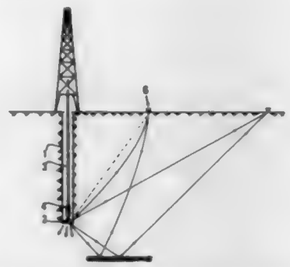
output of a selected one of the plurality of selection circuits to an output terminal; and
a circuit for supplying said latch signal at the beginning of a page mode cycle, changing said address during the page mode cycle, and inputting to the cell decoder an address from which to read out data to be output in a following page mode cycle, wherein an output of said circuit for supplying said latch signal is an input to said latch circuit group.

5,305,285

METHOD AND APPARATUS FOR SUBSOIL EXPLORATION INCLUDING EMISSION OF A SERIES OF SEISMIC IMPULSES

Charles Naville, Grigny, and Hubert Japiot, Paris, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Continuation of Ser. No. 821,086, Jan. 16, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 46,921
Claims priority, application France, Jan. 16, 1991, 91 00608
Int. Cl.[5] G01V *1/36*
U.S. Cl. 367—49 **13 Claims**



1. A method of applying sign-bit representation to seismic events, in the processing of seismic signals obtained from subsoil seismic exploration during drilling of a wellbore using as a seismic signal source a drill bit that emits an irregular series of impulses, having a random frequency spectrum, while progressing in the wellbore during drilling thereof, said method comprising the steps of:

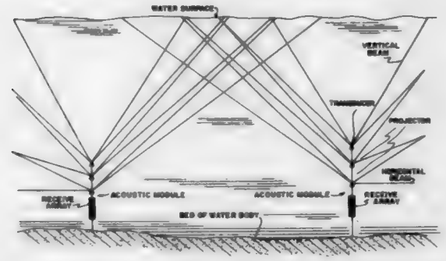
activating the drill bit to emit an irregular series of impulse seismic signals having a random frequency spectrum;
receiving the seismic signals after passage thereof through a seismic formation; and
processing the received seismic signals in real time by:
(a) dividing the frequency spectrum of the received signals and the emitted impulse signals into a plurality of frequency bands;
(b) within each of said frequency bands, producing from the received signals sequences of elementary signals indicative of the respective signs or sign bits of the received signals;
(c) within each of said frequency bands, producing from the emitted impulse seismic signals sequences of elementary signals indicative of the respective signs or sign bits of the emitted signals;
(d) cross-correlating within each frequency band the elementary signals respectively indicative of the emitted signals and the received signals;
(e) filtering the signals resulting from the cross-correlations performed in each of said frequency bands through filters with an adapted pass-band; and
(f) stacking the filtered signals resulting from step (e).

5,305,286

BISTATIC/MONOSTATIC SONAR FENCE

Harvey C. Woodsum, Bedford, N.H., and Joseph J. Stapleton, Norton, Mass., assignors to Sonetech Corporation, Bedford, N.H.

Filed May 21, 1992, Ser. No. 887,210
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—92 **1 Claim**



1. A sonar system comprising at least two separate bottom-mounted acoustic modules, each module including: a projector for generating horizontal parametric acoustic beam;
a vertical line receive array for monostatic and bistatic detection; and
an upward-directed transducer for providing a steerable vertical acoustic beam to ensure full water column coverage by the use of surface reflections to minimize shadowing caused by relief bottom topography.

5,305,287

HIGH-FREQUENCY BOREHOLE SEISMIC SOURCE

Robert F. Ballard, Jr., Clinton, Miss.; Richard D. Rechtien, and Kurt L. Hambacker, both of Rolla, Mo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 20, 1992, Ser. No. 963,363
Int. Cl.[5] G01V *1/157*
U.S. Cl. 367—147 **20 Claims**

1. An acoustic source for seismic exploration, comprising:
a) a generally cylindrical tube having spaced upper and lower closed ends;
b) an insulated continuous conductor having a first arc producing portion with an exposed internal conductive end within said tube and a second portion extending therefrom through said upper end;
c) a selectively closeable port operably associated with said tube for permitting said tube to be filled and maintained filled with a conductive solution;



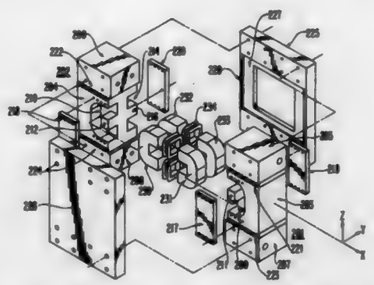
d) a gas vent having a first open end within said tube adjacent said upper end and a second open end exteriorly disposed of said tube.

5,305,288

VARIABLE RELUCTANCE ACOUSTIC PROJECTOR

Thomas Kupiszewski, Harrison City, and David Marachik, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1993, Ser. No. 54,184
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—175 **16 Claims**



1. A variable reluctance acoustic projector comprising:
a first metallic piston block including a first cavity;
a second metallic piston block including a second cavity;
a pair of electromagnetic cores including a first electromagnetic core positioned in said first cavity and a second electromagnetic core positioned in said second cavity, wherein
said first piston block is coupled to said second piston block such that a pole face of said first electromagnetic core is aligned with a pole face of said second electromagnetic core, the respective pole faces being oriented substantially parallel to each other and being separated by an air gap of a predetermined width.

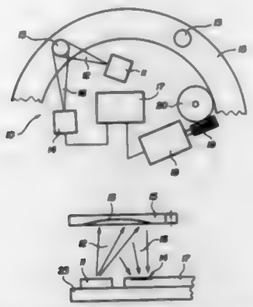
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5,305,289

AUTOMATIC INITIALISATION METHOD FOR AT LEAST THE DATE DISPLAY, A DEVICE FOR PERFORMING THIS METHOD AND A WATCH EQUIPPED WITH SAID DEVICE

René Besson, Geneva, and Claude-Eric Leuenberger, Geneve-Acacias, both of Switzerland, assignors to Montres Rolex S.A., Switzerland

Filed Oct. 30, 1990, Ser. No. 605,550
Claims priority, application Switzerland, Nov. 3, 1989, 03977/89
Int. Cl.[5] G04B *19/24*
U.S. Cl. 368—28 10 Claims



1. A method for the automatic initialisation of at least the date display in a perpetual calendar electronic watch comprising a face fitted with at least one window and at least one date disk driven by an electric motor, which is powered by a battery and controlled by an electronic circuit, this disk being disposed in such a way that the dates appear successively in the window, comprising the steps of:

optically analysing a serial code attributed to the date appearing in the window at the moment the electric circuit is switched on;

automatically identifying the date that appears in the window via the optically analyzed serial code; and

memorizing this data.

5,305,290

DOUBLE-FACED CLOCK HAVING A DEVICE FOR ADJUSTING A TIME DIFFERENCE

Won G. Yoo, 53 Yea Ji-Dong, JongRo-Ku, Seoul, Rep. of Korea

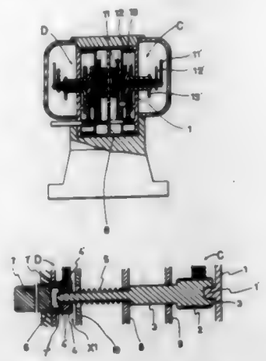
Filed Apr. 1, 1993, Ser. No. 41,168
Claims priority, application Rep. of Korea, Apr. 20, 1992, 92-7227
Int. Cl.[5] G04B *19/00, 19/04*
U.S. Cl. 368—76 5 Claims

1. A double-faced clock having a device for adjusting a time difference comprising:

a first clock part containing a first gear group for operating hands of clock;

a second clock part attached to a rear side of the first clock part which contains a second gear group similar to the first gear group;

a driving shaft rotatably supported in the first and second clock parts and driven by a driving source which is mounted with a first driving gear engaging with any gear of the first gear group at its first end and which is mounted with a second driving gear engaging with any gear of the second gear group at its second end; and



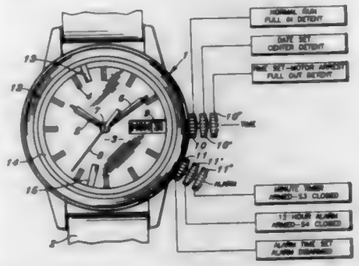
means for adjusting selectively time of one or both of the first and second clock parts.

5,305,291

ALARM SETTING AND ACTUATING MECHANISM FOR ANALOG TIMEPIECE

Bruce H. Kamens, Thomaston, and Paul Wuthrich, Watertown, both of Conn., assignors to Timex Corporation, Middlebury, Conn.

Filed Sep. 22, 1993, Ser. No. 124,528
Int. Cl.[5] G04C *21/16*
U.S. Cl. 368—252 9 Claims



1. Alarm setting mechanism for analog timepiece having a minute hand and an hour hand both rotatable about an axis at a 12:1 ratio and an alarm device responsive to switch actuations, said alarm setting mechanism comprising:

a minute setting ring rotatably mounted in said timepiece coaxial with said axis and including a minute alarm marker,

an hour setting ring rotatably mounted in said timepiece coaxial with said axis and including an hour alarm marker,

drive means adapted to selectively rotate said minute setting ring and said hour setting ring at a ratio of 12:1 to set said hour and minute alarm markers,

first switch means responsive to a selected position of said minute hand with respect to said minute alarm marker,

second switch means responsive to a selected position of said hour hand with respect to said hour marker, and

circuit means adapted to selectively connect either one or both of said switch means to said alarm device.

5,305,292

FLUID FILLED WATCH APPARATUS

Daniel Reynoso, 85536 Ave. 52, Coachella, Calif. 92236

Filed Dec. 18, 1992, Ser. No. 993,367
Int. Cl.[5] G04B *45/00*
U.S. Cl. 368—281 6 Claims



1. A fluid filled watch apparatus, comprising,

a watch housing, the watch housing including a housing top wall and a watch face mounted to the top wall, including an annular array of time indicator positions, with an output shaft directed through the top wall, having the indicator hands mounted to the shaft exteriorly of the housing, and

a transparent lens positioned over the watch face, and

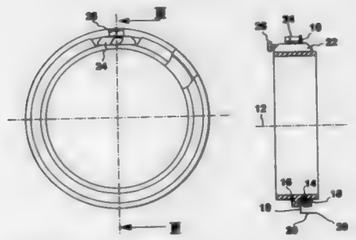
a lens cavity defined between the lens and the watch face and the lens cavity containing a fluid immersing said indicator hands therewithin.

5,305,293

WATCH

Eliahu Eliachar, 25 Yafe Nof Street, 34 371 Haifa; Rakefet Walter, 24 Harel Street, 34 555 Haifa, and Dan Ashkenazi, 3 Eshkolot Street, 34 321 Haifa, all of Israel

Filed Nov. 12, 1992, Ser. No. 974,437
Claims priority, application Israel, Nov. 15, 1991, 100060
Int. Cl.[5] G04B *19/20*
U.S. Cl. 368—282 20 Claims



1. A watch, comprising:

an annular member of a diameter to enclose a wearer's wrist and including viewable graduation markings around the circumference graduated according to time;

a pointer member on the circumference of the annular member and viewable with said graduation markings;

one of said members being rotatable relative to the other member;

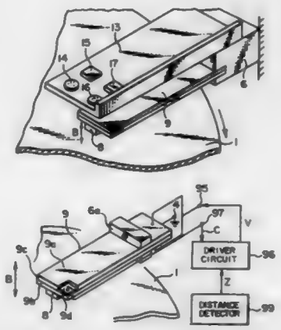
and a drive for rotating said rotatable member to effect relative movement between said pointer member and said graduation markings at a predetermined uniform velocity such that the pointer member indicates the time according to its location relative to the graduation markings on the circumference of the annular member.

5,305,294

MAGNETO-OPTICAL RECORDING/REPRODUCING SYSTEM HAVING AN ELECTROMAGNETIC ACTUATOR

Kenjiro Kime; Keiji Nakamura, both of Nagaokakyo; Isao Watanabe, and Hajime Nakajima, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 333,686, Apr. 5, 1989, Pat. No. 5,247,493.
This application Mar. 30, 1993, Ser. No. 40,263
Claims priority, application Japan, Apr. 4, 1988, 63-86116
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 9 Claims



1. An optical disk device capable of recording and reproducing information on and from an magneto-optical disk including a layer of magnetic material, comprising

optical head means for radiating a light beam on a recording surface of said magneto-optical disk;

magnetic head means for generating, in a recording process, a biasing magnetic field at a recording spot on the recording surface of the magneto-optical disk, which spot is being heated by a light beam radiated from said optical head means, to effect a recording of information by reversing a direction of magnetization of said magnetic material heated by said light beam, wherein reproduction of information is effected by radiating a light beam from said optical head means on the magneto-optical disk and receiving a light reflected by the recording surface of the magneto-optical disk to read recorded information out from the reflected light;

distance detector means for detecting the distance between the magnetic head and the recording surface of the magneto-optical disk;

an electromagnetic actuator including an electromagnetically driven movable member on which said magnetic head means is mounted to oppose the recording surface of the magneto-optical disk; and

actuator driver means for driving said electromagnetic actuator in response to the distance detected by said distance detector means so that an error of said distance with respect to a target distance thereof is reduced.

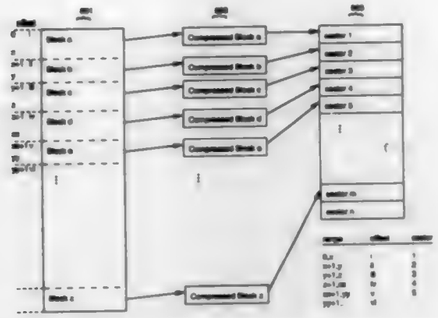
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,295

EFFICIENT METHOD AND APPARATUS FOR ACCESS AND STORAGE OF COMPRESSED DATA

Ke-Chiang Chu, Saratoga, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 29, 1992, Ser. No. 905,558
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—30 **20 Claims**



1. A method of data storage and access in a storage medium subdivisible into separately addressable segments, said data storage and access method comprising the following steps:

a) compressing a data file into separate blocks of a predetermined size;

b) storing each said predetermined size compressed logical block of said data file into said storage medium segments;

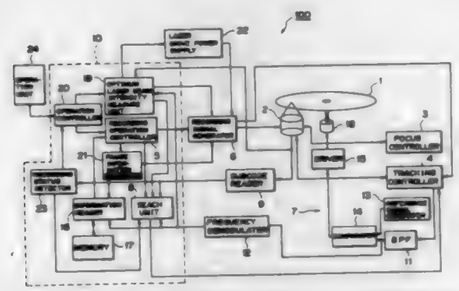
c) mapping said uncompressed logical blocks of said data file to said storage medium segments containing said compressed logical blocks of said data file, said mapping providing an access correlation between each said uncompressed logical block and each said storage medium segment containing said compressed logical block of each said uncompressed logical block.

5,305,296

METHOD AND APPARATUS FOR RECORDING INFORMATION ON A RECORDABLE OPTICAL DISC UTILIZING UNRECORDED COUNT AREA TO DETERMINE AVAILABLE TEST AREA

Mutsumi Kono, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,608
Claims priority, application Japan, Jul. 5, 1991, 3-165796
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—50 **7 Claims**



1. A method of recording information on a recordable optical disc having a plurality of test areas for effecting test recording therein with a light beam applied thereto which has an optional light intensity, a plurality of count areas for recording count information indicative of whether test recording is effected or not in the test areas, respectively, said count areas being associated respectively with said test areas, and an information recording area for recording information with a light beam applied thereto, said method comprising the steps of:

searching said plurality of count areas for an unrecorded count area with no count information recorded therein in response to a predetermined command;

if at least one unrecorded count area is located, recording count information in said one unrecorded count area;

searching said plurality of test areas for one test area which is associated with said one count area in which the count information is recorded;

applying the light beam to said one test area to effect test recording therein to determine as optimum light intensity for recording information in said information recording area, said count information recording step preceding said test area recording step; and

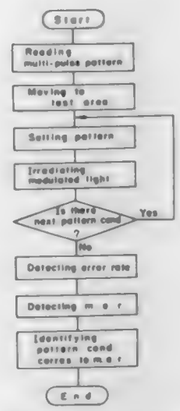
recording information in said information recording area with the light beam applied thereto with the determined optimum light intensity.

5,305,297

METHOD FOR DETERMINING OPTIMUM IRRADIATION CONDITIONS IN OPTICAL DATA RECORDING

Kenichi Nishiuchi, Moriguchi; Eiji Ohno; Noboru Yamada, both of Hirakata, and Nobuo Akahira, Yahata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1991, Ser. No. 668,478
Claims priority, application Japan, Mar. 14, 1990, 2-63166
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 **9 Claims**



1. A method of recording on an optical data medium,

said method recording a data signal by means of laser beam irradiation on a recording medium which changes reversibly between optically distinguishable states according to specific light irradiation conditions, and comprising:

a process for accomplishing a light irradiation sequence combining plural different irradiation conditions before the data signal is recorded to the recording medium;

a light detection process which detects the quantity of light reflected by a passing through the recording medium after said light irradiation sequence;

a process of measuring the signal obtained from the light detection process;

a comparison process which compares the measured results;

a process which determines the optimum irradiation conditions from the comparison result; and

a process of recording the data signal using these optimized irradiation conditions;

wherein the irradiation beam is power modulated between at least two power levels, and

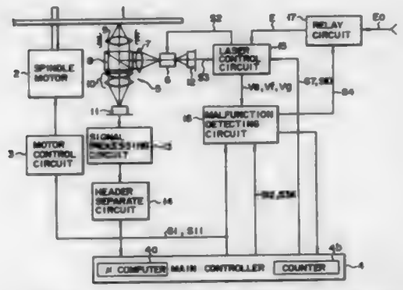
wherein said power modulation is accomplished for one recording mark formed on the recording medium according to the data signal by means of a modulation pattern comprising plural pulse strings and selected from among at least two modulation patterns.

5,305,298

OPTICAL DATA RECORDING/REPRODUCING APPARATUS WITH OPTICAL IRRADIATION INHIBITION CIRCUIT

Tsuneshi Yokota, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 412,524, Sep. 26, 1989, abandoned. This application Jul. 2, 1992, Ser. No. 908,572
Claims priority, application Japan, Sep. 30, 1988, 63-244320
Int. Cl.[5] G11B *7/00, 7/085*
U.S. Cl. 369—116 **4 Claims**



1. An optical data recording/reproducing apparatus comprising:

light source means for irradiating a light beam onto a recording medium;

detector means for detecting an amount of light irradiated from said light source means;

control means, connected to said light source means and detector means, for driving said light source means such that the amount of light detected by the detector means coincides with a first predetermined amount during a reproducing mode; and

inhibition means, connected to said control means, for inhibiting operation of said control means to inhibit light irradiation from said light source means when the amount of light detected is lower than a second predetermined amount which is lower than the first predetermined amount during the reproducing mode;

said inhibition means inhibiting operation of said control means to inhibit light irradiation from said light source means when the amount of light detected is higher than a third predetermined amount which is higher than the first predetermined amount during the reproducing mode;

said control means driving said light source means such that the amount of light detected by the detector means coincides with a fourth predetermined amount which is higher than the third predetermined amount during a recording mode;

said inhibition means inhibiting operation of said control means to inhibit light irradiation from said light source means when the amount detected is higher than a fifth predetermined amount which is higher than the fourth predetermined amount during the recording mode; and

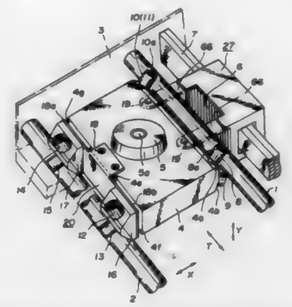
means for recording an operation state of said control means when operation of said light source means is inhibited.

5,305,299

SUPPORT MECHANISM FOR OPTICAL BLOCK IN OPTICAL DISC DRIVE APPARATUS

Tamotsu Maeda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,860
Claims priority, application Japan, Jun. 21, 1991, 3-177340
Int. Cl.[5] G11B *17/30, 23/00*
U.S. Cl. 369—215 **9 Claims**



1. A support mechanism of an optical block in an optical disc drive apparatus provided with a reference shaft, a support shaft positioned substantially parallel to the reference shaft, and an optical block which has an optical head and which is supported between the reference shaft and the support shaft by the support mechanism so that the optical block moves along an axial direction of the reference shaft substantially in parallel with the reference shaft, the support mechanism comprising:

at least two positioning rotational members provided at a positioning side of the optical block for positioning and guiding the optical block at two positioning locations along the axial direction of the reference shaft,

at least two supporting rotational members provided at a supporting side of the optical block for supporting and guiding the optical block at two supporting locations along the support shaft, and

a roller support member including an attachment portion attached to the optical block and wings which elastically support the supporting rotational members so that the supporting rotational members approach and move away from the optical block and so that when any one of the supporting rotational members is moved toward the optical block, the wing supporting that supporting rotational member elastically presses that supporting rotational member away from the optical block.

5,305,300

MAGNETO OPTICAL STORAGE DEVICE USING A MULTI-LAYER FILM OF PT/CO LAMINATED SECTIONS

Kenji Ohta; Akira Takahashi, both of Nara; Junsaku Nakajima, Yamatotakada, and Yoshiteru Murakami, Nishinomiya, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1992, Ser. No. 888,548
Claims priority, application Japan, Feb. 13, 1991, 3-20113; May 23, 1991, 3-118857; May 23, 1991, 3-118866
Int. Cl.[5] G11B *7/24*
U.S. Cl. 369—275.2 **9 Claims**

1. A magneto-optical storage device comprising:

a substrate;

a first AlN film;

a second AlN film;

a Pt/Co multi-layer film formed by alternately laminating Pt and Co one after the other; and

an Al reflective film,

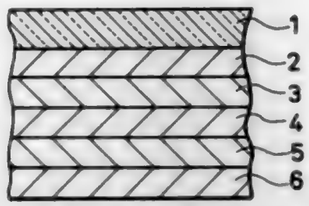
the first AlN film, the Pt/Co multi-layer film, the second

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AlN film and the Al reflective film being successively formed on the substrate,

wherein a film thickness δAlN (1) of the first AlN film is set to range within 50 nm ≤ δAlN (1) ≤ 200 nm;

a film thickness δAlN (2) of the second AlN film is set to range within 120 nm ≤ δAlN (2) ≤ 140 nm;



a film thickness δPt of a single Pt layer of the Pt/Co multilayer film is set to range within 0.6 nm ≤ δPt ≤ 1.0 nm;

a film thickness δCo of a single Co layer of the Pt/Co multilayer film is set to range within 0.3 nm δCo ≤ 0.6 nm; and

a total film thickness δPt/Co of the Pt/co multi-layer film is set to range within 15 nm ≤ δPt/Co ≤ 20 nm.

5,305,301

OPTICALLY READABLE RECORD CARRIERS

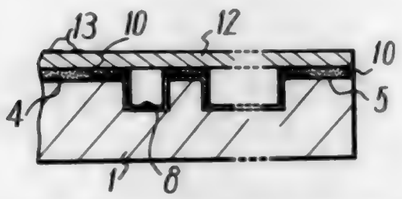
Norio Ohga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 395,219, Aug. 17, 1989, abandoned, which is a continuation of Ser. No. 693,303, Jan. 23, 1985, abandoned, which is a continuation of Ser. No. 363,532, Mar. 30, 1982, abandoned. This application May 22, 1992, Ser. No. 890,316

Claims priority, application Japan, Apr. 10, 1981, 56-54678

Int. Cl.[5] G11B *7/26*

U.S. Cl. 369—275.3 **5 Claims**



1. A method of manufacturing an optically readable, rotatable, record carrier for reading by a focussed beam of radiation, comprising the steps of:

forming by molding a disc-shaped substrate having a central aperture;

masking inner and outer edge portions of the disc-shaped substrate, so that no information signal track can be formed by coating at said portions;

coating a metallic layer onto the masked, disc-shaped substrate having a central aperture on remaining portions of said disc-shaped substrate that were not masked in said step of masking;

removing the masking on the inner and outer edge portions of the disc-shaped substrate to form an unmasked substrate;

coating an adhesive layer on the metallic layer and on the unmasked substrate; and

adding a protective layer upon the entire surface area of the adhesive layer on said disc-shaped substrate whereby said metallic layer is uncapsulated by said disc-shaped substrate and said protective layer.

5,305,302

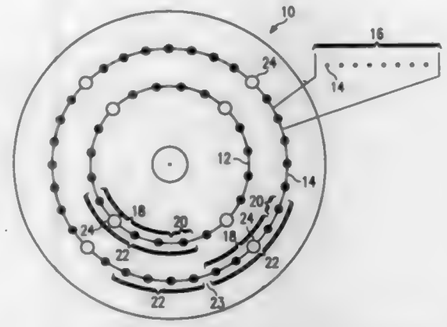
TRACK FORMAT AND RECORD CARRIER SYSTEM FOR SPLIT DATA FIELD SUPPORT

Andrew C. Hardwick, Boulder, Colo., assignor to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 621,996, Dec. 4, 1990, abandoned. This application Aug. 12, 1993, Ser. No. 105,530

Int. Cl.[5] G11B *5/596*

U.S. Cl. 369—275.3 **5 Claims**



1. A method for controlling the transfer of information from a data field that is split by a servo field, comprising:

providing a disk comprising a plurality of tracks including a first track and a second track, each of said first and second tracks having a first portion that includes a header and a data field and a second portion that includes a servo field containing servo information for use in controlling the position of a transducer for reading and writing data in a data field, each of said first portions having a starting point and an ending point, said second portion of said first track located intermediate of said starting point and said ending point of said data field of said first track, said first track header including information relating to the location of said first track servo field, said first and second track servo fields being located at predetermined positions on said disk, said first track servo field occurring at a first frequency relative to said transducer used in reading said servo information contained in said first track servo field, said second portion of said second track located intermediate of said starting point and said ending point of said data field of said second track, said second track header including information related to the location of said second track servo field, said second track servo field occurring at a second frequency relative to said transducer for use in reading servo information contained in said servo field of said second track that is substantially equal to said first frequency;

reading said servo information from said servo field in said first track;

controlling said transducer to position said transducer relative to said first track using said servo information in said servo field of said first track;

transferring data relative to said data field of said first track;

reading said servo information from said servo field in said second track;

controlling said transducer to position said transducer relative to said second track using said servo information in said servo field of said second track; and

transferring data relative to said data field of said second track.

5,305,303

OPTICAL INFORMATION RECORDING MEDIUM

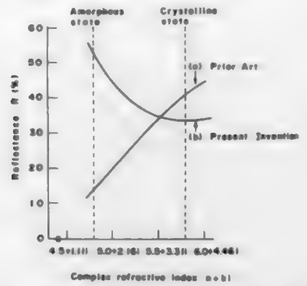
Nobuo Akahira, Yawata; Eiji Ohno, Hirakata; Kenichi Nishiuchi, Moriguchi; Kenichi Nagata, Mino, and Noboru Yamada, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1991, Ser. No. 765,515

Claims priority, application Japan, Sep. 25, 1990, 2-255830

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—275.4 **11 Claims**



3. An optical information recording medium comprising:

a substrate;

a recording film in which an optically detectable characteristic is subjected to change by irradiation of at least a laser beam thereto, said optically detectable characteristic being selected from the group consisting of (a) intensity of transmitted light (transmittance) (b) intensity of reflected light (reflectance) and (c) polarization direction; and

a transparent layer member;

said recording film and said transparent layer member being provided on said substrate;

wherein information is recorded by partially changing said recording film and is reproduce by optically detecting change of the optically detectable characteristic;

wherein said recording film is made of material assuming a plurality of states having different optical constants, respectively;

wherein when the optically detectable characteristic assumes a maximum value or a minimum value relative to the optical constants in at least one of the states in the case where said recording film and said transparent layer member are, respectively, set to specific thicknesses, thicknesses of said recording film and said transparent layer member are so selected to substantially have said specific thicknesses, respectively.

5,305,304

OPTICAL INFORMATION CARRIER HAVING A SPACER SECURELY BONDED BETWEEN DISKS BY ADHESIVE

Ryutaro Hayashi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 474,306, Feb. 5, 1990, abandoned, which is a continuation of Ser. No. 68,099, Jun. 30, 1987, abandoned. This application Oct. 3, 1990, Ser. No. 593,597

Claims priority, application Japan, Jun. 30, 1986, 61-151546; Jun. 30, 1986, 61-151547

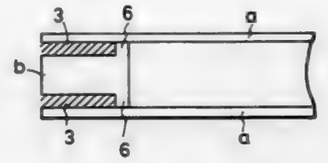
Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—275.5 **7 Claims**

1. An optical information record carrier comprising:

upper and lower optical disks, at least one of said optical disks having an optical recording surface;

a spacer located between said upper and lower optical disks to maintain said optical disks separated from one another, said spacer comprising a main body portion and at least one projection having a predetermined uniform height and projecting from a surface of said main body portion toward the optical recording surface of said at least one of said optical disks, said at least one projection contacting but not being bonded to the optical surface of said at least one of said optical disks so as to form an air gap between



said surface of said main body portion and the optical recording surface of said at least one of said optical disks; and

adhesive, disposed in said air gap, for gluing said main body portion to at least one of the upper and lower disks.

5,305,305

MESSAGE SWITCHING NETWORK MONITORING

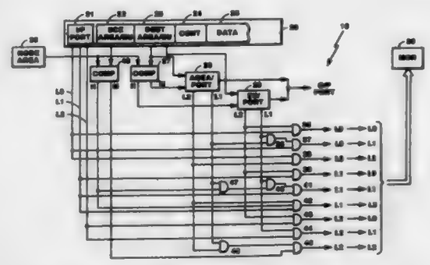
John A. Harper, Reading, and Francis Dolan, Thatcham, both of United Kingdom, assignors to Digital Equipment International Limited, Fribourg, Switzerland

Filed Jul. 18, 1991, Ser. No. 732,366

Claims priority, application United Kingdom, Jul. 18, 1990, 9015760

Int. Cl.[5] H04L *12/26*

U.S. Cl. 370—13 **12 Claims**



1. A message switching network comprising:

a plurality of end unit stations coupled together via switching node stations, the stations having ports, the ports being ordered hierarchically by levels, the level indicating the type of link attached to the port; and

monitoring means for monitoring the transitions of messages between different levels of the hierarchy as the message passes from a port of one level to a port of a different level.

5,305,306

STATION-TO-STATION FULL DUPLEX COMMUNICATION IN A TOKEN RING LOCAL AREA NETWORK

Barry A. Spinney, Wayland; Henry S. Yang, Andover, and William R. Hawe, Pepperell, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 893,217, Jun. 2, 1992, abandoned, which is a division of Ser. No. 468,480, Jan. 22, 1990, Pat. No. 5,155,726. This application Feb. 25, 1993, Ser. No. 23,741

Int. Cl.[5] H04J *3/02;* **H04L** *12/42*

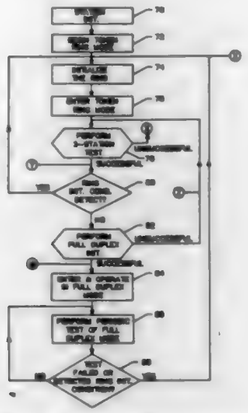
U.S. Cl. 370—29 **4 Claims**

1. A method for establishing and maintaining full duplex operation between two stations in a token ring network, the method comprising the steps of:

ascertaining, in each station in a token ring network, whether only two stations are active in the network;

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if only two stations are active in the network, exchanging frames between the two stations to negotiate the establishment of full duplex communication;
switching to a full duplex mode of communication between the two stations;
and the step of exchanging frames to negotiate the establishment of full duplex communication includes



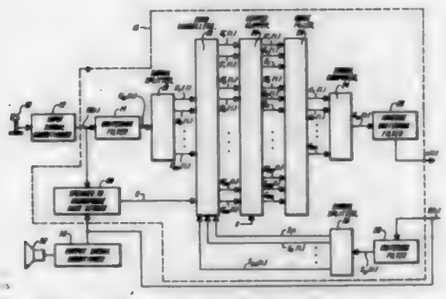
transmitting a full duplex request frame from at least one of the stations, and
transmitting a full duplex acknowledgement frame in response to receipt of a full duplex request frame;
and the step of switching to full duplex mode is initiated in each station upon the receipt of a full duplex request frame or a full duplex acknowledgement frame.

5,305,307

ADAPTIVE ACOUSTIC ECHO CANCELLER HAVING MEANS FOR REDUCING OR ELIMINATING ECHO IN A PLURALITY OF SIGNAL BANDWIDTHS

Peter L. Chu, Needham, Mass., assignor to PictureTel Corporation, Peabody, Mass.

Continuation-in-part of Ser. No. 640,477, Jan. 11, 1991, abandoned, which is a continuation of Ser. No. 637,016, Jan. 4, 1991, abandoned. This application Feb. 21, 1991, Ser. No. 659,579
Int. Cl.[5] H04J *1/00*
U.S. Cl. 370—32.1 **40 Claims**



23. An echo cancelling device for reducing the effects of acoustic feedback between a loudspeaker and microphone in a communication system, comprising:
a first whitening filter for receiving a near end microphone signal and generating in response thereto a whitened version of said near end microphone signal,
a first signal splitter for separating said whitened microphone signal into a plurality of bandlimited microphone signals,
a second whitening filter for receiving a loudspeaker signal and generating in response thereto a whitened version of said loudspeaker signal,
a second signal splitter for separating said whitened loudspeaker signal into a plurality of bandlimited loudspeaker signals, the band of frequencies of each bandlimited loudspeaker signal being approximately the same as the band of frequencies of a corresponding bandlimited microphone signal,
a plurality of adaptive echo estimators, each adaptive echo estimator for generating an echo estimation signal for an associated bandlimited loudspeaker signal, said echo estimation signal representing an approximation of the acoustic feedback of said bandlimited loudspeaker signal into a corresponding bandlimited microphone signal,
a subtractor means for subtracting from each bandlimited microphone signal an echo estimation signal having the same frequency band as the bandlimited microphone signal, to produce a bandlimited echo corrected microphone signal,
a plurality of local speech detectors each for identifying periods of time during which a corresponding bandlimited microphone signal is substantially derived from acoustic feedback between said loudspeaker and microphone, and
a plurality of adjustment modules each for adjusting characteristics of at least one said adaptive echo estimator during said identified periods of time when a corresponding bandlimited microphone signal is substantially derived from acoustic feedback, and
a plurality of signal clippers, each clipper for attenuating a corresponding bandlimited echo corrected microphone signal during periods of time during which said bandlimited echo corrected microphone signal is substantially derived from acoustic feedback between said loudspeaker and microphone, and
a plurality of noise fillers, each noise filler comprising:
a means for generating a background noise estimation signal representing the background noise contained in a bandlimited microphone signal, and
a means for adding said background estimation signal to said attenuated bandlimited echo corrected microphone signal in an amount complementary to the magnitude of said attenuation.

5,305,308

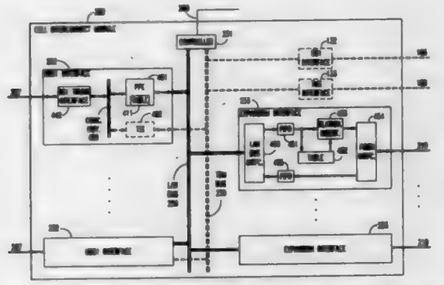
WIRELESS ACCESS TELEPHONE-TO-TELEPHONE NETWORK INTERFACE ARCHITECTURE

Michael J. English, Aurora; Charles Y. Farwell, Denver; Michael L. Hearn, Broomfield; Richard M. Heidebrecht; David M. Kissel, both of Boulder; Paul E. Miller; Richard D. Miller, both of Northglenn; Alan S. Mulberg, Boulder; Michael A. Smith, Westminster; Douglas A. Spencer; John S. Thompson, both of Boulder, and Richard A. Windhausen, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 727,498, Jul. 9, 1991, Pat. No. 5,195,090. This application Oct. 29, 1992, Ser. No. 968,559
Int. Cl.[5] H04Q *7/02*
U.S. Cl. 370—32.1 **33 Claims**

4. A switching system for conveying radio-telephone call traffic to and from cells over communications links in a radio-telephone communications system, the switching system being for connection to a plurality of communication channels of a telephone network that is connected to the radio-telephone communications system, each channel for carrying traffic of an individual call, and the switching system including:
a packet transmission bus;

a time-division-multiplexed (TDM) bus defining a plurality of time slots;
a plurality of packet communications link interface means connected to the packet transmission bus and each for receiving from the packet transmission bus packets carrying outgoing voice call traffic destined for radio telephones served by a cell and transmitting the received packets on a packet communications link to the cell in statistically-multiplexed form, and for transmitting on the packet transmission bus packets received in statistically-multiplexed form on the link and each carrying incoming traffic of a voice call from a radio telephone;
a plurality of call-handling means each connected to the packet transmission bus and to the TDM bus, each for handling a different call and responsive to receipt of outgoing voice call traffic of the handled call on the TDM bus in first time slots assigned to the handled call for



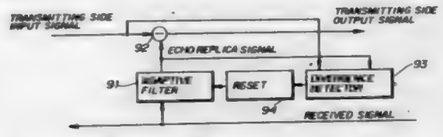
packetizing the received outgoing call traffic and transmitting the packets at regular intervals on the packet transmission bus, and for receiving at regular intervals on the packet transmission bus packets carrying incoming voice call traffic of the handled call and for depacketizing and transmitting the incoming call traffic on the TDM bus in second time slots assigned to the handled call; and
at least one channel interface means connected to the TDM bus, each responsive to receipt from a communication channel of a telephone network of outgoing call traffic of an individual call for transmitting the received outgoing call traffic on the TDM bus in first time slots that are assigned to the call, and responsive to receipt of incoming call traffic of an individual call on the TDM bus in second time slots that are assigned to the individual call for transmitting the received incoming call traffic on the communication channel of the telephone network that carries traffic of that call.

5,305,309

ECHO CANCELLER

Kaoru Chujo, Hachiouji, and Masako Katoh, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 623,554, Dec. 6, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,664
Claims priority, application Japan, Dec. 6, 1989, 1-317363; Mar. 5, 1990, 2-53321
Int. Cl.[5] H04B *3/23*
U.S. Cl. 370—32.1 **23 Claims**



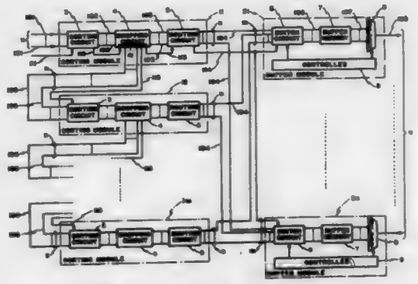
1. An echo canceller comprising:
echo replica generating means for generating an echo replica signal based on a received signal and including filter having tap coefficients;
subtracting means coupled to said echo replica generating means for obtaining a transmitting side output signal by subtracting the echo replica signal generated by said echo replica generating means from a transmitting side input signal;
divergence detecting means coupled to said echo replica generating means and said subtracting means for detecting a divergence of the echo canceller based on the transmitting side input signal and the echo replica signal, the detecting being based on a comparison between a first power of the transmitting side input signal and a second power of the echo replica signal and for outputting a detection signal when the divergence is detected; and
resetting means coupled to said divergence detecting means for automatically resetting said echo replica generating means in response to the detection signal from said divergence detecting means.

5,305,310

PACKET SWITCHING SYSTEM HAVING ARBITRATIVE FUNCTION FOR COMPETING PACKETS

Atsuo Itoh, and Toshio Suzuki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 495,464, Mar. 19, 1990, abandoned. This application May 8, 1992, Ser. No. 883,065
Claims priority, application Japan, Mar. 17, 1989, 1-65304
Int. Cl.[5] H04J *3/26*; **H04Q** *11/04*
U.S. Cl. 370—60 **13 Claims**



1. A packet switching system comprising:
on its input side, m-sorting modules, where m is a positive integer, and $2 \leqq m$, each having sorting means for sorting a plurality of packets entered simultaneously from n-input lines, where n is a positive integer, and $2 \leqq n$, according to the destination address; dropping means for, keeping one of the competing packets and dropping the rest to a sorting module in an inferior position if there are a plurality of competing packets having the same destination address among the packets sorted by the sorting means; and routing means for routing each packet passed the dropping means on the basis of the destination address;
said m-sorting modules comprising a first sorting module, a second sorting module, ..., and an m-1-th sorting module and each being in a first superior position, a second superior position, ..., a second inferior position and a first inferior position respectively, and said m-sorting modules being coupled in cascade connection to input a dropped packet outputted from said dropping means of the sorting module in a superior position into the sorting means of the sorting module in a next inferior position toward said sorting module;
buffer modules for temporarily storing the packets entered from said routing means of said m-sorting modules and supplying them to output lines of the packet switching system on a first-in first-out basis, each buffer module being connected to an output line corresponding to said

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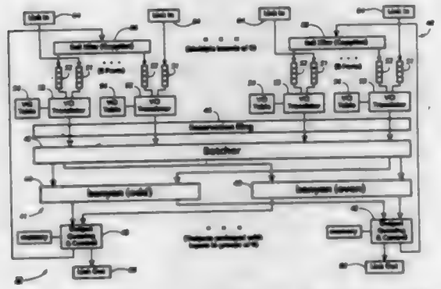
destination address, whereby said plurality of packets are initially entered into the first sorting module in the first superior position, non-competing packets are distributed from said first sorting module to the buffer modules corresponding to the output lines indicated by said destination addresses, the k-competing packets, where k is a positive integer, and $2 \leq k \leq n$ are entered into the same buffer module with predetermined delays in sequence from the highest-positioned sorting module to the k-th sorting module.

5,305,311

COPY NETWORK PROVIDING MULTICAST CAPABILITIES IN A BROADBAND ISDN FAST PACKET SWITCH SUITABLE FOR USE IN A LOCAL AREA NETWORK

Joseph B. Lyles, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 20, 1992, Ser. No. 887,167
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **1 Claim**



1. In a switch having a non-blocking, self-routing switching fabric having a plurality of input ports and a plurality of output ports for routing packets from input sources coupled to said input ports to output destinations coupled to said output ports on virtual circuits specified by such packets, an improved multicast mechanism for routing multicast packets from any one of said sources to copy groups composed of multiple ones of said destinations; said multicast mechanism comprising a copy network that is coupled to receive said multicast packets from said switching fabric after said multicast packets have made at least one pass through said switching fabric from an input port thereof to an output port thereof, said copy network being configured for making separate copies of each of said multicast packets for each member of the copy group to which the packet is addressed and for applying said copies to input ports said switching fabric, such that the copies are rerouted by said switching fabric to the respective members of said copy group.

5,305,312

APPARATUS FOR INTERFACING ANALOG TELEPHONES AND DIGITAL DATA TERMINALS TO AN ISDN LINE

Martin J. Fornek, Lisle; Dennis R. Kinn, Geneva; Steven P. Meade, Bolingbrook, and Blaine E. Welman, Wheaton, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 7, 1992, Ser. No. 832,269
Int. Cl.[5] H04J *3/12*; **H04Q** *11/04*
U.S. Cl. 370—62 **14 Claims**

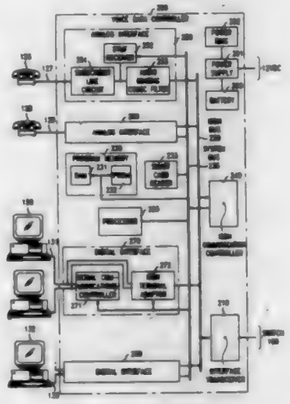
1. A customer premises apparatus capable of interfacing more than one analog telephone and more than one digital data terminal to a single integrated services digital network (ISDN) line connected to a telephone switching system switch that provides ISDN services, said ISDN line comprising two B-channels and a D-channel, said apparatus comprising:

a stored program control processor;

a communications controller, said communications controller communicating with said processor;

analog interface means for interfacing said more than one analog telephone to said B-channel under the control of said processor, said analog interface means receiving analog signaling indicative of requests for ISDN services from said analog telephones and forwarding said requests to said processor;

digital interface means for interfacing said more than one digital data terminal to said D-channel and said B-channels under the control of said processor, said digital interface means receiving digital signaling indicative of requests for ISDN services from said digital data terminals and forwarding said requests for ISDN services to said processor; and



bus means for connecting said analog interface means, said digital interface means and said communications controller to said ISDN line,

wherein said communications controller receives ISDN control messages from said switch on said ISDN line, translates said control messages and sends said translated control messages to said processor, and wherein said processor configures said analog and digital interface means responsive to said translated control messages, and wherein said communications controller receives request messages from said processor pursuant to requests for ISDN services from said analog interface means and said digital interface means, translates said messages and sends said messages on said ISDN line to said switch, thus providing ISDN services to said more than one analog telephone and said more than one digital data terminals.

5,305,313

ELECTRONIC SWITCHING SYSTEM FOR USE IN CONNECTION TO AN ISDN AND METHOD OF SETTING COMMUNICATION DISCONNECTION REASONS

Hitoshi Katoh, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 6, 1992, Ser. No. 908,371
Claims priority, application Japan, Jul. 4, 1991, 3-164663
Int. Cl.[5] H04L *12/12*
U.S. Cl. 370—62 **11 Claims**

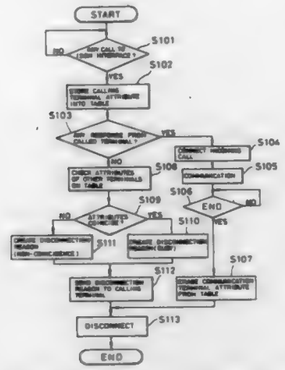
1. An electronic switching system comprising:

an ISDN interface accommodating a plurality of ISDN terminals provided at an extension side of the switching system and including a plurality of channels;

means for extracting an attribute of a first originating terminal originating a call when a first ISDN terminal originates or receives the call using one of the plurality of channels of the ISDN interface;

means for storing the attribute of the first ISDN terminal corresponding to a used channel when the first ISDN terminal is engaged in communications with another party following the originating or receiving of the call;

means for determining whether any of the terminals accommodated by the ISDN interface can respond to and be connected to an incoming call originated by a second originating terminal through an office line;



means for creating a disconnection reason message for notifying the second originating terminal to discontinue calling based on the attribute of the second originating terminal and the attributes of terminals engaged in communications stored in the storing means, when the determining means determines that none of the terminals accommodated in the ISDN interface can respond and be connected to the call originated by the second originating terminal through the office line; and

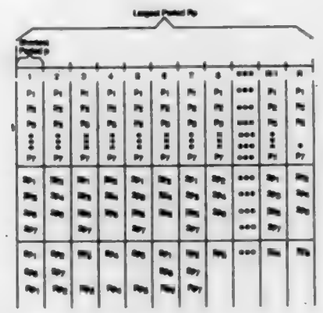
means for informing the second originating terminal of the disconnection reason message created by the disconnection reason creating means.

5,305,314

GLOBAL LOAD SMOOTHING IN A REAL TIME DATA IMAGING NETWORK SYSTEM

Warren A. Edblad, Plum Boro; Linda L. Santoline, South Park; Carl J. Staab; Charles W. Einolf, Jr., both of Murrysville, and Albert W. Crew, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 19, 1992, Ser. No. 901,445
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—79 **15 Claims**



1. A real time data imaging network system comprising:

a plurality of stations, each generating a plurality of periodic data messages having a plurality of data periods ranging from a longest data period to a shortest data period, with the longest data period being an integer multiple of each of the other data periods;

a data communications network connecting all of said stations;

means sequentially enabling, within repetitive transmit time slots, transmission by each station of periodic data messages on said data communications network, said transmit time slots being equal in duration to the shortest data period; and

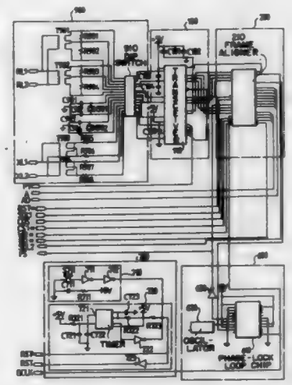
means within each station repetitively transmitting, when enabled during every transmit time slot, periodic data messages having the shortest data period, and repetitively transmitting other data messages with longer data periods when enabled during transmit time slots spaced for each other data message by a ratio of the data period for said other periodic data message to the shortest data period, with transmission of said periodic data messages with longer data periods in all stations distributed over transmit time slots occurring during each longest data period to minimize the number of data messages transmitted by all stations during each transmit time slot.

5,305,315

TRUNK INTERFACE FOR THE ISDN SYSTEM USING TWO DIFFERENT SIGNALLING SYSTEMS

Young D. Lee, Seongnamsi, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Dec. 1, 1992, Ser. No. 983,777
Claims priority, application Rep. of Korea, Dec. 2, 1991, 1991/21998
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—84 **4 Claims**



1. A trunk interface for a network using two different signalling systems for use in an Integrated Services Digital Network apparatus in order to interface with a central office exchange or other Private Automatic Branch Exchange through trunk lines, comprising:

a selection means for adjusting the trunk interface to a CEPT system or a T1 system;

a primary rate transceiving means connected to said selection means, for transmitting and receiving information at a primary rate of 2.048 Mbps (CEPT) for 1.544 Mbps (T1) in a primary rate format;

a frame alignment means connected to said primary rate transceiving means, for re-formatting a frame of transmitted or received information in accordance with the selected signalling system of CEPT or T1;

a B channel switching means connected to said frame alignment means, for switching B channel information in pri-

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mary rate time slots to PCM time slot in order to transmit the B channel information in PCM format to a switch matrix, and for switching B channel information in PCM time slots to primary rate time slots in order to transmit the B channel information to the frame alignment means;

a D channel control means connected to said frame alignment means, for extracting D channel information from received information in and for inserting D channel information received from the high order level order to transmit said D channel information to a high order level, into transmitted information in the primary rate format;

a central processing means respectively connected to said primary rate transceiving means, said frame alignment means, said B channel switching means and said D channel control means, for controlling and managing said primary rate transceiving means, said frame alignment means, said B channel switching means and said D channel control means;

a reset means respectively connected to said frame alignment means, said central processing means and said D channel control means, for resetting said frame alignment means, said control processing means and said D channel control means; and

a clock generation means respectively connected to said frame alignment means, said B channel switching means and said D channel control means, for supplying clocks synchronized with a network clock.

5,305,316

MULTIPLEX COMMUNICATION SYSTEM

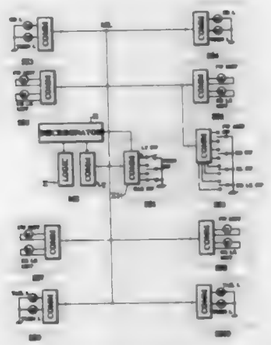
Kiyoshi Yoshida, Atsugi, and Atsushi Sakagami, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 3, 1991, Ser. No. 754,043

Claims priority, application Japan, Sep. 4, 1990, 2-232407; Sep. 4, 1990, 2-232409; Sep. 18, 1990, 2-246239

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—85.1 **5 Claims**



1. A multiplex communication system for transmitting and receiving data between a master station and a plurality of slave stations, comprising:

(a) master communicating means, disposed in said master station, for controlling data transmission and reception to and from each of said slave stations;

(b) slave communicating means, including switches disposed in each of said slave stations, for controlling data transmission and reception to and from said master station;

(c) logic means, disposed in said master station, for accessing said slave stations cyclically one by one in sequence by transmitting a slave station access address an instruction to an accessed slave station and receiving information data from said accessed slave station, to controllably activate loads of said slave stations on the basis of information data concerning said slave stations; and

(d) discriminating means, disposed in said master station, for collating switch address data transmitted from a slave station with data stored therein to improve transmission reliability, wherein immediately after having received the switch address data transmitted from a slave station, said discriminating means transmits again an access address to the slave station to receive again the switch address data for collation of the switch address data, and said discriminating means discriminates the switch address data as being correct, only when first received switch address data matches in level with second received switch address data.

5,305,317

LOCAL AREA NETWORK ADAPTIVE CIRCUIT FOR MULTIPLE NETWORK TYPES

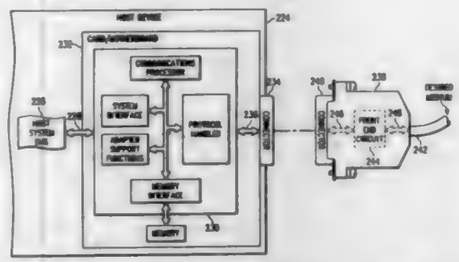
Andre Szczepanek, Brickhill, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 24, 1992, Ser. No. 874,242

Claims priority, application United Kingdom, Feb. 28, 1992, 9204382

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.5 **26 Claims**



1. A local area network adaptive circuit for coupling a host device to a network front end circuit which communicates information to/from a network, comprising:

an internal bus;

a system interface connected to said internal bus and operable to interface the adaptive circuit to the host device;

a first bus operable to communicate with the host device and with said system interface;

a second bus operable to communicate with the front end circuit;

a protocol handler operable to communicate with said second and internal buses for communicating at bit and frame levels with either a token ring or an ethernet protocol in a token ring or ethernet protocol mode, respectively, said protocol handler further operable to provide network specific status and control information required by either token ring or ethernet standards; and

a configuration input coupled to said second bus for receiving a signal generated by said front end circuit indicating a first and second state wherein said first state indication configures the local area network adaptive circuit to operate in a token ring protocol and wherein said second state indication configures the local area network adaptive circuit to operate in an ethernet protocol.

5,305,318

METHOD FOR CONTROLLING DATA TRANSMISSION OF AN INTEGRATED SERVICES DIGITAL NETWORK TERMINAL HAVING A MULTI-CHANNEL DATA TRANSMISSION CAPABILITY

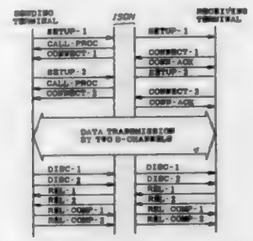
Shinichiro Ozeki, Isehara, and Fumihiro Ogasawara, Ebina, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1991, Ser. No. 787,633

Claims priority, application Japan, Nov. 9, 1990, 2-302582

Int. Cl.[5] H04J *3/12*

U.S. Cl. 370—85.7 **5 Claims**



1. A method of controlling data transmission of a terminal connected to an integrated services digital network which transmits data to a receiving terminal using a plurality of data channels a variable in the network, said method comprising the steps of:

transmitting a procedural message from a first terminal to the network so that the procedural message is sent from the network to a second terminal, said procedural message including user-user data in which a channel setup request item is set to a unique first value and a requested channel number item is set to a unique second value;

receiving a connection message at the first terminal from th second terminal via the network in response to the procedural message transmitted by the first terminal, said connection message including user-user data which indicates whether the second terminal accepts the channel setup request and requested channel number from the first terminal, the sending of this connection message from the second terminal to the first terminal establishing a first channel for transmuting information between the first and second terminals;

wherein said transmitting of the procedural message and said receiving of the connection message are repeated until all the data channels indicated by the requested channel number item of the user-user data are established; and

transmitting data from the first terminal to the second terminal through the network by simultaneously using the thus determined number of the data channels.

5,305,319

FIFO FOR COUPLING ASYNCHRONOUS CHANNELS

Richard Sowell, San Jose, Calif., assignor to Chips and Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 648,103, Jan. 31, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 28,648

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.13 **6 Claims**

1. A bus master having a first clock signal input for interfacing an asynchronous system bus and an asynchronous local bus comprising:

means for outputting a read/write control signal;

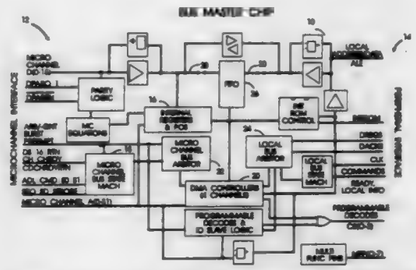
a FIFO memory having a single data input port, a single data output port, and a control port for receiving said read/-write control signal, with said input port enabled when said read/write control signal is asserted and said output port enabled when said read/write control signal is negated;

an internal system side bus;

an internal local side bus;

a FIFO input data MUX having first and second input port coupled to said internal system side and local side buses respectively, an output port coupled to the input port of said FIFO memory, and a control port for receiving a second clock signal derived by dividing said first clock signal and comprising a continuous series of contiguous, alternating high and low clock phases of equal duration, said FIFO input data MUX for coupling its first input port to its output port during high second clock signal phases and for coupling its second input port to its output port during low second clock signal phases;

a FIFO output data MUX having first and second output ports coupled to said internal system side and local side buses respectively, an input port coupled to the output port of said FIFO memory, and a control port for receiving said second clock signal, said FIFO output data MUX for coupling its first output port to its input port during high second clock signal phases and for coupling its second output port to its input port during low second clock signal phases;



means for generating system bus control signals, congruent to said second clock signal, for controlling the bus cycles of the asynchronous system bus to facilitate the transfer of data between said FIFO memory and the system bus during a signal selected high second clock signal phase;

means for generating local bus control signals, congruent to said second clock signal, for controlling the bus cycles of the asynchronous local bus to facilitate the transfer of data between said FIFO memory and the local bus during a single selected low second clock signal phase so that accesses to the FIFO by the system and local buses can be interleaved to simultaneously transfer data between said FIFO and said local buses at high transfer rates.

5,305,320

PERIPHERAL COMMUNICATIONS NETWORK

Michael W. Andrews, Maplewood; Stephen J. Brolin, Livingston; Robert W. DeMarco, Hanover Township, Morris County; Daniel S. Greenberg; David J. Hodgdon, both of Parsippany-Troy Hills Township, Morris County; Chandan Sarkar, Wharton, and Gordon D. Woods, Randolph Township, Morris County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 6, 1992, Ser. No. 953,571

Int. Cl.[5] H04L *29/08*

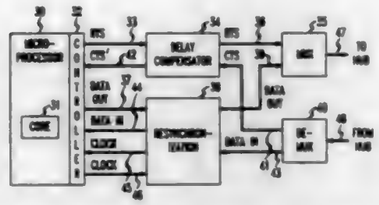
U.S. Cl. 370—85.15 **10 Claims**

1. A circuit in a peripheral component for use in a digital loop carrier transmission system employing a broadcast STAR network for communication among peripheral components of the system, the circuit comprising:

a microprocessor including a peripheral controller, the controller including means for transmitting an outgoing message stream to a hub, means for transmitting to the hub a signal indicating a request to send a message to other peripherals of the system, means for receiving a signal indicating it is clear to send said message, and means for

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processing an incoming message stream from the hub in order to determine if said incoming message stream is intended for the peripheral including the circuit;



means for multiplexing the request to send signal with the outgoing message stream; and

means for demultiplexing the clear to send signal from an incoming message stream.

5,305,321

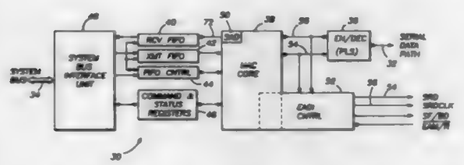
ETHERNET MEDIA ACCESS CONTROLLER WITH EXTERNAL ADDRESS DETECTION INTERFACE AND ASSOCIATED METHOD

Ian Crayford, San Jose, Calif., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Feb. 24, 1992, Ser. No. 841,113

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—94.1 **19 Claims**



1. For use with an Ethernet Media Access Controller (MAC) coupled to a system bus and a look-up memory external to the MAC, a method for determining whether to accept or to reject a packet which is decoded by the MAC into a serial data (SRD) signal stream and a serial data clock (SRDCLK) signal and provide accepted packets to said system bus, the method comprising the steps of:

converting the SRD signal stream into byte frames and loading the frames into a receive FIFO of the MAC;

while the receive FIFO is being loaded, producing by the MAC a boundary delimiter (BD) signal stream which delimits the boundary of each byte in the frame;

while the receive FIFO is being loaded, providing the SRD signal stream, the SRDCLK signal and the BD signal stream from the MAC to the look-up memory via a path other than said system bus;

while the receive FIFO is being loaded, determining whether a selected field in the packet matches information stored in the look-up memory;

while the receive FIFO is being loaded, informing the MAC by the look-up memory whether a match has been detected; and

causing said MAC to either accept or reject said packet in response to whether a match has been detected.

5,305,322

PHASE ALIGNMENT CIRCUIT FOR STUFFED-SYNCHRONIZED TDM TRANSMISSION SYSTEM WITH CROSS-CONNECT FUNCTION

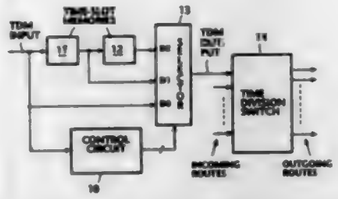
Eiichi Kabaya, and Kenichi Kurokawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 542,568, Jun. 25, 1990, abandoned. This application Jan. 8, 1993, Ser. No. 3,832

Claims priority, application Japan, Jun. 23, 1989, 1-161506

Int. Cl.[5] H04J *3/06*

U.S. Cl. 370—102 **2 Claims**



1. A phase alignment circuit for a stuff-synchronized time division multiplex (TDM) transmission system, comprising:

a tapped delay line having two time slot memories for storing an incoming TDM signal having time slots each containing a plurality of channels, each channel of a predetermined time slot of the received TDM signal having a stuff bit/byte or an information bit/byte, said received TDM signal further containing stuff specification data specifying whether each bit/byte in said predetermined time slot is a positive or a negative bit/byte or an information bit/byte, said time slot memories permitting three replicas of the incoming TDM signal to be provided at successive taps of the tapped delay line;

control means for decoding the stuff specification data contained in said incoming TDM signal and generating therefrom a channel selection signal; and

selector means connected to the successive taps of the tapped delay line so that positionally corresponding channels of said three replicas appear simultaneously at inputs of the selector means, said selector means selecting a channel from said positionally corresponding channels in response to said channel selection signal and generating an outgoing TDM signal therefrom.

5,305,323

TECHNIQUE FOR DIGITALLY DETECTING BIT-ERROR DENSITIES THAT OCCUR IN A SERIAL BIT STREAM

Timothy P. Lada, Raleigh, N.C., assignor to Siemens Stromberg-Carlson, Boca Raton, Fla.

Filed Jun. 25, 1992, Ser. No. 904,345

Int. Cl.[5] G06F *11/30*

U.S. Cl. 371—5.1 **14 Claims**

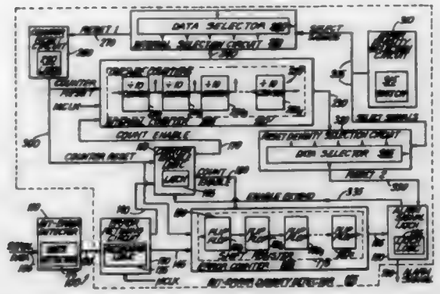
1. Apparatus (**125**) for detecting a bit-error density in a serial bit stream and for producing an output signal when the bit-error density exceeds a pre-defined value, said apparatus comprising:

retiming means (**130**), operating in response to a bit clock signal and detected bit-errors, for synchronizing each detected bit-error to the bit clock and producing an error pulse;

first counting means (**165**), connected to said retiming means, for counting each error pulse occurring during a first interval;

second counting means (**205**) for counting a number of bit clock cycles and for establishing said first interval equivalent to said number of bit clock cycles;

means (**190**), connected to said first counting means, for producing an output signal whenever said first counting means attains a specified bit error count during said first interval; and



resetting means (**250, 280**), connected to said first and second counting means, for resetting said first and second counting means at an end of said first interval.

5,305,324

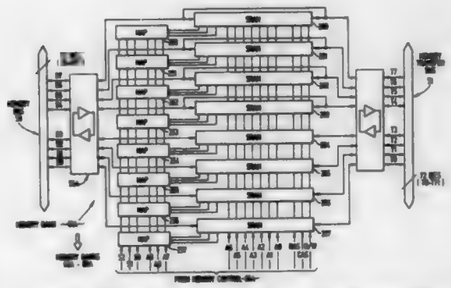
DATA SCRAMBLING INTERFACE FOR CORRECTING LARGE BURST ERRORS IN HIGH SPEED, HIGH CAPACITY TAPE DRIVES

Gary Demos, Culver City, Calif., assignor to DemoGraFX, Culver City, Calif.

Continuation of Ser. No. 589,383, Sep. 26, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 89,426

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—2.1 **47 Claims**



1. A high speed data interface for recording information onto a tape comprising:

data receiver means for receiving original data words from a high speed data channel;

a buffer memory, coupled to the data receiver, and having a plurality of memory locations;

memory control means, coupled to the buffer memory, for separating each original data word into smaller data segments, and writing said smaller data segments to equally spaced locations in the buffer memory to generate buffer memory data words;

recording means, coupled to the buffer memory and to the tape, for recording the buffer memory data words from the buffer memory onto the tape such that each data segment of each original data word is located on the tape spaced both longitudinally and vertically from every other data segment from the same original data word.

5,305,325

METHOD AND A DEVICE FOR SUPERVISING AND TESTING MAJORITY VOTING

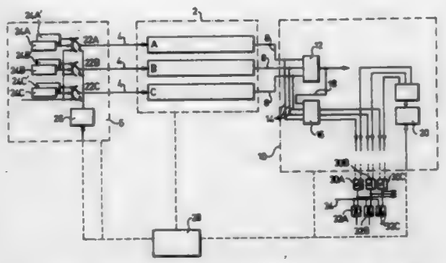
Sture G. Roos, Bergshamra, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 21, 1991, Ser. No. 719,000

Claims priority, application Sweden, Jul. 10, 1990, 9002407-6

Int. Cl.[5] G06F *11/08*

U.S. Cl. 371—3 **8 Claims**



1. A method for testing and supervising majority votes in a multiplane unit in a digital time selector, said unit including essentially identical equipment in each of at least three planes working in parallel, said method comprising distributing to the parallel planes a data flow received by the unit, allowing said data flow to pass the equipment in each of the planes, delivering an outgoing data stream from the respective planes, comparing said outgoing data streams to each other, and delivering from the unit a majority voted outgoing dataflow based upon the comparison, testing and supervising said majority vote by introducing an error deliberately into the data streams to be majority voted, comparing these data streams with the majority voted data flow, and emitting an alarm as a result of this comparison if an error is found in any of data streams coming to the majority vote, wherein the step of deliberately introducing an error comprises cyclically introducing the error into the planes in accordance with a predetermined pattern, and by identifying an expected alarm, caused by an error introduced in accordance with the predetermined pattern, based upon knowledge of the predetermined pattern in order to distinguish from alarms resulting from errors not introduced in accordance with the pattern.

5,305,326

HIGH AVAILABILITY DISK ARRAYS

Robert C. Solomon, Kensington, N.H., and Stephen J. Todd, Shrewsbury, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Mar. 6, 1992, Ser. No. 847,639

Int. Cl.[5] G06F *11/10*; **H03M** *13/00*

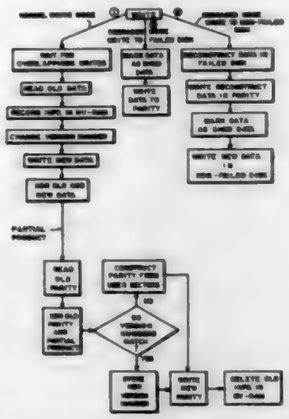
U.S. Cl. 371—11.1 **2 Claims**

1. A method for handling data in a system having a processor for controlling access to a plurality of data storage disks, wherein storage sectors of a selected number of said disks contain user data and storage sectors of a selected one of said disks contain redundant parity entries which match with the user data entries in the sectors corresponding thereto, corresponding user data sectors and parity sectors in said disks forming identifiable sector groups, said method being used when said plurality of disks are being operated in a degraded mode wherein one of said user data disks is inoperative and the user data therein is reconstructed from the user data in the remaining user data disks and the parity entries in the parity disk, said method including the steps wherein

before writing new data into a selected sector of an operative disk, writing the reconstructed user data for the corresponding sector of the inoperative disk into the corresponding parity sector of the parity disk to replace the parity entry therein;

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entering at a specified identification region of said parity disk, information identifying the inoperative disk whose reconstructed data has been written into the parity disk;



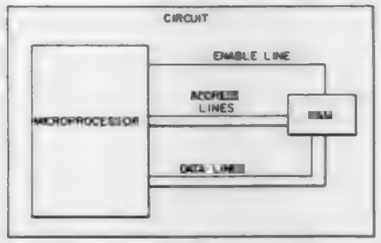
writing the new data into the selected sector of the operative disk.

5,305,327

TESTING RANDOM ACCESS MEMORIES

Stephen A. Huckstepp, Basingstoke, England, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 659,676
Claims priority, application United Kingdom, Mar. 28, 1990, 9006915
Int. Cl.[5] G11C *29/00*
U.S. Cl. 371—21.3 9 Claims



1. A method for testing data lines of a random access memory having a plurality of address locations from which said data lines extend, comprising the steps of:

generating first and second sets of test words in which each of said test words has a number of bits equal to a number (D) of said data lines, said bits in each of said test words being arranged differently from said bits in the other test words, said first set having a number (n) of said test words therein respectively identified by a designation S from 0 to n−1, with n being determined from the expression $2^n \geqq D > 2^{n-1}$, the bits of each of the test words having said designations S=0 to n−1 in said first set being arranged in groups each having a number of bits equal to 2^s, said bits in each of said groups having a similar binary level which is different from binary levels of said bits in adjacent groups of the respective test word, said second set having from one to n test words with respective designations S=0 to n−1 and which are respectively similar to said test words with the same designations in said first set except that the binary level of each of the bits of each test word in said second set is opposite to the binary level of the respective bit of the corresponding test word in said first set;

writing one of said test words from either of said first and said second sets into each of said address locations of said random access memory;

reading the test word which was written into each of said address locations from each of said address locations;

determining whether each of the read test words is the same as the test word which was written into each of said address locations;

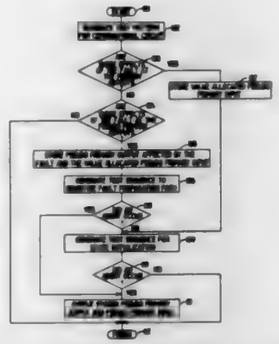
repeating said writing, said reading and said determining steps, so that all of said test words in said first set are written and read and only one of said test words in said second set is written and read.

5,305,328

METHOD OF TEST SEQUENCE GENERATION

Akira Motohara, Hyogo; Toshinori Hosokawa, and Mitsuyasu Ohta, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 22, 1990, Ser. No. 602,405
Claims priority, application Japan, Oct. 24, 1989, 1-277404
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—27 9 Claims



1. A computer implemented method of generating a test input sequence and corresponding output values for a fault in a logic circuit, said logic circuit having input terminals, output terminals and including sequential and combinational portions, said method comprising the steps of:

generating the test input sequence representing input values to said logic circuit, the input values being designed to cause a signal indicating the fault to be propagated to the sequential portion of the logic circuit;

simulating a response of the logic circuit to the test input sequence and simulating storage of the fault indication signal in the sequential portion of the logic circuit as one of a group of simulated state values which define a state of the sequential portion of the logic circuit;

storing the simulated state values of the sequential portion of the logic circuit;

setting a time limit defining a time interval;

determining the end of said time interval;

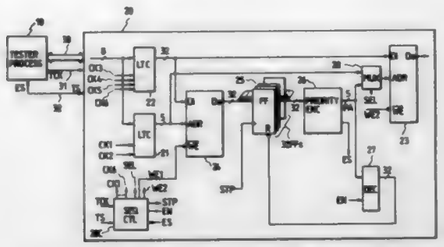
providing the stored state values of said sequential portion of said logic circuit as output values if the fault indication signal has not been propagated to one of the output terminals of the logic circuit during the time interval.

5,305,329

DELAY DATA SETTING CIRCUIT AND METHOD

Yasushi Sasaki, Kumagaya, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed May 31, 1991, Ser. No. 713,996
Claims priority, application Japan, Jun. 8, 1990, 2-150339
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—27 7 Claims



1. A method whereby delay time data for setting a delay time of a test clock for each pin of an IC under test to a desired value is set in a delay data memory from a testor processor, said method comprising the steps of:

a) prestoring in a pin group table memory pin group data, the table of pin group data indicating whether or not each pin belongs to respective ones of a plurality of pin groups, the pins being grouped according to respective delay times set therein;

b) reading out pin group data from the pin group table memory for each pin group, addresses only for pins belonging to each pin group are sequentially specified, based on the pin group data read out of the pin group table memory; and

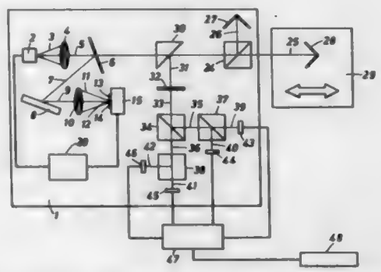
c) writing data of the delay time common to the pins belonging to the pin group into the delay data memory.

5,305,330

SYSTEM COMPRISING A LASER DIODE AND MEANS FOR STABILIZING THE WAVELENGTH OF LIGHT EMITTED BY SAID LASER DIODE, AND LASER INTERFERROMETER

Heinz Rieder, Oberndorf, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Austria

Filed Mar. 30, 1993, Ser. No. 39,959
Claims priority, application Austria, Apr. 2, 1992, 677/92
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—29 17 Claims



1. In a system comprising a laser diode for emitting a primary beam of light, a power source for supplying energizing current to said laser diode, and means for stabilizing the wavelength of said primary beam, wherein said stabilizing means comprise:

sensor means which are responsive to the instantaneous ambient conditions and to operating parameters of said system,

a controller for controlling said energizing current in response to said sensor means,

a first beam splitter disposed in the path of said primary beam and arranged to divert from said main beam a partial beam,

measuring means, which are included in said sensor means and arranged to receive said partial beam and comprise photodetector means, which are arranged to be illuminated by said partial beam in dependence on the wavelength of said primary beam and are arranged to deliver control signals in response to said illumination to said controller,

the improvement residing in that

said measuring means comprise a diffraction grating arranged to receive said partial beam and to project a diffracted partial beam so as to form on said photodetector means a light spot occupying an area which depends on the instantaneous wavelength of said primary beam,

said diffraction grating is arranged to form said light spot on a predetermined area when said wavelength is a predetermined rated wavelength, and

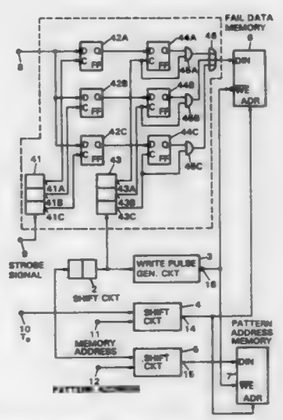
said photodetector means are arranged to change said control signals in response to a change of said area resulting from a deviation of said wavelength from said rated wavelength.

5,305,331

DATA LOGGING APPARATUS WITH MEMORY AND PATTERN TESTING DEVICE

Toshiya Sato; Akira Shimizu; Hajime Hirol, and Hirohisa Ooishi, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1991, Ser. No. 684,411
Claims priority, application Japan, Apr. 23, 1990, 2-107053
Int. Cl.[5] G06F *11/00;* G01R *31/28*
U.S. Cl. 371—29.1 2 Claims



2. A system for testing a device, comprising:

pattern generating means for generating pattern data to be applied to a device under test and for generating an expected pattern which is expected to be outputted from said device in response to said pattern data applied thereto;

a decision circuit for deciding whether actual pattern data outputted from said device under test coincides with said expected pattern, the decision being an output signal of the decision circuit; and

a data logging apparatus, wherein said data logging apparatus comprises:

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a first shift circuit having inputs supplied with the decision signal of said decision circuit and a strobe signal, the first shift circuit shifting said decision signal of said decision circuit by n rates, the shifted decision signal being an output signal of the first shift circuit, where n represents a given integer;

a second shift circuit having an input supplied with a basic clock signal, the second shift circuit shifting said timing of said basic clock signal by n rates, the shifted clock signal being an output signal of the second shift circuit and an input of the first shift circuit, the first shift circuit shifting the decision signal of said decision circuit under the shifted clock signal;

a write pulse generating circuit having an input supplied with said shifted clock signal of said second shift circuit, the write pulse generating circuit generating as an output signal a write pulse signal;

a third shift circuit having inputs supplied with a memory address signal and the basic clock signal, the third shift circuit shifting the memory address signal by n rates under said basic clock signal, the shifted memory address signal being an output signal of the third shift circuit;

a fourth shift circuit having inputs supplied with a pattern address signal and the basic clock signal, the fourth shift circuit shifting the pattern address signal by n rates under said basic clock signal, the shifted pattern address signal being an output signal of the fourth shift circuit;

a first memory having a data input supplied with said shifted decision signal from said first shift circuit, a write signal input supplied with said write pulse signal from said write pulse generating circuit, and an address input supplied with said shifted memory address signal from said third shift circuit, the first memory storing the shifted decision signal at the shifted memory address in response to the write pulse signal; and

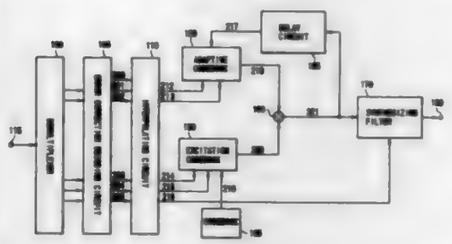
a second memory having a data input supplied with said shifted pattern address signal from said fourth shift circuit, a write signal input supplied with said write pulse signal from said write pulse generating circuit, and an address input supplied with said shifted memory address signal from said third shift circuit, the second memory storing said shifted pattern address at the shifted memory address in response to said write pulse signal.

5,305,332

SPEECH DECODER FOR HIGH QUALITY REPRODUCED SPEECH THROUGH INTERPOLATION

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 28, 1991, Ser. No. 707,361
Claims priority, application Japan, May 28, 1990, 2-135273
Int. Cl.[5] G06F *11/10*; H04L *1/00*
U.S. Cl. 371—31 **4 Claims**



1. A speech decoder comprising:

separating means for separating a code string of a filer parameter, a code string of a parameter associated with a pitch, and a code string of a parameter associated with an index and a gain of a codebook representing an excitation signal of speech from a received code string;

error correction decoding means for detecting a transmission error, which cannot be corrected, in the received code string;

interpolating means for, when a transmission error which cannot be corrected is detected, interpolating between parameters of past and further proper frames, thereby recovering parameters of a current frame; and

speech reproducing means for reproducing a speech signal on the basis of the interpolated parameters and other received codes,

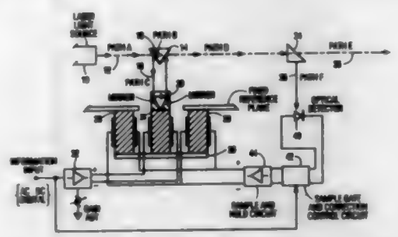
further comprising weighting means for, when a transmission error which cannot be corrected is detected in a received code string, weighting a filter parameter in a predetermined number of frames starting from a frame in which the error is detected.

5,305,333

METHOD AND APPARATUS FOR AMPLITUDE MODULATION OF LASER LIGHT

William R. Kaylor, Morristown, and Allen H. Boardman, Maryville, both of Tenn., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,075
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—31 **6 Claims**



1. An apparatus for amplitude modulation of laser light comprising:

a laser light source for providing a laser light beam;

means for splitting said laser light beam into a first light beam and a second light beam;

means for directing said first light beam along a first light path having a fixed length and said second light beam along a second light path having a variable length;

a signal source for providing information signals to be transmitted by said laser light beam;

means coupled to said signal source for generating a modulation signal having an amplitude which changes in dependence on said information signals;

means for varying the length of said second light path in dependence on changes in the amplitude of said modulation signal; and

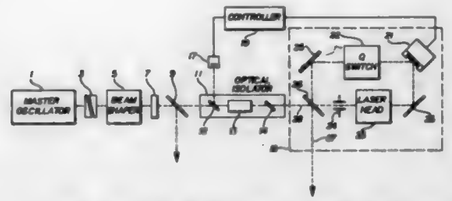
means for recombining said first and said second light beams at the ends of said first and said second light paths whereby the varying of the length of the second light path results in an amplitude modulation of said laser light beam, wherein said means for varying the length of said second light path comprises a mirror assembly coupled to actuator means for changing an electrical signal to a mechanical displacement, said actuator means displacing said mirror assembly over a distance which varies in accordance with the changes in the amplitude of said modulation signal.

5,305,334

PULSED SOLID STATE RING LASER INJECTION LOCKING STABILIZER

Eli Margalit, Calabesas, and Farzin Amzajerdian, Thousand Oaks, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 16, 1992, Ser. No. 990,993
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—32 **14 Claims**



1. A single frequency laser system, wherein high energy pulse signals are generated and output at a single frequency as defined by a seed laser resonator in conjunction with a slave ring laser resonator, which comprises:

a seed laser resonator serving as a master oscillator;

a ring laser resonator serving as a slave laser connected to said seed laser, and having a closed path for its laser beam;

means for changing said closed pathlength of said ring laser resonator;

means, serving as part of said ring laser resonator, for switching into and out of resonance said ring laser resonator whereby said high energy output pulses are created;

means for detecting a return laser beam emitted from said slave laser back toward said seed laser resonator, and

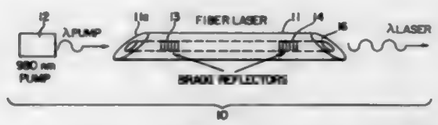
means for comparing the intensity of said return laser beam with a predetermined threshold level and for causing said means for changing to adjust said closed pathlength of said ring laser resonator by a predetermined amount before a next single output laser pulse is created in a manner present to be responsive to said compared intensity and said threshold level.

5,305,335

SINGLE LONGITUDINAL MODE PUMPED OPTICAL WAVEGUIDE LASER ARRANGEMENT

Gary A. Ball, Simsbury, and William H. Glenn, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 732,552, Jul. 19, 1991, which is a continuation-in-part of Ser. No. 457,118, Dec. 26, 1989, abandoned, and Ser. No. 659,952, Feb. 26, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,069
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—6 **2 Claims**



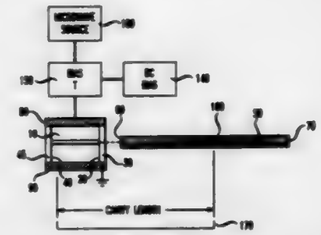
1. In an optical waveguide laser arrangement including a solid optical waveguide having a gain portion that extends along an axis between two axially spaced reflectors disposed along the optical waveguide, said gain portion being of an excitable material which emits stimulated light upon excitation by pumping light, means for launching the pumping light into the optical waveguide for axial propagation along the optical waveguide, the two reflectors axially delimiting said gain portion thereby forming a laser resonator in said gain portion, the improvement wherein at least one of the reflectors is constituted by a Bragg grating consisting of a plurality of axially consecutive periodic perturbations in the refractive index of the optical waveguide, said Bragg grating reflecting the stimulated light with a reflectivity profile that is a maximum at a central wavelength corresponding to a central longitudinal mode of the laser resonator, said reflectivity profile decreasing for longitudinal modes adjacent to said central longitudinal mode of the laser resonator, and wherein the axial length of the laser resonator, the reflectivity of the one Bragg grating, and the gain of the excitable material are such that lasting occurs only at said central longitudinal mode of the laser resonator.

5,305,336

COMPACT OPTICAL PULSE SOURCE

Reuen Adar, Westfield; Victor Mizrahi, Bedminster; Lisa F. Mollenauer, Colts Neck, and Paul A. Morton, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 827,249, Jan. 29, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,664
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—18 **15 Claims**



1. Apparatus comprising:

a) a semiconductor diode laser having a back facet and opposing the back facet at least one output facet through which electromagnetic radiation is emitted;

b) optical waveguide means situated adjacent and external to the laser, the waveguide means including a distributed Bragg reflector, to be referred to as a "DBR", situated a given length from the output facet such that an optical cavity is defined between the back facet and the DBR with respect to the emitted electromagnetic radiation; and

c) means for applying a modulated drive current to the laser at an appropriate modulation frequency for actively mode-locking the laser such that optical pulses having approximately a given wavelength are emitted from the laser;

characterized in that

d) the waveguiding means comprise a first optical fiber having an end proximal and optically coupled to the output facet.

5,305,337

LASER CONTROLLER

Yoshiyuki Araki, and Hiroto Watanabe, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 847,278
Claims priority, application Japan, Mar. 15, 1991, 3-022921[U]
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—31 **17 Claims**

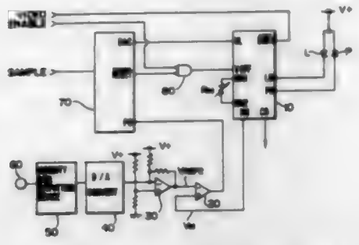
1. A laser controller, comprising:

means for emitting a laser beam;

means for receiving said laser beam emitted by said laser beam emitting means, said receiving means outputting a

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receipt signal that corresponds to a power level of said laser beam;
means for outputting a reference signal in accordance with an ambient humidity surrounding said laser controller;



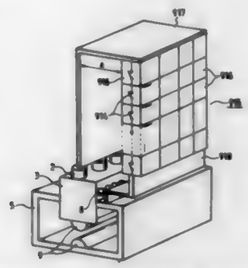
means for comparing said receipt signal of said light receiving means with said reference signal; and
means for controlling an output of said laser beam emitting means in accordance with a comparison result of said comparing means.

5,305,338

SWITCH DEVICE FOR LASER

Hitoshi Wakata; Akihiro Suzuki; Keayu Haruta; Haruhiko Nagai; Akihiko Iwata; Shinji Murata; Isamu Tanakura; Tomohiro Sasagawa, and Yuito Kimura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,419
Claims priority, application Japan, Sep. 25, 1990, 2-256232; Sep. 25, 1990, 2-256233; Sep. 25, 1990, 2-256234; Sep. 25, 1990, 2-256235; Sep. 25, 1990, 2-256236; Sep. 25, 1990, 2-256237; Sep. 25, 1990, 2-256238; Sep. 25, 1990, 2-256239; Sep. 25, 1990, 2-256240; Sep. 25, 1990, 2-256241; Nov. 9, 1990, 2-305201; Nov. 9, 1990, 2-305203; Nov. 9, 1990, 2-305204; Nov. 9, 1990, 2-305205; Nov. 9, 1990, 2-305206; Nov. 9, 1990, 2-305209; Nov. 9, 1990, 2-305210; Nov. 9, 1990, 2-305211
Int. Cl.[5] H01S *3/00*; H03K *17/08*
U.S. Cl. 372—38 **30 Claims**



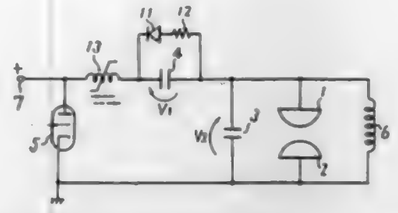
1. A laser discharge circuit switching device, comprising:
a plurality of modules connected between a laser power source and laser discharge electrodes, each module containing a circuit including a plurality of high speed switch elements of 0.1 μs or less in switching time, said switch elements being arrayed so as to simultaneously be conductive.

5,305,339

PULSE LASER APPARATUS

Hajime Nakatani; Atsushi Sugitatsu, and Yasushi Minamitani, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/00152, § 371 Date Dec. 17, 1991, § 102(e) Date Dec. 17, 1991
PCT Filed Feb. 8, 1991, Ser. No. 793,430
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **4 Claims**



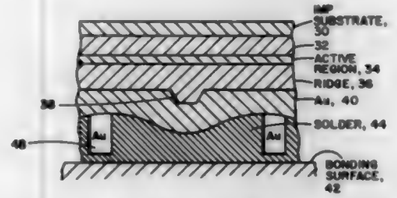
1. A pulse laser apparatus comprising:
a pair of main discharge electrodes opposed to one another;
a peaking capacitor connected in parallel with the pair of main discharge electrodes;
a pulse generation capacitor connected in series with the pair of main discharge electrodes;
a charging terminal connected in series with the pulse generation capacitor for charging an electric charge on the pulse generation capacitor with a predetermined charging polarity, wherein a main discharge is produced between said pair of main discharge electrodes by transferring the electric charge on the pulse generation capacitor onto the peaking capacitor; and
a diode in series with a resistor, both being connected in parallel across the pulse generation capacitor in a direction of non-conduction with respect to the predetermined charging polarity, thereby preventing a reverse polarity voltage from appearing on the pulse generation capacitor.

5,305,340

WAVEGUIDE RIDGE LASER DEVICE WITH IMPROVED MOUNTING AND RIDGE PROTECTION

Arsam Antreasyan; Myra N. Boenke, both of Hopewell Junction, N.Y.; Greg Costrini, Austin, Tex.; Kurt R. Grebe, Beacon, N.Y.; Christoph Harder, Zurich, Switzerland, and Peter D. Hoh, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,009
Int. Cl.[5] H01S *3/18*
U.S. Cl. 372—43 **4 Claims**



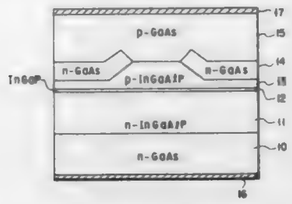
1. A semiconductor ridge waveguide laser structure of the type including a semiconductor substrate, an active region layer disposed on said substrate, a ridged layer having at least one ridge part disposed on said active region layer and a layer of metalization on said ridged layer, characterized in having,
a layer of protective metal disposed on said layer of metalization on each side of said ridge part of said ridged layer of said ridge waveguide laser structure to form a pair of protective walls, said protective walls having a height greater than said ridge part of said ridged layer.

5,305,341

SEMICONDUCTOR LASER WHOSE ACTIVE LAYER HAS AN ORDERED STRUCTURE

Yukie Nishikawa, Narashino; Koichi Nitta; Genichi Hatakoshi, both of Yokohama; Masaki Okajima, Kawasaki; Minoru Watanabe, and Kazuhiko Itaya, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 19, 1992, Ser. No. 836,763
Claims priority, application Japan, Feb. 19, 1991, 3-24382; Jul. 15, 1991, 3-173756
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **19 Claims**



1. A semiconductor laser comprising:
an active layer made of a Group III-V compound semiconductor forming a zinc blend structure, said semiconductor of said active layer being constituted by an ordered structure of Group III atoms along a<111> direction, and said semiconductor having two lattice constants "a" and "2*a*";
a first cladding layer of an n-conductivity type arranged on a negative polarity side of said active layer, said first cladding layer being constituted by a Group III-V compound semiconductor which forms a zinc blend structure and is heterogeneous from that of said active layer; and
a second cladding layer of a p-conductivity type arranged on a positive polarity side of said active layer, said second cladding layer being constituted by a Group III-V compound semiconductor which forms a zinc blend structure and is heterogeneous with that of said active layer, said semiconductor of said second cladding layer having Group III atoms arranged to form a disordered structure in which the Group III atoms are randomly distributed and having the lattice constant "a",
whereby the band discontinuity at the interface of the active layer and the second cladding layer is larger than if the Group III atoms of the active layer were disordered and whereby leakage of electrons from said active layer to said second cladding layer is reduced.

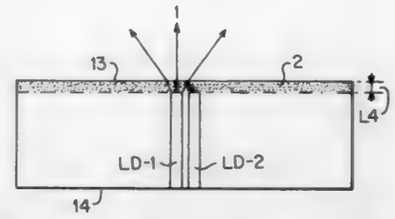
5,305,342

MULTIBEAM SEMICONDUCTOR LASER ARRAY

Takeshi Ota, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,025
Claims priority, application Japan, Jun. 28, 1991, 3-185240; Apr. 30, 1992, 4-137694
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **10 Claims**

1. A multibeam semiconductor laser array comprising:
a substrate;
a plurality of semiconductor laser elements respectively provided on said substrate, each of said semiconductor laser elements being coupled to one of a plurality of electrodes and being drivable independently of one another;
a first window area disposed on a first end surface of a cavity forming said semiconductor laser elements, said first window area having a band gap wider than that of an active material layer of each of said semiconductor laser elements, and not excitable electrically;
a low reflectance coating applied to said first window area for reducing an optical reflectance; and



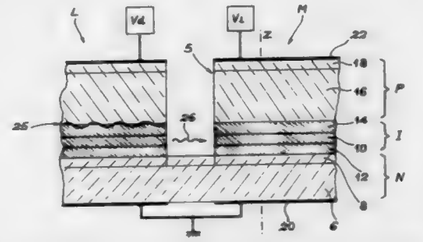
a high reflectance coating disposed on a second end surface of said cavity forming said semiconductor laser elements for increasing the optical reflectance.

5,305,343

HIGHLY COUPLED SUPERLATTICE INTEGRATED LASER-MODULATOR COMPONENT

Michel Allovon, Fontenay Aux Roses, France; Erwan Bigan, Evanston, Ill.; Jean-Christophe Harmand, Villejuif, and Paul Voisin, Paris, both of France, assignors to France Telecom Etablissement Autonome de Droit Public and Centre National de la Recherche Scientifieque, both of Paris, France

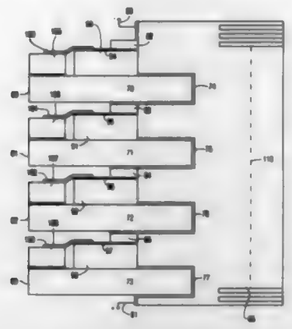
Filed Sep. 4, 1992, Ser. No. 941,260
Claims priority, application France, Sep. 6, 1991, 91 11046
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **9 Claims**



1. Integrated monolithic electrooptical component comprising on the same substrate an electrooptical modulator (M) formed from a stack of semiconductor layers, whereof one layer (10) is absorbent, a semiconductor laser (L) formed from a stack of semiconductor layers, whereof one (10) is active, means (Vd, 20, 22) for applying to the stack of laser layers a forward voltage crating an electric field perpendicular to the plane of the layers, the laser then emitting by its active layer (10) a radiation (26) traversing the absorbent layer of the modulator in the plane of said layer, means (Vi, 20, 22) for applying to the stack of layers of the modulator (M) a reverse voltage creating an electric field perpendicular to the plane of the layers to modulate the absorption of the radiation traversing the modulator, characterized in that the active layer of the laser (L) and the absorbent layer of the modulator (M) are both constituted by the same epitaxied structure of the highly coupled composition superlattice type (10) with alternation of the semiconductor layers of different compositions.

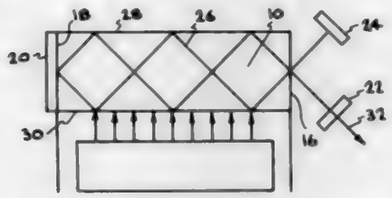
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,344
LASER DIODE ARRAY
Rushikesh M. Patel, Pomona, Calif., assignor to Opto Power Corporation, Industry, Calif.
Filed Apr. 29, 1993, Ser. No. 55,681
Int. Cl.[5] H01L *21/20*
U.S. Cl. 372—50 **6 Claims**



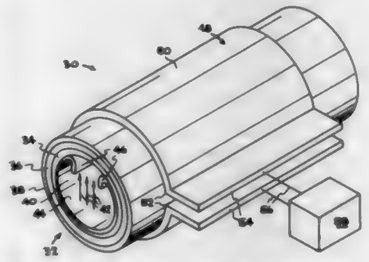
1. A laser array assembly comprising a structurally stable substrate having first and second major surfaces, said substrate including a plurality of grooves in said first major surface, each of said grooves having side walls and a bottom portion, each of said side walls including a layer of electrically conducting material, said bottom portion being free of electrically conducting material, said grooves including at least one laser submount, each of said submounts comprising a substrate with a mesa positioned thereon to define a rear extending pedestal and a forward extending portion, said submount including a laser attached to said forward extending portion and being electrically connected to said mesa, said rear extending pedestal being positioned in one of said grooves and electrically and thermally connected to said layers on said side walls.

5,305,345
ZIGZAG LASER WITH REDUCED OPTICAL DISTORTION
Georg F. Albrecht, Livermore; Brian Comaskey, Stockton, and Steven B. Sutton, Manteca, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 25, 1992, Ser. No. 950,559
Int. Cl.[5] H01S *3/09*
U.S. Cl. 372—69 **19 Claims**



1. An apparatus for amplifying laser light comprising:
(a) a solid state, slab geometry laser medium comprising:
(1) lateral pump faces;
(2) a beam entrance face cut perpendicular with respect to the pump faces;
(3) a beam return face cut perpendicular with respect to the pump faces;
(b) an excitation mechanism located along said laser medium comprising:
(1) a first set of laser diodes producing a uniform intensity distribution along a central portion of said laser medium;
(2) a second set of laser diodes producing a non-uniform intensity distribution along outer portions of said laser medium to provide a gradual reduction of optical excitation from said central portion to said entrance and return faces; and
(c) a cooling system.

5,305,346
TRANSVERSE-TYPE LASER ASSEMBLY USING INDUCED ELECTRICAL DISCHARGE EXCITATION AND METHOD
Earl R. Ault, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 8, 1993, Ser. No. 117,857
Int. Cl.[5] H01S *3/0971, 3/0975, 3/227*
U.S. Cl. 372—82 **10 Claims**

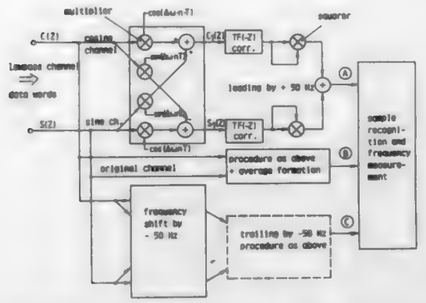


1. A transverse-type laser assembly, comprising
(a) first means for defining a laser cavity containing a gaseous substance which lases when subjected to specific electrical discharge excitation, thereby providing a source of light; and
(b) second means for subjecting said gaseous substance within said laser cavity to said specific electrical discharge excitation, thereby providing a source of light; and
(i) first inductive means including a pair of spaced-apart, confronting electrodes located entirely within said laser cavity such that some of said gaseous substance is present between said electrodes, and
(ii) second inductive means located entirely outside said laser cavity for inducing a voltage into said first inductive means and across said electrodes sufficient to subject the gaseous substance therebetween to said electrical discharge excitation and thereby cause the gas to lase.

5,305,347
METHOD OF DETECTING THE FREQUENCY DEVIATION IN DIGITAL COMMUNICATION TRANSMISSIONS
Hansjörg Roschmann, Neu-Ulm; Walter Theisges, Westerstetten; Manfred Zoberbier, Ulm-Jungingen; Achim Brakemeier, Ulm; Jürgen Lindner, Erbach, and Ralf Esprester, Dornstadt, all of Fed. Rep. of Germany, assignors to Deutsche Aerospace AG, Munich, Fed. Rep. of Germany
Filed Jul. 7, 1992, Ser. No. 855,683
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028369; Aug. 20, 1991, 4127501
Int. Cl.[5] H04L *27/30;* **H04B** *17/00*
U.S. Cl. 375—1 **9 Claims**

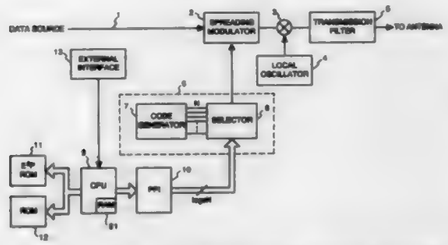
1. A method of detecting a coarse frequency deviation of a digital communication transmission having echo propagation, wherein the transmission includes a plurality of data blocks where each data block includes a preamble of a repeated pseudo noise sequence comprising the steps of:

applying the preamble of a data block to a plurality of simultaneous Doppler channels at a receiver, the plurality of simultaneous Doppler channels including at least one pair of simultaneous Doppler channels offset in frequency relative to a received frequency of the transmission by a predetermined positive and predetermined negative amount, respectively;



compressing the preamble in each simultaneous Doppler channel to produce a quadrature signal associated with each simultaneous Doppler channel; and
determining the coarse frequency deviation of the transmission based on an amplitude of a quadrature signal associated with a Doppler channel.

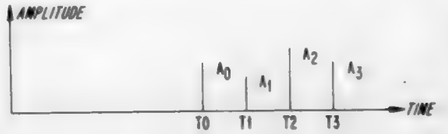
5,305,348
SPREAD-SPECTRUM COMMUNICATION APPARATUS
Michihiro Izumi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 19, 1992, Ser. No. 978,627
Claims priority, application Japan, Nov. 19, 1991, 3-303269
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 **17 Claims**



1. A spread-spectrum communication apparatus comprising:
memory means for storing a value specific to the apparatus;
code generating means, which is capable of generating a plurality of codes, for generating one of the plurality of codes selected by the specific value; and
spreading means for spreading input data using the code generated by said code generating means.

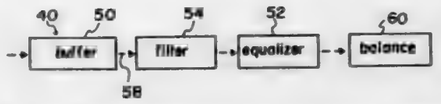
5,305,349
QUANTIZED COHERENT RAKE RECEIVER
Paul W. Dent, Stehags, Sweden, assignor to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.
Filed Apr. 29, 1993, Ser. No. 54,028
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **41 Claims**

1. A method for decoding a Code Division Multiple Access signal comprising the steps of:
correlating at least two time shifts of a received signal against a spreading code, the received signal comprising successive transmitted data symbols, the at least two time shifts corresponding to a transmitted data symbol, and the spreading code and a complement of the spreading code corresponding to different respective transmitted data symbols;
weighting the results of the correlating step according to



coefficients selected from a coefficient store, each coefficient having a sign and a value that is an inverse integer power of two and corresponding to a respective time shift;
summing the results of the weighting step for each time shift in a respective accumulator; and
determining a sign of the sums in the accumulators to decode the transmitted data symbol.

5,305,350
MULTIMEDIA HIGH SPEED NETWORK
Dan Budin, Newton; Yoseph Linde, Needham; Gordon Saussy, Brighton; Robert Snyder, Westford, and Jack W. Lee, Brookline, all of Mass., assignors to Chipcom Corporation, Scarborough, Mass.
Filed Jun. 8, 1990, Ser. No. 535,033
Int. Cl.[5] H04L *25/03*
U.S. Cl. 375—12 **18 Claims**



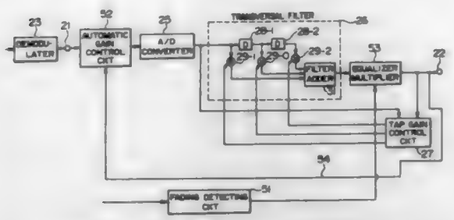
18. A Fiber Distributed Data Interface (FDDI) transmission link system comprising:
a medium transferring signals from one end of said medium to another end of said medium, said medium having frequency domain characteristics which distort FDDI transmission line signals and render said FDDI transmission line signals substantially unrecognizable;
a transmitter connected to said one end of said medium, said transmitter including a conversion means for receiving data intended to be transmitted over an FDDI transmission link as said FDDI transmission line signals, said conversion means being also for converting said data into medium transferrable FDDI signals and providing said medium transferable FDDI signals with frequency domain compensation for counteracting said frequency domain characteristics of said medium in order to render said medium transferrable signals recognizable after being transferred from said one end of said medium to said other end, said conversion means providing said frequency domain compensation dependent on said frequency characteristics of said medium which distorts said FDDI transmission line signals; and
a receiver connected to said another end of said medium, said receiver including reconversion means for receiving said medium transferable FDDI signals from said medium and regenerating said data from said medium transferrable FDDI signals.

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5,305,351
ADAPTIVE EQUALIZER WHICH CARRIES OUT AN EQUALIZATION OPERATION WITH REFERENCE TO A MAGNITUDE OF FADING

Shoichi Mizoguchi, c/o NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,581
Claims priority, application Japan, Feb. 13, 1991, 3-040600
Int. Cl.[5] H03H 7/30
U.S. Cl. 375—14 3 Claims



1. An adaptive equalizer for use in combination with a demodulator for producing a demodulated signal responsive to a received signal which is susceptible to fading, said adaptive equalizer including modifying means for modifying said demodulated signal into a modified signal in accordance with a control signal, an equalizer section for carrying out a predetermined equalization operation on said modified signal to produce an equalized signal representative of a result of said predetermined equalization operation,

detecting means for detecting said received signal to produce a detection signal representative of a magnitude of said fading;

processing means connected to said equalizer section and said detecting means for processing said equalized signal into a processed signal in accordance with said detection signal; and

supplying means connected to said modifying and said processing means for supplying said processed signal as said control signal to said modifying means,

said processing means comprising:

coefficient-determining means connected to said detecting means for determining a multiplication coefficient in accordance with said detection signal; and

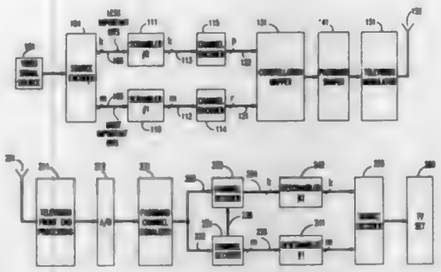
multiplying means connected to said equalizer section and said coefficient determining means for carrying out a multiplication operation between said equalized signal and said multiplication coefficient to produce, as said processed signal, a signal representative of a result of said multiplication operation.

5,305,352
CODED MODULATION WITH UNEQUAL ERROR PROTECTION

Arthur R. Calderbank, Maplewood, and Nambirajan Seshadri, Chatham, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 786,164
Int. Cl.[5] H04L 5/12
U.S. Cl. 375—39 17 Claims

11. Apparatus for use in a receiver which receives intelligence communicated to said receiver by a transmitter, said transmitter being adapted to channel code successive groups of m+k data bits associated with respective symbol intervals via the steps, performed for each said interval, of a) redundancy encoding m of the bits of one of the groups using a first predetermined code to generate a redundancy coded group of r bits, r>m; b) identifying a particular one of 2^r supersymbols of a predetermined channel symbol constellation as a function of the values of said r bits, each of said supersymbols being comprised of a plurality of symbols forming a subset of said constellation assigned thereto and the minimum distance between the symbols within at least one of the supersymbols being i) less than the maximum intrasubset distance for said constellation and ii) greater than the minimum distance between the symbols of the constellation as a whole, and said at least one supersymbol having at least two symbols in at least one quadrant of the constellation; c) generating a signal representing a selected one of the channel symbols of the identified one supersymbol, the selection being performed as a function of the values of the other k bits of said one group; and d) communicating said signal to said receiver over a communication channel;



said apparatus comprising

means for receiving said signal from said channel, and

means for recovering said intelligence from the received signal, said recovering being carried out in response to information stored in said receiver about said first predetermined code, about said constellation, and the manner in which said symbols are assigned to their respective supersymbols.

5,305,353
METHOD AND APPARATUS FOR PROVIDING TIME DIVERSITY

Vijitha Weerackody, Springfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 29, 1992, Ser. No. 890,977
Int. Cl.[5] H04B 7/10; H04L 1/02, 27/28; H04K 1/10
U.S. Cl. 375—100 34 Claims



1. A method of transmitting digital signal information to a receiver with use of a plurality of M antennas, the method comprising the steps of:

applying a channel code to a digital signal to produce one or more symbols;

forming M copies of a symbol;

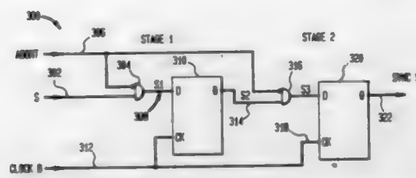
weighting each of the M copies of the symbol with a distinct time varying function to form M weighted symbol copies; and

substantially simultaneously transmitting M signals with M different antennas, each transmitted signal based on a distinct one of the M weighted symbol copies.

5,305,354
ABORTING SYNCHRONIZER

Kurt M Thaller, Acton, and Nitin D. Godiwala, Boylston, both of Mass., assignors to Digital Equipment corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 874,237
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—106 12 Claims



1. A N-stage synchronizer with an aborting mechanism for generating a synchronous signal from an asynchronous signal, comprising:

a synchronizer input;

a synchronizer output;

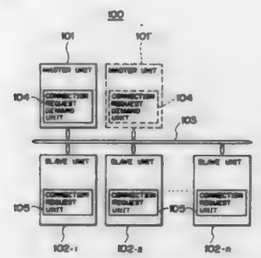
N synchronizer stages connected in series between the synchronizer input and output, with each of the N synchronizer stages having input means for causing abortion of synchronization at that stage when a predetermined signal is input to the input means; and

a clock signal in the time domain of the synchronous signal being generated, the clock signal for controlling timing of the N synchronizer stages.

5,305,355
SYSTEM FOR DATA COMMUNICATION ON AUTOMOBILE

Yasunao Go; Yoshikatsu Ikata; Toshiyuki Kimura, and Hiroshi Shimotsuma, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 874,968
Claims priority, application Japan, Apr. 26, 1991, 3-097673; May 22, 1991, 3-117726; May 22, 1991, 3-117727
Int. Cl.[5] H04L 7/00; G05B 23/02, 19/02
U.S. Cl. 375—107 25 Claims



1. A data communication system for use on a motor vehicle, comprising:

a communication bus;

at least one master unit connected to said communication bus; and

at least one slave unit connected to said communication bus;

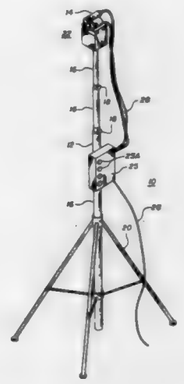
said master unit having connection request demand means for outputting connection request demand data to demand a request for a connection to the communication bus to said slave unit when the master unit is enabled;

said slave unit having connection request means for transmitting its own connection request information to said master unit in response to said connection request demand data from the master unit if said connection request demand data is received by said slave unit, and for continually transmitting the connection request information to said master unit in each predetermined time period as long as said data communication system is energized if said connection request demand data is not received by said slave unit.

5,305,356
INSPECTION DEVICE

Raymond J. Brooks, Ontario; John M. Gay, Pittsford; Bruce A. Weir, Ontario; Paul E. McEntee, Rochester, and Lauren Blood, Livonia Center, all of N.Y., assignors to Brooks Support Systems, Inc., Williamson, N.Y.

Filed May 14, 1992, Ser. No. 882,847
Int. Cl.[5] G21C 17/00
U.S. Cl. 376—249 11 Claims



1. A nuclear power plant inspection device comprising:

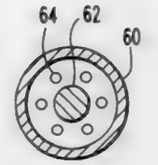
telescoping boom means for extending said device to a difficult to reach position to be inspected within a nuclear power plant; and

video camera means affixed to an end of said boom means for permitting the visual inspection of said difficult to reach position to be inspected within said nuclear power plant, said video camera means being further affixed to pan and tilt means attached to said end of said boom means.

5,305,357
LOW ACTIVATED INCORE INSTRUMENT

Douglas E. Ekeroth, Delmont, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 903,631, Jun. 24, 1992, abandoned.
This application Apr. 28, 1993, Ser. No. 52,843
Int. Cl.[5] G21C 17/00
U.S. Cl. 376—254 8 Claims

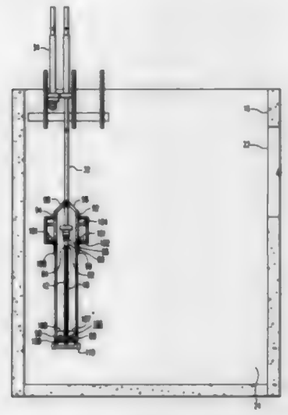


1. A thimble for use in head-mounted instrumentation for nuclear reactors, said thimble retractably disposed in a removable head of a nuclear reactor vessel and comprising a sheath and a mandrel disposed within the sheath, the sheath and the mandrel both comprised of an alloy of a metal selected from

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the group consisting of zirconium and titanium, the sheath forming a pressure boundary in the reactor vessel.

5,305,358
CONTROL ROD DRIVE HANDLING EQUIPMENT
Edward L. Wrobel, Kennesaw, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 17, 1992, Ser. No. 991,765
Int. Cl.[5] G21C *19/00*; F16G *13/00*
U.S. Cl. 376—260 **9 Claims**



8. An apparatus for handling control rod drives in a reactor, comprising:
a first chain having a first end, a second end, and a plurality of links therebetween, the links having a pivotable portion and a rigid portion for allowing the first chain to bend in a single first bend direction;
a second chain having a first end, a second end, and a plurality of links therebetween, the links having a pivotable portion and a rigid portion for allowing the second chain to bend in a single second bend direction, the second chain being freely positionable adjacent the first chain whereby the second bend direction and the first bend direction are substantially in opposition for providing a rigid column;
engaging means, for attaching to a piece of equipment, connected to the first end of the first chain and the first end of the second chain;
a drive mechanism, associated with the first chain and the second chain, for drawing the first chain through the drive mechanism in a first drive direction and for drawing the second chain through the drive mechanism in a second drive direction whereby the first chain and the second chain may be positioned to form the rigid column;
aligning means for allowing the rigid column to be aligned with the piece of equipment;
a first chain guide associated with both the first chain and the second chain for guiding the first chain and the second chain during operation of the drive mechanism; and
a second chain guide pivotally attached to the first chain guide and separable from the first chain and the second chain.

5,305,359
DIMENSIONALLY STABLE AND CORROSION-RESISTANT FUEL CHANNELS AND RELATED METHOD OF MANUFACTURE
Ronald B. Adamson, Fremont, Calif.; Donald C. Bartosik, Wilmington, N.C.; Eric B. Johansson, Wrightsville Beach, N.C., and Cedric D. Williams, Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.
Filed May 13, 1993, Ser. No. 60,668
Int. Cl.[5] G21C *21/00*
U.S. Cl. 376—260 **20 Claims**

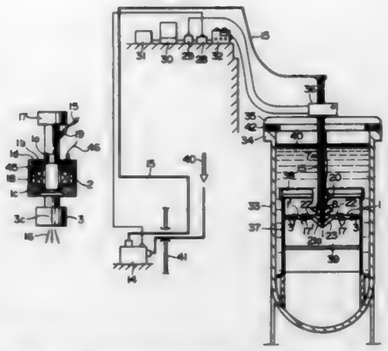
1. A method for manufacturing a dimensionally stable and corrosion-resistant component, comprising the steps of:
forming said component from a material comprising metal alloy in a hexagonal close-packed crystallographic phase having a uniform texture;
subjecting said component to heat treatment by heating to a first temperature which initiates transformation from said hexagonal close-packed crystallographic phase to a body-centered cubic crystallographic phase and then quenching to a second temperature at a rate which initiates transformation to a hexagonal close-packed crystallographic phase having a texture factor f_L=0.28–0.38; and
subjecting said component to thermal sizing by heating to a third temperature less than said second temperature and sufficient to anneal said material and then cooling.

5,305,360
PROCESS FOR DECONTAMINATING A NUCLEAR REACTOR COOLANT SYSTEM
John F. Remark, Gainesville, Fla., and Thomas G. Bengel, Plum Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 16, 1993, Ser. No. 18,138
Int. Cl.[5] G21C *19/28*
U.S. Cl. 376—309 **8 Claims**

1. A process for decontaminating a reactor coolant system wherein radioactive ions and particles are transported by flowing coolant water from a nuclear reactor vessel to the balance of the system where they deposit on chromium (III) oxide-containing surfaces, comprising the steps of:
circulating permanganate ion-containing reactor coolant water throughout a reactor coolant system to oxidize chromium (III) oxide surfaces of the system to chromium (IV) oxide, the reactor coolant water containing from about 20 to about 2000 ppm permanganate ion; and then
adding formic acid to the permanganate ion-containing reactor coolant water to reduce the permanganate ions in the reactor coolant water to manganous ions.

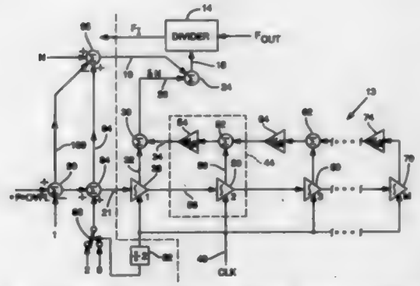
5,305,361
METHOD OF AND APPARATUS FOR WATER-JET PEENING
Kunio Enomoto, Ibaraki; Masahiro Otaka, Hitachi; Koichi Kurosawa, Hitachi; Hideyo Saito, Hitachi; Hiroshi Tsujimura, Hitachi; Yasumasa Tanai, Hitachi; Keiichi Uraki, Hitachi, and Masahito Mochizuki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 25, 1993, Ser. No. 8,718
Claims priority, application Japan, Jan. 24, 1992, 4-010856
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—316 **12 Claims**

8. A water jet peening apparatus for peening an internal structural member of a nuclear reactor, comprising:
a swivel carriage placed on an upper surface of a flange of a pressure vessel of said nuclear reactor having a core evacuated by removing an upper cover of said pressure vessel and by successively dismounting a steam drier, a steam separator and fuel channels, said swivel carriage being radially movable on said pressure vessel;
a radially-movable carriage mounted on an upper surface of said swivel carriage, said radially-movable carriage being radially movable on said pressure vessel;
a mast suspended from said radially-movable carriage, formed of a plurality of sections and extendible in a vertical direction; and



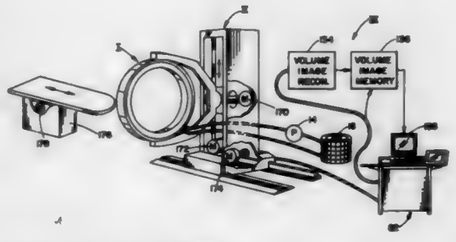
a flexible peening arm attached to a lowermost section of said mast through a coupler;
wherein a pressurized water jet flow of reactor core water ejected from a pressurized vibration nozzle of said peening arm is jetted to a surface of said internal structural member to reduce residual tensile stress therein.

5,305,362
SPUR REDUCTION FOR MULTIPLE MODULATOR BASED SYNTHESIS
Brian M. Miller, Liberty Lake, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 10, 1992, Ser. No. 989,811
Int. Cl.[5] H03K *23/54*
U.S. Cl. 377—48 **20 Claims**



1. In a multiple modulator fractional-N divider comprising:
a fractional divisor input for receiving a fractional divisor value;
an integer divisor input for receiving an integer divisor value;
an integrator connected to the fractional divisor input for accumulating the fractional divisor value and, when an overflow value is exceeded, for generating an integrator overflow signal;
at least one modulator coupled to the integrator in cascade fashion for producing a modulator signal; and
a programmable divider for dividing a first frequency signal by a modulus value equal to the sum of at least the integer divisor value, the integrator overflow signal, and the modulator signal to form a second frequency signal,
an improvement for eliminating structure spurs caused by insufficiently random modulators comprising:
first summation means connected in series with the fractional divisor input for adding a changing value to the fractional divisor value at the fractional divisor input.

5,305,363
COMPUTERIZED TOMOGRAPHIC SCANNER HAVING A TOROIDAL X-RAY TUBE WITH A STATIONARY ANNULAR ANODE AND A ROTATING CATHODE ASSEMBLY
James E. Burke, Villa Park; Lester Miller, Forest Park, both of Ill.; Rodney A. Mattson, Mentor, Ohio; Carl J. Brunnett, Willoughby Hills, Ohio, and Theodore A. Resnick, Beachwood, Ohio, assignors to Picker International, Inc., Highland Hts., Ohio
Continuation-in-part of Ser. No. 817,294, Jan. 6, 1992, Pat. No. 5,241,577, and a continuation-in-part of Ser. No. 817,295, Jan. 6, 1992, Pat. No. 5,200,985, and a continuation-in-part of Ser. No. 817,296, Jan. 6, 1992, abandoned. This application Apr. 3, 1992, Ser. No. 863,182
Int. Cl.[5] H01J *35/06*
U.S. Cl. 378—4 **23 Claims**



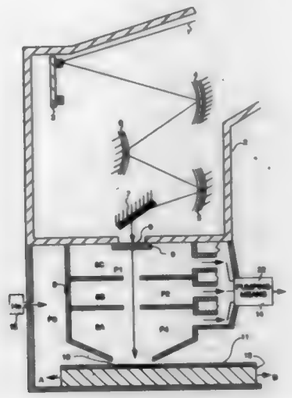
1. A CT scanner comprising:
a toroidal x-ray tube defining a central bore of sufficient diameter for passing an imaged region of a subject therethrough, the toroidal x-ray tube generating a fan-shaped x-ray beam from a multiplicity of apex locations thereabout, which x-ray beam is directed across the central bore;
an x-ray tube mounting means for mounting the toroidal x-ray tube;
a plurality of scintillation crystal means spanning at least an arc for converting a received portion of the x-ray beam after it is passed through the imaged subject region in the central bore into light, the scintillation crystal means being rotatably mounted to the toroidal x-ray tube for rotation around the central bore thereof;
a ring of opto-electrical transducers for converting received light into corresponding electrical signals, the opto-electrical transducers being stationarily mounted with the toroidal housing in optical communication with the scintillation crystal means such that a corresponding fraction of the opto-electrical transducers are in optical communication with the arc of scintillation crystal means;
an x-ray beam apex location determining means for determining an angular position of the x-ray beam apex location;
an image reconstruction means operatively connected with the opto-electric transducers and the x-ray beam apex location determining means for reconstructing an image representation of the image region of the subject.

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5,305,364
PROJECTION TYPE X-RAY LITHOGRAPHY APPARATUS

Kozo Mochiji, Hachioji; Hiroaki Oizumi, Kokubunji; Shigeo Moriyama, Tama; Shinji Okazaki, Urawa; Tsuneo Terasawa, Ome, and Masaaki Itoa, Higashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 945,146
Claims priority, application Japan, Sep. 19, 1991, 3-239244
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—34 **19 Claims**



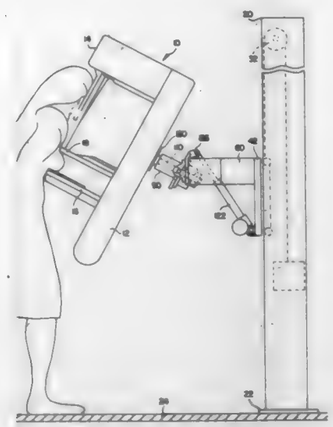
1. A reduction optical projection type X-ray lithography apparatus, comprising:
a chamber forming a first space;
means for providing an X-ray beam;
an X-ray mask and optical devices for focusing the X-ray beam being within said chamber;
means for holding a substrate in a second space outside said chamber;
a differential pumping mechanism and a thin-film window separating the first and second spaces, and passing the focused X-ray beam from the first space to the second space for projection onto the substrate; and
wherein the thin-film window has a profile of varying thickness to correct an X-ray intensity profile on the surface of the substrate produced by the optical devices.

5,305,365
MAMMOGRAPHY SYSTEM WITH REARWARDLY TILTING MAMMOGRAPH

Robert P. Coe, Dix Hills, N.Y., assignor to Bennett X-Ray Technologies, Copaigne, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,776
Int. Cl.[5] A61B *6/04*
U.S. Cl. 378—37 **10 Claims**

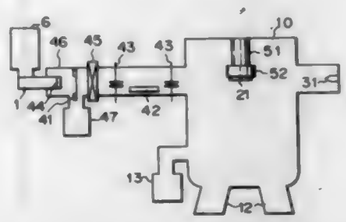
1. A mammography system, comprising:
a. a mammograph,
b. a mammograph support stand,
c. a first mount supported on said support stand for vertical movement in a first vertical plane,
d. a second mount supported on said first mount for angular movement about a horizontal axis in a second vertical plane parallel to the first vertical plane,
e. said angular movement, above said horizontal axis, being toward said first vertical plane, and
f. a third mount supported on said second mount for rotational movement about an axis perpendicular to said horizontal axis,
g. said mammograph being mounted on said third mount,
h. whereby the mammograph is rearwardly tiltable about said horizontal axis, rotatably adjustable about said perpendicular axis, and vertically adjustable with said first mount.



5,305,366
THIN FILM FORMING APPARATUS

Takehiko Nakahara; Masao Koshinaka; Nobuyuki Kosaka, and Toshimasa Tomoda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1992, Ser. No. 817,660
Claims priority, application Japan, Jan. 9, 1991, 3-011677; Mar. 26, 1991, 3-084516
Int. Cl.[5] G01N *23/223*
U.S. Cl. 378—45 **38 Claims**

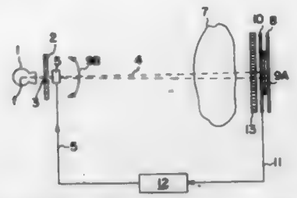


23. A method of analyzing more than one element present in the neighborhood of the surface of a sample, said method comprising the steps of:
applying energy particles to the surface of said sample;
picking up a plurality of electromagnetic waves, emitted by each of the elements present in the neighborhood of said surface as a result of excitation due to said step of applying energy particles, at angles of a range that includes the angles of total reflection of each of said electromagnetic waves from said surface;
reflecting all of the picked up electromagnetic waves at angles such that the intensities of X-rays emitted by the elements are at a similar level; and
subjecting said totally reflected electromagnetic waves to spectroscopy for detection.

5,305,367
DEVICE FOR SLIT RADIOGRAPHY WITH IMAGE EQUALIZATION

Hendrik Mulder, Delft, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", Delt, Netherlands

Continuation of Ser. No. 435,424, Nov. 1, 1989, Pat. No. 5,062,129. This application May 9, 1991, Ser. No. 697,711
Claims priority, application Netherlands, May 12, 1987, 8701122
The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.
Int. Cl.[5] G21K *3/00*
U.S. Cl. 378—146 **14 Claims**

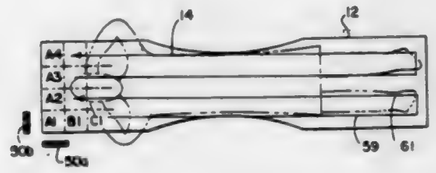


1. A slit radiography assembly, which comprises:
an X-ray source;
an X-ray detector for recording radiation passing through a body being radiographed;
a slit diaphragm positioned between said X-ray source and said body for forming a substantially planar X-ray beam;
means for scanning said body with said planar X-ray beam;
an X-ray adsorption means for influencing said planar X-ray beam during scanning;
a two dimensional dosimeter for ionizing radiation corresponding to a width of said planar X-ray beam and to a height of total scanning distance, said dosimeter including one system of essentially parallel electrodes extending in a direction of scanning for forming sector-wise signals from detected quantities of X-ray radiation transmitted through said body and counterelectrode;
a control means for receiving signals from said parallel electrodes and for forming control signals corresponding to sector-wise signals from detected quantities of X-ray radiation; and
means for transmitting said control signals to said X-ray adsorption means.

5,305,368
METHOD AND APPARATUS FOR PIECE-WISE RADIOGRAPHIC SCANNING

Joseph P. Bisek, Madison, and Jixing Chen, Fitchburg, both of Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 976,797, Nov. 16, 1992, which is a continuation-in-part of Ser. No. 944,626, Sep. 14, 1992, Pat. No. 5,228,068. This application Mar. 23, 1993, Ser. No. 36,130
Int. Cl.[5] G21K *5/10*
U.S. Cl. 378—146 **7 Claims**

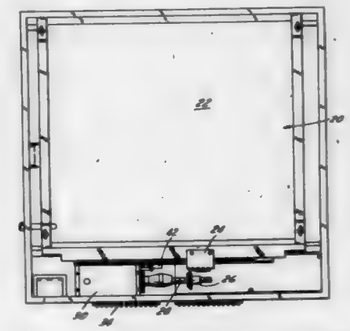


1. An imaging system for obtaining diagnostic images of a patient comprising:
a radiation source for directing a fan beam of radiation toward the patient, the fan beam diverging about a radiation axis but substantially within a beam plane from a focal spot;
a radiation detector opposing the radiation source along the radiation axis for receiving the diverging beam of radiation after passage through the patient to produce a projection signal indicating the attenuation of the beam of radiation for multiple rays within the beam;
a translating means for translating the radiation axis along a first and second path across the patient, the first and second paths being spaced apart and substantially perpendicular to the beam plane;
a repositioning means for rotating the radiation axis about the focal spot by a displacement angle, within the beam plane so as to move the radiation axis from the first path to the second path; and
means for combining the projection signal obtained along the first and second path to produce a two dimensional projection image.

5,305,369
BUCKY DRIVE SYSTEM

Glenn J. Johnson, Aurora, and John Pischl, Glen Ellyn, both of Ill., assignors to Material Control, Inc., Crosswell, Mich.

Filed Mar. 11, 1993, Ser. No. 29,696
Int. Cl.[5] G21K *1/00*
U.S. Cl. 378—155 **4 Claims**



1. A bucky for use with an x-ray system comprising:
a grid;
a mechanical drive to reciprocate said grid, said mechanical drive including a reversible rotary motor which is connected to said grid by a rotary to reciprocating connection such that said rotary motor causes said grid to reciprocate; and
an integrated circuit chip control for said motor, wherein said bucky may be operated in a semi-automatic mode in which an operator must actuate said motor, and said bucky may alternatively be operated in an automatic mode in which a signal from an x-ray generator utilized with said bucky actuates said motor.

5,305,370
PERSONAL EMERGENCY RESPONSE COMMUNICATIONS SYSTEM

Lloyd Kearns, 10833 Scotsman Way, Rancho Cordova, Calif. 95620, and David E. Petersen, 1888 Blubell Dr., Livermore, Calif. 94550

Filed Sep. 4, 1991, Ser. No. 755,539
Int. Cl.[5] H04M *11/00, 11/04*
U.S. Cl. 379—45 **14 Claims**

1. A personal emergency response communications system, comprising:
(a) transmitting means for transmitting a signal indicative of an emergency, said transmitting means adapted for ready

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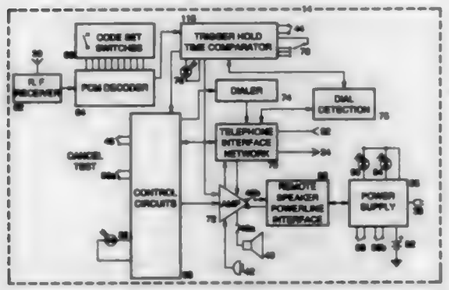
transport by the user thereof, said transmitting means including a manually operable switch for activation thereof by said user;

(b) receiving means for receiving said transmitted signal;

(c) control means for accessing a telephone line and dialing 9-1-1, said control means responsive to said received signal;

(d) comparator means for comparing the duration of said transmitted signal with a predetermined period of time and preventing said control means from accessing said telephone line unless the duration of said transmitted signal exceeds said predetermined period of time;

(e) telephone line interface means for connecting said control means to said telephone line;



(f) communications means for audible communications between said user and a 9-1-1 system operator, said communications means coupled to said control means, said communications means operatively responsive to said control means, said communications means coupled to said telephone line interface means;

(g) said receiving means, said control means, said comparator means, said telephone line interface means, and said communications means included within a base unit; and

(h) dial detection means for accessing said telephone line and activating said communications means in response to said telephone line being taken off-hook and 9-1-1 being dialed form an extension telephone coupled to said telephone line, said dial detection means coupled to said telephone line interface means, said dial detection means included within said base unit.

5,305,371

CORDLESS KEY TELEPHONE SYSTEM FOR REPEATING ATTEMPTS TO ALERT STATIONS LOCATED IN INTERFERENCE-AFFECTED ZONES

Nobuo Saegusa; Naoyasu Nishimura, and Ichiro Tamura, all of Tokyo, Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,853

Claims priority, application Japan, Sep. 20, 1991, 3-241667

Int. Cl.[5] H04M *11/00*; **H04Q** *7/00*

U.S. Cl. 379—58 **4 Claims**

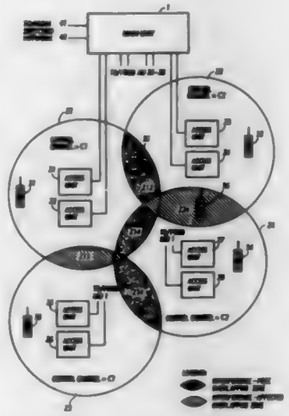
1. A cordless key telephone system for servicing a plurality of service zones to which control channels are respectively assigned, said service zones partially overlapping to form a zone in which radio frequency interference occurs due to assignment of a single control channel to adjacent service zones, said system comprising a main unit having first terminals connected to a switched network and second terminals for establishing a connection between said first and second terminals, and a plurality of access units connected to the second terminals of the main unit for establishing a radio-frequency channel to cordless stations, each of said access units comprising means for broadcasting a signal when directed by said main unit, the system comprising:

means, provided in said main unit, for initially selecting an access unit from each of said service zones in response to an incoming call from said network and directing the selected access unit to broadcast a first alert signal;

means, provided in each of said access units, responsive to an acknowledgment (ACK) signal signalling receipt of the first alert signal from a cordless station, for selecting a speech channel and broadcasting a first channel assignment signal signalling identification of the selected speech channel;

means, provided in said main unit, for directing the selected access unit to broadcast a first ringing signal;

means, provided in said main unit, for detecting when a cordless station fails to return an acknowledgment signal signalling receipt of the first alert signal and directing a



first access unit, which is not initially selected and located in one of said adjacent service zones, to broadcast a second alert signal and receive an ACK signal signalling receipt of the second alert signal from a cordless station; and

means, provided in said main unit, responsive to said first access unit receiving said ACK signal, for directing said first access unit to broadcast a second channel assignment signal signalling identification of a speech channel previously selected by a second access unit which is initially selected and located in one of said adjacent service zones, and subsequently directing said second access unit to broadcast a second ringing signal on said previously selected speech channel.

5,305,372

MOBILE UNIT WITH SPEED DIALING FEATURE FOR CELLULAR TELEPHONE NETWORK

Yutaka Tomiyori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,728

Claims priority, application Japan, Jul. 30, 1991, 3-190280

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—59 **4 Claims**

1. A mobile telephone for a cellular telephone network, comprising:

a numeric key pad;

a speed dialing memory;

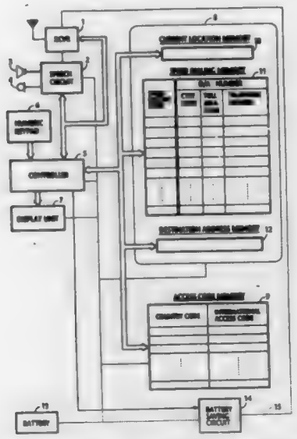
a current location memory;

read/write means connected to said numeric keypad and to said speed dialing memory and said current location memory, the read/write means being responsive to digits entered from the keypad for storing destination address numbers into said speed dialing memory corresponding to speed dialing codes, and storing an indication of a current

location of said mobile telephone into said current location memory, and responsive to a speed dialing code entered from said keypad when a call is originated for retrieving a corresponding destination address number from said speed dialing memory, each of the destination address numbers containing a country code, a toll area code, and a telephone number;

an access code memory storing a plurality of international access codes respectively identified by corresponding country codes;

control means for making a first decision that said originated call is an international call or a second decision that said call is a domestic call depending on whether the country



code of the retrieved destination address number corresponds to the indication stored in the current location memory, said control means being responsive to said first decision for retrieving an international access code from said access code memory corresponding to the indication stored in said current location memory and updating the retrieved destination address number by appending thereto the retrieved international access code, and responsive to said second decision for updating the retrieved destination address number by replacing the country code thereof with a digit "0"; and

means for transmitting the updated destination address number to a base station of the cellular telephone network.

5,305,373

CORDLESS TELEPHONE APPARATUS INCLUDING AN ANTENNA GAIN SWITCHING CIRCUIT

Tooru Mizumoto, c/o Intellectual Property Division, Kabushiki Kaisha Toshiba, 1-1 Shibaura 1-chome, Minato-ku, Tokyo 105, Japan

Filed Feb. 11, 1991, Ser. No. 653,517

Claims priority, application Japan, Feb. 13, 1990, 2-29481

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—61 **6 Claims**

5. A cordless telephone apparatus comprising:

a base station telephone set, which is connected to a wire telephone network; and

a plurality of portable radio telephone sets coupled by said base station telephone set and a radio network,

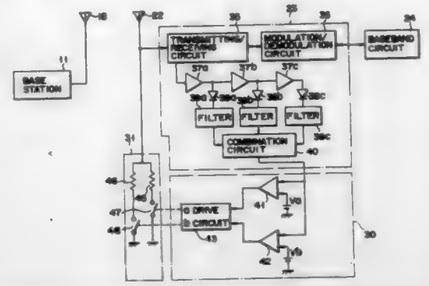
each of said plurality of portable radio telephone sets including:

an antenna;

radio means, coupled to said antenna, for receiving a radio signal to be transmitted from said base station telephone set, and generating a radio signal to be transmitted;

antenna gain control means for controlling a gain of said antenna in accordance with a level of the radio signal received from said radio means;

said antenna gain control means having a plurality of load resistors selectively connected to said antenna; and



switch means for selectively connecting said load resistors to said antenna in accordance with the level of said received radio signal.

5,305,374

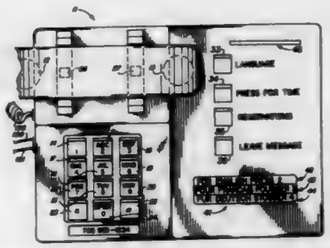
ENHANCED TERMINAL TELECOMMUNICATIONS SYSTEM

Gary K. Snyder, 1011 E. Calle Monte Vista Dr., Tempe, Ariz. 85284

Filed Apr. 16, 1992, Ser. No. 868,889

Int. Cl.[5] H04M *1/21*

U.S. Cl. 379—67 **3 Claims**



3. In combination with an existing telephone line in a country having a prominant language spoken by the inhabitants of the country, telephone apparatus comprising

(a) means for connecting said apparatus to said existing telephone line;

(b) means for receiving the voice of a user utilizing said apparatus and for transmitting said voice over said telephone line;

(c) memory means for storing at least one telephone number for dialing an operator who speaks a foreign language different that the language of prominence in the country;

(d) dialing means for entering telephone numbers in said telephone apparatus, telephone numbers on said dialing means being transmitted by said apparatus through said telephone line;

(e) display means for displaying telephone use instructions;

(f) language selection means actuated by the user individual for selecting said foreign language; and,

(g) operator dialing means actuated after said language selection means is utilized, said operator dialing means

(i) recalling from said memory means the telephone number of the operator who speaks said selected foreign language, and

(ii) dialing said telephone number recalled from said memory means to contact over said telephone line the operator who speaks the foreign language.

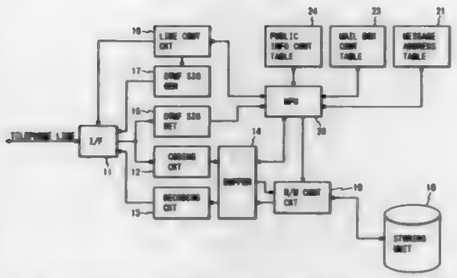
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,375

INFORMATION SERVICE APPARATUS

Ryoji Sagara; Shigehisa Iwanaga; Akihiro Shinohara, and Yuji Sumi, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 10, 1991, Ser. No. 757,401
Claims priority, application Japan, Sep. 11, 1990, 2-238919
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—89 **11 Claims**



1. An information service apparatus for serving one of a plurality of stored voice messages to a caller through a telephone line, comprising:

(a) message storing means for storing said plurality of voice messages;

(b) voice message reproducing means for reproducing one of said plurality of voice messages;

(c) table means for storing plural tables, for forming a hierarchical system, each of said plural tables including at least one of a plurality of table addresses to be accessed next, a message address of said one of said plurality of voice messages, and a selected one of a plurality of predetermined service codes;

(d) dial signal detection means for detecting a dial signal sent through the telephone line; and

(e) first control means responsive to a call from the caller for entering said hierarchical system and changing a scene in said hierarchical system in response to each detection of the dial signal by:

i) accessing one of said plural tables selected in accordance with the detected dial signal with reference to a table address of a previously accessed one of said plural tables; and

ii) reading one of said plurality of voice messages in accordance with a message address of the currently accessed one of said plural tables and supplying said read one of said plurality of voice messages to the caller through said voice message reproducing means, said first control means detecting said one of said plurality of predetermined service codes stored in said currently accessed one of said plural tables; and

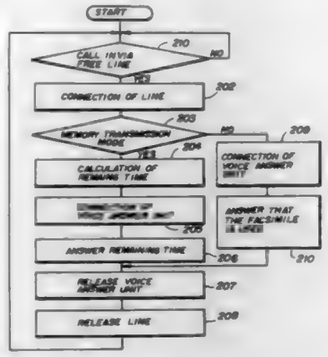
(f) second control means responsive to said first control means and, in the presence of said selected one of said plurality of predetermined service codes in said currently accessed one of said plural tables, selecting one of a plurality of predetermined services in accordance with said selected one of said plurality of predetermined service codes detected by said first control means and effecting said selected one of said plurality of predetermined services.

5,305,376

FACSIMILE MACHINE WITH VOICE ANSWER UNIT

Takeshi Ukegawa, Hadano, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 587,038, Sep. 24, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 17,995
Claims priority, application Japan, Sep. 25, 1989, 1-246534
Int. Cl.[5] H04M *11/00*; H04N *1/42*
U.S. Cl. 379—100 **5 Claims**



1. A facsimile machine which accommodates a plurality of lines comprising:

memory means for storing image information which is obtained by scanning of a document;

memory transmission means, coupled to said memory means, for transmitting the image information in said memory means to an external facsimile machine via a line;

time data generation means coupled to said memory means and memory transmission means, for generating data corresponding to a time required for transmitting an amount of remaining image information in said memory means when said memory transmission means is activated, said time data generation means including a table which represents the time required for transmitting image information for one page in each of predetermined cases;

voice answer means for generating a voice answer message indicating that said facsimile machine is communicating to an external facsimile machine;

determination means for determining whether or not said memory transmission means is activated when a call is received via one of the lines during a communication via another line;

first control means, coupled to said determination means, said voice answer means and said plurality of lines, for outputting said voice answer message generated by said voice answer means to said one of the lines when said determination means determines that said memory transmission means is not activated during the communication via said another line, so that said voice answer message is transmitted to a calling station;

second control means, coupled to said determination means, said voice answer means, said time data generation means and the lines, for outputting said voice answer message generated by said voice answer means and a voice time message corresponding to said data generated by said time data generation means to said one of the lines when said determination means determines that said memory transmission means is activated during the communication via said another line, so that said voice answer message and said voice time message are transmitted to a calling station

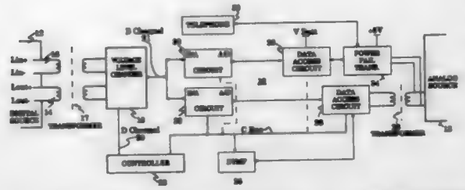
wherein a calling station is informed when the facsimile machine is busy and is selectively informed of the approximate waiting time.

5,305,377

APPARATUS FOR PROVIDING AN ISDN TO ANALOG INTERFACE

Paul D'Arcy, Sunnyvale; Robert Sloan, Los Altos Hills, and David Evans, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 29, 1991, Ser. No. 677,115
Int. Cl.[5] H04J *3/12*
U.S. Cl. 379—399 **8 Claims**



1. An interface for communicating between digital ISDN signals from an ISDN terminal and an analog telephone network, comprising:

a first circuit for receiving first ISDN signals from said ISDN terminal and separating said ISDN signals into first digital control and first digital data signals;

a second circuit for receiving said first digital control signals and translating said first digital control signals into first translation control signals;

a DTMF transceiver coupled to receive said first translation control signals and generating first analog telephone tone control signals;

a third circuit for receiving said first digital data signals and said first translation control signals, and translating said first digital data signals into first analog telephone data signals under the control of said first translation control signals;

analog coupling means for coupling said first analog telephone tone control signals and said first analog data signals to said analog telephone network, and for receiving second analog data signals and second analog telephone tone control signals from said analog telephone network;

said DTMF transceiver receiving said second analog telephone tone control signals and generating second translation control signals;

said second circuit receiving said second translation control signals and translating said second translation control signals into second digital control signals;

said third circuit receiving said second analog data signals and said second translation control signals, and translating said second analog data signals into second digital data signals, under the control of said second translation control signals;

said first circuit receiving said second digital data signals from said third circuit, and said second digital control signals from said second circuit, and combining said second digital control signals and said second digital data signals into second ISDN signals;

digital coupling means for coupling said second ISDN signals from said first circuit to said ISDN terminal.

5,305,378

ARRANGEMENT FOR ADJUSTING AN ADAPTIVE DIGITAL FILTER INCLUDED IN A SUBSCRIBER UNIT

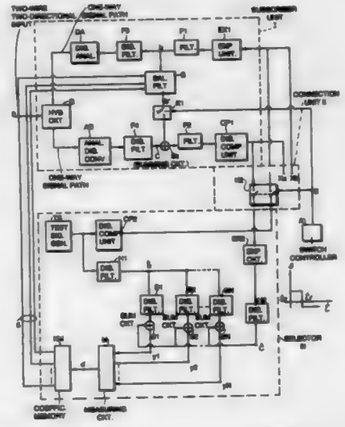
Lars T. E. Svensson, Eksätravägen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 346,060, Jan. 22, 1982, abandoned. This application Sep. 21, 1984, Ser. No. 653,609
Claims priority, application Sweden, Jan. 7, 1980, 8004848I
Int. Cl.[5] H04B *3/03*
U.S. Cl. 379—404 **8 Claims**

1. Apparatus for adjusting an adaptive digital filter balancing impedance (B) in a subscriber unit (I) connected to a telephone exchange, in response to the impedance of a two-wire subscriber line connected to the subscriber unit, said unit including a two-wire to four-wire transfer circuit (G) connected to said incoming two-wire subscriber line, first and second four-wire branches connected to said transfer circuit (G), a switch (K1) for connecting and disconnecting said digital filter balancing impedance (B) between said first and second branches, first filter units (F1, F3) and a digital/analog converter (DA) in said first branch, and second filter units (F2, F4) and an analog/-digital converter (AD) in said second branch; a selection unit (III), a switching unit (II) connected to both said four-wire branches for connecting said selection unit (III) to said subscriber unit (I) simultaneously as said digital filter balancing impedance (B) is disconnected by said switch from said branches, said selection unit (III) comprising:

a) a test signal generator (TS) for transmitting a periodic test signal in digital form containing at least one tone frequency (fo) across a loop containing said first four-wire branch, the subscriber line and said second four-wire branch,

b) a filter bank containing N digital filters (B1 . . . BN) connected in parallel for receiving said test signal corresponding to the signal across an input of said digital filter balancing impedance, each said filter in the filter bank



having a transfer function corresponding to a transfer function of an equivalent filter (F) formed by the line impedance of each of at least N lines, which are connected to the subscriber unit (I) and to the part of said loop which is connected to said digital filter balancing impedance (B),

c) a plurality of N summing circuits (S1 . . . SN) for summing the test signal which has gone through said loop with the same test signal filtered in a respective one of said digital filters in said filter bank,

d) a measuring unit (M) for forming a value measured and calculated from signals (y1 . . . yN) obtained from said summing circuits (S1 . . . SN) with relation to one (Bk) of said digital filters (B1 . . . BN) in said filter bank, said value indicating one of said N digital filters whose transfer function best matches the transfer function of said equivalent filter (F), and

e) a memory unit (KM) storing a plurality of filter parameters (cij) corresponding to the parameters of each of said digital filters in the filter bank and which, in dependence on an address signal (d) obtained from the measuring unit (M), transmits signals to said digital filter balancing impedance (B) corresponding to the parameters of said digital filters in the filter bank, the output signal of which corresponds to said value formed in the measuring unit.

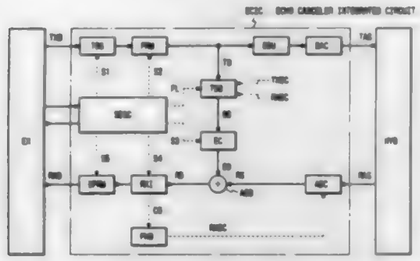
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5,305,379

SEMICONDUCTOR INTEGRATED DEVICE

Yusuke Takeuchi, Ohme; Masaru Kokubo, Hachiouji; Keizo Yabuta, Yokohama; Atuko Kenmoku, Mitaka, and Kazuo Okado, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,370
Claims priority, application Japan, May 22, 1991, 3-146791; Mar. 11, 1992, 4-087839
Int. Cl.[5] H04M 1/00; H04J 3/00
U.S. Cl. 379—410 27 Claims



1. A semiconductor integrated device being coupled between a first station for carrying out digital data processing and a second station for inputting and outputting analog signals, said semiconductor integrated device comprising:

sending means for converting digital data supplied from said first station into analog signals, and for sending the converted analog signals to said second station;

receiving means for converting the analog signals supplied from said second station into digital data, and for supplying the converted digital data to said first station;

storage means for storing the digital data supplied from said first station, wherein said storage means has a shift operation and a first in-first out operation;

arithmetic means for receiving the digital data stored in said storage means, and for carrying out prescribed arithmetic processing; and

mode selecting means for selecting one operation from that of said shift and first in-first out operations, wherein said storage means outputs digital data to said arithmetic means according to said one operation selected by said mode selecting means.

5,305,380

METHODS AND APPARATUS FOR PROVIDING A SECURE TELECOMMUNICATIONS PORT

Vincent Hileman, San Jose; Clifford Willis, Tracy; David Evans, and Benjamin Stolz, both of Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 20, 1992, Ser. No. 886,071
Int. Cl.[5] H04M 1/00; H01R 13/44
U.S. Cl. 379—445 9 Claims

1. A security device for preventing unauthorized access to a telecommunications port having a plurality of electrical contacts, said device comprising:

a housing for enclosing said telecommunications port, said housing having a rear wall and a retaining ledge in said housing;

a plug for filling said housing such that the plug locks into said telecommunications port housing, said plug comprising:

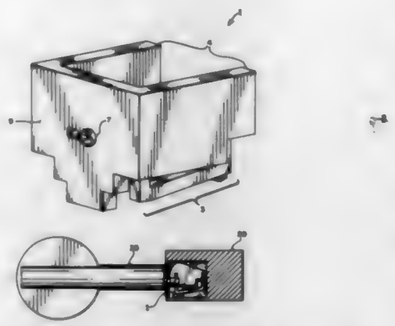
a body, said body having an opening such that said plurality of electrical contacts do not contact said body;

a face on said body, said face shaped such that said plug substantially covers said housing, said face having a keyhole opening; and

an engaging mechanism coupled to said body for engaging said retaining ledge of said housing, said engaging mechanism having:

a pair of parallel rails constructed such that said parallel rails flex while being inserted into said housing and snap into place engaging said retaining ledge when fully inserted; and

a rear member joining said pair of parallel rails, said parallel rails extending forward from said rear member:



a crossbar coupled to said parallel rails by a pair of vertical standoffs, said crossbar located such that said parallel rails disengage said retaining ledge when said crossbar is lifted;

a tab spring extending rearward from said rear member, said tab spring pushing against said rear wall so as to push said parallel rails against said retaining ledge when said parallel rails are fully inserted into said housing; and

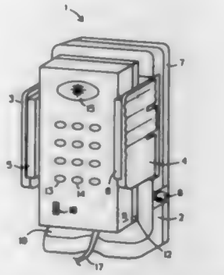
a key for removing said plug from said housing, said key shaped to fit within said keyhole opening on said plug face and disengage said engaging mechanism.

5,305,381

CRADLE FOR TELEPHONE

Chin Y. Wang, #167 Lane 131 Sec 2 True Hsing Rd., Pan Chiao Taipei Hsien, Taiwan, and Timothy Sheahan, 3089½ Ewing Ave., Altadena, Calif. 91001

Filed Nov. 9, 1992, Ser. No. 973,031
Int. Cl.[5] H04M 1/00
U.S. Cl. 379—455 20 Claims



1. A cradle for various sizes of telephone means, said cradle comprising:

a base;

first and second walls attached to said base;

at least one of said walls slidably attached to said base, said sliding wall disposed opposite the other wall and disposed to slide toward and away from said other wall;

means for holding said sliding wall at several, successive positions against various sizes of said telephone means;

spring means disposed to urge said sliding wall away from said other wall; and

means for releasing said means for holding, thereby allowing said spring means to move said sliding wall away from said other wall;

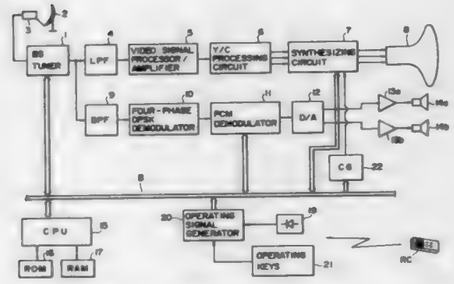
wherein said means for holding said sliding wall, comprises ratchet means, having several teeth for holding said sliding wall at said several, successive positions.

5,305,382

SATELLITE BROADCAST RECEIVER

Toshihide Hayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 31, 1991, Ser. No. 785,760
Claims priority, application Japan, Nov. 9, 1990, 2-302606
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—23 3 Claims



1. A satellite broadcast receiver comprising:

demodulating means, operating means, and control means;

the demodulating means demodulating a received signal including a video signal and an aural signal and detecting if at least the video signal of the received signal is scrambled;

the operating means changing the voice output mode; and

the control means that preventing a voice output mode changing operation from being executed in response to a voice output mode changing signal provided by the operating means, when the demodulating means detects that the video signal of the received signal is scrambled.

5,305,383

METHOD OF ELECTRONIC PAYMENT BY CHIP CARD BY MEANS OF NUMBERED TOKENS ALLOWING THE DETECTION OF FRAUD

Louis-Claude Guillou, Rennes, France, and Jean-Jacques Quisquater, Brussels, Belgium, assignors to France Telecom, Telediffusion de France S.A., France and U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 862,088, Apr. 2, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 107,413
Claims priority, application France, Apr. 3, 1991, 91 04035
Int. Cl.[5] H04L 9/00; G07F 7/08
U.S. Cl. 380—24 15 Claims

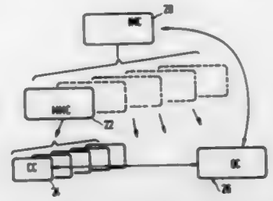
1. A method of performing an electronic automated transaction by initializing a management card from an initial management card, said management card for interfacing with a consumption card, to copy a plurality of tokens to said consumption card in order for said consumption card to transfer tokens to a vendor by interfacing said consumption card with a vendor card to copy a predetermined number of tokens to said vendor card, each of said cards including a microprocessor and input and output terminals, comprising the steps of:

generating a distribution array in said initial management card, said distribution array including an initial set of t consecutive entries in said initial management card, a random portion of said numbers being removed from said set;

generating a subset of numbers from said initial set and copying each number of said subset to said management card to form a sales array; said sales array including t number of entries, each entry corresponding to one of said tokens; each token being valid for payment upon interfacing said consumption card with said vendor card;

copying a predetermined amount of tokens from said sales array of said management card to said consumption card; upon transacting a sale, copying a predetermined number of tokens from said consumption card to said vendor card; updating said consumption card to prevent said copied tokens from again being copied to said vendor card or a further vendor card; and

comparing the corresponding number of each token received by said vendor card with the corresponding number on said management card to authenticate a valid transfer of tokens between said consumption card and said vendor card.

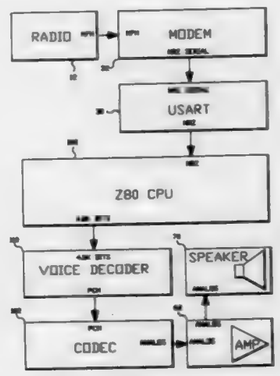


5,305,384

APPARATUS, SYSTEM AND METHOD FOR TRANSMITTING SECURE SIGNALS OVER NARROW SPACED CHANNELS

James C. Ashby, Priddy; Clark Burkhart, Azle; Frankie Favors, Bedford; Roy G. Tiemann, Priddy; Robert L. Vandaveer, Granbury, and Lothar A. Krause, Irving, all of Tex., assignors to Chips International, Inc., Priddy, Tex.

Continuation-in-part of Ser. No. 621,476, Dec. 4, 1990, Pat. No. 5,150,401. This application Sep. 9, 1992, Ser. No. 942,661
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] H04K 1/00
U.S. Cl. 380—29 27 Claims



1. An improved digital encryption device comprising:

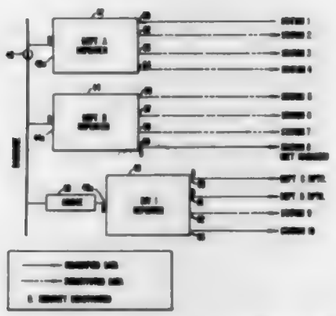
a radio interface connected to a conventional radio and adapted to receive a non-secure voice signal;

a codec selectively coupled to said radio interface for receiv-

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ing said non-secure voice signal and for converting said signal into a pulse code modulated signal;
a signal processor adapted for converting said pulse code modulated signal into a digitally encrypted NRZ signal; and
means for modulating said digitally encrypted NRZ signal on a carrier signal, said modulated carrier signal occupying a necessary bandwidth approved for channels spaced 15 KHz to 25 KHz apart.

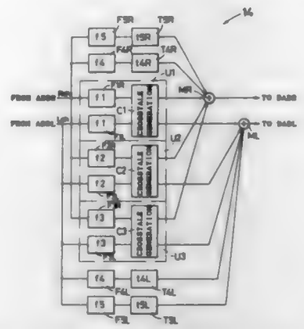
5,305,385
NETWORK MESSAGE SECURITY METHOD AND APPARATUS
Brian Schanning, Marblehead; Sadredin Tavana, Watertown; Steven E. Archambault, Haverhill, and Carl G. Haysseu, III, Andover, all of Mass., assignors to Ungermann-Bass, Inc., Andover, Mass.
Continuation of Ser. No. 776,145, Oct. 15, 1991, Pat. No. 5,177,788. This application Nov. 25, 1992, Ser. No. 982,217
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—49 **27 Claims**



1. In a local area network having a plurality of input/output devices coupled to a multiport repeater, a method for securing data on the network comprising the steps of:
receiving at the repeater a data frame having a data field and a frame check sequence field; and
replacing a content of said data field with a substitute bit pattern to form a secured data field.

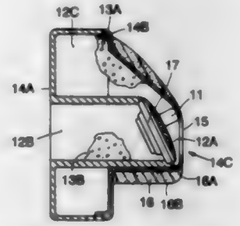
5,305,386
APPARATUS FOR EXPANDING AND CONTROLLING SOUND FIELDS
Toshitaka Yamato, Kobe, Japan, assignor to Fujitsu Ten Limited, Hyogo, Japan
Filed Oct. 15, 1991, Ser. No. 775,523
Claims priority, application Japan, Oct. 15, 1990, 2-108379[U]; Nov. 1, 1990, 2-115812[U]
Int. Cl.[5] H04S *1/00*
U.S. Cl. 381—1 **18 Claims**

1. An apparatus for expanding and controlling sound fields comprising:
an acoustic signal source which outputs acoustic signals of fundamental sounds of two channels, right and left;
a means for correcting at least one of the phase and level of acoustic signals of the fundamental sounds of the right and left channels to form outputs of right, left and center channels;
a means for arithmetically processing the acoustic signals of fundamental sounds of the right and left channels from the acoustic signal source to produce acoustic signals of effective sounds of the right and left channels; and
a means for correcting at least one of the phase and level of acoustic signals of effective sounds of the right and left channels to form outputs of right, left and center channels; and
wherein outputs of respective channels from the fundamental sounds correcting means and corresponding outputs of



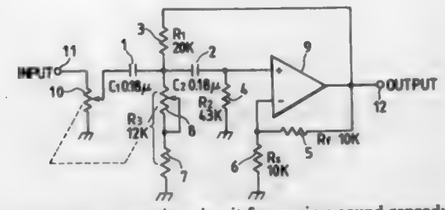
respective channels from the effective sounds correcting means are added together for each of the right, left and center channels, which are, in turn, outputted from a loudspeaker for each channel.

5,305,387
EARPONING
Roman Sapiejewski, Boston, Mass., assignor to Bose Corporation, Framingham, Mass.
Filed Oct. 27, 1989, Ser. No. 427,767
Int. Cl.[5] G10K *11/16*; A61F *11/02*
U.S. Cl. 381—71 **22 Claims**



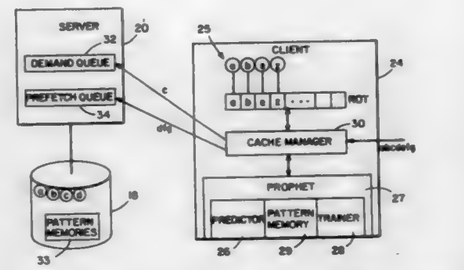
1. Earphone apparatus in an active noise reduction system comprising:
an assembly including a shell accommodating first and second closely adjacent electroacoustical transducers of shape and size that allows said shell and first and second electroacoustical transducers to fit inside the concha of the ear,
said shell being formed with at least a front cavity characterized by a compliance C_F arranged to be adjacent to the ear canal characterized by a compliance C_E when said shell is seated inside the concha,
the volume of said front cavity being sufficiently large so that the front cavity compliance C_F is greater than the ear canal compliance C_E to furnish significant passive attenuation,
and electronic circuitry intercoupling said first and second electroacoustical transducers and coacting therewith to provide active noise reduction by reproducing with said first electroacoustical transducer characterized by a compliance C_D noise incident upon said second electroacoustical transducer but of opposite phase so as to actively reduce the noise intensity inside said concha,
said compliance C_D being greater than said compliance C_F.

5,305,388
BASS COMPENSATION CIRCUIT FOR USE IN SOUND REPRODUCTION DEVICE
Fumiyasu Konno, Matsuzaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 16, 1992, Ser. No. 899,186
Claims priority, application Japan, Jun. 21, 1991, 3-150034
Int. Cl.[5] H03G *9/00*; H04R *5/00*; H03H *5/00*; H04B *1/10*
U.S. Cl. 381—102 **2 Claims**



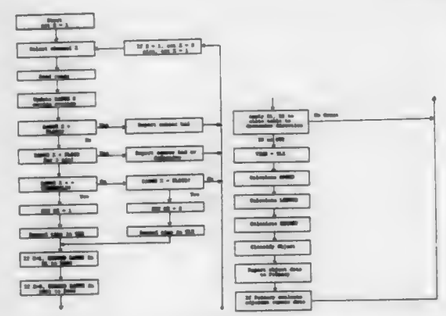
1. A bass compensation circuit for use in a sound reproduction device, comprising:
a first variable resistor, connected to an input terminal for receiving an input signal, having a tap for volume control;
a second-order positive feedback type high-pass filter having:
a first capacitor having a first terminal and a second terminal, the first terminal of the first capacitor being connected to the tap of the first variable resistor;
a second capacitor having a first terminal and a second terminal, the first terminal of the second capacitor being connected to the second terminal of the first capacitor;
a first resistor having a first terminal and a second terminal, the first terminal of the first resistor being connected to the second terminal of the first capacitor;
a second resistor having a first terminal and a second terminal, the first terminal of the second resistor being connected to the second terminal of the second capacitor, the second terminal of the second resistor being grounded;
an operational amplifier having a non-inverting terminal, an inverting terminal and an output terminal, the non-inverting terminal of the operational amplifier being connected to the second terminal of the second capacitor and to the first terminal of the second resistor, the second terminal of the first resistor being connected to the output terminal of the operational amplifier, the output terminal of the operation amplifier being the output terminal of the circuit;
a third resistor having a first terminal and a second terminal, the first terminal of the third resistor being connected to the output terminal of the operational amplifier, the second terminal of the third resistor being connected to the inverting terminal of the operational amplifier; and
a fourth resistor having a first terminal and a second terminal, the first terminal of the fourth resistor being connected to the inverting terminal of the operational amplifier and to the second terminal of the third resistor, the second terminal of the fourth resistor being grounded;
a second variable resistor adapted to change resistance thereof correspondingly to change in resistance of the first variable resistor, the second variable resistor having a first terminal and a second terminal, the first terminal of the second variable resistor being connected to the second terminal of the first capacitor of the second-order positive feedback type high-pass filter; and
a fifth resistor having a first terminal and a second terminal, the first terminal of the fifth resistor being connected to the second terminal of the second variable resistor, the second terminal of the fifth resistor being grounded, the fifth resistor determining a cut-off frequency and a Q-value of the second-order positive feedback type high-pass filter,
wherein the determined cutoff frequency and Q-value of the high pass filter compensate the frequency response at a low frequency range.

5,305,389
PREDICTIVE CACHE SYSTEM
Mark L. Palmer, Hollis, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Aug. 30, 1991, Ser. No. 753,096
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **41 Claims**



1. A data processing system including a predictive cache memory subsystem comprising:
a cache memory for storing objects retrieved from secondary memory;
pattern memory storing object access patterns generated from prior accesses of the data processing system processing in a like context;
a prefetcher responsive to a current access pattern during operation of the data processing system for predicting, from like object access patterns stored in pattern memory, accesses to objects and for prefetching predicted objects to store the predicted objects in cache memory.

5,305,390
PERSON AND OBJECT RECOGNITION SYSTEM
Ronald G. Frey, Hackensack, and Thomas C. Guthrie, Mendham, both of N.J., assignors to Datatec Industries Inc., Fairfield, N.J.
Continuation-in-part of Ser. No. 640,272, Jan. 11, 1991, Pat. No. 5,138,638. This application Mar. 20, 1992, Ser. No. 855,503
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—2 **32 Claims**



1. A system for automatically recognizing persons or objects as they move past a selected location and for classifying said persons or objects in accordance with selected criteria, said system comprising:
means for emitting beams toward a person or object moving past a selected location to generate reflected beams from said person or object intercepting said beams, the included

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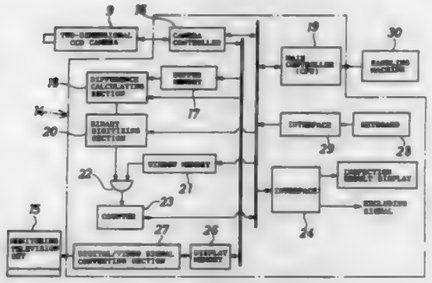
angle of an emitted and reflected beam being a function of the height of the person or object;
means for detecting said reflected beams and generating signals representative of the included angles and thus the height of the person or object;
means for determining the speed and length of the person or object intercepting said emitted beams;
means for generating signals representing a time dependent height profile of the person or object from which the beams are reflected; and
means for classifying said person or object in accordance with selected criteria.

5,305,391

METHOD OF AND APPARATUS FOR INSPECTING BOTTLE OR THE LIKE

Tadashi Gomibuchi, Tokyo, Japan, assignor to Toyo Glass Company Limited, Tokyo, Japan

Filed Sep. 18, 1991, Ser. No. 761,524
Claims priority, application Japan, Oct. 31, 1990, 2-291776
Int. Cl.[5] G01N *21/88*; **G06K** *9/00*
U.S. Cl. 382—8 **6 Claims**



1. A method of inspecting a rotating or moving object for detecting a defect in the object, comprising the steps of irradiating light upon an inspection area of the object from an angle between a line extending perpendicular to a rotational axis of the object and the rotational axis of the object, photographing reflected light from the inspection area of the object by a two-dimensional camera, storing picture element data corresponding to a first frame at a first point of time of the photographed reflected light into a memory, storing picture element data corresponding to a second frame at a second point of time of the photographed reflected light after a fixed interval of time after the first point of time, said fixed interval of time being determined based on a predetermined period of time and a thinning out value that is determined based on a rotating speed of the object, calculating differences of the picture element data between the first and second frames, binary digitizing the differences with reference to a predetermined brightness threshold level, counting a number of the differences which have one of two binary values, and comparing the count number with a predetermined number to determine the presence or absence of a defect in the object.

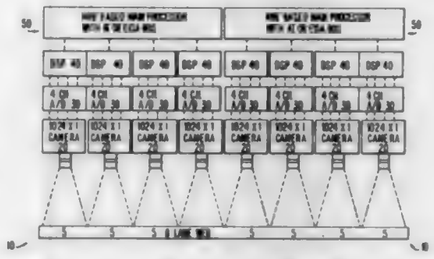
5,305,392

HIGH SPEED, HIGH RESOLUTION WEB INSPECTION SYSTEM

H. Cary Longest, Jr.; Robert H. Moffitt, both of Midlothian, and W. Randolph Sweeney, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 11, 1993, Ser. No. 2,892
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **10 Claims**

1. For use in a modular system for the inspection of the lanes of a printed web, said system having analog image input means, analog-to-digital conversion means, primary real-time digital signal processing means and secondary non-real-time processing means, a method for detecting flaws in a printed web, said method comprising the steps of:
inputting an analog representation of each pixel of a line of an input image from a printed web;
converting the analog representation to a gray scale digital representation;
transferring the digital representation of each line to the primary digital signal processing means;
generating pre-stabilization offsets for the digital representation in the primary digital signal processing means;
transferring the digital representation of a collection of lines comprising an image to the secondary processing means;



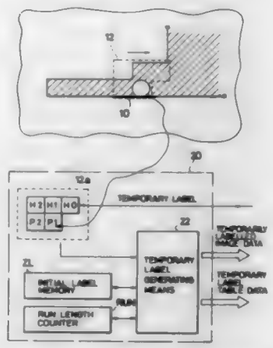
creating in the secondary processing means a statistical representation of the gray scale values for each pixel from a set of input images;
calculating in the secondary processing means the minimum and maximum threshold values for a jitter desensitized template;
transferring the template to the primary digital signal processing means; and
comparing input images to the template in the primary digital signal processing means.

5,305,393

LABELLING CIRCUIT AND PROCESSOR FOR IMAGE PROCESSING

Ryutaro Kawai, and Toshimi Kobayashi, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Dec. 26, 1991, Ser. No. 813,792
Claims priority, application Japan, Dec. 28, 1990, 2-417487; Sep. 30, 1991, 3-278216
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—9 **14 Claims**



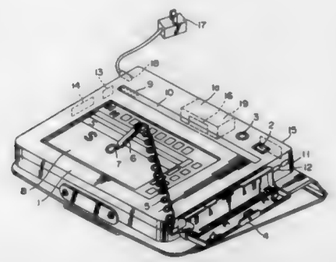
1. An image processing labelling circuit for scanning two-valued pictures in one scene in a raster scan direction with a specified mask to determine a connection relationship between a current pixel and pixels surrounding said current pixel within said mask and sequentially determines and assigns a label value to each pixel, comprising:
an initial label memory storing initial temporary label values of connected pixels within a current scan line; and
a run length counter counting the number of connected pixels the current scan line being scanned; wherein
said image processing labeling circuit uses said initial label memory and said run length counter to generate temporarily labelled image data and temporary label table data, said temporary label table data indicating conversion relationships for integration of the temporary labels, and to thereafter generate finally labelled image data from the temporarily labelled image data and the temporary label table data.

5,305,394

CHARACTER INPUTTING APPARATUS

Hidekazu Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,190
Claims priority, application Japan, Apr. 30, 1991, 3-126739; May 1, 1991, 3-128349
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—13 **7 Claims**



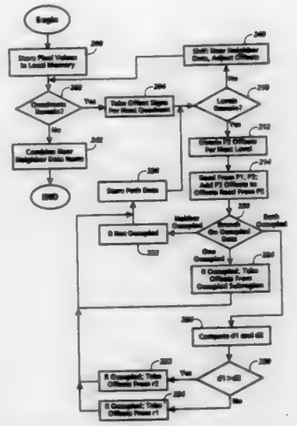
1. An apparatus for recognizing handwritten trace and inputting document information compriaing:
trace means for inputting handwritten characters;
coordinate information detection means for detecting locus information provided by said trace means as coordinate information;
a display superposed on said detection means for allowing an image displayed thereon to be recognized through said detection means;
M character display frames to which said handwritten characters are successively input and in which results of recognition of the locus information are displayed substantially in a cyclic manner;
a logical character frame disposed in the vicinity of said character display frames for temporarily displaying N (N>M) characters cyclically input from said character display frames;
a writing page portion to which characters displayed in said logical character frame are finally transferred to be displayed thereon; and
operating means for selecting at least one character displayed in said logical character frame and displaying each selected character in one of the character display frames to permit editing of each selected character.

5,305,395

EXHAUSTIVE HIERARCHICAL NEAR NEIGHBOR OPERATIONS ON AN IMAGE

James V. Mahoney, Sunnyvale, Calif., and David T. Clemens, Somerville, Mass., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 8, 1990, Ser. No. 535,438
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—27 **31 Claims**



1. A method of operating a system that includes memory and a processor connected for accessing the memory, the method comprising steps of:
storing in the memory a body of data defining an image that includes a plurality of pixels, the body of data including a plurality of data items, each including a pixel value for a respective one of the pixels; and
operating the processor to produce, for each of the pixels, a respective set of near neighbor data items by operating on the data items in the body of data; each near neighbor data item of each pixel indicating a near neighbor attribute of a respective one of a plurality of zones of orientation extending from the pixel to the edge of the image, the respective zones together including all orientations with respect to the pixel; the near neighbor attribute of each zone of orientation indicating whether the zone of orientation includes a pixel that meets a near neighbor criterion;
the near neighbor attribute of a first one of the zones of orientation for a first one of the pixels indicating that the first zone includes a second pixel that meets the near neighbor criterion, the second pixel being at a distance from the first pixel, the distance from the first pixel to the second pixel being greater than one pixel.

5,305,396

DATA PROCESSING SYSTEM AND METHOD FOR SELECTING CUSTOMIZED CHARACTER RECOGNITION PROCESSES AND CODED DATA REPAIR PROCESSES FOR SCANNED IMAGES OF DOCUMENT FORMS

Timothy S. Betts, Germantown; Valerie M. Carras, Kensington, and Lewis B. Knecht, Olney, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1992, Ser. No. 870,507
Int. Cl.[5] G06K *9/62*
U.S. Cl. 382—36 **19 Claims**

1. In a data processing system, a method for repairing character recognition errors for digital images of document forms, comprising:
inputting a document form processing template including a

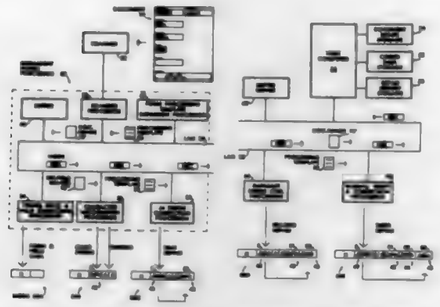
VOL 1161 ISS 3 AP 19 1994 UMI

first sequence specification for a first plurality of character recognition processes and a second sequence specification for a second plurality of coded data repair processes;

inputting a digital document image of a document form and extracting a field image from said document image, forming a corresponding extracted field image;

selecting a character recognition process from said first plurality specified in said template and generating recognition coded data from said extracted field image and generating recognition error data using said selected character recognition process; and

selecting a coded data repair process from said second plurality specified in said template and operating on said recognition coded data and said recognition error data to generate repaired coded data using said selected coded data repair process.



5,305,397

IMAGE COMMUNICATION APPARATUS

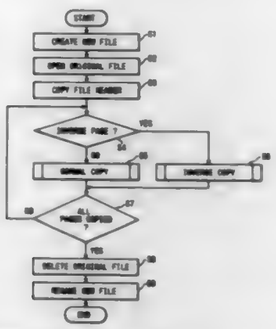
Yoshinori Yamaguchi, Yamato; Kenichi Sugiura, Funabashi; Masanao Yasuda, Tokyo; Naoshi Inoue, Tokyo; Hideyuki Kobayashi, Tokyo, and Michibei Murayama, Tachikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 915,889, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 603,295, Oct. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 516,301, Apr. 30, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,012

Claims priority, application Japan, May 1, 1989, 1-112526; Oct. 8, 1990, 2-271215

Int. Cl.[5] G06K *9/32;* **H04N** *1/00;* **G09G** *1/06*

U.S. Cl. 382—46 **13 Claims**



5. A facsimile apparatus comprising:

receiving means for receiving image information from a calling station, the image information including a calling station information area located in a predetermined location and a remaining area excluding the calling station information area, wherein the calling station information area is received in a correct display orientation and the remaining area may be received in an upside down orientation;

storage means for storing the received image information;

display means for displaying the image information stored in said storage means instructing means for providing an instruction to turn upside down said remaining area; and

control means responsive to said instructing means for turning upside down the received image information of the remaining area when received in the upside down orientation without turning upside down the calling station information area in said predetermined location of the received image information.

5,305,398

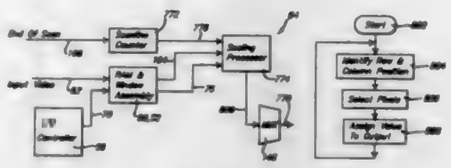
METHOD AND APPARATUS FOR SCALING IMAGE DATA

Robert Klein, Farmington; Andrey A. Brennan, Northville, and Kevin Jennings, Farmington Hills, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 10, 1989, Ser. No. 420,779

Int. Cl.[5] G06K *9/42*

U.S. Cl. 382—47 **18 Claims**



1. An image processing device for use with an array of pixel data arranged in rows and columns and corresponding to an image, said device comprising:

first input means for receiving scanned lines of pixel data;

second input means for receiving a signal indicating an end of a scan line from an image sensor that generated the pixel data;

memory means for storing the pixel data in a first matrix;

address generator means for generating an address for each pixel in a scan line;

counter means for identifying each of said end of scan line signals;

output means for providing information regarding each of said scanned lines of pixel data, each of said generated addresses, and said first matrix of pixel data; and

scaling processor means coupled to the output means and operative to create a plurality of sub-matrices from the first matrix of pixel data, each said sub-matrix being centered about a center pixel, and to generate a second matrix of pixel data smaller than the first matrix by combining pixels in each of the plurality of sub-matrices in a predetermined manner to scale down the image, said combination of pixels excluding said center pixel of each sub-matrix.

5,305,399

TWO DIMENSIONAL SHIFT-ARRAY FOR USE IN IMAGE COMPRESSION VLSI

James D. Allen, Santa Cruz, and Steven M. Blonstein, San Jose, both of Calif., assignors to Ricoh Corporation, Menlo Park, Calif. and Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 511,245, Apr. 19, 1990, Pat. No. 5,129,015. This application Mar. 29, 1991, Ser. No. 686,485

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] G06K *9/36, 9/46, 9/54;* **G11C** *8/00*

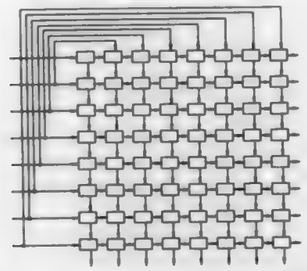
U.S. Cl. 382—56 **5 Claims**

1. Two dimensional image compression apparatus for use in image compression image pixel data wherein said image pixel data is in the form of blocks of 1×N pixel vectors, said image compression apparatus comprising

means for performing a transform on rows of said blocks of 1×N pixel vectors to generate even and odd blocks of partially transformed vectors,

shift array means including a plurality of multi-bit shift registers

for shifting said even and odd blocks of partially transformed



vectors in at least two directions through said plurality of shift registers of said shift array means including means for shifting said odd blocks of partially transformed vectors in a first direction and means for shifting said even blocks of partially transformed vectors in a second different direction to provide rotated blocks of partially transformed vectors, and

means for performing a transform on rows of said rotated blocks of partially transformed vectors to provide blocks of two-dimensionally transformed vectors.

5,305,400

METHOD OF ENCODING AND DECODING THE VIDEO DATA OF AN IMAGE SEQUENCE

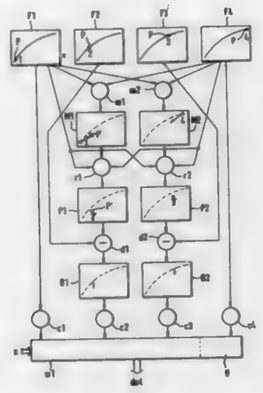
Bill Butera, Emmendingen, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 2,320, Dec. 5, 1991, abandoned. This application Jul. 30, 1992, Ser. No. 931,461

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1990, 90123317

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—56 **14 Claims**



1. Method of encoding video data of an image sequence whose individual images follow each other at fixed time intervals, with each individual image having a frame data field associated therewith, said method comprising the steps of:

(a) dividing the sequence of frame data fields into sections each comprising n frame data fields, with a first frame data field in each section serving as a key frame data field, and the remaining n-1 frame data fields in each section serving as intermediate-frame data fields, where n is greater than or equal to 2;

(b) determining n-1 motion fields from the first key frame data field in a given section and from a second key frame data field in a next following second, by means of n-1 motion estimators, the respective reference times of said motion fields being equal to the reference times of the associated intermediate-frame data fields;

(c) computing from the first and second key frame data fields and one of the motion fields, a respective phantom image data field by means of a respective phantom-image-computing device;

(d) computing, from the phantom image data field and the associated intermediate-frame data field, difference image data by means of a subtractor; and

(e) generating an output signal as a data stream formed from the data of the key frame data fields and the difference image data, said data being inserted into the data stream by means of a transmitter switching device which also inserts at least one synchronizing character for identifying and separating the individual data fields.

5,305,401

OPTICAL CONNECTION DEVICE AND DATA PROCESSING APPARATUS FITTED WITH OPTICAL TRANSMISSION MEANS

Alain Becker, Montrouge, and Jean Chazelas, Paris, both of France, assignors to Thomson-CSF, Puteaux, France

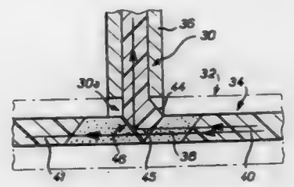
PCT No. PCT/FR91/01009, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO92/11553, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 13, 1991, Ser. No. 920,577

Claims priority, application France, Dec. 21, 1990, 90 16128

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—24 **13 Claims**



1. Data processing apparatus having optical transmission means for transmission of light information, comprising at least one first light guide with a pointed end made of rigid material; at least one second light guide fitted with at least one segment of transparent elastic material; and mechanical fixing means for forcibly applying and holding the said pointed end against a side of the said segment made of transparent elastic material.

VOL 1161 ISS 3 AP 19 1994

5,305,402

TUNABLE OPTICAL FILTERS

Alan M. Hill; David B. Payne, both of Woodbridge, and Kevin J. Blyth, Harleston, all of England, assignors to British Telecommunications Public Limited Company, London, England

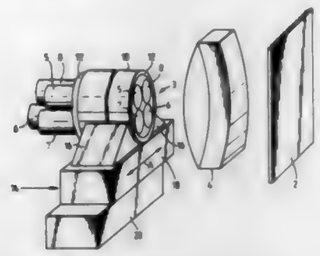
PCT No. PCT/GB91/00264, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO91/13377, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 20, 1991, Ser. No. 930,683

Claims priority, application United Kingdom, Feb. 20, 1990, 9003768; Apr. 25, 1990, 9009306; Oct. 11, 1990, 9022126

Int. Cl.[5] G02B 6/26

U.S. Cl. 385—25 16 Claims



1. An optical filter comprising:

an optical dispersion means,

first and second optical waveguides mounted on a common support such that a multiplexed beam of optical wavelength channels launched from said first optical waveguide into the optical dispersion means is receivable by said second optical waveguide after dispersion by the optical dispersion means, and

means for moving the support relative to the dispersion means in a direction causing said second optical waveguide to sweep through a dispersed wavelength spectrum of the multiplexed beam of optical wavelength channels, thereby allowing any desired one of such wavelength channels to be coupled into said second waveguide.

5,305,403

OPTICAL WAVEGUIDE AND METHOD OF MAKING AN OPTICAL WAVEGUIDE

Raman Kashyap, Ipswich, England, assignor to British Telecommunications public limited company, London, England

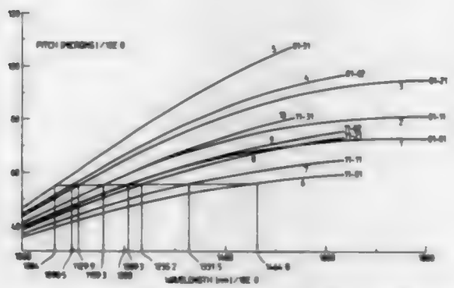
PCT No. PCT/GB90/01917, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/09338, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 7, 1990, Ser. No. 862,757

Claims priority, application United Kingdom, Dec. 7, 1989, 8927697

Int. Cl.[5] G02B 6/34

U.S. Cl. 385—37 10 Claims



1. An optical waveguide in which the rate of change with wavelength of the reciprocal of the difference between the effective refractive indices of a fundamental wavelength mode and a second harmonic wavelength mode is zero at a first wavelength, and there is an internal periodic grating providing phase matching in the wavelength region of the first wavelength.

5,305,404

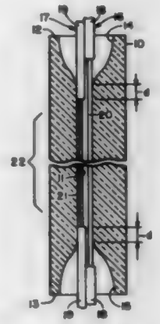
FIBER OPTIC COUPLER

Christopher D. Robson, Horseheads, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 944,193, Sep. 11, 1992, Pat. No. 5,240,489. This application Jun. 11, 1993, Ser. No. 75,665

Int. Cl.[5] E02B 6/26

U.S. Cl. 385—43 15 Claims



1. A fiber optic coupler comprising

an elongated body of matrix glass having a midregion and first and second end surfaces,

first and second optical fibers extending through said midregion, said fibers being fused together and to said midregion, the diameter of the central portion of said midregion being smaller than the diameters of said body at said end surfaces,

first and second longitudinal bore portions extending from said midregion toward said first and second end surfaces, respectively, said fibers extending through said first and second bore portions,

each of said fibers having a protective coating except for an uncoated portion within a portion of said elongated body, the protective coating of only one of said fibers extending into said first bore portion, and the protective coating of only one of said fibers extending into said second bore portion.

5,305,405

PATCH CORD

David J. Emmons, Plymouth; Liang-Ju Lu, Eden Prairie; James W. Conroy, Prior Lake, and George B. Pfeffer, Minnetonka, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Feb. 25, 1993, Ser. No. 17,156

Int. Cl.[5] G02B 6/36

U.S. Cl. 385—73 29 Claims

1. A patch cord comprising:

a cable having a primary transmission member for carrying a primary signal, said cable extending from a first cable end to a second cable end;

secondary transmission means for carrying a tracing signal and secured to said cable for movement therewith and extending from a first end proximate said first cable end to a second end proximate said second cable end;

a first connector secured to a first end of said primary transmission member at said first cable end for connection of said first end to a first telecommunications equipment;

a second connector secured to a second end of said primary transmission member at said second cable end for connection of said second end to a second telecommunications equipment;

first means carried on said cable for movement therewith upon disconnection of said first and second connections from said first and second telecommunications equipment, respectively, and connected to said second end of said secondary transmission means for receiving said energy from said secondary transmission means and generating a sensible signal in response to receiving said energy;

whereby said tracing signal is transmitted along said secondary energy transmission means from said first means and generates said sensible signal at said second means to permit tracing of said cable.

5,305,406

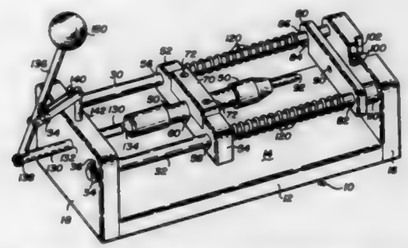
FIBEROPTIC CONNECTOR ASSEMBLY AND METHOD AND DEVICE FOR THE MANUFACTURE THEREOF

Michel Y. Rondeau, San Jose, Calif., assignor to Fibotech, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 429,445, Oct. 31, 1989, abandoned. This application Sep. 27, 1990, Ser. No. 589,868

Int. Cl.[5] G02B 6/36

U.S. Cl. 385—81 16 Claims



6. A fiberoptic connector assembly device for effecting the frictional engagement of an optical fiber within a fiberoptic connector, wherein said fiberoptic connector includes a deformable portion that may be mechanically deformed to frictionally engage said optical fiber therewithin, comprising:

support means;

fiberoptic connector holding means for holding said fiberoptic connector and an optical fiber disposed therewithin during assembly;

connector engagement means, said connector engagement means being engaged to portions of said support means;

movement means, said movement means being engaged to portions of said support means and operable to cause said connector engagement means to make physical connect with said deformable portion of said fiberoptic connector, whereby said deformable portion of said fiberoptic connector will become mechanically deformed proximate said optical fiber upon the occurrence of said physical contact, such that said optical fiber will become frictionally engaged within said fiberoptic connector.

5,305,407

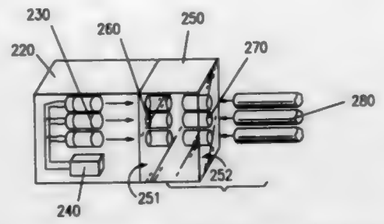
APPARATUS AND METHOD FOR UNDERWATER FIBER-OPTIC COUPLING

Marshall M. Monroe, Glendale, and Kerry M. Perkins, Simi Valley, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed Oct. 6, 1992, Ser. No. 957,265

Int. Cl.[5] G02B 6/421

U.S. Cl. 385—89 16 Claims



5. A fluid impervious coupler for coupling a light source and at least one fiber-optic cable comprising:

a watertight enclosure defining an interior space in which the light source is housed;

an optically clear coupling element forming a part of said enclosure,

said coupling element having an interior surface facing into said interior space; and

an exterior surface facing outwardly from said enclosure;

an interior blind hole extending into said interior surface less than all the way through said coupling element, said interior blind hole sized to snugly hold the light source and form a friction fit therewith; and

an exterior blind hole extending into said exterior surface less than all the way through said coupling element, said exterior blind hole sized to snugly hold a fiber-optic cable and form a friction fit therewith, said first and second blind holes being axially aligned on opposite sides of an intervening region of said coupling element, the light from the light source passing through said optically clear coupling element into the fiber-optic cable for transmission along it,

whereby the fiber-optic cable can be removed and replaced without intrusion of water into said watertight enclosure.

5,305,408

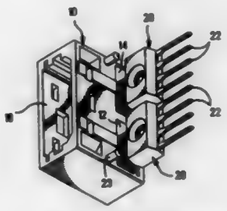
OPTICAL RECEPTACLE WITH FRICTIONAL CONTAINMENT CELLS FOR ACTIVE DEVICES

Ronald R. Schaffer, Harrisburg, Pa., and Gary N. Warner, Memphis, Tenn., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 29, 1992, Ser. No. 906,077

Int. Cl.[5] G02B 6/36

U.S. Cl. 385—92 17 Claims



1. A containment cell in combination with an optical recep-

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tacle and an active optical device, said receptacle including a housing having an open end for receiving an optical plug, and an optical channel extending between said open end and said containment cell, the containment cell further comprising:

a fitted cavity for seating said active optical device in a facing relation to said open end; and

a resilient panel for biasing the active optical device towards the open end and to frictionally retain said active optical device within said cavity, said panel being formed integrally within said cavity arid extending along a direction in which said active optical device is inserted in said receptacle;

whereby the resilient panel is driven laterally by insertion of said active optical device and imparts an opposing bias against said active device towards the open end to frictionally retain the active optical device within the containment cell.

5,305,409

TIME-REDUCING OPTICAL FIBER CONNECTOR

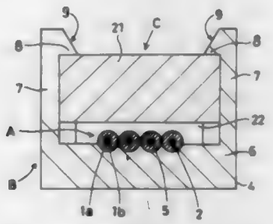
Jyunji Fujikawa, and Tadashi Seto, both of Shiga, Japan, assignors to Nippon Electric Glass Co., Ltd., Otsu, Japan

Filed Oct. 27, 1992, Ser. No. 966,926

Claims priority, application Japan, Oct. 28, 1991, 3-280996

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—95 **3 Claims**



1. A permanent optical fiber connector comprising a base part including a base body made of a material of low expansion coefficient having a pair of opposed locking elements and one or more capillary tubes bonded to the base body and having an inner wall diameter slightly greater than a cladding of an optical fiber, and an optical fiber pressing part including a pressing body made of a material of low expansion coefficient and adapted to be embraced as it fits between the locking elements of the base body and elastic bodies attached to a lower surface of the pressing body, said pressing body being embraced between the locking elements of the base body, whereby optical fiber covers and optical fiber bodies are pressed against the base part by the optical fiber pressing part.

5,305,410

DIELECTRIC OPTICAL FIBER CABLES WHICH ARE MAGNETICALLY LOCATABLE

Candido J. Arroyo, Lithonia, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 2, 1993, Ser. No. 12,357

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—109 **11 Claims**

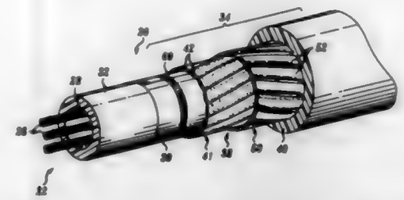
1. An optical fiber cable, which includes:

a core comprising at least one optical fiber transmission medium;

a tubular member in which is disposed said core and which is made of a plastic material;

a sheath system which is disposed about said tubular member; and

means disposed about said tubular member for blocking the longitudinal flow of water and including means of which the location can be detected magnetically therein and wherein the means of which the location can be detected



magnetically generates a detection signal which is distinguishable from that generated by a solid metallic pipe.

5,305,411

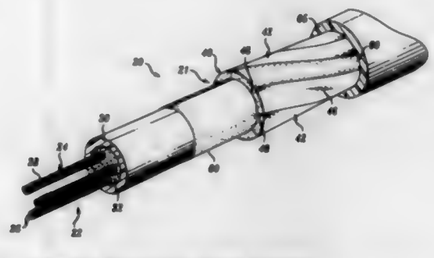
DIELECTRIC OPTICAL FIBER CABLES WHICH ARE MAGNETICALLY LOCATABLE

Candido J. Arroyo, Lithonia, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 26, 1993, Ser. No. 23,538

Int. Cl.[5] G02B *6/00, 6/44*

U.S. Cl. 385—109 **9 Claims**



1. An optical fiber cable, which includes:

a core comprising at least one optical fiber transmission medium;

a tubular member in which is disposed said core and which is made of a plastic material;

a sheath system which is disposed about said tubular member and includes a plurality of longitudinally extending strength members wherein at least one of the strength members is treated with a magnetically locatable material and wherein the magnetically locatable material generates a detection signal which is distinguishable from that generated by a solid metallic pipe.

5,305,412

SEMICONDUCTOR DIODE OPTICAL SWITCHING ARRAYS UTILIZING LOW-LOSS, PASSIVE WAVEGUIDES

Thomas L. Paoli, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,142

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—122 **24 Claims**

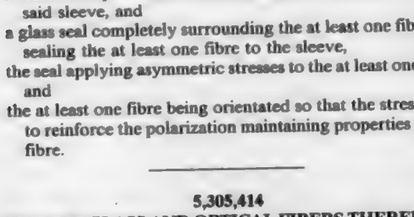
1. A semiconductor optical array comprising:

a monolithic semiconductor structure having a plurality of semiconductor heterostructure layers disposed over a substrate, at least one of said layers being an active layer for light amplification and propagation;

means, electrically coupled to said active layer, for applying an electrical forward bias to said active layer;

an input facet and an output facet disposed at opposing ends of said monolithic semiconductor structure, perpendicular to said plurality of semiconductor heterostructure layers and said active layer, said input facet receiving incident light waves and said output facet propagating transmitted light waves;

and a plurality of substantially parallel amplification waveguides, disposed in the active layer, with each of said



amplification waveguides having a predetermined width, and having a first end terminating at said input facet and a second end terminating at said output facet for generating and amplifying light waves at a given wavelength in response to said electrical forward bias.

5,305,413

OPTICAL FIBRE FEEDTHROUGH

Roger A. Payne, Felixstowe, England, assignor to BT & D Technologies Limited, Suffolk, United Kingdom

PCT No. PCT/GB91/00479, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/14958, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 28, 1991, Ser. No. 924,076

Claims priority, application United Kingdom, Mar. 29, 1990, 9007019

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—128 **10 Claims**

1. An optical fibre feedthrough assembly comprising:

a metallic sleeve,

at least one polarization maintaining fibre passing through said sleeve, and

a glass seal completely surrounding the at least one fibre and sealing the at least one fibre to the sleeve,

the seal applying asymmetric stresses to the at least one fibre, and

the at least one fibre being orientated so that the stresses act to reinforce the polarization maintaining properties of that fibre.

5,305,414

LOW LOSS GLASS AND OPTICAL FIBERS THEREFROM

Paige L. Higby, Burke; Ishwar D. Aggarwal, Fairfax Station, both of Va., and Edward J. Friebele, Cheverly, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 3, 1992, Ser. No. 923,450

Int. Cl.[5] G02B *5/14*

U.S. Cl. 385—142 **15 Claims**

1. An optical fiber comprising a cladding layer formed from a glass and a core disposed within said cladding layer, said core being made of a glass having an index of refraction that is higher than the index of refraction of said cladding layer; said cladding glass having a composition comprising barium oxide, gallium oxide, and germanium oxide; said core glass having a composition comprising barium oxide, gallium oxide, and germanium oxide; said barium oxide and said gallium oxide in said core glass composition having a molar ratio in the range of about 2:1 to about 1:1 with respect to each other and the amount of germanium oxide is in the range of about 65 to 90 mole percent, based on the total amount of barium oxide, gallium oxide and germanium oxide in said glass composition; said core having an optical loss that is lower than that of optical loss of a silica-based core; and said core having light transmission band that is wider than that of silica-based optical fibers.

5,305,415

ELECTRIC STEAM GENERATOR HAVING MOLDED PLASTIC LID AND BASE SECURED TOGETHER BY A SNAP-FIT CONNECTION ARRANGEMENT

Paul Stevens, Croydon, Great Britain, assignor to Earlex Limited, Godalming, England

PCT No. PCT/GB90/00431, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO90/13771, PCT Pub. Date Nov. 15, 1990

PCT Filed Mar. 21, 1990, Ser. No. 768,564

Claims priority, application United Kingdom, Apr. 29, 1989, 8909510

Int. Cl.[5] F22B *1/28, 37/04;* H05B *3/82*

U.S. Cl. 392—403 **23 Claims**

1. A steam generator for generating steam at a pressure greater than ambient atmospheric pressure, comprising:

a moulded plastic base (1) including a sidewall (36);

a moulded plastic lid (2);

the lid (2) and the base (1) defining between them a circumferential inter-engagement zone;

the lid (2) having at the inter-engagement zone at least one engagement member (24) with an engagement face (38) directed generally away form the base (1), when assembled thereto;

the base (1) having at the inter-engagement zone at least one engagement member (39) with an engagement face (40) directed generally away from the lid (2), when assembled thereto;

an electrical heating element (4) mounted in the base (1); and

an elastomeric sealing ring (29) arranged on assembly, around the circumferential inter-engagement zone, between the base (1) and the lid (2);

the lid-engagement and base engagement members (24, 39) engaging via their engagement faces (38, 40) with resilient deformation of either or both of the lid-engagement and base-engagement members (24, 39) on assembly of the lid (2) to the base (1) so as to compress the sealing ring (29) for sealing contact with both the base (1) and the lid (2), for containing steam in the generator at a pressure greater than an ambient atmospheric pressure; and

means (P, W) for providing the steam from the generator at

VOL 1161 ISS 3 APR 19 1994 UMI

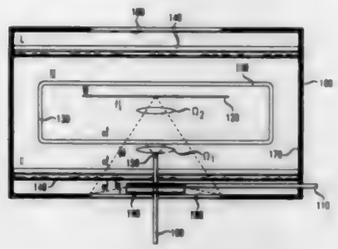
the pressure greater than the ambient atmospheric pressure.

5,305,416

SEMICONDUCTOR PROCESSING TECHNIQUE, INCLUDING PYROMETRIC MEASUREMENT OF RADIANTLY HEATED BODIES

Anthony T. Fiory, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 2, 1993, Ser. No. 42,028
Int. Cl.[5] G01J *5/10*
U.S. Cl. 392—416 **11 Claims**



1. A process for heating a body, comprising the steps of exposing the body to a controllable flux of electromagnetic radiation from at least one lamp energized by time-varying electric current, measuring the surface temperature of the body, and in response to the temperature measurement, controlling the flux of radiation, wherein the measuring step comprises:

a) collecting radiation emitted and reflected by the body in a first light-pipe probe and detecting said radiation, leading to a first probe signal denoted S_1;

b) collecting a portion of radiation propagating toward the body in a second light-pipe probe, said portion comprising radiation reflected from a diffusively reflective surface, and detecting said radiation, leading to a second probe signal denoted S_2;

c) determining magnitudes of time-varying components of S_1 and S_2, said magnitudes respectively denoted ΔS_1 and ΔS_2; and

d) mathematically combining S_1, S_2, ΔS_1, and ΔS_2 such that a surface temperature of the body is calculated, characterized in that:

e) in step (a), the first probe effectively samples radiation from an area of the body that subtends a solid angle Ω_1 at the first probe;

f) in step (b), the second probe effectively samples radiation from an area of the diffusively reflective surface that subtends a solid angle Ω_2 at the nearest surface of the body; and

g) Ω_2 is greater than or approximately equal to Ω_1.

5,305,417

APPARATUS AND METHOD FOR DETERMINING WAFER TEMPERATURE USING PYROMETRY

Habib N. Najm; Mehrdad M. Moslehi; Somnath Banerjee, and Lino A. Velo, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 26, 1993, Ser. No. 37,771
Int. Cl.[5] G01J *5/06*
U.S. Cl. 392—418 **23 Claims**

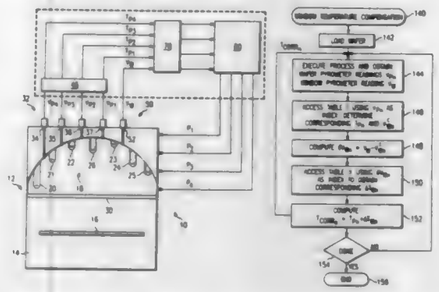
1. A method for controlling a RTP reactor, the RTP reactor having at least one heating element heating and processing a wafer through a window, and a wafer pyrometer assembly adapted for measuring the wafer temperature through the window and producing wafer pyrometer measurements, the method comprising the steps of:

mounting a window temperature sensor in said RTP reactor adapted for measuring the window temperature and producing window temperatures;

calibrating the wafer pyrometer assembly and producing wafer calibration data using a thermocouple wafer;

compiling a calibration table having wafer calibration data including window temperature error factors;

executing a predetermined wafer processing heating sequence for wafer processing;



collecting wafer pyrometer measurements and window temperatures;

computing a corrected wafer temperature by accessing data stored in said wafer pyrometer calibration table; and

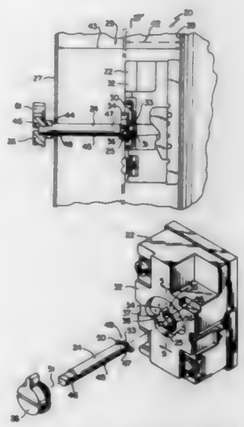
controlling said heating element in response to said computed corrected wafer temperature.

5,305,418

WATER HEATER TANK ARRANGEMENT CONTROL DEVICE AND SHAFT EXTENSION THEREFOR AND METHODS OF MAKING THE SAME

James R. Tuttle, Mission Viejo, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 720,226, Jun. 24, 1991, Pat. No. 5,159,658. This application Aug. 14, 1992, Ser. No. 930,750
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] H05B *1/02*; **F24H** *9/20*
U.S. Cl. 392—449 **12 Claims**



1. In the combination of a water heater tank having a heating means therefor, and a control device carried by said tank and having operating means to sense the temperature of said tank and to operate said heating means in relation to said sensed temperature and a selected temperature of said control device,

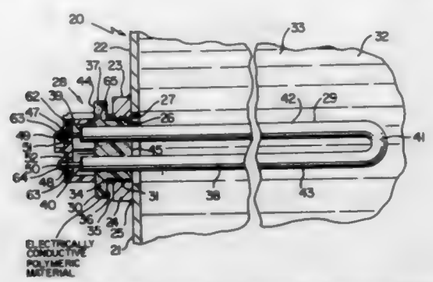
said control device having a housing means and having a temperature selector means rotatably carried by said housing means to set said selected temperature, said selector means comprising a first knob provided with a transverse slot means therein and being the part in some applications thereof that is manually grasped by an operator for setting said selected temperature, the improvement comprising a shaft extension having opposed ends one of which has drive means snap-fitted into said slot means so that said first knob is adapted to be rotated upon the turning of the other of said ends of said shaft extension, and a second knob secured to said other of said ends of said shaft extension.

5,305,419

HOT WATER TANK CONSTRUCTION, ELECTRICALLY OPERATED HEATING ELEMENT CONSTRUCTION THEREFOR AND METHODS OF MAKING THE SAME

Gary J. Cameron, Dayton, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 815,826, Dec. 30, 1991, Pat. No. 5,159,659, which is a division of Ser. No. 660,789, Feb. 26, 1991, Pat. No. 5,109,474. This application Sep. 14, 1992, Ser. No. 944,821
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] F24H *1/20*
U.S. Cl. 392—501 **3 Claims**



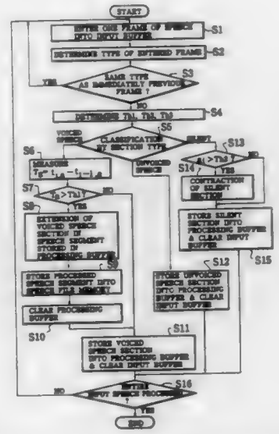
1. In a method of making an electrically operated heating element construction for a hot water tank that has an internally threaded opening means in a wall means thereof, said construction comprising a heating element and an externally threaded fitting for threading into said opening means of said tank, said heating element comprising an outer metallic tubular sheath and an inner conductive heater wire means insulated from said sheath, said fitting comprising polymeric material, said construction comprising electrical resistance means electrically interconnected to said sheath and being adapted to electrically interconnect said sheath to said wall means of said tank, said polymeric material comprising an electrically conductive polymeric material that also comprises said resistance means of said construction, the improvement comprising the step of molding said externally threaded fitting from said electrically conductive polymeric material directly onto a previously deformed section of said outer metallic tubular sheath of said heating element to mechanically interconnect said heating element to said fitting.

5,305,420

METHOD AND APPARATUS FOR HEARING ASSISTANCE WITH SPEECH SPEED CONTROL FUNCTION

Akira Nakamura; Ryou Ikezawa; Nobumasa Seiyama; Tohru Takagi, and Eiichi Miyasaka, all of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Japan

Filed Sep. 22, 1992, Ser. No. 950,411
Claims priority, application Japan, Sep. 25, 1991, 3-245960; Mar. 10, 1992, 4-051787
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.8 **17 Claims**



1. A method of hearing assistance, comprising the steps of:

dividing input speech into voiced speech sections, unvoiced speech sections, and silent sections;

subdividing each voiced speech section into pitch sub-sections according to pitch periods in said each voiced speech section;

extending/contracting each pitch sub-section of each voiced speech section by a first extension/contraction rate to obtain extended/contracted voiced speech sections;

extending/contracting each silent section by a second extension/contraction rate to obtain extended/contracted silent sections; and

combining the extended/contracted voiced speech sections, the unvoiced speech sections, and the extended/contracted silent sections, in an identical order as in the input speech, to obtain output speech which is easier to hear for a listener with a handicapped hearing ability.

5,305,421

LOW BIT RATE SPEECH CODING SYSTEM AND COMPRESSION

Kung-Pu Li, La Jolla, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 28, 1991, Ser. No. 750,981
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.28 **34 Claims**

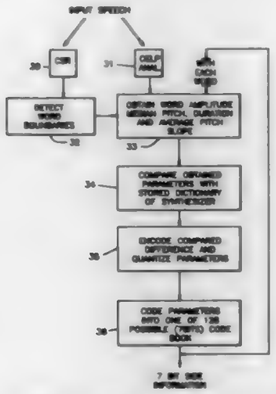
1. A speech coder apparatus for encoding input speech signals for transmission over a communication channel at bit rates of 100 bits per second or less, comprising:

transmitting means responsive to an input speech signal for providing a first and a second output signal for transmission, said transmitting means including:

continuous speech recognition means having a first output and a second output, said continuous speech recognition means having a memory for storing templates and means responsive to said stored templates to provide at an output, digital signals indicative of recognized words in said

input speech signal as those matching said stored templates with said digital signals providing said first output signal and providing at a second output a word end point signal wherein each of said recognized works in said input speech signal has a value of pitch, duration and amplitude; and

front end processing means having an input and an output, said front end processing means responsive to said input speech signal for providing at said output of said front end processing means, digitized speech samples during a given frame interval including side information encoding means responsive to said digitized speech samples and capable of determining value of pitch, duration and amplitude, said



side information encoding means having an input coupled to said second output of said continuous speech recognition means and operably responsive thereto, to provide at an output of said side information encoding means a signal indicative of at least the value of the pitch and duration for each word recognized by said continuous speech recognition means with said output of said side information encoding means providing said second output signal for transmission and wherein said side information encoding means includes means for comparing and determining differences of values of said pitch and duration of each recognized word with values of pitch and duration as stored in a memory associated therewith to provide an output parameter signal indicative of said differences.

5,305,422

METHOD FOR DETERMINING BOUNDARIES OF ISOLATED WORDS WITHIN A SPEECH SIGNAL

Jean-claude Junqua, Santa Barbara, Calif., assignor to Panasonic Technologies, Inc., Santa Barbara, Calif.

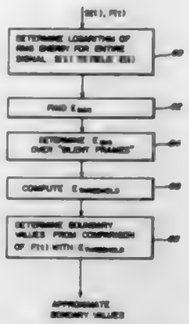
Filed Feb. 28, 1992, Ser. No. 843,013
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.62 **15 Claims**

1. A method for determining boundaries of words carried within a time-varying speech signal, said signal being representative of words separated by regions of relative silence, said method comprising the steps of:

determining a constant threshold value representative of an average of said signal within said regions of relative silence, said threshold value determined by calculating a maximum value, E_{max}, and an average value, E_{ave}, of the root-mean-square, RMS, energy contained within the signal;

determining a time-varying comparison signal representative of said signal biased to emphasize components of said signal having frequencies within a preselected frequency band, said comparison signal based upon a measurement of linear energy within said signal and a measurement of frequency of said signal;

comparing said time-varying comparison signal with said constant threshold value to determine first and last crossover times when said time varying comparison signal crosses said threshold value, said times representing



boundaries of said words for reliably locating the beginning and ending of said words within the speech signal;

determining an average level of noise in said signal; and

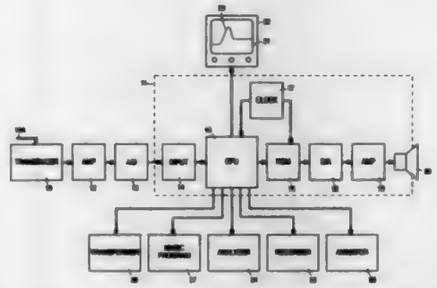
adjusting said boundaries by applying adjustment values, varying according to the average level of noise and the measurement of linear energy in said signal.

5,305,423

COMPUTERIZED SYSTEM FOR PRODUCING SENTIC CYCLES AND FOR GENERATING AND COMMUNICATING EMOTIONS

Manfred Clynes, 19181 Mesquite Ct., Sonoma, Calif. 95476

Continuation-in-part of Ser. No. 793,123, Nov. 18, 1991, which is a continuation-in-part of Ser. No. 787,254, Nov. 4, 1991, Pat. No. 5,195,895. This application Aug. 19, 1992, Ser. No. 931,963
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.67 **10 Claims**



1. A computer system in which the sounds of speech are stored and reproduced, the reproduced sounds being emotionally expressive, said system comprising:

(a) a computer provided with a memory in which the sounds are stored, and including means to reproduce the sounds;

(b) a set of sentograms stored in the computer having respective wave forms expressive of different emotions, each sentogram being derived through touch from an individual expressing a particular emotion; and

(c) means to amplitude modulate the sounds of speech to be reproduced in accordance with a dynamic function of the amplitude contour of a sentogram selected from the set to impart emotional expressivity thereto that reflects the emotion felt by the individual, said sounds being the sounds of speech messages stored in the computer, said

system including means to select a speech message to be reproduced.

5,305,424

DATA FORMING METHOD FOR A MULTI-STAGE FUZZY PROCESSING SYSTEM

Xiwen Ma; Hongmin Zhang, and Weidong Xu, all of Santa Clara, Calif., assignors to Apt Instruments (N.A.) Inc., Santa Clara, Calif.

Filed Jul. 26, 1990, Ser. No. 558,315
Int. Cl.[5] G05B *13/00*; G06F *9/44*
U.S. Cl. 395—51 **10 Claims**



6. A method of forming data supplied to a fuzzy processing system comprising a plurality of processing means arranged in a predetermined sequence in such a way that outputs of front-stage processing means are inputted to rear-stage processing means, comprising the steps of:

dividing each of a plurality of give fuzzy rules into unit rules;

rearranging the divided unit rules according to the sort of processing executed by the final stage processing means and, iteratively, according to the sort of processing executed by the processing means which is arranged one stage before the final stage, and repeating reversely toward the frontmost stage processing means until no rearranging operation is required.

5,305,425

METHOD OF AND APPARATUS FOR EVALUATING MEMBERSHIP FUNCTIONS OR RULES IN FUZZY REASONING SYSTEM

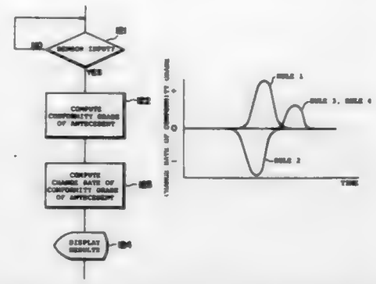
Tsutomu Ishida; Nobuo Tsuchiya; Kazuaki Shoji, and Nobutomo Matsunaga, all of Kyoto, Japan, assignors to Omron Corporation, Kyoto, Japan

PCT No. PCT/JP90/00480, § 371 Date Dec. 30, 1991, § 102(e) Date Dec. 30, 1991, PCT Pub. No. WO90/13082, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 9, 1990, Ser. No. 768,675
Claims priority, application Japan, Apr. 14, 1989, 1-93116; Apr. 14, 1989, 1-95588; May 10, 1989, 1-118072; Jun. 22, 1989, 1-160547; Jul. 12, 1989, 1-179418; Aug. 11, 1989, 1-209044; Sep. 8, 1989, 1-234454
Int. Cl.[5] G06F *9/44*; G05B *13/02*
U.S. Cl. 395—51 **13 Claims**

1. An apparatus for evaluating rules in a fuzzy reasoning system comprising:

means provided with a plurality of membership functions established for each of input variables of at least two kinds and a plurality of membership functions established for output variables of at least one kind for executing in response to an input value a fuzzy reasoning based on predetermined rules beforehand established;

means for determining, when an input value is supplied, an antecedent conformity grade of the input value and a change rate thereof; and



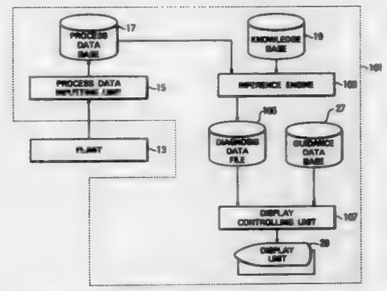
a display device for displaying the determined antecedent conformity grade and a change rate thereof for each of the rules.

5,305,426

PLANT OPERATION SUPPORT SYSTEM FOR DIAGNOSING MALFUNCTION OF PLANT

Fujiko Ushioda, Tokorozawa; Toshiko Adachi, Niiza, and Kazushi Yamamoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 14, 1992, Ser. No. 883,040
Claims priority, application Japan, May 15, 1991, 3-110015; May 12, 1992, 4-118966
Int. Cl.[5] G06F *15/20*; G21D *1/00*; G05B *23/02*
U.S. Cl. 395—61 **12 Claims**



1. A plant operation support system for diagnosing a malfunction in a plant and searching for a cause of the malfunction, the system comprising:

a knowledge base for storing diagnosis knowledge, said diagnosis knowledge including a fault tree representing a correlation among phenomenons appearing in said plant and information for determining whether or not an abnormality arises with respect to each of the phenomenons;

means for inputting process data from said plant;

an inference engine for calculating, based on said process data and said knowledge base, reliability of an appearance of at least one particular phenomenon causally related to the malfunction to be diagnosed, and determining whether said at least one particular phenomenon has appeared based on the calculated reliability; and

means for controlling a display unit to display an appeared phenomenon corresponding to said at least one particular phenomenon of which appearance has been determined by said inference engine.

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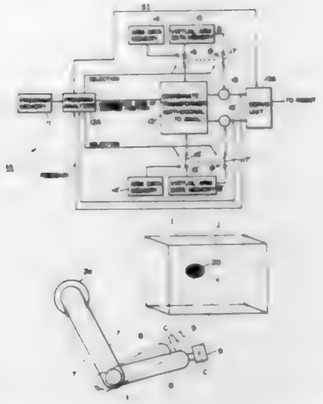
VOL 1161 ISS 3 AP 19 1994 UMI

5,305,427

ROBOT WITH VIRTUAL ARM POSITIONING BASED ON SENSED CAMERA IMAGE

Yasuyuki Nagata, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,773
Claims priority, application Japan, May 21, 1991, 3-144191
Int. Cl.[5] B25J *9/00*
U.S. Cl. 395—94 3 Claims



3. A robot numerical control apparatus for controlling the operation of a robot equipped with a camera on one of a plurality of arms thereof for sensing an image, comprising:

a memory for storing a program wherein instructions for operation of said robot are written;

a coordinate transformer for transforming coordinate data of a desired displacement position expressed by an orthogonal coordinate system to a coordinate value expressed by an axial coordinate system which represents a positional relationship between mutually adjacent arms and for outputting axial coordinate data;

a program analyzer for retrieving the program from said memory, for analyzing the program, and for supplying to said coordinate transformer the coordinate data of the desired displacement position with respect to either a manipulating end of the robot or the center of a sensed image;

an arm data memory for storing data relative to the respective lengths of said plurality of arms;

a virtual arm data memory for storing data representing the length of a virtual arm measured from the center of the sensed image to the center of articulation of the arm equipped with said camera, and also for storing data representing the value of a deviation angle formed by said virtual arm and said arm equipped with said camera;

an adder/subtractor for adding or subtracting the value of the deviation angle stored in said virtual arm data memory, to or from the axial coordinate data outputted from said coordinate transformer; and

a selector for selecting, in response to the coordinate data supplied from said program analyzer, either the content of said arm data memory or the content of said virtual arm data memory as the arm data to be supplied to said coordinate transformer;

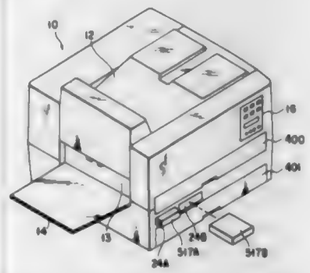
whereby, when said program analyzer receives a displacement command relative to the center of said sensed image, the content of said arm data memory is selected by said selector, and said virtual arm length data is supplied to said coordinate transformer, while said virtual arm deviation angle data is supplied to said adder/subtractor to control movement of the arm, thereby controlling the displacement of the image center with pseudo control in such a manner that the center of the sensed image is positioned at the manipulating end of said virtual arm.

5,305,428

IMAGE FORMING APPARATUS

Kimio Osawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1993, Ser. No. 32,684
Claims priority, application Japan, Mar. 26, 1992, 4-068664
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—110 6 Claims



1. An image forming apparatus for forming a character image corresponding to character data on an image bearing member, comprising:

means for receiving character code data from a host apparatus, the character code data defining the characters to be formed on the image bearing member;

first storing means, fixedly mounted in the image forming apparatus, for storing first font data representing a first expanding pattern in which the character code data is expanded to the character data;

second storing means, detachably mounted in the image forming apparatus, for storing second font data representing a second expanding pattern in which the character code data is expanded to the character data;

means for detecting that the second storing means is mounted in the image forming apparatus;

first selecting means for automatically selecting the second font data based on the detection of the detecting means;

second selecting means for selecting one of the first font data and the second font data irrespective of the selection by the first selecting means, the second selecting means being manually operable;

means for displaying at least one of the first and second font names so as to point out the font data selected by the first selecting means and the second selecting means, the first font name being the name of the first font data and the second font name being the name of the second font data;

means for expanding the character code data into the character data using one of the first font data and the second font data, selected by the first electing means and the second selecting means; and

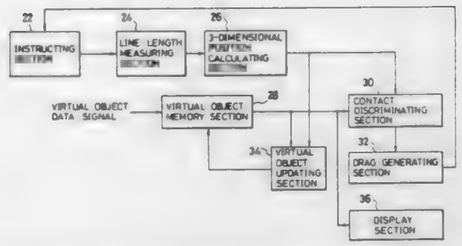
means for forming an image corresponding to the character data on the image bearing member.

5,305,429

INPUT APPARATUS USING THREE-DIMENSIONAL IMAGE

Makoto Sato, No. 4-30-42, Tsukushino, Machida-shi, Tokyo, and Yukihiro Hirata, Machida, both of Japan, assignors to Makoto Sato and Tokimec Inc., both of Tokyo, Japan

Filed Nov. 14, 1990, Ser. No. 613,982
Claims priority, application Japan, Nov. 30, 1989, 1-311127; Mar. 7, 1990, 2-56004
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—119 10 Claims



1. A three-dimensional input apparatus comprising:

an instructing means which positions an instruction point in a three-dimensional space and movably supports the instruction point in the three-dimensional space by a finger tip;

an instructing position measuring means for measuring a position of the instruction point;

a virtual object memory means for storing and outputting information of a virtual object which virtually exists in the three-dimensional space;

a contact discriminating means for determining whether or not the instruction point is virtually in contact with the virtual object in the three-dimensional space on the basis of the measured position of the instruction point which is output from the instructing position measuring means and the virtual object information which is output from the virtual object memory means; and

a drag generating means for selectively providing resistance to movement of the instruction point on the basis of a contact discrimination signal which is output from the contact discriminating means;

wherein the instructing means further independently movably positions an additional instruction point in the three-dimensional space and supports the additional instruction point by an additional finger tip.

5,305,430

OBJECT-LOCAL SAMPLING HISTORIES FOR EFFICIENT PATH TRACING

Andrew S. Glassner, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1990, Ser. No. 633,660
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—127 14 Claims

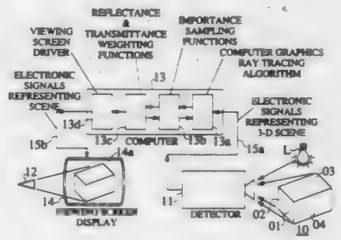
1. A method of randomly sampling information obtained from a ray tracing algorithm (13c), which algorithm creates a tree of rays extending from a viewing eye (12) to a first object region (O1) and from there to other object regions (O2, O3, O4) and to light sources (L, L1, L2) of a three-dimensional scene (10) for each pixel (16) of a plurality of pixels, in order to produce a brightness and color for each said pixel (16), in a system for producing a computer-generated two-dimensional synthetic image (14*a*) composed of said plurality of pixels, from said three-dimensional scene (10) said system having a detector (11), a computer (13) which implements said ray-tracing algorithm (13c) and a viewing screen (14) driven by said computer (13) to display said two-dimensional synthetic image (14*a*), comprising the steps of:

(a) providing said three-dimensional scene (10), said three-dimensional scene (10) containing at least one object (17), said object (17) having at least one surface (18), said three-dimensional scene (10) having a boundary;

(b) subdividing said surface (18) of said object (17) into a plurality of object regions (O1, O2, O3, O4);

(c) assigning to each one of said object regions (O1, O2, O3, O4) a hemisphere (30) centered on each one of said object regions (O1, O2, O3, O4), said hemisphere (30) subdivided into a plurality of sundry closed regions (32), each one of which said sundry closed regions (32) is a solid angle centered respectively on one of said object regions (O1, O2, O3, O4), each one of said sundry closed regions (32, 38) providing an equal amount of light intensity determined by a reflection function for each one of said object regions (O1, O2, O3, O4) which is a reflecting region, said light intensity determined by a transmission function for each one of said object regions (O1, O2, O3, O4) which is a transmitting region, and said light intensity determined by an emission function for each one of said object regions (O1, O2, O3, O4) which is an emitting region;

characterizing said plurality of sundry closed regions (32, 38) by an abstract data structure termed a pack, said pack having a plurality of elements each one of said plurality of elements corresponding to one of said sundry closed regions (32, 38) and representing an equally weighted but unequally distributed light ray (28); said plurality of elements being identified as unmarked elements (32*a*, 38*a*) and therefore being available for sampling, or marked elements (32*b*, 38*b*) and therefore being unavailable for sampling;



(d) sending a ray (E) from said viewing eye (12) through said pixel (16) to a strike location point (40) on said surface (18) of an ith object region (O1) of a plurality of object regions (O1, O2, O3, O4) as a first step in determining which ray (R1, T1, S1) will strike other object regions and light sources (L1, L2): then

interrogating an ith object region (O1) of said plurality of object regions (O1, O2, O3, O4), said ith object region (O1) having been characterized by a said pack, where said interrogation includes:

asking said ith object region (O1) for one of said unmarked elements (32*a*, 38*a*) from said pack characterizing said ith object region (O1);

marking said one of said unmarked elements (32*a*, 38*a*), but if every one of said elements of said pack is already marked, then

unmarking every one of said marked elements (32*b*), and randomly choosing and marking one of said unmarked elements (32*a*) making it a chosen and marked element (32*b*);

(e) sending a ray (R1) from said ith object region (O1) to a jth object region (O4), an origin and direction of said ray (R1) determined by said chosen and marked element (32*b*) from said pack which characterizes said ith object region (O1), but if said ray (R1) does not extend toward said jth object region (O4), then sending said ray (R1) from said ith object region (O1) to said boundary of said scene (10);

(f) repeating steps (d) and (e) for each said pixel (16) in said two-dimensional image (14*a*) and until an arbitrary inter-

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rogation threshold of ray (R1) distribution has been reached and said tree of rays of light reflection and transmission is thereby completed; and

(g) summing together for each said pixel (16), spectral characteristics of each said ray (R1) resulting from steps (a) through (f) beginning with said jth object region (O4) and proceeding to said ith object region (O1) along said tree of rays of light reflections and transmissions:

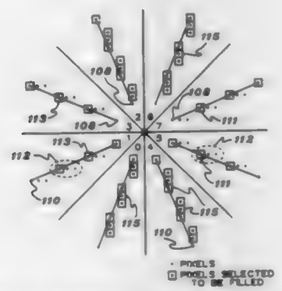
(h) whereby a brightness and a color are determined for each said pixel (16) of which said two-dimensional synthetic image (14a) is composed.

5,305,431

METHOD AND SYSTEM FOR RENDERING POLYGONS ON A RASTER DISPLAY

Michael P. Cyr; William F. Lawless, both of Red Hook, and Terrance L. Staley, II, Highland, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,735
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—143 **39 Claims**



1. A method for rendering a polygon outline in a graphics processor, said polygon outline comprising a plurality of lines, said method comprising the steps of:

(a) identifying each line to be rendered, each line comprising a number of pixels;

(b) determining a rendering direction and an octant position for each line;

(c) using a set of rules to determine a value for each pixel, said set of rules comprising:

setting said value to a first value when said pixel is a first pixel of one of said lines and said rendering direction of said line is positive;

setting said value to said first value when said pixel is a last pixel of said line and said rendering direction is negative;

setting said value to a second value when one of a plurality of conditions exists, said plurality of conditions comprising a center of said pixel lies on said line, said pixel is a first pixel of a horizontal group of pixels of said line and said line is positioned in one of a fifth and a seventh octant, and said pixel is a last pixel of a horizontal group of pixels of said line and said line is positioned in one of a first and a third octant;

(d) for each pixel determining a current pixel value and exclusive ORing said current pixel value with said determined value of said pixel to determine a render value for said pixel; and

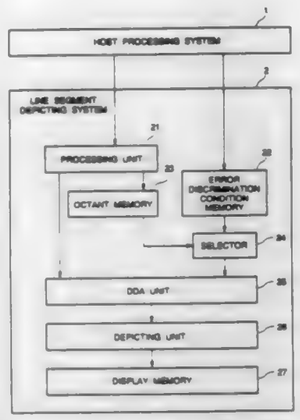
(e) writing each said render value to a buffer such that a polygon outline is rendered.

5,305,432

LINE SEGMENT DEPICTING SYSTEM FOR A DISPLAY IMAGE MEMORY

Kazuhiro Kubota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 939,509
Claims priority, application Japan, Sep. 4, 1991, 3-223245
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—143 **5 Claims**



1. A line segment depicting system comprises:

a display memory including a number of memory cells for storing image information corresponding to, in one-to-one relation, discrete coordinate points (X_N, Y_N) positioned at equal intervals on a two-dimensional plane;

a depicting unit for reading and writing memory cells at any location in said display memory, said depicting unit capable of designating a position in the memory cell to be read or written by using said discrete coordinate points (X_N, Y_N);

a data processing unit receiving from a data processing system a start point coordinate and an end point coordinate for defining a line segment on said two-dimensional plane, said data processing unit generating a Digital Differential Analyzer (DDA) parameter and determining in which of at least partial areas a directional vector of said line segment is included, said at least partial areas being obtained by dividing said two-dimensional plane by at least one straight line passing through an origin of said two-dimensional plane;

an error discrimination condition memory for storing one of first and second error discrimination conditions in such a manner that one error discrimination condition is stored for each one of said at least two partial areas, said first error discrimination condition being that when a DDA error item is not less than 0.5, a carry-up is performed, and said second error discrimination condition being that when the DDA error item is greater than 0.5, a carry-up is performed, said error discrimination condition memory being set by said data processing system;

a partial area memory connected to said data processing unit for storing a partial area which is determined by said data processing unit and in which the directional vector of said line segment is included;

a selector controlled by an output of said partial area memory so as to select one of a plurality of error discrimination conditions stored in said error discrimination condition memory; and

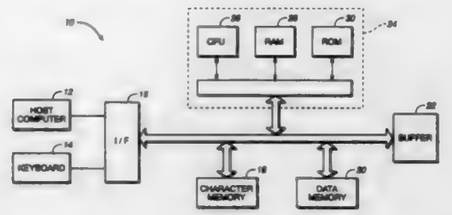
a DDA unit receiving said DDA parameter generated by said data processing unit so as to sequentially calculate a coordinate (Xn, Yn) of each dot position of an approximate line segment on a discrete coordinate system, said DDA unit determining the coordinate (Xn, Yn) of the dot position in accordance with the error discrimination condition supplied through said selector when the DDA error item becomes 0.5.

5,305,433

METHOD AND SYSTEM FOR GENERATING CHARACTERS WITH COMPACT CHARACTER DATA

Shoji Ohno, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 28, 1990, Ser. No. 590,258
Claims priority, application Japan, Sep. 29, 1989, 1-253871; May 25, 1990, 2-135862
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—150 **30 Claims**



1. A character generating system, comprising:

memory means including first and second regions each region having a plurality of sections, each section of said first region including:

a first part for storing a basic character code associated with a corresponding basic element, and

a second part for storing basic element data associated with the corresponding basic element, the basic element data including a plurality of stroke data sets, each stroke data set associated with a corresponding stroke of the corresponding basic element and including coordinate data and associated local border data relative to a local reference point, the coordinate data including coordinates for a starting point, one or more middle points for a bending stroke, and an ending point of a baseline that substantially runs through the centerline of the corresponding stroke, each middle point corresponding to a point at a bending portion of the baseline between the starting and ending points, the local border data including a plurality of groups of coordinates for a plurality of groups of points, each group of points surrounding one of the starting, middle, and ending points of the baseline and forming a portion of the contour of the corresponding stroke;

each section of said second region including:

a first part for storing a compound character code associated with a corresponding compound character, and

a second part for storing compound character data associated with the corresponding compound character, the compound character data including a plurality of constituent data sets, each constituent data set associated with the corresponding constituent basic element of the corresponding compound character and including a basic element pointer for referencing to basic element data associated with the corresponding constituent basic element in said first region, magnification data for adjusting the size of the corresponding constituent basic element and position data for specifying the position of the corresponding constituent basic element in the compound character;

means for receiving an externally input character code associated with a particular character;

means, responsive to said receiving means, for determining whether the input character code is a basic character code;

means, responsive to said determining means, for retrieving basic element data corresponding to the input character code from said first region if the input character code is a basic character code and, if the input character code is not a basic character code, for retrieving compound character data corresponding to the input character code from said second region for retrieving basic element data associated with constituent basic elements of the particular character from said first region using associated basic element pointers in the retrieved compound character data;

means, responsive to said retrieving means, for adjusting the retrieved basic element data using associated magnification data in the retrieved compound character data for reshaping the constituent basic elements if the input character code is not a basic character code;

means, responsive to said adjusting means, for modifying the adjusted basic element data using associated position data in the retrieved compound character data for positioning the constituent basic elements in the particular character;

means, responsive to said retrieving means and said modifying means, for generating contour data based on the retrieved basic element data for forming a contour of the particular character if the input character code is a basic character code and, if the input character code is not a basic character code, for generating contour data based on the modified adjusted basic element data for forming a contour of the particular character; and

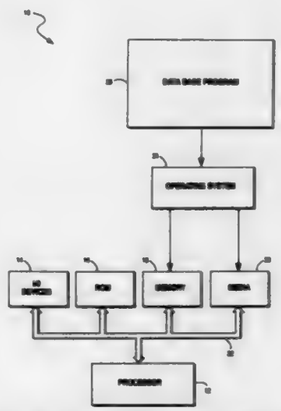
means, responsive to said contour data generating means, for generating bit data for filling in the contour of the particular character specified by the generated contour data.

5,305,434

SYSTEM AND METHOD FOR EXECUTING PANEL ACTIONS FROM PROCEDURES

David J. Ballard, Austin; Carrie J. Bracht; Gayle E. Fisher, both of Round Rock; Michael E. Payne, and Troy D. Spencer, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 421,482, Oct. 13, 1989, abandoned.
This application Mar. 30, 1992, Ser. No. 861,357
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—155 **9 Claims**



1. A method for sequencing actions within a panel in a computerized database, comprising the steps of

executing program code corresponding to a panel;

detecting a user-selected panel action for executing a procedure having an embedded panel action;

executing program code corresponding to said procedure until said embedded panel action is detected;

returning to said panel with said embedded panel action;

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executing program code corresponding to said embedded panel action; and

automatically returning to program code corresponding to execution of a procedure wherein said automatic execution of program code corresponding to said procedure is in response to detecting a pre-selected state of said panel from a plurality of states comprising

a. a first state when execution of program code corresponding to a panel set begins; and

b. a second state when execution of program code corresponding to a panel instance begins; and

c. a third state when said panel set is exited and further wherein said procedure includes looping logic statements causing automatic batch panel executions of program code corresponding to a plurality of said panels.

5,305,435

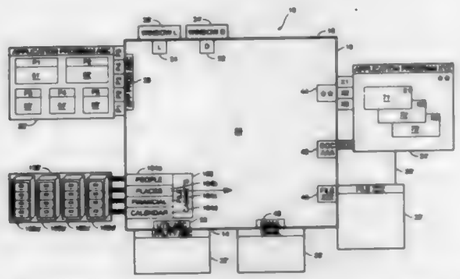
COMPUTER WINDOWS MANAGEMENT SYSTEM AND METHOD FOR SIMULATING OFF-SCREEN DOCUMENT STORAGE AND RETRIEVAL

Barry Bronson, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 554,237, Jul. 17, 1990, abandoned. This application May 7, 1993, Ser. No. 57,938

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—159 **10 Claims**



5. A method of managing computer windows for displaying stored data comprising:

providing a display screen having a plurality of window tabs for identifying computer windows, including a first window tab for identifying a first computer window, each window tab extending from a boundary of the display screen,

initiating an open command to open the first computer window for viewing stored data on the display screen, wherein initiating the open command includes directing a cursor to a window tab for identifying the first computer window, and

in response to the open command, simulating dragging a rectangular document from a non-displayed area completely beyond the boundary of the display screen without a user dragging the first computer window using a cursor device by displaying the first computer window on the display screen such that a first edge of the first computer window enters at a boundary of the display screen and moves in a direction away from the boundary of the display screen, while parallel second and third edges of the first computer window remain a fixed distance apart.

5,305,436

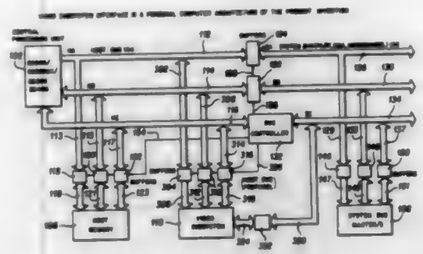
HOSE BUS VIDEO INTERFACE IN PERSONAL COMPUTERS

Kiran Mundkur, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 2, 1990, Ser. No. 502,821

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—162 **4 Claims**



1. A computer apparatus comprising:

(1) a CPU;

(2) a host bus connected to the CPU and the host bus having a host address bus, a host data bus, and a host control bus;

(3) a system bus connected to the host bus, the system bus comprising a system address bus connected to the host address bus by a first buffer, the system bus comprising a system data bus connected to the host control bus by a bus controller;

(4) a video subsystem having a video controller and a video memory; and

(5) a host bus video interface connecting the host bus to the video subsystem, the host bus video interface comprising a third buffer connecting the host address bus to the video subsystem and the third buffer is controlled by the bus controller, the host bus video interface comprising a fourth buffer connecting the host data bus to the video subsystem and the fourth buffer is controlled by the bus controller, the host bus video interface comprising a fifth buffer connecting the host control bus to the video subsystem and the fifth buffer is controlled by the bus controller, and the host bus video interface comprising a sixth buffer connecting the system control bus to said video subsystem.

5,305,437

GRAPHICAL SYSTEM DESCRIPTOR METHOD AND SYSTEM

Nathan K. Fritze, Boca Raton, and Mitchell E. Medford, Delray Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 3, 1991, Ser. No. 758,973

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **17 Claims**

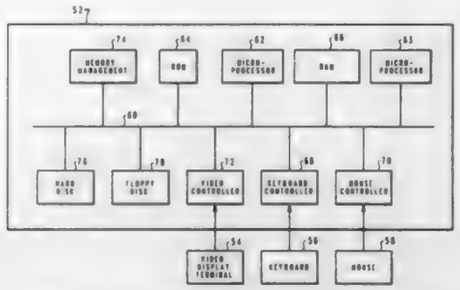
1. A graphical hardware description and testing interface for use with a data processing system comprising a plurality of components, said graphical hardware description and testing interface comprising:

polling means for polling a data processing system to obtain data to determine a configuration of said data processing system, including identification of said plurality of components;

data translation means, coupled to said polling means to receive data obtained by said polling means, for translating said data into a data format for display;

graphic display means for displaying a graphic depiction of said data processing system, including said plurality of components, in response to receiving data in a data format for display from said data translation means, wherein said graphic depiction illustrates a layout of said data processing system;

testing means for selectively testing a particular one of said plurality of components to determine if said particular one of said plurality of components is defective and generating an indication of a status of said particular one of said



plurality of components in response to a result from testing said particular one of said plurality of components; and

display control means coupled to said graphic display means for selectively altering said graphic depiction of said data processing system, including said plurality of components, in response to receiving said indication from said testing means.

5,305,438

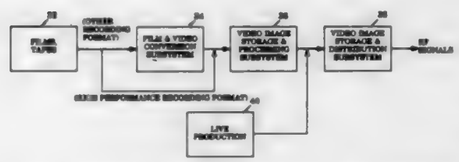
VIDEO STORAGE, PROCESSING, AND DISTRIBUTION SYSTEM USING RECORDING FORMAT INDEPENDENT HIERARCHICAL STORAGES AND PROCESSORS

Michael T. MacKay, Vallejo; Donald Morgan, Saratoga, both of Calif., and Matthew R. Adams, Boston, Mass., assignors to Sony Electronics Inc., Park Ridge, N.J.

Filed May 19, 1992, Ser. No. 885,502

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **16 Claims**



1. In a video image storage, processing, and distribution system, a method for processing video image data, said method comprising the steps of:

a) transferring said video image data from a high performance recording format video tape into a recording format independent hierarchy of storage;

b) accessing and processing selectively said video image data stored in said recording format independent hierarchy of storage, said selective processing comprising compressing said video image data with a bit reduction technique, and providing formatting data for said video data; and

c) outputting said processed video image data onto a compressed low bit rate data tape using an instrument data recorder having a recording format where formatting data is segregated from video data.

5,305,439

METHOD AND APPARATUS FOR TIME-SHARED PROCESSING OF DIFFERENT DATA WORD SEQUENCES

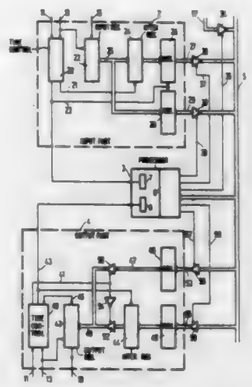
Peter Anders, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1990, Ser. No. 616,448

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1989, 3939072

Int. Cl.[5] G06F *7/00, 5/06*

U.S. Cl. 395—250 **25 Claims**



1. A method of providing time-shared processing of a first sequence of principal data words having a predetermined constant period and a second sequence of secondary data words having a second period which is longer than said predetermined constant period, processing time of each of the principal data words being shorter than said predetermined constant period, the method comprising the steps of:

storing principal data words of said first sequence in a memory;

reading-out and processing each of the principal data words stored in said memory, each of the principal data words stored in said memory being sequentially and immediately processed as it is read-out from said memory; and

processing at least one of the secondary data words when said memory is absent of any principal data words which have not yet been processed;

wherein there is continuous processing of the at least one of the secondary data words among principal data words.

5,305,440

FILE EXTENSION BY CLIENTS IN A DISTRIBUTED DATA PROCESSING SYSTEM

Stephen P. Morgan, Mahopac, N.Y., and Todd A. Smith, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 739,799, Aug. 1, 1991, abandoned, which is a continuation of Ser. No. 352,220, May 15, 1989, abandoned. This application Jun. 12, 1992, Ser. No. 898,234

Int. Cl.[5] G06F *13/14*

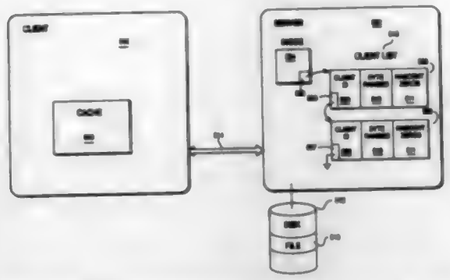
U.S. Cl. 395—200 **12 Claims**

1. A method for access to a range of bytes in a file residing at a server data processing system from at least one client data processing system, wherein said server data processing system and said at least one client data processing system are connected through a means of communication; said method comprising:

returning, by said server, a description of a range of presently unused bytes in said server, as determined by said server, in a replay to a request from one of said at least one

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client data processing systems for an operation to be performed by said server; and



granting, by said server, the client data processing system permission to use the described range of bytes.

5,305,441

DATA COMMUNICATION SYSTEM PRIORITIZING DATA TRANSFER OVER MICROCOMPUTER DATA INTERRUPT PROCESSING

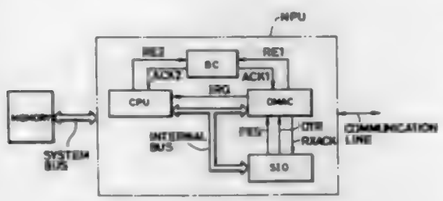
Toshio Okochi, and Takeshi Miyazaki, both of Ohme, Japan, assignors to Hitachi,Ltd., Tokyo, Japan

Continuation of Ser. No. 501,418, Mar. 28, 1990, Pat. No. 5,142,628, which is a continuation of Ser. No. 137,063, Dec. 23, 1987, abandoned. This application Mar. 24, 1992, Ser. No. 856,355

Claims priority, application Japan, Dec. 26, 1986, 61-308449

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **10 Claims**



1. A communication controller for use with:

a bus;

a bus controller;

a memory coupled to the bus for storing first data therein; and,

a microprocessor coupled to the memory and responsive to an interrupt request signal for providing a first bus request signal to the bus controller to process the first data stored in the memory,

the communication controller comprising:

serial communication means for receiving serial data in frame units, and including buffer memory means for storing parallel data corresponding to the received serial data therein, wherein the serial communication unit includes means for providing a data transfer request signal in response to reception of the serial data and means for providing a frame end signal in response to reception of each frame unit of the serial data;

data transfer means responsive to the data transfer request signal for providing a second bus request signal to the bus controller to transmit the parallel data stored in the buffer memory means to the memory via the bus, wherein said bus controller recognizes a priority of the second bus request signal being higher than that of the first bus request signal, the bus controller granting a bus mastership to the data transfer means over the microprocessor when the first and second bus request signals are simultaneously generated; and,

indication means, operatively associated with said data transfer means and said serial communication means, for indicating a count value using a plurality of bits corresponding to a number of frame units of the stored data to be processed by the microprocessor and for generating the interrupt request signal in response to a non-zero count value.

5,305,442

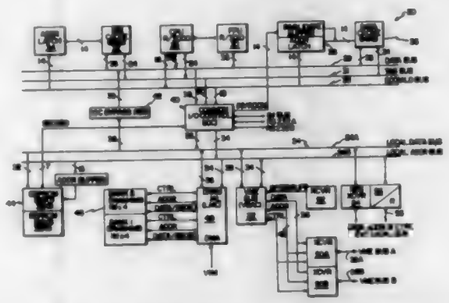
GENERALIZED HIERARCHICAL ARCHITECTURE FOR BUS ADAPTERS

Derald A. Pedersen, Apple Valley, and James A. Dahlberg, Eagan, both of Minn., assignors to Ceridian Corporation, Minneapolis, Minn.

Filed Mar. 27, 1992, Ser. No. 858,698

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—325 **12 Claims**



1. In a computer system having a system bus connected to a plurality of data processing platforms, each platform including a local bus and a plurality of data handling devices connected to the local bus to execute operations, each data handling device being capable of assuming at least a master state or a slave state, and each platform further including a bus adapter for transferring data between the local bus and the system bus in response to commands, the bus adapter assuming a selected one of at least a dispatch state, a master top state, and a slave top state, wherein the improvement comprises, at each platform, a top state controller for controlling the state of the bus adapter, the top state controller including:

means responsive to a command on the local bus or on the system bus during a dispatch state of the bus adapter for changing the state of the bus adapter to a selected master or slave top state, said bus adapter remaining in the selected top state until the command is completed or suspended, said bus adapter returning to the dispatch state upon completion or suspension of the command;

means for setting a first flag in response to a change of state of the bus adapter from a master top state to the dispatch state and to the suspension of a command by a data handling device connected to the local bus;

means for setting a second flag in response to a change of state of the bus adapter from a slave top state to the dispatch state and to the completion of an execution by the data handling device and to the set state of the first flag;

means responsive to the first flag to change the state of the bus adapter to that master top state from which the bus adapter changed to set the first flag and being responsive to the second flag to change the state of the bus adapter to that master top state from which the bus adapter changed to set the first flag; and

means responsive to the completion of a suspended command to clear the first flag and said second flag.

5,305,443

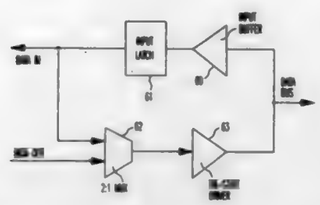
MICROPROCESSOR WITH LOW POWER BUS

Robert T. Franzo, Emmaus, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 668,550, Mar. 13, 1991. This application Jan. 22, 1993, Ser. No. 8,053

Int. Cl.[5] G06F *13/364, 1/32*

U.S. Cl. 395—325 **13 Claims**



1. An integrated circuit comprising:

a bus master including an output buffer for sending data signals, and an input buffer for receiving data signals, over a bus, and

means for requesting data to be sent over said bus, from an external device and means for receiving acknowledgement of the receipt of data sent over said bus from said external device;

characterized in that said integrated circuit further comprises means for maintaining in a valid logic state on said bus the last-received data, when said integrated circuit receives the acknowledgement of the receipt of said last-received data and no further bus requests have been sent by said means for requesting data,

and further characterized in that said means for maintaining in a valid logic state on said bus the last-received data comprises a multiplexer responsive to said acknowledgement and said bus requests, and having first and second inputs for selectively coupling either a data out signal, or alternatively the output of said input buffer, to the input of said output buffer;

and wherein the output of said input buffer is directly connected to the second input of said multiplexer.

5,305,444

APPARATUS FOR INCREASING THE NUMBER OF HITS IN A TRANSLATION LOOKASIDE BUFFER INCLUDING INSTRUCTION ADDRESS LOOKASIDE REGISTER

Robert Becker, Shirley, and Peter Mehring, Wilmington, both of Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 21, 1990, Ser. No. 633,460

Int. Cl.[5] G06F *12/00, 12/10*

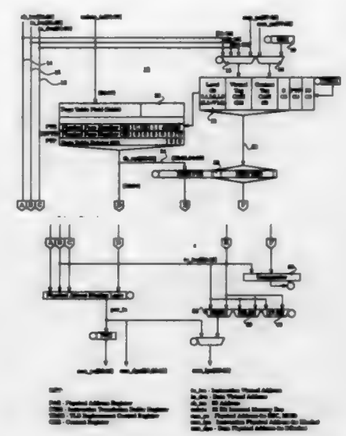
U.S. Cl. 395—400 **7 Claims**

1. A translation lookaside buffer for caching virtual addresses for data and instructions along with physical addresses associated with the virtual addresses wherein virtual addresses for instructions and data may appear substantially simultaneously and require translation into physical addresses, comprising:

a primary cache for storing a plurality of individual virtual addresses and associated physical addresses;

register means for storing a single instruction virtual address and its associated physical address each time an instruction virtual address and an associated physical address is referenced in the primary cache; and

determination means for ascertaining whether the single virtual address held in the register means is a virtual address sought when an attempt is made to access the primary cache for a physical address with two virtual addresses received at substantially the same time.



5,305,445

SYSTEM AND METHOD EMPLOYING EXTENDED MEMORY CAPACITY DETECTION

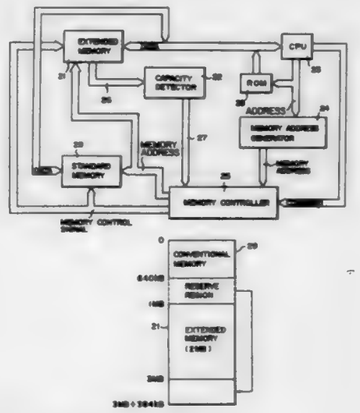
Hirofumi Nishikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 424,712, Oct. 20, 1989, abandoned. This application Dec. 1, 1992, Ser. No. 985,225

Claims priority, application Japan, Oct. 31, 1988, 63-275566

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—400 **15 Claims**



1. A memory system comprising:

a standard memory having a reserve region;

a memory slot means for receiving a memory;

capacity detection means, responsive to a signal from said memory slot means, for detecting a capacity of said memory received by said memory slot means, and for generating a capacity detection signals; and

memory control means, responsive to said capacity detection signal, for assigning said reserve region of said standard memory to an address region following an address

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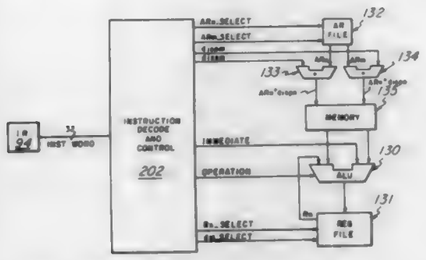
region of said memory received by said memory slot means.

5,305,446

PROCESSING DEVICES WITH IMPROVED ADDRESSING CAPABILITIES, SYSTEMS AND METHODS

Jerald G. Leach, Houston; Laureace R. Simar, Richmond; Alan L. Davis, Houston, and Reid E. Tatge, Richmond, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1990, Ser. No. 589,968
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 **22 Claims**



1. A data processing system comprising:
a data processing device including:
a memory having a plurality of addressable memory locations;
an arithmetic logic unit, connected to said memory, operative to perform an arithmetic operation on operands applied to said arithmetic logic unit;
a data register, connected to said arithmetic logic unit, operative to store a first operand for said arithmetic logic unit;
an instruction decode and control unit, connected to said memory and said arithmetic logic unit, having an instruction register operative to hold a program instruction, said instruction decode and control unit operative to decode the program instruction into control signals to control the operations of the data processing device and to identify at least two operands for said arithmetic logic unit according to sections of the program instruction wherein the sections include a register section selecting said data register for said first operand and an immediate data section containing a second operand;
a coprocessor, connected to said data processing device, operative to support operation of the data processing system; and
a peripheral device, connected to said coprocessor, operative to provide communication between said data processing system and another data processing system.

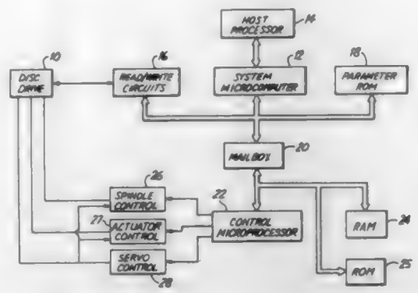
5,305,447

MULTI-TASK OPERATING SYSTEM FOR A DISC DRIVE

Randall D. Hampshire, Edmond, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 31, 1991, Ser. No. 738,584
Int. Cl.[5] G06F *13/10*
U.S. Cl. 395—425 **20 Claims**

8. A process for operating an actuator control process, a servo control process and a spindle control process in a disc drive wherein data are stored on a rotatable media and wherein data are read and written by a sensor in respect to the rotating media and wherein the actuator control process controls the position of the sensor with respect to the rotatable media and the servo control process performs functions in response to commands and the spin control process controls the spin speed of the rotatable media, the process comprising machine-executed steps of:
providing an interrupt; and



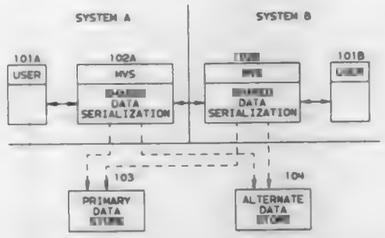
executing the actuator control process, servo control process and spin control process in consecutive order in response to the interrupt.

5,305,448

SHARED ACCESS SERIALIZATION FEATURING SECOND PROCESS LOCK STEAL AND SUBSEQUENT WRITE ACCESS DENIAL TO FIRST PROCESS

Joseph S. Insalaco, Pleasant Valley, and Michael D. Swanson, Poughkeepsie, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 548,516, Jul. 2, 1990, abandoned. This application Sep. 16, 1993, Ser. No. 122,620
Int. Cl.[5] G06F *13/00, 13/14*
U.S. Cl. 395—425 **11 Claims**



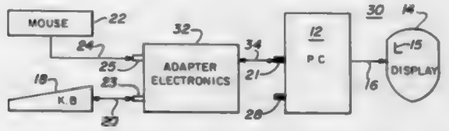
1. In a multi-system central electronic complex (CEC) comprising systems each having main storage, system resources, an operating system for managing said system resources, and shared data residing on external module, a method for controlling access to said shared data comprising the steps of:
A) placing a shared resource element of said shared data into a primary data store on the external media;
B) associating with said shared resource element access control information on said primary data store, said access control information comprising lock blocks, each of the lock blocks being uniquely associated with one of the systems;
C) in response to a first Read Serialized access request by a first process on a first system, granting to said first process, by means of an exclusive access control method utilizing said access control information on said primary data store, exclusive access to the shared resource element in said primary data store and reading said shared resource element into the main storage;
D) modifying, by said first process, said shared resource element in the main storage;
E) in response to a second Read Serialized across request for the shared resource element by a second process on a second system, said exclusive access control method recognizing ownership of said shared resource element by said first system, and recording said second Real Serialized access request in said access control information;
F) determining, by an excessive wait detection method that the wait by said second process for the shared resource element has been excessive and passing exclusive control of the resource to said second system by a lock-stealing method, said lock-stealing method comprising the step of modifying said access control information on said primary data store to reflect said lock stealing;
G) in response to a Write Serialized access request for the shared resource element by the first process, to write back said source element as modified, said exclusive access control method recognizing said modifying of said access control information on said primary data store, and rejecting said Write Serialized access request.

5,305,449

KEYCODE/POINTING DEVICE CONVERSION ADAPTER WHICH CONVERTS MOUSE MOTION SIGNALS INTO CURSOR SIGNALS BY ACTIVATING KEYBOARD CURSOR KEYS

Jonas Ulenas, Dix Hills, N.Y., assignor to Vetra Systems Corporation, Plainview, N.Y.

Filed Nov. 16, 1990, Ser. No. 614,640
Int. Cl.[5] G06F *3/033*
U.S. Cl. 395—500 **6 Claims**



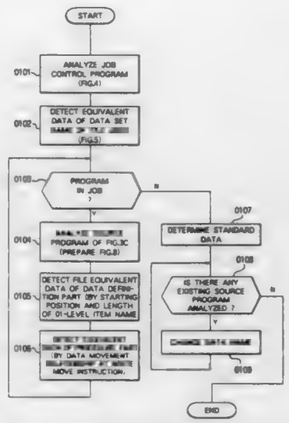
1. A computer system having a display device with a cursor separately movable with either keyboard or pointing device key code signals, the system comprising:
an electronic signal input terminal on the computer for normally receiving only keyboard cursor key code signals that move the cursor;
a keyboard having keys thereon including cursor keys for generating key code signals when actuated;
a pointing device for generating signals representing motion of the pointing device in orthogonal planes;
adapter electronics coupled to the keyboard for receiving the keyboard key code signals and to the pointing device for converting only the pointing device signals into cursor code signals corresponding to the cursor key code signals generated by activating cursor keys on the keyboard; and
means in the adapter electronics for alternatively coupling the converted pointing device cursor code signals and the keyboard key code signals to the computer electronic signal input terminal such that movement of the cursor on the display may be controlled from either the keyboard or the pointing device through the computer electronic signal input terminal.

5,305,450

METHOD OF SOFTWARE STANDARDIZATION BY UNIFYING AND STANDARDIZING THE NAMES AND ATTRIBUTES OF DATA ITEMS IN DEVELOPED SOFTWARE

Ichiro Naito, Tokyo; Hirofumi Danno, Yokohama, and Kenichi Ohta, Kiyose, all of Japan, assignors to Hitachi Ltd. and Hitachi Microcomputer System Ltd., Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,920
Claims priority, application Japan, Apr. 12, 1990, 2-097076
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—500 **20 Claims**



1. A method of standardization of data items in an existing software program comprising the steps of:
detecting a set of data items having a data transfer relationship with each other as a set of mutually equivalent data items by analyzing said existing software program and checking each data transfer relationship of instructions in the existing software program;
analyzing data definition information of the existing software program, calculating physical relative memory positions of said set of mutually equivalent data items, detecting second data items sharing the same physical memory position as the set of mutually equivalent data items, and including such second data items in the set of mutually equivalent data items;
determining a name and attribute of a first standard data item for the set of equivalent data items; and,
changing the points of use and definition of each data item belonging to the set of equivalent data items in the existing software to the name and attribute of the first standard data item thus determined.

5,305,451

SINGLE PHASE CLOCK DISTRIBUTION CIRCUIT FOR PROVIDING CLOCK SIGNALS TO MULTIPLE CHIP INTEGRATED CIRCUIT SYSTEMS

Hu H. Chao, Pleasantville, N.Y.; Jung H. Chang, Saratoga, Calif., and Feng-Hsien W. Shih, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

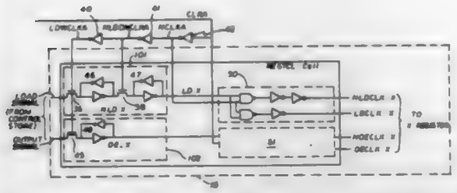
Filed Sep. 5, 1990, Ser. No. 578,035
Int. Cl.[5] G06F *1/04, 13/372;* **H03K** *17/687*
U.S. Cl. 395—550 **5 Claims**

1. A circuit for providing from a command clock signal a clocked LOAD ENABLE, and OUTPUT ENABLE signal all having a predetermined time difference comprising:
first, second and third serially connected inverter circuits for generating from said clock signal first, second and third delayed clock signals;

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first and second gate transistors serially connected together by a first pair of parallel connected inverter circuits, said first gate transistor connected to pass a LOAD signal in response to said third delayed clock signal, said second gate transistor being enabled in response to said second delayed signal;

a third gate transistor connected to pass an OUTPUT signal in response to said third delayed clock signal; and,



a register cell for generating complementary LOAD and ENABLE signals from said first delayed clock signal and said LOAD signal from said second gate transistor, and for generating complementary OUTPUT ENABLE signals from said command clock and said OUTPUT signal from said third gate transistor.

5,305,452

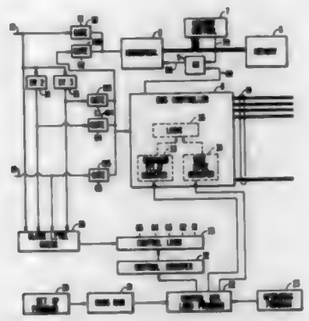
BUS CONTROLLER WITH DIFFERENT MICROPROCESSOR AND BUS CLOCKS AND EMULATION OF DIFFERENT MICROPROCESSOR COMMAND SEQUENCES

Rashid N. Khan, San Jose; Robert W. Catlin, Santa Clara, and Jefferson E. Owen, Fremont, all of Calif., assignors to Chips and Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 112,962, Oct. 23, 1987, abandoned. This application Oct. 15, 1990, Ser. No. 600,297

Int. Cl.[5] G06F *1/04*

U.S. Cl. 395—550 **9 Claims**



1. A bus controller for an I/O bus coupled to a microprocessor, comprising:

means for providing a bus controller clock signal having a different frequency from a clock for said microprocessor;

means for monitoring said I/O bus to detect and I/O signal from said microprocessor;

means responsive to a detected I/O signal from said microprocessor, for providing at least one command signal to said I/O bus, said command signal being synchronized with said bus controller clock signal;

means for determining completion of an I/O access using said bus controller clock signal; and

means for providing a ready signal to said microprocessor indicating completion of an I/O access, said ready signal being synchronized with said microprocessor clock.

5,305,453

PROCESS AND DEVICE FOR ADJUSTING CLOCK SIGNALS IN A SYNCHRONOUS SYSTEM

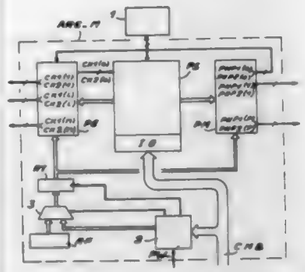
Jean-Marie Boudry, Maurepas, and Jacques Brinkuysen, Guyancourt, both of France, assignors to Bull S.A., Paris, France

Filed Aug. 28, 1991, Ser. No. 750,967

Claims priority, application France, Aug. 30, 1990, 90 10805

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—550 **15 Claims**



1. A process for adjusting clock signals in a synchronous system having at least a first unit and a second unit synchronized by the clock signals, said process comprising the steps of:

determining optimum values of digital adjustment parameters to confer reference characteristics on said clock signals prior to starting said synchronous system;

storing said digital adjustment parameters in a nonvolatile memory coupled to a first clock signal generator having an adjustment means;

furnishing said clock signals by said first clock signal generator from a basic clock signal provided from a basic clock signal generator to said first clock signal generator;

adjusting said clock signals using said adjustment means;

controlling said adjustment means using said digital adjustment parameters retrieved from said nonvolatile memory;

reading said nonvolatile memory wherein the step of reading said nonvolatile memory is carried out by a read circuit synchronized by at least one clock signal and wherein said step of reading said nonvolatile memory further includes the step of:

(a) detecting the existence of read errors;

wherein in response to no read errors being detected in said detecting step, said adjustment means is controlled directly by said digital adjustment parameters stored in said nonvolatile memory;

wherein in response to read errors being detected in said detecting step, said adjustment means is controlled by a modified value of said digital adjustment parameters; and

wherein a first reading of said nonvolatile memory is preceded by a step of controlling said adjustment means by an adjustment value having a value corresponding to an approximate value of said digital adjustment parameters.

5,305,454

NOTIFICATION OF EVENT HANDLERS IN BROADCAST OR PROPAGATION MODE BY EVENT MANAGEMENT SERVICES IN A COMPUTER SYSTEM

Stephen E. Record, Ridgefield, Conn.; Ann Marie Shepherd, Endwell, and Steven S. Shultz, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1991, Ser. No. 744,850

Int. Cl.[5] G06F *9/40, 9/44*

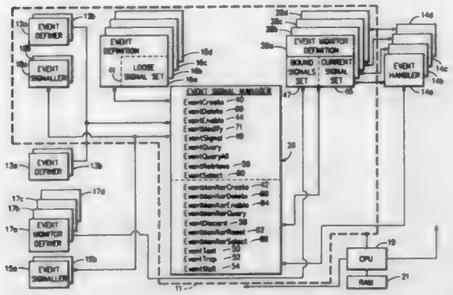
U.S. Cl. 395—650 **16 Claims**

1. A computer system for managing events, said system comprising:

means for defining a sequence in which a plurality of programs or parts of the same program can receive notification of an event;

means for notifying a first one of the programs or parts in the sequence of the occurrence of the event;

means for receiving an indication from said first program of part whether or not the event notification should be propagated to the next program or part in the sequence;



means for propagating the event notification to said next program or part in the sequence if the indication is to propagate the event notification; and

means for blocking propagation of the event notification to said next program or part in the sequence if the indication is not to propagate the event notification.

5,305,455

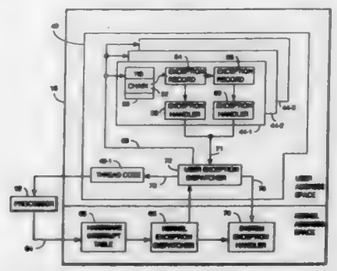
PER THREAD EXCEPTION MANAGEMENT FOR MULTITASKING MULTITHREADED OPERATING SYSTEM

Brigitte D. L. Anschuetz; Paul P. Giangarra; Jeffrey A. Grantz, all of Boca Raton; Michael S. Kogan, Delray Beach; Dean C. Oakes, Boynton Beach, all of Fla., and Steven M. Zanoni, Brookfield, Wis., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 21, 1990, Ser. No. 633,638

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—700 **3 Claims**



1. A multitasking data processing system comprising:

a memory system having an address space divided into a user address space (UAS) and a kernel address space (KAS);

a process stored in said UAS, said process owning system resources assigned to said process, said process comprising a plurality of threads, each thread being a dispatchable unit of work having access to said system resources owned by said process;

a multitasking operating system kernel stored in said KAS including means for handling user exception son a per thread basis;

a processor for selectively executing said process out of said UAS and for selectively executing said operating system out of said KAS, said processor being operative to notify said operating system when exceptions occur, which exceptions include an abnormal process termination exception arising during execution of one of said threads;

said operating system comprising a kernel exception dispatcher operative to receive exception notifications from said processor and, in response thereto, dispatch exceptions to said process;

a subsystem accessible during execution of another thread for performing a transaction for said another thread;

said process further comprising

a plurality of user defined handlers for handling exceptions caused by execution of respective ones of said threads, said user defined handlers including an abnormal process termination exception handler for handling said abnormal process termination for said another thread by completing said transaction prior to abnormal termination of said process, and

a user exception dispatcher for receiving exceptions dispatched from said kernel exception dispatcher and, in response thereto, selectively dispatching user defined handlers for handling exceptions dispatched thereto, said user exception dispatcher being operable, in response to receiving said abnormal process termination exception, to sequentially search through said plurality of user defined handlers for said plurality of threads to locate said abnormal process termination handler and to dispatch said abnormal process termination exception handler, prior to abnormal termination of said process.

5,305,456

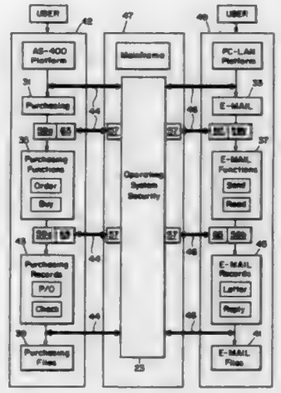
APPARATUS AND METHOD FOR COMPUTER SYSTEM INTEGRATED SECURITY

George A. Boitana, Jamaica Plain, Mass., assignor to Security Integration, Inc., Lexington, Mass.

Filed Oct. 11, 1991, Ser. No. 775,294

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—700 **14 Claims**



1. In an operating system of a computer for supporting execution of at least one application, each application having a respective application security means for controlling access of application specific functions and records, the operating system having an operating system security means separate from the each of the application security means, the improvement comprising a computer system security apparatus for bypassing the application security means and controlling access of each application and application-specific functions and records through the operating system security means.

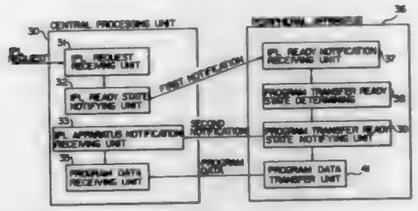
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5,305,457

SYSTEM FOR INITIAL PROGRAM LOADING RESPONDING TO NOTIFICATION FROM PROGRAM SUPPLY APPARATUS

Masatoshi Takida, Inagi; Satoru Kuwata, Kawasaki; Atsushi Yoshioka, Yokohama, and Yasuo Ogasawara, Zama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 658,394, Feb. 20, 1991, abandoned.
This application Jul. 28, 1993, Ser. No. 97,915
Claims priority, application Japan, Feb. 20, 1990, 2-39035
Int. Cl.[5] G06F *3/00, 15/20*
U.S. Cl. 395—700 **29 Claims**



1. An initial program loading (IPL) system for performing an initial program load operation in an information processing system, said IPL system comprising:

a plurality of peripheral apparatuses, each peripheral apparatus capable of transferring and loading program data in response to an IPL request input into said IPL system, and comprising:

IPL request receiving means for receiving said IPL request,

program transfer ready state notifying means for sending a notification that the peripheral apparatus holds the program data to be transferred and is ready to transfer the program data, and

program data transfer means for transferring the program data; and

a central processing unit connected to each of said peripheral apparatuses, receiving the notification and the program data from one of said peripheral apparatuses, and comprising:

a memory unit,

notification receiving means for receiving said notification from said program transfer ready state notifying means of the one of said peripheral apparatuses, informing said central processing unit that said one of the peripheral apparatuses is ready to transfer the program data, and

program data receiving means for receiving the program data transferred from said program data transfer means of said one of the peripheral apparatuses to be loaded into the memory unit of said central processing unit for performing the initial program load operation.

5,305,458

MULTIPLE VIRTUAL STORAGE SYSTEM AND ADDRESS CONTROL APPARATUS HAVING A DESIGNATION TABLE HOLDING DEVICE AND TRANSLATION BUFFER

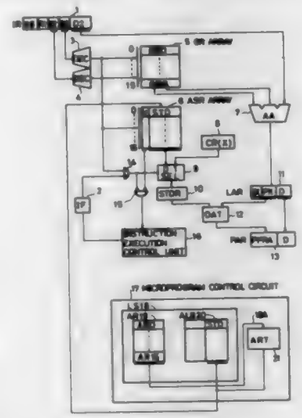
Yukihiro Motomura; Hideki Takeuchi; Hideo Sawamoto, all of Hadano, and Mari Ara, Yamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1990, Ser. No. 518,411
Claims priority, application Japan, May 2, 1989, 1-112967
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—725 **2 Claims**

1. A multiple virtual storage system having an address translator and a plurality of access registers corresponding to a plurality of general registers in a processor, wherein said multiple virtual storage system when any one of the general registers is designated by an instruction being executed by said processor, a logical address of an operand of the instruction is obtained by using a content of the designated one of the general registers while designating a virtual address space possessing the operand by a segment table designation obtained by translating a content of an access register corresponding to the designated one of the general registers according to a predetermined rule with a table in a main storage and the segment table designation and the logical address are translated into a real address by said address translator, said multiple virtual storage system comprising:

(a) access register translating means for translating a content of the access register to obtain the segment table designation;

(b) designation holding means for holding a plurality of pairs of data each having a segment table designation obtained



by said access register translating means and a valid bit indicating whether a respective segment table designation is valid or not, each pair of data corresponds to one of the general registers; and

(c) means for, at the time of an operand access attendant on executing an instruction, reading the content of said designation holding means corresponding to the general register, in parallel with reading a general register for calculating an address of the operand, supplying the segment table designation, along with the logical address, to the address translator if the read segment table designation is valid and performing, if the read segment table designation is invalid, the translating of the access register while deterring the execution of the instruction so that the segment table designation obtained by the translating is stored in said designation holding means to restart executing an instruction.

5,305,459

CIRCUIT FOR "WAKING UP" A MICROPROCESSOR POWER SUPPLY, IN PARTICULAR FOR AN ID CARD IN A CAR REMOTE CONTROL SYSTEM

Charles Rydel, Paris, France, assignor to Valeo Securite Habitacle, Croissy-sur-Seine, France

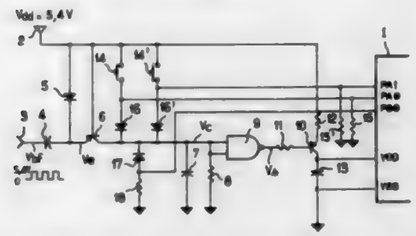
Continuation of Ser. No. 681,554, Apr. 5, 1991. This application Apr. 19, 1993, Ser. No. 49,632
Claims priority, application France, Apr. 6, 1990, 90 04427
Int. Cl.[5] G06F *1/32*
U.S. Cl. 395—750 **7 Claims**

1. In a portable card including a microprocessor, RF receiving means for receiving a RF signal for waking-up said microprocessor, said signal being transmitted by an on-board electronic module of an automotive vehicle adapted to control

given functions of said vehicle, RF transmitting means for transmitting to said electronic module an RF identification signal, and a low capacity battery for powering said portable card, a wake-up circuit for switching said microprocessor from a sleeping state to a woken-state, wherein said signal transmitted from said electronic module to said portable card comprises a given plural number of successive control pulses of given period, and wherein said circuit comprises:

converter means for outputting a variable electric signal, connected to said receiving means and including

means for increasing the level of said variable electric signal, different from said pulses, by a predetermined value from a reference level each time a first pulse is received by said circuit from said receiving means,



means for increasing the level of said variable electric signal by said predetermined value from its actual level each time a subsequent pulse is received by said circuit from said receiving means, and

means for gradually decreasing the level of said variale electric signal between the reception of two subsequent pulses, and

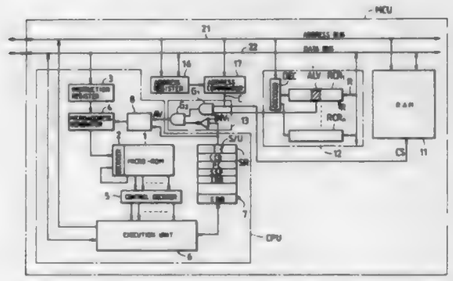
means for comparing the level of said variable electric signal with a predetermined threshold value and for producing a wake-up signal for said microprocessor only when said level has reached said threshold value, whereby said microprocessor is woken-up only when a given plural number of control pulses have been received and the frequency of said control pulses is not less than a predetermined frequency.

5,305,460

DATA PROCESSOR

Susumu Kaneko, Kodaira, and Keiichi Kurakazu, Tachikawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1988, Ser. No. 254,267
Claims priority, application Japan, Oct. 9, 1987, 255180
Int. Cl.[5] G06F *9/00, 12/14*
U.S. Cl. 395—775 **30 Claims**



1. A microcomputer formed on a single semiconductor chip comprising a central processing unit which operates in either a supervisor mode which is permitted to execute all instructions of the microcomputer or a user mode which is limited in the instructions it is permitted to execute, and which includes a status register having a bit for indicating the mode in which the central processing unit is operating, the microcomputer comprising:

memory means for storing data; and

a register having a bit for indicating whether the central processing unit can access the memory means in the user mode, the bit of the register being rewriteable by the central processing unit, when the central processing unit operates in the supervisor mode,

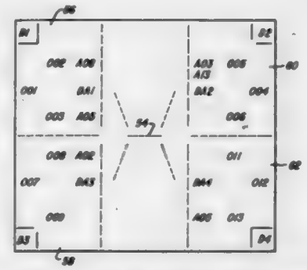
wherein the central processing unit is restricted from accessing the memory means when the bit of the status register indicates that the central processing unit is operating in the user mode, and the bit of the register indicates that the central processing unit is restricted from using the memory means in the user mode and wherein the central processing unit accesses the memory means regardless of the bit of the register when the bit of the status register indicates that the central processing unit is operating in the supervisor mode.

5,305,461

METHOD OF TRANSPARENTLY INTERCONNECTING MESSAGE PASSING SYSTEMS

Barry A. Feigenbaum; Mark A. Fiechtner, both of Boca Raton, and Darren M. Miclette, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1992, Ser. No. 862,912
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—775 **17 Claims**



1. A method of passing data between objects located distributed among a plurality of visual address spaces constituting domains established by processes executing on a data processing system, the method comprising the steps executed by the data processing system of:

broadcasting a session initiation message from a source object in a first domain to objects in the first domain;

responsive to receipt of the session initiation message by a domain agent of the first domain, forwarding the session initiation message from the domain agent for the first domain via a pipe or virtual device driver to a domain agent for a second domain;

responsive to receipt of the session initiation message by the domain agent for the second domain, transmitting the session initiation message from the domain agent for the second domain to an agent object of the source object in the second domain; and

responsive to receipt of the session initiation message by the agent object for the source object, establishing a session between the agent object for the source object and a target object for passage of data.

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5,305,462

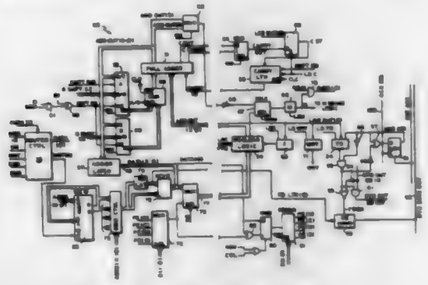
MECHANISM FOR BROADCASTING DATA IN A MASSIVELY PARALLELL ARRAY PROCESSING SYSTEM

Robert S. Grondalski, Maynard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 869,014, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 497,403, Mar. 21, 1990, abandoned, which is a division of Ser. No. 909,013, Sep. 18, 1986, Pat. No. 4,985,832. This application Jun. 3, 1993, Ser. No. 72,342

Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—800 18 Claims



1. An array processing system comprising:

a grid array of processing elements, each of which is surrounded by a group of nearest neighbor processing elements in the grid array, each of said processing elements comprising

an input multiplexer having a multiplexer output line and a plurality of multiplexer input lines each of which is connected to a different member of the group of nearest neighbor processing elements for that processing element;

a demultiplexer circuit having a first input line and a plurality of first output lines each of which is connected to a different member of the group of nearest neighbor processing elements for that processing element, said demultiplexer circuit comprising a control circuit that responds to a broadcast control signal by electrically coupling the output line of said input multiplexer of the same processing element to one or more of said first output lines to form a signal path from a selected one of the plurality of multiplexer input lines to said one or more first output lines, wherein said signal path is without any intermediate storage and/or latching devices that delay the propagation of a broadcast signal over said signal path from said selected one of the plurality of multiplexer input lines to said one or more first output lines.

5,305,463

NULL CONVENTION LOGIC SYSTEM

Karl M. Fant, and Scott A. Brandt, both of Minneapolis, Minn., assignors to Theseus Research, Minneapolis, Minn.

Continuation of Ser. No. 702,016, May 17, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 74,288

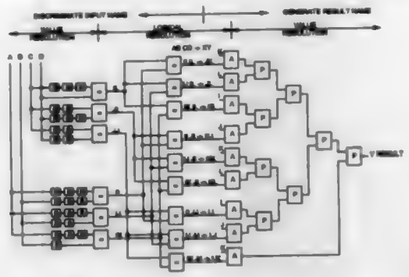
Int. Cl.[5] G06F *1/00*

U.S. Cl. 395—800 10 Claims

1. A logic system which is capable of logical expression, comprising processing members interconnected by transmission elements, processing members having two or more input and an output, the transmission elements transmitting allowed values from processing member outputs to processing member inputs, a processing member resolving at least two input allowed values to one result allowed value via a set of transfrom rules specifying a mapping for each combination of input allowed values to an output allowed value, allowed values including at least one data value and at least one non-data value, at least one-data value veing a NULL value, the set of transform rules further specifying that a processing member:

(1) switches its output allowed value to a different value when all of its presented input values is a valid combination of data values, or

(2) switches its output allowed value to a diffrent value



when all of its presented input values are NULL values, but

(3) does not switch its output allowed value to a different value when its presented input values are a mixture of NULL and data values.

5,305,464

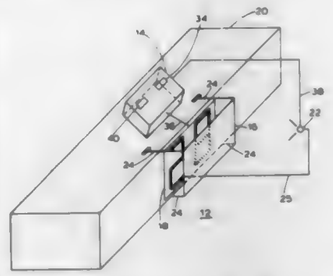
METHOD AND APPARATUS FOR DETERMINING CHANNEL TO WHICH A RECEIVER IS TUNED

Kenneth J. Frett, Crystal Beach, Fla., assignor to A. C. Nielsen Company, Northbrook, Ill.

Filed Apr. 6, 1992, Ser. No. 862,985

Int. Cl.[5] H04B *17/02;* H04N *7/10;* G09G *3/36*

U.S. Cl. 455—2 23 Claims



1. An apparatus for facilitating identification of a channel to which a receiver is tuned, said receiver having a light emitting display means for displaying a channel symbol related to the channel to which the receiver is tuned, said apparatus comprising:

panel means mounted adjacent said light emitting display means for selectably transmitting light from portions of said channel symbol displayed by said light emitting display means, said panel means being controllable such that selected panel portions of said panel means are rendered transparent or opaque;

light detecting means for detecting the light being emitted by said light emitting display means and being transmitted through said selected panel portions of said panel means that are rendered transparent; and,

control means associated with said panel means and coupled to the light detecting means for controlling said panel means to render said selected panel portions of said panel means transparent or opaque and responsive to the light detecting means for determining the channel symbol being displayed by the light emitting display means.

5,305,465

INTERFACE CHIP FOR COUPLING MODULATED SIGNALS

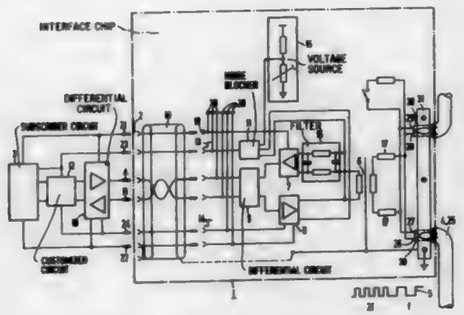
Werner Flach, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1990, Ser. No. 582,750

Claims priority, application European Pat. Off., Sep. 28, 1989, 89117970.7

Int. Cl.[5] H04H *1/00*

U.S. Cl. 455—6.1 17 Claims



1. An interface circuit for connecting a bus interface of a subscriber circuit to a two-wire line bus on which modulated signals are transmitted, said subscriber circuit further comprising a first differential amplifier and a customized circuit, the interface circuit comprising:

a transformer coupled to the two-wire line bus;

a transceiver coupled to said transform, said transceiver comprising a parallel connection including a receiver and a transmitter, said transmitter releasing the modulated signals to be transmitted to the bus in response to an enabling signal received from the first differential amplifier;

a second different amplifier coupled to said transceiver, said first and second differential amplifiers providing the modulated signals to said transmitter; and

a noise blocker transmitting, as a function of the level of the modulated signals, a blocking signal to the customized circuit of the subscriber circuit.

5,305,466

LOCATION REGISTRATION AND PAGING PROCEDURE FOR MOBILE COMMUNICATION

Masanori Taketugu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,474

Claims priority, application Japan, Feb. 20, 1990, 2-39076; Feb. 20, 1990, 2-39077; Apr. 16, 1990, 2-99662; Dec. 28, 1990, 2-416937; Dec. 28, 1990, 2-416938

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.1 10 Claims

8. A location registration information setting procedure for a mobile communication system comprising:

a plurality of radio zones defined by dividing a service area;

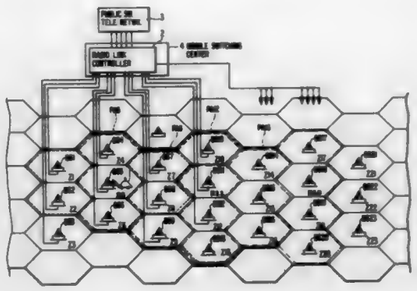
a plurality of radio base stations each being situated in a respective one of said radio zones;

a plurality of location areas each comprising a set of at least two of said radio zones among which a representative one of said radio zones is assigned as a reference radio zone; and

a plurality of mobile stations each movable in said service area, and communicable with any one of said radio base stations over a radio channel for registering a location of said mobile station corresponding to where said mobile station exist in one of said radio zones;

said radio base stations each comprising:

means for setting a set of identifiers of more than one radio zone including the reference radio zone where said radio base station is situated as location registration information; and



means for increasing and decreasing the number of radio zone identifiers included in said location registration information in response to the traffic of paging signals transmitted to said mobile stations in said reference radio zone.

5,305,467

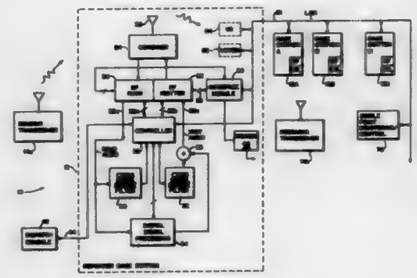
LOCAL AREA NETWORK FOR FLEXIBLE DIGITAL COMMUNICATIONS WITHIN AND BETWEEN RF BASE STATIONS

Charles C. Herndon, Forest; John R. Martin, Lynchburg; Rodney L. Nickel, Lynchburg; Daniel I. Schwed, Lynchburg, and Claude L. Vignali, Forest, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Dec. 3, 1990, Ser. No. 620,423

Int. Cl.[5] H04B *3/00*

U.S. Cl. 455—56.1 10 Claims



1. An RF base station system including:

a first RF base station including:

a first RF device, and

a first digital control means for controlling said first RF device: a further RF base station including:

a further RF device, and

a further digital control means for controlling said further RF device; and

a bidirectional multipurpose digital signal link providing communications between and within said first and further RF base stations, said link being coupled to each of said first RF device, said first digital control means, said further RF device, and said further digital control means, said link conveying digital control signals between said first digital control means and said first RF device, conveying digital control signals between said further RF

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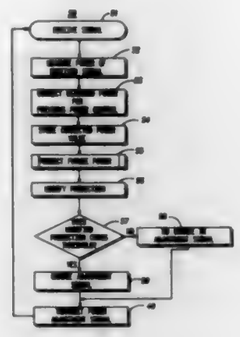
device and said further digital control means, and conveying digital signals between said first and further digital control means.

5,305,468

POWER CONTROL METHOD FOR USE IN A COMMUNICATION SYSTEM

Eugene J. Bruckert, Arlington Heights, Ill., and Fuyun Ling, Jamaica Plain, Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 18, 1992, Ser. No. 853,211
Int. Cl.[5] H04B 7/005
U.S. Cl. 455—69 **15 Claims**



1. In a communication system, a method for controlling a power output of a transceiver comprising the steps of:

receiving a signal at a control site from said transceiver;

measuring a power value of said signal;

determining a power adjustment command based upon said power value, a first previous power value, a power slope representing a change of said power value of said signal, and a change in power slope representing a rate of change of said power value of said transmitted signal; and

transmitting said power adjustment command to said transceiver.

5,305,469

MODEM FOR TELECOMMUNICATION SYSTEM WITH A REFLECTION AMPLIFIER FUNCTION

Marc Camiade, Antony; Pierre Quentin, Paris; Pierre Savary, Les Ulis, and Jean-Philippe Brandeau, Palaiseau, all of France, assignors to Thomson Composants Microondes, Puteaux, France

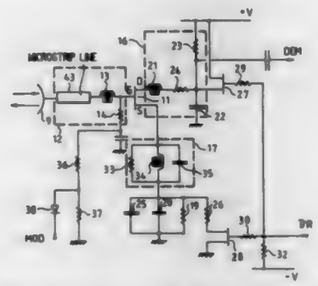
Filed Nov. 15, 1991, Ser. No. 792,911
Claims priority, application France, Nov. 16, 1990, 90 14292
Int. Cl.[5] H04B 1/44
U.S. Cl. 455—78 **6 Claims**

1. A modem for use in a system of data exchange by electromagnetic waves between a first antenna of a first fixed station, which transmits a pure carrier wave in a transmission phase and a modulated carrier wave in a reception phase, and a second antenna of at least one mobile station, the modem being located in the at least one mobile station and comprising:

at least one active circuit comprising:

a field-effect transistor;

a high impedance load connected to a drain of the field effect transistor and that can be switched over to a low impedance load by a first switching transistor;



a self-biasing circuit at a high impedance connected to a source of the field effect transistor, and that can be switched over to a low impedance by a second switching transistor; and

a negative voltage source connected to gates of the first and second switching transistors;

an information processing circuit further connected to the gates of the first and second switching transistors and to a gate of the field effect transistor, for outputting information signals on the gates of the field effect transistor and the first and second switching transistors.

DESIGN PATENTS

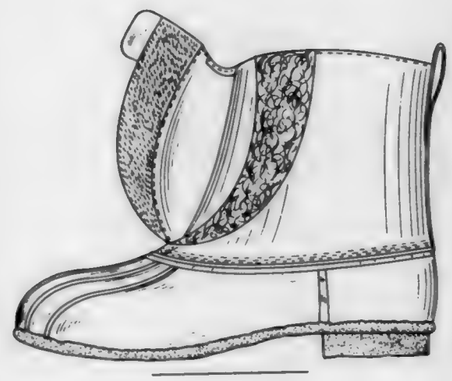
GRANTED APR. 19, 1994

ERRATA

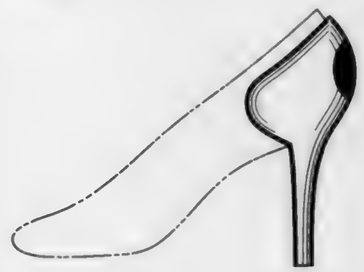
For CLASS	See PATENT NO.
012-416	D 346,066
003-263	D 346,262

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346,059
BOOT
Steven P. Schnee, 108 Silverwood Dr., Bozeman, Mont. 59715
Filed Sep. 22, 1992, Ser. No. 950,031
Term of patent 14 years
U.S. Cl. D2—911



346,060
SHOE HEEL COVER
Aaron J. Martinez, 1085 Lafayette Ave., McMinnville, Oreg. 97128
Filed Aug. 19, 1991, Ser. No. 747,916
Term of patent 14 years
U.S. Cl. D2—915



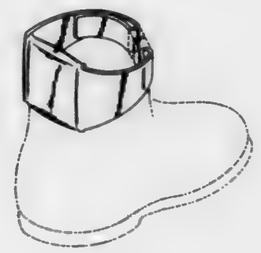
346,061
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,048
Term of patent 14 years
U.S. Cl. D2—969



346,062
SLIPPER WITH THERAPEUTIC PAD
Byron C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Randleman, N.C.
Filed Nov. 2, 1992, Ser. No. 1,001
Term of patent 14 years
U.S. Cl. D2—911

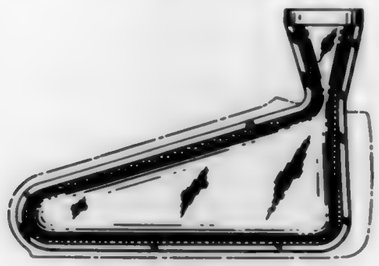


346,063
BOOT WARMER
Douglas R. Clark, and Michael E. Sunderland, both of Eugene, Oreg., assignors to Ski-Time Corporation, Eugene, Oreg.
Filed May 6, 1992, Ser. No. 880,341
Term of patent 14 years
U.S. Cl. D2—946

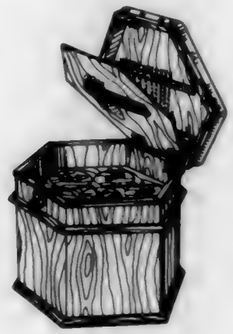


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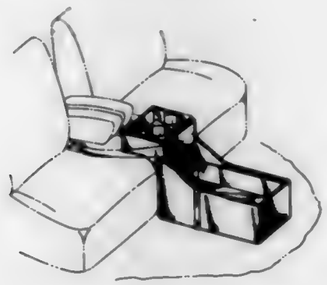
346,064
INFLATED SHOE STUFFING
Edward Markowitz, 277 Prospect Ave., Hackensack, N.J. 07602
Filed Mar. 23, 1992, Ser. No. 855,350
Term of patent 14 years
U.S. Cl. D2—979



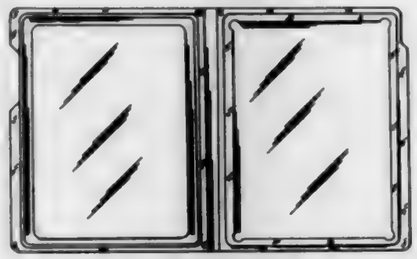
346,065
YARN STORAGE CABINET
George E. Rooks, 404 Washington St., Rochester, N.H. 03839
Filed Aug. 7, 1991, Ser. No. 745,085
Term of patent 14 years
U.S. Cl. D3—23



346,066
FLOOR TO SEAT VEHICLE CONSOLE
Daniel G. Smith, Arlington, Tex., assignor to Texas Saddlebags, Inc., Arlington, Tex.
Filed Oct. 8, 1992, Ser. No. 236
Term of patent 14 years
U.S. Cl. D12—416



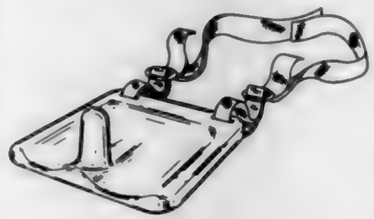
346,067
CARD CASE
Craig J. Bell, 27 Meadow Rd., E. Swanzey, Winchester, N.H. 03470, and Francis J. Cavallo, Cady La., Chesterfield, N.H. 03441
Filed Mar. 20, 1992, Ser. No. 854,457
Term of patent 14 years
U.S. Cl. D6—300



346,068
MIRROR
Winsor White, Chicago, Ill., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Aug. 14, 1990, Ser. No. 567,448
Term of patent 14 years
U.S. Cl. D6—309



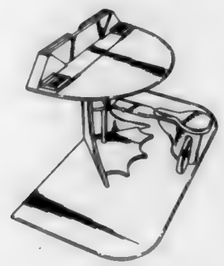
346,069
CHILD SADDLE SEAT
Clifford G. Schwenker, 2355 Flintlock Dr., Stone Mountain, Ga. 30087
Filed Nov. 25, 1991, Ser. No. 797,797
Term of patent 14 years
U.S. Cl. D6—333



346,070
CHAIR FOR A CHILD'S SEAT OR PUSHCART
Peter I. Kither, Ploegstraat 60, 1097 WJ Amsterdam, Netherlands
Filed Mar. 4, 1992, Ser. No. 846,399
Claims priority, application Netherlands, Sep. 5, 1991, 21722
Term of patent 14 years
U.S. Cl. D6—333



346,071
CHILD'S DESK
Stephen T. Sharar, 2401 Larkspur Dr., Johnson City, Tenn. 37604
Filed Nov. 10, 1992, Ser. No. 1,333
Term of patent 14 years
U.S. Cl. D6—338



346,072
ROLLING CHAIR
Otto W. Zapf, Herzog-Adolph-Strasse 5, D-6250 Königstein, Fed. Rep. of Germany
Filed Oct. 8, 1992, Ser. No. 267
Term of patent 14 years
U.S. Cl. D6—366

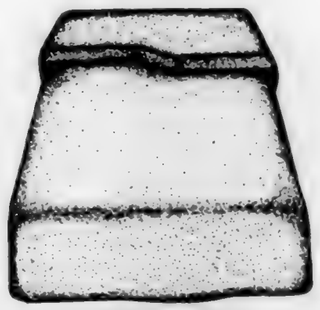


346,073
CHAIR
Krijn Hamelink, Amsterdam, Netherlands, assignor to Car Industrie B.V., KE Katwijk, Netherlands
Filed Feb. 18, 1992, Ser. No. 836,444
Term of patent 14 years
U.S. Cl. D6—373



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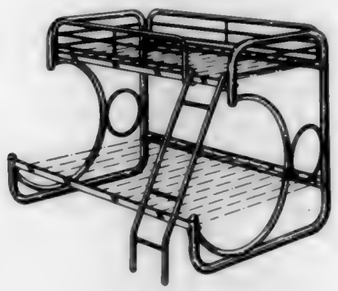
346,074
BEDSPREAD
Aaron L. White, P.O. Box 635, Southfield, Mich. 48037-0635
Filed Oct. 1, 1992, Ser. No. 91
Term of patent 14 years
U.S. Cl. D6—603



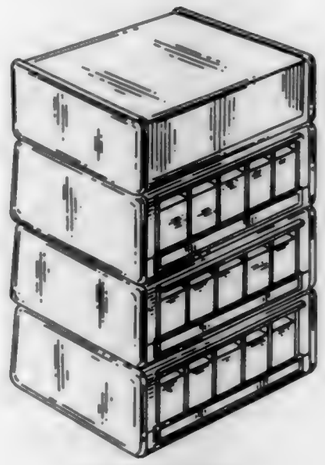
346,075
CHAIR
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company of Alabama, Inc., Birmingham, Ala.
Filed Oct. 6, 1992, Ser. No. 201
Term of patent 14 years
U.S. Cl. D6—376



346,076
BUNK BED
Jean Brunel, Montmagny, Canada, assignor to Amisco Industries Ltd., Quebec, Canada
Filed Apr. 8, 1992, Ser. No. 866,234
Term of patent 14 years
U.S. Cl. D6—394



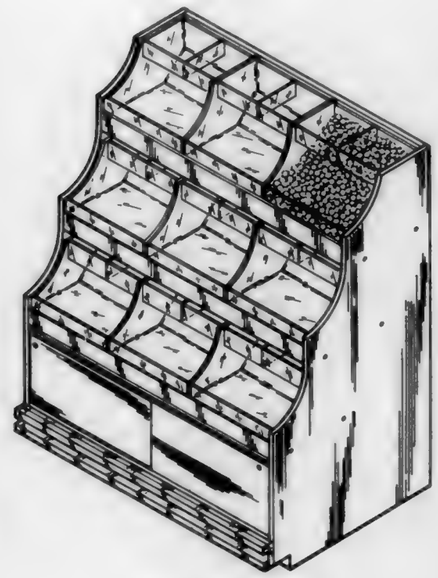
346,077
POINT OF PURCHASE DISPLAY CASE FOR PACKAGES OF CIGARETTES
Benjamin S. Weshler, Old Westbury, N.Y., assignor to Display Systems, Inc., Maspeth, N.N.Y.
Filed Sep. 30, 1991, Ser. No. 769,133
Term of patent 14 years
U.S. Cl. D6—408



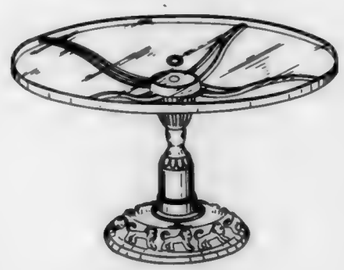
346,078
DESK AND HUTCH COMBINATION
Carl H. Schulman, San Diego, and Charles D. Anacker, La Mesa, both of Calif., assignors to Bush Industries, Inc., Jamestown, N.Y.
Division of Ser. No. 748,912, Aug. 23, 1991. This application Jul. 26, 1993, Ser. No. 11,074
Term of patent 14 years
U.S. Cl. D6—426



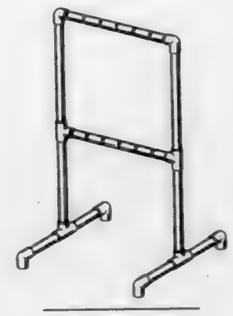
346,079
DISPLAY MERCHANDISING CABINET
Stephen A. Farber, Fishers, Ind., assignor to Golden Stream Quality Foods Co., Inc., Fishers, Ind.
Continuation-in-part of Ser. No. 648,382, Jan. 31, 1991, Pat. No. Des. 333,219. This application Apr. 8, 1991, Ser. No. 681,397
Term of patent 14 years
U.S. Cl. D6—437



346,080
PATIO TABLE
Jeffrey A. Weis, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 9, 1992, Ser. No. 277
Term of patent 14 years
U.S. Cl. D6—452



346,081
TUBULAR ART DRYING RACK
Mary E. Turner, 8534 Cedel, Houston, Tex. 77055
Filed Jun. 14, 1990, Ser. No. 538,191
Term of patent 14 years
U.S. Cl. D6—465



346,082
TABLE
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Nov. 18, 1992, Ser. No. 1,625
Term of patent 14 years
U.S. Cl. D6—484

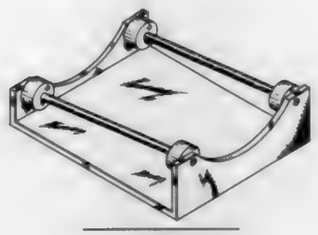


346,083
PEDESTAL OR SIMILAR ARTICLE
Raymond E. Bareiss, 311 E. Rianda Rd., Watsonville, Calif. 95076
Filed Feb. 22, 1990, Ser. No. 482,998
Term of patent 14 years
U.S. Cl. D6—495

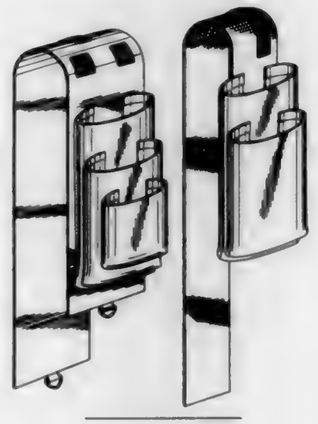


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346,084
RACK FOR ROTATING FLUID DISPENSING CONTAINERS
Louis C. Fioravanti, Jr., Schwenksville; Edward L. Lotz, Jr., North Wales; George F. Charles, Quakertown, and Francis T. Letterio, Kreugeville, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed Jun. 23, 1992, Ser. No. 904,525
Term of patent 14 years
U.S. Cl. D6—512



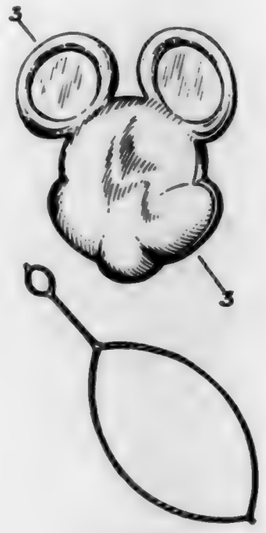
346,085
HOLDER FOR REMOTE CONTROLS
John P. Wagner, 1318 Seven Oakes Rd., Escondido, Calif. 92026
Filed Jan. 28, 1992, Ser. No. 827,816
Term of patent 14 years
U.S. Cl. D6—513



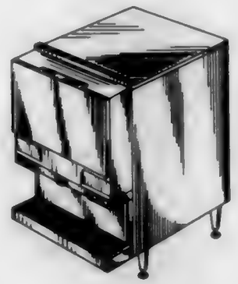
346,086
POCKETED PILLOW
Linda S. Jones, 5635 Mt. Burnside Way, Burke, Va. 22015
Filed Sep. 18, 1991, Ser. No. 761,629
Term of patent 14 years
U.S. Cl. D6—601



346,087
INFLATABLE CUSHION
Robt. W. VonHeck, 3350 Kurtz St., Pt. Loma, Calif. 92110
Filed Feb. 3, 1993, Ser. No. 4,377
Term of patent 14 years
U.S. Cl. D6—604



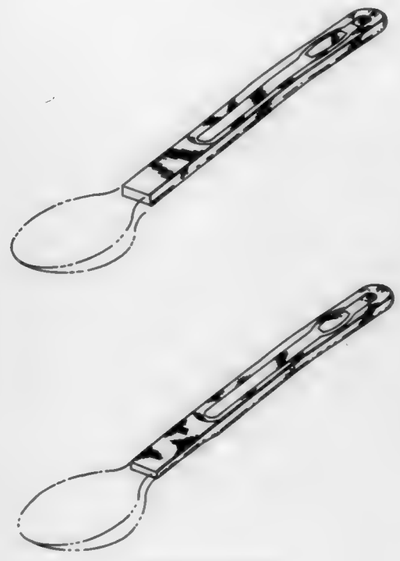
346,088
POSTMIX BEVERAGE DISPENSER
Alfred A. Schroeder, San Antonio, Tex., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed May 1, 1992, Ser. No. 877,589
Term of patent 14 years
U.S. Cl. D7—307



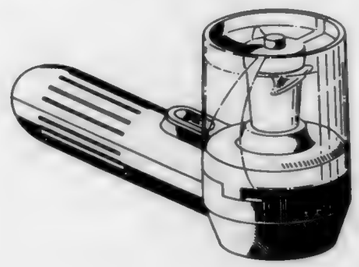
346,089
DECALCOMANIA FOR CHINA DINNERWARE
Michele M. Jaworski, New Castle, Pa., assignor to The Pfaltzgraff Co., York, Pa.
Filed May 14, 1992, Ser. No. 881,561
Term of patent 14 years
U.S. Cl. D7—396.5



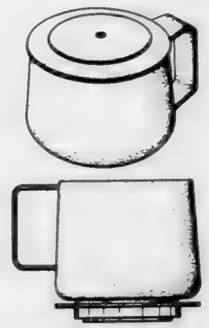
346,091
HANDLE FOR A KITCHEN UTENSIL
Andre Doxey, Shaker Heights, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 10, 1992, Ser. No. 818,966
Term of patent 14 years
U.S. Cl. D7—401.2



346,090
FOOD CHOPPER
John C. K. Sham, Rm. 1508, Block C, 19 Broadwood Rd., Hong Kong, and Yu S. Kwong, Flat H, 13/G, Hoi Ming Mansions, Riviera Garden, Tsuen Wan, N. T., both of Hong Kong
Filed Jun. 12, 1991, Ser. No. 714,047
Term of patent 14 years
U.S. Cl. D7—381

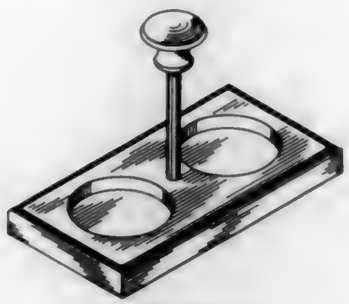


346,092
COMBINED INSULATED CONTAINER WITH COVER
Jack A. Van De Velde, Garderenstraat 22, 5043 NG Tilburg, Netherlands
Filed Jun. 12, 1992, Ser. No. 897,530
Term of patent 14 years
U.S. Cl. D7—538



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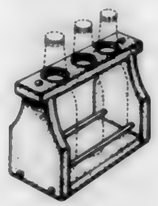
346,093
JAM CADDIE
Scott L Holson, R.R. #1, Box 432, Pittsford, Vt. 05763
Filed Sep. 8, 1992, Ser. No. 940,807
Term of patent 14 years
U.S. Cl. D7—600



346,094
BEVERAGE CAN INSULATOR
William J. Patterson, Burlington, Iowa, assignor to Flexible Industries Company, Burlington, Iowa
Filed Oct. 28, 1992, Ser. No. 881
Term of patent 14 years
U.S. Cl. D7—608



346,095
DISPLAY RACK FOR COMMEMORATIVE BEVERAGE CONTAINERS
Clarence W. Gower, 1604 Pinedale Dr., Raleigh, N.C. 27603
Filed Sep. 23, 1992, Ser. No. 949,122
Term of patent 14 years
U.S. Cl. D7—701



346,096
GARLIC PRESS
Dennis C. L. Wong, Kowloon, Hong Kong, assignor to Maxpat Trading & Marketing (Far East) Limited, Hong Kong, Hong Kong
Filed Jul. 14, 1992, Ser. No. 913,076
Claims priority, application United Kingdom, Jan. 31, 1992, 2020640
Term of patent 14 years
U.S. Cl. D7—663



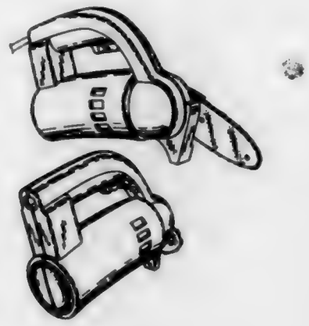
346,097
NUTCRACKER
Arnold Godinger, Brooklyn; Albert Schneider, Westbury, and Marc Littlejohn, Brooklyn, all of N.Y., assignors to Godinger Silver Art Co., Ltd., New York, N.Y.
Filed Jun. 10, 1993, Ser. No. 9,310
Term of patent 14 years
U.S. Cl. D7—680



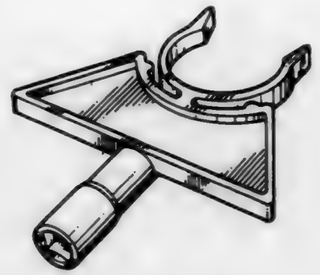
346,098
COMBINED PLANT FEEDER AND SUPPORT STAKE
James H. Schweiker, Jr., 7710 E. Thornwood Dr., Scottsdale, Ariz. 85251
Filed Jun. 10, 1991, Ser. No. 713,349
Term of patent 14 years
U.S. Cl. D8—1



346,099
HAND HELD POWER PRUNER
Sohrab Vossoughi; David Knaub, and Robert Dillon, all of Portland, Oreg., assignors to Blount, Inc., Portland, Oreg.
Filed Apr. 7, 1992, Ser. No. 868,273
Term of patent 14 years
U.S. Cl. D8—8



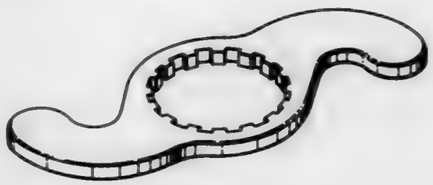
346,100
DRUM TUNING KEY
Eric J. Behrenfeld, 2450 North Francisco, Chicago, Ill. 60647
Filed Jun. 1, 1992, Ser. No. 891,812
Term of patent 14 years
U.S. Cl. D8—21



346,101
SPANNER WRENCH
Jose A. Soliz, 410 Avenue D, Olton, Tex. 79064
Filed Dec. 31, 1991, Ser. No. 815,353
Term of patent 14 years
U.S. Cl. D8—27



346,102
CAP OPENING AID
Brian L. Ogden, Dartford, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Filed Dec. 21, 1992, Ser. No. 2,766
Claims priority, application United Kingdom, Jun. 30, 1992, 2023935
Term of patent 14 years
U.S. Cl. D8—40

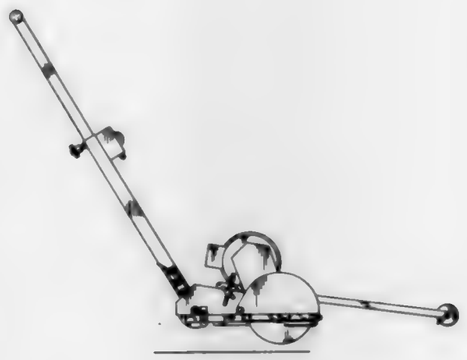


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346,103
CHISEL
Roger L. Warner, Washington C.H., Ohio, assignor to Mac Tools, Inc., Washington Court House, Ohio
Filed Aug. 21, 1992, Ser. No. 933,059
Term of patent 14 years
U.S. Cl. D8—67



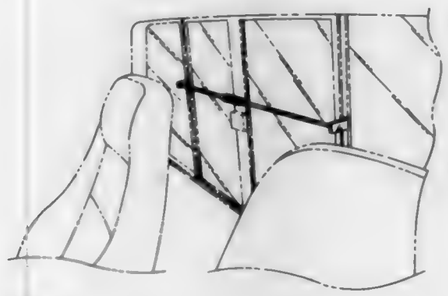
346,104
PORTABLE CONCRETE SAW
Darrell A. Yelton, Lee's Summit, Mo., assignor to Target Products, Inc., Kansas City, Mo.
Filed Aug. 7, 1992, Ser. No. 926,546
Term of patent 14 years
U.S. Cl. D8—64



346,105
HANDLE
Gad Shaanan, Montreal, Canada, assignor to La Compagnie Ideal Security Inc., Quebec, Canada
Filed Mar. 1, 1993, Ser. No. 5,259
Claims priority, application Canada, Dec. 30, 1992, 3012927
Term of patent 14 years
U.S. Cl. D8—301

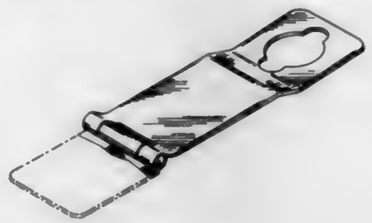


346,106
VEHICLE WINDOW LOCK
William L. Walls, 604 'D' 65th Ave. North, Myrtle Beach, S.C. 29577
Filed Jan. 27, 1992, Ser. No. 825,878
Term of patent 14 years
U.S. Cl. D8—339

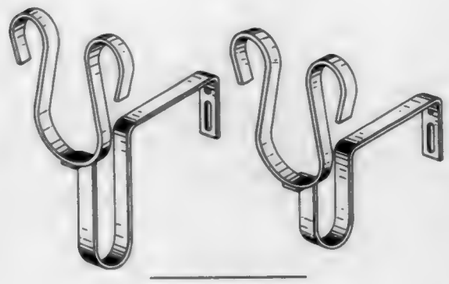




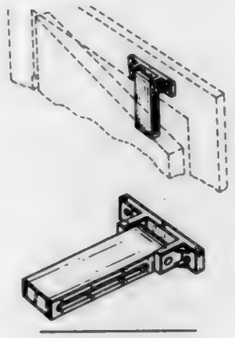
346,107
STAPLE PLATE FOR A HASP
Paul Appelbaum, 219 Broadway, Ste. 510, Laguna Beach, Calif. 92651
Filed Oct. 8, 1992, Ser. No. 218
Term of patent 14 years
U.S. Cl. D8—345



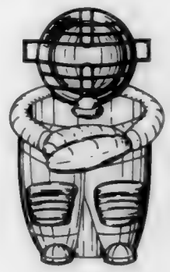
346,108
CURTAIN DRAPING HOOK
Christopher Hannerstig, Höllviknäs/Schweden, Sweden, assignor to AB A. Svensson & Co., Malmö, Sweden
Filed May 29, 1990, Ser. No. 530,076
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 8908413
Term of patent 14 years
U.S. Cl. D8—368



346,109
DOOR SPACER
James Comaianni, 5033 Bartlett St., San Gabriel, Calif. 91776
Filed Sep. 18, 1992, Ser. No. 948,929
Term of patent 14 years
U.S. Cl. D8—402



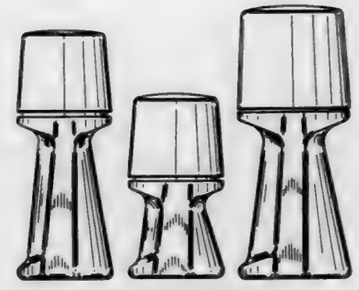
346,110
STORAGE CONTAINER
Gary A. Hale, 51 Brook St., E. Hartford, Conn. 06108
Filed May 14, 1992, Ser. No. 883,305
Term of patent 14 years
U.S. Cl. D9—316



346,111
STORAGE CONTAINER
Gary A. Hale, 51 Brook St., E. Hartford, Conn. 06108
Filed May 14, 1992, Ser. No. 883,306
Term of patent 14 years
U.S. Cl. D9—316



346,112
COMBINED ROLL-ON DISPENSER BOTTLE AND CAP
Eddy R. Alcindor, Randolph, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Aug. 13, 1992, Ser. No. 929,210
Term of patent 14 years
U.S. Cl. D9—338

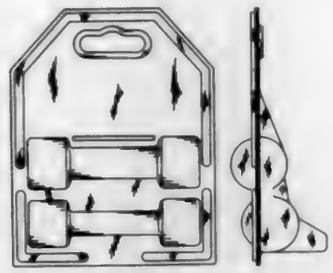


346,113
GASOLINE CONTAINER
John Ferguson, Erin, and Max Suit, Campbellville, both of Canada, assignors to Scepter Manufacturing Company Limited, Ontario, Canada
Continuation of Ser. No. 530,246, May 30, 1990, abandoned. This application Feb. 19, 1992, Ser. No. 836,534
Claims priority, application Canada, Dec. 19, 1989, 1912898
Term of patent 14 years
U.S. Cl. D9—347



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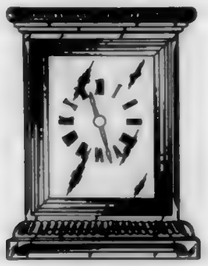
346,114
PRODUCT PACKAGE
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11753
Filed Feb. 2, 1993, Ser. No. 4,333
Term of patent 14 years
U.S. Cl. D9—415



346,115
COMBINED BOTTLE AND CAP
Edward H. Meisner, Short Hills, N.J.; Roland Charries, Cortlandt Manor, N.Y., and Jeffrey J. Miller, Lincoln, R.I., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 9, 1993, Ser. No. 4,593
Term of patent 14 years
U.S. Cl. D9—529



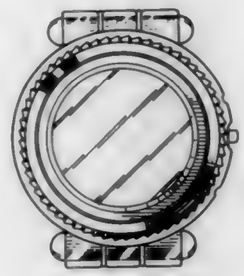
346,116
CLOCK
Arnold Godinger, Brooklyn, N.Y., assignor to Godinger Silver Art Co., Ltd., New York, N.Y.
Filed May 1, 1992, Ser. No. 878,002
Term of patent 14 years
U.S. Cl. D10—26



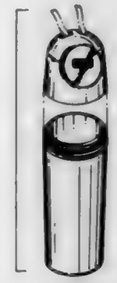
346,117
CLOCK
Mitsuo Wada, and Mariko Minami, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,145
Term of patent 14 years
U.S. Cl. D10—28



346,118
WATCH CASE
Philippe Charriol, 66 Black's Link, Hong Kong, Hong Kong
Filed Oct. 15, 1990, Ser. No. 597,754
Claims priority, application World Int. Prop. O., Apr. 19, 1990, DM/016468
Term of patent 14 years
U.S. Cl. D10—30



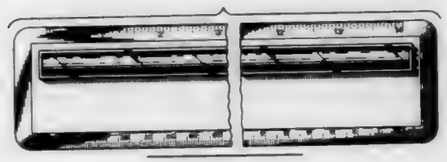
346,119
COMBINATION WATCH HOLDER AND WATER-TIGHT CONTAINER
Jay Weinstock, Fort Lee, N.J., assignor to Jayline International Corporation, Brooklyn, N.Y.
Filed May 28, 1991, Ser. No. 706,119
Term of patent 14 years
U.S. Cl. D10—31



346,120
ELECTRONIC CLINICAL THERMOMETER
Hideo Yoshikawa, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 2,801
Claims priority, application Japan, Jul. 1, 1992, 4-19373
Term of patent 14 years
U.S. Cl. D10—57



346,121
RULER
Joshua Lapsker, Thornhill, and Lawrie McIntosh, Mississauga, both of Canada, assignors to Starline Industries Inc., Ontario, Canada
Filed May 21, 1992, Ser. No. 886,632
Claims priority, application Canada, Dec. 6, 1991, 06-12-91-3
Term of patent 14 years
U.S. Cl. D10—71



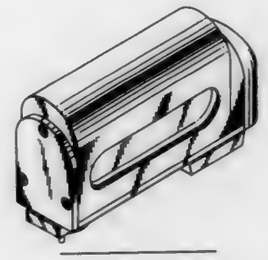
346,122
PROBING HEAD FOR AN ELECTRICAL TEST PROBE
Mark W. Nightingale, Washougal, Wash., and Jonathan E. Myers, Aloha, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Mar. 1, 1993, Ser. No. 5,282
Term of patent 14 years
U.S. Cl. D10—78



346,123
TEST INSTRUMENT FOR MEASURING PROPERTIES OF LIQUIDS
Bhaskar Narayanan, Sinapore, Singapore, assignor to Eutech Cybernetics Pte. Ltd., Ayer Rajah Industrial Park, Singapore
Filed Jul. 31, 1992, Ser. No. 922,968
Term of patent 14 years
U.S. Cl. D10—81



346,124
BREAST COMPLIANCE MEASURING DEVICE
Nebojsa Kovacevic, Plymouth, Minn., assignor to N.K. Biotechnical Engineering Company, Minneapolis, Minn.
Filed Nov. 18, 1992, Ser. No. 1,640
Term of patent 14 years
U.S. Cl. D10—84



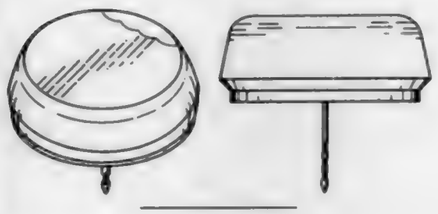
346,125
PERSONNEL LOCATOR SYSTEM
Robert Cote, 45 Prospect Ave., Kentville, Nova Scotia, CN B4N-2L7, and Terry Dill, 58 Woodworth Rd., Kentville, Nova Scotia, CN B4N-3V8, both of Canada
Filed Dec. 11, 1992, Ser. No. 2,383
Term of patent 14 years
U.S. Cl. D10—104



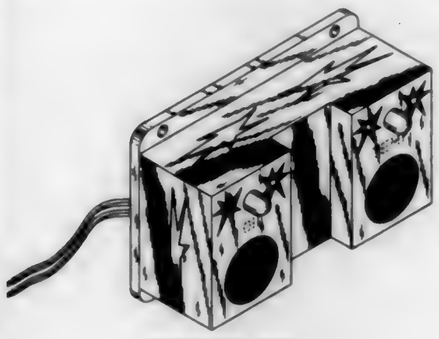


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346,126
ANTI-THEFT PIN FOR CLOTHING
Jacobus G. M. Hodrikx, Diepenbroklaan 23, 5242 HB Rosmalen, Netherlands, assignor to Jocobus Gerardus Maria Hodrikx, Rosmalen, Netherlands
Filed Aug. 28, 1990, Ser. No. 574,008
Claims priority, application Benelux, Jun. 18, 1990, 65637-00
Term of patent 14 years
U.S. Cl. D10—106



346,127
AUXILIARY WARNING LIGHT FOR AUTOMOBILES
Kenneth M. Fisher, 1415 W. Cerritos Ave. #51, Anaheim, Calif. 92802
Filed May 7, 1993, Ser. No. 7,970
Term of patent 14 years
U.S. Cl. D10—114



346,128
WATCH DIAL
Sumiko Ono, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,123
Term of patent 14 years
U.S. Cl. D10—126



346,129
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,135
Term of patent 14 years
U.S. Cl. D10—126



346,130
ORNAMENTAL CHAIN
David Rozenwasser, Savion, Israel, assignor to David Rozenvasser, Ltd., Petah Tikva, Israel
Filed Nov. 26, 1991, Ser. No. 798,427
Claims priority, application Israel, May 29, 1991, 17897
The portion of the term of this patent subsequent to Jan. 11, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—13



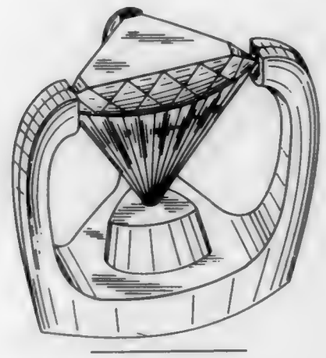
346,131
CONTINUOUS JEWELRY CHAIN
Stefano Chiaramonti, 4, Via Del Pantano; Piero C. Ferruzzi, 19, Via Cimabue, and Pierino Maruffi, 73, Via di San Leo, all of 52110 Arezzo, Italy
Continuation-in-part of Ser. No. 497,515, Mar. 22, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 866,243
Claims priority, application Int'l Pat. Institute, Sep. 26, 1989, DM/014648
Term of patent 14 years
U.S. Cl. D11—13



346,132
EXPANSION BRACELET
John J. McNally, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Jul. 13, 1992, Ser. No. 912,604
Term of patent 14 years
U.S. Cl. D11—19



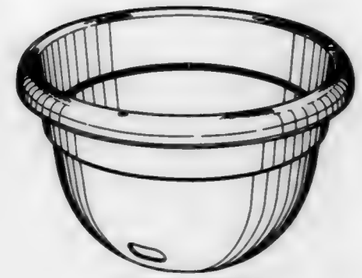
346,133
COMBINED GEMSTONE AND MOUNTING
Jacque S. Beber, and Richard A. Beber, both of 2061 Mesa Dr., Santa Ana Heights, Calif. 92707
Filed Apr. 30, 1991, Ser. No. 693,414
Term of patent 14 years
U.S. Cl. D11—92



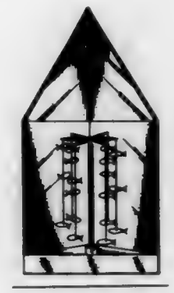
346,134
TABLE ORNAMENT
Yang Chin-Sheng, 4 FR No. 26 Lane 358 Yung An Street, Tainan, Taiwan
Filed Apr. 20, 1993, Ser. No. 7,350
Term of patent 14 years
U.S. Cl. D11—131



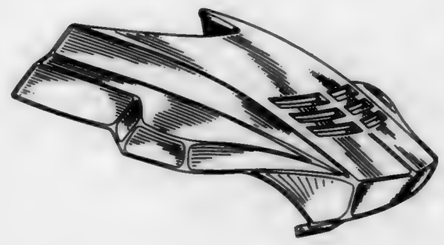
346,135
HANGING PLANTER
Arthur R. Carlson, East Malvern, Australia, assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Feb. 5, 1992, Ser. No. 831,491
Term of patent 14 years
U.S. Cl. D11—153



346,136
TABLE TOP SHOWCASE
Arthur W. Dollery, General Delivery, Yarmouth, Nova Scotia, Canada B5A 4A4
Continuation-in-part of Ser. No. 484,660, Feb. 26, 1990, abandoned. This application Feb. 20, 1991, Ser. No. 657,195
Term of patent 14 years
U.S. Cl. D11—158

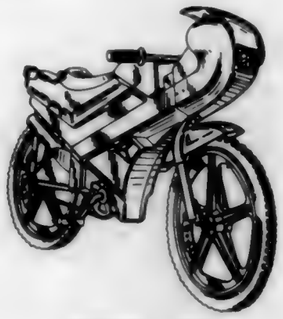


346,137
SNOWMOBILE HOOD
Miklos D. Hornai, Brooklyn, Mich., assignor to Arctco, Inc., Thief River Falls, Minn.
Filed Mar. 12, 1990, Ser. No. 491,636
The portion of the term of this patent subsequent to Dec. 14, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—7

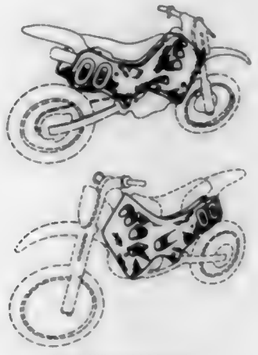


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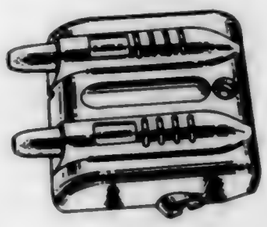
346,138
BICYCLE
David K. Caulfield, and Daniel G. Hahn, both of Olney, Ill., assignors to Roadmaster Corporation, Olney, Ill.
Filed Jun. 10, 1992, Ser. No. 896,543
Term of patent 14 years
U.S. Cl. D12—111



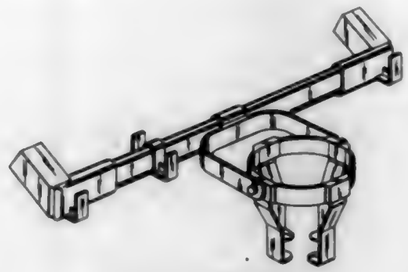
346,139
SET OF MOTORCYCLE SIDE PANELS
Richard P. Galley, 11901 Harris St., Garden Grove, Calif. 92640
Filed Jun. 30, 1992, Ser. No. 906,789
Term of patent 14 years
U.S. Cl. D12—117



346,140
MOTORCYCLE COIL COVER
Tom Rudd, Hudson, Wis., and Alwin J. Stabel, St. Paul, Minn., assignors to KaryAkya Holdings, Inc., Somerset, Wis.
Filed Nov. 16, 1992, Ser. No. 1,481
Term of patent 14 years
U.S. Cl. D12—126



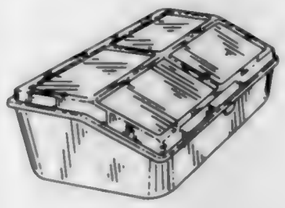
346,141
STROLLER ACCESSORY BAR
Thomas E. McConnell, 2421 S. Westgate Rd., Santa Maria, Calif. 93455
Filed Oct. 9, 1992, Ser. No. 274
Term of patent 14 years
U.S. Cl. D12—133



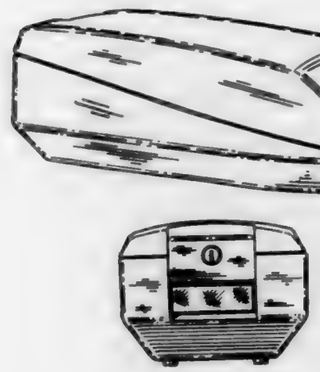
346,142
TIRE TREAD
Rudy E. Consolacion, Copley, and Randall R. Brayer, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 4, 1992, Ser. No. 845,444
Term of patent 14 years
U.S. Cl. D12—147



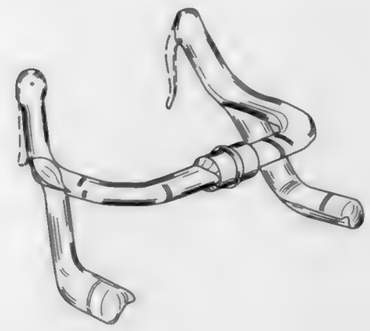
346,143
CARRIER FOR MOUNTING ON ALL TERRAIN VEHICLES
William D. Black, Crain Road, Tenn., assignor to Helton & Helton, Inc., Morrison, Tenn.
Filed Aug. 24, 1992, Ser. No. 933,949
Term of patent 14 years
U.S. Cl. D12—413



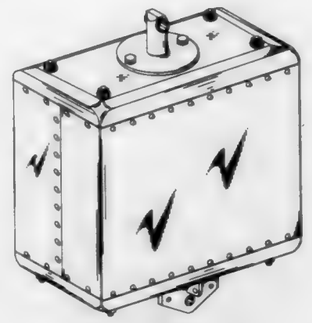
346,144
CARRIER FOR MOUNTING ON BICYCLES
Robert D. Katz, 1648 C Sherbrooke St. West, Montreal, Quebec, Canada H3H 1C9
Filed Oct. 7, 1992, Ser. No. 195
Claims priority, application Canada, Apr. 8, 1992, 08-04-92-1
Term of patent 14 years
U.S. Cl. D12—409



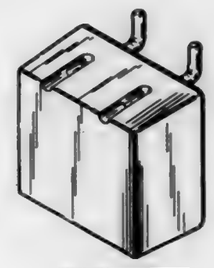
346,145
BICYCLE HANDLEBAR
David R. Jeshurun, 952 Ridgedale, Birmingham, Mich. 48009, and Joseph Toth, 2001 Burger, Dearborn, Mich. 48128, assignors to Weston W. Marsh; Vasanth Surath; David R. Jeshurun and Joseph Toth
Filed Nov. 24, 1992, Ser. No. 1,854
Term of patent 14 years
U.S. Cl. D12—178



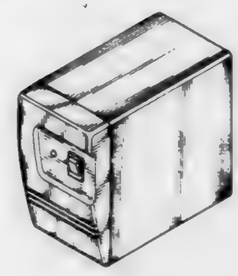
346,146
VIBRATION REDUCTION SYSTEM
Dennis Halwes, Arlington, Tex., assignor to Aeronautical Accessories, Inc., Bristol, Tenn.
Filed Apr. 15, 1993, Ser. No. 7,223
Term of patent 14 years
U.S. Cl. D12—345



346,147
BATTERY PACK
Marko Makar, 7-7883 Knight Street, Vancouver, B.C., Canada V5P 2X5 , and Michael Makar, 8566 164th Street, Surrey, B.C., Canada V3S 3W9
Filed Mar. 11, 1992, Ser. No. 849,541
Term of patent 14 years
U.S. Cl. D13—103

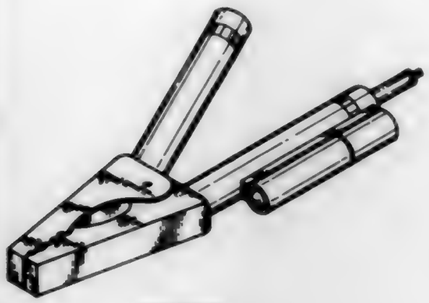


346,148
COMPUTER POWER SUPPLY SYSTEM
Ching-Ting Chen, No. 25, Lane 80, Ta Hsin Rd., Tan Tzu Hsiang, Taichung Hsien, Taiwan
Filed Mar. 9, 1993, Ser. No. 5,691
Term of patent 14 years
U.S. Cl. D13—110

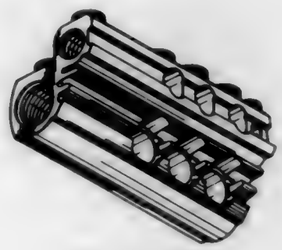


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346,149
LIGHTED BOOSTER CABLES
Charles Deering, 408 Jones St., Summerville, Ga. 30747
Filed Oct. 26, 1992, Ser. No. 770
Term of patent 14 years
U.S. Cl. D13—120



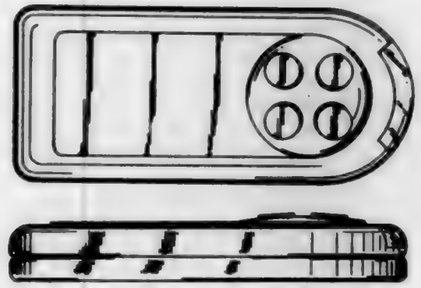
346,150
SET SCREW TRANSFORMER CONNECTOR
George C. Triantopoulos, Manchester, N.H., assignor to Burndy Corporation, Norwalk, Conn.
Filed Mar. 6, 1992, Ser. No. 846,439
Term of patent 14 years
U.S. Cl. D13—149



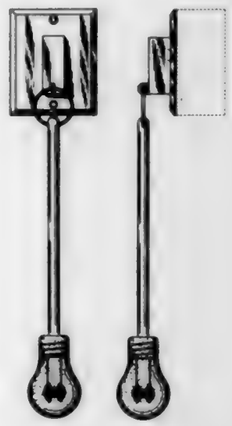
346,151
INFRARED RECEIVER FOR CONTROLLING LIGHT FIXTURES
Hans Zaugg, Derendingen, Switzerland, assignor to Feller AG, Horgen, Switzerland
Filed Sep. 27, 1991, Ser. No. 766,799
Term of patent 14 years
U.S. Cl. D13—158



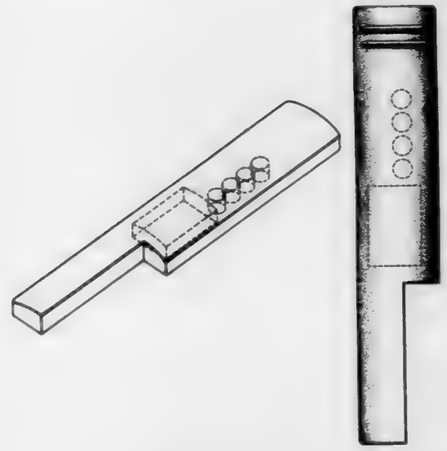
346,152
REMOTE CONTROL FOR ELECTRICAL EQUIPMENT
Hans Zaugg, Derendingen, Switzerland, assignor to Feller AG, Horgen, Switzerland
Filed Sep. 27, 1991, Ser. No. 766,795
Term of patent 14 years
U.S. Cl. D13—168



346,153
CHILDREN'S LIGHT SWITCH
Lehman A. Moseley, III, 6005 Ashwood Rd., Columbia, S.C. 29206
Filed Oct. 19, 1992, Ser. No. 555
Term of patent 14 years
U.S. Cl. D13—173



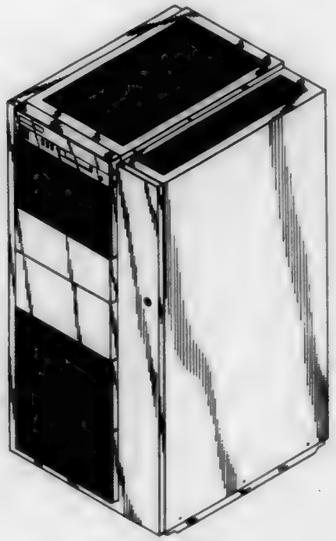
346,154
ORNAMENTAL DESIGN FOR A CIRCUIT PACK FACEPLATE
Tor A. Alden, Bernardsville; Gihyun Cho, Franklin Lakes, and Fredrick G. Randall, Newark, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 16, 1991, Ser. No. 807,383
Term of patent 14 years
U.S. Cl. D13—177



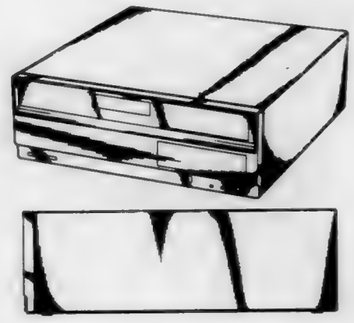
346,155
COMBINED ELECTRONIC COMPONENT RACK AND ENCLOSURE
Grinnell More, P.O. Box 270, Dublin, N.H. 03444
Filed Feb. 26, 1991, Ser. No. 661,448
Term of patent 14 years
U.S. Cl. D13—184



346,156
COMPUTER SYSTEM
Peter Lee, San Jose, Calif., and Stephen G. Brown, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 29, 1992, Ser. No. 991
Term of patent 14 years
U.S. Cl. D14—100

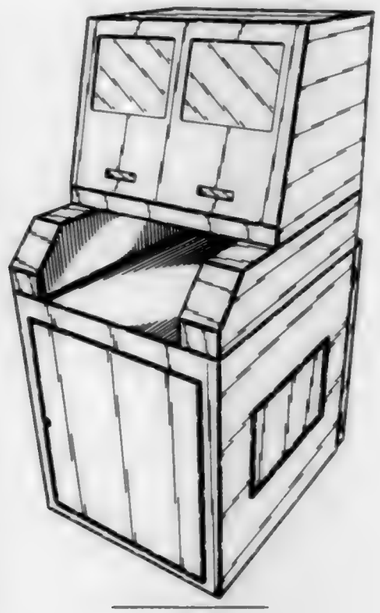


346,157
PERSONAL COMPUTER ENCLOSURE
Willis Y. Jordan, III, Birmingham, Ala., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Nov. 12, 1992, Ser. No. 1,448
Term of patent 14 years
U.S. Cl. D14—100

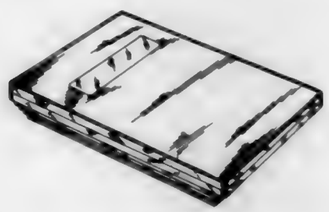


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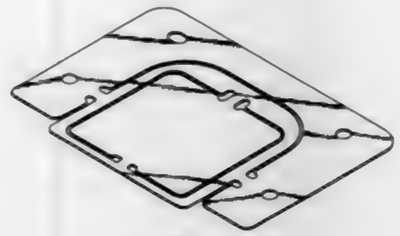
346,158
CABINET HOUSING FOR OPTICAL IMAGING OF FINGERPRINTS
Bruce N. Stanger, Norwood; Glenn M. Fishbine, Eden Prairie, and Douglas D. Castle, Crystal, all of Minn., assignors to Digital Biometrics, Inc., Minnetonka, Minn.
Filed Mar. 25, 1991, Ser. No. 674,728
The portion of the term of this patent subsequent to Apr. 7, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—107



346,159
COMPUTER CHASSIS FOR SELECTING PAINT PRODUCTS AND TINT FORMULATIONS
Hari Matsuda, Skokie, and Peter Langmar, Chicago, both of Ill., assignors to FlexTech Systems, Inc., Brookfield, Wis.
Filed Aug. 12, 1991, Ser. No. 744,008
Term of patent 14 years
U.S. Cl. D14—107



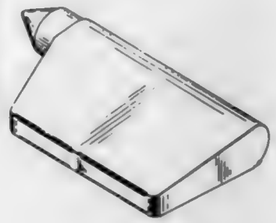
346,160
SPRING FOR MAGNETIC HEAD
Fumio Nagase, Tokyo; Kazuhiko Inoue, Hoya, and Hidetoshi Kabasawa, Tokyo, all of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Nov. 6, 1991, Ser. No. 789,157
Claims priority, application Japan, May 8, 1991, 13197
Term of patent 14 years
U.S. Cl. D14—114



346,161
KEYBOARD FOR A COMPUTER
Jae-heaun Oh, Kyunggi-do, and Sang-hyun Lee, Seoul, both of Rep. of Korea, assignors to TriGem Computer, Inc., Ansan, Rep. of Korea
Filed Dec. 11, 1991, Ser. No. 806,938
Claims priority, application Rep. of Korea, Jun. 21, 1991, 91-8898
Term of patent 14 years
U.S. Cl. D14—115



346,162
ELECTRONIC BAR CODE READER
Henry W. Bennett, and Edward L. Davis, both of Charlotte, N.C., assignors to Hand Held Products, Charlotte, N.C.
Continuation-in-part of Ser. No. 817,116, Dec. 23, 1991. This application Jun. 30, 1992, Ser. No. 907,207
Term of patent 14 years
U.S. Cl. D14—116



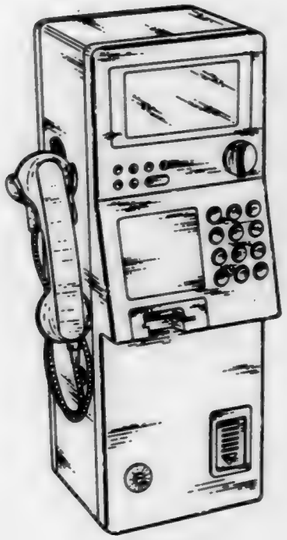
346,163
FACSIMILE MACHINE
George Sowden, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Sep. 10, 1992, Ser. No. 941,643
Claims priority, application Italy, Mar. 31, 1992, T0920 00 0060
Term of patent 14 years
U.S. Cl. D14—118



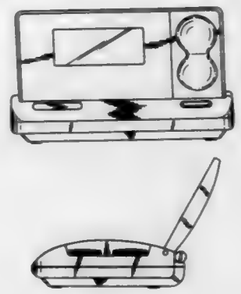
346,164
PORTABLE RADIO TELEPHONE
Tomiaki Shirakawa; Takashi Kajita, both of Takaidohigashi; Akihiko Konno, Tokyo, and Takaharu Ando, Ryugasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,936
Term of patent 14 years
U.S. Cl. D14—138



346,165
PUBLIC TELEPHONE
Sun H. Kwon; Eun H. Kim, and Byung W. Chin, all of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Seoul, Rep. of Korea
Filed Nov. 9, 1992, Ser. No. 2,193
Term of patent 14 years
U.S. Cl. D14—146



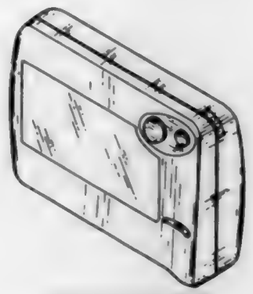
346,166
RADIO CLOCK
Lai L. Wong, New Territories, Hong Kong, assignor to Ballanda Limited, Hong Kong, Hong Kong
Filed Jan. 21, 1992, Ser. No. 822,991
Term of patent 14 years
U.S. Cl. D14—171



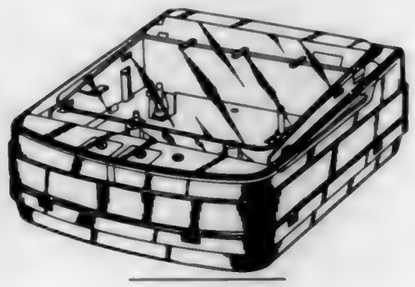
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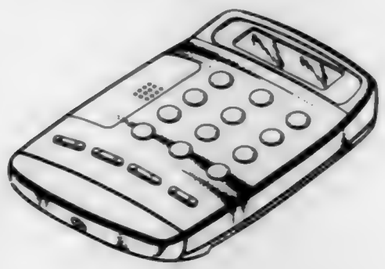
346,167
PAGER
Tapani Hyvönen, Turku, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Dec. 8, 1992, Ser. No. 2,300
Claims priority, application Finland, Jun. 8, 1992, 419/92
Term of patent 14 years
U.S. Cl. D14—191



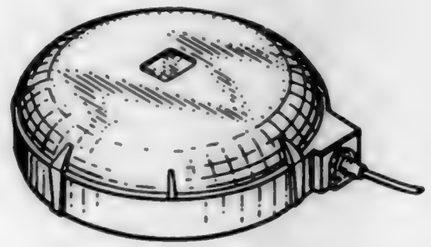
346,168
VIDEO TAPE AUTO REWINDER
David Tai, 1st Floor, No. 17, Lane 180, Ho Chiang Street, Taipei City, Taiwan
Filed Feb. 6, 1992, Ser. No. 831,323
Term of patent 14 years
U.S. Cl. D14—217



346,169
VCR AND CABLE BOX CONTROLLER
Louise J. Wannier, La Canada, and Keith A. Chambers, Santa Monica, both of Calif., assignors to Genstar Marketing Corporation, Pasadena, Calif.
Filed May 1, 1992, Ser. No. 877,591
Term of patent 14 years
U.S. Cl. D14—218



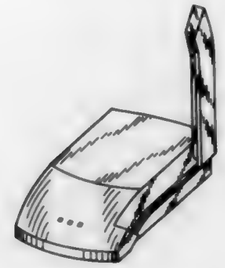
346,170
COMBINED GLOBAL POSITIONING SYSTEM ANTENNA AND PREAMPLIFIER
John G. Tang, San Carlos, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.
Filed Apr. 17, 1992, Ser. No. 870,704
Term of patent 14 years
U.S. Cl. D14—230



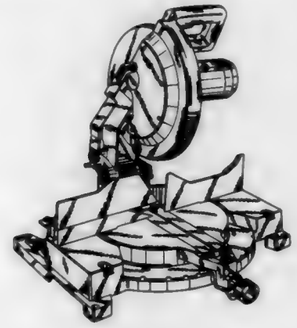
346,171
TELEPHONE HANDSET
William R. Ratcliffe, Thousand Oaks, Calif., assignor to Marpole International Inc., Kowloon, Hong Kong
Filed Oct. 26, 1992, Ser. No. 780
Term of patent 14 years
U.S. Cl. D14—248



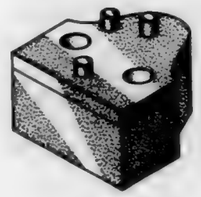
346,172
COMBINATION DATA CONVERTER AND RADIO TRANSMITTER UNIT
Antony J. Fields, San Francisco, and Douglas B. Satzger, Menlo Park, both of Calif., assignors to Alps Electric, U.S.A., Inc., San Jose, Calif.
Filed Aug. 10, 1992, Ser. No. 927,360
Term of patent 14 years
U.S. Cl. D14—299



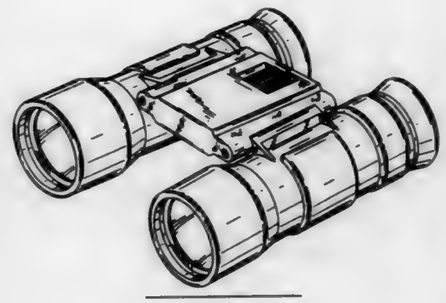
346,173
MITER SAW
Scott D. Price, Pylesville, Md., assignor to Black & Decker Inc., Wilmington, Del.
Continuation of Ser. No. 774,117, Oct. 9, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 4,839
Term of patent 14 years
U.S. Cl. D15—133



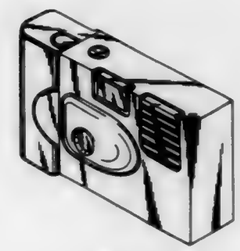
346,174
PUNCH RETAINER
Werner Stroh, Cincinnati, Ohio, assignor to Porter Precision Products Co., Cincinnati, Ohio
Filed Jun. 10, 1992, Ser. No. 896,546
Term of patent 14 years
U.S. Cl. D15—140



346,175
PAIR OF BINOCULARS
Kwong-Chi Chan, Flat A, 7th Floor, Manning Industrial Building, 118 How Ming Street, Kwun Tong, Kowloon, Hong Kong
Filed Mar. 31, 1992, Ser. No. 861,421
Claims priority, application United Kingdom, Nov. 4, 1991, 2018734
Term of patent 14 years
U.S. Cl. D16—133



346,176
CAMERA
Kazuhiro Nibei, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Jul. 21, 1992, Ser. No. 918,394
Claims priority, application Japan, Jan. 28, 1992, 4-1810
Term of patent 14 years
U.S. Cl. D16—209

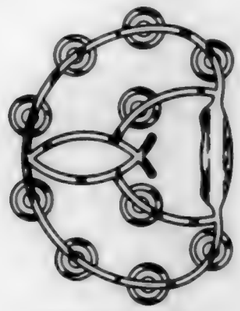


346,177
STRINGED INSTRUMENT PLECTRUM
Robert W. Reineck, 10651 Johnson St., NE., Blaine, Minn. 55434
Filed Sep. 17, 1991, Ser. No. 761,020
Term of patent 14 years
U.S. Cl. D17—20

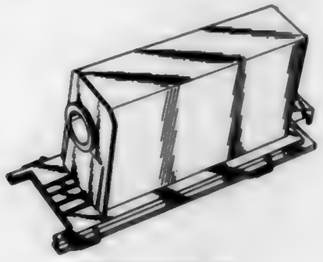


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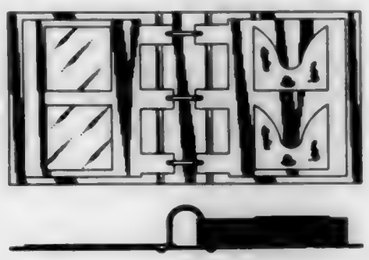
346,178
TAMBOURINE
Efraim Shalev, Laurel Canyon Annex, North Hollywood, Calif. 91605
Filed Jul. 27, 1992, Ser. No. 920,050
Term of patent 14 years
U.S. Cl. D17—22



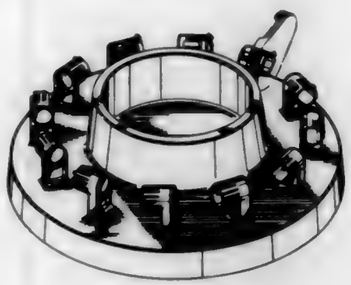
346,179
TONER CARTRIDGE FOR PRINTER
Kazuo Haida, Tokyo, Japan, assignor to Kyocera Corporation, Kyoto, Japan
Filed Sep. 23, 1992, Ser. No. 950,038
Claims priority, application Japan, Mar. 30, 1992, 4-9429
Term of patent 14 years
U.S. Cl. D18—56



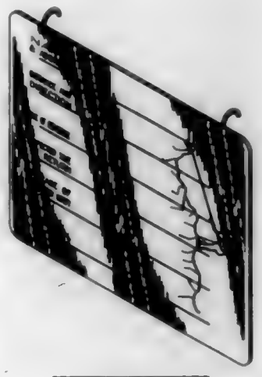
346,180
FOLIO
Victor M. Gonzalez Sandoval, 34368 Gadwall Common, Fremont, Calif. 94555
Filed Dec. 21, 1992, Ser. No. 2,609
Term of patent 14 years
U.S. Cl. D19—27



346,181
TAPE DISPENSER CAROUSEL
Kenneth R. Blake, 9641 Thomas Ave. N., Brooklyn Park, Minn. 55444
Filed Nov. 2, 1992, Ser. No. 1,075
Term of patent 14 years
U.S. Cl. D19—67



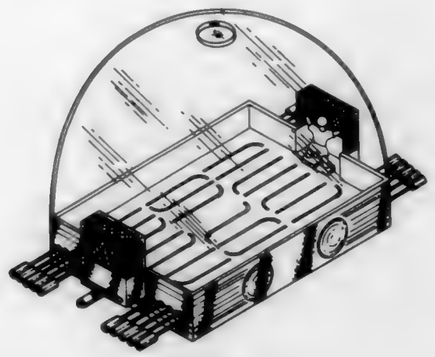
346,182
MESSAGE BOARD FOR VEHICLES
Jack C. Sherwood, Sr., Rte. 2 Box 47, St. Maries, Id. 83861
Filed Apr. 26, 1993, Ser. No. 7,495
Term of patent 14 years
U.S. Cl. D20—18



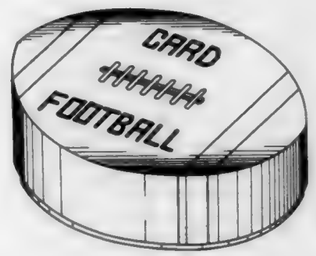
346,183
COMBINED TOY DISK AND LAUNCHER
John A. Crane, Elk Grove Village, Ill., assignor to Allied Display & Packaging Corp., Elk Grove Village, Ill.
Filed Dec. 29, 1992, Ser. No. 3,127
Term of patent 14 years
U.S. Cl. D21—2



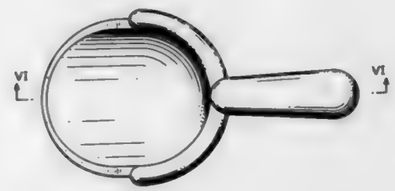
346,184
TABLE SOCCER GAME
Anthony Pies, 36 Leatherhead Court, Brammpton, Ontario, Canada L6S 5E7
Filed Apr. 24, 1992, Ser. No. 873,070
Term of patent 14 years
U.S. Cl. D21—18



346,185
FOOTBALL CARD CONTAINER
George M. Francis, 56000 Matts La., Shadyside, Ohio 43947
Filed Nov. 6, 1991, Ser. No. 789,152
Term of patent 14 years
U.S. Cl. D21—54



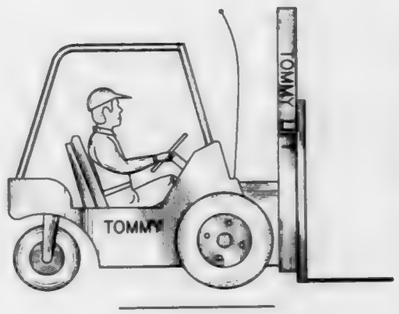
346,186
SHOVEL TOY
Moriya Kino, Yokohama, Japan, assignor to Royal Company Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,924
Claims priority, application Japan, May 29, 1992, 4-16022
Term of patent 14 years
U.S. Cl. D21—120



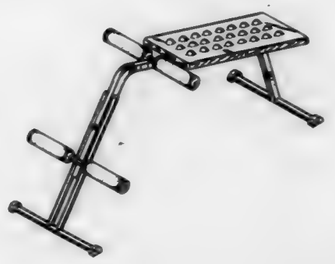
346,187
SHOVEL TOY
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,928
Claims priority, application Japan, May 29, 1992, 4-16037
Term of patent 14 years
U.S. Cl. D21—120



346,188
REMOTE CONTROL FORKLIFT
Jeffray M. Vandergrift, 34477 Redgrave Pl., Fremont, Calif. 94555
Filed Jul. 9, 1992, Ser. No. 911,301
Term of patent 14 years
U.S. Cl. D21—134

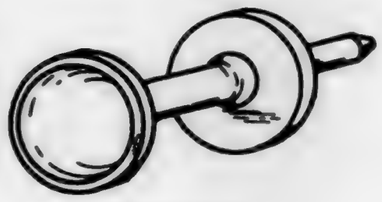


346,189
EXERCISE BENCH
Ko C. Chen, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan
Filed May 14, 1992, Ser. No. 881,552
Term of patent 14 years
U.S. Cl. D21—191



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346,190
GOLF TEE
Joseph G. Folker, 4639 W. Warwick Ave., Chicago, Ill. 60641
Filed Mar. 20, 1992, Ser. No. 854,274
Term of patent 14 years
U.S. Cl. D21—208



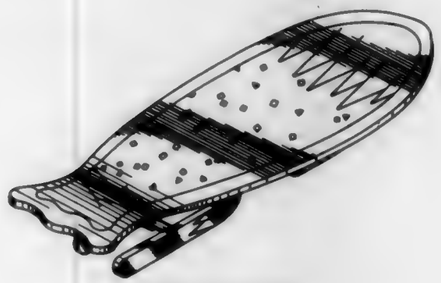
346,191
DOUBLE FACED GOLF CLUB
Edward M. Bryant, 422 S. Westfield St., Feeding Hills, Mass. 01030
Filed May 21, 1991, Ser. No. 703,353
Term of patent 14 years
U.S. Cl. D21—214



346,192
IN-LINE SKATE
Douglas R. Miller, Eden Prairie; Timothy J. Wiener, Minnetonka, both of Minn., and Gregory J. Collins, Toronto, Canada, assignors to Rollerblade, Inc., Minneapolis, Minn.
Filed Feb. 4, 1993, Ser. No. 4,425
Term of patent 14 years
U.S. Cl. D21—226



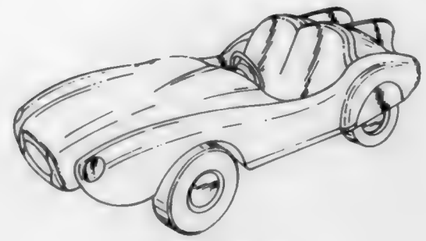
346,193
SKATEBOARD HAVING STEEL RUNNERS FOR SNOW
Lorie A. Bryce, 545 Ann St., East Lansing, Mich. 48823
Filed Dec. 18, 1990, Ser. No. 629,365
Term of patent 14 years
U.S. Cl. D21—227



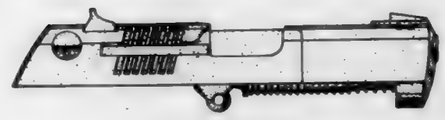
346,194
SNOWBOARD
Chris Ferris, P.O. Box 5022, Breckenridge, Colo. 80424
Filed Jan. 27, 1992, Ser. No. 826,683
Term of patent 14 years
U.S. Cl. D21—228



346,195
AMUSEMENT RIDE CAR
Timothy J. Delaney, Northridge, Calif., assignor to Walt Disney Company, Burbank, Calif.
Filed Mar. 20, 1992, Ser. No. 854,263
Term of patent 14 years
U.S. Cl. D21—250



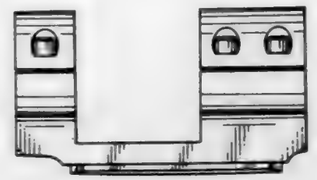
346,196
GROOVED PISTOL SLIDE
William B. Ruger, Croydon Turnpike, Croydon, N.H. 03773
Filed May 6, 1992, Ser. No. 880,322
Term of patent 14 years
U.S. Cl. D22—108



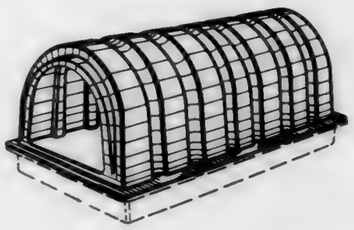
346,197
FISHING ROD
Kenji Onishi, Sakai, and Toshihiko Yasui, Tondabayashi, both of Japan, assignors to Shimano Inc., Osaka, Japan
Filed Jul. 9, 1991, Ser. No. 727,135
Claims priority, application Japan, Jan. 17, 1991, D.A. 3-746; Jul. 17, 1991, D.A. 3-847
Term of patent 14 years
U.S. Cl. D22—142



346,198
MOUNT FOR GUN SCOPE
James H. Herringshaw, 2405 Somrack Dr., Willoughby Hills, Ohio 44094
Filed Jan. 17, 1992, Ser. No. 822,568
Term of patent 14 years
U.S. Cl. D22—110



346,199
COVER FOR RODENT TRAP
Clase W. Spragins; John R. Schwerin, both of Madison, and Richard J. Ray, Plymouth, Wis., assignors to Bell Laboratories, Inc., Madison, Wis.
Filed Nov. 12, 1992, Ser. No. 1,372
Term of patent 14 years
U.S. Cl. D22—119



346,200
FISHING LURE
Mark A. Hildebrandt, Logansport, Ind., and Bernard L. Schultz, Gainesville, Fla., assignors to Hildebrandt Corporation, Logansport, Ind.
Filed Nov. 20, 1992, Ser. No. 1,750
Term of patent 14 years
U.S. Cl. D22—128

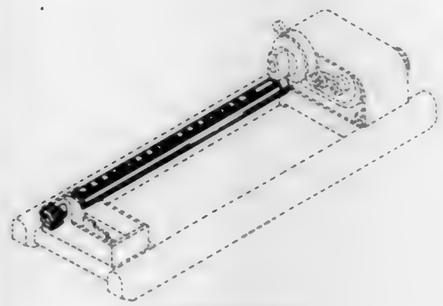


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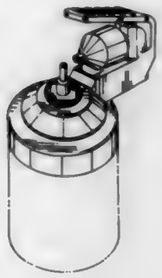
346,201
PORTABLE STORM DRAIN COVER
Craig D. Heki, Henderson, and Alan J. Gaddy, Las Vegas, both of Nev., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.
Filed Sep. 6, 1991, Ser. No. 756,113
Term of patent 14 years
U.S. Cl. D23—200



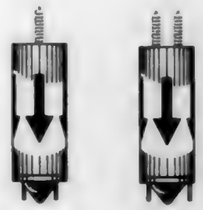
346,202
SPRAY TUBE FOR AN OSCILLATING SPRINKLER
Paul C. Aquilina, Kitchener, Canada, assignor to Melnor Manufacturing, Ltd., Brantford, Canada
Filed Jun. 5, 1992, Ser. No. 893,699
Term of patent 14 years
U.S. Cl. D23—216



346,203
AIRBRUSH
Adam P. Morrison, Rockford, Ill., assignor to The Testor Corporation, Rockford, Ill.
Filed Jul. 20, 1992, Ser. No. 917,478
Term of patent 14 years
U.S. Cl. D23—225



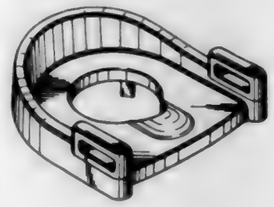
346,204
DUAL ACTION TOILET FLUSH VALVE
Ross V. Gordon, 244 N. 1st East St., Huntington, Utah 84528
Filed May 1, 1991, Ser. No. 694,055
Term of patent 14 years
U.S. Cl. D23—236



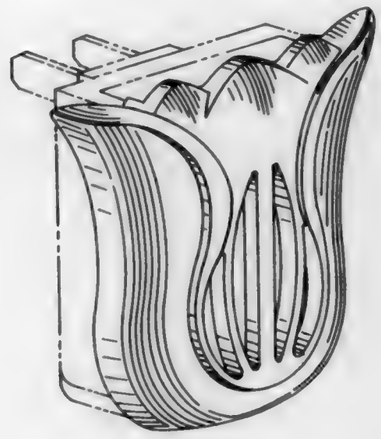
346,205
HANDLE FOR A PLUMBING FIXTURE
Bruce M. Sauter, Elgin, and Kevin G. Short, Midlothian, both of Ill., assignors to Sterling Plumbing Group, Inc., Rolling Meadows, Ill.
Filed Aug. 14, 1992, Ser. No. 930,868
Term of patent 14 years
U.S. Cl. D23—252



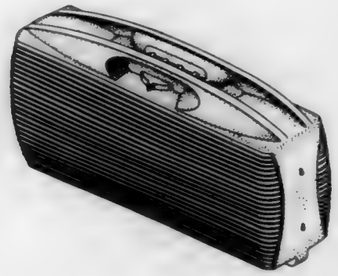
346,206
TOILET SEAT FOR A CHILD
David W. Crossley, Woonsocket, R.I.; Michael S. Bernstein, Natick, and Michael I. Lerner, Boston, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Jul. 2, 1992, Ser. No. 908,024
Term of patent 14 years
U.S. Cl. D23—296



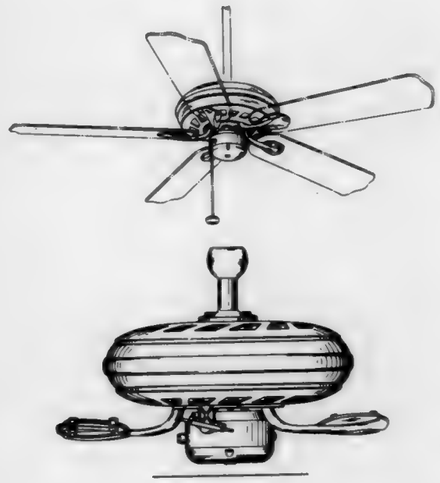
346,207
DECORATIVE COVER FOR USE ON A VOLATILE DISPENSER UNIT OR HEATER UNIT
John Martin, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Oct. 14, 1992, Ser. No. 415
Term of patent 14 years
U.S. Cl. D23—367



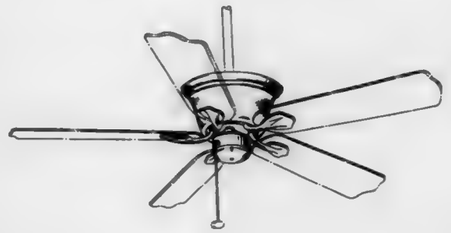
346,208
COMPACT COMBINED TWIN WINDOW AND FLOOR FAN HOUSING
Barry W. Smith, Dublin, Ohio, assignor to The W. B. Marvin Manufacturing Company, Urbana, Ohio
Filed Aug. 13, 1992, Ser. No. 929,809
Term of patent 14 years
U.S. Cl. D23—370



346,209
COMBINED CEILING FAN MOUNTING CANOPY, MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT
Richard M. Holbrook, Redondo Beach, Calif., assignor to Casablanca Fan Company, City of Industry, Calif.
Filed Jan. 25, 1993, Ser. No. 4,029
Term of patent 14 years
U.S. Cl. D23—377

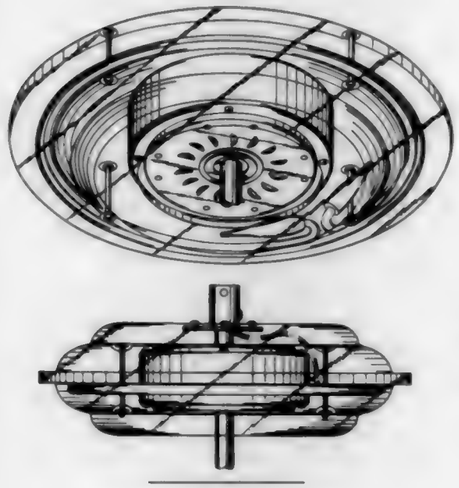


346,210
COMBINED CEILING FAN MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT
Richard M. Holbrook, Redondo Beach, Calif., assignor to Casablanca Fan Company, City of Industry, Calif.
Filed May 24, 1993, Ser. No. 8,659
Term of patent 14 years
U.S. Cl. D23—377

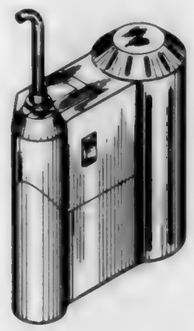


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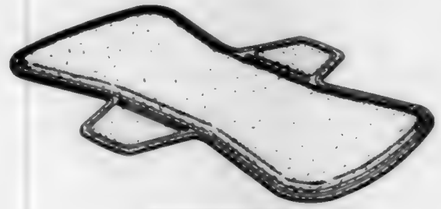
346,211
COMBINED NEON CEILING FAN MOTOR HOUSING AND SUPPORT ROD
John C. Bucher, Coral Springs; Shih T. Wu, Lighthouse Point, both of Fla., and Ta-Yao Tao, Taipei, Taiwan, assignors to Chien Luen Industries Company, Ltd., Inc., Ft. Lauderdale, Fla.
Filed Aug. 27, 1992, Ser. No. 937,550
Term of patent 14 years
U.S. Cl. D23—411



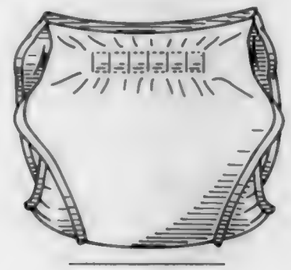
346,212
PORTABLE ORAL DOUCHE
Ernst Hösl, Prielmayerstrasse 3/IV W, 8000 München 2, Fed. Rep. of Germany
Filed Apr. 13, 1992, Ser. No. 867,927
Term of patent 14 years
U.S. Cl. D24—111



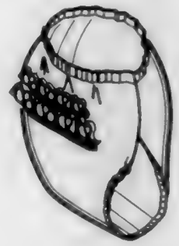
346,213
SANITARY NAPKIN
Angelo P. Ruffo, Mount Royal, Canada; James Bradstreet, Colts Neck, N.J.; Frank S. Glaug, Appleton, Wis.; Sherilyn S. McCoy, Monmouth Junction, N.J., and Patricia Ramacieri, Montreal, Canada, assignors to Johnson & Johnson Inc., Montreal, Canada
Continuation of Ser. No. 478,168, Feb. 9, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 973,936
Term of patent 14 years
U.S. Cl. D24—125



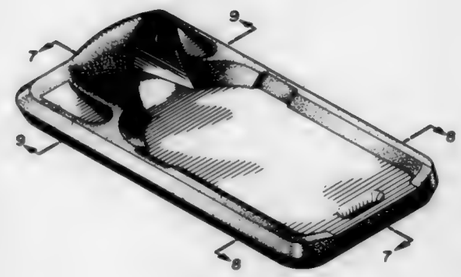
346,214
DIAPER
Laura K. Bradford, 304 W. Main St., Grand Junction, Colo. 81505
Filed Mar. 10, 1992, Ser. No. 849,130
Term of patent 14 years
U.S. Cl. D24—126



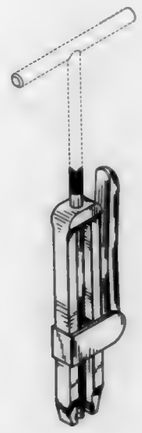
346,215
DIAPER
Lisa C. Scheuerman, 4035 Merritt Rd., Ypsilanti, Mich. 48197
Filed Aug. 3, 1992, Ser. No. 924,251
Term of patent 14 years
U.S. Cl. D24—126



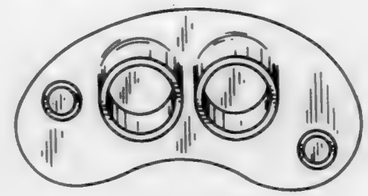
346,216
HOME ENEMA BOARD KIT
Marlene J. Irons, 22455 Adobe Rd., Cottonwood, Calif. 96022
Filed Mar. 6, 1992, Ser. No. 846,435
Term of patent 14 years
U.S. Cl. D24—132



346,217
COMBINED HOOK HOLDER AND ROD MOVER FOR SPINAL SURGERY
Steven B. Sparker, Cleveland Heights; Frank S. Janson, Rocky River; Albin R. Majcen, Wickliffe, all of Ohio, and Walter S. Stripppen, Golden, Colo., assignors to AcroMed Corporation, Cleveland, Ohio
Filed Jul. 13, 1992, Ser. No. 912,812
Term of patent 14 years
U.S. Cl. D24—133



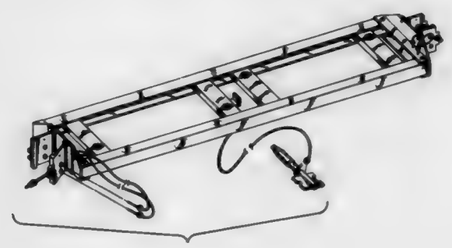
346,218
ILIAC PLATE FOR POSTERIOR PELVIC FRACTURE STABILIZATION APPARATUS
Joseph B. White, 8463 Brook Rd., McLean, Va. 22101
Filed Nov. 12, 1991, Ser. No. 790,155
Term of patent 14 years
U.S. Cl. D24—140



346,219
ERECTION PUMP
Thomas Färdigh, Örnsköldsvik, Sweden, assignor to Actimed Plast AB, Jarved, Sweden
Filed Dec. 9, 1991, Ser. No. 802,690
Claims priority, application Sweden, Nov. 25, 1991, 91-2356
Term of patent 14 years
U.S. Cl. D24—143

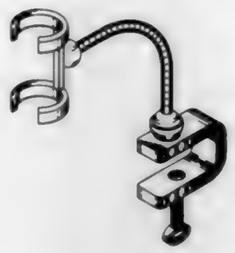


346,220
OXYGEN SYSTEM MOUNTING ASSEMBLY
Tomio Miya, Culver City, Calif., assignor to American Safety Flight Systems, Inc., Glendale, Calif.
Filed Aug. 20, 1990, Ser. No. 570,288
Term of patent 14 years
U.S. Cl. D24—164

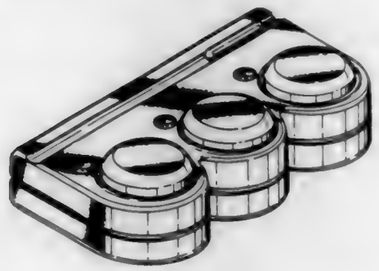


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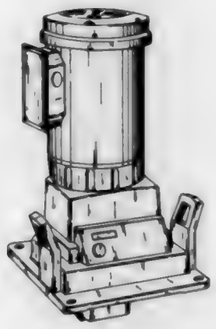
346,221
HOLDER FOR A NURSING BOTTLE
Dennis H. Godfrey, 1604 Lower Moncure Rd., Sanford, N.C. 27330
Filed Dec. 23, 1991, Ser. No. 812,368
Term of patent 14 years
U.S. Cl. D24—199



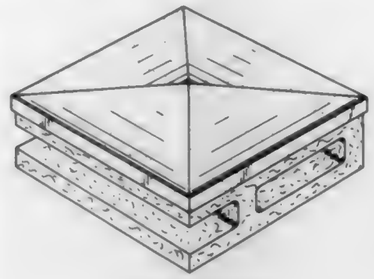
346,222
COSMETIC SKIN CARE UNIT
Ravi K. Sawhney, and Donald A. Brown, both of Canoga Park, Calif., assignors to Selvac Corporation, Dresher, Pa.
Filed Oct. 4, 1989, Ser. No. 417,211
Term of patent 14 years
U.S. Cl. D24—200



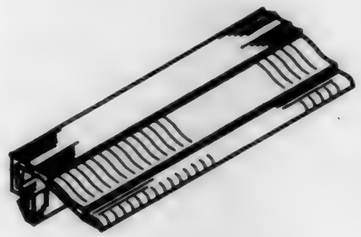
346,223
PLATE MOUNT INDUSTRIAL MIXERS
David O. Mechler, Fairport; Daniel J. Beatley, Rochester, and James H. Karlin, Fairport, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.
Filed Jul. 26, 1991, Ser. No. 736,895
Term of patent 14 years
U.S. Cl. D24—220



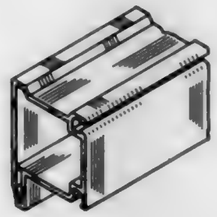
346,224
COATED MASONRY BUILDING BLOCK
John L. McClinton, Hanover, and Russell P. Rich, Lutherville, both of Md., assignors to The Burns & Russell Company, Baltimore, Md.
Filed Nov. 14, 1991, Ser. No. 791,649
Term of patent 14 years
U.S. Cl. D25—118



346,225
EXTERIOR TRIM
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,827
Term of patent 14 years
U.S. Cl. D25—119



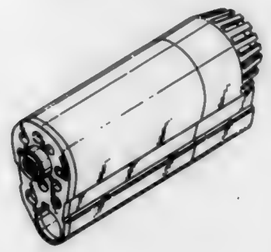
346,226
PANEL HEAD SILL JAMB
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,823
Term of patent 14 years
U.S. Cl. D25—124



346,227
OIL CANDLE
Karen Boss, Ross, Calif., assignor to Vitrico Corporation, Emeryville, Calif.
Filed Jul. 1, 1993, Ser. No. 10,302
Term of patent 14 years
U.S. Cl. D26—11



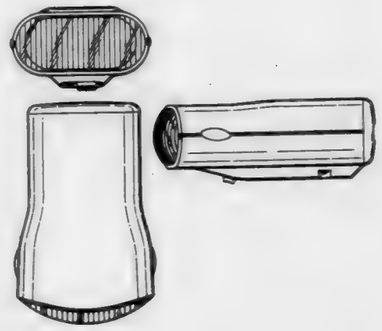
346,228
LIGHT SOURCE FOR USE WITH AN INDUSTRIAL BORESCOPE
Jennifer M. Harley, and Andrew W. Towch, both of Essex, United Kingdom, assignors to Keymed (Medical & Industrial Equipment) Ltd., Essex, United Kingdom
Filed Dec. 30, 1991, Ser. No. 813,415
Claims priority, application United Kingdom, Aug. 16, 1991, 2016712
Term of patent 14 years
U.S. Cl. D26—24



346,229
NIGHT LIGHT
Bruce Ancona; Jane Ancona, and Jose Padron, all of New York, N.Y., assignors to American Tack & Hardware, Monsey, N.Y.
Filed Feb. 27, 1992, Ser. No. 842,579
Term of patent 14 years
U.S. Cl. D26—26



346,230
BICYCLE HEAD LAMP
Takashi Ueda, Izumi, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Feb. 27, 1992, Ser. No. 843,980
Term of patent 14 years
U.S. Cl. D26—28



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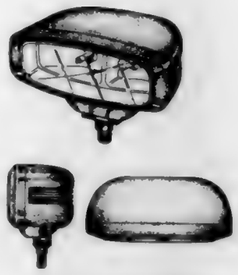
346,231
BICYCLE LAMP
Ming-Yiu Lai, Tien Yat Metal Ware Factory, A1, 3, 6, 11th Floor, Block A, Mai Hing Industrial Building, 16-18 Hing Yip Street, Kwun Tong, Kowloon, Hong Kong
Filed Mar. 13, 1992, Ser. No. 850,796
Term of patent 14 years
U.S. Cl. D26—28



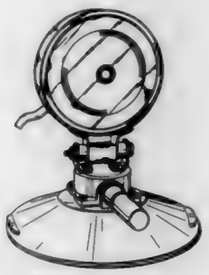
346,232
VEHICLE MARKER LIGHT
Rickard Falkensson, Amerikagatan 1E, S-414 63 Göteborg, and Göran Linderoth, Björkgatan 6, S-432 32 Varberg, both of Sweden
Filed Dec. 1, 1992, Ser. No. 2,150
Claims priority, application Sweden, Jun. 5, 1992, 921229
Term of patent 14 years
U.S. Cl. D26—28



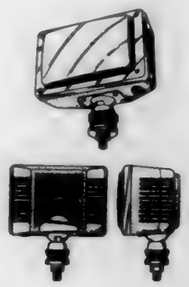
346,233
FOG LIGHT
Wen-Tsung Tsai, No. 58-3, Lane 410, Sec. 2, Wen Hua Rd., Pan Chiao, Taipei, Taiwan
Filed Jan. 3, 1992, Ser. No. 816,938
Term of patent 14 years
U.S. Cl. D26—29



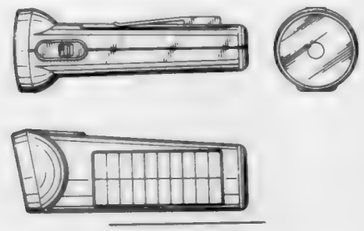
346,234
ADJUSTABLE, MAGNETICALLY MOUNTED WARNING LIGHT FOR A VEHICLE
James A. Sammis, 5562 Poplar Pl., Buford, Hall County, Ga. 30518
Filed Jan. 7, 1992, Ser. No. 817,674
Term of patent 14 years
U.S. Cl. D26—29



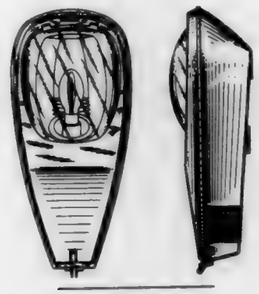
346,235
FOG LIGHT
Wen-Tsung Tsai, No. 58-3, Lane 410, Sec 2, Wen Hua Rd., Pan Chiao, Taipei, Taiwan
Filed May 19, 1992, Ser. No. 885,558
Term of patent 14 years
U.S. Cl. D26—29



346,236
SOLAR RECHARGEABLE FLASHLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 11, 1992, Ser. No. 851,132
Claims priority, application United Kingdom, Sep. 11, 1991, 2017375
Term of patent 14 years
U.S. Cl. D26—46



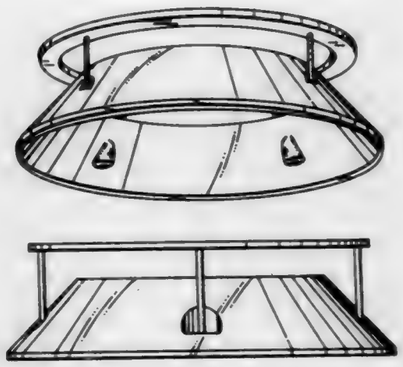
346,237
LUMINAIRE
Francis J. E. Schreder, Financière des Applications de l'Electricité S.A., 67, rue de Lusambo, 1190 Brussels, Belgium
Filed Feb. 2, 1993, Ser. No. 4,416
Term of patent 14 years
U.S. Cl. D26—71



346,238
SUSPENDED NOVELTY LAMP
Joseph B. Fox, P.O. Box 831, Tavernier, Fla. 33070
Filed Jan. 6, 1992, Ser. No. 818,213
Term of patent 14 years
U.S. Cl. D26—73



346,239
TRIM FOR RECESSED LIGHTING FIXTURE
Klaus Vamberszky, Bregenz, Austria; Marco Zanini, Milan, and Sebastiano Mosterts, Somma Lombardo, both of Italy, assignors to Zumtobel Lighting, Inc., Garfield, N.J.
Filed Apr. 5, 1990, Ser. No. 504,999
Term of patent 14 years
U.S. Cl. D26—118

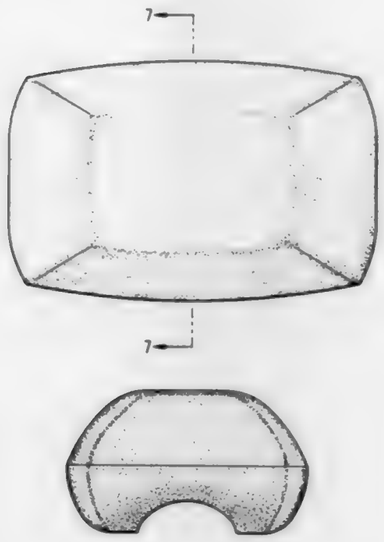


346,240
INSECT LAMP STAND
Arthur D. Dickens, Sr., and Emma Dickens, both of 802 MT Gap Rd., Huntsville, Ala. 35803
Filed Mar. 6, 1992, Ser. No. 846,431
Term of patent 14 years
U.S. Cl. D26—138



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346,241
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,946
Term of patent 14 years
U.S. Cl. D28—8.1



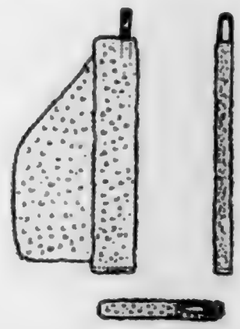
346,242
COMBINED SHAMPOO SHIELD AND DRAINAGE TRAY
Sharon McNally, 12 Raymond Pl., W. Newton, Mass. 02165
Filed Apr. 25, 1991, Ser. No. 691,110
Term of patent 14 years
U.S. Cl. D28—20



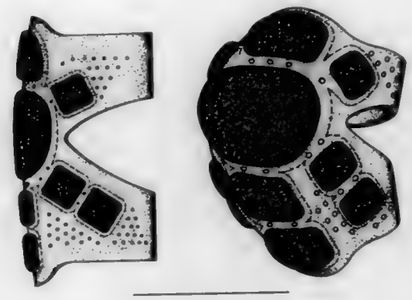
346,243
CURLING IRON HOLDER
Carol A. Weber, 615 W. S. Omaha Bridge Rd. #10, Council Bluffs, Iowa 51501
Filed Sep. 3, 1992, Ser. No. 938,652
Term of patent 14 years
U.S. Cl. D28—38



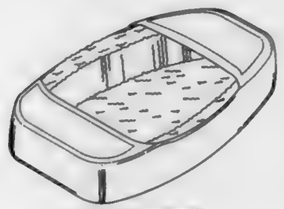
346,244
SADDLE ATTACHMENT FOR PROTECTING LEG AND CALF
Virginia C. Majewski, 32 Treasure Ave., Kensington, Conn. 06037
Filed Jul. 16, 1992, Ser. No. 914,099
The portion of the term of this patent subsequent to Jun. 15, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D29—10



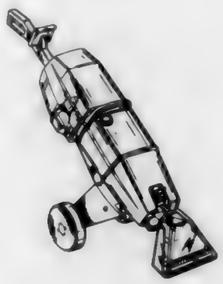
346,245
ELBOW PAD
Edward D. Krent, 207 Hampton Rd., Sharon, Mass. 02067, and Nicholas B. Paffett, 806 Tucker La., Hingham, Mass. 02043
Filed Jul. 6, 1992, Ser. No. 909,299
Term of patent 14 years
U.S. Cl. D29—20



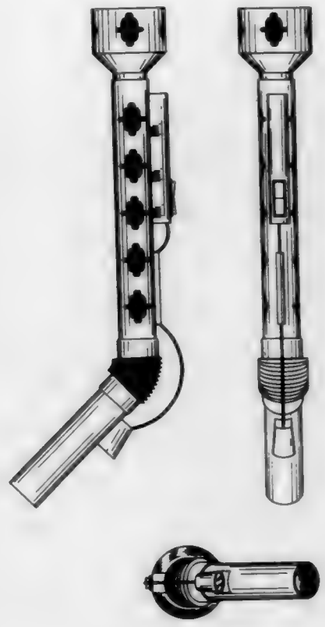
346,246
PET BED
Aurelio F. Barreto, and Darrell R. Paxman, both of 303 Parkplace, Suite 132, Kirkland, Wash. 98033
Filed Dec. 2, 1992, Ser. No. 2,107
Term of patent 14 years
U.S. Cl. D30—118



346,247
CLEANING DEVICE
Kent J. Furcron; Gary A. Miller, both of Bristol, Va.; Ricky A. Owens, Bristol, Tenn.; John W. Walch, Abingdon, Va., and Mark D. Dziersk, Simsbury, Conn., assignors to TRC Acquisition Corporation
Filed Jul. 15, 1991, Ser. No. 730,293
The portion of the term of this patent subsequent to Apr. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—22



346,248
HOSE FOR A WET AND DRY VACUUM CLEANER
Ralph E. Patterson, Rte. I Box 317, New Cumberland, W. Va. 26047
Filed May 15, 1992, Ser. No. 883,727
Term of patent 14 years
U.S. Cl. D32—31



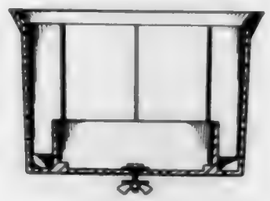
346,249
PAINT MIXING CONTAINER
William H. Peltier, III, 607 High St., Denver, Colo. 80209, and Emmett O. Flowers, Jr., 4705 Gypsum Dr., NE., Rio Rancho, N. Mex. 87124
Filed Mar. 11, 1993, Ser. No. 5,829
Term of patent 14 years
U.S. Cl. D32—53.1

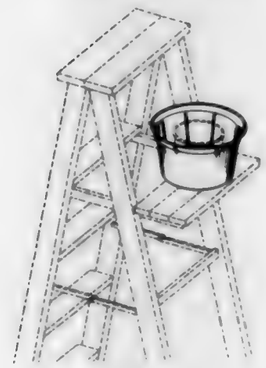


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HOLDER FOR A PAINT CONTAINER
James Devlin, 3205 Panorama, Redding, Calif. 96003, and James L. Surface, 2066 O'Conner Ave., Redding, Calif. 96001
Filed May 18, 1992, Ser. No. 884,835
Term of patent 14 years
U.S. Cl. D32—54





346,251
TRUCK FOR CARRYING GOODS
Kozo Morooka, Osaka, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan
Filed May 12, 1992, Ser. No. 882,084
Term of patent 14 years
U.S. Cl. D34—17



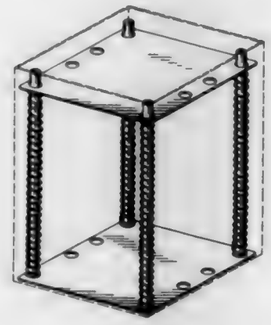
346,252
WHEEL DOLLY FOR TRANSPORTING VEHICLES
Gary W. Jones, and Rex A. Jones, both of 1496 Little Rd., Canton, Ga. 30115
Filed Aug. 3, 1992, Ser. No. 924,245
Term of patent 14 years
U.S. Cl. D34—23



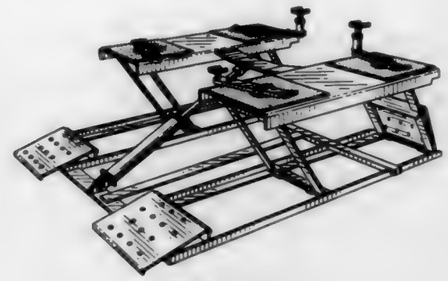
346,253
LEANER DISCHARGE UNIT
Charles E. DeCrane, 802 Janna St., West Monroe, La. 71291
Filed Jun. 22, 1992, Ser. No. 902,587
Term of patent 14 years
U.S. Cl. D34—28



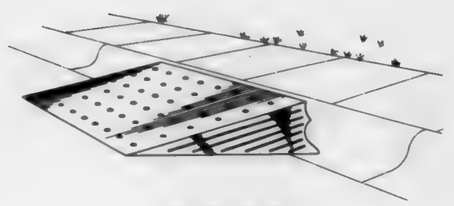
346,254
MULTIPLE USE LIFT
Gregory J. Novak, Ham Lake, Minn., assignor to Evans Recycling, Inc., Grandy, Minn.
Filed Nov. 25, 1992, Ser. No. 1,927
Term of patent 14 years
U.S. Cl. D34—28



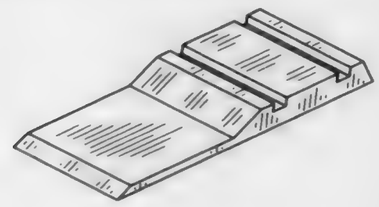
346,255
SWING ARM SHORT-RISE VEHICLE LIFT
Richard T. Francis, Easton, and Jerry A. Ohlemeier, St. Joseph, both of Mo., assignors to Gray Automotive Products Company, St. Joseph, Mo.
Filed May 21, 1993, Ser. No. 8,684
Term of patent 14 years
U.S. Cl. D34—31



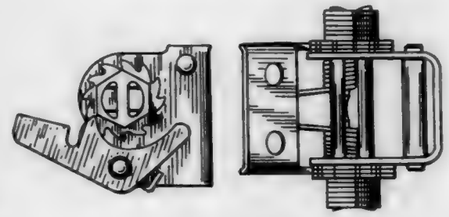
346,256
ACCESS RAMP FOR HANDICAPPED PERSONS
Clyde E. Thomas, III, P.O. Box 2117, Big Spring, Tex. 79721-2117; Stanley E. Partee, P.O. Box 2820, Big Spring, Tex. 79720-2820, and Donnie L. Reagan, 4008 Vickey St., Big Spring, Tex. 79720
Filed Apr. 8, 1993, Ser. No. 6,824
Term of patent 14 years
U.S. Cl. D34—32



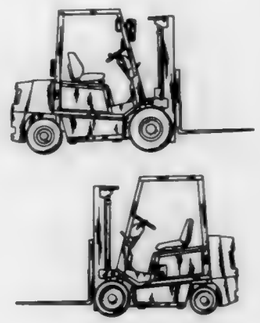
346,257
DEVICE TO HELP INSTALL SNOW CHAINS
Russ McMillan, 15244 Presilla Dr., Jamul, Calif. 91935
Filed Jun. 14, 1993, Ser. No. 9,422
Term of patent 14 years
U.S. Cl. D34—32



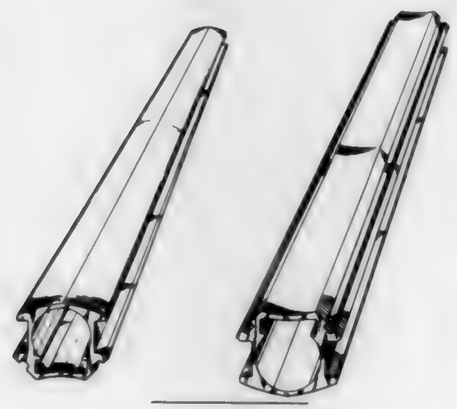
346,258
WINCH FOR TIGHTENING STRAP
Frank A. Zankich, San Pedro, Calif., assignor to Ancra International Corporation, Hawthorne, Calif.
Filed Feb. 14, 1992, Ser. No. 836,922
Term of patent 14 years
U.S. Cl. D34—33



346,259
FORK LIFT TRUCK
Richard Lastsch, Warminster, Pa., assignor to Yale Materials Handling Corporation, Flemington, N.J.
Continuation-in-part of Ser. No. 499,821, Mar. 20, 1990, abandoned. This application Sep. 19, 1990, Ser. No. 587,457
Term of patent 14 years
U.S. Cl. D34—34



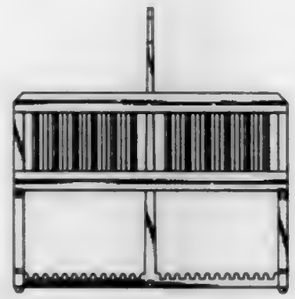
346,260
COLUMN FOR A LIFTING APPLIANCE
Jonnie Silbersky, Malmo, and Leif B. Sonesson, Eslov, both of Sweden, assignors to Arjo Hospital Equipment AB, Eslov, Sweden
Division of Ser. No. 508,413, Apr. 13, 1990, Pat. No. Des. 329,112. This application Jun. 11, 1992, Ser. No. 897,108
Claims priority, application Sweden, Oct. 17, 1989, 89 2337
Term of patent 14 years
U.S. Cl. D34—35



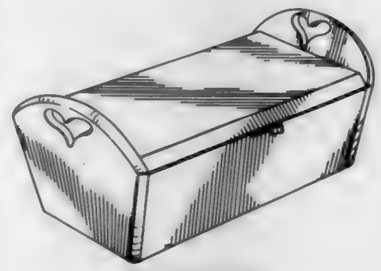
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DOUGH STATION
James R. Fay, Joliet, Ill., assignor to Champion Universal Ltd., Joliet, Ill.
Filed Mar. 19, 1992, Ser. No. 854,060
Term of patent 14 years
U.S. Cl. D34—29



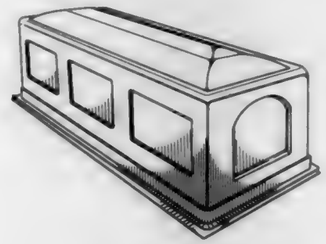
346,262
STAIN BASKET
James Brambert, Mishawaka, and Ronald C. Mathia, South Bend, both of Ind., assignors to Miles Inc., Elkhart, Ind.
Filed Jul. 27, 1992, Ser. No. 919,268
Term of patent 14 years
U.S. Cl. D3—263



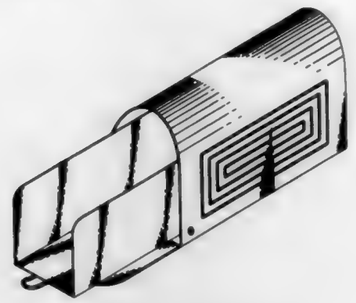
346,263
INFANT BURIAL CRADLE
Dale W. Erickson, P.O. Box 2873, Pagosa Springs, Colo. 81147
Filed Sep. 4, 1992, Ser. No. 940,713
Term of patent 14 years
U.S. Cl. D99—1



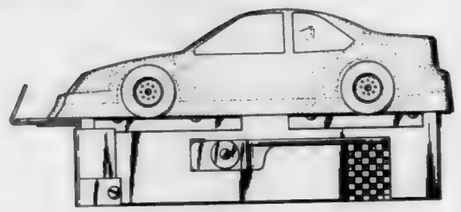
346,264
BURIAL VAULT
Henry V. Etzel, and Robert T. Etzel, both of 2268 N. Hillcrest, Wellington, Utah 84542
Filed Mar. 16, 1993, Ser. No. 5,998
Term of patent 14 years
U.S. Cl. D99—1



346,265
COMBINED BASKET AND MAILBOX
Louis D. Smith, 6902 SE Eola Hills Rd., Amity, Oreg. 97101
Filed Aug. 9, 1990, Ser. No. 564,960
Term of patent 14 years
U.S. Cl. D99—29



346,266
FAST LANE MAILBOX
Eugene A. Tingler, 413 McGeorge Dr., Vinton, Va. 24179
Filed Oct. 26, 1992, Ser. No. 765
Term of patent 14 years
U.S. Cl. D99—30



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LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 19TH DAY OF APRIL, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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A.T.N. French Societe Anonyme: *See*—
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AB Volvo: *See*—
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ABB Carbon AB: *See*—
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Yim, Jeffrey B., 5,304,495, Cl. 436-68.000.

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Abe, Fumiyoshi; Horikoshi, Takayuki; and Hasegawa, Akira, to Sony Corporation. Servo system that controls a motor and compensates for system irregularities. 5,304,907, Cl. 318-611.000.

Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, to NGK Insulators, Ltd. Dielectric ceramic composition containing ZnO-B_2O_3-SiO_2 glass, method of preparing the same, and resonator and filter using the dielectric ceramic composition. 5,304,521, Cl. 501-139.000.

Abe, Minoru: *See*—
Kajitani, Kouji; Abe, Minoru; and Takano, Tetuji, 5,303,806, Cl. 192-70.270.

Abe, Mitsuyuki: *See*—
Kagiya, Tsutomu; Abe, Mitsuyuki; Nishimoto, Seiichi; Shibamoto, Yuta; Shimokawa, Kazuhiro; Hisanaga, Yorisato; Nakada, Tatsuo; and Yoshizawa, Toru, 5,304,654, Cl. 548-327.500.

Abe, Nobuo: *See*—
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Abe, Shinya: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richar S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Koukichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,304,553, Cl. 514-219.000.

Abe, Sou; Kishimoto, Shinichi; Takemoto, Tadashi; Kato, Toshihisa; and Kumon, Satoshi, to Ajinomoto Co., Inc. Method for recovery of alpha-l-aspartyl-l-phenylalanine methyl ester, l-phenylalanine and l-aspartic acid. 5,304,671, Cl. 560-41.000.

Abe, Takayuki: *See*—
Yamaguchi, Toshio; Yamasaki, Satoshi; and Abe, Takayuki, 5,305,225, Cl. 364-474.020.

Abe, Tomohiko: *See*—
Yamada, Akio; Ono, Yoshihisa; Yamazaki, Satoru; and Abe, Tomohiko, 5,304,811, Cl. 250-492.220.

Abele, John E.; Heath, Kevin R.; Landman, Mark S.; and McLaughlin, Paul D., to Boston Scientific Corporation. Guidewire for crossing occlusions in blood vessels. 5,303,714, Cl. 128-772.000.

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Kluttz, James W.; and Roberts, Edgar P., Jr., 5,303,924, Cl. 273-185.00R.

Acello, Salvatore J., to General Instrument Corporation. Semiconductor devices having copper terminal leads. 5,304,429, Cl. 428-620.000.

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Hines, Horace H.; Walsh, Brian J.; Koops, Ronald; and Jones, Steven M., 5,304,806, Cl. 250-369.000.

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Adamson, William H.; Baker, L. Dale; and Reilly, Paul, to Case Corporation. Machine with PTO-shaft support bracket. 5,303,789, Cl. 180-53.100.

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Adar, Renen; Mizrahi, Victor; Mollenauer, Linn F.; and Morton, Paul A., to AT&T Bell Laboratories. Compact optical pulse source. 5,305,336, Cl. 372-18.000.

ADC Telecommunications, Inc.: *See*—
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Adolf Wurth GmbH & Co. KG: *See*—
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Advanced Safety Technology: *See*—
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Advantest Corporation: *See*—
Sasaki, Yasushi, 5,305,329, Cl. 371-27.000.

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Aggarwal, Ishwar D.: *See*—
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Akada, Yuzo; Akazawa, Koji; and Nakamoto, Keiji, to Nitto Denko Corporation. Dicing-die bonding film. 5,304,418, Cl. 428-345.000.
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Akahira, Nobuo; Ohno, Eiji; Nishiuchi, Kenichi; Nagata, Kenichi; and Yamada, Noboru, to Matsushita Electric Industrial Co., Ltd. Optical information recording medium. 5,305,303, Cl. 369-275.400.
Akahira, Nobuo: *See*—
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Akashi, Tsutomu; and Imada, Shuichi, to Kao Corporation. Apparatus for and method of picking up flexible disk center hub. 5,303,939, Cl. 279-158.000.
Akazawa, Koji: *See*—
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Akiyama, Shin-ichi; Sakoda, Ryozo; Seto, Kiyotomo; and Shudo, Norimasa, to Nissan Chemical Industries Ltd. Drug effect-enhancing agent for antitumor drug. 5,304,550, Cl. 514-85.000.
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Hayashi, Yasukazu; and Shibata, Shinji, to Okuma Corporation. Error correcting apparatus in position detection. 5,305,241, Cl. 364-576.000.

Hayashi, Yoshiaki; Ota, Akiho; and Sugiura, Hiroaki, to Yoshino Kogyosho Co., Ltd. Blow-molded bottle-shaped container made of synthetic resin. 5,303,833, Cl. 215-1.00C.

Hayashi, Yoshio: *See*—
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Hayduk, Edward A., Jr.: *See*—
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Heinecke, Rudolf A. H.; and Williamson, Roger J., to Northern Telecom Limited. Crystal resonator device. 5,304,887, Cl. 310-361.000.

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Held, Kurt. Continuously operating double band press with a shape compensating plate structure including a deformation-limiting supporting plate. 5,303,644, Cl. 100-93.00P.

Held, Manfred, to Deutsche Aerospace AG. Combination projectile for combatting armored targets. 5,303,654, Cl. 102-476.000.

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Hoffa, Robert J., to General Electric Company. Fuel supply control method for a gas turbine engine. 5,303,542, Cl. 60-39.060.

Hoffman, Ernest G., to Hubbell Incorporated. Cable clamp with stress distributing grip. 5,304,075, Cl. 439-472.000.

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Iijima, Masaki; Yamada, Masakazu; Tomikawa, Fumio; Negoro, Masaki; Minemoto, Masaki; and Haneda, Hisao, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for the fixation of carbon dioxide, apparatus for fixing and disposing carbon dioxide, and apparatus for the treatment of carbon dioxide. 5,304,356, Cl. 422-226.000.

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Ikai, Keizo; Minami, Masaki; and Matsuno, Mitsuo, to Nippon Oil Company, Ltd. Process for producing polysilanes. 5,304,622, Cl. 528-16.000.

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Montres Rolex S.A.: *See*—
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Summa, Gareth D.; and Hespe, Darrel D., to Mid-West Conveyor Company, Inc. Automatic stabilizer unit for free trolley having vertically movable wheels resonsive to trackside rails. 5,303,655, Cl. 104-140.000.
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Suzuki, Akiyoshi; and Noguchi, Miyoko, to Canon Kabushiki Kaisha. Imaging method for manufacture of microdevices. 5,305,054, Cl. 355-53.000.
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Tanaka, Hitoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Waterproof lens. 5,305,145, Cl. 359-513.000.

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Young, Nathan W.; Bieri, Robert B.; Busch, David B.; Bainbridge, Scott S.; and Hotary, James T., to Prince Corporation. Overhead console for a vehicle with a sunroof. 5,303,970, Cl. 296-37.700.

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Zhao, Yang; and Tang, Qingfeng, to Wayne State University. Pressure or fluid level sensor. 5,303,586, Cl. 73-293.000.

Zhou, Peter Y.; Dunn, John; Graham, Charles D.; and Shin, Kyung-Ho, to Knogo Corporation. Multiple pulse responder and detection system and method of making and using same. 5,304,983, Cl. 340-572.000.

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Zink, Donald J.: *See*—
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Zink, Donald L.; Zink, Donald G.; and Schwartz, John E., to Montana Sulphur & Chemical Co. Fluid transport apparatus with water hammer eliminator system. 5,303,843, Cl. 220-563.000.

Zirkelbach, Donald A.; and Parniske, Dennis J., to Aldon Industries, Inc. Boat camper system and method. 5,303,667, Cl. 114-361.000.

Zivkov, Catherine: *See*—
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Zook, Ben B. Economical padded horseshoe and method. 5,303,777, Cl. 168-12.000.

Zulick, James E., III; and Appler, William F. Plastic security handrail system and connectors therefor. 5,303,900, Cl. 256-65.000.

Zurecki, Zbigniew; Hayduk, Edward A., Jr.; North, John G.; Swan, Robert B.; and Mitchell, David L., Jr., to Air Products and Chemicals, Inc. Graphite/carbon articles for elevated temperature service and method of manufacture. 5,304,417, Cl. 428-336.000.

Zurnamer, Kal G., to Manhattan Beach Blading Company. In-line roller skate guard. 5,303,955, Cl. 280-825.000.

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TO WHOM

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Crane, Michael B.; and Sullivan, Neil W., deceased (by Sullivan, Louise S.), to Call-It Co. Interactive computerized communications systems with voice input and output. Re. 34,587, Cl. 379-88.000.

Dow Chemical Company, The: *See*—
Yin, Tyze-Kuan T., Re. 34,589, Cl. 568-709.000.

Hong, Kuochih. Hydrogen storage hydride electrode materials. Re. 34,588, Cl. 423-644.000.

Mayer, Timothy G.: *See*—
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Peabody Myers Corporation: *See*—
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Schmidt, Ronald L., Jr.; and Mayer, Timothy G., to Peabody Myers Corporation. Pivoting hose storage reel and mounting thereof. Re. 34,585, Cl. 134-167.00C.

Spink, Donald R.; and Spink, Edward F., to Turbotak Inc. Spray nozzle design. Re. 34,586, Cl. 239-427.300.

Spink, Edward F.: *See*—
Spink, Donald R.; and Spink, Edward F., Re. 34,586, Cl. 239-427.300.

Sullivan, Louise S.: *See*—
Crane, Michael B.; and Sullivan, Neil W., deceased, Re. 34,587, Cl. 379-88.000.

Sullivan, Neil W., deceased: *See*—
Crane, Michael B.; and Sullivan, Neil W., deceased, Re. 34,587, Cl. 379-88.000.

Turbotak Inc.: *See*—
Spink, Donald R.; and Spink, Edward F., Re. 34,586, Cl. 239-427.300.

Yin, Tyze-Kuan T., to Dow Chemical Company, The. Aqueous synthesis of 2-halo-4,6-dinitroresorcinol and 4,6-diaminoresorcinol. Re. 34,589, Cl. 568-709.000.

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Elscint, Ltd.: *See*—
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Forestal, Robert J.; and Kays, H. Terrell. Convenience tray. B1 5,152,398, 4-19-94, Cl. 206-561.000.

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Grimberg, Ernest: *See*—
Inbar, Dan; Gafni, Giora; Grimberg, Ernest; and Koren, Jacob, B1 4,424,446, Cl. 250-363.070.

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Kays, H. Terrell: *See*—
Forestal, Robert J.; and Kays, H. Terrell, B1 5,152,398, Cl. 206-561.000.

Killough, Bruce A., to Corning Incorporated. Modular solvent extractory concentrator apparatus. B1 5,098,662, 4-19-94, Cl. 422-102.000.

Koren, Jacob: *See*—
Inbar, Dan; Gafni, Giora; Grimberg, Ernest; and Koren, Jacob, B1 4,424,446, Cl. 250-363.070.

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CLASS 73
7 5,303,574
23.3 5,303,575
[illegible] 5,303,576
40.5 R B1 5,040,408
49.2 5,303,577
54.24 5,303,578
73 5,303,579
118.1 5,303,580
5,303,581
155 5,303,582
201 5,303,583
204.21 5,303,584
290 V 5,303,585
293 5,303,586
[illegible] 5,303,587
497 5,303,589
[illegible] 5,303,588
[illegible] 5,303,590
[illegible] 5,303,591
[illegible] 5,303,592
[illegible] 5,303,593
727 5,303,594
728 5,303,595
754 5,303,596
861.35 5,303,597
862.23 5,303,601
[illegible] 5,303,598
[illegible] 5,303,599
864.62 5,303,600
866.5 5,303,602

CLASS 74
37 5,303,603
89.15 5,303,604
[illegible] 5,303,605
441 5,303,606
459 5,303,607
502.2 5,303,608
523 5,303,609
535 5,303,610
551.1 5,303,611
553 5,303,612
[illegible] 5,303,613
5,303,614
5,303,615
890 5,303,616

CLASS 75
231 5,303,617
403 5,304,230
528 5,304,231
571 5,304,232
741 5,304,233

CLASS 76
107.1 5,303,618

CLASS 81
180.1 5,303,619
434 5,303,620

CLASS 82
1.11 5,303,621
127 5,303,622

CLASS 83
121 5,303,623
[illegible] 5,303,624
447 5,303,625
485 5,303,626
777 5,303,627

CLASS 84
96 5,304,733
383 R 5,303,628
615 5,303,629
[illegible] 5,304,734

CLASS 87
9 5,303,630

CLASS 89
1.14 5,303,631
7 5,303,632
8 5,303,633
14.2 5,303,634
33.4 5,303,635

CLASS 91
471 5,303,636

CLASS 92
13.41 5,303,637
88 5,303,638

CLASS 95
106 5,304,234

CLASS 96
144 5,304,235

CLASS 99
289 R 5,303,639
495 5,303,640

CLASS 100
35 5,303,641
50 5,303,642
51 5,303,643
93 P 5,303,644
144 5,303,645

CLASS 101
32 5,303,646
125 5,303,647
329 5,303,648
363 5,303,649
[illegible] 5,303,650
424 5,303,651
425 5,303,652

CLASS 102
363 5,303,653
476 5,303,654

CLASS 104
140 5,303,655

CLASS 105
144 5,303,656
206.1 5,303,657
401 5,303,658

CLASS 106
15.05 5,304,236
18.3 5,304,237
19 F 5,304,238
35 5,304,239
217 5,304,240
482 5,304,241
483 5,304,242
490 5,304,243
493 5,304,244
5,304,245

CLASS 108
50 5,303,659

CLASS 110
336 5,303,660
341 5,303,661

CLASS 111
52 5,303,662
200 5,303,663

CLASS 112
292 5,303,664
445 5,303,665

CLASS 114
315 5,303,666
361 5,303,667

CLASS 116
63 P 5,303,668
205 5,303,669

CLASS 118
228 5,303,670
406 5,304,246
715 5,304,247
719 5,303,671
723 ER 5,304,250
728 5,304,248
5,304,249

CLASS 119
51.11 5,303,672
60 5,303,673
77 5,303,674
165 5,303,675
173 5,303,676
174 5,303,677

CLASS 122
1 R 5,303,678

CLASS 123
44 C 5,303,679
90.22 5,303,680
192.1 5,303,681
193.1 5,303,682
193.6 5,303,683
435 5,303,684
510 5,303,685
[illegible] 5,303,686

CLASS 124
17 5,303,695

CLASS 125
13.02 5,303,687
15 5,303,688
21 5,303,689
23.2 5,303,690

CLASS 126
9 R 5,303,691
506 5,303,692
522 5,303,693

CLASS 127
42 5,304,251

CLASS 128
[illegible] 5,303,694
200.26 5,303,697
204.21 5,303,698
5,303,699
204.23 5,303,700
206.17 5,303,701
642 5,303,703
5,303,704
653.2 5,303,705
5,303,706
5,303,707
660.01 5,303,708
665 5,303,709
5,303,710
680 5,303,711
716 5,303,712
763 5,303,713
772 5,303,714
782 5,303,715
830 5,303,717
897 5,303,718
898 5,303,719

CLASS 131
194 5,303,720
248 5,303,721

CLASS 132
219 5,303,722
246 5,303,723
[illegible] 5,303,724

CLASS 134
2 5,304,252
26 5,304,253
37 5,304,254
56 R 5,303,725
167 C Re.34,585

CLASS 135
89 5,303,726

CLASS 136
257 5,304,255

CLASS 137
83 5,303,727
113 5,303,728
[illegible] 5,303,729
318 5,303,732
375 5,303,730
[illegible] 5,303,731
[illegible] 5,303,733
505.43 5,303,734
596.2 5,303,735
625.17 5,303,737
625.4 5,303,736
809 5,303,782
852 5,303,738
899.2 5,303,739

CLASS 138
44 5,303,740
89 5,303,741
94.3 5,303,742
96 T 5,303,743
110 5,303,744

CLASS 139
123 5,303,748

CLASS 141
4 5,303,749
319 5,303,750
329 5,303,751

CLASS 144
34 R 5,303,752
5,303,753
237 5,303,754
286 A 5,303,755

CLASS 148
202 5,304,256
265 5,304,257
306 5,304,258
325 5,304,259
403 5,304,260
519 5,304,261
589 5,304,262
671 5,304,263

CLASS 152
154.2 5,303,756
216 5,303,757
523 5,303,758

CLASS 156
[illegible] 5,304,264
5,304,265
5,304,266
[illegible] 5,304,267
90 5,304,268
[illegible] 5,304,269
127 5,304,270
145 5,304,271
[illegible] 5,304,272
219 5,304,273
230 5,304,274
270 5,304,275
[illegible] 5,304,276
345 5,304,277
5,304,278
5,304,279
574 5,303,759

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384	5,304,280
814	5,304,281
643	5,304,282
	5,304,283
666	5,304,284

CLASS 140

236	5,303,780

CLASS 142

339	5,304,285

CLASS 164

15	5,303,761
83	5,303,762
97	5,303,763
312	5,303,764
428	5,303,765
476	5,303,766

CLASS 165

12	5,303,767
104.26	5,303,768
108	5,303,769
140	5,303,770
165	5,303,771

CLASS 166

55.1	5,303,772
66	5,303,773
191	5,303,774
264	5,303,775
361	5,303,776

CLASS 168

12	5,303,777

CLASS 169

90	5,303,778

CLASS 172

311	5,303,779
329	5,303,780

CLASS 173

169	5,303,781

CLASS 174

16.3	5,304,735
48	5,304,736
52.4	5,304,737
	5,304,738
102 R	5,304,739
110 PM	5,304,740
117 FF	5,304,741
135	5,304,742
262	5,304,743

CLASS 175

53	5,303,783
56	5,303,784
57	5,303,785
66	5,303,786
430	5,303,787

CLASS 177

50	5,304,745
136	5,304,744

CLASS 180

7.1	5,303,788
53.1	5,303,789
53.3	5,303,790
79.1	5,303,791
89.17	5,303,792
132	5,303,793
197	5,303,794
216	B1 4,570,739
219	5,303,795
233	5,303,796
248	5,303,797
292	5,303,798

CLASS 181

148	5,304,746
156	5,304,747
262	5,304,748
264	5,304,749
294	5,304,750

CLASS 182

78	5,303,799

CLASS 184

5.1	5,303,800

CLASS 187

115	5,304,751
126	5,304,752

CLASS 188

73.34	5,303,801
158	5,303,802
299	5,303,803
319	5,303,804

CLASS 190

18 A	5,303,805

CLASS 192

0.076	5,303,807
70.27	5,303,806

CLASS 194

202	5,303,808

CLASS 198

341	5,303,809
345.3	5,303,810
419.1	5,303,811
465.2	5,303,812
525	5,303,813
659	5,303,814
680	5,303,815
750	5,303,816
833	5,303,817
850	5,303,818

CLASS 200

16 R	5,304,753
47	5,304,754
50 AA	5,304,755
61.45 M	5,304,756
82 R	5,304,757
83 J	5,304,758
83 SA	5,304,759
144 AP	5,304,760
144 R	5,304,761
148 A	5,304,762
295	5,304,763
314	5,304,764
401	5,304,765

CLASS 202

167	5,304,286

CLASS 203

1	5,304,287

CLASS 204

129.1	5,304,288
149	5,304,289
157.6	5,304,291
295 R	5,304,292
414	5,304,293
418	5,304,290
426	5,304,294
451	5,304,295
433	5,304,296

CLASS 205

101	5,304,297
186	5,304,298

CLASS 206

83	5,303,819
232	5,303,825
328	5,303,820
346	5,303,821
366	5,303,822
394	5,303,823
449	5,303,824
561	B1 5,152,398

CLASS 208

120	5,304,299

CLASS 209

46	5,303,826

CLASS 210

86	5,304,300
180	5,304,301
222	5,304,302
242.3	5,304,303
331	5,304,304
346	5,304,305
360.3	5,304,306
490	5,304,307
614	5,304,308
636	5,304,309
639	5,304,310
693	5,304,311
808	5,304,312

CLASS 211

13	5,303,827
	5,303,828
30	5,303,829
57.1	5,303,830
66	5,303,831
105.4	5,303,832

CLASS 215

1 C	5,303,833
	5,303,834
247	5,303,835

CLASS 219

61.2	5,304,768
119	5,304,769
121.43	5,304,775
121.5	5,304,770
121.63	5,304,771
121.71	5,304,772
121.78	5,304,773
131.83	5,304,774
125.11	5,304,776
137 WM	5,304,777
270	5,304,778
388	5,304,779
492	5,304,780
501	5,304,781
810	5,304,782
543	5,304,783
	5,304,784
674	5,304,767
687	5,304,766

CLASS 220

1.5	5,303,836
254	5,303,837
270	5,303,838
306	5,303,839
469	5,303,840
555	5,303,841
562	5,303,842
563	5,303,843

CLASS 221

1	5,303,844

CLASS 222

	5,303,845
54	5,303,846
78	5,303,847
79	5,303,848
129.1	5,303,849
153	5,303,850
207	5,303,851
209	5,303,852
212	5,303,853
321	5,303,854

CLASS 223

85	5,303,855
111	5,303,856

CLASS 224

42.03 B	5,303,857
42.45 R	5,303,858
149	5,303,859
158	5,303,860

CLASS 225

2	5,303,861

CLASS 228

175	5,303,862

CLASS 229

227	5,303,863

CLASS 235

95 R	5,304,785
462	5,304,786
	5,304,787
467	5,304,788
487	5,304,789

CLASS 236

92 B	5,303,864

CLASS 239

9	5,303,865
142	5,303,866
333	5,303,867
391	5,303,869
394	5,303,868
427.3	Re 34,586

CLASS 241

9	5,303,870
20	5,303,871
41	5,303,872

CLASS 242

36	5,303,873
68	5,303,874
197	5,303,875
199	5,303,876
256	5,303,877

CLASS 244

3.15	5,303,878
23 C	5,303,879
54	5,303,880
122 R	5,303,881
130	5,303,882
145	5,303,883

CLASS 246

435 R	5,303,884

CLASS 248

59	5,303,885
63	5,303,886
68.1	5,303,887
86	5,303,888
97	5,303,889
118	5,303,890
218.4	5,303,891
231.9	5,303,892
288.5	5,303,893
343	5,303,894
475.1	5,303,895
557	5,303,896

CLASS 250

338.1	5,304,790
214 A	5,304,793
214 R	5,304,794
214 VT	5,304,791
	5,304,792
234	5,304,795
252	5,304,796
287	5,304,797
288	5,304,798
296	5,304,799
302	5,304,800
311	5,304,801
332	5,304,803
338.1	5,304,804
	5,304,805
363.07	B1 4,424,446
369	5,304,806
373	5,304,807
391	5,304,808
458.1	5,304,809
	5,304,810
492.22	5,304,811
551	5,304,812
556	5,304,813
573	5,304,814

CLASS 251

85	5,303,897

CLASS 252

3	5,304,313
47.005	5,304,314
51.5 A	5,304,315
80	5,304,316
81	5,304,317
62.61	5,304,318
67	5,304,319
	5,304,320
171	5,304,321
172	5,304,322
299.5	5,304,323
300	5,304,324
312	5,304,325
314	5,304,334
363	5,304,335
511	5,304,326

CLASS 254

126	5,303,898
334	5,303,899

CLASS 256

65	5,303,900

CLASS 257

10	5,304,815
26	5,304,816
31	5,304,817
81	5,304,818
82	5,304,819
86	5,304,820
133	5,304,821
136	5,304,822
146	5,304,823
183	5,304,824
192	5,304,825
202	5,304,826
262	5,304,827
309	5,304,828
324	5,304,829
328	5,304,802
338	5,304,830
341	5,304,831
342	5,304,832
372	5,304,833
374	5,304,834
380	5,304,835
399	5,304,836
470	5,304,837
542	5,304,838
546	5,304,839
640	5,304,840
667	5,304,841
668	5,304,842
670	5,304,843
676	5,304,844
722	5,304,845
	5,304,846
762	5,304,847

CLASS 261

66	5,304,327
94	5,304,328

CLASS 264

25	5,304,329
81	5,304,330
141	5,304,331
234	5,304,333
242	5,304,336
255	5,304,332
303	5,304,337
328.4	5,304,338
511	5,304,339
521	5,304,340
572	5,304,341

CLASS 264

225	5,303,901
230	5,303,902
239	5,303,903
252	5,303,904
271	5,303,905

CLASS 267

64.11	5,303,906
281	5,303,907

CLASS 269

48.1	5,303,908

CLASS 270

5	5,303,909

CLASS 271

21	5,303,910
158	5,303,911
263	5,303,912
274	5,303,913

CLASS 273

26 E	5,303,914
31	5,303,915
67 A	5,303,916
72 R	5,303,917
73 D	5,303,918
143 R	5,303,919
149 R	5,303,921
173	5,303,922
175	5,303,923
185 R	5,303,924
186.1	5,303,926
186.2	5,303,925
188 R	5,303,927
249	5,303,928
269	5,303,929
283	5,303,930
348	5,303,931
411	5,303,932

CLASS 277

1	5,303,943
9	5,303,933
24	5,303,934
152	5,303,935
165	5,303,936
215	5,303,937

CLASS 279

1	5,303,938
158	5,303,939

CLASS 280

11.22	5,303,940
79.11	5,303,941
118	5,303,942
188.4	5,303,944
284.1	5,303,945
405.1	5,303,946
423.1	5,303,947
407	5,303,948
408	5,303,949
416	5,303,950
728 B	5,303,951
731	5,303,952
733	5,303,953
819	5,303,954
825	5,303,955

CLASS 281

31	5,303,956

CLASS 283

117	5,303,957

CLASS 285

23	5,303,958
24	5,303,959
93	5,303,960
119	5,303,961
259	5,303,962
319	5,303,963
322	5,303,964

CLASS 290

45	5,304,848

CLASS 291

336.3	5,303,965

CLASS 294

15	5,303,966
19.2	5,303,967
106	5,303,968

CLASS 296

37.6	5,303,969
37.7	5,303,970
50	5,303,971
98	5,303,972
194	5,303,973
216	5,303,974

CLASS 297

129	5,303,975
146	5,303,976
230.1	5,303,977
230.12	5,303,978
250.1	5,303,979
251	5,303,980
338	5,303,981
339	5,303,982
472	5,303,983

CLASS 299

86	5,303,984

CLASS 301

124.1	5,303,985

CLASS 303

3	5,303,986
22.2	5,303,987
103	5,303,988
111	5,303,989
117.1	5,303,990

CLASS 305

46	5,303,992

CLASS 306

296.4	5,304,861

CLASS 307

10.5	5,304,849
30	5,304,850
113	5,304,851
118	5,304,852
241	5,304,853
263	5,304,854
265	5,304,855
270	5,304,856
273	5,304,857
290	5,304,858
296.2	5,304,859
296.3	5,304,860
296.6	5,304,862
314	5,304,863
351	5,304,864
353	5,304,866
362	5,304,865
443	5,304,867
446	5,304,868
	5,304,869
448	5,304,870
465	5,304,871
475	5,304,872
492	5,304,873
530	5,304,874
571	5,304,875

CLASS 310

45	5,304,877
67 R	5,304,878
	5,304,879
71	5,304,880
103.5	5,304,876
156	5,304,881
	5,304,882
180	5,304,883
198	5,304,884
216	5,304,885
268	5,304,886
361	5,304,887

CLASS 312

9.22	5,303,993
221	5,303,994
319.1	5,303,995
328	5,303,996
334.4	5,303,997

CLASS 313

359.1	5,304,888
467	5,304,889
477 R	5,304,890
479	5,304,891
623	5,304,892
631	5,304,893

CLASS 315

58	5,304,894
72	5,304,895
84	5,304,896
209 R	5,304,897
411	5,304,898

CLASS 318

16	5,304,899
34	5,304,900
164	5,304,901
234	5,304,902
	5,304,903
484	5,304,904
561	5,304,905
568.18	5,304,906
611	5,304,907
639	5,304,908
661	5,304,909
696	5,304,910

729	5,304,911
802	5,304,912
811	5,304,913

CLASS 320

3	5,304,914
14	5,304,915
23	5,304,916
32	5,304,917

CLASS 323

315	5,304,918

CLASS 324

74	5,304,919
96	5,304,920
158 F	5,304,921
158 P	5,304,922
158 R	5,304,923
	5,304,924
158 T	5,304,925
207.2	5,304,926
233	5,304,927
309	5,304,928
	5,304,929
	5,304,930
	5,304,931
318	5,304,932
	5,304,933
	5,304,934
415	5,304,935
686	5,304,937
689	5,304,936

CLASS 328

15	5,304,938
151	5,304,939
164	5,304,941
167	5,304,940

CLASS 330

45	5,304,942
51	5,304,943
149	5,304,944
	5,304,945
254	5,304,946
279	5,304,947
284	5,304,948
296	5,304,949
308	5,304,950

CLASS 331

1 A	5,304,951
	5,304,952
	5,304,953
	5,304,954
1 R	5,304,955
10	5,304,956
12	5,304,957
107 A	5,304,958

CLASS 333

26	5,304,959
101	5,304,960
112	5,304,961
134	5,304,962
172	5,304,963
181	5,304,964
194	5,304,965
204	5,304,966
206	5,304,967
222	5,304,968
260	5,304,969

CLASS 335

78	5,304,970
126	5,304,971
216	5,304,972
219	5,304,973

CLASS 337

4	5,304,974

CLASS 338

32 R	5,304,975
34	5,304,976
275	5,304,977
280	5,304,978

CLASS 340

428	5,304,979
435	5,304,980
436	5,304,981
331	5,304,982
572	5,304,983
573	5,304,984
620	5,304,985
636	5,304,986
854	5,304,987
825.06	5,304,990
825.44	5,304,991
825.52	5,304,992
984	5,304,993

CLASS 341

50	5,304,994
67	5,304,995
95	5,304,996
	5,304,997
120	5,305,003
	5,305,004
131	5,305,005
141	5,304,988
155	5,305,006

CLASS 342

20	5,305,007
44	5,305,008
157	5,305,009
401	5,305,010

CLASS 343

767	5,304,998
778	5,304,999
786	5,305,000
	5,305,001
788	5,305,002

CLASS 345

7	5,305,011
	5,305,012
82	5,305,013
128	5,304,989
173	5,305,014
174	5,305,017

CLASS 346

1.1	5,305,015
	5,305,018
74.2	5,305,019
76 PH	5,305,020
	5,305,021
108	5,305,022
	5,305,023
140 R	5,305,016
	5,305,024
155	5,305,025
159	5,305,026

CLASS 348

14	5,305,097
45	5,305,121
65	5,305,098
88	5,305,099
159	5,305,100
242	5,305,096
415	5,305,101
	5,305,102
	5,305,103
473	5,305,104
485	5,305,105
521	5,305,106
594	5,305,108
624	5,305,120
651	5,305,094
665	5,305,095
737	5,305,109
836	5,305,110

CLASS 351

44	5,305,027
169	5,305,028

CLASS 353

37	5,305,029

CLASS 354

64	5,305,030
	5,305,031
	5,305,032
76	5,305,033
82	5,305,034
96	5,305,035
149.1	5,305,037
195.1	5,305,036
195.12	5,305,038
202	5,305,040
266	5,305,041
275	5,305,042
288	5,305,039
294	5,305,043
400	5,305,044
	5,305,045
402	5,305,046
403	5,305,047
412	5,305,048
416	5,305,049
420	5,305,050
441	5,305,051

CLASS 355

	5,305,052
132	5,305,053
53	5,305,054
200	5,305,055
202	5,305,056
203	5,305,057
308	5,305,058
	5,305,059
	5,305,060
219	5,305,061
245	5,305,062
260	5,305,063
	5,305,064
285	5,305,065
289	5,305,066
297	5,305,067
309	5,305,068
326 R	5,305,069
	5,305,070

CLASS 356

73	5,305,071
73.1	5,305,078
237	5,305,079
	5,305,080
240	5,305,081
328	5,305,082
332	5,305,083
336	5,305,072
338	5,305,073
345	5,305,074
	5,305,075
346	5,305,076
	5,305,077
349	5,305,084
350	5,305,085
	5,305,086
	5,305,087
351	5,305,088
356	5,305,089
366	5,305,090
375	5,305,091
376	5,305,092
435	5,305,093

CLASS 358

261.1	5,305,111
310	5,305,112
312	5,305,113
401	5,305,114
432	5,305,115
448	5,305,116
451	5,305,117
456	5,305,118
522	5,305,119
530	5,305,122

CLASS 359

8	5,305,123
13	5,305,124
17	5,305,125
52	5,305,126
96	5,305,127
59	5,305,128
67	5,305,129
88	5,305,130
104	5,305,131
113	5,305,132
152	5,305,133
192	5,305,134
200	5,305,135
247	5,305,136
281	5,305,137
355	5,305,138
360	5,305,139
402	5,305,140
416	5,305,141
435	5,305,142
488	5,305,143
507	5,305,144
513	5,305,145
634	5,305,146
644	5,305,147
689	5,305,148
694	5,305,149
784	5,305,150
814	5,305,151
842	5,305,153
883	5,305,154
896	5,305,152

CLASS 360

32	5,305,155
40	5,305,156
53	5,305,157
75	5,305,158
77.02	5,305,159
78.06	5,305,161
78.07	5,305,160
85	5,305,162
98.01	5,305,163
98.07	5,305,164
105	5,305,165
	5,305,166
104	5,305,167
	5,305,168
105	5,305,169
	5,305,170
132	5,305,171
133	5,305,172

CLASS 361

45	5,305,173
63	5,305,174
	5,305,175
205	5,305,176
225	5,305,177
323	5,305,178
680	5,305,181
684	5,305,182
685	5,305,180
686	5,305,183
699	5,305,184
704	5,305,185
	5,305,186
718	5,305,179
784	5,305,187
787	5,305,188

CLASS 362

61	5,305,189
83.3	5,305,190

CLASS 363

17	5,305,191
21	5,305,192

CLASS 364

151	5,305,193
400	5,305,194
401	5,305,195
	5,305,196
	5,305,197
402	5,305,198
403	5,305,199
408	5,305,200
410	5,305,201
413.06	5,305,202
413.13	5,305,203
	5,305,204
419.09	5,305,207
419.1	5,305,205
	5,305,206
419.19	5,305,208
420	5,305,209
	5,305,210
422	5,305,211
	5,305,212
424.01	5,305,216
424.02	5,305,217
424.04	5,305,214
	5,305,219
424.1	5,305,213
	5,305,215
426.02	5,305,218
431.03	5,305,220
468	5,305,221
	5,305,222
472	5,305,223
473	5,305,224
474.02	5,305,225
474.04	5,305,226
474.29	5,305,228
474.35	5,305,227
489	5,305,229
495	5,305,230
497	5,305,231
498	5,305,232
507	5,305,239
526	5,305,233
550	5,305,234
551.01	5,305,235
559	5,305,236
562	5,305,237
569	5,305,238
571.01	5,305,240
576	5,305,241
602	5,305,242
604	5,305,243
708.1	5,305,244
728.03	5,305,245
729	5,305,246
748	5,305,247
	5,305,248
768	5,305,249
807	5,305,250
	5,305,251

CLASS 362

63	5,305,252
73	5,305,253
122	5,305,254
145	5,305,255
149	5,305,256
	5,305,257
189.01	5,305,258
	5,305,261
189.05	5,305,262
189.09	5,305,259
	5,305,260
190	5,305,263
	5,305,264
194	5,305,265
201	5,305,266
	5,305,267
203	5,305,268
	5,305,269
	5,305,270
205	5,305,271
208	5,305,272
210	5,305,273
222	5,305,274
226	5,305,275
230.01	5,305,276
230.02	5,305,277
230.03	5,305,278
	5,305,279
	5,305,280
230.04	5,305,281
230.08	5,305,282
	5,305,283
238.5	5,305,284

CLASS 366

3	5,303,998
25	5,303,999
97	5,304,000
132	5,304,001
349	5,304,002

CLASS 367

49	5,305,285
92	5,305,286
147	5,305,287
175	5,305,288

CLASS 368

28	5,305,289
76	5,305,290
252	5,305,291
281	5,305,292
282	5,305,293

CLASS 369

13	5,305,294
30	5,305,295
50	5,305,296
116	5,305,297
	5,305,298
215	5,305,299
275.2	5,305,300
275.3	5,305,301
	5,305,302
275.4	5,305,303
275.5	5,305,304

CLASS 370

13	5,305,305
29	5,305,306
32.1	5,305,307
	5,305,308
	5,305,309
60	5,305,310
	5,305,311
62	5,305,312
	5,305,313
79	5,305,314
84	5,305,315
85.1	5,305,316
85.13	5,305,319
85.15	5,305,320
85.5	5,305,317
85.7	5,305,318
94.1	5,305,321
102	5,305,322

CLASS 371

2.1	5,305,324
4	5,305,325
5.1	5,305,323
11.1	5,305,326
21.3	5,305,327
27	5,305,328
	5,305,329
29.1	5,305,331
31	5,305,332

CLASS 372

8	5,305,335
18	5,305,336
29	5,305,330
31	5,305,333
	5,305,337
32	5,305,334
38	5,305,338
	5,305,339
43	5,305,340
45	5,305,341
50	5,305,342
	5,305,343
	5,305,344
69	5,305,345
82	5,305,346

CLASS 374

150	5,304,003
208	5,304,004

CLASS 375

1	5,305,347
	5,305,348
	5,305,349
12	5,305,350
14	5,305,351
39	5,305,352
100	5,305,353
106	5,305,354
107	5,305,355

CLASS 376

249	5,305,356
254	5,305,357
260	5,305,358
	5,305,359
309	5,305,360
316	5,305,361

CLASS 377

48	5,305,362

CLASS 378

4	5,305,363
34	5,305,364
37	5,305,365
45	5,305,366
148	5,305,367
	5,305,368
155	5,305,369

CLASS 379

45	5,305,370
88	5,305,371
89	5,305,372
91	5,305,373
67	5,305,374
88	Re 34,587
89	5,305,375
100	5,305,376
399	5,305,

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423	5,305,446
	5,305,447
	5,305,448
500	5,305,449
	5,305,450
550	5,305,451
	5,305,452
	5,305,453
650	5,305,454
700	5,305,455
	5,305,456
	5,305,457
725	5,305,458
750	5,305,459
775	5,305,460
	5,305,461
800	5,305,462
	5,305,463
CLASS 409	
120	5,304,007
134	5,304,008
CLASS 451	
268	5,304,009
289	5,304,010
CLASS 483	
253	5,304,011
274	5,304,012
CLASS 484	
127	5,304,013
CLASS 488	
26	5,304,005
129	5,304,014
132	5,304,015
133	5,304,016
CLASS 406	
111	5,304,017
CLASS 408	
1 R	5,304,018
156	5,304,019
205	5,304,020
CLASS 411	
121	5,304,021
366	5,304,022
387	5,304,023
418	5,304,024
CLASS 412	
9	5,304,025
CLASS 414	
257	5,304,026
331	5,304,027
412	5,304,028
788	5,304,029
795.8	5,304,030
CLASS 415	
173.4	5,304,031
200	5,304,032
206	5,304,033
214.1	5,304,034
CLASS 416	
63	5,304,035
102	5,304,036
134 R	5,304,037
164	5,304,038
241 R	5,304,039
247 R	5,304,040
CLASS 417	
53	5,304,041
269	5,304,043
312	5,304,044
372	5,304,045
419	5,304,046
CLASS 418	
5	5,304,047
36	5,304,048
257	5,304,049
CLASS 419	
11	5,304,342
39	5,304,343
CLASS 420	
418	5,304,344
455	5,304,345
580	5,304,346
CLASS 422	
67	5,304,347
72	5,304,348
101	5,304,349
102	5,304,350
104	5,304,351
188	5,304,352
186	5,304,353
193	5,304,354
225	5,304,355
226	5,304,356
250	5,304,357
305	5,304,358
CLASS 423	
22	5,304,359
220	5,304,361
239.1	5,304,362
326.1	5,304,363
338	5,304,364
352	5,304,365
443 B	5,304,366
521	5,304,360
644	Re.34,538
CLASS 424	
1.11	5,304,367
47	5,304,368
52	5,304,369
71	5,304,370
88	5,304,371
94.64	5,304,372
121	5,304,373
195.1	5,304,374
405	5,304,375
409	5,304,376
426	5,304,377
445	5,304,378
449	5,304,379
450	5,304,380
484	5,304,381
489	5,304,382
490	5,304,383
502	5,304,724
CLASS 425	
4 R	5,304,050
145	5,304,051
192 S	5,304,052
204	5,304,053
208	5,304,054
225	5,304,055
304	5,304,056
389	5,304,057
562	5,304,058
CLASS 426	
16	5,304,384
94	5,304,386
412	5,304,385
582	5,304,387
658	5,304,388
659	5,304,389
CLASS 427	
8	5,304,390
	5,304,391
98	5,304,392
130	5,304,393
166	5,304,394
213.3	5,304,395
230	5,304,396
249	5,304,397
255.3	5,304,398
286	5,304,399
288.4	5,304,400
410	5,304,401
420	5,304,402
437	5,304,403
512	5,304,404
534	5,304,405
554	5,304,406
569	5,304,407
CLASS 428	
40	5,304,410
75	5,304,408
122	5,304,409
141	5,304,411
174	5,304,412
215	5,304,413
229	5,304,414
328	5,304,415
329	5,304,416
336	5,304,417
345	5,304,418
355	5,304,419
373	5,304,420
377	5,304,421
392	5,304,422
402	5,304,423
403	5,304,424
484	5,304,425
552	5,304,426
567	5,304,427
607	5,304,428
620	5,304,429
CLASS 429	
17	5,304,430
27	5,304,431
30	5,304,432
91	5,304,433
86	5,304,434
101	5,304,435
196	5,304,436
CLASS 430	
5	5,304,437
20	5,304,438
	5,304,439
21	5,304,440
30	5,304,441
45	5,304,442
49	5,304,443
58	5,304,444
59	5,304,445
78	5,304,446
109	5,304,447
	5,304,448
110	5,304,449
137	5,304,450
	5,304,451
138	5,304,452
252	5,304,453
255	5,304,454
270	5,304,455
	5,304,456
280	5,304,457
281	5,304,458
311	5,304,459
	5,304,460
323	5,304,461
349	5,304,462
503	5,304,463
CLASS 431	
170	5,304,059
255	5,304,060
CLASS 433	
8	5,304,061
171	5,304,062
199.1	5,304,063
CLASS 434	
83	5,304,064
218	5,304,065
219	5,304,066
CLASS 438	
3	5,304,464
8	5,304,465
9	5,304,466
14	5,304,467
	5,304,468
25	5,304,469
68.1	5,304,470
69.1	5,304,471
	5,304,472
69.7	5,304,473
111	5,304,474
108	5,304,475
115	5,304,476
134	5,304,477
172.3	5,304,478
188	5,304,479
193	5,304,480
196	5,304,481
226	5,304,482
240.25	5,304,483
252.1	5,304,723
252.31	5,304,484
254.1	5,304,485
287	5,304,486
291	5,304,487
	5,304,488
320.1	5,304,489
	5,304,490
CLASS 436	
11	5,304,491
52	5,304,492
56	5,304,493
60	5,304,494
68	5,304,495
86	5,304,496
89	5,304,497
501	5,304,498
CLASS 437	
5	5,304,499
	5,304,500
31	5,304,501
41	5,304,502
43	5,304,503
44	5,304,504
52	5,304,505
60	5,304,506
129	5,304,507
170	5,304,508
173	5,304,509
195	5,304,510
203	5,304,511
211	5,304,512
214	5,304,513
225	5,304,514
231	5,304,515
CLASS 439	
98	5,304,067
106	5,304,068
108	5,304,069
157	5,304,070
164	5,304,071
166	5,304,072
282	5,304,073
347	5,304,077
417	5,304,074
472	5,304,075
483	5,304,076
CLASS 440	
41	5,304,078
88	5,304,079
CLASS 441	
58	5,304,080
64	5,304,081
129	5,304,082
CLASS 445	
25	5,304,083
CLASS 446	
8	5,304,084
15	5,304,085
36	5,304,090
108	5,304,086
340	5,304,087
443	5,304,088
474	5,304,089
CLASS 452	
192	5,304,091
CLASS 453	
18	5,304,092
CLASS 454	
61	5,304,093
258	5,304,094
365	5,304,095
CLASS 455	
2	5,305,464
6.1	5,305,465
33.1	5,305,466
56.1	5,305,467
69	5,305,468
78	5,305,469
CLASS 472	
137	5,304,096
CLASS 473	
113	5,304,097
CLASS 474	
25	5,304,098
110	5,304,099
135	5,304,100
170	5,304,101
CLASS 475	
125	5,304,102
230	5,304,103
CLASS 482	
1	5,304,104
53	5,304,105
	5,304,106
98	5,304,107
110	5,304,108
142	5,304,109
CLASS 483	
16	5,304,110
CLASS 501	
31	5,304,516
32	5,304,517
62	5,304,518
103	5,304,519
127	5,304,520
139	5,304,521
CLASS 502	
22	5,304,522
66	5,304,601
152	5,304,523
167	5,304,524
185	5,304,525
235	5,304,526
425	5,304,527
CLASS 503	
227	5,304,528
CLASS 504	
148	5,304,529
266	5,304,530
316	5,304,531
337	5,304,532
CLASS 505	
120	5,304,537
190	5,304,538
410	5,304,535
433	5,304,602
434	5,304,534
440	5,304,533
445	5,304,536
473	5,304,539
CLASS 514	
2	5,304,540
12	5,304,541
	5,304,542
	5,304,603
	5,304,543
21	5,304,544
23	5,304,545
63	5,304,548
80	5,304,549
85	5,304,550
182	5,304,551
216	5,304,552
219	5,304,553
228.2	5,304,554
228.5	5,304,555
238.2	5,304,604
243	5,304,556
248	5,304,557
253	5,304,558
255	5,304,559
259	5,304,560
274	5,304,561
284	5,304,562
311	5,304,563
332	5,304,564
340	5,304,565
357	5,304,566
372	5,304,567
383	5,304,568
396	5,304,569
423	5,304,570
471	5,304,571
514	5,304,572
522	5,304,573
563	5,304,574
	5,304,575
CLASS 521	
41	5,304,576
51	5,304,578
	5,304,579
150	5,304,580
159	5,304,581
CLASS 522	
148	5,304,582
	5,304,583
CLASS 523	
106	5,304,584
116	5,304,585
117	5,304,586
161	5,304,587
204	5,304,588
CLASS 524	
178	5,304,589
227	5,304,605
235	5,304,590
417	5,304,577
437	5,304,592
451	5,304,593
494	5,304,591
495	5,304,594
CLASS 525	
54.1	5,304,595
84	5,304,596
	5,304,597
89	5,304,598
99	5,304,599
132	5,304,600
186	5,304,607
210	5,304,606
274	5,304,608
309	5,304,609
327.1	5,304,610
327.2	5,304,611
528	5,304,612
540	5,304,613
CLASS 526	
127	5,304,614
189	5,304,615
280	5,304,616
255	5,304,617
293	5,304,618
311	5,304,619
CLASS 527	
310	5,304,620
CLASS 528	
12	5,304,621
16	5,304,622
28	5,304,623
98	5,304,624
168	5,304,625
353	5,304,626
	5,304,627
370	5,304,628
388	5,304,629
	5,304,630
CLASS 530	
323	5,304,631
326	5,304,633
327	5,304,632
330	5,304,634
	5,304,635
	5,304,636
351	5,304,637
383	5,304,638
CLASS 536	
18.6	5,304,639
23.5	5,304,640
CLASS 540	
215	5,304,641
336	5,304,643
455	5,304,642
547	5,304,644
CLASS 544	
111.2	5,304,645
204	5,304,646
235	5,304,647
410	5,304,648
CLASS 546	
242	5,304,649
245	5,304,650
280	5,304,651
CLASS 548	
126	5,304,652
193	5,304,653
327.5	5,304,654
461	5,304,655
590	5,305,107
CLASS 549	
1	5,304,656
57	5,304,657
80	5,304,658
199	5,304,659
417	5,304,660
426	5,304,661
556	5,304,662
CLASS 552	
310	5,304,663
545	5,304,546
	5,304,547
CLASS 554	
98	5,304,664
149	5,304,665
212	5,304,545
CLASS 556	
21	5,304,666
413	5,304,667
449	5,304,668
CLASS 558	
41	5,304,669
CLASS 560	
39	5,304,670
41	5,304,671
51	5,304,672
78	5,304,673
204	5,304,674
261	5,304,675
CLASS 562	
414	5,304,676
476	5,304,677
548	5,304,678
CLASS 564	
158	5,304,679
417	5,304,680
485	5,304,681
CLASS 568	
30	5,304,682
59	5,304,683
385	5,304,684
433	5,304,685
496	5,304,686
604	5,304,687
709	Re.34,589
727	5,304,688
748	5,304,689
780	5,304,690
867	5,304,691
CLASS 585	
446	5,304,692
648	5,304,693
862	5,304,694
666	5,304,695
888	5,304,696
720	5,304,697
722	5,304,698
810	5,304,699
864	5,304,700
CLASS 588	
201	5,304,701

206	5,304,702
223	5,304,703
249	5,304,704
252	5,304,705
	5,304,706
255	5,304,707
256	5,304,708
257	5,304,709
	5,304,710
258	5,304,711
CLASS 600	
9	5,304,111
27	5,304,112
CLASS 601	
33	5,303,696
34	5,303,716
CLASS 604	
4	5,304,113
8	5,304,114
22	5,304,115
39	5,304,116
49	5,304,117
51	5,304,118
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52	5,304,120
53	5,304,121
	5,304,122
54	5,304,123
55	5,304,124
57	5,304,125
65	5,304,127
67	5,304,126
68	5,304,128
74	5,304,129
85	5,304,130
95	5,304,131
96	5,304,132
	5,304,134
101	5,304,135
110	5,304,136
	5,304,137
	5,304,138
132	5,304,153
158	5,304,141
167	5,304,142
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177	5,304,144
179	5,304,145
180	5,304,146
183	5,304,147
192	5,304,148
	5,304,149
195	5,304,150
198	5,304,151
207	5,304,152
240	5,304,154
247	5,304,155
256	5,304,156
281	5,304,140
333	5,304,157
378	5,304,161
385.1	5,304,158
385.2	5,304,159
	5,304,160
391	5,304,162
403	5,304,163
	5,304,164
.411	5,304,165
CLASS 606	
3	5,304,167
4	5,304,168
5	5,304,169
9	5,304,170
15	5,304,171
	5,304,172
173	5,304,173
174	5,304,174
176	5,304,175
177	5,304,176
178	5,304,177
179	5,304,178
180	5,304,179
181	5,304,180
182	5,304,181
183	5,304,182
184	5,304,183
185	5,304,184
186	5,304,185
187	5,304,186
188	5,304,187
189	5,304,188
190	5,304,189
191	5,304,190
192	5,304,191
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194	5,304,193
195	5,304,194
197	5,304,195
198	5,304,196
199	5,304,197
200	5,304,198
	5,304,199
	5,304,200
201	5,304,201
203	5,304,202
207	5,304,203
219	5,304,204
230	5,304,205
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2	5,304,206
3	5,304,207
17	5,304,208
20	5,303,702
30	5,304,209
51	5,304,210
58	5,304,211
88	5,304,212
104	5,304,213
105	5,304,214
106	5,304,215
112	5,304,216
114	5,304,217
122	5,304,139
	5,304,218
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CLASS 623	
1	5,304,220
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200	5,304,712
	5,304,713
	5,304,714
	5,304,715
	5,304,716
	5,304,717
	5,304,718
	5,304,719
	5,304,720
	5,304,721
	5,304,722
	5,304,725
	5,304,726
	5,304,727
	5,304,728
	5,304,729
205	5,304,730
	5,304,731
235	5,304,732
CLASS 917	
222.1	5,304,042

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D2—	911	346,059		608	346,094			346,129		118	346,163		119	346,199			346,232
		346,062		661	346,096	D11—	13	346,130		138	346,164		120	346,200		29	346,233
	915	346,060		680	346,097			346,131		146	346,165		142	346,197			346,234
	946	346,063		701	346,095		19	346,132		171	346,166	D23—	205	346,201			346,235
	969	346,061	D8—	1	346,098		92	346,133		191	346,167		216	346,202		46	346,236
	979	346,064		8	346,099		131	346,134		217	346,168		225	346,203		71	346,237
D3—	23	346,065		21	346,100		153	346,135		218	346,169		236	346,204		73	346,238
	263	346,262		27	346,101		158	346,136		230	346,170		252	346,205		118	346,239
D6—	300	346,067		40	346,102	D12—	7	346,137		248	346,171		296	346,206		138	346,240
	309	346,068		47	346,103		111	346,138		299	346,172		367	346,207	D28—	8.1	346,241
	333	346,069		64	346,104		117	346,139	D15—	133	346,173		370	346,208		20	346,242
		346,070		301	346,105		126	346,140		140	346,174		377	346,209		38	346,243
	338	346,071		339	346,106		133	346,141	D16—	133	346,175			346,210	D29—	10	346,244
	366	346,072		345	346,107		147	346,142		209	346,176		411	346,211		20	346,245
	373	346,073		348	346,108		178	346,145	D17—	20	346,177		111	346,212	D30—	118	346,246
	376	346,075		400	346,109		345	346,146		22	346,178		125	346,213	D32—	22	346,247
	394	346,076	D9—	316	346,110		409	346,144	D18—	56	346,179		126	346,214		31	346,248
	408	346,077			346,111		413	346,143	D19—	27	346,180			346,215		53.1	346,249
	426	346,078		338	346,112		416	346,066		67	346,181		132	346,216		54	346,250
	437	346,079		347	346,113	D13—	103	346,147	D20—	10	346,182		133	346,217	D34—	17	346,251
	452	346,080		415	346,114		110	346,148	D21—	2	346,183		140	346,218		23	346,252
	465	346,081		529	346,115		120	346,149		18	346,184		143	346,219		33	346,253
	484	346,082	D10—	216	346,116		149	346,150		54	346,185		164	346,220			346,254
	495	346,083		218	346,117		158	346,151		120	346,186		199	346,221		29	346,261
	512	346,084		301	346,118		168	346,152			346,187		200	346,222		31	346,255
	513	346,085		31	346,119		173	346,153		134	346,188		220	346,223		32	346,256
	601	346,086		57	346,120		177	346,154		191	346,189	D25—	118	346,224			346,257
	603	346,074		71	346,121	D14—	184	346,155		208	346,190		119	346,225		33	346,258
	604	346,087		78	346,122		100	346,156		214	346,191		124	346,226		34	346,259
D7—	307	346,088		81	346,123			346,157		226	346,192	D26—	11	346,227		35	346,260
	311	346,090		84	346,124		107	346,158		227	346,193		24	346,228	D99—	1	346,263
	396.5	346,089		104	346,125			346,159		228	346,194		26	346,229			346,264
	401.2	346,091		106	346,126		114	346,160		250	346,195		28	346,230		10	346,265
	518	346,092		114	346,127	D22—	101	346,161		298	346,196		32	346,231		10	346,266
	600	346,093		126	346,128		116	346,162		110	346,198						

CLASSIFICATION OF PLANTS

P.—	1	8,688	7.1	8,690	28	8,692	82.2	8,694	87.1	8,696		8,698
	3	8,689	9	8,691	38.1	8,693		8,695		8,697		8,699

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PATENTS

01 :	5,303,460		5,303,591		5,304,172		5,304,767		5,305,165		5,304,994
	5,303,472		5,303,618		5,304,174		5,304,783		5,305,168		5,305,170
	5,303,633		5,303,668		5,304,176		5,304,790		5,305,180		5,305,302
	5,303,735		5,303,688		5,304,182		5,304,806		5,305,192		5,305,308
	5,303,903		5,303,691		5,304,183		5,304,809		5,305,195	09 :	5,303,640
	5,303,981		5,303,692		5,304,185		5,304,831		5,305,221		5,303,730
	5,303,982		5,303,705		5,304,192		5,304,836		5,305,274		5,303,854
	5,303,992		5,303,709		5,304,194		5,304,840		5,305,281		5,304,023
	5,304,330		5,303,716		5,304,195		5,304,849		5,305,292		5,304,031
02 :	5,303,786		5,303,727		5,304,198		5,304,863		5,305,295		5,304,068
03 :	5,303,457		5,303,731		5,304,216		5,304,864		5,305,311		5,304,075
	5,303,541		5,303,734		5,304,219		5,304,871		5,305,319		5,304,143
	5,303,605		5,303,756		5,304,248		5,304,883		5,305,321		5,304,187
	5,303,663		5,303,767		5,304,266		5,304,888		5,305,324		5,304,269
	5,303,760		5,303,774		5,304,268		5,304,918		5,305,334		5,304,292
	5,303,841		5,303,805		5,304,274		5,304,922		5,305,344		5,304,338
	5,303,931		5,303,819		5,304,282		5,304,930		5,305,345		5,304,373
	5,304,109		5,303,827		5,304,293		5,304,932		5,305,346		5,304,410
	5,304,129		5,303,835		5,304,297		5,304,938		5,305,359		5,304,414
	5,304,207		5,303,837		5,304,300		5,304,942		5,305,370		5,304,557
	5,304,749		5,303,838		5,304,348		5,304,944		5,305,377		5,304,616
	5,304,825		5,303,855		5,304,354		5,304,948		5,305,380		5,304,648
	5,304,860		5,303,885		5,304,359		5,304,950		5,305,395		5,304,709
	5,304,917		5,303,891		5,304,366		5,304,951		5,305,399		5,304,751
	5,304,949		5,303,917		5,304,379		5,304,956		5,305,406		5,304,754
	5,304,953		5,303,925		5,304,396		5,304,959		5,305,407		5,304,761
	5,304,955		5,303,938		5,304,397		5,304,960		5,305,412		5,304,773
	5,304,958		5,303,943		5,304,398		5,304,971		5,305,418		5,304,798
	5,304,961		5,303,946		5,304,419		5,304,984		5,305,421		5,304,982
	5,304,964		5,303,955		5,304,424		5,304,989		5,305,422		5,305,291
	5,305,184		5,303,958		5,304,430		5,304,996		5,305,423		5,305,335
	5,305,374		5,303,975		5,304,432		5,305,001		5,305,424		5,305,454
05 :	5,303,525		5,303,978		5,304,436		5,305,006		5,305,430	10 :	5,303,763
	5,303,842		5,303,996		5,304,447		5,305,010		5,305,435		5,304,253
	5,304,537		5,304,011		5,304,462		5,305,015		5,305,436		5,304,305
	5,304,736		5,304,022		5,304,468		5,305,016		5,305,438		5,304,413
06 :	Re.34,589		5,304,033		5,304,472		5,305,018		5,305,452		5,304,520
	5,303,435		5,304,048		5,304,479		5,305,025	08 :	5,303,436		5,304,535
	5,303,439		5,304,073		5,304,481		5,305,043		5,303,571		5,304,536
	5,303,475		5,304,076		5,304,493		5,305,071		5,303,572		5,304,586
	5,303,479		5,304,077		5,304,497		5,305,074		5,303,602		5,304,666
	5,303,480		5,304,089		5,304,501		5,305,082		5,303,858	11 :	Re.34,587
	5,303,485		5,304,115		5,304,503		5,305,085		5,303,865		5,303,426
	5,303,492		5,304,116		5,304,505		5,305,108		5,303,875		5,303,478
	5,303,524		5,304,120		5,304,529		5,305,118		5,303,949		5,303,503
	5,303,531		5,304,128		5,304,538		5,305,120		5,304,043		5,303,517
	5,303,543		5,304,132		5,304,595		5,305,121		5,304,049		5,303,518
	5,303,546		5,304,134		5,304,635		5,305,123		5,304,509		5,303,527
	5,303,554		5,304,150		5,304,640		5,305,124		5,304,534		5,303,545
	5,303,567		5,304,151		5,304,672		5,305,132		5,304,631		5,303,564
	5,303,574		5,304,165		5,304,708		5,305,139		5,304,718		5,303,600
	5,303,585		5,304,167		5,304,738		5,305,150		5,304,921		5,303,619
	5,303,587		5,304,169		5,304,743		5,305,152		5,304,987		5,303,638

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	5,303,666		5,304,214		5,305,185		5,304,730		5,304,138		5,303,880
	5,303,667		5,304,473		5,305,205		5,304,881		5,304,193		5,303,889
	5,303,675		5,304,519		5,305,255	[illegible] :	5,303,748		5,304,215		5,303,932
	5,303,728		5,304,618		5,305,306		5,303,843		5,304,271		5,303,961
	5,303,729		5,304,689		5,305,307		5,304,700		5,304,275		5,303,986
	5,303,822		5,304,740		5,305,350	31 :	5,303,945		5,304,279		5,304,014
	5,303,840		5,305,093		5,305,354		5,304,286		5,304,281		5,304,039
	5,303,844		5,305,237		5,305,385	32 :	5,303,899		5,304,284		5,304,090
	5,303,851		5,152,398		5,305,387	33 :	5,303,733		5,304,312		5,304,112
	5,303,860	19 :	5,303,569		5,305,444		5,303,762		5,304,313		5,304,161
	5,303,896		5,303,627		5,305,456		5,303,834		5,304,339		5,304,178
	5,303,923		5,303,662		5,305,462		5,303,934		5,304,344		5,304,190
	5,303,926		5,303,859	[illegible] :	Re.34,588		5,304,147		5,304,367		5,304,203
	5,303,927		5,303,972		5,303,449		5,304,267		5,304,427		5,304,213
	5,303,940		5,303,997		5,303,463		5,304,735		5,304,429		5,304,264
	5,303,967		5,304,712		5,303,473		5,305,286		5,304,439		5,304,328
	5,304,005		5,304,713		5,303,586		5,305,326		5,304,441		5,304,329
	5,304,082		5,304,714		5,303,593		5,305,389		5,304,449		5,304,355
	5,304,107		5,304,715		5,303,616	34 :	5,303,594		5,304,457		5,304,411
	5,304,135		5,304,716		5,303,634		5,303,676		5,304,517		5,304,423
	5,304,197		5,304,717		5,303,659		5,303,687		5,304,540		5,304,426
	5,304,199		5,304,726		5,303,680		5,303,698		5,304,587		5,304,431
	5,304,200		5,304,727		5,303,685		5,303,724		5,304,603		5,304,500
	5,304,202		5,304,728		5,303,749		5,303,848		5,304,611		5,304,639
	5,304,365		5,304,729		5,303,794		5,303,941		5,304,649		5,304,668
	5,304,370		5,304,993		5,303,829		5,304,003		5,304,682		5,304,936
	5,304,584		5,305,181		5,303,902		5,304,012		5,304,763		5,305,007
	5,304,590	20 :	5,303,456		5,303,906		5,304,017		5,304,771		5,305,183
	5,304,739		5,303,866		5,303,913		5,304,055		5,304,786		5,305,210
	5,305,277		4,570,739		5,303,944		5,304,064		5,304,787	40 :	5,303,481
	5,305,360	21 :	5,303,451		5,303,951		5,304,094		5,304,788		5,303,499
	5,305,437		5,303,522		5,303,952		5,304,149		5,304,791		5,303,528
	5,305,455		5,303,637		5,303,959		5,304,204		5,304,814		5,303,582
	5,305,461		5,304,098		5,303,963		5,304,229		5,304,847		5,303,592
	5,305,464		5,304,542		5,303,970		5,304,265		5,304,911		5,304,056
13 :	5,303,424	22 :	5,303,476		5,303,983		5,304,272		5,304,914		5,304,111
	5,303,534		5,303,533		5,303,994		5,304,334		5,304,919		5,304,620
	5,303,563		5,303,783		5,304,000		5,304,350		5,304,934		5,304,683
	5,303,573		5,303,817		5,304,058		5,304,358		5,304,943		5,304,696
	5,303,811		5,303,998		5,304,099		5,304,363		5,304,969		5,304,807
	5,303,831		5,304,097		5,304,118		5,304,368		5,304,983		5,305,160
	5,303,849		5,304,280		5,304,164		5,304,437		5,304,998		5,305,211
	5,304,554		5,304,524		5,304,188		5,304,460		5,305,012		5,305,447
	5,304,647		5,305,027		5,304,217		5,304,485		5,305,039	41 :	5,303,446
	5,304,999	23 :	5,303,484		5,304,273		5,304,522		5,305,055		5,303,477
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

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—Additional examination fee, per additional invention (payable only upon invitation	140.00
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March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 23, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,008,959 through 5,010,588
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Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 13, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 33,362	07/157,439	10/02/90
(4,569,469)	(06/701,970)	(02/11/86)
Re 34,279	07/878,289	06/08/93
(4,569,960)	(06/635,446)	(02/11/86)
Re 34,370	07/652,752	09/07/93
(4,901,278)	(07/054,977)	(02/13/90)
Re 34,414	07/693,107	10/19/93
(4,569,943)	(06/543,943)	(02/11/86)
Re 34,504	07/597,906	01/11/94
(4,901,143)	(07/311,510)	(02/13/90)
4,315,408	06/217,850	02/16/82
4,315,459	06/250,881	02/16/82
4,315,525	06/218,783	02/16/82
4,315,701	06/215,736	02/16/82
4,315,814	06/223,531	02/16/82
4,315,822	06/228,248	02/16/82
4,315,827	06/234,561	02/16/82
4,315,850	06/238,517	02/16/82
4,315,861	06/246,412	02/16/82
4,315,993	06/219,073	02/16/82
4,315,994	06/220,486	02/16/82
4,316,010	06/222,187	02/16/82
4,316,030	06/217,888	02/16/82
4,316,040	06/224,938	02/16/82
4,316,043	06/218,335	02/16/82
4,316,127	06/230,827	02/16/82
4,316,187	06/223,748	02/16/82
4,569,086	06/736,081	02/11/86
4,569,087	06/603,774	02/11/86
4,569,090	06/614,552	02/11/86
4,569,092	06/539,738	02/11/86
4,569,093	06/536,692	02/11/86
4,569,094	06/544,887	02/11/86
4,569,096	06/681,058	02/11/86
4,569,101	06/742,431	02/11/86
4,569,108	06/667,963	02/11/86
4,569,124	06/613,114	02/11/86
4,569,126	06/608,839	02/11/86
4,569,127	06/688,997	02/11/86
4,569,129	06/514,704	02/11/86
4,569,130	06/619,295	02/11/86
4,569,136	06/571,840	02/11/86
4,569,137	06/616,181	02/11/86
4,569,138	06/689,713	02/11/86
4,569,140	06/604,454	02/11/86
4,569,141	06/542,496	02/11/86
4,569,146	06/451,079	02/11/86
4,569,149	06/598,234	02/11/86
4,569,150	06/547,208	02/11/86
4,569,152	06/604,148	02/11/86
4,569,155	06/603,743	02/11/86
4,569,165	06/563,631	02/11/86
4,569,170	06/516,205	02/11/86
4,569,171	06/694,808	02/11/86
4,569,172	06/388,757	02/11/86
4,569,176	06/555,702	02/11/86
4,569,189	06/655,944	02/11/86
4,569,192	06/676,734	02/11/86
4,569,193	06/740,006	02/11/86
4,569,202	06/647,386	02/11/86
4,569,204	06/710,162	02/11/86
4,569,206	06/608,091	02/11/86
4,569,209	06/490,727	02/11/86
4,569,212	06/736,774	02/11/86
4,569,213	06/585,369	02/11/86

Patent Number	Serial Number	Issue Date
4,569,214	06/532,276	02/11/86
4,569,215	06/614,029	02/11/86
4,569,226	06/606,289	02/11/86
4,569,229	06/648,163	02/11/86
4,569,233	06/583,621	02/11/86
4,569,238	06/714,907	02/11/86
4,569,243	06/725,820	02/11/86
4,569,244	06/485,579	02/11/86
4,569,247	06/450,009	02/11/86
4,569,249	06/617,839	02/11/86
4,569,250	06/602,994	02/11/86
4,569,262	06/438,319	02/11/86
4,569,263	06/614,946	02/11/86
4,569,265	06/455,531	02/11/86
4,569,269	06/481,639	02/11/86
4,569,271	06/501,697	02/11/86
4,569,273	06/514,641	02/11/86
4,569,274	06/715,374	02/11/86
4,569,284	06/714,568	02/11/86
4,569,285	06/603,686	02/11/86
4,569,286	06/691,853	02/11/86
4,569,287	06/621,776	02/11/86
4,569,293	06/595,332	02/11/86
4,569,297	06/624,603	02/11/86
4,569,298	06/466,335	02/11/86
4,569,303	06/655,059	02/11/86
4,569,307	06/717,710	02/11/86
4,569,308	06/671,066	02/11/86
4,569,309	06/667,451	02/11/86
4,569,310	06/666,458	02/11/86
4,569,312	06/579,450	02/11/86
4,569,313	06/678,810	02/11/86
4,569,316	06/412,659	02/11/86
4,569,318	06/635,255	02/11/86
4,569,320	06/701,905	02/11/86
4,569,321	06/684,177	02/11/86
4,569,322	06/637,558	02/11/86
4,569,323	06/631,174	02/11/86
4,569,324	06/534,317	02/11/86
4,569,326	06/628,862	02/11/86
4,569,330	06/649,005	02/11/86
4,569,336	06/689,380	02/11/86
4,569,339	06/535,607	02/11/86
4,569,343	06/529,557	02/11/86
4,569,349	06/645,837	02/11/86
4,569,351	06/684,351	02/11/86
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4,569,355	06/383,004	02/11/86
4,569,357	06/464,765	02/11/86
4,569,366	06/390,185	02/11/86
4,569,368	06/648,982	02/11/86
4,569,369	06/594,870	02/11/86
4,569,370	06/551,138	02/11/86
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4,569,384	06/526,489	02/11/86
4,569,385	06/554,203	02/11/86
4,569,388	06/380,743	02/11/86
4,569,394	06/584,584	02/11/86
4,569,397	06/642,597	02/11/86
4,569,398	06/711,706	02/11/86
4,569,400	06/605,497	02/11/86
4,569,401	06/570,877	02/11/86
4,569,403	06/640,307	02/11/86
4,569,405	06/587,541	02/11/86
4,569,406	06/653,863	02/11/86
4,569,407	06/608,014	02/11/86
4,569,409	06/511,162	02/11/86
4,569,413	06/492,741	02/11/86
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4,569,442	06/698,459	02/11/86
4,569,445	06/543,661	02/11/86
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4,569,452	06/736,596	02/11/86
4,569,454	06/653,552	02/11/86
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4,569,488	06/464,597	02/11/86
4,569,490	06/641,249	02/11/86
4,569,493	06/475,198	02/11/86
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4,569,496	06/335,065	02/11/86
4,569,501	06/614,543	02/11/86
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4,569,513	06/363,435	02/11/86
4,569,519	06/599,549	02/11/86
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4,569,535	06/573,805	02/11/86
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4,569,538	06/564,752	02/11/86
4,569,543	06/665,678	02/11/86
4,569,547	06/583,829	02/11/86
4,569,549	06/582,660	02/11/86
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4,569,554	06/685,040	02/11/86
4,569,555	06/675,995	02/11/86
4,569,560	06/601,258	02/11/86
4,569,565	06/515,834	02/11/86
4,569,567	06/609,969	02/11/86
4,569,569	06/363,661	02/11/86
4,569,570	06/498,477	02/11/86
4,569,571	06/538,797	02/11/86
4,569,575	06/622,170	02/11/86
4,569,576	06/413,395	02/11/86
4,569,582	06/684,924	02/11/86
4,569,597	06/743,288	02/11/86
4,569,599	06/488,779	02/11/86
4,569,600	06/478,191	02/11/86
4,569,602	06/649,985	02/11/86
4,569,603	06/669,652	02/11/86
4,569,604	06/563,989	02/11/86
4,569,612	06/599,738	02/11/86
4,569,615	06/519,595	02/11/86
4,569,616	06/557,445	02/11/86
4,569,617	06/646,025	02/11/86
4,569,621	06/574,873	02/11/86
4,569,623	06/678,913	02/11/86
4,569,624	06/556,292	02/11/86
4,569,626	06/624,502	02/11/86
4,569,628	06/565,233	02/11/86
4,569,640	06/491,679	02/11/86
4,569,642	06/460,681	02/11/86
4,569,648	06/692,364	02/11/86
4,569,650	06/696,179	02/11/86
4,569,653	06/626,851	02/11/86
4,569,658	06/647,725	02/11/86
4,569,662	06/626,492	02/11/86
4,569,663	06/570,193	02/11/86
4,569,664	06/463,122	02/11/86
4,569,665	06/607,239	02/11/86
4,569,667	06/470,732	02/11/86
4,569,670	06/615,630	02/11/86
4,569,680	06/686,563	02/11/86
4,569,682	06/687,595	02/11/86
4,569,686	06/586,437	02/11/86
4,569,687	06/676,641	02/11/86

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Patent Number	Serial Number	Issue Date
4,569,689	06/620,562	02/11/86
4,569,691	06/710,969	02/11/86
4,569,698	06/739,509	02/11/86
4,569,699	06/731,823	02/11/86
4,569,709	06/536,771	02/11/86
4,569,724	06/430,812	02/11/86
4,569,725	06/613,388	02/11/86
4,569,727	06/549,155	02/11/86
4,569,733	06/633,126	02/11/86
4,569,737	06/597,089	02/11/86
4,569,738	06/606,920	02/11/86
4,569,739	06/688,092	02/11/86
4,569,745	06/539,180	02/11/86
4,569,749	06/642,579	02/11/86
4,569,750	06/675,372	02/11/86
4,569,753	06/524,813	02/11/86
4,569,754	06/681,468	02/11/86
4,569,757	06/368,755	02/11/86
4,569,758	06/488,997	02/11/86
4,569,759	06/593,251	02/11/86
4,569,766	06/617,761	02/11/86
4,569,767	06/591,426	02/11/86
4,569,770	06/579,529	02/11/86
4,569,773	06/649,781	02/11/86
4,569,779	06/688,588	02/11/86
4,569,782	06/618,794	02/11/86
4,569,783	06/667,237	02/11/86
4,569,784	06/313,124	02/11/86
4,569,785	06/639,562	02/11/86
4,569,786	06/597,605	02/11/86
4,569,796	06/508,301	02/11/86
4,569,803	06/580,700	02/11/86
4,569,811	06/426,063	02/11/86
4,569,812	06/623,786	02/11/86
4,569,818	06/486,449	02/11/86
4,569,821	06/467,805	02/11/86
4,569,823	06/592,613	02/11/86
4,569,827	06/669,927	02/11/86
4,569,828	06/675,404	02/11/86
4,569,830	06/558,502	02/11/86
4,569,832	06/663,861	02/11/86
4,569,833	06/725,503	02/11/86
4,569,835	06/520,673	02/11/86
4,569,852	06/525,776	02/11/86
4,569,854	06/580,891	02/11/86
4,569,859	06/629,438	02/11/86
4,569,864	06/509,320	02/11/86
4,569,865	06/592,548	02/11/86
4,569,874	06/724,119	02/11/86
4,569,878	06/714,855	02/11/86
4,569,884	06/419,208	02/11/86
4,569,886	06/621,966	02/11/86
4,569,887	06/591,708	02/11/86
4,569,888	06/630,442	02/11/86
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4,569,898	06/674,409	02/11/86
4,569,907	06/571,227	02/11/86
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4,569,910	06/583,143	02/11/86
4,569,911	06/572,107	02/11/86
4,569,913	06/583,142	02/11/86
4,569,914	06/508,613	02/11/86
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4,569,917	06/240,720	02/11/86
4,569,930	06/577,376	02/11/86
4,569,932	06/586,311	02/11/86
4,569,933	06/599,784	02/11/86
4,569,945	06/660,287	02/11/86
4,569,952	06/696,942	02/11/86
4,569,966	06/602,048	02/11/86
4,569,967	06/545,077	02/11/86
4,569,971	06/523,628	02/11/86
4,569,976	06/662,472	02/11/86
4,569,985	06/761,758	02/11/86
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4,570,002	06/573,586	02/11/86
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4,570,043	06/499,701	02/11/86
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4,570,073	06/611,224	02/11/86
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4,570,081	06/508,202	02/11/86
4,570,085	06/458,435	02/11/86
4,570,088	06/510,183	02/11/86
4,570,092	06/426,739	02/11/86
4,570,094	06/572,828	02/11/86
4,570,100	06/478,527	02/11/86
4,570,103	06/430,285	02/11/86
4,570,111	06/731,516	02/11/86
4,570,114	06/595,752	02/11/86
4,570,119	06/552,209	02/11/86
4,570,120	06/488,414	02/11/86
4,570,129	06/586,955	02/11/86
4,570,132	06/645,468	02/11/86
4,570,134	06/602,157	02/11/86
4,570,138	06/574,730	02/11/86
4,570,141	06/628,086	02/11/86
4,570,142	06/640,816	02/11/86
4,570,154	06/491,514	02/11/86
4,570,156	06/590,453	02/11/86
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4,570,166	06/527,280	02/11/86
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4,570,195	06/564,755	02/11/86
4,570,196	06/564,304	02/11/86
4,570,204	06/701,076	02/11/86
4,570,210	06/562,917	02/11/86
4,570,213	06/627,694	02/11/86
4,570,215	06/456,000	02/11/86
4,570,216	06/465,061	02/11/86
4,570,226	06/433,092	02/11/86
4,570,228	06/416,020	02/11/86
4,570,232	06/448,085	02/11/86
4,570,235	06/410,078	02/11/86
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4,570,240	06/566,837	02/11/86
4,570,245	06/485,703	02/11/86
4,570,247	06/553,484	02/11/86
4,570,248	06/423,889	02/11/86
4,570,250	06/495,570	02/11/86
4,570,252	06/483,808	02/11/86
4,570,253	06/659,952	02/11/86
4,570,256	06/665,931	02/11/86
4,899,399	07/314,175	02/13/90
4,899,400	07/106,061	02/13/90
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4,899,408	07/382,257	02/13/90
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4,899,415	07/274,292	02/13/90
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4,899,417	07/238,115	02/13/90
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4,899,421	07/229,910	02/13/90
4,899,422	07/263,860	02/13/90

Patent Number	Serial Number	Issue Date
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4,900,032	07/179,831	02/13/90
4,900,033	07/242,972	02/13/90
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4,901,345	07/216,427	02/13/90
4,901,354	07/279,814	02/13/90
4,901,366	07/197,005	02/13/90

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,815,033, Re. S.N. 08/203,690, Feb. 28, 1994, Cl. 340, METHOD AND APPARATUS FOR ACCESSING A COLOR PALATE SYNCHRONOUSLY DURING REFRESHING OF A MONITOR AND ASYNCHRONOUSLY DURING UPDATING OF THE PALATE, Steven Harris, Owner of Record: *Advanced Micro Devices, Inc., Sunnydale, Calif.*, Attorney or Agent: Martin C. Fliesler, Ex. Gp.: 2615

4,896,133, Re. S.N. 08/192,805, Feb. 7, 1994, Cl. 364, PARALLEL STRING PROCESSOR AND METHOD FOR A MINICOMPUTER, David H. Methvin, et. al., Owner of Record: *David Computer Corporation, Irvine, Calif.*, Attorney or Agent: Jerry T. Sewell, Ex. Gp.: 2306

4,949,079, Re. S.N. 08/169,580, Dec. 17, 1993, Cl. 345/180, BRIGHTPEN/PAD II, Hugh Gene Loebner, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 2609

4,992,825, Re. S.N. 08/190,580, Feb. 2, 1994, Cl. 355, METHOD OF FORMING PATTERN AND PROJECTION ALIGNER FOR CARRYING OUT THE SAME, Hiroshi Fukuda, et. al., Owner of Record: Hitachi, Ltd., Tokyo, Japan, Attorney or Agent: Melvin Kraus, Ex. Gp.: 2101

5,043,299, Re. S.N. 08/113,025, Aug. 27, 1993, Cl. 437/192, PROCESS FOR SELECTIVE DEPOSITION OF TUNGSTEN ON SEMICONDUCTOR WAFER, Mei Chang, et. al., Owner of Record: *Applied Materials, Inc., Santa Clara, Calif.*, Attorney or Agent: Peter J. Sgarbossa, Ex. Gp.: 1104

5,049,732, Re. S.N. 08/123,459, Sept. 17, 1993, Cl. 250/201.5, OPTICAL PICKUP DEVICE WITH DIFFRACTION DEVICE, Toshiya Naqahama, et. al., Owner of Record: *Sharp Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: James R. Shay, Ex. Gp.: 2509

5,054,052, Re. S.N. 08/130,045, Sept. 30, 1993, Cl. 379/57, MOBILE TELEPHONE DEVICE WITH LOW POWER CONSUMPTION, Takayuki Nonami, Owner of Record: *Mitsubishi Denki Kabushiki* Kaisha, Tokyo, Japan, Attorney or Agent: Francis E. Morris, Ex. Gp.: 2607

5,062,632, Re. S.N. 08/164,131, Dec. 7, 1993, Cl. 482/129, USER PROGRAMMABLE EXERCISE MACHINE, William T. Dalebout, et. al., Owner of Record: *Program Fitness Products, Inc., Logan, Utah*, Attorney or Agent: Alan K. Aldous, Ex. Gp.: 3302

5,067,883, Re. S.N. 08/157,289, Nov. 26, 1993, Cl. 418/61.2, ROTARY INTERNAL COMBUSTION ENGINE, Sofyan Adiwinata, Owner of Record: *Inventor*, Attorney or Agent: Ronald J. Shore, Ex. Gp.: 3403

5,090,144, Re. S.N. 08/203,983, Feb. 23, 1994, Cl. 40/410, CRYSTAL BALL HAVING SWING DOLL WITH COLOR CHANGEABLE EYES, J.H. Liv, Owner of Record: *Inventor*, Attorney or Agent: Harold L. Novick, Ex. Gp.: 3507

5,092,020, Re. S.N. 08/198,885, Feb. 18, 1994, Cl. 27/19, LIQUID RETAINING TRAY FOR CASKET, Keith D. Magvire, Owner of Record: *Batesville Casket Company, Inc., Batesville, Ind.*, Attorney or Agent: None, Ex. Gp.: 3504

5,092,528, Re. S.N. 08/205,588, Mar. 2, 1994, Cl. 241/65, MEAT EMULSIFYING AND PROCESSING SYSTEM, Richard Rudibaugh, Owner of Record: *Cozzini, Inc., Chicago, Ill.*, Attorney or Agent: Dennis M. McWilliams, Ex. Gp.: 3206

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5,093,786, Re. S.N. 08/204,653, Mar. 2, 1994, Cl. 364/200, REMOTE RESPONSE SYSTEM, Harry G. Derks, Owner of Record: *Fleetwood Furniture Company, Holland Mich.*, Attorney or Agent: Donna J. Raaymakers, Ex. Gp.: 2301

5,096,335, Re. S.N. 08/208,856, Mar. 11, 1994, Cl. 405/288, POLYMER GRID FOR SUPPLEMENTAL ROOF AND RIB SUPPORT OF COMBUSTIBLE UNDERGROUND OPENINGS, Ronald P. Anderson, et. al., Owner of Record: *Electra, Inc., New York, N.Y.*, Attorney or Agent: Marvin R. Stern, Ex. Gp.: 3501

5,115,609, Re. S.N. 08/208,341, Mar. 9, 1994, Cl. 52/309.9, METHOD OF CONVERTING LOGS AND RESULTANT PRODUCT, Peter Sing, Owner of Record: *Inventor*, Attorney or Agent: Nathaniel Altman, Ex. Gp.: 3504

5,169,013, Re. S.N. 08/207,822, Mar. 7, 1994, Cl. 220/32, ELECTRICAL CONDULET EXTENSION BOX, Albert Lammens, Jr., Owner of Record: *Condulet Adapter, Inc., Del Mar, Calif.*, Attorney or Agent: Kennith H. Ohriner, Ex. Gp.: 2401

5,174,899, Re. S.N. 08/178,641, Jan. 5, 1994, Cl. 210/644, PROCESS FOR SEPARATING ORGANOMETALLIC COMPOUNDS AND/OR METAL CARBONYLS FROM THEIR SOLUTIONS IN ORGANIC MEDIA, Helmut Bahrmann, et. al., Owner of Record: *Hoechst Aktiengesellschaft Frankfurt/Main, Federal Republic of Germany*, Attorney or Agent: Charles A. Muserlian, Ex. Gp.: 1306

5,198,429, Re. S.N. 08/189,361, Dec. 30, 1993, Cl. 514/58, SUBSTITUTED CYCLODEXTRINS AND PROCESS FOR CHROMATOGRAPHIC SEPARATION OF CHIRAL, Wilfried Koniq, et. al., Owner of Record: *Organic Compounds Machinery-Nagel & Co., Duren-Rolsdorf, Germany*, Attorney or Agent: Leonard Horn, Ex. Gp.: 1803

5,205,380, Re. S.N. 08/197,714, Feb. 17, 1994, Cl. 188/18A, DISC BRAKE ASSEMBLY, J. Jacques Paquet, et. al., Owner of Record: *Inventor*, Attorney or Agent: Joe M. Muncy, Ex. Gp.: 3103

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 33,766, Reexam. No. 90/003,336, Requested Feb. 18, 1994, Cl. 427/195, COATED FASTENERS AND PROCESS FOR MAKING THE SAME, Richard J. Duffy, et. al., Owner of Record: *Nylok Fastener Corp., Rochester, Mich.*, Attorney or Agent: Raymond P. Niro, Niro, Scavone, Haller & Niro, Chicago, Ill., Ex. Gp.: 1112, Requester: Thomas P. Liniak, Myers, Liniak & Berenato, Bethesda, Md.

4,361,137, Reexam. No. 90/003,339, Requested Feb. 23, 1994, Cl. 600/022, INCUBATOR HAVING WARM AIR CURTAIN ACROSS ACCESS OPENING, James R. Grosholz, Owner of Record: *Air Shields, Inc., Hatboro, Pa.*, Attorney or Agent: Weiser & Stapler, Philadelphia, Pa, Ex. Gp.: 3305, Requester: Ohmeda, Inc., Liberty Corner, N.J.

4,834,553, Reexam. No. 90/003,337, Requested Feb. 22, 1994, Cl. 383/123, PLASTIC FILM PACKAGE WITH A HANGER, Ronald Bennett, Owner of Record: *Ultra Creative Corp., Brooklyn, N.Y.*, Attorney or Agent: Ladas & Parry, Attn: Alan K. Roberts, New York, N.Y., Ex. Gp.: 2401, Requester: John B. Hardaway, III, Hardaway Law Firm, Greenville, S.C.

4,923,666, Reexam. No. 90/003,338, Requested Feb. 22, 1994, Cl. 264/572, METHOD OF INJECTION MOULDING, Kunio Yamazaki, et. al., Owner of Record: *Cinpres Ltd., Staffordshire, England*, Attorney or Agent: Beveridge, DeGrandi & Weilacher, Washington, D.C., Ex. Gp.: 1307, Requester: Robert C.J. Tuttle, Southfield, Mich.

4,951,833, Reexam. No. 90/003,335, Requested Feb. 18, 1994, Cl. 229/005.6, END CONSTRUCTION WITH HOLLOW BEAM CONSTRUCTION FOR A DRUM, Herbert L. Carpenter, Jr., et. al., Owner of Record: *Greif Bros., Delaware, Ohio*, Attorney or Agent: John Kurucz, Kane, Dalsimer, Sullivan, Kurucz, Eisele & Richard, New York, N.Y., Ex. Gp.: 2401, Requester: Owner

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Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED MARCH 07, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
91,855	71/056,470	06/03/1913
91,856	71/059,980	06/03/1913
91,859	71/055,628	06/03/1913
91,876	71/068,012	06/03/1913
91,886	71/067,464	06/03/1913
303,508	71/333,803	05/30/1933
303,512	71/333,887	05/30/1933
303,513	71/333,845	05/30/1933
303,515	71/333,888	05/30/1933
303,533	71/332,339	05/30/1933
303,538	71/334,756	05/30/1933
303,572	71/334,573	05/30/1933
303,587	71/334,349	05/30/1933
303,635	71/333,603	05/30/1933
575,060	71/556,281	06/02/1953
575,061	71/556,772	06/02/1953
575,065	71/570,402	06/02/1953
575,071	71/587,014	06/02/1953
575,076	71/591,901	06/02/1953
575,083	71/599,233	06/02/1953
575,087	71/601,005	06/02/1953
575,089	71/601,328	06/02/1953
575,090	71/601,656	06/02/1953
575,091	71/602,129	06/02/1953
575,101	71/605,523	06/02/1953
575,103	71/605,596	06/02/1953
575,106	71/617,637	06/02/1953
575,114	71/613,370	06/02/1953
575,115	71/613,433	06/02/1953
575,121	71/616,089	06/02/1953
575,134	71/619,243	06/02/1953
575,138	71/619,566	06/02/1953
575,140	71/620,322	06/02/1953
575,144	71/621,225	06/02/1953
575,147	71/621,631	06/02/1953
575,160	71/624,005	06/02/1953
575,179	71/627,672	06/02/1953
575,184	71/627,913	06/02/1953
575,185	71/627,916	06/02/1953
575,188	71/628,147	06/02/1953
575,190	71/628,236	06/02/1953
575,192	71/628,401	06/02/1953
575,197	71/629,079	06/02/1953
575,207	71/631,091	06/02/1953
575,208	71/631,167	06/02/1953

Reg. No.	Serial Number	Reg. Date
575,212	71/631,437	06/02/1953
575,218	71/631,881	06/02/1953
575,226	71/632,735	06/02/1953
575,230	71/633,218	06/02/1953
575,238	71/633,647	06/02/1953
575,245	71/633,933	06/02/1953
575,248	71/634,227	06/02/1953
575,251	71/634,784	06/02/1953
575,257	71/636,819	06/02/1953
575,263	71/638,821	06/02/1953
575,265	71/639,148	06/02/1953
575,271	71/586,501	06/02/1953
575,280	71/617,323	06/02/1953
575,284	71/625,001	06/02/1953
575,288	71/630,553	06/02/1953
575,292	71/622,425	06/02/1953
575,299	71/589,970	06/02/1953
575,308	71/611,270	06/02/1953
575,310	71/612,578	06/02/1953
575,313	71/613,305	06/02/1953
575,317	71/616,326	06/02/1953
575,328	71/622,330	06/02/1953
575,332	71/624,685	06/02/1953
575,355	71/641,486	06/02/1953
952,651	72/389,792	02/06/1973
959,598	72/356/793	05/29/1973
959,604	72/420,761	05/29/1973
959,610	72/396,355	05/29/1973
959,611	72/400,854	05/29/1973
959,612	72/402,797	05/29/1973
959,613	72/403,430	05/29/1973
959,618	72/401,250	05/29/1973
959,620	72/392,771	05/29/1973
959,624	72/399,731	05/29/1973
959,626	72/400,855	05/29/1973
959,627	72/403,415	05/29/1973
959,631	72/412,332	05/29/1973
959,634	72/424,573	05/29/1973
959,635	72/424,788	05/29/1973
959,636	72/426,060	05/29/1973
959,638	72/431,241	05/29/1973
959,639	72/390,928	05/29/1973
959,641	72/422,790	05/29/1973
959,645	72/421,582	05/29/1973
959,650	72/425,876	05/29/1973
959,651	72/411,226	05/29/1973
959,653	72/421,344	05/29/1973
959,656	72/428,373	05/29/1973
959,661	72/413,357	05/29/1973
959,663	72/414,372	05/29/1973
959,667	72/426,385	05/29/1973
959,668	72/426,597	05/29/1973
959,672	72/424,149	05/29/1973
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959,676	72/400,032	05/29/1973
959,677	72/402,607	05/29/1973
959,678	72/404,189	05/29/1973
959,682	72/413,219	05/29/1973
959,684	72/415,489	05/29/1973
959,691	72/421,643	05/29/1973
959,694	72/422,106	05/29/1973
959,695	72/422,107	05/29/1973
959,696	72/422,386	05/29/1973
959,698	72/369,001	05/29/1973
959,701	72/396,550	05/29/1973
959,703	72/401,061	05/29/1973
959,704	72/402,036	05/29/1973
959,706	72/408,210	05/29/1973
959,708	72/413,888	05/29/1973
959,710	72/426,574	05/29/1973
959,711	72/326,607	05/29/1973
959,714	72/368,939	05/29/1973
959,717	72/374,793	05/29/1973
959,722	72/398,356	05/29/1973
959,723	72/398,675	05/29/1973
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959,737	72/418,655	05/29/1973
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959,754	72/428,409	05/29/1973
959,757	72/428,981	05/29/1973
959,758	72/376,378	05/29/1973
959,760	72/378,369	05/29/1973
959,766	72/400,804	05/29/1973
959,768	72/406,555	05/29/1973
959,769	72/407,053	05/29/1973
959,772	72/409,846	05/29/1973
959,773	72/409,998	05/29/1973
959,775	72/410,497	05/29/1973
959,777	72/411,225	05/29/1973
959,781	72/416,411	05/29/1973
959,786	72/418,570	05/29/1973
959,787	72/418,738	05/29/1973
959,792	72/349,695	05/29/1973
959,793	72/390,372	05/29/1973
959,795	72/392,321	05/29/1973
959,796	72/392,322	05/29/1973
959,797	72/393,087	05/29/1973
959,802	72/409,931	05/29/1973
959,803	72/410,692	05/29/1973
959,804	72/414,585	05/29/1973
959,810	72/423,845	05/29/1973
959,812	72/433,668	05/29/1973
959,815	72/418,381	05/29/1973
959,818	72/398,519	05/29/1973
959,825	72/394,669	05/29/1973
959,826	72/400,552	05/29/1973
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959,831	72/417,276	05/29/1973
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959,834	72/429,128	05/29/1973
959,841	72/396,890	05/29/1973
959,842	72/396,891	05/29/1973
959,845	72/411,855	05/29/1973
959,846	72/411,856	05/29/1973
959,850	72/420,348	05/29/1973
959,851	72/408,010	05/29/1973
959,853	72/409,093	05/29/1973
959,855	72/409,625	05/29/1973
959,858	72/409,850	05/29/1973
959,859	72/402,209	05/29/1973
959,861	72/403,988	05/29/1973
959,865	72/394,547	05/29/1973
959,872	72/407,040	05/29/1973
959,875	72/410,253	05/29/1973
959,880	72/417,332	05/29/1973
959,882	72/417,467	05/29/1973
959,883	72/417,706	05/29/1973
959,888	72/420,321	05/29/1973
959,889	72/421,889	05/29/1973
959,892	72/441,046	05/29/1973
959,893	72/399,835	05/29/1973
959,897	72/412,497	05/29/1973
959,898	72/413,942	05/29/1973
959,901	72/416,041	05/29/1973
959,902	72/416,903	05/29/1973
959,904	72/417,156	05/29/1973
959,906	72/417,455	05/29/1973
959,908	72/418,085	05/29/1973
959,910	72/419,980	05/29/1973
959,912	72/420,391	05/29/1973
959,913	72/421,994	05/29/1973
959,914	72/422,466	05/29/1973
959,916	72/423,073	05/29/1973
959,917	72/414,188	05/29/1973
959,923	72/418,823	05/29/1973
959,925	72/422,601	05/29/1973
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959,950	72/400,104	05/29/1973
959,951	72/402,332	05/29/1973
959,959	72/409,941	05/29/1973
959,960	72/413,956	05/29/1973
959,964	72/418,126	05/29/1973
959,966	72/418,859	05/29/1973
959,967	72/419,091	05/29/1973
959,973	72/422,859	05/29/1973
959,975	72/423,329	05/29/1973
959,976	72/423,373	05/29/1973
959,980	72/423,900	05/29/1973
959,981	72/423,901	05/29/1973
959,985	72/424,419	05/29/1973
959,988	72/424,675	05/29/1973
959,989	72/424,676	05/29/1973
959,991	72/426,875	05/29/1973
959,993	72/365,472	05/29/1973
959,997	72/403,229	05/29/1973
959,999	72/406,920	05/29/1973
960,005	72/380,467	05/29/1973
960,008	72/382,403	05/29/1973
960,012	72/403,839	05/29/1973
960,018	72/415,061	05/29/1973
960,019	72/418,334	05/29/1973
960,021	72/418,920	05/29/1973
960,024	72/420,413	05/29/1973
960,030	72/421,909	05/29/1973
960,031	72/422,815	05/29/1973
960,034	72/423,906	05/29/1973
960,036	72/424,233	05/29/1973
960,037	72/424,234	05/29/1973
960,047	72/420,766	05/29/1973
960,048	72/424,508	05/29/1973
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960,052	72/398,909	05/29/1973
960,053	72/401,536	05/29/1973
960,055	72/405,524	05/29/1973
960,056	72/409,585	05/29/1973
960,057	72/409,935	05/29/1973
960,058	72/412,818	05/29/1973
960,065	72/420,080	05/29/1973
960,068	72/424,728	05/29/1973
960,072	72/409,598	05/29/1973
960,077	72/414,606	05/29/1973
960,078	72/415,299	05/29/1973
960,079	72/415,300	05/29/1973
960,080	72/416,931	05/29/1973
960,082	72/419,776	05/29/1973
960,083	72/419,779	05/29/1973
960,090	72/430,020	05/29/1973
960,093	72/364,793	05/29/1973
960,099	72/403,535	05/29/1973
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960,103	72/408,003	05/29/1973
960,104	72/373,084	05/29/1973
960,113	72/376,090	05/29/1973
960,116	72/397,434	05/29/1973
960,121	72/410,450	05/29/1973
960,122	72/412,423	05/29/1973
960,123	72/413,799	05/29/1973
960,124	72/419,639	05/29/1973
960,127	72/404,804	05/29/1973
960,129	72/407,254	05/29/1973
960,132	72/409,181	05/29/1973
960,136	72/426,531	05/29/1973
960,142	72/412,839	05/29/1973
960,145	72/415,325	05/29/1973
960,147	72/387,136	05/29/1973
960,148	72/400,407	05/29/1973
960,150	72/422,960	05/29/1973
960,152	72/387,770	05/29/1973
960,153	72/404,741	05/29/1973
960,155	72/404,974	05/29/1973
960,156	72/398,159	05/29/1973
960,159	72/403,359	05/29/1973
960,160	72/404,072	05/29/1973
960,161	72/404,074	05/29/1973
960,164	72/396,147	05/29/1973

Erratum

In the notice of Certificates of Correction appearing at 1160 OG 41, delete Patent No. 5,037,758, the number was erroneously mentioned. Request for Certificate of Correction was denied on Feb. 4, 1994.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

William H. Harrison, Kansas City, Kans., Reg. No. 1,319,443 for the mark "KOOL-DOWN", Canc. No. 20,721.

Langley Publications, Inc., Falls Church, Va., Reg. No. 1,782,266 for the mark "CD-ROM SHOPPERS GUIDE", Canc. No. 22,328.

Herrick, Inc., Arlington, Va., Reg. No. 1,564,739 for the mark "WACQUET AND DESIGN", Canc. No. 21,674.

Michael Mazenc, San Clemente, Calif., Reg. No. 1,656,429 for the mark "MINITEL (BLOCK FORM)", Canc. No. 21,729.

Garren International, Inc., Hialeah, Fla., Reg. No. 1,012,352, for the mark "LA HACIENDA AND DESIGN", Canc. No. 22,061.

Chris S. Merkouris, Chicago, Ill., Reg. No. 1,020,836, for the mark "CHICKEN CHIPS", Canc. No. 21,733.

Classic Weaving Corporation, Paterson, N.J., Reg. No. 349,303 for the mark "CLASSIC WEAVES AND DESIGN" Canc. No. 22,141.

Chiesi Corporation, Coral Gables, Fla., Reg. No. 1,549,449, for the mark "FIESTA CARD", Canc. No. 21,547.

Booth Fisheries Corporation, Chicago, Ill., Reg. No. 351,477, for the mark "AQUA & Design", Canc. No. 21,868.

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For ROBERT M. ANDERSON
Acting Assistant Commissioner for Trademarks

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificate of Correction Issue of April 26, 1994

Re. 34,095	5,062,381	5,141,144	5,171,589
D.321,134	5,066,135	5,141,534	5,171,601
D.322,217	5,066,664	5,142,633	5,171,680
D.336,690	5,066,883	5,143,919	5,171,740
D.337,375	5,067,340	5,147,889	5,172,409
D.338,085	5,070,597	5,147,893	5,172,736
D.340,213	5,070,914	5,148,390	5,172,875
D.341,929	5,074,225	5,149,019	5,173,187
D.342,371	5,079,128	5,149,760	5,173,334
D.342,714	5,082,382	5,149,856	5,173,451
4,764,982	5,083,167	5,151,249	5,174,015
4,777,577	5,084,593	5,151,440	5,174,210
4,854,940	5,085,395	5,152,205	5,175,105
4,860,261	5,086,786	5,152,754	5,175,185
4,866,699	5,090,952	5,152,984	5,175,747
4,872,611	5,092,164	5,155,517	5,176,642
4,892,237	5,093,353	5,156,530	5,177,236
4,894,950	5,096,535	5,156,847	5,177,346
4,896,551	5,098,204	5,157,244	5,177,778
4,906,064	5,098,750	5,157,297	5,179,437
4,936,533	5,103,348	5,157,606	5,179,511
4,947,036	5,103,466	5,158,242	5,180,544
4,948,814	5,103,645	5,159,659	5,180,720
4,949,954	5,104,671	5,159,818	5,181,355
4,955,568	5,108,743	5,159,949	5,181,861
4,961,533	5,111,673	5,161,037	5,182,270
4,965,391	5,115,783	5,162,147	5,182,340
4,965,525	5,118,701	5,162,942	5,182,632
4,975,662	5,120,835	5,163,089	5,182,963
4,985,737	5,120,923	5,163,698	5,183,534
4,994,568	5,121,514	5,163,993	5,183,658
4,998,427	5,124,440	5,164,628	5,183,892
5,001,225	5,126,130	5,165,040	5,184,190
5,001,256	5,127,853	5,167,244	5,184,601
5,011,691	5,130,335	5,167,274	5,185,264
5,011,867	5,130,953	5,167,622	5,185,520
5,013,877	5,132,825	5,168,219	5,186,802
5,034,151	5,133,255	5,168,295	5,187,044
5,036,230	5,134,128	5,169,727	5,187,087
5,037,758	5,135,116	5,169,838	5,187,157
5,044,067	5,135,290	5,170,009	5,187,508
5,045,334	5,135,942	5,170,017	5,188,113
5,054,323	5,137,686	5,170,162	5,188,531
5,055,344	5,139,049	5,171,142	5,188,588
5,057,063	5,139,821	5,171,280	5,189,885
5,061,082	5,140,775	5,171,584	5,189,951
5,190,200	5,214,195	5,228,275	5,240,763
5,190,790	5,214,549	5,228,518	5,241,155
5,190,864	5,214,627	5,228,843	5,241,166
5,191,467	5,214,844	5,228,934	5,241,169
5,191,475	5,215,071	5,228,992	5,241,240
5,191,620	5,215,273	5,229,194	5,241,280
5,191,798	5,215,300	5,229,232	5,241,747
5,192,747	5,215,505	5,229,556	5,241,882
5,193,028	5,216,014	5,229,699	5,241,886
5,193,093	5,216,450	5,229,935	5,242,059
5,193,597	5,216,625	5,230,017	5,242,093
5,193,861	5,217,049	5,230,139	5,242,295
5,194,745	5,217,502	5,230,186	5,242,397
5,195,026	5,217,645	5,230,575	5,242,659
5,195,445	5,217,762	5,231,074	5,242,825
5,195,542	5,218,002	5,231,113	5,242,997
5,195,901	5,218,425	5,231,157	5,243,096
5,196,424	5,218,628	5,231,211	5,243,281
5,196,460	5,218,852	5,231,372	5,243,303
5,196,513	5,218,896	5,231,398	5,243,502
5,196,885	5,219,194	5,231,421	5,243,853
5,197,512	5,219,207	5,231,594	5,244,545
5,197,913	5,219,281	5,231,625	5,244,621
5,198,137	5,219,427	5,231,633	5,244,631
5,198,430	5,219,574	5,231,651	5,244,862
5,198,613	5,219,691	5,231,723	5,245,021
5,198,701	5,219,944	5,231,816	5,245,060
5,199,045	5,220,005	5,231,944	5,245,071
5,200,079	5,220,190	5,232,314	5,245,333
5,200,409	5,220,567	5,232,596	5,245,378
5,200,996	5,220,623	5,232,934	5,245,387
5,201,053	5,221,030	5,233,263	5,245,638
5,201,225	5,221,040	5,233,424	5,245,651
5,201,568	5,221,351	5,233,547	5,245,768
5,202,291	5,221,389	5,233,584	5,245,854
5,202,583	5,221,417	5,233,649	5,246,048
5,202,703	5,222,020	5,234,342	5,246,177
5,202,962	5,222,156	5,234,361	5,247,013
5,202,998	5,222,163	5,234,456	5,247,505
5,203,206	5,222,241	5,234,607	5,247,627
5,203,208	5,222,426	5,234,661	5,247,942
5,203,760	5,222,501	5,234,669	5,248,309
5,203,846	5,222,799	5,234,731	5,248,531
5,204,765	5,223,162	5,234,914	5,248,533
5,204,771	5,223,264	5,235,009	5,248,590
5,204,848	5,223,433	5,235,108	5,248,760
5,204,985	5,223,486	5,235,494	5,248,804
5,205,152	5,223,493	5,235,577	5,249,016
5,205,276	5,223,497	5,235,613	5,249,433
5,205,549	5,223,703	5,235,877	5,249,728
5,205,716	5,223,814	5,236,103	5,250,034
5,205,747	5,223,899	5,236,118	5,250,070
5,206,082	5,223,942	5,236,365	5,250,284
5,206,190	5,223,963	5,236,373	5,250,586
5,206,247	5,223,966	5,236,704	5,250,817
5,206,684	5,223,975	5,237,057	5,251,232
5,206,785	5,224,109	5,237,178	5,251,714
5,206,814	5,224,743	5,237,303	5,252,630
5,207,648	5,224,919	5,237,330	5,253,105
5,207,791	5,224,921	5,237,353	5,253,644
5,207,863	5,225,238	5,238,023	5,253,923
5,207,937	5,225,409	5,238,290	5,253,932
5,208,034	5,225,411	5,238,325	5,254,342
5,208,109	5,225,703	5,238,380	5,254,363
5,208,272	5,225,852	5,238,503	5,255,091
5,208,613	5,225,933	5,238,558	5,255,807
5,208,634	5,226,128	5,238,757	5,255,903
5,208,982	5,226,390	5,238,920	5,255,916
5,209,905	5,226,515	5,239,488	5,255,966
5,210,196	5,226,671	5,239,625	5,256,381
5,210,624	5,227,109	5,239,650	5,256,411
5,212,032	5,227,221	5,239,722	5,256,424
5,212,131	5,227,355	5,240,127	5,256,471
5,213,190	5,227,396	5,240,241	5,257,006
5,213,236	5,227,623	5,240,453	5,257,366
5,213,738	5,227,669	5,240,459	5,258,037
5,213,887	5,227,752	5,240,575	5,258,148
5,213,900	5,227,871	5,240,638	5,258,345
5,214,054	5,228,019	5,240,714	5,258,463

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5,258,535	5,260,128	5,262,447	5,263,987	5,265,926	5,267,573	5,269,749	5,273,155
5,258,582	5,260,489	5,262,534	5,264,279	5,266,075	5,268,019	5,269,923	5,274,721
5,258,643	5,260,666	5,262,551	5,264,375	5,266,107	5,268,271	5,270,160	5,276,392
5,258,784	5,261,536	5,262,851	5,264,595	5,266,663	5,268,489	5,270,168	5,279,449
5,259,436	5,261,703	5,263,148	5,264,768	5,266,666	5,269,007	5,271,325	5,284,250
5,259,662	5,261,892	5,263,504	5,264,994	5,267,107	5,269,211	5,271,425	
5,259,867	5,262,164	5,263,736	5,265,293	5,267,161	5,269,541	5,271,985	
5,259,871	5,262,191	5,263,964	5,265,613	5,267,522	5,269,592	5,272,640	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

March 7-11, 1994

Date Issued	Type of Proceeding (1)	Proceeding or Appl'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Grnds of Registration Cited by Examining Atty.	Recommended for Publication
3-9	EX	74/089,758	Sweet Nothings, Inc.	2(d)	Refusal Affirmed (as to "PORKY'S PIT" marks only)		"PORKY'S BAR B Q" (and design) [restaurant services]	"PORKY'S TENDERLOIN" [restaurant services]; "PORKY'S PIT" and "PORKY'S PIT" (and design) [both marks for restaurant services]	No
3-10	EX	74/205,079	Jessica Behrman	2(e)(1); 2(d)	Refusal Affirmed (on both grounds)		"SALSA SABROSA" (stylized lettering) [salsa]	"SABROSA" [dairy based dip]	No
3-10	EX	74/210,601	MPR Teltech, Ltd.	2(e)(1)	Refusal Affirmed		"POCKET PLB" [miniature personal locator beacon for personal use in locating the source of the sender of a radio signal]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Washington, D.C. 20231

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
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Box 9	Coupon orders for U.S. patent and trademark copies.
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Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PDTLs have both the patent and trademark sections of the *Official Gazette of the U. S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that prelminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage: Z. J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
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Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
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	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
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Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
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	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
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	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	4/10/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/28/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	11/27/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	11/27/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	7/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	9/15/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	8/28/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	4/13/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	8/19/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	8/22/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	11/17/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	2/22/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	11/13/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	1/05/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/08/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	6/03/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during March 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,009,494 to 4,015,293 inclusive
Plant Patents ..... 4,019 to 4,031

UMI

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of March 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/93	01/13/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	11/03/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/22/93	11/12/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/20/93	10/20/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	11/12/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/05/93	01/26/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments- Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	01/01/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering- Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/24/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/03/93	09/13/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/20/93	01/07/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/93	01/24/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/06/93	01/07/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	10/06/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

APRIL 26, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

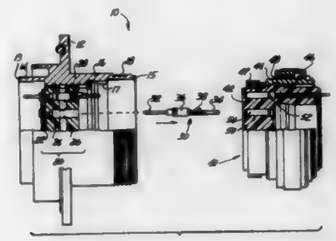
B1 4,203,880 (2278th)
LUBRICANT COMPOSITION FOR HALOGEN-CONTAINING POLYMERS
Alfred Stoloff, Livingston, and Anthony L. Williams, Summit, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.
Reexamination Request No. 90/002,956, Feb. 11, 1993.
Reexamination Certificate for Patent No. 4,203,880, issued May 20, 1980, Ser. No. 959,707, Nov. 13, 1978.
Int. Cl.[5] C08K *5/57, 5/59, 3/26;* **C08L** *91/06*
U.S. Cl. 524—182

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–22** is confirmed.

1. A composition for improving the melt strength and processability of polymers formed from at least one halogen-containing ethylenically unsaturated compound, said composition comprising (1) an effective amount of a heat stabilizer for said polymers, (2) an effective amount of an external lubricant for said polymers, said lubricant being selected from the group consisting of paraffin oils, paraffin waxes, liquid and solid hydrocarbons and non-oxidized polyethylene waxes, and (3) an oxidized polymer wherein at least 50% of the repeating units are derived from ethylene and any remaining repeating units are derived from at least one α-olefin containing from 3 to 10 carbon atoms, wherein said oxidized polymer exhibits an acid number greater than 5 and a melt viscosity of from 1,000 to about 60,000 centipoises at a temperature of 140° C.

B1 4,789,360 (2279th)
ELECTRICAL CONNECTOR WITH REAR REMOVABLE CONTACTS
Richard L. Paul, and Ronald W. Morse, both of Sidney, N.Y., assignors to Amphenol Corporation, Wallinsford, Conn.
Reexamination Request No. 90/002,894, Nov. 23, 1992.
Reexamination Certificate for Patent No. 4,789,360, issued Jun. 19, 1988, Ser. No. 153,731, Dec. 6, 1988.
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620



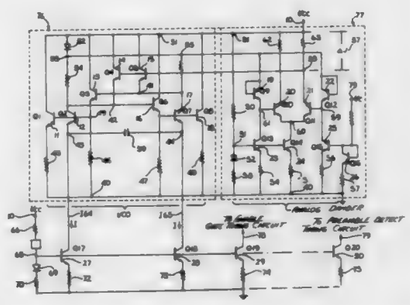
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–5** dependent on an amended claim, are determined to be patentable.

1. An electrical connector assembly for receiving and transmitting an electrical signal comprising a hollow cylindrical metal shell having a mating forward and a rearward end portion, a dielectric insert having an array of first passages extending therethrough, each first passage receiving an electrical first contact, said first contact comprising a mating forward and rearward end portion and a medial portion having circuit protection means electrically connected thereto for preventing transmission of signals from the assembly which exceed a predetermined value, grounding means electrically connected to each first contact for grounding the contacts to the shell *through said circuit protection means*, and mounting means for releasably mounting the first contacts in the shell, the mounting means comprising a removable insert assembly having a like array of second passages extending therethrough and carrying an electrical contact in each respective second passage thereof, each second contact being nonremovably mounted in the insert assembly and having a forward end portion for mating with the rearward end portion of a first contact and a rearward end portion for further interconnection to transmit a [protection] *protected* signal, means for removably securing the insert assembly to the rearward end portion of the shell and means for aligning the dielectric insert and insert assembly so that the arrays of first and second passages are aligned with one another, said first contacts being individually removable from the rearward end portion of the shell upon removal of the insert assembly.

B2 4,803,445 (2280th)
VARIABLE FREQUENCY OSCILLATOR
Richard G. Yamasaki, Torrance, Calif., assignor to Silicon Systems, Tustin, Calif.
Reexamination Request Nos. 90/003,160, Aug. 13, 1993 and 90/002,791, Jul. 21, 1992.
Reexamination Certificate for Patent No. 4,803,445, issued Feb. 7, 1989, Ser. No. 41,767, Apr. 22, 1987.
Reexamination Certificate B1 4,803,445, issued Sep. 7, 1993.
Int. Cl.[5] H03K *3/281*
U.S. Cl. 331—177 R



AS RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A circuit for providing a variable frequency oscillator (VFO) comprising:
oscillating means having a center frrquency and outputting a first clock signal;
first control means coupled to a control voltage and said oscillating means for controlling said first clock signal;
second control means coupled to said oscillating means for

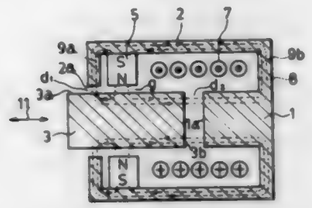
VOL 1161 ISS 4 AP 26 1994 UMI

controlling said center frequency and outputting a plurality of second clock signals, said second control means independent of said first control means.

B1 4,859,975 (2281st)
ELECTROMAGNETIC ACTUATOR

Tokio Uetsuhara, Urawa, Japan, assignor to Mitsubishi Mining & Cement, Tokyo and Iwasaki Electronics Co. Ltd., Kyoto, both of Japan

Reexamination Request No. 90/002,505, Nov. 12, 1991.
Reexamination Certificate for Patent No. 4,859,975, issued Aug. 22, 1989, Ser. No. 139,251, Dec. 2, 1987.
PCT No. PCT/JP86/00663, § 371 Date Dec. 2, 1987, § 102(e) Date Dec. 2, 1987, PCT Pub. No. WO88/05207, PCT Pub. Date Jul. 14, 1988
The portion of the term of this patent subsequent to Nov. 10, 2004, has been disclaimed.
Int. Cl.[5] H01F *7/13, 7/08*
U.S. Cl. 335—230



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2-4 are cancelled.

Claim 1 is determined to be patentable as amended.

New claims 5-7 are added and determined to be patentable.

1. An electromagnetic actuator which is composed of a yoke, a stationary core fixed to the yoke, a movable core *which is confronted consistently with a circumferential gap d_1 to the yoke and with a moving stroke gap d_2 to the stationary core and is* capable of reciprocally moving, with respect to the stationary core, a coil wound around the movable core for applying the first magnetic flux thereto when the coil is energized, *and* a permanent magnet fixed to the yoke so as to apply [the] *a* second magnetic flux which dividingly flows to the first magnetic flux in parallel thereto, *and a spring which keeps the movable core at a stable position by cancelling electromagnetic force between the stationary core and the movable core induced by the permanent magnet when the coil is not energized*; wherein the improvement is characterized that this electromagnetic actuator satisfies the [condition] *conditions* (a) *and* (*b*) *within a magnetically non-saturated zone;*

(a) $0.5 > R_1/R_0 > 0$

(*b*) $\phi_p/\phi_o > 0.5$

wherein,

R_1 represents the magnetic reluctance of the magnetic [pass] *path* of one divided magnetic flux generated by the permanent magnet, including the magnetic reluctance of the gap d_1 between [one pole face] *the circumferential surface* of the movable core and one pole face of the yoke; R_2 represents the magnetic reluctance of the magnetic [pass] *path* of the other divided magnetic flux generated by the permanent magnet, including the magnetic reluctance of the gap d_2 between the [other pole] *moving end* face of the movable core and one pole face of the stationary core; and

$R_0 = R_1 + R_2$;

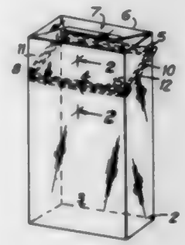
ϕ_o represents the magnetic flux caused when the coil is energized; and

ϕ_p/ϕ_o equals to $R_o F_p/R_p F_o$; *wherein R_p represents the magnetic reluctance of the permanent magnet; F_o represents the magnetomotive force caused when the coil is energized; and F_p represents the magnetomotive force caused by the permanent magnet.*

B1 4,938,363 (2282nd)
CONTAINER WRAPPER WITH INTEGRAL TEAR TAPE, AND METHODS AND APPARATUS FOR MAKING SAME

Angel Amendola, Millersville, Md., assignor to Philip Morris Incorporated, New York, N.Y.

Reexamination Request No. 90/002,669, Mar. 13, 1992.
Reexamination Certificate for Patent No. 4,938,363, issued Jul. 3, 1990, Ser. No. 342,240, Apr. 24, 1989.
Int. Cl.[5] B65D *77/04, 65/34*
U.S. Cl. 206—264



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-14 are cancelled.

[1. A wrapper for enveloping a container comprising:
a sheet of material having a thickness and a longitudinal axis; and
a first set and a second set of substantially parallel score lines in the surface of and extending partially through the thickness of said sheet, said first set of score lines forming an integral tear tape in said wrapper and said second set of score lines being disposed outwardly of said first set of score lines thereby forming a track for minimizing tearing of said wrapper outside of said track when said tear tape is removed.]

B1 4,986,435 (2283rd)
RECEPTICLE FOR A FLEXIBLE BEVERIDGE CONTAINER

Connie Wright, 11606 Shady Grove, Houston, Tex. 77024

Reexamination Request No. 90/002,631, Feb. 4, 1992.
Reexamination Certificate for Patent No. 4,986,435, issued Jan. 22, 1991, Ser. No. 364,885, Jun. 12, 1989.
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—737

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 3 and 9 are cancelled.

Claims 2, 4, 7, 8, 10-12 and 14-17 are determined to be patentable as amended.

Claims 5, 6 and 13, dependent on an amended claim, are determined to be patentable.

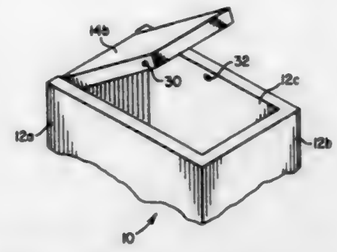
New claims 18-32 are added and determined to be patentable.

22. A receptacle for holding a potable beverage container of predetermined size, the beverage container having flexible side walls and an access port positioned on a top portion of the beverage container, the container being of the type in which unwanted pressure exerted on the flexible walls results in the expulsion of the fluid from the flexible wall container through the access port, said receptacle comprising:

a plurality of rigid sidewalls each connected to an adjacent one of said sidewalls for shielding the flexible wall container from the unwanted pressure;

a bottom wall connected to at least one of said sidewalls, said sidewalls and said bottom wall collectively defining a box-like structure having an internal space therein, said structure having an opening for receiving the beverage container and the beverage container resting directly upon said bottom wall; and

a top piece covering less than said entire opening and cooperating with said sidewalls to secure said beverage container within said internal space, wherein with said top piece in a closed position a portion of said opening not covered by said top piece corresponds to the location of said access port of the beverage container when the beverage container is secured within said internal space, said receptacle having closed double wall construction said construction comprising an interior wall and an exterior wall defining an air space having insulative qualities, said top piece having a substantially rectangularly shaped cover having a first protuberance and a second protuberance, said first protuberance protruding from a first edge and said second protuberance protruding from a second and opposite edge; and



said receptacle having a first aperture and a second aperture, said first aperture being located interiorly within said internal space and on a first sidewall and said second aperture being located interiorly within said internal space and on a second and opposite sidewall, said first aperture being positioned to received in mating fashion said first protuberance and said second aperture being positioned to receive in mating fashion said second protuberance.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,590

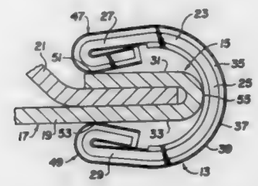
METHOD OF MANUFACTURING A DOOR EDGE GUARD

Gerald R. Schotthoefer, Dallas, Tex., assignor to Adell Corporation, Sunnyvale, Tex.

Original No. 5,028,288, dated Jul. 2, 1991, Ser. No. 398,951, Aug. 28, 1989. Application for reissue Aug. 17, 1992, Ser. No. 935,871

Int. Cl.[5] B29C *47/02*

U.S. Cl. 156—226 **6 Claims**



5. A method of manufacturing a door edge guard for protecting the trailing edge of a door, comprising the steps of:

coextruding an insulating cover completely around a continuous metal strip, forming a region of decreased thickness in the insulating cover;

laminating a strip of colored material onto one surface of the insulating cover before the cover has lost the heat of the coextrusion step;

roll forming the combination of the metal strip, the insulating cover, and the colored material into a shape having a curved base adapted to fit over the edge and legs extending from the base to fit against the sides of the door against the edge, and folding one of the legs to form a bead, wherein the region of decreased thickness in the insulating cover becomes an interior portion of the bead and facilitates the forming of the bead and wherein the colored material is on the exterior side of the base and the legs; and

cutting the formed combination to a desired length.

Re. 34,591

HIGH PRESSURE FUEL INJECTION UNIT

Takeo Yoshida, and Minoru Suzuki, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

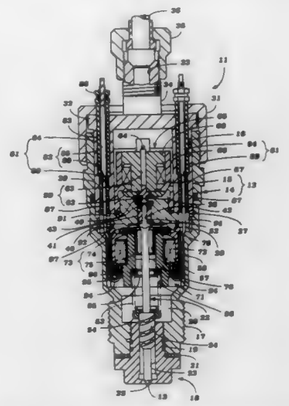
Original No. 5,090,620, dated Feb. 25, 1992, Ser. No. 610,540, Nov. 8, 1990. Application for reissue May 19, 1992, Ser. No. 885,343

Claims priority, application Japan, Nov. 9, 1989, 1-293366

Int. Cl.[5] F02M *47/00*

U.S. Cl. 239—96 **7 Claims**

1. An accumulator type of injection nozzle comprising an outer housing assembly defining a cavity partitioned into an accumulator chamber adapted to be supplied with high pressure fuel and a coil chamber, a nozzle port leading from said accumulator chamber, an injection valve moveable between a closed position and an open position for controlling the discharge of fuel from said accumulator chamber through said nozzle port, a control chamber for receiving pressurized fuel, an actuating member supported for movement within said control chamber and associated with said injection valve for retaining said injection valve in its closed position when said control chamber is pressurized and for movement of said injection valve to its open position when pressure is relieved in said control chamber, valve means moveable between a closed position for maintaining pressure in said control chamber and an open position for relieving pressure in said control chamber for effecting fuel discharge through said nozzle port, a first electromagnet within said outer housing assembly for moving said valve means to one of said positions when said first electromagnet is energized, and a second electromagnet within said outer housing assembly for controlling the lift amount of said injection valve by selectively energizing or de-energizing said second electromagnet, *wherein said first and second electro-*



magnets have first and second coils respectively, said first coil being wound with a lesser number of turns than said second coil and the wire of said first coil having a larger diameter than the wire of said second coil and wherein when said second electromagnet is energized, energization of said second electromagnet is started before energization of said first electromagnet for a given fuel injection cycle.

Re. 34,592

WEBBING LOCKING DEVICE

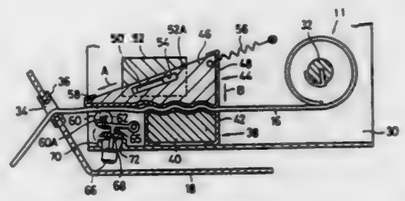
Teruhiko Kawaguchi, Gifu, and Yuji Nishimura, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Japan

Original No. 4,570,975, dated Feb. 18, 1986, Ser. No. 686,395, Dec. 26, 1984. Application for reissue Feb. 9, 1988, Ser. No. 154,047

Claims priority, application Japan, Dec. 29, 1983, 58-204831[U]

Int. Cl.[5] B60R *22/42*

U.S. Cl. 242—107.2 **23 Claims**



21. A webbing locking device adapted for use in a seatbelt system for restraining an occupant of a vehicle by an occupant restraining webbing, which comprises:

(a) a frame fixed to a vehicle body;

(b) a fixed locking member fixed to the frame;

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(c) a movable locking member supported movably by the frame to be opposed to the fixed locking member, the movable member locking an intermediate portion of the webbing by the same and the fixed locking member in an emergency situation of the vehicle;

(d) guide means for guiding the movable locking member in a direction of a webbing drawing-out and approach to the fixed locking member;

(e) trigger means being contactable to the webbing for causing the webbing to move into contact with the movable locking member by contact of the trigger means with the webbing; and

(f) acceleration sensing means for detecting a large acceleration of the vehicle to actuate the trigger means in the emergency situation of the vehicle, whereby the webbing is locked by the fixed and the movable locking members in the emergency situation of the vehicle.

Re. 34,593

LOOSE-LEAF NOTEBOOK CONSTRUCTION

Judith A. Moncrieff Baldwin, New York, and Steven Selwyn, Brooklyn, both of N.Y., assignors to Strategic Financial Communications Corp., New York, N.Y.

Original No. 4,930,925, dated Jun. 5, 1990, Ser. No. 329,655, Mar. 28, 1989. Application for reissue Apr. 27, 1992, Ser. No. 874,681

Int. Cl.[5] B42F *13/22*

U.S. Cl. 402—30 **10 Claims**

6. In a notebook construction having cover and a selectively openable and closeable binder mechanism for supporting a plurality of pre-punched loose-leaf pages, the improvement in which said binder mechanism includes:

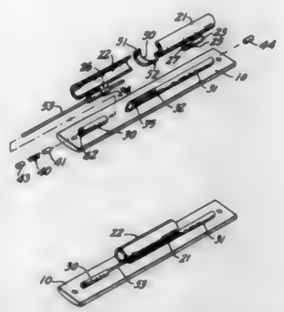
(a) an elongated rigid plate means;

(b) a hollow tubular support channel means including upper and lower portions fixed to said plate means in coaxial relation with one another;

(c) an opposed pair of pivotable clam shell means cooperatively associated to define a closed, generally elongated cylindrical, leaf holder in a first radial position and an open split cylinder in a second radial position;

(d) said clam shell means including a rod-like pivot means slidably mounted in said support channel for limited axial displacement between a first normally restrained position and a second normally unrestrained position;

(e) first spring means axially biasing said pivot means toward said first normally restrained position; and



(f) camming means associated with said support channel means and operative to cam said clam shell means into said closed position.

Re. 34,594

PREEMERGENCE WEED CONTROL USING CORN GLUTEN MEAL

Nick E. Christians, Ames, Iowa, assignor to Iowa State University of Research Foundation, Inc., Ames, Iowa

Original No. 5,030,268, dated Jul. 9, 1991, Ser. No. 465,475, Jan. 16, 1990. Application for reissue Oct. 1, 1992, Ser. No. 955,927

Int. Cl.[5] A01N *65/00*

U.S. Cl. 504—116 **9 Claims**

1. A method for selectively inhibiting growth of undesirable annual and certain perennial grassy plants in an area containing an established plot of desirable grassy plants, said method comprising:

applying prior to emergence of undesirable grassy plants to said area at a concentration of application which *selectively* inhibits growth of undesirable plants, corn gluten meal.

PLANT PATENTS

GRANTED APRIL 26, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,700

HYBRID TEA ROSE PLANT NAMED 'JACOLLY'

Jack E. Christensen, Ontario, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 16, 1993, Ser. No. 17,828

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its distinctive orange flowers with a yellow reverse on the petals, red bark on main stems and laterals, thick petals, vigorous, upright growth habit, and an attractive exhibition-style flower and bud form.

8,701

APPLE TREE TF812

Harold Thome, Comstock Park, Mich., assignor to Inter-Plant Patent Marketing, Inc., Niagara-On-The-Lake, Canada

Filed Oct. 11, 1991, Ser. No. 777,780

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. The new and distinct apple tree as shown and described.

8,702

APPLE VARIETY NAMED STARLITE

Paul Gillespie, P.O. Box 8612, Havelock North, Hastings, New Zealand

Filed Sep. 15, 1992, Ser. No. 945,062

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.34.1 **1 Claim**

1. A new and distinct variety of apple tree substantially as herein described and illustrated characterised by a high percentage of burgundy red overcolour.

8,703

CORNUS KOUSA VARIETY CV. PARASOL

William Devine, Kennedyville, Md., assignor to Joseph Cesarini, Ridgely, Md.

Filed Jun. 23, 1993, Ser. No. 82,053

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—53.2 **1 Claim**

1. A new and distinct variety of Cornus Kousa plant named "Parasol" as herein illustrated and described.

8,704

CHRYSANTHEMUM PLANT NAMED YELLOW SHEENA

Barrie J. Machin, Hants, England, assignor to Goldstock Breeding Limited, Hants, England

Filed Oct. 23, 1992, Ser. No. 966,084

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Sheena, as described and illustrated.

8,705

ASIATIC LILY CULTIVAR NAMED PORTLANDIA

Edward A. McRae, Woodland, Wash., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Jun. 16, 1992, Ser. No. 901,612

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. The new and distinctive variety of asiatic hybrid lily substantially as shown and described herein, characterized in particular by a tepals having a bright orange-red coloration, medium-sized flowers produced profusely in racemes, and a vigorous growth habit.

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GRANTED APR. 26, 1994

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043-044	5,305,534
439-395	5,305,547
073-864	5,305,658
072-389	5,305,659
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601-004	5,305,737
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211-122	5,305,890
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365-145	5,307,305

PATENTS

GRANTED APRIL 26, 1994

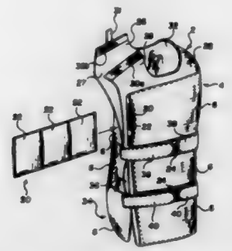
GENERAL AND MECHANICAL

5,305,470
SPORTS BAND
William D. McKay, 528 Kelso St., Flint, Mich. 48506
Continuation-in-part of Ser. No. 712,141, Jun. 5, 1991, Pat. No. 5,119,513. This application Sep. 16, 1991, Ser. No. 762,849
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] A42C *5/00*
U.S. Cl. 2—7 **5 Claims**



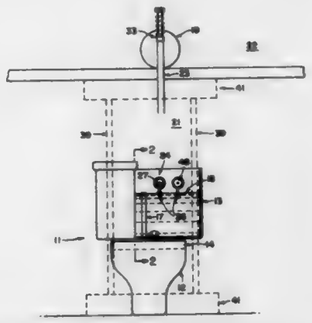
1. A sports band for absorbing perspiration and for cooling the wearer, said band comprising;
(a) a band of non-elastic absorbent material, generally toroidal in shape and configured to be worn upon one of a person's head and a person's wrist, said band being cut completely through at one point thereof such that a first end and a second end are formed; and
(b) an elastic strip, wherein said elastic strip is sewn to said first end of said inelastic material such that said first end is closed and is sewn to said second end of said inelastic material such that said second end is open and can receive a cold pack therethrough.

5,305,471
INSULATED COOLING VEST
Sandra L. Steele, Kingston, and Harry W. Nettleton, Hansville, both of Wash., assignors to Steele and Associates, Inc., Kingston, Wash.
Filed Feb. 20, 1992, Ser. No. 839,256
Int. Cl.[5] A41D *1/04*
U.S. Cl. 2—102 **14 Claims**



1. A cooling vest comprising:
(a) opposed front and back panels to substantially cover the front and back of a user's torso;
(b) at least one pocket on one of the panels having an opening such that a cooling pack can be received therein, and having opposed inner and outer walls on an inside and an outside, respectively, of the vest, the inner wall comprising a structural layer; and
an insulation layer; the outer wall having a greater insulation value than the inner wall, the outer wall comprising a structural layer;
at least one breathable, metallized layer; and
an insulation layer; and all of such pockets together covering the majority of at least one of the panels.

5,305,472
VENTILATION UNIT FOR A TOILET
Leroy O. Eger, 401 E. Robinson St., #105, Orlando, Fla. 32801
Filed Feb. 8, 1993, Ser. No. 14,844
Int. Cl.[5] E03D *9/052*
U.S. Cl. 4—213 **10 Claims**



1. A ventilation unit for a conventional toilet in a building to vent odors from said toilet to remote areas through wall voids in the building frame surrounding said toilet, said toilet having a bowl with a rim, a water tank, and an overflow tube in said water tank connected to a conduit in the rim of the bowl for passage of water and apertures in said rim for flow of water to enter the bowl, comprising:
a) means, adapted to be connected to the water tank, for inducing air flow through the overflow tube, rim and apertures of the toilet and away from said toilet to draw odors from the toilet; and
b) means, mounted to said air inducing means, for regulating the air flow created by said air inducing means, including a first valve in communication with said air inducement means adjacent said water tank, said valve connected to a floatable device in the water such that the valve is actuated concomitantly with the lowering and raising of the water level of said water tank, to regulate the flow of air created by the air inducement means.

5,305,473
URINAL HAVING A SMELL RELEASE FUNCTION
Shouichi Nakamura, Aichi, Japan, assignor to Inax Corporation, Tokoname, Japan
Filed Mar. 18, 1992, Ser. No. 853,423
Claims priority, application Japan, Mar. 29, 1991, 3-19948[U]
Int. Cl.[5] E03D *13/00*
U.S. Cl. 4—306 **3 Claims**

1. A urinal to be hung on a room wall, comprising:
a urine gathering unit including a drain port formed in a bottom surfaces thereof, a urine gathering wall extending upward from said bottom surface, with its front part opened for use;
side walls extending vertically along opposite sides of said urine gathering wall;

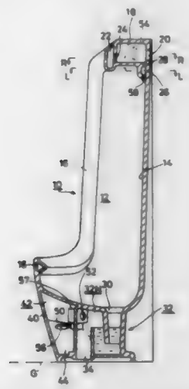
VOL 1161 ISS 4 AP 26 1994 UMI

a first air space defined by said urine gathering wall, said side walls and a rear wall so as to extend vertically along said urine gathering wall;

a drain trap disposed on a lower side of said bottom surface of said urine gathering unit so as to communicate with said drain port and having a secondary side to be connected to a drain line;

first communicating means provided at an upper portion of said urine gathering wall for causing said first air space to communicate with an upper part of said urine gathering unit;

second communicating means provided at a wall of said secondary side of said drain trap for causing said first air space to communicate with said secondary side of said drain trap, said second communicating means having a first port and a second port, said second port being provided through a wall of said drain trap;



a skirt member provided along peripheral edges of a bottom surface of said urine gathering unit, said skirt member being spaced away from said drain trap, said first port being provided through the skirt member,

a second air space defined by said skirt member and the bottom surface of said urine gathering unit, and

an exhaust fan for blowing air within said second air space to said secondary side of said drain trap, said exhaust fan being provided between a rear side of said skirt member and said drain trap and including a first suction port connected to said second port and a second suction port opened to a space around a lower part of said urinal so that air around the lower part of said urinal is forcibly drawn into a drain pipe through said secondary side of said drain trap.

5,305,474

STOPPABLE FLUSHING MECHANISM WITH ASSURED MINIMAL FLOW

Bernard Nardi, Gemenos, and Michel Pourcier, Marseille, both of France, assignors to Societe Phoceene de Matieres Plastiques, SPMP, Marseille, France

Continuation of Ser. No. 723,071, Jun. 28, 1991, abandoned. This application Aug. 25, 1993, Ser. No. 111,432

Int. Cl.[5] E03D *1/14*

U.S. Cl. 4—324 **21 Claims**

1. A stoppable flushing mechanism having an assured minimum flow capable of dispensing two levels of water from a flushing tank of a toilet, comprising:

means defining an evacuation orifice including a sealing edge and, adapted to be positioned in a base of said flushing tank, for permitting water to be evacuated from the flushing tank;

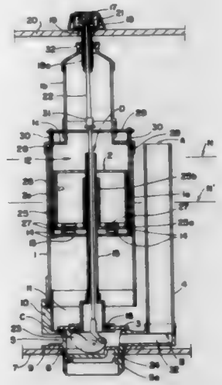
a housing defining a substantially vertical axis and having an upper portion and a lower portion defined by a partition;

a valve movable in a direction substantially along said substantially vertical axis for displaceably contacting said sealing edge;

a floater movable in a direction substantially along said substantially vertical axis, said floater being affixed to said valve and adapted to maintain said valve at a distance from said sealing edge during evacuation of water from the flushing tank;

a transmission and lifting system for moving said valve from a position on said sealing edge; a push-button control device for activating said transmission and lifting system;

a buoyancy chamber having a first base, said buoyancy chamber being positioned in said upper portion of said



housing and said floater being positioned within said buoyancy chamber; and

a rapid evacuation mechanism for rapidly evacuating said buoyancy chamber, comprising at least one element activatable by said push-button control device, and at least one first orifice in a vicinity of said first base of said buoyancy chamber, said at least one element being placed in an operative position to permit rapid flow of water from said buoyancy chamber through said at least one first orifice when said push-button control device is pressed and water in the flushing tank is at a level below said at least one first orifice, thus allowing said floater to descend causing said valve to close, retaining a portion of said water in said tank, and in an operative position to stop rapid flow of water from said buoyancy chamber when said push-button control device is no longer pressed.

5,305,475

PUMP OPERATED PLUMBING FIXTURE

Norman J. Jaeckels, Sheboygan; John A. Fiumefreddo, Plymouth; Michael P. Gray, Kohler; Anton J. Kolar; Randy O. Mesun, both of Sheboygan, and Jeffrey F. Tempas, Oostburg, all of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Nov. 13, 1992, Ser. No. 976,109

Int. Cl.[5] E03D *1/14, 1/28, 5/01, 11/02*

U.S. Cl. 4—325 **26 Claims**

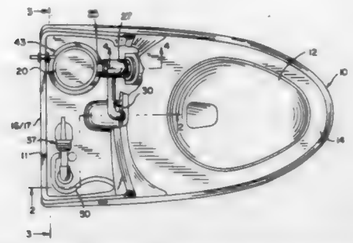
1. A plumbing fixture for receiving flushable waste comprising:

at least one receptacle for receiving said waste;

a reservoir tank for storing a volume of flush water;

a pump motor and pump both positioned in the reservoir tank, an inlet of the pump being in communication with the interior of the reservoir tank;

a conduit connected between an outlet of the pump and the receptacle; and



control means selectively and operatively connected to the motor to operate the pump for a period of time to deliver a quantity of flush water to the pump outlet.

5,305,476

SHOWER BATHING DEVICE

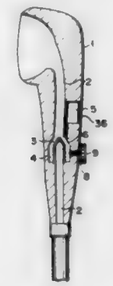
Keiichi Ohyama, Mitaka; Ayami Inaba, Matsudo, and Takashi Murata, Yokohama, all of Japan, assignors to The Nisshin Oil Mills, Ltd., Japan

Continuation of Ser. No. 684,558, Apr. 12, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,628

Claims priority, application Japan, Apr. 13, 1990, 2-39030

Int. Cl.[5] A47K *3/22*

U.S. Cl. 4—605 **10 Claims**



1. A shower bathing device having a shower head, said shower head comprising:

a passage means through which water is passed;

a solution chamber and solution supply means for supplying a medical solution into the passage means; and

mixing means for mixing the solution with water passing through the passage means, said mixing means including stream pump means arranged in the passage means, a pressure reducing chamber having a through hole, and directly communicating with the stream pump means and with air outside the shower bathing device via the through hole, a mixing area formed in the pressure reducing chamber and communicating with the solution supply means to receive the medical solution, and means for adjusting the amount of the solution supplied to the mixing area by adjusting the amount of air entering from outside of the shower bathing device into the pressure reducing chamber, wherein said mixing area is situated between the adjusting means and the solution supply means and wherein the solution thereby enters the mixing area from the supply means at a location different from a location at which said air enters the mixing area.

5,305,477

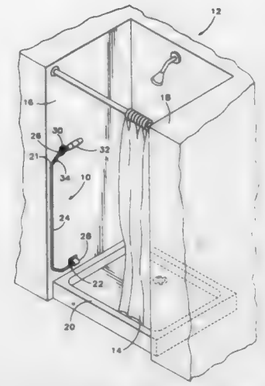
SHOWER CURTAIN BRACE

Scott Cochran, Goerdelerweg #6, 6100 Darmstadt, Fed. Rep. of Germany

Filed Dec. 9, 1992, Ser. No. 988,226

Int. Cl.[5] A47K *3/00*

U.S. Cl. 4—609 **13 Claims**



1. A brace for securing a shower curtain away from a shower stream when the shower curtain is extended across the shower entrance above a shower edge between first and second shower walls comprising:

a bar member having first end portion and second L-shaped end portion separated by a distance approximately equivalent to the distance between the first and second shower walls;

a hinge device connected to said first end portion for pivotally fastening the first end portion of the bar member to the first shower wall and allowing the bar member to move between a non-use-position in which the bar member is substantially vertically disposed parallel to the shower walls, and a use-position in which the bar crosses the shower entrance in a substantially perpendicular orientation to the shower walls pinning the shower curtain firstly against an upper surface of the shower ledge and said L-shaped end portion pinning said shower curtain secondly against the second shower wall so that the shower curtain is held substantially away from the shower stream and shower water is prevented from exiting across the shower entrance.

5,305,478

ECOLOGY SINK

Edwin R. Potter, Jr., Howards Grove, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Feb. 18, 1993, Ser. No. 19,399

Int. Cl.[5] E03C *1/00*

U.S. Cl. 4—629 **13 Claims**

1. A support assembly for a waste container for use with a waste chute disposed under a sink, the waste chute having a sealing member comprising:

a first hinge member adapted to be connected to a frame structure;

a second hinge member;

a pintle having an essentially vertically oriented longitudinal axis;

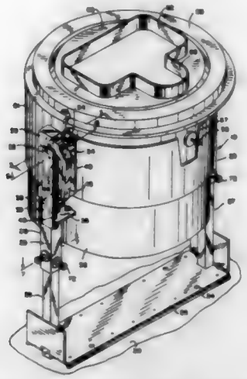
said first and second hinge members being axially aligned with said pintle, means for connecting said second hinge member to said pintle in a rotatable manner, means for connecting said pintle to said first hinge member in an essentially vertically translatable manner;

a bearing surface connected to said first hinge member;

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a cam member pivotally connected to said pintle and having a camming surface and an arm member with said camming surface operatively positioned on said bearing surface; and

a support member connected to said second hinge member for supporting the waste container, said support member defined by an annular collar device;



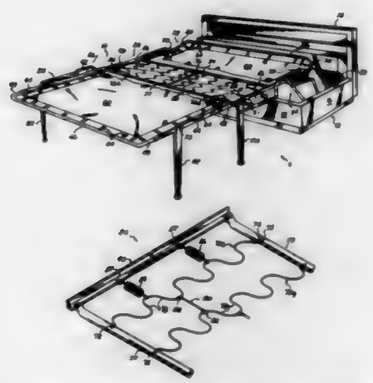
whereby said waste container can be pivoted from positions outside and under said sink by said second hinge member rotating relative to said pintle as well as raised and lowered by means of said pintle being translated by said cam member to engage said sealing member of said waste chute.

5,305,479

SOFA SLEEPER HAVING SINUOUS SPRING REINFORCED SHOULDER AREA

Danny C. Robinson, Carthage, Mo., assignor to L&P Property Management Company, Chicago, Ill.

Filed May 20, 1993, Ser. No. 64,952
Int. Cl.[5] A47C *17/22, 17/04*
U.S. Cl. 5—13 6 Claims



1. A sofa sleeper foldable sofa bed assembly adapted to be mounted upon a stationary sofa frame, said bed assembly having pivotally interconnected head, body, intermediate and foot frame sections each including a pair of opposed side rails, said frame sections being extendable to form a bed and foldable to form a sofa seat, and fabric material attached atop at least said head, body and intermediate frame sections, the improvement comprising:

said body section including a mattress supporting panel for reinforcing said body section beneath said fabric material and extending between the side rails of said body section, said panel comprising a pair of opposed rigid cross tie members extending between said side rails; and

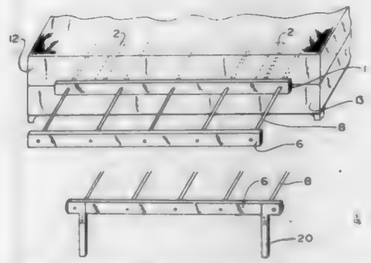
a plurality of transversely spaced, longitudinally extending sinuous wire springs extending between said cross tie members of said body frame section parallel to said side rails thereof, one end of each of said sinuous wire springs being mounted to one of said cross tie members.

5,305,480

BED SPREAD SAVER

Robert Loren, 85020 Hwy 101, and Karen Morgan-Loren, 85020 Hwy 101 S., both of, Florence, Oreg. 97439

Filed Mar. 30, 1993, Ser. No. 40,374
Int. Cl.[5] A47C *21/02*
U.S. Cl. 5—504.1 1 Claim



1. A bed spread support apparatus for attachment between the mattress and box spring of beds comprising: a base board and at least two support boards in fixed connection to said base board and about perpendicular to said base board so that said support boards may be positioned between said mattress and said box spring, said support boards of length sufficient to support said apparatus from between said mattress and said box spring, said base board having at least two apertures, at least two dowel rods in slidable connection with said apertures for sliding underneath said mattress when said apparatus is not in use, said dowel rods in fixed connection to an extension board, said extension boards about perpendicular to said dowel rods so that said extension board and dowel rods may be extended from said base board in order to support articles, two legs in pivotal connection with said extension board.

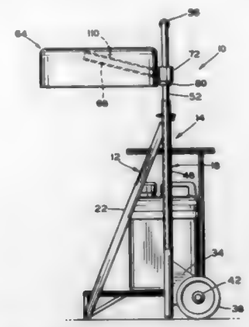
5,305,481

MOBILE SALON STATION

J. Clyde Nebb, Walbridge, Ohio, assignor to Mobile Salon Station, Inc., Toledo, Ohio

Filed Jul. 8, 1992, Ser. No. 910,558
Int. Cl.[5] A45D *19/04, 19/12*
U.S. Cl. 4—516 13 Claims

1. A salon station comprising two generally upright, parallel frame members means for rigidly connecting said frame members together, said frame members each having upper telescoping, vertically adjustable portions, two supporting rods, pivotal mounting means for mounting said rods on said telescoping, vertically adjustable portions of said frame members to enable said supporting rods to pivot between a position in which said rods are substantially parallel to a plane formed by said frame members and a position extending outwardly from said plane and to be in a substantially parallel relationship, and a basin having two tubular members positioned to removably



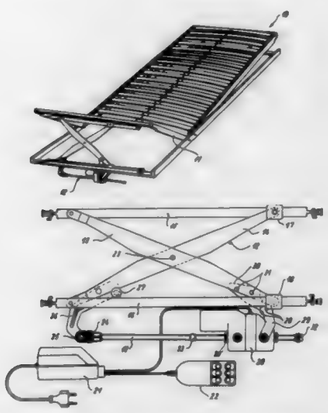
receive said supporting rods when extending outwardly from said frame members so said basin is supported thereby.

5,305,482

LIFTING DEVICE

Eckhart Dewert, Enger, Fed. Rep. of Germany, assignor to Dewert Antriebs-und Systemtechnik GmbH & Co KG, Kirchlengern, Fed. Rep. of Germany

Filed Mar. 24, 1992, Ser. No. 872,968
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 9103817[U]
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—616 21 Claims



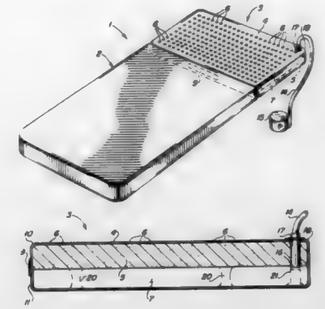
1. A furniture article, comprising a furniture article unit with turnable parts; and a lifting device for said turnable parts of said furniture article unit, said lifting device including a scissors-type element mountable directly on said furniture article unit, means for mounting said scissors-type element directly on said furniture article unit, an electric motor actuating said scissors-type element and having a driven member formed as a rotatable nut, and a stationary threaded spindle on which said electric motor is displaceable.

5,305,483

INFANT BODY SUPPORT AND PROVIDING AIR FLOW FOR BREATHING

Charles E. Watkins, 3131 N. Druid Hills Rd., Apt 10303, Decatur, Ga. 30033

Filed Mar. 8, 1993, Ser. No. 27,815
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—638 16 Claims



1. A pillow breathing aid means for supporting the head of an infant, supplying breathing air near the mouth and nose of said infant, and providing ventilation to the portion of the skin of said infant in contact with said pillow means comprising:

a thin pliable outer sheet portion having a lower surface and sidewall surfaces which are relatively impermeable and having an upper support surface which is relatively permeable to the passage of air;

said outer sheet portion enclosing an interior volume of sufficient length and width to fully underlie said head of said infant, said interior volume also being of sufficient overall thickness to support said head of said infant in a position of healthy repose;

said enclosed interior volume being further subdivided into upper and lower portions, said upper portion being formed of a porous foam material and said lower portion being a void defining an air pocket bounded on the bottom and sides by said lower surface and sidewall surfaces of said thin pliable outer wall portion, and on the top by said sheet of porous foam material;

air pump means for supplying steady breathing air flow to said air pocket, wherein:

said steady breathing air flow to said air pocket cause air to flow near said nose and mouth of said infant without any effort on the part of the infant.

5,305,484

CLOTHES STEAMING AND DRYING CABINET

John S. Fitzpatrick, County Cork; Patrick M. Branigan, Dublin; William C. Kee, County Dublin; Cornelius B. Clarke, Dublin; Ernest Search, County Dublin; Mark Cunnane, Dublin, and Richard P. Delaney, County Dublin, all of Ireland, assignors to J.S.F. Holdings (Cork) Limited, County Cork, Ireland

Continuation of Ser. No. 790,144, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 631,766, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 463,893, Jan. 9, 1990, abandoned, which is a continuation of Ser. No. 295,853, Jan. 11, 1989, abandoned. This application Jun. 1, 1992, Ser. No. 891,690
Claims priority, application Ireland, Jan. 13, 1988, 79/88; May 24, 1988, 1558/88
Int. Cl.[5] D06B *1/08*
U.S. Cl. 8—149.3 11 Claims

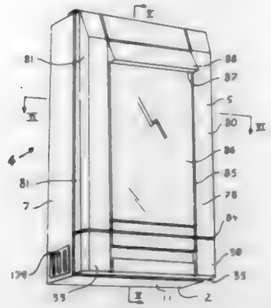
8. A method for steaming and drying a garment in an interior region of a cabinet, the method comprising the steps of

delivering steam continuously into the interior region of the

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cabinet during a steaming period of a steaming and drying cycle,

delivering heated air into the interior region of the cabinet during at least part of the steaming and drying cycle,



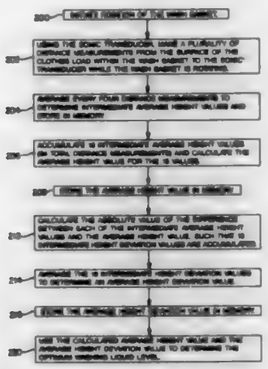
wherein the heated air is intermittently delivered into the interior region simultaneously with the steam during part of the said steaming period of the steaming and drying cycle.

5,305,485

CLOTH DETECTION SYSTEM FOR AN AUTOMATIC WASHER

Edward H. Getz, Pipestone Township, Berrien County, and R. Bruce Sherer, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 4, 1993, Ser. No. 350
Int. Cl.[5] D06F *33/02*
U.S. Cl. 8—158 **18 Claims**



1. An automatic washing machine having a vertical axis tub disposed within a cabinet and a rotatable perforate wash basket disposed within said tub for receiving washing liquid and a load of clothes to be washed therein, said washing machine having a washing liquid level control system comprising:

a sonic transducer for directing a plurality of sonic pulses into said wash basket having said load of clothes disposed therein and further for receiving a plurality of sonic echo pulses from said load of clothes, said sonic echo pulses being the reflections of said sonic pulses from said load of clothes;

means for rotating said wash basket while transmitting said plurality of sonic pulses and receiving said plurality of sonic echo pulses;

means for determining the height of said load of clothes in said wash basket in response to said plurality of sonic echo pulses;

means for determining an optimum quantity of washing liquid in response to said determined height of said load of clothes; and

means for supplying said determined optimum quantity of washing liquid to said tub.

16. In a method for washing a load of clothes in a vertical axis automatic clothes washing machine having a perforate wash basket for receiving washing liquid and the load of clothes to be washed therein, a method for determining the amount of water to be used during a washing cycle comprising:

rotating said wash basket; while

transmitting a plurality of sonic pulses and directing said plurality of sonic pulses into said wash basket having said load of clothes disposed therein;

receiving a plurality of sonic echo pulses from said load of clothes prior to supplying wash liquid into said wash basket for washing said clothes load, said plurality of sonic echo pulses being the reflections of said sonic pulses from said load of clothes;

determining an optimum quantity of washing liquid in response to said plurality of sonic echo pulses; and then

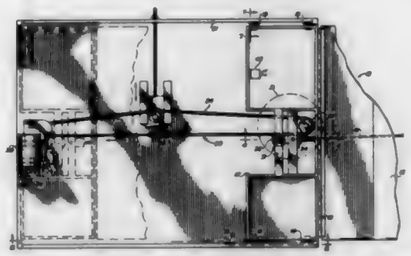
supplying said determined optimum quantity of washing liquid to said tub.

5,305,486

VEHICLE PASSENGER BOARDING SYSTEM

Ronald E. Smith, Glendale, and Miles H. Kennington, Phoenix, both of Ariz., assignors to Wheelers Manufacturing, Inc., Glendale, Ariz.

Filed Jun. 24, 1993, Ser. No. 80,539
Int. Cl.[5] A61G *3/06*; B60P *1/00*
U.S. Cl. 14—69.5 **9 Claims**



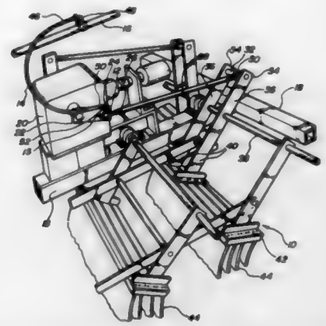
1. A vehicle passenger boarding system comprising a vehicle having a floor, a ramp stowable beneath the floor of the vehicle and having an inner end region and an outer end region, said ramp being movable between a retracted position in which the ramp is stowed substantially entirely beneath the floor and an extended position in which the outer end region of the ramp extends outwardly of the vehicle, an endless band having at least one linear run extending parallel to the direction of movement of said ramp, motor means for selectively propelling said band in opposite directions, means for releasably connecting said ramp to said linear run of said band, said ramp when connected to said band being movable by said band between its retracted and extended positions, said ramp when disconnected from said band being manually movable between its retracted and extended positions, and means carried by said outer end region of said ramp for manually manipulating said releasable connecting means.

5,305,487

SPHERICAL ROD END WITH FLEXIBLE CONDUIT

Robert J. Wentworth, Farmington Hills, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Oct. 13, 1992, Ser. No. 960,134
Int. Cl.[5] B60S *3/04*
U.S. Cl. 15—97.3 **7 Claims**



1. A cyclically movable joint assembly for a vehicle wash which pivotally interconnects a first and a second member, the joint assembly comprising:

a housing having an inner region and an outer region, said inner region having a central opening extending therethrough and defining a spherical inner race surface, means for affixing the housing to the first member, and a fluid passageway extending from the inner race surface through to the outer region of the housing;

a ball sized to fit within and free to rotatably cooperate with the housing spherical inner race surface and having means for affixing the ball to the second member; and

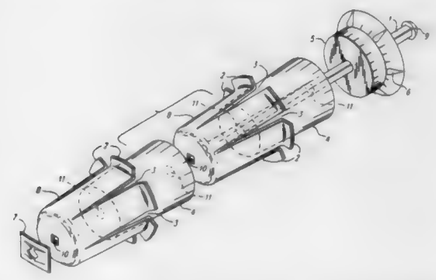
an elongated flexible fluid conduit having a first end adapted to be coupled to a source of pressurized fluid and a second end in fluid communication with the housing fluid passageway, the conduit being of sufficient length to enable the conduit to flex as the ball and housing cyclically move relative to the conduit first end such that the conduit does not fatigue.

5,305,488

TUBE CLEANING TOOL

Daniel C. Lyle, 520 Virginia Ave., Oakmont, Pa. 15139

Continuation of Ser. No. 898,701, Jun. 15, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 114,999
Int. Cl.[5] B08B *9/04*
U.S. Cl. 15—104.061 **28 Claims**



1. A tube cleaning tool for the loosening or removal of deposits collected on the interior wall of a tube comprising:

a shaft having two ends and including a stop at a first said end, said shaft defining a longitudinal axis;

a substantially cylindrical shaped tail portion defining a central longitudinal axis and a hole along said central axis, said tail portion being mounted on said first end of said shaft;

at least two substantially hollow truncated cone shaped cutters each defining a central axis on the shaft with a hole through said central axis, with each cutter having a plurality of blades extending outward from the cutter transverse to said longitudinal axis of the shaft;

at least two flexible bushings, each defining a central longitudinal axis, which are substantially truncated cone shaped on the shaft with a hole through said longitudinal axis of said bushings, one for each cutter, which fits into the cutter and forces the cutter blades apart upon compression along said longitudinal axis of said shaft;

means to fasten the tail, cutters, and bushings to the shaft;

said shaft having a non-circular cross-section and the cutters having a non-circular hole through their central axes, whereby the cutters are located on the shaft but are unable to rotate around the shaft;

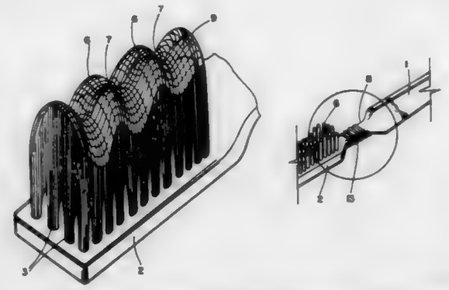
said shaft being twisted thirty (30) degrees along its axis to fix the angular separation of said cutters from each other on said shaft.

5,305,489

ERGONOMIC TOPOGRAPHIC TOOTHBRUSH

Gregg L. Lege, 1680 Peregrine Ct., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 739,727, Jul. 30, 1991, abandoned, which is a continuation of Ser. No. 573,893, Aug. 28, 1990, abandoned. This application Apr. 13, 1993, Ser. No. 46,445
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **2 Claims**



1. A toothbrush having an elongated handle, an integral brush head and a neck connecting said handle to said brush head, said head, neck and handle all being coaxial, said brush head having a longitudinal and a transverse axis with respect to said handle, and which brush head anchors a plurality of bristle tufts having free ends spaced from the head, comprising:

(a) a plurality of bristles, the free ends of said bristles disposed so as to form a bristle face defining alternating series of first and second substantially arctuate curves;

(b) said first curves being substantially convexly arctuate in the longitudinal and transverse axes of said brush head;

(c) said second curves being substantially concavely arctuate in the longitudinal axis of said brush head and substantially convexly arctuate in the transverse axis of said brush head;

(d) said first and second curves defining a regulator and repeating pattern having substantially equal heights and substantially equal depths; and

(e) said neck being substantially cylindrical, and said neck furthermore being substantially narrower in dimension than said handle and said brush head, and having on its surface means for enabling a user of said toothbrush to obtain bristle face motion along a line diagonal with respect to said longitudinal axis, said means comprising a plurality of helically wound threads of predetermined thread height and predetermined pitch, which threads are

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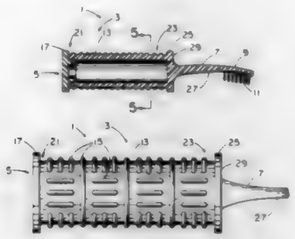
substantially the same radial distance from said longitudinal axis.

5,305,490

TOOTHBRUSH WITH FIRM GRIP HANDLE

James F. Lundgren, 723 71st Ave. No., St. Petersburg, Fla. 33702

Filed Apr. 19, 1993, Ser. No. 47,298
Int. Cl.[5] A46B 9/04
U.S. Cl. 15—167.1 **1 Claim**



1. A toothbrush comprising:
(a) an elongated tubular handle having a first closed end and a second open end, said handle being hollow between said first and second ends, said handle having an exterior gripping surface;
(b) said gripping surface having means thereon for enhancing gripping thereof by a user;
(c) a plug which engages and encloses the open end of the handle, a portion of which fits within the hollow handle;
(d) a first curb extending outwardly from said plug and defining a peripheral edge which extends radially outward a greater distance than the exterior gripping surface of the handle;
(e) a second curb at said closed end of said handle extending outwardly therefrom and defining a peripheral edge which extends radially outward a greater distance than the exterior gripping surface of the handle, said gripping surface being defined between said first and second curbs;
(f) an elongated shaft having one end thereof extending from said closed end of said handle and having at a second opposite end a generally rectangular brush head having bristles projecting outwardly therefrom, said elongated shaft being generally aligned with the longitudinal axis of the handle; and
(g) said handle and shaft being integrally fabricated to define a monolithic structure.

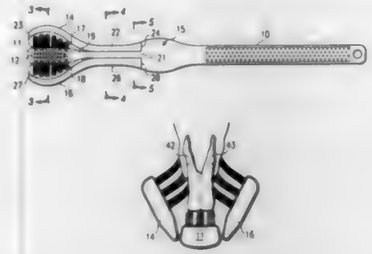
5,305,491

SELF ADJUSTING THREE-HEAD TOOTHBRUSH

Kenneth J. Hegemann, Carlsbad, Calif., assignor to Benefit International Products, Ltd., George Town, Cayman Islands

Continuation of Ser. No. 790,198, Nov. 7, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,528
Int. Cl.[5] A46B 9/04
U.S. Cl. 15—167.2 **8 Claims**

1. A self-adjusting three-head toothbrush comprising:
(a) a handle having a connecting end;
(b) a central brush head having (i) a central brush head portion having a plurality of recesses formed therein for receiving tufts of bristles, (ii) tufts of bristles, each tuft having an anchor fixed in the recesses of the central brush head portion and bristle ends lying in a plane substantially parallel to the central brush head portion, and (iii) an elongated arm extending longitudinally from said central brush head portion and terminating in a connecting end;
(c) a first side brush head having (i) a first side brush enlarged head portion having a plurality of recesses formed therein for receiving tufts of bristles, (ii) tufts of bristles, each tuft having an anchor fixed in the recesses of the first side brush enlarged head portion and bristle ends, and (iii) an elongated arm extending longitudinally from said first side brush enlarged head portion and terminating in a connecting end;
(d) a second side brush head having (i) a second side brush enlarged head portion having a plurality of recesses formed therein for receiving tufts of bristles, (ii) tufts of bristles, each tuft having an anchor fixed in the recesses of the second side brush enlarged head portion and bristle ends, and (iii) an elongated arm extending longitudinally from said second side brush enlarged head portion and terminating in a connecting end;
wherein (i) said first side brush head and said second side brush head are positioned on opposite sides of said central



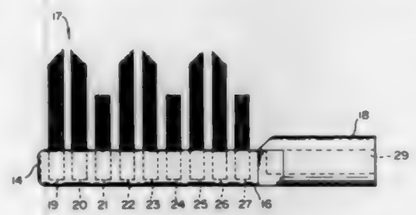
brush head, (ii) said connecting end of the elongated arm of the central brush head is integrally connected to the connecting end of the handle, (iii) said connecting end of the elongated arm of the first side brush head and said connecting end of the elongated arm of the second side brush head are both connected to the connecting end of the handle on opposite sides of the elongated arm of the central brush head, (iv) the elongated arms of the first side brush head and the second side brush head lie parallel to and against opposite sides of the elongated arm of the central brush head, and (v) said bristle ends of the first side brush head and said bristle ends of the second side brush head lie in a plane substantially perpendicular to the plane of the bristle ends of the central brush head.

5,305,492

BRUSH ELEMENT FOR AN ACOUSTIC TOOTHBRUSH

David Giuliani, Mercer Island, Wash., and L. David Engel, La Jolla, Calif., assignors to Optiva Corporation, Bellevue, Wash.

Filed Nov. 3, 1992, Ser. No. 970,761
Int. Cl.[5] A46B 9/04, 13/02
U.S. Cl. 15—176.1 **10 Claims**



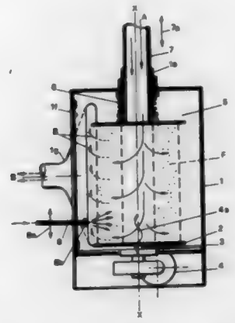
1. A brushhead for use with a vibrating toothbrush which uses fluid to produce an acoustic cleaning effect on the teeth beyond the reach of the bristles, wherein the vibrating toothbrush has an operating frequency in the range of 200 Hz to 300 Hz, the brushhead comprising:
a brushhead base member; and
a plurality of bristle portions, at least some of the bristle portions being shorter than the remaining, longer bristle portions, wherein the remaining bristle portions have a natural resonant frequency such that the operating frequency of the toothbrush is within the range of 0.60 to 0.95 of said natural resonant frequency of the remaining bristle portions and wherein the shorter bristle portions have a natural resonant frequency significantly greater than the longer bristle portions.

5,305,493

PNEUMATIC DEVICE FOR CLEANING AIR FILTERS

Josef Preun, Campo Tures, Italy, assignor to Nuova Camp S.r.l., Turin, Italy

Filed Mar. 27, 1992, Ser. No. 858,772
Claims priority, application Italy, Mar. 29, 1991, BZ91000010
Int. Cl.[5] B08B 5/04
U.S. Cl. 15—304 **8 Claims**



1. A filter cleaner for reconditioning a filter for reuse, said cleaner comprising:
a casing of a dimension to accommodate the filter to be cleaned;
an air inlet duct mounted to extend slidably through an opening in a wall of said casing;
an annular flange on an end of said inlet duct in said casing;
a spring positioned to bias said flange away from the wall of said casing through which said inlet duct extends;
a support plate dimensioned to engage one edge of the filter to be cleaned, said plate rotatably mounted in said casing at a point spaced from said flange;
an air blowing nozzle movably mounted in said casing for movement between said flange and said support plate; and
a suction collector coupled to an opening in a wall of said casing for drawing off air from the interior of said casing, whereby a filter to be cleaned may be spring clamped in said casing between said flange and said support plate so that a cleaning stream of air may be blown over a surface of the filter from said air inlet duct and another air stream may be blown over an opposed surface of the filter by said air blowing nozzle to thereby clean the filter.

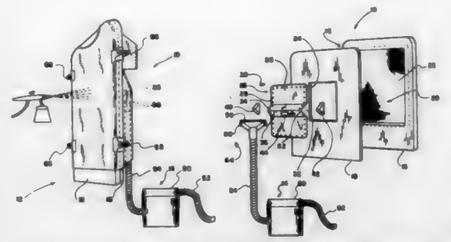
5,305,494

AIRBRUSH VACUUM SYSTEM

Teresa Candler, 1202 Tiffany La. #C, Myrtle Beach, S.C. 29557

Filed Mar. 8, 1993, Ser. No. 27,671
Int. Cl.[5] A47L 7/00
U.S. Cl. 15—304 **13 Claims**

1. An integral garment board-vacuum system for removing overspray, fumes and vapor from the exterior of a garment while an area of the garment is being painted with an airbrush painting system, comprising:
(a) a garment board having a perforated screen and an integral vacuum chamber, the integral garment board and vacuum chamber being sized and dimensioned to fit inside a selected garment with the perforated screen positioned directly adjacent the painting area of the garment and the garment overlying and substantially surrounding the vacuum chamber;
(b) an outlet port formed in the integral garment board vacuum chamber; and
(c) vacuum pump means connected to the outlet port for inducing overspray, paint fumes and vapor located outside



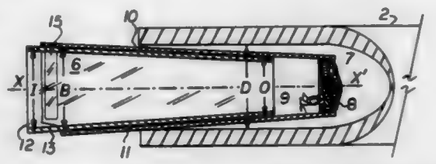
the garment board and vacuum chamber through the garment, through the perforated screen, into the vacuum chamber and out the outlet port of the vacuum chamber so as to substantially remove overspray, paint fumes and vapor in the area around the exterior of the garment while the garment is being subjected to an airbrush painting operation.

5,305,495

PEST TRAP FOR VACUUM DEVICE

Phillip A. Nelsen, 8999 Summerhill Point, Alpine, Calif. 91901, and Fred M. Nelsen, 402 Northgate Dr., Modesto, Calif. 95350

Filed Nov. 27, 1992, Ser. No. 64,481
Int. Cl.[5] A01M 1/06; A47L 9/12
U.S. Cl. 15—414 **7 Claims**



1. In combination with a vacuum suction apparatus having a substantially circular intake orifice of a certain diameter, a device for collecting items sucked into said orifice, which comprises:
a conical trap partially inserted through said intake orifice, said trap being made of sheet-like, pliable material having a tapering angle of no more than 40 degrees, an open base having an aperture diameter greater than said intake orifice diameter, and an air-permeable area having a plurality of perforations, said perforations being sized to retain said items in said trap; and
a frusto-conical funnel having at one end an inlet with an outer diameter greater than said base aperture diameter and at an opposite end an outlet with an outer diameter smaller than said intake orifice diameter, and a tapering angle no greater than the tapering angle of said conical trap, said funnel being forcibly inserted into said base aperture to wedge said trap into said intake orifice.

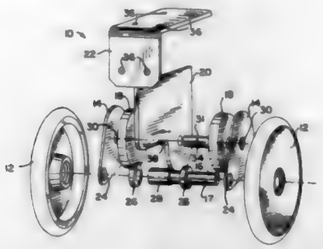
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5,305,496

SHOCK AND VIBRATION ISOLATING CASTER

Paul R. Gagnon, Acton, and David F. Cerqua, Maynard, both of Mass., assignors to Applied Power Inc., Butler, Wis.

Filed Dec. 9, 1992, Ser. No. 987,861
Int. Cl.[5] A47B *91/00*
U.S. Cl. 16—44 **14 Claims**



1. A shock and vibration isolating caster, comprising:
at least two floor engagement wheels, said wheels being spaced apart along a wheel axis;
a wheel support for each said wheel, said wheel supports being disposed inboard of said wheels along said wheel axis;
an axle extending through said wheel supports, coaxial with said wheel axis and mounting said wheels to said wheel supports to rotate about said wheel axis;
an elastomeric torsion element for each said wheel support, each said element being disposed inboard of said wheels along said wheel axis and each said element being bonded on a side thereof to a corresponding wheel support with a clearance between each said element and said axle so as to allow rotation of said axle about a bearing axis which is parallel to said wheel axis;
a bearing support inboard of said wheels along said wheel axis and bonded to said torsion elements on sides of said elements opposite from said wheel supports;
a pivot bearing coaxial with said bearing axis, said pivot bearing extending through said wheel supports, said torsion elements and said bearing support, said pivot bearing allowing rotation of said wheel supports relative to said bearing support about said bearing axis; and
means for mounting said bearing support to a structure to be supported by said caster;
wherein said elastomeric torsion elements flex in torsion to allow rotation of said axle about said bearing axis.

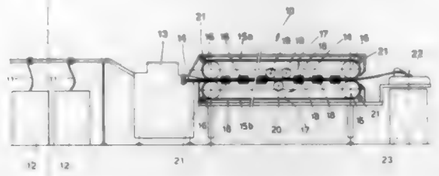
5,305,497

METHOD TO SEPARATE POLYPROPYLENE IN THE PROCESSING OF SILK AND DEVICE TO SEPARATE POLYPROPYLENE WHICH EMPLOYS SUCH METHOD

Cesare Liverani, Tarcento; Gianvittore Valent, Caneva di Tolmezzo, and Paolo Viciguerra, Rivignano, all of Italy, assignors to Cascami Seta-Filature Seriche Riunite SpA, Vallemosso, Italy

Filed Nov. 13, 1992, Ser. No. 976,514
Claims priority, application Italy, Nov. 15, 1991, UD91A000191
Int. Cl.[5] D01B *9/00*; B30B *15/34*; B07B *15/00*
U.S. Cl. 19—66 R **20 Claims**

1. A method to separate polypropylene impurity fibres in the processing of silk schappe, comprising providing a lap of sufficiently parallel silk fibres, heating said lap between 110° C. and 160° C. compressing said lap so as to form clusters of polypropylene and silk fibre and thereafter combing or pre-combing



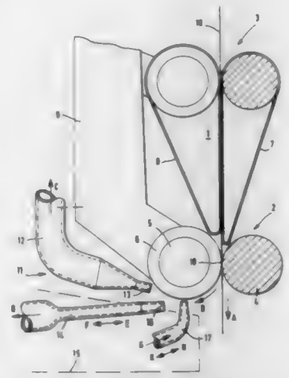
the lap for removal of said clusters of polypropylene and silk fibres.

5,305,498

ARRANGEMENT FOR CLEANING A PRESSURE ROLLER OF A DRAFTING UNIT

Kurt Lang, Lauterstein, Fed. Rep. of Germany, assignor to Fritz Stahlecker, Bad Ueberkingen and Hans Stahlecker, Suessen, both of Fed. Rep. of Germany

Filed Nov. 19, 1991, Ser. No. 794,240
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1990, 4037006
Int. Cl.[5] D01H *5/60*
U.S. Cl. 19—263 **21 Claims**



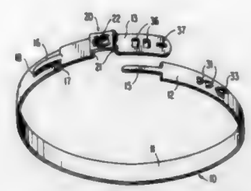
1. An arrangement for cleaning the circumferential surface of a pressure roller of a pair of delivery rollers of a drafting unit of a spinning machine, comprising:
a cleaning suction device assigned to the circumferential surface of the pressure roller for cleaning the pressure roller during normal spinning operations,
increased cleaning apparatus for increasing cleaning effects on the circumferential surface of the pressure roller to a higher level than during normal spinning operations,
and selectively operable actuating apparatus for selectively actuating the increased cleaning apparatus during a restarting of the drafting unit after a stoppage for deactuating the increased cleaning apparatus during normal spinning operations,
wherein the cleaning suction device includes a first suction nozzle assigned to the pressure roller of the pair of delivery rollers, and wherein the increased cleaning apparatus includes a second suction nozzle which is operable with a stronger vacuum than the first nozzle.

5,305,499

HOSE CLAMP

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparate-fabrik, Zurich, Switzerland

Continuation of Ser. No. 922,473, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 622,765, Jun. 20, 1984, abandoned. This application Jan. 10, 1992, Ser. No. 821,749
Int. Cl.[5] B65D *63/02*
U.S. Cl. 24—20 **38 Claims**



1. A clamp structure capable of withstanding very high tightening forces, comprising clamping band means providing in its closed condition an inner band portion and an outer band portion each terminating in a free end, mechanical interconnecting means adapted to close the clamping band means into a closed clamp structure including outwardly extending hook means near the free end of the inner band portion adapted to engage with aperture means near the free end of the outer band portion, means operable for tightening the clamp structure circumferentially about an object to be fastened after engagement of at least one hook means in the corresponding aperture means including deformable ear means, each ear means including two generally outwardly extending leg portions interconnected by a bridging portion, said bridging portion being provided with reinforcing means, at least one of said hook means being a cold-deformed deformed hook having force-engaging abutment surface means while another hook means is a pressed-out tab-like combined guide and support hook so pressed-out of the inner band portion that its connection with the inner band portion extends in the longitudinal direction of the band means to enable said another hook means to be operable to perform a guide function as also a support function resisting circumferentially directed tightening forces, and said reinforcing means being in the form of depression means extending in the longitudinal direction of the band means and of shallow configuration, said depression means being surrounded on all sides by remaining non-depressed bridging parts and having recessed bottom means recessed relative to said remaining non-recessed bridging parts, and the area of said depression means occupying, at least, about 35% of the total area of the bridging portion when in its non-reinforced condition.

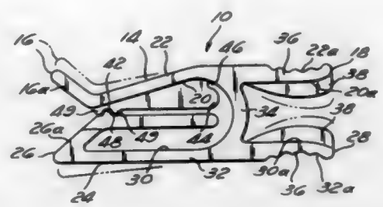
5,305,500

BAG CLIP

Terence Tucker, P.O. Box 1420, San Juan Capistrano, Calif. 92693

Filed Jan. 14, 1993, Ser. No. 4,793
Int. Cl.[5] B65D *77/00*; E05D *7/00*
U.S. Cl. 24—30.5 R **9 Claims**

1. A bag clip comprising:
a first elongate jaw portion defining front and back ends and inner and outer surfaces;
a second elongate jaw portion defining front and back ends and inner and outer surfaces;
a first spring portion extending between and interconnecting said first and second jaw portions intermediate said front and back ends, said first spring portion being configured to orient the front and back ends of the first and second jaw portions in juxtaposed relation and operable to bias the front ends toward each other; and
an elongate second spring portion attached to the front end of said second jaw portion and extending inwardly toward said first spring portion in cantilevered relation to the inner surface of said second jaw portion, said second spring portion being operable to bias the front end of said second jaw portion toward the front end of said first jaw portion;



wherein the compression of the back ends of the first and second jaw portions toward each other is operable to overcome the biasing force exerted by said first spring portions and separate the front ends from each other.

5,305,501

SPRING CLIP

Ali M. A. Ockba, PO Box 10627, Sana'a, Yemen (Sana)

Filed Mar. 1, 1993, Ser. No. 24,285
Int. Cl.[5] B42F *1/00*
U.S. Cl. 24—67.7 **5 Claims**



1. A spring clip structure, comprising,
at least one clip assembly having a first clamp plate, the first clamp plate including a first clamp plate first end spaced from and to parallel a first clamp plate second end, and
a second end recess directed into the first clamp plate medially of the first clamp plate second end, and
an axle shaft mounted to the first clamp plate second end extending colinearly with the first clamp plate second end over the second end recess, and
a first actuator plate having a first actuator plate first end spaced from and to parallel a first actuator plate second end, with the first actuator plate first end fixedly mounted to the axle shaft diametrically opposed to the first clamp plate second end, and
a first end recess directed into the first actuator plate from the first actuator plate first end coextensive with the second end recess, and
a second clamp plate having a second clamp plate first end and a second clamp plate second end, and
a pivot tube mounted to the second clamp plate second end receiving the axle shaft therewithin within the second end recess and the first end recess, and
a second actuator plate mounted to the pivot tube diametri-

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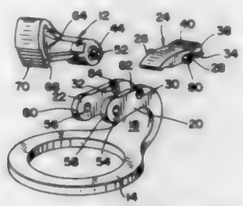
VOL 1161 ISS 4 APR 26 1994 UMI

cally opposed to the second clamp plate second end extending along the first actuator plate, with the second actuator plate second end extending beyond the first actuator plate second end.

5,305,502
CLAMP

Graham N. Abrahams, Lyttleton Manor, South Africa, assignor to Clampi Corporation CC, Transvaal, South Africa

Filed Apr. 22, 1992, Ser. No. 872,009
Claims priority, application South Africa, Apr. 23, 1991, 91/3031
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—517 **11 Claims**

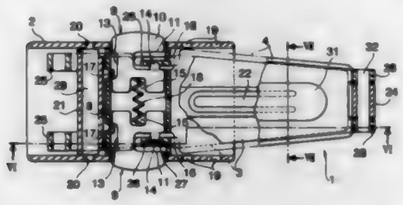


1. A clamp comprising a first jaw which includes first limb, a second opposed limb and an interconnecting bight portion extending between the first and second limbs; a second jaw being mounted pivotably towards the free end of the second limb; locking means for locking the second jaw relative to the first jaw in a plurality of degrees of closure; and release means for releasing the locking means, the first limb terminating in an aperture, and the free end of the second jaw being pivotable towards the aperture for urging a portion of material to be clamped between the first and second jaws into the aperture, the locking means comprising a ratchet, a pawl component, and biasing means for biasing the pawl component into engagement with the ratchet and allowing unidirectional movement of the second jaw towards the aperture in the first limb.

5,305,503
BUCKLE FOR WATCH BANDS

Hisao Yamagata, Higashimurayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1993, Ser. No. 109,057
Int. Cl.[5] A44C *5/00*
U.S. Cl. 24—68 J **5 Claims**



1. A buckle for watch bands having a first band and a second band, the buckle including a cover having opposite side plates, each of which has an opening, and rotatably connected to an end of said first band at one of longitudinal ends thereof, a middle plate rotatably connected to the other end of said cover at one of longitudinal ends thereof, a bottom plate rotatably connected to the other end of said middle plate at one of longitudinal ends thereof and rotatably connected to an end of said second band at the other end thereof, the buckle comprising

a guide housing secured to an underside of said cover;

a pair of push plates slidably mounted in said guide housing so as to slide in the lateral direction with respect to the longitudinal direction of the bands;

a spring provided between the push plates for outwardly urging the push plates respectively;

stopping means for stopping each of push plates at a position where an outer end portion of the push plates is projected from the opening of said plate of the cover so as to be operated by a finger of a wearer;

a slant formed at a part of each push plate, which is inclined toward the underside of the cover;

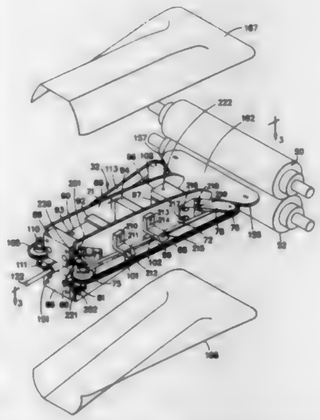
a pair of lugs formed on said bottom plate to be projected to the cover, each of the lugs having an engaging portion and being arranged such that a part of the lug is engaged with said slant so as to inwardly move the push plate due to the inclination of the slant when the bottom plate is pivoted toward the cover, and that the engaging portion engages with the push plate at an opposite surface of said slant when the engaging portion passes the slant; and

resilient means provided for urging the cover in a disengaging direction.

5,305,504
METHOD AND APPARATUS FOR FORMING A SCRIM WITH YARNS ORIENTED IN THE BIAS DIRECTION

John B. Manly, Jr., Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 15, 1993, Ser. No. 5,763
Int. Cl.[5] D04H *3/04*; D02G *3/36*
U.S. Cl. 28—102 **35 Claims**



1. An apparatus for forming a scrim, having an outer perimeter, with yarns oriented in the bias direction comprising:

(a) a plate means having a longitudinal axis and a first end portion and a second end portion;

(b) a first endless belt;

(c) a second endless belt;

(d) a first drive means for rotating said first endless belt in a first direction and rotating said second endless belt in a second direction opposite said first direction;

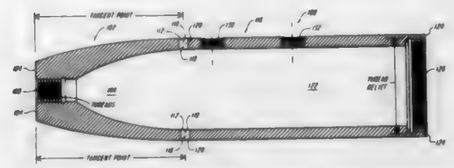
(e) means for feeding a plurality of yarns to the plate means; and

(f) a first attachment means for transversely attaching said first drive means to said plate means, wherein said scrim is formed by encircling said plate means, said first endless belt and said second endless belt by the plurality of yarns, with yarns oriented in a bias angle with respect to said longitudinal axis and said outer perimeter of said scrim is substantially constant throughout said longitudinal axis, wherein said scrim is transported by said first endless belt and said second endless belt in a direction parallel to said longitudinal axis of said plate means.

5,305,505
PROCESS OF MAKING A MULTI-SECTION BOMB CASING

James D. Ruhlman, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Continuation of Ser. No. 816,840, Dec. 31, 1991, abandoned, which is a continuation of Ser. No. 492,500, Mar. 12, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 46,433
Int. Cl.[5] B21K *21/06*
U.S. Cl. 29—1.2 **22 Claims**



1. A process for making bomb casings having a plurality of sections at a predetermined production rate, with the resulting bomb casing having the plurality of sections joined together such that the casing has substantially uniform metal properties along its length and across each location where two sections are joined, comprising the steps of:

(a) forming a substantially hollow section by a casting method;

(b) preliminarily heat treating the section formed at step (a);

(c) preparing for welding predetermined edges of the section preliminarily heat treated at step (b);

(d) repeating steps (a), (b), and (c) for each of the plurality of sections of the casing;

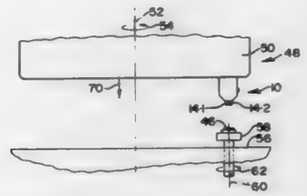
(e) assembling the casing from the plurality of sections formed by steps (a), (b), (c), and (d) by welding together adjacently disposed sections of the casings at the edges prepared for welding; and

(f) heat treating for properties the casing assembled at step (e).

5,305,506
FORMATION OF AN ELEMENT FOR AN ARTICLE OF JEWELLERY

Mark Forman, Johannesburg, South Africa, assignor to Sid Forman (Proprietary) Limited, South Africa

Filed Nov. 4, 1992, Ser. No. 971,397
Claims priority, application South Africa, Nov. 8, 1991, 91/8857
Int. Cl.[5] B23P *5/00*; A44C *17/02*
U.S. Cl. 29—10 **17 Claims**



1. A method of forming an illusion which includes the steps of

(a) forming a first groove across an operatively upper surface of a workpiece;

(b) forming at least one further groove across said upper surface, the, or each, further groove being substantially parallel to the first groove;

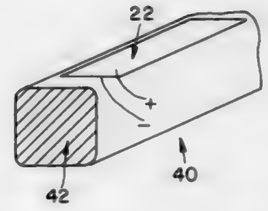
(c) rotating the workpiece through a predetermined angle; and

(d) repeating steps (a) to (c) until sufficient material has been removed from the upper surface of the workpiece to leave a desired number of spaced prongs projecting from a remaining portion of the workpiece.

5,305,507
METHOD FOR ENCAPSULATING A CERAMIC DEVICE FOR EMBEDDING IN COMPOSITE STRUCTURES

George R. Dvorsky, Manhattan Beach, and David W. Love, Lakewood, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 29, 1990, Ser. No. 604,306
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **23 Claims**



1. A method for fabricating and assembling a generally planar ceramic actuator/sensor package, comprising the steps of:

bonding wire leads to electrodes of a ceramic actuator/sensor;

completely encapsulating the generally planar ceramic actuator/sensor in a non-conductive fiber composite material having a coefficient of thermal expansion between that of the ceramic material and a graphite-epoxy laminate of a structural member in which the actuator/sensor is to be assembled;

embedding the encapsulated actuator/sensor in the structural member; and

heat curing the structural member with the encapsulated actuator/sensor embedded therein;

whereby the encapsulating material provides good mechanical coupling, reduces thermally induced stresses, electrically insulates the actuator sensor, and protects it from mechanical damage.

5,305,508
CABLE-BUNDLING EQUIPMENT FOR CABLE-PROCESSING MACHINES

Max Koch, Meggen, and Alois Coute, Ebikon, both of Switzerland, assignors to Komax Holding AG, Meggen, Switzerland

Filed Aug. 27, 1993, Ser. No. 112,455
Claims priority, application Switzerland, Aug. 27, 1992, 2660/92
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—33 M **10 Claims**

1. Cable-bundling equipment for a cable-processing machine, including a cable trough for receiving cables being processed by said cable processing machine, said cable-bundling equipment comprising:

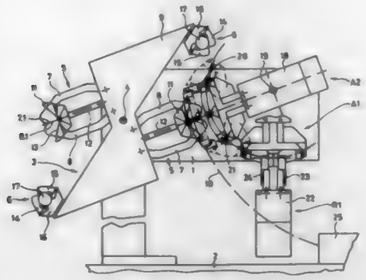
a cable receptacle unit rotatably secured at a mounting plate on a machine frame of said cable-processing machine;

said cable receptacle unit including multiple first and second bundle clamps, wherein said multiple first bundle clamps are utilized for receptively clamping fault-free cables and said multiple second bundle clamps are utilized with receptively clamping faulty cables;

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a first gripper, movably secured at a pivot axis on said mounting plate, said first gripper is pivotable about said pivot axis and extending into first, second and third operative setting positions, said first gripper including a moveable part, said moveable part being displaceable perpendicularly relative to said pivotal axis, said moveable part including two pivotable gripper jaws;

a second gripper, displaceably mounted on said machine frame, is provided for feeding said cables;



wherein said first gripper, in said first operative setting, always accepts a cable from said second gripper and, in said second operative setting transfers said cable to one of a first bundle clamp and, in said third operative setting, to a second bundle clamp; and

wherein said cables are transferred, at one end of the bundle clamp, which end is retained and transported by said second gripper, perpendicularly to a direction of movement of said second gripper, while the other end of said cable is guided in said cable trough.

5,305,509

NON-CONTACT ROTATION WATERPROOF AND DUSTPROOF METHOD AND MACHINE USING THE SAME

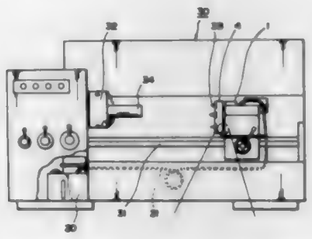
Hideo Yuhara, and Toshio Yagami, both of Aichi, Japan, assignors to Okuma Corporation, Japan

Filed Jul. 7, 1992, Ser. No. 909,718

Claims priority, application Japan, Jul. 12, 1991, 3-198597

Int. Cl.[5] B23B *29/24;* **F16J** *15/447*

U.S. Cl. 29—39 **15 Claims**



1. A method of providing a waterproof and dustproof labyrinth clearance for non-contact rotation between a rotating body and a fixed body, comprising the steps of supplying a viscous fluid continuously into the labyrinth clearance independently of rotation of the rotating body via a supply path to an eccentrically arranged distribution groove on a clutch ring located between the rotating body and the fixed body and maintaining the continuous supply of the viscous fluid in the labyrinth clearance to prevent ingress of water and dust at both a rotating state and a non-rotating state of the rotating body.

5,305,510

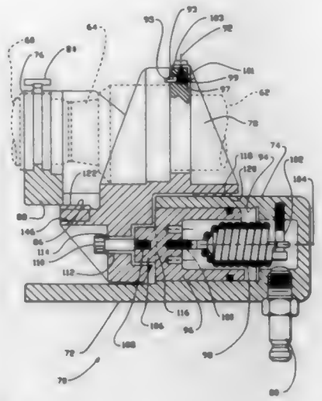
HYDRAULIC ASSEMBLY TOOL WITH IMPROVED LOAD BEARING ARRANGEMENT FOR TUBE FITTINGS

Steven T. Croft, Atherton, and Maxwell B. Ho, San Jose, both of Calif., assignors to Lokring Corporation, Foster City, Calif.

Continuation of Ser. No. 505,897, Apr. 6, 1990, abandoned. This application Aug. 18, 1992, Ser. No. 931,855

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—237 **30 Claims**



1. A tool comprising:

body structure;

a first carrier unit formed by said body structure;

a second carrier unit;

mean for urging the second carrier unit toward the first carrier unit along a longitudinal axis, said urging means in the body structure;

means for mounting the second carrier unit onto said urging means so that the second carrier unit is mounted on said urging means;

said second carrier unit having a second carrier unit moment resisting means including a first bearing surface provided in sliding engagement with the body structure substantially adjacent the urging means and a second bearing surface in sliding engagement with respect to said body structure, said first and second bearing surface formed by the second carrier unit and wherein said first bearing surface is substantially parallel to said longitudinal axis and said second bearing surface is substantially parallel to said longitudinal axis;

a third bearing surface formed in the body structure beneath said first carrier unit and with said second bearing surface provided in sliding engagement with the third bearing surface beneath said first carrier unit as the second carrier unit is being urged toward the first carrier unit;

wherein said first bearing surface and said body structure are arranged with respect to each other such that a first load is transmitted between the first bearing surface and said body structure, which first load is substantially perpendicular to said longitudinal axis;

wherein said second bearing surface and the third bearing surface are arranged with respect to each other such that a second load is transmitted between the second bearing surface and the third bearing surface, which second load is substantially perpendicular to said longitudinal axis;

wherein said first load is substantially parallel to said second load; and

wherein said first carrier unit and said second carrier unit form first and second work engaging means for engaging a work.

5,305,511

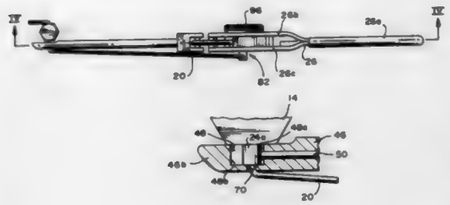
HAND TOOL FOR APPLYING A MOTION STOP FERRULE TO A SAFETY CABLE

Robert H. Koehler, Secaucus, and William E. Koehler, North Bergen, both of N.J., assignors to Bergen Cable Technologies, Inc., Lodi, N.J.

Continuation-in-part of Ser. No. 692,569, Apr. 29, 1991, Pat. No. 5,214,832. This application Mar. 29, 1993, Ser. No. 38,266

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—268 **16 Claims**



1. Apparatus for crimping a motion stop ferrule to a wire type safety cable extending through the bore of the ferrule while under tension and for cutting the free end of the cable from the ferrule upon crimping comprising:

a tool body having at least one handle element connected thereto for manual manipulation;

an elongate nose portion extending forwardly of the tool body and having a distal end and a proximal end, said proximal end connected to the tool body;

a ferrule crimping punch driving element extending axially along the nose portion and operatively connected to the handle element for reciprocating motion upon manipulation of the handle element;

said distal end of said nose portion including a ferrule receiving opening extending partially therethrough and transversely of the nose portion distal end;

a crimping punch disposed at the distal end area of said nose portion, operatively connected to the punch driving element for reciprocal movement axially along the nose portion, and extending axially into said opening upon outward reciprocal movement to a sufficient extent to cause crimping of a ferrule located in said opening;

a safety cable tension device operatively associated with the tool body and arranged to be engageable by a safety cable extending from the distal end of said nose portion to apply tension force to such cable upon actuation thereof;

said ferrule receiving opening being elongate in the axial direction of said nose portion and having a length greater than the diameter of a ferrule to be crimped by the tool, said opening including a transversely extending side wall, said crimping punch cooperating with said sidewall during crimping of a ferrule disposed in said opening;

a safety cable receiving aperture having at least one dimension extending transversely across the aperture that is smaller than the diameter of a ferrule to be crimped by the tool, said aperture extending transversely of said nose portion in the same direction as said ferrule receiving opening and intersecting the bottom of said ferrule receiving opening where the safety cable receiving bore of a ferrule is disposed before crimping, whereby, upon extension of the ferrule punch and with a ferrule disposed in the ferrule receiving opening so that its bore is aligned with the cable receiving aperture and its one end resting against the bottom of the opening with a safety cable extending therethrough, a ferrule will be driven axially relative to the cable receiving aperture into engagement with a wall of the ferrule receiving opening to be thereby crimped, said axial movement also causing a safety cable extending through the ferrule bore and cable receiving aperture to be sheared between the end of the ferrule located against the bottom wall of the opening and the bottom wall of the opening.

5,305,512

METHOD OF MAKING A SPECIALTY-TRUCK CONVERSION VAN

Jeffrey Ward, 3320 Wall Blvd. 11-102, Gretna, La. 70056

Division of Ser. No. 959,787, Oct. 13, 1992. This application May 21, 1993, Ser. No. 67,039

Int. Cl.[5] B23P *17/04;* **B60J** *7/10;* **B60R** *13/01*

U.S. Cl. 29—401.1 **4 Claims**

1. A method of making a specialty truck-conversion van from a conventional van having a frame with frame-beams, a roof, a side door-entrance, and rear tail lights, comprising:

(a) vertically-downwardly, partially cutting a conventional van along a vertical plane from the roof thereof that is rearward of the side door-entrance of the conventional van;

(b) said step (a) comprising vertically cutting to a horizontal plane below the roof, which horizontal plane lies above the tops of the rear tail lights of the conventional van;

(c) horizontally cutting along said horizontal plane to form a cut extending from the rear end of said conventional van up to said vertical plane;

(d) removing from the conventional van a slab cut out from the conventional van by said steps (a) and (b);

(e) said step (d) comprising exposing a well-portion in the rear of the conventional van bounded from below by frame-beams of the frame of the conventional van; and

(f) placing a linear-insert into the well-portion for forming a pick-up truck-bed.

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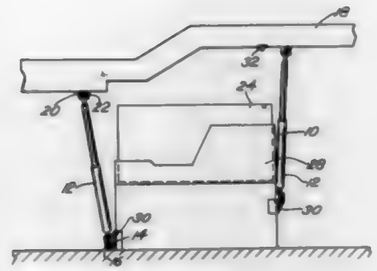
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5,305,513

VEHICLE BATTERY DECKING DEVICE

Joseph A. Lucid, Farmington Hills, and Robert K. Brown, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 24, 1992, Ser. No. 949,956
Int. Cl.[5] B60K *1/04*
U.S. Cl. 29—402.08 7 Claims



4. A method for installing a vehicle battery into a vehicle using a vehicle battery decking apparatus including a battery tray platform and a plurality of hydraulically linked lifting cylinders, each lifting cylinder having a first end attached to a discrete first fixing point on the battery tray platform, and a second end complementary to a discrete second fixing point on a vehicle chassis comprising the steps of:

loading a vehicle battery into a vehicle battery tray to define a loaded vehicle battery tray;

placing the loaded vehicle battery tray on the battery tray platform;

moving the battery tray platform to a location below the vehicle chassis;

attaching the second end of each of the plurality of hydraulic cylinders to discrete second fixing points on the vehicle chassis;

actuating the hydraulic cylinders to move the loaded vehicle battery tray towards the vehicle chassis until the vehicle battery is united with the vehicle chassis;

attaching the vehicle battery tray to the vehicle chassis;

actuating the hydraulic cylinders to move the battery tray platform away from the vehicle chassis; and

detaching the second end of each of the plurality of hydraulic cylinders from discrete second fixing points on the vehicle chassis such that the battery tray platform is no longer connected to the vehicle chassis.

5,305,514

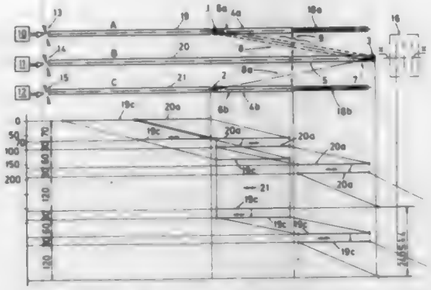
Patent Not Issued For This Number

5,305,515

METHOD AND ARRANGEMENT FOR ROLLING HOT WIDE STRIPS FROM CONTINUOUSLY CAST THIN SLABS

Herbert Fastert, Franklin Lakes, N.J.; Wolfgang Rohde, Dormagen, Fed. Rep. of Germany; Dieter Nobis, Neuss, Fed. Rep. of Germany, and Hans Malinowski, Düsseldorf, Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,802
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041205
Int. Cl.[5] B21B *1/46, 15/00*
U.S. Cl. 29—527.7 10 Claims



1. A method of rolling hot-rolled wide strips from continuously cast thin slabs in successive steps of operation of a rolling line which includes a continuous finishing train, said method comprising the steps of:

producing continuously cast strands in a plurality of casting lines;

severing individual thin slabs from the cast strands;

homogenizing and adjusting to rolling temperature the thin slabs in equalizing furnaces provided in the plurality of casting lines;

providing a roller-type turning furnace in each of the casting lines after the equalizing furnace and the roller line for alternately conveying thin slabs from one of the casting lines into the rolling line; and

turning the roller-type turning furnaces toward each other into positions which are inclined relative to the casting and rolling lines thereby to form a switch between the casting lines and the rolling line.

7. A arrangement for rolling hot wide strips from continuously cast thin slabs in a rolling line which includes a continuous finishing train, said arrangement comprising:

a plurality of casting lines for producing cast strands;

means for severing individual thin slabs from the produced cast strands;

an equalizing furnace in each of the plurality of casting line; and

means for alternatively conveying thin slabs from a casting line to the rolling line, wherein the conveying means comprises a roller-type turning furnace in each of the plurality of casting lines and in the rolling line, the roller-type turning furnace of the casting lines and the roller-type turning furnace of the rolling line being longitudinally offset relative to each other in conveying direction of the thin slabs approximately by a length of a roller-type turning furnace;

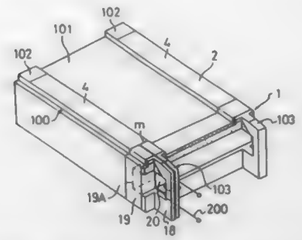
and wherein each of the roller-type turning furnaces has a turning point, the turning points of the turning furnaces of the casting lines being arranged at a rearward end of the turning furnaces in a conveying direction, and the turning point of the turning furnace of the rolling line being arranged at a forward end of the turning furnace in the conveying direction, so that the turning furnace in the rolling line and the turning furnace in a respective one of the casting lines form a straight-line transition from the respective casting line to the rolling line, when the furnaces are turned into aligned positions in the manner of a switch.

5,305,516

METHOD OF MANUFACTURING FLYING MAGNETIC HEADS

Nobuo Imazeki, and Kazuhiro Saito, both of Saitama, Japan, assignors to Nikko Kyodo Company, Limited, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,940
Claims priority, application Japan, Dec. 9, 1991, 3-350320
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 16 Claims



1. A method of manufacturing a flying magnetic head comprising:

(a) forming a magnetic thin film layer on each of a plurality of substrates;

(b) bonding together said plurality of substrates each provided with said magnetic thin film layer with intervening high-melting-point laminate glass layers to form a magnetic thin film lamination;

(c) slicing said magnetic thin film lamination in the direction of the thickness of said lamination to obtain a plurality of core plates;

(d) grooving one of the principal surfaces of some of said core plates in a direction perpendicular to said magnetic thin film layer to form wiring grooves and apex glass molding grooves, thus obtaining C core plates formed with said wiring grooves and said apex glass molding grooves;

(e) slicing other ones of said core plates in a direction parallel to said magnetic thin film layers to obtain I core bars;

(f) forming each of said I core bars with a given number of window grooves;

(g) depositing at least a high-melting-point bonding glass layer on the surface of each said C core plate formed with said wiring grooves and on the surface of each said I core bar formed with said window grooves;

(h) overlapping the bonding glass layer formation surfaces of each of a given number of said I core bars and each said C core plate, overlapping a dummy plate with a high-melting-point bonding glass layer formed thereon and the other surface of said I core bars and bonding together said I core bars, said C core plate and said dummy plate with intervening bonding glass layers to form a magnetic head block;

(i) grooving said magnetic head block on the side of said C core plate to form C cores having a predetermined head core thickness;

(j) subsequently, slicing said magnetic head block in a direction parallel to said C cores to obtain a given number of magnetic head bars;

(k) forming each said magnetic head bar with edge grooves and a center groove, thus forming ABSs and then slicing the resultant magnetic head bar to obtain a given number of flying magnetic heads;

(l) obliquely chamfering front and rear portions of said ABSs of each said separated flying magnetic head to form inclined surfaces; and

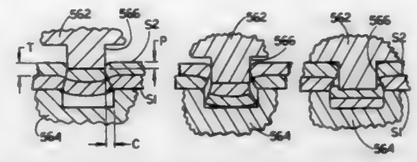
(m) providing a winding on the C core of each said flying magnetic head.

5,305,517

APPARATUS FOR FORMING CLINCH JOINTS

Louis C. Schleicher, 1917 Marcastle Ct., Rochester Hills, Mich. 48063

Filed Sep. 23, 1991, Ser. No. 764,188
Int. Cl.[5] B23P *19/00, 11/00;* B21D *39/00*
U.S. Cl. 29—798 7 Claims



1. An apparatus for forming a lance-type clinch joint to fasten a plurality of overlapping sheets of deformable material together, wherein each of the sheets has a predetermined initial thickness with one of the sheets having an initial thickness T which is greater than the initial thickness of the other of the plurality of sheets, the apparatus comprising:

a die assembly having a central axis, a die face normal to the axis and a die recess formed therein having a floor and a plurality of generally vertical walls extending between the floor and the die face forming a plurality of sharp cutting edges at the intersection of the die face and the walls, said walls being spaced apart and securely connected together to prevent relative movement therebetween; and

a punch having a solid punch end sized to fit within the die recess when aligned coaxially therewith, said punch having a plurality of cutting edges formed on the punch end for cooperating with the die cutting edges to shear a plurality of non-intersecting slits in the sheets which define a central spot having a plurality of webs connected to the remainder of the sheets, said punch and die cooperating cutting edges being spaced apart a distance C which exceeds 0.08, said punch end and die floor cooperating with one another to squeeze the central spot to outwardly extrude the material therein into conformity with the die recess walls.

5,305,518

WORK MOUNTING APPARATUS

Yutaka Okumoto, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,884
Claims priority, application Japan, Sep. 26, 1991, 3-248067
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—822 12 Claims

1. A work mounting apparatus comprising:

a work supply section disposed in a predetermined transportation path and having a supply position to which works are successively supplied;

a work mounting section disposed at a distance from the supply section, in the transportation path, and having a mounting surface upon which the works are to be mounted by the work mounting apparatus;

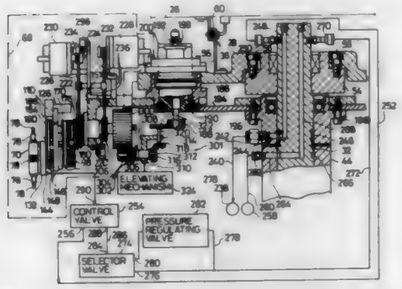
a carrier repeatedly movable along the transportation path between the mounting section and the supply section;

a work head provided on the carrier, the work head having a turning axis extending across the transportation path and including an attraction rod projecting from the work-head toward the transportation path said attraction rod having a distal end, wherein said work head and turning axis

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move with said carrier as said carrier moves along said transportation path;

turning means for turning the work head around the turning axis while keeping the work head in a fixed posture such that the work head maintains a predetermined orientation with respect to the transportation path, with the turning means turning the work head during the movement of the carrier such that the turning means turns the work head about the turning axis while said turning axis also moves as said carrier moves along said transportation path, and thereby moving the distal end of the attraction rod in a cycloid motion with respect to the transportation path;



means for supplying an attraction force to the rod;

control means for controlling a cycle of the cycloid motion of the distal end of the attraction rod and for controlling said means for supplying an attraction force to the rod such that the control means causes one of the works to be attracted to the distal end of the rod in the supply position and then releases the work from the distal end of the rod at the mounting surface, so that the work is mounted on the mounting surface; and

actuating means for moving the work head in a direction across the transportation path.

5,305,519

MULTILEVEL INTERCONNECT STRUCTURE AND METHOD OF MANUFACTURING THE SAME

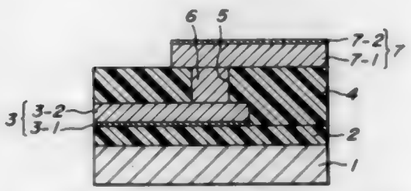
Hiroshi Yamamoto, and Tomohiro Ohta, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 23, 1992, Ser. No. 965,780

Claims priority, application Japan, Oct. 24, 1991, 3-277803

Int. Cl.[5] H01K *3/10*

U.S. Cl. 29—852 **17 Claims**



1. A method of manufacturing a multilevel interconnect structure for use in a semiconductor device comprising the steps of:

forming a lower metal wiring having a given pattern on a semiconductor substrate, said lower metal wiring comprising at least one aluminum or aluminum alloy film and at least one high melting point metal or high melting metal alloy film;

forming an interlayer insulating film on said lower metal wiring;

forming a via hole in said interlayer insulating film such that said aluminum or aluminum alloy film is exposed at a bottom of the via hole;

forming a plug made of aluminum or aluminum alloy in said via hole such that a lower end of said plug is directly contacted with the aluminum or aluminum alloy film of the lower metal wiring; and

forming an upper metal wiring comprising an aluminum or aluminum alloy film which is directly contacted with an upper end of said plug.

5,305,520

METHOD OF MAKING FIBRE REINFORCED METAL COMPONENT

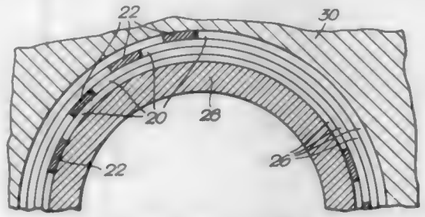
Phillip J. Doorbar, Derby, and Ian D. A. Sudds, Lancashire, both of Great Britain, assignors to Rolls-Royce plc, London, England

Continuation-in-part of Ser. No. 739,519, Aug. 2, 1991, Pat. No. 5,222,296. This application Apr. 13, 1993, Ser. No. 45,429

Claims priority, application United Kingdom, Sep. 1, 1990, 9019093

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—889.21 **23 Claims**



1. A method of manufacturing a member having a body and an axis of rotation with the body adapted to rotate in use about said axis of rotation, said method comprising the steps of:

arranging at least one piece of metal matrix composite and at least one piece of unreinforced metal matrix alternately in adjacent abutting relationship to form at least one annular laminate, the at least one piece of metal matrix composite having a plurality of unidirectionally arranged fibers in a metal matrix and the fibers of the at least one piece of metal matrix composite extending in substantially the same direction;

arranging the at least one annular laminate in a first annular metal member and a second annular metal member to form an assembly; and

consolidating the assembly to bond the first annular member, the at least one annular laminate, and the second annular metal member to form a unitary composite component,

attaching to the outer most one of said first and second annular metal members blade means spaced circumferentially about said axis of rotation, each said blade means being attached to said associated annular metal member whereby at least one composite piece of unreinforced metal matrix is at a position between two adjacent blades where radial stresses due to the blades are minimal.

5,305,521

INK-JET HEAD ASSEMBLING METHOD

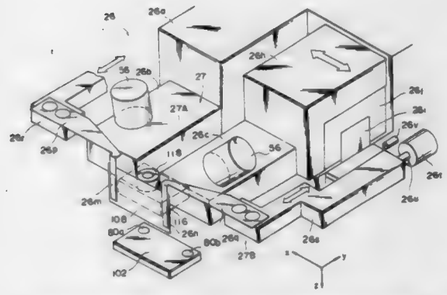
Masaki Inaba, Kawasaki; Tsuyoshi Baba, Yokohama; Tsuyoshi Orikasa, Kasukabe; Takashi Ohba, Zama, and Toshio Tsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 903,119

Claims priority, application Japan, Jun. 25, 1991, 3-153009; Jun. 25, 1991, 3-153010; Jun. 25, 1991, 3-153012; Jun. 25, 1991, 3-153013; Jun. 25, 1991, 3-153014; Jun. 26, 1991, 3-154384; Jul. 9, 1991, 3-167907

Int. Cl.[5] B23P *25/00*

U.S. Cl. 29—890.1 **10 Claims**



1. An ink-jet head assembling method for assembling a head nozzle of a printing head for discharging ink by mounting a top plate member upon a heater board having a plurality of heaters for heating the ink, the top plate member having a plurality of nozzles corresponding to the heaters and an ink reception portion on its upper surface, said method comprising the steps of:

providing a top plate member having a plurality of nozzles and an ink reception portion and a heater board having a plurality of heaters;

applying an adhesive to the heater board;

holding the top plate member by a set of fingers;

moving the fingers to place the top plate member on the heater board with the adhesive interposed between the top plate member and the heater board, and then releasing the holding by the fingers so that the fingers are in a position to engage the ink reception portion from a lateral direction in a top plate member and heater board supply step;

adjusting a relative position between the heaters of the heater board and the nozzles of the top plate member by moving the fingers in a lateral direction to abut against the ink reception portion;

adhering the top plate member to the heater board with the adhesive;

fixing the heater board and the plate member adhered in said adhering step to a base plate via a spring member, wherein said top plate member and heater board supply step includes the substeps of:

detecting arranging positions of the nozzles;

calculating errors between a reference position set below an arranging position of the heater board and the detected arranging position of the nozzles;

moving the fingers downward by the calculated error; and

moving the fingers upward by a predetermined value,

wherein by performing said moving-up substep, a fixed amount of a gap between the top plate member and the fingers can be maintained, and the fingers are moved in a lateral direction to engage the ink reception portion.

5,305,522

METHOD OF PRODUCING A COMPOUND ROLL

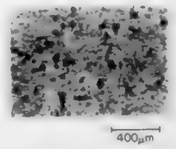
Ryosaku Nawata; Kiyoshi Furushima, both of Kitakyushu, and Kenji Date, Fukuoka, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 6, 1992, Ser. No. 847,508

Claims priority, application Japan, Jul. 9, 1991, 3-167304

Int. Cl.[5] B31B *31/08*

U.S. Cl. 29—895.32 **3 Claims**



1. A method of producing a compound roll comprising a shell portion made of a hard cast iron having excellent wear resistance and resistance to surface roughening and a core portion made of a tough cast iron or cast steel, which method comprises forming said shell portion by centrifugally casting an iron having a composition consisting essentially, by weight ratio, of 2.5–3.5% of C, 0.5–1.5% of Si, 0.5–1.5% of Mn, 0.1% or less of P, 0.05% or less of S, 3.0–5.0% of Ni, 1.0–2.5% of Cr, 0.1–1.5% of Mo and balance Fe and inevitable impurities, said shell portion having a surface portion extending radially inward from an outer surface of said shell portion, and wherein said cast iron in that part of said surface portion ranging from said outer surface to a depth of 50 mm has a metal structure comprising a matrix of primary precipitated particles having an average diameter of 80 μm or less when determined by an image analysis method on the primary precipitated particles having diameters exceeding 30 μm, and said primary precipitated particles satisfy the formula: $m_2 \leqq 1.2\ m_1$, wherein m_1 is an average diameter of said primary precipitated particles at the surface of said shell portion, and m_2 is an average diameter of said primary precipitated particles at the depth of 50 mm, which method further comprises supplying a melt for said shell portion at a temperature T satisfying the formula: $Tc-20°\ C. \leqq T \leqq Tc+70°\ C.$, wherein Tc is a primary crystal-forming temperature of the melt for said shell portion, to a hollow cylindrical mold rotatable around its longitudinal axis.

5,305,523

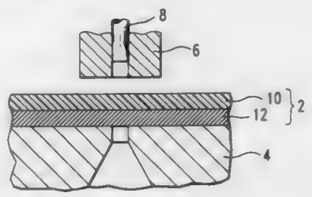
METHOD OF DIRECT TRANSFERRING OF ELECTRICALLY CONDUCTIVE ELEMENTS INTO A SUBSTRATE

Arthur Bross, Poughkeepsie; Julian G. Cempa, Deposit; Robert O. Lassow, Hopewell Junction; James A. McDonald, Newburgh; Donald E. Myers, Poughkeepsie; Joseph D. Peruffo, Pleasant Valley; Thomas J. Walsh, Poughkeepsie, and Thomas J. Walsh, III, Verbank, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,445

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—832 **47 Claims**



1. A method of forming and transferring electrically semi-

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conductive or resistive elements into a deformable dielectric material, comprising the steps of:

providing a multilayer structure comprising a sheet, molding, casting, or composite structure of a deformable dielectric material and a sheet of a semiconducting, or resistive material, said semiconducting, or resistive material being in direct contact with said dielectric material; and

punching or stamping said multilayer structure so as to form and transfer a slug of material from the sheet of semiconducting, or resistive material into the dielectric material.

5,305,524

METHOD FOR CONTROLLING DIFFERENT COMPONENT INSERTING SYSTEM

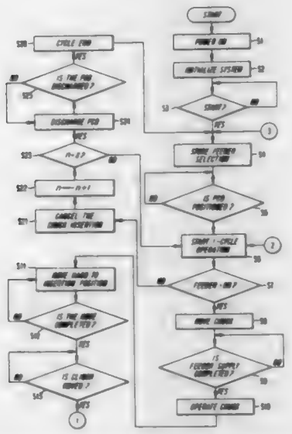
Sang-Du Byeon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 14, 1992, Ser. No. 929,575

Claims priority, application Rep. of Korea, Aug. 17, 1991, 91-14205

Int. Cl.[5] H05K *3/32*

U.S. Cl. 29—836 **4 Claims**



1. A method of controlling a component inserting system for inserting components into a printed circuit substrate, said method comprising the steps of:

setting, in a programmable logic controller, a program having a first variable for identifying a component insertion point and a second variable for identifying a component to be inserted;

providing at least two component feeders;

selecting a component feeder from said at least two component feeders based on said program;

storing chuck data and insertion data of the selected component feeder in said programmable logic controller;

positioning a printed circuit substrate on a conveyor at a substrate position;

judging whether the selected feeder is operative depending on the condition of a component to be fed by the selected feeder;

moving a chuck to a component chucking position with a hand mechanism connected to said programmable logic controller based on said chuck data of said selected feeder when the selected feeder is judged to be operative in said judging step;

determining whether the selected feeder is operative depending on whether components can be fed by the selected feeder;

supplying at least one component to said chuck from said selected feeder at said component chucking position when the selected feeder is determined to be operative in said determining step;

moving said hand and a clinch to a component insertion position on said printed circuit substrate based on said insertion data;

inserting said at least one component into said printed circuit substrate; and

discharging said printed circuit substrate from said substrate position after said at least one component has been inserted into said printed circuit substrate.

5,305,525

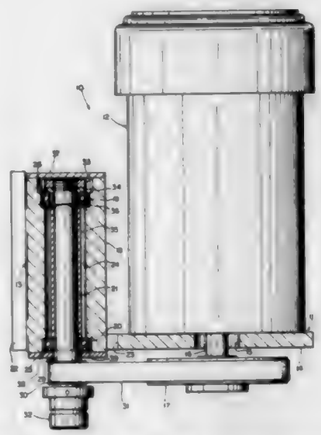
SPINDLE ASSEMBLY FOR MACHINE TOOLS AND METHOD OF FABRICATING SAME

Kenneth J. Susnjara, Santa Claus; Kenneth L. Gwin, Dale, and David A. Stutsman, Huntingburg, all of Ind., assignors to Thermwood Corporation, Dale, Ind.

Continuation of Ser. No. 578,488, Aug. 24, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 821,831

Int. Cl.[5] B23Q *3/00*

U.S. Cl. 29—898.07 **25 Claims**



1. A method of fabricating a high speed spindle assembly for a machine tool, including a housing, at least two bearings seated in said housing and a spindle mounted in said bearings, comprising:

forming a pair of bearing seats in said housing slightly oversized relative to the outer dimensions of said bearings;

mounting a first bearing on said spindle;

inserting said spindle in said housing while adhesively bonding said first bearing in a first oversized bearing seat; and

mounting a second bearing on said spindle while adhesively bonding said second bearing in a second oversized bearing seat whereby upon setting of the adhesive bonding between the bearings and the housing said bearings will be axially aligned and maintained in axial alignment.

5,305,526

RAZOR HEAD, ESPECIALLY RAZOR BLADE UNIT OF A WET RAZOR

Wolfgang Althaus, Wuppertal, Fed. Rep. of Germany, assignor to Wilkinson Sword Gesellschaft mit beschränkter Haftung, Solingen, Fed. Rep. of Germany

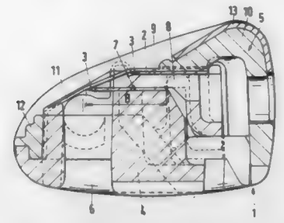
Filed Apr. 30, 1992, Ser. No. 877,438

Claims priority, application European Pat. Off., Feb. 14, 1992, 92710005.7

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] B26B *21/14, 21/54*

U.S. Cl. 30—77 **8 Claims**



1. In a razor head, said razor head including a plastic body having a front guide strip and a rear protective cover, with razor blade means, which comprise at least one blade made of steel, being fixedly disposed in said plastic body, and with said razor blade means being protected by protective wire means that extend over cutting edges of said blade means, the improvement wherein:

said at least one blade of said razor blade means comprises a steel strip having a width of less than 5 mm, a thickness between 0.05 and 0.25 mm, and a chromium/molybdenum steel composition having a hardness of greater than 620 HV and a retained austenite content of less than 32%, with each blade being a single piece that has no perforations, bores, and holes and is mounted in a vibration-free manner in said plastic body; and

said protective wire means comprises a wire loop arrangement, with individual loops thereof being spaced greater than 2 mm apart but less than 5 mm apart and having a minimum wire thickness of greater than 0.1 mm to form a protective guard means over said razor blade means with the effect of a protective foil.

5,305,527

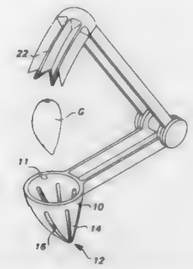
METHOD AND APPARATUS FOR PEELING PRODUCE SUCH AS GARLIC

David A. Holcomb, Seattle, Wash., assignor to Chef'N Corporation, Seattle, Wash.

Continuation of Ser. No. 873,459, Apr. 24, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 46,380

Int. Cl.[5] B26B *11/00, 3/00*; B23N *7/00*

U.S. Cl. 30—123.5 **18 Claims**



1. Apparatus for peeling the husk from garlic cloves of the type having a firm inner meat and a fibrous husk, the garlic cloves having a leading surface and a trailing surface in the direction of movement through the apparatus, comprising:

cup means having an entrance end and an opposite exit end, the exit end having a plurality of flexible, circumferentially spaced prongs converging radially inward and away from the entrance end, said prongs having inwardly protruding gripping members closely spaced to one another adjacent the exit end for engaging the husk of the garlic cloves and moving along the husk from its leading surface to its trailing surface; and

plunger means for pushing the garlic cloves unidirectionally through and out of the exit end past the gripping members, wherein the gripping members penetrate the husk to hold the husk as the plunger pushes the inner meat out of the exit end separated from the husk.

5,305,528

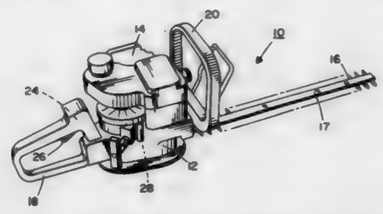
POWER TOOL BRAKING SYSTEM

Richard E. Garrison, Fort Mill, S.C., assignor to Textron Inc., Providence, R.I.

Continuation of Ser. No. 869,959, Apr. 17, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,776

Int. Cl.[5] B23D *57/02*

U.S. Cl. 30—216 **15 Claims**



1. A power tool comprising a braking system, the braking system comprising:

a brake movably mounted to a frame of the power tool, the brake being substantially rigid and having a first portion with a braking surface and a second portion; and

means for automatically moving the brake to a braking position, the means for automatically moving the brake comprising a throttle of the power tool having a trigger with a finger section extending therefrom, wherein the finger section is not directly attached to the brake, but is adapted to push against the brake second portion to move the brake to its braking position upon release of the throttle trigger by a user.

5,305,529

ADAPTER FOR CIRCULAR-TYPE SAW

Andrew J. Tarpill, East Haddam, Conn., assignor to Capewell Components Company, Cromwell, Conn.

Filed Mar. 30, 1993, Ser. No. 39,894

Int. Cl.[5] B23D *47/02*

U.S. Cl. 30—374 **2 Claims**

1. An adapter for use with a circular-type saw for controllably making incisions in a tubular member, comprising:

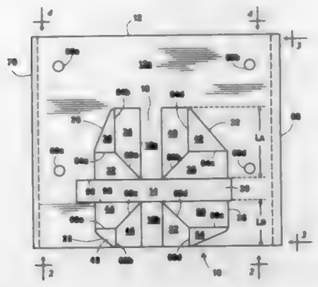
a base having a top and bottom surface, said base having an elongated slot therein;

means for attaching said base to said saw in such a manner that said top surface of said base faces said saw, and said slot receives a portion of the blade of said saw, said blade portion being operative within said slot; and

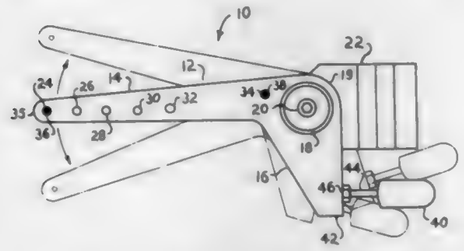
means for removably mounting said saw upon said tubular member in the area of said intended incision, said mounting means being attached to and projecting from said bottom surface of said base, said mounting means having

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first and second perpendicularly intersecting, substantially V-shaped channels, said second V-shaped channel substantially overlapping said slot, said blade portion being operative within said second V-shaped channel.

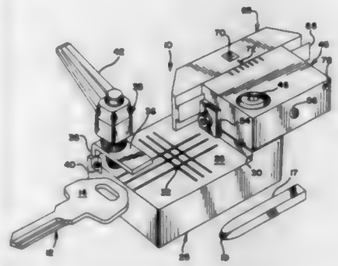


5,305,530
ARCHER'S BOW SIGHT
George B. Robertson, Jr., 346 Harmon Johnson Rd., Monroe, La. 71202, and Eric J. Broadway, Rte. 3, Box 684, Rayville, La. 71269
Filed Aug. 3, 1993, Ser. No. 101,039
Int. Cl.[5] F41G 1/467
U.S. Cl. 33—265 15 Claims



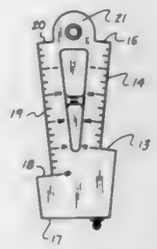
1. A pendulum bow sight attachable to an archery bow and providing for use from elevated sites and providing near, intermediate and distant target alignment, said bow sight comprising:
a pivotally mounted sight arm having a forward extension and a rear extension including an angled juncture therebetween and thereby having a substantially L shaped form, with said forward extension being longer than said rear extension;
said sight arm including bearing means at said juncture with said bearing means being secured to and cooperating with an axle, said bearing means providing for the pivotal movement of said sight arm about said axle with said forward extension and said rear extension depending from said juncture and thereby providing pendulum means for said sight arm;
said axle being generally horizontally disposed and secured to a mounting bracket, with said mounting bracket providing for the adjustable attachment of said bow sight to an archery bow;
said forward extension of said sight arm including a distal end and a plurality of first sight pin passages and a single second sight pin passage disposed between said distal end and said juncture with said second sight pin passage disposed between said first sight pin passages and said juncture;
one of said first sight pin passages including a first sight pin threadibly installed therein and said second sight pin passage including a second sight pin threadibly installed therein, whereby;
said sight arm maintains a predetermined position by said pendulum means as an archer adjusts a bow to cause said first sight pin to appear lower than said second sight pin for relatively distant targets, said second sight pin to appear relatively lower than said first sight pin for relatively close targets, and said first sight pin and said second sight pin to appear aligned for middle distance targets as the bow is downwardly aimed at one of the targets.

5,305,531
STAMP INDEXING TOOL
Charles H. Cole, Des Plaines, and James Mueller, Schaumburg, both of Ill., assignors to HPC, Inc., Schiller Park, Ill.
Filed Mar. 29, 1993, Ser. No. 38,829
Int. Cl.[5] B41B 11/00, 3/02
U.S. Cl. 33—622 18 Claims



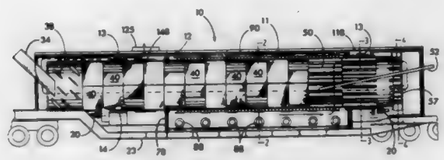
1. An indexing tool for stamps comprising:
a base block having a planar bed for supporting a relatively thin and flat object thereon;
an adjustable clamp operable to releasably hold the object on said bed;
a second block mounted on said base block;
an indexing block slidably mounted on said second block, said indexing block being formed with a hole for receiving a stamp therein; and
spaced detents cooperable between said second block and indexing block for selectively positioning said hole over the clamped object at a plurality of positions for applying stamp indicia to the object.

5,305,532
SIDING ALIGNMENT TOOL
Joel T. Johnson, 34 Main St., and Sharon L. Johnson, P.O. Box 292, both of Kingston, N.H. 03848
Filed Apr. 19, 1993, Ser. No. 48,305
Int. Cl.[5] G01B 5/14
U.S. Cl. 33—647 3 Claims



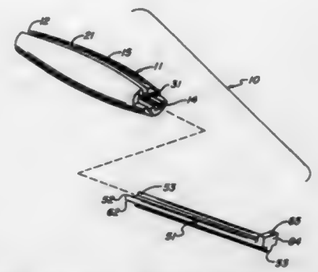
1. A siding alignment tool, comprising,
a tool plate body, having a first side wall spaced from a second side wall in a parallel coextensive relationship defining a predetermined thickness of said tool plate body, wherein the tool plate body includes a bottom end wall, and
a first end wall extending at an obtuse included angle relative to and from the bottom end wall, with a first step flange orthogonally intersecting the first end wall at an uppermost distal end of the first end wall, and
a second end wall arranged in a parallel relationship relative to the first end wall and extends orthogonally from the first step flange terminating in a second step flange orthogonally intersecting the second end wall, and
a graduated scale extending from the second step flange to the first step flange, and
a third end wall extending from the bottom end wall at an obtuse included angle relative to the bottom end wall, with the third end wall terminating in a third step flange orthogonally intersecting the third end wall, and a fourth end wall parallel to and offset relative to the third end wall extending orthogonally from the third step flange and extending along the tool plate body terminating in a fourth step flange, wherein the fourth step flange includes a second graduated scale extending from the fourth step flange to the third step flange, wherein the second graduated scale is of a second length and the graduated scale is of a first length, with the second length greater than the first length.

5,305,533
COMBINED DIRECT AND INDIRECT ROTARY DRYER WITH RECLAIMER
Donald J. Alexander, 125 Webster St., and Robert A. Sindelar, 606 E. South St., both of Beaver Dam, Wis. 53916
Filed Jan. 27, 1993, Ser. No. 9,856
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] F26B 19/00
U.S. Cl. 34—48 18 Claims



1. An apparatus for drying material comprising:
a) cylindrical drum rotatable about a longitudinal axis and having an exterior and portions defining a material inlet at one end of the drum and a material outlet at the opposite end of the drum, wherein the drum has portions defining a cavity therein which permits the passage of material and exhaust gases through the drum in a counterflow relationship;
b) a heating chamber communicating with the material outlet end of the drum and enclosing a substantial portion of the axial length of the drum; and
c) a heat source which directs heated exhaust gases onto the drum exterior within the heating chamber to heat the drum, wherein portions of the heating chamber direct said heated exhaust gases into the material outlet of the drum and wherein said heating chamber gas directing portions are substantially sealed to prohibit the escape of exhaust gases from the chamber at that location, such that substantially all the exhaust gases are directed into the drum material outlet and escape from the apparatus through the drum material inlet, wherein the heat source comprises a plurality of heaters mounted to the heating chamber and spaced axially along the chamber such that the heaters are spaced radially outwardly from the drum and are selectively operable to control the amount of heat supplied to the drum.

5,305,534
FISH LINE SINKER
Thomas A. Lazich, 11856 Bray St., Culver City, Calif. 90230
Filed Feb. 11, 1993, Ser. No. 16,569
Int. Cl.[5] A01K 95/02
U.S. Cl. 43—44.91 1 Claim



1. A fishing line sinker assembly conformed for selective, slideable engagement to a fishing line comprising:
a generally oval sinker body formed of a metallic material structure defined by a front end and a rear end and a (fared) faired, generally oval, elongated exterior surface therebetween, said body further including a first slot extending through the length of said body between said front and rear end communicating to the exterior surface, and a second slot extending through said body in a transverse alignment with said first slot, said body including a recess proximate said rear end, and said first and second slots forming sharp edges at the intersection thereof;
a plastic retainer of an elongate form received by said body characterized by generally parallel sides and a central bead formed longitudinally on a first surface thereof and an orthogonal tab formed at one end of (the) a second surface opposite said first surface, said central bead being of a cross section greater than the width of said second slot, said plastic retainer being formed to a longitudinal dimension greater than the length of said body between said front and rear ends, and said retainer including parallel beads along the longitudinal edges of said second surface.

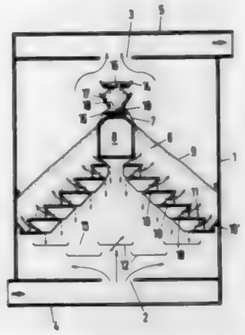
5,305,535
BULK MATERIAL REACTOR
Juergen Ritter, Stuttgart, Fed. Rep. of Germany, assignor to Nymic Anstalt, Schaan, Fed. Rep. of Germany
PCT No. PCT/EP90/01354, § 371 Date Jun. 11, 1991, § 102(e) Date Jun. 11, 1991, PCT Pub. No. WO91/02586, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 20, 1990, Ser. No. 688,520
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1989, 3927417; Dec. 7, 1989, 3940412
Int. Cl.[5] F26B 9/00
U.S. Cl. 34—164 17 Claims

1. Bulk material reactor comprising a travelling bed of bulk material which is arranged inside a reactor housing together with a feed device located on a top side and a removal device located on an underside of said travelling bed, said reactor housing including an inlet opening and an outlet opening for the purpose of respectively letting gas into and out of said reactor, whereby said travelling bed is bounded along its lower side by means of cascade-forming staggered plates that overlap toward side walls of said reactor, whereby plates 10 can be arranged at a height from each other and to overlap each other such that an angle of repose 11 is formed by bulk material 7, 7' upon plates 10, said angle of repose serving to prevent bulk

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material 7, 7' from trickling out while the reactor is stopped, and whereby plates 10 are connected to a vibration power source which enables bulk material 7, 7' to fall from said plates due to the motion of said plates and whereby plates 10 are situated along a sloped line that runs parallel to a sloping surface 9 of travelling bed 6, 6';



whereby a feed trough 14 extends over the depth of reactor housing 1, and is provided with at least one opening therein;

whereby feed trough 14 is set into motion by means of a vibrating power source.

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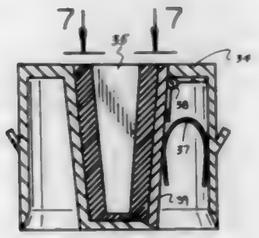
SHOE CLEAT GUARD HAVING A SPRING BIASED SECURING DEVICE

Carl L. Depping, 1448 School Ave., Walla Walla, Wash. 99362

Filed Jun. 7, 1993, Ser. No. 72,077

Int. Cl.[5] A43B *5/00*

U.S. Cl. 36—135 **1 Claim**



1. A shoe cleat guard, comprising,

a body, having a first layer of a first durometer of hardness coextensive and contiguous with a second layer of a second durometer of hardness greater than said first durometer of hardness, and a third layer coextensive and contiguous with said second layer, with the third layer having a third durometer of hardness greater than said second durometer of hardness, the first layer having a first layer concave top wall arranged to receive cleat members of a sport shoe therewithin in a piercing relationship, and the third layer having a convex bottom wall for engaging of an underlying support surface,

and

the first layer includes a first layer first slot spaced from a first layer second slot, the second layer having a second layer first slot coextensive with and in communication with the first layer first slot, and the second layer having a second layer second slot coextensive with and in communication with the first layer second slot, and a connecting strap having a central web captured between the second layer and the third layer, with the central web including a first web projecting through the first layer first slot and the second layer first slot extending beyond the first layer top wall, and a second web having a second length greater than said first length projecting through the first layer second slot and the second layer second slot, with the first web having a first hook and loop fastener surface, the second web having a second hook and loop fastener surface arranged for engaging the first web hook and loop fastener surface,

and

at least one insert housing directed through the first layer into the second layer, wherein the insert housing includes an insert housing side wall having a plurality of barbed projections to secure the insert housing within the arcuate body, the housing having a housing top wall, with the housing top wall having a top wall slot directed into the housing, with the top wall slot including facing carbide slot side walls for sharpening of a cleat member directed into the top wall slot,

and

the housing includes a housing cavity, having a spring member interposed between the housing side wall and one of said carbide slot side walls, with a carbide reinforcing wall engaging said spring member interposed between said spring member and said at least one carbide slot side wall, with said carbide reinforcing wall having a hinge hingedly mounting the reinforcing wall to the housing top wall within the cavity.

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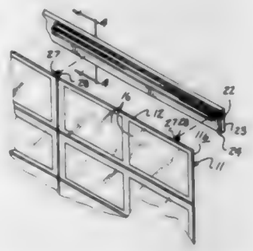
PHOTO DISPLAY ARRANGEMENT

Robert A. Pascarelli, P.O. Box 112815, Anchorage, Ak. 99511

Filed Feb. 22, 1993, Ser. No. 20,610

Int. Cl.[5] G09F *1/10*

U.S. Cl. 40—159 **3 Claims**



1. A photo display arrangement, comprising,

a mounting web, having a web top edge spaced from a web bottom edge, and a web first side spaced from a web second side, and a web front surface spaced from a web rear surface, with the web front surface including a matrix of transparent pockets, including parallel rows of said pockets extending from the web top edge to the web bottom edge and intersecting parallel columns of pockets extending from the web first side to the web second side, with each pocket having a pocket slot directed into the pocket, with the pocket slot arranged to receive a photo web through the pocket slot into the transparent pocket, and

hanger means arranged for securement to a support wall for securing the mounting web to the support wall, and

an indicator strip arranged for securement to at least one of said pockets, wherein the indicator strip includes a strip rear wall and a strip front wall, the indicator strip formed of a transparent material and an adhesive layer on the strip rear wall in facing relationship relative to said at least one pocket for securing the indicator strip to the pocket, with the indicator strip having an indicator strip pocket, and an indicator card arranged for sliding reception within the indicator strip pocket for providing visual information relative to said at least one pocket, and

the hanger means includes a hanger plate, the hanger plate having a plate rear wall spaced from a plate front wall, and a plate top end, with a C-shaped resilient channel member fixedly mounted to the plate front wall in adjacency to the plate top end, wherein the C-shaped channel member includes a channel cavity, and the channel cavity includes a plurality of spaced channel flanges coextensive with the channel member oriented at an entrance to the channel cavity, with the channel flanges arranged in a substantially parallel coplanar relationship relative to one another, and the mounting web rear surface having a plurality of spaced post members, and each post member including a semi-spherical head, with each semi-spherical head arranged for reception within the channel cavity.

5,305,538

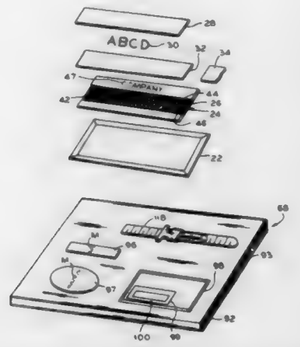
PLASTIC PLATE WITH GRAPHICS

James C. Kanzelberger, Manitowoc, Wis., assignor to Contemporary Inc., Wis.

Filed Sep. 13, 1991, Ser. No. 759,492

Int. Cl.[5] A47G *1/06*

U.S. Cl. 40—616 **4 Claims**



1. A do-it-yourself kit for making graphic displays, said kit comprising a metal backing plate of a predetermined size, a plastic plate having a metalized surface for mounting centrally on said metal plate, said metal plate and said metalized surface having virtually the same appearance whereby said plastic plate and metal plate look like a single member were joined, a textured area on said metalized surface which allows air to escape through surface irregularities of said texture, transparent tape having graphics printed on a back side, said textured area having a shape and size adapted to receive said transparent tape, adhesive means on the backs of said plastic plate and said transparent tape for assembling said graphics display, said texture preventing an entrapment of air bubbles under said transparent tape when it is adhered to said textured surface;

a printer having an alpha-numerical keyboard, means in said printer for assembling the transparent tape with the graphics printed on the back for viewing through the plastic, a pressure sensitive adhesive behind the graphics with a release paper over the adhesive;

accessories for assisting in an application of said pressure adhesive to said plastic plate comprising a work board having a metal surface made of a magnetic material, at least one metal plate having a magnet attached to part of the back thereof for securing it to said surface of said work board, said magnet having a thickness which positions said one metal plate to accept said metal backing plate under an edge where said magnet is not attached, and means for trimming said tape on said metal backing plate by using said one metal plate as a template for said similar backing plate.

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COLLAPSIBLE FIREARM DEVICE

Kent Von Kuster, 2336 Adams Rd., Corbin, Ky. 40701

Filed Jul. 24, 1992, Ser. No. 919,024

Int. Cl.[5] F41C *23/04*

U.S. Cl. 42—75.01 **15 Claims**



9. Firearm receiver means containing a bolt means and a firing mechanism means for a firearm including

collapsible grip means pivotably disposed to be received within said receiver means for ambidextrous support of a firearm when the firearm is in an operative configuration where said grip means is pivotably retractable for storage substantially within said receiver means.

5,305,540

ATTACHMENT DEVICE FOR RIFLE SLINGS

Gerhard Blenk, Wertach, Fed. Rep. of Germany, assignor to Horst Blaser Jagdwaffenfabrik, Isny, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 993,352

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1992, 4201398

Int. Cl.[5] F41C *23/02, 33/00*

U.S. Cl. 42—85 **20 Claims**



12. A device for attaching an elongate rifle sling to a rifle having first and second sling mounts provided thereon, the sling mounts each having a transverse bore therethrough, the rifle sling extending from the first sling mount to the second sling mount, said device comprising:

first and second sling sleeves disposed at respective ends of the rifle sling and each having at least one circumferentially continuous loop being coaxially aligned with the transverse bore of the respective sling mount;

first and second retaining pins extending through said respective axially aligned loops and transverse bores;

each said retaining pin including at least one opening therethrough;

retaining means for limiting relative movement between said retaining pin and said loop in a first direction extending parallel to a longitudinal axis of said retaining pin; and

retaining strip means at one end of said rifle sling for preventing movement of said retaining pin in a direction opposite said first direction by having a free end of said retaining strip means pass through said opening.

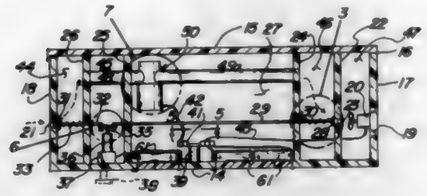
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5,305,541

GAME SCENT DISPENSING APPARATUS

Tony R. Simpson, Rte. 3, Box 92, Elkin, N.C. 28621

Filed Nov. 9, 1992, Ser. No. 973,643
Int. Cl.[5] A01M *1/20*; B67D *5/64*
U.S. Cl. 43—1 6 Claims



1. A game scent dispensing apparatus, comprising,

a dispensing housing, with the dispensing housing having a housing floor, housing side walls, a first end wall spaced from a second end wall, and a lid having a lid hinge, with the lid hinge secured to the lid and to the first end wall to pivotally mount the lid relative to the dispenser housing, and

a scent dispensing canister mounted within the housing between the first end wall and the second end wall, and the first end wall having a plurality of first end wall openings, and the second end wall having a single second end wall opening, and a blower fan mounted within the housing in adjacency to the first end wall, and conduit means mounted within the housing in operative communication with the canister for directing air from the second end wall through the canister and the first end wall, and

the housing includes a first partition wall in adjacency to the first end wall defining a fourth cavity, with a second partition wall spaced from the first partition wall defining a second cavity within the housing, and a third partition wall spaced from the second partition wall defining a battery cavity, and a fourth partition wall spaced from the third partition wall defining a second cavity, and a first cavity defined between the fourth partition wall and the second end wall, and the conduit means including a first pneumatic conduit in pneumatic communication with the first cavity directed through the second cavity into the battery cavity, with the canister mounted within the battery cavity, and the conduit means further including a second partition wall into a third cavity oriented between the second partition wall and the first partition wall, with the first partition wall having a first partition wall opening to permit air flow from the second end wall opening through the first pneumatic conduit into the canister, and from the canister into the second pneumatic conduit, from the second pneumatic conduit into the third cavity, and from the third cavity through the first partition wall opening into the fourth cavity.

5,305,542

AERATED BAIT CONTAINER

Kenneth D. Phelps, P.O. Box 3791, Bartlesville, Okla. 74006

Filed Mar. 24, 1993, Ser. No. 36,354
Int. Cl.[5] A01K *97/05, 97/10, 97/06*
U.S. Cl. 43—21.2 4 Claims

1. A bait container apparatus, comprising,

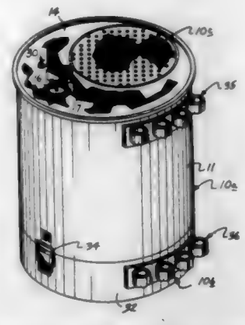
a primary container, with the primary container having a first side wall and a first floor, and

a top wall, and a second floor spaced between the top wall and the first floor, and

a flexible resilient pneumatic bladder reservoir mounted between the first floor and the second floor, and a pneumatic pump means mounted between the top wall and the second floor for selective inflation of the bladder reservoir, with the pneumatic pump means having a pump rod reciprocatably and slidably directed through the top wall into the pneumatic pump means, with the pump rod having a handle positioned exteriorly of the top wall, and

a bait container mounted within the primary container between the top wall and the second floor, with the bait container having an insulated layer surrounding the bait container between the top wall and the floor, and

conduit means directed into the bait container for directing



aeration of the bait container from the bladder reservoir, and

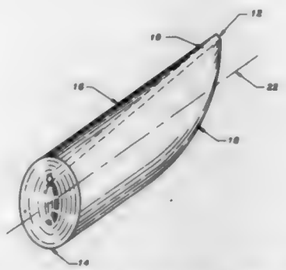
the conduit means includes a first conduit directed from the pump means into the bladder reservoir, and a valve member mounted to the top wall in pneumatic communication with a second conduit for selective passage of air from the bladder reservoir, and a third conduit directed from the valve into the bait container.

5,305,543

SLIP SINKER

George E. Fore, Sierra Blanca, Tex., assignor to Catch-All Enterprises, Inc., Austin, Tex.

Filed Feb. 18, 1993, Ser. No. 19,076
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.13 6 Claims



1. An improved fishing line slip sinker, comprising:

a body generally having a conical shape, said body in cross sectional area having an upper edge connecting a vertex to a bottom periphery wherein said upper edge being perpendicular to said bottom periphery, the remainder of said body being described generally by a forward edge connecting said vertex to said bottom periphery and forming a paraboloid surface; and

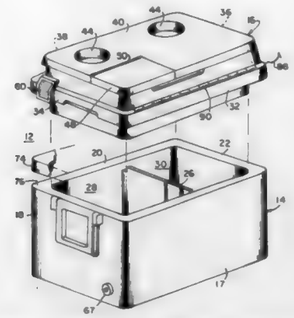
a fishing line tunnel extending between said vertex and said bottom periphery wherein said fishing line tunnel being located entirely above the central axis of gravity of said body and not parallel to said upper edge, the forward periphery of said fishing line tunnel substantially defining said vertex, the location of said fishing line tunnel creates an asymmetrical weight distribution with the greater part of said weight lying below said fishing line tunnel.

5,305,544

BAIT STORAGE, COOLER AND TACKLE HOLDER ARRANGEMENT

Vincent M. Testa, Jr., 61 Ober St., Beverly, Mass. 01915

Filed Apr. 16, 1993, Ser. No. 48,894
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—54.1 13 Claims



1. A multi compartment bait and food containment chest for keeping such bait and food fresh and accessible, said chest comprising:

a lower base compartment defining a first bait section and a second section, said sections for holding perishable items separated by a non-insulated partition;

an upper portion matable with said lower base, said upper portion being separable from said lower base;

said upper portion being floatable apart from said lower base, having multiple compartments therein for containment of accessories and perishables;

said upper portion having an upper deck, a lower floor and a plurality of peripheral walls, said upper portion having a secondary lid arranged through said upper deck; and

said lower floor in said upper portion having an opening therethrough, to permit direct access through said upper portion into said bait portion in said lower base.

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ELECTROMECHANICAL DEVICE FOR THE CONTINUOUS TRAPPING OF PESTS

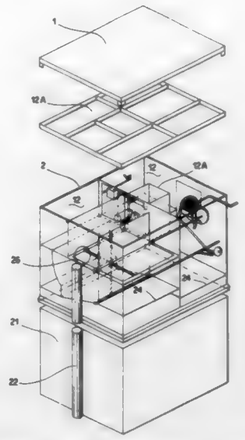
Mariano Cerullo, Via Braccianese 672 00060 S.Maria di Galeria, Rome, Italy

PCT No. PCT/IT91/00053, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO92/00671, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 1, 1991, Ser. No. 838,226
Claims priority, application Italy, Jul. 6, 1990, 48125A90
Int. Cl.[5] A01M *23/10*
U.S. Cl. 43—72 6 Claims

1. An electromechanical vermin trap which comprises:

a housing that includes a lower section for disinfectant liquid and an upper section sealingly mounted on the lower section, said upper section being upwardly open and defining a front end having an entrance opening with a movable closure flap which can sealingly close the entrance opening and a rear end, said upper section containing a sensor means near said rear end, a drop floor means between said entrance opening and said sensor means, electromechanical means for causing said drop floor means to operate to drop a vermin thereon downwardly towards said lower section upon a signal from said sensor means due to vermin activation, tray means for food positioned on an opposite side of said drop floor means from said entrance opening, and a hinged discharge flap below aid drop floor means which moves downwardly to allow a vermin dropping downwardly from said drop floor means to drop into said lower section of said housing,

cover means which sealingly covers said upper section of said housing, and



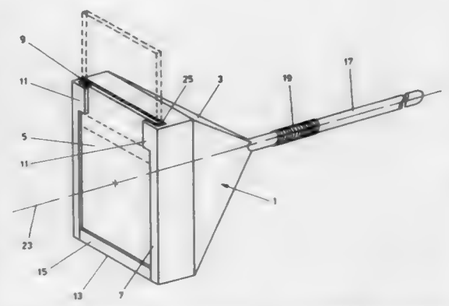
external vermin access means which extends upwardly along said lower section and said upper section to said entrance opening.

5,305,546

INSECT CATCHING APPARATUS

David L. Edwards, Leeds, United Kingdom, assignor to James F. King, Leeds, United Kingdom

PCT No. PCT/GB91/00778, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO91/17654, PCT Pub. Date Nov. 28, 1991
PCT Filed May 17, 1991, Ser. No. 949,827
Claims priority, application United Kingdom, May 18, 1990, 9011229
Int. Cl.[5] A01M *5/02*
U.S. Cl. 43—134 5 Claims



1. Apparatus for catching insects, comprising an insect-carrying chamber adapted to hold an insect including an opening large enough to allow an insect to pass therethrough, the opening having a periphery lying in one plane such that if the insect-carrying chamber is placed with its opening against a substantially planar surface, a closed space is defined between the surface and the insect carrying chamber, the apparatus including a gravity operated shutter readily movable between a first position where the shutter lies over the opening to define a closed space between the shutter and the insect-carrying

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chamber, and a second position where the shutter does not obscure the opening to leave it fully open, the apparatus including means to hold the insect-carrying chamber and move it to its in-use position with its opening periphery against a substantially planar surface, the apparatus being arranged such that in said in-use position the shutter is readily movable, by the operation of gravity, from its second position to its first position.

5,305,547

ELECTRICAL CONNECTOR ARRANGEMENT

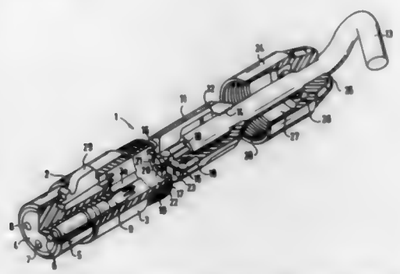
Christopher J. Weiss, Cheltenham, Australia, assignor to Alcatel Components Limited, Australia

Filed Nov. 12, 1992, Ser. No. 974,538

Claims priority, application Australia, Nov. 14, 1991, PK-9486

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—395 **21 Claims**



1. An electrical connector element for a sheathed cable containing a locally insulated conductor, said connector element comprising:

a body member having a forwardly-extending contact element arranged therein and an opposite end that terminates in a rearwardly-extending insulation-penetrating means;

a cup-shaped end member having a side wall and a rear wall for defining an inner space and a co-axial hole for receiving said sheathed cable therethrough, and having means for releasably coupling said cup-shaped end member and said body member; and

a mateable insulated-wire terminal means being arranged in the inner space of said cup-shaped end member, having a guide-slot means for receiving said locally insulated conductor, having a slot for receiving said rearwardly-extending insulation-penetrating means when said forwardly-extending contact element and said rearwardly-extending insulated wire terminal means are axially mated, and having a cable gripping means with two rearwardly extending longitudinal limbs for gripping said sheathed cable when said cup-shaped end member and said body member are coupled, at least one of said limbs being hingeable;

whereby when said cup-shaped end member and said body member are de-coupled said cable gripping means releases said sheathed cable.

5,305,548

ORCHARD HEAT EXCHANGER

James R. Siebol, 4300 W. Birchfield, Yak, Wash. 98901

Filed Nov. 12, 1992, Ser. No. 975,617

Int. Cl.[5] A01G *13/00*

U.S. Cl. 47—2 **10 Claims**

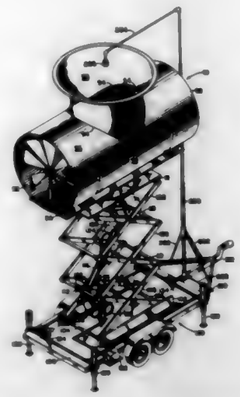
1. An orchard heat exchanger comprising:

an internal combustion engine;

a propeller shaft having a propeller on each end, said shaft being driven by the engine;

a cylindrical shroud, said shroud surrounding the engine and propeller shaft and propellers;

a converging-diverging air entrance at the top of the shroud; said engine, propeller shaft and propellers and shroud being mounted on a wheeled trailer; and



means to elevate the engine, propeller shaft and propellers and shroud above the trailer.

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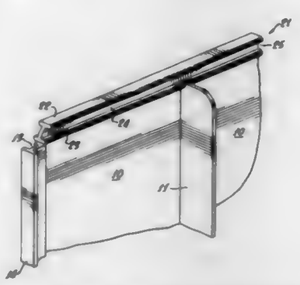
METHOD AND APPARATUS FOR DEFLECTING TREE ROOTS, AND COMBINATION OF THE APPARATUS WITH TREE AND STATIC STRUCTURE

Leonard N. Albrecht, Irvine, Calif., assignor to Deep Root Partners, L.P., Burlingame, Calif.

Filed Jun. 29, 1992, Ser. No. 905,761

Int. Cl.[5] A01G *1/00*

U.S. Cl. 47—33 **10 Claims**



1. A root-control barrier panel for embedment in the earth between a static structure and a tree whose roots may damage said static structure, said panel comprising:

(a) a generally rectangular planar sheet of synthetic resin having an upper edge and a lower edge, and having end edges perpendicular to said upper and lower edges,

(b) ridge means provided on one side of said sheet and extending generally perpendicular to said upper and lower edges,

(c) means to connect said end edges of said sheet to end edges of other root-control barrier panels, and

(d) a double rail provided on said sheet along said upper edge and extending parallel thereto,

said double rail comprising upper and lower cross-members that are substantially parallel to each other and are vertically spaced a short distance from each other

said upper cross-member having a cross-sectional shape such that portions thereto extend in both directions away from the plane of said sheet, said upper cross-member shading said lower cross-member from sun,

said upper cross-member protecting said lower cross-member from lawn trimmers.

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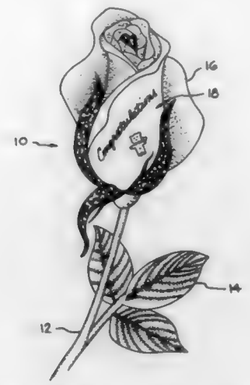
PERSONALIZED FLOWER

Debra Skonecki, 5852 Comet Ave., Toledo, Ohio 43623

Continuation of Ser. No. 652,590, Feb. 8, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 84,765

Int. Cl.[5] A01B *79/00*

U.S. Cl. 47—58 MS **10 Claims**



1. A method for producing a decorative article comprising the steps of:

providing a fresh natural flower having a plurality of petals; and

applying an individually personalized message or drawing to at least one of said petals by using a hand-held applicator which contains a permanent paint, said hand-held applicator operable to enable said paint flow from a tip thereof onto said one petal by applying minimal pressure to said one petal with said tip, thereby preventing damage to said one petal.

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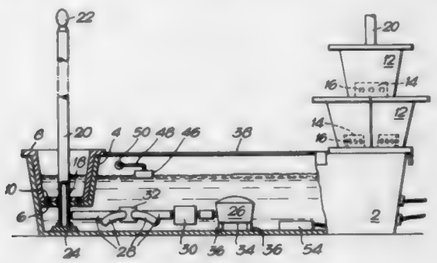
COLUMN PLANTER

Dov Orlov, Kfar Maimon, Israel, assignor to Gro-Max Systems, Inc., Dover, Fla.

Filed Jun. 10, 1991, Ser. No. 712,811

Int. Cl.[5] A01G *25/00*

U.S. Cl. 47—82 **12 Claims**



1. A column planter comprising:

a tank adapted to contain water and having a polygonal shape;

a cover for said tank, including an access opening covered by a lid, said cover having a polygonal shape;

a plurality of planting pots stackable on top of each other, to form at least one column of stacked pots, each pot having a central opening in its bottom, as well as a plurality of drainage holes;

a substantially vertical, substantially rigid tube for each column, said tube having a lower end and an upper end and on which tube, with their central openings, are strung said pots of said column, the lower end of which tube is supported in said tank, said tube being of such length as to have its upper end protrude above a top of an uppermost pot in a column;

an emitter attached to the upper end of said vertical tube;

means for mounting and supporting said column of pots on said tank and comprising a pot-shaped recess provided in at least one corner of said cover, and

a pump having an inlet and an outlet opening and adapted to draw water from said tank, which outlet opening is operatively connected the lower end of said vertical tube into which said pump forces said water drawn from said tank, to be issued from said emitter at the upper end of said tube, wherein water issuing from said emitter trickles down, passing from one pot into another pot therebelow through said drainage holes, and returns to said tank to be recirculated by said pump.

5,305,552

METAL ARMATURE FOR A TIGHT STRIP OR A SEAL, FOR USE, IN PARTICULAR, IN THE AUTOMOTIVE INDUSTRY

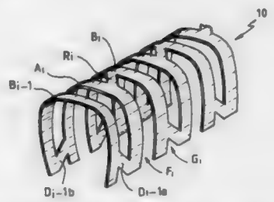
Henri Guillon, St Maurice sur Fessard, France, assignor to Hutchinson, Paris, France

Filed Sep. 7, 1990, Ser. No. 579,520

Claims priority, application France, Sep. 13, 1989, 89 11955

Int. Cl.[5] E06B *7/16*

U.S. Cl. 49—490.1 **6 Claims**



1. Metal armature blank for a tight strip or seal, for use in the automotive industry for production of guides, slides, pane bottom or window car wiper rings, having a U shape in its operational condition and comprising a sequence of elements arranged at intervals and connected with each other, each element being composed of two nearly parallel strips joined by means of spacers and two adjacent elements being connected with each other using a connecting strip arranged approximately near median parts of the strips, wherein the spacers and the connecting strips are slanted with respect to a mean longitudinal direction of the armature but with opposite angles

wherein the first spacer connecting two strips making up an element is provided between an end of a first strip and an intermediate zone of a second strip whilst a second spacer of said element is provided between an end of the second strip and an intermediate part of the first strip.

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5,305,553

WEATHERSTRIP STRUCTURE FOR AUTOMOTIVE VEHICLE

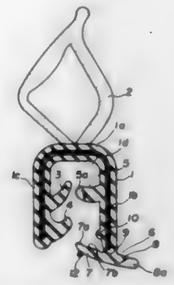
Toshimitsu Shimizu, Kanagawa; Tomio Sugawara, Chiba; Yuji Sakamaki, Chiba, and Takahiro Usuta, Chiba, all of Japan, assignors to Nissan Motor Company, Limited and Kinugawa Rubber Industrial Co. Ltd., both of Japan

Filed Dec. 27, 1990, Ser. No. 634,728

Claims priority, application Japan, Dec. 28, 1989, 1-344795; Dec. 28, 1989, 1-344796

Int. Cl.[5] E06B *7/16*

U.S. Cl. 49—490.1 12 Claims



1. A weatherstrip structure for an automotive vehicle, comprising:

a main body having first, second and third sections, said second and third sections extending substantially in parallel with each other from opposite ends of said first section so as to define therebetween a space which is open at one end remote from said first section for receiving a weatherstrip mounting member fixed to a vehicle body into said space, said second section being positioned to be located inside the vehicle body with respect to said weatherstrip mounting member and said third section being positioned to be located outside the vehicle body with respect to said weatherstrip mounting member;

a first lip extending into said space from an inner surface of the second section, said inner surface facing said space, said first lip being arranged to be pressed against one side of said weatherstrip mounting member when said weatherstrip mounting member is received is said space;

a second lip connected on said third section near said open end of said space via a linkage portion and having an inner extending section which extends into said space from said linkage portion and an outer extending section which extends from said linkage portion in a direction opposite to that of the inner extending section, said second lip being adapted to tilt relative to the third section by means of said linkage portion to allow said inner and outer extending sections to tilt relative to the third section as one integral unit; and

projection means provided at least on said inner extending section of the second lip or on an inner surface of the third section, said inner surface of the third section facing said space, for limiting the tilting movement of the second lip beyond a predetermined level, said projection means and said second lip being so arranged that, when the tilting movement of the second lip is limited by said projection means, said inner extending section presses against the other side of the weatherstrip mounting member to firmly hold the weatherstrip mounting member between said first lip and said inner extending section of the second lip, and simultaneously, said outer extending section is pressed at its outer end remote from said linkage portion against the vehicle body for providing a reliable sealing therebetween.

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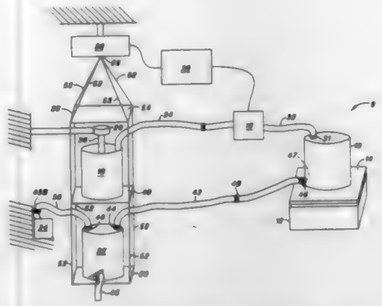
MOISTURE CONTROL IN VIBRATORY MASS FINISHING SYSTEMS

Michael R. Emken; Mark Seeley, and David S. Wilde, all of Austin, Tex., assignors to Carbon Implants, Inc., Austin, Tex.

Filed Jun. 16, 1993, Ser. No. 78,560

Int. Cl.[5] B24B *31/06, 57/02*

U.S. Cl. 51—7 17 Claims



1. A method for precisely finishing pyrolytic carbon coated parts, which method comprises

providing a vibratory chamber which contains particulate polishing media,

supplying a predetermined amount of a liquid slurry containing a polishing agent to said vibratory chamber,

supplying pyrocarbon objects to be finished to said chamber,

vibrating said chamber so as to cause the surfaces of said pyrocarbon-coated objects to be contacted by the polishing media and the polishing agent,

continuously supplying fresh liquid slurry from a reservoir to said chamber,

removing liquid slurry and pyrocarbon fines in the form of a discharge slurry from a lower location in said chamber,

collecting said discharge slurry in a sump,

monitoring the total weight of said reservoir of fresh slurry and said sump of discharge slurry for the purpose of maintaining a constant level of overall total weight,

upon detecting a decrease in said monitored total weight, slowing the rate of supply of fresh slurry to said vibratory chamber, and

upon detecting an increase in said monitored total weight, increasing the rate of supply of fresh slurry to said vibratory chamber

whereby the amount of liquid slurry within said vibratory chamber is maintained at said predetermined amount over a substantial period of time during which precise finishing of a batch of pyrocarbon-coated objects is achieved.

5,305,555

BELT GRINDING ASSEMBLY HAVING PIVOTING MEANS

Arthur P. Luedeke, Marine on St. Croix; Bradley W. Keller, Lino Lakes, and Robert P. Miller, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 686,774, Apr. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,047, Jan. 7, 1991, Pat. No. 5,165,204, which is a continuation-in-part of Ser. No. 359,729, May 31, 1989, Pat. No. 5,140,775. This application Aug. 12, 1992, Ser. No. 930,192

Int. Cl.[5] B24B *21/00*

U.S. Cl. 51—145 T 28 Claims

1. A grinding assembly for forming a new surface on an object, said grinding assembly comprising:

frame means;

machining means comprising:

means for grinding a workpiece,

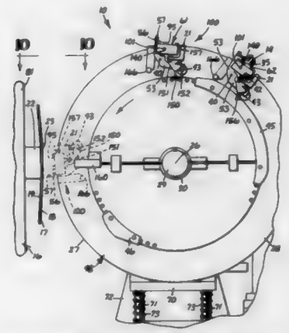
means for driving said means for grinding a workpiece along a grinding path relative to said frame means;

workpiece feed means comprising a member having an arcuate peripheral portion having a workpiece feed axis and a workpiece feed radius defined from said workpiece feed axis;

means mounting said workpiece feed means on said frame means for rotation of at least a portion of said workpiece feed means about said workpiece feed axis along a workpiece feed path;

drive means for rotating at least a portion of the peripheral portion of said workpiece feed means past said machining means in a first direction; and

a plurality of object holder assemblies having radially outward and inward sides, each object holder assembly including engagement means for releasably engaging and holding an object, said object holder assemblies including:



pivotal mounting means for mounting said engagement means about engagement means axes that are generally parallel to the workpiece feed axis and which are spaced about the peripheral portion of said workpiece feed means;

said pivotal mounting means mounting each of said engagement means so that they project radially outwardly of said workpiece feed means for pivotal movement about their respective engagement means axis between a pre-grinding position and a post-grinding position with pivotal movement of said engagement means from said pre-grinding to said post-grinding position being generally in said first direction of said workpiece feed means;

cam bar track means generally adjacent said machining means for pivoting each engagement means from said pre-grinding position to said post-grinding position during movement of the engagement means past said machining means to bring an object into forceful engagement with the machining means.

5,305,556

METHOD AND APPARATUS FOR SHAPING THE INTERIOR SURFACES OF BORES

Oswald Kopp, Nurtingen, and Gerhard Flores, Ostfildern, both of Fed. Rep. of Germany, assignors to Kopp Verfahrenstechnik GmbH, Leutkirch, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 540,010, Jun. 19, 1990, abandoned. This application May 13, 1992, Ser. No. 882,566

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919895; PCT Int'l Appl., Oct. 31, 1990, PCT/EP90/01822; Fed. Rep. of Germany, Apr. 2, 1992, 4210928

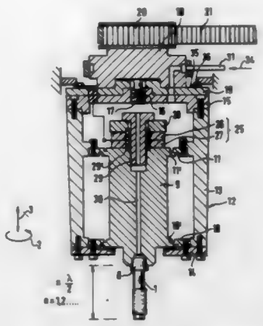
Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—165.77 11 Claims

1. A honing tool for honing a workpiece having an interior bore, the tool being used in shaping the interior bore of the workpiece by means of an abrasive coating, and when rotated and reciprocated in an axial direction simultaneously, and when further energized by an ultrasonic resonant motion, the honing tool having an operative condition and an inoperative condition, and comprising:

a shaft with a free length equal to a half wavelength of the ultrasonic motion or an integer multiple thereof; and

means for introducing the ultrasonic motion onto said honing tool at one end of said honing tool, said one end being adapted to be received in a sound transmission body, wherein:



said shaft having a free end and an abrasive coating, said abrasive coating having a contour, which, when viewed from the free end of said honing tool and in the operative condition of said honing tool when energized with the ultrasonic motion, includes a relative short conical section and adjacent thereto a relatively long cylindrical section, the contour of the honing tool in the inoperative condition being determined such that in the operative condition it is obtained by superposition of an amplitude of a radial oscillation component of the ultrasonic motion and the contour of the honing tool in the inoperative condition.

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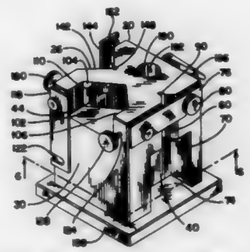
PUNCH AND DIE REGRIND FIXTURE

Lee A. Warncke, 178 Englewood Dr., Orange, Conn. 06477

Filed Sep. 14, 1992, Ser. No. 944,594

Int. Cl.[5] B24B *41/06*

U.S. Cl. 51—216 R 10 Claims



1. A punch and die grinding fixture for a punch having a front cutter face and shank toward the front of the punch and a spring head assembly toward the back of the punch, and a mating die having a front cutter face and a back, said fixture comprising:

a block having a top, a bottom, a first side, a second side, and comprising a first permanent cavity and a second permanent cavity,

said first cavity being in said first side and comprising an upper portion and a lower portion, said upper portion comprising a pair of walls forming a first vertical V-groove for receiving the punch shank, said lower portion

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comprising a permanent pocket that is wider and deeper than said first vertical V-groove, for receiving with clearance, the spring head assembly of the punch, and a first permanent horizontal bottom wall in said pocket, for supporting the spring head assembly of the punch,

said second cavity being in said second side and comprising a pair of walls forming a second vertical V-groove having an axis parallel to the axis of the first vertical V-groove, and a second permanent horizontal bottom wall higher than said first bottom wall, and

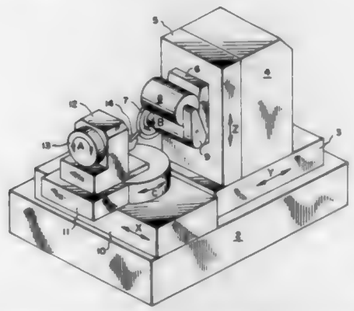
a first means and a second means for pressing respectively said punch shank and said die into the respective first and second V-grooves by bearing respectively on said punch shank and said die normally to the center of the V-groove.

5,305,558

METHOD OF SHARPENING PROFILE-SHARPENED CUTTING BLADES

Harry Pedersen, Penfield, and Charles G. Ellwanger, Rochester, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Feb. 26, 1993, Ser. No. 23,273
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—288 **17 Claims**



1. A method of sharpening a cutting blade of the profile-sharpened type made from a length of bar stock, said cutting blade having a base portion and a cutting end with said cutting end having a front rake surface, a back face, a top surface, and opposed side surfaces, said cutting end further including a cutting profile surface extending between said front rake surface and said back face, the intersection of said front rake face and said cutting surface defining a cutting edge, said method comprising:

forming first and second relief surfaces on said cutting profile surface by removing stock material from said cutting surface,

said first relief surface extending from a location inward of said cutting edge to said back face with said first relief surface being oriented at a first relief angle with respect to one of said opposed side surfaces,

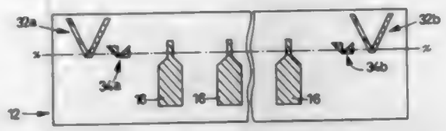
said second relief surface extending from said cutting edge to said location inward of said cutting edge with said second relief surface being oriented at a second relief angle with respect to said one of said opposed side surfaces, said second relief angle being less than said first relief angle.

5,305,559

METHOD OF GRINDING CORE BLANK FOR MAGNETIC HEADS, USING MARKERS FOR DETERMINING GRINDING DEPTH FOR NOMINAL MAGNETIC GAP DEPTH

Hirofumi Ogawa, Iwakura, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Apr. 29, 1993, Ser. No. 53,705
Claims priority, application Japan, May 12, 1992, 4-146625
Int. Cl.[5] B24B *7/00, 49/04*
U.S. Cl. 51—323 **9 Claims**



1. A method of grinding a core blank which yields at least one head core each used for a magnetic head, each of said at least one head core having an annular magnetic path having a magnetic gap, said core blank having a working surface which is ground to thereby give a sliding surface of said each head core that is opposed to a magnetic recording medium for sliding contact therewith, said method comprising the steps of:

forming at least one marker by photolithography so that said at least one marker is embedded in said core blank, said at least one marker consisting of a first right-angled isosceles triangle, and a second right-angled isosceles triangle which is obtained by rotating said first right-angled isosceles triangle by 90° about an apex thereof, said first and second right-angled isosceles triangles having respective bases as edges of said marker which are spaced from each other in a direction of width of said magnetic gap, by a first distance that continuously varies in a direction of depth of said magnetic gap, said edges of said each marker being located on the same side as viewed in the direction of width of said magnetic gap; and

measuring, upon grinding of said core blank, said first distance between said edges of said each marker which is exposed on said working surface of said core blank under grinding, which first distance varies with a second distance between said working surface under grinding and a grinding depth line which determines a nominal depth dimension of said magnetic gap, so as to determine a required residual depth of grinding which is to be further effected to establish the nominal depth dimension of the magnetic gap;

wherein said first and second triangles are positioned such that said grinding depth line crosses said respective bases, and said first distance between said respective edges of said each marker continuously increases with an increase in said second distance between said working surface and said grinding depth line.

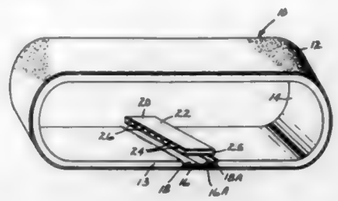
5,305,560

METHOD OF SPLICING ENDLESS ABRASIVE BELTS AND CONES

Glenn E. Roelofs, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 697,703, May 9, 1991, Pat. No. 5,256,227. This application May 13, 1993, Ser. No. 61,700
Int. Cl.[5] B32B *31/12*
U.S. Cl. 51—399 **2 Claims**

1. An endless abrasive belt or cone comprising a length of coated abrasive sheet material which includes a backing, said length of coated abrasive sheet material having first and second ends, the first and second ends spliced together by an adhesive derived from an aqueous adhesive dispersion consisting essentially of polyester polyurethane polymers having



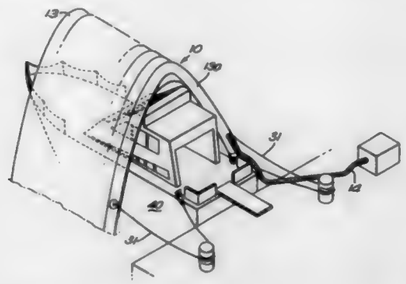
backbones, the backbones having a plurality of ionic groups therein, and a crosslinking agent.

5,305,561

INFLATABLE HOUSING STRUCTURE

David L. Goddard, BP24, 83440 Callian, France

PCT No. PCT/GB90/01138, § 371 Date Feb. 24, 1992, § 102(e) Date Feb. 24, 1992, PCT Pub. No. WO91/01250, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 24, 1990, Ser. No. 828,992
Claims priority, application United Kingdom, Jul. 25, 1989, 8916988
Int. Cl.[5] E04H *15/20*
U.S. Cl. 52—2.22 **3 Claims**



1. A floating structure with inflatable walls having means adjacent a foot thereof for receiving water ballast said means comprise a plurality of ports adjacent the foot of at least one of the walls with the ports being arranged at substantially the same height and being connected to tubes of different lengths which extend downwardly along inside the boot of the at least one of the walls to define water ballast inlets at differing heights.

5,305,562

RAIN GUTTER COVER

John A. Sapia, 69 Locust Point Rd., Locust, N.J. 07760

Filed Aug. 27, 1992, Ser. No. 935,978
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—12 **12 Claims**

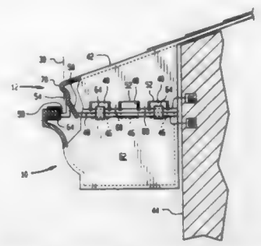
1. A cover of predetermined material for a hollow gutter of the type which is secured to the facial board of a structure and which incorporates a trough for receiving rainwater culminating in a defined front lip, comprising:

an upwardly pitched top surface extending rearwardly to reach said facial board;

a downwardly pitched front surface extending toward the front lip of said gutter, and composed of a pair of upper and lower angularly disposed sections; and

a single row of spaced-apart, interrupted slots running horizontally along said front surface said slots having an upper and lower edges;

with the lower-edges of said slots extending in said lower section below the front lip of said gutter, and with a plurality of rearwardly and downwardly extending flaps provided along the upper edges of said slots for diverting rainwater into said hollow gutter;



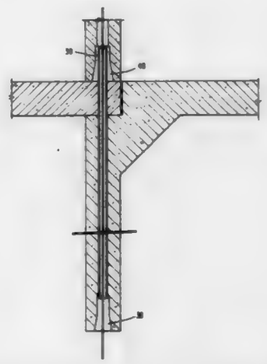
whereby received rainwater flows down said top and front surfaces, and along said flaps, into said trough.

5,305,563

ELEMENTS OF MODULAR PARKING LOT

Yigal Erel, 59 Shearit Hapleta Street, Haifa, Israel

Division of Ser. No. 587,933, Sep. 25, 1990, Pat. No. 5,177,913. This application Jul. 31, 1992, Ser. No. 922,427
Claims priority, application Israel, Oct. 12, 1989, 91978
Int. Cl.[5] E04H *3/00*
U.S. Cl. 52—79.2 **4 Claims**



1. A modular concrete element for a single or a multi-level parking lot, said element comprising a table-like unit having plural concrete columns, and further including at least one hollow pipe which is embedded in at least one of the concrete columns to extend along the length thereof and protrude from an upper surface of the column, and further including a tapered opening in a lower end of each column, said hollow pipe enabling a cable to extend through the column for connection to a vertically adjacent one of said elements.

5,305,564

HEMISPHERICAL DOME BUILDING STRUCTURE

William E. Fahey, 472 Spaulding, Akron, Ohio 44310

Filed Apr. 27, 1992, Ser. No. 874,604
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—81.5 **12 Claims**

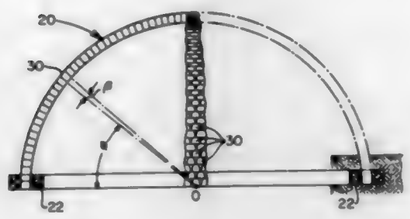
1. A hemispherical dome building structure comprising:

(a) a plurality of like oriented rigid unit cells having the same size and shape, said cells defining an essentially hemispherical open rigid building structure having an essentially hemispherical outside surface and an essentially

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hemispherical inside surface concentric with and spaced from said outside surface;

(b) each of said cells having an open interior affording a dead air space, each of said cells being of essentially frustopyramidal shape and having a longitudinal direction which is aligned with a radial direction of the hemispherical building structure, each cell having first and second ends which are spaced apart and a plurality of longitudinal edges extending from said first end to said second end, said first end being larger than said second end, said longitudinal edges tapering inwardly along radii of said building structure;



(c) each of said cells having the cross-sectional shape of an isosceles trapezoid, the cross sectional shape of each cell being substantially the same over its entire length and decreasing gradually from said first end to said second end;

(d) each cell extending from said outside surface to said inside surface of said building structure;

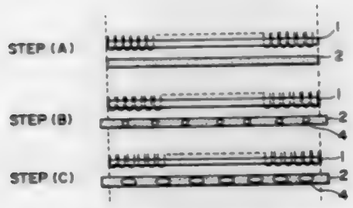
(e) each unit cell being oriented so that its first end lies along said outside surface of said building structure and its second end lies along said inside surface of said building structure, the larger ends of the unit cells forming said outside surface of said building structure and the smaller ends of the unit cells forming said inside surface of said building structure.

5,305,565

FLOOR MAT WITH PREVENTION OF WAVING

Yuji Nagahama, Saita, and Tetsuo Miyake, Tsu, both of Japan, assignors to Duskin Co., Ltd., Osaka, Japan

Filed May 14, 1991, Ser. No. 699,642
Int. Cl.[5] E04F *15/00*; B32B *33/00*
U.S. Cl. 52—177 **7 Claims**



1. A floor mat which is resistant to waving comprising:

a base cloth;

a mat pile tufted to the base cloth forming a tufted mat; and

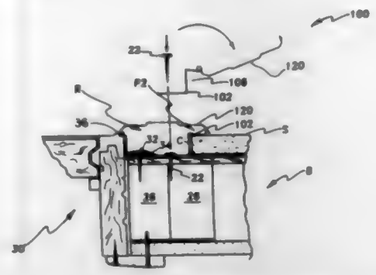
a low foamed rubber sheet integrated onto the back surface of the base cloth, said mat being formed by integrating an unvulcanized rubber having a low foamibility and the tufted mat under heat and pressure and vulcanizing and expanding the rubber sheet, wherein the resulting low foamed rubber sheet has an expansion factor of 20 to 200% and a skin layer having a thickness of 0.1 to 1.00 mm.

5,305,566

MOLDING SYSTEM FOR REPLACEMENT DOORS AND WINDOWS

Brian J. Larkowski, 1952 Stanley Ave., Signal Hill, Calif. 90806

Filed Jul. 6, 1993, Ser. No. 85,913
Int. Cl.[5] E06B *1/04*
U.S. Cl. 52—211 **10 Claims**



1. A molding system for use about the periphery of an article, the article being attached to and disposed within an opening in a supporting structure, said molding system comprising:

a) a first member; and

b) a second member hingedly attached to said first member, said second member having means for engaging the periphery of the article, whereby

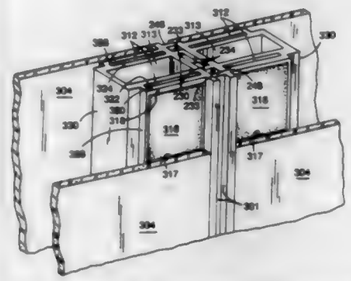
said first member is fastenable about the periphery of the article and said second member is hingedly displaceable to cover the first member and to engage the periphery of the article.

5,305,567

INTERLOCKING STRUCTURAL MEMBERS WITH EDGE CONNECTORS

Waldemar E. Wittler, 25 Harbourside Rd., North Quincy, Mass. 02171

Continuation-in-part of Ser. No. 630,067, Dec. 19, 1990, Pat. No. 5,097,643, and a continuation-in-part of Ser. No. 695,592, May 3, 1991, abandoned. This application Mar. 23, 1992, Ser. No. 855,440
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] E04H *3/00*; E04C *2/10*; A47G *5/00*
U.S. Cl. 52—238.1 **25 Claims**



1. A frame member for assembly into a frame and for connecting adjacent frame members comprising:

an elongated tubular member comprising a base forming one wall thereof, said base extending transversely between edges of said base,

a support wall integral with said base extending outwardly from said base on one side thereof away from said tubular member, said support wall extending generally parallel to said base edges and positioned between the transverse center of said base and one edge of said base;

a tongue integrally connected at one end to said support wall and extending to a free end thereof spaced away from said base and positioned between the transverse center of said base and the other edge of said base, said tongue and said base defining a recess therebetween to receive a tongue of a mating frame member;

at least one detent or groove in said one side of said base positioned between said free end of said tongue and said other edge of said base;

at least one bead or protrusion connected to said base on said one side thereof at a distance from the transverse center thereof equal to the distance of said detent or groove from said transverse center and extending from said base a distance greater than the distance of the outer surface of the tongue therefrom;

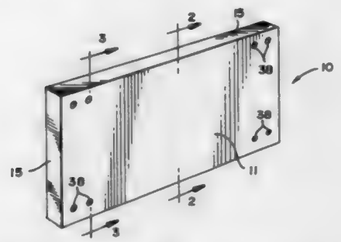
a plurality of tube walls extending from said base on the other side thereof and at least one end wall spaced from said base and extending between said tube walls and together therewith and with said base defining at least a pair of parallel tubes, one of said tubes dimensioned to receive an angle member therein for attaching frame members together to form a frame.

5,305,568

HIGH STRENGTH, LIGHT WEIGHT SHORING PANEL AND METHOD OF PREPARING SAME

Norton S. Beckerman, Arlington, Va., assignor to Comcore Utilities Products, Falls Church, Va.

Filed Mar. 5, 1992, Ser. No. 846,612
Int. Cl.[5] F04C *1/00*; B32B *3/00*
U.S. Cl. 52—309.4 **8 Claims**



1. A structural composite panel which is adapted to be used as a shoring panel in a generally vertical plane so as to protect against the collapse of excavated walls and which comprises:

(a) a first substantially flat facing layer for providing an interface between an excavation wall and an underground worker;

(b) a second facing layer spaced from said first facing layer and extending substantially parallel thereto;

(c) four end sections integrally formed along the entire perimeter of the panel and connecting said first and second facing layers along the entire periphery thereof; and

(d) core means disposed between said first and second facing layers, said core means having generally flat first and second surfaces lying substantially parallel to said first and second facing layers and having substantially flat end sections disposed generally perpendicular to said first and second facing layers, said core means being comprised of cellular material having a high strength to weight ratio and having a length and width substantially greater than the thickness thereof;

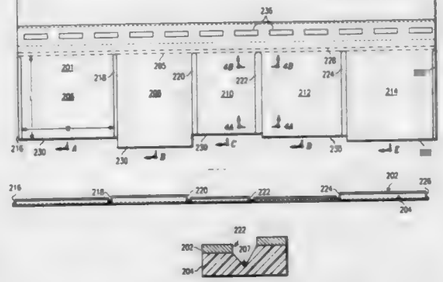
wherein said first and second facing layers comprise at least four layers of fiber reinforced hardenable resin material, wherein a first of said layers of fiber reinforced hardenable resin material is disposed adjacent to said first surface and is comprised of fiber matting, wherein a second of said layers of fiber reinforced hardenable resin material is disposed adjacent to said core means and is comprised of fiber matting, and wherein the remainder of said at least four layers of fiber reinforced hardenable resin material are adjacent to each other, are disposed between said first and second layers of fiber reinforced hardenable resin material and are comprised of fiber roving; wherein said hardenable resin material is selected from the group consisting of epoxy, phenolic, vinylester, polyester, polyamide, polyamide, polyurethane and polysulphone resin material; wherein said fiber matting and said fiber roving fiber reinforcing material are disposed in said resin material such that the fibers thereof lie in a generally planar array which is substantially parallel to said first and second facing layers; wherein said panel weighs less than about 6 pounds per square foot; and wherein said panel, when supported over its entire height, on each vertical extending end, by no more than 5 inches, is able to withstand an extended load in Type C soils (OSHA, CFR 1926) of at least 592 pounds per square foot with a minimum safety factor of 3:1.

5,305,569

THICK SHINGLE

Alfred B. Malmquist, Rancho Rio, N. Mex., and Matti Kiik, Dallas, Tex., assignors to Elk Corporation of Dallas, Dallas, Tex.

Continuation-in-part of Ser. No. 609,731, Nov. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 340,259, Apr. 19, 1989, abandoned. This application Nov. 18, 1992, Ser. No. 977,887
Int. Cl.[5] E04D *1/26, 1/28*
U.S. Cl. 52—309.8 **11 Claims**



1. A roofing shingle, comprising:

a weatherproof asphaltic composite material having a weatherproof side and an underside, the shingle of predetermined width, the material consisting of a lower layer of asphalt, an intermediate layer of a base made from a material selected from the group consisting of fiberglass and felt, an upper layer of asphalt and a layer of weather resistant granules, the material having at least one key way formed there define a plurality of tabs across the width of the shingle, each tab defining an exposed edge;

a foam layer bonded to the underside of the material, the foam layer having a thickness decreasing from the exposed edges of the tabs toward a back edge of the material, the foam layer having a different thickness at the exposed edge of a first tab then at the exposed edge of a second tab.

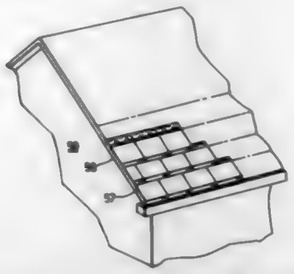
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5,305,570

PANEL ELEMENT FOR FORMING A CONTINUOUS COVERING ON A BUILDING

Melchor Rodriguez, and Santiago Menendez, both of 45 Robina Ave., #1B, Toronto, Ontario, Canada M6C 3Y5

Filed Oct. 9, 1992, Ser. No. 958,821
Int. Cl.[5] E04D 1/00
U.S. Cl. 52—520 13 Claims



1. A panel element, which is generally rectangular, for mounting on a support surface and forming a continuous covering with a plurality of similar panel elements, the panel element comprising:

a main body;

an upper marginal edge region along one, upper edge of the main body, including apertures for fasteners, for fastening the panel element to an underlying support surface, and a barrier ridge extending generally upwardly above the main body, to hinder upward movement of water towards the fastener apertures;

a lower marginal edge region along another, lower edge of the main body, and adapted to overlap the upper marginal edge region of an adjacent panel element, the lower marginal edge region including a lower edge strip at the lowermost end thereof, extending below the main body;

complementary left and right marginal edge regions along opposite other edges of the main body, and adapted to enable adjacent panels to overlap and engage one another, the marginal edge regions being configured to impede flow of water between engaged edge regions of adjacent panels;

a first locking formation provided below the upper marginal edge region, so as to be below any fasteners inserted through the upper marginal edge region, the first locking formation comprising a plurality of locking tabs extending away from the lower marginal edge region, at an angle to the barrier ridge; and

a second locking formation in the lower marginal edge region and comprising locking projections that extend away from the upper marginal edge region and towards the lower edge strip, the locking tabs and projections being shaped to interlock with one another to secure the upper and lower marginal edge regions of adjacent panels together, with the lower edge strip below the barrier ridge.

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STRUCTURAL FRAME ASSEMBLY

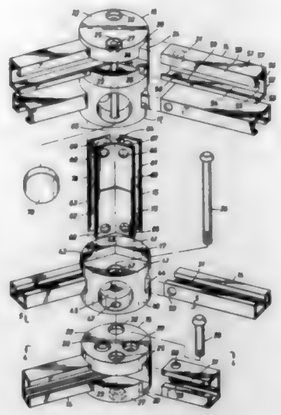
José A. Trevino, 3139 Chesterfield Ln., Stafford, Tex. 77477-4605

Filed Aug. 28, 1992, Ser. No. 936,351
Int. Cl.[5] E04H 12/10
U.S. Cl. 52—653.2 10 Claims

1. A structure comprising:

first and second couplings having contacting surfaces;

first beams extending in one directional orientation and having first and second positions and connected to said first couplings when said first beams are in said first positions and connected to said second couplings when said first beams are in said second positions;



second beams arranged transverse to said first beams and connected to said second couplings and to said first beams when said first beams are in said second positions; and

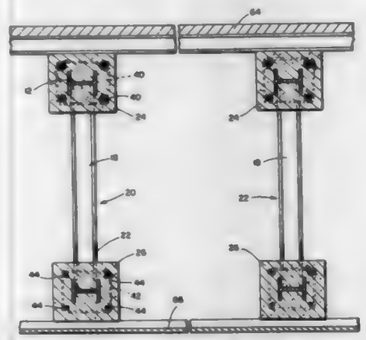
means securing said first and second couplings to each other.

5,305,572

LONG SPAN POST-TENSIONED STEEL/CONCRETE TRUSS AND METHOD OF MAKING SAME

Alfred A. Yee, 1441 Kapiolani Blvd., Honolulu, Hi. 96814

Filed May 31, 1991, Ser. No. 708,712
Int. Cl.[5] E04C 3/10; B28B 5/00
U.S. Cl. 52—223.8 5 Claims



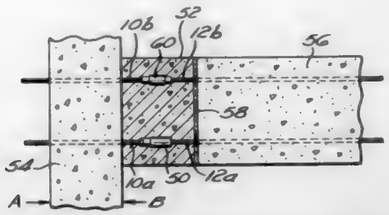
1. A long span post-tensioned light steel/concrete truss encased in concrete comprising an elongated bottom chord, an elongated top chord spaced from the bottom chord, a plurality of vertical and diagonal braces interconnecting the top and bottom chords to form a rigid truss, said chords and braces being constructed of light structural steel and being completely assembled for support at end points, concrete cladding completely encasing said top and bottom chords and including steel reinforcement, said chords providing support for formwork for said concrete when poured, and a plurality of spaced, longitudinal steel tendons embedded in the concrete cladding encasing the bottom chord, said steel tendons being post-tensioned after the concrete has hardened to increase the strength of the bottom chord, and a plurality of spaced, longitudinal steel tendons embedded in the concrete cladding encasing the top chord of the truss and being post-tensioned to increase the strength of the top chord when the truss is supported at end points.

5,305,573

ENERGY DISSIPATING CONNECTOR

Hanns U. Baumann, 312 Emerald Bay, Laguna Beach, Calif. 92651

Filed Jun. 3, 1992, Ser. No. 893,259
Int. Cl.[5] E04C 3/26
U.S. Cl. 52—726.1 12 Claims



1. A joint for coupling first and second structural members together, said joint comprising:

at least one rigid connector attaching at least one first pair of corresponding rebar portions of the first and second structural members together;

at least one energy dissipating connector disposed proximate said rigid connector, attaching at least one second pair of corresponding rebar portions of the first and second structural members together, said energy dissipating connector comprising:

a first attachment member attached to a first rebar portion of the first structural member;

a second attachment member attached to a second rebar portion of the second structural member, said second attachment member frictionally engaging and slidably connectable to said first attachment member such that said second attachment member moves relative to said first attachment member only in response to a force greater than a desired level; and

wherein said energy dissipating connector facilitates rotation of said first structural member relative to said second structural member and dissipates energy tending to cause such rotation.

5,305,574

METHOD FOR ERECTION OF ABSORBER TOWERS USING JACKING SYSTEM

Dennis S. Fedock, Marshallville; Gregory B. Glidden, Copley, both of Ohio; Allyn E. Haase, Greensburg, Pa., and Leon V. Urbain, Petersburg, Ill., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 30, 1991, Ser. No. 784,860
Int. Cl.[5] E04B 1/00
U.S. Cl. 52—741.1 17 Claims

1. A method for erecting an absorber tower, comprising the steps of:

positioning a plurality of trestle means with jack means in a selected arrangement on a floor plate for the absorber tower;

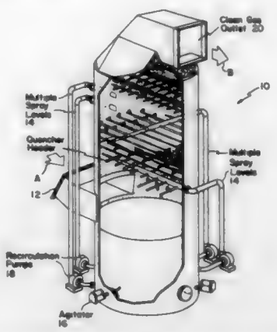
assembling sequentially a plurality of courses from individual shell plates to form an outer wall of the absorber tower, each course being assembled and then elevated after assembly with the jack means engageably moving up the trestle means;

providing a clearance between the elevated course and the next course being assembled to allow access for internal components;

constructing temporary supports inside the absorber tower for facilitating installation of internal components;

installing spray headers and manifolds as internal components through the provided clearance between the elevated course and next course near ground level in predetermined courses of the absorber tower;

fastening adjacent courses together sequentially by joining an elevated course with a just assembled course; and



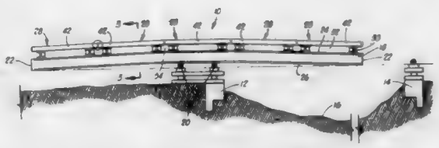
completing the absorber tower with its internal components contained therein by attaching the final course to a floor plate.

5,305,575

COMPOSITE, PRESTRESSED STRUCTURAL MEMBER AND METHOD OF FORMING SAME

Stanley J. Grossman, 1024 Cruce St., Norman, Okla. 73069

Division of Ser. No. 884,418, May 18, 1992, which is a division of Ser. No. 662,467, Feb. 28, 1991, Pat. No. 5,144,710. This application Feb. 8, 1993, Ser. No. 14,852
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[5] E04B 1/00
U.S. Cl. 52—745.2 13 Claims



1. A method of constructing a prestressed structural member comprising the steps of:

positioning a plurality of girders on a construction support adjacent to a center portion of the girders, such that opposite free ends of said girders cantilever away from said construction support and are free to deflect downwardly, said girders extending in a longitudinal direction;

positioning a plurality of composite structural units on upper portions of said girders, each of said composite structural units comprising:

a plurality of transverse beams extending normally with respect to said girders and engaging said upper portions thereof; and

a deck portion engaged with said transverse beams, a transversely extending side of the deck portion of each composite structural unit generally facing a transversely extending side of the deck portion of an adjacent composite structural unit;

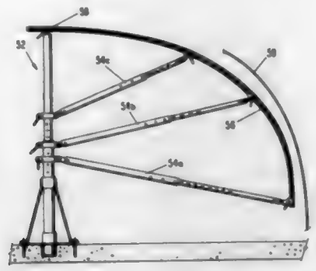
attaching said transverse beams to said girders to form a complete structural member; and

moving said complete structural member to an operating position, wherein said complete structural member is supported adjacent to said opposite ends of said girders, at

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least one of said deck portions being thereby placed in compression in said longitudinal direction.

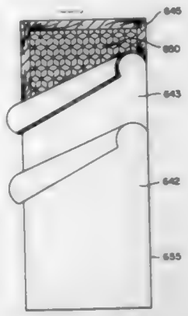
5,305,576
METHOD OF CONSTRUCTING CURVILINEAR STRUCTURES
Brian C. Giles, 98 Main St. #339, Tiburon, Calif. 94920
Filed May 7, 1992, Ser. No. 879,882
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—745.07 **20 Claims**



1. A method of constructing a curvilinear structure comprising the steps of:
preparing a foundation having a plurality of vertical reinforcement elements disposed about its periphery;
providing an armature having a vertical mast positioned at a point on said foundation within said periphery, said armature having a vertically and horizontally pivotable boom terminating in a reinforcement element tying guide member;
pivoting said armature boom so that said tying guide member engages one of said foundation vertical reinforcement elements at a point;
placing a horizontal reinforcement element adjacent said point on said vertical reinforcement element, and securing said horizontal reinforcement element to said vertical reinforcement element proximate said point;
pivoting said armature boom so that said tying guide member engages an adjacent vertical reinforcement element at a point, and securing said horizontal reinforcement element to said adjacent vertical reinforcement element at that point;
repeating such pivoting and securing step to construct a non-planar grid of reinforcement elements;
placing a layer of generally impermeable material over at least a portion of said constructed grid; and
placing an initially liquid but hardening construction material over at least a portion of said generally impermeable material to form a rigid shell.

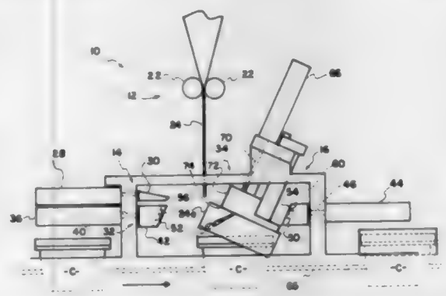
5,305,577
FIRE-RESISTANT STRUCTURE CONTAINING GYPSUM FIBERBOARD
Turner W. Richards, Conyers; Hubert C. Francis, Lithonia, and George F. Fowler, Norcross, all of Ga., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Continuation of Ser. No. 614,622, Nov. 16, 1990, which is a continuation-in-part of Ser. No. 420,362, Oct. 12, 1989, Pat. No. 5,171,366. This application Nov. 10, 1992, Ser. No. 975,900
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[5] E05D *7/00*
U.S. Cl. 52—799 **42 Claims**

1. A fire-resistant structure, suitable for use in fire door applications, said structure having at least a 20 minute ASTM E-152 fire test rating, said structure comprising: a core including a gypsum-containing composition having a density of at least about 60 lbs/ft^3, a flexural strength of at least about 30 lbs (¼ inch thick material), and a screw-holding capacity of at least about 400 lbs, said having a density of at least about 60 lbs/ft^3, a flexural strength of at least about 30 lbs (¼ inch thick material), and a screw-holding capacity of at least about 400 lbs, said composition containing a substantially uniform distribu-



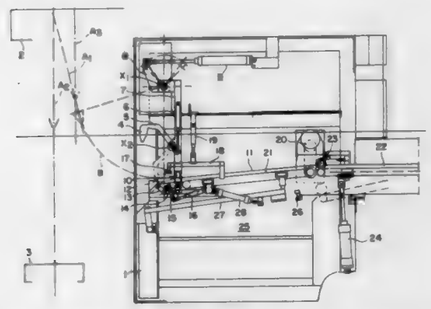
tion of solids including about 65 wt. % to about 90 wt. % set gypsum dihydrate, about 7 wt. % to about 30 wt. % paper fiber, and one or more performance boosters selected from inorganic fiber, clay, vermiculite, and binder polymer.

5,305,578
HEAT-SHRINKABLE BAND APPLICATION MACHINE
Victor V. Menayan, Cary, N.C., assignor to Axon Corporation, Garner, N.C.
Filed Mar. 15, 1993, Ser. No. 31,314
Int. Cl.[5] B65B *9/10*
U.S. Cl. 53—399 **24 Claims**



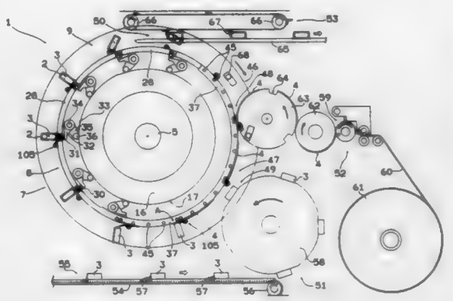
1. A method of applying bands to containers conveyed past a band application machine, comprising:
(a) cutting a band from a supply strip;
(b) gripping opposite sides of the cut band with a gripping mechanism and pulling the opposite sides of the band to an open position;
(c) continuously conveying containers underneath a plunger;
(d) moving the plunger from a retracted position spaced above the open cut band downwardly toward the cut band;
(e) engaging the open cut band with the downwardly moving plunger while the open cut band is disposed about the gripping mechanism;
(f) moving the plunger downwardly past the gripping mechanism to an extended position and pushing the open cut band downwardly onto the top of a moving container passing underneath the plunger;
(g) maintaining the plunger stationary and in the extended position while the moving container and the open band moves beneath the plunger;
(h) pressing the band downwardly onto the moving container by engaging the band with the plunger while the plunger is held stationary and in the extended position such that the stationary plunger acts to press the band onto the container as the container and band move generally horizontally with respect to the stationary plunger; and
(i) moving the plunger from the stationary extended position back to the retracted position.

5,305,579
DEVICE FOR EXPANDING AND SLIPPING ON BAGS
Karl-Wilhelm Kader, Hennef, Fed. Rep. of Germany, assignor to Chronos Richardson GmbH, Hennef, Fed. Rep. of Germany
Filed Dec. 14, 1992, Ser. No. 990,121
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141253
Int. Cl.[5] B65B *43/34, 43/16*
U.S. Cl. 53—459 **19 Claims**



1. In a system for filling bags in which the bags are fed individually onto an aligning table with the bag opening being positioned at the front, the improvement comprising a device for expanding bags and slipping them on to a filling neck, said device comprising:
(a) first suction means which are supported at the aligning table;
(b) second suction means which are supported at the aligning table and disposed opposite said first suction means, said first and second suction means being movable away from one another while being vacuum-loaded so as to open the bag;
(c) a pair of bag grips disposed opposite one another, each comprising a pair of claws which may be opened and closed to grip a portion of the opposing sides of the bag in proximity to the open end of the bag;
(d) first pivot means comprising first pivot arms with said bag grips arranged at their free ends, said first pivot arms being pivotable around a first horizontal axis positioned above the aligning table; and
(e) second pivot means comprising second pivot arms shorter than said first pivot arms and having a pair of expanding blades arranged at their free ends, and pivotable around a second horizontal axis parallel to said first horizontal axis on a radius which is smaller than that of the first pivot arms, said pair of expanding blades being movable into the open end of the bag by rotation of first pivot arms rotating about said first horizontal axis.

5,305,580
METHOD OF PRODUCING TUBULAR WRAPPINGS
Fiorenzo Draghetti, Medicina, Italy, assignor to G.D Societa' Per Azioni, Italy
Continuation of Ser. No. 712,051, Jun. 7, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 947,997
Claims priority, application Italy, Jun. 11, 1990, 3548 A/90
Int. Cl.[5] B65B *49/00, 49/12*
U.S. Cl. 53—465 **4 Claims**



1. A method of producing tubular wrappings (2) about elongated articles (3), comprising the steps of:
a) feeding the articles (3) in succession into end engagement with respective support means (68) and advancing the articles (3) in succession along a path (9) at a first substantially constant speed, with a longitudinal axis (74) of the articles (3) being arranged transversely of a direction of advancement of the support means (68) along the path (9);
b) feeding wrapping portions (4) of wrapping material having a front portion (106) and a back portion (107) in succession along the same path (9) at a second substantially constant speed so that each wrapping portion (4) mates with a corresponding article (3) at a pickup position (A) arranged along the path (9);
c) holding the front portion (106) of each wrapping portion (4) in direct contact with an outer surface of a respective article (3) at the pickup position (A) so that movement of such article (3) results in a corresponding movement of the wrapping portion (4) held thereto;
d) rotating the support means (68) about a longitudinal axis (74) to rotate each article (3) as the article (3) advances along an outlet portion of the path (9) extending downstream from the pickup position (A), and winding the respective wrapping portion (4) about the article (3) in progressive contact with the outer surface thereof and thereby forming a respective tubular wrapping (2) enclosing the article (3) and with the wrapping (2) front and back portions (106, 107) overlapping each other;
e) applying a braking control action to each wrapping portion (4) as it is wound about a respective article (3), said braking control action being applied by frictionally gripping the wrapping portion (4) to exert a drag action thereon; and
f) welding together the overlapping front and back portions (106, 107) of each wrapping portion (4) as the wrapping portion (4) advances at said first speed along the outlet portion of the path (9).

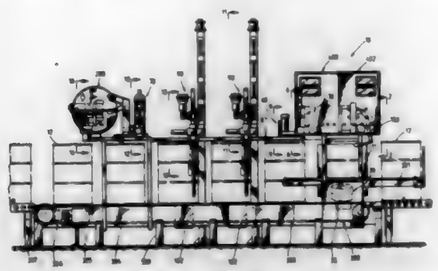
VOL 1161 ISS 4 AP 26 1994 UMI

5,305,581

AUTOMATED CONTAINER FILLING APPARATUS

Robert H. Reeves, Jr., Angleton, and Randal Kretzler, Clute, both of Tex., assignors to Velasco Scale Company, Freeport, Tex.

Filed Feb. 9, 1993, Ser. No. 15,634
Int. Cl.[5] B65B 3/28, 7/28
U.S. Cl. 53—468 18 Claims



1. An automated, fluid filling apparatus for introducing a fluid into a container having a bung opening comprising:

(a) a fluid dispensing assembly for dispensing fluid into said container;

(b) a bung alignment assembly for locating and positioning the bung of said container relative to said fluid dispensing assembly, said bung alignment assembly being functionally interconnected with said fluid dispensing assembly;

(c) a kicker assembly functionally associated with said bung alignment assembly for applying necessary positional adjustments to said container to yield precise alignment of said container relative to said fluid dispensing assembly;

(d) a bung cap handling assembly for removing a bung cap from said bung prior to a fluid dispensing operation and for inserting a bung cap into said bung after the fluid dispensing operation has been completed;

(e) a sealing cap installation assembly for sealing the top of said bung with a sealing cap after filling of said container and insertion of said bung cap into said bung; and

(f) an apparatus control system associated with said assemblies, said apparatus control system comprising means for controlling the interaction of said container and said assemblies to sequentially align said bung, remove said bung cap, dispense fluid, reinsert a bung cap and seal said bung.

5,305,582

METHOD FOR TWO-STAGE PRESSURIZATION OF DISPENSING CONTAINER

Joe L. Abbott, Cumberland, R.I., assignor to Enviro Pak International, Lincoln, R.I.

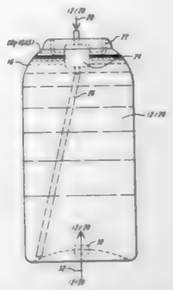
Continuation of Ser. No. 593,854, Oct. 5, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,174
Int. Cl.[5] B65B 31/00
U.S. Cl. 53—470 23 Claims

1. A method for two-stage pressurization of a dispensing container, comprising the steps of:

placing a predetermined amount of product and a first reactant into said dispensing container;

sealing said dispensing container under atmospheric conditions to provide an ambient pressure within said container; and

introducing into said sealed container, under external control, a predetermined amount of a second reactant in solution to cause said first reactant and said second reactant to react to generate a gas for pressurizing the contents



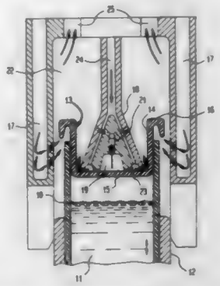
of said container at a desired pressure to dispense said product.

5,305,583

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF A CONTAINER END PORTION DURING MANUFACTURE

Hans Linner, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden

PCT No. PCT/SE91/00124, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/14624, PCT Pub. Date Oct. 3, 1991
PCT Filed Feb. 20, 1991, Ser. No. 916,858
Claims priority, application Sweden, Mar. 26, 1990, 9001086
Int. Cl.[5] B65B 7/28, 51/20, 51/32
U.S. Cl. 53—478 12 Claims



1. A method for manufacturing a container by sealing an end-piece having a transverse wall portion and a peripheral portion to an open end portion of said container, said method comprising the steps of:

introducing said end-piece into said open end portion of said container to an intermediate position such that said end-piece partially projects into said open end portion;

heating said open end portion and said peripheral portion of said end-piece so as to soften said open end portion and said peripheral portion; and

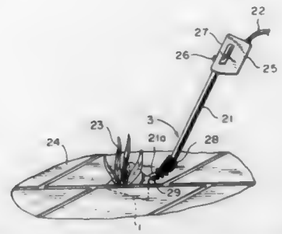
displacing said transverse wall portion of said end-piece to its terminal position relative to said open end portion while simultaneously cooling said transverse wall portion of said container.

5,305,584

MANUALLY OPERATED CUTTING AND DETACHMENT DEVICE

Iradj Hessabi, Breitenkamp 59, D-4811 Oerlinghausen, Fed. Rep. of Germany

PCT No. PCT/EP91/02372, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO92/10091, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 11, 1991, Ser. No. 916,844
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1990, 4039458; Dec. 11, 1990, 4039460
Int. Cl.[5] A01M 21/04
U.S. Cl. 56—1 7 Claims



1. A manually operated cutting and detachment device comprising:

a rod-shaped manual holder,

a heat conductor,

said heat conductor disposed on a heat conductor mount,

said heat conductor mount disposed, with a fist spring interspersed, on a connecting part for compensating the expansion difference of said heat conductor at varying temperature,

said connecting part with said heat conductor mount and said heat conductor disposed thereon being separably and exchangeably engaged to a first end of said rod-shaped manual holder, and

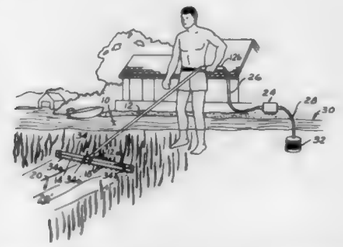
electrical means engaged on a second end of said rod-shapen manual holder for generating electricity for resistance heating of said heat conductor.

5,305,585

SYSTEM FOR UPROOTING AQUATIC PLANTS

Ronald J. Cousineau, 1875 Long Pointe Dr., Bloomfield Hills, Mich. 48302

Continuation-in-part of Ser. No. 740,715, Aug. 6, 1991, Pat. No. 5,152,126. This application Jul. 16, 1992, Ser. No. 915,054
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] A01D 44/00, 7/02
U.S. Cl. 56—8 12 Claims



1. A device for uprooting aquatic plants, wherein the aquatic plants possess roots which provide anchorage therefor into soil located beneath a body of water, said device being provided with a source of pressurized water, said device comprising:

a handle having a forward end and an opposite distal end, said handle being of elongate shape and of hollow construction forming a fluidic conduit from said forward end to said distal end thereof;

means for connecting said distal end of said handle to the source of pressurized water;

a discharge member having a first end and an opposite second end, said discharge member being connected to said forward end of said handle at a location on said discharge member substantially midway between said first and second ends thereof, said discharge member being of elongate shape and of hollow construction forming a fluidic conduit between said first and second ends thereof, said discharge member being oriented substantially perpendicularly with respect to said handle, said fluidic conduit of said discharge member fluidically communicating with said fluidic conduit of said handle, said discharge member having a cylindrical axis; and

a plurality of nozzles connected with said discharge member and arranged in a row parallel to the cylindrical axis between said first and second ends of said discharge member, said plurality of nozzles fluidically communicating with said fluidic conduit of said discharge member;

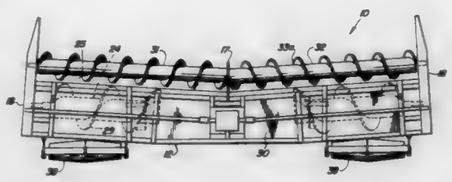
wherein the source of pressurized water provides a flow of pressurized water into said distal end of said handle, through said fluidic conduit of said handle, out said forward end of said handle and into said fluidic conduit of said discharge member, and thereupon into said plurality of nozzles so as to produce a water jet exiting from each nozzle of said plurality of nozzles; said discharge member in combination with said handle having a predetermined amount of weight such that said discharge member is thereby kept adjacent the soil when said water jet exits from each said nozzle; said water jet exiting each said nozzle having a predetermined pressure and water flow rate so as to undermine soil anchorage of the roots of the aquatic plants.

5,305,586

CROP PROCESSOR

E. Cordell Lundahl, Providence, and Laurel H. Jensen, Hyrum, both of Utah, assignors to Lundahl Research, Inc., Logan, Utah

Filed Aug. 20, 1992, Ser. No. 932,601
Int. Cl.[5] A01D 34/53
U.S. Cl. 56—14.4 10 Claims



1. A crop processor comprising:

a support frame coupled to a prime mover, said support frame having the side adjacent the prime mover at right angles to the direction of travel of the processor and ends parallel to the direction of travel of the processor;

a drive system for said processor connected to and powered from said prime mover;

at least two conveyer augers on a common horizontal plane, each including a helical flange thereon, each conveyor auger supported in cantilever fashion on said support frame at opposite ends thereof, each of said conveyor augers being less than half the width of the processor, the conveyor augers being canted at an angle to the direction of travel of the crop processor;

conveyor auger housings cooperating with said conveyor augers to move the material;

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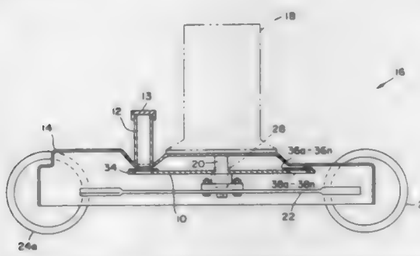
at least two cutting augers on a common horizontal plane;
support means for each of said cutting augers at the ends and at the center of the processor;
each of said cutting augers having a helical flange there around with the flange from the outside turned in the same direction as the conveyor flange for at least a portion of the length of the conveyor auger and a continuation reversely turned flange for the remaining length of the cutting auger to the center of the processor;
said cutting augers mounted and canted at substantially the same angle to the direction of travel as said conveyor augers; each of said flanges including a plurality of means for mounting cutting teeth thereon;
a plurality of cutting teeth;
a front cover means pivotally attached to said support means;
a rear cover means;
a baffle means attached to and extending from said conveyor auger housing enlarging the volume for conveying the cut crop;
a center discharge area to discharge cut crop to the rear of said processor;
means for selecting and maintaining the height of the cutting augers above the ground, including a pair of shoes;
whereby the crop is cut by the cutting augers and fed by the conveying augers to the center area for discharge.

5,305,587

SHREDDING DISK FOR A LAWN MOWER

Stephen C. Johnson, 815 Crystal Spring Rd., Grand Rapids, Minn. 55744

Filed Feb. 25, 1993, Ser. No. 22,106
Int. Cl.[5] A01D *34/63*; B02C *18/10*
U.S. Cl. 56—16.9 **7 Claims**



1. In combination, a shredding disk and a lawn mower comprising:
a. a lawn mower with a shaft;
b. top loading tube with a cap; and,
c. a rotating shredding disk plate having shredding knives mounted on its top surface and having alternating large holes and small holes therethrough for passing shredded materials to below the disk plate.

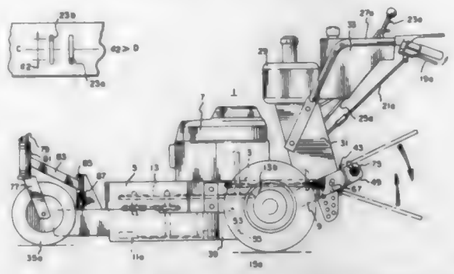
5,305,588

LAWN MOWER WITH SAFETY MEANS

Kazuhiro Minato, Dublin, and Kazunobu Sato, Columbus, both of Ohio, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 819,240, Jan. 13, 1992, Pat. No. 5,251,429. This application Jan. 8, 1993, Ser. No. 2,459
Int. Cl.[5] A01D *34/68, 75/20*
U.S. Cl. 56—10.2 **3 Claims**

1. A lawn mower comprising:
(a) a frame means;
(b) an engine mounted on said frame means;
(c) cutting deck means mounted on said frame means;
(d) front wheels mounted on said cutting deck means;
(e) rear wheel means coupled to said frame means, said rear wheel means including first and second rear drive wheels;
(f) first and second rear wheel driving pump means, mounted on said frame means for respectively driving said first and second rear drive wheels;
(g) first and second hand control means for controlling the operation of said respective first and second rear wheel driving pump means;



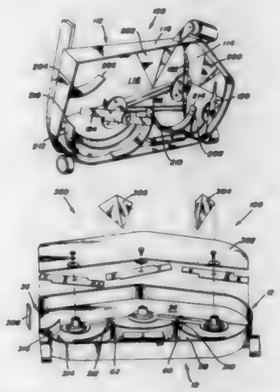
(h) first and second linkage means respectively linking said first and second hand control means and said first and second rear wheel driving pump means; and
(i) safety means having a first portion mounted to said first linkage means, and a second portion mounted on said second linkage means, said safety means stopping said engine when said first and second linkage means are separated by more than a predetermined amount.

5,305,589

MULCHING DECK

Carlos Rodriguez, Ft. Myers, Fla.; C. Robert Christy, 15421 River By Rd., and Felipe Rodriguez, 4619 New Haven Dr., both of, Ft. Myers, Fla. 33908, assignors to C. Robert Christy and Felipe Rodriguez, Ft. Myers, Fla.

Filed May 26, 1992, Ser. No. 891,957
Int. Cl.[5] A01D *34/66, 34/73, 34/82*
U.S. Cl. 56—320.1 **33 Claims**



13. A mulching deck for cutting and mulching grass, comprising:
(a) a housing;
(b) a plurality of rotary cutting blades in said housing for cutting said grass into clippings;
(c) means for driving at least some of said rotary cutting blades; and
(d) a plurality of stationary cutting blades in said housing for further cutting said clippings, wherein said plurality of stationary cutting blades includes a stationary cutting blade fixed to said housing downstream of the most downstream of said rotary cutting blades.

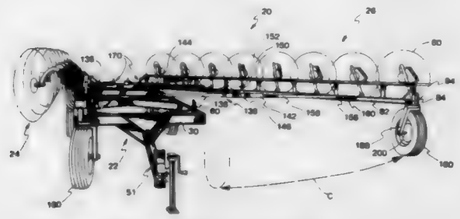
21. A kit for converting a conventional multi-bladed mowing deck into a multi-bladed mulching deck, said mowing deck comprising a housing and a plurality of rotary cutting blades within said housing, said housing including a plurality of wall portions partially surrounding said rotary cutting blades, a tunnel, and a discharge chute, said kit comprising:
(a) first plate means adapted to cover said tunnel;
(b) second plate means adapted to close said discharge chute; and
(c) stationary cutting blade means adapted to be affixed to said housing for further cutting grass confined to said housing.

5,305,590

WHEEL RAKE

Kenneth J. Peeters, Bear Creek, Wis., assignor to H & S Manufacturing Co., Inc., Marshfield, Wis.

Continuation-in-part of Ser. No. 679,723, Apr. 3, 1991, abandoned. This application Jul. 23, 1992, Ser. No. 919,029
Int. Cl.[5] A01D *57/12, 67/00, 78/14*
U.S. Cl. 56—377 **9 Claims**



4. An agriculture implement comprising:
a primary frame having a front end, a rear end and opposed sides;
a secondary frame operably supporting a bank of ground driven wheel rakes shiftable between an extended position and a folded, transport position;
joint means for operably, pivotally coupling said secondary frame to said primary frame;
said secondary frame comprising an elongated beam for supporting said wheel rakes, said beam having a proximal end operably coupled to said primary support frame rear end by said joint means and an opposed, distal end engageable with said primary frame front end, and further including upwardly tending ramp means operably carried by said primary support frame front end engageable with said secondary frame distal end when said secondary frame is being folded to said transport position for elevating said distal end of said secondary frame when said secondary frame is in the folded, transport position.

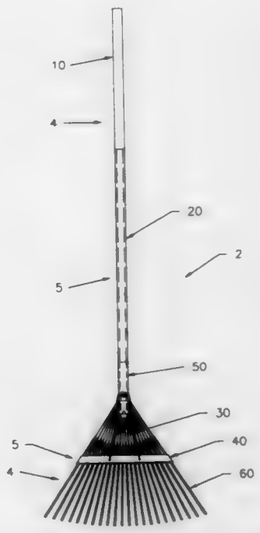
5,305,591

RAKING IMPLEMENT WITH INTEGRAL TINE CLEANER

Herbert M. Gibson, Jr., 565 E. Indiana Ave., Southern Pines, N.C. 28387

Filed Aug. 10, 1992, Ser. No. 926,396
Int. Cl.[5] A01D *7/04*
U.S. Cl. 56—400.1 **10 Claims**

1. An implement for raking comprising:
a. a raking apparatus for gathering debris comprising:
1) an elongated handle which allows the longitudinal movement of a cleaning apparatus along and about a distal section of said handle, a distal end of said handle being inserted into;
2) a formed elongated socket of a rake head and secured by a fastener which holds a bumper against which a bottom distal end of an elongated hollow actuator comes to rest, said rake head binding;
3) a plurality of downward diverging tines at their proximal ends, said tines being oriented in parallel planes, perpendicular to a rake top and being twisted 90 degrees about their longitudinal axes at a point equidistant from the rake head for each tine, before extending coplanar and passing through a plurality of slots in a cleaning bar, thence arcing downward to terminate in a common plane, said tines being of such length as to each terminate between a distal top and bottom edge of said cleaning bar when said cleaning bar is fully distally extended;
4) said raking apparatus supporting said cleaning apparatus:
b. said cleaning apparatus for removing debris lodged in the tines of said raking apparatus and comprising
1) the elongated hollow actuator, with a bottom distal portion removed to allow said actuator to be slid freely along the distal section of the handle and over the rake



head, said actuator being attached at a top distal end of said actuator to;
2) a proximal end of a spring, a distal end of said spring being attached to and applying tension downward along;
3) a cleaning bar, also acting as a stress distributor and tine spreader which transverses and through which pass the downward diverging tines, said cleaning bar being of inverted V shape cross section with said plurality of slots arranged end to end along an apex to admit the individual tines and with the distal top and bottom edge diverging from each other, said top and bottom edge for removing accumulated debris which becomes lodged in the tines, as said cleaning bar is moved freely down the length to the end of said tines as the actuator is moved toward a distal end of the raking apparatus;
4) said cleaning apparatus being stopped in its travel toward the distal end of the raking apparatus by contact of the actuator bottom distal end with said bumper;
5) and upon its return travel by contact with a stop integral with the raking apparatus.

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5,305,592

GRAB-CLEARING SYSTEM FOR TUBE-CHANGING APPARATUS

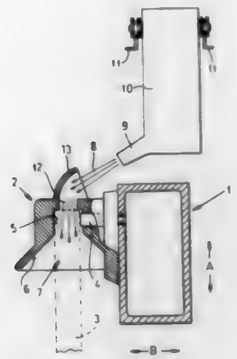
Günter Schulz, Ebersbach/Fils, and Gerd Stölzner, Urbach, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 878,152

Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115772

Int. Cl.[5] D01H *5/66, 3/16*

U.S. Cl. 57—304 **9 Claims**



1. In a spinning machine wherein a row of grabs having seat cavities are adapted to engage over tubes in respective spinning stations to remove the tubes from and insert the tubes into the respective stations, a cleaning apparatus comprising:

at least one nozzle directed into the seat cavities of the grabs; and

means for supplying air under pressure to the nozzle and thereby forming at the nozzle a jet that is directed into and that blows lint from the seat cavity into which the nozzle is directed.

5,305,593

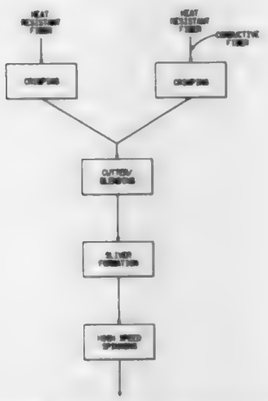
PROCESS FOR MAKING SPUN YARN

David J. Rodini, Midlothian, Va., and Donald E. Hoffman, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 31, 1992, Ser. No. 937,037

Int. Cl.[5] D01H *1/115*

U.S. Cl. 57—328 **13 Claims**



1. A process for making spun yarn from a blend of staple fibers formed from a plurality of first, second and third component filaments, wherein the first component is comprised of staple fibers having an electrically conductive carbon black core and a sheath of a non-conductive polymer and the second and third components are comprised of heat-resistant staple fibers, such process including the steps of:

combining the fibers

cutter blending the combined fibers to form an intimate three-component blend of staple fibers

forming the blend of staple fibers into a sliver, and spinning the sliver into a spun yarn using spinning techniques wherein a fluid is used to twist the fibers, the improvement wherein the denier per filament of the first component filaments is no greater than about 2.5 times the denier per filament of the second and third component filaments and wherein the sliver is spun at speeds in excess of 70 meters per minute.

5,305,594

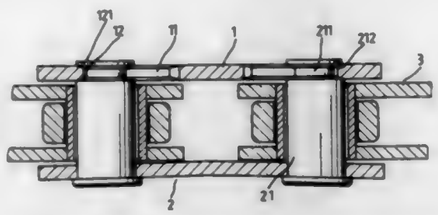
CHAIN STRUCTURE

Wen B. Wang, Tainan Hsien, Taiwan, assignor to Yaban Chain Ind'l Co., Ltd., Tainan Hsien, Taiwan

Filed Jul. 12, 1993, Ser. No. 89,564

Int. Cl.[5] F16G *13/06*

U.S. Cl. 59—85 **4 Claims**



1. A chain having pairs of consecutively spaced apart sets of chain links comprising:

(a) a base plate member having a pair of cylinder members extending through and rotatably coupled to a pair of said consecutively spaced apart chain links, each of said pair of cylinder members being coupled to said base plate member at a lower section thereof and having an annular groove formed in an upper section thereof forming a pair of opposing cylinder groove walls, at least one of said cylinder groove walls being inclined; and,

(b) a connecting plate member rotatably coupled to said cylinder members having a pair of elliptically contoured through openings formed therethrough, each of said elliptically contoured through openings having an inner end section and an opposing outer end section, said inner end section having an inner radius greater than an outer end section radius, each of said elliptically contoured openings defining an elliptical wall member having opposing upper and lower wall surfaces for mating engagement with said opposing groove walls of a respective cylinder member, at least one of said upper and lower wall surfaces being inclined for mating engagement with a respective inclined cylinder groove wall.

5,305,595

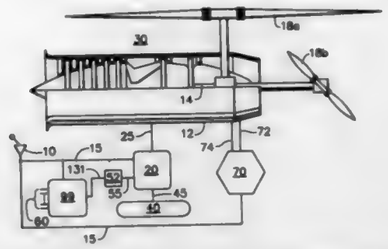
SUPERVISORY CONTROL METHOD

Joseph J. Curran, Weymouth, Mass., and Martha J. Nagy, Merrimack, N.H., assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 748,610, Aug. 22, 1991, Pat. No. 5,231,823. This application Dec. 28, 1992, Ser. No. 997,972

Int. Cl.[5] F02C *9/28*

U.S. Cl. 60—39.03 **2 Claims**



1. A method of limiting the demanded acceleration of a gas turbine engine including a DEC, and an HMU, wherein the HMU includes a collective pitch input, the method comprising the steps of:

generating a first signal representative of the acceleration demanded by the DEC;

generating a second signal representative of the acceleration demanded by the collective pitch input;

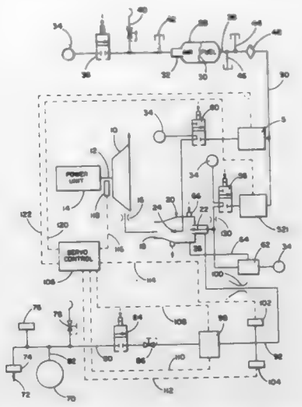
adding the first and second signal to form a third signal representative of the total demanded acceleration;

generating a fourth signal representative of the maximum allowable demanded acceleration;

subtracting the third signal from the fourth signal to obtain an error signal, and

limiting the DEC output signal if the error signal is negative.

start said turbine, said restriction being sized so as to substantially isolate the rate of fuel flowing through said fuel flow line



from the effects of sudden pressure increase in said combustor associated with ignition therein.

5,305,597

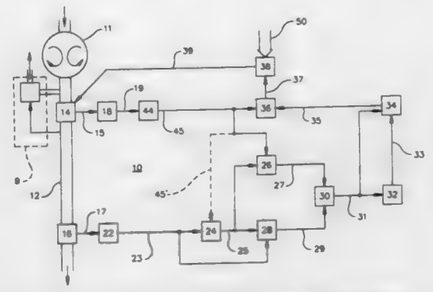
GAS TURBINE FUEL CONTROL

Barton H. Snow, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 666,315, Mar. 8, 1991, Pat. No. 5,259,186. This application Jun. 16, 1993, Ser. No. 78,708

Int. Cl.[5] F02C *9/28*

U.S. Cl. 60—39.281 **2 Claims**



1. A fuel control for a gas turbine engine comprising:

a) a metering valve having a variable flow area;

b) means for measuring said flow area of said metering valve which is adapted to produce a first signal directly related to said flow area;

c) means for measuring a mass flow of fuel through said metering valve which is adapted to produce a second signal directly related to said mass flow;

d) means for determining that said second signal conforms to a specified accuracy criteria which is adapted to produce a third signal that indicates that said second signal conforms to said accuracy criteria;

e) means for simultaneously storing said first and said second signals when said third signal indicates that said second signal conforms to said accuracy criteria;

f) means for producing a fourth signal that relates the quotient of said stored first signal and said stored second signal;

g) means for storing said fourth signal when said fourth signal is within a predetermined authority range;

5,305,596

METHOD FOR PREVENTING LEAN FLAEOUT AT IGNITION OF A STORED ENERGY SYSTEM FOR DRIVING A TURBINE WHEEL

Steven Lampe; Timothy David, and Jack R. Shekleton, all of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 643,349, Jan. 22, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,360

Int. Cl.[5] F02C *3/00*

U.S. Cl. 60—39.06 **2 Claims**

1. A method of preventing lean flameout as a result of ignition in the combustor of a turbine including a combustor having an air blast atomization fuel injector, a fuel flow line connected to said injector and a ΔP valve connected to said fuel flow line for controlling the flow of fuel to the injector through said fuel flow line, comprising the steps of providing a fuel flow restriction in said fuel flow line between said ΔP valve and said injector, thereafter initiating the flow of fuel to said combustor and igniting said fuel within said combustor to

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h) means for producing a fifth signal that is equivalent to the product of said first signal and said stored fourth signal;

i) an electronic control that positions said metering valve as a function of said fifth signal.

5,305,598

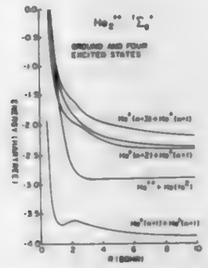
ENERGY GENERATED FROM VOLCANIC GROUNDSTATES

Cleanthes A. Nicolaides, 18 Agras Street, Athens, Greece 11635

Continuation of Ser. No. 369,288, Jun. 21, 1989, abandoned. This application Oct. 22, 1991, Ser. No. 780,414

Int. Cl.[5] C06B *47/00*; C06D *5/00*

U.S. Cl. 60—205 **12 Claims**



1. A method of providing a high specific impulse propellant comprising:

cryogenically forming and storing a material having a volcanic ground state; and

supplying activation energy to the material in a reaction chamber ,whereby said material forms reaction products, providing said high specific impulse (Isp).

3. A cryogenic propellant having a metastable ground state, an I_{sp} of greater level than 1000 sec. and a lifetime for its lowest rotation-vibration level greater than a few seconds.

5,305,599

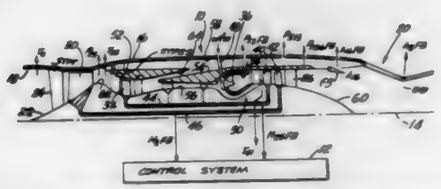
PRESSURE-RATIO CONTROL OF GAS TURBINE ENGINE

Ira E. Marvin, Russell Springs, Ky., assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 10, 1991, Ser. No. 683,162

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.3 **12 Claims**



1. A control for a gas turbine engine, the gas turbine engine comprising:

a core engine having a turbine means, a combustion chamber, and an exhaust plenum disposed at an end of said turbine means opposite said combustion chamber, said exhaust plenum receiving exhaust gas expelled from a combustion chamber via the turbine means;

compressor means driven by said turbine means for directing air into said combustion chamber, said compressor means including a low-pressure compressor and a high-pressure compressor;

a bypass duct extending from an outlet of said low-pressure compressor to said exhaust plenum; and wherein said control comprises:

entraining means connected to a downstream end of said exhaust plenum for entraining bypass air of said bypass duct with gas expelled from said combustion chamber, the entraining means being adjustable for varying a flow of the bypass air, said bypass duct serving as a first conduit of air past said core engine, there being a second conduit of air in said compressor means for conducting air from the outlet of said low-pressure compressor to an inlet of said highpressure compressor; and

adjustment means responsive to a ratio of pressure in one of said conduits to pressure in said exhaust plenum for adjusting said entraining means for controlling flows of the bypass air and exhaust gas.

5,305,600

PROPULSION ENGINE

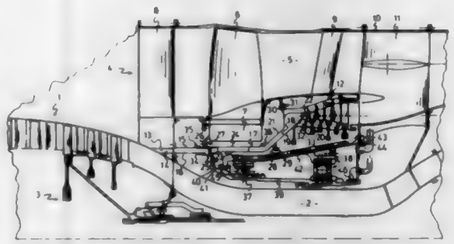
Pascal Brossier, Lieusaint; Marc G. Loubet, Cesson; Georges Mazeaud, Yerres, and Claudine L. M. Planquet, Vert Saint Denis, all of France, assignors to Societe Nationale d'Etude et de Construction de Motors d'Aviation "SNECMA", Paris, France

Filed Mar. 3, 1993, Ser. No. 25,780

Claims priority, application France, Mar. 4, 1992, 92 02580

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.3 **7 Claims**



1. A propulsion engine of the turbojet type having a gas ejection assembly comprising

a primary unit including at least one compressor and a primary duct leading from the downstream end of said at least one compressor and forming part of the primary air flow path through said engine in a flow direction towards the gas ejection assembly,

a secondary unit coaxially surrounding said primary unit and including an annular noncombusted air flow duct and a fan rotor, said fan rotor having at least one stage of compression rotor blades disposed in said noncombusted air flow duct,

a rotary body which carries said fan rotor,

support bearings mounting said rotary body so as to surround said primary duct,

a multi-stage external turbine having a fixed stator assembly and a rotor assembly connected to said rotary body such that said fan rotor is driven by the flow of noncombusted air through said external turbine, and

an axisymmetrical auxiliary duct communicating with said primary duct near the downstream end of said at least one compressor and leading to said external turbine such that noncombusted air directed from said primary duct continuously flows through said auxiliary duct in the flow direction towards the gas ejection assembly.

5,305,601

SOLID FUEL ROCKET MOTOR ASSEMBLY, AND METHOD OF MAKING THE SAME

Kieran F. Drain, Rochester Hills, Mich.; Larry A. Nativi, Rocky Hill, and Richard T. Thompson, Haddam, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Division of Ser. No. 651,078, Feb. 6, 1991, which is a continuation of Ser. No. 398,028, Aug. 24, 1989, abandoned, which is a division of Ser. No. 109,675, Oct. 16, 1987, Pat. No. 4,892,764, which is a continuation-in-part of Ser. No. 882,670, Jul. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 801,984, Nov. 26, 1985, abandoned. This application Aug. 12, 1992, Ser. No. 929,651

Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—255 **11 Claims**

1. A solid fuel rocket motor precursor article, comprising a solid fuel body in a filament-wound fiber-resin composite casing, said casing being formed by filament winding on said solid fuel body of a continuous filament impregnated with a resin composition comprising an actinic radiation-curable first resin component and an ambient temperature curable second resin component, wherein the actinic radiation-curable component is present in an immobilizingly effective amount for said composition prior to ambient temperature curing of the second resin component, and wherein said resin composition has been subjected to actinic radiation curingly effective for the first resin component and is ambient temperature curable in respect of the second resin component.

5,305,602

DEVICE FOR CATCHING AND REMOVING PARTICULATES FOR A DIESEL ENGINE

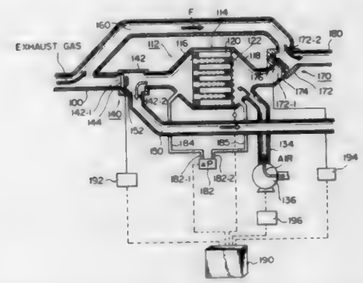
Akikazu Kojima, Gamagori; Shinji Miyoshi, and Mitsuo Inagaki, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 6, 1992, Ser. No. 924,882

Claims priority, application Japan, Aug. 9, 1991, 3-200482

Int. Cl.[5] F01N *3/10*

U.S. Cl. 60—286 **7 Claims**



1. A device for removing particulates in an exhaust gas in a diesel engine, said device comprising;

a filter adapted to be disposed in an exhaust line for receiving said exhaust gas from said diesel engine and trapping said particulates included in said exhaust gas;

heating means arranged adjacent to said filter for generating heat in said filter;

means for supplying air into aid filter for incinerating said particulates; and

means for controlling an amount of air flow for obtaining a desired incineration performance of said particulates trapped in said filter;

wherein said air flow amount controlling means includes means for detection of a number of repetitions of an incineration process, and means for varying said air flow amount in accordance with said number of the repetitions of said incineration process.

5,305,603

EXHAUST GAS DUCT FOR A ROW OF CYLINDERS OF AN INTERNAL COMBUSTION ENGINE

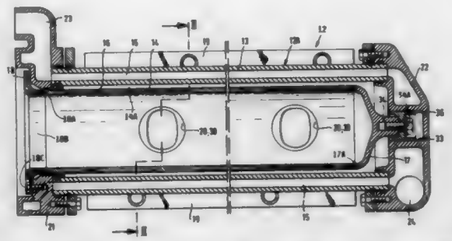
Hermann Baumann, Tettnang, Fed. Rep. of Germany, assignor to Mtu Motoren- Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 22, 1993, Ser. No. 21,166

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206249

Int. Cl.[5] F01N *7/10*

U.S. Cl. 60—321 **13 Claims**



1. An exhaust gas duct for a row of cylinders of an internal combustion engine, comprising a single piece exhaust gas pipe section for extending alongside said row of cylinders, said exhaust pipe section having a first open end and a second closed end, a cooling housing wherein said exhaust gas pipe section is mounted, an insulating gap between said cooling housing and said pipe section, said cooling housing comprising an elongated housing section and first and second housing end sections for closing said elongated housing section, cooling liquid flow channels (15) in said cooling housing, exhaust gas flow passages (20) through said exhaust gas pipe section and through said cooling housing, said exhaust gas pipe section being self-supporting between its ends for mounting said ends of said exhaust gas pipe section in said housing end sections, whereby said exhaust gas pipe section is unsupported between its ends along said insulating gap, first means for mounting said first end of said exhaust gas pipe section in said first housing end section, and second means for mounting said second end of said exhaust gas pipe section in said second housing end section, at least one of said first and second mounting means permitting an axial displacement of said exhaust gas pipe section relative to said cooling housing in response to thermal expansions and contractions of said exhaust gas pipe section.

5,305,604

CONTROL VALVE FOR BOOTSTRAP HYDRAULIC SYSTEMS

Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 743,243, Aug. 9, 1991, which is a continuation-in-part of Ser. No. 698,601, May 10, 1991. This application Oct. 7, 1991, Ser. No. 774,055

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—450 **16 Claims**

1. A method of providing tactile feedback for a power steering system in response to rotational inputs applied to a steering wheel, said method comprising the steps of:

providing a source of hydraulic fluid including pressure regulating means fur regulating the pressure of said hydraulic fluid as a function of a load pressure;

providing means for receiving said rotational inputs, said receiving means including an open-center control valve having first and second resiliently coupled valve members;

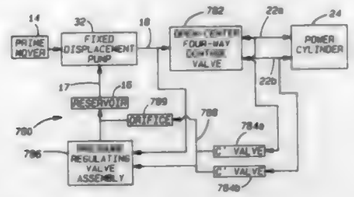
supplying said hydraulic fluid to an inlet port of said open-centered control valve;

providing fluid communication between first and second

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output ports of said open-center control valve and first and second ports of a power output transducer, respectively;

controlling the differential output pressure applied to said first and second ports of said power output transducer and the differential fluid flow therebetween in response to said rotational inputs, said differential output pressure defining said load pressure;



selecting the higher valued fluid pressure at one of said first and second output ports;

coupling the higher valued fluid pressure to said pressure regulating means; and

generating said tactile feedback as a function of both of said differential output pressure and said differential fluid flow.

5,305,605

HYDRAULIC PISTON AND CYLINDER UNIT

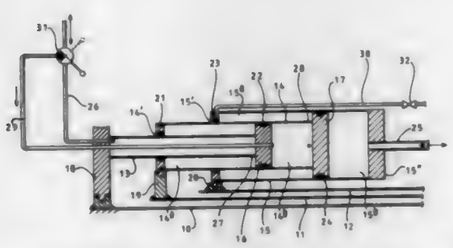
Sergio Cella, Brescia, Italy, assignor to Simon Cella S.r.l., Italy

Filed Dec. 29, 1992, Ser. No. 997,902

Claims priority, application Italy, Jan. 14, 1992, BS92 A 000003

Int. Cl.[5] F15B *7/00, 11/18;* **F01B** *7/20*

U.S. Cl. 60—546 **10 Claims**



1. An hydraulic piston and cylinder unit comprising:

a piston rod having first and second ends;

a first cylinder having first and second ends;

a second cylinder having first and second ends;

the piston rod extending into the first cylinder through the first end of the first cylinder and being slidable relative thereto and the first cylinder extending into the second cylinder through the first end of the second cylinder and being slidable relative thereto;

a first piston connected to the second end of the piston rod and slidable within the first cylinder, the first piston dividing the first cylinder into a first chamber adjacent to its first end and a second chamber adjacent to its second end;

a second piston connected to the second end of the first cylinder and slidable within the second cylinder, the second piston dividing the second cylinder into a first chamber adjacent to its first end and a second chamber adjacent to its second end;

the second chamber of the first cylinder and the first chamber of the second cylinder being in closed fluid communication with each other so that extension of the second cylinder relative to the first cylinder causes extension of the first cylinder relative to the piston rod;

a fluid supply system for connecting and supplying an incompressible fluid to said second chamber of said first cylinder and thereby to said first chamber of said second cylinder, and including a purging system connected to said first chamber of the second cylinder for filling said chambers in said closed communication with said imcompressible fluid and compensating for fluid losses therein.

5,305,606

ACTUATING UNIT FOR HYDRAULIC BRAKE SYSTEMS

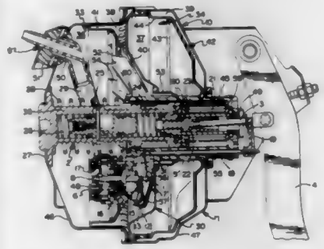
Juergen Schonlau, Walluf, and Holger von Hayn, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Fed. Rep. of Germany

Filed Aug. 6, 1992, Ser. No. 926,246

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127001

Int. Cl.[5] B60T *13/00*

U.S. Cl. 60—547.1 **30 Claims**





1. An actuating unit for hydraulic brake systems having a master brake cylinder and pneumatic brake power booster connected upstream thereof in terms of effect, a control valve actuatable by means of an actuating member, said brake booster comprising at least one movable wall which is operatively coupled to a control housing, and is adapted to be acted upon by a pneumatic differential pressure, said movable wall subdivides said power booster into at least one vacuum chamber and at least one working chamber ventilatable by actuation of the control valve, the control valve is operable opposite to the actuating direction of the actuating member by means of a lever mechanism that actively pulls said control valve with variable transmission which is ineffectual after a predefined actuating stroke of the master brake cylinder;

wherein the control housing is furnished with axial guide webs.

24. An actuating unit for hydraulic brake systems, said actuating unit comprising:

a pneumatic brake power booster and actuating means for actuating said power booster, said brake power booster having a control housing and a master cylinder, at least one movable wall interconnected to said control housing, said movable wall being responsive to pneumatic differential pressure and subdividing said booster housing into at least one vacuum chamber and at least one working chamber;

a control valve means for actuating said control valve, said control valve when actuated being adapted to vent said working chamber creating a pressure differential between said vacuum chamber and said working chamber, said control valve being actuated for a predefined period during the actuating stroke of said master brake cylinder, with said control housing traveling a distance greater than said actuating means during said predetermined period,

wherein said means for actuating said control valve includes a lever mechanism having a first lever operatively coupled to said actuating means and a second lever supported on the control housing rotatable within predefined limits, said first lever being supported on said second lever.

5,305,607

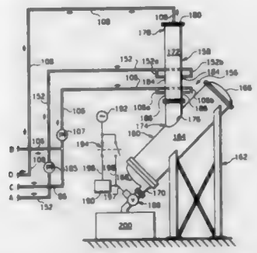
GEOTHERMAL POWER PLANT SCALE SEPARATION METHOD AND APPARATUS

Enos A. Bonham, Jr., Houston, Tex., assignor to Magma Power Company, San Diego, Calif.

Filed Sep. 16, 1992, Ser. No. 945,381

Int. Cl.[5] F01K *27/00;* **F03G** *7/00*

U.S. Cl. 60—641.5 **27 Claims**



1. In a geothermal electrical power generating plant of the type employing flash crystallizer means and reactor clarifier means for processing a large quantity of particulate silica that precipitates out of a geothermal brine stream as thermal energy is extracted from it during power production, a method of separating scale particles which have broken loose into the brine stream from the silica particles, which comprises:

generally continuously diverting a portion of the sludge underflow output of said clarifier means into decanter means, said underflow having particulate solids suspended therein consisting primarily of silica seed particles and also including scale particles;

establishing a liquid slurry medium within said decanter means that includes said underflow portion and which has a sufficiently low viscosity to enable generally free settling movement of said silica and scale particles suspended in said liquid slurry medium; and

establishing a continuous upward flow of said liquid slurry medium in said decanter means having an upward velocity that is substantially greater than the terminal settling velocity of said silica particles but substantially less than the terminal settling velocity of said scale particles, whereby most of said silica particles will rise upwardly in said decanter means to an upper silica slurry removal location, and most of said scale particles will settle downwardly in said decanter means to a lower scale collection location.

16. In a geothermal electrical power generating plant of the type employing flash crystallizer means and reactor clarifier means for processing a large quantity of particulate silica that precipitates out of a geothermal brine stream as thermal energy is extracted from it during power production, apparatus for separating scale particles which have broken loose into the brine stream from the silica particles, which comprises:

elongated tubular decanter means having its tubular axis generally vertically oriented, and having upper and lower end portions;

substantially closed scale collector vessel means located generally below said decanter means and operatively connected to said lower end portion of said decanter means for fluid communication with said decanter means, said collector vessel means having a scale collection location in the bottom thereof;

first fluid conduit means from underflow means of said clarifier means to said decanter means for generally continuously diverting a portion of the underflow from said underflow means, said underflow portion having particulate solids suspended therein consisting primarily of silica seed particles and also including scale particles;

a source of dilution liquid in said plant, and second fluid conduit means from such source to said decanter means for generally continuously diluting said underflow portion to provide a liquid slurry medium in said decanter means which has a sufficiently low viscosity to enable generally free settling movement of said silica and scale particles; and

slurry removal port means in said upper end portion of said decanter means for generally continuous removal of said liquid slurry medium from said decanter means, which establishes a continuous upward flow of said liquid slurry medium in said decanter means that has an upward velocity that is substantially greater than the terminal settling velocity of said silica particles but substantially less than the terminal settling velocity of said scale particles, whereby most of said silica particles will rise upwardly in said decanter means and out through said slurry removal port means, and most of said scale particles will settle downwardly in said decanter means into said scale collector vessel means and downwardly therein to said scale collection location.

5,305,608

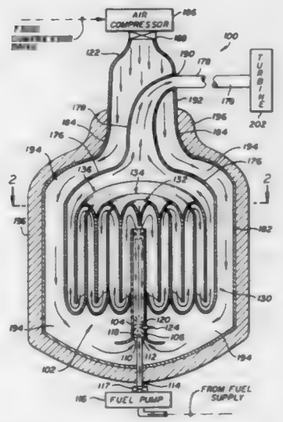
LIQUID FUEL POWER PLANT AND METHOD

Ronald E. Loving, Simi Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 15, 1992, Ser. No. 961,302

Int. Cl.[5] F02C *1/00*

U.S. Cl. 60—722 **10 Claims**



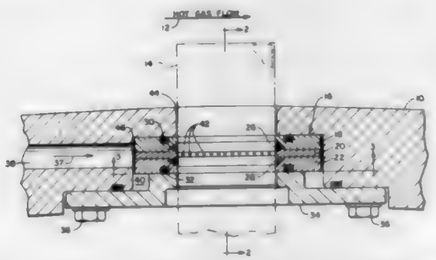
1. A liquid fuel power plant comprising:

a elongated cylindrical center combustion chamber having a first end and a second end, said first end receiving combustible liquid fuel and an oxidizer, said second end having an outlet for exhausting hot pressurized gases from said elongated cylindrical center combustion chamber, said elongated cylindrical center combustion chamber having an ignition region in which the fuel and the oxidizer are ignited and having means for igniting said fuel in said ignition region, the fuel being ignited in said ignition

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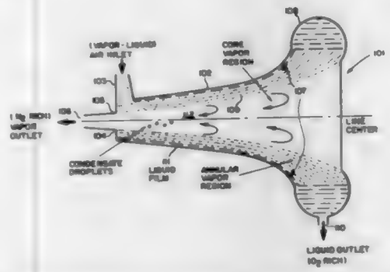
region to produce hot pressurized gases in said elongated cylindrical center combustion chamber;
means for delivering said combustible liquid fuel to said ignition region;
means for delivering said oxidizer to said ignition region;
a plurality of concentric annular chambers including at least two inner annular concentric chamber including
a first annular chamber having an inlet and an outlet, a portion of the length said elongated cylindrical center combustion chamber disposed in the central opening of said first annular shaped chamber with the outlet of the central annular chamber being in communication with the inlet of said first annular chamber to allow said hot pressurized gases to flow into said first annular chamber; and
a second annular chamber having an inlet and an outlet, said first annular chamber disposed in the central opening of the second annular chamber with the outlet of said first annular chamber being in communication with the inlet of said second annular chamber to allow said hot pressurized gasses to flow into said second annular chamber; and
an outer most annular chamber having an inlet and an outlet, said outermost annular chamber having the inner annular chambers disposed in its central opening with the outlet of the adjacent inner annular chamber being in communication with the inlet of said outer most annular chamber,
said plurality of concentric annular chambers providing a reaction region for further combustion of said hot pressurized gases received from said elongated cylindrical combustion chamber, said further combusted hot pressurized gases being exhausted at the outlet of said outer most annular chamber.

5,305,609
SEAL ASSEMBLY
Daniel P. Gainan, Hobe Sound, Fla., and Donald R. Miehe, Waterloo, Iowa, assignors to United Technologies Corporation, Hartford, Conn.
Filed May 14, 1993, Ser. No. 61,783
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—740 **6 Claims**



1. A fuel injector arrangement for injecting fuel into a high temperature supersonic gas flow bounded by a wall, having an inner and outer side comprising:
an elongated fuel injector extending through and substantially perpendicular to said wall;
a seal carrier comprised of an inner plate, a central plate and an outer plate, said plates having inner faces and outer faces and edges and being parallel to each other and to said wall, and surrounding said injector;
joining means for compressively joining said plates;
an inner wedge seal between the edge of said inner and central plates adjacent said injector and in contact with said injector;
a outer wedge seal between the edges of said outer and central plates adjacent said injector and in contact with said injector;
said seal carrier countersunk in said wall from the outerside thereof;
an inner face seal located on the inner face of said inner plate surrounding but spaced from said injector;
an outer face seal located on said outer face of said outer plate surrounding but spaced from said injector;
a cover plate sealingly secured to said wall and compressing said seal carrier inner and outer face seals; and
a coolant flow path through said wall and into a plenum surrounding said seal carrier outside said face seals.

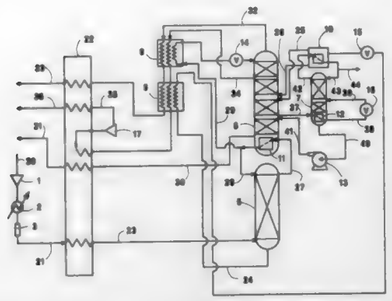
5,305,610
PROCESS AND APPARATUS FOR PRODUCING NITROGEN AND OXYGEN
Douglas L. Bennett, Allentown; Keith A. Ludwig, Emmaus, and Robert F. Weimer, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 28, 1990, Ser. No. 573,922
Int. Cl.[5] F25B *9/02*
U.S. Cl. 62—5 **18 Claims**



1. A process for separating air into a nitrogen-rich gas stream and an oxygen-enriched liquid stream by introducing partially condensed compressed air at a pressure of 3 to 30 atm (304 to 3,040 kPa(absolute)) and at a temperature in the range of 160° to 230° R (−184° to −146° C.) into a vortex tube for distillation, wherein the vortex tube has an entry point for the introduction of the partially condensed compressed air, a vapor outlet for the removal of the nitrogen-rich gas stream and a liquid outlet for the removal of the oxygen-enriched liquid stream; the entry point is located at an intermediate location along the length of the vortex tube between the vapor outlet and the liquid outlet, thereby defining a cold end section between the end point and the vapor outlet and a warm end section between the entry point and the liquid outlet, characterized by refrigerating the cold end section of the vortex tube, thereby reducing the energy requirement of the partially condensed, compressed air, resulting in less oxygen exiting the vortex tube in the nitrogen-rich gas stream and more oxygen exiting the vortex tube in the oxygen-rich liquid stream.

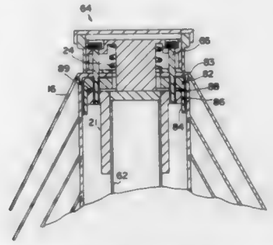
5,305,611
CRYOGENIC RECTIFICATION SYSTEM WITH THERMALLY INTEGRATED ARGON COLUMN
Henry E. Howard, Grand Island, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.
Filed Oct. 23, 1992, Ser. No. 966,108
Int. Cl.[5] F25J *3/04*
U.S. Cl. 62—22 **9 Claims**

1. A cryogenic rectification method for producing argon comprising:
(A) providing a feed comprising argon into a main column system and carrying out cryogenic rectification within the main column system;
(B) withdrawing argon-containing vapor from the main column system and condensing said argon-containing vapor;
(C) reducing the pressure of the resulting argon-containing liquid;
(D) providing reduced pressure argon-containing liquid as feed into an argon column at an intermediate point of the argon column and separating the feed by cryogenic rectification into argon-richer fluid and argon-leaner fluid;



(E) withdrawing argon-leaner fluid from the argon column, increasing its pressure, and passing increased pressure argon-leaner fluid into the main column system; and
(F) recovering argon-richer fluid as product argon.

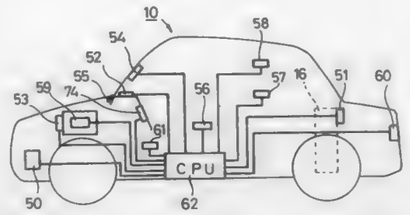
5,305,612
CRYOPUMP METHOD AND APPARATUS
Graham J. Higham, Contra Costra, and Craig Perkins, Santa Clara County, both of Calif., assignors to Ebara Technologies Incorporated, Santa Clara, Calif.
Continuation-in-part of Ser. No. 908,401, Jul. 6, 1992, abandoned. This application Dec. 10, 1992, Ser. No. 988,708
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 **10 Claims**



1. A cryopump comprising: refrigeration means; first and second cryoarrays; means for thermally isolating and thermally reconnecting the first cryoarray and the refrigeration means without isolating the second cryoarray from the refrigeration means; said means for thermally isolating and thermally reconnecting comprising a thermal shrink fit switch formed from at least first and second switch elements made of materials having dissimilar coefficients of thermal expansion.

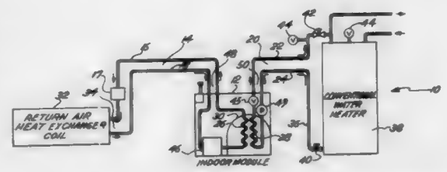
5,305,613
AIR CONDITIONING SYSTEM SUITABLE FOR USE IN A ELECTRIC VEHICLE
Yoshihiko Hotta, and Akihiro Tajiri, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 25, 1992, Ser. No. 982,384
Claims priority, application Japan, Nov. 27, 1991, 3-312822
Int. Cl.[5] F25B *27/00*; B60K *1/00*
U.S. Cl. 62—209 **51 Claims**

1. An air conditioning system for use in an electric vehicle, comprising:
an electric vehicle;
a first drive source for running said electric vehicle;
a refrigerant gas circulatory system disposed inside said electric vehicle for effecting cooling and heating of said vehicle, said gas circulatory system comprising lines which interconnected at least one heat exchanger, a directional control valve, a compressor and an expansion valve to one another; and
controlling means for activating and inactivating said heat exchanger, said directional control valve and said compressor, said controlling means comprising:



operation starting time computing means for computing an operation starting time prior to a preset running time of said vehicle, and
means for causing operation of at least a portion of said refrigerant gas circulatory system at said operation starting timing prior to said preset running time of said vehicle, said refrigerant gas circulatory system being operated by a second drive source different from said first drive source for running said vehicle.

5,305,614
ANCILLARY HEAT PUMP APPARATUS FOR PRODUCING DOMESTIC HOT WATER
Theodore C. Gilles, Dallas, Tex., assignor to Lennox Industries Inc., Dallas, Tex.
Continuation of Ser. No. 785,049, Oct. 30, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,166
Int. Cl.[5] F25B *27/02*
U.S. Cl. 62—238.7 **24 Claims**



1. Apparatus for heating liquid, said apparatus including a heat pump having first and second circuits, first circulation means for circulating refrigerant through said first circuit and second circulation means for circulating liquid to be heated through said second circuit, respective first portions of said first and second circuits being operatively disposed in heat exchange relationship to define a first heat exchanger, a second portion of said first circuit being operatively disposed in heat exchange relationship with a return fluid stream of a primary source of space conditioning and being cooperable therewith to define a second heat exchanger for removing heat from the return fluid stream, the primary source of space conditioning being systemically separate from said heat pump, a second portion of said second circuit being connected to a tank for storing heated liquid.

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5,305,615

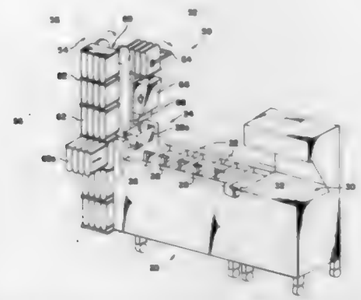
FROZEN FOOD STORAGE & DISPENSING SYSTEM

David H. McFadden, Lexington; Richard N. Caron, Dorchester; John M. Collins, Ipswich; Robert Farra, Leminster; Kevin P. Barnes, Stoneham; Joop F. Hoekstra, Medfield, and Thomas P. Hosmer, Concord, all of Mass., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 831,110, Feb. 4, 1992, Pat. No. 5,224,415, which is a continuation-in-part of Ser. No. 759,606, Sep. 13, 1991, Pat. No. 5,142,968, which is a continuation of Ser. No. 458,982, Dec. 29, 1989, abandoned. This application Jan. 7, 1993, Ser. No. 1,188

Int. Cl.[5] F25D *25/00*

U.S. Cl. 62—378 7 Claims



1. In a freezer system for storing and dispensing one or more frozen food products, said system comprising means for maintaining said frozen food products at a frozen temperature, and transport means for moving frozen food product is preselected amounts between a loading location and a dispensing location, wherein the improvement comprises:

(a) container means for storing a predetermined portion of food;

(b) access means located at said loading location to permit uncovering, filling, and recovering said container means; and

(c) dispensing means located at said dispensing location for uncovering, emptying, and recovering said container means;

wherein said container means remains completely closed between said loading and dispensing locations, and is only uncovered when food is dispensed from said container at said dispensing location.

5,305,616

GAS TURBINE ENGINE COOLING SYSTEM

George A. Coffinberry, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 23, 1992, Ser. No. 856,318

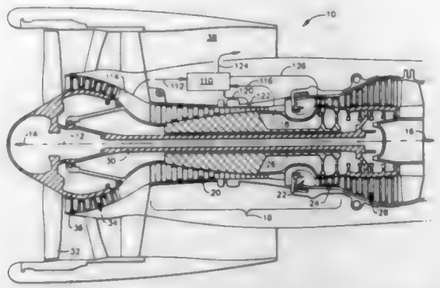
Int. Cl.[5] F25D *9/00*

U.S. Cl. 62—402 10 Claims

1. A system for cooling a first portion of a gas turbine engine, said engine having an engine compressor, and said cooling system comprising:

(a) a turbocompressor having a compressor section and a turbine section each with an inlet and an outlet; and

(b) a first heat exchanger having an inlet and an outlet for a first fluid flow providing cooling to said first heat exchanger and having an inlet and an outlet for a second airflow receiving cooling from said first heat exchanger, said first fluid flow inlet of said first heat exchanger in fluid communication with lower temperature fluid, said second airflow inlet of said first heat exchanger in fluid communication with higher temperature air from said engine compressor, said second airflow outlet of said first heat exchanger in fluid communication with said inlet of said compressor section of said turbocompressor, and said outlet of said compressor section of said turbocompressor in fluid communication with said first portion of said



engine for said cooling of said first portion of said engine and wherein said higher temperature air has a higher temperature than that of said lower temperature fluid.

5,305,617

CLOSING DEVICE FOR BRACELETS OF WATCHES, BRACELETS, JEWELS AND THE LIKE

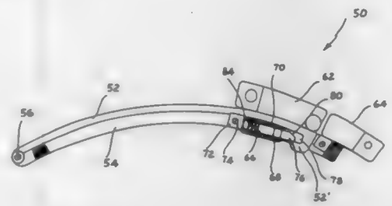
Fernando Fontana, Sesto Calende, Italy, assignor to G.T.F. S.r.l., Sesto Calende, Italy

Filed Aug. 11, 1992, Ser. No. 925,436

Claims priority, application Italy, Sep. 6, 1991, MI91 U 000764

Int. Cl.[5] A44C *5/00*

U.S. Cl. 63—3 1 Claim



1. A closing device for interwoven or barbed type metal bracelets, comprising:

a first arched sheet including first and second substantially longitudinally extending arms;

a second arched sheet complementary to said first arched sheet, said first and second sheets being hingedly connected together at one end thereof;

a chamber formed in said first sheet proximate the end thereof opposite the end connected to said second sheet, said chamber being formed by opposing plates connected at the top and bottom to said first and second arms;

a movable catch plate housed in said chamber and having lateral projections extending through millings formed in said arms beyond lateral sides of said first sheet, said catch plate including at least one seat for at least one spring housed in said chamber;

a tie bar closing said chamber at the end thereof proximate the end of said first sheet hingedly connected to said second sheet; and

a hook disposed on said second sheet proximate an end opposite the connection to said first sheet, said hook defining a seat wherein the end portion of said catch plate, having a chamfer thereon, is engageable.

5,305,618

KNITTING METHOD OF WEFT KNITTED FABRIC AND MULTIBED FLAT KNITTING MACHINE

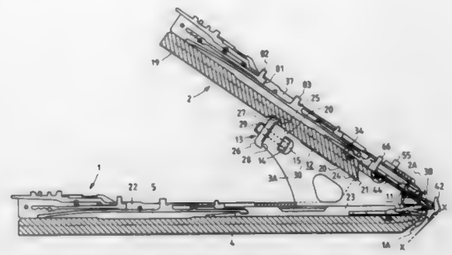
Masahiro Yabuta, Wakayama, Japan, assignor to Shima Seiki Mgf. Ltd., Wakayama, Japan

Filed Aug. 27, 1992, Ser. No. 936,745

Claims priority, application Japan, Aug. 29, 1991, 3-245042

Int. Cl.[5] D04B *7/00*

U.S. Cl. 66—64 6 Claims



1. A method of knitting a weft knitted fabric using a multibed flat knitting machine, comprising:

providing an upper needle bed having a head portion,

providing a lower needle bed having a head portion under the upper needle bed, the head portion of the lower needle bed being located adjacent to the head portion of the upper needle bed,

providing an upper needle having a needle hook, the upper needle defining a sliding direction and an advanced position,

providing a lower needle for stitching,

providing a knock-over bit located in the head portion of the upper needle bed and having a loop holder, the knock-over bit being slidable in a direction parallel to the sliding direction defined by the upper needle,

advancing the knock-over bit to a position in which the loop holder of the knock-over bit supports the needle head of the upper needle when the upper needle is in the advanced position,

raising the lower needle, and

retracting the knock-over bit to a position in which a collision between the lower needle and the knock-over bit is avoided when the lower needle is raised.

5,305,619

STITCH INCREASING METHOD AND CAMS FOR FLAT KNITTING MACHINE HAVING STITCH INCREASING FUNCTION

Masahiro Shima, and Masaki Miyamoto, both of Wakayama, Japan, assignors to Shima Seiki Mfg. Ltd., Wakayama, Japan

Filed Mar. 20, 1991, Ser. No. 672,860

Claims priority, application Japan, Mar. 26, 1990, 2-76147; May 16, 1990, 2-127845

Int. Cl.[5] D04B *7/10*

U.S. Cl. 66—70 5 Claims

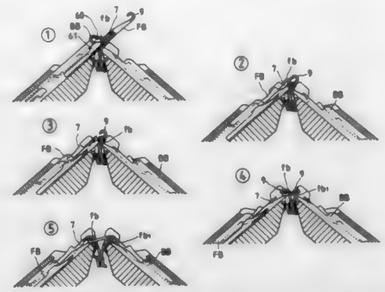
1. A stitch increasing method for a flat knitting machine which comprises a pair of opposed front and back needle beds, a plurality of compound needles disposed equally spaced in each said front and back needle beds wherein each of said plurality of needles comprises a needle body having a hook portion and a slider having a latch portion movable relative to said needle body over a given stroke such that the latch portion of the slider is brought into and out of engagement with the hook portion of the needle body to close and open the hook portion, and cam means disposed on each said front and back needle beds for operably moving each of said plurality of needles on each said front and back needle beds along an axis to transfer loops from compound needles on one of said front and back needle beds to the needles of the other of said front and back needle beds, said method comprising the steps of

raising a delivery needle which carrier a loop on one of said front and back needle beds to a transfer position,

raising a confronting transfer needle on the other of said front and back needle beds into the loop carried by the delivery needle,

engaging the loop by the hook portion of both the delivery needle and the transfer needle,

lowering the delivery needle and the transfer needle so that



a portion of the loop is carried respectively by both the delivery needle and the transfer needle to extend between the front and back needle beds,

relatively moving said front and back needle beds in either a first or second direction transverse to the axis along which each of said needles move, and

transferring the portion of the loop carried by the transfer needle to a needle on the one of the front and back needle beds adjacent the delivery needle so that the loop is carried by adjacent needles on the one of the front and back needle beds.

5,305,620

FLAT KNITTING MACHINE

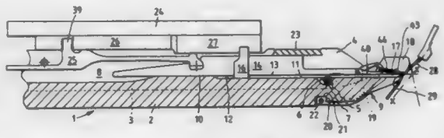
Masahiro Yabuta, Wakayama, Japan, assignor to Shima Seiko Mfg. Ltd., Wakayama, Japan

Filed Sep. 16, 1992, Ser. No. 945,486

Claims priority, application Japan, Sep. 17, 1991, 3-265286

Int. Cl.[5] D04B *7/00, 15/36*

U.S. Cl. 66—109 4 Claims



1. A flat knitting machine, comprising:

a needle moveable in a forward direction and a backward direction,

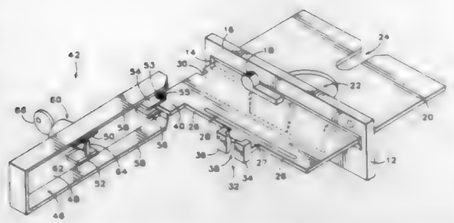
a needle bed comprising a head portion defining a needle groove having a bottom,

a knock over plate positioned in the bottom of the needle groove of the head portion of the needle bed and being slidably moveable in the forward direction and the backward direction, the knock over plate comprising a loop pressing plate defining an end edge having an extreme end for contacting a knitting yarn, wherein the knock over plate comprises a flat plate-like shank defining a tail portion having a loop pressing plate, and wherein the knock over plate is slidably fitted in a guide recess of a needle bed base plate so that an end edge of the loop pressing plate extends between a position protruding from a head portion of the needle bed base plate and a position substantially adjacent an end edge of a sinker.

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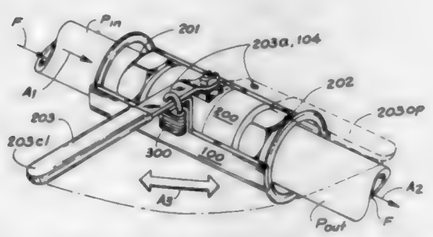
VOL 1161 ISS 4 AP 26 1994 UMI

5,305,621
COMPUTER DRIVE LOCKOUT DEVICE
Michael H. Broadwater, 105 SW Sixth, Rockaway Beach, Oreg. 97136
Filed Dec. 23, 1992, Ser. No. 995,717
Int. Cl.[5] E05B 73/00
U.S. Cl. 70—14 20 Claims



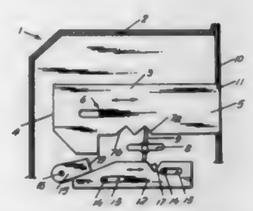
1. A method for locking an external drive of a computer system with a lockout device of the type having a locking unit insertable into the external drive, the external drive defined by a slot dimensioned to receive a data storage device and a bezel that can be interlocked with an engagement member coupled to the locking unit, said method comprising;
turning off the computer system;
pivotally interlocking the bezel to a first location on the locking unit;
disabling the computer system by inserting and locking the locking unit into the external drive slot while the locking unit is pivotally interlocked to the bezel;
rotating the bezel about the locking unit until the bezel both abuts a front face of the external drive and engages with the engagement member to prevent access to the external drive; and
locking the bezel to the locking unit to prevent the lockout device from being removed from the external drive.

5,305,622
APPARATUS AND METHOD FOR LOCKING VALVES ON OIL TANKS, TANK TRAILERS AND THE LIKE
Carlos Flores, 1514 S. Kentucky, Roswell, N. Mex. 88201
Filed Jul. 12, 1993, Ser. No. 89,487
Int. Cl.[5] F16K 35/06
U.S. Cl. 70—177 9 Claims



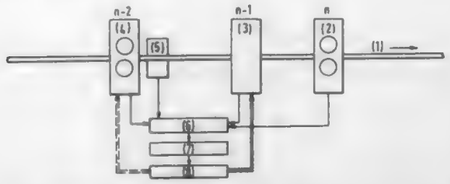
1. A method for meeting environmental protection requirements for locking outside lever operated valves on hazardous fluid tanks and tanker trailers to avoid vandalism and accidental spills, said method comprising the steps of:
(a) providing a lockout apparatus for use on a valve having an operating lever coupled to a valve mechanism for opening and closing a flow of fluid through said valve said lockout apparatus comprising:
an open framework comprising opposing ring members interconnected by a plurality of cross members that delineate at least one window, said open framework formed to encage an exterior body structure of said valve; and
a structural member extending from a cross member said structural member having an anchor point for being in alignment with a securement point on said operating lever for attachment of a user provided lock to secure said operating lever to said structural member;
(b) providing a tank or tanker trailer for containing hazardous fluid and having said valve provided with said operating lever and needing to be locked to avoid vandalism and accidental spills of said hazardous fluid;
(c) installing said provided lockout apparatus by encaging said valve within said framework;
(d) manipulating said operating lever via said at least one window and aligning said anchor point with said securement point;
(e) locking said operating lever to said structural member such that said valve mechanism is maintained in a closed position; and
(f) preventing vandalism and accidental spills of any contained hazardous fluid contained within said tank or tanker trailer.

5,305,623
KEY OPERATED, COMBINATION CHANGING, LOCK
Endel Kello, 140 Fernandes Vieira St., Apt. 13 in Porto Alegre, State of Rio Grande do Sul, RS BOM FIN, Brazil
Continuation of Ser. No. 791,029, Nov. 12, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 95,067
Claims priority, application Brazil, Nov. 16, 1990, 9005985
Int. Cl.[5] E05B 35/08
U.S. Cl. 70—338 15 Claims



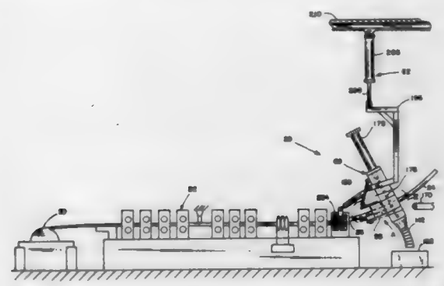
1. A set of keys to operate a combination changing lock which comprises a bolt and bolt retaining means and a plurality of locking plates, any one of which actuates a locking block capable of holding said bolt of the lock in a locking extended position, each key comprises a stem that, at one end, has a bit including a plurality of lock-actuating steps which operate to release said bolt retaining means and actuate said bolt and, a locking plate-actuating step being provided, which is higher than the other steps, said locking plate-actuating step of said keys being operable to move said locking plates thereby actuating said locking block only when said bolt is in said locking extended position, each key having its respective plate-actuating step in a position different from the position in which the plate-actuating step are located in the remaining keys whereby each of said keys is operable to set a combination for said lock upon actuation of said lock different from the combination set by any other key of said set of keys.

5,305,624
SIZING-STAND GROUP
Karl Backhaus, Duisburg-Baerl, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft A Corp. of the Federal Republic of Germany, Dusseldorf, Fed. Rep. of Germany
Filed May 22, 1992, Ser. No. 887,275
Claims priority, application Fed. Rep. of Germany, May 22, 1991, 4117054
Int. Cl.[5] B21B 1/18, 37/12
U.S. Cl. 72—12 8 Claims



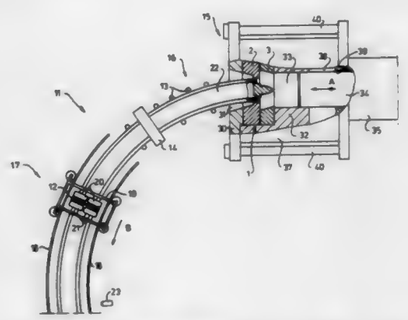
1. A method for obtaining narrow tolerances of accuracy to shape and size of a rolled product, rolled in a wire mill or a bar mill, including at least two successively arranged sizing stands of high stiffness, wherein the stands include stands that are adjustable under load and a last stand that is not adjustable under load, the method comprising: measuring geometrical data of the rolled product and relevant rolling data before the rolled product enters the next-to-last sizing stand: processing the measured data in a computer, forming in the computer a signal from stored data and the measured data by means of a sizing model for obtaining a desired exact profile shape in the last sizing stand: and utilizing the signal for adjusting at least the next-to-last sizing stand.

5,305,625
ADJUSTABLE CUTOFF APPARATUS
Richard D. Heinz, Grand Haven, Mich., assignor to Shape Corporation, Grand Haven, Mich.
Filed Sep. 18, 1992, Ser. No. 948,150
Int. Cl.[5] B21D 28/00
U.S. Cl. 72—132 37 Claims



19. A cutoff apparatus for cutting an end segment of a predetermined length from a roll-formed element being formed by a roll-forming apparatus, said end segment of the roll-formed element having a sweep therein, the roll-formed element defining a longitudinal direction and being continuously moved in the longitudinal direction, the sweep of said end segment being in a direction transverse to said longitudinal direction, comprising:
a movably supported carriage; means on said carriage for engaging said roll-formed element at said end segment;
means for movably supporting said carriage for movement with the end segment of the roll-formed element for a predetermined distance as the roll-formed element is being continuously formed and moved;
cutter means operably mounted to said carriage for cutting said segment from the roll-formed element as the roll-formed element is being formed by said roll-forming apparatus, said cutter means including a blade; and
an overhead support movably supporting said carriage and cutter means substantially in a "weight free" state so that said carriage can pivot and translate as necessary to accommodate the sweep of said segment to thereby minimize undesirable stress on the roll-formed element and prevent binding of the blade as the end segment of said roll-formed element extends through said carriage and is cut by said cutter means.

5,305,626
EXTRUSION METHOD AND EXTRUSION APPARATUS
Jozef J. Tiekink, Harderwijk, Netherlands, assignor to Reynolds Aluminium Holland B.V., KH Harderwijk, Netherlands
Filed Jan. 22, 1993, Ser. No. 7,734
Claims priority, application Netherlands, Jan. 24, 1992, 9200138
Int. Cl.[5] B21C 35/00
U.S. Cl. 72—257 10 Claims



1. A method for extruding curved sections from a material which has been rendered plastic comprising:
providing an extrusion die having first and second extrusion gaps;
sizing the first and second extrusion gaps so as to provide different resistances for plastic material forced therethrough;
forcing the plastic material through the first and second extrusion gaps so as to form a curved extruded section having a radius of curvature;
gripping said curved extruded section; and
pulling said curved extruded section along a predetermined curved path having a radius of curvature substantially equal to the radius of curvature of the curved extruded section emerging from the die so as to form a curved section of constant curvature.

5,305,627
SPLIT SLEEVE COLD EXPANSION
Darryl E. Quincey, Seattle; Charles M. Copple, Kent; William B. Walsh, Seattle; Richard Z. Jarzebowicz, Kirkland, and Eric T. Easterbrook, Kent, all of Wash., assignors to Fatigue Technology, Inc., Seattle, Wash.
Filed Jul. 27, 1992, Ser. No. 920,602
Int. Cl.[5] B21D 39/08
U.S. Cl. 72—370 58 Claims

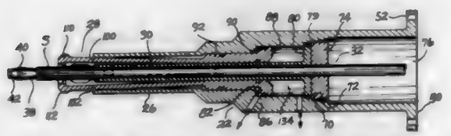
1. Apparatus for prestressing a hole in a workpiece, comprising:
a puller tool including an elongated tubular nose portion having a front end;
an elongated tubular sleeve holder within said nose portion;
an elongated tubular sleeve stop within said sleeve holder, said sleeve stop having a front end;
an elongated mandrel extending through said sleeve stop and

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including in order a rear end portion, a small diameter portion, an increasing diameter portion, and a maximum diameter portion;

said sleeve holder having a circumferentially continuous rear end portion and an elongated axially slotted front portion extending axially forwardly from said rear end portion, said front portion including a plurality of axial fingers separated by slots, said fingers having front end portions which define a front end opening and sleeve gripping jaws radially outwardly bounding said end opening, said jaws being positioned axially forwardly of the front end of the sleeve stop;

said sleeve holder being movable axially between a retracted position, wherein said jaws are located at least partially within the nose portion and are radially contracted and an extended position wherein said jaws are positioned axially forwardly of the nose portion and are radially expanded;



a piston within the puller tool connected to the portion of said mandrel, said piston being extendable and retractable for extending and retracting the mandrel;

said mandrel having an extended position in which a part of the small diameter portion of the mandrel and the increasing diameter and maximum diameter portions of the mandrel are positioned endwise forwardly of the tubular nose portion;

a split sleeve which when the mandrel is in its extended position is positionable on the small diameter portion of the mandrel outwardly of the outer end of the sleeve stop, said split sleeve having a rear end; and

said piston being retractable to pull the mandrel through the sleeve while the sleeve holder is retracted, and the jaws of the sleeve holder are against the workpiece, and the rear end of the sleeve is against the front end of the sleeve stop, and the sleeve is within a hole in the workpiece.

5,305,628

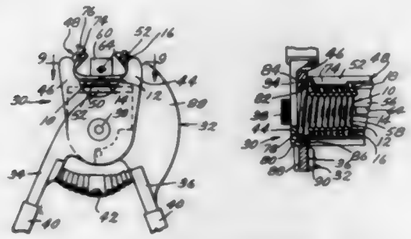
RING FASTENER PACKAGE FOR MOVABLE MAGAZINE OF A PORTABLE TOOL

Raymond F. Cluggish, Indianapolis, Ind., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Nov. 18, 1992, Ser. No. 978,399

Int. Cl.[5] **B21D** *39/00*; **B21F** *45/16*

U.S. Cl. 72—410 **18 Claims**



1. A package of ring fasteners comprising

a multiplicity of similar ring fasteners each being made of a short length of metal wire of no smaller than 0.101 inch diameter material bent to provide a central bight portion and legs extending from opposite ends of said central bight portion terminating in spaced free ends,

said multiplicity of ring fasteners being arranged in a packaged orientation wherein the ring fasteners are in a row with the bight portions and legs thereof aligned in the direction of extent of the row,

each ring fastener in said packaged orientation having the bight portion and each leg thereof extending generally transversely to the direction of extent of the row in abutting relation to a bight portion and corresponding leg respectively of an adjacent leading ring fastener in the row except for a leading ring fastener disposed forwardmost in the row,

the configuration of each ring fastener in said packaged orientation being such that when present as the leading ring fastener in the row (1) a leading leg of the legs thereof is disposed forwardly in the direction of extent of the row with respect to a trailing leg of the legs thereof so that the free ends of the leading and trailing legs are disposed substantially on opposite sides of a plane perpendicular to the direction of extent of the row and (2) the leading and trailing legs thereof include opposed jaw engaging portions offset in the direction of extent of the row and spaced apart transversely with respect to the direction of extent of the row a distance greater than the spacing between the free ends of said legs, and

means for releasably retaining said ring fasteners in said packaged orientation enabling the ring fasteners in said packaged orientation to be handled and inserted as a unit into a tool magazine capable of being moved transversely from (1) a cooperating position wherein the leading ring fastener of the row interfaces with a pair of tool jaws movable toward and away from one another into (2) a spaced non-interfering position during which the ring fasteners other than said leading ring fastener retained in said packaged orientation are separated from the leading ring fastener in interfaced relation with the pair of jaws enabling the pair of jaws to be moved toward one another so as to move the free ends of the legs of the interfaced leading ring fastener toward one another substantially along opposite sides of said perpendicular plane until the leading ring fastener is crimped into a closed ring configuration wherein free end portions of the legs thereof are disposed generally in side-by-side relation,

the length of metal wire forming the bight portion being greater than the combined length of metal wire forming the legs, said bight portion being bent at its center into an angular configuration during the crimping movement so that the resultant closed ring formation is generally an equilateral triangular configuration two sides of which are formed by the angularly bent bight portion and the third side of which is formed by the legs with their free end portions in side-by-side relation,

each of said ring fasteners being configured so that the aforesaid perpendicular plane intersects the entire bight portion thereof and a substantial part of each leg extending therefrom, the amount of material of said leading leg forwardly of the perpendicular plane progressively increasing in a direction toward the free end thereof and the amount of material of the trailing leg rearwardly of the perpendicular plane increasing in a direction toward the free end thereof.

10. A manually actuated portable tool operable to handle a package of ring fasteners and to crimp successive ring fasteners from the package into a closed formation around elements to be retained together, such as a fence cable element and a chain link fence link element,

said package of ring fasteners comprising a multiplicity of similar ring fasteners each being made of a short length of metal wire of no smaller than 0.101 inch diameter material bent to provide a central bight portion and legs extending from opposite ends of the central bight portion terminating in spaced free ends, the multiplicity of ring fasteners being arranged in a packaged orientation wherein the ring fasteners are in a row with the bight portions and legs thereof aligned in the direction of extent of the row, each ring fastener in the packaged orientation having the bight portion and each leg thereof extending generally transversely to the direction of extent of the row in abutting relation to a bight portion and corresponding leg respectively of an adjacent leading ring fastener in the row except f or a leading ring fastener disposed forwardmost in the row, the configuration of each ring fastener in the packaged orientation being such that when present as the leading ring fastener in the row (1) a leading leg of the legs thereof is disposed forwardly in the direction of extent of the row with respect to a trailing leg of the legs thereof so that the free ends of the leading and trailing legs are disposed substantially on opposite sides of a plane perpendicular to the direction of extent of the row and (2) the leading and trailing legs thereof include opposed jaw engaging portions offset in the direction of extent of the row and spaced apart transversely with respect to the direction of extent of the row a distance greater than the spacing between the free ends of said legs, said portable tool comprising

a frame providing manually grippable surfaces enabling an operator to manually operate the tool,

a pair of jaws mounted on said frame for movement from a ring fastener interfacing position toward one another through a ring fastener crimping stroke into a crimping position and from said crimping position away from one another through a return stroke into said ring fastener interfacing position,

a magazine assembly for receiving and supporting a ring fastener package therein for biased movement forwardly in the direction of extent of the ring fastener row thereof,

said magazine assembly being elongated in a longitudinal direction corresponding with the direction of extent of the ring fastener row of the package received and supported therein and being mounted on said frame for movement in a direction transverse to said longitudinal direction between a cooperating position with respect to said pair of jaws and a non-interfering position with respect to said pair of jaws,

said pair of jaws having leading and trailing leg engaging surfaces for interfacing with the leading and trailing legs of the leading ring fastener of the ring fastener package,

said leading and trailing leg engaging surfaces including (1) longitudinally offset leading and trailing stop surface portions facing in a longitudinal direction toward said magazine assembly when in said cooperating position for engaging forward surface portions of the leading ring fastener so as to position the leading ring fastener in interfaced relation with said pair of jaws and (2) longitudinally offset leading and trailing crimping surface portions facing generally transversely toward one another for engaging the jaw engaging portions of the leading and trailing legs of the leading ring fastener during the crimping stroke of the pair of jaws to thereby crimp the leading ring fastener into the closed ring formation,

said frame including (1) a planar surface transverse to the longitudinal extent of said magazine assembly for engaging the leading ring fastener of the package when said magazine assembly is in said non-interfering position, and (2) a transitional cam surface between said planar surface and said leading crimping surface portion for (A) engaging the leading leg of the leading ring fastener during the last portion of the movement of the magazine assembly into said cooperating position to guide the leading ring fastener under the forward bias thereof into interfaced relation with said pair of jaws and (B) engaging the leading leg of the ring fastener abutting the leading ring fastener during the initial portion of the movement of the magazine assembly out of said cooperating position to cam the leading leg engaged therewith onto said planar surface against the forward bias thereof.

5,305,629

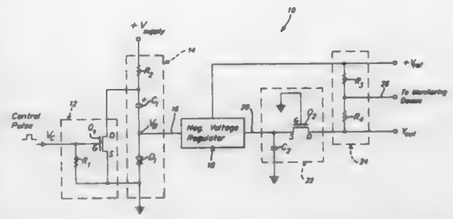
REGULATED NEGATIVE CALIBRATION PULSE GENERATOR

James A. Campbell, Ann Arbor; James R. Paye, Southfield, and Kenneth M. Klemczak, Novi, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Nov. 6, 1992, Ser. No. 972,566

Int. Cl.[5] **G01P** *21/00*

U.S. Cl. 73—1 D **9 Claims**



1. A circuit for generating a regulated negative voltage pulse for use in calibrating the output of a transducer comprising:

an input switch means responsive to an externally generated control signal for generating an activation potential;

a voltage conditioning means connected to a first positive voltage source and to said input switch means, said voltage conditioning means generating a negative voltage output in response to generation of said activation potential, and a positive voltage output in the absence of said activation potential;

a negative voltage regulator connected to said voltage conditioning means, said negative voltage regulator being responsive to said negative voltage output for generating a regulated negative voltage output having a predetermined magnitude; and

an output switch means responsive to said regulated negative voltage output for outputting said regulated negative voltage output as a calibration signal to said transducer.

5,305,630

PROCESS AND APPARATUS FOR SUPPLYING GAS TO A VERY HIGHLY SENSITIVE ANALYZER

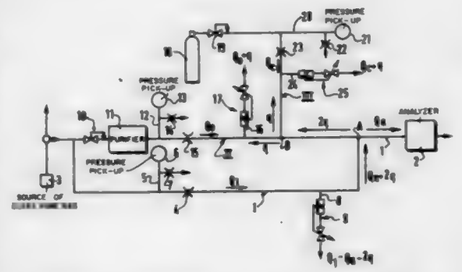
Maurice Molozay, Le Mesnil Saint Denis; Gérard Loiseau, Bois D'Arcy, and Catherine Bonge, Paris, all of France, assignors to l'Air Liquid, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sep. 17, 1991, Ser. No. 760,977

Claims priority, application France, Oct. 2, 1990, 90 12101

Int. Cl.[5] **G01D** *18/00*

U.S. Cl. 73—1 G **10 Claims**



1. Process for supplying a gas to a trace analyzer of very high sensitivity comprising the steps of sequentially supplying to an input line to the analyzer of a given flow:

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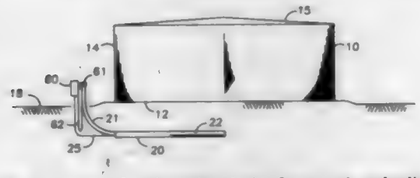
a) of a gas to be analyzed, via a first line;
b) of a pure gas prepared by purifying the gas to be analyzed, via a second line;
c) of at least one calibration gas, which is diluted with the pure gas, initially containing a greater quantity of traces than the gas to be analyzed, via a third line,
the downstream parts of the three lines being connected to said input line,
wherein the gas permanently runs through the upstream parts of each of the three lines at a constant flow, there is provided in an intermediate part of each line a discharge by-pass which is provided with a controllable flow regulator, said constant flow in the first and second lines being higher than said given flow, and the flow regulators are controlled for step a) so that a first part of the gas flow in the first line is discharged through the associated discharge by-pass and second and third parts of the flow in the first line are respectively discharged from the discharge by-passes of the second and third lines in combination with the respective constant flows in the second and third lines, the constant flow in the upstream part of the first line equaling the sum of said given flow and said first and second and third parts of the flow in the first line.

5,305,631

CATHODIC PROTECTION AND LEAK DETECTION PROCESS AND APPARATUS

Timothy A. Whited, Nederland; Jack L. Leatherman, Littleton, and John L. Markham, Nederland, all of Colo., assignors to Corrocon, Inc., Nederland, Colo.

Filed Jun. 16, 1992, Ser. No. 899,432
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 **20 Claims**



13. A process for detecting leaks from and cathodically protecting an aboveground storage tank comprising:
positioning a slotted tubing within a slotted casing beneath an aboveground storage tank;
monitoring fluid transmitted via said slotted tubing to determine leakage of fluid from said storage tank;
positioning an impressed current anode within said slotted casing; and
transmitting electrical current to said anode to cathodically protect said storage tank.

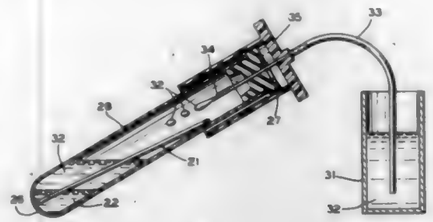
5,305,632

METHOD AND APPARATUS FOR MEASURING INTERFACIAL TENSION OF A LIQUID USING THE CAPILLARY RISE METHOD

Gregory S. Sprenger, San Jose, Calif., assignor to Velcon Filters, Incorporated, San Jose, Calif.

Filed Feb. 24, 1993, Ser. No. 21,880
Int. Cl.[5] G01N *13/02*
U.S. Cl. 73—64.48 **12 Claims**

1. A method of measuring interfacial tension of a liquid using capillary rise, said method including the steps of:
a) providing an enclosed evacuated space partially filled with water,
b) providing a capillary tube within said evacuated space having one of its ends submerged in said water,



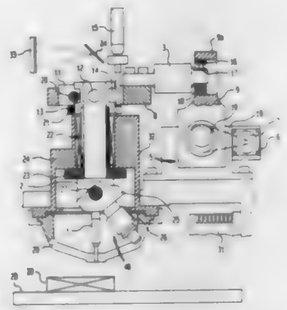
c) introducing a supply of liquid whose interfacial tension is to be measured into said evacuated space, and
d) determining the height of the water in said capillary tube.

5,305,633

HARDNESS TESTER INCLUDING A FORCE GAGE FOR MEASURING THE FORCE EXERTED SO AS TO CONTROL THE DRIVE UNIT

Herbert Weissenbacher, and Karl Brutmann, both of Salzburg, Austria, assignors to EMCO Maier Gesellschaft mbH, Austria

Filed Dec. 7, 1990, Ser. No. 623,358
Claims priority, application Austria, Dec. 7, 1989, 2786/89
Int. Cl.[5] G01N *3/42*
U.S. Cl. 73—82 **11 Claims**



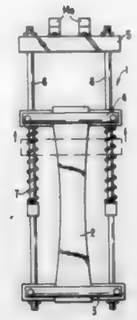
1. A hardness tester comprising
a frame;
a carrier movably guided within said frame;
an indentor connected to said carrier;
linkage means operatively connected to said carrier for transmitting a load upon said indentor, said linkage means including a load receiving and transmitting element in form of a force gage for converting the force generated in said load receiving and transmitting element at impact of said indentor upon said a workpiece into an electric variable;
circuit means electrically connected to said force gage for comparing the electric variable generated in said force gage with a selectable desired value, said circuit means having an output; and
drive means connected to said linkage means and communicating with the output of said circuit means so that said circuit means controls said drive means to thereby control the load exerted upon said indentor via said linkage means;
said linkage means further including a lever movably mounted in said frame and bearing upon said carrier, and a coupler operatively connected to said drive means, said load receiving and transmitting element being interposed between said lever and said coupler.

5,305,634

WEATHERING TEST METHOD AND SAMPLE HOLDER USED THEREIN

Shigeru Suga; Shigeo Suga, and Etsuji Natori, all of Tokyo, Japan, assignors to Suga Test Instruments Co. Ltd., Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 982,372
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—86 **32 Claims**



1. A method for carrying out a weathering test on a sample, comprising:
providing a sample holder having a fixed sample holding member for holding one end of a sample to be tested, a movable sample holding member for holding the other end of the sample to be tested, a movable sample holding member mounting means on which said movable sample holding member is movably mounted for movement toward and away from said fixed sample holding member, and a force applying means made of a material which is expandable and contractable by a predetermined amount with variations in temperature over a predetermined range and which is engaged with said movable sample holder;
mounting a sample in said holder by connecting respective ends of the sample to said fixed and movable sample holding members;
positioning said holder in an environment under weather conditions corresponding to those for which the sample is to be tested and including repeatedly varying temperature varying in a range of temperatures in which said force applying means expands and contracts for exposing said sample to said weather conditions while applying varying force to said sample by the expansion and contraction of said force applying means in accordance with the variations in temperature; and
evaluating the weather-fastness of the thus tested sample.

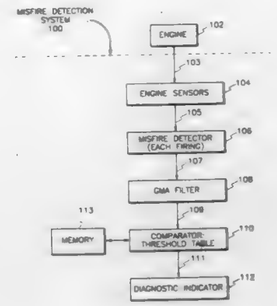
5,305,635

SYSTEM AND METHOD FOR FILTERING A MISFIRE DETECTING DATA STREAM TO YIELD OPTIMUM MEASUREMENT OF MISFIRE RATE

John V. James, Walled Lake; Nathan R. Soderborg, and Timothy M. Feldkamp, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 2, 1993, Ser. No. 42,257
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **7 Claims**

1. A misfire detection system for measuring whether a multiple cylinder combustion engine is misfiring beyond acceptable threshold levels, comprising:
sensing means, coupled to the engine, for measuring firings of each cylinder of the multiple cylinder engine during operation of the engine; misfire detector means, coupled to said sensing means, for processing the signals received from said sensing means, for producing a current misfire detection data stream of first and second logic signals, wherein said first logic signals indicate a current misfire condition and said second logic signals indicate a current normal firing of the engine;
geometric filter means, coupled to said misfire detector means, for receiving said current misfire detection data stream, for combining said current misfire detection data stream with previously detected and stored measured data representing an engine misfire rate and for replacing the previously stored measured data by said combined current and previously stored data to produce a misfire rate output measurement;



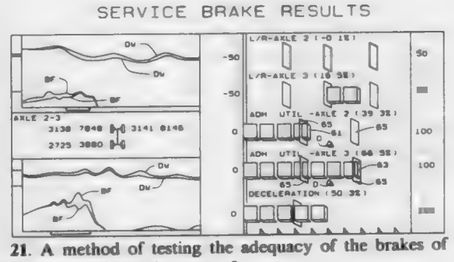
storage means for storing threshold values;
comparator means, coupled to said geometric filter means and to said storage means, for comparing said combined current and previously stored data and said stored threshold values and for generating an actuation signal if said combined current and previously stored data exceed said stored threshold values; and
a diagnostic indicator, coupled to said comparator means, for indicating a misfire condition in the engine upon receiving said actuation signal produced by said comparator.

5,305,636

PLATE BRAKE TESTER AND METHOD

Steven C. Balsarotti, Crestwood, and Nicholas J. Colarelli, III, Creve Coeur, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Feb. 12, 1993, Ser. No. 17,640
Int. Cl.[5] G01L *5/28*
U.S. Cl. 73—122 **22 Claims**

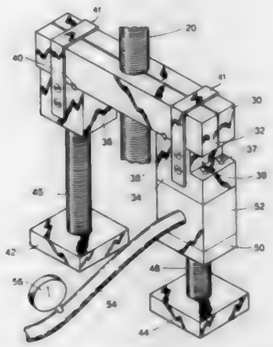


21. A method of testing the adequacy of the brakes of a vehicle, comprising the steps of:
for at least one axle of a vehicle under test, determining the adhesion utilization for that axle when the brakes are applied;

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determining the deceleration of the vehicle when the brakes are applied;
comparing the adhesion utilization for said axle with the deceleration of the vehicle;
rejecting the brakes on said axle as inadequate if the adhesion utilization for that axle differs from the deceleration more than a preset amount.

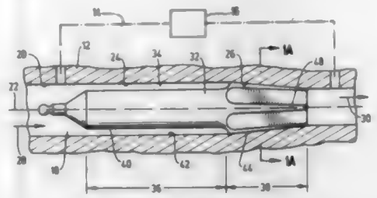
5,305,637
APPARATUS FOR APPLYING A KNOWN AXIAL FORCE TO A VALVE STEM
Donald L. Bauer, Atascadero, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 753,785, Sep. 3, 1991, Pat. No. 5,199,301. This application Mar. 3, 1993, Ser. No. 25,498
Int. Cl.[5] F16K *31/05*; G01L *5/00*
U.S. Cl. 73—168 **1 Claim**



1. A method for applying an axial force to a valve stem mounted in a valve yoke, the method comprising the steps of:
providing a gripping means for gripping the valve stem on opposite sides thereof, said gripping means extending in a direction perpendicular to the valve stem;
pivotally connecting a first leg to one end of said gripping means such that said first leg extends approximately parallel to the valve stem;
pivotally connecting a second leg to an opposite end of said gripping means such that said second leg extends approximately parallel to the valve stem;
providing a force means operably connected to the first leg for exerting a predetermined known axial force against said gripping means; and
activating said force means, whereby said determined axial force is applied to the valve stem.

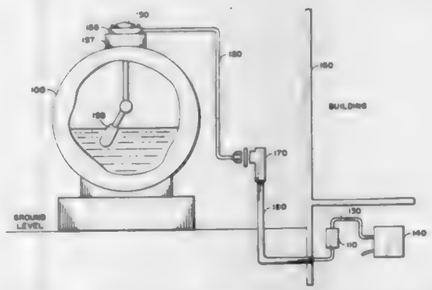
5,305,638
MASS FLOWMETER HAVING NON-ADJUSTABLE FLOW SPLITTER
Hamid Saghatchi, Orange; Daniel T. Mudd, Torrance, and Charles F. Drexel, Long Beach, all of Calif., assignors to DXL International, Inc., Torrance, Calif.
Filed Mar. 20, 1992, Ser. No. 854,498
Int. Cl.[5] G01F *5/00*
U.S. Cl. 73—202 **22 Claims**

1. In a fluid flowmeter, a flow splitter path comprising:
a surface defining a bore forming a longitudinal fluid flow path having a central longitudinal axis, said surface including a tapered portion tapering in the direction of fluid flow through the flowmeter; and
a flow splitter disposed within said bore, said flow splitter having an outer surface defining with said bore surface a fluid passage dimensioned to maintain laminar flow therethrough, the outer surface of said flow splitter including a tapered portion having a taper corresponding generally to that of the tapered portion of the bore surface, the tapered portion of the flow splitter being disposed within the tapered portion of said bore surface, the tapered portions of the bore surface and flow splitter forming a retention section along said flow splitter path, said flow splitter



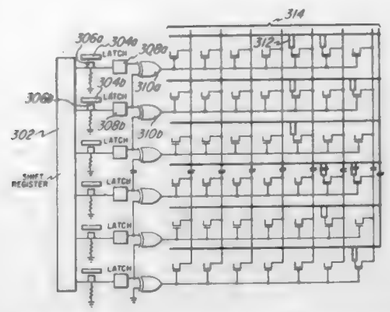
being non-adjustably retained within said bore at said retention section, said retention section comprising the sole means for retaining and locating the flow splitter relative to the bore, said bore surface and said flow splitter further defining a calibration section adjacent the retention section.

5,305,639
LPG GAUGE SENSOR
Robert A. Pontefract, Chelmsford, Mass., assignor to Scully Signal Company, Wilmington, Mass.
Filed Oct. 16, 1992, Ser. No. 962,393
Int. Cl.[5] G01F *23/38*
U.S. Cl. 73—317 **16 Claims**



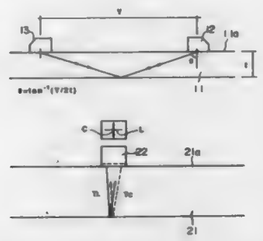
1. Sensor apparatus to be employed with a LPG gauge which measures an LPG level in a tank, said LPG gauge having a hermetic base unit connected to said tank, a base magnet located in said base unit, means for rotating said base magnet to an angular position corresponding to said LPG level, a hermetic indicator unit containing an indicator magnet which magnetically couples to said base magnet, a longitudinal axis along said base unit and said indicator unit, and an indicator element connected to said indicator magnet, said sensor apparatus comprising:
a hermetic housing having a shape which allows said housing to be mounted between said base unit and said indicator unit;
means located in said housing and responsive to the angular position of said base magnet for generating an indicative signal when said base magnet reaches a predetermined proximity to said generating means; and
means for variably positioning said generating means relative to said base magnet to generate said indicative signal when said base magnet reaches a predetermined angular position.

5,305,640
DIGITAL FLEXURE BEAM ACCELEROMETER
Robert M. Boysel, and Jeffrey B. Sampsell, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 596,841, Oct. 12, 1990, Pat. No. 5,192,395. This application May 1, 1992, Ser. No. 877,571
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 R **15 Claims**



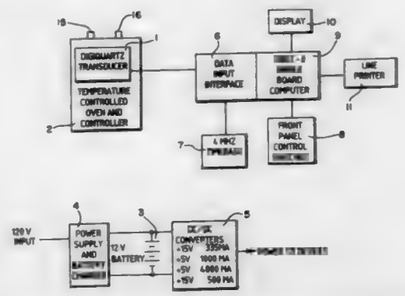
1. A system for detecting and measuring acceleration comprising the following:
a) a circuit for providing electronic pulses;
b) an array of sensor elements capable of altering said electronic pulses and propagating said altered pulses;
c) a holding circuit for receiving and holding said altered pulses;
d) a comparator circuit for receiving and comparing said altered pulses held by said holding circuit; and
e) an encoding circuit for generating a unique digital word based on said comparison.

5,305,641
METHOD FOR EVALUATION OF ACOUSTIC ANISOTROPY AND MEASURING APPARATUS THEREFOR
Mitsugu Kuramochi, and Yoshitaka Yabe, both of Tokyo, Japan, assignors to Shimizu Construction Co., Ltd., Tokyo, Japan
Filed Sep. 16, 1991, Ser. No. 760,336
Claims priority, application Japan, Sep. 17, 1990, 2-246536
Int. Cl.[5] G01N *29/18*
U.S. Cl. 73—598 **7 Claims**



1. An apparatus for evaluating acoustic anisotropy in a material having a primary rolling direction, said apparatus comprising:
(a) a first pulse generating and detecting means comprising a traverse beam probe having a double-structure vibrating element of transmitting ultrasonic pulses in two mutually perpendicular directions into said material, one said direction being parallel to said primary rolling direction and the other said direction being perpendicular to said primary rolling direction, and means for simultaneously detecting ultrasonic pulses reflected back from both of said directions;
(b) a second-pulse generating and detecting means comprising an angle probe for transmitting ultrasonic pulses into said material in a direction at an angle to a thickness direction of said material and detecting reflected ultrasonic pulses;
(c) a computing means comprising:
a first acoustic anisotropy determining part for calculating speeds at which ultrasonic pulses propagate in each of said mutually perpendicular directions within said material and comparing said speeds to determine the presence of acoustic anisotropy in said material,
a second acoustic anisotropy determining part for calculating refracting angles for ultrasonic pulses transmitted by said second pulse generating and detecting means in each of said mutually perpendicular directions and comparing said angles to determine the presence of acoustic anisotropy in said material, and
means for calculating a deviation between a retracting angle, calculated as aforesaid, and an a experimentally determined retracting angle stored as a function of acoustic speed;
(d) means for selecting one of said acoustic anisotropy determining parts for use in determining the presence of acoustic anisotropy in said material; and
(e) a display means for displaying results of an acoustic anisotropy determination, propagation speed ratios, refracting angles, and aforesaid deviation.

5,305,642
PORTABLE HIGH PRECISION PRESSURE TRANSDUCER SYSTEM
Thomas C. Piper; John P. Morgan; Norman J. Marchant, all of Idaho Falls, and Steven M. Bolton, Pocatello, all of Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Apr. 14, 1992, Ser. No. 868,149
Int. Cl.[5] G01L *11/00*
U.S. Cl. 73—702 **11 Claims**

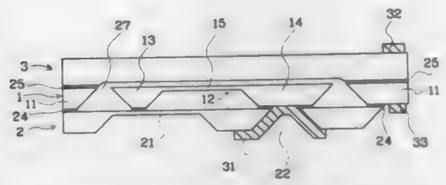


1. A pressure measuring system which measures the differential pressure between two points in a liquid column comprising:
a quartz pressure transducer which incurs a change in frequency in response to a change in applied pressure;
means for controlling the environmental temperature of said quartz pressure transducer;
means for applying a differential pressure to said quartz pressure transducer;
a data input interface where said data input interface is coupled to said pressure transducer and is responsive to an output from said pressure transducer;
a time base coupled to said data input interface where said time base provides a stable clock for the pressure measuring system;
computer means for coordinating command and data transfer to said data input interface and to a plurality of output

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devices, and for processing a data stream from said data input interface to produce a pressure measurement;
visual display means for viewing a data stream representing data inputted and processed by said computer means where said visual display means is coupled and responsive to said computer means;
printing means for printing the computed pressure measurements where said printing means is coupled and responsive to said computer means;
control means for controlling the operation of the pressure measuring system where said control means is coupled to said computer means; and
power means for supplying the electrical power to the pressuring measuring system where said power means is coupled to said time base, said computer means, said visual display means, and said temperature controlling means.

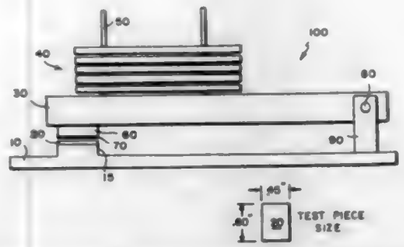
5,305,643
PRESSURE MICRO-SENSOR
Isabelle Thomas, and Pierre O. Lefort, both of Valence, France, assignors to Sextant Avionique, Cedex, France
Filed Feb. 19, 1993, Ser. No. 20,081
Claims priority, application France, Feb. 20, 1992, 92 02189
Int. Cl.[5] G01L *7/08, 11/00*
U.S. Cl. 73—704 **7 Claims**



1. A pressure micro-sensor formed by a sandwich of three silicon plates in contact by their periphery, with an interposed insulating layer in order to define an internal cavity, wherein:
the lower plate (2) includes a thinner region (21) forming a diaphragm, on its internal side,
the intermediate plate (1) includes a peripheral region (11) forming a frame coupled to the upper and lower plates by a silicon oxide layer (24, 25), a first stud (13) mounted onto the thinner region of said lower plate, a second stud (14) mounted onto a thick region of said lower plate, and a silicon beam (15) forming a resonator, said silicon beam being disposed between the upper surfaces of said first and second studs in front of the upper plate (3), the studs being electrically insulated from the frame,
a first electrode (32) is connected to said upper plate, a second electrode (33) is connected to the frame and a third electrode (31) is connected to the second stud.

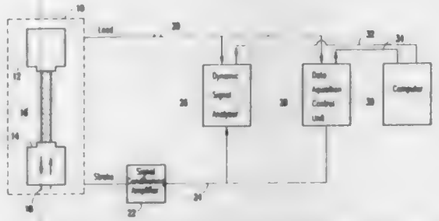
5,305,644
FORCE SENSOR
John Ehrreich, Maynard, Mass., assignor to Ercon, Inc., Waltham, Mass.
Division of Ser. No. 599,277, Oct. 16, 1990, Pat. No. 5,194,205, which is a continuation of Ser. No. 323,283, Mar. 14, 1989. This application Sep. 2, 1992, Ser. No. 918,656
Int. Cl.[5] G01B *7/16*
U.S. Cl. 73—774 **18 Claims**

1. A force sensor component comprising:
a dimensionally stable body of electrically conductive material, the body having a selected outer surface formed into a predetermined topography;
the body including an electrically conductive material in an amount sufficient to render the body electrically conductive at least throughout the selected outer surface of the body;



the predetermined topography of the outer surface of the body comprising a plurality of adjoining ridges across the outer surface of the body.

5,305,645
DYNAMIC MEASUREMENT OF MATERIAL STRENGTH AND LIFE UNDER CYCLIC LOADING
Kenneth L. Reifsnider; Ahmad Razvan, and Mehran Elahi, all of Blacksburg, Va., assignors to The Center for Innovative Technology, Herndon, Va.
Filed May 4, 1992, Ser. No. 878,718
Int. Cl.[5] G01N *3/32*
U.S. Cl. 73—808 **13 Claims**

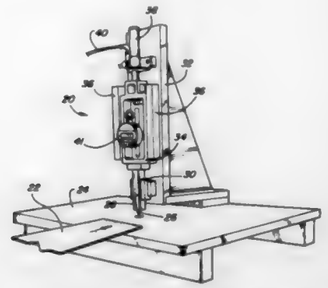


1. A method for dynamically monitoring fatigue damage in a specimen, comprising the steps of:
cyclically applying a load to a specimen, at least a portion of said specimen being displaced from a stationary position by said cyclically applied load;
detecting said displacement of said portion of said specimen during said step of cyclically applying a load, said step of detecting providing a displacement signal with respect to time;
sensing a load applied during said step of cyclically applying a load, said step of sensing providing a load signal with respect to time;
determining a phase difference between said displacement signal and said load signal;
identifying a change in amplitude of said displacement signal with respect to time; and
correlating said phase difference and said change in amplitude with specimen damage, whereby increases in phase difference and amplitude of said displacement signal with respect to time corresponds with specimen damage.

5,305,646
GAUGE FOR COMPRESSIBLE MEDIUM
James D. Ashmore, Hohenwald, Tenn., and Tommy K. Lawson, Stanford, Ky., assignors to Dana Corporation, Toledo, Ohio
Filed Feb. 3, 1992, Ser. No. 830,390
Int. Cl.[5] G01N *3/08*
U.S. Cl. 73—818 **5 Claims**

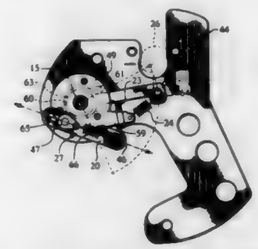
1. A gauge for measuring characteristics of a compressible material comprising:

a movable probe positioned at a first location and spaced a predetermined distance above the compressible material, said movable probe having an associated predetermined weight; and
a cylinder including a piston holding said movable probe at said first location, said cylinder being actuatable to allow said movable prove to move from said first location



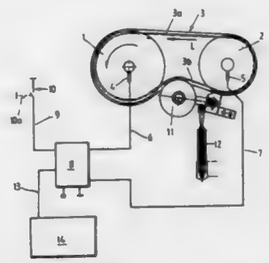
towards the compressible material, wherein said predetermined weight is applied by a plurality of weights, wherein said weights are mounted at outer lateral portions of a bracket fixed to said movable prove, said weights each including an ear which may be inserted into an enlarged portion of a keyhole-shaped slot formed at each lateral side of said bracket, said ears being movable to lock said weight to said bracket.

5,305,647
COUNTER ASSEMBLY FOR GAS METER
Albert B. Atkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed May 28, 1992, Ser. No. 890,745
Int. Cl.[5] G01F *15/02*
U.S. Cl. 73—861.01 **4 Claims**



2. A counter assembly for a fluid meter having an output shaft rotatable proportionally to the volume of fluid flow through the meter, said counter including a support plate, an input crank shaft supported adjacent said plate and drivingly connectable with said output shaft, a computer mechanism connected to said plate, and a readable register driven by said computer mechanism to provide corrected fluid flow volume information, said computer mechanism having a clutch shaft connected to said register and rotated proportionally to the corrected volume flow of fluid through said meter, a one-way clutch unit including a rear clutch hub supported against rotation and an input hub mounted on said clutch shaft rotatably within a plane to drivingly release from and connect with said clutch shaft for unidirectional rotation thereof, a crank connected to said crank shaft, a drive link with one end pivotally connected to said crank and an opposite end coupled to said input hub from outside the plane of rotation thereof and being reciprocally movable in response to rotation of said crank to reciprocally rotate said input hub, a computer arm pivotally connected to said input hub to swing back and forth through an adjustable length arc with reciprocal movement of said link, an adjustable stop connected to said input hub and engageable with said computer arm for angular adjustment of said arm relative to said input hub, a spring connected between said computer arm and said input hub and urging said computer arm against said adjustable stop, a condition responsive stop positionable in the arc of travel of said computer arm in response to changes relative to a preselected standard condition to limit the arc of travel of said arm relative to a standard length arc at said standard set condition, an overtravel spring-biased connection between said computer arm and said crank to compensate for the change of travel distance of said computer arm from its standard length of travel, and a support member fixedly connected to said input hub for movement therewith and extending along said clutch shaft, said support member having a distal end with an integral reaction surface spaced from the rotational plane of said input hub and located in bearing engagement with said clutch shaft to react against tilting of said hub within its rotational plane and binding relative to said clutch shaft when drivingly released therefrom.

5,305,648
V-BELT DRIVE
Norbert Diekhans, Gütersloh, and Willi Behnke, Steinhagen, both of Fed. Rep. of Germany, assignors to Claas Ohg, Harsewinkel, Fed. Rep. of Germany
Filed May 28, 1992, Ser. No. 889,327
Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117530
Int. Cl.[5] G01L *3/02*
U.S. Cl. 73—862.191 **5 Claims**



1. A v-belt drive comprising:
a drive pulley and a power take-off pulley;
each said pulley having a v-groove with a constant cross-section;
an endless v-belt rotating around said drive pulley and said power take-off pulley guided in each said v-groove;
said v-belt penetrating into said v-groove of said driven pulley to a depth dependent on a current torque load condition;
a first RPM sensor engaged to said drive pulley to measure RPM at a current torque load condition;
a second RPM sensor engaged to said power take-off pulley to measure RMP at a current torque load condition;
electronic unit means engaged to and receiving signals from said first RPM sensor and said second RPM sensor for calculating a current RPM ratio of said drive pulley and said power take-off pulley;
torque measurement means included in said electronic unit means for comparing said current RPM ratio to an assigned calibrated RPM ratio corresponding to a torque produced within a working range of said drive pulley and said power take-off pulley to provide a torque reading representing a different between said current RPM ratio and said assigned calibrated RPM ration,
wherein, a load on said drive pulley and said power take-off pulley can be adjusted if a difference between said current

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RPM ratio and said assigned calibrated exceeds, said assigned calibrated RPM ratio.

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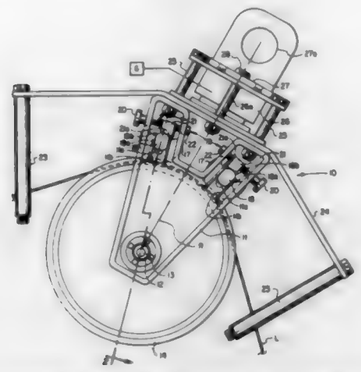
CABLE LENGTH AND TENSION MEASURING DEVICE

David R. Larimore, Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Apr. 13, 1992, Ser. No. 867,399

Int. Cl.[5] G01L *1/00*

U.S. Cl. 73—862.391 **9 Claims**



1. A combination measuring device for measuring length of flexible line moved through the device and any tensile force in moving or stationary flexible line comprising:

(a) a frame;

(b) a counterwheel having a groove around for receiving flexible line;

(c) means for mounting said counterwheel to rotate on said frame;

(d) pressure wheels mounted on said frame for pressuring said flexible line into said counterwheel groove;

(e) means for adjusting the pressing force each pressure wheel exerts on said flexible line, said adjusting means including:

slots in said frame, each said slot having a guide surface,

a shaft mounted for movement in each slot with a pressure wheel mounted for rotation on each shaft, said shaft having a guide surface slidably engageable with said slot guide surface;

means for moving said shaft in said slot; and

(f) a load cell mounted on said frame for measuring the force on said counterwheel resulting from tensile force in said flexible line.

5,305,650

AUTOMATIC PREPARATION APPARATUS

Toshio Koike; Toshiyuki Mochizuki, and Keiko Gondo, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,108

Claims priority, application Japan, Oct. 29, 1990, 2-291323

Int. Cl.[5] G01N *35/06*

U.S. Cl. 73—864.21 **9 Claims**

1. An automatic preparation apparatus comprising:

turntable means having a turntable which is provided with a plurality of container receiving portions, and being constructed so as to rotate the turntable in a horizontal plane and to stop a rotated turntable in a desirable position;

a rack disposed in a stationary position separate from said turntable means, for receiving a plurality of containers;

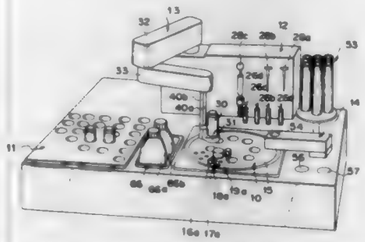
a plurality of probe means each comprising a syringe pump and a probe needle connected to the syringe pump through an extendable flexible pipe, for sampling a liquid contained in one of said plurality of containers mounted on the turntable by a predetermined amount of the liquid and for injecting a sampled liquid into the other of said containers on the turntable by the predetermined amount, said probe means having capacities different from one another;

robot means constructed to transfer the containers between said turntable and said rack and to move said probe needles to a desired position on said apparatus;

a pair of chuck members adapted to be attached to said robot means at one ends thereof;

a plurality of first attachments located in a predetermined position of said apparatus, and each constructed to be able to hold the container when chucked by the other ends of said chuck members which have been attached to said robot means, each of said first attachments being formed into a size conformable with that of each container;

a plurality of second attachments located in another predetermined position of said apparatus, and each constructed to be able to hold the probe needle when chucked by the



other ends of said chuck members which have been attached to said robot means, each of said second attachments being formed into a size conformable with that of each probe needle; and

control means including a microcomputer in which a sequence of desired treatments is programmed, and controlling, according to instructions from the microcomputer, mounting and dismounting operations of said chuck members to and from each of said first attachments, mounting and dismounting operations of said chuck members to and from each of said second attachments, holding and releasing operations of each container by said first attachment which is mounted to said robot means through said chuck members, holding and releasing operations of each probe needle by said second attachment which in mounted to said robot means through said chuck members, transferring operation of a held container, moving operation of a held probe needle to a desired position, sampling operation of the liquid from the container into said probe means, and injecting operation the liquid sampled into said probe means into another container.

5,305,651

MECHANICAL TRANSMISSION FOR TOY AUTOMOBILES

Gianluca Perego, Arcore, Italy, assignor to Peg Perego Pines, S.p.A., Milan, Italy

Continuation of Ser. No. 916,953, Jul. 20, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,258

Claims priority, application Italy, Jul. 22, 1991, MI 91 A 002017

Int. Cl.[5] F16H *3/08*

U.S. Cl. 74—372 **8 Claims**

1. A mechanical transmission particularly for toy automobiles, comprising:

a transmission housing;

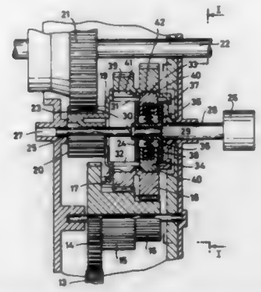
a pin supported by said housing at a housing first seat and a housing second seat for axially sliding said pin relative to said housing;

a substantially cylindrical element supported in said housing by said pin for rotation about a central axis of said pin;

transmission motion output means in kinematic connection with said substantially cylindrical element;

transmission motion input means including a first plurality of toothed gears supported by said housing, said gears being connected to a motion input for input of transmission motion;

a second plurality of toothed rotatably gears fitted on said cylindrical element, each of said second plurality toothed gears being in kinematic connection with one of said first plurality of toothed gears at a different gear ratio with said transmission motion input means;



a connection cursor positioned in a cavity formed inside said cylindrical element, said connection cursor being axially slidable and non-rotatable with respect to said cylindrical element, said cursor being connected to said pin in an axially integral manner, whereby the pin is both a supporting shaft for free rotation of the substantially cylindrical element about said central axis and a reciprocating element for axial sliding of the connection cursor, whereby upon axial sliding movement of said pin, said cursor slides axially in said cavity to radially engage one of said second plurality of toothed gears rotating on said cylindrical element whereby said one of said second plurality toothed gears is connected to said motion output means via said cylindrical element.

5,305,652

MULTIAXIAL INDUSTRIAL ROBOT

Ernst Zimmer, Friedberg, Fed. Rep. of Germany, assignor to Kuka Schweissanlagen + Robotor GmbH, Augsburg, Fed. Rep. of Germany

PCT No. PCT/EP90/02268, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO91/11299, PCT Pub. Date Aug. 8, 1991

PCT Filed Dec. 20, 1990, Ser. No. 915,804

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1990, 4001885

Int. Cl.[5] B25J *11/00*; G05G *11/00*

U.S. Cl. 74—479 B **19 Claims**

1. A multiaxial robot comprising:

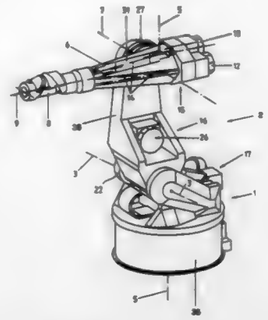
a mount;

a rocker arm rotatably connected at one end about a principal rotating axis to said mount, said rocker arm also being pivotably connected at said end about a mount swing axis to said mount;

an extension arm connected on another end of said rocker arm and pivotable about an extension swing axis extending from a drag bearing in a side of said rocker arm;

a robot hand connected to one end of said extension arm, said robot hand including a plurality of members;

a plurality of motor means for driving each of said plurality of members of said robot hand, each of said plurality of motor means being positioned on said extension arm, two of said plurality of motor means being positioned adjacent each other in a direction of said extension swing axis, said principal rotating axis extending in an area between a



center of gravity of said motor means and said drag bearing of said rocker arm.

5,305,653

ROBOT WRIST MECHANISM

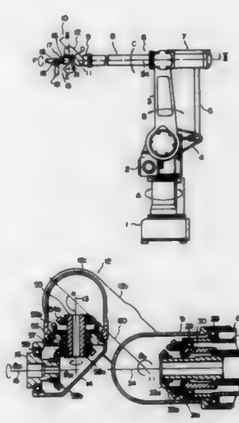
Yukio Ohtani, Kawasaki; Satoshi Uehara, Yokohama; Masahiro Igarashi, Kawasaki, and Hiroshi Suzuki, Yokohama, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Sep. 25, 1992, Ser. No. 951,154

Claims priority, application Japan, Sep. 30, 1991, 3-252571; Mar. 19, 1992, 4-64180

Int. Cl.[5] B25J *17/02, 18/00*

U.S. Cl. 74—479 BP **18 Claims**



1. A robot wrist mechanism having the following features;

an arm rotated by a drive source, said arm having an axis;

a first wrist member rotatably supported on the end of the arm so as to be rotatable about a first rotation axis orthogonal to the axis of the arm;

a second wrist member supported at another end of the first wrist member so as to be freely rotatable about a second rotation axis, wherein the second axis and the arm axis lie in the same plane;

a mounting shaft provided on the second wrist member with an axis of the mounting shaft lying in a plane including the first axis and orthogonal to the second axis, wherein

the second wrist member protrudes upwards with respect to a plane including the first axis and the axis of the mounting shaft.

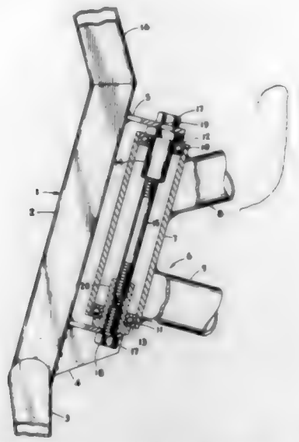
VOL 1161 ISS 4 APR 26 1994 UMI

5,305,654

HEADSET FOR BICYCLES WITH EXTERNAL FORKS

Roger O. Durham, 1370 Thompson Ave., Glendale, Calif. 91201

Filed Jun. 7, 1993, Ser. No. 72,108
Int. Cl.[5] B62K *21/12*
U.S. Cl. 74—551.1 2 Claims



1. In a bicycle having external forks including a pair of spaced-apart mounting brackets mounted on a steering tube, said mounting brackets including mounting holes, and a head tube having oppositely-disposed shouldered bearing bores at its ends, a headset comprising;

a) a pair of ball bearing including inner and outer races, said outer races inserted in said bearing bores of said bicycle frame head tube;

b) a pair of internally-threaded, shouldered bushings including head portions and cylindrical portions for engagement with the inner races of said ball bearings;

c) a threaded stud engaging said internal threads of said bushings;

d) a pair of fastener means inserted through said mounting holes in said mounting brackets of said external forks, said screws engaging said internal threads of said bushings.

5,305,655

STEERING WHEEL WITH AN AIR BAG UNIT AND METHOD OF MANUFACTURES

Kouichi Kaga, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 783,157, Oct. 28, 1991, abandoned. This application May 14, 1993, Ser. No. 61,501
Claims priority, application Japan, Oct. 29, 1990, 2-291505
Int. Cl.[5] B62D *1/04;* B60R *21/16*
U.S. Cl. 74—552 3 Claims

1. A steering wheel for a vehicle, comprising:

an air bag unit therein, said air bag unit being disposed within the steering wheel so that a center of said unit is positioned on a driver side of a boss of said steering wheel, said steering wheel having a center of gravity subject to displacement by said air bag unit;

a steering wheel core having a hollow ring core including a front portion; and

means for weighting the steering wheel to minimize said displacement of the center of gravity of the steering wheel;

wherein said weighting means is buried within said core; and

wherein said steering wheel includes a right spoke member and a left spoke member; and

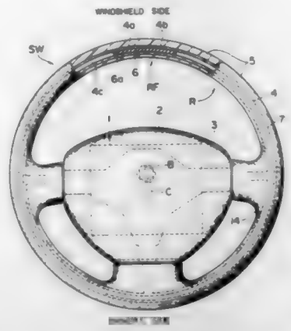
wherein said weighting means is disposed halfway between said left and right spoke members in said hollow ring core of said steering wheel

wherein said steering wheel core includes:

a hollow ring core having opposite end portions that fit around said weight member; and

means for joining the opposite end portions to the weight member;

wherein the opposite end portions are joined to the weight



member so as to produce a gap between opposite ends of the ring core and so that a circumferential groove is defined by the opposite ends and a circumferential surface of the weight member; and

wherein the joining means includes a welding material welded into an filling the circumferential groove;

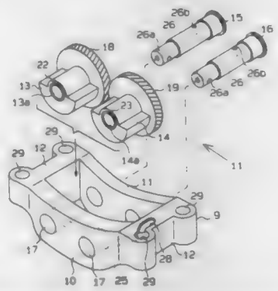
wherein the joining means has an outer surface that is substantially flush with outer surfaces of the opposite end portions.

5,305,656

BALANCER APPARATUS FOR ENGINE

Tamotsu Kamiya, Susono; Makoto Ishikawa, Mishima; Masaaki Konishi, and Keisuke Suga, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 807,051, Dec. 12, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 83,833
Claims priority, application Japan, Dec. 21, 1990, 2-405212; Dec. 25, 1990, 2-401715[U]; Dec. 28, 1990, 2-417348; Dec. 28, 1990, 2-417350; Feb. 13, 1991, 3-20045; Apr. 16, 1991, 3-84233
Int. Cl.[5] F16C *3/04, 11/00*
U.S. Cl. 74—604 7 Claims



1. An engine including a balancer apparatus for suppressing vibrations in the engine, wherein the engine has a rotatable crankshaft and a plurality of pistons and cylinders for causing rotation of the crankshaft, the balancer apparatus comprising:

a drive gear mounted substantially at the center of the longitudinal direction of the crank shaft for the rotation with the crank shaft, the drive gear being a helical gear; and

a first driven gear for supporting a first weight when engaged with a drive gear, the first driven gear also being a helical gear;

a first support shaft for rotatably supporting the first driven gear and the first weight;

a case for non-rotatably supporting the first support shaft, the case having a first wall that receives the thrust induced by rotation of the drive gear;

a first oil passage for delivering lubricating oil to the junction between the first weight and the first support shaft; and

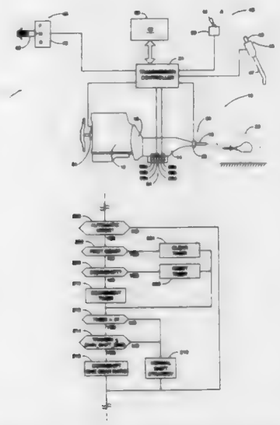
a guide passage in communication with the oil passage, for delivering lubrication oil to the portion of the first wall that receives the thrust induced by rotation on the drive gear.

5,305,657

METHOD AND APPARATUS FOR CONTROLLING MANUAL DOWNSHIFTING IN AN AUTOMATIC TRANSMISSION

Steven C. Bray, Metamora; Daniel C. Wood, East Peoria, and Randall M. Mitchell, Washington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 11, 1992, Ser. No. 881,279
Int. Cl.[5] B60K *41//12*
U.S. Cl. 74—861 19 Claims



1. An apparatus for use in a vehicle having an engine driven transmission which includes a plurality of gear ratios, comprising:

a sensor, wherein said sensor senses a parameter indicative of vehicle speed and responsively produces a vehicle speed signal;

a downshift switch, wherein said downshift switch controllably produces a downshift signal;

an engine speed sensor, wherein said engine speed sensor senses engine speed and responsively produces an engine speed signal;

a controller, wherein said controller receives the vehicle speed, engine speed, and downshift signals, processes the vehicle speed signal to produce a transmission control signal, produces a down shift enable value as a function of the engine speed signal, and modifies the transmission control signal to correspond to a lower gear ratio in all but the lowest gear ratio when the downshift signal is received and a value responsive to the vehicle speed signal is less than the down shift enable value; and

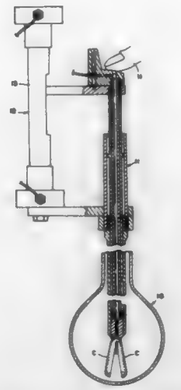
an actuator, wherein said actuator receives the transmission control signal and responsively controls the transmission gear ratio.

5,305,658

CAPSULE TRANSFER DEVICE

Leo J. Magee, Jr., Coboes, N.Y., assignor to Sterling Winthrop Inc., Malvern, Pa.

Filed Jul. 1, 1992, Ser. No. 908,124
Int. Cl.[5] B65D *83/76*
U.S. Cl. 73—864.82 10 Claims



1. A device for slitting a capsule and quantitatively transferring its content into a container comprising:

a slitting means; and

a washing means in cooperative relationship with said slitting means to slit and wash said capsule, said washing means comprises a dual syringe pump including tubings associated therewith through which a solvent is introduced into said device and check valves through which solvent flow is controlled.

5,305,659

TOOLING FOR FOLDING PRESS FOR AIR FOLDING

Willem Dieperink, Buchillon, and Claude Croisier, Bière, both of Switzerland, assignors to Beyeler Raskin S.A., Bussigny, Switzerland

PCT No. PCT/CH90/00216, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991, PCT Pub. No. WO91/03332, PCT Pub. Date Mar. 21, 1991
Continuation of Ser. No. 675,899, May 10, 1991, abandoned. This PCT application Sep. 11, 1990, Ser. No. 48,208
Claims priority, application Switzerland, Sep. 11, 1989, 3297/89
Int. Cl.[5] B21D *37/02*
U.S. Cl. 72—389 13 Claims

1. A tooling for a folding press for air folding comprising

a male die and a female die, the female die including two parts mounted on a table of a lower frame of said press for forming a folding V and arranged to allow modification of a width of the folding V by moving of at least one of said two parts, and

separating means including a spring steel blade including two longitudinal sides and arranged inside said folding V between said parts for separating said two parts, said longitudinal sides of the blade being secured to each of the two parts, respectively.

9. A tooling for a folding press comprising:

a male die and a pair of female die parts mounted on a table of a lower frame of said press for forming a folding groove,

at least one of the female die parts of said pair being slidably adjustable on said table with respect to the other female die part by an adjusting device allowing adjustment of a width of said folding groove,

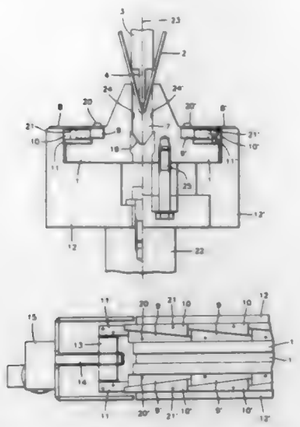
VOL 1161 ISS 4 AP 26 1994 UMI

said adjusting device comprising a plurality of pairs of first and second tapered shims,

said first and said second shims of each pair being slidably arranged with respect to each other,

said first shims of each pair being coupled with said adjustable female die part and at least said second shims of each pair being coupled with an actuating member connected to a driving device for adjusting the position of said second shims with respect to said first shims,

elastic means for acting on said adjustable female die parts for urging the same against the action of said tapered shims.



5,305,660

SHIFT KNOB

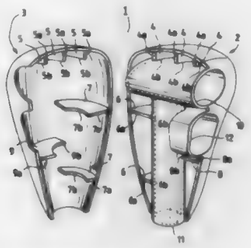
Hiroyasu Hasegawa, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Continuation of Ser. No. 804,926, Dec. 11, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,154

Claims priority, application Japan, Dec. 28, 1990, 2-405981

Int. Cl.[5] B60K *20/00*

U.S. Cl. 74—553 **6 Claims**



1. A shift knob comprising:

a knob body of a rigid resin including first and second portions joined along a generally central longitudinal axis;

a button insertion tubular portion formed unitarily on an upper portion of said first knob portion, said button insertion tubular portion opening to a side of the knob body;

a mounting tubular portion formed integrally on said first knob portion and generally perpendicularly intersecting said button insertion tubular portion; and

a shell portion covering an outer periphery of said knob body.

5,305,661

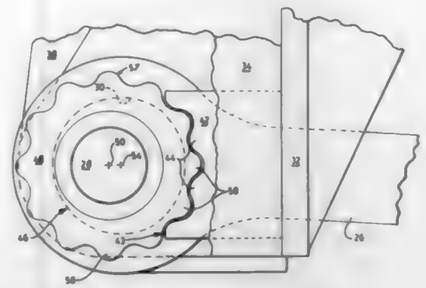
APPARATUS AND METHOD FOR POSITIONING A LINK

Daniel J. Schartman, East Peoria, and David J. Balzer, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 5, 1992, Ser. No. 956,208

Int. Cl.[5] G05G *1/04*

U.S. Cl. 74—571 M **5 Claims**



1. A length adjustment apparatus, comprising:

a first structure;

a second structure spaced from the first structure;

an elongated link having a first end portion removably connected to the first structure and a second end portion removably connected to the second structure, the second end portion includes a mounting hole;

an eccentric cam rotatably mounted within the mounting hole of the link and including a locking flange having a plurality of lobes on an outer periphery and an adjustment portion axially offset from the locking flange, a hole extends through the locking flange and the adjustment portion; and

a locking plate welded to the second structure, and including an end surface having a plurality of lobes interacting with the plurality of lobes on the locking flange to prevent rotation of the cam.

5,305,662

DRIVE BY WIRE CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE AND A CONTINUOUS VARIABLE TRANSMISSION USING ENGINE TORQUE CORRECTION MEANS BASED ON ACCELERATION TO DETERMINE A RATE-OF-CHANGE OF SPEED-RATIO CORRECTION MEANS

Kazuhide Togai, Takatsuki; Takashi Takatsuka, Kyoto; Makoto Shimada, Okazaki; Junji Kawai, Anjo, and Kazuya Hayafune, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 871,118, Apr. 20, 1992, abandoned. This application Nov. 16, 1992, Ser. No. 974,812

Claims priority, application Japan, Apr. 19, 1991, 3-88603; Apr. 7, 1992, 4-85740

Int. Cl.[5] B60K *41/12*

U.S. Cl. 74—866 **9 Claims**

1. In a control device for an internal combustion engine and a continuous variable transmission, said internal combustion engine is mounted on a vehicle and said continuous variable transmission is disposed between said internal combustion engine and driving wheels and a transmission ratio of said continuous variable transmission is continuously changeable, said control device comprising:

engine output adjusting means for adjusting an output of said internal combustion engine without depending upon operational amount of a driver-operable member;

operational amount detecting means for detecting operational amount of said driver-operable member to produce an operational amount signal;

target transmission ratio determining means for determining a target transmission ratio for said continuous variable transmission in response to said operational amount signal to produce a target transmission ratio signal;

transmission ratio detecting means for detecting an actual transmission ratio of said continuous variable transmission to produce an actual transmission ratio signal;

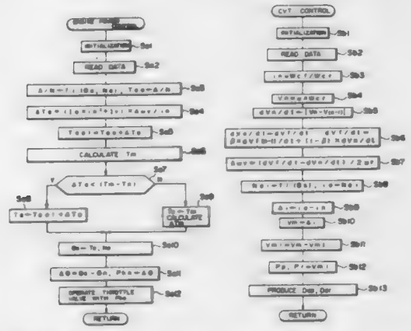
transmission ratio deviation calculating means for calculating a deviation between said target transmission ratio determined by said target transmission ratio determining means and said actual transmission ratio detected by said transmission ratio detecting means to produce a transmission ratio deviation signal;

changing speed determining means for determining a changing speed of the transmission ratio in response to said transmission ratio deviation signal to produce a changing speed signal;

driving condition detecting means for detecting a driving condition of the vehicle to produce a driving condition signal, wherein said driving condition includes at least an actual acceleration of said vehicle which is a time-dependent variation of the running speed of said vehicle;

target acceleration determining means for determining a target vehicle acceleration in response to said driving condition signal to produce a target acceleration speed signal;

acceleration deviation calculating means for calculating an acceleration deviation between said target vehicle acceleration determined by said target acceleration determining means and said actual vehicle acceleration detected by said driving condition detecting means to produce an acceleration deviation signal;



engine torque correction amount determining means for producing in response to said acceleration deviation signal an engine torque correction amount signal, wherein said engine torque correction amount signal is required for eliminating said acceleration deviation calculated by said acceleration deviation calculating means;

engine torque controlling means for controlling said engine output adjusting means on the basis of said engine torque correction amount signal when an engine torque can be changed by said engine torque correction amount, and on the basis of a restricted engine torque correction amount when the engine torque cannot be changed by said engine torque correction amount, wherein said restricted engine torque correction amount is obtained by restricting said engine torque correction amount within a range where the engine torque can be changed;

transmission ratio changing speed correcting means for correcting said changing speed of the transmission ratio determined by said changing speed determining means, when said engine torque correction amount is restricted, on the basis of a deficient torque to produce a corrected changing speed signal, wherein said deficient torque is lacked by restricting said engine torque correction amount; and

transmission controlling means for controlling said continuous variable transmission in response to said corrected changing speed signal so that an actual transmission ratio converges to said target transmission ratio determined by said target transmission ratio determining means with the changing speed of the transmission ratio corrected by said changing speed correcting means.

5,305,663

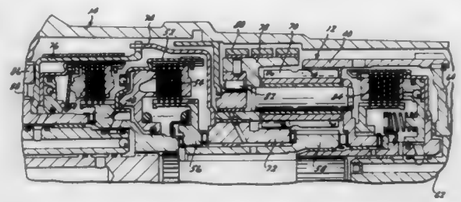
AUTOMATIC TRANSMISSION CONTROL SYSTEM

Allan S. Leonard, Westland; Kenneth G. Walega, Allen Park; David M. Garrett, Rochester Hills; Thomas L. Greene, Plymouth; John A. Daubenmier, Canton; Bruce J. Palansky, Livonia, and Lawrence H. Buch, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 10, 1992, Ser. No. 926,627

Int. Cl.[5] F16H *61/00*

U.S. Cl. 74—866 **17 Claims**



1. An automatic control system for a multiple speed ratio geared transmission adapted to deliver torque from a throttle-controlled engine to a driven shaft;

said transmission having a fluid pressure pump driven by said engine;

multiple ratio gear elements forming multiple torque flow paths;

clutch means for establishing and disestablishing said torque flow paths and brake means for establishing and disestablishing torque reaction points for said torque flow paths;

multiple fluid pressure operated servo means including clutch servo means and brake servo means for respectively actuating said clutch means and said brake means;

said control system comprising a fluid control valve circuit, first shift valve means in said circuit for controlling pressure distribution from said pump selectively to a first of said servo means to effect a first transmission ratio, second shift valve means in said circuit for controlling pressure distribution to a second of said servo means to effect a second transmission ratio and a third shift valve means in said circuit for controlling pressure distribution to a third of said servo means;

multiple shift solenoid valve means in said circuit having on and off operating states, electronic processor means for controlling changes in said operating states, each change in ratio between adjacent ratios of said transmission being effected by a change in the state of a single shift solenoid valve means.

5,305,664

HYDRAULIC CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION HAVING A SHIFT VALVE AND A CONTROL VALVE COAXIALLY ALIGNED IN A VALVE CHAMBER

Tatsuo Wakahara, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 27, 1992, Ser. No. 826,381

Claims priority, application Japan, Jan. 29, 1991, 3-028047

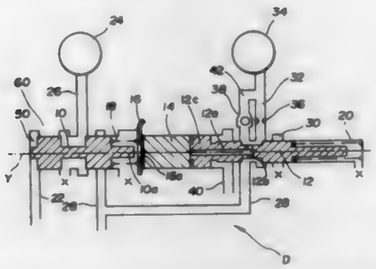
Int. Cl.[5] F16H *61/00*

U.S. Cl. 74—867 **5 Claims**

1. A hydraulic control device for an automatic transmission, comprising:

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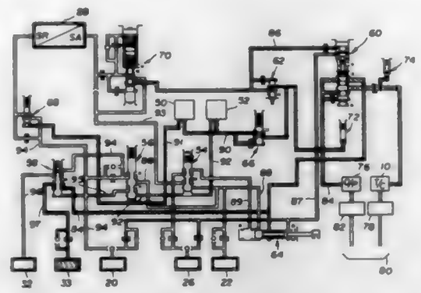
valve chamber means defining a valve chamber;
a first spool disposed in said valve chamber in which said first spool takes one of a first state and a second state in accordance with a hydraulic control signal supplied to said valve chamber;
a spring disposed in said valve chamber; and
a second spool disposed in said valve chamber and receiving a biasing force of said spring and a line pressure oppositely applied relative to the spring biasing force in a second spool movable direction, said second spool being separated from said first spool and controlling the line pressure at a predetermined pressure value according to the biasing force of the spring when said first spool is in the first state, said second spool being connected with said first spool and fixed by said first spool so as to output one of zero and a maximum value of the line pressure when said first spool is in the second state;



wherein said first spool operates to establish a fluid communication between a drain port and a hydraulic chamber of a first friction-joint element when said first spool is in the first state, and wherein said first spool operates to establish a fluid communication between the hydraulic chamber of the first friction-joint element and a line pressure port through which the line pressure is supplied when said first spool is in the second state; and
wherein said second spool operates to control the line pressure to a predetermined value and to supply the controlled line pressure to a hydraulic chamber of a second friction-joint element when said first spool is in the first state, and wherein said second spool operates to establish a fluid communication between the hydraulic chamber of the second friction-joint element and another drain port when said first spool is in the second state.

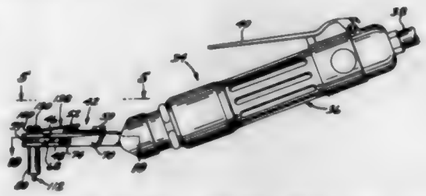
5,305,665
SPEED CHANGE CONTROL DEVICE OF AUTOMATIC TRANSMISSION
Kunihiko Sano, and Mitsugi Tazawa, both of Shizuoka, Japan, assignors to Jatco Corporation, Fuji, Japan
Filed Sep. 2, 1992, Ser. No. 939,600
Int. Cl.[5] F16H *61/00*
U.S. Cl. 74—869 **9 Claims**

1. A speed change control device for an automatic transmission, comprising:
first, second and third shift valves, each having two switching positions for selectively carrying out application and releasing of hydraulic pressure to and from an oil chamber of a corresponding hydraulically-operated friction element;
first and second solenoid valves, each controlling an output of hydraulic pressure in accordance with an electric signal applied thereto, said first solenoid valve outputting a hydraulic preasure which is applied to said second shift valve to control the switching operation of said second shift valve, said second solenoid valve outputting a hydraulic pressure which is applied to said first shift valve to control the switching operation of said first shift valve; and
passage means for permitting application of the hydraulic pressure from said second solenoid valve to said third shift valve to control the switching operation of said third shift valve, said passage means including said second shift valve



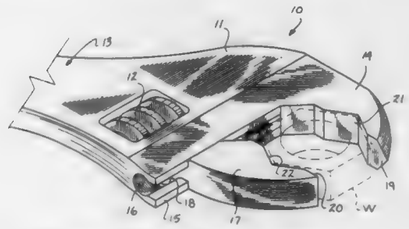
when said second shift valve assumes a predetermined one of said switching positions to disengage a corresponding hydraulically-operated friction element.

5,305,666
INSTALLATION TOOL SYSTEM FOR HI-LOK-TYPE FASTENERS
Joseph S. LaTorre, 11632 Plantero Dr., Santa Ana, Calif. 92705
Continuation of Ser. No. 500,197, Mar. 28, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 856,839
Int. Cl.[5] B25B *13/56*
U.S. Cl. 81—55 **42 Claims**



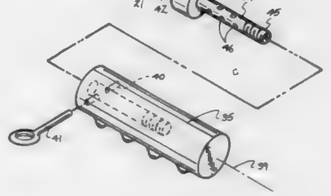
1. A tool for installing a threaded fastener of the Hi-Lok type, comprising a pin component having a headed end and a threaded end with a hex recess therein, and a collar component having a threaded body and a torque-off nut, which comprises:
body means comprising rotary motivating means;
drive head assembly means generally fixedly supported on said body means and having rotary power receiving means therein operatively connected to said motivating means for rotation of said receiving means;
tubular socket means having forward and rearward portions and having a cylindrical through bore, said rearward portion being rotatably supported by said drive head means and operatively connected to said power receiving means for rotation of said socket means during a fastener installation event, and said forward portion having a forwardly opening hex drive socket recess therein that is operatively engageable with said torque-off nut;
hex key means having a rearward body coaxial of said socket means bore and a forward hex wrenching shaft extending forwardly of said socket means, said wrenching shaft being receivable in said pin component hex recess for holding said pin component against rotation during a fastener installation event, said key body having a rearward external hex surface and a rearwardly opening threaded bore;
tubular key holder means coaxial with but rotationally independent of said socket means, at least a forward portion of said holder means being located within said socket means bore, said holder means having a forwardly opening internal hex engageable over said key body hex to rotationally lock said key means and said holder means together;
retention means extending coaxially through said holder means but rotationally independent of said holder means, said retention means having an externally threaded forward end portion that is threadedly engageable in said threaded bore of said key means, and having limit means thereon which is interengageable with said holder means to limit forward location of said retention means in said holder means;
said retention means being biased forwardly toward a forwardmost position of repose in said socket means, and said retention means and key means being rearwardly retractable relative to said socket means against the biasing force of said spring means during a fastener installation event as said socket means moves forwardly relative to said key means; and
antirotation means connected to said drive head assembly means and operatively associated with said holder means for holding said holder means fixed against rotation relative to said assembly means;
said key means being forwardly threadedly removable from said holder means by rotating said retention means in one direction relative to said holder means, and another said key means being threadedly replaceable in said holder means by rotating said retention means in the other direction relative to said holder means.

5,305,667
ADJUSTABLE WRENCH
Juan Caballero, P.O. Box 162, Morgan Hill, Calif. 95038
Filed Apr. 12, 1993, Ser. No. 44,706
Int. Cl.[5] B25B *13/16*
U.S. Cl. 81—165 **2 Claims**



1. An adjustable wrench, comprising,
a wrench head, the wrench head having a drive worm screw rotatably mounted within the wrench head, with the wrench head including a wrench head end wall, and a fixed jaw fixedly mounted to the wrench head, with the fixed jaw including a fixed jaw wall orthogonally oriented relative to the wrench head end wall, and
a guide slot directed into the wrench head in communication with the wrench head end wall, and
a movable jaw having a follower, with the follower received within the guide slot, and the movable jaw further including a movable jaw wall arranged in a parallel coextensive relationship relative to the fixed jaw wall, and
a first V-shaped recess directed into the fixed jaw wall, and a second V-shaped recess directed into the movable jaw wall, wherein the &irst V-shaped recess and the second V-shaped recess are arranged in a mirror image facing relationship relative to one another, and the drive worm screw is arranged for reciprocation of the movable jaw within the guide slot, and
further including an elongate wrench handle integrally mounted relative to the wrench head, with the wrench handle having a handle end wall, the handle end wall including a polygonal cavity directed into the handle end wall, the polygonal cavity having spaced cavity side walls, and the handle having a handle top wall, and at least one recess, the at least one recess directed into the handle top wall, with the wrench handle formed of a ferrous metallic material, and a screwdriver blade member complementarily received 7ithin the recess, the screwdriver blade member formed of a magnetic material, and the blade member having a blade member head, and the blade member head having at least one semi-spherical recess directed therein, and at least one of said cavity side walls having a detent cavity directed into the at least one cavity side wall, with the detent cavity having a cavity spring and a detent sphere mounted to the cavity spring, wherein the detent sphere is directed into the polygonal cavity from the detent cavity for reception within the semi-spherical recess for selective securement of the screwdriver blade member within the polygonal cavity.

5,305,668
ARTICULATED WRENCH APPARATUS
Clive N. Davis, 218 Barnum Ave., Port Jefferson, N.Y. 11777
Filed May 3, 1993, Ser. No. 55,286
Int. Cl.[5] B25B *23/16*
U.S. Cl. 81—177.7 **2 Claims**



1. An articulated wrench apparatus, comprising
a forward link and a plurality of intermediate links pivotally mounted relative to one another, with the forward link mounted to one of said intermediate links, and
a rear link mounted to one of said intermediate links spaced from the forward link, with the forward link including a tool head pivotally mounted to the forward link, and the rear link including a handle plate pivotally mounted to the rear link, and
the forward link includes a bifurcated forward link end pivotally receiving the tool head therewithin and the forward link including a link rear plate, with each of the intermediate links including an intermediate link bifurcated forward end, and the rear link including a bifurcated rear end pivotally mounting the handle plate therewithin, and
the handle plate includes an abutment boss, and a connecting shaft fixedly and orthogonally mounted to the abutment boss at a second end of the connecting shaft, with a first end of the connecting shaft having a threaded portion, and a handle shaft, the handle shaft having a handle shaft forward end, with the handle shaft forward end including a first bore directed through the handle shaft forward end, and a second bore in communication with the first bore, with the second bore internally threaded to receive the handle shaft second end threadedly therewithin.

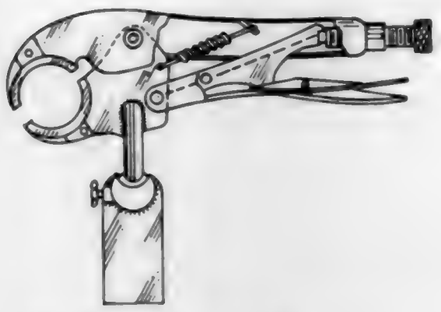
VOL 1161 ISS 4 APR 26 1994 UMI

5,305,669

SHAFT CLAMPING PLIERS

Gary A. Kimbro, 1208 Maryland Ave., and Wendell R. Burson, 1034 Pennsylvania Ave., both of St. Cloud, Fla. 34769

Filed May 17, 1993, Ser. No. 61,543
Int. Cl.[5] B25B *7/02, 23/00*
U.S. Cl. 81—423 2 Claims



1. Shaft clamping pliers, comprising,

a plier assembly having a fixed handle, with the fixed handle including a fixed jaw, the fixed jaw including a fixed jaw semi-cylindrical face, and

a movable handle, the movable handle having a movable jaw, with the movable jaw and the movable handle interconnected by a movable handle pivot axle, the movable jaw pivotally attached to the fixed jaw about a jaw pivot axle, with the movable jaw having a movable jaw semi-cylindrical face in a facing confronting relationship relative to the fixed jaw, and

a first insert secured to the fixed jaw and a second insert secured to the movable jaw, and

the first insert includes a first semi-cylindrical body complementarily received within the fixed jaw semi-cylindrical face, with the first insert further including a plurality of first insert mounting flanges arranged in a parallel relationship relative to one another receiving the fixed jaw therebetween, and the second insert including a second insert semi-cylindrical body having spaced parallel second mounting flanges, with the second mounting flanges receiving the movable jaw therebetween, and the fixed jaw having a first mounting bore, the movable jaw having a second bore, and a first fastener rod directed through the first insert flanges and the first mounting bore, and a second fastener rod directed through the second mounting flanges and the second mounting bore, with the first mounting bore and the second mounting bore arranged in a parallel relationship relative to one another, and

a support shaft fixedly mounted to the movable jaw orthogonally oriented relative to the jaw pivot axle and the movable handle pivot axle, with the support shaft having a support shaft first and secured to the movable jaw and a support shaft second end, and a support plate, with the support plate mounted to the support shaft at the support shaft second end, and

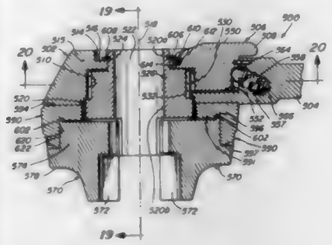
the support shaft second end includes a pivot sphere, and the support plate includes a support plate socket, the support plate socket complementarily and rotatably receives the pivot sphere, and a locking rod threadedly directed through the pivot sphere socket in engagement with the pivot sphere within the pivot sphere socket to clampingly secure the pivot sphere relative to the pivot sphere socket.

5,305,670

ADJUSTABLE WRENCH

Gregory Fossella, 97 Main St., P.O. Box 838, Osterville, Mass. 02655, and Pater L. Lindenmuth, Boston, Mass., assignors to Gregory Fossella, Osterville, Mass.

Continuation-in-part of Ser. No. 638,828, Jan. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 387,220, Jul. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 392,206, Aug. 10, 1989, Pat. No. 5,067,376, which is a continuation-in-part of Ser. No. 567,290, Aug. 14, 1990, Pat. No. 5,090,273. This application Apr. 21, 1992, Ser. No. 871,845
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—63.2 71 Claims



1. An adjustable ratchet wrench comprising:

a housing having an axis and carrying a handle,

at least two jaws carried by the housing and having gripping faces which face the axis,

jaw control means mounted on the housing for limiting the jaws to radial movement with respect to the housing for enabling the jaws to open and close about a workpiece disposed between the gripping faces,

cam means for moving the jaws radially to open and close them about a workpiece, and

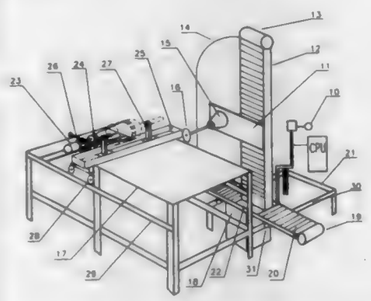
locking means connecting the cam means with the jaw control means for preventing the jaws from releasing the workpiece when the workpiece is turned by the jaws, said locking means comprises a latching means mounted in a recess in one of said means and cooperating teeth on the other of said means.

5,305,671

UNIVERSAL COIL CUTTER

Theodore C. Wachs, 6164 Norfolk Dr., Parma, Ohio 44134

Filed Jan. 15, 1993, Ser. No. 4,979
Int. Cl.[5] B23D *45/02, 47/04, 47/08*
U.S. Cl. 83—76.1 3 Claims



1. An apparatus for cutting end turns of stator, rotor and armature windings comprising:

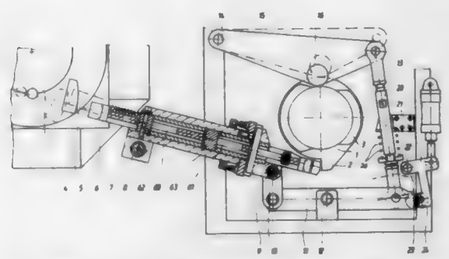
a motor within a support housing, an extended shaft attached to said motor, a saw attached to said shaft, and bearings within said support housing for supporting said shaft, said support housing mounted on a y-axis motor driven carriage which is mounted on an x-axis motor driven carriage which in turn is mounted on a z-axis carriage above a table for supporting a first workpiece with said end turns in a first cutting mode, a control means which communicates with a drive motor of each of said y-axis and said x-axis motor driven carriages to move the saw in a path around the first workpiece while cutting a plurality of said windings in said first cutting mode, and rails to support a workpiece stand on said table which allows for rotary motion of a second workpiece with said end turns in a second cutting mode, and a drive belt for looping around a diameter of the second workpiece and a drive pulley for imparting said rotary motion, the control means moving said saw into the windings of said second workpiece to position said saw to cut off a plurality of said windings of said second workpiece as said second workpiece is rotated in said second cutting mode.

5,305,672

DRIVING MEANS

Ludwig Balint, Bregenzer Strasse 37, A-6911 Lochau/Österreich, Austria

Filed Jun. 20, 1991, Ser. No. 718,017
Int. Cl.[5] B23D *21/00;* B26D *3/16*
U.S. Cl. 83—179 2 Claims



1. A driving means for a cutting-off device with a rotationally-held cutting-off tool, comprising:

a sledge hammer having a first end aligned with an impact surface for hitting the impact surface, said impact surface arranged on the rotationally-held cutting-off tool;

at least one driven rotating body, a cam located on said at least one driven rotating inertial body defining a path of movement about said rotating inertial body for striking a second end of said sledge hammer, said at least one driven rotating inertial body being rotated at an essentially constant speed; and

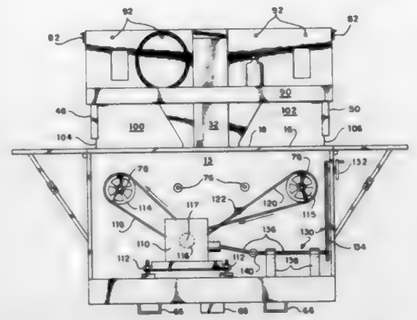
guide means, with a fixed axle, for holding said sledge hammer, and control means for controlling said guide means, wherein said sledge hammer is held axially displaceable in said guide means, said guide means being pivotally supported by said fixed axle and being pivoted by said control means to move said second end of said sledge hammer into the path of movement of said cam so that said cam axially drives said sledge hammer into said impact surface, and out of said path of movement after said sledge hammer has been driven.

5,305,673

DUAL BLADE BAND SAW

Donald E. Costley, 6425 Tolhurst Ct., Anchorage, Ak. 99504

Filed Jun. 25, 1993, Ser. No. 81,097
Int. Cl.[5] B23D *55/06;* B27B *13/00*
U.S. Cl. 83—802 12 Claims



1. A cutting machine comprising:

a housing supporting a table having an upwardly facing horizontal working surface;

a power source supported and located within said housing;

a plurality of work stations, each of said work stations comprising a plurality of guide wheels rotatably supporting a flexible, continuous cutting band, said plurality of guide wheels comprising, for each of said cutting bands, a drive wheel, an adjustment wheel, and an idler wheel, thus describing a triangular rotation pattern, at least one of said drive wheel, said adjustment wheel, and said idler wheel being located in said housing above said working surface and at least one other of said drive wheel, said adjustment wheel, and said idler wheel being located in said housing below said working surface, each of said work stations being configured such that a respective cutting band projects from said housing above said table working surface and is received into said table and is exposed to a user, thereby to enable work to be manipulated therearound and thus to be cut thereby, whereby a number of independent cutting operations corresponding to the number of work stations is enabled;

said power source is adjustably supported within said housing by a plurality of adjustment bolts, and includes a variable speed motor and a plurality of drive belts powering said drive wheels, manual positioning control means mounted on said housing and mechanically connected to said power source by linkage including a shaft for adjusting said motor, said shaft employing a universal joint therealong so that all connections of said linkage reaming operable should said power source be adjusted when tensioning the drive belts used to transfer rotational power from said motor to said drive wheel of said triangular rotation patterns.

5,305,674

STRINGED MUSICAL INSTRUMENT WITH VISUAL IMAGES

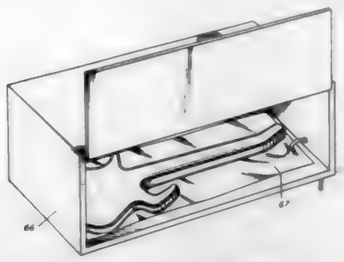
Lawrence R. Fishman, West Medford, Mass., and Kenneth Parker, Seymour, Conn., assignors to Korg/Fishpark Associates, Wilmington, Mass.

Continuation-in-part of Ser. No. 352,154, May 15, 1989, Pat. No. 5,125,312. This application Feb. 18, 1992, Ser. No. 836,245
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] G10D *1/08*
U.S. Cl. 84—291 27 Claims

1. A method of constructing a light-weight stringed musical

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instrument comprising the steps of, providing a wood instrument core that is for forming at least the body of the instrument; providing a laminate secured to the outer surface of said wood instrument core the laminate including, a strengthening



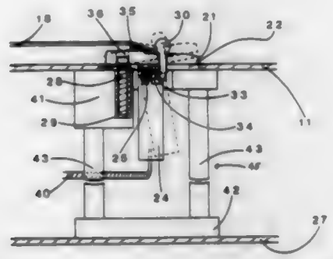
layer, a finish layer, and a means for displaying one or more visual images; disposing said means for displaying one or more visual images between at least part of the strengthening layer and at least part of the finish layer; providing strings; and securing the strings to the instrument.

5,305,675

HAND ACTUATED TREMOLO ASSEMBLY

Richard Lasner, 17621 Lemay Pl., Van Nuys, Calif. 91406

Filed Apr. 9, 1992, Ser. No. 876,720
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—313 **20 Claims**



1. A tremolo assembly to produce a desired tremolo effect in and to preserve the acoustic sound of a substantially hollow acoustic guitar having a substantially hollow sound box comprised of a top sound board and a bottom sound board joined by side walls, comprising

plate means pivotedly mounted to the top of said sound board for receiving the strings of the guitar,

actuating means attached to said plate means for actuating pivotal movement of said plate means, and

support means fixedly attached to the underside of said top sound board at the location of said plate means for supporting said plate means and countering excessive stress placed upon the acoustic guitar by said pivotal movement,

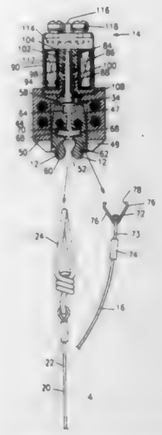
whereby manual operation of the actuating means causes said plate means to pivot and thus vary the tension of the strings of the guitar to produce the desired tremolo effect.

5,305,676

LOW RETENTION FORCE RELEASE AND ARMING MECHANISM FOR ORDINANCE DEVICES

Coleman W. Conrad, Whittier, and Charles H. Pearson, Riverside, both of Calif., assignors to BW/IP International, Inc., Long Beach, Calif.

Filed Mar. 8, 1993, Ser. No. 27,707
Int. Cl.[5] B64D *1/04*; F41F *5/02*
U.S. Cl. 89—1.55 **19 Claims**



1. A release and arming mechanism for selectively retaining an arming lanyard associated with an ordnance device, the ordnance device being released in an armed condition when the arming lanyard is retained by the mechanism and being released in an unarmed condition when the arming lanyard is not retained by the mechanism, said mechanism comprising:

an arming block;

a pair of opposed jaws mounted to the arming block, at least one of said jaws being movable such that the jaws may assume a closed position and an open position, the jaws being configured to retain the arming lanyard between them when held in the closed position and to release the arming lanyard when not held in the closed position;

solenoid means for selectively holding the jaws in the closed position;

a release lanyard; and

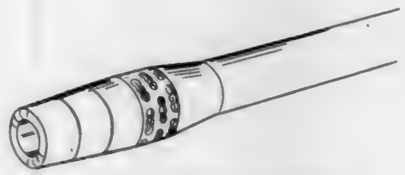
means for connecting the release lanyard to the jaws in such a manner as to hold the jaws in the closed position until the release lanyard is disconnected from the jaws.

5,305,677

MUZZLE BRAKE-BULLET STABILIZER

Robert A. Kleinguenther, P.O. Box 923, Seguin, Tex. 78155, and Glen M. Arnott, 1370 Flaming Oak, New Braunfels, Tex. 78132

Filed Apr. 23, 1993, Ser. No. 52,251
Int. Cl.[5] F41A *21/36*
U.S. Cl. 89—14.2 **1 Claim**



1. A muzzle brake-bullet stabilizer comprising:

a cylindrical body of predetermined length having: a muzzle attachment means;

an exhaust chamber of limited length comprised of bores of decreasing diameter, each bore being truncated by and communicating with a plurality of radial exhaust ports forming deflection walls;

a metering orifice, coaxial and communicating with said exhaust chamber, having a diameter slightly larger than that of the projectile;

a supersonic nozzle communicating with said metering orifice and having a minor diameter equal to that of said metering orifice increasing thereafter in size to the end of said cylindrical body;

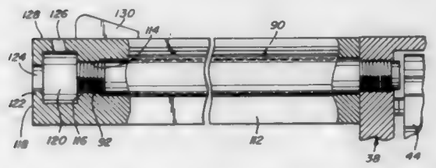
said exhaust ports being slots in nature formed by the intersection of multiple radial holes; said exhaust ports having a different orientation one to the next.

5,305,678

COMPENSATED BARREL SHROUD

Robert Talbot, Holland; Edward C. Arventos, and Seth K. Wesson, both of Monson, all of Mass., assignors to Wesson Firearms Co., Inc., Palmer, Mass.

Continuation-in-part of Ser. No. 826,622, Jan. 28, 1992, Pat. No. 5,225,615. This application Nov. 19, 1992, Ser. No. 978,784
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] F41C *27/04*; F41A *21/34, 21/36*
U.S. Cl. 89—14.3 **14 Claims**



7. In combination, a firearm having a frame, a barrel and a compensated barrel shroud that encases the barrel comprising:

a barrel shroud having a first end for engaging the frame of the firearm and a second end remote from the frame, the shroud including a first section that surrounds the barrel, the shroud being secured to the barrel at an end of the barrel remote from the frame, the shroud further including a second section positioned between the second end of the shroud and the end of the barrel, the second section defining an expansion chamber; and

at least one slot extending substantially transversely to a longitudinal axis of the barrel, the slot constructed and arranged to direct expanding propellant gases from the expansion chamber to force the shroud downwardly.

5,305,679

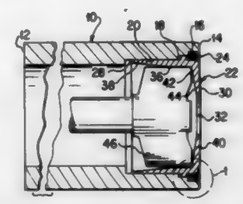
CYLINDER MORTAR

Michel Begneu, Bourges, France, assignor to Giat Industries, Versailles, France

PCT No. PCT/FR92/00114, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/17746, PCT Pub. Date Oct. 15, 1992
PCT Filed Feb. 10, 1992, Ser. No. 941,148
Claims priority, application France, Apr. 4, 1991, 91 04117
Int. Cl.[5] F41A *3/74, 3/76, 9/77*
U.S. Cl. 89—26 **16 Claims**

1. A cylinder mortar of the type in which a gun barrel is associated with an ammunition cylinder mounted to rotate about an axis parallel to the axis of the barrel and comprising a plurality of cylindrical chambers for receiving rounds of ammunition, said chambers being open at front and rear ends and movable by rotation of the cylinder to a firing position aligned with the barrel, a rear end of said chamber being supported on a firing plate, said cylinder mortar further comprising means for firing the ammunition, each of said chambers comprising:

elastically deformable means for forming an abutment for supporting the rounds of ammunition inserted in the chamber through the front end thereof and further for ensuring gas tightness on firing, relative to the chamber and to the firing plate, the elastically deformable means comprising a metal seal of generally cylindrical shape, said



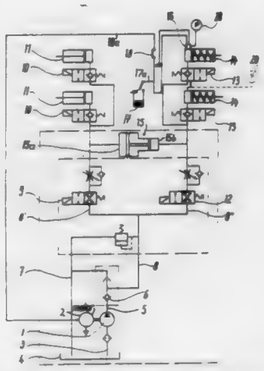
seal being open at a front end and having an annular bottom wall at a rear end, said seal comprising a central aperture, wherein said seal is mounted in a bore in the rear end of the chamber and is retained in said bore by a retaining means, said elastically deformable means further comprising means for positioning the rounds of ammunition, said positioning means comprising an inner surface of the seal, wherein a diameter of said inner surface is substantially equal to a diameter of the ammunition.

5,305,680

CONTROL DEVICE FOR HYDRAULIC ACTUATING CYLINDERS OF A LOADING TAILGATE OF A VEHICLE

Günter Weber, Hauptplatz 23, A-2474 Gattendorf, Austria

PCT No. PCT/AT91/00005, § 371 Date Jun. 30, 1992, § 102(e) Date Jun. 30, 1992, PCT Pub. No. WO91/10577, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 9, 1991, Ser. No. 867,672
Claims priority, application Austria, Jan. 10, 1990, 46/90
Int. Cl.[5] F01B *25/26*; F16D *31/02*
U.S. Cl. 91—1 **7 Claims**



1. A control device for a hydraulic operating circuit of a combination loading, lifting, and closing wall or tailgate combination of a vehicle, having

a hydraulic fluid pump (**1**) communicating with a fluid supply (**4**) of pressure fluid;

a motor (**2**) driving said pump;

a hydraulic system including a pump pressure line (**5, 8**) connected to said pump, a pump return line (**7**) connected to the pump and the fluid supply (**4**);

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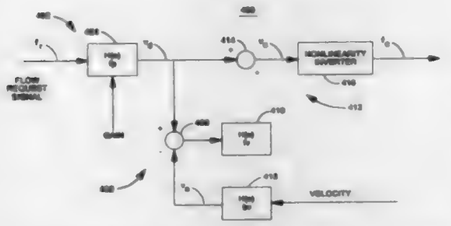
a first branch line (8') connected to said pump pressure line (8);
a lifting cylinder (11) coupled to said first branch line (8') for lifting said tailgate;
a first control valve (9) controlling admission and drainage of pressurized fluid to said lifting cylinder (11);
a second branch line (8'') hydraulically connected to said pump pressure line (8);
a closing cylinder (14) coupled to said second branch line (8'') for lifting and closing the combination tailgate;
a second control valve (12) for controlling admission and drainage of pressurized fluid to said closing cylinder (14);
a hydraulic pressure intensifier piston-cylinder unit (15) hydraulically connected across said first and second branch lines, and having a larger piston-cylinder chamber (15*a*) and a smaller piston-cylinder chamber (15*b*) hydraulically connected across said branch lines (8', 8''); and
comprising, in accordance with the invention,
means for determining an overload placed on the combination tailgate upon application of hydraulic pressure to the second branch line (8'') for moving the tailgate by said closing cylinder (14),
said means including
a pressure-responsive electrical switch (16) hydraulically coupled to the closing cylinder (14), said pressure-responsive switch being electrically connected (18*a*) to and controlling energization of said motor (2) for interruption of hydraulic pressure from said fluid pump (1) to said hydraulic system when the pressure switch (16) senses occurrence of a pressure beyond a predetermined limit in said closing cylinder (14); and
a maximum pressure indicating pressure gauge or maximum indicating manometer (20), hydraulically coupled to the closing cylinder (14) and indicating the maximum level of pressure exceeding said predetermined limit upon stoppage of the pump motor; and
wherein said maximum pressure indicating pressure gauge (20) is inaccessible from the outside of the vehicle.

5,305,681

HYDRAULIC CONTROL APPARATUS

Lonnie J. Devier; John J. Krone, both of Dunlap; Michael S. Lukich, Peoria; Stephen V. Lunzman, Chillicothe, and Howard A. Marsden, Pekin, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 821,099, Jan. 15, 1992. This application Aug. 10, 1993, Ser. No. 104,521
Int. Cl.[5] F15H *13/16*
U.S. Cl. 91—361 **15 Claims**



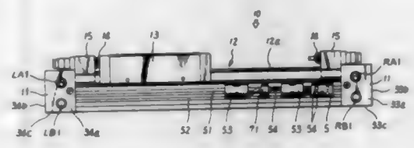
1. An apparatus for controlling a hydraulic circuit having a plurality of hydraulic actuators, each hydraulic actuator having first and second ends, the apparatus being connected between a source of pressurized hydraulic fluid and the hydraulic actuators, comprising:
means for controllably providing pressurized hydraulic fluid to the hydraulic actuators, wherein said providing means includes a plurality of respective control valves, each control valve being connected to both the first and second ends of the corresponding hydraulic actuator, wherein each of said control valves includes a signal control element for controlling flow to both the first and second ends of the corresponding hydraulic actuator, wherein said plurality of control valves includes at least one open center control valve and at least one closed center pressure compensated control valve;
means for producing a mode signal;
controlling means for receiving said mode signal and responsively producing a plurality of command signals, each command signal corresponding to a respective hydraulic actuator, wherein said command signal corresponding to said at least one open center control valve is determined according to a set of flow characteristics responsive to said mode signal having a first value and according to a second set of flow characteristics responsive to said mode signal having a second value and wherein said command signal corresponding to said at least one closed center pressure compensated valve is determined according to a third set of flow control characteristics responsive to said mode signal having said first value and according to a fourth set of flow control characteristics responsive to said mode signal having said second value.

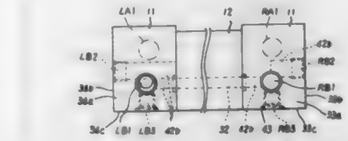
5,305,682

PIPING AND WIRING LEAD-OUT MECHANISM FOR RODLESS CYLINDER

Junya Kaneko, Soka, Japan, assignor to SMC Corporation, Tokyo, Japan

PCT No. PCT/JP91/00012, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO92/12351, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 10, 1991, Ser. No. 927,646
Int. Cl.[5] F01B *25/26, 29/00, 31/00*
U.S. Cl. 92—5 R **1 Claim**





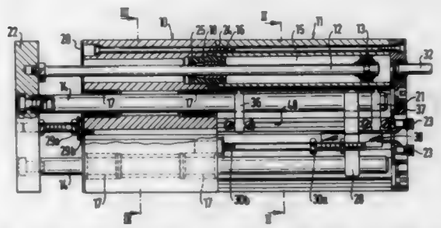
1. A piping and wiring lead-out mechanism for a rodless cylinder having a piston fitted in a cylinder body for reciprocating movement therein and a moving member adapted to slide reciprocatingly along the cylinder body in synchronism with the movement of the piston, said lead-out mechanism comprising:
a port opened in each of end plates which are located at opposite ends of said cylinder to supply fluid pressure to a pair of pressure chambers defined by said piston;
each of said end plates having fluid supply ports opened in a lateral wall, an outer end wall and a lower side wall of each of said end plates to supply fluid pressure separately to each one of said pressure chambers;
said fluid supply ports on each of said end plates being communicated with each other through passages formed in each of said end plates and said cylinder body;
a groove formed longitudinally on a lateral side of said cylinder body to mount and accommodate a switch and switch lead wires thereon; and
a wire outlet member having a plural number of lead wire outlet holes in face to face relation with said groove for drawing out lead wires, the wire outlet member being relocatably fixed in said groove at an arbitrary position in the longitudinal direction thereof.

5,305,683

PRESSURE-MEDIUM ACTUATED LINEAR UNIT

Gerhard Gosdowski, Bietigheim, and Josef Neuwirth, Esslingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00138, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/17321, PCT Pub. Date Oct. 15, 1992
PCT Filed Feb. 22, 1992, Ser. No. 986,568
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1991, 4111202
Int. Cl.[5] F01B *25/26*
U.S. Cl. 92—5 R **15 Claims**



1. A pressure medium actuated linear unit for handling apparatus for industrial manufacture, the unit including:
a housing block;
at least one operating cylinder for at least one piston;
at least one piston rod;
at least one guide rod; and
guide elements for the at least one piston rod and the at least one guide rod;
wherein the housing block accommodates the at least one operating cylinder for the at least one piston and the guide elements for the at least one piston rod and the at least one guide rod;
wherein the housing block is a modular unit and comprises:
a guide unit; and
a drive unit releasably connected with the guide unit, one behind the other, to form a compact unit in the direction of linear movement;
wherein the guide rod and the piston rod are arranged in an axially parallel manner;
wherein the end of the guide rod at the end of the drive can be moved within the drive unit;
wherein if the guide rod is moved into the drive unit, the drive unit extends at least over the moved-in length of the guide rod; and
wherein the guide unit includes the guide elements for the piston rod and the guide rod.

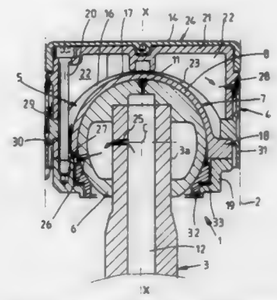
5,305,684

PISTON FOR INTERNAL COMBUSTION ENGINES AND LIKE MACHINES

Jean F. Melchior, 126 Bld du Montparnasse, 75 014 Paris, France

Continuation of Ser. No. 679,234, Apr. 2, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,497
Claims priority, application France, Apr. 6, 1990, 90 04477
Int. Cl.[5] F16J *1/14;* **F01B** *31/00*
U.S. Cl. 92—187 **12 Claims**

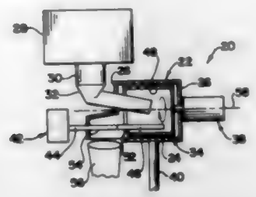
1. An assembly for cyclically transferring a working force of a working gas in a cylinder of a reciprocating combustion engine in which the working gas is at both high temperature and high pressure and the engine includes a lubricating oil at high pressure and an oil discharge zone at low pressure, said assembly comprising:
a connecting rod in the oil discharge zone including a partly substantially spherical little-end, a supply passage to which the lubricating oil at high pressure is supplied, an opening from said supply passage in a distal substantially hemispherical surface of said little-end, and a check valve in said passage through which the oil flows under pressure only through said supply passage to said opening;
a shell including a substantially hemispherical dome and an annular edge portion, said shell being made from a resilient material and with a thickness such that said dome deforms under a direct tension force resulting form the working force acting in a direction parallel to a longitudinal axis of the cylinder which is applied to said annular edge portion, and said dome having a substantially hemispherical inner surface and a substantially hemispherical outer surface and said inner surface being shaped to receive said spherical little-end therein such that said inner surface of said dome bears only against said distal surface of said little-end along a closed circular contact line or band when a pressure of the working gas is at a minimum in a course of a compression-expansion cycle of the engine whereby a fluid-tight interstice is provided between said inner surface of said dome and said distal surface of said little-end which is in communication with said opening and hence is filled with lubricating oil;
a piston which slides in the cylinder including a transverse surface against which the working gas presses when at high pressure and an external cylindrical body having an



inner cavity in which said shell and said little-end of said connecting rod are received;
a holding means for holding said annular edge portion of said shell to a lower part of said cylindrical body with said shell held taut such that a free space devoid of any axial force-transmitting connections is provided in said cavity between said outer surface of said dome and said piston at all times and such that the working force cyclically exerted on said transverse surface of said piston by the working gas is transferred to said dome of said shell as a direct tension force only through said annular edge portion and the tension force is then transferred to said little-end with a resilient direct tensile deformation of said dome in said free space as said shell is held taut by said holding means, the resilient tensile deformation of said dome and the resultant increase in the area of said contact line or band as said dome is resiliently deformed into contact with said little end compresses the oil in said interstice to a high pressure and hence past said contact line or band to the discharge zone, and after the force is transferred and said dome resiliently moves back to the initial shape in said free space new oil is moved into said interstice through said opening of said supply passage in said little-end of said connecting rod; and
a freeing means for preventing any hydrostatic pressure build-up in said free space of said cavity so that said shell is free to deform in said free space.

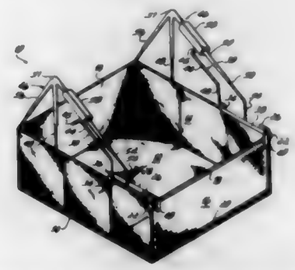
VOL 1161 ISS 4 APR 26 1994 UMI

5,305,685
GROUNDS REMOVAL CENTRIFUGE
William E. Midden, Springfield, Ill., assignor to BUNN-O-MATIC Corporation, Springfield, Ill.
Filed May 4, 1993, Ser. No. 58,275
Int. Cl.[5] A47J *31/44*
U.S. Cl. 99—289 R **17 Claims**



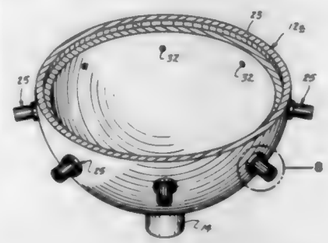
1. A spent beverage brewing substance disposal device for use with a beverage brewing apparatus, said beverage brewing apparatus having means for producing a brewed beverage from a beverage brewing substance by infusion with a liquid, a drain conduit in communication with and extending from said beverage brewing means for removing a slurry of moist beverage brewing substance and waste liquid from said beverage brewing means, said disposal device comprising:
a housing having a base, walls, and an opening formed through an area of said walls communicating with said drain conduit for receiving said slurry from said beverage brewing means;
a strainer basket disposed in said housing for receiving said slurry, said strainer basket having porous surfaces through which liquid passes;
means for rotating said stainer basket operatively associated with said strainer basket, said rotating means transferring rotary motion to said strainer basket for centrifugally extracting a substantial portion of a liquid component of said slurry through said porous surfaces of said strainer basket leaving a drained material component in said strainer basket; and
a drain hole in said housing for draining said liquid component centrifugally removed from said slurry out of said housing.

5,305,686
FRY BASKET
S. Alfred Svensson, Cincinnati, Ohio, assignor to Falcon Fabricators, Inc., Batavia, Ohio
Filed May 7, 1993, Ser. No. 59,440
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—407 **11 Claims**



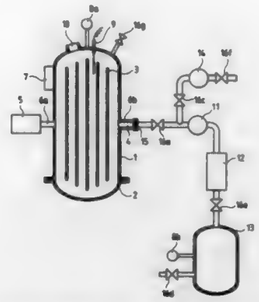
1. A basket for frying food products which comprises:
a perforate bottom wall;
a plurality of interconnected perforate side walls each having a top edge and a bottom edge, said bottom edge of each said side wall being fixedly joined to said bottom wall;
a gate having a top edge, a bottom edge, and a pair of opposed side edges;
means for pivotally connecting said side edges of said gate to two of said side walls, said connecting means being operable to enable said gate to be moved between a closed position in which said gate bottom edge is proximate said bottom wall and an open position in which said gate bottom edge is displaced from said adjacent bottom wall; and
means for releasably latching said gate in said closed position.

5,305,687
POPCORN BALL FORMING APPARATUS
Jesse D. Cantrell, and Hilda J. Cantrell, both of 136 Rifle Gap, Universal City, Tex. 78148
Filed Apr. 19, 1993, Ser. No. 48,310
Int. Cl.[5] A23P *1/10*
U.S. Cl. 99—440 **3 Claims**



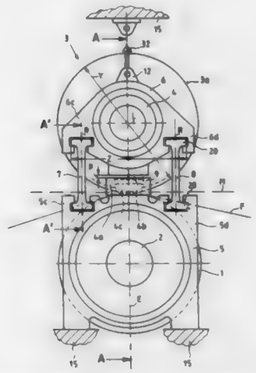
1. A popcorn ball forming apparatus, comprising,
a first semi-spherical mold arranged for securement to a second semi-spherical mold, wherein the first semi-spherical mold includes a first handle fixedly mounted medially of and radially aligned relative to the first semi-spherical mold, and a second handle mounted medially and fixedly in a radial orientation relative to the second semi-spherical mold permitting securement and positioning of the first semi-spherical mold in a mirror image relationship relative to the second semi-spherical mold, and
the first semi-spherical mold includes a first stepped annular entrance wall, with the second mold having a second complementarily stepped entrance wall received within the first stepped annular entrance wall, and
the first mold includes a first hinge plate, the second mold includes a second hinge plate, wherein the first hinge plate is mounted in adjacency to the first entrance wall, having a first hinge plate loop, and the second hinge plate positioned in adjacency relative to the second entrance wall includes a plurality of second hinge plate loops, and a hinge pin is arranged for slidable reception through the first hinge plate loop and the second hinge plate loop to hingedly secure the first mold to the second mold, and
a spring-biased latch plate mounted to the second mold in adjacency to the second entrance wall, with the latch plate mounted in a diametrically oriented relationship relative to the second hinge plate, and a locking lug fixedly mounted to the first mold in a diametrically opposed orientation relative to the first hinge plate arranged for reception through the latch plate, and
an annular array of flavor injector housing members mounted to the second mold in adjacency to the second entrance wall, wherein each of the injector housings include a threaded boss, each threaded boss coaxially aligned relative to an injector port directed through the second mold, and an injector housing component received medially of and coaxially aligned through the threaded boss for fluid communication with the port to direct fluid through the port.

5,305,688
DEVICE FOR TREATING NUTS
Akeshi Kotani, and Masahiro Takagaki, both of Hiroshima, Japan, assignors to Amano Jitsugyo Co., Hiroshima; Tabata Co., Ltd., Osaka and Kasho Co., Ltd., Tokyo, all of Japan
Division of Ser. No. 888,316, May 27, 1992, Pat. No. 5,208,058, which is a continuation of Ser. No. 638,970, Jan. 9, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,365
Int. Cl.[5] A23L *1/36*
U.S. Cl. 99—470 **19 Claims**



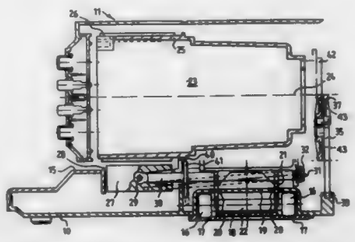
1. A device for treating nuts with compressed carbon dioxide gas so as to make said nuts more oxidation-resistant, said device comprising:
vessel means for containing nuts and compressed carbon dioxide gas, said vessel means including at least one door means for putting nuts into said vessel means and removing nuts therefrom;
heater means for heating nuts within said vessel;
chiller means for chilling nuts within said vessel; and
carbon dioxide gas injecting and releasing means for introducing carbon dioxide gas into said vessel and releasing said gas from said vessel, said carbon dioxide gas injecting and releasing means including at least one valve.

5,305,689
TENSION BARS FOR ROLL PRESS FOR PAPER MAKING MACHINE
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany
Filed May 13, 1993, Ser. No. 61,577
Claims priority, application Fed. Rep. of Germany, May 27, 1992, 4217560
Int. Cl.[5] B30B *3/04*
U.S. Cl. 100—169 **24 Claims**



1. In a roll press having a first press roll and a second press roll having main axes which define a press plane and which form with one another a press nip, the roll press having a loaded condition and an unloaded condition, and wherein:
a) each of the press rolls has a rotatable roll shell and means for permitting the roll shell to rotate about the axis of the press roll;
b) the first press roll is supported on at least one end in a first bearing bracket which is in turn supported on a machine frame;
c) the second press roll is supported on at least one end in a second bearing bracket which is coupled to the first bearing bracket by means of detachable tie bars, which are arranged on both sides of the press plane substantially parallel to the latter and perpendicular to the main axes of the press rolls;
d) the detachable tie bars being low in tension in the unloaded condition of the roll press;
e) the tie bars being movable substantially in the direction of the main axes of the press rolls in such a manner as to permit, in the loaded condition of the roll press, the second bearing bracket of the second press roll to be movable relative to the first bearing bracket of the first press roll;
the improvement wherein:
f) each of the tie bars, which couple the first and second bearing brackets, comprises a group of at least two tie bars arranged in a plane which is approximately parallel to the press plane; and
g) attachment means permits the tie bars to be inserted into the bearing brackets along said plane of said tie bars for being attached to the bearing brackets.

5,305,690
FRANKING MACHINE WITH CARRIAGE MOUNTED RESILIENT PRESSURE ROLLER
Cyrus Abumehdi, Harlow, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom
Filed Dec. 21, 1992, Ser. No. 993,850
Claims priority, application United Kingdom, Dec. 30, 1991, 9127479
Int. Cl.[5] B41F *3/04*
U.S. Cl. 101—269 **7 Claims**



1. A franking machine including a base member; a carriage movable from a home position to a final position along the base member; a rotatable print drum carried by the carriage; drive transmission means interconnecting the carriage and the base member to cause rotation of the print drum through a franking impression printing revolution in response to movement of the carriage away from the home position to said &inal position in a franking printing operation; and an impression roller mounted on said carriage and resiliently urged toward said print drum to apply impression pressure to a mail item located between said print drum and said impression roller.

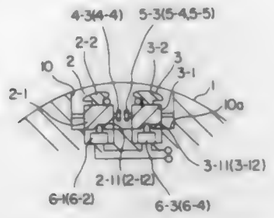
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5,305,691

PLATE LOCKUP DEVICE POSITION DETECTING APPARATUS FOR PRINTING PRESS

Kazuhiro Maejima, Ibaragi, Japan, assignor to Komori Corporation, Japan

Filed Feb. 5, 1993, Ser. No. 14,274
Claims priority, application Japan, Feb. 10, 1992, 4-13053
Int. Cl.[5] B41F *1/28*
U.S. Cl. 101—415.1 **10 Claims**



1. A plate lockup device position detecting apparatus for a printing press, comprising:

a plate cylinder having a circumferential surface on which a plate is mounted;

a gap formed in the circumferential surface of said plate cylinder in an axial direction thereof and having a bottom portion;

a leading-side plate lockup device provided in said gap and having a first recess formed on a bottom side thereof, the leading-side plate lockup device being slidable on the bottom portion of the gap;

a trailing-side plate lockup device provided in parallel with said leading-side plate lockup device in said gap and having a second recess formed on a bottom side thereof, the trailing-side plate lockup device being slidable on the bottom portion of the gap;

a first origin position detecting switch with a first actuating member, fixed on the bottom portion of said gap, for detecting that said leading-side plate lockup device, a position of which is adjustable at least in one of vertical and horizontal directions of the plate, is restored to a first origin thereof, said first actuating member capable of being engaged with the first recess of said leading-side plate lockup device when the leading-side plate lockup device is located at the first origin position thereof;

a second origin position detecting switch with a second actuating member, fixed on the bottom portion of said gap, for detecting that said trailing-side plate lockup device, a position of which is adjustable at least in one of vertical and horizontal directions of the plate, is restored to a second origin position thereof, said second actuating member capable of being engaged with the second recess of said trailing-side plate lockup device when the trailing-side plate lockup device is located at the second origin position thereof; and

informing means for informing that said leading- and trailing-side plate lockup devices are respectively restored to the first and second origin positions on the basis of detection outputs from said first and second origin position detecting switches.

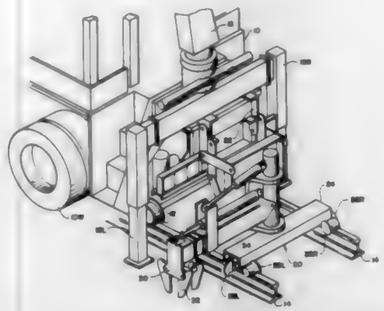
5,305,692

TRUCK MOUNTED TIE EXCHANGER WITH SELF-ALIGNING TIE CLAMP

Harry Madison, Germantown, Tenn.; Robert F. Ryan, Fairmont, and Michael B. Gilbert, both of Fairmont, Minn., assignors to Harsco Corporation, Wormleysburg, Pa.

Filed Jul. 14, 1992, Ser. No. 913,161
Int. Cl.[5] E01B *29/10*
U.S. Cl. 104—9 **37 Claims**

13. A tie exchanger assembly comprising a tie exchanger operable for removing and inserting ties in a rail roadbed, said tie exchanger having a tie clamp mounted on an end thereof, said tie clamp having opposite jaws, each jaw having at least two contact surfaces which have at least one degree of freedom for self-aligning movement upon clamping a tie, and wherein each jaw has: a jaw frame and a curved member having opposite ends with one of said contact surfaces at each



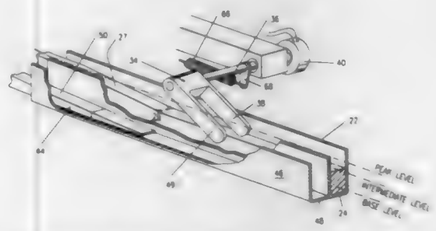
end and an intermediate portion therebetween, said intermediate portion of said curved member pivotably captured within part of the jaw frame; and further comprising two mounts, each jaw frame movable mounted to a corresponding one of said mounts for rotation relative to said corresponding mount to provide self-aligning movement upon clamping a tie.

5,305,693

SYSTEM AND METHOD FOR EXTERNALLY CONTROLLED SPACING OF SELF PROPELLED VEHICLES ALONG A RAIL

Bruce S. Johnson, Burbank, and Mark S. Mesko, Valencia, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed May 26, 1993, Ser. No. 67,550
Int. Cl.[5] B60L *15/00*
U.S. Cl. 104—299 **32 Claims**



1. A vehicular system comprising,

a rail extending in a predetermined path;

at least two vehicles contacting said rail and guided thereby for in-line motion along said path in a forward direction, said vehicles spaced in forward and rear relation to each other;

an elongate stationary cam connected to said rail extending parallel to said predetermined path, said cam having a cam edge which rises and falls in an inward and outward direction perpendicular to the length of said cam in a predetermined manner along its length between a base level and a peak level spaced a maximum distance outwardly from said base level;

each said vehicle including,

variable speed driving means for driving said vehicle along said path at varying speed controlled by a control signal;

a cam follower movably mounted on said vehicle biased into sliding contact with said cam edge;

a transducer connected to said cam follower for providing said control signal to said driving means, said transducer varying said control signal in response to the spacing of said cam follower from said base level to cause the speed of said vehicle to be decreased in response to increase in spacing of said cam follower away from said base level and vice versa;

an elongate tail connected to said vehicle extending rearwardly therefrom, said tail, along its length, having an outer edge spaced perpendicularly from said base level of said cam edge on the same side thereof;

a tail guide guiding each said tail for movement parallel to said base level with said outer edge of said tail positioned alongside said cam edge and with at least a projecting portion of its outer edge spaced a greater distance from said base level than the adjacent regions of said cam edge, said cam followers positioned to contact both said cam edge and said outer edges of said tails;

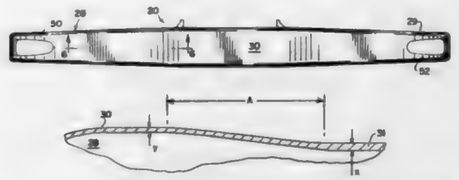
whereby, if said vehicles come close enough together for said cam follower of the rear said vehicle to be moved further away from said base level by the projecting portion of said outer edge of said tail of the forward said vehicle than said cam follower of the forward said vehicle resting on said cam edge, said transducer of the rear said vehicle signals the associated said driving means to move said rear vehicle at a speed no faster than the speed of the forward said vehicle.

5,305,694

SIDEFRAME WITH INCREASED FATIGUE LIFE HAVING LONGER CROSS-SECTIONAL THICKNESS TRANSITION ZONE

Robert D. Wronkiewicz, Park Ridge, Ill., and Franklin S. McKeown, St. Louis, Mo., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jun. 17, 1993, Ser. No. 79,102
Int. Cl.[5] B61F *5/52*
U.S. Cl. 105—206.1 **3 Claims**



1. An improved AAR standard 100 ton truck sideframe having a longitudinal axis, said improved sideframe comprising:

a longitudinally extending upper compression member having a front end, a back end, and a midpoint therebetween, said upper compression member front end having a downwardly projecting front pedestal jaw depending therefrom and said upper compression member back end having a downwardly projecting back pedestal jaw depending therefrom;

a longitudinally extending lower tension member generally parallel to said upper compression member having a central portion with a first end and a second end, said first end interconnected to an upwardly extending first diagonal arm and defining a first bend point, said second end interconnected to an upwardly extending second diagonal arm and defining a second bend point, each of said diagonal arms extending upwards to and connecting with a respective upper compression member end at a respective said pedestal jaw; and

a pair of vertically extending columns disposed in proximity to said sideframe midpoint, each of said columns being longitudinally spaced fore and aft of said sideframe midpoint and connecting said upper and lower members together;

said upper compression member having a top wall with a cross-sectional wall thickness, a bottom wall with a cross-sectional wall thickness, and a pair of arcuate side walls having respective cross-sectional wall thicknesses, said arcuate side walls connecting said upper and bottom walls, said upper, bottom, and arcuate side walls cooperating to define a core which continuously extends between said front and back pedestal jaws,

said top wall of said upper compression member having a first cross-sectional wall thickness of about 0.75 inches (1.905 cm) approximate to and above each of said vertical columns and a second and thinner cross-sectional wall thickness of about 0.50 inches (1.27 cm) longitudinally disposed between six inches (15.24 cm) and twelve inches (30.48 cm) from said respective first cross-sectional wall thickness, said top wall of said upper compression member gradually decreasing in cross-sectional wall thickness from said first cross-sectional wall thickness to said second cross-sectional all thickness, wherein said gradually decreasing cross-sectional wall thickness increases the static strength of said sideframe such that said improved 100 ton AAR standard sideframe can be loaded with 110 tons of payload without reaching the AAR ultimate loading limits set for a standard AAR 100 ton sideframe, and

wherein said lower tension member includes two core support holes having additional metallic mass, one of said two holes being located on said first upwardly extending diagonal arm and the other of said two holes being located on said second upwardly extending diagonal arm, each of said core support holes substantially equal in size and second modulus, with each of said core support holes experiencing substantially equivalent flexure stresses in the area around said holes, said flexure stresses around said holes being lower in magnitude than at other points of loading along said sideframe, each of said core support holes sized such that said magnitude of flexure stresses around said holes, when divided by said section modulus, results in a ratio which is smaller than a ratio derived from a core support hole without the additional mass,

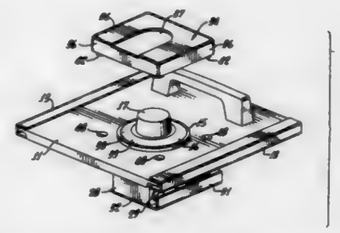
said core support holes allowing an AAR standard 100 sideframe to meet AAR dynamic testing standards set for a 100 ton sideframe although said sideframe is loaded and flexured with 110 tons of payload.

5,305,695

BURGLAR-RESISTANT LOCK-OPERATING CONSTRUCTION FOR SAFES

Robert J. Lichter, 15571 Placid Cir., Huntington Beach, Calif. 92647

Filed Feb. 21, 1992, Ser. No. 839,834
Int. Cl.[5] E05B *15/16*
U.S. Cl. 109—59 R **9 Claims**



1. A safe for valuables, which comprises:

(a) a strong body having a space therein adapted to contain valuables, said body having an opening therein extending from said space to the exterior of said body, and through which objects may be passed into and out of said space,

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(b) a strong steel door provided on said body over said opening to block said opening when said door is in closed condition,

(c) lock means to lock said door in closed condition, said lock means including a combination lock mechanism on the inside of said door, a knob on the outside of said door, and a spindle extending rotatably through said door between said knob and said lock mechanism so that rotations of said knob are transmitted by said spindle to said lock mechanism,

said knob being coaxial with said spindle, said knob having a dial associated coaxially therewith on the outside of said door for rotation therewith,

(d) means to provide indicia in fixed relationship to said door and adjacent said dial for cooperation with said dial in determining the correct rotated positions of said knob,

(e) a strong steel security mask provided over said dial on the outside of said door,

said security mask having an opening therein sufficiently large to permit a person operating said knob to see said indicia and the portion of said dial near said indicia, said security mask and knob being so associated with each other that said knob may be manually operated at all times,

(f) means to strongly, fixedly and nonremovably secure said security mask to the outside of said door to thereby tend strongly to prevent a burglar from pounding on said dial, while permitting said person to operate said knob to open said door without removing said security mask, and

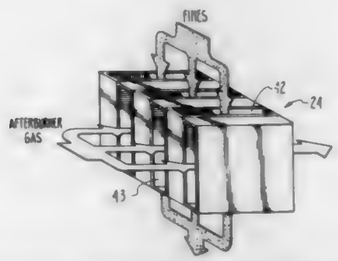
(g) an anti auto-dialer element mounted fixedly on said security mask in such relationship to said knob that driving engagement between said knob and an anti auto-dialer is prevented, and also in such relationship that manual operation of said knob is permitted.

5,305,696

PROCESS AND SYSTEM FOR TREATING CONTAMINATED PARTICULATE SOIL COMPOSITIONS

Robert L. Mendenhall, 4420 S. Decatur Blvd., Las Vegas, Nev. 89103

Filed Oct. 5, 1992, Ser. No. 956,913
Int. Cl.[5] A47J *36/24*
U.S. Cl. 110—236 **9 Claims**



1. A process for treating particulate soil composition having volatilizable organic material therein, said particulate soil including a substantial portion of fine soil particles passing a size 40 U.S. series sieve, comprising:

heating said particulate soil composition in a rotating drum while passing hot gases of combustion comprising a mixture of said hot gases of combustion, volatilized organic material and said fine particles,

separating said fine particles from said gaseous composition, directing said gaseous composition to a furnace and combusting said volatilized organic material therein,

recovering at least a portion of hot exhaust gases from said furnace, and recovering said fine particles separated from said gaseous composition, and directing said recovered hot exhaust gases and recovered fine particles to a heat exchange apparatus having one or more first channels for directing said fine particles therethrough and one or more second channels in heat exchange communication with said first channels for directing said hot exhaust gases therethrough, heating said fine particles and volatilizing organic material therefrom in said heat exchange apparatus and wherein said fine particles and said hot exhaust gases are indirectly exposed in said heat exchange apparatus whereby contamination of said hot exhaust gases with volatilized organic material is avoided therein, and

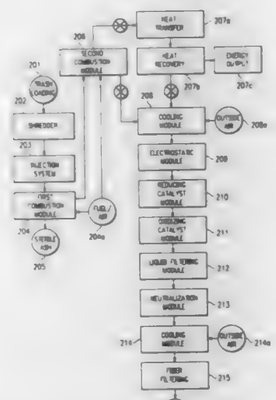
separating volatilized organic material from said fine particles, and recovering said fine particles.

5,305,697

METHOD AND APPARATUS FOR DISPOSING OF WASTE MATERIAL

Ralph F. Greene, Richardson, and Patrick C. Malone, The Colony, both of Tex., assignors to New Clear Energy, Inc., Carrollton, Tex.

Division of Ser. No. 804,474, Dec. 6, 1991, Pat. No. 5,203,267, which is a continuation of Ser. No. 643,419, Jan. 22, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,224
Int. Cl.[5] F23J *11/00*
U.S. Cl. 110—345 **9 Claims**



1. A method for disposing of waste material comprising:

(a) incinerating said waste material in an oxygen rich atmosphere to produce ash and exhaust;

(b) firing said exhaust in an oxygen starved atmosphere to produce a fired exhaust; and then

(c) filtering said fired exhaust in a neutralizing solution to remove particles contained in said fired exhaust and for chemically treating said fired exhaust to reduce harmful gasses.

5,305,698

METHOD AND APPARATUS FOR IMPROVING FLUID FLOW AND GAS MIXING IN BOILERS

Brian R. Blackwell, 4680 W. 11th Avenue, Vancouver, B. C., Canada V6R 2M7 , and Colin MacCallum, 1808 Duchess Avenue, West Vancouver, B. C., Canada V7V 1R1

Continuation-in-part of Ser. No. 587,645, Sep. 24, 1990, Pat. No. 5,121,700, which is a continuation-in-part of Ser. No. 333,545, Apr. 4, 1989, abandoned. This application May 22, 1992, Ser. No. 887,764
Int. Cl.[5] F23L *1/00, 9/00*
U.S. Cl. 110—348 **65 Claims**



1. A method of introducing primary air at the lowest airflow elevation into a kraft recovery boiler furnace comprising:

(a) introducing air into the furnace at the lowest air flow elevation by means of a first set of large jets originating from a first wall of the interior of the furnace;

(b) introducing air into the furnace by means of a second set of large jets originating from a second wall of the interior of the furnace opposite the first wall and substantially at the same elevation as the first set of jets; and

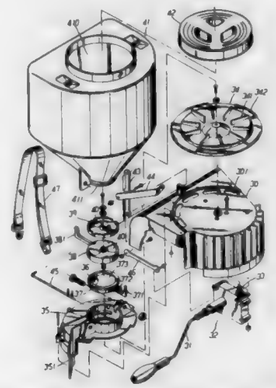
(c) introducing air into the furnace by means of a third set of small jets originating from a third wall of the interior of the furnace between the first wall and the second wall, at substantially the same elevation as the first and second sets of jets.

5,305,699

PORTABLE SEEDER HAVING A TWO SECTION TURNING PLATE

Suian Wu, Chang Hua Hsien, Taiwan, assignor to Fwu Tien Industry Co., Ltd., Chang Hua Hsien, Taiwan

Filed Dec. 29, 1992, Ser. No. 998,134
Int. Cl.[5] A01C *11/00;* **B23Q** *7/04*
U.S. Cl. 111—183 **3 Claims**



1. An improved portable seeder for agricultural cultivation of seedling, comprising:

a container having a top opening for feeding seeds or fertilizer grains therein and a bottom discharge hole;

a top lid disposed on top of said container for covering said top opening;

a feeder plate disposed directly under said container having a number of feeding holes;

a control plate disposed under and rotatably mounted to said feeder plate having a plurality of feeding holes disposed in non-alignment with said feeding holes on said feeder plate;

said control plate having an outwardly extended actuation pin to rotate said control plate on said feeder plate and vary an opening formed between said feeding holes on said feeder plate and said feeding holes on said control plate respectively;

a rudder member having an outwardly extended control pin with a guide roller disposed thereon and a tilted plane defined in a middle thereof; a through opening being disposed on the periphery of said tilted plane;

said rudder member rotatably mounted on a cover disposed under said rudder member,

said cover having a guard plate disposed thereon for protecting a hand of an operator;

a circular two-section turning plate having an inner section and an outer section which are concentrically disposed and said inner section being positioned at a higher level than said outer section; said inner section being provided with a plurality of spaced radial dispensing fingers; said outer section being provided with a number of consecutively disposed grooves each having an opening cut on a periphery of said outer section;

a base mount having a number of through holes disposed thereon; said turning plate being rotatably mounted onto said base mount with said through holes located under said outer section of said turning plate;

a transmission means for driving said turning plate having a rotation shaft securedly engaged with said turning plate and a rock arm which can actuate said rotation shaft to spin whereby said turning plate can be rotated accordingly;

a dispelling stick disposed above said feeding holes of said control plate and said feeder plate;

a connecting rod associated with an eccentric hole disposed at the end of said rock arm of said transmission means at one end;

a link arm having one end pivotally mounted to said connecting rod and the other end pivotally connected to said dispelling stick;

a support rod having one end pivotally fixed to the middle of said link arm and the other end thereof being secured to said container; and

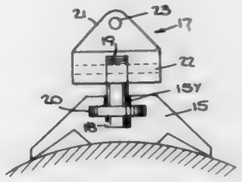
a pickaback strap engaged to said container.

5,305,700

TRACK AND SLIDE ASSEMBLY FOR SAILBOATS

Jeffrey W. Strong, Boca Raton, and John R. Newton, Jupiter, both of Fla., assignors to Tides Marine, Inc., Boca Raton, Fla.

Filed Apr. 26, 1993, Ser. No. 51,860
Int. Cl.[5] B63H *9/08*
U.S. Cl. 114—112 **11 Claims**



1. A track and slide assembly for a sailboat provided with a mast, and a sail whose luff is coupled to the slides of the assembly, whereby when the sale is raised on the mast, the slides ride

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up the track; and when the sail is lowered, the slides then ride down the mast; said assembly comprising:

(a) a track attachable to the mast so that its outer face is exposed, said track having formed along its full length a slideway slot having a cruciform cross section to define a major channel of substantially uniform width that extends into the track below the outer face and a minor channel that is spaced from the outer face and intersects the major channel at substantially its midpoint at right angles thereto; and

(b) a set of slides riding on the track, each slide having a cylindrical post that slides within the major channel, said post having a diameter substantially equal to the width of the major channel, and a disc-shaped runner integral with the post and intersecting the post at right angles thereto at a position corresponding to that of the minor channel, so that the runner slides within the minor channel, said slide also being rotatable within the slideway slot, whereby the slide does not bind to the track when a torque force is applied to the slide by the sail.

5,305,701

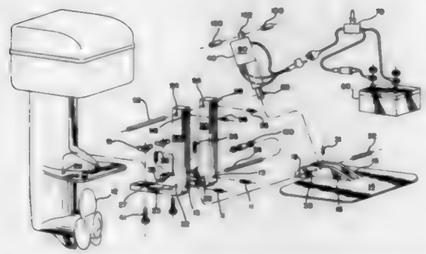
DEVICE FOR CONTROLLING BOAT SPEED

John B. Wilson, 1248 Albert Ave., Muskegon, Mich. 49442

Continuation-in-part of Ser. No. 850,965, Mar. 12, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 52,154

Int. Cl.[5] **B63H** *25/44*

U.S. Cl. 114—145 A **6 Claims**



1. A low speed control device adapted to be mounted on the anti-cavitation plate of a boat's propulsion unit, which includes a motor and a propeller operatively connected thereto, wherein the anti-cavitation plate defines a horizontal plane when the motor is in operative position, which device comprises, in combination:

a unitary plate including spaced members defining a mounting pivot aperture adjacent an end portion of the plate, and an actuator pivot aperture spaced from the plate end portion defining the mounting pivot aperture;

mounting bracket means adapted to clamp onto said anti-cavitation plate, said bracket means including a top actuator pivot aperture disposed above said anti-cavitation plate, and also including a lower actuation pivot aperture disposed no lower that the horizontal plane defined by said anti-cavitation plate when the motor is in operative position;

an actuator being longitudinally extensible and retractable;

first connection means for connecting one end of said actuator to the top actuator pivot aperture of the mounting bracket means and second connection means for connecting the opposite end of the actuator to the unitary plate whereby all forces of extension or contraction of the actuator are between the top pivot on the mounting bracket means and the actuator pivot on the unitary plate;

the unitary plate being movable between a vertical position where the plate is deployed immediately aft of the propeller and blocks the wash therefrom and a horizontal position where the unitary plate is spaced from the propeller and located parallel to the plane of the anti-cavitation plate; and

a source of power to said actuator to cause the same to be extended or contracted to incrementally move the unitary plate between its vertical and horizontal positions.

5,305,702

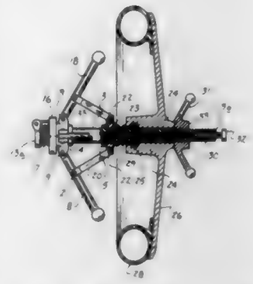
VESSEL OPENING REPAIR APPARATUS

Donald E. Phillips, 350 Whitmore Rd., Dangerfield, Tex. 75638

Filed Apr. 12, 1993, Ser. No. 44,755

Int. Cl.[5] **B63B** *43/16*

U.S. Cl. 114—227 **6 Claims**



1. A vessel opening repair apparatus, comprising,

a central shaft, the central shaft having a first end, the first end including a first end cap, and the shaft including a second end spaced from the first end, and

a first flange mounted to the central shaft, and a first collar slidably mounted to the central shaft between the first flange and the first end cap, wherein the first collar includes a plurality of positioning legs, with each positioning leg including a leg first end spaced from a leg second end, with each leg first end including a leg axle pivotally mounting the leg first end relative to the collar, and

a first spring interposed between the first end cap and the first collar, and

a second flange fixedly mounted to the shaft spaced from the first collar, and

a central hub coaxially aligned with the shaft and slidably receiving the shaft therethrough positioned between the second flange and the shaft second end, with the central hub including a central web, and the web having a pneumatic chamber mounted to the web extending from the web towards the shaft first end, and a fill valve permitting pneumatic pressurization of the chamber, and

a second collar slidably mounted along the shaft interposed between the hub and the second flange, and the second collar including a plurality of leg links, with each leg link of said leg links pivotally mounted at a link first end to one of said positioning legs, and each leg link having a link second end pivotally mounted to the second collar, and

release means coaxially directed through the central shaft extending from the shaft second end and secured to the first collar to coaxially displacing the first collar along the shaft and pivoting the positioning legs about the first collar.

5,305,703

VESSEL MOORING SYSTEM

Jens Korsgaard, 318 North Post Rd., Princeton Junction, N.J. 08550

Continuation-in-part of Ser. No. 998,986, Dec. 31, 1992, abandoned. This application Feb. 18, 1993, Ser. No. 19,401

Int. Cl.[5] **B63B** *22/02*

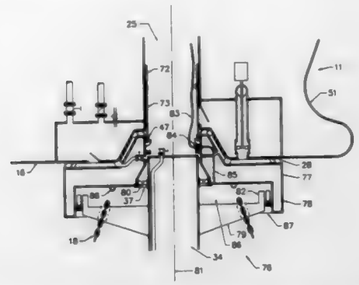
U.S. Cl. 114—230 **21 Claims**

1. An ocean mooring system including

a vessel having a hull with an annular mooring recess in the bottom of the hull;

a buoyant mooring element having an upper part that is engageable with the mooring recess in the bottom of the hull;

a plurality of lines connecting the mooring element to the ocean floor, the weight of the lines relative to the buoyancy of the mooring element being such that the mooring element assumes an equilibrium position at a preselected depth below the bottom of the hull; and



means for hoisting the mooring element from the preselected depth to engagement with the mooring recess in the bottom of the hull, wherein the system further comprises:

means for rapidly drawing seawater into the hull through an intake opening located within the mooring recess so as to reduce the downward hydrostatic pressure acting on the upper part of the mooring element as it comes into engagement with the mooring recess.

5,305,704

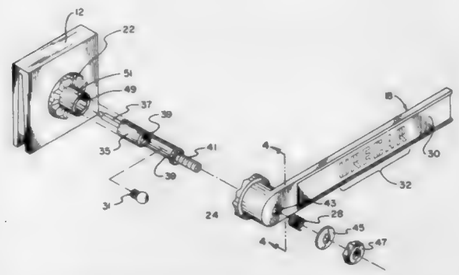
AUTOMOBILE LOCATOR

Olajide O. Olaniyan, 9101 Glenville Rd., Silver Spring, Md. 20901

Filed Apr. 26, 1993, Ser. No. 51,665

Int. Cl.[5] **B60Q** *1/26*; **G08B** *5/00*

U.S. Cl. 116—28 R **7 Claims**



1. A new and improved automobile locator apparatus, comprising:

a base member adapted to fit onto a top edge of an automobile window;

an internally illuminated identifier element;

pivot means for connecting said identifier element to said base member, said pivot means having a first member on said base member and a second member on said identifier element;

illumination source means for providing a source of illumination, wherein said first member serves as a housing for said illumination source means;

illumination transmission means for transmitting illumination to said identifier element, wherein said second member serves as a housing for said illumination transmission means, wherein said illumination transmission means is connected to said internally illuminated identifier element; and

electrical conductor means for connecting said illumination source means to an external source of electrical power.

5,305,705

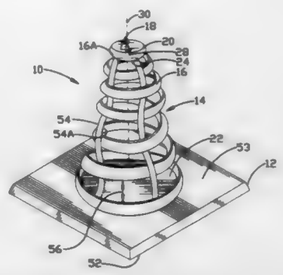
COLLAPSIBLE ROAD MARKER AND METHOD

Greg R. Gagliano, 221 Primrose Cir., Chesterton, Ind. 46304

Filed Feb. 14, 1992, Ser. No. 837,349

Int. Cl.[5] **E01F** *09/00*

U.S. Cl. 116—63 P **25 Claims**



1. In a collapsible road marker having a base, a collapsible body with a fixed end mounted adjacent to the base and a distal end mounted for movement between the base, whereat the distal end is located when the body is in a collapsed position, and an erect position spaced from the base when the body is in an erect position, the improvement being an automatic locking assembly for releasably holding the movably mounted distal end of the collapsible body adjacent to the base, comprising:

a latch member mounted to the one of the collapsible body and the base for movement between a locked position and a nonlocked position;

a latch engaging member mounted to the other of the collapsible body and the base to interlock with the latch member when in a locked position; and

means for automatically moving the latch member at least partially to the locked position to interlock with the latch engaging member in response to relative movement of the latch member and the latch engaging member toward each other and into adjacent interrelationship, including means for spring biasing the latch member toward the unlocked position, said spring biasing means being a coil spring for rotating the latch member from the locked position to the unlocked position.

5,305,706

PAGE NUMBER INDICATING BOOKMARKER

Atuallah Arjomand, P.O. Box 7084, Bellevue, Wash. 98008

Filed Mar. 9, 1993, Ser. No. 28,362

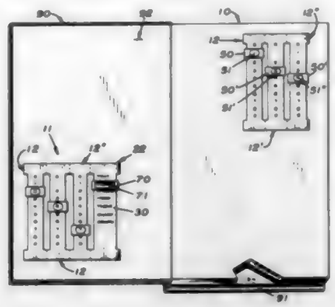
Int. Cl.[5] **B42D** *9/00*; **G09F** *9/40*

U.S. Cl. 116—234 **12 Claims**

12. A sheet of page number indicating bookmarkers, comprising a plurality of I-shaped digit indicators manufactured thereon, each said digit indicator having an elongated body with a vertically aligned central region, said central region having a top surface with a set of digits 0–9 printed thereon, each said digit indicator having a sliding collar capable of moving vertically over said central region, said collar having a viewing means with enables a digit located below said collar to be seen from above, each said digit indicator being separated by perforated lines which enables a user to selectively remove

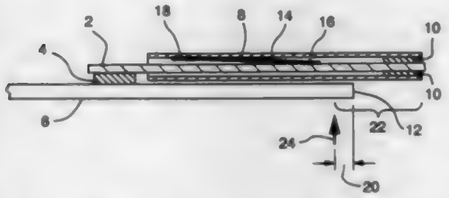
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one or a group of digit indicators from said sheet, said sheet having a bottom surface with a suitable adhesive applied



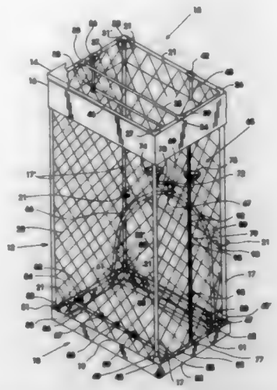
thereto which enables each said digit indicator to be applied to a planar surface.

5,305,707
WEB MARKING DEVICE
Robert Ryder, 141 Seminary Dr., P, Mill Valley, Calif. 94941
Filed Mar. 26, 1993, Ser. No. 37,925
Int. Cl.[5] G09F *3/10*; G08B *5/02*
U.S. Cl. 116—281 13 Claims



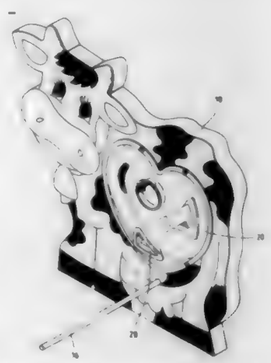
1. An elongate device for continuously marking a location on a web having lateral edges, said web subject to trimming along at least one of its lateral edges, said device comprising:
a) anchor means for anchoring the elongate device to said web such that the longitudinal axis of said device is substantially perpendicular to said web lateral edge;
b) marker means cooperating with said anchor means for providing a continuous mark on said web lateral edge;
c) means for initially holding said marker means in a fixed position relative to said anchor means; and,
d) spring bias means connecting said anchor means and said marker means for exerting biasing forces on said marker means to cause it to move along said device longitudinal axis in the direction of said web lateral edge,
wherein said marker means is initially held in a fixed position relative to said anchor means by said means for initially holding said marker against the biasing forces of said biasing means, and wherein said marker means is then subsequently biased toward said web lateral edge by said bias means when said marker means is released from its fixed position when the web lateral edge and said means for initially holding said marker are trimmed, causing said marking means to extend beyond the trimmed web lateral edge.

5,305,708
CONVERTIBLE AVIARY WITH SIDE NETTING
Clyde A. Keisler, Jr., 2510 Rolling Meadows Dr., Raleigh, N.C. 27603
Filed Jul. 6, 1993, Ser. No. 86,655
Int. Cl.[5] A01K *31/00*
U.S. Cl. 119—17 20 Claims



1. An improved aviary comprising: a rigid upper frame; a rigid lower frame disposed in space relation below said upper frame; netting material disposed about said upper and lower frame and covering the space therebetween; means for securing said netting to said upper and lower frames; means for covering said upper frame; a litter tray removable mounted on said lower frame; a entryway in said netting; and support means connected to and disposed between said upper frame and said lower frame whereby an improved aviary with netted side walls is provided.

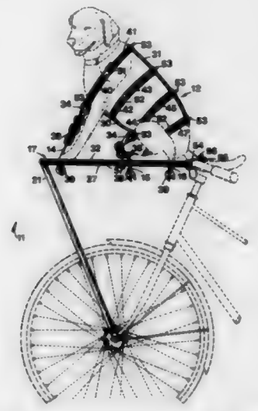
5,305,709
BIRD FEEDER
Dong-Fuh Hong, No. 276, Fun-Tsao Road, Tsao-Tung Township, Nan-Tou Hsien, Taiwan
Filed Sep. 27, 1993, Ser. No. 127,059
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—57.8 2 Claims



1. A bird feeder comprising a decorating face plate and a feeding set; wherein said decorating face plate is provided centrally with a through hole, under which a through cavity of a predetermined dimension is disposed for receiving and holding a rod intended for birds to stand thereon; wherein said feeding set comprises two shells of a transparent material and

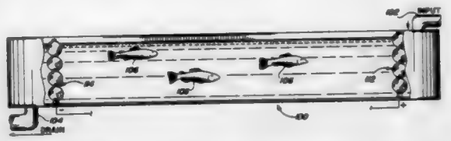
fastened respectively to two opposite side edges of said through hole of said decorating face plate, with said two shells having an arcuate surface and being provided respectively and correspondingly at a lower portion thereof with a feeding port, and with one of said two shells being provided at an upper portion thereof with a feed supplying port, said feeding port being provided with a protective mask having a slot; wherein said shells are fastened by fasteners to said through hole of said decorating face plate such that an interior of said through hole and said two shells form jointly a receiving space having a predetermined capacity to contain a predetermined quantity of feed; and wherein said protective mask is provided with a cross beam by which said protective mask is secured to said feeding port.

5,305,710
PET CARRIER MOUNTABLE ON BICYCLES AND THE LIKE
James F. Ward, Jr., 25 Pine Valley Rd., Floyd, Ga. 30161
Filed Dec. 17, 1992, Ser. No. 992,110
Int. Cl.[5] A61D *3/00*
U.S. Cl. 119—771 5 Claims



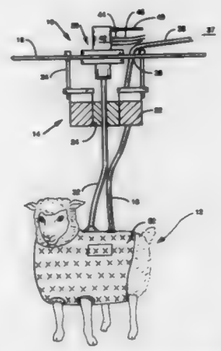
1. An apparatus adapted for transporting a pet, which comprises:
(a) a platform having an outer periphery;
(b) hoisting means including a harness and a leash, the harness having first and second straps which are adapted to extend longitudinally along the pet's torso and at least three sets of straps interconnected with said first and second straps but extending generally perpendicularly thereto, the leash having a branched structure which has at least as many branches as there are sets of straps, each branch being attachable to the first strap proximate with points where the first strap is interconnected with one of the sets of straps;
(c) a plurality of fasteners attachable to the harness; and
(d) means for tethering each fastener to the platform, tethering means for at least two fasteners being slideably connected to the platform, the tethering means limiting the travel of each of the fasteners, at least one of the fasteners being further constrained by the tethering means to stay well within the outer periphery of the platform, so that the pet can safely enjoy substantial freedom of motion while riding on the platform.

5,305,711
TANK FOR ELECTROANESTHETIZING FISH
Norman G. Sharber, 515 W. Havasupi Rd., Flagstaff, Ariz. 86001
Continuation of Ser. No. 874,715, Apr. 27, 1992, Pat. No. 5,253,610. This application Feb. 12, 1993, Ser. No. 17,384
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—215 20 Claims



1. Apparatus for electroanesthetizing aquatic animals, said apparatus comprising in combination:
a) a compartment for containing water and the aquatic animals to be electroanesthetized;
b) a source of electric power for generating an electric signal to establish an electric field in said compartment to electroanesthetize the aquatic animals;
c) a first electrode disposed at one part of said compartment;
d) a second electrode disposed at another part of said compartment;
e) means for interconnecting said first and second electrodes with said power source to establish the electric field within said compartment and commensurate flow of electric current between said first and second electrodes; and
f) means for shielding at least one of said first and second electrodes to prevent contact between the aquatic animals and the shielded at least one electrode, said shielding means including means of accommodating flow of water about the substantially complete immersed areas of said shielded at least one electrode.

5,305,712
ANIMAL TETHER SYSTEM AND METHOD OF USE
Andrew H. Goldstein, Pittsburgh, Pa., assignor to Allegheny-Singer Research Institute, Pittsburgh, Pa.
Filed Nov. 30, 1992, Ser. No. 983,505
Int. Cl.[5] A01K *27/00*, *29/00*
U.S. Cl. 119—784 26 Claims



16. A tether system for an animal comprising:
an anchor for attachment to a structure; and
at least 11 distinct electrical conduction elements which are electrically and swivably connected to the anchor and electrically connected to the animal.

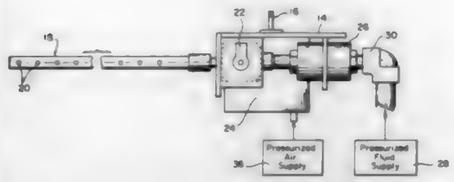
VOL 1161 ISS 4 AP 26 1994 UMI

5,305,713

ANGULAR ROTATION ROTARY CLEANING DEVICE

Thomas C. Vadakin, Marietta, Ohio, assignor to Vadakin, Inc., Marietta, Ohio

Filed Jul. 29, 1992, Ser. No. 921,259
Int. Cl.[5] F22B *37/52*
U.S. Cl. 122—391 9 Claims



1. Apparatus for cleaning spaced parallel rows of pendant tubes in boilers, comprising

(a) a frame arranged parallel to the pendant tubes;

(b) cleaning means connected with said frame for cleaning the exterior surfaces of the pendant tubes, said cleaning means including;

(1) a tubular lance extending between the tubes and having an axis arranged perpendicular to the parallel tubes, said lance containing a plurality of spaced radial openings;

(2) means for delivering a pressurized cleaning fluid to said lance; and

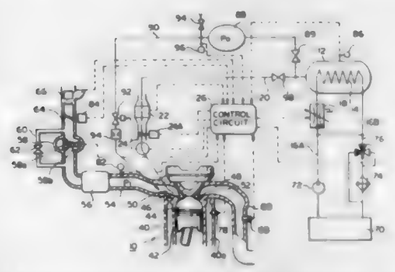
(3) means for adjustable reciprocally rotating said lance through a selected angle less than 180°, whereby the cleaning fluid exits said lance via said openings and impinges on a limited area of the adjacent pendant tube surfaces in accordance with the selected angle of rotation of said lance to remove slag deposits from the tube surfaces.

5,305,714

FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kiyonori Sekiguchi, Okazaki; Toshihiko Igashira, Toyokawa; Kenji Kanehara, Toyohashi; Nobuo Imatake, Nishio; Jun Yamada; Nobuyuki Murate, both of Okazaki, and Osamu Kito, Nisshin, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Jul. 2, 1992, Ser. No. 908,270
Claims priority, application Japan, Jul. 3, 1991, 3-162844; Oct. 1, 1991, 3-253737; Feb. 7, 1992, 4-022725; Feb. 14, 1992, 4-028058
Int. Cl.[5] F02B *43/08*
U.S. Cl. 123—3 23 Claims



1. A fuel supply system for an internal combustion engine, wherein a hydrogen gas is used as the fuel, the system comprising:

a fuel tank in which a metal hydride is stored;

a heat exchange device arranged in the fuel tank for controlling a temperature of the metal hydride in the tank;

first control means for controlling an amount of heating medium introduced into the heat exchange device so that a desired amount of hydrogen gas is generated from the metal hydride in the tank;

a fuel supply conduit connecting the fuel tank with the internal combustion engine for introducing the hydrogen gas into the engine; and

second control means for controlling an amount of hydrogen gas flowing in the fuel supply conduit so that a desired amount of hydrogen gas is introduced into the engine in accordance with an operating condition of the engine, wherein the second control means comprises:

sensor means for detecting an amount of hydrogen gas in the fuel supply conduit, and

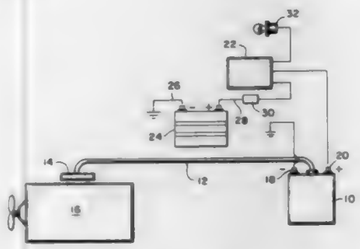
means for controlling the amount of hydrogen gas introduced to the engine so that a desired amount of the hydrogen gas detected by the sensor means is introduced into the engine.

5,305,715

SUPPLEMENT FUEL GENERATOR FOR VEHICLE ENGINES

Ira C. Nissley, Williamsburg, Iowa, assignor to Alira, Inc., Keosauqua, Iowa

Continuation of Ser. No. 137, Jan. 4, 1993, abandoned, which is a continuation of Ser. No. 810,101, Dec. 19, 1991, abandoned.
This application Aug. 17, 1993, Ser. No. 107,931
Int. Cl.[5] F02B *93/08*
U.S. Cl. 123—3 3 Claims



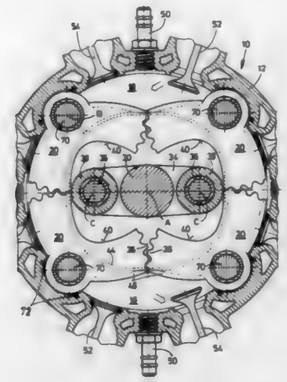
1. A gas generating unit for use with vehicle engines having a source of electrical energy and also having an intake for supplying a fuel-air mixture to the engine, said unit comprising an electrolysis unit having bottom and top walls joined by side walls to form an enclosed unit, a positive terminal and a negative terminal combined with said unit for connecting the unit in circuit with the source of electrical energy to supply said energy to the unit only when the engine is operating, at least one vertically-oriented cathode plate in said unit connected to the negative terminal of the electrolysis unit, at least one vertically-oriented anode plate spaced from the cathode plate in said unit and connected to the positive terminal of the electrolysis unit, said cathode and anode plates being made of stainless steel, an electrolyte solution contained in said enclosed electrolysis unit and completely submerging the cathode and anode plates, the electrolyte consisting only of acetic acid and distilled water in a concentration of one to four percent of acetic acid, and means for connecting the electrolysis unit to the air intake of the engine to convey gases generated from the electrolyte solution to said engine air intake.

5,305,716

ROCKING-TYPE PISTON ENGINE

Herbert Hüttlin, Daimlerstrasse 7, 7853 Steinen, Fed. Rep. of Germany

PCT No. PCT/EP92/00399, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO93/01395, PCT Pub. Date Jan. 21, 1993
PCT Filed Feb. 26, 1992, Ser. No. 969,146
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123176
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—18 R 10 Claims



1. A rocking-type piston engine, comprising

a housing (**10**) in which a plurality of chambers (**18**) are defined all around a central housing axis (A) between two end walls (**14**),

a plurality of pistons (**20**), each being pivotable about a piston axis (B), which is parallel with the housing axis (A), and each being sealed with respect to both end walls (**14**),

a central shaft (**30**) which is rotatable about the housing axis (A) and in driving connection with the pistons (**20**), and

inlet and outlet passages (**56**, **58**) for supply and discharge, respectively, of a fluid into and out of the chambers (**18**) of the housing, characterized in that

the pistons (**20**) are two-armed levers, each piston arm being in sealing rolling engagement with a respective adjacent piston arm through meshing teeth (**26**, **28**), and

each housing chamber (**18**) is defined by a pair of piston arms in rolling engagement.

5,305,717

ARRANGEMENT FOR THE AUTOMATICALLY CONTROLLED VARYING OF THE RELATIVE ROTATING POSITION OF SHAFTS IN AN INTERNAL-COMBUSTION ENGINE

Donatus Wichelhaus, Börtlingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Fed. Rep. of Germany

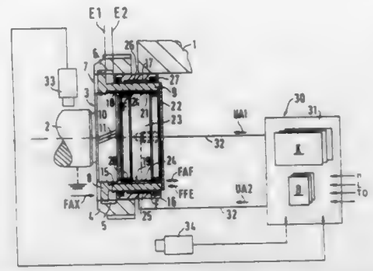
PCT No. PCT/EP91/01553, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO92/04530, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 16, 1991, Ser. No. 977,441
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027631
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 12 Claims

1. An arrangement for automatically controlled varying of a relative rotating position of two shafts in an internal-combustion engine, said shafts including a camshaft and a second shaft, the camshaft being rotatable relative to said second shaft as a function of parameters of said internal-combustion engine, the arrangement comprising:

a driving wheel which drives the camshaft and carries a first set of gear teeth;

a second set of gear teeth connected with the camshaft with at least one of the first and second sets of gear teeth being a set of helical gear teeth;

an intermediate timing gear axially displaceable between at least two end positions and arranged between the driving wheel and the camshaft to act upon the second set of gear teeth;



a stationary intermediate timing gear bearing ring which coaxially surrounds the intermediate timing gear at least in sections and bounds an annulus formed between the bearing ring and the intermediate timing gear;

a fluid in the annulus, said fluid having a viscosity which can be changed by application of voltage;

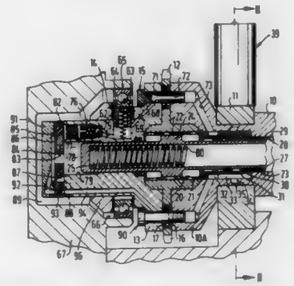
an electronic control device coupled to apply a first output voltage to the fluid, wherein application of the first output voltage to the fluid creates a braking moment that acts on the intermediate timing gear, the braking moment causing an axial force that displaces the intermediate timing gear towards one of the end positions.

5,305,718

HYDRAULIC CONTROL DEVICE

Martin Müller, Moeglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00750, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO93/08380, PCT Pub. Date Apr. 29, 1993
PCT Filed Sep. 4, 1992, Ser. No. 64,163
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135377
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 12 Claims



1. A hydraulic control device for rotating a camshaft of an internal combustion engine, comprising a sprocket wheel which is driven by an internal combustion engine and having an inner circumference provided with a toothing; a longitudinally displaceable couple member which is acted upon by a

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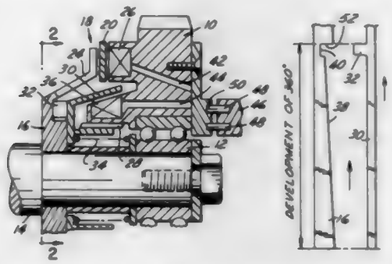
pressure and having a first toothing provided at a first location of its outer circumference and engaging with said toothing at said inner circumference of said sprocket wheel and also having a second toothing provided at an other location of its outer circumference and engaging with a toothing of a camshaft, so as to form two toothing pairs, one of said toothing pairs being formed as a spiral toothing while another of said toothing pairs being formed as a straight toothing; a single acting piston which is acted upon by a pressure medium against a mechanical force and is arranged at said couple member; a pump and an electromagnetic valve arranged so that a pressure medium is delivered by said pump and directed via said electromagnetic valve for application of pressure on said piston, said sprocket wheel being rotated relative to the camshaft by a displacement of said couple member; a hydraulic body mountable at a widened end portion of the camshaft on which said sprocket wheel also sits and having substantially radially extending piston bores, said hydraulic body having a longitudinal bore hole a radial piston pump having a plurality of pistons sliding in said piston bores of said hydraulic body; a ball bearing arranged eccentrically relative to an axis of the camshaft and having an inner ring contacted by said pistons; an outlet valve connected to a pressure space of each of said piston bores and having an outlet, said single acting single-action piston being received in said longitudinal bore hole of said hydraulic body, said outlet of said outlet valve opening into a pressure space of said longitudinal bore hole; a pressure limiting valve having a valve housing and controlling the pressure space of said longitudinal bore hole, said valve housing closing said pressure space, said pump feeding inlet sides of said piston bores, and said electromagnetic valve controlling a feed flow and being arranged between said pump and said piston bores.

5,305,719

ENGINE CAMSHAFT DEACTIVATION MECHANISM

James R. Clarke; Roy E. Diehl, both of Northville, and Aladar O. Simko, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 85,889
Int. Cl.[5] F01L *1/12*; F02D *13/06*
U.S. Cl. 123—90.17 **10 Claims**



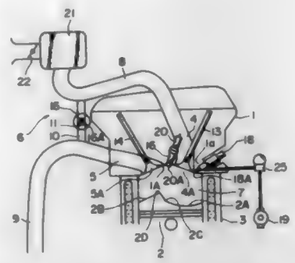
1. A camshaft coupling and decoupling mechanism for an automotive type engine having an engine crankshaft driven sprocket type driving element and a camshaft connected and driven thereby, the mechanism including clutch means between the sprocket element and camshaft having one and another parts, means for gradually engaging the clutch means with an initial force establishing relative rotation between the parts to provide a lagging rotation of one of the parts behind the other, and contoured surface means on a portion of the parts engageable by means on the other of the parts in response to relative rotation therebetween to effect a movement of the first mentioned one part into positive engagement with the first mentioned other part to lock the sprocket element and camshaft together for unitary movement, and means to render inoperable said clutch means to disconnect the camshaft from the sprocket element to deactivate the camshaft.

5,305,720

INTERNAL COMBUSTION ENGINE

Hiromitsu Ando, Okazaki; Jun Takemura, Toyota; Kazuyoshi Nakane, Okazaki, and Tetsuji Saeki, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,630
Claims priority, application Japan, Feb. 28, 1992, 4-044006; Feb. 28, 1992, 4-044008; Feb. 28, 1992, 4-044009; Nov. 4, 1992, 4-295320; Nov. 4, 1992, 4-295321
Int. Cl.[5] F02B *23/00*
U.S. Cl. 123—193.4 **21 Claims**



1. In an internal combustion engine having:
a combustion chamber formed between a top wall of a piston fitted in a cylinder and a lower wall of a cylinder head,
an intake port formed through the cylinder head on one side of a reference plane in which a central axis of the cylinder is contained, said intake port communicating through an intake opening with the combustion chamber,
an exhaust port formed through the cylinder head on an opposite side of said reference plane, said exhaust port communicating through an exhaust opening with the combustion chamber, and
open/close valves disposed in the intake port and the exhaust port, respectively, the improvement comprising:
the intake port is formed extending upstream from the intake opening substantially along the cylinder axis; and
the piston is provided at the top wall thereof with a recessed portion and a raised portion, said recessed portion being formed at a location off-set toward said one side to guide an intake air flow, which has been inducted into the combustion chamber, as a swirl about an axis extending in parallel with a line which in turn extends at a right angle relative to the cylinder axis, and said raised portion being formed on the opposite side of said reference plane to extend in continuation with an upwardly gently sloping edge portion of the recessed portion, whereby the raised portion approaches the lower wall of the cylinder head at top dead center of the piston.

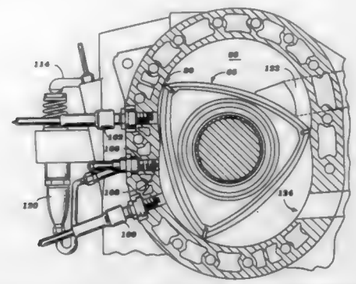
5,305,721

ROTARY WANKEL TYPE ENGINE

Wilson A. Burtis, 5011 Harvard Ave., Westminster, Calif. 92683

Division of Ser. No. 561,924, Aug. 1, 1990, Pat. No. 5,203,307, which is a continuation-in-part of Ser. No. 373,231, Jun. 29, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 6,968
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—205 **14 Claims**

1. In a rotary engine comprising at least one rotor having at least one apex, said rotor for rotation within a toroidal engine operating chamber defined by an engine housing, the rotor having at least one combustion-side rotor face, an improved rotor characterized by a plurality of aerodynamic riblets defined in said combustion-side rotor face extending laterally substantially in the direction of rotation, said riblets reducing rotor surface wetting and improving lateral directing of atomized fuel before ignition.

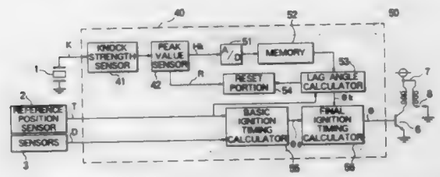


5,305,722

KNOCK SUPPRESSION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1993, Ser. No. 78,854
Claims priority, application Japan, Jun. 30, 1992, 4-172835
Int. Cl.[5] F02P *5/145*
U.S. Cl. 123—425 **8 Claims**



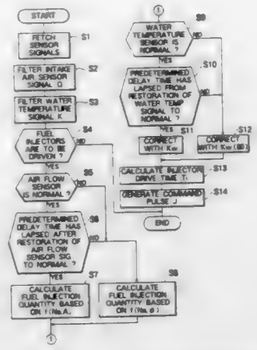
1. A knock suppression apparatus for a internal combustion engine comprising:
knock sensing means for generating an electrical knock signal indicative of the occurrence of knocking in an engine;
peak value sensor for sensing a peak value of the knock signal and generating an analog peak value signal indicative of the peak value;
an analog to digital converter connected to the peak value sensor for converting the peak value signal into a digital signal at first intervals;
lag angle calculating means for calculating at second intervals larger than the first intervals a lag angle based on the most recent digital signal generated by the converter;
basic ignition timing calculating means for calculating a basic ignition timing based on an operating condition of the engine; and
final ignition timing calculating means for calculating a final ignition timing based on the basic ignition timing and the lag angle.

5,305,723

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Youichi Kadota, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,494
Claims priority, application Japan, Aug. 27, 1992, 4-228469
Int. Cl.[5] F02D *41/22*
U.S. Cl. 123—479 **6 Claims**



1. A control apparatus for an internal combustion engine, comprising:
a plurality of sensor means for detecting parameters representing operation state of said engine to thereby output respective sensor signals;
crank angle sensor means for generating a reference period signal in synchronism with rotation of said engine;
fuel injector means for injecting fuel into said engine; and
air-fuel ratio control means for determining a driving time of said fuel injector means on the basis of at least one of said sensor signals and said reference period signal;
wherein said air-fuel ratio control means includes:
filter means for filtering said one sensor signal;
decision means for making decision as to normality or abnormality of said one sensor signal;
means responsive to the decision of abnormality of said one sensor signal for thereby determining said driving time of said fuel injector means on the basis of another one of said sensor signals; and
means responsive to restoration of said one sensor signal to the normal state thereof to thereby allow the determination of said injector driving time based on said one sensor signal to be resumed only after lapse of a first predetermined delay time from the restoration of said one sensor signal to the normal state.

5,305,724

EVAPORATIVE FUEL CONTROL UNIT FOR INTERNAL COMBUSTION ENGINE

Masataka Chikamatsu; Shigetaka Kuroda; Kazutomo Sawamura; Toshihiko Sato, and Takayoshi Nakayama, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

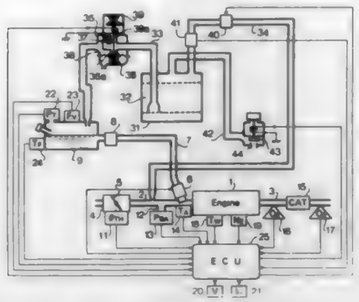
Filed Feb. 22, 1993, Ser. No. 20,404
Claims priority, application Japan, Feb. 28, 1992, 4-075912
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—520 **4 Claims**

1. An evaporative fuel purging apparatus used for an internal combustion engine, comprising:
a purge system comprising a fuel tank and a canister, said canister having an absorbing agent for absorbing an evaporative fuel generated in the fuel tank, and a drain control valve, provided on a drain port for opening said canister

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to the atmospheric air, which is adapted to open and close said drain port;

a purge control valve provided on a purge passage communicating said canister to a part of an intake system of the internal combustion engine, and which is adapted to control purge of said evaporative fuel absorbed into said canister through said purge passage;



a diagnostic means for diagnosing presence or absence of leakage in the purge system when said drain control valve and said purge control valve are closed; and

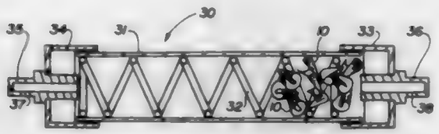
a purge control means for maintaining said purge control valve in a closed state until a predetermined time elapses after opening of said drain control valve wherein purging of evaporative fuel is inhibited.

5,305,725

METHOD AND APPARATUS FOR TREATING FUEL

John R. Marlow, 4316 E. Tropicana Ave., #89, Las Vegas, Nev. 89121

Filed Sep. 11, 1992, Ser. No. 943,469
Int. Cl.[5] F02M *33/00*
U.S. Cl. 123—538 **8 Claims**



1. A device for promoting the efficient combustion of fluid hydrocarbon fuel comprising

(a) at least one primary metal member comprised of at least one metal selected from the group consisting of brass, copper, and bronze, said primary metal member coated with at least one metal selected from the group consisting of silver and silver alloys;

(b) at least one secondary metal member comprised of at least one metal, said secondary metal member contacting said primary metal member; and,

(c) means for contacting said primary metal member and said secondary metal member with the hydrocarbon fuel;

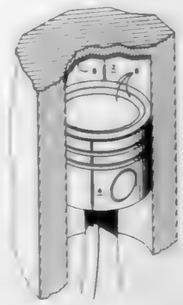
said secondary metal member having a standard reduction potential, Eo, at 298.15K and a pressure of 101.325 kPa which is more negative than that of the standard hydrogen electrode; the differential between the standard reduction potential, Eo, of said primary metal member and said secondary metal member being at least 0.46 volts.

5,305,726

CERAMIC COMPOSITE COATING MATERIAL

Alan J. Scharman, Hebron; Alfred P. Matarese, North Haven, and Harry E. Eaton, Jr., Woodstock, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1992, Ser. No. 954,450
Int. Cl.[5] F02B *75/08*
U.S. Cl. 123—668 **15 Claims**



1. A metal article coated with a ceramic coating, wherein the coating comprises:

(a) a metallic bond coat deposited on the metal article,

(b) at least one MCrAlY/ceramic layer deposited on the bond coat, wherein M is Fe, Ni, Co, or a mixture of Ni and Co, and the ceramic in the MCrAlY/ceramic layer comprises mullite, alumina, zircon, sillimanite, sodium zirconium phosphate, fused silica, cordierite, aluminum titanate, or zirconia, and

(c) a ceramic composite top layer deposited on the MCrAlY/ceramic layer, wherein the ceramic composite top layer comprises a ceramic matrix having a coefficient of thermal expansion less than about 5.4×10^{-6}°C.$^{-1}$ and a thermal conductivity between about 1 J sec^{-1}m^{-1}°C.$^{-1}$ and about 1.7 J sec^{-1}m^{-1}°C.$^{-1}$ and about 1.7 J sec^{-1}m^{-1}°C.$^{-1}$ and at least one secondary phase dispersed in the matrix such that the secondary phase inhibits crack propagation in the ceramic composite top layer.

5,305,727

OXYGEN SENSOR MONITORING

Alexander Y. Gopp, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 1, 1992, Ser. No. 891,086
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—688 **9 Claims**

1. A method for monitoring an internal combustion engine on-board oxygen sensor, said engine having exhaust means, an exhaust gas oxygen (EGO) sensor associated with the exhaust means and an air/fuel ratio controller for controlling operation of the engine, said method including the steps:

determining test entry conditions;

measuring a first limit cycle period with a first calibration of said air/fuel ratio controller;

generating a signal which represents an average of said first limit cycle period;

changing parameters of said air/fuel ratio controller to a second calibration and initiating a second limit cycle with a different limit cycle period;

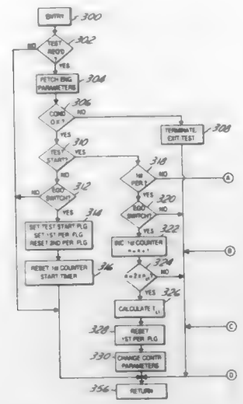
measuring a second limit cycle period with the second calibration of said air/fuel ratio controller;

generating a signal which represents an average of said second limit cycle period;

calculating a time constant of said EGO sensor as a function of said first and second limit cycle periods;

generating a signal representing said time constant;

comparing said signal representing said time constant with a predetermined maximum allowed response rate; and



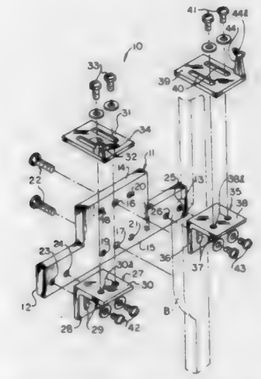
generating a signal indicating a failed EGO sensor if said time constant si greater than said maximum allowed response rate.

5,305,728

BOW SIGHT APPARATUS

Dennis L. Young, R.D. #1, Box 28A, Lot #19, Enon Valley, Pa. 16120, and Robert E. Davenport, R.D. #2, Box 2307, Wampum, Pa. 16157

Filed Dec. 31, 1992, Ser. No. 999,264
Int. Cl.[5] F41G *1/467*
U.S. Cl. 124—87 **3 Claims**



1. A bow sight apparatus arranged for securement to an archery bow, wherein the apparatus comprises,

a mounting plate, the mounting plate having a planar first side parallel to a planar second side, and

the mounting plate having a first end spaced from a second end, and a top side spaced from a bottom side, wherein the mounting plate includes a first smooth mounting bore and a second smooth mounting bore directed through the mounting plate an equal distance between the first end and the second end defining a first row, and

an internally threaded third mounting bore and an internally threaded fourth mounting bore spaced an equal distance relative to the first end between the first end and the first row, wherein the third mounting bore and the fourth mounting bore define a second row, and

a fifth internally threaded mounting bore and a sixth internally threaded mounting bore directed through the mounting plate between the first row and the second end, wherein the fifth mounting bore and the sixth mounting bore are spaced an equal distance relative to the second end, and define a third row, wherein the first row, the second row, and the third row are parallel relative to one another, and

the first mounting bore and the second mounting bore each receiving a fastener therethrough for securement of the mounting plate to the bow, and

the third mounting bore and the fourth mounting bore are arranged for reception of an arrow quiver for use by a left-handed shooter, and the fifth and the sixth mounting bore are arranged for reception of a bow quiver relative to a right-handed shooter upon securement of the mounting plate to the bow, and

a seventh internally threaded bore and an eighth internally threaded bore defining a fourth row, wherein the seventh bore and the eighth bore are positioned in adjacency relative to the first end between the second row and the first end, and orthogonally oriented relative to the second row, and a ninth internally threaded bore and a tenth internally threaded bore defining a fifth row positioned adjacent the second end between the third row and the second end, wherein the fourth row and the fifth row are colinear relative to one another and orthogonally oriented relative to each of the first row, the second row, and the third row, and

a front sight means mounted to the fourth row, and a rear sight means arranged for mounting to the fifth row, and

the front sight means includes an L-shaped front sight support member having a first plate orthogonally and integrally mounted to a second plate, the first plate having first plate parallel slots, and the first plate in contiguous communication with the mounting plate, and front sight fasteners directed through the first plate slots, with one of said front plate fasteners received within one of said seventh bore and eighth bore, and a front sight plate having a plurality of front sight plate slots orthogonally oriented relative to the first plate, and front sight fasteners directed through the front sight plate slots, and the second plate having second plate threaded bores, and the front sight fasteners received within the second plate threaded bores, and a front sight post orthogonally and fixedly mounted to the front sight plate.

5,305,729

METHOD AND APPARATUS FOR CUTTING WET CONCRETE

Edward R. Chiuminatta, and Alan R. Chiuminatta, both of 1112 Olympic Dr., Corona, Calif. 91719

Filed Feb. 14, 1992, Ser. No. 837,248
Int. Cl.[5] B28D *1/00*
U.S. Cl. 125—12 **15 Claims**

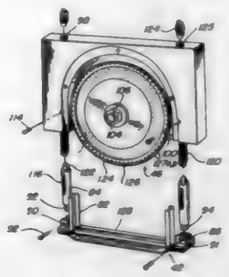
1. A skid plate assembly for use with a concrete saw having a rotating cutting blade with a leading cutting edge which cuts a groove in a concrete surface as the saw is moved across the surface, comprising:

a first and second mounting portion configured to be releasably fastened to the concrete cutting saw;

a support portion depending from between the first and second mounting portions such that during cutting the support portion supports the surface being cut adjacent at least the leading cutting edge of the blade to inhibit raveling of the edges of a groove cut by the rotating blade as the blade moves across the concrete to cut the groove, the support portion having a slot through which the cutting blade extends during cutting; and

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a load bearing member communicating with the first and second mounting portions to urge them to assume a predetermined position relative to one another, whereby said support portion is caused to bow.



5,305,730

BELT-CONFIGURED SAW FOR CUTTING SLOTS INTO STONES HAVING A POLYCRYSTALLINE DIAMOND CUTTING SURFACE

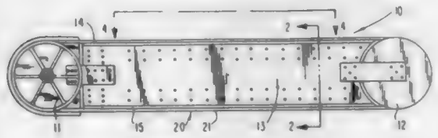
Donald D. Fish, Bedford, Ind., assignor to W. F. Meyers Company, Inc., Bedford, Ind.

Continuation of Ser. No. 131,461, Dec. 11, 1987, Pat. No. 4,945,889. This application May 4, 1990, Ser. No. 519,022

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] B28D *1/08*

U.S. Cl. 125—21 **12 Claims**



1. A stone cutting belt comprising:

a flexible and continuous main body with length and lateral width, said main body having a top surface across said lateral width and an opposite bottom surface, said bottom surface having a drive portion adapted to be drivenly engaged by a sheave;

a plurality of stone cutting elements, each of said elements having a width substantially less than the lateral width of said main body; and

means for mounting each of said plurality of stone cutting elements in said main body such that said plurality of elements are spaced along the length thereof and such that at least a portion of each of said cutting elements projects above said top surface of said main body, wherein said stone cutting elements are staggered across the lateral width of said top surface of said main body in a pattern to form a continuous cutting width at least equal to the lateral width of said main body.

5,305,731

APPARATUS FOR GENERATING ACOUSTIC WAVE HAVING A LIQUID LENS WITH AN ADJUSTABLE FOCAL LENGTH

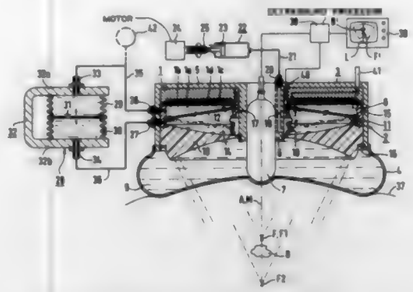
Gerhard Buchholtz, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,631

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1991, 4136004

Int. Cl.[5] A61B *17/22*

U.S. Cl. 601—4 **11 Claims**



1. An acoustic wave generator comprising:

a housing containing an acoustic propagation medium;

means for generating acoustic waves propagating in a propagation direction in said acoustic propagation medium;

a liquid lens for focusing said acoustic waves, said liquid lens being disposed in said acoustic propagation medium and having two spaced lens walls disposed at least substantially transversely to said propagation direction and lens liquid between said two lens walls, said two lens walls and said lens liquid, in combination, defining a focal length of said liquid lens;

said liquid lens having a central opening extending in said propagation direction formed by an inner wall, with said two lens walls each having an inner edge proximate said inner wall and an outer edge remote from said inner wall;

the inner edge of at least one of said lens walls being movable along said inner wall and the outer edge of said at least one lens wall being fixed; and

means for deforming said at least one lens wall by moving said inner edge thereof along said inner wall for varying the focal length of said liquid lens.

5,305,732

JACKETED JET RADIANT TUBE HEATER ENCLOSING A SEGMENTED FLAME TUBE HELD TOGETHER BY CLASPS

Joachim Wunning, Leonberg, and Joachim G. Wunning, Aachen, both of Fed. Rep. of Germany, assignors to WS WarmeprozeBtechnik GmbH, Renningen, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,749

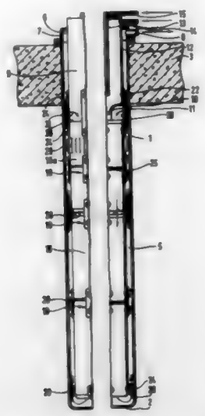
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132235

Int. Cl.[5] F24C *3/00*

U.S. Cl. 126—91 A **25 Claims**

1. A jacketed jet radiant heater suitable for heating an industrial process furnace comprising a jacket tube (**1**), mounted, near one end thereof, in a furnace wall and closed at its other end, said jacket tube surrounding, at its furnace-wall end, a burner unit (**9**) mounted therein, and a flame tube (**4**) disposed within said jacket tube, said flame tube being aligned at one end with said burner unit so as to receive a flame therefrom and at its other end being positioned for discharging combustion product gas into said jacket tube near said closed end thereof, said flame tube being composed of axially aligned pipe pieces (**16,16*a***) connected one to another in each case by a plurality of clasps, said clasps in some pipe piece connections spacing apart

connected pipe pieces from each other for providing channels for exhaust gas flow between the inside of said flame tube and a ring duct (**5**) inside said jacket tube and outside said flame tube, said clamps (**19**) each having elements protruding perpendicularly into respective holes of pipe pieces respectively joined by a said clasp.



5,305,733

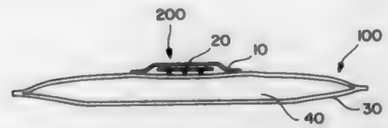
TRIGGER TO ACTIVATE SUPERCOOLED AQUEOUS SALT SOLUTION FOR USE IN A HEAT PACK

Dale E. Walters, St. Louis, Mo., assignor to Omni Therm, Inc., St. Louis, Mo.

Filed Mar. 31, 1993, Ser. No. 40,475

Int. Cl.[5] A61F *7/00, 7/08*

U.S. Cl. 126—263 R **12 Claims**



1. A trigger to initiate crystallization of a supercooled aqueous salt solution encased in a flexible container, comprising a puncturing means and an adhesive sealing means,

wherein the puncturing means is attached by a sealing means to the exterior of the flexible container,

wherein the trigger, when activated, punctures the flexible container, and admits air thereby initiating crystallization, and

wherein the sealing means prevents any leakage of the solution from the container.

5,305,734

ASSEMBLY STRUCTURE FOR AN EXTERNAL BODY OF A KITCHEN SOOT EXTRACTOR

Sun-Sing Jang, 650, Yuan-Huan E. Rd., Fong-Yuan, Taichung Hsien, Taiwan

Division of Ser. No. 894,805, Jun. 4, 1992, Pat. No. 5,267,550. This application Aug. 5, 1993, Ser. No. 102,232

Int. Cl.[5] F24C *15/20*

U.S. Cl. 126—299 D **5 Claims**

1. An assembly structure for an external body of a kitchen soot extractor comprising: a top sheet member having left and right sides having downwardly bent portions; two side sheet members respectively at left and right sides of said top sheet member and individually having a main plate portion, arcuate plate portion at one end of said main plate portion and a portion bent downwardly at a side of said arcuate portion opposite said main plate portion; means attaching said downwardly bent portions of said top sheet to respective bent down portions of said side sheet members.



5,305,735

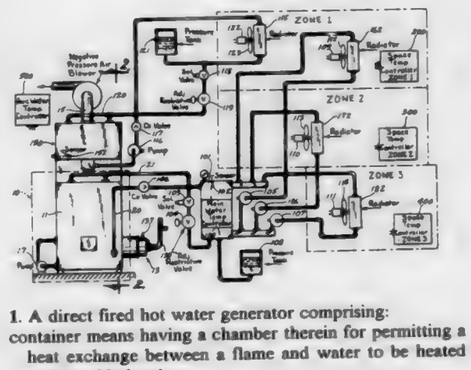
DIRECT FIRED HOT WATER GENERATOR WITH MORE THAN ONE HEAT EXCHANGE ZONE

David P. Welden, N. Indiana Ave., Iowa Falls, Iowa 50126

Filed Mar. 29, 1993, Ser. No. 38,846

Int. Cl.[5] F24H *1/10*

U.S. Cl. 126—355 **13 Claims**



1. A direct fired hot water generator comprising:

container means having a chamber therein for permitting a heat exchange between a flame and water to be heated within said chamber;

a cool water inlet disposed adjacent a top portion of said container means;

a burner for burning a fuel to produce heat and other products of combustion;

a burner inlet connected to said burner and to a lower portion of said container means for introducing said heat and products of combustion into said chamber;

exhaust means operably attached to a top portion of said container means for exhausting said products of combustion from said container means;

a first water heat exchange zone disposed in said chamber above said burner inlet means for permitting the rising heat and products of combustion to contact the falling water from said water inlet;

means for receiving heated water adjacent the bottom of said container means;

a second water heat exchange zone disposed above and surrounding said exhaust means;

second container means having a second chamber therein for permitting heat exchange between the exhaust gases from said exhaust means and water to be heated within said second chamber;

a second cool water inlet disposed adjacent a top portion of said second container means; and

means for receiving heated water adjacent the bottom of said second container means.

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5,305,736

DISTAL END PART OF ENDOSCOPE

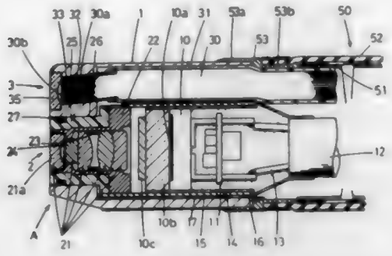
Keiji Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,696

Claims priority, application Japan, Apr. 26, 1991, 3-191339; May 14, 1991, 3-206618

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 13 Claims



1. A distal end part of a forward view type endoscope having an objective optical system arranged to face forwardly in a distal end block, comprising:

a light guide fiber bundle, positioned adjacent a periphery of said distal end block, for illuminating an observation field of view of said objective optical system;

a bore that is provided in said distal end block with an angle of inclination, so that said bore approaches an optical axis of said objective optical system at a forward end thereof, said bore receiving an exit end portion of said light guide fiber bundle; and

an illuminating lens, having a diameter which is larger than a diameter of said bore, said illuminating lens disposed in a forward end face of said distal end block at a position facing an exit end face of said light guide fiber bundle in order to enlarge a divergence angle of illuminating light emitted from said light guide fiber bundle, whereby said illuminating lens can be positioned in said forward end face of said distal end block such that said illuminating lens does not protrude out of the periphery of said distal end block.

5,305,737

ULTRASONIC TREATMENT SYSTEM

Robert E. Vago, Bettendorf, Iowa, assignor to Arjo Inc., Morton Grove, Ill.

Continuation-in-part of Ser. No. 753,008, Aug. 23, 1991, Pat. No. 5,178,134, which is a continuation-in-part of Ser. No. 726,948, Jul. 8, 1991, abandoned, which is a division of Ser. No. 322,128, Mar. 10, 1989, Pat. No. 5,048,520, which is a continuation-in-part of Ser. No. 175,936, Mar. 30, 1988, Pat. No. 4,492,868. This application Oct. 28, 1992, Ser. No. 967,670

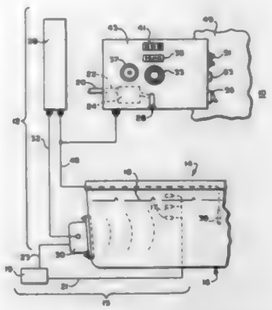
Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—4 42 Claims

1. A method of treating animals in a working fluid contained within wall means comprising the steps of:

immersing a body portion of the animal into the working fluid during a time period with the body portion being in acoustic contact with the fluid; and

applying ultrasonic waves through the working fluid to the body portion at a frequency in the range of 15 kilohertz to 500 kilohertz and a power density that is not irritating to the animal during the time period; and



reducing thermal layering during the application of ultrasonic waves through the working fluid.

5,305,738

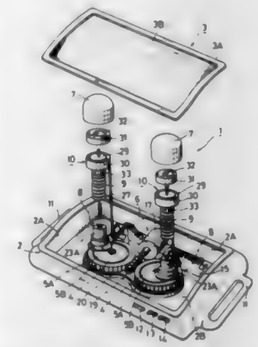
MASSAGE DEVICE

Nobuzo Shimizu, Higashi-Osaka, Japan, assignor to Daito Electric Machine Industry Company Limited, Osaka, Japan

Filed May 22, 1992, Ser. No. 886,942

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—35 19 Claims



11. A massage device comprising:

a housing;

a pair of rotary plates with one plate each mounted on one shaft, respectively, of a pair of opposite shafts disposed in the housing;

means for drivingly rotating each one of said pair of rotary plates in directions opposite to each other;

a connecting member provided upright on and rotatable relative to each of the rotary plates and eccentric relative to each of the pair of opposite shafts, said connecting member being elastically deformable in a direction perpendicular to its axis, wherein the connecting member is attached to the rotary plate and rotatable relative thereto; and

a kneading ball attached to an upper end of each of the connecting members;

vibrating means provided between each of the kneading balls and the connecting members for vibrating the kneading balls;

rotation control means provided in the housing for preventing said connecting member from rotating about its own axis with the rotation of the rotary plate, said rotation control means including pivotal levers, each having one end pivotally connected to one of said pair of rotary plates and eccentrically placed with respect to each of the opposite shafts and the other end extending outward beyond said one of said pair of rotary plates, and a guide member fixedly provided outside of said one of said pair of rotary plates for limiting the range of pivotal movement of the other end of the pivotal lever, each connecting member having a lower end connected to said one end of the pivotal levers, respectively.

5,305,739

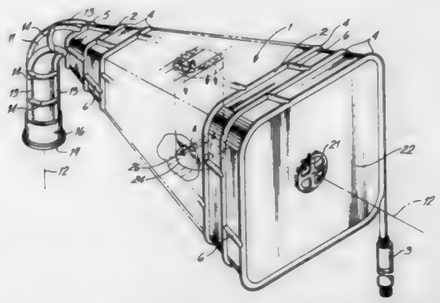
INFLATABLE RESUSCITATION DEVICE

Thomas C. Gray, Clarkston, Wash., assignor to Grayco, Inc., Clarkston, Wash.

Filed Sep. 28, 1992, Ser. No. 951,984

Int. Cl.[5] A61M *15/00*

U.S. Cl. 128—205.13 18 Claims



1. An improved pulmonary resuscitator of the type having a compressible bladder to be compressed to supply air to a user device, said bladder having a flexible wall and an inlet check valve and said user device having outlet check valve, wherein the improvement comprises:

a) a first network means comprising substantially orthogonal interconnected inflatable fluid channels integrally contained in said flexible wall said first network means upon inflation erecting said bladder and maintaining said bladder erect and resilient during compression of said bladder;

b) means carried by said bladder for inflating said first network of inflatable fluid channels with a gas and sealingly retaining said gas within said network during compression of said bladder.

5,305,740

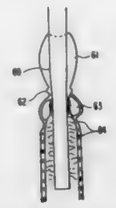
SEALING MEANS FOR ENDOTRACHEAL TUBES

Theodor Kolobow, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 758,824, Sep. 12, 1991. This application May 6, 1992, Ser. No. 878,784

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.14 15 Claims



1. An endotracheal tube comprising a tubular member and a sealing means on said tubular member, said sealing means including a circular collar portion having a through hole centrally located therein and a pliable flange attached to an outer circumferential surface of said circular collar portion, said pliable flange being continuous along the entire circumferential surface of said circular collar portion and having a thickness of less than about 0.002 inches, said pliable flange providing a means to collect tracheal bronchial secretions and thereby assist in sealing said endotracheal tube in a tracheal when inserted therein.

5,305,741

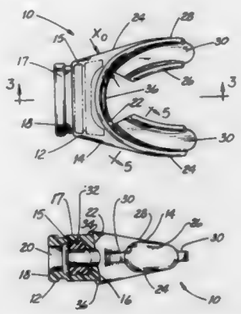
CUSTOMIZABLE MOUTHPIECE FOR DIVERS AND METHOD OF MANUFACTURE

Randall C. Moles, Racine, Wis., assignor to CGM, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 721,127, Jun. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 380,397, Jul. 17, 1989, Pat. No. 5,031,611. This application Aug. 12, 1992, Ser. No. 929,162

Int. Cl.[5] B63C *11/16;* A61M *16/00;* A62B *9/06*

U.S. Cl. 128—207.14 17 Claims



1. A scuba-diving mouthpiece for customizing for a particular diver including means for gripping the diver's teeth, such mouthpiece and gripping means comprising:

a front member extending from a proximal in-mouth end to a distal outside end and forming a horizontal passageway from the distal end to the proximal end; and

a U-shaped thermoformable back member having:

a forward middle portion secured to the front member proximal end in position for thermoformable custom moldable engagement with the diver's forward teeth; and

a pair of leg portions extending from the middle portion rearwardly to pass between the diver's molars and terminate at the rear of the mouth, each leg portion having inner and outer upstanding flanges and a substantially horizontal bite portion extending therebetween, the bite portion having thermoformable custom moldable upper and lower surfaces and the flanges having upwardly-extending and downwardly-extending flange portions with upper and lower edges, respectively, and inside surfaces spaced for thermoformable custom moldable engagement with opposite side surfaces of the user's teeth, said outer flanges extending forward to merge with the forward middle portion.

5,305,742

ENDOTRACHEAL TUBE HOLDER

James Styers, Gilbert, Ariz., and Claude Twogood, Littleton, Colo., assignors to Dale Medical Products, Inc., Plainville, Mass.

Filed Sep. 2, 1992, Ser. No. 939,299

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.17 23 Claims

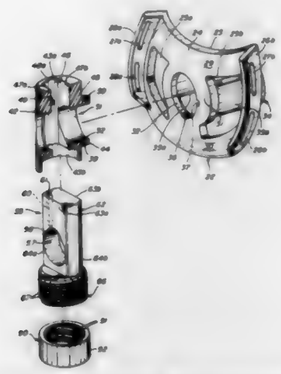
1. A holder for securing an endotracheal tube extending from a patient's mouth, the holder comprising:

VOL 1161 ISS 4 AP 26 1994

a support member and a cylinder;

a support member being positional in front of the patient's mouth and including a first tube bore for receiving the endotracheal tube and a cylinder bore substantially perpendicular to the first tube bore for receiving the cylinder;

the cylinder being movable within the cylinder bore and including a second tube bore movable between an aligned position wherein the axes through the centers of the first and second tube bores are colinear and the endotracheal



tube passes freely through the aligned bores, and a plurality of unaligned positions wherein the axes are non-colinear but parallel for frictionally engaging endotracheal tubes of varying diameters to prevent movement thereof and without occluding the tube;

a coupling for adjustably maintaining the first and second tube bores in the plurality of unaligned positions; and

attachment means for maintaining the support member in front of the patient's mouth.

5,305,743

ARTIFICIAL AIRWAY DEVICE

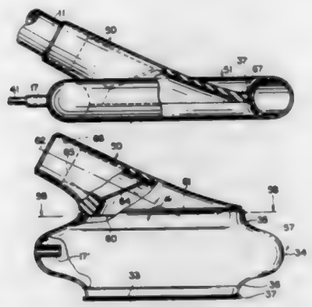
Archibald I. J. Brain, St. Andrews, Abney Court Drive, Bourne End, Bucks, United Kingdom

Filed Feb. 1, 1993, Ser. No. 3,900

Claims priority, application United Kingdom, Mar. 5, 1992, 9204754

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.15 **13 Claims**



1. A laryngeal-mask construction, comprising a back-plate member providing an essentially a single plane an apertured base-mounting rim of generally elliptical configuration, and an inflatable toroidal ring of flexible material, the radially inner circumference of which is connected to the periphery of said rim, said ring having a generally toroidal wall having an inner toroidal wall surface and an outer toroidal wall surface, said ring having a port connection that is locally open through said inner and outer toroidal wall surfaces, and the inner toroidal wall surface when uninflated being compressionally stressed in opposition to tensional stress of the outer torroidal wall surface.

5,305,744

CALIBRATING REFLECTOR DEVICE FOR AN OPTICAL MEASURING SYSTEM

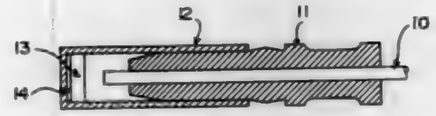
Ulrich Pfeiffer, Metzstr. 29a, D-8000 Munich, and Reinhold Knoll, Kircheastr. 88, D-8000 Munich 80, both of Fed. Rep. of Germany

Filed Mar. 17, 1993, Ser. No. 32,862

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 4208707

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—634 **20 Claims**



1. Calibrating reflector device, for an optical measuring system which has an optical fiber optics probe, the reflector device comprising a housing that is open at one end, a reflecting device in said housing, said reflecting device having a specific reflection behavior and a positioning device which positions a front end of a fiber optics probe of an optical measuring system in the housing of the reflector device; wherein a transparent layer is placed adjacent the reflecting device in a manner causing the front end of a fiber optics probe to be positioned in the housing, by said positioning device, adjoining the transparent layer.

5,305,745

DEVICE FOR PROTECTION AGAINST BLOOD-RELATED DISORDERS, NOTABLY THROMBOSES, EMBOLISMS, VASCULAR SPASMS, HEMORRHAGES, HEMOPATHIES AND THE PRESENCE OF ABNORMAL ELEMENTS IN THE BLOOD

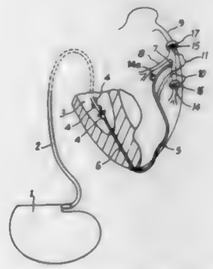
Fred Zacouto, 16 rue de la Convention, 75 015 Paris, France

Continuation of Ser. No. 366,889, Jun. 13, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 863,332

Claims priority, application France, Jun. 13, 1988, 88 07852; Oct. 14, 1988, 88 13523

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—637 **27 Claims**



1. Device for protection against at least one of the following blood coagulation related disorders: thromboses, embolisms, coagulapathies, hemorrhages, hemopathies, and abnormal cell elements in blood; characterized by the fact that it comprises:

first implanted means for measuring continuously or periodically at least one value of a biological parameter likely to precede or accompany an impending blood coagulation related disorder or the occurrence of a blood coagulation related disorder, and comprising at least one presentation means adapted to be placed in or on a blood or lymphatic vessel or cavity for presenting to the surrounding blood or lymph a provoking means for actively and continuously provoking a local biological reaction of a factor related to blood coagulation, and a sensor means in or close to said presentation means for responding to the local reaction of the factor provoked by said presentation means,

second implanted means for determining one or several thresholds to which the measured value of the parameter is compared,

and third implanted means for detecting crossing of this threshold and for automatically releasing, into circulation, a suitable dose of one or several therapeutic agents for therapy of the blood coagulation disorder.

5,305,746

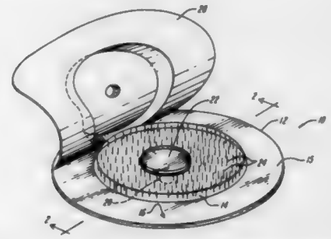
DISPOSABLE, PRE-GELLED, SELF-PREPPING ELECTRODE

Charles Fendrock, Sudbury, Mass., assignor to Aspect Medical Systems, Inc., Framingham, Mass.

Filed Sep. 29, 1992, Ser. No. 952,970

Int. Cl.[5] A61B *5/0402*

U.S. Cl. 128—641 **19 Claims**



1. An electrode for monitoring electrical signals of a body comprising:

an electrical pad;

means for parting and keeping parted outer layers of skin on the body without removing any skin, said means for parting being non-conductive and being arranged in close proximity to said electrical pad.

5,305,747

OPTICAL ELEMENTS FOR APPLANATION TONOMETERS

John McNaughton, Harlow, and Jack Balzano, West Drayton, both of England, assignors to Clement Clarke International Ltd., Essex, England

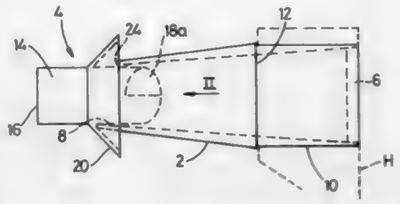
Filed Feb. 18, 1992, Ser. No. 835,869

Claims priority, application United Kingdom, Feb. 18, 1991, 9103360

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—652 **12 Claims**

1. An applanating member for an applanation tonometer, said applanating member comprising a tubular carrier and an optical element mounted in said carrier to be applied against the eye of a subject, said optical element being releasably held in and projecting forwardly from the tubular carrier, said element being a molding having a generally cylindrical body and a radial projection intermediate the length of said body spaced from a front face of said element, the projection being in the form of a peripheral flange extending radially outwardly at an angle to the cylindrical body and inclined rearwardly away from said front face, said flange providing an abutting engagement for the optical element with the tubular carrier for locating the element longitudinally in the carrier wherein the optical element and the carrier comprise mutually co-operat-



ing location elements for locating the member angularly in the carrier, said location element of the optical element being spaced from said front face.

5,305,748

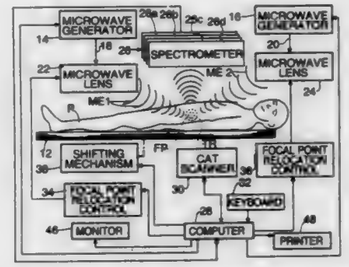
MEDICAL DIAGNOSTIC SYSTEM AND RELATED METHOD

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Jun. 5, 1992, Ser. No. 894,081

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—653.1 **26 Claims**



1. A medical tissue investigation system comprising:

support means for supporting a patient in a predetermined position;

generating means for generating electromagnetic energy having a predetermined plurality of wavelengths;

focusing means disposed between said generating means and said support means for focusing said energy at a predetermined point internal to the patient supported on said support means;

photodetector means disposed proximately to said support means for detecting electromagnetic radiation emitted from organic cellular material at said predetermined point in response to excitation of said cellular material by said energy upon focusing thereof on said predetermined point by said focusing means; and

computer means operatively connected to said photodetector means for determining a spectral output of said organic cellular material.

5,305,749

SIDE-LOADING OF PATIENT INTO MRI C-MAGNET WHILE MAINTAINING ADJACENT OPEN ACCESSIBILITY TO PATIENT

Andrew J. Li, South San Francisco, and Leon Kaufman, San Francisco, both of Calif., assignors to The Regents of the University of California, Oakland

Filed Sep. 24, 1992, Ser. No. 950,277

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **11 Claims**

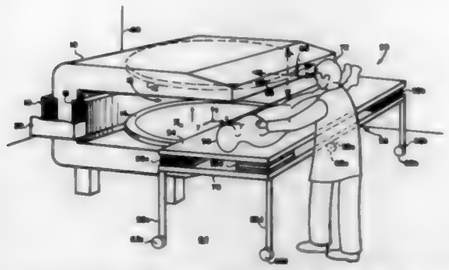
1. In an MRI system including a C-shaped NMR polarizing

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magnet having an MRI image volume in a gap between upper and lower pole faces thereof, the improvement comprising,

a patient transport bed movably mounted to an undercarriage having a plurality of depending legs on rollers, said



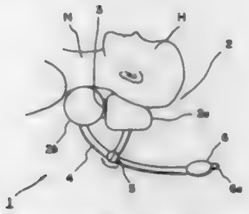
undercarriage including an aperture sized for telescopic movement over at least a portion of the lower pole face while simultaneously retaining substantially unaltered adjacent open-accessibility to a patient disposed on the bed.

5,305,750

NECK BENDING APPARATUS

Junichi Makita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 19, 1991, Ser. No. 717,664
Claims priority, application Japan, Jun. 19, 1990, 2-160344
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653.5 **9 Claims**



1. An apparatus for bending a neck portion of a patient and which is utilized in association with a coil device of a magnetic resonance imaging system for imaging a forwardly or rearwardly bent condition of the neck portion of the patient in a lying position, the apparatus comprising:

a head and neck supporting cushion adapted to be positioned in the coil device, the cushion having a variable inner volume and comprising at least two pad-like air cushions, which are connected with each other, with variable inner volumes for respectively supporting the neck portion and a head portion of the patient in the lying position; and

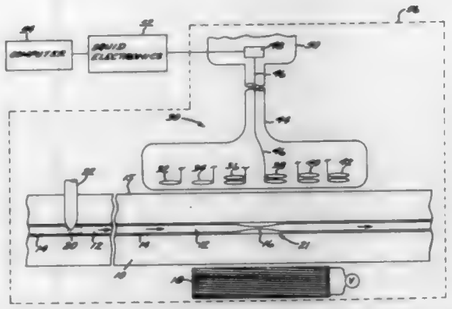
a regulator connected to the cushions for regulating the inner volume of the cushions in accordance with an inclination of the neck portion on one of the pad-like air cushions for the purpose of imaging, said one of the pad-like air cushions being adapted to be disposed in an imaging area of the coil device.

5,305,751

MEASUREMENT OF LIQUID FLOWS IN A LIVING ORGANISM

Michael Chopp, Southfield; John Moran, Dearborn, and Norman Tepley, Bloomfield Hills, all of Mich., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Jun. 4, 1992, Ser. No. 893,503
Int. Cl.[5] A61B *5/026*
U.S. Cl. 128—654 **20 Claims**



1. A method of measuring liquid flows in a living organism, comprising the steps of:

applying an applied magnetic field to a living organism;

introducing a quantity of a magnetizable fluid from an external source into a flow or liquid in the living organism, wherein the quantity of magnetizable liquid flowing from the external source varies as a function of time; and

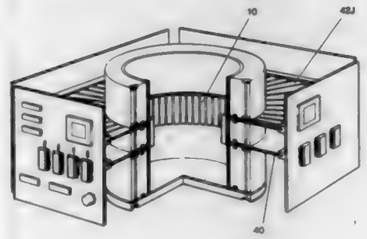
measuring the variation in an induced magnetic field emanating from the living organism as a measure of the flow of the magnetizable fluid and the liquid within the living organism, the step of measuring including a step of determining a liquid flow from the measured magnetic field variation.

5,305,752

ACOUSTIC IMAGING DEVICE

Brett A. Spivey; Peter J. Martin, both of Encinitas, and Douglas A. Palmer, San Diego, all of Calif., assignors to Thermotrex Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 708,354, May 31, 1991, abandoned. This application Jun. 1, 1992, Ser. No. 891,851
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.02 **15 Claims**



1. An acoustic imaging device for providing an image of at least a portion of a medium comprising:

a. an acoustic broadcasting means for broadcasting into said medium an acoustic signal from a plurality of at least seven locations partially surrounding said medium, one location at a time said signal being at least one frequency and continuous for a period of time at least equal to twice the travel time of said acoustic signal across said meals,

b. an acoustic signal detection means for detecting, at a plurality of closely spaced locations at least partially surrounding said medium, acoustic signals broadcast by said broadcasting medium,

c. a data collection and comparison means for comparing signals broadcast to signals received in order to provide with respect to each of said at least seven locations a set of data representing the phases and amplitudes of acoustic signals received at said at least seven locations relative to the phase and amplitude of the signals broadcast from at least seven locations, and

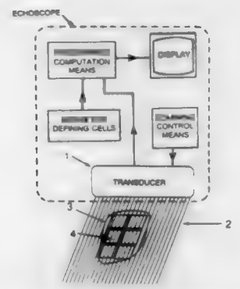
d. a computing means including means for effecting a remap algorithm for mathematically constructing an image of at least a portion of said medium utilizing said set of phase and amplitude data.

5,305,753

METHOD AND APPARATUS FOR DETERMINING THE VELOCITY OF A FLOWING LIQUID

Laurence S. Wilson, Allambie Heights, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU91/00143, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO91/16000, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 18, 1991, Ser. No. 941,088
Claims priority, application Australia, Apr. 18, 1990, PJ9658
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.08 **10 Claims**



1. A method of determining the two-dimensional velocity vector of liquid flowing through a region which is included in a B-mode ultrasonic echoscopy display of at least a part of an object, said B-mode display being created from an analysis of the ultrasonic echoes received from a beam of ultrasonic energy which is scanned over said at least part of said object, said scanning being effected by the sequential transmission into said object of said beam of ultrasonic energy along a plurality of lines of sight, each line of sight being spatially displaced relative to its preceding, adjacent line of sight, said method comprising the steps of

(a) selecting, from said B-mode display, a plurality of small cells within said region, each cell being intersected by a plurality of said lines of sight;

(b) for a selected one of said cells, scanning the ultrasonic beam at least twice in rapid succession over the lines of sight which pass through the cell and, for each scan, subjecting the signals reflected from scatterers within the cell to conventional video processing and producing a two dimensional brightness function S(x,y), and subsequently creating a data set S(x,y,t) of the image of the cell;

(c) for the selected cell, integrating the data set S(x,y,t) separately with respect to x and y, by projecting S(x,y,t) onto the (x,t) and (y,t) planes to obtain projected functions $S_x(x,t)$ and $S_y(y,t)$, respectively;

(d) for the selected cell, determining, from said projected functions $S_x(x,t)$ and $S_y(y,t)$, the average velocity of the scatterers within the cell, and hence of the liquid flowing through the cell, (i) in the x-direction ($<v_x>$) and (ii) in the y-direction ($<v_y>$);

(e) for the selected cell, determining, from the average velocity in the x-direction and the average velocity in the y-direction, the two-dimensional velocity vector of the liquid flowing through the cell; and

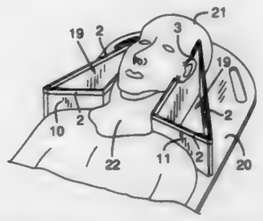
(f) repeating steps (b), (c), (d) and (e) for another one of the cells.

5,305,754

HEAD IMMOBILIZATION DEVICE

Valerie S. Honeywell, and Paul J. Honeywell, both of 37502 NE. Olstedt Rd., La Center, Wash. 98629

Filed Dec. 17, 1991, Ser. No. 808,664
Int. Cl.[5] A61B *19/00*; **A61F** *5/37*
U.S. Cl. 128—869 **9 Claims**



1. A head immobilization device, comprising:

head support sheet having top and bottom surfaces supporting the head of a patient; and

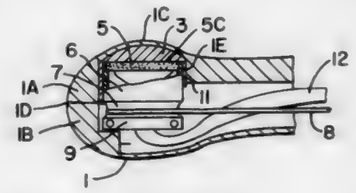
a pair of lateral support members for preventing lateral movement of the head, each lateral support member being a triangular cylinder of sheet material having three sides and a triangular cross-section, said cross-section being substantially parallel to the head support sheet with said sides extending in height at an angle away from said support sheet, and said cylinder extending longitudinally upward from the top surface of the head support sheet to provide a pair of triangular cylinders, each cylinder having an inner side and the inner sides of said pair of cylinders being spaced apart by a fixed spacing distance substantially the same as the maximum width of the head.

5,305,755

ULTRASONIC PROBE, HAVING TRANSDUCER ARRAY CAPABLE OF TURNING AROUND ITS APERTURE AXIS AND HAVING A CONVEX LENS COMPRISING A VISCOUS RESIN

Narutaka Nakao, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 4, 1992, Ser. No. 845,716
Claims priority, application Japan, Mar. 12, 1991, 3-46261
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—660.08 **8 Claims**



1. An ultrasonic probe comprising:

a case of a substantially cylinder shape having a first axis along longitudinal direction thereof, said case having a thin convex wall in the vicinity of a closed end of said

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case, said convex wall being acoustically transparent for an ultrasonic signal to radiate from the ultrasonic probe;

a support cylinder having a second axis rotatably mounted in said case, said support cylinder and said convex wall being coaxial to said second axis;

an ultrasonic transducer of phased-array type and including a plurality of transducer elements, said ultrasonic transducer being fixed on a base of said support cylinder; and

a viscous resin filled in a space between said convex wall and said ultrasonic transducer so that a convex lens coaxial to said second axis is formed by said convex wall and said viscous resin, said viscous resin also filling a gap between a case wall and said support cylinder for rotatably supporting said support cylinder in said case.

5,305,756

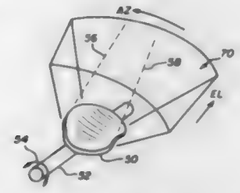
VOLUMETRIC ULTRASONIC IMAGING WITH DIVERGING ELEVATIONAL ULTRASOUND BEAMS

Robert R. Entrekin, Bothell; Brent S. Robinson, Kirkland, and Philip Keller, Indianola, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Apr. 5, 1993, Ser. No. 43,045

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.09 **10 Claims**



1. In an ultrasonic imaging system, including transducer means having an ultrasonic energy emitting surface for scanning a region in front of said emitting surface in an azimuthal direction by mechanically sweeping beams emitted from said transducer means over said region, and means for producing an image from echoes received by said transducer means, said transducer means further comprising means for focusing the ultrasonic energy emitted by said transducer means in the azimuthal direction at a focal range in front of said emitting surface and means for diverging said ultrasonic energy in the elevation direction within said azimuthal focal range.

5,305,757

GAS FILLED LIPOSOMES AND THEIR USE AS ULTRASONIC CONTRAST AGENTS

Evan C. Unger, 13365 E. Camino La Cebadilla, Tucson, Ariz. 85749, and Guanli Wu, 2602 W. Alden St., Tucson, Ariz. 85745

Division of Ser. No. 717,084, Jun. 18, 1991, Pat. No. 5,228,446, which is a continuation-in-part of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned. This application Feb. 12, 1993, Ser. No. 17,683

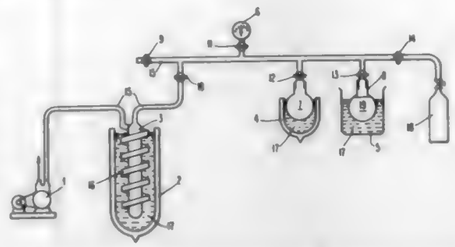
Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.02 **25 Claims**

1. A method for preparing contrast agents for ultrasonic imaging comprising the following steps:

(i) placing liposomes under negative pressure;

(ii) incubating said liposomes under said negative pressure for a time sufficient to remove substantially all liquid from said liposomes; and



(iii) instilling gas into said liposomes until ambient pressures are achieved.

5,305,758

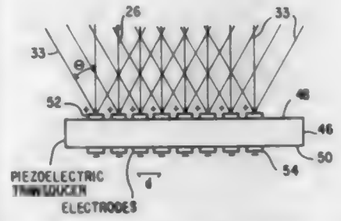
ULTRASONIC APPARATUS FOR USE IN OBTAINING BLOOD FLOW INFORMATION

Dennis R. Dietz, and Lawrence J. Busse, both of Littleton, Colo., assignors to Tetrad Corporation, Englewood, Colo.

Continuation of Ser. No. 684,221, Apr. 12, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 984,717

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **7 Claims**



1. An apparatus adapted for use in obtaining information relating to blood flow, comprising:

a carrier; and

diffraction grating means, operatively attached to said carrier, for use in transmitting a transmission wave that can be used to obtain information relating to the flow of blood in a blood vessel and that has a defined wavelength or receiving a reception wave that contains information relating to the flow of blood in a blood vessel and that has substantially said defined wavelength using the grating lobe effect, said diffraction grating means includes a member with a first surface and a second surface that is different than said first surface, a first electrode that is located on said first surface and a second electrode that is located on said second surface, wherein one of said first electrode and said second electrode includes a plurality of members that are substantially parallel to one another and spaced from one another by a defined distance, wherein the relationship between said defined wavelength and said defined distance is substantially in accordance with the Bragg diffraction equation.

5,305,759

EXAMINED BODY INTERIOR INFORMATION OBSERVING APPARATUS BY USING PHOTO-PULSES CONTROLLING GAINS FOR DEPTHS

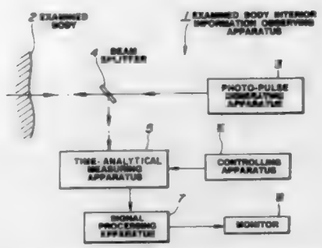
Mamoru Kaneko; Kuniaki Kami, both of Hachioji; Masakazu Gotanda, Kanagawa; Shuichi Takayam, Hachioji; Ichiro Nakamura, Kokubunji; Kazunari Nakamura; Eiichi Fuse, both of Hachioji; Susumu Takahashi, Kunitachi; Yoshihiro Kosaka, Hachioji, and Hiromasa Suzuki, Akishima, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1991, Ser. No. 700,225

Claims priority, application Japan, Sep. 26, 1990, 2-258477; Sep. 27, 1990, 2-259913; Sep. 27, 1990, 2-259914; Sep. 27, 1990, 2-259915; Sep. 27, 1990, 2-259916; Nov. 22, 1990, 2-319908

Int. Cl.[5] A61B *1/00, 6/00*

U.S. Cl. 128—665 **50 Claims**



1. An examined body interior information observing apparatus comprising:

a photo-pulse generating means for generating light energy in the form of photo-pulses for observing the interior of an examined body;

a time-analytical reflected light detecting means for time-analytically measuring in response to a depth from a surface of the examined body light energy emitted from said photo-pulse generating means and reflected within said examined body to produce an output signal; and

a detection sensitivity varying means for varying detection sensitivity so that a level of at least the output signal of said time-analytical reflected light detecting means may vary in response to said light energy reflected from different depths within said examined body.

5,305,760

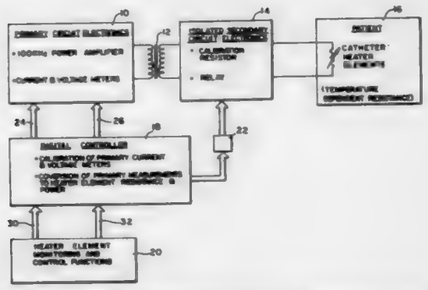
METHOD FOR REJECTING ELECTRICAL INTERFERENCE FROM PHYSIOLOGICAL MEASUREMENTS

Russell C. McKown, Dallas; Chris Eckert, Lewisville, and Michael D. Quinn, Plano, all of Tex., assignors to Interflo Medical Inc., Plano, Tex.

Filed Feb. 7, 1992, Ser. No. 832,410

Int. Cl.[5] A61B *5/021*

U.S. Cl. 128—692 **23 Claims**



1. A method for obtaining a measurement of a parameter of interest of a system while minimizing the effects of any electromagnetic interference on said measurement, comprising the steps of:

(a) injecting an amount of indicator into said system by supplying power to said system via an isolation transformer and a carrier frequency;

(b) measuring a first signal that is both indicative of said amount of said indicator injected in step (a) and substantially free of the effects of said electromagnetic interference;

(c) determining, from said first signal, a first waveform representative of said amount of said indicator delivered into said system as a function of time, said first waveform being substantially free of the effects of said electromagnetic interference;

(d) measuring a second signal that is indicative of a response of said system to said indicator;

(e) determining, from said second signal, a second waveform representative of said response as a function of time; and

(f) determining a system transfer function by cross-correlating said first waveform with said second waveform, said system transfer function being both substantially uncorrupted by said electromagnetic interference and indicative of said parameter of interest.

5,305,761

AMBULATORY MONITOR

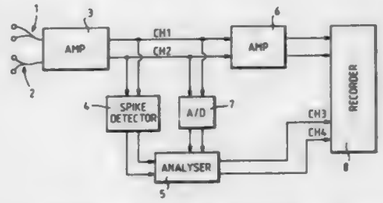
Shaun C. Byrne; Simon J. Large; Richard J. Riggs, and Peter J. Narramore, all of Oxon, Great Britain, assignors to Oxford Medical Limited, Osney Mead, United Kingdom

Filed May 13, 1991, Ser. No. 699,212

Claims priority, application United Kingdom, May 14, 1990, 9010774

Int. Cl.[5] A61N *1/08*

U.S. Cl. 128—697 **13 Claims**



1. An ambulatory monitor for monitoring the action of a pacemaker and cardiac response of a patient fitted with a pacemaker, the monitor comprising:

a pair of electrodes for coupling to a patient to monitor pacemaker pulses and analog ECG signals, said analog ECG signals being amplified for recording;

a spike detector for detecting said pacemaker pulses from said electrodes, said spike detector having means for generating a first signal indicating the occurrence of said pacemaker pulses;

an A/D converter for detecting said amplified analog ECG signals from said electrodes, said A/D converter generating a second signal, said second signal is a digital version of said analog ECG signal indicating the occurrence of said amplified analog ECG signal;

an analyzer connected to said spike detector and said A/D converter, said analyzer comprising:

a) means for determining a time of occurrence of said pacemaker pulses from said first signal, and means for determining a time of occurrence of said ECG signal from said second signal;

b) means for determining in real time, a timing relationship between said first and second signals;

c) means for analyzing in real time, the timing relationship and a shape of said second signal; and

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d) means for generating in real time, composite data signals defining:

a time of occurrence of each of said first and second signals;

a first and a second indication identifying said first signal as said pacemaker pulse and said second signal as said ECG signal; and

a third indication denoting the shape of said first and second signals; and

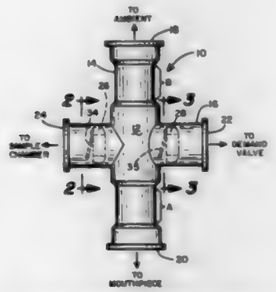
recording means for recording said composite data signals on a first channel of said recording means.

5,305,762

PATIENT VALVE INCORPORATING ONE-WAY CHECK VALVES FOR INFECTION CONTROL

Russell G. Acorn, White Bear Lake, and Gary M. Hassebroek, Eagan, both of Minn., assignors to Medical Graphics Corporation, St. Paul, Minn.

Filed Sep. 21, 1992, Ser. No. 948,041
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—716 5 Claims



1. In patient valve for pulmonary test equipment of the type including a unitary hollow elastomeric body, said body including first, second, third and fourth tubular sections, each having an inner lumen, one end of each tubular section being joined and sealed in a common area to the other three tubular sections to allow fluid flow from any tubular section to any other tubular section without escaping from said body, said first and second tubular sections including zones in which said body is sufficiently elastic to close when squeezed and reopen when released, said first tubular section having its other end open to the ambient, said second tubular section adapted to be coupled to a patient mouthpiece, said third tubular section adapted to be coupled to a gas demand value and said fourth tubular section adapted to be coupled to a gas sampling chamber, the improvement comprising:

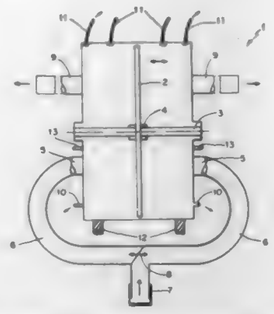
infection control valve means disposed in said third and fourth tubular sections for allowing gas flow from said demand vale through said patient mouthpiece and blocking gas flow from said gas sampling chamber when the patient inhales through said mouthpiece and for permitting gas flow from said mouthpiece to said gas sampling chamber while blocking gas flow from said mouthpiece to said demand valve when the patient exhales through said mouthpiece.

5,305,763

EXPIRATORY AIR RECEPTION VESSEL

Peter Ganshorn, Goldgrund 5, 8732 Münnerstadt, Fed. Rep. of Germany

PCT No. PCT/DE90/00075, § 371 Date Aug. 1, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO90/08504, PCT Pub. Date Aug. 9, 1990
PCT Filed Feb. 3, 1990, Ser. No. 741,497
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1989, 3903370
Int. Cl.[5] A61B *5/091*
U.S. Cl. 128—730 10 Claims



1. An expiratory air reception vessel for a measurement of lung function, comprising:

a closed container having two inlets, said two inlets being disposed opposite to one another and able to be pressurized alternatively with expired air from a patient; switching means for changing an inlet of said two inlets which is pressurized at any given time; and

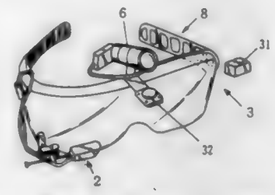
a piston means disposed within said closed container for operating said switching means, said piston means being movable within said container in a direction toward one of the two inlets wherein said one of said two inlets not pressurized at any given time is in contact with the atmosphere.

5,305,764

MEDICAL DIAGNOSTIC APPARATUS UTILIZING LINE-OF-SIGHT DETECTION

Mitsuho Yamada; Hitoshi Hongo; Kenya Uomori; Hiroshi Yoshimatsu; Keiichi Ueno, all of Kyoto; Mitsuru Fujii, Hokkaido; Shinji Murakami, Hokkaido; Norihito Nakano, Hokkaido; Jiro Miyazawa, Hokkaido; Ryo Fukatsu, Hokkaido, and Naohiko Takahata, Hokkaido, all of Japan, assignors to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan

Filed Dec. 18, 1992, Ser. No. 995,401
Claims priority, application Japan, Jul. 9, 1992, 4-182226
Int. Cl.[5] A61B *13/00*
U.S. Cl. 128—745 8 Claims



1. A medical diagnostic apparatus employing line-of-sight detection for diagnosing diseases related to brain function by detecting the line-of-sight of a subject, comprising:

head movement detecting means for detecting head movement of said subject;

eye movement detecting means for detecting eye movement of said subject;

calculating means responsive to an output from said head movement detecting means and to an output from said eye movement detecting means for calculating spatial movement of the line-of-sight of said subject; and

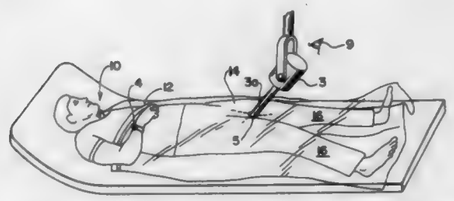
displaying means for displaying the movement of the line-of-sight calculated by said calculating means in terms of vectors thereby enabling diseases related to brain function to be detected.

5,305,765

CYSTOSCOPY SPLASH SHIELD

William E. Potts, Tallahassee, Fla., assignor to Little Rapids Corporation, Green Bay, Wis.

Continuation of Ser. No. 760,176, Sep. 16, 1991. This application Oct. 28, 1992, Ser. No. 967,936
Int. Cl.[5] A61F *13/00*
U.S. Cl. 128—849 2 Claims



1. A splash shield for use in surgical operations on a patient that involve the use of instruments, comprising:

a. a flexible plastic sheet of sufficient size to cover the area of the patient upon which the operation is to be performed, and to provide substantial overlap around the edges of the operating area, said sheet having a top side and a bottom side, and a top edge and a bottom edge;

b. a sealable aperture in said sheet through which an instrument can be inserted to provide access to the patient while enabling operation of the instrument from said top side of said sheet, wherein said sealable aperture further comprises two lines of perforated tear slits oriented at right angles to each other to form an apex, and a hole located at said apex; and

c. adhesive fastening means affixed to said bottom side of said sheet, spaced from said top edge and positioned intermediate said top edge and said aperture, and extending across the entire width of said sheet in a direction substantially parallel to said top edge, whereby said sheet can be attached to the patient's body.

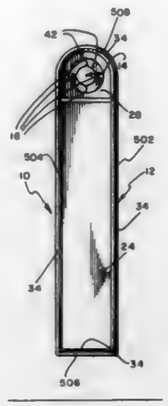
5,305,766

NEEDLE CAP WRENCH AND METHOD

James K. Hahn, 900 N. Poplar, Newton, Kans. 67114

Filed Nov. 9, 1992, Ser. No. 973,422
Int. Cl.[5] A47F *13/06*
U.S. Cl. 604—192 8 Claims

1. A tool for removing and replacing a needle cap from a combined needle cap and needle assembly comprising a generally longitudinal wrench structure means for removing and replacing a needle cap from a needle assembly; said longitudinal wrench structure means defining a generally cylindrical opening having an opening axis that is perpendicular to the longitudinal wrench structure means, and further having an open top, an open bottom, and a cylindrical wall with at least one arcuate channel traversing said cylindrical wall; a distance between one of said first opposed arcuate channels and one of said second opposed arcuate channels is defined by an approximately 90 degree arc; said generally longitudinal structure means further defines a first recess and a second recess terminating in a first wrench platform and a second wrench platform respectively; and additionally comprising a first ridge integrally formed on said first wrench platform and circumscribing said generally cylindrical opening, and a second ridge integrally formed on said second wrench platform and circumscribing said generally cylindrical opening.



5,305,767

COMB

Yuri Ivanov, 2120 Cruger Ave., Bronx, N.Y. 10462

Filed May 7, 1993, Ser. No. 57,629
Int. Cl.[5] A45D *24/00*
U.S. Cl. 32—151 9 Claims



1. A comb, comprising

a plurality of prongs, each of said prongs being composed of two prong parts movable relative to one another between an open position in which hair can engage between said prongs and a closed position in which hair is clamped between the prongs;

user-actuated means for moving said prong parts from one of said positions to another of said positions;

means for automatically returning said prong parts from said another position to said one position when the user stops acting on said user-actuated means, said prong parts including a first group of prong parts and a second group of prong parts;

a support provided with one group of said prong parts; and

a slider movable relative to said support by said user-actuated means and provided with another group of said prong parts,

said user-actuating means including a lever turnable relative to said support and engaged with said slider so as to displace the latter,

said returning means including spring means and compessible washer means which simultaneously prevent engaging of hair into gaps between said support and said slider.

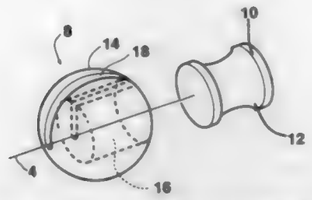
VOL 1161 ISS 4 APR 26 1994 UMI

5,305,768

DENTAL FLOSSER UNITS AND METHOD OF MAKING SAME

Joseph Gross, Moshav Mazor, and Shlomo Zucker, Mikmoret, both of Israel, assignors to Product Development (ZGS) Ltd., Petah Tikva, Israel

Continuation-in-part of Ser. No. 933,638, Aug. 24, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,707
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 20 Claims



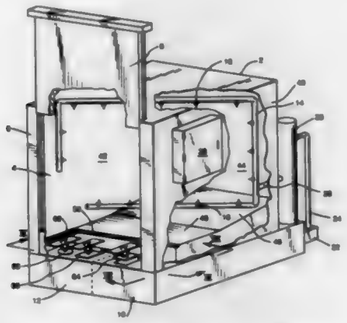
1. A dental flosser unit for flossing teeth including a filament of high tensile strength terminating in thickened end portions at its opposite ends; characterized in that each of said thickened end portions includes a metal ferrule crimped to the respective filament end, and a plastic bead enclosing said ferrule and the respective filament end.

5,305,769

DRAIN SEPARATION SYSTEM FOR POWER SPRAY PARTS WASHING MACHINE

Robert S. Jung, Pittsburgh, Pa., assignor to American Metal Wash, Inc., Canonsburg, Pa.

Continuation of Ser. No. 838,148, Feb. 18, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,220
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—96.12 16 Claims



10. A power spray washing machine comprising:
a. an enclosed wash cabinet having a floor therein;
b. a first liquid holding tank positioned beneath said wash cabinet;
c. a second liquid holding tank positioned beneath said wash cabinet;
d. a first spray means for spraying a first liquid within said wash cabinet;
e. a second spray means for spraying a second liquid within said wash cabinet;
f. a first pump means for pumping said first liquid from said first liquid holding tank into said first spray means and into said wash cabinet;
g. a second pump means for pumping a second liquid from said second liquid holding tank into said second spray means and into said wash cabinet;
h. a liquid collection trough extending downwardly from said wash cabinet floor;
i. a first opening through a bottom wall of said trough and in direct fluid communication with said first liquid holding tank;
j. a second opening through the bottom wall of said trough and in direct fluid communication with said second liquid holding tank;
k. a first valve means positioned within said trough and above said first opening for controlling fluid flows through said first opening, with said first valve means including (i) a support positioned within the trough above and spaced from said first opening and attached to opposed sidewalls of said trough, (ii) an actuator attached to a lower surface of said support and having a moveable shaft extending downwardly therefrom, and (iii) a valve head attached to an exterior end of said shaft, with each of said support, actuator, moveable shaft and valve head of said first valve means being totally contained within said trough and having no portion thereof which extends out of said trough, with said first valve head moveable by said actuator between a closed position with said first valve head in direct contact with and closing said first opening and an open position with said first valve head out of contact with and uncovering said first opening, and with said first valve head retaining no fluids between the floor of said wash cabinet and said first liquid holding tank when said first valve head is in said closed position;
l. a second valve means positioned within said trough and above said second opening for controlling fluid flows through said second opening, with said second valve means including (i) a support positioned within the trough above and spaced from said second opening and attached to opposed sidewalls of said trough, (ii) an actuator attached to a lower surface of said support and having a moveable shaft extending downwardly therefrom, and (iii) a valve head attached to an exterior end of said shaft, with each of said support, actuator, moveable shaft and valve head of said second valve means being totally contained within said trough and having no portion thereof which extends out of said trough, with said second valve head moveable by said actuator between a closed position with said second valve head in direct contact with and closing said second opening and an open position with said second valve head out of contact with and uncovering said second opening, and with said second valve head retaining no fluids between the floor of said wash cabinet and said second liquid holding tank when said second valve head is in said closed position; and
m. control means for controlling the operation of said first and second valve means between said open and closed positions.

5,305,770

OUTDOOR UMBRELLA

Joseph H. DeMarco, 60 Seaman Ave., New York, N.Y. 10034

Filed Apr. 7, 1993, Ser. No. 43,756
Int. Cl.[5] A45B *19/06*
U.S. Cl. 135—26 1 Claim

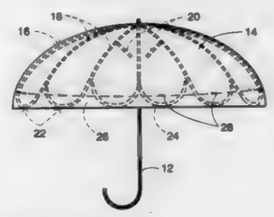
1. An umbrella having an optimum small-sized fabric cover in a closed position and an increased-sized fabric cover in an opened position, said umbrella comprising a center pole having opposite upper and lower ends, a pivot mounted adjacent said center pole upper end, an upper circumferentially disposed first set of struts having opposite upper and lower ends having said upper ends thereof pivotally mounted to said pivot, a first doughnut-shaped fabric cover disposed in covering relation over said first set of struts and having opposite upper and lower edges, said first fabric cover being connected only along said upper and lower edges to said cooperating upper and lower ends of said first set of struts and having a length portion disposed in unconnected relation therebetween, a first slide slidably disposed to track lengthwise of said center pole, a lower circumferentially disposed second set of struts having opposite upper and lower ends operatively disposed in supported relation from said first set of struts so as to be urged through movement from an initial closed position together with said first set of struts against said center pole into an open position extending radially outwardly of said center pole and lengthwise radially of said first set of struts in response to sliding movement of said first slide lengthwise of said center pole, a second doughnut-shaped fabric cover disposed in covering relation over said second set of struts, and a second slide on each said upper end of said second set of struts in encircling relation about a cooperating upper end of each first set of struts so as to adapt said second set of struts to track from an initial position of movement adjacent an end of a first strut along each said first set of struts beneath said unconnected length portion of said first doughnut-shaped fabric cover to a subsequent position of movement adjacent said opposite lower connected edge of said first doughnut-shaped fabric cover, whereby in response to sliding movement of said first slide lengthwise of said center pole said first and second fabric covers simultaneously are urged into radially extending positions from said pivot of said center pole with said second fabric cover serving as a radial extension of said first fabric cover to thereby contribute to an increased-size of fabric covers for said umbrella.

5,305,771

UMBRELLA WITH ROUNDED RIB TERMINALS

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Apr. 19, 1993, Ser. No. 49,134
Int. Cl.[5] A45B *25/00*
U.S. Cl. 135—31 6 Claims



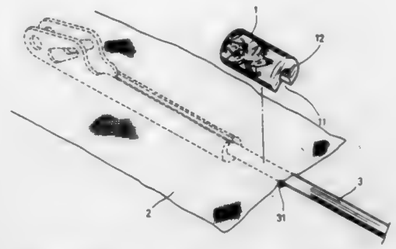
1. An umbrella comprising:
an elongate shaft;
a web member;
support means for enabling an opening of the umbrella from a collapsed storage configuration to an opened use configuration and for supporting said web in the opened configuration of the umbrella, said support means including a foldable linkage connected to said shaft and to said web member and having a plurality of radially extending ribs angled with respect to each other said ribs each having a free end, said support means also including a plurality of elongate flexible tie members each having opposite ends and each connected at opposite ends to free ends of adjacent ones of said ribs, said tie members having central arcuate portions; and
attachment means for coupling said tie members to said web member along said central arcuate portions.

5,305,772

STRUT STRUCTURE OF A FOLDING UMBRELLA HAVING A SEAMLESS UMBRELLA COVER

Chen M. Lai, F38, 3rd Fl., 5, Shin Yi Rd., Taipei, Taiwan

Filed Oct. 12, 1993, Ser. No. 134,100
Int. Cl.[5] A45B *25/18*
U.S. Cl. 135—33.4 3 Claims



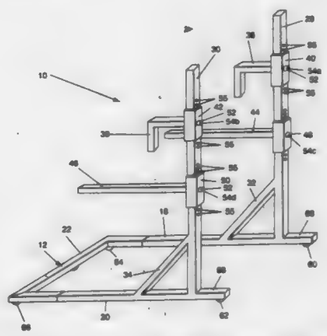
1. A strut structure of a folding umbrella having a seamless umbrella cover, said strut structure comprising a strut covered with an umbrella cover, characterized in that an integrally molded plastic fastener is a hollow cylindrical body provided with an open groove on one side thereof, the outside diameter of said strut is slightly larger than the width of said groove and slightly smaller than the inner hole diameter of said fastener, said fastener is placed on said umbrella cover with the opening of said groove sitting opposite said strut and directly pressed onto said strut to fix said umbrella cover on said strut.

5,305,773

MOBILITY ASSIST DEVICE

U. Grant Browning, 1432 Tyne Blvd., Nashville, Tenn. 37215

Filed May 13, 1992, Ser. No. 883,134
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 13 Claims



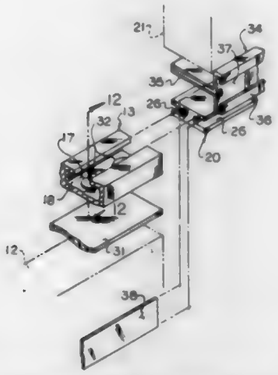
1. A portable device for assisting a user in rising from a workpiece stationary on a floor, and device comprising:
a. first and second uprights extending vertically from a base for allowing said user to grasp said uprights and pull outwardly and upwardly from a seated positioned on said workpiece;
b. said base adapted to allow leverage against said floor;
c. braces attached to said base and to said uprights, said braces positioned diagonally between said uprights and

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said base whereby when said device is positioned proximate to a workpiece for use, said braces contact a portion of the workpiece to provide leverage against said workpiece while said user is rising from said workpiece and to space said uprights away from the user whereby the arms of the user must be extended to grasp said uprights; and

d. an adjustable first L-shaped attached to an adjustable first upright and a second L-shaped handle attached to said second upright, each handles extending horizontally toward the user and movable to a position to support the user while walking or standing.

5,305,774
TRUCK BED CANOPY MOUNT
Charles T. Hager, 124 Pine St., Frostburg, Md. 21532
Filed Nov. 9, 1992, Ser. No. 973,660
Int. Cl.[5] B60P *7/00*
U.S. Cl. 135—88 **1 Claim**



1. A truck bed canopy mount arrangement for mounting to a vehicle having a truck bed, wherein the truck bed includes truck bed side walls, and each side wall includes an upper top wall surface, and a canopy, wherein the canopy includes canopy side walls, and each canopy side wall includes a lower end face, wherein the arrangement comprises,

a plurality of side wall rail members, each side wall rail member arranged for mounting to one of said upper top wall surfaces, and each side wall rail member including a side rail top wall spaced from a side wall rail bottom wall, and spaced side wall rail side walls, and

a T-shaped channel directed into each side wall rail member through the side wall rail top wall, and each T-shaped channel includes a channel floor, and each channel floor includes a plurality of floor apertures directed therethrough, with each floor aperture arranged for receiving a fastener for mounting the side wall rail member to an upper top wall surface, and

a plurality of slide rails, each slide rail arranged for mounting to a lower end face of a canopy side wall, and each slide rail having a slide rail bottom wall spaced from a slide rail top wall, and spaced slide rail walls, each side wall includes a side wall slot coextensive with each side wall, and the slots are coextensive relative to one another and arranged in a colinear relationship, wherein each slide rail is received within one of the T-shaped channels between the slots and the slide rail bottom wall, and

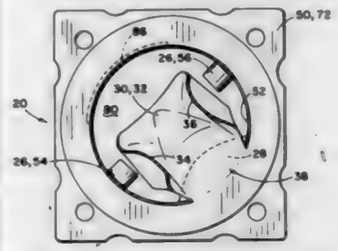
each slide rail having a plurality of mounting bores, with each mounting bore arranged to receive a further fastener to secure a slide rail to one of the canopy side walls, and

each channel floor includes a lock aperture directed therethrough, and each slide rail includes a lock bore, wherein each lock bore is aligned with one of said lock apertures to define a lock bore pair, and a plurality of lock pins, each lock pin having a lock pin body, and each lock bore pair is arranged to receive a lock pin therethrough, with each lock pin having a plurality of resilient sealing rings, with one of the sealing rings positioned within said lock bore, and a further one of said sealing rings positioned within the lock aperture of the lock bore pair, and

each channel floor includes a plurality of fibrous lubricant impregnated pads to provide for lubricity between the channel floor and the slide rail bottom wall, and each impregnated pad is received within a pad recess directed into a channel floor, and

a trim plate assembly mounted to each slide rail top wall, and each trim plate assembly having a first flange mounted to a slide rail top wall, and a second flange orthogonally and fixedly mounted to the first flange, and the second flange having a second flange track, and a trim plate slidably received within the track.

5,305,775
APPARATUS AND METHOD FOR PREVENTING FRAGMENTATION OF A RUPTURE DISK
Stephen P. Farwell, Owasso, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.
Filed Oct. 5, 1993, Ser. No. 131,907
Int. Cl.[5] F16K *17/16, 17/40*
U.S. Cl. 137—14 **17 Claims**



11. Method for preventing fragmentation of a rupture disk during pressure relieving rupture and fluid flow through the ruptured disk, comprising:

rupturing the disk into a petal having a body, at least two generally opposed edges extending across the rupture disk, and a base for retaining the petal to the rupture disk;

retarding motion of the generally opposed edges as the body of the petal is forced away from the rupture disk by the pressure relieving rupture, thereby bending the body of the petal into a channel shape; and

deforming the channel-shaped body of the petal as the petal is forced away from the rupture disk by the pressure relieving rupture.

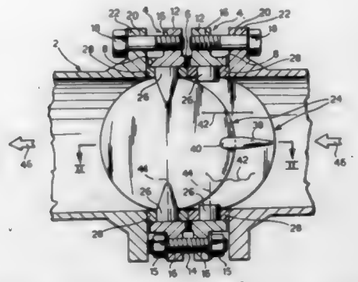
5,305,776
EMERGENCY SHUT-OFF DEVICE
Rosa Romano, Via Dante, 7-I-22070 Veniano (Como), Italy
PCT No. PCT/EP91/00155, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO91/12459, PCT Pub. Date Aug. 22, 1991
PCT Filed Jan. 28, 1991, Ser. No. 934,613
Claims priority, application Italy, Feb. 6, 1990, 67086 A/90
Int. Cl.[5] F16K *17/40*
U.S. Cl. 137—68.1 **2 Claims**

1. An emergency shut-off device for use in the event of the breakage of pipes for conveying fluids, including two adjacent valves arranged in series in the pipe, each valve comprising:

a hollow body having joining means with a predetermined breaking load for joining said body to the body of the other valve and connecting means for connecting said body to the adjacent portion of pipe, and

a disc-shaped obturator which is rotatable around an axis in the body so that said obturator can assume a shut-off

position transverse the pipe and an open position substantially perpendicular to said shut-off position, the obturator having means for engaging the obturator of the other valve, the means fixing the two obturators in a contiguous arrangement in the open positions they assume normally and releasing the obturators so that they can assume said shut-off positions when the valves move apart because said joining means have been subjected to loads greater than or equal to said breaking loads, wherein the axes of the two obturators are separated by a distance shorter than the diameter of the obturators and in that each obturator has a not flat face and an opposite face with a flat portion, which is intended to substantially overlap the flat

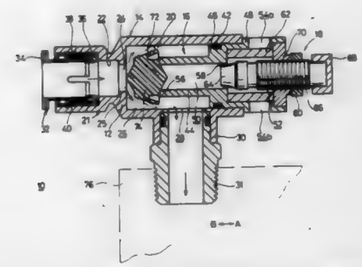


portion of the face of the other obturator, when the two valves are in the open position, the flow of the fluid over the faces of the obturators forcing the obturators to assume said shut-off positions when the two valves move apart due to the breaking of the joining means,

wherein each obturator is rotatable in the body on diametral pins and has on the face with the flat portion a projection which, in the open position, forms an extension of the profile of the other obturator, and

wherein the projection has a stop protuberance which engages the opposite obturator to keep it in the open position under normal operating conditions, but releases it when the valves move apart axially as a result of the breakage of the joining means.

5,305,777
SPEED CONTROLLER
Sanae Nakamura, and Shizuo Mori, both of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 898,099, Jun. 12, 1993, abandoned. This application Jun. 4, 1993, Ser. No. 71,230
Claims priority, application Japan, Jun. 24, 1991, 3-152059; Dec. 19, 1991, 3-337093
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—102 **20 Claims**



1. A speed controller for regulating the introduction of pressurized fluid into an external device and the discharge therefrom, comprising: a main body having:

(a) a first connecting portion for receiving the fluid;

(b) a second connecting portioh for passing the fluid from said first connecting portion to the external device, and for receiving the fluid flowing back from the external device;

(c) a discharge portion for discharging from said main body, the fluid flowing back from the external device through said second connecting portion, said discharge portion having an exit port, wherein the respective axes of said first and second portions and said discharge portion lie on the same plane;

(d) a fluid flow regulating valve, disposed within said discharge portion, for regulating the rate of fluid discharge from said discharge portion by means of selective adjustment of the effective cross-sectional area of said discharge portion exit port;

(e) a passageway disposed intermediate said first and second connecting portions and said discharge portion, for providing intermittent fluid communication among said portions; and

(f) check valve means, housed in said passageway and having a check valve with:

a front section, facing the fluid flowing from said first connecting portion, and

a rear section, facing the fluid flowing from said second connecting portion,

a lip disposed at the peripheral portions of said check valve front and rear sections, which is flexibly engageable with the inner wall of said passageway in a fluid-tight sealing relationship in a forward position, and flexibly disengageable therefrom in a backward position, so that in the backward position said rear section is moved, in response to the flow of fluid flowing from said first connecting portion against said check valve, (i) to engage and seal said discharge portion relative to said first and second connecting portions, and (ii) to permit the flow of fluid past said check valve, through said passageway to said second connecting portion and external device is sequence,

and so that, in the forward position: said rear section lip is flexed outwardly in response to the flow of fluid thereagainst flowing back from said discharge portion through said second connecting portion, (i) to disengage said rear section from said discharge portion and thereby unseal said discharge portion to permit the flow of fluid flowing back from the external device to said discharge portion, and also (ii) to engage said lip with an adjacent portion of said passageway inner wall and thereby seal said first connecting portion relative to said second connecting portion and said passageway.

5,305,778
AIR GAP APPARATUS
Paul L. Traylor, 16591 Milliken Ave., Irvine, Calif. 92714
Continuation-in-part of Ser. No. 781,751, Oct. 23, 1991, Pat. No. 5,176,165. This application Dec. 31, 1992, Ser. No. 999,222
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] E03C *1/12*
U.S. Cl. 137—216 **30 Claims**

1. Air gap apparatus for connection between a waste water inlet passage and a waste water outlet passage which is connected to a drain line, the apparatus comprising:

housing means defining an internal space;

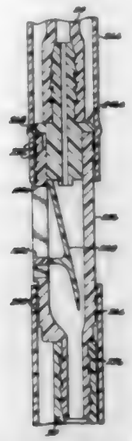
deflector means supported in the internal space the housing means, the deflector means and the housing means defining an air gap chamber on one side of the deflector means and a backflow chamber on the other side of the deflector means;

nozzle means carried by the housing means for directing a flow of water from the inlet passage into the air gap chamber;

the housing means including an air gap in communication with the air gap chamber to vent the air gap chamber to

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atmosphere and thereby prevent back siphonage of waste water into the air gap chamber from the water outlet passage, the housing means further including a backflow opening in communication with the backflow chamber; and



the deflector means being positioned to direct water coming out of the nozzle means toward the water outlet passage, and also to intercept and direct toward the backflow opening any backflowing water coming from the outlet passage.

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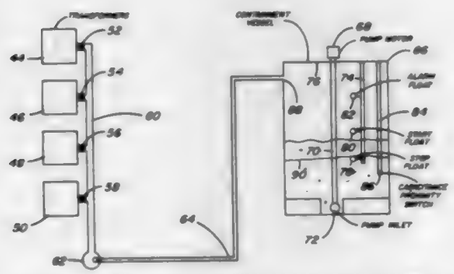
METHOD, SYSTEM, AND APPARATUS FOR OPERATING LARGE POWER GENERATING STATIONS WITH IMPROVED ENVIRONMENTAL PROTECTION MEASURES

Albert L. Izaguirre, 12064 W. Jody Dr., Boise, Id. 83704

Continuation of Ser. No. 742,030, Aug. 8, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,457

Int. Cl.[5] G05D *9/12*

U.S. Cl. 137—172 **5 Claims**



1. A system for containing oil and preventing oil spillage in the event of malfunctioning of certain heavy electrical equipment including, in combination:

a. means for passing oil and water into a common tank in the event of a malfunction to create an oil/water interface,

b. means for pumping water out of an exit port of said tank when said oil/water interface is above a predetermined level,

c. means within said tank or vessel for sensing the movement of said oil/water interface past said predetermined level within said tank or vessel, said sensing means including a closed hollow tube disposed within said tank or vessel to a predetermined level therein, a capacitance proximity probe disposed in one end of said tube and operative to create an electromagnetic field through which said oil/-water interface may pass and thereby change the reluctance of said electromagnetic field, said capacitance proximity switch being operative to discriminate between the near proximity of water on the one hand and the near proximity of petroleum products on the other hand to in turn generate an output signal of a level sufficient to operate said pumping means when in predetermined close proximity to water having a dielectric constant on the order of about 80 but insufficient to operate said pumping means when in predetermined close proximity to petroleum product having a dielectric constant on the order of about 2, and

d. means for shutting off said pumping means when said oil/water interface drops a certain distance from said capacitance proximity switch, whereby oil spillage from said common tank is prevented.

5,305,780

PRESSURE RELIEF VALVE WITH AUXILIARY LOADING DEVICE

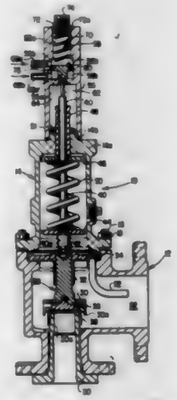
Ying-San Lai, Alexandria, La., assignor to Dresser Industries, Dallas, Tex.

Continuation of Ser. No. 843,853, Feb. 27, 1992, Pat. No. 5,234,023. This application Mar. 18, 1993, Ser. No. 33,046

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] F16K *17/10*

U.S. Cl. 137—489 **13 Claims**



1. A pressure relief valve assembly comprising:

means defining a first chamber having an inlet for receiving fluid from an external source and an outlet for discharging said fluid;

a valve member movable between an open and closed position in said chamber and in the path of said fluid flow between said inlet and said outlet so that said fluid urges said valve member to one of said positions;

a stem extending from said valve member;

means including a spring engaging said stem for normally biasing said valve member to the other of said positions so that said valve member moves to said one position in response to the fluid pressure exceeding a predetermined value;

means defining a second chamber in a spaced relation to, and isolated from, said first chamber for receiving fluid from said source and for discharging said fluid;

piston means disposed in said second chamber and responsive to a fluid pressure in said second chamber for engaging said stem for applying an additional force to said stem to force it, and therefore said valve member, to said other position;

a spring disposed in said second chamber and urging said piston towards said stem; and

means responsive to said predetermined pressure for releasing the fluid pressure in said second chamber to release said additional force and permit said valve member to move to said one position.

5,305,781

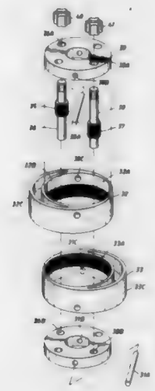
VALVE POSITIONING MONITORING APPARATUS

Frank J. Raymond, Jr., Houston, Tex., and Frank W. Johnston, Hardgate, United Kingdom, assignors to Bray International, Inc., Houston, Tex.

Continuation of Ser. No. 854,229, Mar. 20, 1992, abandoned. This application Dec. 14, 1992, Ser. No. 990,362

Int. Cl.[5] F16K *37/00*

U.S. Cl. 137—554 **5 Claims**



1. Apparatus for monitoring the rotative position of a rotary closure member of a valve, comprising

a housing having an opening through one side,

a shaft rotatably mounted in the housing opening and having means thereon connectible to a part exterior of the housing which rotates with the closure member,

first and second plates surrounding and fixed to the shaft in axially spaced relation within the housing,

a first ring closely surrounding the first plate for rotation with respect thereto and having a circle of teeth formed about the interior thereof,

a second ring closely surrounding the second plate for rotation with respect thereto and having a circle of teeth thereabout,

first and second rods mounted on the plates for rotation about axes parallel to the axis of rotation of the shaft,

a pinion gear on the first rod engaging the circle of teeth of the first ring,

a pinion gear on the second rod engaging the circle of teeth of the second ring,

each ring having an outer cam surface eccentric to its axis of rotation,

first and second switches mounted in the housing in position to be engaged and activated by the cam surfaces on the first and second rings, respectively, so as to sense the rotation of the shaft into angularly spaced positions, and

manually manipulative means on the end of each rod to permit adjustment of the rotation position of the cam surfaces on the rings.

5,305,782

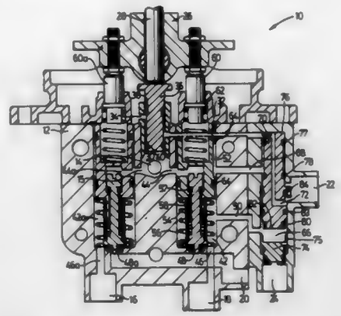
PNEUMATIC CONTROL VALVE SYSTEM

Graham V. Kipling, Ajax, and Paul H. Martin, Toronto, both of Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Filed Jan. 22, 1993, Ser. No. 7,954

Int. Cl.[5] F15B *13/04*

U.S. Cl. 137—596 **7 Claims**



1. A pneumatic control valve system comprising:

an actuating chamber having a pressure passageway, a switching passageway, a vent, and a piston between said actuating chamber pressure passageway, said actuating chamber vent, and said actuating chamber switching passageway moveable between a first position whereat said actuating chamber pressure passageway is cut off from said actuating chamber switching passageway and is vented and a second position whereat said actuating chamber pressure passageway is not vented and communicates with said actuating chamber switching passageway;

means to bias said actuating chamber piston to a position whereat said actuating chamber pressure passageway is cut off from said actuating chamber switching passageway;

a work chamber having a pressure passageway, a work passageway, a switching passageway, a vent, and a piston and plunger assembly between said work chamber pressure passageway on the one hand and said work passageway, work chamber switching passageway, and work chamber vent on the other, biasing means biasing said piston and plunger assembly to a first position whereat said work passageway and said work chamber switching passageway are cut off from said work chamber pressure passageway and vented, said piston and plunger assembly moveable to a second position whereat said work passageway and said work chamber switching passageway are not vented and communicate with said work chamber pressure passageway;

said work chamber, said piston and plunger assembly, and said work chamber biasing means comprising a modulator valve, said work chamber piston moveable past said second position to a third position for, when said work chamber pressure passageway is pressurized, increasing pressure at said work passageway and said work chamber switching passageway with increasing deflection of said work chamber piston past said second position toward said third position;

said work passageway terminating at a work port for connection to a control line;

a switching chamber having a pressure passageway, a switching outlet and a switching piston between said switching chamber pressure passageway and said switching outlet, said actuating chamber switching passageway communicating with said switching chamber at one end of said switching piston, said work chamber switching passageway communicating to said switching chamber at another end of said switching piston, said switching piston

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moveable between an unswitched position whereat said switching chamber pressure passageway is cut off from said switching outlet and a switched position whereat said switching chamber pressure passageway communicates with said switching outlet;

means to retain said switching piston in said switched position and in said unswitched position;

whereby when each said pressure passageway is pressurised and said actuating chamber piston is moved against said actuating chamber biasing means in order to communicate said actuating chamber pressure passageway with said actuating chamber switching passageway, said switching piston is moved to one of said switched and unswitched pistons, said switching piston retaining said one position when said actuating chamber piston returns to a position whereat said actuating chamber pressure passageway is cut off from said actuating chamber switching passageway and whereby when said work chamber piston is deflected past said second position, pressure is communicated through said work passageway to said work port for pressurizing a control line and whereby when said work chamber piston is deflected sufficiently past said second position, pressure communicated from said work chamber pressure passageway to said work chamber switching passageway overcomes said retaining means and acts to move said switching piston to the other of said switched and unswitched positions, said switching piston retaining said other position when said work chamber piston returns to said first position whereat said work chamber pressure passageway is cut off from said work chamber switching passageway.

5,305,783

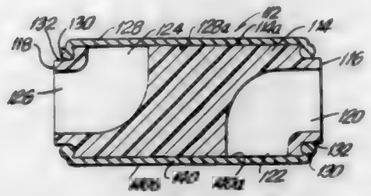
ELASTOMERIC SLEEVE AND METHOD FOR ASSEMBLING THE SLEEVE ON A ONE-WAY VALVE BODY

George Debush, Hamden, Conn., assignor to ReSeal International Limited Partnership, New York, N.Y.

Continuation of Ser. No. 816,632, Dec. 31, 1991, abandoned. This application May 6, 1993, Ser. No. 58,993

Int. Cl.[5] F16K *15/14*

U.S. Cl. 137—853 **9 Claims**



1. A one-way valve for dispensing a fluid material from a container comprising a valve body having an inlet end for receiving the fluid material from the container and an outlet end for dispensing the fluid material out of the valve body, said valve body has a circumferentially extending outside surface extending in the direction between the inlet end and the outlet end of said valve body, at least one first outlet passageway extending from the inlet end of said valve body to the outside surface thereof, at least one second outlet passageway extending from the outside surface of said valve body to the outlet end thereof, at the outside surface of the valve body said first and second outlet passageways arranged in spaced relation, an elastomeric sleeve tightly fitted around the outside surface of said valve body and forming a closure at the outside surface for said first and second outlet passageways, said sleeve having a radially inner surface, a radially outer surface, a first end located adjacent said inlet end and a second end located adjacent said outlet end, and means formed monolithically with and adjacent said first and second ends of said sleeve and forming a fluid tight seal with said valve body, said means comprises an O-ring like enlargement on each of the opposite ends of said sleeve, said valve body has an axially extending central section contacted by said sleeve and a pair of opposite end sections recessed inwardly from said center section and having a smaller diameter than said center section, said end sections each forming an annular shoulder at the opposite ends of said center section, and said enlargements seated in sealing contact with said shoulders.

5,305,784

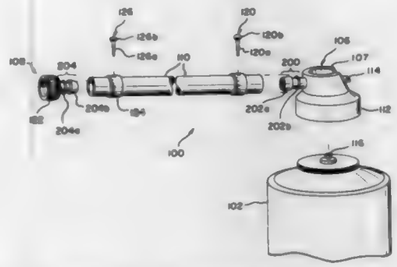
TIRE INFLATION HOSE ASSEMBLY

Randall E. Carter, Waynesfield, Ohio, assignor to Precision Thermoplastic Components, Inc., Lima, Ohio

Filed Apr. 12, 1993, Ser. No. 44,737

Int. Cl.[5] F16K *15/20*; **B60C** *29/00*

U.S. Cl. 137—231 **7 Claims**



1. A tire inflation hose assembly for interconnecting a container of pressurized tire inflation material and a valve stem of a tire, said hose assembly comprising:

a release valve assembly for securing said hose assembly to said container and for releasing said pressurized material from said container;

transport means for transporting said pressurized material from said release valve assembly;

a first sleeve mounted on said transport means;

a first pin transversing said release valve assembly, said sleeve and said transport means for coupling said transport means, said first sleeve and said release valve assembly;

nozzle means for interconnecting said transport means and said valve stem whereby said pressurized material enters said tire when said release valve assembly releases said pressurized material;

a second sleeve mounted on said tube; and

a second pin transversing said transport means, said second sleeve and said nozzle means for coupling said nozzle means, said second sleeve and said transport means.

5,305,785

WASHING MACHINE OR ICE MAKER OUTLET BOX INSTALLATION WITH TORQUE INHIBITING WATER SUPPLY CONNECTION

Jeffery A. Humber, Memphis, Tenn., assignor to IPS Corporation, Collierville, Tenn.

Filed Jun. 28, 1993, Ser. No. 84,852

Int. Cl.[5] F16L *5/00*

U.S. Cl. 137—360 **11 Claims**

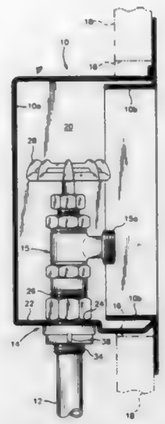
1. A plumbing installation, comprising:

an outlet box having an outwardly opening interior and a horizontally extending bottom wall with a water supply hole extending therethrough;

a water supply pipe made of CPVC having an upper end extending through the water supply hole in the bottom of the outlet box;

a boiler drain valve positioned in the interior of the outlet box and having a male straight threaded lower shank in which the upper end of the water supply pipe is seated and a handwheel which may be manually rotated to turn the valve ON and OFF; and

means for connecting the water supply pipe to the boiler drain valve to thereby inhibit the transmission of torque to the water supply pipe resulting from rotation of the handwheel including a ferrule surrounding the upper end of the water supply pipe, a compression nut having straight



female threads screwed over the male threaded lower shank of the boiler drain valve to compress the ferrule around the upper end of the water supply pipe, a male threaded cylindrical adapter connected to, and extending downwardly from, the compression nut through the water supply hole and surrounding the water supply pipe, and a lock nut screwed over the male threaded cylindrical adapter to squeeze the bottom wall between the compression nut and the lock nut.

5,305,786

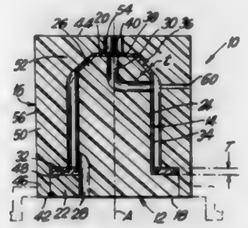
ONE-WAY VALVE ASSEMBLY

George Debush, Hamden, Conn., assignor to ReSeal International Limited Partnership, New York, N.Y.

Filed Jan. 14, 1993, Ser. No. 4,397

Int. Cl.[5] F16K *15/14*

U.S. Cl. 137—512.3 **28 Claims**



1. One-way valve assembly for dispensing a flowable substance, comprising a valve body having an inlet arranged to receive the flowable substance from a source and an outlet spaced from the inlet for dispensing the fluid, said valve body has an exterior surface extending in the direction form the inlet toward the outlet, a first passageway in said valve body extends from said inlet through said exterior surface, a second passageway in said valve body extends from the exterior surface through said valve body to said outlet, said first and second passageways are disposed in spaced relation at the exterior surface, a radially expandable sleeve-like elastomeric member is tightly fitted over at least a part of said exterior surface and covers the first and second passageways at said exterior surface, said elastomeric member having a first section closer to said inlet and a second section closer to said outlet with said first and second sections spaced apart in the direction from the inlet to the outlet, a cover member encloses at least part of said elastomeric member and valve body, said cover member is secured to and is in tightly fitted surface contact with said valve body adjacent said inlet and compresses said first and second sections of said elastomeric member in the axial direction toward said inlet into sealing contact with said valve body between said inlet and first passageway extending through said exterior surface and between said outlet and said second passageway extending through said exterior surface, whereby the flowable substance can pass only from the inlet through said first passageway expanding the elastomeric member and permitting the flowable substance to enter the second passageway and exit through the outlet.

5,305,787

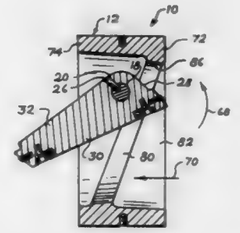
DISK VALVE WITH IMPROVED DISK MOUNTING

Theodore E. Thygesen, Downers Grove, Ill., assignor to C & S Valve Company, Westmont, Ill.

Filed Feb. 3, 1993, Ser. No. 13,057

Int. Cl.[5] F16K *15/03*

U.S. Cl. 137—527 **18 Claims**



1. A valve assembly, comprising:

a housing defining a tubular flow passageway extending along a flow axis;

a reference plane extending through said housing, perpendicular to the flow axis;

a valve disk having attachment means for attaching to a pivot shaft;

a double-ended pivot shaft extending through said housing with end portions lying outside said housing, said pivot shaft connected to said attachment means for mounting said valve disk for pivoting within said housing between closed and open positions, with said valve disk lying in a seal plane when in said closed position;

said housing including a valve seat engaging said valve disk in said closed position so as to seal said flow passageway and so as to orient the seal plane at an acute angle to the flow axis; and

spring bias means mounted on at least one of said pivot shaft end portions, outside of said housing for biasing said valve disk toward one of said closed and said open positions.

5,305,788

STREAM SELECTOR FOR PROCESS ANALYZER

Donald P. Mayeux, Prairieville, La., assignor to Whitey Co., Highland Hts., Ohio

Filed Aug. 13, 1992, Ser. No. 928,780

Int. Cl.[5] F16K *24/00*

U.S. Cl. 137—583 **18 Claims**

1. A block-and-bleed valve module, comprising

(a) a first block valve having a first opening, a first passage-

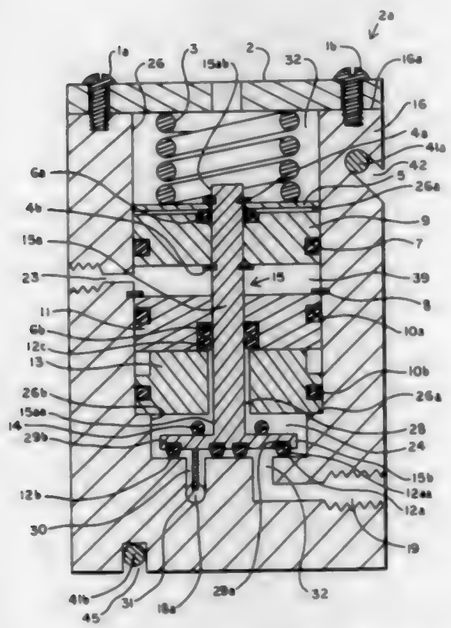
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way, first flat-face sealing means, and a first flat sealing surface;

(b) a second block valve having a second opening, a second passageway, second flat-face sealing means, and a second flat sealing surface;

(c) a bleed valve having a third opening, a third passageway, third flat-face sealing means, and a third flat sealing surface; and

(d) means for closing the first and second block valves and the bleed valve by urging the first, second, and third sealing means against the first, second, and third sealing surfaces, respectively; and for opening the first and second block valves and the bleed valve by breaking contact between the first, second, and third sealing means and the first, second, and third sealing surfaces; the means for closing and opening the first and second block valves and the bleed valve including a valve poppet and an internal



pneumatic actuator; the valve poppet having first and second opposite faces, the first and second block valves being disposed on the first face and the bleed valve being disposed on the second face of the poppet, the first and second block valves and the bleed valve being so constructed and arranged that, when the poppet is moved in a first linear direction to a first position, the first and second block valves are closed and the bleed valve is opened, and when the poppet is moved in a second linear and opposing direction to a second position, the first and second block valves are opened and the bleed valve is closed, and the first and second block valves and the bleed valve are open during transition rom the first to the second position and during transition from the second to the first position, thereby necessitating one hundred and eighty degrees out of phase synchronization and an efficient purging of the first and second block valves and the bleed valve.

5,305,789

HYDRAULIC DIRECTIONAL CONTROL VALVE COMBINING PRESSURE COMPENSATION AND MAXIMUM PRESSURE SELECTION FOR CONTROLLING A FEED PUMP, AND MULTIPLE HYDRAULIC CONTROL APPARATUS INCLUDING A PLURALITY OF SUCH VALVES

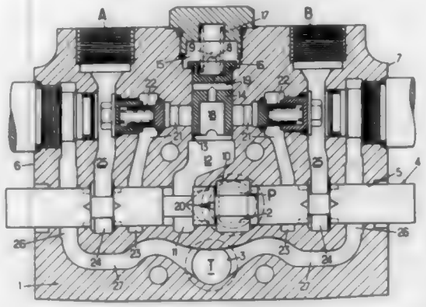
Michel Rivolier, L'Arbresle, France, assignor to Rexroth-Sigma, France

Filed Apr. 6, 1993, Ser. No. 44,531

Claims priority, application France, Apr. 6, 1992, 92-04183

Int. Cl.[5] F15B *13/08*

U.S. Cl. 137—596 **14 Claims**



1. A pressure compensating hydraulic directional control valve comprising:

a valve body;

a slide received in the body to be capable of being displaced longitudinally therein for selectively transmitting a pressurized hydraulic fluid to working orifices provided in the body from an orifice for admitting pressurized hydraulic fluid;

a passage in said body for connecting a distribution chamber to the working orifices, the distribution chamber being associated with the slide and being suitable for being connected selectively to the admission orifice by the displaced slide;

a load sensing line channel combined with maximum pressure selecting means organized to establish in said channel the maximum pressure selected from the pressure existing in said channel and the pressure of the pressurized fluid of the valve; and

pressure compensating means placed in said passage and responsive to the difference between the pressure of the fluid in the valve and the pressure existing in said channel in order to generate a substantially fixed pressure drop in the pressurized fluid flowing towards the working orifices;

wherein, in the valve, the pressure compensating means are combined with the maximum pressure selecting means;

and selective link means exist that are suitable for selectively establishing a link between the channel and the passage upstream from the pressure compensating means in such a manner that:

if the pressure in the channel is greater than or equal to the pressure of the fluid in the passage upstream from the pressure compensating means, no communication exists between said passage and said channel, and the pressure in the channel retains its value; or else

if the pressure in the channel is less than the pressure of the fluid in the passage upstream from the pressure compensating means, communication is established between said passage upstream from the pressure compensating means and said channel, and the pressure in the channel becomes the same as the pressure of the fluid present in the passage upstream from the pressure compensating means.

5,305,790

BALL VALVE

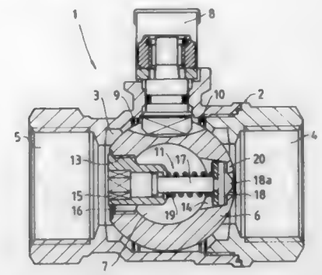
Mario Giacomini, Boleto, Italy, assignor to Giacomini, S.p.A., Italy

Filed Aug. 31, 1992, Ser. No. 937,284

Claims priority, application Italy, Feb. 28, 1992, MI92A-000444

Int. Cl.[5] F16K *47/02*

U.S. Cl. 137—599.2 **7 Claims**



1. A valve, comprising:

(a) a housing having an inlet, an outlet and a chamber located between the inlet and the outlet;

(b) a valve member mounted in the chamber for movement about a valve axis between open and closed positions in which fluid flow from the inlet to the outlet is permitted and blocked, respectively, said valve member having a first internal passage extending linearly along a first axis through the valve member in a direction substantially perpendicularly to the valve axis and being aligned with the inlet and the outlet in the open position, said valve member also having a second internal passage extending between opposite end regions linearly along a second axis through the valve member in a direction substantially perpendicularly to the valve axis and the first axis and being aligned with the inlet and the outlet in the closed position, said first and secone axes lying in a common plane;

(c) means for moving the valve member from the open to the closed position; and

(d) pressure relief means mounted in the second internal passage for resisting sudden pressure fluctuations in the fluid flow during movement from the open to the closed position, including a support mounted at one of said end regions of the second internal passage, a piston mounted on the support for sliding movement along the second axis, and having a head, and biasing means for constantly urging the head with a biasing force into engagement with the other of said end regions of the second internal passage.

5,305,791

REMOTE FLUID FLOW CONTROLLER

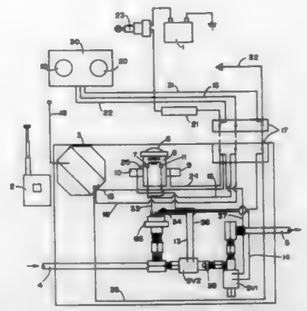
Allan M. Kowalchuk, 16 Upland Drive, Regina, Saskatchewan, Canada S4R 0B9

Filed Feb. 22, 1993, Ser. No. 20,598

Int. Cl.[5] F16K *31/05*

U.S. Cl. 137—613 **12 Claims**

3. A pressurized fluid flow controlling apparatus comprising in combination, a grounded electrical power supply means, including ground return circuits, remote signal transmitting means, signal receiving means powered by said power supply means and adapted to be actuated by a signal transmitted from said remote signal transmitting means, valve means, valve control means for controlling a first portion of said valve means and powered by said grounded electrical power supply means, said valve control means including a control signal generated by said signal receiving means, whereby fluid entering said fluid flow controlling apparatus is controlled at will by actuating said remote signal transmitting means and wherein said ground return circuits include a switch connected to said valve control means and operated by said fluid pressure entering said apparatus to connect a portion of said ground return



circuits to said grounded electrical power supply means to permit controlled operation of said first portion of said valve means.

5,305,792

USED OR WASTE WATER COLLECTION SYSTEM FOR AN AIRCRAFT

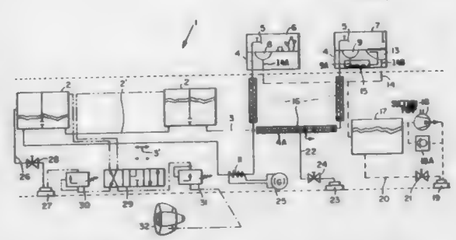
Hubert Ellgoth; Helge Frank, both of Hamburg; Gerd Grunwald, Neuenkirchen; Georg Mai, Bremen; Karolin Mau, and Ralf Schliwa, both of Hamburg, all of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,892

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1991, 4132491; Aug. 20, 1992, 4227517

Int. Cl.[5] A01G *25/09;* **E03B** *7/00*

U.S. Cl. 137—899.2 **9 Claims**



1. A waste water collection system in an aircraft, comprising at least one waste water discharging sink (**8**, **9**), a waste water collection tank (**17**, **42**), an individual pipe section (**14A**) communicating said waste water discharging sink with said collection tank (**17**, **42**), a controllable valve (**38**) connected in said individual pipe section, at least one toilet (**13**), a toilet effluent conduit (**14**) connecting said toilet to said collection tank (**17**, **42**), suction means (**18**) connected to said system for transporting waste water from said waste water discharging sink and from said toilet into said collection tank, said suction means (**18**) constantly maintaining a reduced pressure in said system for said transporting and for suppressing an odor emission, and valve control means (**40**, **41**) connected to each said control valve (**38**) in said individual pipe section for individually controlling an application of suction to said system for said transporting, said valve control means controlling said controllable valves (**38**) in such a way that only one valve (**38**) is open at a

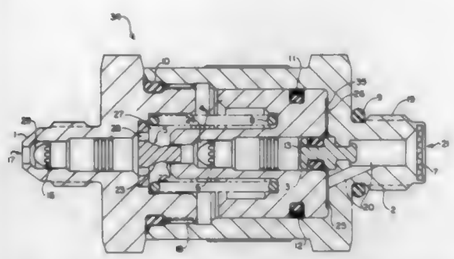
VOL 1161 ISS 4 APR 26 1994 UMI

time, whereby clogging of said system and or escape are prevented.

5,305,793
AUTOMATIC PRESSURIZED RESERVOIR BLEED VALVE

Michael A. Cencula, Clearwater, Fla., assignor to Pall Corporation, East Hills, N.Y.

Filed Sep. 16, 1992, Ser. No. 945,367
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—198 **11 Claims**



1. An automatic bleed valve for a pressurized fluid reservoir comprising:
- a housing including an inlet passage and an outlet passage and defining a piston chamber having an upstream end connected to the inlet passage and a downstream end connected to the outlet passage;
- a piston located within the piston chamber and dividing the chamber into an upstream fluid space communicating with the inlet passage and a downstream fluid space communicating with the outlet passage, the piston having a fluid passage providing fluid communication between the upstream fluid space and the downstream fluid space and including a first orifice means disposed in the fluid passage for restricting gas flow through the passage and thereby developing a first pressure drop;

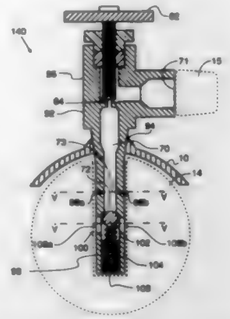
means for urging the piston in an upstream direction; and
- a second orifice means located in the outlet passage for restricting gas flow through the passage and thereby developing a second pressure drop.

5,305,794
VALVE STRUCTURE

Gary George, Rocklin, Calif., assignor to NEC Electronics Incorporated, Mountain View, Calif.

Continuation of Ser. No. 823,572, Jan. 15, 1992, and a continuation of Ser. No. 580,389, Sep. 10, 1990. This application Mar. 12, 1993, Ser. No. 31,064
Int. Cl.[5] F16K *15/18*
U.S. Cl. 137—614.2 **12 Claims**

1. A valve assembly for controlling a flow of matter between a first region located inside of a vessel and a second region located outside of the vessel, said valve assembly comprising:
- a body adapted for being mounted in a wall of the vessel with a first body portion inside the vessel and a second body portion outside the vessel, said body having
- a first opening formed in the second body portion and a second opening formed in the first body portion;
- a canal extending through said first and second body portions rom said first opening to said second opening, said canal being distinguished from said first region and said second region, said canal having a part adjacent said second opening, said part continually communicating with said first region through one or more orifices formed on said first body portion;
- a valve disposed in said canal between said second region and said orifices; and
- a check valve comprising:
  - first means removably seated against said second opening and adapted to open said second opening to provide flow between asid canal and said first region when a matter is supplied trough said canal under a predetermined pressure; and
  - means for impelling said first means to close said opening;

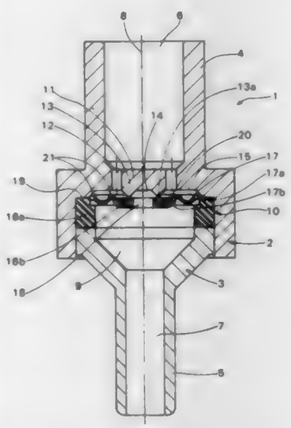


wherein if the valve is separated from said body when a gas pressure in the first region is greater than a gas pressure in the second region, said first means is biased to seat against said second opening by said means for impelling, and gas is released from said first region to said second region through said orifices.

5,305,795
NONRETURN VALVE, IN PARTICULAR FOR MEDICAL INFUSION APPLIANCES

Hans-Jürgen Forberg, Sebenter Weg 4, D-2432 Damlos, Fed. Rep. of Germany

PCT No. PCT/DE91/00896, § 371 Date Aug. 7, 1992, § 102(e) Date Aug. 7, 1992, PCT Pub. No. WO92/10232, PCT Pub. Date Jun. 25, 1992
PCT Filed Nov. 16, 1991, Ser. No. 916,837
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039814
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—859 **12 Claims**



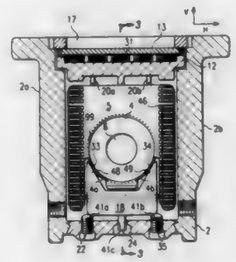
1. A nonreturn valve, in particular for use in connection with medical infusion appliances, comprising a housing with a central chamber into which open an inlet channel and an outlet

channel, the channels being separated by a sealing membrane provided with a flow passage, wherein the membrane has a marginal part clamped in the housing, a central sealing part having a sealing surface, and a thinner annular wall that links both parts, wherein an inner wall side of the chamber (9) facing the outlet channel (7) comprises a sealing system for the membrane, the sealing system comprising a central crater-like ring having an annular sealing edge, wherein inflow from the inlet channel (6) to the membrane (10) takes place outside the crater-like sealing ring, and the flow passage (18) of the membrane (10) is located as an aperture within the crater-like sealing ring, wherein the thinner annular wall (17) of the membrane (10) generates a sealing prestress between the annular sealing edge and the sealing surface, and junctures (17*a*, 17*b*) adjacent to the marginal part (16*a*) and to the central sealing part (16*b*) of the membrane, the junctures being substantially coplanar with the sealing surface of the central sealing part (16*b*) and the annular sealing edge of the crater-like sealing ring.

5,305,796
APPARATUS AND METHOD FOR CENTERING AN ORIFICE PLATE

Steven P. Klak, Houston, Tex., assignor to G-H Flow Automation, Inc., Houston, Tex.

Filed Aug. 5, 1992, Ser. No. 925,969
Int. Cl.[5] F15D *1/02*
U.S. Cl. 138—44 **22 Claims**

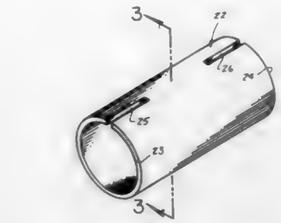


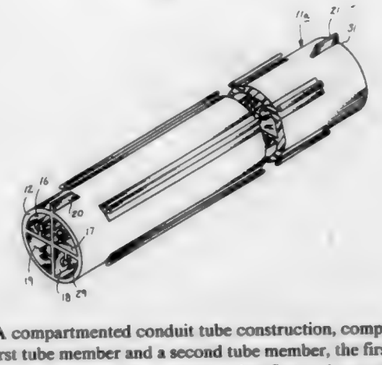
1. An apparatus for centering an orifice plate in an orifice fitting, comprising:
- (a) an orifice fitting body having a flow passage therethrough;
- (b) an orifice plate, removably located in the flow passage, having upstream and downstream sides and a bore therethrough;
- (c) an orifice plate carrier, having upstream and downstream sides and bottom and top portions, a seat for removably supporting and receiving said orifice plate, said seat defining a bore through said orifice plate carrier, wherein the bottom portion of the seat has at least one slot therethrough and wherein at least a portion of said orifice plate protrudes from the seat through the slot, and wherein said plate carrier further has at least one channel on its downstream side which extends from the bottom portion of said plate carrier to the slots;
- (d) sealing means adjacent to said orifice plate for sealing the interface between said orifice plate and said orifice fitting body;
- (e) centering means which extend through the channels in said orifice plate carrier and contact at least part of the portion of said orifice plate which protrudes through the slot, for centering said orifice plate within the flow passage; and
- (f) contacting means for urging said orifice plate carrier toward said centering means and thus urging at least a portion of said orifice plate against said centering means.

5,305,797
COMPARTMENTED CONDUIT TUBE CONSTRUCTION

John D. Roy, Sr., P.O. Box 380781, East Hartford, Conn. 06138

Filed May 10, 1993, Ser. No. 58,140
Int. Cl.[5] F16L *9/18*
U.S. Cl. 138—108 **3 Claims**





1. A compartmented conduit tube construction, comprising,
- a first tube member and a second tube member, the first tube member having a first tube member first end spaced from a first tube member second end, and
- a first partition wall diametrically directed within the first tube member coextensive thereof extending from the first tube member first end to the first tube member second end, and
- a second partition wall orthogonally intersecting said first partition wall, with the second partition wall diametrically aligned within the first tube member and extending from the first member end to the first tube member second end, with the first partition wall and the second partition wall defining respective first, second, third, and fourth chambers, and

the first tube member having an exterior surface, and the exterior surface includes a first blade and a second blade mounted to the exterior surface in adjacency to the respective first tube member first end and the first tube member second end, with the first blade and the second blade having a predetermined length, and

said second tube member including a second tube member first end and a second tube member second end arranged to complementarly receive the first tube member therewithin, wherein the second tube member includes a first slot directed into the second tube member at the second tube member first end, and a second slot directed into the second tube member at the second tube member second end projecting through the second tube member second end, wherein the first slot and the second slot each have a slot length equal to said predetermined length to receive an individual one of said blade and said second blade therewithin, and

each chamber includes a resilient C-shaped support channel coextensive with each chamber for securing removable within said support channel.

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5,305,798

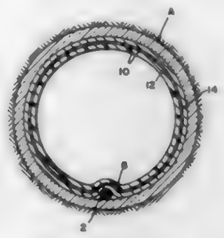
TWO-WALL LEAKAGE DETECTION SYSTEM FOR A PIPE

F. Thomas Driver, 6710 Kirby Oaks La., Memphis, Tenn. 38119

Continuation of Ser. No. 831,629, Feb. 7, 1992, Pat. No. 5,172,730, which is a continuation of Ser. No. 374,995, Jul. 3, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 922,325

Int. Cl.[5] F16L *55/16*; B29C *17/00*

U.S. Cl. 138—98 5 Claims



1. A process for retrofitting an existing fluid-carrying circumferentially closed conduit with a leakage detection system comprising:

(a) inserting along the interior conduit an elongated means for detecting the presence of fluid and a layer of fluid-retentive material, said fluid-detecting means including means for coupling to a monitoring system outside the conduit, and the layer of fluid-retentive material in the conduit contacting said fluid-detecting means and in contact with the inner surface of said conduit over substantially the entire circumferential extent thereof,

(b) inserting a fluid-impermeable liner within the layer of fluid-retentive material, and

(c) causing said fluid-impermeable liner to lie substantially against said layer of fluid-retentive material over substantially the entire circumferential extent thereof.

5,305,799

FLEXIBLE CONDUIT FOR VEHICLE ENGINE COOLANT CIRCUITS

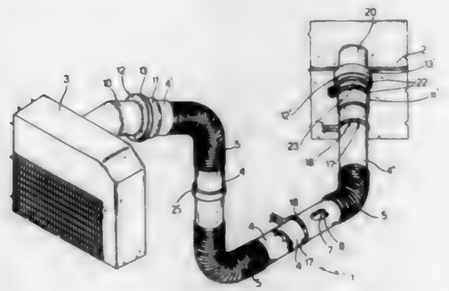
Attilio Dal Palù, Rivoli, Italy, assignor to F.I.S.T. S.p.A., Turin, Italy

Continuation of Ser. No. 631,380, Dec. 20, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 876,117

Claims priority, application Italy, Dec. 20, 1989, 53-566-B/89

Int. Cl.[5] F16L *11/00*

U.S. Cl. 138—109 3 Claims



1. A flexible conduit for connecting a coolant circuit of an engine to a radiator, comprising:

at least two successive conduit sections, each conduit section having a coaxially extruded inner wall and outer wall;

a pair of rigid end portions and at least one undulated portion disposed between said pair of rigid end portions;

said inner wall and said outer wall forming said rigid end portions and said undulated portion;

said inner wall being formed of a plastic material which provides good resistance to engine coolant and said outer wall being formed of nylon to provide greater mechanical resistance than provided by said inner wall;

means for connecting one of said rigid end portions of a first of said conduit sections to one of said rigid end portions of a second of said conduit sections;

said connecting means comprising annular couplings molded in one piece around the one of said rigid end portions of said first and second conduit sections;

the other of said pair of rigid portions of said first and second conduit sections facing said engine and said radiator, respectively;

annular projections provided on portions attached at opposing ends to each of said other rigid end portions;

end couplings molded integrally with said portions for connecting said flexible conduit to said engine and to said radiator, respectively, said end couplings being constructed of a soft plastic; and

said end couplings having inner cylindrical walls, each of said inner cylindrical walls having inclined annular grooves coacting with said annular projections provided on said portions to provide a coolant-tight connection between said flexible conduit and said engine and between said flexible conduit and said radiator.

5,305,800

FLEXIBLE HOSE OF TUBE

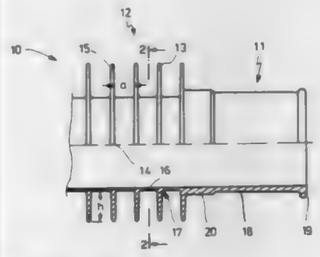
Lothar Kolberg, Norderstedt, Fed. Rep. of Germany, assignor to ITW-ATECO GmbH, Norderstedt, Fed. Rep. of Germany

Filed Nov. 14, 1991, Ser. No. 791,685

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1991, 4112211

Int. Cl.[5] F16L *11/11*

U.S. Cl. 138—121 21 Claims



1. A flexible hose, comprising:

a hose body fabricated from a plastic material and comprising a fluid conduit through which a fluid can be conducted and defining an interior fluid passageway extending along a longitudinal axis and defined by an interior peripheral wall surface of said hose body having a predetermined radial extend; and

a plurality of axially spaced, radially extending, annular ribs disposed around outer peripheral surface portions of said hose body;

each one of said plurality of ribs having a predetermined radial extend h extending radially outwardly from each one of said outer peripheral surface portions of said hose body, a predetermined axial thickness t, and a predetermined axial spacing a defined between successive ones of said plurality of axially spaced ribs;

wherein the ratio of said radial extent h of each one of said plurality of ribs with respect to said axial thickness t of each one of said plurality of ribs is approximately 10:1, and the ratio of said radial extent h of each one of said plurality of ribs with respect to said axial spacing a defined between successive ones of said plurality of axially spaced ribs is approximately 1.5:1 such that said hose body can be bent through a predetermined angle at which radially outermost portions of said plurality of axially spaced ribs engage each other so as to limit the angular bending of said hose body as a result of which said fluid is able to be conducted through said fluid conduit with excellent flow characteristics.

5,305,801

APPARATUS FOR PREPOSITIONING AND DELIVERING HEALD SHAFTS IN LOOMS

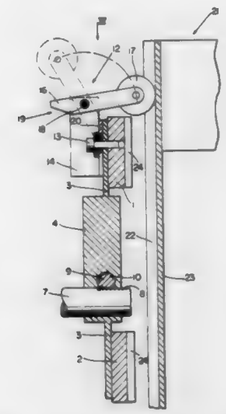
Fritz Rupflin, and Armin Hiemer, both of Lindau, Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Jul. 22, 1992, Ser. No. 918,428

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4124797

Int. Cl.[5] D03C *9/00*

U.S. Cl. 139—91 14 Claims



1. An apparatus for prepositioning and advancing guidable heald shafts (21) in a loom, said apparatus comprising heald shaft guide means (1, 2, 24) adapted for guiding said guidable heald shafts in an operating position, carrier means (4, 14) including a carrier element (14) supporting said heald shaft guide means (1, 2, 24), said heald shaft guide means (1, 2, 24) comprising a plurality of guide rails (24) spaced from each other by a pitch spacing (t), said guide rails (24) being adapted for engaging said guidable heald shafts with said pitch spacing (t) when said guidable heald shafts (21) are in said operating position, said apparatus further comprising prepositioning mechanisms (16, 17) arranged along said carrier element (14) also with said pitch spacing (t) between neighboring prepositioning mechanisms, whereby said prepositioning mechanisms are adapted for engaging each of said guidable heald shafts before said heald shafts are in said operating position to thereby preposition said heald shafts, and drive means (7, 8, 9) connected to said carrier means (4) for advancing said heald shaft guide means (1, 2, 24) toward said prepositioned heald shafts, whereby said heald shaft guide means are adapted for bringing said prepositioned heald shafts into said operating position.

5,305,802

DRIVE ADJUSTMENT DEVICE FOR SECTIONAL WARP BEAM LET-OFF MOTION

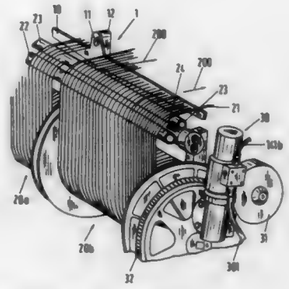
Lutz Fehrenbach, Constance, Fed. Rep. of Germany, assignor to Gebrueder Sulzer Aktiengesellschaft, Winterthur, Switzerland

Filed Mar. 16, 1993, Ser. No. 32,345

Claims priority, application European Pat. Off., Mar. 27, 1992, 92810226.8

Int. Cl.[5] D03D *49/06*

U.S. Cl. 139—103 14 Claims



1. A weaving machine comprising:

at least two sectional warp beams for unwinding warp yarns through the weaving machine, the sectional warp beams being arranged parallel to each other with mutually adjacent axes;

at least two drives, each drive operatively coupled to one of the warp beams for rotating each warp beam at a speed of rotation;

a rocker bar pivotally mounted to an upright positioned between the warp beams, the rocker bar having two feeler members symmetrically mounted on either side of the upright for measuring the tension of the warp yarns, the rocker bar being parallel to a warp plane when the tension of the warp yarns from each warp beam is substantially equal;

a whip roll rotatably mounted to the weaving machine for directing the warp yarns onto the rocker bar; and

a sensor for measuring a deviation of the rocker bar with respect to the warp plane, the sensor being adapted to send a signal to the drives corresponding to said deviation, the drives adjusting the speed of rotation of at least one of the warp beams so to correct the deviation of the rocker bar with respect to the warp plane.

5,305,803

RETOOLABLE TROUGH-SHAPED SPREADER TABLE FOR AN AIR LOOM

Rainer Steinberger, Lindau/B., Fed. Rep. of Germany, assignor to Lindauer Dornier GmbH, Lindau, Fed. Rep. of Germany

Filed Feb. 22, 1993, Ser. No. 47,555

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1992, 4205514

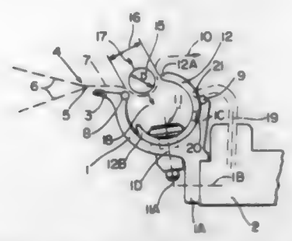
Int. Cl.[5] D03D *49/00*

U.S. Cl. 139—435.1 9 Claims

1. A retoolable trough-shaped fabric spreader table for an air loom, comprising a table projection pointing substantially toward the center of a weft thread insertion channel, said table projection having an upper surface forming an extension of a fabric support of said spreader table, said spreader table further comprising a first spreader element (8) arranged at an inlet of said spreader table and a second spreader element (9) at an outlet of said spreader table, wherein said fabric spreader table forms a trough between said spreader elements (8, 9), a half shell shaped fabric detour element (12) insertable into said trough of said spreader table (1), means (11, 23, 24) for mounting said fabric detour element (12) inside said spreader table (1)

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in a form-locking and force-locking manner for a circumferential and axial displacement of said fabric detour element (12) relative to said spreader table (1), and wherein a fabric slot (16) is formed between said first spreader element (8) and a free edge (12A) of said fabric detour element (12), said slot having



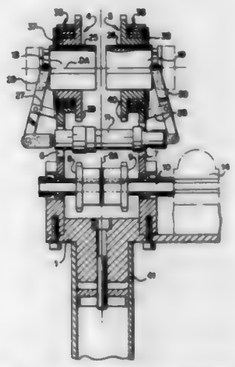
a clear passage width that is variable by said circumferential displacement of said fabric detour element (12) in accordance with a diameter (D) of a spreader rod (15) insertable into said trough, said spreader rod (15) being supported by a fabric (7) for simultaneously spreading and clamping said fabric.

5,305,804

APPARATUS FOR CONNECTING TWO MUTUALLY CROSSING CABLE PORTIONS

Fabio Peder, Laives, Italy, assignor to Eurock S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 606,839, Oct. 31, 1990, Pat. No. 5,190,080. This application Feb. 12, 1993, Ser. No. 16,955
Int. Cl.[5] B21F *27/08*
U.S. Cl. 140—115 **10 Claims**



1. Apparatus for connecting two mutually crossing cable portions (2, 3) at respective cable intersections (17) of a netting formed by one or more cables, said netting having two wires (12, 13) wound around the cable portions at the intersections, said apparatus comprising:

two wheels (4, 5) of a hollow configuration, which are driven about a common axis (DA) in mutually opposite directions;

wire receiving means (20, 21) for the wires (12, 13), which are mounted in cavities in the hollow wheels (4, 5) displaceably in mutually opposite axial directions and which are non-rotatably connected to the hollow wheels (4, 5);

a frame (1, 6, 7) on which the hollow wheels (4, 5) are rotatably mounted; and

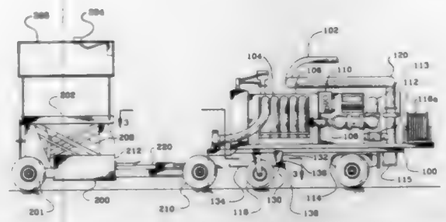
a common drive means (8–10, 14) for the hollow wheels (4, 5).

5,305,805

FIXED HYDRANT CART WITH NON-ARTICULATING COUPLING

Robert G. Watkins, Jr., R.D. #5, Coatesville, Pa. 19320

Filed Oct. 27, 1992, Ser. No. 967,147
Int. Cl.[5] B60P *3/00*
U.S. Cl. 141—231 **5 Claims**



1. A hydrant refueler for refueling an aircraft by a refueling operator for use in an airport wherein the airport has a hydrant for supplying fuel, the hydrant refueler comprising:

a hydrant cart including a fuel hose having at one end means for coupling to said hydrant, a delivery fuel hose having at one end means for coupling to a fuel intake valve of said aircraft, and means for coupling the other end of said fuel hose to the other end of said delivery fuel hose;

a self propelled land vehicle including controls for operating said land vehicle, a platform for supporting a refueling operator, and means for raising and lowering said platform between a minimum height and a maximum height; and

means for detachably coupling said hydrant cart to said land vehicle, including means for preventing sideways pivoting between said land vehicle and said hydrant cart,

wherein said one end of said delivery fuel hose is raised with said platform to a height for coupling with said aircraft fuel intake valve for conducting fuel to the airplane during operation.

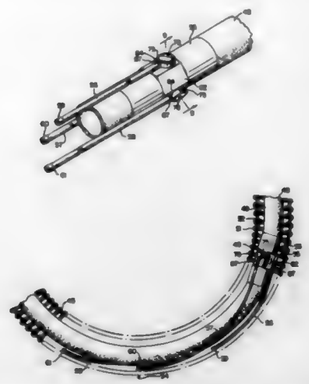
5,305,806

FUEL DISPENSING SYSTEM, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Jeffrey M. Berger, Springfield; Randy C. Foster, Strafford; Timothy J. Hampton, Willard; Jack S. Hargus, Marshfield; Richard L. Marsh, Springfield, all of Mo., and Masseth, David A., La Habra, Calif., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Oct. 16, 1992, Ser. No. 962,537
Int. Cl.[5] B65B *3/18*; B67D *5/06*
U.S. Cl. 141—59 **25 Claims**

1. In a system comprising a liquid fuel source, a dispensing nozzle and a hose assembly having a first fluid passage therein for conveying said liquid fuel in one direction from said source to said nozzle that dispenses said liquid fuel into a container and a second fuel passage therein for returning the vapors of said liquid fuel from said container, said hose assembly comprising a flexible inner hose having an outer peripheral surface and defining said first fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining said second fluid passage therebetween, said system having a venturi section therein that tends to remove liquid from a normal drape area of said hose assembly when the same is being utilized to dispense said liquid fuel into said container, the improvement wherein said venturi section has inlet means that is positioned in said section fluid passage generally at the actual drape area of said hose assembly even when said actual drape area is disposed intermediate said normal drape area and said nozzle or is disposed intermediate said normal drape area and said source as well as when said actual drape area is disposed generally at said normal drape area, said inlet means comprising tube means interconnected to said venturi section,



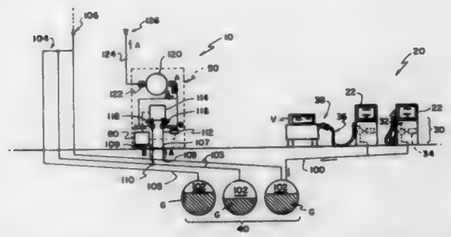
said tube means having a plurality of inlets respectively disposed in different axial positions in said second fluid passage along the length thereof.

5,305,807

AUXILIARY VAPOR RECOVERY DEVICE FOR FUEL DISPENSING SYSTEM

James W. Healy, Hollis, N.H., assignor to Healy Systems, Inc., Hudson, N.H.

Filed Apr. 22, 1993, Ser. No. 51,613
Int. Cl.[5] B65B *3/18*
U.S. Cl. 141—59 **12 Claims**



1. An auxiliary vapor recovery device for use with a fuel dispensing system comprising a dispensing apparatus for delivery of fuel from a storage tank system into a vehicle tank, a recovery apparatus for return of hydrocarbon vapor/air mixture displaced by fuel delivery to ullage space of the storage tank system, a piping manifold interconnecting the ullage space of storage tanks in the storage tank system, and a vent pipe terminating in a pressure relief vent valve adapted to open when vapor pressure in the ullage space reaches a predetermined maximum level,

said auxiliary vapor recovery device comprising a vacuum pump,

a canister defining a volume containing a substance adapted to remove molecules of hydrocarbon from hydrocarbon vapor/air mixture flowing through said canister, a recovery device conduit system comprising:

a first conduit between said vacuum pump and the piping manifold from the ullage space of the fuel storage system, for flow of vapor from the ullage space into said vapor recovery device,

a second conduit between said vacuum pump and the piping manifold from the ullage space of the fuel storage system, for flow of vapor from said vapor recovery device toward the ullage space,

a third conduit for flow of vapor toward said canister,

a fourth conduit between said vacuum pump and said canister for flow of vapor toward said vacuum pump, and

a fifth conduit connected to the volume of said canister for release of air from said vapor recovery device,

a solenoid valve system comprising a first solenoid valve and a second solenoid valve positioned in said recovery device conduit system, said solenoid valve system having a first, recovery condition for permitting flow of hydrocarbon vapor/air mixture from the ullage space, through said canister for removal of hydrocarbon vapor and release of air, a second, off condition for restricting flow of vapor in said recovery device conduit system and a third, stripping condition for establishing an increased vacuum condition within said canister for return of hydrocarbon vapor to the ullage space, and

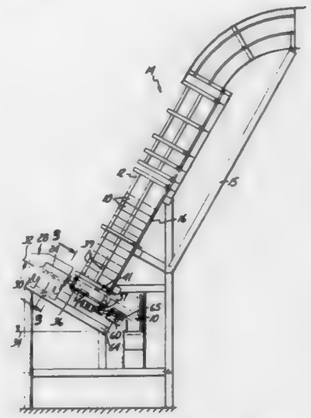
a solenoid valve system control apparatus adapted to cause said solenoid valve system to move among said first condition, said second condition and said third condition.

5,305,808

APPARATUS AND METHOD FOR INSERTING CYLINDRICALLY SHAPED FOOD PRODUCT INTO CONTAINER

Glen O. Rasmussen, Champlin, and James L. Schurz, New Hope, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Sep. 11, 1992, Ser. No. 943,910
Int. Cl.[5] B65B *43/42*
U.S. Cl. 141—169 **14 Claims**



1. A device for inserting cylindrical objects into cylindrical containers, comprising:

a frame;

a surface pivotally mounted to the frame, located within a surface plane which is angled with respect to the horizontal, wherein an intersection of the reference plane and the horizontal defines a first angle;

first delivery means positioned substantially perpendicular to the surface near the surface, wherein the first delivery means delivers each cylindrical container to the surface;

aligning means for aligning the cylindrical objects into a plurality of lanes;

second delivery means for delivering cylindrical objects to the surface along a path which near the surface is substantially parallel to the surface and for inserting at least one cylindrical object into an open end of the cylindrical container; and

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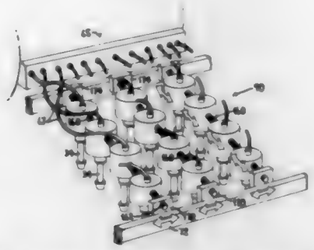
means for positioning the cylindrical container on the surface and for releasing the cylindrical container after loading from the surface.

5,305,809

GANG ARRAY FILLER WITH RELOCATABLE NOZZLES

Frank G. Pringle, Medford, N.J., assignor to R & D Innovators, Inc., Medford, N.J.

Filed Oct. 20, 1992, Ser. No. 963,596
Int. Cl.[5] B65B *1/04, 3/04, 37/00*
U.S. Cl. 141—235 18 Claims



1. A filling machine for filling arrays of equally sized containers, said filling machine being adjustable to fill at least two different sized containers, each of the containers of said different sizes are such that the distance between the centers of at least any three containers in an X-Y array are equally spaced and at least two of said three containers are laterally abutting one another and wherein said filling machine has a longitudinal axis in the x-direction and a lateral axis in the y-direction, the filling machine comprising:

means for supporting the containers in an upright orientation with the containers occupying a plurality of evenly spaced laterally abutting container positions, forming an array of evenly spaced abutting containers of which the centers intersect a plurality of parallel longitudinal axes intersected by a plurality of parallel lateral axes perpendicular thereto;

a plurality of nozzles coupled to a source of material to be discharged into the containers, the nozzles being movably mounted on a fill station structure for occupying nozzle positions in registry with said evenly spaced container positions; and,

actuator means mounted on the fill station structure, operable to displace the nozzles along both the longitudinal axes and long the lateral axes perpendicular thereto, thereby being operable to alter the nozzle positions for achieving at least two alternative spacings of the nozzles corresponding to the centers of the containers of said at least two different sizes, along both said longitudinal axes and said lateral axes.

5,305,810

APPARATUS AND METHOD FOR FILLING AND DISPENSING A HIGHLY VISCOUS PRODUCT FROM A CONTAINER

Philip Meshberg, 2770 S. Ocean Blvd., Apt. 602, Palm Beach, Fla. 33480

Filed May 22, 1992, Ser. No. 887,032
Int. Cl.[5] B65B *1/04, 3/00*
U.S. Cl. 141—374 21 Claims

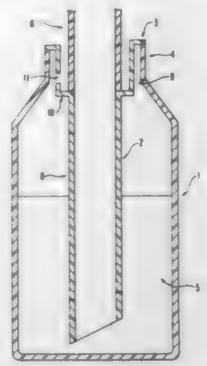
1. An apparatus for dispensing a flowable product comprising:

a container for holding said flowable product; and

a dip tube structure, said dip tube structure comprising:

a dip tube extending axially inwardly into said container; and

an upper portion, said upper portion directly engaging said container, an axially outward end of said dip tube being connected to said upper portion, said upper portion having a vent path, said vent path allowing air to enter and exit said container during a filling and dispensing operation, an axial end of said upper portion opposite said dip tube being open, whereby said axial end opposite said dip tube provides an unobstructed path to said dip tube, and whereby a lower inlet of a pump may be inserted into said dip tube.

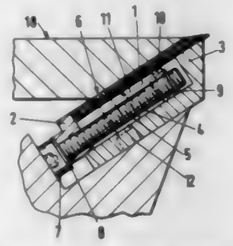


5,305,811

BLADE MOUNTING FOR A CHIPPER BLADE

Karl Schaefer, Lechbruck am See, Fed. Rep. of Germany, assignor to Inter-Wood-Maschinen GmbH & Co., KG, Lechbruck am See, Fed. Rep. of Germany

Filed Apr. 14, 1993, Ser. No. 46,847
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1992, 4219447
Int. Cl.[5] B27C *1/00*
U.S. Cl. 144—176 10 Claims



1. A blade mounting for a chipper blade of a wood-chipping machine, the chipper blade having a back and the fore-part, the blade mounting comprising:

a disk coverplate having an inner slope which bears against the back of the chipper blade;

a blade holder having at least two grooves which are oriented perpendicular to a longitudinal axis of the blade holder and parallel to a plane of the chipper blade, the blade holder bearing against the fore-part of the chipper blade;

adjusting screws located in the grooves in the blade holder; and

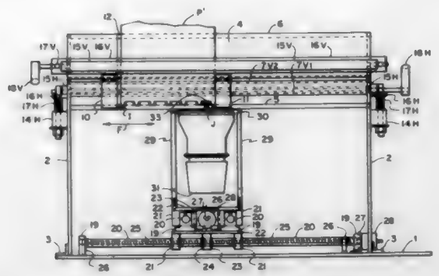
dogs for underpinning a bottom edge of the chipper blade at at least two locations, the dogs being adjusted by the adjusting screws.

5,305,812

PROGRAMMABLE WOODWORKING DOVETAIL MACHINE

Robert P. Ferencsik, 164 E. Main St., Gloucester, Mass. 01930

Filed Mar. 5, 1993, Ser. No. 27,255
Int. Cl.[5] B27B *1/00*
U.S. Cl. 144—356 11 Claims



1. A method of cutting both mating components for woodworking half-blind dovetail joints comprising the steps of: programming a personal computer control station; mounting a first workpiece board vertically and a second workpiece board horizontally; positioning adjustable locking stops on vertical and horizontal clamping surfaces; clamping the vertically and horizontally mounted first and second workpiece boards; inserting a dovetail shaped bit into the collet of a router cutting means and adjusting its height; initiating a computer program from a personal computer control station that will direct the movements of a router cutting means first to the vertically mounted first workpiece to mill the tails of the joint, then to the horizontally mounted second workpiece to mill the pins of the joint, and return it to its home position.

5,305,813

WINDOW BLINDS

Philip J. Poole, 13 Westfield, Lightcliffe, Halifax, West Yorkshire, HX3 8AS, England

PCT No. PCT/GB89/01005, § 371 Date Mar. 18, 1991, § 102(e) Date Mar. 18, 1991, PCT Pub. No. WO90/02240, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 30, 1989, Ser. No. 659,357
Claims priority, application United Kingdom, Aug. 31, 1988, 8820569
Int. Cl.[5] E06B *3/12*
U.S. Cl. 160—236 13 Claims

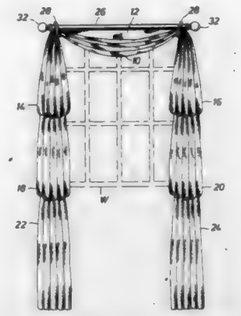
1. A fabric window blind comprising a woven or knitted fabric constructed of yarns, said fabric window blind being characterized by dimensional stability in first, second and third dimensions wherein the window blind is resistant to cupping and twisting, said window blind fabric comprising a high temperature fiber component constituted within yarns of the fabric and a thermoplastic low melt fiber component constituted within yarns of the fabric, said fabric having said high temperature fibers and said low melt fibers bonded to each other by heating said fabric to a point above the melting point of the low melt fiber and below the temperature-induced degradation point of the high melt fiber, the melting point of the low melt fiber being at least 110 degrees centigrade.

5,305,814

METHOD FOR FORMING A BISHOP TAIL AND BISHOP SLEEVE

James A. Ford, and William L. Tacchella, both of Sturgis, Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 9, 1992, Ser. No. 988,041
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—348 12 Claims



1. A method for draping curtains comprising the steps of:

securing a pair of brackets to opposing sides of an opening in a substantially vertical wall above said opening wherein said brackets project outwardly from said wall to secure a fabric attachment means to said bracket,

cutting and hemming opposite edges of a portion of fabric to form a fabric scarf of a size to allow said fabric scarf to cover said wall opening with a depending end portion suspended on either side of said wall opening,

securing said fabric scarf to said brackets utilizing said fabric attachment means,

forming a draping arc with said fabric scarf between said brackets,

installing a gathering means through the first of said hemmed edges of said fabric scarf,

connecting an adjusting means to said gathering means,

adjusting said adjusting means to form a bishop tail with said first hemmed edge,

installing a gathering means through the second of said hemmed edges of said fabric scarf,

connecting an adjusting means to said gathering means, and

adjusting said adjusting means to form a bishop tail with said second hemmed edge.

5,305,815

METHOD AND APPARATUS FOR PREDICTING MICROSTRUCTURE OF CAST IRON

Zhu Pan Ping, and Reginald W. Smith, both of Kingston, Canada, assignors to Queen's University, Kingston, Canada

Filed Oct. 30, 1992, Ser. No. 968,879
Int. Cl.[5] B22D *2/00*; G01N *1/10*; G01K *13/12*
U.S. Cl. 164—4.1 11 Claims

1. A method for predicting nodularity of a cast iron melt treated with a nodularizing agent, comprising:

(a) providing a ceramic test cup which includes bismuth in an amount in the range 0.005–0.025% by wt of a sample of said melt;

(b) introducing said sample into said cup;

(c) measuring the temperature of said sample at selected intervals of time so as to produce a cooling curve for said sample; and

(d) determining the difference (ΔT) between a eutectic recalescence temperature (TER) and a eutectic undercooling temperature (TEU) for said cooling curve, and predicting a degree of nodularity therefrom.

8. A ceramic test cup having a cavity for receiving, when full, a selected weight of molten cast iron, said cavity contain-

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ing bismuth in an amount in the range of 0.005–0.025% by weight of said selected weight of molten cast iron.

5,305,816

METHOD OF PRODUCING LONG SIZE PREFORM USING SPRAY DEPOSIT

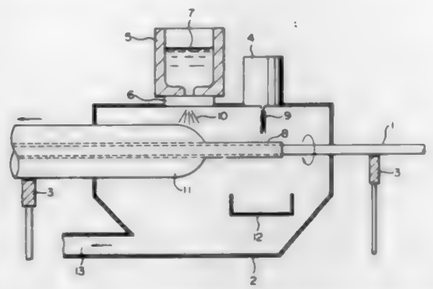
Yoshio Ikawa, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 888,663, May 27, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 115,800

Claims priority, application Japan, Jun. 21, 1991, 3-177150; Jul. 5, 1991, 3-192552

Int. Cl.[5] B22D *11/00, 19/00*

U.S. Cl. 164—46 **7 Claims**



1. A method of producing long size preform using spray deposit, comprising the steps of:

causing a cylindrical base material for a long size preform to move longitudinally within a chamber while rotating the base material about the axis thereof;

permanently forming a preheated metal layer on the outer periphery of the base material by permanently adhering a molten metal to said base material at the upstream side in the traveling direction of said base material within said chamber; and

cumulating sprayed molten metal sprayed from a container over the metal layer on said base material by providing said container containing the molten metal for preforming spray deposit by means of an atomizer for ejecting an inert gas on the ceiling of said chamber at the downstream side in the traveling direction of said base material, said sprayed molten metal and said preheated metal layer being the same type of metal, and said sprayed molten metal being permanently fixed to said preheated metal layer;

whereby porosity on the base material side of the preform is inhibited.

5,305,817

METHOD FOR PRODUCTION OF METAL BASE COMPOSITE MATERIAL

Valery G. Borisov; Ljudmila P. Borisenko; Alexandr V. Ivanchenko; Nikolai A. Kaluhsky, all of Leningrad; Alexandr P. Bogdanov, Budapeshtskaya; Vladimir M. Rapoport, Leningrad; Nikolai N. Belousov, Leningrad; Svetlana N. Pavlova, Leningrad; Tatyana I. Belyaeva, Leningradskaya; Vladimir V. Volkov, Leningrad, and Viktor S. Shusterov, Leningrad, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelysky I Proektny Institut Aluminievoi, Magnievoi I Elektrodnoi Promyshlennosti, Leningrad, U.S.S.R.

Filed Aug. 8, 1991, Ser. No. 740,823

Claims priority, application U.S.S.R., Sep. 19, 1990, 4867973

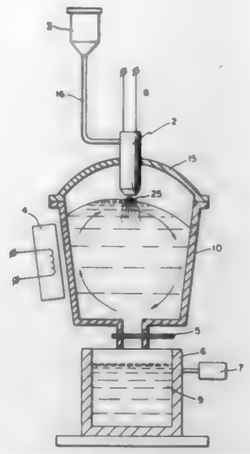
Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—97 **18 Claims**

1. A method of making a composite material, comprising:

(a) entraining finely divided solid additive particles having surfaces in a stream of ionized inert gas;

(b) preheating said finely divided solid additive particles to a temperature between 0.5–0.9 of a melting point of said solid, additive particles to provide sufficient degree of activation for interphase action to achieve a sufficient bond between said additive particles and a base metal and to prevent agglomeration of said additive particles into a



large formation during mixing of said additive particles in the molten base metal;

wherein said temperature of preheating said finely divided solid additive particles is determined in accordance with the formula

$$T_p = \theta \frac{C_m}{C_p} \frac{M_m}{M_p}\left(1 - \frac{T_m \cdot (1 + K_n)}{\theta}\right)$$

wherein:

θ—temperature of said molten base metal after injection of said additive particles, ° C.;

T_m—molten base metal temperature before injection of said additive particles, ° C.;

C_m—specific heat of the base metal

$$\frac{K\,J}{Kg\Delta t\ ^\circ C.};$$

M_m—said metal base mass, Kg;

C_p—specific heat of said additive particles

$$\frac{K\,J}{Kg\Delta t\ ^\circ C.};$$

M_p—mass of said additive particles, Kg;

K_n—dimensionless factor taking into account heat effects upon air cooling of melt surface during preheating in treatment by stream of ionized gas without injection of the additive particles, K_m=0.05–0.06 for 5 Kg of the molten metal and an ionized argon gas flow of 0.1 M^3/min.

(c) injecting said stream of ionized inert gas and said entrained preheated additive particles deep into a body of molten base metal; forming a mixture of said additive particles and said molten base metal;

(d) continuously agitating said mixture during all phases of formation of said composite material to establish a substantially uniform distribution of said additive particles in the molten metal; and

(e) conveying said mixture into a suitable mold.

5,305,818

PROCESS FOR PRODUCING A MOULDED PART, MADE OF ALUMINIUM OR AN ALUMINIUM ALLOY, EQUIPPED WITH INTEGRATED CHANNELS

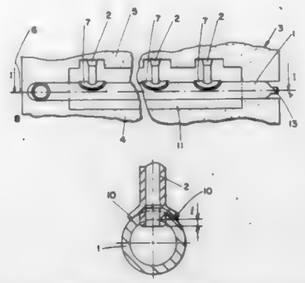
Eric Darsy, Chateauroux, and Philippe Meyer, Nogent/sur-/Oise, both of France, assignors to Montupet S.A., Levallois Perret, France

Filed Jul. 30, 1991, Ser. No. 737,721

Claims priority, application France, Aug. 2, 1990, 90 10487

Int. Cl.[5] B22D *19/00*

U.S. Cl. 164—98 **12 Claims**



1. Process for casting a part made of Al or an Al alloy and containing integrated channels, comprising the steps of:

(a) placing at least a tube (1), made of aluminum or an alloy thereof of thickness greater than or equal to 1 mm, which is previously formed, in a mold (3) with ends of the tube being on the outside of a mold cavity or inserted into cores;

(b) pouring molten aluminum or an alloy thereof into the cavity of the mold and allowing the molten metal to solidify; and

(c) demolding and eliminating surplus end portions of the tube,

wherein prior to said pouring taps (2) are fixed to the tube (1) by press fitting in apertures provided therein and an end of the tap (2) is provided with longitudinal ribs (20) obtained by embossing before press fitting.

5,305,819

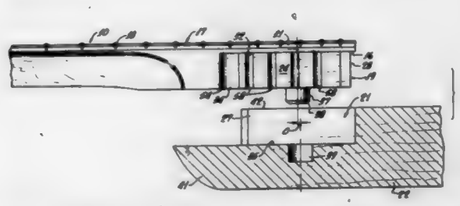
GUITAR, AND METHOD OF MANUFACTURING GUITARS

Stephen J. Boulanger, La Habra; John F. Page, Anaheim Hills, and John W. Black, Corona, all of Calif., assignors to Fender Musical Instruments Corporation, Scottsdale, Ariz.

Division of Ser. No. 716,900, Jun. 18, 1991, Pat. No. 5,125,311, which is a continuation-in-part of Ser. No. 642,003, Jan. 16, 1991, abandoned. This application Apr. 24, 1992, Ser. No. 874,303

Int. Cl.[5] B27F *1/00*; G10D *3/00*

U.S. Cl. 144—347 **10 Claims**



1. A method of mass producing set-neck solid body electric guitars, which comprises:

(a) manufacturing many identical wooden necks for solid-body electric guitars of the conventional type wherein the inner neck ends are connected to solid bodies by screws,

(b) routing-out edge regions of the undersides of at least some of said necks to thus form a tongue on each routed neck, the tongue extending longitudinally of the neck,

(c) providing solid wooden bodies for said routed necks, and forming tongue pockets in said bodies corresponding generally to said tongues and adapted to receive the same, and

(d) tightly mounting said tongues in said respective tongue pockets and adhesively securing them there.

5,305,820

WITHDRAWAL CONTROL PROCESS OF HORIZONTAL CONTINUOUS CASTING

Masahiro Tsuru; Tatuo Saiki, and Akihiro Nakajima, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

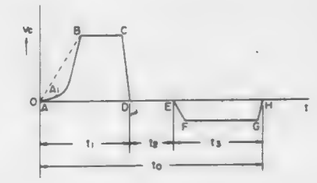
PCT No. PCT/JP91/01590, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO92/09384, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 20, 1991, Ser. No. 910,274

Claims priority, application Japan, Nov. 21, 1990, 2-314155

Int. Cl.[5] B22D *11/04*

U.S. Cl. 164—478 **2 Claims**



1. A withdrawal control process of horizontal continuous casting comprising a cast matter pulling cycle composed of a pull step, a pause step and a push back step, characterized in that the pull step is controlled along an inwardly curved pulling velocity trace in the pull acceleration beginning stage and that the value of acceleration of said cast matter pulling velocity at the beginning part of the acceleration stage in the pull step is not larger than 0.6 m/sec^2.

5,305,821

HIGH-TEMPERATURE HEAT STORAGE DEVICE

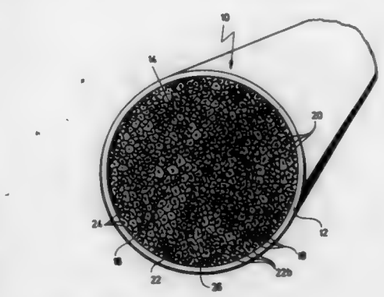
Stefan Weingartner, Munich, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fuer-Luft und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Jul. 1, 1991, Ser. No. 724,971

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1990, 4021492

Int. Cl.[5] F23D *20/00*

U.S. Cl. 165—10 **23 Claims**



1. Heat storage device comprising:

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a storage container of gas tight material having an inner chamber for accommodating anhydrous alkali and alkaline earth halides, and their eutectics as a storage medium in both a solid phase and a liquid phase, said storage medium being subject to substantial volume variations of up to about 30% during transitions between its solid and liquid states, and

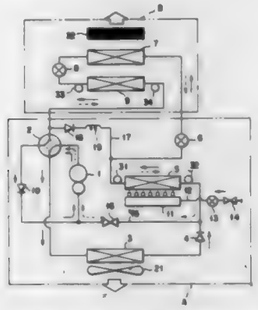
a substantially open-pored structure consisting of a material wettable by the storage medium arranged in the inner chamber and having an average pore size of greater than approximately 0.1 mm, wherein said structure is soaked with the storage medium and accommodates the substantial volume variations of said storage medium to prevent damage to said storage container.

5,305,822

AIR CONDITIONING APPARATUS HAVING A DEHUMIDIFYING OPERATION FUNCTION

Katsumi Kogetsu; Kanji Takebayashi; Shigeto Sumitani, all of Fuji; Hiroaki Kuroyanagi, Shizuoka; Takeshi Sato, Fuji; Naozumi Sukegawa, Fuji, and Hidetoshi Fukunaga, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 2, 1993, Ser. No. 70,211
Claims priority, application Japan, Jun. 2, 1992, 4-141503
Int. Cl.[5] F25B *29/00, 13/00*
U.S. Cl. 165—12 **17 Claims**



10. An air conditioning apparatus having a dehumidifying function, comprising:

a compressor for sucking, compressing and discharging a refrigerant;

an outdoor heat exchanger for making an exchange between refrigerant heat and outdoor air heat;

an outdoor fan for supplying the outdoor air to the outdoor heat exchanger;

a refrigerant heater for heating the refrigerant;

pressure reducing means for reducing a refrigerant pressure;

a first indoor heat exchanger for making an exchange between the refrigerant heat and indoor air heat;

an electric expansion valve for enabling its opening extent to be changed;

a second indoor heat exchanger for making an exchange between the refrigerant heat and the indoor air heat;

an indoor fan for circulating the indoor air through the second and first indoor heat exchangers;

means for enabling the refrigerant which is discharged from the compressor to be returned back to the compressor through the outdoor heat exchanger, pressure reducing means, first indoor heat exchanger, electric expansion valve and second indoor heat exchanger and for fully opening the electric expansion valve and implementing a cooling operation;

means for enabling a refrigerant which is discharged from the compressor to be returned back to the compressor through the outdoor heat exchanger, refrigerant heater, first indoor heat exchanger, electric expansion valve and second indoor heat exchanger and for reducing an opening extent of the electric expansion valve to a predetermined target opening level and implementing a dehumidifying operation;

means for controlling at least one of the operations of the outdoor fan and refrigerant heater at a time of dehumidifying operation to adjust temperature of air blown into a room; and

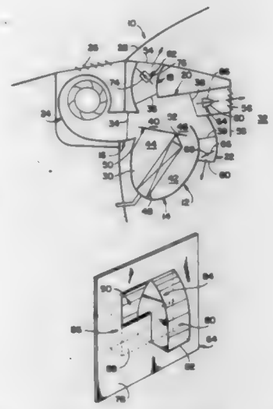
means for implementing the cooling operation for the first predetermined time period when an operation mode at a time of starting operation is the dehumidifying operation.

5,305,823

ZONE CONTROLLED AUTOMOBILE AIR CONDITIONING SYSTEM WITH AIR MIXERS AT SELECTED OUTLETS

Gilles Elliot, Courcouronnes, France, assignor to Valeo Thermique Habitacle, Le Mesnil-Saint-Denis, France

Filed Mar. 18, 1991, Ser. No. 670,939
Claims priority, application France, Mar. 22, 1990, 90 03687
Int. Cl.[5] B60H *1/00*
U.S. Cl. 165—41 **6 Claims**



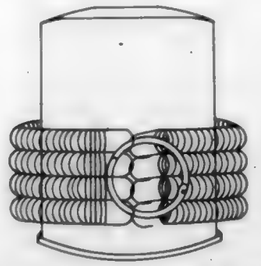
1. Heating and ventilating apparatus for the cabin of an automotive vehicle, comprising a housing, a fresh air inlet duct in the housing, and at least three air outlet ducts in the housing, the said outlet ducts comprising a windshield de-icer outlet duct, a ventilation air outlet duct for air to be delivered at the level of the fascia of the vehicle, and a foot warming air outlet duct for delivering warm air into a lower part of the cabin of the vehicle, the housing further comprising a central bulkhead dividing the interior of the housing into a left hand half and a right hand half, and regulating means, separate from each other and disposed respectively in each said half of the housing for regulating the temperature of the air therein, with the said central bulkhead extending at least partly into each of the said outlet ducts so as to enable airstreams at different temperatures to be delivered into the right hand half of the cabin and the left hand half of the cabin, the apparatus further comprising at least one mixer member disposed in at least one of the outlet ducts comprising the de-icer outlet duct and the ventilation outlet duct, whereby to give air emitted by the outlet duct concerned a homogeneous temperature, and wherein said at least one mixer member comprises a plate disposed as an extension of the central bulkhead, and two scoop-shaped elements arranged respectively on each said side face of the plate, for capturing the airstream flowing on one side of the plate whereby to transfer it to the opposite side of the plate, the plate further having an opening between its two said sides for the said airstream transfer to take place through the opening.

5,305,824

OIL FILTER COOLER

John B. Gasseling, P.O. Box 15208, Phoenix, Ariz. 85060

Filed Sep. 27, 1993, Ser. No. 127,252
Int. Cl.[5] F28F *5/00;* **B01D** *24/00, 29/00, 35/18*
U.S. Cl. 165—47 **2 Claims**



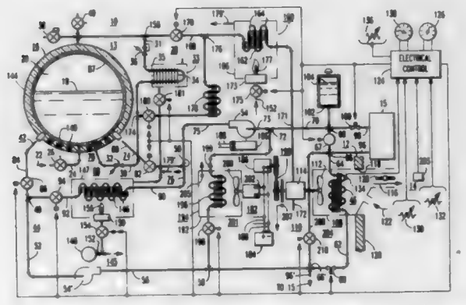
1. A oil filter cooler comprising extension springs connected together by a loose leaf ring, wherein said extension springs and said loose leaf ring encircle the outside circumference of a oil filter.

5,305,825

AIR CONDITIONING AND REFRIGERATION APPARATUS UTILIZING A CRYOGEN

Roland L. Roehrich, Pittsburgh, Pa.; Herman H. Viegas, Bloomington, and David H. Taylor, Minneapolis, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Nov. 27, 1992, Ser. No. 982,548
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—64 **17 Claims**



1. A refrigeration system associated with a conditioned space to be controlled to a predetermined set point temperature via heating and cooling cycles, with the refrigeration system including heating means and cryogenic cooling means, the improvement comprising:

a fluid flow path,

a predetermined fluid in said fluid flow path,

means for circulating said fluid in said fluid flow path,

first, second and third heat exchanger means in said fluid flow path,

said first heat exchanger means being disposed to condition the conditioned space,

said second heat exchanger means being in heat exchange relation with the cryogenic cooling means,

said third heat exchanger means being in heat exchange relation with the heating means,

means configuring the fluid flow path to interconnect the first and second heat exchanger means when the conditioned space requires a cooling cycle,

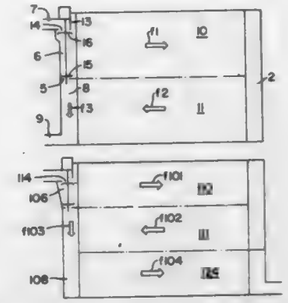
and means configuring the fluid flow path to interconnect the first and third heat exchanger means when the conditioned space requires a heating cycle.

5,305,826

MOTOR VEHICLE RADIATOR HAVING A FLUID FLOW CONTROL DEVICE

Hervé Couëtoux, Versailles, France, assignor to Valeo Thermique Moteur, France

Filed Feb. 24, 1992, Ser. No. 840,322
Claims priority, application France, Feb. 26, 1991, 91 02284
Int. Cl.[5] F28F *27/02;* **F01P** *3/18*
U.S. Cl. 165—103 **4 Claims**



1. A radiator for a motor vehicle comprising:

a fluid manifold;

a divider separating said manifold into first and second chambers, said radiator further including an inlet port selectively fluidly communicable with said first chamber and an outlet port fluidly in communication with said second chamber;

a first set of tube members having open ends communicating with said first chamber;

a second set of tube members having open ends communicating with said second chamber;

a first valve member cooperable with said divider for permitting direct fluid communication between said first and second chambers;

a second valve member for permitting fluid communication between said inlet and said first chamber; and

an actuator member coupled to said first and second valve members for simultaneous operation of such valves such that said actuator is operable to (a) close said second valve to prevent fluid flow through said inlet into the radiator; (b) close said first valve member and open said second valve member to permit fluid flow through said inlet, said first chamber, said first set of tubes, said second set of tubes, said second chamber, and said outlet; and (c) open both said first and second valves a predetermined amount to permit a first regulatable fluid flow through said inlet, said first chamber, directly through said second chamber and through said outlet, and a second regulatable fluid flow through said inlet, said first chamber, said first and second sets of tube members, said second chamber, and said outlet.

5,305,827

ANTIMICROBIAL HYDROPHILIC COATING

John W. Steele, Torrington; Philip J. Birbara, Windsor Locks; Robert W. Marsh, Simsbury, and Timothy D. Scull, Riverton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 4, 1992, Ser. No. 846,457
Int. Cl.[5] F28F *19/02;* **C09D** *5/14*
U.S. Cl. 165—133 **10 Claims**

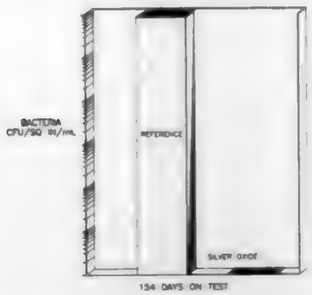
1. An antimicrobial hydrophilic coating, comprising:

a. an adhesive agent for binding said coating together and

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for preventing flaking and cracking of said coating wherein said adhesive agent does not adversely affect the hydrophilic properties of said coating;

b. a water insolubilizer for insolubilizing said adhesive agent;



c. an inorganic compound wherein said inorganic compound is selected from the group consisting of silica, calcium silicate, and mixtures thereof; and

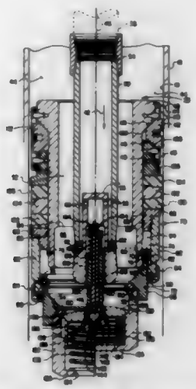
d. from about 0.1 wt % to about 1.0 wt %, based upon the total weight of the coating, of silver oxide.

5,305,828

COMBINATION PACKER/SAFETY VALVE ASSEMBLY FOR GAS STORAGE WELLS

Pat M. White, Carrollton, and Robert W. Crow, Irving, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Apr. 26, 1993, Ser. No. 52,899
Int. Cl.[5] E21B *33/12*
U.S. Cl. 166—120 **20 Claims**



1. A combination packer/safety valve assembly for use in controlling upward flow of a pressurized well fluid through a casing string portion of a subterranean well, comprising:

a body portion lowerable into the casing string and having:

a normally closed first internal passage through which, when opened, pressurized well fluid may internally traverse said body portion, and

a second internal passage for receiving a pressurized control fluid from a source thereof;

first means carried by said body portion and operative to open said normally closed first passage during the presence of a predetermined first control fluid pressure within said second internal passage; and

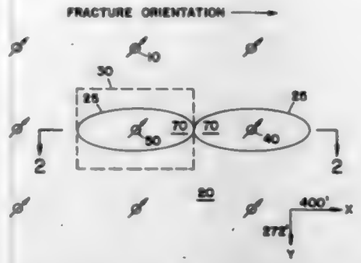
second means carried by said body portion and operative to anchor and seal said body portion within the casing string in response to a predetermined second control fluid pressure created within said second internal passage and different than said predetermined first control fluid pressure.

5,305,829

OIL PRODUCTION FROM DIATOMITE FORMATIONS BY FRACTURE STEAMDRIVE

Mridul Kumar, Placentia, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Sep. 25, 1992, Ser. No. 951,288
Int. Cl.[5] E21B *43/17, 43/24, 43/26*
U.S. Cl. 166—245 **9 Claims**



1. A method of improving oil production from a relatively impermeable formation utilizing a steam drive, said method comprising:

determining a hydraulic fracture orientation for the formation:

drilling and casing a plurality of first wellbores in an elongated pattern along the fracture orientation;

cyclically injecting into each of said wellbores an amount of steam in a short steaming cycle sequence sufficient to heat the formation through a plurality of controllably induced vertical formation fractures created throughout a production interval, while minimizing leakoff from said fractures outside the formation, and cyclically producing formation hydrocarbons upon cessation of a steam injection cycle by reflashing said steam through the wellbore;

continuing to alternate steam injection and hydrocarbon production from each wellbore until a thermal communication is established between adjacent wellbores;

drilling a plurality of second injection wells centrally interposed between the first wellbores, and converting said first wellbores to production wells; and

initiating a fracture steam drive by injecting steam above fracture pressure into each of the second wells, wherein formation hydrocarbons initially mobilized by said steam drive and heated by contacting heated formation sections around the induced fractures, thereby allowing further hydrocarbons mobilization for recovery at the production wells.

5,305,830

METHOD AND DEVICE FOR CARRYING OUT MEASURINGS AND/OR SERVICINGS IN A WELLBORE OR A WELL IN THE PROCESS OF BEING DRILLED

Christian Wittrisch, Rueil-Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison Cedex, France

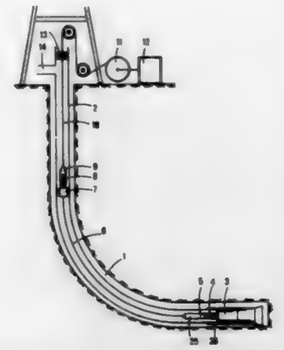
Filed Aug. 3, 1992, Ser. No. 923,559
Claims priority, application France, Aug. 2, 1991, 9109915
Int. Cl.[5] E21B *47/00*
U.S. Cl. 166—250 **17 Claims**

1. A method for carrying out measurings and/or servicings in a wellbore or in a well in the process of being drilled, comprising the following stages:

a) fastening to the end of a first pipe of a drill string, an assembly comprising measuring and/or servicing means, said means being electrically linked to a first electric connector integral with said assembly and accessible from the inside of a drill string,

b) assembling the drill string by connecting end to end new drillpipes above said first pipe and lowering progressively into the well said assembly and the drill string as the drill string is assembled,

c) introducing into said drill string, from the surface, a second electric connector adapted for connecting to the first connector, this second connector being mechanically fastened to the lower end of a cable section of non zero length comprising electric conductors and whose other end is fastened to a support adapted for being integral with said drill string and comprising a first intermediate electric connector,



d) introducing into said drill string, from the surface, a second intermediate electric connector adapted for connecting to said first intermediate connector, this second intermediate electric connector being mechanically fastened to the lower end of a cable comprising electric conductors and electrically connected to the surface,

e) connecting said second connector to the first connector,

f) making said support of the first intermediate connector integral with said drill string,

g) connecting said second intermediate connector to the first intermediate connector,

h) carrying out the measurings and/or the servicing,

i) disconnecting the second intermediate connector and taking it up to the surface by means of cable.

5,305,831

BLAST FURNACE SLAG TRANSITION FLUID

James J. W. Nahm, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 25, 1993, Ser. No. 23,181
Int. Cl.[5] E21B *33/16*
U.S. Cl. 166—293 **20 Claims**

1. A wellbore cementing process comprising:

introducing a lead cementitious slurry comprising blast furnace slag and a drilling fluid into a wellbore;

thereafter introducing a transition fluid comprising blast furnace slag, said transition fluid being of lower density than said lead slurry; and



thereafter introducing a tail slurry comprising Portland cement.

5,305,832

METHOD FOR FRACTURING HIGH TEMPERATURE SUBTERRANEAN FORMATIONS

D. V. Satyanarayana Gupta, The Woodlands, and Vernon L. Franklin, Spring, both of Tex., assignors to The Western Company of North America, Houston, Tex.

Filed Dec. 21, 1992, Ser. No. 993,405
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—300 **14 Claims**

13. A process for fracturing a subterranean formation which comprises introducing into said formation, at a flow rate and pressure sufficient to produce a fracture in said formation a fluid comprised of an aqueous gel and a propping agent, said aqueous gel comprising an aqueous fluid, a guar or derivitized guar gelling agent and a zirconium chelate crosslinking agent wherein said gelling agent is present at from about 15 to about 60 pounds per thousand gallons of aqueous fluid, said crosslinking agent is present at from 0.01 to about 10 pounds per thousand gallons of aqueous fluid, wherein the bottom hole temperature of said subterranean formation is above 200° F., and wherein the pH of said fluid is maintained between about 10.5 and about 12.

5,305,833

SHIFTING TOOL FOR SLIDING SLEEVE VALVES

Leo G. Collins, Lewisville, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Feb. 16, 1993, Ser. No. 17,788
Int. Cl.[5] E21B *34/00*
U.S. Cl. 166—386 **6 Claims**

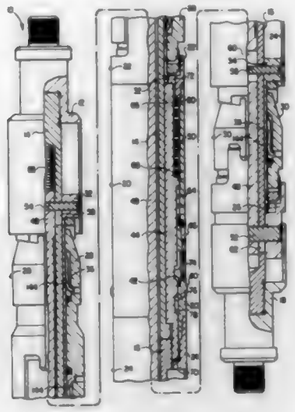
1. A shifting tool for use with a sliding sleeve valve deployed in an oil or gas well, the sliding sleeve valve being characterized by a tubular body, at least one port providing fluid communication through the body, a longitudinally slidable sleeve disposed inside the body for selectively controlling fluid flow through the port, and detent positions marking the locations of closed, equalizing and fully open positions of the sliding sleeve relative to the port, the shifting tool comprising:

means for selectively locating and engaging a predetermined profile inside the valve;

means for engaging and selectively shifting the sliding sleeve to the equalizing detent position;

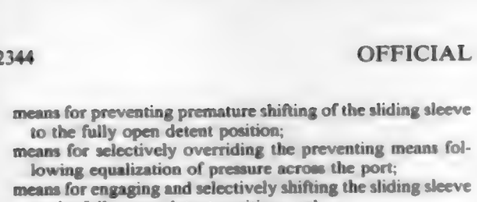
VOL 1161 ISS 4 AP 26 1994

means for preventing premature shifting of the sliding sleeve to the fully open detent position;
means for selectively overriding the preventing means following equalization of pressure across the port;
means for engaging and selectively shifting the sliding sleeve to the fully open detent position; and



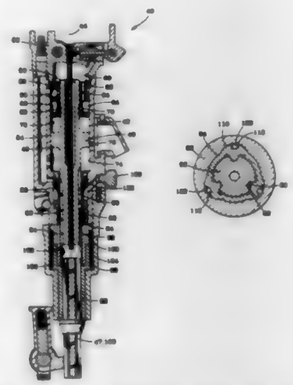
means for selectively disengaging the shifting tool from the sliding sleeve valve for withdrawal of the shifting tool from the well;
the means for engaging and selectively shifting the sliding sleeve to the fully open detent position being disposed in a leading position relative to the means for engaging and selectively shifting the sliding sleeve to the equalizing detent position.

5,305,834
ROCK GATHERING TOOL
Steve White, 792 Oak Trail Dr., Marietta, Ga. 30062
Filed Jan. 8, 1993, Ser. No. 2,317
Int. Cl.[5] A01B *43/00*
U.S. Cl. 171—63 **15 Claims**



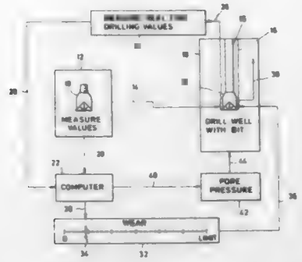
12. A rock gathering tool for collecting rocks or the like from the surface of the ground, comprising
a basket including a bottom, two sides, a back side, and an opening along its front side, the opening being sized sufficiently large so that rocks can move through the opening and into the basket,
a handle mounted to the basket and extending forwardly therefrom for pulling the basket along the surface of the ground,
a plurality of tines mounted along a bottom edge of the basket below the opening in the front side of the basket, the tines projecting at an angle downwardly and forwardly from the basket, and
means for preventing collected rocks from escaping through the opening in the front of the basket,
whereby, as the rock gathering tool is pulled along the ground, the tines extend into the ground and lift rocks from the ground, and the rocks move over the tines and through the opening in the front of the basket and are collected within the basket.

5,305,835
NONROTARY PISTON FOR JACKHAMMER AND REMOVABLE SPLINED NUT THEREFOR
Paul B. Campbell, Roanoke, and Robert R. Kimberlin, Troutville, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Sep. 23, 1992, Ser. No. 948,545
Int. Cl.[5] B25D *16/00*
U.S. Cl. 173—97 **9 Claims**



1. In a fluid-activated percussive impact tool having a backhead at a top end, a drill steel chuck at a bottom end, a housing extending therebetween forming a central bore having a reciprocal piston therein, the improvement comprising:
(a) said piston having a piston stem, a piston tail and a piston head therebetween;
(b) means for supporting said piston for reciprocation along a longitudinal axis through said bore;
(c) a plurality of longitudinal grooves extending along said piston stem and spaced apart around a circumference of said piston stem;
(d) a plurality of helical grooves extending helically along said piston stem, each helical groove being spaced between a pair of longitudinal grooves;
(e) interference fit means between said housing and said piston stem for permitting longitudinal reciprocation of said piston, while restraining rotation of said piston in said bore;
(f) rotation means connected to said helical grooves for causing rotation, in one direction, of a drill steel positioned in said chuck during reciprocation of said piston; and
(g) said interference fit means comprising a removable nut having a splined internal surface slidably connected to said longitudinal grooves and an external surface forming a male profile lobe thereon, said male profile lobe restrained from rotation by said housing at a female profile lobe cavity, said female profile lobe cavity formed to match said male profile lobe, said male profile lobe contacting said housing at said female profile lobe cavity in an interference fit to transmit torsional load from said piston to said male profile lobe and said female profile lobe cavity of said housing, whereby rotation of said nut and said piston is restrained, but longitudinal movement of said piston is permitted.

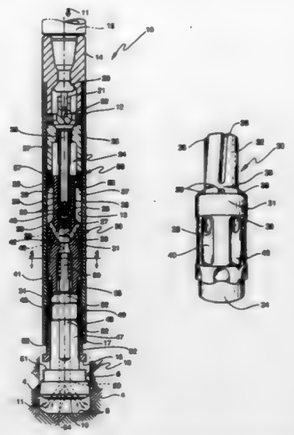
5,305,836
SYSTEM AND METHOD FOR CONTROLLING DRILL BIT USAGE AND WELL PLAN
Philip Holbrook, Houston, Tex., and Sanjeev Mittal, New Delhi, India, assignors to Baroid Technology, Inc., Houston, Tex.
Filed Apr. 8, 1992, Ser. No. 865,120
Int. Cl.[5] E21B *44/00*
U.S. Cl. 175—39 **56 Claims**



1. A method of controlling drill bit usage, comprising the steps of:
drilling at least a portion of a given oil or gas exploration or production well with a given drill bit;
continually measuring drilling data from the well and producing outputs indicative of the drilling data;
converting the outputs indicative of the drilling data into electrical drilling data signals and inputting the electrical drilling data signals to a computer;
continually processing the drilling data signals to produce a variable signal indicative of an abrasive-wear-affecting variable for the lithology which has been most recently drilled with said bit;
continually processing the variable signal to calculate current abrasive wear of the bit by the total lithology which has been so drilled thereby and produce a wear calculation signal; and
continuing use of the bit or retiring the bit in accord with said wear calculation signal.

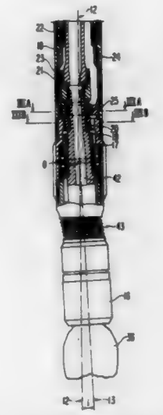
5,305,837
AIR PERCUSSION DRILLING ASSEMBLY FOR DIRECTIONAL DRILLING APPLICATIONS
Roger P. Johns, Terrace Mustang, Okla.; Michael S. Oliver, Lafayette, La., and Huy D. Bui, Houston, Tex., assignors to Smith International, Inc., Houston, Tex.
Filed Jul. 17, 1992, Ser. No. 916,046
Int. Cl.[5] E21B *7/04, 4/14*
U.S. Cl. 175—61 **23 Claims**

23. A method of rotating a hammer rock bit of an air percussion hammer bit apparatus for directional drilling operations while it reciprocates in a housing, the rotation of the bit being independent of an attached drill string comprising the steps of;
forming a cylindrical housing an open upstream end connectable to a drill string component and a downstream end containing a hammer bit, the hammer bit being free to reciprocate longitudinally in the housing;
mounting a longitudinally moveable annular piston on the housing defining a first chamber having an upstream end and a downstream end having a hammer striking surface, and including a helical groove in an outside wall of the piston;
alternately
passing air from a chamber above the upstream end of the piston to the inside of the piston, and
passing air from the inside of the piston to a chamber outside of the piston adjacent to the downstream end of the piston, for reciprocating the piston in the housing and striking the hammer bit;
engaging the helical groove with a detent for rotating the piston during a downward stroke of the piston;
rotating the hammer bit in concert with the piston; and



preventing rotation of the piston during an upward stroke of the piston.

5,305,838
DEVICE COMPRISING TWO ARTICULATED ELEMENTS IN A PLANE, APPLIED TO A DRILLING EQUIPMENT
André Paue, 59, rue Clémenceau, 78670 Villennes sur Seine, France
PCT No. PCT/FR91/00977, § 371 Date Aug. 26, 1992, § 102(e) Date Aug. 26, 1992, PCT Pub. No. WO92/12324, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 6, 1991, Ser. No. 920,445
Claims priority, application France, Dec. 28, 1990, 90 16442
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—73 **13 Claims**



1. A device for enabling two elements connected by a knuckle to take a disalignment angle with respect to one another, in a single displacement plane, a lower element of the two elements extends beyond the knuckle shaped as a lever arm located in a hollow upper element forming the second element of the two elements, wherein the knuckle a ball joint

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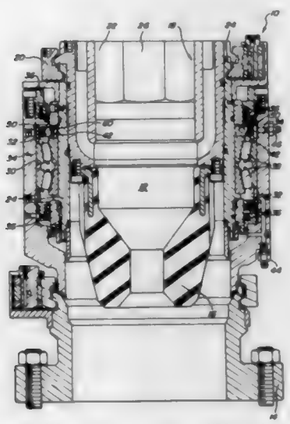
type, said device comprises guiding means holding the displacement of the two elements in said displacement plane, said means being integrated into the upper element, said device also comprises, in the upper element, means for controlling said disalignment angle, and wherein said control means comprise an eccentric whose position determines said disalignment angle.

5,305,839

TURBINE PUMP RING FOR DRILLING HEADS

Manmohan S. Kalsi, Houston; Patricio D. Alvarez, Richmond; Thomas F. Bailey, and Larry F. Moeller, both of Houston, all of Tex., assignors to Masx Energy Services Group, Inc., Houston, Tex.

Filed Jan. 19, 1993, Ser. No. 4,886
Int. Cl.[5] E21B *33/00*
U.S. Cl. 175—162 **11 Claims**



1. In a drilling head having a drive assembly selectively rotatable with a drill string extending through the drilling head, a sealed chamber disposed in the drilling head, and lubricant supply means in fluid communication with the sealed chamber, the improvement comprising:

a pump ring rotatably disposed within the sealed chamber to circulate lubricant through the sealed chamber, said pump ring attached to the drive assembly for rotation therewith.

5,305,840

ROCK BIT WITH COBALT ALLOY CEMENTED TUNGSTEN CARBIDE INSERTS

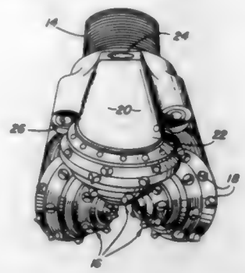
Dah-Ben Liang, and Madapusi K. Keshavan, both of The Woodlands, Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Sep. 14, 1992, Ser. No. 944,430
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—426 **29 Claims**

1. A rock bit comprising:

a body having a pin end for connection to a drill string and a downhole end; and

a plurality of cutter inserts mounted adjacent to the downhole end of the rock bit for engaging a rock formation, at least a portion of the inserts comprising cemented tungsten carbide having as a binder phase a cobalt base alloy



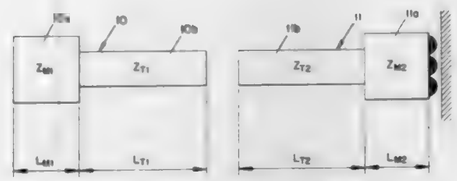
including from 10 to 35% by weight nickel, from 3 to 10% by weight chromium and a balance primarily of cobalt.

5,305,841

HAMMER DEVICE

Rainer Beccu, Storvik, Sweden, assignor to Sandvik AB, Sandviken, Sweden

PCT No. PCT/SE91/00254, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO91/15652, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 9, 1991, Ser. No. 938,124
Claims priority, application Sweden, Apr. 11, 1990, 9001319-4
Int. Cl.[5] E21B *1/00*
U.S. Cl. 175—189 **21 Claims**



1. In a hammer device comprising a drill bit disposed at a front end of the device, and a piston mounted longitudinally behind said drill bit for reciprocation in a longitudinal direction to repeatedly strike said drill bit, the improvement wherein:

said drill bit includes front and rear portions of difference impedance, and said piston includes front and rear portions of different impedance, wherein:

Z_{M1}/Z_{T1} is in the range of 3.0–5.5, and

Z_{M2}/Z_{T2} is in the range 3.0–5.5,

where:

Z_{M1} is the impedance of said piston rear portion,

Z_{T1} is the impedance of said piston front portion,

Z_{M2} is the impedance of said drill bit front portion, and

Z_{T2} is the impedance of said drill bit rear portion.

5,305,842

FEED DEVICE ON A SURFACE-CLEANING MACHINE

Paul Dummermuth, Zunzgen, Switzerland, assignor to Pamag AG, Flums, Switzerland

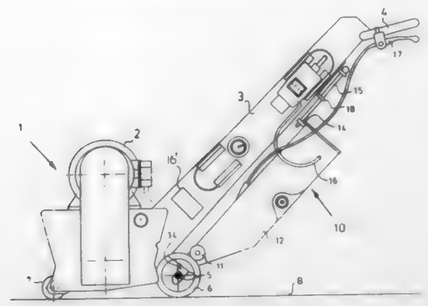
Filed Dec. 15, 1992, Ser. No. 989,598
Claims priority, application Switzerland, Dec. 16, 1991, 03710/91
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—11 **12 Claims**

1. A propulsion device (**10**) for a motor-driven surface-cleaning machine (**1**), said motor-driven surface-cleaning machine equipped for manual propulsion and having a handle-supporting deck (**3**) and an axle (**5**) extending laterally through

a lower portion of said surface-cleaning machine, said axle having two running wheels (**6**),

the propulsion device (**10**) comprising:

a detachable coupling between the surface-cleaning machine and the propulsion device;



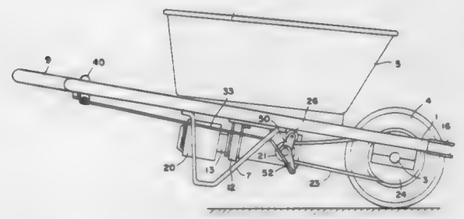
a housing, said housing having at least one driven frictional wheel (**11**) positioned on said housing to drive at least one of the two running wheels (**6**) of the surface-cleaning machine when the propulsion device is coupled to the surface-cleaning machine.

5,305,843

POWER DRIVEN WHEEL BARROW

Leonard J. Armstrong, 138 Royal Oak Rd., Staten Island, N.Y. 10314

Filed Dec. 24, 1992, Ser. No. 996,635
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—19.1 **8 Claims**



1. A power driven wheel barrow comprising:

a pair of frame members, said pair of frame members being connected at a front portion thereof;

a drive wheel rotatably mounted at the front portion of said frame members;

drive means for providing rotational motion to a first shaft about an axis having a direction substantially normal to a direction of an axis of rotation of said drive wheel;

sealed gear box means for converting the rotational motion provided by said first shaft to a direction substantially parallel to the direction of rotation of said drive wheel and for outputting the converted rotational motion using a second shaft, said drive means and said sealed gear box means being attached to each other to form a compact direct-drive unit, wherein a driving pulley is mounted to said second shaft for rotating a belt used for driving said drive wheel; and

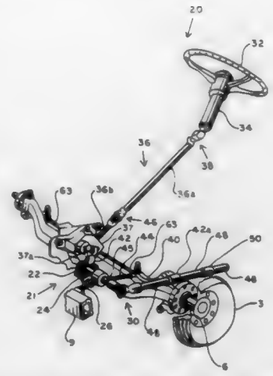
engaging means for selectively engaging and disengaging the rotational motion output by said sealed gear box means to and from said drive wheel, said engaging means comprising a member including an engaging roller, wherein the member is pivotally connected about said second shaft so that the engaging roller can be selectively moved to a position engaging the belt and to a position removed from engagement with the belt.

5,305,844

REMOTE STEERING OF ON-HIGHWAY VEHICLES

Edgar A. Ducote, P.O. Box 45654, Baton Rouge, La. 70895

Division of Ser. No. 594,716, Oct. 9, 1990, Pat. No. 5,135,064, which is a continuation-in-part of Ser. No. 337,292, Apr. 13, 1989, Pat. No. 5,026,085. This application Dec. 16, 1991, Ser. No. 807,199
Int. Cl.[5] B62D *61/10*
U.S. Cl. 180—24.01 **4 Claims**



1. An extended motor vehicle having front and rear ends, the vehicle comprising:

(a) an elongated, integral chassis including a frame;

(b) a body including a motor, mounted on the frame;

(c) a first pair of steerable wheels rotatably mounted on spindles attached to opposite ends of a first fixed axle at the front end of the vehicle;

(d) a second pair of steerable wheels rotatably mounted on spindles attached to opposite ends of a second fixed axle at the rear end of the vehicle;

(e) a pair of fixed wheels rotatably mounted on opposite ends of a third fixed axle disposed between and spaced apart from the first and second axles, at least one of the second and third axles being a driving axle;

(f) a steering wheel for directing the motion of the motor vehicle; and

(g) means for forcibly steering the steerable wheels in accordance with the orientation of the steering wheel and the geometry of the motor vehicle, said geometry being inclusive of the disposition and spacing of the axles and of the dimensions of the motor vehicle, said means for forcibly steering the steerable wheels including

(g1) a steering column connected to the steering wheel;

(g2) first and second segments of a first steering shaft;

(g3) a first universal joint connecting the steering column to the first segment of the steering shaft;

(g4) a second universal joint connecting the first and second segments of the steering shaft to one another;

(g5) a first steering-gear box connected to the second segment of the steering shaft;

(g6) a first gear;

(g7) a second gear adapted to engage the first gear, the first and second gears forming in combination a mechanical sensor for detecting the orientation of the steering shaft and thereby the orientation of the steering wheel, the second gear being mounted on

(g8) a first Pitman arm having first and second ends, the first end of the first Pitman arm being connected to the first gear box, the second end of the first Pitman arm

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being connected by a drag link to a power train which comprises

(g9) a first shaft having first and second ends, the first end of the first shaft being connected to the first gear, the second end of the first shaft being connected to a second shaft in a substantially perpendicular configuration by a third universal joint;

(g10) first and second bushings in which the second shaft is disposed;

(g11) a third shaft substantially colinear with the second shaft;

(g12) a spline connecting the second and third shafts to one another;

(g13) a third bushing in which the third shaft is disposed;

(g14) a fourth shaft substantially colinear with the second and third shafts;

(g15) a third universal joint connecting the third and fourth shafts to one another, the spline preventing relative rotary movement of the second and third shafts while permitting longitudional movement thereof, the bushings stabilizing the shafts and limiting the movements of the shafts in any direction except longitudionally, the third and fourth universal joints allowing and compensating for non-colinearity of the shafts which the universal joints connect to one another;

(g16) a second steering shaft;

(g17) a second gear box coupling the fourth shaft to the second steering shaft;

(g18) a second Pitman arm;

(g19) a third gear box coupling the second steering shaft to the second Pitman arm; and

(g20) spindles connected to and forcibly steered by the second Pitman arm, the spindles being attached to opposite ends of the second fixed axle.

5,305,845

WHEELCHAIR SHUTTLE

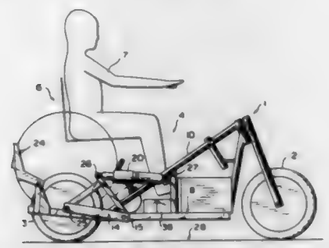
Alexander A. A. Van Dooren, Eersel, Netherlands, assignor to Freewiel Techniek, Eersel, Netherlands

Filed Aug. 3, 1992, Ser. No. 923,449

Claims priority, application Netherlands, Aug. 5, 1991, 9101349

Int. Cl.[5] **B60K** *1/00*

U.S. Cl. 180—65.1 **18 Claims**



1. A self propelled steerable vehicle for one person, who would normally be invalided by a leg and/or hip condition, the driver's seat of which may be a wheelchair, comprising:

(A) a vehicle frame,

(B) a floor panel, adapted so that a wheelchair may be driven onto the floor panel, that is pivotally connected to the vehicle frame therein providing an up and down movement in relation to a road surface,

(C) at least one front wheel and two rear wheels, wherein each rear wheel (3) includes:

(1) a separate mounting construction (14), which simultaneously pivots upwards or downwards in relation to the floor panel,

(2) adjustable suspension elements (20) positioned in front of the rear wheels (3) and pivotally connected to a rear side of the floor panel whereon the floor panel (8) can be lowered to the road surface (28),

(D) wherein the floor panel (8) includes:

(1) a folding ramp construction (24) adapted to be driven on to by a wheelchair (6),

(2) means (9) on the folding ramp construction for preventing the wheelchair (6) from rolling backwards,

(E) a plurality of side panels connected to the floor panel, provided with means (11) for preventing the wheelchair (6) from rolling forwards, and

(F) wherein the mounting construction (14) for the rear wheels (3) is movable downwards by the adjustable suspension elements, and the locking into position of the wheelchair (6) on the vehicle (1) during a journey is assured when the folding ramp construction (24) is raised.

5,305,846

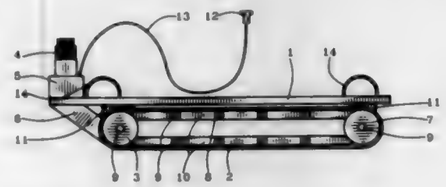
MOTORIZED TRACKBOARD

William D. Martin, 234 Magnolia St., Oviedo, Fla. 32765

Filed Oct. 29, 1992, Ser. No. 968,504

Int. Cl.[5] **B62M** *9/16*

U.S. Cl. 180—181 **35 Claims**



1. A trackboard comprising:

a trackboard platform;

an endless-belt track mounted on track-engagement wheels on each side of a bottom surface of the trackboard platform;

a track-drive wheel in rotationally track-engagement relationship with the endless-belt track at each side of a rear portion of the bottom surface of the trackboard platform in a common axis;

a prime mover positional on a rear portion of the trackboard platform;

a rotational-drive means in rotational-drive relationship between the prime mover and the track-drive wheel;

a track-adjustment wheel in track-engagement relationship with a front portion of each endless-belt track in a common axis at each side of a front portion of the bottom surface of the trackboard platform; and

a base-length-adjustment means attached rotationally to an axle of the track-adjustment wheel and attached to the trackboard platform in base-length-adjustment communication between the track-adjustment wheel and the front portion of the trackboard platform.

5,305,847

DUAL MODE ENGINE/TRANSMISSION MOUNT

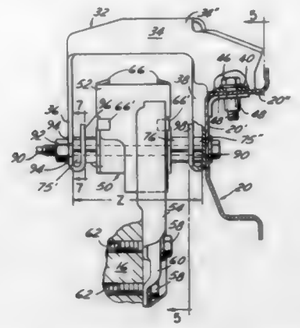
Jack L. Mefford, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of Ser. No. 938,742, Sep. 2, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 71,903

Int. Cl.[5] **B60K** *5/00*; **F16M** *5/00*

U.S. Cl. 180—292 **8 Claims**

1. In a vehicle having a pair of spaced frame members for supporting an engine and transmission, a dual mode engine mount with a first mode for positioning an ° /engine in which the mount automatically adjusts to dimensional variances in the spacing between the frame members and with a second mode for securing an engine in a fixed position in the vehicle where the mount maintains a desirable operative spaced relationship corresponding to the spacing between the frame members, comprising: the mount having a first bracket portion with an aperture therethrough and a second bracket portion with two spaced legs, each of said legs spaced to either side of the first bracket portion; an elongated tubular bar with opposite end portions, the bar being positioned between the two legs with the end portions abutting the legs, the bar having a midportion extending through the aperture of the first bracket portion; the midportion of said bar being weakened by re-



moved material providing relatively weak integral corner portions whereby in the first mode the first bracket portion is free to slide along the bar to accommodate the variance in frame spacing; means for selectively applying a sufficient compressive force in an axial direction of the bar subsequent to the first mode causing outward radial distortion of the weak corner portions of said bar and resultant binding between the bar midportion and the first bracket portion thereby operatively fixing a positioning of the first bracket portion along the bar.

5,305,848

AUTOMOBILE POWERTRAIN STRUCTURE INCLUDING AUTOMATIC TRANSMISSION FOR TRANSVERSE ENGINE

Hitoshi Akutagawa, Hiroshima; Junichi Okita, Iwakuni; Osamu Kameda, Hiroshima; Sakumi Hasetoh, Hiroshima, and Yoshimichi Tanaka, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 31, 1992, Ser. No. 922,922

Claims priority, application Japan, Jul. 31, 1991, 3-192275; Jul. 31, 1991, 3-192278; Jul. 31, 1991, 3-192294; Aug. 9, 1991, 3-200412

Int. Cl.[5] **B60K** *5/04*

U.S. Cl. 180—292 **21 Claims**

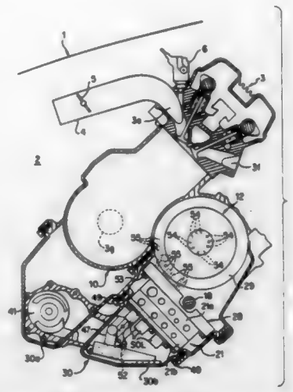
1. A structure of a powertrain disposed in an engine compartment of an automotive vehicle, comprising:

an engine placed within the engine compartment, said engine having a crankshaft directed in a transverse direction of a vehicle body;

an automatic transmission placed within the engine compartment behind said engine, said automatic transmission having an input shaft and an output shaft which are arranged coaxially with each other and directed parallel to said crankshaft;

a torque converter operationally coupled to said crankshaft and said input shaft; and

control valve means for applying controlled hydraulic pressure to said automatic transmission therethrough so as to shift said automatic transmission, said control valve means being placed in a space defined below a horizontal plane including a top of said automatic transmission and behind



a vertical plane including an axis of rotation of said crankshaft.

5,305,849

TREE STEP CADDY

Ray D. Shaw, Rt. 1, Box 52, Ennice, N.C. 28623

Filed May 3, 1993, Ser. No. 55,285

Int. Cl.[5] **A63B** *27/00*

U.S. Cl. 182—92 **1 Claim**

1. A tree climbing kit apparatus, comprising,

a flexible web, the flexible web having a web first side spaced from a web second side, a web first end spaced from a web second end, and the web having an interior surface and a camouflage surface, with the interior surface including a first hook and loop fastener strip mounted to the interior surface in adjacency to the first end, and a second hook and loop fastener strip selectively securable to the first hook and loop fastener strip fixedly mounted to the exterior surface adjacent the second end, and

a belt loop mounted to the exterior surface orthogonally oriented relative to the first end and fixedly secured to the exterior surface, and

a plurality of pairs of pockets orthogonally oriented relative to the first end parallel to the first side and the second side

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mounted to the interior surface, with each of the pockets including a step member therewithin, and

the pairs of pockets arranged in a symmetrical relationship relative to the interior surface, and defining two columns, with each pocket in a pair being staggered longitudinally with respect to each other in their respective column, and

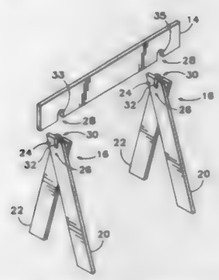
each step member includes a first rigid pivot leg mounted to a second rigid pivot leg about a pivot axle directed through the first rigid pivot leg and the second rigid pivot leg permitting orthogonal orientation of the first rigid pivot leg relative to the second rigid pivot leg.

5,305,850

KNOCK-DOWN SAWHORSE

Arthur J. McQuiston, 8411 NE. 54th St., Unit D2, Vancouver, Wash. 98662

Filed Jun. 22, 1993, Ser. No. 81,784
Int. Cl.[5] B27B *21/00*
U.S. Cl. 182—153 **13 Claims**



1. A knock-down sawhorse for supporting various articles in a horizontal disposition, comprising:

an elongated, horizontally disposed support member having a top support side and a bottom side portion and first and second opposed lateral sides; and

a first upright leg assembly and a second upright leg assembly spaced apart lengthwise along the support member of each assembly including a pair of separate, oppositely inclined elongate leg members that overlap at a top end thereof;

each leg member of each leg assembly having a notch at the top end thereof, the notch including a bottom wall and a pair of opposed sidewalls providing an open top entry sized to receive the bottom side portion of the support member;

the notches in the oppositely inclined leg members of each leg assembly being aligned to form a leg assembly channel wherein the first and second lateral sides of the support member are bindingly engaged.

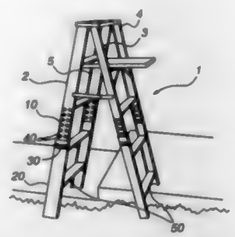
5,305,851

SAFETY LADDER

George A. Katson, 1117 W. Washington St., and Michael D. Katson, Rte. 4, Box 40-A, both of Grafton, W. Va. 26354

Filed Jan. 2, 1992, Ser. No. 815,979
Int. Cl.[5] E06C *7/00*
U.S. Cl. 182—204 **9 Claims**

1. A ladder comprising: at least two lateral legs, at least one of the legs comprising a stationary element and a slideable element, the slideable element comprising a transverse section of slightly greater width than a corresponding transverse portion of the stationary element, the slideable element further having two lateral sections, one of the two lateral section being disposed at each lateral end of the transverse section, each of the two lateral sections being slightly wider than a corresponding lateral portion of the stationary element, each lateral section of the slideable element having an abutment means disposed thereon at an edge of the lateral section distant from the transverse section, the slideable element thereby having a modified U-shape operable to be slideably disposed upon the stationary element with substantially minimal transverse and lateral motion, the ladder further comprising a means for attaching the slideable element to the stationary element at a position thereon so that the length of the at least one leg is adjustable to substantially level the ladder, said attachment



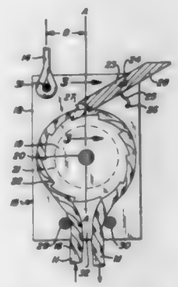
means being positioned so that at least 40% of the stationary element remains in contact with the slideable element after adjustment of the at least one leg, thereby stabilizing the ladder when the at least one leg is in an extended position, a bottommost step of the ladder being placed near the bottom of the stationary element to reduce a first step required of a user of the ladder.

5,305,852

APPARATUS FOR LOWERING PEOPLE FROM BUILDINGS AND THE LIKE

Per Klokseth, N-6375 Hovdenakken, Norway

PCT No. PCT/NO90/00191, § 371 Date Aug. 18, 1992, § 102(e) Date Aug. 18, 1992, PCT Pub. No. WO91/08798, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 19, 1990, Ser. No. 862,555
Claims priority, application Norway, Dec. 20, 1989, 895136
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—241 **5 Claims**



1. An apparatus for lowering people from a high level, for example from a building, a post, a platform or scaffolding, the apparatus including a lowering line that is looped through a block member having a cylindrical ratchet means with a grooved rim that is rotatably mounted on a shaft centrally positioned between two side plates forming the sides of the block member, the improvement comprising a pawl means that is pivotally mounted between said side plates and is positioned to engage teeth formed around the outer perimeter of the rim of the ratchet means; said block member includes a longitudinal axis extending through the center of the shaft mounting said cylindrical ratchet means; said block member includes attaching means which is offset a predetermined distance to one side of said longitudinal axis and at the opposite end of said block member from said attaching means is a narrow entry and exit opening means through which the incoming and outgoing

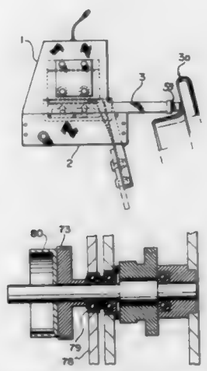
ends of the lowering line extend after passing around the cylindrical ratchet means; said narrow entry and exit opening means being formed by a pair of spaced pivots equally spaced on either side of said longitudinal axis with the outgoing end of the lowering line passing adjacent to the pivot which is arranged on the opposite side of the longitudinal axis from the attaching means; said attaching means includes an anchor pin attached between said side plates and an attachment line connected to said anchor pin which extends outwardly from said block member so that it can be attached to a secure object for suspending the apparatus; and the grooved rim of the ratchet means is formed as a pair of side walls which taper inward at a predetermined angle so as to produce friction between the side walls of the ratchet rim and the lowering line when a load is placed on the outgoing end of the lowering line causing the pawl means to engage the ratchet teeth and lock the ratchet means from rotating in the downward direction and cause the block member to tilt on a side corresponding to the pivot engaging the outgoing end of the lowering line to bend the line around the pivot to increase the friction on the lowering line.

5,305,853

LUBRICANT STICK APPLICATOR

Robert C. Ross, Shawnee, Kans.; Michael B. Myers, Staffordshire, England; William A. Stallings, Atglen, Pa., and Harold A. Vaughan, Independence, Mo., assignors to Century Lubricants Co., Kansas City, Kans.

Filed Sep. 18, 1992, Ser. No. 947,340
Int. Cl.[5] B61K *3/00*
U.S. Cl. 184—3.2 **20 Claims**



1. A dispensing apparatus for the controlled application of a plurality of solid lubricant sticks to an area of a wheel of a vehicle, said apparatus comprising:

a. a receptacle for retaining the plurality of lubricant sticks in a predetermined arrangement;

b. transport means operably connected to the receptacle for receiving the lubricant sticks form the receptacle and for moving the lubricant sticks sequentially from the receptacle into contact with the wheel area.

5,305,854

STUFFING BOX LUBRICATOR

John H. Wheeler, Dallas, Tex., assignor to The Texacone Company, Mesquite, Tex.

Filed Sep. 20, 1991, Ser. No. 763,264
Int. Cl.[5] F16N *11/04*
U.S. Cl. 184—24 **9 Claims**

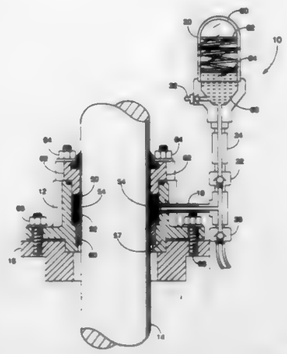
1. Apparatus for lubricating a piston through a stuffing box having a lantern ring sandwiched between dual seal rings comprising:

a pressure lubrication reservoir for supplying a first fluid comprising fresh lubricant to the piston;

means for adding the first fluid to the lubrication reservoir;

means for connecting the lubrication reservoir to the stuffing box for directing the first fluid flow from the lubrication reservoir into the piston;

means for discharging a second fluid comprising spent lubricant, spent hydraulic fluid, or condensate under a predetermined pressure out of the stuffing box;



means for preventing the flow of the second fluid from the stuffing box into the pressure lubrication reservoir as the second fluid is discharged under pressure from the stuffing box; and

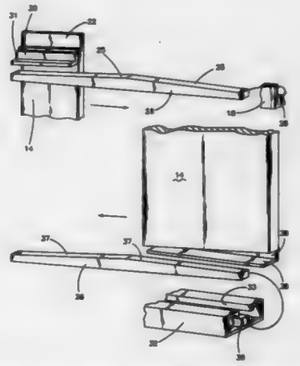
means for preventing the discharge through the discharge means of the first and second fluids the first fluid it flows from the lubrication reservoir to the stuffing box under pressures less than the predetermined pressure.

5,305,855

SEALED ELEVATOR CAB ENTRANCE ASSEMBLY

James A. Rivera, Bristol, Conn., and Christian Tonna, Sao Paulo, Brazil, assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 25, 1993, Ser. No. 37,138
Int. Cl.[5] B66B *13/00*
U.S. Cl. 187—56 **7 Claims**



1. In combination with an elevator cab structure, a passenger door assembly comprising:

a) at least one elevator door translationally reciprocally movably mounted on said cab structure adjacent to a cab door opening therein, said door being movable between a door-open position and a door-closed position;

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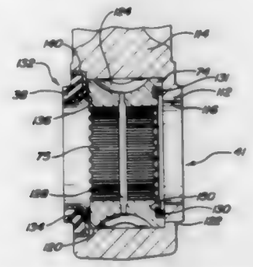
b) a track mounted on said cab structure and engaged by said door, said track providing a guide for said translational door movement;
c) upper and lower horizontally extending first seal means mounted adjacent to upper and lower edges respectively of said cab door opening, said lower first seal means being mounted in a sill portion of said cab door opening;
d) upper and lower second seal means mounted adjacent to said upper and lower edges respectively of said door; and
e) each of said first seal means having first vertically inclined sealing surfaces thereon, and each of said second seal means having vertically inclined sealing surfaces thereon, said sealing surfaces of said second seal means being laterally offset from said sealing surfaces of said first seal means when said door is in said door-open position, and said sealing surfaces of said second seal means being disposed in substantially hermetically sealing engagement with said sealing surfaces of said first seal means when said door is in said door-closed position.

5,305,856

AUTOMATIC SLACK ADJUSTING MECHANISM INCLUDING A LOW FRICTION ADJUSTING GEAR

David J. Edwards, Shelby, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1992, Ser. No. 954,599
Int. Cl.[5] F16D *65/56*
U.S. Cl. 188—79.55 1 Claim



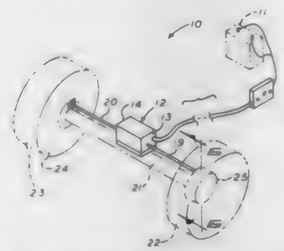
1. An automatic slack adjusting mechanism for a rotary oscillating cam actuated brake assembly including an elongated housing having an opening therethrough and a bore, a worm gear rotatably mounted in said opening, a shaft mounted for rotation in said bore and having a worm non-rotatably secured thereto, said worm drivingly engaging said gear, a plunger assembly including a plunger slidably mounted in said bore, said plunger having an axially movable rotary driving connection with said shaft in said bore, detent means in said housing, said detent means being axially fixed relative to said bore and link means pivotally connecting one end of said plunger assembly to said housing whereby pivotal movement of said link means relative to said housing will move said plunger assembly relative to said detent means and said detent means will rotate said plunger, said worm and said worm gear upon return movement of said plunger assembly following outward movement of said assembly beyond a predetermined distance relative to said detent means and said plunger is a cylinder having a splined connection with said shaft and a helical toothed surface portion and said detent means includes a spring biased pawl extending into toothed engagement with said helical toothed surface portion; the improvement comprising:
said opening including first, second and third coaxial bores defined therein;
said opening including a first flange disposed intermediate said first and second bores and a second flange disposed intermediate said second and third bores;
said worm gear including a circumferential portion defining a bearing surface disposed in slidable association with said second bore;
said worm gear including axially displaced first and second radially extending annular bearing surfaces;
a first annular bearing surface disposed in sliding relation with said second flange;
an annular retainer disposed in said first bore in abutting relation with said first flange;
wherein said retainer comprises an annular channel formed having a first axially extending portion continuously connected to a radially extending portion which is continuously connected to a second axially extending portion disposed coaxial to said first axially extending portion and said retainer includes an elastomeric material disposed in said channel in contact with said first and second axially extending portions and said radially extending portion;
said retainer is maintained in said first bore by interference fit and thereby retains said worm gear in slidable association with said second bore and sliding relation with said second flange; and
said elastomeric material extends through openings defined in said channel continuously forming an annular seal maintained proximate a second annular bearing surface of said worm gear.

5,305,857

TRAILER BRAKE SET APPARATUS

Terry L. Smith, 42801 SE. Oral Hull Rd., Sandy, Oreg. 97055

Filed Feb. 8, 1993, Ser. No. 14,747
Int. Cl.[5] F16D *69/00*
U.S. Cl. 188—265 4 Claims



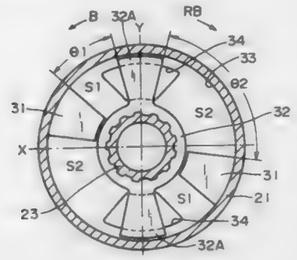
1. A trailer brake set apparatus in combination with an axle housing, wherein the axle housing includes a housing first end spaced from a housing second end, with the first end and the second end each including a wheel assembly rotatably mounted thereto, and each wheel assembly including a brake backing plate fixedly mounted to said axle housing, and each backing plate including a plurality of facing brake pads, including a first brake pad and a second brake pad, and each wheel assembly further including a brake drum rotatably mounted about the first brake pad and the second brake pad, wherein the apparatus further comprises,
a control housing fixedly mounted to the axle housing, and the control housing including a housing first side wall spaced from a housing second side wall, and
a reversible drive motor mounted within the housing between the first side wall and the second side wall, with the drive motor having a first output shaft and second output shaft rotatably mounted to the drive motor in adjacency relative to the respective first side wall and the second side wall, wherein the first output shaft includes a first extension shaft directed from the first output shaft, and the second output shaft including a second extension shaft mounted to the second output shaft, where one of said first and second extension shafts are rotatably directed through one said backing plate, and
switch means for effecting rotation and contra-rotation of the drive motor, and
each wheel assembly including cam means mounted within each wheel assembly for effecting engagement of each first brake pad and second brake pad for engagement with an adjacent brake drum.

5,305,858

ROTARY SHOCK ABSORBER HAVING VANES WITH RADIAL FLOW CLEARANCE

Kyosuke Haga, Anjo; Toshifumi Sakai, Aichi; Naoyuki Kokubo, Aichi; Masaharu Ooba; Youzo Yamaguchi, Nagoya, and Sadamu Tuge, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 21, 1992, Ser. No. 918,221
Claims priority, application Japan, Jul. 22, 1991, 3-204619; Jul. 22, 1991, 3-204620; Jul. 25, 1991, 3-207314; Jul. 25, 1991, 3-207315; Jul. 25, 1991, 3-207316
Int. Cl.[5] F16F *9/12*
U.S. Cl. 188—271 4 Claims



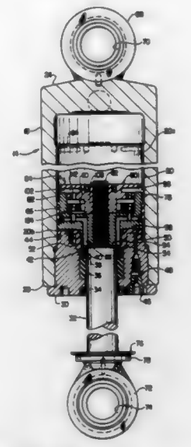
1. A rotary shock absorber comprising:
a cylindrical housing;
a rotary shaft carried by said housing for rotation relative thereto;
a brake disposed between said housing and said rotary shaft to generated a damping force by frictional engagement of said brake;
a piston received within said housing for axial movement to actuate said brake in response to a pressure applied to said piston, one end of said piston being contacted with said brake;
a pressure chamber formed in said housing at an axial location adjacent to the other end of said piston and filled with an operation fluid;
a rotor mechanically coupled with said rotary shaft for rotation therewith and received within said pressure chamber, said rotor having at least one blade extending in a radial direction; and
at least one partition wall means formed within said pressure chamber so that said pressure chamber is divided into first and second chambers in a circumferential direction by said partition wall means and said blade, wherein said first chamber is formed at one circumferential side of said blade and said second chamber is formed at an other circumferential side of said blade, wherein said rotor and at least one of said housing and said at least one partition wall means form a clearance of a controlled size through which the operation fluid passes when said rotary shaft is rotated relative to said housing to generate a pressure in one of said first and second chambers, wherein said first chamber has a first pressure receiving area through which a pressure generated in said first chamber is transmitted to said piston, wherein said second chamber has a second pressure receiving area through which a pressure generated in said second chamber is transmitted to said piston and wherein said first and second pressure receiving areas are different from one another.

5,305,859

LIQUID SPRING HAVING IMPROVED DAMPER VALVE STRUCTURE

Leo W. Davis, 15711 Regal Hill Cir., Dallas, Tex. 75248

Filed May 12, 1992, Ser. No. 882,067
Int. Cl.[5] F16F *9/50*
U.S. Cl. 188—282 2 Claims



1. A liquid spring comprising:
a cylinder structure having a chamber disposed therein and containing a compressible liquid:
a piston structure reciprocably disposed within said chamber and dividing it into bounce and rebound subchambers;
a rod longitudinally extending along an axis and being slidably and sealingly carried by said cylinder structure for axial movement into and out of said chamber, said rod being fixedly secured at an inner end thereof to said piston structure and having an outer end portion disposed outwardly of said cylinder structure;
passage means extending through said piston structure and intercommunicating said bounce and rebound subchambers, said passage means being operative to permit compressible liquid to flow therethrough from said bounce subchamber into said rebound subchamber in response to axial movement of said rod into said chamber, and to permit compressible liquid to flow therethrough from said rebound subchamber into said bounce subchamber in response to axial movement of said rod out of said chamber,
an axially intermediate portion of said passage means being defined by a valve chamber disposed within the interior of said piston structure;
damper valve means, protectively retained within said valve chamber for fluid-driven axial movement therein between first and second limit positions in respective response to forced movement of said piston structure relative to said cylinder structure in first and second opposite axial directions, said damper valve means being operative to restrict liquid flow through said passage means, in a manner providing greater resistance to liquid flow in one direction between said bounce and rebound subchambers than in the other direction, by limiting liquid flow through said valve chamber to a first positive flow rate when said damper valve means are in said first limit position thereof, and limiting liquid flow through said valve chamber to a second, different positive flow rate when said damper valve means are in said second limit position thereof,
said valve chamber having an annular configuration, circumscribing said axis, and axially spaced apart opposing first and second annular end surfaces,
said damper valve means including an annular damper

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valve member coaxially and slidably received within said valve chamber for liquid-driven axial movement relative to said piston structure between a first position in which said damper member abuts said first annular end surface of said valve chamber, and a second position in which said damper valve member abuts said second end surface of said valve chamber,

said valve chamber having an annular radially inner side surface and an annular radially outer side surface,

said damper valve member having a radially inner side surface with a diameter larger than that of said radially inner side surface of said valve chamber, a radially outer side surface slidably engaging said radially outer side surface of said valve chamber, first and second opposite annular end surfaces, and annular peripheral standoff lip projecting axially outwardly beyond said first end surface and said damper valve member toward one of said first and second end surfaces of said valve chamber, and at least one liquid flow passage extending between said first and second damper valve member end surfaces radially inwardly of said peripheral standoff lip,

said passage means having portions extending outwardly through said first and second valve chamber end surfaces at locations disposed radially inwardly of said peripheral standoff lip and radially outwardly of said radially inner side surface of said damper valve member;

a generally cylindrical piston member coaxially anchored to said inner end of said rod, said piston member having an inner end face through which a central cylindrical opening inwardly extends, said central cylindrical opening having an inner end surface which defines said first end surface of said valve chamber, and an annular side surface which defines said radially outer side surface of said valve chamber; and

a locking member removably secured to said inner end of said rod, said locking member having a first cylindrical portion closely and coaxially received in an outer end portion of said central cylindrical opening and having an inner side surface which defines said second end surface of said valve chamber, and a reduced diameter second cylindrical portion extending coaxially into said central cylindrical opening and having an outer side surface which defines said radially inner side surface of said valve chamber.

5,305,860

REMOTE CONTROLLED VEHICLE DAMPER

John Rothamel, Arlington Heights; Joseph Ergun, Itasca; Robert F. Bedsole, Berwyn; Joseph Cubalchini, and Harold B. Hutter, both of St. Charles, all of Ill., assignors to Maremont Corporation, Carol Stream, Ill.

Continuation-in-part of Ser. No. 318,619, Mar. 3, 1989, abandoned. This application Nov. 30, 1989, Ser. No. 443,496

Int. Cl.[5] F16F *9/46*

U.S. Cl. 188—299 **10 Claims**

1. An improved remote-controlled variable damping shock absorber, the improvement comprising in combination:

(A) a piston head connected to a piston rod;

(B) a internal cavity extending axially within the piston rod;

(C) a motor disposed in the internal cavity and having a drive and providing means for alternately rotating the drive in either of two directions;

(D) a wire means passage extending from the internal cavity to a point external to the piston rod;

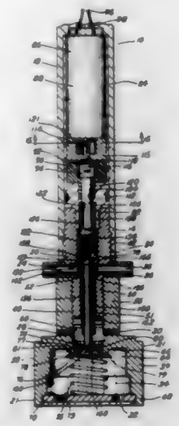
(E) a wire means including a pair of wires disposed within the wire means passage and connected to the motor;

(F) at least one fluid passage for providing fluid flow during movement of the piston head;

(G) a valve connected to and moving in accordance with the rotation of the drive to cooperate with the fluid passage for effecting the fluid flow;

(H) manually actuable switch means for initiating rotation of the motor; and

(I) electrical circuitry means responsive to actuation of the switch means for providing voltage across the pair of wires to drive the motor, the electrical circuitry means including: (1) means for developing a motor voltage and a ground connection; (2) switch logic for switching the motor voltage and the ground connection between the two wires in responsive to actuation of the switch means, the switch logic including enabling means for enabling



application of the motor voltage to one of the two wires in response to actuation of the switch means; and (3) stopping means for discontinuing application of the motor voltage to the two wires, the stopping means including a brushless-contactless decision means for stopping the motor at a time when the valve occupies a predetermined position with respect to the fluid passage.

5,305,861

INTEGRATED BACKING PLATE FOR A DRUM BRAKE

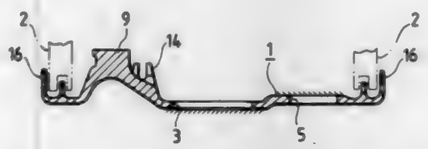
Shigeyoshi Kobayashi, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre, Ltd., Hanyu, both of Japan

Filed Apr. 13, 1992, Ser. No. 867,434

Claims priority, application Japan, Apr. 15, 1991, 3-108101; Jan. 16, 1992, 4-004979[U]

Int. Cl.[5] F16D *51/00*

U.S. Cl. 188—328 **4 Claims**



1. An integrated backing plate for a drum brake comprising:

an anchor portion for anchoring brake shoes to the backing plate, said anchor portion having embedding pieces embedded in each side thereof against which an end of said brake shoe abuts; and

a dust cover,

the anchor portion and the dust cover being integrally formed with the backing plate, and being made of one of aluminum alloy and an aluminum-based composite material.

5,305,862

CONTROL DEVICE FOR A FRICTIONALLY ENGAGING CLUTCH FOR A HYDRODYNAMIC TORQUE CONVERTER

Georg Gierer, Kressbronn, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshaften AG, Fed. Rep. of Germany

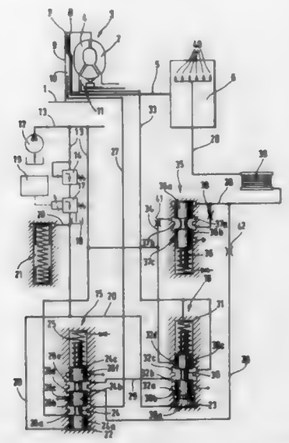
PCT No. PCT/EP89/01367, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991, PCT Pub. No. WO90/06458, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 15, 1989, Ser. No. 690,968

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840427

Int. Cl.[5] F16H *61/14*

U.S. Cl. 192—3.3 **6 Claims**



1. A control mechanism for a frictionally engaged lock-up clutch (7) of a hydrodynamic torque converter (3) having an axially displaceable coupling element (8) being pressurizable on opposed faces thereof via first and second actuation spaces (10, 11) for engaging and disengaging said lock-up clutch (7), said first and second actuation spaces (10, 11) being connectable to a main pressure line (13) via respective first and second regulating valves (15, 16), said control mechanism including a lubricant line (28) attached to a radiator (39) and a lubrication system (40) of a transmission (6) mounted on an output side of said torque converter (3), and said lubricant line (28) being connected with a controlled return (26*d*) of pressurized fluid from said second actuation space,

wherein a supply leg (34) of said main pressure line (13) discharges into said lubricant line (28) before said radiator (39); and

a pressure-regulating valve (35) is situated between the supply leg (34) of said main pressure line (13) and said main pressure line's connection point with said lubricant line (28), and a valve position of said pressure-regulating valve (35) is controlled by pressure fluid in said lubricant line (28).

5,305,863

CLUTCH ASSEMBLY FOR AN AUTOMATIC MECHANICAL TRANSMISSION

Douglas C. Gooch, Richland; Lloyd A. Waling; John S. Steurer, both of Kalamazoo, and Paul R. Peterson, Scotts, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 30, 1992, Ser. No. 998,901

Int. Cl.[5] F16D *13/74, 25/063*

U.S. Cl. 192—70.12 **18 Claims**

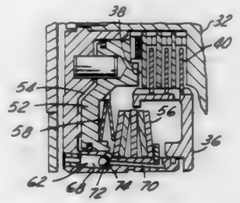
1. A clutch assembly for use in an automatic mechanical transmission comprising:

a drive and driven member which are rotatable about a common axis;

a clutch element interposed between the drive and driven members for connecting and disconnecting said members to interrupt the transmission of power therebetween in response to a hydraulic signal;

a first internal lubrication passageway formed in the drive member for feeding lubricant to the clutch element, said lubrication passageway having a section which is radially spaced from said axis and is provided with a valve seat; and

a rotational speed sensitive first valve oriented within the first internal lubrication passageway and intermittently cooperating with the valve seat, said first valve being biased against the valve seat by the lubricant pressure, blocking the flow of lubricant to the clutch element when the drive member rotates at speeds below a first rotational speed, said first valve being centrifugally biased off the valve seat when the drive member is rotated at speeds



above said first rotational speed thereby opening the lubricant passageway and supplying lubricant to the clutch element.

17. A method for reducing disengaged clutch drag in an automatic mechanical transmission, comprising:

providing a first internal passageway in a rotary drive member of a clutch assembly, said internal passageway providing a lubricant to a clutch element, with a section of said lubrication passageway which is radially spaced from the axis of rotation defining a conical valve seat;

providing a first ball valve sized to cooperate with the valve seat within the internal passageway;

pumping lubricant through the internal passageway in a direction to bias the ball against the valve seat where upon the flow of lubricant to the clutch element is restricted; and

automatically centrifugally biasing the ball off the seat in response to rotation of the drive member above a selected rotational speed thereby providing lubricant to the clutch element.

5,305,864

MOTOR VEHICLE CLUTCH DISC

Fritz Strohm, Kürten-Eichhof, Fed. Rep. of Germany, assignor to Textar Kupplungs- und Industriebeläge GmbH, Leverkusen, Fed. Rep. of Germany

Filed Jan. 13, 1993, Ser. No. 4,089

Claims priority, application European Pat. Off., Jan. 17, 1992, 921007290.0

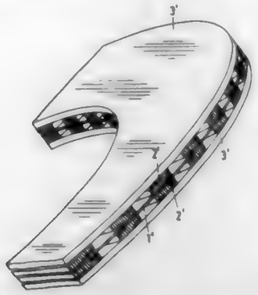
Int. Cl.[5] F16D *13/60*

U.S. Cl. 192—107 C **10 Claims**

1. In a clutch disc for a motor vehicle clutch; the clutch disc having a clutch disc plane and including a metal carrier sheet; an elastomer intermediate layer facing the metal carrier layer; a clutch lining facing the elastomer intermediate layer; and a composite binder bonding first surface regions of the elastomer intermediate layer to the metal carrier sheet and to the clutch lining by chemical sorption; areas of the first surface regions being less than areas of the metal carrier sheet and the clutch lining facing the elastomer intermediate layer; the elastomer intermediate layer being essentially composed of a material selected from the group consisting of hydrated nitrile rubber

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and a fluoroelastomer; the elastomer intermediate layer having an elasticity of non-linear spring characteristics and being effective in a direction perpendicular to the clutch disc plane; the improvement wherein said elastomer intermediate layer has unbonded, second surface regions facing said metal carrier sheet and said clutch lining; said elastomer intermediate layer being of such a configuration that in an absence of a compressive force applied to the clutch disc in a direction perpendicular to said clutch disc plane, said second surface regions are in their entirety spaced from said metal carrier sheet and upon applying a compressive force to the clutch disc in a direction perpendicular to said clutch disc plane, at least parts of said second surface regions assume a contacting relationship with at least one of said metal carrier sheet and said clutch lining.

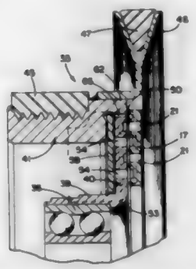


5,305,865

ROTOR FOR ELECTROMAGNETIC COUPLING

Paul A. Larson, Belvidere, Ill.; James A. Pardee, and Robert L. Stibbe, both of Janesville, Wis., assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 5, 1993, Ser. No. 26,995
Int. Cl.[5] F16D *27/10, 27/14*
U.S. Cl. 192—107 R **6 Claims**



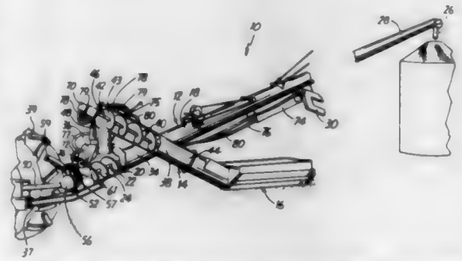
1. A rotor for an electromagnetic coupling, said rotor comprising first and second annular members made of material having low magnetic reluctance, said first annular member having an annular pocket defined by an axially facing wall having an outer margin and by a radially inwardly facing wall, said radially inwardly facing wall being defined by the inner surface of an annular flange projecting axially from the outer margin of said axially facing wall and having an axially facing end, said second annular member comprising a hub located within said first annular member in radially spaced relation therewith and further comprising a disc formed integrally with and projecting radially outwardly from said hub, said disc having an outer periphery, having an axially facing working face and having an oppositely facing non-working face, at least one circumferentially extending row of circumferentially spaced slots formed through said disc to define magnetic poles on the working face of the disc, there being intervening bridges between said slots, said disc being located in said pocket with the non-working face of the disc spaced axially from the axially facing wall of the pocket and with the outer periphery of the disc spaced inwardly from the radially inwardly facing wall of said pocket by a narrow annular air gap, said air gap causing an additional magnetic pole to be defined on the end of said flange, a ring made of material having high magnetic reluctance and sandwiched between the non-working face of said disc and the axially facing wall of said pocket, means securing said ring rigidly to the non-working face of said disc and to at least one of said walls of said pocket, said ring extending radially and circumferentially along substantially all of the non-working face of said disc and serving to structurally reinforce the disc and particularly the bridges between said slots.

5,305,866

HYDRAULIC DRIVE FOR A FEED AUGER

Ronald S. Stewart, Rock Rapids, and Ronald F. Bechler, George, both of Iowa, assignors to Sudenga Industries, Inc., George, Iowa

Filed Dec. 4, 1992, Ser. No. 986,120
Int. Cl.[5] B65G *47/18*
U.S. Cl. 198—311 **14 Claims**



1. In an auger arrangement having a main auger, a feed auger operatively arranged with respect to the main auger such that particulate materials can be transported through the feed auger and the main auger, a support structure for supporting the main auger and the feed auger, and a mechanical drive means for driving the main auger from power derived from an external power source, the improvement comprising:

a hydraulic assembly mounted on the auger arrangement, the hydraulic assembly including a hydraulic motor responsive to pressurized hydraulic fluid for driving the feed auger, and a hydraulic pump for supplying pressurized hydraulic fluid to the hydraulic motor; and

connecting means operatively connecting the hydraulic pump to the mechanical drive means to drive the feed auger.

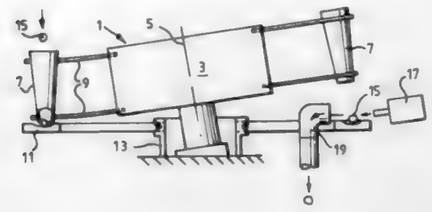
5,305,867

METHOD AND APPARATUS FOR FEEDING ARTICLES

Timothy H. Leaton, Ascot, Great Britain, assignor to Gersan Establishment, Liechtenstein

PCT No. PCT/GB91/01144, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO92/00907, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 11, 1991, Ser. No. 969,266
Claims priority, application United Kingdom, Jul. 11, 1990, 9015245
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—377 **22 Claims**

1. A feeding apparatus comprising an upper movable carrier comprising a plurality of guides which in operation are transported at a predetermined speed and with a predetermined spacing along a predetermined path, said guides each having an open bottom and each being adapted to receive a respective article individually fed thereto; wherein over a first portion of its path each guide lies immediately above a lower carrier which closes the bottom of and moves in synchronism with the said guide, so as to allow one of the said articles to become located within the said guide by the said lower carrier for a sufficient period of time to allow the said article to settle; and



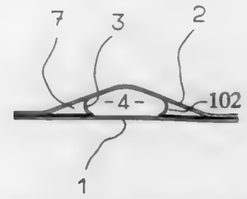
wherein over a subsequent portion of the path, the guide and the lower carrier are separated from one another, thereby exposing the article on the lower carrier with accurately defined position and timing.

5,305,868

COVER BELT CONVEYOR

Hartmut Grathoff, Wendelstein, Fed. Rep. of Germany, assignor to Man Gutehoffnungshütte, Oberhausen, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,296
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138226
Int. Cl.[5] B65G *15/14*
U.S. Cl. 198—626.4 **10 Claims**



1. A cover belt conveyor, particularly for inclined or vertical delivery of bulk materials and/or piece goods, comprising:

a basic belt;

a cover belt;

rollers for pressing said cover belt onto said basic belt, said rollers being mounted elastically on support structures for changing a delivery cross section of said basic belt and pressed cover belt;

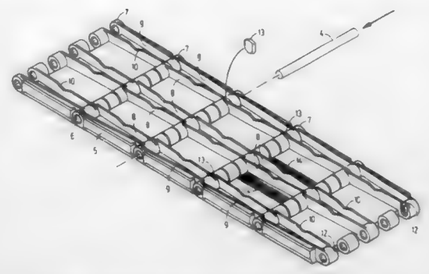
compressible reinforcements made in one piece provided with at least one of said basic belt and said cover belt to form a reinforced belt, said reinforcements being provided at edge areas with respect to a longitudinal direction of said reinforced belt to change said delivery cross section, said reinforcements including sides directed against material being delivered, said sides being bulged in an outward direction of said reinforced belt and said sides enclosing an acute angle with said reinforced belt in a direction of the center of the reinforced belt, said reinforced belt having an edge area forming an inner acute angle.

5,305,869

CHAIN LINK CONVEYOR

Poul E. Damkjaer, Vejle, Denmark, assignor to Maskinfabrikken Baelitix A/A, Vejle, Denmark

Filed Feb. 24, 1993, Ser. No. 21,663
Claims priority, application Denmark, Feb. 24, 1992, 232/92
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—689.1 **20 Claims**



1. A chain link conveyor comprising:

a plurality of identical plastic chain links, each of said chain links including an upper surface adapted to support items to be conveyed;

a plurality of eye-shaped hinge parts provided at opposite ends of each of the chain links and lying beneath the upper surface, said hinge parts being adapted to be coupled together with corresponding hinge parts in adjacent chain links by a pivot, said hinge parts on the opposite sides of each chain link being staggered with respect to each other;

ribs provided on an underside of each chain link for connecting the hinge parts lying opposite each other, said ribs extending substantially in a conveying direction of the chain link conveyor; and

at least one transversely extending opening provided in at least one of said ribs for enabling an application of a uniform vacuum over an entire width of each of the chain links of the conveyor.

5,305,870

METHOD OF AND APPARATUS FOR TRANSPORTING LOOSELY BOUND BOOKS

Manfred Riesmeier, Rahden, Fed. Rep. of Germany, assignor to Kolbus GmbH & Co. KG, Rahden, Fed. Rep. of Germany

Filed Feb. 22, 1993, Ser. No. 20,626
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1992, 4241386
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—692 **9 Claims**

1. In a conveyor for use with a casing-in machine of a book manufacturing operation, the conveyor having multiple saddle plates, the saddle plates intercepting books comprised of plural loose sheets, each sheet having an array of holes along one edge and the holes of all of the sheets being generally aligned, the loose sheets being retained in an assembled condition by a single mechanical binding member having plural curved teeth which extend through the aligned holes in the sheets, the improvement comprising:

positioning means on the leading edge of each of said saddle plates, said positioning means engaging a book in regions

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located between the teeth of the binding member whereby the possibility of relative movement between the saddle

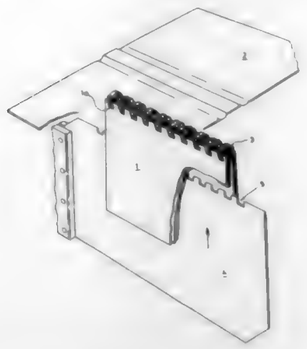


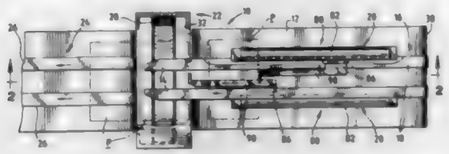
plate and book subsequent to such engagement is minimized.

5,305,871

PACKAGE-CONVEYING APPARATUS COMPRISING ENDLESS MEMBER CONVEYOR AND PUSHERS

Philip G. Scherer, Fort Lauderdale, Fla., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed May 5, 1993, Ser. No. 57,149
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—737 **10 Claims**



1. A package-conveying apparatus useful with a wrapping machine of a type capable of wrapping a package with stretch film from a roll moving in an annular path, the package-conveying apparatus comprising

(a) an elongate table having a back end and a front end, at least one elongate ledge mounted to the elongate table so as to extend frontwardly from the front end, the at least one elongate ledge having a front end spaced frontwardly from the front end of the table,

(b) a package conveyor mounted operatively to the elongate table and including at least one endless member adapted to receive a package on the at least one endless member, near the back end of the elongate table, the package conveyor including means for driving the at least one endless member so as to convey a package thereon frontwardly toward the front end of the elongate table,

(c) a pair of package pushers mounted operatively to the elongate table in side-to-side relation to each other, each package pusher including a longitudinally extending leg with a front end and means for driving the leg frontwardly from a retracted position wherein the front end of the leg is spaced backwardly from the output end of the elongate table, through an intermediate position wherein the front end of the leg is near the output end of the elongate table, to an extended position wherein the front end of the leg is near the front end of the at least one elongate ledge and for driving the leg backwardly from the extended position, through the intermediate position, to the retracted position,

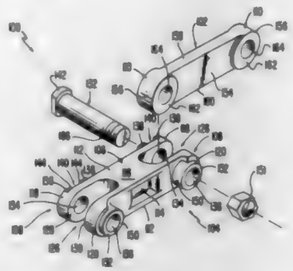
the package pushers being operable in such manner that the leg of one such pusher is driven frontwardly as the leg of the other pusher is driven backwardly and that the leg of whichever of the package pushers is driven frontwardly at any given time is capable of pushing a package from the at least one endless member onto the at least one elongate ledge as the leg being driven frontwardly is driven from the retracted position to the intermediate position and of pushing a package from the at least one elongate ledge as the leg being driven frontwardly is driven from the intermediate position to the extended position.

5,305,872

CHAIN

Richard W. Hutton, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Jan. 30, 1992, Ser. No. 827,217
Int. Cl.[5] B65G *17/38*
U.S. Cl. 198—853 **20 Claims**



1. A conveyor chain comprising:

a plurality of male links each having a pair of ends, each of said ends defining an aperture therein;

a plurality of female links each having a central segment and a pair of ends, each of said ends defining a gap to receive an end of a male link and at least one aperture, said central segment having a generally I-shaped cross section including a pair of relatively broad wear flange portions adapted to slide along wear rails during use and for increasing the wear life of the chain by providing a broad contact surface between said female links and the wear rail upon which said female links slide; and

a plurality of pivot pins, one of said pivot pins being inserted into said apertures of each said male and female link to be pivotally coupled together.

5,305,873

PACKAGE FOR RECORDING MEDIA

Michael Joyce, Kinnelon, N.J., assignor to Joyce Molding, Rockaway, N.J.

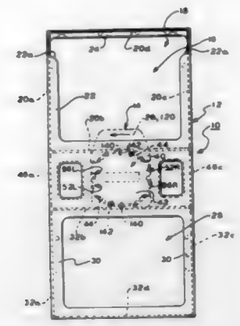
Filed Jan. 12, 1993, Ser. No. 3,121
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—1.5 **18 Claims**

1. A reusable, anti-theft security package for selectively (i) retaining an object in a housing and for (ii) releasing the object for removal from the housing; the housing having an object-receiving compartment and an object-conformal access opening communicating with the compartment; the package being of the type in which a member is movable between a first position, whereat it overlies the access opening to block removal of the object therefrom, and a second position, whereat it does not overlie the access opening to permit removal of the object therefrom; wherein the improvement comprises:

the member being rotatably mounted on the housing for rotation between the first and second positions, generally parallel to the plane of the housing about an axis which is both generally perpendicular to the plane of the housing and remote from the access opening a portion of the member overlying the access opening in the first position and not overlying the access opening in the second position;

a first projection on the member which rotates therewith; and

a second projection on the housing, the second projection normally lying on a rotational path of and engaging the first projection when the member is in the first position to



prevent rotation of both the first projection and the member;

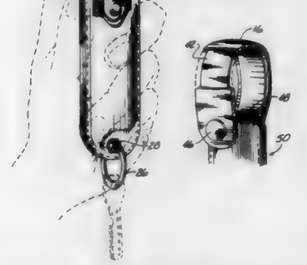
a manipulable key being selectively engageable with the second projection for moving the second projection out of the rotational path of the first projection to permit rotation of the member from the first to the second position.

5,305,874

SELF-PROTECTION CHEMICAL DISPENSER HOLDER

John H. McLaughlin, P.O. Box 420, Glidden, Iowa 51443

Filed Apr. 7, 1993, Ser. No. 43,562
Int. Cl.[5] A45C *11/32*
U.S. Cl. 206—37 **10 Claims**



1. A carrying case for use in combination with a self-protection chemical dispenser having a cylindrical body equipped with a spray nozzle and an actuator button wherein the carrying case comprises:

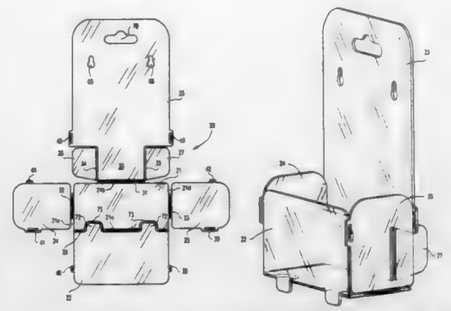
a front section and a rear section, said front section being fastened to said rear section along at least a portion of its periphery, wherein, whereby a generally cylindrical tubular housing is formed capable of holding the chemical dispenser therein, said tubular housing having a first end and a second end, said second end being closed, said first end having an enlarged retention means forming an enlarged generally arcuate loop for retaining the dispenser within said housing, wherein, the top of the actuator button is spaced a substantial distance from the apex of said arcuate loop to accommodate the insertion of a users finger intermediate the said arcuate loop and the top of said actuator button, and protective means associated with said arcuate loop and associated with said arcuate loop and extending over the top and along both sides of said actuator button for preventing the inadvertent activation of the spray nozzle of the chemical dispenser.

5,305,875

FOLD-UP DISPLAY CONTAINER

Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corp., Indianapolis, Ind.

Continuation of Ser. No. 834,000, Feb. 11, 1992, abandoned.
This application May 13, 1993, Ser. No. 61,417
Int. Cl.[5] B65D *5/52, 6/26*
U.S. Cl. 206—45.25 **5 Claims**



1. A fold-up display container for printed material and discrete articles which is initially in flat form and folded into a receiving configuration, said fold-up display container comprising:

a main panel designed and arranged into three hinged sections including a front section, a rear section and disposed therebetween a base section hinged along a first edge to said front section and hinged along a second edge to said rear section;

a pair of oppositely disposed side panels hinged to opposite sides of said main panel and designed to attach with said main panel;

said rear section including a main body portion with opposite side edges and a reduced width portion with opposite side edges and a lower edge, said rear section being joined to said base section along said lower edge; and

a pair of oppositely disposed support legs, each leg of said pair being integrally connected to a corresponding different one of the side edges of said reduced width portion by a corresponding flexible hinge.

5,305,876

ORTHODONTIC BAND STERILIZATION CASSETTE

Susan K. Brigham, 7324 E. Ironwood Ct., Scottsdale, Ariz. 85258

Continuation-in-part of Ser. No. 33,290, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 811,657, Dec. 23, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 121,698
Int. Cl.[5] A61L *2/00;* **B65D** *81/00*
U.S. Cl. 206—63.5 **20 Claims**

1. A sterilization cassette comprising:

two generally parallel sidewalls and two generally parallel endwalls generally perpendicular to said sidewalls, the sidewalls and endwalls attached to a base also generally perpendicular to said sidewalls, said sidewalls, endwalls and base defining a generally rectangular container having an upper opening adjacent an upper edge of the sidewalls and endwalls;

a plurality of dividing wall members supported in the container, each of said plurality of wall members having end, top and bottom edges, thereby defining a plurality of discrete compartments within said generally rectangular container;

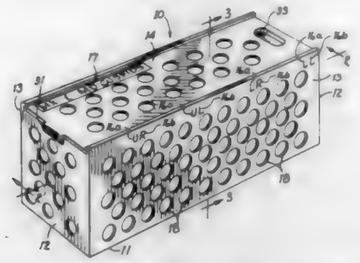
VOL 1161 ISS 4 APR 26 1994 UMI

a generally flat lid portion operably associated with said upper edge of said side or end walls to releaseably close said upper opening;

a first indicia disposed on each of said compartments identifying a jaw of a patient's mouth;

a second indicia disposed on each of said compartments identifying a quadrant of a patient's mouth;

a third indicia disposed on said container or lid identifying each of said discrete compartments with an associated orthodontic band for a tooth,



a plurality of openings in the container or lid for admitting a sterilization liquid to each compartment for sterilizing orthodontic bands placed therein, and

each of said edges closely abutting its associated adjacent inner surface of said base, wall and lid, respectively and being sufficiently flat to prevent passage therebetween of an orthodontic band identified for one compartment to an adjacent compartment.

5,305,877

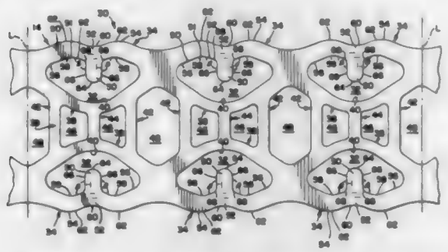
CARRIER STOCK WITH OUTER BAND SEGMENTS HAVING CONCAVE EDGE PORTIONS

Robert Olsen, Medinah, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 21, 1993, Ser. No. 50,848

Int. Cl.[5] B65D *75/62*

U.S. Cl. 206—150 **10 Claims**



1. Carrier stock for machine application to substantially identical cans of a type having an end with a chime of a given diameter, a cylindrical side wall of a larger diameter, and a generally frustoconical wall between the cylindrical side wall and the chime, said stock being formed from a single sheet of resilient polymeric material and having integrally joined band segments defining elongated can-receiving apertures in longitudinal rows and in transverse ranks, said band segments including generally longitudinal inner band segments and generally longitudinally outer band segments joined at extremity regions, each outer band segment having a central region and having an inner edge with two lateral portions adjacent the central region where such outer segment partly bounds one of the can-receiving apertures, the lateral portions being concave when said stock is in a flat, unstressed condition, the lateral portions defining outer and inner regions, the outer regions extending from the extremity regions and directed laterally outwardly and toward the central region, the inner regions extending from the central region and directed laterally outwardly and toward the extremity regions.

5,305,878

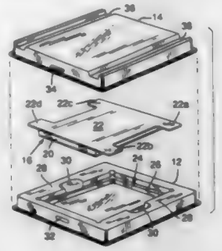
PACKAGED OPTICAL PELLICLE

Yung-Tsai Yen, 196 Tuscaloosa Ave., Atherton, Calif. 94025

Filed Apr. 1, 1993, Ser. No. 42,089

Int. Cl.[5] B65D *85/38*

U.S. Cl. 206—316.1 **8 Claims**



1. A packaged optical pellicle comprising:

a pellicle membrane having an inwardly facing side and an outwardly facing side;

a pellicle frame having a pellicle membrane side and a pellicle cover side, the inwardly facing side of the pellicle membrane being mounted to the pellicle membrane side of the pellicle frame;

a protective cover removably mounted to the cover side of the pellicle frame, the protective cover including opposing portions which extend outwardly beyond the outer periphery of the pellicle frame;

a pellicle package including a base and a top, the base including a centrally disposed recessed portion adapted to receive the pellicle frame with the pellicle membrane mounted thereon, and a peripheral shoulder portion for supporting the opposing portions of the protective cover, the top being adapted to fit onto the base, with engagement portions for engaging the opposing portions of the protective cover and biasing those portions toward the peripheral shoulder of the base.

5,305,879

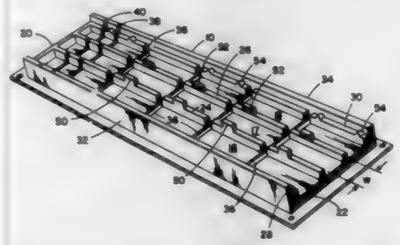
PACKAGE FOR CARD EDGE CONNECTORS

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Dec. 3, 1991, Ser. No. 801,987

Int. Cl.[5] B65D *81/00*

U.S. Cl. 206—328 **16 Claims**



1. A packaging container for elongate electrical connectors, the container comprising:

a base having a plurality of parallel connector-receiving channels, each channel has a width suitably sized and shaped to receive a row of connectors in an adjacent side-by-side orientation and a length suitably sized and shaped to receive a column of rows of connectors in an adjacent end-by-end orientation, a spacing section between each connector-receiving channel and at an exterior of exterior connector channels having a height less than a height of electrical connectors when located in the connector-receiving channels, the spacing sections being suitably sized and spaced relative to each other to allow an unloader's thumb and fingers to be inserted at two of the spacing sections to grasp a row of the connectors with one grasping operation to remove the row of connectors from one of the channels; and

a removable cover adapted to be mounted to the base and contain the connectors with the base and cover.

5,305,880

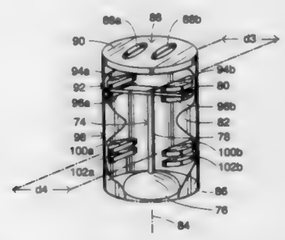
RETRACTABLE TOOL ASSEMBLY

Marilyn M. Wilk, and Peter J. Wilk, both of 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 917,596, Jul. 23, 1992. This application Aug. 11, 1992, Ser. No. 928,275

Int. Cl.[5] B65D *85/00;* **E03D** *9/00*

U.S. Cl. 206—349 **26 Claims**



1. A household implement comprising:

a tool member including an operative element and a rod attached at one end to said operative element;

a hollow housing having an opening at one end and a hand grip at an opposite end, said housing having a longitudinal axis;

mounting means for mounting said tool member to said housing for slidable motion between a retracted position inside said housing and an extended position wherein said operative element and a portion of said rod are outside of said housing; and

locking means on said housing for releasably locking said tool member in said extended position, said locking means including:

a pair of arrests extending inwardly from opposite sides of an inner surface of said housing, said arrests defining a pair of abutment surfaces disposed essentially in a common plane oriented transversely with respect to said housing, said arrests being spaced from one another in said common plane; and

a bar connected to said rod at an end thereof opposite said operative element, said bar extending orthogonally to said rod, said bar having a length greater than a distance between said abutment surfaces, said bar having a width less than said distance.

13. A household implement comprising:

a tool member including:

(i) an operative element;

(ii) an elongate rod attached at one end to said operative element; and

(iii) a bar connected to said rod at an end opposite said operative element, said bar extending substantially orthogonally with respect to said rod;

a hollow housing having an opening at one end and a hand grip at an opposite end, said housing having a longitudinal axis;

first locking means at said opposite end of said housing for cooperating with said bar, upon a rotation of said tool member from a retracted neutral position, to releasably hold said tool member in a retracted locked position to said housing; and

second locking means at said one end of said housing for cooperating with said bar, upon a rotation of said tool member from an extended neutral position, to releasably hold said tool member in an extended locked position to said housing,

at least one of said first locking means and said second locking means including a pair of arrests extending inwardly from opposite sides of an inner surface of said housing, said arrests defining a pair of abutment surfaces disposed essentially in a common plane oriented transversely with respect to said housing, said abutment surfaces being spaced from one another in said common plane, said bar having a length greater than a distance between said abutment surfaces, said bar having a width less than said distance.

22. A method for executing a household chore, comprising the steps of:

lifting up a housing by a handle provided at an upper end thereof;

extending, from an opening in a lower end of said housing, a tool member disposed inside said housing prior to said step of lifting;

rotating said tool member with respect to said housing;

upon said step of rotating, locking, to formations on opposite sides of said housing, opposite ends of a bar connected to said tool member and extending transversely relative to said housing;

manipulating said housing and said tool member via said handle to perform a task to which said tool member is adapted;

upon completion of said task, again rotating said tool member with respect to said housing, thereby unlocking said tool member from said housing;

retracting said tool member back into said housing; and

placing said housing upon a horizontal surface so that said opening is covered and said tool member is again contained inside said housing.

26. A household implement comprising:

a tool member including:

(i) an operative element;

(ii) an elongate rod attached at one end to said operative element; and

(iii) a bar connected to said rod at an end opposite said operative element, said bar extending substantially orthogonally with respect to said rod;

a hollow housing having an opening at one end and a hand grip at an opposite end, said housing having a longitudinal axis;

first locking means at said opposite end of said housing for cooperating with said bar, upon a rotation of said tool member from a retracted neutral position, to releasably hold said tool member in a retracted locked position to said housing; and

second locking means at said one end of said housing for cooperating with said bar, upon a rotation of said tool member from an extended neutral position, to releasably hold said tool member in an extended locked position to said housing

said second locking means including arresting means for preventing said bar from moving more than a predetermined distance beyond said second locking means in a direction opposite said first locking means, said arresting means including a ring extending inwardly from said inner surface, said ring having an inner diameter, said bar having a length greater than said inner diameter.

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5,305,881

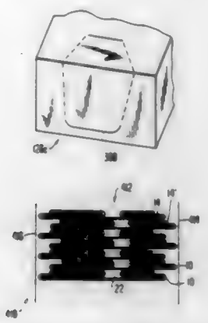
DISPENSER FOR FABRIC SOFTENER SHEETS

Lawrence W. Caldwell, Hanover, Pa.; James M. Kittle, Jr., Milwaukee, Wis.; James Stone, Grand Rapids, Mich.; Kara Sturdy, Reisterstown, Md., and Kenneth Zylka, Grafton, Wis., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 805,275, Dec. 10, 1991. This application May 8, 1992, Ser. No. 880,765

Int. Cl.[5] B65D *85/62*

U.S. Cl. 206—494 **10 Claims**



1. A carton containing therein a stack of individual, separate fabric softener sheets which are not interleaved, said stack overall forming a generally U-shape having a bight, said carton including a top panel and a front panel, said front and top panels including lines of weakness defining a reclosable access flap, one of said front or top panels including a first score line defining a hinge by which said access flap is permanently attached to said top or front panel, a panel-separating scoreline separating said front and top panels, at least a portion of said panel separating scoreline traversing said access flap whereby said portion of the panel-separating scoreline traversing said access flap is positioned to act as a second hinge for opening and reclosure of said access flap said bight facing the access aperture said carton not containing an insert supporting the stack of individual sheets, said sheets being offset prior to forming the U-shape.

5,305,882

SELF-STORING COLLAPSIBLE IMPLEMENT

Alan F. Kaplan, 101 Grove St., Chestnut Hill, Mass. 02167, and Saul H. Garlick, 35 Woodledge Rd., Needham, Mass. 02192

Continuation of Ser. No. 805,848, Dec. 10, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 20,265

Int. Cl.[5] A46B *5/02, 17/00;* **A45D** *44/18;* **B65D** *25/28*

U.S. Cl. 206—349 **15 Claims**

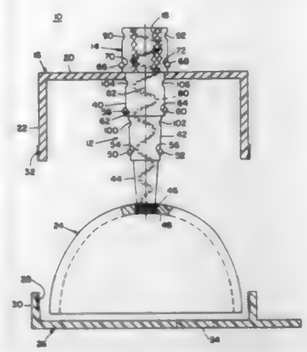
1. A self-storing collapsible implement comprising:

a collapsible handle having a collapsible and an extended position;

a grip portion at the proximal end of said handle;

a tool at the distal end of said handle; and

a cover, attached to the handle proximate the junction of said grip portion and said handle, for moving with said handle between the collapsed and extended positions; said cover including a side wall and a top wall defining a cavity for receiving and covering said tool when said



handle is in the collapsed state and exposing said tool when said handle is in the extended state.

5,305,883

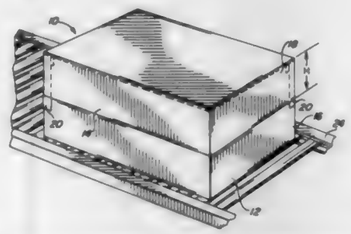
METHOD AND APPARATUS FOR STACKING CARTONS

John C. Gage, Orlando, and A. Mark Gage, Minneola, both of Fla., assignors to Bruce S. Bialor, Temple Terrace, Fla., a part interest

Filed Sep. 21, 1992, Ser. No. 947,556

Int. Cl.[5] B65D *5/42*

U.S. Cl. 206—511 **9 Claims**



1. A method for stacking cartons for transport comprising the steps of:

providing a first and a second carton, each having a bottom and a first, a second, a third, and a fourth side wall, each of said side walls having an outside surface, a top edge, a bottom edge, and a height;

stacking the second carton onto the first carton, extending the side walls of the second carton substantially coplanar to the side walls of the first carton;

providing a first and a second straddle, each having an elongated base portion having a length larger than the height of one of the side walls and a top portion having a length shorter than the height of one of said side walls;

placing the first straddle on the first side wall of the second carton such that said top portion contacts the top edge of the first side wall of the second carton and the elongated portion extends parallel to the first side wall of the second carton along the outside surface from the top edge of the first side wall past the bottom edge of the first side wall of the second carton;

placing the second straddle on the second side wall of the second carton such that said top portion contacts the top edge of the second side wall of the second carton and the elongated portion extends parallel to the second side wall of the second carton along the outside surface form the top edge of the second side wall of the second carton past the bottom edge of the second side wall of the second carton; and

placing a cover having a ceiling and four side walls, each having an inside surface, over both the outside surfaces of the side walls of the second carton and the straddles such that the inside surfaces of the side walls of the cover engage the straddles to hold the straddles against the outside surfaces of the second carton side walls,

the straddles extending over the outside surfaces of the first carton side walls to prevent the second carton from sliding off the first carton during transport.

5,305,884

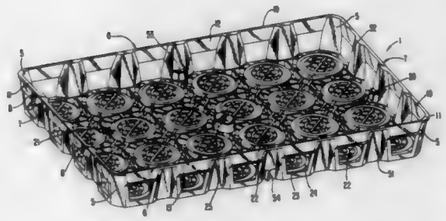
DUAL PURPOSE LOW DEPTH NESTABLE TRAY

William P. Apps, Anaheim, and Jonathan A. Kalin, Manhattan Beach, both of Calif., assignors to Rehrig Pacific Company, Inc., Los Angles, Calif.

Filed Oct. 20, 1992, Ser. No. 963,678

Int. Cl.[5] B65D *21/00*

U.S. Cl. 206—519 **33 Claims**



1. A low depth tray for cylindrical containers adapted to be nested with other trays when empty of the containers and stacked with other trays when loaded with the containers, said tray comprising:

a low depth wall structure comprising a band extending around the periphery of said tray for preventing the cylindrical containers from tipping during transport;

a floor structure comprising,

a floor top surface comprising a plurality of support areas for supporting the containers thereon, and at least one nub disposed on said floor top surface, and

a floor bottom surface comprising a plurality of upward recesses generally centered below said support areas, a plurality of spaced downward redoubts generally disposed between said support areas and adapted to be positioned between the containers in another tray therebeneath in order to block the low depth tray from free sliding when in a loaded and stacked position, and a nub support surface centered below each said nub; and

a plurality of columns along each side of said wall structure, said columns interconnecting said band and said floor structure, at least one of said columns along each side of said wall structure, including an inwardly projecting nesting ledge equal in height to said nub, said nesting ledge projecting inward from said column between said support areas, the outside of said column with said nesting ledge having a vertical rib equal in height to said nesting ledge, said plurality of columns configured to nest deeply with columns of another empty tray;

wherein said nub support surface and said vertical ribs are adapted to be supported by the nub and the nesting ledges, respectively, of another tray when the low depth tray is empty and nested with another tray therebeneath, and to support the weight of any trays nested above the low depth tray, to thereby prevent fraying of said wall structure of the low depth tray.

5,305,885

Patent Not Issued For This Number

5,305,886

DECONTAMINATION PROCESS

Randall J. Kehl, and John W. Verbicky, Jr., both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 826,692, Jan. 28, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,109

Int. Cl.[5] B03B *9/00*

U.S. Cl. 209—2 **1 Claim**

1. A method for reducing the volume of oil-contaminated particulate material of varying size which comprises contacting an oil-contaminated volume of particulate material comprising particles of varying size with a washing means consisting of steam, transferring oil contaminants from surfaces of large particles to surfaces of small particles, while screen separating the material into fractions by size whereby the oil contaminant becomes concentrated in the small particle size fraction.

5,305,887

METHOD AND APPARATUS FOR EXAMINING THE GASEOUS CONTENT OF RETURNED DRINK BOTTLES

Gunther Krieg, Im Rennich 12, 7500 Karlsruhe 41; Karl Koukolitschek, Karlsruhe, and Wilfried Maier, Sulzfeld, all of Fed. Rep. of Germany, assignors to Gunther Krieg, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 905,470

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121429

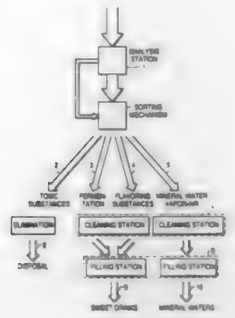
Int. Cl.[5] B07C *5/02*

U.S. Cl. 209—3.1 **30 Claims**

16. Method for examining gas phases in containers, such as drink or beverage bottles, particularly for sorting and eliminating bottles in a drink bottle filling plant, the method comprising the steps of removing a gas sample from the bottles, examining the gas sample by IR spectroscopy by passing an IR light beam through the gas sample, and directing the spectroscopically widened beam to a detector array of juxtaposed detectors,

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wherein a wavelength range of approximately 3.2 to 3.6 μm is received by the detector array, and wherein test cells are



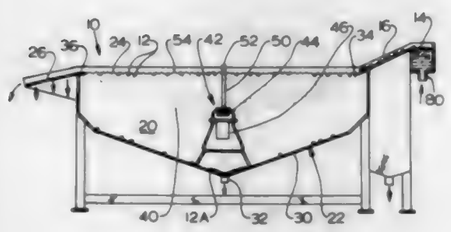
stopped in a vicinity of analysis stations for a measurement time, without impairing a continuous bottle transport.

5,305,888

FRUIT/VEGETABLE FLOATATION GRADING

Donald M. Meylor, 22316 Harkwood, El Toro, Calif. 92630, and Patrick J. Fian, 845 Paularine Ave., Apt. E320, Costa Mesa, Calif. 92626

Filed Jul. 27, 1992, Ser. No. 920,017
Int. Cl.[5] B03B 5/28; B03D 1/00
U.S. Cl. 209—164 9 Claims



1. A method for separating first and second groups of articles of fruit or vegetable, wherein almost all articles of said first group have a slightly lower density than the articles of said second group, comprising:

feeding the articles of said first and second group, wherein substantially every article of said groups has a volume of a plurality of cubic millimeters, to the surface of a pool of liquid having a specific gravity slightly less than some of said articles of said first group, and moving said articles along a path in said pool, so some of said placed articles of said first group and almost all of said placed articles of said second groups tend to sink in said liquid from a location near the surface of the liquid as said articles move along said path;

continually maintaining a cloud of gas bubbles of an average volume of less than one cubic millimeter in said body of liquid below substantially all of said path of articles in said pool, which includes bubbles that continually rise in substantially the entire surface region of said body which contains said articles, including creating new gas bubbles at a rate sufficient to float substantially all of said first articles including those having a slightly greater density than the density of said liquid in the absence of gas bubbles, but not said second articles;

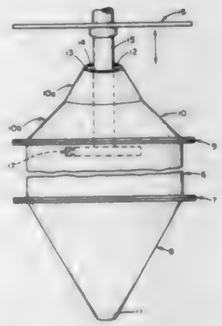
the articles of said first and second group remaining on said path and being exposed to said cloud of gas bubbles for at least 30 seconds.

5,305,889

CENTER FEED CYCLONE

John M. Ganz, 346 S. Pennsylvania, Wellston, Ohio 45692

Filed Oct. 18, 1991, Ser. No. 779,062
Int. Cl.[5] B04C 5/02, 5/06
U.S. Cl. 209—734 72 Claims



1. A cyclone apparatus comprising: a cylindrical shell having joined at one orifice a conical shell with the largest diameter of the conical shell matching the diameter of the cylindrical shell, wherein said conical shell is truncated and open, and with said cylindrical shell having joined at the other orifice another conical shell with the largest diameter of the second conical shell also matching the diameter of the cylindrical shell, wherein said conical shell is truncated and open;

a feed line entering the cyclone apparatus through the opening at the smallest diameter of one of the two conical shells, wherein said feed line is positioned coincident with the central internal axis of the cyclone apparatus, wherein there is an annular opening between said feed line and said opening of said conical shell, and wherein said feed line terminates in a means for discharging a feed to the cyclone apparatus.

5,305,890

CIRCULATORY STORAGE APPARATUS

Koichi Ishikawa, Shizuoka, Japan, assignor to Marushin Company Limited, Tokyo, Japan

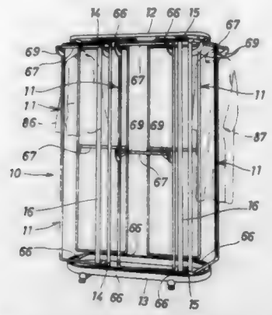
Filed Aug. 18, 1992, Ser. No. 931,922
Claims priority, application Japan, Aug. 22, 1991, 3-092330[U]; Aug. 22, 1991, 3-092331[U]; Dec. 13, 1991, 3-114089[U]; Dec. 25, 1991, 3-114451
Int. Cl.[5] A47F 5/02
U.S. Cl. 211—122 12 Claims

1. A circulatory storage apparatus, comprising:

a pair of upper and lower endless rails, said upper endless rail having a downwardly opened guide channel formed along the overall length therein while said lower endless rail has an upwardly opened guide channel formed along the overall length therein;

a plurality of rectangular circulatory frames mounted for circulatory movement along said upper and lower endless rails and each having a pair of parallel upper and lower side portions and a pair of parallel left and right side portions;

a plurality of casters mounted on said lower side portion of each of said circulatory frames and positioned in said



guide channel of said lower endless rail, each of said casters including a support roller for rolling on an inner bottom face of said guide channel of said lower endless rail and a lower guide roller or rollers for contacting with and rolling on an inner side face or faces of said guide channel of said lower endless rail;

a plurality of upper guide rollers mounted on said upper side portion of each of said circulatory frames for contacting with and rolling on an inner side face or faces of said guide channel of said upper endless rail; and

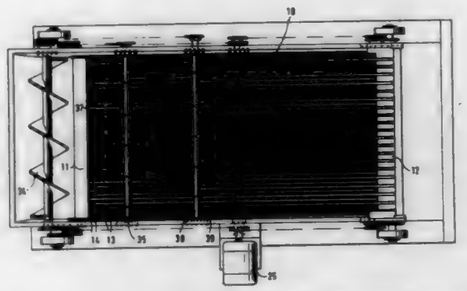
a pair of upper and lower series of links for interconnecting said circulatory frames.

5,305,891

WOOD CHIP BAR SCREEN DECK ARRANGEMENT

Joseph B. Bielagus, Tualatin, Oreg., assignor to Beloit Technologies, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 629,924, Dec. 19, 1990, abandoned. This application Jul. 1, 1991, Ser. No. 724,095
Int. Cl.[5] B07B 1/49
U.S. Cl. 209—396 7 Claims



1. A screening apparatus for separating a particular material by material thickness comprising in combination:

a screen deck defining a screening area with screening openings and extending from a receiving end to a discharge end, with delivery means for distributing material onto the screening deck at the receiving end to move toward the discharge end so that large material moves longitudinally the length of the deck from the receiving end to the discharge end, and smaller thickness material passes through the screening deck;

said deck having a plurality of individual screening bars extending from the receiving end to the discharge end and arranged in spaced relationship to define openings therebetween for passing therebetween the material of smaller thickness;

said bars extending parallel to each other, with bars being fixedly mounted with respect to each other into at least two independent grids, and with the bars of at least one of said grids including a first group of bars having top surfaces thereof which are coplanar and a second group of bars having top surfaces noncoplanar with said top surfaces of said first group of bars.

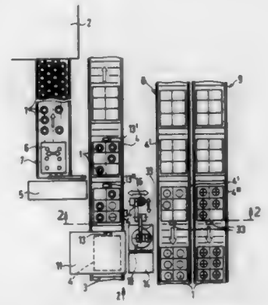
said independent grids being connected to drive means for moving the grids in an orbital motion throughout the bar length, for causing material spanning adjacent bars on the deck to be tipped to present a thickness, dimension for size discrimination.

5,305,892

PROCESS AND DEVICE FOR THE SORTING OF BOTTLES

Hermann Kronseder, Regensburger Strasse 42, 8404 Woerth-/Donau, Fed. Rep. of Germany

Filed Apr. 13, 1993, Ser. No. 45,225
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1992, 4212535
Int. Cl.[5] B07C 5/00
U.S. Cl. 209—523 23 Claims



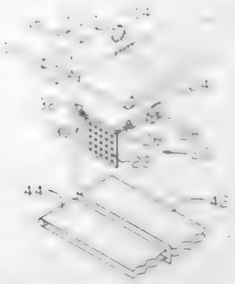
1. A method for sorting bottles of different types stored unsorted in crates, said method comprising delivering crates containing unsorted bottles to a sorting station, at least partially removing the bottles from a crate at said sorting station and identifying each of said bottles while removed therefrom according to type and transferring at least one identified type of bottle out of said crate at the sorting station to at least one other crate without intermediate storage.

12. An apparatus for sorting bottles of different types stored unsorted in crates comprising delivery means for delivering crates containing unsorted bottles to a sorting station, means for at least partially removing the bottles from a crate at said sorting station and identifying each of said bottles while removed therefrom according to type and transfer means for directly transferring at least one identified type of bottle out of said crate at the sorting station to at least one other crate at a receiving station.

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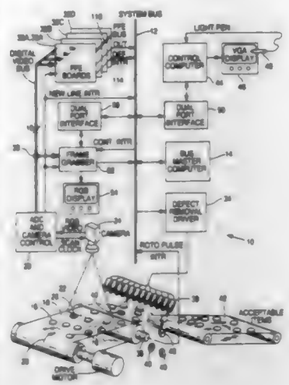
5,305,893
CONVEYOR SYSTEM INCLUDING FLOW DIVERTER MEANS
Cliff E. Hereford, Haddock, Ga., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Sep. 30, 1991, Ser. No. 767,722
Int. Cl.[5] B07C 5/00
U.S. Cl. 209—577 18 Claims



1. A conveyor system comprising:
(a) a first conveyor means spaced from and disposed vertically above a second and third conveyor means, said second and third conveyor means being transverse to said first conveyor means and positioned at a discharge end of said first conveyor means; and,
(b) a flow diverter means positioned in the spacing between said first and said second and third conveyor means, said flow diverter means including means to control flow of material from said first conveyor means to said second and third conveyor means, wherein said means to control flow from said first conveyor means to said second and third conveyor means includes detecting means in cooperating relationship with means to divert selected portions of flow of material from said first conveyor means to said second and third conveyor means, said means to divert selected portions of said flow of material comprises a plurality of performated sheets aligned in side-by-side relation parallel to the flow of said material.

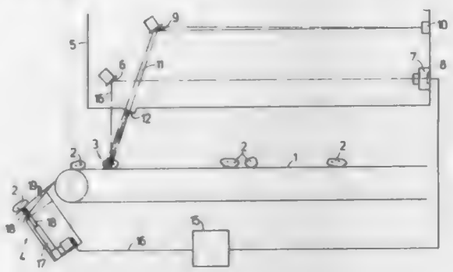
5,305,894
CENTER SHOT SORTING SYSTEM AND METHOD
Kenneth J. McGarvey, Medford, Oreg., assignor to Simco/-Ramic Corporation, Medford, Oreg.
Filed May 29, 1992, Ser. No. 890,966
Int. Cl.[5] B07C 5/342, 5/00
U.S. Cl. 209—580 2 Claims

1. An apparatus for sorting moving items, some items having defects, comprising:
a scanning camera scanning the moving items to generate item signals and defect signals;
an item signal processor processing the item signals to generate a set of item position coordinates for each item scanned;
a defect signal processor processing the defect signals to generate a set of defect position coordinates for each defect scanned, the item signal processor generating a defective item list identifying items having item position coordinates in common with one or more defect position coordinates and determining a centroid of the identified items; and
a communications link sending the defective item list to a sorting processor that drives an air ejector which directs a



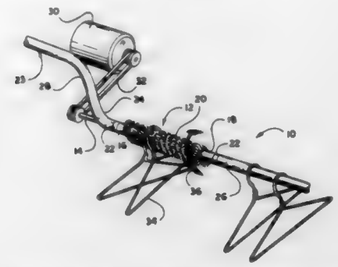
single air blast at the centroid of an item containing one or more defects to reject the item.

5,305,895
METHOD AND DEVICE FOR MEASURING A DIMENSION OF A BODY, AND USE OF SAID METHOD
Zwahlen Hermann, Wiler, Switzerland, assignor to Samro-Bystronic Maschinen AG, Switzerland
Filed Feb. 4, 1992, Ser. No. 830,740
Claims priority, application Switzerland, Feb. 13, 1991, 00445/91-8
Int. Cl.[5] B07C 5/10
U.S. Cl. 209—586 29 Claims



1. A method for measuring a dimension of a body, comprising:
observing the surface of the body in an observation plane parallel to the dimension of the body being measured;
producing a light pattern comprising a series of stripes on the body by projecting light in a stripe pattern toward the body in a projecting direction inclined from the observation plane, and forming each of the stripes to have at least a first, second and third edge, with the stripes arranged parallel, the light being so directed at the body that the first and second edges of the stripes shining on the body cross the observation plane and the first edges are obliquely inclined from the observation plane;
for the stripes then observable on the body at the observation plane, determining the positions of the intersections of the observation plane with the first and second edges of the stripes by registering the projections of the intersections on a projection line lying in the observation plane, wherein the intersections of the first and second edges are respectively represented by alternating dark to light and light to dark transitions; and
calculating the dimension of the body to be measured at each stripe using the determined positions of the intersections of the first and second edges with the observation plane.

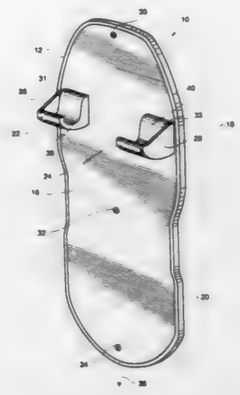
5,305,896
APPARATUS FOR SEPARATING CROSSED GARMENT HANGERS
Thomas R. Branch, 6 Sterling Ct., Cartersville, Ga. 30120
Filed Sep. 11, 1992, Ser. No. 943,862
Int. Cl.[5] B07C 5/36
U.S. Cl. 209—616 21 Claims



1. An apparatus for separating crossed garment hangers in a laundry separation assembly having a first rail portion and a second rail portion, comprising:
a barrel having a first end and a second end, the first end being connectable to the first rail portion and the second end being connectable to the second rail portion such that when connected the first rail portion, the barrel and the second rail portion form a single unified rail capable of supporting a hanger wherein the connection comprises a set of bearings at each end of the barrel operatively connectable to one end of the first rail portion and the other bearing operatively connectable to one end of the second rail portion such that the barrel can rotate on its axis;
a plurality of fingers attached to and projecting radially outward around the circumference of the barrel; and
means for mechanically rotating the barrel comprising a motor operatively connected to the barrel,
whereby when hangers are fed onto the first rail, the hangers will move toward the rotating barrel and the fingers will comb through the necks of the hangers separating any hangers which are crossed, the separated hangers traveling off the barrel to the second rail portion.

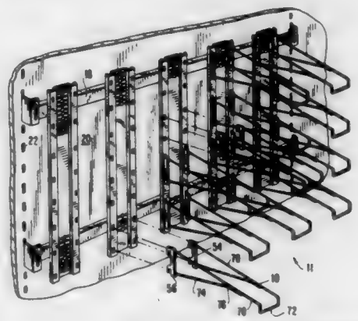
20. A method for separating a plurality of crossed conventional garment hangers in a laundry separation assembly, the assembly including a common hanger support means comprising an elongated rail having a first rail portion and a second rail portion, comprising:
providing a plurality of the hangers;
providing a barrel having
a first end and a second end, the first end being connectable to the first rail portion and the second end being connectable to the second rail portion such that when connected the first rail portion, the barrel and the second rail portion form a single unified rail capable of supporting a hanger, wherein the connection comprises a set of bearings at each end of the barrel operatively connectable to the ends of the first and second rail portions such that the barrel can rotate on axis,
a plurality of fingers attached to and projecting radially outward around the circumference of the barrel, and
means for mechanically rotating the barrel comprising a motor operatively connected to the barrel,
moving a plurality of the hangers onto the first end of the barrel; and
rotating the barrel about the barrel axis in the direction of the hanger curve from neck to tip in such a manner as to interpose a portion of the fingers between any crossed hangers, resulting in the separation of any crossed hangers.

5,305,897
WALL MOUNTED SKATEBOARD STORAGE RACK
Ronald I. Smith, R.D. #1 - Box 95, Dolgeville, N.Y. 13329
Continuation-in-part of Ser. No. 821,607, Jan. 16, 1992. This application Dec. 24, 1992, Ser. No. 996,733
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—13 10 Claims



1. A wall mounted skateboard storage rack comprising a base plate having a back planar surface and a front surface including an upper and lower portion, means for connecting said base plate to a wall, a pair of skateboard wheel support arms located at said upper portion of said base plate front surface and horizontally aligned from each other in spaced apart relation to receive and support a pair of wheels of a skateboard, and means for containing the skateboard in substantially vertical alignment with the base plate.

5,305,898
MERCHANDISE SADDLE DISPLAY SYSTEM
Milton J. Merl, 50 Wilcox Rd., Stonington, Conn. 06830
Filed Oct. 27, 1992, Ser. No. 967,167
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—87 7 Claims



1. A merchandise saddle display system for attachment to a vertical wall of a display case, which comprises
(a) a male back containing at least two vertically aligned slots, and means for attaching said male back to the vertical wall;

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(b) a saddle adapted to be cantilevered from said male back, said saddle having means for supporting at least one merchandise package; and

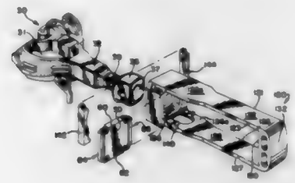
(c) engaging means mounted from said saddle for detachably securing said saddle to said male back, and including at least one engaging member having a body portion and at least one upper and at least one lower tab, each of said tabs being adapted to be received within said slots, said upper and lower tabs being spaced from said body portion, wherein said upper tab is spaced to a greater distance from said body portion than said lower tab for facilitating insertion and removal of the tabs into and from said slots, whereby said saddle is easily removable and replaceable in vertically aligned slots on the male back.

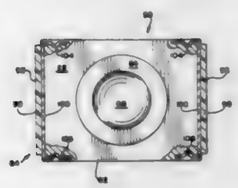
5,305,899

COUPLER FOLLOWER WITH ELASTOMERIC WEAR PAD FOR PREVENTING METAL TO METAL CONTACT BETWEEN THE FOLLOWER AND THE CENTER SILL SIDE WALLS

Horst T. Kaufhold, Aurora, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jun. 25, 1993, Ser. No. 83,048
Int. Cl.[5] B61G 7/10
U.S. Cl. 213—50 **4 Claims**





3. In a railroad car center sill formed by connecting a top wall and a pair of side walls together to define an inverted generally U-shaped structure having a longitudinal axis with a corresponding cavity, an improved follower block comprising:

a generally rectangularly shaped solid body, said body including a top wall, a bottom wall, a first side wall, a second side wall, a front face and a rear face, said front face having a raised portion containing a spherically shaped recess for receiving a coupler butt end; and

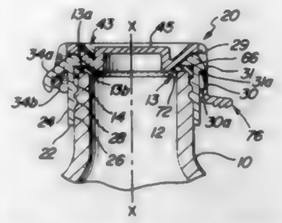
means attached and centered on each of said follower block sidewalls for preventing said follower block from directly contacting said center sill side walls and for protecting said follower block sidewalls from metal-to-metal contact, said means extending outwardly from said follower block sidewalls and across said center sill cavity in immediate approximation with said center sill side walls thereby eliminating abrasive metal-to-metal contact between said follower block and said center sill side walls and whereby wear of said center sill and follower block side walls is prevented when external forces operate upon said coupling system and cause said follower block to laterally travel within said center sill cavity.

5,305,900

POSITIVE-SEALING BOTTLE CAP

Paul R. Maguire, 4284 Sea View La., Los Angeles, Calif. 90065, and John M. Lown, 6622 Silverspur La., Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 961,479, Oct. 15, 1992. This application Mar. 10, 1993, Ser. No. 29,035
Int. Cl.[5] B65D 39/00
U.S. Cl. 215—245 **16 Claims**



1. A bottle cap device for sealing gaseous liquids stored within a bottle having a threaded neck portion, said bottle cap device comprising:

a cap body member having an annular wall with an outer surface and an inner surface, said inner surface being formed with threads, whereby said bottle cap device is adapted to be threaded to the neck portion of the bottle;

a cover lid member;

a hinge means mounted between said lid member and said cap body member, whereby said lid member may be pivoted at said hinge means from a closed position to an open position;

locking means positioned between said lid member and said cap body member, the locking means comprising at least one locking hook on the cap body member and a locking tongue on the lid member, whereby said lid member is held by said locking means in a sealed locked position; a gasket mounted within said cap body member;

sealing means formed as part of said lid member so as to engage said gasket, whereby a positive seal is established between said sealing means and said gasket; and

pressure release means for arresting the movement of the lid member after the disengagement thereof from said gasket to allow gas to escape from the bottle and relieve any pressure build up therein.

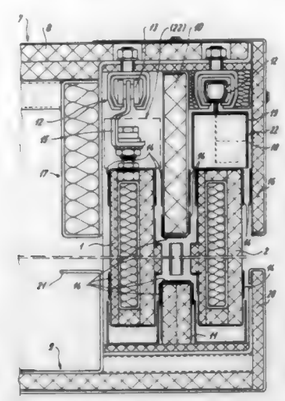
5,305,901

LARGE-SCALE CONTAINER, PREFERABLY TRANSPORTABLE AND CLOSABLE BY A FIREPROOF SLIDING DOOR

Helmut Dennig, Bad Oeynhausen, Fed. Rep. of Germany, assignor to P & D Systemtechnik GmbH, Bad Oeynhausen, Fed. Rep. of Germany

PCT No. PCT/DE92/00109, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO92/14901, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 12, 1992, Ser. No. 923,983
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1991, 4104704
Int. Cl.[5] E06B 5/16
U.S. Cl. 220—1.5 **6 Claims**

1. A large-scale container, preferably transportable and closable by a fireproof sliding door, with the sliding door including several leaves, at least one of which being provided at its upper end with rollers guided in a guide rail arranged at a ceiling of the large-scale container, characterized in that a fireproof bulkhead (**10**) is mounted to the ceiling (**8**) of the large-scale container (**7**) parallel to the leaves (**1, 2**), with the bulkhead (**10**) extending over the entire width of the sliding door and projecting in a gap defined by a spaced arrangement of the leaves (**1, 2**), wherein the bulkhead (**10**) and the leaves (**1, 2**) overlap each other and are provided along their facing sides in an overlapping area with a fireproof intumescent coating (**14**).

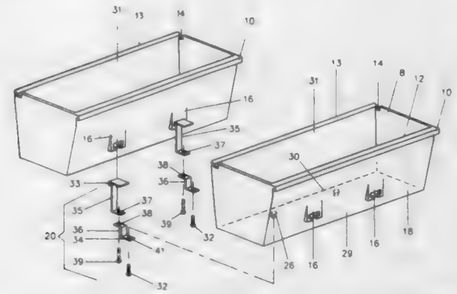


5,305,902

METHOD AND APPARATUS FOR INTERCONNECTING VESSELS

David Vozick, Elmsford, N.Y., assignor to AFP Imaging Corporation, Elmsford, N.Y.

Filed Jun. 19, 1992, Ser. No. 901,038
Int. Cl.[5] A47G 19/00
U.S. Cl. 220—23.4 **8 Claims**



1. An apparatus for interconnecting at least two contiguous vessels for containing liquids, comprising:

a lip at the first upper exterior edge of each of said at least two said vessels;

a groove at a second upper exterior edge of each said at least two vessels, said lip of one said at least two contiguous vessels mating with said groove of the other said at least two contiguous vessels;

a first bracket receptacle attached to a first wall of each said at least two said vessels;

a second bracket receptacle attached to a second wall of each of said at least two said vessels;

a tension bracket assembly;

said tension bracket assembly mating with said first and second bracket receptacles of said at least two contiguous vessels;

means for interconnecting and tightening said tension bracket assembly to said first and second bracket receptacles;

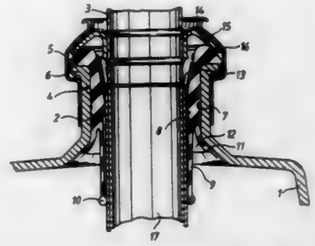
whereby upon tightening said tension bracket assembly by said interconnecting means, said at least two contiguous vessels are interconnected at said first and second walls and at the same time force is exerted upon said lip and groove to rigidly interconnect said at least two contiguous vessels at said first and second wall exterior edges to form a rigid array of said at least two contiguous vessels.

5,305,903

DEVICE IN FUEL TANKS

Bo Harde, Wieselgreusgata, Sweden, assignor to AB Volvo, Gothenborg, Sweden

PCT No. PCT/SE91/00011, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO91/11342, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 8, 1991, Ser. No. 890,587
Claims priority, application Sweden, Jan. 26, 1990, 90000277
Int. Cl.[5] B65D 25/20
U.S. Cl. 220—86.2 **10 Claims**



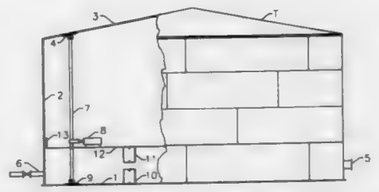
1. A sealing arrangement comprising a liquid tank having an outer body defining a cavity for containing a fluid and a mouth socket having a tubular portion defining an opening into said cavity, a filler tube extending through said mouth socket tubular portion with a substantial clearance therebetween, and a seal engaging and sealingly said tubular portion and said filler tube and accommodating substantial pivotal movement of said filler tube relative to said tubular portion while maintaining the seal therebetween, said seal having a first portion resiliently engaged with the outer end of said tubular portion for effecting a seal therewith and for retaining said seal to said liquid tank, a second portion spaced along the axis of said filler tube and sealingly engaged with said filler tube for retaining said filler tube relative to said seal, the area of said seal between said second portion and said first portion defining a clearance between said seal and said filler tube for accommodating pivotal movement of said filler tube about said second portion relative to said first seal portion, and a third portion spaced from said second portion and sealingly engaged with one of said filler tube and said mouth socket adjacent said cavity.

5,305,904

FLUID STORAGE TANK

William T. Cutts, 14814 Cedar Isle Dr., Houston, Tex. 77084

Filed Apr. 28, 1992, Ser. No. 874,689
Int. Cl.[5] B65D 88/40
U.S. Cl. 220—220 **12 Claims**



1. An improved fluid storage tank of the type having a bottom, side walls and a floating roof in which the improvement comprises support means for selectively supporting said

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floating roof at a first elevation above said bottom and a second elevation above said bottom, independently of the fluid in said tank, said support means comprising:

a plurality of first support legs attached to said bottom and extending vertically upward therefrom;

a plurality of second support legs attached to said floating roof and extending vertically therefrom; and

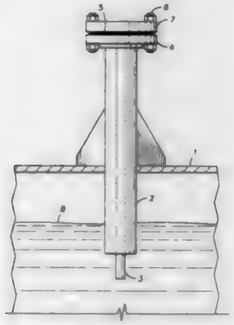
means for rotating said floating roof about a central axis thereof between a first position in which said first and second support legs are not vertically aligned, allowing said roof to be supported on said support means at said first elevation, and a second position in which corresponding ones of said first and second support legs are vertically aligned, allowing said roof to be supported on said support means at said second elevation.

5,305,905

VAPOR TIGHT FLOATING ROOF SUPPORT LEG FOR LIQUID STORAGE TANK

Andrew A. Zizinia, Houston, Tex., assignor to Amerada Hess Corporation, Galena Park, Tex.

Filed Mar. 8, 1993, Ser. No. 27,897
Int. Cl.[5] B65D *88/40*
U.S. Cl. 220—220 **5 Claims**



1. A sealed support leg for a floating roof of a liquid storage tank comprising:

a hollow sleeve firmly affixed to a floating roof of a liquid storage tank and having an upper and lower extension above and below said roof wherein said lower extension supports the roof at a predetermined distance from the bottom of the tank when the liquid in the tank reaches a certain low level;

a flange fitted closely around and firmly attached to said upper extension; and

a blind flange securely attached to said flange so as to produce a seal and prevent leakage of fluids or gases into the atmosphere.

5,305,906

DRUM WITH PLUG

Klaus Dietrich, Fichtenberg-Mittelrot, and Roland Winkler, Esslingen/Neckar, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.v., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 502,169, Mar. 29, 1990, abandoned. This application Oct. 1, 1992, Ser. No. 955,235
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910475
Int. Cl.[5] B65D *41/04*
U.S. Cl. 220—288 **1 Claim**

1. A metal container comprising:

at least one wall defining an interior and an exterior of said metal container, said wall having an opening providing access between the interior and the exterior;

a collar integrally formed from said wall and surrounding said opening, said collar and said wall being a unitary piece of metal bent both inward and outward in an "S"-shape, said collar including:

a base having an inwardly projecting portion including and an exterior facing O-ring seat;

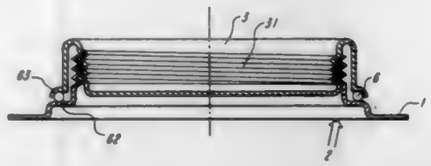
a neck having a first locking element including a plurality of threads formed in said unitary piece of metal; and

a lip;

a plug sized to fit within said opening, said plug having:

an upper plug portion having a second locking element including a second plurality of threads cooperative with said plurality of threads of said first locking element to retain said plug within said opening;

an interior facing O-ring seat alignable with said exterior facing O-ring seat of said inwardly projecting portion of said base; and



an inner plug wall exposed to the interior of said container, said inner plug wall separated from said upper plug portion by said interior facing O-ring seat;

an O-ring disposed between said plug and said collar on said exterior facing seat, said O-ring having a larger diameter than an inwardmost portion of said exterior facing O-ring seat, said O-ring compressible between said interior and exterior facing O-ring seats to isolate said first and second locking elements from the interior of said container, and said O-ring holding said inner plug wall in spaced apart relation with said collar; and

a support ring having a lower edge attached to said base and an upper edge attached to said lip for strengthening and protecting said neck.

5,305,907

BATHROOM ACCESSORIES

Jeffrey A. Richardson, Woodstock, and Robert Orlando, Round Lake Beach, both of Ill., assignors to R.A. Briggs & Company, Lake Zarich, Ill.

Division of Ser. No. 932,349, Aug. 19, 1992, which is a division of Ser. No. 641,606, Jan. 15, 1991, Pat. No. 5,165,567. This application Aug. 31, 1993, Ser. No. 115,199
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] B65D *90/06, 65/02*
U.S. Cl. 220—400 **3 Claims**



1. A bathroom accessory comprising:

a rigid container having side walls, a base at one end and a mouth at another end, the mouth including a rim;

a decorative, washable cloth bag for covering the container, the washable cloth bag having an opening and a bottom, the shape of the bottom conforming to the base of the container, the bag also having pleated sides which conform to the side walls of the container; and

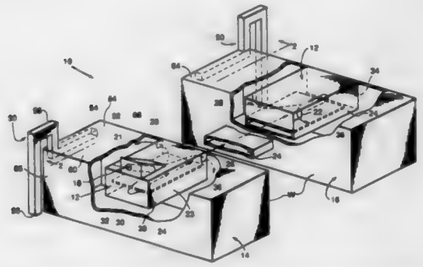
retaining means attached to the opening of the bag and positionable inwardly of the rim of the container for retaining the bag around the container and comprising an elongated, stiffly flexible element, having opposed free ends, for resting against the inner walls of the container adjacent the rim, thereby securing the bag over the rim of the container.

5,305,908

COMPARTMENTALIZED FLUID TANK

John E. Otto; Allen C. Bieber, both of Erie, and Ronald H. Till, Fairview, all of Pa., assignors to General Electric Company, Erie, Pa.

Division of Ser. No. 881,925, May 12, 1992, Pat. No. 5,186,352. This application Jan. 6, 1993, Ser. No. 1,011
Int. Cl.[5] B65D *1/24*
U.S. Cl. 220—564 **6 Claims**



1. A compartmentalized fluid tank device comprising:

first fluid containment means,

second fluid containment means, and

filling chamber means, in fluid connection with said first and second fluid containment means, for filling said first and second containment means, said filling chamber means having a filling port and fluid channel means for facilitating fluid flow between said first and second containment means when the tank is being filled, and for substantially preventing fluid flow between said first and second containment means when said tank is improperly oriented, said fluid channel means in the filling chamber being defined by end walls connected to a floor wall, and a partition panel secured above the floor wall.

5,305,909

METHOD AND DEVICE FOR PROTECTING PAINT IN A PAINT CONTAINER

James A. Merritt, 4141 Foothill Rd., Pleasanton, Calif. 94566

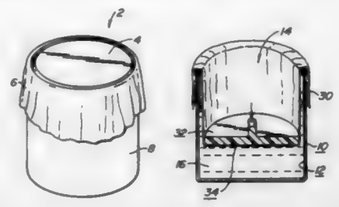
Filed Jan. 22, 1993, Ser. No. 7,460
Int. Cl.[5] B65D *88/34*
U.S. Cl. 220—579 **11 Claims**

1. A liquid container assembly comprising:

a container body having an opening through which a liquid is removed, a lid mating surface having an upwardly-opening circumferential channel surrounding the opening, an outer surface, and an inner surface defining an interior containing the liquid, the liquid having a free surface;

a lid having a downwardly extending circumferential lip configured to matingly engage the circumferential channel of the lid mating surface;

a flexible bag having a bottom region sized to cover the free surface of the liquid and a sidewall region sized to cover at least a substantial part of the inner surface above the free surface of the liquid, the lid mating surface, and at least a portion of the outer surface of the container body regardless of the liquid level within the container body, the sidewall extending substantially perpendicular to the bottom region, whereby outward splashing of any liquid from the circumferential channel when the circumferential lip is pressed into engagement with the circumferential channel is blocked by the sidewall covering the portion of the outer surface of the container.

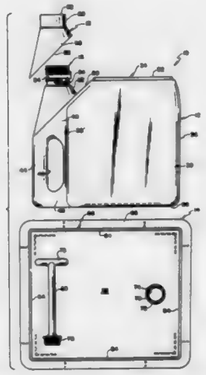


5,305,910

CONTAINER FOR ENGINE OIL

Paul J. Pollacco, Alexandria, Va., assignor to Amersave Products Corporation, Alexandria, Va.

Filed Nov. 17, 1992, Ser. No. 977,759
Int. Cl.[5] B65D *25/28*
U.S. Cl. 220—771 **2 Claims**



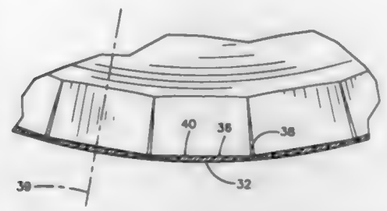
1. A jug, having:

a bottom wall, a set of upstanding sidewalls and a top wall, providing a jug body, and a neck which projects outwardly from the body, this neck terminating in a mouth through which contents may be poured from the jug, and a closure adapted to removably close that mouth, said neck having an upwardly-tapering generally conical lower portion adjoining a generally cylindrical upper portion; and

said jug neck is offset to one side of said jug body over a handle portion that is internally communicated with but thinner than said jug body; there being means defining a generally vertically elongated handle slot provided through the thickness of said handle portion of said jug under said jug neck.

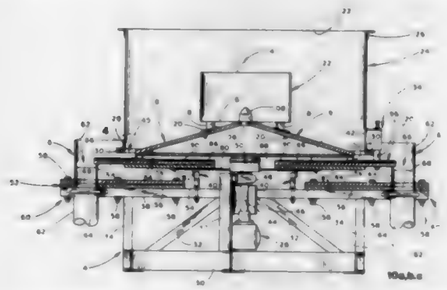
VOL 1161 ISS 4 AP 26 1994 UMI

5,305,911
FACETED CONTAINER
Thomas J. Aylward, Sandusky, Ohio, assignor to Sandusky Plastics, Inc., Sandusky, Ohio
Filed Oct. 16, 1992, Ser. No. 961,492
Int. Cl.[5] B65D *21/00*
U.S. Cl. 220—675 2 Claims



1. An injection molded container having a bottom panel, a side wall extending from said bottom panel, and lid receiving lip structure extending about the projecting wall end defining an end opening opposite the bottom panel, said side wall extending about a central axis through the bottom panel and end opening and comprising:
a continuous outer wall face intersecting a plane extending normal to said axis along a substantially circularly curved line; an inner wall surface defined by a series of facets, said inner wall face intersecting said plane along a line having a substantially polygonal shape;
said polygonal shape composed of straight line segments corresponding to respective ones of said facets with each straight line segment defining the chord of a second circular line within said first circular line;
said side wall defining a series of spaced load supporting ribs respectively defined between a respective facet and the outer face, each rib having a maximal thickness radially outwardly from the midpoint the respective straight line segment, a series of thin walled segments having a minimal thickness along a radial line extending between adjacent ends of adjacent straight line segments;
the maximal thickness rib having sufficient column strength to enable mechanical capping of the container.

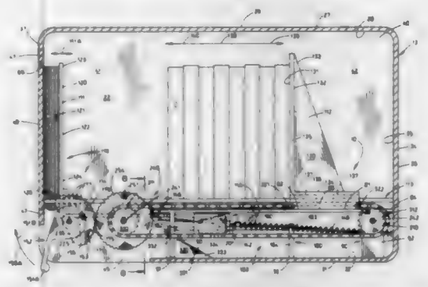
5,305,912
GRANULAR MATERIAL FLOW DIVIDER
Robert E. Johnston, 630 8th St., SE., P.O. Box 495, Altoona, Iowa 50009
Filed Nov. 12, 1992, Ser. No. 975,066
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—1 14 Claims



1. Apparatus for distributing granular material, comprising:
a base,
a material divider secured to said base,
said divider being provided with a plurality of equally spaced holes disposed in a circular pattern,
an inverted cone defining an evenly sloped surface from an elevated apex to a lower circular bottom edge,
a peripheral flange on said bottom edge,
said sloped surface having an angle of inclination matching the angle of repose of material to be distributed,
said cone adapted to receive a flow of material onto said apex for flow by gravity down said sloped surface to establish its angle of repose with a toe point at said flange,
means for mounting said cone to said base so that said flange is in spaced above relationship to said holes, and
means for rotating said cone to create only that amount of centrifugal force necessary to overcome the angle of repose at said toe point for initiating movement of material thereat in an even flow over the edge of said flange into said holes.

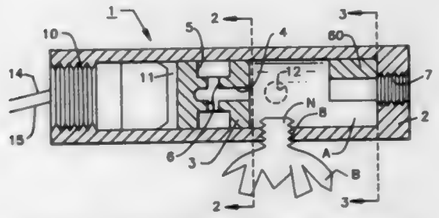
11. A method of distributing granular material, comprising the steps of:
providing a rotatable support surface in the form of an inverted cone on which the angle of slope from the apex of the cone to the base thereof is matched to the angle of repose of the particular material to be processed,
delivering material for accumulation at its angle or repose on said support surface between said apex and said base, providing a plurality of circumferentially arranged receiving points below said base, and
rotating said material at a speed to create only that amount of concentrifugal impulse necessary to overcome the angle of repose at said base to initiate movement of said material from said base to said receiving points as the angle of repose continually moves to correct itself.

5,305,913
APPARATUS FOR DISPENSING ARTICLES
Michael W. Shade, 7801 Dock Rd., #7, Egg Harbor, Wis. 54209
Continuation-in-part of Ser. No. 901,767, Jun. 19, 1992, Pat. No. 5,199,599. This application Apr. 5, 1993, Ser. No. 43,199
Int. Cl.[5] B65H *1/08*
U.S. Cl. 221—226 12 Claims



1. A dispensing apparatus for vending articles comprising:
a platform for supporting the articles to be vended;
a rearward support assembly slidably mounted in spaced relation relative to the platform and operable to urge the articles in a predetermined direction along the platform;
a carriage assembly movably borne by the platform;
a metering assembly pivotally borne by the carriage assembly and operable for movement from a first position, wherein the metering assembly substantially inhibits movement of the articles along the platform, to a second position wherein the metering assembly permits the articles to advance along the platform;
an actuator disposed in force transmitting relation relative to the platform;
a movement limiting member disposed in movement impeding relation relative to the metering assembly; and
a drive assembly disposed in force receiving relation relative to the actuator and in driving relation relative to the rearward support assembly and metering assembly respectively, the drive assembly simultaneously urging the rearward support assembly along the platform, and the metering assembly from the first to the second positions, thereby vending a single article.

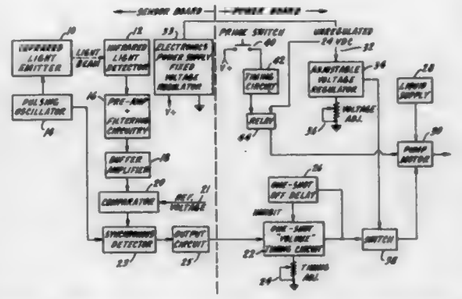
5,305,914
PRESSURIZED GAS BOTTLE DISCHARGE DEVICE
Edward S. Hoo, Stanhope, and Robert J. Okken, Wayne, both of N.J., assignors to Cartridge Actuated Devices, Inc., Fairfield, N.J.
Filed Mar. 23, 1993, Ser. No. 35,935
Int. Cl.[5] B67B *7/24*
U.S. Cl. 222—5 3 Claims



1. Apparatus for discharging a gas bottle, comprising:
(a) a tubular body having a longitudinal axis, a proximal end and a distal end wall and provided with a transversely facing orifice for receiving the neck of a gas bottle and for disposing the end of the neck within the confines of said tubular body;
(b) a ram slidably disposed inside said tubular body and having a cutting end facing the distal end wall of said tubular body and a pusher end facing the proximal end of said tubular body and an intermediate portion forming a circumferential groove between said ram ends, said ram pusher and cutter being slidable from a first position with said cutting end on the proximal side of said transversely facing orifice to a second position with said circumferential groove overlying said transversely facing orifice;
(c) a pyrotechnic device secured within said proximal end of said tubular body and for driving when fired said ram from said first to said second position;
(d) means for stopping the movement of said ram disposed radially of the longitudinal axis of said tubular body and on the distal side of the orifice and extending inwardly from the distal end wall of said tubular body; and
(e) means for receiving the end of the neck of the gas bottle cut from the bottle as said ram is driven from said first to said second position, said receiving means being disposed radially of the longitudinal axis of said tubular body and on the distal side of the orifice and extending inwardly from the distal end of said tubular body 180 degrees opposite to the position of said ram stopping means.

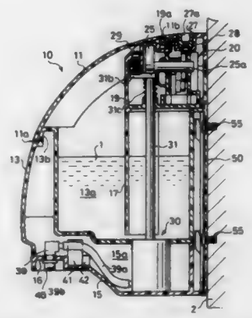
5,305,915
LIQUID DISPENSING PUMP WITH SPLASH MINIMIZING ADJUSTMENT AND VOLUME DISPENSING ADJUSTMENT
Richard A. Kamysz, Roselle, and Nhon T. Vuong, Lombard, both of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.
Filed Sep. 18, 1992, Ser. No. 947,420
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—63 10 Claims

1. A sensor-operated dispenser for liquids having a viscosity equal to or greater than water including a sensor for detecting the presence of an object upon which such liquid will be dispensed, a source of such liquid and pump means connected thereto for dispensing liquid from said source, circuit means connected to said sensor and responsive to the detection of the presence of an object thereby for supplying operating power to said pump means, said circuit means including a voltage regulator for supplying power to said pump means, and means for adjusting the output voltage of said voltage regulator to control the force at which the liquid is dispensed by said pump



means, switch means connected between said voltage regulator and said pump means, a signal from said sensor detecting the presence of an object upon which liquid will be dispensed controlling the operation of said switch means, a timing circuit connected between said sensor and said switch means, and means for adjusting the time period of said timing circuit to control the volume of liquid dispensed by said pump means.

5,305,916
DRIP FREE, VOLUME-ADJUSTABLE, AUTOMATIC LIQUID DISPENSER
Michifumi Suzuki; Atsushi Matsuura; Kenji Tsukiji, all of Tokyo, and Takahiro Tomioka, Abiko, all of Japan, assignors to Kabushiki Kaisha San-Ai, Tokyo, Japan
Filed Dec. 7, 1992, Ser. No. 986,276
Claims priority, application Japan, Dec. 9, 1991, 3-350238; Dec. 9, 1991, 3-350239; Jan. 30, 1992, 4-008964[U]; Jul. 29, 1992, 4-058612[U]
Int. Cl.[5] B67D *1/00*
U.S. Cl. 222—52 22 Claims



1. A liquid dispenser of the type comprising a tank providing a supply of liquid to be dispensed, a pump comprising a cylinder communicating with the tank and having a cylinder head connected, via a normally closed check valve, to an outlet passageway, a working piston having a piston rod with a piston head mounted for reciprocation in the cylinder thereby defining with the cylinder head a liquid pressure chamber of variable size whereby liquid is drawn into the pressure chamber from the supply during an intake stroke and a prespecified amount of liquid is expelled from the pressure chamber there-

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from through the check valve to the outlet passageway during an exhaust stroke, the improvements residing in that

ducts are formed in the piston head for permitting flow of liquid from the supply therethrough into the pressure chamber, the piston rod includes a valve member for closing the ducts and check valve engaging means at a leading end thereof, and in that the piston head is mounted on the piston rod for limited lost motion therewith in the direction of reciprocation during initial portions of both the intake and exhaust strokes whereby,

for an initial portion of the exhaust stroke, as a result of the lost motion, the piston rod and valve member can move relatively towards the piston head and, subsequently, when such lost motion has been taken up, engage and push the piston head towards the cylinder head with the valve member in sealing engagement with the ducts, closing the pressure chamber to prevent flow of liquid therethrough and causing an increasing pressure of liquid therein to open the check valve and expel a prespecified volume of liquid, determined by the total displacement of the exhaust stroke less the displacement of the lost motion, through the check valve into the outlet passageway, the check valve engaging means being carried into engagement with the check valve towards the end of the exhaust stroke and maintaining the check valve open at a first stage of the intake stroke, during which, return movement of the piston rod causes liquid remaining in the outlet passageway to be sucked back towards the pressure chamber and the valve member to be removed from the ducts and so that, after take up of the lost motion, the piston rod can engage and move the piston head, permitting liquid to be drawn from the supply through the ducts into the pressure chamber.

5,305,917

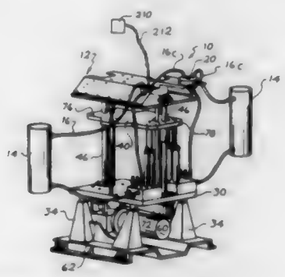
SIMULTANEOUS DISPENSING APPARATUS

William A. Miller, Buffalo Grove; Theodore R. Arneson, Lake Zurich; Andrew V. Platacis, Crystal Lake, and Jeffrey D. Krull, Chicago, all of Ill., assignors to Fluid Management Limited Partnership, Wheeling, Ill.

Filed Nov. 19, 1992, Ser. No. 978,924

Int. Cl.[5] B67D *5/08*

U.S. Cl. 222—63 **38 Claims**



26. Dispensing apparatus, comprising:

a frame;

a bottom plate supported by the frame;

a top plate;

at least one slide support carried by said bottom plate so as to extend toward said top plate;

at least one of said frame and said slide support supporting said top plate above said bottom plate;

a drive plate slidably supported by said at least one slide support for movement toward and away from said bottom plate;

a plurality of material supply vessels;

a dispense head;

a plurality of selectively operable valve means coupled to said dispense head;

a plurality of pump means for pumping said material carried by said bottom plate, having inlets coupled to respective ones of said material supply vessels and outlets coupled through respective ones of said valve means to said dispense head, said pump means further having first ends coupled to said drive plate and second ends coupled to said bottom plate, said first and second ends movable with respect to each other so as to pump material through said pump means;

actuating means for moving said drive plate toward and away from said bottom plate so as to pump material through said pump means, said actuating means comprising a plurality of drive screws carried by said bottom plate so as to extend toward said top plate and said actuating Means furthre comprising rotating means for rotating said drive screws; and

said drive plate threadingly engaging said drive screws so as to be moved toward and away from said bottom plate as said drive screws are rotated.

5,305,918

ACTION FIGURE WITH THE ABILITY TO SHOOT WATER

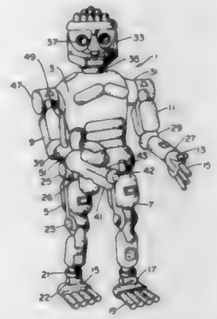
Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J.

Continuation-in-part of Ser. No. 841,762, Feb. 28, 1992, Pat. No. 5,150,819, which is a continuation of Ser. No. 680,247, Apr. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,145, Sep. 6, 1990, Pat. No. 5,074,437. This application Jun. 8, 1992, Ser. No. 895,272

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] A63H *3/24, 33/30*; B67D *5/00*

U.S. Cl. 222—78 **13 Claims**



1. An action figure with the ability to shoot water by means of an air pressurized water chamber, comprising:

(a) a body having a hollow portion and having at least one body orifice and having at least one appendage;

(b) a water and air storage reservoir connected to and located within said body and having at least one orifice corresponding to and coincidental with said at least one body orifice;

(c) a pressuring means for pressuring said reservoir with air, said means being attachable to at least one of said reservoir and said body and being inserted into said reservoir through said at least one body orifice and at least one corresponding orifice of said reservoir;

(d) an avenue of release for water displaced by pressurized air in said reservoir, said avenue of release being located within and extending from said reservoir to a nozzle;

(e) a nozzle at one end of said avenue of release; and,

(f) a water release means for regulating the fluid flow through said avenue of release and out of said nozzle.

5,305,919

PINCH TRIGGER HAND PUMP WATER GUN WITH NON-DETACHABLE TANK

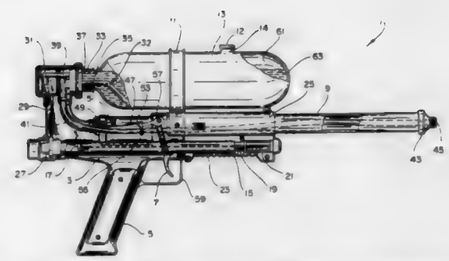
Lonnie G. Johnson, 4030 Ridgehurst Dr., Smyrna, Ga. 30080, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889

Continuation-in-part of Ser. No. 841,762, Feb. 28, 1992, Pat. No. 5,150,819, which is a continuation of Ser. No. 680,247, Apr. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,145, Sep. 6, 1990, Pat. No. 5,074,437. This application Apr. 23, 1992, Ser. No. 873,294

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] A63H *3/18*

U.S. Cl. 222—79 **20 Claims**



1. A high pressure, self-contained, air pressured toy water gun, which comprises:

(a) a housing;

(b) an extended handle connected to said housing;

(c) a trigger located on said housing adjacent said handle;

(d) a barrel portion of said housing extending outwardly away from said handle;

(e) at least one high pressure, non-detachable water storage reservoir externally attached to said housing, said reservoir having a fill port, and said reservoir having an orifice with connection means connected to said housing;

(f) an attachment means located on said water gun housing for attaching said water storage reservoir to said water gun housing by attachment of said connection means of said orifice to said attachment means, and, when said water storage reservoir is attached to said housing, said attachment means seals said orifice to said housing with a seal impervious to water and air;

(g) a pressurizing means with a slider, operably connected to said reservoir for pressurizing said reservoir with air, said means being an integral part of said water gun housing and being remotely located from said reservoir and said attachment means;

(h) an elongated avenue of release for water displaced by said pressurized air, said avenue of release extending from said attachment means and running the length of said barrel;

(i) a water release means for regulating the fluid flow through said avenue of release, said water release means being operable by said trigger of said water gun and functionally connected to said avenue of release; and,

(j) a nozzle at the end of said barrel, said nozzle being connected to said avenue of release.

5,305,920

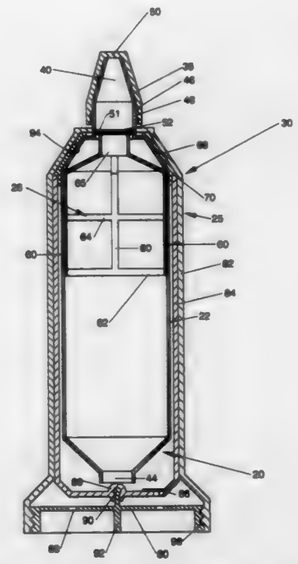
BAG-IN-BOTTLE PACKAGE WITH REUSABLE RESILIENT SQUEEZE BOTTLE AND DISPOSABLE INNER RECEPTACLE WHICH INVERTS UPON EMPTYING WITHOUT ATTACHMENT NEAR ITS MIDPOINT TO SQUEEZE BOTTLE

H. Norman Reiboldt, College Corner; Ronald W. Kock, Wyoming; Nancy J. McCarthy, Cincinnati, all of Ohio, and Reuben E. Oder, Florence, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 20, 1991, Ser. No. 795,213

Int. Cl.[5] B65D *35/28*

U.S. Cl. 222—95 **4 Claims**



1. A squeeze bottle package including a reusable outer squeeze bottle and a replaceable inner receptacle, the inner receptacle including a flexible bag having a dispensing passage, the flexible bag being adapted to house a viscous product and the inner receptacle being adapted to cause the flexible bag to invert upon itself substantially about its midpoint, the squeeze bottle comprising:

(a) an outer squeeze bottle having a resiliently deformable side wall, an opening at the top end of the squeeze bottle adapted to accommodate the dispensing passage of the inner receptacle, and an opening at the bottom end of the squeeze bottle adapted to permit insertion of the entire inner receptacle therethrough when the inner receptacle is completely full of product;

(b) a single closure means comprising a screw on end plate which is attached to an inner sleeve which extends to the top end of the package to push the top end of the inner receptacle against an interior surface of the squeeze bottle when screwed onto the bottom end of the package; and

(c) a vent valve located in the outer squeeze bottle and adapted, when the inner receptacle is sealed therein, to substantially prevent air between the inner receptacle and the squeeze bottle from exiting the package when a squeezing force is applied to the resilient side wall so that produce is dispensed from the package through the discharge passage, and the vent valve being adapted to permit air to enter the space between the inner receptacle and the squeeze bottle upon release of the squeezing force.

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5,305,921

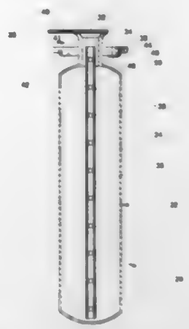
PACKAGE WITH REPLACEABLE INNER RECEPTACLE HAVING LARGE INTEGRALLY MOLDED FITMENT

Ronald W. Kock, Wyoming; William J. Willhite, Cincinnati, and Richard D. Satterfield, Bethel, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 809,986, Dec. 18, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 120,694

Int. Cl.[5] B65D *35/28*

U.S. Cl. 222—95 **6 Claims**



1. A replaceable inner receptacle for use in an outer bottle having a finish portion wherein the replaceable inner receptacle comprises a single integral piece flexible bag adapted to contain a fluid product and including:

a. a thin walled lower half portion having a thickness small enough that the thin walled portion readily collapses after being radially deflected under an externally supplied squeeze force;

b. a thick walled upper half portion having a thickness great enough to be resiliently deformable such that after being radially deflected under an externally supplied squeeze force, the upper portion of the flexible bag returns substantially to its original shape; and

c. a rigid fitment portion having a fluid passage therethrough providing fluid communication with the interior of the flexible bag and including a flange having an overall dimension greater than both the upper and lower walled of the walled portion of the flexible bag, and the periphery of the flange being adapted to rest against the finish portion of the outer bottle;

wherein the thin walled half portion of the flexible bag inverts inside the thick walled upper portion of the flexible bag enabling substantially all of the fluid product within the flexible bag to be dispensed;

5,305,922

TOOTHPASTE DISPENSER

Chaim Varon, 14826 Magnolia Blvd., Sherman Oaks, Calif. 91403

Filed Apr. 19, 1993, Ser. No. 47,960

Int. Cl.[5] B65D *35/56*

U.S. Cl. 222—105 **3 Claims**

1. A toothpaste dispenser operated by one hand comprising:

a toothpaste tube holding a quantity of paste;

a stationary support retaining said tube in a fixed position;

said support having a fixture outwardly projecting from said support having a first nozzle in communication with said tube;

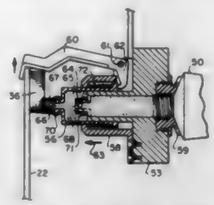
said fixture having a primary chamber in communication at one end with said paste held in said toothpaste tube and terminating in an interior wall carrying said first nozzle at said chamber's other end,

a movable element slidably carried on said fixture having an exterior wall carrying a second nozzle coaxially disposed with respect to said first nozzle;

an intermediate chamber provided in said movable element defined between said fixture interior wall and said exterior wall for receiving paste from said first nozzle preparatory for dispensing from said second nozzle;

spring means compressed between said stationary support fixture and saic' movable element normally biasing said element away from said fixture;

flexible sealing means operable about each of said nozzles to release paste into said intermediate chamber and exteriorly of said second nozzle respectively in response to linear movement of said movable element;



said movable element having two positions defined as a first position compressing said spring means to load paste into said intermediate chamber and a second position expanded by said spring means to expel paste from said intermediate chamber exteriorly of and via said second nozzle;

a deformable adaptor composed of pliable material intercoupling said tube with said stationary support; and

said firs position of said element creates a vacuum as it moves into its second position whereby paste is withdrawn via said fist nozzle past said sealing means to fill said intermediate chamber.

5,305,923

POSTMIX BEVERAGE DISPENSING SYSTEM

Jonathan Kirschner, Powder Springs; Simon J. Richter, Marietta; Mark S. Heflin, Atlanta; Shawn B. Gatipon, Smyrna, all of Ga.; Jack F. Brumley, Houston, Tex.; Michael T. Romanyszyn, Jr., San Antonio, Tex.; Alfred A. Schroeder, San Antonio, Tex.; Samuel Durham, San Antonio, Tex.; Harold R. Heath, Houston, Tex.; Richard O. Norman, San Antonio, Tex., and Norman P. Wittig, Corry, Pa., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 752,406, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 634,857, Dec. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 534,601, Jun. 6, 1990, abandoned, and a continuation-in-part of Ser. No. 715,433, Jun. 14, 1991, abandoned. This application Feb. 28, 1992, Ser. No. 843,757

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.1 **16 Claims**

1. A postmix beverage dispenser comprising:

(a) a housing;

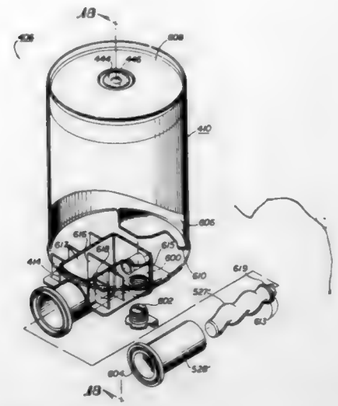
(b) a compartment in said housing for receiving a one-piece, unitary, disposable package including a concentrate container and a positive displacement pump;

(c) an air drive system in said housing for pressuring concentrate in a concentrate container located in said compartment;

(d) a water line in said housing and having a flexible distal end for connection to a disposable mixing nozzle; and

(e) a pump drive motor in said housing for driving a pump received in said compartment; and

(f) a one-piece, unitary disposable package located in said compartment and including a concentrate container and a positive displacement pump having a pump inlet open to a concentrate chamber in said container and having a pump outlet, and a disposable mixing nozzle connected to said pump outlet and to said water line, said positive displacement pump being selected from the group consisting of:



rotary pumps; swash plate pumps; or reciprocating piston pumps.

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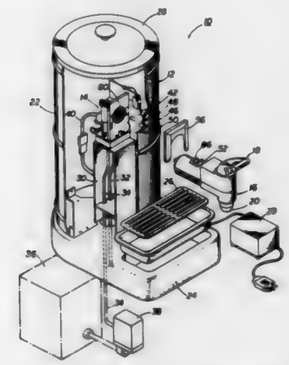
BEVERAGE DISPENSER

Phillip B. Groover, Woodstock; Kirk W. Charles, Austell; Lionel D. Gillespie, Atlanta, all of Ga.; Samuel Durham, San Antonio, Tex., and Lisa C. Wandrick, Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 12, 1993, Ser. No. 60,892

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.1 **6 Claims**



1. A postmix beverage dispenser comprising:

(a) a hollow housing;

(b) a postmix beverage dispensing valve mounted completely inside of said housing and including an on-off switch for operating said valve and having a valve nozzle;

(c) a water line and a concentrate line connected to said dispensing valve;

(d) a handle body connected to said housing and having an inner portion inside of said housing and an outer portion outside of said housing;

(e) a handle connected to said outer portion of said body and movable between an off-position and an on-position;

(f) switch actuating means inside of said body responsive to movement of said handle for energizing said valve on-off switch;

(g) a dispensing nozzle connected to said body; and

(h) a nozzle extender including a water conduit and a concentrate conduit therein and located inside of said body and connected at a proximal end thereof to said valve nozzle and at a distal end thereof to dispersing nozzle.

5,305,925

DISPOSABLE PRESSURE CONTAINER, IN PARTICULAR FOR USE AS A REFILL CONTAINER FOR REFRIGERATING AND AIR CONDITIONING SYSTEMS

Guenter M. Vogel, Munich, Fed. Rep. of Germany, assignor to Hago-Chemotechnik GmbH & Co. KG, Munich, Fed. Rep. of Germany

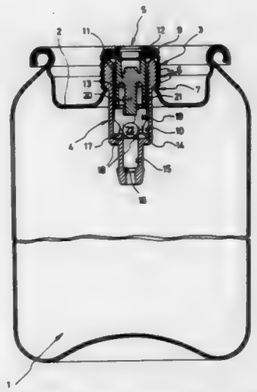
PCT No. PCT/EP91/01723, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO92/06019, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 10, 1991, Ser. No. 916,005

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1990, 9013730[U]

Int. Cl.[5] B65D *47/02*

U.S. Cl. 222—147 **19 Claims**



1. A combined filling and removing valve for a disposable pressure container, comprising:

a. a first valve body within a valve housing having a first end and a second end; said first valve body having a generally cylindrical shape, said first valve body having a first valve body diameter, said first valve body having a sealing collar end and a tappet end;

b. a second valve body within said valve housing, said second valve body having a second valve body diameter;

c. a sealing disk adjacent said first end of said valve housing;

d. a helical spring within said valve housing; and

e. said valve housing of unitary construction; said valve housing having an axis therethrough; said valve housing having a first axial bore therein extending from said fist end, said first axial bore having a first axial bore diameter; said valve housing having a second axial bore therein extending from said first axial bore, said second axial bore having a second axial bore diameter and a second axial bore circumference; said valve housing having a third axial bore therein extending from said second end, said third axial bore having a third axial bore diameter; said first axial bore and said second axial bore having a first intersection location; said second axial bore and said third axial bore having a second intersection location; said second intersection location defining a valve seat; said first axial bore diameter being greater than said second axial bore diameter, said second axial bore diameter being greater than said third axial bore diameter, said second valve body diameter being greater than said third axial bore diameter and less than said second axial bore diame-

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ter, said first valve body diameter being less than said first axial bore diameter; said valve housing having a surmountable and fluid-permeable barrier assembly, said barrier assembly being located internal to said valve housing at said first intersection location, said barrier assembly including a shoulder at said first intersection location, said shoulder having a plurality of radial inward projections extending therefrom, said plurality of projections having ends defining a projection circumference, said projection circumference being less than said second axial bore circumference;

f. said second valve body being movable from said first axial bore to said second axial bore of said valve housing; said helical spring disposed within said first axial bore of said valve housing; said first valve body disposed within said first axial bore of said valve housing; said helical spring engageable with said barrier assembly and said first valve body thereby urging said sealing collar end of said first valve body against said sealing disk.

5,305,926

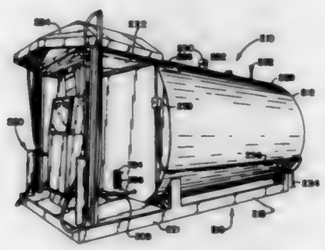
PORTABLE FUELING FACILITY HAVING FIRE-RETARDANT MATERIAL

R. Michael Webb, Eau Claire, Wis., assignor to U-Fuel, Inc., Eau Claire, Wis.

Continuation-in-part of Ser. No. 332,462, Mar. 30, 1989, Pat. No. 4,988,020. This application Nov. 1, 1990, Ser. No. 607,567

Int. Cl.[5] B67D *5/00*; B65D *25/00*

U.S. Cl. 222—183 **2 Claims**



1. An improved portable fueling facility, comprising:

a storage tank for storing a volatile fuel that has a boiling point less than water;

outer tank means for providing secondary containment about said storage tank;

means for supporting said outer tank means on a flat surface;

pump means adapted for dispensing fuel into a vehicle;

supply pipe means for guiding fuel from said storage tank to said pump means; and

fire-retardant thermal ceramic fiber material positioned between said storage tank and said outer tank means, said storage tank being substantially supported within said outer tank means by said thermal ceramic fiber material, whereby said storage tank will be insulated against heat that would vaporize said volatile fuel for a prolonged period against flames and resulting extreme temperature conditions during a fire emergency which might occur outside said outer tank means.

5,305,927

HAND-PUMPED TOY BEVERAGE DISPENSER

Martin J. Caveza, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Jan. 29, 1993, Ser. No. 10,725

Int. Cl.[5] B67D *5/06*

U.S. Cl. 222—185 **4 Claims**

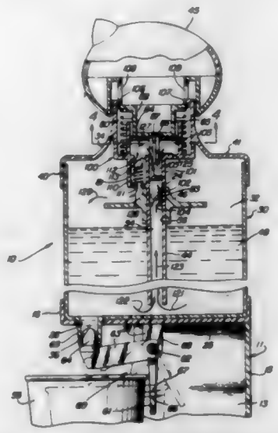
1. A toy beverage dispenser containing:

a support member having a support base and upwardly extending walls;

a beverage reservoir supported by said walls and defining a pair of beverage cavities;

a pair of dispensing valves each coupled to one of said beverage cavities for dispensing a beverage therefrom;

a pair of pumps each coupled to one of said beverage cavities and each operative to draw beverage from one of said cavities upwardly and to discharge it outwardly above



said one of said beverage cavities, said pumps each including a siphon tube extending into one of said beverage cavities, a discharge aperture above said one of said beverage cavities, and a disperser supported beneath said discharge aperture for deflecting beverage flowing from said discharge aperture outwardly; and

a pair of hand manipulated pump actuators each coupled to and operating one of said pair of pumps and each including a depressible member and a return spring,

said pump responding solely to said pump actuators.

5,305,928

SQUEEZABLE FEEDING CONTAINER

Roberto Verdaguer, 8315 NW. 64 St., Bay 5, Miami, Fla. 33166

Filed Jun. 4, 1993, Ser. No. 72,463

Int. Cl.[5] B67D *1/07*

U.S. Cl. 222—192 **6 Claims**



1. An assembly for feeding food to infants, said assembly comprising:

a. a container including a hollow interior structured to store food therein and including an open end communicating with said hollow interior,

b. a retaining structure attached to said container in adjacent relation to said open end,

c. an applicator means for delivering food from said container to the infant's mouth and interconnected to said container by said retaining structure in communicating relation with said open end and said hollow interior,

d. said applicator means comprising an elongated hollow interior defining a flow path for food from said container to the infant,

e. valve means for regulating flow of food from said hollow interior of said container to said flow path and being selectively positionable between an open position and a closed position,

f. said open position defining open communication between said flow path and said hollow interior and said closed position defining closed communication between said flow path and said hollow interior,

g. said valve means comprising a first plate mounted in at least partially covering relation to said open end and including a first passage extending therethrough and disposed in communication with said hollow interior of said container; and a second plate connected to said applicator means and movable therewith and rotatable therewith relative to said first plate and said retaining structure and mounted adjacent said first plate and including a second passage extending therethrough and disposed in communication with said flow path,

h. said first plate and said second plate being disposed in removable, confronting relation to one another and removably and collectively sandwiched substantially within said retaining structure and in covering relation to said open end of said container,

i. said retaining structure comprising a recess formed therein and said first plate comprising a projecting member extending outwardly therefrom beyond said second plate and into received engagement within said recess of said retaining structure, and

j. said projecting member and recess structurally adapted to be cooperatively dimensioned and configured to prevent relevant rotation between said retaining structure and said first plate when said projecting member and said recess are engaged.

5,305,929

COMBINATION MIXER DISPENSER HAVING A ROD TO PREVENT BOWING

James O. Camm, 51 Millewa Ave., Chadstone Victoria, and Stephen J. Camm, 11 Kaisman Sq., Wantirna Victoria, both of Australia

Continuation of Ser. No. 718,994, Jun. 21, 1991, Pat. No. 5,181,629, which is a continuation of Ser. No. 534,468, Jun. 7, 1990, Pat. No. 5,050,774. This application Oct. 26, 1992, Ser. No. 966,401

Claims priority, application Australia, Jun. 13, 1989, PJ4700

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—386 **2 Claims**

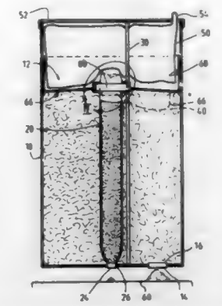
1. A dispenser for dispensing a substance, including:

a container having a lid, a base and a side wall, the lid and base being formed from light gauge material and being capable of bowing unless restrained;

a piston arranged within the container for movement within the container relative to the side wall of the container for dispensing the substance from the dispenser;

moving means for moving the piston; and

a rod, positioned in the container closer to the center of the container than to the side wall of the container and affixed to said lid and said base, for holding the base and the lid of



the container and for preventing the lid and the base of the container from bowing during movement of the piston.

5,305,930

ACTUATING DEVICE FOR DISPENSING A PRODUCT, ESPECIALLY A SELF-FOAMING PRODUCT

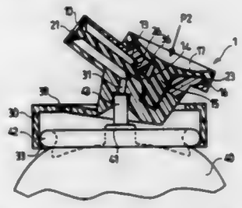
Vincent De Laforcade, Clamart, France, assignor to L'Oreal, Paris, France

Filed Nov. 17, 1992, Ser. No. 977,636

Claims priority, application France, Nov. 27, 1991, 91 14631

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—402.13 **8 Claims**



1. An actuating device for dispensing a product of the self foaming type and stored in a container of the type having a rim surrounding a tubular valve outlet that is pressed inwardly to effect dispensing, said actuating device comprising a base having means for fixing said base on the rim of the container, a hollow body having a cylindrical chamber including one end having an inlet located adjacent the tubular valve outlet when said device is mounted on the rim of the container and an opposite end including an outlet orifice in the form of a poppet valve seat, a poppet valve member disposed coaxially in said cylindrical chamber and movable along said chamber from a first position closing said outlet orifice by engaging said seat to a second position opening said outlet orifice, said cylindrical chamber having a longitudinal axis which extends generally transverse to the axis of the tubular valve outlet, said inlet of said hollow body including an axis extending transverse to said axis of said cylindrical chamber, said poppet valve member including an extension control rod extending beyond said inlet of said hollow body and out of said cylindrical chamber, said extension control rod controlling movement of said poppet valve member, said base and said cylindrical chamber being connected by a hinge allowing movement of said cylindrical chamber whereby the tubular valve outlet may be moved upon pivotal movement of said cylindrical chamber about said hinge, said control rod being connected to a push member, said push member being located on a base member connected to said base, said base member having an axial opening receiving a portion of said push member and a recess provided at one end of said axial opening allowing movement of said push member

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into said recess, said push member having another portion extending into said axial opening and being connected through an orthogonal joint to said control rod so that, upon movement of said push member into said recess, said control rod will be withdrawn from said cylindrical chamber to thereby move said poppet valve member from said first position toward said second position and causing said chamber to move about said hinge to actuate said tubular valve outlet to cause the product to be dispensed through said cylindrical chamber and said outlet orifice and movement of said push member away from said recess will cause said control rod to allow said poppet valve to move to said first position and said tubular valve outlet to cease dispensing of the product while confining a quantity of the product in said cylindrical chamber.

5,305,931

MULTI-FUNCTIONAL, ENVIRONMENTALLY-ORIENTED, TAMPER-EVIDENT CONTAINER CLOSURE

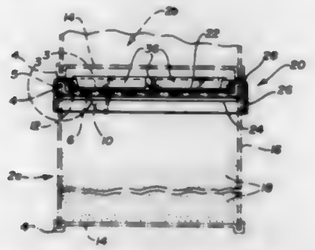
Clyde J. Martin, Cincinnati, and Gail F. Duncan, Dayton, both of Ohio, assignors to Iri-Made Products, Inc., Dayton, Ohio

Continuation of Ser. No. 818,115, Jan. 8, 1992, Pat. No. 5,213,238. This application Jan. 26, 1993, Ser. No. 9,553

The portion of the term of this patent subsequent to May 23, 2010, has been disclaimed.

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—480 **3 Claims**



1. An environmentally oriented, multi-functional, one-piece container closure for an easy-opening container having a container body and a container end, a push-in opening defined by a score line in said container end, and a lip formed in said container end where said container body is inserted in said container end, said lip extending around the outer edge of said container end, said container closure comprising:

a one-piece, removable, rotatable closure panel with a peripheral skirt having a peripheral rib extending around the inner surface of said peripheral skirt and positioned to removably engage only the outermost surfaces of said lip of said container end, said peripheral rib slidably rotatable on said lip to position said closure panel; and

said closure panel having at least one opening defined therein, and said closure panel rotatable between a position wherein said closure panel substantially blocks said push-in opening, and one or more positions wherein at least a portion of said at least one opening is generally alignable with at least a portion of said push-in opening;

whereby said container closure regulates the dispensing of contents from said container.

5,305,932

PERMANENT SNAP-ON, TWIST-OPEN CAP AND CONTAINER

Andreas Iseli, Downey, Calif., assignor to Seda International Plastics, Los Angeles, Calif.

Filed Apr. 19, 1993, Ser. No. 47,995

Int. Cl.[5] B65D *47/28*

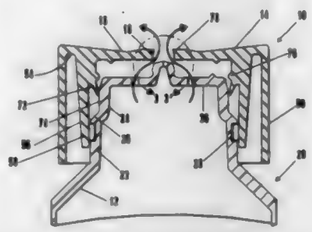
U.S. Cl. 222—521 **12 Claims**

1. A dispensing cap and container with a tubular body for liquid and semi-solids which container includes a cylindrical neck base of lesser diameter than said body and having at least one partial helical groove, an upper portion of reduced diameter with an outer axial wall and a frustro-conical upper edge, and a planar neck top broken with aperture means and an orthogonal post centrally located on said neck top, which comprises:

a) a dish-shaped cap top having a central aperture with an annular lip thereabout for registration with said post;

b) a cylindrical skirt dependent from said cap top about its outer edge;

c) a second, inner skirt, dependent from the undersurface of said cap top;



axially inclined lug means dependent on the inner surface of said second, inner skirt at a location to cooperatively seat in each of said partial helical grooves to permit extension and retraction of said cap upon rotatable movement thereof;

e) seal means about the bottom edge of said central aperture for sealing engagement with said central post; and

f) an inwardly directed flexible lip seal about the inner wall of said second, inner skirt and undercut on its outer surface to impart flexibility thereto, and being to impart flexibility thereto, and being of sufficient diameter to be received over said fustro-conical upper edge and to be resiliently expanded into a seal against the outer axial wall of said upper portion of said neck.

5,305,933

HANGER WITH EASILY ATTACHABLE INFORMATION TAB

Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions Inc., Rego Park, N.Y.

Division of Ser. No. 943,820, Sep. 11, 1992, Pat. No. 5,238,159, which is a continuation-in-part of Ser. No. 801,613, Nov. 22, 1991, Pat. No. 5,199,608. This application May 20, 1993, Ser. No. 64,940

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] A47G *25/14*

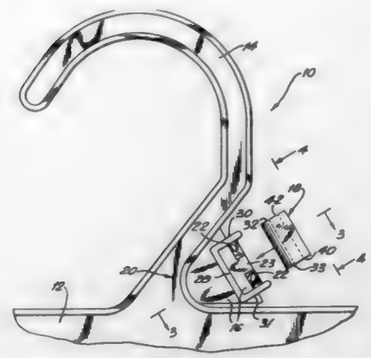
U.S. Cl. 223—85 **10 Claims**

1. A garment hanger including an easily attachable tab comprising:

a hanger including a body and a hook member;

a tab holder formed integrally with said hanger, said tab holder having two opposite sides, a free upper edge connecting said opposite sides, said free upper edge containing thereon an upper ridge extending along the top of said free upper edge; and

a resilient tab, said tab having a face member, two opposing tab ends and two opposing tab sides, said opposing tab sides extending from said face member and terminating in foremost edges adjacent said face member, said two opposing tab sides each having a projecting member disposed on the inner surf ace thereof for cooperatively engaging said upper ridge to lock said tab to said tab holder;



said upper ridge having a break therein so as to enable one end of said tab to be threaded onto said upper ridge.

5,305,934

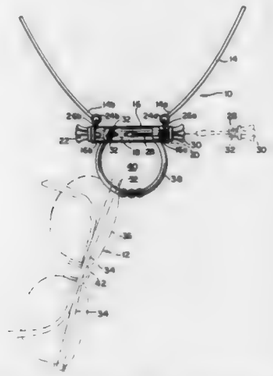
TOOL AND EYEGLASS HOLDER

Marilyn Grey, 30 Fox Hollow Dr., Cherry Hill, N.J. 08003

Filed Jan. 19, 1993, Ser. No. 6,230

Int. Cl.[5] A45C *13/30*; **A45F** *3/14*

U.S. Cl. 224—207 **5 Claims**



1. A device for supporting a pair of eyeglasses about a neck of a user, said device comprising:

an elongated flexible member for being positioned about the neck of the user, said elongated member having first and second terminal ends;

a container having a generally hollow interior cavity and an opening for accessing said cavity, said first and second terminal ends of said elongated member being secured to said container;

a tool at least partially positioned within said cavity, said tool being sized to pass through said opening for allowing the user to access and use said tool; and

a loop member, separate from said elongated flexible member, extending from said container and defining an aperture for receiving a temple of the pair of eyeglasses therethrough to thereby support the pair of eyeglasses on the device.

5,305,935

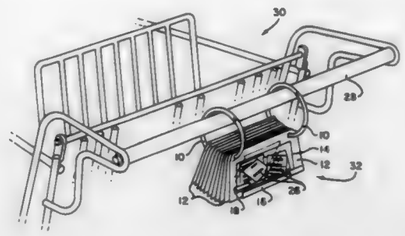
COUPON ORGANIZER

Andrea L. Weiner, 1317 Franklin St., Apartment B, Santa Monica, Calif. 90404

Filed Sep. 29, 1992, Ser. No. 954,754

Int. Cl.[5] B60R *7/00*

U.S. Cl. 224—277 **10 Claims**



1. A coupon organizer to attached a horizontally disposed handle spaced from a basket of a shopping cart, and including;

a plurality of coupon pockets, each having a chamber with at least one transparent side and an opening at an edge for insertion of and access to coupons in said chamber, and a header portion having at least one connection opening therethrough,

and at least one connection ring engaged through said at least one connection opening and around the horizontal handle of the shopping cart and from which the coupon pockets depend,

whereby particular coupons are viewed through the transparent side of a selected pocket by lifting and selectively flipping the coupon pockets around the handle of the shopping cart.

5,305,936

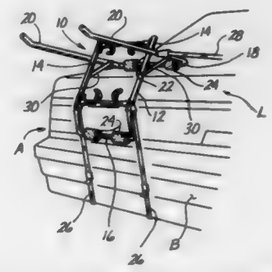
COMBINATION BICYCLE/SKI CARRIER FOR AUTOMOBILES

Neil Nusbaum, 11170 Westwood Boulevard, Culver City, Calif. 90230

Filed Aug. 27, 1992, Ser. No. 937,356

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—324 **20 Claims**



1. A combination bicycle/ski carrier, comprising:

a carrier frame including means for attaching said frame to an automobile:

first support means for supporting one or more cycles on said frame;

ski carriers rotatable on said frame independently of said first support means between an extended position and a retracted position, said ski carriers being spaced apart on said frame for supporting between them one or more pairs of skis in said extended position, said ski carriers being inoperative for supporting said cycles in either said extended or retracted position.

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5,305,937

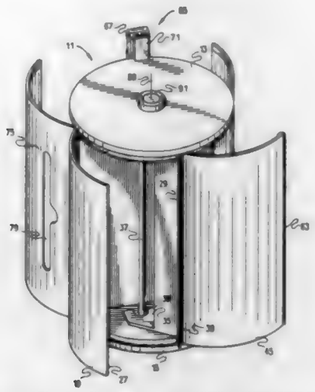
DISPENSER FOR SUPPLIES

Sharon R. Barnett, P.O. Box 86, Thornton, Tex. 76687

Continuation-in-part of Ser. No. 928,305, Aug. 12, 1992, abandoned. This application May 27, 1993, Ser. No. 68,423

Int. Cl.[5] **B26F** *3/02*; **B65H** *16/02*

U.S. Cl. 225—7 **13 Claims**



1. A dispenser for dispensing a variety of dispensably different supply materials comprising:
- a top;
- a bottom;
- a side, connecting the top to the bottom wherein a portion of the side defines a first door and a second door separate from said first door for providing access to the interior of the dispenser;
- an inner wall dividing the interior of the dispenser into at least one first compartment to contain and from which to dispense a continuous feed from a roll of supply material and at least one second compartment to contain and from which to dispense a successive feed from a source of non-rolled supply material wherein each door provides access to one of said compartments;
- draw means associated with the doors of said compartments to enable withdrawing a predetermined quantity of supply material from said compartments; and
- a holder for supporting the roll of supply material within said first compartment; said holder comprising opposite brackets mounted for pivotal displacement between a first position within said first compartment for securing a supported roll in a dispensing location and a second position within said first compartment relatively closer to the door of said first compartment to enable enhanced replacement access to the supported roll.

5,305,938

STRIP STOCK FEED APPARATUS WITH BALANCE FORCE FEED ROLL

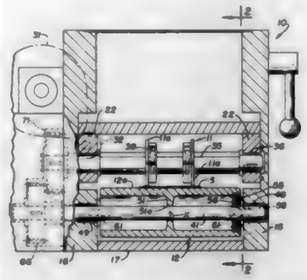
Richard D. Nordlof, 3312 Crest Rd., Rockford, Ill. 61107

Filed Aug. 10, 1992, Ser. No. 926,635

Int. Cl.[5] **B65H** *26/02*

U.S. Cl. 226—181 **12 Claims**

1. A roll type strip stock feed apparatus for advancing strip stock along a feed path comprising, a frame assembly, first and second support shafts having respective first and second shaft axes, means mounting the first and second support shafts on the frame assembly with the first and second shaft axes in parallel relation and disposed in a plane transverse to the feed path, a first feed roll having a work engaging surface coaxial with a first roll axis, means non-rotatably mounting the first feed roll on the first support shaft with the first roll axis coaxial with the first shaft axis, a second feed roll having an outer work engaging surface coaxial with a second rill axis and a passage extending axially through the second feed roll, means mounting the second feed roll on the second support shaft for longitudinal tilting movement of the second roll axis relative to the second shaft axis at a location intermediate ends of the second feed roll, and drive means for driving said first and second feed rolls to advance stock along the feed path, said drive means including a first toothed coupling member mounted on the second feed roll and having teeth arranged in an annular array coaxial



with said second roll axis, a second toothed coupling member having teeth arranged in an annular array coaxial with said second shaft axis, the teeth on the first and second coupling members interengaging and having working clearance therebetween sufficient to accommodate limited tilting of the second roll axis relative to the second shaft axis, and means for substantially preventing tilting movement of the second feed roll in a direction crosswise of said plane while accommodating tilting movement in said plane.

5,305,939

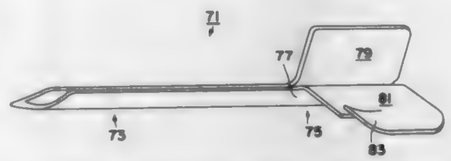
NEEDLE FOR USE AS PART OF A PLASTIC FASTENER DISPENSING TOOL

Charles L. Deschenes, North Attleboro, Mass.; William J. Cooper, Woonsocket, R.I.; Paul A. Davignon, Uxbridge, and F. Thomas Bilek, Milford, both of Mass., assignors to Avery Deanison Corporation, Pasadena, Calif.

Filed Sep. 23, 1992, Ser. No. 950,420

Int. Cl.[5] **B65C** *7/00*; **A41H** *37/00*

U.S. Cl. 227—67 **14 Claims**



1. A needle for use as part of a fastener dispensing tool, the fastener dispensing tool having an opening formed therein to receive the needle, the needle comprising an elongated hollow member having a stem portion and a base portion, said base portion being sized and shaped for insertion into the opening in the fastener dispensing tool, said base portion having a cylindrically shaped bottom section having a longitudinal slot and a first tab constructed for releasably securing said base portion within the opening in the fastener dispensing tool, said first tab being a flexible spring tab movable between a first position relative to said stem during insertion and removal of said needle from said opening, and a second position relative to said stem for retaining said needle within said opening said stem portion being cylindrically shaped and including a longitudinal slot aligned with said longitudinal slot in base portion.

5,305,940

STUD WELDING DEVICE

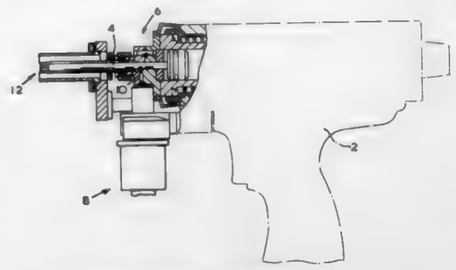
Alfred Gerhardt, Lahnau, and Kurt Liebich, Lich, both of Fed. Rep. of Germany, assignors to Emhart Inc., Newark, Del.

Filed Jul. 28, 1993, Ser. No. 98,184

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1992, 4225415

Int. Cl.[5] **B23K** *9/20*

U.S. Cl. 228—4.1 **3 Claims**



1. A stud welding device comprising
- a plunger movable between an advanced and a retracted position
- a receiver adapted to receive a T stud from a feeding device and comprising a T shaped transverse passage through which a T stud may pass to an axial bore which is of a diameter corresponding to that of the head of the T stud,
- the plunger being mounted for movement in the axial bore of said receiver so that the plunger in its movement from its retracted position to its advanced position carries a T stud located in the axial bore to locate it against a work piece for welding thereto
- and spring means in the receiver adjacent the axial bore arranged to engage a circumferential face of the head of a T-Stud fed through the transverse passage into alignment with the axial bore.

5,305,941

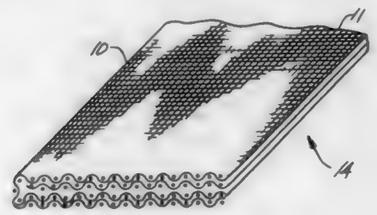
DESOLDERING WICK

George M. Kent, Sierra Madre, and William H. Strater, Fontana, both of Calif., assignors to Plato Products, Inc., Industry, Calif.

Filed Dec. 28, 1992, Ser. No. 998,119

Int. Cl.[5] **B23K** *3/08*

U.S. Cl. 228—19 **29 Claims**



1. A desoldering wick comprising:
- a pad comprising multiple layers of wire mesh, the surface of the wire mesh being wettable by molten solder;
- a plurality of spaces between adjacent wires in the wire mesh; and
- a plurality of spaces between adjacent layers of the wire mesh for receiving molten solder drawn into the pad by the wire mesh, and wherein
- the ribbon is made from a strip of wire mesh having at least some wires extending transverse to the length of the ribbon and comprising at least two longitudinal folds in the strip for forming a ribbon having a width less than the width of the strip, and having multiple thicknesses of wire mesh and at least two spaces between layers of wire mesh.

5,305,942

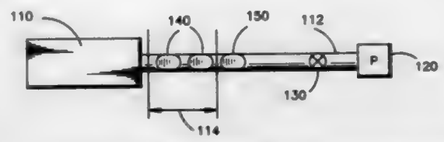
METHOD FOR SEALING THERMAL PROCESSING APPARATUS

Ronald D. Brunken, Torrance, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 27, 1993, Ser. No. 52,983

Int. Cl.[5] **B23K** *31/02*

U.S. Cl. 228—173.4 **6 Claims**



1. A method for sealing the interior of a container from the environment, comprising the steps of:
- (1) coupling tubing to said container;
- (2) providing a predetermined amount of brazing material inside a length of said tubing;
- (3) forming a plurality of crimps in a region of the tubing, said region encompassing said length; and
- (4) heating said region of said tubing to a brazing material melting point, whereby said brazing material melts and flows to form a metallurgical weld at each said crimp.

5,305,943

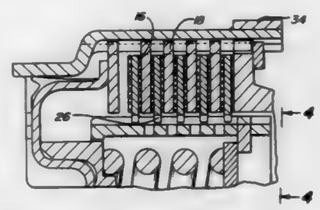
SPLINED ASSEMBLY

Herman B. Walker, Rochester, Mich., assignor to Koppy Corporation, Orion, Mich.

Division of Ser. No. 839,513, Feb. 20, 1992, Pat. No. 5,180,043. This application Nov. 18, 1992, Ser. No. 977,994

Int. Cl.[5] **F16D** *13/62*

U.S. Cl. 228—176 **4 Claims**



1. A method of manufacturing a housing, including splines formed therein, comprising the steps of:
- 1) forming a housing having a central axis, forming a plurality of splines in said housing extending parallel to said central axis such that said housing has radially inner and radially outer portions defined by said splines;
- 2) forming a plurality of circumferentially spaced grooves extending circumferentially along said radially inner portions, and extending radially outwardly from said radially inner portion; and
- 3) attaching a band of reinforcing material on a radially outer surface of said radially outer portions, said band having portions circumferentially aligned with said grooves.

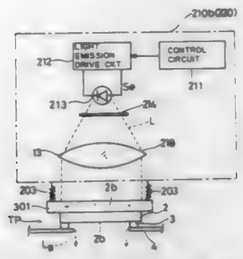
VOL 1161 ISS 4 APR 26 1994 UMI

5,305,944

BONDING METHOD AND BONDING APPARATUS

Masaharu Yoshida; Yasufumi Nakasu, and Masataka Takehara, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,249
Claims priority, application Japan, Apr. 23, 1992, 4-104249
Int. Cl.[5] H05K *3/34*
U.S. Cl. 228—180.22 **24 Claims**



1. A method of bonding a semiconductor chip to an object to be bonded, said semiconductor chip having first and second major surfaces, said object to be bonded including a conductive member, said method comprising the steps of:

(a) supporting said object to be bonded and said semiconductor chip in such a manner that said first major surface of said semiconductor chip is faced with said conductive member through a bump interposed therebetween; and

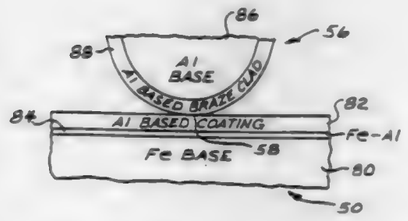
(b) illuminating an infrared light beam from a second major surface side of said semiconductor chip onto said bump through said semiconductor chip.

5,305,945

FINNED ASSEMBLY FOR HEAT EXCHANGERS

Andrew J. Cottone, Racine, Wis., and Zalman P. Saperstein, Lake Bluff, Ill., assignors to Modine Manufacturing Co., Racine, Wis.

Continuation of Ser. No. 697,204, May 8, 1991, Pat. No. 5,102,032, which is a division of Ser. No. 558,613, Jul. 26, 1990, Pat. No. 5,042,074, which is a continuation-in-part of Ser. No. 406,064, Sep. 12, 1989, Pat. No. 4,949,543. This application Mar. 23, 1992, Ser. No. 855,248
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—183 **14 Claims**



1. A method of making a finned head exchanger assembly which includes the steps of:

a) providing a first heat exchanger component of the said assembly formed of a ferrous material with a surface coated with aluminum;

b) providing a second heat exchanger component of the assembly having an aluminum surface;

c) abutting said surfaces together at an interface to form said assembly;

d) locating aluminum braze clad material at said interface;

e) raising the temperature of the assembly and the aluminum braze clad material to a level sufficient to at least partially melt the braze clad material; and

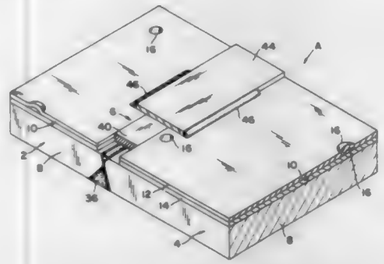
f) maintaining the temperature achieved during step e) for a sufficient period of time to achieve a brazed joint between the first and second components but a time insufficient to convert said coating and/or said braze clad material to ferrous-aluminum intermetallic compound or intermediate phase in the vicinity of said second component.

5,305,946

WELDING PROCESS FOR CLAD METALS

Leroy W. Heilmann, Belleville, Ill., assignor to Nooter Corporation, St. Louis, Mo.

Filed Nov. 5, 1992, Ser. No. 972,418
Int. Cl.[5] B23K *28/02*
U.S. Cl. 228—184 **20 Claims**



1. A process for joining two segments into a weldment, each segment having a substrate formed from one metal and a protective layer which is formed from another metal that is attached to the substrate and includes embossments which cover pockets in which gas is trapped, said process comprising: welding the two substrates together at edges of the segments such that the protective layers are generally aligned at those edges of the segments; venting the pockets which are located along the edges of the segments; placing a batten strip over the protective layers of the two segments such that it projects laterally beyond the edges of both segments and covers the locations where the pockets are vented; and welding the batten strip along its edges to the protective layer, with the welds so formed being continuous along the edges of the batten strip so as to isolate the edges of the protective layers and the pockets from substances to which the protective layer is exposed.

5,305,947

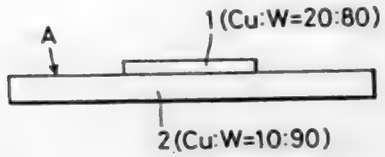
METHOD FOR MANUFACTURING SEMICONDUCTOR-MOUNTING HEAT-RADIATIVE SUBSTRATES AND SEMICONDUCTOR PACKAGE USING THE SAME

Mitsuo Osada, and Kenichiro Kohmoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 770,430, Oct. 3, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 87,073
Claims priority, application Japan, Oct. 26, 1990, 2-290092
Int. Cl.[5] H01L *21/48*
U.S. Cl. 228—262.8 **3 Claims**

1. A method for manufacturing a semiconductor-mounting heat-radiative substrate, which is a joined body of a CuW or a CuMo composite metal alloy with a pore-free Cu-layer interposed therebetween, comprising the step of joining together a plurality of CuW or CuMo composite metal alloys obtained by an infiltration method or a mixed powder sintering method,

wherein Cu is disposed on an interface between said CuW or CuMo composite metal alloys and said plurality of CuW or



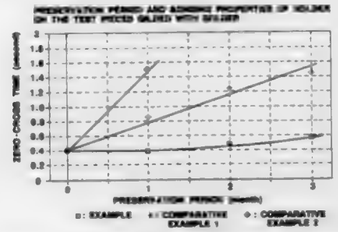
CuMo composite metal alloys are joined together through Cu by heating them to the melting point of Cu or higher in a reducing atmosphere.

5,305,948

METHOD OF BONDING A METAL BY SOLDER

Yoshio Yoshikawa; Yoshiaki Inoue; Teruo Takeuchi, and Kazuo Fujinami, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,599
Claims priority, application Japan, Jun. 2, 1992, 4-141825
Int. Cl.[5] B23K *35/363, 35/38;* **H01L** *21/50, 21/54*
U.S. Cl. 228—205 **26 Claims**



1. A method of bonding a metal by solder, which method comprises the steps of:

applying a flux containing a small amount of halogen compounds over the portion, which is to be bonded by solder, of a member including metal which is preserved in a gas-impermeable container together with a rust-proof agent which absorbs substances that oxidize metals; and

bonding by solder the portion on which the flux is applied.

5,305,949

FOLDABLE, EASILY-DISPOSABLE PIZZA BOX, AND METHODS OF MAKING AND USING SAME

Gerald E. Linden, 1535 Ensenda St., Orlando, Fla. 32822

Continuation of Ser. No. 813,961, Dec. 24, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 997,114
Int. Cl.[5] B65D *5/10*
U.S. Cl. 229—117.01 **16 Claims**

1. Pizza box blank comprising:

a blank of paperboard;

a matrix of pre-stressed lines on the blank defining a top lid panel having a length dimension "l" and a width dimension "w", a bottom tray panel having a length dimension and a width dimension substantially equal to the length and width dimensions of the top lid panel, and a rear sidewall panel joining the top lid panel to the bottom tray panel;

the rear sidewall panel having one edge coincident with an edge of the top lid panel;

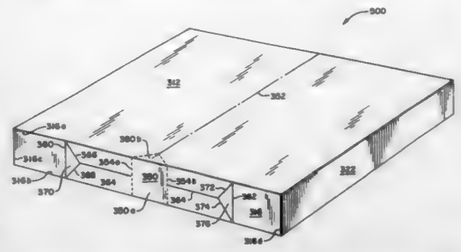
the rear sidewall panel having an other edge, opposite the one edge, coincident with an edge of the bottom tray panel;

the rear sidewall panel having a width dimension substantially equal to the width dimensions of the top lid and bottom tray panels;

the rear sidewall panel having a height dimension "h" several times smaller than its width dimension and defined as the distance between the one and the other edges of the rear sidewall panel;

at least one punch-out section formed in at least the rear sidewall panel, and extending heightwise at least completely across the rear sidewall panel from the one edge to the other edge of the rear sidewall panel, for facilitating folding an inter-folded pizza box formed from the blank;

at least one first weakening lines extending from the at least one punch-out section towards a one end of the rear sidewall panel; and at least one second weakening lines extending from at least one punch-out section towards an other opposite end of the rear sidewall panel.

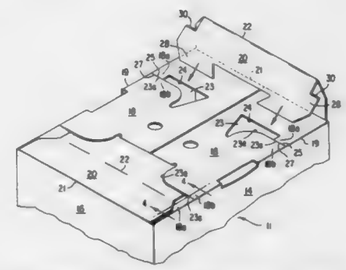


5,305,950

LOCK FOR CARTON BOTTOM

Paul J. Oppenheim, San Jose, Calif., assignor to International Paper Company, Purchase, N.Y.

Filed Apr. 20, 1993, Ser. No. 48,171
Int. Cl.[5] B65D *5/10*
U.S. Cl. 229—157 **6 Claims**



1. A paperboard container formed from a unitary paperboard blank, the container having sides which are defined by two length panels and two width panels, each of said panels having an upper and a lower edge and being generally rectangular, major bottom panels foldably secured along straight hinge connections to said lower edges of respective said length panels, minor bottom panels foldably secured along straight hinge connections to said lower edges of respective of said width panels, said bottom panels forming a bottom for the container, each of said bottom panels being interlocked with two next adjacent said bottom panels, said two major bottom panels being substantially coplanar, each of said major bottom panels having a pair of spaced openings, each of said major bottom panel openings spaced from respective major bottom panel straight hinge lines, each of said minor bottom panels having free ends, said free ends provided with outer corner locking tabs, said locking tabs engaged in respective said major bottom panel openings, at least a part of each of said major bottom panel openings intersected by a respective slit which

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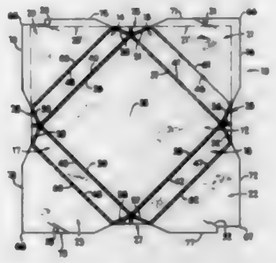
extends substantially normal to and adjacent to a respective said major bottom panel hinge connection, each of said minor bottom flap outer corners locking tabs forming a hook engaged with a respective edge of one of said slits exposed by displacement of said slit edges upon insertion of said locking tabs into respective said major flap openings thereby preventing accidental retraction of said tabs from said major flap openings.

5,305,951

ERECTABLE CONTAINER APPARATUS

Wayne H. Kuhn, Palos Park, and Jeffrey S. James, Lisle, both of Ill., assignors to Stone Container Corporation, Chicago, Ill.

Filed Jun. 3, 1993, Ser. No. 71,511
Int. Cl.[5] B65D *5/24*
U.S. Cl. 229—105 **14 Claims**



1. An erectable container apparatus constructed from a substantially square blank of material for use in releasably storing various articles therewithin, said erectable container apparatus comprising:

base means for providing an underlying support to one or more of the various articles to be releasably stored within said erectable container apparatus,

said base means having a top surface, a bottom surface opposite said top surface and at least three peripheral edges;

side panel means for operably restraining the position of said articles within said container apparatus, said side panel means having an inner edge operably attached to at least a portion of a corresponding one of each of said at least three peripheral edges of said base means, as well as an outer edge substantially parallel to said inner edge, and a left and right edge operably positioned between said inner and outer edges of each of said side panel means,

each of said left and right edges of said side panel means being operably positioned at an acute angle relative to said inner edge to which they operably intersect, for providing substantially upright and inwardly sloping side panels after said erectable container apparatus has been articulated into a fully erected orientation;

a plurality of top flap means for operably covering at least a portion of said base means and said articles, at least one of said plurality of top flap means having a proximal end operably attached to a corresponding one of said outer edges of said side panel means, a distal end, and a first and second side end, wherein said first and second side ends are operably positioned between said proximal end and said distal end of said corresponding one of said plurality of top flap means,

said first and second side ends of said at least one of said plurality of top flap means being operably positioned at an acute angle relative to said corresponding one of said outer edge of said side panel means,

at least a portion of said plurality of said top flap means and said side panel means collectively serving to substantially cover said top surface of said base means and said articles when said erectable container apparatus has been articulated into said fully erected orientation; and

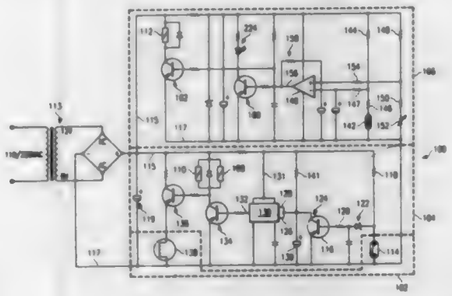
locking means operably associated with at least two of said plurality of top flap means for locking, and, alternatively releasing said erectable container apparatus into and from said fully erected orientation respectively.

5,305,952

ENERGY SAVING APPARATUS AND METHOD

Suwat Hannarong, Bangkok, Thailand, assignor to EnerSaver (U.S.A.), Inc., Dallas, Tex.

Filed Jul. 23, 1992, Ser. No. 919,190
Int. Cl.[5] G05D *23/00*
U.S. Cl. 236—47 **3 Claims**



1. An apparatus for saving energy in climate controlled space infrequently occupied, the apparatus comprising:

a switch operable by a specially adapted object in the possession of an occupant; the switch assuming a first state when the object is received and assuming a second state when the object is removed; the switch being adapted for mounting near an entrance to a room; and

a housing including:

first means for disconnecting power from light circuits in the room in response to the switch assuming the second state and connecting power to the light circuits in response to the switch assuming the first state;

a first thermostat having a set temperature not controllable by a room occupant, the set temperature reducing energy consumption;

second means placed in series with an air conditioning unit and a second occupant-controllable thermostat, said second means for switching the first thermostat into series with the air conditioning unit and for disconnecting the second thermostat from the air conditioning unit in response to the switch assuming the second state; and

delay means for generating a delay signal for a predetermined period following receipt of a signal from the switch indicating assumption of the second state upon removal of the object; the delay signal being provided to the first means for disconnecting power and to the second means for switching the second thermostat in series with the air conditioner after the predetermined period;

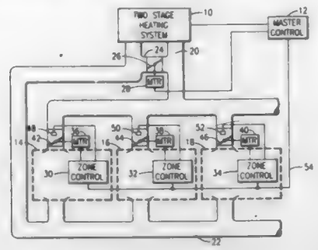
wherein the apparatus is adaptable to be retrofit to a room having previously installed occupant-controllable thermostat and air conditioning unit or to be used with separate thermostat and air conditioning units; the housing having a plurality of terminals thereon for attaching wires from the previously installed second thermostat and to the previously installed air conditioning unit, for attaching control wires between the housing and the air conditioning unit, and for attaching a power line to supply power to lights.

5,305,953

REACTIVE HEATING CONTROL SYSTEM

Ronald R. Rayburn, Huntington, and Harold L. Jeffery, Ft. Wayne, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 30, 1993, Ser. No. 83,575
Int. Cl.[5] F24F *13/10*
U.S. Cl. 236—49.3 **26 Claims**



1. A system for controlling the positioning of dampers within a variable air volume system when the supply air temperature rises above a predefined temperature level, said system comprising:

a plurality of motors for positioning the dampers within the variable air volume system;

a plurality of sensors for sensing the temperature of the air supplied to each damper within the variable air volume system;

a plurality of programmable zone control units, each connected to a respective motor and to a sensor so as to normally control the positioning of the damper and further monitor the temperature of the air supplied to each damper that is sensed by the respective sensor;

a master programmable control unit connected to each programmable zone control unit said master programmable control unit having a stored program therein for successively reading the sensed temperatures of the air supplied to each damper from the programmable zone control units and for comparing the highest sensed temperature with a predetermined limit for sensed supply air temperature, said programmable master control unit being operative to send a warning to each of said programmable zone control units within the variable air volume system when the temperature of the air sensed by any sensor is higher than the predetermined limit of supply air temperature.

5,305,954

HEATING SYSTEMS

Gunther Abel, 8212 Alpine Way, Whistler, British Columbia, Canada V0N 1B0

Filed Feb. 11, 1993, Ser. No. 16,466
Int. Cl.[5] F24B *7/00*
U.S. Cl. 237—55 **9 Claims**

1. A heating system, comprising:

a solid fuel stove;

a combustion gas chamber at the exterior of said stove for receiving combustion gases from said stove;

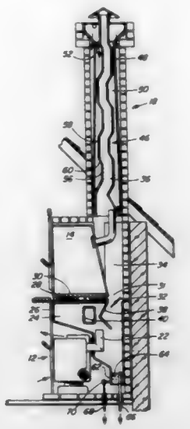
a chimney located above said combustion gas chamber, said chimney having a flue for the outflow of the combustion gases;

an outlet opening located at the top of said combustion gas chamber and provided with a damper for controlling the flow of the combustion gas upwardly through said opening;

a water tank;

a heat exchange passage extending adjacent said water tank and communicating with said flue;

second opening located at one side of said combustion gas chamber and communicating with said heat exchange passage for the outflow of the combustion gas from said combustion gas chamber; and



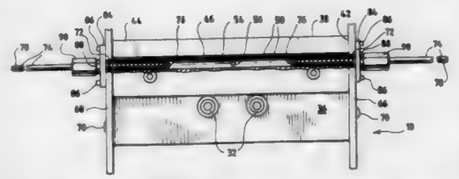
an oven located at the top of said combustion gas chamber so as to be heated by the combustion gas therein.

5,305,955

NOZZLE BAR WITH ADJUSTABLE PATTERN

John P. Smitherman, Salinas, Calif., and Danny M. Low, Lilburn, Ga., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Mar. 25, 1993, Ser. No. 37,097
Int. Cl.[5] B05B *1/24*
U.S. Cl. 239—75 **10 Claims**



1. Apparatus for depositing a pattern of a viscous material upon a portion of a substrate movable disposed within a plane relative to said apparatus, wherein said apparatus is adjustable so as to vary the length, width, and position of said pattern of said viscous material relative to said substrate, comprising:

viscous material supply means for supplying said viscous material to be deposited upon said substrate;

a nozzle bar having a longitudinal extent;

a longitudinal bore defined within said nozzle bar and extending throughout said longitudinal extent of said nozzle bar so as to have first and second oppositely disposed open ends, said longitudinal bore being fluidically connected to said viscous material supply means so as to receive a supply of said viscous material from said viscous material supply means;

a plurality of channels defined within said nozzle bar along said longitudinal extent thereof, fluidically connected at first end portions thereof to said longitudinal bore so as to receive said viscous material from said longitudinal bore, and defining material dispensing outlets, facing the substrate for dispensing the material onto said substrate, at second opposite end portions thereof which are disposed at an acute angle with respect to said plane of said substrate so as to prevent dripping and stringing of said viscous material as said viscous material is deposited upon said substrate;

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heating means disposed within said nozzle bar at a position adjacent to said longitudinal bore and said plurality of channels for heating said nozzle bar and said viscous material to a predetermined temperature;

sensor means disposed within said nozzle bar at a position adjacent to said longitudinal bore and said plurality of channels and operatively connected to said heating means for sensing the temperature of said nozzle bar and controlling said heating means so that the temperature of said nozzle bar and said viscous material is regulated to said predetermined temperature; and

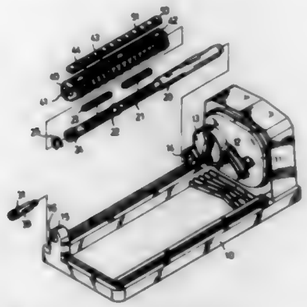
means adjustably movable within said first and second oppositely disposed open ends of said longitudinal bore for selectively preventing said viscous material, as supplied from said viscous material supply means, from reaching predetermined ones of said plurality of channels so as to thereby vary the width, as well as the relative position, of said pattern of said dispensed viscous material along said longitudinal extent of said nozzle bar and with respect to said substrate.

5,305,956

OSCILLATORY SPRINKLER

Po H. Wang, No. 91, Kuo Tai Rd., Chu Nan Chen, Miao Li Hsien, Taiwan

Continuation-in-part of Ser. No. 924,164, Aug. 3, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,872
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—242 **3 Claims**



1. An oscillatory sprinkler comprising:

a base frame;

an oscillatory means;

a water output tube with one end thereof attached to said oscillatory means and the other end thereof pivotally attached to said base frame to allow oscillatory motion of said water output tube upon actuation of said oscillatory means, said water output tube having at least one water output and a gasket mounted around said water output; and

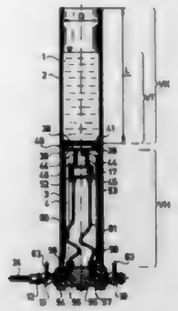
a tubular socket rotatably mounted around said water output tube, having more than four faces each with a plurality of holes and a plurality of retaining members separating said holes, a strip with a plurality of sprinkling nozzles being removably attached to each said face, said retaining members being in a frictional contact relationship with said gasket to retain said gasket and retain said tubular socket in a desired position relative to said water output tube.

5,305,957

PROCESS AND APPARATUS FOR THE FINE DISPERSION OF LIQUIDS OR POWDERS IN A GASEOUS MEDIUM

Istvan Szocs, Nemetvolgyi ut 10, H-1126 Budapest, Hungary

PCT No. PCT/HU89/00043, § 371 Date Oct. 12, 1990, § 102(e) Date Oct. 12, 1990, PCT Pub. No. WO90/07373, PCT Pub. Date Jul. 12, 1990
PCT Filed Aug. 16, 1989, Ser. No. 571,668
Claims priority, application Hungary, Jan. 4, 1989, 20/89
Int. Cl.[5] A62C *35/02, 13/66*
U.S. Cl. 239—302 **24 Claims**



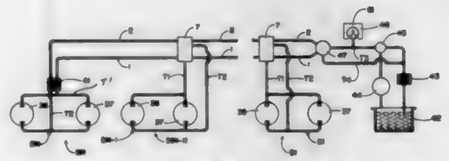
1. Process for the fine dispersion of liquid or powders in gaseous medium, characterized in that a charge (1) of the liquid or powder is put into an ejection tube (2), and pressurized gaseous propellant (4) is admitted at explosion-like speed behind the charge (1), container (3) is filled with said propellant (4) of at least 10 bar pressure, and the propellant (4) is conducted from the container (3) behind the charge (1) in the ejection tube (2), with a maximum of 20 msec., and wherein the volume of said charge (1) amounts to 25–100% of the volume of the ejection tube (2), and the volume of said propellant (4) amount to 30–750 times the volume of the charge (1) in normal condition.

5,305,958

DUAL-DIRECTIONALLY HYDRAULICALLY-CONTROLLABLE CENTER-PIVOT IRRIGATION APPARATUS

Theodore V. Olson, 105 W. Neely St., Atkinson, Nebr. 68713

Filed Feb. 19, 1992, Ser. No. 839,473
Int. Cl.[5] B05B *3/18*
U.S. Cl. 239—733 **2 Claims**



1. In a sprinkling and irrigating apparatus for a section of land which includes a centrally located water supply pipe, a horizontally extending water distributing conduit having a fixed-pivot inward-end pivotably connected at said supply pipe and having a conduit outward-end, said conduit being axially movable around said supply pipe, a plurality of upright and ground-engaging supports disposed at spaced positions along and horizontally elevating said conduit and including an innermost support located nearest said conduit fixed-pivot inward-end, an outermost support located nearest said conduit outward-end, and a next-outermost support directly inwardly

neighboring said outermost support, said horizontally disposed water distributing conduit being adapted to laterally flex due to temporary misalignment of said support members, drive means at each upright support for laterally moving the supports and the associated horizontal water distributing conduit around the central water supply pipe, and alignment means tending to maintain the several supports in lineal alignment, the improvement wherein said water distributing conduit is selectably commandably moveable clockwise or counterclockwise according to a commandable dual-directional-valve and wherein said alignment means comprises:

(a) pump means for introducing non-acqueous hydraulic fluid into a said dual-directional-valve located between the conduit inward-end and said innermost support;

(b) a first-main extending along said conduit, from said dual-directional valve to the drive means for said outermost upright support;

(c) a second-main extending along said conduit;

(d) at each of said upright supports, but to the exclusion of said outermost support, a four-ways fluid valve interconnected between: said first main; said second main; and also bi-directionally to the drive means for said support member; and

(e) means responsive to lateral flexing along the said water distributing conduit at each of said upright supports but not at said outermost support, and acting through a said four-way fluid valve to control hydraulic fluid flow into the drive means;

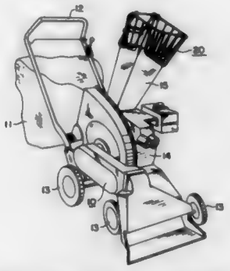
whereby alternate settings of said strategically centrally located dual-directional valve will maintain the water distributing conduit in lineal alignment as said conduit is commanded to alternatively axially rotate clockwise or counterclockwise about said conduit fixed-pivot inward-end.

5,305,959

INLET CHUTE FOR CHIPPER/SHREDDER

Thomas O. Chesser, Rensselaer, N.Y., assignor to Garden Way Incorporated, Troy, N.Y.

Filed Jan. 17, 1992, Ser. No. 822,636
Int. Cl.[5] B02C *23/02*
U.S. Cl. 241—100 **9 Claims**



1. An extension member to accommodate extended length branches, and the like for insertion into the generally rectangular inlet chute of a chipper/shredder device comprising

a lattice framework structure having an open bottom base member, an open top member and side elements interconnecting said base member and said top member on three contiguous sides to define a generally U-shaped passageway leading to the inlet chute of the chipper/shredder,

said base member having a rectangular shape generally coextensive with the shape of the rectangular inlet of the chipper/shredder device,

said top member being generally rectangular in configuration,

first means for securing at least one edge of the base member of the structure to one upper edge of the inlet of the chipper/shredder inlet; and

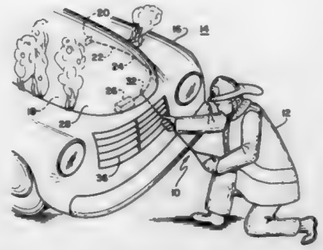
foldable second means opposite said first means and secured to the edge of the open side of the U-shaped extension member for securing the opposite edge of the base member to the chipper/shredder inlet chute, said second means having an extended and a folded position whereby said extension member may be fixed in an upright position with said second means in the extended position.

5,305,960

AUTO ENGINE FIRE CONTROL METHOD

Edmund T. Healey, 619 Remmert Pl., Baldwin, N.Y. 11510

Filed Oct. 6, 1993, Ser. No. 132,190
Int. Cl.[5] B25J *11/00;* **A47F** *13/06*
U.S. Cl. 294—1.1 **1 Claim**



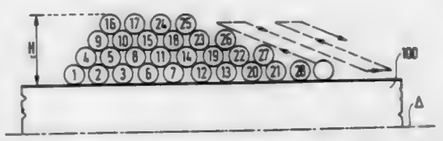
1. A method used preparatory to extinguishing an auto engine fire to unlatch an auto hood from its position in closed relation over said auto engine, said hood-unlatching method comprising the steps of locating in a driver's side off-center location in a grille of said auto an opening to gain access beneath said latched hood, using an elongated tool having a gripping handle at a proximal end and a configuration in the shape of a hook at a distal end by projecting said tool hook through said grille access opening to a position known to be adjacent a cable connected in spanning relation between a hood-latching mechanism and a pulling handle within reach of a driver intended for use in normally operating said hood-latching mechanism, establishing hooking engagement between said tool hook and said cable, and exerting a yanking force at said tool gripping handle to cause a cable movement which operates said hood-latching mechanism while bypassing normal use of said cable pulling handle, whereby said unlatched hood is released from its closed position over said engine fire at a safe distance therefrom.

5,305,961

METHOD OF WINDING AN ELECTRICAL COIL AS SUCCESSIVE OBLIQUE LAYERS OF COIL TURNS

Alain Errard, Malaunay, and Roger Bourgeon, Sotteville, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Jun. 12, 1992, Ser. No. 897,642
Claims priority, application France, Jun. 14, 1991, 91 07327
Int. Cl.[5] H01F *15/10*
U.S. Cl. 242—7.03 **1 Claim**



1. In a method of oblique winding of an electrical coil by winding said coil as successive parallel oblique layers of coil turns perpendicular to a winding axis of a coil former and effecting a change from one turn to the next turn by axially offsetting said one turn from said next turn, the improvement wherein:

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said step of winding said coil as successive parallel oblique layers of coil turns comprises;

winding coil turns in the form of a triangle about said winding axis, having in radial cross-section through said winding axis one side as a base of said triangle situated against said coil former, a second side constituting an oblique rising edge and a third, oppositely oblique side, and

winding sequentially alternately oppositely upward and downward oblique coil turn layers parallel to said third, oppositely oblique side thereby causing the coil to advance progressively along the axis of the coil former, such that a half-section of said coil in a radial plane containing said winding axis is in the form of a trapezium with said coil constituting a self-supporting stable mechanical assembly, and with coil turns on oblique sides of the trapezium, with the exception of two turns at respective opposite ends of a longer parallel side of the trapezium, resting on two turns in a coil layer extending parallel to the winding axis, and wherein a point at which said oblique rising edge meets said third oppositely oblique side defines the radial extremity of said trapezium, with each coil turn of the rising edge except for a first coil turn resting on two successive turns in the same layer parallel to the winding axis, the first of said turns being a previous turn of a rising edge,

skipping placement of a coil turn n for making an adjustment tap during one of downwardly oblique coil turn winding and upwardly oblique coil turn winding; thereby leaving one turn location free, and continuing winding of succeeding coil turns from said one turn location free until reaching the last coil turn of a succeeding alternately oppositely upward oblique coil turn layer, and thereafter placing said skipped turn n at the top of the upwardly wound oblique coil turn layer at the top of the trapezium, and further continuing said coil winding in a succeeding downwardly oblique coil turn layer.

5,305,962

YARN WINDING APPARATUS AND METHOD

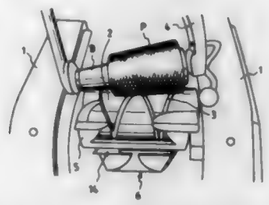
Masao Uehara, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 18, 1992, Ser. No. 900,912

Claims priority, application Japan, Jun. 19, 1991, 3-176177; Aug. 27, 1991, 3-240502

Int. Cl.[5] B65H *54/28*

U.S. Cl. 242—43.2 **6 Claims**



1. A method for winding yarn onto a package, the package having a width, the method comprising:

providing a traverse drum,

providing a yarn guide,

guiding yarn through the yarn guide to the traverse drum,

providing a defining guide,

detachably mounting the defining guide on the yarn guide to that the defining guide limits movement of yarn guided to the traverse drum in at least one direction to thereby define the width of the package.

5,305,963

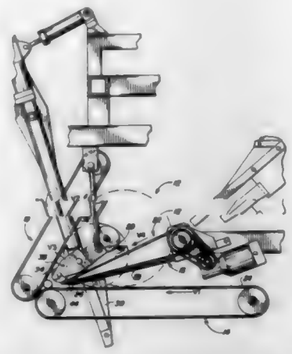
METHOD AND APPARATUS FOR FORMING ROLLS FROM STRIPS OF COMPRESSIBLE MATERIAL

Emerson C. Harvey, III, Lawrenceville, Ga.; Robert J. Allwein, Littleton, Colo.; Larry J. Weinstein, Littleton, Colo., and Jo M. Teague, III, Littleton, Colo., assignors to Schuller International, Inc., Denver, Colo.

Filed Dec. 3, 1992, Ser. No. 984,765

Int. Cl.[5] B65H *18/16, 18/08*

U.S. Cl. 242—55.1 **19 Claims**



9. An apparatus for forming spirally wound rolls from strips of compressible material comprising:

a first endless belt conveyor, a second endless belt conveyor extending upwardly from an end of the first endless belt conveyor at an acute angle relative to the first endless belt conveyor, a compression roll intermediate the first and the second endless belt conveyors, and a third endless belt conveyor intermediate the compression roll and the first endless belt conveyor whereby the first endless belt conveyor, the second endless belt conveyor, the compression roll and the third endless belt conveyor define a winding space within which the spirally wound rolls are formed from the strips of compressible material;

means driving the first endless belt conveyor to deliver the strips of compressible material to the winding space, means driving the second endless belt conveyor to cause the strips of compressible material to begin to turn in a spiral, means driving the compression roll to cause the strips of compressible material to be turned further into the spiral, and means driving the third endless conveyor to cause leading portions of the strips of compressible material to be tucked inside trailing portions of the strips of compressible material to complete the formation of each spiral layer of the rolls.

5,305,964

CASSETTE TAPE LOADING DEVICE HAVING PIVOTABLE ADHESIVE TAPE APPLICATOR AND METHOD OF USE

Koichi Sota, Chohu, Japan, assignor to Otari Inc., Chou, Japan

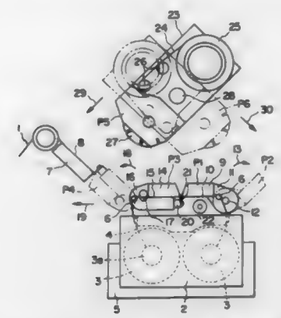
Filed May 28, 1992, Ser. No. 890,634

Claims priority, application Japan, Jun. 20, 1991, 3-148571

Int. Cl.[5] B65H *21/00*

U.S. Cl. 242—56 R **10 Claims**

6. A tape cassette loading and winding apparatus for splicing and winding a magnetic tape into a cassette comprising; magnetic tape supply means for supplying magnetic tape; first tape holding means for holding an end of said magnetic tape from said magnetic tape supply means; cassette holding means for holding a cassette to be loaded with magnetic tape; leader tape withdrawing means for extending a leader tape from said cassette; second tape holding means movable between a first position and a second position, said second tape holding means holding a portion of said withdrawn leader tape when in said second position; third tape holding means for holding the leader tape exposed outside of said cassette; said third tape holding means being movable between first and second positions, said third tape holding means being in alignment with said second holding means in its first position and in alignment with said first tape holding means when moved to said second position; first tape cutting means constructed and arranged to cut said leader tape being held on said second and third tape holding means when they are in alignment; second cutting means for cutting said magnetic tape when said third tape holding means is in alignment with said first tape holding means; first sticking means for sticking a piece of adhesive tape on the first cut end of said leader tape and the held end of said



magnetic tape; second sticking means for sticking a piece of adhesive tape to the other cut end of leader tape with about half of the piece of adhesive tape extending beyond the other cut end of said leader tape; third sticking means for pressing the piece of adhesive tape extending beyond the other cut end of said leader tape to the cut end of said magnetic tape when the respective ends are in abutment; said first and second sticking means constitute a single structure that is movable from a first position to stick a piece of adhesive tape on a first cut end of said leader tape and one end of said magnetic tape to a second position to stick a piece of adhesive tape on a second cut end of said leader tape; revolving means for revolving a reel in said cassette to wind the leader tape and spliced magnetic tape into the cassette; whereby the cassette is loaded with magnetic tape.

5,305,965

APPARATUS FOR WINDING AND STORING A TAPE-LIKE ARTICLE IN A CONTAINER

Yasuo Yamada, and Masaaki Fuda, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,144

Claims priority, application Japan, Dec. 21, 1990, 2-412591

Int. Cl.[5] B65H *18/10*

U.S. Cl. 242—56 R **7 Claims**

1. An apparatus for winding and storing an elongate article in a container, comprising:

(a) an elongate article supply unit including at least one feed roller for feeding the elongate article in a feed direction and a cutter for cutting the elongate article;

(b) a guide member for guiding the elongate article, said guide member being rotatably connected to said elongate article supply unit via an upper portion of said guide member and including a guide piece which is slidable in the feed direction of said elongate article;

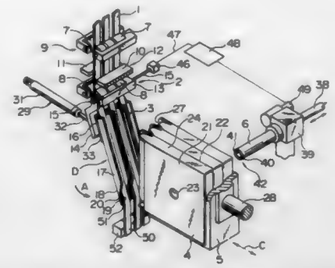
(c) a holder for supporting said container, said container having a through hole on at least one of front and rear surfaces and an opening on one side wall, said holder being positioned so that said opening of said container is kept within a moving path of a lower end of said guide member;

(d) a first driving unit connected to said guide member to reciprocate the lower end of said guide member between a standby position outside said container and a work position at least partially within said container where said lower end approaches a center line of said through hole through said opening;

(e) a second driving unit connected to said guide member to slide said guide piece of said guide member between the work position and a position where said guide piece crosses the center line of said through hole;

(f) a spindle located at a position corresponding to said through hole of said container supported on said holder, said spindle being reciprocated between a standby position outside said container and a position at least partially inside said container for winding said elongate article thereon in said container fed through said opening, and including a means for catching said elongate article carried on said guide piece of said guide member when said spindle is at the tape winding position and the guide piece has crossed the center line of the hole; and

(g) a third driving unit for rotating said spindle when said guide piece withdraws to a stop position away from the center line of the hole where said guide piece does not interfere with said spindle, and for stopping said spindle when said elongate article is wound to a preset length.



5,305,966

DEVICE FOR THE DIFFERENTIAL BRAKING OF TRAVELING THREADS, WIRES OR THE LIKE

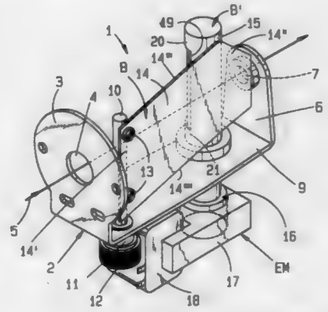
Bruno Motta, Pregassona, Switzerland, assignor to Sobrevin Société de brevets industriels-Etablissement, Vaduz, Liechtenstein

Filed Jun. 24, 1992, Ser. No. 903,513

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1991, 9109001[U]; Oct. 29, 1991, 9113430[U]

Int. Cl.[5] B65H *59/22*

U.S. Cl. 242—149 **8 Claims**



1. A device for differential braking of traveling elongated, flexible material including threads, wires and the like, particularly for use upon entry of filling thread in a loom, comprising brake parts which are arranged with spring action with

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respect to each other and between which the material travels,

one of said brake parts comprising a rotatable shaft,

a motor for driving said shaft in rotation,

another of said brake parts comprising a plate which resiliently abuts said shaft, and

said shaft having a window formed of reduced cross section on a part of circumference of said shaft, in which said material passes without braking force, whereby rotation of said shaft results in a change of braking force on the material.

5,305,967

CONTROL MECHANISM FOR BAIT-CASTING REEL

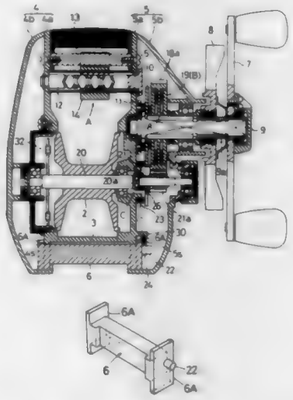
Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 648,514, Jan. 30, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 946,159

Claims priority, application Japan, Feb. 6, 1990, 2-10641[U]

Int. Cl.[5] A01K *89/02*

U.S. Cl. 242—261 **4 Claims**



1. A fishing reel comprising:

a handle for providing driving force through a drive mechanism;

a spool for taking up a fishing line in a rearward direction;

a clutch mechanism for controllably coupling said drive mechanism to said spool;

a control member having, at opposite ends thereof, holding portions projecting in forward, upward and downward directions, said forward direction being opposite to said rearward direction, said control member being movable in said upward and downward directions, said holding portions being perpendicular to a line extending through said opposite ends of said control member, said holding portions having opposing inner faces, said control member operating said clutch mechanism to allow said spool to be freely rotatable;

a pair of side cases including outer wall members covering outer peripheries of said side cases, and inner wall members having rear edge portions with rectangular cutouts and having contact faces contacting said inner faces of said holding portions, each outer wall member having a rear edge inner face, said rectangular cutouts having front edges; and

guide slots defined by said cutouts and said rear edge inner faces, said inner wall members and outer wall members being in contact with each other;

said control member being mounted between said inner wall members and being longer than the distance between said contact faces of the inner wall members,

said opposite ends of the control member being inserted into said guide slots,

said inner faces of said holding portions slidably contacting said contact faces of said inner wall members,

said holding portions having rear edges slidably contacting said rear edge inner faces of said outer wall members,

said control member having front faces adjacent to said holding portions, said front faces slidably contacting said edges of said cutouts,

wherein said inner wall members are held by said holding portions of said control member, thereby to prevent a space between said side cases from increasing and also to prevent said control member from being laterally displaced and further to prevent said control member from distorting.

5,305,968

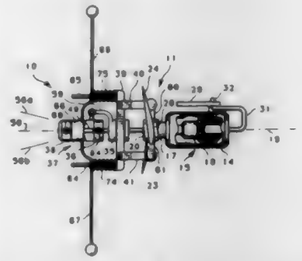
DEVICE FOR AUTOMATICALLY STABILIZING THE YAW MOTION OF A HELICOPTER

Paul E. Arlton, 1132 Anthrop Dr., West Lafayette, Ind. 47906

Filed Sep. 30, 1991, Ser. No. 770,013

Int. Cl.[5] B64C *27/82*

U.S. Cl. 244—17.13 **46 Claims**



25. A device for stabilizing the yaw motion of a helicopter having a main rotor, a power source for driving a tail rotor, and a tail boom with a longitudinal axis, comprising:

a tail rotor mountable to one side of the tail boom and rotatable about a transverse rotor axis by the power source to generate a thrust force transverse to the tail boom and rearward of the main rotor axis;

thrust varying means for permitting a pilot to remotely vary the magnitude of the thrust force; and

gyroscopic means operably mounted with said tail rotor outward and to one side of both said tail rotor and tail boom for automatically varying the thrust force of said tail rotor to oppose yaw motion.

5,305,969

AIRCRAFT DOOR LATCH LOCK MECHANISM

Richard B. Odell, Kirkland, and Leo W. Plude, Woodinville, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 16, 1991, Ser. No. 746,767

Int. Cl.[5] B64C *1/14*

U.S. Cl. 244—129.5 **40 Claims**

1. A lift-latch mechanism for an aircraft door for selectively opening, closing, and locking the door in a door opening formed in an aircraft fuselage, said mechanism comprising:

an opposed set of cam tracks mounted to the fuselage on either side of the door opening;

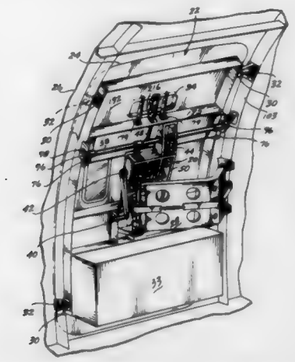
a latch shaft assembly including an elongated latch shaft having an axis, said latch shaft extending approximately the width of the door opening and having a pair of opposed ends, at least one mounting member for rotatably securing said latch shaft to the aircraft door and a pair of crank assemblies secured to said opposed ends of said latch shaft to rotate in unison with said latch shaft,

wherein each said crank assembly is provided with a cam bearing positioned to be disposed in an adjacent said cam track and said cam bearings having common axes and are axially offset from said latch shaft axis, whereby when said latch shaft is rotated about said latch shaft axis in an opening direction, said latch shaft pivots about said cam tracks so that said latch shaft and the door are moved upwards relative to said cam tracks;

a handle including a handle shaft, wherein said handle shaft is rotatably attached to the aircraft door along an axis approximately parallel with said latch shaft axis and said handle and said handle shaft can be rotated in a first, opening, direction and in a second, closing, direction opposite said opening direction;

a lifting cam attached to said handle shaft so as to rotate in unison therewith, wherein said lift cam is formed with a lifting surface;

a latch shaft lifting assembly including a lifting cam follower



having a member positioned to be disposed against and displaced by said lifting cam lifting surface when said handle shaft is rotated in said handle shaft opening direction, and a drive link connected between said lifting cam follower and said latch shaft for rotating said latch shaft in said latch shaft opening direction when said lifting cam follower member is displaced by said lifting cam lifting surface;

a locking cam attached to said handle shaft to rotate in unison therewith, wherein said locking cam is formed with a locking surface; and

a latch shaft locking assembly including a locking cam follower having a member positioned to abut said locking cam locking surface when said handle shaft is rotated in said closing direction, and a locking link connected between said locking cam follower and said latch shaft is prevent said latch shaft opening direction rotation when said locking cam follower member is disposed against said locking cam locking surface.

5,305,970

CENTRIFUGAL SPACE PROPELLANT STORAGE AND TRANSFER DEPOT

John W. Porter, San Diego; William A. Johns, Poway, and David A. Caudle, San Diego, all of Calif., assignors to General Dynamics Corporation, Space Systems Division, San Diego, Calif.

Filed Jan. 12, 1993, Ser. No. 3,163

Int. Cl.[5] B64G *1/00, 1/64*

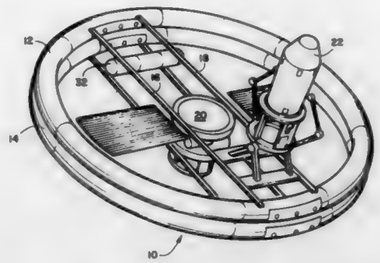
U.S. Cl. 244—159 **22 Claims**

1. A centrifugal propellant depot positioned in outer space for storing and transferring liquid propellants to and from transfer space vehicles which are adapted to transport liquid propellants to the depot for storage or to receive the liquid propellants stored in the depot and comprising:

a plurality of contra-rotatable torus-shaped hollow storage tanks adapted to receive liquid oxidizer and fuel propellants:

transport rail means transversely bridging the hollow storage tanks;

central docking hub means coupled to the rail means and adapted to securably receive a space vehicle in the central portion of the transport rail means and to assist in transporting the space vehicle outwardly to a transfer position for establishing communication between the storage tanks and the space vehicle for transfer of said oxidizer and fuel therebetween;



docking cage means operatively coupled to said central docking hub means and to the transport rail means for receiving the space vehicle and to releasably connect the space vehicle when placed in the transfer position to a predetermined storage tank for controllably transferring of said oxidizer and fuel therebetween; and

counterbalancing mass means coupled to the transport rail means for variable deployment therealong as required to counterbalance the movement of the transfer vehicle means and the secured space vehicle radially on the transport rail means and the transfer of said oxidizer and fuel between the space vehicle and a storage tank.

5,305,971

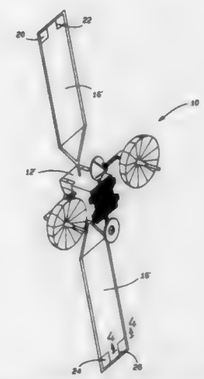
SPACECRAFT CONTROL BY ELECTROCHROMIC DEVICES

Jorge H. Decanini, Long Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 14, 1992, Ser. No. 913,106

Int. Cl.[5] B64G *1/24*

U.S. Cl. 244—168 **14 Claims**



1. A method for altering the orientation of a spacecraft during flight, said method comprising:

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securing at lease one electrochromic device onto at least one surface of the spacecraft; and

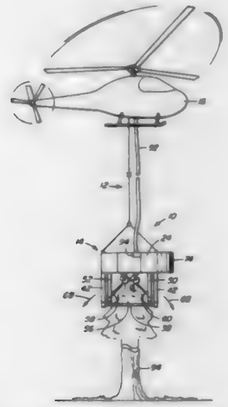
applying electrical excitation to the electrochromic device to cause a change in its radiant energy characteristics to create a controllable variable force on the spacecraft due to light impinging on the device sufficient to alter the orientation thereof.

5,305,972

CABLE SUSPENDED CHIPPER SYSTEM

Larry R. K. Hancocks, Site 8 Comp. 88, R.R. #1, Tampen, B.C., Canada V0E 2X0

Filed Jul. 30, 1993, Ser. No. 99,821
Int. Cl.[5] B64D *47/00*
U.S. Cl. 244—118.1 **12 Claims**



1. A chipper system including a suspension cable connected in supporting relationship to the system, a drive means, a pair of chipper drums mounted to rotate about spaced parallel axes, means defining a tapered inlet passage for directing tree tops entering said passage toward and between said drums, said tapered inlet passage having an entrance located below said drums when said system is supported on said cable, and delimber means defining the circumference of said entrance to said tapered passage.

5,305,973

TEMPERATURE NORMALIZED STRUCTURE

Harry Shortland, Torrance; Martin L. Shanken, Fountain Valley; Peter O. Paxson, Rancho Palos Verdes; C. Dwayne Johnston, Santee, and Guillermo Mas, La Palma, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 7, 1989, Ser. No. 447,347
Int. Cl.[5] B64C *1/38;* **B64D** *37/34*
U.S. Cl. 244—117 A **18 Claims**

1. An aerospace vehicle primary structure thermal conditioning system comprising;

a quantity of working fluid;

fluid temperature conditioner equipment;

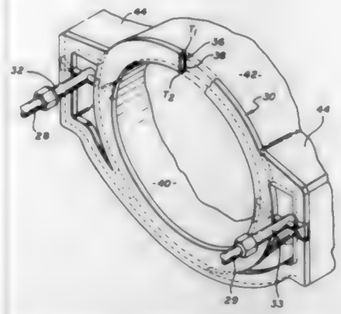
fluid transfer means including conduit means;

one or more primary structure support elements;

each such support element having an inner and an outer load bearing surface and a fluid flow duct intermediate said surfaces and generally central thereto,

each duct having an inlet and an outlet port, said ports being coupled to said conduit means,

temperature sensor means disposed selectively about said conditioning system; and



control means capable of causing said conditioner equipment and transfer means to vary temperature and flow rates of fluid through said support elements.

5,305,974

SPACESHIP PROPULSION BY MOMENTUM TRANSFER

Robert C. Willis, 1365 Fox Gap Rd., Bangor, Pa. 18013

Filed Jul. 23, 1991, Ser. No. 734,797
Int. Cl.[5] B64G *1/00*
U.S. Cl. 244—158 R **4 Claims**



1. A space travel system comprising:

a spaceship,

a first electromagnetic projectile launcher for launching momentum transfer projectiles,

a second electromagnetic projectile launcher mounted to said spaceship which is capable of both launching and catching said projectiles,

said spaceship further comprising:

a guidance system to assure said projectiles are caught by said second projectile launcher,

living quarters suitable to sustain a human crew for an extended period of time,

an electric power source,

and means for connecting said second electromagnetic projectile launcher and said electric power source with said living quarters.

5,305,975

FLAGGING APPARATUS AND METHOD

Charles L. Douglass, 1432 Pine Crescent, Kamloops, British Columbia, Canada V2C 2Z3, and Bruce A. Mertz, 1212 Highridge Dr., Kamloops, British Columbia, Canada V2C 5G6

Filed Nov. 6, 1992, Ser. No. 972,691
Int. Cl.[5] B61L *5/12*
U.S. Cl. 246—477 **14 Claims**

1. An apparatus for representing the state of a condition, the condition having a true state and a false state, the apparatus comprising:

a) an indicator having a recognizable feature indicative of the true state of the condition;

b) a cover for covering the indicator;

c) moving means for moving the indicator relative to the cover such that the true state of the condition is represented by the indicator being uncovered and the false state of the condition is represented by the indicator being covered;

d) support means for removably supporting the indicator and cover on a surface, the support means including:

i) first and second support members removably connectable to the cover in a usage position such that the cover is held in an upright position, the first and second support members being operable to lay on the surface in parallel spaced apart relation and having sufficient length and being spaced apart sufficiently to prevent the cover from being toppled from the upright position;

ii) first and second holders on the cover, for holding the first and second support members in the usage position; and

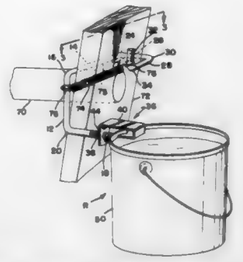
iii) third and fourth holders for holding the first and second support members in a storage position in which the support members and cover lie in a common plane.

5,305,977

LADDER PAINT BUCKET HOLDERS

Alfred C. Roth, 2388 Yost Blvd., Ann Arbor, Mich. 48104

Filed May 8, 1992, Ser. No. 879,986
Int. Cl.[5] E06C *7/14*
U.S. Cl. 248—210 **9 Claims**



1. A receptacle support for supporting a receptacle on a ladder, comprising:

a metal rod having a plurality of bends to provide a hook means at one end and a clamp receiving end at the other end;

said metal rod having a first arm and a second arm, an angled bend in said rod separates said first arm and said second arm, where said first arm has a length greater than a ladder rail width and said second arm having a length less than said first arm;

said hook means having a first member at a right angle to said first arm and parallel to said clamp receiving end and a second member at a right angle to said first member, where said second member being parallel to said first arm, and said hook means being on said first arm;

a third member on said second member and at a right angle to said second member, where said third member extends in a plane parallel to said first arm and in a direction outside of said angled bend; and

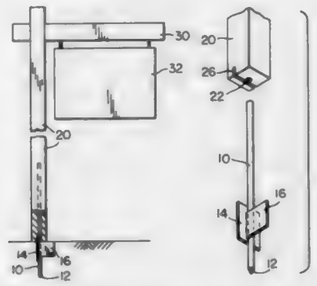
a clamp means on said clamp receiving end for moving along said end, where said clamp means clamps on a side wall of a receptacle and supporting said receptacle on said receptacle support, whereby said hook means wraps around one end of a ladder rail and said first arm engages a rung on said ladder.

5,305,976

STAKE SUPPORTED POST

Jack D. Blanchard, 1618 E. Lassen Ave., Chico, Calif. 95926, assignor to Jack D. Blanchard, Chico, Calif.

Filed Nov. 9, 1992, Ser. No. 973,278
Int. Cl.[5] A45F *3/44*
U.S. Cl. 248—156 **1 Claim**



1. A post for supporting signs (or the like) which comprises

a metal stake having at least one plate extending laterally therefrom in a plane including said stake enabling earth penetration and

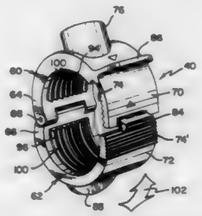
a substantially upright wooden post having an interior opening removably encompassing said stake and a slot encompassing said plate.

5,305,978

ARCUATE COMPRESSION CLAMP

Wayne Current, Holmdel, N.J., assignor to International Visual Corporation, Port Washington, N.Y.

Continuation of Ser. No. 806,886, Dec. 12, 1991, abandoned. This application May 26, 1993, Ser. No. 68,580
Int. Cl.[5] B65D *77/00;* **A44B** *21/00*
U.S. Cl. 248—230 **11 Claims**



11. An arcuate compression clamp useful for clamping onto a rod shaped support, the clamp comprising:

(a) an upper housing and a lower housing, said upper and lower housings each having a curved portion between

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which is defined a space to accommodate the support extending therethrough;

(b) means for hingably connecting each of said upper and lower housings at a corresponding end thereof which permits opposite free ends of said upper and lower housing to move relative to each other in a direction to selectively clamp or release the support extending through the space formed between said upper and lower housings;

(c) releasable engaging means for selectively locking together said free ends of said upper and lower housings at nay one of a plurality of relative positions thereof and for releasing the free ends from being locked at any of the plurality of relative positions thereof, said releasable engaging means including engaging elements which engage each other when said free ends of the upper and lower housings overlap each other, the upper and lower housings being configured so that in response to a manual movement of the outer one of the overlapping free ends in a radially outward direction relative to the inner one of the free ends, the engaging elements separate from each other to release the upper and lower housings from being locked together, said engaging means of said upper housing being arranged relative to said engaging means of said lower housing to keep said free ends locked together until manually released, said upper housing exhibiting a springy force which normally urges said upper free end radially inwardly to normally maintain said engaging elements locked together and said free end of said upper portion being adapted to be flexed outwardly, in opposition to said springy force, to release said engaging elements from being locked together; and

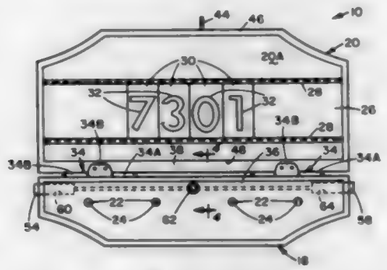
(d) handle means including a first handle element extending outwardly from said upper housing and a second handle element extending outwardly from said lower housing, said first and second handle elements being arranged relative to each other to be simultaneously grasped by one hand and then pushed in a circumferential direction toward each other with the one hand for locking together said free ends of said engaging means, said handle means including a third handle element extending outwardly from said upper housing and adapted to be pushed in a radial outward direction with the one hand for releasing said free ends from being locked together, said third handle element being closer to said free end of said upper housing than is said first handle element.

5,305,979

ASSEMBLY CONVERTIBLE BETWEEN HOUSE ID DISPLAY SIGN AND SUPPORT SHELF

John D. Hanson, Jr., 1104 BB Mary La., Port Tobacco, Md. 20677

Filed Mar. 10, 1992, Ser. No. 849,279
Int. Cl.[5] G09F *7/00, 7/16*
U.S. Cl. 248—291 **19 Claims**



1. An assembly convertible between a house ID display sign and a support shelf, comprising:

(a) a lower member having means for stationarily attaching said lower member on a wall portion of a house adjacent to an entry door;

(b) an upper member having means for mounting ID indicia to said upper member for identifying the house;

(c) means for mounting said upper member to said lower member such that said upper member can be moved relative to said lower member between a house ID display sign configuration in which said upper member extends above and in a substantially coplanar relation with said lower member and a support shelf configuration in which said upper member extends outwardly from and generally above said lower member and in a substantially perpendicular relation with said lower member and is capable of seating an object thereon; and

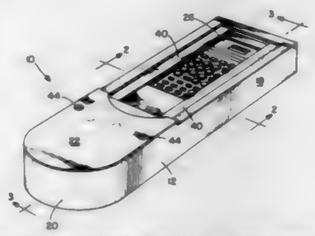
(d) means on said lower member for engaging and supporting said upper member when said upper member is moved to said substantially perpendicular relation to said lower member so as to retain said upper member in said support shelf configuration when an object is seated on said upper member.

5,305,980

REMOTE CONTROL UNIT HOLDER

James F. Le Blanc, 27 Heath Rd., Fishkill, N.Y. 12524

Filed Jul. 19, 1993, Ser. No. 93,468
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—309.1 **10 Claims**



1. An adjustable device for holding a remote control device of the type having control buttons on the top thereof and a radiation transmission window at one end comprising:

an elongated hollow body member adapted to receive a remote control device;

top means secured in the body member adapted to partially cover the top of a remote control device and leave the top buttons thereof uncovered whereby they can be operated with the control device in place within said adjustable device;

bottom means secured in the body member a distance from the top means corresponding to the thickness of a remote control device;

two side means secured in the body member separated a distance corresponding to the width of a remote control device;

adjustable means to adjust the distance between the top means and the bottom means; and

said top means including stop means adapted to abut against one end of a control device located within the body member.

5,305,981

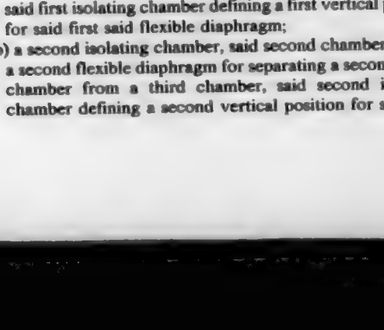
MULTIAXIS VIBRATION ISOLATION SYSTEM

David C. Cunningham, Carefree; Lawrence P. Davis, and Frank M. Schmitt, both of Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 31, 1991, Ser. No. 785,726
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **12 Claims**

1. Vibration isolating and damping apparatus for passively isolating vibrations between a supporting structure and a supported structure having a center of mass while permitting movement of the supported structure over six degrees of freedom with respect to the supporting structure, wherein the supported structure contains a torque-producing device for developing predetermined control torques over a given vibration frequency range, comprising:

a cradle for supporting said supported structure, a plurality of vibration isolators, each isolator having a body, a first end flexibly secured to said supporting structure, and a second end flexibly secured to said cradle, said isolators supporting said cradle with respect to said supporting structure, pairs of said isolators having a common base on said supporting structure and having intersecting longitudinal axes disposed to define a substantially isosceles triangle at a predetermined acute angle with respect to said



base, said pairs being substantially parallel to an azimuthal axis passing through said supporting structure and said cradle, said isolators being arranged in substantially equiangularly disposed pairs about said azimuthal axis, a flexible joint at each of said first and second ends of said isolators adapted to provide at least two degrees of freedom of motion, so that opposite ends of each said isolator are relatively movable axially, each of said isolators being movable relative to each other along their respect longitudinal axes while maintaining said supported structure in kinematic relation with said supporting structure,

said isolators providing a predetermined complex impedance as as a function of vibration frequency and adapted for transmission of said control torques over said given vibration frequency range.

5,305,982

ADJUSTABLE STATIC PRESSURE REGULATOR

Yehuda Tamari, 21 Singworth St., Oyster Bay, N.Y. 11771-3703

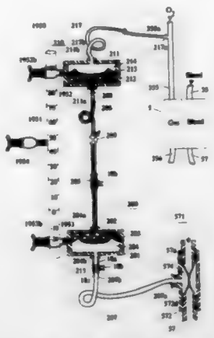
Division of Ser. No. 852,931, Mar. 13, 1992, Pat. No. 5,186,431, which is a continuation of Ser. No. 683,093, Apr. 19, 1991, abandoned, which is a continuation of Ser. No. 410,845, Sep. 22, 1989, abandoned. This application Dec. 31, 1992, Ser. No. 999,217
Int. Cl.[5] F16K *7/07*
U.S. Cl. 251—5 **21 Claims**

1. An adjustable pressure regulator for supplying a static pressure to a pressure sensitive device, the regulator comprising:

(a) a first isolating chamber, said chamber having a first flexible diaphragm for separating a fluid chamber having a fluid to be pressure regulated from a first liquid chamber, said first isolating chamber defining a first vertical position for said first said flexible diaphragm;

(b) a second isolating chamber, said second chamber having a second flexible diaphragm for separating a second liquid chamber from a third chamber, said second isolating chamber defining a second vertical position for said second flexible diaphragm at least one of said first or second vertical positions being adjustable;

(c) a conduit connecting the first liquid chamber and the second liquid chamber to form an interconnected liquid column, the hydraulic height of said column between said first vertical position and second vertical position generating a static pressure for said regulator;



(d) means for connecting the fluid to be pressure regulated in the first isolating chamber to the pressure sensitive device;

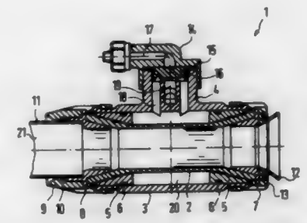
(e) whereby an adjustable static pressure is added to the fluid to be pressure regulated by the hydraulic height of the liquid between the first and second diaphragms.

5,305,983

SPINNING DEVICE

Manfred Haase, and Gottfried Schneider, both of Ingolstadt, Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 923,300, Jul. 31, 1992, abandoned. This application Aug. 24, 1993, Ser. No. 111,109
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126282
Int. Cl.[5] F16K *7/00*
U.S. Cl. 251—5 **11 Claims**



1. A pressure circuit for controlling the pressure at the spinning surface of textile machine spinning device, comprising:

a negative pressure source, said negative pressure source in pneumatic communication with the spinning surface;

a pneumatically actuated diaphragm valve operatively disposed between said negative pressure source and the spinning surface, said diaphragm valve having a normally open position so that during yarn formation a negative pressure is established at the spinning surface;

pneumatic actuation means in physical communication with said valve and with a source of compressed air for actuating said valve by directing compressed air to said diaphragm valve thereby closing said diaphragm valve;

a rapid deaeration device in physical communication with said diaphragm valve, said deaeration device defining a

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vent path from said diaphragm valve for venting compressed air directly from said diaphragm valve thereby allowing said diaphragm valve to rapidly open; and

a remote control means for actuating said pneumatic actuation means upon the occurrence of a predetermined condition wherein the negative pressure at the spinning surface must be interrupted.

5,305,984

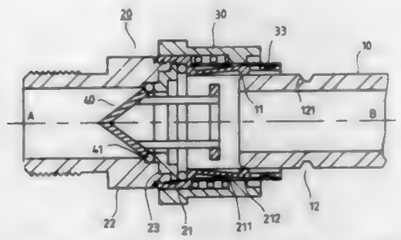
FAUCET ASSEMBLY

Kun-Yang Chen, Suite 1, 11F, 95-8 Chung Ping Road Sec. 1, Taichung, Taiwan

Continuation-in-part of Ser. No. 819,486, Jan. 10, 1992, abandoned. This application Jan. 11, 1993, Ser. No. 3,838

Int. Cl.[5] **F16L** *37/28*

U.S. Cl. 251—149.1 **4 Claims**



1. A quick releasing and attaching fluid coupling comprising:

a hollow female member defining a fluid conduit therein and having a receiving portion with a generally cylindrical bore;

at least one resilient cantilever formed unitarily in a peripheral wall of the receiving portion and secured to said female member at one end thereof and being axially aligned with the bore thereof, said at least one cantilever having a lug on the other end thereof projecting radially inwards so as to extend into the bore of said female member, said at least one resilient cantilever defines an extended portion of the cylindrical bore;

a hollow male member defining a fluid conduit therein and having a first end portion for insertion into the bore of said female member wherein the fluid conduit of said male member is in communication with the fluid conduit of said female member, said male member having;

a) a cam surface on the terminal end of the first end portion thereof for engaging said lug when said male member is inserted into said female member so as to effect the outward radial flexure of said at least one cantilever;

b) an annular recess formed at a predetermined position around an outer periphery of the first end portion thereof for receiving said lug of said at least one cantilever wherein the outwardly flexed said at least one cantilever recovers so as to intromit said lug into said annular recess, said annular recess defining a cam surface therein for engaging said lug so as to effect the outward radial flexure of said at least one cantilever when said male member is retracted from said female member;

a sleeve member slidingly mounted over and along the entire length of said at least one resilient cantilever, said sleeve member having at least one stop surface on an inner periphery thereof for abutment with an outer periphery of the other end of said at least one cantilever so as to prevent the outward radial displacement of said lug thereon from said recess when said sleeve member is in a first position on said female member;

a positioning means for maintaining said slide member in said first position on said female member disposed between and around a portion of said at least one resilient cantilever and a portion of said sleeve member adjacent said at least one stop;

whereby, said male member can be releasably secured to said female member by displacing said sleeve member along said at least one resilient cantilever into a distal position relative to said lug and said recess engagement so as to allow the outward radial displacement of said lug, inserting the first end portion of said male member into said female member away from said recess, and thereafter, and returning said sleeve member to said first position.

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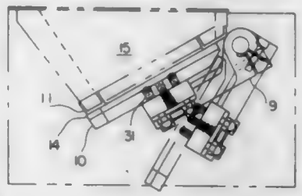
VALVE

Richard J. Fendley, Seabrook; Linda M. White, Friendswood, both of Tex., and James R. Meyer, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 30, 1993, Ser. No. 56,167

Int. Cl.[5] **F16K** *1/20, 1/48*

U.S. Cl. 251—85 **18 Claims**



1. A flapper valve comprising a valve housing having a flow passage therethrough;

a valve seat positioned in the flow passage so as to accommodate a flapper plate member, the valve seat comprising a peripheral seal of conductive material on its engaging surface;

a flapper plate member comprising a sealing surface, the flapper plate member being positioned in the housing so that the sealing surface of the member may move alternately out of and into sealing contact with the seal on said seat, the flapper plate member comprising a conductive sealing material bonded to its engaging surface;

actuating means comprising a rotatable shaft disposed in said housing on an axis transverse to said flow passage and an arm member pivoted on said shaft in said housing for opening and closing the valve by bringing the flapper plate member out of and into sealing contact with the seat, the arm member being connected to the flapper plate member through means for absorbing impact energy from the flapper plate member and allowing restricted three dimensional movement of said plate member, said means for absorbing impact energy and allowing restricted three dimensional movement comprising at least one flexible energy absorbing member.

5,305,986

FLUID CONTROL VALVE

Kevin F. Hunt, 2148 Looscan La., Houston, Tex. 77019

Filed Mar. 31, 1993, Ser. No. 40,474

Int. Cl.[5] **F16K** *5/06, 5/10*

U.S. Cl. 251—207 **20 Claims**

1. A fluid control valve comprising:

a. a body defining a cylindrical passageway for the fluid, the passageway extending through the body, the passageway having a first section and a second section adjacent to the first section, the first section having a first diameter at the point immediately adjacent to the second section, the second section having a second diameter larger than the first diameter, the passageway having a longitudinal axis, the longitudinal axis defining a first axis;

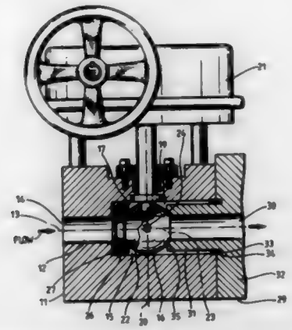
b. a ball rotatably disposed in the second section, wherein

the ball divides the second section into an upstream part and a downstream part, the ball having:

(i) a second axis extending through the center of the ball, the second axis substantially perpendicular to the first axis;

(ii) a first cylindrical through hole having a central longitudinal axis defining a third axis, substantially perpendicular to the second axis, the first hole having a third diameter; and

(iii) a second through hole at an angle to the first through hole, the second through hole having a central longitudinal axis defining a fourth axis, the second hole having



a cylindrical inlet segment having a fourth diameter, the fourth diameter less than the third diameter, the second hole having a cylindrical outlet segment having a fifth diameter, the fifth diameter less than the third diameter.

c. an annular upstream seat disposed in the upstream part, positioned between and in contact with the first section and the ball, the seat having an internal diameter smaller than the first diameter; and

d. an end cap disposed within the downstream part, the end cap having an integral annular downstream seat positioned in contact with the ball, the downstream seat having an internal diameter larger than the internal diameter of the upstream seat.

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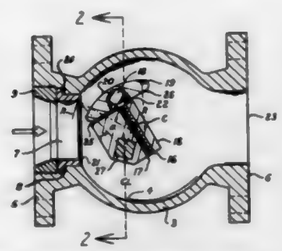
ECCENTRIC, ROTARY PLUG VALVE

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

Continuation-in-part of Ser. No. 894,010, Jun. 3, 1992, abandoned. This application May 17, 1993, Ser. No. 62,002

Int. Cl.[5] **F16K** *15/00*

U.S. Cl. 251—298 **5 Claims**



1. Eccentric, rotary plug valve comprising:

a. a housing capable of being suitably connected to a piping system and having a co-axial inlet port and an outlet port connected by an enlarged inner cavity, said housing further having a hollow bonnet extension extending perpendicularly from the axis aligning said inlet and outlet ports;

b. an annular seat ring having a circular bore and being suitably fastened within said housing cavity and near said inlet port whose one terminating end has a chamfered seating surface;

c. a plug adjustably connected to a hub element, the latter having an upper and a lower portion where the lower portion has a pierced opening constituting a shaft passageway whose axis being offset from that of the annular seat ring, said plug having a semi-spherical front face whose spherical radius sealingly engages the seating surface of the seat ring and a flat rear face having a lower and upper portion and a centrally attached stud with a threaded rear portion connecting with a similarly threaded opening within said hub element and capable of adjustably moving said plug towards or away from said seat ring and into a correct geometric relationship with said seat ring when the plug is sealingly engaged with said seat ring, said hub element having a lower portion having a surface complementing that of the rear face of the plug and configured to cover at least one half of the lower rear face and less than one third of the upper rear face of said plug and being separated from said plug surface by no more than fifteen percent of the diameter of the circular seat ring bore to effectively prevent fluid pressure established near the outlet port and within the housing cavity from affecting the lower portion of the rear face of said valve plug when the latter is not sealingly engaging said seat ring;

d. a shaft rotably mounted within said hollow bonnet extension and further extending into the pierced opening of said hub element and capable of rotating said hub element together with the adjustably attached plug towards said seat ring in order to affect the a sealing engagement with the latter.

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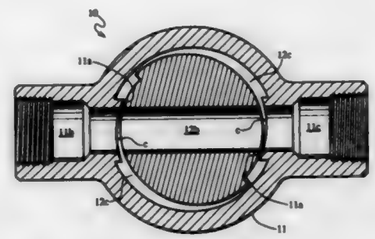
VALVES HAVING INVOLUTE SEALING SURFACES

Don C. Cox, Roanoke, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Sep. 24, 1992, Ser. No. 949,939

Int. Cl.[5] **F16K** *5/00*

U.S. Cl. 251—309 **17 Claims**



1. A valve comprising:

(a) a body having inlet and outlet flow passages and inlet and outlet flow passage sealing surfaces therein, said inlet and outlet sealing surfaces formed as a portion of the curve of an involute of a circle; and

(b) a valve member having a flow passage therethrough mounted for rotation between open and closed positions in said body, said valve member having sealing surfaces thereon, each said sealing surface formed as a portion of the curve of an involute of a circle, said valve member sealing surfaces sealingly engageable with said body inlet and outlet sealing surfaces.

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5,305,989

HOIST AND TRACTION MACHINE WITH FREE ROTATION CONTROL

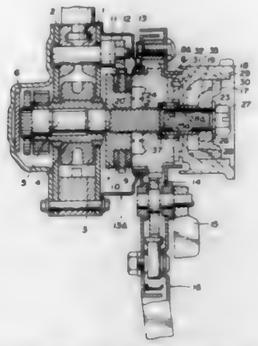
Yoshio Nishi; Yasuo Wada; Haruo Kubota; Munenobu Honda, and Yoshio Ueno, all of Osaka, Japan, assignors to Elephant Chain Block Company Limited, Osaka, Japan

Filed Mar. 17, 1992, Ser. No. 852,943

Claims priority, application Japan, Sep. 20, 1991, 3-241372; Dec. 2, 1991, 3-318040

Int. Cl.[5] B66D *1/14*

U.S. Cl. 254—352 **8 Claims**



1. A hoist and traction machine comprising:
a load sheave;
a driving shaft, having a driven member, for driving said load sheave;
a driving member threadingly mounted to said driving shaft;
a braking pawl;
a braking ratchet wheel engageable with said braking pawl;
braking plates, interposed between said driving member and said driven member, constituting a mechanical brake;
driving means for normally and reversely driving said driving member;
a cover for covering said mechanical brake, wherein said driving member does not contact said cover;
a free rotation control means for controlling operation of said mechanical brake so as to provide free rotation operation for said load sheave, said free rotation control means comprising:
(a) a stopper provided at an axial end of said driving shaft so as to be non-rotatable and axially immovable with respect to said driving shaft;
(b) a free-rotation operation handle provided between said stopper and said driving member in such a manner as to be axially movable between a first position, in proximity to said driving member, and a second position, apart therefrom, and being non-rotatable relative to said driving shaft due to engagement with said stopper, said handle being rotationally operable to rotate said driving shaft to cause said driving member to screw backwards in a non-braking direction, so as to provide the free rotation operation;
(c) an elastically biasing member, interposed between said stopper and said handle, for biasing said handle toward said first position in proximity to said driving member;
(d) regulation means, provided between said handle and said driving member, (i) for regulating a relative rotation range of said driving member with respect to said driving shaft when said handle is put in the first position and (ii) for releasing said regulation when said handle is put in the second position; and
(e) free-rotation-control holding means for applying a biasing force to said driving member from said elastically biasing member, when (i) said handle is put in the second position to release said regulation and (ii) then is rotated so as to perform free rotation operation, so as to maintain said free rotation operation.

5,305,990

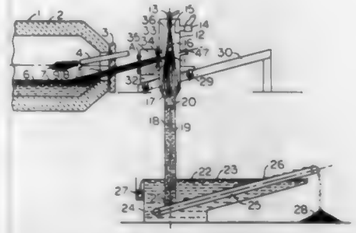
METALLURGICAL FURNACE VACUUM SLAG REMOVAL

William L. Sherwood, 7249 Cypress Street, Vancouver, B.C., Canada V6P 5M2

Filed Feb. 10, 1993, Ser. No. 15,580

Int. Cl.[5] C22B *7/04*

U.S. Cl. 266—45 **15 Claims**



1. A process for slag separation and removal from a metallurgical process furnace containing a liquid metal bath and a slag layer floating on the surface of said bath, comprising the combination of the following steps: withdrawing liquid slag from said slag layer by way of a slag suction-tube inserted into the furnace through said furnace discharge opening with slag entering the inlet said tube immersed in said slag layer but above said metal bath surface and the outlet connected and discharging into a slag cooling chamber positioned outside of the furnace;
evacuating said chamber maintaining a controlled vacuum pressure sufficient to cause a stream of slag to flow from said tube inlet exiting said outlet;
introducing liquid coolant into said chamber to intercept and solidify said stream to form granulated slag;
collecting and removing said granulated slag and coolant from said chamber; and
separating and recovering said granulated slag from said coolant.

5,305,991

HYDRAULICALLY DAMPED SLEEVE BEARING

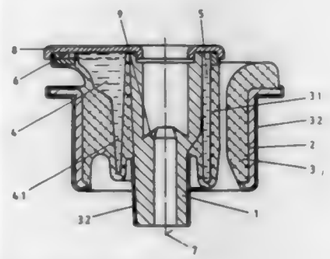
Axel Rudolph, Bensheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed May 18, 1992, Ser. No. 884,694

Claims priority, application Fed. Rep. of Germany, May 21, 1991, 4116577

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.12 **7 Claims**



1. A sleeve bearing comprising:
two support structures, one of said support structures surrounding the other of said support structures, said support structures being parallel to a common axis;
an elastic spring member located between the support structures, the spring member comprising at least one pair of recesses molded into the spring member, the recesses being connected by a damping opening, said recesses and said damping opening being open at an axial end, one of said recesses being defined by walls which are substantially parallel to the common axis and the other of said recesses is defined by at least one wall which is substantially non-parallel to the common axis; and
at least one locking device connected to one of said support structures and movable relative to the other of said support structures, the locking device sealing the open end of said recesses and said damping opening to thereby retain said liquid.

5,305,992

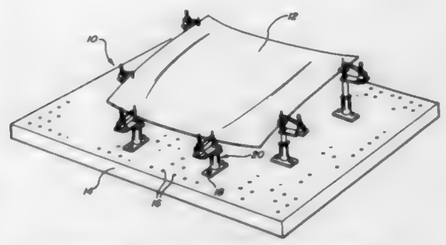
MEASURING FIXTURE WITH GAUGE BALL

William S. Kish, Riverview, Mich., assignor to The Budd Company, Troy, Mich.

Filed Apr. 19, 1993, Ser. No. 49,774

Int. Cl.[5] B25B *1/22*

U.S. Cl. 269—51 **7 Claims**



1. A workpiece retention assembly comprising:
a platform having a matrix of holes in predetermined locations;
a plurality of measuring fixtures secured to said platform by fasteners which engage said holes, said measuring fixtures having a sufficient range of movement to support and position a variety of different workpieces, said measuring fixtures including:
(a) a base portion attachable to said platform;
(b) a selectively compressible stanchion extending upwardly from said base portion including an axial bore extending at least partially therethrough;
(c) a shaft disposed at least partially within said axial bore including means for supporting a workpiece, said means including ahead extending from a shaft and a selectively adjustable support member attached over the head of the shaft for receiving the workpiece;
(d) means for retaining the shaft within said axial bore;
(e) a plate member attachable to said shaft; and
(f) an adjustable clamping mechanism including an actuable lever for retaining a workpiece between said support member and said lever.

5,305,993

FOLDER AND STITCHER ASSEMBLY WITH FIRST AND SECOND STITCHING CYLINDERS

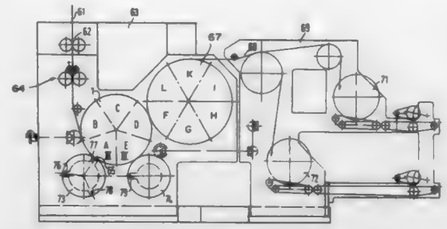
Rudolf Staeb, Frankenthal, Fed. Rep. of Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed May 27, 1992, Ser. No. 888,647

Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117205

Int. Cl.[5] B41F *13/64;* **B42B** *2/00*

U.S. Cl. 270—37 **4 Claims**



1. A folder assembly usable in cooperation with a printing unit having a forme cylinder provided with a plurality of printing plates on its periphery; said folder assembly comprising:
a collect cylinder, said collect cylinder having an uneven number of peripheral fields with there being more than three such peripheral collect cylinder fields;
a transfer and jaw cylinder positioned after, in the direction of paper travel, said collect cylinder;
a split delivery positioned after in the direction of paper travel, said transfer and jaw cylinder and receiving paper products from said transfer and jaw cylinder; and
first and second separate stitching cylinders, said first and second stitching cylinders cooperating with said collect cylinder and being positioned before, in the direction of paper travel, said transfer and jaw cylinder, one of said first and second stitching cylinders having at least three stitching devices evenly arranged at equal peripheral angles on a peripheral surface of said one of said first and second stitching cylinders and an other of said first and second stitching cylinders having at least one stitching device on a peripheral surface of said other of said first and second stitching devices.

5,305,994

SORTER WITH ROTARY SPIRALS AND GUIDE RAILS

Toshikazu Matsui, Kishiwada; Takatoshi Nishimura, Hirakata; Kenichi Honda, Kawasaki; Shoichiro Tajima, Sagamihara; Keiichi Asano, Tokyo; Hiroyuki Nagai, Toyonaka, and Nobukazu Ootsuka, Kashiba, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1992, Ser. No. 912,460

Claims priority, application Japan, Jul. 16, 1991, 3-175282; Nov. 20, 1991, 3-304923; Nov. 26, 1991, 3-311055

Int. Cl.[5] B65H *39/10, 39/05;* **G03G** *21/00*

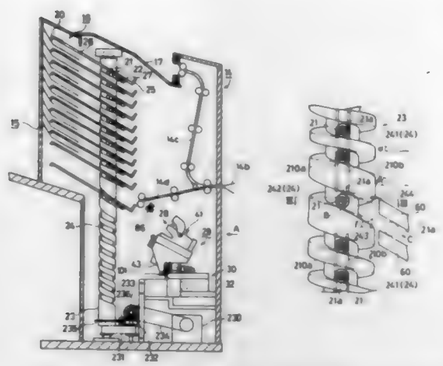
U.S. Cl. 270—58 **10 Claims**

1. A sorter comprising:
a plurality of bin trays arranged in a vertical direction, each bin tray having a specified width and length and adapted for bearing a sheet;
shifting means for shifting the plurality of bin trays in the vertical direction; and
moving means for moving a bin tray at a predetermined position in said sorter, in a lengthwise direction of the respective bin tray;
said moving means including disengaging means for disengaging the bin tray from the shifting means;
said shifting means including:

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a pair of rotatable upstanding cylinders arranged on opposite sides of the plurality of bin trays, each cylinder having a guide surface extending spirally on a surface of the cylinder;

a pair of pins projecting horizontally from opposite sides of



each bin tray and slidable on the guide surface and disengagable therefrom at said position; and

driving means for rotating the pair of cylinders;

whereby the pins slide on the guide surface in response to rotation of the cylinders so as to shift the plurality of bin trays in the vertical direction.

5,305,995

SHEET FEEDING APPARATUS FOR RE-FEEDING A SHEET WITHOUT SMEARING

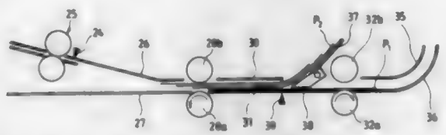
Hisao Nakajima, Tokyo; Yasumi Yoshida; Minoru Nada, both of Kawasaki, and Noriaki Koyanagi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 821,867, Jan. 16, 1992, abandoned, which is a continuation of Ser. No. 628,332, Dec. 17, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 963,265

Claims priority, application Japan, Dec. 18, 1989, 1-327819; Dec. 29, 1989, 1-343865; Jan. 26, 1990, 2-016585; Feb. 7, 1990, 2-027761

Int. Cl.[5] **B65H** *3/00*

U.S. Cl. 271—18 **28 Claims**



1. A sheet feeding apparatus, comprising:

first conveying means for conveying a sheet stack formed in a stepped fashion by offsetting each sheet by a predetermined distance in a predetermined direction toward said predetermined direction or toward an opposite direction;

separating means disposed at a downstream side of said first conveying means in said predetermined direction for separating an outermost sheet from the sheet stack fed out by said first conveying means by sliding between the outermost sheet and other sheets;

second conveying means for conveying the sheet separated by said separating means; and

control means for controlling said first conveying means in such a manner that said first conveying means is activated to convey the sheet stack in said predetermined direction and said first conveying means is stopped after the sheet separated by said separating means starts to be conveyed by said second conveying means.

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PAPER HOPPER

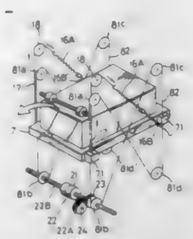
Tatsuhiro Taniwa; Tetsuya Fujimoto; Toshio Fukushima; Hirohiko Kubo, and Wataru Miki, all of Hyogo, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 874,284, Nov. 10, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,362

Claims priority, application Japan, Nov. 13, 1991, 3-297108; Mar. 10, 1992, 4-051418; Apr. 20, 1992, 4-099630

Int. Cl.[5] **B65H** *1/12*

U.S. Cl. 271—22 **13 Claims**



1. A paper hopper wherein a paper feed table is lifted and lowered being kept in a horizontal condition and paper sheets stacked on the paper feed table are sequentially sent out from a top sheet for feeding, the paper hopper comprising:

(a) wire suspending means having an endless wire rope at at least each of one pair of opposite sides of the paper feed table, each endless wire rope being extended in figure-of-eight fashion in such a manner that parts of the endless wire rope form vertical portions parallel to an ascending-/descending plane of the paper feed table; and fixing the paper feed table to the vertical portions of the extended endless wire ropes in order to suspend it in a horizontal condition so that the paper feed table can be lifted or lowered being kept in a horizontal condition; and

(b) lift force exerting means for exerting a lift force to the paper feed table, the exerting means having at least one resilient member for exerting an elastic tensile force to the paper feed table such that the direction of lifting the paper feed table is coincident with the direction in which the restoring displacement of the resilient member takes place.

5,305,997

BASKETBALL RIM ASSEMBLY

James Jolly, Glen Dean, Ky. 40141

Filed Jan. 14, 1992, Ser. No. 822,489

Int. Cl.[5] **A63B** *63/08*

U.S. Cl. 273—1.5 R **13 Claims**

1. A basketball rim assembly, comprising:

a. a mounting portion comprising

i. a mounting wall adapted to be rigidly attached to a backboard,

ii. a housing portion adapted to be attached to the mounting wall in a manner that allows the housing portion to rotate relative to the mounting wall about a pivot point, the housing portion having a first bearing portion;

b. a rim portion comprising a ring and a back portion having a second bearing portion, where the back portion is adapted to be so attachable to the housing portion that the second bearing portion is adjacent to the first bearing portion;

c. release means mounted within the housing, the release means comprising

i. means for releaseably connecting the housing portion to the mounting wall in a manner that allows the mounting portion to rotate about the pivot point when downward loads on the ring exceed a predetermined amount, and

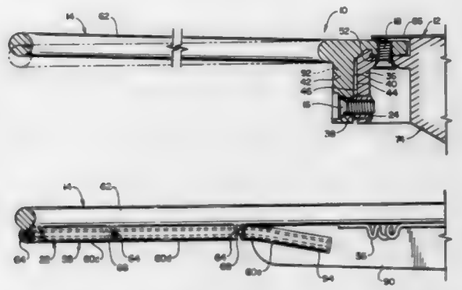
ii. means for opposing rotation of the housing portion about the pivot point caused by downward loads on the ring; and

d. first fastening means for detachably attaching the rim portion to the housing portion along a first fastening axis; wherein

when a downward force is applied to the ring, the second bearing portion is urged towards and contacts the first bearing portion and the first fastening means is so arranged relative to the first and second bearing portions that a force applied by the rim portion on the first fastening means subjects the first fastening means primarily to shear loads.

13. A basketball rim assembly, comprising:

a. a rim portion having a ring with a lower surface;



b. a mounting portion attached to the rim portion, the mounting portion being adapted to be attached to a backboard;

c. a plurality of tubes mounted on the lower surface of a ring with gaps between adjacent tubes, where the tubes are arranged with openings extending therethrough substantially parallel to the ring; and

d. an elongate member adapted to be inserted through the tubes; wherein

a net is suspended from the rim portion by placing an upper loop of the net in a gap between any given pair of adjacent tubes and inserting the elongate member through the given pair of adjacent tubes underneath the loop so that the loop is securely held by the elongate member; and

the length and position of the tubes is so determined that the gaps between adjacent tubes occur at the points where the upper loops of the net are to be attached to the ring.

5,305,998

ILLUMINATED BASKETBALL BASKET RIM AND ILLUMINATED BASKETBALL BACKBOARD

Charles E. Nesbit, 9206 Willard Ct., Des Moines, Iowa 50322, and Mark S. Nesbit, 1248 - 17th St., West Des Moines, Iowa 50265

Continuation-in-part of Ser. No. 327,597, Mar. 23, 1989. This application Mar. 3, 1990, Ser. No. 501,483

The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.

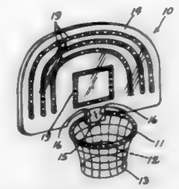
Int. Cl.[5] **A63B** *63/08*

U.S. Cl. 273—1.5 R **18 Claims**

1. In a basketball backboard and basketball rim combination an improvement comprising:

an illumination means in the form of illumination lights contained within both the basketball rim and portions of the basketball backboard wherein both said rim and backboard are provided with transparent surfaces that will permit the transmission of light from the said illumination lights;

switching means for controlling the an/off actuation of said illumination means; and,



light detection means operable to override the said switching means in response to a sensed condition.

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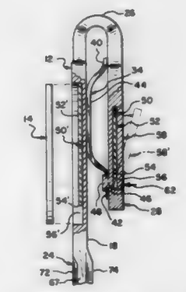
GOLF ACCESSORY

John Tate, 14535 Firestone Blvd., La Mirada, Calif. 90638

Filed Jan. 16, 1992, Ser. No. 821,033

Int. Cl.[5] **A63B** *57/00*

U.S. Cl. 273—32 B **4 Claims**



1. A golf accessory formed with a flat, planar body having an obverse surface and a reverse surface and a peripheral edge therebetween, a pair of elongated generally parallel legs extending from said peripheral edge, and a projection from said peripheral edge at a location on said body opposite said legs formed as a return bent in a loop and terminating in a planar backing plate located in spaced separation from said reverse surface of said body and parallel thereto, said planar body and said backing plate forming a pair of spaced members, a leaf spring secured to one of said spaced members to project toward the other of said spaced members, whereby said leaf spring is resiliently deformable to flex and exert pressure on articles inserted between said leaf spring and said other of said spaced members, and wherein each of said spaced members has an exposed surface which defines entirely within its confines a recessed region, and further comprising a flat, magnetic slab secured within each said recessed region, and a flat ball marker formed of a material attracted by magnetism removably disposed in each said recessed region and held there by the magnetic force of said flat, magnetic slab.

5,306,000

GOLF TOOL

John H. Comella, 1702 N. Dove Tail Dr., Ft. Pierce, Fla. 34982

Filed Feb. 3, 1993, Ser. No. 12,768

Int. Cl.[5] **A63B** *57/00, 47/02, 47/04*

U.S. Cl. 273—32.5 **6 Claims**

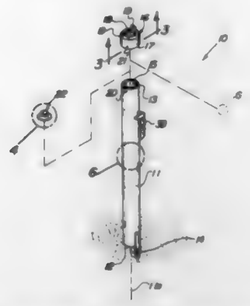
1. A golf tool, comprising,

an elongate cylindrical housing tube symmetrically oriented about a predetermined axis, with the tube having a first end spaced from a second end, and a housing cavity directed coextensively from the first end through the second end, and

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a golf tee member, the golf tee member including a base plate complementarily received through the housing tube, the base plate having a plurality of base plate spikes fixedly and orthogonally mounted to the base plate extending to a roof plate, with the roof plate including a semi-spherical cavity for receiving a golf ball thereon, with the golf tee arranged for projection from the second end to the first end, and

a golf tee member includes a central conical riser projecting from the base plate to the roof plate, and



the second end includes a second end cap, the second end having latch means for securing the cap to the second end, and the cap including a cap top wall, the cap top wall having a plurality of diametrically opposed semi-cylindrical flanges resiliently biased towards one another symmetrically oriented about the predetermined axis for grasping a golf ball therebetween, the cap arranged for selective mounting to the first end when removed from the second end.

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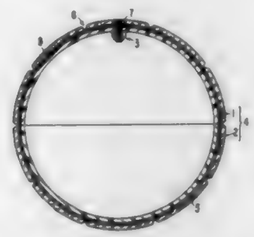
GAME BALL

Hideomi Shishido; Shigeo Doi; Masanori Hirakiuchi, and Hajime Okimoto, all of Hiroshima, Japan, assignors to Molten Corporation, Hiroshima, Japan

Filed Oct. 16, 1992, Ser. No. 962,331

Int. Cl.[5] A63B *41/02, 41/10, 45/00*

U.S. Cl. 273—65 B **3 Claims**



1. A ball for a ball game, comprising a base body consisting essentially of two hemispherical hollow bodies formed of injection-molded thermoplastic elastomer and bonded together at peripheral edges thereof to form a spherical hollow body, compressed air sealingly contained in said base body, an air-injection valve provided at an appropriate portion of one of said two hemispherical hollow bodies and through which compressed air can be injected into the base body, and a plurality of leather panels bonded by means of an adhesive to the surface of said base body, and wherein said thermoplastic elastomer has a 10% tensile stress within the range of 30 to 190 kg/cm^2.

5,306,002

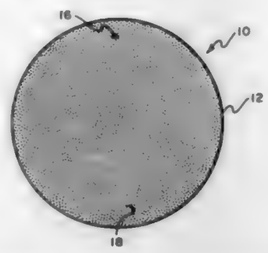
SEAMLESS BASKETBALL

Darin J. Meyer, 1028 Jessup Rd., Thorofare, N.J. 08086

Filed May 10, 1993, Ser. No. 59,097

Int. Cl.[5] A63B *41/08, 45/02*

U.S. Cl. 273—65 B **7 Claims**



1. A basketball for training basketball players to shoot without first aligning the ball in a particular orientation comprised of a substantially spherical outer cover including a value for inflating same, said outer cover being devoid of outwardly facing and visible lines, seams, stitching, indentations and indicia or other marking tending to give the appearance of said ball having a particular orientation, said outer cover having a substantially continuous and uninterrupted outer surface, said outer cover having stippling thereon, and said stippling being a continuous and uniform gripping surface formed from small bumps.

5,306,003

HOCKEY STICK SHAFT

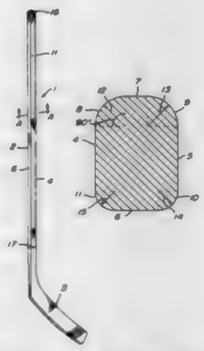
John Pagotto, Town of Mount-Royal, Canada, assignor to Tropsport Acquisitions Inc., Montreal, Canada

Filed Jul. 8, 1992, Ser. No. 910,512

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1992, 9204465

Int. Cl.[5] A63B *59/12*

U.S. Cl. 273—67 A **12 Claims**



1. An elongated handle of rectangular configuration, for a hockey stick, said handle having one end adapted to be attached to a hockey stick blade

a pair of opposed broad side faces,

a pair of opposed narrow side faces,

a first convexly curved corner portion,

a second convexly curved corner portion,

a third convexly curved corner portion, and

an fourth convexly curved corner portion,

said first and second corner portions each connecting a respective broad side face to a same narrow side face,

said third and fourth corner portions each connecting a respective broad side face to the other narrow side face,

said handle being characterized in that for a gripping part of a handle for being gripped by a user,

each of the broad and narrow side faces has a planar configuration,

each of said corner portions has a rounded configuration, and

said first and second corner portions each have a radius of curvature greater than

the radius of curvature of each of the third and fourth corner portions.

5,306,004

SPORTS RACKETS HAVING ALL STRINGS DAMPENED FOR VIBRATION

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14625

Filed Nov. 12, 1992, Ser. No. 975,064

Int. Cl.[5] A63B *49/02*

U.S. Cl. 273—73 C **10 Claims**



1. In a sports racket having a frame formed by a top portion, two opposed lateral portions connecting the top portion to a throat, a shank portion leading from the throat to a handle, and having a string network with longitudinal strings and cross strings defining a string network with its plane coinciding with the plane of the frame, the strings being arranged to enter and leave the frame, the improvement wherein

the cross-section of the major portion of the frame is generally T-shaped, the frame including a central member having a plane of symmetry coinciding with the plane of the string network and defined by side walls, one on either side of said plane of symmetry, and a vertical member extending outwardly and symmetrically away from the plane of the string network, and

including damping strips fastened on the surfaces of said side walls of said central member along major portions of the frame, said strips being in contact with the strings entering in and exiting from the frame at least when the strings are in vibration in the direction perpendicular to the plane of the string network, due to the impact of a ball against the racket.

5,306,005

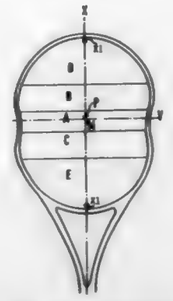
TENNIS RACKET

Rene Lacoste, and Alain Gallais, both of Paris, France, assignors to La Chemise Lacoste (S.A.), Paris, France

Continuation-in-part of Ser. No. 781,635, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 465,103, Dec. 26, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 19,753

Int. Cl.[5] A63B *49/02*

U.S. Cl. 273—73 C **6 Claims**



1. A tennis racket comprising a rigid closed frame delimiting a strung surface and a handle connected to the frame, the strung surface comprising main strings running parallel to the axis of symmetry X of the frame and cross strings parallel to an axis Y perpendicular to axis X and crossing it at a point M near the middle of a section X_1 of the axis X within said frame, the racket being characterized in that the strung surface comprises five zones:

a central zone A, including both the point M and the center of percussion P together with at least three cross strings;

two zones B and C, one on either side of zone A, each including at least three cross strings having an average length exceeding the average length of the cross strings in zone A;

and two zones D and E, respectively, on the sides of zones B and C,

said frame containing local reinforcement in the area of attachment of the cross strings in zones A, B, and C sufficient to insure that the frame in zones A, B, and C is substantially as rigid as any other part of the frame.

5,306,006

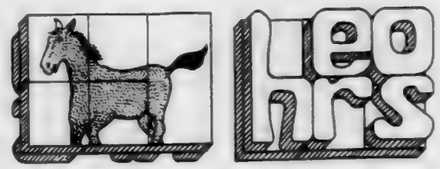
STRUCTURE FOR UNITING SHAPES AND IMAGES WITH WORDS

Sheridan Bell, Kent's Store, Va., assignor to Harmonic Innovations, Inc., Washington, D.C.

Continuation of Ser. No. 813,501, Dec. 26, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,594

Int. Cl.[5] A63F *9/12*

U.S. Cl. 273—157 R **10 Claims**



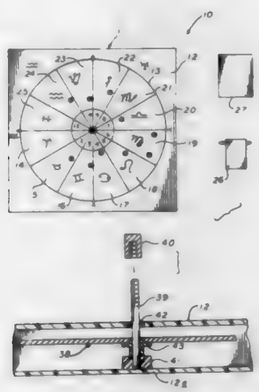
1. A transformable puzzle having an assembled image state and a disassembled word state comprising:

a plurality of letter pieces each representing a letter of at

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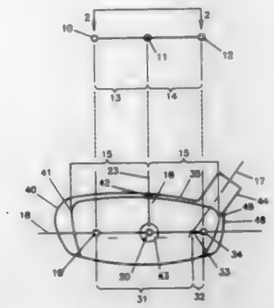
least one identifying word and having an outline of said letter,
wherein at least one of said letter pieces has means, disposed outside the outline of its respective letter, for allowing said plurality of letter pieces to have dimensions that are within predetermined thresholds,
wherein said letter pieces are shaped such that in said assembled image state the letter pieces substantially fill a unique image area having a boundary and in said disassembled word state the letter pieces can be aligned to spell said at least one identifying word, and
wherein at least a part of one of said letter outlines form part of said boundary.

5,306,007
ASTROLOGICAL GAME APPARATUS
Fernando J. Scuteri, 804 San Pedro SE., Albuquerque, N. Mex. 87108
Filed Apr. 12, 1993, Ser. No. 44,757
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—161 **1 Claim**



1. An astrological game apparatus, comprising,
a game board, the game board including a game board top wall, and
a circular target area imposed upon the top wall, with the circular target area including first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth, eleventh, and twelfth wedge-shaped segments directed concentrically relative to the target area, with each of the wedge-shaped segment areas of an equal predetermined configuration, and
each of the segment areas representative of a contrasting Zodiac symbology, and
first, second third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth token discs, each representative of a contrasting planetary representation to include a sun representation and a moon representation permitting dropping of the token discs upon the target area for random positioning of the token discs upon the game board top wall, and
the game board includes a bottom wall spaced from the top wall defining a board cavity therebetween, and a rotary cylindrical disc rotatably mounted intermediate the top wall and the bottom wall, the rotary disc having an axle, the axle fixedly and coaxially oriented through the rotary disc and the game board top wall terminating in a grasp knob spaced from the top wall, and the rotary disc formed of first wedge-shaped segments and second wedge-shaped segments in alternating orientation throughout the rotary disc, wherein the first wedge-shaped segments are of a ferromagnetic construction and the second wedge-shaped segments are of a non-ferromagnetic material, and wherein the token discs are of a ferrous metallic construction to impart random displacement of the token discs upon their being deposited upon the game board top wall.

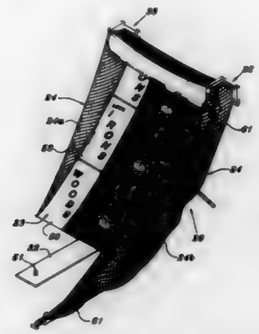
5,306,008
MOMENTUM TRANSFER GOLF CLUB
Frank Kinoshita, P.O. Box 3164, Rancho Santa Fe, Calif. 92067
Filed Sep. 4, 1992, Ser. No. 940,460
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—164.1 **20 Claims**



1. A golf club comprising a rigid club head, a shaft and a grip;
said club head being rigidly shaped to define a club face, a heel, a sole, a toe, a crown, and a hosel, a heel section, a toe section, a toe mass section, a heel mass section, and an interconnect;
said club face having a front being adapted to strike a golf ball;
said club face having upper and lower edges, toe and heel boundary limits;
said heel being the portion of said club head where the sole and hosel meet;
said sole defining a bottom surface of said club head which normally rests on the ground when said golf club is held in the address position;
said toe being the part of the club head that is the farthest away from said heel of said club head;
said crown defining a curved top portion of said club head;
said hosel being that portion of said club head that is designed to interfit with said shaft;
said hosel being integrally attached to said club head;
said club head having an effective center of gravity substantially at the midpoint of the toe and heel boundary limits of said club face;
said heel section being the portion, of said club head, having boundary limits starting at a vertical plane intersecting the effective center of gravity and ending at a heel extremity;
said toe section being the portion, of said club head, having boundary limits starting at a vertical plane intersecting the effective center of gravity and ending at a toe extremity;
said vertical plane being perpendicular to said club face;
said effective center of gravity affording dynamic balancing so that the moment of the toe section momentum equals the moment of the heel section momentum at impact;
said heel section having a weight of from 1.05 to 1.15 greater than the weight of said toe section;
said toe mass section having a concentrated weight of from 7 to 30 percent of the weight of said club head and being located at the proximity of the toe;
said heel mass section having a concentrated weight of from 10 to 33 percent of the weight of said club head and being located at the proximity of the heel;
said interconnect rigidly connecting said toe mass section to the heel mass section, traversing substantially through a horizontal plane intersecting said effective center of gravity;

said interconnect being an intrinsic part of said club head and having a rearward dimension measured horizontally from the club face along said vertical plane of at least 0.5 inch affording a high moment of inertia interconnect;
said grip being adhesively attached to said shaft; and
said shaft being attached to said club head.

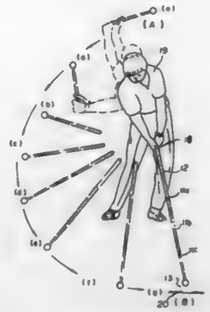
5,306,009
GOLF PRACTICE KIT
Antonio R. Bolanos, 9024C2 Fishers Pond Dr., Charlotte, N.C. 28277
Filed Oct. 1, 1992, Ser. No. 954,818
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—181 F **11 Claims**



1. A golf practice kit comprising:
(a) a frame including upper and lower horizontal frame members,
(b) a tee area,
(c) a fabric ramp supported in a longitudinally tensioned state by the frame and including:
(i) a target portion extending upwardly and away from the tee area at an angle between the horizontal and the vertical and
(ii) a top portion extending above the target portion,
(d) the top portion of the ramp being curved inwardly on itself and terminating in a loosely hung through for the reception of successive balls hit against the target portion of the ramp, and
(e) the ramp being tensioned by only the upper and lower horizontal frame members, the sides of the ramp being laterally unrestrained.

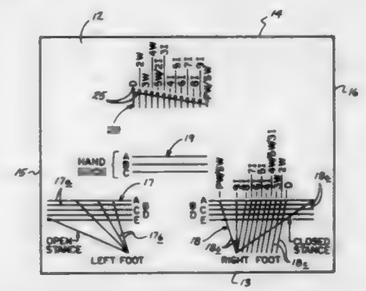
5,306,010
EXTENSIBLE EXERCISE GOLF CLUB
Richard W. Choi, 111 S. Poinsettia Pl., Los Angeles, Calif. 90036
Filed May 7, 1993, Ser. No. 57,838
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **6 Claims**

1. An extensible exercise golf club comprising:
a club head member, a club handle member, and a club shaft member disposed therebetween, said club shaft member including:
a plurality of telescopic tubular members which telescopically fit into each other for slidably extending from a telescopically collapsed position to a telescopically extended position, said telescopic tubular members, when in the extended position, defining an internal space,
extended raised portions disposed on the outer and inner end portions of adjacent telescopic tubular members for slidably interlocking said adjacent telescopic tubular members together, and
a cap for covering the end opening of the largest of said plurality of telescopic tubular members; and
a weighted member attached to the end portion of the smallest one of said plurality of telescopic tubular members; and said club further including means



whereby upon swinging the golf club, the club shaft member of the golf club is telescopically extended while simultaneously creating a vacuum within the internal space of the club shaft, and upon finishing the swing, the club shaft member of the golf club is automatically collapsed by the force of the vacuum generated in said internal space of the club shaft.

5,306,011
GOLF SWING TRAINING DEVICE
Robert O. Perry, 1801 Williamsburg Rd., Apt. 34E, Durham, N.C. 27707
Filed Jun. 1, 1993, Ser. No. 69,753
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187 A **3 Claims**



1. A golf swing training device, comprising,
a support mat, the support mat including a first end wall spaced from a second end wall, a first side wall spaced from a second side wall, and a top surface, with the top surface including a first indicia group oriented adjacent the first end wall and the first side wall, with a second indicia group oriented spaced from the first indicia group and positioned adjacent the second side wall and the first end wall, a fourth indicia group positioned intermediate the first indicia group and the second indicia group, with the fourth indicia group position in adjacency relative to the second end wall, and a third indicia group oriented intermediate the first indicia group and the second indicia group and between the first indicia group, the second indicia group, and the fourth indicia group, and,
the first indicia group includes a first series of horizontal lines, and a first series of radial lines intersecting the first series of horizontal lines for orienting an individual's left foot relative to horizontal projection of the individual's

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left foot relative to the first series of horizontal lines, with the second indicia group including a second series of horizontal lines for positioning an individual's foot, a second series of radial lines intersecting the second series of horizontal lines for orientation of the individual's foot relative to the horizontal lines in an angulated orientation, and a parallel series of lines intersecting obliquely the second series of horizontal lines for orientation of an individual's right foot relative to a golf club type, and,

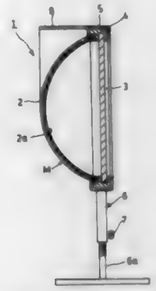
the third indicia group includes a series of lines oriented parallel to the first series of horizontal lines and the second series of horizontal lines for positioning of an individual's hands, and the fourth indicia group including a linear series of positions for positioning a golf club head.

5,306,012

SIMULATION TRAINING DEVICE

Kazuyuki Fujita, 1-7-15, Denenchofu, Ota-ku, Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 18
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187 R **7 Claims**



1. A simulation training device comprising:

a transparent convex member;

a color resin film affixed to a surface of said convex member forming a half mirror;

lens means, placed adjacent the back surface of said convex mirror, for displaying an enlarged image onto said convex member; and

adjusting means, attached to said convex member, for adjusting the position of said convex member,

whereby a previously recorded reverse image located at the back of said convex member is projected on said convex member together with a reflection of the user on the front of the convex member so that the user can train.

5,306,013

PROJECTILE ACCURACY SIGNALLING APPARATUS

Philip Germinario, 27 Conger St., Dover, N.J. 07801

Filed Apr. 21, 1993, Ser. No. 49,323
Int. Cl.[5] A63B *63/04*
U.S. Cl. 273—184 A **15 Claims**

1. A new and improved apparatus for signalling accuracy of a path of a projectile moving on a floor or ground surface, said apparatus, comprising:

audible signal assembly means for providing an audible signal when hit by a projectile moving along a floor or ground surface, said audible signal assembly means being located above the floor or ground surface, and

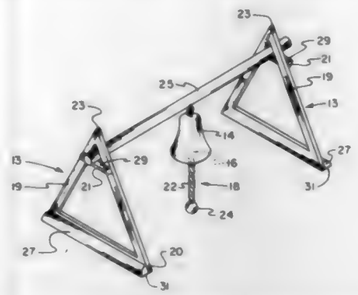
support assembly means for supporting said audible signal assembly means above the floor or ground surface such that said audible signal assembly means can be hit by a projectile moving along the floor or ground surface,

wherein said support assembly means includes:

two triangular-shaped end units in which bases of end units are supported by said the floor or ground surface,

transverse rod supports connected to said end units near apices of said end units, and

a transverse rod extending transversely between said end units and supported by said transverse rod supports,



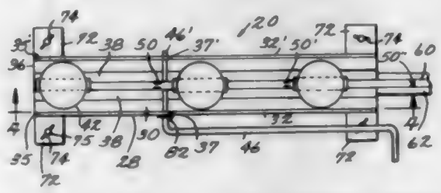
wherein said audible signal assembly means is supported by said transverse rod.

5,306,014

GOLF SWING TRAINING APPARATUS

Burton Langley, 1752 St. Tropez Ct., Kissimmee, Fla. 34744

Filed Apr. 2, 1993, Ser. No. 41,857
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 **12 Claims**



1. Golf swing training apparatus for positioning golf balls by an instructor for striking by a student with a golf club, said apparatus comprising:

an open-ended, elongated member having a bottom wall and having first and second opposed sidewalls extending upwardly from said bottom wall;

said first and second sidewalls respectively defining first and second opposed, elongated, closed-end slots therein, each of said slots extending along predetermined lengths of said sidewalls from positions at a first end of said elongated member;

a guide track projecting upwardly from and extending substantially along the length of said bottom wall;

an elongated supply magazine for golf balls removably and slidably positioned with respect to said guide track and defining a plurality of openings therein at predetermined spaced intervals along the length of said magazine; and

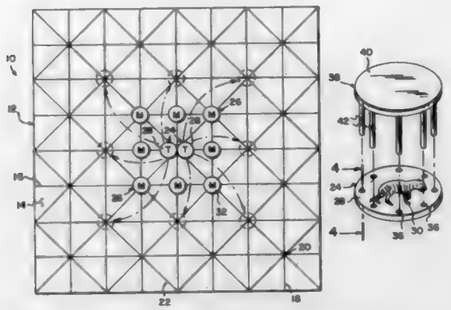
a substantially L-shaped pin member for removable positioning by an instructor through said slots and through a selected one of said openings, whereby movement of said pin member toward said first end of said elongated member by the instructor causes said magazine to slide along said track toward said first end to present a golf ball in said magazine to a student for striking by a golf club.

5,306,015

TIGERS TRAP BOARD GAME

Danny S. Daud, 478 Huntley Way N.E., Calgary, Alberta, Canada T2K 4Z8 , and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Apr. 22, 1993, Ser. No. 50,625
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—242 **2 Claims**



1. A tigers trap board game which comprises;

a) a game board having a playing surface thereon;

b) a plurality of horizontal lines formed on said playing surface;

c) a plurality of vertical lines formed on said playing surface intersecting said horizontal lines, thereby indicating playing positions at the intersections thereof;

d) a plurality of diagonal lines formed on said playing surface intersecting said horizontal lines and said vertical lines at every other intersection thereof; further including a pair of first playing pieces representative of tigers which are placed together on the intersection at the center of the playing surface at the start of the game; further including a plurality of second playing pieces representative of trappers in which eight are placed on the intersections of the playing surface about said first playing pieces at the start of the game; wherein each said first playing piece is a disk having a picture of a tiger thereon; wherein each said second playing piece is a disk having a picture of a man thereon; wherein each said first playing piece includes;

e) said disk having a plurality of apertures about its periphery; and

f) a cage being a small flat circular plate with a plurality of bars about its periphery extending downwardly therefrom to engage with said apertures in said disk, when said first playing piece is trapped during the play of the game.

5,306,016

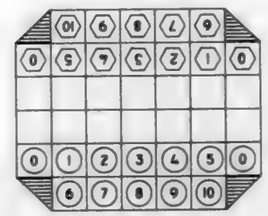
PACE BOARD GAME

James M. McInnis, 10070 W. Swan Rd., Odessa, Tex. 79763

Continuation-in-part of Ser. No. 474,158, Mar. 12, 1990, abandoned. This application Jan. 23, 1991, Ser. No. 644,453
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—258 **1 Claim**

1. A method of playing a board game comprising a game board divided into a plurality of squares forming rows and columns arranged with two unmarked rows of squares at each end of the board, called base rows, that at the start of the game accommodate two sets of consecutively marked tokens, one set of tokens differing in color from the other set, the base rows at one end being a first player's territory, the base rows at the other end being the other player's territory, and the middle portion of unmarked squares being open territory, the method comprising:

each player alternatingly moving a token wherein if an opponent's token is in a square forward, diagonally forward, or on a square to the sides of the token, the player may jump the opposing token only if the number on the



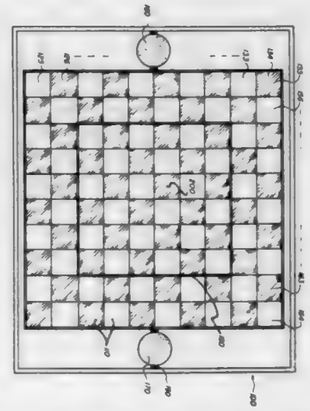
token and the opponent's token multiply to an even number.

5,306,017

CIVIL WAR CHESS

James A. Huston, Lynchburg, Va., assignor to Huston & Huston, Escondido, Calif.

Filed Oct. 14, 1992, Ser. No. 961,072
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—261 **18 Claims**



1. A method of playing a board game of logic and strategy comparable to chess in that it is played by opposing players on opposite sides of a checkered board with playing pieces that are moved by the players in accordance with prescribed rules for both movement and capture in order to try to place the opponent in a condition of checkmate, said method comprising the steps of:

covering a playing board with a checkered surface formed by ten alternating-colored and equal sized squares in a ten-square row and ten-square column matrix that yields a total of at least one hundred squares over the surface of the playing board;

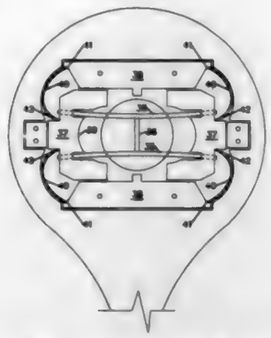
establishing at the center of said playing board a restricted zone formed from a multiplicity of squares which are equally divided for each player on his side of the playing board;

formatting predetermined rules of movement for play wherein a particular type of playing piece for each player may not move into that restricted zone; and

additionally formatting a rule of capture for play wherein said particular piece is permitted capture of an opponent's pieces within and without the restricted zone, which particular type of pieces themselves are excluded from movement by the players into the restricted zone.

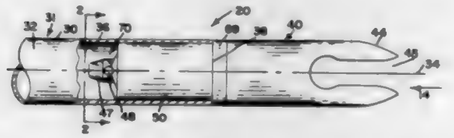
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5,306,018
BAT FOR CATCHING GAMES
Marie L. C. Talbot, Black River, Mauritius, South Africa
Filed Dec. 1, 1992, Ser. No. 983,772
Claims priority, application South Africa, Dec. 20, 1991, 91/10031
Int. Cl.[5] A63B 71/00
U.S. Cl. 273—327 8 Claims



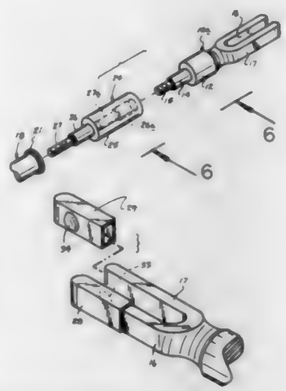
1. A racquet with a handle and a head, the head including an orifice adapted so that a ball may pass therethrough, the orifice comprising:
flexible ball-catching material, the catching material being included between a pair of elements slidable in a frame between a first position in which the ball passes therebetween land a second position to which the elements are moved by virtue of the catching material being acted upon by the entering ball, the elements being adapted to retain the ball in the second position.

5,306,019
ARROW WITH NOCK ASSEMBLY
Elmer F. Guest, 29 Hancock St., and Leon A. Eckert, 30 Plain St., both of Fitchburg, Mass. 01420
Filed Nov. 4, 1992, Ser. No. 971,292
Int. Cl.[5] F42B 6/06
U.S. Cl. 273—416 9 Claims



1. A nock assembly, for an arrow, the arrow having a shaft and at least one vane, the shaft having an outer cylindrical surface, a central longitudinal shaft axis, a bore which extends along said axis, and a first rear opening to the bore, the vane being fixed to the outer cylindrical surface, which nock assembly comprises:
(a) an adapter which is mounted within the bore at the first rear opening and is longitudinally parallel to the shaft axis, said adapter being fixed to the shaft in a predetermined angular position about the shaft axis relative to the vane, said adapter having a socket which has an inner cylindrical surface and a second rear opening to the socket;
(b) a nock having a head end, a bifurcated tail end, and a central longitudinal nock axis which is collinear with said shaft axis, said nock being removably mounted to said adapter so that said head end is located within said socket, said head end having an outer cylindrical surface and a reduced forward portion and said bifurcated tail end is located outside of said socket; and
(c) retaining means for releasably locking the head end of said nock within the socket so that the nock is in a predetermined locking angular position lengthwise of the shaft axis relative to the second opening, said retaining means comprising:
(1) at least one locking pin which extends radially outward from the reduced portion of said head end of the nock, said pin being spaced from said inner cylindrical surface when said reduced portion is within said socket; and
(2) a detent means on said adapter for releasably retaining the locking pin when said nock is in said predetermined locking angular position, said detent means comprising a wall at the forward end of said socket which is perpendicular to the shaft axis, said wall having an aperture and a forward surface, said aperture being shaped so that said reduced portion and said pin can pass freely through said aperture when said nock is in a non-locking angular position relative to said shaft axis and so that said pin is forward of and aligned with a solid portion of said forward surface when said nock is in said predetermined angular locking position.

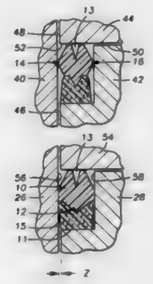
5,306,020
ARROW NOCK ASSEMBLY
Robert G. Bolf, 147 Onyx, Eagle Point, Oreg. 97524
Filed Jun. 1, 1993, Ser. No. 69,747
Int. Cl.[5] F42B 6/06
U.S. Cl. 273—416 2 Claims



1. An arrow nock assembly, comprising,
a nock member having a cylindrical head of a first diameter, the cylindrical head including a cylindrical head first end and a cylindrical head second end, with the cylindrical head first end having a shank extending therefrom of a second diameter less than the first diameter, with an externally threaded mounting rod coaxially aligned relative to the shank extending therefrom of externally threaded configuration of a third diameter less than said second diameter, and
second legs arranged in a spaced relationship mounted to the cylindrical head integrally at the second end, with the cylindrical head, the first leg, the second leg, the shank, and the mounting rod coaxially aligned along a predetermined axis in a symmetrical configuration, and
an insert sleeve, the insert sleeve having a sleeve entrance end, with the sleeve including an entrance end opening, and a first cylindrical cavity directed into the insert sleeve coaxially of the insert sleeve, with the first cylindrical cavity arranged to complementarily receive the shank therewithin, and a second cylindrical sleeve in communication with the first cylindrical sleeve arranged to threadedly engage and receive in a complementary relationship the mounting rod, and

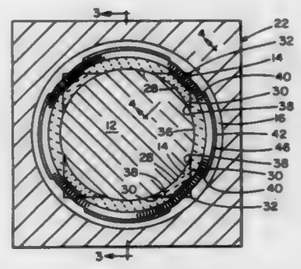
the entrance end includes an annular flange oriented coaxially of the insert sleeve projecting laterally thereof, and
an extension member, the extension member having an extension member cylindrical body, having a cylindrical body diameter equal to said first diameter, with the extension member including an extension member first cylindrical boss arranged for selective threaded reception within the first cylindrical cavity, and the extension member further including an extension member second cylindrical boss arranged to threadedly engage the second cylindrical cavity, and the extension member further including an extension member first cavity arranged to threadedly receive the shank, and an extension member second cavity arranged to threadedly receive in a complementary relationship the mounting rod, and
a first tubular sleeve mounted upon the first leg, and a second tubular sleeve mounted upon the second leg, the first tubular sleeve includes a first facing wall, the second tubular sleeve includes a second facing wall, the first facing wall includes a first projection, the second facing wall includes a second projection, with the first projection and the second projection arranged in a mirror image relationship relative to one another when mounted upon the first leg and the second leg respectively.

5,306,021
V-SHAPED SEAL WITH ANTI-EXTRUSION SECTION
John D. Morvant, 1922 Grand Valley Dr., Houston, Tex. 77090
Continuation of Ser. No. 512,734, May 21, 1990, abandoned, which is a continuation of Ser. No. 833,690, Feb. 25, 1986, abandoned. This application Sep. 24, 1992, Ser. No. 950,820
Int. Cl.[5] F16J 15/32
U.S. Cl. 277—188 R 2 Claims



1. An anti-extrusion sealing device for use in an enclosed area subject to force, comprising:
an extrudable body section having extrudable material and an upper end, said upper end including a top in contact with the enclosed area force and an inner and an outer sealing surface opposing each other depending downward from said top and contacting the enclosed area and said body section having a lower portion depending downward from said sealing surfaces;
an anti-extrusion section having an upper portion and a bottom, said bottom having a bottom surface, said anti-extrusion section in contact at said upper portion to said lower portion of said body section and said bottom surface abutting the enclosed area, said anti-extrusion section serving to resist extrusion forces acting on said sealing surfaces adjacent said anti-extrusion forces acting on said sealing surfaces adjacent said anti-extrusion section, said anti-extrusion section being comprised of a knitted material, at least some of the filaments of said knitted material being metallic in nature, said upper portion having inner and outer radial edges facing the enclosed area and an upper surface having at least a partial V-shape in cross-section between said edges;
said extrudable body section having a lower end with a lower portion having a lower surface shaped for reception in said upper surface of said anti-extrusion section upper portion and said sealing surfaces extending radially beyond said edges prior to application of the force;
said anti-extrusion section bottom includes a portion below said V-shape upper surface of sufficient axial thickness to permit rotation of said radial edges and said upper surface so that said radial edges contact the enclosed area in response to normal force applied to said upper surface, whereby upon application of force from the enclosed area upon said top, said radial edges rotate into contact with the enclosed area adjacent to said sealing surfaces, forming an anti-extrusion seal for said extrudable material of said sealing surfaces;
wherein, said sealing surface of said upper end includes an inner concave central portion and at least one V-shape outer surface, in cross-section, having slanted upper and lower surfaces, which intersect at the apex of the said V;
wherein the angle T measured between a first horizontal ray parallel to said base extending from said apex and a second ray extending upward from said lower surface has a range between 20° and 30°.

5,306,022
SHAFT SEAL HAVING CAPACITY FOR SUBSTANTIAL WEAR
Robert F. Bourque, San Diego, Calif., assignor to General Atomics, San Diego, Calif.
Filed Sep. 27, 1991, Ser. No. 766,588
Int. Cl.[5] F16J 15/38, 15/54, 15/56
U.S. Cl. 277—192 15 Claims



1. A shaft seal having capacity for substantial wear comprising a plurality of members which collectively engage a shaft exterior in substantially uninterrupted 360° sealing contact in a plane perpendicular to the axis of the shaft, each of said members being movable inwardly as it wears while said members collectively maintain said substantially uninterrupted 360° sealing contact;
said plurality of members comprising a plurality of followers and an equal plurality of drivers;
each of said followers having a wear surface configured for sealing engagement with said shaft, and a pair of bearing surfaces for engagement by said drivers, said bearing surfaces defining an included angle therebetween of about 90° or less;
each of said followers being driven inward as it wears by drivers on each side;
each of said drivers having a pair of bearing surfaces for engaging respective bearing surfaces of said followers, and a central wear surface between said bearing surfaces for engaging said shaft;
said bearing surfaces of said drivers and said followers being configured such that the intersection of each of said bearing surfaces with a plane perpendicular to the shaft axis defines a line segment.

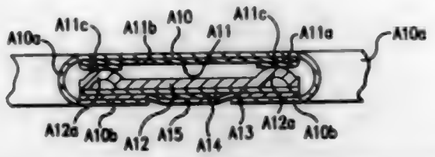
VOL 1161 ISS 4 APR 26 1994 UMI

5,306,023

CYLINDER HEAD GASKET WITH AUXILIARY SEALING PLATE

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 756,239
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—235 B **7 Claims**



1. A cylinder head gasket for an internal combustion engine having a plurality of cylinder bores therein, comprising,

a main plate extending substantially throughout an entire area of the engine, said main plate being formed of a metal plate and having a plurality of holes corresponding to the cylinder bores of the engine and at least one intermediate area surrounded between the holes situated adjacent to each other,

a first metal plate situated under the main plate for constituting a steel laminate gasket,

sealing means formed around the cylinder bores for sealing therearound, and

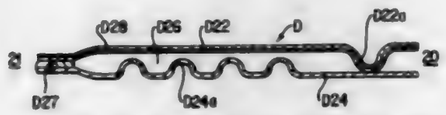
an auxiliary plate situated between the main plate and the first metal plate and laminated only at said at least one intermediate area and around the holes of the main plate without extending throughout the entire area of the engine, said auxiliary plate having edge portions extending only around the respective cylinder bores, at least one base portion extending between the edge portions at the intermediate area, and turning portions laminated over the respective edge portions to abut thereto, said turning portions extending along the respective edge portions and being disposed over the sealing means so that when the gasket is tightened, the edge portions and the turning portions provide high surface pressure around the cylinder bores to thereby prevent gas leakage around the entire cylinder bores.

5,306,024

METAL GASKET WITH LOW HEAT TRANSMISSION

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Division of Ser. No. 736,965, Jul. 30, 1991, Pat. No. 5,232,229.
This application Apr. 29, 1993, Ser. No. 53,547
Claims priority, application Japan, Aug. 7, 1990, 2-83094
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—235 B **7 Claims**



1. A metal gasket for reducing heat transmission between two engine parts with at least one hole to be sealed, comprising,

two plates extending substantially throughout an entire area of the gasket and having at least one first hole corresponding to the hole of the engine parts to be sealed and bolt holes for attaching the plates to the engine parts,

sealing means formed around the first hole, said sealing means, when the gasket is tightened, being compressed to securely seal around the hole of the engine parts,

space forming means formed on at least one of the plates and provided over a substantial portion of the plate to form a space between the plates without substantial contact between the plates except at the space forming means when the gasket is compressed,

spacers formed around the bolt holes, said spacer having a non-compressible thickness less than a thickness of the sealing means before the gasket is compressed so that when the gasket is tightened at the spacers, the sealing means is compressed to said non-compressible thickness of the spacers to securely seal around the hole of the engine parts while the two plates do not closely abut against each other except at said spacers and at said sealing means and provide spaces between the plates by the space forming means to thereby reduce heat transmission between the two engine parts by means of the gasket, and

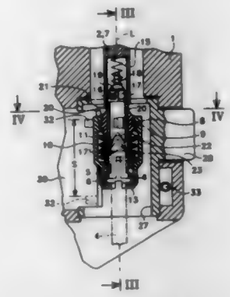
a heat insulating layer formed on at least one of the plates to reduce heat transmission to the plate from the engine part.

5,306,025

CLAMPING DEVICE FOR A COMPASS SAWING MACHINE

Boris Langhoff, Backnang, Fed. Rep. of Germany, assignor to Atlas Copco Elektrowerkzeuge GmbH, Winnenden, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 38,716
Int. Cl.[5] B25B *5/00*; **B27B** *19/09*
U.S. Cl. 279—90 **14 Claims**



1. Clamping device for a saw blade of a hand-operated compass sawing machine, the saw blade being movable in parallel to a longitudinal axis of the saw blade by means of a plunger driven according to a sawing stroke in a housing of the compass sawing machine, the saw blade having two dogs at a clamped end, the clamping device comprising:

a centering sleeve defining an interior region for receiving said clamped end of said saw blade, said centering sleeve having an outer inclined plane surface;

a clamping sleeve mounted rotatably about said longitudinal axis, said clamping sleeve having an inclined surface engaging said centering sleeve inclined surface;

spring means between said clamping sleeve and said centering sleeve for axial movement of said clamping sleeve upon relative rotation between said centering sleeve inclined surface and said clamping sleeve inclined surface to generate a clamping force for clamping said dogs of said clamped end of said saw blade in said centering sleeve to achieve a clamping position;

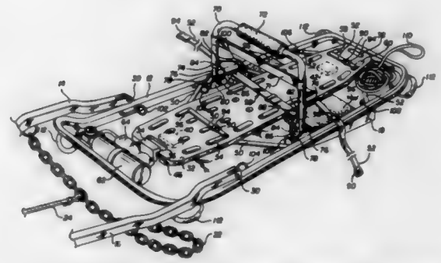
adjusting means for rotating said clamping sleeve from said clamping position into a releasing position against the force of said spring, said adjusting means including an axially nondisplaceably mounted connection bush, said connection bush has an axis of rotation for pivoting said housing, said connection bush axis of rotation being approximately around said longitudinal axis, a gripping member being connected to said connection bush and extending through an opening in said housing, said connection bush forming a stop edge having a length extending in said axial direction, said length being at least as long as a sawing stroke of said sawing machine, said clamping sleeve having an actuating cam, said stop edge being located opposite said actuating cam for rotating said clamping sleeve upon movement of said gripping member from a clamping position into a releasing position.

5,306,026

RESCUE TOBOGGAN

Terry A. Jease, 21629 E. Fairwinds, Diamond Bar, Calif. 91765

Filed Nov. 2, 1992, Ser. No. 970,010
Int. Cl.[5] B62B *13/06, 17/06*
U.S. Cl. 280—18 **16 Claims**



1. A rescue toboggan for carrying an injured patient over snow and ice comprising:

an oversize sled having a top side and a corresponding underside;

a backboard disposed on the top side of the sled, having sufficient rigidity to support a body weight of the injured patient lying thereon with minimal flexing;

means for securing said backboard to said sled, disposed on the top side of the sled; and

a CPR bracket having a generally inverted U-shape with opposite ends, pivotally attached at the opposite ends to the top side of the toboggan and substantially overlying the injured patient.

5,306,027

TROLLEY WITH A RETRACTABLE WHEEL ASSEMBLY

Chiun-Jer Cheng, No. 20, Lane 327, Sec. 2, Chung Shan Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed Jan. 22, 1993, Ser. No. 8,576
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—30 **4 Claims**

1. A trolley comprising:

a pair of vertical bars defining a pair of legs at lower ends thereof;

a supporting means attached to said lower ends of said vertical bars;

a first sleeve means securely mounted to an upper portion of said vertical bars;

a lever means pivotally mounted to said first sleeve means;

a bracket means mounted on said vertical bars (20);

a pair of arms extending outward from said bracket means, each said arm having a first end pivotally connected to said bracket means and a second end pivotally connected to a connecting member;

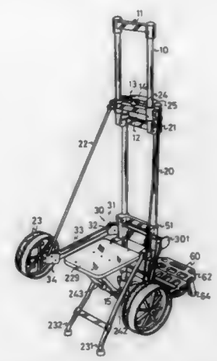
a linking bar with a first end thereof pivotally connected to said lever means and a second end thereof pivotally connected to said connecting member;

a wheel attached to each said connecting member; and

a foldable seat means comprising:

a second sleeve means slidably mounted on said vertical bars;

a seat means pivoted to said second sleeve means, comprising (a) two seat-supporting members pivoted to said second sleeve mans, (b) a connecting member attached by respective ends thereof to middle portions of said two seat-supporting members, (c) two swaying members having first ends thereof respectively pivoted to said ends of said connecting member; and (d) a linking rod to which



second ends of said two swaying members are pivotally attached;

a seat plate fixed on top sides of said first and second seat-supporting members;

a first pair of stands pivoted to said second sleeve means; and

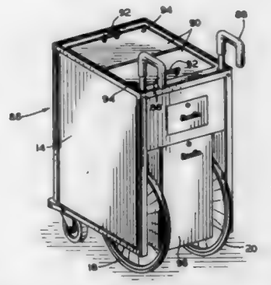
a second pair of stands pivoted at a middle portion thereof to a middle portion of said first pair of stands and pivoted to a cross bar attached to said lower ends of said vertical bars, said linking rod being pivotally attached between said second pair of stands.

5,306,028

CHANGE CART

Russell C. Pike, and Dinah D. Pike, both of #5 Lakeview Dr., Kimberling City, Mo. 65686

Filed Jan. 27, 1993, Ser. No. 9,966
Int. Cl.[5] B62B *3/00*
U.S. Cl. 280—47.35 **5 Claims**



1. A change cart for gambling casinos comprising a housing of generally rectangular parallelepiped configuration, said housing having parallel side panels and a front panel, said housing also having a top, a bottom, and a rear, a pair of large wheels rotatably mounted by said side panels near the rear of said housing and extending upwardly approximately half the height of said housing, said large wheels being located inside said side panels, two casters mounted under front corners of

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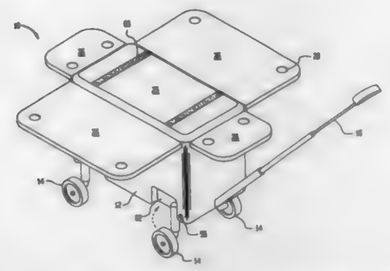
said housing where said side panels and said front panel meet, push handle means at the rear of said housing and extending upwardly thereabove, internal sleeves in the rear of said housing to receive lower portions of said push handle means to enable said push handle means to be vertically adjusted, said housing having a first, upper coin compartment accessible from the top thereof, overlapping, horizontally-disposed, slidable panels for closing off and locking said upper compartment, said housing having a second compartment accessible from the rear thereof, a drawer in said second compartment and having a drawer front for locking said drawer in said second compartment when said drawer front is in a closed position, and said housing forming a large utility compartment below said second compartment.

5,306,029

COOLER CADDY, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Ronald R. Kaiser, II, 12060 Cavell, Livonia, Mich. 48150

Filed Jun. 3, 1991, Ser. No. 709,208
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—30 **15 Claims**



1. A device for conveying food and food related objects, comprising:

an insulated container portion having four side walls, a bottom and a top member with a horizontal upper surface;

at least one tray means hingedly secured to one of said side walls adapted to pivot between a vertical and horizontal position and having securement means thereon for fastening said at least one tray means in said horizontal position and further including a cooperating securement means on said side wall adjacent said tray means;

said at least one tray means comprises four tray means, one tray means mounted on each said side wall, said tray means being substantially level with the upper surface of said top member when in said horizontal position and having molded therein detent means for accommodating beverage containers, and each of said tray means having a pair of inner corners proximate said top member;

said top member having four corner extensions, each corner extension having a recess for receiving an inner corner of a respective tray means when the tray means is in the horizontal position;

at least three wheels pivotally mounted to said insulated container; and

a telescopic handle member for providing motive force to said device.

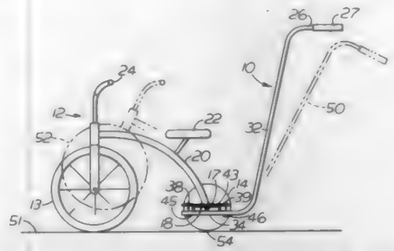
5,306,030

CHILD RIDING VEHICLE AND CONTROL HANDLE

George T. Becka, 119 E. Sprague Rd., Seven Hills, Ohio 44131

Filed Nov. 2, 1992, Ser. No. 969,987
Int. Cl.[5] B62H *7/00*; **B62K** *9/02*
U.S. Cl. 280—282 **5 Claims**

1. In combination a children's riding tricycle having laterally spaced rear wheels and a frame including a lower rear step extending between said rear wheels, a goose neck handle having a lower one end and an upper other end readily releasably connected at said lower one end to said step and extending from said step rearwardly and then upwardly and terminating at said other end in a horizontally extending handgrip at a convenient height for an adult standing behind the vehicle, whereby the adult can control the speed and direction of the



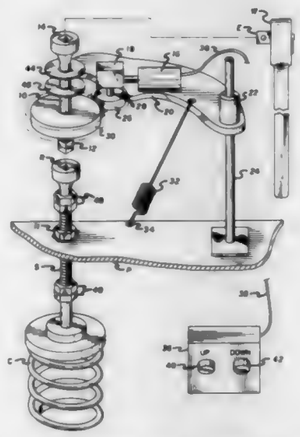
vehicle through the use of the handle, said handle including means at said lower one end for readily releasably connecting said lower one end to said lower rear step, said means comprising a clamp plate adapted to fit over said step and clamp said lower one end beneath said step.

5,306,031

AUTOMATIC WEDGE CHASSIS ADJUSTER

Thomas N. Quinn, and Kimberly J. Quinn, both of 504 Roaring Springs Cir., Hampton, Va. 23663

Filed Apr. 6, 1993, Ser. No. 44,576
Int. Cl.[5] B60G *1/00*
U.S. Cl. 280—688 **12 Claims**



1. In an automotive suspension including a screw permanently and adjustably mounted between a vehicle body or chassis and a coil suspension spring thereof, the screw adjusting height of the body or chassis on the suspension spring, the improvement comprising:

motor means comprising an electric motor having an output shaft,

motor control means comprising switches and electrical conductors enabling said motor means to be selectively energized in a first direction, energized in a second direction, and stopped,

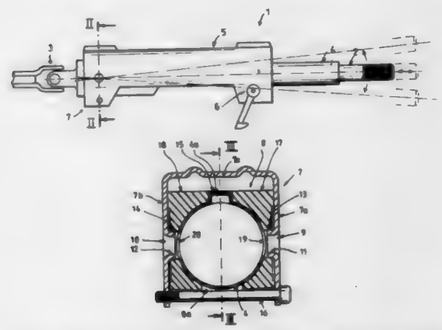
drive means connecting said output shaft to the screw, whereby the screw is selectively rotated in a first and a second desired direction and maintained in a non-rotating condition when a vehicle operates said switches, and the height of the vehicle chassis or body is adjusted while the vehicle is being driven by the operator, said drive means also including means enabling ready engagement with and disengagement from the screw, and support means for holding said drive means and said motor means securely as a unit to the vehicle and in operable relationship to the screw, said support means being spring biased to normally retain the drive means and the motor means in operable relationship to the screw during normal operation of the vehicle, said support means being readily removed from a vehicle prior to a road race to prevent alteration of the vehicle suspension during the race.

5,306,032

ADJUSTABLE STEERING COLUMN UNIT FOR AN AUTOMOBILE VEHICLE

André Hoblingre, Valentigney, and Ghislain Passebeck, Audincourt, both of France, assignors to Ecia-Equipements et Composants pour l'Industrie Automobile, Audincourt, France

Filed Mar. 3, 1993, Ser. No. 27,322
Claims priority, application France, Mar. 4, 1992, 92 02594
Int. Cl.[5] B62D *1/18*
U.S. Cl. 280—775 **18 Claims**



1. Steering column unit adjustable in position for an automobile vehicle, said unit comprising: a steering column body, a steering shaft rotatably mounted in said column body and having one end for carrying a steering wheel and an opposite end for connection to a steering mechanism of the vehicle, a fixing structure having two flanges for fixing said body to the automobile vehicle, at least one of said body and said shaft being mounted to be movable in at least one of an angular manner and an axial manner between said two flanges, locking means for locking in position said body and said shaft and therefore said steering wheel and carried by said fixing structure at a first end of said fixing structure and movable between a locking position and an unlocking position to permit the adjustment of the position of said steering shaft and therefore said steering wheel by the user, a guide bearing for guiding said body and carried by said fixing structure in proximity to a second end of said fixing structure opposed to said first end thereof, said guide bearing comprising a yoke portion having a generally U-shaped section, said flanges being part of said yoke portion, a bushing disposed in said yoke portion for mounting said column body in said fixing structure without play, opposite lateral walls of said bushing being connected to said flanges of said yoke portion, said bushing including an opening for receiving said column body and said opposite lateral walls of said bushing include means for articulating it without play to said bushing in said yoke about an axis substantially perpendicular to the axis of said column body.

5,306,033

SHOPPING CART BUMPER

Harold A. Evans, 10 Merrymount Dr., Swampscott, Mass. 01907

Filed Sep. 25, 1992, Ser. No. 951,398
Int. Cl.[5] B62B *3/00*
U.S. Cl. 280—33.992 **21 Claims**



1. A bumper for a shopping cart basket, the basket having a front end opposite a handle-carrying end and sides adjacent the front end, each of the front end and the sides being defined by a plurality of peripheral edges, and the front end and sides each having openings therealong, the bumper comprising:

a sheet of resilient material having a width, a length and a thickness, each of the width and the length being greater than the thickness, the sheet being constructed and arranged to overlay substantially the entire front end of the cart basket along an outer facing surface of the basket, the length and width of the sheet being sized so that the sheet extends along the length and the width to locations substantially adjacent each of the peripheral edges of the front end and the sheet further extends to overlie at least a portion of the adjacent sides of the basket; and

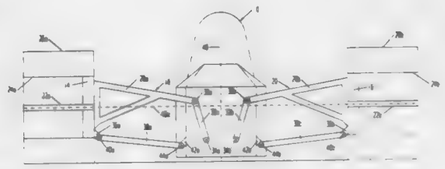
a fastening structure positioned along an inner facing surface of the basket and joined to the sheet through the openings in the basket to maintain the sheet against the outer facing surface.

5,306,034

VEHICLE WHEEL SUSPENSION SYSTEM

Gregory Buchanan, 109 S. Main St., Nazerth, Pa. 18064

Continuation of Ser. No. 822,410, Jan. 17, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,781
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—112.2 **12 Claims**



1. A wheel suspension system providing independent suspension of each wheel for a vehicle having a central frame with a front and back centerline in which seating for a driver is provided comprising in combination,

first and second wheel supports located on opposite sides of said frame and each having wheel-mounting spindle means thereon,

a rigid extension rigidly and non-pivotally, parallel to the

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centerline, connected to and extending from each of the wheel supports to at least the edge of the frame,

upper linkages, each respectively pivotally connected, at one end to the associated rigid extension and at the other end to the frame,

lower linkages, each respectively pivotally connected at one end to a portion of the associated wheel support, and at the other end to said frame,

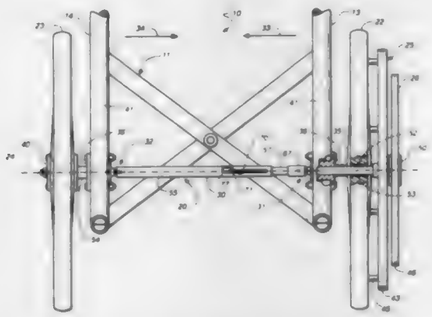
said pivotal connections being located relative to each other whereby the pivotal connections create a relatively low roll center and cause a negative camber on the outside wheel and a positive camber on the inside wheel as the vehicle travels around curves on a relatively flat roadbed.

5,306,035

SINGLE-HAND MANUAL DRIVE WHEELCHAIR ASSEMBLY

David M. Counts, Fresno, Calif., assignor to Quickie Designs Inc., Fresno, Calif.

Filed Feb. 16, 1993, Ser. No. 17,765
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 **17 Claims**



1. A single-hand manual drive wheelchair assembly comprising:

frame means for supporting a seat;

a first drive wheel rotatably mounted to one side of said frame means;

a second drive wheel rotatably mounted to an opposite side of said frame means, said first drive wheel and said second drive wheel being substantially aligned to rotate about a common wheel axis.

a manual hand-rim assembly positioned proximate said first drive wheel and mounted for rotation relative to said first drive wheel about said common wheel axis; and

an elongated axle means coupled between said hand-rim assembly and said second drive wheel and substantially axially aligned to rotate about said common wheel axis, said axle means including first latching means on one end thereof releasably coupled to said hand-rim assembly and second latching means on an opposite end thereof releasably coupled to said second drive wheel for manual operation of said second drive wheel from said hand-rim assembly on said one side, said axle means being manually movable between a selected one of a latched condition, for providing interengagement of said first latching means with said hand-rim assembly and of said second latching means with said second drive wheel, and an unlatched condition, for disengaging at least one of said first latching means from said hand-rim assembly and said second latching means from said second drive wheel, said axle means further including a first drive axle, and an opposing second drive axle aligned substantially axially with said first drive axle, said second drive axle providing a longitudinal receiving cavity defined by an inner side wall at one distal end of said second drive axle, said cavity being formed and dimensioned for telescopic sliding receipt of one distal end of said first drive axle to provide sliding axial displacement between said latched condition and said unlatched condition;

biasing means interposed between said first drive axle and said second drive axle for biasing said axle means toward said latched position; and

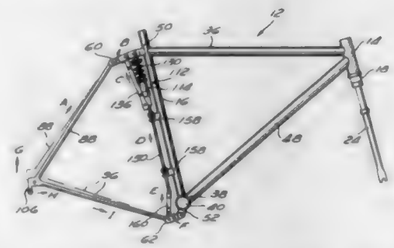
guide means for guiding relative axial sliding displacement of said first drive axle and said second drive axle between said latched condition and said unlatched condition, said guide means including a guide key member affixed to and extending radially outward from said first drive axle, and a longitudinal guide opening provided in the inner side wall of said cavity, and formed and dimensioned for sliding engagement with said key member to guide said first drive axle relative said second drive axle between said latched condition and said unlatched condition.

5,306,036

BICYCLE REAR SUSPENSION

James S. Busby, Laguna Beach, Calif., assignor to GT Bicycles, Inc., Santa Ana, Calif.

Continuation of Ser. No. 4,131, Jan. 13, 1993, Pat. No. 5,259,637. This application Jul. 2, 1993, Ser. No. 87,998
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] B62K *25/28*
U.S. Cl. 280—284 **3 Claims**



1. A bicycle rear suspension linkage, system, comprising:

an elongate seat tube having upper and lower ends;

an upper rocker pivotally connected to said upper end of said seat tube;

a lower rocker pivotally connected to said lower end of said seat tube;

first and second seat stay members having upper and lower ends, said upper ends being pivotally connected to said upper rocker;

first and second chain stay members having front ends pivotally connected to said lower rocker and back ends connected to the lower ends of said seat stay members;

a shock absorber having a body portion and a reciprocal piston rod extending axially from said body portion, said piston rod defining a distal end pivotally connected to said upper end of said seat tube;

first and second upper link rods having top ends pivotally connected to said upper rocker and bottom ends pivotally connected to the body portion of said shock absorber;

an elongate alignment rod having proximal and distal ends, said proximal end being rigidly attached to the body portion of said shock absorber in a manner wherein said alignment and piston rods are coaxially aligned; and

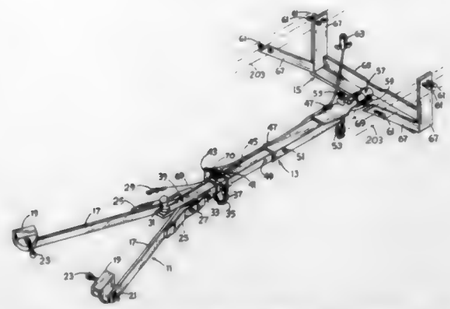
a lower link rod having a first end pivotally connected to the distal end of said alignment rod and a second end pivotally connected to the front ends of said chain stay members.

5,306,037

MOBILE HOME TRAILER UNDER-VEHICLE HITCH

Robert L. Robertson, 926 Honeysuckle St., Lowell, Ark. 72745

Filed Mar. 29, 1993, Ser. No. 38,495
Int. Cl.[5] B60D *1/48*
U.S. Cl. 280—495 **15 Claims**



1. Trailer hitch apparatus, particularly for a travel trailer drawn by a pickup truck having a rear bumper, an underframe and rear wheels with a common axis, comprising:

a mount frame adapted to be secured to an underframe of said pickup truck between said rear wheels near said rear wheels axis;

a tow bar having an elongated forward element and an elongated rearward element, said forward element having a length at least sufficient to reach from the position of said mount frame to the rearmost portion of a pickup truck;

a ball and socket joint for coupling said forward element to said mount frame midway between said rear wheels with at least 60 degrees of left-right freedom of pivotal movement and at least 6 degrees of up-down freedom of pivotal movement;

means for detachably joining said rearward element to said forward element in rigid colinear fashion said means including a tapered arm on one of said elements and a mating sleeve on the other of said elements; and

means for temporarily securing said forward element to said pickup truck to restrict movement thereof relative to said bumper when said rearward element is detached;

said rearward element including a trailer connector unit having a ball for engaging a trailer hitch ball socket and having fastening means for fixedly securing at least two other positions on said connector unit to corresponding positions on a conventional travel trailer tongue and hitch structure;

whereby said apparatus, when said rearward element is joined to said forward element, provides an anti-sway coupling for said travel trailer with a load transfer and pivot point very close to the position of the rear wheels axis, and whereby detachment and reattachment of said elements is conveniently accomplished by a vehicle driver without second person assistance or access to the underside of the pulling vehicle.

5,306,038

MODEL CAR SUSPENSION LIFT AND LOWERING APPARATUS

Ronald D. Henderson, Jr., 6485 Calvine Rd., Sacramento, Calif. 90822

Filed Oct. 19, 1992, Ser. No. 962,928
Int. Cl.[5] B60G *1/00*
U.S. Cl. 280—688 **2 Claims**

1. A model car suspension lift and lowering apparatus, comprising,

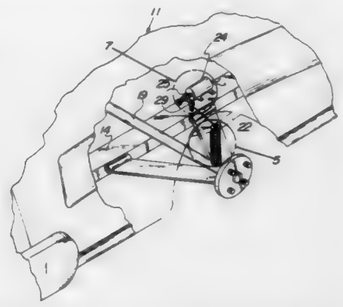
a vehicle frame, and

a vehicle body mounted relative to the vehicle frame, with the vehicle frame having a first side rail spaced from a second side rail, with the first side rail having a first side rail forward wheel and first side rail rear wheel, the second side rail having a second side rail forward wheel and a second side rail rear wheel, and the first side rail forward wheel and the second side rail forward wheel are mounted in confronting relationship relative to one another, and the first side rail rear wheel and the second side rail rear wheel arranged in confronting relationship relative to one another, and

the first side rail forward wheel and the second side rail forward wheel mounted to a first axle, and the first side rail rear wheel and the second side rail rear wheel mounted about a second axle, and

control means arranged for directing the vehicle frame within the vehicle body, and

a plurality of reversible drive motors mounted to the frame,



with each of said reversible drive motors mounted in adjacency relative to one of said wheels, and a remote control transmitter arranged in operative communication with a remote control receiver, the remote control receiver mounted within the vehicle body, and the remote control receiver arranged for selective actuation of each reversible drive motor, and each axle having a guide tube mounted thereon in adjacency relative to a respective wheel, and each guide tube having a guide tube collar slidably receiving the guide tube therethrough, and a spring interposed between each collar and each axle in surrounding relationship relative to a respective guide tube, and each guide tube having a slot directed therethrough, with a cable directed through said slot over said collar and secured to a respective drive motor, with each drive motor having an output shaft receiving said cable thereabout, and each collar mounted to an upper control arm, each upper control arm mounted to said frame.

5,306,039

PASSENGER'S AIR BAG ASSEMBLY

Yoshikazu Nakayama, Hikone, Japan, assignor to Takata Corporation, Tokyo, Japan

PCT No. PCT/JP91/00841, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO92/00206, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 21, 1991, Ser. No. 820,652
Claims priority, application Japan, Jun. 22, 1990, 2-164638
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—728 A **2 Claims**

1. A passenger's air bag assembly, comprising:

a container including a main container and a subcontainer situated inside the main container, each of said main container and said subcontainer having an opening at one side, said opening having upper, lower and two side portions,

a rectangular frame for attaching the subcontainer to the main container,

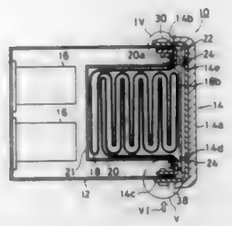
an air bag folded and retained inside the subcontainer,

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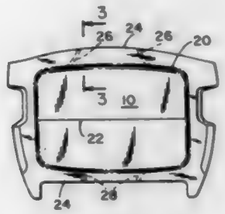
an inflator for generating gas to inflate the air bag upon detection of a predetermined acceleration, said inflator being fixed to the main container,

a modular cover fixed to the main container to cover the opening of the main container and having a plurality of ribs for increasing rigidity of the modular cover, said ribs being located at a side of the air bag when assembled, and



a cloth for covering a substantially entire area of the opening of the subcontainer, said cloth having upper, lower and two side portions and being fixed to the upper portion of the subcontainer and held between the frame and the subcontainer only at the upper portion thereof so that when the air bag is folded and retained inside the subcontainer, the cloth substantially completely covers the opening of the subcontainer to thereby prevent direct contact of the air bag to the modular cover with the ribs.

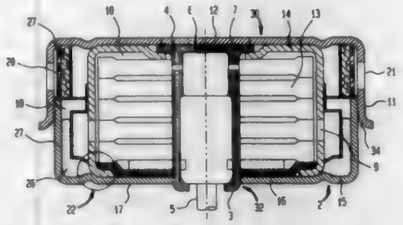
5,306,040
COVER FOR AIRBAG
F. Paul Leonelli, Roy, and Bradley D. Harris, Farmington, both of Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Mar. 17, 1993, Ser. No. 32,492
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **15 Claims**



1. In an air bag vehicle occupant restraint system including a resilient cover having a front wall defining first tear lines rupturable upon expansion of said air bag to form first and second substantially rectangular hinged doors through which said bag expands, each of said doors having edges displaced inwardly from outer margins of said front wall, and rearwardly extending sidewalls surrounding said front wall to enclose the unexpanded bag, the improvement which comprises:

first and second pairs of secondary arcuate tear lines extending from the first tear lines to said outer margin, thereby forming door hinges which allow full swinging motion of the doors.

5,306,041
GAS GENERATOR HAVING HOUSING OF DOUBLE STRUCTURE
Akihisa Ogawa, and Osamu Muramatsu, both of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Japan
PCT No. PCT/JP92/00793, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO93/00234, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 22, 1992, Ser. No. 983,569
Claims priority, application Japan, Jun. 21, 1991, 3-150337
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—741 **18 Claims**

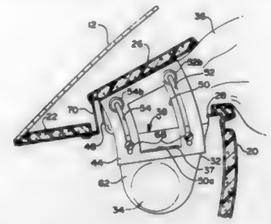


1. A gas generator having a central cylindrical holder in which a squib/enhancer is housed, a combustion chamber surrounding said holder and holding gas generants therein, a filter/coolant chamber formed annularly so as to surround said combustion chamber, and adapted to allow the entry thereinto of a gas which has passed through openings thereof communicating with said combustion chamber, and gas outlet ports formed at said filter/coolant chamber and through which the gas which has passed through a filter and a coolant rushes into an air bag, characterized in that said combustion chamber (**10**) is formed with a housing (**14**) having an annular top wall fixed at an inner edge portion thereof to a circumferential edge of a top wall of said central cylindrical holder (**4**), and an annular bottom wall fixed at an inner edge portion thereof to an edge portion of an opposite end of said holder, a diffuser (**12**) being provided so as to cover said top wall of said central cylindrical holder and a top wall which is joined thereto of said housing of said combustion chamber, whereby a double wall of said combustion chamber is formed, an annular closure (**17**) being provided so as to cover a bottom wall of said housing of said combustion chamber and be welded at an inner edge portion thereof to the edge portion of the lower end of said central cylindrical holder, an outer end of said closure being welded to an extended portion of said diffuser to form said filter/coolant chamber, said outlet ports for a gas from said filter/coolant chamber being provided in said extended portion of said diffuser.

5,306,042
AIR BAG DEPOLYMENT CONTROL
Frederick W. Frank, Tipp City, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jul. 6, 1992, Ser. No. 907,520
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **3 Claims**

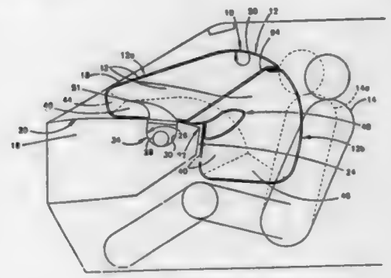
1. In a vehicle instrument panel having a recess for mounting an air bag assembly located below an opening, and a removable cover door for normally closing the opening, wherein the air bag assembly comprises an inflator, an air bag, and a container for housing the air bag and inflator and having a deployment opening, the improvement comprising a deflection shield for controlling air bag deployment comprising a deflector panel mounted on the container of the air bag assembly and generally underlying the removable cover door of the instrument panel and movable between a stored position and an open position forming a deployment chute for directing deployment of the air bag rearwardly of the instrument panel, the deflector panel

closing the container deployment opening in the stored position and moving upwardly through said instrument panel opening to the open position opening the container deployment opening, and the deflection shield including front and



side flaps depending from the deflector panel and overlying the front and sides of the container in the stored position and closing the space between the deflector panel and the container in the open position to prevent forward and sideward deployment of the air bag.

5,306,043
DASHBOARD TOP MOUNTED VEHICLE AIR BAG ASSEMBLY
Joseph J. Mihm, North Branch, and Patrick G. Jarboe, Shelby Township, Macomb County, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 24, 1991, Ser. No. 782,078
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—732 **22 Claims**



1. An inflatable vehicle air bag comprising:

a bag formed of flexible material and having an internal fluid cavity;

said bag being inflatable to a predetermined three dimensional configuration when fluid under pressure is directed into said fluid cavity;

said bag comprising a pair of main panels having an interconnection with each other which enables the main panels to bow outward relative to each other as the bag is inflated, the interconnection including at least one expansible end pleat which interconnects respective portions of the main panels and enables the portions of the main panels to separate from each other as the bag is inflated;

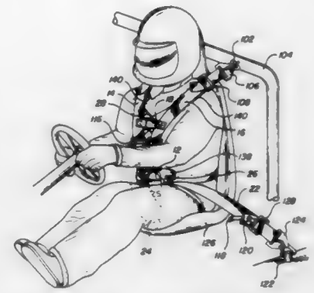
said bag having a fluid opening to enable fluid under pressure to be directed into said fluid cavity; and

said bag further comprising means for causing one of said main panels to bend at a predetermined location, said means consisting essentially of a bend pleat formed in said one of said main panels;

said bend pleat comprising a folded loop of said one of said main panels, said folded loop including at least two layers of flexible material, said two layers of flexible material being fastened to each other;

the capability of said main panels to bow outward relative to each other and the bending of said one main panel caused by said bend pleat at least partially contributing to said predetermined three dimensional configuration of said bag as said bag is inflated to said predetermined configuration.

5,306,044
BODY RESTRAINT SYSTEM
Curt L. Tucker, 1365 Midland Rd., Saginaw, Mich. 48603
Filed Mar. 11, 1992, Ser. No. 850,341
Int. Cl.[5] A44B *21/00*
U.S. Cl. 280—801.1 **24 Claims**



1. A restraint system for restraining a person in a road vehicle including a strap retaining and release assembly; a right shoulder strap with one end adapted to anchor to the vehicle, the other end being releasably attachable to the assembly, and having a portion that passes over the right shoulder and down the right side of the chest of a person being restrained; a left shoulder strap with one end adapted to anchor to the vehicle, the other end being releasably attachable to the assembly, and having a portion that passes over the left shoulder and down the left side of the chest of a person being restrained; a right lap strap with one end adapted to anchor to the vehicle, the other end being releasably attachable to the assembly and having a portion that passes over the right side of the pelvis of a person being restrained; a left lap strap with one end adapted to anchor to the vehicle, the other end being releasably attached to the assembly, and having a portion that passes over the left side of the pelvis of a person being restrained; and a leg strap for the prevention of submarining having an end attached to the right lap strap, another end attached to the left lap strap, a right leg portion which extends from the right lap strap, under the right leg, up between both legs, a left leg portion which extends from the left lap strap, under the let leg, up between both legs, and mechanism for releasably attaching said right and left leg portions to the assembly.

5,306,045
SHOULDER HARNESS SLEEVE
Jeffery S. Parks, 21727 Harper Lake, St. Clair Shores, Mich. 48050
Filed May 20, 1993, Ser. No. 64,319
Int. Cl.[5] B60R *22/10*
U.S. Cl. 280—808 **14 Claims**

1. A sleeve for a seat belt assembly mounted to a structural component wherein the assembly has an eye mounted on the structural component, a belt segment passing through the eye, the belt segment having a first portion and a second portion faced toward the second portion, the sleeve comprising:

a zone of the sleeve faced against the first portion;

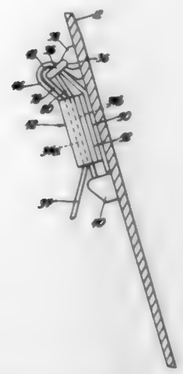
an inner flap joined to and faced toward the zone, whereby the first and second portion are between the inner flap and the zone;

an outer flap joined to the zone and faced toward the inner flap;

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attachment means between the inner flap and the outer flap for releasably affixing the flaps together,

a tongue extending from the zone through the eye along the belt segment, a section of the tongue faced against the outer flap;



fastener means between the section of the tongue and the outer flap for releasably affixing the tongue to the outer flap.

5,306,046

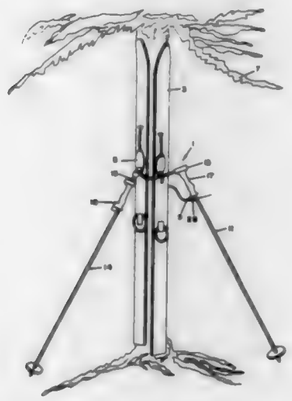
SKI POLE SECURITY SYSTEM

Edward (Bud) Stanley, 160 Bartemus Ter., Nashua, N.H. 03063

Filed May 22, 1992, Ser. No. 887,329

Int. Cl.[5] A63C *11/22*

U.S. Cl. 280—819 **6 Claims**



6. A ski pole, comprising:

(a) a grip housing having a hollow interior, said housing including a chamber at one end and a handle at the opposite end,

(b) an elongated ski pole shaft having a first end in contact with said chamber,

(c) a security line,

(d) a lock head which is fixed to one end of said security line,

(e) a retractor mechanism which is disposed in said housing chamber and which extends into said elongated ski pole shaft, said retractor mechanism being fixed to the other end of said security line, and further comprising: a spool which is rotatably mounted within said grip housing for storing said security line, biasing means for rotating said spool in a first direction for winding said security line onto said spool, a ratchet mechanism which is in contact with said rotatable spool, said ratchet mechanism providing for a step-wise rotation of said spool in a second direction which is opposite said first direction for unwinding said security line from said spool,

(f) a ski pole grip cap which is fixed to said grip housing and in contact with said grip housing chamber to protect said retractor mechanism and to seal said chamber from the exterior, and

(g) a lock housing fixed to said ski pole handle, said housing having a passageway for receiving said lock head in a selective releasing and locking arrangement.

5,306,047

BOOKLET ALBUM OF PHOTOGRAPHS AND BINDING APPARATUS THEREFOR

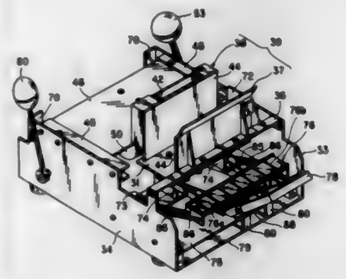
Katsumi Otake; Yuhei Kishimura, and Shuichi Nakajima, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 12, 1992, Ser. No. 897,640

Claims priority, application Japan, Jun. 14, 1991, 3-170629

Int. Cl.[5] B42D *1/00*

U.S. Cl. 281—21.1 **23 Claims**



1. A booklet album of a plurality of photographs comprising:

a booklet body consisting of a bundle of said photographs which are piled on one another, a front cover sheet and a rear cover sheet disposed on respective sides of said bundle to sandwich said bundle of photographs therebetween; and

an adhesive tape stuck to each of said photographs, at one edge thereof, and to said front and rear cover sheets at one end thereof such that said adhesive tape forms a spine cover of said booklet body, wherein said adhesive tape comprises:

a base strip having an adhesive portion on which an adhesive layer is applied and a tab portion, said tab portion being bordered by a perforation line from said adhesive portion and being separated from said adhesive portion along said perforation line after sticking said adhesive tape to said booklet body; and

a peelable paper removably stuck to said adhesive layer.

5,306,048

ATLAS PROVIDED WITH COLORED INDEXES

Se Joon Park, Sadang 3-dong, Tongjak-gu, Seoul, Rep. of Korea

Filed Mar. 10, 1993, Ser. No. 29,071

Claims priority, application Rep. of Korea, Mar. 23, 1992, 1992-4589

Int. Cl.[5] G09B *29/00*

U.S. Cl. 283—35 **2 Claims**

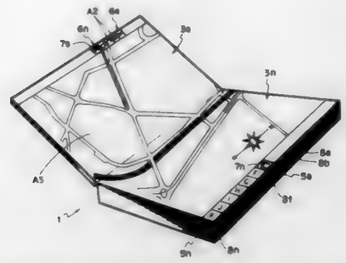
1. An atlas comprising:

a plurality of inner papers each having a map printed thereon; and

a front cover having a regional name section and a plurality

of cover index blocks, said plurality of cover index blocks being colored in different colors so as to be distinguishable from each other, each of said different colored cover index blocks corresponding with at least one of said maps printed on said plurality of inner papers;

each of said inner papers having a set of front index blocks and a set of back index blocks positioned on the front and back surfaces of each of said plurality of inner papers, respectively, said sets of front and back index blocks having the same size as said plurality of cover index blocks



and being aligned with said plurality of cover index blocks when the atlas is in a closed position, said sets of front and back index blocks being colored in said different colors so that the cover, front and back index blocks having the same color are aligned with one another when the atlas is in the closed position, at least one of said front index blocks and at least one of said back index blocks on each inner paper being colored in a distinguishable shade of color relative to the other of said front and back index blocks with which said at least one of said front and back index blocks is aligned.

5,306,049

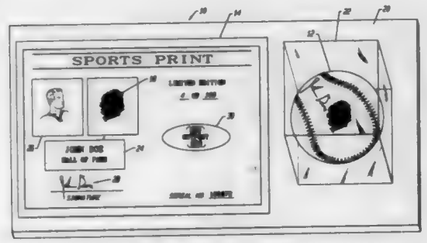
SPORTS MEMORABILIA AUTHENTICATION KIT

John W. Schireck, 2251 San Ramon Valley Blvd., San Ramon, Calif. 94583

Filed Sep. 13, 1993, Ser. No. 119,305

Int. Cl.[5] B65D *69/00;* **G09F** *3/00*

U.S. Cl. 283—74 **7 Claims**



1. A sports memorabilia authentication kit comprising:

a sport collectable item, wherein the sport collectable item has a discernable fingerprint from a notable sports individual thereon,

a sports certification card, wherein the sports certification card has a substantially identical fingerprint from the notable sports individual thereon, wherein the certification card includes additional indicia identifying the sports individual.

5,306,050

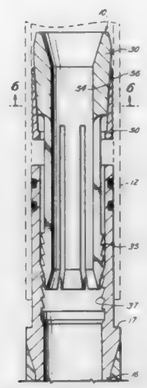
APPARATUS FOR INTERNALLY CONNECTING TO COILED TUBING

Walter J. Laflin, Houston, and Brian K. Moore, Humble, both of Tex., assignors to Camco International Inc., Houston, Tex.

Continuation-in-part of Ser. No. 988,089, Dec. 9, 1992, Pat. No. 5,238,273, which is a continuation of Ser. No. 744,152, Aug. 13, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,385

Int. Cl.[5] F16L *55/00*

U.S. Cl. 285—119 **6 Claims**



1. A well connector connectable to the inside of one end of well coiled tubing for coupling the coiled tubing to another member comprising,

a circular body having first and second ends and a bore therethrough and an outside diameter of a size no greater than the outside diameter of the coiled tubing,

said first end of the body having an outside diameter substantially equal to the inside diameter of the coiled tubing,

seal means on the first end for sealing between the first end and the inside of the one end of the coiled tubing,

a mandrel having first and second ends and having a bore therethrough, said first end of the mandrel having collet fingers,

coacting ratchet means on the fingers and the inside of the first end of the body for locking engagement of the mandrel with the body,

slip means abutting the first end of the body and engagable with the outside of the mandrel, said slip means including a plurality of outwardly directed teeth engaging the inside of the coiled tubing, and

coacting wedge surfaces on the inside of the slip means and the outside of the mandrel for wedging the slip means into the inside of the coiled tubing when the body longitudinally moves the mandrel by the coacting ratchet means.

5,306,051

SELF-ALIGNING AND SELF-TIGHTENING HOSE COUPLING AND METHOD THEREFOR

Ernest B. Loker, Edgewater, and Karl E. Halfpap, Deale, both of Md., assignors to Hydrasearch Co., Inc., Annapolis, Md.

Filed Mar. 10, 1992, Ser. No. 849,510

Int. Cl.[5] F16L *39/04*

U.S. Cl. 285—149 **25 Claims**

1. A method of aligning and tightening a hose coupling, comprising;

a) providing a unitary nipple with a rearward hose receiving end and a forward hose coupling end;

b) forming a hose abutment flange directed outwardly on the nipple remote from the hose receiving end;

c) forming a pressure ramp on the nipple intermediate the hose receiving end and the hose abutment flange, and an

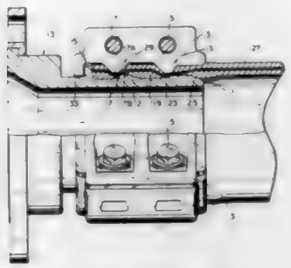
VOL 1161 ISS 4 APR 26 1994 UMI

inclined area on the nipple adjacent to the hose receiving end;

d) providing a plurality of unitary grip segments with a hose receiving end and a coupling end, two nodes including a hose receiving end node, and an inwardly directed alignment flange;

e) sliding a hose over the hose receiving end of the nipple toward the abutment flange;

f) forming an expansion area by placing the grip segments over the hose with the inward alignment flange located



between the outward abutment flange and the coupling end of the nipple, one node between the ramp and the abutment flange, and the hose receiving end node over the inclined area; and

g) tightening the grip segments on the hose and nipple, forcing the grip segments toward the coupling end, forcing the hose receiving end node axially toward the inclined area and the hose receiving end, forcing the other node axially toward the ramp and squeezing the hose into the expansion area, without penetrating the hose.

5,306,052

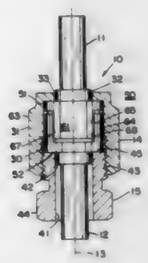
TUBING UNION WITH A TORQUE TRANSFER FITTING

Kevin D. McGushion, 1448 19th St., Santa Monica, Calif. 90404

Filed Dec. 15, 1992, Ser. No. 990,575

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—328 **3 Claims**



1. In a compression-type union having a central axis, said union joining two tubing segments together, each tubing segment having a central passage, and at an end to be joined a head, on said head a peripheral sealing bead and a compression shoulder, said compression shoulder and sealing bead facing in opposite axial directions, and a sealing washer placed between said sealing beads, said sealing washer including a pair of opposite facing sealing faces and a central orifice, an externally threaded male nut having external wrench engaging surfaces, an external thread and an internal compression shoulder and a central passage, a female nut having external wrench engaging surfaces, an internal thread to engage said external thread, an internal compression shoulder and a central orifice, said orifices in said nuts leaving a clearance between said nuts and said tubing segments, the improvement comprising:

a transfer fitting, said fitting including a pair of caps, each cap including a disc having a central opening and a pair of opposite facing faces, a peripheral skirt extending axially away from said disc, one of aid caps having an axially extending tongue, and the other having an axially extending slot, the edges of the tongue and slot all being parallel to the central axis, the lateral dimensions of the tongue and slot being substantially equal so the caps can move axially relative to one another, but not rotationally, said skirts fitting around said heads to align them, said caps being non-integral with either tubing segment or with either nut, and neither of said nuts having any interengagement of any kind with said tubing segments said tongue and slot interengaging, said nuts clearing said tubing segments, whereby tightening the nuts together presses the caps toward one another, and through them compresses both of the sealing beads against the sealing washer, without exertion of relative counter-rotational forces at the sealing beads.

5,306,053

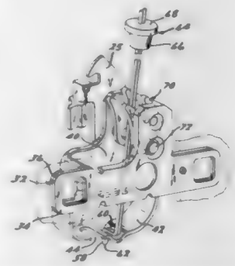
HOOD PROP ROD WITH SECONDARY LATCH

Senthil A. Gurusami, Farmington Hills, and Ajit K. Desai, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jnl. 6, 1993, Ser. No. 86,295

Int. Cl.[5] E05C *17/10*

U.S. Cl. 292—278 **16 Claims**



1. A hood prop rod assembly for an automotive vehicle body having a latch assembly operatively carried between a hood panel pivotally mounted on a first mounting surface of the body for movement between an open and a closed position and a second mounting surface of the body longitudinally spaced from the first mounting surface, the latch assembly including a housing mounted on the second mounting surface, comprising:

a rod extending vertically through the latch housing and having one end pivotally connected to the hood and an opposed end engageable with a support portion of latch housing to support the hood in the open position;

a catcher member carried on the rod at a certain position intermediate its ends; and

a second latch assembly mounted on the latch housing and operative to receive the catcher member in latching engagement when the hood is in the closed position.

5,306,054

FRANGIBLE APERTURE SEAL

George Georgopoulos, Pine Brook, N.J., assignor to E.J. Brooks Company, Newark, N.J.

Filed Apr. 14, 1993, Ser. No. 47,698

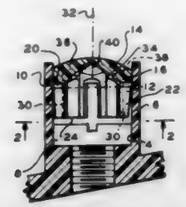
Int. Cl.[5] B65D *33/34*

U.S. Cl. 292—307 R **24 Claims**

1. An aperture seal for providing tamper evidence indicating access to a cylindrical aperture of a given transverse shape and

axial extent, said aperture having an interior side wall, said seal comprising:

a cylindrical body having a peripheral side wall of said given transverse shape dimensioned to be received in and frictionally retained in said aperture in an axial direction, said body having a hollow core forming the body into a cup shaped ember comprising a side wall extending in said axial direction; and



transverse wall means secured to the body side wall for enclosing said aperture, said transverse wall means comprising a top wall at an edge of the body side wall and transverse the axial direction, said body comprising frangible means such that the body breaks into a plurality of pieces in response to a localized pressure, said frangible means comprising forming the body of a frangible material and further comprising slots in said body side wall and undulations in said top wall.

5,306,055

PLASTIC SEAL

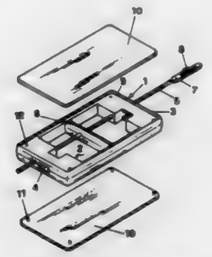
Mario Mainetti, Castelgomberto, Italy, assignor to Mainetti S.p.A., Castelgomberto, Italy

PCT No. PCT/EP90/01705, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO91/06084, PCT Pub. Date May 2, 1991

PCT Filed Oct. 11, 1990, Ser. No. 848,002

Int. Cl.[5] B65D *33/34*

U.S. Cl. 292—320 **24 Claims**



1. A plastic seal arrangement comprising:

- a continuous flexible cord,
- a plurality of bodies passed through by said continuous flexible cord from one side to the opposite side, and equally spaced along it,
- a plurality of hooks connected to said cord, each hook being insertable, after cutting of the cord and separation of the arrangement in individual seals, into a corresponding aperture provided in said body,
- a seat for housing said hook inserted into said aperture,
- means for the irreversible retention of each hook to said aperture, and
- a pair of closure plates applied to said body.

5,306,056

BUMPER FOR VEHICLES

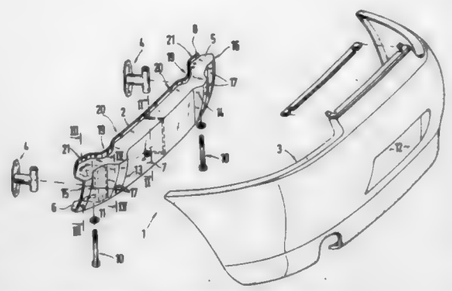
Harald-Werner Vogelgesang, Wurmberg, Fed. Rep. of Germany, assignor to Dr. Ing. H.C.F. Porsche AG, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 5,263

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1992, 4201839

Int. Cl.[5] B60R *19/04*

U.S. Cl. 293—121 **7 Claims**



1. A bumper for a vehicle body comprising:

a dimensionally stable support made of a light metal which, at least in sections, is profiled in an approximately U-shaped manner; and

an elastic covering disposed in front of the support and forms an end area of the vehicle body;

wherein substantially vertically extending impact absorbing flanges are arranged locally on the dimensionally stable support, are integrally constructed in one piece with the dimensionally stable support.

5,306,057

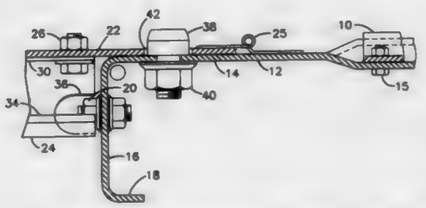
LATCHING COVER FOR BULK STORAGE STRUCTURES

George E. Miller, Jr., Raytown, Mo., assignor to Butler Manufacturing, Kansas City, Mo.

Filed Aug. 16, 1993, Ser. No. 106,646

Int. Cl.[5] E05C *9/18*

U.S. Cl. 292—259 **9 Claims**



6. In a bulk material storage structure having a door frame defining an access opening for said structure, at least one pair of studs extending inward of a periphery of said frame and being substantially coaxial, and at least one cover pivotally mounted to said frame for movement between open and closed positions, an improved latching arrangement, comprising:

a slide bar mounted to said cover for sliding movement along an outer face of said cover between latched an unlatched positions, said slide bar including a lock portion in at least close proximity to said stud, with said stud interposed between said lock portion and said frame, when said slide bar is in said latched position, and said lock portion being spaced from said stud along a pivot axis of said cover when said slide bar is in said unlatched position.

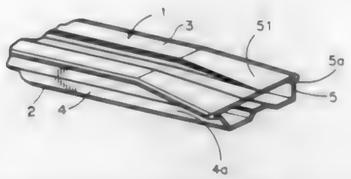
VOL 1161 ISS 4 APR 26 1994 UMI

5,306,058

TUBULAR ROLL-FORMED AUTOMOTIVE BUMPER

Peter Sturrus, and Richard Heinz, both of Grand Haven, Mich., assignors to Shape Corporation, Grand Haven, Mich.

Filed Mar. 26, 1990, Ser. No. 499,100
Int. Cl.[5] B60R 19/24
U.S. Cl. 293—154 1 Claim



1. A bumper bar for a vehicle comprising:

a formed sheet of high tensile strength steel of at least 60 KSI and less than 0.100 inch thickness; said formed sheet having side edges and roll-formed to cause the side edges to abut one another;

said side edges being welded together to form an integral tube having ends and having a front wall and a rear wall connected together by side walls from end to end; and

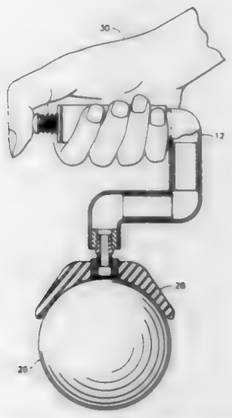
said ends each comprising an end portion of said side walls which are deformed along with an end portion of said rear wall, said end portion of said rear wall being deformed to provide a substantially flat surface for attachment to said vehicle.

5,306,059

BOWLING BALL HANDLING APPARATUS

Frank G. Pirrallo, 9143 Brandy Ct., Spring Valley, Ohio 45370

Filed Mar. 19, 1993, Ser. No. 34,897
Int. Cl.[5] B66C 1/02
U.S. Cl. 473—56 12 Claims



1. A bowling ball handling apparatus comprising:

a. a handle means for a bowler to grip, the handle means having a grip portion for a user to grip and an extension portion extending from the grip portion;

b. a rubber suction cup attached to the extension portion of the handle means for providing a vacuum to hold the bowling ball, by dispelling air and suctioning the bowling ball; and

c. a release mechanism associated with the grip portion of the handle means for releasing the vacuum when it is desired to release the bowling ball, the release mechanism including,

a spring;

a release pin associated with the spring to allow an air path through the handle means when the release pin is depressed;

a stopper for providing a seal when the release pin is in its normally extended position and having a through hole for receiving the release pin; and

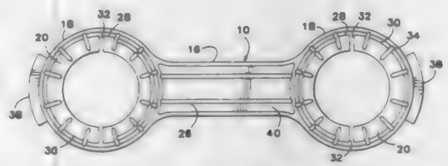
a valve guide abutting the stopper and having a partial through hole for receiving the release pin, for providing support for the release pin when the release pin is depressed.

5,306,060

CARRIER STRAP FOR BOTTLES OR JUGS

James C. Borg, Eugene, Oreg., assignor to Oregon Precision Industries, Inc., Eugene, Oreg.

Continuation of Ser. No. 919,213, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 914,691, Jul. 6, 1992. This application Sep. 22, 1993, Ser. No. 125,352
Int. Cl.[5] B65D 71/00
U.S. Cl. 294—87.2 13 Claims



1. A one-piece carrier strap for carrying a pair of containers, such as jugs, narrow-necked bottles or the like, that are of a type having an enlarged neck portion, said strap comprising:

(a) an elongate grip having a pair of opposite ends;

(b) a pair of rings, each ring being fixedly attached to a respective one of said ends of said grip, each ring having a pair of scores formed therein; and

(c) a respective neck-retaining collar within each ring, each collar having at least a pair of resiliently yieldable portions that progressively approach each other toward an upper side of said strap for yieldably receiving and springably retaining the enlarged neck portion of a respective container of said type that is inserted through said collar toward said upper side, said yieldable portions of each collar being, apart from the corresponding ring, completely separated from each other by at least a pair of gaps such that if either ring is stressed and thereby broken along said scores, then at least a pair of the corresponding yieldable portions are fully disconnected from each other.

5,306,061

SHOVEL DEVICE

Robert N. Ives, 2308 Cheshire La., Alexandria, Va. 22307

Filed Jul. 30, 1993, Ser. No. 99,474
Int. Cl.[5] A01B 1/02
U.S. Cl. 294—49 2 Claims

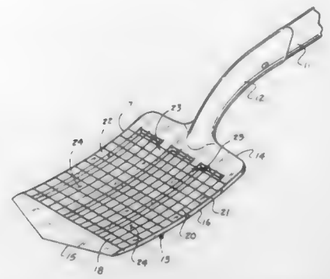
1. A shovel device, comprising,

a handle and a shovel blade, the shovel blade having a first end spaced from a second end, a first side parallel to and spaced from a second side, the first end including a handle tube with the handle received within the handle tube, and

the shovel blade having a concave front wall coextensive with a convex rear wall, and

a mesh screen fixedly mounted to the concave front wall coextensive between the first side and the second side, and

a first rib extending along the first side between the first end and the second end, and a second rib extending along the second side between the first and second ends, with the first rib parallel to and spaced from the second rib, and at least one intermediate rib between the first rib and the second rib, with the intermediate rib coextensive with and parallel to the first rib and the second rib, and a plurality of elongate openings parallel relative to one another positioned between the first rib, the second rib, and the at least one intermediate rib, with the mesh screen extending coextensively over the openings permitting sifting of soil through the mesh screen and the openings, and



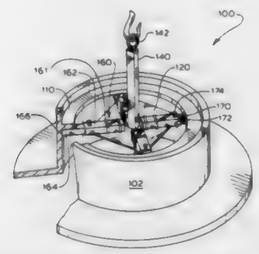
a screen receiving slot fixedly mounted within the concave front wall in adjacency to the second end, with first fasteners directed into the slot from the front wall securing the mesh screen within the slot, and a clamp plate spaced from and parallel to the slot, with the clamp plate positioned between the openings and the first end, with second fasteners directed through the clamp plate into the front wall, with the clamp plate securing the mesh screen between the clamp plate and the front wall.

5,306,062

ADJUSTABLE LIFTING DEVICE FOR SEWER FRAME OR THE LIKE

John P. Dodge, 1507 Brixham Ave., McHenry, Ill. 60050

Filed Apr. 21, 1993, Ser. No. 50,842
Int. Cl.[5] B66C 1/66
U.S. Cl. 294—81.21 3 Claims



1. An adjustable lifting device for raising and transporting a heavy item comprising:

the adjustable lifting device including a lifting frame;

a first adjustable arm, a second adjustable arm, a third adjustable arm and a fourth adjustable arm for the adjustable lifting device being substantially parallel to and secured to the lifting frame, and radially spaced around the lifting frame;

the first adjustable arm, the second adjustable arm, the third adjustable arm and the fourth adjustable arm being substantially similar in construction;

lifting arm for the adjustable lifting device being secured to and substantially perpendicular to the lifting frame;

the first adjustable arm having a fixed tubular member, a movable tubular member and an adjusting means for releasably securing the movable tubular member in the fixed tubular member;

the fixed tubular member being secured to the frame;

the adjusting means including an arm securing means for releasably securing the movable tubular member in the fixed tubular member in a male-female relationship;

the arm securing means serving to fix and adjust a length of the first adjustable arm;

the movable tubular member having a first attaching arm end oppositely disposed from a second attaching arm end thereof;

the first attaching arm end having a first shape adapted to fit a first type of a heavy item; the second attaching arm end having a second shape adapted to fit a second type of a heavy item; the movable tubular member being slidably mounted in the fixed tubular member;

the movable tubular member being completely removable from the fixed tubular member;

the lifting arm being substantially centrally located on the lifting frame;

the lifting arm being secured to the lifting frame at a first lifting arm end;

the lifting arm having a second lifting arm end oppositely disposed from the first lifting arm end;

the second lifting arm end having an attaching mechanism to receive a lifting mechanism;

the lifting mechanism being suitable for lifting and moving the adjustable lifting device with the heavy item secured thereto;

the frame being a substantially flat sheet;

a first reinforcing means securing the lifting arm to the lifting frame;

the first reinforcing means including a first flat member, a second flat member, a third flat member, and a fourth flat member each being substantially similar in shape;

the first flat member having a right triangular shape secured to the lifting arm;

the first flat member being secured to the fixed tubular member of the first adjustable arm and the lifting arm; the second flat member being secured to the fixed tubular member of the second adjustable arm and the lifting arm; the third flat member being secured to the fixed tubular member of the third adjustable arm and the lifting arm; and the fourth flat member being secured to the fixed tubular member of the fourth adjustable arm and the lifting arm; and

the arm securing means including a locking bolt movable mounted in the fixed tubular member and capable of contacting the movable member to fix a position thereof to thereby adjust a length of the first adjustable arm.

5,306,063

HANGER SUPPORT HANDLE

D. Campbell Higgins, 91 Reginald Crescent, Markham, Ontario, Canada L3P 3T8 , and Ron Hodgins, 41 Norwich Street East, Suite 220, Guelph, Ontario, Canada N1H 2G7

Filed Dec. 14, 1992, Ser. No. 990,033
Int. Cl.[5] A45C 13/26
U.S. Cl. 294—143 8 Claims

1. A support handle for supporting the hooked ends of opposed hangers within the support handle, said support handle comprising:

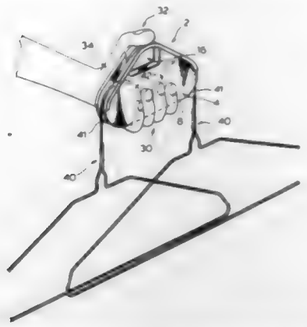
a lower finger grip edge of a length to be engaged by the fingers of one hand;

opposed sidewalls extending upwardly from said finger grip edge to define a top open slot therebetween, said sidewalls extending in a length of said finger grip edge;

two opposed hanger support structures located within said slot at opposite ends of said handle, each hanger support structure being adapted to support a hooked segment of a

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hanger in said slot with a free end of the hooked segment located in a central recess, said central recess being located between said sidewalls and above said finger grip edge.



5,306,064

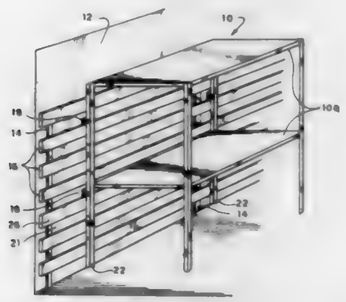
VEHICLE FREIGHT CLAMPING ASSEMBLY

Nina Padovano, and Daniel Morski, both of 5960 Jamieson Ave., Encino, Calif. 91316

Filed May 10, 1993, Ser. No. 59,125

Int. Cl.[5] B62D *33/08*

U.S. Cl. 296—24.1 **6 Claims**



1. For use within a motorized vehicle having an enclosed freight compartment, the compartment having horizontal reinforcing slat members spaced apart from the walls, there being a gap between the walls and the slats, a storage system including:

storage means having at least one vertical support strut with a vertical surface parallel to and clamped against a horizontal reinforcing slat member of the freight compartment;

means defining a plurality of spaced openings along said vertical surface of at least one strut; and

clamp means comprising L-shaped members, each having a first leg and a second leg being disposed normal to one another, said first leg being placed in substantially parallel contact with said one of the slat members, and within the gap between the slat member and the wall, said second leg being supported substantially perpendicularly by said first leg against said at least one strut, thereby partially encompassing the reinforcing slat member between said strut and said each first leg of said clamp means, whereby said reinforcing slat member is unencumbered by a concentrated force bearing thereupon to effect clamping, each of said L-shaped members having:

means defining a threaded bore through an end of said each first leg adjacent said each second leg; and

screw means, matingly engageable with and passing through said threaded bore; whereby

said clamp means define a lever and said each second leg defines a fulcrum, thereby enabling said screw means to exert a tensile force originating from said at least one vertical support strut and drawing said each first leg against the reinforcing slat member, thus clamping said at least one vertical support strut to said reinforcing slat member.

5,306,065

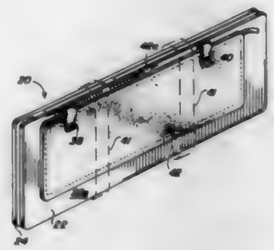
SUPPLEMENTAL VISOR ASSEMBLY

Bruce A. Ades, 763 Plaza Hermosa, Novato, Calif. 94947

Filed Mar. 16, 1993, Ser. No. 33,266

Int. Cl.[5] B60J *3/02*

U.S. Cl. 296—97.6 **24 Claims**



1. A supplemental visor assembly, comprising:

(a) a first main panel having a pair of opposite lateral ends;

(b) a first extension panel placeable against said first main panel;

(c) first means for mounting said first extension panel on said first main panel to undergo laterally slideable movement between retracted and extended positions relative to said first main panel and past one of said pair opposite lateral ends thereof;

(d) a second main panel having a pair of opposite lateral ends, said second main panel being mounted at one of said pair of opposite lateral ends thereof to the other of said pair of opposite lateral ends of said first main panel to undergo pivotal movement between a stored position against said first main panel and said first extension panel and a deployed position away therefrom;

(e) a second extension panel placeable against said second main panel; and

(f) second means for mounting said second extension panel on said second main panel to undergo laterally slideable movement movement between retracted and extended positions relative to said second main panel and past the other of said pair of opposite lateral ends thereof.

5,306,066

ENERGY ABSORBING VEHICLE DOORS

Donald G. Saathoff, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 15, 1992, Ser. No. 961,303

Int. Cl.[5] B60R *21/04*

U.S. Cl. 296—146.6 **20 Claims**

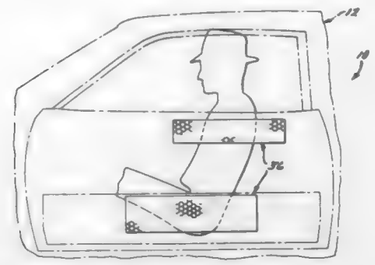
1. A vehicle door comprising:

an inner panel;

an outer panel joined to said inner panel;

a door trim panel mounted on said inner panel to form a space therebetween; and

a pre-crushed honeycomb shaped energy absorbing structure disposed in the space between said door trim panel



and said inner panel for absorbing energy from a side collision type impact of said vehicle door.

5,306,067

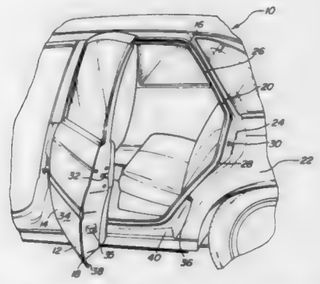
REAR DOOR ASSEMBLY FOR AUTOMOBILES

Edward I. Hull, West Bloomfield, and Michael T. Vecchio, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 25, 1993, Ser. No. 9,195

Int. Cl.[5] B60J *5/04*

U.S. Cl. 296—146.6 **10 Claims**



1. A side door assembly for an automotive vehicle having an aperture formed through the side of the vehicle, the aperture being longitudinally bounded by a forwardly positioned and substantially vertical mounting surface, and a plurality of contiguous rearwardly positioned surfaces including at least a substantially vertical latching surface positioned proximate the vertical mid-point of the vehicle, and a lower canted surface extending forwardly from the vertical latching surface, the side door assembly comprising:

a door mounted on the vertical mounting surface for pivotal movement between the position closing the aperture and a position opening the aperture;

a latch mechanism operatively connected between said door and said latching surface when said door is in said closed position; and

reinforcing means operatively disposed between said door and said canted surface for resisting movement of said door away from said open position and beyond said closed position.

5,306,068

AUTOMOBILE DOOR

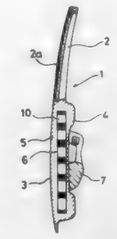
Toshiharu Nakae, Shiga; Fusayoshi Akimaru, and Syunji Okubo, both of Ohtsu, all of Japan, assignors to Toray Industries Inc., Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 934,827

Claims priority, application Japan, Aug. 30, 1991, 3-069332[U]; Jan. 14, 1992, 4-004782; Apr. 30, 1992, 4-110934

Int. Cl.[5] B60R *21/02*

U.S. Cl. 296—189 **10 Claims**



1. An automobile door comprising:

a door body defining a cavity; and

a shock absorber installed in said cavity, said shock absorber being composed of a plurality of foamed-resin tubes arranged such that longitudinal axes of said tubes lie in parallel, said tubes being bonded to one another wherein said shock absorber is disposed in said cavity such that said foamed-resin tubes are axially aligned in a thickness direction of said door body,

wherein said foamed-resin tubes are composed of an inner part and an outer part, said inner part and outer part consisting of different resin foams.

5,306,069

SLIDING ROOF FOR AN AUTOMOBILE

Thomas Becker, Frankfurt; Albert Schlapp, Dreieich, and Günther Pfeifer, Niedernberg, all of Fed. Rep. of Germany, assignors to Rockwell Golde GmbH, Fed. Rep. of Germany

Filed Dec. 5, 1991, Ser. No. 804,266

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040825

Int. Cl.[5] B60J *7/053, 7/22*

U.S. Cl. 296—217 **2 Claims**



1. A sliding roof for an automobile having a roof opening comprising:

a front wind deflector pivotally mounted about a front edge of said roof opening and a rear sliding lid which may be slid along a path with respect to said front wind deflector to define a selectable dimensioned roof opening;

said sliding lid in conjunction with said wind deflector together in a first position fill the roof opening;

said sliding lid having a first pair of control blocks disposed on a front portion on opposing sides, and a second pair of control blocks disposed on a rear portion on opposing sides;

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said control blocks including a vertically disposed planar portion oriented in a direction parallel to said path of said sliding lid;

a first pair of trolleys slidably disposed on opposing tracks disposed on opposing sides of said roof opening, and a second pair of trolleys axially displaced from said first pair of trolleys and slidably disposed on said tracks;

means for displacing said first and second pair of trolleys along said opposing tracks to selectable positions therealong;

control pins disposed on each said trolley and slidably engaging a respective opening defined in said vertically disposed planar portion of each said control block;

each said opening defining a slide track having a shape which defines a height of the respective sliding lid portion;

said first pair of control blocks each having one of said slide tracks having a forward horizontal portion followed by a middle upwardly ascending portion and a rear elongate horizontal portion;

said second pair of control blocks each having one of said slide tracks having a forward elongate horizontal portion followed by an upwardly ascending middle portion and a horizontal rear portion;

wherein said front portion of said sliding lid is lowered by said control pins sliding in said middle upwardly ascending portion of said slide tracks in said first pair of control blocks and said rear portion of said sliding lid is pivoted about said control pins disposed in said forward elongate horizontal front portion of said slide track in said second pair of control blocks; and

wherein said front portion of said sliding lid is pivoted about said control pins disposed in said rear elongate horizontal portion of said slide track in said first pair of control blocks and said rear portion of said sliding lid is lowered by said control pins sliding in said upwardly ascending middle portion of said slide track in said second pair of control blocks.

5,306,070

SLIDING-LIFTING ROOF FOR AUTOMOBILES

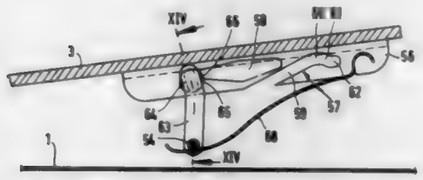
Albert Schlapp, Dreieich, and Ralf Heindl, Goldbach, both of Fed. Rep. of Germany, assignors to Rockwell Golde GmbH, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,329

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200725

Int. Cl.[5] B60J *7/053*

U.S. Cl. 296—222 **6 Claims**



1. Sliding-lifting roof for automobiles, comprising a rigid sliding lid, which is guided by forward and rear guide shoes on guide rails fixed laterally to the roof opening, is driven by cables guided in pressure-stiff manner and acting upon the rear guide shoes, is pivotally journalled by pivot bearings fitted to the forward guide shoes about a horizontal axis extending transversely to the direction of sliding and is equipped, along each of its lateral edges, with a guide block fixed to it, having a guide slit of which a guide pin fitted to the rear guide shoe engages, wherein the guide slits are each composed of a relatively long, first rectilinear portion, ascending from front to rear relative to the sliding lid and associated with outward tilting movement, of relatively short second portion, adjoining thereto and extending towards the rear approximately parallel to the sliding lid and associated with the closed position of the sliding lid, and of a relatively short, obliquely oriented third portion adjoining thereto and associated with a vertical displacement of the rear edge of the lid, characterized in that the rear guide shoes (**24**) are each connected to the guide block (**56**) associated with them, additionally to the engagement of the guide pins (**54**) into the guide slits (**57**), each by a control lever (**63**), which at one end is articulated to the rear guide shoe (**24**) and at the other end is connected rotatably and slidably to guide means in the guide block (**56**) a first phase of the outward tilting movement and a second phase of the opposite movement being controlled by the engagement between the guide slits (**57**) and the guide pins (**54**), and a second phase of the outward tilting movement and first phase of the opposite movement being controlled by the connection of the control levers (**63**) and the guide means, the guide slits (**57**) and the guide pins (**54**) then being disengaged.

5,306,071

OBJECT HOLDER FOR OFFICE-TYPE CHAIRS

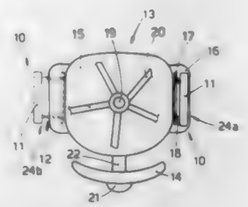
Lucio Zamo'; Nicola Zamo', both of Manzano; Silvano Guion, Udine, and Giuseppe Todesco, Sacile, all of Italy, assignors to Offix Italia Srl, Gorizia, Italy

Filed Jun. 4, 1992, Ser. No. 893,837

Claims priority, application Italy, Jun. 10, 1991, UD91 U 000024

Int. Cl.[5] A47C *7/62*

U.S. Cl. 297—192 **9 Claims**



1. An office-type chair, comprising:

a support base;

a seat supported in a substantially horizontal plane by said supporting base, said seat having a front edge, an opposed rear edge and a pair of opposed said edges;

a seatback extending substantially vertically adjacent a rear edge of said seat and having a drawer in a rear portion thereof, said drawer having an object holder slidable along a substantially horizontal axis extending substantially perpendicular to said pair of opposed side edges of said seat; and

said object holder having a retracted position within said drawer and a usage position withdrawn from said drawer and at a side of said seatback.

5,306,072

MODULAR SEATING

John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108

Filed Feb. 20, 1992, Ser. No. 840,052

Int. Cl.[5] A47C *15/00*

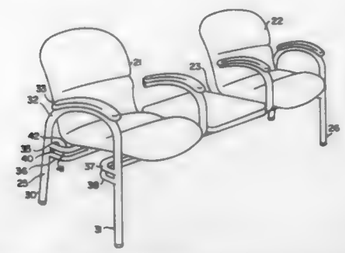
U.S. Cl. 297—232 **12 Claims**

1. A modular article of furniture comprising:

a left hand and a right hand element, each said element comprising a rigid U-shaped arch with a pair of downwardly-extending legs adapted to rest on a surface, a bight interconnecting said legs, a pair of parallel shear members integrally and rigidly connected to each of said legs, said shear members each having a first arm rigidly joined to one of said legs and directed toward the other of said legs and a second arm directed laterally from the plane of the arch, the members of each pair of shear members being spaced apart one member above the other member;

a rigid interconnecting member interconnecting said second arms, whereby to provide in-plane shear resistance to relative movement of the second arms;

splice means for rigidly engaging ends of the second arm of said shear members whereby when said end members are



joined by said splice means the arches form standing ends for the article of furniture, and the shear members provide support for furniture amenities and also provide resistance to sideward tilting of said left hand and right hand elements.

5,306,073

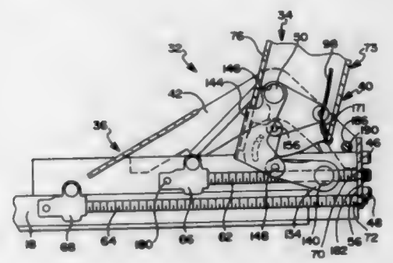
HIGH STRENGTH MOTOR VEHICLE SEAT RECLINER

Richard W. A. Rees, Rochester Hills, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 24, 1992, Ser. No. 840,373

Int. Cl.[5] B60N *1/06*

U.S. Cl. 297—362.14 **20 Claims**



1. A motor vehicle seat recliner comprising:

a lower recliner structure for supporting a seat cushion;

an upper recliner structure including a seat back frame for supporting a seat back, said seat back frame and said lower recliner structure joined at a hinge point; and

an adjuster mechanism carried by said lower recliner structure engaging said upper recliner structure for selective, substantially fixed angular positioning therebetween, said mechanism including a longitudinally disposed drive screw restrained from rearward displacement by a forward facing thrust surface defined by said lower recliner structure, a traveling nut threadably engaged upon said drive screw, an elongated link pivotally connected at one end to said nut and pivotally connected at an opposite end to a link control bracket, said link control bracket pivotally connected to said seat back frame at one end and to said link at an opposite end, whereby when said upper recliner structure is disposed in a generally upright operating position said link control bracket positions said link generally parallel with said drive screw so that upon imposition of frontal impact forces, said link and a portion of said drive screw intermediate said nut thrust surface are subjected to substantially pure compressive loading.

5,306,074

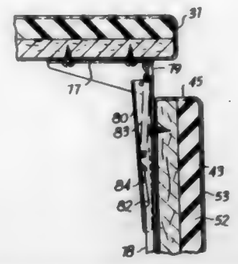
AMPUTEE ATTACHMENT FOR A WHEELCHAIR

Paul Mocur, 45685 Greenridge Dr., Northville, Mich. 48167

Filed Jun. 8, 1992, Ser. No. 894,950

Int. Cl.[5] A47C *7/50*

U.S. Cl. 297—423.31 **23 Claims**



1. In a wheelchair having a seat, wherein said seat has a bottom surface, a top surface, a front edge, and two side edges; the improvement comprising a leg support panel; hinge means suspending said panel from the seat at a point near the seat front edge so that the panel is swingable between a raised position in planar alignment with the seat and a lowered position extending downwardly in a plane extending generally vertically through the seat front edge; said leg support panel having a top surface that is substantially contiguous with the seat top surface when said panel is in its raised position; a manually-operated latch means for releasable holding said panel in its raised position; and an over-center spring means trained between the seat and the panel for exerting a lifting force on the panel when the panel is manually swung toward its raised position and which does not exert a lifting force when the panel is in said lowered position.

5,306,075

HYDRAULIC BRAKING PRESSURE CONTROL SYSTEM HAVING AN ON-OFF VALVE RESPONSIVE TO AN OUTPUT HYDRAULIC PRESSURE

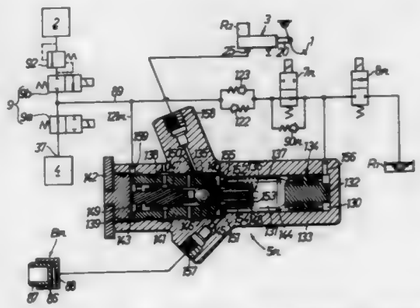
Shohei Matsuda; Kazutoshi Tashima; Kohichi Furuya; Masaaki Myoi, all of Saitama, and Makoto Horiuchi, Nagano, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Nissin Kogyo Co., Ltd., Ueda, both of Japan

Filed Oct. 18, 1991, Ser. No. 779,475

Claims priority, application Japan, Oct. 26, 1990, 2-289305

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—10 **9 Claims**



1. A hydraulic braking pressure control system comprising:

a brake device (B_{FL}, B_{FR}, B_{RL}, B_{RR});

a hydraulic pressure control means (**4**) for controlling a hydraulic pressure from a hydraulic pressure supply

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source (2) in accordance with an amount of operation of an operating member (1).

an auxillary hydraulic pressure generating means (3) including a working piston (16, 17) operatively connected to said operating member to advance in response to operation of said operating member and being slidably received in a housing (14) with a front surface of the working piston facing a hydraulic pressure chamber (18, 19) which is defined in said auxiliary hydraulic pressure generating means (3);

a hydraulic pressure transmitting means (134) including a free piston (132) slidably received in a cylinder body (133) and having opposite ends facing an input hydraulic pressure chamber (130) connected to said hydraulic pressure control means (4) and an output hydraulic pressure chamber (131) leading to said brake device, respectively; and

an on-off valve (135) interposed between the hydraulic pressure chamber (18, 19) in said auxiliary hydraulic pressure generating means (3) and said brake device and adapted to be closed by a drive means (147) in response to an increase in a hydraulic pressure output from said hydraulic pressure control means,

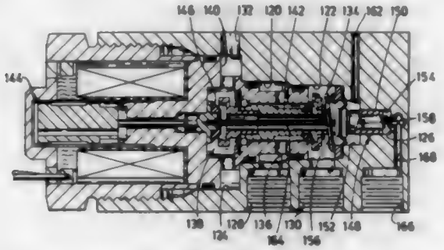
wherein said system further includes valve-opening means (136) for forcedly opening said on-off valve in response to the movement of said free piston by at least a predetermined distance in a direction to reduce the volume of said output hydraulic pressure chamber.

5,306,076

PROPORTIONAL CONTROL VALVE WITH PRESSURE COMPENSATION

Jeffrey A. Tyler, Newark, N.Y., assignor to G. W. Link Company, Inc., Clifton Springs, N.Y.

Filed May 20, 1992, Ser. No. 886,123
Int. Cl.[5] B60T *8/00*
U.S. Cl. 303—118.1 **31 Claims**



1. A proportional control valve for controlling fluid pressure in a closed volume load comprising:

a housing;

a first passage within said housing connecting an inlet port to a working port for increasing fluid pressure in the closed volume load;

a second passage within said housing connecting said working port to an exhaust port for decreasing fluid pressure in the closed volume load;

a directional valve for controlling fluid flow through said first and second passages;

a first actuator movable in a first direction by a control signal and movable in a second direction by fluid pressure from a first side of a restriction to fluid flow between a common portion of said first and second passages and the closed volume load;

a second actuator movable in said first direction by fluid pressure from the first side of the restriction and movable in said second direction by fluid pressure from a second side of the restriction;

said restriction being sized to provide a pressure difference between the first and second sides of the restriction so that the fluid pressure at the second side of the restriction closely matches the fluid pressure of the closed volume load and the fluid pressure at the first side of the restriction fluctuates with respect to the fluid pressure of the closed volume load accompanying operation of said directional control valve; and

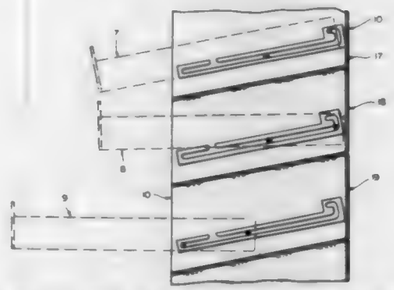
said first and second actuators being operatively associated with each other for regulating the fluid pressure at the second side of the restriction proportional to the control signal applied to the first actuator independently of the relative fluctuations of fluid pressure at the first side of the restriction.

5,306,077

DRAWER UNIT FOR DISPLAYING AND DISPENSING OF MERCHANDISE

Thomas R. Trevaskis, Victoria, Australia, assignor to Megaspace Pty Ltd., Moorabbin, Australia

Filed Oct. 5, 1992, Ser. No. 955,199
Claims priority, application Australia, Oct. 4, 1991, 8744; Apr. 8, 1992, 1767
Int. Cl.[5] A47F *3/024*; A47B *88/04, 88/18*
U.S. Cl. 312—122 **6 Claims**



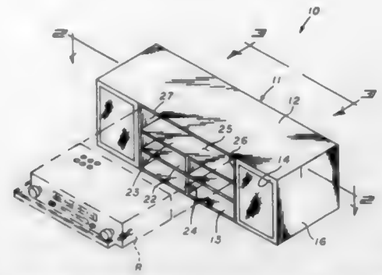
1. A drawer unit for displaying articles for sale and affording convenient access thereto, comprising a first element in the form of a housing having an open forward end, a second element in the form of a drawer for receipt in the housing, elongate guide means on one of said elements and front and rear guide runner means on the other of said elements cooperable with the guide means for mounting the drawer within the housing for back and forth substantially translational movement relative to the housing, the guide means and guide runner means defining a substantially straight path of movement for the drawer downwardly inclined in a forward direction for allowing gravity to assist forward movement of the drawer from a rear first position wherein a relatively small front part of the drawer protrudes from the forward end of the housing to a forwardmost second position wherein a relatively large part of the drawer protrudes from the forward end of the housing and substantially the entire interior of the drawer is exposed and is thereby accessible for restocking, the drawer in the first position being inclined such that unrestrained articles therein slide forwardly to a position in which a foremost article is accessible for removal from the drawer, the drawer having a center of mass located forwardly of the front guide runner means, said guide means and guide runner means being cooperable under the weight of the drawer to constrain the drawer from movement along said path, said guide means having abutments defining front and rear extremities of said path and a rear end part which is branched such that when the drawer is pushed back by hand, the drawer having reached said first position tilts under its own weight about the front runner means as a fulcrum causing the rear runner means to enter said rear end part of the guide means and thereby hold the drawer against forward movement until a further action dislodges the rear runner means from said rear end part of the guide means enabling the drawer to move from the first position to the second position.

5,306,078

MOTOR VEHICLE RADIO RECEIVING CABINET

Russell E. Reed, 1212 Duffy Pl., Raleigh, N.C. 27603

Filed Sep. 21, 1992, Ser. No. 948,104
Int. Cl.[5] A47B *5/00, 81/06*
U.S. Cl. 312—7.1 **2 Claims**



1. A motor vehicle radio receiving cabinet, comprising,

a housing, the housing having a top wall and a floor, with the floor arranged in a parallel coextensive relationship relative to the top wall, and

a rear wall extending between the top wall and the floor, and

a front wall extending between the top wall and the floor spaced from the rear wall, and

a first side wall extending between the front wall and the rear wall and a second side wall extending between the front wall and the rear wall, and

a first interior wall arranged within the cabinet spaced from the first side wall coextensive with the first side wall, and

a second interior wall mounted within the cabinet spaced from the second side wall coextensive with the second side wall, and

a first speaker cavity oriented between the first side wall and the first interior wall, and

a second speaker cavity oriented between the second side wall and the second interior wall, and

a first speaker mounted within the first speaker cavity, and

a second speaker mounted within the second speaker cavity, and

an intermediate floor orthogonally directed between the first interior wall and the second interior wall spaced from and parallel the floor, and

an upper floor oriented parallel to and between the intermediate floor and the top wall coextensive with the intermediate floor, and

a radio receiving cavity defined between the first interior wall and the second interior wall and the upper floor and the top wall to receive a radio therewithin, and

a battery cavity is oriented between the first interior wall and the second interior wall below the upper floor, with a battery cavity interior wall extending between the first interior wall and the second interior wall at an interface of the battery cavity and the radio receiving cavity, and the battery cavity interior wall including a radio plug connector, the radio plug connector including first and second speaker wire members directed through the respective first and second speaker wires, and a plug connector for electrical communication to the radio, and a battery cavity door directed through the rear wall hingedly mounted to the floor, and

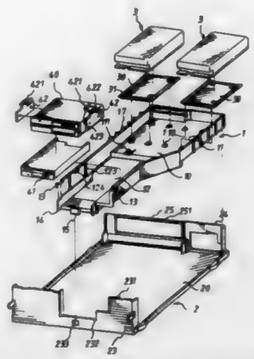
the door having a pair of parallel door grooves, wherein the door is oriented from a first position coplanar with the rear wall to a second position orthogonally oriented relative to the rear wall, and the grooves are orthogonally oriented relative to the floor in the first position and are orthogonally oriented relative to the rear wall in the second position, and a battery tray reciprocatably mounted within the battery cavity, with the battery tray having plural pairs of wheels, with one pair of wheels of said plural pair of wheels mounted within each of said grooves, and the battery tray including a plurality of battery tray cavities, and the battery tray cavities each having acidic neutralizing powder therewithin.

5,306,079

MULTI-PURPOSE FRAME FOR A COMPUTER

Morgan C. Liu, Taoyuan, Taiwan, assignor to Enlight Corporation, Taoyuan, Taiwan

Filed Oct. 8, 1992, Ser. No. 958,304
Int. Cl.[5] H05K *7/14*
U.S. Cl. 312—223.2 **17 Claims**



6. In a multi-purpose frame for a computer, the frame comprising a substantially rectangular box, a first floppy disk seat and a second floppy disk seat on a front portion of the box, and at least one hard disk seat at a rear portion of the box, the improvement wherein:

said first floppy disk seat has fitting means on each of two opposite side walls thereof;

said hard disk seat having a support plate with a plurality of projecting fastening hooks disposed thereon and at lest one resilient retainer at a front edge thereof; and;

said front portion of said box has a side hook positioned on each of opposite sides of a front end thereof as a pair of said side hooks, a pair of front hooks projected outward on a lower portion of said front end thereof and a downward urging retainer between said front hooks.

5,306,080

SYSTEM FOR FASTENING THE BACK END OF THE GUIDE RAIL OF A DRAWER SLIDE

Horst Lautenschläger, Reinheim, and Horst Berger, Bielefeld, both of Fed. Rep. of Germany, assignors to MEPLA-Werke Lautenschläger GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 7, 1992, Ser. No. 909,972
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1991, 4124535
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—334.5 **8 Claims**

1. A mounting system comprising:

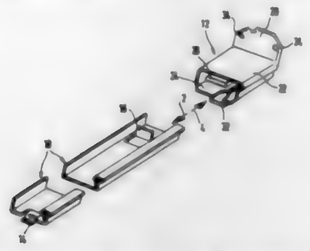
A) a guide rail having an end, wherein said end of said guide rail of a slide for drawers includes means for fastening said guide rail to a carcase of a cabinet, said end to be fastened being a carcase-interior back end of said guide rail which is for fastening at a distance from an inside surface of a carcase side wall, the guide rail being formed as a channel and including means for filling to a corresponding runner rail formed by an open-bottomed hollow shape which can be fastened to a part to be drawn out, including and roller tracks formed inside of the runner rail, for rolling bodies which can roll on these runner rail roller tracks on one side; said guide rail including and roller tracks formed in a portion thereof for engaging a runner rail on another side,

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said guide rail roller track having a profile section for extending from below into the runner rail and being bent from a substantially horizontally disposed profile limb;

B) a tab (16) of a carcase-interior end portion of said guide rail which extends upwardly therefrom and is aligned transversely of the length of the guide rail from the rail's horizontal web, said tab having detent teeth (18) on its defining edge remote from the web;

C) a mounting piece (12) including means for fastening to the interior of the carcase and having a supporting surface (24) extending under a back end of the horizontal web of the guide rail (10), said mounting piece having a resilient



tongue (26) at a distance above the supporting surface (24) approximately at the level of the tab (16) provided on the guide rail and said tongue having a bottom with parallel grooves (28) running in a lengthwise direction of the guide rail and thrusting with bias against the detent teeth (18) of the tab (16); and

said supporting surface (24) being formed by an inside surface of the bottom horizontal wall of a socket (22) that is closed at the carcase-interior end by a mounting flange (20) but is open at the opposite end in the direction out of the carcase interior, and the resilient tongue (26) projects from the mounting flange (20) within the socket (22) toward an open end of the socket (22).

5,306,081

VEHICLE-MOUNTED STORAGE APPARATUS EQUIPPED WITH A SAFETY DEVICE

Masumi Fukumoto, Yokohama, Japan, assignor to NIFCO Inc., Yokohama, Japan

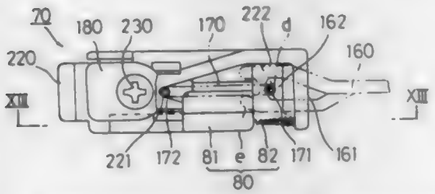
PCT No. PCT/JP91/01699, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO92/10384, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 6, 1991, Ser. No. 915,987

Claims priority, application Japan, Dec. 6, 1990, 2-400164[U]

Int. Cl.[5] E05C *7/06;* **A47B** *88/00, 81/06*

U.S. Cl. 312—334.44 **21 Claims**



1. A vehicle-mounted storage apparatus equipped with a first safety device which comprises a housing having an opening, a projecting object held in the housing and movable in a projecting direction through the opening on the housing, forcing means for forcing the projecting object in the projecting direction through the opening of the housing, a lock device for locking the projecting object at a non-projecting position relative to the forcing means, said lock device being unlocked when the projecting object in the non-projecting position is pressed into the housing, and a second safety device for stopping an unlocking operation of the lock device when an inertia force is applied, wherein

said lock device is composed of: a cam groove formed in one of the housing and the projecting object and having a heart-shaped island in a center thereof; a lock pin axially supported on the other of the housing and the projecting object for tracing a bottom of the cam groove; and pressing means for pressing the lock pin toward the bottom of the cam groove,

said cam groove is composed of: an introductory path extending toward a sharpened tapering portion of the heart-shaped island; an outward path extending along one side of the heart-shaped island with a depth becoming gradually shallower from the introductory path; a double portion which is closed and deeper than a shallowest end of the outward path; a stopping portion formed in a vicinity of the doubled portion and deeper than the doubled portion, said stopping portion extending along the heart-shaped constricted portion at a middle of one end portion of the heart-shaped island; an escape portion formed in a vicinity of the stopping portion, said escape portion being deeper than the stopping portion, extending toward the other side of the heart-shaped island, and being closed; and a returning path extending along the other side of the heart-shaped island with a depth gradually becoming shallower from the escape portion to be communicated with the introductory path, and having a shallowest end higher than the bottom of the introductory path,

said cam groove of the lock device has a tapered surface inclined toward a bottom of the stopping portion of the cam groove at a projecting edge portion projecting toward the heart-shaped constricted portion of the heart-shaped island.

5,306,082

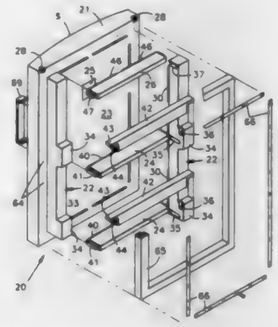
APPLIANCE DOORS AND PANELS

James Karlin, 28 Clarkes Crossing, Fairport, N.Y. 14450, and David G. Bank, 4801 Reservoir Rd., Geneseo, N.Y. 14454

Filed Jun. 12, 1992, Ser. No. 897,765

Int. Cl.[5] F25D *11/00*

U.S. Cl. 312—405 **13 Claims**



1. An appliance door, comprising

a hollow, plastic, molded door slab having a pair of vertically spaced upper and lower end walls, respectively, and a pair of spaced inner and outer walls, respectively, extending between said end walls,

a storage shell projecting from the side of said inner wall of said slab remote from said outer wall thereof,

said shell comprising a pair of laterally spaced side walls extending vertically of said slab, and a pair of vertically spaced upper and lower end walls, respectively, connected at opposite ends thereof to said side walls and extending transversely therebetween,

each of said walls of said shell having thereon at least one projection molded in a registering recess in said inner wall of said slab thereby to fix said walls of said shell to said slab,

a pair of vertically spaced pivot pin bushings anchored coaxially of each other in one of said pairs of vertically spaced end walls for use in mounting the door for pivotal movement on an appliance, and into and out of a closed position in which said shell faces the interior of said appliance, and

expansion means formed in said door slab to compensate for any thermal bow caused by temperature differentials between the walls of said door slab and the interior of an appliance upon which the slab is mounted.

5,306,083

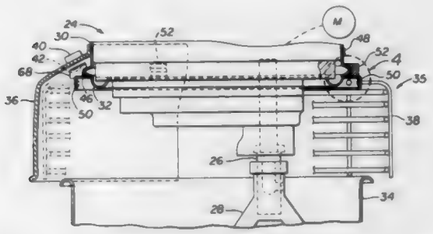
MIXER GUARD MOUNTING MEANS

Frank J. Caldwell, West Carrollton, and Neal Blackburn, Springfield, both of Ohio, assignors to Premark FEG Corporation, Troy, Ohio

Filed Aug. 4, 1993, Ser. No. 101,868

Int. Cl.[5] B01F *7/16, 7/32, 15/00*

U.S. Cl. 366—347 **11 Claims**



1. In a food mixer having an electric motor; a power transmission driven thereby and having an essentially cylindrical portion with a rotary mixing shaft extending downwardly therefrom; said shaft having means for receiving a mixing member on its lower end for rotation with said shaft to mix food ingredients in an open-topped bowl positioned therebelow; a bowl guard suspended from said cylindrical transmission portion and covering the open top of said bowl while said mixing shaft is rotating, said guard comprising a fixed first essentially semi-cylindrical splash guard portion remote from an operator station and a second removable semi-cylindrical see-through portion adjacent said operator station; said second portion being pivotable about a vertical axis centrally of said transmission cylindrical portion between a bowl-covering position encompassing that area of the open top of the bowl not covered by said splash guard portion and a bowl-access position in which said first and second portions are adjacent and essentially nested; a plurality of circumferentially-spaced inwardly-facing guide shoes on said second portion adjacent said cylindrical transmission portion for enabling pivoting of said second see-through portion about said transmission; and fixed track means associated with said cylindrical transmission portion for slidably receiving said guide shoes; the improvement comprising:

said track means consisting of a cylindrical sheet metal band surrounding and coaxially-fixed to a lower end of said cylindrical transmission portion, said band having an outwardly-directed horizontal bead integral therewith and extending essentially 360 degrees thereabout for supporting said pivotable portion by means of said guide shoes for enabling pivotal movement thereof between its bowl-covering and bowl-access positions, said bead and the adjacent outer surface of said band being essentially free of food-collecting crevices whereby, upon removal of said second portion for cleaning away from said mixer, the outer surface of said band and bead can be completely and easily wiped free of food splashed thereon during mixing.

5,306,084

PRINTING CONTROL SYSTEM AND THE METHOD

Yasunori Orii, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

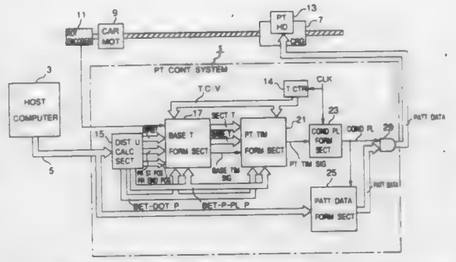
PCT No. PCT/JP91/00802, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO91/19612, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 14, 1991, Ser. No. 834,254

Claims priority, application Japan, Jun. 15, 1990, 2-157191

Int. Cl.[5] B41J *2/30*

U.S. Cl. 400—279 **6 Claims**



1. A printing control system for deciding printing timings at printing positions when a carriage is traveling in accordance with a designated printing density, which comprises:

timer means for generating time information indicative of current time;

position detecting means for generating position pulses having a constant number of pulses per unit travel distance when the carriage is traveling;

speed information forming means for forming speed information related to the latest travel speed of the carriage, said speed information forming means receiving time information from said timer means whenever each position pulse is generated, and forming the speed information on the basis of the received time information;

means for deciding a distance unit so that a common multiple of a preselected printing density and the number of position pulses generated per unit length travel distance to generate a distance unit density as a number of distance units per unit length;

time estimating means for estimating time at which the carriage arrives at each printing position on the basis of the speed information formed by said speed information forming means, said time estimating means calculating a difference in distance between the selected position pulse and the printing position on the basis of the printing density and the number of position pulses generated per unit travel distance, and estimating the time at which the carriage reaches the printing position on the basis of the calculated distance difference and the speed information formed by said speed information forming means, said time estimating means utilizing the distance difference as the number of the distance units, obtains a required travel time of the distance unit on the basis of the speed information; calculates a required travel time of the distance difference on the basis of the obtained required travel time of the distance unit and the number of the distance units; and estimates the time at which the carriage reaches each printing position, as an addition of the required travel time of the distance difference and the time information from said time means at which the specific position pulses a regenerated; and

printing timing deciding means for deciding each printing

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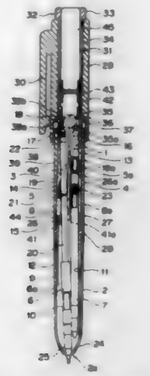
timing at the time when the current time of said timer means matches the estimated time.

5,306,085

MULTIPLEX WRITING IMPLEMENT WITH ERASER

Seiichi Kobayashi, Yokohama, Japan, assignor to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,509
Claims priority, application Japan, Dec. 3, 1991, 3-107265[U]; Dec. 3, 1991, 3-107268[U]
Int. Cl.[5] B43K *29/02, 24/14*
U.S. Cl. 401—29 **4 Claims**



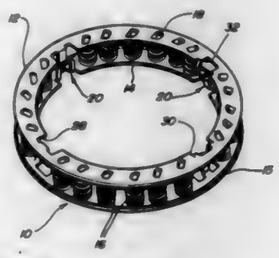
1. A multiplex writing implement comprising:
a front barrel section made of a resin and having a longitudinal axis;
a middle barrel section, made of a resin, and disposed coaxially with and in the rear of said front barrel section;
a plurality of writing elements, at least one of which is a mechanical pencil, and each of which is provided with a sliding piece at a rear end thereof;
a writing element guide member, made of a resin material, and fixed to said front barrel section for fitting each of said plural writing elements in a corresponding guide groove that is arranged in the axial direction so that the writing elements can be moved in the axial direction, said writing element guide member being axially non-rotatable and locked in the axial direction relative to said middle barrel section;
a cylindrical cam member having a slanted cam surface at a front side thereof, said cam surface being around a periphery of a guide cylinder, said slanted cam surface having a generally circular shape and being abutted against said sliding pieces;
an eraser holder having a projection integrally provided on a peripheral side thereof for fixing an eraser at a rear opening;
an eraser guide member fixedly disposed at a rear end of said cylindrical cam member so as to move integrally with said cylindrical cam member, said eraser guide member having an axial slit into which the projection of said eraser holder is slidably fit for allowing said eraser holder to slide in said slit;
an eraser projecting and retracting means for extending and retracting the eraser from a rear end of said eraser guide member by moving said eraser holder inside said eraser guide member;
said middle barrel section being locked against said cylindrical cam member to prevent rotation;
said cylindrical cam member being integrally and fixedly connected with said eraser guide member such that a front end portion of said eraser guide member joins with a rear end of said cylindrical cam member;
said eraser guide member carrying on its circumference a cap member which is made of a resin material with a spiral slot formed on an inner wall thereof, such that said cap member is rotatable but locked in the axial direction relative to said eraser guide member;
said eraser projecting and retracting means including said slit disposed in said eraser guide member, the spiral slot disposed on the inner wall of said cap member, and said eraser holder projection which is fit in the spiral slot through the slit; and
said sliding pieces being biased to abut against the slanted cam surface of said cylindrical cam member and moved forward and backward alternately by rotation of said cylindrical cam member with respect to the front barrel section, each writing tip of the writing elements being selectively projected and retracted from a front opening of said front barrel section; and when the mechanical pencil writing element is selectively engaged, pencil lead can be discharged by depressing the rear end of said eraser guide member against the middle barrel section, and the eraser can be extended and retracted from the rear end of said eraser guide member of said multiplex writing implement by rotation of said cap member against said middle barrel section.

5,306,086

SPRING ASSEMBLY WITH INTERCONNECTING ANNULAR PLATES

Henry Orlowski, Coldwater, and Richard Margaritondo, Howell, both of Mich., assignors to Kuhlman Corporation, Lexington, Ky.

Filed Oct. 29, 1992, Ser. No. 968,535
Int. Cl.[5] F16F *3/00, 1/06*
U.S. Cl. 267—89 **30 Claims**



1. A spring assembly comprising:
a pair of spaced-apart annular plates defining a central axis;
a plurality of circumferentially spaced, parallel-oriented compression springs disposed between said annular plates and having associated therewith a free-state height; and
interconnecting means external of said plurality of springs for joining said annular plates so that the maximum axial distance between said annular plates is limited to less than said free-state height of said springs to thereby precompress said springs, said interconnecting means being configured so as to permit the overall axial height of said spring assembly to diminish as said springs are compressed.

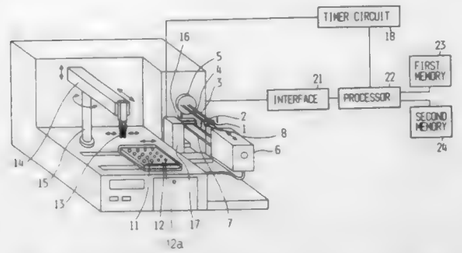
5,306,087

APPARATUS FOR THERMOGRAVIMETRY

Nobutaka Nakamura; Haruo Takeda, and Yoshiharu Sugano, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,391
Claims priority, application Japan, Aug. 26, 1991, 3-213965
Int. Cl.[5] G01G *23/18*; G01N *25/00*
U.S. Cl. 374—14 **6 Claims**

5. An apparatus for performing thermogravimetry measurements comprising: a sample holder for holding a sample container in which a sample can be accommodated; a thermobalance for measuring the weight of a sample container which is held by said sample holder, for producing weight signals representing measured weights and for determining a change of weight of said sample holder, caused by a change of temperature of a sample in the sample container when held in said holder; means for holding a plurality of the sample containers in predetermined positions; a conveyance mechanism for conveying a sample container between said holding means and said sample holder; weight signal processing means connected



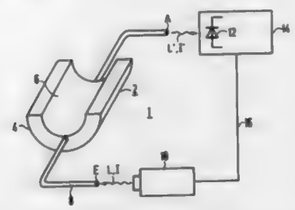
to said thermobalance for receiving each weight signal from the thermobalance; a first memory connected with said processing means for receiving and storing a weight signal output from said thermobalance when an empty sample container is held by said sample holder; and a second memory for storing a weight signal output from said thermobalance when a sample container loaded with a sample to be measured is held by said holder, wherein said apparatus conducts measurements under the condition that the difference between a weight signal stored in said second memory and a weight signal stored in said first memory is the initial weight of a sample to be measured.

5,306,088

METHOD AND APPARATUS FOR MONITORING THE TEMPERATURE IN A TURBINE COMPONENT

Walter Zoerner, Baiersdorf-Igelsdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 11,220
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202440
Int. Cl.[5] G01N *21/41*; G01K *1/14*
U.S. Cl. 374—131 **14 Claims**



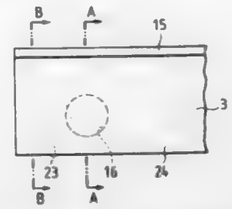
1. A method for monitoring temperature in a turbine bearing, which comprises:
detecting a change in photoconduction properties in a fiber-optical cable disposed in a meandering fashion inside a turbine bearing underneath a running surface of the turbine bearing and across at least a portion of the turbine bearing, wherein the change in photoconduction properties is caused at a site by a temperature change in the turbine bearing, and determining therefrom the site of the temperature change.

5,306,089

LINEAR MOTION ROLLING GUIDE UNIT

Katsuya Anada, and Yasumasa Ooya, both of Gifu, Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,862
Claims priority, application Japan, Jan. 31, 1992, 4-40717
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **8 Claims**



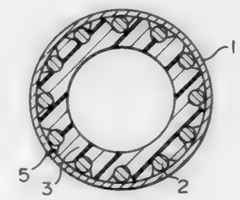
1. A linear motion rolling guide unit comprising:
a track rail having raceway surface formed longitudinally extending on both side walls thereof;
a casing saddling the track rail and being able to slide relative to the track rail, the casing having raceway surfaces formed therein at positions facing the track rail raceway surfaces;
end caps mounted to both ends of the casing;
a slider consisting of the casing and the end caps;
a table secured to the casings by fastenings;
under seals attached to the underside of the slider;
a number of rolling elements rolling so as to circulate through raceways defined by the track rail raceway surfaces and the casing raceway surfaces;
the under seals each consisting of a metal core member and a seal member fixed to one side of the metal core member, the seal member being formed of a soft elastic material having a sealing function;
the core members having through-holes through which to pass the fastenings; and
the seal members covering the through-holes in the core members, parts of the seal members being cut at positions corresponding to the through-holes of the core members so that the fastenings can be passed through the cut portions of the seal members when the table is mounted on the casings.

5,306,090

SLIDING ROLLER BEARING HAVING ROLLING MEMBERS

Kosaburo Niwa, and Hideyumi Matsumura, both of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Sep. 1, 1993, Ser. No. 114,362
Claims priority, application Japan, Sep. 18, 1992, 4-249678
Int. Cl.[5] F16C *21/00*
U.S. Cl. 384—91 **8 Claims**



1. A sliding roller bearing including an outer cylinder, an inner cylinder and a plurality of cylindrical rolling members which intervene between said inner and outer cylinders, cir-

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cumferentially spaced apart from each other; said bearing comprising:

a plurality of retaining grooves extending axially on the outer peripheral surface of said inner cylinder and retaining said rolling members;

said retaining grooves including bottom halves having generally semicircular sections so as to retain said rolling members slidably brought into contact with said bottom halves, said grooves including top halves having sector-shaped sections diverging radially outwardly;

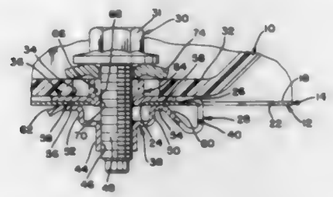
said rolling members and said outer peripheral surface of said inner cylinder being brought into contact with the inner peripheral surface of said outer cylinder when a heavy load is applied, thereby distributing and supporting said load by both said rolling members and said outer peripheral surface of said inner cylinder.

5,306,091

SHEET METAL NUT

Wieslaw S. Zaydel, Rochester, and Eleonora K. Curti, Bloomfield Hill, both of Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Jul. 19, 1993, Ser. No. 93,399
Int. Cl.[5] F16B *37/02, 39/284*
U.S. Cl. 411—175 **8 Claims**



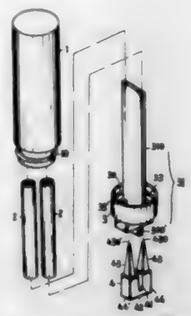
1. A sheet metal nut for use with a bolt for connecting an article to a support panel formed with a retainer opening, said nut comprising an upper member and a lower member, a hinge portion integrally formed with and interconnecting said upper and lower members at one end thereof and resiliently biasing the other ends thereof towards each other, a first tubular collar formed with said lower member and having internal threads formed therein for threadably receiving said bolt, a second tubular collar formed with said upper member, said second tubular collar having a crimped portion formed at the juncture of said second tubular collar and said upper member that extends radially inwardly relative to said second tubular collar and downwardly out of the plane of said upper member towards said lower member, said crimped portion defining an opening having a dimension greater than the major diameter of the threads of said bolt, and the center longitudinal axis of said first tubular collar being substantially aligned with the longitudinal center axis of said second tubular collar, the arrangement being such that when said other end of said upper and lower members engages said support panel and is urged toward said retainer opening, the upper and lower members are parted against the bias provided by the hinge portion and upon further movement of said sheet metal nut in the same direction, the crimped portion of said upper member will drop into said retainer opening to locate the sheet metal nut relative to said support panel and allow the sheet metal nut to receive said bolt for connecting said article to said support panel.

5,306,092

MARKING PEN WITH GRADUAL-LAYER COLOR EFFECT

Li-Chen Jenq, No. 36, Sec. 1, Jong Shan RD., Yeong Her, Taipei, Taiwan

Filed May 5, 1993, Ser. No. 56,466
Int. Cl.[5] B43K *1/12, 5/18, 8/08, 27/00*
U.S. Cl. 401—47 **2 Claims**



1. A gradual-layer colored marking pen comprising:

a) a hollow holder formed of compressible material for containing a plurality of color ink tubes and including an open end provided with a convex thread around an outer periphery thereof;

b) a cover including a concave annulet engageable by the convex thread, an upper separating piece receivable within the holder for separating the ink tubes from each other, and a a lower separating piece defining a plurality of through holes;

c) a head including a bottom end in the shape of a plane surface, a concave groove and a plurality of conical bodies extending upwardly from the bottom end, each conical body for receiving ink from an ink tube and transferring the ink to the bottom end, the head being engagable with the cover to dispose the conical bodies through the through holes and into the ink tubes; and

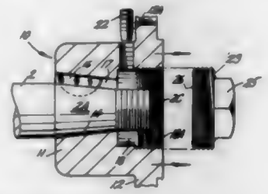
d) whereby the different color inks from the ink tubes flow separately through the conical bodies to the bottom end of the head when the holder is compressed, with the lower separating piece serving to strengthen the head and preventing the different color inks from mixing prior to reaching the bottom end of the head.

5,306,093

PROPELLOR SHAFT COUPLING

Alvin R. Elbert, 704 So. Springbrook Rd., Newberg, Oreg. 97132

Filed Sep. 23, 1992, Ser. No. 949,587
Int. Cl.[5] B25G *3/00;* **F16B** *9/00*
U.S. Cl. 403—259 **1 Claim**



1. In combination,

a propellor shaft having a steeply tapered end segment, a recess, a key and a threaded segment terminating in an end wall,

a coupling including a housing having a steeply tapered bore to receive said steeply tapered end segment, an internal wall having internal threads defining an area into which said threaded segment of the shaft projects,

a lock nut having an annular rim, said annular rim being means for engaging said threaded segment of the propellor shaft to lock the housing to the steeply tapered end segment of the shaft,

a set screw carried by said housing, said set screw being means for engaging said annular rim of the lock nut at a selected point located on said annular rim, and

an extractor element externally threaded and being means for engagement with the internal threads of said housing, an end face on the extractor element being means for engaging the end wall of the propellor shaft with rotation of said extractor element, subsequent to end wall engagement, resulting in axial displacement of the housing away from the steeply tapered end segment of the propellor shaft, said extractor element including a head with flats thereon which protrudes from said coupling when the extractor element is in place on the coupling, said head being means for application of a wrench to the extractor element.

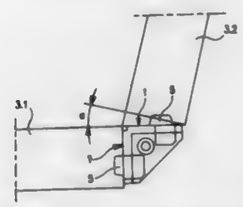


5,306,094

CONNECTOR FOR SECTIONS

Curt Danielsson, Bondegatan 4 C, S-645 32 Strängnäs, and Olle Andersson, Vadstorp, 6-645 00 Strängnäs, both of Sweden

PCT No. PCT/SE90/00430, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO90/15934, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 19, 1990, Ser. No. 778,114
Claims priority, application Sweden, Jun. 21, 1989, 8902287
Int. Cl.[5] F16B *7/00, 12/00;* **F16S** *3/00*
U.S. Cl. 403—11 **4 Claims**



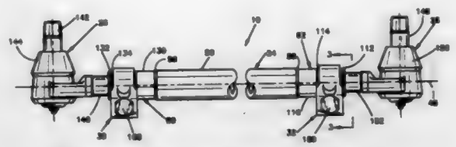
1. In a connector element for attaching together at least two frame sections used to mount sheets of a structure, said connector element providing at least two flat contact surfaces which are perpendicular to each other and to which respective ends of associated frame sections can be attached and including guiding means which project outwardly from each contact surface so as to extend into an identically shaped cavity in the respective end of the associated frame section and prevent torsional twisting, the improvement wherein at least one said guiding means defines an outer supporting surface which, as it extends away from the associated contact surface from which it projects, includes a base portion which extends about 1 mm away from said contact surface and has an external side surface that extends substantially perpendicularly to said associated contact surface, and a tip portion which has a side surface which tapers as it extends away from said base portion at a maximum angle of 20° from an imaginary plane that extends perpendicularly to said associated contact surface, thus enabling the connection thereto of frame sections whose ends are sloped relative to their longitudinal axis.

5,306,095

VEHICLE STEERING LINK ASSEMBLY

David N. Snitgen, Portland, and Jim L. Torrey, Grand Ledge, both of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Oct. 15, 1991, Ser. No. 776,801
Int. Cl.[5] F16B *2/02, 7/04*
U.S. Cl. 403—290 **5 Claims**



1. A vehicle steering link assembly comprising:

an intermediate tube for extending between the steerable wheels of a vehicle to transmit steering force from a first steerable wheel of the vehicle to a second steerable wheel of the vehicle on the opposite side of the vehicle, said intermediate tube being made of one homogeneous piece of metal and having a slitted end portion including surfaces defining two axially extending slits defining between them two generally semi-circular wall portions of said tube, said tube having inwardly of the inner ends of the slits a continuous wall portion;

a vehicle part received in said slitted end portion of said intermediate tube and adjustable relative to said intermediate tube; and

a clamp on said slitted end portion of said intermediate tube, said clamp having a first condition in which said clamp squeezes said wall portions radially inwardly and clamps said intermediate tube and said vehicle part together and a second condition in which said clamp is released and is rotatable relative to said intermediate tube and to said vehicle part to enable adjustment of said intermediate tube relative to said vehicle part;

said intermediate tube having an axially outer first tubular portion comprising a first retaining ring on one axial side of said clamp, an axially inner second tubular portion comprising a second retaining ring on the other axial side of said clamp, and a third tubular portion disposed axially intermediate said first and second tubular portions and on which said clamp is located, said first and second tubular portions having an outer diameter greater than the outer diameter of said third tubular portion, said first and second and third tubular portions of said intermediate tube being of the same homogeneous piece of metal as the remainder of said intermediate tube;

said continuous wall portion of said intermediate tube being contiguous with said inner retaining ring and forming an axially inner boundary of said inner retaining ring and having an outer diameter larger than the outer diameter of said inner retaining ring;

said slitted end portion of said intermediate tube having the same inner diameter at locations axially coincident with said retaining rings as at locations spaced axially from said retaining rings;

said retaining rings engaging opposite axially outer surfaces of said clamp to restrict axial movement of said clamp on said intermediate tube when said clamp is in the first and second conditions.

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5,306,096

ADJUSTABLE COUPLING BETWEEN A ROTARY COMPONENT AND A CYLINDRICAL SHAFT

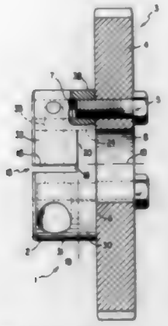
Heinz J. Tüns, Dachsen, and Hermann Murbach, Schaffhausen, both of Switzerland, assignors to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Aug. 26, 1992, Ser. No. 935,428

Claims priority, application Switzerland, Aug. 27, 1991, 2509/91-7

Int. Cl.[5] F16D *1/08*

U.S. Cl. 403—344 12 Claims



1. A rotary assembly for attachment to a rotary shaft, comprising

(a) a rotary body having an end;

(b) a bore hole extending in said rotary body from said end for coaxially receiving a rotary shaft; said bore hole having a longitudinal axis coinciding with a rotary axis of the shaft when received in the bore hole;

(c) a parting split defining a clearance and extending in said rotary body from said end; said parting split extending in a plane containing said longitudinal axis;

(d) a slot extending in said rotary body from said parting split as a continuation thereof on opposite sides of said bore hole; said slot defining a dividing plane traversing said longitudinal axis and dividing said rotary body into first and second axially adjoining body parts; said bore hole extending consecutively in said first and second body parts; said bore hole extending in said first body part being circumferential closed;

(e) two clamping wings defined in said second body part by said parting split, said slot and said bore hole extending in said second body part; and

(f) two clamping bolts passing through said second body part and traversing said parting split for tightening the champing wings to a rotary shaft passing through said bore hole.

5,306,097

INK RIBBON CASSETTE AND RECORDING APPARATUS USING ELECTRODE GROUND

Masanori Kaneko, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 608,533, Nov. 2, 1990, abandoned. This application Jul. 9, 1993, Ser. No. 95,370

Claims priority, application Japan, Nov. 2, 1989, 1-284885; Oct. 30, 1990, 2-290715

Int. Cl.[5] B41J *3/02, 35/28*

U.S. Cl. 400—120 34 Claims

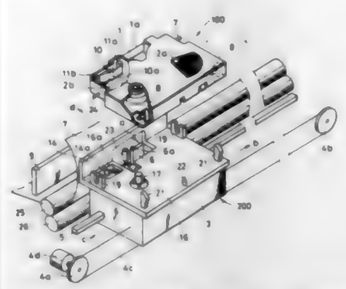
1. An ink ribbon cassette adapted to be attached to a recording apparatus, said ink ribbon cassette comprising:

an ink ribbon having an ink layer and an electrically insulating surface layer;

a first winding section around which said ink ribbon can be wound;

a second winding section around which said ink ribbon can be wound; and

a conductive member positioned to contact with said ink ribbon, to form an electrical connection with the ink layer, wherein when said ink ribbon cassette is attached to the



recording apparatus, said ink ribbon is subjected to a recording action from the recording apparatus, wherein said conductive member is positioned downstream of a recording head of the recording apparatus when said cassette is attached to the recording apparatus.

5,306,098

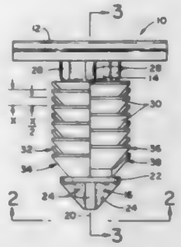
PLASTIC DRIVE FASTENER

Jeffrey C. Lewis, Rochester Hills, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 2, 1993, Ser. No. 12,237

Int. Cl.[5] F16B *19/00*

U.S. Cl. 411—510 2 Claims



1. A one-piece drive fastener formed of plastics material for insertion through an aperture in a member comprising:

an enlarged head portion;

a rigid cylindrical shank extending from the head portion and terminating in a free end;

four circumferentially spaced rows of axially aligned wing elements extending generally radially outwardly from the shank, each row of wing elements abutting the next adjacent row and having a circumferential extent relative to the shank of approximately 90° and the wing elements in each row having the shape of an axially continuous circumferential segment of a thin walled truncated cone with a narrow first end joined to the cylindrical shank and a wider second end spaced outwardly of the shank and inclined toward the head portion and being freely flexible in the direction toward the head portion, the wing elements in each row being relatively uniformly spaced axially of the shank and axially offset from the wing elements in the next adjacent rows by an amount equal to approximately one-half of the axial distance between adjacent wing elements in the row, each wing element in each row uniformly tapering in thickness from a thick base portion to a thinner tip portion.

5,306,099

MINE TUNNEL SUPPORT SYSTEM

Benjamin Mason, Notts, Great Britain, assignor to Caledonian Mining Company Limited, Great Britain

Continuation-in-part of Ser. No. 784,170, Oct. 28, 1991, Pat. No. 5,176,474. This application May 5, 1992, Ser. No. 878,819

Claims priority, application United Kingdom, Oct. 29, 1990, 9023502

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] E21D *15/44*

U.S. Cl. 405—299 17 Claims



1. A method of supporting a mine tunnel comprising temporarily supporting the tunnel with a mine tunnel support system and permanently supporting the tunnel by inserting roof bolts in the roof thereof, the mine tunnel support system comprising a plurality of interconnected and spaced support sections arranged in one or more groups, each group comprising at least two sections, the first of which carries at least one first bolting machine in the form of a drill for forming a hole in the tunnel roof and the second of which is rearward of the first and carries at least one second bolting machine in the form of means for inserting a bolt in a hole in a tunnel roof and means which advance the support system along the tunnel, the method comprising the steps of forming a hole in the tunnel roof above the first section with the first bolting machine, advancing the system along the tunnel and then inserting a bolt in the already formed hole with the second bolting machine carried on the second section.

5,306,100

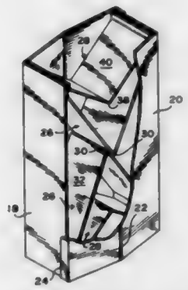
VOID FILLER

David D. Higginbotham, Bent Mountain, Va., assignor to Corrugated Container Corporation, Roanoke, Va.

Filed Feb. 2, 1993, Ser. No. 12,504

Int. Cl.[5] B61D *45/00;* B63B *25/24*

U.S. Cl. 410—154 17 Claims



1. A collapsible and expandable void filler comprising a casing and a core mounted therein, said casing having opposed outer ends, a pair of side walls positioned in facing relation to each other and extending between said opposed outer ends of said casing, said core including multiple elongate strips, each of said strips having remote ends and being centrally folded to form adjacent panels joined at a vertex fold which defines hinge means between said panels of each strip, each strip extending between said side walls and having said remote ends thereof secured to said side walls, said side walls being selectively movable between an expanded position with said side walls remote from each other and with each of said strips having the adjacent panels thereof diverging at an angle relative to each other outward from the vertex fold therebetween, and a collapsed position with said side walls adjacent each other and with each of said strips having the adjacent panels thereof folded in substantially parallel overlying orientation to each other wherein said elongate strips comprise first and second inner strips positioned inward of said opposed outer ends of said casing with said vertex folds thereof oppositely directed and in facing relation to each other, said vertex folds of said first and second strips, in said expanded position being parallel and proximate, and in said collapsed position being parallel and laterally offset, with the panels of said first strip overlapping and substantially paralleling the panels of said second inner strip to form overlapping portions.

5,306,101

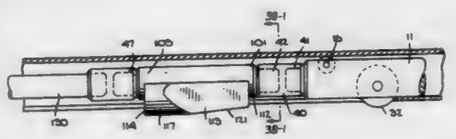
CUTTING/EXPANDING TOOL

Gerald Rockower, Brooklyn, N.Y., and Joseph J. Marazzo, Scotch Plaines, N.J., assignors to Brooklyn Union Gas, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 854,578, Mar. 20, 1992, Pat. No. 5,171,106, which is a continuation-in-part of Ser. No. 636,258, Dec. 31, 1990, Pat. No. 5,098,225. This application Dec. 11, 1992, Ser. No. 989,563

Int. Cl.[5] F16L *1/00, 55/18*

U.S. Cl. 405—154 8 Claims



1. A tool for cutting and expanding a main, comprising:

a cylindrical support body having an upper side and an opposed lower cutting side including cutting means, the main being cut by said cutting means along a line on the cutting side; and

an expanding device rearward of the support body having a first end coupled to said support body and a second end rearward of the first end, said expanding device including:

a top section facing a side of the main on the upper side of the support body; and

a pie shaped bottom section narrower than the diameter of the main at the first end and wider than the diameter of the main at the second end having a lower surface extending through the line cut in the main on the cutting side from the first end to the second end

wherein the top section of the expanding device has a cylindrical surface out of contact with and facing the portion of the main on the upper side of the support body; and

wherein the top section of the expanding device has a flat lower surface portion parallel to the longitudinal axis of the support body, an upper surface of the pie shaped section being joined to the flat lower surface of the top section.

5,306,102

PRINT SIMULATION FOR MODE SELECTION

Yuichi Ota, Anjo, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 14, 1992, Ser. No. 990,246

Claims priority, application Japan, Dec. 26, 1991, 3-358986

Int. Cl.[5] B41J *5/00*

U.S. Cl. 400—76 16 Claims

1. A control device for a printing apparatus comprising:

printing data storing means for storing printing data;

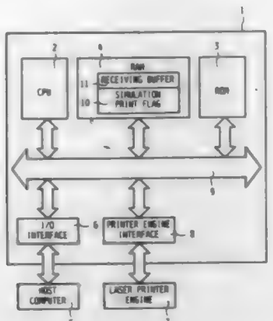
printing means for printing images of the printing data on a printing medium;

driving means for driving the printing means;

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operation mode storing means for storing at least one operation mode having a control code and at least one operation mode without a control code in one of which printing is carried out according to the printing data;

simulation printing means for simulating printing the printing data in a simulating operation mode corresponding to an operation mode stored in the operation mode storing means without executing the driving means;



error judging means for determining if an error has occurred when the simulating operation mode is executed by the simulation printing means; and

printing control means for controlling the driving means to drive the printing means to carry out printing according to the printing data in an operation mode corresponding to the simulating operation mode when the judging means determines an error has not occurred.

5,306,103

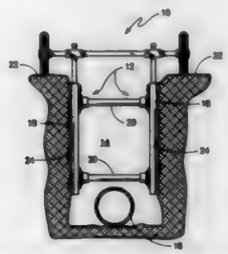
WHEELED CARRIAGE ASSEMBLY FOR TRENCH SHIELDS

Dennis I. Spencer, 12140 E. 116th Cir., Henderson, Colo. 80640

Continuation-in-part of Ser. No. 30,788, Mar. 12, 1993. This application Jun. 25, 1993, Ser. No. 82,616

Int. Cl.[5] E02D *19/00*

U.S. Cl. 405—282 **22 Claims**



1. A carriage assembly operative to support a trench shield in a suspended relationship in a trench excavated in the ground, comprising:

(a) an axle member;

(b) a pair of spaced apart bracket elements disposed on said axle member and each adapted to support a portion of said trench shield;

(c) a pair of wheel assemblies disposed at opposite ends of said axle member, each said wheel assembly including a wheel rotatably mounted with respect to said bracket elements, said wheels operative to engage a surface of the ground laterally adjacent

to said trench; and

(d) a support member attached to each of said bracket elements in downwardly depending relation therefrom when said wheels engage the surface of the ground, said support member operative to interconnect to said trench shield whereby said trench shield may be fastened to said support member and thereby suspended from said axle member and whereby said trench shield may be advanced along said trench by said wheels.

5,306,104

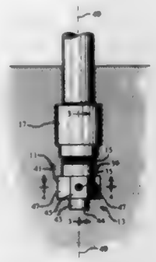
METHOD AND WAND FOR INJECTING A LIQUID INTO THE GROUND

W. Tom Witherspoon, 537 E. Polk St., Richardson, Tex. 75081

Filed Apr. 1, 1993, Ser. No. 42,096

Int. Cl.[5] E02D *3/12*

U.S. Cl. 405—263 **7 Claims**



1. A method for injecting a liquid into ground soil, comprising the steps of:

(a) conducting a soil test at the contemplated site of liquid injection to determine soil depths at which injection of liquid is to be stopped;

(b) providing a portable hand holdable wand;

(c) providing a source of pressurized injection liquid to said wand;

(d) effecting a flow of the liquid received from said source through said wand while gradually inserting said wand into the ground at said contemplated site to create a hole in the ground;

(e) while liquid is being injected into said hole continuing to gradually insert said wand into the ground thereat to an increasing depth until the wand reaches a first of said predetermined depths;

(f) stopping insertion of the wand at a first of said predetermined depths;

(g) pivoting the stopped wand through a selected angle about a vertical axis in a selected time period;

(h) inserting the wand increasingly downward into the ground a selected distance beyond said predetermined depth; and

(i) repeating steps (f) through (h) a selected number of times for subsequent predetermined depths until a selected maximum ground penetration is achieved.

5,306,105

STREET MARKING STRIP

Josef Langbrandner, Lerchenweg 5, 8411 Deuerling; Alfred Seisenberger, Thannstr. 28a, 8501 Allersberg, and Theo Trimborn, Delle 33, 5338 Bad Münstereifel, all of Fed. Rep. of Germany

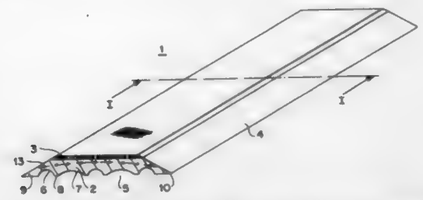
Filed Jun. 2, 1992, Ser. No. 892,030

Claims priority, application Japan, May 7, 1992, 4-114771

Int. Cl.[5] E01F *9/06*

U.S. Cl. 404—12 **32 Claims**

1. A street marking strip device comprising a flexible and resilient strip material capable of being rolled up and having traffic marking means thereon, said strip material having a street engaging side including longitudinally extending, laterally separated clearances (6) and concavities (7); and longitudinal contact edge zones (8) disposed between said clearances and concavities, said edge zones adapted to releasably engage a street surface; said strip material having side edges, and including longitudinal side edge contact zones (9) on the street engaging side of the strip material between each side edge of



the strip material and the next adjacent clearance or concavity; said marker strip including longitudinal side edges and an upper side opposite said street engaging side, and upwardly sloping flanks between said side edges and the upper side of the strip material.

5,306,106

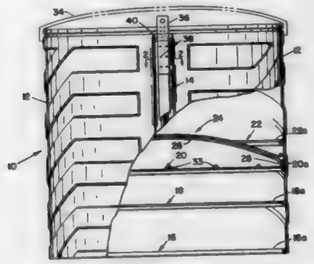
IMPACT ATTENUATOR

Robert Mileti, 16 Balmoral St., Unit 401, Andover, Mass. 01810

Filed Aug. 14, 1992, Ser. No. 929,409

Int. Cl.[5] E01F *13/00*

U.S. Cl. 404—6 **8 Claims**



1. An impact attenuator module comprising a substantially cylindrical frangible housing, said housing having two substantially identical semi-cylindrical halves, connector strips securing adjacent edges of said housing halves together, said housing having a lower edge for resting on a supporting surface and an upper edge for receiving a lid, a plurality of flanges projecting from the interior of said housing, each of said flanges extending essentially entirely around the interior of said housing, one of said flanges being closely adjacent the lower edge of said housing and the remaining flanges being spaced at selected intervals above said lower edge, and a frangible shell supported on a selected one of said flanges for supporting a dispersible mass on its upper surface.

5,306,107

TWIN-TYPE STICK-SHAPED MATERIAL EXTENDING CONTAINER

Shuhei Kageyama; Shoji Anzai, and Yoshihide Mitsuya, all of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 805,376, Dec. 9, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 22,808

Claims priority, application Japan, Dec. 28, 1990, 2-405678[U]; Aug. 6, 1991, 3-061953[U]

Int. Cl.[5] A45D *40/24, 40/06*

U.S. Cl. 401—29 **9 Claims**

1. A twin type stick-shaped material extending container comprising;

a base sleeve (3) having first and second cavities (4,5), said first and second cavities (4,5) having first and second projections (1,2) at an inner end providing abutments;

first and second rotatable guide sleeves (6,7), said first and second rotatable guide sleeves (6,7) having raised portions (14,15) at an inner end respectively;

said first and second rotatable guide sleeves (6,7) being inserted in said first and second cavities (4,5) with their inner ends abutting said first and second projections (1,2);

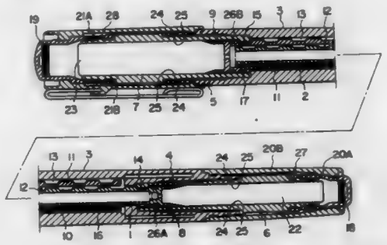
a first axially traveling body (10) slidably fitted in said first rotatable guide sleeve (6), said first axially traveling body having a first stick shaped material receiving recess in its base (8);

a second axially traveling body (11) slidably fitted in said second rotatable guide sleeve (7), said second axially traveling body (11) having a second stick-shaped material receiving recess in its base (9);

said first axially traveling body (10) fitting inside said second axially traveling body (11) inside said base sleeve (3);

said first and second axially traveling bodies (10,11) having peripheral spiral threaded grooves (12,13), said first and second raised portions (14,15) on said first and second rotary guide sleeves (6,7) engaging said peripheral spiral threaded grooves (12,13) respectively;

first and second rotation preventing means on said first and



second axially traveling bodies (10,11) for preventing rotation relative to said base sleeve, said first and second rotation preventing means comprising axially grooves (16,17) on said first and second traveling bodies, said first and second projections (1,2) in said first and second cavities (4,5) engaging said first and second axial grooves (16,17) to prevent rotation while allowing axial travel relative to said base sleeve (3);

detachable securing means (24,25) securing said first and second rotatable guide sleeves (6,7) with said first and second traveling bodies (10,11) in said first and second cavities (4,5) in said base sleeve (3) as completely detachable cassette units that may be easily removed and replaced, said first and second securing means (24,25) allowing said guide sleeves (6,7) to rotate relative to said base sleeve (3);

first and second detachable inner cap means (20A,21A) for capping the ends of said first and second rotatable guide sleeves (6,7);

first and second frictionally retained outer cap means (20B,21B) on said base sleeve (3) engaging said first and second detachable inner cap means (20A,21A);

whereby stick-shaped material may be selectively extended from said base sleeve for easy removal and replacement in cassette form.

5,306,108

SELF-SEALING WASHERS

Sidney Goldman, Boca Raton, Fla., assignor to Mechanical Manufacturing Corp., Sunrise, Fla.

Filed Jul. 19, 1993, Ser. No. 95,577

Int. Cl.[5] F16B *33/00, 43/02*

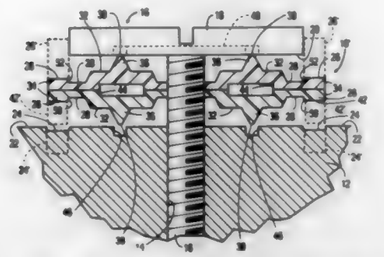
U.S. Cl. 411—369 **13 Claims**

1. A self-sealing washer for use on a fluid containing housing cover comprising:

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a semi-rigid circular member having a horizontal portion and a relatively short vertical portion extending above and below said horizontal portion disposed at the distal edge thereof, suitable to be received into a channel provided on a flat surface of said housing cover, said horizontal portion being provided with;

i) a centrally disposed through aperture adapted to receive



a screw therein, said screw having a relatively large head portion,

ii) a first elevation portion disposed remote from said distal edge having a channel disposed therein on the underside thereof, and

iii) a second elevation portion generally centrally disposed within said first elevation portion, said second elevation portion terminating in a relatively sharp edge.

5,306,109

TRANSPORTABLE MEDICAL APPARATUS, IN PARTICULAR INFUSION SUPPLY

Friedhelm Kreuzer, Munich, and Armin Stöckl, Ohlstadt, both of Fed. Rep. of Germany, assignors to Kreuzer GmbH & Co. OHG, Puchheim, Fed. Rep. of Germany

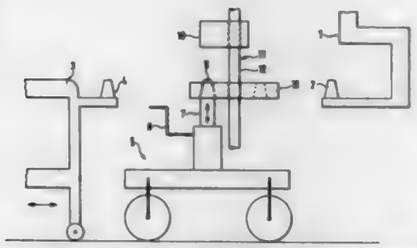
PCT No. PCT/EP92/00889, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO92/18085, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 22, 1992, Ser. No. 938,158

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1991, 4113228

Int. Cl.[5] **B65G** *69/00*

U.S. Cl. 414—343 **13 Claims**



1. Transportable medical apparatus, in particular infusion supply apparatus, with

a support (12);

appliances (10) mountable to said support (12) for the care of patients,

wherein said support (12) comprises a coupling means (13) and said coupling means (13) comprises locking means (19, 20),

means (5) for transferring said support (12) having a first coupling member (9) cooperating with said coupling means (13);

a second coupling member (2) mounted at a stationary apparatus, in particular a stationary support (1) and cooperating with said coupling means (13); and

a third coupling member (4) mounted to a patient transporting means (3) and cooperating with said coupling means (13),

wherein said coupling means (13) is formed such that one as well as two of said first, second, and third coupling members (2, 4, 9) can be engaged to said coupling means (13) at any time; and

wherein said locking means, (19, 20) is formed such that in case one of said first, second, and third coupling members (2, 4, 9) is engaged to said coupling means, (13) said one of said first, second, and third coupling members (2, 4, 9) is locked to said coupling means, (13);

and that in case two of said first, second, and third coupling members (2, 4, 9) are engaged to said coupling means, (13) said two of said first, second, and third coupling members (2, 4, 9) and said coupling means (13) are unlocked so that the respective engagements of said two of said first, second, and third coupling members and said coupling means are releasable.

5,306,110

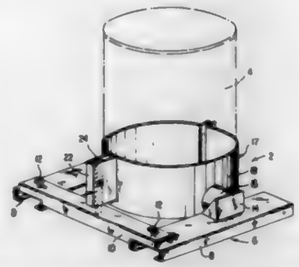
APPARATUS FOR DUMPING THE CONTENTS OF A DRUM

Marion Cline, R.D. 1, Blairsville, Pa. 15717

Filed May 26, 1992, Ser. No. 888,014

Int. Cl.[5] **B65G** *65/23*

U.S. Cl. 414—424 **10 Claims**



1. Apparatus for dumping the contents of a drum comprising:

a first frame for receiving tines of a fork lift;

a second frame for receiving a drum pivotally mounted on said first frame;

spring-loaded latch means on said second frame having a first position latching said first frame and said second frame together and extending downward below said first frame for engaging an upper edge of a receptacle for receiving contents of the drum, and having a second position released from said first frame enabling the drum held by said second frame to be pivoted on said first frame to an inverted position for emptying, said second frame comprising means for holding the drum securely thereon, said holding means comprising a band encircling a lower portion of said drum, said holding means further comprising said pivoting means, said holding means further comprising said latch means, said latch means comprising a latch pin extending below a lower edge of the drum held in the holding means.

5,306,111

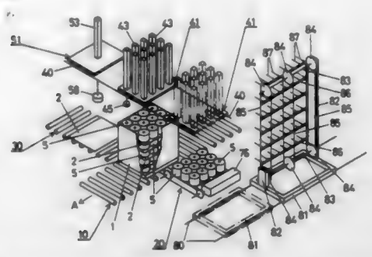
APPARATUS FOR WITHDRAWING REELS FROM A PACKING CASE

Toshihiko Higashiura, Hyogo, Japan, assignor to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Filed Feb. 26, 1993, Ser. No. 23,661

Int. Cl.[5] **B65G** *60/00*

U.S. Cl. 414—416 **1 Claim**



1. An apparatus for withdrawing reels from a packing case containing a plurality of reels in plural rows and lines and in a plurality of stages with separators each interposed between adjacent stages, which comprises a first conveyer adapted to convey said packing case in a horizontal direction, a second conveyer for conveying said reels as disposed on one side of said first conveyer and at right angles therewith, a third conveyer for conveying said separators as disposed on a side of said first conveyer which is opposite to said second conveyer, overhead rails disposed over and between said second conveyer and said third conveyer, a first carriage adapted to travel back and forth along said overhead rails between respective overhead positions of said first conveyer and second conveyer, reel attracting means suspended from said first carriage and free to ascend and descend, a second carriage adapted to travel back and forth along said rails between the respective overhead positions of said first conveyer and third conveyer, and a separator attracting means suspended from said second carriage and free to ascend and descend.

5,306,112

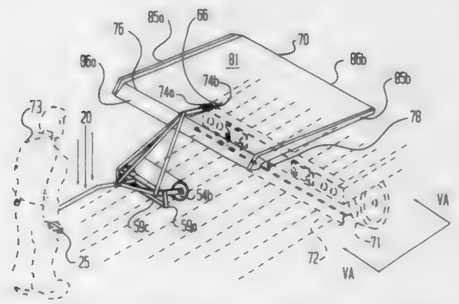
DOCK-AID

Thomas P. Kielinski, 215 Stenton Ave., Plymouth Meeting, Pa. 19462

Filed Jul. 31, 1992, Ser. No. 923,333

Int. Cl.[5] **B60P** *1/04;* **E01D** *1/00;* **B62B** *3/00*

U.S. Cl. 414—490 **6 Claims**



1. A dock aid and dock plate in combination, in which said dock aid comprises

a. roller means for rolling upon a surface, said roller means having an axis;

b. yoke means having end pieces spaced apart from each other, said end pieces being intersected by said axis of the roller means, and said roller means being positioned between said end pieces and rotatably mounted thereon, whereby said roller means can rotate on its axis in said yoke means;

c. handle means connected to said yoke means and extending therefrom in a first direction in an imaginary plane to which said axis of the roller means is substantially perpendicular, said handle means having an end remote from said roller means and manually graspable means at said remote end;

d. lifting boom means also connected to said yoke means and extending therefrom in a second direction in said imaginary plane, said lifting boom means having a distal end remote from said roller means; and

e. means, at said distal end, for engaging and holding a dock plate;

wherein:

f. said handle means and said lifting boom means are arranged on said yoke so that, with said roller means engaged with a horizontal surface, the graspable means and the engaging and holding means can both be aboye said axis of the roller means and extend toward opposite sides of said roller means;

g. said lifting boom means comprises a first part connected directly to said yoke, and a second part connected to said first part at a location remote from said yoke;

h. said second part extending obliquely downward from said first part; and

i. said means for engaging and holding said dock plate comprises hook means extending upwardly from said second part of the lifting boom means;

and in which:

said dock plate has a dock-engaging edge, opposite side edges extending substantially perpendicular to said dock-engaging edge, an opening extending through said plate and elongated in a direction substantially perpendicular to said dock-engaging edge at an intermediate location between said side edges, and a hole for receiving said hook means, said hole being aligned with the direction of elongation of said elongated opening,

said second part of the lifting boom means extending downward from said first part through said elongated opening, and said hook means extending upward from said second part and through said hole.

5,306,113

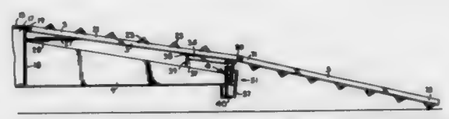
FOLD OUT RAMP SYSTEM

Fred W. Mann, Box 444, Waterville, Kans. 66548

Continuation-in-part of Ser. No. 756,808, Sep. 9, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,901

Int. Cl.[5] **B65G** *69/28*

U.S. Cl. 414—537 **21 Claims**



1. In a vehicle having an elevated flat bed for transporting a load wherein the bed has a bed front end and a bed rear end, the improvement comprising:

(a) transition ramping means for ramping to said flat bed, said transition ramping means having a transition ramp front end, which is pivotally connected to the bed rear end, and a transition ramp rear end;

(b) tail ramping means for ramping to said transition ramp rear end for loading and unloading the vehicle, said tail ramping means having a tail ramp secured end, which is

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pivotally connected to said transition ramp rear end, and tail ramp free end;

(c) transition ramp supporting means for supporting said transition ramping means in an elevated position extending rearwardly from said bed rear end;

(d) a first locking means for locking said transition ramping means in said elevated position, said first locking means comprising a first rod extending longitudinally across said transition ramp rear end, said first rod being rotatable about the longitudinal axis thereof; a locking tab means attached to said rod, said locking tab means being adapted to overlap corresponding portions of said transition ramp supporting means when said first rod is in a locked position and said transition ramping means is in said elevated position;

(e) said transition ramping means is pivotable between said elevated position and a sloping position;

(f) said first locking means is also adapted to lock said transition ramp in said sloping position by overlapping said locking tab means with portions of said transition ramping means when said first locking means is in said lock position and said transition ramping means is in said sloping position; and

(g) said transition ramp supporting means comprises a tailer bed tapered tail end fixedly connected to and extending rearwardly from said bed rear end and a stanchion means pivotally attached near said transition ramp rear end, said stanchion means being pivotable between a first position in which said stanchion means is basically parallel with said transition ramping means and a second position in which said stanchion extends between said transition ramp rear end and a rear end of said trailer tapered tail end to support said transition ramping means in said elevated configuration.

5,306,114

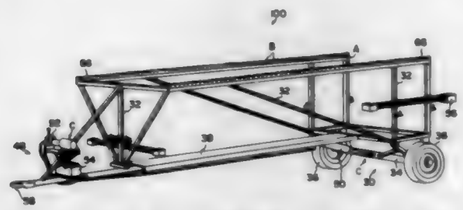
ELEVATING SCAFFOLD TRAILER

Jay S. Eaton, Rte. 2, Buladean, Bakersville, N.C. 28705

Filed Feb. 26, 1992, Ser. No. 842,231

Int. Cl.[5] B60D *1/00*

U.S. Cl. 414—498 **20 Claims**



1. An elevating tobacco trailer for transporting tobacco laden tobacco rods into or out of a curing cell of the type having holding racks across which the tobacco laden rods are placed, said trailer comprising:

a steerable wheeled base, said wheeled base configured to be connected to a work vehicle;

a generally upright frame structure raisably supported on said wheeled base;

oppositely faced parallel tobacco rod carrying members supported by said frame structure, said carrying members spaced apart a distance so that tobacco rods which may be carried by said carrying members overhang each of said carrying members, said carrying members supported by said frame structure at a height so that tobacco stalks impaled on said tobacco rods carried by said carrying members hang freely within said frame structure between said carrying members;

means for positioning said tobacco rods along said carrying members at predetermined intervals;

means for raising and lowering said frame structure relative said wheeled base, said raising and lowering means operatively connected between said frame structure and said wheeled base; and

whereby said trailer is movable into or out of said curing cell between said holding racks with said carrying members in a raised position, said carrying members being raised or lowered between said holding racks for depositing said tobacco rods upon said holding racks or picking up said tobacco rods from said holding racks.

5,306,115

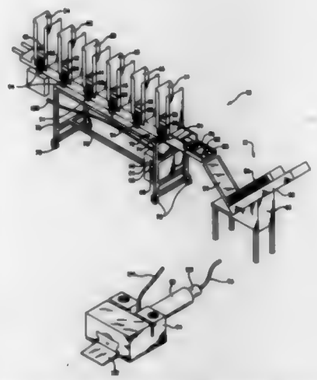
RECIPROCATING MEMBER FOR DISPENSING FLAT ARTICLES

Samuel A. Montalvo, San Jose, and Phillip J. Kronzer, Los Gatos, both of Calif., assignors to Creative Disc Products, Inc., Campbell, Calif.

Filed Sep. 23, 1992, Ser. No. 950,808

Int. Cl.[5] G65H *3/24*

U.S. Cl. 414—797.9 **19 Claims**



1. An apparatus for sequentially releasing disks, such as computer disks, from a stack comprising,

support means for holding a stack of disks in a condition in which disks atop a lowest disk exert gravitational force on said lowest disk,

singularization means for sliding said lowest disk along an underside of a next lowest disk in said stack, said singularization means including a pusher plate having a disk-receiving opening positioned to receive said lowest disk and to contact an edge thereof, said pusher plate having a height not exceeding the height of said lowest disk, thereby allowing said pusher plate to pass beneath said next lowest disk, said singularization means disposed such that said sliding of said lowest disk is in the direction generally parallel to an edge of said lowest disk,

reciprocating means for partially supporting said next lowest disk during said sliding of said lowest disk, said reciprocating means having a retracted position and having an extracted position in which said next lowest disk is partially supported while maintaining a portion of said gravitational force of said disks on said lowest disk, said lowest disk thereby being pressed downwardly during said sliding, said reciprocating means being mounted in fixed relation to said support means for motion independent of said pusher plate,

a first actuation means for selectively triggering motion of said reciprocating means between said retracted position and said extracted position, and

second actuation means for sliding said pusher plate while said reciprocating means is selectively fixed in position relative to said support means.

5,306,116

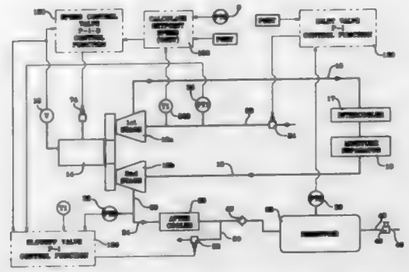
SURGE CONTROL AND RECOVERY FOR A CENTRIFUGAL COMPRESSOR

John T. Gunn, Charlotte; Daniel T. Martin, Clemmons, and William H. Harden, Yadkinville, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 867,304, Apr. 10, 1992. This application Mar. 10, 1993, Ser. No. 29,195

Int. Cl.[5] F04D *27/02*

U.S. Cl. 415—27 **8 Claims**



1. In a centrifugal compressor having an inlet valve, an inlet port, a discharge port, and at least one compressor stage, a method of preventing fluid surge comprising the following steps:

sensing ambient absolute pressure;

generating a first signal corresponding to the ambient absolute pressure;

sensing ambient temperature at the inlet port of the compressor;

generating a second signal corresponding to the ambient temperature;

sensing a predetermined compressor setpoint discharge pressure;

generating a third signal corresponding to the compressor setpoint discharge pressure;

sensing the actual compressor speed;

generating a fourth signal corresponding to the actual compressor speed;

inputting the first, second, third and fourth signals to a controller having a characteristic map which provides comparator speeds at which fluid surge occurs at predetermined ambient conditions;

calculating a target compressor speed as a function of the ambient absolute pressure, the ambient temperature, and the setpoint discharge pressure;

controlling the actual compressor speed using a proportional integral derivative control device to achieve the target compressor speed to thereby maintain a predetermined margin from the mapped compressor speed to prevent fluid surge; and

controlling positioning of the inlet valve by employing proportional integral logic to match compressor flow with actual compressor flow demand, the inlet valve being prevented from fully closing to prevent compressor source from occurring during startup, acceleration, operation at warmup compressor speeds, and operation at compressor unloaded idle speeds.

5,306,117

AXIAL INLET BEAM-TYPE COMPRESSOR

Clayton Bear, and Robert A. Peterson, both of Calgary, Canada, assignors to NOVA Corporation of America, Calgary, Canada

Filed Dec. 7, 1992, Ser. No. 986,290

Claims priority, application Canada, Dec. 23, 1991, 2058395

Int. Cl.[5] F01D *9/04*

U.S. Cl. 415—142 **5 Claims**

1. A rotary fluid machine containing:

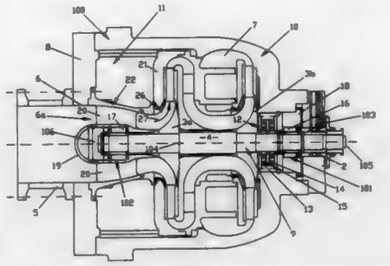
(a) a housing which defines a fluid duct; and

(b) a rotating assembly supported by first and second radial bearing assemblies, said rotating assembly having a shaft having a rotational axis, wherein one end of said shaft extends through one end wall of said housing and the second end of said shaft terminates within said fluid duct, and wherein at least one radial bearing within said first radial bearing assembly is located in the end wall of the housing which said shaft extends through; wherein said rotary fluid machine is further defined by:

(i) having a bearing frame positioned within said fluid duct and comprising a plurality of radial limbs extending between said housing and said second radial bearing assembly, wherein said second radial bearing assembly comprises at least one radial bearing;

(ii) having at least one impeller attached to and rotatable with said shaft wherein said impeller is positioned between said first and second radial bearing assemblies; and

(iii) said housing having a fluid passage formed in it to allow passage of fluid through said housing, wherein said passage is coaxial with the rotational axis of said rotating assembly.



5,306,118

MOUNTING GAS TURBINE OUTLET GUIDE VANES

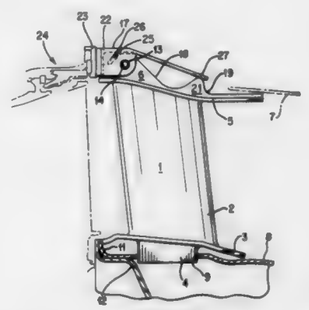
Martin D. Holmes, Dunstable, England, assignor to Rolls-Royce plc, London, England

Filed May 26, 1993, Ser. No. 67,032

Claims priority, application United Kingdom, Jun. 4, 1992, 9211821.5

Int. Cl.[5] F01D *17/00*

U.S. Cl. 415—146 **5 Claims**



1. In a gas turbine engine, an assembly comprising: an exhaust diffuser cone, an exhaust discharge duct surrounding and co-axial with said exhaust diffuser cone, an annular array of outlet guide vanes extending between said exhaust diffuser cone and said exhaust discharge duct, each guide vane in said array having a root and a tip, engagement means whereby each said root engages said exhaust diffuser cone, pivot mounting means whereby each said vane is pivoted at its tip so as to

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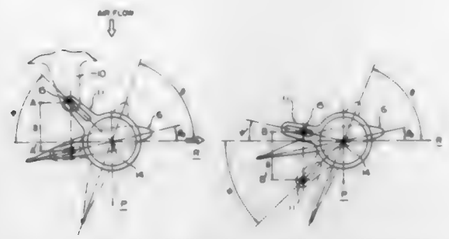
rotate about an axis extending through the tip of the vane, and a leaf spring acting on each said guide vane whereby each said guide vane is urged into engagement with said diffuser cone.

5,306,119

DUCTED TAIL ROTOR FOR ROTOR CRAFT

Shunichi Bandoh; Koichi Egami, and Takashi Watanabe, all of Kakamigahara, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Mar. 24, 1993, Ser. No. 36,381
Claims priority, application Japan, Mar. 24, 1992, 4-096986
Int. Cl.[5] B64C *11/06*
U.S. Cl. 416—168 R 32 Claims



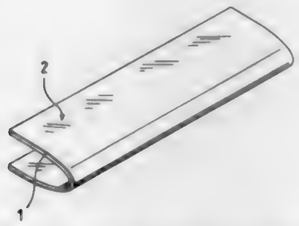
1. A tail rotor of a rotor craft, which is surrounded by a tubular duct, said tail rotor comprising:
at least six rotor blades; and
pitch horns, each mounted to respective rotor blades, each of said pitch horns being swingable to change a pitch angle of said respective rotor blades, some of said pitch horns being mounted to a first type of rotor blades of said rotor blades at a mounting angle larger than a reference mounting angle required to obtain a predetermined thrust, and the remainder of said pitch horns being mounted to a second type of rotor blades of said rotor blades at a mounting angle smaller than the reference mounting angle.

5,306,120

SYSTEM TO PROTECT AGAINST EROSION A BODY SUBJECTED TO AN AIRFLOW

Joachim Hammer, Rückersdorf, and Rudolf Schindler, Neubiberg, both of Fed. Rep. of Germany, assignors to Eurocopter Deutschland GmbH, Fed. Rep. of Germany

Filed Jan. 26, 1993, Ser. No. 9,242
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208842
Int. Cl.[5] B64C *27/46*
U.S. Cl. 416—224 4 Claims



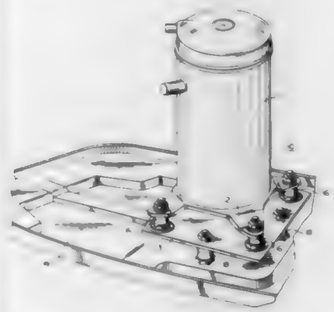
1. A system for protecting against erosion, comprising:
a helicopter rotor blade body having a surface subject to airflow;
a metallic coating having at least two layers covering the surface in respective areas to be protected;
a primary layer of said metallic coating being formed of a material having a modulus of elasticity that is approximately identical to that of the material on the surface of the body; and
wherein the primary layer is in the form of a sheet glued to the surface and is coated with a two-phase material, said two-phase material having particles of at least one of metallic oxide, metallic carbide, and metallic nitride compounds embedded in a finely distributed manner in a ductile, solid-solution-hardened matrix of a metallic but nonferrous material.

5,306,121

COMPRESSOR TIERED MOUNTING ARRANGEMENT

Christopher Heflin; Ronald G. McFarland, and Louis J. Sullivan, all of Indianapolis, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 23, 1993, Ser. No. 51,332
Int. Cl.[5] F04B *39/12*
U.S. Cl. 417—363 5 Claims



1. Air conditioning or refrigeration assembly comprising a compressor having a plurality of mounting feet with mounting openings therein; a base pan on which said compressor is mounted; a mounting plate situated between said compressor and said base pan and having a first group of mounting openings in registry with mounting openings of the compressor feet and a second group of mounting openings; a first plurality of elastomeric isolator stud means each secured to a respective one of said first group of mounting openings and to an associated one of the mounting openings of said compressor feet for supporting said compressor upon said plate while functioning to isolate vibration from being transmitted from the compressor to the mounting plate; and a second plurality of elastomeric isolator means each secured to said base pan and to an associated one of said second group of mounting openings of said mounting plate to support said mounting plate on said base pan while functioning to isolate vibration from being transmitted from the mounting plate to the base pan, the base pan adapted to rest on a fixed surface.

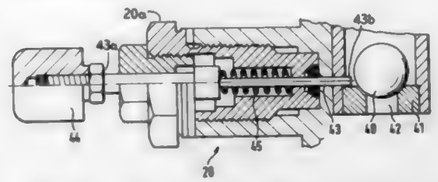
5,306,122

DIAPHRAGM PUMP CONSTRUCTION

Gerhard Gebauer, Bermatingen; Wilfried Goes, Meersburg, and Otto Roseanuer, Langenargen, all of Fed. Rep. of Germany, assignors to J. Wagner GmbH, Fed. Rep. of Germany

Division of Ser. No. 573,626, Aug. 27, 1990, Pat. No. 5,192,198. This application Aug. 21, 1992, Ser. No. 934,352
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1989, 3928949
Int. Cl.[5] F04B *43/06;* F16K *15/18*
U.S. Cl. 417—383 11 Claims

1. A diaphragm pump comprising:
a first compartment means for receiving a liquid therein and directing said liquid thereout, said compartment means comprising an inlet valve and an outlet valve, at least one of said inlet valve and said outlet valve having manual force activated mechanical means for interfering with and forcing open said one valve when pressed in a first direction, said mechanical means extending to an outside of said compartment means to be engaged by a user;
a spring connected to said mechanical means for returning said mechanical means in a second direction to a non-interfering position;



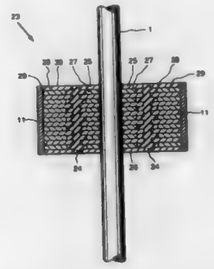
a diaphragm means for reciprocating in first and second directions for exerting a reciprocating pressing force upon said liquid to cause expulsion of said liquid from said compartment means through said outlet valve; and
said one of said inlet valve and said outlet valve being a flow check valve allowing flow therethrough corresponding to a diaphragm movement in said first direction and closing during diaphragm movement in said second direction.

5,306,123

NOISE ISOLATING ROTOR FOR AIR HANDLER MOTOR

James Day, Scotia, N.Y., and Tariq M. Alkhairy, Ft. Wayne, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 8, 1993, Ser. No. 43,692
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—423.7 4 Claims



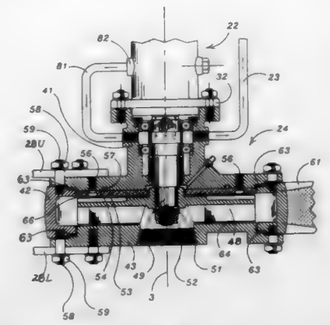
1. A motor assembly for an air handler, comprising:
a duct for passage of gas, and, located in said duct:
rotatable gas propulsion means;
a rotatable shaft driving said gas propulsion means; and
a rotor fixedly attached to and adapted to drive said shaft; said rotor comprising:
a rotor insert fixedly attached to said shaft and having non-circular axial outer surfaces, said rotor insert comprising a plurality of laminated portions with staggered edges;
a rotor core axially surrounding said rotor insert, having a cylindrical axial outer surface and a non-circular axial hole therein to accommodate said rotor insert, said rotor core comprising a plurality of laminated portions with staggered edges;
a cylindrical magnet attached to the axial outer surface of said rotor core; and
means to prevent axial movement of said rotor core along said shaft, said means including a vibration-damping elastomeric seal securing said rotor core to said rotor insert.

5,306,124

SLURRY PUMP AND SEAL SYSTEM

Carl F. Back, Winter Haven, Fla., assignor to Laibe Supply Corporation, Indianapolis, Ind.

Filed Mar. 24, 1993, Ser. No. 36,662
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—406 13 Claims



1. Pumping apparatus comprising:
a hydraulic motor having a case and power output member, the output member being driven by hydraulic fluid in a system wherein the hydraulic fluid is supplied under pressure to the motor;
a pump impeller coupled to the motor output member and drivable by the motor;
a bearing assembly supporting the impeller;
a bearing lubricator delivering a portion of the hydraulic fluid under pressure to the bearing assembly;
a pump housing assembly having a cavity therein receiving the bearing assembly and having a cavity therein receiving the impeller;
a seal separating the impeller cavity from the bearing cavity;
the pumping housing assembly being attached to the motor case; and
the motor case being bolted directly to the pump housing assembly at the bearing cavity thereby closing the bearing cavity to contain hydraulic fluid under pressure in the bearing cavity.

5,306,125

DISPENSING PUMP FOR SUBSTANCES OF LOW VISCOSITY, ESPECIALLY PASTE-LIKE SUBSTANCES

Ernst Weag, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Raimund Andris GmbH U. Co. KG, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,665
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1992, 4206524
Int. Cl.[5] B65D *37/00;* F04B *45/02*
U.S. Cl. 417—472 9 Claims

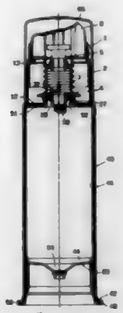
1. Dispensing pump for dispensing metered amounts of substances of low viscosity, especially paste-like substances, comprising:
a bellows pumping member;
two coaxial parts made of dimensionally stable plastic and positioned telescopingly movable relative to one another, said bellows pumping member being sealingly arranged between said two coaxial housing parts;
suction and discharge valves with axially movable valve closing members, said suction and discharge valves being designed as one-way valves arranged at both ends of said bellows;
a suction pipe socket concentric to said suction valve, said suction pipe socket being directed away from said bellows arranged at a suction-side radial wall of one of said hous-

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ing parts, said one of said housing parts being connected to said suction-side end of said bellows provided with a coaxial mounting device;

said one of said housing parts including an enveloping body formed in one piece with said one of said housing parts, said enveloping body having an open end;

a paste container including a follower plunger, said paste container and follower plunger being positioned within said enveloping body in an enveloping manner;



an axially projecting opener plunger positioned on a suction side of said suction valve, formed in one piece with said one of said housing parts, said paste container including an upper wall, a collar projecting from said upper wall towards said suction valve, said collar sealingly surrounding said suction pipe socket, said collar having a cut-off closure connected in one piece with a thin annular cut-off web, said cut-off web being separated from said collar by said opener plunger of said housing part.

5,306,126

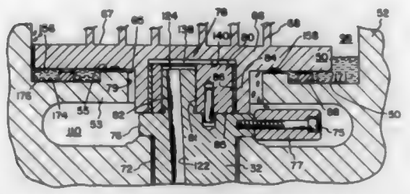
SCROLL COMPRESSOR LUBRICATION CONTROL

Hubert Richardson, Jr., Brooklyn, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation-in-part of Ser. No. 675,641, Mar. 27, 1991, Pat. No. 5,131,828. This application Jul. 20, 1992, Ser. No. 916,598

Int. Cl.[5] F04C *18/04, 27/00, 29/02*

U.S. Cl. 418—1 **9 Claims**



1. A hermetic scroll compressor comprising:

a hermetically sealed housing including therein a discharge chamber at discharge pressure and a suction chamber at suction pressure;

a fixed scroll member in said housing including an involute fixed wrap element;

an orbiting scroll member in said housing including a plate portion having a face surface and a back surface, said face surface having an involute orbiting wrap element thereon intermeshed with said fixed wrap element, said orbiting scroll member plate portion having a flange extending radially beyond said orbiting wrap element, said flange including an upper peripheral edge;

a frame including a thrust surface adjacent said orbiting scroll member back surface;

a seal between said orbiting scroll member and said thrust surface sealingly separating between respective portions of said plate portion back surface exposed to discharge pressure and suction pressure;

drive means for causing said orbiting scroll member to orbit relative to said fixed scroll member;

means defining an oil chamber in which said orbiting scroll member flange orbits, said oil chamber at suction pressure; and

an oil pool of sufficient depth in said oil chamber to extend said oil pool above said upper peripheral edge of said orbiting scroll member as said orbiting scroll orbits, whereby oil from the oil pool is sucked between the intermeshed scrolls.

5,306,127

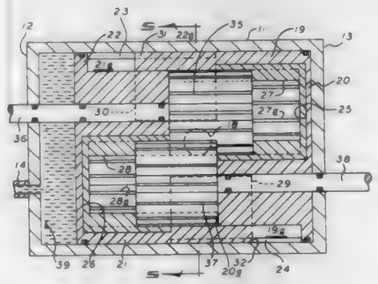
FLUID PUMP WITH AXIALLY ADJUSTABLE GEARS

Gerald R. Kinney, 1820 Fairview, Wichita, Kans. 67203

Filed Mar. 8, 1993, Ser. No. 27,431

Int. Cl.[5] F01C *21/16*

U.S. Cl. 418—21 **2 Claims**



1. A fluid pump apparatus, comprising,

a primary cylindrical housing symmetrically oriented about a housing axis, with the primary cylindrical housing including a cylindrical side wall and a first end wall spaced from and parallel to a second end wall, and

a hydraulic pressure conduit directed into the primary cylindrical housing through the first end wall, and

an inlet conduit directed into the cylindrical side wall and an outlet conduit directed into the cylindrical side wall, wherein the inlet conduit and the outlet conduit are diametrically opposed relative to one another through the cylindrical side wall, and

a fixed first cylindrical housing mounted within the primary cylindrically housing in communication with the second end wall, and

a second cylindrical housing reciprocatably mounted within the primary cylindrical housing and arranged in a facing relationship relative to the first cylindrical housing, wherein a fluid control chamber is oriented between the second cylindrical housing and the first end wall, and

the first cylindrical housing having a first housing cylindrical cavity radially displaced relative to the housing axis, and the second cylindrical housing having a second housing cylindrical cavity directed into the second cylindrical housing radially displaced relative to the housing axis, wherein the first cylindrical housing included a first housing first end wall positioned in adjacency to the primary housing second end wall, and the first cylindrical housing having a first housing second end wall, including the first housing cylindrical cavity directed therethrough, and wherein the second cylindrical housing includes a second housing first end wall arranged in a facing relationship relative to the primary cylindrical housing first end wall, with the fluid control chamber oriented therebetween, with the second cylindrical housing having a second cylindrical housing second end wall in facing parallel relationship relative to the first cylindrical housing second end wall, with the second cylindrical housing second end wall including the second cylindrical cavity directed therein, wherein the first cylindrical cavity and the second cylindrical cavity are arranged in a spaced parallel relationship relative to one another, with the first cylindrical cavity including a first tubular sleeve having first gear ribs therewithin, and the second cylindrical cavity having a second tubular sleeve having second gear ribs therewithin, and

a second pump gear received slidably within the first tubular sleeve, and a first pump gear slidably received within the second tubular sleeve, wherein the first tubular sleeve and the second tubular sleeve are arranged for rotative engagement relative to the first cylindrical cavity and the second cylindrical cavity respectively, and

the second pump gear includes a second pump gear shaft directed through the primary cylindrical housing first end wall, and the first pump gear including a first pump gear shaft directed through the primary cylindrical housing second end wall, wherein fluid control means in fluid communication with the hydraulic pressure conduit is arranged for providing for selective volumetric filling of the fluid control chamber to provide for axial displacement of the second pump gear relative to the first pump gear to effect selective pressurizing of fluid from the inlet conduit to the outlet conduit, and

the second cylindrical housing second end wall includes a first C-shaped shield fixedly mounted thereto, wherein the first housing second end wall includes a first C-shaped cavity to receive the first C-shaped shield complementarily therewithin, and a second C-shaped shield is orthogonally and fixedly mounted to the first housing second end wall, and wherein the second housing second end wall includes a second housing C-shaped cavity to receive the second C-shaped shield slidably therewithin, wherein the first C-shaped shield and the second C-shaped shield include a first gap in facing relationship relative to the inlet conduit, and the first C-shaped shield and the second C-shaped shield include a second gap oriented in facing relationship relative to the outlet conduit.

5,306,128

DISCHARGE VALVE DEVICE OF A ROTARY COMPRESSOR

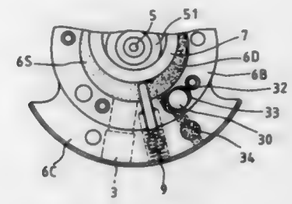
Seok J. Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 2, 1993, Ser. No. 25,247

Claims priority, application Rep. of Korea, Mar. 2, 1992, 92-3438; Mar. 6, 1992, 92-3740; Mar. 6, 1992, 92-3741; Mar. 7, 1992, 92-3782

Int. Cl.[5] F01C *21/00*

U.S. Cl. 418—270 **21 Claims**



1. A rotary compressor comprising:

a body enclosing a compression chamber to which fluid is supplied;

means in said chamber for compressing the fluid; a discharge passage formed in said body in communication with said chamber for discharging the compressed fluid; and

a discharge valve for repeatedly opening and closing said discharge passage, said discharge valve being biased to a passage-closing position blocking said discharge passage, and including a reaction surface arranged to be acted upon by compressed fluid for moving said discharge valve to a passage opening position, said discharge valve being arranged to move along at least a portion of a passage surface in contact therewith as said discharge valve moves between said passage opening and passage closing position, wherein said discharge valve travels in a direction generally transversely relative to a direction of fluid travel through said passage when moving between said passage-opening and passage-closing positions.

5,306,129

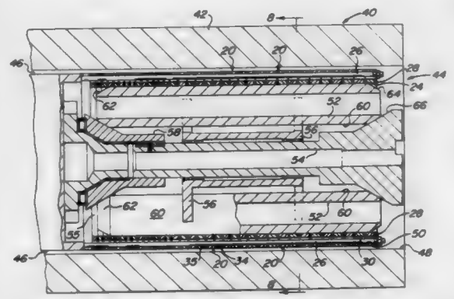
MOLDING DEFORMABLE MATERIALS WITH USE OF VIBRATING WALL SURFACES

Jean-Pierre Ibar, New Canaan, Conn., assignor to Solomat Partners, L.P., Stamford, Conn.

Filed May 11, 1992, Ser. No. 880,926

Int. Cl.[5] B28B *21/00*

U.S. Cl. 425—3 **14 Claims**



14. An apparatus, for shaping, or directing the flow of, deformable materials, comprising at least one vibrating wall assembly having at least one surface which defines a specific mold or die geometric shape over which said deformable material will pass, said at least one vibrating wall assembly comprises:

(a) a plurality of pulsating, polygonally-shaped surface elements, and at least one non-pulsating, polygonally-shaped surface element;

i. wherein each pulsating surface element is movable between a resting position and an energized position,

ii. wherein said plurality of pulsating surface elements and said at least one non-pulsating surface element collectively define at least one surface element of a specific mold or die geometric shape when said plurality of pulsating surface elements are each in their resting position,

iii. wherein a deformation in the surface of said specific mold or die geometric shape defined by the plurality of pulsating surface elements and the at least one non-pulsating surface element results when at least one pulsating surface element is in its energized position, and

iv. wherein each pulsating surface element and each non-pulsating surface element has an opening defined therein which is dimensioned to receive a linking means, and which permits adjacent pulsating and non-pulsating surface elements to be interconnected to one another by a linking means;

(b) an energizing means for moving at least one pulsating surface element from its resting position to its energized position to form an energized surface element;

(c) a biasing means for moving said energized surface element from its energized position to its resting position; and

(d) a linking means for interconnecting adjacent pulsating surface elements and non-pulsating surface elements,

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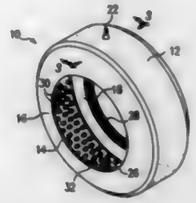
i. wherein said linking means limits the pulsating movement of pulsating surface elements, and
ii. wherein said linking means passes through corresponding openings defined in adjacent pulsating and non-pulsating surface elements.

5,306,130

APPARATUS FOR RECAPPING A TIRE AND AN IMPROVED CURING ENVELOPE FOR USE THEREIN

Michael J. King, Concord, Calif.; Paul E. Rier, Jr., Argyle, Tex., and Robert A. Flynn, San Francisco, Calif., assignors to Oliver Rubber Company, Oakland, Calif.

Filed Jun. 17, 1992, Ser. No. 899,766
Int. Cl.[5] B29C *35/02*
U.S. Cl. 425—17 **13 Claims**



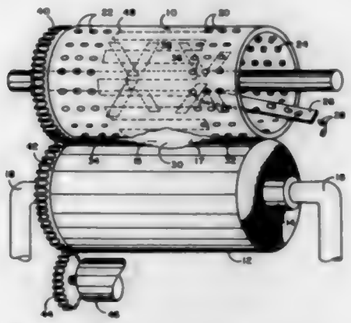
1. An improved curing envelope for use in retreading a tire body using an annular layer of retread material, said improvement comprising a flexible, elastomeric annular member arranged to be positioned to encompass said retread material to hold said material in place, said annular member including:
a generally U-shape cross-section;
spaced, annular sealing edge portions for sealingly engaging the sidewalls of the tire;
a gas passageway extending through said annular member between said sealing edge portions; and
an annular interior surface on said member between said edge portions including a plurality of protuberances and a plurality of interconnected passages connecting with said passageway to permit ingress and egress of gas through said passageway to apply pressure to said retread material during the curing step of retreading of said tire and to permit full escape of gas therefrom.

5,306,131

PELLETIZING ROLL

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Filed Oct. 7, 1992, Ser. No. 957,163
Int. Cl.[5] B29B *9/00, 9/02*
U.S. Cl. 425—201 **4 Claims**



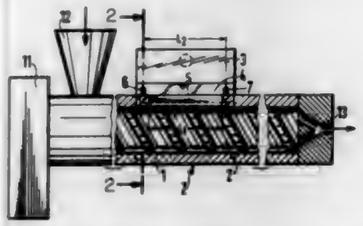
1. A mill roll for pelletizing material, comprising:
a first cylindrical roller having a solid exterior and first and second ends;
a second cylindrical roller positioned next to said first roller, said second roller having first and second ends;
means to counter-rotate said first and second rollers;
a nip formed between said first and second rollers;
a hollow core defined in said second roller;
a first plurality of apertures defined at the first end of said second roller;
a second plurality of apertures defined at the second end of said second roller;
a centrally disposed non-perforated area disposed between said first and second plurality of apertures on said second roller; and
knife means positioned at said first and second ends of said second roller within said hollow core to cut off portions of said material which pass from the nip defined between said first and second rollers through said first and second pluralities of apertures to the inside hollow core of said second roller.

5,306,132

PROCESS AND APPARATUS FOR DEGASSING PLASTIC MELT IN A SCREW EXTRUDER

Andre Grundmann, Ludwigsburg, and Dieter Rath, Esslingen, both of Fed. Rep. of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 26, 1991, Ser. No. 661,560
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1990, 4010692
Int. Cl.[5] B29C *47/36*
U.S. Cl. 425—203 **19 Claims**



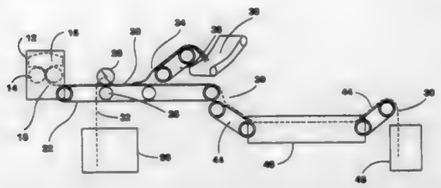
1. A process for degassing plastic melt in a screw extruder in which the plastic melt is advanced in a housing by a screw, an opening is provided in the housing for escape of gas and a degassing unit is arranged at the opening to extend over the length of the opening and partially cover the screw along said length to guide the flow of plastic melt and provide a passage for the gas flow, said process comprising
heating the degassing unit to a temperature at least equal to the melting point of the plastic melt to liquefy plastic from the melt which contacts the degassing unit and return the liquefied plastic to the melt, the degassing unit having a corner or edge region bounding said passage and located on said degassing unit at a distance from said housing, said corner or edge region being in facing and closely adjacent relation to said screw, said heating being effected by passing a heating medium through said degassing unit in proximity to said corner or edge region longitudinally of the screw and lengthwise of said opening.

5,306,133

DOUGH SHEET ROTARY CUTTING SYSTEM

Kyle E. Dayley, Rigsby, Id., assignor to Miles J. Willard, Idaho Falls, Id.

Filed Jan. 21, 1993, Ser. No. 7,322
Int. Cl.[5] A21C *11/12*
U.S. Cl. 425—217 **1 Claim**



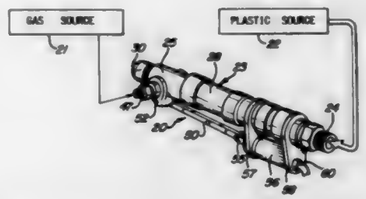
1. A dough processing system for cutting a dough sheet into at least two separate quantities and transporting each respective quantity in a predetermined direction, comprising:
(a) a main conveyor for transporting said dough sheet in a first predetermined direction;
(b) a rotary cutter having a cylindrical mandrel with first and second ends with a predetermined geometry of cutters mounted thereon, each of said cutters having a predetermined periphery cutting means for producing a shaped dough piece and an interior hole-cutting means for producing an internal hole punching, said interior hole-cutting means including a path for said hole punching to proceed to an interior of said mandrel;
(c) an auger disposed within said cylindrical mandrel for transporting said hole punching from an interior of said mandrel to a side of said mandrel when said mandrel rotates, wherein said rotary cuter cuts said dough sheet into multiple hole punchings, multiple shaped dough pieces, and at least one web scrap remnant; and
(d) a transportation means further comprising the main conveyor for conveying said multiple shaped dough pieces in the first predetermined direction, the auger for conveying said hole punchings in a second predetermined direction, and a web conveyor for conveying at least one web scrap remnant in a third predetermined direction to a recycle or scrap bin.

5,306,134

FLUID FORCING NOZZLE

Antony Gill, Rochester, Mich., assignor to Automotive Plastic Technologies, Sterling Heights, Mich.

Filed Jun. 12, 1991, Ser. No. 714,117
Int. Cl.[5] B29C *45/20*
U.S. Cl. 425—566 **19 Claims**



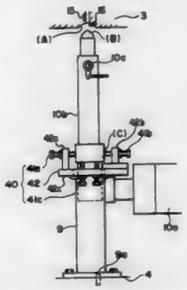
8. A fluid forcing nozzle for use in injection molding machines to inject molten thermoplastic and pressurized fluid or gas into a mold cavity, said nozzle including:
a) a body portion having an upstream end for communication with an end of an injection molding machine, and a downstream end for fluid communication with a sprue of a mold body, said nozzle body including:
(a) an axially extending bore for establishing a first flow channel,
(ii) a valve cavity provided in said axially extending bore and in fluid communication therewith, and
(iii) a second bore in fluid communication with said valve cavity,
(b) a valve part rotatable in said valve cavity for operation between a first position and a second position wherein when said valve part is in said first position, said first flow channel is established between said upstream end and said downstream end of said body portion for injection of said molten thermoplastic, and when said valve part is in its second position, a second flow channel is established which provides fluid communication between said second bore and said downstream end of said nozzle body portion for injection of said pressurized fluid or gas, while blocking said first flow channel, and
c) means to activate said valve part.

5,306,135

NOZZLE TOUCH MECHANISM FOR INJECTION PRESS COMPOSITE MOLDING MACHINE

Hideaki Okubo, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP90/00968, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/01868, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 30, 1990, Ser. No. 834,527
Claims priority, application Japan, Aug. 11, 1989, 1-208952
Int. Cl.[5] B29C *45/07, 45/20*
U.S. Cl. 425—569 **20 Claims**



1. In an injection press composite molding machine including: a vertical press unit having a movable die plate adapted to support an upper mold, having a fixed die plate adapted to support a lower mold wherein the lower mold has a resin injection passageway therein extending from a resin injection opening in a bottom surface of the lower mold to a mold cavity formed by the lower mold and the upper mold, and being adapted to move the upper mold toward the lower mold to form a mold cavity therebetween and to move the upper mold away from the lower mold, the fixed die plate having an opening therethrough corresponding to the position of the resin injection opening of the lower mold; a horizontal injection unit positioned below said fixed die plate and having an injection nozzle through which a melted resin can be supplied to the resin injection opening in the lower mold and then to the mold cavity formed by said upper and lower molds; said lower mold having a contact portion surrounding the resin injection opening in said lower mold for receiving said injection nozzle; said injection nozzle having a contact surface for mating with said contact portion; a table on which said horizontal injection unit is mounted; said table having a first end and a second end; a base; said first end of said table being rotatably supported on said base; a stand positioned on said second end of said table; and an actuator which supports said second end of said table and which can push said injection nozzle via said stand against said lower mold; said base being horizontally slidable;
the improvement comprising a nozzle touch mechanism which comprises:

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adjusting means provided on an upper portion of said stand and positioned between said stand and said injection nozzle for adjusting the vertical position of said injection nozzle and the horizontal position of said injection nozzle so that said contact surface of said injection nozzle aligns with said contact portion of said lower mold; and

a positioning stopper which adjustably defines the position of said base.

5,306,136

MOLD CLAMP DRIVING APPARATUS

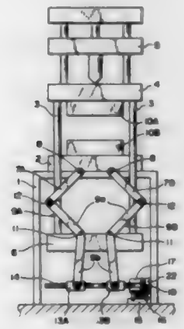
Toshiaki Oomori, and Tomiyasu Goto, both of Aichi, Japan, assignors to Okuma Corporation, Japan

Filed Jan. 25, 1993, Ser. No. 27,327

Claims priority, application Japan, Jan. 25, 1992, 4-034112

Int. Cl.[5] B29C *33/26, 45/66*

U.S. Cl. 425—593 **7 Claims**



1. A drive apparatus for a toggle-type clamping mechanism having a rear platen, an upper platen associated with the rear platen so as to be movable therewith, and a stationary platen located between the rear platen and the upper platen, in which the rear platen is to be pushed to close mold halves secured to a lower surface of the upper platen and an upper surface of the stationary platen secured to a bed, said drive apparatus comprising:

(a) a pair of symmetrical toggle mechanisms each including a toggle link pivotally connected at its upper end to the stationary platen, a toggle arm pivotally connected at its central portion to the rear platen, the toggle arm being bent at its central portion, a lower end of said toggle link and an upper end of said toggle arm being pivotally connected centrally between the stationary platen and the rear platen;

(b) a horizontal screw having a right-handed thread portion and a left-handed thread portion;

(c) right-handed-thread and left-handed-thread nuts having the same pitch and threadedly mounted on said right-handed and left-handed thread portions, respectively, each of said right-handed-thread and left-handed-thread nuts being pivotally connected to a lower end of said toggle arm of each said toggle mechanisms;

(d) a drive motor mounted on the bed so as to be horizontally movable;

(e) means for connecting said drive motor with said screw so as to keep a constant distance between the axis of an output shaft of said drive motor and the axis of said screw;

(f) rotation transmitting means for transmitting the rotation of the output shaft of said drive motor to said screw; and

(g) means for horizontally guiding said drive motor following a vertical movement of said screw when the mold halves are closed or opened.

5,306,137

APPARATUS FOR MOLDING PRODUCTS

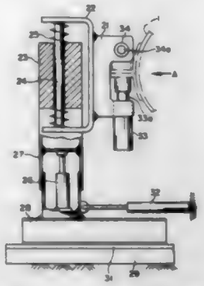
Hiroshi Kitamura, 1222, Kawada-cho, Utsunomiya-shi, Tochigi-ken, Japan

Filed Jul. 17, 1991, Ser. No. 731,848

Claims priority, application Japan, Jul. 16, 1990, 2-187504

Int. Cl.[5] B28B *21/22;* **E04G** *13/02*

U.S. Cl. 425—595 **2 Claims**



1. A formwork clamping apparatus for clamping opposed first and second protruding pieces which are provided separately to a pair of upper and lower molds, said upper and lower molds forming a formwork, said clamping mechanism comprising:

(a) a plurality of pairs of clamping force applying portions formed along joining edges of said formwork, each pair of clamping force applying portions being formed respectively at opposite sides of said first and second protruding pieces, said upper and lower molds being clamped by applying forces opposing to each other to said pair of clamping force applying portions;

(b) a plurality of tension members formed on said first protruding piece to protrude vertically along the joining edges of said formwork, said tension members respectively penetrating through holes respectively formed in said second protruding piece, each of said tension members having a head portion at an end thereof protruding beyond said second protruding piece;

(c) a plurality of lock pieces provided independently and movably on an upper surface of said second protruding piece, each of said lock pieces being adapted to move and engage between a lower surface of the head portion and the upper surface of said second protruding piece to maintain a clamped condition of said first and second protruding pieces;

(d) a plurality of engaging force applying portions independently formed on said plurality of lock pieces, each of said lock pieces being moved to an engaging position between the lower surface of the head portion and the upper surface of said second protruding piece when an engaging force is applied to a corresponding engaging force applying portion;

(e) a plurality of disengaging force applying portions independently formed on said plurality of lock pieces, each of said lock pieces being moved to a disengaged position when a disengaging force is applied to a corresponding disengaging force applying portion;

(f) a plurality of C-shaped frames each having opposing ends respectively facing first and second protruding pieces formed respectively on said pair of lower and upper molds constituting a formwork;

(g) a first pressing machine held by the opposing ends of said each C-shaped frame for applying said clamping forces to said clamping force applying portions respectively formed on said first and second protruding pieces, said C-shaped frame being fixed to said first and second protruding pieces by the clamping forces;

(h) a second pressing machine supported by each of said C-shaped frames for moving one of said lock pieces provided on said second protruding piece to the engaging position to maintain a clamped condition of said first and second protruding pieces;

(i) a beam extending along a longitudinal direction of said formwork for supporting said plurality of C-shaped frames; and

(j) a moving machine for moving said beam toward and away from said formwork.

5,306,138

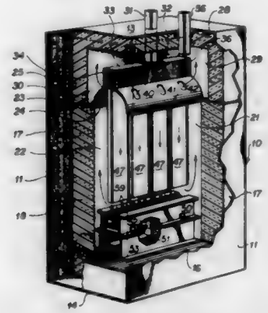
METHOD AND APPARATUS FOR INCINERATING COMBUSTIBLES CARRIED BY AN AIR STREAM

Willie H. Best, 18C The Heritage, Columbia, S.C. 29203

Filed Mar. 10, 1992, Ser. No. 848,748

Int. Cl.[5] F23D *14/00*

U.S. Cl. 431—5 **34 Claims**



1. Process for incinerating combustibles which are carried by an air stream, comprising the steps of:

(a) passing said air stream progressively along a confined plurality of individual parallel first paths in a first direction in an incineration chamber;

(b) progressively discharging said air stream from said confined first paths into said combustion chamber as individual progressively discharging air streams;

(c) applying flames produced by a combustible mixture simultaneously to said discharging air streams as the discharging air streams simultaneously emerge from said confined paths so that said discharging air streams simultaneously supply oxygen and combustibles to the flames and so that the combustibles carried by said discharging air streams are progressively oxidized for producing heated gases containing air, the products of combustion and the oxidized combustibles; and

(d) directing the heated gases progressively in countercurrent flow along a second path adjacent to said confined paths and in a second direction opposite to said first direction so that said heated gases progressively simultaneously heat the confined air streams in said first paths as said heated gases pass progressively along said second path.

5,306,139

SUCTION ADHESION-TYPE HOLDER

Kanji Ozawa, and Yukitaka Sonoda, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 792,708

Claims priority, application Japan, Nov. 16, 1990, 2-308717

Int. Cl.[5] F27D *5/00*

U.S. Cl. 432—225 **1 Claim**

1. A suction adhesion type holder which holds semiconductor workpieces on a bonding stage which is provided with a heating means, by means of vacuum suction adhesion, comprising:

suction holes provided in said bonding stage;

a first pipe connected to said suction holes;

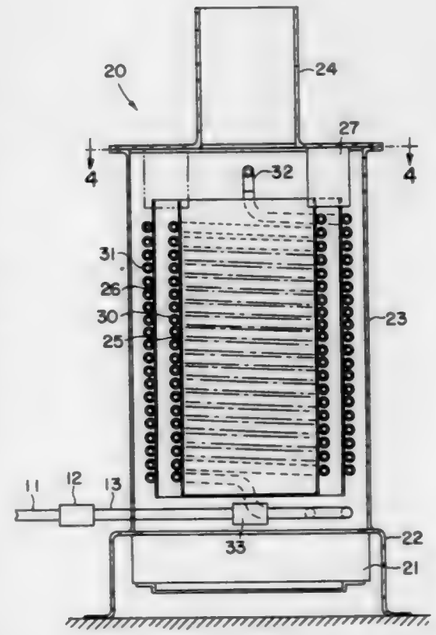
an air cooling device having an input connected to said suction holes via said first pipe;

a second pipe connected to an output of said air cooling device; and

a vacuum pump connected to said air cooling device via said second pipe, said vacuum pump providing suction adhesion through said first and second pipes and said cooling device; and

wherein said air cooling device comprises:

an outer tube provided with a fan at the bottom;



an outer heat shielding plate provided said outer tube;

an inner heat shielding plate provided inside said outer heat shielding plate;

a forward-path pipe spirally provided on said inner heat shielding plate with one end connected to said first pipe;

a return-path pipe spirally provided on said outer heat shielding plate with one end connected to said second pipe; and

a transition pipe that connects the outer end of said forward-path pipe to the other end of said return-path pipe.

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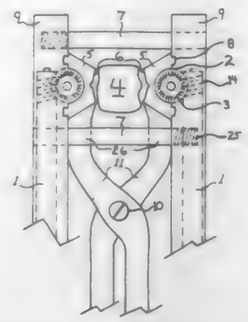
5,306,140
INFRA-RED GENERATION
Thomas M. Smith, 1415 Golf Rd., Cinnaminson, N.J. 08077
Continuation of Ser. No. 697,906, May 1, 1991, Pat. No. 5,145,056, which is a continuation of Ser. No. 313,943, Feb. 23, 1989, abandoned, which is a division of Ser. No. 125,001, Jan. 4, 1988, Pat. No. 4,830,651, and a continuation-in-part of Ser. No. 771,722, Sep. 3, 1985, Pat. No. 5,024,696, and a continuation-in-part of Ser. No. 12,723, Feb. 9, 1987, abandoned, said Ser. No. 125,001, is a continuation-in-part of Ser. No. 831,795, Feb. 19, 1986, Pat. No. 4,722,681, said Ser. No. 771,722, is a continuation-in-part of Ser. No. 752,908, Jul. 8, 1985, Pat. No. 4,604,054, Ser. No. 628,989, Jul. 9, 1984, Pat. No. 4,589,843, Ser. No. 592,793, Mar. 23, 1984, Pat. No. 4,654,000, Ser. No. 509,161, Jun. 29, 1983, Pat. No. 4,500,283, Ser. No. 567,270, Dec. 30, 1983, abandoned, and Ser. No. 435,412, Oct. 20, 1982, abandoned, said Ser. No. 12,723, is a continuation-in-part of Ser. No. 831,795, Oct. 20, 1982, Ser. No. 771,722, Oct. 20, 1982, and Ser. No. 592,793, Oct. 20, 1982, said Ser. No. 831,795, is a continuation-in-part of Ser. No. 771,722, Oct. 20, 1982, Ser. No. 752,908, Oct. 20, 1982, and Ser. No. 592,793, Oct. 20, 1982, said Ser. No. 752,908, is a continuation-in-part of Ser. No. 592,793, Oct. 20, 1982, Ser. No. 567,270, Oct. 20, 1982, and Ser. No. 435,412, Oct. 20, 1982, said Ser. No. 628,989, is a continuation-in-part of Ser. No. 592,793, Oct. 20, 1982, Ser. No. 509,161, Oct. 20, 1982, Ser. No. 567,270, Oct. 20, 1982, Ser. No. 435,412, Oct. 20, 1982, Ser. No. 312,730, Oct. 19, 1982, Pat. No. 4,443,185, and Ser. No. 292,167, Aug. 12, 1981, Pat. No. 4,474,552. This application Aug. 24, 1992, Ser. No. 934,574
Int. Cl.[5] F23D *14/12*
U.S. Cl. 431—328 7 Claims



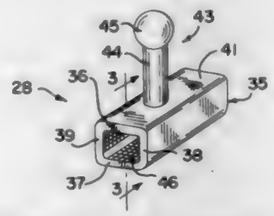
1. A burner for gas-fired infra-red generators comprising a body, a combustion mixture plenum in said body, two spaced partitions in said plenum extending completely across said plenum, means for moving said partitions toward and away from each other to adjust the size of the chamber therebetween, a porous plate comprising the top wall of said plenum, a ceramic fiber matrix over said porous plate, a lower channel in said body under said plenum, passage means for permitting the flow of a combustion mixture into said lower channel, and said lower channel being in flow communication with said plenum to permit the combustion mixture to flow into said plenum.

5,306,141
VETERINARY TOOTH EXTRACTOR
Stephen A. Sears, 299-15 Diamond Village, Gainesville, Fla. 32603
Filed Jan. 28, 1993, Ser. No. 10,176
Int. Cl.[5] A61D *5/00*; A61C *3/00*
U.S. Cl. 433—1 4 Claims

1. A tooth extracting assembly having a tooth grasping means, a purchase means, means to displace a portion of said tooth grasping means away from said purchase means while extracting said tooth, and means to cause said tooth grasping means to grasp said tooth, said means to cause being located substantially entirely beyond the area between occlusal surfaces of molar arcades within a patient's mouth when said assembly is mounted therein.

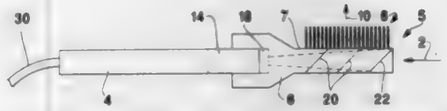


5,306,142
CRIMPABLE ORTHODONTIC HOOK
Cecil J. Richards, Kouts, Ind., assignor to TP Orthodontics, Inc., Westville, Ind.
Filed Aug. 7, 1992, Ser. No. 927,929
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—22 13 Claims



1. An orthodontic crimpable hook adapted to be mounted on an archwire and used for inter or intra arch traction comprising, a tubular member defining an opening for receiving said archwire, said member having a hook extending from said member and inner surfaces for contacting the archwire, an abrasive coating on at least part of said inner surfaces of said member, said member being crimpable such that upon crimping on said archwire said abrasive coating on said inner surfaces of said member engages said archwire to increase the friction between said member and said archwire.

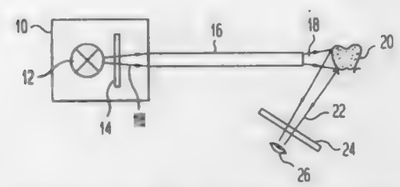
5,306,143
DENTAL HYGIENE APPLIANCE
Philippe Levy, San Clemente, Calif., assignor to Laser Medical Technology, Inc., San Clemente, Calif.
Filed Oct. 15, 1992, Ser. No. 961,341
Int. Cl.[5] A61C *1/00, 3/00*; A46B *9/04*
U.S. Cl. 433—29 15 Claims



1. A dental hygiene appliance for brushing teeth comprising:

a handle;
a brushing head connected to said handle and a set of tooth brushing bristles projecting in a given direction from said head;
a laser contained in said handle and constituting a source of monochromatic radiation having a given wavelength;
means for directing the radiation from said head in a direction having at least a component in the given direction; and
means for delivering the radiation to said means for direction radiation;
wherein said means for directing radiation are structurally separate from said bristles.

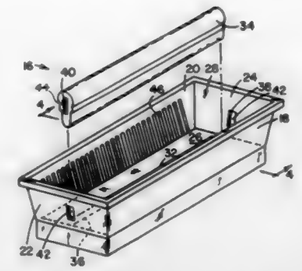
5,306,144
DEVICE FOR DETECTING DENTAL CARIES
Raimund Hibst, Erbach, and Karsten Konig, Blaustein, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Fed. Rep. of Germany
Filed Jan. 12, 1993, Ser. No. 3,267
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200741
Int. Cl.[5] A61C *1/00, 3/00*; A61B *6/00*; G01J *3/30*
U.S. Cl. 433—29 39 Claims



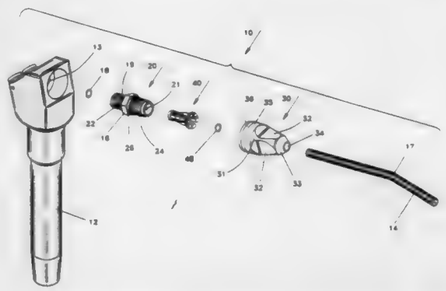
1. Device for detecting dental caries, having an illumination device which emits radiation at a predetermined wavelength in the spectral range from 360 to 580 nm towards at least one tooth, and having at least one filter which accepts radiation returned by the tooth in a predetermined spectral range above 620 nm, the accepted radiation being evaluated for caries detection, wherein the illumination device has at least one light guide, by means of which the radiation is supplied to the tooth, and wherein a detector is connected after the filter, seen in the direction of the returned radiation, which detector converts the radiation supplied to it into a first electrical signal, and a further filter is provided which accepts radiation returned by the tooth in a further spectral range different from the spectral range of the filter, and the detector converts the filtered radiation into a second electrical signal which is supplied to a quotient-forming element, which forms a quotient from the first signal and the second signal, which quotient serves as a measure of the presence of caries.

5,306,145
DENTAL MODEL PREPARATION AND APPARATUS THEREFOR
Robert M. Michnel, 116 N. Road, Rte. 5, Johnson City, Tenn. 37601
Continuation of Ser. No. 821,179, Jan. 15, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 80,188
Int. Cl.[5] A61C *19/00*
U.S. Cl. 433—34 11 Claims

1. A dental stone casting mold device comprising associated side wall means, end wall means and floor means forming an open top cavity means having a longitudinal axis, said cavity means being adapted for containing set dental stone material, retaining bar means removable affixed to said floor means substantially along said longitudinal axis thereof and extending upwardly from said floor means, said retaining bar means having a generally upright, bulbous cross-sectional configuration providing first cam surface means adapted to provide vector forces directed generally toward said floor means, said retaining bar means being removably receiving on its outer surface portions a cooperating snap interlocking but separable retaining socket type clip means affixed to a hardened dental stone casting, said clip means having second cam surface means oppositely facing to said first cam surface means for engaging said first cam surface means and forcing said clip means and the casting affixed thereto toward said floor means.



5,306,146
SYRINGE TIP LOCKING ASSEMBLY
Warren Davis, 942 Eldorado La., Las Vegas, Nev. 89123; David Wasserman, 2095 Mohigan Way, Las Vegas, Nev. 89109, and Richard R. Matthews, 7950 Alameda St., Huntington Park, Calif. 90255
Continuation-in-part of Ser. No. 241,081, Sep. 6, 1988, abandoned, and a continuation-in-part of Ser. No. 351,431, May 12, 1989, Pat. No. 5,049,071, and a continuation-in-part of Ser. No. 596,987, Oct. 11, 1990, Pat. No. 5,192,206, and a continuation-in-part of Ser. No. 687,039, Apr. 16, 1991, Pat. No. 5,236,356, and a continuation-in-part of Ser. No. 4,098, Jan. 13, 1993. This application Feb. 16, 1993, Ser. No. 17,770
Int. Cl.[5] A61C *17/02, 17/00*
U.S. Cl. 433—80 19 Claims



1. A locking assembly for locking a syringe tip in a dental handpiece body comprising:
a) an adaptor mounted in the handpiece body, the adaptor including a hollow body portion having external threads and a tapered male member mounted on the interior of the hollow body portion; and
b) means for pulling the syringe tip onto the tapered male member and for gripping the syringe tip in a tightly held position on the tapered male member to prevent axial rotation of the syringe tip; the means comprising:
1) a gripping member comprising a generally hollow tubular body separated into a plurality of fingers, each finger separated from an adjacent finger by a longitudinal slot; and
2) a locking cup comprising a generally hollow body having internal threads;

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3) the gripping member being mounted inside the locking cap;

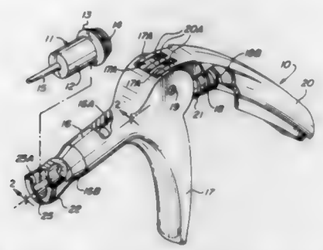
whereby when the locking cap is screwed onto the adaptor, the gripping member compresses around a syringe tip to securely hold the syringe tip inside the adaptor and to pull the syringe tip onto the tapered male member.

5,306,147

DENTAL SYRINGE AND CARTRIDGE THEREFOR

William B. Dragan, 85 Burr St., Easton, Conn. 06612, and John Discko, Jr., 50 Laura Rd., Hamden, Conn. 06514

Filed Jun. 28, 1993, Ser. No. 82,464
Int. Cl.[5] A61C 5/04
U.S. Cl. 433—90 10 Claims



1. A dental syringe gun for applying a dental material directly to a tooth to be restored comprising

a plastic barrel having a bore extending therethrough,

a plunger reciprocally mounted in said barrel,

said plastic barrel having a front end defining a barrel opening,

and a cartridge holder connected to said front end in line with said front end opening,

said cartridge holder comprising a rear portion and a forwardly extending cartridge seat,

said cartridge seat projecting beyond said front end opening of said barrel,

said rear portion of said cartridge holder being embedded in the material of said plastic barrel, and

said cartridge seat being substantially U-shaped terminating in an inturned flange at the forward end thereof,

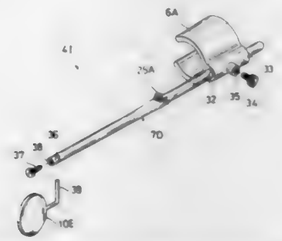
said flange having a notch formed with an open end sized to receive the diameter of the cartridge portion adapted to be received therein.

5,306,148

DENTAL POWER TOOL GUARD

Shoukou Nakamura, 61-2 Tsurukouji-machi,, Maebashi-shi, Gunma-ken, Japan

Filed Nov. 2, 1992, Ser. No. 970,359
Claims priority, application Japan, Nov. 6, 1991, 3-090721[U]; Jan. 16, 1992, 4-001136[U]
Int. Cl.[5] A61C 1/16
U.S. Cl. 433—116 2 Claims



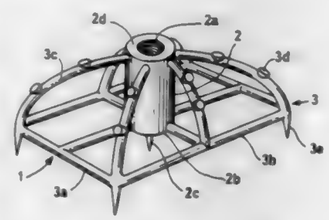
1. A dental power tool comprising a tool body; a high-speed rotary head attached to a front end of said tool body; a cutting bit detachably mounted to said rotary head; and a guard device detachably coupled to said tool body, said guard device having a fitting member to attach said guard device to said tool body, said fitting member being rotatably connected to said tool body thereby allowing said guard device to rotate 360° with respect to said tool body, an arm being slidable within said fitting member for extending and retracting said guard device, a screw being threaded in said fitting member operating to fix said arm in one of an extended and a retracted position, said arm having a first portion and a second portion pivotably connected to each other, thereby allowing said arm to swing distal and proximal with respect to said tool body, a guard plate being rotatably mounted to a front end of said arm, thereby allowing said guard plate to rotate 360° with respect to said arm, said guard plate having a semi-circular protuberance at its forward end and at each of its two lateral ends.

5,306,149

IMPLANT FOR ATTACHING A SUBSTITUTE TOOTH OR THE LIKE TO A JAW

Jürg Schmid, Ilanz; Christoph Hämmerle, Forst; Niklaus P. Lang, Neuenegg, and Francis J. Sutter, Hölstein, all of Switzerland, assignors to Institut Straumann AG, Waldenburg, Switzerland

Filed Jul. 6, 1992, Ser. No. 909,559
Claims priority, application Switzerland, Jul. 15, 1991, 2099/91
Int. Cl.[5] A61C 8/00
U.S. Cl. 433—173 6 Claims



1. An implant for attaching a substitute tooth or the like onto a jaw or the like, comprising:

a carrier having a central portion and containing a threaded bore;

a diaphragm covering said carrier and enabling bone formation;

a frame surrounding said central portion of the carrier, wherein said frame, further comprises:

a base formed by transverse ribs;

longitudinal ribs;

at least four cross-ties extending from the base edge; and

at least two spikes on said carrier for fastening the implant into the jawbone.

5,306,150

DENTAL RAMUS IMPLANT

Neal B. Gittleman, 15 Greenway Plz. #1-D, Houston, Tex. 77046

Filed Aug. 4, 1992, Ser. No. 924,490
Int. Cl.[5] A61C 8/00
U.S. Cl. 433—173 9 Claims

1. A clamp securable non-invasively to the ramus portion of the human mandible, the clamp having means for engagement with clampable surfaces of said ramus portion, said clamp further having an anterior articulating arm, support means for the jawbone, said arm having connecting means adaptable to the support means selected for the jaw bone, the clamp further comprising:

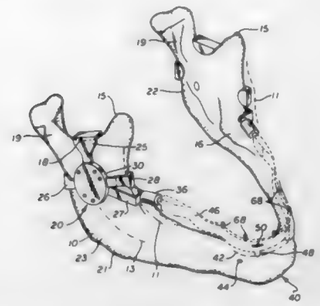
a generally thin central hub, the hub adapted to be positioned appropriately on said ramus portion;

radiating from said hub,

(1) two fixed securing arms, comprising a superior securing arm and a posterior securing arm;

(2) said anterior articulating arm terminating in said connecting means; and

(3) an adjustable anterior securing arm;



said hub having

(a) means to secure said superior securing arm on a clampable surface of the mandibular notch of said ramus;

(b) means to secure said posterior securing arm within the posterior border of said ramus; and

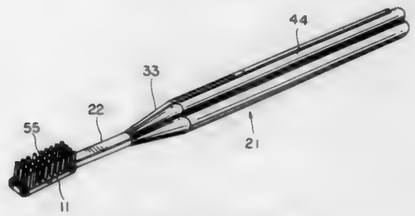
(c) means to secure said anterior articulating arm to a clampable surface within the anterior border of said ramus.

5,306,151

TOOTHBRUSH

Samuel Rauch, 40 Spruce St., Cedarhurst, N.Y. 11516

Division of Ser. No. 568,476, Aug. 16, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 963,029
Int. Cl.[5] A61C 15/00; A46B 9/04
U.S. Cl. 433—216 3 Claims



1. A method of brushing teeth comprising:

providing a toothbrush having a substantially longitudinally aligned handle with spaced opposite ends, brush head means at one end of said handle having a plurality of bristles extending therefrom; and a gripping portion at the opposite end of said handle, said gripping portion being in the form of a substantially four-sided column having a cross-section with a shape which can be circumscribed with a square, the geometrical relationship of the cross-section of said gripping portion and said brush head means being such that one diagonal of the circumscribing square is substantially parallel to the bristles of said brush head and the other diagonal of said square is substantially perpendicular to said bristles of said brush head, the four sides of the column of said gripping portion having four longitudinal sides forming two pairs of detente gripping positions for being respectively engaged by a hand of a user, said detente gripping positions of one pair being substantially perpendicular to the detente gripping positions of the other pair, said gripping portion of said handle having a cross-section substantially along its entire length with a circumference formed by corner sections forming at said detente gripping positions a configuration to automatically guide the thumb and fingers of the user into gripping engagement on the handle in a position so that when the handle is moved longitudinally along the gum line of the teeth, the bristles will be at an angle of 45° relative to the long axis of the teeth without rotation of the hand, wrist or forearm of the user,

engaging the thumb and at least one finger of the user with one pair of said detente gripping positions of said gripping portion of said handle, and

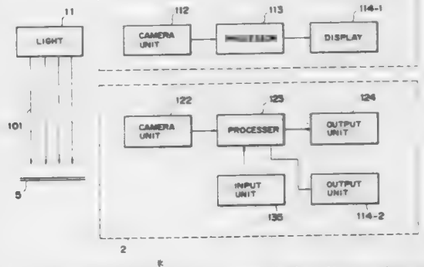
longitudinally displacing the handle back and forth along the gum line of the teeth of the user while maintaining the thumb and finger of the user in engagement with said detente gripping positions to maintain the attitude of the bristles fixed relative to the teeth at said angle of 45° so that the bristles will always contact and brush the teeth at said angle of 45° during the longitudinal back and forth movements of the handle.

5,306,152

READING APPARATUS FOR EYESIGHT HANDICAPPED PERSON

Isamu Shimoda, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 962,827
Claims priority, application Japan, Oct. 30, 1991, 3-284745; Nov. 26, 1991, 3-310661
Int. Cl.[5] G09B 21/00; G06K 9/00
U.S. Cl. 434—114 10 Claims



1. A reading apparatus for an eyesight handicapped person, comprising:

reading means for optically reading character information from a recording medium on which the character information has been recorded and for converting the read character information into an electrical signal;

first converting means for converting the electrical signal from said reading means into information which can be perceived in a tactile manner;

second converting means for converting the electrical signal from said reading means into coded information and, thereafter, for further converting the coded information into corresponding information which can be perceived in a tactile manner; and

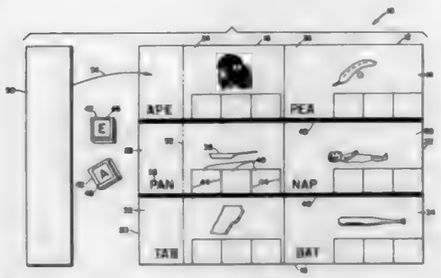
display means for displaying the information generated from said first and second converting means so that it can be perceived in a tactile manner.

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5,306,153
EDUCATIONAL DEVICE FOR DEVELOPING VOCABULARY AND SPELLING SKILLS

Margaret J. Foster, Box 24482, Christensted, St. Croix, V.I. 00824

Filed May 10, 1993, Ser. No. 58,305
Int. Cl.[5] G09B *1/30*
U.S. Cl. 434—170 15 Claims



1. An educational device for developing vocabulary and spelling skills, said device comprising:
   a. a plurality of substantially flat tiles, each tile bearing the same predetermined identifying color and bearing a letter of the alphabet on at least one surface; and
   b. a board member having a tile-receiving surface for receiving a plurality of titles, the tile-receiving surface divided into a plurality of substantially rectangular board areas by dividing lines, the dividing lines defining a plurality of rows of board areas and a plurality of columns of board areas, each board area including pictorial indicia representative of a respective object having a name that is to be spelled, each board area including a plurality of tile positioning indicia equal in number to the number of letters in the name of the object illustrated in the board area, the tile positioning indicia including the same predetermined color as the identifying color borne by the tiles and oriented to allow a user to place a tile on each of the tile positioning indicia to spell the name of the object illustrated in the board area by selecting appropriate letter-bearing tiles and placing the selected tiles on the tile positioning indicia within the board area to spell the name of the illustrated object, and object name indicia carried by the board member adjacent associated pictorial indicia within a board area to spell the name of the object illustrated in the board area, the object name indicia spaced from the tile positioning indicia to permit the object name indicia to be covered while the tile positioning indicia remain uncovered.

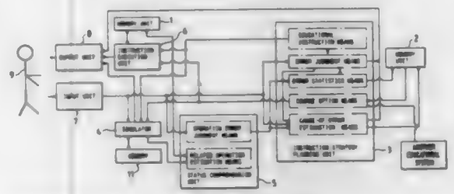
5,306,154
INTELLIGENT EDUCATION AND SIMULATION SYSTEM AND METHOD

Hiroshi Ujita, Tokyo; Takeshi Yokota, Hitachi; Kanji Kato, Katsuta; Toichi Shida; Nasbo Tanikawa, both of Hitachi, and Toshiya, Kurakake, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,786
Claims priority, application Japan, Mar. 7, 1991, 3-41572
Int. Cl.[5] G09B *9/00, 25/02*
U.S. Cl. 434—218 17 Claims

1. An intelligent education and simulation system comprising:
   text teaching means for teaching procedure and physical process of subject domain knowledge to a learner;
   simulation means for providing an actual physical process situation experience and response using proper procedure to said learner;
   comprehension means for determining an understanding level of said learner by integrating results from said text teaching means with results from said simulation means; and
   educational execution means for selectively reactuating at least one of said text teaching means and said simulation means in response to said understanding level being below a predetermined value.

10. A method for teaching system operation using an intelligent education and simulation system having a computer, said method comprising the steps of:
   obtaining understanding of a learner of procedure and physical process of subject domain knowledge which has been previously taught to said learner by a text teaching means;

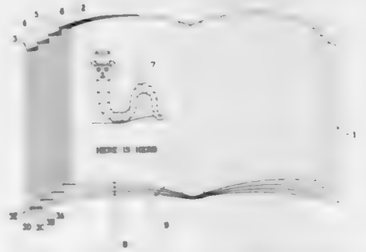


   obtaining understanding of said learner of an actual physical process simulation situation experience and response using proper procedure which has been previously presented to said learner by a simulation means;
   comprehending an understanding level of said learner by integrating said understanding of subject domain knowledge and said understanding of simulation situation experience and response from a comprehension means; and
   selectively structuring a reeducational curriculum of at least one of said subject domain knowledge and said simulation situation experience and response for said learner in response to said understanding level being below a predetermined value from an educational execution means.

5,306,155
CREATIVE WRITING BOOK

Joseph Koke, 245A Old Mill Rd., St. James, N.Y. 11780

Filed Nov. 24, 1992, Ser. No. 980,740
Int. Cl.[5] B43L *1/12;* G09B *11/00*
U.S. Cl. 434—410 12 Claims

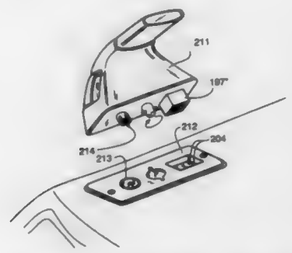


1. A book to teach and encourage writing skills, comprising:
   a picture pad having a plurality of double-leaf pages, each respective double-leaf page comprising a plurality of leaves, said plurality of leaves includes a first separable leaf and a second permanently attachable leaf, wherein one leaf of said plurality of leaves is a top leaf and another leaf of said plurality of leaves is a bottom leaf, each said double leaf page comprising a pressure sensitive writing surface capable of producing an image on said bottom leaf in response to the pressure of a writing instruction being applied to said top leaf; and further wherein said double leaf pages bear at least one identical picture in register on said top leaf and on said bottom leaf, said top and bottom leaf having no text; and said top leaf and said bottom leaf further having space for a user to inscribe creative test to imaginatively explain and give meaning to the picture thereon;
   said pad pages being capable of being torn off from said pad to permit a user to inscribe differing text from page to page on a succession of pages which all have identical pictures, the differing inscriptions for permitting the user to practice and improve creative writing skills by varying and expanding upon previously inscribed text and said leaves which have been written upon and then torn-off from said picture pad comprising a portfolio of the user's educational progress;
   said book having a stiff flat insert for placing underneath a pad page to be written on, for preventing successive pressure sensitive pad pages from being inadvertently spoiled by a user's writing pressure, said stiff flat insert being capable of preventing user writing pressure from inadvertently spoiling pressure sensitive pad pages below the one pad page being written upon;
   wherein said top leaf and said bottom leaf are capable of being separated, and further;
   wherein one leaf of said plurality of leaves of each said double-leaf pages is permanently attached to the picture pad, and further where the other leaf of said plurality of leaves of each said double-leaf pages is removable from the picture pad for keeping a separate record of the user's inscribed text.

5,306,156
MECHANICAL AND/OR ELECTRO-MECHANICAL INTERCONNECT SYSTEM FOR VEHICLE LOAD CARRYING COMPONENTS/ACCESSORIES

Andrew H. Gibbs, and Douglas P. Gibbs, both of Yuba City, Calif., assignors to Sport Rack Systems, Inc., Yuba City, Calif.

Filed Apr. 3, 1992, Ser. No. 863,200
Int. Cl.[5] H01R *11/30*
U.S. Cl. 439—34 9 Claims

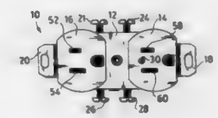


1. In an easily manipulatable latch for securing when desired a selected one of a plurality of accessories of different types to the exterior of a vehicle, mounting structure for the same comprising:
   (a) a connection component permanently attachable to said vehicle, which component includes at least one mechanical connector on the exterior of said vehicle configured to mate with and securely connect respectively to all corresponding mechanical connectors associated with accessory latching structures of said plurality of accessories of different types and at least one electrical connector configured to mate with a corresponding electrical connector on said accessory latching structure when said mechanical connection is made;
   (b) a backing component for securance to said vehicle interiorly of said connection component, which backing component cooperates with said connection component to transmit to said vehicle for support thereof both the static and the dynamic loading expected by reason of connection to any one of said accessories of different types; and
   (c) a cover plate for said electrical connector securable thereover when an electrical connector of said accessory latching structure is not connected thereto.

5,306,157
ADJUSTABLE DUPLEX RECEPTACLE

Thomas E. Francisco, 446 Niagara Falls Blvd., Kenmore, N.Y. 14223

Filed Jun. 15, 1992, Ser. No. 898,812
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—52 8 Claims





1. An adjustable duplex receptacle comprised of:
   (a)a body comprised of a first female receptacle and a second female receptacle wherein:
      1. each of said first female receptacle and said second female receptacle is comprised of two orifices which each has a substantially rectuangular cross-sectional shape,
      2. said body is comprised of a central orifice, and
      3. said body is comprised of a first mounting bracket and a second mounting bracket;
   (b) a first integral electrical contact, a second integral electrical contact, a third, integral electrical contact, wherein said first integral electrical contact, said second integral electrical contact, and said third integral electrical contact are located within said body, and: wherein:
      1. said first, integral electrical contact is comprised of a first terminal, a first terminal screw, and a first contact plate;
      2. said second, integral contact is comprised of a second terminal, a second terminal screw, and a second contact plate;
      3. said third, integral contact is comprised of a proximal end, a distal end, a third terminal, and a contact assembly with an electrically conductive surface, wherein:
         (a)said third terminal is located at the distal end of said integral contact, and said contact assembly is located at the proximal end of said contact assembly;
         (b)said contact assembly is comprised of a first contact surface, and a second contact surface;
   (c)a movable connector disposed within said body, wherein said movable connector engages said electrically conductive surface of said contact assembly;
   (d)moving means for moving said movable connector in a first direction within said body to cause said movable connector to abut said first contact plate; and
   (e) means for moving said movable connector in a second direction within said body to cause said electrically conductive plate to move out of abutment with first contact plate and into contact with said second contact plate, whereby the movable connector is used to selectively electrically connect said electrically conductive surface to either one or the other of the first and second contact plates.

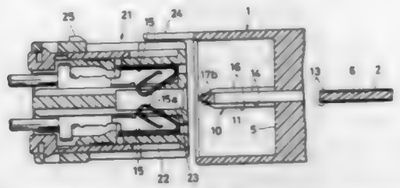
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,158

CONNECTOR FOR CIRCUIT BOARD

Takayoshi Endo; Shigemitsu Inaba, and Satoshi Yamada, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Apr. 13, 1993, Ser. No. 45,195
Claims priority, application Japan, Apr. 13, 1992, 4-23261
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—59 **14 Claims**



1. A circuit board connector for electrically connecting at least one terminal conductor of a circuit board to a respective spring terminal of a complementary connector with which the circuit board is to be mated, said circuit board connector comprising:

a connector housing body, said housing body including a base wall having an opening for receiving at least one terminal conductor of a circuit board; and

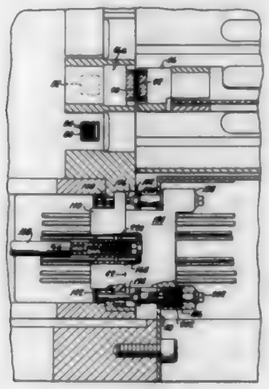
a guide case connected to said base wall adjacent said opening of said base wall, said guide case having at least one slot for receiving the terminal conductor of the circuit board, at least one terminal-exposing opening for exposing the terminal conductor, and at least one guide rib for guiding the terminal conductor into electrical connection with a spring terminal of a complementary connector.

5,306,159

SEQUENTIAL MATING OF CONNECTORS OF MULTIPLE FRAMED CIRCUIT BOARD ASSEMBLY

Gregory B. Noll, Riverside, and Theodore R. Conroy-Wass, Tustin, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1992, Ser. No. 922,905
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—61 **12 Claims**



1. Signal connecting apparatus comprising:

a housing structure,

first and second support members each having a connector node and circuitry connected to its connector node,

means for detachably mounting said members to said structure and fixedly securing said members to each other in a node mated position wherein said connector nodes are connected with one another to transmit signals between said support members,

a third connector part on said first support member, said third connector part having connector elements,

a fourth connector part movably mounted on said housing structure independently of said support members, said fourth connector part having connector elements positioned to be adjacent to but not connected with said third connector part elements when said support members are in node mated position, and

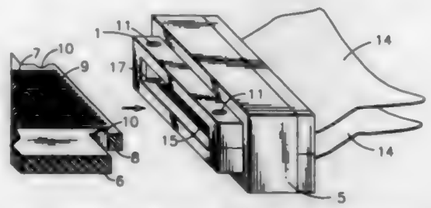
means resiliently mounted on one of said first support members and fourth connector part for driving said fourth connector part toward said first support member and said third connector part so as to cause said fourth connector part to resiliently initially engage said third connector part when said members are in said node mated position.

5,306,160

SELF-ALIGNING HIGH-DENSITY PRINTED CIRCUIT CONNECTOR

Joseph A. Roberts, Grafton, N.H., assignor to Rock Ltd. Partnership, Grafton, N.H.

Continuation-in-part of Ser. No. 861,119, Mar. 31, 1992, Pat. No. 5,240,420. This application Mar. 26, 1993, Ser. No. 37,351
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—62 **19 Claims**



1. A connector for electrically conductive connection to electrically conductive contact pads of a circuit comprising:

a) a housing;

b) a resilient flexible circuit assembly held captive by said housing, housed, at least in part, in said housing and having a flexible circuit with an end portion defining a row of conductive contact areas on one face thereof corresponding to said row of pads, resilient spring means for resiliently urging said areas into electrically conductive contact with said pads when said connector is attached at a desired location to said circuit;

c) means for providing limited desired float of said assembly in said housing to facilitate registration of said areas and said pads; and

d) said assembly having alignment means to engage a cooperating feature of said circuit to cause registration of said areas with said pads, when said connector is attached at the desired location to said circuit, with sufficient accuracy to ensure that only the desired conductive contact between said areas and said pads is achieved.

5,306,161

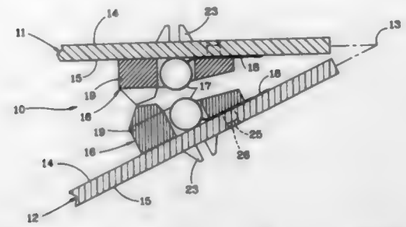
INTERFACE SYSTEM FOR ANGULARLY-CONVERGING PRINTED CIRCUIT BOARDS

Keith L. Volz, Jamestown; Robert M. Rean, Pfafftown; Frederick R. Deak, Kernersville, and David C. Johnson, Winston Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1992, Ser. No. 994,862
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—66 **5 Claims**

1. An electronic assembly to interface between a pair of angularly-converging printed circuit boards, where said boards are arranged to pivot relative to one another from a non

engagement non parallel position of a first angle to one of an electrical interconnection position therebetween, where the latter position is non parallel and of a lesser angle, said assembly comprising a pair of identical connector housing mounted to a respective printed circuit board, each of said housing including at least (1) one flexible electrical connector, where said connector consists of a thin flexible film having electrical



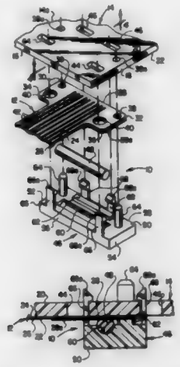
circuitry thereon wrapped around a soft, non-conducting rubber core, and (2) a plurality of uniformly spaced-apart hermaphroditic guide fingers, such that one of the connector housings may be turned over and fitted over the other connector housing, and such that the hermaphroditic guide fingers mesh therebetween, thereby providing guide means and a stop means between the connectors housing as the flexible electrical connectors engage each other.

5,306,162

CLAMP CONNECTOR APPARATUS FOR REMOVABLY COUPLING A FLEXIBLE RIBBON CABLE TO A PRINTED CIRCUIT BOARD

Luis C. Armendariz, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Apr. 14, 1993, Ser. No. 47,227
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—67 **12 Claims**



1. Apparatus for removably coupling an end portion of a flexible ribbon cable having a first spaced series of electrically conductive traces on a side surface thereof to a side surface of a printed circuit board having a second spaced series of electrically conductive traces formed thereon and alignable with said first series of electrically conductive traces, said apparatus comprising:

a support structure having a side surface with an elongated groove formed therein, said groove having a generally semicircular cross-section along its length;

a solid elastomeric member having a generally cylindrical configuration, a first side portion complementarily received in said groove, and a second side portion laterally projecting outwardly beyond said support structure side surface;

attachment means for removably securing said support structure to the printed circuit board in a spaced apart, facing relationship with said side surface thereof, with the ribbon cable end portion being interposed between said elastomeric member and said side surface of the printed circuit board, and said side surfaces of the ribbon cable end portion and the printed circuit board being positioned against one another, in a manner laterally compressing said second side portion of said elastomeric member directly against the ribbon cable end portion, whereby essentially the entire compression force exerted on said elastomeric member is borne by the ribbon cable end portion along a single, relatively narrow area thereof,

said groove, when said support structure is operatively secured to the printed circuit board, longitudinally extending generally transversely to said first and second series of electrically conductive traces adjacent the portion of the ribbon cable end portion against which said second side of said elastomeric member is compressed;

an elongated stabilizing portion formed on said support structure side surface and laterally projecting outwardly therefrom, said stabilizing portion being in a laterally spaced, parallel relationship with said groove and being configured to bear against the ribbon cable end portion when said support structure is operatively secured to the printed circuit board;

a spaced first plurality of openings formed through the ribbon cable end portion; and

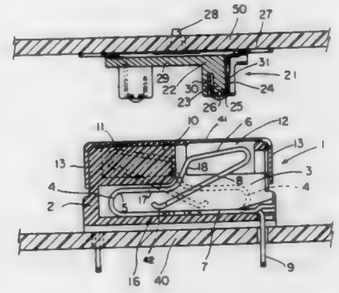
cooperating alignment means associated with the circuit board and said support structure, and extendable through said ribbon cable end portion openings, for maintaining said first and second series of electrically conductive traces in precisely aligned contact with one another at the location of the compressed elastomeric member.

5,306,163

DESTATICIZED CONNECTOR STRUCTURE

Kazushige Asakawa, Yokohama, Japan, assignor to Molex Incorporated, Lisle, Ill.

Filed Aug. 27, 1992, Ser. No. 936,956
Claims priority, application Japan, Oct. 30, 1991, 3-97306
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—74 **3 Claims**



1. A static charge removal connector comprising:

a male plug (**21**) including a male housing (**22**) having a base, a terminal mount (**23**), and at least one male terminal (**24**) fixed to the terminal mount (**23**);

a female receptacle (**1**) comprising a female housing (**2**) having at least one terminal mounting cavity (**3**) and a flexible female terminal (**4**) in the cavity, said female housing (**2**) having a metal cover (**11**) integrally connected to ground bars (**15**) and applied to a top surface (**10**) of said female housing (**2**) said cover (**11**) having apertures (**41**)

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through which said terminal mount (23) with said male terminal (24) can be inserted;

said terminal mount (23) projecting from a floor (29) of the male housing (22) of the male plug (21), and physically dimensioned so as to permit insertion through the aperture (41) in said cover (11) and into a slot (12) in the female housing (2), said male terminal (24) being fixed to said terminal mount (23) with a contact section (26) of said male terminal (24) laid on the top of said terminal mount (23), thus permitting the contact section (26) of said male terminal (24) to come to contact the contact section (6) of said flexible female terminal (4) when said male plug (21) is mated with said female receptacle (1); and

said female terminal (4) which is yieldingly deformable remains contained within slot (12) of said female housing (2) prior to making contact with the male terminal (24),

said female terminal having a base section (7) with two ends mounted within said female housing (2), one end integrally connected to a solder tail section (9) adapted to be connected to a trace on a printed circuit board and the other end integrally connected to a flexible bent section (5) which supports one end of a flat contact section (6) with the other end of the flat contact section (6) supported by a flexible arm (8),

whereby the upward force provided by the flat contact section (6) against the male terminal (24) due to the support at both ends of the flat contact section by the flexible bent section (5) and the flexible arm (8) is generally equal across the entire length of the contact section (6).

5,306,164

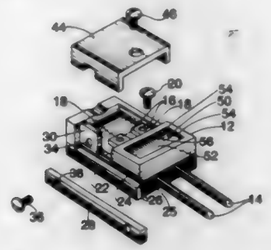
ELECTRICAL CONNECTOR WITH ADAPTABLE EXTERNAL GROUND AND INDICIA DISPLAY

Milton B. Hollander, Stamford; David R. Jacobs, Norwalk; William E. McKinley, Stamford, and Janice E. Angrave, Danbury, all of Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 952,478, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 639,355, Jan. 16, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 22,674

Int. Cl.[5] H01R *13/652*

U.S. Cl. 439—103 **3 Claims**



1. A groundable, separable electrical connector comprising:

a body member formed of electrically insulating material with at least one contact element having a longitudinal mating axis;

said body member having an elongated flat-bottomed recess of substantially rectangular cross-section formed in the outer surface thereof, at least part of said recess being aligned parallel to said mating axis for receiving therein a grounding conductor in the form of a strip of conductive material having a substantially rectangular cross-section;

a grounding conductor anchor element mounted to said body member within said recess and having its outer most surface substantially flush with the bottom surface thereof;

said grounding conductor anchor element having a threaded aperture therein to receive a mating threaded screw for separably securing the grounding conductor strip thereto;

an information display area integrally formed in said body member, said display area being characterized by a substantially flat, planar base surface recessed below the outer surface of said body member, and by a circumscribing, integrally formed upstanding sidewall completely encircling said base surface and extending between said base surface and said outer surface;

said integrally formed base surface being treated in known manner to render it readily erasable and readily markable using conventional writing and marking instruments;

said information display area being positioned on said body member in substantially close proximity to a contact element mounted on said housing for permitting convenient observation of said base surface of said display, and said contact element, at substantially the same time.

5,306,165

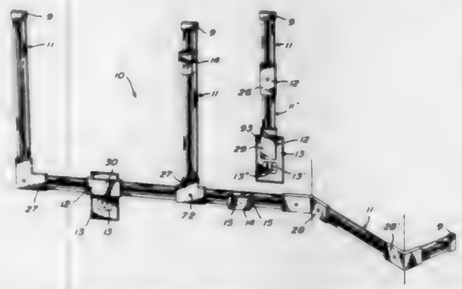
ELECTRIC DISTRIBUTING SYSTEM

Jacques Nadeau, 940 boulevard St-Joseph West, Drummondville, Quebec, Canada J2E 1H9

Filed Jan. 27, 1993, Ser. No. 9,925

Int. Cl.[5] H01R *25/14*

U.S. Cl. 439—115 **52 Claims**



1. An electrical distribution system comprising one or more electrical tracks, each track being formed of a substantially flat elongated rectangular strip of electrical insulating material, each strip having two current-carrying conductors retained in undercut channels formed in side ribs extending end to end along opposed side edges of said strip with said channels facing one another inwardly of a top face of said strip, a ground conductor retained in said top face intermediate and parallel to said conductors, guide means spaced closer to one of said side ribs to permit proper polarity connection to said current-carrying conductors, and an electrical connector housing slidingly receiving an end portion of said track in a connecting slot in an end wall thereof in polarity alignment with a pair of electrical side contacts engaging with a respective one of said current-carrying conductors through said undercut channels and an intermediate electrical contact engaging with said ground conductors through said slot in said intermediate rib; each side contact of said pair of electrical side contacts having a flexible metal strip with an attaching portion held securely in said connector housing, a flexible arm portion and a contact blade portion, said flexible arm portions of said side contacts biasing said side contact blade portions outwardly from one another in the plane of said connecting slot and towards opposed end edges of said connecting slot, said side contact blade portions being positioned in a plane aligned with said undercut channels when said end portion of said track is slid into said connecting slot so that said contact blades will protrude in a respective one of said undercut channels to electrically engage a respective one of said current-carrying conductors while maintaining contact pressure.

5,306,166

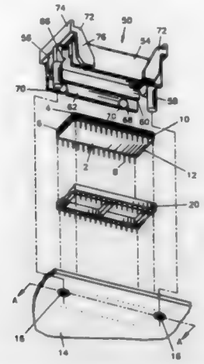
CHIP STORAGE INSERTION GUIDE

Frank Kula, Pleasanton, and Luis Arreola, San Jose, both of Calif., assignors to Wyse Technology, Inc., San Jose, Calif.

Filed Dec. 14, 1992, Ser. No. 990,494

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—160 **12 Claims**



1. A storage and insertion guide for a computer chip of the type having a plurality of lead pins for engagement within a socket, the insertion guide comprising:

a housing defining a chamber formed by a top wall, end and side walls, the side walls having means for aligning the lead pins when the computer chip is placed within the chamber and sized to shield the lead pins when the computer chip is stored within the chamber, the housing further defining means for disengaging the lead pins from the socket when the computer chip is engaged within a socket.

5,306,167

IC SOCKET

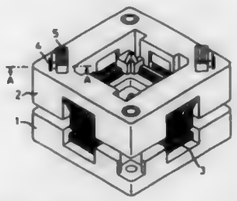
Takayuki Nagumo, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 2, 1993, Ser. No. 71,584

Claims priority, application Japan, Jun. 2, 1992, 4-141227

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—226 **5 Claims**



1. An IC socket including

a socket body formed with a plurality of contacts for electrical contact with leads of an IC package, and,

a cover releasably loading a said IC package on said socket body by vertical movement, wherein said IC socket further comprises

a plurality of latches having hooks arranged at least at two diagonally opposing corners of said cover and connected to said socket body and said hooks having projections extending in the same direction as said hooks;

a plurality of releasing blocks arranged in the vicinity of said latches and movable in a direction parallel with respect to the latch; and

a plurality of catching portions formed in said socket body for engagement with said hook of said latches, and in which

when said cover is depressed, said hook hooks to the catching portion to maintain said cover at a predetermined position in relationship to said socket, and when said releasing blocks are depressed, the lower end of said releasing block slidingly contacts with said projection so that said projections are depressed in a direction opposite that of said hooks and said hooks are released from said catching portions.

5,306,168

FLOATING TYPE ELECTRIC CONNECTOR

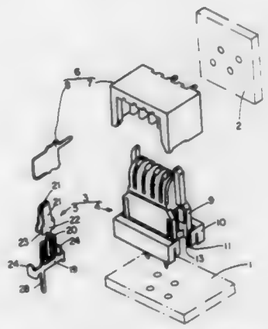
Shinsuke Kunishi, Oosaka, and Masashi Seto, Zama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 8, 1993, Ser. No. 73,813

Claims priority, application Japan, Jul. 16, 1992, 4-212046

Int. Cl.[5] H01R *13/629*

U.S. Cl. 439—248 **7 Claims**



1. A floating type electric connector adapted to be mounted on a circuit board, comprising:

a unitarily molded, housing having a movable housing portion and a stationary housing portion mountable on the surface of the circuit board, and at least two resilient joints flexibly connecting the movable and stationary housing portions, said stationary housing portion surrounding the movable housing portion, thus limiting the movement of said movable housing portion; and

a plurality of female terminals each having a terminal mating section and a base section jointed by an intermediate resilient section, said mating terminal section being mounted in said movable housing portion and said base terminal section being mounted in said stationary housing portion.

5,306,169

ELECTRICAL CONNECTOR FOR CONNECTING PRINTED CIRCUIT BOARDS

Minoru Fukushima, Yokohama; Shinichi Tadokoro, Fujisawa, and Masahiro Henmi, Yokohama, all of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Aug. 3, 1993, Ser. No. 101,605

Claims priority, application Japan, Nov. 19, 1992, 4-085830[U]

Int. Cl.[5] H01R *13/629*

U.S. Cl. 439—248 **4 Claims**

1. A two part floating connector adapted to be mounted on the surface of a printed circuit board, said connector including,

a contact housing part having a plurality of first terminal receiving cavities;

a solder tail housing part adjacent said contact housing part and having a plurality of second terminal receiving cavities in line with the first terminal receiving cavities;

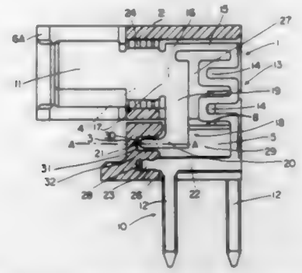
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a plurality of terminals, each terminal having a terminal mating section, a solder tail section and a flexible connecting section, said terminal mating sections held in said first terminal receiving cavities, said solder tail sections held in said second terminal receiving cavities, whereby the contact housing and solder tail housing parts are held together in a plane in a generally sliding relationship with one another by the terminals;

the improvement comprising:

a mounting recess in said solder tail housing part, said mounting recess having a longitudinal axis extending parallel to the plane of the generally sliding relationship,



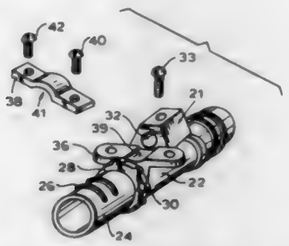
a protective bar extending from said terminal mating section toward said solder tail housing part, said protective bar having an arm adapted to be slidably engaged in the mounting recess in a direction parallel to said longitudinal axis of said mounting recess, whereby any force placed upon the terminal mating section attempting to move said contact housing part out of said sliding plane will be met by an opposite force cause by the arm contacting an inner wall of the mounting recess thereby reducing stress on the terminal flexible connecting section of the terminal.

5,306,170

ELECTRICAL PIPE FITTING WITH INTEGRAL GROUNDING FIXTURE

Lu V. Luu, Hong Kong, Hong Kong, assignor to Pacomex Industries, Inc., Indianapolis, Ind.

Filed Jul. 21, 1993, Ser. No. 94,213
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—100 **6 Claims**



1. An electrical pipe fitting, comprising:

a hollow metal tubular member for receiving electrical wire, said hollow tubular member adapted to be coupled as an intermediate section of a grounded electrical pipe, said hollow tubular member having a first end and a second end, the first end having ridges adapted to secure a section of said electrical pipe received over the first end, the second end being provided with external threads; and

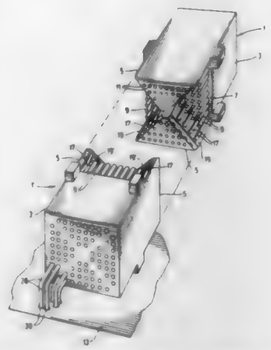
a raised portion formed integrally with and extending from said hollow tubular member, said raised portion having an aperture therethrough for receiving and securing a grounding wire, whereby a ground path is established between said grounding wire and said electrical pipe.

5,306,171

BOWTIE CONNECTOR WITH ADDITIONAL LEAF CONTACTS

Robert E. Marshall, State College, Pa., assignor to Elco Corporation, Huntingdon, Pa.

Filed Aug. 7, 1992, Ser. No. 927,077
Int. Cl.[5] H01R *13/28*
U.S. Cl. 439—284 **9 Claims**



1. A connector system for making multiple electrical connections, including:

(a) complementary first and second connectors, each including:

(1) an electrically-insulating connector body;

(2) a plurality of spaced-apart electrical first contacts mounted in the connector body and extending away from a substantially planar end surface of the body;

(3) a plurality of electrically-insulating projections extending away from the body end surface and beyond the free ends of the first contacts, the projections having substantially co-planar end surfaces parallel to the body end surface;

(4) a plurality of spaced-apart electric second contacts recessed within the projections and open to the projection end surfaces;

(b) at least one third contact mounted on a side of at least one projection orthogonal to the projection end surfaces, each third contact on each connector having a distal end, and being positioned complementarily to a corresponding third contact on the other connector; and

(1) at least one covered slot **22**, each covered slot **22** corresponding to an associated one of the third contacts, for receiving the distal end of the associated third contact;

(c) the projections of each connector diverging linearly and transversely away from a central portion of the body to form an interfacing surface consisting of the projection end surfaces alternating with sectors of the body end surface;

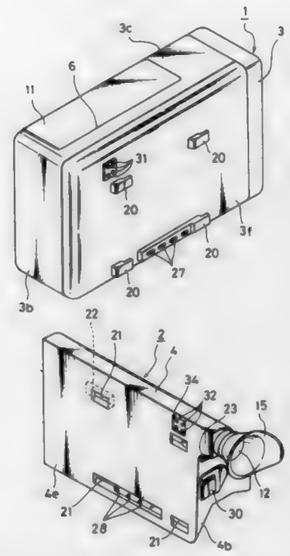
(d) the first and second connectors being adapted for interlocking mechanical and electrical engagement with each projection of each connector in a nesting relation between a pair of neighboring projections of the other connector, with the projection end surfaces of each connector facing the body end surface of the other connector, with the first contacts of each connector aligned and engaged with the second contacts of the other connector, and with the at least one third contact of each connector aligned and engaged with the at least one third contact of the other connector.

5,306,172

VIDEO TAPE RECORDER HAVING BUILT-IN CAMERA DETACHABLE HAND GRIP MEMBER

Shinsaku Inada; Eiji Ohshima, both of Tokyo; Hideaki Io, Kanagawa, and Masayoshi Morikawa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 823,130, Jan. 21, 1992, abandoned, which is a division of Ser. No. 751,650, Aug. 26, 1991, Pat. No. 5,157,512. This application Dec. 1, 1992, Ser. No. 985,350
Claims priority, application Japan, May 27, 1985, 60-78896[U]; May 27, 1985, 60-78897[U]; May 27, 1985, 60-78898[U]; May 27, 1985, 60-78899[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—299 **56 Claims**



1. A battery connecting mechanism for connecting a battery to electric equipment and for supplying electrical power from said battery to such equipment, comprising in combination:

a battery case containing a battery, said battery case having a first side wall;

an equipment case containing said electric equipment, said equipment case having a second side wall adapted to abut said first side wall of said battery case;

a first connecting member including a projection or a recess disposed on said first side wall of said battery case;

a second connecting member including a recess or projection disposed on said second side wall of said equipment case, said projection being adapted to be received in said recess for connecting said battery case with said equipment case, said recess having a generally rectangular elongate opening and said projection being generally rectangular with one dimension substantially equal to the transverse dimension of said opening, whereby movement of said projection after insertion into said opening is restricted to one dimension;

a first electric contacting member disposed on said first side wall of said battery case and connected to said battery; and

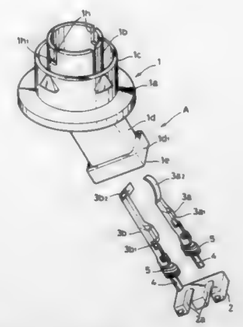
a second electric contacting member disposed on said side wall of said equipment case for receiving electrical power supplied from said battery through said first electric contacting member.

5,306,173

BULB SOCKET

Takanori Suzuki, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Jan. 15, 1993, Ser. No. 5,116
Claims priority, application Japan, Jan. 20, 1992, 4-1502[U]
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—336 **5 Claims**



1. A bulb socket comprising:

a center electrode contact having an elastic contact portion at a forward end thereof, which is adapted to contact a center electrode of a bulb, and a conductor fastening portion for receiving a conductor;

a side electrode contact having an elastic contact portion at a forward end thereof, which is adapted to contact a side electrode of said bulb, and a conductor fastening portion for receiving a conductor; and

a housing that includes a bulb insertion portion for receiving a bulb and an electrode contact portion for receiving said center electrode contact and said side electrode contact;

wherein said electrode contact portion extends from said bulb insertion portion such that a central axis of said electrode contact portion intersects a central axis of said bulb insertion portion at an inclination angle;

wherein said electrode contact portion of said housing includes a first elongated chamber for receiving said center electrode contact and a second elongated chamber for receiving said side electrode contact, said first elongated chamber having a central axis that extends in a plane that is defined by said central axis of said electrode portion and said central axis of said bulb insertion portion, and said second elongated chamber having a central axis that extends in said plane that is deffned by said central axis of said electrode portion and said central axis of said bulb insertion portion; and

wherein said central axes of said first and second elongated chambers are substantially parallel and located on opposing sides of said central axis of said electrode contact portion.

5,306,174

CONNECTING DEVICE FOR EASY CONNECTION OF SEPARATE CASINGS FOR ELECTRIC APPARATUS

Kazuyoshi Kiga, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Nov. 18, 1992, Ser. No. 978,416
Claims priority, application Japan, Nov. 18, 1991, 3-301917
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—341 **20 Claims**

1. A connecting device for detachably connecting a first casing with a second casing, comprising:

first and second wedges disposed on said first casing;

a third wedge secured to said second casing;

a fourth wedge slidably mounted on said second casing;

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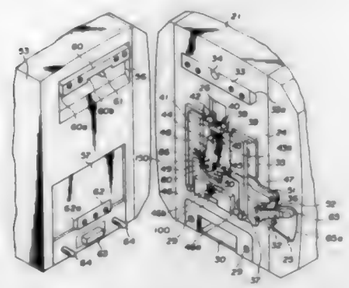
at least said second and fourth wedges being substantially parallel with each other when said first and second casings are in a mating position;

means for driving said fourth wedge on said second casing, said driving means comprising a link assembly which is operatively coupled with said fourth wedge; and

means for locking said fourth wedge at a locking position where said fourth wedge is engaged with said second wedge of said first casing;

wherein said link assembly comprises:

a first link rotatably mounted on said second casing; and



a second link connected, at one end thereof, with said first link and, at the other end thereof, with said fourth wedge;

wherein, when said first and second casings mate with each other and said link assembly is operated in one direction, said fourth wedge moves from a first position where said fourth wedge is located remotest from said second wedge, through a second position where said fourth wedge is located closest to said second wedge to be engaged therewith, into a third position where said fourth wedge is located between said first and second positions but still engaged with said second wedge.

5,306,175

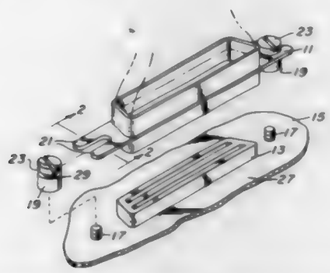
ELECTRICAL CONNECTOR PANEL FASTENER

Kenneth A. Swanstrom, Doylestown, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed Apr. 23, 1993, Ser. No. 51,337

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—362 **10 Claims**



1. A system for fastening together a cable connector plug, a panel, and a cable receptacle, comprising:

a flat panel;

a connector plug located on a front side of said panel and having attachment means parallel to said panel at opposite right and left lateral sides of said plug;

a connector receptacle at a rear of said panel protruding through an aperture in said panel, said connector receptacle affixed to said panel and in mating relationship with said connector plug;

a self-clinching, threaded stud inserted through a hole in said panel from the rear and affixed thereto; and

a headed cap nut threadably engaged with said stud, said nut having a lateral groove along an outside surface which captively retains said attachment means of said connector plug located therein.

5,306,176

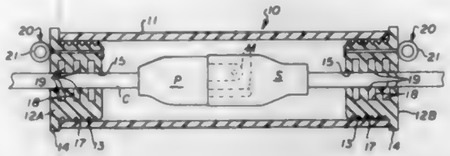
PROTECTOR FOR ELECTRICAL CORD CONNECTIONS

Eugene M. Coffey, P.O. Box 328, Kemah, Tex. 77565

Filed Jan. 26, 1993, Ser. No. 9,584

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—367 **13 Claims**



1. A protector for protecting the plug and socket members of connected electrical cords comprising;

a hollow tubular housing open at each end slidably received over the connected plug and socket members,

a pair of end plug members slidably engaged on each electrical cord rearward the plug and socket members for axial movement relative to the cords and configured to be received and releasably engaged one at each end of said tubular housing to define a hollow chamber therebetween,

the plug and socket members of the connected electrical cords being enclosed in said chamber when said end plugs are engaged on said tubular housing,

the plug and socket members being disconnected from each other upon opposed pulling forces applied axially on the electrical cords, and

said chamber being of sufficient length to allow complete separation of the plug and socket members while enclosed in said chamber.

5,306,177

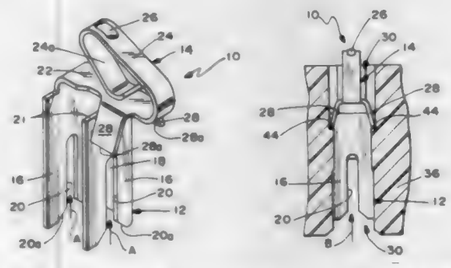
INSULATION DISPLACEMENT TERMINATION SYSTEM FOR INPUT-OUT ELECTRICAL CONNECTOR

Rodger W. Burké, Lisle; Paul A. Reisdorf, LaGrange, and Stephen A. Sampson, Downers Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 9, 1993, Ser. No. 15,704

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—395 **5 Claims**



1. In an insulation displacement termination system for an input-output electrical connector which includes a dielectric housing having a top face and a bottom face with a terminal-receiving passage therebetween, at least one terminal including an insulation displacement section generally at the bottom face of the housing for termination to an insulated electrical conductor through a lower mouth of the passage in the bottom face of the housing and a contact section projecting through an open upper end of the passage generally in the top face of the housing for engaging a complementary mating electrical component, wherein the improvement comprises the terminal being configured for insertion into the terminal-receiving passage through the lower mouth thereof and including complementary interengaging abutment means between the insulation displacement section of the terminal and the housing within the passage to define a stop-limit position of the terminal and to provide support for the insulation displacement section during termination to the insulated electrical conductor, and complementary interengaging latch means between the contact section of the terminal and the housing within the passage for holding the terminal in the passage,

wherein said complementary interengaging latch means include at least one spring tab on the contact section for camming into a snap-latched position behind a latch shoulder of the housing, and

wherein the terminal is fabricated of stamped and formed sheet metal material, said contact section of the terminal comprises a base portion extending transversely of the passage and a reverse-bend spring contact portion projecting through the open upper end of the passage, and said at least one spring tab is integral with said base portion.

5,306,178

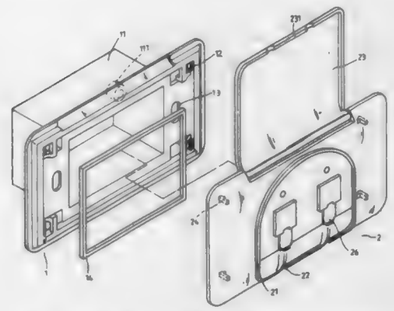
PHONE JACK BOX

Min Huang, No. 38, Lane 21, Section 2, Chin Hwa Road, Tainan, Taiwan

Filed Jul. 23, 1993, Ser. No. 95,009

Int. Cl.[5] H01R *13/52*

U.S. Cl. 439—536 **1 Claim**



1. A phone jack box for securement to an electrical wiring box, comprising:

at least one telephone receptacle;

a housing, said housing having a frontal frame portion and an enclosed portion extending from a rear surface of said frontal frame portion, said enclosed portion defining a cavity therein, said cavity being closed at a rear end thereof and in open communication with a respective aperture formed through said frontal frame portion for receipt of at least a portion of said receptacle therein, said enclosed portion having a wire access opening formed through one wall thereof, said frontal frame having a plurality of through openings formed therethrough, at least two of said plurality of through openings being disposed on opposing sides of said aperture and in alignment with respective openings in said electrical wiring box for said securement thereto with a respective pair of threaded fasteners;

a wall plate member secured to said frontal frame portion of said housing, said wall plate member having four studs extending from a rear surface thereof for clampingly engaging said frontal frame portion through a respective four of said plurality of through openings formed in said frontal frame portion, said receptacle being coupled to said wall plate member and accessible through a respective aperture formed through said wall plate member, said wall plate member having a displaceable closure for said receptacle access aperture disposed on a front surface thereof, said wall plate member having an elongated rib protruding from said front surface thereof and substantially circumscribing said receptacle access aperture;

a cover member hingedly coupled to said front surface of said wall plate member, said cover member having a lip portion extending about a perimeter edge thereof for releasable engagement with said elongated rib; and,

a gasket member disposed between said frontal frame portion of said housing and said rear surface of said wall plate member for providing a moisture and dust seal thereat.

5,306,179

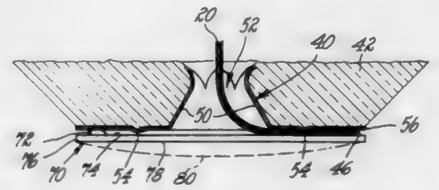
LAMP BASE AND METHOD OF FORMING SAME

Nicholas E. Korenowski, Newbury, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 9, 1993, Ser. No. 44,673

Int. Cl.[5] H01J *9/36*

U.S. Cl. 439—615 **20 Claims**



1. A method of forming a base of an electrical lamp comprising the steps of:

providing an annular base eyelet adapted to be secured to a glass insulation of said lamp;

forming a protrusion in said eyelet to extend from one face thereof;

advancing a lead wire through said eyelet and deforming said lead wire over said protrusion;

providing a contact in facing relation with said eyelet and receiving said lead wire therebetween; and

fusion bonding said contact and said eyelet together.

5,306,180

ELECTRICAL CONNECTOR PROVIDED WITH AN ELECTRICAL INTERCONNECTION BETWEEN RESPECTIVE PORTIONS OF ITS CONTACTS

Alain Buhr, Sucy-En-Brie, France, assignor to Framatome Connectors International, Paris la Defense, France

Filed Feb. 25, 1993, Ser. No. 22,538

Claims priority, application France, Feb. 27, 1992, 92 02301

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **8 Claims**

1. An electrical connector including a plurality of contacts (**6**) held in respective housings (**5**) in an insulating body (**4**) received in a connector box (**1**), interconnection means being provided to electrically connect together respective lengths (**7**) of said contacts (**6**) that are electrically insulated from the respective bodies of the contacts,

wherein said interconnection means comprise:

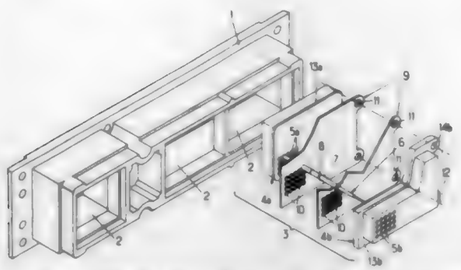
contact rings (**8**) surrounding respective ones of said contact lengths (**7**) and each constituted of an elastically-deformable electrically-conductive material, each of said rings (**8**) being wound helically and occupying at least half a winding turn around the corresponding length and clamping resiliently thereto;

two rigid plates (**9**), at least one of which is made of an electrically conductive material, both plates being pierced

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by a multiplicity of holes (10) through which the contacts (6) of the connector can slide freely, said plates (9) being disposed on either side of the contact rings (8); and

clamping means (11, 12) for clamping the two plates (9) towards each other and resiliently compressing the contact rings (8) in the longitudinal direction of the contacts;



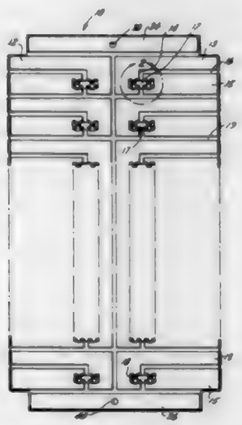
whereby electrical interconnection is established between each of said contact lengths and each conducting rigid plate via said rings, and whereby each contact may be individually dismantled without it being necessary to involve the other contacts.

5,306,181

PLANER FUSE PANEL

Wayne G. Monie, Scottsdale; Scott J. Raffles, Queen Creek; Benjamin L. Richie, Jr., and Joseph V. Woodley, both of Scottsdale, all of Ariz., assignors to Rogers Corporation, Rogers, Conn.

Filed Mar. 1, 1993, Ser. No. 25,043
Int. Cl.[5] H01R *33/95*
U.S. Cl. 439—621 **12 Claims**



1. A fuse retainer comprising:

planar resilient metal sheet means having a plurality of discrete, spaced planar circuits formed therein and electrically insulated from one another, each circuit comprising a first element having a first shape and a second element having a second shape, said first element being spaced from said second element by an insulative gap;

a space formed through each of said circuits and bridging said first element, said second element and said gap;

first bent resilient tab means extending from said first element and into said space;

second resilient bent tab means extending from said second element into said space, said first and second bent tab means cooperating to frictionally engage and retain a blade from a fuse or the like;

first electrical connector means extending from said first element outwardly of said planar sheet means;

second electrical connector means extending from said second element outwardly of said planar sheet means; and

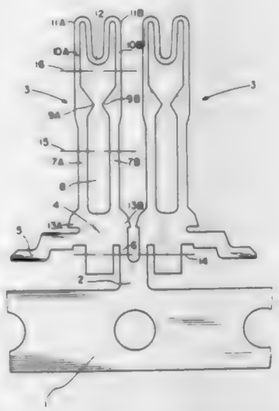
a dielectric protective layer surrounding said planar sheet means with the exception of at least said (1) space, (2) at least a portion of said first and second bent tab means and (3) said first and second electrical connector means.

5,306,182

ELECTRIC CONNECTOR TERMINAL

Minoru Fukushima, Yokohama, and Shinichi Aihara, Atsugi, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 26, 1993, Ser. No. 23,291
Claims priority, application Japan, Mar. 2, 1992, 4-80508
Int. Cl.[5] H01R *13/11*
U.S. Cl. 439—857 **1 Claim**



1. A terminal stamped from a sheet of metal adapted to connect a male pin with at least two opposed flat surfaces to a printed circuit board comprising:

a base having printed circuit board mounting means;

a pair of spaced apart elongated cantilevered beams integrally formed with and extending from said base;

each beam having at least one pin contacting a portion formed in an edge thereof pointing toward one another in a direction parallel to the sheet of metal;

said pair of beams bent to form three sections where each section being in a different plane and each plane being parallel to each other;

a first said section extending from said base in a first plane,

a second section extending from said first section in a second plane spaced from said first plane and having said pin contacting portions, said second section defining the longitudinal axis of the terminal; and

a third said section extending from said second section in a third plane spaced between said first and second planes, said third section including a resilient beam support member extending between and mechanically interconnecting the forward, free ends of said pair of beams;

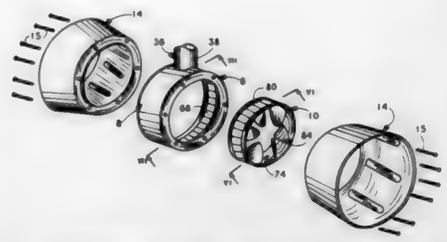
whereby the pin contacting portions of said pair of beams in said second section are positioned to slidably receive and electrically engage said flat surfaces of said male pin terminal which is inserted in either direction along the longitudinal axis of the terminal.

5,306,183

PROPULSION SYSTEMS FOR SUBMARINE VESSELS

John K. Holt, and Gregory C. Kennedy, both of Ft. Pierce, Fla., assignors to Harbor Branch Oceanographic Institute Inc., Ft. Pierce, Fla.

Filed Feb. 25, 1993, Ser. No. 22,304
Int. Cl.[5] B60L *11/02*
U.S. Cl. 440—6 **9 Claims**



1. A propulsion system for a submarine vessel comprising:

a thruster including a magnetic flux generating stator, a shaftless propellant rotor, bearing means and nozzle means,

conductor means to supply D.C. electrical current to said thruster from a battery electric supply source,

controller means to regulate said electrical current and

mounting means to attach said thruster to said vessel, said stator comprising:

a pair of spaced apart, ring-like side plates each defined by a first outer circular periphery of diameter D1, an outer face, an inner face and a central circular opening through said outer and inner faces defined by a first inner circular periphery of diameter D2 smaller than D1,

a stator ring of width W1 defined by a second outer circular periphery of diameter D3, a second inner circular periphery of diameter D4 smaller than D3 but larger than D2 and a pair of first side edges, said stator ring being positioned between and fixed to said side plates and,

a plurality of similar pole pieces of width W2 less than W1 made of magnetizable material positioned along a circular locus of diameter D5 smaller than D4 but larger than D2, said pole pieces being substantially centered between said first side edges,

each pole piece being associated with windings of a plurality of separate conductive wires each insulated from each other with said pole pieces and windings being potted in plastic forming a ring-like structure inside said stator ring, said wires being electrically connected to said conductor means,

said rotor comprising:

a propeller ring of width W2 defined by a third outer circular periphery of diameter D6 smaller than D5, a third inner circular periphery of diameter D2 and a pair of second side edges having thickness T1 equal to D6 minus D2,

a circular channel in said propeller ring extending through said third outer circular periphery to a depth less than T1, said channel being substantially centered between said second side edges,

a plurality of permanent magnets of thickness less than T1 positioned in said channel and fixed therein with potting plastic, and

a plurality of propeller blades fixed to and depending from said third inner circular periphery, and

said bearing means comprising:

first semi-circular grooves in said inner face of said side plates juxtaposed to said first inner circular periphery of said stator,

second semi-circular grooves in said second side edges of said rotor, and

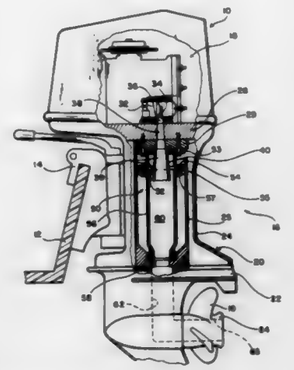
a plurality of ball bearings captured between said first and second grooves.

5,306,184

OUTBOARD ENGINE EXHAUST SYSTEM

Manabu Nakayama, Hamamatsu-Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 23, 1992, Ser. No. 917,236
Claims priority, application Japan, Jul. 24, 1991, 3-207436
Int. Cl.[5] B63H *21/00*
U.S. Cl. 440—89 **16 Claims**



1. In an exhaust system for an outboard engine propulsion unit including an engine, a generally vertically extending muffler support member disposed below the engine, and a sound attenuation muffler mounted generally vertically in the muffler support member and arranged to receive engine exhaust gases from an exhaust passage that extends into the muffler, the improvement comprising:

said muffler including at least two sections longitudinally joined together with a single resilient joint connection therebetween such that one of said at least two sections extends the longitudinal length of the other of said at least two sections, and wherein a first of said sections is longer in length than a second of said sections and said single resilient joint connection further engages said muffler support member.

5,306,185

CATALYTIC ELEMENTS FOR MARINE PROPULSION DEVICE

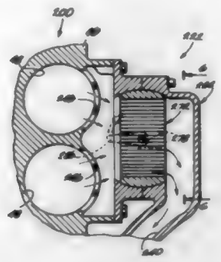
George G. Lassanske, Nashotah, Wis.; Edgar Rose, Glencoe, Ill., and Theodore J. Holtermann, Brookfield, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 822,972, Jan. 21, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 20,905
Int. Cl.[5] F01N *3/28*
U.S. Cl. 440—89 **20 Claims**

1. A marine propulsion device comprising a propulsion unit including a lower unit supporting a propeller shaft, and a powerhead located above said lower unit and including an engine driving said propeller shaft and including an exhaust port, a housing including an exhaust gas inlet communicating with said exhaust port and an exhaust gas outlet, an element which comprises catalytic material and which is movably supported in said housing about a pivot extending transversely to the direction of flow of exhaust gas through said element for

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reorientation from a first orientation in said housing to a second orientation in said housing different from the first orientation, and means for reorienting said element from the first orientation to the second orientation.



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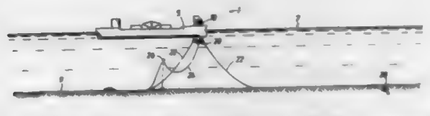
DISCONNECTABLE MOORING SYSTEM

L. Terry Boatman, Katy, Tex., assignor to Sofec, Inc., Houston, Tex.

Division of Ser. No. 767,026, Sep. 27, 1991. This application Mar. 5, 1993, Ser. No. 26,750

Int. Cl.[5] B63B *21/52*

U.S. Cl. 441—4 **7 Claims**



1. A radial bearing arrangement for radially supporting a substantially vertically aligned turret rotatably secured to a vessel comprising

a turret support ring secured to said vessel and having an inner diameter sized to accept an outer diameter of said turret placed within said ring, said ring having a ring axis,

a plurality of radial bearing assemblies secured about said ring each of which engage an outer surface of said turret, each of said radial bearing assemblies including,

bearing means secured to said turret support ring including a bushing having an inwardly curved inner surface, said inner surface having a radius of curvature substantially the same as a radius of curvature of an outwardly facing cylindrical surface of said turret, said bearing means for automatically adjusting its orientation with respect to said turret support ring to maintain substantially constant engagement of said inner surface of said bushing against said cylindrical surface of said turret when said turret axis is not parallel with said ring axis and when said outer surface of said cylindrical surface is out-of-round or small clearances exist, wherein said bearing means includes

a support member fixed to said turret support ring and oriented along a radius of said turret ring,

a support block carried by said support member, said support block having a seat surface characterized by a partial circular cross section, said seat surface facing inwardly toward the center of said turret support ring,

a bushing block having an outer end connected to said bushing and having an outwardly facing surface characterized by a partial circular cross section, and

carrying means for carrying said bushing block between said outer surface of said turret and said support block wherein said outwardly facing partial circular cross section surface of said bushing block bears against said inwardly facing partial circular cross section seat surface of said support block when said bushing engages said outer surface of said turret, and

whereby said outwardly facing surface of said bushing block may roll a limited amount both horizontally and vertically on said outwardly facing partial circular cross section seat surface of said support block.

5,306,187

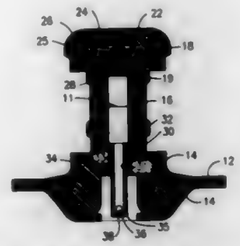
INFLATOR MANIFOLD HAVING PLASTIC PARTS

Glenn H. Mackal, 2586 25th Ave. North, St. Petersburg, Fla. 33713

Filed Mar. 22, 1993, Ser. No. 34,055

Int. Cl.[5] F16K *15/20*

U.S. Cl. 441—41 **5 Claims**



1. An inflator manifold, comprising:

a tubular main body having an outermost end and an innermost end, said innermost end being embedded in thickened side walls of an article to be inflated;

said tubular main body being formed of a plastic material,

said tubular main body defining a bore through which gaseous fluid under pressure flows when said inflator manifold is being used to inflate said article to be inflated;

said bore having a first diameter at its outermost end, a second diameter at its innermost end, said second diameter being greater than said first diameter, and a third diameter between said outermost and innermost ends, said third diameter being less than said first diameter and said third diameter therefore forming a radially inwardly extending annular shoulder where said first diameter changes to said third diameter, said bore thus having a first, a second, and a third section;

an end cap for closing said outermost end of said tubular main body;

a plastic tubular member, having an innermost end and an outermost end, slidably disposed in said bore;

an imperforate plate for closing said innermost end of said plastic tubular member;

a radially outwardly extending base member formed in said outermost end of said plastic tubular member, an annular shoulder being formed in said plastic tubular member by said base member;

at least one aperture formed in the innermost end of said plastic tubular member, in the side wall of said plastic tubular member, just outwardly of said imperforate plate;

a resilient sleeve member, having an outermost end and an innermost end, disposed in ensleeving relation to said plastic tubular member, said outermost end of said resilient sleeve member abutting said annular shoulder formed in said plastic tubular member by said base member, said at least one aperture being covered by said innermost end of said sleeve member when said sleeve member is in repose, and said at least one aperture being uncovered when said sleeve member is not in repose;

said resilient sleeve member providing a seal between said plastic tubular member and said third section of said bore so that gaseous fluid introduced into said outermost end of said bore cannot bypass said plastic tubular member by flowing around it;

whereby when gaseous fluid under pressure flows through said plastic tubular member toward said article to be inflated, said imperforate plate constrains said gaseous fluid to exit said plastic tubular member through said at least one aperture, and wherein the force of said flow separates said resilient sleeve member from said plastic tubular member in the vicinity of said at least one aperture; and

whereby the resiliency of said sleeve member returns said sleeve member to overlying relation to said at least one aperture upon cessation of said flow.

5,306,188

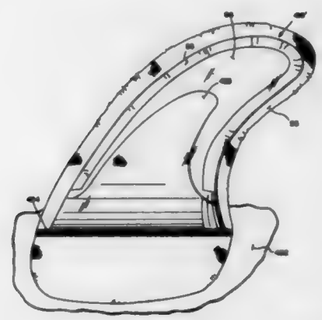
METHOD OF APPLYING A SAFETY/MANEUVER ENHANCING FIN TO A SURFBOARD

David Skedeleski, and Eric Arakawa, both of Aiea, Hi., assignors to Surfco Hawaii, Aiea, Hi.

Continuation-in-part of Ser. No. 788,459, Nov. 6, 1991, Pat. No. 5,273,472. This application May 13, 1993, Ser. No. 60,649

Int. Cl.[5] A63C *15/06*

U.S. Cl. 441—79 **22 Claims**



1. A surfboard fin intermediate, used to make a final surfboard, comprising:

a rigid body element having a leading edge, a base, and a trailing edge;

a flexible material covering disposed on said leading and trailing edges of said rigid body element, spaced from said base, said flexible material being soft enough to minimize injury to a person impacted by a leading or trailing edge of said fin, and being flexible enough to be deflected by water pressure during surfing to provide a rudder, anticavitation, action; and

a protective material having protective properties sufficient to protect the flexible material from damage during manufacturing processes, including sanding, readily removably secured to said flexible material and a small part of said body element to substantially completely cover said flexible material to protect it during manufacture of a surfboard with surfboard fin attached thereto.

5,306,189

CATHODE IMPREGNATED BY AN ELECTRON EMISSIVE SUBSTANCE COMPRISING (PBAO.QCAO).NBAA1204, WHERE P>1, Q>0, N>1

Toshikazu Sugimura, and Maki Narita, both of Shiga, Japan, assignors to Nec Corporation, Japan

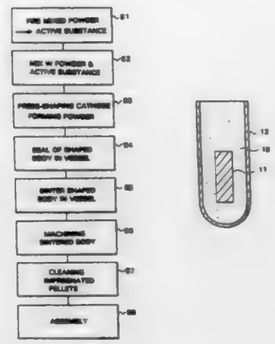
Filed Sep. 18, 1992, Ser. No. 947,413

Claims priority, application Japan, Sep. 18, 1991, 3-237736

Int. Cl.[5] H01J *9/04*

U.S. Cl. 445—50 **28 Claims**

1. A method of manufacturing an impregnated cathode comprising the steps of mixing metal powder of a high melting point and a heat resistive property and an electron emissive substance in a dry state into cathode forming powder, press-shaping said cathode forming powder into a shaped body, sealing said shaped body in a reaction vessel to provide a sealed vessel, subjecting the shaped body in said sealed vessel to a hot isostatic press treatment to change said shaped body to a sintered body of said cathode forming powder by keeping said sealed vessel at a substantially constant final temperature which is not lowered than 900° C. and is not higher than 1400° C., and machining said sintered body into said impregnated cathode, wherein said electron emissive substance comprises a barium aluminate compound represented by a chemical formula of:



$$(pBaO.qCaO).nBaAl_2O_4,$$

where p represents an integer which is not less than one, q represents an integer which is not less than zero, n represents an integer which is not less than one and which compound does not react with said high melting point metal powder during said hot isostatic press treatment.

5,306,190

FORMING PROCESS FOR A SHEET OF PERFORATED METAL AND PROCESS IMPLEMENTATION DEVICE

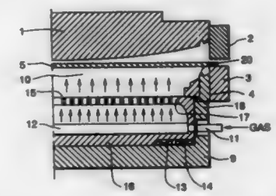
Paolo Spina, Ferentino; Carlo L. Fonda, Anagni; Marco Visconti, Rome, all of Italy, and Eric M. Jego, Gouvernes, France, assignors to Videocolor SpA, Anagni, Italy

Filed Jul. 9, 1992, Ser. No. 910,796

Claims priority, application Italy, Oct. 23, 1991, M191A002807

Int. Cl.[5] H01J *9/14*

U.S. Cl. 445—68 **7 Claims**



1. A device for forming a sheet of perforated metal comprising clamping means, a punch and a counter punch, said counter punch being within a shaping chamber having a horizontal bottom part, said shaping chamber being supplied with pressurized hot air to heat said sheet of perforated metal and said device to a forming temperature of said sheet of perforated metal, wherein said shaping chamber includes a hot air distribution system between said horizontal bottom part of said shaping chamber and a rigidity plate which divides said shaping chamber into two volumes.

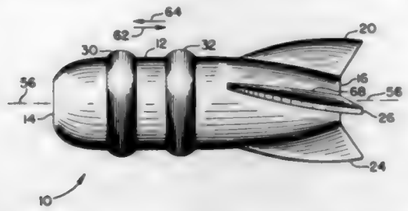
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,191

CYLINDRICAL AERODYNAMIC TOY WITH BALLAST RINGS

Charles B. Phillips, 180 West End Avenue (18-L), New York, N.Y. 10023, and Ronald A. Wiecek, 26430 127 St. SE., Monroe, Wash. 98272

Filed Apr. 19, 1993, Ser. No. 47,930
Int. Cl.[5] A63H *27/00*; A63B *65/00*
U.S. Cl. 446—61 9 Claims



1. A cylindrical aerodynamic toy with ballast rings comprising

a body member having a front and a rear end, an inner cylindrical surface in open communication with said front and rear end, an outer convexly curved surface coaxial with said inner cylindrical surface and said outer surface lying between said front end and said rear end and smoothly merging with said front end and

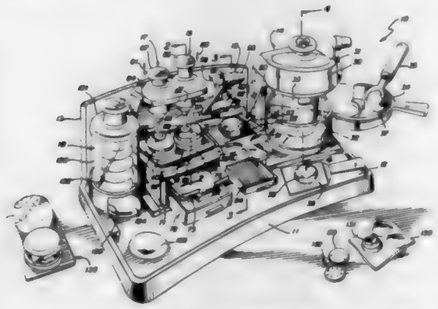
a plurality of like wings spaced circumferentially from each other and extending toward said front end from said rear end.

5,306,192

SIMULATED TOY HAMBURGER MAKER

Martin J. Caveza, Redondo Beach; Caleb S. Chung, Van Nuys; John N. Handy, Long Beach, and Jim I. Tucker, Manhattan Beach, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Feb. 3, 1993, Ser. No. 12,716
Int. Cl.[5] A63H *33/30*
U.S. Cl. 446—71 14 Claims



1. A simulated toy hamburger maker for use in combination with a malleable food mixture and a plurality of generally diskshaped food articles, said simulated toy hamburger maker comprising:

mixing means for receiving the constituents of said malleable food mixture and for forming a generally uniform mixture thereof;

noncoating simulated cooking means for receiving a quantity of said generally uniform mixture and for forming a disk-like patty thereof; and

condiment dispensing means for receiving an edible extrudible food material and for depositing a quantity thereof upon one of said disk-like patties,

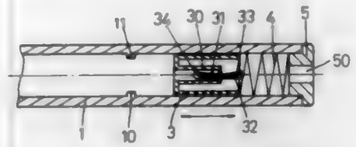
said disk-like patty and said deposited extrudible food material being combined with a pair of said disk-shaped food articles to form a simulated hamburger.

5,306,193

TOY DOUBLE CLUB WITH WHISTLES

Chia-Fa Yang, 100-4, Chung-Cheng Rd., Jeng-Te Shiang, Tainan Shien, Taiwan

Filed Mar. 29, 1993, Ser. No. 38,870
Int. Cl.[5] A63H *5/00, 33/30*
U.S. Cl. 446—215 2 Claims



1. A toy nunchuck with whistles comprising:

two elongated tubular bodies of the same diameter and length with a chain connecting said two tubular bodies, wherein

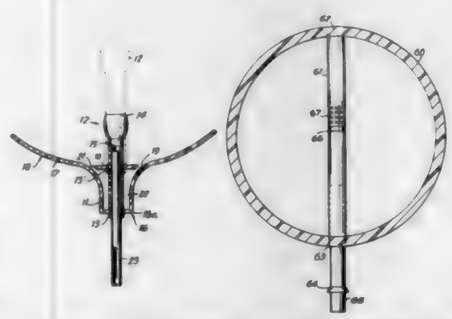
each said tubular body having first and second ends, said body has a whistle contained in an inner cavity, said cavity being defined at a said first end by a stopper with a central hole capping said first end of the tubular bodies, the cavity being defined at a second end by opposing projections on the interior of the tubular bodies, the cavity including a coil spring that urges the whistle toward said second end of the bodies, so that the whistle moves between the two projections and the stopper, the whistle moving toward the stopper by centrifugal force generated by swinging the tubular bodies, and the whistle moving toward the projections when the centrifugal force is decreased so that the urging force of the coil spring overcomes said centrifugal force, so that with the intermittent application of centrifugal force caused by a user swinging the toy nunchuck with a high velocity, the whistle slides back and forth in the cavity, creating a whistling sound due to air flowing through the whistles.

5,306,194

INFLATABLE EDGE HOLDER ASSEMBLY

Marc I. Epstein, 1172 Park Ave., New York, N.Y. 10128

Filed Sep. 3, 1991, Ser. No. 753,829
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—224 17 Claims



1. An inflatable edge holder assembly for an inflatable body adapted to be filled with an inflation medium, comprising:

a plurality of adjoined sealable panels having first seal means defining an inflation port formed therein;

means defining an inflation conduit for communicating the inflation medium from said inflation port to the interior of said inflatable body;

second seal means spaced from said first seal means and traversing without closing said inflation conduit and bonding together at least predetermined ones of said sealable panels forming said inflatable body for defining pressure chamber means expandable substantially to surround said inflation conduit between said first and second seal means; and

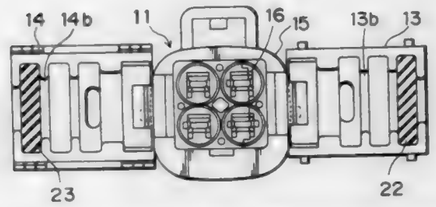
a holder element releasably insertable within said inflation conduit whereby the pressure of said inflation medium within said pressure chamber means when said inflatable body is filled depressed sidewalls defining said inflation conduit against said holder element frictionally to secure said holder within said inflation conduit along its length, said pressure chamber means thereby providing sidewall support to hold the inflatable body rigidly relative to said holder element.

5,306,195

WATER-PROOF CONNECTOR

Hiroyuki Hayashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Dec. 11, 1992, Ser. No. 989,132
Claims priority, application Japan, Dec. 21, 1991, 3-105577
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—587 2 Claims



1. A water-proof connector comprising a main body having a terminal accommodating chamber provided therein, a pair of covers integrally connected on both respective sides of a rear portion of the main body by respective hinges for movement between an open condition and a closed condition, said rear portion being an insertion side for an electric wire with a terminal connected thereto, a concave portion on each of said pair of covers for forming an electric wire through opening, wherein in said closed condition, the respective concave portions mutually become less spaced apart from each other as they converge towards respective tip end portions of the pair of covers, a rubber sealing material mounted in said respective concave portions on an inner face of each cover to contact the electric wire near the tip end portions, and an engaging projection for locking said pair of covers in the closed condition.

5,306,196

ELECTRIC CIRCUIT BOARD UNIT AND ELECTRIC CONNECTOR AND USE THEREIN

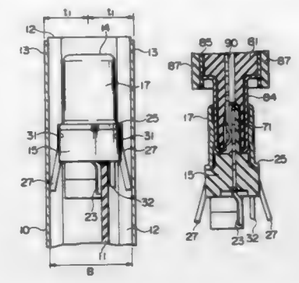
Osamu Hashiguchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 28, 1993, Ser. No. 10,658
Claims priority, application Japan, Jan. 30, 1992, 4-2973[U]; Aug. 18, 1992, 4-57965[U]
Int. Cl.[5] H05K *9/00*
U.S. Cl. 439—607 11 Claims

1. An electric connector for use in an electric circuit board unit including a frame, an electric circuit board having terminal pads and supported by said frame, electroconductive plates fixedly mounted on said frame to face the opposite surfaces of said electric circuit board with a gap left between said electric circuit board and each of said electroconductive plates, and said electric connector attached to said frame to connect said electric circuit board to an external circuit, said electric connector comprising:

an insulator to be fixedly mounted on said frame;

a plurality of electroconductive contacts fixedly mounted on said insulator for connection with electroconductive mating contacts of a mating connector, each of said electroconductive contacts having a terminal portion to be connected to a corresponding one of said terminal pads;



an electroconductive shell fixedly mounted on said insulator and isolated from said contacts; and

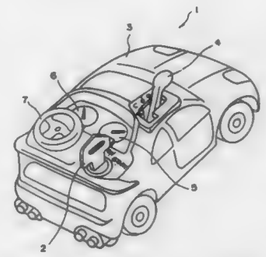
connecting means connected to said electroconductive shell and extending outwardly of said insulator, said connecting means being for connecting said electroconductive shell with said electroconductive plates when said electric connector is mounted on said frame of said electric circuit board unit.

5,306,197

KEY ACTION, MOVEABLE TOY

Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Company, Limited, Tokyo, Japan

Filed Aug. 28, 1991, Ser. No. 751,055
Claims priority, application Japan, Sep. 10, 1990, 2-239357
Int. Cl.[5] A63H *5/00, 17/00, 29/24*
U.S. Cl. 446—409 2 Claims



1. A key action, movable toy having a body, comprising:

power means for moving the toy and for keeping the toy stationary

vibrating means for bouncing the body of the toy up and down;

means for generating an engine starting sound;

means for generating an engine running sound;

key switch means, operatively connected to said means for generating an engine starting sound and said means for generating an engine running sound, having an off position, a starting position and an on position,

said means for generating an engine starting sound generating the engine starting sound when said key switch means is in the starting position,

said means for generating an engine running sound generating the engine running sound when said key switch means

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is in the on position, and ceasing to generate the engine running sound when said key switch means returns to the off position,

said power means operative to move the toy when said key switch means is in the on position, and

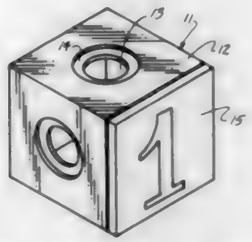
said vibrating means operative to vibrate the toy body up and down when the toy is stationary and said key switch means is in the on position.

5,306,198

TOY BUILDING BLOCK ASSEMBLY

Stanley Forman, 365 Geneva St., Apt. 307, St. Catharines, Ontario, Canada L2N 5S7

Filed May 24, 1993, Ser. No. 65,374
Int. Cl.[5] A63H *33/06*
U.S. Cl. 446—120 **3 Claims**



1. A toy building block assembly, comprising,

a plurality of block members, wherein at least one of said block members includes a hollow cubicle configuration having planar block walls, wherein each of said block walls is formed of a predetermined configuration, and each of the block walls includes a central wall annular opening, and said central wall annular opening including an annular surrounding flange recessed below said planar block wall a predetermined thickness, and

at least one covering plate arranged for mounting to said planar block wall, and the covering plate having a plate configuration equal to said predetermined configuration, said covering plate including a front wall having a predetermined configurational theme imparted thereon, and the covering plate having a plate rear wall having a rigid annular ring, including a resilient projection, with the annular ring and the resilient projection concentrically mounted relative to the rear wall and medially of the rear wall, and the resilient projection arranged for reception within the central wall annular opening, and the annular ring having a ring thickness equal to said predetermined thickness arranged for complementary mounting onto said annular surrounding flange.

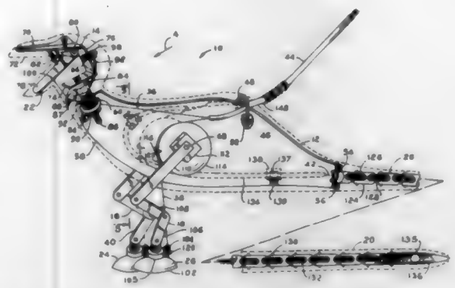
5,306,199

MANUALLY ACTUATED TOY DINOSAUR STRUCTURE AND METHOD

Salvatore Locricchio, 4559 Essex Ct., Sterling Hts., Mich. 48310

Filed Feb. 8, 1989, Ser. No. 307,540
Int. Cl.[5] A63H *7/00*
U.S. Cl. 446—177 **7 Claims**

1. A manually actuable toy dinosaur mechanical device comprising a plurality of separately movable parts, at least some of which movable parts are legs of the dinosaur, which legs have feet and ankle portions, which feet and ankle portions are suction cups, means for moving each dinosaur leg portion, a cable control including selectively manually actuable triggers, a single laterally flexible cable tube which is substantially rigid longitudinally, and a plurality of separate control cables including one cable passing from each of the movable parts of the device through the cable tube to a specific trigger for producing movement of the parts on actuation of the triggers, wherein the means for moving each dinosaur leg portion comprises means for first breaking the suction on the associated suction cup, and then means for rotating the leg portion on selective tensioning of the control cables, and bias means for subsequently returning the leg portion to its initial position on relaxing of the one control cable, and wherein the control cable for each dinosaur leg portion extends from a



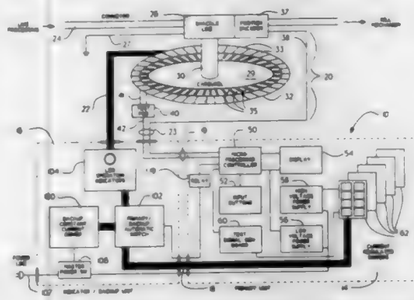
specific trigger structure to which one end of the control cable is attached, through the flexible cable tube to the means for first breaking the suction on the associated suction cup to which the other end of the control cable is attached, through the means for rotating the leg portion with which an intermediate portion of the control cable is operably associated.

5,306,200

CURRENT REGULATED ELECTRONIC STUNNING APPARATUS

George J. Ripol; Samuel C. Yakulis, both of Manassas; Forrest K. Smith, Nokesville; George K. Woodworth, Gainesville, and Craig D. Peterson, Woodbridge, all of Va., assignors to Geoarator Corporation, Manassas, Va.

Filed Jan. 15, 1993, Ser. No. 4,017
Int. Cl.[5] A22B *3/08*
U.S. Cl. 452—58 **17 Claims**



1. An apparatus for stunning poultry, said apparatus comprising:

conveyor means for suspending the poultry, said conveyor means moving along a predetermined path;

a compartmentalized basin means defining individual compartments for a conducting liquid, said basin means positioned below a portion of said conveyor means and moving at the same speed as said conveyor means;

means for sensing the position of each of said compartments relative to a reference point; and

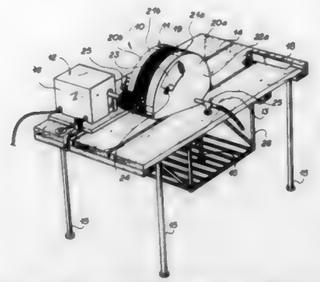
means, responsive to said means for sensing, for impressing a voltage across said conveyor means and each of said individual compartments, said voltages being a function of said position of each of said compartments.

5,306,201

FISH SCALER AND METHOD THEREOF

H. K. Holyoak, P.O. Box 449, Alapala, Ga. 31622

Filed Oct. 2, 1992, Ser. No. 956,648
Int. Cl.[5] A22C *25/02*
U.S. Cl. 452—99 **24 Claims**



1. A fish scaler for efficiently scaling fish, comprising:

a barrel for housing fish, said barrel having a cylindrical side wall provided with scraping edges on its interior surface, said scraping edges adapted to scrape sides of said fish during rotation of said barrel; said barrel also having opposed end walls, at least one of said walls being inclined for directing said fish towards the central portion of said barrel;

rotation means for rotating said barrel; and

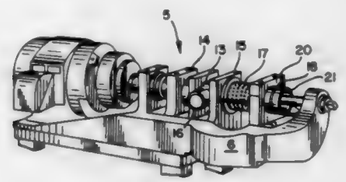
a flipper member, said flipper member adapted to progressively engage and flip fish during rotation of said barrel for tumbling said fish within said barrel.

5,306,202

DEBONING SCREEN

Rick A. Meeker, Davenport, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Aug. 9, 1992, Ser. No. 932,707
Int. Cl.[5] B02C *23/16*
U.S. Cl. 452—138 **5 Claims**



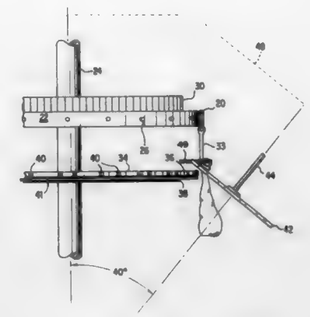
1. In a machine for separating meat from feed material containing sinew-like material and bone particles, in combination, a foraminous cylinder or screen having a rear infeed end and a front discharge end, a conveying auger rotatable within said foraminous cylinder or screen, and valve means at the discharge end of said auger providing an orifice through which compacted sinew-like material and bone particles discharge, the improvement which comprises in the overall area of said cylinder or screen wherein foramina are located said area is substantially free of parallel circumferential band areas which are aligned at 90° to the longitudinal axis of the cylinder and are substantially free of foramina.

5,306,203

AUTOMATIC SADDLE LOADER FOR POULTRY LEG PROCESSOR

Eugene G. Martin, 840 S. Cocalico Rd., Denver, Pa. 17517, and Duane Newswanger, 36 Venture Dr., Holtwood, Pa. 17532

Continuation-in-part of Ser. No. 646,949, Jan. 30, 1991, Pat. No. 5,240,454. This application Dec. 28, 1992, Ser. No. 976,352
Int. Cl.[5] A22C *21/00*; **B65G** *29/00*
U.S. Cl. 452—182 **8 Claims**



1. A device for transferring poultry hocks from a first, linear shackle conveyor, supporting the hocks in a vertical plane, to a gathering wheel having a series of slots in its periphery for receiving the hocks from the shackle conveyor, said device comprising

a rotatable transfer disc supported on an axis oblique to the direction of movement of first conveyor and intersecting said plane below the level of the hocks, the disc being situated so that its uppermost peripheral portion crosses the path of the hocks and lifts them from the shackles as it pushes them laterally away from the conveyor, wherein the disc has a circumferentially spaced array of indentations around its periphery, corresponding to the spacing of the hocks in the shackle conveyor, and further comprising

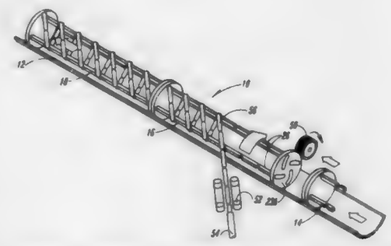
a flexible bar, passing substantially tangent to both the transfer disc and the gathering wheel, for holding the hocks firmly in their respective indentations until they are seated in the slots of the gathering wheel.

5,306,204

STORAGE RACK AND LINKER FOR AN ELONGATED STRAND OF LINKED MEAT PRODUCTS

David W. Smith, West Des Moines, Iowa, and Theo R. Bruinsma, Alphen a/d Rijn, Netherlands, assignors to Townsend Engineering Company, Des Moines, Iowa

Filed Aug. 11, 1992, Ser. No. 928,952
Int. Cl.[5] A22C *11/00, 15/00*
U.S. Cl. 452—186 **2 Claims**



1. A storage rack for an elongated strand of linked meat products, comprising,

a pair of spaced parallel plates,

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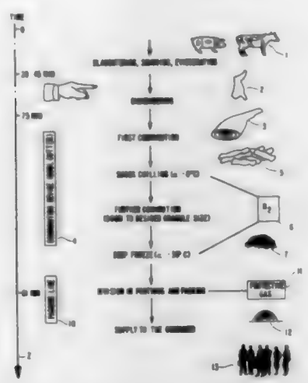
a plurality of elongated parallel bars extending between said plates,
adjustment means on said plates to adjust the parallel positions of said parallel bars,
said adjustment means comprises a pair of plates on each end of said rack,
a first one of said plates having a plurality of radially extending slots therein,
and the other of said plates having a plurality of arcuate slots registering with the radially extending slots in said first plate whereby when said bars are supported by their ends in the registering slots in said pair of plates, the radial distance between each of said bars being adjustable by rotating said plates with respect to each other,
said bars having notches therein adapted to receive the narrow structure between links of an elongated linked strand of meat product,
and a slidably knife structure in said bars with a cutting edge for each of said notches whereby the sliding movement of said knife structure through said notches will sever said link structures in said notches.

5,306,205

METHOD FOR PRODUCING MINCEMEAT

Christian Gilles, Northeim, Fed. Rep. of Germany, assignor to Sudfleisch GmbH, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 939,809
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129416
Int. Cl.[5] A22C *7/00*; B02C *19/12*
U.S. Cl. 452—198 **13 Claims**



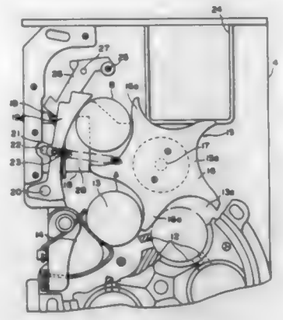
1. A method for the production of mincemeat by the comminution of meat of muscles from a carcass of a slaughtered animal, characterized in that pieces of meat of the freshly slaughtered and dismembered carcass and prior to onset of rigor mortis are subjected to a first comminuting operation in a comminuting apparatus and are shock-chilled down to a temperature of the meat under 0° C. and are then further comminuted until the desired granule size is reached, such working operations being performed directly one after the other, rigor mortis of the pieces of meat being prevented by immediate further processing without the addition of salt or of another chemical.

5,306,206

COIN FEEDING DEVICE

Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,238
Claims priority, application Japan, Jun. 26, 1991, 3-078625[U]
Int. Cl.[5] G07D *9/04*
U.S. Cl. 453—32 **6 Claims**



1. A coin-feeding device comprising:
a base plate having a one end portion and an opposite end portion and adapted to receive a predetermined type of coins on said one end portion,
a scraper means for scraping coins deposited at said one end portion and for delivering said coins to said opposite end portion along a predetermined coin-feeding path,
said scraper means comprising a main rotating body rotatably mounted on said base plate,
an outlet guiding member for guiding the coins towards said scraper means,
said main rotating body having a coin-feeding finger unit or assembly comprising a plurality of spaced fingers extending radially outward from said main rotating body,
said coin-feeding finger unit or assembly being adapted for feeding said coins from said one end portion to said opposite end portion while traveling along said coin-feeding path by means of the rotation of said main rotating body; and
a movable engagement piece disposed along said coin-feeding path and adapted to force successively each one of said coins against said main rotating body along said coin-feeding path.

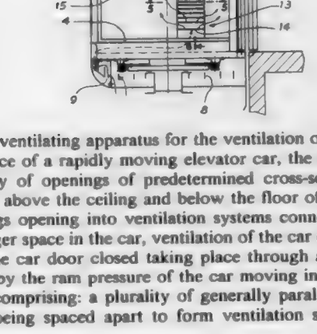
5,306,207

AIR REMOVAL APPARATUS

James K. Courts, 8715 Newfield La., Beaumont, Tex. 77707

Filed Feb. 12, 1993, Ser. No. 17,177
Int. Cl.[5] F24F *7/06*; F16L *3/00*
U.S. Cl. 454—49 **9 Claims**

1. A new and improved wide area air removal apparatus, comprising:
at least one air duct traversing a portion of the wide area, said air duct having a length and at least one sidewall which includes a plurality of apertures arrayed along the length of said air duct, and
means, connected to said plural-aperture-including air duct, for creating a vacuum in said plural-aperture-including air duct, for moving air from the wide area through said apertures and through said air duct to outside said air duct,
further including adjustable hanger assemblies for connecting said plural-aperture-including air duct to a ceiling, and
wherein said adjustable hanger assemblies include:
a first element for connecting to the ceiling, wherein said ceiling connecting element includes a horizontal plate element which includes a plurality of apertures and a first vertically projecting element which includes first threads,
a sleeve element which includes a first threaded portion and a second threaded portion, wherein said first threaded portion is complementary to said first threads on said first vertically projecting element,



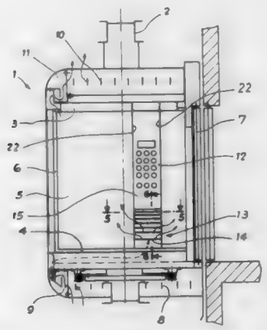
a duct connecting element which includes a hollow cylindrical element for encompassing a portion of said plural-aperture-including air duct and includes a second vertically projecting element which includes second threads, wherein said second threads on said second vertically projecting element are complementary to said second threaded portion on said sleeve element.

5,306,208

APPARATUS FOR THE VENTILATION OF THE PASSENGER SPACE OF RAPIDLY MOVING ELEVATOR CARS

Brigitte Sommerrock; Rolf Günther, both of München, Fed. Rep. of Germany, and Urs Minder, Luzern, Switzerland, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Dec. 4, 1992, Ser. No. 986,142
Claims priority, application Switzerland, Dec. 4, 1991, 03561/91-3
Int. Cl.[5] F24F *13/20*
U.S. Cl. 454—68 **11 Claims**



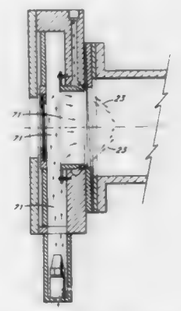
1. A ventilating apparatus for the ventilation of the passenger space of a rapidly moving elevator car, the car having a plurality of openings of predetermined cross-sectional area formed above the ceiling and below the floor of the car, the openings opening into ventilation systems connected with a passenger space in the car, ventilation of the car during travel with the car door closed taking place through air flow produced by the ram pressure of the car moving in the elevator shaft, comprising: a plurality of generally parallel extending strips being spaced apart to form ventilation slots therebetween, said strips for covering a ventilation channel formed in at least one wall of an elevator car, the channel being connected to a ventilation system of the car, and a perforated metal reinforcing plate for protecting against damage to said ventilating apparatus, said plate being perforated by a plurality of apertures aligned with an associated one of said ventilation slots and having a total cross-sectional area at least the same as a cross-sectional area of said associated ventilation slot, said plate being positioned on a rear side of said strips and being connected to said strips for mounting in the ventilation channel.

5,306,209

CONTAMINANT SHIELD FOR VIEWING PORTS

Fred D. Lang, 1662 El Padro, Livermore, Calif. 94550

Filed May 4, 1992, Ser. No. 877,632
Int. Cl.[5] F24F *9/00*
U.S. Cl. 454—192 **9 Claims**



1. A dirt shield for a viewing port of a contaminated environment comprising
a window in said port,
a means for creating a first gas flow between said window and said environment which flows from the region in front of said window toward said environment, and
a means for establishing said window, all internal surfaces of said port disposed between said window and said first gas flow, and all particulate contaminants which enter the space between said window and said first gas flow at neutral electrical potential.

5,306,210

LOUVRE TYPE ROOF STRUCTURES

Dirk V. Z. Smit, P.O. Box 13869, Sinoville, 0129, South Africa

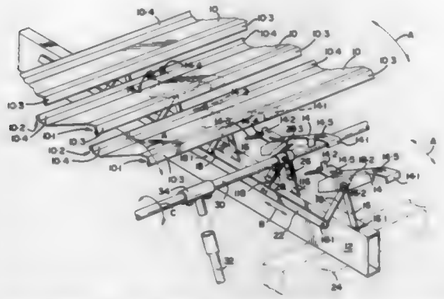
Filed Aug. 12, 1992, Ser. No. 928,789
Claims priority, application South Africa, Aug. 15, 1991, 91/6462
Int. Cl.[5] F24I *7/02*
U.S. Cl. 454—250 **14 Claims**

1. A louvre type roof structure which includes a plurality of parallel slats mounted on carrier beams extending transversely to the slats, in which the slats are mounted on carrier elements which carrier elements are in turn mounted on the carrier beams by means of mounting levers, a pair of mounting levers being provided in respect of each carrier element, one of a pair of mounting levers being a fixed lever and being secured to a carrier beam in a fixed position, and the other one of the pair of mounting levers being a free lever and being displaceable relative to the carrier beam, the fixed lever of a pair further being rotatably attached to a carrier element and the free lever of a pair being fixedly attached to the carrier element, to permit pivotal displacement of the carrier element when the free lever is displaced relative to the carrier beam, the carrier elements further being secured to the slats by means of securing

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means engaging the slats without penetrating said slats and in such a manner that a slat will be located in a fixed planar position relative to the carrier elements to which it is secured, the arrangement being such that pivotal displacement of the carrier elements will bring about pivotal displacement of the slats between a closed position in which the slats are disposed in a roughly coplanar configuration, and an open position in which they are disposed in spaced apart parallel planes.

10. A roof structure according to claim **1**, wherein free edges of the roof structure are finished off by a fascia surround, and wherein a fascia mounting support is provided comprising a



rod mounted in a substantially upright position, the rod carrying at least one deformable snap-fit mounting means on which a profiled fascia panel is mountable, the fascia panel being profiled with turned-back edge formations defining channels within which the mounting means are engageable, and the deformable mounting means comprising loop-shaped mounting formations formed of resilient metal strips formed into angular loops having angled sections and secured on the fascia mounting support, the arrangement being such that the angled sections of the loops snap-fit into the channels formed in the fascia panels, to mount the panels on the fascia support.

5,306,211

ROUNDABOUT WITH TUBULAR GONDOLA

Yves Pasquier, Villa Sainte-Thérèse, Jullouville, France 50610

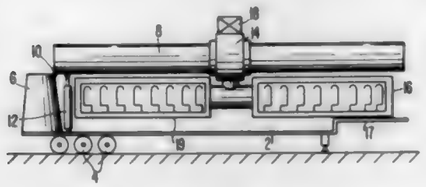
PCT No. PCT/FR91/00214, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO91/13661, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 15, 1991, Ser. No. 773,618

Claims priority, application France, Mar. 16, 1990, 90 03431

Int. Cl.[5] A63G *1/24, 27/00*

U.S. Cl. 472—44 **14 Claims**



1. A roundabout comprising:

a substantially vertical mast (**8**);

means forming a support (**14**) for a gondola mounted to move in a straight line along the mast (**8**);

driving means (**22, 24, 26**) for moving the means forming a support (**14**) along the mast (**8**) between a low position and a high position and;

a gondola (**16**) mounted such that the gondola is mobile with respect to said means forming a support (**14**); and wherein the gondola further comprises:

a hub-shaft pair (**40**) of which one end (**41**) is integral with the means forming a support (**14**) and of which the other end (**49**) is integral with the side surface of a cylindrical drum (**50**), a shaft (**47**) being mounted so as to rotate about a substantially horizontal axis;

driving means (**55, 56, 57**) to rotate the shaft (**47**) about a substantially horizontal axis;

said gondola (**16**) comprising at least one cylindrical part (**58**) housed inside the drum (**50**), and guided in rotation in said drum (**50**) about a substantially vertical axis, and wherein driving means (**62, 64, 66**) are provided to rotate the cylindrical part of the gondola (**16**) in the drum (**50**), whereby the passengers seated in the gondola are subjected to a complete revolution about a substantially vertical axis and to a complete revolution about a substantially horizontal axis.

5,306,212

CHAIN-TURNING SYSTEM

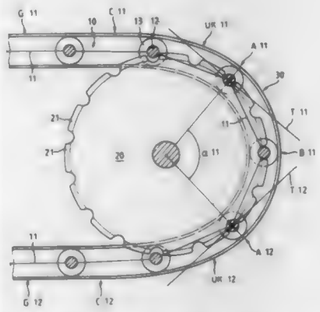
Jürg Eberle, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jan. 8, 1993, Ser. No. 2,182

Claims priority, application Switzerland, Feb. 5, 1992, 00327/92

Int. Cl.[5] F16H *55/00*

U.S. Cl. 474—140 **11 Claims**



1. Chain-turning system for a chain made of a continuous series of links articulated to each other, comprising a turning device that defines the track along which the chain moves around a circular turning arc with the turning radius (R), and chain-guidance devices so made as to provide at least one transition curve which joins up with the turning arc at a first junction point; the turning arc and the transition curve having a common tangent at the first junction point; and the curvature of the transition curve varying along its length so as to ensure that the difference between its radius of curvature and the turning radius (R) decreases continually with its distance from the first junction point.

5,306,213

TOOTHED BELT

Masayoshi Nakajima; Kazutoshi Ishida, both of Kobe, and Satoshi Murakami, Kakogawa, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed May 20, 1992, Ser. No. 886,339

Claims priority, application Japan, May 17, 1991, 3-142374

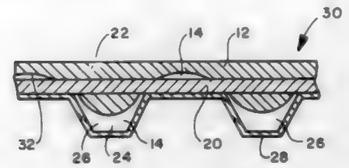
Int. Cl.[5] F16G *1/28*

U.S. Cl. 474—205 **36 Claims**

1. A power transmission belt comprising:

a belt body having an inside surface and an outside surface, said belt body having a compression section and a tension section spaced outside of said compression section,

at least a first part of said tension section being defined by a chlorosulfonated polyethylene rubber composition having a chlorine content of 15 to 30% by weight, and



at least a second part of said compression section being defined by a rubber composition that is different than the rubber composition of said first part.

5,306,214

CHAIN-TYPE POWER TRANSMISSION BELT

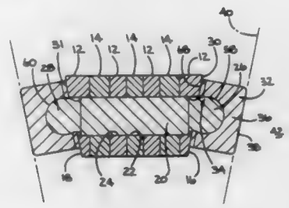
Takashi Masuda, Kobe; Hiromi Michikura, Akashi, and Akira Kawaguchi, Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Sep. 22, 1992, Ser. No. 949,430

Claims priority, application Japan, Sep. 25, 1991, 3-86324

Int. Cl.[5] F16G *5/18*

U.S. Cl. 474—245 **20 Claims**



1. In a power transmission belt of the type having a length, laterally spaced sides and a pin with an end exposed at one of the laterally spaced sides, the improvement wherein a tip member is provided comprising:

a body defining a first surface to be engaged with a cooperating pulley; and

a pin-receiving opening in said body,

said pin-receiving opening defined by a surface of said body,

said body surface comprising a concave portion for guiding pivoting movement of the pin end bearing against the concave surface portion, a tapered inlet portion for guiding the pin end into an operative position within the pin-receiving opening, and a transition portion of a different configuration extending for a finite length between the concave surface portion and tapered inlet portion.

5,306,215

DRIVE DEVICE WITH GEARBOX

Egon Mann, and Helmut Eymüller, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

PCT No. PCT/EP90/00512, § 371 Date Sep. 12, 1991, § 102(e) Date Sep. 12, 1991, PCT Pub. No. WO90/12227, PCT Pub. Date Oct. 18, 1990

Continuation of Ser. No. 761,745, Sep. 12, 1991, abandoned. This PCT application Mar. 31, 1990, Ser. No. 20,172

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911333

Int. Cl.[5] F16H *61/12*

U.S. Cl. 475—83 **13 Claims**

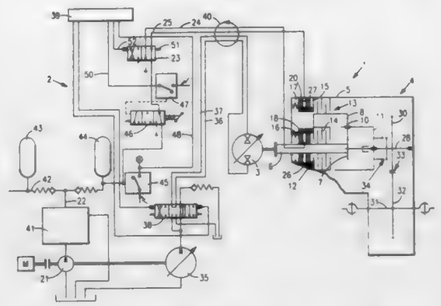
1. A drive device for one of a mobile excavator vehicle, a wheeled loader vehicle and a similar work vehicle, comprising:

a prime mover (**3**) driving a transmission (**4**) designed as power-shiftable planetary transmission having at least first and second shiftable gears;

the first and second shiftable gears of said transmission (**4**) being alternatively engageable and disengageable via first and second friction clutches (**12, 13**);

gear-shift valve means (**23**) connected to supply pressurized oil to said first and second friction clutches (**12, 13**) for controlling engagement and disengagement of said first and second friction clutches (**12, 13**);

said first and said second friction clutches (**12, 13**) being spring-accumulator clutches and being disengaged by oil pressure supplied by at least one oil pump (**21**) via an oil pressure line (**22**) and said gear shift valve means (**23**); and



at least said second friction clutch (**13**), and having a static leakage-oil-free oil supply;

wherein pressure control means (**39, 45, 47**) is provided for sensing the oil pressure in said oil pressure line (**22**) and controlling operation of said gear shift valve means (**23**), and when said pressure control means senses that the oil pressure generated by said at least one oil pump (**21**) falls below a first specific value, said pressure control means causes said gear-shift valve means (**23**) to adjust to a position in which said second friction clutch (**13**) is disengaged by the pressurized oil.

5,306,216

VARIABLE WEIGHT-LOAD GENERATOR

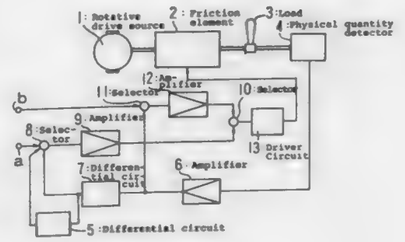
Atsuo Kato, Kasugai, and Hajime Yamada, Mizuno, both of Japan, assignors to Dai-ichi Keisoku Inc., Japan

Filed Apr. 22, 1992, Ser. No. 872,111

Claims priority, application Japan, Dec. 27, 1991, 3-357974

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—1 **6 Claims**



1. An apparatus comprising:

load applying means;

a first drive source

a second drive source;

first clutch means for selectively providing a drive connection between said first drive source and said load applying means in a manner which enables said load applying means to apply a positive load;

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a second clutch means for selectively providing a drive connection between said first drive source and said load applying means in a manner which allows said load applying means to apply a negative load;

sensor means for outputting:

a first signal indicative of a torque exerted by said load applying means, and

a second signal indicative of displacement induced by said load applying means;

first driver circuit operatively associated with said first clutch means for controlling the amount of drive connection which is established between said first drive source and said load applying means;

second driver circuit operatively associated with said second clutch means for controlling the amount of drive connection which is established between said second drive source and said load applying means; and

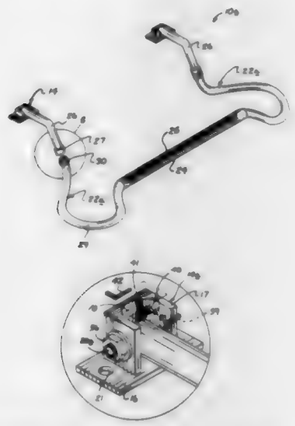
control circuit means responsive to said first and second signals and operatively connected with said first and second driver circuits for selectively engaging said first and second clutch means so that load is selectively applied in positive and negative modes by said load applying means.

5,306,217

SWIMMING POOL BALLET BAR

Monica G. Bracone, 4823 Lansing St. NE, St. Petersburg, Fla. 33703

Filed Feb. 3, 1993, Ser. No. 12,774
Int. Cl.[5] A63B *31/00*
U.S. Cl. 482—55 **1 Claim**



1. A swimming pool ballet bar, comprising,

a plurality of anchor brackets;

each anchor bracket having a base plate;

a U-shaped support boss mounted to the base plate;

a plurality of support legs, with each of said support legs having a first end, each support leg mounted to one of the anchor brackets, with the support legs including a rigid exercise bar extending therebetween spaced from each said first end, with each said first end pivotally mounted within the U-shaped support boss;

each of the support legs include a first leg and a second leg, the first leg having the first end thereon, the first leg including a second end coupling spaced from the first end, and each second leg having a first end coupling arranged for reception within the second end coupling, and each second leg having a second leg second end, and each second leg second end fixedly mounted to the exercise bar;

the second end coupling includes a rotatable socket, the rotatable socket having spaced slots and an annular flange extending between the spaced slots, and the second leg first end coupling having a plurality of projecting spaced lock plates arranged for reception within the spaced slots, whereupon the projection of the lock plates within the spaced slots permits rotation of the second end coupling to position the lock plates onto the annular flange; and

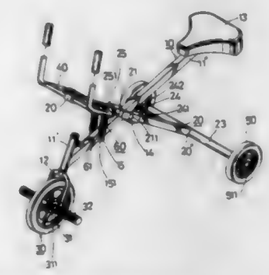
the U-shaped support boss has a boss receiving cavity receiving the first end therein, and each boss receiving cavity including a mounting bar, with the mounting bar pivotally mounting the first leg thereon, the cavity including a cavity interior wall, and the mounting bar having a star lock wheel fixedly mounted thereon oriented between the first leg first end and the cavity interior wall, the star lock wheel having spaced radial projections, with adjacent spaced radial projections having a gap therebetween, with the cavity interior wall including a lock bore arranged for orientation within the gap, and the boss formed of a ferrous material, with the L-shaped magnetic lock rod arranged for reception through the lock bore, and each of the radial projections having a lock lug thereon, with the L-shaped lock rod arranged for simultaneous projections through the lock bore and between one of the lugs and the mounting bar to selectively lock the first leg in a predetermined orientation relative to a respective anchor bracket.

5,306,218

ROWING EXERCISER

Vincent Huang Chen, No. 137, Feng-Nien Rd., Feng-Yuan City, Taichung Hsien, Taiwan

Filed Oct. 15, 1993, Ser. No. 138,155
Int. Cl.[5] A63B *69/06, 22/00*
U.S. Cl. 482—72 **5 Claims**



1. A rowing exerciser comprising:

elongated first and second frame members connected pivotally to one another substantially at intermediate portions thereof, said first frame member including a downward front fork end which is provided with a front wheel assembly and an upward rear end which carries a seat, said second frame member having an upward front end which is provided with a handle member and a downward rear end which carries at least one rear wheel assembly, said front and rear wheel assemblies being single direction rotating wheel assemblies, said handle member being operable in a rowing mode in order to perform up and down movements of said second frame member relative to said first frame member;

a limit member fixed to one of said first and second frame members adjacent to and posterior to a pivot point which is cooperatively defined by said first and second frame members, said limit member having an abutting face to abut against remaining one of said first and second frame members to limit said up and down movements of said second frame member; and

a tension spring connecting said first and second frame members adjacent to and anterior to the pivot point under tension, thereby pulling said upward rear end of said first frame member and said downward rear end of said second

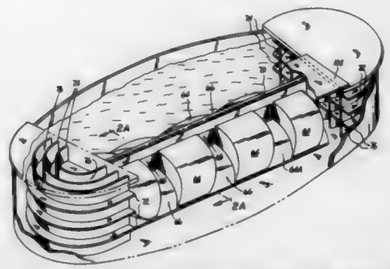
frame member toward one another to permit said abutting face of said limit member to abut against said remaining one of said first and second frame members.

5,306,219

TRAINING MACHINE FOR ROWERS

Frank Solymosi, 255 Violet St., Massapequa Park, N.Y. 11762

Filed Oct. 15, 1992, Ser. No. 961,251
Int. Cl.[5] A63B *69/06*
U.S. Cl. 482—73 **12 Claims**



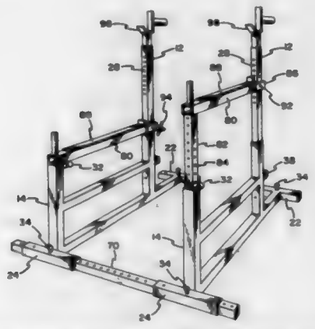
1. An apparatus for training rowers having an oblong tank filled with water and in which the rower manipulates an oar to simulate rowing, the improvement comprising a tank, a rowing simulator, a tank dividing assembly extending longitudinally in said tank to separate said tank into two parallel sections and to cause the flow of water created by the simulated rowing to take a circular path within said tank, said dividing assembly being provided with a plurality of transverse passages intermediate the tank ends for short circuiting at least a portion of the water from one parallel section to the other.

5,306,220

KNOCK-DOWN WEIGHT-LIFTING FRAME AND EXERCISE SYSTEM

David E. Kearney, 3014 Lake Country La., Glencoe, Mo. 63038

Filed Jun. 11, 1992, Ser. No. 897,190
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—94 **22 Claims**



1. A universal-use knock-down weight-lifting frame having vertically and horizontally adjustable members, comprising:

a) a main frame having front and rear spaced opposed ends;

b) a front substantially vertical multifunction upright disposed at said front end of said main frame;

c) means disposed at said front end of said main frame for varying the vertical length of said front multifunction upright;

d) a front substantially horizontal support foot disposed at said front end of said main frame, said front substantially horizontal support foot being configured for carrying substantially vertical forces exerted on said main frame and for engaging a support surface;

e) means disposed at said front end of said main frame for varying the horizontal length of said front support foot;

f) a rear substantially vertical multifunction upright disposed at said rear end of said main frame;

g) means disposed at said rear end of said main frame for varying the vertical length of said rear multifunction upright;

h) a rear substantially horizontal support foot disposed at a lowermost portion of said rear end of said main frame, said rear substantially horizontal support foot being configured for carrying substantially vertical forces exerted on said main frame and for engaging a support surface; and

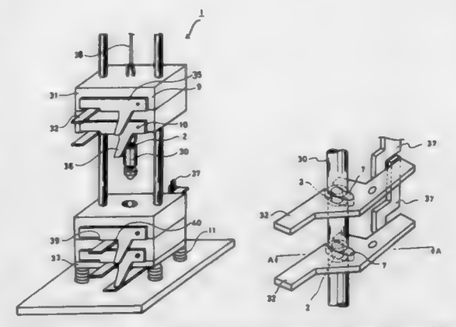
i) means disposed at said rear end of said main frame for varying the horizontal length of said rear support foot.

5,306,221

WEIGHT ADJUSTING DEVICE FOR MUSCLE TRAINING MACHINE

Abe Itaru, 169-1 Takamatsu, Sakaiminato, Tottori, Japan

Filed Dec. 15, 1992, Ser. No. 991,289
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—98 **2 Claims**



1. A weight adjusting device for a muscle training machine, comprising:

a hanger bar;

at least one guiding post placed parallel to said hanger bar;

at least one weight plate having a vertical central aperture for receiving said hanger bar and at least one vertical guiding aperture for receiving said guiding post;

a hanging means for lifting said hanger bar;

at least one latch lever attached to said weight plate for rotation in a horizontal plane between a release position where said latch lever disengages said hanger bar and a latch position where said latch lever engages said hanger bar;

at least one lock lever attached to said weight plate for rotation about a fulcrum in a vertical plane between a lock position where a first shoulder thereof engages said latch lever for locking said latch lever in said latch position and an unlock position where said latch lever is released from said first shoulder toward said release position;

at least one spring means placed between said latch lever and said weight plate so as to urge said latch lever toward said release position;

at least one interlocking arm extending upwardly from a rear portion of said latch lever so as contact at right angles with another latch lever placed above said latch lever;

at least one latch notch formed on a circumference of said hanger bar; and

at least one latch recess formed on said latch lever so as to engage said latch notch on opposite sides thereof when said latch lever is moved towards said latch position against said spring means, wherein said interlocking arm

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has such a configuration that is brought into contact with said another latch lever in an area other than a portion of said another latch lever from which another interlocking arm extends upwardly.

5,306,222

AEROBIC RESISTANCE EXERCISE GARMENT

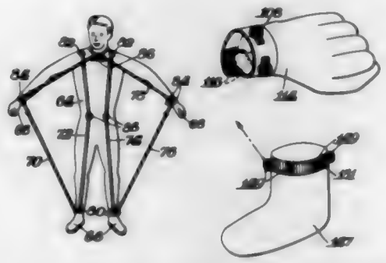
William T. Wilkinson, Severnside Farm, 300 Kyle Rd., Crownsville, Md. 21032-0572

Continuation-in-part of Ser. No. 788,364, Nov. 6, 1991, Pat. No. 5,186,701, Continuation-in-part of Ser. No. 746,900, Aug. 19, 1990, Pat. No. 5,176,600. This application Feb. 16, 1993, Ser. No. 18,023

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] A63B *21/02*

U.S. Cl. 482—124 **18 Claims**



1. An aerobic resistance exercise garment to supplement motion exercises comprising an article of clothing worn on the body of the user, said article of clothing including a body portion, a pair of gloves to be worn on the hands of the user, each of said gloves including a palm portion extending to at least the fingers and including a closed loop wrist portion, a pair of feet portions each of which is to be worn on a foot of the user, said feet portions being socks made of flexible material, a pair of anchor members remote from said feet portions, a plurality of elastic cords, each of said cords having two free ends with an intermediate portion, said plurality of cords being arranged in at least two sets of cords, one of said sets of cords comprising at least one cord having one of its free ends attached to a respective one of said gloves at its said wrist portion and the other of its free ends attached to the other of said gloves at its said wrist portion with said intermediate portion of said cord extending through first guides means on said body portion whereby said cord elastically interconnects said gloves to each other to provide resistance to arm movement of the user, and the second set of said cords comprising two cords with each of said cords being attached at one of its free ends to a respective one of said anchor members and being attached are the other of its free ends to a respective one of said feet portions and with its intermediate portion extending through second guide means on said body portion of said clothing whereby each of said elastic cords of said second set elastically interconnects a respective one of said anchor members with a respective one of said feet portions to provide resistance during relative movement between a respective arm and leg of the user.

5,306,223

ABDOMINAL EXERCISE APPARATUS

Richard J. Martinez, 325 Circle Dr., Algonquin, Ill. 60102

Filed Jan. 25, 1993, Ser. No. 8,149

Int. Cl.[5] A63B *23/04*

U.S. Cl. 482—142 **1 Claim**

1. An abdominal exercise apparatus, comprising,

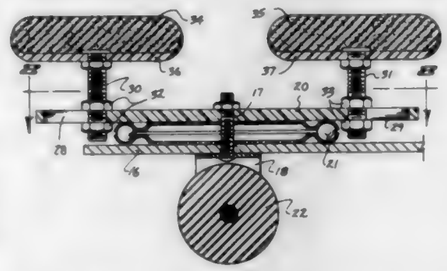
a rigid support plate, the support plate having an outer perimeter and a first handle leg and a second handle leg arranged in a parallel relationship relative to one another and fixedly mounted to the support plate extending beyond the outer perimeter, with a support shaft oriented orthogonally and medially of the support plate and fixedly mounted to the support plate and spaced an equal distance relative to the first handle leg and the second handle leg, with the positioning leg having a positioning leg first end rotatably mounted to the support shaft and a positioning leg second end, a mounting plate fixedly mounted to the positioning leg second end, with the mounting plate and the positioning leg arranged in a parallel relationship relative to one another, and

the mounting plate having an axle orthogonally directed medially of the mounting plate, with a wheel housing mounted to the axle below the mounting plate interposed between the mounting plate and the support plate, and

the wheel housing having a wheel member rotatably mounted to the wheel housing for rotative engagement with the support plate, and

a base plate, the base plate having a roller bearing interposed between the base plate and the axle rotatably mounting the base plate relative to the mounting plate, and

the support shaft includes a threaded lock rod coaxially and threadedly directed into the support shaft, with a first positioning leg bearing interposed between the support shaft and the positioning leg, and a second positioning leg bearing interposed between the positioning leg and a



handle shank, with the handle shank having a handle mounted to the handle shank, and the handle shank rotatably directed onto the threaded lock rod to effect frictional engagement of the first positioning leg bearing and the second positioning leg bearing relative to the support shaft, and

the base plate includes a first slot and a second slot, the first slot and the second slot arranged in a longitudinally aligned relationship on opposed sides of the axle, and a first slot lug and a second slot lug arranged in a parallel relationship relative to one another, with the first slot lug directed through the first slot and the second slot lug directed through the second slot, with first fasteners directed on opposed sides of the base plate and mounted to the first slot lug to adjustably secure the first slot lug relative to the first slot, and second fasteners directed to the second slot lug on opposed sides of the base plate to adjustably secure the second slot relative to the second slot, and a first pad plate fixedly and orthogonally mounted to the first slot lug and a second pad plate mounted to the second slot lug, wherein the first pad plate and the second pad plate are spaced above the base plate, and a first pad mounted to the first pad plate, and a second pad mounted to the second pad plate for cushioned accommodation of an individual's knees upon the first pad plate and the second pad plate.

5,306,224

METHOD AND APPARATUS FOR INTEGRALLY FORMING A CUTTER ON A CARTON BLANK

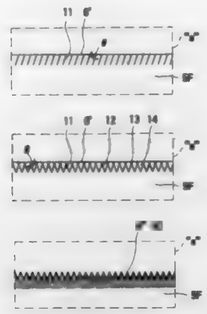
Eitaro Okumura, Kyoto, Japan, assignor to Ayako Okumura, Kyoto, Japan

Division of Ser. No. 643,286, Jan. 22, 1991, Pat. No. 5,204,142. This application Feb. 23, 1993, Ser. No. 21,066

Claims priority, application Japan, Jan. 22, 1990, 2-4473; Mar. 1, 1990, 2-50775

Int. Cl.[5] B31B *1/14, 1/74*

U.S. Cl. 493—56 **5 Claims**



1. An apparatus for integrally forming a cutter on a carton blank comprising:

first cutting means for forming a plurality of first slits on an edge portion of a paperboard at a predetermined angle relative to the edge;

second cutting means for forming a plurality of second slits on said edge portion of the paperboard at a predetermined angle relative to the first slits in such a manner that saw-teeth are formed on the edge;

a bath of a quick drying adhesive including α-cyanoacrylate, in which said edge portion is immersed to impregnate said teeth with the adhesive; and

a transfer means for transferring said edge portion along a predetermined path via said first and second cutting means and said bath.

5,306,225

DECANTER CENTRIFUGE HAVING A DISC-LIKE DIP WEIR WITH A HOLE

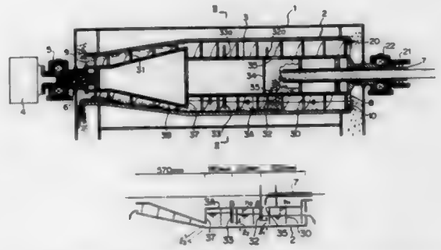
Keiichiro Miyano; Katsunori Nishida, both of Tokyo, and Hiroshi Sano, Kanagawa, all of Japan, assignors to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 797,865, Nov. 26, 1991, abandoned. This application May 17, 1993, Ser. No. 62,030

Claims priority, application Japan, Nov. 27, 1990, 2-323864

Int. Cl.[5] B04B *1/20*

U.S. Cl. 494—53 **10 Claims**



1. A decanter centrifuge to separate solid and liquid components of a slurry, comprising:

an elongate cylindrical shell, provided with a solids discharge port and a clarified liquid discharge port comprising a weir board and being rotatable about a horizontal axis;

a screw conveyor, comprising a cylindrical portion and a conical portion with screw blades fixed to an external surface of the cylindrical portion and extending over an axial span of said cylindrical portion, said screw conveyer being rotatably mounted coaxially within said rotating shell and defining an annular space therebetween, said rotating shell and said screw conveyor being rotatable in the same direction at predetermined different speeds;

a slurry feeding port, formed in a side wall of said cylindrical portion of said conveyor to which said screw blades are fixed to enable a flow of said slurry into the screw conveyor to be separated into solid and liquid components in said annular space;

at least one disc-shaped dip weir, which is fixed to the external surface of said cylindrical portion of said screw conveyor said at least one dip weir extending radially outward and being disposed within the axial span of said screw blades, said at least one dip weir being located between axial locations of the solids discharge port and the slurry feeding port and sized so that there is a predetermined separation radially between an external periphery of said at least one dip weir and an adjacent internal surface of the shell; and

an overflow hole formed in said at least one dip weir adjacent the screw conveyor so that said liquid component of said slurry flows through said overflow hole, a radially outermost edge of said overflow hole being disposed closer to the axis than both a radially outermost edge of said clarified liquid discharge port and a radially innermost edge of said weir board provided on said clarified liquid discharge port.

5,306,226

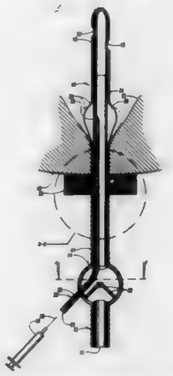
URINARY CONTROL WITH INFLATABLE SEAL AND METHOD OF USING SAME

Fouad A. Salama, 3220 Valley Ridge Ct., West Des Moines, Iowa 50265

Continuation of Ser. No. 600,629, Oct. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 307,992, Feb. 9, 1989, Pat. No. 4,968,294. This application May 14, 1993, Ser. No. 61,770

Int. Cl.[5] A61M *25/00*

U.S. Cl. 600—29 **14 Claims**



1. The method of controlling the urine flow in the urethra comprising the steps of,

providing an inflation tube having an inflatable balloon at one end and an inlet at the opposite end, said balloon

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having a non spherical shape when inflated and a downwardly extending lower end portion,

providing a urine tube operatively connected to the inflation tube with the urine tube extending through the balloon and having a valve to limit urine flow from the urine inlet tube end to the urine outlet tube end,

inserting the urine tube, and inflation tube and balloon into the urethra and positioning the deflated balloon in the bladder with the lower end portion in the urethra at the neck and orifice of the bladder with the inlet end of the urine tube being in the bladder,

inflating the balloon to provide a plug seal in the urethra at the neck and orifice of the bladder to prevent urine flow in the urethra on the outside around the urine tube, and

operating the valve to allow flow of urine from the bladder through the urine tube to the urine tube outlet end.

5,306,227

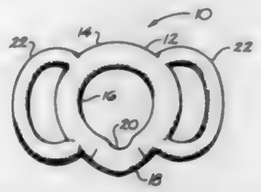
APPARATUS FOR AUGMENTING MALE POTENCY

Robert E. Osbon, Taylors, S.C., and James B. Osbon, Richmond, Va., assignors to Osbon Medical Systems, Ltd., Augusta, Ga.

Continuation-in-part of Ser. No. 880,308, May 5, 1992, abandoned, which is a continuation of Ser. No. 504,354, Apr. 3, 1990, abandoned, and a continuation of Ser. No. 820,216, Jan. 10, 1992, Pat. No. D. 343,455. This application May 15, 1992, Ser. No. 883,083

Int. Cl.[5] A61F *5/00*

U.S. Cl. 600—41 **32 Claims**



1. A cincturing device for improving male potency by retaining an engorged condition of the male sex organ, comprising:

a ring of elastic material, having a generally circular outside diameter and inside diameter, with a protruding region integrally defined by said ring for receipt of the user's male sex organ urethra; and

handle means integrally formed with peripheral portions of said ring for facilitating manipulation and alignment of same;

wherein said ring and said handle means comprise an integral construction of elastic rubber, so that said ring may be elastically fitted to the base of a user's male sex organ for cincturing blood flow therefrom at peripheral areas of the user's male sex organ so as to retain an engorged condition of such organ, while the user's urethra is received in said protruding region therefor so as to decrease stricture of the urethra for improved discharge of seminal fluids.

5,306,228

BRAIN WAVE SYNCHRONIZER

Tye Rubins, 2073 Sunset Plz. Dr., Los Angeles, Calif. 90069

Filed May 5, 1992, Ser. No. 878,825

Int. Cl.[5] A61M *21/00*

U.S. Cl. 600—27 **18 Claims**

1. An arrangement, including earphones having first and second speakers and a stereo connector, for inducing brain waves with a predetermined synchronization frequency in the brain of a user, comprising:

a recording medium with a dingle, pre-recorded control track;

a playback device being arranged to read the control rack and to generate an electrical composite control signal corresponding to the control track;

a decoder/controller including a first filter with an output comprising a first filtered control signal, a second filter with an output comprising a second filtered control signal, and a third filter with an output comprising a third filtered control signal, with each filter having the composite control signal as an input signal;

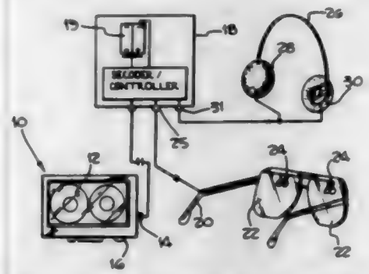
a first connector means for connecting the playback device electrically with the decoder/controller;

a visual presentation means for screening the eyes of a user from ambient light;

a second connector means for connecting the visual presentation means electrically with the decoder/controller;

first and second light, each mounted on the visual presentation means so as to be in front of a respective one of the eyes of the user;

a light-switching means for activating the first and second lights at a synchronization frequency when selected ones of the filtered control signals have a substantially non-zero



amplitude, said light-switching means including a first amplifier that is electrically connected to the first light and a second amplifier that is electrically connected to the second light;

a sound-switching means for applying a selected one of the filtered control signals alternately to the first and second speakers of the earphones and for producing audible tones pulsating at the synchronization frequency;

the sound-switching means includes a first amplifier that is electrically connected to a first switch and a second amplifier that is electrically connected to a second switch;

the first filter is connected to the first amplifier;

the second filter is connected to the second amplifier;

the third filter is connected to inputs of the first and second switches;

the first and second speakers are connected to outputs of the first and second switches, respectively; and,

encoder means for varying, during recording of the first and second control signals, the number of sinusoids in the first and second control signals.

5,306,229

ARTICULAR BANDAGE

Dieter Brandt, Düsseldorf; Ingeborg Szlema, Kempen, and Hans H. Wetz, Uerikon, all of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 825,002

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4101965

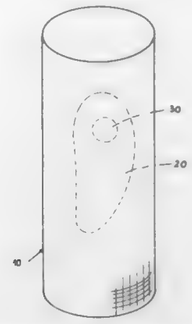
Int. Cl.[5] A61F *5/00, 13/00*

U.S. Cl. 602—26 **9 Claims**

1. An articular bandage of elastic bandage material, more particularly of tubular or cap-like construction for the speedier rehabilitation of the function of injured joints such as knee joints, ankle joint, shoulder joints, elbow joints and/or wrist joints, comprising:

at least one pressure pad comprising a shaped member acting upon the joint in the applied state and possessing a configuration determined by the bony prominences and tendon attachments of the joint and fabricated from a soft elastic material shaped member, wherein said shaped member possesses a hardness below 50 Shore A; and

at least one friction core of a hard or incompressible material, having a hardness above 50 Shore A, disposed and fixed in its position in the material of the shaped member,



wherein the friction core has a hardness exceeding the hardness of the material of the shaped member, constructed in a disk-shaped form and having a circular diameter and groove-like recesses in order to secure its position in the shaped member of the pressure pad, within its circumferential wall area or accommodating the material of the shaped member, wherein the difference between the hardness of the shaped member and the hardness of the friction core is between 10 and 20 Shore A.

5,306,230

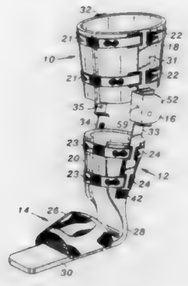
KNEE EXTENDING ORTHOTIC APPLIANCE

Robert C. Bodine, Mission Viejo, Calif., assignor to Rob Bodine/Capra Research, Laguna Hills, Calif.

Filed Sep. 23, 1992, Ser. No. 950,809

Int. Cl.[5] A61F *3/00*

U.S. Cl. 602—26 **22 Claims**



1. An appliance for urging the knee joint of a human being to an extended non-bent position, said appliance comprising:

at least one elongate strut member having an upper end, a lower end and a hinge formed therebetween, said strut member being positionable adjacent the knee joint such that the upper end of said strut member extends below the knee and the hinge of said strut member is adjacent the knee to permit bending of said knee joint;

said hinge of said at least one strut member comprising a non-adjustable spring hinge which is adapted to continually bias the upper and lower ends of the at least one strut member to an extended non-bent configuration;

an upper-like component attachable to the upper end of said at least one strut member for anchoring the upper end of said strut member above the knee said upper leg component comprising a rigid bendable inner core member encased within and surrounded by cushioning foam material;

a lower leg component attachable to the lower end of said at least one strut member and engageable with the leg to anchor the lower end of said strut member below the knee, said lower leg component having an under-foot portion which extends beneath the plantar surface of the foot such that abutment of the underfoot member against the plantar surface of the foot will prevent the appliance from shifting in an upward superior direction.

5,306,231

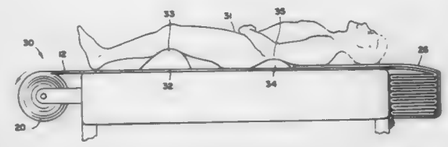
TRACTION SYSTEM FOR A PATIENT IN A BED

Harry Cullum, 22 Oak St., East Hampton, N.Y. 11937, and Jonathan Korn, 159 E. 69th St., New York, N.Y. 10021

Filed Oct. 26, 1992, Ser. No. 966,257

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—32 **14 Claims**



1. For cooperation with a bed having a top surface and opposite head and foot ends, an apparatus for applying traction to a patient's lower back, comprising:

a—a lower sheet extending from the head end lengthwise to the foot end, said sheet including excess length at the head end of said bed,

b—pulling means for pulling said lower sheet lengthwise toward the foot end of said bed, and

c—an upper sheet having one end fixedly attached to said head end of said bed and extending lengthwise about halfway toward said foot end, said upper sheet positioned above and lying on said lower sheet,

said pulling means adapted to periodically pull said lower sheet lengthwise in the foot end direction a predetermined distance, wherein movement of the lower sheet with the patient's buttocks and legs lying thereon effects a frictional pull in the foot end direction on said buttocks and legs, and wherein the weight of the patient's upper body on the fixed upper sheet effects a frictional resistance in the opposite direction on the patient's upper body, thus producing a tension in said lower sheet and a traction to the patient's lower back intermediate said upper body and buttocks.

5,306,232

HEAD ALIGNMENT SYSTEM

Jody J. Whitmyer, Tallahassee, Fla., assignor to Whitmyer Biomechanix, Inc., Tallahasse, Fla.

Filed Feb. 1, 1993, Ser. No. 12,059

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—32 **8 Claims**

1. A head alignment system suitable for attachment to a support system comprising:

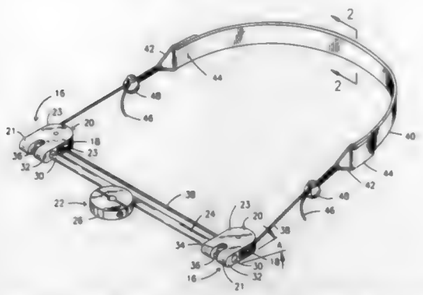
at least one pulley having mounting means adapted to be connected to a support;

a headband cord having two ends, a portion of said cord being intermediate said two ends, said intermediate portion of said cord being received by said pulley; and

a headband having two ends, each one of said ends being attached to a corresponding one of said ends of said cord

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such that said headband and said cord form a loop, whereby said loop is adapted for placement about the head of a person, whereby said alignment system holds the



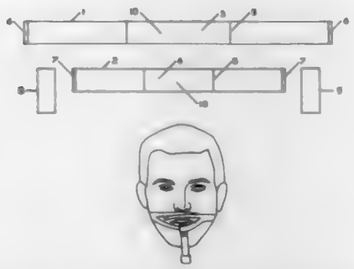
head of the person upright while permitting rotational movement of the head about an axis extending from the neck upwardly through the top of the head of the person.

5,306,233

ENDOTRACHEAL TAPE AND METHOD OF USE

David F. Glover, P.O. Box 1424, Wheat Ridge, Colo. 80034, assignor to David F. Glover, Wheat Ridge, Colo.

Filed Mar. 8, 1993, Ser. No. 27,675
Int. Cl.[5] A01F *13/00*
U.S. Cl. 602—41 **1 Claim**



1. A method for applying an endotracheal tube tape to the face and neck of a patient comprising the steps of:

a. providing a single piece of 1 inch wide endotracheal tape comprising: first and second opposite ends that are split into two identical sections and coated with an adhesive, a single short non-stick piece centered along the length of said tape and adhesive portions disposed adjacent to and on either side of said cloth where said tape is rolled from said first and second opposite ends onto two plastic tubes and packaged in a pre-sealed, clear plastic wrap;

b. tearing said plastic wrap and removing said endotracheal tape;

c. unrolling said endotracheal tape toward said first and second ends to expose said short non-stick piece;

d. placing said cloth against the back of the patient's neck;

e. further unrolling the endotracheal tape toward said first and second ends up and across each side of the face;

f. tearing said first and second ends to a desired length;

g. affixing the upper half of said split end of said first end above the lip or nose;

h. wrapping the lower half of said split end of said first end around an endotracheal tube;

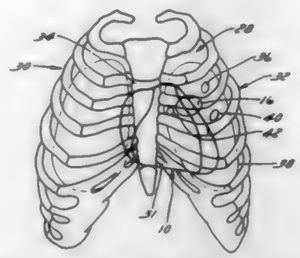
i. repeating steps g and h with the upper and lower halves of said second end.

5,306,234

METHOD FOR CLOSING AN ATRIAL APPENDAGE

W. Dudley Johnson, N-128 W-17741 Holy Hill Rd., Germantown, Wis. 53022

Filed Mar. 23, 1993, Ser. No. 35,418
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—49 **23 Claims**



1. A method for manipulating tissue of the heart, where the heart is located within a chest cavity defined by a sternum and an associated set of ribs and the heart includes an atrium and atrial appendage having a fluid passage therebetween, the method comprising the steps of:

a) inserting an observation device into the chest cavity to permit observation of heart tissue from the exterior of the chest cavity, where the device is inserted at a first position between two ribs;

b) inserting a manipulation device into the chest cavity to permit operation on heart tissue from the exterior of the chest cavity, where the device is inserted at a second position between two ribs;

c) positioning the manipulation device substantially proximate a selected tissue area of the heart and operating on the selected tissue; and

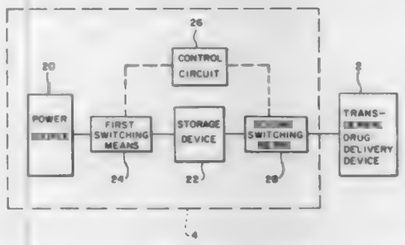
d) maintaining the sternum and ribs intact during the execution of steps a–c.

5,306,235

FAILSAFE IONTOPHORESIS DRUG DELIVERY SYSTEM

John L. Haynes, Chapel Hill, N.C., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 30, 1992, Ser. No. 954,176
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **19 Claims**



1. An iontophoresis system, which comprises:

an iontophoretic drug delivery device for placement against the skin of a patient, the drug delivery device including:

a first electrode;

means for holding an electrolyte situated in relation to the first electrode such that an electrolyte held by the electrolyte holding means is in electrical communication with the first electrode;

a second electrode; and

means for holding an ionic medication situated in relation to the second electrode such that an ionic medication held by the medication holding means is in electrical communication with the second electrode; and

a circuit for controlling the current or voltage provided to the electrodes of the drug delivery device, the circuit including:

first switching means, the first switching means being coupled to a source of power, the first switching means having a conductive state and a non-conductive state;

control means coupled to the first switching means for causing the first switching means to be in one of the conductive state and the non-conductive state;

an intermediary storage device, the intermediary storage device being coupled to the first switching means such that energy from the power source is transferred to and stored in the intermediary storage device when the first switching means is in the conductive state; and

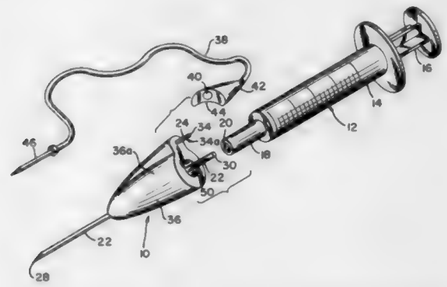
second switching means, the second switching means being coupled between the intermediary storage device and the electrodes of the drug delivery device, the second switching means selectively coupling the intermediary storage device to the drug delivery device wherein when the first switching means is in the conductive state, the second switching means effectively decouples the intermediary storage device from the electrodes of the drug delivery device and wherein when the first switching means is in the non-conductive state, the second switching means effectively couples the intermediary storage device to the electrodes of the drug delivery device allowing energy stored in the intermediary storage device to be transferred to the drug delivery device thereby providing sufficient power to cause the ionic medication to be driven into the skin of a patient.

5,306,236

NEEDLE ELECTRODE FOR USE WITH HYPODERMIC SYRINGE ATTACHMENT

Arthur Blumenfeld, Brewster, and Alan J. Schaefer, Spring Valley, both of N.Y., assignors to Vickers PLC, London, England

Filed Feb. 18, 1993, Ser. No. 19,077
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—21 **3 Claims**



1. A needle electrode, for use with a hypodermic syringe, the electrode comprising:

a hollow straight needle of electrically conductive material with an axis and a tip end and a rear end,

a conductor wire connected fixedly to the needle and extending radially outwardly and rearwardly therefrom,

insulating material formed around the grip portion of the handle and the conductor wire to provide a firm solid handle,

said grip portion sufficiently long for an operator's thumb and first two index fingers of one hand to grasp comfortably the handle like a writing instrument,

said grip portion arranged to maintain the operator in electrical isolation from the needle,

the handle provided with an external configuration that is ogival in shape from a rounded nose situated toward the tip end to a divergent rear adapted to receive the syringe in fluid flow communication with the needle,

the handle provided with electrical engagement means for connecting a source of electricity to the conductor wire,

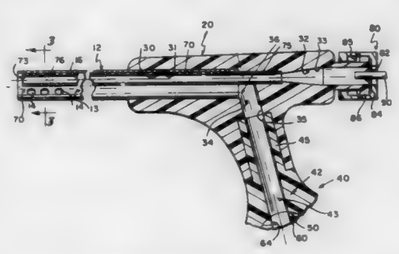
the electrical engagement means comprising a smoothly contoured insulating body having a cylindrically concave inwardly facing surface rearward of said grip portion of the needle and adapted in use to be configured with the syringe in a smooth convex profile which is a continuation of the ogival configuration of the handle.

5,306,237

DISPOSABLE LAVAGE

Thomas P. Clement, and David P. Weber, both of Bloomington, Ind., assignors to Mectra Labs, Inc., Bloomfield, Ind.

Continuation of Ser. No. 580,945, Sep. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 432,084, Nov. 6, 1989, Pat. No. 5,019,054. This application Sep. 21, 1992, Ser. No. 948,342
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—30 **26 Claims**



1. A surgical device comprising

a first cannula formed to define a first interior channel,

a second cannula positioned substantially within the first interior channel of the first cannula and formed to define a second interior channel,

said first and second interior channels each having an open end,

said open end of said second interior channel being located with respect to the open end of said first interior channel such that any flow through said second interior channel and out the open end of said second interior channel passes through the open end of said first interior channel,

a conduit piece defining a first axially extending passageway, which first extending passageway is connected with the first cannula, a second axially extending passageway in fluid communication with the second interior channel of the second cannula, and a third passageway in fluid communication with the first interior channel of the first cannula, and

elastic means for sealing the second passageway to limit fluid flow.

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5,306,238

LAPAROSCOPIC ELECTROSURGICAL PENCIL

Richard P. Fleenor, Englewood, Colo., assignor to Beacon Laboratories, Inc., Broomfield, Colo.

Continuation-in-part of Ser. No. 495,449, Mar. 16, 1990, Pat. No. 5,098,430. This application Sep. 13, 1991, Ser. No. 759,401
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] A61B 17/39
U.S. Cl. 606—42 24 Claims



1. An electrosurgical instrument comprising:

a surgical assembly including a nozzle and an electrode having a common longitudinal axis, the nozzle positioned about at least a portion of the electrode;

first means for arranging said assembly between a first arrangement wherein said electrode is exposed and a second arrangement wherein said electrode and said nozzle are substantially nested;

second means for maintaining said assembly in said second arrangement when said assembly is in an inactive state; and

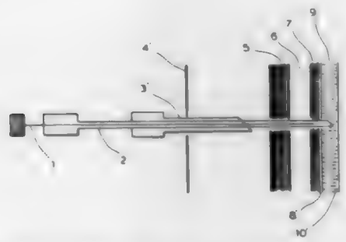
third means for forward delivering a gas to said nozzle when said assembly is in said first arrangement.

5,306,239

METHOD OF AND SET FOR SPINAL ANESTHESIA

Simon Gurmarnik, 38 Garrison Rd., Brooklyne, Mass. 02146, and Konstantin Kandror, 314 Langley Rd., Newton, Mass. 02159

Filed Jul. 30, 1993, Ser. No. 99,524
Int. Cl.[5] A61M 31/00
U.S. Cl. 604—51 3 Claims



1. A method of spinal anesthesia , comprising the steps of

applying an antiseptic substance on an area of patient's skin;

administering an anesthetic substance into a spinal space by a spinal needle penetrating through said area of patient's skin;

withdrawing the spinal needle from patient after said administering; and

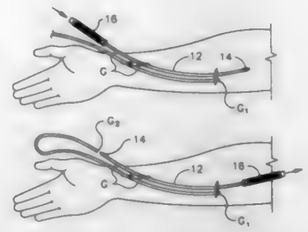
immediately before said administering, removing the antiseptic substance from the area of patient's skin to prevent penetration of the antiseptic substance through the patient's skin during said administering.

5,306,240

TUNNELER AND METHOD FOR IMPLANTING SUBCUTANEOUS VASCULAR ACCESS GRAFTS

William Berry, Pasadena, Tex., assignor to Pilling Co., Fort Washington, Pa.

Filed Jan. 21, 1993, Ser. No. 7,245
Int. Cl.[5] A61B 19/00
U.S. Cl. 604—51 8 Claims



1. A method of implanting a subcutaneous graft for vascular access comprising the steps of:

forming a subcutaneous tunnel by pushing a tunnelling instrument, comprising a rod having a tunnelling tip at one end and a handle at its other end, through a first incision until said one end of the rod projects through a second incision remote from said first incision and said other end of the rod projects outwardly from the first incision;

removing the handle from said other end of the rod and attaching said handle to said one end of the rod;

attaching an end of the graft to the rod with said end of the graft being adjacent to said other end of the rod; and

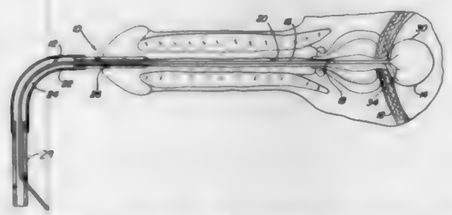
pulling the graft through said subcutaneous tunnel, by moving the rod through said tunnel, in the direction from said first incision toward said second incision.

5,306,241

METHOD OF CATHETERIZATION ON AND BLADDER DRAINAGE

Charles R. Samples, 465 Barr Ct., Akron, Ohio 44319

Division of Ser. No. 654,525, Feb. 13, 1991, Pat. No. 5,096,454, which is a continuation-in-part of Ser. No. 568,203, Aug. 16, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,257
Int. Cl.[5] A61M 31/00, 29/00, 5/00; A61F 5/44
U.S. Cl. 604—54 16 Claims



1. A catheter assembly (10) for collecting urine from a urethra into a drainage system, said catheter assembly (10) comprising: a first tubular body portion (12) having an end portion (14) and an intermediate portion (16) adjacent thereto, said intermediate portion (16) having an outer surface, said end portion (14) including retaining means for retaining said intermediate portion (16) within the urethra, said intermediate portion (16) including flow means for allowing the free flow of urine from the bladder (18) and over the intermediate portion (16) and through the urethra (20) to maintain an infection free bladder (18) and urethra (20); and a second tubular member

(22) including a collection end portion (26) operatively connected about and containing a portion of said intermediate portion (16) and spaced from said end portion (14), said collection end portion (26) being insertable at the ostium of the urethra (20) for collecting the fluid flow over said intermediate portion (16) and preventing the fluid from escaping from the draining system, said collection end portion (26) forming a tubular channel for fluid flow between said collection end portion (26) and said outer surface of said intermediate portion (16) contained therein, said second tubular member (22) including a distal portion (29) spaced from said collection end portion (26), and a collapsible portion interposed between said collection end portion (26) and said distal portion (29) for allowing sliding movement of said collection end portion (26) relative to said end portion (14) of said first tubular body portion without relative movement of said first tubular body portion (12) with respect to the distal portion (29) of said second tubular member (22) and flexing of the collapsible portion for allowing said distal portion to bend off axis with respect to the collection end portion (26);

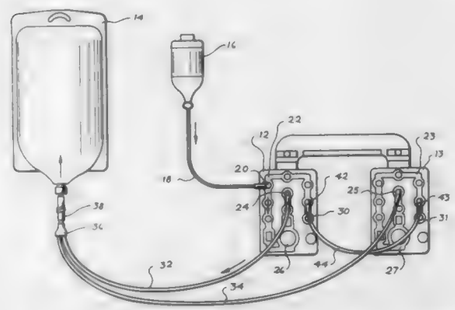
said free flow means for allowing the free flow of urine through said collapsible portion and through said distal portion (29).

5,306,242

RECIRCULATION THROUGH PLURAL PUMP CASSETTES FOR A SOLUTION COMPOUNDING APPARATUS

Thomas P. Joyce, Libertyville, and John S. Ziegler, Arlington Heights, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 15, 1992, Ser. No. 991,066
Int. Cl.[5] A61M 37/00
U.S. Cl. 604—82 13 Claims



1. An apparatus for compounding an admixture solution from at least one source solution, comprising:

first and second pump cassettes, each cassette having a fluid flow path including a plurality of liquid inlets and liquid outlets, the liquid flow path joining said inlets and said outlets in fluid communication, and positive displacement pump means for pumping liquid from a selected one of said inlets through a selected one of said outlets;

an admixture container for receiving at least one source solution from one of said first and second pump cassettes for forming an admixture solution; and

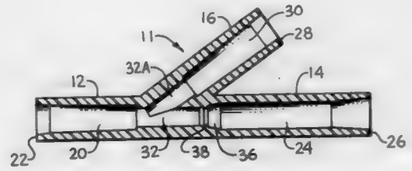
recirculation means comprising means for joining an outlet of the first cassette with an inlet of the second cassette, and the outlet of the second cassette with the admixture container, and the admixture container with the inlet of the first cassette, whereby said first and second pump cassettes are operable to alternately draw said admixture from said admixture container and into said recirculation means for flow into the inlet and pump liquid from the pump cassettes through said recirculation means for flow into said admixture container.

5,306,243

MEDICAL VALVE

Jean M. Bonaldo, Upland, Calif., assignor to Care Medical Devices, Inc., Ontario, Calif.

Continuation-in-part of Ser. No. 849,520, Mar. 11, 1992, Pat. No. 5,273,533. This application Jul. 12, 1993, Ser. No. 90,735
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[5] A61M 37/00
U.S. Cl. 604—86 18 Claims



1. A medical valve for use in a conduit having an inlet portion and an outlet portion comprising:

a hub;

means for fixing said hub within the conduit so as to hold a hollow cannula having a pointed end disposed within the conduit so as to point toward the conduit inlet;

an elongated flexible valve element having:

a first portion which is generally circular in cross-section and which is solid at one end thereof so as to form a first end of the valve element;

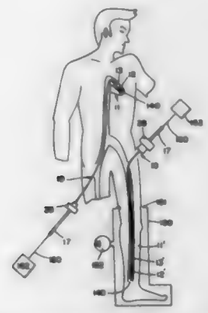
a second portion which is generally frustoconical in configuration over the majority of its length and has a longitudinal central passage extending therethrough which is axially aligned with the first portion; and

a third portion which is generally circular in cross-section and has a longitudinal central passage extending therethrough which is axially aligned with the second portion central passage and extends from said second portion away from said first portion so as to terminate in a valve element second end opposite said valve element first end; and

means for fixing the valve element within the conduit with respect to the hub so that the valve element is disposed in the conduit with the pointed end portion of the cannula contained within said central passages and so that the valve element first portion normally closes the conduit inlet portion.

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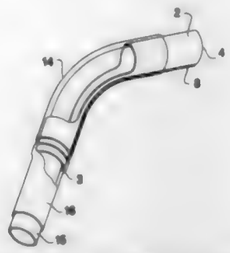
5,306,244
METHOD OF GUIDEWIRE INSERTION
Samuel Shiber, Billerica, Mass., assignor to Surgical Systems & Instruments, Inc., Ill.
Continuation-in-part of Ser. No. 499,726, Mar. 27, 1990, Pat. No. 5,135,531, which is a continuation-in-part of Ser. No. 350,020, May 12, 1989, Pat. No. 4,979,939, which is a continuation-in-part of Ser. No. 326,967, Mar. 22, 1989, Pat. No. 4,957,482, Ser. No. 324,616, Mar. 16, 1989, Pat. No. 5,007,896, Ser. No. 323,328, Mar. 13, 1989, Pat. No. 5,002,553, and Ser. No. 322,497, Mar. 13, 1989, Pat. No. 5,024,651, said Ser. No. 326,967, said Ser. No. 324,616, said Ser. No. 323,328, said Ser. No. 322,497, is a continuation-in-part of Ser. No. 286,509, Dec. 19, 1988, Pat. No. 4,894,051, which is a continuation-in-part of Ser. No. 243,900, Sep. 13, 1988, Pat. No. 4,886,490, which is a continuation-in-part of Ser. No. 78,042, Jul. 27, 1987, Pat. No. 4,819,634, Ser. No. 205,479, Jun. 13, 1988, Pat. No. 4,883,458, and Ser. No. 225,880, Jul. 29, 1988, Pat. No. 4,842,579, said Ser. No. 78,042, said Ser. No. 205,479, said Ser. No. 225,880, is a continuation-in-part of Ser. No. 18,083, Feb. 24, 1987, Pat. No. 5,041,082, which is a continuation-in-part of Ser. No. 874,546, May 16, 1986, Pat. No. 4,732,154, which is a continuation-in-part of Ser. No. 609,846, May 14, 1984, abandoned. This application Feb. 28, 1991, Ser. No. 662,558
Int. Cl.[5] A61B *17/32*
U.S. Cl. 604—53 1 Claim



1. A process for inserting into a vessel a flexible guide wire, comprising the following steps;
a) suspending a body part, containing the vessel, in a de-compression chamber,
b) lowering the pressure in the de-compression chamber sufficiently, to dilate the vessel, and
c) inserting the flexible guide wire into the dilated vessel.

5,306,245
ARTICULATING DEVICE
Malcolm D. Heaven, Hopewell, N.J., assignor to Advanced Surgical Inc., Princeton, N.J.
Filed Feb. 23, 1993, Ser. No. 21,456
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 16 Claims

1. A medical uniplanar steering device comprising:
a tubular member having first and second spaced-apart ends and a central opening extending axially between the first and second ends;
hinge means for connecting the first end to the second end and permitting uniplanar bending of the first end back and forth in a plane towards and away from the second end, the hinge means comprising a cut-out in a wall of the tubular member; and
articulating means for moving the first end in the plane towards the second end of the tubular member, the articulating means comprising a control wire located on a side



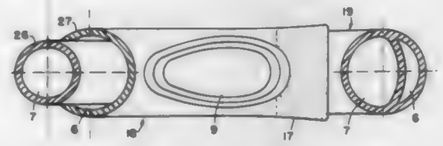
of the tubular member opposite to a side of the tubular member in which the cut-out is located.

5,306,246
BALLOON FOR MEDICAL CATHETER
Ronald Sahatjian, Lexington, and Arthur R. Madenjian, Winchester, both of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.
Continuation of Ser. No. 612,073, Nov. 9, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 943,977
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 30 Claims



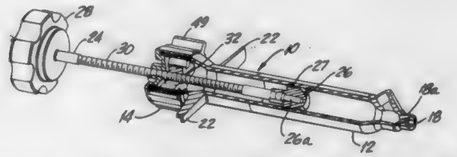
1. A medical device comprising a support member, an inflation lumen and a medical balloon mounted on said support and communicating with said lumen, the improvement comprising:
a balloon member comprised of a polymer blend including a predominant amount of a crystalline polymer and
a compliance enhancing additive polymer in amount sufficient to interrupt the crystalline structure of said crystalline polymer, said amount being about 20% or less of the polymer blend.

5,306,247
BALLOON CATHETER
Susanne Pfenninger, New York, N.Y., assignor to Schneider (Europe) A.G., Bulach, Switzerland
Filed Dec. 9, 1992, Ser. No. 987,937
Claims priority, application European Pat. Off., Dec. 11, 1991, 91203259.6
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 4 Claims



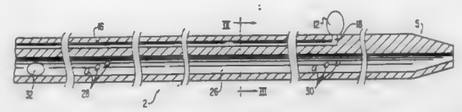
1. A balloon dilatation catheter, comprising:
a proximal shaft with a proximal end and a distal end having an inner tube defining a first lumen and a coaxial outer tube defining a second annular lumen between the inner tube and the outer tube;
a bilumen distal shaft defining a third and fourth lumen with a proximal end and a distal end, wherein the proximal end of the bilumen distal shaft is connected to the distal end of the proximal shaft such that the first lumen is in communication with the third lumen to define a guidewire passageway and the second lumen is in fluid communication with the fourth lumen to define a balloon inflation passageway, wherein a distal portion of the inner tube is bonded directly to a distal portion of the outer tube to thereby block at least a portion of the second lumen;
a balloon coaxially disposed around the bilumen distal shaft and in fluid communication with the fourth lumen; and
a proximal guidewire port extending through the bonded distal portions of the inner tube and the outer tube in communication with the first lumen and the third lumen.

5,306,248
SELECTIVELY CONTROLLABLE INFLATION-DEFLATION DEVICE ADAPTED FOR USE IN ANGIOPLASTY PROCEDURES
James E. Barrington, Lexington, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Apr. 7, 1992, Ser. No. 864,735
Int. Cl.[5] A61M *29/00, 5/00*
U.S. Cl. 604—97 7 Claims



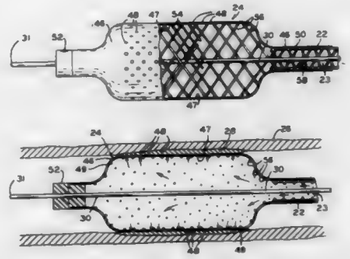
1. A selectively controllable inflation-deflation device for use with a balloon catheter during angioplasty procedures comprising:
(a) a cylinder having proximal and distal ends and a fluid conduit adapted for communication with a balloon;
(b) a piston shaft received within the proximal end of said cylinder, said piston shaft including a piston mounted on the distal end of said shaft, said piston being movable in one direction during inflation and in a second direction during deflation of the balloon;
(c) screw threads positioned on at least a portion of said piston shaft;
(d) a flexible support arm said flexible support arm mounted within said cylinder, said flexible support arm comprising cam means and including means for selectively engaging said threads on said piston shaft; and
(e) a collar mounted on an outer surface of said proximal end of said cylinder and comprising cam actuation means for rotatably engaging said cam means for selectively engaging and disengaging said thread on said piston shaft thereby allowing selective locking and unlocking of said piston shaft so that said piston shaft can be either 1) locked and then rotatably and incrementally moved within said cylinder to enable controlled pressurization of depressurization or 2) unlocked and moved within the cylinder to enable fluid purging of the cylinder and retraction of said piston shaft to a vacuum position where it may be selectively relocked to maintain said vacuum.

5,306,249
METHOD OF TREATING BODY PASSAGE WALLS
T. Anthony Don Michel, 309 Panorama Dr., Bakersfield, Calif. 93305
Continuation-in-part of Ser. No. 808,924, Dec. 18, 1991, Pat. No. 5,222,941, which is a division of Ser. No. 492,582, Mar. 13, 1990, Pat. No. 5,090,960, which is a continuation-in-part of Ser. No. 464,029, Jan. 12, 1990, abandoned. This application Apr. 19, 1992, Ser. No. 868,961
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 7 Claims



1. A method for performing a therapeutic treatment on a section of a wall of a body passage, comprising:
isolating a portion of the body passage which encloses the section from the remainder of the body passage;
introducing into the isolated portion of the body passage a liquid medium containing a treatment agent;
maintaining the treatment agent in the isolated portion for a predetermined time period;
during said step of maintaining, periodically withdrawing a sample of the liquid medium from the isolated portion of the body passage, analyzing the sample to determine the proportion of treatment agent present in the liquid medium in the isolated portion and modifying the liquid medium in the isolated portion on the basis of the analysis to establish a desired proportion of the treatment agent in the liquid medium in the isolated portion.

5,306,250
METHOD AND APPARATUS FOR INTRAVASCULAR DRUG DELIVERY
Keith L. March, Carmel; David R. Hathaway, Indianapolis, and Robert L. Wilensky, Carmel, all of Ind., assignors to Indiana University Foundation, Bloomington, Ind.
Filed Apr. 2, 1992, Ser. No. 862,075
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—104 35 Claims



1. A method applying a drug to a localized area on the inner wall of a tubular body vessel comprising the steps of:
providing expandable, porous outer membrane;
inserting membrane into the vessel adjacent the localized area;
expanding the membrane into contact with the localized area of the vessel; and
after the step of expansion, causing drug-containing liquid to flow under pressure through pores in the expanded

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membrane into contact with the localized area of the vessel;

wherein the step of expanding the membrane occurs independently of the step of causing the drug-containing liquid to flow through the membrane.

5,306,251

DEVICE FOR INJECTING A FLUID OR INSERTING AN OBJECT BENEATH THE SKIN OF AN ANIMAL

Nicholas J. Alexander, Drayton House Farm, Drayton St., Leonard, Wallingford, Oxon, OX10 8BG, United Kingdom

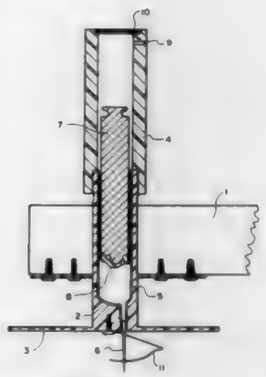
PCT No. PCT/GB91/00461, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/15165, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 27, 1991, Ser. No. 930,505

Claims priority, application United Kingdom, Mar. 30, 1990, 9007207

Int. Cl.[5] A61M *5/20*

U.S. Cl. 604—130 **18 Claims**



1. A hand-held device for injecting material beneath the skin of an animal comprising:

holding means for holding the material to be injected into the animal;

piercing means for piercing the animal's skin coupled to said holding means and configured to have the material pass therethrough;

a plate coupled to said piercing means from which said piercing means projects; and

momentum drive means coupled to said holding means for propelling the material from said holding means through said piercing means into the animal, said momentum drive means including at least one weight configured for movement relative to said holding means, wherein when said hand-held device is moved towards the animal and is brought to a sudden halt on engagement of said plate with the animal after said piercing means has pierced the animal's skin, the momentum of said weight is used to propel the material from said holding means through said piercing means into the animal.

5,306,252

CATHETER GUIDE WIRE AND CATHETER

Toshiaki Yutori; Masahiko Uchimura, and Yoshinobu Mizukawa, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

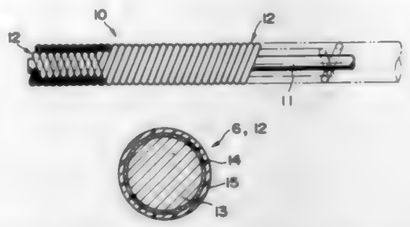
Filed Jul. 13, 1992, Ser. No. 912,765

Claims priority, application Japan, Jul. 18, 1991, 3-203286; May 19, 1992, 4-152852

Int. Cl.[5] A61M *25/01;* **A61B** *5/00*

U.S. Cl. 604—164 **4 Claims**

1. A guide wire to keep a tubular catheter approximately straight, said guide wire comprising a core wire, a winding of a low carbon duplex structure steel wire having a diameter smaller than 30 μm and a tensile strength higher than 300 kgf/mm^2, said winding having two tiers and covering the core wire such that the low carbon duplex structure steel wire runs



obliquely to the axis of the core wire and the turns of the tiers cross each other, and a polyester resin film covering the low carbon duplex structure steel wire about substantially the entire circumference of the wire.

5,306,253

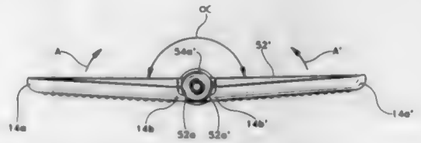
WINGED CATHETER INTRODUCER WITH PRE-BENT WINGS

Greg L. Brimhall, West Jordan, Utah, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 17, 1993, Ser. No. 32,226

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—165 **3 Claims**



1. A catheter introducer set comprising:

a tube having a first internal lumen;

a cannula for introduction into a blood vessel, the cannula having a second internal lumen;

an intermediate member disposed between the cannula and the tube such that the first and second lumens are in fluid communication, the intermediate member comprising a pair of wings attached thereto, the wings respectively being on substantially opposite sides of the intermediate member, the wings defining an angle therebetween and extending outwards from the intermediate member;

a needle comprising a sharp tip, the needle being disposed lengthwise in the first and second lumens and within the intermediate member;

wherein the wings are initially in a first position in which the angle between the wings is less than 180 degrees, the wings being moveable into a second position by bringing the wings together; and

gripping means actuable by the wings for squeezing the intermediate member such that the intermediate member grips the needle, the gripping means being actuable by the wings when the wings are brought together in a first direction such that the angle between the wings decreases, but not actuable by the wings when the wings are brought together in a direction opposite to the first direction, and wherein the wings do not actuate the gripping means when the wings are in the first position.

5,306,254

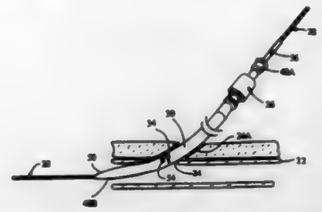
VESSEL POSITION LOCATING DEVICE AND METHOD OF USE

John Nash, Downingtown; Douglas Evans, Devon, both of Pa., and John J. Fleischhacker, Minnetonka, Minn., assignors to Kensey Nash Corporation, Exton, Pa.

Filed Oct. 1, 1992, Ser. No. 955,095

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—168 **14 Claims**



1. A device for use with a guide wire and an introducer sheath having an open distal end for determining the location of the wall of a vessel or lumen in a living being via a percutaneous incision or puncture through which said guide wire and sheath extend, said device comprising an elongated tubular member having a cylindrical side wall including an inner surface defining a passageway extending longitudinally through said member, a distal end portion including an opening therein, and a proximal end portion including an opening therein, said passageway being configured for receipt of said guide wire, whereupon said guide wire extends through said openings and a fluid space is created between said inner surface of said side wall and said guide wire, said tubular member having at least one liquid entrance port extending through said side wall adjacent said distal end portion and a liquid outlet port extending through said side wall adjacent said proximal end portion, said at least one liquid entrance port being in fluid communication with said fluid space when said guide wire is received within said passageway, said outlet port being in fluid communication with said fluid space when said guide wire is received within said passageway, whereupon when said device is positioned within said introducer sheath and said at least one entrance port is located beyond said open distal end of said introducer sheath and within said vessel or lumen, liquid within said vessel or lumen may flow into said entrance port through a portion of said fluid space and out through said outlet port.

5,306,255

PORTCATHETER

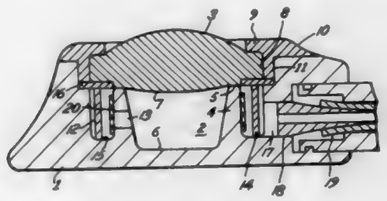
Hans Haindl, Hauptstr. 39, 3015 Wennigsen 1, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 940,018

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1991, 4129782

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—175 **9 Claims**



1. A portcatheter comprising

a generally flat housing,

a central blind opening within said housing formed by a circular wall extending axially from the bottom of said housing, said circular wall terminating in a free edge,

an annular cavity outside said circular wall concentric with said circular wall,

a soft, needle-pierceable cover disposed within said opening, lying tightly on the free edge of said wall, said cover having a circumferential margin

said circumferential margin overlying said annular cavity,

a hole through said wall connecting said central blind opening to said annular cavity,

a check valve for said hole which permits fluid flow in one direction from said opening to said annular cavity, and

a catheter tube communicating with said annular chamber.

5,306,256

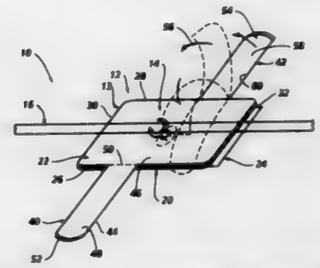
MEDICAL TUBING MOUNT

Rick Jose, 224 Old Brattleboro Rd., Hinsdale, N.H. 03451

Filed Aug. 18, 1993, Ser. No. 107,565

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—180 **4 Claims**



1. A means for temporarily mounting a medical tube to a patient comprising:

A) a base unit which includes

a body having a top surface, a bottom surface, side edges and a width dimension defined between said side edges,

medical adhesive on said bottom surface,

a release sheet covering said medical adhesive,

wing straps on said side edges, each wing strap being flexibly attached to one of said side edges at a proximal end of said each wing strap and having a distal end spaced from said proximal end, each wing strap further including

(a) a top surface which is adjacent to the top surface of said body and a bottom surface,

(b) adhesive on the top surface of said each wing strap,

(c) a release cover on the adhesive on said each wing strap,

(d) each wing strap being sized to have a length dimension defined between said distal end and said proximal end which is greater than said width dimension; and

B) a tube mount mounted on said base unit, said tube mount including

a base fixed to said body,

a neck portion connected to said base,

a C-shaped portion connected to said neck portion,

said tube mount being located between said side edges and being offset from said wing straps.

5,306,257

DRUG INFUSER

Brian D. Zdeb, Round Lake, Ill., assignor to Prime Medical Products, Inc., Round Lake Park, Ill.

Filed May 4, 1992, Ser. No. 878,364

Int. Cl.[5] A61M *37/00*

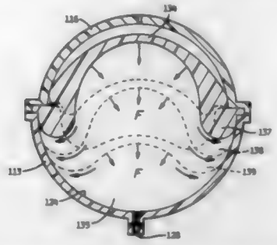
U.S. Cl. 604—131 **47 Claims**

1. An infuser apparatus for the delivery of a fluid at a controlled rate of flow comprising in combination:

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a housing having a first portion and a second portion, said housing defining an inner chamber, said inner chamber having a first and a second inner surface;

a deformable member disposed in said inner chamber, said deformable member normally disposed in contacting relation with said first inner surface when said infuser is unfilled, inlet means for introducing fluid into said inner chamber in between said deformable member and said first inner surface, said deformable member and said first inner surface defining a fluid storage means, said fluid storage



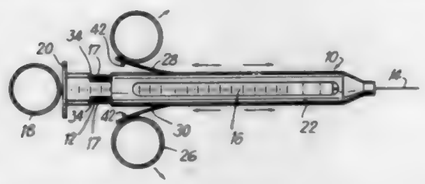
means including fluid outlet means, said deformable member bending away from said first inner surface as fluid is introduced into said fluid storage means, said deformable member having bending strain recovery properties to exert a pressure force against fluid in said fluid storage means, said pressure force causing fluid contained in said inner fluid storage means to be expelled at a controlled rate as said deformable member returns by relief of internal bending strains to its original disposition against said first inner surface.

5,306,258

SAFETY SYRINGE AND METHOD OF USING SAME

Ricardo L. de la Fuente, 2415 Granada Blvd., Coral Gables, Fla. 33134

Filed Apr. 3, 1991, Ser. No. 679,753
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **34 Claims**



1. A safety syringe which comprises:

a) a needle body having a proximal end and a distal end and defining a fluid chamber;

b) a needle attached to said distal end of said body and communicating with said fluid chamber;

c) means for manually drawing fluid into said chamber and expelling fluids out of said chamber through said needle;

d) a safety sheath positioned about said needle body, said sheath having a fixed angular orientation with respect to said needle body about a longitudinal axis extending therethrough, and movable between a first distal position whereby said needle is shielded by said sheath, a proximal position whereby said needle is exposed. and a second distal position whereby said needle is protected by said sheath;

e) means movable toward and away from said safety sheath to releasably retain said sheath in said first distal position and said proximal position and including means for facilitating reception of a user's finger; and

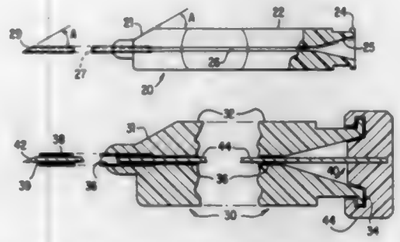
f) means to lockingly retain said safety sheath in said second distal position, said second distal position being distal of said first distal position whereby said needle is protected from unwanted contact after use.

5,306,259

VASCULAR ACCESS NEEDLE HAVING AN EXTENDED LENGTH BODY

Robert E. Fischell, Dayton, Md.; David R. Fischell, Fair Haven, N.J., and Tim A. Fischell, Los Altos, Calif., assignors to Cathco, Inc., Dayton, Md.

Filed Aug. 10, 1992, Ser. No. 926,271
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—239 **10 Claims**



8. A device for accessing a vascular lumen comprising:

(a) a hollow longitudinally extending needle having a longitudinal axis defining a needle distal end and a needle proximal end and a longitudinally directed central passageway extending therethrough, said needle distal end forming a substantially planar needle distal end surface being inclined with respect to said longitudinal axis; and,

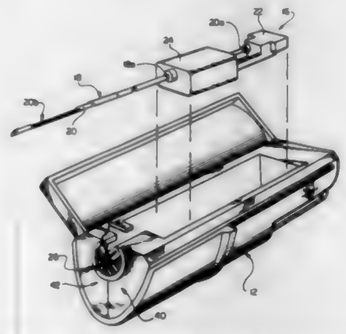
(b) an elongated rigid substantially transparent body defining a body distal end and a body proximal end and a longitudinally directed central lumen extending therethrough, said transparent body distal end being coupled to said needle proximal end, said body central lumen and said needle central passageway being aligned in fluid communication with each other for providing a longitudinally directed through passageway, said distal end of said transparent body forming a planar surface substantially parallel to a plane of said needle distal end surface.

5,306,260

INDEXING CANNULA SUPPORT MECHANISM

Rowland W. Kanner, Guntersville, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Oct. 30, 1992, Ser. No. 969,025
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 **7 Claims**



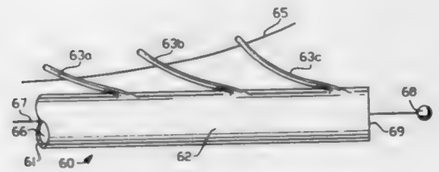
1. A tissue sampling instrument for use with various needle gauges to extract a tissue sample, said instrument comprising: a support structure including a plurality of needle-support seats having different seat dimensions corresponding to respective different needle circumferences, said seats being arranged on said support structure to enable selective access and positioning of each said seat in order to selectively support said corresponding needle circumference thereon for tissue extraction operation wherein said instrument comprises a generally elongate body and said support structure is secured on an end wall of said body, said seats being arranged to enable perpendicular projection of the selected needle from said end wall, and wherein said selective positioning of said seat forms an interruption in an upper edge of said end wall to enable vertical and transverse insertion and removal of said selected needle with respect to said seat and end wall.

5,306,261

CATHETER WITH COLLAPSIBLE WIRE GUIDE

Howard M. Alliger, Melville; Joseph Librizzi, Huntington, both of N.Y., and Robert Ginsburg, Greenwood Village, Colo., assignors to Misonix, Inc., Farmingdale, N.Y.

Filed Jan. 22, 1993, Ser. No. 9,207
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 **18 Claims**



1. A catheter comprising:

an elongate substantially cylindrical catheter wall having an outer surface; and

flexible guide means including a flap-like appendage attached to said outer surface of said wall at a distal end thereof for flexing between a neutral configuration relatively collapsed against said outer surface and a guide configuration extending outwardly from said outer surface and for slidably attaching, while in said guide configuration, a guidewire to said catheter wall.

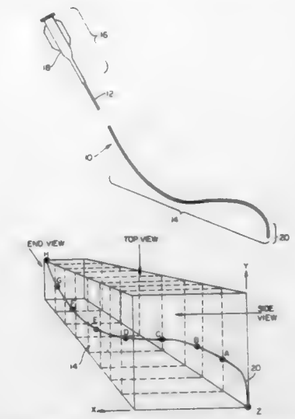
5,306,262

CORONARY CATHETER

Thomas D. Weldon, Aquadilla, P.R., assignor to Namic Caribe, Inc., Aguadilla, P.R.

Division of Ser. No. 757,684, Sep. 11, 1991, Pat. No. 5,195,990.
This application Feb. 10, 1993, Ser. No. 15,934
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—281 **8 Claims**

1. A coronary catheter for the diagnosis or treatment of conditions of the right coronary artery of a human, comprising an elongated tubular member having a proximal end portion and a distal end portion, said distal end terminating in a tip end portion, said distal end being substantially curved in three dimensions to define a distal end means cooperative with the aorta of a human patient for automatic placement of said tip end portion into the ostium of the right coronary artery with minimum manual adjustment upon passage of said distal end



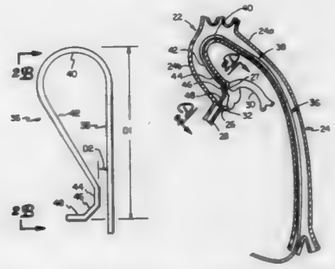
portion through the descending aorta, over the aortic arch, and into the ascending aorta of a human.

5,306,263

CATHETER

Jan Voda, 1404 Camden Way, Oklahoma City, Okla. 73116

Filed May 1, 1992, Ser. No. 877,288
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—281 **25 Claims**



1. A catheter cooperable with a right main coronary artery of a cardiovascular system via the aortic arch and ascending aorta of said system, said catheter comprising a preformed, elongated tubular member comprising:

a proximal end portion extending distally from a proximal end of said tubular member; and

a distal end portion extending distally from said proximal end portion and including:

a first curved portion extending distally from said proximal end portion and being curved in a first arced direction, wherein when inserted into said system, said first curved portion defines a first contact portion adapted for resting against a portion of the inner wall of said aortic arch; and

a first additional portion extending distally from said first curved portion, wherein when said inserted into said system, said additional portion defines a second contact portion adapted for resting against a portion of a wall of said ascending aorta opposite the right coronary artery,

a second additional portion extending distally from the first additional portion, wherein when inserted into said system, said second additional portion defines a second

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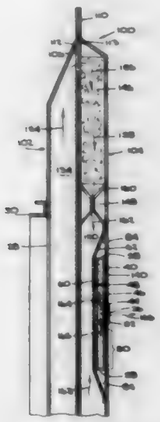
curved portion having ends forming an obtuse angle and a third curved portion having ends forming an obtuse angle, said second and third curved portions being curved in a second opposite arced direction.

5,306,264

OSTOMY BAG WITH MULTI-STAGE FILTER

Keith Ferguson, Scotch Plains, and Mark Lesko, Jackson, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 14, 1993, Ser. No. 4,322
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—333 **20 Claims**



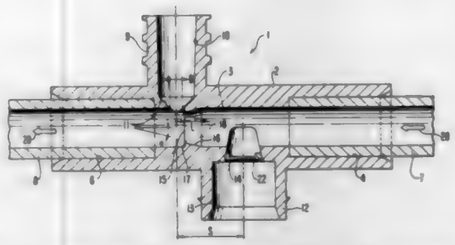
1. An ostomy bag for holding body waste that passes through a stoma comprising,
(a) an envelope formed of flexible plastic sheet material defining a waste collection chamber for body waste that includes gaseous and semi-liquid waste material, said envelope having interior surface portions and a top end portion,
(b) a waste inlet opening formed in said envelope proximate said top end portion, said waste inlet opening being of predetermined size and including means for fitting said opening around a stoma,
(c) gas outlet means formed in said envelope proximate said top end portion and spaced from said waste inlet opening,
(d) a deodorizing filter joined to said envelope in alignment with said gas outlet means for deodorizing gaseous waste material before said gaseous waste material exits from said bag through said gas outlet means, and
(e) means for protecting said deodorizing filter from contact by semi-liquid waste material, and for permitting the flow of gaseous waste, and for preventing the flow of semi-liquid waste, said protection means including open-cell foam material, said protection means being located in said envelope to precede the deodorizing filter such that the gaseous waste must pass through said protection means before it passes through said filter.

5,306,265

SAMPLING AND INFUSION CONNECTOR FOR AN EXTRACORPOREAL BLOOD CIRCULATION LINE

Guido Ragazzi, Massa Finalese, Italy, assignor to Hospal, Ltd., Basel, Switzerland

Filed Dec. 11, 1992, Ser. No. 989,149
Claims priority, application Italy, Dec. 13, 1991, TO91A000975
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **10 Claims**



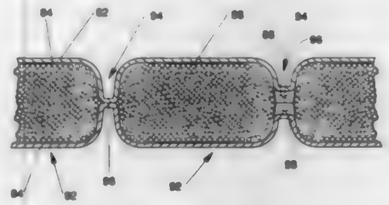
1. A sampling and infusion connector for an extracorporeal blood circulation line, the connector comprising:
a body having upstream and downstream distal ends and an elongated cavity extending therebetween, the upstream and downstream ends for connection to ducts of the extracorporeal blood circulation line;
infusion port means connected to the elongated cavity for introducing a substance into the cavity;
sampling port means connected to the cavity for removing blood from the cavity; and
means disposed in the cavity between the infusion port means and the sampling port means for preventing the substance introduced through the infusion port means from entering the sampling port means, the preventing means including a constriction having a diameter that progressively decreases towards the infusion opening.

5,306,266

FLEXIBLE SPACERS FOR USE IN DISPOSABLE ABSORBENT ARTICLES

Mary E. Freeland, Loveland, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 21, 1992, Ser. No. 994,023
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 **25 Claims**



1. A spacer for maintaining a fecal void space in a disposable diaper, the spacer comprising:
a flexible outer cover; and
a plurality of discrete elements enclosed in the outer cover, each discreate element relatively movable with respect to other discrete elements within the outer cover;
the spacer being a generally closed figure having an opening therethrough, whereby fecal material may pass through the opening into the void space of the diaper.

5,306,267

REUSABLE, ALL-IN-ONE, MULTI-LAYERED DIAPER WITH WICKING ACTION, MOISTURE RETENTION, AND METHODS FOR MAKING AND USING SAME

Janice L. Hahn; Edwin K. Hahn, and Melody Taylor, all of Idaho Falls, Id., assignors to J & E Enterprise, Idaho Falls, Id.

Filed Jan. 6, 1992, Ser. No. 817,149
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—378 **25 Claims**



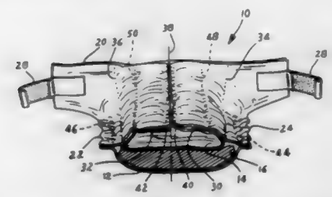
1. A reusable, multi-layered diaper to be worn about a body of an individual, the diaper comprising:
(a) a first layer for contacting the body of the individual, the first layer being a polyester wicking fabric to draw moisture away from the body of the individual;
(b) a middle panel comprising a plurality of layers secured beneath the first layer, at least one of the plurality of layers being absorbent and characterized by a presence of viscose rayon fibers and two of the plurality of layers being comprised of cotton, the two cotton-containing layers being sandwiched about the at least one absorbent layer of fabric containing viscose rayon fibers; and
(c) an outer layer secured beneath the middle panel to the first layer, the outer layer being impermeable to liquids such that the diaper is waterproof.

5,306,268

DIAPERS WITH ELASTICIZED SIDE POCKETS

Kenneth M. Enloe, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 242,460, Sep. 9, 1988, which is a continuation of Ser. No. 85,422, Aug. 13, 1987, Pat. No. 4,846,823, which is a continuation of Ser. No. 786,891, Oct. 11, 1985, Pat. No. 4,704,116, which is a continuation-in-part of Ser. No. 627,164, Jul. 2, 1984, abandoned. This application Feb. 13, 1989, Ser. No. 310,106
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.2 **26 Claims**



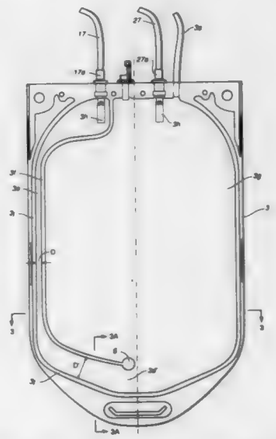
1. An integral disposable absorbent article comprising:
a liquid pervious topsheet having a top surface;
a backsheet connected to the topsheet;
an absorbent core disposed between the topsheet and the backsheet;
a pair of elastically contractible gasketing cuffs, each disposed adjacent to a longitudinal edge of the absorbent article;
and having between them a longitudinal centerline;
a pair of barrier cuffs,
(a) each barrier cuff having a proximal edge and a distal edge,
(b) each barrier cuff being disposed inboard of one of the gasketing cuffs, and
(c) a central portion of the distal edge of each barrier cuff being biased toward the longitudinal centerline of the integral absorbent article, between the gasketing cuffs of the integral absorbent article
means for tensioning the barrier cuffs, to space a portion of the distal edge of each barrier cuff away from the top surface of the topsheet, whereby a channel is formed by the two barrier cuffs and a portion of the topsheet between the barrier cuffs.

5,306,269

BOTTOM BLOOD BAG SEPARATION SYSTEM

Willie J. Lewis, and Eva Sajan, both of Oakland, Calif., assignors to Miles Inc., Berkeley, Calif.

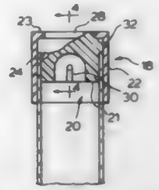
Continuation-in-part of Ser. No. 609,498, Nov. 6, 1990, Pat. No. 5,154,716. This application Apr. 2, 1992, Ser. No. 862,093
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—403 **8 Claims**



1. In a plastic blood bag system comprising a blood bag having two major walls that meet at a top, a bottom, and two sides the top having at least an inlet port and an outlet port, and the bottom without a port, the improvement comprising:
A. a generally longitudinal seal of said walls extending from the top of said bag and between said inlet port and said outlet port to and along said bag bottom forming a blood outlet channel between the seal and one of said sides and in communication with said outlet port for expressing dense blood components from said bag bottom through said outlet port and terminating at a passageway proximal a central axis of said bag,
wherein said seal includes an upper portion positioned a predetermined distance from and parallel to one of said sides, and a lower portion angled away from said side and from said channel and along said bag bottom, and
B. a spot weld at one terminal end of said longitudinal seal, said spot weld positioned proximal said central axis.

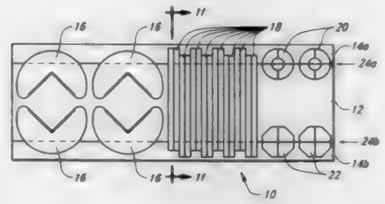
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,270
SEALING CLOSURE CAP AND BIOLOGICAL SAMPLE COLLECTION TUBE
Charles T. Macartney, Georgetown, and Victor A. Daykin, Pickering, both of Canada, assignors to Starplex Scientific, Etobicoke, Canada
Continuation-in-part of Ser. No. 486,550, Feb. 28, 1990. This application Dec. 31, 1990, Ser. No. 636,317
Int. Cl.[5] A61J *1/00*
U.S. Cl. 604—415 **1 Claim**



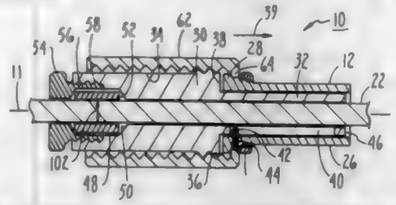
1. A safety plug for use with a tube, in inserted, sealing relation therewith, said plug having a central tapered resilient sealing annular tongue portion for insertion axially in sealing relation within the mouth of said tube; said plug having a lateral passage therethrough of predetermined size, connecting the interior of said annular tongue portion to a space within said annular skirt to provide in use a controlled access to said tube, on displacement of said passage past the rim of said tube, said plug portion being of thermoplastic elastomer, having a predetermined durometer to permit penetration and resealing closure of a cannula and an axially extending outer annular skirt bonded thereto and projecting downwardly below said tongue portion, in use, upon withdrawal of said tongue portion in separating relation above the rim of said tube to provide an air flow passage between said tube interior and said extended skirt interior, to control the rate of ingress of air to the tube.

5,306,271
RADIATION THERAPY SKIN MARKERS
Simion J. Zinreich; Eva S. Zinreich, both of Owings Mills, Md., and Earl F. Robinson, Lake Forest, Calif., assignors to Izi Corporation, Owings Mill, Md.
Filed Mar. 9, 1992, Ser. No. 848,269
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—1 **15 Claims**



1. A device for marking skin surfaces to delineate a radiation therapy portal area comprising
a set of thin flat markers comprising at least two surfaces including adhesive on one surface and including at least one corner boundary marker of substantially circular shape with a ninety degree wedge cut therefrom such that the corner boundary marker may be used to outline a ninety degree corner boundary of a radiation therapy portal and at least one of another corner boundary marker, a line boundary marker, an isocenter marker, or a set-up point marker configured to be used to define and delineate a radiation therapy portal, and
a thin flat backing liner comprising a surface onto which the set of markers is removably adhered, said backing liner including a die cut such that a portion of the liner which is adhered to a portion of at least one marker of the set may be removed without disturbing the set of markers from a remaining portion of the backing liner and thereby exposing at least a portion of the surface including adhesive of at least one of the markers of the set.

5,306,272
ADVANCER FOR SURGICAL INSTRUMENT
Donald Cohen, Irvine, and John Aoki, Bellflower, both of Calif., assignors to Neuro Navigational Corporation, Costa Mesa, Calif.
Filed Nov. 2, 1992, Ser. No. 970,705
Int. Cl.[5] A61B *19/00*
U.S. Cl. 606—1 **17 Claims**

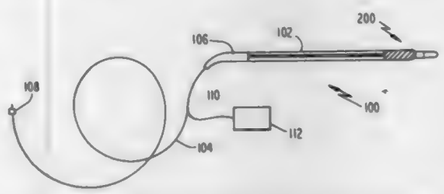


15. A device engageable with a surgical apparatus for axially advancing a surgical instrument into a patient, comprising:
a telescoping advancer engageable with the surgical apparatus, the advancer being movable from a shortened configuration, wherein the advancer has a first length, to an extended configuration, wherein the advancer has a second length longer than the first, the advancer further comprising;
a resilient gripping element for gripping the surgical instrument, such that the surgical instrument can be advanced axially into the patient when the advancer is moved toward the extended configuration; and
a compression element operatively engaged with the gripping element for selectively causing the gripping element to grip the surgical instrument.

5,306,273

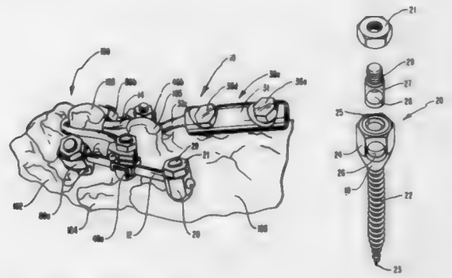
Patent Not Issued For This Number

5,306,274
LASER-POWERED HIGH TEMPERATURE ENERGY DELIVERY TIP ELEMENT WITH THROUGHFLOW OF VAPORIZED MATERIALS AND ELECTROCAUTERIZATION CAPABILITY
Gary Long, Cincinnati, Ohio, assignor to Laser Centers of America, Cincinnati, Ohio
Continuation-in-part of Ser. No. 812,449, Dec. 23, 1991. This application Oct. 9, 1992, Ser. No. 958,836
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—28 **31 Claims**



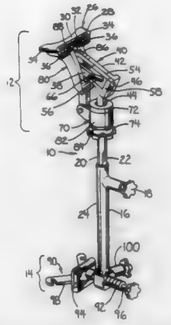
1. A tip element for applying a high temperature energy flux, comprising:
an optical fiber comprising a laser light transmitting first material, having an extended distal end portion formed into a conical shape with an end face for emitting laser energy therefrom; and
a cover element comprising a second material, formed and positioned with respect to said distal end of the optical fiber so as to cover the same and thereby receive laser energy emitted therefrom, whereby a heat-applying first portion of said cover element is heated,
wherein said heat-applying first portion of said cover element is formed as a closed cone, and said conically-shaped extended distal end portion of said optical fiber is correspondingly shaped and fitted to an inside surface of said cone.

5,306,275
LUMBAR SPINE FIXATION APPARATUS AND METHOD
Donald W. Bryan, 6151 S. Woodland Dr., Ogden, Utah 84403
Filed Dec. 31, 1992, Ser. No. 999,005
Int. Cl.[5] A61F *5/02*
U.S. Cl. 606—61 **27 Claims**



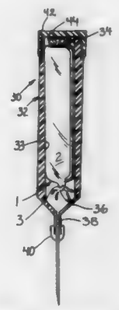
1. A spinal fixation apparatus comprising:
a rod;
a plurality of pedicle screws, each pedicle screw comprising an anchor head with a top at one end and a screw shaft extending from the other end of said anchor head, said screw shaft having a predetermined length sufficient to pass through a pedicle of a vertebra and into threaded engagement with a vertebral body of the vertebra, said anchor head comprising a bolt head external profile and a throughbore passing transversely through an axis of said anchor head, said anchor head having a coaxial, blind bore in said top, said pedicle screw including an anchor body configured to be telescopically received in said blind bore, said anchor body having a transverse hole therethrough, said hole being configured to be placed in registry with said throughbore to allow said rod to be passed through said anchor head, said anchor body including a threaded boss and a nut threadedly engaged to said threaded boss and operable to force said anchor body upwardly relative to said anchor head thereby clamping said rod to said anchor head; and
a first pedicle screw configured to be embedded in a first vertebra and a second pedicle screw configured to be embedded in a second vertebra with said rod clamped by said first pedicle screw and said second pedicle screw, said rod being configured to rigidly orient the first vertebra to the second vertebra.

5,306,276
TIBIAL RESECTOR GUIDE
Todd S. Johnson; Richard A. Lane, both of Fort Wayne, Ind.; Thomas D. Petersen, 5555 Reservoir Dr., San Diego, Calif. 92120; Chuck Nichols, and John R. Howard, both of Addison, Ill., assignors to Zimmer, Inc., Warsaw, Wis. and Thomas D. Petersen, San Diego, Calif.
Continuation of Ser. No. 805,696, Dec. 10, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 121,390
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—86 **9 Claims**



1. A resector guide for use in orthopaedic surgery to form a stable cutting surface for a surgical saw blade, said resector guide including a head, a cutting guide pivotally carried by said head and including a slot, said cutting guide having a posterior aperture and an anterior aperture forming said slot for accommodating said saw blade, said head further including adjustment means connected to said cutting guide for pivoting said slot in an anterior-posterior direction relative to said head, said head being carried by a rod adapted to position said head adjacent an end of a patient's limb, means carried by said head means operatively associated with said rod member for shifting said head in a longitudinal direction relative to said rod member, said rod further including an alignment device carried at an end opposite said head for contacting a second end of said limb.

5,306,277
MONOMER TRANSFER DEVICE
Mark Bryant, Auburn; Kirt Case; Todd A. Dawson, both of Warsaw, all of Ind.; Rebecca Gibbs, Greensboro, N.C., and Cary R. Reeves, Leesburg, Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Dec. 23, 1991, Ser. No. 812,542
Int. Cl.[5] A61F *2/32, 2/28;* **A61M** *5/00*
U.S. Cl. 606—93 **6 Claims**



1. A monomer transfer device for connection to a bone

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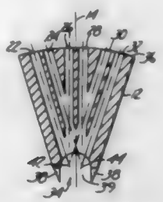
cement mixing container for transferring a liquid monomer contained within an ampule to the mixing container, the ampule including an ampule body having a neck portion and a tip portion, the neck portion being predisposed to break at a predetermined location to separate the tip from the ampule body, said monomer transfer device comprising a generally cylindrical body having an open end and a tapered end, a nozzle extending from the tapered end, said generally cylindrical body including a longitudinal bore extending from said open end to said tapered end for accommodating the ampule body, a cap for connection to said generally cylindrical body for capping the open end of the generally cylindrical body, said generally cylindrical body configured for carrying said ampule, said nozzle adapted for connection to conduit means for passing said liquid monomer from the body through the nozzle into said mixing container, said monomer transfer device further including transferring means for causing the monomer to flow from the ampule into the mixing container, wherein said cap includes a biasing member pad on an inner surface of said cap for compressively contacting the ampule to urge said ampule toward said tapered end.

5,306,278

CORTICOTOMY DRILL GUIDE

Mark T. Dahl, Eagan, Minn., and Richard H. Clewett, Los Angeles, Calif., assignors to Ace Medical Company, Los Angeles, Calif.

Filed Sep. 11, 1992, Ser. No. 944,211
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—96 **8 Claims**



1. A drill guide for use in corticotomy procedures to guide a drill bit into the cortex of a bone, the drill guide comprising a head having:
   (a) a first end having tines for gripping the bone;
   (b) a second end generally opposite the first end;
   (c) a nominal axis extending through the first and second ends; and
   (d) a plurality of guide passages in the head extending between and open to the first and second ends, the guide passages being arranged in first and second groups, each group containing a plurality of guide passages, the guide passages being sized to receive a drill bit, each guide passage of the first group having an axis arranged at an angle to the nominal axis which is different from the angle between the nominal axis and the axis of each other guide passage of the first group, the guide passage axes of the first group being arranged to converge at a point offset from the nominal axis of the head in a first direction, and each guide passage of the second group having an axis arranged at an angle to the nominal axis which is different from the angle between the nominal axis and the axis of each other guide passage of the second group, the guide passage axes of the second group being and arranged to converge at the first end at a point offset from the nominal axis of the head in a second direction opposite the first direction, the guide passage axes of both the first and second groups lying in a single plane and the axis of each guide passage of the first group being parallel to the axis of a guide passage of the second group; and

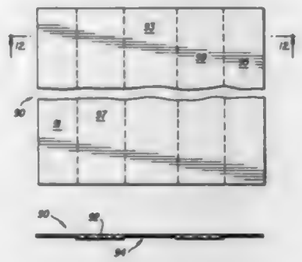
a handle mounted to the head at a side of the head between the first and second ends, the handle having an axis disposed at an angle to the nominal axis of the head.

5,306,279

SKIN GRAFT PREPARATION APPARATUS

Robert W. Atkinson, Dover, Ohio, assignor to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 656,471, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 374,833, Jul. 3, 1989, Pat. No. 5,004,468. This application Jan. 29, 1992, Ser. No. 826,664
Int. Cl.[5] A61B *17/322*
U.S. Cl. 606—132 **6 Claims**



4. A carrier device comprising:
   (a) a thin generally rectangular plastic body having at least one substantially straight side, a first guiding face and a second skin receiving face, said body having an axis parallel to said side;
   (b) said first face having a sharply stepped surface; and
   (c) said second face being continuous and substantially flat, whereby said carrier device has laterally adjacent elongated regions alternating between first regions having a first relatively thicker thickness and second regions having a second relatively thinner thickness, each of said regions being elongated substantially parallel to said axis, each of said regions being thin and having a width at least several times as wide as a thickness thereof, two of said second regions being separated by a said first region having a width at least as wide as the width of at least one of said second regions, said second face adapted to receive a piece of skin which is to be rendered expandable by advancing said skin on said carrier device between a guide roller having an outer surface complementary to said first face and a cutting roller of a skin graft preparation device.

5,306,280

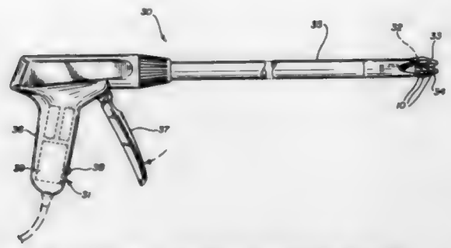
ENDOSCOPIC SUTURE CLIP APPLYING DEVICE WITH HEATER

Michael Bregen, Lebanon, N.J., and Brian H. Luscombe, Washington Crossing, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 844,253, Mar. 2, 1992, Pat. No. 5,171,251, This application Aug. 5, 1992, Ser. No. 926,099
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—143 **9 Claims**

1. A surgical clip applying device comprising:
   a) a handle having a base and an actuating trigger movably attached to said base,
   b) clamping jaws having first and second opposed clamping members, said first clamping member having a first grasping means and said second clamping member having a second grasping means wherein the first and second grasping means are configured on the opposing clamping members to grasp the outer surfaces of a surgical clip when compressive force is applied to the surgical clip via the clamping jaws,
   c) a tubular shaft for connecting said handle to said clamping jaws,

   d) a longitudinal shaft connected to said handle and positioned between said clamping jaws for retaining one or more surgical clips,
   e) a heating element incorporated in the distal end of the longitudinal shaft for heating a surgical clip,



   f) a first means for activating said heating element,
   g) a second means for delivering compressive force to said first and second opposed clamping members of said clamping jaws.

5,306,281

SUTURING CASSETTE DEVICE

Henry R. Beurrier, Far Hills, N.J., assignor to Merrimac Industries, Inc., West Caldwall, N.J.

Filed Aug. 31, 1992, Ser. No. 938,916
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—144 **14 Claims**

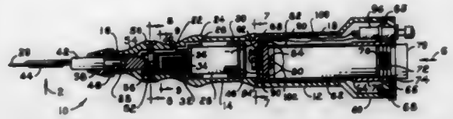
1. An apparatus for suturing, comprising:
a housing;
a flexible, continuous loop drive element mounted within the housing for circulation therein;
means for circulating the continuous loop drive element, including a rotating drive member mounted in the housing having a plurality of first spaced projecting means for engaging the continuous loop drive element, wherein said loop element passes around said drive member and is circulated through said housing by rotation of said member;
means detachable from said housing and rotating drive member for driving said rotating drive member; and
an arcuate suturing needle mounted at an end of the housing for 360° rotation through a closed path, said needle having a leading point and a plurality of second spaced projecting means for engaging the continuous loop drive element.

5,306,282

HIGH INCISION VELOCITY VIBRATING SCALPEL STRUCTURE AND METHOD

George H. Muller, Longboat Key, Fla., assignor to Joseph J. Berke and Multipower, Inc., both of Detroit, Mich., a part interest

Filed Sep. 9, 1991, Ser. No. 756,422
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—169 **13 Claims**



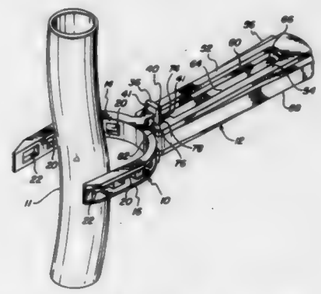
1. High incision velocity vibrating scalpel structure comprising a body member, motor means positioned within the body member, means connected to the motor means for energizing the motor means, said motor means including an eccentric fly wheel member mounted in the motor means for rotation on energizing of the motor means, means resiliently mounting the motor means in the body member for permitting vibration of the motor means on rotation of the eccentric fly wheel member, wherein the motor means includes a motor having an axis of rotation and a drive shaft bent at an angle of approximately 1 degree to the axis of rotation of the motor, rotatable on energizing the motor and the eccentric fly wheel member is mounted on the drive shaft, and a scalpel blade secured to the motor means for vibration with the motor means on energizing of the motor means and rotation of the eccentric fly wheel member.

5,306,283

TWO-PART SURGICAL LIGATION CLIP

John A. Conners, Fairfield, Conn., assignor to American Cyanamid Company, Wayne, N.J.

Filed Jun. 30, 1992, Ser. No. 906,938
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—151 **30 Claims**



1. A two-part surgical ligation clip, comprising:
a track including two substantially symmetrical arms connected together at a proximal end to form an apex and having spaced tips at a distal end with first complementary surfaces, said track also including a connector to said apex and having a second complementary surface; and
a clip having an extended slot for slidably engaging said track and distal end tips for receiving said connector, with a distal end of said clip having a first contour surface and a second contour surface, wherein
said first contour surface engages and interlocks with said first complementary surfaces on said track to lock said track in a closed position, said second contour surface engages and interlocks with said second complementary surface on said track to lock said track in an open position.

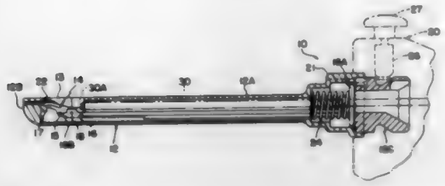
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,284

SURGICAL INSTRUMENT

John M. Agee, 77 Scripps Dr., Sacramento, Calif. 95822; Francis King, Sacramento, Calif.; Kimberly A. Romanko, St. Paul, Minn.; Lawrence A. Flor, St. Paul, Minn.; Thomas A. Turgeon, St. Paul, Minn., and William A. Mittelstadt, St. Paul, Minn., assignors to John Agee, Sacramento, Calif. and Minnesota Mining & Mfg. Co., St. Paul, Minn.

Filed Feb. 19, 1992, Ser. No. 838,532
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **63 Claims**



1. A surgical instrument for manipulating selected tissue in a body cavity under visual inspection, comprising:

(a) a probe having an upper surface, a generally closed distal end, and a lateral aperture in said upper surface and adjacent said closed distal end; wherein said distal end slopes away from said upper surface in a manner such that said distal end diverts displaceable tissue it contacts away from the region of the lateral aperture and said upper surface;

(b) means for accepting an optical system disposed at least partially within the probe, said system having a distal portion terminating adjacent the lateral aperture, thereby defining a viewing space between the distal portion of the optical system, and the distal end and the lateral aperture, said viewing space located within the field-of-view of the optical system;

(c) a working tool comprising blade means mounted within the probe and including a cutting blade capable of dividing selected tissue; wherein said cutting blade is capable of being extended from the viewing space; wherein said cutting blade includes a distal end portion;

(d) means for extending said cutting blade outwardly from the viewing space in a manner such that said distal end portion of said cutting blade follows a path which is essentially perpendicular to the longitudinal axis of said probe;

(e) a grip handle rotatably connected to said probe; and

(f) adjustment means for adjusting the rotational orientation between said lateral aperture of said probe and said grip handle; wherein said adjustment means is adapted to temporarily fix said rotational orientation.

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SURGICAL SAW BLADE

Alex M. Miller, Savannah, Ga., and Robert L. Stranahan, Ventura, Calif., assignors to Komet Medical, Savannah, Ga.

Filed Apr. 30, 1993, Ser. No. 55,015
Int. Cl.[5] A61B *17/14*
U.S. Cl. 606—177 **12 Claims**

1. A surgical saw blade comprises

a) a blade body having opposing side surfaces;

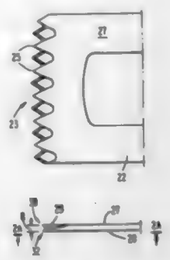
b) a cutting edge on a distal end of said blade body; and

c) a means for connecting said blade body to a handpiece adapted to oscillate said blade body;

d) wherein said cutting edge comprises a plurality of teeth, each tooth comprising:

i) a generally flat face extending from one of said opposing side surfaces, said generally flat face terminating at a cutting point; and

ii) a hollow trough having a generally concave surface aligned with the other of said opposing side surfaces and in opposing relationship with said generally flat face;



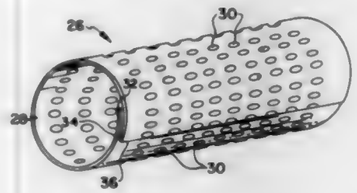
e) said plurality of teeth arranged in a pair of rows such that said flat face is adjacent said hollow trough for each side of said blade body.

5,306,286

ABSORBABLE STENT

Richard S. Stack, Chapel Hill, and Zenaida P. Klopovic, Durham, both of N.C., assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 66,345, Jun. 25, 1987, Pat. No. 5,059,211. This application Feb. 1, 1991, Ser. No. 649,534
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 **15 Claims**



1. A stent comprising:

a main body portion having a first open end and a second open end and a lumen extending therethrough, said main body portion being sized for intraluminal placement within a body passage, said main body portion comprising a sheet of material which has first and second free longitudinal edges and which has been rolled into a substantially cylindrical configuration, said material having at least one of holes and pores defined therethrough for tissue ingrowth; said main body portion being expandable from a first, reduced diameter wherein said free edges at least partially overlap which allows intraluminal transport to a targeted portion of said body passage, to a second expanded diameter at said targeted portion so as to engage and support the interior wall of the body passage in which it is disposed against collapse and stenosis.

5,306,287

HEATED TISSUE FORCEPS AND METHOD

James H. Becker, P.O. Box 4835, Topeka, Kans. 66604

Filed Oct. 30, 1992, Ser. No. 969,064
Int. Cl.[5] A61B *17/42*
U.S. Cl. 606—205 **2 Claims**

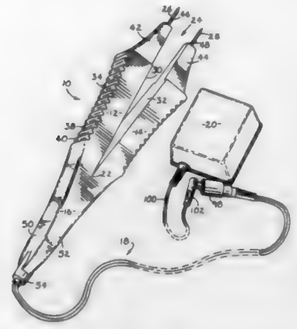
1. Dissection forceps comprising:

a pair of elongated arms, each of said arms respectively having a first end, a second end, and a midsection, said midsection having a heatable surface and an insulated surface positioned along the length of said arms;

a flexible coupling between said respective first ends, which allows said second ends a limited range of opposed motion as said arms come together and move apart;

a spring insert positioned within said arms to bias said arms into a position a fixed distance apart, said insert having sharp prongs that protrude from within said arms;

an electronic heat source element forming a part of the structure of said one of said arms; and



means for coupling said heat source element with a source of electric power,

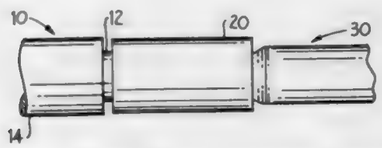
each of said arms having a layered crossectional construction including a flexible body, said metal insert, said body, said element, said body, foam insulation, a foil heat shield, and said body.

5,306,288

COMBINED SURGICAL NEEDLE-SUTURE DEVICE

Richard N. Granger, Huntington, and Michael S. Kassim, Monroe, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 670,992, Mar. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 576,046, Sep. 5, 1990, abandoned. This application Apr. 29, 1991, Ser. No. 693,441
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—227 **57 Claims**



1. A combined surgical needle-suture device which comprises:

(a) a needle having a shank of reduced cross-section;

(b) a suture; and,

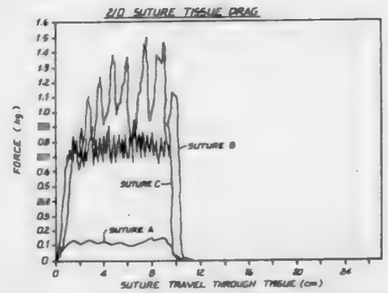
(c) a shrinkable tubing around said needle shank and a portion of said suture, the ratio of the axial length of the tubing to the effective axial length of the needle shank being at least about 4:1 when the needle is intended to be non-detachable from the suture and no more than about 3.5:1 when the needle is intended to be detachable from the suture.

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BRAIDED SUTURE OF IMPROVED CHARACTERISTICS

Donald S. Kaplan, Weston; Matthew E. Hermes, Easton, and Ross R. Muth, Brookfield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 569,062, Aug. 17, 1990, abandoned, and Ser. No. 529,740, May 22, 1990, Pat. No. 5,037,429, and Ser. No. 491,215, Mar. 9, 1990, Pat. No. 5,019,093, which is a continuation of Ser. No. 344,745, Apr. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 227,699, Aug. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 89,732, Aug. 26, 1987, abandoned, said Ser. No. 529,740, is a continuation of Ser. No. 89,735, Aug. 26, 1987, abandoned, and a continuation-in-part of Ser. No. 221,308, Jul. 13, 1988, Pat. No. 5,051,272, and Ser. No. 395,476, Aug. 18, 1989, abandoned, and Ser. No. 89,733, Aug. 26, 1987, abandoned, and Ser. No. 393,017, Aug. 10, 1989, abandoned, which is a continuation of Ser. No. 89,734, Aug. 26, 1987, abandoned. This application Feb. 26, 1991, Ser. No. 658,681
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—228 **61 Claims**



1. A braided suture possessing a greater pick count and a greater number of sheath yarns and exhibiting reduced tissue drag compared with a suture of substantially equivalent size possessing the following enumerated characteristics:

Overall Suture Denier	Pick Count	Number of Sheath Yarns	Denier of Individual Filaments	Denier of Core
175	40	6	6	25
259	47	[illegible]	2.1	29
300	46	[illegible]	6	100
500	40	[illegible]	6	100
698	52	12	2.1	55
800	50	12	6	200
1200	50	16	6	400
1500	50	12	6	600
1566	50	16	2.1	252
2000	40	16	6	800
2122	44	16	2.2	330.

5,306,290

SUTURE BUTTON

Harold M. Martins, Newton, Mass., and Stephen J. Snyder, Encino, Calif., assignors to Mitek Surgical Products, Inc., Norwood, Mass.

Filed Feb. 12, 1993, Ser. No. 17,145
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—232 **26 Claims**

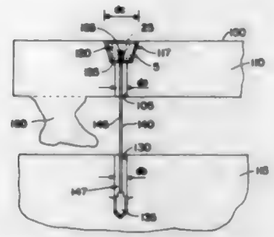
1. A suture retention means for use in approximating an object to an anatomical structure by at least one length of

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suture extending outwardly from said anatomical structure and through said object, said suture retention means comprising:

a substantially frusto-conical body having a longitudinal axis, a top surface, a bottom surface, a side surface and a longitudinally-centered cavity extending into said top surface;

said top and bottom surfaces each (a) being substantially planar, (b) being oriented in spaced, parallel relation to one another, and (c) defining a substantially circular periphery centered about said longitudinal axis, said periphery of said bottom surface being smaller than said periphery of said top surface;



said side surface extending in a substantially frusto-conical monomer between said periphery of said top surface and said periphery of said bottom surface;

said longitudinally-centered cavity including a base surface, a sidewall surface and an open end; and

said body further defining at least one opening extending from said bottom surface to said base surface, each said opening being sized so as to allow at least one free end of at least one length of suture to be threaded therethrough from said bottom surface into said longitudinally-centered cavity, and so as to prevent a knot formed by said at least one free end of suture from passing therethrough.

5,306,291

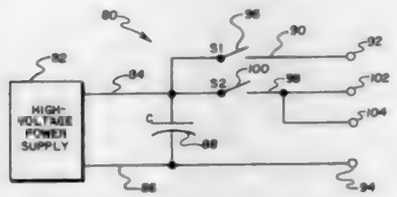
OPTIMAL ENERGY STEERING FOR AN IMPLANTABLE DEFIBRILLATOR

Mark W. Kroll, Minnetonka; Theodore P. Adams, Edina, and Charles G. Supino, Arden Hills, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Feb. 26, 1992, Ser. No. 841,544

Int. Cl.[5] A61N *1/36*

U.S. Cl. 607—5 **16 Claims**



1. An implantable defibrillation system comprising:

capacitor means for storing an electrical charge;

power supply means for charging the capacitor means;

means for selectively controlling an electrical discharge of the electrical charge in response to a sensing of a myocardial arrhythmia; and

electrode means for providing at least two pathways for the electrical discharge, each pathway having an inherent resistance

the means for selectively controlling including steering means for apportioning energy among said pathways in manner different than that dictated by the inherent resistances of the pathways if the electrical discharge were delivered to the pathways at the same time by controlling energy delivery to at least one of said pathways.

5,306,292

HEART STIMULATION APPARATUS

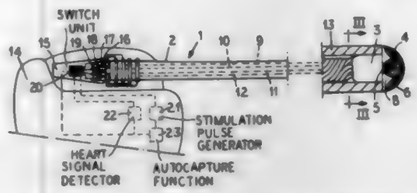
Ulf Lindegren, Enskede, Sweden, assignor to Siemens-Elema AB, Solna, Sweden

Filed May 13, 1993, Ser. No. 60,546

Claims priority, application Sweden, May 25, 1992, 92016401; Aug. 28, 1992, 9202479

Int. Cl.[5] A61N *1/368*

U.S. Cl. 607—11 **16 Claims**



1. An apparatus for intracardial electrical interaction with cardiac tissue, comprising:

an electrode lead having an electrode head disposed at a distal end thereof, said electrode head having a plurality of separate electrically conductive electrode surfaces thereon electrically insulated from each other and adapted for in vivo electrical interaction with cardiac tissue, and a like plurality of electrical conductors respectively connected to said electrode surfaces, said electrical conductors being electrically insulated from each other and extending through said electrode lead to a proximal end thereof;

circuit means for performing an energy-consuming cardiac-assist function which is adjustable according to an electrical threshold associated with said cardiac-assist function;

switch means disposed between said proximal end of said electrode lead and said circuit means for connecting a combination of said electrical conductors to said circuit means for activating the respective electrode surfaces connected to said electrical conductors in said combination for use in performing said cardiac-assist function; and

autocapture means for controlling said switch means by selecting said combination of conductors to connect to said circuit means based on said electrical threshold for optimizing said cardiac-assist function and minimizing the energy consumption of said cardiac-assist function.

5,306,293

DEVICE FOR THE PREVENTION OF CARDIAC FAILURES

Fred Zacouto, 16 rue de la Convention, 75 015 Paris, France

Filed Nov. 21, 1991, Ser. No. 796,250

Claims priority, application France, Nov. 23, 1990, 90 14643

Int. Cl.[5] A61N *1/36*

U.S. Cl. 607—17 **18 Claims**

1. A device for the prevention of a cardiac failure, said device comprising:

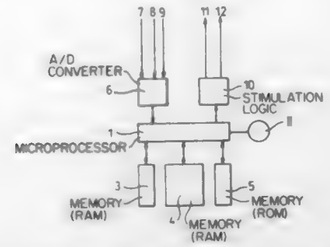
sensor means for detecting at least one cardiac parameter including a parameter from which a cardiac cycle is inferred,

logic processing means, responsive to said sensor means, for determining a parameter value from said at least one parameter,

first memory storage means, controlled by said processing means, for storing a succession of said parameter values corresponding to an active sequence of cardiac cycles, and

second memory storage means for permanently storing parameter values of at least one former sequence which has been followed by a detected cardiac failure,

said processing mans comprising comparison means for comparing said succession of said parameter values, corresponding to said active sequence of cardiac cycles, with said permanently stored information, and



said device further comprising intervention means, responsive to said comparison means, for delivering a preventive treatment in response to a result of said comparison if said result corresponds to predetermined values.

5,306,294

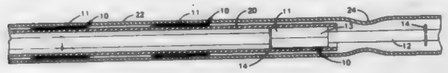
STENT CONSTRUCTION OF ROLLED CONFIGURATION

Thomas R. Winston, Leawood, and John M. Neet, Shawnee, both of Kans., assignors to Ultrasonic Sensing and Monitoring Systems, Inc., Leawood, Kans.

Filed Aug. 5, 1992, Ser. No. 925,959

Int. Cl.[5] A61F *2/06*

U.S. Cl. 623—1 **17 Claims**



1. A stent assembly for placement in a body passage to reinforce a damaged wall in the passage, comprising:

an elongated core;

an elongated, flexible sheet arranged on said core in a multiple layer roll having expanded and contracted conditions and having a spring force so that said sheet is urged toward the expanded condition, said roll being tightly wound on the core in the contracted condition and presenting in the expanded condition a diameter at least equal to the diameter of the body passage.

said roll being spirally wound on said core and having a tendency to radially expand, said roll presenting a plurality of adjacent, arcuate layers of said sheet in a direction transverse to the longitudinal axis of said core;

releasable means for retaining said roll in the contracted condition on said core while the core is being inserted into the passage to the location of the damaged walls; and

means for effecting release of said releasable means to permit the roll to expand against the damaged wall in the expanded condition of the roll,

said roll in the expanded condition thereof having at least two overlapping layers which overlap and bear against one another over a substantial portion of the circumference of a inner layer, said expanded roll adapted for securely contacting said damaged wall by virtue of said radial expansion tendency.

5,306,295

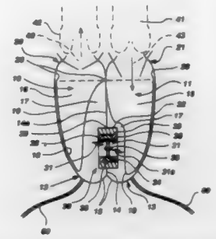
ELECTROHYDRAULIC HEART WITH SEPTUM MOUNTED PUMP

Willem J. Kolff; Stephen R. Topaz, both of Salt Lake City, Utah; Peter A. Topaz, West Lafayette, Ind.; N. Dan Bishop; Dmitry M. Golub, both of Salt Lake City, Utah; Long S. Yu, Andover, Mass.; Yvo Smulders; Mark Stegeman, both of Amsterdam, Netherlands, and Cornelis Verhoef, Brandwijk, Netherlands, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Apr. 30, 1992, Ser. No. 876,387

Int. Cl.[5] A61M *1/12*

U.S. Cl. 623—3 **14 Claims**



1. A total artificial heart (TAH) for placement inside a living body, said TAH comprising:

first and second ventricle enclosures operable as left and right ventricles in the TAH, each ventricle enclosure having an exterior wall formed of (i) contacting wall structure and (ii) noncontacting wall structure which collectively encloses an interior volume comprised of a block chamber and pumping chamber, said interior volume including at least one pumping membrane sealed at a single, continuous periphery of the pumping membrane at an upper portion of an interior surface of the exterior wall and configured to divide said block chamber from said pumping chamber, said pumping membrane being continuous and uninterrupted within the single, continuous periphery;

said contacting wall structure of each ventricle enclosure being configured for intercontacting relationship wherein the contacting walls of the respective ventricles form a septum which structurally separates the interior volume of the first ventricle enclosure from the interior volume of the second ventricle enclosure;

said noncontacting wall structure comprising the remaining exterior wall of each ventricle enclosure;

said pumping chamber of each ventricle being enclosed by at least a portion of (i) the septum, (ii) the pumping membrane and (iii) any surrounding noncontacting wall structure;

said blood chamber being positioned above the pumping membrane, each blood chamber having valved inlet and outlet means suitable for use in a TAH to enable unidirectional flow of blood through each ventricle in response to pumping action of the pumping membrane;

a single, fluid drive motor capable of reversible flow and being positioned within and circumscribed by the septum and including a flow channel therethrough which communicates between the respective pumping chambers of the first and second ventricle enclosures;

powering means for driving the fluid drive motor; and

a fluid medium contained within the pumping chambers and being responsive to the fluid drive motor to be reversibly transferred between the pumping chambers of the first and second ventricle enclosures and to reversibly extend and retract the continuous pumping membrane to enlarge and contract the blood chamber and thereby simulate natural pumping action of a natural heart.

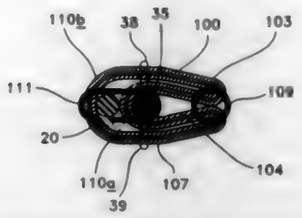
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5,306,296

ANNULOPLASTY AND SUTURE RINGS

John T. M. Wright, Conifer, and Donald P. Elliott, Denver, both of Colo., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 826,405, Nov. 27, 1992, Pat. No. 5,201,880. This application Aug. 21, 1992, Ser. No. 933,339
Int. Cl.[5] A61F 2/24, 2/78
U.S. Cl. 623—2 15 Claims



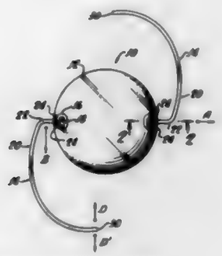
1. An annuloplasty ring comprising an annulus shaped and sized for insertion in a human heart comprised of multi-layers of braided tube. wherein each layer forms a wall, said annulus formed from a single length of tubular braid that is invaginated to form a double walled tube having first and second ends and inner and outer walls, a roll over fold formed at one end thereof, and two cut ends formed at the other end thereof, said inner and outer walls of the tube being sealed together at said two cut ends forming a seal line, said tube being rolled so that said seal line lies substantially centrally in the inner wall of the tube, said tube set to form a "V" cross-section configuration to form an eight walled flexible contractile member.

5,306,297

INTRAOCULAR LENS HAPTIC WITH ENLARGED ANCHORING HEAD

Robert S. Rheinish, Huntington Beach; Allan R. Tonks, Fontana, and Thomas P. Richards, Los Angeles, all of Calif., assignors to Kabi Pharmacia Ophthalmics, Inc., Monrovia, Calif.

Filed Jul. 6, 1992, Ser. No. 909,167
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 22 Claims



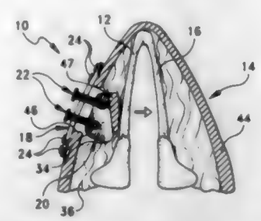
1. An intraocular lens comprising:
a lens optic;
at least one haptic including an elongate support portion and an enlarged integral anchoring head of a single materially uniform piece therewith, said anchoring head being disposed in the intraocular lens optic and including an oblong hole; and
wherein the anchoring head and the support portion are everywhere of substantially the same thickness and are disposed in a generally planar arrangement.

5,306,298

ADJUSTABLE LARYNGOPLASTY DEVICE

Frederick A. Godley, III, Four Rogers Ave., North Kingstown, R.I. 02852, and Paul C. Christu, 174 Church St., East Greenwich, R.I. 02818

Filed Feb. 16, 1993, Ser. No. 18,294
Int. Cl.[5] A61F 2/20
U.S. Cl. 623—9 20 Claims



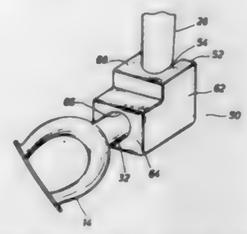
1. A device for medializing a paralyzed vocal cord in a larynx, said larynx including an outer layer of thyroid cartilage and a window formed in said thyroid cartilage adjacent to said paralyzed vocal cord, said device comprising:
an anchoring plate having a pair of spaced, threaded apertures formed therein;
a prosthesis member;
a pair of adjustment screws having first and second ends, said adjustment screws being threaded through said threaded apertures, and said first ends of said adjustment screws being rotatably connected to said prosthesis member; and
means for securing said anchoring plate over said window in said thyroid cartilage so that said prosthesis member extends through said window and presses against said vocal cord;
said adjustment screws being operable for moving the prosthesis member relative to said anchoring plate and thereby adjusting the medial position of said vocal cord in said larynx.

5,306,299

MIDDLE EAR PROSTHESIS

Edward Applebaum, Chicago, Ill., assignor to Smith & Nephew Richards, Inc., Memphis, Tenn.

Filed Sep. 21, 1992, Ser. No. 948,121
Int. Cl.[5] A61F 2/18
U.S. Cl. 623—10 9 Claims



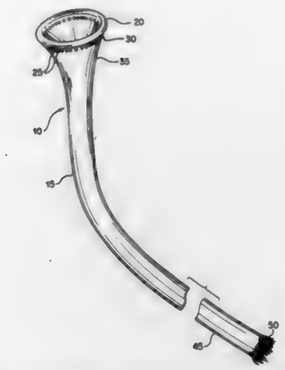
1. A prosthesis for connecting a remnant portion of an incus with either a portion of the lenticular process of the incus or a substantially intact stapes, comprising;
a body formed of a biocompatible material defining (a) an elongated opening having an axis of symmetry adapted to receive the lenticular process of the incus or a head of the stapes; and (b) an elongated channel open along one side of the body and having a plane of symmetry adapted to receive a remnant portion of the long process of the incus;
wherein the opening and channel intersect and are oriented such that the axis of symmetry of the opening is oriented normal to a plane generally perpendicular to the plane of symmetry of the channel; and
the body being sized and shaped to provide a connection between the remnant portion of the incus and one of the portion of the lenticular process of the incus or the substantially intact stapes.

5,306,300

TUBULAR DIGESTIVE SCREEN

H. Lee Berry, 4304 Evergreen La., #204, Annandale, Va. 22003

Filed Sep. 22, 1992, Ser. No. 948,498
Int. Cl.[5] A61F 2/02, 2/04, 2/54
U.S. Cl. 623—11 4 Claims



1. A tubular digestive screen comprising a thin-walled, membrane-like tube having a top and being of a predetermined length and shaped and sized to conform to the shape and size of a stomach and intestine of an animal, further comprising:
a firm ring at the top of the tube;
a portion selected from the group consisting of a funnel-shaped portion and a portion which is broad and shallow below the firm ring;
a tubular portion of tapered diameter beginning below the funnel-shaped portion; and
a distal end of the tube comprising a brush portion comprising vertical strips extending therefrom;
wherein the tube is held in place once inserted solely by peristaltic movements along the length of the tube.

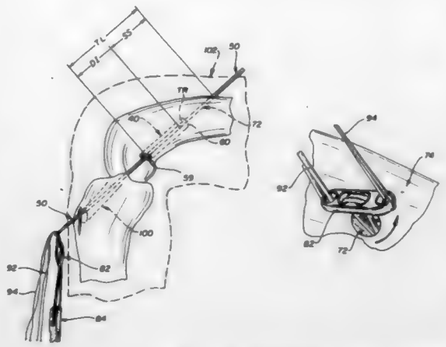
5,306,301

GRAFT ATTACHMENT DEVICE AND METHOD OF USING SAME

Ben K. Graf, Madison, Wis.; Thomas D. Rosenberg, Salt Lake City, Utah; Joseph H. Sklar, Longmeadow, and Michael C. Ferragamo, No. Dighton, both of Mass., assignors to American Cyanamid Company, Wayne, N.J.

Filed Feb. 11, 1993, Ser. No. 16,411
Int. Cl.[5] A61F 2/08, 2/46
U.S. Cl. 623—13 11 Claims

1. A method of attaching a graft to bone, comprising:
forming a first socket in a bone to accommodate a portion of the graft, the socket having an opening at one end and a floor at its opposite end;
providing a first graft attachment device having an elongated body with a maximum length, a maximum width, an upper surface, a lower surface, a leading end, and a trailing end, each end carrying a first lead filament and a first trailing filament, respectively, the body further defining means for attaching to the body one of the graft and a graft connection element;
forming a first passage from the floor of the socket to the opposite side of the bone, the passage having a width at least as large as the maximum width of the graft attachment device;
securing the graft to the means for attaching;
inserting the first lead and trailing filaments through the first passage and pulling primarily on the lead filament until the elongated body of the graft attachment device emerges; and
rotating the elongated body by pulling on the trailing filament and seating the elongated body against the surface of the bone to fixate the graft to the bone.



5,306,302

IMPLANT MATERIAL

Hans J. Bauer, Reinheim; Bianca Katzenmeier, Weiterstadt, and Matthias Kuntz, Mühltal-Traisa, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Sep. 9, 1991, Ser. No. 756,744
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1990, 4028683
Int. Cl.[5] A61F 2/28, 2/02, 2/30
U.S. Cl. 623—16 18 Claims

1. A process for production of an implant material based on natural bone, said implant material comprising a sintered ceramic material having a porous fine structure characteristic of natural bone in essentially unchanged form, and wherein more than 99% of said ceramic material is hydroxyapatite detectable by X-ray, said process comprising
(a) subjecting bone material freed from all organic constituents to treatment with an aqueous solution of an organic acid selected from aliphatic C_{1-5}-monocarboxylic acid and malonic acid, tartronic acid, succinic acid, malic acid, tartaric acid and citric acid, and
(b) sintering the bone material at temperatures between 900° and 1400° C. thereafter.

5,306,303

BONE INDUCTION METHOD

Kenneth L. Lynch, Brookfield, Wis., assignor to The Medical College of Wisconsin, Inc., Milwaukee, Wis.

Filed Nov. 19, 1991, Ser. No. 794,747
Int. Cl.[5] A61F 2/28, 2/02
U.S. Cl. 623—16 5 Claims

1. A method of inducing new bone growth in an animal which comprises: implanting in the soft tissue of said animal a porous bone-inducing ceramic implant free of bone morphogenetic proteins and bone-marrow cells consisting essentially of a calcium phosphate which is at least partially resorbable; sustaining said animal; and, leaving the implant in place until the host tissue responds to the implant by causing angiogenesis, multinucleate giant cell resorption of some of the calcium phosphate and the replacement of the ceramic with intramem-

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branous bone formed by an endosteal membrane which produces active osteogenic osteoblasts which are characteristic of new bone.

5,306,304

FLEXIBLE MEMBRANES PRODUCED FROM ORGANIC BONE MATRIX FOR SKELETAL REPAIR AND RECONSTRUCTION

El Gendler, 917 S. Shenandoah, Los Angeles, Calif. 90035

Continuation of Ser. No. 606,449, Oct. 31, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 4,093

Int. Cl.[5] A61F *2/28, 2/30, 2/02, 2/54*

U.S. Cl. 623—16 **3 Claims**

1. A flexible organic bone sheet for use during the in vivo replacement or reformation of preselected portions of an animal skeletal system consisting of a continuous sheet of demineralized natural bone, wherein the thickness of said sheet is less than about 1.5 millimeters, the sheet being capable of being bent from its original shape to conform to the configuration of a skeletal region to be repaired without damage to the sheet, said sheet being capable of inducing osteogenesis throughout its thickness.

5,306,305

METHODS OF COATING IMPLANTS WITH BONY STRUCTURE

Dosuk Lee, Brookline, Mass., assignor to Etex Corporation, Cambridge, Mass.

Filed Jan. 31, 1992, Ser. No. 830,174

Int. Cl.[5] A61F *2/54*

U.S. Cl. 623—16 **6 Claims**



1. An in vitro method for producing an implant device comprising a porous metal or metal alloy surface of said implant device coated with bony tissue as a result of laying down of said bony tissue by osteoblasts, said method comprising:

dispersing viable osteoblast cells in a gel medium comprising a nutrient medium;

coating said surface with said gel medium; and

incubating said gel medium coated surface in a growth medium providing nutrients for the growth of said osteoblasts for sufficient time for said bony tissue to be laid down.

5,306,306

METHOD FOR PERIPROSTHETIC BONE MINERAL DENSITY MEASUREMENT

Joseph P. Bisek; James A. Hanson, and Richard B. Mazess, all of Madison, Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation of Ser. No. 862,096, Apr. 2, 1992, abandoned, which is a continuation of Ser. No. 655,011, Feb. 13, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 73,264

Int. Cl.[5] A61F *2/28;* **A61B** *5/00, 6/00*

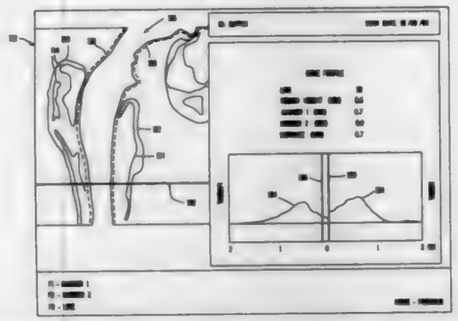
U.S. Cl. 623—16 **12 Claims**

1. A method of using a dual energy densitometer having a visual display to determine bone mineral density in a patient having a bone with a prosthetic implant, the method comprising the steps of:

a) scanning with said dual energy densitometer said patient in the region of said bone and said implant so as to generate a two dimensional matrix of data elements wherein the value of each said data element of said matrix is proportional to the absorption of energy by said bone and implant at a defined location in the internal structure of said patient in said region, the matrix holding a corresponding location and data value for each data element;

b) analyzing the matrix of data elements to identify a data element as a boundary data element, the boundary data element being on an edge of said implant adjacent to a portion of the bone of the patient, the location of said boundary data element being a function of a value and location of the boundary data element and a value and location of at least one immediately adjacent data element;

c) using a plurality of the boundary data elements to form an implant boundary;



d) establishing a measurement boundary which conforms to said implant boundary and is translated from said implant boundary by a predetermined distance along a translation axis;

e) calculating bone mineral density within a plurality of segments contained between the implant boundary and the measurement boundary and displaced along the implant boundary to produce a set of segment values indicative of the density of the bone adjacent to said implant; and

f) displaying on said visual display a plot of segment values versus distance along the implant boundary.

5,306,307

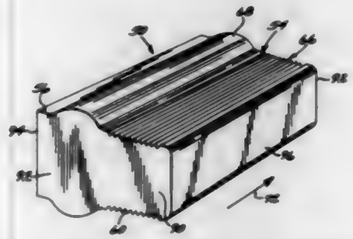
SPINAL DISK IMPLANT

Howard J. Senter, Pittsburgh, Pa.; William R. Wagner, and Richard L. Lariviere, both of Escondido, Calif., assignors to Calcitek, Inc., Carlsbad, Calif.

Filed Jul. 22, 1991, Ser. No. 733,710

Int. Cl.[5] A61F *2/44, 2/02*

U.S. Cl. 623—17 **24 Claims**



1. A biocompatible spinal disk implant, comprising a solid body having four sides and a pair of spaced-apart, opposed bases, the four sides including spaced-apart, opposed anterior and posterior faces, and

a pair of spaced-apart, opposed transverse faces, each transverse face having

an anterior platform directly adjacent to the anterior face, the anterior platform being spaced apart from an opposed anterior platform by a maximum anterior platform spacing, and

a posterior ledge directly adjacent to the posterior face and being oriented at an insertion angle relative to an opposed posterior ledge of an opposed transverse face, at least one of the posterior ledges having thereon a pattern of serrations; and

a ridge on at least one of the transverse faces positioned between the anterior platform and the posterior ledge and extending in a direction perpendicular to the bases, a top of the ridge being spaced apart from the opposed transverse face by an amount greater than the anterior platform spacing.

5,306,308

INTERVERTEBRAL IMPLANT

Ulrich Gross, Hindenburgdamm 30, W-1000 Berlin 45; Herman-Josef Schmitz, Fronhofer Str. 14, W-1000 Berlin 41; Bertram Kaden, Cranachstr. 7, W-1000 Berlin 41; Gerhard Fuhrmann, Bertholdstr. 3, W-1000 Berlin 37, all of Fed. Rep. of Germany

Gerhard Fuhrmann, all of Berlin, Fed. Rep. of Germany

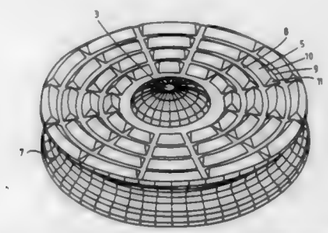
PCT No. PCT/DE90/00819, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO91/05521, PCT Pub. Date May 2, 1991

PCT Filed Oct. 23, 1990, Ser. No. 848,955

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1989, 8912648

Int. Cl.[5] A61F *2/44*

U.S. Cl. 623—17 **16 Claims**



1. An intervertebral implant insertable between two vertebrae, comprising:

a disc made of rigid material and having two opposing sides bordering respectively adjacent vertebrae, each said side having a circular frontal area, a raised dome at a central portion of said circular area, and roof-shaped projections surrounding said dome, each of said projections having a pair of end faces, a ridge edge, a pair of side faces, and a pair of base edges extending between said end faces, each of side faces terminating at said ridge edge and at a respective base edge the base edges and the ridge edge of said projections forming respective arcs of concentric circles.

5,306,309

SPINAL DISK IMPLANT AND IMPLANTATION KIT

William R. Wagner; Richard L. Lariviere, both of Escondido, and Scott D. Slabbekoorn, Vista, all of Calif., assignors to Calcitek, Inc., Carlsbad, Calif.

Filed May 4, 1992, Ser. No. 878,196

Int. Cl.[5] A61F *2/44*

U.S. Cl. 623—17 **33 Claims**

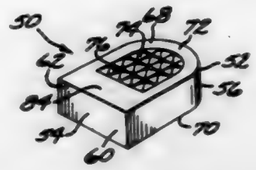
1. A spinal disk implant, comprising a solid body having

a convexly curved anterior face, the anterior face having a curvature of about that of the anterior surface of a human vertebra and having an anterior face lateral margin and a curved anterior face transverse margin;

a posterior face spaced apart from the anterior face and having a posterior face lateral margin and a posterior face transverse margin;

a pair of generally parallel, spaced apart, opposed side faces extending between the lateral margins of the anterior face and the posterior face; and

a pair of spaced apart, opposed transverse faces extending between the transverse margins of the anterior face and



the posterior face, each transverse face having an anterior platform and at least one of the transverse faces having an engagement region located posterior of the anterior platform, the engagement region having three-dimensional features thereon raised above the transverse face, a width of the anterior platform being about that of a thickness of anterior cortical bone of a human vertebra, the spinal disk implant being made of a biocompatible synthetic material.

5,306,310

VERTEBRAL PROSTHESIS

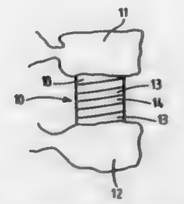
Wolfgang Siebels, Deggendorf, Fed. Rep. of Germany, assignor to MAN Ceramics GmbH, Deggendorf, Fed. Rep. of Germany

Filed Aug. 27, 1992, Ser. No. 937,345

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1991, 4128332

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—17 **8 Claims**



1. An implantable vertebral prosthesis configured to be inserted between adjacent vertebrae comprising:

a biocompatible tubular structure with a hollow interior space having a variable length, said tubular structure being formed from two helical springs having substantially equal diameters, said helical springs being connected to each other by screwing one of said helical springs into the other of said helical springs, whereby said length of said tubular structure may be adjusted to a final intermediate distance between the vertebrae by screwing or unscrewing said two helical springs.

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5,306,311

PROSTHETIC ARTICULAR CARTILAGE

Kevin R. Stone, Mill Valley, Calif., and Shu-Tung Li, Oakland, N.J., assignors to ReGen Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 520,027, May 19, 1990, which is a continuation-in-part of Ser. No. 317,951, Mar. 2, 1989, Pat. No. 5,007,934, which is a continuation-in-part of Ser. No. 75,352, Jul. 20, 1987, Pat. No. 4,880,429. This application Dec. 17, 1991, Ser. No. 809,003

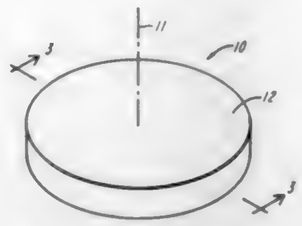
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—18 27 Claims

1. A prosthetic articular cartilage device comprising a dry porous volume matrix of biocompatible and at least partially bioresorbable fibers,

said fibers selected from the group consisting of natural polymers, and analogs and mixtures thereof, said matrix being adapted to have an in vivo outer surface contour substantially the same as that of natural articular cartilage, said matrix having a pore size in the approximate range of about 100 microns to about 400 microns,



whereby said matrix establishes a bioresorbable scaffold adapted for the ingrowth of articular chondrocytes, and for supporting natural articulating joint forces.

5,306,312

DYE DIFFUSION PROMOTING AGENTS FOR ARAMIDS

Phillip H. Riggins, and John H. Hansen, both of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 606,572, Oct. 31, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 851,781

Int. Cl.[5] D06P *1/64, 1/649, 3/24, 3/26*

U.S. Cl. 8—586 64 Claims

1. A process of dyeing poly(m-phenyleneiso-phthalamide) fabric comprising:

(a) dyeing the fabric at a temperature in the range of about 1000° C. to about 1500° C. and elevated pressure in a fiber-dyeing solution containing a tinctorial amount of at least one dye and a dye diffusion promoting amount of an alphatic amide having 7 to 14 carbon atoms capable of increasing the swelling ratio of the fabric at least 1.5% and excluding N-octyl-2-pyrrolidone and N-cyclohexyl-2-pyrrolidones, then

(b) heating the fabric while in contact with the solution until the desired degree of dyeing is attained.

5,306,313

DISPERSANT ADDITIVE COMPRISING THE REACTION PRODUCT OF A POLYANHYDRIDE AND A MANNICH CONDENSATION PRODUCT

Jacob Emert, Brooklyn, N.Y.; Antonio Gutierrez, Mercerville, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 961,051, Oct. 14, 1992, Pat. No. 5,259,968, which is a continuation of Ser. No. 681,635, Apr. 3, 1991, abandoned, which is a continuation of Ser. No. 162,282, Feb. 29, 1988, abandoned. This application Jul. 29, 1993, Ser. No. 99,085

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—386 8 Claims

1. An oleaginous composition comprising:

(A) oleaginous material selected from the group consisting of fuels; and

(B) oil soluble composition comprising reaction product of:

(1) at least one oil soluble Mannich condensation product formed by condensing long chain hydrocarbyl substituted hydroxyaromatic compound with aldehyde and polyamine, said Mannich condensation product containing at least one reactive amino group, and

(2) at least one polyanhydride.

5,306,314

POLY(ALKYLENE ETHER) AMINOCARBAMATES AND FUEL COMPOSITIONS CONTAINING THE SAME

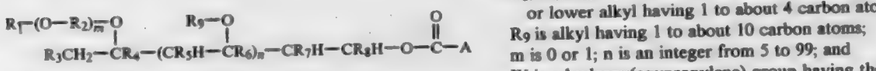
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Apr. 1, 1993, Ser. No. 41,734

Int. Cl.[5] C10L *1/22;* C07C *271/00*

U.S. Cl. 44—387 37 Claims

17. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range is and an effective detergent amount of a compound of the formula:



wherein A is a polyamine moiety having at least one basic nitrogen atom;

R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render said compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;

R_2 is an alkylene group having 2 to about 8 carbon atoms;

R_3, R_4, R_5, R_6, R_7 and R_8 are each independently hydrogen or a lower alkyl group having 1 to about 4 carbon atoms;

R_9 is a straight- or branched-chain alkyl group having 1 to about 10 carbon atoms;

m is 0 or 1; and n is an integer from 5 to 99.

5,306,315

POLY(ALKYLENE ETHER) AMINES AND FUEL COMPOSITIONS CONTAINING THE SAME

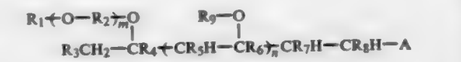
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Apr. 1, 1993, Ser. No. 41,071

Int. Cl.[5] C10L *1/22;* C07C *215/00*

U.S. Cl. 44—424 37 Claims

1. A compound of the formula:



wherein

A is an amine moiety having at least one basic nitrogen atom;

R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render said compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;

R_2 alkylene having 2 to about 8 carbon atoms;

R_3, R_4, R_5, R_6, R_7 and R_8 are each independently hydrogen or lower alkyl having 1 to about 4 carbon atoms;

R_9 is alkyl having 1 to about 10 carbon atoms;

m is 0 or 1; and n is an integer from 5 to 99.

5,306,316

POLY(ALKYLENE ETHER) AMINES HAVING A HYDROXY(OXYPROPYLENE) CONNECTING GROUP

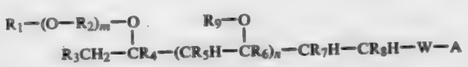
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Apr. 1, 1993, Ser. No. 41,736

Int. Cl.[5] C10L *1/22;* C07C *215/00*

U.S. Cl. 44—424 37 Claims

1. A compound of the formula:



wherein A is an amine moiety having at least one basic nitrogen atom;

R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render said compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;

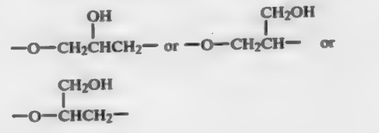
R_2 is alkylene having 2 to about 8 carbon atoms;

R_3, R_4, R_5, R_6, R_7 and R_8 are each independently hydrogen or lower alkyl having 1 to about 4 carbon atoms;

R_9 is alkyl having 1 to about 10 carbon atoms;

m is 0 or 1; n is an integer from 5 to 99; and

W is a hydroxy(oxypropylene) group having the formula:



or mixtures thereof.

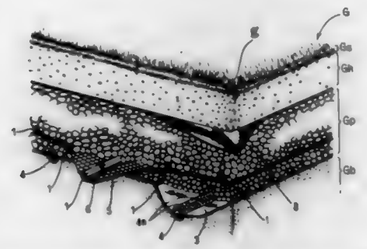
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5,306,317

DEVICE AND METHOD FOR PRESERVING PUTTING GREEN ON A GOLF COURSE

Mitsuo Yoshizaki, Higashimatsuyama, Japan, assignor to Ryokuei-Kensetsu Co., Ltd. and Yoshizaki-Gijutsukenkyusho, both of Saitama, Japan

Filed Apr. 16, 1992, Ser. No. 869,512
Claims priority, application Japan, Jun. 26, 1991, 3-048568[U]
Int. Cl.[5] A01B *79/00*
U.S. Cl. 47—1.01 **5 Claims**



1. A device for preserving grass on a putting green of a golf course, comprising:

a radiation pipe laid under the putting green;

a leading pipe unit, said leading pipe unit having a supply pipe connected with said radiation pipe and a return pipe connected with said radiation pipe; and

a fluid heating unit, said fluid heating unit comprising a heating boiler, a discharge passage connected to said supply pipe and said heating boiler for sending fluid from said heating boiler to said radiation pipe through said supply pipe, and a return passage connected to said discharge pipe and said heating boiler for allowing fluid sent to said radiation pipe to return to said heating boiler through said return pipe;

wherein said discharge and return passages are each provided with a thermometer for regulating the temperature to which the fluid is heated according to the difference between the temperatures measured by said thermometers; and

wherein said discharge passage is further provided with a pressure gauge, an air vent valve, a relief valve, a fluid flow meter, a gate valve and a drain pipe extending therefrom, said drain pipe having a second gate valve.

5,306,318

PROCESS FOR MAKING COATED ABRASIVES FOR GRINDING WHEELS

Alan C. Carius, Columbus; Edward J. Connors, Westerville, and Daniel R. Riehle, Columbus, all of Ohio, assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 758,023, Sep. 12, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,750
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **10 Claims**

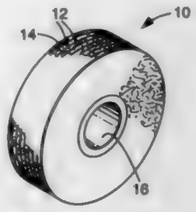
1. A process for the preparation of coated-cubic boron nitride (CBN) abrasive for use in abrasive tools, said process comprising applying a metal coating to CBN abrasive particles of at least one primary metal layer and at least one secondary metal layer, wherein the amount of metal coating is 60–95 wt % of the original CBN abrasive particles before coating, said primary metal layer comprises titanium applied by salt bath deposition and said secondary metal layer comprises nickel/-phosphorous applied by electrolyses deposition, said electrolyses deposition being carried out by depositing from about 5 to about 20 layers of electrolessly deposited nickel wherein the final wt % of nickel/phosphorous is from 60–75% of the total particle weight with a phosphorous content between 6 and 11%.

5,306,319

SURFACE TREATING ARTICLES AND METHODS OF MAKING SAME

Subramanian Krishnan, St. Paul; Eugene J. Miller, Maplewood; Mary B. Donovan, St. Paul; Ramona M. Janochoski, Lake Elmo, all of Minn., and Caroline Couvelard, Vauhallan, France, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1993, Ser. No. 60,616
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—298 **64 Claims**



1. A surface treating article comprising an organic matrix substantially engulfed by a binder, the binder comprising materials selected from the group consisting of:

a) the reaction product of a plurality of linear isocyanate-terminated polyurethane prepolymers with a first adduct, said first adduct comprising the reaction product of an amine-functional material having an average amine functionality of at least 2 and an epoxy-functional material having an average epoxy functionality of at least 2, with the provisos that said first adduct has at least one amine reactive with said isocyanates and at least one secondary hydroxyl moiety reactive with said isocyanates; and

b) the reaction product of a plurality of linear polyurethane polymers having a high molecular weight, said polymers having a plurality of ionic moieties, with a second adduct, the second adduct selected from the group consisting of

i) the reaction product of the amine-functional material and the epoxy-functional material of part a), and

ii) the reaction product of the amine-functional material and a homopolymerized epoxy-functional material,

with the provisos that the second adduct has at least one epoxy functional group reactive with the ionic moieties.

5,306,320

STOICHIOMETRIC B1-TYPE TANTALUM NITRIDE AND A SINTERED BODY THEREOF AND METHOD OF SYNTHESIZING THE B1-TYPE TANTALUM NITRIDE

Tsutomu Mashimo; Minoru Nishida, both of Kumamoto; Susumu Yamaya, and Hisashi Yamasaki, both of Kawasaki, all of Japan, assignors to Toshiba Tungaloy Co., Ltd., Kawasaki, Japan

Division of Ser. No. 735,923, Jul. 25, 1991, Pat. No. 5,201,923. This application Dec. 8, 1992, Ser. No. 986,907
Claims priority, application Japan, Jul. 27, 1990, 2-199622; Apr. 30, 1991, 3-124447
Int. Cl.[5] C04B *35/58*
U.S. Cl. 51—307 **24 Claims**

1. A sintered body of cubic tantalum nitride, comprising:

at least 10 vol % of stoichiometric cubic tantalum nitride having the properties:

(a) that the X ray powder diffraction using the Cu-K α ray shows a pattern ascribed to the stoichiometric cubic tantalum nitride alone but not others and,

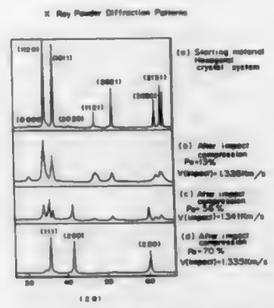
(b) that the electron diffraction image substantially shows the spots ascribed to the stoichiometric cubic tantalum nitride alone but not others and

(c) that the value of z in the formula of TaN_z is within a range of 0.96 to 1.01,

in an independent phase in the sintered body,

and one or more other substances selected from the group consisting of metals in the 4B, 5B and 6B groups of the periodic table, Mn, Fe, Co, Ni, Al, Si and compounds, solid solutions, and alloys thereof, diamond, cubic boron nitride, and Wurtzite structured boron nitride.

22. A cutting tool comprising at least 10 vol % of stoichiometric cubic tantalum nitride, in an independent phase having the properties:



(a) that the X ray powder diffraction using the Cu-K α ray shows a pattern ascribed to the stoichiometric cubic tantalum nitride alone but not others and,

(b) that the electron diffraction image substantially shows the spots ascribed to the stoichiometric cubic tantalum nitride along but not other and

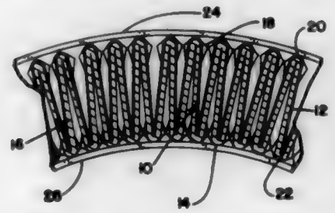
(c) that the value of z in the formula of TaN_z is within a range of 0.96 to 1.01.

5,306,321

LAYERED AIR FILTER MEDIUM HAVING IMPROVED EFFICIENCY AND PLEATABILITY

Richard J. Osendorf, North St. Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 909,791, Jul. 7, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 112,640
Int. Cl.[5] B01D *39/16, 46/02*
U.S. Cl. 55—487 **13 Claims**



1. An air filter comprising:

a first filter layer of melt blown filter medium having an efficiency of at least 99.97% on 0.3 micron particles;

a second filter layer of support medium by which said first filter layer is supported; and

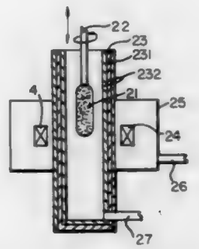
means for laminating said layers together to form a filter; said filter being pleated into a plurality of pleats having tips and opposing folds, and a plurality of dimples formed on said tips and said folds for separating said pleats.

5,306,322

PROCESS FOR THERMAL TREATMENT OF GLASS FIBER PREFORM

Shinji Ishikawa; Yuichi Ohga; Ichiro Tsuchiya; Hiroo Kanamori; Hiroshi Yokota, and Michihisa Kyoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 783,256, Oct. 28, 1991, abandoned, which is a division of Ser. No. 544,942, Jun. 28, 1990, Pat. No. 5,106,401. This application Jul. 24, 1992, Ser. No. 924,767
Claims priority, application Japan, Jun. 29, 1989, 1-167695
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—3.12 **4 Claims**



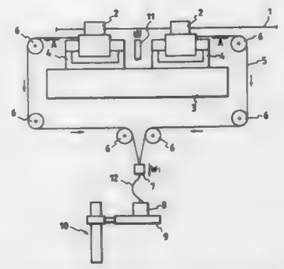
1. A process for vitrifying and fluorine-doping a porous glass preform for an optical fiber comprising passing the preform through a muffle tube having an SiC layer on its inner surface at a temperature of above 1400° C. in an atmosphere comprising an inert gas and at least one of SiF_4, C_2F_4 and CF_4 and at least one of Si_2F_6 and Si_3F_8.

5,306,323

FIBER COUPLER MANUFACTURING APPARATUS HAVING AN AUTOMATIC BREAKING TEST DEVICE

Hiroaki Takimoto; Hiroshi Suganuma, both of Kanagawa, and Kazuhiko Arimoto, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Sumiden Opcom, Ltd., Tokyo, both of Japan

Filed Jul. 1, 1992, Ser. No. 907,023
Claims priority, application Japan, Jul. 2, 1991, 3-50921[U]
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—3.11 **9 Claims**



1. A fiber coupler manufacturing apparatus, comprising:

first and second means for holding a plurality of optical fibers, a portion of said plurality of optical fibers being held between said first and second holding means;

first and second means for movably supporting said first and second holding means, respectively, said first and second holding means being movable in a direction substantially parallel to a longitudinal axis of said portion of said optical fibers held between said first and second holding means;

first means for exerting a first predetermined force on said first and second holding means to urge said first and sec-

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ond holding means away from each other along said direction said first exerting means comprising:

a first mass,

a first means for coupling said first mass to said first and second holding means, and

first means for hanging said first mass, said first hanging means cooperating with said first coupling means to cause said first mass to exert said first predetermined force on said first and second holding means;

second means for exerting a second predetermined force on said first and second holding means to urge said first and second holding means away from each other along said direction, said second exerting means comprising;

a second mass,

second means for coupling said second mass to said first mass, and

means for selectably supporting said second mass, said supporting means comprising a surface and being movable in a substantially vertical direction between a first position and a second position, said surface contacting said second mass to support said second mass when said supporting means is at said first position and said surface being at a predetermined distance away from said second mass when said supporting means is at said second position to enable said second mass to exert said second predetermined force on said first and second holding means; and

means for heating said portion of said plurality of said optical fibers held between said first and second holding means.

5,306,324

METHOD AND APPARATUS FOR BENDING AND TEMPERING A GLASS SHEET

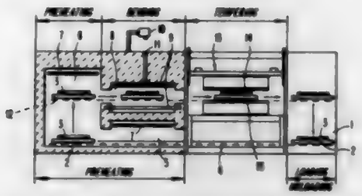
Jukka H. Vehmas, and Juha Paavola, both of Tampere, Finland, assignors to Tamglass Engineering Oy, Tampere, Finland

Filed Jun. 25, 1992, Ser. No. 904,481

Claims priority, application Finland, Apr. 30, 1992, 921964

Int. Cl.[5] C03B *23/025*

U.S. Cl. 65—104 **14 Claims**



1. A method for bending and tempering a glass sheet, comprising the steps of:

supporting a glass sheet on a ring mould;

preheating the glass sheet in a lower station;

lifting the glass sheet on the ring mould to an upper preheating station for additional preheating;

carrying the glass sheet on the ring mould to a heating and bending station;

heating the glass sheet to a softening temperature and allowing the glass sheet to bend gravitationally;

advancing the bent glass sheet to a tempering station; and,

tempering the glass sheet;

wherein, heating of the glass sheet above the glass sheet temperature of 500° C. to a tempering temperature is effected at a heating rate such that a 4 mm glass sheet heats from the temperature of 500° C. to a tempering temperature of 600°–630° C. in less than 28 seconds, whereby the temperature increase rate of a glass sheet at least at the glass surface is in average at least approximately 15° C./mm/s.

5,306,325

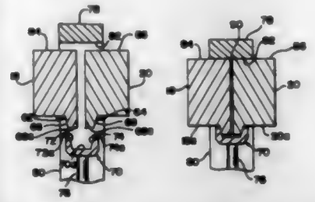
MOLD CLAMPING MECHANISM FOR GLASS CONTAINER FORMING MACHINE

Richard L. Smith, Upland; Homer E. Miller, LaFontaine, and Roger L. Erb, Marion, all of Ind., assignors to American National Can Company, Chicago, Ill.

Filed Apr. 5, 1993, Ser. No. 43,017

Int. Cl.[5] C03B *9/353*

U.S. Cl. 65—357 **14 Claims**



1. A mold locking system for a glass molding machine having first and second mold support arms for supporting respectively first and second mold halves, said support arms having first and second ends and upper surfaces, and being pivotally cantilever-mounted at said first ends thereof for rotation about a vertical axis between an open position, where said mold halves are separated, and a closed position, where said mold halves are brought into close proximity with each other, said locking system comprising:

pressure means for exerting an upward force on said second ends, said pressure means including surfaces configured to pressingly engage portions of said second ends so that operation of said pressure means forces said second ends towards each other; and

limit stop means for terminating upward travel of said second ends when said support arms are in a given position.

5,306,326

TITANIUM BASED CARBONITRIDE ALLOY WITH BINDER PHASE ENRICHMENT

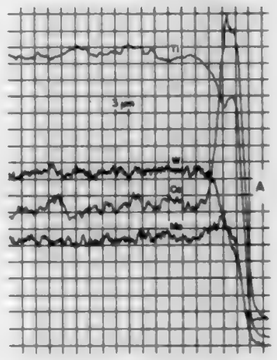
Rolf G. Oskarsson, Rouninge, and Gerold Weinl, Alvajo, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed May 22, 1992, Ser. No. 886,885

Claims priority, application Sweden, May 24, 1991, 9101590

Int. Cl.[5] C22C *29/02*

U.S. Cl. 75—238 **8 Claims**



1. Sintered titanium based carbonitride alloy body containing hard based on titanium as the main component and at least one metal taken from the group consisting of Zr, Hf, V, Nb, Ta, Cr, Mo and W in 5–30% binder phase based on a metal taken from the group consisting of Co, Ni and mixtures thereof, said body having a binder phase enriched surface zone with a higher binder phase content than in the inner portion of the body, said surface zone having an enrichment of simple hard constituents without a core-rim structure.

5,306,327

MODIFIED NATIVE STARCH BASE BINDER FOR PELLETIZING MINERAL MATERIAL

David L. Dingeman, Duluth, and William E. Skagerberg, Cloquet, both of Minn., assignors to Oriox Technologies, Inc., Duluth, Minn.

PCT No. PCT/US90/05466, § 371 Date May 19, 1992, § 102(e) Date May 19, 1992

PCT Filed Sep. 26, 1990, Ser. No. 852,269

Int. Cl.[5] C22B *1/08*

U.S. Cl. 75—313 **39 Claims**

1. A binder for pelletizing particulate mineral material, said binder comprising:

(a) about 30–99.5% modified native starch; and

(b) about 0.2–80% of water-dispersible polymer material selected from the group consisting of water-dispersible natural gums, water-dispersible pectins, water-dispersible starch derivatives, water-dispersible cellulose derivatives, water-dispersible vinyl polymers, water-dispersible acrylic polymers and mixtures thereof.

5,306,328

PROCESS FOR THE PREPARATION OF COPPER POWDER

Willi Streckel; Herbert Straussberger, both of Mehring/Öd, and Berad Pachaly, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 989,685

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142432

Int. Cl.[5] B22F *9/24*

U.S. Cl. 75—353 **7 Claims**

1. A process for preparing finely divided copper powder suitable for the preparation of copper catalyst for the synthesis of methylchlorosilane, which comprises adding a flocculating agent to an aqueous copper salt solution obtained by treating a process residue from the synthesis of methylchlorosilane with mineral acid, with the proviso that an oxidizing agent is present when the mineral acid is hydrochloric acid or sulfuric acid, filtering the aqueous copper salt solution and then adding the filtered aqueous copper salt solution into an aqueous suspension of iron powder.

5,306,329

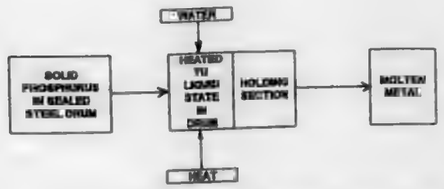
PHOSPHOROUS DEOXIDATION OF METAL

Warren B. Goodman, Jr., 306 Pine Tree Rd., Radnor, Pa. 19087

Filed Apr. 9, 1993, Ser. No. 45,409

Int. Cl.[5] C22B *9/02*

U.S. Cl. 75—646 **11 Claims**



1. A process for deoxidizing metal, which comprises continuously or semi-continuously treating a stream or bath of molten metal, selected from the group consisting of copper and brass, with a deoxidizing agent consisting essentially of liquid elemental phosphorous in an amount sufficient to deoxidize the metal but not more than 1% by weight based upon the weight of said molten metal, whereby the deoxidized metal so produced has a phosphorous content not greater than 1% by weight.

5,306,330

METHOD AND MECHANISM FOR THE SUPERSONIC SEPARATION OF DROPLETS FROM A GAS STREAM

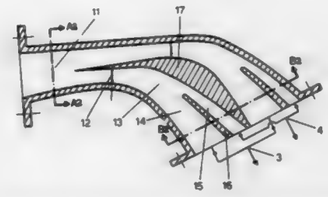
Athanasios Nasikas, Ethnikis Antistaseos 10,, 413 35 Larissa, Greece

Filed Aug. 8, 1991, Ser. No. 742,331

Claims priority, application Greece, Aug. 10, 1990, 900100605

Int. Cl.[5] B01D *51/08*

U.S. Cl. 95—29 **5 Claims**



1. A method for the separation of droplets from a gas stream in a gas-droplets mixture, wherein the mixture enters a separator mechanism at supersonic speed attained through a Laval nozzle, comprising the steps of:

convergence of said gas-droplets mixture flow, resulting to an inertial differentiation of the speed of droplets from the speed of gas, the gas flow being decelerated;

creation of a normal shock wave, resulting to an abrupt transition from supersonic to subsonic flow, whereof the droplets undergo a further inertial differentiation of their speed relative to the gas flow;

divergence of flow within a convex divergent nozzle downstream said normal shock wave and change in the flow direction, the inertia of droplets resulting to the creation of two subflows, one droplet enriched and one relatively droplet-free subflow;

separation and recovery of pressures of said subflows up to the values imposed by their subsonic discharge conditions, said separation being implemented by means of a separator plate dividing a purely divergent nozzle downstream said convex divergent nozzle into two partial divergent nozzles, one for said droplet-enriched subflow and one for said relatively droplet-free subflow;

discharge of said droplet-enriched subflow and of said relatively droplet-free subflow through separate outlet ducts, further subsonic separation of said droplet-enriched subflow to receive a liquid and a gas stream, disposal of said liquid and convergence of said gas stream in a common flow channel with said relatively droplet-free subflow and compression of said gas stream and said droplet-free subflow prior to their disposal.

5,306,331

PROCESS FOR COOLING THE FEED GAS TO GAS SEPARATION SYSTEMS

Steven R. Auvil, Macungie, Pa.; Rodney J. Allam, Guildford, England; Paul A. Webley, Macungie, Pa., and Philip J. Young, Whitchurch, England, assignors to Permea, Inc., St. Louis, Mo.

Filed Mar. 18, 1993, Ser. No. 32,885

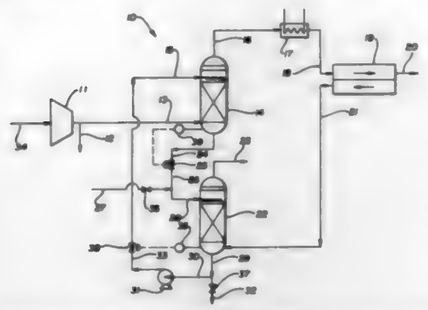
Int. Cl.[5] B01D *53/22*

U.S. Cl. 95—42 **49 Claims**

1. An improved process for the separation of at least one gas of a feed gas mixture from at least one other gas in the feed gas mixture by utilizing a gas separation unit to produce a high

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pressure stream and a low pressure stream, the improvement which comprises utilizing one stream from the gas separation



unit to cool water by evaporation, cooling the feed gas mixture by direct or indirect contact with the cooled water, and recovering the other stream enriched in the at least one gas.

5,306,332

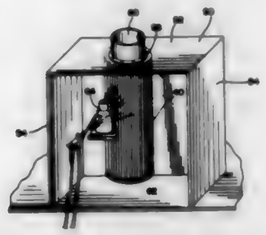
COLUMNAR FILTERING UNIT FOR SPRAY PAINTING

George E. Allen, Carol Stream, Ill., assignor to Air-Gonomics, Inc., Addison, Ill.

Continuation of Ser. No. 860,307, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 699,912, May 14, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,497

Int. Cl.[5] B01D *29/21, 29/54*

U.S. Cl. 95—273 31 Claims



1. A process for separating suspended paint particles from a fluid stream in a cross-draft spray booth; said booth comprising an air inlet, a wet operation spray chamber, an exhaust system and at least one columnar filtering unit located in said spray chamber; said filtering unit connected to said exhaust system by an exhaust outlet and said filtering unit having a filtering medium on at least a portion thereof; said process comprising:

projecting a fluid stream with paint particles at an object to be painted;

drawing air flow containing said fluid stream to said filtering unit by drawing air flow through said air inlet and said spray chamber to said columnar filtering unit and out said exhaust outlet; and

accumulating the paint particles in the fluid stream on the frontal side of said filtering unit causing the air flow to wrap around said filtering unit to enter said filtering medium.

5,306,333

RESINLESS PSEUDOPLASTIC BONDING COMPOSITIONS

Stephen M. Dershem, San Diego, Calif., assignor to Quantum Materials, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 802,013, Dec. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 675,127, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 581,068, Sep. 6, 1990, abandoned, which is a continuation of Ser. No. 464,612, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 204,016, Jun. 8, 1988, abandoned. This application Jan. 8, 1993, Ser. No. 2,308

Int. Cl.[5] C23C *20/04*

U.S. Cl. 106—1.19 19 Claims

1. A resinless die attach paste, consisting of:

approximately 70–82% by weight silver;

approximately 8–18% by weight glass frit having a glass transition temperature below 400° C.; and

approximately 8–20% by weight liquid organic vehicle of a type that results in a pseudoplastic rheology and a thixotropic index of 7.5–15.0 for the resulting mixture.

5,306,334

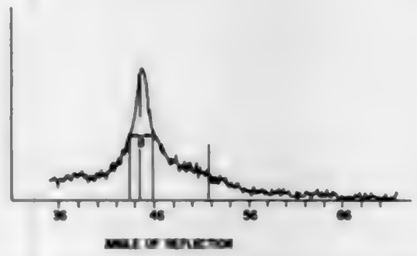
ELECTROLESS NICKEL PLATING SOLUTION

Nicholas M. Martyak, Ballwin, and Bruce F. Monzyk, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 20, 1992, Ser. No. 916,572

Int. Cl.[5] C23C *18/36*

U.S. Cl. 106—1.22 5 Claims



1. An electroless nickel plating solution consisting essentially of nickel salt, one or more organic acids selected from the group consisting of lactic acid, acetic acid, propionic acid, pyruvic acid, aspartic acid and glycolic acid, hypophosphite reducing agent, thiourea and ammonia and essentially no heavy metal, wherein the concentration of thiourea is less than 1 ppm, wherein the pH of said solution is alkaline.

5,306,335

ELECTROLESS BISMUTH PLATING BATH

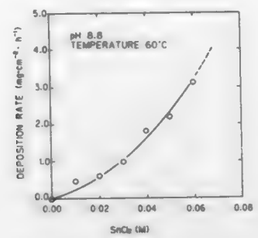
Atsuo Senda; Takuji Nakagawa, and Yoshihiko Takano, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 4, 1993, Ser. No. 13,701

Claims priority, application Japan, Feb. 5, 1992, 4-019751

Int. Cl.[5] C23C *18/16*

U.S. Cl. 106—1.22 11 Claims



1. An electroless bismuth plating bath, comprising a trivalent salt of bismuth, a reducing agent, the reducing agent comprising a bivalent water soluble compound of tin, and complexing agent.

5,306,336

SULFATE-FREE ELECTROLESS COPPER PLATING BATHS

Nicholas M. Martyak, Ballwin; Bruce F. Monzyk, Maryland Heights, and Henry H. Chien, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 20, 1992, Ser. No. 979,097

Int. Cl.[5] C23C *18/38*

U.S. Cl. 106—1.23 8 Claims

1. A sulfate-free electroless copper bath consisting of: cupric ions; cuprous ions; formaldehyde; formate ions; hydroxy ions; alkali metal ions; monovalent counterions for ionic copper selected from the group consisting of acetate, formate, sulfamate, methylsulfate, nitrate, trichloroacetate and trifluoroacetate; a cuprous ion chelant; and a cupric ion chelant selected from the group consisting of an alkali metal salt of one or more of aminotris(methylenephosphonic acid), biscarboxymethylaspartic acid, ethylenediaminetetra(methylenephosphonic acid), diethylenetri-aminepenta(methylenephosphonic acid), gluconic acid, 1-hydroxyethyl-idene-1,1-diphosphonic acid, mucic acid, D-saccharic acid, N,N,N',N'-tetrakis(2-hydroxypropyl)ethylenediamine and nitrilotriacetic acid.

5,306,337

ALGINATE IMPRESSION COMPOSITIONS

Jens Winkel, Cologne; Reiner Voigt, Leverkusen, and Norbert Weber, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 15, 1992, Ser. No. 945,197

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131839

Int. Cl.[5] A61K *6/08, 6/10*

U.S. Cl. 106—35 4 Claims

1. An alginate-based dental impression composition which is stable in the absence of a preservative, comprising two separate and distinct paste components A and B, A being anhydrous and comprising constituents which change adversely in the presence of water, and B comprising water and constituents which do not change adversely in the presence of water, B being present in 3.5 to 10 times the weight of A, wherein paste A consists essentially of

a) 10–25% by weight of calcium sulphate dihydrate

b) 15–23% by weight of at least one of potassium alginate and sodium alginate

c) 3–7% by weight of a metal oxide

d) 0.5–3% by weight of an alkali metal phosphate

e) 0.5–2% by weight of colored pigment and

f) 50–65% by weight of an organic paste-forming agent and paste B comprises

g) 75–85% by weight of demineralized water

h) 15–25% by weight of diatomaceous earth or silica

i) Traces of fragrances and

j) 0.3–1% by weight of gel-forming agent.

5,306,338

DENTAL RESTORATION COMPOSITION

Masayoshi Tsunekawa, Toyonaka, Japan, assignor to Sankin Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 783,328, Jan. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 686,685, Apr. 17, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,635

Int. Cl.[5] A61K *6/10, 6/08*

U.S. Cl. 106—35 8 Claims

1. A light-curing, fluoride-releasing dental restoration composition, comprising:

a powder and a liquid which are mixed together to be used in dental restoration, said powder including a fluoride-releasing glass filler and accelerator, said liquid including dimethacrylate monomers, diluent and 25–70% of water soluble methacryloxyalkyl phosphate and photoinitiator, said diluent comprising tetramethacryloxyethyl pyrophosphate.

5,306,339

CERAMIC DIE FOR MOLDING GLASS MEMBER

Shuichi Takeda; Hideki Shishiba, and Takeji Kajiuru, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP90/01210, § 371 Date Mar. 20, 1992, § 102(e) Date Mar. 20, 1992

PCT Filed Sep. 20, 1990, Ser. No. 842,183

Int. Cl.[5] B28B *7/36*

U.S. Cl. 106—38.27 9 Claims

1. In a die for molding a glass member, a ceramic die for glass molding characterized by having press surface thereof formed of a boron containing composite ceramics comprising

(A) at leas tone ceramic phase of a formula

M^IB,

wherein M^I stands for at least one member selected from the group consisting of Ni, Cr, V, Nb, Ta, Mo, W, and Mn having a M^I/B atomic ratio of 1/1 and

(B) at least one ceramic phase of

(b_1) IV-group diboride ceramic phase selected from the group consisting of TiB_2, ZrB_2, and HfB_2 and

(b_2) $(Cr, Ni)_3B_4$ ceramic phase.

5,306,340

SCLEROGLUCAN-BASED COMPOSITIONS AND THEIR USE AS A CEMENTATION SPACER

Alain Douche, Jurancon, and Patrick Isambourg, Saint Lys, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Feb. 11, 1993, Ser. No. 16,243

Claims priority, application France, Feb. 12, 1992, 92 01548

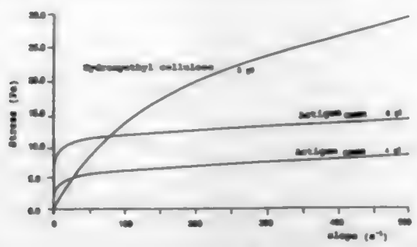
Int. Cl.[5] C08L *5/00;* E21B *33/16*

U.S. Cl. 106—208 20 Claims

1. A spacer composition, comprising (1) water, (2) unrefined scleroglucan which contains at least 15%, by weight, of the mycelium which produced said scleroglucan based on the total

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amount of mycelium in the producing fungus, and (3) at least one compound selected from the group consisting of polyalcohols, monoethers of polyalcohols, alkanolamines, and dialdehydes.



5,306,341

AQUEOUS PAINT ADDITIVE AND AQUEOUS PAINT COMPOSITION

Ichiro Ono, and Shoji Ichinohe, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

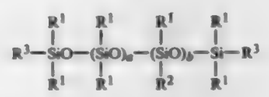
Filed Jul. 15, 1993, Ser. No. 91,709

Claims priority, application Japan, Jul. 16, 1992, 4-212092

Int. Cl.[5] C07G *3/00*

U.S. Cl. 106—287.13 **6 Claims**

1. An aqueous paint additive comprising as an active ingredient a triglycerol-modified silicone compound of the following formula (1):



(1)

wherein R^1 is a monovalent hydrocarbon group having 1 to 10 carbon atoms,

R^2 is a group of the following formula (A):



(A)

wherein Q is a divalent hydrocarbon group having 2 to 10 carbon atoms,

R^3 is a monovalent hydrocarbon group having 1 to 10 carbon atoms or a group of formula (A), and

letters a and b are positive integers inclusive of 0, with the proviso that at least one of the R^3 groups is a group of formula (A) when b is equal to 0.

5,306,342

PRODUCTION OF PIGMENTS

John A. Stirling, Glasgow, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 893,131, Jun. 3, 1992, abandoned. This application Mar. 30, 1993, Ser. No. 40,232

Claims priority, application United Kingdom, Jun. 6, 1991, 9112155

Int. Cl.[5] C09B *35/12*

U.S. Cl. 106—494 **26 Claims**

1. Process for the production of a flocculation-resistant pigment, comprising after-treating an arylamide pigment which has been subjected to a dyestuff treatment, the after-treatment comprising a further treatment of the dyestuff-treated arylamide pigment with an arylamide yellow dyestuff, under alkaline conditions at elevated temperature.

5,306,343

TAGGING AND IDENTIFYING ASPHALT ADDITIVES

Walter A. Richardson, III, Beverly, Mass.; Alejandro Zimin, Sr., Wayne, N.J.; James Fuerholzer, Crystal Lake, Ill.; Michael R. Friswell, Wayne, N.J.; Michael P. Hinton, Neshanic Station, N.J., and Peter A. Caputo, South Orange, N.J., assignors to Morton International, Inc., Chicago, Ill.

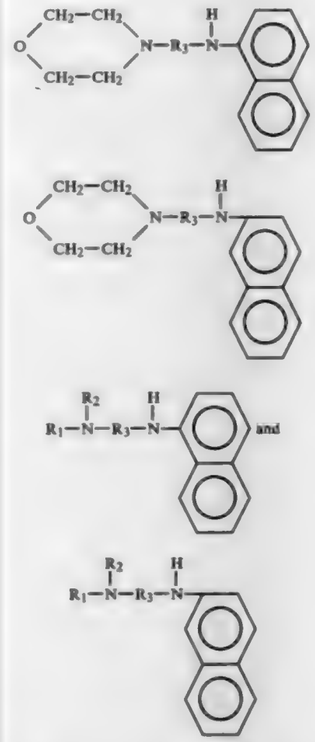
Filed Apr. 26, 1993, Ser. No. 53,256

Int. Cl.[5] C04B *24/02*

U.S. Cl. 106—668 **7 Claims**

1. A method of determining the presence of an additive in an asphalt composition, the method comprising,

tagging said additive with a tag selected from a compound of the formulae:



and

where R_1 and R_2 are hydrogen or alkyl having from one to twenty carbon atoms and R_3 is an alkyl group of from one to eight carbon atoms,

mixing said tagged additive with asphalt and other components of an asphalt composition to form a mixture, an asphalt portion component of said mixture comprising said asphalt and any asphalt-soluble component, including said tag, and

processing said mixture at temperatures of about 300° F. (149° C.) or above to form the asphalt composition,

obtaining a specimen of said asphalt composition,

dissolving the asphalt portion of said a specimen in a water-immiscible solvent to form an asphalt portion-insolvent solution, and

concurrently or successively extracting tag from said asphalt portion-insolvent solution and developing a color by reacting said tag with a diazo compound.

5,306,344

MIXTURE OF PORTLAND CEMENT CONCRETE MATERIALS FOR FREEZE/THAW RESISTANCE

Paul F. Gutmann, Northville, and James L. Thornley, Milford, both of Mich., assignors to Edward C. Levy Company, Detroit, Mich.

Filed Dec. 2, 1992, Ser. No. 984,871

Int. Cl.[5] C04B *22/00, 24/12, 26/22*

U.S. Cl. 106—714 **4 Claims**

1. A concrete mix comprising:

(A) a mixture which includes

(1) a cementitious mixture having the following components by weight percentage of the cementitious mixture

(a) about 13% to 18% Type I Portland cement,

(b) about 1% to 5% Type C fly ash,

(c) about 36% to 43% air-cooled blast furnace slag aggregate having substantially no chert particles or shale particles,

(d) about 38% to 46% fine aggregate having less than 15% retained on a No. 8 mesh and about 0% retained on a No. 4 mesh, said fine aggregate having substantially no chert particles or shale particles, and

(e) sufficient water to effect hydraulic setting of the cementitious mixture;

(2) 4 to 10 ounces of an admixture for every 100 pounds of said cementitious mixture, said admixture having the following components by weight percent of the admixture

(a) about 20% to 30% sodium lignosulfonate,

(b) about 15% to 20% sodium nitrate,

(c) about 2% to 7% sodium thiocyanate,

(d) about 1% to 4% triethanolamine, and

(e) about 50% aqueous solution;

(3) an air entraining admixture of neutralized alkali salts of pinewood resin extracts; and

(B) a finishing enhancer of about one ounce of 10% solution of coconut fatty acid diethanolamine for every cubic yard of said mixture.

5,306,345

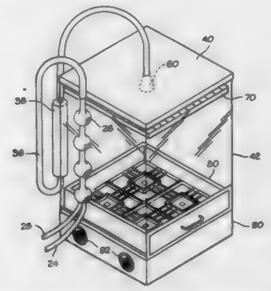
DEPOSITION CHAMBER FOR DEPOSITION OF PARTICLES ON SEMICONDUCTOR WAFERS

Carrie Pellet, and Craig Donaldson, both of Charlotte, N.C., assignors to Particle Solutions, Charlotte, N.C.

Filed Aug. 25, 1992, Ser. No. 935,043

Int. Cl.[5] B05B *15/06*

U.S. Cl. 118—301 **18 Claims**



1. A deposition chamber for forming a deposited layer on a wafer having an upperside comprising:

(a) a mixing chamber;

(b) wafer support means for supporting a wafer in said chamber;

(c) a nozzle located above said wafer support means which can eject a mixture of gas and particles into said mixing chamber toward the wafer;

(d) gas outlet means at the opposite end of said chamber from said nozzle for allowing said gas to exit said chamber; and

(e) deionizing means located above said wafer support means for neutralizing said particles and being configurated and arranged to facilitate uniform deposition of said particles on said wafer.

3. A deposition chamber according to claim 1 wherein said wafer support means comprises a base member having an underside and a topside having a first recess on said topside sized to fit the wafer therein and a mask member connected to said base member and movable between a first position and a second position, said first position being where said mask member is positioned over said first recess to aid in selective deposition of particles on a wafer and said second position being where said mask member is raised from said base member relative to the first position for insertion and removal of said wafer said first recess together with said mask member movement being capable of effecting a space of potentially no more than approximately one ten-thousandths of an inch between said mask member and the upperside of the wafer in said first position; whereby when said mask member is above said recess in said first position there is a distance between said mask member and the semiconductor wafer placed in said recess for processing of one-ten thousandths of an inch or less.

5,306,346

APPARATUS FOR COATING FASTENERS

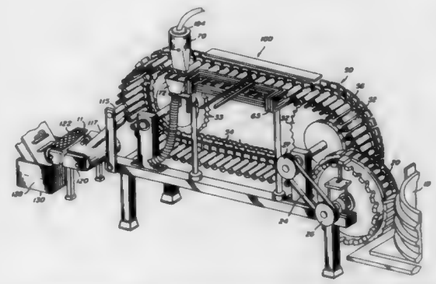
Anthony DiMaio, Barre, Vt.; Richard J. Duffy, Shelby Township, Macomb County, and Eugene Sessa, Mt. Clemens, both of Mich., assignors to Nylok Fastener Corporation, MaComb, Mich.

Continuation-in-part of Ser. No. 748,773, Aug. 22, 1991, Pat. No. 5,169,621, which is a division of Ser. No. 422,602, Oct. 17, 1989, Pat. No. 5,078,083. This application Sep. 2, 1992, Ser. No. 939,139

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] B05B *7/00*

U.S. Cl. 118—308 **10 Claims**



1. An apparatus for continuously applying a coating material to fasteners, comprising:

means for providing a supply of fasteners;

means for positioning the fasteners on fastener supporting notches on a rotating carriage.

means for transferring the fasteners from said rotating carriage to a belt with externally threaded fastener holders that are synchronously alignable with said supporting notches;

means for moving said belt to advance the fasteners positioned on said fastener holders;

means for centering the fasteners positioned on said corresponding fastener holders on said moving belt;

means for heating the fasteners positioned on said externally threaded fastener holders to raise the temperature of the fasteners above the melting point of the coating material;

means for advancing the fasteners through said heating means;

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means for applying the coating material to at least a portion of said fasteners positioned on said externally threaded fastener holders; and

means for rotating said fastener holders while said coating material is applied to said fasteners.

5,306,347

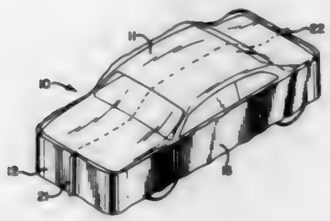
PROTECTIVE COVER FOR A VEHICLE

Arthur B. Semle, Wilbraham; Karl C. Unger, West Springfield, both of Mass., and Kenneth L. Motsinger, Gahanna, Ohio, assignors to Westvaco Corporation, New York, N.Y.

Filed Jun. 17, 1993, Ser. No. 77,385

Int. Cl.[5] B05C *11/00*

U.S. Cl. 118—504 **8 Claims**



1. A disposable enclosure for covering a vehicle comprising, a plurality of planar, substantially rectangular panels, each having longitudinal edges and end edges, said panels comprising:

(a) a central panel prepared from a substantially transparent material adapted to cover at least the top portion of a vehicle; and

(b) a pair of side panels prepared from a substantially heat reflective material, said side panels being bonded to the longitudinal edges of said central panel and said central panel and side panels each being bonded to one another at the end edges thereof, whereby the side panels are adapted to cover the front, rear and side portions of a vehicle.

5,306,348

METAL GROWTH ACCELERATOR SHELL FOR THE CHEMICAL VAPORIZATION DEPOSITION OF DIAMOND

James F. Fleischer, Scotia, and Thomas R. Anthony, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 632,875, Dec. 24, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 893,969

Int. Cl.[5] H01L *21/00*

U.S. Cl. 118—715 **12 Claims**

1. Apparatus for chemical vapor deposition of diamond, comprising:

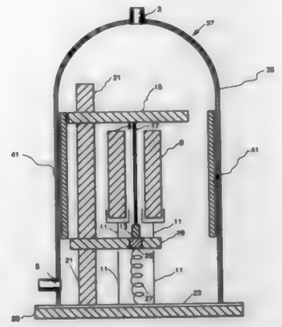
a closed reaction chamber having uncooled, uninsulated walls, at least one gas inlet and at least one exhaust means, said chamber being capable of being maintained at a pressure below atmospheric;

sources of hydrogen and a hydrocarbon gas for the purpose of feeding said gases to said chamber through said gas inlet;

at least one continuous uncooled substrate adapted to receive a diamond deposit;

support means for supporting said substrate in said chamber; and

at least one heated filament;



wherein a surface of a wall in the reaction chamber contains an expediting metal having a melting point equal to or higher than copper.

5,306,349

METHOD FOR REMOVING COATINGS FROM COMPACT DISCS

Han H. Nee, Shizouka, Japan, assignor to Sony Music Entertainment, Inc., New York, N.Y.

Filed Nov. 23, 1992, Ser. No. 980,582

Int. Cl.[5] B08B *3/12*

U.S. Cl. 134—1 **10 Claims**

1. A method for removing the lacquer and aluminum coatings from the polycarbonate substrate or a compact disc, comprising the steps of:

(a) immersing a batch of compact discs comprising compact discs coated with a solvent based lacquer coating and/or compact discs coated with a UV-cured acrylic lacquer coating in an alkaline solution at a pH of about 13 or more;

(b) heating said alkaline solution;

(c) mechanically agitating said immersed discs by applying to said heated alkaline solution ultrasonic energy having a frequency in the range from about 20 to about 40 Khz with an energy density in the range from about 10 to about 200 watts per liter, the alkaline solution being at a sufficient concentration and temperature and in contact with the agitated discs for a time sufficient to dissolve the lacquer and aluminum coatings into solution and to leave behind stripped polycarbonate discs;

(d) washing the stripped polycarbonate discs to remove remanent alkaline solution therefrom; and

(e) drying the washed polycarbonate discs.

5,306,350

METHODS FOR CLEANING APPARATUS USING COMPRESSED FLUIDS

Kenneth L. Hoy, St. Albans, and Kenneth A. Nielsen, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 631,406, Dec. 21, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 874,521

Int. Cl.[5] B08B *9/00, 9/06*

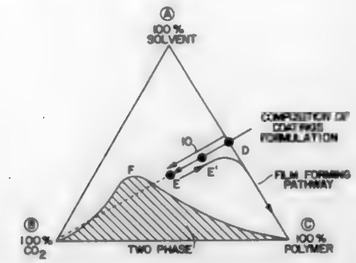
U.S. Cl. 134—22.14 **44 Claims**

1. A method of cleaning apparatus containing one or more polymeric compounds which comprises:

a) forming a one phase, liquid cleaning mixture comprising:

(i) a compressed fluid fraction containing at least one compressed fluid, said compressed fluid being a gas at standard conditions of 0° C. and one atmosphere (STP); and

(ii) a solvent fraction containing at least one active solvent component in which said at least one or more polymeric compounds are at least partially soluble and which is at least partially miscible with the at least one compressed fluid component; and



b) passing said liquid cleaning mixture through the apparatus at a pressure at which the cleaning mixture and the polymer dissolved therein is substantially near its two fluid phase boundary region.

5,306,351

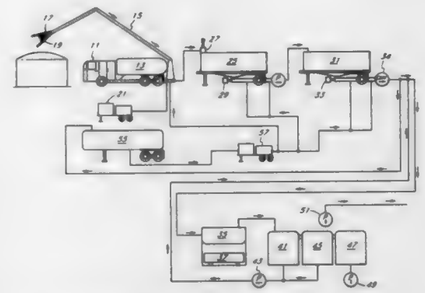
WASTE OIL REMOVAL COMPOSITION AND METHOD

William J. Anderson, 16401 Woodstock La., Huntington Beach, Calif. 92647

Filed May 21, 1993, Ser. No. 65,653

Int. Cl.[5] B08B *3/04;* B01F *17/50, 17/54*

U.S. Cl. 134—40 **11 Claims**



1. A concentrate composition for use in an oil removal dispersion solution comprising:

about 0.1 weight percent soy flour;

about 0.05 weight percent lignin flour;

about 0.05 weight percent citrus pectin;

about 62.95 weight percent sodium silicate; and

about 36.85 weight percent water.

5,306,352

PEROXIDE DISINFECTION METHOD

Paul Nicolson, Dunwoody; Kenneth R. Seamons, Marietta; Fu-Pao Tsao; Larry A. Alvord, both of Lawrenceville, and Earl C. McCraw, Duluth, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 636,280, Dec. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 458,123, Dec. 28, 1989, Pat. No. 5,078,798. This application Jan. 22, 1993, Ser. No. 7,809

Int. Cl.[5] B08B *3/08, 7/00*

U.S. Cl. 134—42 **34 Claims**

1. A method of disinfecting a hydrogen peroxide stable material comprising contacting said material with a hydrogen peroxide containing solution and a hydrogen peroxide decomposition means which permits said material to have a cumulative (% peroxide)(min) exposure from the time said decomposition means contacts said peroxide containing solution, time zero, over a period of no greater than 12 hours of at least 20% peroxide-min.,

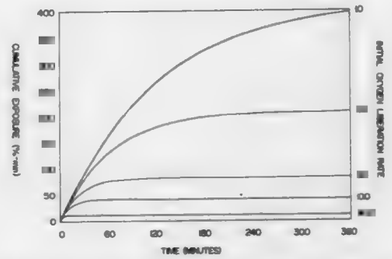
said hydrogen peroxide containing solution having a hydrogen peroxide content at time zero of from about 0.5 to about 6%,

and wherein said decomposition means is a member selected from the group consisting of

(a) a catalyst fixed to a position which is at the bottom of said solution, said catalyst being prepoisoned to partially deactivate the active sites of the catalyst to slow down the decomposition rate of the hydrogen peroxide solution,

(b) a catalyst flexibly attached to a portion of a hydrogen peroxide decomposing device in which the disinfecting is carried out so as to move out of and into said solution during said decomposition process,

(c) a catalyst enclosed within a container located within a hydrogen peroxide decomposing device in which said



disinfecting is carried out, said container having one or more orifices therethrough so as to restrict the flow rate of oxygen from inside the container to the exterior of the container,

(d) a catalyst free floating in said solution with a density to drive it into unreacted solution areas and sufficiently light to be driven away from said unreacted solution areas by buoyant forces resulting from oxygen bubbles adherent thereto, and

(e) a catalyst located in a position at the top of a hydrogen peroxide decomposing device in which said disinfecting is carried out and which is in contact with the hydrogen peroxide solution, whereby the decomposition of the hydrogen peroxide is controlled by a stirring means located at the bottom of said hydrogen peroxide decomposition device which stirring means functions by agitating the hydrogen peroxide liquid solution such as to remove the reaction product formed from the vicinity of the catalyst and bring the unreacted hydrogen peroxide in fresh contact with the catalyst.

5,306,353

METHOD OF PRODUCING GRAIN ORIENTED SILICON STEEL SHEETS HAVING LESS IRON LOSS

Yasuyuki Hayakawa; Michiro Komatsubara; Takahiro Kan; Hirotake Ishitobi, and Katsuo Iwamoto, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 683,257, Apr. 10, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 899,957

Claims priority, application Japan, Apr. 13, 1990, 2-96322; Sep. 7, 1990, 2-235806; Mar. 11, 1991, 3-69525

Int. Cl.[5] C21D *8/12*

U.S. Cl. 148—111 **9 Claims**

6. A method of producing grain oriented silicon steel sheets having low iron loss from a slab of silicon steel comprising C: 0.02–0.08 wt %, Si: 2.5–4.0 wt %, Mn: 0.02–0.15 wt %, Se: 0.010–0.060 wt %, Sb: 0.01–0.20 wt %, Cu: 0.02–0.30 wt % and the balance being substantially Fe, comprising subjecting said

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slab to hot rolling, subjecting the resulting hot rolled sheet to heavy cold rolling or two-stage cold rolling through an intermediate annealing up to a final product thickness, subjecting the resulting cold rolled sheet to decarburization annealing, applying a slurry of an annealing separator containing MgO to the surface of the sheet, and then subjecting the sheet to secondary recrystallization annealing and purification annealing, characterized in that in said decarburization annealing the sheet is heated to 850°–1000° C. at a rate of not less than 10° C./s and kept in that temperature range in a non-oxidizing atmosphere having a dew point of not higher than 15° C. for



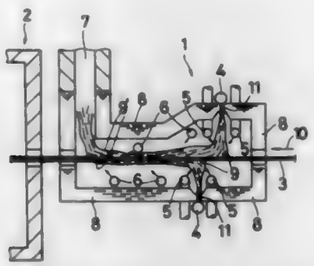
5–60 seconds and further kept in a wet hydrogen atmosphere of 780°–850° C. for 30 seconds to 5 minutes, and said final product thickness is 0.12–0.23 mm, and said secondary recrystallization annealing is a treatment in which the sheet is heated up to a temperature of 840°–900° C. and a rate of not less than 15° C./h and kept at that temperature for 30 minutes to 5 hours and further kept at a temperature lower by 20°–50° C. than the above temperature for not less than 20 hours, and said annealing separator is added with 1–50 parts by weight of a spinel composite compound containing aluminum and 1–20 parts by weight of a Ti compound based on 100 parts by weight of MgO.

5,306,354

METHOD OF BLACKENING TREATING A STAINLESS STEEL STRIP SURFACE

Takakatsu Adachi, Shinanyo, Japan, assignor to Nisshin Steel Co., Ltd., Tokyo and Chugai Ro Co., Ltd., Osaka, both of Japan

Filed Jun. 23, 1992, Ser. No. 902,892
Claims priority, application Japan, Jul. 10, 1991, 3-195116
Int. Cl.[5] C21D *1/08*
U.S. Cl. 148—235 **8 Claims**



1. A method of blackening treatment of a surface of a stainless steel strip moved through a treating furnace positioned upstream of a continuous annealing furnace, said method comprising:

incompletely combusting a fuel in a soot generation burner to thereby generate an incomplete combustion flame including soot and directing said incomplete combustion flame toward said surface within said treating furnace, such that said soot deposits on and blackens said surface;

injecting secondary combustion air into said treating furnace toward said surface, separately from said soot generation burner at positions to enclose said incomplete combustion flame, and thereby combusting further said fuel from said incomplete combustion flame to form a combustion reaction flame;

injecting flame guide air, separately from said soot generation burner and said secondary combustion air, into said treating furnace toward said surface in a direction perpendicular to a direction of movement of said strip through said treating furnace or in a direction inclined downstream to said direction of movement; and

causing said combustion reaction flame to flow along said surface parallel to said direction of movement.

5,306,355

SYSTEM FOR THE PASSIVATION OF METAL SURFACES AFFECTED BY OPERATING CONDITIONS AND AGENTS PROMOTING CORROSION

Vincenzo Lagana, Milan, Italy, assignor to Urea Casale S.A., Lugano, Switzerland

Filed Mar. 4, 1992, Ser. No. 846,537
Claims priority, application Italy, Mar. 18, 1991, MI 91 A 000715
Int. Cl.[5] C23C *8/12*
U.S. Cl. 148—276 **14 Claims**

1. A method for the passivation of stainless steel and titanium metal surfaces in equipment used for chemical processes, comprising the steps of:

feeding into the equipment feed a first oxygen-containing passivating agent; and

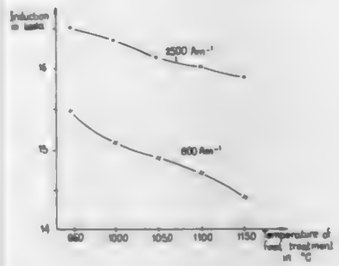
feeding into the equipment ozone as a second passivating agent, said ozone content in said feed being at least 0.001% v/v.

5,306,356

MAGNETIC SHEET METAL OBTAINED FROM HOT-ROLLED STRIP STEEL CONTAINING, IN PARTICULAR, IRON, SILICON AND ALUMINUM

Pierre Brissonneau, Grenoble; Jacques Quenin, Gieres, and Jean Verdun, St Chély d'Apcher, all of France, assignors to Ugine, Aciers de Chatillon et Gueugnon, Puteaux, France

Continuation of Ser. No. 530,587, May 31, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,627
Claims priority, application France, Jun. 1, 1989, 89 07263
Int. Cl.[5] C22C *38/02, 38/06*; H01F *1/147*
U.S. Cl. 148—308 **8 Claims**



1. Magnetic sheet metal obtained from hot-rolled strip steel containing iron, silicon and aluminum, wherein its composition by weight is as follows:

silicon less than 3.3%,

aluminum between 1.5 and 8%,

manganese less than 0.2%,

sum of metal residues (nickel, chromium, molybdenum, titanium and copper) less than 0.1%,

carbon less than 30 ppm, sulphur less than 20 ppm, nitrogen less than 20 ppm,

oxygen less than 20 ppm and phosphorus less than 50 ppm,

the remainder being iron, the sum of percentages of silicon and aluminum being higher than 2.5% and up to 9% in concentration by weight, and wherein the strip steel is 2.5

mm thick resulting from having been hot-rolled, subjected to two cold-rollings in one or several passes, separated by an intermediate annealing carried out continuously at a temperature higher than 950° C. and followed by a final annealing, the degree of reduction of the first cold-rolling being between 50% and 75%, the degree of reduction of the second cold-rolling being between 60% and 75%, has a cubic structure at least 40% of the grains therein not deviating by more than 15° from the ideal cubic orientation (100) (001) in the Miller notation.

5,306,357

SULFURIC ACID RESISTANT ALLOYS

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, Pevely, Mo.

Filed Feb. 4, 1993, Ser. No. 13,741
Int. Cl.[5] C22C *38/44, 38/16*
U.S. Cl. 148—327 **10 Claims**

1. An austenitic alloy consisting essentially of about:

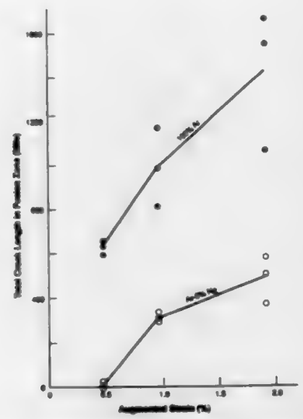
NICKEL	17.3–22.5% BY WEIGHT
CHROMIUM	9–14%
MOLYBDENUM	1.2–2.8%
COPPER	2.6–3.8%
MANGANESE	2.6–4.2%
COLUMBIUM	0.2–0.85%
IRON	ESSENTIALLY BALANCE

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SHIELDING GAS TO REDUCE WELD HOT CRACKING

George Y. Lai, Carmel; Robert B. H. Herchenroeder, Kokomo, both of Ind., and Christopher R. Patriarca, Ruston, La., assignors to Haynes International, Inc., Kokomo, Ind.

Filed Aug. 20, 1991, Ser. No. 747,558
Int. Cl.[5] C22C *19/05*
U.S. Cl. 148—427 **7 Claims**



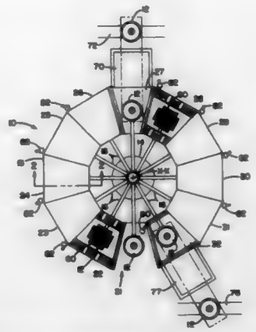
1. A process for the welding of nickel base superalloys containing zirconium and/or boron by a welding method requiring gas shielding, wherein the shielding gas consists essentially of about 2 to 8 percent by volume nitrogen and the balance arc inert gas plus normal impurities.

5,306,359

METHOD AND APPARATUS FOR HEAT TREATING

John R. Eppeland, St. James, and Jack E. Mannerud, Coon Rapids, both of Minn., assignors to BGK Finishing Systems, Inc., Blaine, Minn.

Continuation of Ser. No. 824,378, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 788,252, Nov. 5, 1991, abandoned. This application May 6, 1993, Ser. No. 59,191
Int. Cl.[5] C21D *11/00*
U.S. Cl. 148—511 **30 Claims**



1. A method for metallurgically heat treating a plurality of discreet, individually movable aluminum alloy parts, said method comprising heat treating said parts in a plurality of successive stations arranged in a line of travel with one of said parts in each of said stations heat treated with direct radiation from at least one infrared radiation lamp until said part attains a final desired state of metallurgical heat treatment after heat treatment in said stations, said method including placing and holding said part in one of said plurality of stations and heat treating said part in said one of said plurality of stations with a first infrared radiation intensity independent of an infrared radiation intensity in others of said plurality of stations, said first infrared radiation intensity selected, at least in part, in response to a measured initial temperature of said part prior to said part being heat treated in said first station and said part held substantially stationary relative to said line of travel in said first station during said heat treatment for said part to be heated by said first infrared radiation intensity until a temperature of said part is elevated to a temperature greater than said initial temperature and for said part to at least partially attain said desired final state of metallurgical heat treatment, said method further including moving said part along said line of travel to a second one of said plurality of stations and holding said part substantially stationary relative to said line of travel in said second one of said plurality of stations with a second infrared radiation intensity independent of an infrared radiation intensity in others of said plurality of stations.

5,306,360

PROCESS FOR IMPROVING THE FATIGUE CRACK GROWTH RESISTANCE BY LASER BEAM

Arvind Bharti, D-45/10, Defence Laboratory Quarters, P.O. Kanchanbagh, and Vikas K. Saxena, D-285/5, Defence Laboratory Quarters, P.O. Kanchanbagh, both of Hyderabad-500 258, India

Filed Dec. 5, 1991, Ser. No. 803,112
Int. Cl.[5] C22C *14/00*; C21D *10/00*
U.S. Cl. 148—525 **9 Claims**

1. A process for improving the fatigue crack growth resistance of a component comprising α-β titanium alloys, pure iron and other alloys and metals capable of retaining a metastable phase on rapid cooling comprising the steps of sand blasting the component, determining the exact position and depth of focal spot of a laser beam, selecting a scanning speed for the

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available power of the laser beam, making a single laser trail on the component with the selected power and scan speed such that focal spot is up to 200 μm above or below the surface to be treated, measuring the width of the trail, successively scanning the component while adjusting successive scans such that there is an overlap of 5 to 50%, wherein the covering of the sand blasted surface of the component by successive scanning is effected under a shield of an inert gas at a pressure of 20–48 PSI.

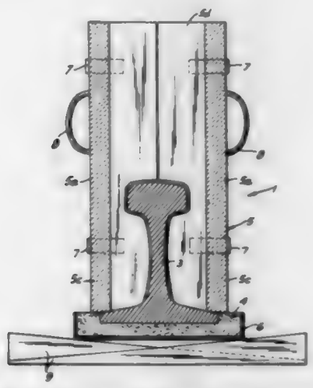


5,306,361

METHOD FOR IMPROVING SERVICE LIFE OF RAIL WELDS BY ALUMINOTHERMIC HEAT TREATMENT

Gordon O. Beach, 968 5th St., SW., New Brighton, Minn. 55112; Robert H. Kachik, 780-B Liverpool Pl., Lakehurst, N.J. 08733; Mark A. Swartz, 440 Mulberry Pl., Brick, N.J. 08723; Frank K. Kuster, Bartholomaeus Str. 1, D 4030 Ratingen 6, and Hans J. Guntermann, Augenerstrasse 94, D 4300 Essen 14, both of Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,947
Int. Cl.[5] C21D *9/04*
U.S. Cl. 148—529 **4 Claims**



1. A method of heat treating thermite welds comprising the steps of enclosing a thermite weld formed between adjacent rail ends with a containment spaced laterally from the weld and the adjacent rail ends, filling the containment with an aluminothermic material mixture with the mixture contacting the rail ends and the weld, igniting the aluminothermic mixture, maintaining the reacted aluminothermic material in contact with the rail ends for a period of time, after the period of time stripping the containment and aluminothermic reaction products from the welded rail end, and immediately thereafter air cooling the weld and rail ends, completing the aluminothermic reaction in approximately two minutes and maintaining the aluminothermic reaction products in contact with the weld and rail ends for approximately eight minutes, and removing the containment and aluminothermic reaction products in about two minutes.

5,306,362

ALUMINUM ALLOY AND METHOD OF MAKING

Alok K. Gupta; David J. Lloyd, and Pierre H. Marois, all of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 734,619, Jul. 23, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 950,423
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—552 **21 Claims**

12. A method of making an improved aluminum alloy, comprising:

forming an aluminum alloy consisting essentially of, by weight percent, 1% to 1.8% Cu, 0.8% to 1.4% Mg, 0.2% to 0.39% Si, 0.05% to 0.4% Fe, 0.05% to 0.40% Mn, with the balance aluminum with normal impurities, wherein the percentage of Mg by weight is approximately equal to % Cu/2.2+1.73×% Si;

forming aluminum alloy sheets from the aluminum alloy;

stamping the aluminum alloy sheets into workpieces; and

heat treating and age hardening the workpieces at a temperature and for a time period effective to form metastable beta Mg_2Si precipitate and a metastable Al_2CuMg precipitate within the alloy.

5,306,363

THIN ALUMINUM-BASED ALLOY FOIL AND WIRE AND A PROCESS FOR PRODUCING SAME

Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, Aoba-ku, Sendai-shi, Miyagi-ken; Akihisa Inoue, Miyagi; Hitoshi Yamaguchi, Nagano; Noriaki Matsumoto, Tokyo, and Kazuhiko Kita, Miyagi, all of Japan, assignors to Tsuyoshi Masumoto, Miyagi; Teikoku Piston Ring Co., Ltd., Tokyo; Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Kogyo K.K. Yoshida, Tokyo, all of Japan, a part interest

Filed Aug. 20, 1990, Ser. No. 574,654
Claims priority, application Japan, Aug. 31, 1989, 1-223079
Int. Cl.[5] C22C *45/08*
U.S. Cl. 148—561 **22 Claims**



1. A process for producing a thin aluminum-based alloy foil or wire having excellent strength and resistance to corrosion, by using an amorphous wire or foil shaped starting material which has been made by a quenching and solidifying process and which has a composition represented by the general formula:

$$Al_aM_bX_c$$

wherein:

M is one or more elements selected from a group consisting of V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Ti, Mo, W, Ca, Li, Mg and Si;

X is one or more elements selected from a group consisting of Y, Nb, Hf, Ta, La, Ce, Sm, Nd and Mm (misch metal); and

a, b, and c are atomic percentages falling within the following ranges:

$50 \leq a \leq 93$

$0.5 \leq b \leq 35$ and

$0.5 \leq c \leq 25$,

the process for producing the thin aluminum-based alloy foil or wire comprising the steps of:

heating said amorphous material to a working temperature which falls within a glass transition region, a supercooled liquid region or ±30° K. of the crystallization temperature that is peculiar to the amorphous material;

subjecting the heated amorphous material to rolling or drawing under a tensile stress; and

cooling the material to approximately room temperature; and wherein

all the process steps are performed within a 600 sec. time period, and

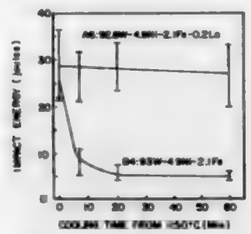
the rolling or drawing is conducted so as to obtain a foil product of a uniform thickness with inaccuracies of ±0.1 μm or lese both across the width and along the length or a wire product of a uniform diameter with inaccuracies of ±0.1 μm along the length of the wire.

5,306,364

HIGH TOUGHNESS TUNGSTEN BASED HEAVY ALLOY CONTAINING LA AND CA. MANUFACTURING THEREOF

Seong-Hyeon Hong; Suk-Joong L. Kang; Duk Yong Yoon, all of Seoul, and Woon-Hyung Baek, Daejon, all of Rep. of Korea, assignors to Agency For Defense Development, Daejon, Rep. of Korea

Filed Jun. 9, 1992, Ser. No. 896,134
Int. Cl.[5] B22F *1/00*; C22C *27/00*
U.S. Cl. 148—673 **4 Claims**



1. A high toughness tungsten based heavy alloy comprising a W—Ni—Fe based composition containing at least 90 wt % tungsten, no more than about 10 wt % nickel and iron, and from about 0.01 wt % to 1.0 wt % lanthanum.

5,306,365

APPARATUS AND METHOD FOR TAPERED HEATING OF METAL BILLET

Scott E. Reighard, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

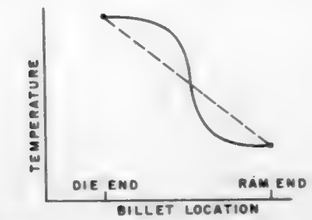
Filed Nov. 19, 1992, Ser. No. 978,801
Int. Cl.[5] C22F *1/04*; C21D *11/00*
U.S. Cl. 148—688 **20 Claims**

1. A method for providing a tapered temperature profile in a metal billet prior to extrusion, comprising:

(a) providing a metal billet heated to a specified substantially uniform initial temperature;

(b) monitoring the temperature of said heated metal billet at a plurality of locations along the length of said heated metal billet; and

(c) successively withdrawing and returning said metal billet to a heating source through physical movement of said metal billet in response to said monitoring said temperature to reduce the heat in an adjoining portion relative to the hot end of said metal billet to form and maintain a



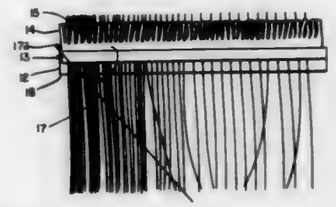
specified tapered temperature profile along said metal billet.

5,306,366

METHOD OF MANUFACTURING AN ILLUMINATED ARTIFICIAL TREE

Marcia J. Shattan, 200 E. 27th St., Apt. 18B, New York, N.Y. 10016

Filed Jun. 30, 1992, Ser. No. 906,828
Int. Cl.[5] A47G *33/06*; A41G *1/02*
U.S. Cl. 156—61 **10 Claims**



1. A method of producing an illuminated artificial tree comprising

forming each of a plurality of branches of the tree by:

a) placing a plurality of fiber optic elements in longitudinally juxtaposed relation,

b) affixing to said fiber optic elements, adjacent one of the ends thereof, an assembly of simulated pine needles which extends substantially along the transverse width of the fiber optic elements in adjacent relation to the ends of the fiber optic elements, and

c) winding the simulated pine needles and the fiber optic elements spirally around a support wire along a length of the wire so that the simulated pine needles and the ends of the fiber optic elements project from the wire all thereabout along the length of winding along the wire,

assembling the branches onto a trunk of the tree with the fiber optic elements of the respective branches extending longitudinally along the trunk to a location at the base of the trunk where the fiber optic elements can be illuminated and produce points of light at tips of their free end all around the-branches along the length of the branches.

5,306,367

PROCESS FOR THE PREPARATION OF RADIATION IMAGE STORAGE PANELS

Hideki Suzuki, and Katsuhiro Kohda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 29, 1991, Ser. No. 692,649
Claims priority, application Japan, Apr. 27, 1990, 2-112505; May 11, 1990, 2-122380; Jun. 20, 1990, 2-161518
Int. Cl.[5] C09K *11/00*; B32B *31/20*
U.S. Cl. 156—67 **11 Claims**

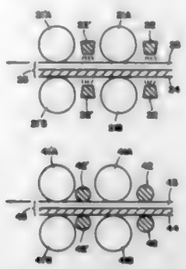
1. A process for the preparation of a radiation image storage

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panel characterized by improved sharpness and graininess comprising the steps of:

(a) forming a phosphor sheet comprising a binder and a stimulable phosphor;

(b) placing the phosphor sheet on a support and compressing and heating the phosphor sheet and support at a first pressure of 10 to 1,000 kg/cm^2 and a first temperature; and



(c) compressing and heating said compressed phosphor sheet and support at a second pressure of 50 to 2,000 kg/cm^2 and a second temperature differing from the first temperature to fix the phosphor sheet on the support, wherein said second pressure is at least 10 kg/cm^2 higher than said first pressure and said first and second temperatures are greater than the softening point of the binder.

5,306,368

FORMATION OF CERAMIC THIN FILM ON CERAMIC BODY

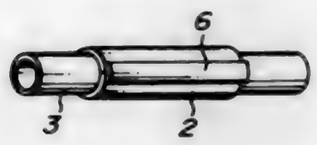
Hirotake Yamada, and Ritsu Tanaka, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jan. 12, 1993, Ser. No. 3,289

Claims priority, application Japan, Jan. 17, 1992, 4-006742

Int. Cl.^{5} B32B *31/00*

U.S. Cl. 156—86 12 Claims



1. A process for forming a solid oxide fuel cell, comprising the steps of:

forming an elongate tubular ceramic porous electrode supporting body having a substantially cylindrical outer shape;

forming a substantially annular green ceramic solid electrolyte thin film from a ceramic solid electrolyte green sheet having a thickness ranging from tens of microns to hundreds of microns;

fitting said substantially annular solid electrolyte thin film around the outer peripheral surface of said elongate porous electrode supporting body to form an assembly;

firing the assembly to shrink and join the entirety of said inner surface of said substantially annular solid electrolyte thin film to a corresponding portion of said outer peripheral surface of said elongate porous electrode supporting body; and

forming a porous electrode on at least a portion of said solid electrolyte thin film.

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PROCESS OF BONDING AROMATIC POLYAMIDE FIBERS TO RUBBER COMPOUNDS

Akinori Fujiwara, and Katsuhiko Hata, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Japan

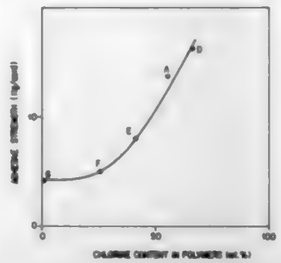
Continuation of Ser. No. 456,636, Dec. 22, 1989, abandoned.

This application Jul. 13, 1992, Ser. No. 911,377

Claims priority, application Japan, Dec. 23, 1988, 63-327234; Dec. 23, 1988, 63-327235

Int. Cl.^{5} B29C *34/02*; C09J *5/04, 109/10*

U.S. Cl. 156—110.1 4 Claims



1. A process of bonding aromatic polyamide fibers to rubber compounds wherein the rubber is selected from the group consisting of natural rubber, styrene/butadiene rubber, acrylonitrile/butadiene rubber, ethylene/propylene rubber, epichlorohydrin rubber and fluorocarbon rubber, which comprises: a first step of treating fibers with an aqueous mixture consisting essentially of a resorcinol/formalin resin and a latex of a polymer selected from the group consisting of polyvinyl chloride, chlorinated rubber, chlorinated polyethylene, poly(-dichlorobutadiene) and a copolymer of dichlorobutadiene and containing chlorine in amounts of not less than 45% by weight based on the polymer; the polymer being contained in the aqueous mixture in amounts of 50–1000 parts by weight in relation to 100 parts by weight of the resorcinol/formalin resin; a second step of treating the fibers with an aqueous adhesive composition consisting essentially of a resorcinol/formalin resin and a latex of an adhesive rubber which is the same as the rubber in the rubber compounds; the adhesive rubber being contained in the aqueous adhesive composition in amounts of 50–1000 parts by weight in relation to 100 parts by weight of the resorcinol/formalin resin; and a third step of placing the fibers in close contact with the rubber compound and then vulcanizing the rubber together with the fibers.

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METHOD OF REDUCING CHIPPING AND CONTAMINATION OF RESERVOIRS AND CHANNELS IN THERMAL INK PRINTHEADS DURING DICING BY VACUUM IMPREGNATION WITH PROTECTIVE FILLER MATERIAL

Lawrence H. Herko, Walworth; Robert P. Altavela, Pittsford; Joseph R. Weber; Robert M. White, both of Rochester, and Kathryn A. Wallace, Canandaigua, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1992, Ser. No. 970,499

Int. Cl.^{5} B32B *31/00*

U.S. Cl. 156—155 7 Claims

1. A method of fabricating thermal ink jet printheads, comprising the steps of:

(a) aligning and bonding together a pair of substrates having confronting surfaces, the confronting surface of one substrate containing a plurality of sets of linear arrays of heating elements and associated driver circuitry, the confronting surface of the other substrate containing a plurality of sets of equally spaced, parallel grooves and a plurality of reservoirs, each reservoir having an inlet and being in communication with a set of grooves, the aligning and bonding of said pair of substrates placing a heating element in each groove;

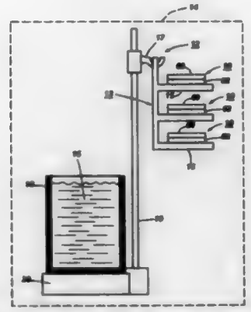
(b) placing a container having a quantity of filler material therein into a vacuum chamber;

(c) placing the bonded pair of substrates into said vaccum chamber and evacuating air from the grooves and reservoirs through said inlets;

(d) heating the filler material in a vacuum until the filler is in a liquid state;

(e) inserting said air-evacuated pair of substrates into the liquid filler material in said container in the vacuum chamber without interrupting the vacuum in said vacuum chamber;

(f) removing the pair of substrates from the liquid filler material;



(g) cooling the pair of substrates and filler material to room temperature; and

(h) removing the pair of substrates with solid filler material filling the grooves and reservoirs from the vacuum chamber;

(i) severing the bonded pair of substrates into a plurality of individual printheads by dicing processes at room temperature, one dicing process cutting the grooves in a direction perpendicular thereto in order to form concurrently a nozzle face and a plurality of nozzles therein, whereby the solid filler material supports fragile edges of the substrates during the dicing process and the filled grooves and reservoirs prevent entry of dicing debris or other contaminants; and

(j) heating the plurality of individual printheads to remove the filler material from the grooves and reservoirs.

5,306,371

APPARATUS AND METHOD TO RELEASE A FILAMENT WOUND TUBE FROM A MANDREL

Roy R. Ramey, Forest, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 26, 1992, Ser. No. 841,955

Int. Cl.^{5} B65H *81/00*

U.S. Cl. 156—171 13 Claims

1. An apparatus for releasing a filament wound tube, comprising:

a mandrel for supporting a tube to be formed by filament winding at least one fiber, said mandrel being a length greater than a planned length of said filament wound tube to be formed;

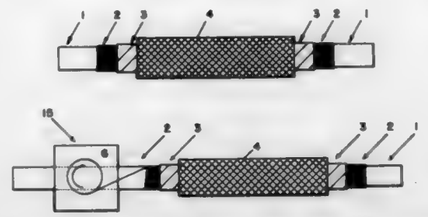
a removable fiber wound onto said mandrel prior to filament winding said at least one fiber, said removable fiber having a cylindrical shape and being wound onto said mandrel a predetermined length beyond the planned length of the tube to be formed, said removable fiber being wound so that each hoop is adjacent each other at a preset center-to-center distance;

a wrap covering said wound removable fiber and in contact therewith, said wrap extending lengthwise on said wound removable fiber on said mandrel a length beyond the planned length of the tube to be formed, said wrap being a member selected from the group consisting of plastic wrap and paper wrap, said wrap having fabricated on a portion thereof a filament wound tube of said planned length; and

means for pulling said removable fiber out from beneath said wrap after fabrication of the tube to provide for removal of the filament wound tube.

8. A method for releasing a filament wound tube, comprising the steps of:

winding a removable cylindrical fiber lengthwise onto a mandrel constructed to support a tube and of a length



greater than a planned length of the tube to be filament wound thereon so that the wound removable cylindrical fiber extends beyond the planned length of the tube to be filament wound thereon;

then covering the removable cylindrical fiber with a wrap, said wrap extending a length beyond the planned length of the tube to be formed, the wrap being a member selected from the group consisting of plastic wrap and paper wrap;

fabricating a filament wound tube of the planned length on a portion of the wound removable cylindrical fiber covered with the wrap by filament winding; and

pulling the removable cylindrical fiber out from beneath the wrap off of the mandrel to release the filament wound tube therefrom.

5,306,372

ADHESIVE-COATED WRAPPING PAPER

Nancy E. Hall, 4525-H Sharon Chase Dr., Charlotte, N.C. 28215, and Robert C. Economos, 8608 Beeswood Dr., Charlotte, N.C. 28277

Filed Dec. 14, 1992, Ser. No. 989,759

Int. Cl.^{5} B32B *31/00*

U.S. Cl. 156—213 1 Claim



1. A method of wrapping an article to form a package, said method comprising the steps of:

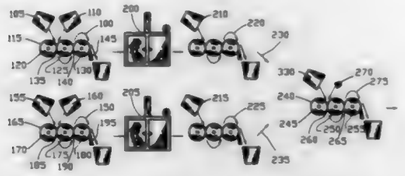
(a) providing a sheet of paper large enough to wrap about the article and having one surface to be the inner surface and a second surface to be the outer surface when the sheet of paper is wrapped about an article to form a package;

(b) applying a coating of releasable adhesive substantially throughout the one surface of the paper to be placed against the article when it is wrapped;

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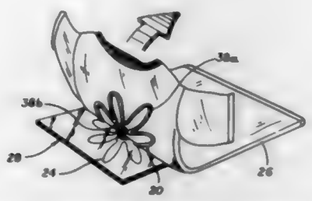
(c) using the adhesive on the one surface of the paper to adhere the paper to the article while the article is being wrapped to form a package; and
(d) using the adhesive on the one surface of the paper to adhere the paper to itself to define a package after the article is wrapped.

5,306,373
LASER RADIATION BARRIER
Charles H. Swan, 1405 S. 14th St., Dade City, Fla. 33525
Division of Ser. No. 826,011, Jan. 27, 1992, Pat. No. 5,212,387.
This application May 14, 1993, Ser. No. 62,310
Int. Cl.[5] B29C *43/24*; A61B *19/08*; A61F *13/00*
U.S. Cl. 156—242 **15 Claims**



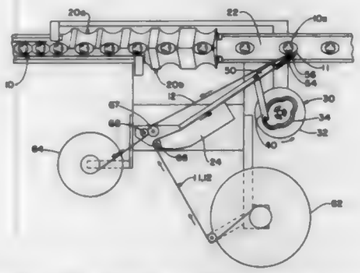
1. A process for producing an improved laser radiation barrier for shielding a surface from laser radiation comprising the steps of:
mixing a first mixture comprising a silicone polymer compound and a first filler on a roll mill;
heating the first mixture to liberate volatile components;
mixing a second mixture comprising a silicone polymer compound and a second filler on a roll mill;
heating the second mixture to liberate volatile components;
mixing the first and the second mixtures with a catalyst on a roll mill to create a final catalyzed mixture;
placing a first layer of the final catalyzed mixture in a mold;
placing a mica sheet in the mold upon the first layer of the final catalyzed mixture;
placing a second layer of the final catalyzed mixture in the mold upon the mica sheet; and
curing the final catalyzed material.

5,306,374
TACKY PATTERN CRAFT TRANSFER PROCESS
Perry Hambright, 23515 Oxnard St., Woodland Hills, Calif. 91367
Filed Dec. 11, 1992, Ser. No. 989,085
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—247 **20 Claims**



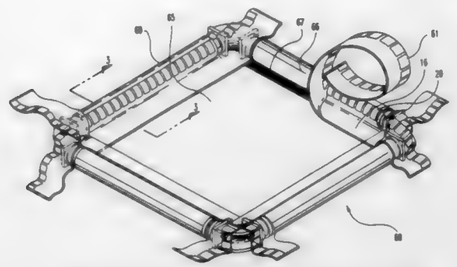
1. A process for creating a handicraft, the steps comprising:
applying a pattern to a first substrate;
arranging a craft material on the first substrate over the pattern;
temporarily securing an outer surface of the craft material to the first substrate, including a step of overlapping portions of adjacent craft material pieces to hide a portion of the craft material in the finished handicraft;
permanently attaching an inner surface of the craft material to a second substrate; and
removing the first substrate from the outer surface of the craft material.

5,306,375
CONTOUR COMPENSATING PEELER PLATE
Robin G. Leonard, Maple Plain, Minn., assignor to Accraply, Inc., Minnetonka, Minn.
Continuation of Ser. No. 794,116, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 452,773, Dec. 19, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 77,710
Int. Cl.[5] B32B *31/00*; B44C *1/16*
U.S. Cl. 156—249 **16 Claims**



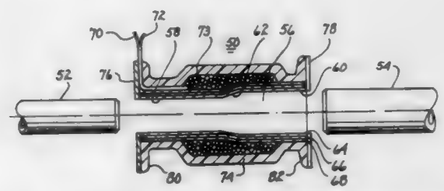
1. A device for applying pressure sensitive labels having leading and terminating edges to a contoured panel at a labeling site comprising:
a means for conveying said contoured panels past a labeling site;
a peeler plate assembly having a longitudinal axis, first and second ends and a peeler tip at said second end of said peeler plate assembly;
a label wiper fixedly attached to said peeler plate and essentially parallel thereto, said label wiper having a first and a second end portion, said second end portion extending beyond said peeler tip of said peeler plate and angled inward toward the longitudinal axis of said peeler plate so as to direct said labels into contact with said contoured panel, said pressure sensitive labels passing between said peeler plate and said label wiper;
a single rotating closed loop cam means controlling the speed and movement of said peeler plate assembly with at least first portions and second portions, said first portions generally corresponding to the outline of said contoured panel;
the first end of said peeler plate assembly being pivotally and slidably connected to said cam means and capable of movement around the cam means and said second end approximating said labeling site;
a means for rotating said cam;
wherein said cam means is rotated such that as a contoured panel moves through said labeling site said label wiper presses said leading edge of said label into contact with said panel, said label wiper and said second end of said peeler plate are subsequently guided in close proximity to the contoured panel without actual contact of said panel between said leading edge and said terminal edge of said label as said first end of said peeler plate assembly moves over said first portion of said cam means while urging said label onto said panel, said label wiper further presses the terminating edge of said label into contact with said panel, the continued rotation of said cam means through said second portion resetting said peeler plate assembly for subsequent labeling as said first end of said peeler plate moves over said second portion of said cam means.

5,306,376
SEALING TAPE FOR SCREEN PRINTING
Martin F. James, 411 Coventry Way, Noblesville, Ind. 46060
Filed Mar. 8, 1993, Ser. No. 27,786
Int. Cl.[5] B05C *17/08*
U.S. Cl. 156—291 **5 Claims**



2. A method for stencil printing comprising the steps of:
(a) stretching a woven sheet of fabric across a frame, said woven sheet having a peripheral area;
(b) securing the peripheral area of the fabric to the frame;
(c) attaching a stencil design to said woven sheet inboard of said peripheral area;
(d) sealing the peripheral area of said woven sheet and the frame with tape, said tape including a substrate, adhesive received on said substrate in a first lengthwise adhesive pattern and a second lengthwise adhesive pattern, said first pattern being parallel to said second pattern, said first pattern including a continuous strip of adhesive, said second pattern including discrete segments of adhesive spaced longitudinally of the substrate, said sealing accomplished by adhering said second pattern to said frame and said first pattern to said fabric inboard of said second pattern.

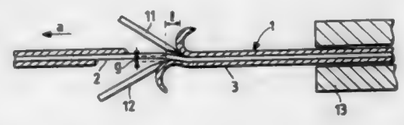
5,306,377
MOLD INCLUDING A LOW THERMAL INERTIA HEATER AND METHOD OF USING SAME
Joseph C. Jensen, Tucson, and Junius E. Taylor, Phoenix, both of Ariz., assignors to Engineering & Research Associates, Inc., Tucson, Ariz.
Continuation of Ser. No. 653,892, Feb. 11, 1991, Pat. No. 5,160,396. This application Jul. 20, 1992, Ser. No. 916,596
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B29C *65/02*
U.S. Cl. 156—304.2 **22 Claims**



1. Apparatus for shaping, forming and welding thermoformable elements with RF energy, said apparatus comprising in combination:
a) a mold having a mold cavity for receiving a thermoformable element;
b) a source for generating RF energy, said source including means for varying the power of the RF energy generated;
c) means thermally responsive to RF energy for heating said mold cavity and any element disposed therein;
d) means for transmitting the RF energy to said heating means; and
e) means for modulating the RF energy transmitted as a function of the temperature of said heating means to maintain the element at its thermoforming temperature.

18. A method for shaping, forming or welding a thermoformable element with RF energy from a source of RF energy, said method comprising the step of:
a) locating the element to be heat welded within a mold cavity of a mold;
b) heating the mold cavity with an ohmicly resistive load responsive to RF energy received from the source of RF energy;
c) transmitting RF energy to the load; and
d) modulating the RF energy transmitted as a function of the temperature of the load to maintain the element at its thermoforming temperature.

5,306,378
APPARATUS AND METHOD FOR REMOVING A COATING FROM A COATED LINEAR MATERIAL
Hiroaki Takimoto; Hiroshi Suganuma, and Junichi Yoshikawa, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jun. 9, 1992, Ser. No. 895,807
Claims priority, application Japan, Nov. 25, 1991, 3-104741[U]
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—344 **8 Claims**



1. A method for removing a coating from a coated linear metal having a coating layer on a core material comprising the steps of:
bringing at least two separate cutting blades into contact with the coating layer of said coated linear material at sharp angles from at least two directions, said cutting blades having a width disposed in a direction perpendicular to the axis of said coated linear material and being located at different positions on the axis of said coated linear material when said at least two separate cutting blades are brought into contact with the coated linear material, said coated linear material being substantially in a curved state with respect to said cutting blades when in a contact position between said coated linear material and said cutting blades and said at least two cutting blades being set at a distance from each other less than the diameter of said coated linear material after removal of said coating layer; and
moving said central linear material relative to said cutting blades so as to remove a part of said coating layer.

5,306,379
DRY ETCHING APPARATUS FOR RECTANGULAR SUBSTRATE COMPRISING PLASMA BAR GENERATION MEANS
Yukihiro Kamide, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 1, 1992, Ser. No. 937,673
Claims priority, application Japan, Sep. 3, 1991, 3-252934
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **10 Claims**

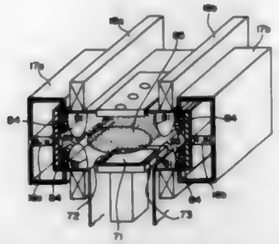
1. A dry etching apparatus for dry etching a rectangular substrate, comprising:

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an etching chamber having a parallelpiped shaped with a pair of side walls extending parallel to each other and connected together by a pair of end walls;

means for holding a rectangular substrate to be etched in position in said etching chamber; and



a plasma generator disposed in said etching chamber for generating a pair of high density plasma bars adjacent the pair of side walls and on the outer sides of and substantially in parallel to a pair of opposing sides of the rectangular substrate in said etching chamber so as to etch the rectangular substrate with diffusion components of the high density plasma bars.

5,306,380

VACUUM PROCESSING APPARATUS

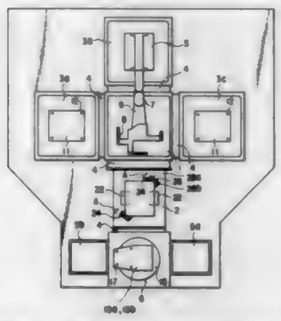
Tutomu Hiroki, Yamanashi, Japan, assignor to Tokyo Electron Limited, Tokyo and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Filed Apr. 28, 1993, Ser. No. 53,389

Claims priority, application Japan, Apr. 28, 1992, 4-110506

Int. Cl.[5] B44C *1/22*; H01L *21/306*; B66C *23/00*

U.S. Cl. 156—345 **16 Claims**



1. A vacuum processing apparatus, comprising:

a first process chamber in which a treatment is applied to a substrate to be processed under an atmosphere of a reduced pressure;

a first mount for supporting the substrate within said first process chamber;

a second process chamber in which a treatment is applied to the substrate under an atmoaphere of a reduced pressure;

a second mount for supporting the substrate within said second process chamber;

a load lock chamber connected via a gate to each of said first and second process chambers;

a storing member for holding the substrate within said load lock chamber;

a retractable arm arranged within said load lock chamber for transferring the substrate among said first and second mounts and said storing member; and

an arm support member supporting said arm and serving to drive said arm to selectively face said first and second process chambers.

5,306,381

LAMINATING APPARATUS

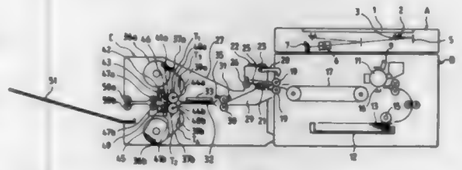
Noriaki Nakazawa; Hideaki Furukawa, both of Yokohama, and Norifumi Miyake, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Aptex Inc., Ibaraki, both of Japan

Continuation of Ser. No. 713,311, Jun. 11, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 96,839

Claims priority, application Japan, Jun. 11, 1990, 2-152144; Jul. 27, 1990, 2-200361; Jul. 27, 1990, 2-200362; Jun. 11, 1991, 3-766284

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—359 **55 Claims**



1. A laminating apparatus to be connected to an image forming apparatus, comprising:

sheet support means for supporting a sheet on which an image is formed by the image forming apparatus and discharged from the image forming apparatus;

sheet feeding means for feeding the sheet on which the image is formed by the image forming apparatus;

laminate film feeding means for feeding laminate films;

heating means for heating the laminate films fed from said film feeding means;

pressure means for pressurizing the sheet and the laminate films that are fed by said sheet feeding means and laminate film feeding means, respectively, in an overlapping manner;

temperature detection means for detecting a temperature of said heating means; and

control means for prohibiting a laminate operation when the temperature detected by said temperature detection means is lower than a set temperature in a laminate mode, and for discharging the sheet from the image forming apparatus to said sheet support means in a non-laminate mode.

5,306,382

LABEL DISPENSER CONVERSION KIT

Maurice D. Pichel, Milford, and Syed A. Asghar, Brockton, both of Mass., assignors to Avery-Dennison Corporation, Pasadena, Calif.

Filed Nov. 6, 1990, Ser. No. 609,508

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—361 **6 Claims**

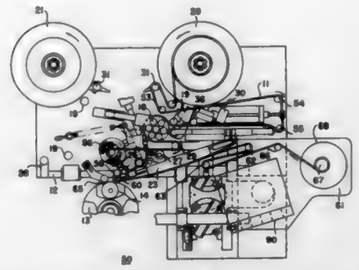
1. For use with a heat transfer labelling machine of the type including a device for moving an article to be labelled through a labelling site, a heated applicator member for impressing a label from a carrier web to the article, and a transport assembly for routing the carrier web bearing a plurality of labels from an unwind reel to the transfer site, and for transporting the empty carrier web from the transfer site to a take-up reel,

apparatus for converting said heat transfer labelling machine to use in dispensing pressure sensitive labels arrayed on a carrier web for transfer to an article held in the article moving device, comprising:

a peel plate;

a pressure applicator member, said pressure applicator member and peel plate being designed for mechanical compatibility with said heat transfer labelling machine for use in place of the heated applicator member; and

means for disengaging the carrier web from a label dispensing edge of the peel plate, wherein the user may actuate



the disengaging means to prevent labels from being dispensed at said label dispensing edge, and deactuate said disengaging means to allow labels to be dispensed at said label dispensing edge.

5,306,383

METHOD AND APPARATUS FOR PRODUCING A WELDED JOINT IN THERMOPLASTIC STRAP WITH DIFFERENTIAL PRESSURE

Robert J. Kobiella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Oct. 30, 1992, Ser. No. 969,584

Int. Cl.[5] B29C *65/06*

U.S. Cl. 156—468 **11 Claims**

1. Apparatus for making a welded joint between first and second overlapping lengths of flexible, thermoplastic strap, said apparatus comprising:

a frame;

an anvil supported on said frame for movement to a position in which it can be engaged by said first overlapping length of strap;

a drive shaft mounted for rotation in said frame about an axis and a cylindrical drive cavity defined in said drive shaft with the cavity axis being parallel to, but offset radially from, the drive shaft axis;

a peripheral strap-engaging member having a cylindrical driven shaft rotatably mounted in said drive shaft cavity and having an annular strap-contacting surface engageable with said second overlapping length of strap; a central strap-engaging member carried by said peripheral strap-engaging member and being engageable with said second overlapping length of strap within said annular strap-contacting surface of said peripheral strap-engaging member;

a resilient means carried by said peripheral strap-engaging member for biasing said central strap-engaging member relative to said peripheral strap-engaging member toward said anvil from a fully depressed position to fully extended position;

positioning means on said frame for moving said anvil to (1) a first position in which said anvil can be engaged by said first overlapping length of strap and in which both said central and peripheral strap engaging members engage said second overlapping length of strap to force said lengths of strap into face-to-face contact under pressure, (2) a second position in which said anvil and said peripheral strap-engaging member are sufficiently spaced apart to release the pressure of said peripheral strap-engaging member on said lengths of strap while still maintaining the pressure of said central strap engaging member on said lengths of strap, and (3) a third position in which said anvil and said central strap-engaging member are sufficiently spaced a part to release the pressure of said central strap-engaging member on said lengths of strap; and

means for increasing the temperature of the contacting faces of the overlapping strap lengths to melt at least part of the thickness of each said strap including rotating means for rotating said drive shaft about said shaft axis in the first position of said anvil whereby both of said central and peripheral strap-engaging members are oscillated in a generally circular orbit about said shaft axis causing relative generally circular orbital slidable frictional movement between said contacting faces of said overlapping strap lengths.

5,306,384

MACHINE FOR MAKING CORRUGATED BOARD INCLUDING A VACUUM/POSITIVE PRESSURE TRANSFER ROLL

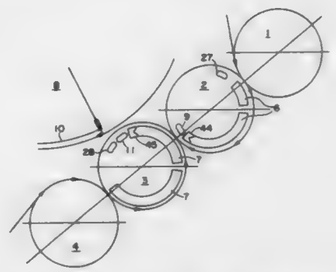
Colin Stutt, Bristol, United Kingdom, assignor to Amcor Limited, Victoria, Australia

Continuation-in-part of Ser. No. 678,998, Jun. 28, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 975,040

Claims priority, application United Kingdom, Oct. 27, 1988, 8825145

Int. Cl.[5] B31F *1/28*

U.S. Cl. 156—473 **7 Claims**



1. A machine for making corrugated board comprising means to feed two separate webs between two respective pairs of corrugating rolls to form two corrugated layers, a first adhesive applicator for applying adhesive to the peaks of at least one of the two corrugated layers, means to bring the two corrugated layers together at the peaks of the corrugations, means to convey the joined corrugated layers past a second adhesive applicator for applying adhesive to the exposed peaks of one of the corrugated layers, and means to apply a liner web to the corrugated layer having the adhesive on its peaks, in which one of the corrugated webs carried by a first corrugating roll is arranged to be transferred to the corrugating web carried by a second one of the rolls, the first roll including a vacuum chamber which acts to retain the corrugated web and a pressure chamber downstream of said vacuum chamber from which air pressure acts positively to assist the transfer of the corresponding web and a portion of said vacuum chamber adjacent said pressure chamber incorporating means to gradu-

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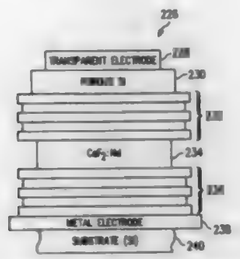
ally change the negative pressure to positive pressure to provide an even transfer of said webs.

5,306,385

METHOD FOR GENERATING PHOTOLUMINESCENCE EMISSION LINES FROM TRANSITION ELEMENT DOPED CAF2 THIN FILMS OVER A SI-BASED SUBSTRATE

Chih-Chen Cho, Richardson; Taen H. Lin, Dallas; Shou-Kong Fan, Dallas, and Walter M. Duncan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 945,991, Sep. 15, 1992. This application Sep. 30, 1992, Ser. No. 954,136
Int. Cl.[5] H01L *21/22*
U.S. Cl. 156—610 24 Claims



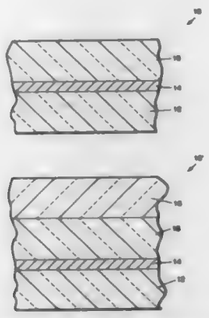
1. A method for producing photoluminescence emissions comprising the steps of:
forming a layer of reflective material, said reflective material having the property of reflecting greater than approximately 90 percent of radiation at the wavelength of said emissions;
forming a layer of CaF_2 over said layer of reflective material; and
doping said CaF_2 film with a transition element dopant.

5,306,386

ARSENIC PASSIVATION FOR EPITAXIAL DEPOSITION OF TERNARY CHALCOGENIDE SEMICONDUCTOR FILMS ONTO SILICON SUBSTRATES

Terence J. de Lyon, Newbury Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 6, 1993, Ser. No. 43,644
Int. Cl.[5] C30B *25/02*
U.S. Cl. 156—612 4 Claims



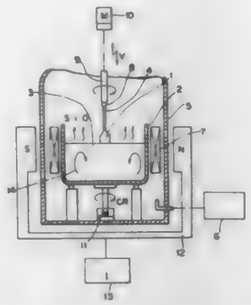
1. A method of growing a ternary or quaternary II-VI semiconductor layer on a silicon substrate, comprising:
(a) providing said silicon substrate having a major surface;
(b) depositing a monolayer of a Group V element selected from the group consisting of arsenic, phosphorus, and antimony on said major surface of said silicon substrate; and
(c) depositing said ternary or quaternary II-VI semiconductor layer over said Group V monolayer.

5,306,387

METHOD FOR PULLING UP SEMICONDUCTOR SINGLE CRYSTAL

Izumi Fusegawa, and Hirotoshi Yamagishi, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1991, Ser. No. 713,848
Claims priority, application Japan, Jun. 21, 1990, 2-163891
Int. Cl.[5] C30B *15/22*
U.S. Cl. 156—618.1 10 Claims



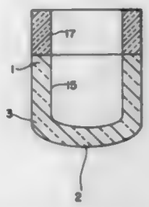
1. A method for pulling a semiconductor single crystal rod from a molten semiconductor held in a quartz crucible under application of a magnetic field, which method is characterized by fixing the rotational speed of said quartz crucible at a level exceeding 5 rpm and varying the intensity of said magnetic field applied to said molten semiconductor according to the length of pull of said single crystal rod.

5,306,388

QUARTZ GLASS CRUCIBLE FOR PULLING A SEMICONDUCTOR SINGLE CRYSTAL

Toshio Nakajima; Tohru Ito, and Yoshinobu Nagamine, all of Oguni, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 828,503
Int. Cl.[5] B01D *9/00*
U.S. Cl. 156—620.4 9 Claims



1. A quartz glass crucible for pulling a semiconductor single crystal, which comprises:
a cylindrical straight wall portion comprising a first area and a second area, said first area having a height corresponding to about 75% or less of the total height of the crucible measured from an upper open end of the crucible, the first area comprising across its entire thickness an opaque material having a volume of bubbles ranging from about 7×10^{-3} cm^3/cm^3 ≈ 30×10^{-3} cm^3/cm^3;
a bottom wall portion; and

a curved intermediate wall portion connecting the straight wall portion and the bottom-wall portion;
the second area of the straight wall portion, the bottom wall portion and the curved intermediate wall portion consist essentially of transparent quartz glass having a total volume of bubbles of about 4×10^{-3} cm^3/cm^3 or less.

9. A method of pulling a silicon single crystal comprising the steps of:
supplying metallic silicon into a quartz crucible comprising:
a cylindrical straight wall portion comprising a first area and a second are, said first area having a height corresponding to about 75% or less of the total height of the crucible measured from an upper open end of the crucible, the first area comprising across its entire thickness an opaque material having a volume of bubbles ranging from about 7×10^{-3} cm^3/cm^3 to 30×10^{-3} cm^3/cm^3;
a bottom wall portion; and
a curved intermediate wall portion connecting the straight wall portion and the bottom wall portion;
the second area of the straight wall portion, the bottom wall portion and the curved intermediate wall portion consist essentially of transparent quartz glass having a total volume of bubbles of about 4×10^{-3} cm^3/cm^3 or less;
melting the metallic silicon by heating; and
pulling a silicon single crystal from the melted metallic silicon.

5,306,389

METHOD OF PROTECTING ALUMINUM NITRIDE CIRCUIT SUBSTRATES DURING ELECTROLESS PLATING USING A SURFACE OXIDATION TREATMENT

Sandra L. Smith, Georgetown, and Brian J. Hazen, Framingham, both of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Sep. 4, 1991, Ser. No. 754,864
Int. Cl.[5] C23C *26/00*
U.S. Cl. 156—625 4 Claims

1. A method of forming a pattern on an aluminum nitride substrate comprising the steps of:
coating said substrate, in sequence, with a layer of titanium/-tungsten alloy, nickel and gold to form a coated substrate;
etching said coated substrate to form a patterned substrate including metal areas and exposed aluminum nitride;
firing said patterned substrate at a temperature of approximately 850° C. to 1000° C., in an oxidizing atmosphere for a time sufficient to convert said exposed aluminum nitride to aluminum oxide and form a fired substrate; and
placing said fired substrate in an electroless gold solution to plate the gold on said metal areas.

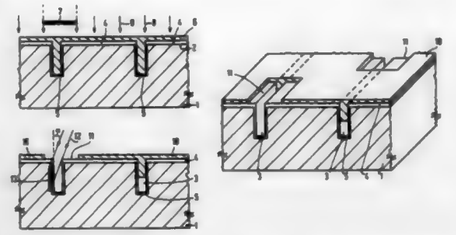
5,306,390

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE USING AN IMPLANTATION MASK

Hermanus L. Peek, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,952
Claims priority, application European Pat. Off., May 3, 1991, 91201052.7
Int. Cl.[5] H01L *21/312*
U.S. Cl. 156—659.1 5 Claims

1. A method of manufacturing a semiconductor device whereby a semiconductor body is provided at a surface with at least one groove which extends from the surface into the semiconductor body, a zone doped with an impurity being provided in a portion of the groove by means of ion implantation through a mask, characterized in that a positive photoresist layer is provided on the surface and in the groove, in that the photoresist layer is masked against irradiation at the area of the ion implantation to be carried out and the non-masked portions of the photoresist layer are subjected to irradiation, after which the irradiated portions of the photoresist layer are rendered insoluble by means of an image reversal process, and in that subsequently the photoresist layer is subjected to irradiation in a second irradiation step at the area of the ion implantation to



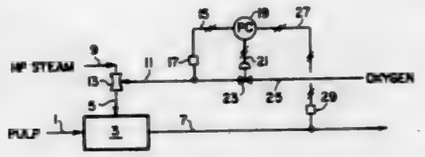
be carried out, after which the portions of the photoresist layer masked during the irradiation step first mentioned are removed by development.

5,306,391

CONTROL OF CHEMICAL DOSAGE TO A PULP SLURRY

John F. Cirucci, Allentown, and Harold H. Gunardson, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 16, 1992, Ser. No. 899,415
Int. Cl.[5] D21C *3/00*
U.S. Cl. 162—49 16 Claims



1. A method for controlling a desired chemical dosage to a continuous flow of cellulosic pulp heated by the addition of steam, said method comprising:
(a) initially establishing a functional relationship between the flow rate of said pulp and the temperature of said pulp by determining the heat capacity of said pulp, adding steam to said pulp, measuring the pressure and flow rate of said steam, measuring the temperature of said pulp before and after adding steam, and calculating by heat balance the pulp flow rate which corresponds to a unit temperature increase of said pulp, and thereafter repeating at a first interval the steps of:
(b) measuring the temperature of said pulp after said addition of steam and measuring the flow rate of said addition of steam;
(c) calculating the flow rate of said pulp by utilizing the relationship of step (a) and the temperature and steam flow rate of step (b);
(d) calculating the flow rate of said chemical to achieve a selected dosage and setting the desired flow rate of said chemical; and
(e) continuously combining and mixing said pulp with said steam at the flow rate of step (b) and said chemical at the flow rate of step (d).

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5,306,392

PROCESS FOR PREPARING PULP USING POTASSIUM-BASED ALKALINE SOLUTION

Akio Mita, 4-26-2 Nukui, Nerima-ku, Tokyo, Japan

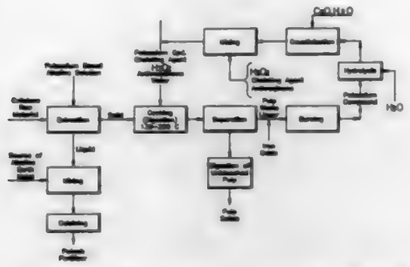
PCT No. PCT/JP91/01234, § 371 Date May 12, 1992, § 102(e) Date May 12, 1992, PCT Pub. No. WO92/05309, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 17, 1991, Ser. No. 849,386

Claims priority, application Japan, Sep. 14, 1990, 2-244280

Int. Cl.[5] D21C *3/04*

U.S. Cl. 162—76 **4 Claims**



1. A process for the preparation of chemical pulp from a cellulose raw material comprising:

contacting the cellulose raw material, in succession, with an acidic solution and with a potassium-based alkaline solution to extract siliceous materials from the cellulose raw material thereby forming a siliceous extract liquor;

mixing said siliceous extract liquor with an alkaline earth metal and calcining the resulting mixture to produce a potash fertilizer having citric solubility and comprising glass-like materials containing potassium, alkaline earth meal and silica;

cooking the cellulose raw material, from which siliceous materials have been extracted, at 130° C. to 200° C. in a cooking liquor containing a potassium compound, hydrogen peroxide, a chelating agent, an anthraquinone and water to produce a digestion product;

separating said digestion product into a pulp waste liquor and an unbleached pulp;

concentration and burning said pulp waste liquor to recover the potassium compound;

forming an aqueous solution of the recovered potassium compound and adding calcium oxide to said aqueous solution for causticization; and

adding hydrogen peroxide, said chelating agent and said anthraquinone to the causticized aqueous solution to regenerate the cooking liquor.

5,306,393

METHOD FOR INSTALLING A FABRIC IN A PAPER MACHINE

Myron T. Rhyne, Youngsville, N.C., assignor to Huyck Licensco, Inc., Wilmington, Del.

Filed Jul. 16, 1992, Ser. No. 914,874

Int. Cl.[5] D21F *1/24*

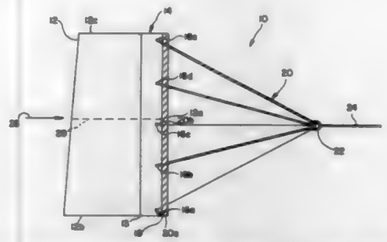
U.S. Cl. 162—200 **2 Claims**

1. A method for installing a fabric in a paper machine, the fabric having a leading edge and two side edges perpendicular to the leading edge and parallel to each other and a plurality of spaced empty grommets having apertures disposed proximate the leading edge, comprising the steps of:

providing a loading harness including a line receiving device, having an aperture, spaced from the leading edge and a line, having first and second ends, the line being successively and slidably laced through the line receiving device aperture and through the aperture of each empty grommet, the first and second ends of the line being separately secured;

securing a pull rope to the line receiving device;

pulling the pull rope in a given direction so the fabric is installed on the paper machine; and



automatically readjusting each portion of the line slidably laced through the line receiving aperture and through each aperture of each empty grommet in response to said pulling so that uniform tension is applied across the fabric as it is being installed on the paper machine.

5,306,394

TURBULENCE ROLL FOR A WEB FORMER

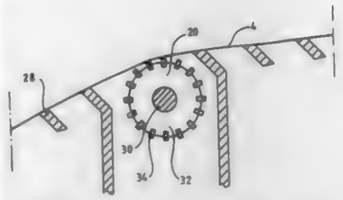
Paul O. Meinander, Grankulla, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

PCT No. PCT/F191/00177, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/01110, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 5, 1990, Ser. No. 961,675

Int. Cl.[5] D21F *1/20, 1/40*

U.S. Cl. 162—209 **3 Claims**



1. In a paper machine having a moving forming fabric, a turbulence roll for generating high-frequency vibrations of the moving forming fabric and having a surface with a plurality of lengthwise extending gaps extending the entire length of the roll, said roll comprising:

a shaft (**30**) having an axis;

a plurality of spaced discs (**32**) having rims and being mounted on said shaft; and

a plurality of means for generating the high-frequency vibrations of the moving forming fabric, said means comprising a plurality of spaced axially extending rods (**34**) attached to and extending outwards from said rims of said discs, the spacing between said rods forming the plurality of the lengthwise extending gaps.

5,306,395

C-WRAP TYPE TWIN WIRE FORMER

H. Ingemar Myrén, Karlstad, Sweden, assignor to Valmet-Karlstad AB, Karlstad, Sweden

Filed Apr. 5, 1993, Ser. No. 42,880

Claims priority, application Sweden, Apr. 23, 1992, 9201283

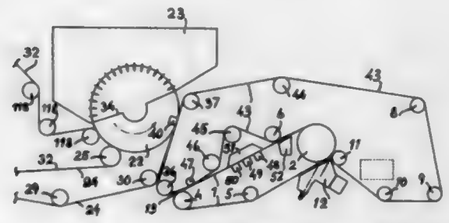
Int. Cl.[5] D21F *1/00, 5/18*

U.S. Cl. 162—301 **2 Claims**

1. An improved C-wrap twin wire former having an endless looped inner forming fabric, a rotatable forming roll that is located inside of the inner forming fabric loop and has a portion wrapped by a portion of the inner forming fabric, an endless looped outer forming fabric partially wrapping said portion of the inner forming fabric, means for guiding the forming fabrics so as to form between them a converging forming throat located at a lower rising quadrant of the rotatable forming roll and curving along an upstream part of said wrapped portion of the forming roll, and a headbox for discharging a jet of papermaking furnish obliquely upwards into the forming throat, said furnish on drainage through at least the outer forming fabric being formed into a paper web sandwiched between the two forming fabrics, wherein the improvement comprises:

means for first separating the outer forming fabric from the formed web and the inner forming fabric, so that the web will be carried by the inner forming fabric;

means for then running the outer forming fabric for a certain distance spaced from the inner forming fabric and the web carried thereby;



means for thereafter guiding the outer forming fabric into a renewed contacting relationship with the inner forming fabric and the web carried thereby, so that the web once more will be sandwiched between the two forming fabrics prior to a final separation of the outer forming fabric and the web from the inner forming fabric;

means for ensuring at said final separation a transfer of the once more sandwiched web from the inner forming fabric to the outer forming fabric; and

at least one suction box provided inside of the inner forming fabric loop and in contacting relationship therewith at a location where the outer forming fabric is temporarily separated from the web and the inner forming fabric, said at least one suction box being adapted to raise a dry solids content of the web by sucking water out of the web.

5,306,396

LEVELING DOOR

Rainer Schlösser, Essen, and Paul Greiwe, Schermbeck, both of Fed. Rep. of Germany, assignors to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany

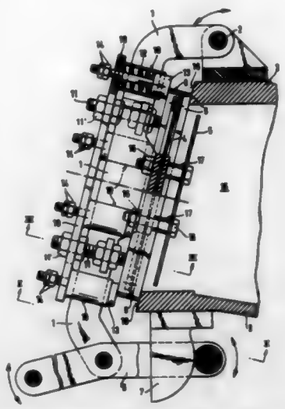
Filed May 18, 1992, Ser. No. 885,169

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122492

Int. Cl.[5] C10B *25/06, 25/16*

U.S. Cl. 202—242 **8 Claims**

1. A leveling door for sealing a leveling opening of a coke oven door, comprising a leveling door body; a diaphragm sheet mounted on said leveling door body at its side facing a leveling opening so as to cover the leveling opening, said diaphragm sheet having an edge and being provided on said edge with a circumferential sealing frame; a plurality of pressing elements mounted on a connecting plate which is mounted on said leveling door body by socket pins so as to distribute said pressing elements over a periphery of said sealing frame and acting on said sealing frame; and an exchangeable heat protective screen arranged in front of said diaphragm sheet at a side facing said leveling opening.



5,306,397

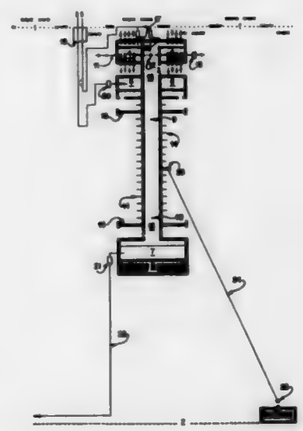
PROCESS AND APPARATUS FOR THE EXTRACTION OF FRESH WATER FROM WARM SEAWATER

Edgar Schmidt, München, Fed. Rep. of Germany, assignor to PI Praktische Informatik GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 615,897, Nov. 20, 1990, abandoned. This application Oct. 28, 1992, Ser. No. 969,675

Int. Cl.[5] B01D *3/10*; C02F *1/04*

U.S. Cl. 203—11 **13 Claims**



1. Apparatus for extraction of fresh water from seawater comprising an elongated water producing unit including a long immersion tube to be totally submerged vertically oriented in ambient sea water with its top adjacent the surface and its bottom in the colder sea water drift;

a closed deaeration chamber having an inlet and outlet mounted at the upper end of the long immersion tube;

a pressure reduction means for controlling seawater passing into the inlet of the deaeration chamber;

an evaporation chamber having an inlet connected to the outlet of the deaeration chamber and an outlet mounted at

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the upper end of the long immersion tube and being open at its upper end to the interior of the long immersion tube;
a lift pump connected to the outlet of the evaporation chamber to remove seawater therefrom;
control means for controlling flow between the deaeration and evaporation chambers;
heat exchange means for heat interchanging seawater with said deaeration and evaporation chambers;
buoyancy means for maintaining the water-producing unit at preselected orientation in ambient seawater closely adjacent to the surface thereof with the long immersion tube extending downwardly into the colder seawater drift;
anchoring means for holding the water producing unit intermediate its centers of gravity and buoyancy;
collection means located at the bottom of said long immersion tube for collecting fresh water evaporated from seawater in said evaporation chamber;
vacuum means for controlling the pressure in the deaeration and evaporation chamber; and
controlling means for sequentially evacuating the deaeration chamber and admitting seawater therein to deaerate same, admitting deaerated seawater to the evaporation chamber and evaporating same therein to cause water vapor to pass into the top of the long immersion tube, condense on its interior surface and be collected in the collection means and evacuating seawater from the evaporation chamber.

8. A method of extracting fresh water from seawater comprising the steps of

(1) maintaining a long vertically oriented immersion tube in a buoyant state at a preselected level totally submerged in ambient sea water with the top of the tube closely adjacent to the surface thereof and the bottom of the tube extending downwardly into the colder sea water drift;
(2) introducing ambient sea water into a deaeration chamber and deaerating under reduced pressure;
(3) introducing the deaerated sea water into an evaporation chamber at reduced pressure to cause evaporation;
(4) transferring evaporated water vapors into the top of the long vertically oriented immersion tube;
(5) condensing transferred water vapors to transform to water;
(6) collecting water at the bottom of the long immersion tube;
(7) indirectly heat exchanging ambient sea water with the sea water in the chambers;
(8) cooling the immersion tube; and
(9) damping the immersion tube.

5,306,398

PROCESS FOR THE PURIFICATION OF WASTE ACETIC ACID

Andreas Seidel, Cologne; Alfred Hauser, Erftstadt, and Erhard Jägers, Boraheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 19, 1992, Ser. No. 978,905

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140082

Int. Cl.[5] **B01D** *3/34;* **C07C** *51/44*

U.S. Cl. 203—33 **1 Claim**

1. A process for removing nitrogen compounds and halogen compounds from waste acetic acid which comprises adding to said waste acetic acid copper metal or a copper compound selected from the group consisting of copper acetates, copper oxides and copper hydroxides, and an alkali compound selected from the group consisting of sodium hydroxide, sodium carbonate, sodium hydrogen carbonate and sodium acetate, and keeping the resultant mixture at a temperature between 25° and 118° C. over a period of time of 1 to 6 hours in a first distillation stage, and thereafter distilling in a further distillation stage the acetic acid from the thus treated mixture, to separate the nitrogen compounds and halogen compounds.

5,306,399

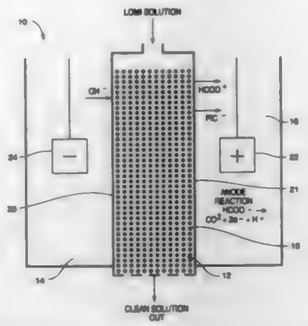
ELECTROCHEMICAL EXCHANGE ANIONS IN DECONTAMINATION SOLUTIONS

David Bradbury, Tresham, United Kingdom, and Christopher J. Wood, Mountain View, Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Oct. 23, 1992, Ser. No. 965,892

Int. Cl.[5] **C25C** *1/22;* **C02F** *1/46*

U.S. Cl. 204—1.5 **31 Claims**



1. A process for removing organic anions from spent decontamination process solutions comprising the steps of:

a) providing a cation exchange resin with cation capture sites;
b) providing an electrochemical cell with electrolytes, said cell having
a central compartment containing anion exchange resin with anion capture sites and bounded by two anion-permeable membranes;
a cathode compartment containing electrolyte and a cathode,
an anode compartment containing electrolyte and an anode; and,
said cell central compartment in ion-communicating relationship with said cathode compartment through one of said anion-permeable membranes and with said anode compartment through the second of said anion-permeable membranes;
c) flowing spent decontamination process solution through said cation exchange resin to capture any radioactive components and metallic impurities contained in said decontamination process solution on said cation exchange resin cation capture sites and eluting an outlet feed from said cation exchange resin which contains organic anions;
d) flowing said outlet feed containing organic anions through said electrochemical cell central compartment anion exchange resin to capture outlet feed organic anions on said anion exchange resin anion capture sites, said outlet feed flowing to said central compartment until said central compartment anion exchange resin approaches full loading of its capture sites;
e) stopping the flow of said outlet feed into said electrochemical cell central compartment when said central compartment anion exchange resin capture sites are substantially fully loaded;
f) applying electric current to said electrochemical cell through its anode and cathode thereby causing hydroxide ions to migrate from said cathode compartment through said anion-permeable membrane into said central compartment where hydroxide ions replace the captured organic anions present on the anion exchange resin anion capture sites, and where organic anions displaced from said anion exchange resin by said hydroxide ions thereafter migrate through said second anion-permeable membrane into said anode compartment; and,

g) removing said migrated organic anions from said electrochemical cell anode compartment.

5,306,400

METHOD FOR THE COMBINED REMOVAL AND DESTRUCTION OF NITRATE IONS

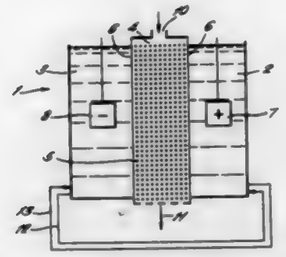
David Bradbury, Wotton-Under-Edge, and George R. Elder, Westbury-on-Severn, both of United Kingdom, assignors to Braditec Limited, Bristol, United Kingdom

Filed Feb. 24, 1992, Ser. No. 839,435

Claims priority, application United Kingdom, Feb. 25, 1991, 9103851

Int. Cl.[5] **C25B** *1/02, 1/00*

U.S. Cl. 204—101 **18 Claims**



1. Method for the combined removal and destruction of nitrate ions in an electrochemical cell which comprises an anode compartment containing electrolyte and an anode, a cathode compartment containing electrolyte and a cathode, and a central compartment containing an anion exchange resin, the central compartment is separated from the anode compartment and the cathode compartment by respective permeable membranes, which method consists essentially of the steps of

(i) passing an aqueous solution containing nitrate ions through the anion exchange resin in the central compartment of the cell to capture the nitrate ions onto the ion exchange resin,
(ii) passing an electric current through the cell in order to cause the nitrate ions captured on the anion exchange resin to migrate into the anode compartment of the cell, and
(iii) destroying the nitrate ions by subjecting them to reduction by cathodic reduction means either inside or outside said anode compartment and if necessary to oxidation by anodic oxidation means to form nitrogen and oxygen or water.

5,306,401

METHOD FOR DRILLING COOLING HOLES IN TURBINE BLADES

Richard H. J. Fierkens, Keurbeek 15, 6914 AE Herwen; Martien H. H. van Dijk, and Ger J. N. E. de Vlieger, both of P.O. Box 4341, 5944 ZG Arcen, all of Netherlands

Filed Mar. 15, 1993, Ser. No. 31,279

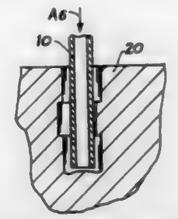
Int. Cl.[5] **B23H** *3/00, 9/10, 9/4, 9/10, 9/14*

U.S. Cl. 204—129.5 **16 Claims**

1. A process for drilling cooling holes with turbulator ridges in a conventional electrochemical process using a vertical electrode drilling through a metallic workpiece in an acid electrolyte, comprising the following steps:

(a) drilling a vertical section of a cooling hole to a depth in the workpiece;
(b) displacing the drilling electrode laterally so that it is brought to a position adjacent to a wall of the vertical section just drilled;
(c) drilling another vertical section to a depth deeper than reached during the immediately-preceding drilling step, thus creating another vertical section that is offset from the vertical section drilled during the immediately-preceding drilling step by an amount equal to the lateral displacement of the drilling electrode during the immediately-preceding lateral-displacement step;
(d) displacing the drilling electrode laterally in a direction substantially opposite to that of the immediately-preceding lateral-displacement step to a position adjacent to a wall of the vertical section drilled during the immediately-preceding drilling step;
(e) repeating steps (c) and (d) through the metallic workpiece to form a cooling hole with multiple offset sections with turbulator ridges therebetween.

3. The process described in claim 1, wherein



said step (a) is conducted under operating conditions that produce a clearance of 0.25 to 3.0 mm between the electrode and the workpiece;
said step (b) is conducted by displacing the drilling electrode laterally 0.15 to 0.20 mm, so that it is brought to within approximately 0.1 mm from the wall of the workpiece; and
said step (d) is conducting by displacing the electrode laterally in the direction opposite to that of step (b) to a position approximately 0.1 mm from the wall of the vertical section just drilled in the direction opposite to that of the displacement in step (b).

5,306,402

METHOD FOR CONTROLLING THE MACHINING CURRENT IN ELECTROCHEMICAL MACHINING

Fritz-Herbert Frembgen, Erfurter Strasse 31, D-87700 Memmingen, Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 100,053

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1992, 4227005

Int. Cl.[5] **B23H** *3/00, 9/02*

U.S. Cl. 204—129.43 **9 Claims**

1. Improved method for controlling the machining current in electrochemical machining, in which between a stationary tool and a stationary metallic workpiece a working gap is formed, a liquid electrolyte is flown through said working gap, an anode of a variable DC current source is connected to the workpiece the cathode thereof connected to said tool, the gap width increasing during machining by metal removal and in which the density of machining current as related to the machined surface area at the end of machining is on a higher level than at the start thereof, the improvement comprising a machining process composed of at least two machining periods between which a discontinuous steep current rise is produced.

5,306,403

RAMAN-BASED SYSTEM FOR DNA SEQUENCING-MAPPING AND OTHER SEPARATIONS

Tuan Vo-Dinh, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Aug. 24, 1992, Ser. No. 933,376

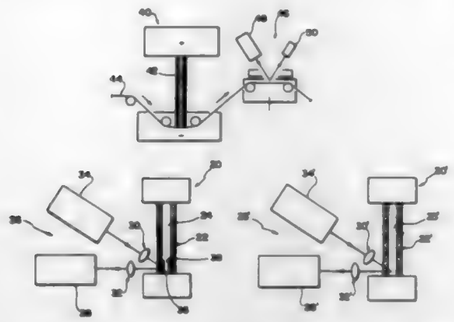
Int. Cl.[5] **G01N** *27/447, 27/26*

U.S. Cl. 204—182.8 **15 Claims**

9. A method for analyzing DNA comprising:
attaching a SERS label to DNA fragments;

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separating the labeled DNA fragments with a sequencer;
adsorbing at least one of the DNA fragments onto a SERS-active media disposed within the sequencer; and



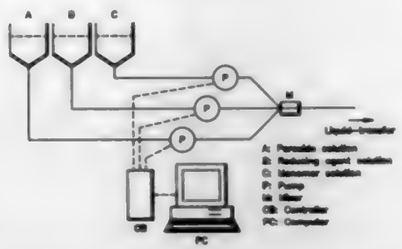
producing a SERS spectrum of the SERS labeled DNA fragment with a Raman spectrometer, the SERS spectrum having characteristics which identify the DNA fragment.

5,306,404

PROCESS FOR PREPARING POLYACRYLAMIDE GEL PLATE FOR ELECTROPHORESIS

Kazuaki Notsu, Abiko; Nobuyoshi Ebata, Takizawa; Akiko Udagawa, Tokyo, and Mieko Shiratori, Abiko, all of Japan, assignors to Daiichi Pure Chemicals Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,109
Claims priority, application Japan, Jan. 28, 1992, 4-013174
Int. Cl.[5] C25B *7/00*
U.S. Cl. 204—182.8 11 Claims



1. A process for preparing a polyacrylamide gel plate for electrophoresis having a concentration of 2–50 w/v % and having a plurality of concentrations or a concentration gradient, comprising the steps of simultaneously mixing the following:

(a) an acrylamide monomer solution, which comprises an acrylamide monomer and a cross-linking agent, the acrylamide monomer solution being in the range of 20–50% by weight;

(b) a peroxide solution having a concentration of 0.005–1.0% by weight; and

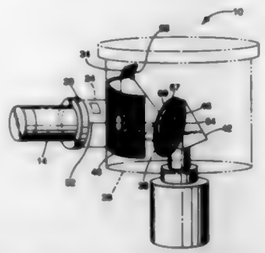
(c) a reducing agent solution having a concentration of 0.005–1.0% by weight; and introducing the mixture into a gel supporter.

5,306,405

SPUTTERING TARGET AND METHOD OF MANUFACTURE

Robert D. Lorentz, North Oaks, and Joseph H. Sexton, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 26, 1992, Ser. No. 904,997
Int. Cl.[5] C23C *14/46;* H01L *39/24*
U.S. Cl. 204—192.11 9 Claims



9. A method of sputter depositing a coating on a substrate with a uniform composition, said method comprising the steps of:

a) providing a powdered target material;

b) combining a suspending liquid with the target material to form a slurry;

c) forming the slurry to a desired target shape;

d) drying the slurry by evaporating the suspending liquid at about room temperature; and

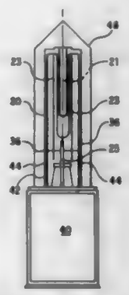
e) sputter depositing the target material onto said substrate.

5,306,406

METHOD AND APPARATUS FOR SPUTTERING SUPERCONDUCTING THIN FILMS OF NIOBIUM ON QUARTER-WAVE RESONANT CAVITIES OF COPPER FOR ACCELERATING HEAVY IONS

Vincenzo Palmieri, Legnaro; Renato Preciso, Piazzola Sul Brenta, both of Italy, and Vladimir L. Ruzinov, Moscow, U.S.S.R., assignors to Instituto Nazionale DiFisica Nucleare, Frascati, Italy

Filed Aug. 14, 1992, Ser. No. 930,197
Claims priority, application Italy, Aug. 14, 1991, RM 91A 000616
Int. Cl.[5] H01L *39/24;* C23C *14/34*
U.S. Cl. 204—192.24 14 Claims



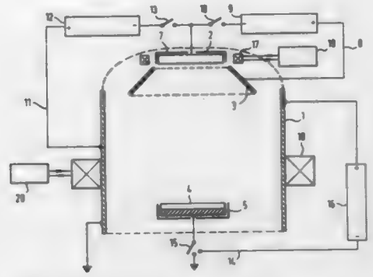
1. A method of depositing a film of niobium superconducting material on a copper support forming a quarter-wave resonant cavity for the acceleration of heavy ions, which comprises: hard-cleaning the copper surfaces to be deposited; introducing said surfaces into an ultrahigh vacuum chamber; and biased-diode d.c. sputtering niobium onto said surfaces by means of at least one niobium emitting sputtering cathode shaped so as to fit the geometry of said surfaces.

5,306,407

METHOD AND APPARATUS FOR COATING SUBSTRATES

Franciscus J. M. Hauzer; Wolf-Dieter Munz; Hans Veltrop, all of Venlo, Netherlands; Harald Wesemeyer, deceased, late of Hanger-Varnamo, and Beate Wesemeyer, heiress, Kleinfischbach, both of Sweden, assignors to Hauzer Holding BV, AF Venlo, Netherlands

PCT No. PCT/EP90/01032, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/00374, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 27, 1990, Ser. No. 654,626
Claims priority, application European Pat. Off., Jun. 27, 1989, 89111705.3; Fed. Rep. of Germany, Dec. 19, 1989, 3941918
Int. Cl.[5] C23C *14/32, 14/34, 14/48*
U.S. Cl. 204—192.38 28 Claims



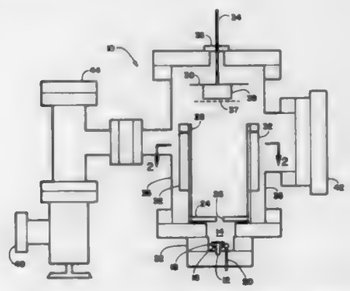
1. A method for the coating of a substrate in which a layer to be applied is produced by condensing particles of a plasma generated by means of a gas discharge which are incident on the substrate, the method comprising an arc discharge vaporization coating process and a cathode sputtering coating process, the arc discharge vaporization coating process being carried out before the cathode sputtering coating process; the arc discharge vaporization coating process being carried out with an ion energy and ion flux density which is selected to produce an anchorizing zone in the substrate for the layer by bombarding the substrate with appropriately optimized ion energy and ion current density in such a way that ion implantation takes place in which ions penetrate into the substrate to a depth of a plurality of crystal lattice planes to thereby form the anchoring zone.

5,306,408

METHOD AND APPARATUS FOR DIRECT ARC PLASMA DEPOSITION OF CERAMIC COATINGS

James R. Treglio, San Diego, Calif., assignor to ISM Technologies, Inc., San Diego, Calif.

Filed Jun. 29, 1992, Ser. No. 905,342
Int. Cl.[5] C23C *14/32*
U.S. Cl. 204—192.38 14 Claims



7. The method of forming an electrically-conductive, ceramic compound coating on a substrate by direct ion mixed arc plasma deposition, which comprises the steps of:

providing a vacuum chamber containing, in seriatim, a cathode, a perforated anode, and a substrate;

said cathode comprising a high temperature resistant, electrically-conductive, ceramic compound;

initiating an arc at said cathode to form a mixed plasma moving toward and through said anode;

guiding said plasma passing through said anode toward said substrate by surrounding the line between said cathode and said anode with a non-magnetic drift tube and positioning a plurality of permanent magnets along the exterior of said drift tube with the like poles of adjacent magnets in a face-to-face relationship to form magnetic cusps between adjacent magnets;

maintaining a substantially uniform ion mixture and plasma density as said plasma moves toward said substrate;

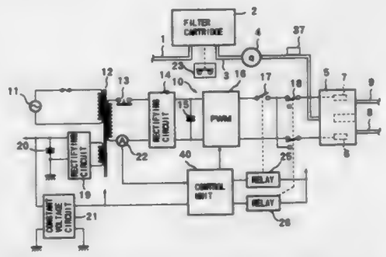
impinging said plasma onto said target whereby a substantially stoichiometric adherent coating of said compound is formed on said target.

5,306,409

CONTROLLING APPARATUS FOR CONTINUOUS ELECTROLYTIC ION WATER PRODUCING APPARATUS

Kazuyoshi Arai, Atsugi, Japan, assignor to Janfx Kabushiki Kaisha, Japan

Filed Sep. 14, 1992, Ser. No. 944,440
Claims priority, application Japan, Nov. 10, 1991, 3-290312
Int. Cl.[5] C25B *15/00;* C25D *21/00*
U.S. Cl. 204—228 9 Claims



1. A control circuit for controlling operation of an electrolytic cell for treating an incoming water flow to produce a continuous flow of alkali and acid ion water wherein the electrolytic cell has a pair of negative and positive electrodes and a power source circuit for supplying a dc voltage, said control circuit comprising:

means for detecting a variation in rate of the incoming water flow;

a range change-over switch for adjusting the dc voltage to provide an electrolytic voltage to said electrolytic cell at one of a plurality of stages:

a switching regulator connected in said power source circuit for controlling pulse width of the electrolytic voltage in accordance with a pulse width signal; and

a control unit for setting a pulse width for electrolytic voltage to one of a plurality of stages in response to a signal from said range change-over switch, for correcting the thus set pulse width in accordance with a detected variation in water flow rate, and for supplying a signal corresponding to the thus corrected pulse width, as said pulse width signal to said switching regulator.

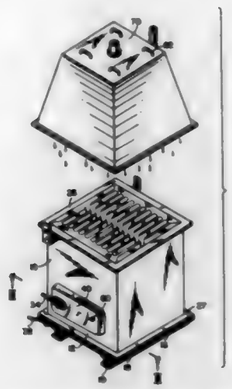
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,410

METHOD AND DEVICE FOR ELECTRICALLY COUPLING A CONDUCTOR TO THE METAL SURFACE OF AN ELECTROLYTIC CELL WALL

Thomas E. Farmer, 1602 Biova, Galveston, Tex. 77551

Filed Dec. 4, 1992, Ser. No. 985,291
Int. Cl.[5] C25B *9/04*
U.S. Cl. 204—242 19 Claims



13. An improved electrolytic cell, comprising:
a) a metal tank having a wall and a bottom for containing an electrolyte;
b) a first electrode suspended in said tank and electrically insulated from said tank;
c) a second electrode extending from said wall of said tank and electrically connected to said tank;
d) first attachment means for attaching a first conductor to said first electrode;
e) a conductive strap plate;
f) second attachment means for attaching said conductive strap plate to said wall, wherein said conductive strap plate is shaped such that when it is attached to said wall, a pocket interspace is formed between said conductive strap plate and said wall;
g) filler metal substantially filling said pocket interspace;
h) third attachment means for attaching a second conductor to said conductive strap plate.

5,306,411

SOLID MULTI-COMPONENT MEMBRANES, ELECTROCHEMICAL REACTOR COMPONENTS, ELECTROCHEMICAL REACTORS AND USE OF MEMBRANES, REACTOR COMPONENTS, AND REACTOR FOR OXIDATION REACTIONS

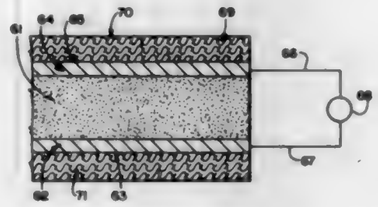
Terry J. Mazzaoc, Solon; Thomas L. Cable, Newbury; John G. Frye, Jr., and Wayne R. Kliewer, both of Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 457,327, Dec. 27, 1989, abandoned, Ser. No. 457,340, Dec. 27, 1989, abandoned, Ser. No. 457,384, Dec. 27, 1989, abandoned, and Ser. No. 510,296, Apr. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 357,317, May 25, 1989, abandoned, said Ser. No. 457,340, is a continuation-in-part of Ser. No. 25,511, Mar. 13, 1987, Pat. No. 4,933,054. This application Nov. 27, 1990, Ser. No. 618,792
Int. Cl.[5] C25B *1/02, 13/04*
U.S. Cl. 204—265 26 Claims

1. A solid multi-component membrane for use in an electrochemical reactor characterized by (1) an intimate, gas-impervious, multi-phase mixture of an electronically-conductive phase and an oxygen ion-conductive phase wherein at least one of said phases is a mixed metal oxide having a perovskite structure represented by the formula:

$$A_sA'_tB_uB'_vB''_wO_x$$

wherein A represents a lanthanide, Y, or mixture thereof; A represents an alkaline earth metal or mixture thereof; B represents Fe; B′ represents Cr, Ti, or mixture thereof; and B″ represents Mn, Co, V, Ni, Cu, or mixture thereof and s, t, u, v, w, and x each represent a number such that:
s/t equals from about 0.01 to about 100;
u equals from about 0.01 to about 1;
v equals from about 0.01 to 1;
w equals from zero to about 1;
x equals a number that satisfies the valences of the A, A′, B, B′ and B″ in the formula; and
$0.9<(s+t)/(u+v+w)<1.1$;
or (2) a mixed metal oxide material having a perovskite structure represented by the formula:



$$A_sA'_tB_uB'_vB''_wO_x$$

wherein A represents a lanthanide or Y, or a mixture thereof; A′ represents an alkaline earth metal or a mixture thereof; B represents Fe; B′ represents Cr or Ti, or a mixture thereof; and B″ represents Mn, Co, V, Ni or Cu, or a mixture thereof and s, t, u, v, w, and x each represent a number such that:
s/t equals from about 0.01 to about 100;
u equals from about 0.01 to about 1;
v equals from about 0.01 to 1;
w equals from zero to about 1;
x equals a number that satisfies the valences of the A, A′, B, B′ and B″ in the formula; and
$0.9<(s+t)/(u+v+w)<1.1$.

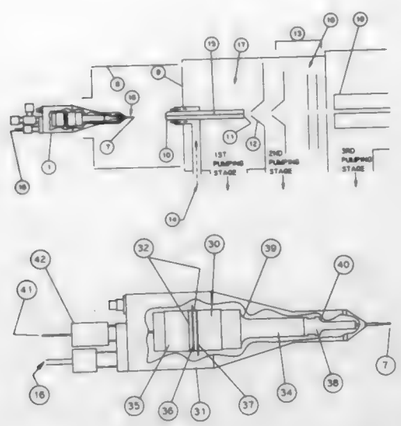
5,306,412

METHOD AND APPARATUS FOR IMPROVING ELECTROSPRAY IONIZATION OF SOLUTE SPECIES

Craig M. Whitehouse; John B. Fenn, both of Branford; Shida Shen, Durham, and Cawthon Smith, Norwalk, all of Conn., assignors to Analytica of Branford, Inc., Branford, Conn.

Continuation of Ser. No. 703,506, May 21, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 46,379
Int. Cl.[5] G01N *27/26, 27/447;* H01J *49/04, 49/10*
U.S. Cl. 204—299 R 112 Claims

1. A method for the production of ions from a liquid sample for analysis of said ions, comprising:
providing a tubular conduit having an exit end, said tubular conduit having a channel of small diameter at said exit end, said exit end serving as the tip of said tubular conduit,
passing said liquid sample through said tubular conduit;
maintaining said conduit at an electrical potential at said exit end relative to a conductive surface at some distance from said exit end, said conducting surface serving as a counter electrode to said conduit,
simultaneously subjecting said liquid sample to both an electrostatic field and mechanical vibration at the point of exit form said tubular conduit to form charged droplets of



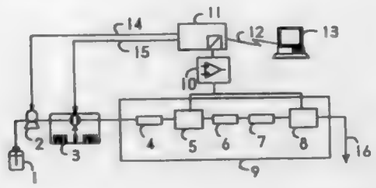
said liquid sample at said point of exit and to induce emission of ions from said charged droplets.

5,306,413

ASSAY APPARATUS AND ASSAY METHOD

Ryuzo Hayashi, Higashiosaka; Yukie Inoue, Tsuzuki, and Akio Kariyone, Kyoto, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,421
Claims priority, application Japan, Mar. 31, 1992, 4-077257
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 4 Claims



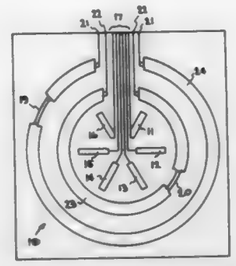
1. An apparatus for assaying either an oxidized-form substrate $B_{oxidized}$ or a reduced-form coenzyme $A_{reduced}$, and a reduced-form substrate $B_{reduced}$ by means of:
a dehydrogenase catalyzing the reaction between the reduced-form coenzyme $A_{reduced}$ and oxidized-form substrate $B_{oxidized}$ to form the corresponding oxidized-form coenzyme $A_{oxidized}$ and reduced-form substrate $B_{reduced}$; and
an oxidase catalyzing the oxidation of the reduced-form substrate $B_{reduced}$;
which apparatus comprises:
(1) a first measuring part including the oxidase in immobilized form and a first electrode for detecting the change in the concentration of an electrochemically active substance as resulting from the oxidiase-catalyzed reaction and
(2) a second measuring part including the dehydrogenase in immobilized form and the oxidase in immobilized form and a second electrode for detecting the change in the concentration of an electrochemically active substance as resulting from the oxidase-catalyzed reaction.

5,306,414

CORROSION SENSOR

Robert S. Glass, Livermore; Willis L. Clarke, Jr., San Ramon, and Dino R. Ciarlo, Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed May 17, 1993, Ser. No. 61,724
Int. Cl.[5] G01N *17/02, 27/27*
U.S. Cl. 204—404 11 Claims



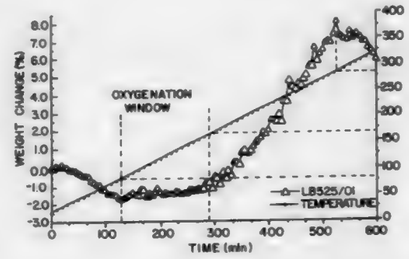
1. An electrochemical corrosion sensor assembly providing in-situ corrosion/environmental monitoring and adapted to be embedded in or emplaced on a structure to be monitored, comprising:
a sensor array;
said sensor array including a plurality of individual sensors;
certain of said plurality of individual sensors being constructed to be sensitive to chemical ions and factors present in a environment;
certain of said plurality of individual sensors being constructed from a material which is the same as a metal or metal alloy structural material to be monitored, so that its corrosion potential/rate may be measured; and
means operatively connected to each of said individual sensors for generating a signal and directing the signal therefrom to a point of use.

5,306,415

OXYGENATED PITCH AND PROCESSING SAME

Ludovic P. Coraec, and Charles C. Fain, both of Clemson, S.C., assignors to Clemson University, Clemson, S.C.

Division of Ser. No. 737,446, Jul. 29, 1991, Pat. No. 5,225,070. This application Apr. 16, 1993, Ser. No. 48,388
Int. Cl.[5] C10C *3/02*
U.S. Cl. 208—22 11 Claims



9. A process for forming composites comprising the steps of:
(a) providing an unstabilized oxygenated pitch;
(b) adding a carbon-containing material capable of allowing said unstabilized oxygenated pitch to form a carbon matrix about said material to said pitch so that a carbon/carbon mixture is formed;
(c) heating said carbon/carbon mixture at a temperature above the temperature at which oxidation of said pitch

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begins to occur and applying pressure during a portion of said heating; and

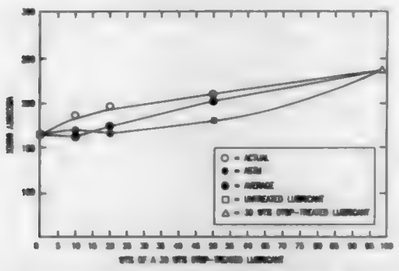
(d) shaping said carbon/carbon mixture during said heating and producing a carbon/carbon composite therefrom.

5,306,416

PROCESS FOR MAKING A BLENDED LUBRICANT

Quang N. Le, Cherry Hill, N.J., and Stephen S. Wong, Astrid Meadows, Singapore, assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 15, 1992, Ser. No. 898,365
Int. Cl.[5] C10G *71/00*; C10M *171/02, 129/22*
U.S. Cl. 208—108 20 Claims



1. A process for making a blended lubricant of enhanced viscosity index (VI) comprising the steps of:

treating a first lubricant boiling range material with about 10 to about 30 wt. % of an organic peroxide sufficient to increase the viscosity index of the lubricant boiling range material;

blending from about 5 to 95 wt. % of the peroxide-treated lubricant boiling range material with from about 95 to 5 wt. % of a second non-peroxide treated lubricant boiling range material to produce a blended lubricant having a higher viscosity index than predicted by calculating the viscosity index using an ASTM standard method designated D 341-87 and by calculating the average of the VI based on the proportion of each component of the blend and wherein the blended lubricant contains a lower peroxide dosage than the peroxide-treated lubricant treated with an amount of peroxide sufficient to achieve the same VI as that of the blended lubricant.

5,306,417

CATALYTIC CRACKING PROCESS UTILIZING A SILICA MODIFIED BAYERITE AND/OR ETA ALUMINA-CONTAINING CATALYST

Wu-Cheng Cheng, Ellicott City, and John A. Rudesill, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 780,680, Oct. 18, 1991, Pat. No. 5,147,836. This application Jul. 6, 1992, Ser. No. 909,328
Int. Cl.[5] C10G *11/05*
U.S. Cl. 208—118 6 Claims

1. A method for the catalytic cracking of hydrocarbons which comprises reacting a hydrocarbon feedstock under catalytic cracking conditions in the presence of a catalytic cracking catalyst composition which comprises a molecular sieve dispersed in an inorganic oxide matrix and silica modified bayerite and/or eta alumina that contains from about 0.5 to 10 weight percent SiO_2.

5,306,418

HEAVY HYDROCARBON FEED ATOMIZATION

Suisheng M. Dou, Lawrenceville; Allen R. Hansen, Glassboro, both of N.J.; Steven C. Heidenreich, Houston, Tex.; William J. Hillier, Houston, Tex.; Phillip K. Niecum, Houston, Tex., and Maury I. Schlossman, Katy, Tex., assignors to Mobil Oil Corporation, Fairfax, Va. and M. W. Kellogg Company, Houston, Tex.

Continuation-in-part of Ser. No. 808,266, Dec. 13, 1991, abandoned. This application Apr. 2, 1992, Ser. No. 862,480
Int. Cl.[5] C10G *11/18*
U.S. Cl. 208—157 17 Claims

1. A fluidized catalytic cracking process wherein a heavy feed is catalytically cracked in a riser cracking reactor means to produce cracked products and spent catalyst, spent catalyst is stripped in a stripping means and regenerated in a catalyst regeneration means to produce hot regenerated catalyst which is recycled to said riser reactor, characterized by use of at least one multi-stage atomizing feed nozzle to inject feed in a base portion of said riser reactor, said nozzle comprising:

an initial atomization section wherein atomizing gas is charged, in radial out-to-in flow, into a flowing stream containing liquid hydrocarbon, to partially atomize said liquid feed stream and produce a partially atomized jet having a diameter and cross sectional area and having a less atomized core region and a more atomized peripheral region;

an impingement section contiguous with and downstream of said initial atomization section, and having a diameter no greater than the diameter of said initial atomization section to atomize by impact against said impingement section of liquid and atomizing vapor discharged from said initial atomization section and channel flow into an annular expansion region next to and downstream of said impingement region;

said expansion region having a cross sectional area at least as large as said partially atomized jet and connective with a nozzle barrel having a cross sectional area at least 1.5 times as large as the cross sectional area of said partially atomized jet and wherein said expansion region transmits atomized liquid and atomizing vapor through said annular region to said nozzle barrel; and

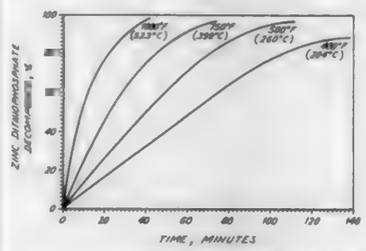
a nozzle outlet having a cross sectional area smaller than the cross sectional area of said nozzle barrel at an end of said nozzle barrel for distributing an atomized mixture into said riser cracking reactor means.

5,306,419

USED LUBRICATING OIL RECLAIMING

Charles W. Harrison; Arthur G. Gorneau; Robert M. Steinberg, all of Houston, Tex., and Bruce R. Bond, Carmel, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 5, 1993, Ser. No. 102,365
Int. Cl.[5] C10M *175/00*; C10G *7/00*; B01D *3/00*
U.S. Cl. 208—179 15 Claims



9. A process for reclaiming used lubricating oil having a zinc dithiophosphate concentration of 0.01 to 5.0 wt %, comprising the steps of:

(a) heating the used lubricating oil by direct heat exchange by means of admixing with a heated product oil at an additive decomposition temperature of about 400° F. (204° C.) to 1000° F. (538° C.) and maintaining a residence time in the range of about 10 to 120 minutes to yield a product oil comprising 0.001 wt % or less zinc dithiophosphate;

(b) heating the product oil by means of indirect heat exchange to the additive decomposition temperature of 400° F. (204° C.) to 1000° F. (538° C.) to produce the heated product oil.

(c) vacuum distilling the heated product oil at a distillation temperature of 400° F. (204° C.) to 1050° F. (565° C.) and a distillation pressure of 20 to 500 mm Hg, and

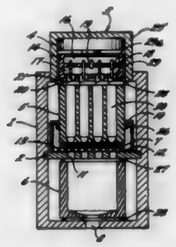
(d) recovering a distillate product comprising 0.001 wt % or less zinc dithiophosphate, and an asphaltic bottoms product comprising zinc containing degradation products.

5,306,420

MODULAR DEVICE FOR COLLECTING, INCUBATING, AND FILTERING MULTIPLE SAMPLES

Jean-Claude Bisconte, Brie-Sous-Forges, France, assignor to Biocom Societe Anonyme, Les Ulis, France

PCT No. PCT/FR91/00044, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO91/11245, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 25, 1991, Ser. No. 910,162
Claims priority, application France, Jan. 26, 1990, 90 00959
Int. Cl.[5] B01D *35/30*
U.S. Cl. 210—143 16 Claims



1. A filter device for a plurality of liquid or gaseous fluid samples containing particles to be filtered, the device comprising:

a stand;

at least one filter;

an assembly comprising upstream and downstream clamping blocks cooperating with said at least one filter ad designed to be fixed together with an interposed perforated sealing gasket, said upstream clamping block comprising a plurality of wells for storing samples to be treated, said downstream clamping block being make int he form of a removable perforated tray, said wells, the perforation of said removable tray and the perforations of the sealing gasket facing each other and delimiting a plurality of independent sealed filter zones on said at least one filter;

forced filtering means; and

filtrate evacuation means;

said upstream clamping block being made in the form of a removable independent tank block so that samples introduced in the wells thereof can be pretreated outside said strand, and said upstream and downstream clamping blocks being provided with complementary fixing means for securing the clamping blocks together;

said stand having a front opening configured so as to enable the assembly formed by said upstream and downstream clamping blocks to be inserted therein, and having a top opening to enable said forced filtering means to be applied to the upstream clamping block.

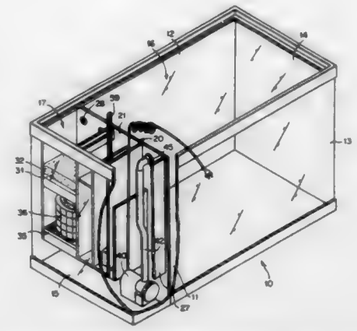
16. A filter device according to claim 1, wherein said device is automatic and programmable and the forced filtering means are themselves also programmable, the device being under the control of a controlling computer.

5,306,421

FILTRATION SYSTEM FOR A FISH TANK

Stuart Weinstein, Brooklyn, N.Y., assignor to T Y & G, Inc., Woodmere, N.Y.

Continuation-in-part of Ser. No. 532,061, Jun. 1, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 859,665
Int. Cl.[5] A01K *63/04*
U.S. Cl. 210—151 16 Claims



1. An internally-situated filter assembly for an aquarium comprising:

an upright partition wall mounted within the aquarium for dividing said aquarium into a side-by-side aquarium compartment and a filter compartment defining a trickle-type filter chamber, said compartments and said partition wall each having a top end and a bottom end;

inlet means in said partition wall for allowing tank water in said aquarium compartment to flow into said filter compartment, said inlet means being disposed adjacent said top end of said partition wall and including ancillary inlet means formed in said partition wall generally adjacent to the bottom end thereof for allowing tank water closer to said bottom end of said aquarium compartment to flow directly into said filter compartment and wherein said filter compartment includes a bottom draw compartment having a top end and bottom end into the latter of which said ancillary inlet means opens and an opening adjacent said top end of said bottom draw compartment which opens into said pre-filter compartment;

outlet means in said partition wall for allowing filtered tank water to flow from said filter compartment into said aquarium compartment;

filter means mounted exclusively in the tank in said filter compartment generally beneath said inlet means so that tank water may be fed directly thereto under the influence of gravity from said aquarium compartment, said filter means includes pre-filter means having a generally horizontally disposed, perforated pre-filter drip plate and a main filter assembly comprising wet/dry trickle-type biological filter means mounted in said trickle-type filter chamber of said filter compartment generally beneath said pre-filter assembly for receiving pre-filtered aquarium water from said pre-filter means, said pre-filter drip plate uniformly distributing water fed from the tank over the surface of said main filter in trickle-type fashion, said pre-filter means additionally including a mechanical filter;

a catch basin formed beneath said filter means and adjacent to said bottom end of said filter compartment for collecting filtered water from said filter means; and

pump means mounted within the tank within said catch basin, including conduit means communicating with said outlet means, for returning filtered water collected in said

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catch basin to said aquarium compartment via said conduit and outlet means.

5,306,422

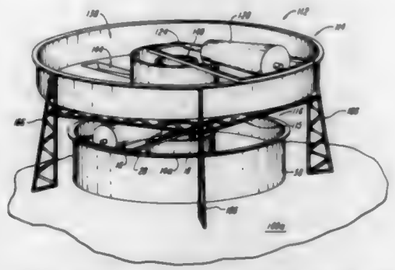
COMPACT CLARIFIER SYSTEM FOR MUNICIPAL WASTE WATER TREATMENT

Milos Krofta, Lenox, Mass., assignor to Lenox Institute of Water Technology, Inc., Lenox, Mass.

Continuation-in-part of Ser. No. 885,522, May 19, 1992, which is a continuation-in-part of Ser. No. 756,323, Sep. 6, 1991, Pat. No. 5,160,611, which is a continuation of Ser. No. 241,384, Sep. 7, 1988, Pat. No. 4,931,175. This application Mar. 18, 1993, Ser. No. 33,015

Int. Cl.[5] **C02F** *1/24, 3/08*

U.S. Cl. 210—151 **15 Claims**



1. A system for treating raw inlet water to remove dissolved and colloidal solid contaminants, including organic solids that require treatment with oxygen, to produce a clarified effluent water, comprising

a first clarifier having a shallow tank that receives said raw inlet water and means for conducting dissolved air flotation clarification in said tank to produce a first clarified output water,

a second clarifier having a hydraulic flocculator that receives said first clarified output water and feeds it to a clarification tank that has (i) means for conducting dissolved air flotation clarification in said tank, (ii) a filtration medium at the bottom of the tank divided into radial zones, (iii) means for backwashing said medium at a preselected zone, and (iv) means for withdrawing the clarified, filtered effluent water from said clarification tank, and

means for mounting said first clarifier above said second clarifier in a stacked relationship.

5,306,423

DISCONTINUOUSLY OPERATING FILTER CENTRIFUGE WITH NONINVERTING FILTER BAG

Günter Hultsch, Oberschleissheim, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,152

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1991, 4132715

Int. Cl.[5] **B01D** *33/06*

U.S. Cl. 210—232 **13 Claims**

1. A filter centrifuge, comprising: a housing;

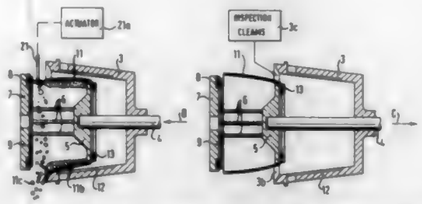
a centrifuge drum rotatable about an axis in said housing, said housing being provided with means for collecting a liquid centrifugally expelled by rotation of said drum;

means for rotating said drum in said housing;

a filter bag in said housing rotatable with said drum and adapted to receive a filter cake upon centrifugal expulsion of liquid from a suspension introduced into said filter bag, said liquid passing through said filter bag into said drum and being discharged from said drum;

a bottom axially movable in said drum, said filter bag being secured only to said bottom and having a mouth located at a mouth of said drum during formation of said cake; and

means for axially shifting said bottom relative to said drum in a direction to displace said filter bag out of said mouth of



said drum and form a clearance between said filter bag and said drum, and for shifting said mouth of said bag in said direction away from the mouth of said drum through which an interior of said drum can be inspected.

5,306,424

FUEL FILTER

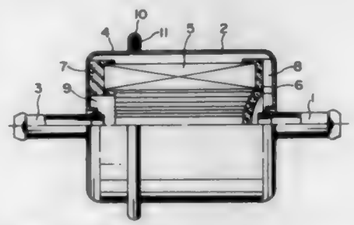
Yoshiharu Matsushita, Ibaraki, Japan, assignor to Kyosan Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,783

Claims priority, application Japan, Nov. 21, 1991, 3-103438[U]

Int. Cl.[5] **B01D** *27/06, 27/08*

U.S. Cl. 210—448 **6 Claims**



1. A fuel filter comprising:

a cylindrical case including an end wall at one end thereof and an opposite open end, said end wall having a fuel inlet pipe disposed therein;

a cap having a fuel outlet pipe disposed therein, said cap closing the open end of said case;

a filter element having first and second ends, the filter element being housed in a space defined between the case and the cap, the filter element having zigzag folds and being of a hollow tubular shape;

a first foam rubber elastic body abutting said first end of the filter element, said first foam rubber elastic body having an outer diameter slightly greater than that of the filter element;

a holding plate abutting the first foam rubber elastic body for holding said first foam rubber elastic body against the filter element, said holding plate being disposed between said first end of the filter element and the case, said holding plate including first and second projection means for providing a spacing between said holding plate and said case and for defining a fuel passageway therebetween from said inlet pipe to an outer periphery of said filter element, said holding plate comprising a cylindrical portion and a bottom plate, wherein said first and second projection means are located on said cylindrical portion and said bottom plate, respectively, and said first projection means abut an inner cylindrical surface of said casing and said second projection means abut said end wall and surround said inlet pipe;

a second foam rubber elastic body of of annular configuration sealingly disposed about said outlet pipe and located adjacently between the second end of the filter element and the cap so that fuel passes through the outer periphery of said filter element into a space defined by an inside periphery of said filter element and then out through an opening in the second foam rubber elastic body into said fuel outlet pipe.

5,306,425

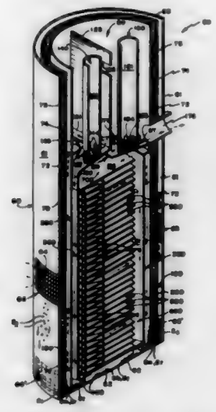
WASTEWATER TREATMENT MECHANISM

Jan D. Graves, Norwalk, Ohio, assignor to Norwalk Wastewater Equipment Company, Norwalk, Ohio

Division of Ser. No. 477,389, Feb. 9, 1990, Pat. No. 5,207,896. This application Apr. 27, 1993, Ser. No. 52,741

Int. Cl.[5] **C02F** *3/02*

U.S. Cl. 210—620 **34 Claims**



1. A method of treating wastewater comprising the steps of settling relatively large solids in a first settling zone peripherally outboard of a generally peripherally disposed filtering area by flowing wastewater peripherally inwardly through the filtering area causing relatively large solids to be blocked by the filtering area while relatively smaller solids pass therethrough, settling the relatively smaller solids in a second settling zone peripherally inboard of the filtering area, flowing wastewater inboard of the second settling zone along a plurality of vertically superimposed and spaced horizontal wastewater flow path portions, and settling still smaller solids in a third settling zone associated with each of the horizontal wastewater flow path portions.

5,306,426

METHOD FOR DETECTING TRACE CONTAMINANTS

Noubar B. Afeyan, Brookline, Mass., assignor to Perseptive Biosystems, Inc., Cambridge, Mass.

Continuation of Ser. No. 721,192, Jun. 26, 1991, abandoned. This application May 25, 1993, Ser. No. 67,418

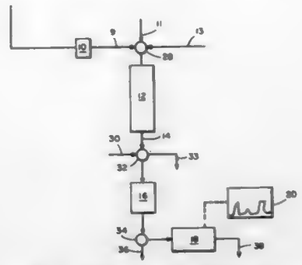
Int. Cl.[5] **B01D** *15/08*

U.S. Cl. 210—635 **8 Claims**

1. A method of detecting a trace solute in a solution comprising a major amount of a dissolved product, the method comprising the steps of:

flowing the solution through product extraction means comprising a chromatography matrix which selectively extracts the product without substantially extracting said trace solute thereby to produce an effluent, substantially free of said product and containing said trace solute, which flows through and exits from said extraction means;

flowing said effluent exiting said product extraction means through a trace solute adsorbing means to progressively accumulate therein said trace solute; and



eluting said trace solute from said adsorbing means to produce an eluant fraction containing a detectable quantity of said trace solute.

5,306,427

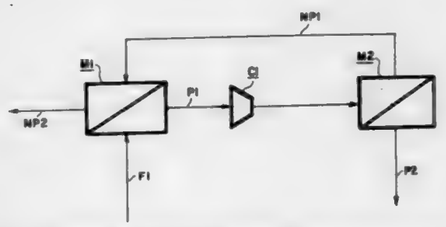
LOW PRESSURE FEED MEMBRANE SEPARATION PROCESS

Jianguo Xu, Fogelsville, Pa., assignor to Permea, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 993,153, Dec. 18, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,376

Int. Cl.[5] **B01D** *61/36*

U.S. Cl. 210—640 **4 Claims**



1. A process for the separation of one or more, more permeable components from one or more, less permeable components in a feed stream comprising:

(a) introducing the feed stream into a first membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the feed stream is more specifically introduced into the low pressure side of the first module;

(b) withdrawing from the low pressure side of the first module a first permeate stream enriched in the more permeable component(s);

(c) compressing the first permeate stream and introducing the compressed first permeate stream into a second membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the first non-permeate stream is more specifically introduced into the high pressure side of the second module;

(d) withdrawing from the low pressure side of the second module a second permeate stream which is further enriched in the more permeable component(s);

(e) withdrawing from the high pressure side of the second module a first non-permeate stream which is enriched in the less permeable component(s);

(f) introducing the first non-permeate stream into the high pressure side of the first module; and

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(g) withdrawing from the high pressure side of the first membrane separation module a second non-permeate stream which is further enriched in the less permeable component(s) wherein the feed stream comprises a mixture selected from the group consisting of:

(i) hydrogen as the one or more, more permeable component(s) and carbon monoxide as the one or more, less permeable component(s);

(ii) hydrogen as the one or more, more permeable component(s) and carbon dioxide as the one or more, less permeable component(s);

(iii) hydrogen as the one or more, more permeable component(s) and methane as the one or more, less permeable component(s);

(iv) hydrogen as the one or more, more permeable component(s) and nitrogen as the one or more, less permeable component(s);

(v) nitrogen as the one or more, more permeable component(s) and methane as the one or more, less permeable component(s); and

(vi) carbon dioxide as the one or more, more permeable component(s) and nitrogen, oxygen and argon as the one or more, less permeable component(s).

5,306,428

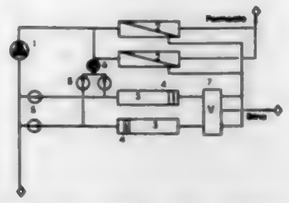
METHOD OF RECOVERING ENERGY FROM REVERSE OSMOSIS WASTE STREAMS

John B. Tonner, 10201 N. Concord Dr., Mequon, Wis. 53092

Filed Oct. 29, 1992, Ser. No. 968,318

Int. Cl.[5] B01D *61/06*

U.S. Cl. 210—652 **10 Claims**



1. A method of improving the energy efficiency of operation of a reverse osmosis system by recovering and transferring energy from at least one fluid waste stream of the system to at least /ne fluid stream of feed liquor being pumped into the system through transfer of fluid pressure using at least one work exchange cylinder and controlling paths of flow of the fluid streams by means including rotation of at least one valve spool piece that is fluidly connected to the at least one work exchange cylinder.

5,306,429

COPOLYMERS OF POLYAMINO ACIDS AS SCALE INHIBITION AGENTS

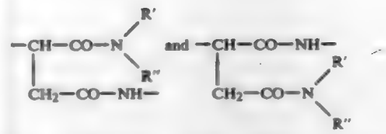
Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Srchem, Incorporated, Elkridge, Md.

Filed Oct. 29, 1992, Ser. No. 968,319

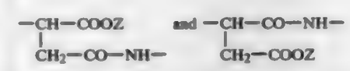
Int. Cl.[5] C02F *5/12*

U.S. Cl. 210—698 **6 Claims**

1. A method of preventing mineral scale deposition including calcium phosphate or calcium sulfate in water comprising the addition of an amount effective in preventing said deposition to said water of a polyamide having in its molecule at least one of the groups



wherein R′ is a hydrogen or an alkyl or alkenyl group having 1 to 20 carbons or a polyamine and R″ is an alkyl or alkenyl group having 2 to 20 carbons or a polyamine, together with at least one of the groups



wherein Z represents a hydrogen atom, an alkali metal or an alkaline earth metal or a ammonia, as a repeating unit.

5,306,430

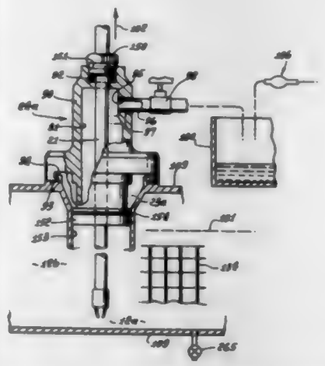
ENGINE COOLANT PRESSURE RELIEF METHOD AND APPARATUS

Patrick L. Dixon, Riverside, Calif., and Robert B. Sweeney, Forth Worth, Tex., assignors to Wynn Oil Company, Azusa, Calif.

Filed Jul. 27, 1992, Ser. No. 920,398

Int. Cl.[5] C02F *1/52*

U.S. Cl. 210—712 **27 Claims**



1. In the method of removing hot liquid coolant from an internal combustion engine cooling system, which includes a radiator having a fill port, a pressure cap and a by-pass outlet located near said fill port, there being a venturi-type suction-/aspiration mechanism in fill flow communication with said by-pass outlet, the method including

a) applying suction to withdraw hot fluid, including hot liquid and pressurized gas, from the radiator via said outlet and said mechanism, prior to removal of said cap, and

b) then opening the radiator by removal of said cap, for safely removing hot liquid coolant therefrom.

5,306,431

PROCESS FOR AUTOMATICALLY CONTROLLABLE REDUCTION OF THE NITRITE CONTENT OF NITRITE-CONTAINING AQUEOUS SOLUTIONS TO VALUES BELOW 1 MG/1

Joachim Fischer, Rodenbach; Hubert Wolf, Hammersbach; Klaus Stuetzel, Frankfurt am Main; Friedhelm Brandner, Gelnhausen, and Manfred Diehl, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 925,749

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4127980

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—746 **9 Claims**

1. A process for the automatic controllable reduction of the nitrite content of a nitrite-containing aqueous solution, said process comprising adding hydrogen peroxide continuously or in stages to said solution until the redox potential of said solution is at a maximum value and thereafter continuing to add hydrogen peroxide to further reduce the nitrite content to a value below 1 mg NO_2^-/l, wherein the pH of said solution is held below 3.5, continuously measuring said redox potential of said solution, and terminating said addition of hydrogen peroxide when said redox potential is lowered to a value of 650±10 mV.

5,306,432

WATER PURIFICATION

John D. Puetz, Oak Creek, Wis., assignor to Great Lakes Biochemical Co., Inc., Milwaukee, Wis.

Filed Aug. 9, 1993, Ser. No. 104,368

Int. Cl.[5] C02F *1/50*

U.S. Cl. 210—759 **1 Claim**

1. A method for inhibiting growth of bacteria in swimming pool water, which comprises; mixing in the water 25 to about 75 ppm of decylisononyldimethyl ammonium chloride and 0.5 to 2 pound per 10,000 gallons of water of the triple salt $KHSO_5:KHSO_4:K_2SO_4$.

5,306,433

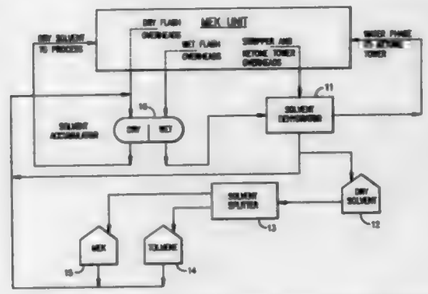
METHOD OF CHANGING COMPOSITIONS OF CIRCULATING SOLVENT IN SOLVENT DEWAXING

Lyle A. Leach, Morphett Vale, Australia, assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 714,430, Jun. 12, 1991, Pat. No. 5,190,672. This application Dec. 7, 1992, Ser. No. 986,211

Int. Cl.[5] B01D *33/48;* **C10G** *73/22*

U.S. Cl. 210—772 **11 Claims**



1. A process for changing the composition of total circulating solvent in an MEK dewaxing unit including a dewaxing filter comprising the steps of:

subjecting a petroleum feedstock to solvent dewaxing and thereafter recovering solvent from dewaxed filtrate and separated wax by evaporation and stripping;

dehydrating the recovered solvent from said evaporation and stripping to form a dry solvent and recycling said dry solvent to the dewaxing unit;

passing a portion of said dry solvent into a dry solvent tank;

splitting said dry solvent from the dry solvent tank in a solvent splitter into an MEK rich fraction and a toluene rich fraction and storing each fraction in a separate tank; and

replacing the dry solvent portion passed to the dry solvent tank with an amount of MEK rich fraction recovered from the solvent splitter.

5,306,434

HAIR CARE COMPOSITION CONTAINING DISPERSED SILICONE OIL

Randy M. Schueller, Park Ridge; Gilles M. L. Verboom, Mundelein; Sheila M. Moran, Palatine, and Barry W. Williams, Country Club Hills, all of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Oct. 20, 1992, Ser. No. 963,603

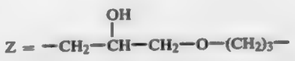
Int. Cl.[5] C11D *3/12, 3/37;* **A61K** *7/08, 7/06*

U.S. Cl. 252—8.8 **3 Claims**

1. An after-shampoo hair conditioner composition comprising an aqueous dispersion of a water-insoluble hair-conditioning silicone oil having a viscosity of from 10,000 to 60,000 cps and being present in an amount of 0.20 to 2.0% by weight of the composition, said composition containing a dispersing agent for said silicone oil consisting of 0.1 to 1.5% of a diquaternary polydimethylsiloxane having an average molecular weight from 1000 to 4000, said polydimethylsiloxane having the diquaternary structure of the formula:



wherein Z is



and n is a number from 5 to 40 and both R's are an alkyl group containing from 4 to 6 carbons.

5,306,435

TREATING AGENT COMPOSITION FOR LEATHER, FOR FIBROUS MATERIALS

Mitsuo Ishikawa, Tokyo; Ikumi Ohnuki, Narashino; Tomoya Ishiyama, Tokyo, and Toshiaki Matsuura, Osaka, all of Japan, assignors to Nihon Junyaku Co., Ltd. and Alota Co., Ltd., both of Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,187

Claims priority, application Japan, Jul. 11, 1991, 3-203967; Aug. 23, 1991, 3-236954

Int. Cl.[5] D06M *15/12*

U.S. Cl. 252—8.57 **10 Claims**

1. A treating agent composition for leather, fur and fibrous material comprising:

(a) a member selected from the group consisting of a water-soluble polyurethane, a water-dispersible polyurethane and mixtures thereof in amount of 30–99% by weight,

(b) a member selected from the group consisting of an aluminum salt, a chromium salt and a zirconium salt in an amount of 0.2–15% by weight,

(c) a surfactant comprising at least one nonionic surfactant which is an ethylene oxide adduct having 5–11 moles of ethylene oxide units on the average in amount of 0.2–30% by weight wherein said ethylene oxide adduct is selected from the group consisting of polyoxyethylene alkylphenyl

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ethers having an average of from 6 to 12 carbon atoms in the alkyl group, polyoxyethylene alkyl ethers having an average of from 10 to 20 carbon atoms in the alkyl group, polyoxyethylene alkenyl ethers having an average of from 10 to 20 carbon atoms in the alkenyl group, ethoxylated fatty acid alkanolamides and polyoxyethylenepolyoxypropylene alkyl ethers; and

(d) auxiliary ingredients conventionally used in such leather, fur and other fibrous treating compositions, other than components (a)–(c), in amount of 0 to 20% by weight, when the total quantity of ingredients (a), (b), (c) and (d) are taken as 100% by weight.

5,306,436

NEW PHOSPHOSULFIDES COMPOUNDS AND USE THEREOF AS OIL LUBRICANTS

Maurice Born, Nanterre; Ourida Aberkane, Fameck; Jean-Luc Mieloszynski, Montigny les Metz; Daniel Paquer, Vandoeuvre, and Guy Parc, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Aug. 26, 1991, Ser. No. 749,783

Claims priority, application France, Aug. 24, 1990, 90 10702; Dec. 27, 1990, 90 16530

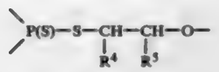
Int. Cl.[5] C10M *137/10, 137/06;* **C07F** *9/165*

U.S. Cl. 252—32.7 E **20 Claims**

1. A phosphosulfur compound in accordance with the following general formula (I):

$$(((R^1{-}S_x{-}O_y{-}A{-})_v{-}B_r{-})_pP(X){-}Y_t{-})_qZ_m$$

in which R^1 represents a functionalized or non-functionalized alkyl or alkenyl group with 1 to 30 carbon atoms; A represents the group $-(CH_2)_n-O-$ in which n is a number from 3 to 30; B represents the group



in which R^4 and R^5, which can be the same or different, in each case represent a hydrogen atom or a monovalent hydrocarbyl radical with 1 to 30 carbon atoms and R^4 and R^5 can be interlinked to form a polymethylene chain; X represents an oxygen atom or a sulphur atom; Y represents an oxygen atom, a sulphur atom, or a hydrocarbon chain interrupted by an oxygen or sulfur atom; Z represents a hydrogen atom, a chlorine atom, a sulphur atom, a polysulphide chain, a metal, an oxygen- or sulphur-containing derivative of molybdenum or a functionalized or non-functionalized alkyl or alkenyl R^6 group containing 1 to 30 carbon atoms; x is a number equal to or greater than 1; y is equal to 0,1 or 2; v is equal to 1; r is equal to 2; p is equal to 2 or 3; t is equal to 0 or 1; m is equal to 0,1 or 2; q is a number equal to the valency of Z if Z represents a metal or a number equal to 1 to 2, said functionalized alkyl or alkenyl R^1 and R^6 groups having at least one heteroatom selected from the group consisting of sulfur and chlorine, or at least one group selected from the group consisting of carboxylic, aldehyde, ketone, nitrile, hydroxyl and epoxide functions.

5,306,437

COPOLYMERS AND THEIR USE AS LUBRICANTS AND RELEASE AGENTS FOR PROCESSING THERMOPLASTICS

Franz-Leo Heinrichs, Gablingen; Gerd Hohner, Gersthofen; Anton Lukasch, Meitingen, and Jan-Peter Plesold, Augsburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 981,553, Nov. 25, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,887

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139601

Int. Cl.[5] C10M *145/10*

U.S. Cl. 252—56 R **8 Claims**

1. A method for improving the flow properties of a thermoplastic composition or for reducing the tendency of the thermoplastic composition to stick to a metallic component of a processing machine, comprising the step of:

adding to the thermoplastic composition a copolymer comprising

20 to 99.5 parts by weight of units which are derived form a C_{12}–C_{60}-α-olefin,

0.5 to 50 parts by weight of units which are derived from a carboxylic acid of the formula $CH_2{=}CR^1{-}COOH$,

0.1 to 60 parts by weight of units which are derived a carboxylic acid ester of the formula $CH_2{=}CR^1{-}COOR^2$, in which formulae R^1 is a hydrogen atom or a methyl group and R^2 is a straight-chain or branched alkyl radical having 1 to 6 carbon atoms, and

0.0 to 30 parts by weight of units which are derived from styrene, 3-methylstyrene, 4-methylstyrene or α-methylstyrene.

5,306,438

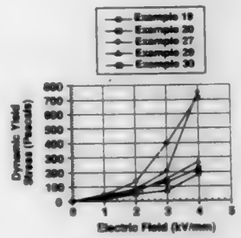
IONIC DYE-BASED ELECTRORHEOLOGICAL MATERIALS

J. David Carlson; Keith D. Weiss, both of Cary, N.C., and Joseph E. Bares, Bartlesville, Okla., assignors to Lord Corporation, Erie, Pa.

Filed Dec. 13, 1991, Ser. No. 806,981

Int. Cl.[5] C10M *169/04, 171/00*

U.S. Cl. 252—74 **17 Claims**



- Ionic Dye Materials

1. An electrorheological material comprising from about 20 to 97 percent by weight of an electrically insulating hydrophobic liquid as a carrier fluid and from about 3 to 80 percent by weight of an ionic dye particle component wherein the particle component contains at least one aromatic nucleus that has been sulfonated and/or carboxylated to form a negatively charged system which has, in turn, been offset with a positive ion in order to form a salt.

5,306,439

JEWELRY CLEANER FORMULATION

Ronald R. Lockhart, P.O. Box 331, Downingtown, Pa. 19335

Filed Feb. 24, 1993, Ser. No. 21,979

Int. Cl.[5] C11D *17/00, 1/37, 3/08, 7/12*

U.S. Cl. 252—174 **5 Claims**

1. A jewelry cleaner composition, comprising:

a molded wafer of citric acid and sodium bicarbonate compressed together in an amount effective to give a compaction sufficient to produce effervescence for at least 15 minutes;

a quantity of detergent comprising about 6% to 10% of sodium lauryl sulfate by weight of the total weight of said composition, about 12% to 18% of alkyl aryl sulfonate by weight of the total weight of said composition, and about 4% to 6% of tetra sodium ethylene diamine tetra acetic acid by weight of the total weight of said composition, admixed into said compressed wafer prior to formation of said wafer in an amount sufficient to form a detergent solution in up to two cups of water;

a quantity of mold release admixed in said wafer in an amount effective to permit easy release of said wafer after compression; and

an outer package sealingly protecting said wafer from air and moisture until said package is opened for use.

5,306,440

METHODS FOR GENERATING CHLORINE DIOXIDE AND COMPOSITIONS FOR DISINFECTING

Paul S. Ripley, Irvine; Anthony J. Dziabo, El Toro, both of Calif., and James P. Ringo, Norman, Okla., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 969,549, Oct. 30, 1992, Pat. No. 5,246,662, which is a continuation of Ser. No. 765,219, Sep. 24, 1991, abandoned, which is a division of Ser. No. 416,074, Oct. 2, 1989, Pat. No. 5,078,908. This application Jun. 30, 1993, Ser. No. 86,433

Int. Cl.[5] C01B *13/00, 11/02*

U.S. Cl. 252—186.33 **10 Claims**

1. A tablet capable of generating chlorine dioxide in an aqueous medium comprising a chlorine dioxide precursor capable of generating chlorine dioxide when exposed to a transition metal, a transition metal component effective to promote the generation of chlorine dioxide from said chlorine dioxide precursor in an aqueous medium at a pH in the range of about 6 to about 10, and a buffering component in an amount effective to maintain the pH of the aqueous medium in which said tablet is released in the range of about 6 to about 10, said buffering component being effective to increase the rate of chlorine dioxide generation from said chlorine dioxide precursor relative to a similar tablet without said buffering component, wherein said tablet contains sufficient chlorine dioxide precursor to produce at least about 0.2 ppm of chlorine dioxide in the aqueous medium in which said tablet is released.

5,306,441

METHOD OF PREPARING FLUOROPLOGOPITE PHOSPHOR

Vaddi B. Reddy, Sayre; Ronald E. Karam, Towanda, and Shellie K. Northrop, Sayre, all of Pa., assignors to GTE Products Corporation, Danvers, Mass.

Continuation-in-part of Ser. No. 999,637, Dec. 31, 1992. This application Feb. 1, 1993, Ser. No. 12,095

Int. Cl.[5] C09K *11/64*

U.S. Cl. 252—301.4 F **9 Claims**

1. A method of making a green-emitting titanium-activated fluorophlogopite phosphor having a platelet particle morphology and having the general formula $KMg_3(Si_3Al)O_{10}F_2{:}Ti$, comprising the steps of: combining potassium carbonate, aluminum oxide, magnesium oxide, silicon dioxide, potassium hexafluorosilicate, and titanium dioxide in amounts corresponding to said general formula, to form a uniform mixture, firing said mixture in air at about 1200° C. for about 12 hours to obtain a fired cake, and pulverizing and screening said fired cake to obtain a green-emitting titanium-activated fluorophlogopite phosphor.

4. A method of making a red-emitting manganese-activated fluorophlogopite phosphor having a platelet particle morphology and having the general formula $KMg_3(Si_3Al)O_{10}F_2{:}Mn$, comprising the steps of: combining potassium carbonate, aluminum oxide, magnesium oxide, silicon dioxide, potassium hexafluorosilicate, and manganese carbonate in amounts corresponding to said general formula to form a uniform mixture, firing said mixture in a covered container in the presence of graphite at about 1200° C. for about 12 hours to obtain a fired cake, and pulverizing and screening said fired cake to obtain a red-emitting manganese-activated fluorophlogopite phosphor.

7. A method of making a green-emitting terbium-activated fluorophlogopite phosphor having a platelet particle morphology and having the general formula $KMg_3(Si_3Al)O_{10}F_2{:}Tb$, comprising the steps of: combining potassium carbonate, aluminum oxide, magnesium oxide, silicon dioxide, potassium hexafluorosilicate, and terbium fluoride in amounts corresponding to said general formula, to form a uniform mixture, firing said mixture in a covered container in the presence of graphite at about 1200° C. for about 12 hours to obtain a fired cake, and pulverizing, screening and washing said fired cake to obtain a green-emitting terbium-activated fluorophlogopite phosphor.

5,306,442

MIXTURE OF ALKYL GLUCOSIDES AND ALCOHOLS AS FOAM INHIBITORS

Karlheinz Hill, Erkrath; Adolf Asbeck, Duesseldorf, and Karl Heinz Schmid, Mettmann, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/00680, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO90/13345, PCT Pub. Date Nov. 15, 1990

PCT Filed Apr. 27, 1990, Ser. No. 777,224

Claims priority, application Fed. Rep. of Germany, May 5, 1989, 3914906

Int. Cl.[5] B01D *19/04*

U.S. Cl. 252—321 **14 Claims**

1. A foam-inhibiting mixture consisting essentially of an alkyl glucoside (A) corresponding to the formula $R\text{-}O\text{-}(G)_n$, a primary monofunctional alcohol (B) corresponding to the formula ROH, and a water-immiscible carrier oil (C), wherein R is a linear or branched alkyl chain containing from 16 to 28 carbon atoms, G is a glucose unit, n has a value of 1 to 10, and the weight ratio of (A) to (B) is from 20:1 to 1:9.

5,306,443

METHOD FOR THE PREPARATION OF CONDUCTIVE POLYMER FILM

Takehira Kaneko, Odawara; Hirofumi Suzuki, Tokyo; Nobuo Matsui, Odawara; Tomio Yagihara, Kurashiki; Shiro Higashida, Ichihara; Akira Nakada, Ichihara; Hitoshi Matsumoto, Ichihara, and Takeo Shimizu, Kyoto, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 329,425, Mar. 27, 1989, abandoned. This application Sep. 26, 1990, Ser. No. 588,586

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—518 **16 Claims**

1. A process for the preparation of a conductive aromatic polymer film which comprises reacting an aromatic monomer selected from the group consisting of substituted and unsubstituted pyrrole, substituted and unsubstituted thiophene, and substituted and unsubstituted aniline, with a metal containing oxidizing agent dissolved in an amount of solvent effective to prevent immediate polymerization, and eliminating the solvent whereby a conductive polymer film is formed.

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5,306,444

WASHING COMPOSITION CAPABLE OF PREVENTING AND AMELIORATING SKIN IRRITATION

Kenji Kitamura; Yasukazu Nakayama; Naoe Akiyama, and Eriko Kasahara, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

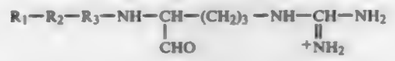
Continuation of Ser. No. 748,230, Aug. 21, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 96,206

Claims priority, application Japan, Aug. 24, 1990, 2-223553; Nov. 1, 1990, 2-295678

Int. Cl.[5] C11D *3/33*

U.S. Cl. 252—546 **3 Claims**

1. In a washing composition containing at least one surfactant but not containing protease, the improvement which comprises incorporating said composition 0.0001% to 20% by weight, based on the total weight of the composition, of at least one compound selected from the group consisting of (a) leupeptin and the derivatives thereof having the formula:



wherein:

R_1=CH_3CO, CH_3CH_2CO

R_2—L-Leu, L-Ile, L-Val

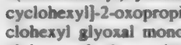
R_3=L-Leu, L-Ile, L-Val

Leu—leucine,

Ile=isoleucine, and

Val=valine, and

(b) tranexamic acid, p-aminomethylbenzoic acid, 4-aminomethylbicyclo(2,2,2)-octane-1-carboxylic acid, 5-[trans-4(aminomethyl)cyclohexyl]tetrazole, 3-[trans-4(aminomethyl)-cyclohexyl]-2-oxopropionate, trans-4(aminomethyl)cyclohexyl glyoxal monohydrate, and trans-4(aminomethyl)cyclohexane hydroxamic acid, and substances represented by the following formula:



wherein n=1–8.

5,306,445

INORGANIC VOLUMETRIC LIGHT SOURCE EXCITED BY ULTRAVIOLET LIGHT

Scott Reed; Robert J. Walko; Carol S. Ashley, and C. Jeffrey Brinker, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 495,579, Mar. 20, 1990, Pat. No. 5,137,659, and a continuation-in-part of Ser. No. 495,579, Mar. 20, 1990. This application May 18, 1992, Ser. No. 884,445

Int. Cl.[5] C09K *11/04;* **G21G** *4/00*

U.S. Cl. 252—646 **28 Claims**

1. A composition comprising:

an aerogel or xerogel porous metal oxide substrate loaded with a component capable of emitting radiation of a second energy upon interaction with radiation of a first energy, said component being an inorganic phosphor or luminescent ionic species, wherein said composition is substantially transparent to said radiation of a first energy, and said composition is a volumetric source of said radiation of a second energy.

5,306,446

APPARATUS WITH ROLLER AND FOR IRRADIATION OF PHOTOPOLYMERS

Robert J. Howe, W180 S6822 Muskego Dr., Muskego, Wis. 53150

Filed Jul. 10, 1992, Ser. No. 911,715

Int. Cl.[5] B29C *35/08*

U.S. Cl. 264—22 **17 Claims**

1. An apparatus for producing three dimensional objects by irradiating uncured photopolymeric material to solidify at least portions of the photopolymeric material, said apparatus being adapted to be used with film material which does not substantially interfere with transmission of radiation therethrough, said apparatus comprising:

a tank adapted to contain liquid photopolymeric material, the liquid photopolymeric material in said tank defining an upper generally horizontal surface;

a selectively operable source of radiation for solidifying the liquid photopolymeric material in said tank; and

means for smoothing the upper generally horizontal surface of the liquid photopolymeric material in said tank while moving from a first position on one side of said tank to a second position on another side of said tank, and for simultaneously laying a sheet of film onto the liquid photopolymeric material while moving from the first position to the second position, said smoothing and laying means including upper and lower parallel spaced apart film guide rods each extending horizontally in respective directions that are each perpendicular to the direction of movement of said smoothing and laying means between the first position and the second position, wherein said upper guide rod is located above the lower guide rod and, when said smoothing and laying means is in said first position, said upper guide rod being located further from said tank than said lower guide rod.

5,306,447

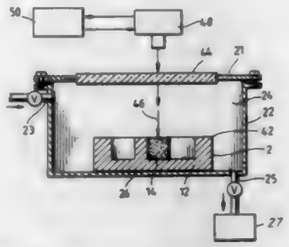
METHOD AND APPARATUS FOR DIRECT USE OF LOW PRESSURE VAPOR FROM LIQUID OR SOLID PRECURSORS FOR SELECTED AREA LASER DEPOSITION

Harris L. Marcus; James V. Tompkins; Britton R. Birmingham, all of Austin, Tex.; Shyh-Nung Lin, Santa Clarita, Calif., and Guisheng Zong, Austin, Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Continuation of Ser. No. 741,869, Aug. 8, 1991, Pat. No. 5,169,579, which is a continuation of Ser. No. 670,416, Mar. 15, 1991, Pat. No. 5,135,695, which is a continuation of Ser. No. 444,882, Dec. 4, 1989, Pat. No. 5,017,317. This application Dec. 7, 1992, Ser. No. 987,476

Int. Cl.[5] B29C *35/08, 41/02, 41/22*

U.S. Cl. 264—22 **47 Claims**



1. A method of depositing a layer of material on a target area, the method comprising:

preparing a catalytic environment upon the target area;

positioning a gas phase at an ambient temperature proximate to the target area, said gas phase comprising at least one gas phase component which condenses at a temperature above said ambient temperature;

scanning an energy beam across the target area; and depositing material from said gas phase onto the target area at predetermined scanned locations of said beam in accordance with said catalytic environment upon said target area.

5,306,448

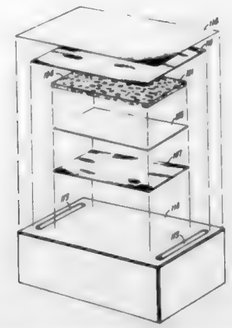
METHOD FOR RESIN TRANSFER MOLDING

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1987, Ser. No. 138,776

Int. Cl.[5] B29C *43/10, 43/18*

U.S. Cl. 264—29.5 **8 Claims**



1. A method for reimpregnating a carbon-carbon composite by resin transfer molding said composite comprising:

a) applying pressure to a resin containing, pressure yielding, porous sponge to transfer said resin to a carbon-carbon composite;

b) applying a vacuum to said carbon-carbon composite to remove fluids from said carbon-carbon composite; and

c) curing and carbonizing said resin containing carbon-carbon composite;

wherein said carbon-carbon composite is reimpregnated wherein said sponge comprises a layer disposed adjacent said carbon-carbon composite, said sponge being of organic material and being decomposed and carbonized during said curing and carbonizing step.

5,306,449

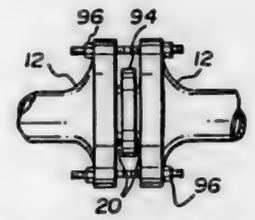
PROCESS FOR LINING HIGH PRESSURE PIPELINE

Perry N. Brittain, 711 Willamette Drive S.E., and John D. Kirkpatrick, Suite 2008, 1200 6th St. S.W., both of Calgary, Alberta, Canada

Continuation of Ser. No. 332,180, Apr. 3, 1989, abandoned, which is a division of Ser. No. 906,655, Sep. 12, 1986, Pat. No. 4,818,314, which is a continuation of Ser. No. 664,837, Oct. 25, 1984, abandoned, which is a division of Ser. No. 359,498, Mar. 18, 1982, Pat. No. 4,496,499, which is a continuation-in-part of Ser. No. 115,488, Jan. 25, 1980, abandoned. This application Jun. 5, 1992, Ser. No. 895,561

Int. Cl.[5] B29C *63/34*

U.S. Cl. 264—36 **26 Claims**



1. A method of lining a multi-section high pressure pipeline which utilizes the structural strength of the pipeline to enable the lined pipeline to be operated at high pressure, comprising:

(a) drawing through each pipeline section in non-collapsed, fully tubular formed condition a plastic liner segment that is sufficiently rigid so as to be self-sustaining in tubular form in the presence of a collapse pressure condition of at least about one atmosphere and having an original manufactured outside diameter sufficiently less than the inside diameter of the pipeline section to enable drawing the liner through the pipeline section in non-collapsed, fully tubular formed condition until the liner segment is substantially longitudinally co-extensive within the pipeline section;

(b) fixing the liner segment against longitudinal movement within each pipeline section after it is drawn therein;

(c) then assembling the pipeline sections with the liner segments to form a continuous pipeline;

(d) then permanently deforming the liner segments by radially expanding them against the inner wall of the pipeline sections using a radial force applied within the liner to an extent to permanently change the original manufactured outside diameter of the liner segments from their original size to a size conforming to the inside diameter of the pipeline;

(e) during step (d), bleeding trapped fluid from the space between the liner segments and the pipeline inner wall.

4. A method of lining a section of a high pressure pipeline which utilizes the structural strength of the pipeline to enable the lined pipeline section to be operated at high pressure, comprising:

(a) drawing through the pipeline section in non-collapsed, fully tubular formed condition a plastic liner segment that is sufficiently rigid so as to be self-sustaining in tubular form in the presence of a collapse pressure condition of at least about one atmosphere and having an original manufactured outside diameter sufficiently less than the inside diameter of the pipeline section to enable drawing the liner segment through the pipeline section in non-collapsed, fully tubular formed condition until the liner segment is substantially longitudinally co-extensive with the pipeline section;

(b) then fixing the liner segment against longitudinal movement with the pipeline section by using flange elements attached to opposite ends of the liner segment with the flange elements engaging the opposed ends of the pipeline section;

(c) then permanently deforming the liner segment by radially expanding same against the inner wall of the pipeline section using a radial force applied within the liner to an extent to permanently change the original manufactured outside diameter of the liner segment from its original size to a size conforming to the inside diameter of the pipeline;

(d) during step (c), bleeding trapped fluid from the space between the liner segment and the pipeline inner wall.

5,306,450

METHOD OF PRODUCING WOOD TYPE GOLF CLUB HEAD

Takaharu Okumoto, Chigasaki; Toshio Kobayashi, Ninomiya; Heihatiro Soeda, and Kazuo Kawada, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,263

Claims priority, application Japan, Aug. 13, 1991, 3-202918; Sep. 30, 1991, 3-250906

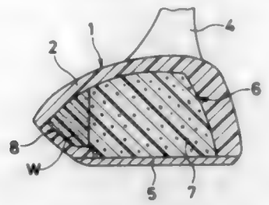
Int. Cl.[5] B29D *9/00*

U.S. Cl. 264—45.1 **10 Claims**

1. A method for producing a wood type golf club head having a head main body, said body having an outer shell portion, top and bottom sides, face and back sides and toe and heel sides, a weight member embedded in said body adjacent at least one of said toe, heel and back sides and a sole plate on the bottom side of the body, said method comprising molding and curing the outer shell portion of the head main body from a synthetic resin, with a hollow portion inside thereof accessible from the bottom side of the body and a recess on the inside adjacent at least one of the toe, back and heel sides thereof and facing said hollow portion, inserting a weight member into said

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hollow portion and fixing the weight member into said at least one recess, packing a core member into said hollow portion,



and securing a sole plate to said bottom side of said head main body.

5,306,451

METHOD FOR THE PRODUCTION OF REFRACTORY BRICKS

Klaus Wächter, Kaarst, Fed. Rep. of Germany, assignor to DYKO Industriekeramik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,616

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1991, 4140417

Int. Cl.[5] C04B *35/12*

U.S. Cl. 264—65 **11 Claims**

1. A method for producing a porous chromium oxide containing refractory brick having a firing shrinkage less than 1.0% comprising:

(a) mixing chromium oxide and titanium oxide to form a first mixture having at least approximately 95% chromium oxide and approximately 5.0% titanium oxide;

(b) molding and reductive firing the first mixture of chromium oxide and titanium oxide to form intermediate units of solid titanium oxide in the chromium oxide;

(c) crushing the intermediate units to form sieve fractions;

(d) mixing the sieve fractions with non-fired chromium oxide to form a second mixture; and

(e) reductive firing the second mixture to form a porous refractory brick having a firing shrinkage less than 1.0% and containing chromium oxide.

5,306,452

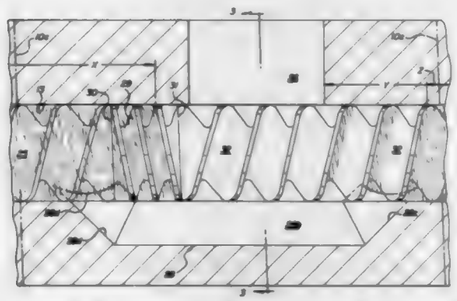
DEVOLATILIZING AND/OR PROCESSING SYSTEMS AND METHODS

David B. Todd, Princeton, N.J., assignor to APV Chemical Machinery Inc., Saginaw, Mich.

Filed Mar. 23, 1993, Ser. No. 35,717

Int. Cl.[5] B29C *47/76*

U.S. Cl. 264—102 **16 Claims**



1. Continuous, self-wiping, multiple parallel shaft processing and/or extruding systems wherein material is charged to a barrel, in which the shafts extend, at one end and discharged at another, comprising:

(a) an elongate, axially extending barrel with an interior wall defining a longitudinally extending chamber with twin parallel intersection side-by-side cylinders providing generally V-shaped saddles at their confluence in saddle regions, the barrel having an inlet end with an inlet for material to be processed and an outlet end with an outlet for discharging material;

(b) processing mechanism including a pair of parallel shafts supported to rotate on spaced parallel axes and extending within said cylinders from the inlet end of the barrel to the outlet end, said mechanism including drive motor elements connected with said shafts for driving them at the same speed of rotation and in the same direction of rotation, and further including upstream and downstream radially co-wiping helical processing elements fixed respectively on said shafts which are configured to also wipe the walls of said cylinders;

(c) a vacuumized vent for egressing gases disposed in said barrel in a venting region between said upstream and downstream elements and leading from said chamber;

(d) and a bypass passage, of a diameter to take the full volume of material moving in said chamber, having a first section leading from said chamber upstream from said vent through one of said saddle regions, a mid-section spaced from said barrel chamber extending longitudinally coextensively with said chamber within said barrel along said one of said saddle regions, and a return section returning to said chamber through said one of said saddle regions downstream of said vent;

(e) said upstream helical processing elements including forwardly helical elements for moving material in said chamber toward said vent and helical elements reversely pitched relative thereto immediately upstream from said vent for creating a melt seal of material upstream of said bypass passage and directing the material being processed into said bypass passage, while preventing material from passing directly through the venting region; and

(f) said downstream helical elements including co-wiping, forwardly helical elements extending in said vent region toward said return section of the bypass passage and beyond it to facilitate a melt seal downstream from said return passage.

15. A method of operating a continuous, selfwiping, multiple parallel shaft processing and/or extruding system wherein synthetic plastic or like material is charged to a barrel, in which the shafts extend, at one end and discharged as a liquid mass at another, the system having:

(a) an elongate, axially extending barrel with an interior wall defining a longitudinally extending chamber with twin parallel intersecting cylinders providing generally V-shaped saddles at their confluence in saddle regions, the barrel having an inlet end with an inlet for material to be processed and an outlet end with an outlet for discharging material;

(b) processing mechanism including a pair of parallel shafts supported to rotate on spaced parallel axes and extending within said cylinders from the inlet end of the barrel to the outlet end, said mechanism including drive motor elements connected with said shafts for driving them at the same speed of rotation and in the same direction of rotation, and further including upstream and downstream radially co-wiping helical processing elements fixed respectively on said shafts which are configured to also wipe the walls of said cylinders.

(c) a vent in a venting region of said chamber for egressing volatiles, disposed in said barrel between said upstream and downstream elements, and leading from said chamber to the exterior of said barrel;

(d) a vent bypass passage spanning the venting region and contained in said barrel, having a first section with a mouth leading from said chamber upstream from said vent, a mid-section spaced from the barrel chamber extending longitudinally generally coextensively with said chamber within said barrel, and a return section returning to said chamber downstream of said vent; and

(e) a system for controlling the temperature of said barrel;

(f) said helical processing elements including forwardly pitched helical elements for moving material in said chamber from said inlet toward said vent and helical elements reversely pitched relative thereto immediately upstream from said vent; the steps of:

(g) forwarding said material via said forwardly pitched co-wiping helical elements on said shafts;

(h) upstream from said vent at said mouth creating a back flow of material filling said chamber at said mouth via said reversely pitched helical elements to create a first melt seal of material upstream from said mouth and move the material being forwarded into said mouth and bypass passage;

(i) downstream from said return section creating a second melt seal of material;

(j) creating a suction pulling volatiles upstream from said second melt seal to said vent; and

(k) maintaining the temperature of material flowing through said first, mid-section, and return sections of said bypass passage by heating said barrel and transferring the heat from said barrel to said bypass passage.

5,306,453

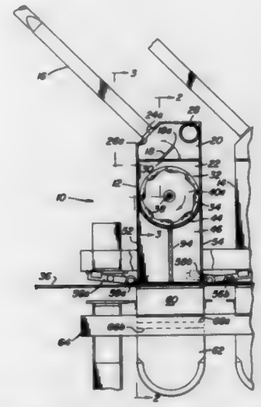
APPARATUS AND METHOD OF MAKING A NON-WOVEN FABRIC

Edward Shulman, R.D. #1, Box 205, Frenchtown, N.J. 08825

Filed Aug. 18, 1993, Ser. No. 109,334

Int. Cl.[5] B27N *3/04*

U.S. Cl. 264—121 **15 Claims**



1. A method of fabricating a web of non-woven fibers in a dry fiber web-forming apparatus from one or more fiber feedstocks comprising the steps of:

a) providing a continuous supply of defibrated feedstock of randomly sized individual fibers;

b) conveying the defibrated feedstock supply in a dry fluid stream into a transition zone for reducing the flow rate of the fluid-entrained fiber stream including fibers having partial tangling or clumping;

c) deflecting the fluid-entrained fiber stream by a first baffle means adapted to slow the flow of said stream and deflect the fluid-entrained fiber into a closed fiber processing means;

d) circulating the fibers within the fiber processing means to deagglomerate any partially tangled or clumped fibers through contact with and fluid turbulence created by a rotor means, depositing a layer of random dimension individual fibers upon an arcuate screen means adjacent said rotor means;

e) intermittently and continuously contacting the individual fibers accumulated on the screen means by a wiping action of the rotor means to cause the layer of individual fibers to be reduced by reintroducing a portion of said fibers into the fiber processing means with the remainder of the layer of individual fibers remaining in place against the screen means;

(f) pushing individual fibers from the remainder of the layer of individual fibers through said screen means by the positive fluid pressure built up in the fiber processing means and by the wiping action of the rotor means;

g) conveying the individual fibers pushed through the screen means to free-fall through a vertical chute means for collection on an underlying web-forming means upon which consecutive layers of the web are formed.

8. A forming apparatus for fabricating a web of non-woven fibers created from one or more fiber feedstocks comprising:

a) means for conveying individualized fibers entrained in a dry fluid transport medium into a flow transition zone adapted for reducing the flow rate of the fluid-entrained fiber stream;

b) a first baffle means interposed in the fiber stream adapted to disrupt said stream and to deflect its fiber component into a closed fiber processing means having a rotor means for impacting and deagglomerating any partially tangled or clumped fibers recirculating the fibers within the fiber successing means, and depositing a layer of random dimension individual fibers upon an upwardly concave, arcuate fiber screen means located in close proximity to, but setoff from said rotor means, enclosing substantial segment of the peripheral path of said rotor means, and being adapted to pass individualized fibers through its many apertures;

d) said rotor means being powered to move in a rotating motion about a concentric shaft axle with the outer edge of each of a plurality of impeller means wiping against the layer of individual fibers accumulating against the upward facing surface of said screening means to uniformly distribute the accumulating fibers and to reduce the layer of individual fibers by reintroducing a portion of said fibers into the fiber processing means with the remainder of the layer of individual fibers remaining in place against the screen means enabling the positive fluid pressure in the chamber and the wiping action to push said fibers through the apertures in the screen means;

e) a vertically oriented chute means adapted for containing and conducting by gravity and positive fluid pressure the individualized fibers to a moving foraminous web-forming means underlying the chute means for intercepting and collecting the falling fibers and for forming consecutive layers of non-woven fibers.

5,306,454

CASTINGS WITH CAST-IN REINFORCEMENT

Conny Lagergvist, Karlskoga, Sweden, assignor to AB SKF, Gothenburg, Sweden

Filed Nov. 14, 1991, Ser. No. 791,326

Claims priority, application Sweden, Nov. 19, 1990, 9003673

Int. Cl.[5] B29C *45/14, 39/10*

U.S. Cl. 264—135 **12 Claims**

1. A method of producing an article, comprising the steps of:

providing a metallic reinforcement member containing a plurality of coils;

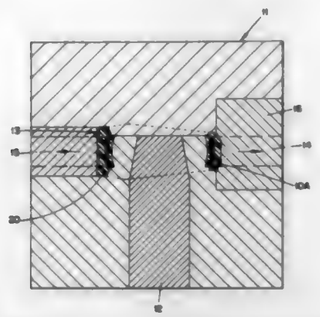
sintering a thermoplastic layer to a surface of said coiled reinforcement member, thereby fusing together at least a portion of said coils;

positioning said reinforcement member with said layer into a mold cavity; and

introducing into said cavity a thermoplastic material at a temperature sufficient to melt an outer portion of said layer, said thermoplastic material and said melted outer

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portion of said thermoplastic layer becoming fused to define the article having embedded therein said reinforcement member, and to which said reinforcement member is sintered.

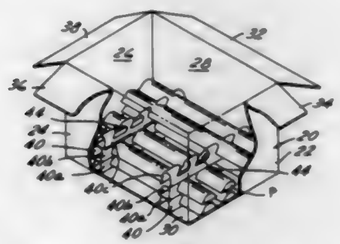


5,306,455

METHOD OF MAKING TUBULAR DUNNAGE

Hazen J. Carroll, 6340 Miller Rd., P.O. Box 780, Dearborn, Mich. 48121

Division of Ser. No. 747,677, Aug. 20, 1991, Pat. No. 5,267,652.
This application Mar. 26, 1993, Ser. No. 37,888
Int. Cl.[5] B29C *61/06*
U.S. Cl. 264—145 13 Claims



1. The method of making resilient slotted tubular dunnage for supporting products comprising the steps of:

forming an elongated plastic tube having resilient side walls;

flattening the tube by compressing together opposed side walls;

while holding the tube flattened, cutting product configured openings through the side walls; and

reopening the tube.

5,306,456

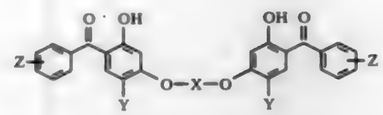
PREPARING LAMINATED THERMOPLASTICS STABILIZED WITH BISBENZOPHENONES

Joseph Suhadolnik, Yorktown Heights, N.Y.; James H. Botkin, Passaic, N.J., and Carmen Hendricks, White Plains, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 10, 1993, Ser. No. 29,211
Int. Cl.[5] B29C *47/06*
U.S. Cl. 264—171 12 Claims

1. A process for stabilizing a multi-layered, thermoplastic article, prepared by coextrusion, which process comprises

coextruding a thermoplastic resin or mixture of thermoplastic resins to give a multi-layered thermoplastic article having an outer UV absorbing thermoplastic layer 0.1 to 10 mil (0.00254 to 0.254 mm) thick, which said outer UV absorbing layer contains 0.1 to 20% by weight of a bisbenzophenone UV absorber of the formula



wherein

X is a straight or branched chain alkylene of 1 to 16 carbon atoms, o-, m- or p-xylylene or an oxa-alkanediyl of the formula $-CH_2CH_2[OCH_2CH_2]_n-$, $-CH_2CH(CH_3)[OCH_2CH(CH_3)]_n-$ or $-CH_2CH_2CH_2CH_2[OCH_2CH_2CH_2CH_2]_n-$ where n is 1–4,

Y is hydrogen, straight or branched chain alkyl of 1–18 carbon atoms, and

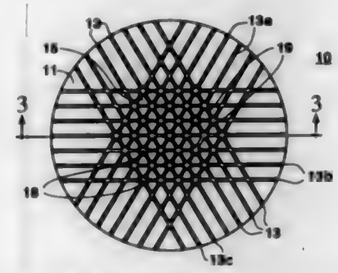
Z is hydrogen, chloro, straight or branched chain alkyl of 1 to 18 carbon atoms or alkoxy of 1 to 18 carbon atoms.

5,306,457

EXTRUSION DIE AND METHOD

G. Daniel Lipp, Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed May 28, 1993, Ser. No. 69,085
Int. Cl.[5] B29C *47/12*
U.S. Cl. 264—177.12 10 Claims



1. An extrusion die for extruding a honeycomb body, the die incorporating a feedhole portion bounded by an inlet face and a discharge slot portion bounded by an outlet face, the discharge slot portion comprising multiple long discharge slots and the feedhole portion comprising multiple feedholes open at the inlet face which extend toward and communicate with the discharge slots, wherein:

the discharge slots criss-cross on the outlet face to form an array of interconnected triangles, the triangles having shared vertices on slot intersections and shared sides on slot segments between slot intersections;

the feedholes communicate only with slot intersections; and

the feedholes are alternately positioned such that each feedhole is separated by three slot segments from the next adjacent feedhole on the same slot.

5,306,458

PROCESS FOR MANUFACTURING A PLASTIC PIPE

Börge Carlström, Oberwil, and Ralph Jost, Füllinsdorf, both of Switzerland, assignors to Hobas Engineering AG, Basel, Switzerland

Filed Oct. 22, 1992, Ser. No. 964,766
Claims priority, application Switzerland, Oct. 23, 1991, 3095/91
Int. Cl.[5] B28B *1/20*; B29C *33/40*
U.S. Cl. 264—255 6 Claims

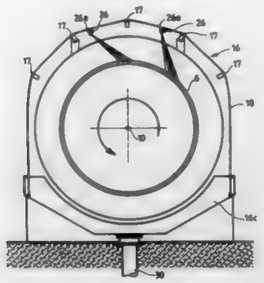
1. A centrifugal casting process for manufacturing pipe, said process comprising the steps of:

providing a centrifugal drum serving as a mold;

introducing a first liquid thermosetting resin including glass fibers into said centrifugal drum to form an outermost wall portion of said pipe by centrifugal casting, said first liquid thermosetting resin having a gel time;

introducing a second liquid thermosetting resin including glass fibers into said centrifugal drum to form an inner wall portion of said pipe by centrifugal casting, said second liquid thermosetting resin having a gel time, and said gel time of said first liquid thermosetting resin being 10% to 70% in length of said gel time of said second liquid thermosetting resin;

spraying an outside surface of said centrifugal drum during said centrifugal casting of said pipe with hot fluid at a temperature higher than a temperature of said centrifugal drum in order to heat up said centrifugal drum and to stimulate a thermosetting process of said first and second thermosetting resins to become exothermic;



stopping said spraying when said thermosetting process becomes exothermic; and

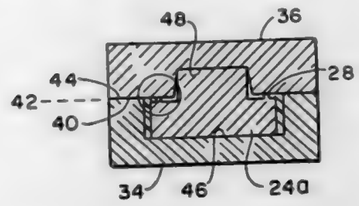
spraying said centrifugal drum with cold fluid at a temperature lower than said temperature of said centrifugal drum when said temperature of said centrifugal drum starts to lower after said thermosetting process has become exothermic, said spraying of said cold fluid on said centrifugal drum causing a portion of said cold fluid to evaporate.

5,306,459

INSERT MOLDING METHOD USING A CRUSH RIB

Terry D. Thomason, Joliet, and Robert L. Hamilton, Barrington, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 9, 1992, Ser. No. 866,318
Int. Cl.[5] B29C *45/14, 45/16*
U.S. Cl. 264—266 7 Claims



1. A method for encapsulating at least a laterally outward portion of a component insert with plastic material in a manner to eliminate the creation of flashing upon a laterally inward portion of said component insert, comprising the steps of:

providing a mold having first and second mold plates, said first mold plate having a cavity for receiving a component insert, a lower internal surface for supportably engaging a bottom surface of said component insert when said component insert is inserted into said cavity of said first mold plate, and an upper surface for matably engaging a lower surface of said second mold plate;

providing a component insert having a bottom surface and a top surface, and providing a deformable rib member upon said top surface of said component insert such that said deformable rib member is integral with and extends upwardly from said top surface of said component insert, between laterally outward and laterally inward portions of said top surface, so as to project upwardly a first predetermined amount beyond said upper surface of said first mold plate when said component insert is inserted into said cavity of said first mold plate;

inserting said component insert into said cavity of said first mold plate such that said lower internal surface of said first mold plate engages said bottom surface of said component insert, and said rib member of said component insert extends above said upper surface of said first mold plate by said first predetermined amount while said top surface of said component insert is disposed below said upper surface of said first mold plate;

moving said second mold plate such that said lower surface of said second mold plate engages said upper surface of said first mold plate so as to close said mold and define a mold cavity between said component insert and said mold plates, said lower surface of said second mold plate thereby deforming said rib member of said component insert so that the deformed rib member extends a second predetermined amount above said top surface of said component insert and thereby creates a seal barrier in said mold cavity between said laterally outward and said laterally inward portions of said top surface of said component insert, said lower surface of said second mold plate remaining spaced above said laterally outward and laterally inward portions of said top surface of said component insert;

forcing a molten plastic material into said mold cavity, defined between said component insert and said first and second mold plates, at a position laterally outward of said seal barrier so as to encapsulate a laterally outward portion of said component insert, including said laterally outward portion of said top surface, said barrier seal preventing said molten plastic material from flashing toward said laterally inward portion of said top surface of said component insert;

curing said molten plastic material so as to form a molded encapsulated component insert product; and

moving said second mold plate away from said first mold plate so as to permit removal of said molded encapsulated component insert product from said cavity of said first mold plate.

5,306,460

METHOD OF PRODUCING CAST PRODUCTS USING ELASTIC MOLDS

Yoshiyuki Hidawa, Tokorozawa; Toshiya Fujishima, Zushi; Satoru Takeda, Akashi; Toshihiro Hayashi, Kobe, and Hiroshige Kohno, Kawasaki, all of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Division of Ser. No. 690,390, Apr. 25, 1991, abandoned, which is a division of Ser. No. 494,371, Mar. 16, 1990, abandoned, which is a division of Ser. No. 340,092, Feb. 3, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,221
Claims priority, application Japan, Jun. 13, 1987, 62-147704
Int. Cl.[5] B29C *41/36, 41/42*
U.S. Cl. 264—500 2 Claims

1. A method of providing cast products, comprising the steps of:

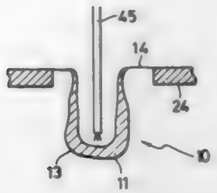
providing an apparatus which includes a filling unit wherein a non-solid material is filled, said filling unit having elastic molds having open bag shaped interior filling sections, said filling unit further having a filling nozzle insertable internally of the filling sections of the elastic molds, and

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said filling unit further having a blowing nozzle for blowing air into the filling sections,

partly filling, through said filling nozzle, said filling sections of said elastic molds with said non-solid material,

blowing air, through said blowing nozzle, into said partly filled filling sections before said material solidifies to blow said material upward and cause said material to contact



the inner peripheral surface of said filling sections thereby leaving an interior hollow space within said material,

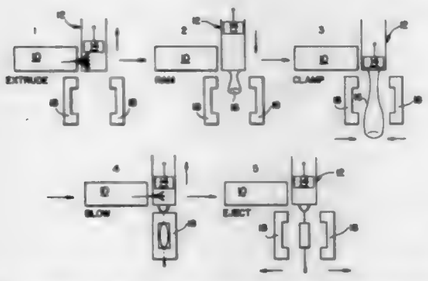
solidifying the material caused to contact the inner peripheral surface in said elastic molds to form cast products, and

elastically expanding said elastic molds to a size greater than that of the cast products so as to allow the cast products to be withdrawn.

5,306,461
EXTRUSION BLOW MOLDING OF FILLED LIQUID CRYSTAL POLYMERS

Cheryl F. Corallo, Charlotte, N.C.; Robert B. Sandor, Cliffside Park, N.J.; Ralph S. Blake, Lake Wylie, S.C., and Derrick B. McKie, Brooklyn, N.Y., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 28, 1992, Ser. No. 967,896
Int. Cl.[5] B29C *49/04*
U.S. Cl. 264—540 **8 Claims**

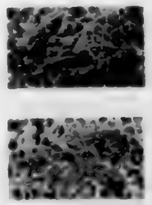


1. A method for extrusion blow molding a liquid crystalline polymer, said method comprising providing a molten, filled, liquid crystalline polymer at a suitable parison-forming temperature, said polymer consisting essentially of a wholly aromatic polyester, and containing a melt-strength enhancing filler parison by vertically extruding the polymer melt generally downward into space; clamping a forming mold around said parison; blowing a gas into the clamped parison to form a molten part; and opening said mold to provide the formed part.

5,306,462
FIBROUS TANTALUM AND CAPACITORS MADE THEREFROM

James A. Fife, Douglassville, Pa., assignor to Cabot Corporation, Boston, Mass.

Division of Ser. No. 708,143, May 31, 1991. This application Jul. 31, 1992, Ser. No. 923,402
Int. Cl.[5] B22F *1/00*
U.S. Cl. 419—24 **11 Claims**

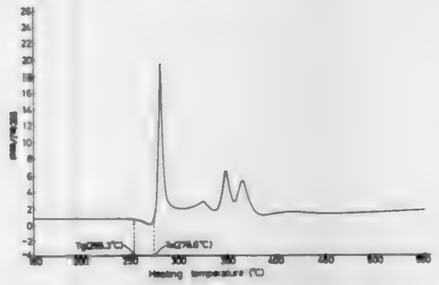


8. A method of making metal fiber containing capacitor material having increased surface area and specific capacitance comprising pressing particles of bonded metal fibers consisting essentially of tantalum, columbium, or alloys thereof, randomly oriented in a substantially non-aligned, porous array, the fibers having a length of up to about 400 microns, and heating the pressed particles at a temperature sufficient to bond the particles together.

5,306,463
PROCESS FOR PRODUCING STRUCTURAL MEMBER OF AMORPHOUS ALLOY

Hiroyuki Horimura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1991, Ser. No. 687,825
Claims priority, application Japan, Apr. 19, 1990, 2-104142
Int. Cl.[5] B22F *1/00*
U.S. Cl. 419—44 **4 Claims**



1. A process for producing a structural member of an amorphous alloy, comprising the steps of:

subjecting a material formed from an amorphous alloy having a glass transition temperature Tg and a crystallization temperature Tx, which is higher than the glass transition temperature Tg, to a thermal treatment in which said material is kept at a heating temperature equal to or lower than the glass transition temperature Tg, thereby permitting a structure relaxation phenomenon to occur in said material; and

subjecting said material to a hot plastic working while setting the temperature of said material at the time of starting the working to a level equal to or lower than the crystallization temperature Tx.

5,306,464
ABRASION, EROSION AND CORROSION RESISTANT ALLOY

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, Pevely, Mo.

Filed Apr. 5, 1993, Ser. No. 42,813
Int. Cl.[5] C22C *38/34*
U.S. Cl. 420—49 **10 Claims**

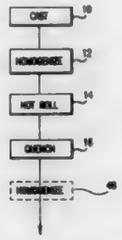
1. A silicon containing chromium-nickel-iron alloy having improved corrosion resistance consisting of:

CHROMIUM	15–26% BY WEIGHT
NICKEL	15–25%
SILICON	4.5–8%
CARBON	0.5–1.7%
COPPER	1–4%
MOLYBDENUM	0.3–3%
MANGANESE	UP TO ABOUT 1.5%
IRON	ESSENTIALLY THE BALANCE

5,306,465
COPPER ALLOY HAVING HIGH STRENGTH AND HIGH ELECTRICAL CONDUCTIVITY

Ronald N. Caron, Branford, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 4, 1992, Ser. No. 971,499
Int. Cl.[5] C22C *9/00*
U.S. Cl. 420—492 **11 Claims**



1. A copper alloy, consisting essentially of:

an effective amount to increase strength up to about 0.5 weight percent chromium;

from about 0.05 to about 0.25 weight percent zirconium;

from about 0.1 to about 1.0 weight percent of "M" where "M" is selected from the group consisting of cobalt, iron, nickel and mixtures thereof; and

from about 0.05 to about 0.5 weight percent titanium where the atomic ratio of "M" to titanium, M:Ti, is from about 1.5:1 to about 3.0:1.

5,306,466
DETECTION OF CONTAMINANTS IN FOOD

Robert M. Goldsmith, Pasadena, Calif., assignor to California South Pacific Investors, Pasadena, Calif.

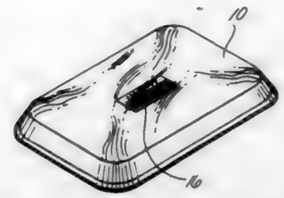
Filed May 19, 1993, Ser. No. 64,521
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—58 **19 Claims**

15. A method of detecting contaminants in food comprising:

printing toxins onto a substrate;

binding an indicator to the toxins to form a bar code detectable by an optical scanner;

contacting the bar code with material derived from the food which is suspected of being contaminated with a toxin; and

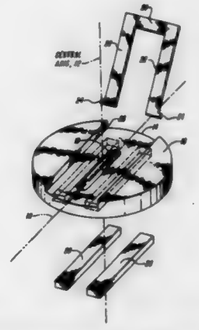


scanning the bar code to thereby detect the presence of contaminants in the food.

5,306,467
APPARATUS FOR MEASUREMENT OF CELL CONCENTRATION IN A BIOLOGICAL SAMPLE EMPLOYING A MAGNETIC SLIDE LOADING APPARATUS

Diarmaid H. Douglas-Hamilton, Beverly, and Thomas Keany, Woburn, both of Mass., assignors to Hamilton-Thorn Research, Beverly, Mass.

Filed Feb. 17, 1993, Ser. No. 18,734
Int. Cl.[5] B01L *3/00, 9/00*; G01N *21/01*
U.S. Cl. 422—99 **8 Claims**



1. A slide loading apparatus for receiving a slide holding a fluid specimen within a defined region of uniform depth, said specimen being covered by a cover slip, said apparatus comprising,

a holder having a recess for receiving said slide, and an aperture for allowing radiation to pass there through,

a holder clamp formed to include magnetically susceptible material, pivotally secured to said holder wherein said holder clamp can be placed in mechanical contact with said cover slip, said holder clamp having an opening therethrough aligned with said aperture in said holder when said holder clamp is in mechanical contact with said cover slip, and

first magnetic means coupled to said holder, for applying a uniform magnetic attraction to said holder clamp such that, when placed in mechanical contact with said cover slip, said holder clamp exerts a uniform pressure on said cover slip to maintain a constant separation distance between said slide and said cover slip over said defined region.

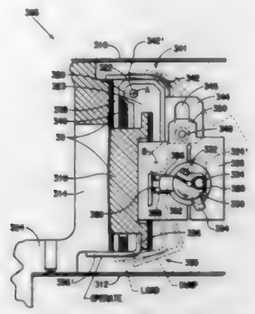
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5,306,468

APPARATUS FOR THE HANDLING OF ELECTROPHORETIC TRANSFER MEMBRANES AND FOR THE CHEMILUMINESCENT DETECTION OF BLOTS CONTAINED THEREON

Lynne E. Anderson; Robert K. Kobos, both of Wilmington, Del.; Shay E. Polsky, West Chester, Pa., and Charles W. Robertson, Rockland, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1991, Ser. No. 739,123
Int. Cl.[5] B01L *9/00*
U.S. Cl. 422—101 9 Claims



1. In an improved apparatus for the handling of an electrophoretic transfer membrane and the detecting of a signal generated by separated biological materials on said electrophoretic transfer membrane that are suitably treated to generate said signal, wherein the electrophoretic transfer membrane comprises a rigid frame (i) that supports a flexible membrane (ii) along portions of the periphery thereof, the membrane (ii) containing thereon a detectable, signal generating electrophoretic blot, and a signal detector therefor, the improvement comprising:
   (a) guide apparatus designed to accommodate the rigid frame (i) and the flexible membrane (ii) so that the flexible membrane (ii) is positioned for reading in a location for detection while engaged by pressure head (b);
   (b) pressure head positioned with respect to said guide apparatus and said location to releasably engage the flexible membrane (ii);
   (c) light shielding apparatus positioned with respect to said guide apparatus to selectively enclose about the rigid frame (i) and the flexible membrane (ii); and
   (d) means for sequentially operating said guide apparatus (a), said pressure head (b), and said light shielding apparatus (c) so that the rigid frame (i) and the flexible membrane (ii) are enclosed and said pressure head engages the flexible membrane (ii) while the transfer membrane is in said location appropriate for detection.

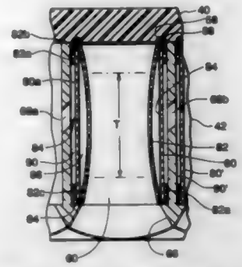
5,306,469

SAMPLE CONTAINER HOLDER

Kenneth E. Iles, Los Altos, Calif., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Jul. 2, 1993, Ser. No. 86,744
Int. Cl.[5] B01L *9/06*
U.S. Cl. 422—104 14 Claims

1. A sample container holder for holding at least one container, said holder comprising:
   a body having a plurality of holes extending therethrough in which a container is received;
   a cap mounted on said body covering said container and holes;
   first and second tubular elements of different inner and outer diameters disposed within each of said hole,
   said first tubular element being rigid and having an inner diameter larger than the outer diameter of said second tubular element,
   said second tubular element being flexible and disposed within the first tubular element with first and second ends of the second tubular element being folded back over first and second ends of the first tubular element so as to form an hermetically sealed chamber between said first and second tubular elements;



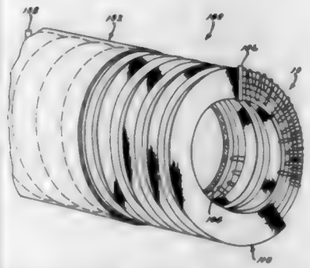
   said first tubular element and said body having openings therein comprising a fluid passage through which a negative or a positive pressure may be applied to said chamber to increase or decrease, respectively, the inner diameter of said second tubular element whereby a container may be received into a region bounded by said second tubular element when a negative pressure is applied, said container being gripped by said second tubular element when a positive pressure is applied.

5,306,470

CONICAL MICROLITH CATALYTIC REACTION SYSTEM

Michael J. Bak, White Lake, and Thomas A. Culbertson, Orchard Lake, both of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Continuation-in-part of Ser. No. 872,342, Apr. 23, 1992, Pat. No. 5,246,672. This application Jul. 1, 1993, Ser. No. 85,590
Int. Cl.[5] F01N *3/10*; B01D *50/00*; B01J *21/04*
U.S. Cl. 422—174 7 Claims



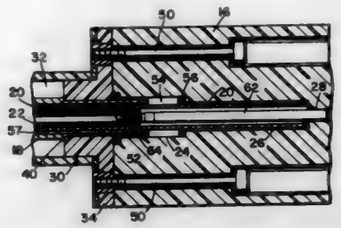
1. A conical microlith catalytic reaction system for the conversion of carbon containing compounds comprising:
   a housing made from an insulating material having an inner hub and an outer shroud;
   a conical shaped microlith catalyst bed formed from a spiral wound wire cloth, the spiral windings of said wire cloth located in said housing between said inner hub and said outer shroud and wound to form a uniform cone angle less than 90° relative to the respective surfaces of said inner hub and said outer shroud, wherein the carbon containing compounds pass axially through each winding of wire cloth, and the uniform cone angle in the spiral windings of said wire cloth allowing said inner hub and said outer shroud to axially translate relative to each other to prevent buckling of the spiral windings due to thermal stress generated by said catalyst bed becoming hot.

5,306,471

CONCENTRIC OZONATOR TUBE ASSESMBLY

Matthew G. Harbert, 3650 Armitage St., San Diego, Calif. 92117, and Daniel M. Rohrbach, 2416 Deerpark Dr., San Diego, Calif. 92110

Filed Aug. 20, 1991, Ser. No. 747,353
Int. Cl.[5] B01J *19/12*
U.S. Cl. 422—186.19 14 Claims



1. A corona discharge ozonator tube assembly comprising:
   two endcaps, each said endcap having an inside face, said face having at least three concentric endcap bore holes comprising a small, an intermediate and a large bore hole;
   a cooling jacket assembly having two jacket ends and
      an elongate hollow outer electrode,
      an elongate jacket disposed to surround said outer electrode, and
      two flanges, one said flange disposed at each said jacket end to sealably join said jacket to said outer electrode, thereby forming a substantially fluid-tight cooling fluid flow space between said outer electrode and said elongate jacket;
   endcap fastening means for sealably joining said endcap inside face to said flange at each said jacket end such that both said large bore holes join with the hollow interior of said outer electrode to form a substantially gas-tight ozone space;
   an elongate hollow dielectric having two dielectric ends, said dielectric disposed within said outer electrode and held in concentric relationship with said outer electrode by the disposition of said dielectric ends within said intermediate endcap bore holes; and
   an elongate inner electrode having two ends, said inner electrode disposed within said dielectric and held in concentric relationship with said dielectric by the disposition of said inner electrode ends within said small bore holes.

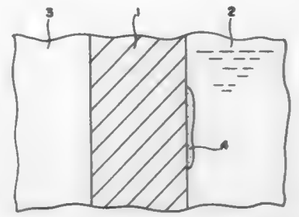
5,306,472

VACUUM-SUCTION DEGASSING METHOD AND AN APPARATUS THEREFOR

Masamichi Sano, Fujimori 1-43-3, Meito-ku, Nagoya-shi, 465, Aichi-ken; Nobuo Miyagawa, and Kunji Yamamoto, both of Tajimi, all of Japan, assignors to Tokyo Yogyo Kabushiki Kaisha, Tokyo and Masamichi Sano, Nagoya, both of Japan

Continuation of Ser. No. 715,620, Jun. 14, 1991, abandoned. This application May 10, 1993, Ser. No. 58,792
Claims priority, application Japan, Jun. 16, 1990, 2-158321; Jun. 16, 1990, 2-158322
Int. Cl.[5] F27D *1/00*
U.S. Cl. 422—211 11 Claims

1. A vacuum-suction degassing method comprising the steps of:
   placing a melt of molten metal, matte or slag in a vessel under reduced atmospheric pressure to gasify a part of gas-forming components in said melt; and
   immersing a hollow partitioning member in said melt which is made of a porous material permeable to gas and impermeable to the melt under reduced atmospheric pressure, said porous material having a chemical composition which chemically reacts with an impurity in said melt to yield a product gas, whereby suction permeation of gas in said melt and said product gas produced by chemical reaction is effected through said porous member.

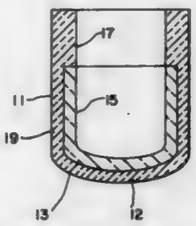


5,306,473

QUARTZ GLASS CRUCIBLE FOR PULLING A SINGLE CRYSTAL

Toshio Nakajima; Yuji Hayashi; Satoru Tachibana, and Kazuhiko Takariki, all of Oguni, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 828,737
Int. Cl.[5] B01D *9/00*
U.S. Cl. 422—248 8 Claims



1. A quartz glass crucible for pulling a single crystal, which comprises:
   a cylindrical straight wall portion including a first area having a height corresponding to about 75% or less of the total height of the crucible, measured from an upper open end of the crucible, the first area comprising across its entire thickness an opaque material having a total volume of bubbles ranging from about 7×10^{-3} cm^3/cm^3 to $30\times10^{-3}/cm^3$;
   a bottom wall portion; and
   a curved intermediate wall portion connecting the straight wall portion and the bottom wall portion;
   the straight wall portion further having a second area, wherein said second area, said curved intermediate portion and said bottom portion are comprised of two layers, the first layer of which comprises an inner transparent layer having a total volume of bubbles of about 4×10^{-3} cm^3 or less and corresponding to from about 20% to 60% of the total thickness of the crucible wall measured from the inside surface thereof, and the second layer of which comprises an outer layer comprised of an opaque material having a total volume of bubbles ranging between about 7×10^{-3} cm^3/cm^3 and 30×10^{-3} cm^3/cm^3.

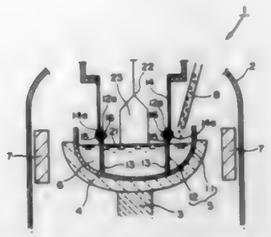
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,474

APPARATUS FOR GROWING SINGLE CRYSTALS

Michio Kida; Yoshiaki Arai; Naoki Ono, and Kensho Sahira, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,896
Claims priority, application Japan, Jul. 30, 1991, 3-190274
Int. Cl.[5] C30B *15/12*
U.S. Cl. 422—249 6 Claims



1. An apparatus for growing semiconductor single crystals comprising:
a double crucible assembly including an outer crucible formed of quartz and an inner crucible disposed in said outer crucible, said inner crucible having an upper member, a lower member, and a connecting means for connecting said upper and lower members, said lower member being formed of quartz; and
a support member for supporting said inner crucible;
wherein said support member and said upper member are formed essentially of an inorganic oxide selected from the group consisting of alumina and mullite.

5,306,475

REACTIVE CALCIUM HYDROXIDES

Roland Fichtel, Starnberg, and Hermann Sucheawirth, Grafrath, both of Fed. Rep. of Germany, assignors to FTU GmbH Technische Entwicklung und Forschung Im Umweltschutz, Starnberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 302,593, Jan. 13, 1989, abandoned. This application Dec. 2, 1991, Ser. No. 801,679
Claims priority, application Fed. Rep. of Germany, May 18, 1987, 3716566; May 10, 1988, 3815982; May 16, 1988, 3816595; European Pat. Off., May 18, 1988, 88/00436
Int. Cl.[5] B01D *47/00;* B01J *8/00;* C10H *23/00*
U.S. Cl. 423—210 11 Claims

1. A process for purifying exhaust gases from volatile heavy metals, mercury, organic harmful substances, chlorinated hydrocarbons, polychlorinated dioxines and furanes, polychlorinated biphenyls, hexachlorobenzenes and pentachlorophenols, and polyaromatic hydrocarbons, comprising the steps of:
(a) manufacturing a modified calcium hydroxide by adding from 0.1 to 25 wt. % of silica gel or activated aluminum oxide
i. prior to the slaking process to the burnt lime, or
ii. during the slaking process, or
iii. to the water required for slaking;
(b) introducing said modified calcium hydroxide into the exhaust gas at a temperature of 20° to 1200° C.;
(c) mixing said modified calcium hydroxide with the exhaust gas; and
(d) removing the solid materials by dust separators.

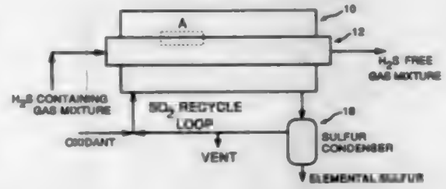
5. A process for purifying exhaust gases from volatile heavy metals, mercury, organic harmful substances, chlorinated hydrocarbons, polychorinated dioxines and furanes, polychlorinated biphenyls, hexachlorobenzenes and pentachlorophenols, and polyaromatic hydrocarbons, comprising the steps of:
(a) manufacturing a modified calcium hydroxide by adding from 0.1 to 25 wt. % of at least one substance selected from the group consisting of activated coal, kieselguhr, zeolites and open-hearth lignite coke
i. prior to the slaking process to the burnt lime, or
ii. during the slaking process or to the water required for slaking;
(b) introducing said modified calcium hydroxide into the exhaust gas at a temperature of 20° to 1200° C.;
(c) mixing said modified calcium hydroxide with the exhaust gas; and
(d) removing the solid materials by dust separators.

5,306,476

CONTINUOUS SULFUR REMOVAL PROCESS

Vinod Jalan, deceased, late of Concord, Mass. by Radha Jalan, executrix , and Jae Ryu, Cambridge, Mass., assignors to Electrochem, Inc., Woburn, Mass.

Filed Jun. 2, 1992, Ser. No. 892,556
Int. Cl.[5] C01B *17/16*
U.S. Cl. 423—220 14 Claims



1. In a process for the removal of hydrogen sulfide from a pressurized hydrogen sulfide containing gas stream, the improvement comprising:
A) providing a membrane comprising a gas impervious metal oxide that reacts with the hydrogen sulfide as a first side and a porous substrate upon which sulfur is deposited as the opposite side;
B) passing a pressurized hydrogen sulfide containing gas along the porous substrate side of the membrane and concurrently passing an oxidant containing gas along the metal oxide side of the membrane;
C) reacting the hydrogen sulfide and metal oxide to form metal sulfide and water;
D) oxidizing the metal sulfide with the oxidant to form sulfur and metal oxide, and
E) removing the sulfur formed.

5,306,477

USE OF WROUGHT AND CAST MATERIALS AND WELDING FILLERS FOR MAKING AND USING HOT CONCENTRATED SULPHURIC ACID OR OLEUM

Elmar-Manfred Horn, Leverkusen, and Stylianos Savakis, Koeln, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 15, 1993, Ser. No. 48,163
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1992, 4213325
Int. Cl.[5] C22C *38/42;* C01B *17/48, 17/69;* B01J *19/00*
U.S. Cl. 423—522 5 Claims

1. In a process for the preparation of sulphuric acid by catalytic oxidation of sulphur dioxide to sulphur trioxide, absorption of the sulphur trioxide in sulphuric acid having a concentration of between 98 and 101%, wherein heat of absorption is generated and the absorption is performed in a tower into which the sulphuric acid is introduced at a temperature in excess of 120° C., the sulphuric acid leaving the tower exhibits a concentration greater than 99% and a temperature greater than 120° C., and the heat of absorption is removed in a heat exchanger by conduction to other fluids, the improvement which comprises forming the heat exchanger or other components which contact the hot sulphuric acid of an austenitic iron-nickel-chromium-silicon alloy comprising about

15.5 to 17.5	wt %	nickel
10 to 12	wt %	chromium
5.7 to 6.5	wt %	silicon
0 to 0.06	wt %	carbon
0 to 1.5	wt %	manganese
0 to 0.03	wt %	phosphorus
0 to 0.03	wt %	sulphur
0 to 0.15	wt %	titanium
0 to 0.8	wt %	zirconium
0 to 0.2	wt %	nitrogen
0 to 0.3	wt %	molybdenum

and the remainder iron, and wherein the sulphuric acid leaves the tower at a temperature of from about 200° to 280° C.

5,306,478

PREPARATION OF GRANULAR COMPOSITIONS

Ignn Hayati, Slough; Kenneth W. Taylor, Ewell, and John M. Simon, Chessington, all of England, assignors to U.S. Borax Inc., Valencia, Calif.

Filed Mar. 9, 1993, Ser. No. 28,452
Claims priority, application United Kingdom, Mar. 12, 1992, 9205459; Jan. 22, 1993, 9301198
Int. Cl.[5] C01B *35/12;* C22B *1/14*
U.S. Cl. 423—279 18 Claims

1. A process for preparing a granular water soluble alkali metal borate composition containing a major amount of alkali metal pentaborate which comprises:
(a) agitating a finely divided feedstock having an average particle size of less than 75 μm and comprising a water soluble alkali metal borate and optionally boric acid, the molar ratio of alkali metal oxide to boric oxide in the feedstock being from about 0.1 to 0.5:1;
(b) optionally heating the agitated feedstock particles to a temperature of at least 50° C.;
(c) contacting the agitated feedstock particles with an aqueous granulating agent to agglomerate feedstock particles; and
(d) recovering a granular borate composition having an average particle size of at least 250 μm.

18. A water soluble borate composition having the approximate formula $2/3Na_2B_{10}O_{16}.10H_2O:1/3Na_2B_4O_7.10H_2O$ in the form of free flowing granules up to 90% by weight of which pass through a 500 μm screen and fewer than about 0.5% by weight pass through a 75 μm screen.

5,306,479

PROCESS FOR SYNTHESIZING NIOBIUM DIOXIDE AND MIXED METAL OXIDES CONTAINING NIOBIUM

James A. Sommers, Albany, Oreg., assignor to Teledyne Industries, Inc. (California Corp.), Albany, Oreg.

Filed Nov. 20, 1992, Ser. No. 979,316
Int. Cl.[5] C01G *33/00*
U.S. Cl. 423—593 3 Claims

1. A method of producing niobium dioxide from niobium nitride comprising the steps of:
a) providing particulate niobium nitride, and
b) heating the particulate niobium nitride in a sufficiently oxygen rich atmosphere at a temperature above the melting point of niobium dioxide and high enough to produce an exothermic reaction with subsequent formation of niobium dioxide.

5,306,480

ALUMINA HYDRATES

Stephen C. Brown, Northolt, United Kingdom, assignor to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 391,628, Aug. 4, 1989, abandoned, which is a continuation of Ser. No. 74,044, Jul. 16, 1987, abandoned. This application Oct. 17, 1990, Ser. No. 598,587
Claims priority, application United Kingdom, Jul. 16, 1986, 8617387
Int. Cl.[5] C01F *7/02;* C04B *14/30*
U.S. Cl. 423—625 11 Claims

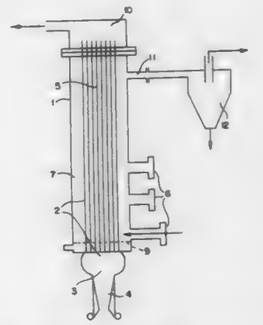
1. Alumina hydrate particles in dry product form having a surface area from 2 to 15 m^2/g, a polydispersity not exceeding 0.3 and a soluble soda content (a sodium content expressed as a weight percent of sodium oxide present which is readily water extractable) not exceeding 0.02%.

5,306,481

INDIRECTLY HEATED THERMOCHEMICAL REACTOR APPARATUS AND PROCESSES

Momtaz N. Mansour, Columbia, Md.; Kandu-Swamy Durai-Swamy, Torrence, and David W. Warren, Sherman Oaks, both of Calif., assignors to Manufacturing and Technology Conversion International, Inc., Columbia, Md.

Division of Ser. No. 310,202, Feb. 14, 1989, Pat. No. 5,059,404. This application Jul. 1, 1991, Ser. No. 724,156
Int. Cl.[5] C01B *3/26*
U.S. Cl. 423—652 5 Claims



1. A process for steam reforming heavy liquid hydrocarbons comprising the steps of:
(a) providing a bed of solid steam-activating material in a first reaction vessel;
(b) injecting steam into said bed to fluidize said bed;
(c) heating said fluidized bed to a substantially uniform temperature to obtain a bed of fluidized hot solids;
(d) depositing said heavy liquid hydrocarbons directly onto said fluidized hot solid bed so that said heavy liquid hydrocarbons react with said steam and said solid steam-activating material to form a partially reformed gas containing hydrogen, light hydrocarbons, and hydrogen sulfide;
(e) withdrawing said partially reformed gas from said first reaction vessel; and
(f) providing said partially reformed gas to a second reaction vessel containing a fixed bed of solid steam-reforming catalyst indirectly heated to a substantially uniform temperature by a fire tube comprising a resonance tube of a pulse combustor so that said partially reformed gas is steam reformed to produce a hydrogen-containing product gas.

3. A process for steam reforming heavy liquid hydrocarbons comprising the steps of:
(a) providing a bed of solid steam-activating material in a first reaction vessel;

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(b) injecting steam into said bed to fluidize said bed;
(c) indirectly heating said fluidized bed by providing heat transfer from a resonance tube of a pulse combustor to obtain a bed of fluidized hot solids;
(d) depositing said heavy liquid hydrocarbons directly onto said fluidized hot solid bed so that said heavy liquid hydrocarbons react with said steam and said solid-steam activating material to form a partially reformed gas containing hydrogen, light hydrocarbons, and hydrogen sulfide;
(e) withdrawing said partially reformed gas from said first reaction vessel and providing said partially reformed gas to a second reaction vessel containing a fixed bed of solid steam-reforming catalyst; and
(f) further steam-reforming said partially reformed gas within said second reaction vessel to produce a hydrogen-containing product gas.

5,306,482

RADIOPHARMACEUTICAL BACTERIOSTATS

Daniel Tartaglia, Anjou, and Richard J. Flanagan, St. Lazare, both of Canada, assignors to Merck Frosst Canada, Inc., Montreal, Canada

Continuation-in-part of Ser. No. 806,572, Dec. 12, 1991, Pat. No. 5,227,152, which is a division of Ser. No. 682,170, Apr. 9, 1991, Pat. No. 5,093,105. This application Mar. 3, 1992, Ser. No. 841,281

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[5] A61K *43/00, 49/02*

U.S. Cl. 424—1.37 **36 Claims**

1. A radiopharmaceutical composition comprising:
(a) a ^{99m}Tc-based radiopharmaceutical;
(b) a water-soluble pertechnetate reducing agent;
(c) a radical-scavenging antioxidant; and
(d) a first bacteriostat selected from:
(i) benzalkonium chloride, and
(ii) benzethonium chloride;
(e) a second bacteriostat selected from:
(i) a polymyxin selected from the group consisting of:
(A) polymyxin B,
(B) polymyxin B_1,
(C) polymyxin B_2,
(D) polymyxin D_1,
(E) polymyxin D_2, and
(F) polymyxin E,
or a pharmaceutically acceptable salt thereof; and
(ii) an N-methanesulfonate derivative of a polymyxin wherein the polymyxin is selected from the group consisting of:
(A) polymyxin B,
(B) polymyxin B_1,
(C) polymyxin B_2,
(D) polymyxin D_1,
(E) polymyxin D_2, and
(F) polymyxin E,
or a pharmaceutically acceptable salt thereof.

5,306,483

PHOSPHOLIPID DELIVERY SYSTEM

Alan J. Mautone, Morris Township, Morris County, N.J., assignor to Scientific Development & Research, Inc., Belleville, N.J.

Continuation-in-part of Ser. No. 385,907, Jul. 27, 1989, Pat. No. 5,174,988. This application Sep. 4, 1992, Ser. No. 940,496

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] A61K *9/12*

U.S. Cl. 424—45 **20 Claims**

1. A process for preparing lipid crystals in combination with a therapeutically active agent comprising:
(a) preparing a mixture of one or more lipids and one or more spreading agents selected from the group consisting of cholesteryl esters, phospholipids, carbohydrates, and proteins, in powder form; the therapeutically active agent; and one or more fluorocarbon propellants, said lipids, said spreading agents, and said therapeutically active agent being insoluble in the propellants wherein the lipids are present in an amount of about 80 to 99.5 percent by weight and the spreading agents are present in an amount of about 0.5 to about 20 percent by weight, both based on the weight of the mixture; and
(b) evaporating the propellants from said mixture.

5,306,484

HAIR SETTING COMPOSITION

Birgit Potthoff-Karl, Weinheim; Axel Sanner, Frankenthal, and Karin Sperling-Vietmeier, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 459,319, Dec. 29, 1989, abandoned. This application Apr. 27, 1992, Ser. No. 874,203

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1989, 3901325

Int. Cl.[5] A61K *7/00, 7/11*

U.S. Cl. 424—47 **10 Claims**

1. A hair setting composition in the form of a spray consisting essentially of, as a film former, a copolymer based on t-butyl acrylate or t-butyl methacrylate or a mixture thereof, having a K value of from 10 to 50 and obtained by free radical polymerization of (A) from 75–99% by weight of t-butyl acrylate, t-butyl methacrylate or a mixture thereof as monomer (A), (B) from 1–25 wt. % of acrylic acid, methacrylic acid or a mixture thereof as monomer (B) and (C) from 0–10% by weight of a C_1–C_4-n-alkyl(meth)acrylate, the amounts of combined components (A–C) constituting 100% by weight of the copolymer, and the carboxyl groups of the copolymer having been partially or wholly neutralized by an amine, in combination with solvents and propellants for a hair spray composition.

5,306,485

SUNCARE COMPOSITIONS

Larry R. Robinson, Oxford; Marie A. Rinaldi, Hamden, and Anil J. Gupte, Seymour, all of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 696,817, May 7, 1991, Pat. No. 5,207,998. This application Feb. 11, 1993, Ser. No. 16,341

Int. Cl.[5] A61K *7/42, 7/44, 7/48, 9/12*

U.S. Cl. 424—59 **20 Claims**

1. A suncare composition having enhanced substantivity and efficacy comprising:
(a) a sunscreen component consisting essentially of:
(i) from about 0.1% to about 20% of octocrylene based on the weight of the total composition;
(ii) from about 0.1% to about 25% of titanium dioxide based on the weight of the total composition; and
(iii) from about 0.5% to about 20% of a sunscreen compound based on the weight of the total composition selected from the group consisting of 2-ethylhexyl p-methoxycinnamate, 2-ethylhexyl N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenylbenzimidazole-5-sulfonic acid, oxybenzone, homomenthyl salicylate, octyl salicylate, butylmethoxydibenzoylmethane, 4-isopropyl dibenzoylmethane, benzylidene camphor, 4-methylbenzylidene camphor, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester of 2,4-dihydroxybenzophenone, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 4-hydroxydibenzoylmethane, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester of 2-hydroxy-2-(2-hydroxyethoxy)benzophenone, 4-N,N-(2-ethylhexyl)-methylaminobenzoic acid ester of 4-(2-hydroxyethoxy)dibenzoylmethane, zinc oxide, silica, tron oxide and mixtures thereof; and
(b) a safe and effective amount of a topical carrier.

5,306,486

COSMETIC SUNSCREEN COMPOSITION CONTAINING GREEN TEA AND A SUNSCREEN

John P. McCook, Guilford; Alan J. Meyers, Trumbull; Brian J. Dobkowski, Milford, all of Conn., and Allan R. Burger, Passaic, N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,711

Int. Cl.[5] A61K *7/40, 7/42, 9/10*

U.S. Cl. 424—59 **5 Claims**

1. A sunscreen cosmetic having a sunscreen system comprising:
(i) from about 0.001 to about 20% by weight of green tea;
(ii) from about 0.001 to about 25% by weight of a sunscreen compound which is effective to at least partially block ultraviolet radiation from harming human skin; and
(iii) from about 30 to 99.9% by weight of a pharmaceutically acceptable carrier.

5,306,487

HIGH CAPACITY ODOR CONTROLLING COMPOSITIONS

Nancy Karapasha, and Theresa L. Johnson, both of P.O. Box 398707, Cincinnati, Ohio 45239-8707

Continuation of Ser. No. 478,801, Feb. 12, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 908,588

Int. Cl.[5] A61L *15/16*

U.S. Cl. 424—76.6 **1 Claim**

1. An absorbent structure in the form of a diaper, catamenial or pantiliner, comprising a cohesive mixture in the form of particles or aggregates, said particles or aggregates having a size, by sieve analysis, greater than about 100 microns, said particles comprising:
(a) at least 20% by weight of a particulate odor-controlling agent which is a mixture of zeolite and activated carbon odor-controlling agents;
(b) at least 40% by weight of an absorbent gelling material; and
(c) a water-soluble or water-dispersible binder material which is a member selected from the group consisting of hydroxypropyl celluloses, hydroxyethyl celluloses, hydroxymethyl celluloses, C_1–C_3 alkyl-substituted cellulose, maltodextrin, and mixtures thereof.

5,306,488

COSMETIC COMPOSITION FOR THE HAIR CONTAINING A WAX MICRODISPERSION AND A PROCESS FOR TREATING THE HAIR USING THE COMPOSITION

Guy Vanlerberghe, Montjay-la-Tour; Luc Nicolas-Morgantini, Rully, and Alain Lety, Lagny-sur-Marne, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 23, 1990, Ser. No. 483,378

Claims priority, application Luxembourg, Feb. 24, 1989, 84 457

Int. Cl.[5] A61K *7/075*

U.S. Cl. 424—71 **19 Claims**

1. A process for the cosmetic treatment of hair so as (a) to improve the hold and volume of the style of the hair, or (b) to suppress or retard the appearance of an oily aspect of the hair, or both (a) and (b), said process comprising applying to at least a portion of the hair close to the roots thereof, in an amount sufficient to impregnate the hair or the portion of the hair being treated, a cosmetic composition comprising a non-foaming fluid composition containing a wax dispersion in a liquid vehicle containing from 80 to 100 percent water, the dispersed phase in said liquid vehicle being a stable microdispersion of particles having a size lower than 500 nm and comprising a wax, the said wax having an end melting point greater than 60° C. and lower than 100° C. and being capable of forming said microdispersion, said composition containing, by weight, from 1 to 20 percent of said wax, from 0.01 to 25 percent of at least one anionic or nonionic emulsifier and at least 35 percent of water, the wax/emulsifier weight ratio ranging from 1 to 30 and said composition not containing a cationic surfactant.

5,306,489

HAIR CARE PRODUCTS CONTAINING N-ALKOXYALKYLAMIDES

Marvin E. Goldberg, Marlboro; Malti Bhambhani, Scotch Plains, both of N.J., and Arthur Brandon, Valley Cottage, N.Y., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Filed Jul. 24, 1992, Ser. No. 920,220

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[5] A61K *7/11, 7/06*

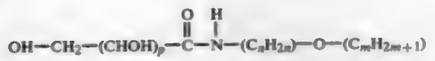
U.S. Cl. 424—71 **15 Claims**



1. A hair care composition selected from the group consisting of a shampoo composition comprising 1–45% anionic surfactant, 1–55% water and 0.01–10% of a foam booster selected from the group consisting of cocamide MEA, cocamide DEA, lauramide DEA, capramide DEA, cetearyl alcohol, cetyl alcohol, cetyl betaine, cocamide MIPA, cocamidoethyl betaine, cocamidopropylamine oxide, cocamidopropyl betaine, cocamidopropyl hydroxysultaine, cocamide oxide, coconut alcohol, coco-sultaine, lauryl betaine, lauryl sultaine, lauryl alcohol, myristamide DEA, myristamide MEA, oleyl betaine, sodium sarcosinates, potassium coco-hydrolyzed silk protein, and mixture thereof, a conditioner composition comprising 10–95% water, 1.0–10% of a cationic polymer selected from the group consisting of cetyl trimethyl ammonium chloride, stearylamidopropylethyldimonium ethosulfate, Polyquaternium 11, oleylamidopropyl amine oxide, guar hydroxypropyl trimonium chloride, trimethylsilylamodimethicone, stearyl dimethyl benzyl ammonium chloride, cetyl pyridinium chloride, dicetyl dimethyl ammonium chloride and mixtures thereof, and 0.1–10% conditioning agent, a hair spray composition comprising 0.001–10% of a resin selected from the group consisting of vinyl acetate/crotonic acid/vinyl neodecanoate copolymer, octylacrylamide/acrylates/butylamino ethylmethacrylate copolymer, vinyl acetate/crotonic acid, polyvinylpyrollidone, polyvinyl pyrollidone vinyl acetate copolymer, PVP acrylates copolymer, the ethyl ester of polyvinyl methylether/maleic anhydride, polyvinylpyrrolidone acetate, polymeric quaternary ammonium salts prepared by the reaction of ethyl methacrylate/abietylmethacrylate/diethylamino ethyl methacrylate copolymer with dimethyl sulfate, a polymeric quaternary ammonium salt prepared by the reaction of ethyl methacrylate/oleylmethacrylate/diethylamino ethyl methacrylate copolymer with dimethyl sulfate and mixtures thereof, 0.01–5% neutralizer, 0.01–5% plasticizer, and 15–40% solvent, a hair setting lotion comprising 0.01–10% of a hair fixative resin selected from the group consisting of polyvinylpyrrolidone, vinyl acetate, polyquaternium compounds, polyvinylpyrrolidone, and mixtures thereof, 0.01–5% plasticizer, and 20–70% solvent, and a mousse composition comprising 0.1–10% of a hair fixative resin selected from the group con-

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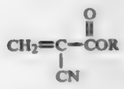
sisting of polyvinylyrrolidone, vinyl acetate, polyquaternium compounds, polyvinylpyrrolidone, and mixtures thereof, 0.1–5% conditioner, 0.05–5% foaming agent, and 1–50% solvent, and comprising 0.001–10% of a compound of the formula (Formula I):



wherein p is a whole number from 1 to about 4,
(C_nH_{2n}) is a straight or branched chain alkyl bridge in which n is a whole number of 1 to about 6, and
(C_mH_{2m+1}) is a straight or branched chain alkyl radical in which m is a whole number of 1 to about 6.

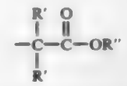
5,306,490
METHODS FOR RETARDING BLISTER FORMATION BY USE OF CYANOACRYLATE ADHESIVES
Leonard V. Barley, Jr., Colorado Springs, Colo., assignor to Medlogic, Inc., Colorado Springs, Colo.
Filed Apr. 20, 1992, Ser. No. 871,558
Int. Cl.[5] A61L *25/00, 15/24;* A61K *31/78*
U.S. Cl. 424—78.35 **13 Claims**

1. A method for inhibiting blister formation arising from friction during physical activities which method comprises:
applying, either prior to or during physical activities but prior to blister formation, a quantity of cyanoacrylate adhesive to a surface area of unbroken skin which is prone to blister formation, which quantity of cyanoacrylate adhesive is sufficient to form an artificial callus of from about 0.1 to about 0.5 millimeters in thickness; and
polymerizing the cyanoacrylate adhesive so as to form an artificial callus which callus adheres to the surface area of unbroken skin where the adhesive was applied;
wherein the cyanoacrylate, in monomeric form, is represented by formula I:



I

where R is selected from the group consisting of alkyl of 1 to 10 carbon atoms, alkenyl of 2 to 10 carbon atoms, cycloalkyl groups of from 5 to 8 carbon atoms, phenyl, 2-ethoxyethyl, 3-methoxybutyl, and a substituent of the formula:

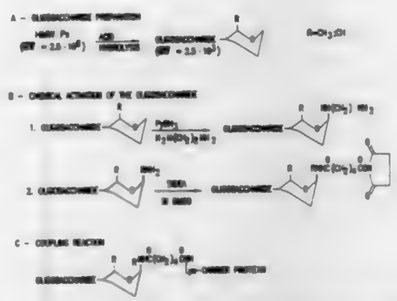


where each R′ is independently selected from the group consisting of hydrogen and methyl and R″ is selected from the group consisting of alkyl of from 1 to 6 carbon atoms; alkenyl of from 2 to 6 carbon atoms; alkynyl of from 2 to 6 carbon atoms; cycloalkyl of from 3 to 8 carbon atoms; aralkyl selected from the group consisting of benzyl, methylbenzyl and phenylethyl; phenyl; and phenyl substituted with 1 to 3 substituents selected from the group consisting of hydroxy, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms, and alkoxy of from 1 to 4 carbon atoms.

5,306,491

Patent Not Issued For This Number

5,306,492
OLIGOSACCHARIDE CONJUGATE VACCINES
Massimo Porro, Siena, Italy, assignor to American Cyanamid Company, Wayne, N.J.
Division of Ser. No. 590,649, Sep. 28, 1990, Pat. No. 5,153,312.
This application Jul. 30, 1992, Ser. No. 921,678
Int. Cl.[5] A61K *39/385, 39/02;* C07K *17/06*
U.S. Cl. 424—88 **2 Claims**



1. A vaccine comprising a covalent conjugate of an oligosaccharide and a carrier protein for eliciting an immune response to said oligosaccharide produced by a method comprising the steps of:
(i) reacting an oligosaccharide having a terminal reducing group with diaminomethane in the presence of pyridine borane such that reductive amination occurs; and
(ii) reacting the aminated oligosaccharide product of (i) with a molecule comprising two functional groups, one of which is capable of reacting with the terminal group of the activated oligosaccharide and the other which is capable of reacting with said carrier protein; and
(iii) reacting the activated oligosaccharide product of (ii) with said carrier protein such that conjugation occurs.

5,306,493
FELV-INFECTED FELINE CELL LINE
William H. Kelsey, Alameda, and Edmund P. Bass, Menlo Park, both of Calif., assignors to Miles Inc., Pittsburgh, Pa.
Continuation of Ser. No. 915,088, Oct. 3, 1986, abandoned. This application Nov. 15, 1989, Ser. No. 437,551
Int. Cl.[5] A61K *39/12;* C12N *5/06;* C12P *21/00*
U.S. Cl. 424—89 **7 Claims**

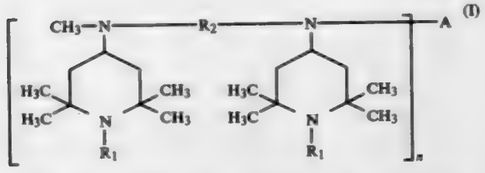
5. A feline leukemia virus vaccine comprising:
inactivated viral material produced by Crandell Feline Kidney cells chronically infected with the Rickard isolate of feline leukemia virus designated FeLV-A_{R1} and a pharmaceutically acceptable carrier or immunologic adjuvant.

5,306,494
COLEOPTERAN-ACTIVE *BACILLUS THURINGIENSIS* ISOLATES AND GENES ENCODING COLEOPTERAN-ACTIVE TOXINS
Jewel M. Payne, San Diego, Calif., assignor to Mycogen Corporation, San Diego, Calif.
Division of Ser. No. 788,638, Nov. 6, 1991, Pat. No. 5,262,324. This application Sep. 7, 1993, Ser. No. 117,778
Int. Cl.[5] A01N *63/00*
U.S. Cl. 424—93 L **4 Claims**

1. A method for controlling *Lepinotarsa rubiginosa* insects which comprises administering to said insects or to the environment of said insects a microorganism host transformed to express a *Bacillus thuringiensis* toxin active against *Lepinotarsa rubiginosa* pests wherein said toxin is encoded by a gene isolated from a *Bacillus thuringiensis* microbe selected from the group consisting of *Bacillus thuringiensis* HD511, *Bacillus thuringiensis* HD867 and *Bacillus thuringiensis* HD1011 or a mutant gene thereof that retains its *Lepinotarsa rubiginosa* toxic properties.

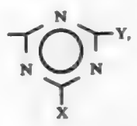
5,306,495
COMPOUNDS CONTAINING SUBSTITUTED PIPERIDINE GROUPS FOR USE AS STABILIZERS FOR ORGANIC MATERIALS
Giuseppe Cantatore, Bitonto, and Graziano Vignali, Sasso Marconi, both of Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 719,069, Jun. 20, 1991, abandoned, which is a continuation of Ser. No. 607,213, Oct. 30, 1990, abandoned, which is a continuation of Ser. No. 389,159, Aug. 2, 1989, abandoned. This application Mar. 2, 1992, Ser. No. 846,723
Claims priority, application Italy, Aug. 4, 1988, 21643A/88
Int. Cl.[5] C08K *5/3492*
U.S. Cl. 514—100 **12 Claims**

1. A compound of formula I



(I)

in which R_1 is hydrogen, C_1–C_8alkyl, O., OH, NO, CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12} cycloalkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is substituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl, or is C_1–C_8acyl or C_2–C_4alkyl substituted by OH in the 2-, 3- or 4-position,
R_2 is C_2–C_{12}alkylene, n is 1, 2, 3 or 4 and, if n is 1, A is C_2–C_{18}alkyl, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl, or is C_2–C_4-alkyl substituted by OH in the 2-, 3- or 4-position, or A is one of the groups of the formula (IIa)–(IIb) or (IId)–(IIh)



(IIa)



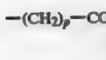
(IIb)



(IId)



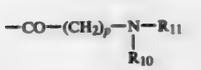
(IIe)



(IIf)



(IIg)

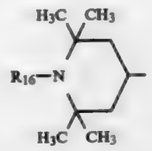


(IIh)

in which X and Y which can be identical or different are C_1–C_{18}alkyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4-alkyl, or are a group $—OR_{13}$, $—SR_{13}$ or



where R_{13} is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, or is C_3–C_{18}alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, or C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl, or is a group of the formula (III)



(III)

where R_{16} corresponds to any of the definitions given for R_1, R_{14} and R_{15} which can be identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}-cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, C_2–C_4alkyl substituted in the 2-, 3- or 4-position by OH, by C_1–C_8alkoxy or by di-(C_1–C_4alkyl)-amino, or are C_3–C_{18}-alkenyl, tetrahydrofurfuryl or a group of the formula (III), or R_{14} and R_{15}, together with the nitrogen atom to which they are linked, form part of a 5-membered to 7-membered heterocyclic ring which is 1-pyrrolidyl, 1-piperidyl, 4-morpholinyl, 4-methyl-1-piperazinyl, 1-hexahydroazepinyl, 5,5,7-trimethyl-1-homopiperazinyl or 4,5,5,7-tetramethyl-1-homopiperazinyl, R_3 is hydrogen, C_1–C_{18}-alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di-or tri-substituted by C_1–C_4alkyl, C_2–C_{18}alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl and/or an OH group, C_7–C_9-phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl

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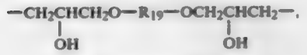
by C_1–C_4alkyl and/or an OH group, p is zero or an integer from 1 to 5, R_6 and R_9 are C_1–C_{13}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, C_3–C_{18}-alkenyl or a group of the formula (III), R_5 is a direct bond, C_1–C_{12}-alkylene, cyclohexylene or phenylene, R_7 is hydrogen, C_1–C_8alkyl or phenyl R_8 is —CN or a group —$COOR_9$ with R_9 being as defined above, R_{10} and R_{11} which can be identical or different are as defined above for R_{14} and R_{15}, and R_{12} is C_1–C_{18}alkyl or phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, and, if n is 2, A is C_2–C_{12}alkylene, 2-hydroxytrimethylene, xylylene or one of the groups of the formula (IVa)–(IVe)



(IVa)

$$-COR_{17}CO-, \quad \text{(IVb)}$$

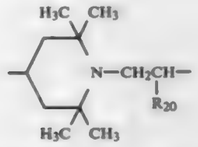
$$-COOR_{18}OOC-, \quad \text{(IVc)}$$



(IVd)

$$-(CH_2)_qCO- \quad \text{(IVe)}$$

in which Z is as defined above for X and Y, R_{17} is as defined above for R_5, R_{18} and R_{19} are C_2–C_{12}alkylene, C_4–C_{12}alkylene which is interrupted by 1, 2 or 3 oxygen atoms, cyclohexylene, cyclohexylenedimethylene, methylenedicyclohexylene, isopropylidenedicyclohexylene, phenylene, isopropylidenediphenylene, xylylene or a group of the formula (V)



(V)

with R_{20} being hydrogen, C_1–C_8alkyl or phenyl, and q is zero or an integer from 1 to 5, and, if n is 3, A is aliphatic C_4–C_{18}triacyl,aliphatic C_6–C_{18}triacyl substituted by one nitrogen atom, aromatic or heterocyclic triacyl having up to 18 carbon atoms or 1,3,5-triazine-2,4,6-triyl, and, if n is 4, A is aliphatic C_6–C_{18}tetraacyl, aliphatic C_{10}–C_{18}tetraacyl substituted by two nitrogen atoms, aromatic C_{10}–C_1.tetraacyl or cycloaliphatic C_{10}–C_{22}tetraacyl.

5,306,496

ANTIBIOTICS NK374186A, NK374186B, NK374186B3 AND NK374186C3, PROCESS FOR PRODUCING THE SAME, AND USE OF THE SAME

Tomio Morino, Omiya; Masakazu Nishimoto, Yono; Mituyuki Nishide, Yono; Akira Masuda, Yono; Masatoshi Yamada, Yono; Eiji Kawano, Higashimurayama; Takaaki Nishikiori, Yono, and Seiichi Saito, Kashiwa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,676

Claims priority, application Japan, Jul. 10, 1991, 3-195123

Int. Cl.[5] A61K *35/70*; **C12P** *1/02*

U.S. Cl. 424—117 **5 Claims**

1. Novel antibiotics (a) NK374186A, (b) NK374186B, (c) NK374186B3 or (d) NK374186C3 or salts thereof having the following physicochemical properties:

(a) antibiotic NK374186A

1) appearance: colorless powder,
3) molecular weight: FD-MS m/z (M+ 735),
3) rational formula: $C_{34}H_{61}N_3O_{12}S$,
4) solubility: soluble in lower alcohols, chloroform and ethyl acetate,
5) Rf value in silica gel thin layer (Art.5715, a product of Merck) chromatography: 0.12 with the use of a chloroform/methanol mixture (20:1) as developer,
6) UV absorption spectrum: refer to FIG. **1**,
7) IR absorption spectrum: refer to FIG. **2** (determined by using potassium bromide tablet),
8) proton NMR spectrum: refer to FIG. **3** (determined in heavy DMSO),
9) carbon NMR spectrum: refer to FIG. **4** (determined in heavy DMSO), and
10) color reaction: positive in phosphomolybdic acid/sulfuric acid reaction and Tolidine-Chlorine reaction and negative in ninhydrin reaction;

(b) antibiotic NK374186B

1) appearance: colorless powder,
2) molecular weight: FD-MS m/z (M+655),
3) rational formula: $C_{34}H_{61}N_3O_9$,
4) solubility: soluble in lower alcohols, chloroform and ethyl acetate,
5) Rf value in silica gel thin layer (Art.5715, a product of Merck) chromatography: 0.35 with the use of a chloroform/methanol mixture (20:1) as developer,
6) UV absorption spectrum: refer to FIG. **5**,
7) IR absorption spectrum: refer to FIG. **6** (determined by using potassium bromide tablet),
8) proton NMR spectrum: refer to FIG. **7** (determined in heavy DMSO),
9) carbon NMR spectrum: refer to FIG. **8** (determined in heavy DMSO), and
10) color reaction: positive in phosphomolybdic acid/sulfuric acid reaction and Tolidine-Chlorine reaction and negative in ninhydrin reaction;

(c) antibiotic NK374186B3

1) appearance: colorless powder,
2) molecular weight: FD-MS m/z (M+ 655),
3) rational formula: $C_{34}H_{61}N_3O_9$,
4) solubility: soluble in lower alcohols, chloroform and ethyl acetate,
5) Rf value in silica gel thin layer chromatography: 0.49 with the use of a chloroform/methanol mixture (20:1) as developer,
6) UV absorption spectrum: refer to FIG. **9**,
7) IR absorption spectrum: refer to FIG. **10** (determined by using potassium bromide tablet),
8) proton NMR spectrum: refer to FIG. **11** (determined in heavy DMSO),
9) carbon NMR spectrum: refer to FIG. **12** (determined in heavy DMSO), and
10) color reaction: positive in phosphomolybdic acid/sulfuric acid reaction and Tolidine-Chlorine reaction and negative in ninhydrin reaction;

(d) antibiotic NK374186C3

1) appearance: colorless powder,
2) molecular weight: FD-MS m/z (M+597),
3) rational formula: $C_{34}H_{59}N_3O_7$,
4) solubility: soluble in lower alcohols, chloroform and ethyl acetate,
5) Rf value in silica gel thin layer chromatography: 0.33 with the use of a chloroform/methanol mixture (20:1) as developer,
6) IR absorption spectrum: refer to FIG. **14**,
7) proton NMR spectrum: refer to FIG. **15**
8) proton NMR spectrum: refer to FIG. **15** (determined in heavy DMSO),
9) carbon NMR spectrum: refer to FIG. **16** (determined in heavy DMSO), and
10) color reaction: positive in phosphomolybdic acid/sulfuric acid reaction and Tolidine-Chlorine reaction and negative in ninhydrin reaction.

5,306,497

INSECTICIDAL OR INSECT BEHAVIORALLY ACTIVE PREPARATIONS FROM AROMATIC PLANTS

Florence V. Dunkel, Bozeman, Mont.; David K. Weaver, Nova Scotia, Canada, and Weaver, III: Theodore W., Bozeman, Mont., assignors to Research and Development Institute Inc. at Montana State University, Bozeman, Mont.

Filed Dec. 6, 1991, Ser. No. 801,817

Int. Cl.[5] A01N *65/00*

U.S. Cl. 424—195.1 **9 Claims**

1. A method for the control of insects in an environment by destruction or behavior modification which comprises:

preparing dried and finely milled leaves and mixtures thereof of one or more aromatic plants, wherein said plants are insecticidal or capable of modifying the behavior of insects, and

adding said dried and finely milled leaves and mixtures thereof to said environment in an effective amount such that the insects are controlled by destruction or behavior modification,

wherein said plants are aromatic plants selected from the group consisting of the mint family, *Geranium viscosissimum, Balsamorhiza sagittata, Artemesia tridentata* and mixtures thereof.

5,306,498

COSMETIC COMPOSITION IN THE FORM OF A TRIPLE EMULSION

Laurence Vesperini, Paris; Pierre Fodor, Garches, and Françoise Bouget, Fontenay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 3, 1992, Ser. No. 862,716

Claims priority, application France, Apr. 5, 1991, 91 04209

Int. Cl.[5] A61K *9/113, 7/00*

U.S. Cl. 424—401 **23 Claims**

1. A water/oil/water triple emulsion comprising

(a) continuous gelled outer aqueous or water phase containing, as a gelling agent, at least one acrylic or methacrylic acid polymer or copolymer, combined with a polyglyceryl methacrylate;

(b) a fatty or oil phase dispersed in said outer aqueous phase; and

(c) an inner aqueous or water phase dispersed in said fatty or oil phase.

5,306,499

MICROENCAPSULATED COCKROACH-CONTROLLING COMPOSITION

Toshiro Ohtsubo, Hyogo; Shigenori Tsuda, Kyoto; Hitoshi Kawada; Goro Shinjo, both of Osaka, and Kozo Tsuji, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 290,384, Dec. 27, 1988, abandoned. This application Nov. 15, 1990, Ser. No. 613,042

Claims priority, application Japan, Dec. 25, 1987, 62-331237

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—405 **6 Claims**

1. A method for controlling cockroaches comprising:

applying a microencapsulated cockroach controlling composition,

(a) said microcapsules having

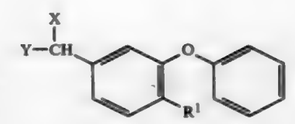
(i) a polyurethane wall,

(ii) an average particle diameter of not more than 80 microns,

(iii) a wall thickness of not more than 0.3 microns, and

(iv) an average particle diameter/wall thickness ratio of 100 to 400; and

(b) said microcapsules containing phenylxylylethane and at least one insecticidal compound selected from the group consisting of the compounds represented by formula (I)



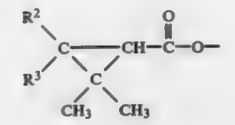
(I)

wherein

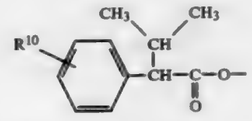
R^1 represents a hydrogen or a fluorine atom,

X represents a hydrogen atom or a cyano group, and

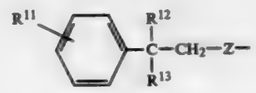
Y represents a group of formula (II), (III), or (IV)



(II)



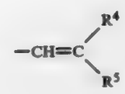
(III)



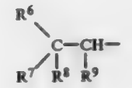
(IV)

wherein

R^2 represents a hydrogen atom or a methyl group; and when R^2 is a hydrogen atom, R^3 represents a group of formula



or a group of formula



in which

R^4 represents a methyl group, a chlorine atom, a bromine atom, or a fluorine atom,

R^5 represents a methyl group, a trifluoromethyl group, a chlorine atom, a bromine atom, or a fluorine atom, and

R^6, R^7, R^8, and R^9, which can be the same or different, each represent a chlorine atom, a bromine atom, or a fluorine atom, and when

R^2 is a methyl group, R^3 represents a methyl group,

R^{10} represents chlorine atom, a bromine atom, fluorine atom, a trifluoromethoxy group, a difluoromethoxy group, or a 3, 4-methylenedioxy group, Z represents an oxygen atom or a —CH2— group,

R^{11} represents a lower alkoxy group having one to five carbon atoms, a chlorine atom, a bromine atom, or a fluorine atom,

R^{12} represents a hydrogen atom or a lower alkyl group having one to two carbon atoms, and

R^{13} represents a lower alkyl group having one to two carbon atoms or a trifluoromethyl group.

VOL 1161 ISS 4 AP 26 1994 UMI

5,306,500

METHOD OF AUGMENTING TISSUE WITH COLLAGEN-POLYMER CONJUGATES

Woonza Rhee, Palo Alto; Donald G. Wallace, Menlo Park, both of Calif.; Alan S. Michaels, Boston, Mass.; Ramon A. Burns, Jr., Fremont, Calif.; Louis Fries, Los Altos, Calif.; Frank DeLustro, Belmont, Calif., and Hanne Bentz, Newark, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Division of Ser. No. 930,142, Aug. 14, 1992, Pat. No. 5,264,214, which is a division of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Aug. 23, 1993, Ser. No. 110,577

Int. Cl.[5] A61F *2/00, 13/00;* **A61K** *9/14, 9/50*

U.S. Cl. 424—422 **14 Claims**

1. A method for augmenting tissue in a mammal, which comprises:

administering at a site in need of augmentation a composition comprising

collagen chemically conjugated to a synthetic hydrophilic polymer, and

a sufficient amount of a fluid, pharmaceutically acceptable carrier.

5,306,501

DRUG DELIVERY BY INJECTION WITH THERMOREVERSIBLE GELS CONTAINING POLYOXYALKYLENE COPOLYMERS

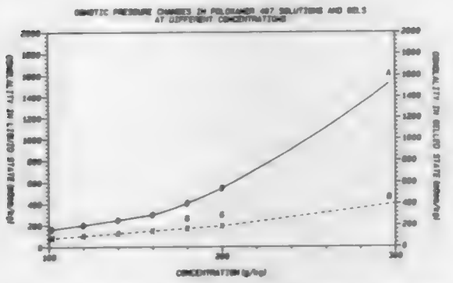
Tacey X. Viegas, Ann Arbor; Lorraine E. Reeve, Dexter, both of Mich., and Robert S. Levinson, Chesterfield, Mo., assignors to Mediventures, Inc., Dearborn, Mich.

Continuation-in-part of Ser. No. 517,277, May 1, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 791,119

The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.

Int. Cl.[5] A61K *9/10, 47/34*

U.S. Cl. 424—423 **20 Claims**



1. A process for treating a condition requiring the use of a medical device or pharmacological treatment which comprises injection into the body of a mammal a hyperosmotic, iso-osmotic, or hypo-osmotic aqueous composition, which is a liquid at room temperature or below and an aqueous gel with a desired osmolality at mammalian body temperature, said aqueous composition containing:

(1) about 20% to about 80% by weight of water and

(2) about 10% to about 50% by weight of a polyoxyalkylene block copolymer of formula

$$Y[(A)_n—E—H]_x \qquad (I)$$

wherein A is a polyoxyalkylene moiety having an oxygen/carbon atom ratio of less than 0.5, x is at least 1, Y is derived from water or an organic compound containing x reactive hydrogen atoms, E is a polyoxyethylene moiety, n has a value such that the minimum molecular weight of A is between about 500, as determined by the hydroxyl number of an intermediate of formula

$$Y[(A)_n—H]_x \qquad (II)$$

and the total average molecular weight of the polyoxyalkylene block copolymer is at least about 5,000;

wherein the osmolality of the composition in the liquid state is adjusted to achieve the desired value of the osmolality of the aqueous gel by assuming that the polyoxyalkylene block copolymer does not contribute to the osmolality in the aqueous gel.

5,306,502

APPARATUS FOR DELIVERING NITROGLYCERIN TO THE SKIN, PROCESSES FOR THE PRODUCTION THEREOF AND THE USE THEREOF

Halvor Jaeger, Neu-Ulm; Hans-Rainer Hoffmann, Neuwied; Reinhold Meconi, Neuwied, and Robert-Peter Klein, Neuwied, all of Fed. Rep. of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

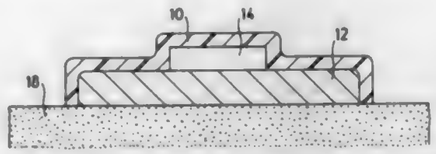
Continuation of Ser. No. 566,854, Aug. 10, 1990, Pat. No. 5,126,144, which is a continuation of Ser. No. 353,663, Apr. 28, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 860,411

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1987, 3729165; Dec. 23, 1987, 3743946; PCT Int'l Appl., Aug. 3, 1988, PCT/DE88/00478

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—443 **14 Claims**



1. Process for the production of an apparatus for controlled transdermal release of nitroglycerine to skin, with a pressure sensitive adhesive nitroglycerine-resevoir with a distribution fo the nitroglycerine, said process comprising producing the pressure sensitive adhesive-nitroglycerine producing the pressure sensitive adhesive-nitroglycerine reservoir by using a hot melt pressure sensitive adhesive with a processing temperature of 40° to 80° C., wherein the hot melt adhesive is produced from between 10 to 80% by weight of polymer, between 1 to 80% by weight of plasticiser, and between 10 and 80% by weight of tackifier, whereas the sum of percentages always is 100.

5,306,503

PATCH WITH A HIGH CONTENT OF SOFTENING INGREDIENTS

Walter Müller, Neuwied; Raphaela Minderop, Munich, and Andreas Teubner, Pfaffenhofen, all of Fed. Rep. of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Jun. 21, 1991, Ser. No. 718,668

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1990, 4020144

Int. Cl.[5] A61K *13/00*

U.S. Cl. 424—449 **34 Claims**

1. A device for the topical and systemic administration of an active substance to or through the skin comprising a backing layer, at least one self-adhesive layer, and a removable protective layer, the self-adhesive layer comprising

(a) 100 parts by weight of a polyacrylate adhesive,

(b) 5 to 150 parts by weight of a film-former compatible with polyacrylates, said film-former being based on at least one of a polyacrylate and polymethacrylate,

(c) 0 to 250 parts by weight of at least one of a non-softening active substance and an adjuvant selected from the group consisting of pigments, active substance carriers, antioxidants, separating agents, buffering substances, water absorbers and combinations thereof, and

(d) 10 to 250 parts by weight of at least one member selected from the group consisting of a softening active substance, a tackifying additive, a softening adjuvant, and an adjuvant or active substance which locally stimulates the blood flow or creates a feeling of warmth, where the substance is at least one of an antiphlogistic and an antirheumatic.

5,306,504

SKIN ADHESIVE HYDROGEL, ITS PREPARATION AND USES

Donald H. Lorenz, Basking Ridge, N.J., assignor to Paper Manufactures Company, Philadelphia, Pa.

Filed Dec. 9, 1992, Ser. No. 987,642

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **22 Claims**

1. A skin adhesive hydrogel composition comprising a water-insoluble, water-swellable cross-linked ampholyte salt of

A. a high molecular weight water-soluble polyvinylpyrrolidone having ring opened pyrrolidone groups providing at least 1.5×10^{-2} milliequivalents of carboxylic acid groups per gram of polymer, and

B. a water-soluble multifinctional amine-containing polymer selected from the group consisting of polyethyleneimine, amine-terminated polyethylene oxide, amine-terminated polyethylene/polypropylene oxide, polymers of dimethyl amino ethyl methacrylate and copolymers of dimethyl amino ethyl methacrylate and vinyl pyrrolidone.

15. The method of making a polymer for skin adhesive hydrogel which comprises mixing in aqueous medium

A. a high molecular weight water-soluble polyvinylpyrrolidone having ring opened pyrrolidone groups providing at least 1.5×10 milliequivalents of carboxylic acid groups per gram of polymer, and

B. a water-soluble multifunctional amine-containing polymer selected from the group consisting of polyethyleneimine, amine terminated polyethylene oxide, amine terminated polyethylene/polypropylene oxide, polymers of dimethyl amino ethyl methacrylate and copolymers of dimethyl amino ethyl methacrylate and vinyl pyrrolidone until reaction between acid groups of the ring opened polyvinyl-pyrrolidone and basic amine groups of the water-soluble multifunctional amine-containing polymer form a water-insoluble, water-swellable cross-linked ampholyte salt.

5,306,505

PLASMA-IRRADIATED SOLID PREPARATION

Masayuki Kuzuya, Gifu, and Sumio Watanabe, Ibaraki, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01625, § 371 Date Apr. 22, 1991, § 102(e) Date Apr. 22, 1991, PCT Pub. No. WO91/08736, PCT Pub. Date Jun. 27, 1991

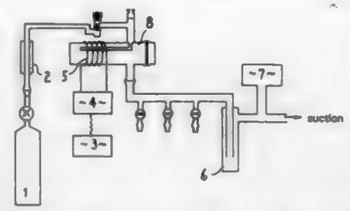
PCT Filed Dec. 12, 1990, Ser. No. 678,330

Claims priority, application Japan, Dec. 12, 1989, 1-322881; Nov. 26, 1990, 2-322071

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—464 **12 Claims**

1. A multi-layer solid preparation comprising a core, an outer layer covering said core, said outer layer comprising a mixture of a plasma-decomposable polymer and a plasma-crosslinkable polymer, which mixture has been irradiated with a plasma of a non-organic gas effective to decompose said



plasma-decomposable polymer and to crosslink said plasma-crosslinkable polymer.

5,306,506

PHARMACEUTICAL COMPOSITION FOR RAPID SUSPENSION IN WATER

Marco Zema, Como; Luigi G. Mapelli, and Marco G. Marconi, both of Milan, all of Italy, assignors to Eurand International S.p.A., Milan, Italy

PCT No. PCT/EP91/01268, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO92/00731, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 4, 1991, Ser. No. 838,818

Claims priority, application Italy, Jul. 11, 1990, 20908 A/90

Int. Cl.[5] A61K *9/46*

U.S. Cl. 424—466 **19 Claims**

1. A solid pharmaceutical composition for addition to water to produce a suspension of a drug comprising a mixture of

a) a drug which is substantially water-insoluble or microencapsulated; with granules comprising an inert carrier coated with an intimate mixture consisting essentially of

b) a thickening or suspending agent;

c) a pharmaceutically accepted acid;

d) a pharmaceutically acceptable carbonate or bicarbonate;

characterized in that the weight ratio of c+d:b is from 1:1.5 to 1:15 and the amount of c+d is sufficient to obtain rapid hydration of the thickening or suspending agent b) when the composition is mixed with water such that a homogeneous suspension of the drug is obtained within 30 seconds.

5,306,507

PROCESS AND COMPOSITION CONTAINING PAMABROM AND PYRILAMINE MALEATE

Steven R. Freebersyser, St. Louis County, Mo., assignor to Mallinckrodt Specialty Chemicals Company, Chesterfield, Mo.

Filed Mar. 26, 1992, Ser. No. 857,822

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—493 **8 Claims**

1. A pharmaceutical composition comprising particles having a core containing only one member selected from the group consisting of pamabrom and pyrilamine maleate, which particles have a solid intermediate layer containing pregelatinized starch, and an outer coating containing the other member of said group consisting of pamabrom and pyrilamine maleate which is not present in said core, which member present in said core is not present in said outer coating, wherein said solid intermediate starch-containing layer separates said core containing one said member from said outer coating containing the other said member, so as to separate said pamabrom from said pyrilamine maleate.

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5,306,508
RED BLOOD CELL SURROGATE
Nir Kossovsky; Andrew E. Gelman, both of Los Angeles, and Edward E. Sponsler, Burbank, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 000,199, Jan. 4, 1993, which is a continuation-in-part of Ser. No. 690,601, Apr. 24, 1991, Pat. No. 5,178,882, which is a continuation-in-part of Ser. No. 542,255, Jun. 22, 1990, Pat. No. 5,219,577. This application Mar. 11, 1993, Ser. No. 29,773
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—493 **23 Claims**

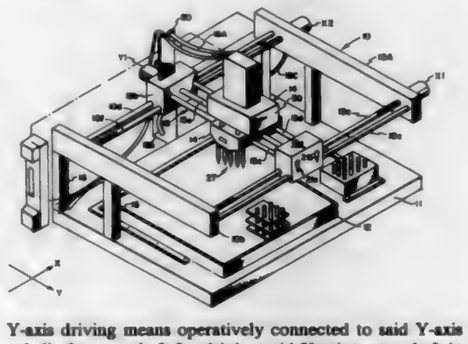
1. A red cell surrogate comprising:
a nanocrystalline core particle comprising a ceramic, ionic solid metal or polymer, said core particle having a surface;
an oxygen carrier anchor coating located on the surface of said nanocrystalline core particle, said oxygen carrier anchor coating comprising a glassy film which substantially covers the surface of said nanocrystalline core particle, said glassy film having a threshold surface energy that is sufficient to anchor said oxygen carrier to said core particle without denaturing said oxygen carrier and wherein said glassy film comprises a sugar selected from the group of basic sugars consisting of cellobiose, trehalose, isomaltose, nystose and sucrose or an allosteric effector selected from the group consisting of pyrodoxyl-5-phosphate, 2,3-phosphoglycerate and sodium citrate;
an oxygen carrier bound to said oxygen carrier anchor coating; and
an exterior layer of lipid.

5,306,509
PREVENTION AND TREATMENT OF ORAL LESIONS
Robert E. Turner, 421 Marble Dr., Corsopolis, Pa. 15108
Continuation of Ser. No. 26,738, Mar. 17, 1987, abandoned. This application Oct. 12, 1989, Ser. No. 423,500
Int. Cl.[5] A61K *33/40, 33/00*
U.S. Cl. 424—616 **13 Claims**

1. A method for prophylaxis and treatment of oral lesions incident to use of a chemotherapeutic agent, the method comprising the steps of:
identifying a patient with a susceptibility to or already having oral lesions incident use of a chemotherapeutic agent; and
orally rinsing said patient multiple times per day for a period of time at least as long as the chemotherapeutic agent is administered, and until the patient is hematologically competent, with a premixed aqueous solution consisting essentially of between about 0.1% and about 0.8% hydrogen peroxide, and between about 0.1% and about 0.4% sodium bicarbonate,
wherein the premixed aqueous solution is therapeutically effective for at least 6 days after mixture stored in a light impeding container.

5,306,510
AUTOMATED PIPETTING SYSTEM
Walter Meltzer, New Milford, Conn., assignor to Cyberlab, Inc., Norwalk, Conn.
Continuation-in-part of Ser. No. 144,576, Jan. 14, 1988, Pat. No. 5,055,263. This application Feb. 1, 1991, Ser. No. 649,710
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] B01L *3/02*
U.S. Cl. 422—65 **20 Claims**

1. An automated pipetting system for performing programmed pipetting quantitative transfer of fluids between preselected units of an array of test tubes comprising:
a horizontal table for holding test tube arrays;
a substantially rigid overhead frame defining a horizontal X-Y pipetting area, which is spaced vertically above said horizontal table for holding the test tube arrays;
a pair of X-axis guide shafts fixedly mounted and spaced apart in parallel on two opposite sides of said frame;
a pair of X-axis helical screw shafts rotatably mounted in the frame, each disposed adjacent and parallel to a respective one of said X-axis drive means operatively connected to said pair of X-axis screw shafts for driving said X-axis screw shafts synchronously in rotation;
a subframe assembly having a pair of X-axis roller sections, each X-axis roller section of said pair having a support wall provided with a helix engagement portion which threadedly engages one of said X-axis helical screw shafts for moving said subframe assembly along an associated X-axis guide shaft in the X-axis directions in response to rotation of the associated X-axis helical screw shaft;
a pair of Y-axis guide shafts supported on the subframe assembly by being sections connected at its opposite ends to said pair of X-axis roller operatively, said four X-axis shafts being spaced parallel to each other and perpendicular to said pair of Y-axis guide shafts;
a Y-axis helical screw shaft rotatably mounted in said pair of Y-axis roller sections parallel to the two Y-axis guide shafts;

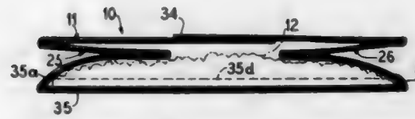


Y-axis driving means operatively connected to said Y-axis helical screw shaft for driving said Y-axis screw shaft in rotation;
a carriage having a pair of Y-axis roller sections rolling on the pair of Y-axis guide shafts, and further having a support wall provided with a helix engagement portion engaging said Y-axis helical screw shaft for moving said carriage in the Y-axis direction in response to rotation of said Y-axis helical screw shaft;
at least one Z-axis modulator removable unit having at least one row of probes said Z-axis modular unit being removably mounted on said carriage for movement in the Z-axis directions by a Z-axis drive means;
said Z-axis drive means being operatively connected to each probe for independently driving respective ones of said probes in the Z-axis direction relative to the test tube array on said table, said Z-axis direction being perpendicular to said X and Y axes directions; and
computer control means operatively connected to said X, Y and Z axes drive means.

5,306,511
ALKALINE ADDITIVE FOR DRINKING WATER
Sang Y. Whang, Miami, Fla., assignor to Sang Whang Enterprises, Inc., Miami, Fla.
Filed Mar. 18, 1993, Ser. No. 33,011
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—66 **15 Claims**

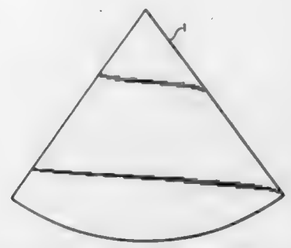
1. A concentrated alkaline booster solution that is to be added to normal drinking water in order to increase the pH value of said drinking water, said booster solution comprising:
a combination of potassium hydroxide and sodium hydroxide mixed in a ratio of about one part combination to about nine parts water in order to formulate said concentrated alkaline booster.

5,306,512
METHOD AND MEANS FOR ENHANCING MICROWAVE POPPING OF POPCORN
Robert H. Blamer, Westmont, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.
Continuation of Ser. No. 16,522, Feb. 17, 1987, abandoned, and a continuation of Ser. No. 732,139, May 9, 1985, abandoned. This application Jul. 24, 1988, Ser. No. 384,077
Int. Cl.[5] B65B *25/22*; B65D *81/34*
U.S. Cl. 426—107 **14 Claims**



1. A sealable bag for receiving a charge of popcorn and shortening for microwave popping, comprising:
a two-ply bag having side gussets and one sealed end adapted to be folded along spaced lines extending transversely to said gussets to define an area on which the corn and shortening is to be placed, said area being in registration with a printed layer of metallized ink on an unexposed surface of one of the plies of said bag.

5,306,513
CONES FORMED FROM ROLL DOUGH
Joyce Colucci, 1 Connel Dr., West Orange, N.J. 07052, and William A. May, 14 Mockingbird Dr., Hackettstown, N.J. 07840
Continuation of Ser. No. 402,786, Sep. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 922,675, Oct. 24, 1986, abandoned. This application Nov. 15, 1991, Ser. No. 793,505
Int. Cl.[5] A21D *13/08*
U.S. Cl. 426—139 **3 Claims**



1. A process for making a cookie cone from a roll dough composition, said roll dough composition having a moisture content sufficient to provide a baked cone having the texture, appearance and consistency of a cookie, said baked cone having a water content of from about 3.0 wt. % to about 10 wt. %, said process comprising the following steps:
cooling said roll dough composition;
shaping said roll dough composition about the exterior of a cone form to provide a shaped cone;
refrigerating said shaped cone; and
heating said shaped cone supported solely by said cone form and free of external support to effect baking of the dough into a cookie cone.

5,306,514
SOLID, NONDIGESTIBLE, FAT-LIKE COMPOUNDS AND FOOD COMPOSITIONS CONTAINING SAME
James C. Letton, Forest Park; Deborah J. Back, Cleves; John R. Baginski, Loveland; Joseph J. Elsen, Cincinnati; Timothy B. Guffey; Jeffrey J. Kester, both of West Chester, and David J. Weisgerber, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 751,406, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 514,794, Apr. 26, 1990, abandoned. This application Jun. 24, 1993, Ser. No. 81,959
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—531 **30 Claims**

1. A polyol fatty acid polyester having a complete melting point above about 25° C. wherein:
a) the polyol has at least 4 hydroxyl groups,
b) the ester groups consist essentially of (i) C_{12} or higher unsaturated fatty acid radicals or a mixture of said unsaturated radicals and C_2 to C_{12} saturated fatty acid radicals, and (ii) C_{20} or higher saturated fatty acid radicals, the molar ratio of (i):(ii) is from about 3:5 to about 1:1, and
c) at least 4 of the hydroxyl groups of the polyol are esterified.

5,306,515
REDUCED CALORIE POURABLE SHORTENING, COOKING OILS, SALAD OILS OR LIKE COMPOSITIONS
James C. Letton, Forest Park; John R. Baginski, Loveland; Joseph J. Elsen, Cincinnati; Timothy B. Guffey, West Chester; James B. Hirshorn, Cincinnati; Jeffrey J. Kester, West Chester, and David J. Weisgerber, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 755,375, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 514,903, Apr. 26, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 85,461
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—531 **33 Claims**

1. A pourable composition comprising:
(A) a solid polyol fatty acid polyester having a complete melting point above about 37° C. wherein
(i) the polyol has at least about 4 hydroxyl groups,
(ii) the ester groups are comprised of (a) fatty acid radicals selected from the group consisting of C_{12} or higher unsaturated fatty acid radicals, C_2–C_{12} saturated fatty acid radicals, or mixtures thereof, and (b) C_{20} or higher saturated fatty acid radicals at a molar ratio of (a):(b) being from about 1:15 to about 1:1, and.
(iii) at least about 4 of the hydroxyl groups of the polyol are esterified;
(B) a liquid nondigestible oil having a complete melting point below about 37° C;
(C) from 0% to about 90% by weight of a digestible oil having less than 5% solids at 21° C.; and
(D) from 0% to about 10% hardstock;
wherein the ratio of (A) to (B) is from about 1:99 to about 9:91 wherein the pourable composition has a yield point of not more than about 100 dynes/cm^2, wherein at least 15% by weight of the fatty acid radicals in (A) are C_{20} or higher saturated fatty acid radicals, wherein the slope of the SFC profile of the mixture of (A) and (B) between 37° C. and 21.1° C. is from 0 to about −75, and wherein the combined level of (A) and (B) in said composition is at least about 10% by weight.

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5,306,516

SHORTENING COMPOSITIONS CONTAINING POLYOL FATTY ACID POLYESTERS

James C. Letton, Forest Park; Joseph J. Elsen, Cincinnati; Timothy B. Guffey; Jeffrey K. Koster, both of West Chester, and David J. Weisgerber, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 755,254, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 514,793, Apr. 26, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 85,467

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] **A23L** *1/00*

U.S. Cl. 426—531 **31 Claims**

1. A shortening comprising:

(A) a solid polyol fatty acid polyester having a complete melting point about 37° C. wherein

(i) the polyol has at least about 4 hydroxyl groups,

(ii) the ester groups are comprised of (a) fatty acid radicals selected from the group consisting of C_{12} or higher unsaturated fatty acid radicals, C_2–C_{12} saturated fatty acid radicals, or mixtures thereof, and (b) C_{20} or higher saturated fatty acid radicals at a molar ratio of a:b being from about 1:15 to about 1:1, and

(iii) at least about 4 of the hydroxyl groups of the polyol are esterified;

(B) a liquid nondigestible oil having a complete melting point below about 37° C.;

(C) from 0% to about 90% by weight of a digestible oil having an iodine value between about 75 and about 150;

(D) from 0% to about 50% intermediate melting fraction triglyceride having an iodine value between about 25 and about 75;

(E) from 0% to about 20% by weight hardstock; and

(F) from 0% to about 15% by weight other shortening ingredients;

wherein the ratio of (A) to (B) is from about 1:99 to about 9:91, wherein the shortening composition has a yield point more than about 100 dynes/cm^2, wherein the combined level of (A) and (B) is greater than 10%, wherein at least 15% by weight of the fatty acid radicals in (A) are C_{20} or higher saturated fatty acid radicals and wherein the slope of the SFC profile of the mixture of (A) and (B) between 37° C. and 21.1° C. is between 0 and about −0.75.

5,306,517

WATER-IN-OIL DISPERSION AND PROCESS FOR PREPARING SUCH DISPERSION

Ian T. Norton, Rushden, Great Britain, and Jeffrey Underdown, Hamburg, Fed. Rep. of Germany, assignors to Van Den Bergh Foods Co., Division of Conopco Inc, Lisle, Ill.

Division of Ser. No. 807,023, Dec. 10, 1991, Pat. No. 5,151,290, which is a continuation of Ser. No. 521,517, May 10, 1990, abandoned. This application Jan. 26, 1992, Ser. No. 904,911

Claims priority, application European Pat. Off., May 16, 1989, 89201209.7; Feb. 19, 1990, 90200386.2

Int. Cl.[5] **A23D** *7/00*

U.S. Cl. 426—602 **4 Claims**

1. A dispersion comprising less than 23% by wt. of a continuous fat phase and a dispersed gelled aqueous phase comprising gelatin at a concentration of 1.0 to 7.5 times its critical concentration and a combination of one or more gelling agents other than gelatin in a concentration below their critical concentration.

5,306,518

PREPARATION OF FLAVORANTS FROM OIL SEEDS

René E. Chablaix, Lausanne, and Daniel Hug, St-Legier, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Jan. 5, 1993, Ser. No. 486

Claims priority, application Switzerland, Feb. 26, 1992, 596/92

Int. Cl.[5] **A23L** *1/36, 1/221*

U.S. Cl. 426—632 **14 Claims**

1. A process for preparing a flavorant comprising:

heat-treating a first quantity of oilseeds for from 1 minute to 20 minutes at a temperature of from 220° C. to 320° C. to obtain a first quantity of heat-treated oilseeds;

heat-treating a second quantity of oilseeds for from 1 minute to 40 minutes at a temperature of from 140° C. to 180° C. to obtain a second quantity of heat-treated oilseeds;

grinding the first and second heat-treated oilseeds; and

mixing the first and second ground oilseeds.

5,306,519

SYRUP FOR CONFECTIONS AND METHODS FOR USING SAME

Benjamin R. Peterson, West Chicago, and John G. Ashley, St. Charles, both of Ill., assignors to Universal Foods Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 704,829, May 23, 1991, Pat. No. 5,194,288. This application Jan. 26, 1993, Ser. No. 9,582

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] **A23L** *1/0526, 1/053, 1/0532*

U.S. Cl. 426—658 **20 Claims**

1. A syrup that increases in viscosity upon contact with a calcium-containing confection, comprising:

a. an amount of at least one sweetener contributing from about 25 to about 60 percent sugar solids, in water;

b. an amount of at least one sequestrant sufficient to complex substantially all the hardness present in the syrup wherein the sequestrant is a combination of a first type and a second type, the first type being optional and selected from the group consisting of sodium citrate, potassium citrate, and mixtures thereof, the second type being selected from the group consisting of phosphate, polyphosphate, and carbonate compounds; and

c. an amount of at least one calcium reactive gum sufficient to thicken the syrup upon contact with the calcium-containing confection.

5,306,520

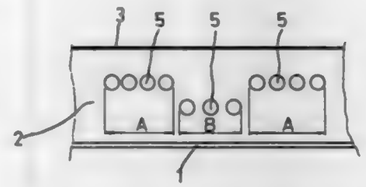
METHOD OF DISCRIMINATING AN ARTICLE

Ching C. You, Tainan, Taiwan, assignor to Yung T. Shen, Tainan, Taiwan

Filed Sep. 20, 1993, Ser. No. 124,049

Int. Cl.[5] **B05D** *5/06*

U.S. Cl. 427—7 **1 Claim**



1. A method of discriminating an article comprising steps of:

a. finishing said article to make it have a smooth base surface;

b. applying a transparent reflective film on the base surface of said article, said transparent reflective film being provided with a plurality of transparent spherical particles forming a first region and a plurality of transparent spherical particles forming a second region which have different distances from said base surface, distance between the transparent spherical particles in said first region and said base surface being just equal to focal length of said transparent spherical particles in said first region, distance between the transparent spherical particles in said second region and said base surface being shorter than focal length of said transparent spherical particles in said second region;

c. coating said transparent reflective film with a transparent protecting film;

whereby the first region will be more bright than the second region when light is vertically projected on the article, but will be less bright than the second region when light is slantwise projected on the article.

5,306,521

PROCESS FOR MANUFACTURING DC SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE

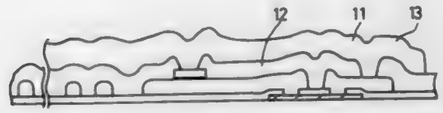
Nobuhiro Shimizu; Kazuo Chinone, and Norio Chiba, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Feb. 24, 1992, Ser. No. 840,343

Claims priority, application Japan, Feb. 26, 1991, 3-031073

Int. Cl.[5] **H01L** *39/24;* **G01R** *33/035*

U.S. Cl. 427—62 **13 Claims**



1. In a process for manufacturing a DC superconducting quantum interference device having a pick-up coil for detecting a magnetic field to produce a signal current, an input coil superconductively coupled to said pick-up coil through two input terminals, a feedback coil for transmitting a signal coming from an external control system, a washer coil magnetically coupled to said input coil and said feedback coil for constituting a superconducting ring, and a Josephson junction connecting a counter electrode and said washer coil and sandwiching a barrier layer between a lower electrode and an upper electrode for converting said signal current into a voltage, the improvement comprising the steps of fabricating at least one of said Josephson junction and said counter electrode simultaneously with fabricating said input coil and said feedback coil by photolithographic patterning and etching a superconducting film.

5,306,522

PROCESS FOR COATING A SUBSTRATE WITH ZINC OXIDE AND USES FOR COATED SUBSTRATES

Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, each is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and Ser. No. 272,539, Nov. 17, 1988, abandoned, each is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Aug. 12, 1991, Ser. No. 743,738

Int. Cl.[5] **B05D** *5/12*

U.S. Cl. 427—126.3 **24 Claims**

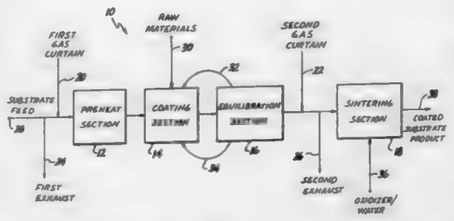
1. A process for coating an inorganic three dimensional substrate with doped zinc oxide comprising:

contacting an inorganic three dimensional substrate which includes external surfaces and shielded surfaces which are at least partially shielded by other portions of said substrate with a composition comprising a zinc oxide-forming compound other than zinc oxide at conditions effective to form a zinc oxide-forming compound containing coating on at least a portion of said substrate;

forming a liquidus zinc oxide forming compound containing coating on at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate;

contacting said substrate with at least one dopant forming component at conditions effective to form a dopant component-containing coating on at least a portion of said substrate including at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate; said contacting being initiated at least prior to the substantially complete oxidation of said zinc oxide forming compound to zinc oxide and

contacting said substrate having said zinc oxide forming compound containing coating and said dopant component-containing coating thereon with an oxidizing agent at conditions effective to convert said zinc oxide forming compound to zinc oxide and form a doped zinc oxide coating on at least a portion of said three dimensions of said substrate including the shielded surfaces of said substrate.



5,306,523

METHOD OF APPLYING ORGANIC SOLVENT-BASED COATING SOLUTION

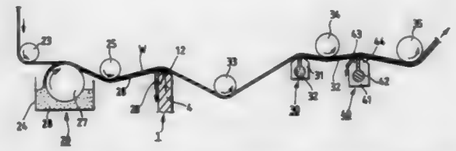
Norio Shibata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 13, 1993, Ser. No. 45,251

Claims priority, application Japan, Apr. 16, 1992, 4-122614

Int. Cl.[5] **H01F** *10/02*

U.S. Cl. 427—129 **8 Claims**



1. A method of applying an organic solvent-based coating solution comprising the following steps:

(a) applying an excess amount of a cleaning fluid to a moving substrate;

(b) scraping off a portion of the cleaning fluid utilizing a first scraping means, a remaining portion of the cleaning fluid remaining on said substrate;

(c) applying an excess amount of the coating solution to the substrate while said remaining portion of the cleaning fluid is in an undried state; and

(d) scraping off a portion of the coating solution utilizing a second scraping means so as to meter the amount of coating solution remaining on said substrate.

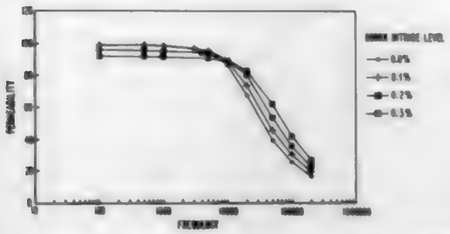
VOL 1161 ISS 4 APR 26 1994

5,306,524

THERMOPLASTIC COATED MAGNETIC POWDER COMPOSITIONS AND METHODS OF MAKING SAME

Howard G. Rutz, Newtown, Pa.; Christopher Oliver, Burlington, and Brooks Quin, Marlton, both of N.J., assignors to Hoeganaes Corporation, Riverton, N.J.

Division of Ser. No. 701,776, May 17, 1991, Pat. No. 5,198,137, which is a continuation-in-part of Ser. No. 365,186, Jun. 12, 1989, Pat. No. 5,063,011. This application Sep. 15, 1992, Ser. No. 945,166
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—216 9 Claims



1. A method of making a magnetic core component comprising;
providing an iron-based powder composition comprising;
iron core particles having a substantially uniform coating of a thermoplastic material surrounding the iron particles, said thermoplastic material constituting from about 0.2% to about 15% by weight of the iron particles as coated; and
boron nitride powder admixed with said coated particles in an amount up to about 1% by weight of the coated particles; and
pressing the composition in a die at a temperature and pressure sufficient to form an integral core component.

5,306,525

METHOD OF PROCESSING ROD

Yasuki Semura; Hiroshi Ando, and Nobuyuki Nagahashi, all of Atsugi, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho and Komatsu Zenoah Kabushiki Kaisha, both of Tokyo, Japan

PCT No. PCT/JP91/00492, § 371 Date Oct. 15, 1992, § 102(e) Date Oct. 15, 1992, PCT Pub. No. WO91/16473, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 15, 1991, Ser. No. 938,251
Claims priority, application Japan, Apr. 25, 1990, 2-107347; Jul. 3, 1990, 2-174520
Int. Cl.[5] B05D *1/32, 1/36, 5/00*
U.S. Cl. 427—259 1 Claim



1. A method of processing the surface of a rod, comprising the steps of:
applying a film onto a portion of the surface where a recessed portion is not to be formed, leaving a portion of the surface exposed where a recessed portion is to be formed;
removing material from the exposed portion of the surface of the rod so as to form a recessed portion in the surface;
plating the surface of the rod while said film remains thereon so as to plate the recessed portion to a level corresponding to the surface of the rod, thereby filling the recessed portion with plated material;
removing said film from the surface of the rod, whereby an unplated portion is provided on the surface of the rod; and
finishing the plated recessed portion and unplated surface portion of the rod.

5,306,526

METHOD OF TREATING NONFERROUS METAL SURFACES BY MEANS OF AN ACID ACTIVATING AGENT AND AN ORGANOPHOSPHATE OR ORGANOPHOSPHONATE AND SUBSTRATES TREATED BY SUCH METHOD

Ralph C. Gray, Butler; Michael J. Pawlik, Glenshaw; Charles F. Kahle, II, Allison Park, and Paul J. Pruchal, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1992, Ser. No. 862,143
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—309 19 Claims

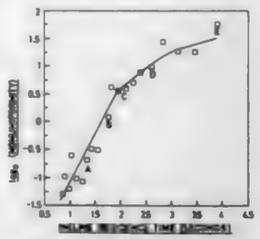
1. A method of treating a nonferrous metallic substrate comprising the steps of:
(a) contacting the metallic substrate with a solution of an acid activating agent, so as to dissolve metal oxide film which may have formed on the nonferrous metallic substrate; followed by
(b) further contacting the metallic substrate contacted in step (a) with a solution of a compound selected from a group consisting of phosphoric acid esters of epoxy compounds and phosphonic acid esters of epoxy compounds.

5,306,527

METHOD OF COATING MULTILAYER PHOTOGRAPHIC ELEMENTS WITH REDUCED RIPPLE DEFECTS

Mark R. Kurz, Rochester; Steven J. Weinstein, Fairport, and Kenneth J. Ruschak, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1992, Ser. No. 868,829
Int. Cl.[5] B05D *1/30*
U.S. Cl. 427—420 16 Claims



1. A method for reducing the tendency toward the formation of ripple imperfections in the coating of a plurality of layers of liquid photographic compositions on a moving web which follows a path from a coating application point to a set point and where said web path has a vertical component not equal to zero, comprising the steps of:
determining conditions for aid coating of said compositions in accordance with the formula:

$$X = \frac{(\rho)(g)(d_T)(L_{VT})}{2\mu(V_w)}$$

wherein X is a ripple value and is less than 35 and wherein

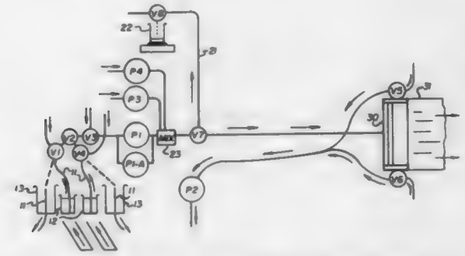
ρ is the critical density of said plurality of layers, g is a constant representing the acceleration due to gravity, d_T is the total thickness of said plurality of layers, L_{VT} is the total vertical distance of said web path, μ is the critical viscosity of said plurality of layers, and V_w is the speed of said moving web;
in accordance with said determined conditions, forming a laminar flow of said plurality of layers which includes said compositions as middle, upper, and lower layers, said middle layer contiguous with both said upper layer and said lower layer; and
receiving said plurality of layers as a layered mass on said moving web at said coating application point.

5,306,528

PRECISION FLUID DELIVERY SYSTEM WITH RAPID SWITCHING CAPABILITY

Walter A. Bruehs, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,223
Int. Cl.[5] B05D *1/26, 1/30*
U.S. Cl. 427—420 4 Claims



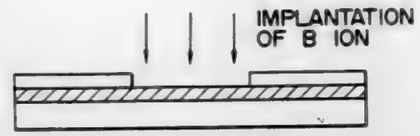
1. A method of switching from a first coating composition to a second coating composition comprising:
providing a moving substrate;
providing a coating hopper having a cavity, a slot in fluid communication with the cavity, inlet means in fluid communication with the cavity and outlet means in fluid connection with the cavity wherein coating composition flows through the slot and is deposited on said substrate via a coating bead or a coating curtain;
supplying the first coating composition to the inlet means at a first volumetric flowrate;
switching to the second coating composition by supplying the second coating composition to the inlet means for a time at a second volumetric flowrate larger than the first volumetric flowrate while discharging from the outlet means coating composition at a third volumetric flowrate, the third flowrate being equal to the first flowrate subtracted from the second flowrate wherein the coating bead or coating curtain is maintained at the first flowrate and wherein coating composition discharged through the outlet means is not deposited on said substrate; and
thereafter supplying the second coating composition to the inlet means at the first volumetric flowrate while preventing flow out of the outlet means.

5,306,529

PROCESS FOR FORMING AN OHMIC ELECTRODE ON A DIAMOND FILM INVOLVING HEATING IN A VACUUM ATMOSPHERE

Kouzo Nishimura, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 3, 1992, Ser. No. 816,722
Claims priority, application Japan, Jan. 8, 1991, 3-000716
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—526 1 Claim



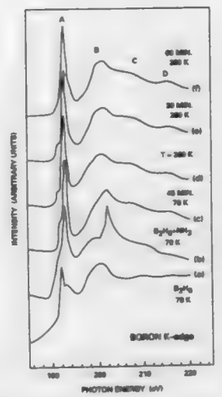
1. A process for forming an ohmic electrode, comprising the steps of:
implanting ions of at least one element selected from the group consisting of B, Li, Na, Ti, W, Ta, Mo, Fe, Ni and Co on a surface area of a diamond film, on which electrodes are to be formed, said surface area being fabricated by photolithography, so as to form an interface level in a vicinity of said surface area,
forming a metal electrode on the ion implanted area, and
heating said metal electrode formed on said diamond film at temperature between 400° C. and 800° C. in vacuum atmosphere of 1×10^{-5} Torr or less to decrease contact resistance between said metal electrode and said diamond film.

5,306,530

METHOD FOR PRODUCING HIGH QUALITY THIN LAYER FILMS ON SUBSTRATES

Myron Strongin, Center Moriches; Mark Ruckman, Middle Island, and Daniel Strongin, Port Jefferson, all of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Nov. 23, 1992, Ser. No. 980,496
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—533 12 Claims



1. A method for selectively providing a highly pure, thin layer film of a compound on the surface of a temperature sensitive substrate, said method comprising:
condensing at least a first and a second molecular precursor on the surface of said substrate under cryosorption conditions suitable for condensation, each of said precursors

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being capable of rendering volatile reactive species at the substrate surface upon irradiation; and

directing an irradiating beam at said precursors under conditions suitable for formation of at least a first and a second reactive species corresponding to said first and second precursors, respectively,

whereby said first and second species react to form said compound upon the surface of said substrate.

5,306,531

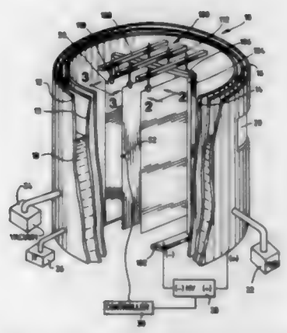
METHOD FOR MANUFACTURE OF PLASMA ION NITRIDED STAINLESS STEEL PLATES

Kenneth J. Laurence, West Chester, Ohio, and Wolfgang Kieferle, Berg, Fed. Rep. of Germany, assignors to Formica Technology, Inc., Wilmington, Del.

Division of Ser. No. 810,244, Dec. 19, 1991, Pat. No. 5,135,944. This application Mar. 30, 1993, Ser. No. 39,654

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—569 **2 Claims**



1. A method for producing a ferrous press plate for manufacturing decorative laminate, the press plate comprising a planar surface substantially defining the surface finish of the decorative laminate, the method including the steps of:

providing a ferrous based press plate;

cleaning the press plate to remove residue therefrom;

suspending the press plate within a vessel capable of nitriding ferrous materials, and introducing a nitrogen or nitrogen as mixture into the vessel;

applying an electrical potential between the press plate and the vessel, attracting thereby nitrogen ions present in the gas or gas mixture onto the press plate and diffusing the nitrogen ions present in the gas or gas mixture into the surface of the press plate, creating thereby a glow discharge plasma about the press plate and sputtering off of ferrous metal ions from the surface of the press plate for subsequent combination with the nitrogen ions to form nitrogen ferrous metal alloy ions;

adjusting the electrical potential between the press plate and the vessel such that the temperature of the press plate remains substantially below 1000° F;

further maintaining the flow discharge plasma about the press plate, now containing the nitrogen and nitrogen ferrous metal alloy ions for an extended period of at least 20 hours to produce a hardened case by exposure to nitrogen ion and the nitrogen ferrous metal alloy ion bombardment generated by the glow discharge to create the hardened case of a hardness of at least 55 Hc, the case having a total case depth of at least 0.0001 inch;

cooling the press plate; and

removing the press plate from the vessel.

5,306,532

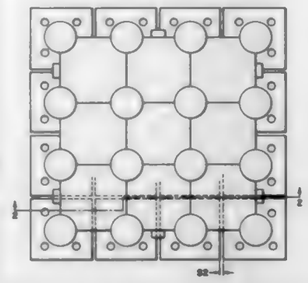
KNIFE-PROOF GARMENT MATERIAL WITH PROTRUDED TEXTURE

Vee C. Taien, P.O. Box 73-145, and Kuang C. Chang, 131, Sheh Jong St., both of Shyh Lin, Taipei, Taiwan

Filed Mar. 4, 1993, Ser. No. 26,294

Int. Cl.[5] B32B *3/10*

U.S. Cl. 428—33 **5 Claims**



1. A protective garment material against penetration, comprising:

an array of cells, each having a protrusion which is cone-shaped;

multiple number of connecting plates placed over said cells for connecting neighboring said cells,

said connecting plates having a shape to conform a section of a complete frame for said protrusion, and to cover areas of each said cell other than said protrusion as an additional protective layer;

means for holding the cells and the connecting plates together.

5,306,533

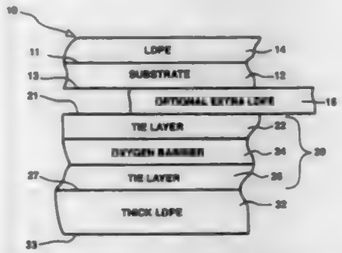
OXYGEN BARRIER CONTAINER

Arthur W. Robichaud, West Worthington, and Michael S. Mabee, Dublin, both of Ohio, assignors to Combibloc, Inc., Columbus, Ohio

Filed Apr. 27, 1992, Ser. No. 874,082

Int. Cl.[5] B65D *85/00*

U.S. Cl. 428—34.2 **9 Claims**



1. An aseptic container prepared from an oxygen barrier laminate structure, said laminate structure comprising:

a substrate having an inner surface and an outer surface;

a first low density polyethylene layer coated on said outer surface of said substrate;

a multi-layer coextrusion having an inner surface and an outer surface wherein said outer surface of said multi-layer coextrusion is coated onto the inner surface of said substrate, said multi-layer coextrusion comprising a first adhesive tie layer, an oxygen barrier material layer and a second adhesive tie layer; and

a second low density polyethylene layer coated on said inner surface of said multi-layer coextrusion, said second low density polyethylene layer having a thickness of at least 1.4 mil.

5,306,534

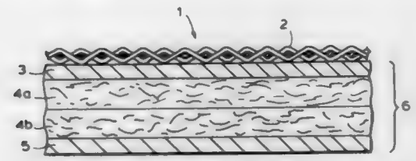
VACUUM CLEANER BAG WITH ELECTROSTATICALLY CHARGED MELTBLOWN LAYER

Mark D. Bosses, Montvale, N.J., assignor to Home Care Industries, Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 673,514, Mar. 22, 1991, abandoned, and a continuation-in-part of Ser. No. 704,873, May 23, 1991, abandoned. This application Jul. 1, 1992, Ser. No. 907,162

Int. Cl.[5] B65D *30/04;* **B01D** *46/00*

U.S. Cl. 428—35.2 **17 Claims**



1. A reusable vacuum cleaner bag fabricated from a multi component sheet, said sheet comprising:

an outermost layer of a textile fabric material, said outer layer being laminated to a non-woven composite material, said composite material comprising:

an inner cover layer of a spun-bonded, non-woven web;

at least one electrostatically charged intermediate melt-blown layer; and

an outer cover layer of a spun-bonded, non-woven web.

5,306,535

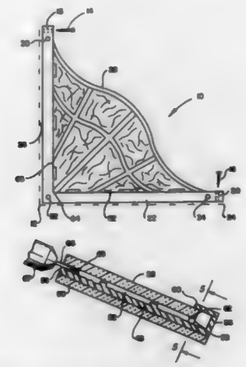
DECORATIVE CORNER INSERT FOR WINDOW OR DOOR OPENINGS WITH CONTOURED PLASTIC RESIN LAMINATED TO GLASS FORMING THE INSERT

B. Jeremiah Shaffer, 1332 Candlewood Dr., Columbus, Ohio 43235

Filed Jun. 19, 1992, Ser. No. 901,201

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—38 **15 Claims**



1. A decorative insert for mounting at the corner of a window or door frame comprising,

a flat glass plate having a thickness and a peripheral edge,

said peripheral edge including two generally planer edges converging to form a second corner having an angle of about the same angle as said frame corner,

a mounting flange bonded to a planer edge for mounting said insert to said frame,

said mounting flange having a thickness greater than the thickness of said glass plate,

apertures extending through said mounting flange to accommodate a fastener extending through said flange to penetrate said frame,

said apertures being located in said mounting flange so as not to pass through said glass plate.

5,306,536

MULTI-LAYER MOISTURE MANAGEMENT FABRIC AND GARMENTS INCORPORATING A MOISTURE MANAGEMENT PANEL

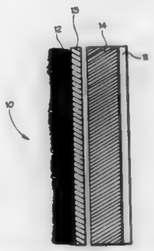
Herbert L. Moretz, 20205 Lola Cir., Davidson, N.C. 28036, and Daniel L. Brier, 1645 Lake Shore Dr., Denver, N.C. 28037

Continuation of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Jan. 11, 1993, Ser. No. 2,650

The portion of the term of this patent subsequent to Jan. 11, 2010, has been disclaimed.

Int. Cl.[5] B32B *33/00*

U.S. Cl. 428—91 **5 Claims**



1. A reusable, launderable, multi-layer moisture management fabric for being incorporated into reusable, launderable garments, and comprising:

(a) a relatively thick knitted or woven inner moisture permeable hydrophobic fabric layer for being positioned next to the skin of the wearer of the garment;

(b) a first, relatively thin knitted or woven intermediate hydrophilic fabric layer positioned adjacent the hydrophobic fabric layer on the side thereof away from the skin of the wearer; and

(c) a second, relatively thick knitted or woven outer hydrophilic moisture permeable fabric layer positioned adjacent the first hydrophilic fabric layer on the opposite side thereof from the hydrophobic fabric layer.

5,306,537

WEAR RESISTANT COATING FOR GLASS RUN CHANNEL

Thomas L. Gustafson, and Lou Citarel, both of Southfield, Mich., assignors to The Standard Products Company, Cleveland, Ohio

Filed Dec. 20, 1991, Ser. No. 812,121

Int. Cl.[5] B32B *25/08;* **E06B** *7/16;* **B05D** *3/02*

U.S. Cl. 428—141 **9 Claims**

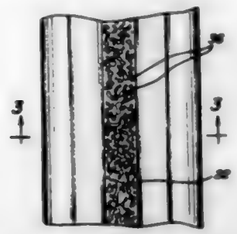
1. A glass run weatherstrip comprising:

a glass run channel having at least a portion thereof made of an ethylene propylene diene rubber;

a discontinuous thermoplastic coating formed by a powder, high density polyethylene material having a molecular weight of from about 60,000 to about 200,000 heat fused directly to said ethylene propylene diene rubber material

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of said glass run weatherstrip for presenting spaced apart surfaces to a glass panel such that a low friction wear



resistant surface having a coefficient of friction of from about 0.100 to about 0.200.

5,306,538

MAGNETIC RECORDING MEDIUM HAVING A RESIN COATED BIAXIALLY ORIENTED POLYESTER SUBSTRATE

Hideshi Kurihara; Tsuyoshi Nagai, both of Sagamihara, and Sadayoshi Miura, Yamato, all of Japan, assignors to Teijin Limited, Osaka, Japan

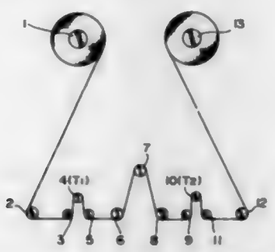
PCT No. PCT/JP91/01365, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/05942, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 7, 1991, Ser. No. 852,263

Claims priority, application Japan, Oct. 8, 1990, 2-268,509; Jun. 5, 1991, 3-159,887

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—141 **4 Claims**



1. A magnetic recording medium formed by providing a magnetic recording layer on the surface of a first film of a biaxially oriented polyester film, which is composed of:

(1) a biaxially oriented base film of aromatic polyester prepared by use of an organotitanium compound as the polymerization catalyst, wherein the aromatic polyester (1) is substantially linear and saturated, and is obtained through polycondensation of an aromatic dibasic acid or an ester-forming derivative thereof, with an aliphatic diol or an ester-forming derivative thereof,

(2) a first continuous film provided on one of the surfaces of said base film, on which the magnetic recording layer is formed, said first continuous film having a weight per unit area of 0.001 to 1 g/m^2 and being composed of a composition consisting essentially of:

(A1) a first binder resin, wherein the first binder resin (A1) in the first continuous film (2) is at least one resin selected from the group consisting of acryl-polyester resin, and a comination of saturated polyester resin and acrylic resin, and

(B1) first fine particles having an average particle diameter of not greater than 0.1 μm, and having on its surface

(C1) first projections derived from said first fine particles at the number of 1.0×10^4 to 1.0×10^9 projections/mm^2, and the surface roughness being 0.001 to 0.01 μm in terms of center line average roughness, and

(3) a second continuous film provided on the other surface of said base film, which forms a surface with a frictional coefficient of 0.6 or less, said second continuous film being composed of a composition consisting essentially of:

(A2) a second binder resin, wherein the second binder resin (A2) of the second continuous thin film (3) is selected from the group consisting of acryl-polyester resin, and a combination of saturated polyester resin and acrylic resin,

(A3) a cellulosic resin, wherein the cellulosic resin (A3) is selected from the group consisting of ethyl cellulose, methyl cellulose, acetyl cellulose, acetoacetyl cellulose, nitrocellulose, carboxylated cellulose, carboxy-methyl cellulose and cellulose acetate butyrate, and

(B2) second fine particles having an average particle diameter not greater than 0.15 μm, and having

(C2) a surface roughness of 0.002 to 0.01 μm in terms of center line average roughness.

5,306,539

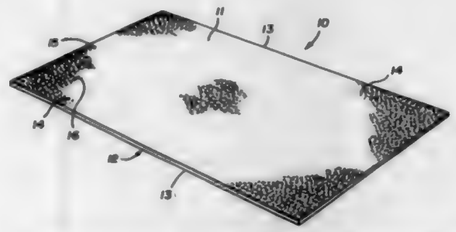
SCORED FIBERBOARD HAVING IMPROVED MOLDABILITY

John T. Clarke, and Egon R. H. Teodorson, Jr., both of St. Charles, Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation of Ser. No. 663,202, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 229,197, Aug. 5, 1988, abandoned. This application Feb. 21, 1992, Ser. No. 840,677

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—156 **30 Claims**



1. A scored board of consolidated fibers comprising a major face with a selected area to be molded, an obeserve face, and a plurality of discontinuous incisions on each of said faces.

5,306,540

TRIM STRUCTURE

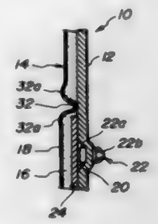
Yoshihisa Hayashi, and Hiroshi Kano, both of Tarui, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jan. 22, 1993, Ser. No. 8,345

Claims priority, application Japan, Jan. 29, 1992, 4-008931[U]

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—172 **10 Claims**



1. A trim structure comprising:

a base member having a first side and a second side, and including at least one depression in said first side;

an inner trim member placed on said first side of said base member, said inner trim member comprising a pad member having a first side facing said first side of said base member and an outer skin member covering a second side of said pad member facing away from said base member, said pad member having a first portion directly adhered to said base member and a second portion not directly adhered to said base member; and

an interlayer member positioned between said base member and the second portion of said pad member in order to cover said depression, said interlayer member having an edge portion, said inner trim member having a concavely shaped pattern formed thereon, said pattern being positioned in the vicinity of said edge portion of said interlayer member.

5,306,541

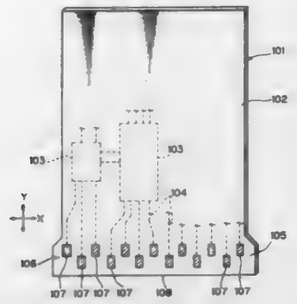
PRINTED CIRCUIT BOARD AND TERMINAL BOARD WITH STAGGERED CONDUCTIVE PADS

Yasushi Kasatani, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 492,854, Mar. 13, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,865

Int. Cl.[5] B32B *23/02*

U.S. Cl. 428—192 **9 Claims**



1. A printed circuit board comprising:

an insulating plate having a surface for supporting a terminal board, said surface including an end;

a staggered planar array of conductive pads disposed /n said surface of said insulating plate at said end portion of said surface; and

printed wiring disposed on said surface of said insulating plate and electrically connected to said conductive pads.

5,306,542

PLASTIC CLOSURE WITH COMPRESSION MOLDED SEALING LINER

John W. Bayer, Perrysburg, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Feb. 11, 1993, Ser. No. 16,356

Int. Cl.[5] B32B *23/02*

U.S. Cl. 428—192 **2 Claims**

1. A plastic closure comprising

a base wall having an inner surface,

a peripheral skirt extending from said base wall, and

a liner compression molded on said inner surface of said base wall,

said liner comprising

(a) ethylene vinyl acetate composition,

(b) a primary fatty acid amide selected from the group consisting of an oleamide and an erucamide,

(c) a bis-fatty acid amide,

the total amount of primary fatty acid amide and bis-fatty acid amide being about 0.5%–1.5% by weight based on the weight of the ethylene vinyl acetate,

the ethylene vinyl acetate comprising about 85%–94% by weight of polyethylene and about 6%–15% by weight of vinyl acetate,

the ratio of primary fatty acid amide to bis-fatty acid amide ranges between 25:75 and 75:25, by weight.

5,306,543

COMPOSITION USEFUL IN TRANSPARENT CONDUCTIVE COATINGS

Boris J. Katsen, Longmeadow, Mass., assignor to Rexham Graphics Inc., South Hadley, Mass.

Division of Ser. No. 603,016, Oct. 25, 1990, Pat. No. 5,158,849. This application Jun. 3, 1992, Ser. No. 893,012

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 **8 Claims**

1. A ground plane comprised of a support and a conductive coating layer thereon, wherein the conductive coating is comprised of ohmic bridged cuprous iodide particles and a binder resin, with an ohmic bridging electrolyte comprised of an alkali metal iodide, thiosulfate, bisulfate, bisulfite or dithionate being present in the conductive coating layer to thereby provide ohmic bridging between the cuprous iodide particles.

5,306,544

PLASTIC COATED PAPER WEB FOR TRAYMATS AND COASTERS

Winfried Ponmeranz, Enger, and Manfred Korn, Kleve, both of Fed. Rep. of Germany, assignors to Eul & Guenther GmbH & Co. KG, Emmerich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 692,169, Apr. 26, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,629

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 3911912

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—195 **9 Claims**



1. A paper web for producing traymats or coasters, comprising, a hygroscopic support paper having two sides, and means for reducing sliding of said support paper, applied on at least one side of said support paper, said sliding reducing means including a coating applied on at least one side of said support paper, said coating forming a discrete structure on said support paper, being raised above said support paper, and increasing static friction, said coating consisting of butylacrylate and methylacrylamide.

5,306,545

MELT-BLOWN NON-WOVEN FABRIC AND LAMINATED NON-WOVEN FABRIC MATERIAL USING THE SAME

Ryutaro Shirayanagi; Akimi Saeki; Kazuhiro Masumoto, and Masaki Shimizu, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,807

Claims priority, application Japan, Dec. 11, 1991, 3-326264; Dec. 25, 1991, 3-343698

Int. Cl.[5] B32B *27/14*

U.S. Cl. 428—198 **35 Claims**

1. A melt-blown non-woven fabric of fine fibers obtained by

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melt-blowing an ethylene-α-olefin copolymer having a density of smaller than 0.900 g/cm^3 and a crystallinity of from 5 to



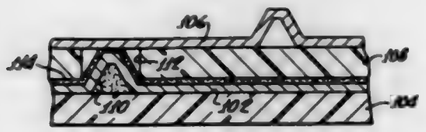
40% or by melt-blowing a resin composition which chiefly comprises said copolymer.

5,306,546

MULTI CHIP MODULE SUBSTRATE

Christopher M. Schreiber, Newport Beach; Haim Feigenbaum, Irvine, and Harold C. Bowers, Rancho Palos Verdes, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,802
Int. Cl.^{5} B32B *9/00*
U.S. Cl. 428—210 **9 Claims**



1. A multi component module substrate comprising:
a plurality of independently formed laminated sheets, each sheet comprising:
an electrically conductive circuit having first and second sides and a plurality of conductive circuit traces,
a plurality of projecting features integral with said traces and projecting from the first side of each of said circuits,
a plurality of contact receiving areas on the second side of each of said circuits, and
a dielectric film laminated to said circuit and having holes aligned with receiving areas of an adjacent circuit,
said sheets being laminated together with the projecting features of each sheet projecting through a hole in the dielectric film of adjacent layer, and
means for electrically connecting said projecting features with said receiving areas, the projecting features of one sheet projecting from the circuit traces of such sheet by a distance substantially equal to the thickness of the dielectric film of an adjacent sheet, whereby the circuit traces and projecting features of the sheet are directly connected only to receiving areas of the circuit of an adjacent sheet.

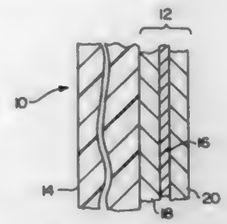
5,306,547

LOW TRANSMISSION HEAT-REFLECTIVE GLAZING MATERIALS

Thomas G. Hood, San Francisco, and Stephen F. Meyer, Los Gatos, both of Calif., assignors to Southwall Technologies Inc., Palo Alto, Calif.

Filed Dec. 14, 1990, Ser. No. 628,893
Int. Cl.^{5} B32B *7/02*; **E06B** *3/24*
U.S. Cl. 428—213 **21 Claims**

1. A heat-reflective glazing material comprising a transparent substrate having a surface and a composite film on the surface,
the composite film having a single discrete layer consisting essentially of metallic silver of from 270Å to 400Å in thickness disposed between two discrete layers of transparent dielectric, one a bottom layer located between the substrate and the silver layer and the other a top layer located on top of the silver layer,
the bottom layer being at least about 30Å in physical thickness and the top layer having an index of refraction at 550 nm of 1.75 to 2.50 and being from 950Å to 1800Å in optical thickness, the thickness of the dielectric layers being selected so as to yield a composite film having a total transmission of available solar energy in the visible wavelengths of 380–750 nm of less than 40% and a reflection of solar energy in all wavelengths of at least about



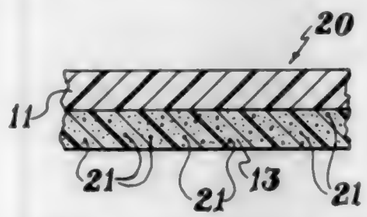
50% and a transmitted and reflected color neutrality such that the maximum transmission at any wavelength between 400Å and 700Å (Tmax(400–700)) is not greater than 1.7 times the minimum transmission at any wavelength between 400Å and 700Å (Tmin(400–700)) and the maximum reflectance at any wavelength between 400Å and 700Å (Rmax(400–700)) is not greater than 1.7 times the minimum reflectance at any wavelength between 400Å and 700Å (Rmin(400–700)), and absolute values for each of L°a°b° color space coordinates, Ta°, Tb°, Ra° and Rb° of less than 6.

5,306,548

COEXTRUDED WEATHERABLE FILM STRUCTURES AND LAMINATES

Vincent S. Zabrocki, Newark, and Robert H. Kelch, Granville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 20, 1992, Ser. No. 886,655
Int. Cl.^{5} B32B *7/02*, *27/08*
U.S. Cl. 428—215 **12 Claims**



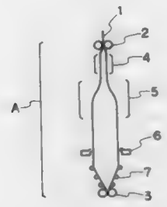
1. A coextruded multilayer weatherable film product adapted to be adhered as a weatherable surface coating onto a substrate in a separate process operation, comprising:
at least a first thermoplastic surface layer of a weatherable polymer comprising (a) AES, ASA, SAN or mixtures thereof or (b) any of the polymers of (a) blended with PVC, CPE, aliphatic polyurethanes or saturated styrenic block copolymers; said first layer having a 1% secant modulus of greater than about 100,000 psi and said first layer having a thickness of about 20 mils or less; and
at least a second thermoplastic layer underlying the weatherable layer, said second layer being adjacent to and adhered to said first layer and said second layer adapted to be adhered to the substrate in a subsequent operation; said second layer having a 1% secant modulus of less than about 200,000 psi and said second layer having a thickness of about 20 mils or less; wherein the total thickness of the coextruded weatherable film is less than 25 mils.

5,306,549

BIAXIALLY STRETCHED POLYETHYLENE FILM

Hideo Isozaki, Yatsushiro; Makoto Hirata, Sentyo, and Masumi Takahashi, Matsudo, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01307, § 371 Date Mar. 27, 1991, § 102(e) Date Mar. 27, 1991, PCT Pub. No. WO91/05004, PCT Pub. Date Apr. 18, 1991
Continuation-in-part of Ser. No. 393,943, Aug. 15, 1989, Pat. No. 5,132,074. This PCT application Oct. 9, 1990, Ser. No. 667,392
Claims priority, application Japan, Apr. 10, 1989, 1-87869; Oct. 9, 1989, 1-261973
Int. Cl.^{5} B32B *27/08*
U.S. Cl. 428—220 **11 Claims**



1. A biaxially stretched polyethylene film comprising a main component of linear low density polyethylene (A) having a density of 0.870 to 0.930 g/cm^3 and a melt flow index of 0.1 to 10 g/10 minutes, and showing, in measurement of a melting point by a differential scanning calorimeter a main peak temperature (Tma) within the range of 118±5° C. in a melting curve obtained when after a temperature of the polyethylene is kept at 190° C. for 30 minutes, the temperature is dropped down to 20° C. at a cooling rate of 100° C./minute and subsequently raised at a heating rate of 10° C./minute, and showing a temperature difference between Tma and Tmb of at least 3° C. wherein Tmb is a main peak temperature in a melting curve obtained when after the temperature of the polyethylene is kept at 190° C. for 30 minutes, the temperature is dropped down to 20° C. at a cooling rate of 10° C./minute and subsequently raised at a heating rate of 10° C./minute.

5,306,550

BIODEGRADABLE COMPOSITION AND SHAPED ARTICLE OBTAINED THEREFROM

Masashi Nishiyama, Kannoji; Jun Hosokawa, Takamatsu; Kazutoshi Yoshihara, Takamatsu; Takamasa Kubo, Takamatsu; Kunio Kanaoka, Sakaide; Kazuo Kondo, Marugame; Satoshi Maruyama; Kenji Tateishi, both of Kagawa, and Akihiko Ueda, Marugame, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology and Okura Industrial Co., Ltd., both of Japan

Continuation-in-part of Ser. No. 718,376, Jun. 20, 1991, abandoned. This application Jun. 28, 1991, Ser. No. 721,766
Claims priority, application Japan, Jun. 29, 1990, 2-170075; Mar. 18, 1991, 3-78584
Int. Cl.^{5} B32B *5/16*, *9/02*; **C08K** *5/00*
U.S. Cl. 428—288 **14 Claims**

1. A biodegradable composition consisting essentially of, in the form of an admixture, 100 parts by weight of cellulose fibers having a length of 3 mm or less and a diameter of 50 μm or less, 10–600 parts by weight of a thermoplastic resin and 2–100 parts by weight of chitosan, said composition produced by a process comprising:
providing (a) an aqueous solution of chitosan and (b) an aqueous dispersion or solution of a thermoplastic resin;
mixing said cellulose fibers with said aqueous solution (a) and said aqueous dispersion or solution (b) to form a mixture; and
drying said mixture to form said composition.

5,306,551

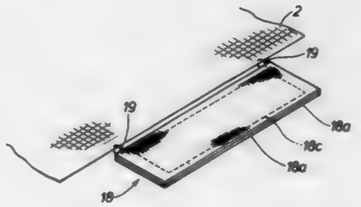
Patent Not Issued For This Number

5,306,552

MAGNETIC POSITION MARKER

Takao Shimizu, Kounosu, Japan, assignor to Nippon Felt Co., Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 889,841
Claims priority, application Japan, Apr. 10, 1992, 4-118413
Int. Cl.^{5} B32B *7/00*
U.S. Cl. 428—251 **6 Claims**



1. A magnetic marker for detection by a magnetic sensor in a process control system, the magnetic marker being secured to a ground fabric during fabrication of material in a needle press, said magnetic marker comprising:
a first fabric base sheet;
a plurality of magnetized fibers attached to a surface of said first fabric base sheet in parallel spaced-apart relationship by an adhesive layer on the surface of said base sheet;
a plurality of fibers for reinforcing and securing said magnetized fibers, said reinforcing fibers being combined with said magnetized fibers and secured to said first base sheet by the adhesive layer; and
a second fabric base sheet secured to said surface of said first fabric base sheet so as to interpose said magnetized fibers and said reinforcing fibers between said first and second fabric base sheets whereby said reinforced magnetized fibers are maintained between said first and second fabric base sheets for proper detection by the magnetic sensor during the needling of the ground fabric wherein said magnetic marker is adapted to be secured to ground fabric used for the production of felt.

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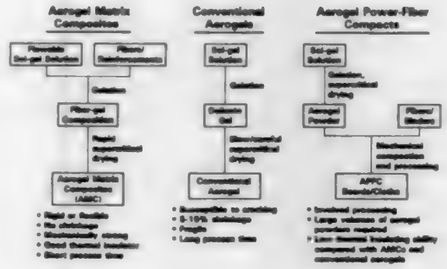
5,306,553
IMPREGNATED FLAT GASKET AND METHOD OF PRODUCING THE GASKET
Bernd Spillner, Leverkusen, and Hans-Rainer Zerfass, Taunusstein-Neuhof, both of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany
Filed Mar. 10, 1992, Ser. No. 849,229
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109681
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—283 **15 Claims**

1. An impregnated flat gasket useful as a cylinder head gasket for an internal-combustion engine, comprising:
a fiber mat comprised of:
from about 2 to about 20 weight percent of a synthetic organic fiber, as the sole fibrous constituent, composed of at least one polymer selected from the group consisting of a polyaramid and a polyamidimide;
from about 10 to about 70 weight percent of a first inorganic filler which has a grain size having a maximum of 0.01 mm and which has a specific surface area having a maximum of 30 m^2/g;
from about 10 to about 70 weight percent of a second inorganic filler which is composed of particles having a shape which is one of needle-shaped or globular, which has a grain size having a maximum of 0.01 mm, and which has a specific surface are ranging from 50 to 350 m^2/g;
from about 0.5 to about 1 weight percent of zinc oxide; and
from about 3 to about 10 weight percent of a nitrile butadiene latex.

5,306,554
CONSOLIDATED MEMBER AND METHOD AND PREFORM FOR MAKING
Michael G. Harrison, West Chester; Michael L. Millard, Sharonville, and Andrew Szweda, Middletown, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Continuation of Ser. No. 341,001, Apr. 14, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 866,944
Int. Cl.[5] B32B *19/06;* **C04B** *35/02*
U.S. Cl. 428—283 **33 Claims**

13. A composite member preform, comprising:
a plurality of reinforcing fibers; and
a matrix mixture interspersed about the fibers;
the matrix mixture including a solvent, a binder, and a plasticizer, at least the solvent and binder being removable from the matrix mixture by heating the preform to a first temperature below a preselected sintering temperature, the matrix mixture further including a discontinuous ceramic material which consolidates in a substantially solid phase and produces a predetermined shrinkage amount and associated stresses by heating at a preselected sintering temperature at ambient pressure, and a particulate inorganic filler having a lathy-type crystal shape which exhibits net expansion relative to the discontinuous material when heated to the preselected sintering temperature, the matrix preform being pliable prior to heating to the first temperature;
The proportion of the inorganic filler in the mixture being selected so that expansion of the filler substantially counteracts matrix stresses due to consolidation of the discontinuous material and thermal stresses between the matrix and fibers at elevated temperatures.

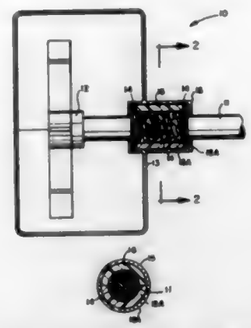
5,306,555
AEROGEL MATRIX COMPOSITES
Sangeeta Ramamurthi, and Mukund Ramamurthi, both of West Worthington, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio
Continuation-in-part of Ser. No. 761,577, Sep. 18, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 904,777
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—289 **23 Claims**



1. A method for preparing an aerogel matrix composite comprising:
a. preparing an aerogel precursor;
b. mixing fibers with the aerogel precursor;
c. aging the aerogel precursor containing the fibers to obtain a gelled composition;
d. completely submerging the gelled composition in a liquid suitable for supercritical drying;
e. heating and pressurizing the gelled composition at a rate between about 75° C. per hour to about 500° C. per hour until at least the critical temperature and pressure of a liquid in the gel composition are reached;
f. maintaining at least the critical temperature and pressure for a time sufficient to transform the liquid to a supercritical fluid; and
g. reducing the pressure and temperature to ambient conditions by reducing the pressure at a rate above 500 psi per hour, and maintaining the temperature above at least the critical temperature until the critical pressure transition is passed.

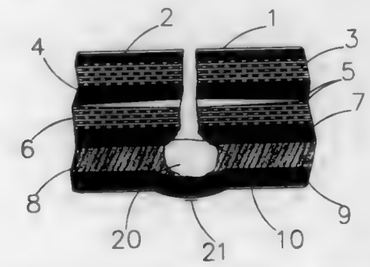
5,306,556
GASKETS AND SEALING MATERIAL
Michael Rowland, Altrincham, United Kingdom, assignor to R. K. Carbon Fibers, Ltd., Scotland
Filed Nov. 7, 1991, Ser. No. 788,849
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—293 **12 Claims**

1. In a mechanical device having a chopped fiber packing or gasketing or sealing yarn, the improvement wherein said yarn or chopped fiber packing comprises linear carbonaceous fibers having a carbon content of greater than 65 percent and not more than 78 percent, and an elongation to break of greater than 2.0% said carbonaceous fibers being derived from heat



treated oxidized fibers selected from acrylonitrile homopolymers, acrylonitrile copolymers and acrylonitrile terpolymers.

5,306,557
COMPOSITE TACTICAL HARD BODY ARMOR
Thomas J. Madison, 25506 Many Oak Dr., Spring, Tex. 77380
Filed Feb. 27, 1992, Ser. No. 843,947
Int. Cl.[5] F41H *1/02;* **B32B** *5/12*
U.S. Cl. 428—304.4 **10 Claims**



1. A hard body armor set of ballistic material layers for Class III protection comprising:
a first subset of two carbon fiber layers, said first subset constituting an outer surface;
a second subset of a plurality of aramid layers, consisting of unidirectional aramid fibers, said layers so disposed so that said fibers have orientations at 22.5° increments;
a third subset of a plurality of polyethylene layers consisting of unidirectional polyethylene fibers, said layers so disposed so that said fibers have orientations at 22.5° increments;
a fourth subset of two metallic foil layers without any binder disposed between them;
a fifth subset of a plurality of aramid layers, consisting disposed so that said fibers have orientations at 22.5° increments;
a sixth subset of a plurality of polyethylene layers consisting of unidirectional polyethylene fibers, said layers so disposed so that said fibers have orientations at 22.5° increments;
a seventh subset of open-celled, unicellular, porous, rigid material,
an eighth subset of a plurality of polyethylene layers consisting of unidirectional polyethylene fibers, said layers so disposed so that said fibers have orientations at 22.5° increments;
a ninth subset of two carbon fiber layers;
resin systems disposed upon each of the layers in the first subset, the second subset, the third subset, the fifth subset, the sixth subset, the eighth subset, and the ninth subset;
a surface of each of said subsets in full contact with a surface of the next higher-numbered subset;
said hard body armor set, after arrangement of said subsets, being molded and heated until cured, and having a total thickness ranging from 0.880 to 1.475 inches.

5,306,558
DOUBLE-LAYERED RUBBER LAMINATE
Masaharu Takahashi, and Tsutomu Nakamura, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 32,588
Claims priority, application Japan, Mar. 17, 1992, 4-91812
Int. Cl.[5] B32B *25/20*
U.S. Cl. 428—331 **3 Claims**

1. A double-layered rubber laminate which is an integral body consisting of
(A) a first layer of a rubber which is a cured organopolysiloxane composition comprising
(a) 100 parts by weight of an organopolysiloxane represented by the average unit formula $R_aSiO_{(4-a)/2}$, in which R is an unsubstituted or substituted monovalent hydrocarbon group and the subscript a is a positive number in the range from 1.95 to 2.05;
(b) from 5 to 500 parts by weight of a finely divided silica powder having a specific surface area of at least 1 m^2/g; and
(c) from 0.1 to 5 parts by weight of a first organic peroxide;
and
(B) a second layer of a rubber which is a cured acrylic rubber-based composition comprising
(d) 100 parts by weight of an acrylic rubber comprising a copolymer of from 99.99% to 90% by weight of the (meth)acrylate ester monomer and from 0.01% to 10% by weight of a vinyl silyl-containing monomer which has another ethylenically unsaturated group indirectly bonded to the silicon atom;
(e) from 10 to 200 parts by weight of a reinforcing filler having a specific surface area of at least 30 m^2/g; and
(f) from 0.1 to 10 parts by weight of a second organic peroxide,
the first and second rubber layers being integrally bonded to each other by curing a laminate consisting of a first layer of the organopolysiloxane composition before curing and a second layer of the acrylic rubber-based composition before curing.

5,306,559
POLYMERIC FILMS
Roy Christopherson, Swindon, England, assignor to Courtaulds Films (Holdings) Ltd., United Kingdom
Filed Jun. 4, 1993, Ser. No. 71,491
Claims priority, application United Kingdom, Jun. 5, 1992, 9211938
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—349 **6 Claims**

1. A biaxially oriented polymeric film comprising
(a) a core layer comprising a propylene homopolymer;
(b) a first heat sealable layer on one surface of the core layer and including an ionic hydrocarbyl sulfonate and a non-silica, non-migratory slip or antiblock agent; and
(c) a second heat sealable layer on the other surface of the core layer and including a non-migratory slip or antiblock agent but substantially no ionic hydrocarbyl sulfonate.

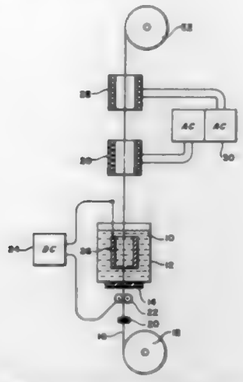
VOL 1161 ISS 4 APR 26 1994 UMI

5,306,560

CERAMIC COATED FIBERS

Robert J. Wright, Tequesta, and William J. Dalzell, Jr., Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 7, 1991, Ser. No. 637,849
Int. Cl.[5] B05D *3/02*
U.S. Cl. 428—379 **20 Claims**



1. An essentially defect-free metal oxide coated fiber, said coated fiber produced by:

a) providing a sol comprising metal hydrate particles selected from the group consisting of aluminum hydrate, yttrium hydrate, and mixtures thereof, said particles being less than 150 Angstroms in size, said sol also comprising an alcohol such that the molar ratio of said alcohol to said metal hydrate is from about 50 to about 70;

b) electrophoretically depositing particles from said sol onto on electrically conductive fiber core by applying a direct current potential between said fiber core and an anode, said potential being from about 0.1 to about 100 volts, for sufficient time to obtain a uniform deposit of the desired thickness of metal hydrate on said fiber core, while providing means for removal of hydrogen gas generated by said electrophoresis;

c) removing the metal hydrate coated fiber core from said sol;

d) heating the metal hydrate coated fiber core to dry the coating and to transform said metal hydrate to the corresponding metal oxide; and

e) recovering the metal oxide coated fiber.

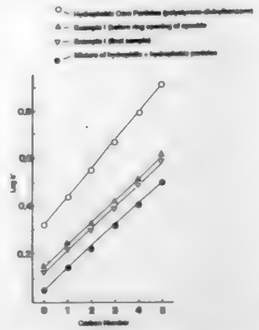
5,306,561

PREPARATION OF SURFACE-FUNCTIONAL POLYMER PARTICLES

Jean M. J. Frechet, Ithaca, N.Y., and Ken Hosoya, Kyoto, Japan, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 20, 1992, Ser. No. 841,971
Int. Cl.[5] B32B *5/16, 9/00*
U.S. Cl. 428—402 **27 Claims**

1. A process for producing surface functionalized polymer materials comprising (i) adding a non-emulsified functional monomer which further contains at least one polymerizable vinyl group into an aqueous phase of a dispersion of soluble polymer particles which are insoluble in water, soluble in an organic material in the dispersion, and which are swollen with an emulsion of a polymerizable vinyl monomer and (ii) copolymerizing (a) the emulsified monomer in the swollen particles and (b) the non-emulsified functional monomer, thereby



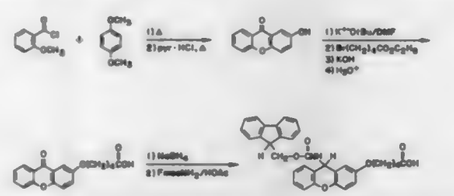
forming an insoluble polymer particle having a hydrophobic polymer core and a functionalized polymer outer layer.

5,306,562

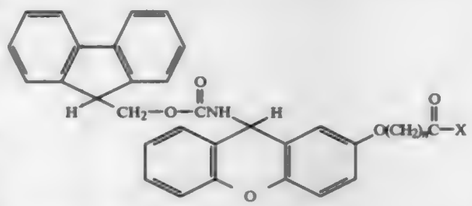
XANTHENYLAMIDE HANDLE FOR USE IN PEPTIDE SYNTHESIS

George Barany, Falcon Heights, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 576,232, Aug. 31, 1990, Pat. No. 5,117,009. This application May 15, 1992, Ser. No. 884,653
Int. Cl.[5] B32B *5/16*; C08F *8/00, 2/00*; C07D *231/00*
U.S. Cl. 428—402 **6 Claims**



1. A xanthenylamide compound bound to a solid support for use in peptide synthesis having the formula:



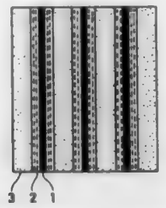
wherein n is an integer from about 1 to about 10; and X is the amino component of an amide linkage that is covalently linked to a solid support.

5,306,563

HIGH-PERFORMANCE C/C COMPOSITE

Hiroshi Shioyama, Ikeda; Isao Souma, Ibaraki; Kuniaki Tatsumi, and Masaki Narisawa, both of Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Division of Ser. No. 664,664, Mar. 5, 1991, Pat. No. 5,215,689. This application Dec. 9, 1992, Ser. No. 987,606
Claims priority, application Japan, Mar. 20, 1990, 2-71579
Int. Cl.[5] D01F *11/12*; C01B *31/02*
U.S. Cl. 428—408 **11 Claims**



1. A C/C composite having improved mechanical strength and thermal conductivity and containing carbon fibers and a carbon matrix having a contacting portion in contact with said carbon fibers and a remaining portion, wherein said contacting portion and said remaining portion have different crystal structures, said composite being produced by a process comprising the steps of:

(1) placing a carbonizing catalyst and carbon fibers in a container and evacuating said container;

(2) heating said evacuated container to intercalate said carbonizing catalyst into said carbon fibers;

(b 3) impregnating said intercalated carbon fibers with a carbon matrix precursor to form an impregnated product, and

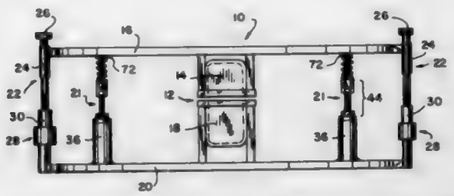
(4) heating said impregnated product under pressure to deintercalate said carbonizing catalyst from said carbon fibers.

5,306,564

MOLD CLOSURE SYSTEM

Gary R. Gazikowski, Franklin, Wis., assignor to The Kelch Corporation, Cedarburg, Wis.

Filed Feb. 11, 1993, Ser. No. 16,347
Int. Cl.[5] B29C *37/00*
U.S. Cl. 425—408 **3 Claims**



1. A mold closure apparatus having first and second mold portions that are positionable with respect to each other so as to form a mold and so as to define a seam between surfaces of the respective mold portions that abut against each other, the improvement comprising:

a resilient shock absorber linked to one of the mold portions and projecting therefrom such that before the mole portions form the seam, the shock absorber will contact an element linked to the second mold portion; and

a clamp for causing movement of the mold portions towards each other;

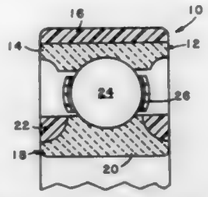
wherein the shock absorber has a spring that provides resiliency to the shock absorber, and there is an adjusting means operatively connected to the spring to vary a resistance force that the sprig provides against said element when the mold portions are positioned to form the seam.

5,306,565

HIGH TEMPERATURE CERAMIC COMPOSITE

Normand D. Corbin, Northborough; Brad J. Miller, Worcester; Kazimierz Sawicki, Worcester, all of Mass.; John W. Lucek, Canton, and James G. Hannoosh, Avon, both of Conn., assignors to Norton Company, Worcester, Mass.

Filed Sep. 18, 1990, Ser. No. 584,223
Int. Cl.[5] B32B *15/04, 17/06*
U.S. Cl. 428—432 **25 Claims**



1. A composite ceramic structure comprising a dense ceramic monolith bonded to a fiber-reinforced ceramic body having a fracture toughness of greater than about 20 MPam$^{\frac{1}{2}}$ by a high temperature resistant interlayer wherein the ceramic monolith does not fail catastrophically when placed in stress, and wherein the fiber in the fiber-reinforced ceramic body has a debonding layer disposed thereon.

5,306,566

METHOD OF INHIBITING THE REDUCTION OF THE BOND STRENGTH BY WATER OF A METAL-THERMOPLASTIC POLYMER METAL SANDWICH

Jan Bottema, Santpoort-Zuid, Netherlands, assignor to Hoogovens Groep B.V., Ca Ijmuiden, Netherlands

Division of Ser. No. 759,915, Sep. 13, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,596
Claims priority, application Netherlands, Sep. 14, 1990, 9002022
Int. Cl.[5] B32B *15/08, 27/28*; C08K *5/09*
U.S. Cl. 428—461 **6 Claims**

1. The method of inhibiting the reduction of the bond strength by water of a metal-thermoplastic polymer-metal sandwich, where the thermoplastic core contains carbon to carbon double bonds, by incorporating 0.01 to 1.0% of a fatty acid component which comprises at least one fatty acid as an additive.

5,306,567

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo; Charles H. Foster, and Yeong-Ho Chang, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 982,545, Nov. 27, 1992. This application Mar. 22, 1993, Ser. No. 34,960
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—482 **11 Claims**

1. A thermosetting powder coating composition comprising

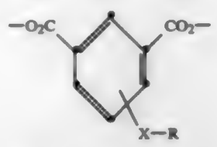
(I) about 95 to 70 weight percent of a curable polyester having a number average molecular weight of about 800 to about 6,000, a weight average molecular weight of about 3,000 to about 40,000, and a T_g of greater than about 50° C., comprising

(a) about 20 to about 60 mol % of diol residues, based on the total moles of components (a), (b), (c), (d), (e) and (f);

(b) 0 to about 20 mol % of polyol residues, based on the total moles of components (a), (b), (c), (d), (e) and (f);

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(c) about 5 to about 40 mol % of hydroxy functionalized isophthalic acid residues, based on the total moles of (a), (b), (c), (d), (e) and (f); said hydroxy functionalized residues having the formula



wherein X is selected from —O—, —S—, —SO_2— or —O—(CH_2—)$_a$ (n is 1 to about 6); R is a phenyl radical containing 1–3 hydroxy groups with the proviso that when X is —O— or —S—, that R may also be hydrogen;

(d) about 10 to about 40 mol % of diacid residues, derived from an aromatic diacid or a cycloaliphatic diacid or a mixture thereof, based on the total moles of (a), (b), (c), (d), (e) and (f);

(e) about 0 to about 40 mol % of diacid residues derived from an aliphatic diacid, based on the total moles of components (a), (b), (c), (d), (e) and (f);

(f) 0 to about 10 mol % of residues derived from trimellitic acid or trimellitic anhydride, based on the total moles of components (a), (b), (c), (d), (e) and (f); and

(II) about 5 to 30 weight percent of a cross-linking agent.

5,306,568

HIGH YOUNG'S MODULUS MATERIALS AND SURFACE-COATED TOOL MEMBERS USING THE SAME

Yukinori Matsuda, Nagoya; Kozo Ozaki, Tohkai, and Koichi Sudo, Nagoya, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 24, 1992, Ser. No. 873,167

Claims priority, application Japan, Apr. 26, 1991, 3-097426; Jun. 5, 1991, 3-161143

Int. Cl.[5] B32D *15/00*; C22C *38/36*

U.S. Cl. 428—548 **13 Claims**

8. A surface-coated tool member formed by coating on a substrate a hard coating layer having a Young's modulus of not less than 24,000 kfg/mm^2, wherein said substrate contains 14.5–70% by volume of hard particles, said particles having a Young's modulus of not less than 24,000 kfg/mm^2, in a carbon steel or alloy steel matrix.

5,306,569

TITANIUM-TUNGSTEN TARGET MATERIAL AND MANUFACTURING METHOD THEREOF

Akitoshi Hiraki, Yasugi, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 708,340, May 31, 1991, Pat. No. 5,160,534. This application Jul. 16, 1992, Ser. No. 914,544

Claims priority, application Japan, Jun. 15, 1990, 2-157287; Feb. 12, 1991, 3-040999; Mar. 20, 1991, 3-081643

Int. Cl.[5] B22F *3/16*

U.S. Cl. 428—569 **9 Claims**



1. A titanium-tungsten target material comprising a titanium-tungsten alloy phase which occupies 98% or more of a cross-sectional area of the titanium-tungsten target material.

3. A method of manufacturing a titanium-tungsten target, comprising the steps of preparing an ingot formed by melting tungsten and titanium;

pulverizing the ingot into a powder; and

sintering the powder.

5,306,570

CLAD STRUCTURAL MEMBER WITH NBTIAL HIGH HF ALLOY CLADDING AND NIOBIUM BASE METAL CORE

Melvin R. Jackson, Niskayuna; Mark G. Benz, Burnt Hills, and John R. Hughes, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1992, Ser. No. 953,911

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] C22C *1/09*

U.S. Cl. 428—614 **6 Claims**

1. A composite article adapted for use at temperatures of 1000° C. or above comprising at least one ductile reinforcing element having a reinforcement ratio of 50 or less formed of a niobium base alloy of body centered cubic crystal form, bonded to a cladding of an alloy comprising in atom percent $Nb_{balance}$-Ti_{32-45}-Al_{3-18}-Hf_{8-15}, said composite article being ductile and having higher tensile strength and rupture strength at temperatures above 1000° C. than the cladding alloy.

5,306,571

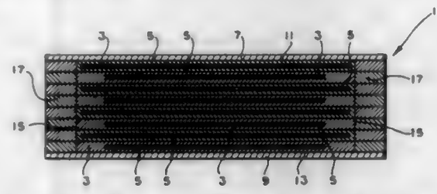
METAL-MATRIX-COMPOSITE

Joseph F. Dolowy, Jr., Oxnard, Calif.; Bradley A. Webb, Las Vegas, Nev., and Mark van den Bergh, Thousand Oaks, Calif., assignors to BP Chemicals Inc., Advanced Materials Division, Cleveland, Ohio

Filed Mar. 6, 1992, Ser. No. 847,259

Int. Cl.[5] B32B *15/00*; C22C *1/09*

U.S. Cl. 428—608 **9 Claims**



1. A thermally conductive composite useful as a printed wiring board thermal plane comprising a consolidated laminate having a first and second outer layer comprising a thermally conductive metal, at least one intermediate layer disposed between said first and second outer layers comprising a metal matrix reinforced with graphite fiber, said outer end intermediate layers having outside edges and a layer of thermally conductive material disposed about the outside edges of said outer and intermediate layers wherein the thermally conductive metal and the thermally conductive material comprise aluminum.

5,306,572

EL ELEMENT COMPRISING ORGANIC THIN FILM

Yutaka Ohashi; Nobuhiro Fukuda; Atsuhiko Nitta, and Sadao Kobayashi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 993,882

Claims priority, application Japan, Dec. 24, 1991, 3-340768; Apr. 24, 1992, 4-107011

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—690 **18 Claims**

1. An organic thin film EL element having a layer structure which comprises at least one organic thin film sandwiched between two electrodes, at least one of which is a metal thin film, and an interfacial layer of a phosphorous atom-containing compound formed between the organic thin film and the metal



thin film adjacent to the organic thin film, which layer is produced by applying or exposing at least one of the interfacial surfaces of the organic thin film and the metal thin film with a reactive organic phosphorous atom-containing compound.

5,306,573

MAGNETIC DEVICE AND PROCESS FOR PRODUCTION OF MAGNETORESISTIVE SENSORS ACCORDING TO THIS PROCESS

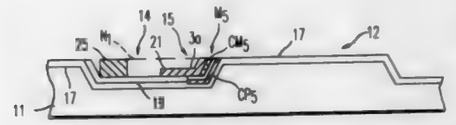
Francois-Xavier Pirot, Les Ulis; Jean-Marc Coutellier, Maurepas, and Thierry Valet, Viroflay, all of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 812,128, Dec. 19, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,650

Claims priority, application France, Dec. 27, 1990, 90 16334

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—692 **19 Claims**



1. A process for producing a plurality of magnetoresistive sensors, comprising the steps of:

forming at least one recess on a face of a substrate, each recess having a bottom surface and a side surface zone, wherein the side surface zone is inclined in relation to a plane of the face of the substrate;

depositing at least one layer of magnetoresistive material on said at least one inclined side surface zone and on said face of said substrate, so that said at least one layer of magnetoresistive material exhibits an edge directed outward from the substrate;

forming at least one magnetoresistive element in the at least one layer of magnetoresistive material, each magnetoresistive element corresponding to a magnetoresistive sensor;

forming at least one shim in the at least one recess so that a top level of the shim is flush with a level to be reached in a polishing phase and a bottom level of the shim is on the bottom surface of the recess; and

polishing said at least one magnetoresistive element, the shim thereby reducing the speed at which the polishing is performed when the polishing reaches the top level of the shim.

5,306,574

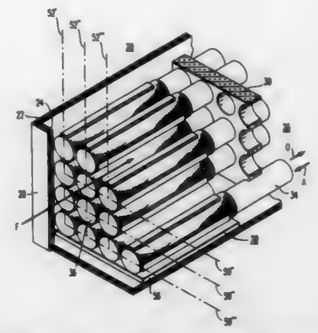
METHOD OF LOW TEMPERATURE OPERATION OF AN ELECTROCHEMICAL CELL ARRAY

Prabhakar Singh, Export; Roswell J. Ruka, Churchill Boro, and Raymond J. Bratton, Delmont, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1992, Ser. No. 957,117

Int. Cl.[5] H01M *8/00*

U.S. Cl. 429—13 **8 Claims**



1. In a method of operating a fuel cell apparatus comprising a generating chamber containing a cell array of electrically connected, parallel, elongated cells, each cell having an exterior porous electrode, an interior porous electrode having an inside portion, and solid oxide electrolyte therebetween which solid electrolyte transports oxygen as oxygen ions only, at temperature over 850° C., where hot fuel gas is fed to the exterior electrode, and hot oxidant gas is fed to the inside of the interior electrode and where the generating chamber normally operates at a temperature over 850° C., wherein the improvement comprises operating the generator with the change of contacting the interior electrode with a gas containing at least 90% vol % N_2 during any period that the generating chamber temperature drops within the range of from 550° C. to 800° C.

5,306,575

POWER GENERATION SYSTEM USING MOLTEN CARBONATE TYPE FUEL CELL

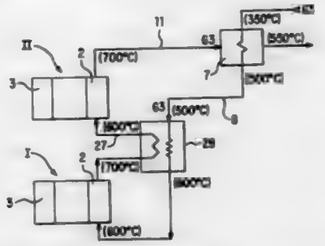
Elias H. Camara, 246 Middaugh Rd., Clarendon Hills, Ill. 60514, and Kenzo Nakazawa, No. 8-15, Azumznodai, Seya-ku, Yokohama, Japan

Continuation of Ser. No. 675,190, Mar. 28, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 913,997

Claims priority, application Japan, May 1, 1990, 2-115615

Int. Cl.[5] H01M *8/14*

U.S. Cl. 429—16 **2 Claims**



1. In a fuel cell power plant having:

a. a plurality of fuel cells, each of said fuel cells having an anode side and a cathode side, said anode side including inlet means and outlet means, said cathode side including inlet means and outlet means;

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b. a source of fuel gas in communication with said anode side inlet means of said fuel cells for providing fuel to said fuel cells;
c. first connecting means connecting said cathode sides in series gas flow relationship;
d. a source of cathode feed gas;
e. second connecting means connecting said source of cathode feed gas to said cathode side inlet means of said first fuel cell in the series for providing process cathode feed gas to said first fuel cell and to succeeding fuel cells in the series via said first connecting means;
f. means constructed and arranged for transferring CO_2 produced at said anode sides of all of said plurality of fuel cells to said cathode side inlet means of said first fuel cell in the series for providing CO_2 to said first fuel cell and for providing CO_2 to succeeding fuel cells in the series via said first connecting means;

the improvement comprising:

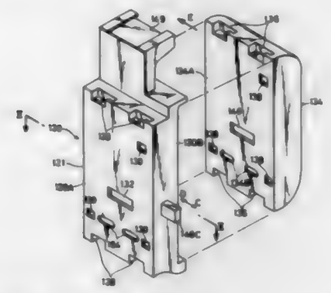
g. reactant-containing gas introduction means associated with said first connecting means between each pair of consecutive fuel cells in the series for adding a reactant-gas to the cathode side exhaust between each pair of consecutive fuel cells, whereby the temperature of the cathode side exhaust between consecutive cells is reduced by dilution with added reactant-containing gas at a temperature less than the temperature of the cathode exhaust to which the reactant-containing gas is added.

5,306,576

BATTERY COUPLER

Hidemi Sasaki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 597,222, Oct. 15, 1990, Pat. No. 5,151,727.
This application Apr. 10, 1992, Ser. No. 866,408
Claims priority, application Japan, Oct. 17, 1989, 1-269860; Oct. 18, 1989, 1-271253; Dec. 19, 1989, 1-328750; Sep. 12, 1990, 3-239989
Int. Cl.[5] H07M *2/10*
U.S. Cl. 429—98 9 Claims



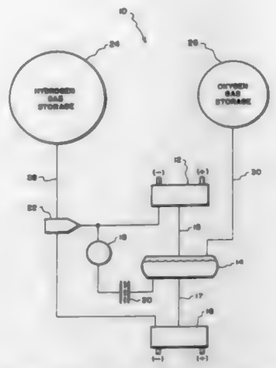
1. A battery coupler comprising:
a video light portion;
a video light battery portion; and
a coupler portion mountable to a battery mounting portion of a video camera and allowing a battery to be mounted to said video camera via said coupler portion for electrically connecting said battery to said video camera, wherein said video light portion and said video light battery portion are mounted through said coupler portion to said video camera.

5,306,577

REGENERATIVE FUEL CELL SYSTEM

Kenneth M. Sprouse, Northridge, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 15, 1992, Ser. No. 914,273
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—17 5 Claims



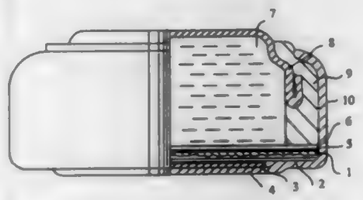
1. A method for controlling process water used in a variable pressure passive regenerative fuel cell system including a fuel cell and an electrolyzer comprising:
(a) configuring the fuel cell system to position a water tank intermediate a fuel cell and an electrolyzer such that the fuel cell is above the water tank and the electrolyzer below the water tank whereby water produced by the fuel cell is gravity feed to the water tank and oxygen produced at the electrolyzer's anode ascends into the water tank;
(b) further configuring the fuel cell system to include means communicating with said water storage tank for supplying water to an anode cavity of an anode component of said fuel cell; and
(c) providing a fiber packed column structure for controlling the flow of water to said main water tank, and fuel cell during fuel cell system operation.

5,306,578

AIR CELL WITH GAS DIFFUSION ELECTRODE

Masato Ohashi; Michio Watabe; Hitoshi Takagishi; Masao Ide, all of Takasaki, and Keiji Kobayashi, Tokyo, all of Japan, assignors to Toshiba Battery Co., Ltd. and Toshiba Silicone Co., Ltd., both of Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 967,277
Claims priority, application Japan, Oct. 30, 1991, 3-310031
Int. Cl.[5] H01M *8/00*
U.S. Cl. 429—27 11 Claims



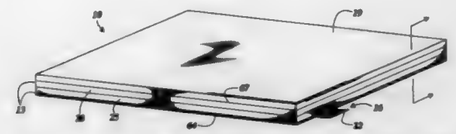
1. An air cell having first and second electrodes, the air cell comprising:
a cell container having an air-inlet hole in communication with outside air;
wherein said first electrode is a gas diffusion electrode, disposed within said cell container, which uses oxygen as an active material;
a porous film for supporting said gas diffusion electrode; and
an air-diffusing porous sheet impregnated with film-forming silicone and provided between said porous film and said air-inlet hole.

5,306,579

BIFUNCTIONAL METAL-AIR ELECTRODE

V. Roger Shepard, Jr., Mableton; Yardlyne G. Smalley, Riverdale, and R. Dennis Bentz, Marietta, all of Ga., assignors to AER Energy Resources, Inc., Atlanta, Ga.

Filed Oct. 30, 1992, Ser. No. 969,433
Int. Cl.[5] H01M *4/92*
U.S. Cl. 429—40 23 Claims



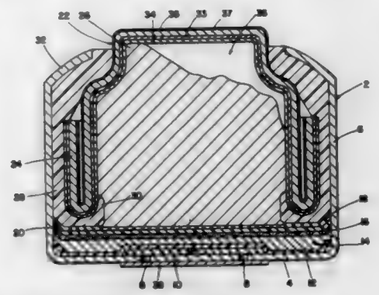
1. A bifunctional air electrode for use in a secondary metal-air electrochemical cell comprising:
an active layer having an electrolyte side and an air side and comprising an oxygen reduction catalyst having a first oxygen evolution potential and an oxygen evolution catalyst having a second oxygen evolution potential less than the first oxygen evolution potential, the oxygen evolution catalyst being present in a greater concentration proximate the air side than proximate the electrolyte side;
a current collector in electrical contact with the active layer; and
a wet-proofing layer laminated to the air side of the active layer.

5,306,580

ELECTROCHEMICAL CELL HAVING A COATED CUP-SHAPED TERMINAL

Robert N. Mansfield, Jr., Valley View, and Robert F. Scarr, Westlake, both of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 848,497, Mar. 9, 1992. This application May 17, 1993, Ser. No. 62,517
Int. Cl.[5] H01M *2/04*
U.S. Cl. 429—175 20 Claims



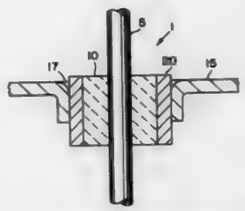
1. An electrochemical cell, comprising:
a) a first terminal contacting a first electrode material;
b) a gasket located adjacent said first terminal;
c) a separator contacting said first electrode material, and
d) a second terminal secured to said gasket and comprising an electrically conductive substrate defining a convex surface and a concave surface, said second terminal's concave surface coated by electrodeposition with a metal selected from the group consisting of indium, lead and bismuth, said second terminal's convex surface remaining free of indium, lead and bismuth, and said second terminal's coated concave surface contacting a second electrode material that abuts said separator.

5,306,581

BATTERY WITH WELDABLE FEEDTHROUGH

William J. Taylor, Anoka; Douglas J. Weiss, Plymouth; Joseph Lessar, Coon Rapids; Jennifer P. Miller, Elk River, and Robert E. Kraska, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 612,115, Nov. 9, 1990, Pat. No. 5,104,755, which is a continuation-in-part of Ser. No. 366,430, Jun. 15, 1989, abandoned. This application Apr. 8, 1992, Ser. No. 865,381
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] H01M *2/30*
U.S. Cl. 429—181 18 Claims



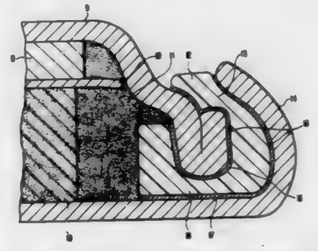
1. A battery with a weldable feedthrough, the battery comprising:
(a) a case defining a feedthrough aperture;
(b) a lithium anode;
(c) a cathode;
(d) an electrolyte comprising a lithium salt in an organic solvent within the case; and
(e) a feedthrough secured in the aperture comprising:
1. a pin of a metal selected from the group consisting of niobium and ductile alloys thereof; and
2. an insulating glass positioned around a portion of the pin in sealing engagement with the pin, said insulating glass having a silica content of 0–50%.

5,306,582

NONAQUEOUS BATTERY SEALED WITH A MONTMORILLONITE MATERIAL

Mitsutoshi Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 18, 1993, Ser. No. 78,049
Claims priority, application Japan, Jun. 23, 1992, 4-164546
Int. Cl.[5] H01M *2/08*
U.S. Cl. 429—185 29 Claims



1. A nonaqueous battery comprising a positive electrode, a negative electrode made of an active material of a light metal

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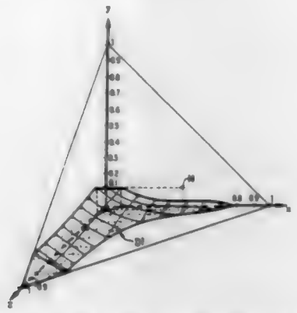
or its alloy or an active material capable of intercalating/deintercalating lithium ion, and a nonaqueous electrolyte, wherein the battery is sealed with a sealant comprising a pitch and at least one montmorillonite group material.

5,306,583

HYDRIDABLE MATERIAL FOR THE NEGATIVE ELECTRODE OF A NICKEL-HYDRIDE STORAGE CELL

Jacques Bouet, Paris; Bernard Knosp, Neuilly sur Seine; Annick Percheron-Guegan, Paris, and Jean-Michel Cocciantelli, Bordeaux, all of France, assignors to SAFT, Romainville, France

Filed Dec. 14, 1992, Ser. No. 990,079
Claims priority, application France, Dec. 4, 1992, 92 14662
Int. Cl.[5] H01M *4/24*
U.S. Cl. 429—223 **4 Claims**



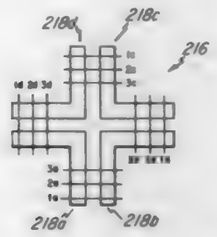
1. A hydridable alloy material represented by the formula AB_5 for the negative electrode of a nickel-hydride storage cell, A represents $La_{(1-x-y-z)}Ce_xNd_yPr_z$,
where $0 \leq x \leq 0.784$, $0 \leq z \leq 1$, $0.1 \leq x+z$, $0 < y+z$, $x+y+z \leq 1$, and
$0 \leq y \leq 0.205-1.17x+2.39x^2-1.57x^3-z(0.23-0.65x+1.18x^2)+z^2(0.18-0.54x)$, and
wherein B_5 represents $Ni_aMn_bAl_cCo_d$, where $3.25 \leq a \leq 3.75$, $0.25 \leq b \leq 0.45$, $0.25 \leq c \leq 0.45$, $0.65 \leq d \leq 0.95$, and $4.8 \leq a+b+c+d \leq 5.2$.

5,306,584

MASK OR WAFER WRITING TECHNIQUE

Shane R. Palmer, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 28, 1991, Ser. No. 722,795
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **21 Claims**



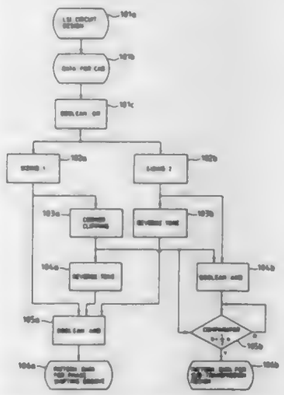
1. A method of forming a photolithographic mask comprising the steps of:
forming a grid pattern on a mask substrate;
forming a layer of resist material on said substrate;
scanning said grid pattern without substantially reacting said resist layer to obtain calibration information on the location of said grid pattern;
reacting portions of said resist material by exposing said portions with energy from an energy source to form a device pattern, wherein said grid pattern is substantially transparent to said energy, said device pattern determined in part from said calibration information and formed at least in part over said grid pattern; and
removing said resist material.

5,306,585

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417. This application Apr. 23, 1993, Ser. No. 51,552
Claims priority, application Japan, Nov. 22, 1988, 63-295350
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **6 Claims**



1. A fabrication method of a phase-shifting mask for transferring a circuit pattern thereon onto an integrated circuit wafer by focusing a real image of the circuit pattern on the mask onto a photoresist film formed on a major surface of the wafer through an optical projection system, the circuit pattern including a real mask pattern having a first opening pattern, a second opening pattern adjacent thereto, a light shield pattern defining the first and second opening patterns, and a transparent phase-shifting film pattern covering the entire surface of the second opening pattern and further extending onto the light shield pattern for reversing the phase of light passing through the second opening pattern, the phase of light passing through the second opening pattern being reversed in comparison with that of light passing through the first opening pattern, the method comprising:
(a) preparing a real mask pattern data corresponding to the real mask pattern;
(b) automatically preparing a photoresist pattern data, corresponding to a photoresist pattern for patterning the phase-shifting film pattern, by enlarging a real mask pattern data corresponding to one of the first and second opening patterns in the real mask pattern data;
(c) forming the real mask pattern on a major surface of the mask according to the real mask pattern data; and
(d) forming the photoresist pattern according to the photoresist pattern data, and patterning to form the phase-shifting film pattern.

5,306,586

DUAL LAYER SWITCH PHOTORECEPTOR STRUCTURES FOR DIGITAL IMAGING

Damodar M. Pai, Fairport; Andrew R. Melnyk, Rochester, and Milan Stolka, Fairport, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 6, 1992, Ser. No. 926,068
Int. Cl.[5] G03G *15/02*
U.S. Cl. 430—58 **28 Claims**

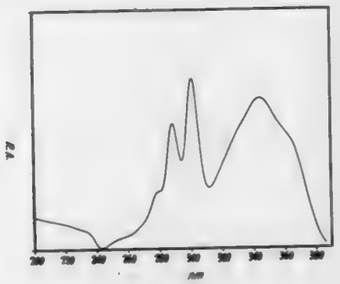
1. An electrophotographic imaging member comprising
a conductive substrate;
a charge generating layer; and
a charge transport layer; said charge transport layer comprising
at least two charge transporting regions and
an electrically inactive region, said charge transporting regions in contact with each other forming a convoluted charge transport path.

5,306,587

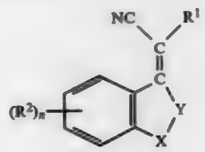
PHOTOSENSITIVE RECORDING MATERIAL

David R. Terrell, Lint; Frans C. De Schryver, Linden; Carina Geelen, Louvain; Marcel J. Monbaliu, Mortsel; Stefaan K. De Meutter, Antwerp; Mark G. Van der Auweraer, and Guy P. Verbeek, both of Louvain, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

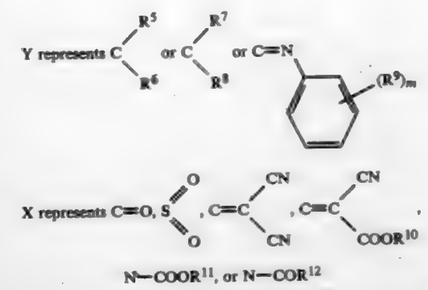
Filed Aug. 26, 1992, Ser. No. 935,299
Claims priority, application European Pat. Off., Sep. 24, 1991, 91202469
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—58 **12 Claims**



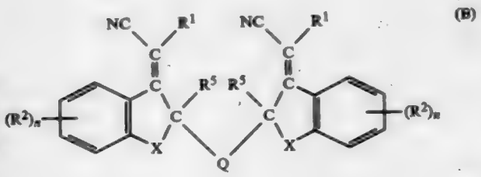
1. A photosensitive recording material which comprises an electrically conductive support having thereon a layer containing a charge transporting compound (n-CTM-compound) capable of accepting and transporting electrons which have been obtained by radiation-activated charge-generation from a charge generating compound (CGM-compound) present in said material, characterized in that said n-CTM-compound corresponds to a following general formula (A), (B) or (C):

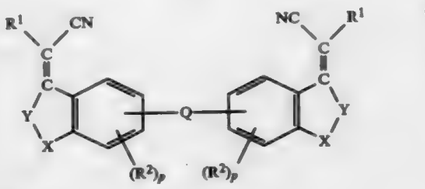


wherein:
R^1 represents CN, $COOR^3$ or COR^3,
R^2 represents CN, $COOR^3$, COR^3, SO_2R^4, F, Cl, alkyl including a substituted alkyl group or an alkoxy group,
R^3 represents an alkyl group, an aryl group or an aralkyl group including said groups in substituted form,
R^4 represents F, Cl, an alkyl, an aryl or an aralkyl group including said groups in substituted form;



R^5 represents an alkyl group including said group in substituted form,
R^6 represents an alkyl, an alkenyl group, an aryl group, a $—CONR^7R^8$ group or a heterocyclic group including said groups in substituted form,
each of R^7 and R^8 which may be the same or different represents an alkyl or an aryl group including said groups in substituted form or together represent the atoms and bonds necessary to form a carbocyclic or a heterocyclic ring structure including said structure in substituted form;
R^9 represents an alkyl group including a substituted alkyl group, an alkoxy group, F, Cl, CN, NO_2, a $NR^{13}R^{14}$ group, wherein each of R^{13} and R^{14} represents a COR^{17} or $COOR^{18}$ group, R^{17} and R^{18} having the definition given below, or R^9 represents a $COOR^{15}$ or COR^{16} group, wherein R^{15} and R^{16} have the definition given below;
each of R^{10}, R^{11}, R^{12}, R^{15}, R^{16}, R^{17} and R^{18} which may be the same or different represents an alkyl group, an aryl group or an aralkyl group including said groups in substituted form,
n is 0, 1 or 2, and
m is 0, 1 or 2;





wherein:
Q represents a divalent organic group,
R^1, R^2, R^5, X, Y and n are as defined above, and
p is zero or 1.

2. Photosensitive recording material according to claim 1, wherein at least one n-CTM-compound is present in a charge transporting layer that stands in direct contact with a photosensitive charge generating layer.

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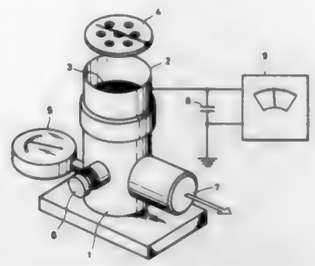
VOL 1161 ISS 4 APR 26 1994 UMI

5,306,588

TREATED SILICA FINE POWDER AND TONER FOR DEVELOPING ELECTROSTATIC IMAGES

Katsuhiko Tanaka; Tsuyoshi Takiguchi, both of Kanagawa, and Rika Doi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,001
Claims priority, application Japan, Mar. 19, 1991, 3-078183
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—110 **17 Claims**



1. A treated fine silica powder comprising treated fine particles of silica having a negatively chargeable property, said treated fine particles of silica being obtained by

(a) treating fine particles of silica with a first silane coupling agent in which at least one of

(i) a secondary alkyl group substituted with at least one substituent group selected from the group consisting of a halogen group, a phenyl group and derivatives of the phenyl group,

(ii) an unsubstituted secondary alkyl group,

(iii) a tertiary alkyl group substituted with at least one substituent group selected from the group consisting of a halogen group, a phenyl group and derivatives of the phenyl group,

(iv) an unsubstituted tertiary alkyl group,

(v) a cyclic hydrocarbon group substituted with an alkyl group having 1 to 8 carbon atoms, and

(vi) an unsubstituted cyclic hydrocarbon group is bonded to a silicon atom of said first coupling agent through a secondary carbon atom or a tertiary carbon atom, and

(b) thereafter, further treating the resulting fine particles of silica with a second silane coupling agent represented by the following formula:

$$(R_1)_m—Si—(Y)_n$$

wherein R_1 represents a methyl group, a halomethyl group, a saturated straight chain hydrocarbon group or an unsaturated straight chain hydrocarbon group; Y represents an alkoxy group or a halogen group; m represents an integer of 1 to 3; n represents an integer of 1 to 3; and the sum of m plus n is 4.

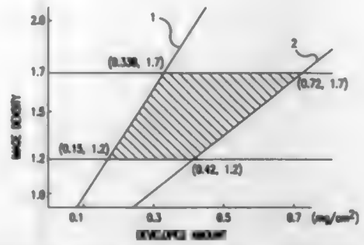
5,306,589

BLACK TONER FOR COLOR DIGITAL COPYING MACHINE

Yasuo Yamamoto, and Yutaka Sugizaki, both of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,714
Claims priority, application Japan, May 14, 1991, 3-137046
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—111 **8 Claims**

1. A black toner for color digital copying machine, which comprises a binder resin having dispersed therein toner particles comprising carbon black having an average primary particle diameter of 35 mμm to less than 50 mμm as a colorant in an amount of 2 to 6 parts.



5,306,590

HIGH SOLIDS LIQUID DEVELOPER CONTAINING CARBOXYL TERMINATED POLYESTER TONER RESIN

Thomas Felder, Pannal, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,678
Int. Cl.[5] G03G *9/125*
U.S. Cl. 430—115 **28 Claims**

1. A method for producing a high solids replenishable electrostatic liquid developer concentrate, comprising:

blending particles containing a carboxyl terminated polyester and a pigment with a liquid toner dispersant to form a toner dispersant mixture and to increase the solids content of the toner dispersant mixture to more than about 90% solids.

5,306,591

LIQUID DEVELOPER COMPOSITIONS HAVING AN IMINE METAL COMPLEX

James R. Larson, Fairport, and Bing R. Hsieh, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 25, 1993, Ser. No. 9,202
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—115 **30 Claims**

1. A liquid developer comprised of (A) a liquid with a viscosity of from about 0.5 to about 20 centipoise and a resistivity equal to or greater than 5×10^9; (B) thermoplastic resin particles with an average volume particle diameter of from about 0.1 to about 30 microns; (C) a nonpolar liquid soluble ionic or zwitterionic charge director compound; and (D) a charge adjuvant comprised of an imine bisquinone metal complex.

5,306,592

METHOD OF PREPARING ELECTROGRAPHIC MAGNETIC CARRIER PARTICLES

Bijay S. Saha, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,925
Int. Cl.[5] G03G *9/107*
U.S. Cl. 430—137 **11 Claims**

1. A method of producing magnetic carrier particles of substantially uniform particle size and substantially spherical shape comprising hard magnetic ferrite material having a single-phase hexagonal crystalline structure of the formula:

$$MO•(Fe_2O_3)_x \quad (A)$$

where M is strontium or barium and x is 5 to 6 suitable for magnetic brush development of electrostatic charge patterns and having a reduced tendency towards early life dusting, which method comprises:

(i) mixing an aqueous solution containing strontium ions and iron (III) ions or barium ions and iron (III) ions in amounts sufficient to provide the strontium ferrite or barium ferrite of formula (A);

(ii) reacting the mixture formed in step (i) with an alkaline aqueous ammonium hydroxide solution having an alkalinity of at least 0.1N to form finely divided co-precipitated particles of strontium hydroxide and iron (III) hydroxide or barium hydroxide and iron (III) hydroxide;

(iii) separating the co-precipitated particles from the aqueous mother liquor;

(iv) washing the resultant co-precipitated particles;

(v) mixing the washed co-precipitated particles obtained from step (iv) with an organic binder and water, as a solvent, to form a slurry;

(vi) spray drying the slurry to obtain green beads of substantially uniform particle size and substantially spherical shape, and

(vii) firing the beads at a temperature ranging from approximately 900° C. to 1100° C. for a period of time of from approximately 7 to 10 hours to obtain magnetic carrier particles of substantially uniform particle size and substantially spherical shape comprising hard magnetic ferrite material having a single-phase, hexagonal crystalline structure of the formula:

$$MO•(Fe_2O_3)_x \quad (A)$$

where M is strontium or barium and x is 5 to 6.

5,306,593

SUSPENSION POLYMERIZED TONER TREATED BY STARVED FEED MONOMER ADDITION PROCESS

Michael F. Cunningham, Georgetown, and Hadi K. Mahabadi, Toronto, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1993, Ser. No. 42,216
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—137 **18 Claims**

1. A process for the preparation of toner particles which comprises a suspension polymerization followed by a starved feed monomer addition process and wherein the suspension polymerization comprises the formation of an organic phase comprised of monomer, initiator, pigment and optional toner additives; adding the organic phase to an aqueous phase comprised of water and a stabilizer; shearing the resulting organic and aqueous phase mixture; polymerizing the monomer by heating to enable toner particles; and wherein said starved feed addition comprises adding a second monomer, optionally with crosslinking agents or initiators, and heating to polymerize the added monomer, which second monomer is slowly added to enable said monomer to diffuse through said aqueous phase and into said formed toner particles, and wherein secondary droplets or polymer particle formation is avoided or minimized prior to heating; and wherein said starved feed monomer has hydrophilic characteristics less than or equal to said monomer formed in the organic phase selected for said suspension polymerization and said second monomer has hydrophilic characteristics equal to or less than any polymer formed as a result of said suspension polymerization of said monomer to thereby ensure that said second monomer diffuses into the interior of the formed toner particle thereby avoiding formation of a shell around the exterior of said toner particles; and wherein subsequent to polymerization of the added second monomer there is formed a polymer that is incompatible with the formed said toner particles.

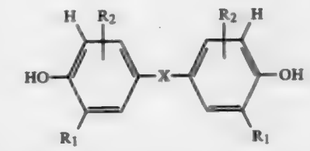
5,306,594

RADIATION-SENSITIVE COMPOSITIONS USING NOVOLAK RESINS MADE FROM A SUBSTITUTED BIS(HYDROXYPHENYL)METHANE AND A BIS-(METHYLOL)-CRESOL

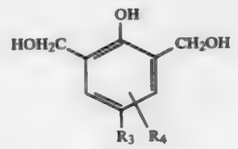
Thomas R. Sarubbi, Providence, R.I., and Joseph J. Sizensky, Seekonk, Mass., assignors to OCG Microelectronic Materials, Inc., West Paterson, N.J.

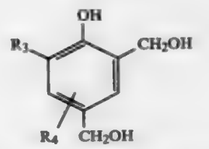
Filed Nov. 4, 1991, Ser. No. 787,454
Int. Cl.[5] G03F *7/023, 7/30*
U.S. Cl. 430—165 **17 Claims**

11. A coated substrate comprising a substrate coated with a film of a radiation-sensitive composition comprising an admixture of at least one o-quinonediazide compound and a novolak resin composition comprising of the reaction product of a para-, para-bonded bisphenol having formula (A):


(A)

wherein R_1=lower alkyl group having 1–4 carbon atoms, halogen, or lower alkoxy group having 1–4 carbon atoms;
wherein R_2=hydrogen or lower alkyl group having 1–4 carbon atoms; and
wherein X is selected from the group consisting of CH_2, $CH(CH_3)$, $C(CH_3)_2$, O, and S;
with a bismethylol monomer selected from a difunctional ortho-, ortho-phenolic bismethylol of formula (B), a difunctional ortho-, para-phenolic bismethylol of formula (C), or mixtures thereof.


(B)


(C)

wherein R_3 is selected from CH_3, CH_2CH_3, Cl, and Br;
wherein R_4 is selected from H and CH_3; and wherein the amount of said o-quinonediazide compound being about 5% to about 40% by weight and the amount of said binder resin being about 60% to 95% by weight, based on the total solid content of said radiation-sensitive composition.

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5,306,595

COMPOSITION CONTAINING NAPHTHOQUINONE DIAZIDE SULFONIC ACID MIXED ESTERS AND RADIATION-SENSITIVE RECORDING MATERIAL PREPARED THEREWITH

Siegfried Scheler, Wiesbaden-Naurod; Wolfgang Zahn, Eltville; Axel Schmitt, Walluf, and Gerhard Buhr, Koenigstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 1, 1992, Ser. No. 862,603

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111444

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[5] **G03C** *1/52*

U.S. Cl. 430—191 **20 Claims**

1. A radiation-sensitive composition comprising

(i) a resinous binder which is insoluble in water but soluble or at least swellable in aqueous-alkaline solutions, and

(ii) a radiation-sensitive compound which is an ester which is the condensation product of

(a) a compound containing 2 to 6 aromatic hydroxyl groups,

(b) a compound D_1 which is a ring-substituted (o-naphthoquinone 2-diazide)-4-sulfonic acid, and

(c) a compound D_2 which is an (o-naphthoquinone 2-diazide)-4-sulfonic acid which is not further substituted or an (o-naphthoquinone 2-diazide)-5-sulfonic acid which is not further substituted,

wherein the molar ratio (b):(c) is between about 0.1:1 and 30:1.

5,306,596

POSITIVE RESIST COMPOSITION COMPRISING A POLYPHENOLIC O-QUINONE DIAZIDE SULFONATE

Masayuki Oie, Kamakura; Shoji Kawata, Kawasaki; Takamasa Yamada, Komaki, and Shinya Ikeda, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1990, Ser. No. 603,597

Claims priority, application Japan, Nov. 17, 1989, 1-298857

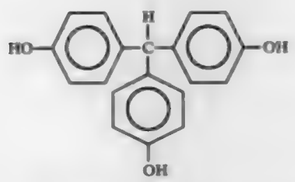
Int. Cl.[5] **G03F** *7/023; C07C 245/00*

U.S. Cl. 430—192 **3 Claims**

1. A positive resist composition comprising in admixture:

(i) 100 parts by weight of an alkali-soluble phenolic resin;

(ii) 5–50 parts by weight of a photosensitive agent formed of a quinonediazide sulfonate of the following phenolic compound



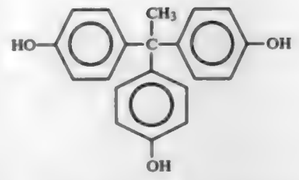
wherein the —OH groups have been converted into the ester groups with a quinonediazide sulfonic compound to an extent of 85–100 mole %. and;

(iii) sufficient solvent to dissolve the foregoing components.

2. A positive resist composition comprising in admixture:

(i) 100 parts by weight of an alkali-soluble phenolic resin;

(ii) 5–50 parts by weight of a photosensitive agent formed of a quinonediazide sulfonate of the following phenolic compound



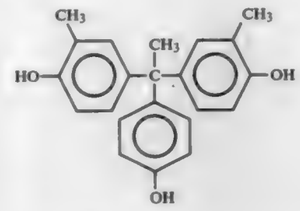
wherein the —OH groups have been converted into the ester groups with a quinonediazide sulfonic compound to an extend of 85–100 mole %, and;

(iii) sufficient solvent to dissolve the foregoing components.

3. A positive resist composition comprising in admixture:

(i) 100 parts by weight of an alkali-soluble phenolic resin;

(ii) 5–50 parts by weight of a photosensitive agent formed of a quinonediazide sulfonate of the following phenolic compound



wherein the —OH groups have been converted into the ester groups with a quinonediazide sulfonic compound to an extent of 85–100 mole %, and;

(iii) sufficient solvent to dissolve the foregoing components.

5,306,597

DYE FIXING ELEMENT

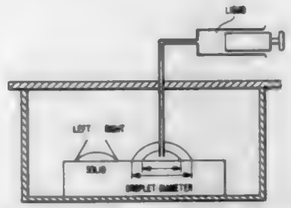
Toshiaki Aono, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 20, 1992, Ser. No. 932,556

Claims priority, application Japan, Aug. 22, 1991, 3-233779; Aug. 22, 1991, 3-233781

Int. Cl.[5] **G03C** *5/54*

U.S. Cl. 430—203 **8 Claims**



1. A dye fixing element comprising a dye fixing layer on which a diffusive dye produced or released by developing a light-sensitive element containing at least a light-sensitive silver halide, a hydrophilic binder and a dye providing compound which produces or releases a diffusive dye in correspondence to or counter correspondence to the exposure in the presence of a base and/or base precursor after or simultaneously with imagewise exposure is transferred and fixed, wherein the outermost layer on the dye fixing layer side or on the back layer side opposite thereto contains at least one compound represented by the following general formula (I) and exhibits a contact angle of 80° or more to a drop of methane iodide

$$(RfCH_2O)_n—PO(OM)_m \qquad (I)$$

wherein n and m are each 1 or 2 and n and m satisfy the equation: n+m=3; Rf represents a perfluoroalkyl group; and M represents an alkali metal ion, NH^{4+} or secondary, tertiary or quaternary ammonium ion.

5,306,598

SILVER HALIDE PHOTOGRAPHIC EMULSIONS AND ELEMENTS FOR USE IN HELIUM/NEON LASER AND LIGHT-EMITTING DIODE EXPOSURE

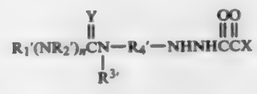
Clarence D. Kolosick, Binghamton, N.Y., assignor to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 819,651, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 486,020, Feb. 28, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,610

Int. Cl.[5] **G03C** *1/06*

U.S. Cl. 430—264 **5 Claims**

1. A silver halide photographic material, suitable for exposure using Helium/Neon laser or light-emitting diode, comprising silver bromide grains capable of forming a surface-latent image, a binder, a dot quality-promoting amount of at least one compound of the Formula I, and an effective amount for sensitizing said grains in the red region of the spectrum only one optical sensitizer compound of the Formula II:



(I)

wherein:

X=—$NR_5'R_6'$, or —OR_7'

R_1' and R_2' are independently selected from the group consisting of hydrogen, substituted and unsubstituted alkyl having up to 18 carbon atoms; substituted and unsubstituted cycloalkyl, phenyl and naphthyl;

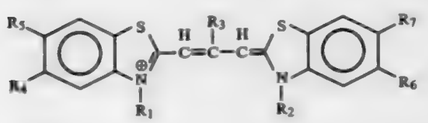
R_3' is selected from the group consisting of hydrogen, substituted and unsubstituted benzyl provided that R_3' is hydrogen when neither R_1' and R_2' are hydrogen; wherein R_1' and R_2' or R_1' and R_3' can be linked together to form a heterocyclic ring system with the ring having 3–10 carbon atoms;

R_4' is a divalent aromatic group with the two valences being ortho- or para- to each other said group being substituted or unsubstituted;

R_5', R_6' and R_7 are independently selected from the group consisting of hydrogen, substituted or unsubstituted alkyl having up to 12 carbon atoms; substituted or unsubstituted cycloalkyl, phenyl and naphthyl; wherein R_5' and R_6' can be linked to form a heterocyclic ring system with the ring containing 3–10 atoms;

Y is selected from the group consisting of sulfur and oxygen atoms;

n is zero or one; provided that n=1 when Y is sulfur;



(II)

wherein:

R_4–R_7 (each independently) are lower (C_1–C_6) alkyl or lower (C_1–C_6) alkoxy;

R_3 is C_1–C_3 alkyl;

R_1–R_2 are independently lower carboxy alkyl, lower sulfonic acid alkyl, or lower alkyl; and wherein the compounds of Formula II are incorporated in amounts ranging from about 0.5 to about 1 mg/g Ag, and wherein said material has a relative red speed over 100, a green safe light gap of at least 30, a stain rating of two or less and a pepper rating of 2.5 or less.

5,306,599

OPTICAL RECORDING MATERIAL

Kazuaki Sakoda; Masayuki Maeda, and Masao Iwamoto, all of Otsu, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 843,556, Feb. 28, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 73,971

Claims priority, application Japan, Mar. 1, 1991, 3-036393; Sep. 24, 1991, 3-243155

Int. Cl.[5] **G11B** *7/24*

U.S. Cl. 430—270 **25 Claims**

1. An optical recording material comprising a water-soluble polymer as a host component, said polymer including deuterium atoms bonded to carbon atoms contained within said polymer, and a water-soluble organic pigment dispersed in said host component as a guest component, wherein at least some of said deuterium atoms are not engaged in hydrogen bonding.

5,306,600

OXYGEN-CONTAINING TITANOCENES, AND THE USE THEREOF

Eginhard Steiner, Füllinsdorf; Harry Beyeler, Basel; Martin Riediker, Rorbas; Vincent Desobry, Marly; Kurt Dietliker, Fribourg, and Rinaldo Hüsler, Wünnewil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 527,988, May 23, 1990, Pat. No. 5,192,642. This application Nov. 12, 1992, Ser. No. 975,042

Claims priority, application Switzerland, Jun. 1, 1989, 2074/89

Int. Cl.[5] **G03F** *7/029;* **C07F** *17/00*

U.S. Cl. 430—281 **4 Claims**

1. A method for the production of radiation-polymerizable materials including paints, printing inks, printing plates, resist materials, materials for dental applications and image recording materials, which comprises incorporating into or applying to said materials a composition containing

(a) at least one non-volatile, monomeric, oligomeric or polymeric compound containing at least one polymerizable ethylenically unsaturated double bond, and

(b) at least one titanocene of the formula I



(I)

in which both the R^1 radicals, independently of another, are cyclopentadienyl⊖, indenyl⊖ or 4,5,6,7-tetrahydroindenyl⊖, each of which is unsubstituted, monosubstituted or polysubstituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_2–C_{18}alkenyl, C_5–C_8cycloalkyl, C_6–C_{10}aryl, C_7–C_{16}aralkyl, —$Si(R^4)_3$, —$Ge(R^4)_3$, cyano or halogen, and R^4 is C_1–C_{12}alkyl, C_5–C_8cycloalkyl, C_6–C_{10}aryl or C_7–C_{16}aralkyl, R^2 is a 6-membered carbocyclic or 5- or 6-membered heterocyclic aromatic ring which is substituted by fluorine atoms at least in the two ortho-positions to the titanium-carbon bond, and in which the aromatic ring may contain 1 to 2 fluoro atoms as further substituents, and R^3, independently, is as defined for R^2, R^2 and R^3 in the titanocenes being substituted by a radical of the formula II

—O—Y—R^5 II

in which Y is a —CO—, —CS—, —CO—O—, —SO_2—, —$Si(R^4)_2$—, —CO—NR^6—, —CS—NR^6— or —SO_2—NR^6— group, R^5 is linear or branched C_1–C_{20}alkyl, C_2–C_{20}alkyl, C_2–C_{20}alkenyl, C_3–C_8cycloalkyl, C_6–C_{15}-cycloalkylalkyl or -alkylcycloalkyl, C_7–C_{16}-alkylcycloalkylalkyl, C_6–C_{20}cycloalkenylalkyl, C_7–C_{20}bicycloal-

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kyl, C_6–C_{14}aryl, C_7–C_{12}aralkyl, C_7–C_{20}alkylaryl or C_8–C_{20}alkylaralkyl, these radicals being unsubstituted or substituted by C_1–C_{18}alkoxy, C_1–C_{12}alkylthio, C_1–C_1.salkylsulfonyl, C_6–C_{10}arylsulfonyl, C_7–C_{20}alkylarylsulfonyl, —COOH, —CN, —COOR⁴, —Co—(C_1–C_{20}alkyl) or halogen, R^6 is hydrogen or has one of the meanings mentioned for R^5, or R^5 and R^6 together are C_3–C_7alkylene, which may be interrupted by —O—, —S— or —N(R^7)—, in which R^7 is hydrogen, C_1–C_{12}alkyl, C_3–C_{12}alkenyl, C_7–C_{12}aralkyl or C_2–C_{20}alkanoyl.

5,306,601

FINE PATTERN FORMING MATERIAL AND PATTERN FORMING METHOD

Kazuhiko Hashimoto, Moriguchi; Taichi Koizumi, Osaka; Kenji Kawakita, Neyagawa, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 656,692, Feb. 19, 1991, abandoned, which is a division of Ser. No. 371,251, Jun. 26, 1989, abandoned. This application Jul. 19, 1993, Ser. No. 93,032

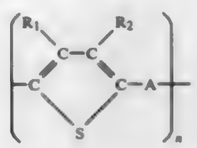
Claims priority, application Japan, Jun. 29, 1988, 63-161640; Jun. 29, 1988, 63-161644

Int. Cl.⁵ G03C *5/00*

U.S. Cl. 430—296 **4 Claims**

1. A method for forming a fine pattern which comprises the steps of:

coating on a semiconductor substrate an organic polymeric substance represented by the following general formula:



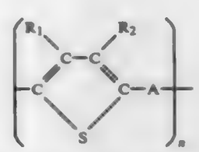
wherein R_1 represents alkyl group, R_2 represents an alkyl group identical with or different from R_1 or a higher alkyl having a chlorine-substituted or hydroxyl end group, A represents —$CH(OR_3)$—CH_2— in this case, R_1, R_2 and R_3 represent identical or different alkyl group or hydrogen, and n represents a positive integer, heat-treating it and thereafter coating an inorganic film on said organic polymeric substance and heat-treating it,

coating an electron beam resist film onto said inorganic film and heat-treating it,

writing a pattern on said resist film and developing it to form a resist pattern, and

etching the inorganic film and organic polymeric substance by using said resist pattern as a mask.

3. A method for forming a fine pattern which comprises the steps of coating on a semiconductor substrate an organic polymeric substance represented by the following general formula:



wherein R_1 represents alkyl group, R_2 represents an alkyl group identical with or different from R_1 or a higher alkyl having a chlorine-substituted or hydroxyl end group, A represents —$CH(OR_3)$—CH_2— in this case, R_1, R_2 and R_3 represent identical or different alkyl group or hydrogen, and n represents a positive integer, heat-treating it and writing a pattern on said organic polymeric substance and developing it to form a resist pattern.

5,306,602

METHOD OF PRODUCING LONGITUDINALLY FINE STRIPED TYPE HEAT SEAL CONNECTOR MEMBER

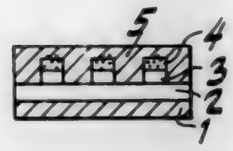
Mitsumasa Shibata, Kusatsu; Katsuhiro Murata, and Tadaaki Isono, both of Ohtsu, all of Japan, assignors to Nippon Graphite Industries Ltd., Ohtsu, Japan

Continuation of Ser. No. 918,802, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 616,403, Nov. 21, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,902

Claims priority, application Japan, Nov. 30, 1989, 1-309173

Int. Cl.⁵ G03C *5/00*; **G03F** *7/00*

U.S. Cl. 430—314 **14 Claims**



1. A method of producing longitudinally fine striped type heat seal connector members having a desired length, width and spacing of electrically conductive channels, said method comprising the following process steps:

(A) mixing an electrically conductive fine powder with a photoresist ink to produce a uniformly dispersed electrically conductive photoresist paint;

(B) applying a coating of said electrically conductive photoresist paint on the surface of a copper foil on a flexible insulative substrate film;

(C) curing the paint on the copper foil by exposing the paint to ultraviolet radiation through a negative mask having a pattern on longitudinally fine stripes to cure irradiated patterned portions of the coated paint;

(D) removing uncured portions of the electrically conductive photoresist paint to leave the cured portions of the photoresist paint of the desired pattern on the copper foil layer and to directly expose the copper foil layer in the portions where the uncured portions of the paint have been removed;

(E) etching the exposed portions of the copper foil layer to remove the same down to the substrate film on which the copper film layer is applied whereby to obtain the substrate film with the pattern of copper foil thereon covered by the photocured paint;

(F) applying an electrically insulative press heat bonding suspension paint over the entire surface of the substrate including the pattern of the photocured paint on the copper foil and the bare portions of the substrate from which the copper foil layer has been removed to form a press heat bonding layer as an uppermost covering layer; and

(G) cutting the resulting produce to a desired length and width.

5,306,603

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL, AND METHOD OF PROCESSING THE SAME

Keiji Mihayashi, and Atsuhiro Ohkawa, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

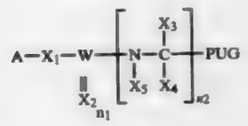
Filed Jun. 3, 1992, Ser. No. 892,963

Claims priority, application Japan, Jun. 6, 1991, 3-160814; Jun. 10, 1992, 4-20789

Int. Cl.⁵ G03C *7/32, 7/34, 7/18*

U.S. Cl. 430—359 **20 Claims**

1. A silver halide color photographic light-sensitive material comprising at least one light-sensitive, silver halide emulsion layer on a support, said material containing at least one compound represented by the following formula (I), and a yellow-colored cyan coupler:



where A is a coupler residue or a redox group; X_1 is oxygen or sulfur; X_2 is oxygen, sulfur or $=NX_6$ group; W is carbon or sulfur; X_3, X_4, X_5 and X_6 are each hydrogen or an organic group, and any two of X_3, X_4 and X_5 can be divalent groups which form a ring; PUG is a photographically useful group bonded to the carbon atom by a hetero atom in PUG which is cleavable from the carbon atom; n_1 is 1 if W is carbon, and either 1 or 2 if W is sulfur; if n_1 is 2, two X_2 groups can either be the same or different; and n_2 is either 1 or 2, and if n_2 is 2, two X_3 groups, two X_4 groups, and two X_5 groups are either the same or different.

20. A method of processing a silver halide color photographic light-sensitive material of claim 1, said method comprising the steps of: subjecting the material to imagewise light-exposure, and treating the light-exposed material with a color-developing solution containing 4-amino-3-methyl-N-ethyl-N-(3-hydroxybutyl) aniline, 4-amino-3-methyl-N-ethyl-N-(4-hydroxybutyl) aniline, 4-amino-3-methyl-N-propyl-N-(2-hydroxyethyl) aniline, or 4-amino-3-methyl-N-propyl-N-(3-hydroxypropyl) aniline.

5,306,604

PHOTOGRAPHIC SILVER HALIDE MATERIAL CONTAINING A COUPLER HAVING IN A NON-COUPLING POSITION IN A SILYL SUBSTITUENT

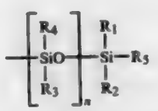
Sundaram Krishnamurthy, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1992, Ser. No. 987,047

Int. Cl.⁵ G03C *1/08, 7/26, 7/32*

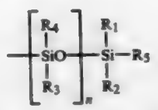
U.S. Cl. 430—376 **31 Claims**

1. A photographic element comprising a support and a silver halide emulsion layer having associated therewith a coupler having in a non-coupling position a silyl substituent represented by the formula:



wherein R_1 through R_4 individually are unsubstituted or substituted aliphatic, aromatic or heterocyclic groups, R_5 is an unsubstituted or substituted aliphatic, aromatic or heterocyclic group which can be bonded to a non-coupling position of a second coupler moiety, and N=0, 1 or 2 with the proviso that an Si atom of the silyl substituent is bonded directly to the coupler nucleus.

13. A process for developing an image in a photographic element comprising a support and a silver halide emulsion containing an imagewise distribution of developable silver halide grains, said process comprising the step of developing said element with a silver halide color developing agent in the presence of a photographic coupler having in a non-coupling position a silyl substituent represented by the formula:



wherein R_1 through R_4 individually are unsubstituted or substituted aliphatic, aromatic or heterocyclic groups, R_5 is an unsubstituted or substituted aliphatic, aromatic or heterocyclic group which can be bonded to a non-coupling position of a second coupler moiety, and n=0, 1 or 2 with the proviso than an Si atom of the silyl substituent is bonded directly to the coupler nucleus.

5,306,605

PHOTOGRAPHIC RECORDING MATERIAL

Heinrich Odenwälder, Leverkusen; Lothar Rosenhahn, Köln, and Thomas Stetzer, Langenfeld, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen

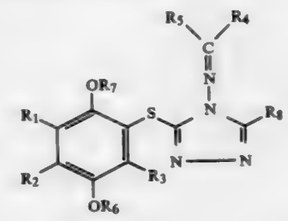
Filed Apr. 5, 1993, Ser. No. 42,585

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212795

Int. Cl.⁵ G03C *7/32, 1/34, 1/42*

U.S. Cl. 430—509 **8 Claims**

1. A photographic recording material comprising a carrier and at least one photosensitive silver halide emulsion layer, a non-photosensitive layer and optional intermediate and protective layers, characterised in that the photographic recording material (1) contains at least one silver halide emulsion layer having a silver iodide content ≧3 mol % and an average grain diameter ≦0.4 μm, and (2), at least in one layer, contains a compound having the formula I



(I)

in which

R_1, R_2 and R_3 denote hydrogen, an optionally substituted hydrocarbon radical, an optionally substituted alkylthio, alkyloxy or arylthio radical, an optionally substituted amino group, OH or halogen or R^1 and R^2 together denote the radical for completing a carbocyclic or heterocyclic ring,

R_4, R_5 denote hydrogen, an optionally substituted alkyl or aryl radical, or an optionally substituted heterocyclic radical,

R_6, R_7 denote hydrogen or a radical which can be split off in alkaline solution, and

R_8 denotes hydrogen, an optionally substituted alkyl or aryl radical, or an optionally substituted alkylthio radical.

6. A photographic recording material according to claim 1, containing at least two photosensitive silver halide emulsion layers sensitized in the same spectral region and differing in

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sensitivity, characterised in that the emulsion according to claim 1 is disposed in the less sensitive layer.

5,306,606

BIAXIALLY STRETCHED POLYESTER FILM COMPRISING A COATING LAYER CONTAINING A SALT OF A SULFONIC ACID TYPE POLYMER

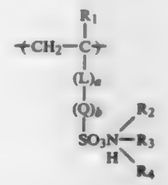
Norfki Tachibana; Yoshihiro Wada, and Tohru Kobayashi, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Dec. 23, 1991, Ser. No. 813,883
Claims priority, application Japan, Dec. 31, 1990, 2-415951
Int. Cl.[5] B32B 27/06
U.S. Cl. 430—533 **11 Claims**

1. A biaxially stretched polyester film which comprises a polyester film and a coating layer composed of a resin composition comprising:

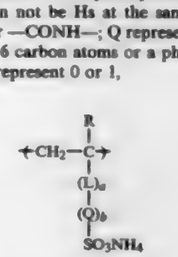
at least one of (A) an acrylic polymer and (B) a ester copolymer and

at least one of (C) a polymer containing a monomer having a sulfonic acid group neutralized with an organic amine represented by the following formula (I) in its recurring unit and (D) a polymer containing a monomer having a sulfonic acid group neutralized with ammonium represented by the following formula (II) on at least one surface of the polyester film,



(I)

wherein R_1 represents hydrogen atom, a halogen atom or an alkyl group having 1 to 6 carbon atoms; R_2, R_3 and R_4 each represent hydrogen atom, an alkyl group having 1 to 20 carbon atoms or a hydroxyl-substituted alkyl group, and they can not be Hs at the same time; L represents —COO— or —CONH—; Q represents an alkylene group having 1 to 6 carbon atoms or a phenylene group; and a and b each represent 0 or 1,



(II)

wherein R represents hydrogen atom, a halogen atom or an alkyl group having 1 to 6 carbon atoms; L represents —COO— or —CONH—; Q represents an alkylene group having 1 to 6 carbon atoms or a phenylene group; a and b each represent 0 or 1; and when a=0, Q represents an alkylene group having 1 to 6 carbon atoms.

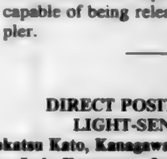
5,306,607

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A PYRAZOLOTRIAZOLE MOIETY

William J. Begley, Webster; Teh-hsuan Chen; Frank D. Coms, both of Fairport, and Donald Singleton, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,379
Int. Cl.[5] G03C 7/32, 7/34, 7/36, 7/38
U.S. Cl. 430—544 **16 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and at least one photographic coupler comprising a pyrazolotriazole moiety (PT), said coupler having the formula



wherein:

COUP is a photographic coupler moiety capable of forming a dye upon reaction with oxidized color developer;

Z_1 is a releasing group having an oxygen, nitrogen or sulfur atom bonded to COUP:

Z_2 is a timing group containing an oxygen or sulfur atom, said timing group bonded to $—C(R_1)(R_2)—$ by said oxygen or sulfur;

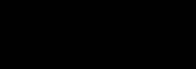
R_1 and R_2 selected from hydrogen, substituted or unsubstituted aryl, substituted or unsubstituted alkyl, substituted or unsubstituted cycloalkyl, said aryl cycloalkyl or alkyl having substituents selected from ester, chloro, bromo, carbamoyl, sulfamoyl, carbonamido, sulfonamido, keto, sulfo, nitro, hydroxyl, carboxyl, amino, substituted amino, alkyl, heterocyclic, alkoxy, aryloxy, arylthio, acylamino groups, and a 5, 6, or 7-membered ring comprising R_1 and R_2;

each n is independently 0 or 1;

PT is a pyrazolotriazole moiety having the structure



and attached at its 1-position, either directly or through Z_1, to the coupling position of COUP, said pyrazolotriazole moiety further having the following group located at its 3-position



PUG is a photographically useful group which, after reaction of the coupler with oxidized color developer, is capable of being released from the remainder of the coupler.

5,306,608

DIRECT POSITIVE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kiyokatsu Kato, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1992, Ser. No. 962,872
Claims priority, application Japan, Oct. 18, 1991, 3-297853
Int. Cl.[5] G03C 1/485
U.S. Cl. 430—547 **5 Claims**

1. A direct positive photographic light-sensitive material comprising a support and a single light-sensitive emulsion layer provided thereon, said light-sensitive emulsion layer containing non-pre-fogged internal latent image type silver halide grains of a core/shell structure, the silver halide grains containing no silver iodide or containing silver iodide in an amount of not more than 3 mol % and having a mean grain size of 0.1 to 1.5 μm, and a molar ratio between silver halide in the cores of the silver halide grains and that in the shells of the silver halide grains is from 20:1 to 1:100, wherein the cores of the silver halide grains are sensitized with a spectral sensitizing dye and subsequently sensitized with a chemical sensitizer.

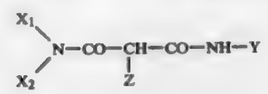
5,306,609

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

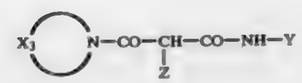
Keiji Mihayashi, and Takayoshi Kamio, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 6, 1992, Ser. No. 846,955
Claims priority, application Japan, Mar. 8, 1991, 3-67807
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] G03C 1/08, 7/26, 7/32
U.S. Cl. 430—557 **19 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, wherein the silver halide color photographic material comprises i) a nondiffusive coupler represented by the general formula (I) or (II) described below:



(I)



(II)

wherein X_1 and X_2 each represents an aliphatic or alicyclic hydrocarbon residue, an aryl group or a heterocyclic group; X_3 represents an organic moiety necessary to form a nitrogen-containing heterocyclic group together with >N—; Y represents an aryl group or a heterocyclic group; and Z represents a group capable of being released upon a reaction with an oxidation product of a developing agent; said coupler may be in the form of a dimer, a higher polymer or a bis-compound compound which is formed at X_1, X_2, X_3, Y or Z; ii) and an acyl acetamide coupler comprising, as an acyl group, a group represented by the general formula (A) described below:



(A)

wherein R_1 represents a mono-valent group, and Q represents a non-metallic atomic group necessary to form a 3-membered, 4-membered or 5-membered hydrocarbon ring or a heterocyclic ring containing at least one hetero atom selected from N, 0, S and P as a ring-forming member together with C, provided that R_1 is not a hydrogen atom and does not combine with Q to form a ring; and said coupler may be in the form of a dimer, a higher polymer or a biscompound.

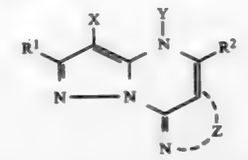
5,306,610

PHOTOGRAPHIC COUPLER

Satoru Ikesu; Hiroshi Kita, and Yutaka Kaneko, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 853,639, Mar. 18, 1992, abandoned.
This application Apr. 1, 1993, Ser. No. 41,515
Claims priority, application Japan, Apr. 4, 1991, 3-97861
Int. Cl.[5] G03C 7/38
U.S. Cl. 430—558 **9 Claims**

1. A silver halide photographic material comprising a support, and provided thereon, at least one silver halide emulsion layer containing a photographic coupler represented by Formula 1:



1

wherein R^1 and Y represent hydrogen or a substituent; R^2 is alkyl, aryl, alkenyl, cycloalkenyl, alkynyl, or a heterocyclic ring group, Z represents a non-metallic atomic group necessary for forming a 5- to 7-membered heterocyclic ring, and said 5- to 7-membered ring may have a substituent(s); and x represents hydrogen atom or a substituent which is eliminatable by the reaction with an oxidized product of a color developing agent.

5,306,611

SILVER HALIDE PHOTOGRAPHIC EMULSION MATERIALS

Toshihiko Yagi; Masaru Iwagaki; Toshiya Kondou; Hideo Akamatsu, and Minoru Ishikawa, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 619,175, Nov. 27, 1990, abandoned.
This application Aug. 18, 1992, Ser. No. 931,897
Claims priority, application Japan, Nov. 29, 1989, 1-309569; Jan. 12, 1990, 2-5227; Jan. 18, 1990, 2-9207
Int. Cl.[5] G03C 1/035
U.S. Cl. 430—567 **13 Claims**

1. A photographic silver halide emulsion comprising silver halide twinned crystal grains having a higher iodide content in an inner core than in an outer shell thereof, wherein 50% or more of the total grain projection area comprises of said silver halide grains having a ratio of grain diameter to grain thickness of 5 or less;

said emulsion is monodispersion;

said silver halide grains provide an X-ray diffraction pattern having a signal with a single peak when a diffraction pattern of a (420) face of said grains is measured with an X-ray diffractometer using Kα ray of Cu; and

the width of said peak at a height of 0.13 times the maximum peak height, based on the signal intensity, is 1.5 degrees or less in a diffraction angle 2θ where θ is the Bragg angle.

5,306,612

SUPERSENSITIZATION OF RED SENSITIZED, SILVER HALIDE EMULSIONS WITH 5-SUBSTITUTED-AMINO-1,2,3,4-THIATRIAZOLES

James B. Philip, Jr.; Craig A. Perman; Richard J. Loer, and Peter D. Sills, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1988, Ser. No. 259,349
The portion of the term of this patent subsequent to Oct. 25, 2005, has been disclaimed.
Int. Cl.[5] G03C 1/28, 1/29
U.S. Cl. 430—572 **14 Claims**

1. A silver halide photographic emulsion in a hydrophilic colloidal binder, said emulsion being spectrally sensitized to the red portion of the electromagnetic spectrum and having a supersensitizing amount of a 5-substituted-amino-1,2,3,4-thiatriazole.

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5,306,613

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING SELENIUM COMPOUND

Morio Yagihara; Hiroyuki Mifune; Hirotomo Sasaki, all of Kanagawa, and Shinji Kato, Gifu, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

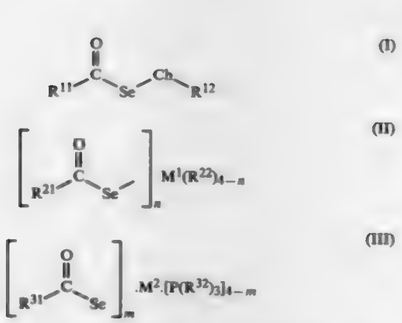
Filed Aug. 24, 1993, Ser. No. 110,988

Claims priority, application Japan, Aug. 25, 1992, 4-226153

Int. Cl.[5] G03C *1/09*

U.S. Cl. 430—600 **22 Claims**

1. A silver halide photographic material which comprises a silver halide emulsion layer and a non-light-sensitive hydrophilic colloidal layer provided on a support, wherein the silver halide emulsion layer or the hydrophilic colloidal layer contains a selenium compound represented by the formula (I), (II) or (III):



(I)

(II)

(III)

in which R^{11} is an aliphatic group, an aromatic group, a heterocyclic group, —OR^{13} or —$NR^{14}R^{15}$; each of R^{13}, R^{14} and R^{15} independently is hydrogen, an aliphatic group or an aromatic group; Ch is S, Se or Te; R^{12} is an aliphatic group, an aromatic group, a heterocyclic group or —COR^{16}; R^{16} is an aliphatic group, an aromatic group, a heterocyclic group, —OR^{17} or —$NR^{18}R^{19}$; each of R^{17}, R^{18} and R^{19} independently is hydrogen, an aliphatic group or an aromatic group; R^{21} is an aliphatic group, an aromatic group, a heterocyclic group, —OR^{23} or —$NR^{24}R^{25}$; each of R^{23}, R^{24} and R^{25} independently is hydrogen, an aliphatic group or an aromatic group; M^1 is Ge, Sn or Pb; R^{22} is an aliphatic group or an aromatic group; n is 1 or 2; R^{31} is an aliphatic group, an aromatic group, a heterocyclic group, —OR^{33} or —$NR^{34}R^{35}$; each of R^{33}, R^{34} and R^{35} independently is hydrogen, an aliphatic group or an aromatic group; M^2 is Ni, Pd or Pt; R^{32} is an aliphatic group or an aromatic group; m is 1 or 2; and each of the aliphatic, aromatic and heterocyclic groups may have one or more substituent groups.

5,306,614

METHODS AND KITS FOR DIAGNOSING HUMAN IMMUNODEFICIENCY VIRUS TYPE 2(HIV-2)

Marc Alizon, Paris; Luc Montagnier, Le Plessis Robinson; Denise Guetard, Paris, all of France; Francois Clavel, Rockville, Md.; Pierre Sonigo, and Mireille Guyader, both of Paris, France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 752,368, Sep. 3, 1991, which is a division of Ser. No. 013,477, Feb. 11, 1987, Pat. No. 5,079,342, which is a continuation-in-part of Ser. No. 003,764, Jan. 16, 1987, which is a continuation-in-part of Ser. No. 933,184, Nov. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 916,080, Oct. 6, 1986, abandoned, and Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,288. This application Dec. 20, 1991, Ser. No. 810,824

Claims priority, application France, Jan. 22, 1986, 00911; Feb. 6, 1986, 01635; Feb. 13, 1986, 01985; Mar. 18, 1986, 03881; Mar. 24, 1986, 04215

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] G01N *33/53*; C07K *7/10*

U.S. Cl. 435—5 **11 Claims**

1. A method for the in vitro detection of the presence or absence of antibodies which bind to peptides of a Human Immunodeficiency Virus Type 2 (HIV-2) comprising:

contacting a biological sample with a peptide having immunological properties of a first portion of the envelope glycoprotein of a HIV-2 virus,

wherein said immunological properties comprise the ability of said peptide to specifically recognize antibodies against HIV-2; and

wherein said peptide comprises no more than about 40 amino acid residues, said first portion of the envelope glycoprotein is antigenic or is capable of eliciting the production of antibodies directed to the peptide, and said envelope glycoprotein comprises an amino acid sequence substantially as follows:

MetMetAsnGlnLeuLeuIleAlaIleLeuLeuAlaSerAlaCys
10

LeuValTyrCysThrGlnTyrValThrValPheTyrGlyValPro
20 30

ThrTrpLysAsnAlaThrIleProLeuPheCysAlaThrArgAsn
40

ArgAspThrTrpGlyThrIleGlnCysLeuProAspAsnAspAsp
50 60

TryGlnGluIleThrLeuAsnValThrGluAlaPheAspAlaTrp
70

AsnAsnThrValThrGluGlnAlaIleGluAspValTrpHisLeu
80 90

PheGluThrSerIleLysProCysValLysLeuThrProLeuCys
100

ValAlaMetLysCysSerSerThrGluSerSerThrGlyAsnAsn
110 120

ThrThrSerLysSerThrSerThrThrThrThrThrProThrAsp
130

GlnGluGlnGluIleSerGluAspThrProCysAlaArgAlaAsp
140 150

AsnCysSerGlyLeuGlyGluGluGluThrIleAsnCysGlnPhe
160

AsnMetThrGlyLeuGluArgAspLysLysLysGlnTyrAsnGlu
170 180

ThrTrpTyrSerLysAspValValCysGluThrAsnAsnSerThr
190

-continued

AsnGlnThrGlnCysTyrMetAsnHisCysAsnThrSerValIle
200 210

ThrGluSerCysAspLysHisTyrTrpAspAlaIleArgPheArg
220

TyrCysAlaProProGlyTyrAlaLeuLeuArgCysAsnAspThr
230 240

AsnTyrSerGlyPheAlaProAsnCysSerLysValValAlaSer
250

ThrCysThrArgMetMetGluThrGlnThrSerThrTrpPheGly
260 270

PheAsnGlyThrArgAlaGluAsnArgThrTyrIleTyrTrpHis
280

GlyArgAspAsnArgThrIleIleSerLeuAsnLysTryTyrAsn
290 300

LeuSerLeuHisCysLysArgProGlyAsnLysThrValLysGln
310

IleMetLeuMetSerGlyHisValPheHisSerHisTyrGlnPro
320 340

IleAsnLysArgProArgGlnAlaTrpCysTrpPheLysGlyLys
350

TrpLysAspAlaMetGlnGluValLysThrLeuAlaLysHisPro
360 370

ArgTyrArgGlyThrAsnAspThrArgAsnIleSerPheAlaAla
380

ProGlyLysGlySerAspProGluValAlaTyrMetTrpThrAsn
390 400

CysArgGlyGluPheLeuTyrCysAsnMetThrTrpPheLeuAsn
410

TrpIleGluAsnLysThrHisArgAsnTyrAlaProCysHisIle
420 430

LysGlnIleIleAsnThrTrpHisLysValGlyArgAsnValTyr
440

LeuProProArgGluGlyGluLeuSerCysAsnSerThrValThr
450 460

SerIleIleAlaAsnIleAspTrpGlnAsnAsnAsnGlnThrAsn
470

IleThrPheSerAlaGluValAlaGluLeuTyrArgLeuGluLeu
480 490

GlyAspTyrLysLeuValGluIleThrProIleGlyPheAlaPro
500

ThrLysGluLysArgTyrSerSerAlaHisGlyArgHisThrArg
510 520

GlyValPheValLeuGlyPheLeuGlyPheLeuAlaThrAlaGly
530

SerAlaMetGlyAlaArgAlaSerLeuThrValSerAlaGlnSer
540 550

ArgThrLeuLeuAlaGlyIleValGlnGlnGlnGlnGlnLeuLeu
560

AspValValLysArgGlnGlnGluLeuLeuArgLeuThrValTrp
570 580

GlyThrLysAsnLeuGlnAlaArgValThrAlaIleGluLysTyr
590

LeuGluAspGlnAlaArgLeuAsnSerTrpGlyCysAlaPheArg
600 610

GlnValCysHisThrThrValProTrpValAsnAspSerLeuAla
620

ProAspTrpAspAsnMetThrTrpGlnGluTrpGluLysGlnVal
630 640

ArgTyrLeuGluAlaAsnIleSerLysSerLeuGluGluAlaGln
650

IleGlnGlnGluLysAsnMetTyrGluLeuGlnLysLeuAsnSer
660 670

TrpAspIlePheGlyAsnTrpPheAspLeuThrSerTrpValLys
680

TyrIleGlnTyrGlyValLeuIleIleValAlaValIleAlaLeu
690 700

ArgIleValIleTyrValValGlnMetLeuSerArgLeuArgLys
710

GlyTyrArgProValPheSerSerProProGlyTyrIleGln***
720 730

IleHisIleHisLysAspArgGlyGlnProAlaAsnGluGluThr
740

GluGluAspGlyGlySerAsnGlyGlyAspArgTyrTrpProTrp
750 760

ProIleAlaTyrIleHisPheLeuIleArgGlnLeuIleArgLeu
770

LeuThrArgLeuTyrSerIleCysArgAspLeuLeuSerArgSer
780 790

PheLeuThrLeuGlnLeuIleTyrGlnAsnLeuArgAspTrpLeu
800

ArgLeuArgThrAlaPheLeuGlnTyrGlyCysGluTrpIleGln
810 820

GluAlaPheGlnAlaAlaAlaArgAlaThrArgGluThrLeuAla
830

GlyAlaCysArgGlyLeuTrpArgValLeuGluArgIleGlyArg
840 850

GlyIleLeuAlaValProArgArgIleArgGlnGlyAlaGluIle
860

AlaLeuLeu***GlyThrAlaValSerAlaGlyArgLeuTyrGlu
870

TyrSerMetGluGlyProSerSerArgLysGlyGluLysPheVal
880

GlnAlaThrLysTyrGly.
890

5,306,615

IMMUNOASSAYS AND NUCLEIC ACID ASSAYS WITH LIQUID EXCHANGE SUPPORTS

Julian P. Breillatt, Jr., Mundelein, Ill., and John W. d. Eveleigh, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 134,026, Dec. 17, 1987, abandoned, which is a continuation-in-part of Ser. No. 32,642, Mar. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 863,607, May 15, 1986, abandoned. This application Oct. 31, 1990, Ser. No. 606,381

Int. Cl.[5] C12Q *1/68*; G01N *33/53*; C12N *15/00*

U.S. Cl. 435—6 **3 Claims**

1. An assay for a nucleic acid comprising the steps of:

(A) capturing a nucleic acid from a sample suspected of containing a nucleic acid by contacting said sample with a

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liquid affinity support, the liquid affinity support consisting essentially of:

(a) a chemically inert, water immiscible liquid perfluorocarbon carrier having a specific gravity greater than that of water and further having low nonspecific binding to a ligand or binder for the ligand; and

(b) a perfluorocarbon-substituted ligand or binder for a ligand complementary to the nucleic acid, the ligand or binder for the ligand securely but reversibly attached to the surface of said carrier through a highly fluorinated isocyanate anchor group;

(B) concentrating support:nucleic acid complex formed in step (A) to form a binder:nucleic acid complex; and

(C) analyzing for the nucleic acid by a nucleic acid hybridization assay.

5,306,616

MOLECULAR DIAGNOSIS OF AUTOSOMAL DOMINANT CHARCOT-MARIE-TOOTH DISEASE

James R. Lupski; Pragna I. Patel; Roberto M. de Oca-Luna, and Odila S. Cardenas, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Jun. 6, 1991, Ser. No. 711,615

Int. Cl.[5] C12Q *1/68*; C07H *21/04*; C12N *15/11*

U.S. Cl. 435—6 **20 Claims**

1. A method of detecting Charcot-Marie-Tooth-1A(CMT-1A) disease in a sample containing DNA from an individual to be tested comprising the step of measuring the presence or absence of a DNA duplication at a gene locus associated with CMt-1A disease.

5,306,617

PHENYTOIN DERIVATIVES

Takafumi Uchida, Oberwil, Switzerland; Hiroshi Ishikawa, Hino; Koichi Koyama, Machida, both of Japan; Yoshihiro Kurano, Akigawa, and Yoshiaki Uchida, Hachioji, both of Japan, assignors to Fujirebio Inc., Tokyo, Japan

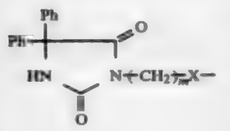
Filed Aug. 13, 1991, Ser. No. 744,411

Claims priority, application Japan, Aug. 16, 1990, 215076

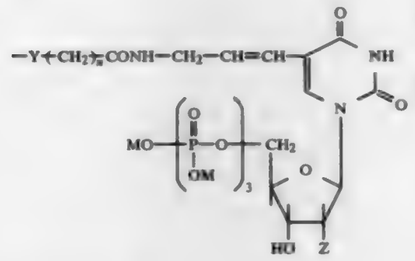
Int. Cl.[5] C12Q *1/68*; C07H *5/04, 17/00, 19/06*

U.S. Cl. 425—6 **12 Claims**

1. A phenytoin derivative represented by formula (I)



(I)



wherein

Ph denotes a phenyl group,

X denotes —O—, —NH— or —CH_2—,

Y denotes —CO— or —CH_2—,

Z denotes a hydrogen atom or a hydroxyl group,

M denotes a salt-forming cation, and

m and n are each an integer of 0 to 8 and m+n is from 2 to 16.

5,306,618

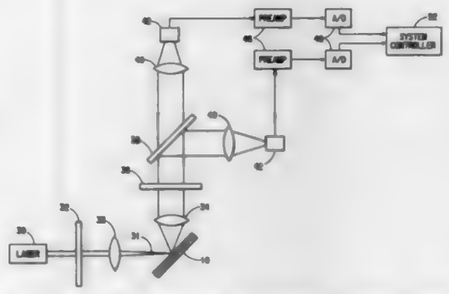
METHOD SYSTEMS AND REAGENTS FOR DNA SEQUENCING

James M. Prober, Wilmington, Del.; Rudy J. Dam, Landenberg, Pa.; Charles W. Robertson, Jr., Rockland; Frank W. Hobbs, Jr., Wilmington, both of Del., and George L. Trainor, Glen Mills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 57,566, Jun. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 881,372, Jul. 2, 1986, abandoned. This application Jan. 16, 1992, Ser. No. 821,569

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **17 Claims**



1. A system for detecting the presence of radiant energy emitted from more than two spectrally distinct species following separation in time and/or space and the identity of such species, comprising:

means responsive to the spectra of the species for generating a first signal that varies in amplitude in a first sense as a function of the nature of the species,

means responsive to the spectra of the species for generating a second signal that varies in amplitude in a second sense as a function of the nature of the species,

means responsive only to the first and second signals for obtaining a third signal corresponding to the ratio of the first and second signals, the amplitude of the third signal being indicative of the identity of each of the species.

5,306,619

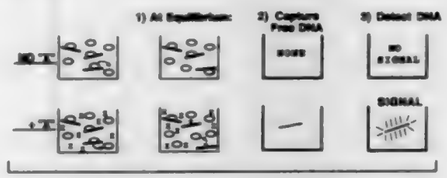
SCREENING ASSAY FOR THE DETECTION OF DNA-BINDING MOLECULES

Cynthia A. Edwards, Menlo Park; Charles R. Cantor, Berkeley, both of Calif., and Beth M. Andrews, Watertown, Mass., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Continuation of Ser. No. 723,618, Jun. 27, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,070

Int. Cl.[5] C12Q *1/68, 1/00*; G01N *33/566*; C07H *17/00*

U.S. Cl. 435—6 **17 Claims**



1. A method of screening for molecules capable of binding to a selected test sequence in a duplex DNA, comprising

(i) adding a molecule to be screened to a test system composed of (a) a DNA binding protein that is effective to bind to a screening sequence in a duplex DNA with a binding affinity that is substantially independent of such test sequence adjacent the screening sequence, but that is sensitive to binding of molecules to such test sequence, when the test sequence is adjacent the screening sequence, and (b) a duplex DNA having said screening and test sequences adjacent one another, where the binding protein is present in an amount that saturates the screening sequence in the duplex DNA,

(ii) incubating the molecule in the test system for a period sufficient to permit binding of the molecule being tested to the test sequence in the duplex DNA, and

(iii) comparing the amount of binding protein bound to the duplex DNA before and after said adding.

5,306,620

ANTIBODIES THAT BIND TO A LIGAND-INDUCED BINDING SITE ON INTEGRIN AND INDUCE INTEGRIN ACTIVATION

Mark H. Ginsberg; Timothy E. O'Toole; Edward F. Plow, all of San Diego, Calif., and Andrew L. Frelinger, III, Natick, Mass., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 417,565, Oct. 5, 1989, Pat. No. 5,284,751, which is a continuation-in-part of Ser. No. 175,342, Mar. 31, 1988, Pat. No. 5,114,842, which is a continuation-in-part of Ser. No. 70,953, Jul. 8, 1987, abandoned. This application Nov. 13, 1990, Ser. No. 613,357

Int. Cl.[5] G01N *33/567*

U.S. Cl. 435—7.21 **4 Claims**

1. A diagnostic method for determining activation competence of viable cells having cell surface integrim comprising:

(a) admixing said cells in a physiological fluid with an activating amount of integrim-activating antibodies that:

(i) immunoreact with said integrin and when immunoreacted increase the binding affinity of said integrin for binding to its specific ligand; and

(ii) immunoreact with a ligand-induced binding site formed on said integrin when said integrin is specifically bound to said specific ligand, to form an activating admixture;

(b) maintaining said activating admixture for a time period sufficient for said cell surface integrin to immunoreact with said integrin-activating antibodies and form an activated integrin immunocomplex on the surface of said cells; and

(c) assaying for the presence of said activated integrin immunocomplex formed in step (b) and thereby the activation competence of said cell,

wherein said integrin is GPIIb-IIIa, and said integrin-activating antibodies immunoreact with the GPIIIa subunit.

5,306,621

ENHANCED CHEMILUMINESCENT ASSAY

Larry J. Kricka, Berwyn, Pa., assignor to British Technology Group Limited, London, England

PCT No. PCT/GB90/01597, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/05872, PCT Pub. Date May 2, 1991

PCT Filed Oct. 16, 1990, Ser. No. 844,598

Claims priority, application United Kingdom, Oct. 17, 1989, 8923344; May 14, 1990, 9010763

Int. Cl.[5] G01N *21/76, 33/53*; C12Q *1/28*; C12N *9/96*

U.S. Cl. 435—7.91 **26 Claims**

1. A method of determining the presence or amount of an enzyme comprising the steps of:

subjecting a peroxidase, an oxidant and a dihydrophthalazinedione (DPD) to a chemiluminescent reaction in the presence of a pro-enhancer and a sample suspected of containing said enzyme, said enzyme acting catalytically to cleave the pro-enhancer to generate an enhancer of the chemiluminescent reaction, said enzyme being present in a limiting concentration relative to that of the pro-enhancer so that the enhancement depends on said generation of the enhancer by said enzymatic catalysis;

detecting or measuring the resulting chemiluminescence; and

relating the presence or amount of said chemiluminescence to the presence or amount of said enzyme.

5,306,622

HETEROGENEOUS IMMUNOASSAY PROCESS

Dieter Mangold, Mannheim, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 195,604, May 18, 1988, abandoned. This application Nov. 5, 1991, Ser. No. 788,173

Claims priority, application Fed. Rep. of Germany, May 29, 1987, 3718140

Int. Cl.[5] G01N *33/543*

U.S. Cl. 435—7.92 **6 Claims**

1. Method for determining an analyte in a liquid sample, comprising:

(i) contacting said sample to a carrier material comprising (a) a dissolvable labelled immunoreactant which specifically binds to said analyte and which reacts with said analyte to form a complex therebetween and (b) a dissolvable, detectable substance selected from the group consisting of a fluorescent dye and a colored dye which does not participate in the reaction between said analyte and said dissolvable labelled analyte specific immunoreactant and which is soluble in the same solutions and under the same conditions in which said dissolvable labelled specific immunoreactant is soluble wherein (a) and (b) dissolve from said carrier into said liquid sample to form a liquid mixture of said analyte, said labelled immunoreactant and said dissolvable detectable substance,

(ii) incubating said liquid mixture with a solid phase which comprises an amount of solid phase bound analyte larger than the amount of said labelled immunoreactant, to form immune complexes between said analyte and said dissolvable labelled immunoreactant and between said solid phase bound analyte and said labelled immunoreactant

(iii) separating solid phase bound immune complexes from liquid phase immune complexes;

(iv) measuring the amount of label in the liquid phase to provide a first, uncorrected value indicative of analyte concentration,

(v) measuring the amount of said detectable substance in said liquid phase to determine a second measurement value which is proportional to the portion of said labelled immunoreactant dissolved from said carrier which has not formed solid phase immunecomplexes and is present in said liquid phase, and;

(vi) determining a corrected analyte concentration from the difference of said second measurement value from a mean value for said detectable substance and correcting said first uncorrected value by said difference.

5,306,623

VISUAL BLOOD GLUCOSE CONCENTRATION TEST STRIP

Ernest J. Kiser, Los Altos; Edward G. Rice, Palo Alto, and Michael F. Tomasco, Mountain View, all of Calif., assignors to Lifescan, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 578,364, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 399,055, Aug. 28, 1989, abandoned. This application Jul. 26, 1991, Ser. No. 736,537

Int. Cl.[5] C12Q *1/54, 1/26, 1/28*; G01N *21/00*

U.S. Cl. 435—14 **7 Claims**

1. A reagent strip comprising:

a porous matrix having sample side and a test side, said matrix uniformly impregnated with a separation coating and a testing reagent;

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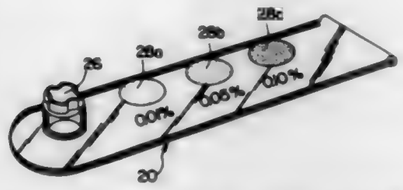
an upper support member upon which the matrix is mounted, having a slit which extend through the upper support member and permits visual observation of the test side;

a lower support member having a hole therethrough, said lower support member and said upper support member substantially surrounding the matrix;

said lower support member and said matrix defining a capillary gap therebetween which communicates with the hole and with a portion of the sample side opposite the slit;

said matrix having a pore size distribution suited to accept a whole blood sample suspected of containing glucose as an analyte applied onto said sample side via the hole and to pass said sample toward said test side by capillary actions;

said separation coating capable of separating from said whole blood a substantially clear component fluid containing said glucose by selectively retarding the passage of red blood cells through the matrix;



said testing reagent comprising an enzyme, a dye indicator, and a dye inhibitor capable of reacting with said glucose in said clear component fluid to vary coloration of the test side of said matrix, dependent upon the concentration level of the glucose in said fluid;

wherein said separation coating is selected from the group consisting of polyvinyl sulfonic acid, polyethylene glycol, polystyrene sulfonic acid, hydroxypropyl cellulose, polyproplene glycol, polyvinyl pyrrolidone and polyacrylic acid; and

said indicator and said inhibitor are present together on said matrix in bands, such that each band corresponds to one of two or more predetermined glucose concentrations and the presence of glucose concentrations in said whole blood sample which are equal to or greater than said predetermined concentrations may be detected by inspecting each band on the test side though said slit for variations in coloration.

5,306,624

PROCESS OF QUANTIFYING CELL NUMBER

Chris Roelant, Wilsele, Belgium, assignor to Packard Instrument Co., Inc., Meriden, Conn.

Filed Sep. 17, 1992, Ser. No. 946,974
Int. Cl.[5] C12Q *1/06*; G01N *21/76*
U.S. Cl. 435—39 **47 Claims**

1. A process of quantifying the number of viable cells in an aqueous suspension of cells, which process comprises the steps of:

a) admixing an effective detection amount of a light-emitting non-hazardous probe with said suspension to form an admixture, wherein the emission of light from said probe is proportional to and activated by an amount of a stimulant;

b) exposing said admixture to an effective triggering amount of a probe-trigger, wherein said probe-trigger interacts with said viable cells to generate said stimulant in an amount proportional to the number of said viable cells;

c) maintaining said admixture under biological reaction conditions and for a period of time sufficient for activation of said light-emitting non-hazardous probe; and

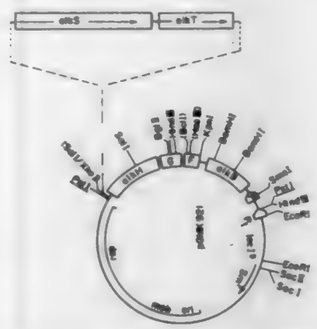
d) detecting the amount of light emitted from said probe and correlating said amount of light to the number of viable cells.

5,306,625

PROCESS FOR TERMINAL HYDROXYLATION OF ETHYL GROUPS ON AROMATIC 5- OR 6-RING HETEROCYCLES

Andreas Kiener, Visp, and Thomas Zimmermann, Naters, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Continuation of Ser. No. 846,900, Mar. 6, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,098
Claims priority, application Switzerland, Mar. 7, 1991, 696/91
Int. Cl.[5] C12P *1/00, 13/06*; C12N *15/00, 1/20*
U.S. Cl. 435—41 **21 Claims**


alkS
alkT
alkA
alkB
alkH
alkG
alkJ
alkK
alkL
alkM
alkN
alkF
alkT
alkS
Pst I
Sal I
Xho I
Nde I
Sma I
Bam HI
Eco RI
Sac I
Sac II
Eco RI
Sac I

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5,306,632

POROUS ACRYLONITRILE POLYMER SUBSTRATE FOR BONDING LIGANDS AND SEPARATING BIOLOGICALLY ACTIVE SUBSTANCES

Larry S. Anderson, Morwall, Conn.; Michael T. Cooke, New York, N.Y., and David A. Ley, New Canaan, Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 399,199, Aug. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 276,183, Nov. 23, 1988, abandoned. This application Feb. 25, 1993, Ser. No. 22,223

Int. Cl.[5] C12N *11/08, 11/06;* G01N *33/546, 33/549*

U.S. Cl. 435—180 66 Claims

1. A porous shaped substrate comprising polyacrylonitrile or a copolymer thereof containing nitrile groups, said substrate having a hydrophilic surface consisting of evenly distributed amide groups formed from said nitrile groups, said amide groups comprising between about 1.8 mole percent to less than about 15 mole percent of the total nitrile groups, said surface containing imide or carboxyl groups, said substrate being substantially non-swellable in water and able to resist hydrostatic pressures in columnar beds of up to about 3000 psi without collapsing.

5,306,633

BACTERIAL XYLANASE, METHOD FOR ITS PRODUCTION, BACTERIA PRODUCING A XYLANASE, DNA FRAGMENT ENCODING A XYLANASE, PLASMID CONTAINING THE DNA FRAGMENT, BAKING AGENTS CONTAINING A XYLANASE, AND METHOD FOR PRODUCING BREAD AND BAKED GOODS USING THE XYLANASE

Michael Gottschalk, Ober-Ramstadt; Erwin Schuster, Bensheim-Auerbach, and Bruno Sprössler, Rossdorf, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Aug. 10, 1993, Ser. No. 104,445

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1992, 4226528

Int. Cl.[5] A23L *1/28;* C12N *9/24, 9/26;* C07H *21/04*

U.S. Cl. 435—200 3 Claims

1. A bacterial xylanase having the amino acid sequence according to SEQ ID NO:3.

5,306,634

SOLUBLE ALDC DERIVATIVE AND USE THEREOF

Sven Pedersen, Gentofte, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

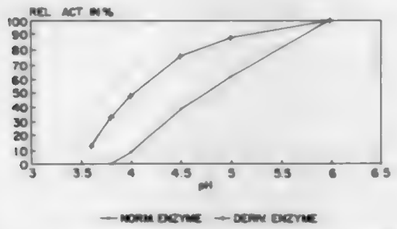
PCT No. PCT/DK91/00222, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/03543, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 9, 1991, Ser. No. 976,983

Claims priority, application Denmark, Aug. 16, 1990, 1949/90

Int. Cl.[5] G12N *9/88, 9/96;* C12C *1/00;* C12G *1/00*

U.S. Cl. 435—232 4 Claims



1. A soluble derivative of acetolactate decarboxylase (ALDC), wherein the derivative is obtained by treatment of ALDC in an aqueous medium with glutaraldehyde, in a concentration of between 0.1 and 5 g of glutaraldehyde per g of pure ALDC protein in the medium.

5,306,635

DNA ENCODING IMMUNOGENIC GPIII GLYCOPROTEIN OF VARICELLA ZOSTER VIRUS

Paul M. Keller, Lansdale; Mark W. Riemen, Doylestown; Ronald W. Ellis, Overbrook Hills, all of Pa.; Andrew J. Davison, Glasgow, Scotland, and Robert S. Lowe, Harleysville, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 526,075, May 18, 1990, abandoned, which is a division of Ser. No. 859,159, May 2, 1986, Pat. No. 4,952,674. This application Jun. 9, 1992, Ser. No. 896,038

Int. Cl.[5] C12N *15/38, 5/10, 1/19, 1/21*

U.S. Cl. 435—240.2 4 Claims

1. A 2.5 kbp fragment of VZV DNA having the nucleotide sequence:

```
ATG TTT GCG CTA GTT TTA GCG GTG GTA ATT CTT
GTA ACA CCA ACC CCT GCG ACT CGC TCT ATC GGA

        CCT CTT TGG ACC ACG GCT AAT AAA TCT TAC
        CAT ATG TCT GCT CTT CTA CGA GAA TAT TCC

GAC CGT AAT ATG TCT CTG AAA TTA GAA GCC TTT
AAA TCA CTT CAC TGG GGA AAT GAT AGA AAA CAC

        TAT CCT ACT GGT TTC GAT GAA GAA CTC ATT
        GTT TTC TTG GTT ATT GTT AAG GTT AAC CCT

ACA ACA CAC GAA GGA GAC GTC GGG CTG GTT ATA
TTC AAA GCA GAA CAT CGA GCA CCG TTT CCT GCT

        TTT CCA AAA TAC TTG TTA TCG CCA TAC CAT
        GGA CGT TTT GGA TTT CTT AGT CAC CCT GTG

ACA CCC GAC GTG AGC TTC TTT GAC AGT TCG TTT
GCG TTT ACT ACG TTC CCA CCA AAC CCC CTT GTA

        GCG CCG TAT TTA ACT ACG CAA CAT CTT GTT
        TGG CAT TTG GAA AGA GCT GAG ACC GCA GCA

ACT GCA GAA AGG CCG TTT GGG GTA AGT CTT TTA
ATT CTG GAA CAT AAA GCG CAT TTT GCT ACA TGG

        CCC GCT CGC CCA ACA GTC CCC AAG AAT ACT
        GAT GCC CTT GCC CGA CAT ACT TTT TTT TCT

GCC GAA GCA ATT ATC ACC AAC TCA ACT TTG AGA
CCA ATT CGA TAC TGG GCC ACC GGT TCG GTG CTT

        ATA CAC GTT CCC CTT TTT GGG TCG GTA TGG
        CTC ACA AGC GAC TCG GGT CGT GTG GAA GTA

AAT ATT GGT GTA GGA TTT ATG AGC TCG CTC ATT
ATT GTT GTA CCA CAT ACA GTA AAA CTG AAC GCG

        TCT TTA TCC TCT GGA CCA CCG ATA GAA TTA
        GTT ACA AGC GAC ACC ACA TGG TTC CAG CTA

AAT CCA CCG GGT CCG GAT CCG GGG CCA TCT TAT
ATG AAT TTT TCA AAG CAT GCT ACG GTC GAT ATA

        CGA GTT TAT TTA CTT GGA CGT GGG TTG GAT
        TGC GCA TAT CCC GAA GAG AGT TTG GAT TAC

CGC TAT CAT TTA TCC ATG GCC CAC ACG GAG GCT
GAC ATA AAC GAG GAA AGC TAT TAC CAT ATC GCC

        CTG CGG ATG ACA ACG AAG GCG GAT CAA CAT
        GCA AGA ATA GCC ACA TCA ATT TTT GCG TTG

TCG GAA ATG GGC CGT ACC ACA GAA TAT TTT CTG
TTA AAA TTC CTT AAT TAC ATT TTA ATG CGG ATA

        TTA GAT GAG ATC GTA GAT GTT CAG TAT CAA
        GGA GCA GGA GCT CAT CCC AAC ACT ATA TCC

GGA ACC TCG GAT CTG ATC TTT GCC GAT CCA TCG
GGT CAG GTA AAA CCC GCA AAT GTC GAT TAT TTT

        CAG CTT CAT GAC GAA CTT TCA CTT CTT TTT
        ATT TCA TAT GAT GAA GCC CGT GAT CAA CTA
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AAG ACC GCA TAC GCG CTT TCC CGT GGT CAA GAC
GTT ATA ATG AGC ATA TAC AAG GGG CTG CTT GTG

        CAT GTG AAT GCA CCT TCT CTC GCC AGG CGT
        AAG CAA AAT TTA AAT GCT ACA GAG AGG CAG

GCT TTA TTT TTT GCC TCA ATG ATT TTA TTA AAT
GTA TTA GAC GGT CGC ACA ACT TTG CTT TTA ATG

        TTC CGC GAA GGA CTA GAA AAT TCA TCT CGG
        ACA TCC ATG TGT ACG GCA GCT CAC GCC ACG

CAA GCA GCA CTT AAC ATA CAA GAA GGC CTG GCA
ATA CCA ACC GTA TAC AGT CCT TGT ATG GGT TCC

        TAC TTA AAT CCT TCA AAA CAC ATG TTT ACA
        CTT CGT ACA GAC CTC ACG GAA GAG ATT CAT

GTT ATG AAT CTC CTG TCG GCA ATA CCA ACA CGC
CTA GAC GAA TCT GAA ATA TTC GAC GCG GCA TTT

        CCA GGA CTT AAC GAG GTA TTG CAT ACC CAA
        AAA ACC ATG ATG ATT TTT ACC ACA TGG ACT

GCC AAA GAT TTG CAT ATA CTC CAC ACC CAT GTA
GCG CGT AAC GGA GAA TAT GTG CTC ATT CTT CCA

        CCA GAA GTA TTT ACG TGT CAA GAT GCA GCC
        GCT GTC CAG GGA CAC AGT TAT GTG ATT ACA

CGA AAC AAA CCT CAA AGG GGT TTG GTA TAT TCC
TCC GTT GTT TAT TTA AGC AGG GAT ACT TGC GTG

        CTG GCA GAT GTG GAT GTA TAT AAC CCC ATA
        TCT GAA CAT GGT GTC ATA GAG ACG GTC GCA

CTG CCC CAT CCG GAC AAT TTA AAA GAA TGT TTG
ACC ACG GGG GCG ATT ATG GAT ATA ATT ATT ATT

        TAT TGC GGA AGT GTT TTT CTT AGG TAT CTA
        GAC AGC AAA GAT ACA GAA CGA CAA CTA GCC

GCT ATG GGA AAC TCC ACA ATT CCA CCC TTC AAT
GTG TTG TTG TTT CCA AAC GGA ACT GTG GTA ACG

        CCA GAC ATG CAC GGG GAT GAC TCT AAG GCT
        CTT CTA GGA TTC GAA CGA CGA CAA GCC

ATA CGA ATG TCG GGA CAA TAC CTT GGG GCC TCT
TTT GGT ATT ATC GGA TGG ATG TTA TGT GGA AAT

        TTA GGA GGG GCG TTT CTG GCG GTA GTG GGG
        TCC CGC CTT CGA GAA TAT AAT AAA ATA CCT

CTG ACA TAA
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or a subportion of the foregoing sequence encoding an immunogenic epitope selected from the group consisting of phe[152]-pro[173]; glu[793]-tyr[804]; and gly[828]-thr[841].

5,306,636

GENE, VECTOR AND TRANSFORMANT FOR THERMOSTABLE LIPASE AND PREPARATION OF THEM AND THERMOSTABLE LIPASE

Taro Iizumi, Isehara; Koichi Nakamura, Sagamihara, and Tetsuro Fukase, Kamakura, all of Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Filed Jan. 10, 1991, Ser. No. 639,330

Int. Cl.[5] C12N *15/55, 15/74, 1/21, 9/20*

U.S. Cl. 435—252.3 3 Claims

1. A thermostable lipase gene consisting essentially of a DNA obtained by cloning a chromosomal DNA from Pseudomonas sp. KWI-56, said obtained DNA encoding a thermostable lipase and having the nucleotide sequence of SEQ ID NO:1, said SEQ ID NO: 1 being:

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GCC GAT GGC TAC GCG GCG ACG CGT TAT CCG ATC
                                        ATC CTC GTG  42

CAC GGG CTC TCG GGT ACC GAC AAG TAC GCC GGC
                                    GTG GTC GAG  84

TAT TGG TAT GGC ATC CAG GAA GAC CTG CAG CAG
                                    AAC GGT GCG 126

ACC GTC TAC GTC GCG AAC CTG TCG GGG TTC CAG
                                    AGC GAC GAC 168

GGC GCG AAC GGG CGC GGC GAA CAG TTG CTC
                                    GCT TAC GTG AAG 210

ACG GTG CTC GCG GCG ACG GGC GCG ACC AAG
                                    GTC AAT CTC GTC 252

GGC CAC AGC CAG GGC GGC CTC ACG TCG CGC TAT
                                    GTC GCG GCC 294

GTC GCG CCC GAT CTC GTG GCG TCG GTG ACG ACG
                                    ATC GGC ACG 336

CCG CAT CGC GGC TCC GAG TTT GCC GAC TTC GTG
                                    CAG AAC GTG 378

CTG GCG TAC GAT CCG ACC GGG CTT TCG TCA TCG
                                    GTG ATC GCC 420

GCG TTC GTC AAT GTG TTC GGC ATC CTG ACG AGC
                                    AGC AGC CAC 462

AAC ACG AAC CAG GAC GCG CTC GCC GCG CTG CAG
                                    ACG CTG ACC 504

ACC GCC CGG GCT GCC ACG TAC AAC CAG AAC TAT
                                    CCG AGC GCG 546

GGC CTG GGT GCG CCG GGC AGT TGC CAG ACC
                                    GGC GCG CCG ACC 588

GAA ACC GTC GGC GGC AAC ACG CAC CTG CTG TAT
                                    TCG TGG GCC 630

GGC ACG GCG ATC CAG CCG ACG CTT TCG GTG TTC
                                    GGC ATC ACG 672

GGC GCG ACC GAC ACG AGC ACC GTT CCG CTC GTT
                                    GAT CTG GCG 714

AAC GTG CTC GAC CCG TCG ACG CTC GCG CTG TTC
                                    GGC ACC GGC 756

ACG GTG ATG ATC AAC CGC GGC TCC GGG CAG AAC
                                    GAC GGG CTC 798

GTG TCG AAG TGC AGT GCG CTG TAC GGC AAG GTG
                                    CTG AGT ACG 840

AGC TAC AAG TGG AAC CAC CTC GAC GAG ATC AAC
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VOL 1161 ISS 4 AP 26 1994 UMI

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CAG CTG CTC 882

GGC GTG CGC GGC GCG TAT GCG GAA GAT CCG

GTC GCG GTG ATC 924

CGC ACG CAT GCG AAC CGG CTG AAG CTG GCG

GGC GTG 960.

5,306,637

METHOD FOR RECOVERY OF INTRACELLULAR MATERIAL BY DISRUPTION OF MICROBIAL CELLS WITH CARBON DIOXIDE UNDER PRESSURE

Ho-Mu Lin, 30 Morehouse Ct., and Li-Fu Chen, 112 Seneca La., both of West Lafayette, Ind. 47906

Continuation of Ser. No. 748,435, Aug. 22, 1991, abandoned. This application May 10, 1993, Ser. No. 58,671

Int. Cl.[5] C12N *1/06, 9/36, 9/88*

U.S. Cl. 435—259 **5 Claims**

1. A method to rupture microbial cells in order to recover intracellular materials in said cells comprising

a) treating said cells with a lytic enzyme selected from the group consisting of β-glucuronidase, lysozyme, glucanases and mixtures thereof in conjunction with carbon dioxide under pressure of from above 500 psi (gauge) to about 5,000 psi so that said carbon dioxide will enter said cells and for a time of from between about one hour and about fifteen hours and a temperature of from about 10° to about 85° C. to allow enough carbon dioxide into said cells to effect later rupture then,

b) suddenly releasing the applied fluid pressure on said cells so that the outer wall or membrane of said cells is ruptured by expansion of said carbon dioxide within said cells,

c) repeating said steps a) and b) at least once,

d) separating the remaining intracellular materials of step c), and

e) recovering said intracellular materials, wherein said enzyme remains active and protein in said cells retains its native state in the ruptured cell suspension.

5,306,638

AMINE ADDITIVE ASSISTED ENZYMATIC ESTERIFICATION OF 1,2-DIOL MONOSULFONATES

Neil W. Boaz, Waterloo, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 20, 1992, Ser. No. 854,944

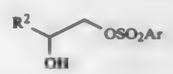
Int. Cl.[5] C12P *41/00, 11/00*

U.S. Cl. 435—280 **12 Claims**

1. A process for the enzymatic esterification of 1,2-diol monosulfonates comprising contacting:

(a) a vinyl ester selected from the group consisting of vinyl acetate, vinyl propionate, vinyl butyrate, isopropenyl acetate and vinylchloroacetate;

(b) a 1,2-diol monosulfonate having the formula:



(B)

wherein

R^2 is a straight or branched, substituted or unsubstituted C_1–C_{10} alkyl group, a straight or branched, substituted or unsubstituted C_2–C_{10} alkenyl group, or a straight or branched, substituted or unsubstituted C_2–C_{10} a alkynyl group, wherein said substituents are selected from the group consisting of halogen, cyano, C_1–C_5 alkoxy and C_1–C_5 alkylthio; and

Ar represents a substituted or unsubstituted C_4–C_{10} aromatic group wherein said substituents are selected from the group consisting of halogen atoms, nitro, or a dialkylamino having alkyl groups with 1 to 3 carbon atoms with each alkyl the same or different;

(c) an enzyme derived from a microorganism or animal organ which has steroselective activity to asymmetrically esterify said 1,2-diol monosulfonate;

(d) a nonhydroxylic organic solvent; and

(e) an amine additive of the general formula $R^3{}_2R^4N$, wherein

R^3 may be the same or different and is selected from hydrogen or a straight or branched C_1–C_{20} alkyl, and

R^4 is a straight or branched C_1–C_{20} alkyl;

to produce a mixture of enantiomerically enriched 1,2-diol monosulfonate and corresponding enantiomerically enriched entipodal ester.

5,306,639

DNA ENCODING GLUCANASE ENZYMES

Aizo Matsushiro, 4-15-2, Suite 565, Aoyamadai, Japan

Continuation of Ser. No. 454,159, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 840,940, Mar. 18, 1986, abandoned. This application Oct. 8, 1991, Ser. No. 772,850

Claims priority, application Japan, Mar. 20, 1985, 60-57443

Int. Cl.[5] C12N *15/31*

U.S. Cl. 435—320.1 **2 Claims**

1. A recombinant DNA molecule consisting of segments of DNA from different genomes which have been joined end-to-end outside of living cells and which have the capacity to transform a host and to be maintained therein, and the progeny thereof, comprising a DNA sequence selected from the group consisting of:

(a) a DNA fragment present in Arthrobacter sp. CB-8 (FERM BP-995) and encoding α-1,6-glucan 6-glucanohydrolase,

(b) DNA sequences which hybridize to the foregoing DNA under strigent conditions and which code on expression for α-1,6-glucan 6-glucanohydrolase, and

(c) DNA sequences which code on expression for an α-1,6-glucan 6-glucanohydrolase enzyme of the type coded on expression by any of the forgoing DNA sequences and fragments,

said DNA sequences and fragments being operatively linked to an expression control sequence in said recombinant DNA molecule.

5,306,640

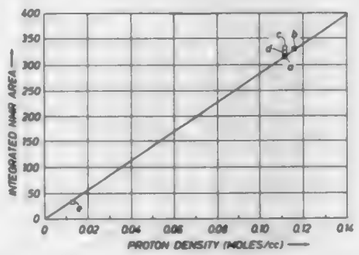
METHOD FOR DETERMINING PRESELECTED PROPERTIES OF A CRUDE OIL

Harold J. Vinegar, and Pierre N. Tutunjian, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 28, 1987, Ser. No. 114,793

Int. Cl.[5] G01R *33/08, 33/20;* **G21B** *49/08*

U.S. Cl. 436—29 **5 Claims**



1. A method of obtaining a preselected property of a crude oil from a sample inside a porous medium which sample contains both crude oil and water, comprising the steps of:

differentiating between crude oil and water based on frequency-resolved chemical shift NMR spectroscopy of said crude oil and water in said porous medium; and

determining the preselected property of said crude oil from an NMR measured parameter in the chemical shift spectrum.

5,306,641

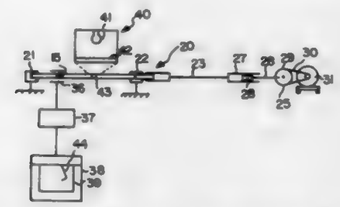
APPARATUS AND METHOD FOR DETERMINING GEL RATE OF POLYMERIZABLE COMPOSITIONS

Edward J. Saccocio, 1790 Sugar Run Trail, Bellbrook, Ohio 45305

Continuation of Ser. No. 558,587, Jul. 27, 1990, abandoned. This application Aug. 12, 1991, Ser. No. 746,068

Int. Cl.[5] G01N *33/44*

U.S. Cl. 436—85 **12 Claims**



1. Apparatus for use with a polymerizable composition comprising in combination:

container means to be filled with a polymerizable composition for forming a liquid column therein and along a length thereof;

reciprocating means for applying a reciprocating motion to said liquid column within said container means;

gelling means for gelling said polymerizable composition within said container means;

means for determining when said reciprocating motion of said liquid column stops due to gelation of the liquid column across a diameter thereof anywhere along the length of said liquid column.

5,306,642

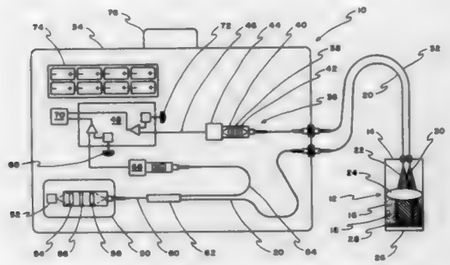
DEVICE FOR AQUEOUS DETECTION OF NITRO-AROMATIC COMPOUNDS

William K. Reagen, Stillwater, Minn.; Amber L. Schulz, Bremerton, Wash.; Jani C. Ingram, Idaho Falls, Id.; Gregory D. Lancaster, Idaho Falls, Id., and Alan E. Grey, Idaho Falls, Id., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 21, 1992, Ser. No. 993,552

Int. Cl.[5] G01N *21/64*

U.S. Cl. 436—106 **12 Claims**



9. A method of detecting parts-per-billion amounts of dissolved nitro-aromatic based chemical compounds in water comprising the steps of:

a. submerging a chemical sensor in the water permitting water to enter a lower section of the chemical sensor, said chemical sensor having a supply optical fiber, a return optical fiber, and a chemically coated plate; said plate coating having a combination of perylene, polyethylene, and squalene;

b. activating a filtered light source;

c. directing a filtered light though fiber optics to a beam splitter;

d. splitting the filtered light;

e. directing a first filtered light from the beam splitter through the supply optical fiber to the chemical sensor;

f. directing a second filtered light from the beam splitter to a reference detector;

g. reflecting the first filtered light from the supply optical fiber through the water to the return optical fiber, at a reduced light intensity, by means of the chemically coated plate;

h. directing the return optical fiber light to a photon-sensing device;

i. conducting a reference electrical signal from the reference detector to an electronics assembly;

j. conducting a photon-sensing device electrical signal &rom the photon-sensing device to the electronics assembly;

k. comparing the photon-sensing device electrical signal and the reference electrical signal; and then

l. activating an alarm if the photon-sensing device electrical signal decreases below a present limit as a result of interaction of the dissolved chemical compound with the chemical coated plate.

5,306,643

METHOD FOR DETECTING LOW LEVELS OF ALKYLBENZENE OR MINERAL OIL IN POLYOL ESTER LUBRICANTS IN THE COMPRESSORS

Rajender K. Sadhir, Plum Boro, Westmoreland County, Pa., and Jeffrey B. Berge, Edina, Minn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1993, Ser. No. 114,404

Int. Cl.[5] G01N *33/00, 31/00*

U.S. Cl. 436—140 **6 Claims**

1. A method for detecting low level of at least one alkylbenzene and mineral oil impurity in polyol ester lubricant for compressors which comprises:

a) adding a sufficient amount of a mixture of alcohol and water to a sample of said lubricant and;

b) comparing the clarity of the resulting solution against a blank wherein said clarity indicates substantially pure polyol ester lubricant whereas no clarity indicates said at least one alkylbenzene and mineral oil.

5,306,644

MASS SENSOR METHOD FOR MEASURING ANALYTES IN A SAMPLE

Carl A. Myerholtz, Cupertino; May Tom-Moy, San Carlos; Darlene J. Spira-Solomon, Portola Valley; Richard L. Baer, Los Altos, and Thomas P. Doherty, San Mateo, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 792,975, Nov. 15, 1991, Pat. No. 5,283,037, which is a continuation-in-part of Ser. No. 251,149, Sep. 29, 1988, Pat. No. 5,130,257, which is a continuation-in-part of Ser. No. 876,804, Apr. 29, 1992, which is a continuation of Ser. No. 404,721, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 251,149, Sep. 29, 1988, Pat. No. 5,130,257. This application Apr. 1, 1993, Ser. No. 41,662

Int. Cl.[5] G01N *27/00, 33/00;* **H01L** *41/00, 41/08*

U.S. Cl. 436—149 **18 Claims**

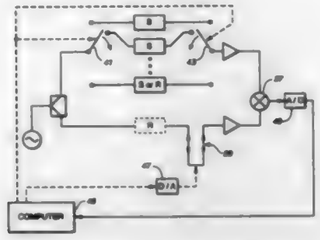
1. A measurement system for determining the amount of at least one analyte in a liquid sample suspected of containing such analytes comprising:

a plurality of piezoelectric surface transverse wave sample devices comprising a receptor layer attached to the surface thereof, which receptor layer contains receptor molecules which are complementary to the analytes and which

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device generates data relating to the mass change on the surface of the device arising from contacting the device with the sample;

at least one piezoelectric surface transverse wave reference device comprising a receptor layer having little or no affinity for the analyte(s) and which generates data as to



the interferences arising from contacting the device with the liquid sample; and

a measurement instrument capable of correlating the data from the sample and reference devices so as to provide data on at least one of the presence and amount of the analytes in the liquid sample.

5,306,645

CONCENTRATION AND TRANSFER METHODS FOR A CHROMATOGRAM AND AN LC/IR MEASURING METHOD

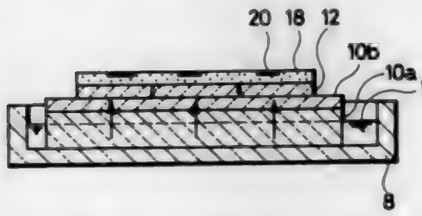
Hiroshi Yamamoto, Nagaokakyo; Katsuhiko Ichimura, Kobe; Kenji Nakamura, Ibaraki; Tomiyuki Maeda, Kyoto; Takahiro Tajima, Kyoto, and Kiyoshi Wada, Mukaijima-Marumachi, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 30, 1991, Ser. No. 647,899

Claims priority, application Japan, Jan. 31, 1990, 2-23409

Int. Cl.[5] G01N *30/94, 30/95*

U.S. Cl. 436—162 **12 Claims**



1. A transfer method comprising the steps of placing a thin Layer Chromatography (TLC) plate having sample spots and including no support material on a porous substrate, placing a layer of an infrared-nonabsorbent substance on said TLC plate to be in close contact therewith, and upwardly moving a solvent from said porous substrate toward said infrared-nonabsorbent substance layer through said TLC plate by capillary action for vaporizing the same from the surface of said infrared-nonabsorbent substance layer, thereby transferring said sample spots developed in said TLC plate onto said infrared-nonabsorbent substance layer.

5,306,646

METHOD FOR PRODUCING TEXTURED SUBSTRATES FOR THIN-FILM PHOTOVOLTAIC CELLS

Robert J. Lauf, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Dec. 23, 1992, Ser. No. 996,328

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—2 **16 Claims**



1. The method for producing a thin-film photovoltaic cell comprising a film of semiconductor material supported on a surface region of a substrate formed of sintered particulates of a ceramic material having non-rectifying properties with the substrate being in a preselected configuration and with the surface region of the substrate supporting the film of semiconductor material being provided with a light-reflecting texture prior to the sintering of the ceramic particulates, said method comprising the steps of providing a substrate for supporting a film of semiconductor material by forming a mixture including ceramic particulates, a relatively volatile binder and a relatively volatile plasticizer, mechanically forming the mixture into sheet means having opposite first and second planar surface, contacting the first planar surface of the sheet means with a patterned surface of a mechanical means for embedding the pattern of the patterned surface in the first planar surface of the sheet means, said binder being in the mixture in a concentration adequate for maintaining the ceramic particulates together in the form of the mechanically formed sheet means and said plasticizer being in the mixture in a concentration adequate for providing the mechanically configured sheet means with sufficient plasticity to receive and retain the pattern embedded in the first planar surface, sizing at least a portion of the sheet means into a configuration desired of the substrate, heating the configuration to a temperature adequate to first volatilize the binder and the plasticizer and then adequate to sinter together the ceramic particulates for providing the substrate, and thereafter depositing a film of semiconductor material onto the patterned surface of the first planar surface of the substrate.

5,306,647

METHOD FOR MANUFACTURING A SOLAR CELL FROM A SUBSTRATE WAFER

Volker Lehmann, Munich; Reinhard Stengl, Stadtbergen; Hermann Wendt, Neukeferloh; Wolfgang Hoenlein, Unterhaching, and Josef Willer, Riemerling, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 30, 1992, Ser. No. 998,611

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202455

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—2 **20 Claims**

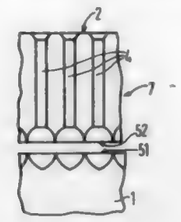
1. A method for manufacturing a solar cell from a substrate wafer, comprising the steps of:

(a) stripping a self-supporting layer of n-doped, monocrystalline silicon by electrochemical etching from a substrate wafer of n-doped, monocrystalline silicon, said stripping comprising the steps of —:

(1) forming holes in a first surface of the substrate wafer by electrochemical etching;

(2) modifying the process parameters of the etching when a depth of the holes which essentially corresponds to thickness of the self-supporting layer has been reached

such that the cross section of the holes is enlarged and further such that the self-supporting layer is stripped as a result of the holes growing together;



(b) producing at least one pn-junction in the self-supporting layer; and

(c) providing the self-supporting with contacts such that the pn-junction may be connected as a solar cell.

5,306,648

METHOD OF MAKING PHOTOELECTRIC CONVERSION DEVICE

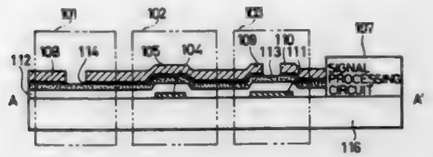
Masaki Fukaya, Isehara; Soichiro Kawakami, Nagahama; Satoshi Itabashi, Atsugi; Katsunori Terada, Sagamihara; Ihachiro Gofuku, Hiratsuka; Katsumi Nakagawa, Nagahama; Katsunori Hatanaka; Yoshinori Isobe, both of Yokohama; Toshihiro Saika, Atsugi; Tetsuya Kaneko, Yokohama; Nobuko Kitahara, Tama, and Hideyuki Suzuki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 496,402, Mar. 20, 1990, abandoned, which is a division of Ser. No. 412,586, Sep. 25, 1989, Pat. No. 4,931,661, which is a continuation of Ser. No. 246,962, Sep. 21, 1988, abandoned, which is a continuation of Ser. No. 5,886, Jan. 22, 1987, abandoned. This application Jul. 1, 1992, Ser. No. 907,287

Claims priority, application Japan, Jan. 24, 1986, 61-11981; Jan. 24, 1986, 61-11982; Feb. 20, 1986, 61-33777; Jun. 7, 1986, 61-131099; Jun. 23, 1986, 61-144990; Jun. 30, 1986, 61-153281

Int. Cl.[5] H01L *21/205*

U.S. Cl. 437—3 **4 Claims**



1. A method for producing a device having a charge accumulating element provided with upper and lower electrodes, a first semiconductor layer and an insulating layer and a transistor electrically connected with said charge accumulating element provided with a gate electrode, a gate insulating layer and a second semiconductor layer, said charge accumulating element and said transistor being formed on an insulating surface of a common substrate, comprising the steps of:

forming said lower electrode and said gate electrode on said insulating surface;

forming said insulating layer and said gate insulating layer on said lower electrode and said gate electrode in a same first deposition process step so that said insulating layers are constituted of a common layer;

forming said first and second semiconductor layers on said insulating layers in a same second deposition process step, said semiconductor layers being a thin film; and

forming source and drain electrodes and said upper electrode.

5,306,649

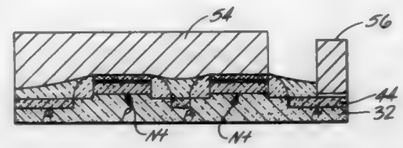
METHOD FOR PRODUCING A FULLY WALLED EMITTER-BASE STRUCTURE IN A BIPOLAR TRANSISTOR

Francois Hébert, Sunnyvale, Calif., assignor to Avantek, Inc., Milpitas, Calif.

Division of Ser. No. 736,743, Jul. 26, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,226

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—31 **20 Claims**



19. A method for producing a fully walled emitter-base structure for a bipolar transistor comprising the steps of:

defining a monocrystalline silicon emitter region within a base island region wherein the emitter region is raised relative to the surrounding base island region;

forming a transistor base in the base island region;

producing an oxide wall surrounding the raised emitter region for isolating the emitter from the base;

forming a metal silicide layer on the base;

covering substantially the entire silicide layer with an oxide layer; and

depositing a metal emitter contact over the oxide layer over the base, over the oxide wall, and into direct contact with the monocrystalline silicon emitter.

5,306,650

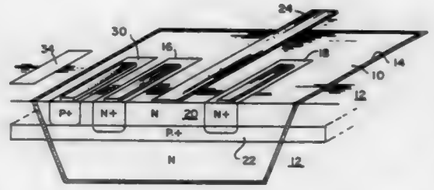
METHOD OF MAKING SILICON MESFET FOR DIELECTRICALLY ISOLATED INTEGRATED CIRCUITS

William E. O'Mara, Jr., Kingston, N.H., and James D. Beason, Melbourne Village, Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 523,427, May 15, 1990, Pat. No. 5,014,108. This application Oct. 31, 1990, Ser. No. 606,193

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—39 **9 Claims**



1. A method of manufacturing a MESFET in an island of a first conductivity type isolated by dielectric isolation from a substrate comprising:

forming source and drain regions of said first conductivity type spaced in said island;

forming a bottom gate region of a second conductivity type in and below the surface of said island; and

forming a top gate on said top surface of said island of a material which forms a Schottky barrier therewith continuously across a portion of said island forming a channel between said source drain regions and beyond two sides of said dielectric isolation two points onto said substrate to divide said island into at least two regions.

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VOL 1161 ISS 4 AP 26 1994 UMI

5,306,651

PROCESS FOR PREPARING A POLYCRYSTALLINE SEMICONDUCTOR THIN FILM TRANSISTOR

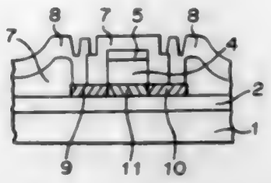
Kunio Masumo, Yokohama, and Masanori Yuki, Hadano, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,092

Claims priority, application Japan, May 11, 1990, 1-20111; May 15, 1990, 1-22938

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **5 Claims**



1. A process for preparing a polycrystalline semiconductor thin film transistor, comprising the steps of:

forming a non-singlecrystalline semiconductor layer formed of amorphous silicon and having a thickness of 10–500 nm on a front surface side of a transparent substrate;

forming a gate insulation layer on the non-singlecrystalline semiconductor layer;

forming a gate electrode of non-singlecrystalline semiconductor on the gate insulation layer at a channel region;

implanting impurity ions into the gate electrode and a source-drain region of said non-singlecrystalline semiconductor layer formed of amorphous silicon, wherein the gate electrode of semiconductor is used as a mask;

irradiating laser beams so that simultaneously the non-singlecrystalline semiconductor at the channel region is polycrystallized, the non-singlecrystalline semiconductor at the source and drain region is polycrystallized, said impurity ions implanted into the non-singlecrystalline semiconductor at the source-drain region are activated, and

said impurity ions implanted into the gate electrode are activated and the non-singlecrystalline semiconductor of the gate electrode is polycrystallized, without causing said non-singlecrystalline semiconductor layer to reach a molten state.

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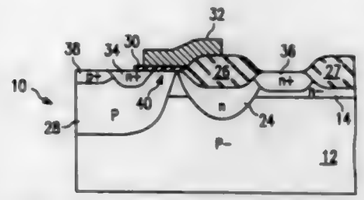
LATERAL DOUBLE DIFFUSED INSULATED GATE FIELD EFFECT TRANSISTOR FABRICATION PROCESS

Oh-Kyong Kwon, Plano; Taylor R. Efland, Richardson; Satwinder Malhi, Garland, all of Tex., and Wai T. Ng, Thornhill, Canada, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1991, Ser. No. 815,732

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—40 **27 Claims**



1. A method of fabricating a transistor on a semiconductor layer of a first conductivity type comprising the steps of:

forming a thin epitaxial layer of a second conductivity type at a surface of the semiconductor layer;

implanting a dopant of said second conductivity type into a defined implant area on a face of said thin epitaxial layer to create a drift region;

forming a thick insulator layer on said drift region, wherein said step of forming said thick insulator layer drives in said dopant to extend said drift region through said thin epitaxial layer and into said substrate;

implanting a body of the first conductivity type on said face of said thin epitaxial layer adjacent said drift region, wherein said body extends through said thin epitaxial layer and into said substrate;

implanting a source region and a drain region of said second conductivity type at said face, said source region within said body, said drain region adjacent said drift region; and

forming a conductive gate insulatively disposed on said body extending from said source region to said thick insulator layer.

5,306,653

METHOD OF MAKING THIN FILM TRANSISTORS

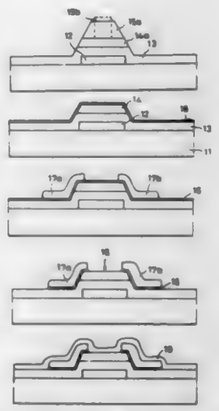
Chang W. Hur, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Youngdungpo, Rep. of Korea

Filed Aug. 25, 1992, Ser. No. 934,234

Claims priority, application Rep. of Korea, Aug. 27, 1991, 14856

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **16 Claims**



1. A method of making a thin film transistor, comprising the steps of:

(a) forming a gate electrode having a desired length of an insulating transparent substrate, thereby obtaining a first resultant structure;

(b) forming, entire on the first resultant structure, an insulating layer, a semiconductor layer, and a photoresist, in this order;

(c) performing a back substrate exposure at the insulating transparent substrate using the gate electrode as a photo mask, to form a photoresist pattern;

(d) baking the photoresist pattern to make it flow outwardly for obtaining a desired bottom width thereof;

(e) etching the semiconductor layer together with the insulation layer using the photoresist pattern as an etch mask to form a semiconductor layer pattern;

(f) removing the photoresist pattern, thereby obtaining a second resultant structure;

(g) forming, entire on the second resultant structure, an ohm contact layer for reducing a contact resistance;

(h) depositing a metal layer over the ohm contact layer and then photoing and etching the metal layer to remove its portion disposed above the semiconductor pattern and its opposite side edge portions, thereby forming a metal layer pattern for source and drain electrodes;

(i) etching the ohm contact layer using the metal layer pattern as an etch mask to form, on the semiconductor layer pattern, a through hole for making the metal layer pattern come into contact with other upper electrodes to be subsequently formed, thereby obtaining a third resultant structure; and

(j) forming an insulation layer for a passivation, entire on the third resultant structure.

5,306,654

METHOD FOR MANUFACTURING INSULATED GATE FIELD EFFECT TRANSISTOR

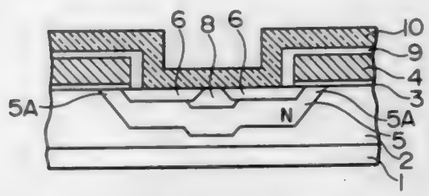
Nobuyuki Kometani, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 21, 1993, Ser. No. 7,251

Claims priority, application Japan, May 7, 1992, 4-114395

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—41 **6 Claims**



1. In a method for manufacturing ark insulated gate field effect transistor on a semiconductor substrate, said method including steps of forming a gate insulation film and a gate electrode of a polycrystalline silicon layer, patterning said gate insulation film and gate electrode for forming an opening therein, doping said gate electrode with a P-type dopant, forming an N-type base layer adjacent to said opening, introducing a P-type dopant to a portion of said base layer for forming a P-type source region, introducing an N-type dopant to another portion of said base layer for forming an N-type contact region adjacent to said source region, the improvement wherein said doping of said gate electrode is carried out after said introducing of said N-type dopant for forming the contact region.

5,306,655

STRUCTURE AND METHOD OF MANUFACTURE FOR MOS FIELD EFFECT TRANSISTOR HAVING LIGHTLY DOPED DRAIN AND SOURCE DIFFUSION REGIONS

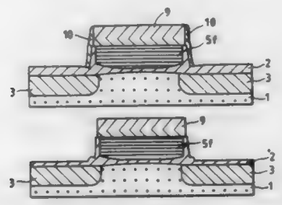
Kazumi Kurimoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 735,237, Jul. 24, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 977,462

Claims priority, application Japan, Jul. 24, 1990, 2-196621

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—44 **2 Claims**



1. A method of manufacture of a metal-oxide semiconductor field effect transistor comprising successively executed steps of:

(a) sequentially forming upon a major face of a semiconductor substrate (1) that is of a first conduction type a first insulating film (2), a conducting film for use in forming a gate electrode, formed over said first insulating film, and a second insulating film formed over said conducting film;

(b) forming a mask by photolithography and executing anisotropic etching using the mask, to a depth sufficient to selectively expose said first insulating film, to form a portion (5*f*) of said conducting film as a gate electrode, with a portion (9) of said second insulating film covering only a top face of said gate electrode;

(c) forming over said gate electrode, said second insulating film portion thereon, and adjoining regions of said first insulating film, a third insulating film consisting of a material which is not readily permeable to oxygen;

(d) executing anisotropic etching to selectively remove said third insulating film, leaving said third insulating film (10) only upon side faces of said gate electrode (5*f*) and of said second insulating film portion (9);

(e) executing ion implantation to form first and second highly doped diffusion regions (3) of a second conduction type within said major face of the semiconductor substrate;

(f) executing oxidation processing to oxidize outer end portions of an underside of said gate electrode, while side faces of said gate electrode extending above said end portions are protected from oxidation by said third insulating film, to thereby form thick oxide insulating film regions (2*b*) between said outer end portions of the gate electrode underside and said major face of the semiconductor substrate; and

(g) executing large tilt angle ion implantation to form, in said major face of the semiconductor substrate, first and second lightly doped diffusion regions (4) of said second conduction type, respectively adjoining said first and second highly doped diffusion regions (3), with said said lightly doped diffusion regions extending below respective ones of said thick oxide insulating film regions (2*b*).

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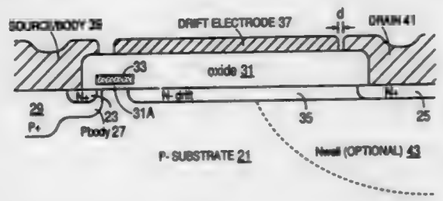
METHOD FOR REDUCING ON RESISTANCE AND IMPROVING CURRENT CHARACTERISTICS OF A MOSFET

Richard K. Williams, Cupertino, and Randolph D. Mah, Fremont, both of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Division of Ser. No. 210,959, Jun. 24, 1988, Pat. No. 5,237,193. This application Apr. 12, 1993, Ser. No. 46,058

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—44 **9 Claims**



1. A method for reducing the on-state resistance and improving the current characteristics of a MOSFET, the method comprising the steps of:

providing a substrate region of first electrical conductivity type that has a top surface;

forming source and drain regions, each more heavily doped than said substrate region, of second electrical conductiv-

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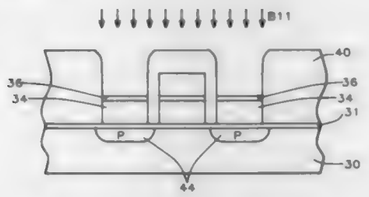
ity type, spaced apart from each other and each forming a part of said top surface of said substrate region;
forming a body region of second conductivity type material doped at a level intermediate that of said substrate region and said source region, surrounding said source region and forming a part of said top surface of said substrate region, so that said source region becomes an island in said body region;
forming an oxide region having a top surface, being adjacent to said top surface of said substrate region, overlying at least a portion of said source and drain regions and overlying substantially all of said substrate region that lies between said source and drain regions;
forming a drift region positioned between said source and drain regions and forming a part of said top surface of said substrate region, spaced apart from at least one of said source region and said drain region and defining a gap therebetween, and forming a part of said top surface of said substrate region, said drift region being of second conductivity type;
forming a gate overlying at least a portion of said gap and being positioned within the interior of said oxide region and overlying a portion of said substrate region that lies between said source and drain regions;
electrically connecting said gate for impressing a voltage on said gate;
forming a second oxide region, positioned between said gate and a portion of said top surface of said substrate region;
forming a first electrical contact contiguous to said source region, a second electrical contact contiguous to said drain region, and a third electrical contact contiguous to said gate;
forming a drift electrode of electrically conducting material positioned adjacent to said top surface of said oxide region, overlying at least a portion of said drift region and at most only a portion of said gate and having a voltage impressed on said drift electrode, to enhance the conductivity of said drift region when the MOSFET is on and to suppress the conductivity when the MOSFET is not on; and
electrically connecting said drift electrode for impressing a first voltage on the drift electrode when the MOSFET is on and to impress a second voltage that differs from the first voltage when the MOSFET is not on, the first voltage being more positive than the voltage impressed on said gate.

5,306,657

PROCESS FOR FORMING AN FET READ ONLY MEMORY DEVICE

Ming-Tzong Yang, Hsin Chu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Mar. 22, 1993, Ser. No. 35,182
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 16 Claims



1. A method of producing a Read Only Memory device having closely spaced elongated regions constituting bit lines in a semiconductor substrate and a plurality of orthogonal closely spaced surface conductive lines, constituting word lines and code implant regions comprising:
forming a plurality of closely spaced line regions of a first conductivity type, forming bit lines in a semiconductor substrate of a second conductivity type opposite to said first conductivity type;
forming a first insulating layer on said substrate for gate insulation;
forming a blanket layer of polysilicon over said first insulating layer;
forming a blanket etch stop layer over said polysilicon layer;
forming an overlying polysilicon layer over said etch stop layer;
selectively etching the polysilicon layer, the etch stop layer, and the overlying polysilicon layer to form orthogonally extending word lines over said bit lines;
forming a second insulating layer over said word lines of a thickness greater than the combined thickness of said polysilicon layer, said etch stop layer, and said overlying polysilicon layer;
exposing and developing a pattern in a resist layer to define a code implant pattern, said pattern defining openings over selected areas over said word lines;
etching the exposed areas of the second insulating layer to expose the overlying polysilicon layer of said word lines;
etching the exposed portions of the overlying polysilicon layer down to the etch stop layer;
ion implanting code implant dopants into said substrate through the openings in the second insulating layer and overlying polysilicon layer to form code implant regions between said bit lines wherein there is no lithography step required to form the code implant regions.

5,306,658

METHOD OF MAKING VIRTUAL GROUND MEMORY CELL ARRAY

Manzur Gill, Arcola, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 27, 1993, Ser. No. 68,472
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 4 Claims



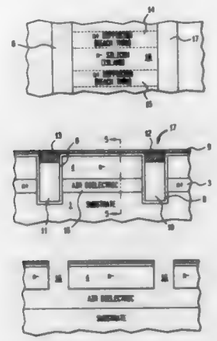
1. A method of fabricating source regions and drain regions of a memory array having single-transistor cells, comprising the steps of:
forming a first photoresist pattern on the surface of a substrate to define drain and source regions of said single-transistor cells, such that said drain and source regions are not covered by said first photoresist pattern;
abrupt-junction doping said drain and source regions with a first dopant;
forming a second photoresist pattern, such that only a portion of said source regions and drain regions are not covered; and
graded-junction doping said areas not covered by said first photoresist pattern and by said second photoresist pattern with a second dopant.

5,306,659

REACH-THROUGH ISOLATION ETCHING METHOD FOR SILICON-ON-INSULATOR DEVICES

Klaus D. Beyer, Poughkeepsie, and Andrie S. Yapsir, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1993, Ser. No. 37,855
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—64 4 Claims



1. The method of isolating semiconductor islands from a common semiconductor chip comprising the steps of:
providing a first heavily doped epitaxial layer on said substrate;
providing a second lightly doped epitaxial layer on said first layer;
forming a pair of spaced deep trenches extending from the top surface of said second layer, through said first layer and into said substrate;
placing an insulating lining on the interior walls of said trenches;
forming a pair of heavily-doped reach-through regions extending fully between said trenches and from said top surface to said first layer; and
removing said heavily doped layer under said islands and said heavily doped reach-through regions by selective isotropic etching whereby said islands are surrounded by air except where they contact said lined trenches.

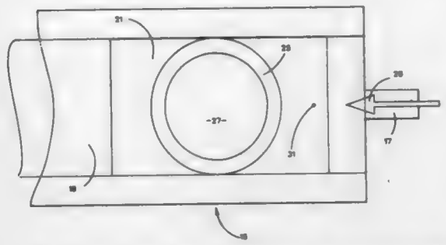
5,306,660

TECHNIQUE FOR DOPING MERCURY CADMIUM TELLURIDE MOCVD GROWN CRYSTALLINE MATERIALS USING FREE RADICAL TRANSPORT OF ELEMENTAL INDIUM AND APPARATUS THEREFOR

Charles R. Younger, Anaheim Hills; Shawn L. Johnston, Moorpark; Stuart J. C. Irvine, Moorpark; Edward R. Gertner, Moorpark, and Kenneth L. Hess, Yorba Linda, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 19, 1991, Ser. No. 657,692
Int. Cl.[5] H01L *21/365*
U.S. Cl. 437—81 17 Claims

1. A method for precisely and reproducibly establishing levels of indium dopant in mercury cadmium telluride semiconductor material comprising the steps of:
(a) heating elemental indium in a chamber to form a metallic source;
(b) selectively introducing gases as a gas stream to said chamber comprising at least elemental mercury in vapor form, organo-metallic zinc, organo-metallic tellurium, and organo-metallic cadmium in a carrier gas for reaction therein to form mercury cadmium telluride at a heated site downstream of the indium; and
(c) transporting indium from the metallic source by free aliphatic radicals to the mercury cadmium telluride material being formed in said chamber in close proximity to



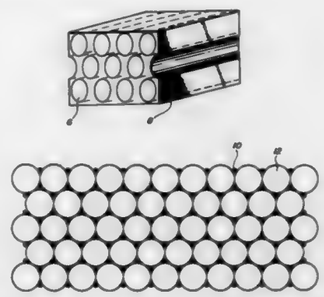
said metallic source, the radicals being liberated during the mercury cadmium telluride reaction formation.

5,306,661

METHOD OF MAKING A SEMICONDUCTOR DEVICE USING A NANOCHANNEL GLASS MATRIX

Ronald J. Tonucci, Temple Hills, Md., and Brian L. Justus, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 897,638, Jun. 12, 1992, Pat. No. 5,264,722.
This application Apr. 29, 1993, Ser. No. 53,752
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—90 10 Claims



1. A method of forming a semiconductor device comprising the steps of:
forming a glass block of an acid inert glass having acid etchable glass rods extending therethrough, the acid etchable glass rods having an average diameter of less than 1 micron;
partially etching one end of the acid etchable rods of the glass block to form cavities in the glass block on one surface thereof having an average diameter of less than 1 micron;
depositing a first deposition material in the cavities to form a semiconductor device.

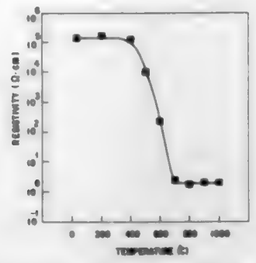
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5,306,662
METHOD OF MANUFACTURING P-TYPE COMPOUND SEMICONDUCTOR

Shuji Nakamura; Naruhito Iwasa, and Masayuki Senoh, all of Anan, Japan, assignors to Nichia Chemical Industries, Ltd., Tokushima, Japan

Filed Nov. 2, 1992, Ser. No. 970,145
Claims priority, application Japan, Nov. 8, 1991, 3-321353; Dec. 24, 1991, 3-357046; Jan. 22, 1992, 4-32763; Jan. 29, 1992, 4-40280
Int. Cl.[5] H01L *21/203*
U.S. Cl. 437—107 8 Claims

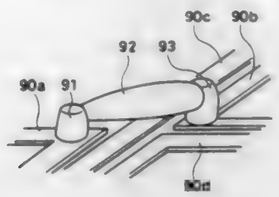


1. A method of manufacturing a p-type III-V nitride compound semiconductor by a vapor phase epitaxy method, comprising the steps of:
growing a III-V nitride compound semiconductor by using a reaction gas containing a p-type impurity; and
annealing said nitride compound semiconductor at a temperature above 400° C.

5,306,663
METHOD OF WIRING SEMICONDUCTOR DEVICE USING ENERGY BEAM

Hiroaki Morimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 723,094, Jun. 28, 1991, Pat. No. 5,149,973. This application Apr. 27, 1992, Ser. No. 873,845
Claims priority, application Japan, Jul. 2, 1990, 2-175799
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—173 5 Claims

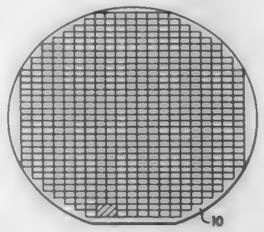


1. A method of wiring a semiconductor device by forming a connection wiring between a first wiring layer and a second wiring layer of said semiconductor device by supplying a reactive gas to the semiconductor device and irradiating the same with an energy beam, said method of wiring a semiconductor device comprising the steps of:
supplying such a reactive gas as forms a conductive material constituting said connection wiring through the irradiation with said energy beam to a position where the connection wiring of said semiconductor device should be formed;
forming a first connection portion on said first wiring layer by irradiating a surface of said first wiring layer of said semiconductor device with a first energy beam directed from above;
forming a second connection portion spaced apart from a surface of said semiconductor device at a predetermined interval to extend from said first connection portion in a horizontal direction relative to the surface of said semiconductor device by irradiating a side surface portion of said first connection portion with a second energy beam provided along a direction crossing said first energy beam; and
forming a third connection portion on said second wiring layer so as to connect with an end portion of said second connection portion by irradiating a surface of said wiring layer of the semiconductor device with the first energy beam from above.

5,306,664
SEMICONDUCTOR DEVICE, METHOD OF FORMING BUMP ELECTRODE OF A SEMICONDUCTOR DEVICE, METHOD OF PACKAGING A SEMICONDUCTOR DEVICE, CHIP CARRIER TAPE, DISPLAY DEVICE AND ELECTRONIC PRINTING DEVICE INCORPORATING THE SEMICONDUCTOR DEVICE

Seiichi Sakura, Suwa, Japan, assignor to Seiko Epson Corp., Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,578
Claims priority, application Japan, May 16, 1991, 3-111383
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—183 21 Claims



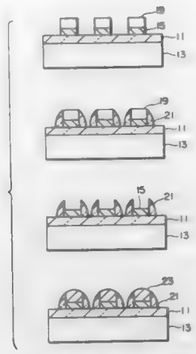
1. A method of forming at least one bump electrode of at least one semiconductor device located on a wafer containing plural semiconductor devices in which a sphere of metal is placed onto an electrode of a semiconductor substrate with heat by bringing a leading end of a metal wire into contact with said electrode and then cutting said metal wire so as to form a bump electrode including said sphere on said electrode, a portion of said metal wire remaining on and extending from said bump electrode after said metal wire is cut, said method comprising: reshaping said at least one bump electrode by heating and applying pressure to said remaining wire portion using stamping means so as to flatten an upper portion of said bump electrode while said at least one semiconductor device is attached to said wafer.

5,306,665
MANUFACTURING A WIRING FOR A SEMICONDUCTOR DEVICE BY A FORWARDLY TAPERED STACK OF TWO CONDUCTOR FILMS

Kazutaka Manabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,345
Claims priority, application Japan, Oct. 6, 1992, 4-266955
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—189 5 Claims

1. A method of manufacturing a conductor pattern on an insulator surface of an insulator layer formed on a semiconductor substrate, said method comprising the steps of:
forming a two-film layer with a first conductor film formed on said insulator surface and a semiconductor film formed on said first conductor film;
patterning said two-film layer into a patterned layer having a side surface with said first conductor film patterned in compliance with said conductor pattern into a patterned film partially exposing said insulator surface around said patterned film as an exposed area and with a part of said semiconductor film left on said patterned film as a semiconductor pattern having a patterned surface;
forming an insulator film on said patterned surface, said side surface, and said exposed area;

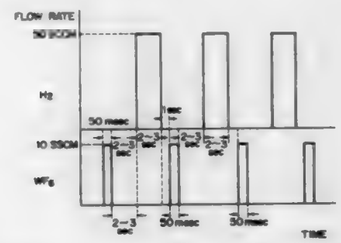


etching back said insulator film to leave a side wall on said side surface and to expose said patterned surface;
etching away said semiconductor pattern to expose said patterned film as an exposed film; and
selectively forming a second conductor film on said exposed film to provide said conductor pattern.

5,306,666
PROCESS FOR FORMING A THIN METAL FILM BY CHEMICAL VAPOR DEPOSITION

Hirohiko Izumi, Sagamihara, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,226
Claims priority, application Japan, Jul. 24, 1992, 4-198778
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—192 8 Claims

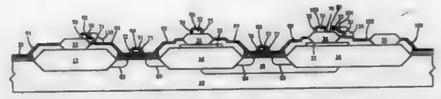


1. A process for forming a thin metal film on a substrate by chemical vapor deposition, which comprises alternately and discontinuously introducing a raw material gas and a reducing gas onto a substrate, reducing the raw material gas with the reducing gas on the substrate at a constant substrate temperature, thereby conducting chemical vapor deposition on the substrate, and repeating the chemical vapor deposition, thereby forming a thin metal film having a desired thickness on the substrate.

5,306,667
PROCESS FOR FORMING A NOVEL BURIED INTERCONNECT STRUCTURE FOR SEMICONDUCTOR DEVICES

Joseph Shappir, Jerusalem, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 811,453, Dec. 17, 1991. This application Apr. 26, 1993, Ser. No. 52,500
Int. Cl.[5] H01L *21/283, 21/335*
U.S. Cl. 437—195 26 Claims

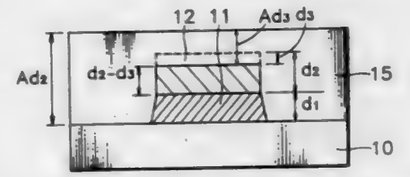


1. A process for forming a semiconductor device on a semiconductor substrate comprising the steps of:
a) performing a first oxidation of first areas of said semiconductor substrate forming an oxidized portion of said semiconductor substrate and a non-oxidized portion of said semiconductor substrate;
b) forming a buried conductor over said silicon substrate, said buried conductor overlying first areas of said oxidized portion of said silicon substrate;
c) growing a first layer of silicon over said silicon substrate including over at least some of said oxidized portion, at least some of said non-oxidized portion, and at least some of said buried conductor;
d) selectively oxidizing said first layer of silicon to oxidize at least some of that portion of said first silicon layer which overlies said buried conductor;
e) forming gate structures over said first layer of silicon; and
f) forming a second layer of conductive material over said semiconductor substrate so as to electrically couple a first one of a gate structure or diffusion area with a second one of a gate structure or diffusion area.

5,306,668
METHOD OF FABRICATION METAL-ELECTRODE IN SEMICONDUCTOR DEVICE

Bae Byungseong; Jeongha Sohn, both of Seoul; Insik Jang, Kyunggi-do; Sangsoo Kim, Seoul; Namdeog Kim, Seoul, and Hyungtaek Kim, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Division of Ser. No. 810,848, Dec. 20, 1991, Pat. No. 5,240,868. This application May 21, 1993, Ser. No. 65,562
Claims priority, application Rep. of Korea, Apr. 30, 1991, 91-7009; Apr. 30, 1991, 91-7010; Jul. 5, 1991, 91-11375
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—195 8 Claims



5. A method of fabricating a metal electrode of a semiconductor device comprising the steps of:
forming and patterning a first metal layer which is not anodizable to a first desired thickness on a substrate;
forming a second metal layer which is anodizable to a second desired thickness on the substrate;
forming a mask corresponding to said patterned first metal

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layer on said second metal layer and oxidizing the unmasked region of the second metal layer; and

further oxidizing a portion of the second metal layer after said mask is removed.

5,306,669

INTEGRATED CIRCUIT DEVICE AND METHOD FOR MANUFACTURING THE SAME

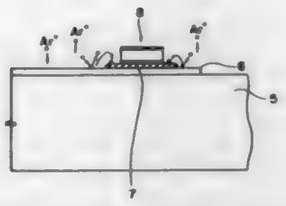
Mitsuaki Fujihira, and Yoshiaki Tanaka, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 794,669, Nov. 18, 1991, Pat. No. 5,196,918, which is a continuation of Ser. No. 566,504, Aug. 13, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,302

Claims priority, application Japan, Aug. 28, 1989, 1-220848

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **13 Claims**



1. A method for manufacturing an integrated circuit device on a substrate, said device including an electronic circuit component connected to wires, said method comprising the steps of:

providing a substrate;

forming a bonding mask member on said substrate, said bonding mask member being formed of a material having a first sputtering rate;

providing an electronic circuit component on said bonding mask member;

forming electrodes on a surface of said electronic circuit component, said electrodes being made of a material having a higher sputtering rate than said first sputtering rate;

performing a sputter cleaning process to pre-clean said electrodes; and

connecting wires to said electrodes of said electronic circuit component.

5,306,670

MULTI-CHIP INTEGRATED CIRCUIT MODULE AND METHOD FOR FABRICATION THEREOF

Larry J. Mowatt, Allen, and David Walter, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 9, 1993, Ser. No. 15,510

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **3 Claims**

1. A method for fabricating a multi-chip integrated circuit package, comprising the steps of:

providing first and second substrate layers of polymer material, the first substrate layer thinner than the second substrate layer;

forming a plurality of cavities in the first substrate layer that extend through the first substrate layer;

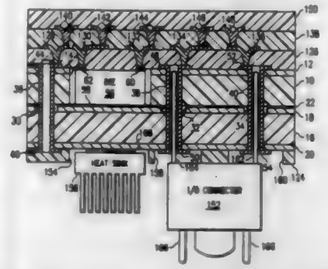
forming a thermally conductive layer on the upper surface of the second substrate layer;

forming an electrically conductive layer on the lower surface of the second substrate layer;

laminating the lower surface of the first substrate layer to the surface of the thermally conductive layer;

forming a plurality of plated-through holes that extend from the upper surface of the first substrate layer to the electrically layer on the lower surface of the second substrate layer;

disposing an integrated circuit chip in each of the cavities, the integrated circuit chips each having bonding pads associated therewith, integrated circuit chips adhered to the exposed surface of the thermally conductive layer in the associated cavity, with the upper surfaces of the circuit chips substantially co-planar with the surface of the first substrate



disposing a thin polymer film over the upper surface of the first substrate layer and the integrated circuit chips and forming a plurality openings therein aligned with at least some of the bonding pads and the plated-through holes; and

forming a pattern of interconnection conductors on the upper surface of the polymer film so as to extend between at least some of the openings and provide electrical connections between at least some of the bonding the plated through holes.

5,306,671

METHOD OF TREATING SEMICONDUCTOR SUBSTRATE SURFACE AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE INCLUDING SUCH TREATING METHOD

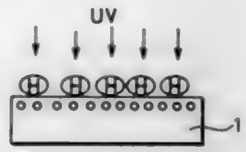
Toshiaki Ogawa; Hiroshi Morita; Tomoaki Ishida; Kenji Kawai, and Moriaki Akazawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1991, Ser. No. 718,674

Claims priority, application Japan, Jul. 9, 1990, 2-183751; May 1, 1991, 3-99365

Int. Cl.[5] H01L *21/00, 21/02*

U.S. Cl. 437—225 **12 Claims**



1. A method of treating a surface of a semiconductor substrate on which an oxide film is formed, comprising the steps of:

(a) plasma-etching the surface of said semiconductor substrate by employing a gas containing fluorine in order to remove said oxide film;

(b) plasma-etching the surface of said semiconductor substrate again by employing a gas containing fluorine in order to remove a surface damaged layer and a fluorocarbon layer formed in said step (a); and

(c) irradiating the surface of said semiconductor substrate with ultraviolet rays under a low pressure reducing gas in order to dissociate and remove fluorine atoms chemically adsorbed to the surface of said semiconductor substrate in said step (b).

5,306,672

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WHEREIN NATURAL OXIDE FILM IS REMOVED FROM THE SURFACE OF SILICON SUBSTRATE WITH HF GAS

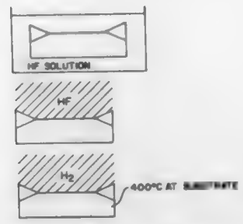
Youichirou Numasawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,569

Claims priority, application Japan, Oct. 17, 1991, 3-268041

Int. Cl.[5] H01L *21/306, 21/336*

U.S. Cl. 437—225 **7 Claims**



6. A method for manufacturing a semiconductor device, comprising the steps of removing a natural oxide formed on a surface of a silicon substrate of the semiconductor device from said surface with a HF gas wherein fluorine in said HF gas remains attached to the surface of said silicon substrate, then subjecting said silicon substrate without exposing said silicon substrate to air, to a H_2 gas to remove said fluorine from the surface of said silicon substrate by chemically reacting hydrogen in said H_2 gas with said fluorine to thereby form the silicon substrate having a fluorine-free and natural-oxide-free surface, and thermally oxidizing the fluorine-free and natural-oxide-free surface of said silicon substrate.

5,306,673

COMPOSITE CERAMIC MATERIAL AND METHOD TO MANUFACTURE THE MATERIAL

Leif Hermansson, Uppsala; Sevald Forberg, Enskede, and Li Jiangou, Stockholm, all of Sweden, assignors to Stiftelsen Centrum for Dentalteknik och Biomaterial i Huddinge, Huddinge, Sweden

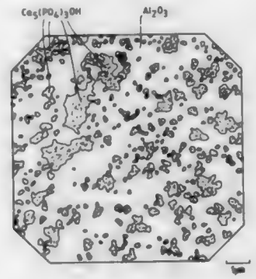
PCT No. PCT/SE90/00207, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991

PCT Filed Mar. 30, 1990, Ser. No. 752,605

Claims priority, application Sweden, Apr. 10, 1989, 8901294-2

Int. Cl.[5] C04B *35/10, 35/46, 35/48*

U.S. Cl. 501—1 **12 Claims**



7. A ceramic material having high strength and bioactive properties and useful as dental and orthopedic implants, comprising a high temperature, isostatically formed shape of a matrix material containing a bioinert material selected from the group consisting of titanium dioxide, zirconium oxide, aluminum oxide and mixtures thereof and dispersed material containing a bioactive material selecteg from the group consisting of hydroxylapatite, tricalcium phosphate and mixtures thereof, wherein the bioactive material is substantially uniformly dispersed in the matrix material in amounts between about 5 and 35% by volume and in particle form having particle sizes of up to 30μm with maximum mean distances between particles of about 5 μm and wherein the density of the high temperature isostatically formed shape is at least 97% of theoretical maximum density, and wherein the formed shape is hot isostatically pressed at temperatures between 900 °C. and 1300° C. and at a pressure higher than 50 MPa.

5,306,674

LEAD-FREE GLASS COATINGS

Clifford G. Ruderer, Pittsburgh, Pa.; Gordon J. Roberts, Parma, Ohio, and Hasan B. Emlemdi, Pittsburgh, Pa., assignors to Ferro Corporation, Cleveland, Ohio

Filed Sep. 4, 1992, Ser. No. 939,520

Int. Cl.[5] C03C *3/066, 8/04, 8/14*

U.S. Cl. 501—70 **16 Claims**

1. A lead-free glass enamel composition comprising a lead-free glass frit having in percent by weight from about 22% to about 27% ZnO, from about 22% to about 28% B_2O_3, from about 20% to about 25% SiO_2, from about 4% to about 7% TiO_2, from about 6% to about 8% Na_2O, from about 3% to about 6% K_2O, from about 6% to about 10% ZrO_2, up to about 2% Al_2O_3, up to 5% BaO, up to 1% Li_2O, up to 2% F_2, substantially no CaO, SrO and MgO, with a combined weight of ZrO_2 plus TiO_2 being at least about 10% and the combined weight of MgO plus CaO plus SrO plus BaO being less than about 15%.

5,306,675

METHOD OF PRODUCING CRACK-FREE ACTIVATED CARBON STRUCTURES

Shy-Hsien Wu, Horseheads, and Evelyn M. DeLiso, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 28, 1992, Ser. No. 967,848

Int. Cl.[5] B01J *37/34, 20/20, 20/28, 20/26*

U.S. Cl. 502—5 **17 Claims**

1. A method of producing a crack-free, dried activated carbon structure, the method comprising the steps of:

preparing a mixture comprising (a) carbonaceous particles selected from the group consisting of carbon, graphite and mixtures thereof, (b) 3–10% binder selected from methylcellulose, its derivatives, and mixtures thereof, (c) 0.5–5% polyvinyl alcohol, and (d) 100–200% super addition of water based on the weight of carbon;

forming the mixture into a shaped carbonaceous article; and

drying the shaped article by first contacting the body with electromagnetic energy for a time sufficient to remove a portion of the water, and then placing the body in a conventional oven at a temperature of 60°–150° C. for a period of time sufficient to reduce the water content to less than about 15% of its original level, to form a crack-free activated carbon structure.

5,306,676

SILICON CARBIDE BODIES AND METHODS OF MAKING THE SAME

William B. Johnson, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Filed Mar. 9, 1993, Ser. No. 28,455

Int. Cl.[5] C04B *35/56, 35/65*

U.S. Cl. 501—88 **16 Claims**

1. A method for producing a self-supporting ceramic body by oxidation of a parent metal comprising silicon to form a polycrystalline material comprising (1) the oxidation reaction

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product of said parent metal with a vapor-phase oxidant comprising carbon, and (2) one or more non-oxidized constituents of the parent metal, comprising the steps of:

(a) heating said parent metal comprising silicon to a temperature above the melting point of said parent metal, but below the melting point of its oxidation reaction product;

(b) reacting said parent metal with a vapor-phase oxidant comprising at least one gas selected from the group consisting of fluorinated hydrocarbon gases, chlorohydrocarbon gases and chlorofluorocarbon gases to form an oxidation reaction product comprising silicon carbide;

(c) maintaining at least a portion of said oxidation reaction product in contact with and between said body of parent metal and said oxidant, to draw molten metal through the oxidation reaction product towards the oxidant so that fresh oxidation reaction product continues to form at the interface between the oxidant and previously formed oxidation reaction product; and

(d) continuing said reaction for a time sufficient to produce said self-supporting ceramic body.

5,306,677

CERAMIC MATERIALS

Marc S. Newkirk, Newark, Del., and Steven F. Dizio, Golts, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 631,229, Dec. 21, 1990, Pat. No. 5,118,647, and a continuation of Ser. No. 256,257, Oct. 11, 1988, abandoned, which is a continuation of Ser. No. 13,857, Feb. 12, 1987, abandoned, which is a division of Ser. No. 818,943, Jan. 15, 1986, Pat. No. 4,713,360, which is a continuation-in-part of Ser. No. 776,964, Sep. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 705,787, Feb. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 591,392, Mar. 16, 1984, abandoned. This application Jun. 1, 1992, Ser. No. 891,618

Int. Cl.[5] C04B *35/65*

U.S. Cl. 501—94 **27 Claims**

21. A self-supporting ceramic body having at least some porosity comprising a three-dimensionally interconnected ceramic matrix comprising about 65 to 85 volume percent of said ceramic body, the remainder of said ceramic body comprising a metallic phase, said metallic phase comprising both interconnected and isolated regions within said ceramic body.

5,306,678

DISC BRAKE FOR VEHICLES

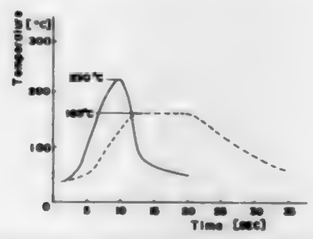
Hiroshi Yoshida; Kenichi Yamazaki, and Morio Yumoto, all of Nagano, Japan, assignors to Nissin Kogyo Co., Ltd., Ueda, Japan

Filed May 19, 1992, Ser. No. 885,537

Claims priority, application Japan, May 21, 1991, 3-116154

Int. Cl.[5] C04B *35/02*

U.S. Cl. 501—95 **7 Claims**



1. A disc brake for a vehicle comprising a disc having at least two faces and adapted to rotate integrally with a wheel of the vehicle, a brake pad movable into friction contact with each face of said disc, and means for moving said brake pad into contact with said disc, wherein one of said disc or said brake pads are made of a carbon fiber reinforced ceramic composite consisting of a ceramic matrix containing mullite having a grain boundary and particles of carbide or nitride dispersed in the grain boundary, said matrix reinforced by a carbon fiber, the other of said disc or said brake pads is made of a different material.

5,306,679

HEAT CONDUCTIVE COLORED ALUMINUM NITRIDE SINTERED BODY

Kouhei Shimoda; Takao Maeda; Kouichi Sogabe, and Masaya Miyake, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 686,618, Apr. 17, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,820

Claims priority, application Japan, Apr. 17, 1990, 2-101396

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—98 **2 Claims**

1. A heat conductive black colored aluminum nitride sintered body comprising 100 parts by weight of aluminum nitride, at least 0.005 parts by weight and not more than 0.5 parts by weight of carbon, at least 0.01 parts by weight and not more than 15 parts by weight of a rear earth aluminum oxide in terms of the simple substance of a rare earth element, and at least 0.01 parts by weight and not more than 15 parts by weight of at least one element selected from the group consisting of compounds containing elements belonging to the groups IVB, VB and VIB of the periodic table in terms of the simple substance of said element, said aluminum sintered body having a heat conductivity of at least 100 W/m·K. and not more than 270 W/m·K. at room temperature.

5,306,680

FINE FLAKY BOEHMITE PARTICLES AND PROCESS FOR THE PREPARATION OF THE SAME

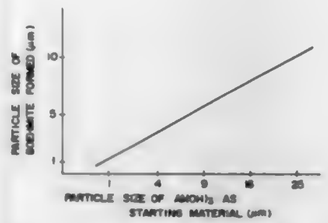
Takeshi Fukuda, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 27,331

Claims priority, application Japan, Mar. 30, 1992, 4-74504

Int. Cl.[5] C01F *7/02*

U.S. Cl. 501—153 **2 Claims**



1. A process for the preparation of a fine flaky boehmite particle having an orthorhombic crystal form, a crystal face grown in the form of a flat plate, major and minor axes of the order of submicron and a ratio of the major axis to the minor axis between 1 and 5, said process comprising the step of subjecting aluminum hydroxide or hydrated alumina having a particle size of the order of submicron to hydrothermal treatment in essentially pure water or a solution consisting essentially of an aqueous caustic soda solution or an aqueous sodium carbonate solution at a temperature from 150° to 350° C. and a pressure between 10 to 100 atm.

5,306,681

METHOD FOR RECOVERY OR MAINTAINING THE ACTIVITY OF HYDROISOMERIZATION CATALYSTS

James J. Schorfheide, Baton Rouge, La., and Biddanda U. Achia, Clearwater, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 799,810, Nov. 29, 1991, Pat. No. 5,212,128. This application Mar. 26, 1993, Ser. No. 37,218

Int. Cl.[5] B01J *20/34*; C10G *73/00*

U.S. Cl. 502—22 **8 Claims**

1. A method for recovering the activity of deactivated isomerization catalysts comprising Group VI and/or VIII metal on halogenated refractory metal oxide used for the isomerization of feeds selected from wax, waxy distillates and waxy raffinates, comprising washing the deactivated catalyst one or more times with a light aromatic solvent selected from the group consisting of benzene and single-ring aromatics bearing one or more alkyl substituents which are the same or different and which contain C_1–C_5 hydrocarbyl groups or with a light aromatic containing oil selected from reformate, virgin or catalytically cracked naphthas, at least a part of the light aromatic solvent or light aromatic containing oil being in the liquid state, and at an elevated temperature in the range of 100 to 350° C.

5,306,682

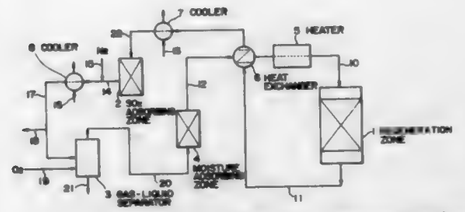
PROCESS FOR THE REGENERATION OF COKE-DEPOSITED, CRYSTALLINE SILICATE CATALYST

Masaaki Ueda, Yokohama; Teruo Murakami, Chigasaki; Shunji Shibata, Kawasaki; Kazuo Hirabayashi, Yokohama; Tadami Kondoh, Ebina; Kohji Adachi, Tokyo; Nobuko Hoshino, and Shinichi Inoue, both of Yokohama, all of Japan, assignors to Research Association for the Utilization of Light Oil, Japan

Filed Dec. 21, 1992, Ser. No. 993,848

Int. Cl.[5] B01J *29/38, 38/14*; C07C *15/00*; C10G *35/06*

U.S. Cl. 502—52 **7 Claims**



1. A process for the regeneration of a crystalline silicate aromatization catalyst consisting essentially of a crystalline aluminogallosilicate and coke deposited thereon, comprising contacting an oxygen-containing gas having a moisture content of 0.2% by volume or less and an oxygen concentration of 0.05–10% by volume with said crystalline silicate aromatization catalyst at a temperature of 420°–600° C. and at a gas hourly space velocity of 300–4000/hour to burn said coke at said temperature without inactivation of the catalyst.

5,306,683

TRANSITION METAL SULFIDE LOADED CATALYST

Victor A. Maroni, Naperville; Lennox E. Iton, Downers Grove; James W. Pasterczyk; Markus Winterer, both of Westmont, and Theodore R. Krause, Lisle, all of Ill., assignors to ARCH Development Corporation, Chicago, Ill.

Filed May 1, 1992, Ser. No. 877,308

Int. Cl.[5] B01J *29/08*

U.S. Cl. 502—60 **10 Claims**

1. A catalyst for activation and conversion of methane, comprising:

a zeolite support consisting of a material selected from the group consisting of H-Y zeolite, Na-Y zeolite, faujasite zeolite, rate earth ion exchanged Y-zeolite and hydrogen form of zeolite beta; and

a transition metal sulfide cluster disposed within the pores of said zeolite support, said transition metal selected from the group consisting of Mo, Cr and W, said catalyst operative to activate methane under chemically reducing conditions.

3. The catalyst as defined in claim 1 wherein said transition metal sulfide clusters are prepared from transition metal carbonyl precusors.

5,306,684

CATALYST FOR PURIFICATION OF EXHAUST GASES

Takashi Itoh; Yukio Kosaki, and Hiroyuki Yamaguchi, all of Ichikawa, Japan, assignors to N. E. Chemcat Corporation, Tokyo, Japan

Continuation of Ser. No. 804,376, Dec. 10, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,535

Claims priority, application Japan, Jun. 18, 1991, 3-173250

Int. Cl.[5] B01J *29/04, 29/06*

U.S. Cl. 502—61 **4 Claims**

1. A catalyst for removal of nitrogen oxides from exhaust gases wherein oxygen is present in excess of the stoichiometric amount required for completely oxidizing the entire amount of reducing components contained in the exhaust gases and also containing hydrocarbons, which comprises a coprecipitated mixed oxide of copper and tin loaded on a carrier composed of at least one type selected from the group consisting of crystalline aluminosilicate, aluminogallosilicate and gallosilicate.

5,306,685

ABSORPTION OF HYDROGEN SULFIDE AND ABSORBENT COMPOSITION THEREFOR

Gyanesh P. Khare, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 874,908, Apr. 28, 1992, Pat. No. 5,244,641. This application May 7, 1993, Ser. No. 58,586

Int. Cl.[5] B01J *21/00*

U.S. Cl. 502—253 **18 Claims**

1. A process for preparing a composition of matter which consists essentially of component (i) a mixed oxide of iron, zinc and nickel at a level exceeding about 20 weight percent and component (ii) at least one inorganic binder selected from the group consisting of alumina and silica as the remainder, said process comprising the steps of:

dry blending zinc oxide, iron oxide and said at least one inorganic binder; mixing the obtained dry blend with an aqueous acid solution so as to obtain a shapable pasty mixture; shaping the obtained pasty mixture; drying the thus-obtained shaped particles; calcining the dried, shaped particles at a temperature of about 600°–900° C. for a period of time of at least 0.1 hour; impregnating the thus-obtained calcined particles with a solution of at least one decomposable nickel compound; drying the thus-impregnated particles; and calcining the dried, impregnated particles at a temperature of about 600°–900° C. for a period of time of at least 0.1 hour, so as to obtain said composition of matter;

wherein an atomic ratio of (Ni+Zn): Fe in the range of about 0.9:2 to about 1.1:2 in said composition of matter is attained.

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5,306,686

NEGATIVE-ACTING THERMOGRAPHIC MATERIALS

Ranjan C. Patel, Little Hallingbury; John H. A. Stibbard, Harlow; Darren Cooper, Andover; Terence W. Baldock, Harlow, all of Great Britain; Donald J. Newman, White Bear Lake, and John J. Stofko, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1992, Ser. No. 878,165

Claims priority, application United Kingdom, May 8, 1991, 9109948

Int. Cl.[5] B41M *5/28*

U.S. Cl. 503—200 21 Claims

1. A negative-acting thermographic material having a first layer comprising an amine compound having one or more amino groups and a second layer comprising an amine-sensitive dye which undergoes a visible change when in reactive association with the amine compound wherein a barrier layer is interposed between said first and second layers, which barrier layer is substantially impermeable to the amine compound and amine-sensitive dye at ambient temperature but allows migration of the amine compound and/or the amine-sensitive dye through the layer above a predetermined elevated temperature.

5,306,687

THERMOSENSITIVE RECORDING MATERIAL

Hiromi Furuya, Shimizumachi; Keishi Taniguchi, Susono; Kunio Hayakawa, Gotenba; Masafumi Torii, Shizuoka; Shoji Maruyama, and Keishi Kubo, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 46,796

Claims priority, application Japan, Apr. 17, 1992, 4-124116; Dec. 15, 1992, 4-354203

Int. Cl.[5] B41M *5/30*

U.S. Cl. 503—207 5 Claims

1. A thermosensitive recording material comprising a support and thermosensitive recording layer formed on said support, comprising a leuco dye, a color developer capable of inducing color formation in said leuco dye upon application of hat therto, and a thermofusible material comprising p'-methylphenyl p-chlorobenzoate serving as a thermosensitivity-improving agent.

5,306,688

SALICYLIC ACID DERIVATIVES, THE PROCESS FOR PREPARING THE SAME AND THE HEAT-SENSITIVE RECORDING MATERIALS COMPRISING THEREOF

Yoshimitsu Tanabe, Yokohama; Yuki Kobayashi, Kamakura; Atsuo Otsuji, Yokohama; Masakatsu Nakatsuka, Yokohama; Kiyoharu Hasegawa, Yokohama; Kazuyoshi Kikkawa; Akihiro Yamaguchi, both of Kamakura; Naomasa Koike, and Fumio Okumura, both of Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Mitsubishi Paper Mills Limited, both of Tokyo, Japan

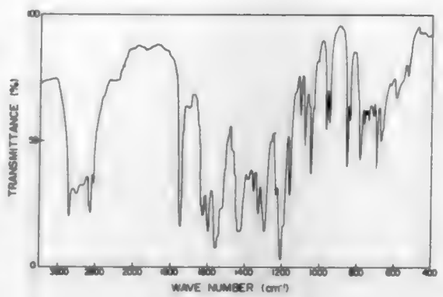
Filed Sep. 18, 1992, Ser. No. 946,694

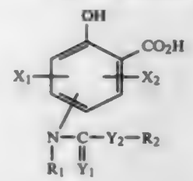
Claims priority, application Japan, Sep. 24, 1991, 3-243201; Jun. 26, 1992, 4-168744

Int. Cl.[5] B41M *5/32*

U.S. Cl. 503—210 12 Claims

1. A heat-sensitive recording material comprising a color-forming, electron donating compound and an electron accepting compound wherein said electron accepting compound is one or more compound selected from a salicylic acid derivative represented by the formula (1):





(I)

wherein X_1 and X_2 are a hydrogen atom, an alkyl group, an alkoxy group, an aralkyl group, an aryl group or a halogen atom, Y_1 and Y_2 are an oxygen atom or a sulfur atom, R_1 is a hydrogen atom, an alkyl group, an aralkyl group or an aryl group , and R_2 is an alkyl group, an alkenyl group, an aralkyl group or an aryl group, and/or a metal salt of said salicylic acid derivative.

5,306,689

REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL

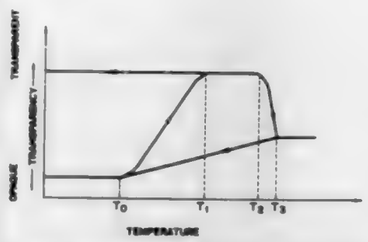
Shoji Maruyama, and Keishi Kubo, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,888

Claims priority, application Japan, Mar. 13, 1992, 4-089397

Int. Cl.[5] B41M *5/26*

U.S. Cl. 503—217 5 Claims



1. A reversible thermosensitive recording material comprising a reversible thermosensitive recording layer capable of reversibly assuming a transparent state and a white opaque state depending on the temperature thereof, which recording layer comprises a matrix resin and an organic low-molecular-weight material dispersed in said matrix resin, said organic low-molecular-weight material comprising a eutectic mixture comprising a saturated higher fatty acid having 23 to 32 carbon atoms and a higher fatty acid,

wherein said higher fatty acid is a saturated dibasic acid of formula (I) or (II):

$$CH_3(CH_2)_nCH(COOH)_2, \quad (I)$$

-continued

$$CH_3(CH_2)_nCH(CH_2COOH)COOH \quad (II)$$

wherein n is an integer of 13 to 28.

5,306,690

THERMAL TRANSFER RECORDING SHEET

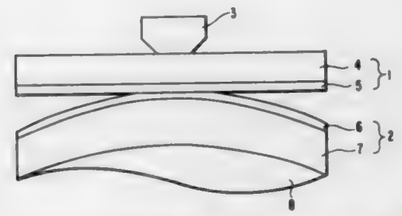
Akihiko Ohno; Takatoshi Nishizawa, and Akira Iwai, all of Ibaraki, Japan, assignors to Oji Yuka Goseishi Co. Ltd., Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 45,794

Claims priority, application Japan, Apr. 30, 1992, 4-111053

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 21 Claims



1. A thermal transfer recording sheet comprising a support having thereon a thermal transfer image-receiving layer, in which said support comprises a thermoplastic resin film containing from 3 to 60% by weight of a petroleum resin.

5,306,691

ANTISTATIC SUBBING LAYER FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Charles L. Bauer, Webster, and Wayne A. Bowman, Walworth, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 22, 1993, Ser. No. 125,369

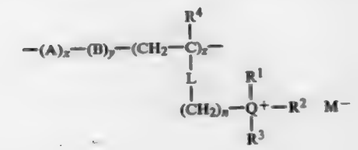
Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 12 Claims

5. A process of forming a dye transfer image comprising:

(a) imagewise-heating a dye-donor element comprising a support having on one side thereof, in order, a subbing layer and a dye layer, and

(b) transferring a dye image to a dye receiving element to form said dye transfer image, wherein said subbing layer has antistatic properties and comprises a copolymer having the formula:



wherein:

A represents units of an addition polymerizable monomer containing at least two ethylenically unsaturated groups;

B represents units of a copolymerizable α,β-ethylenically unsaturated monomer;

L is a carboxylic group or an aromatic ring;

Q is N or P;

R^1, R^2 and R^3 each independently represents an alkyl or cycloalkyl group having from about 1 to about 20 carbon atoms or an aryl or aralkyl group having from about 6 to about 10 carbon atoms;

R^4 is H or CH_3;

M is an anion;

n is an integer of from 1 to 6;

x is from about 0 to about 20 mole %;

y is from about 0 to about 90 mole %; and

z is from about 10 to about 100 mole %.

5,306,692

HERBICIDAL INDAZOLE AND BENZIMIDAZOLE COMPOUNDS

John E. D. Barton; David Cartwright, both of Reading, and Derek McCormack, Windsor, all of England, assignors to Zeneca Limited, London, United Kingdom

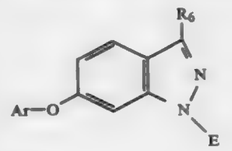
Filed Feb. 7, 1991, Ser. No. 652,337

Claims priority, application United Kingdom, Feb. 16, 1990, 9003548; Feb. 16, 1990, 9003549; Aug. 2, 1990, 9016979; Nov. 5, 1990, 9023984; Dec. 10, 1990, 9026810

Int. Cl.[5] C07D *213/30, 235/26;* A01N *43/50, 43/56*

U.S. Cl. 504—139 8 Claims

1. A compound having the formula

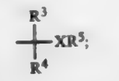


in which:

Ar is an optionally substituted aromatic or heterocyclic ring system;

R^6 is H, halogen, OR^7, CN, $COOR^8$, alkyl or haloalkyl;

E is



R^3 and R^4 are independently selected form H, optionally substituted alkyl, alkenyl or aklynyl, halogen, NR^9R^{10}, or R^3 and R^4 together with the carbon to which they are attached form an optionally substituted alkenyl or cycloalkyl group;

R^5 is CO_2R^{11}, CN, COR^{11}, CH_2OR^{11}, $CH(OH)R^{11}$, $CH(OR^{11})R^{12}$, $CSNH_2$, $COSR^{11}$, $CSOR^{11}$, $CONHSO_2R^{11}$, $CONR^{13}R^{14}$, $CONHNR^{13}R^{14}$, $CONHN^+R^{13}R^{14}R^{15}$ Y^-, $CO_2^-M^+$ or $COON{=}CR^{13}R^{14}$;

X is $(CH_2)_n$, CH=CH, $CH(OR^{16})CH_2$ or $COCH_2$; where n is 0, 1 or 2;

M^+ is an agriculturally acceptable cation;

Y^- is an agriculturally acceptable anion;

R^7 and R^8 are independently H or lower alkyl;

R^{11}, R^{12} and R^{16} are independently selected form H or an optionally substituted alkyl, alkenyl, alkynyl or aryl group;

R^9, R^{10}, R^{13}, R^{14} and R^{15} are independently selected from H or an optionally substituted alkyl, alkenyl, alkenyl, alkynyl or aryl group, providing that the compound is other than 5-(2,4-dichlorophenoxy)-indazol-1-ylacetic acid or its methyl ester;

optional substituents for aryl or heterocyclic rings are up to 5 members selected form halogen; C_1–C_3 alkyl; C_1–C_{10} haloalkyl; C_1–C_{10} haloalkoxy; nitro; cyano; C_1–C_3 alkoxy or $S(O)_pR^a$ where p is 0, 1, or 2 and R^a is C_1–C_{10} alkyl; and

optional substitutents for alkyl, alkenyl and alkynyl groups are one or more members selected form halogen; nitro, cyano; aryl; CO_2R^{17}, $NHCOR^{17}$ or $NHCH_2CO_2R^{17}$

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wherein R^{17} is hydrogen, C_1–C_8 alkyl or an agriculturally acceptable cation; C_1–C_6 alkoxy; oxo; $S(O)_pR^a$ whre p is 0, 1, or 2 and R^a is C_1–C_{10} alkyl; amino; mono or di-(C_1–C_6) alkylamino; $CONR^{18}R^{19}$ wherein R^{18} and R^{19} are independently selected from hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl.

8. A method of killing or controlling the growth of unwanted plants comprising applying to the plants or to a locus thereof a herbicidally effective amount of a compound according to claim 1 or 3.

5,306,693

SULFONYLUREAS

Willy Meyer, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

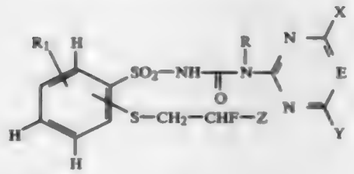
Division of Ser. No. 744,625, Aug. 12, 1991, Pat. No. 5,163,996. This application Aug. 18, 1992, Ser. No. 931,753

Claims priority, application Switzerland, Aug. 15, 1990, 2654/90

Int. Cl.[5] A01N *43/54, 43/66;* **C07D** *239/48, 239/47*

U.S. Cl. 504—214 **15 Claims**

1. An N-phenylsulfonyl-N'-pyrimidinyl-urea of formula I



(I)

wherein

R is hydrogen or C_1–C_4alkyl,

R_1 is hydrogen, halogen, C_1–C_5alkyl, C_2–C_5alkenyl, C_1–C_4-haloalkyl, COO—R_2 or A—R_3;

R_2 is C_1–C_5alkyl;

R_3 is C_1–C_5alkyl, C_2–C_4alkoxyalkyl or C_1–C_5haloalkyl;

X is C_1–C_3alkyl, C_1–C_3alkyl mono- to tri-substituted by halogen; C_1–C_3alkoxy or C_1–C_3alkoxy mono- to tri-substituted by halogen;

A is oxygen, sulfur, SO or SO_2;

Y is halogen, C_1–C_3alkyl, C_1–C_3alkyl mono- to tri-substituted by halogen; C_1–C_3alkoxy, C_1–C_3alkoxy mono- to tri-substituted by halogen; cyclopropyl, methylamino or dimethylamino;

E is or the methine group; and

Z is fluorine or chlorine;

or a salt of that compound;

wherein R_1 at the phenyl ring is in the 5-position and the group —S—CH_2—Z is in the 2-position.

5,306,694

PESTICIDAL 1-(2-PYRIDYL)-PYRAZOLE

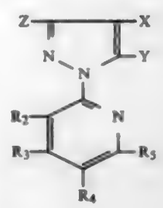
Jeanifer L. Phillips, Apex; Philip R. Timmons, Durham; Gail S. Powell, Raleigh; Michael T. Pilato, Raleigh; David T. Chou, Raleigh, and Jamin Huang, Chapel Hill, all of N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 643,530, Jan. 18, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 79,221

Int. Cl.[5] A01N *43/40;* **C07D** *401/00*

U.S. Cl. 504—253 **24 Claims**

1. A compound of formula (I),



(I)

wherein:

X is halogen, nitro, or unsubstituted or halo-substituted alkylsulfenyl, alkylsulfinyl or alkylsulfonyl, wherein the alkyl moiety is a linear or branched chain, containing one to four carbon atoms, and the halo-substitution consists of one or more halogen atoms, which are the same or different, up to full substitution of the alkyl moiety;

Y is hydrogen, halogen, cyano, alkylsulfenyl, alkylsulfinyl, alkylsulfonyl, amino, alkylamino, dialkylamino, trialkylammonium salt, cyanoalkylamino, alkoxyalkylamino, alkoxycarbonylamino, alkylcarbonylamino, haloalkylcarbonylamino, alkylaminocarbonylamino, dialkylaminocarbonylamino or alkoxyalkylideneimino, wherein the alkyl and alkoxy moieties are a linear or branched chain, containing one to four carbon atoms, and the halo-substitution consists of one or more halogen atoms, which are the same or different, up to full substitution of the alkyl moiety;

Z is cyano or halogen; and

R_2, R_3, R_4, and R_5 are each individually hydrogen, halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, cyano or nitro, wherein the alkyl and alkoxy moieties are a linear or branched chain, containing one to four carbon atoms, and the halo-substitution consists of one or more halogen atoms, which are the same or different, up to full substitution of the alkyl and alkoxy moieties; and with the proviso that at least one of R_2 to R_5 is other than hydrogen.

5,306,695

HALOALKOXY-SUBSTITUTED BENZOYLCYCLOHEXANEDIONES AS HERBICIDES AND PLANT GROWTH REGULATORS

Herbert Stark, Kelkheim (Taunus); Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

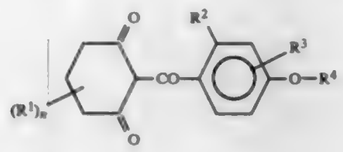
Filed Mar. 4, 1992, Ser. No. 846,003

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 4107141

Int. Cl.[5] A01N *31/04;* **C07C** *205/06*

U.S. Cl. 504—348 **11 Claims**

1. A compound of the formula (I) or a salt thereof,



(I)

in which

n is an integer from 0 to 6,

R^1 represents identical or different substituents selected from the group consisting of straight-chain C_1–C_4-alkyl, branched C_3–C_4-alkyl, C_3–C_6 -cycloalkyl and phenyl, the abovementioned radicals being unsubstituted or substituted by one or more halogen atoms,

R^2 is halogen, NO_2, CN, C_1–C_3-alkyl, C_1–C_3-haloalkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkoxy, C_1–C_3-thioalkyl,

R^aSO_2—, R^aSO_2—O—, $R^aSO_2NR^b$—, where R^a and R^b independently of one another are C_1–C_2-alkyl or C_1–C_2-haloalkyl,

R^3 is hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-haloalkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkoxy or C_1–C_3-alkylthio and

R^4 is C_1–C_3-haloalkyl.

5,306,696

METHOD OF PRODUCING $YBA_2CU_4O_x$-TYPE SUPERCONDUCTING METAL OXIDES

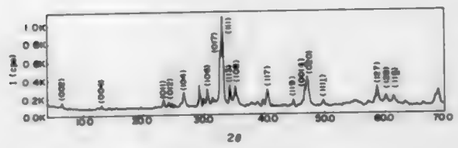
Hirohiko Murakami, Koshigaya; Junya Nishino, Yokohama; Seiji Yasegashi, Urawa; Yu Shiohara, and Shoji Tanaka, both of Tokyo, all of Japan, assignors to Kabushiki-Gaisha Arubakku Kohporehiosentaki; Nippon Mining Co., Ltd.; Ishikawajima-Harima Jukogyo Kabushiki Kaisha and International Superconductivity Technology Center, all of Japan

Filed Dec. 10, 1990, Ser. No. 624,219

Claims priority, application Japan, Dec. 11, 1989, 1-321103

Int. Cl.[5] C01F *11/02, 17/00;* **C01G** *3/02*

U.S. Cl. 505—445 **3 Claims**



1. A method of producing a superconductor of metal oxides having the following composition:

$$(M_{1-x}Ca_x)(Ba_{1-y}Sr_y)_2Cu_4O_8$$

wherein M stands for a rare earth element, x is 0–0.1 and y is 0 or a positive number of less than 1, comprising the steps of:

subjecting an organic solvent solution containing (a) an alkoxide of the rare earth element M, (b) alkoxides of Ca, Ba and Sr and (c) cupric nitrate to hydrolysis in the presence of 12/7–2.0 moles of water per mole of combined (a), (b) and (c) and nitrate ions, thereby forming a hydrolyzed product, said alkoxides of Ca and Sr being present only when x and y are not zero, respectively;

removing the solvent from said hydrolyzed product to obtain amorphous powder;

shaping said powder to form a shaped body; and

pyrolyzing said shaped body at a temperature of 700°–850° C. and a pressure of 0.1–10 atm. and in an oxidizing atmosphere to form the superconductor.

5,306,697

ORIENTED GRAINED Y-BA-CU-O SUPERCONDUCTORS HAVING HIGH CRITICAL CURRENTS AND METHOD FOR PRODUCING SAME

Kamel Salama, and Venkatakrishnan Selvamanickam, both of Houston, Tex., assignors to University of Houston - University Park, Houston, Tex.

Continuation of Ser. No. 477,311, Feb. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 309,382, Feb. 10, 1989, Pat. No. 4,956,336. This application Aug. 23, 1991, Ser. No. 753,012

Int. Cl.[5] C01F *11/02, 17/00;* **C01G** *3/02;* **H01L** *39/12*

U.S. Cl. 505—126 **39 Claims**

1. A bulk high temperature superconductive composition comprising grains oriented by cooling a molten sample through its peritectic temperature, said grains being of the formula

$$L_1Ba_2Cu_3O_{6+\delta}$$

wherein L is a rare earth element and δ has a number value from about 0.5 to about 1.0 and further wherein, at 77° K., the current density of said bulk composition is greater than 70,000



amps/cm^2 at zero magnetic field and the current density is greater than 37,000 amps/cm^2 under a 0.6 T magnetic field.

5,306,698

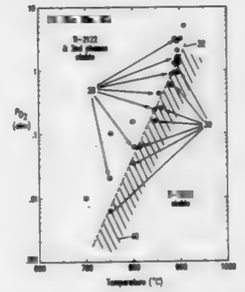
METHODS FOR PRODUCING $TL_2CA_2BA_2CU_3$ OXIDE SUPERCONDUCTORS

Byung T. Ahn, Seoul, Rep. of Korea; Robert B. Beyers, and Wen Y. Lee, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 10, 1991, Ser. No. 775,626

Int. Cl.[5] H01L *39/24;* **C01F** *11/02;* **C01G** *15/00*

U.S. Cl. 505—475 **10 Claims**



1. A method for producing a high T_c superconductor of $Tl_2Ca_2Ba_2Cu_3$ oxide from a $Tl_2Ca_2Ba_2Cu_3$ starting cation composition, comprising the steps of:

(a) producing a substantially uniform mixture of said starting cation composition; and

(b) performing heat treatment on said uniform mixture with a temperature from about 700 to 860 degrees centigrade and a corresponding oxygen pressure from about 0.008 to 0.5 atmosphere as shown substantially by the shaded area 40 in FIG. 3 to produce a substantially single-phase superconductor.

5,306,699

REACTOR VESSEL FOR MANUFACTURE OF SUPERCONDUCTING FILMS

Michael M. Eddy, Goleta, Calif., assignor to Superconductor Technologies, Inc., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 516,078, Apr. 27, 1990, Pat. No. 5,139,998, which is a continuation-in-part of Ser. No. 308,149, Feb. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 238,919, Aug. 31, 1988, Pat. No. 5,071,830. This application Oct. 25, 1991, Ser. No. 781,358

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

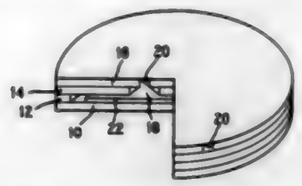
Int. Cl.[5] C01F *11/02*

U.S. Cl. 422—245 **19 Claims**

1. A reactor vessel for thermal processing of a deposited metal oxide film including thallium on a substrate to be crystal-

VOL 1161 ISS 4 AP 26

lized into a superconductor, comprising a vessel including a chamber large enough to receive the substrate and film, the



vessel including at least one aperture to permit controlled venting of the thallium.

5,306,700

DENSE MELT-BASED CERAMIC SUPERCONDUCTORS

Hamid Hojaji, Bethesda, Md., assignor to The Catholic University of America, Washington, D.C.

Filed Sep. 1, 1992, Ser. No. 938,612
Int. Cl.[5] C01F *11/02*; C01G *3/02*; H01B *1/08*; H01L *39/24*
U.S. Cl. 505—450 43 Claims

1. A method of producing a superconducting article comprising:
(a) mixing superconducting oxide precursors to form a first phase;
(b) heating the first phase to a temperature at which the first phase melts;
(c) quenching the molten first phase by rapid cooling;
(d) grinding the first phase to form a powder;
(e) mixing the ground first phase with a second phase comprising (i) superconducting oxide precursors, or (ii) a mixture of metallic silver and metallic copper, or (iii) mixtures of (i) and (ii);
(f) forming the mixture of the first phase and the second phase into a shaped article;
(g) heating the shaped article to an elevated firing temperature;
(h) rapidly cooling the article from the elevated firing temperature to a grain growth temperature;
(i) slowly cooling the article from the grain growth temperature to a grain offset temperature; and
(h) cooling the article to room temperature.

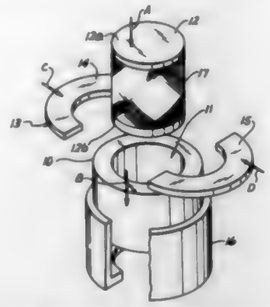
5,306,701

SUPERCONDUCTING MAGNET AND FABRICATION METHOD

Ulf E. Israelsson, Monrovia, and Donald M. Strayer, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 28, 1991, Ser. No. 662,266
Int. Cl.[5] H01F *7/22*
U.S. Cl. 505—213 6 Claims

1. A method of trapping a field in a block of superconductor material, comprising:
providing (i) a block of superconductor material defining a bore, (ii) a high permeability core within the bore that defines a low reluctance path through the bore, (iii) a high permeability external structure on the exterior of the block of material that defines a low reluctance path between opposite ends of the core, and (iv) an electromagnet configured to apply a magnetic field around the high permeability core;
energizing the electromagnet while the block of superconductor material is at a temperature above T_c to produce an applied magnetic field around the high permeability core;
cooling the block of superconductor material to less than T_c in order to render the block of material superconducting;
de-energizing the electromagnet to result in a trapped magnetic field inside the bore; and



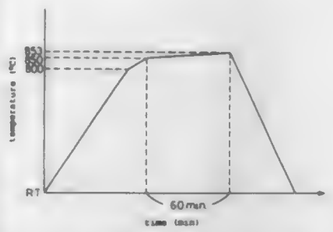
at least partially removing the low reluctance path defined by the core and the external structure in order to increase the magnetic flux density of the trapped magnetic field.

5,306,702

PROCESS FOR PRODUCING BI-PB-SR-CA-CU-O SUPERCONDUCTING FILMS

Atsushi Tanaka; Nobuo Kamehara, and Koichi Niwa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/01423, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO92/06923, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 17, 1991, Ser. No. 860,505
Claims priority, application Japan, Oct. 17, 1990, 2-276507
Int. Cl.[5] B05D *5/12*; C23C *14/00*
U.S. Cl. 505—473 12 Claims



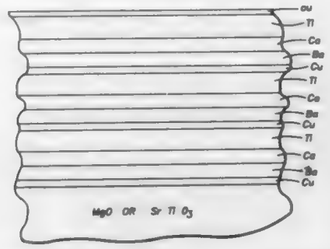
1. A process for producing a Bi-based perovskite superconducting film, comprising the steps of forming on a substrate a Pb-containing Bi-based material film comprising Bi, Pb, Sr, Ca and Cu in a Bi:Pb:Sr:Ca:Cu molar ratio of (1.9 to 2.1):(1.2 to 2.2):2:(1.9 to 2.2):(3 to 3.5) and sintering the Pb-containing Bi-based material film in an oxygen-containing atmosphere, said sintering step including a main sintering period of 20 to 120 minutes, in which the temperature of said film is raised from a first temperature to a second temperature, said second temperature being in a range of 850° to 860° C., and the temperature rise in said main sintering period of 20 to 120 minutes is from 3° to 10° C.

5,306,703

METHOD OF FORMING SMOOTH, UNIFORM THALLIUM-BASED SUPERCONDUCTING FILMS

Ali Naziripour, Boulder, and Allen M. Hermann, Golden, both of Colo., assignors to The University of Colorado Foundation, Inc., Boulder, Colo.

Filed May 27, 1992, Ser. No. 889,599
Int. Cl.[5] B05D *5/12*
U.S. Cl. 505—470 3 Claims



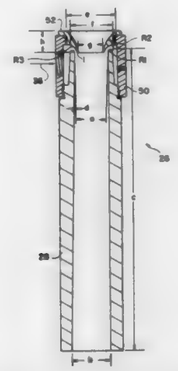
1. A method of forming a thallium, barium, calcium, copper oxide superconducting film with smooth surfaces and chemical uniformity comprising the steps of:
sequentially depositing layers of copper, barium, calcium and thallium to a thickness,
repeating the deposition of sequential layers until a final layer thickness is obtained,
depositing a final copper capping layer,
heating the layered structure at a temperature in the range of 800°–850° C. in the absence of a separate source of Tl for a time period of 5 to 20 minutes in a container while introducing oxygen into the container and then allowing the substrate to cool to room temperature.

5,306,704

EFFICIENT INCORPORATION OF SILVER TO IMPROVE SUPERCONDUCTING FIBERS

Richard A. Gleixner, North Canton; Dale F. LaCount, Alliance, both of Ohio, and Douglas K. Finnemore, Ames, Iowa, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 29, 1992, Ser. No. 922,128
Int. Cl.[5] H01L *39/12*; B29B *9/00*
U.S. Cl. 505—425 18 Claims



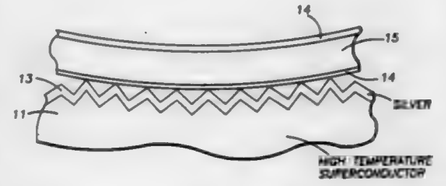
1. A method for fabricating flexible fibers of a high strain tolerant superconducting material, comprising the steps of:
blending a predetermined amount of silver with a superconductor precursor powder;
cold-compacting the blend into at least one pellet;
charging the at least one pellet into a preheated crucible assembly;
melting the at least one pellet in the crucible;
dropping a stream of the melted blend into a vertically extending nozzle;
blowing gas downwardly through the nozzle at a sufficient rate to transform the melted blend in the nozzle into fine ligaments which cool and solidify in a barrel of the nozzle to form flexible fibers; and
collecting the fibers.

5,306,705

SUPERCONDUCTOR-NORMAL-SUPERCONDUCTOR WITH DISTRIBUTED SHARVIN POINT CONTACTS

Matthew J. Holcomb, San Mateo County, and William A. Little, Santa Clara County, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 732,049, Jul. 18, 1991, abandoned. This application May 6, 1993, Ser. No. 58,986
Int. Cl.[5] H01L *39/22*, *39/12*
U.S. Cl. 505—191 11 Claims



1. A non-linear device operated at an operating temperature, said device comprising:
a naturally superconducting material which has a critical temperature above said operating temperature;
a normal metal layer which is in contact with said naturally superconducting material and which has a critical temperature below said operating temperature; and
a second material which is superconducting at said operating temperature and which forms distributed point contacts with said metal layer, each distributed point contact having a small cross-sectional area relative to the mean free path of electrons in said metal layer.

5,306,706

PERFUME BASES

Ahmet E. Baydar, Cannes; Ghislaine-Henriette Caylus, and Christof B. Selden, both of Grasse, all of France, assignors to Givaudan-Roure Corporation, Clifton, N.J.

PCT No. PCT/EP92/00823, § 371 Date Dec. 7, 1993, § 102(e) Date Dec. 7, 1993, PCT Pub. No. WO92/18097, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 11, 1992, Ser. No. 956,023
Claims priority, application European Pat. Off., Apr. 20, 1991, 91106402.0
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—2 6 Claims

1. Perfume base, comprising usnic acid in combination with a perfumery raw material, which is selected from the group consisting of benzyl salicylate, benzyl benzoate, anisic aldehyde, isoeugenol methylether, cinnamyl acetate, eugenol and anethol, the concentration of usnic acid being from about 0.3% w/w to about 3% w/w.

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5,306,707

PERFUMED PRODUCTS

John W. Burrell, Ashford; Stuart B. Fraser, Little Neston; Neil Kilcullen, Moreton; Alexander Martin, Helsby, and James B. Melville, Eastham, all of Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

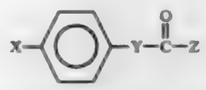
Continuation of Ser. No. 671,618, Mar. 20, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 13,196

Claims priority, application United Kingdom, Mar. 20, 1990, 9006254.8

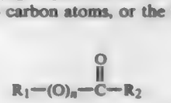
Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—2 16 Claims

1. In a perfumed product which is subject to microbial spoilage and which comprises at least 25% of water and 0.1–60% of a surface active material, the improvement wherein said product contains less than 0.1% of conventional preservatives and 0.05% by weight or more of a preservative perfume wherein at least 30% by weight of said perfume consists of at least one antimicrobially effective perfume ingredient requiring at least three microbial inoculations to failure in an individual challenge test such that said perfume product also requires at least three inoculations to failure in the perfume challenge test, wherein said effective ingredient is selected from the group consisting of compounds according to the formula:



wherein X denotes a hydrogen atom, a methyl or a methoxy group, Y denotes an alkylene, alkenylene, alkyleneoxy or alkenyleneoxy group or may be absent and Z denotes a hydrogen atom or a hydroxy, alkyl or alkoxy group, provided that when Z is a hydroxy or alkoxy group and Y is an alkylenoxy or alkenylenoxy group the oxygen atom in Y is attached to the phenylgroup, provided further that when Y is absent Z does not denote a hydroxy group, and wherein Y and Z together have no more than 4 carbon atoms, or the formula:



wherein R_1 denotes a saturated or unsaturated aliphatic group, n is 0 or 1, R_2 denotes a hydrogen atom or an alkyl group of up to 5 carbon atoms and wherein R_1 and R_2 together have no more than 14 carbon atoms.

5,306,708

ANTIBIOTIC AGENT

Robert E. Schwartz, Westfield; David F. Sesin, Rahway; Prakash S. Masurekar, Warren; Jerrold M. Liesch, Princeton Junction; Thomas C. Hallada, Westfield, and Otto D. Hensens, Red Bank, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

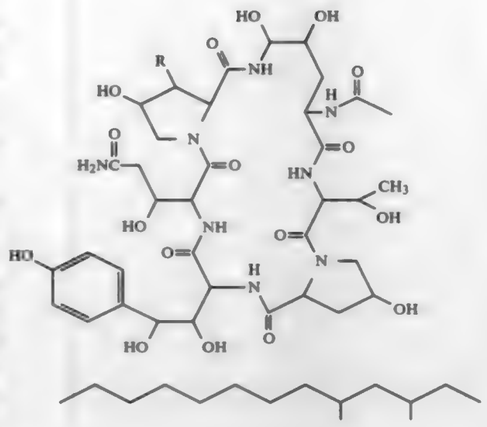
Filed Dec. 19, 1990, Ser. No. 630,457

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] A61K *37/02;* C07K *7/54*

U.S. Cl. 514—11 5 Claims

1. A compound having the formula



wherein R is hydroxyl Seq. ID No.: 2.

4. A method for the treatment of or for the prevention of *Pneumocystis carinii* infections in mammals which comprises administering to mammals an anti-infective amount of the compound of claim 1.

5,306,709

SUPPRESSION OF MEGAKARYOCYTOPOIESIS BY MACROPHAGE INFLAMMATORY PROTEINS

Alan M. Gewirtz, Philadelphia, Pa., assignor to The University of Pennsylvania, Philadelphia, Pa.

Filed Nov. 15, 1991, Ser. No. 792,988

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 20 Claims

1. A method for reducing the number of circulating platelets in the bloodstream of a mammal comprising administering to the mammal an amount of macrophage inflammatory protein-1 and/or macrophage inflammatory protein-2 effective to inhibit megakaryocytopoiesis and thereby induce such a reduction.

5,306,710

METHOD FOR TREATING ENDOTOXIN SHOCK WITH CRF

Edward T. Wei, Berkeley, Calif., assignor to Regents of the University of California, Oakland, Calif.

Division of Ser. No. 386,885, Jul. 28, 1989, Pat. No. 5,137,871. This application Apr. 30, 1992, Ser. No. 876,487

Int. Cl.[5] A61K *37/40*

U.S. Cl. 514—12 1 Claim

1. A method of treating endotoxin shock in a patient comprising:

administering to the patient a corticotropin-releasing factor, including salts and analogs thereof, in an amount effective to antagonize inflammatory mediators.

5,306,711

ORGAN PRESERVATIVE SOLUTION

Peter Andrews, Falls Church, Va., assignor to Georgetown University, Washington, D.C.

Filed Jun. 24, 1992, Ser. No. 903,477

Int. Cl.[5] A61K *31/715*

U.S. Cl. 514—59 25 Claims

1. An organ preservative solution, comprising a pharmacologically acceptable storage solution and 20–30 wt % dextran having an average molecular weight of 10,000 daltons or less, said preservative solution having a pH of 7.0 or greater.

5,306,712

FUNGICIDAL SILICON-CONTAINING COMPOUNDS AND THEIR AGROCHEMICAL AND MEDICINAL USES

Junzo Tobitsuka; Hideo Takeshibe; Yasuhiko Kondo; Hiroshi Ohta, and Shigehiro Kato, all of Shiga, Japan, assignors to Sanyo Company, Limited, Tokyo, Japan

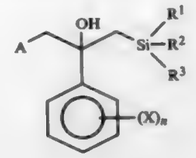
Filed Oct. 6, 1992, Ser. No. 957,269

Claims priority, application Japan, Oct. 9, 1991, 3-262089

Int. Cl.[5] A01N *55/00;* A61K *31/695;* C07D *7/08*

U.S. Cl. 514—63 24 Claims

1. A compound of formula (I):



(I)

wherein:

A represents a 1,2,4-triazol-1-yl group;

n represents 0, 1, 2 or 3, and, when n represents 2 or 3, the groups represented by X may be the same or different;

X represents a halogen atom, a phenyl group, an alkyl group having from 1 to 6 carbon atoms, a haloalkyl group having from 1 to 6 carbon atoms and having at least one halogen atom, an alkoxy group having from 1 to 6 carbon atoms, or a haloalkoxy group having from 1 to 6 carbon atoms and having at least one halogen atom, or $(X)_n$ represents an alkylenedioxy group having I or 2 carbon atoms;

R^1 represents an alkyl group having from 1 to 4 carbon atoms or a phenyl group which is unsubstituted or is substituted by at least one halogen atom; and

R^2 and R^3 are independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms;

or a salt thereof.

5,306,713

HIGHLY ACTIVE ANTIOXIDANT OF TOCOPHERYL ASCORBYL PHOSPHATE

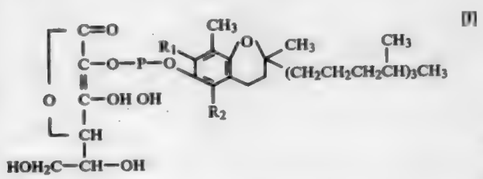
Keiko Suetsugu, Yokohama; Kazumi Ogata, Toyonaka; Kenichi Yoshida, Itami; Keiichi Uehara, and Kenichi Tomita, both of Yokohama, all of Japan, assignors to Shiseido Company Ltd., Tokyo and Senju Pharmaceutical Co, Ltd., Osaka, both of Japan

Continuation of Ser. No. 364,051, Jun. 8, 1989, abandoned. This application Aug. 7, 1991, Ser. No. 741,988

Int. Cl.[5] A61K *31/66, 31/355, 31/34*

U.S. Cl. 514—100 2 Claims

1. A method of preventing oxidation deterioration of a material susceptible to oxidative deterioration which comprises mixing said material with an antioxidant-effective amount of a diester of phosphoric acid with tocopherol and ascorbic acid of the formula



[I]

wherein R_1 represents H or CH_3 and R_2 represents H or CH_3, or a salt thereof.

5,306,714

(S)-2,3-DIHYDROPOLYPRENYL, MONOPHOSPHATE, AND AGENTS FOR INHIBITING THE METASTASIS OF CANCERS

Yasushi Okamoto, Tokyo; Masahiro Tsuji, Kawagoe, and Hiroyuki Yamazaki, Fujimi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

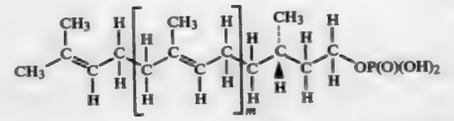
Filed Jun. 21, 1993, Ser. No. 79,271

Claims priority, application Japan, Aug. 17, 1992, 4-217882; Mar. 29, 1993, 5-069750

Int. Cl.[5] A61K *31/66;* C07F *9/113*

U.S. Cl. 514—134 2 Claims

1. A (S)-2,3-dihydropolyprenyl monophosphate of formula (II)



[II]

wherein m is 7 or 8 or the pharmaceutically acceptable salt thereof.

5,306,715

RIFAPENTINE HYDROHALIDES

Emilio Occelli, Parabiago; Marino Nebuloni, Rho, and Bruno Cavalieri, Milan, all of Italy, assignors to Gruppo Lepetit SpA, Milan, Italy

PCT No. PCT/EP89/00694, § 371 Date Jan. 8, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO90/00553, PCT Pub. Date Jan. 25, 1990

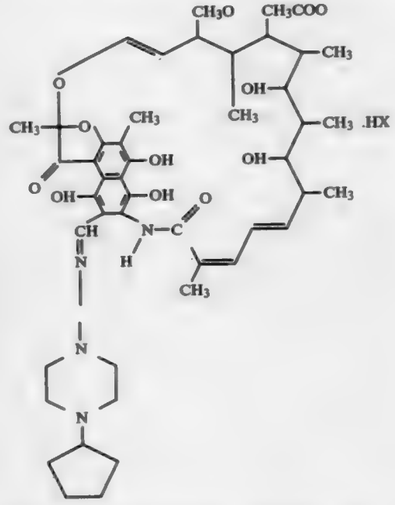
PCT Filed Jun. 21, 1989, Ser. No. 635,172

Claims priority, application United Kingdom, Jul. 13, 1988, 8816620

Int. Cl.[5] A61K *31/395;* C07D *498/08*

U.S. Cl. 514—183 14 Claims

1. A solid acid addition salt of rifapentine of the formula



wherein X is chlorine or bromine in the solid form.

13. A pharmaceutical antibacterial dosage form comprising rifapentine hydrochloride or rifapentine hydrobromide as the active ingredient present in an antibacterially effective amount in admixture with inert excipients.

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5,306,716

METHODS OF ACHIEVING ANTILEUKEMIA ACTIVITY USING 16-MEMBERED-MACROLIDE-TYPE COMPOUNDS

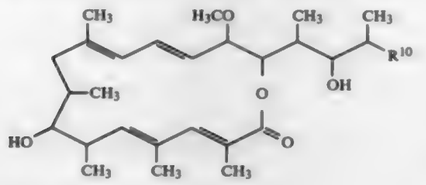
Tom G. Holt, Westfield, and Richard L. Monaghan, Somerset, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 20, 1992, Ser. No. 854,174

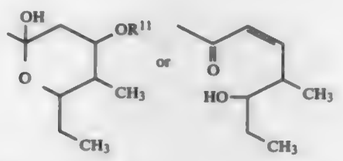
Int. Cl.[5] A01N *43/02*; A61K *31/335*

U.S. Cl. 514—185 **6 Claims**

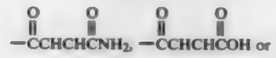
1. A method of treating leukemia cells in a mammal in need thereof, comprising the step of administering to said mammal a pharmacologically effective amount of a compound selected from the group consisting of a hygrolidin of the formula

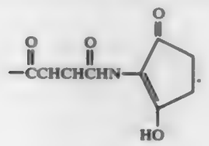


where R^{10} is



and R^{11} is hydrogen,





5,306,717

CEPHALOSPORIN DERIVATIVES

Friedhelm Adam, Hofheim am Taunus; Walter Dürckheimer, Hattersheim am Main; Gerd Fischer, Frankfurt am Main; Burkhard Mencke, Holzappel; Gerhard Seibert, Darmstadt; Dieter Isert, Eschborn, and Norbert Kiesel, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 499,723, Mar. 27, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 924,598

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1989, 3910093

Int. Cl.[5] C07D *501/22*; A61K *31/545*

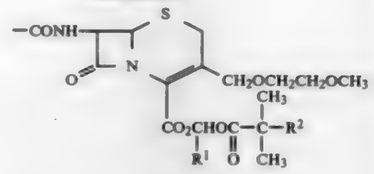
U.S. Cl. 514—202 **7 Claims**

1. A cephemcarboxylic acid ester of the formula I



(I)

-continued



in which

R^1=hydrogen or methyl and

R^2=methyl or ethyl and in which the HO group is in the syn-position, or a physiologically tolerated acid addition salt thereof.

5,306,718

OXIME AND AMINE SUBSTITUTED AZABICYCLO AND AZOCYCLO MUSCARINIC AGONISTS AND METHODS OF TREATMENT

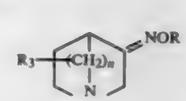
David J. Lauffer, Saline, Mich.; Walter H. Moos, Emeryville, Calif.; Michael R. Pavia, Ann Arbor, Mich.; Haile Tecle, Ypsilanti, Mich., and Anthony J. Thomas, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 641,478, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 591,647, Oct. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 488,916, Mar. 6, 1990, abandoned. This application Oct. 16, 1991, Ser. No. 778,412

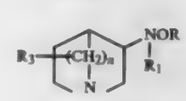
Int. Cl.[5] C07D *211/72*; A61K *31/00*

U.S. Cl. 514—230.8 **21 Claims**

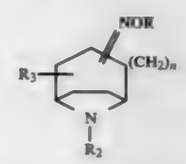
1. A compound of the following formulas I, II, or III, its enantiomer, its geometric isomer or a pharmaceutically acceptable salt thereof:



I



II



III

wherein n is one;

wherein each of R_1 and R_2 is hydrogen or straight or branched lower alkyl having from 1 to 4 carbon atoms;

wherein R_3 is hydrogen, a straight or branched lower alkyl group having from 1 to 6 carbon atoms, hydroxy, a straight or branched lower alkoxy group having from 1 to 4 carbon atoms, acyloxy group wherein the acyl moiety has from 2 to 5 carbon atoms, or the group $-(CH_2)_q-NR_{11}R_{12}$ wherein Q is zero or 1 to 4 and each of R_{11} and R_{12} is the same or different and is hydrogen or a straight or branched lower alkyl group having from 1 to 4 carbon atoms; or cycloalkyl having from 3 to 6 carbon atoms;

wherein R is

(a) hydrogen;

(b) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms which is saturated or which is unsaturated and contains from 1 to 4 double and/or triple bonds;

(c) phenyl or phenyl substituted with 1 to 3 substituents selected from chlorine, bromine, fluorine, trifluoromethyl, hydroxy, trifluoromethoxy, straight or branched alkoxy having from 1 to 4 carbon atoms, straight or branched alkyl having from 1 to 4 carbon atoms, nitro, $-NR_4R_5$ wherein each of R_4 and R_5 is hydrogen or a straight or branched alkyl group having from 1 to 4 carbon atoms;

(d) cycloalkyl having from 3 to 8 carbon atoms or a cycloalkenyl group having from 4 to 8 carbon atoms;

(e) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms which is saturated or which is unsaturated and contains from 1 to 4 double and/or triple bonds, and the terminal carbon of the hydrocarbon chain is substituted with a group selected from:

(i) A cycloalkyl group having from 3 to 8 carbon atoms or a cycloalkenyl group having from 4 to 8 carbon atoms;

(ii) an aromatic group selected from phenoxy, phenyl, 2- or 3-thienyl, 2- or 3-furanyl, 2- or 3-pyrrolyl, 2-, 3-, or 4-pyridinyl, 3- or 5-(1,2,4)-thiadiazolyl, 3-(1,2,5)-thiadiazolyl, 2-(1,3,4)-thiadiazolyl, 2-triazinyl, 3-or 5-(1,2,4)-oxadiazolyl, 2-(1,3,4)-oxadiazolyl, 3-(1,2,5)-oxadiazolyl, 3- or 5-thiadiazolyl, 2-or 5-pyrimidinyl, 3-or 4-pyridazinyl, 2-, 4-, or 5-thiazolyl, 2-, 4-, or 5-oxazolyl, or 2-pyrazinyl wherein the aromatic group is unsubstituted or is substituted with 1 or 2 substituents selected from straight or branched alkyl having from 1 to 4 carbon atoms, straight or branched alkoxy having from 1 to 4 carbon atoms, chlorine, fluorine, bromine, trifluoromethyl, nitro, hydroxy, trifluoromethoxy, or NR_4R_5 wherein R_4 and R_5 have the meanings defined above,

(iii) $-NR_6R_7$ wherein each of R_6 and R_7 is hydrogen, alkyl having from 1 to 4 carbon atoms, phenyl or benzyl, or $-NR_6R_7$ taken together form a pyrrolidino, piperidino, piperazino, or morpholino ring;

(iv)



wherein R_6 and R_7 have the meanings defined above;

(v)



wherein R_8 is a straight or branched alkyl group having from 1 to 6 carbon atoms;

(vi) CN;

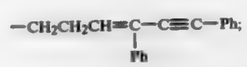
(vii) $-CO_2R_9$ wherein R_9 is hydrogen, a straight or branched hydrocarbon group having from 1 to 6 carbon atoms which is saturated or which is unsaturated and contains 1 or 2 double and/or triple bonds, or benzyl;

(viii) XR_{10} wherein X is oxygen or sulfur, and R_{10} is a straight or branched hydrocarbon chain having from 1 to 6 carbon atoms which is saturated or which is unsaturated and contains 1 or 2 double and/or triple bonds and is unsubstituted or is substituted with an alkoxy group having from 1 to 4 carbon atoms.

(ix) biphenylyl;

(f) the group $-CH_2CH_2CH{=}C(Ph)_2$; or

(g) the group



with the proviso that the following compounds are excluded: compounds of Formula III wherein R is hydrogen.

5,306,719

CARBOSTYRIL DERIVATIVES AND SALTS THEREOF

Shigeharu Tamada; Takafumi Fujioka; Hidenori Ogawa; Shuji Teramoto, and Kazumi Kondo, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

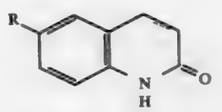
Division of Ser. No. 405,295, Sep. 11, 1989, Pat. No. 5,071,856, which is a division of Ser. No. 79,875, Jul. 30, 1987, Pat. No. 4,886,809. This application Sep. 16, 1991, Ser. No. 760,480

Claims priority, application Japan, Jul. 31, 1986, 61-181662; Jun. 24, 1987, 62-156886

Int. Cl.[5] A61K *31/495*; C07D *403/06*

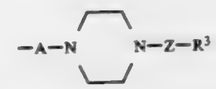
U.S. Cl. 514—253 **14 Claims**

1. A carbostyril compound or salt thereof of the formula



wherein

R is a group of the formula



wherein A is a group of the formula



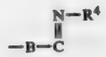
or a group of the formula



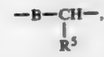
wherein B is a lower alkylene group; R^3 is a phenyl group which may have 1 to 2 substituents selected from the group consisting of a halogen atom, a lower alkyl group, a lower alkoxy group, a lower alkylthio group and a lower alkylenedioxy group; and Z is a group of the formula



a group of the formula



wherein B is a lower alkylene group and R^4 is a hydroxyl group, a lower alkanoyloxy group or a lower alkoxy group, or a group of the formula



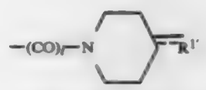
wherein B is a lower alkylene group and R^5 is a cyano group, a halogen atom or a group of the formula

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wherein R^6 and R^7 are each the same or different, and are each a hydrogen atom a lower alkyl group, a lower alkoxycarbonyl group, a benzoyl group or a lower alkanoyl group; further R^6 and R^7 may form, together with the adjacent nitrogen atom being bonded thereto, and further with or without an additional nitrogen atom or oxygen atom, a 5- or 6-membered saturated or unsaturated heterocyclic group selected from the group consisting of piperidino, piperazino, morpholino, imidazoyl, pyrrolyl and pyrrolidyl groups; or

R is a group of the formula



wherein $R^{1'}$ is a lower alkylenedioxy group, an oxo group, a hydroxylimino group, a lower alkanoylyimino group, a group of the formula =N—A', wherein A' is a lower alkyl group, a phenyl-lower alkyl group, a lower alkylsulfonyl group or a phenoxy-lower alkyl group, or a group of the formula



wherein $R^{4'}$ and $R^{5'}$ are each the same or different and are each a hydrogen atom, a lower alkyl group, a lower alkanoyl group, a phenyl-lower alkyl group, a lower alkoxycarbonyl group, a lower alkylsulfonyl group, a benzoyl group which may have 1 to 3 substituents selected from the group consisting of a lower alkoxy group and a halogen atom on the phenyl ring, a phenyl-lower alkanoyl group, a phenyl-lower alkenylcarbonyl group which may have lower alkoxy groups as the substituents on the phenyl ring, or a phenoxy-lower alkyl group, the bond between $R^{1'}$ and the piperidine ring of R is a single or double bond, and l is 0 or 1; and

the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton being a single or double bond;

provided that, when Z is a group of the formula



then A is a group of the formula



further provided that, when l is 0, and $R^{4'}$ is a hydrogen atom, a lower alkyl group or a phenyl-lower alkyl group, the $R^{5'}$ should be neither a hydrogen atom, a lower alkyl group or a phenyl-lower alkyl group.

5,306,720

PIPERIDINE DERIVATIVE AND PHARMACEUTICAL COMPOSITION

Hachiro Sugimoto, Ushiku; Takaharu Nakamura, Abiko; Yutaka Tsuchiya, Ushiku; Hiroyuki Sugumi, Yatabemachi; Kunizou Higurashi, Tokyo; Norio Karibe, Yatabemachi; Yoshiharu Yamanishi, Ryugasaki; Hiroo Ogura, Tsuchiura; Shin Araki; Atsuhiko Kubota, both of Nihari; Michiko Ohtake, Mitsukaido, and Kiyomi Tamatsu, Kamakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 679,769, Apr. 3, 1991, Pat. No. 5,118,684, which is a division of Ser. No. 479,948, Feb. 14, 1990, Pat. No. 5,039,681, which is a division of Ser. No. 321,624, Mar. 10, 1989, Pat. No. 4,942,169, which is a division of Ser. No. 946,459, Dec. 24, 1986, Pat. No. 4,849,431. This application Dec. 20, 1991, Ser. No. 811,698

Claims priority, application Japan, Dec. 27, 1985, 60-293885

Int. Cl.[5] A61K *31/505;* **C07D** *401/12*

U.S. Cl. 514—259 **9 Claims**

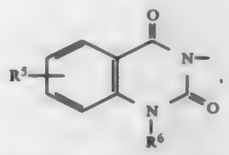
1. A piperidine derivative having the formula (I) or a pharmacologically acceptable salt thereof:



(I)

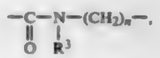
wherein

R^1 is

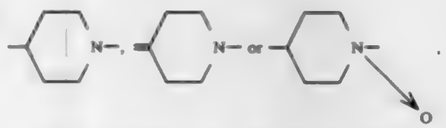


R^5 being hydrogen, methyl or chlorine and R^6 being hydrogen, methyl or chlorine,

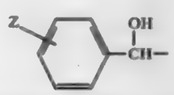
X is



wherein n is an integer of 1 through 7 and R^3 is hydrogen, lower alkyl or benzyl,



and R^2 is hydrogen, lower alkyl, benzyl, benzyl substituted by hydroxy, methoxy or chlorine, benzoyl, benzoyl with a fluorine substituent, pyridyl, 2-hydroxyethyl, pyridymethyl or a group of the formula



wherein Z represents a halogen atom.

5,306,721

3-(MERCAPTOALKYL)QUINAZOLINE

Siegfried Leistner; Michael Gütschow; Karl Dröasler, all of Leipzig; Helmut Vieweg, Rheinfelden; Günther Wagner, Leipzig; Thomas Strohscheidt, Leipzig; Dieter Lohmann, Radebeul; Gunter Laban, Dresden; Herwart Ambrosius, Leipzig, and Angela Siegling, Weissbach, all of Fed. Rep. of Germany, assignors to Arzneimittelerk Dresden G.m.b.H., Radebeul, Fed. Rep. of Germany

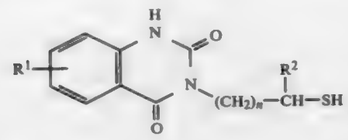
Continuation of Ser. No. 935,124, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 689,999, Apr. 23, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 101,269

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1990, 340025; Apr. 24, 1990, 340026; Apr. 24, 1990, 340027; Apr. 24, 1990, 340029; Apr. 24, 1990, 340032

Int. Cl.[5] A61K *31/505;* **C07D** *239/96*

U.S. Cl. 514—259 **5 Claims**

1. A compound or its tautomer of Formula I,



(I)

wherein

R^1 is hydrogen, a 6-methyl, 6-fluoro, 6-chloro, 6-bromo, or 6,7-dimethoxy residue,

R^2 is hydrogen, or a methyl residue,

and n is 1 or 2,

and tautomers and their pharmaceutically acceptable alkali, or ammonium salts.

5,306,722

THYMIDINE DERIVATIVES AND THERAPEUTIC METHOD OF USE

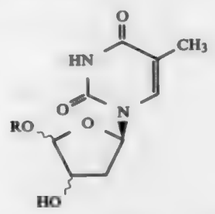
Choung U. Kim, Madison; Bing Y. Luh, Killingworth, and Peter F. Misco, Durham, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Sep. 2, 1992, Ser. No. 939,232

Int. Cl.[5] A61K *31/505;* **C07D** *403/04*

U.S. Cl. 514—274 **21 Claims**

1. A compound of formula I



I

in which R is C_{1-6}alkyl or $Ar(CH_2)_n$—, wherein Ar represents phenyl optionally substituted with one to five same or different halogen, C_{1-6} alkyl or C_{1-6} alkyloxy; and n equals one to six.

21. A method of inhibiting viral thymidine kinase with a compound as claimed in any one of claims 1 to 19.

5,306,723

NEUROPROTECTIVE INDOLONE AND RELATED DERIVATIVES

Bertrand L. Chenard, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

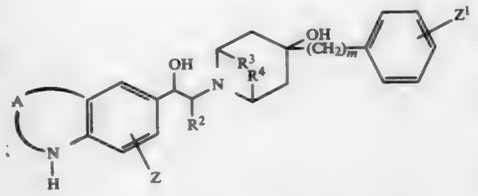
PCT No. PCT/US91/01470, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/17156, PCT Pub. Date Nov. 14, 1991

PCT Filed Mar. 4, 1991, Ser. No. 941,118

Int. Cl.[5] A61K *31/44;* **C07D** *209/34, 401/06, 263/58*

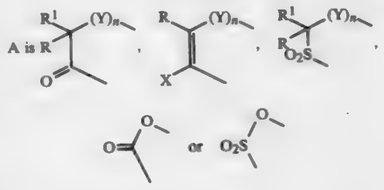
U.S. Cl. 514—304 **55 Claims**

1. A racemic or optically active compound of the formula



(I)

wherein



n is 0 or 1;

m is 0 or an integer from 1–6;

R, R^1 and R^2 are each independently hydrogen or $(C_1–C_3)$alkyl;

R^3 and R^4 are taken separately and are each hydrogen, or R^3 and R^4 are taken together and are ethylene;

X is hydrogen, $(C_1–C_3)$alkoxy or $[(C_1–C_3)$ alkoxy]-carbonyl;

Y is CH_2 or oxygen;

Z and Z^1 are each independently hydrogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$alkoxy, fluoro, chloro or bromo;

or a pharmaceutically-acceptable acid addition salt thereof.

5,306,724

METHOD FOR PREVENTING AND TREATING ATHEROSCLEROSIS

Dennis I. Goldberg, Palatine, Ill., assignor to Clintec Nutrition Company, Deerfield, Ill.

Filed Aug. 17, 1992, Ser. No. 930,183

Int. Cl.[5] A61K *31/425*

U.S. Cl. 514—369 **14 Claims**

1. A method for treating atherosclerosis comprising the step of administering to a patient having atherosclerosis a therapeutically effective amount of L-2-oxothiazolidine-4-carboxylate that stimulates the intracellular synthesis of glutathione.

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5,306,725

STABILIZED ISOTHIAZOLONE LIQUID FORMULATION

Yoichi Sano, Takatsuki; Katsuji Tauji, Kyoto, and Sakae Katayama, deceased, late of Nishinomiya, all of Japan by Hirohiko Katayama, Executor , assignors to Katayama Chemical Inc., Osaka, Japan

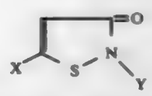
Continuation of Ser. No. 745,250, Aug. 14, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 970,231

Int. Cl.[5] A01N *43/80*; C07D *275/03*

U.S. Cl. 514—372 **5 Claims**

1. A stabilized isothiazolone liquid formulation comprising:

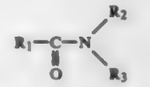
an isothiazolone compound represented by formula (I):



(I)

where X represents a hydrogen atom or a halogen atom, and Y represents a lower alkyl group, and

a mixed solvent containing 70–98 wt. % of a glycol-type solvent selected from the group consisting of ethylene glycol, diethylene glycol, polyethylene glycol, propylene glycol, dipropylene glycol, tripropylene glycol, polypropylene glycol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, tripropylene glycol monomethyl ether, 1,4-butanediol and 1,5-pentanediol and 2–30 wt. % of an amide-type compound represented by formula (II):



(II)

where R_1 represents a hydrogen atom or a lower alkyl group, R_2 and R^3 each represents a lower alkyl group, and R_1 may bond to R_2 or R_3 to form a nitrogen-containing heterocycle,

the compound of the formula (I) being dissolved in the mixed solvent in an amount effective to at least dissolve the compound of formula (I).

5,306,726

3-ARYL-2-HYDROXYPROPIONIC ACID DERIVATIVES AND ANALOGS AS HYPOGLYCEMIC AGENTS

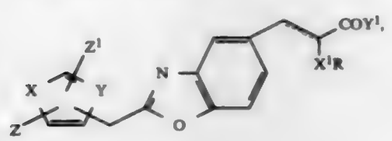
Bernard Hulin, Essex, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,404

Int. Cl.[5] C07D *263/56*

U.S. Cl. 514—375 **4 Claims**

1. A compound of the formula



wherein:

——— represents a bond or no bond;

R is C_1 to C_8 alkyl, C_3 to C_7 cycloalkyl, C_3 to C_8 alkenyl, C_3 to C_8 alkynyl, phenyl, C_7 to C_8 phenylalkyl, C_2 to C_8 alkanoyl, or one of said groups mono- or disubstituted with C_1 to C_3 alkyl, trifluoromethyl, hydroxy, C_1 to C_3 alkoxy, fluoro or chloro;

X is S, NR^2, —CH=CH—;

R^2 is hydrogen, C_1 to C_3 alkyl, phenyl or benzyl;

Y is CH;

Z is hydrogen, C_1 to C_7 alkyl, C_3 to C_7 cycloalkyl, phenyl or phenyl mono- or disubstituted with C_1 to C_3 alkyl, trifluoromethyl, C_1 to C_3 alkoxy, phenyl, phenoxy, benzyl, benzoloxy, fluoro or chloro;

X^1 is O, S, SO or SO_2;

Y^1 is hydroxy, C_1 to C_3 alkoxy, phenoxy, benzyloxy, amino, C_1 to C_4 alkanoylamino, C_1 to C_4 alkanesulfonylamino, benzenesulfonylamino, naphthalenesulfonylamino, di (C_1 to C_3 alkyl)aminosulfonylamino, or one of said groups mono- or disubstituted with C_1 to C_3 alkyl, trifluoromethyl, hydroxy, C_1 to C_3 alkoxy, fluoro or chloro; and

Z^1 is hydrogen or C_1 to C_3 alkyl;

a pharmaceutically acceptable cationic acid addition salt thereof when Y^1 is hydroxy; or

a pharmaceutically acceptable acid addition salt thereof when the compound contains a basic nitrogen atom.

5,306,727

PHOSPHORAMIDATES USEFUL AS ANTITUMOR AGENTS

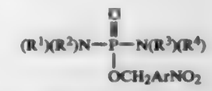
Richard F. Borch, Pittsford, and James P. Schmidt, Rochester, both of N.Y., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Apr. 30, 1993, Ser. No. 55,964

Int. Cl.[5] A61K *31/415, 31/34, 31/38, 31/40*

U.S. Cl. 514—398 **16 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are individually (C_2–C_6)alkyl, optionally substituted with halogen, (C_1–C_4)alkoxy, (C_6–C_{12})aryloxy, cyano, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkylsulfonyl, (C_6–C_{12})arylsulfonyl, ($_1$–C_4)perfluoroalkylsulfonyl, (C_1–C_4)alkylsulfinyl, (C_6–C_{12})arylsulfinyl, or R^1 and R^2 taken together with N are a morpholino ring; R^3 and R^4 are the same as R^1 and R^2 or are individually H; and Ar is a nitrogen-, sulfur- or oxygen-containing heteroaromatic ring wherein nitrogen is unsubstituted or is substituted with (C_1–C_4)alkyl.

5,306,728

SUBSTITUTED AMINE DERIVATIVES HAVING ANTIHYPERLIPEMIA ACTIVITY

Yoshimi Tsuchiya; Takashi Nomoto; Masahiro Hayashi; Yoshikazu Iwasawa; Hitoshi Masaki; Mitsuru Ohkubo; Yumiko Sakuma; Yasufumi Nagata; Toshihiko Satoh, and Toshio Kamei, all of Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

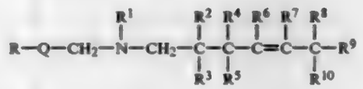
Continuation of Ser. No. 672,430, Mar. 20, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,120

Claims priority, application Japan, Mar. 20, 1990, 2-71542; Apr. 3, 1990, 2-88624

Int. Cl.[5] A61K *31/38*; A01N *43/06*; C07D *411/10, 333/10*

U.S. Cl. 514—438 **13 Claims**

1. Substituted amine derivatives represented by the following formula (I) and their nontoxic salts:

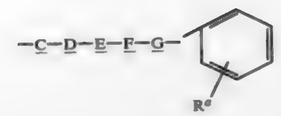


(I)

wherein

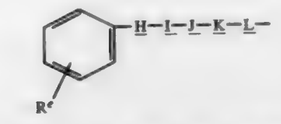
R is a thienyl group; and

Q denotes (a) a group represented by the formula



wherein C, D, E, F and G are the same or different and each denotes an oxygen atom, sulfur atom, carbonyl group, group represented by the formula —CHR^6—, group represented by the formula —CR^c═ or group represented by the formula —NR^4—, wherein R^b, R^c and R^d are the same or different and each denotes a hydrogen atom or lower alkyl group;

R^a denotes a hydrogen atom, halogen atom, hydroxyl group, cyano group, lower alkyl group or lower alkoxy group, provided that except that each pair of C and F, C and G, or D and G are the same or different and can denote oxygen atom(s), sulfur atom(s) or group(s) represented by the formula —NR^d—, it is impossible that at least two of C, D, E, F and G are simultaneously oxygen atom(s), sulfur atom(s) or group(s) represented by the formula —NR^d—, and it is impossible that at least two of C, D, E, F and G simultaneously denote carbonyl groups, and further when double bond(s) and oxygen atom(s), sulfur atom(s) or group(s) represented by the formula —NR^d— coexist in the chain formed by C, D, E, F and G, they do not adjoin one another, or (b) a group represented by the formula:



wherein H, I, J, and K are the same or different and each denotes an oxygen atom, sulfur atom, carbonyl group, group represented by the formula —CHR^f—, group represented by the formula —CR^g═ or group represented by the formula —NR^h—, wherein R^f, R^g and R^h are the same or different and each denotes a hydrogen atom or lower alkyl group; L denotes a carbonyl group, group represented by the formula —CHR^i— or group represented by the formula —CR^j═, wherein R^i and R^j are the same or different and each denotes a hydrogen atom or lower alkyl group; and R^e denotes a hydrogen atom, halogen atom, hydroxyl group, cyano group, lower alkyl group or lower alkoxy group, provided that except that H and K are the same or different and each can denote an oxygen atom, sulfur atom or group represented by the formula —NR^k—, it is impossible that at least two of H, I, J, and K simultaneously denote oxygen atom(s), sulfur atom(s) or group(s) represented by the formula —NR^k—, and it is impossible that at least two of H, I, J, and K simultaneously denote carbonyl groups, and further when double bond(s) and oxygen atom(s), sulfur atom(s) or group(s) represented by the formula —NR^k— coexist in the chain formed by H, I, J, K and L, they do not adjoin one another;

R^1 denotes a hydrogen atom, lower alkyl group, lower haloalkyl group, lower alkenyl group, lower alkynyl group or cycloalkyl group;

R^2, R^3, R^4 and R^5 are the same or different and each denotes a hydrogen atom, halogen atom or lower alkyl group, or R^2 and R^4 and/or R^3 and R^5 combine to denote a single bond;

R^6 and R^7 are the same or different and each denotes a hydrogen atom, halogen atom or lower alkyl group, or R^6 and R^7 combine to denote a single bond;

R^8 and R^9 are the same or different and each denotes a fluorine atom, trifluoromethyl group or lower alkyl group, or R^8 and R^9 combine to form a cycloalkane together with the adjacent carbon atom; and

R^{10} denotes a hydrogen atom, fluorine atom, trifluoromethyl group, acetoxy group, lower alkyl group or lower alkoxy group.

5,306,729

METHOD FOR EFFECTING VASODILATION WITH MONOGLYCERIDES

Bruce M. Spiegelman, Waban; William O. Wilkison, Boston, and Sven Bursell, Newton, all of Mass., assignors to Joslin Diabetes Center and Dana-Farber Cancer Institute, both of Boston, Mass.

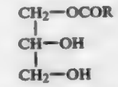
Filed Feb. 25, 1992, Ser. No. 840,909

Int. Cl.[5] A61K *31/22, 31/23*

U.S. Cl. 514—546 **6 Claims**

1. A method of effecting vasodilation, comprising:

administering to a warm-blooded animal in need of such treatment, an amount of a vasodilatory monoglyceride of the formula:



wherein R is a straight chain aliphatic hydrocarbyl substituent of 2–7 carbon atoms which is saturated or unsaturated, and which is substituted or unsubstituted with one or more substituents that do not interfere with vasodilatory activity,

which amount is effective to stimulate vasodilation in the animal.

5,306,730

BOTULINUM TOXIN NEUTRALIZER

Yoshitaka Nagai, Setagaya; Koutaro Takamizawa, Irima; Ryuichiro Tanaka, Tachikawa; Hiroo Takayama, Tokorozawa; Toshizo Sakurai, Mitaka, and Masahiko Mutai, Higashiyamato, all of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Continuation of Ser. No. 131,237, Dec. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 11,213, Feb. 3, 1987, abandoned. This application May 26, 1992, Ser. No. 887,652

Claims priority, application Japan, Feb. 3, 1986, 61-20066

Int. Cl.[5] A61K *31/20*

U.S. Cl. 514—558 **1 Claim**

1. A method of treating a patient suffering from botulinum intoxication which comprises administering to a patient an effective botulinum toxin neutralizing amount of at least one fatty acid having 16 to 22 carbon atoms.

5,306,731

METHOD AND PRODUCTS FOR TREATING THE EYE

David L. Epstein, Wayland, Mass., assignor to Massachusetts Eye and Ear Infirmary, Boston, Mass.

Continuation-in-part of Ser. No. 514,488, Apr. 26, 1990, which is a continuation-in-part of Ser. No. 123,797, Nov. 23, 1987, which is a continuation-in-part of Ser. No. 745,325, Jun. 14, 1985, abandoned. This application Mar. 14, 1991, Ser. No. 669,381

Int. Cl.[5] A61K *31/195, 31/19*

U.S. Cl. 514—562 **27 Claims**

1. In a method for treating or preventing glaucoma wherein a molecule having one or more groups capable of reacting with sulfhydryl groups in the trabecular meshwork of the eye is delivered to the trabecular meshwork in an amount sufficient to increase aqueous humor outflow, the improvement comprising,

administering a masking agent to the eye in conjunction with delivering the molecule in sufficient amount to prevent a

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medically unacceptable side effect which would otherwise occur without administration of the masking agent.

5,306,732

TUMOR NECROSIS FACTOR ANTAGONIST

David B. Norris; Paul Depledge, both of Slough, and Andrew P. Jackson, Birstall, all of United Kingdom, assignors to Xenova Limited, Slough, United Kingdom

PCT No. PCT/GB90/01801, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/07953, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 22, 1990, Ser. No. 862,574

Claims priority, application United Kingdom, Nov. 24, 1989, 8926611.8

Int. Cl.[5] A61K *31/045*

U.S. Cl. 514—729 2 Claims

1. A method for treating a patient suffering from endotoxic shock, which method comprises administering to the patient a thermapeutically effective amount of a compound selected from the group consisting of vinigrol and the pharmaceutically acceptable salts thereof.

5,306,733

LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Robert P. Adamski, Missouri City; Maryanne Mores, Houston; Pui K. Wong, Houston, and Diana D. Davis, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 30, 1993, Ser. No. 114,557

Int. Cl.[5] C08J *9/26, 9/28*

U.S. Cl. 521—63 13 Claims

1. A process for the production of a porous crosslinked polymeric material comprising the steps of:

(a) providing a water-in-oil emulsion comprising (i) a mixture of polymerizable monomers comprising at least one vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a multifunctional unsaturated crosslinking monomer, (ii) at least 90 weight percent, based on the emulsion, of water as the internal phase, (iii) an effective amount of a surfactant comprising at least one saccharide fatty acid ester to produce the water-in-oil emulsion, and (iv) an effective amount of at least one polymerization initiator to polymerize and crosslink the polymerizable monomers;

(b) heating the water-in-oil emulsion under conditions effective to polymerize and crosslink the polymerizable monomers; and

(c) removing at least a portion of the water in said crosslinked emulsion.

5,306,734

USE OF VISCOSITY AS AN IN-LINE DIAGNOSTIC FOR HIGH INTERNAL PHASE EMULSION GENERATION

Ronald M. Bass, and Thomas F. Brownscombe, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 8, 1993, Ser. No. 118,541

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—63 10 Claims

1. A process for the preparation of a porous cross-linked polymeric material comprising the steps of:

(a) providing a water phase comprising water and an electrolyte;

(b) providing an oil phase comprising a mixture of polymerizable monomers comprising at least one vinyl monomer and a crosslinker;

(c) providing a surfactant to the water phase, the oil phase, or both the water and the oil phases;

(d) combining and mixing said water phase and said oil phase in a mixer under conditions effective to produce an emulsion having at least 90 weight percent, based on the emulsion, of water as the internal phase;

(e) providing a capillary for receiving the emulsion output of said mixer, said capillary having segments of different diameters;

(f) maintaining said emulsion at a preselected temperature as it flows through said capillary to a capillary output;

(g) measuring the pressure drop across selected lengths of each of said different diameter segments;

(h) utilizing the pressure drop to adjust operating conditions to produce a porous cross-linked polymeric material;

(i) adding to at least a portion of said oil phase, water phase or emulsion, an effective amount of a polymerization catalyst to cure the polymerizable monomers;

(j) polymerizing said emulsion from said capillary output under conditions effective to cure the polymerizable monomers; and

(k) removing at least a portion of the water from said cured emulsion.

5,306,735

POLYURETHANE, PROCESS FOR PRODUCING THE SAME, AND PROCESS FOR PRODUCING POLYURETHANE FOAM

Shoichiro Harada; Yasutoshi Isayama; Tetsuaki Fukushima; Masayoshi Morii; Hiroshi Kitagawa, and Hiroshi Abe, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 797,350, Nov. 25, 1991, Pat. No. 5,223,547. This application Mar. 17, 1993, Ser. No. 32,107

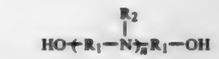
Claims priority, application Japan, Nov. 27, 1990, 2-326696; May 10, 1991, 3-105674; May 10, 1991, 3-105675; May 10, 1991, 3-105676; May 10, 1991, 3-105677

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—78 43 Claims

1. A process for producing a polyurethane, comprising the step of reacting a polyisocyanate component with a polyol component, wherein said polyol component comprises, as all or part thereof, a tertiary aminoalcohol having the formula (I):



(I)

wherein each R_1 is selected from the group consisting of straight or branched alkylene having 2 to 24 carbon atoms, cycloalkylene having 3 to 24 carbon atoms, alicyclic alkylene having 4 to 24 carbon atoms and having 1 to 6 carbon atoms in the alkylene portion, arylene having 6 to 24 carbon atoms, aralkylene having 7 to 24 carbon atoms and having 1 to 6 carbon atoms in the alkylene portion, and $-(CH_2CH_2O)_p-(CH_2CH_2)_q-$, wherein p is zero or a positive number, and q is a positive number, each R2 is selected from the group consisting of straight or branched alkyl having 1 to 24 carbon atoms, aryl having 6 to 24 carbon atoms, and an aralkyl having 7 to 24 carbon atoms and having 1 to 6 carbon atoms in the alkylene portion, and wherein n is a positive number of 2 to 50, on the average.

5,306,736

ENDOTHERMIC BLOWING AGENTS FOR SURFACE MIGRATION OF COMPONENTS IN FOAMED PRODUCTS, COMPOSITIONS AND APPLICATIONS

Gerry Mooney, West Ajax, Canada; Rod A. Garcia, Orange, Tex.; Michael E. Tarquini, Havre de Grace, Md., and John A. Kosin, Bel Air, Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 713,224, Jun. 11, 1991, Pat. No. 5,166,222, which is a division of Ser. No. 467,585, Jan. 19, 1990, Pat. No. 5,045,570, which is a continuation-in-part of Ser. No. 352,307, May 19, 1989, Pat. No. 5,009,810. This application Jul. 31, 1992, Ser. No. 922,722

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—91 5 Claims

1. A foamable mixture in the form of a polymeric concentrate, said polymeric concentrate comprising a foamable polymer, an additive selected from the group consisting of platelet fillers, flame retardants, polar resin systems, and mixtures thereof, and a blowing agent for foaming said polymer composition and for causing migration of said additive through the polymer composition, said blowing agent comprising a mixture of a polycarboxylic acid and sodium aluminum hydroxy carbonate, said polycarboxylic acid and said sodium aluminum hydroxy carbonate having been separately surface treated with a coating member selected from the group consisting of monoglycerides, stearic acid, silane coupling agents, fatty acids, tatanates, oleates, and mixtures thereof, each of said surface treatments being carried out by separately contacting said polycarboxylic acid and said sodium aluminum hydroxy carbonate with about 0.1 to 10 wt. % of said coating member at a temperature of about 72° C. to 135° C. under mixing conditions for a sufficient period to form a coating on said polycarboxylic acid and said sodium aluminum hydroxy carbonate which will avoid premature reaction caused by moisture or water absorption, and blending the surface treated polycarboxylic acid and surface treated sodium aluminum hydroxy carbonate in a weight ratio of from 0.25:1 to about 10:1, respectively to form said blowing agent.

5,306,737

POLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS WITH DIFFERENT POLYOXYALKYLENE BLOCKS IN THE AVERAGE MOLECULE

Georg Burkhart, Essen; Rolf-Dieter Langenhagen, Hattingen-Niederwenigern; Andreas Weier, Essen, and Volker Zellmer, Bottrop, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

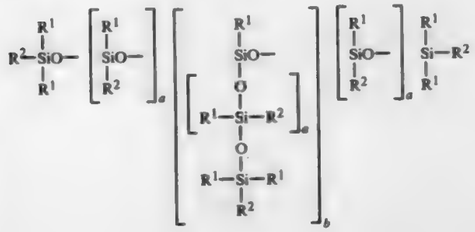
Filed Aug. 26, 1993, Ser. No. 112,504

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1992, 4229402

Int. Cl.[5] C08G *8/00*

U.S. Cl. 521—112 2 Claims

1. In uniform-pore stabilized foam wherein the foam comprises a mixture of a polyether, water, diisocyanate, a blowing agent as well as a stabilizer, the improvement which comprises that the foam stabilizer comprises



wherein

R^1 is an alkyl group with 1 to 4 carbon atoms or a phenyl group, with the proviso that at least 90% of the R^1 groups are methyl groups,

R^2 has the same meaning as R^1 or represents the —M—R^3 group, in which

M is a divalent group of the formula

$$-R^4{}_xO-$$

wherein

R^4 is a divalent alkylene group, which may also be branched and x has a value of 0 or 1,

R^3 is a mixture of

(1) at least one polyoxyalkylene group A, and (2) at least one polyoxyalkylene group B and/or (3) at least one polyoxyalkylene group C., wherein each

polyoxyalkylene group A has an average molecular weight of 600 to 5,500 and consists of 20 to 90% by weight of oxyethylene units and 80 to 10% of oxypropylene units,

polyoxyalkylene group B has an average molecular weight of 500 to 5,000 and consists of 2 to 19% by weight of oxyethylene units and 98 to 81% by weight of oxypropylene units,

polyoxyalkylene group C. has an average molecular weight of 1,500 to 4,500 and consists of oxypropylene units,

up to 20% by weight of the oxypropylene units being replaceable in each case by oxybutylene units and the molar ratio of the polyoxyalkylene groups A to the sum of the polyoxyalkylene groups B and C being 1:4 to 4:1, with the proviso that, in an average block copolymer, at least one R^3 group is present,

b has a value of 0 to 10,

a has a value of 10 to 100, when b =0 or a value of 3 to 70, when b > 0 and ≦ 4, or a value of 3 to 30, when b >4.

5,306,738

PROCESS FOR PRODUCING FLEXIBLE POLYURETHANE FOAM HAVING HIGH AIR FLOW PROPERTY

Hiroyuki Yoshimura, Shinnanyo; Yutaka Tamano, and Shoji Arai, both of Tokuyama, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Continuation of Ser. No. 683,292, Apr. 10, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,437

Claims priority, application Japan, Apr. 11, 1990, 2-93972; Apr. 5, 1991, 3-099814

Int. Cl.[5] C08G *18/20*

U.S. Cl. 521—117 5 Claims

1. A process for producing a flexible polyurethane foam comprising reaction of:

(a) a polyol with at least 5 mol% terminal oxyethylene groups;

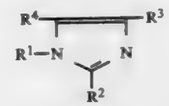
(b) a polyisocyanate selected from the group consisting of toluene diisocyanate and a mixture of toluene diisocyanate and diphenylmethane diisocyanate;

(c) an amine catalyst;

(d) a blowing agent which is water, in an amount of from 3.0 to 8.0 parts by weight based on 100 parts by weight of said polyol; and

(e) a foam stabilizing agent;

wherein said amine catalyst comprises at least one of the imidazoles represented by the general formula below:



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wherein R^1 is alkyl of 1 to 4 carbons, benzyl, vinyl, or hydroxyalkyl of 1 to 3 carbons;
R^2 is hydrogen, alkyl of 1 to 4 carbons, allyl, benzyl or phenyl; and
R^3 and R^4 are respectively hydrogen, alkyl of 1 to 4 carbons or hydroxymethyl.

5,306,739
HIGHLY FILLED POLYMERIC COMPOSITIONS
Michael F. Lucey, Phoenix, Ariz., assignor to MLT/Micro-Lite Technology Corporation, Mesa, Ariz.
Continuation-in-part of Ser. No. 620,378, Nov. 29, 1990, Pat. No. 5,134,175, and a continuation-in-part of Ser. No. 701,664, May 16, 1991, Pat. No. 5,180,757, and a continuation-in-part of Ser. No. 133,497, Dec. 16, 1987, abandoned. This application Jul. 22, 1992, Ser. No. 918,580
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] C08K *3/00;* **C08F** *2/46*
U.S. Cl. 522—42 **43 Claims**

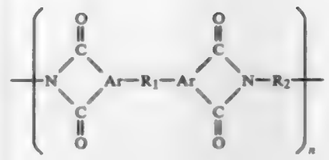
1. A highly filled composition, comprising:
a polymeric material;
at least one filler, and
at least one surface active agent;
wherein one of the surface active agent, or filler has an overall pH greater than or equal to 7 and the other of the surface active agent or filler has an overall pH less than or equal to 7, provided that both overall pH's do not equal 7, the pH relationship between the surface active agent and filler enhancing the filler loading of the composition.

5,306,740
PROCESS FOR THE PRODUCTION OF BROMINATED CHLORINE-SUBSTITUTED POLY-1,3-BUTADIENE
Hans J. Laas, Cologne; Heinz W. Lucas, Bergisch Gladbach; Klaus Nachtkamp, Duesseldorf, and Heinrich Königshofen, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Apr. 12, 1993, Ser. No. 44,732
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1992, 4213164
Int. Cl.[5] C08F *8/22*
U.S. Cl. 522—86 **7 Claims**

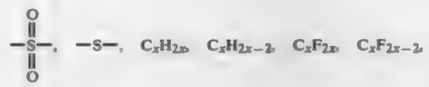
1. A process for the production of brominated chlorine-substituted poly-1,3-butadiene, characterized in that an aqueous chlorine-substituted poly-1,3-butadiene latex is reacted in aqueous phase with a brominating agent in the presence of a radical-forming catalyst and/or in the presence of light at a pH value below 7 and at a temperature of 20° to 95° C., the brominated reaction product is optionally precipitated from the aqueous dispersion obtained and then separated from the aqueous liquid.

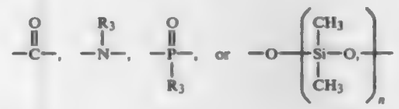
5,306,741
METHOD OF LAMINATING POLYIMIDE TO THIN SHEET METAL
Pei C. Chen, Endicott; Thomas E. Kindl, Endwell; Paul G. Rickerl, Endicott; Mark J. Schadt, Vestal, all of N.Y., and John G. Stephanie, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 695,850, May 6, 1991, Pat. No. 5,156,710. This application Jun. 23, 1992, Ser. No. 902,951
Int. Cl.[5] C08J *3/28;* **C08C** *73/10*
U.S. Cl. 522—164 **4 Claims**

1. A method of imidizing a film of thermoplastic polyimide precursor which is free of any imidized polyimide without causing any substantial crosslinking or densification, which imidized polyimide has the following structure:



where R_1 is





x is 1–10
R_3 is a linear or branched alkyl group which is partially or completely halogenated or an aromatic or heteroaromatic group;
R_2 is a divalent aromatic group;
Ar is a trivalent aromatic group comprising:
subjecting the polyimide precursor to radiation in the band of about 2.82 to 3.28 microns, while maintaining the temperature thereof below about 250° C. to prevent any substantial crosslinking or densification of the polyimide and excluding infrared radiation in the bands which would activate the absorption bands in R_1, for a sufficient time to substantially completely imidize said polyimide precursor without causing any substantial crosslinking of the R_1 components.

5,306,742
SB203/SB205 FLAME RETARDANT DISPERSIONS
Donald P. Kintz, Westford, Mass., assignor to Nyacol Products Inc., Ashland, Mass.
Filed Dec. 26, 1991, Ser. No. 813,458
Int. Cl.[5] C08K *9/02*
U.S. Cl. 523—200 **13 Claims**

1. An antimony oxide flame retardant comprising trivalent antimony deposited on the surface of a colloidal dispersion of antimony pentoxide particles.

5,306,743
MULTIPLE PHASE SYNTHETIC RESIN DISPERSION
Wolfgang Klesse, Mainz; Gerhard Markert, Ober-Ramstadt, and Marliese Weber, Roedermark, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany
Continuation of Ser. No. 447,157, Dec. 7, 1989, abandoned. This application Apr. 8, 1991, Ser. No. 683,506
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843965
Int. Cl.[5] C08L *83/00*
U.S. Cl. 523—201 **9 Claims**

1. An aqueous synthetic resin dispersion containing latex particles having an average particle diameter less than 100 nanometers, said particles consisting of
a) 5 to 45 percent, by weight of said particles, of a core polymer comprising at least one necessary monomer selected from the group consisting of methyl methacrylate, styrene, alkyl esters of acrylic acid, and higher alkyl esters of methacrylic acid, such that the dynamic glass transition temperature of said core copolymer is above 60° C., and
b) 95 to 55 percent, by weight of said particles, of a shell polymer comprising at least one of said necessary monomers, and, further, 0.5 to 10 percent, by weight of the shell polymer, of an unsaturated polymerizable carboxylic acid such that the dynamic glass transition temperature of said shell polymer is below 35° C.,
wherein said necessary monomers together form at least 75 percent by weight of said polymers and wherein the dynamic glass transition temperature of the shell polymer is at least 20 centigrade degrees below that of the core polymer.

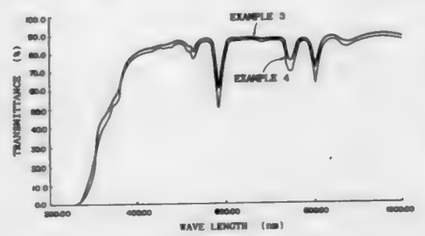
5,306,744
FUNCTIONALIZED MULTISTAGE POLYMERS
Martha H. Wolfersberger, Perkasie; Frederick J. Schindler, Fort Washington; Ronald S. Beckley, Gilbertsville, and Ronald W. Novak, Ottsville, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed Dec. 18, 1992, Ser. No. 993,161
Int. Cl.[5] C08J *3/05;* **C08L** *33/08, 33/10;* **C08F** *2/46*
U.S. Cl. 523—201 **2 Claims**

1. A method of forming a radiation-curable, multistaged latex polymer, comprising:
(a) forming a multistaged latex polymer comprising:
(1) a first stage polymer; and
(2) a second stage polymer comprising at least one comonomer containing acid functionality;
(b) partially neutralizing said acid functionality of said second stage polymer of said multistaged polymer with a base; and
(c) reacting said multistaged polymer having partially neutralized acid functionality with a monoethylenically unsaturated epoxide compound.

5,306,745
COMPOSITION FOR A PACKAGING FILM CONTAINING AN ADDITIVE
Vincent W. Herran, Greenville, S.C., and Livio Buongiorno, Milan, Italy, assignors to W. R. Grace & Co.-Conn., Duncan, S.C.
Continuation of Ser. No. 652,699, Feb. 8, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,999
Claims priority, application United Kingdom, Mar. 1, 1990, 9004650.9
Int. Cl.[5] B32B *27/18;* **C08K** *9/08*
U.S. Cl. 523—205 **6 Claims**

1. A composition comprising a blend of:
a) a migratable additive encapsulated in a first thermoplastic resin having a melting point of between 170° C. to 240° C.; and
b) a second thermoplastic resin having a melting point of between 120° C. and 180° C.;
the blend further characterized in that the second thermoplastic resin has a melting point at least 15° C. lower than the melting point of the first thermoplastic resin; and
the additive is capable of migrating into the second thermoplastic resin.

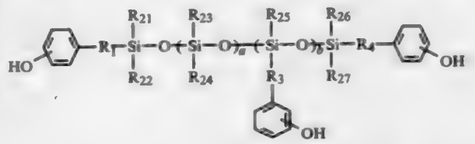
5,306,746
RESIN COMPOSITIONS AND OPTICAL PRODUCTS MAKING USE THEREOF
Kozo Ida, and Tetsuya Suda, both of Kawasaki, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
PCT No. PCT/JP91/00922, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO92/01020, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 10, 1991, Ser. No. 838,258
Claims priority, application Japan, Jul. 11, 1990, 2-183329; Jul. 12, 1990, 2-184478
Int. Cl.[5] C08K *9/00, 5/42*
U.S. Cl. 523—206 **8 Claims**



1. A resin composition comprising a blend of a transparent resin and beads, said beads possessing light selective function, having a particle diameter of from 0.01 μm to 5 mm, and being composed of a transparent polymer containing a neodymium compound, wherein said beads are dispersed in said transparent resin.

5,306,747
FLEXIBILIZERS OF HYDROXYPHENYL SILICONE OIL-EPOXY RESIN PRODUCT AND EPOXY SILICONE OIL-PHENOL RESIN PRODUCT
Hiromi Ito, and Ichiro Takahashi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 333,043, Apr. 4, 1989, Pat. No. 5,157,061. This application May 29, 1992, Ser. No. 889,965
Claims priority, application Japan, Apr. 5, 1988, 63-84511; May 11, 1988, 63-115269; Jun. 28, 1988, 63-161849
Int. Cl.[5] C08L *3/36;* **C08K** *61/14, 63/02, 63/04*
U.S. Cl. 523—433 **41 Claims**

1. An epoxy resin composition for encapsulating a semiconductor device comprising:
a flexibilizer (A) including a pre-reaction product of a first epoxy resin and at least one modified silicone oil (a) having the formula:



wherein R_1, R_3, and R_4 are divalent organic groups; R_{21}, R_{22}, R_{23}, R_{24}, R_{25}, R_{26} and R_{27} are respectively selected from the group consisting of an alkyl group having from 1 to 5 carbon atoms, an alkoxy group having from 1 to 5 carbon atoms, a phenyl group, and a fluorine-substituted alkyl group having from 1 to 5 carbon atoms; a is an integer from 10 to 300; b is an integer from 2 to 10, in which $0 \leqq b/(a+b) \leqq 0.32$, wherein the equivalent ratio of phenolic hydroxyl groups in said modified silicone oil (a) to epoxy groups of said first epoxy resin (phenolic hydroxyl groups/epoxy groups) is 0.001 to 0.4:1;
a flexibilizer (B) including a pre-reaction product of a phenol

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resin and a modified silicone oil (b) having epoxy groups, wherein the equivalent ratio between epoxy groups of said modified silicone oil (b) and hydroxyl groups of said phenol resin (epoxy groups/phenolic hydroxyl groups) is from 0.001 to 0.3:1;

a second epoxy resin; and a curing agent.

5,306,748

FLUORINE-MODIFIED THERMOSETTING RESIN AND THERMOSETTING RESIN COMPOSITION

Toshio Shiobara; Hisashi Shimizu, and Manabu Narumi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

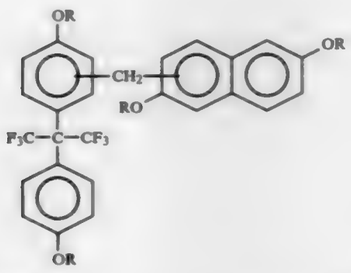
Filed Jul. 29, 1992, Ser. No. 921,251

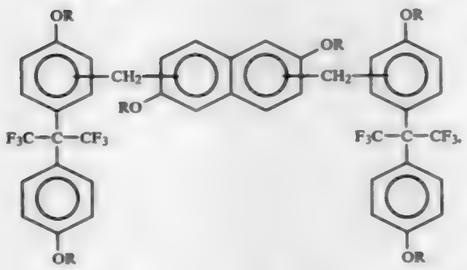
Claims priority, application Japan, Jul. 31, 1991, 3-214676; Oct. 15, 1991, 3-295209

Int. Cl.[5] C08G *59/00, 8/04, 14/04*

U.S. Cl. 523—443 **17 Claims**

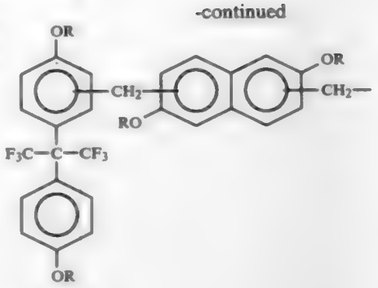
1. A thermosetting resin selected from the group consisting of:

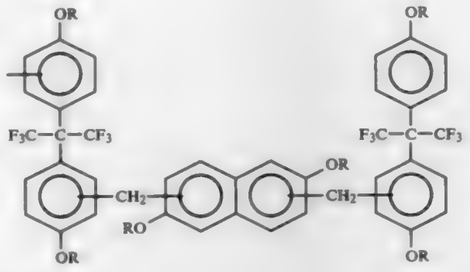




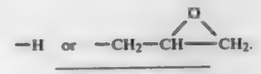
and

-continued





wherein R is



5,306,749

THIXOTROPIC WOOD ADHESIVE GEL

Peter S. Columbus, Melville, N.Y.; John Anderson, Hilliard, and Yogeshbai B. Patel, Gahanna, both of Ohio, assignors to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 976,553, Nov. 16, 1992. This application Jun. 15, 1993, Ser. No. 77,023

Int. Cl.[5] C08L *29/04*

U.S. Cl. 524—13 **17 Claims**

1. An aqueous thixotropic adhesive gel emulsion comprising, by weight:

A. about 40% to 85% of water;

B. about 10% to 45% of polyvinyl acetate;

C. about 1.5% to 15% of polyvinyl alcohol;

D. about 0.1 to 1.5% of xanthan gum;

E. about 0.005 to 0.4% of glyoxal; and

F. about 2% to 20% of wood flour.

5,306,750

POLYMER AND ASPHALT REACTION PROCESS AND POLYMER-LINKED-ASPHALT PRODUCT

J. L. Goodrich, Lafayette, Calif., and R. J. Statz, Kennett Square, Pa., assignors to Chevron Research and Technology Company A Divison of Chevron U.S.A. Inc., San Francisco, Calif. and E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 632,261, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 459,151, Dec. 29, 1989, abandoned. This application Jun. 28, 1991, Ser. No. 724,552

Int. Cl.[5] C08L *95/00, 63/00*

U.S. Cl. 524—59 **37 Claims**

1. A polyepoxy polymer-linked-asphalt thermoplastic composition having a loss tangent of less than 50 at 60° C. and less than 100 at 80° C. wherein the polymer content of said polymer-linked-asphalt composition is from 0.05 to 20 weight percent of said composition and wherein the polymer in said polymer-linked-asphalt is derived from a reactant glycidyl-containing ethylene copolymer having a melt flow index in the range 0.1 to 2,000 as determined by ASTM D1238-65T, Condition E,

wherein said polymer is substantially covalently-bound to the asphalt by one or more covalent bonds, wherein the asphalt in said polymer-linked-asphalt is selected from the group consisting of native rock asphalts, lake asphalts, petroleum asphalts, airblown asphalts, cracked and residual asphalts and, wherein substantially all of the epoxide moieties are reacted within the polymer-linked-asphalt product.

5,306,751

Patent Not Issued For This Number

5,306,752

CYANOACRYLATE ADHESIVES UTILIZING QUINOID COMPOUND POLYMER STABILIZER

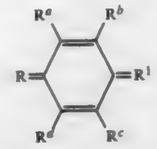
Shabbir Attarwala, West Hartford, Conn., assignor to Loctite Corporation, Hartford, Conn.

Filed Oct. 9, 1992, Ser. No. 959,323

Int. Cl.[5] C08K *5/01, 5/08, 5/10, 5/16*

U.S. Cl. 524—167 **9 Claims**

1. In a cyanoacrylate monomer adhesive formulation the improvement wherein the formulation includes an effective amount for enhancing the thermal resistance of the cured polymer of a quinoid compound of the formula:



where

R is $C(CN)_2$, $C(CO_2R^e)_2$, $C(SO_2R^e)_2$ or $C(Ph)_2$; R^a, R^b, R^c and R^d are independently H, monovalent hydrocarbon, halogen or strong electron withdrawing groups; or two of R^a, R^b, R^c and R^d combined form a fused hydrocarbon ring; R^1 is $C(CN)_2$, $C(CO_2R^e)_2$, $C(SO_2R^e)_2$ or $C(Ph)_2$, or R^1 and R^b combined form a fused ring having a $C(CN)_2$, $C(CO_2R^e)_2$, $C(SO_2R^e)_2$ or $C(Ph)_2$ group in conjugation with R; R^e is alkyl and Ph is phenyl or

R and R^1 are both O; and R^a, R^b, R^c and R^d are independently H, monovalent hydrocarbon, halogen, hydroxyl, alkoxyl or strong electron withdrawing groups, or two of R^a, R^b, R^c and R^d combined form a fused hydrocarbon ring, provided that at least two of R^a, R^b, R^c and R^d are halogen or strong electron withdrawing groups, or

R is O; R^1 is $C(CN)_2$, $C(CO_2R^e)_2$, $C(SO_2R^e)_2$ or a diphenylmethylene group, the phenyl groups of which may be optionally substituted with one or more halo, hydroxyl, alkoxyl, hydrocarbon, nitro, acyloxy or cyano groups; and R^a, R^b, R^c and R^d are independently H, monovalent hydrocarbon, halogen or strong electron withdrawing groups, or two of R^a, R^b, R^c and R^d combined form a fused hydrocarbon ring.

5,306,753

COMPOUND CAPABLE OF ADHERING ON SMOOTH ALUMINIUM SURFACES AND BINDING WITH P.T.F.E. FILM

Michele Montagna, Pesaro, Italy, assignor to Alluflon - S.P.A., Italy

Filed Oct. 30, 1992, Ser. No. 969,423

Int. Cl.[5] C08L *77/00*

U.S. Cl. 524—247 **4 Claims**

1. A compound which can adhere to smooth aluminum surfaces and bind with polytetrafluoroethylene film, comprising a polyamide-imide resin mixed with dimethylaminoethanol and water.

5,306,754

POLYAMIDE RESIN COMPOSITION AND CONNECTOR

Sanehiro Yamamoto; Kazato Sugiyama; Akinori Toyota; Yoshikatsu Amimoto; Fumitoshi Ikejiri, all of Yamaguchi; Tetsuo Kato, and Masahiro Kanda, both of Haibara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and Yazaki Corporation, both of Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,864

Claims priority, application Japan, Mar. 19, 1992, 4-064089; Dec. 25, 1992, 4-347189

Int. Cl.[5] C08K *13/00*

U.S. Cl. 524—289 **10 Claims**

1. A polyamide resin composition comprising resin components and antioxidants,

said resin components comprising:

(A) aromatic polyamide in an amount of 50 to 85% by weight, which comprises repeating units formed from dicarboxylic acid constituent units and diamine constituent units, said dicarboxylic acid constituent units comprising 40–100% by mol of terephthalic acid constituent units, 0–50% by mol of aromatic dicarboxylic acid constituent units other than terephthalic acid constituent units and/or 0–60% by mol of aliphatic dicarboxylic acid constituent units having 4 to 20 carbon atoms, said diamine constituent units comprising aliphatic diamine constituent units and/or alicyclic diamine constituent units,

said aromatic polyamide having an intrinsic viscosity, as measured in a concentrated sulfuric acid at 30° C., of 0.5 to 3.0 dl/g and a melting point of higher than 290° C.;

(B) at least one modified polymer selected from the group consisting of a graft-modified α-olefin polymer, a graft-modified product of a cycloolefin copolymer which is an addition polymer of cycloolefin and ethylene, a graft-modified aromatic vinyl type hydrocarbon/conjugated diene copolymer, a hydrogenation product of this copolymer and an ethylene copolymer containing a carboxyl group and a carboxylic metal salt in the side chain, in an amount of 10 to 40% by weight, wherein said graft-modified polymers have been graft-modified with a modifier selected from the group consisting of an unsaturated carboxylic acid, an unsaturated carboxylic acid anhydride, an unsaturated carboxylic acid halide, an unsaturated carboxylic acid imide and an unsaturated carboxylic acid ester; and

(C) aliphatic polyamide in an amount of 1 to 15% by weight;

said antioxidants comprising:

(D) a hindered phenol type antioxidant having a molecular weight of not less than 500 and a 10% weight loss temperature of not lower than 300° C. in a thermogram measured in air; and

(E) a sulfur type antioxidant having a molecular weight of not less than 600 and a 10% weight loss temperature of not lower than 280° C. in a thermogram measured in air;

wherein, the total amount of the hindered phenol type antioxidant (D) and the sulfur type antioxidant (E) is in the range of 0.2 to 4 parts by weight based on 100 parts by weight of the resin components, and a weight ratio between the hindered phenol type antioxidant (D) and the sulfur type antioxidant (E) is in the range of 1:5 to 5:1.

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5,306,755
CORRECTION FLUID CONTAINING A BUTYL METHACRYLATE COPOLYMER DITRIDECYL PHTHALATE, A NON-HALOGENATED SOLVENT AND AN OPACIFYING AGENT

Chiou C. Yau, Wrentham; Norman G. Sanborn, Weymouth; Kim H. Ng, Franklin; Thomas G. Decker, Arlington; Deborah A. Mayer, Brockton; Vliet M. Hulse, Duxbury, and John Thompson, Medfield, all of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 866,159, Apr. 9, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,676
Int. Cl.[5] C08J 5/10; C08K 5/09, 5/12; C08L 33/10
U.S. Cl. 524—296 33 Claims

1. An ozone-friendly correction fluid comprising:
a non-halogenated solvent;
a film-forming polymeric material comprising a butyl methacrylate copolymer;
a plasticizer comprising ditridecyl phthalate; and an opacifying agent.

5,306,756
METHOD AND COMPOSITIONS FOR DIFFUSION PATTERNING

John J. Felten, Chapel Hill, N.C., and Sheau-Hwa Ma, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 768,504, Sep. 30, 1991, Pat. No. 5,209,814. This application Nov. 18, 1992, Ser. No. 978,472
Int. Cl.[5] C08K 5/12
U.S. Cl. 524—297 6 Claims

1. A composition for use as the first unpatterned layer in a diffusion patterning process comprising finely divided particles of inorganic dielectric solids dispersed in a liquid organic medium comprising a solution of a film-forming acidic polymer having an acid number of 20–600; a plasticizer in which the acidic polymer is incompletely soluble; and a volatile organic solvent wherein the ratio of polymer to plasticizer being such that when the volatile organic solvent is removed from the organic medium, the resulting solvent-free polymer/plasticizer dispersion is specularly nonreflective.

5,306,757
EMULSIFIED ALKENYLSUCCINIC ACID SIZING AGENT

Shigeto Hatanaka; Yoshio Takahashi, and Hideto Umekawa, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 994,521
Claims priority, application Japan, Dec. 20, 1991, 3-354275
Int. Cl.[5] C08K 5/09
U.S. Cl. 524—321 4 Claims

1. An emulsified alkenylsuccinic acid sizing agent having a solid concentration of at least 25% by weight, said agent comprising an alkenylsuccinic acid which is the reaction product of a branched internal olefin having 12 to 18 carbon atoms and maleic anhydride and which has been emulsified and dispersed in water by polyvinyl alcohol.

5,306,758
FLUOROCARBON-BASED COATING COMPOSITIONS AND ARTICLES DERIVED THEREFROM

Mark J. Pellerite, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 450,623, Dec. 14, 1989, abandoned. This application May 26, 1993, Ser. No. 67,634
Int. Cl.[5] C08J 5/10; C08K 5/06; C08L 71/00
U.S. Cl. 524—366 14 Claims

1. A composition suitable for preparing a release coating comprising from about 15% by weight to about 67% by weight of a polyfluoropolyether containing at least two reactive groups and from about 33% by weight to about 85% by weight of an inert polyfluoropolyether oil.

5,306,759
COATING COMPOSITION AND PROCESS FOR MANUFACTURING THE SAME

Toshinori Sakagami, Suzuka; Koichi Nagano, Tokyo; Tomonobu Shimizu, and Kinji Yamada, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,300
Claims priority, application Japan, Feb. 13, 1992, 4-058824
Int. Cl.[5] C08K 5/05
U.S. Cl. 524—379 18 Claims

1. A coating composition comprising,
(I) a composition which comprises the following components (a), (b), (c), (d), and (e):
(a) 100 parts by weight, in terms of organosilane, of a hydrolyzate and/or a partial condensate of an organosilane represented by formula $R^1Si(OR^2)_3$, wherein R^1 is an organic group with 1 to 8 carbon atoms, and R^2 is an alkyl group with 1 to 5 carbon atoms, or an acyl group with 1 to 4 carbon atoms,
(b) 0 to 150 parts by weight, in terms of diorganosilane, of a hydrolyzate and/or a partial condensate of a diorganosilane represented by formula $R^1{}_2Si(OR^2)_2$, wherein R^1 and R^2 are the same as defined above,
(c) 2 to 300 parts by weight of a vinyl resin containing a silyl group with at least one silyl group containing a silicon atom linked to a hydrolyzable group and/or a hydroxyl group at the end or at a side chain in one polymer molecule,
(d) 0.01 to 50 parts by weight of at least one metal chelate compound selected from a group of compounds represented by formulas $Zr(OR^3)_p(R^4COCHCOR^5)_{4-p}$, $Ti(OR^3)q(R^4COCHCOR^5)_{4-q}$, or $Al(OR^3)_r(R^4COCHCOR^5)_{3-r}$, wherein R^3 and R^4 are the same or different alkyl groups with 1 to 6 carbon atoms, R^5 is an alkyl group with 1 to 5 carbon atoms or an alkoxy group with 1 to 16 carbon atoms, p and q are integers from 0 to 3, and r is an integer from 0 to 2, and
(e) an organic solvent; and
(f) at least 2 mols, for one mol of said metal chelate compound (d) in said composition (I), of a β-diketone compound and/or β-ketoester compound represented by formula $R^4COCH_2COR^5$, wherein R^4 and R^5 are the same as above.

5,306,760
IMPROVED GOLF BALL COVER COMPOSITIONS CONTAINING HIGH LEVELS OF FATTY ACID SALTS

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 819,108, Jan. 9, 1992. This application Jul. 1, 1992, Ser. No. 907,488
Int. Cl.[5] C08K 5/09; A63B 37/12
U.S. Cl. 524—400 27 Claims

1. A golf ball comprising a core and a cover, wherein the cover consists essentially of 100 parts by weight of at least one ionomer resin and from above 25 to about 100 parts by weight of fatty acid salt, wherein said ionomer resin is the reaction product of an olefin having from 2 to 8 carbon atoms and an unsaturated monocarboyxlic acid having from 3 to 8 carbon atoms.

5,306,761
HYGROSCOPIC POLYAMIDE FIBER

Shinji Ohwaki, Minoo; Ryoichi Yamazaki, Kyoto, and Masato Yoshimoto, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 24, 1992, Ser. No. 980,723
Claims priority, application Japan, Nov. 25, 1991, 3-334535
Int. Cl.[5] C08L 77/00
U.S. Cl. 524—434 4 Claims

1. A hygroscopic polyamide fiber exhibiting a rate of moisture absorption of at least 3.5%/5 minutes at a temperature of 25° C. and a relative humidity of 90%; said polyamide fiber being made by removing by means of dissolution at least a part of a polyalkylene glycol (B) from a polyamide fiber comprising:
(A) a thermoplastic aliphatic polyamide having a melting point of at least 160° C. and having copolymerized therein a polyalkylene oxide unit having a number average molecular weight of 2,000 to 8,000; the amount of the polyalkylene oxide unit being 3 to 15% by weight based on the weight of the polyamide into which the polyalkylene oxide unit is to be copolymerized, and
(B) 5 to 40% by weight, based on the weight of the ingredient (A), of said polyoxyalkylene glycol; said ingredient (B) having a number average molecular weight of 6,000 to 20,000 and being finely dispersed in the ingredient (A).

5,306,762
ROSIN-SUPPORTED AMIDE-MODIFIED EMULSION POLYMERS

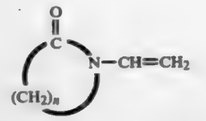
G. Frederick Hutter, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 9, 1992, Ser. No. 987,794
Int. Cl.[5] C08J 3/02
U.S. Cl. 524—457 11 Claims

1. An improved method for the production of polymer emulsion products having pH values in the range of 7.5 to 10.0, which comprises reacting in an esterification reaction:
(A) 60.0 to 98% by weight of the total composition of the esterification reaction of a member selected from the group consisting of fumarated rosin, maleated rosin, and combinations thereof, and
(B) 2.0 to 40.0% by weight of the total composition of the esterification reaction of a polyol selected from the group consisting of polyethylene glycols having a average molecular weight in the range of 100–10,000, glycerol, sorbitol, pentaerythritol, neopentyl glycol, ethylene glycol, and combinations thereof, to produce a rosin-based support resin having an acid number in the range of 120 to 250; and further reacting in a polymerization reaction:
(1) 5.0 to 40.0% by weight of the total composition of the polymerization reaction of said support resin;
(2) 0.2 to 2.0% by weight of the total composition of the polymerization reaction of an initiator;
(3) 1.0 to 12.0% by weight of the total composition of the polymerization reaction of a surfactant selected from the group consisting of sulfated alkylphenoxypoly(ethyleneoxy)ethanol, octylphenoxypoly-(ethyleneoxy)ethanol, and combinations thereof; wherein the improvement comprises also reacting in the polymerization reaction
(4) 31.0 to 93.3% by weight of the total composition of the polymerization reaction of a non amide-containing monomer selected from the group consisting of styrene, alpha-methyl-styrene, acrylic acid, methacrylic acid, methyl methacrylate, butyl methacrylate, butyl acrylate, 2-ethylhexyl acrylate, ethyl acrylate, hydroxyethyl acrylate hydroxyethyl methacrylate, polyethylene glycol monomethacrylate, and combinations thereof; and
(5) 0.5 to 15.0% by weight of the total composition of the polymerization reaction of an amide-containing monomer selected from the group consisting of monomers of the formula

$$CH_2{=}C(R^1)CON(R^2)(R^3)$$

where R^1 is hydrogen or a methyl group, R^2 is hydrogen or a methyl group, and R^3 is hydrogen or an alkyl, hydroxyalkyl, alkoxyalkyl, ketoalkyl, or aryl group containing from 1 to 18 carbon atoms, monomers of the formula



where n is 3, 4, or 5, and combinations of said monomers to produce the polymer emulsion product.

5,306,763
PROCESS FOR THE PREPARATION OF RUBBER-CONTAINING GRAFT COPOLYMER PARTICLES

Koji Matsumoto, and Masaru Morimoto, both of Otake, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,872
Claims priority, application Japan, Mar. 29, 1991, 3-066612
Int. Cl.[5] C08L 51/00, 51/04, 55/02
U.S. Cl. 524—501 14 Claims

1. A process for preparing rubber-containing graft copolymer particles having excellent powder properties, comprising mixing, with 100 parts by weight, as solid content, of a rubber-containing graft polymer (A) in a slurry state, 0.1 to 10 parts by weight of a rigid non-elastic multi-stage polymer (B), in a state of slurry consisting of 30 to 80% by weight of a copolymer component comprising 40 to 100% by weight of methyl methacrylate and 0 to 60% by weight of one or more other monomers copolymerizable therewith being polymerized at least in the first stage and 5 to 70% by weight of a copolymer component comprising 70 to 100% by weight of methyl methacrylate and 0 to 30% by weight of one or more other monomers copolymerizable therewith being polymerized in the final state, the total amount of the copolymer components in the respective stages being 100% by weight and the content of polymeric units derived from an acrylic ester in said multi-stage polymer (B) being from 5 to 30% by weight, and wherein said rubber-containing graft polymer (A) is a graft copolymer obtained by emulsion polymerizing a rubber component acting as a backbone polymer within the range of between about 40 and 95% by weight, and then graft copolymerizing a monomer forming a rigid polymer within the range of between about 5 and 60% by weight, based on the total weight of the rubber-containing graft copolymer.

5,306,764
WATER DISPERSIBLE POLYURETHANE AND PROCESS FOR PREPARATION THEREOF

Der-Shyang Chen, Minoli Hsien, Taiwan, assignor to China Technical Consultants Inc., Taipei, Taiwan

Filed Sep. 3, 1992, Ser. No. 940,176
Int. Cl.[5] C08J 3/00; C08K 3/20; C08L 75/00; C08G 18/00
U.S. Cl. 524—591 20 Claims

1. A process for preparing polyurethane resin comprising:
(1) in a reaction mixture containing less than 70% by weight of a reactive diluent, reacting a polyol with an excess amount of polyisocyanate to form —NCO terminated polyurethane prepolymer, in which the reactive diluent is a chemical compound, oligomer, polymer, or mixture of said compound, oligomer and polymer that possesses an unsaturated ethylenic functionality or epoxy functionality,

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and is not reactive with —NCO functionality at about 60° C. or lower but is reactive with amine functionality;

(2) adding a hydroxyl alkyl acrylate or hydroxyl alkyl methacrylate monomer to react with the prepolymer obtained in step (1) such that an alkyl acrylate or alkyl methacrylate terminated polyurethane prepolymer is formed, in which the OH/NCO equivalent ratio is between 0.5 to 10; and

(3) adding a polyamine containing primary or secondary amines to the reaction mixture obtained in step (2) such that the NH/(unsaturated ethylenic and epoxy functionality) mole ratio is between 1.1 to 10.0, and reacting the polyamine with the reactive diluent and the urethane prepolymer at about 60° C. or higher to form amine-containing polyurethane.

5,306,765

REACTIVE POLYMERS, DISPERSIONS THEREOF AND ARTICLES COATED THEREWITH

Satoshi Kuriyama; Shunichi Nakashima, both of Kyoto; Katsunori Takaki, Kawasaki, and Kaoru Murata, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Oct. 22, 1992, Ser. No. 964,948
Int. Cl.[5] C08K *3/18*
U.S. Cl. 524—547 **19 Claims**

1. A reactive vinyl polymer compriaing from 0.5 to 95.5% by weight of units derived from a vinyl monomer (A) having a hydrolyzable silyl group and 0.5 to 95.5% by weight of units derived from a vinyl monomer (B) having an aminimide group.

5,306,766

LOW HARDNESS SILICONE RUBBER COMPOSITIONS

Naoki Omura; Masaharu Takahashi, and Tomiyoshi Tsuchida, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 939,481
Claims priority, application Japan, Sep. 4, 1991, 3-254613
Int. Cl.[5] C08K *5/01, 3/36*
U.S. Cl. 524—588 **9 Claims**

1. A silicone rubber composition comprising

(A) an organopolysiloxane of the following average compositional formula:

$$R_aSiO_{(4-a)/2} \quad (1)$$

wherein R is a substituted or unsubstituted monovalent hydrocarbon group, at least one alkenyl group being contained in an amount of 0.0001 to 0.5 mol % of the R groups, and letter a is a positive number of from 1.95 to 2.05,

(B) a polycyclic aromatic compound having at least two phenyl groups, which is naphthalene, 1-naphthol, anthracene, phenanthrene, biphenyl, pyrene or naphthacene, and

(C) finely divided silica having a specific surface area of at least 50 m^2 g.

5,306,767

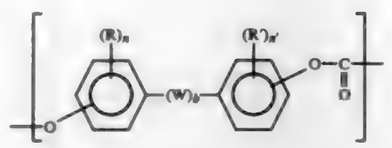
FILLED POLYCARBONATE RESIN COMPOSITION

Tomohide Fujiguchi; Hideyuki Itoi, and Akihiro Saito, all of Utsunomiya, Japan, assignors to GE Plastics Japan, Ltd., Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,900
Claims priority, application Japan, Sep. 17, 1991, 3-262507
Int. Cl.[5] C08L *67/03, 69/00*
U.S. Cl. 524—604 **3 Claims**

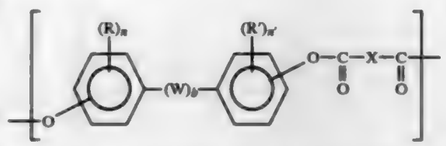
1. A resin composition comprising

(A) 30–80 parts by weight of a copolyester carbonate consisting essentially of constituent units having the formula:



(1)

and the formula:



(2)

where R and R′ independently represent halogen atoms, monovalent hydrocarbon groups or hydrocarbonoxy groups; W is a divalent hydrocarbon group, —S—, —S—S—, —O—, —S(=O)—, —(O=)S(=O)— or —C(+O); n and n′ independently represent integers from 0 to 4; X is a divalent aliphatic group having 6–18 carbons; and b is 0 or 1 and

(B) 70–20 parts by weight of aromatic polyester resin consisting essentially of the polycondensation reaction product of an aromatic dicarboxylic acid or an esterforming derivative thereof and a diol or an ester-forming derivative thereof and which contains also:

(C) 60–1 parts by weight of inorganic filler per 40–99 parts by weight of (A)+(B).

5,306,768

PLASMA-INDUCED PROTEIN IMMOBILIZATION ON POLYMERIC SURFACES

Tien-Tsai Hsu; Mann-Tchao Wang, both of Taipei; Kuang-Pin Hsiung, Hsin; Ging H. Haiue, Hsinchu, and Min-Shyan Sheu, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsincha, Taiwan

Division of Ser. No. 687,224, Apr. 18, 1991, Pat. No. 5,171,779, which is a division of Ser. No. 220,570, Jul. 18, 1968, Pat. No. 5,028,657. This application Aug. 11, 1992, Ser. No. 929,159
Int. Cl.[5] G01N *30/96*
U.S. Cl. 422—50 **11 Claims**

1. An apparatus for treating, sensing, assaying, or transforming a biological substance which comprises (a) a reaction chamber; (b) means for supporting a protein immobilized on the surface of a polymer in said reaction chamber; (c) means for introducing said biological substance into said reaction chamber so as to contact said immobilized protein; said protein immobilized to the surface of the polymer being prepared by coating said polymeric surface with a solution of said protein; exposing said coated polymer to an environment containing a gas plasma to form free radicals; and covalently bonding said protein to said polymeric surface at free radical sites.

5,306,769

ACETAL COPOLYMER AND PROCESS FOR PRODUCING SAME

Tatsuo Sone; Tadashige Hata, and Kazuhiko Matsuzaki, all of Kurashiki, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP90/00792, § 371 Date Feb. 13, 1991, § 102(e) Date Feb. 13, 1991, PCT Pub. No. WO90/15842, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 18, 1990, Ser. No. 656,062
Claims priority, application Japan, Jun. 19, 1989, 1-154647; Aug. 11, 1989, 1-206619; Dec. 29, 1989, 1-342941; Mar. 15, 1990, 2-062514; Mar. 15, 1990, 2-062515
Int. Cl.[5] C08G *63/91*
U.S. Cl. 525—64 **25 Claims**

1. A process for producing a graft acetal copolymer comprising polyacetal units grafted to particulate crosslinked vinyl polymer units, said crosslinked vinyl polymer units comprising 0.05–30% by weight of vinyl monomer based on the total weight of particulate crosslinked vinyl polymer, said particulate crosslinked vinyl polymer is contained in the acetal copolymer in a proportion of from 1.0–90% by weight based on the total weight of the acetal copolymer, wherein said polyacetal and said vinyl polymer are bonded to each other through a functional group of said vinyl polymer, and said graft acetal copolymer has a viscosity of 0.1–10 dl/g, said process comprising homopolymerizing formaldehyde or trioxane or copolymerizing formaldehyde or trioxane with a cyclic ether in the presence of a suspension of said polymer other than a polyacetal, wherein said functional group is selected from the group consisting of a hydroxyl group, a carboxyl group, an amino group, an amide group, an alkoxy group, an acid anhydride group, and an epoxy group, and said polymer other than a polyacetal has an average dispersion particle size of 0.01–2000 μm.

5,306,770

THERMOPLASTIC RESIN COMPOSITIONS AND PROCESS FOR PRODUCING THE SAME

Junji Kojima; Akio Matsuda, both of Yokkaichi; Yasunori Asano, Mie, and Tateki Furuyama, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 493,246, Mar. 14, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 770,778
Claims priority, application Japan, Mar. 16, 1989, 1-064878
Int. Cl.[5] C08L *51/04, 51/06, 51/08, 55/02*
U.S. Cl. 525—68 **27 Claims**

1. A thermoplastic resin composition which comprises:

(A) 45–90% by weight of a mixture of rubber-unmodified styrene resin and at least 38% by weight, based on the weight of the (A) component, of a rubber-modified styrene polymer in which the rubber content is 5–40% based on the weight of component (A) and the rubber is selected from the group consisting of polybutadiene, styrene-butadiene copolymer, hydrogenated styrene-butadiene block copolymer, acrylic copolymer, ethylene-propylene copolymer, chlorinated polyethylene and polyurethane and in which the grafting component is at least one aromatic alkenyl compound alone or in combination with other copolymerizable monomers and the grafting degree is 40–150% by weight based on the weight of the rubber polymer,

(B) 9.5–49% by weight of an aromatic polyester having an intrinsic viscosity of 1.1–2 dl/g as measured at 25° C. in o-chlorophenol which is a polyester of a diol and an aromatic dicarboxylic acid moiety, and

(C) 0.5–6% by weight of a graft copolymer obtained by graft-copolymerizing a monomer mixture consisting of 60–80% by weight of an aromatic alkenyl compound and 20–40% by weight of an alkenyl cyanide compound on a copolymer consisting essentially of an olefin unit and an epoxy group-containing unsaturated compound unit in a weight ratio of 99.9/0.1–60/40.

5,306,771

HIGH RUBBER GRAFT THERMOPLASTIC COMPOSITION WITH IMPROVED MECHANICAL PROPERTIES PREPARED BY MELT BLENDING

Michael P. Laughner, Clifton Park; Marinus E. J. Dekkers, Schenectady; James J. Scobbo, Jr., Clifton Park; Robert J. Halley, Schenectady, all of N.Y., and Ronald L. Jalbert, Parkersburg, W. Va., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 722,420, Jun. 27, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 8,042
Int. Cl.[5] C08G *63/91;* **C08L** *37/00*
U.S. Cl. 525—74 **18 Claims**

1. A composition obtained by blending, under reactive conditions, a mixture consisting essentially of:

a. about 10 to about 90 parts of a rubber consisting essentially of ethylene, C_{3-10} mono-olefin and epoxy- or carboxy-containing structural units and, optionally, nonconjugated diene-derived units;

b. about 90 to about 10 parts of a carboxy or epoxy functionalized copolymer derived from an aromatic vinyl compound and a vinyl cyanide compound, said copolymer being carboxy functionalized when component a is epoxy functionalized and epoxy functionalized when component a is carboxy functionalized; and

c. about 0 to about 75 parts of an unfunctionalized copolymer derived from an aromatic vinyl compound and a vinyl cyanide compound.

5,306,772

POLYACETAL RESIN COMPOSITION AND ITS MOLDED ARTICLE

Hiroshi Mimura; Akiyoshi Shibata; Satoshi Nagai, all of Hiratsuka; Masaharu Kimura, Toyonaka, and Makoto Kobayashi, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 835,598, Feb. 14, 1992, abandoned. This application Mar. 24, 1993, Ser. No. 38,193
Claims priority, application Japan, Feb. 18, 1991, 3-44073; Feb. 18, 1991, 3-44074
Int. Cl.[5] C08L *59/02, 59/04, 27/16*
U.S. Cl. 525—92 **19 Claims**

1. A polyacetal resin composition produced by melt-kneading a mixture which consists essentially of 80 to 99.9% by weight of polyacetal and 0.1 to 20% by weight of polyfluorovinylidene at a temperature higher than the melting point of each of the polyacetal and the polyfluorovinylidene.

5,306,773

MOLDABLE RESIN COMPOSITION

Dean H. Wiseman, Jacksonville, Fla., and Masamichi Togo, Osaka, Japan, assignors to Reichhold Chemicals, Inc., Durham, N.C.

Filed Dec. 31, 1991, Ser. No. 815,377
Int. Cl.[5] C08F *8/00;* **C08L** *63/00*
U.S. Cl. 525—111 **13 Claims**

1. A resin composition moldable at room temperature comprising:

(a) a thermoplastic unsaturated polyester resin;

(b) a mixture of thermoplastic polymers of vinyl acetate and an thermosetting epoxy compound having at least one 1,2-epoxy group per molecule;

(c) a dialkyl-p-toluidine accelerator;

(d) a low temperature free radical peroxide initiator; and

(e) a transition metal compound capable of reacting with the free radical initiator to initiate polymerization of the unsaturated polyester resin.

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5,306,774

MISCIBLE BLENDS OF POLY(ALKYLENE OXIDE) VINYL CARBOXYLIC ESTER POLYMERS AND ACIDIC FUNCTIONAL POLYMERS

Christine J. T. Landry, Honeoye Falls; David M. Teegarden, Rochester; Bradley K. Coltrain, and Wayne T. Ferrar, both of Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,294

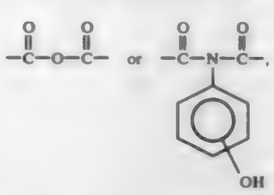
Int. Cl.[5] C08L *33/02, 33/04*

U.S. Cl. 525—221 **15 Claims**

1. A miscible blend comprising (a) a poly(alkylene oxide) vinyl carboxylic ester polymer and (b) a polymer comprising recurring units in an amount of at least about 5% of acidic functional groups represented by the following structure:



wherein R^4 through R^7 are independently selected from H, $-CH_3$, halo groups, —OH, —CN, $-(CH_2)_n{}^*CO_2H$, $-C_6H_4CO_2H$, $-C_6H_4SO_3H$, $-C_6H_4C(CF_3)_2OH$, $-C_6H_4OH$, $-COO(CH_2)_n{}^*SO_3H$, $-COOC_6H_4OH$, $-CONHC_6H_4OH$, $-CONH(CH_2)_n{}^*SO_3H$, $-CONHCH_2CH(CH_3)CH_2SO_3H$, $-C_6H_4(CH_2)_n{}^*CO_2H$ or $-C_6H_4(CX^*)_n{}^*COOH$, wherein the above stated formulas; X^* represents —F, —Cl, —Br or $-CF_3$; n^* is an integer from 0 to 8; those compounds having aromatic rings ($-C_6H_4$) can be substituted with one or more C_1 to C_6 alkyl groups, C_1 to C_6 haloalkyl groups, or halo groups; and R^4 and R^5 may be connected together to form



wherein said halo groups are selected from the group consisting of fluoro, chloro, bromo, and iodo and said miscible blend exhibits a single glass transition temperature.

5,306,775

POLYETHYLENE BLENDS

Joel L. Martin; M. Bruce Welch; William R. Coutant, and Max P. McDaniel, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 761,604, Sep. 18, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 48,628

Int. Cl.[5] C08L *23/06, 23/16, 23/08*

U.S. Cl. 525—240 **10 Claims**

1. A composition of matter comprising:

(a) 30 to 70 weight percent of a low molecular weight ethylene homopolymer resin, where said resin is made by polymerizing ethylene with a chromium oxide based catalyst system, and where said resin has a density greater than 0.96 grams per cubic centimeter, a melt index greater than 30 grams per 10 minutes, a heterogeneity index from 2 to 35, and a high load melt index/melt index ratio less than 40,

(b) 30 to 70 weight percent of a high molecular weight ethylene copolymer resin, where said resin is made by copolymerizing ethylene and an alpha-olefin with a titanium chloride based catalyst system, and where said resin has a density less than 0.955 grams per cubic centimeter, a high load melt index from 0.1 to 50 grams per 10 minutes, and a heterogeneity index from 2 to 10,

where said weight percents are based on the total weight of said resins (a) and (b); and

wherein said composition of matter has a melt index greater than 0.05 grams per 10 minutes and is essentially free of other ethylene polymers.

5,306,776

MULTILAYERED POLYMER

Kanki Matsumoto, Niihama, and Shinji Date, Chiba, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 28, 1993, Ser. No. 53,411

Claims priority, application Japan, May 6, 1992, 4-113502; Jun. 5, 1992, 4-145325

Int. Cl.[5] C08F *265/04, 265/06;* **C08L** *51/00*

U.S. Cl. 525—303 **12 Claims**

1. A multilayered polymer comprising:

(a) about 10 to about 50% by weight of an innermost layer which is formed from a crosslinked polymer having a glass transition temperature (Tg) of 50° C. or higher, the crosslinked polymer being prepared by polymerizing a monomer mixture of about 80 to about 99.5% by weight of an ethylenically unsaturated monofunctional monomer and about 0.5 to about 20% by weight of a multifunctional monomer which contains at least 2 ethylenically unsaturated groups;

(b) about 5 to about 25% by weight of a second layer formed on the innermost layer and formed from a soft polymer having a Tg of 10° C. or lower, the soft polymer being prepared by polymerizing at least one member selected from the group consisting of conjugated dienes and acrylic acid esters;

(c) about 10 to about 40% by weight of a third layer formed on the second layer and formed from a polymer having a Tg of 10° C. or lower, the polymer being prepared by polymerizing an unsaturated monomer comprising at least 25% by weight of a polyalkylene oxide chain-containing unsaturated monofunctional monomer; and

(d) about 10 to about 50% by weight of an outermost layer formed on the third layer and formed from a polymer having a Tg of 50° C. or higher, the polymer being prepared by polymerizing an ethylenically unsaturated monofunctional monomer.

5,306,777

ACRYLIC POLYMERS

Kouichi Nogura, Kurokawa; Kouichi Fujie, Kajikawa; Chouji Suga, Shibata; Naokiyo Inomata, Nakajyo, and Mitsuo Ootani, Niigata, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 17, 1991, Ser. No. 731,326

Claims priority, application Japan, Jul. 18, 1990, 2-191718; May 30, 1991, 3-155604

Int. Cl.[5] C08F *265/04, 265/06*

U.S. Cl. 525—309 **1 Claim**

1. A process for producing an acrylic polymer coagulated material comprising preparing a latex of a polymer with multiphase structure formed by emulsion polymerization which comprises 1) the outer-most phase being a hard phase comprising 40 to 100% by weight of at least one methacrylate unit and 0 to 60% by weight of another monomer unit copolymerizable therewith, and the polymer of the hard phase, if formed in the absence of other phases, having a glass transition temperature of 25° C. or more; and (2) at least one inner phase being a soft phase comprising 40 to 99.9% by weight of at least one acrylate ester unit, 0 to 60% by weight of another monomer copolymerizable therewith, and 0.1% to 5% by weight of polyfunctional monomer unit, and the polymer of the soft phase, if formed in the absence of other phases, having a glass transition temperature of less than 25° C.: and isolating the polymer with

multiphase structure from the latex by freezing at a rate of 0.7 to 4 cm/hr, melting at a temperature of 40°–180° C. and dehydrating, the average particle size of coagulated acrylic polymer being 50–1,000 μm.

5,306,778

PROCESS FOR PRODUCING RUBBER-MODIFIED THERMOPLASTIC RESIN

Atushi Ishida, Mie; Katsuro Oomura, Kameyama; Yuji Yamamoto, Chiba; Yuji Nakagawa, Kuwana; Tateki Furuyama, Yokkaichi; Hisao Nagai, Ichikawa; Toshio Teramoto, Yokkaichi; Yasuo Takahashi, Suzuka; Hideki Ueda, Hisai; Kazuhiko Yamamoto, Kuwana; Toshihiro Shimamura, Kameyama, and Yoshinobu Suzuki, Suzuka, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 782,733, Oct. 28, 1991, abandoned, which is a continuation of Ser. No. 396,660, Aug. 22, 1989, abandoned. This application Feb. 11, 1993, Ser. No. 16,182

Claims priority, application Japan, Aug. 24, 1988, 63-209827; May 18, 1989, 1-124964

Int. Cl.[5] C08F *379/02, 387/00*

U.S. Cl. 525—310 **13 Claims**

1. A process for producing a rubber-modified thermoplastic resin, which comprises polymerizing (B) 30–100% by weight of at least one member selected from the group consisting of an aromatic alkenyl compound monomer and an alkyl (meth)acrylate monomer, the homopolymer of which has a glass transition temperature of 50° C. or more, and (C) 70–0% by weight of at least one other monomeric compound copolymerizable therewith, in the presence of (A) 5–45% by weight, based on the total weight of (A), (B) and (C), of a hydrogenated diene copolymer which is a hydrogenated copolymer consisting of an A-B block copolymer or an A-B-C block copolymer in which A is an alkenyl aromatic compound polymer block, B is an alkenyl aromatic compound-conjugated diene random copolymer block, and C is a polymer block composed mainly of an alkenyl aromatic compound, wherein

(i) the weight ratio of the alkenyl aromatic compound/conjugated diene is 5–50/95–50,

(ii) the total amount of the alkenyl aromatic compounds of the block A and the block C in the copolymer is 3–40% by weight, and

(iii) the vinyl configuration content in the conjugated diene portion of the block B is 10–90%,

and wherein at least 90% of the double bonds of the conjugated diene is saturated.

5,306,779

HYDROGENATED DIENE BLOCK COPOLYMER AND COMPOSITION COMPRISING THE SAME

Tooru Shibata; Toshio Teramoto; Yoshiharu Hashiguchi, and Kunio Goshima, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 524,809, May 18, 1990, Pat. No. 5,191,024. This application Sep. 1, 1992, Ser. No. 937,723

Claims priority, application Japan, May 19, 1989, 1-124429; May 19, 1989, 1-124430

Int. Cl.[5] C08F *297/04;* **C08L** *53/02*

U.S. Cl. 525—314 **3 Claims**

1. A hydrogenated diene block copolymer having a polystyrene-reduced number-average molecular weight of 50,000–600,000 which is a hydrogenation product of an (A)-(B) block copolymer in which (A) means an alkenyl aromatic compound polymer block and (B) means an alkenyl aromatic compound-conjugated diene random copolymer block wherein the vinyl content of the conjugated diene portion is 15–60%, an (A)-(B)-(C) block copolymer in which (A) and (B) are as defined above and (C) means an alkenyl aromatic compound-conjugated diene copolymer tapered block wherein the proportion of the alkenyl aromatic compound increases gradually, or an (A)-(B)-(A) block copolymer in which (A) and (B) are as defined above, in which block copolymer

(1) the weight proportion of the alkenyl aromatic compound/the conjugated diene is 5/95 to 60/40, and

(2) the content of the bound alkenyl aromatic compound in at least one block (A) is at least 3% by weight and the total of the bound alkenyl aromatic compound contents in the two block (A)'s or the block (A) and the block (C) is 3–50% by weight based on the total monomers, and in which hydrogenation product at least 80% of the double bond unsaturations of the conjugated diene portion is saturated by the hydrogenation.

3. A modified hydrogenated diene block copolymer obtained by modifying 100 parts by weight of the hydrogenated diene block copolymer according to claim 1 or 2 with 0.01–20 parts by weight of an unsaturated compound having at least one functional group selected from the group consisting of acid anhydride group, carboxyl group, hydroxyl group, amino group and epoxy group.

5,306,780

SOLID BLOCK ELASTOMERIC COPOLYMERS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa., and Demetreos N. Matthews, Ewing, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 952,127, Sep. 25, 1992, Pat. No. 5,268,427, which is a division of Ser. No. 466,233, Jan. 16, 1990, Pat. No. 5,187,236. This application Mar. 11, 1993, Ser. No. 29,507

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **30 Claims**

1. A solid star-branched block polymer comprising at least two alternating blocks

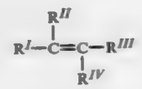
I/II

wherein each free end of the polymer is the block I, the block I comprises at least one polymerized conjugated diene having at least five (5) carbon atoms and the following formula



(1)

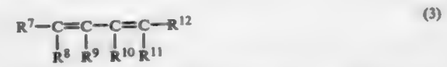
wherein R^1–R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1–R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

B is a block of a polymer of at least one conjugated diene different from the polymerized diene of the block I, having at least four (4) carbon atoms and the following formula



(3)

wherein R^7–R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block B has the following formula

UMI

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(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group.

6. A solid star-branched block polymer comprising at least two alternating blocks

A-D

wherein each free end of the polymer is the block A, and the block A is a copolymer of at least one aryl-substituted olefin and at least one conjugated diene having at least five (5) carbon atoms and the following formula



(1)

wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

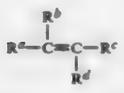
wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

D is a block polymer of a conjugated diene, different from that used to polymerize the block A, having at least four (4) carbon atoms and the following formula



(3)

wherein R^7-R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block D has the following formula



(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group.

11. A solid star-branched block polymer comprising at least three alternating blocks

I-D-A

wherein each free end of the polymer is either the I or the A block, and the block I is polymerized from at least one conjugated diene having at least five (5) carbon atoms and the following formula



(1)

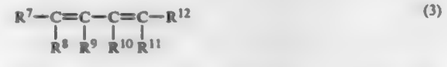
wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

D is a block polymer of a conjugated diene, different from that use to polymerize the block I, having at least four (4) carbon atoms and the following formula



(3)

wherein R^7-R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block D has the following formula



(4)

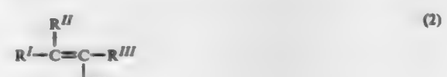
wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group;

A is a copolymer of at least one aryl-substituted olefin and at least one conjugated diene having at least five (5) carbon atoms and the following formula



(1)

wherein R^1-R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups.

16. A solid star-branched block copolymer wherein each branch comprises at least two (2) alternating blocks bonded to each other, the free end of each branch being a block of at least one polymerized hyrocarbon conjugate diene (I) monomer containing at least five (5) carbon atoms, with at least one carbon atom of each pair of residual double-bonded carbon atoms of polymerized conjugated diene (I) units being additionally single-bonded to two carbon atoms, or a copolymer of at least one diene (I) and at least one aryl-substituted olefin, the blocks adjacent to said polymerized diene (I) containing blocks being a polymer of at least one polymerized hydrocarbon conjugated diene (B), which is different from conjugated diene (I) and contains at least four (4) carbon atoms, with each residual double-bonded carbon atom of polymerized conjugated diene (B) units being additionally bonded to a hydrogen atom.

5,306,781

CARBOXYLIC ACID MODIFIED POLYETHYLENE MEMBRANE ACTIVATED BY A LINKER COUPLED AMIDE

Jerome M. Bailey, Duarte, Calif., assignor to City of Hope, Durate, Calif.

Division of Ser. No. 856,151, May 31, 1992, Pat. No. 5,254,475, which is a continuation-in-part of Ser. No. 576,943, Aug. 13, 1990, Pat. No. 5,059,540. This application Mar. 26, 1993, Ser. No. 39,779

Int. Cl.[5] G01N *33/68*

U.S. Cl. 525—333.9 **3 Claims**

1. An activated carboxylic acid modified polyethylene membrane, said activated membrane comprising

(i) a polyethylene membrane bearing surface carboxyl radicals; and

(ii) a linker coupled by an amide linkage to said surface carboxyl radicals of said polyethylene membrane, said linker, prior to said coupling, having the formula $NH_2(CH_2)N$ COOH in which n has a value of from about 4 to about 10.

5,306,782

SURFACE-MODIFIED POLYACRYLONITRILE FIBROUS SUBSTRATES

Laurence W. Chang, Orange; Larry S. Anderson, Norwalk, and David A. Ley, New Canaan, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 894,988, Jun. 8, 1992, Pat. No. 5,270,384, which is a division of Ser. No. 552,742, Jul. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 348,454, May 8, 1989, abandoned. This application Aug. 16, 1993, Ser. No. 107,090

Int. Cl.[5] C08F *8/22*

U.S. Cl. 525—355 **9 Claims**

1. A process for the preparation of surface-modified fibrillated fibers comprising a core of polyacrylonitrile or a copolymer thereof, said fibers having nitrile and N-haloamide groups evenly distributed over the surface thereof, said process comprising;

a) contacting said fibers with a liquid non-solvent for the polymer or copolymer fibers comprising polyacrylonitrile, or a copolymer of acrylonitrile and at least one comonomer;

b) contacting said fibers with an alkaline catalyst, a peroxide, and optionally a reducing agent and providing heat for a time sufficient to convert up to about 15 mole percent of the total nitrile groups through hydration to amide groups;

c) recovering said fibers;

d) contacting said fibers with a halogenating reagent under conditions and for a time sufficient to convert at least a portion of said surface amide groups to N-haloamide groups; and

e) recovering the surface-modified fibers.

5,306,783

RESIN SOLUTION FOR THE IMPREGNATION OF PAPER WEBS

Uwe Kirchgaessner, Frankenthal; Jakob Decher, Bobenheim-Roxheim; Christof Jaeckh, Heidelberg; Otto Wittmann, Frankenthal; Manfred Niessner, Schifferstadt, and Harro Petersen, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,312

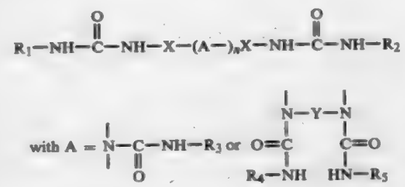
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1991, 4139961

Int. Cl.[5] C08L *61/02*

U.S. Cl. 525—398 **2 Claims**

1. An aqueous resin solution for impregnating paper webs which contain

2-40 parts by weight (based on solids) of a polyurea of the formula



with A =

Y=C_1-C_6-alkylene

n=0 or 1

X=C_1=C_6-alkylene, C_5-C_6-cycloalkylene, C_1-C_6-hydroxyalkylene or C_4-C_{18}-oxyalkylene,

R_1-R_5=H or CH_2OH per 100 parts by weight of a melamine/formaldehyde precondensate.

5,306,784

TOUGH, PROCESSABLE SEMI-INTERPENETRATING POLYMER NETWORKS FROM MONOMER REACTANTS

Ruth H. Pater, Tabb, Va., assignor to The United States of America as represented by the administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 430,470, Nov. 2, 1989, abandoned. This application Jan. 31, 1992, Ser. No. 831,763

Int. Cl.[5] C08J *5/08*; C08G *73/00*

U.S. Cl. 525—421 **10 Claims**

1. A non-conventional synthetic method for preparing a tough, processable semi-interpenetrating polymer network, comprising:

(a) mixing monomer precursors of a thermosetting polyimide wherein one monomer precursor contains an acetylene end group acting as a crosslinking site and monomer precursors of a thermoplastic polyimide at a weight ratio from about 95:5 to 5:95;

(b) allowing the monomer precursors of the thermosetting polyimide to react randomly with the monomer precursors of the thermoplastic polyimide to undergo linear chain extension below 300° C., whereby flow and reaction rate of the monomer precursors of the thermosetting polyimide are decreased by the presence of the monomer precursors of the thermoplastic polyimide and a mixture containing at least one compound containing a polyene structure and at least one thermoplastic polyimide is formed; and

(c) heating the mixture above 30° C., whereby flow and crosslinking reaction rate of the polyene structure are increased by the presence of the thermoplastic polyimide forming a tough, processable semi-interpenetrating polymer network.

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5,306,785

POLY(ALKYLENE CYCLOHEXANE-DICARBOXYLATE) BINARY BLENDS

Willem F. H. Borman, Evansville, and Nan-I Liu, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 551,395, Jul. 12, 1990, abandoned. This application Oct. 5, 1992, Ser. No. 956,818

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—425 30 Claims

1. A composition consisting of

(A) from 75 to 99 parts by weight of a poly(1,4-butylene cyclohexanedicarboxylate) resin; and

(B) from 1 to about 25 parts by weight of a poly(etherimide ester) elastomer; wherein the sum of (A) and (B) is 100 parts by weight.

5,306,786

CARBOXYL GROUP-TERMINATED POLYESTERAMIDES

Luc Moens, Sint Genesius-Rode; Daniel Maeteas, and Jean-Marie Loutz, both of Brussels, all of Belgium, assignors to U C B S.A., Drogenbos, Belgium

Filed Dec. 16, 1991, Ser. No. 807,607

Claims priority, application United Kingdom, Dec. 21, 1990, 9027793

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—437 23 Claims

1. A carboxyl group-terminated polyesteramide which comprises the reaction product of at least one diamine and a carboxyl group-terminated polyester, said carboxyl group-terminated polyester being selected from the group consisting of

(a) a polyester prepared from at least one aliphatic and/or cycloaliphatic dicarboxylic acid and at least one polyol;

(b) a polyester which is the reaction product of

(i) at least one dicarboxylic acid selected from aliphatic dicarboxylic acids, cycloaliphatic dicarboxylic acids and isophthalic acid, with

(ii) a hydroxyl group-terminated polyester prepared from at least one aromatic and/or aliphatic and/or cycloaliphatic polycarboxylic acid and at least one polyol; and

(c) a polyester which is the reaction product of

(i) at least one aliphatic and/or cycloaliphatic dicarboxylic acid with

(ii) a polyester containing both terminal hydroxyl and terminal carboxyl groups, prepared by esterification of

(iv) a hydroxyl group-terminated polyester prepared from at least one aromatic and/or aliphatic and/or cycloaliphatic polycarboxylic acid and at least one polyol,

the said carboxyl group-terminated polyesteramide having a glass transition temperature of between 50° and 70° C.

5,306,787

METHOD FOR PRODUCING SATURATED POLYESTER

Eiichiro Takiyama, Kamakura; Isamu Niikura, Takasakishi, and Yositaka Hatano, Higasikanbaragun, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

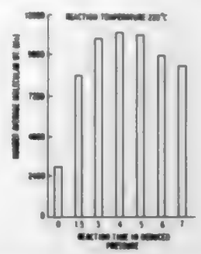
Filed Nov. 25, 1991, Ser. No. 797,033

Claims priority, application Japan, Nov. 25, 1990, 2-317849; Nov. 26, 1990, 2-317850

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—440 6 Claims

1. A method for producing a high molecular weight saturated polyester having a melting point of 105° to 120° C. and film forming properties, comprising adding a diisocyanate to a saturated aliphatic polyester in a molten state at a temperature not lower than the melting point thereof, wherein said saturated aliphatic polyester is obtained by the reaction of (a) succinic acid and butanediol-1,4, (b) succinic acid, adipic acid and butanediol-1,4, or (c) succinic acid and ethylene glycol and has terminal groups being substantially hydroxyl groups, and a number average molecular weight of 10,000 or more, and wherein said diisocyanate has an isocyanate group the amount of which corresponds to from 1/10 to 2 equivalents of the



amount of the hydroxyl group of the saturated aliphatic polyester.

5,306,788

ELASTOMER AND PROCESS FOR PRODUCTION THEREOF

Yuji Uchida, Kanagawa; Yoshio Yoshida, Tokyo; Toshikazu Kaneda, Kanagawa; Toshiaki Moriya, Kanagawa, and Tsutomu Kumazawa, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 837,030

Claims priority, application Japan, May 14, 1991, 3-136992

Int. Cl.[5] C08F *283/04*

U.S. Cl. 525—440 10 Claims

1. An elastomer composition molded by a reaction injection molding of a member selected from the group consisting of polyurethane resins, polyurea resins, polyurethane/urea resins and polyurea/amide resins, said composition containing a member selected from the group consisting of a polyester condensate having a hydroxyl group produced by transesterification of a saturated or unsaturated fatty acid having a hydroxyl group as an internal release agent.

5,306,789

AMORPHOUS, SOLUBLE, AROMATIC POLYMERS WITH HIGH GLASS TRANSITION TEMPERATURES

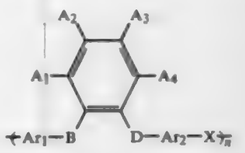
Allan S. Hay, 5015 Glencairn Avenue, Montreal, Quebec H3W 1B3, and Rina Singh, 1190 Fort Street, Apt. #704, Montreal, Quebec H3H 2B5, both of Canada

Filed Oct. 31, 1990, Ser. No. 606,160

Int. Cl.[5] C08G *10/00, 61/10, 61/12, 65/00*

U.S. Cl. 525—471 10 Claims

1. An amorphous polymer of formula (I):

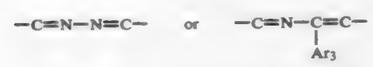


(I)

wherein A_1, A_2, A_3 and A_4 are each independently selected from hydrogen, aryl selected from the group consisting of phenyl, naphthyl and anthracyl, diphenylether or heteroaromatic radicals selected from the group consisting of pyridinyl, pyrazinyl, quinolinyl, thiophenyl, benzothiophenyl, furanyl and dibenzofuranyl, said aryl, diphenylether and heteroaromatic radicals being unsubstituted or substituted by a substituent selected from lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, lower thioalkyl of 1 to 6 carbon atoms, halogen, phenyl, naphthyl, anthracyl, diphenylether or heteroaromatic radicals selected from the group consisting of pyridinyl, pyrazinyl, quinolinyl, thiophenyl, benzothiophenyl, furanyl and dibenzofuranyl,

B and D are both carbonyl groups CO, or

B and D together represent a divalent radical of formula:



(II) (III)

wherein Ar_3 is an aryl selected from the group consisting of phenyl, naphthyl and anthracyl, diphenylether or heteroaromatic radical selected from the group consisting of pyridinyl, pyrazinyl, quinolinyl, thiophenyl, benzothiophenyl, furanyl and dibenzofuranyl, unsubstituted or substituted by a substituent selected from lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, lower thioalkyl of 1 to 6 carbon atoms, halogen, phenyl, naphthyl, anthracyl, diphenylether or heteroaromatic radicals selected from the group consisting of pyridinyl, pyrazinyl, quinolinyl, thiophenyl, benzothiophenyl, furanyl and dibenzofuranyl,

Ar_1 and Ar_2 are each phenylene radicals, unsubstituted or substituted 1 to 4 times by a substituent selected from lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, lower thioalkyl of 1 to 6 carbon atoms, halogen, phenyl, naphthyl, anthracyl, diphenylether or heteroaromatic radicals selected from the group consisting of pyridinyl, pyrazinyl, quinolinyl, thiophenyl, benzothiophenyl, furanyl and dibenzofuranyl,

n is an integer of 20 to 200,

X is a single bond, —O—R—O, —S— or —S—R—S—, wherein R is arylene selected from the group consisting of phenylene, naphthylene and anthracylene or aralkylidinylarylene of formula



in which R_1 is a straight chain or branched alkylene of 1 to 6 carbon atoms and Ph is phenylene, in which each arylene and phenylene moiety is unsubstituted or substituted by lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, lower thioalkyl of 1 to 6 carbon atoms, halogen, phenyl, naphthyl, anthracyl, diphenylether or heteroaromatic radicals selected from the group consisting of pyridinyl, pyrazinyl, quinolinyl, thiophenyl, benzothiophenyl, furanyl and dibenzofuranyl, and the alkylidine moiety of said aralkylidinylarylene is unsubstituted or fluoro-substituted alkylidine,

said polymer having a glass transition temperature of at least 220° C.,

and provided that when B and D are both carbonyl groups CO, A_1 and A_4 are both selected from said aryl, diphenylether or heteroaromatic radicals.

5,306,790

PROCESS FOR PRODUCING STYRENIC POLYMER

Hideki Imabayashi; Kazutoshi Ishikawa, and Yoshihiko Ishida, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,846

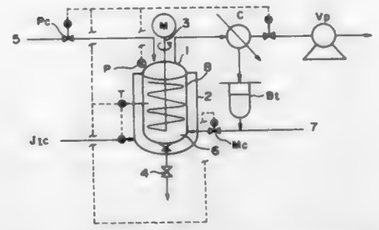
Claims priority, application Japan, Jan. 10, 1991, 3-253570

Int. Cl.[5] C08F *2/02, 12/08*

U.S. Cl. 526—68 3 Claims

1. A process for producing a styrenic polymer having a high degree of syndiotactic configuration which comprises effecting polymerization reaction by continuously introducing a styrenic monomer as the starting material and a polymerization catalyst into a polymerization reactor, the inside of which has been brought into fluidized state by particles previously fed therein, said process being characterized in that the polymerization reactor temperature is controlled by vaporizing a part of the styrenic monomer which has been introduced into the polymerization reactor, while the inside of the reactor is maintained under reduced pressure,

wherein the vaporized styrenic monomer is condensed in a condenser and the resultant condensate is utilized as at least a portion of the styrenic monomer as the starting material, and the polymerization reactor temperature is controlled by cascade control which links polymerization



reactor temperature control to polymerization reactor pressure control through flow rate control of the condensed styrenic monomer refluxed to said polymerization reactor.

5,306,791

ETHYLENE HOMOPOLYMERS AND ETHYLENE COPOLYMERS AND A PROCESS FOR THEIR PREPARATION

Thomas Muehlenbernd, Tokyo, Japan; Roger Klimesch, Alsbach-Haehnlein, Fed. Rep. of Germany; Gernot Koehler, Meckenheim, Fed. Rep. of Germany, and Ernst Fischer, Speyer, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 950,508, Sep. 25, 1992, abandoned. This application May 6, 1993, Ser. No. 57,554

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132012

Int. Cl.[5] C08F *4/28, 10/02*

U.S. Cl. 526—86 3 Claims

1. A process for the preparation of an ethylene homopolymer or ethylene copolymer by polymerizing the relevant monomers at from 500 to 5000 bar and reaction temperatures T from 40° C. to 320° C. by means of an initiator with virtually complete exclusion of oxygen in at least n=3 polymerization stages, in which, in the first stage, the total amount or the predominant part of the monomers is subjected to the polymerization by means of a part of the required initiator until the polymerization virtually comes to a stop, a further part of the initiator and, if required, of the monomers is added to the mixture cooled to 20°–60° C. and this process is repeated in the subsequent stages until the n th stage, with the proviso that the initiators used in the n th stage have a half-life temperature of from 90° to 260° C., wherein the reaction temperature T is 40° to 320° C. and the maximum reaction temperature T_{max} is from 270° C. to 320° C. in the n th stage.

5,306,792

GAS PHASE POLYMERISATION PROCESS

Laszlo Havas, Martigues, and Claudine Lalanne-Magne, Lavera, both of France, assignors to BP Chemicals Limited, London, England

Filed Aug. 16, 1991, Ser. No. 746,473

Claims priority, application France, Aug. 31, 1990, 90 11059

Int. Cl.[5] C08F *4/24*

U.S. Cl. 526—106 14 Claims

1. A continuous process for the polymerization of an alpha-olefin having from 2 to 12 carbon atoms, which is carried out in a gas phase polymerization reactor by bringing a gaseous reaction mixture, containing the alpha-olefin to be polymerized, into contact with a catalyst based on chromium oxide associated with a granular support and activated by a heat treatment, said process being characterized in that the poly-

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merization reactor is fed with (a) alpha-olefin and (b) catalyst at constant rates, and the total pressure in the polymerization reactor is from 0.5 to 5 MPa and can vary freely between a predetermined maximum pressure and a predetermined minimum pressure and the polymerization rate is regulated by variations in the partial pressure of the alpha-olefin in the polymerization reactor.

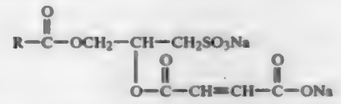
5,306,793

EMULSION POLYMERIZATION METHOD UTILIZING MALEIC ANHYDRIDE PROPYLENE SULFONATE ADDUCTS AS POLYMERIZABLE EMULSIFIERS

Julian E. Parker, III, James Island, and John A. Alford, Goose Creek, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 23, 1992, Ser. No. 948,632
Int. Cl.[5] C08F 2/26
U.S. Cl. 526—213 **3 Claims**

1. In an emulsion polymerization process comprising combining a monomer selected from the group consisting of acrylic, methacrylic, acrylonitrile, butadiene, chloroprene, styrene, and combinations thereof, emulsifier, initiator, and water as the continuous phase, the improvement wherein the emulsifier is a maleic anhydride propylene sulfonate adduct of the general formula



wherein R is a member selected from the group consisting of stabilized rosins, unstabilized rosins, saturated fatty acids containing carbons in the range of C_{12}–C_{20}, mono-olefinic fatty acids containing carbons in the range of C_{12}–C_{20}, and combinations thereof.

5,306,794

METHOD OF PRODUCING COPOLYMER

Toru Doi, and Yoshihiko Sagiura, both of Yokkaichi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Sep. 29, 1992, Ser. No. 952,419
Claims priority, application Japan, Oct. 2, 1991, 3-280302
Int. Cl.[5] C08F 222/40, 210/00, 210/10
U.S. Cl. 526—262 **13 Claims**

1. A method of producing a maleimide-olefin copolymer by precipitation polymerization by radical copolymerization of a maleimide and an olefin, in which a polymerization solvent which will selectively dissolve maleimides and olefins and which will not dissolve the produced polymer to precipitate the produced polymer in a granular form, is used in production of a maleimide-olefin copolymer.

5,306,795

POLYMERIZATION OF VINYLPYRROLIDONE

Jean S. Shih, Paramus, and Terry E. Smith, Morristown, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Jan. 31, 1991, Ser. No. 648,261
Int. Cl.[5] C08F 126/10
U.S. Cl. 526—264 **12 Claims**

1. A precipitation polymerization process for producing homopolymers of polyvinylpyrrolidone in the form of fine powders during polymerization at a solids level of at least about 17% and in a yield of polymer of at least about 95%, which consists essentially of precharging a reactor with a predetermined amount of a solvent selected from a C_3–C_{20} alkane and a C_3–C_{20} cycloalkane, and a polymerization initiator, and feeding vinylpyrrolidone monomer into said precharged reactor at a selected rate of 0.1 to 1.8 g vinylpyrrolidone/min/1000 g of solvent which precludes excessive build-up of monomer and gumming of polymer during the polymerization during a feed period which provides the desired level of solids in the reaction product.

5,306,796

PLIABLE CRYSTALLINE POLYMER AND PROCESS FOR ITS PRODUCTION

Pierre Gilliard, Brussels, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Apr. 7, 1992, Ser. No. 864,545
Claims priority, application Belgium, Apr. 19, 1991, 09100363
Int. Cl.[5] C08F 10/02, 10/06, 110/02, 110/06
U.S. Cl. 526—348.1 **13 Claims**

1. An oriented crystalline polymer, comprising:

a crystalline polymer which is oriented, which is pliable in the absence of any plasticising adjuvant, and which exhibits a tensile modulus E, measured in the drawing direction, of between 0.3 and 0.8 E_0, E_0 being the tensile modulus of the same polymer, unoriented, and which is produced by a process comprising:

a. extruding the polymer through an extrusion die;

b. drawing the extruded polymer to a deformation ratio higher than 500%, at a temperature of between $T_m+10°$ C. and $T_m+30°$ C., T_m being the melting temperature of the polymer , and at a mean velocity gradient ϵ of between $1/20\tau$ and $10/\tau$, τ being the mean relaxation time of the polymer at the chosen extrusion temperature; and

c. cooling the drawn polymer to a temperature below its crystallisation temperature in a time of less than 10 seconds.

5,306,797

ORGANOPOLYSILOXANE COMPOSITION AND ITS GEL CURED PRODUCT

Masayuki Ikeno, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 738,557, Jul. 31, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 586
Claims priority, application Japan, Aug. 1, 1990, 2-204076
Int. Cl.[5] C08G 77/06, 77/12, 77/20
U.S. Cl. 528—15 **9 Claims**

1. An organopolysiloxane composition, comprising

(A) a linear or branched organopolysiloxane or mixture thereof in which 5 to 10 mol % of the molecule ends is made up of an $(R^1)_3SiO_{0.5}$ unit and 95 to 90 mol % of the molecule ends is made up of at least one unit selected from the group consisting of an $R^1(R^2)_2SiO_{0.5}$ unit, an $(R^1)_2R^2SiO_{0.5}$ unit, and an $(R^2)_3SiO_{0.5}$ unit, in which units R^1 represents an aliphatic unsaturated group and R^2 represents a monovalent unsubstituted or substituted hydrocarbon group free of aliphatic unsaturated groups,

(B) an organohydrogenpolysiloxane having two or more Si—H-groups on average in the molecule, and

(C) an addition reaction catalyst, wherein said organohydrogenpolysiloxane (B) is contained in such an amount that the amount of the Si—H-groups contained therein is 0.5 to 3 mol per mol of the aliphatic unsaturated group contained in said organopolysiloxane (A).

5,306,798

TRANSPARENT, AUTOCLAVABLE, NON-CYTOTOXIC, ESSENTIALLY COMPACT POLYURETHANE EMBEDDING COMPOSITIONS, THE PREPARATION THEREOF AND THE USE THEREOF, ESPECIALLY FOR ARTICLES USED IN MEDICINE

Peter Horn, Heidelberg; Werner Hinz, Frankenthal; Georg Knoblauch, Munich; Falko Ramsteiner, Ludwigshafen, and Gottfried Knorr, Schwarzheide, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,749
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1991, 4134693
Int. Cl.[5] C08G 18/32
U.S. Cl. 528—58 **22 Claims**

1. A transparent, autoclavable, non-cytotoxic, essentially compact polyurethane embedding composition, prepared by reacting

a) urethane group-containing diphenylmethane diisocyanate having an NCO content of from 29 to 15% by weight with

b) compounds with at least two reactive hydrogens in the presence or absence of

c) catalysts wherein component (b) is at least one polyether-polyol (b1) with an average functionality of from 3 to 8, a hydroxyl number of from 200 to 1000 and an alkali ion content of from 150 to 1200 ppm.

5,306,799

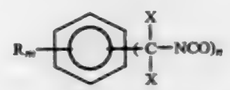
HIGH REFRACTIVE INDEX PLASTIC LENS AND COMPOSITION THEREFOR

Seiichi Kobayashi; Katsuyoshi Sanagawa, and Yoshinobu Kanemura, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 23, 1993, Ser. No. 95,346
Claims priority, application Japan, Aug. 26, 1992, 4-226959
Int. Cl.[5] C08G 18/32
U.S. Cl. 528—77 **10 Claims**

1. A composition for high refractive index plastic lens, consisting of a monomer mixture comprising the following three components:

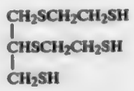
(a) at least one polyisocyanate represented by general formula (1):



(1)

wherein each X represents a hydrogen atom or a methyl group; each R represents a chlorine atom, a bromine atom, a methyl group or an ethyl group; m represents an integer of 0–4; and n represents an integer of 2–4,

(b) 1,2-bis[(2-mercaptoethyl)thio]-3-mercaptopropane represented by formula (2):



(2)

and (c) at least one aliphatic thiol compound having x hydroxyl groups (x is an integer of 0 or 1 or more) and y mercapto groups (y is an integer of 1 or more), wherein the total number (x+y) of the hydroxyl groups and the mercapto groups is 3 or more when the thiol compound has no ring structure in the molecule and is 2 or more when the thiol compound has a ring structure and wherein the number of the carbon atoms present between two hydroxyl groups, two mercapto groups or a hydroxyl and mercapto groups, which are most distant, is 5 or less.

5,306,800

PSEUDO NETWORK CONDENSATION POLYMERS

Balaram Gupta, North Plainfield; Larry F. Charbonneau, Meadham, and Wilfried Hatke, Summit, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Nov. 9, 1992, Ser. No. 973,472
Int. Cl.[5] C08G 63/00
U.S. Cl. 528—190 **25 Claims**



1. A pseudo network condensation polymer including recurring combinations consisting essentially of an acyclic, cyclic or aromatic multivalent branching moiety containing radicals independently selected from the group consisting of amino, carboxy, oxy, thio, and mixtures thereof wherein the branching moiety is at least trivalent; one or more divalent aromatic chain-defining moieties containing a carboxy radical and a radical selected from the group consisting of amino and oxy, said chain-defining moiety being capable of self-condensation; and a multivalent hydrocarbyl coupling moiety containing radicals selected from the group consisting of amino, carboxy, and oxy said coupling moiety being incapable of self-condensation; wherein the concentration of the branching moiety is from about 0.01 to about 10 mole percent, the concentration of the chain-defining moieties is from about 70 to about 99 mole percent, and the concentration of the coupling moiety is from about 0.01 to about 20 mole percent, with the proviso that the stoichiometric ratio of the branching moiety to the coupling moiety is deficient or excessive of the stoichiometric equivalent ratio.

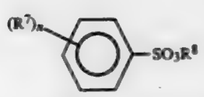
5,306,801

CATALYTIC MELT PREPARATION OF POLYCARBONATE WITH SUBSEQUENT ADDITION OF SULFONIC ACID COMPOUND

Takeshi Sakashita, and Tomoaki Shimoda, both of Iwakuni, Japan, assignors to GE Plastics Japan, Ltd., Tokyo, Japan

Filed Jan. 24, 1992, Ser. No. 903,320
Claims priority, application Japan, Jun. 28, 1991, 159144
Int. Cl.[5] C08G 64/40
U.S. Cl. 528—198 **7 Claims**

1. A method for preparing polycarbonates comprising (a) melt polycondensing a mixture comprising an aromatic dihydroxy compound and a diester carbonate in the presence of a catalyst comprising an alkali metal compound or an alkaline earth metal compound, said catalyst being present in said mixture in an amount of from 5×10^{-8} to 8×10^{-7} mole per mole of said aromatic dihydroxy compound, to form a resulting polycarbonate as a reaction product, and (b) adding to said resulting polycarbonate, as a reaction product, a sulfonic acid compound in an amount of 0.05–10 ppm, based on the polycarbonate wherein said sulfonic acid compound has the following formula:



where R^7 is a group comprising a hydrocarbon or halogenated hydrocarbon group having 1–6 carbons, R^8 is a group comprising a hydrocarbon group or halogenated hydrocarbon group with 1–8 carbons and n is an integer from 0 to 3.

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5,306,802

POLYCARBONATE COPOLYMER AND METHOD FOR PRODUCTION THEREOF

Ryozo Okumura; Shigeki Kuze, and Noriyuki Kunishi, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1993, Ser. No. 31,631

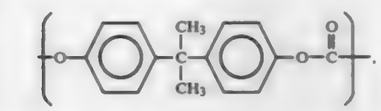
Claims priority, application Japan, Mar. 31, 1992, 4-74891

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] C08G *64/26*

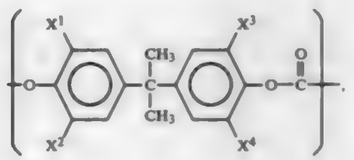
U.S. Cl. 528—198 **18 Claims**

1. A polycarbonate copolymer comprising in a main chain a repeating unit (A) represented by the formula (I):



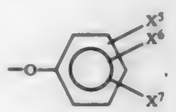
(I)

repeating unit (B) represented by the formula (II):



(II)

wherein X^1 to X^4 are each a halogen atom, and an end group (C) represented by the formula (III):



(III)

wherein X^5 to X^7 are each a halogen atom, said polycarbonate copolymer having a viscosity-average molecular weight of 10,000 to 50,000, said repeating unit (B) being contained in an amount of 1 to 10 mole % in the main chain and containing a tetrahalogenobisphenol A-derived chloroformate group and a trihalogenophenol-derived chloroformate group, each contained within said copolymer in a total amount of not more than 0.05 mole % based on said bisphenols from which the repeating units (A) and (B) are formed.

5,306,803

PROCESS FOR CLEANING THERMOPLASTS BY FRICTION COMPACTING

Wolfgang Arlt; Manfred Schmidt; Thomas Fischer, and Ralf Lange, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed May 17, 1991, Ser. No. 702,047

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1990, 4017830

Int. Cl.[5] C08F *6/00*

U.S. Cl. 528—480 **3 Claims**

1. A process for the removal of residues in the form of ash-forming impurities, residual solvents and water from a thermoplast, comprising the following steps:

introducing a thermoplast between two discs rotating relative to one another, the frequency of rotation of the discs ranging from about 8 sec^{-1} to about 83 sec^{-1}, said introducing step being carried out by conveying the thermoplast with a screw conveyor to and through a hole in one of the discs, and rotating the screw conveyor opposite to the direction of relative rotation of the discs,

the distance between the discs being from 1 mm to 5 mm, separating the residues from the thermoplast by the forces acting on the thermoplast as a result of the rotation, and

removing the processed thermoplast from the outer edges of the discs.

5,306,804

DISCONTINUOUS PROCESS FOR THE PRODUCTION OF A POLYAMIDE-6,6

Hartmut Liehr, Frankfurt am Main, and Hans-Dieter Hofmann, Karben, both of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 23, 1993, Ser. No. 126,035

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1993, 4313587

Int. Cl.[5] C08G *69/28*

U.S. Cl. 528—335 **3 Claims**

1. A discontinuous process for the production of polyamide-6,6 with a relative viscosity of at least 2.2 dl/g, measured at 25° C. in a 1% polyamide solution in 96% sulfuric acid, comprising,

heating a 75% to 85% aqueous solution of adipic acid hexamethylene diamine salt (AH-salt) from 175° C. to a temperature above 175° C. at a rate of at least 1° C./minute to autogenously attain precondensation pressure,

precondensing the AH-salt solution at a pressure in the range of 6 to 9 bar, as the temperature rises to 255° C. maximum, and simultaneously evaporating water from the solution at a rate of at least 2%/minute based on the quantity of water in the AH salt solution, and

polycondensing the precondensed product at a temperature between 260° and 290° C. while gradually reducing the pressure to 1 bar less,

the total retention time for heating from 175° C. and for precondensing being not more than 75 minutes and the total retention time for heating from 175° C., precondensing and polycondensing being not more than 120 minutes.

5,306,805

PROCESS FOR THE PREPARATION OF POLYARYLENE SULPHIDES

Wolfgang Arlt; Wolfgang Alewelt; Karl-Heinrich Meyer; Manfred Schmidt; Erhard Tresper, all of Krefeld, and Wolfgang Eisermann, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Feb. 10, 1992, Ser. No. 832,886

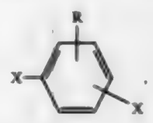
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1991, 4105748

Int. Cl.[5] C08G *75/14*

U.S. Cl. 528—387 **12 Claims**

1. A process for the production of polyarylene sulphides from

a) identical or different dihalogenated aromatic compounds corresponding to formula (I),



(I)

in which

x is a halogen,

R is hydrogen C_1-C_4-alkyl, C_5-C_{10}-cycloalkyl, C_6-C_{10}-aryl, C_7-C_{14}-alkylaryl, or C_7-C_{14}-arylalkyl,

optionally up to 20 mol-% of the dihalogenated aromatic compound may be replaced by at least one of C_1-C_{36}-dihalogenated aliphatic compounds and C_8-C_{36}-aromatic compounds containing at least two aliphatically bound halogens,

b) optionally, at least one of i) from 0.05 to 3 mol-%, based on the sum of a), of tri- or tetrahalogenated aromatic compounds corresponding to formula (IV)

$$ArX_n \quad \text{(IV)}$$

wherein

X is a halogen,

Ar is a C_6-C_{24}-aromatic group or a heteroaromatic group in which up to 3 carbon atoms may be replaced by hetero atoms selected from the group consisting of N, O and S, and

n is the number 3 or 4,

and ii) from 0.05 to 7.5 mol-%, based on the sum of

a), of compounds for regulating the molecular weight,

c) alkali metal hydroxide,

d) hydrogen sulphide, and

e) a polar, aprotic organic solvent,

wherein

i) the dihalogenated aromatic compound mentioned under a), additives mentioned under b) and the polar, aprotic organic solvent mentioned under e) are introduced into a reaction vessel and heated to boiling at a pressure of from 0.5 bar to 6 bar,

ii) a sufficient quantity of hydrogen sulphide from d), at least the quantity corresponding to physical solubility, is then forced into the reaction vessel under a pressure of from 0.5 bar to 10 bar,

iii) approximately 1.5 to 2.2 times molar quantity, based on the sum of components (a+b), of alkali metal hydroxide mentioned under c) is then introduced into the reaction mixture as aqueous or anhydrous melt in a very finely divided form and water is distilled off azeotropically,

iv) hydrogen sulphide is introduced into or over the reaction mixture simultaneously with iii), and

v) when all the components have been added, the reaction mixture is heated to 180°–250° C. and the reaction is continued until the molecular weight has been built up.

5,306,806

THERMOSETTING POLYESTER RESIN AND POWDER COATING RESINOUS COMPOSITION CONTAINING THE SAME

Hisaki Tanabe, Kyoto; Ryozo Takagawa, and Yoshio Eguchi, both of Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 262,734, Oct. 12, 1988, abandoned. This application Jul. 20, 1990, Ser. No. 560,226

Claims priority, application Japan, Oct. 12, 1987, 62-256488; Oct. 12, 1987, 62-256489; Feb. 29, 1988, 63-48412; Jun. 1, 1988, 63-135169

Int. Cl.[5] C08G *63/00*

U.S. Cl. 528—308 **2 Claims**

1. A thermosetting polyester resin comprising a repeating units of the formula: A-X-B, wherein 100 to 50 mol % of A stands for a mesogenic group selected from a polyphenylene group in which 2 or more benzene rings are aligned and connected to each other in their respective para-positions, a polyphenylene group in which 2 or more benzene rings are aligned and connected to each other in their respective para-positions through an azo, azoxy, azomethine, ester or trans-vinylene bond, or a 2,6-naphthylene group, the remaining 50 mol % of A stands from a member selected form the group consisting of p-phenylene, m-phenylene, o-phenylene and tans 1,4-cyclohexylene; B is a spacer group represented by the formula: $-(CH_2)_n-$ or

$$-(CH_2CH_2O\rightarrow_m CH_2CH_2-,$$

in which n is an integer of 2 to 20 and m is an integer of 1 to 19; and X is an ester bond, the adjoining two repeating units being connected through an ester bond, the end bondings of the connected repeating units being occupied by OH, COOH or their reactive derivatives, the sum of resinous acid value and OH value being 10~200, and being capable of forming an anisotropic molten phase, said thermosetting polyester resin having a transition point of 80°~230° C., a number average molecular weight of 500~20,000, providing that when A is p-phenylene, n is an integer of 8 to 20.

5,306,807

PROCESS FOR ISOLATING POLYMER RESINS FROM SOLUTIONS

Ganesh Kailasam, Schenectady, and Godavarthi S. Varadarajan, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1993, Ser. No. 99,504

Int. Cl.[5] C08F *6/10*

U.S. Cl. 528—483 **22 Claims**

1. A process for isolating polymer resins from polymer resin solutions which comprises the steps of:

(a) introducing into a reaction vessel a polymer resin solution which consists essentially of an organic solvent and a polymer resin having a glass transition temperature greater than about ambient temperature and having a bulk density of about 0.2 cm^3 to about 1.0 g/cm^3.

(b) contacting said polymer resin solution with a gaseous component under moderate pressure to produce a solution comprising dissolved gaseous component;

(c) maintaining the solution comprising dissolved gaseous component at an operating temperature of about ambient temperature whereby said polymer resin in solution precipitates as a solid from said solution; and

(d) isolating said solid from said solution comprising dissolved gaseous component.

5,306,808

PEPTIDE DERIVATIVES HAVING VASODILATING ACTIVITY

Mitsuhiro Wakimasu; Takashi Kikuchi, and Kazuki Kubo, all of Tsukuba, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP91/00165, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO91/13089, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 12, 1991, Ser. No. 768,269

Int. Cl.[5] C07K *7/10*

U.S. Cl. 530—326 **1 Claim**

1. The peptide having an amino acid sequence selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 21, SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO: 31, SEQ ID NO: 34, SEQ ID NO: 35, SEQ ID NO: 37, SEQ ID NO: 38, SEQ ID NO: 40, SEQ ID NO: 45, SEQ ID NO: 50, SEQ ID NO: 52, SEQ ID NO: 53, and SEQ ID NO: 59 or a pharmaceutically acceptable salt thereof.

5,306,809

ACID-LABILE LINKER MOLECULES

Petrus J. Boon, Oss; Franciscus M. Kaspersen, Heesch, and Ebo S. Bos, Oss, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 31, 1991, Ser. No. 815,671

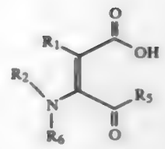
Claims priority, application European Pat. Off., Dec. 31, 1990, 90203526.0

Int. Cl.[5] A61K *35/14*; C07K *3/06*

U.S. Cl. 530—363 **24 Claims**

1. A hydrolytically labile conjugate comprising an acylated active substance having a nucleophilic reactive group according to the general formula:

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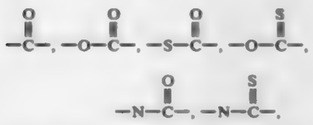
wherein

R_1 is selected from the group consisting of H, lower alkyl, —N— lower alkyl, —O—lower aralkyl, —S—lower aralkyl, —N—lower alkylene, —O—lower alkylene, —S—lower alkylene, —N— aryl, —O— aryl, and —S— aryl;

R_2 is selected from the group consisting of H, lower alkyl, lower aralkyl and aryl;

R_5 is the acylated active substance and

R_6 is selected from the group consisting of



and another chemical structure which is able to delocalize the lone pair electrons of the nitrogen; wherein R_6 is coupled with a carrier selected from the group consisting of a proteinaceous substance, an antibody, an antibody fragment, a polymer, and a nucleic acid.

5,306,810

SEPARATION OF MANGANESE FROM RICE PROTEIN USING ALUMINA

Terrence B. Mazer, Reynoldsburg; Christy A. Nardelli, Westerville; Arthur J. C. L. Hogarth, and Andre Daab-Krzykowski, both of Columbus, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 811,102, Dec. 20, 1991, Pat. No. 5,248,765. This application Jun. 7, 1993, Ser. No. 72,165

Int. Cl.[5] A23J *1/12, 1/14, 3/14*

U.S. Cl. 530—372 **6 Claims**

1. A method of separating manganese from rice protein comprising the steps of:

(a) providing an aqueous slurry containing rice protein;

(b) causing the slurry to contact particles of alumina for a period of time, with the slurry for at least a portion of the contact period to have a pH of not greater than about 6; and thereafter

(c) adjusting the pH of the slurry to be greater than about 9.

5,306,811

SQUAMOUS CELL CARCINOMA-LIKE IMMUNOREACTIVE ANTIGEN FROM HUMAN FEMALE URINE

Thomas H. Duffy, Santa Ana, Calif., assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Division of Ser. No. 618,774, Nov. 27, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 994,399

Int. Cl.[5] C07K *3/02, 3/20, 15/14*

U.S. Cl. 530—412 **5 Claims**

1. A method of isolation of squamous cell carcinoma-like antigen from normal human female urine comprising:

a) selection of normal human female urine samples with concentrations of squamous cell carcinoma-like antigen of greater than approximately 40 ng/ml; and

b) either concentration of the urine or separation of the antigen from the urine.

5,306,812

IMMUNOGLOBULIN-BINDING POLYPEPTIDES

Maurizio Zanetti, La Jolla, Calif.; Petar Lenert, NoviSad, Yugoslavia; Edward Golub, La Jolla, Calif., and Daniel Kroon, Bridgewater, N.J., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 404,968, Sep. 8, 1989, Pat. No. 5,231,167. This application Jan. 20, 1990, Ser. No. 541,269

Int. Cl.[5] C07K *15/28, 3/18, 3/00;* **A61K** *37/02*

U.S. Cl. 530—413 **4 Claims**

1. A method of separating immunoglobulin molecules from an aqueous sample, which method comprises the steps of:

(a) admixing said aqueous sample with a polypeptide comprising a single polypeptide chain having a V_H-binding segment, selected from the group consisting of:

(A) NH_2-Lys-Lys-Ser-Ile-Gln-Phe-His-Trp-Lys-Asn-Ser-Asn-Gln-Ile-Lys-Ile-Leu-Gly-COOH,

(B) NH_2-Lys-Lys-Ser-Ile-Gln-Phe-His-Trp-Lys-Asn-Ser-Asn-Gln-Ile-Lye-Ile-Leu-Gly-Asn-Gln-Gly-Ser-Phe-Leu-Thr-Lys-Gly-Pro-Ser-COOH,

(C) NH_2-Lys-Ser-Ile-Gln-Phe-His-Trp-Lys-Asn-Ser-Asn-Gln-Ile-Lys-Ile-Leu-Gly-COOH,

(D) NH_2-Ser-Ile-Gln-Phe-His-Trp-Lys-Asn-Ser-Asn-Gln-Ile-Lye-Ile-Leu-Gly-COOH,

(E) NH_2-Ile-Gln-Phe-His-Trp-Lys-Asn-Ser-Asn-Gln-Ile-Lys-Ile-Leu-Gly-COOH, and

(F) NH_2-Lys-Lys-Ser-Ile-Gln-Phe-His-Trp-Lys-Asn-Ser-Asn-Gln-Ile-Lys-Ile-Leu-COOH,

(b) maintaining said admixture under Ig-binding conditions to form a binding reaction admixture including a temperature of about 4° C. to about 45° C., a pH value of about 5 to about 9 and an ionic strength of no more than that equivalent to about one molar of sodium chloride for a time period sufficient for a portion of said immunoglobulin molecules present to bind said polypeptide to form a complex and a non-bound sample portion; and

(c) segregating said complex from said non-bound sample portion, thereby separating said immunoglobulin molecules from said aqueous sample.

5,306,813

REACTIVE DYES HAVING A BULKY LINKER GROUP

Andrew H. M. Renfrew, Bury, and John A. Taylor, Prestwich, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 908,393, Jul. 6, 1992, abandoned. This application Jan. 22, 1993, Ser. No. 8,084

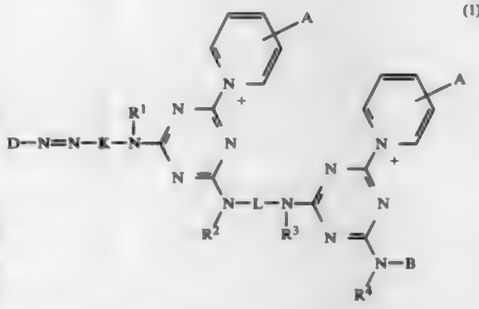
Claims priority, application United Kingdom, Jul. 9, 1991, 9114837

Int. Cl.[5] C09B *62/085;* **D06P** *1/382*

U.S. Cl. 534—612 **7 Claims**

1. A compound which, in the free acid form, is of Formula (1):

(1)



wherein:

D and K are optionally substituted naphthyl;

R^1 and R^4 are each independently C_{1-4}-alkyl;

R^2 and R^3 are each independently optionally substituted alkyl;

B is optionally substituted aryl;

each

A is 4-carboxy; and

L is an optionally substituent divalent organic radical.

5,306,814

BISAZO COMPOUNDS HAVING SULFOPHENYLAZONAPHTYLAZOPHENYLAMINO-S-TRIAZINYL GROUP AND USE THEREOF FOR DYEING OR PRINTING FIBER MATERIALS

Kingo Akahori; Takeshi Washimi, both of Toyonaka; Takashi Omura, Kobe, and Mahito Fujita, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 17, 1992, Ser. No. 993,713

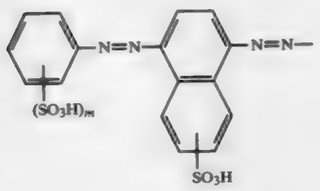
Claims priority, application Japan, Dec. 26, 1991, 3-344606; Jan. 10, 1992, 4-002841; Aug. 26, 1992, 4-227066

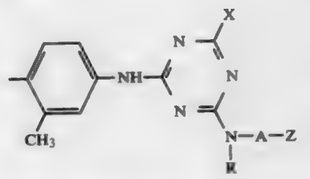
Int. Cl.[5] C09B *62/513;* **D06P** *1/384*

U.S. Cl. 534—642 **15 Claims**

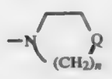
1. A bisazo compound represented by the following formula (I) in the free acid form:

(I)





wherein R is hydrogen or unsubstituted or substituted C_1–C_4 alkyl; A is an unsubstituted or substituted phenylene or naphthylene group; Z is $—SO_2CH=CH_2$ or $—SO_2CH_2CH_2Y$, in which Y is a group capable of being split by the action of an alkali; X is $—NR_1R_2$, C_5–C_7 cycloalkylamino or



in which Q is $—CH_2—$, —O—, $—SO_2—$, —SO— or $—NR_3—$ in which R_3 is hydrogen or C_1–C_4 alkyl; and n is 1 or 2, R_1 is hydrogen or unsubstituted or substituted alkyl; R_2 is hydrogen or an unsubstituted or substituted alkyl or phenyl group; and m is 1 or 2, provided that when m is 2, X is



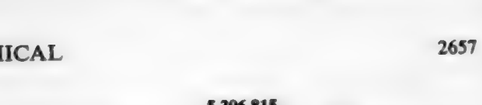
where

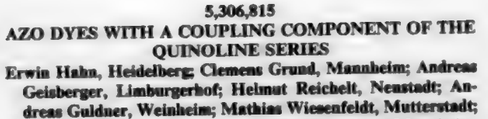
R^1 and R^2 are identical or different and each is independently of the other C_1–C_{10}-alkyl, which may be interrupted by 1 or 2 oxygen atoms in ether function and may be substituted by phenyl, cyano, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxycarbonyloxy, hydroxyl or C_1–C_4-alkanoyloxy, or unsubstituted or chlorine-substituted C_3–C_4-alkenyl, or R^1 may also be hydrogen,

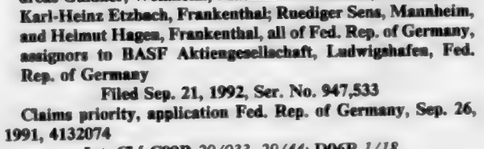
R^3 is hydrogen or C_1–C_8-alkyl,

R^4 and R^5 are identical or different and each is independently of the other hydrogen, C_1–C_6-alkyl, halogen, C_1–C_6-alkoxy, amino or mono- or di(C_1–C_4-alkyl)amino, and

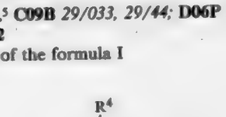
D is a radical of the formula







or



where

L^1 is cyano, C_1–C_6-alkanoyl, benzoyl, C_1–C_4-alkoxy-carbonyl, C_1–C_6-alkylsulfonyl, substituted or unsubstituted phenylsulfonyl or a radical of the formula $—CH=C(CN)_2$ or $—CH=C(CN)—COOX$, where X is C_1–C_4-alkyl,

L^2 is halogen,

L^3 is cyano or C_1–C_4-alkoxycarbonyl,

L^4 is cyano, C_1–C_6-alkanoyl, benzoyl, C_1–C_6-alkylsulfonyl, substituted or unsubstituted phenylsulfonyl or a radical of

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the formula —CH=C(CN)$_2$ or —CH=C(CN)—COOX, where X is C$_1$–C$_4$-alkyl,

L^5 is hydrogen, C$_1$–C$_6$-alkyl, halogen, unsubstituted or phenyl- or C$_1$–C$_4$-alkoxy-substituted C$_1$–C$_6$-alkoxy, unsubstituted or phenyl-substituted C$_1$–C$_6$-alkylthio, substituted or unsubstituted phenylthio, C$_1$–C$_6$-alkylsulfonyl, substituted or unsubstituted phenylsulfonyl or C$_1$–C$_4$-alkoxycarbonyl,

L^6 is cyano, unsubstituted or phenyl-substituted C$_1$–C$_6$ alkyl, C$_1$–C$_6$-alkylthio, substituted or unsubstituted phenyl thienyl, C$_1$–C$_4$-alkylthienyl, pyridyl or C$_1$–C$_4$-alkylpyridyl,

L^7 is cyano, C$_1$–C$_4$-alkoxycarbonyl, halogen or thiocyanato,

L^8 is hydrogen, cyano or halogen and

L^9 is C$_1$–C$_6$-alkanoyl or C$_1$–C$_4$-alkoxycarbonyl.

5,306,816

PROCESSES FOR PREPARING CARBAPENEM DERIVATIVES

Masayoshi Murata, Osaka; Chiyoshi Kasahara, Ikeda; Hideo Tsutsumi, Toyonaka, and Yoshihiro Murakami, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

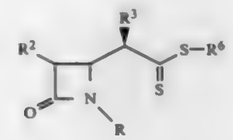
Filed Feb. 12, 1992, Ser. No. 834,613

Claims priority, application United Kingdom, Feb. 13, 1991, 9103034

Int. Cl.^{5} C07D *205/08, 227/087*

U.S. Cl. 540—200 **4 Claims**

1. A compound of the formula:



in which

R^2 is hydroxy (lower)alkyl or protected hydroxy(lower)alkyl,

R^3 is lower alkyl,

R^6 is lower alkyl;

mono(or di or tri)halo(lower)alkyl;

lower alkenyl;

lower alkynyl;

aryl which may have one to three substituent(s) selected from the group consisting of lower alkyl, halogen, hydroxy, protected hydroxy, lower alkenyl and lower alkynyl; or

ar(lower)alkyl; and

R is hydrogen, a group of the formula:



wherein R^1 is carboxy or protected carboxy, a group of the formula:



wherein R^1 is as defined above, and X^2 is halogen, a group of the formula:



wherein R^1 is as defined above, or a group of the formula:



wherein R^1 is as defined above and R^7 is lower alkoxy or aryl, or a salt thereof.

5,306,817

PROCESS FOR THE STEREOSPECIFIC SYNTHESIS OF AZETIDINONES

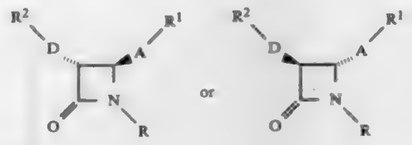
Tiruvettipuram K. Thiruvengadam, Edison; Chou-Hong Tann, Berkeley Heights; Junning Lee, Springfield; Timothy McAllister, Fords, and Anantha Sudhakar, East Brunswick, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 734,652, Jul. 23, 1991, abandoned, and a continuation-in-part of Ser. No. 734,426, Jul. 23, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 962,768

Int. Cl.^{5} C07D *205/08;* **C07B** *53/00*

U.S. Cl. 540—200 **7 Claims**

1. A process for producing a chiral compound of the formula

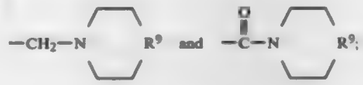


wherein

R is phenyl, W-substituted phenyl, naphthyl, W-substituted naphthyl, benzodioxolyl, heteroaryl, W-substituted heteroaryl, benzofused heteroaryl and W-substituted benzofused heteroaryl, wherein heteroaryl is selected from the group consisting of pyrrolyl, pyridinyl, pyrimidinyl, pyrazinyl, triazinyl, imidazolyl, thiazolyl, pyrazolyl, thienyl, oxazolyl and furanyl, and for nitrogen-containing heteroaryls, the N-oxides thereof;

R^1 and R^2 are independently selected from H or R;

W is 1 to 3 substituents independently selected from the group consisting of lower alkyl, hydroxy lower alkyl, lower alkoxy, alkoxyalkyl, alkoxyalkoxy, alkoxycarbonylalkoxy, (lower alkoxyimino)-lower alkyl, lower alkanedioyl, lower alkyl lower alkanedioyl, allyloxy, —CF$_3$, —OCF$_3$, benzyl, R^3-benzyl, benzyloxy, R^3-benzyloxy, phenoxy, R^3-phenoxy, dioxolanyl, NO$_2$, —NR^{4}R^5, NR^{4}R^5 (lower alkyl)-, NR^{4}R^5(lower alkoxy)-, OH, halogeno, —NHC(O)OR^6, —NHC(O)R^6, R^{7}O$_2$SNH-, (R^{7}O$_2$S)$_2$N—, —S(O)$_2$NH$_2$, —S(O)$_{0-2}$R^4, tert-butyldimethyl-silyloxymethyl, —C(O)R^8,



A and D are independently a bond; C$_3$–C$_6$ cycloalkylene; C$_1$–C$_{10}$ alkylene; C$_1$–C$_{10}$ alkenylene; C$_1$–C$_{10}$ alkynylene;

an alkylene, alkenylene or alkynylene chain as defined substituted by one or more substituents independently selected from the group consisting of phenyl, W-substituted phenyl, heteroaryl and W-substituted heteroaryl, wherein heteroaryl is as defined above; an alkylene, alkenylene or alkynylene chain as defined interrupted by one or more groups independently selected from the group consisting of —O—, —S—, —SO—, —SO$_2$—, —NR$_8$, —C(O)—, C$_3$–C$_6$ cycloalkylene, phenylene, W-substituted phenylene, heteroarylene and W-substituted heteroarylene; or an interrupted alkylene, alkenylene or alkynylene chain as defined substituted by one or more substituents independently selected from the group consisting of phenyl, W-substituted phenyl, heteroaryl and W-substituted heteroaryl; or R^2-D is selected from the group consisting of halogeno, OH, lower alkoxy, —OC(O)R^6, —NR^{4}R^5, —SH and —S(lower alkyl);

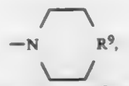
R^3 is 1–3 groups independently selected from the group consisting of lower alkyl, lower alkoxy, —COOH, NO$_2$, —NR^{4}R^5, OH or halogeno;

R^4 and R^5 are independently selected from H and lower alkyl;

R^6 is lower alkyl, phenyl, R^3-phenyl, benzyl or R^3-benzyl;

R^7 is OH, lower alkyl, phenyl, benzyl, R^3-phenyl or R^3-benzyl;

R^8 is H, OH, alkoxy, phenoxy, benzyloxy,



—NR^{4}R^5, lower alkyl, phenyl or R^3-phenyl;

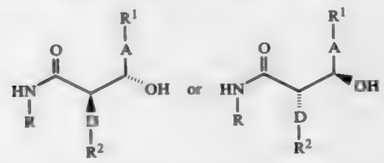
R^9 is —O—, —CH$_2$—, —NH— or —N(lower alkyl)—;

R^{10} is H, lower alkyl, phenyl lower alkyl or —C(O)R^{11};

R^{11} is H, lower alkyl, phenyl or phenyl lower alkyl;

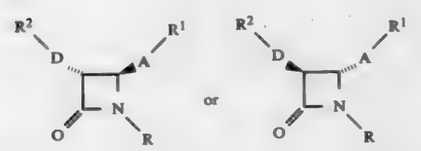
provided that when A is a bond, R^1 is not H, and provided that when R^1 is W-substituted phenyl, W is not p-halogeno;

comprising cyclizing a hydroxyamide of the formula



wherein D, A, R^1, R^2 and R are as defined above, by treating with: a dialkylchlorophosphate and either a metal hydride, or an aqueous solution of a base and a phase transfer catalyst.

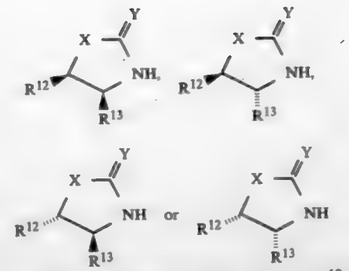
3. A process for producing a chiral compound of the formula



wherein R, R^1, R^2, D and A are as defined in claim 1, comprising:

(a) reacting a carboxylic acid of the formula R^2-D-CH$_2$-COOH, wherein R^2 is as defined above, with a chlorinating agent;

(b) deprotonating a chiral auxillary of the formula



wherein X and Y are independently O or S, and R^{12} and R^{13} are independently selected from the group consisting of C$_1$–C$_6$ alkyl, phenyl, naphthyl, W-substituted phenyl, W-substituted naphthyl, lower alkoxycarbonyl and benzyl; or wherein one of R^{12} or R^{13} is as defined above and the other is hydrogen; and wherein W is as defined above; with a strong base and treating the resulting anion with the product of step (a);

(c) enolizing the product of step (b) with:

(i) a dialkylboron triflate and a tertiary amine base; or

(ii) TiCl$_4$ and a tertiary amine base selected from: tetramethylethylenediamine (TMEDA); triethylamine; or a mixture of TMEDA and triethylamine; then condensing with an aldehyde of the formula R^1-A-CHO, wherein R^1 and A are as defined above;

(d) hydrolyzing the product of step (c) with a base and hydrogen peroxide;

(e) condensing the product of step (d) with an amine of the formula RNH$_2$, wherein R is as defined above, by treating with a dehydrative coupling agent, optionally adding an activating agent; and

(f) cyclizing the product of step (e) by reacting the product of step (e) with: a dialkylchlorophosphate and either a metal hydride, or an aqueous solution of a base and a phase transfer catalyst.

5,306,818

TETRAHYDRO 2-SACCHARINYLMERTHYL ARYL CARBOXYLATES

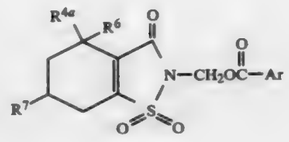
Chakrapani Subramanyam, East Greenbush and Malcolm R. Bell, East Greenbush, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation-in-part of Ser. No. 860,340, Mar. 30, 1992, Pat. No. 5,250,696, which is a division of Ser. No. 782,016, Oct. 24, 1991, Pat. No. 5,128,339, which is a continuation-in-part of Ser. No. 608,068, Nov. 1, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,593

Int. Cl.^{5} C07D *275/06, 413/12*

U.S. Cl. 544—135 **3 Claims**

1. A compound having the formula



wherein

R^{4a} is hydrogen, lower-alkyl or phenyl;

R^6 is hydrogen or primary lower-alkyl; or

R^{4a} and R^6 together form a spirocyclopropyl ring;

R^7 is hydrogen or lower-alkoxy;

Ar is phenyl, naphthyl or anthryl or such groups substituted by from one to three, the same or different, members of

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the group consisting of lower-alkyl, perfluorolower-alkyl, perchlorolower-alkyl, lower-alkoxy, halogen, nitro, cyano, carboxy, PO(lower-alkoxy)$_2$, amino, lower-alkylamino, dilower-alkylamino, lower-alkanoylamino, lower-alkoxycarbonyl, hydroxy, benzyloxy,carboxylower-alkoxy, —SO_2—N=B, —CO—N=B, -(alkylene)—N=B, —COO(alkylene)—N=B, NH(alkylene)—N=B; —N(lower-alkyl)-(alkylene)—N=B, or —O—(alkylene)—N=B, where N=B in each instance is amino, lower-alkylamino, di-lower-alkyl-amino, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-imidazolyl, carboxy-lower-alkylamino or —NR-(alkylene)—N(alkyl)$_2$, where R is lower-alkyl.

5,306,819

CERTAIN ARYL A CYCLOALKYL FUSED IMIDAZOPYRAZINOLS; AND NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

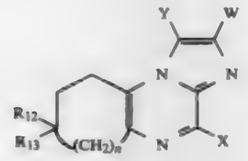
Pamela Albaugh, Clinton; Alan Hutchison, Madison, and Charles Blum, Guilford, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Aug. 27, 1992, Ser. No. 936,589

Int. Cl.^{5} C07D *487/04, 487/14, 487/20, 487/10*

U.S. Cl. 544—346 **18 Claims**

2. A compound of the formula;



wherein:

n is 0, 1 or 2;

X and Y are hydrogen, halogen, hydroxy or amino with the proviso that at least one is hydroxy;

R_{12} and R_{13} are the same or different and represent hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms;

R_{16} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl or pyridylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; and

W is

phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl; or

phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, or mono- or dialkylamino where each alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms.

5,306,820

PROCESS FOR THE PREPARATION OF ENANTIOMERICALLY PURE SUBSTITUTED (QUINOLIN-2-YL-METHOXY)PHENYLACETIC ACIDS

Matthias Decker; Klaus-Helmut Mohrs, both of Wuppertal, and Siegfried Raddatz, Köln, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

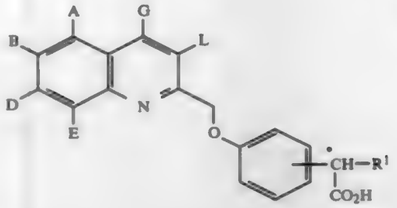
Filed Apr. 10, 1992, Ser. No. 866,707

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1991, 4112533

Int. Cl.^{5} C07D *215/00, 215/12, 215/16*

U.S. Cl. 546—153 **9 Claims**

1. A process for the preparation of an enantiomerically pure (quinolin-2-yl-methoxy)phenylacetic acid of the formula



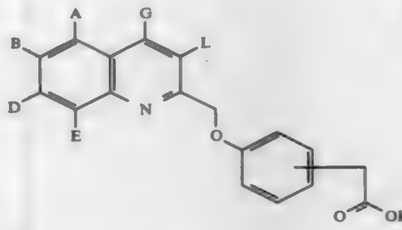
in which

A, B, D, E, G and L are identical or different and represent hydrogen, hydroxyl, halogen, carboxyl, nitro, trifluoromethyl, trifluoromethoxy or alkoxy each having up to 8 carbon atoms, or represent phenyl or naphthyl which is optionally substituted by halogen, hydroxyl, nitro or cyano,

and

R^1 represents cycloalkyl having 4 to 8 carbon atoms,

which comprises alkylating a compound of the formula



in which

R^2 represents a chiral alcohol radical selected from the group consisting of (+)- or (−)-menthyl, (+)- or (−)-bornyl, (+)- or (−)-isobornyl and (−)-8-phenylmenthyl,

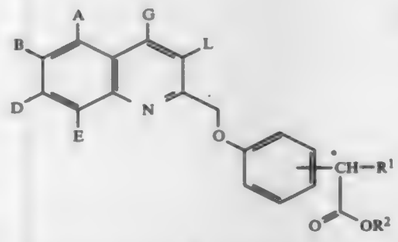
with a compound of the formula

$$R^1—Y \qquad \text{(III)}$$

in which

Y represents a leaving group,

in an inert solvent in the presence of a base to form a compound of the formula



and in a second step specifically removing the radical R^2 with an acid without racemisation.

5,306,821

PROCESS FOR THE PREPARATION OF TERTIARY CARBINAMINES

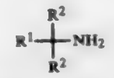
Engelbert Ciganek, Kennett Square, Pa., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Jan. 10, 1992, Ser. No. 819,429

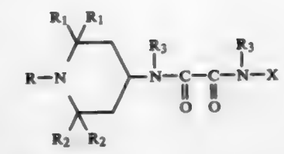
Int. Cl.^{5} C07D *409/00*

U.S. Cl. 546—212 **14 Claims**

1. A method of making a tertiary carbinamine of the formula



which comprises reacting a nitrile of the formula R^1CN with an organolanthanide reagent which is obtained by reacting a compound of the formula R^2Li with a reagent selected from the group consisting essentially of anhydrous lanthanum chloride, praseodymium chloride, neodymium chloride, ytterbium chloride and cerium chloride wherein R^1 is selected from the group consisting essentially of alkyl, alkenyl, cycloalkyl, cyclic ethers, cyclic thioethers, cyclic tertiary amines, or aryl, or heteroaryl; R^1 being optionally substituted with a group that does not react with organolanthanide reagents; said group being selected from the group consisting essentially or alkyl, alkenyl, alkyl- or arylethynyl, aryl, heteroaryl, halo, alkoxy, alkylthio or tertiary amino, or R^1 may be optionally substituted with a group which does react with organolanthide reagents, and which group is selected from the group consisting essentially of hydroxyl, primary and secondary amino, sulfhydryl, formyl, ketones, esters, cyano, or imino; and R^2 is a primary or secondary alkyl of up to about 20 carbon atoms, or aryl, furyl, benzofuryl, thienyl, or benzothienyl optionally substituted with alkyl, alkenyl, aryl, fluorine, chlorine, alkoxy, alkylthio, or tertiary amino.



(I)

in which

R is hydrogen; oxygen; —OH; C_{1-8}alkyl; —O—C_{1-8}alkyl; —O—OC—C_{1-8} alkyl; —O—CO—phenyl or —COR_5;

where

R_5 is —$C(R_3)$=CH_2, C_{1-6}alkyl, phenyl, —CO—phenyl, —NR_7R_8, —C_2—C_6H_5, —CO—OC_{1-12} alkyl or —COOH; R_7 is hydrogen, C_{1-12} alkyl, C_{5-6} cycloalkyl, phenyl, phenyl-C_{1-4}alkyl or C_{1-12}alkylphenyl and R_8 is C_{1-12}alkyl or hydrogen,

each R_1 independently, is —CH_3 or —CH_2(C_{1-4}alkyl) or both groups R_1 form a group —$(CH_2)_5$—;

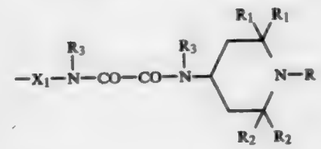
each R_2, independently, is —CH_3 or —CH_2(C_{1-4} alkyl) or both groups R_2 form a group—$(CH_2)_5$—;

each R_3 independently, is hydrogen or C_{1-4} alkyl; and

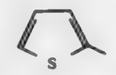
X is a group of formula α, β, γ, δ



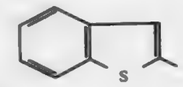
(α)



(β)



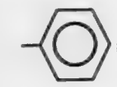
(γ)



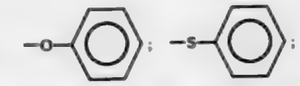
(δ)

where

either R_{10} is



C_{1-22}alkyl; C_{2-22}alkenyl;



—$N(C_{1-4}alkyl)_2$; —$NH(C_{1-4}$alkyl) or halogen, and

R_6 is hydrogen, halogen, C_{1-8}alkyl or C_{2-8}alkenyl or

R_{10} is C_{1-22}alkoxy and R_6 is hydrogen, C_{1-8}alkyl or C_{1-8}alkoxy; provided that when R_{10} is alkyl or alkoxy, R_6 is hydrogen, R is —OH, —O—C_{1-8}alkyl, —O—OC—C_{1-8}alkyl, —O—CO— phenyl, or —COR_5; where R_5 is

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5,306,822

ARYLMETHYLENYL DERIVATIVES OF OXAZOLIDINONE

Wieczeslaw A. Cetenko; David T. Connor; Roderick J. Sorenson; Paul C. Unangst, all of Ann Arbor, Mich., and Stephen R. Stabler, Santa Clara, Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 702,132, May 13, 1991, Pat. No. 5,208,250, which is a continuation of Ser. No. 375,794, Jul. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 334,346, Apr. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 198,528, May 25, 1988, abandoned. This application Dec. 10, 1992, Ser. No. 988,562

Int. Cl.^{5} A61K *31/42*

U.S. Cl. 548—226 **3 Claims**

1. 5-[(3-methoxyphenyl)methylene]-2-thioxo-4-oxazolidinone.

5,306,823

2,2,6,6-TETRAALKYLPIPERIDINE COMPOUNDS USEFUL AS LIGHT STABILIZERS

Lajos Avar, Biel-Benken, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Feb. 14, 1992, Ser. No. 836,027

Claims priority, application United Kingdom, Feb. 19, 1991, 9103415

Int. Cl.^{5} C07D *401/12, 409/12;* C08K *5/34*

U.S. Cl. 546—224 **8 Claims**

1. A compound of formula I

VOL 1161 ISS 4 AP 26 1994 UMI

NR_7R_8, —CO—phenyl, —CH_2—C_6H_5, —CO—OC_5-12alkyl or —COOH; and

X_1 is



where n is 1 or 2 and A is —S— or —O—.

5,306,824

BIOTINYLATED ISOCOUMARINS

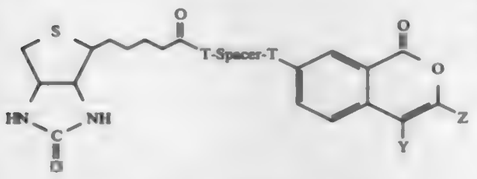
James C. Powers, Atlanta, and Chih-Min Kam, Roswell, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Apr. 15, 1992, Ser. No. 869,531

Int. Cl.[5] C07D *405/14*

U.S. Cl. 548—304.1 **7 Claims**

1 A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein

Z is selected from the group consisting of H, halogen, C_{1-6} alkyl, C_{1-6} fluorinated alkyl, C_{1-6} alkyl substituted with R^1, C_{1-6} fluorinated alkyl substituted with R^1, C_{1-6} alkoxy, C_{1-6} fluorinated alkoxy, C_{1-6} alkoxy substituted with R^1, C_{1-6} fluorinated alkoxy substituted with R^1, C_{1-6} alkyl with a phenyl group attached to the alkyl group, C_{1-6} alkoxy with a phenyl group attached to the alkoxy group, C_{1-6} alkyl with an attached phenyl group substituted with R^2, C_{1-6} alkyl with an attached phenyl group disubstituted with R^2, C_{1-6} alkoxy with an attached phenyl group substituted with R^2, C_{1-6} alkoxy with an attached phenyl group disubstituted with R^2,

wherein R^2 represents halogen, COOH, OH, CN, NO_2, NH_2, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamine, C_{1-6} dialkylamine, C_{1-6} alkyl-O—CO—, C_{1-6} alkyl-O—CO—NH—, or C_{1-6} alkyl-S—,

wherein R^1 represents halogen, COOH, OH, CN, NO_2, NH_2, C_{1-6} alkoxy, C_{1-6} alkylamine, C_{1-6} dialkylamine, C_{1-6} alkyl-O—CO—, C_{1-6} alkyl-O—CO—NH—, C_{1-6} alkyl-S-, or tosylamino,

wherein Spacer is an organic structure which is 3–24 Å long and including a backbone comprising at least one of the members of the group consisting of —CH_2—CH_2—, —CO—NH—, —NH—CO—, —CH_2—CO—, —CH_2—NH—, —NH—CH_2—, and —C_6H_4—,

wherein T represents —NH—, —O—, or —S—,

Y is selected from the group consisting of H, halogen trifluoromethyl, methyl, OH and methoxy.

5,306,825

PHYSOSTIGMINE DERIVATIVES WITH ACETYLCHOLINESTERASE INHIBITION PROPERTIES, AND THE RELATIVE PRODUCTION PROCESS

Mario Brufani, Castel Gandolfo; Claudio Castelland, Rome; Maurizio Marta, Rome; Alberto Oliverio, Rome; Flaminia Pavone, Rome, and Massimo Pomponi, Rome, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

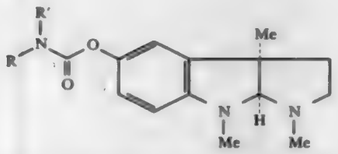
Division of Ser. No. 929,516, Nov. 12, 1986, Pat. No. 4,831,115, which is a continuation-in-part of Ser. No. 705,009, Feb. 25, 1985, abandoned, and a continuation-in-part of Ser. No. 909,025, Sep. 17, 1986, abandoned. This application Apr. 26, 1989, Ser. No. 343,282

Claims priority, application Italy, Mar. 1, 1984, 47780 A/84

Int. Cl.[5] C07D *487/04*

U.S. Cl. 548—429 **3 Claims**

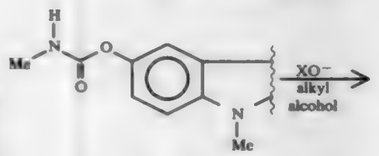
1. A process for preparing physostigmine derivatives with acetylcholinesterase inhibition properties, of the following formula:

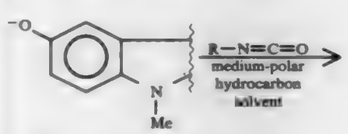


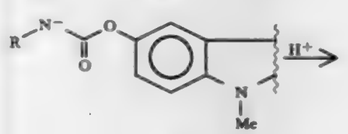
(I)

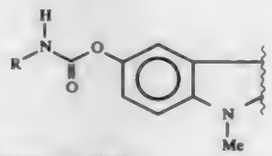
in which R is selected from the group consisting of propyl, isopropyl, tert-butyl, phenyl, cyclohexyl, heptyl, undecyl and pentadecyl when R′ is H or R and R′ are both ethyl or methyl, in accordance with the following schemes:

Scheme I (when R′ = H)



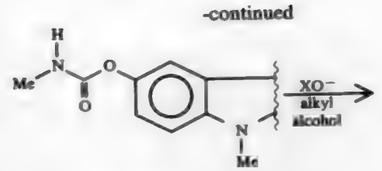


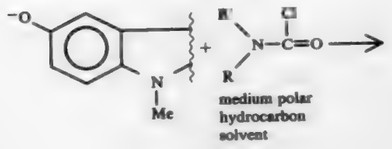


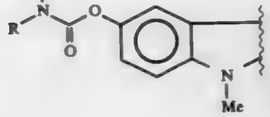


Scheme II (when R′ = alkyl)

-continued







wherein X is methyl.

5,306,826

PROCESS FOR PREPARATION OF AN OPTICALLY ACTIVE AMINO ACID AMIDE

Wilhelmus H. J. Boesten, Sittard, Netherlands, assignor to Stamicarbon B.V., Netherlands

Filed Feb. 15, 1991, Ser. No. 655,623

Claims priority, application Netherlands, Feb. 16, 1990, 9000386

Int. Cl.[5] C07C *231/20*

U.S. Cl. 548—534 **26 Claims**

1. Process for the preparation of an optically active amino acid amide comprising the steps of:

(a) (i) mixing together a mixture of corresponding Schiff bases of L-amino and D-amino acid amides selected from the group consisting of phenylglycine amide, p-hydroxyphenylglycine amide, methionine amide, and homophenylalanine amide, a solvent, an optically active carboxylic acid selected from the group consisting of mandelic acid, 2-pyrrolidone-5-carboxylic acid and Z-aspartic acid, and water, wherein at least 1 equivalent of water is added relative to the quantity of said Schiff base, whereby the salt of said amino acid amide and said carboxylic acid is obtained, or (ii) mixing together a mixture of corresponding L-amino and D-amino acid amides selected from the group consisting of phenylglycine amide, p-hydroxyphenylglycine amide, methionine amide, and homophenylalanine amide, an aldehyde, a solvent and water, wherein the quantity of said aldehyde is 0.5–4 equivalents relative to the quantity of said amino acid amide, whereby the salt of said amino acid amide and said carboxylic acid is obtained;

(b) separating, from the mixture resulting from step (a), a fraction consisting essentially of one of the diastereoisomers of said salt; and

(c) converting the thus separated diastereoisomer of said salt into the corresponding amino acid amide.

5,306,827

HALOALKYLTHIO, -SULFINYL AND -SULFONYL ARYLPYRROLE INSECTICIDAL AND ACARICIDAL AGENTS

Keith D. Barnes, Newtown, Pa.; Victor M. Kamhi, Hamilton Square, N.J., and Robert E. Diehl, Yardley, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 4, 1991, Ser. No. 803,289

Int. Cl.[5] C07D *207/12*

U.S. Cl. 548—543 **12 Claims**

1. A compound having the structural formula



wherein

W is $S(O)_nCF_2R_1$;

R_1 is H, F, Cl, Br, CF_2H, CCl_2H, CClFH, CF_3 or CCl_3;

n is an integer of 0, 1 or 2;

X is phenyl substituted with one to three halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, CF_3, R_2CF_2B, R_3CO or NR_4R_5 groups;

B is $S(O)_n$ or O;

R_2 is H, F, CF_2H, CClFH or CF_3;

R_3 is H or C_1–C_3 alkyl, C_1–C_3 alkoxy or NR_4R_5;

R_4 is H or C_1–C_3 alkyl;

R_5 is H or C_1–C_3 alkyl or R_6CO;

R_6 is H or C_1–C_3 alkyl;

Y is H, halogen, CF_3, CN, NO_2, $S(O)_nCF_2R_1$ or phenyl substituted with one to three halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, CF_3, R_2CF_2B, R_3CO or NR_4R_5 groups;

Z is H, halogen or CF_3;

R is H,



or C_1–C_6 alkyl optionally substituted with one to three halogen atoms,

one cyano,

one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms, or

one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups;

R_8 is hydrogen or C_1–C_4 alkyl;

R_9 is C_1–C_6 alkyl optionally substituted with one to three halogen atoms;

provided that when R is H or C_1–C_6 alkyl, X is attached to a carbon atom adjacent to the pyrrole ring nitrogen atom; and when Y is substituted phenyl, X and Y cannot be attached to the pyrrole ring at positions two and three.

5,306,828

PROCESS FOR THE MANUFACTURE OF SUBSTITUTED MALEIMIDES

Michel Adda, Haifa; Chaim Eidelman, HaGalil, and Leonard Shorr, Haifa, all of Israel, assignors to Bromine Compounds Ltd., Beer-Sheva, Israel

Filed Feb. 13, 1992, Ser. No. 835,198

Int. Cl.[5] C07D *207/44, 207/452, 401/04*

U.S. Cl. 548—548 **24 Claims**

1. In a process for the preparation of substituted maleimides which comprises reacting the corresponding amines with maleic anhydride and effecting the thermal imidization of the

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resulting substituted amic-acids in a mixture of at least one non-polar and at least one polar aprotic solvent in the presence of an acidic catalyst, the improvement comprising selectively removing from the reaction mixture a substantial portion of the non-polar solvent, thus affording the precipitation of most of the final product.

5,306,829

UV ABSORBERS AND LIGHT-SENSITIVE ORGANIC MATERIAL CONTAINING SAME

Godwin Berner, Binningen, Switzerland, and Andreas Valet, Eimeldingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

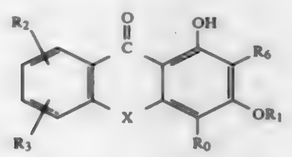
Continuation of Ser. No. 836,141, Feb. 13, 1992, abandoned, which is a continuation of Ser. No. 628,733, Dec. 17, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 919,664

Claims priority, application Switzerland, Dec. 21, 1989, 4579/89-4

Int. Cl.[5] C07D *311/82*

U.S. Cl. 549—223 **4 Claims**

1. A compound of the formula

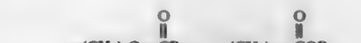


(1)

wherein X is O and R_0 is hydrogen or a radical of formula $-(CH_2)_nCO_2R$, wherein n is 1 or 2 and R is alkyl of 1 to 18 carbon atoms or $-(-CH_2CH_2O-)_m-H$, wherein m is 1 to 12, R_1 is alkyl of 4 to 18 carbon atoms which is substituted by hydroxyl and interrupted by non-adjacent oxygen atoms, or is $-COR_4$, wherein R_4 is alkyl or alkenyl, each of 2 to 12 carbon atoms



or R_1 is



wherein R_5 is alkyl of 1 to 12 carbon atoms or alkenyl of 2 to 12 carbon atoms, and y is 1 to 12, and R_2 and R_3 are each independently of the other hydrogen, alkyl of 1 to 12 carbon atoms, alkenyl of 2 to 12 carbon atoms, $-OR_1$, wherein R_1 has the given meaning, or are chloro, and R_6 is hydrogen or alkyl of 1 to 4 carbon atoms.

5,306,830

SUBSTITUTED 3-AMINO CHROMANS

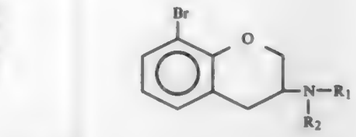
Bengt R. Andersson, Lindome; Per A. E. Carlsson, Gothenburg; Kjell A. I. Svensson, Alingsas; Hakan V. Wikstrom, Partille, and Anders R. Hallberg, Lund, all of Sweden, assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 775,961, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 344,078, Apr. 27, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 994,073

Int. Cl.[5] C07D *311/58*

U.S. Cl. 549—404 **4 Claims**

1. A compound of the formula



wherein:

R_1 is C_{1-3} alkyl, cyclopropylmethyl, or cyclobutylmethyl;

R_2 is C_{1-8} alkyl, $-(CH_2)_{1-3}-R_4$, $-CH_2-(C_{3-8}$ cycloalkyl) or $-CH_2CH_2Z(CH_2)_{0-3}CH_3$; wherein R_4 is phenyl, phenyl substituted by one or two substituents selected from Cl, F, Br, C_{1-3} alkoxy, C_{1-3} alkyl, 2-thiophenyl, and 3-thiophenyl, and Z is —O— or —S—;

or pharmaceutically acceptable salts thereof.

5,306,831

SORBITAN ESTER PURIFICATION PROCESS

Sharon M. Beshouri, Houston, and Robert P. Adamski, Missouri City, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 15, 1992, Ser. No. 961,241

Int. Cl.[5] C07D *307/20*

U.S. Cl. 549—478 **20 Claims**

1. A process for removing polyols from a polyol-containing sorbitan ester mixture comprising the steps of:

a) dissolving the polyol-containing sorbitan ester mixture in a solution comprising at least one hydrocarbon and a polar organic solvent wherein the ratio of said hydrocarbon to said organic solvent is within the range of about 1:1000 to about 5:1, to produce a sorbitan ester solution;

b) adding and mixing into the sorbitan ester solution, a metal salt solution comprising water and from about 1 to about 20 weight percent, based on the salt solution, of a metal salt selected from the group consisting of halides, nitrates, acetates and sulfates of alkali metals, alkaline earth metals, and trivalent metals to produce a combined solution;

c) phase separating the combined solution into an organic phase comprising the hydrocarbon, polar organic solvent and sorbitan ester and an aqueous phase comprising water, metal salt and polyol;

d) separating the aqueous phase from the organic phase; and

e) then recovering the thus-treated sorbitan ester from the organic solution.

5,306,832

HETEROCYCLIC BIS(4-HYDROXYPHENYL(CYCLOALKANES AND POLYCARBONATES PREPARED THEREFROM

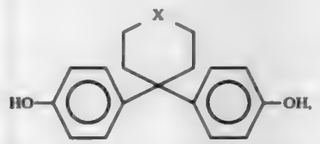
John C. Schmidhauser, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 989,316, Dec. 11, 1992. This application Oct. 7, 1993, Ser. No. 132,979

Int. Cl.[5] C07D *335/02, 211/06*

U.S. Cl. 549—13 **6 Claims**

1. A heterocyclohexylidenebisphenol having the formula



(I)

wherein X is S, SO, SO_2 or N—OCOR and R is a C_{1-4} primary or secondary alkyl or phenyl, optionally substituted by an ethyl or 1-2 methyl groups.

5,306,833

PREPARATION PROCESS FOR ARYLACETIC ACIDS AND THEIR ALKALI METAL SALTS

Jean-Claude Vallejos, and Yani Christidis, both of Paris, France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Feb. 3, 1993, Ser. No. 12,632

Claims priority, application France, Feb. 4, 1992, 92 01215

Int. Cl.[5] C07C *51/377, 67/297;* **C07D** *333/24*

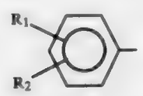
U.S. Cl. 549—79 **20 Claims**

1. Process for obtaining an arylacetic acid of general formula (I):



(I)

in which R represents a hydrogen atom or a C_1–C_4 alkyl radical and Ar represents an aromatic type radical selected from the group consisting of 2-thienyl, 3-thienyl, 1-naphthyl, 2-naphthyl, 1-(2-methoxy naphthyl), 3,4-methylenedioxy phenyl and the phenyls of general formula (II):



(II)

in which R_1 represents a hydrogen atom or a hydroxyl or a C_1–C_4 alkoxyl radical and R_2 represents a hydrogen atom or a C_1–C_4 alkyl radical, a C_1–C_4 alkoxyl radical or a hydroxyl radical, as well as their alkali metal salts, characterized in that the corresponding arylglycolic acid of general formula (III) or one of its alkali metal salts:



(III)

is reacted in a solvent with a hydrogen donor agent chosen from formic acid, or one of its alkali metal salts, phosphonic acid, phosphinic acid or one of their alkali metal salts, in the presence of a hydrogen transfer catalyst, which is isolated or, if desired, salified, said catalyst being metallic.

5,306,834

PROCESS FOR PREPARING OPTICALLY ACTIVE 4-METHYL-2-OXETANONE

Hidemasa Takaya, Shiga; Tetsuo Ohta, Kyoto, and Hidenori Kumobayashi, Tokyo, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 92,446

Claims priority, application Japan, Jul. 16, 1992, 4-210683; Jun. 30, 1993, 5-183490

Int. Cl.[5] C07D *305/12*

U.S. Cl. 549—263 **7 Claims**

1. A process for preparing optically active 4-methyl-2-oxetanone which comprises asymmetrically hydrogenating 4-methylene-2-oxetanone in the presence of a ruthenium-optically active phosphine complex.

5,306,835

METHOD FOR PRODUCING OCTADIENOLS

Keiichi Sato, Tokyo; Iwao Nakajima, Yokohama, and Yoko Misu, Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

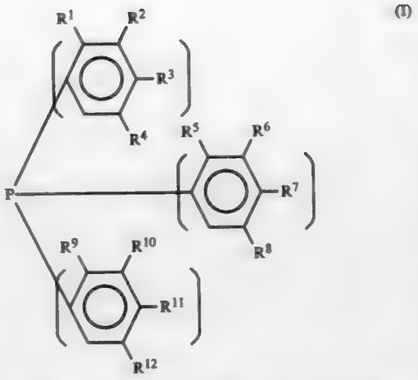
Division of Ser. No. 955,054, Oct. 1, 1992. This application Sep. 3, 1993, Ser. No. 115,636

Claims priority, application Japan, Oct. 2, 1991, 3-255341

Int. Cl.[5] C07F *15/00*

U.S. Cl. 556—16 **6 Claims**

1. A bis(phosphine) palladium complex composed of palladium and a phosphine of the formula (I):



(I)

wherein each of R^1, R^5 and R^9 which may be the same or different, is a hydrocarbon group, and each of R^2, R^3, R^4, R^6, R^7, R^8, R^{10}, R^{11} and R^{12} which may be the same or different, is hydrogen or a substituent, provided that at least one of them is an electron donative substituent.

5,306,836

VOLATILE CVD PRECURSORS BASED ON COPPER ALKOXIDES AND MIXED GROUP IIA-COPPER ALKOXIDES

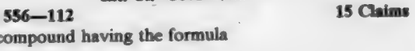
Andrew Purdy, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 828,634, Jan. 31, 1992, Pat. No. 5,213,844. This application Mar. 10, 1993, Ser. No. 34,802

Int. Cl.[5] C07F *1/08*

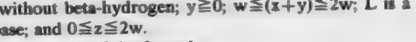
U.S. Cl. 556—112 **15 Claims**

1. A compound having the formula



in which $1 \leqq w \leqq 4$; R is a fluorinated alkyl group; $x \leqq 1$; Y is selected from the group consisting of alkoxy groups and alkyl groups without beta-hydrogen; $y \geqq 0$; $w \leqq (x+y) \leqq 2w$; L is a Lewis base; and $0 \leqq z \leqq 2w$.

13. A compound of the formula:



where M+Ca, Sr, or Ba; $1 \leqq a \leqq 4$; $1 \leqq b \leqq 4$; $(b+2a) \leqq c \leqq 2(b+a)$; and R is a fluorinated alkyl group.

5,306,837

INTERMEDIATES FOR AN OPTICALLY ACTIVE CYCLOBUTANE NUCLEOSIDE

Gregory S. Bisacchi, Lawrenceville, and Toomas Mitt, Plainsboro, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

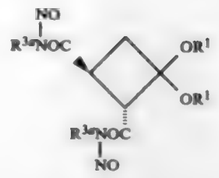
Division of Ser. No. 975,256, Nov. 12, 1992, Pat. No. 5,256,806, which is a division of Ser. No. 770,390, Oct. 3, 1991, Pat. No. 5,198,583, which is a division of Ser. No. 451,664, Dec. 19, 1989, Pat. No. 5,064,961. This application Jul. 15, 1993, Ser. No. 91,389

Int. Cl.[5] C07F *7/10*

U.S. Cl. 556—419 **3 Claims**

1. A compound having the formula

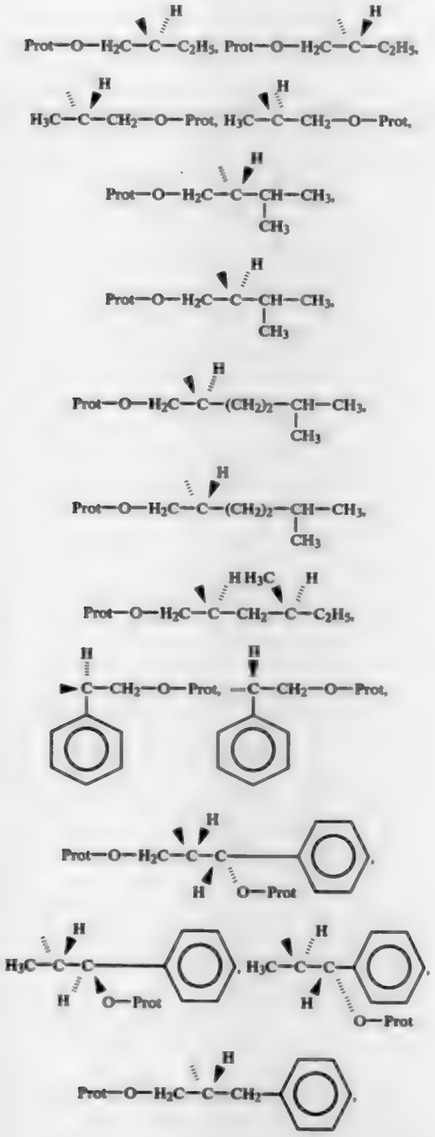
VOL 1161 ISS 4 AP 26 1994 UMI



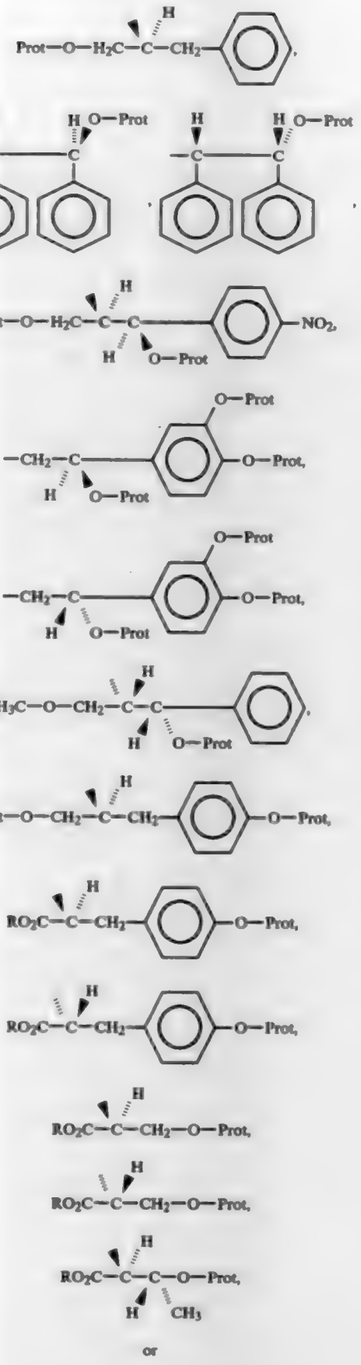
where

R^1 is straight or branched chain lower alkyl of 1 to 5 carbons,

R^{3a} is a chiral moiety of the formula



-continued



R is straight or branched chain lower alkyl of 1 to 5 carbons, and

Prot is t-butyldimethylsily, t-butyldiphenylsilyl, triisopropylsilyl, acetyl, benzoyl, triphenylmethyl, or 4'-methozyphenyldiphenylmethyl.

5,306,838

SILOXANE DERIVATIVES, PRODUCING METHOD THEREOF AND AGENTS INCLUDING SILOXANE DERIVATIVE

Yasushi Shioya, Chiba; Yuji Suzuki, Sakura; Ken Takeuchi, Ichikaimachi; Koji Yoshino, and Akira Kawamata, both of Utsunomiya, all of Japan, assignors to KAO Corporation, Tokyo, Japan

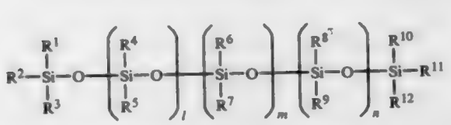
Continuation of Ser. No. 750,535, Aug. 27, 1991, Pat. No. 5,144,054. This application Aug. 7, 1992, Ser. No. 926,186

Claims priority, application Japan, Aug. 30, 1990, 2-228958; Sep. 26, 1990, 2-256732

Int. Cl.[5] C07F 7/04

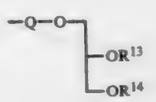
U.S. Cl. 556—445 14 Claims

1. A siloxane derivative represented by general formula (1)



(1)

wherein at least one of R^1 to R^{12} is a group represented by general formula (2)



(2)

wherein Q is a divalent hydrocarbon group having 4 to 20 carbon atoms, R^{13} and R^{14} are hydrogen atom or a hydrocarbon group having 1 to 5 carbon atoms, and at least one of R^{13} and R^{14} is hydrogen atom; the remaining R^1 to R^{12} are straight-chain, branched-chain or cyclic hydrocarbon groups having 1 to 30 carbon atoms or groups represented by general formula (3)

$$—X—R^{15} \quad (3)$$

wherein X is a divalent hydrocarbon group having an ether bonding and/or ester bonding and R^{15} is a straight-chain, branched-chain or cyclic hydrocarbon group having 1 to 30 carbon atoms; l, m and n are numbers of 0 to 200, and at least one of R^1 to R^3 and R^{10} to R^{12} is a group represented by general formula (2) when l+m+n=0.

5,306,839

PHOSPHITE COMPOUNDS

Keiichi Sato; Masaki Takai, both of Tokyo; Yuji Kawarasgi, Yokohama, and Tooru Ookoshi, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 850,267, Mar. 12, 1992. This application Mar. 2, 1993, Ser. No. 25,255

Claims priority, application Japan, Mar. 14, 1991, 3-049862

Int. Cl.[5] C07F 9/02

U.S. Cl. 558—70 10 Claims

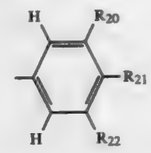
1. A phosphite compound of formula (III):

$$P(OR_{10})(OR_{11})(OR_{12}) \quad (III)$$

wherein each of R_{10} and R_{11} is a 2-naphthyl group in which at least the 3-, 6- and 8-positions are substituted by the same or different hydrocarbon groups of formula (V):

$$—CR_{16}R_{17}R_{18} \quad (V)$$

wherein each of R_{16}, R_{17} and R_{18} is a hydrogen atom or a hydrocarbon group, and R_{12} is an alkyl group or a phenyl group of the formula:



wherein each of R_{20}, R_{21} and R_{22} is a hydrogen atom or an optional organic group.

5,306,840

PROCESS FOR PREPARING PURE L-α-GLYCERYLPHOSPHORYL-D-MYOINOSITOL AND ITS SALTS

Giovanni Tronconi, Lodi, Italy, assignor to Euticals S.p.A., Milan, Italy

PCT No. PCT/EP91/00216, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO91/12256, PCT Pub. Date Aug. 22, 1991

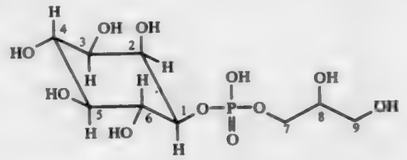
PCT Filed Feb. 5, 1991, Ser. No. 916,978

Claims priority, application Italy, Feb. 9, 1990, 19323 A/90

Int. Cl.[5] C07F 9/10, 9/117

U.S. Cl. 558—146 5 Claims

1. A process for the production of pure L-α-glycerylphosphoryl-D-myoinositol (GPI) of formula I



which consists of

a) suspending a mixture of crude or partially purified glycerophosphatides which includes the glycerophosphatide of inositol in a solvent which is methanol or ethanol, to obtain a suspension, adding to said suspension sodium or potassium methoxide, ethoxide or t-butoxide to obtain the crude Na+ or K+ salt of L-α-glycerylphosphyoryl-D-myoinositol, in the form of a first insoluble residue;

b) filtering said first insoluble residue from step a) and suspending again said insoluble residue in the same solvent as in step a) to obtain a second suspension;

c) adjusting the pH of said second suspension from step b) to

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a value of 4–7 with a mineral acid or an organic acid to obtain a second insoluble residue and filtering said second insoluble residue containing the crude Na+ or K+ salt of L-α-glyceryl-phosphoryl-D-myoinositol;

d) suspending said second insoluble residue from step c) in water and adding a second solvent which is methanol, ethanol or isopropanol in a Vol/Vol ratio with respect to water of 1.5 to 3 to obtain a third suspension, filtering off the third insoluble residue and washing said third insoluble residue with a mixture of water and said second solvent to obtain an extract of water and said second solvent;

e) distilling off the solvent from said extract from step d) to obtain an aqueous solution;

f) passing said aqueous solution from step e) through a cation exchange resin in the H form whereby Na+ or K+ exchanges with the H+ of said resin and said L-α-glyceryl-phosphoryl-D-inositol of formula I is eluted by washing said resin with water to obtain a second aqueous solution;

g) passing said second aqueous solution from step f) through a weakly basic anion exchange resin in the OH form whereby said L-α-glycerylphosphoryl-D-inositol is adsorbed on said resin in the anion form due to the exchange of H for the OH of said resin;

h) washing said resin from step g) with water, then with a dilute solution of formic, acetic or propionic acid in the concentration of 1–3% by weight per volume of water to remove impurities less acidic than said L-α-glycerylphosphoryl-D-inositol which is adsorbed on said resin in the anion form;

i) eluting said resin from step h) with a 5–10% by weight solution of formic acid, acetic acid or propionic acid per volume of water to obtain an aqueous solution of pure GPI to obtain a third solution;

j) concentrating said third solution from step i), to obtain a concentrate wherein said GPI has a concentration not above 10% w/v, pouring the concentrated solution into acetone to obtain GPI as a semi-solid product, decanting the liquid, adding ethanol to said semi-solid product, to obtain a precipitate, filtering the precipitate and drying to obtain pure L-α-glycerylphosphoryl-D-myoinositol (GPI).

5,306,841

DERIVATIVES OF INOSITOL, PREPARATIONS CONTAINING THEM AND THEIR USE

Hans Bundgaard, deceased, late of Horsholm, Denmark, and by Charlotte Bundgaard, legal representative, Tjorneveg 36, Horsholm, Denmark DK-2970

PCT No. PCT/SE92/00489, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO93/01197, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 30, 1992, Ser. No. 955,708

Claims priority, application Sweden, Jul. 3, 1991, 91 02068

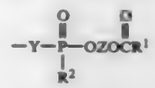
Int. Cl.[5] C07F *9/117, 9/144, 9/40*; A61K *31/66*

U.S. Cl. 558—160 **4 Claims**

1. A compound having the formula



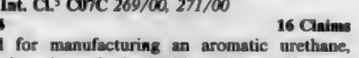
where X is a radical of myo-inositol or a radical of a configuration isomer thereof where at least one R is



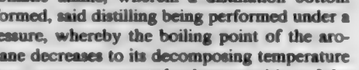
where Y is

(1) oxygen or

(2) a straight or branched alkyl with 1–10 carbon atoms, where Z is



where A^1 and A^2 are the same or different and are hydrogen or methyl and n is 3–10, or



where A^1 and A^2 are hydrogen or methyl and where m is 1–5, where R^1 is hydrogen, straight or branched alkyl, aryl or alkaryl, alkoxy or aryloxy, where R^2 is

(1) R^1,

(2) hydroxyl or

(3) $OZOCOR^1$,

and where the remaining R is/are hydroxyl.

5,306,842

METHOD OF MANUFACTURING AROMATIC URETHANES

Takao Ikariya; Masanori Itagaki; Masatsugu Mizuguchi; Makoto Miyazawa, and Sachiko Yamamoto, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 495,353, Mar. 16, 1990, Pat. No. 5,130,464. This application Apr. 29, 1992, Ser. No. 875,459

Int. Cl.[5] C07C *269/00, 271/00*

U.S. Cl. 560—24 **16 Claims**

1. A method for manufacturing an aromatic urethane, wherein said urethane is synthesized without the use of a catalyst, and the urethane produced is purified, said method comprising:

(a) reacting a N,N'-disubstituted urea and an organic hydroxyl compound to form a reaction mixture containing an aromatic urethane and as a by-product, a primary aromatic amine,

(b) distilling the reaction mixture from step (a) to distill off and remove said organic hydroxyl compound and the primary aromatic amine, wherein a distillation bottom product is formed, said distilling being performed under a reduced pressure, whereby the boiling point of the aromatic urethane decreases to its decomposing temperature thereof or less, so as to prevent the decomposition of the aromatic urethane in the reaction mixture,

(c) separating and removing the N,N'-disubstituted urea from the distillation bottom product obtained in step (b), by solvent extraction to form an extract phase, and

(d) separating and purifying the aromatic urethane in the extract phase.

5,306,843

Patent Not Issued For This Number

5,306,844

TARTARIC ACID AMIDE DERIVATIVE AND METHOD OF PRODUCING THE SAME

Fumio Toda, and Koichi Tanaka, both of Ehime, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

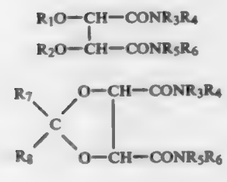
Continuation of Ser. No. 215,023, Jul. 5, 1988, abandoned. This application May 11, 1990, Ser. No. 522,065

Claims priority, application Japan, Jul. 6, 1987, 62-166933

Int. Cl.[5] C07C *235/06*

U.S. Cl. 564—160 **16 Claims**

1. A method of separating an optically active target component comprising the steps of mixing a d- or l-tartaric acid amide derivative serving as a host compound with a solution comprising a mixture including racenic components, causing said host compound to combine with a guest compound contained in said solution to form a clathrate compound and crystallizing said clathrate compound, said tartaric acid amide derivative being expressed by the following Formula (A) or (B):



(A)

(B)

wherein R_1 and R_2 each denote a straight chain or branched chain primary, secondary or tertiary alkyl groups of C_1 to C_{10}, a straight or branched chain primary, secondary or tertiary aralkyl group of C_1 to C_{10}, or an alicyclic or aromatic group of C_5 to C_{15}, R_1 and R_2 being the same as or different from each other; R_3, R_4, R_5 and R_6 each denote a straight chain or branched chain primary, secondary or tertiary alkyl groups of C_1 to C_{10}, a straight or branched chain primary, secondary or tertiary aralkyl group of C_1 to C_{10}, or an alicyclic or aromatic group of C_5 to C_{15}, R_3, R_4, R_5 and R_6 being the same as or different from each other; and R_7 and R_8 each denote a straight chain or branched chain primary, secondary or tertiary alkyl groups of C_1 to C_{10} or a straight or branched chain primary, secondary or tertiary aralkyl group of C_1 to C_{10}, R_7 and R_8 being the same as or different from each other, or the same alicyclic group of C_5 to C_{15}.

5,306,845

METHOD FOR PRODUCING AN ALDEHYDE

Toshiharu Yokohama; Naoko Fujita, both of Yokohama, and Takao Maki, Fujisawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 82,366

Int. Cl.[5] C07C *45/41*

U.S. Cl. 568—484 **13 Claims**

1. A method for producing an aldehyde, which comprises hydrogenating a carboxylic acid or its alkyl ester with molecular hydrogen in the presence of a catalyst, wherein (1) chromium oxide of high purity having a specific surface area of at least 10 m^2/g and a total content of sodium, potassium, magnesium and calcium of not more than 0.4 wt %, is used as the catalyst, and (2) the hydrogenation reaction is conducted while maintaining the carboxylic acid or its alkyl ester at a concentration of not more than 10 vol %.

5,306,846

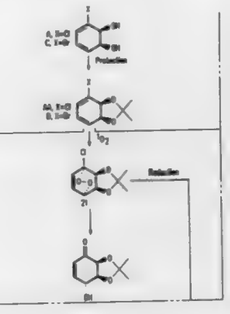
SYNTHESIS OF CYCLITOLS FROM SUBSTITUTED ARENE DIOLS

Thomas Hudlicky, Blacksburg, Va., assignor to Virginia Tech Intellectual Properties, Blacksburg, Va.

Continuation-in-part of Ser. No. 636,396, Dec. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 509,341, Apr. 16, 1990, abandoned. This application Dec. 6, 1991, Ser. No. 802,783

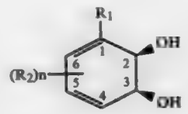
Int. Cl.[5] C07C *35/08*

U.S. Cl. 568—832 **26 Claims**



1. A method for the stereoselective production of a cyclitol, said method comprising:

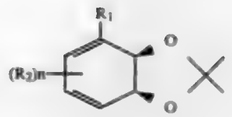
a) providing an arene diol of the formula:



wherein R_1 is halogen, lower alkyl or lower alkenyl; R_2 is halogen or hydrogen; and n is 0–3; and

b) protecting such diol as a chiral diol by adding a catalytic amount of acid in an appropriate solvent with stirring at room temperature, to allow for face selectivity in subsequent hydroxylation or oxygenation methods, said protected diol having the formula:

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5,306,847

MANUFACTURE OF 1,2-PROPYLENE GLYCOL

Eugen Gehrer, Ludwigshafen, and Wolfgang Harder, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,318

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138792

Int. Cl.[5] C07C *29/132, 31/18*

U.S. Cl. 568—863 5 Claims

1. A process for the manufacture of 1,2-propylene glycol, wherein dihydroxyacetone is hydrogenolytically converted to 1,2-propylene glycol in the presence of a solvent using a heterogeneous hydrogenation catalyst at a temperature of above 200° C. and at a pressure of from 1 to 600 bar.

5,306,848

HYDROGENATION CATALYST FOR OXO ALCOHOL PROCESS

Jose M. Vargas, Baton Rouge, La., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Oct. 16, 1992, Ser. No. 962,428

Int. Cl.[5] C07C *29/16, 31/125, 29/90*

U.S. Cl. 568—883 9 Claims

1. In the process for preparing oxo alcohols by the cobalt catalyzed hydroformylation of olefins, which process comprises the sequential steps of

(a) hydroformylation of olefins by reaction with carbon monoxide and hydrogen in the presence of a cobalt hydroformylation catalyst to produce a crude reaction product;

(b) demetalling the crude product of step (a) to recover therefrom homogeneous cobalt catalyst and separate therefrom crude alcohol product, the crude alcohol product containing 20 wt. % or more of carbonyl compounds;

(c) hydrogenating the crude alcohol product at an elevated temperature and pressure to reduce the carbonyl compounds to alcohols;

(d) distilling the product of step (c) and recovery therefrom alcohol products containing very small proportions of carbonyl compounds; and

(e) hydrofinishing the product to step (d) to provide a substantially pure alcohol product, the improvement which comprises conducting step (c) or (e), or both, in the presence of a catalyst being a supported trimetallic nickel, cobalt and molybdenum catalyst.

5,306,849

PROCESS FOR THE PREPARATION OF HALOGENATED AROMATICS

Norbert Lui, Cologne; Dietmar Bielefeldt, Ratingen, and Albrecht Marhold, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

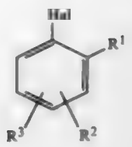
Filed Jul. 28, 1993, Ser. No. 98,689

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1992, 4225763

Int. Cl.[5] C07C *17/33*

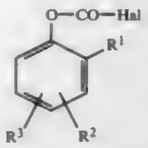
U.S. Cl. 570—173 13 Claims

1. A process for the preparation of halogenated aromatics of formula (I):



(I)

in which
Hal is fluorine or chlorine,
R^1 is C_1–C_6-alkyl,
R^2 is hydrogen or C_1–C_6-alkyl and
R^3 is hydrogen, C_1–C_6-alkyl, fluorine, chlorine or bromine,
comprising heating in the liquid phase halogenoformic acid esters of formula (II)



(II)

in which the symbols used are as defined for formula (I), to 80° to 280° C. in the presence of hydrogen fluoride or a catalytic amount of one or more Lewis acids from the group comprising aluminium halides, iron halides and antimony halides.

5,306,850

PURIFICATION PROCESS FOR A HYDROFLUOROALKANE

Gilles Darago, Tavaux, France, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Mar. 31, 1993, Ser. No. 40,992

Claims priority, application France, Apr. 3, 1992, 92 04277

Int. Cl.[5] C07C *17/38, 19/02*

U.S. Cl. 570—178 18 Claims

1. A purification process for a hydrofluoroalkane, comprising:

distilling said hydrofluoroalkane to separate therefrom impurities which are less volatile than said hydrofluoroalkane, said distillation performed in the presence of approximately 0.005 g to approximately 1 g of an acid-scavenger per kilo of hydrofluoroalkane subjected to the distillation, and

separating said impurities from said hydrofluoroalkane.

5,306,851

HIGH VISCOSITY INDEX LUBRICANT FLUID

Margaret M. Wu, Skillman, N.J.; Dong-Ming Shen, Langhorne, Pa., and Catherine S. H. Chen, Berkeley Heights, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 23, 1992, Ser. No. 979,962

Int. Cl.[5] C10M *127/00;* C07C *13/615*

U.S. Cl. 585—22 18 Claims

1. A composition containing less than about 5 weight percent C_9- components, said composition comprising at least about 10 different diamondoid compounds selected from the group consisting of methyl-substituted and ethyl-substituted adamantane, diamantane, and triamantane, said composition comprising from about 30 to about 70 weight percent substituted and unsubstituted adamantanes, from about 20 to about 60 weight percent substituted and unsubstituted diamantanes, and from about 3 to about 20 weight percent substituted and unsubstituted triamantanes, wherein each of said selected diamondoid compounds comprises no more than about 10 weight percent of said composition.

5,306,852

PROCESS FOR SELECTIVE HYDROGENATION, IN PARTICULAR OF DIOLEFINS IN STEAM CRACKING VOLATILES, WITH A CATALYST IN THE FORM OF BEDS WHICH ARE USED SUCCESSIVELY

Jean Cosyns, Maule; Patrick Sarrazin, Rueil Malmaison; Jean-Paul Boitiaux, Poissy, and Charles Cameron, Paris, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Jan. 28, 1993, Ser. No. 10,386

Claims priority, application France, Jan. 28, 1992, 92 00992

Int. Cl.[5] C07C *5/09*

U.S. Cl. 585—254 8 Claims

1. A process for the hydrogenation of a hydrocarbon charge to obtain a final product, p_p, having a desired quality by contacting the charge with p catalytic beds, $n_1 \ldots n_i \ldots n_p$, wherein n_i designates each bed n_1 to n_p, and the initial value of i is p−1, said beds being separate and containing the same catalyst, which process comprises:

(A) introducing the charge into bed n_p and removing the final product p_p;

(B) when the final product p_p no longer attains the desired quality, stopping the introduction of the charge into the bed n_p;

(C) simultaneously with (B), introducing the charge into a bed n_i, and obtaining a product p_i;

(D) introducing the product p_i from the bed n_i into the bed n_p and removing therefrom the final product p_p;

(E) when the final product p_p no longer attains the desired quality, stopping the introduction of the charge into the bed n_i;

(F) simultaneously with (E), introducing the charge into the bed n_{i-1}, and obtaining a product p_{i-1};

(G) introducing the product p_{i-1} obtained from the bed n_{i-1} through each of beds n_i to n_p successively;

(H) removing the final product P_p; and

(I) repeating steps (E) through (H) until i has assumed all the values from p to 1.

5,306,853

DIPHOSPHINES CONTAINING SILANE GROUPS, IMMOBILIZED DIPHOSPHINES AND THE USE THEREOF AS HYDROGENATION CATALYSTS

Benoit Pugin, Münchenstein; Manfred Müller, Dagmersellen, and Felix Spindler, Starrkirch-Wil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 823,517, Jan. 21, 1992, Pat. No. 5,244,857.

This application Jun. 17, 1993, Ser. No. 78,696

Claims priority, application Switzerland, Jan. 25, 1991, 219/91-0

Int. Cl.[5] C07C *5/10*

U.S. Cl. 585—269 7 Claims

1. A process for the hydrogenation of a compound containing a carbon-carbon double bond or a carbon/hetero atom double bond, which comprises hydrogenating said compound in the temperature range from −20° to +80° C. and under a hydrogen pressure of 10^5 to 10^7 Pa in the presence of a catalytic amount of a solid carrier material which contains a diphosphine rhodium or iridium complex fixed on the surface thereof, which carrier material has the formula IV or IVa



(IV)



(IVa)

wherein Y denotes two monoolefin ligands or a diene ligand, M is Ir(I) or Rh(I), Z is —Cl, —Br or —I, $A^{\ominus}$ is the anion of an oxyacid or complex acid, T is a solid carrier material, r is 0, 1 or 2, m and n are m and n are each independently of the other 0 or 1, R_1 is linear or branched C_1–C_{12}alkyl, unsubstituted C_5–C_6cycloalkyl or C_5–C_6cycloalkyl which is substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or is phenyl or benzyl, or both substituents R_1 in a group $(R_1)_2P$ together are o,o'-diphenylene, $—R_2—X—$ is a bond or $—(C_xH_{2x}—O)_y—$, or X —is O— and R_2 is C_1–C_6alkylene, x is an integer from 2 to 6 and y is an integer from 2 to 6, R_3 is C_2–C_{18}alkylene, phenylene or benzylene, and R_4 is C_1–C_6alkyl or phenyl.

5,306,854

TWO STEP PROCESS FOR PRODUCTION OF LIQUID HYDROCARBONS FROM NATURAL GAS

Vasant R. Choudhary; Subhash D. Sansare, and Amarjeet M. Rajput, all of Pune, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Jul. 10, 1992, Ser. No. 911,448

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—315 10 Claims

1. A two-step process for conversion of natural gas to liquid hydrocarbons of gasoline range comprising the following consecutive steps:

1) continuously passing natural gas, steam, and at least one of either oxygen or air through a tubular reactor in the absence of a catalyst at a pressure of about 0.5–3.0 atm, a temperature of about 600°–1100° C., an O_2/natural gas ratio of about 0.001–0.5, a steam/natural gas ratio of about 0.001–10 and a gas hourly space velocity of about 200–50,000 h^{-1} to provide an intermediate product stream, separating water from the intermediate product stream to provide a gaseous product stream comprising C_2–C_4 olefins, methane, ethane, CO, CO_2, propane, butane, oxygen, hydrogen, and traces of higher hydrocarbons and

2) passing the gaseous product stream from step 1) over an acid catalyst comprising platinum-containing high silica pentasil zeolite having channel diameters of 5–6 A° in a fixed bed reactor at a pressure of about 1–50 atm, a temperature of about 250°–700° C. and at a gas hourly space velocity of about 100–50,000 h^{-1} to provide liquid hydrocarbons and oxides of carbon, separating the liquid hydrocarbons and oxides of carbon to provide liquid hydrocarbons in the gasoline range.

5,306,855

CATALYTIC PROCESS FOR CONVERTING LOWER ALKANES TO ESTERS, ALCOHOLS, AND TO HYDROCARBONS

Roy A. Periana, San Jose; Douglas J. Taube, Hayward; Henry Taube, Stanford, and Eric R. Evitt, Mountain View, all of Calif., assignors to Catalytica, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 656,910, Feb. 15, 1991, Pat. No. 5,233,113, and Ser. No. 766,200, Sep. 26, 1991, abandoned. This application Nov. 27, 1991, Ser. No. 799,446

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 58 Claims

1. A process for converting one or more lower alkanes to higher molecular weight hydrocarbons comprising the steps of:

a. contacting one or more lower alkanes, an oxidizing agent, an oxidation resistant acid with a Pka < 2.0, and a catalyst in at least a catalytic amount comprising one or more metals selected from the group consisting of the class "B" metals of the Mendeleev Table of elements and Pearson "soft" and "borderline" metal cations at esterification conditions to produce a lower alkyl oxy-ester of the acid in a molar amount greater than the molar amount of the metal,

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b. converting the lower alkyl oxy-ester of the acid to an alkyl intermediate, and

c. catalytically converting the alkyl intermediate to higher molecular weight hydrocarbons.

5,306,856

METHOD OF MANUFACTURING METHYLIDENE-GROUP-CONTAINING α, ω-UNSATURATED OLIGOMERS FROM α, ω-DIOLEFINS IN THE PRESENCE OF ORGANOALUMINUM COMPOUNDS AS CATALYSTS

Roland Streck; Jaroslaw Monkiewicz, both of Marl, and Hans G. Wey, Muelheim/Ruhr, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 897,388

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1991, 4119332

Int. Cl.[5] C07C *2/46*

U.S. Cl. 585—508 **9 Claims**

1. A method of manufacturing α,ω-unsaturated oligomers containing at least one methylidene group from α,ω-diolefins in the presence of a catalytic amount of organoaluminum compounds, comprising contacting α,ω-diolefins in the liquid phase, at 150°–350° C., with a catalytic amount of an organoaluminum compounds having the formula AlX_3 or AlX_2H, where X represents an aliphatic, alicyclic, or aromatic hydrocarbon group with 1–30 C atoms, and recovering said oligomer containing at least one methylidene group.

5,306,857

Patent Not Issued For This Number

5,306,858

OXIDIZING PARAFFIN HYDROCARBONS

George F. Salem; Charles J. Besecker, both of Cleveland Heights; Susan M. Kenzig; Walter J. Kowlaski, both of Valley View, and Larry M. Cirjak, Burton, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 20, 1992, Ser. No. 979,035

Int. Cl.[5] C07C *5/327*

U.S. Cl. 585—658 **20 Claims**

1. A process for oxidizing a paraffin hydrocarbon containing 2 to 5 carbon atoms and no quaternary carbon atom to an olefin having the same number of carbon atoms as said paraffin by contacting said paraffin in a reaction zone with molecular oxygen and a VAPO-5 microporous molecular sieve as catalyst under conditions sufficient to effect the recited oxidizing reaction.

5,306,859

ALKYLATION CATALYST REGENERATION UTILIZING POLYVINYLPYRIDINE AND AMINE SUBSTITUTED STYRENE DIVINYLBENZENE COPOLYMER CONTACT MATERIALS

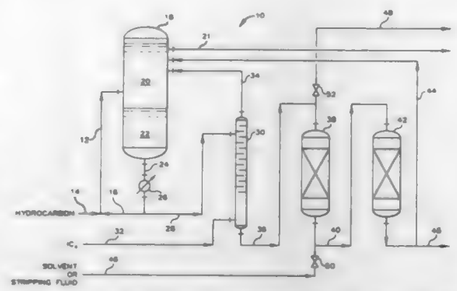
Alan D. Eastman, Bartlesville, Okla.; Ronald G. Abbott, Kingwood, Tex., and Robert B. Eldridge, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 935,807, Aug. 27, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 77,142

Int. Cl.[5] C07C *2/62*

U.S. Cl. 585—724 **49 Claims**

1. A process comprising contacting a sulfone-containing mixture, comprising a sulfone component and Acid-Soluble Oil (hereinafter "ASO"), with a particulate solid of a reversible base selected from the group consisting of polyvinylpyridine, amine substituted styrene divinylbenzene copolymer and mixtures thereof under conditions suitable for the removal of at least a portion of the ASO component from said sulfone-containing mixture to produce a treated sulfone-containing mixture.



5,306,860

METHOD OF HYDROISOMERIZING PARAFFINS EMANATING FROM THE FISCHER-TROPSCH PROCESS USING CATALYSTS BASED ON H-Y ZEOLITE

Pierre-Henri Bigeard, Vienne; Alain Billon, Le Vesinet; Pierre Dufresne, Rueil Malmaison, and Samuel Mignard, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed May 21, 1992, Ser. No. 886,224

Claims priority, application France, May 21, 1991, 91 06140

Int. Cl.[5] C07C *5/13, 5/22*

U.S. Cl. 585—737 **21 Claims**

1. A method of hydroisomerizing charges emanating from a Fischer-Tropsch process containing unsaturated and oxygenated molecules, comprising:

(a) reacting hydrogen with the charge in contact with a first catalyst in a first reaction zone, the first catalyst comprising at least one alumina-based matrix and at least one hydro-dehydrogenation component to remove the unsaturated and oxygenated molecule;

(b) contacting the effluent from the first reaction zone with a second catalyst in a second reaction zone wherein said effluent is hydroisomerized, the second catalyst comprising:

20% to 97% by weight of at least one matrix;

3% to 80% by weight of at least one Y zeolite in hydrogen form, the zeolite having an SiO_2/Al_2O_3 molar ratio of over 4.5, a sodium content of less than 1% by weight determined at 1100° C. under calcining conditions, an a_o crystal parameter of the elemental mesh of less than 24.70×10^{-10}, and a specific surface area determined by the BET method of over 400 $m^2.g^{-1}$; and

at least one hydro-dehydrogenation component;

(c) withdrawing a hydroisomerized effluent from said second reaction zone; and

(d) dewaxing a fraction of said effluent to obtain an oil having a viscosity index of at least 130 and a pour point no higher than −12° C.

5,306,861

TEMPORARY WALL COVERING

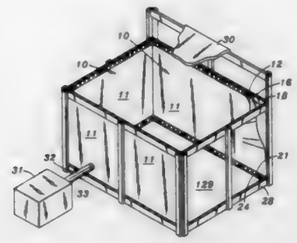
Philip I. Amos, and Diane L. Lickar, both of 1634 Prospect Ave., Hermosa Beach, Calif. 90254

Continuation of Ser. No. 607,308, Oct. 31, 1990. This application Jul. 31, 1992, Ser. No. 925,249

Int. Cl.[5] B01D *46/06; E04H 9/00*

U.S. Cl. 588—249 **21 Claims**

1. A flexible barrier between substrates comprising in combination a flexible sheet and a material with an adhesive surface, the flexible sheet having a first face suitable for receiving the material with an adhesive surface so that the material adheres to a first substrate, the first substrate being at a position adjacent an interface of a ceiling and a wall, a series of apertures through the sheet and spaces between the apertures located opposite the first substrate portion, the apertures being sufficiently large in size relative to the spaces so that when the adhesive surface material is placed over the apertures, the spaces provide an adhesive bond between the material and the first face, and the apertures provide sufficient exposure of the adhesive surface through the apertures to the first substrate, the adhesive material being in physical contact with the sheet and being over the apertures so as to effect adhesion of the



material to the first substrate, the flexible sheet being extended to a second substrate spaced from the first substrate, the second substrate being at a position adjacent the interface of a wall amd a floor, the sheet having a second series of apertures through the sheet with spaces between the apertures, the spaces being adjacent the second substrate, the material with an adhesive surface being in physical contact with the sheet and being across the second series of apertures such that the adhesive surface opposite the second series of apertures adheres to the second substrate and the material over the spaces between the second series of apertures adheres to these spaces whereby the sheet is effectively secured between the first substrate and the second substrate.

5,306,862

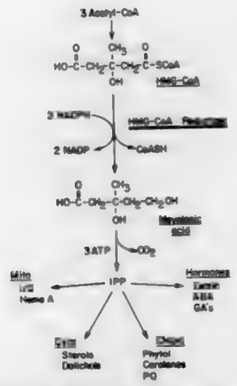
METHOD AND COMPOSITION FOR INCREASING STEROL ACCUMULATION IN HIGHER PLANTS

Joseph Chappell, Lexington, Ky.; Court A. Saunders, Clarendon Hills, Ill.; Fred R. Wolf, Naperville, Ill., and Richard E. Cuellar, Glen Ellyn, Ill., assignors to AMOCO Corporation, Naperville, Ill.

Filed Oct. 12, 1990, Ser. No. 596,467

Int. Cl.[5] A01H *1/04, 1/02;* C12N *15/00;* C12P *7/22*

U.S. Cl. 800—205 **22 Claims**



14. A transformed plant which overaccumulates sterols relative to a native, untransformed plant, wherein said transformed plant has a total sterol level of about twice that found in a native, untransformed plant and said transformed plant also has a increased cycloartenol level relative to that found in a native, untransformed plant, said transformed plant containing a genome comprising a DNA construct comprising a structural gene, said structural gene consisting essentially of nucleotides encoding an HMG-CoA reductase enzyme catalytic region and at least a portion of the HMG-CoA reductase linker region.

5,306,863

TRANSFORMED PLANT WHICH EXPRESSES AN INSECTICIDALLY EFFECTIVE AMOUNT OF A BOWMAN-BIRK TRYSPIN INHIBITOR FROM VIGNA UNGUICULATA IN LEAVES, STEMS OR ROOTS, AND A METHOD FOR THE PRODUCTION THEREOF

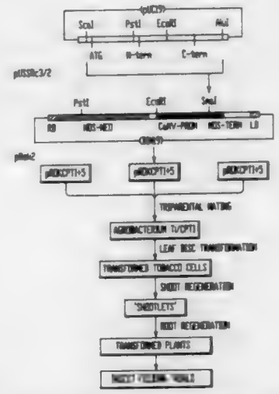
Vaughan A. Hilder, Merryoaks; Angharad M. R. Gatehouser, Stanley; John A. Gatehouse, both of Stanley; Donald Boulter, Durham City; Richard F. Barker, Barhill, and Michael Bevan, Norwich, all of Great Britain, assignors to Agricultural Genetics Company Limited, Cambridge, England

Division of Ser. No. 656,039, Feb. 19, 1991, Pat. No. 5,218,104, which is a continuation of Ser. No. 492,337, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 134,842, Dec. 18, 1987, abandoned. This application Dec. 29, 1992, Ser. No. 997,911

Claims priority, application United Kingdom, Dec. 19, 1986, 8630448; Nov. 2, 1987, 8725610

Int. Cl.[5] A01H *5/00, 4/00;* C12N *15/00, 15/09*

U.S. Cl. 800—205 **21 Claims**



11. A transformed plant which contains and expresses a Bowman-Birk trypsin inhibitor from *Vigna unguiculata* in leaves, stems or roots in an insecticidally-effective amount, or an offspring of said transformed plant which contains and expresses a Bowman-Birk trypsin inhibitor from *Vigna unguiculata* in leaves, stems or roots in an insecticidally-effective amount.

5,306,864

INCREASING THE ANTHER CULTURABILITY OF MAIZE

Joseph F. Petolino, Urbana, Ill., assignor to United AgriSeeds, Savoy, Ill.

Continuation of Ser. No. 657,884, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 279,467, Dec. 2, 1988, abandoned. This application Feb. 18, 1992, Ser. No. 839,024

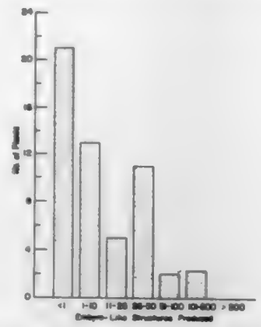
Int. Cl.[5] A01H *5/00, 4/00, 1/04*

U.S. Cl. 800—230 **9 Claims**

1. A method for the production of a maize plant having

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improved anther culturability, the steps of the method comprising (a) providing anthers from at least one heterozygous donor maize plant having the ability to be anther cultured, (b) regenerating, from anthers obtained from the donor plant, at least two microspore-derived parent plants capable of being intermated, (c) intermating the regenerated plants to produce an F_1 population, and (d) self-pollinating or cross-pollinating individuals of the F_1 population to generate at least one F_2 population having a mean frequency response of at least 10% greater than the anther frequency response of any parent, wherein individual plants of said F_2 population have a genome identified by the following restriction fragment length polymorphism: a band of about 10.8 kb when digested with restriction enzyme EcoRI and probed with Ceres 60 probe and a



band of about 17.0 kb when digested with restriction enzyme SstI and probed with Ceres 135.

5,306,865

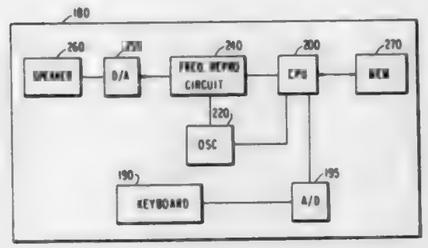
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT OR TONE GENERATOR EMPLOYING MODIFIED EASTERN MUSIC TRU-SCALE OCTAVE TRANSFORMATION TO AVOID OVERTONE COLLISIONS

James A. Dinnan; Joseph A. Dinnan; Thomas P. Dinnan, and James W. Dinnan, all of Athens, Ga., assignors to Meta-C Corp., Athens, Ga.

Filed Dec. 18, 1989, Ser. No. 451,837

Int. Cl.[5] G10C *3/12*

U.S. Cl. 84—622 **6 Claims**



1. In an electronic musical instrument for playing Eastern music in accordance with Eastern tonalities, comprising:

a keyboard, including a plurality of keys which may be depressed singly or in combination; and

means for reproducing said Eastern tonalities in accordance with ones of said keys being depressed singly or in combination, wherein depression of combinations of said keys normally results in overtone collision;

the improvement wherein said reproducing means includes means for eliminating said overtone collision when said ones of said keys are depressed in combinations, said overtone collision eliminating means comprising means for reproducing musical notes in accordance with a 24-tone fixed interval scale system for reproducing said Eastern tonalities;

wherein said means for eliminating said overtone collision comprises means for reproducing notes of a musical scale in accordance with the following octave transformation:

RATIOS	NOTE	FREQUENCY	INTERVAL
1:1	C^0	300	12.5
25:24	$C^\sharp$	312.5	12.5
13:12	$D^\flat$	325	12.5
9:8	D	337.5	12.5
7:6	$D^\sharp$	350	12.5
29:24	$E^\flat$	362.5	12.5
5:4	E	375	12.5
31:24	$E^\sharp$	387.5	12.5
4:3	$F^\flat$	400	12.5
11:8	F	412.5	12.5
17:12	$F^\sharp$	425	12.5
35:24	$G^\flat$	437.5	12.5
3:2	G	450	12.5
37:24	$G^\sharp$	462.5	12.5
19:12	$H^\flat$	475	12.5
13:8	H	487.5	12.5
5:3	$H^\sharp$	500	12.5
41:24	$A^\flat$	512.5	12.5
7:4	A	525	12.5
43:24	$A^\sharp$	537.5	12.5
11:6	$B^\flat$	550	12.5
15:8	B	562.5	12.5
23:12	$B^\sharp$	575	12.5
47:24	$C^\flat$	587.5	12.5
2:1	C^1	600.	

5,306,866

MODULE FOR ELECTRONIC PACKAGE

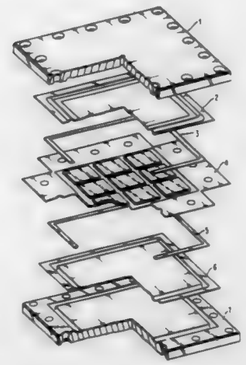
Harald W. Gruber, Herrenberg; Heinz G. Horbach, Gechigen; Gunther W. Kötzle, Boeblingen; Thomas Ludwig, Sindelfingen, and Helmut Schettler, Dettenhausen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1992, Ser. No. 867,953

Claims priority, application European Pat. Off., Jun. 6, 1991, 91109299.7

Int. Cl.[5] H05K *7/20*

U.S. Cl. 174—15.1 **11 Claims**



1. A module for providing a housing for an electronic conductive parts, comprising:

a top metal shell;

a bottom metal shell being assembled with said top metal shell and forming a cavity with said top metal shell for embedding said package therein, said cavity having inner walls, and said package making no contact with the inner walls of said cavity;

a plurality of flexible thermally conductive foils disposed in said cavity and being adjustable for said package, and being isolated from the electrical conductive parts of said package upon installation;

a cooling liquid disposed between said metal shells and said foils;

circuit means for connecting said package to a component external of said module; and

balancing means for balancing pressure and volume between said shells.

5,306,867

CABLES WHICH INCLUDE WATERBLOCKING PROVISIONS

Kent B. Connole, Gahanna, Ohio; Richard S. Cuprak, Tempe; Myles H. Grunewald, Phoenix, both of Ariz.; David M. Mitchell, Decatur, Ga.; Gabriel P. Pellicciotti, Phoenix, and Albert S. Tingley, Glendale, both of Ariz., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 31, 1992, Ser. No. 938,095

Int. Cl.[5] H01B *7/28*

U.S. Cl. 174—23 R **13 Claims**

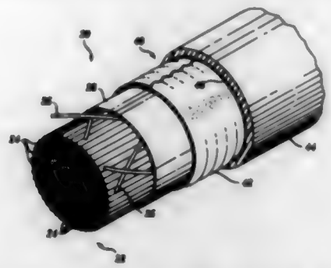
1. A cable, which comprises:

a plurality of longitudinally extending transmission media; and

a waterblocking material which comprises a mixture comprising a filling composition which is disposed in interstices among the transmission media, the filling composition including a styrene-rubber block copolymer, a compatible oil and polyethylene in proportions to provide a cable filling composition and a superabsorbent polymer which is included in an amount no greater than about 10

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parts by weight per 100 parts by weight of said mixture, the viscosity of the mixture being such that a cable core comprising as many as 3000 metallic conductor pairs as



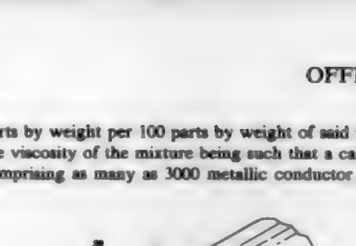
transmission media may be filled with said mixture and said cable characterized by a dissipation factor which is about 10^{-4} microradian and a dielectric constant less than about 2.3.

5,306,868

NAVAL ELECTRICAL POWER CABLE AND METHOD OF INSTALLING THE SAME

Howard C. Faust, Kinnelon; Nicholas Adams, Mahwah, and Wesley R. Kegerise, II, Oakland, all of N.J., assignors to The Okonite Company, Ramsey, N.J.

Continuation of Ser. No. 644,940, Jan. 23, 1991, Pat. No. 5,166,473. This application Nov. 20, 1992, Ser. No. 979,207
Int. Cl.[5] H01B *7/28*
U.S. Cl. 174—23 R **17 Claims**



1. Electrical power cable for use in distributing electrical power aboard a naval vessel, said electrical power cable comprising:

a plurality of insulated electrical conductors each having a longitudinal extent and being helically intertwined with the other of said electrical conductors so as to form a core conductor assembly having at least a pair or other interstices adjacent said insulated electrical conductors;

a water blocking layer disposed about said core conductor assembly so as to prevent passage of water along said interstices about said electrical conductors;

a jacket layer disposed over and adjacent said water blocking layer so that said jacket layer is physically associated with said water blocking layer; and

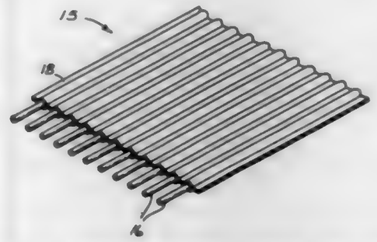
at least a pair of strip cords, each said strip cord being disposed between said core conductor assembly and said jacket layer, so that when each said strip cord is pulled along the longitudinal extent of said insulated electrical conductors, said pulled strip cord cuts both said water blocking layer and said jacket layer.

5,306,869

RIBBON CABLE CONSTRUCTION

Denis D. Springer, Austin, Tex., and Harry A. Loder, Paradise, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 766,578, Sep. 27, 1991. This application Sep. 22, 1992, Ser. No. 949,778
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] H01B *7/08, 7/34*
U.S. Cl. 174—36 **23 Claims**



1. A cable for transmitting electromagnetic signals comprising:

a plurality of conductors disposed in a side-by-side parallel array to form a row of electrical conductors, said row having opposite sides and ends,

a layer of thermally stable, crush resistant, fibril microporous heat sealable thermoplastic crystallizable polymer dielectric disposed on opposite sides of said row of conductors, said dielectric having a void volume in excess of 70%, a propagation velocity of the insulated conductor greater than 75% the propagation velocity in air and the recovery rate after being under a 500 gram weight for 10 minutes greater than 92% of the initial thickness, said layers of dielectric being bonded to each other on each side of each conductor, and

a layer of metal applied to the surface of said thermoplastic material and surrounding the row of conductors to shield the conductors.

19. The process of making a shielded multi-fiber ribbon cable comprising the steps of

placing a plurality of conductive fibers in parallel close spaced relationship to form a row of data transmitting conductors in transverse section,

positioning a web of microporous dielectric thermoplastic polymer against each side of said row of conductors,

bonding the webs together in the area between the conductors, said bonding step comprising advancing said fibers and said webs of polymer between opposed rolls for placing the webs in intimate contact in areas between the fibers and to bond the webs in said areas, and

wrapping the bonded webs and conductors in a layer of metal and adhering the metal layer to the polymer.

5,306,870

SCREENED CABLE BRANCH CONNECTION DEVICE

Fernand Abat, Vauvert, France, assignor to Societe Logistel, Vauvert, France

Filed Jun. 1, 1992, Ser. No. 891,045
Claims priority, application France, Jul. 3, 1991, 91 08320
Int. Cl.[5] H02G *3/18*
U.S. Cl. 174—65 R **20 Claims**

1. In combination, a device for making branch connections to screened cables and screened cables, comprising:

screened cables comprising;

an insulative material;

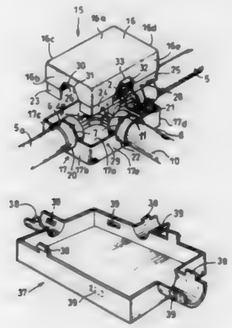
electrical conductors embedded in said insulative material;

a metal braid on said insulative material; and

an insulative sheath enclosing said metal braid;

rings adapted to be crimped on said screened cables with a hexagonal crimp, which screened cables have been striped of said insulative sheath at a portion thereof, and said metal braid is folded back on said insulative sheath at said portion;

a parallellepipedic metallic casing composed of two metallic half-shells comprising a first half-shell and a second half shell, said first half-shell comprising a first base, a first lateral wall extended by a skirt and first notches on said first lateral wall; said second half-shell comprising a second base, a second lateral wall and second notches on said second lateral wall corresponding to said first notches on



said first lateral wall; said first notches and said corresponding second notches forming a holding notch having a hexagonal shape corresponding to the hexagonal shape of said crimp; and said skirt of said first lateral wall being adapted to be inserted into said second lateral wall of said second half-shell;

at least one projection and at least one corresponding recess on said extended skirt and said second lateral wall capable of interacting with each other after insertion of said skirt into said second lateral wall to fix said first half-shell and said second half-shell together; and

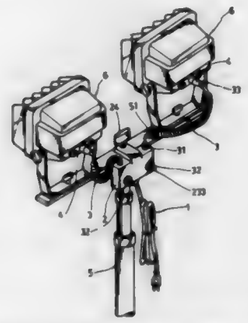
an insulative shroud adapted to house said metallic casing.

5,306,871

ELECTRICAL CORD ASSEMBLY FOR LIGHTING FIXTURE

Shih-Wang Lai, P.O. Box 55-1670, Taipei, Taiwan

Filed Oct. 6, 1992, Ser. No. 956,973
Int. Cl.[5] F21V *21/22, 23/00*
U.S. Cl. 174—65 R **8 Claims**



1. An electrical cord assembly for lighting fixture comprising:

a supporting stand;

a main cord connected with a power supply;

a switch box secured on said supporting stand including an inner box for storing at least a push button switch in said box, a box cover shielding the inner box for fastening the main cord in between the inner box and said box cover, and an outer jacket integrally formed on said inner box and said box cover to encase said inner box and said box cover in said outer jacket;

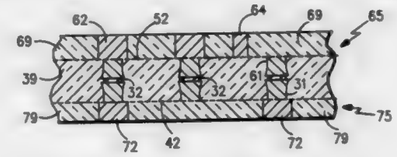
at least a lamp cord having its input terminal connected with said main cord through said push button switch in said switch box and having an output terminal of the lamp cord connected to a lamp secured on said supporting stand by a lamp adapter.

5,306,872

STRUCTURES FOR ELECTRICALLY CONDUCTIVE DECALS FILLED WITH ORGANIC INSULATOR MATERIAL

Mark R. Kordus, Pleasant Valley; Mark S. Schneider, Poughkeepsie, and Louis H. Wirtz, Highland, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 905,499, Jun. 24, 1992, which is a continuation of Ser. No. 665,634, Mar. 6, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,368
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **20 Claims**



1. A transferable electrical connection decal member, wherein said transferable member comprises, at least one first electrically conductive island having two faces and a peripheral wall, at least one second electrically conductive island having two faces and a peripheral wall, and wherein at least one of said first and said second islands has at least one third electrically conductive island having two faces and a peripheral wall therebetween such that at least a portion of one face of said third island physically contact at least a portion of one face of said first island while at least a portion of the second face of said third island physically contacts at least a portion of one face of said second island and provides an electrical connection between said first and said second island, said third island is substantially thinner than either said first or said second island, wherein the material for said third island is different than the material for said first and second islands, and wherein said peripheral wall of said third island and at least a portion of said peripheral wall of either said first island or said second island or both is completely surrounded by an organic insulator material while the faces of said first and said second island not in electrical contact with said third islands are exposed, thereby forming said transferable electrical connection decal member and, wherein said transferable electrical connection decal member is transferred onto a layer or substrate having an insulator material and at least one electrically conductive material, such that at least a portion of said exposed face of either said first or said second island is in physical contact with at least a portion of said at least one electrically conductive material of said layer or substrate, while at least a portion of said organic insulator material is in physical contact with at least a portion of said insulator material of said layer or substrate.

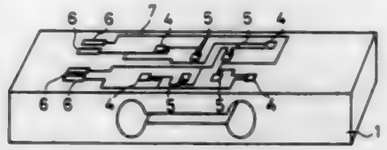
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5,306,873

LOAD CELL WITH STRAIN GAUGES HAVING LOW TEMPERATURE DEPENDENT COEFFICIENT OF RESISTANCE

Takao Suzuki, Kusatsu; Hiroyuki Konishi, Kyoto, and Michito Utsunomiya, Otsu, all of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

PCT No. PCT/JP91/01194, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/05416, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 7, 1990, Ser. No. 859,418
Claims priority, application Japan, Sep. 26, 1990, 2-256424
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 2 Claims



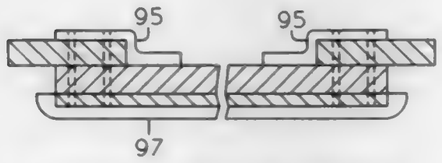
1. A load cell comprising a copper and nickel alloy strain gauge pattern formed on a metallic strain inducing element characterized in that the weight ratio or copper and nickel contained in the strain gauge pattern is chosen to be of a value effective to permit the temperature dependent coefficient of resistance of the strain gauge pattern which undergoes shrinkage and expansion together with the strain inducing element to be substantially zero, and is chosen such that the coefficient of linear expansion of the strain inducing element and said temperature dependent coefficient of resistance of the strain gauge pattern counterbalance each other.

5,306,874

ELECTRICAL INTERCONNECT AND METHOD OF ITS MANUFACTURE

Richard M. Biron, Melbourne, Fla., assignor to W.I.T. Inc., Melbourne, Fla.

Filed Jul. 12, 1991, Ser. No. 728,978
Int. Cl.[5] H05K *01/00*
U.S. Cl. 174—262 25 Claims



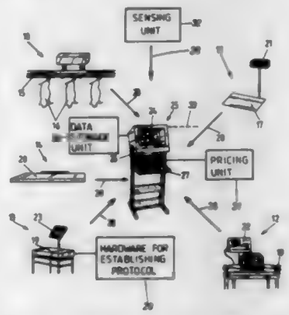
1. An electrical interconnect structure comprising:
a dielectric sheet having at least one first through hole passing through said sheet between first and second surfaces thereof adjacent to a first edge of said sheet and at least one second through hole passing through said sheet between said first and second surfaces adjacent to a second edge of said sheet;
a conductive layer formed on said first surface of said sheet and extending from a first position thereof which overlaps said at least one first through hole to a second portion thereof which overlaps said at least one second through hole;
a first terminal conductor formed on a first portion of said second surface of said sheet overlapping said first through hole and extending beyond said first edge of said sheet;
a second terminal conductor formed on a second portion of said second surface of said sheet overlapping said second through hole and extending beyond said second edge of said sheet;
first conductive material formed in said at least one first through hole and conductively connecting said first terminal conductor to a first portion of said conductor layer overlapping said first through hole; and
second conductive material formed in said at least one second through hole and conductively connecting said second terminal conductor to a second portion of said conductor layer overlapping said second through hole.

5,306,875

WEIGHING ARRANGEMENT FOR A MEAT PACKING FACILITY

Peter Schmitzek, Geilenkirchen, Fed. Rep. of Germany, assignor to CSB-System Software-Entwicklung & Unternehmensberatung GmbH, Geilenkirchen, Fed. Rep. of Germany

Filed Apr. 21, 1992, Ser. No. 871,853
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1991, 4113619
Int. Cl.[5] G01G *19/40*
U.S. Cl. 177—25.15 20 Claims



1. A facility for manipulating commodities, comprising:
a plurality of scales for weighing said commodities, said scales including means for generating electronic data representing commodity weight and data identifying said scales, respectively, and wherein said scales are devoid of readout means;
at least one sensing device other than said scales for sensing the processing of said commodities, said device including means for generating electronic commodity processing data selected from grade data and temperature data;
a central station including computer means for receiving said weight data, said scale identification data, and said commodity processing data, and for processing said data, wherein said central station further comprises means for calibrating all or a plurality of said scales; and
transmission means for conveying said weight data, said associated scale identification data, and said commodity processing data, respectively, from each scale and sensing device to said central station, where said data are read by an operator.

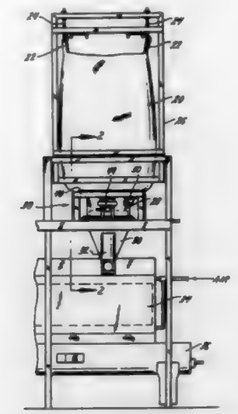
5,306,876

BATCH WEIGHING APPARATUS WITH BULK BAG TYPE BINS

Benjamin L. Volk, St. Louis, and Joseph A. Volk, Jr., Creve Coeur, both of Mo., assignors to Beta Raven, Inc., Earth City, Mo.

Continuation-in-part of Ser. No. 629,157, Dec. 19, 1990, Pat. No. 5,141,135. This application May 10, 1991, Ser. No. 699,988
Int. Cl.[5] G01G *19/22*
U.S. Cl. 177—70 11 Claims

1. A bulk storage, batching and dispensing apparatus, said apparatus comprising means for supporting a plurality of bags, each of said bags containing a quantity of dry material in bulk form, means associated with each bag for agitating the bulk dry material contained therein, means for feeding a measured amount of the dry material from each selected one of said bags



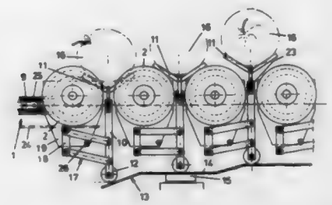
into a collecting means to thereby create a batch comprised of said a plurality of dry material, and means for conveying said batch of dry material contained within said collecting means to a receiver.

5,306,877

APPARATUS FOR SORTING SPHERICAL PRODUCTS ACCORDING TO WEIGHT

Adrianus W. Tas, Burgemeester Winkellaan 3, 2631 HG Nootdorp, Netherlands

Filed Oct. 23, 1992, Ser. No. 965,446
Claims priority, application Netherlands, Oct. 30, 1991, 9101821
Int. Cl.[5] G01G *19/00*
U.S. Cl. 177—145 7 Claims



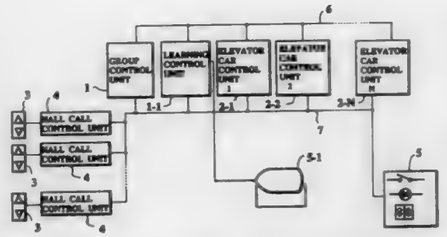
1. In an apparatus for conveying and weighing spherical products in preparation for sorting the products by weight, and having an endless conveyor driveable by at least one drive chain for conveying the products in an individually supported manner, and a weighing means in a path of movement of the conveyor for weighing each individual product, the improvement comprising a roller conveyor having bearing rollers connected to the drive chain by means of a roller carrying element and a product lifting element arranged between each pair of successive bearing rollers and mounted on a corresponding roller carrying element by means of a rod parallelogram, said product lifting element being moveable from a first, lowermost position wherein the product is clear of the lifting element and ress on two adjacent bearing rollers to at least a second , higher position wherein the product is clear of the bearing rollers and rests on the lifting element, such that when the lifting element is in said second position the product is weighable by said weighing means.

5,306,878

METHOD AND APPARATUS FOR ELEVATOR GROUP CONTROL WITH LEARNING BASED ON GROUP CONTROL PERFORMANCE

Susumu Kubo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 2, 1990, Ser. No. 591,887
Claims priority, application Japan, Oct. 9, 1989, 1-262178
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—127 6 Claims



1. An elevator group control apparatus for performing an elevator group control of an elevator system including a plurality of elevator cars and a plurality of destination floors, comprising:
a group control unit for determining a most appropriate one of said elevator cars to respond to a hall call produced at one of said destination floors, by carrying out evaluations of performances of said elevator group control by weighting evaluation reference data in accordance with a traffic demand of said elevator system and generating a hall call allocation control signal;
an elevator control unit, receiving said hall call allocation control signal, for controlling operations of said elevator cars; and
a learning control unit for determining control parameters to be utilized by said group control unit in carrying out said evaluations, in accordance with a response of said most appropriate one of said elevator cars to said hall call, resulting from said hall call allocation control signal from said group control unit and said traffic demand of said elevator system such that the evaluations carried out by said group control unit take into account performances of said elevator group control;
wherein said group control unit carries out said evaluations defined in terms of sums of evaluation characteristics weighted by said control parameters, and wherein said learning control unit comprises:
a partial model unit including a plurality of partial system models representing relationships between said control parameters and said responses for different traffic demands, said partial system models being given in forms of neural networks;
an inference unit for determining weight factors for said partial system models, by expressing relationships between said partial system models and said different traffic demands in terms of a plurality of membership functions;
a composition unit for obtaining an estimated response in accordance with said partial system models and said weight factors; and
an inference result evaluation unit for determining said control parameters in accordance with said estimated response.

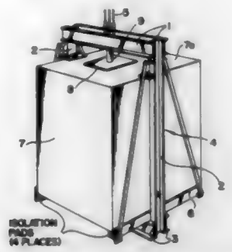
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5,306,879

LOAD MEASURING APPARATUS FOR AN ELEVATOR CAR

David B. Pearson, Raritan, N.J., assignor to Inventio AG, Hergiswil NW, Switzerland

Filed Jan. 30, 1992, Ser. No. 828,103
Int. Cl.[5] G01G *19/14*
U.S. Cl. 187—131 5 Claims



1. In a load measuring apparatus for an elevator car having a roof and supported by a support frame suspended at a traction cable means, the support frame comprising a lower crossbeam carrying a floor frame mounted on isolation pads, said floor frame also acting as a lateral guidance for said elevator car, with said isolation pads being interposed between said floor frame and said elevator car, said support frame further including substantially vertically extending support members and an upper crossbeam connected with the traction cable means, the improvement which comprises:
a proximity sensor arranged at the upper crossbeam;
the proximity sensor having an output lead;
a reference plate member arranged at the roof of the elevator car;
the proximity sensor being disposed in frontal spaced, contactless, relationship, free of physical interaction, at a predetermined vertical spacing with respect to the reference plate member in a no-load condition of the elevator car;
the predetermined vertical spacing of the proximity sensor with respect to the reference plate member increasing in dependency upon the vertical compression, in a substantially straight line manner, of the isolation pads in the presence of a load condition at the elevator car, and
the proximity sensor carrying at the output lead an output potential, which is dependent upon the magnitude of the predetermined vertical spacing between the proximity sensor and the reference plate member.

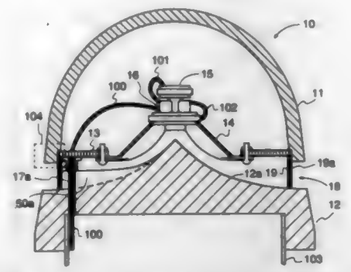
5,306,880

OMNIDIRECTIONAL SPEAKER SYSTEM

Robert L. Cozlar, and Ted L. Haugum, both of Incline, Nev., assignors to Eclipse Research Corporation, Incline Village, Nev.

Continuation of Ser. No. 720,314, Jun. 25, 1991, abandoned.
This application Jul. 16, 1993, Ser. No. 93,296
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—149 3 Claims

1. An omnidirectional speaker system comprising:
a concave, dome-shaped housing;
a base comprising a generally conical outer surface, at least a portion of said generally conical outer surface being in the shape of a hyperbola in cross section, said generally conical surface containing a plurality of flutes arranged around a central axis of said base, each of said flutes extending radially outward from said central axis;
a speaker mounted within said housing and directed toward said generally conical outer surface;
means for mounting said housing on said base so as to form a circumferential aperture between said housing and said base;



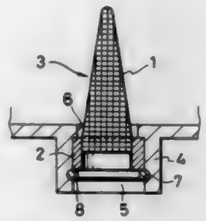
wherein each of said housing and said speaker has an axis and said housing and said speaker are positioned coaxially with respect to said base.

5,306,881

EXHAUST SILENCER WITH SPARK ARRESTER

Katsumi Kiyooka, Togane, Japan, assignor to Maruyama Mfg., Co., Ltd., Togane, Japan

Filed Mar. 26, 1993, Ser. No. 37,386
Claims priority, application Japan, Mar. 27, 1992, 4-25369
Int. Cl.[5] F01N *7/08*
U.S. Cl. 181—227 2 Claims



1. An exhaust silencer comprising:
a tail pipe having an annular groove formed on an inner peripheral surface thereof;
a spark arrester including a sack-like member of a wire mesh and a cylindrical member secured to the sack-like member at an open end of said sack-like member, said spark arrester being mounted in said tail pipe; and
a resilient retainer fitted in said groove for retaining said cylindrical member so as to prevent said spark arrester from coming off said tail pipe.

5,306,882

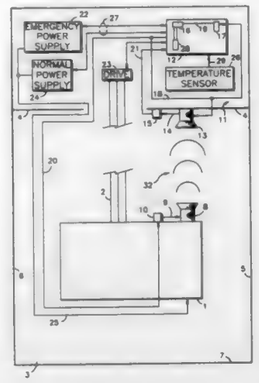
MEASURING ELEVATOR HOISTWAY POSITION USING AUDIBLE SIGNALS

Axel S. Gerwing; Lutz Vietze, and Claudia M. Schmidt-Milkau, all of Berlin, Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed May 13, 1991, Ser. No. 708,946
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B66B *3/02*
U.S. Cl. 187—134 10 Claims

1. A method for measuring the distance of an end of a hoistway from a stationary elevator car in a hoistway, comprising the steps of:
providing an acoustic source excited with an up-sweep signal, with the boundaries of said up-sweep signal being outside the frequency of ambient acoustic noise near said microphone, for transmitting a sound signal in the audible frequency range;

providing a microphone, responsive to said sound signal;
transmitting said sound signal from said acoustic source in response to a trigger signal;
receiving said sound signal at said microphone;



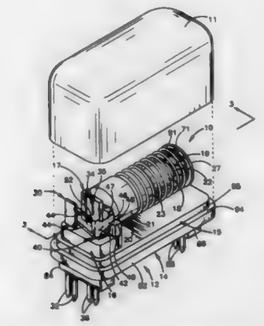
measuring the time elapsed between said step of transmitting and said step of receiving said sound signal and providing a travel time signal; and
calculating said distance in response to said travel time signal, including multiplying the speed of sound by said travel time signal.

5,306,883

DECELERATION SENSOR SWITCH FOR USE IN A VEHICLE OCCUPANT SAFETY SYSTEM

Saroj Manandhar, Chino Hills; Robert J. Bolender, Pasadena; James Purves, Alta Loma, and Long T. Su, West Covina, all of Calif., assignors to TRW Technar Inc., Irwindale, Calif.

Filed Mar. 24, 1993, Ser. No. 36,482
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.53 22 Claims



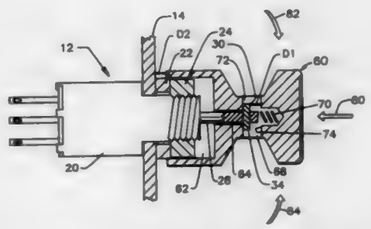
1. A deceleration sensor switch comprising:
a base including a plate portion, a pedestal portion projecting from said plate portion, and a rod portion spaced from said plate portion and projecting from said pedestal portion, said plate portion lying in a flat plane and said rod portion having a longitudinal central axis which extends parallel to the flat plane in which said plate portion lies, said plate, pedestal, and rod portions comprising a single continuous piece of plastic molded material;
a mass mounted on said rod portion and movable relative to said rod portion between an unactuated position and an actuated position along the longitudinal central axis of said rod portion, said mass moving from said unactuated position to said actuated position when said mass is subjected to deceleration of a predetermined magnitude;
a first electrical terminal and a second electrical terminal electrically connectable with said first electrical terminal;
means for electrically connecting said first and second electrical terminals with each other when said mass moves from said unactuated position to said actuated position; and
spring means for providing a restoring force which acts on said mass to move said mass relative to said rod portion from said actuated position back to said unactuated position after said mass has moved to said actuated position.

5,306,884

IMPACT RESISTANT SWITCH KNOB

Joseph N. Caserta, and Gary M. Vance, both of Roanoke, Va., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,823
Int. Cl.[5] H01H *3/20*
U.S. Cl. 200—330 11 Claims



1. In an apparatus having a push/pull switch extending through one external surface thereof, said push/pull switch being operative by the reciprocal linear movement of a post from a first position to a second position, a knob device for manipulating said post, comprising:
an engagement means for selectively engaging said post, whereby said post can be moved between said first position and said second position by the reciprocal manipulation of said knob;
a separating means for selectively disengaging said post as said knob is advanced toward said external surface, said separating means enabling said knob to move independently of said post within a predetermined range, whereby said knob disengages from said post and contacts said external surface when said post is said first position and said knob is advanced toward said external surface.

5,306,885

CABLE ATTACHING DEVICE

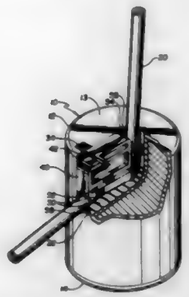
Gene Utke, Rochert, Minn., assignor to S. J. Electro Systems, Inc., Detroit Lakes, Minn.

Filed Sep. 9, 1992, Ser. No. 942,641
Int. Cl.[5] H01L *3/02*
U.S. Cl. 200—338 18 Claims

3. A float switch attachment comprising:
a main body having a top, a bottom and at least one side wall defining an interior, said main body having a tapered recessed slot for receiving a cable, the slot being formed in the top and side wall of the main body, said slot defining a floor, a back wall disposed toward the interior of the main body, two opposing side walls, each of said opposing side walls of said slot having a rib disposed thereon, said ribs extending toward the back wall of the slot, and a plurality of steps located on the floor of said recessed slot;
at least one pair of transverse grooves located one to either side of the recessed slot; and
a removable cable gripping means comprising a tapered body having an upper edge and a lower edge, front and

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back ends and two sides, further including a pair of lateral channels, one on each side, and a row of teeth located on said lower edge, and a transverse T-shaped latching bar located on said upper edge, said gripping means being shaped to mate with the said recessed slot and being retained therein by the T-shaped latching bar, which fits into the transverse grooves on top of the housing and the lateral channels which slidably engage with the ribs located on the sides of the recessed slot;



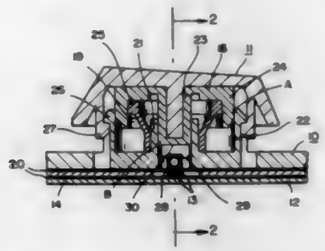
whereby the float switch attachment may be removably fixed to a cable extending to the float switch, the cable being held in the recessed slot between the steps on the floor of the recessed slot and the teeth on the lower edge of the gripping means by placing the cable in the recessed slot and inserting the cable gripping means into place, and the cable is held so that it exits the recessed slot from the side at a right angle to its entry at the top.

5,306,886

KEYBOARD SWITCH

Kazunori Yamada, Tokyo, Japan, assignor to SMK Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,451
Int. Cl.[5] H01H *1/10*
U.S. Cl. 200—517 **6 Claims**



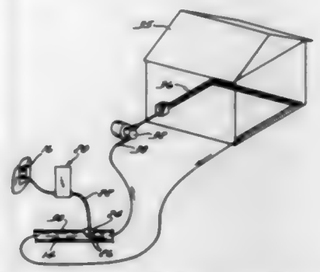
1. A keyboard switch comprising:
a deformable membrane;
means responsive to deformation of said membrane for closing an electrical contact;
a key system;
resilient means for urging said key stem away from said deformable membrane;
means for permitting manual displacement of said key stem toward said deformable membrane;
said resilient means including means for providing a click feel at a first predetermined amount of displacement of said key stem; and
means for permitting said key stem to deform said deformable membrane sufficiently to close said electrical contact at a second predetermined amount of displacement of said key stem;
said means for permitting said key stem to deform said deformable membrane including an elastic cylinder for absorbing a force of said displacement; and
said elastic cylinder is elongate and extends through a plurality of said keyboard switches.

5,306,887

METHOD OF ACCELERATING THE HEATING OF AQUEOUS FLUIDS

Sammie H. Smith, Adamsville, Tenn., assignor to Aqua Dynamics Group Corp., Adamsville, Tenn.

Filed May 8, 1991, Ser. No. 697,064
Int. Cl.[5] H05B *6/46*
U.S. Cl. 219—772 **6 Claims**



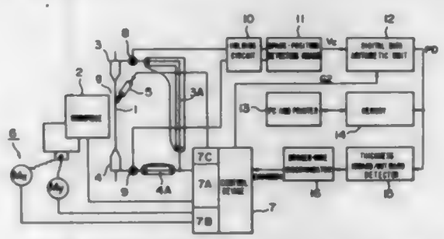
1. A method for heating a quantity of an aqueous fluid comprising the steps of providing an electromagnetic radiation generator and a conductor coupled thereto, treating the aqueous fluid by injecting into said aqueous fluid electromagnetic radiation, said injecting step being accomplished by having the conductor contact with the aqueous fluid, and providing heat to the treated aqueous fluid to increase a temperature thereof to a predetermined temperature wherein the heat provided to the treated aqueous fluid being less than the heat required to raise the temperature of untreated aqueous fluid to said predetermined temperature.

5,306,888

WIRE CUT ELECTRICAL-DISCHARGE MACHINING APPARATUS

Yuji Kaneko, and Hideo Nishimura, both of Sakai, Japan, assignors to Sodick Co., Ltd., Yokohama, Japan

PCT No. PCT/JP92/00846, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO93/01018, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 3, 1992, Ser. No. 984,561
Claims priority, application Japan, Jul. 5, 1991, 3-165915
Int. Cl.[5] B23H *7/04*
U.S. Cl. 219—69.12 **41 Claims**



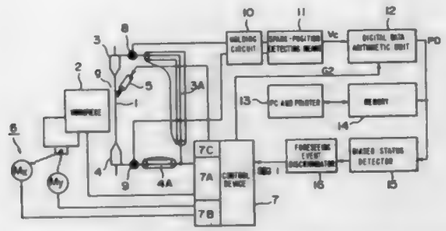
1. A wire break detection system for a wire cut electrical-discharge machining (WC-EDM) apparatus, said apparatus including a renewable wire electrode moveable in its axial direction through a working zone of said apparatus wherein a workpiece to be machined may be positioned, said wire electrode being held under tension and in contact with upper and lower electrical feed members respectively disposed on opposite sides of said working zone, and wherein, during machining, said workpiece is spaced from the wire electrode in said working zone by a working gap across which machining pulses are impressed in order to produce spark discharges between said wire electrode and said workpiece, said detection system comprising:
at least one current detector for detecting the current flowing through at least one of said electrical feed members;
a spark position detecting means for amplifying the detected current value from said at least one current detector and generating a signal corresponding to the spark discharge position along the axial direction of the wire electrode;
a digital data arithmetic unit for converting the spark discharge position signals from said spark position detecting means into digital data;
means for setting upper and lower limit values of digital data corresponding to the locations of the upper and lower surfaces of a workpiece to be machined;
means for comparing the digital data representative of the spark position with said upper and lower limit values;
a spark position generating means for generating a signal indicative of a spark position, said spark position generating means being responsive to a spark position digital data value greater than said upper limit value or less than lower limit value, to generate a signal indicative of a spark discharge outside of said workpiece thickness; and
a broken wire discrimination means, responsive to said signals indicative of the spark position being outside the thickness of the workpiece for generating a wire break signal.

5,306,889

WIRE CUT ELECTRICAL DISCHARGE MACHINING APPARATUS

Yuji Kaneko, and Hideo Nishimura, both of Fukui, Japan, assignors to Sodick Co., Ltd., Yokohama, Japan

PCT No. PCT/JP92/00844, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO93/01017, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 3, 1991, Ser. No. 982,750
Claims priority, application Japan, Jul. 5, 1991, 3-165915
Int. Cl.[5] B23H *7/04*
U.S. Cl. 219—69.12 **45 Claims**



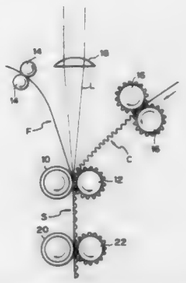
1. A detection system for a wire cut electrical discharge machining apparatus including a renewable wire electrode movable in its axial direction through a working zone in which a workpiece to be machined is adapted to be disposed, said wire electrode being held under tension and during machining in contact with upper and lower electrical feed members, said upper and lower electrical feed members being disposed on opposite sides of the working zone, said workpiece and said wire electrode, during machining, forming a working gap across which machining pulses are impressed in order to produce spark discharges between said wire electrode and said workpiece, said detection system comprising:
a current detector means for detecting a spark current flowing into at least one of said electrical feed members;
a spark position detecting means for amplifying the detected current and generating a signal corresponding to a spark discharge position, along the axial direction of the wire electrode between said upper and lower electrical feed members;
a digital data arithmetic unit for converting the output signal from said spark position detecting means into digital data corresponding to said spark discharge position;
a spark status detector responsive to said digital data for generating a spark discharge bias signal when the digital data output by said digital data arithmetic unit is within a bias range established by an upper limit value and a lower limit value and for delivering a spark position dispersion signal when the digital data output by said digital data arithmetic unit is outside said bias range and for resetting the upper and lower limit values for a new spark discharge position bias range based on a detected spark discharge position.

5,306,890

METHOD OF PRODUCING CORRUGATED METAL SHEETING AND METHOD OF PRODUCING HONEYCOMB STRUCTURE THEREFROM FOR CARRYING CATALYTIC AGENTS USED FOR PURIFYING EXHAUST GASES

Katsuhiro Minamida; Motoi Kido; Atsushi Sugihashi; Masahi Oikawa; Naoya Hamada, and Akira Ishibashi, all of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

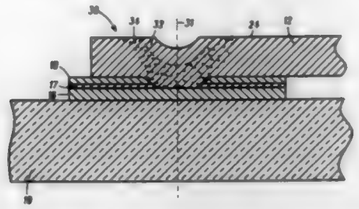
Filed Jun. 5, 1991, Ser. No. 710,462
Claims priority, application Japan, Jun. 5, 1990, 2-145479; Oct. 18, 1990, 2-277893
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 **15 Claims**



1. A method of producing a corrugated metal sheeting including a flat metal sheet and a corrugated metal sheet joined to each other, said method comprising the steps of:
bringing said flat and corrugated metal sheets together so that corrugations of said corrugated metal sheet are successively brought into contact with said flat metal sheet in such a manner that said corrugated metal sheet is freely movable to thereby release resilient stresses therefrom; and
making a laser beam incident on a contact line between said flat metal sheet and each of the corrugations of said corrugated metal sheet, to thereby weld them to each other.

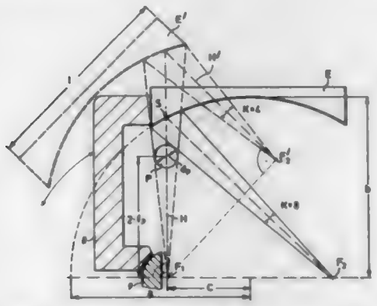
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,891
LASER WELDING PROCESS FOR ATTACHING METAL TO CERAMIC SUBSTRATE
Michael P. Fleming, Lombard; Celia A. Berry, Schaumburg, and Robert W. Shisler, Algonquin, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 2, 1992, Ser. No. 862,479
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 9 Claims



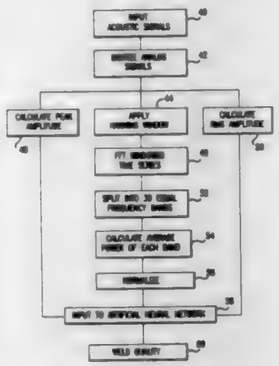
1. A laser welding process for attaching a metal sheet to a ceramic substrate, said process comprising
forming a tungsten layer on the substrate,
depositing a gold film onto the layer,
superposing a metal sheet onto the substrate such that a faying surface of the sheet lies in contact with the gold film and is opposite an outer surface of the sheet, said sheet being formed of a metal having a melting temperature less than the melting temperature of tungsten, and
irradiating the outer surface of the metal sheet using a laser beam to heat the faying surface to a temperature effective to melt and fuse the gold film and the sheet but not to fuse the tungsten layer.

5,306,892
MIRROR OBJECTIVE ARRANGEMENT
Gerhard Hohberg, Aalen-Dewangen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany
Filed Jun. 22, 1992, Ser. No. 901,729
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1991, 4120684
Int. Cl.[5] B23K *26/06*
U.S. Cl. 219—121.67 10 Claims



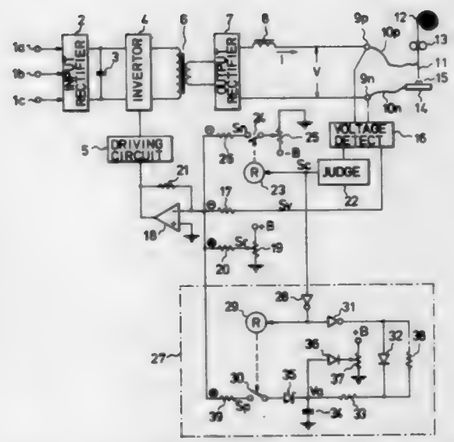
10. A laser machining apparatus for machining a workpiece, said apparatus comprising:
a laser head including laser means for supplying a laser beam defining a beam axis; and, a mirror objective arrangement mounted on said beam axis for directing said laser beam to a machining point on the workpiece;
said mirror objective arrangement having an adjusted focal length and including: a first mirror having a shape which at least approximates a paraboloid form and defining a first focus F_1; a second mirror having a shape which at least approximates an ellipsoid form; said second mirror being in a first position wherein said second mirror images said first focus F_1 at an initial second focus F_2; and, pivot means for pivoting said second mirror about a pivot axis passing through said first focus F_1 from said first position to a second position so as to cause said second mirror to image said first focus F_1 at a new second focus F_2'; and,
track control means for controlling said laser head to change the location of said machining point relative to said laser head so as to cause said machining point to be coincident with said focus (F_2, F_2').

5,306,893
WELD ACOUSTIC MONITOR
Richard A. Morris, Severna Park; Ronald C. Tate, Annapolis, and Milton A. Matteson, Arnold, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 31, 1992, Ser. No. 922,425
Int. Cl.[5] B23K *9/095*
U.S. Cl. 219—130.01 15 Claims



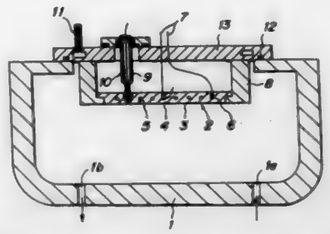
1. A monitor for assessing the quality of a weld produced during an arc welding process in real time comprising:
an A/D converter for receiving at least one weld signature input signal and for sampling and digitizing said input signal, thereby producing a digitized signal;
a signal processor connected to said A/D converter for calculating the root mean square amplitude and peak amplitude of said digitized signal, wherein said signal processor further transforms said digitized signal into a frequency domain signal;
a data processor connected to said signal processor for dividing said frequency domain signal into a plurality of frequency bands and for computing the average power of each of said frequency bands; and
an artificial neural network, wherein said average power values, said root mean square amplitude, and said peak amplitude are provided as inputs to said artificial neural network, said artificial neural network analyzing said inputs and generating an output indicating the quality of said weld being produced during said welding process.

5,306,894
CONSUMABLE ELECTRODE TYPE D.C. ARC WELDER
Haruo Moriguchi, Itami; Tetsurou Ikeda, Osaka; Kenzo Danjo, Kizu; Toshikazu Fujiyoshi, Kawanishi; Masahiro Aoyama, Higashi-osaka, and Kunio Karino, Suita, all of Japan, assignors to Sansha Electric Manufacturing Company, Ltd., Osaka, Japan
Filed Mar. 3, 1993, Ser. No. 25,775
Claims priority, application Japan, Mar. 3, 1992, 4-82675
Int. Cl.[5] B23K *9/10*
U.S. Cl. 219—130.31 3 Claims



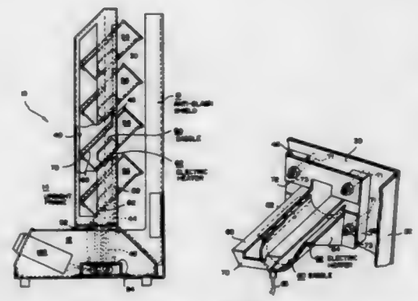
1. In a d.c. arc welder of consumable electrode type comprising an input rectifier means for rectifying an a.c. supply power, and invertor means for converting an output on said rectifier means into a high frequency a.c. power, an output rectifier means for rectifying an output of said invertor means, means for supplying said output of said output rectifier means to a welding load, and feedback control means for detecting an output voltage of said output rectifier means and driving said invertor means based upon a difference in level between said output voltage and a predetermined reference voltage; the improvement comprising:
means for generating a gate signal when said output voltage of said output rectifier means is lower than a predetermined level, and
correction means, responsive to presence and absence of said gate signal, for applying incremental correction to said reference voltage when said gate signal is absent.

5,306,895
CORROSION-RESISTANT MEMBER FOR CHEMICAL APPARATUS USING HALOGEN SERIES CORROSIVE GAS
Ryusuke Ushikoshi, Handa; Kazuhiro Nobori, Haguri; Yusuke Niori, Nagoya; Koichi Umemoto, Toyota; Hiromichi Kobayashi, Yokkaichi; Toshihiko Honda, Nagoya, and Kenji Kawabata, Toyonaka, all of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Mar. 26, 1992, Ser. No. 857,968
Claims priority, application Japan, Mar. 26, 1991, 3-84575; May 28, 1991, 3-150932; Oct. 1, 1991, 3-253678; Oct. 9, 1991, 3-262300
Int. Cl.[5] H01L *21/205*
U.S. Cl. 219—385 23 Claims



1. An apparatus comprising a substrate of aluminum nitride or alumina having a corrosion resistant outer surface film of aluminum trifluoride.

5,306,896
METHOD AND APPARATUS FOR OPEN DIGESTION OF SPECIMENS UTILIZING INCLINED CONTAINER SUPPORT MEANS WITH ELECTRIC HEATER
Michael Glater, Brooklyn, and Yury Zlobinsky, Massapequa, both of N.Y., assignors to Savant Instruments, Inc., Farmingdale, N.Y.
Filed Jun. 22, 1992, Ser. No. 902,062
Int. Cl.[5] H05B *3/02*
U.S. Cl. 219—521 16 Claims



1. Apparatus for use in the digestion/concentration treatment of a liquid specimen, which treatment includes subjecting the specimen to a heating operation while contained in a vessel comprising an open top elongated encircling wall body, said body having a generally uniform cross section of predetermined area which defines a liquid surface expanse of corresponding area for an initial volume of liquid specimen contained in the vessel when the vessel is in upright position, the apparatus comprising
an upright frame,
means on the frame for supporting at least one liquid specimen-containing vessel thereon, and

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a heater carried on the upright frame and positioned to direct a heat output therefrom against a defined heat transfer area on the vessel body wall which heat transfer area partly encircles the body wall and extends longitudinally therealong from a first location proximal but spaced from a vessel bottom to a second wall location remote from said bottom, the support means supporting the vessel in a position inclined at an angle of about 45 degrees relative to a horizontal datum so that the liquid surface expanse of an initial specimen volume is greater than the said corresponding area and the body wall overlays the liquid surface and in which position substantially all the initial specimen volume will be in contact with the defined heat transfer area, heat output from the heater transferring through the heat transfer area to heat the liquid specimen and reducing the level thereof between said first and second locations, reduction of said level diminishing the heat transfer area in contact with the liquid and correspondingly diminishing evaporation rate so that a time for the liquid surface level to reduce to said first location is prolonged as the level approaches said first location.

5,306,898

HEATER FOR SHEET MATERIAL

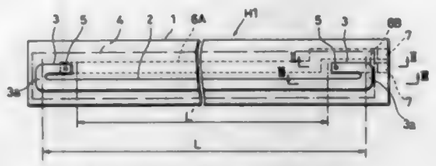
Shinya Yukawa; Shingo Ooyama; Fumiaki Tagashira, and Shigeo Ota, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 21, 1992, Ser. No. 993,676

Claims priority, application Japan, Dec. 28, 1991, 3-359322; Dec. 28, 1991, 3-359323; Dec. 28, 1991, 3-359326

Int. Cl.[5] H05B *3/16*

U.S. Cl. 219—543 **11 Claims**



1. A heater for a sheet material comprising:

an electrically insulating substrate; and

a main resistor strip formed on the substrate and having a heating length;

wherein the substrate is further formed with auxiliary resistor strips adjacent to both ends of the main resistor strip within the heating length thereof, the main and auxiliary resistor strips within the heating length being entirely actuated simultaneously for heat generation.

5,306,897

HEAT TREATMENT METHOD AND APPARATUS FOR TURBINE BLADES USING FLEXIBLE HEATER SLEEVE

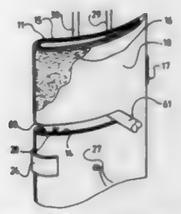
Michael J. Fraser, Badgeworth, United Kingdom, assignor to Turbine Blading Limited, Drottwich, United Kingdom

Filed Jun. 23, 1992, Ser. No. 902,659

Claims priority, application United Kingdom, Jan. 25, 1991, 9113755

Int. Cl.[5] B23K *5/22*; B23P *25/00*; C21D *1/30*; H05B *3/02*

U.S. Cl. 219—535 **11 Claims**



1. A method of providing stress relieving heat treatment to a turbine blade of the type having snubbers, lacing wires or other protuberances, upon which a welding or brazing operation is carried out comprising:

(a) securing on said blade a heating apparatus comprising:

at least one support member;

heating means secured to an inside surface of said support member, said support member of a material sufficient to withstand temperatures of said welding or brazing;

the support member and the heating means being shaped to fit over at least part of the surface of a turbine blade;

the support member and heating means having at least one slot or cut-out extending from an edge of the support member to accommodate said snubber, lacing wire or other protuberance so as to enable the support member and the heating means to be placed in position on the turbine blade; and

securing means for securing the heating apparatus to the turbine blade; and

(b) supplying energy to said heating means.

5,306,899

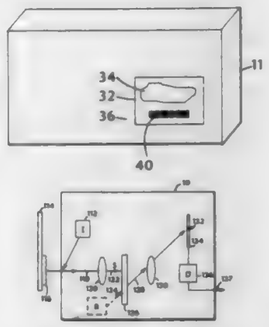
AUTHENTICATION SYSTEM FOR AN ITEM HAVING A HOLOGRAPHIC DISPLAY USING A HOLOGRAPHIC RECORD

Emanuel Marom, and Joseph Katz, both of Stony Brook, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Jun. 12, 1992, Ser. No. 897,761

Int. Cl.[5] G06K *7/10, 5/00*

U.S. Cl. 235—382 **10 Claims**



VOL 1161 ISS 4 APR 26 1994 UMI

projected radiation reflecting back from a localized region of the imaging surface through the confocal imaging means and the aperture;

means for detecting power of radiation reflected back through the aperture; and

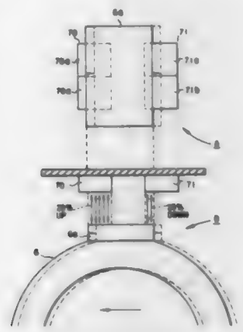
means for adjusting the distance between the object imaging and the imaging surface to maximize said detected power.

5,306,903

OBJECTIVE LENS POSITION DETECTING SYSTEM CAPABLE OF ADJUSTING AMOUNTS OF RADIATION

Mikio Yamamuro, Zushi, and Akihiko Doi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 7, 1992, Ser. No. 909,692
Claims priority, application Japan, Jul. 8, 1991, 3-167104
Int. Cl.[5] G02B *7/02*
U.S. Cl. 250—201.5 **7 Claims**



1. An optical disk apparatus having an objective lens position detecting system, comprising:

means for rotating a storage disk;

means for reading out data from the storage disk, the reading means comprising,

means for holding an objective lens for focusing a light beam on a storage disk having tracks formed thereon,

first detecting means having a first light-emitting element and a first light-receiving element and provided in a vicinity of the objective lens, unconnected thereto, for detecting a position of the objective lens, the first light-emitting element and the first light-receiving element being arranged perpendicular with respect to a lens moving direction where the objective lens is moved,

second means, having a second light-emitting element and a second light-receiving element and provided in a vicinity of the objective lens, unconnected thereto, and apart by a predetermined distance from the first detecting means, for detecting the position of the objective lens, the second light-emitting element and the second light-receiving element being arranged perpendicular with respect to the lens moving direction,

means, connected to the objective lens, for reflecting light from the first light-emitting element to the first light-receiving element and reflecting light from the second light-emitting element to the second light-receiving element, whereby the first detecting means and the second detecting means detect the position of the objective lens from values of the reflected light,

means for outputting a difference between detection signals received from the first detecting means and the second detecting means, and

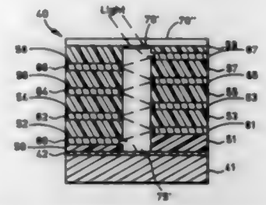
means for receiving the detection signals from the first detecting means and the second detecting means and adjusting amount of radiation from the first light-emitting element and the second light-emitting element so as to cause a sum of the detection signals to approach a predetermined target value.

5,306,904

MULTILAYER MICROELECTRONIC PHOTOMULTIPLIER DEVICE WITH A STACKED SERIES OF DYNODE AND INSULATING LAYERS

Randy L. Shimabukuro, and Stephen D. Russell, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 908,692, Jul. 1, 1992, Pat. No. 5,264,693. This application Feb. 16, 1993, Ser. No. 19,414
Int. Cl.[5] H01J *39/06*
U.S. Cl. 250—207 **35 Claims**



1. A method of fabricating a microelectronic photomultiplier device responsive to at least one impinging wavelength comprising:

providing an insulating substrate;

depositing an anode conductive layer forming an anode on said insulating substrate;

forming a stepped configuration insulating interlayer over said anode conductive layer;

depositing a stacked series of dynode conductive layers interleaved with insulating layers on said stepped configuration insulating interlayer, said stacked series of dynode conductive layers interleaved with insulating layers having a portion defining a stepped cross-sectional configuration;

etching-away said portion defining a stepped cross-sectional configuration to produce a cavity between separated columns of alternately staggered dynode conductive layers interleaved with insulating layers thereby exposing separated columns of alternately staggered dynodes and said anode;

evacuating any gas that may have been in said cavity to produce an evacuated cavity; and

closing said evacuated cavity with a transparent substrate having a photocathode thereon to create an evacuated chamber in communication with said photocathode, said separated columns of alternately staggered dynodes and said anode, said photocathode having the property to generate a representative electron emission in response to said at least one impinging wavelength to thereby provide said microelectronic photomultiplier device.

5,306,905

METHOD FOR MINIMIZING 1/F AND OTHER LOW FREQUENCY NOISE IN SIGNAL PROCESSING FOR FOCAL PLANE ARRAY DETECTOR SYSTEM

Michael R. Guillory, Denton; Michael R. Kay, Dallas, and Robert M. Stokes, The Colony, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1992, Ser. No. 936,690
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **16 Claims**

1. A signal processing method which comprises the steps of:

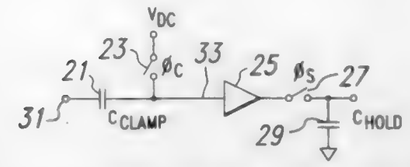
(a) providing a first capacitor having upstream and downstream electrodes;

(b) applying a predetermined constant voltage source to said downstream electrode;

(c) then removing said constant voltage source from said downstream electrode and applying an input signal to said upstream electrode;

(d) providing a signal storage device;

(e) storing the input signal on said downstream electrode at said first capacitor by coupling said signal storage device



to and uncoupling said signal storage device from said downstream electrode; and

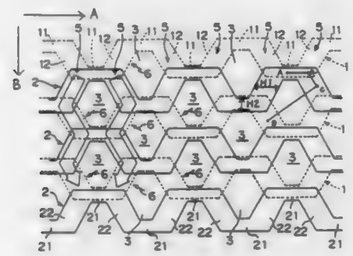
(f) again applying said predetermined constant voltage source to said downstream electrode subsequent to said uncoupling of said signal storage device from said downstream electrode and then removing said constant voltage source from said downstream electrode.

5,306,906

SOLID-STATE IMAGING DEVICE HAVING A PLURALITY OF CHARGE TRANSFER ELECTRODES FORMED IN A SERPENTINE PATTERN

Tetsuro Aoki, Fukuyama; Eiji Koyama, and Ichiro Baba, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed May 20, 1993, Ser. No. 65,166
Claims priority, application Japan, May 20, 1992, 4-127250
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **6 Claims**



1. A solid-state imaging device comprising:

a semiconductor layer having a top surface;

a plurality of first charge transfer electrodes formed on the semiconductor layer and extending in a serpentine pattern in a first direction at a prescribed cycle, the first direction being substantially parallel with the top surface of the semiconductor layer;

a plurality of second charge transfer electrodes formed on the semiconductor layer and extending in a serpentine pattern in the first direction at a prescribed cycle;

a plurality of charge transfer sections formed in the semiconductor layer, and extending in a serpentine pattern in a second direction, the second direction being substantially perpendicular to the first direction; and

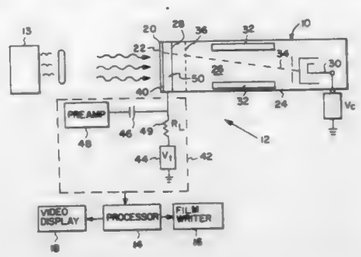
a plurality of photoelectric converters formed in areas of the semiconductor layer bounded by the first and second charge transfer electrodes, each photoelectric converter provided for generating a signal charge in response to incident light, and for supplying the signal charge to an adjacent one of the charge transfer sections.

5,306,907

X-RAY AND GAMMA RAY ELECTRON BEAM IMAGING TUBE HAVING A SENSOR-TARGET LAYER COMPOSED OF A LEAD MIXTURE

Sol Nudelman, Avon, and Donald R. Ouimette, Plantsville, both of Conn., assignors to The University of Connecticut, Farmington, Conn.

Continuation-in-part of Ser. No. 728,652, Jul. 11, 1991, Pat. No. 5,195,118. This application Mar. 12, 1993, Ser. No. 30,588
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT **20 Claims**



1. An imaging tube comprising:

sensor-target means comprising signal plate means for detecting irradiating high energy photons and providing storage capacity to hold electrons on the surface of said sensor-target means, said sensor-target means comprising a layer substantially composed of material selected from the group consisting of PbI_2, $PbBr_2$ and a PbI_2 and $PbBr_2$ mixture, which layer receives incident high energy radiation and causes the generation of internal electronic positive carriers in quantities which are greater than the number of incident photons of said radiation;

electron optics means for generating a low velocity electron beam and directing said beam at said sensor-target means to deposit a uniform layer of charge;

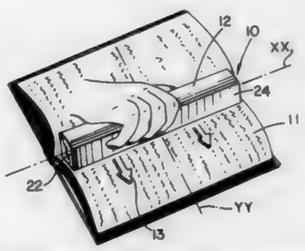
so that high energy radiation directed at said sensor-target means produces a charge redistribution at said sensor-target means surface for generating a signal for transmittal to a read-out circuit.

5,306,908

MANUALLY OPERATED HAND-HELD OPTICAL SCANNER WITH TACTILE SPEED CONTROL ASSEMBLY

Charles H. McConica, Fort Collins; Eric F. Aas, Windsor; Richard L. Kochis, Fort Colins; Dan L. Dalton, Greeley, and Eugene A. Miksch, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1993, Ser. No. 31,771
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—234 **18 Claims**

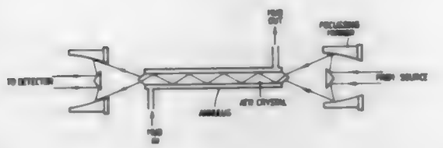


1. A manually displaced, hand-held optical scanner comprising:

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a) optical sensor means for generating a data signal representative of a scanned object;
b) housing means for hand-displacedly supporting said optical sensor means;
c) roller means mounted on said housing means for enabling rolling displacement of said housing means over a scanned object in a predetermined scan direction;
d) displacement sensing means for sensing the angular displacement of said roller means and generating a displacement signal representative thereof;
e) motor means drivingly linked to said roller means for applying a driving torque thereto; and
f) control means for actuating said motor means responsive to said displacement signal for angularly accelerating and decelerating said roller means for urging an operator to hand displace said housing means across a scanned within a predetermined speed range which is optimal for scanning.

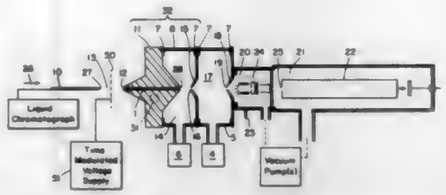
5,306,909
ANALYSIS OF DRILLING FLUIDS
Timothy Jones, Cottenham; Trevor Hughes, Cherry Hinton, and Patrick Tomkins, Chesterton, all of England, assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Mar. 31, 1992, Ser. No. 860,879
Claims priority, application United Kingdom, Apr. 4, 1991, 9107041
Int. Cl.[5] G01V *9/04*; G01N *21/35*
U.S. Cl. 250—255 **12 Claims**



1. A method of quantitative analysis of a drilling mud comprising solid and liquid components which are dispersed or dissolved in a carrier liquid, the method comprising:
a) taking a sample of the drilling mud, said sample including said carrier liquid;
b) recording the infra-red spectrum of said sample using an attenuated total reflectance technique; and
c) comparing said spectrum with a model in which the contribution of the components of the drilling mud to its infra-red spectrum is predicted in order to determine the composition of said sample and hence the drilling mud.

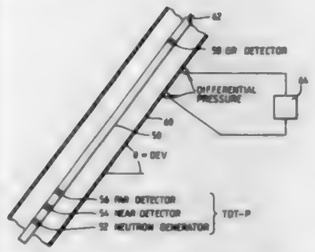
5,306,910
TIME MODULATED ELECTRIFIED SPRAY APPARATUS AND PROCESS
Joseph A. Jarrell, Newton Highlands, Mass.; Michael J. Tomany, North Grosvenordal, Conn., and Douglas P. Wittmer, Upton, Mass., assignors to Millipore Corporation, Bedford, Mass.
Filed Apr. 10, 1992, Ser. No. 866,605
Int. Cl.[5] H01J *49/10*
U.S. Cl. 250—286 **18 Claims**

1. Apparatus for converting a solution containing a solute sample into ionized molecules for analysis of the sample which comprises
a passageway for passing said solution therethrough, said passageway having an exit to discharge said solution from said passageway in the form of an electrospray,



means of generating a time modulated electric field in the vicinity of said exit of said passageway thereby, to time modulate the formation of said electrospray.

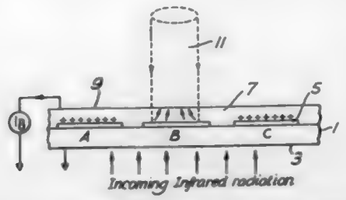
5,306,911
METHOD FOR DETERMINING THE FLOW RATE OF AQUEOUS PHASES IN A MULTIPHASE FLOW
Andrew Hunt, Askerswell, United Kingdom, assignor to Schlumberger Technology Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 756,732, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 524,246, May 16, 1990, Pat. No. 5,047,632. This application Feb. 28, 1992, Ser. No. 843,131
Claims priority, application United Kingdom, May 27, 1989, 8912256
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] G01V *5/10*
U.S. Cl. 250—302 **6 Claims**



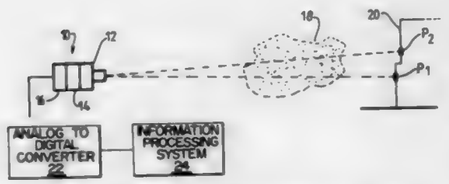
1. A method of determining the flow rate of an aqueous phase of a multiphase flow circulating in a pipe, comprising activating a component of the aqueous phase at a first location in the pipe and measuring the concentration of the activated component with a detector at a second location in the pipe as a function of time (t) so as to obtain a series of activated component data versus time; the method being characterised by fitting a relationship S(t) to the series of data so as to derive the values of the velocity U of the aqueous phase.

5,306,912
OPTICALLY ADDRESSED THERMAL IMAGING DEVICE
Alastair Sibbald, Maidenhead; Brian Holcroft, High Wycombe; Elvin Nix, Windsor, and Stanley Taylor, Sunbury-on-Thames all of England, assignors to Thorn EMI plc, London, United Kingdom
Filed Oct. 11, 1990, Ser. No. 605,172
Claims priority, application United Kingdom, Oct. 21, 1989, 89237671
Int. Cl.[5] G02B *26/10*; G01J *5/00*; H01L *27/14*
U.S. Cl. 250—334 **16 Claims**

1. A thermal imaging device comprising: first and second electrode structures; a pyroelectric layer arranged between the first and second electrode structures to define an array of pyroelectric detector pixels; a further electrode structure; photoconductive means for electrically coupling one of the first and second electrode structures with the further electrode structure, illumination means for illuminating the photoconductive means by enabling a pyroelectric charge developed by pyroelectric detector pixels to be addressed via the further electrode structure; and screening means incorporating opaque regions for selectively controlling illumination of the photoconductive means for enabling an individual detector pixel to be addressed via said further electrode structure.

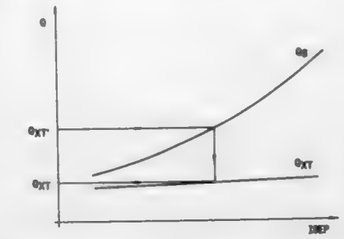


5,306,913
METHOD AND APPARATUS FOR REMOTE OPTICAL DETECTION OF A GAS PRESENT IN AN OBSERVED VOLUME
Jean-Claude Noack, Cabries; Yves Guern, Jouques, and Gérard Pelous, Aix en Provence, all of France, assignors to Bertin & Cie, Plaisir, France
Filed Dec. 3, 1992, Ser. No. 985,640
Claims priority, application European Pat. Off., Dec. 4, 1991, 91403281.8
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—338.5 **13 Claims**



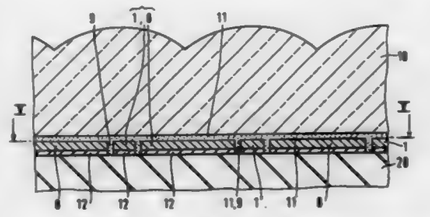
1. A method for remote optical detection of a gas, e.g. a polluting gas, present in an observed volume, the method comprising:
detecting the radiant fluxes coming from at least two different temperature points of said volume, said fluxes passing through the looked-for gas and being detected through a first filter having a transmission band that includes an absorption line characteristic of the looked-for gas;
taking the difference between the fluxes detected through the first filter;
detecting the radiant fluxes coming from the above-specified two points through a second filter having a transmission band similar to that of the first filter and complementary to said absorption line of the looked-for gas;
taking the difference between the fluxes detected through the second filter;
taking the ratio of the above-specified differences; and
deducing possible presence of the gas in the observed volume from the value of said ratio.

5,306,914
METHOD FOR MEASURING LIQUID SCINTILLATION SAMPLES DEPOSITED ON MULTI-WELL SAMPLE PLATES
Tapio Yrjönen; Timo Oikari, and Tuula Stark, all of Turku, Finland, assignors to Wallac Oy, Turku, Finland
Filed Sep. 23, 1992, Ser. No. 948,602
Int. Cl.[5] G01T *1/208*, *1/204*
U.S. Cl. 250—362 **4 Claims**



1. Method for correcting measured values in a liquid scintillation counter when measuring samples deposited on a sample plate, where a detector in addition to detecting scintillation photons from the sample to be analyzed is affected by the scintillation photons from other samples on the sample plate, comprising:
determining the quench level of the sample;
establishing a first relationship between the counting efficiency (Es) and the quench level of the sample;
determining, as a first quantity, the mean of the amplitude distribution of the sample spectrum (Qs);
determining, as a second quantity, the mean of the amplitude distribution of the crosstalk spectrum (Qxt);
establishing a second relationship between said first quantity and said quench level of the sample;
establishing a third relationship between said second quantity and said quench level of the sample; and
correcting the measured value (CPMtot) of said sample by applying said determined relationships.

5,306,915
INFRARED DETECTORS
Brian E. Matthews, Southampton, Great Britain, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 28, 1992, Ser. No. 922,117
Claims priority, application United Kingdom, Jul. 29, 1991, 9116307
Int. Cl.[5] H01L *27/146*, *31/0296*, *31/101*
U.S. Cl. 250—370.13 **11 Claims**



1. An infrared detector comprising at least one detector element which has a body of infrared-sensitive semiconductor material and which is sandwiched between two members, namely a substrate and an optical element, one of the members being secured over the body by an adhesive film, characterised in that the element body is a part of a wider layer of the infrared-sensitive semiconductor material which occupies a major-

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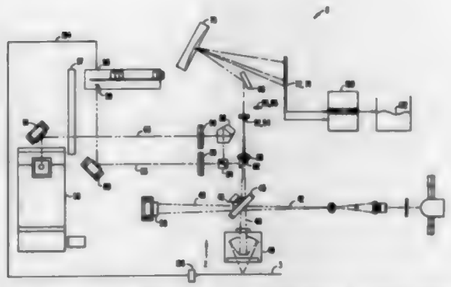
ity of the volume around the element body between the substrate and the optical element, the adhesive film is present between the layer and the one member, and in that the element body is laterally separated around at least a majority of its periphery from the remainder of the layer by a slot which extends through at least part of the thickness of the layer and which defines at least a majority of the periphery of the element body.

5,306,916

BROADBAND SMALL SPOT SPECTRAL REFLECTOMETER WITH AUTOFOCUS

Adam E. Norton, Palo Alto; Chester L. Mallory, Campbell; Hung V. Pham, San Jose, and Paul Rasmussen, Livermore, all of Calif., assignors to Prometrix Corporation, Santa Clara, Calif.

Filed Jun. 16, 1992, Ser. No. 899,666
Int. Cl.[5] G01N *21/25*
U.S. Cl. 250—372 **33 Claims**



1. In an optical system having a platform for supporting a sample, an apparatus for determining the relative reflectance spectrum of a selected area on the sample, comprising:

a light source for emitting a first beam;

a beam splitter for splitting said first beam into a reference beam and a sample beam, said beam splitter being a totally reflecting mirror;

a focussing means for focussing said sample beam at a focal point, the platform movable with respect to said focussing means;

a reference spectroscopic means for detecting a reference spectrum of said reference beam;

a sample spectroscopic means for detecting a reflected spectrum of a reflection of said sample beam, said reflection reflecting off the sample over the selected area; and

a computation means for comparing said reflected spectrum and said reference spectrum to determine a relative reflectance spectrum.

5,306,917

ELECTRO-OPTICAL SYSTEM FOR MEASURING AND ANALYZING ACCUMULATED SHORT-WAVE AND LONG-WAVE ULTRAVIOLET RADIATION EXPOSURE

Michael Black, Foster City; Vladimir Kupershmidt, Pleasanton, and Michael Spitkovsky, Sunnyvale, all of Calif., assignors to Reliant Laser Corporation, Foster City, Calif.

Filed Aug. 12, 1992, Ser. No. 928,918
Int. Cl.[5] G01J *1/44*
U.S. Cl. 250—372 **14 Claims**

1. An electro-optical system for measuring and analyzing an individual's short-wave and long-wave ultraviolet radiation exposure, comprising:

a housing and means for attaching said housing to an item carried or worn by said individual;

a sensor located in said housing, said sensor having a ultraviolet-A photodetector and a ultraviolet-B photodetector, each photodetector having a sensitive area;

said sensor comprising:

a first bandpass filter covering said sensitive area of said ultraviolet-A photodetector and a second bandpass filter covering said sensitive area of said ultraviolet-B photodetector;

a microcontroller for registering and storing output data from said ultraviolet-A photodetector and said ultraviolet-B photodetector;

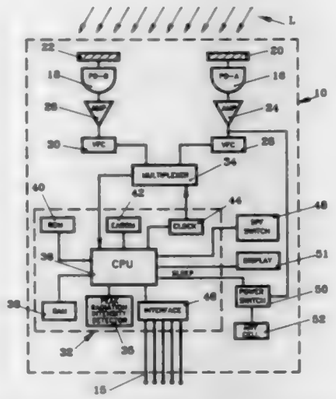
a power switch connected to an output of said microcontroller;

a power source connected to said power switch;

a plurality of output terminals on said sensor;

a first logarithmic amplifier having an input connected to said ultraviolet-A photodetector and an output and a second logarithmic amplifier having an input connected to said ultraviolet-B photodetector and an output;

a multiplexer having an input connected to said output of said first logarithmic amplifier via a first voltage-to-frequency converter and to said output of said second logarithmic amplifier via a second voltage-to-frequency converter, said multiplexer being connected to said microcontroller;



a ultraviolet-data analyzer located remotely from said sensor and having a controller, a first central processing unit connected to said controller, and a plurality of analyzer output units; and

an interface unit located on said analyzer, said interface unit having means for connecting said interface unit to said terminals of said sensor;

said microcontroller further including:

a second central processing unit;

a clock generator for generating a clock signal,

said clock generator being connected to said first central processing unit;

a read-only-memory unit connected to said first central processing unit;

a random-access-memory connected to said first central processing unit;

an electrically alterable read-only memory connected to said first central processing unit;

an interface connected to said second central processing unit; and

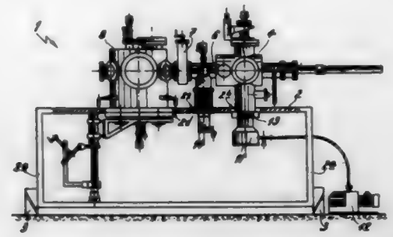
a peak radiation-intensity detector connected to said first central processing unit, said peak radiation-intensity detector having means for registering peak radiation-intensity value and average radiation-intensity value in predetermined intervals of time.

5,306,918

INSTALLATION FOR THE STUDY OR THE TRANSFORMATION OF THE SURFACE OF SAMPLES PLACED IN A VACUUM OR IN A CONTROLLED ATMOSPHERE

Jean-Pierre Goudonnet, 12F rue Isabelle du Portugal, 21000 Dijon, and Yvon LeCroute, 13 rue Champs Fleuris, 21850 Saint-Apollinaire, both of France

PCT No. PCT/FR91/00378, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO91/17429, PCT Pub. Date Nov. 14, 1991
PCT Filed May 7, 1991, Ser. No. 946,412
Claims priority, application France, May 10, 1990, 90 05823
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—442.11 **18 Claims**



1. Installation for the analysis or transformation of the surface of samples placed in vacuum or in a controlled atmosphere, including a main enclosure in which is placed a support plate for at least one device, called SXM, in which a microprobe such as a light or electricity conducting tip is positioned close to the surface of the sample to be examined, whether in the air or in a vacuum, the at least one device being intended for the microscopy, spectroscopy or etching of the sample surface by scanning of the surface by the microprobe, said support plate being equipped with means for disconnecting said support plate from the main enclosure and with means for rotating said support plate around a central axis allowing the use of a series of SXM devices fitted into the periphery of said support plate, the main enclosure is completed by a scrubbing enclosure for the surface of the samples and by an introduction and storage enclosure of said samples, which can be handled through the installation by the end of a conveyor rod that can be moved longitudinally and in axial rotation along an alignment axis of said introduction and storage, scrubbing and main enclosures.

5,306,919

POSITIONING DEVICE FOR SCANNING PROBE MICROSCOPES

Virgil B. Elings, and John A. Gurley, both of Santa Barbara, Calif., assignors to Digital Instruments, Inc., Santa Barbara, Calif.

Filed Sep. 21, 1992, Ser. No. 947,831
Int. Cl.[5] H01J *37/20*
U.S. Cl. 250—442.11 **28 Claims**

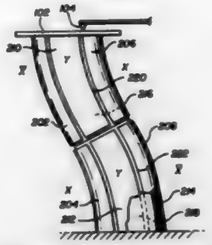
1. A piezoelectric positioning device for controlling at least a two dimensional horizontal movement between a tip and a sample surface in a scanning probe microscope, including,

a thin walled cylindrical shaped member formed of piezoelectric material having inner and outer surfaces and having a first fixed end and a second opposite movable end,

a tip member and a sample member having a sample surface and with the tip member and sample member positioned relative to each other to have the tip member located adjacent to the sample surface and with one of the tip member and sample member mounted on the movable end of the cylindrical shaped member,

a plurality of substantially rectangular shaped members positioned around one of the surfaces of the cylindrical shaped member to form opposite pairs of electrodes to control the two dimensional horizontal movement between the tip member and sample surface in accordance with voltages applied to the pairs of electrodes,

wherein each rectangular shaped member is split into at least two electrode portions and with particular polarity voltages applied to the individual electrode portions to substantially eliminate tilting of the movable end of the cylindrical shaped member during the two dimensional movements, and



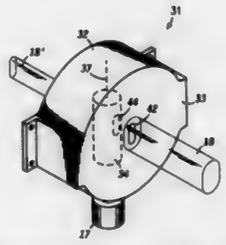
wherein the cylindrical shaped member is formed of at least two pieces of piezoelectric material polarized in opposite directions and with the individual electrode portions in each split electrode located on a different one of the pieces of piezoelectric material and with the same polarity voltage applied to the individual electrode portions in each split electrode.

5,306,920

ION IMPLANTER WITH BEAM RESOLVING APPARATUS AND METHOD FOR IMPLANTING IONS

Jerry S. King, Chandler; Carl E. D'Acosta, Mesa; Craig L. Jasper, and Dan A. Banks, both of Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1992, Ser. No. 980,062
Int. Cl.[5] H01J *37/09*
U.S. Cl. 250—492.21 **10 Claims**



1. An ion implantation apparatus comprising: an ion source that emits ions along a first beam path; a means for selecting ions of a desired mass from the first beam path and redirect the selected ions on a second beam path; a movable shutter placed in the second beam path, wherein the movable shutter includes a solid surface and a hole located so that the selected ions in the second beam path pass through the hole when the movable shutter is in a first position, and are blocked by the solid surface when the movable shutter is in a second position; and an enclosure completely surrounding the movable shutter to reduce ion beam leakage, wherein the enclosure includes a first aperture aligned with the second beam path for allowing the selected ions to enter the enclosure and a second aperture aligned with the second beam path for allowing the selected ions to exit the enclosure after passing through the hole in the movable shutter.

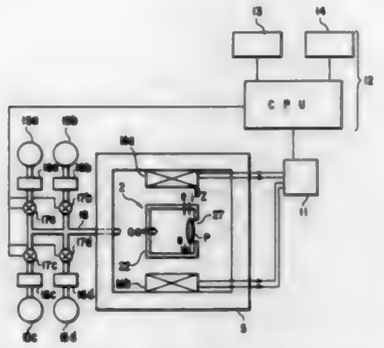
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,921

ION IMPLANTATION SYSTEM USING OPTIMUM MAGNETIC FIELD FOR CONCENTRATING IONS

Hisato Tanaka, Nirasaki, and Naoki Takayama, Koufu, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,137
Claims priority, application Japan, Mar. 2, 1992, 4-080512; Mar. 2, 1992, 4-080513; Mar. 2, 1992, 4-080514; Mar. 14, 1992, 4-089756; Mar. 23, 1992, 4-093907
Int. Cl.[5] H01J *27/02, 37/00*
U.S. Cl. 250—492.21 21 Claims



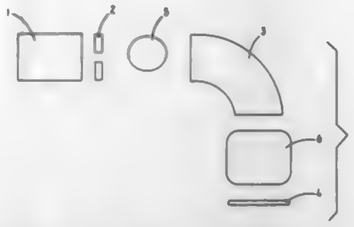
1. An ion implantation system for implanting ions into an object to be processed, comprising:
- a plasma generating chamber provided with an ion extraction opening;
- a material source for storing outside said plasma generating chamber a material to be turned into plasma in said plasma generating chamber;
- material feeding means for feeding said material in a gas phase into said plasma generating chamber from said material source;
- exciting means for making said fed material into plasma in said plasma generating chamber;
- supporting means for supporting said object outside said plasma generating chamber;
- ion extraction means disposed downstream to said opening in the ion extraction direction;
- irradiating means for irradiating said object supported by said supporting means with ions drawn by the ion extraction means from said plasma generating chamber in the form of an ion beam;
- an electromagnet arranged outside said plasma generating chamber to produce a magnetic field in said plasma generating chamber, said magnetic field being formed substantially perpendicular to said ion extraction direction, locally concentrating plasma in said plasma generating chamber, and thereby forming a high density region of plasma;
- a power supply for applying a current to said electromagnet to excite said electromagnet;
- a memory for storing data necessary to achieve an optimum magnetic field intensity specific to the type of ions to be extracted;
- an input station for specifying the type of ions to be extracted; and
- control means for controlling the current of said power supply for said electromagnet, said control means reading data from said memory in response to the type of ions specified in said input station and thereby so controlling the current of said power supply for said electromagnet as to achieve an optimum magnetic field intensity specific to the specified type of ions.

5,306,922

PRODUCTION OF HIGH BEAM CURRENTS AT LOW ENERGIES FOR USE IN ION IMPLANTATION SYSTEMS

John P. O'Connor, Andover, Mass., assignor to Genus, Inc., Sunnyvale, Calif.

Filed Mar. 16, 1993, Ser. No. 33,286
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—492.21 5 Claims



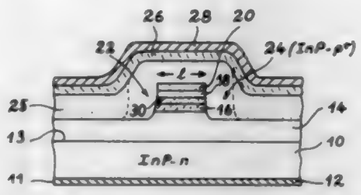
1. Method of implanting ions of a desired element at a desired low energy into a target, comprising the following steps: (1) producing a beam of molecular ions including said desired element and having kinetic energy in excess of said desired low energy, (2) dissociating said beam into a plurality of components one of which consists of said desired element having kinetic energy no greater than said desired low energy, (3) removing components other than said desired element from said beam so as to form a beam of ions of said desired element, and (4) directing said beam of ions of said desired element into said target.

5,306,923

OPTOELECTRIC DEVICE WITH A VERY LOW SERIES RESISTANCE

Christophe Kazmierski, Morangis, and Benoit Rose, Paris, both of France, assignors to France Telecom, Paris, France

Filed Nov. 23, 1992, Ser. No. 980,263
Claims priority, application France, Dec. 4, 1991, 91 15000
Int. Cl.[5] H01L *29/161*
U.S. Cl. 257—14 8 Claims



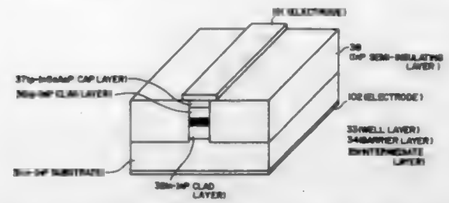
1. An optoelectronic device having a III-V substrate (10), a lower, n-doped III-V material semiconductor confinement layer (14) in contact with the substrate (10), an active zone (22) having at least one not intentionally doped III-V material semiconductor active layer (16) located on the lower confinement layer (14), an upper, p-doped III-V material semiconductor confinement layer (24) covering the active zone, the forbidden energy band gap of the active layer being below that of the confinement layers, a first metal coating (28) placed on the upper confinement layer and a second metal coating (12) placed on the substrate, said device being characterized in that it comprises, between the active layer and the upper confinement layer a strongly n-doped, quaternary III-V material semiconductor stopping layer (30) stopping the diffusion of doping ions from the upper confinement layer, said stopping layer (30) having a thickness smaller than that of the active layer and also forming part of the active zone.

5,306,924

SEMICONDUCTOR DEVICE WITH STRAINED-LAYER SUPERLATTICE

Masashi Usami, Tanashi, and Yuichi Matsushima, Tokorozawa, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 27,192
Claims priority, application Japan, Mar. 12, 1992, 4-087465
Int. Cl.[5] H01L *27/12, 29/161, 33/00*
U.S. Cl. 257—18 2 Claims



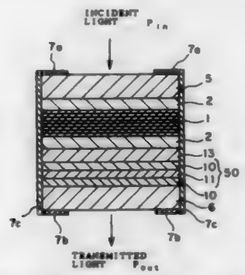
1. A semiconductor device with a strained-layer superlattice comprising:
- a first semiconductor layer;
- a second semiconductor layer having a lattice constant smaller than that of the first semiconductor layer;
- a third semiconductor layer having a lattice constant substantially intermediate between those of the first and second semiconductor layers;
- a clad layer having a lattice constant substantially equal to that of the third semiconductor layer;
- the first and second semiconductor layers being laminated alternately each other to form a strained-layer superlattice on the clad layer; and
- the third semiconductor layer being laminated between the first and second semiconductor layers.

5,306,925

NONLINEAR OPTICAL ELEMENT AND METHOD OF USING THE SAME

Yuji Abe, and Yasunori Tokuda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,296
Claims priority, application Japan, Apr. 15, 1992, 4-122742
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—21 8 Claims



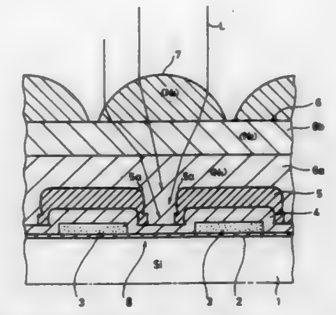
1. A nonlinear optical element using a p-i-n photo-diode structure which has a light absorbing layer of a quantum well structure in an intrinsic region between a p-type doped layer and an n-type doped layer, characterized by including:
- a barrier layer for obstructing the conduction of a multitude of carriers which are generated in said light absorbing layer and transmitted through each said doped layer, said barrier layer being provided in either or both of said p- and n-type doped layers; and
- electrodes for short-circuiting said p- and n-type doped layers.

5,306,926

CCD SOLID STATE IMAGER

Kazuya Yonemoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,599
Claims priority, application Japan, Feb. 12, 1991, 3-018938
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—432 3 Claims



1. A CCD solid state imager comprising,
- a light sensitive portion,
- a pair of light shielding members mounted on either side of said light sensitive portion,
- a first transparent layer with one non-planar surface in contact with said pair of light shielding members and over said light sensitive portion and a second surface of said first transparent layer which is planar, and
- a second transparent layer with a first planar surface in contact with said second planar surface of said first transparent layer, a condenser lens in contact with a second planar surface of said second transparent layer, and a refractive index of said condenser lens being greater than a refractive index of said second transparent layer, and said refractive index of said second transparent layer being lower than a refractive index of said first transparent layer, wherein said second surface of said first transparent layer is located over the surface of said light shielding members.

5,306,927

HIGH CURRENT AMPLIFIER UTILIZING A JOSEPHSON JUNCTION SCHOTTKY DIODE THREE TERMINAL DEVICE

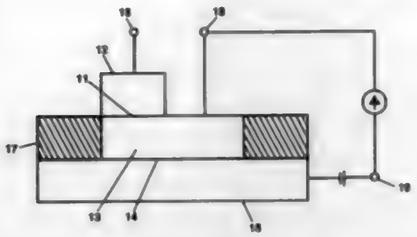
Bruce J. Dalrymple, Redondo Beach; Arnold H. Silver, Rancho Palos Verdes, and Randy W. Simon, Belmont, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 15, 1991, Ser. No. 745,315
Int. Cl.[5] H01L *39/22*
U.S. Cl. 257—38 1 Claim

1. A three-terminal high current amplification device comprising:
- a. an input terminal;
- b. an output terminal;
- c. a common terminal;
- d. a semiconductor substrate of GaAs which is connected to the input terminal; and
- e. a Josephson junction having a first niobium electrode connected to the output terminal and a niobium base electrode connected tot eh common terminal, said base electrode having a thickness less than 200 Angstroms, and said base electrode being directly connected on said semi-

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conductor substrate so that a Schottky barrier is formed there between; said device having a current amplification



between said base electrode and the first electrode of the Josephson junction that is greater than ten.

5,306,928

DIAMOND SEMICONDUCTOR DEVICE HAVING A NON-DOPED DIAMOND LAYER FORMED BETWEEN A BN SUBSTRATE AND AN ACTIVE DIAMOND LAYER

Tunenobu Kimoto; Tadashi Tomikawa, and Nobuhiko Fujita, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

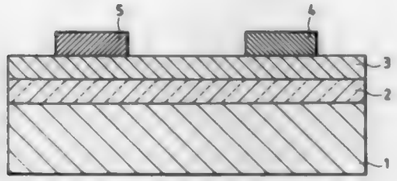
Division of Ser. No. 592,794, Oct. 4, 1990, Pat. No. 5,144,380. This application May 18, 1992, Ser. No. 884,138

Claims priority, application Japan, Oct. 4, 1989, 1-259256

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] H01L *31/0312, 27/095, 29/48, 29/12*

U.S. Cl. 257—77 **1 Claim**



1. A semiconductor device comprising:
a cubic boron nitride substrate;
a non-doped diamond thin film formed on said substrate;
a diamond active layer formed on the non-doped diamond thin film; and
contacts formed on said diamond active layer;
wherein said non-doped diamond thin film substantially reduces the influence of at least one of interface states and surface impurities upon the active layer, and wherein said non-doped diamond thin film insulates said active layer from said substrate.

5,306,929

MOS CONTROLLED THYRISTOR

Noriyuki Iwamuro, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

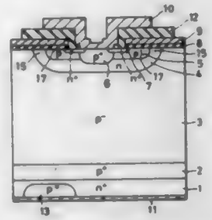
Filed Dec. 13, 1991, Ser. No. 806,257

Claims priority, application Japan, Dec. 28, 1990, 2-408559

Int. Cl.[5] H01L *29/74, 31/111*

U.S. Cl. 257—147 **3 Claims**

1. A MOS controlled thyristor comprising:
a first layer of a heavily doped first conductivity type;
a second layer of a heavily doped second conductivity type disposed on said first layer;
a third layer of a lightly doped second conductivity type disposed on said second layer;
a fourth layer of a first conductivity type selectively formed in a surface region of said third layer;
a fifth layer of a second conductivity type selectively formed in a portion of a surface region of said fourth layer;
a sixth layer of a second conductivity type selectively formed so as to protrude into said fourth layer through said fifth layer;
a seventh layer of a first conductivity type selectively formed in a portion of a surface region of said fifth layer so as to make contact with said sixth layer;
an insulating film formed on a portion of the surface region of said fourth layer between said third and fifth layers;
a gate electrode formed on said insulating film;
a first major electrode making contact with said first layer;
a second major electrode making contract with said sixth and seventh layers; and



an eighth region of highly doped second conductivity type selectively formed in said first layer so as to make contract with said first major electrode without protruding into said second layer and having a surface impurity concentration of $2.0\times10^{19}/cm^3$, a contact area of said eighth region with said first major electrode being at least 25% of the total contact area of said first major electrode with said first layer, a first channel region being formed in the surface region of said fourth layer between said third and fifth layers when a voltage having a first polarity is applied between said gate electrode and said major electrodes, and a second channel region being formed in the surface region of said fifth layer between said fourth and seventh layers when a voltage having a second polarity is applied between said gate and major electrodes.

5,306,930

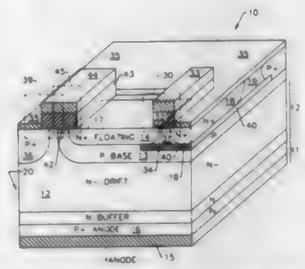
EMITTER SWITCHED THYRISTOR WITH BURIED DIELECTRIC LAYER

Bantval J. Baliga, Raleigh, N.C., assignor to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Dec. 14, 1992, Ser. No. 990,290

Int. Cl.[5] H01L *29/74, 31/111*

U.S. Cl. 257—147 **17 Claims**



1. A semiconductor switching device comprising:
a semiconductor substrate;
a thyristor in said substrate, said thyristor having an anode region, a first base region of first conductivity type on said anode region, a second base region of second conductivity type on said first base region, and a floating emitter region of first conductivity type contacting said second base region and forming a P-N junction therewith;
a cathode region of first conductivity type in said substrate, at a face thereof;
transistor means in said substrate for electrically connecting said cathode region to said floating emitter region in response to a first turn-on bias signal; and
means, including an electrical insulator in said substrate between said cathode region and said anode region, for preventing parasitic regenerative conduction between the P-N-P-N regions formed by said anode region, said first base region, said second base region and said cathode region, while allowing regenerative conduction between the P-N-P-N regions formed by said anode region, said first base region, said second base region and said floating emitter region.

5,306,931

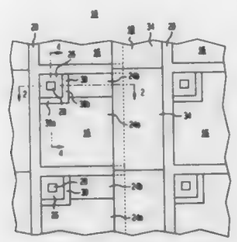
CCD IMAGE SENSOR WITH IMPROVED ANTIBLOOMING CHARACTERISTICS

Eric G. Stevens, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 797,651, Nov. 25, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,587

Int. Cl.[5] H01L *29/78, 27/14, 31/00*

U.S. Cl. 257—223 **14 Claims**



14. An image sensor comprising: a body of a semiconductor material having a surface;
a plurality of photodetectors in the body at the surface, the photodetectors being arranged in an array of at least one line, and each of the photodetectors having first and second photodetecting portions with the first photodetecting portion having a lower potential than the second photodetecting portion so that substantially all of the charge carriers generated in the first photodetecting portion will flow into the second photodetecting portion so that only said second photodetecting portion is used to store the charge carriers generated in both first and second photodetecting portions;
a shift register in the body and extending along the line of photodetectors;
a drain region in the body adjacent each of the photodetectors; and
a barrier region between each drain region and the portions of its adjacent photodetector, wherein the barrier region is located between said drain region and said first photodetecting portion.

5,306,932

CHARGE TRANSFER DEVICE PROVIDED WITH IMPROVED OUTPUT STRUCTURE

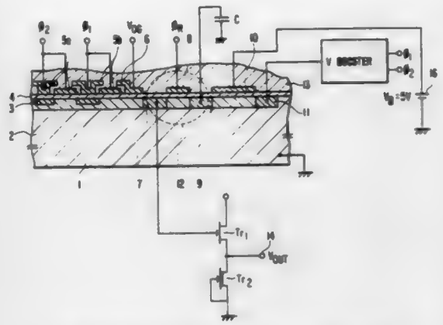
Kazuo Miwada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 854,791, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 555,695, Jul. 23, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 989,889

Claims priority, application Japan, Jul. 21, 1989, 1-190233

Int. Cl.[5] H01L *29/78*

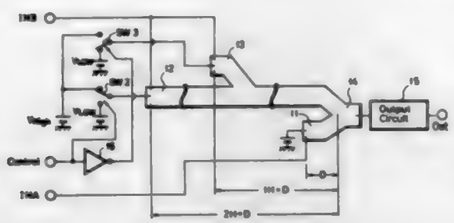
U.S. Cl. 257—239 **3 Claims**



1. A solid-state charge transfer device comprising:
an electric charge transfer section provided in a semiconductor substrate, said electrical charge transfer section being supplied with transfer clock pulses for electrical charge transfer therethrough;
a floating diffused region formed following said electric charge transfer section in said semiconductor substrate;
a reset drain region formed in the vicinity of and apart from said floating diffused region in said semiconductor substrate;
an absorption drain region formed in the vicinity of and apart from said reset drain region in said semiconductor substrate;
an output gate electrode, provided over said semiconductor substrate between said electric charge transfer section and said floating diffused region, for controlling the inflow of electric charges from said electric charge transfer section to said floating diffused region;
a reset gate electrode, provided over said semiconductor substrate between said floating diffused region and said reset drain region, for resetting the potential of said floating diffused region to that of said reset drain region, said reset gate electrode being supplied with a reset clock pulse for periodically resetting said floating diffused region, said reset clock pulse having a voltage height of a first voltage;
a barrier gate electrode provided over said semiconductor substrate between said reset drain region and said absorption drain region, said barrier gate electrode being supplied with a bias voltage having said first voltage;
a capacitor inserted between said reset drain region and a reference potential terminal;
a voltage booster responding to said transfer clock pulses to generate a boosted voltage having a voltage height higher than said first voltage and to supply said boosted voltage to said absorption drain region; and
wherein a channel region under said barrier gate electrode is arranged so that the channel potential beneath said barrier gate electrode becomes lower than the channel potential under said reset gate electrode when in the resetting operation.

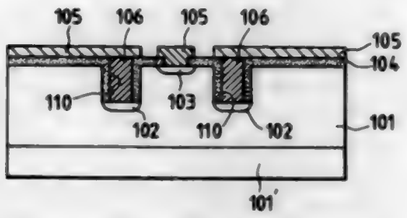
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,933
CCD DELAY LINE WITH SELECTIVE DELAY PERIOD CIRCUIT
Tetsuya Kondo, and Maki Sato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 27, 1993, Ser. No. 112,531
Claims priority, application Japan, Aug. 27, 1992, 4-253884
Int. Cl.[5] H01L 29/78
U.S. Cl. 257—241 12 Claims



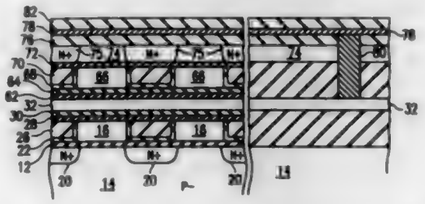
1. A charge transfer device comprising:
a first input stage converting a first input signal into first signal charge;
a first shift register transferring said first signal charge with a first delay amount;
a second input stage converting a second input signal into second signal charge and having first switching means for selectively inputting said second signal charge to a second shift register;
said second shift register transferring said second signal charge with a second delay amount;
a third input stage converting a third input signal into third signal charge and having second switching means for selectively inputting said third signal charge to a third shift register;
said third shift register transferring said third signal charge with a third delay amount; and
adding means for selectively adding one of said second signal charge and said third signal charge to said first signal charge.

5,306,934
SEMICONDUCTOR DEVICE WITH BURIED ELECTRODE
Yuzo Katsuka, Hiratsuka; Toshihiko Ichise; Keiji Ishizuka, both of Kawasaki, and Tetsuo Asaba, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 708,217, May 31, 1991, abandoned.
This application Jan. 17, 1992, Ser. No. 823,604
Claims priority, application Japan, May 31, 1990, 2-139622; Nov. 19, 1990, 2-311593
Int. Cl.[5] H01L 29/80, 23/48
U.S. Cl. 257—263 1 Claim



1. An electrostatic induction transistor comprising:
a first semiconductor region of a first conductivity type;
a second semiconductor region of said first conductivity type having higher resistance than said first semiconductor region and being disposed over said first semiconductor region;
an electrode disposed on a surface of said second semiconductor region; and
a metallic region disposed within said second semiconductor region so as to form a gate electrode by connecting a third semiconductor region of a second conductivity type buried in said second semiconductor region and said electrode through said second semiconductor region,
wherein said metallic region is formed of single-crystalline aluminum.

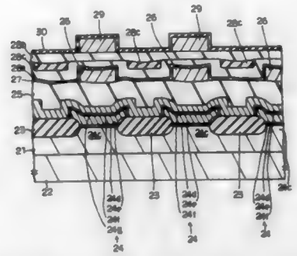
5,306,935
METHOD OF FORMING A NONVOLATILE STACKED MEMORY
Agerico L. Esquivel, Dallas, and Allan T. Mitchell, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 741,978, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 287,973, Dec. 21, 1988, abandoned.
This application Jun. 17, 1992, Ser. No. 900,225
Int. Cl.[5] H01L 29/788
U.S. Cl. 257—315 27 Claims



1. A method of forming a nonvolatile memory array comprising the steps of:
forming first doped regions operable as bitlines in a semiconductor substrate;
forming first floating gates overlying said semiconductor substrate and insulated therefrom;
forming control gates overlying said flowing gates and electrically isolated therefrom;
forming second floating gates overlying said control gates and electronically isolated therefrom;
forming a semiconductor layer overlying said second floating gates such that said second floating gate is electronically isolated from said semiconductor layer; and
forming second diffused regions in said semiconductor layer.

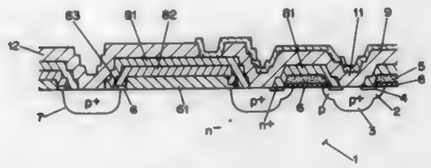
5,306,936
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING OXYNITRIDE FILM FOR PREVENTING CHARGE IN FLOATING GATE FROM LOSS
Yoshiro Goto, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan
Filed Aug. 5, 1993, Ser. No. 102,269
Claims priority, application Japan, Aug. 5, 1992, 4-208677
Int. Cl.[5] H01L 29/68, 29/78, 29/34
U.S. Cl. 257—324 7 Claims

1. A non-volatile semiconductor memory device comprising:
a) a plurality of memory cells each having an accumulating layer operative to accumulate electric charge for changing a conductance of a channel region between a source region and a drain region,
b) a plurality of wirings for supplying at least electric signals to said plurality of memory cells, and
d) a inter-level insulating film structure provided between said plurality of memory cells and said wirings, and having a water-containing insulating film for creating a smooth surface for predetermined wirings incorporated in said plurality of wirings, and a water resisting insulating



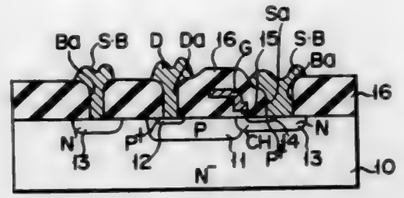
film formed of a substance selected from the group consisting of nitrides and provided between said accumulating layer and said water-containing insulating film.

5,306,937
SEMICONDUCTOR DEVICE HAVING A BUILT-IN CURRENT-SENSING DIODE
Takeyoshi Nishimura, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Sep. 16, 1992, Ser. No. 945,719
Claims priority, application Japan, Sep. 17, 1991, 3-235209
Int. Cl.[5] H01L 29/10, 27/02
U.S. Cl. 257—328 13 Claims



1. A semiconductor device comprising:
a semiconductor substrate first region of a first conductivity type having first and second surfaces;
a second region of a second conductivity type selectively formed in a portion of the first surface of the first region;
an electrode disposed over the first and second regions, the electrode making contact with at least the second region;
a third region formed selectively on a portion of the first surface of the first region, the third region having the same conductivity type, impurity concentration and depth as the second region;
a second electrode disposed over the first and third regions, the second electrode making contact with the third region; and
a third electrode making contact with at least the second surface of the first region;
wherein portions of the first and third regions form a sensing diode for detecting current flow in a parasitic diode consisting of portions of the first and second regions, and current through the sensing diode is measured using the second electrode.

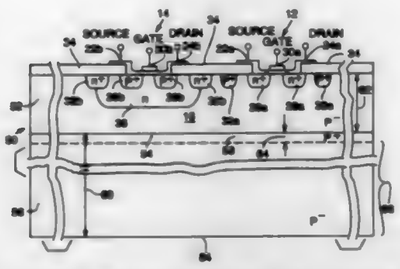
5,306,938
LATERAL MOSFET
Koji Shirai, Kitahyushu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 16, 1991, Ser. No. 777,004
Claims priority, application Japan, Oct. 17, 1990, 2-280202
Int. Cl.[5] H01L 29/784, 29/68
U.S. Cl. 257—344 4 Claims



1. A lateral MOSFET comprising:
a semiconductor substrate of a first conductivity type having a surface;
a first impurity diffused layer of a second conductivity type formed at a first part of the semiconductor substrate;
a second impurity diffused layer of the second conductivity type disposed in the first impurity diffused layer, the second impurity diffused layer having a first depth from the surface of the substrate to a junction of the first impurity diffused layer and the second impurity diffused layer, the first depth of the second impurity diffused layer being smaller than the first impurity diffused layer, and the second impurity diffused layer having a higher impurity concentration than the first impurity diffused layer;
a third impurity diffused layer of the first conductivity type having a higher impurity concentration than the semiconductor substrate, the third impurity diffused layer being formed at a second part of the surface of the semiconductor substrate and surrounding both the first impurity diffused layer and the second impurity diffused layer, the third impurity diffused layer being in contact with a part of a periphery of the first impurity diffused layer;
a fourth impurity diffused layer of the second conductivity type disposed in the third impurity diffused layer adjacent an area where the third impurity diffused layer contacts the first impurity diffused layer, the fourth impurity diffused layer having a second depth from the surface of the substrate to a junction of the third impurity diffused layer and the fourth impurity diffused layer, the second depth of the fourth impurity diffused layer being smaller than the third impurity diffused layer, and the fourth impurity diffused layer having a higher impurity concentration than the first impurity diffused layer;
a gate insulating film on a surface of the third impurity diffused layer, the third impurity diffused layer intervening between the fourth impurity diffused layer and the first impurity diffused layer;
a gate electrode formed on the surface of the third impurity diffused layer through the gate insulating film;
a drain electrode formed in contact with the second impurity diffused layer; and
a source and back gate common electrode formed in contact with both the third impurity diffused layer and the fourth impurity diffused layer.

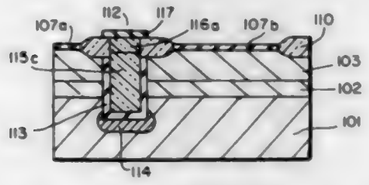
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,939
EPITAXIAL SILICON WAFERS FOR CMOS INTEGRATED CIRCUITS
Kiyoshi Mitani, Durham, N.C., and Witawat Wijaranakula, Vancouver, Wash., assignors to SEH America, Vancouver, Wash.
Continuation of Ser. No. 913,777, Jul. 14, 1992, abandoned, which is a continuation of Ser. No. 684,692, Apr. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 505,056, Apr. 5, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 56,816
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—372 **17 Claims**



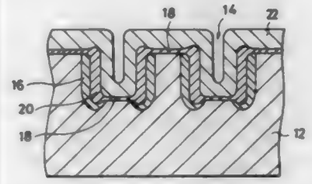
1. A CMOS epitaxial semiconductor wafer, comprising:
a Czochralski semiconductor substrate having a thin, high conductance diffused layer extending inwardly from a major surface region of the substrate toward a thick bulk portion of the substrate having an electrically active dopant concentration of no less than 8×10^{14} atoms/cm^3, the major surface region of the substrate being a medium of suitable size for plural CMOS devices and the diffused layer being continuous across the entire major surface region of the substrate; and
a lightly doped epitaxial layer of semiconductor material supported by the major surface region.

5,306,940
SEMICONDUCTOR DEVICE INCLUDING A LOCOS TYPE FIELD OXIDE FILM AND A U TRENCH PENETRATING THE LOCOS FILM
Toru Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 21, 1991, Ser. No. 779,878
Claims priority, application Japan, Oct. 22, 1990, 2-284733
Int. Cl.[5] H01L *27/02, 27/04, 29/06*
U.S. Cl. 257—374 **13 Claims**



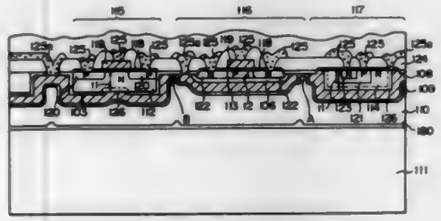
1. A semiconductor device having an element isolation region including a field oxide film of a local oxidation of silicon (LOCOS) type formed in a surface of a silicon substrate, a U-trench provided in said silicon substrate such that said U-trench penetrates said field oxide film with a bottom face of said U-trench reaching at least said silicon substrate, a channel stopper provided in a portion of said silicon substrate exposed on said bottom face of said U-trench, a first film in a form of an insulating film provided in another portion of said silicon substrate exposed on a wall of said U-trench, and a second film buried in said U-trench, said semiconductor device comprising:
said first film being a silicon oxide film formed by thermal oxidation of said another portion of said silicon substrate;
said second film being an insulating film having thermal reflow characteristics;
a third film having non-thermal reflow characteristics, said third film having a top face substantially coplanar with a top face of said field oxide film and a bottom face connected to a top face of said second film; and
a fourth film in a form of an insulating film connected to said top face of said third film at an upper end of said U-trench and covering said U-trench.

5,306,941
SEMICONDUCTOR MEMORY DEVICE AND PRODUCTION PROCESS THEREOF
Norio Yoshida, Hyogo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 1, 1992, Ser. No. 955,128
Claims priority, application Japan, Oct. 9, 1991, 3-292153
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—390 **7 Claims**



1. A semiconductor memory device in which trenches are formed in parallel with each other on a silicon substrate, in which impurity diffused layers are formed on sidewalls of said trenches to provide bit lines, in which word lines serving as gate electrodes as well are formed in a direction to cross said trenches while insulated from said impurity diffused layers, and in which channel regions are defined on bottoms of the trenches and on surfaces of the substrate between adjacent trenches under said word lines.

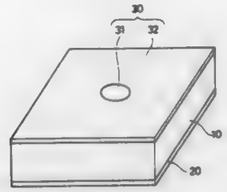
5,306,942
SEMICONDUCTOR DEVICE HAVING A SHIELD WHICH IS MAINTAINED AT A REFERENCE POTENTIAL
Tetsuo Fujii, Toyohashi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Continuation-in-part of Ser. No. 597,698, Oct. 10, 1990, abandoned. This application Feb. 3, 1992, Ser. No. 829,591
Claims priority, application Japan, Oct. 11, 1989, 1-265453; Jan. 19, 1990, 2-11584
Int. Cl.[5] H01L *27/02, 27/04, 25/04*
U.S. Cl. 257—508 **8 Claims**



1. A semiconductor device comprising:

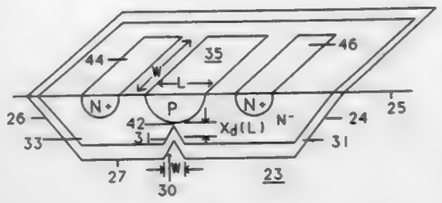
a semiconductor substrate;
a semiconductor layer disposed on said semiconductor substrate;
a first element formed in a region of said semiconductor layer and having a perimeter including a bottom;
a second element formed in another region of said semiconductor layer;
an insulating layer surrounding said perimeter of said first element, for electrically insulating and separating said first element from said second element and said semiconductor substrate;
an electrical shield layer disposed between said insulating layer and from said first element on a surface of the semiconductor layer, surrounding said perimeter of said first element, and adapted to a reference electric potential applied thereto, for shielding said first element from an electrical fluctuation of said semiconductor substrate caused by said second element, said shield layer comprising two layers and having an electrode connection portion having a width greater than a thickness of the shield layer; and
an electrode, connected to said electrode connection portion, for receiving and applying said reference electric potential to said electrical shield layer.

5,306,943
SCHOTTKY BARRIER DIODE WITH OHMIC PORTION
Hisashi Ariyoshi; Masaaki Sueyoshi; Kouichi Sakamoto, and Susumu Fukuda, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Mar. 30, 1992, Ser. No. 860,440
Claims priority, application Japan, Mar. 28, 1991, 3-105030; Jun. 28, 1991, 3-185427
Int. Cl.[5] H01L *29/48*
U.S. Cl. 257—457 **16 Claims**



1. A Schottky barrier diode, comprising: a semiconductor substrate having a prescribed concentration of a conductivity-type-determining impurity,
an ohmic electrode formed on a first region of said semiconductor substrate, and
a Schottky electrode formed on a second region spaced apart from said first region of said semiconductor substrate,
wherein said Schottky electrode includes at least one Schottky portion and at least one ohmic portion both forming a contact with said semiconductor substrate, the Schottky portion having means for forming a depletion layer adjacent said Schottky portion in said semiconductor substrate, and said ohmic portion having means for forming a reduced portion of said depletion layer adjacent said ohmic portion and thereby improving rectifying characteristics of said Schottky barrier diode.

5,306,944
SEMICONDUCTOR STRUCTURE WITHIN DI ISLANDS HAVING BOTTOM PROJECTION FOR CONTROLLING DEVICE CHARACTERISTICS
James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.
Continuation of Ser. No. 470,197, Jan. 24, 1990, abandoned. This application Feb. 5, 1991, Ser. No. 651,327
Int. Cl.[5] H01L *29/80, 29/72, 27/12*
U.S. Cl. 257—524 **25 Claims**



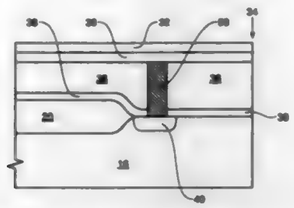
1. A semiconductor device comprising:
a substrate having a first surface and a depression extending from said first surface to a floor portion of said depression, said floor portion being configured such that at least one portion of said substrate extends above said floor portion of said depression in the form of at least one projection;
a dielectric layer formed on the side surfaces and floor portion of said depression;
a semiconductor layer of a first conductivity type and a first, relatively low, impurity concentration formed in contact with said dielectric layer in said depression, so as to be dielectrically isolated from said substrate;
a first semiconductor region of a second conductivity type, opposite to said first conductivity type, formed in a first surface portion of said semiconductor layer so as to define therewith a PN junction which extends adjacent to, but is spaced apart from said at least one projection of said substrate by material of said semiconductor layer therebetween;
a second semiconductor region of said first conductivity type formed in a second surface portion of said semiconductor layer, spaced apart from said first surface portion thereof and having a second, relatively high, impurity concentration; and
wherein, throughout that portion of said semiconductor layer which extends from said at least one projection to said PN junction, said semiconductor layer has said first, relatively low, impurity concentration, and wherein said at least one projection comprises a plurality of projections having sidewall portions which are disposed adjacent to and alongside first semiconductor region.

5,306,945
FEATURE FOR A SEMICONDUCTOR DEVICE TO REDUCE MOBILE ION CONTAMINATION
Tracy W. Drummond, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed Oct. 27, 1992, Ser. No. 968,086
Int. Cl.[5] H01L *29/34*
U.S. Cl. 257—620 **21 Claims**

1. A semiconductor device having a die, said die comprising:
a) a substrate;
b) a plurality of impurity regions formed in said substrate;
c) a dielectric layer formed over said substrate;
d) a conductive layer formed over said substrate wherein said impurity regions, said dielectric layer, and said conductive layer form circuitry; and
e) a barrier formed over said substrate, said barrier being peripherally located on said die with respect to said circuitry, said barrier overlying only said substrate and being

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electrically coupled with at least one of said impurity regions,



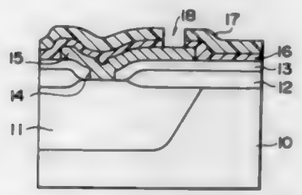
whereby said barrier protects said dielectric to reduce the entrance of mobile ions into said dielectric layer.

5,306,946

SEMICONDUCTOR DEVICE HAVING A PASSIVATION LAYER WITH SILICON NITRIDE LAYERS

Hiroshi Yamamoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,446
Claims priority, application Japan, Oct. 15, 1990, 2-275557
Int. Cl.[5] J01L *23/290, 23/485*
U.S. Cl. 257—640 **2 Claims**



1. A semiconductor device comprising a passivation layer deposited on a wiring layer, wherein said passivation layer includes a plurality of silicon nitride layers comprising at least one underlying silicon nitride layer and at least one overlying silicon nitride layer, said nitride layers deposited by the plasma-assisted chemical disposition method by changing layer forming conditions to demonstrate different properties, wherein the intrinsic compression stress of said at least one underlying silicon nitride layer is 3×10^9 to 1×10^{10} dyne/cm^2, and the intrinsic compressive stress of said at least one overlying silicon nitride layer is less than or equal to half of the intrinsic compressive stress of said at least one underlying silicon nitride layer.

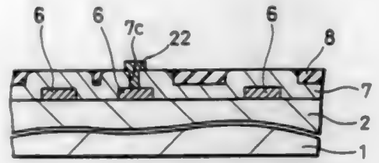
5,306,947

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

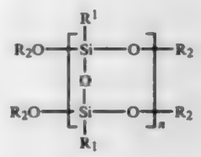
Hiroshi Adachi; Hirozoh Kanegae; Hiroshi Mochizuki; Masanori Obata; Takemi Endoh; Kimio Hagi; Shigeru Harada; Kazuhito Matsukawa; Akira Ohhisa, and Etsushi Adachi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1993, Ser. No. 2,398
Claims priority, application Japan, Jan. 16, 1992, 4-5928
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—642 **7 Claims**

1. A semiconductor device including an interlayer insulating film for insulating and isolating a lower interconnection and an upper interconnection formed over the lower interconnection from each other, comprising:
a semiconductor substrate including an element;
a lower interconnection layer provided on said semiconductor substrate having a pattern of stepped portions and electrically connected to said element;
a silicon type insulating film provided on said semiconductor substrate so as to cover said lower interconnection layer, the surface of said silicon type insulating film including recessed portions above regions between the stepped portions of said pattern;
a silicon ladder resin film filled in said recessed portions of said silicon type insulating film for making even the surface of said silicon type insulating film;



a via hole formed in said silicon type insulating film for exposing part of the surface of said lower interconnection layer; and
an upper interconnection layer provided on said silicon type insulating film and electrically connected to said lower interconnection layer through said via hole,
said silicon ladder resin film having the structural formula:



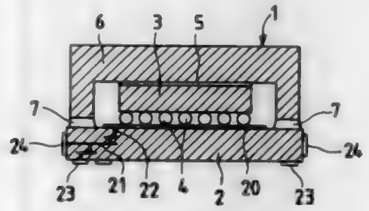
where R_1 is at least one of a phenyl group and a lower alkyl group, R_2 is at least one of a hydrogen atom and a lower alkyl group, and n is an integer of 20 to 1000.

5,306,948

SEMICONDUCTOR DEVICE AND SEMICONDUCTOR MODULE HAVING AUXILIARY HIGH POWER SUPPLYING TERMINALS

Takeo Yamada, Boston, Mass.; Satoru Isomura; Atsushi Shimizu, both of Ohme; Yuko Ito, Hamura; Tohru Kobayashi, Iruma, and Mikinori Kawaji, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,332
Claims priority, application Japan, Oct. 3, 1991, 3-256356
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—690 **25 Claims**



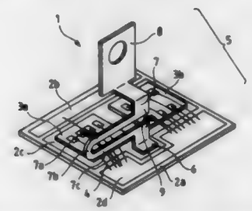
1. A semiconductor device comprising:
a base substrate having a first surface, a second surface opposite to said first surface, and a third surface formed between said first surface and said second surface, said first surface having a plurality of connection terminals, and said second surface having a plurality of mounting terminals connected electrically with said connection terminals, said connection terminals and said mounting terminals having at least one power supplying terminal connected electrically with each other;
a semiconductor pellet having a principal surface having a circuit element and a plurality of external terminals, and a rear surface opposite to said principal surface, said external terminals having at least one power supplying external terminal, said semiconductor pellet being mounted on said base substrate such that the first surface of said base substrate faces the principal surface of said semiconductor pellet, said external terminals being electrically connected with the connection terminals of said base substrate; and
a first auxiliary terminal mounted on the third surface of said base substrate, said first auxiliary terminal being electrically connected with said power supplying external terminal which electrically connects at least one of said connection terminals with at least one of said mounting terminals.

5,306,949

TRANSISTOR MODULE HAVING EXTERNAL LEAD TERMINAL WITH TRANSIENT VOLTAGE SUPPRESSION

Toshifusa Yamada; Shuji Miyashita, and Toshihisa Shimizu, all of Kanagawa, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 9, 1992, Ser. No. 973,276
Claims priority, application Japan, Nov. 25, 1991, 3-309146
Int. Cl.[5] H01L *23/50*
U.S. Cl. 257—690 **6 Claims**



1. A transistor module having a lead terminal extending from the interior of said module through an outer cover of said module and protruding from said outer cover, said lead terminal comprising:
an internal terminal portion on an inner side of said cover;
an external terminal portion extending through and protruding from said cover;
an intermediate terminal portion having at least one bent portion conductively connecting said internal and external terminal portions; and
a shortcircuit element electrically connected in parallel with said intermediate terminal portion, said shortcircuit element having a larger electric resistance than that of said intermediate terminal portion and a smaller inductance than that of said intermediate terminal portion.

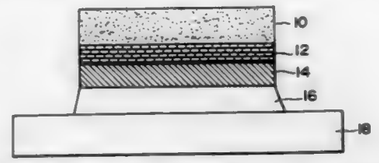
5,306,950

ELECTRODE ASSEMBLY FOR A SEMICONDUCTOR DEVICE

Hisayoshi Fujikawa; Koji Noda; Takeshi Ohwaki, and Yasunori Taga, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 22, 1992, Ser. No. 994,913
Claims priority, application Japan, Dec. 26, 1991, 3-345598
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—750 **6 Claims**

1. An electrode assembly for a semiconductor device comprising:
a semiconductor substrate;
a contact layer formed on said substrate, mainly composed of at least one member selected from the group consisting of rare-earth metals, rare-earth silicides, and mixtures thereof;
a diffusion barrier layer formed on said contact layer, mainly composed of iron or an iron alloy; and
a solder layer formed on said diffusion barrier layer, mainly composed of lead and tin,



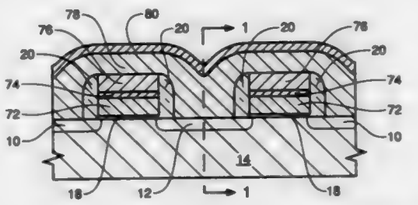
wherein said contact layer contains as impurities not more than 7% oxygen, less than 1% Ca, less than 1% Mg, less than 1% Fe, less than 0.01% Zn, less than 0.01% Si and less than 0.01% Al, all on a weight basis.

5,306,951

SIDEWALL SILICIDATION FOR IMPROVED RELIABILITY AND CONDUCTIVITY

Roger R. Lee; Fernando Gonzalez, and Tyler A. Lowrey, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 14, 1992, Ser. No. 883,008
Int. Cl.[5] H01L *23/48, 23/52, 29/40*
U.S. Cl. 257—755 **16 Claims**



1. A structure for a semiconductor device, comprising:
a) a semiconductor substrate having a major, substantially planar surface;
b) a dielectric layer formed over said semiconductor substrate;
c) a digit line comprising a layer of polycrystalline silicon formed over said dielectric layer, said polycrystalline silicon layer having a major surface substantially parallel with said substrate surface and a pair of minor surfaces intersecting said major surface of said polycrystalline silicon layer,
said digit line further comprising a layer of conductive material comprising a refractory metal, said conductive material formed on said major and minor surfaces of said polycrystalline silicon layer,
whereby said conductive material increases the conductive capacity of said digit line.

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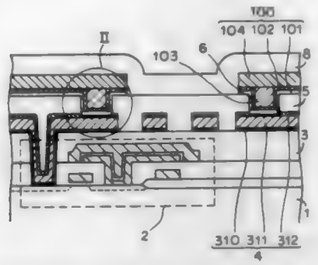
VOL 1161 ISS 4 APR 26 1994 UMI

5,306,952

MULTILAYER ALUMINUM-CONTAINING INTERCONNECTION STRUCTURE OF SEMICONDUCTOR DEVICE

Megumi Matsuura, and Tomohiro Ishida, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,904
Claims priority, application Japan, Oct. 14, 1991, 3-264636
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—165 **9 Claims**



1. An interconnection structure of a semiconductor device, comprising:

a first aluminum-containing interconnection layer including a refractory element-containing layer at its surface, the refractory element-containing layer having a melting point higher than that of aluminum;

an insulating layer formed on said first interconnection layer and including a through-hole reaching the surface of said first interconnection layer;

a second aluminum-containing interconnection layer formed on said insulating layer and electrically connected to said first interconnection layer through said through-hole, wherein

said second interconnection layer comprises

a titanium layer formed on said insulating layer to extend through said through-hole,

a titanium compound layer formed on said titanium layer, and

an aluminum-containing layer formed on said titanium compound layer; and

a metal-containing layer formed on said titanium compound layer and under said aluminum-containing layer and filling said through-hole.

5,306,953

REAR VIEW MIRROR POSITIONING AND ALERTING APPARATUS

Robert I. Weiner, 305 W. Chesapeake Ave., Towson, Md. 21204

Filed Aug. 3, 1992, Ser. No. 923,461
Int. Cl.[5] G08G *1/04*
U.S. Cl. 307—10.1 **8 Claims**

1. Apparatus for adjusting the position of an external rear-view mirror mounted on a tractor of the type used to pull a semi-trailer, the mirror being mounted for rotation about a vertical axis, comprising:

a controllable drive mechanism connected to the mirror including an electric motor operable to rotate the mirror in either direction about the vertical axis thereof;

first and second ultrasonic transducers mounted on the exterior rear wall of the tractor on opposite sides of the longitudinal centerline of the tractor so as to project ultrasonic sound beams rearwardly onto the front wall of the trailer and to detect the reflections of said ultrasonic sound beams from said trailer front wall; and

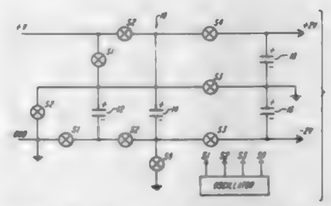
circuit means for determining the difference in path length detected by said first and said second transducers and for generating control signals to said drive mechanism in accordance with the difference to effect rotation of the mirror.

5,306,954

CHARGE PUMP WITH SYMMETRICAL +V AND −V OUTPUTS

Paul S. Chan, Cupertino, and Raymond W. B. Chow, Saratoga, both of Calif., assignors to Sipex Corporation, Billerica, Mass.

Filed Jun. 4, 1992, Ser. No. 893,519
Int. Cl.[5] H02M *3/18*
U.S. Cl. 307—110 **25 Claims**



1. A method for generating, from a first voltage source providing a unipolar input voltage of first polarity having a voltage reference connection, bipolar output voltages of magnitude approximately twice the unipolar input voltage comprising the steps of:

charging a first charge transfer device having first and second connection ends to a voltage approximating said unipolar input voltage by switchably connecting said second connection end of said first charge transfer device to said unipolar input voltage and said first connection end of said first charge transfer device to said voltage reference connection;

in a first generating step, generating a second voltage source at the first connection end of said first charge transfer device, with respect to said voltage reference connection, of magnitude substantially equal to the magnitude of said unipolar input voltage but of opposite polarity by switchably connecting said second end of said first charge transfer device to said voltage reference connection;

charging a second charge transfer device having first and second connection ends by switchably connecting said second connection end of said second charge transfer device to said unipolar input voltage and said first connection end of said second charge transfer device to said second voltage source;

in a second generating step, generating a third voltage source of magnitude approximately equal to twice the magnitude of said unipolar input voltage and of a selected polarity by switchably connecting one of said first and second connection ends of said second charge transfer device to said voltage reference connection;

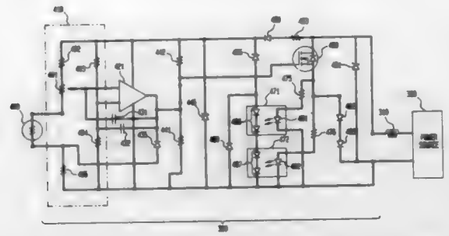
in a third generating step, generating a fourth voltage source of magnitude approximately equal to twice the magnitude of said unipolar input voltage and of a polarity opposite to said selected polarity by switchably connecting the other of said first and second connection ends referenced in said second generating step to said voltage reference connection.

5,306,955

TWO-WIRE, ELECTRONIC SWITCH

Warren R. Fryer, New York, N.Y., assignor to Control Products, Inc., East Hanover, N.J.

Filed Apr. 22, 1991, Ser. No. 688,849
Int. Cl.[5] H01H *35/00, 37/00;* **G02B** *27/00*
U.S. Cl. 307—116 **16 Claims**



1. Power coupling apparatus for coupling power from a power source to a switch, which switch is comprised of (a) two inputs, (b) means for sensing a condition, and (c) means, in response thereto, for causing the switch to be on or off at its inputs, one of the inputs being returned to a load that is being switched and the other of the inputs being returned to the power source, the power source being further connected to the load to supply current to the load whenever the switch is on, the power apparatus comprising:

switch-off-power means for coupling power from the power source to the switch whenever the switch is off; and

switch-on-power means for extracting power from the power source and for coupling the extracted power to the switch whenever the switch is on, wherein the switch-on-power means comprises:

(a) means for extracting current supplied to the load from the power source, and

(b) supply means, in response to the extracted current, for providing an output voltage which is coupled to the switch wherein the supply means comprises one or more photovoltaic devices.

5,306,956

CONNECTING SYSTEM FOR SUPPLYING ELECTRICAL POWER TO A DEVICE IN PLACE OF A BATTERY ALONG WITH THE TRANSMISSION OF DATA SIGNALS FROM THE DEVICE TO MONITORING APPARATUS, OR SUPPLYING ELECTRICAL POWER TO A BATTERY FOR THE CHARGING THEREOF

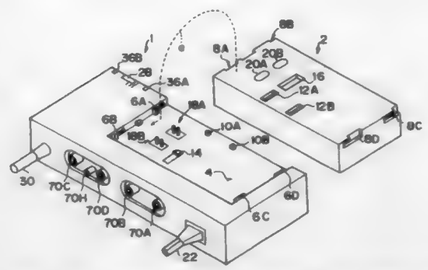
Tamon Ikeda, Tokyo; Hiroaki Itoh, Chiba, and Yoshihiro Konno, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Dec. 12, 1991, Ser. No. 805,989
Claims priority, application Japan, Dec. 29, 1990, 2-416530
Int. Cl.[5] H02J *7/00*
U.S. Cl. 307—125 **8 Claims**

1. A connecting system comprising a connecting apparatus which has a power supply circuit, a battery receiving means and a turn-over switch:

said battery receiving means being able to receive a first battery to be recharged; and

said turn-over switch selectively applying a power source of said power supply circuit to one of said first battery received by said battery receiving means and an external electronic apparatus through an elongate flexible connection cable, said connection cable also transmitting information signals to said electronic apparatus.



5,306,957

SWITCH LEVER OPERATING DEVICE WITH AUTOMATIC TIMER

Donald B. Ellingham, Greenwich, Conn., and Ofer Nissim, 1930 W. Main, Stamford, Conn. 06831, assignors to Ofer Nissim, Stamford, Conn.

Filed Jul. 10, 1992, Ser. No. 911,415
Int. Cl.[5] H01H *43/00*
U.S. Cl. 307—141 **11 Claims**

1. A device for operation of a switch which has a switch lever movable between extreme lever positions, said device comprising:

a housing defining an enclosure in which are contained a slide, a slide return mechanism, a timer, and means for starting the timer;

said housing having means for attaching the housing to a switch having a switch lever for engagement with the slide;

said slide comprising means for engaging and moving a switch lever between its extreme positions by moving the slide along a slide path;

handle means extending outward from the enclosure through an opening in said housing and operable from outside the enclosure for manually moving the slide along its slide path;

said slide return mechanism comprising a return member movable to a cocked position by said slide as said slide is moved manually from one end of its slide path to the other end, spring means for returning said return member from said cocked position, said spring means being loaded for return by the action of manually moving said slide to said other end of its slide path, latch means for engaging and retaining said return member at said cocked position, latch release means actuated by the timer for retracting the latch means to release the return member for return by spring means, and slide return means for returning said

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slide to said one end of its slide path by the action of returning the return member;

said means for starting the timer being actuated by the manual action of moving said return member to said cocked position;

said timer comprising a computer chip programmed to respond to said means for starting the timer, and to measure a preset time interval from when the timer is started and to actuate said latch release means at the end of said interval.

5,306,958

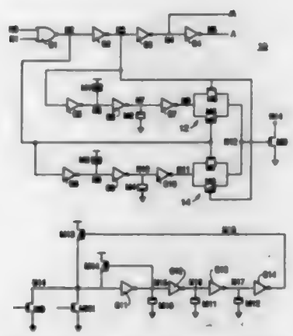
HIGH-SPEED ADDRESS TRANSITION DETECTION CIRCUIT

Chitranjan N. Reddy, Milpitas, and Ajit K. Medbekar, San Jose, both of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed May 6, 1992, Ser. No. 880,968

Int. Cl.[5] H03K *3/017, 5/22*

U.S. Cl. 307—265 **5 Claims**



1. An address transition detection circuit that provides an address transition detection pulse in response to a logic transition of an external address input, the address transition detection circuit comprising:

(a) a buffer output node;

(b) an address input buffer means responsive to the external address input for providing first and second complementary signals at first and second address input buffer output nodes, respectively;

(c) first delay chain means connected between the first address input buffer-output node and the buffer output node and responsive to a high-to-low external address input logic transition for providing a logic high signal at the buffer output node;

(d) second delay chain means connected between the second address input buffer output node and the buffer output node and responsive to a low-to-high external address input logic transition for providing a logic high signal at the buffer output node;

(e) an address transition detection node;

(f) pull-down means connected to the address transition detection node and responsive to a logic high signal at the buffer output node for generating a logic low address transition detection pulse at the address transition detection node;

(g) feedback-controlled means connected to the address transition detection node (N14) for controlling the pulse width of the address transition detection pulse.

5,306,959

ELECTRICAL CIRCUIT FOR GENERATING PULSE STRINGS

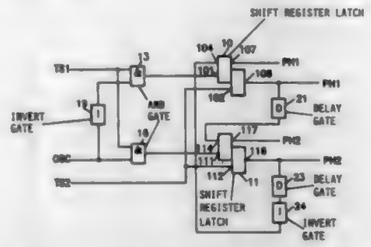
Guenter Knauft, Boehlingen; Bernd Leppla, Grafenau-Datzingen; Dietmar Schmunkamp, Ehningen, and Ulrich Weiss, Holzgerlingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1992, Ser. No. 858,252

Claims priority, application European Pat. Off., Apr. 30, 1991, 91106970.6

Int. Cl.[5] H03K *5/04, 5/13, 3/284, 7/00*

U.S. Cl. 307—269 **5 Claims**



1. An electrical circuit, comprising

means for generating a first and a second pulse string (PH1, PH2) having a first pulse duration (T1) using a third pulse string (OSC) having a second pulse duration (T2),

the second pulse duration (T2) being half of the first pulse duration (T1) and the second pulse string (PH2) being shifted by the value of the second pulse duration (T2) with regard to the first pulse string (PH1),

comprising:

two shift register latches (10, 11),

each having two pulse inputs (101, 102, 111, 112), one data input (104, 114) and two data outputs (106, 107, 116, 117), respectively,

the third pulse string (OSC) and the inversion of the third pulse string (OSC) being applied to one of the two pulse inputs (101, 111) of the two shift register latches (10, 11), respectively, and the other one of the two pulse inputs (102, 112) of the two shift register latches (10, 11) being supplied with a signal (TS2) such that the data outputs (106, 107, 116, 117) of the shift register latches (10, 11) are internally connected, respectively, and the data output (106, 116) of one of the shift register latches (10, 11) being coupled to the data input (114, 104) of the other one of the shift register latches (11, 10), respectively,

and further comprising:

inverting means (24) being provided within one of the two feedback paths from the data outputs (106, 116) to the data inputs (114, 104) of the shift register latches (10, 11),

the data outputs (106, 116) carrying the first and the second pulse string (Ph1, PH2).

5,306,960

COMMON BIAS CIRCUIT FOR A PLURALITY OF DISCRETE IC'S EACH HAVING THEIR OWN BIAS CIRCUITRY

Jeffery B. Lendaro, Noblesville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 696,562, May 6, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 945,847

Int. Cl.[5] H03K *3/01, 3/26*

U.S. Cl. 307—296.1 **7 Claims**

1. Apparatus comprising:

a first circuit;

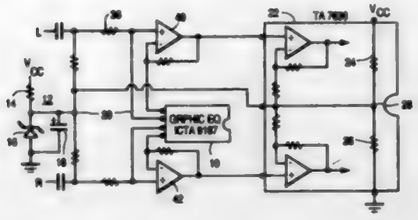
a first bias voltage source for deriving a first bias voltage for at least a portion of said first circuit; said first bias voltage being available at a first terminal;

said first circuit and said said first bias voltage source being incorporated within an integrated circuit; said first terminal being a terminal of said integrated circuit;

a second circuit separate from said integrated circuit;

a second bias voltage source for deriving a second bias voltage for at least a portion of said second circuit; said second bias voltage available at a second terminal; and

means DC coupling said first terminal of said first bias source to said second terminal of said second bias source for equalizing said first and second bias voltages.



5,306,961

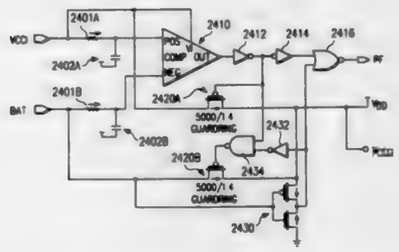
LOW-POWER INTEGRATED CIRCUIT WITH SELECTABLE BATTERY MODES

Robert D. Leo, Denton, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 615,618, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 352,581, May 15, 1989, Pat. No. 5,210,846, Ser. No. 351,759, May 15, 1989, Pat. No. 4,982,371, Ser. No. 351,760, May 15, 1989, Pat. No. 5,091,771, Ser. No. 351,998, May 15, 1989, Pat. No. 4,972,377, Ser. No. 352,598, May 15, 1989, Pat. No. 4,945,217, Ser. No. 352,596, May 15, 1989, Pat. No. 4,948,954, Ser. No. 351,999, May 15, 1989, Pat. No. 5,045,675, Ser. No. 352,142, May 15, 1989, Pat. No. 4,995,004, and Ser. No. 351,997, May 15, 1989, abandoned. This application May 8, 1992, Ser. No. 882,244

Int. Cl.[5] H03K *3/01;* **H02J** *9/00*

U.S. Cl. 307—296.3 **8 Claims**



1. An integrated circuit, comprising:

first, second, and third power input terminals;

said first input terminal being operatively connected to an internal power supply line;

a ground terminal, for connection to ground;

a comparator,

having a negative input thereof operatively connected to said second terminal, and

having a positive input thereof and a power supply input thereof operatively connected to said third terminal,

said comparator being configured to provide a high logic output when said third terminal is at a higher voltage than said second terminal while said comparator is being powered;

a first power switch, configured to connect said third terminal to said internal power supply line when said output of said comparator is at a high logic state;

a second power switch, configured to connect said second terminal to said internal power supply line when said output of said comparator is at a low logic state and the voltage at said second terminal is at least a high logic level;

whereby, (i) when said integrated circuit is combined with a battery attached to said second or third terminal, and a system power supply attached to the other of said second and third terminals, said chip will operate in a battery-backed mode;

and (ii) when both said second and third terminals are grounded, said integrated circuit will operate in a battery-operated mode, when said first terminal is powered up.

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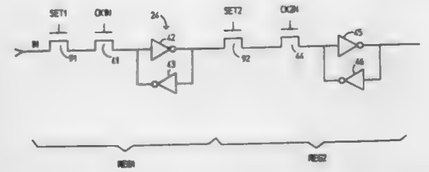
QUALIFIED NON-OVERLAPPING CLOCK GENERATOR TO PROVIDE CONTROL LINES WITH NON-OVERLAPPING CLOCK TIMING

Joel D. Lamb, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 619,280, Nov. 27, 1990, Pat. No. 5,124,572. This application Jun. 22, 1992, Ser. No. 902,231

Int. Cl.[5] H03K *5/13, 7/00, 17/00;* **G11C** *19/00*

U.S. Cl. 307—269 **11 Claims**



1. A control system for providing clocking and control signals to respective stages of a pipelined circuit in a system having conditional signals SET1 and SET2 for limiting the flow of data in the pipelined circuit, the control system comprising:

first means for generating two overlapping differential clock signals CK1 and CK2;

second means for generating two non-overlapping differential clock signals CK1N and CK2N from CK1 and CK2, CK1N having a rising edge which occurs after a falling edge of CK2N and a falling edge which occurs before a rising edge of CK2N;

a plurality of transfer gates, the flow of data to each stage of the pipelined circuit, which is controlled by one of the conditional signals, being controlled by one of the plurality of transfer gates; and

third means for generating control signals SET1N and SET2N, the control signals SET1N and SET2N maintain the timing considerations of the non-overlapping differential clock signals CK1N and CK2N, and the limits of the conditional signals SET1 and SET2, the control signals SET1N and SET2N being used for controlling the transfer gates.

5,306,963

ADDRESS TRANSITION DETECTION NOISE FILTER IN PULSE SUMMATION CIRCUIT FOR NONVOLATILE SEMICONDUCTOR MEMORY

David A. Leak, Rancho Cordova; Sachidanandan Sambandan, Folsom, and Kerry Tedrow, Orangevale, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 19, 1992, Ser. No. 901,276

Int. Cl.[5] H03K *17/16, 19/00*

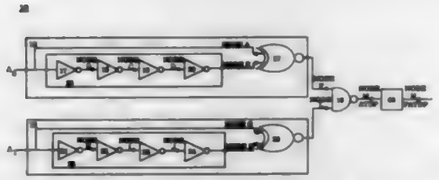
U.S. Cl. 307—443 **18 Claims**

1. A noise filter apparatus for a digital input signal, said

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digital input signal comprising at least one input signal pulse, said input signal pulse having a leading and a trailing edge, said input signal pulse transitioning from a first voltage level to a second voltage level on said leading edge, said first voltage level not equal to said second voltage level, said noise filter apparatus comprising:

a first inversion circuit for inverting and delaying said digital input signal, said first inversion circuit having as input said digital input signal and having as output a first intermediate signal, said first intermediate signal being an inversion of said digital input signal and lagging said digital input signal by a first delay period, said first intermediate signal transitioning from said second voltage level to said first voltage level said first delay period following each said leading edge of said digital input signal and said first intermediate signal transitioning from said first voltage level to said second voltage level said first delay period



following each said trailing edge of said digital input signal;

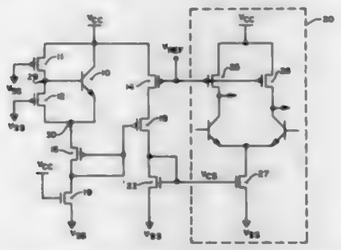
a delay chain circuit, coupled to said first inversion circuit, said delay chain circuit having as input said digital input signal and said first intermediate signal, said delay chain circuit having as output a filtered output signal, if said filtered output signal is not at said second voltage level, said filtered output signal transitioning to said second voltage level a second delay period following said leading edge, said delay chain circuit introducing a third delay period, said third delay period longer than said second delay period, said third delay period resetting following the trailing edge of each said digital input signal pulse, such that said filtered output signal transitions to said first voltage level said third delay period following said trailing edge unless a subsequent said leading edge occurs within said third delay period minus said second delay period from said trailing edge.

5,306,964

REFERENCE GENERATOR CIRCUIT FOR BICMOS ECL GATE EMPLOYING PMOS LOAD DEVICES

Gregory F. Taylor, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 22, 1993, Ser. No. 20,651
Int. Cl.[5] H03K *19/02, 19/086*
U.S. Cl. 307—446 **10 Claims**



1. A reference circuit coupled to a BiCMOS logic gate, said gate including a pair of emitter coupled bipolar transistors, each loaded by a corresponding PMOS load device coupled to a first supply potential, the emitters of said bipolar transistors being commonly coupled to a second supply potential through a NMOS current source device which sources current for said pair, and wherein said first supply potential is higher than said second supply potential, said reference circuit comprising:

a V_{bg} multiplier coupled between said first supply potential and a first internal node, said multiplier establishing a predetermined voltage at said internal node which determines the voltage swing across said PMOS load devices;

a first PMOS transistor having its source coupled to said internal node;

a first NMOS transistor coupled in series with said first PMOS transistor and configured as a current source for said multiplier;

a second PMOS transistor having its gate coupled to the gate and drain of said first PMOS transistor in a source follower configuration so as to drive the source node of said second PMOS transistor to said predetermined potential;

a reference PMOS transistor coupled between said first supply potential and said source node of said second PMOS transistor, the gate of said reference PMOS transistor being commonly coupled to the gates of said PMOS load devices and to a reference potential;

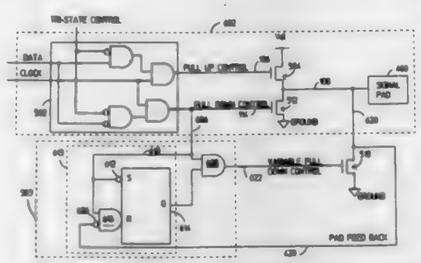
a second NMOS transistor having its gate and drain coupled to the drain of said second PMOS transistor, said second NMOS transistor also having its source coupled to said second supply potential and its gate coupled to the gate of said NMOS current source device such that the reference current flowing through said reference PMOS transistor and said second NMOS transistor is mirrored through said PMOS load devices and said NMOS current source device.

5,306,965

PROCESS COMPENSATING VARIABLE IMPEDENCE I/O DRIVER WITH FEEDBACK

Thomas A. Asprey, Boulder, Colo., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jul. 1, 1992, Ser. No. 907,362
Int. Cl.[5] H03K *19/20*
U.S. Cl. 307—448 **13 Claims**



1. An output driver for driving a signal through a signal pad on a semiconductor device, the output driver comprising:

a first switch having an input, an output and a gate, the output coupled to the signal pad and the input coupled to a first preselected source;

a second switch having an input, an output and a gate, the output coupled to the signal pad and the input coupled to a second preselected source;

a control logic having a first and second output, the first output connected to the gate of the first switch and the second output connected to the gate of the second switch;

a third switch having an input, an output and a gate, the output coupled to the signal pad and the input coupled to a third preselected source; and

a feedback control circuit having:

a first input coupled to the signal pad,

a second input coupled to the second output of the control logic, and

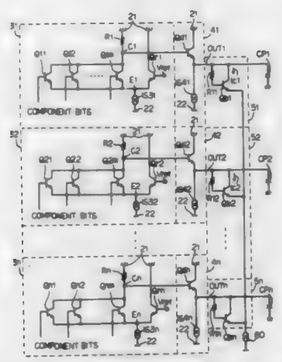
means for outputting a control signal to the third switch such that the third switch connects the signal pad to the third preselected source when the second switch connects the signal pad to the second preselected source and the third switch shows a high impedance as its output when the signal on the signal pad reaches a threshold level and maintains a high impedance at the output of third switch until the second switch shows a high impedance as its output.

5,306,966

HIGH-SPEED AND LOW-POWER CONSUMPTION DECODER UNIT IMPLEMENTED BY EMITTER-COUPLED LOGIC CIRCUIT

Shi-Ichi Ohkawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 15, 1992, Ser. No. 883,473
Claims priority, application Japan, May 28, 1991, 3-152604
Int. Cl.[5] H03K *19/082*
U.S. Cl. 307—463 **2 Claims**



1. An electric circuit implemented by emitter coupled logic circuits, said circuit comprising:

a) a logical unit for achieving a predetermined logic operation;

b) a plurality of output terminals associated with said logical unit;

c) a plurality of driver stages associated with said logical unit for driving said plurality of output terminals, and each of said driver stages being implemented by a series combination of a driving bipolar transistor and a constant current source coupled between first and second sources of voltage, said first and second voltage sources having levels which are different from each other, said driving bipolar transistors respectively having an individually associated base node coupled with output nodes of said logical unit and respective emitter node respectively coupled with said plurality of output terminals; and

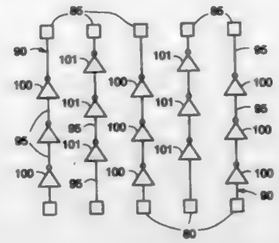
a plurality of current bypassing circuit respectively associated with said plurality of driver stages, and coupled between said plurality of output terminals and a constant current source, each of said plurality of current bypassing circuits having d-1) a bypassing bipolar transistor having a collector-and-emitter current path coupled between the associated output terminal and said constant current source associated with said plurality of current bypassing circuits, and d-2) a resistive element coupled between said associated output terminal and a base node of said bypassing bipolar transistor.

5,306,967

APPARATUS FOR IMPROVING SIGNAL TRANSMISSION ALONG PARALLEL LINES

Keith E. Dow, Mountain View, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed May 29, 1992, Ser. No. 891,233
Int. Cl.[5] H01L *25/00*
U.S. Cl. 307—482.1 **12 Claims**



1. An apparatus for transmitting electrical signals, including:

a first interconnect line comprising at least two line sections;

a second interconnect line comprising at least two line sections, and oriented substantially parallel to the first interconnect line;

a first set of inverters connected along the first interconnect line, and including an inverter connected between each pair of adjacent line sections of the first interconnect line; and

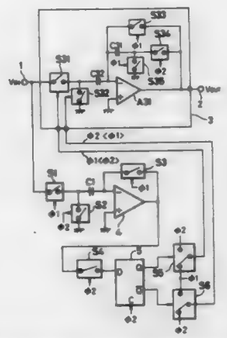
a second set of inverters connected along the second interconnect line, and including an inverter connected between each pair of adjacent line sections of the second interconnect line, wherein the second set of inverters is connected in staggered fashion relative to the first set of inverters, with no overlap between each of the inverters in the second set and the inverters in the first set along an axis substantially parallel to the first interconnect line.

5,306,968

RECTIFIER CIRCUIT NOT USING CLOCK SIGNAL

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,403
Claims priority, application Japan, Oct. 4, 1991, 3-283982; Oct. 22, 1991, 3-302339; Nov. 28, 1991, 3-339899
Int. Cl.[5] H03F *3/45*
U.S. Cl. 307—494 **16 Claims**



1. A rectifier circuit without using a clock signal comprising:

a polarity judgment circuit, a gain control circuit, a first amplifier circuit and a second amplifier circuit, wherein:

said polarity judgment circuit receives an AC signal and

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judges the positive/negative polarity of voltage of said AC signal to output a polarity specification signal.

said gain control circuit receives said polarity specification signal and outputs a first gain control signal and a second gain control signal having a different DC voltage difference between the times when the polarity specification signal shows the judged result of "Positive polarity" and when said polarity specification signal shows the judged result of "Negative polarity",

said first amplifier circuit comprises a first transistor pair connected to a constant current source, and receives said AC signal to amplify said AC signal differentially,

said second amplifier circuit comprises a second differential transistor pair and a third differential transistor pair, said differential input terminals of which are connected in common respectively, and these transistor pairs receive said first gain control signal and said second gain control signal through said differential input terminals respectively, to be gain controlled by said DC voltage difference between said first gain control signal and said second gain control signal.

said second differential transistor pair connected to one transistor of said first differential transistor pair as well as said third differential transistor pair is connected to the other transistor of said first differential transistor pair,

said differential output terminal of said second differential transistor pair and said differential output terminal of said third differential transistor pair are connected in common, and a rectifier signal is outputted from said differential output terminals thus connected in common, and

in said transistors of said second differential transistor pair and said third differential transistor pair, said differential input terminals of the transistors, whose differential output terminals are not connected each other, are connected in common.

5,306,969

FREQUENCY MIXER CIRCUIT USING FETS

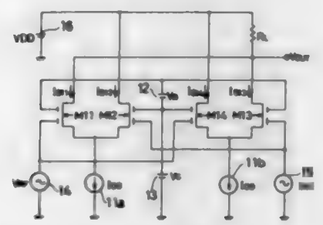
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Minato, Japan

Filed Jan. 13, 1993, Ser. No. 3,567

Claims priority, application Japan, Jan. 14, 1992, 4-24559; Jan. 22, 1992, 4-31524; Jan. 24, 1992, 4-34439

Int. Cl.[5] G06G *7/12*

U.S. Cl. 307—529 **15 Claims**



1. A frequency mixer circuit comprising:

a differential pair including a first field effect transistor and a second field effect transistor whose performance characteristics are different from each other and whose sources are connected in common;

said first field effect transistor having a gate supplied with a first alternating current signal; and

said second field effect transistor having a gate supplied with a second alternating current signal.

5,306,970

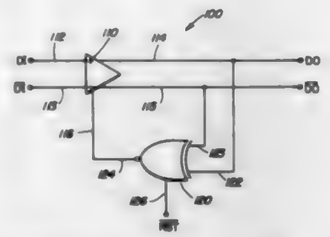
SENSE AMPLIFIER AND METHOD FOR ITS OPERATION

Richard S. Phillips, Constance Bay, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 23, 1992, Ser. No. 993,874

Int. Cl.[5] H03K *5/24*; G01R *19/00*

U.S. Cl. 307—530 **19 Claims**



1. A self-latching sense amplifier, comprising:

a first pair of matched transistors connected as a differential pair;

a second pair of matched transistors, each connected to a respective one of the transistors of the first pair as a load transistor; and

a feedback circuit responsive to a differential output of the differential pair to cross couple the load transistors when the differential output is greater than a threshold value, and to defeat cross-coupling of the load transistors when the differential output is less than the threshold value.

5,306,971

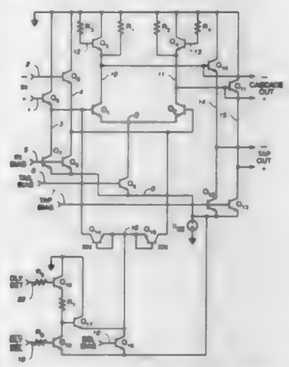
BINARY CONTROLLED DIGITAL TAPPED DELAY LINE

Earl McCune, Santa Clara, Calif., assignor to Proxim, Inc., Mountain View, Calif.

Filed Jul. 23, 1992, Ser. No. 917,386

Int. Cl.[5] H03K *5/13*

U.S. Cl. 307—603 **8 Claims**



1. A binary-controlled digital tapped delay line having a plurality of stages connected in cascade, each stage comprising:

differential amplifier means responsive to a pair of input signals for producing a pair of output signals and including a differential transistor pair;

first loading means comprising a plurality of load devices interconnected to produce a cumulative loading effect and connected to a input of a first transistor of said differential transistor pair for delaying turn-on of said first transistor;

second loading means comprising a same plurality of load devices also interconnected to produce a cumulative loading effect and connected to an input of a second transistor of said differential transistor pair for delaying turn-on of second transistor, said first loading means and said second loading means each being connected to a first circuit node; and

delay control means responsive to a binary-controlled signal and connected to said first circuit node for causing turn-on of first and second transistors to be delayed a set amount of time when said binary control signal is asserted.

5,306,972

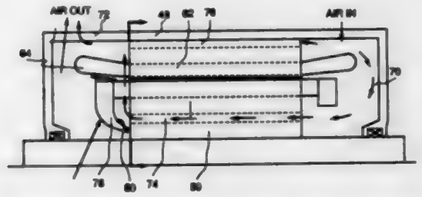
AC MOTOR SYSTEM

Paul R. Hokanson, Girard, and Ajith K. Kumar, Erie, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Jul. 17, 1992, Ser. No. 916,314

Int. Cl.[5] H02K *9/00*; H02P *1/26*

U.S. Cl. 310—58 **25 Claims**



20. An alternating current (AC) motor system comprising:

an AC induction motor having a rotor and a stator, the rotor including a rotor winding comprising rotor bars passing through a core and having bar extensions extending beyond each end of the core, ends of the rotor bar extensions being connected together by end rings, the rotor bar extensions and end rings comprising end turns of the rotor winding, the rotor still further including a plurality of radial air passages formed between the rotor bar extensions, the end rings and the ends of the core for passing cooling air from one end to another end of the rotor, the stator having end windings extending from each end thereof, said end windings comprising end turns of a plurality of electrical conductors forming stator winding circuits arranged in a plurality of electrical phase windings;

air deflector means coupled to said another end of said rotor generally overlaying at least some of said air passages exiting from said another end, said deflector means having a generally curved configuration on a surface facing said at least some air passages for directing cooling air exiting said passages into a generally radial flow direction and onto and through said end turns of said rotor and then onto said stator end windings adjacent said another end of said rotor; and

resistor means selectively coupled in series circuit with each of said phase windings.

5,306,973

MOUNTING BRACKET FOR OVERLOAD PROTECTORS

James A. Butcher and Mark F. Fleer, both of Fort Wayne, Ind. assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 452,101, Dec. 18, 1989, Pat. No. 5,101,129. This application Mar. 25, 1992, Ser. No. 857,503

Int. Cl.[5] H02K *11/00, 5/00*; H01B *17/26*

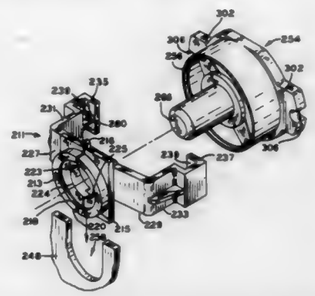
U.S. Cl. 310—68 C **36 Claims**

1. An apparatus for mounting an overload protector having first and second portions within an opening in a motor shell, the mounting apparatus comprising:

a plurality of segments, each segment having a first part and a second part wherein the first parts of the respective segments are adapted to be cooperatively positioned around the first portion of the protector, each of said first parts having a first surface adapted for positioning adjacent an exterior surface of said first portion of the overload protector, and second surface adapted for positioning within the opening in the motor shell;

the second surfaces of the first parts include first means for securing the segments within the opening so as to restrict movement of the mounting apparatus and overload protector relative to the motor shell;

each of the second parts include second means for engaging



a flange on the second portion of said overload protector to restrict relative axial and rotational movement between the segments and the overload protector; and

wherein the second parts of the respective segments include first portions which extend outwardly and generally perpendicularly from a common axis of the first parts formed when the first parts are cooperatively positioned around the first portion of the overload protector, and second portions which extend generally perpendicularly from ends of the first portions and generally parallel to the common axis of the first parts.

5,306,974

ELECTRICAL MOTOR WITH CHOKE COILS ON A COMMON CORE

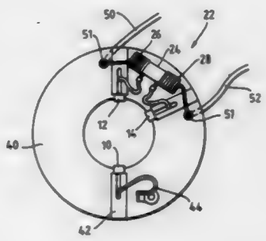
Trevor Bates, Bedfordshire, Great Britain, assignor to Delco Chassis Overseas Corporation, Detroit, Mich.

Filed Dec. 28, 1992, Ser. No. 997,462

Claims priority, application United Kingdom, Jul. 4, 1992, 92142520

Int. Cl.[5] H02K *5/10, 11/00*

U.S. Cl. 310—68 R **8 Claims**



1. An electric motor comprising:

a ground brush switchably coupled to a first electrical potential;

first and second supply brushes switchably coupled to a second electrical potential and adapted to be energized selectively so as to cause the motor to rotate at first and second speeds respectively;

first and second supply lines for connecting respectively the

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first and second supply brushes to a second electrical potential; and

an interference suppression device comprising a common core of magnetically conductive material, and first and second coils disposed over the common core, the first coil being coupled in series between the first supply brush and the first supply line, and the second coil being coupled in series between the second supply brush and the second supply line.

5,306,975

VIBRATION INSULATION OF A BODY ON MAGNETIC BEARINGS

Udo W. Bichler, Heidelberg, Fed. Rep. of Germany, assignor to Ant Nachrichtentechnik GmbH, Heidelberg, Fed. Rep. of Germany

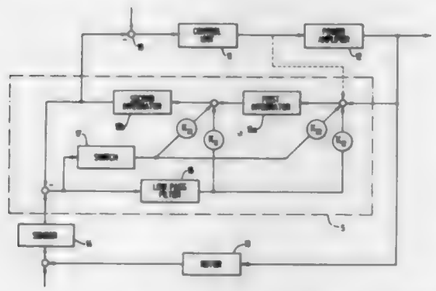
PCT No. PCT/EP91/00848, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/17368, PCT Pub. Date Nov. 14, 1991

PCT Filed May 4, 1991, Ser. No. 946,422

Claims priority, application Fed. Rep. of Germany, May 8, 1990, 4014716

Int. Cl.[5] H02K *7/09*

U.S. Cl. 310—90.5 16 Claims



1. In a device for weakening interference forces created during seating of a body on magnetic bearings, the body being movable along at least one translational axis, which device includes a magnetic position control circuit connected between a sensor which provides a signal representing the position of the body relative to the bearings and a control unit having an input and an output for providing a signal to adjust the position of the body relative to the bearings, the control circuit having means defining two integrators, the improvement wherein:

said means defining two integrators comprise a first integrator and a second integrator each having a signal input and a signal output, said signal output of said first integrator being connected to said signal input of said second integrator so that said first and second integrators constitute a double integration unit, said signal input of said first integrator is connected to receive a signal having a value at least approximately proportional to a force capable of stabilizing the body relative to the bearings along at least one translational axis, and said double integration unit is operative for providing an output signal constituting an actual position value control signal from said control circuit; and

said control circuit further comprises means including a low-pass filter and attenuation members for applying to the inputs of both of said integrators two signals each having a value which is a function of the difference in value between the output signal provided by said double integration unit and the signal provided by said sensor.

5,306,976

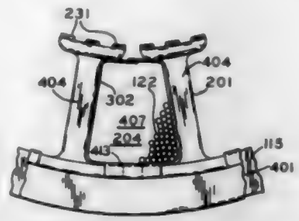
MOTOR AND STATIONARY ASSEMBLY THEREFOR HAVING END CAPS AND OVERLAPPING FILM SLOT INSULATION

Nicholas J. Beckman, Columbia City, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jan. 29, 1993, Ser. No. 10,883

Int. Cl.[5] H02K *5/00*

U.S. Cl. 310—215 21 Claims



1. A stationary assembly for a motor, said stationary assembly comprising:

a stator core having two ends and having a plurality of teeth with adjacent teeth defining a slot therebetween;

windings on the teeth adapted for energization;

a slot liner in each of the slots comprising a transverse wall, opposing side walls projecting outwardly from opposite edge margins of the transverse wall, and deflectable flaps projecting inwardly from free edge margins of the side walls generally opposite the transverse wall, the flaps overlapping thereby to close the slot, the slot liner being disposed between the stator core and the windings for insulating the windings from the stator core; and

means for retaining the slot liners in their respective slots.

5,306,977

COOLING ROTOR FOR AN ALTERNATOR MOUNTED ON VEHICLE

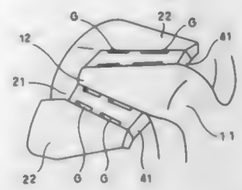
Seiji Hayashi, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 7, 1992, Ser. No. 925,692

Claims priority, application Japan, Aug. 8, 1991, 3-224704; Jul. 31, 1992, 4-205014

Int. Cl.[5] H02K *1/22, 1/32*

U.S. Cl. 310—263 13 Claims



1. A rotor for an alternator comprising:

first and second claw-pole members formed of magnetic material and mounted on a shaft rotatable about an axis, said first and second claw-pole members having at least one first axially extending claw section and at least one second axially extending claw section respectively, said at least one first and second axially extending claw sections having a first and second side face respectively;

a field coil disposed between said first and second claw-pole members; and

a permanent magnet disposed between said first and said second side faces and being polarized in a direction which prevents magnetic flux leakage between said at least one first and second axially extending claw sections, said rotor having a space formed between said permanent magnet and at least one of said first and second side faces.

5,306,978

SURFACE ACOUSTIC WAVE UNIDIRECTIONAL TRANSDUCER HAVING FLOATING ELECTRODES

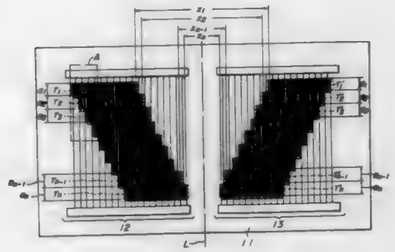
Kazuhiko Yamanouchi, 37-13, Matsugaoka, Taihaku-Ku, Sendai City, Miyagi Pref., and Mitsuhiro Tanaka, Chita, both of Japan, assignors to Kazuhiko Yamanouchi and NGK Insulators, Ltd., Japan

Continuation of Ser. No. 935,920, Aug. 27, 1992, abandoned. This application May 21, 1993, Ser. No. 64,675

Claims priority, application Japan, Aug. 29, 1991, 3-218498

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 C 10 Claims



1. A surface acoustic wave transducer comprising:

a substrate comprised of a piezoelectric material and having a surface;

an input side interdigital electrode structure applied on said surface of substrate and including a plurality of input side positive electrodes, a plurality of input side negative electrodes each of which is arranged between successive input side positive electrodes and a plurality of input side floating electrodes which are arranged between successive input side negative and positive electrodes; and

an output side interdigital electrode structure applied on said surface of substrate and including a plurality of output side positive electrodes, a plurality of output side negative electrodes each of which is arranged between successive output side positive electrodes and a plurality of output side floating electrodes which are arranged between successive output side negative and positive electrodes; wherein in each of said input and output side interdigital electrode structures, said positive electrodes, negative electrodes and floating electrodes are arranged such that a phase of a surface acoustic wave excited by said interdigital electrode structure and a phase of a surface acoustic wave reflected by said floating electrodes are substantially identical with each other viewed in a propagating direction of the wave and are different from each other substantially by 180 degrees viewed in a direction opposite to said propagating direction of the wave, in each of said input and output side interdigital structures, said positive and negative electrodes and floating electrodes are arranged such that the there are formed a plurality of tracks which are arranged in parallel with each other, each of said tracks extending in the propagating direction of the wave, distances between corresponding tracks in the input and output side interdigital electrodes structures are varied viewed in a direction perpendicular to the propagating direction of the wave, and lengths of said tracks viewed in the direction perpendicular to the propagating direction of the wave are changed in accordance with a given function.

5,306,979

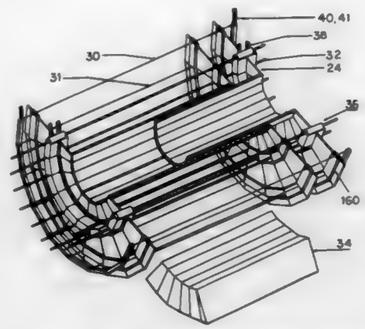
MULTIPLEXING INCREMENTAL LINEAR ACTUATOR SYSTEM

John F. Schwarz, Jr., 1125 Saunders Crescent, Ann Arbor, Mich. 48103

Filed Oct. 7, 1992, Ser. No. 957,471

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—328 12 Claims



1. An actuator system controllably producing linear movement, said system comprising:

an array of elongated control elements extending parallel to each other in an axial direction;

a movable member;

drive means for selectively reciprocating said movable member in said axial direction;

each of said control elements passing through said movable member so as to allow free relative movement therebetween as said movable member is reciprocated; and

selectively actuatable coupling means to selectively couple one or more of any of said control elements to said movable member to cause movement of said selectively coupled element with said movable member, said coupling means allowing free movement of each of said control elements whenever said coupling means is not activated with respect to said control element.

5,306,980

TORSIONAL FORCE TRANSDUCER AND METHOD OF OPERATION

Melvin Montgomery, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 554,030, Jul. 16, 1990, Pat. No. 5,159,226. This application Jul. 17, 1992, Ser. No. 915,928

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—333 20 Claims

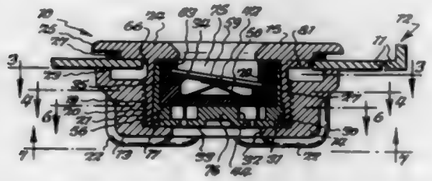


1. A transducer for imparting torsional vibrations to a structure, comprising:

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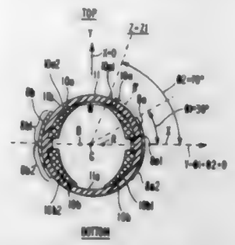
piezoelectric material having a polarization axis;
a first electrode disposed on one side of said piezoelectric material;
a second electrode disposed on an opposing side of said piezoelectric material, so that a potential difference between said first and second electrodes will create an electric field across said piezoelectric material in a direction orthogonal to said polarization axis;
a first end piece, coupled on one side to said piezoelectric material so that force exerted by said piezoelectric material responsive to said electric field is transferred to said first end piece, and having a coupling on an opposint side of said first end piece from the side coupled to said piezoelectric material for attaching said first end piece to the structure in such a manner as to suspend the transducer therefrom;
a second end piece coupled on a first side to said piezoelectric material, so that said piezoelectric material is disposed between said first and second end pieces; and
a reactance mass connected to a second and opposing side of said second end piece, said reactance mass serving as a free end of said transducer.

5,306,981
PIEZOELECTRIC VIBRATOR ASSEMBLY
Earl D. Martel, Toronto, and Michele C. Blokhuis, Stouffville, both of Canada, assignors to Humonics International Inc., Canada
Continuation-in-part of Ser. No. 979,536, Nov. 19, 1992, abandoned. This application Dec. 22, 1992, Ser. No. 994,828
Int. Cl.[5] B05B *17/06;* **H01L** *41/09*
U.S. Cl. 310—348 **33 Claims**



1. A vibrator assembly for mounting on the wall of a tank and for atomizing liquid in said tank comprising a support housing including an inner support housing portion and a separate outer support housing means mounting said inner support housing portion, a separate vibrator support mounted in said inner support housing portion, vibrator means for projecting liquid mounted on said vibrator support, an outer peripheral edge on said vibrator means, insert means mounted in said inner support housing portion for bearing on said outer peripheral edge and holding said vibrator means in position on said vibrator support, a chamber for liquid located within said support housing immediately above said vibrator means, retaining means on said outer support housing means for retaining said vibrator assembly in mounted position on said wall, and securing means for maintaining said vibrator support and said vibrator means and said insert means is assembled relationship within said inner support housing.

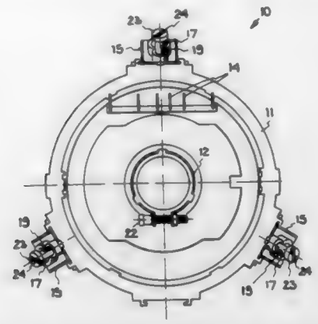
5,306,982
FIELD HARMONIC ENHANCER IN A DEFLECTION YOKE
Andre Mailliot, Dijon, and Marc Milili, Puteaux, both of France, assignors to Videocolor, Paris la Defense, France
Filed Nov. 27, 1991, Ser. No. 799,222
Claims priority, application European Pat. Off., Dec. 12, 1990, 90403538.3
Int. Cl.[5] H01J *29/76;* **H01F** *7/00*
U.S. Cl. 313—413 **22 Claims**



1. A deflection apparatus, comprising:
a cathode ray tube of an in-line system including an evacuated glass envelope, a display screen disposed at one end of said envelope, an electron gun assembly disposed at a second end of said envelope, said electron gun assembly producing a plurality of electron beams that form corresponding rasters on said screen upon deflection;
a deflection yoke mounted around said envelope, including:
at least one vertical deflection coil for producing a vertical deflection field in said cathode ray tube;
first and second horizontal deflection coils each of a saddle type disposed opposite with respect to each other for producing a horizontal deflection field in said cathode ray tube, each of said first and second horizontal deflection coils including a plurality of conductors forming corresponding first and second lateral winding packets extending in a longitudinal direction of said cathode ray tube;
a core made of magnetically permeable material magnetically coupled to said vertical and horizontal deflection coils; and
at least one field former member disposed in the vicinity of a beam entrance section of said horizontal deflection coils near said gun assembly, said at least one field former member comprising a first field former member disposed in the vicinity of said beam entrance section of said horizontal deflection coils, such that a portion of said first lateral winding packet of said first horizontal deflection coil and a portion of said first lateral winding packet of said second horizontal deflection coil are interposed between the neck of said envelope and said first field former member, said first field former member varying a strength of a Fourier coefficient of said horizontal deflection field in the vicinity of said beam entrance section to correct a beam landing error associated with said horizontal deflection coils.

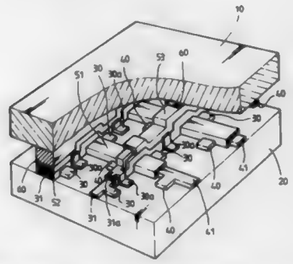
5,306,983
SUPPORT DEVICE FOR A PICTURE TUBE COMPONENT
Heinz Lehner, Oberschneiding, Fed. Rep. of Germany, assignor to Nokia (Deutschland) GmbH, Pforzheim, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 545,351, Jun. 27, 1990, abandoned. This application Oct. 3, 1991, Ser. No. 771,846
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1989, 3923110
Int. Cl.[5] H01J *29/02, 29/70;* **F16B** *35/04*
U.S. Cl. 313—482 **10 Claims**

1. Support device for a picture tube components (10), with more than one support element, characterized in that each support element (17, 17.5, 17.6) comprises a pin (17, 17.5, 17.6) that can be freely moved in the support direction, inside a guide (16, 16.5, 16.6) having a smooth inner surface, and can be arrested in any position inside this guide (16, 16.5, 16.6), said pin (17, 17.5, 17.6) having a thread (19) extending in a longitudinal direction over a part of its circumference and said guide



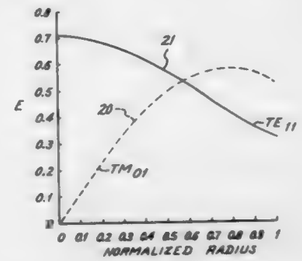
(16, 16.5, 16.6) having a recess (21) of not less than the angular circumference of the thread (19), whereby the thread (19) may fit in the recess (21) to allow free longitudinal movement of the pin (17, 17.5, 17.6) in the guide (16, 16.5, 16.6) to any desired arresting position where the pin (17, 17.5, 17.6) can be locked by rotation so that the thread (19) engages the inner surface of the guide (16, 16.5, 16.6).

5,306,984
PLASMA DISPLAY DEVICE
Sang-rok Lee, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea
Filed Apr. 29, 1992, Ser. No. 875,287
Claims priority, application Rep. of Korea, Aug. 24, 1991, 91-14736
Int. Cl.[5] H01J *17/04, 17/10*
U.S. Cl. 313—484 **4 Claims**



1. A plasma display device comprising:
a front plate and a rear plate which are spaced apart from each other by a predetermined distance to form a discharge space;
stripe-like first signal lines and second signal lines which are sequentially stacked on an inner surface of said rear plate;
insulating layers surrounding said first and second signal lines which electrically insulate said first signal lines and said second signal lines from each other and at the same time, isolate said first and second signal lines from said discharge space;
stripe-like third signal lines which are perpendicular to said first and second signal lines disposed on the inner surface of said rear plate, thereby forming substantially square discharge regions together with said first and second signal lines;
stripe-like insulating layers surrounding said third signal lines for isolating said third signal lines from said discharge space;
discharge electrode groups which are exposed to the discharge space in every square discharge region, each of said discharge electrode groups comprises first electrodes electrically connected to said first signal lines, second electrodes electrically connected to said second signal lines, and third electrodes electrically connected to said third signal lines; and
barrier ribs of a predetermined height stacked onto a structure composed of said first and second signal lines and said insulating layers for preventing cross-talk between unit pixels composed of said first, second and third electrodes.

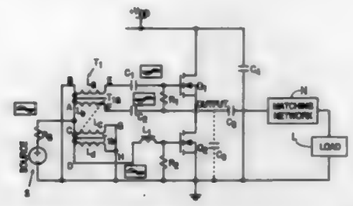
5,306,985
ECR APPARATUS WITH MAGNETIC COIL FOR PLASMA REFRACTIVE INDEX CONTROL
Lee A. Berry, Oak Ridge, Tenn., assignor to Sematech, Inc., Austin, Tex.
Filed Jul. 17, 1992, Ser. No. 916,317
Int. Cl.[5] H01J *7/24;* **C23C** *16/00*
U.S. Cl. 315—111.41 **6 Claims**



1. An electron cyclotron resonance (ECR) plasma apparatus for processing a specimen comprising:
a plasma reactor for having said specimen disposed therein and in which an ECR zone is formed for discharge of plasma to process said specimen;
an electrical energy source for providing microwave energy to generate an electric field component for formation of said ECR zone in said reactor;
a microwave window coupled between said plasma reactor and said electrical energy source for directing said microwave energy into said reactor;
at least one main magnetic coil coupled about said reactor for generating a magnetic field component for formation of said ECR zone in said reactor;
a secondary magnetic coil coupled about said reactor for generating a secondary magnetic field for controlling the radial profile of said magnetic field component at said microwave window in order to alter the index of refraction of said plasma, wherein providing for a substantially uniform power absorption across said ECR zone to provide uniform density plasma for discharge to said specimen.

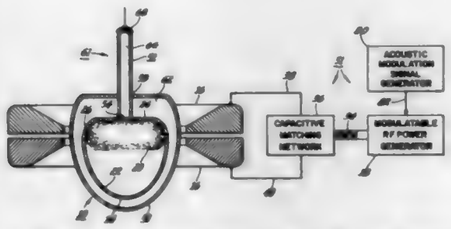
VOL 1161 ISS 4 AP 26 1994 UMI

5,306,986
ZERO-VOLTAGE COMPLEMENTARY SWITCHING HIGH EFFICIENCY CLASS D AMPLIFIER
Roger Siao, Mountain View, Calif., assignor to Diablo Research Corporation, Sunnyvale, Calif.
Filed May 20, 1992, Ser. No. 887,168
Int. Cl.[5] H05B *41/16*; H03F *3/217*
U.S. Cl. 315—248 **22 Claims**



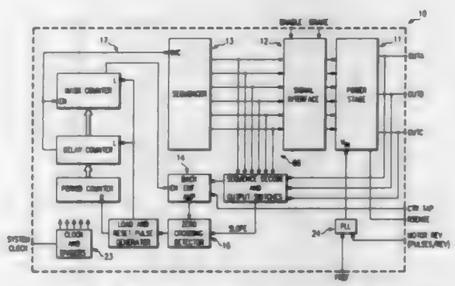
1. An amplifier comprising:
first and second switching means connected in series;
a switch control means for controlling said first and second switching means; and
a signal source connected to said switch control means, said switch control means operative to cause each of said first switching means and said second switching means to open and close in sequence, one of said first and second switching means being open whenever the other of said first and second switching means is closed, and there being a time interval during which both of said first and second switching means are open;
wherein said amplifier has an inherent capacitance which stores energy when one of said first and second switching means is open;
said switch control means comprising a means for storing energy, said means for storing energy being operative during said time interval to receive energy stored in said inherent capacitance so as to reduce the voltage across each of said first and second switching means to approximately zero when it changes from an open to a closed condition.

5,306,987
ACOUSTIC RESONANCE ARC STABILIZATION ARRANGEMENT IN A DISCHARGE LAMP
James T. Dakin, and Mark E. Duffy, both of Shaker Heights, Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 11, 1993, Ser. No. 29,501
Int. Cl.[5] H05B *41/29*
U.S. Cl. 315—248 **13 Claims**



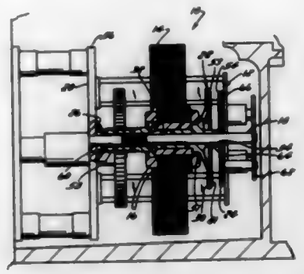
1. An arc stabilization arrangement for an arc discharge lamp having an arc tube containing a fill of materials excitable to a discharge state upon introduction thereto of an operating signal having a predetermined frequency associated therewith, said arc stabilization arrangement comprising:
means for modulating said operating signal with a modulating signal having a frequency less than said predetermined frequency associated with said operating signal;
wherein an acoustic resonance is generated within said arc tube be such excitation of said materials to the discharge state, said acoustic resonance having an acoustic resonance frequency associated therewith; and
wherein said frequency of said modulating signal is set to approximately the same frequency value as said acoustic resonance frequency.

5,306,988
METHOD AND APPARATUS FOR OPERATING POLYPHASE DC MOTORS
Francesco Carobolante, and Mark E. Rohrbaugh, both of Phoenix, Ariz., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Oct. 3, 1991, Ser. No. 770,577
Int. Cl.[5] H02P *1/18*
U.S. Cl. 318—254 **15 Claims**



1. A circuit for operating a polyphase dc motor having a plurality of driving coils, comprising:
circuitry for receiving a back emf of at least one coil at a time when said at least one coil is in a floating state prior to a desired commutation sequence;
and circuitry for determining when the back emf crosses a reference voltage from a predetermined direction to determine the actual position of the rotor of the motor;
circuitry for determining a desired rotor position precedent to executing a desired commutation sequence;
circuitry for executing said desired commutation sequence when said circuit for determining the actual position of the rotor detects that the rotor is actually in the desired rotor position;
mask circuitry for inhibiting said circuitry for determining when the back emf received by said circuitry for receiving the back emf crosses a reference voltage for a predetermined time after a change in said commutation sequence, said mask circuitry comprising:
an up counter and first and second down counters;
a source of clock pulses connected to clock said up and down counters;
means to control the count of said second down counter in relationship to the count of said first down counter;
means operative when said reference voltage crossing detector detects a reference voltage crossing to load as count from said up counter into said first and second down counters and then to reset said up counter;
whereby said first counter determines a switching time of said commutation sequence and said second counter determines a reference voltage crossing mask period.

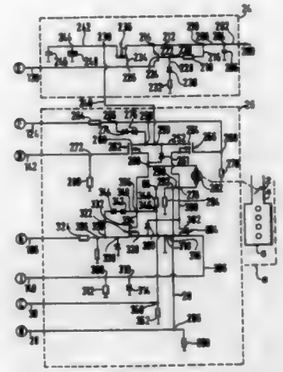
5,306,989
ELECTRIC MOTOR BRAKE
Raymond D. Feller, Jr., Franklin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed May 27, 1992, Ser. No. 889,181
Int. Cl.[5] H02K *7/102*
U.S. Cl. 318—372 **6 Claims**



1. A brake system for use in an electric motor which can be energized or de-energized, said motor having a stator and a rotor mounted about a shaft in operative relationship with said stator, said stator and said rotor both being mounted within a framework, said brake system comprising:
an integral brake member formed of a polymer having self-lubrication properties, said brake member including a spindle and a brake disk affixed to said spindle and extending radially from said spindle, wherein said spindle is disposed at least partially between said shaft and said rotor;
a friction member attached to said framework proximate said brake disk and configured for selective frictional engagement with said brake disk; and
a resilient member for biasing said brake disk towards said friction member when said motor is de-energized, wherein said brake member comprises an acetal polymer mixed with glass beads.

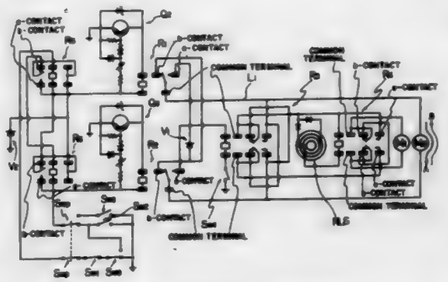
5,306,990
ELECTRIC MOTOR CONTROL APPARATUS INCLUDING AN OUTPUT STAGE PROTECTED AGAINST MALFUNCTION AND DAMAGE
Michael Hofsäss, Vaihingen/Enz; Martin Rutz, Schwieberdingen, and Harald Schweren, Korntal-Münchingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Oct. 19, 1992, Ser. No. 963,394
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134495
Int. Cl.[5] H02H *7/08*
U.S. Cl. 318—434 **15 Claims**

1. A control apparatus for an electrical motor for a motor vehicle, the control apparatus comprising:
at least one computer unit for generating the control signals for actuating the motor;
voltage supply means having positive and negative pole connecting terminals;
a circuit arrangement connected between said computer unit and said motor and including:
first circuit means for conducting current to said motor for driving said motor to rotate in first and second directions of rotation;
said first circuit means including a first power switch connected between said positive pole connecting terminal and said electric motor and a second power switch connected between said electric motor and said negative pole connecting terminal;
second circuit means for conducting said control signals to said power switches;
third circuit means for supplying a supply voltage from said voltage supply means to said first circuit means;
protective means for protecting said control apparatus against malfunction and damage; and,



said protective means including switching means for driving said first and second power switches independently of said control signals when an overvoltage occurs at one of said connecting terminals thereby permitting a current flow through said two power transistors and said electric motor.

5,306,991
WINDOW WIPER AND WIPER ACTUATING MECHANISM
Kazuhiro Suzuki, Nishinomiya, Japan, assignor to Nippon Cable System Inc., Takarazuka, Japan
Continuation of Ser. No. 745,672, Aug. 16, 1991, abandoned, which is a division of Ser. No. 529,424, May 29, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,121
Claims priority, application Japan, Jun. 1, 1989, 140574
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—443 **5 Claims**



1. A wiper actuating mechanism comprising:
a motor for reciprocally actuating a movable member of a wiper;
a detector for detecting both stroke-ends of the movable member; and
a control means for making short-circuit dynamic braking of the motor and for changing poles of power source of the motor upon receiving stroke-end signals from the detector,
wherein said movable member is a wiper arm, and said mechanism further comprises another detector for detecting parking position of the wiper arm and a change-over

switch for alternatively selecting the stroke-end detector and the parking position-detector.

5,306,992

DEVICE FOR CONTROLLING A DRIVE MECHANISM FOR AN AUTOMOTIVE ACCESSORY

Bernhard Dröge, Neuberg, Fed. Rep. of Germany, assignor to Etablissement Vorslp, Liechtenstein, Fed. Rep. of Germany

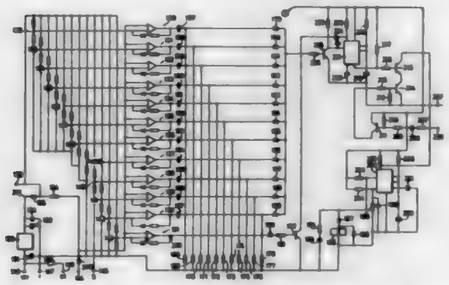
PCT No. PCT/DE90/00037, § 371 Date Sep. 26, 1990, § 102(e) Date Sep. 26, 1990, PCT Pub. No. WO90/08680, PCT Pub. Date Aug. 9, 1990

PCT Filed Jan. 23, 1990, Ser. No. 585,096

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3902231; Sep. 14, 1989, 3930732

Int. Cl.[5] B60S *1/08*

U.S. Cl. 318—483 **26 Claims**



1. Device for controlling a drive mechanism (70) for an automotive accessory, having

a sensor (3) reacting to wetness on the outside of a vehicle, said sensor producing a signal with a parameter dependent on a degree of wetness on the outside of the vehicle, and

a device (83) for actuating the drive mechanism (70) dependent on the size of the parameter of the signal coming from the sensor (3),

characterized by a device (120 to 131, 132 to 143) for detecting the amount of variation of the parameter with time and an additional device (225,221; 252,260; 320,343) for actuating the drive mechanism (70) when there is a preset amount of variation of the parameter with time.

5,306,993

SYSTEM OF DRIVING BY ELECTRIC MOTOR MACHINES WHICH WORK IN A PERIODIC MANNER AT TORQUE VARIABLE AS A FUNCTION OF THE ANGLE OF ROTATION

Jan Richard de Fries, Wallisellen; Jacob Rudolf Metz, Winterthur, and Gerhard Fenkart, Zärich, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

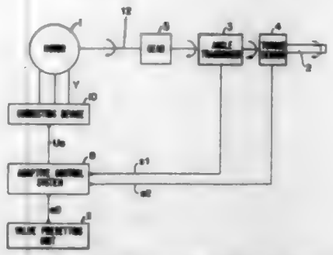
Filed Mar. 6, 1992, Ser. No. 847,548

Claims priority, application Switzerland, Mar. 13, 1991, 00764/91-2

Int. Cl.[5] G05B *13/02*; H02P *6/00*

U.S. Cl. 318—561 **15 Claims**

1. A system of driving a cyclically operating machine having a rotatable element requiring a torque which varies as a function of the angle of rotation of the element, the system comprising: an electric motor providing a controllable, variable power output for rotating the element; a power control operatively coupled with the motor for controlling the operation of the motor according to pre-established, desired values which vary over an operating cycle of the machine as a function of the angle of rotation of the element; electronic pick-ups for detecting and generating measured values for at least one of the torque, an angular velocity, and the angle of rotation of the element; and a programmed computer and a register for the desired values connected in such a way that, in a first operational phase of the machine, differences between the desired values and corresponding measured values detected by the pick-ups are processed by the computer, corrected as to time, and recorded as adapted values in a memory, and in a second operational phase of the machine the adapted values are fed to the power control, measured values are again detected, and



any remaining differences between the desired values and the measured values are processed, corrected as to time, and superimposed upon the adapted values n the memory so that the two operational phases together represent an iterative process of control which renders the measured values independent of cyclical fluctuations caused by the system.

5,306,994

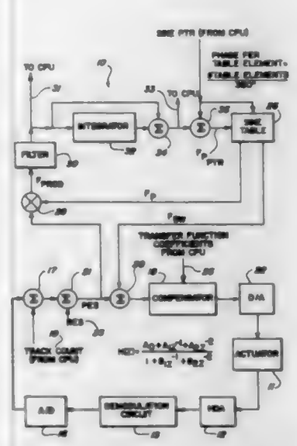
AUTOMATIC PHASE MARGIN COMPENSATION CONTROL CIRCUIT AND METHOD FOR DISK DRIVES

Louis Supine, Colorado Springs, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 9, 1992, Ser. No. 865,994

Int. Cl.[5] G05B *13/04*

U.S. Cl. 318—561 **9 Claims**



1. A method for automatically controlling a phase margin of a disk drive system having a head disk assembly with an actuator, a head driven by said actuator, and a compensator means for controlling the movement of said actuator, said method comprising:

(a) generating a position signal from said head disk assembly;

(b) generating a position error signal using said position signal and a reference signal;

(c) generating a disturbance signal having a predetermined frequency;

(d) combining said disturbance signal and said position error signal to form a combined signal;

(e) applying said combined signal to said compensator means to generate a control signal;

(f) applying said control signal to said head disk assembly to control the movement of said actuator;

(g) determining said phase margin of said disk drive system, said step of determining said phase margin comprising:

(i) generating a first measurement signal that is advanced in phase with respect to said disturbance signal;

(ii) combining said first measurement signal with said position error signal to form a second measurement signal having a frequency component of said predetermined frequency;

(iii) evaluating a phase difference between said frequency component of said second measurement signal and said disturbance signal to determine whether said phase margin of said system is measurable;

(iv) iteratively altering the phase relationship between said disturbance signal and said first measurement signal when said phase difference indicates that said phase margin of said system is not measurable; and

(v) measuring said phase margin of said system when said phase difference indicates that said phase margin is measurable; and

(h) adjusting said phase margin of said system in response to the determination of said phase margin.

5,306,995

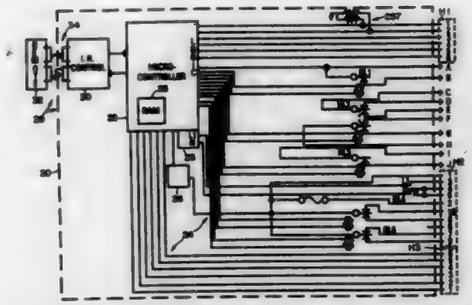
RECONFIGURATION AUTOMATIC ELECTRONIC CONTROL SYSTEM WITH AUTOMATIC MODEL DETERMINATION, INTERNALLY RESTRUCTURABLE CONTROL AND FLEXIBLE PROGRAMMABLE TEST MODES

Thomas R. Payne, and Steven A. Rice, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 30, 1992, Ser. No. 968,991

Int. Cl.[5] G05B *13/02*

U.S. Cl. 318—561 **14 Claims**



1. An electronic control system which is automatically adaptable to particular ones of a plurality of different machines, each having a plurality of functional elements for implementing a plurality of machine functions, said electronic control system comprising:

a plurality of terminals for connection to said functional elements within any of the different machines; and

a controller having input and output lines connected to said terminals, said controller including means for determining the particular machine and accordingly controlling the machine functions for each of the plurality of machines.

7. An electronic control system which is automatically adaptable to particular ones of a plurality of different machines, each including a plurality of functional elements for implementing a plurality of machine functions, said electronic control system comprising:

a connector having a plurality of terminals for connection to any of the different machines; and

a controller having input and output lines connected to said terminals of said connector, said controller including means for controlling machine functions for each of the plurality of machines and for determining the particular machine by applying signals to particular ones of said terminals in a predetermined pattern while monitoring others of said terminals to logically recognize a particular machine.

5,306,996

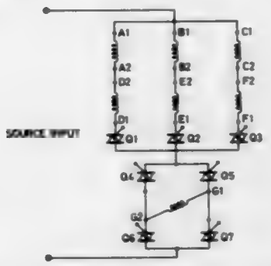
AC/DC STEPPED DRIVE SYSTEM

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Continuation-in-part of Ser. No. 599,054, Oct. 17, 1990, abandoned, which is a division of Ser. No. 258,088, Oct. 17, 1988, Pat. No. 4,962,583, which is a continuation of Ser. No. 426,188, Sep. 28, 1982, abandoned. This application May 21, 1992, Ser. No. 887,484

Int. Cl.[5] H02P *1/04*

U.S. Cl. 318—716 **15 Claims**



1. A stepped drive system operable from an AC or a DC source input, comprising:

a housing;

a stator attached interiorly of said housing, said stator including a stator core having a plurality of salient poles projecting interiorly of said housing, said poles being arranged in diametric pairs and each having a corresponding stator winding wound thereabout;

a rotor rotatably mounted within said housing, said rotor further comprising,

an axle rotatably supported by said housing,

a first rotor core mounted on said axle and having a plurality of poles extending radially therefrom,

a rotor winding wound about said first rotor core, and

a first conductive slip ring and a second conductive slip ring both mounted on said axle and electrically connected to said rotor winding;

a brush assembly for rotatably electrical contact with said slip rings; and

a switching circuit for conducting power from a source input to said stator windings, and to said rotor windings via said brush assembly, said switching circuit further comprising a first plurality of switch devices each connected in series with the stator windings about a diametric pair of stator poles for selectively applying said source input thereto, and a second plurality of switch devices coupling said rotor winding to said first plurality of switches for allowing application of said source input thereto according to a selected polarity.

5,306,997

DRIVE SYSTEM FOR TURBOCHARGER WITH ROTARY ELECTRIC MACHINE

Kazunari Akiyama, Machida, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,039

Claims priority, application Japan, Jul. 6, 1991, 3-192456

Int. Cl.[5] F02B *37/00*

U.S. Cl. 318—721 **2 Claims**

1. A system for driving an electric machine mounted on a

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shaft in a turbocharger, said electric machine functions as a generator or as an electric motor, said system comprising:

positional sensor means for mechanically predicting an initialized position of phase of the electric machine;

phase detective means for electrically predicting the initialized position of phase of the electric machine;

first calculation means for calculating the difference between the mechanically predicted initialized position and the electrically predicted initialized position; and

second calculation means for adding the difference calculated by the first calculation means to the mechanically predicted initialized position of phase to derive an initialized position of phase to be used for producing AC electric power to drive the electric machine when it functions as an electric motor.

5,306,998

PROTECTION CONTROL CIRCUIT FOR A VARIABLE SPEED HOISTING DEVICE

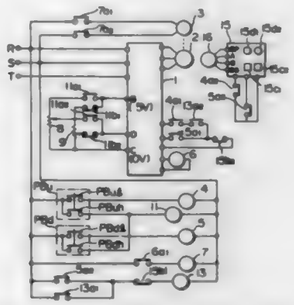
Youji Nakamura, Fukuoka, Japan, assignor to Mitsubishi Denki K. K., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,259

Claims priority, application Japan, Aug. 30, 1991, 3-219495

Int. Cl.[5] H02H *7/08*

U.S. Cl. 318—806 **8 Claims**



1. A protection control circuit for controlling an operation of a variable speed hoisting device driven by an induction motor, said protection control circuit comprising:

inverter unit means for supplying power to said induction motor of said variable speed hoisting device to control a rotational direction and a speed of said induction motor;

rotation detector means for detecting a rotation of said induction motor and for generating an output in response to a detection of rotation;

operation instruction means for inputting an operation instruction, corresponding to one of an upward hoisting operation and a downward hoisting operation, to start supplying power to said induction motor, said operation instruction means generating an operation signal to said inverter unit when one of said hoisting operations is selected; and

abnormal operation detector means, coupled to said operation instruction means and said rotation detector means, for generating an abnormal operation signal when said output of said rotation detector means is terminated while said operation signal is supplied to said inverter unit.

5,306,999

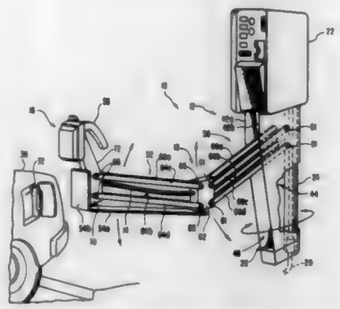
ELECTRIC VEHICLE CHARGING STATION

Ernest G. Hoffman, Middlefield, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Jan. 15, 1993, Ser. No. 5,101

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—2 **20 Claims**



1. An electric vehicle charging station for recharging an electric vehicle, comprising:

a base structure coupled to an electrical power source;

at least one electrical conductor having a first end and a second end with said first end being electrically coupled to said power source;

electrical connector means, coupled to said second end of said electrical conductor, for electrically coupling and dispensing electrical energy to the electric vehicle;

substantially rigid support means, movably coupled to said base structure, for movably supporting said electrical connector means and said electrical conductor between a retracted position and an extended position, said support means including first means for vertically moving said electrical connector means; and

control means, electrically coupled to said electrical power source, for regulating the flow of said electrical energy from said power source to the electric vehicle.

5,307,000

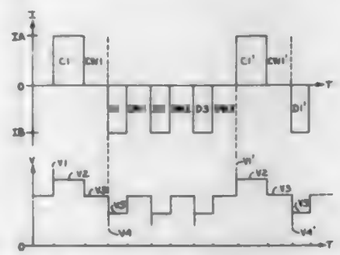
METHOD AND APPARATUS FOR CHARGING, THAWING, AND FORMATTING A BATTERY

Yury Podrazhansky, and Phillip W. Popp, both of Norcross, Ga., assignors to Electronic Power Technology, Inc., Norcross, Ga.

Filed Jan. 22, 1992, Ser. No. 824,113

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—14 **58 Claims**



1. A method for charging a battery, comprising the steps of:

applying at least one charging pulse to said battery, said battery receiving a charging current primarily only during a said charging pulse, a said charging pulse having a pulse width not substantially less than 150 milliseconds;

applying a first discharging pulse to said battery;

waiting for a first wait period during which said battery is neither substantially charged nor substantially discharged;

applying at least a second discharging pulse to said battery, said battery providing a discharging current primarily only during said discharging pulses; and

repeating the above steps until a selected parameter has been achieved.

34. A method for determining the condition of a battery, comprising the steps of:

applying a charging pulse to said battery, said charging pulse causing a positive-going spike voltage to appear at said battery;

measuring said positive-going spike voltage of said battery during said charging pulse; and

evaluating said spike voltage.

5,307,001

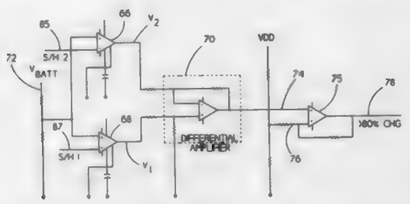
BATTERY CHARGING METHOD AND APPARATUS

Frederick D. Heavey, St. Paul, Minn., assignor to Dimensions Unlimited, Inc., St. Paul, Minn.

Filed May 5, 1992, Ser. No. 878,542

Int. Cl.[5] H02J *7/00;* **H01M** *10/44*

U.S. Cl. 320—30 **18 Claims**



6. A gas point detection apparatus for detecting the gassing point of a battery having battery terminals, the apparatus comprising:

(a) a first sample and hold connected at a first input to a first battery terminal to sample the battery voltage at a first time;

(b) a second sample and hold connected at a first input to the first battery terminal to sample the battery voltage at a second time;

(c) a first comparator to compare the voltage of the first sample and hold from the second sample and hold having a voltage difference output; and

(d) a second comparator connected to the voltage difference output, wherein the second comparator compares the voltage difference output to a predetermined reference voltage and the second comparator has a gas point detector output.

5,307,002

IMPROVEMENTS IN BATTERY CHARGING CIRCUITS

Chun H. Ho, and Wai T. Lou, both of Tsuen Wan, Hong Kong, assignors to Astec International, Ltd., Kowloon, Hong Kong

Filed Jun. 5, 1991, Ser. No. 710,824

Claims priority, application United Kingdom, Jun. 6, 1990, 9012578.2

Int. Cl.[5] H02J *7/04, 7/16*

U.S. Cl. 320—39 **7 Claims**

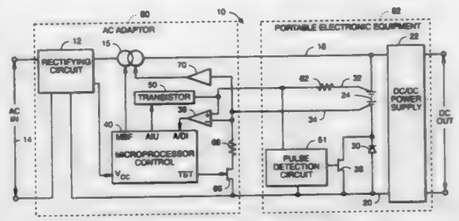
1. An AC adaptor, separate from and adapted to be connected to portable electronic equipment, for supplying a DC output to power the equipment and for charging a battery used to provide the backup power to the equipment when an AC mains supply is not available to power the AC adaptor, the adaptor comprising:

supply means for converting the AC mains supply to a DC supply;

current control means connected to said supply means for sensing and controlling the current supplied to the battery and to the equipment;

battery voltage monitoring means for measuring the potential of the battery;

means responsive to said monitoring means for determining a maximum said potential to indicate a fully charged state of the battery, the current control means being responsive to said determining means to reduce the current supplied to the battery when the fully charged state is determined;



means for sensing connection of the adaptor to the AC mains supply and for electrically disconnecting the battery from the equipment in response thereto; and

means for connecting the adaptor to the equipment;

wherein said battery voltage monitoring means comprises switch means connected in series with the battery and switch control means for repeatedly opening said switch means to interrupt the charging current to the battery, the monitoring means measuring said potential when said switch means is open.

5,307,003

VARYING THE SUPPLY VOLTAGE IN RESPONSE TO THE CURRENT SUPPLIED TO A COMPUTER SYSTEM

John P. Fairbanks, Sunnyvale, and Andy C. Yuan, Saratoga, both of Calif., assignors to Poqet Computer Corporation, Sunnyvale, Calif.

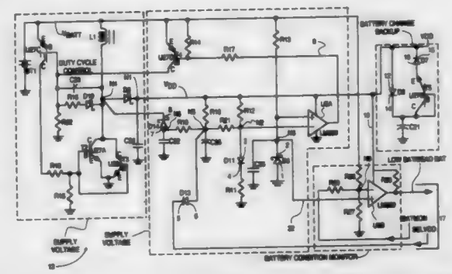
Division of Ser. No. 600,466, Oct. 19, 1990, Pat. No. 5,153,535.

This application Jul. 7, 1992, Ser. No. 909,922

The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.

Int. Cl.[5] G05F *1/613*

U.S. Cl. 323—222 **16 Claims**



1. A power system for providing a supply voltage to a computer and automatically varying said supply voltage responsive to themagnitude of the current being supplied to the computer, said power system comprising:

a supply voltage circuit for generating at an output terminal said supply voltage and said current being supplied to the

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computer, said supply voltage circuit having a control terminal for receiving a control signal for varying said supply voltage between a first voltage level and a second voltage level in accordance with the magnitude of said control signal; and

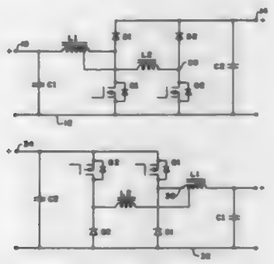
a current sensing circuit for sensing said current provided to the computer, said current sensing circuit generating at its output said control signal such said control signal varies in magnitude in accordance with said current sensed, so as to vary said supply voltage between said first and second voltage levels.

5,307,004

SOFT SWITCHING BOOST AND BUCK REGULATORS

Bruce W. Carsten, 2355 W. 14th Ave., Vancouver, Canada V6K 2W2

Filed Jul. 6, 1992, Ser. No. 909,257
Int. Cl.[5] H02M *3/335*
U.S. Cl. 323—222 **21 Claims**



1. A switching boost regulator comprising:

an input terminal, an output terminal and a common voltage line;

a first inductor, comprising a continuous winding, one end of which continuous winding is connected to the input terminal and the other end of which is connected through passive first switch means to the output terminal, said continuous winding have a tap near said other end of the continuous winding;

active controllable second switch means connecting said other end of the continuous winding to the common voltage line;

a second inductor, one end of which is connected to said tap, the other end of the second inductor being connected through active controllable third switch means to the common voltage line;

a passive fourth switch means connecting said other end of the second inductor to the output terminal.

5,307,005

ZERO CURRENT SWITCHING REVERSE RECOVERY CIRCUIT

Steven J. Ahladas, Highland, and Kevin R. Covi, Glenford, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,323
Int. Cl.[5] G05F *1/613*
U.S. Cl. 323—222 **6 Claims**

1. A switching regulator comprising:

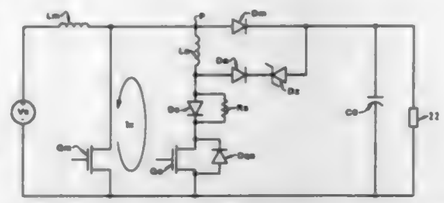
a rectifier;

a capacitive element coupled in series with said rectifier;

a first controllable switching means coupled in series with said rectifier for switching current to said rectifier when said first controllable switching means is in a first state and for switching current away from said rectifier when said first controllable switching means is in a second state, wherein a reverse recovery current originates from said rectifier when said first controllable switching means is in said second state;

a load coupled in parallel with said capacitive element;

an reactive impedance circuit coupled in parallel with said rectifier such that a reverse recovery current from said rectifier may be switched to said reactive impedance



circuit away from said first controllable switching means; and

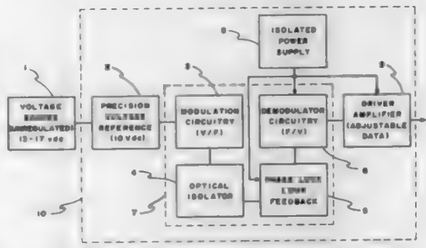
a second controllable switching means coupled to said reactive impedance circuit for switching said reverse recovery current into said reactive impedance circuit away from said first controllable switching means.

5,307,006

OPTICAL VOLTAGE REFERENCE

Richard Rankin, Ammon, and Dale Kotter, Bingham County, both of Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 9, 1992, Ser. No. 942,239
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 **17 Claims**



1. An apparatus for providing an optically coupled, ultra-high precision, isolated reference voltage comprising:

means for providing an unregulated voltage source;

a precision voltage reference means for generating a voltage output in a set range where said precision voltage reference means is coupled to said unregulated voltage means;

means for converting said voltage output from said precision voltage reference to a pulse rate frequency modulated signal;

an optical isolator means for converting said pulse rate frequency modulated signal to an optical signal which is then transformed back to a second pulse rate frequency modulated signal and where said optical isolator is coupled to said voltage converting means;

means for synchronizing said second pulse rate frequency modulated signal with a reference signal from said synchronization means where said synchronization means is coupled to said optical isolator;

means for demodulating said frequency modulated signal and converting said demodulated signal to a voltage signal where said demodulating means is coupled to said synchronizing means;

a driver amplifier coupled to said demodulating means;

an isolated power supply where said isolated power supply is coupled to said demodulating means, said synchronization means, and said driver amplifier; and

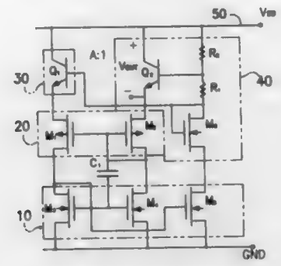
means for controlling the environment of the apparatus minus said unregulated voltage means.

5,307,007

CMOS BANDGAP VOLTAGE AND CURRENT REFERENCES

Chung-Yu Wu, Hsinchu, and Shu-Yuan Chin, Tao-Yuan, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Oct. 19, 1992, Ser. No. 963,093
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 **6 Claims**



2. A simplified CMOS bandgap voltage reference device for generating a reference voltage, comprising:

(1) a first bipolar transistor and a second bipolar transistor with different emitter areas having their collectors connected together;

(2) a first resistor connected between the base of said first bipolar transistor and the base of said second bipolar transistor;

(3) a second resistor connected between the base of said second bipolar transistor and the collector of said second bipolar transistor;

(4) a first MOS transistor having its source connected to the emitter of said first bipolar transistor;

(5) a second MOS transistor having its gate and drain shorted together and connected to the gate of said first MOS transistor, and its source connected to the emitter of said second bipolar transistor;

(6) a third MOS transistor having its gate and drain shorted together, and its drain connected to the drain of said first MOS transistor;

(7) a fourth MOS transistor having its drain connected to the drain of said second MOS transistor, its gate connected to the gate of said third MOS transistor, and its source connected to the source of said third MOS transistor;

(8) a fifth MOS transistor having its gate connected to the gate of said third MOS transistor, and its source connected to the source of said third MOS transistor;

(9) a sixth MOS transistor having its gate and drain shorted together, and connected to the base of said first bipolar transistor, and its source connected to the drain of said fifth MOS transistor;

(11) a capacitor connected between the gate of said first MOS transistor and the gate of said third MOS transistor;

(12) means for connecting the collector of said second bipolar transistor and the positive terminal of an external voltage source;

(13) means for connecting the source of said fifth MOS transistor and the negative terminal of said external voltage source; and

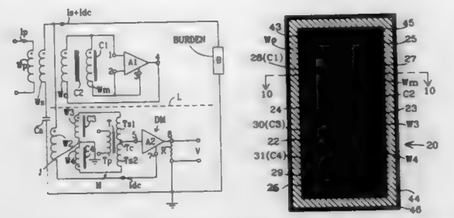
(14) means for connecting the emitter of said second bipolar transistor and the source of said second MOS transistor, so as to produce a voltage difference between the collector of said second bipolar transistor and the emitter of said second bipolar transistor.

5,307,008

CURRENT RATIO DEVICE AND TOROIDAL CORE ASSEMBLY THEREFOR

Eddy So, Gloucester, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Nov. 4, 1991, Ser. No. 787,086
Int. Cl.[5] G01R *21/133*; H03K *13/02*
U.S. Cl. 323—357 **20 Claims**



1. A current ratio device for use in constructing a current transformer for measuring alternating current alone, direct current alone or a mixture of alternating and direct currents simultaneously, said device comprising

(a) a first magnetic core,

(b) a second magnetic core,

(c) a measuring winding electromagnetically coupled with the first core but not with the second core,

(d) an alternating current amplifier having an input and an output,

(e) said input being connected to receive an alternating waveform appearing across the measuring winding,

(f) outer winding means electromagnetically coupled with both the first and second cores, said outer winding means including a secondary winding for connection across a measuring burden,

(g) said amplifier output being connected to said outer winding means to provide a magnetizing current required to magnetize the second core when a primary winding is electromagnetically coupled with the first and second cores and an alternating current flows in said primary winding,

characterized by the addition of

(h) modulation magnetic core means,

(i) modulation winding means electromagnetically coupled with said modulation core means but not with the first and second cores,

(j) said outer winding means being electromagnetically coupled with said modulation core means,

(k) modulating means connected to drive said modulation core means alternately into saturation, and

(l) demodulating and amplifying means for detecting even harmonics in said modulation core means resulting from direct current flowing in the primary winding and for generating a corresponding direct current output connected to a direct current series circuit including said outer winding means and the burden,

whereby to render said current transformer capable of measuring not only alternating current alone and direct current alone, but also measuring individually the alternating and direct current components of a mixture of alternating and direct currents regardless of the relative amplitudes of said components.

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5,307,009

HARMONIC-ADJUSTED WATT-HOUR METER

Alexander McEachern, Oakland, Calif., and William A. Moncrief, Marietta, Ga., assignors to Basic Measuring Instruments, Foster City, Calif.

Division of Ser. No. 840,850, Feb. 25, 1992, Pat. No. 5,298,859. This application Oct. 6, 1992, Ser. No. 957,260
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—142 2 Claims



1. An instrument for measuring electric power consumed by a power consumer, comprising:
   a. means for measuring time-domain current flowing through the consumer's premises;
   b. means, coupled to receive the time domain current, for transforming the time-domain current samples to frequency-domain current;
   c. means for measuring time-domain voltage delivered to the consumer;
   d. means, coupled to receive the time-domain voltage, for transforming the time-domain voltage samples to frequency-domain voltage;
   e. means for calculating a frequency-domain watt signal; and
   f. means for storing watt adjustment tables coupled to the means for calculating for forming an adjusted watt signal.

5,307,010

WAFER BURN-IN AND TEST SYSTEM

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 640,198, Jan. 11, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,592
Int. Cl.[5] G01R *31/28, 31/02*
U.S. Cl. 324—158 R 4 Claims



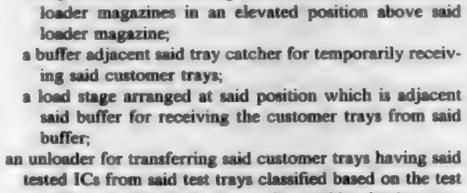
1. An interconnection system for burn-in and testing of semiconductor devices prior to separation from a semiconductor wafer, comprising:
   a semiconductor wafer having a plurality of semiconductor devices thereon, each semiconductor device having a plurality of bond pads and a plurality of edges defining a top surface of the semiconductor device;
   a first layer of a plurality of conductors on the wafer insulated from the semiconductor devices, each of the plurality of conductors of said first layer overlaying one of said semiconductor devices without extending past said plurality of edges of that semiconductor device and connected to a bond pad;
   a second layer of a plurality of conductors on the wafer insulated from the first layer of plurality of conductors;
   an interconnection between each conductor of said first layer of conductors and one conductor of said second layer of a plurality of conductors; and
   a plurality of contact test points on said wafer, each of said contact test points connected to one of said conductors in said second layer of a plurality of conductors.

5,307,011

LOADER AND UNLOADER FOR TEST HANDLER

Mitsuaki Tani, Saitama, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Dec. 4, 1991, Ser. No. 803,154
Int. Cl.[5] G01R *31/02;* B07C *5/344*
U.S. Cl. 324—158 F 22 Claims



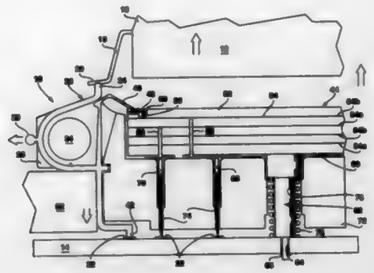
1. An apparatus for handling trays of an automatic test handler for testing integrated circuits ("ICs"), comprising:
   a plurality of customer trays for carrying said ICs to be tested before the testing and for carrying said ICs that have been tested ("tested ICs") after the testing;
   a plurality of test trays for receiving said ICs to be tested from said customer trays and for carrying said ICs to a test position of the automatic test handler;
   a loader magazine for receiving said plurality of customer trays having said ICs to be tested;
   an unloader magazine for receiving said plurality of customer trays having said tested ICs;
   a loader for loading said customer trays to a position for transferring said ICs to be tested to said test trays, said loader comprising:
      a tray catcher for receiving the customer trays from said loader magazines in an elevated position above said loader magazine;
      a buffer adjacent said tray catcher for temporarily receiving said customer trays;
      a load stage arranged at said position which is adjacent said buffer for receiving the customer trays from said buffer;
   an unloader for transferring said customer trays having said tested ICs from said test trays classified based on the test results into said unloader magazines, said unloader comprises a pair of unload stages for receiving said customer trays so that customer trays receive said tested ICs; and
   a transfer arm for (i) transferring said customer trays on said buffer to said load stage, and (ii) transferring said customer trays on said unload stages having tested ICs to said unloader magazines based on the test results.

5,307,012

TEST SUBSTATION FOR TESTING SEMI-CONDUCTOR PACKAGES

Bidyut K. Bhattacharyya, Chandler, Ariz., and Jim Cattedra, Del Mar, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 802,008, Dec. 3, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,674
Int. Cl.[5] G01R *31/26*
U.S. Cl. 324—158 F 34 Claims



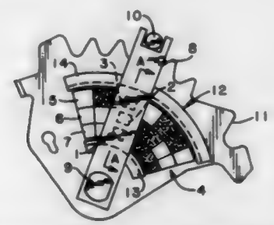
1. An apparatus that electrically couples a test board to a semiconductor package that has at least one lead, comprising:
   a housing;
   at least one first contact attached to said housing and adapted to engage the lead of the semiconductor package and the test board, such that the semiconductor package is electrically coupled to the test board, said first contact forming a loop which defines a first contact opening; and,
   a rod that is attached to said housing and extending through and separated from said first contact opening, said rod being electrically grounded to control the inductance of said first contact.

5,307,013

DIGITAL POSITION SENSOR SYSTEM FOR DETECTING AUTOMATIC TRANSMISSION GEAR MODES

Alfred J. Santos, Canton Center, and Michael C. Brauer, Goshen, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 680,143, Apr. 3, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,558
Int. Cl.[5] G01B *7/14;* H03M *1/22;* H01H *36/00;* H01L *43/06*
U.S. Cl. 324—207.2 14 Claims



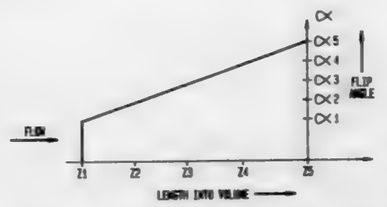
1. A sensor system for detecting gear modes of an automatic transmission, the automatic transmission having a detent lever located internal to a transmission case, the sensor system comprising:
   an encoder means fixed to the detent lever, the encoder means having multiple magnetic elements arranged in at least three parallel binary code tracks, the magnetic elements being arranged in a plurality of sets, each set consisting of one magnetic element from each binary code track, the magnetic elements in a set corresponding to a transmission gear mode, the polarity of the magnetic elements in a set uniquely identifying a transmission gear mode;
   at least three sensor means disposed opposite the encoder means for detecting changes of the gear modes, each sensor means being a magnetic field sensor which produces a digital signal, the digital signals of the at least three sensor means being representative of the position of the encoder means thereby indicating the transmission gear modes, the digital signals of the at least three sensor means being unique for each transmission gear mode, the sensor means being mounted in a sensor mount assembly; and
   a guide means including a lip for allowing relative transverse motion between the encoder means and sensor means and for allowing relative separation between the encoder means and the sensor means only when a pre-determined distance between the encoder means and the sensor means is not exceeded, the guide means being integral with at least one of the sensor means and the encoder means.

5,307,014

INFLOW MR ANGIOGRAPHY WITH SPATIALLY VARIABLE FLIP ANGLES

Gerhard Laub, Edison, N.J., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Oct. 18, 1991, Ser. No. 779,228
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—306 2 Claims



1. In a method of magnetic resonance imaging a paramagnetic material as it flows through an imaging volume, said method including the steps of: generating and applying a static magnetic field and gradient magnetic fields to the imaging volume, successively generating and applying an RF magnetic field to said imaging volume so as to exciting gyromagnetic spins in the imagining volume, detecting magnetic resonance signals emanating from the volume as a result of said RF excitation, and implementing an image-reproducing computation on the detected signals so as to develop an image, a modification of said step of successively generating an applying said RF magnetic field, comprising:
   generating and applying said RF magnetic field so as to locally vary the strength of said RF excitation within said imaging volume, wherein said RF excitation results in an relatively linear increase in flip angle for material flowing through said volume.

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5,307,015

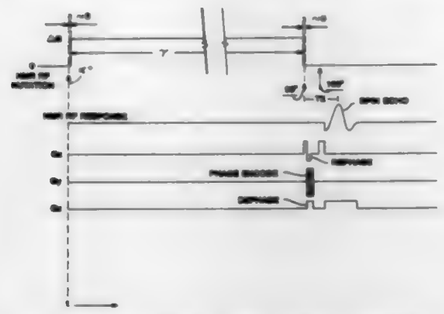
NMR RELAXOMETRY USING VARIABLE INITIAL FLIP ANGLE

Leon Kaufman, San Francisco, and Joseph W. Carlson, Kensington, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 705,964, May 28, 1991, Pat. No. 5,281,913, which is a continuation-in-part of Ser. No. 545,068, Jun. 29, 1990. This application Jul. 7, 1992, Ser. No. 909,747

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 21 Claims



1. A method for obtaining a NMR relaxometry image of in vivo patient tissue using a MRI system having a nominally fixed background magnetic field, said method comprising the steps of:

(a) subjecting said patient tissue to an RF NMR nutation pulse of α degrees;

(b) subjecting said patient tissue to a supplemental magnetic field strength ΔB for a time interval τ during which the sample exhibits a respectively corresponding NMR relaxation parameter value;

(c) in a further time interval, subsequently performing a MRI data acquisition cycle using said fixed background magnetic field; and

(d) repeating steps (a) through (c) for a plurality of different values of initial flip angle α to generate a NMR relaxometry image of said patient tissue.

5,307,016

MAGNETIC FIELD GENERATING APPARATUS

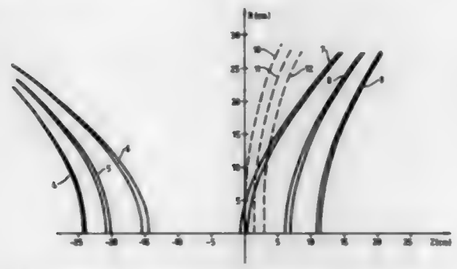
Ian L. McDougall, Charlbury; Robert C. Hawkes, Cambridge, and Peter Hanley, Forest of Dean, all of Great Britain, assignors to Oxford Instruments Limited, Oxford, England

Filed Mar. 13, 1992, Ser. No. 850,833

Claims priority, application United Kingdom, Mar. 13, 1991, 9105286

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—320 3 Claims



1. A magnetic field generating apparatus, comprising:

a solenoid having a plurality of turns about an axis;

a center plane defined orthogonal to said axis and passing through said axis midway between ends of said solenoid; and

a plurality of coaxial coils spaced apart and along said axis, said coils being positioned relative to each other and to said solenoid such that when working currents flow through said coils and said solenoid a magnetic field is generated within said solenoid, said magnetic field having a zero order component and a first order gradient with high order gradients being substantially balanced, wherein said magnetic field has contours of constant value extending with a radially outward component from said axis of aid solenoid, and wherein regions of substantially homogeneous magnetic field for performing an NMR experiment are formed about said contours, said regions extending along said contours and having a substantially constant thickness on either side of said contours.

5,307,017

SPARKING VOLTAGE DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINES

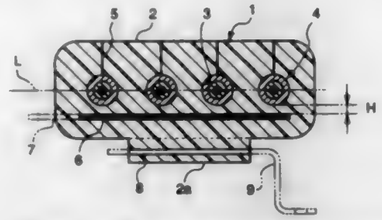
Shigeru Maruyama; Yuichi Shimasaki; Masaki Kanehiro; Takuji Ishioka; Shigeki Baba, and Takashi Hisaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,034

Claims priority, application Japan, Nov. 28, 1991, 3-339725

Int. Cl.[5] G01R *13/42*

U.S. Cl. 324—402 18 Claims



1. A sparking voltage detecting device for an internal combustion engine having an ignition system having at least one secondary side high-tension cord, said sparking voltage detecting device being mounted on said secondary side high-tension cord, for detecting sparking voltage generated in said engine, comprising:

a main body formed of an insulating material and having at least one through hole formed therein, said high-tension cord being fitted through said through hole in a liquidtight manner; and

at least one conductive member embedded in said main body at a location radially outward of said through hole and spaced from said high-tension cord by a predetermined distance;

said main body having an outer surface, and at least one incision formed therein, said incision extending from said outer surface of said main body to said through hole, said incision being forcibly expansible to an extent enough to allow said high-tension cord to be fitted into said through hole through said incision, said conductive member being arranged at a side of said main body remote from said incision with respect to said through hole.

5,307,018

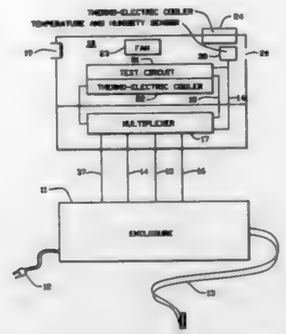
APPARATUS AND METHOD TO DETECT AN IMPENDING FAILURE OF A CIRUCIT CAUSED BY DEPOSITS OF AEROSOL

Ashok Gadgil, 438 Clayton Ave., El Cerrito, Calif. 94530

Filed Jul. 1, 1992, Ser. No. 907,305

Int. Cl.[5] G01R *31/02, 31/28*

U.S. Cl. 324—537 24 Claims



24. A method for detecting an impending failure of a circuit having a corresponding test circuit which includes a first trace having a first contact and a second trace having a second contact, comprising the steps of:

enhancing deposition of aerosol between the first trace and the second trace;

measuring the impedance between the first contact and the second contact;

comparing the measured impedance to a predetermined value; and

warning of the impending circuit failure responsive to the comparison of the measured impedance and the predetermined value.

5,307,019

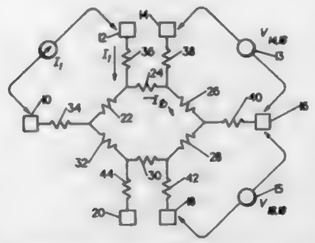
METHOD AND APPARATUS FOR DETERMINING THE WELD AND COIL RESISTANCES OF A MOTOR WINDING

Frank C. Robey, Acton, Mass., and Richard M. Chrisco, Ardmore, Okla., assignors to Slaughter Company, Division of R. E. Phelon Company, Inc., Ardmore, Okla.

Filed Sep. 21, 1992, Ser. No. 948,111

Int. Cl.[5] G01R *27/14, 31/06*

U.S. Cl. 324—713 5 Claims



1. Method of determining the resistance of welds used to join the coils of the armature of a magnetomotive device and commutator bars, the device having a plurality of armature coils connected together in a closed loop, each of said coils having terminal ends welded to said commutator bars, said method comprising the steps of:

(a) imposing a d.c. current across a first pair of adjacent commutator bars so that a portion of said current flows along a first path from one bar of said first pair of bars to the other bar of said first pair of bars through one of said armature coils the terminals of which are connected to said first pair of bars and another portion of said current flows along a second path from one of said first pair of bars, through others of said armature coils and to said other bar of said first pair of bars to provide a voltage drop across each of the other armature coils;

(b) disposing high impedance voltage measuring means across a second pair of adjacent commutator bars and across a third pair of adjacent commutator bars, said second pair and third pair of bars being selected to include one bar that is common to said second pair and third pair of bars, said first pair of bars being separate from said second and third pair of bars, so that the voltage drops measured by said voltage measuring means disposed across said second pair and third pair of bars are essentially proportional to the respective resistance across each of two armature coils connected to the commutator bars of said second pair and third pair of bars;

(c) determining the ratio of the resistances of said two armature coils;

(d) thereafter, imposing a d.c. current across a fourth pair of adjacent commutator bars so that the thereafter imposed current has a circuit path which includes a weld common to said fourth pair of bars and to one of said second pair and third pair of bars; and

(e) using the resistance ratio of the two armature coils to determine the resistance of said weld common to said fourth pair of bars and to one of said second pair and third pair of bars.

5,307,020

PHASE COMPARATOR DEVICE WITH WIDE DYNAMIC RANGE

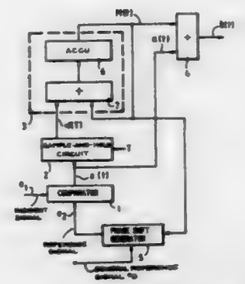
Alain Marcuard, Elancourt, France, assignor to Thomson-CSF, Puteaux, France

Filed Mar. 19, 1992, Ser. No. 853,814

Claims priority, application France, Mar. 22, 1991, 9103501

Int. Cl.[5] H03K *9/06, 5/00, 5/159;* H03L *7/00*

U.S. Cl. 328—133 4 Claims



1. A phase comparator device with wide dynamic range for a phase-locked loop comprising a phase comparator to carry out the measurement, on a determined phase range, of the phase difference existing between an incident signal and a local reference signal output by a controlled phase signal generator and input into said phase comparator, wherein said device comprises, firstly, a phase accumulation circuit coupled to the output of the phase comparator by means of a sample-and-hold circuit for the successive accumulation, at determined instants, of a plurality of successive phase differences measured by the phase comparator and actuation of the controlled phase signal generator so that the phase of the local reference signal is varied in accordance with the accumulated value of the plurality of successive phase differences stored in the accumulation circuit and, secondly, an adder circuit coupled to the output of

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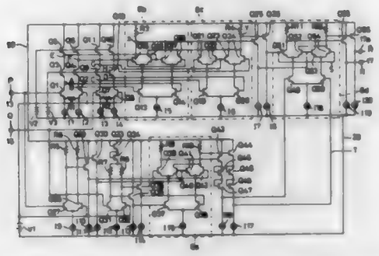
VOL 1161 ISS 4 AP 26 1994 UMI

the phase accumulation circuit and to the output of the comparator to add the phase difference measured by the phase comparator to the contents of the accumulation circuit.

5,307,021
PHASE-ERROR DETECTING CIRCUIT FOR QDPSK DEMODULATOR

Yoshiaki Ishizeki, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,171
Claims priority, application Japan, Sep. 19, 1991, 3-268416
Int. Cl.[5] H03D *3/00*; H04L *27/22*
U.S. Cl. 329—308 **4 Claims**



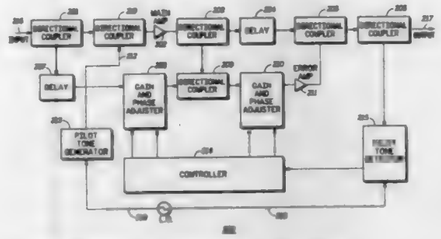
1. A phase-error detecting circuit for detecting a phase error of an output signal of a VCO in a ODPSK demodulating circuit in accordance with the Costas loop method, said phase-error detecting circuit comprising:
first means which generates a first product (P×Q) of a first signal (P) and a second signal (Q), said first and second signals being generated through phase demodulation of a OPSK signal;
second means which generates the difference of the squares (P^2-Q^2) of said first and second signals; and
third means which receives both said first product generated by said first means and said difference generated by said second means and generates a second product ((PQ)×(P^2-Q^2)) of said first product and said difference wherein said first means includes first quadratic multiplier means for generating said first product and said second means includes second quadratic multiplier means, phase reversing means for reversing the phase of said second signal (Q), third quadratic multiplier means, and adding means, said second quadratic multiplier means receiving said first signal (P) and generating the square (P^2) of said first signal, said third quadratic multiplier means receiving said second signal (Q) and a phase-reversed second signal ($-Q$) with the phase reversed by said phase reversing means and generating the product ($-Q^2$) of said second signal and said phase-reversed second signal, and adding means adding said square (P^2) of said first signal and said product of said second signal and said phase-reversed second signal.

5,307,022
HIGH DYNAMIC RANGE MODULATION INDEPENDENT FEED FORWARD AMPLIFIER NETWORK

Derek L. Tattersall, Jr., Wheeling, and James F. Long, Glen Ellyn, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 684,760, Apr. 15, 1991, Pat. No. 5,130,663. This application Mar. 20, 1992, Ser. No. 855,172
Int. Cl.[5] H03F *3/66, 1/26*
U.S. Cl. 330—52 **20 Claims**

1. A feed forward amplifier network for reducing distortion generated by a power amplifier comprising:
means for receiving an input signal having components comprising at least one of a:
wide bandwidth modulation format; and
narrow bandwidth modulation format;
means, coupled to the receiving means, for generating a frequency swept pilot tone as a function of a reference signal, wherein the frequency swept pilot tone is injected into the input path of a power amplifier's input signal;
circuit means, coupled to the receiving means, for generating an amplified output of the input signal having components comprising at least one of:

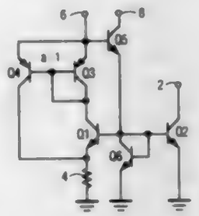


wide bandwidth modulation format; and
narrow bandwidth modulation format;
means, coupled to the circuit means, for detecting an average pilot tone power level that is between the components of the amplified output signal; and
means, coupled to the detecting means, for adjusting circuit means characteristics to reduce the amplitude of the average pilot tone power level within the amplifier's operating bandwidth.

5,307,023
NON-LINEAR OPERATIONAL TRANSCONDUCTANCE AMPLIFIER

Otto H. Schade, Jr., Caldwell, N.J., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 16, 1992, Ser. No. 962,309
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—257 **17 Claims**

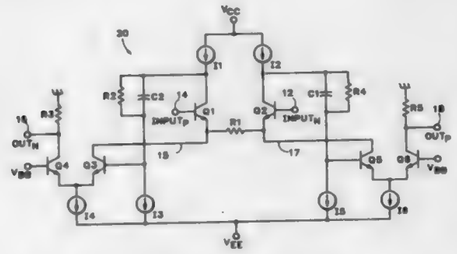


11. A non-linear current mirror amplifier comprising:
an input terminal for the application thereto of an input current;
an output terminal for producing thereat a current which is a continuous, direct and amplified version of said input current;
a first diode connected transistor means for receiving a bias current therethrough and for developing a forward bias voltage in response to said bias current;
current splitting means for providing a predetermined and fixed fractional portion of said input current to said first diode connected transistor means as said bias current.
resistance means connected in series with said first diode connected transistor means for providing a resistive voltage drop in response to current therethrough, said resistance means being connected between said first diode connected transistor means and a point of reference potential;
a second output transistor means having a base-to-emitter region connected across said first diode connected transistor means and said resistance means for receiving the sum of said forward bias voltage and said resistive voltage drop as a forward base emitter bias voltage with its emitter region being connected to said reference potential; and
said second output transistor means having a collector region connected to said output terminal.

5,307,024
LINEARIZED LEVEL-SHIFTING AMPLIFIER

Arthur J. Metz, Gervais, and James S. Lamb, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 27, 1992, Ser. No. 920,076
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—259 **28 Claims**



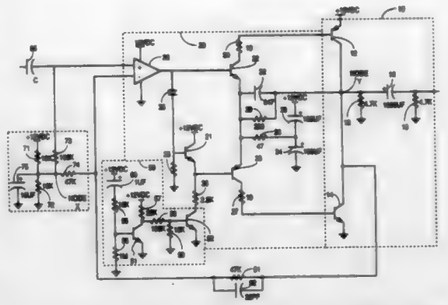
12. A differential amplifier (100) comprising:
first and second identical amplifier halves, each amplifier half including
a load (I1; I2);
a current source (I3; I4);
voltage shifting means (R2, C2; R4, C1) having a first node coupled to the load and a second node coupled to the current source;
a first amplifier (Q1; Q2) having a single-ended voltage input coupled to ground and an output coupled to the first node of the voltage shifting means;
a second amplifier (Q3, Q4; Q5, Q6) having a single-ended current output and an input coupled to the second node of the voltage shifting means; and
means (15, 17) for coupling the first and second amplifiers such that a portion of bias and signal currents flowing through the second amplifier flows through the first amplifier; and
an input current (I10) flowing between the first and second identical amplifier halves and the single-ended current output of the second amplifier in each amplifier half forming a differential output.

5,307,025
AUDIO POWERW AMPLIFIER WITH NOISE PREVENTION AT TURN-ON AND TURN-OFF

Bryan J. Colvin, and Michael S. Rovner, both of San Jose, Calif., assignors to Media Vision, Inc., Fremont, Calif.

Filed Jul. 14, 1992, Ser. No. 913,667
Int. Cl.[5] H03F *1/26*
U.S. Cl. 330—267 **14 Claims**

14. A method for amplifying an audio signal using at least a pair of driver transistors comprising the steps of:
limiting a rate at which the biasing of said pair of driver transistors changes from an unbiased condition to a predetermined operating point, said change in biasing occurring when a power source coupled to said pair of driver transistors is initially turned on;
biasing said pair of driver transistors at said predetermined operating point during steady state conditions; and

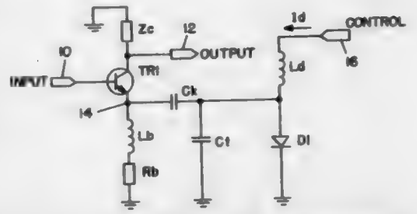


substantially instantaneously changing the biasing of said pair of driver transistors from said predetermined operating point to said unbiased condition, said changing occurring when said power source is turned off.

5,307,026
VARIABLE GAIN RF AMPLIFIER WITH LINEAR GAIN CONTROL

Lars H. Mucke, San Diego, Calif., assignor to Nokia Mobile Phones, Ltd., Finland

Filed Dec. 11, 1992, Ser. No. 989,117
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—283 **2 Claims**



1. A circuit for amplifying a band of radio frequency (RF) signals, said circuit exhibiting a signal gain, in decibels (dB) that is a substantially linear function of a logarithmic control signal, said circuit comprising:
a transistor having emitter, base and collector circuits, an output node connected to said collector circuit, said band of radio frequency signals applied to said base circuit;
complex impedance means consisting of a series connected resistor/inductor combination connected between said emitter circuit and a source of common potential;
a coupling capacitor connected to said emitter circuit;
reactance means consisting of a shunt capacitor connected between said coupling capacitor and said source of common potential for providing, within said band of frequencies, a substantially resonant parallel circuit with said series connected resistor/inductor combination, and
a PIN diode connected between said coupling capacitor and said source of common potential and responsive to said logarithmic control signal, to exhibit a shunt connected variable resistance within said band of frequencies, said variable resistance acting as a shunt to vary the RF emitter impedance of said circuit, and thus the RF gain of the circuit.

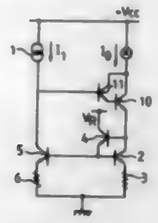
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5,307,027

CURRENT MIRROR WITH LOW COPYING ERROR

Jean-Charles Grasset, Fontaine, France, assignor to Thomson Composants Militaires et Spatiaux, Courbevoie, France

Filed Nov. 12, 1992, Ser. No. 974,883
Claims priority, application France, Nov. 22, 1991, 91 14405
Int. Cl.[5] H03F 3/04
U.S. Cl. 330—288 8 Claims



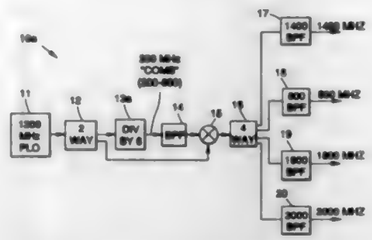
1. A current mirror, comprising:
an input arm;
an output arm including a Darlington amplifier having the collector thereof as an output of the current mirror and the base thereof connected to the input arm; and
a buffered current mirror including a master arm and a copying arm, the master arm connected to the emitter of said Darlington amplifier and the copying arm connected to the base of said Darlington amplifier;
wherein said Darlington amplifier is subjected to negative feedback in shunt-shunt mode by said buffered current mirror.

5,307,029

METHOD AND APPARATUS FOR GENERATING MULTIPLE FREQUENCY TONES USING A DIGITAL FREQUENCY DIVIDER

D. Stuart Schenk, Yorba Linda, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 10, 1992, Ser. No. 911,597
Int. Cl.[5] H03B 21/01
U.S. Cl. 331—37 6 Claims



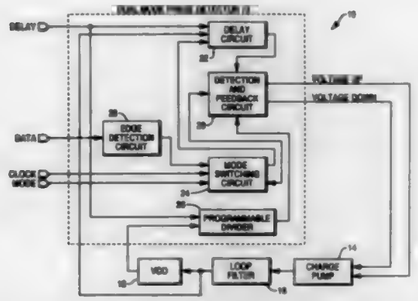
6. A method for generating multiple frequency tones comprising the steps of:
providing a reference frequency signal:
digitally frequency dividing the reference frequency signal by a predetermined number to provide a plurality of harmonically related frequency outputs comprising a fundamental tone and a plurality of harmonics of the fundamental tone; and
mixing the harmonically related frequency outputs with the reference frequency signal to obtain a series of single frequency tones.

5,307,028

PHASE-AND-FREQUENCY MODE/PHASE MODE DETECTOR WITH THE SAME GAIN IN BOTH MODES

Dao-Long Chen, Fort Collins, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 16, 1992, Ser. No. 961,975
Int. Cl.[5] H03L 7/087; H03D 13/00
U.S. Cl. 331—1A 36 Claims



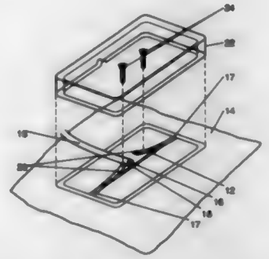
1. A dual-mode detector which has a phase-detection mode of operation and a phase-and-frequency-detection mode of operation;
wherein the dual-mode detector has a first gain while in the phase-detection mode and a second gain while in the phase-and-frequency-detection mode; and
wherein the first and second gains are the same.

5,307,030

COUPLING ADJUSTMENT OF MICROWAVE SLOTS

Ray J. King, Pleasanton, and Michael J. Werner, Livermore, both of Calif., assignors to KDC Technology Corp., Livermore, Calif.

Filed Sep. 14, 1992, Ser. No. 944,523
Int. Cl.[5] H01P 5/04
U.S. Cl. 333—24 R 17 Claims



1. Apparatus for adjusting electromagnetic coupling between two regions, comprising:
a thin conductive ground plane separating the two regions;
a slot in the ground plane through which power coupling occurs;
means for guiding power to and/or from the slot;
at least one curved conducting leaf spring operatively connected to the slot for adjusting the electromagnetic coupling through the slot.

5,307,031

STANDARD OR REFERENCE TRANSMISSION LINE WITH VARIABLE GROUP TIME DELAY

Rudolf Dick, Eningen, Fed. Rep. of Germany, assignor to Wandel & Goltermann GmbH & Co. Elektronische Messtechnik, Eningen, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,487
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129353
Int. Cl.[5] H03H 7/18; H01P 9/00
U.S. Cl. 333—28 R 8 Claims



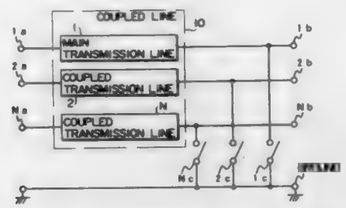
1. An adjustable, characteristic-impedance-correcting delay line capable of use as a standard or reference transmission line for establishing a group delay time adjustable in steps over a wide range, said line comprising:
a multiplicity of selectively effective delay-generating networks having different group delay time and connected in a cascade; and
a shunt across each of said networks of individually and selectively bridging same, thereby decoupling selected ones of said networks from said cascade, at least one of said networks being a reference-line impedance matching all-pass network, others of said networks being formed by different lengths of coaxial cable.

5,307,032

WIDEBAND FREQUENCY DISTRIBUTED SIGNAL SELECTOR USING ELECTROMAGNETIC COUPLING

Tsuyomasa Uno, Atsugi, Japan, assignor to Anritsu Corporation, Tokyo, Japan

PCT No. PCT/JP92/00350, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO92/17912, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 23, 1992, Ser. No. 952,530
Claims priority, application Japan, Mar. 29, 1991, 3-92806
Int. Cl.[5] H01P 1/10, 1/15
U.S. Cl. 333—101 9 Claims



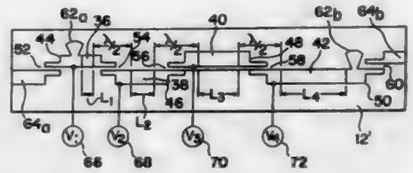
1. A signal selector comprising:
a main transmission line having a transmission characteristic in a bandwidth ranging from a DC band to a high-frequency band, said main transmission line having one end connected to a common terminal to which a signal to be selectively transmitted is input, and another end connected to a first signal selecting terminal from which said signal to be selectively transmitted is output;
at least one coupled transmission line coupled with said main transmission line through at least one of an electric field and a magnetic field, such that said at least one coupled transmission line and said main transmission line constitute a distributed coupled line, said at least one coupled transmission line having a transmission characteristic in a high-frequency bandwidth, said at least one coupled transmission line having one end connected to ground, and another end connected to at least one second signal selecting terminal from which a signal to be selectively transmitted and which is induced from said main transmission lie to said at least one coupled transmission line, is output;
first conducting means connected between said first signal selecting terminal and said ground so that a connecting state between said first signal selecting terminal and said ground is selected between an open state and a closed state; and
at least one second conducting means connected between said at lest one second signal selecting terminal and said ground so that a connecting state is selected between an open state and a closed state; and
said signal selector enabling a signal, which has said transmission characteristic in the bandwidth ranging from the DC band to the high-frequency band, to be output form said first signal selecting terminal as said signal to be selectively transmitted when said first conducting means is in the open state and said at least one second conducting means is in the closed state, and enabling a signal, which has said transmission characteristic in the high-frequency band, to be output from said at least one second signal selecting terminal as said signal, which is induced on said at least one coupled transmission line, to be selectively transmitted when said first conducting means is in the closed state and said at least one second conducting means is in the open state.

5,307,033

PLANAR DIGITAL FERROELECTRIC PHASE SHIFTER

Thomas E. Koscica, Clark; Richard W. Babbitt, Fair Haven, and William C. Drach, Trenton, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 19, 1993, Ser. No. 6,358
Int. Cl.[5] H01P 1/18, 3/08
U.S. Cl. 333—161 12 Claims



1. A digital phase shifter comprising:
a plurality of intercoupled planar type microwave and millimeter wave phase shifter sections fabricated on a substrate, each section including a phase shifter element having a predetermined length and whose permittivity and effective electrical length are a function of a respective electric field applied thereto;
means for applying separate electric fields of fixed magnitude in a binary digital operational mode to each of said phase shifter elements for providing a respective amount of fixed phase shift to microwave and millimeter wave signals propagating through said phase shifter sections;
first microwave and millimeter wave transmission line means for coupling said signals to a first phase shifter section of said plurality of phase shifter sections; and
second microwave and millimeter wave transmission line means for coupling said signals from a last phase shifter section of said plurality of phase shifter sections.

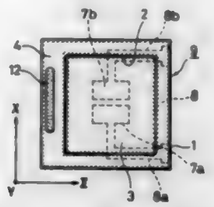
VOL 1161 ISS 4 AP 26 1994 UMI

5,307,034

ULTRATHIN MULTIMODE QUARTZ CRYSTAL FILTER ELEMENT

Takao Morita; Osamu Ishii, and Takebumi Kurosaki, all of Kanagawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Samukawa, Japan

PCT No. PCT/JP90/01528, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO91/19352, PCT Pub. Date Dec. 12, 1991
PCT Filed Nov. 22, 1990, Ser. No. 809,511
Claims priority, application Japan, May 25, 1990, 2-136135
Int. Cl.[5] H03H *9/56*
U.S. Cl. 333—187 **1 Claim**



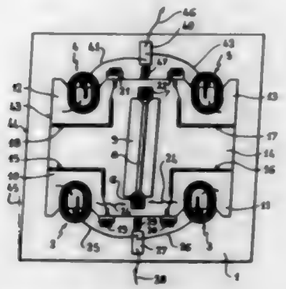
1. An ultrathin multimode quartz crystal filter element having a fundamental frequency of at least 50 Mhz., comprising:
an AT cut quartz crystal plate having an identifiable crystallographic x-axis and including an ultrathin vibratory portion and a thick frame-like marginal portion integral therewith for supporting said ultra-thin vibratory portion; and
split electrodes disposed on said vibratory portion along the crystallographic x-axis of said quartz crystal plate.

5,307,035

LOW LOSS SURFACE WAVE FILTER

Pierre Duffilé, Vernon, Conn., and Jean-Michel Hode, Valbonne, France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR91/00308, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO91/16763, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 12, 1991, Ser. No. 927,267
Claims priority, application France, Apr. 24, 1990, 90 05189
Int. Cl.[5] H03H *9/00*
U.S. Cl. 333—193 **7 Claims**



1. A surface wave filter comprising:
at least one input transducer;
at least one first coupling transducer acoustically connected to the at least one input transducer;
at least one second coupling transducer electrically connected to the at least one first coupling transducer;
at least one output transducer acoustically connected to the at least one second coupling transducer;
wherein at least one of the at least one input transducer or the at least one output transducer comprises a central transducer element and a coupler surrounding the central transducer element, wherein the central transducer element is offset with respect to an axis of the coupler normal to a direction of propagation of a surface wave by a distance i, where

$$i=\lambda/8+N\lambda/2$$

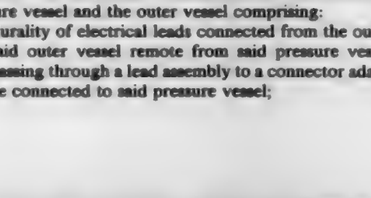
where
λ is a propagation wavelength of the surface wave, and
N is a non-zero integer.

5,307,036

CERAMIC BAND-STOP FILTER

Aimo Turunen, and Pauli Näppä, both of Oulu, Finland, assignors to Lk-Products Oy, Kempele, Finland

Continuation-in-part of Ser. No. 532,018, Jun. 1, 1990, Pat. No. 5,103,197. This application Mar. 31, 1992, Ser. No. 861,080
Claims priority, application Finland, Jun. 9, 1989, 892855; Jun. 9, 1989, 892856; Apr. 12, 1991, 911797
Int. Cl.[5] H01P *1/205*
U.S. Cl. 333—202 **14 Claims**



1. A band-stop filter, comprising;
a plurality of resonators, each of the resonators being composed of a portion of dielectric material having top, bottom and at least two side surfaces with a respective hole extending from said top surface to said bottom surface, the portion of dielectric material for each resonator being adjacent each other along dividing lines, the top, bottom and at least a first side surface being generally covered with an electrically conducting material, a second side surface being at most partially covered with electrically conductive material; and
conductive strip means for substantially cancelling out electric and magnetic fields between said resonators, said conductive strip means including at least one conductive strip located at a respective one of the dividing lines on the second side surface and extending generally straightly between the conductive material on the top and bottom surfaces, said conductive strip being elongated in a direction parallel to a direction of elongation of the resonator hole.

5,307,037

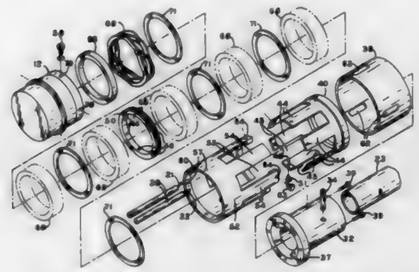
SHIM LEAD ASSEMBLY WITH FLEXIBLE CASTELLATED CONNECTOR FOR SUPERCONDUCTING MAGNET

Daniel C. Woods, and William S. Stogner, both of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 28, 1992, Ser. No. 967,315
Int. Cl.[5] H01F *7/22*
U.S. Cl. 335—216 **14 Claims**

1. In a superconducting magnet assembly including a cryogen pressure vessel surrounded by an outer vessel and subjected to vibration, a flexible electrical connection between the pressure vessel and the outer vessel comprising:
a plurality of electrical leads connected from the outside of said outer vessel remote from said pressure vessel and passing through a lead assembly to a connector adapted to be connected to said pressure vessel;

a flexible joint in said lead assembly to accommodate relative movement between said pressure vessel and said outer vessel;
said flexible joint including a first castellated member secured to said lead assembly, and a second castellated member connected to said connector;
said first castellated member including a first cylindrical portion and a first castellated end region forming a plurality of first end fingers and first slots extending axially toward said second castellated member;
said second castellated member including a second cylindrical portion remote from said first castellated member and a second castellated end portion forming a plurality of



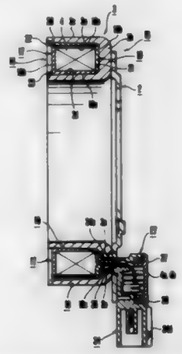
second end fingers and second slots extending axially toward said first castellated member;
said first fingers and said first slots being dimensioned and positioned to interleave with said second fingers and said second slots with clearance for limited rotation therebetween and for limited axial motion therebetween;
a spring providing resiliency against said limited axial movement; and
means to allow limited motion in a direction at an angle to the axis of said flexible joint;
whereby said flexible joint is moveable in response to relative motion between said pressure vessel and said outer vessel.

5,307,038

ELECTROMAGNETIC COUPLING APPARATUS

Takashi Ishimaru, Gunma, Japan, assignor to Ogura Clutch Co., Ltd., Gunma, Japan

Filed Mar. 27, 1990, Ser. No. 500,630
Claims priority, application Japan, Mar. 28, 1989, 1-73973; Jun. 30, 1989, 1-168910; Jul. 6, 1989, 1-172950
Int. Cl.[5] H01F *27/04, 15/10*
U.S. Cl. 335—296 **2 Claims**



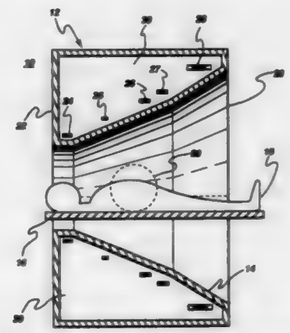
1. An electromagnetic coupling apparatus comprising an excitation unit constituted by an excitation coil wound around a coil bobbin, a yoke in which said excitation coil is arranged, a resin terminal base casing fixed to a rear surface of said yoke, and a pair of terminals which are fixed in said terminal base casing by insert molding and are respectively connected to turn start and end portions of said excitation coil, wherein a cylindrical opening portion through which turn start and end portions of said excitation coil are extracted is formed on said coil bobbin, a protruding opening portion which is fitted in a through hole formed in said yoke and allows said turn start and end portions to be inserted therein is formed on a bottom portion of said terminal base casing, and said protruding opening portion is forcibly fitted and fixed in said cylindrical opening portion through a rubber bush.

5,307,039

FRUSTOCONICAL MAGNET FOR MAGNETIC RESONANCE IMAGING

Madabushi V. Chari, Burnt Hills; Evangelos T. Laskaris, Schenectady, and Michele D. Ogle, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 8, 1992, Ser. No. 942,003
Int. Cl.[5] H01F *5/00*
U.S. Cl. 355—299 **19 Claims**



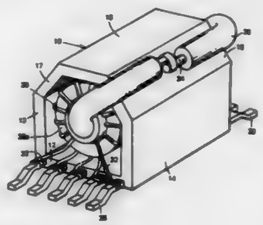
1. A magnet assembly, for whole body magnetic resonance imaging, comprising a plurality of axisymmetric superconducting coils of differing diameters, said coils being disposed along an axis in order or successively increasing diameters.

5,307,040

TRANSFORMER WITH CLOSED CONDUCTIVE LOOP

Barry J. Lytollis, St. Albans, England, assignor to Measurement Technology Limited, Bedfordshire, England

Filed May 27, 1992, Ser. No. 889,538
Claims priority, application United Kingdom, May 29, 1991, 9111535
Int. Cl.[5] H01F *27/02, 27/30*
U.S. Cl. 336—73 **11 Claims**

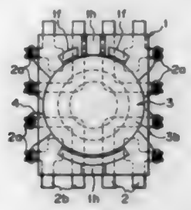


1. A transformer comprising:
a first magnetic core;

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primary winding means on said first core;
a second magnetic core spaced from and separate from said first core;
secondary winding means on said second core;
housing means of electrically insulating material both receiving said cores and winding means and also segregating said cores one from the other; and
electrical conductor means electromagnetically linking said first and second cores, wherein the electrical conductor means comprises a length of wire extending through the housing means and thereby through said first and second cores in spaced insulating relationship thereto, the wire extending outside the housing means to complete a closed conductive loop.

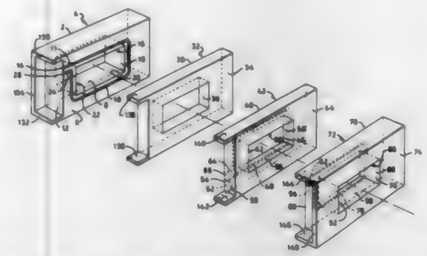
5,307,041
COIL COMPONENT
Shigenori Kato, and Norio Sato, both of Chiba, Japan, assignors to TDK Corporation, Japan
Filed Jul. 9, 1992, Ser. No. 911,042
Claims priority, application Japan, Jul. 16, 1991, 3-063449[U]
Int. Cl.[5] H01F *15/02, 15/10*
U.S. Cl. 336—83 **10 Claims**



1. A coil component comprising:
a dielectric support (1) mounting a magnetic core (3) which has a coil, said support (1) having a plurality of conductive terminal pins (2) projecting from sides of said support (1), each of said terminal pins (2) having a first end (2*a*) projecting from one of the sides of the support (1) for coupling with an end of said coil of the coil component, and a second end (2*b*) projecting from another one of the sides of the support (1) for coupling with an external circuit on a printed circuit board,
said first end (2*a*) of each terminal pin being integral with said second end (2*b*) thereof through an intermediate portion which is molded in said support (1),
top edges of the second ends (2*b*) of the terminal pins along respective sides of said support being aligned with each other in parallel straight lines (L_1, L_2),
said aligned top edges of said second ends (2*b*) of said terminal pins (2) being perpendicular to said sides from which said first ends project, and
housing means (5) covering said magnetic core (3) having at least an essentially rectangular bottom portion with pairs of linear parallel outer walls (5*d*),
a pair of said outer walls (5*d*) of said housing means (5) extending beyond top edges of said first ends (2*a*) of said terminal pins.

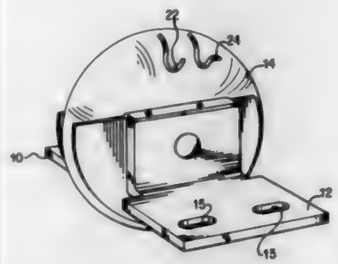
5,307,042
SEARCH COIL FRAME ASSEMBLY FOR METAL AND METHOD FOR MAKING SAME
Patrick A. Papa, Jr., Fitchburg, Mass., assignor to B&D Liquidation Corp., Bannockburn, Ill.
Filed Feb. 19, 1992, Ser. No. 838,057
Int. Cl.[5] H01F *15/04, 27/30*
U.S. Cl. 336—84 C **18 Claims**

1. A search coil frame assembly for a metal detector, said frame assembly comprising a plurality of frame members bonded together, each of said frame members having an aperture therethrough, said apertures each being coincident in size and shape with the remaining apertures so as to provide an open passage through said bonded frame assembly, each of said frame members having opposite face surfaces, selected ones of said face surfaces, respectively, having first, second and third grooves therein, such that said first and third grooves are spaced from said second groove on opposite sides of said



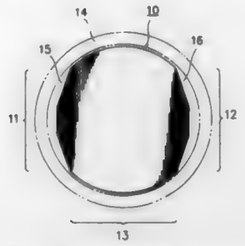
second groove, each of said grooves extending substantially around said passage and to a same edge of said frame assembly, and an electrically conductive strand disposed in and substantially filling each of said grooves and thereby substantially encircling said passage and extending from said frame assembly at said same edge.

5,307,043
TRANSFORMER ASSEMBLY WITH IMPROVED RETAINER AND INSULATOR
Robert F. Dvorak, Mt. Vernon, and Charles E. Netolicky, Cedar Rapids, both of Iowa, assignors to Square D Company, Palatine, Ill.
Filed Sep. 14, 1992, Ser. No. 944,859
Int. Cl.[5] H01F *15/02*
U.S. Cl. 336—174 **18 Claims**



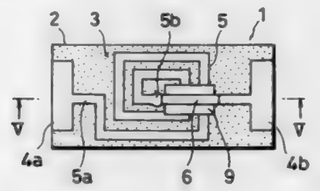
1. A transformer assembly, comprising:
a pair of opposing bracket-like busses;
a toroidal transformer disposed between the opposing bracket-like busses and having an aperture therethrough and a plurality of leads;
a conductor connecting the opposing bracket-like busses and at least partly located in the aperture of the toroidal transformer such that current is carried by the busses through the conductor and is induced by the toroidal transformer to the plurality of leads;
means for insulating the toroidal transformer from one of the opposing bracket-like busses; and
an insulator located adjacent the other of said opposing bracket-like busses situated such that the toroidal transformer is insulated from said other of the opposing bracket-like busses, said insulator including an interfering section which abuts the toroidal transformer and protrudes into the aperture.

5,307,044
WOUND CORE
Tadatoshi Watabe, Tokyo, Japan, assignor to Denki Tetsukin Industrial Co., Ltd., Tokyo, Japan
Filed Nov. 5, 1992, Ser. No. 971,659
Claims priority, application Japan, Sep. 3, 1992, 4-277645
Int. Cl.[5] H01F *27/24, 27/30*
U.S. Cl. 336—198 **1 Claim**



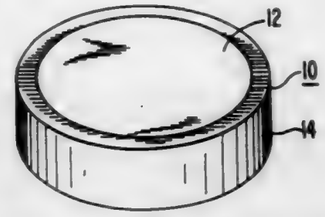
1. A wound core, for use with electric wires that are to be wound by rotating cylindrical bobbins to be attached to said wound core, wherein at least one of a winding start portion and a winding end portion, of a strip wound to form the core, is formed into a trapezoidal cross-sectional shape, and the remaining portion of the strip is formed into a part-circular cross-sectional shape, thereby forming a gap between the trapezoidal cross-sectional shape portion and a bobbin to be attached.

5,307,045
HIGH-FREQUENCY INDUCTOR AND MANUFACTURING METHOD THEREOF
Atsuo Senda; Osamu Kanoh, and Yutaka Sasaki, all of Kyoto, Japan, assignors to Murata Manufacturing Co., ltd., Kyoto, Japan
Filed Dec. 27, 1990, Ser. No. 634,724
Claims priority, application Japan, Dec. 28, 1989, 1-340730
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—200 **5 Claims**



1. A high-frequency inductor, comprising:
an insulating substrate;
a first conductive land comprising first and second terminal electrodes formed on two different parts of the insulating substrate and a spiral inductor portion having an inner end and an outer end formed on a center portion of the insulating substrate, the outer end of the end of the inductor portion being connected to the first terminal electrode, the first conductive land comprising at least two thin films formed of different metal compositions, each of the metal compositions being capable of being etched by an etching agent that substantially does not remove the other metal compositions, the thin films being accumulated vertically;
an insulating member formed on a portion of said first conductive land which is located between the second terminal electrode and the inner end of the inductor portion,
a second conductive land accumulated on the first conductive land except for the portion of the first conductive land covered with said insulating member, said second conductive land comprising at least two thin films formed of different metal compositions, each of the metal compositions being capable of being etched by an etching agent that substantially does not remove the other metal compositions, the thin films being accumulated vertically; and
a connecting electrode between the second terminal and the inner end of the inductor portion, formed on the insulating member, the connecting electrode and the second conductive land having the same construction.

5,307,046
PASSIVATING COATING FOR METAL OXIDE VARISTORS
Mohammad A. Alim, Medina, Ohio, assignor to Hubbell Incorporated, Orange, Conn.
Division of Ser. No. 855,678, Mar. 23, 1992, Pat. No. 5,203,915, which is a continuation-in-part of Ser. No. 704,216, May 22, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,802
Int. Cl.[5] H01C *7/10, 7/13*
U.S. Cl. 338—21 **4 Claims**



1. A zinc oxide varistor disk having a ceramic collar around the periphery thereof, wherein the collar is obtained by coating the periphery of said disk with a coating composition comprising a mixture by dry weight of 55–85% mullite and 15–45% kaolinite, from 0.03 to 15% by weight of the coating composition of one of the following additive compounds: Y_2O_3; ZrO_2; ZnO; $2ZnO.3B_2O_3.7H_2O$; $3ZnO.2B_2O_3.5H_2O$; or Si_3N_4, and sufficient deionized water to form a sprayable slurry, and then curing.

2. A zinc oxide varistor disk as defined in claim 1, wherein said coating composition further contains, by dry weight of the mullite and kaolinite, from 5–6% each of monoaluminum phosphate and phosphoric acid.

5,307,047
EMERGENCY RING
Haruyo Morioka, 1-62-14 Umegaoka, Setagaya-ku, Tokyo, Japan
Filed Mar. 13, 1992, Ser. No. 850,837
Int. Cl.[5] G08B *3/00*
U.S. Cl. 340—384.4 **2 Claims**



1. An emergency alarm device comprising,
mounting means for mounting said device to a user,
said mounting means comprises a finger ring,
housing means attached to said mounting means,
said housing means comprises a setting attached to said finger ring,

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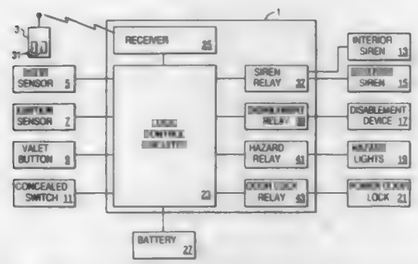
circuit means disposed in said housing means,
transducer means connected to said circuit means,
said transducer means adapted to produce a sound when energized,
battery means, and
switch means disposed in said housing means,
said switch means connected between said circuit means and said battery means whereby said battery means is selectively connected to said circuit means to thereby energize said transducer means,
said switch means is normally open to disconnect said battery means from said circuit means,
said switch means includes two switches connected in series and which must be closed at the same time in order to connect said battery means to said circuit means,
said two switches are disposed on opposite sides of said housing means,
said transducer means is energized only when said switch means is activated when said two switches are closed at the same time,
said two switches are arranged so that they are operated by forces applied in different directions.

5,307,048

VEHICLE SECURITY SYSTEM INCLUDING AN ANTI-CARJACKING SYSTEM

David G. Sonders, Fairfax, Va., assignor to Protect & Defend, Inc., Springfield, Va.

Filed Dec. 18, 1992, Ser. No. 992,931
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—426 **25 Claims**



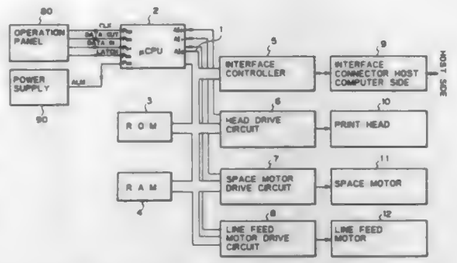
1. A vehicle security system for use with a vehicle having an engine and an interior passenger compartment, the security system comprising:
disablement means coupled to the engine for disabling the engine;
enablement means coupled to the engine for enabling the engine after being disabled;
a first input device being located in the interior passenger compartment for providing a first signal to the enablement means when the first input device is actuated; and
a second input device detached from the vehicle for transmitting an encoded signal when the second input device is actuated, wherein the second input device includes a remote control unit;
wherein a disablement sequence, which includes the disablement of the engine by the disablement means, is initiated in response to the receipt of the encoded signal when the engine is not disabled, so that the engine may be disabled by a user located externally of the interior passenger compartment;
whereby the enablement means enables the engine in response to receiving both the first signal and the encoded signal when the engine is disabled.

5,307,049

ALARM CONTROL METHOD

Takao Uchida; Naoji Akutsu, and Jiro Tanuma, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 875,013
Claims priority, application Japan, Apr. 30, 1991, 3-097780
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—507 **8 Claims**



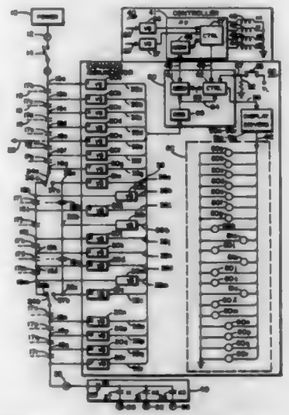
1. An alarm control method comprising the steps of:
providing a first digital signal having n bits, n being a positive integer, from a processor circuit having an analog/-digital function, and controlling a current flowing through at least one actuator in accordance with the first digital signal;
generating a second digital signal having n bits, based on a value of a current actually flowing through said at least one actuator;
comparing digital data of said first digital signal with digital data of said second digital signal; and
detecting an alarm condition when said digital data of the second digital signal is greater than that of the first digital signal.

5,307,050

DISPLAY APPARATUS FOR A FIRST OUT TYPE OF FAULT STATUS ANNUNCIATOR HAVING A SERIES OF INTERLOCK SWITCHES

Paul B. Patton, Rockford, and Gregory J. Merten, Eagan, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 3, 1992, Ser. No. 893,166
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—517 **7 Claims**



1. In an annunciator of the status of a plurality of interlock

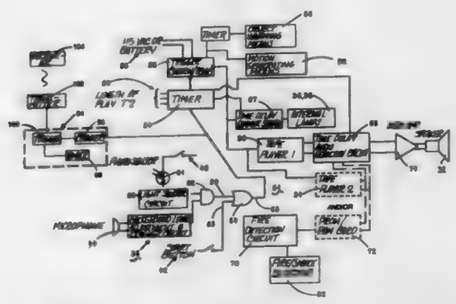
switches each having first and second contacts and connected by a plurality of conductors to form therefrom a series circuit of interlock switches in a preselected sequence for connection by an end interlock switch thereof to a power source to pass current through the series circuit to a load, and including:
a) a plurality of voltage sensors each associated with an interlock switch and connected to a conductor connected to the interlock switch with which the voltage sensor is associated and each voltage sensor providing a status signal having a first state responsive to presence of power voltage on the conductor to which it is connected and a second state otherwise;
b) a display unit having a display panel with a plurality of display elements mounted thereon with each display element associated with one of the voltage sensors, each of said display elements receiving a display signal and entering a first display state responsive to a first state of the display signal and a second display state responsive to a second state of the display signal;
c) a memory receiving the status signals from the voltage sensors, recording the state of at least one of the status signals at a selectable instant, and providing at least one memory signal encoding the state of a single status signal at the selectable instant; and
d) a plurality of display drivers, each display driver associated with a single display element, that display element's corresponding interlock switch, and that interlock switch's associated voltage sensor, each display driver providing to its associated display element a display signal having its first and second states responsive respectively to the first and second states of a control signal, wherein the improvement comprises:
multiplexer means receiving the status signals from the voltage sensors, the memory signal from the memory, and a selection signal having first and second states, for providing control signals to the display drivers encoding the states of the status signals responsive to the first state of the selection signal and encoding the states of the memory signals responsive to the second state of the selection signal; and
mode selecting means for providing the selection signal with its first state responsive to a first state of the mode selecting means, and for providing the selection signal with its second state responsive to a second state of the mode selecting means.

5,307,051

NIGHT LIGHT APPARATUS AND METHOD FOR ALTERING THE ENVIRONMENT OF A ROOM

Steven R. Sedlmayr, 1948 E. Ellis Cir., Mesa, Ariz. 85203

Filed Sep. 24, 1991, Ser. No. 764,777
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—573 **101 Claims**



1. A method of altering an environment of a room for providing a sense of security to a child, said method comprising the steps of:
a. sensing an ambient audio level, and a light level in the room and generating a signal in response to detecting an audio level a predetermined amount above said ambient level when the light level in said room is equal to or less than a predetermined threshold intensity;
b. using the generated signal to activate a generator of an audio output and a light output;
c. following activation of said generator, generating an audio output and a light output in said room;
d. following generation of said audio output and light output, sensing again said pre-determined audio level in said room and generating another signal in response thereto and using said signal to activate again said generator and, following actuation of said generator, generating another audio output and light output in said darkened room;
e. providing an image in said room for viewing by said child; and
f. using said generated output to illuminate said image.

5,307,052

BIO-AMPLIFIER FOR SENSING THE BIO-ELECTRIC FIELD OF FISH

Frank P. Harrison, Alum Ridge, and David Gruber, Christiansburg, both of Va., assignors to Biological Monitoring, Inc., Blackburg, Va.

Continuation-in-part of Ser. No. 611,664, Nov. 13, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 871,741
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—573 **3 Claims**



1. A bio-amplifier for use in a system which detects a bio-electric field generated by locomotor activities of fish and converts the bio-electric field into a varying voltage, and includes a computer and an A/D converter, comprising:
an amplifier for receiving and amplifying bio-electrical signals from the bio-electric field generated by ventilatory activity of fish and outputting amplified bio-electrical signals;
a high-pass filter, connected to said amplifier, for attenuating interference in said amplified bio-electrical signals and outputting a high-pass filtered signal;
a low-pass filter, operatively connected to said high-pass filter and having a cut-off frequency determined by the computer, for preventing interference due to signals not created solely by the ventilatory and locomotor activities of the fish, said low-pass filter having a sampling frequency the same as a sampling frequency of the A/D converter;
a voltage variable attenuator, operatively connected between said low-pass filter and said high-pass filter, for receiving the high-pass filtered signal and outputting a signal corresponding to the bio-electrical signals of fish to said low-pass filter; and
a display, operatively connected to said low-pass filter, symmetrical about ground, for displaying an amplified instantaneous voltage signal corresponding to said low-pass filtered signal from said low-pass filter.

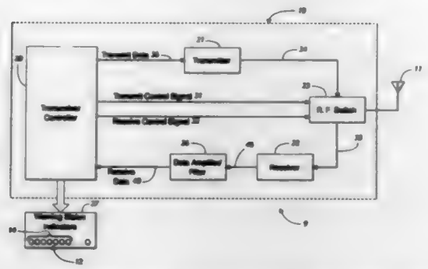
VOL 1161 ISS 4 AP 26 1994 UMI

5,307,053

DEVICE AND METHOD FOR ALERTING HUNTERS

George W. Wills, Smyrna, and Phillip R. Wills, Alpharetta, both of Ga., assignors to Lucile A. Wills, Abbeville, Ala.

Filed May 22, 1992, Ser. No. 887,295
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—573 15 Claims



1. A safety device adapted to be carried by a hunter when hunting game to detect the presence of other hunters carrying like devices and to alert the other hunters of the presence of the hunter within a predetermined range, said device comprising:

transmitter means for transmitting a signal to be received by like devices carried by the other hunters, said transmitter means including means for modulating the transmitted signal to encode the transmitted signal with identification data;

receiver means for detecting signals transmitted from like devices carried by the other hunters while the other hunters are within the predetermined range, including means for decoding encoded signals; and

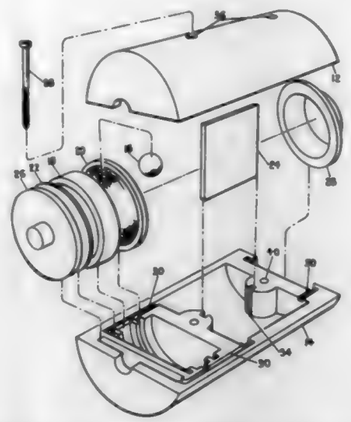
indicator means responsive to the detection of the signal transmitted from like devices for warning the hunter of the presence of the other hunters within the predetermined range, said indicator means being adapted to warm the hunter in a manner that is imperceptible to the hunted game.

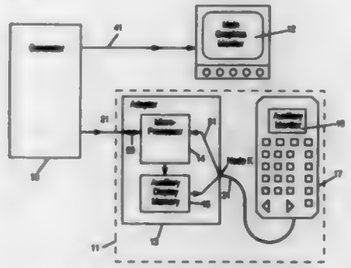
5,307,055

DISPLAY CONTROL DEVICE INCORPORATING AN AUXILIARY DISPLAY

Herbert B. Baskin, Berkeley; Joseph A. DuVivier, and Eugene Sanders, both of Oakland, all of Calif., assignors to General Parametrics Corporation, Berkeley, Calif.

Continuation of Ser. No. 568,588, Aug. 16, 1990, abandoned.
This application Jul. 6, 1992, Ser. No. 908,937
Int. Cl.[5] G09G 3/02
U.S. Cl. 345—1 10 Claims





5,307,054

MOTION SENSOR CIRCUIT CONTROLLER

Milburn K. Concannon, Sr., 224 E. Princeton St., Ontario, Calif. 91764; Thantus M. Concannon, 4303 Nottingham, Pascagoula, Miss. 39567, and Milburn K. Concannon, Jr., 224 E. Princeton St., Ontario, Calif. 91764

Filed Oct. 23, 1992, Ser. No. 965,179
Int. Cl.[5] G08B 13/02, 21/00
U.S. Cl. 340—686 30 Claims

1. A seismic circuit control apparatus configured as a physical replacement for a conventional battery cell unit having battery terminals, the apparatus comprising:

(a) base means defining first and second circuit nodes, the circuit nodes being counterparts of the battery terminals;

(b) seismic switch means on the base means for at least momentarily closing a conductive path between the nodes in response to lateral movement of the base means; and

(c) latch means for maintaining a low-impedance current flow between the first and second circuit nodes in response to the momentary closing of the conductive path, the apparatus being operative for controlling an external circuit when the first and second circuit nodes only are connected in series with the external circuit.

1. A computer display system for displaying visual images comprising:

image generation means for generating visual images;

display control logic means coupled to said image generation means for controlling images being displayed by said computer display system;

storage means coupled to said display control logic means for storing said visual images generated by said image generation means, said storage means having a first portion for storing a first visual image of said visual images, said storage means having a second portion for storing a second visual image of said visual images, said first visual image being different from said second visual image;

overlay storage means coupled to said display control logic means for storing an overlay image;

hand-held remote control means coupled to said display control logic means and said storage means for selecting for display said visual images generated by said image generation means;

primary display means coupled to said image generation means for displaying primary visual images generated by said image generation means; and

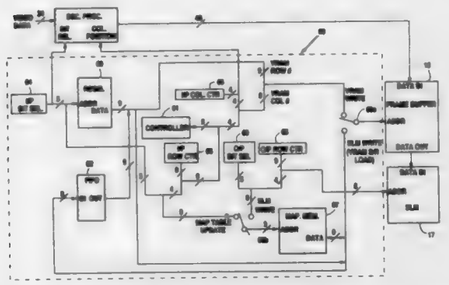
secondary display means located on said remote control means for displaying secondary visual images, said secondary display means for previewing visual images displayed on said primary display means, said hand-held remote control means further including means for selecting said first visual image for display on said primary display means concurrently with the display of said second visual image on said secondary display means, said hand-held remote control means further including means for selecting said overlay image for display on said secondary display means concurrently with the display of said visual images on said secondary display means.

5,307,056

DYNAMIC MEMORY ALLOCATION FOR FRAME BUFFER FOR SPATIAL LIGHT MODULATOR

Paul M. Urbanus, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 6, 1991, Ser. No. 755,883
Int. Cl.[5] G09G 1/02
U.S. Cl. 340—189 14 Claims



1. A projection circuit for storing and displaying data representing rows and columns of a graphic image, comprising:

a spatial light modulator in communication with a frame memory for receiving data representing rows of an image and for reproducing said image from said data;

a video random access frame memory for storing incoming data, having control and addressing lines, such that said data may be read into sections of memory rows wherein each of said sections stores data representing one bit-frame of data; and

a memory allocation circuit for dynamically allocating memory rows of said frame memory, said allocation circuit having a first-in first out (FIFO) memory for storing a list of available memory rows, a mapping memory for mapping memory rows to display rows of said spatial light modulator, and a temporary register for holding memory addresses obtained from said FIFO while said data is loaded into said video random access memory;

wherein said temporary register is in communication with said mapping memory such that as a memory row is filled, its address is placed in said mapping memory, and said mapping memory is in communication with said FIFO such that as a memory row is downloaded, its address is placed in said FIFO; and

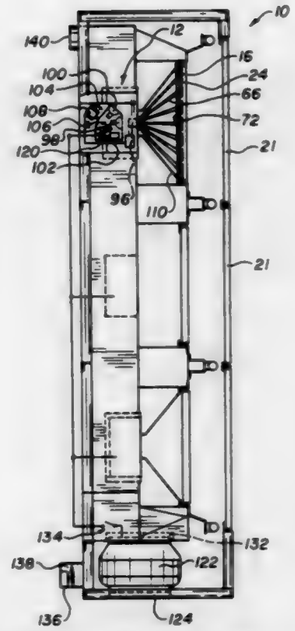
a switch for providing a memory address to said frame memory, with the value of said address depending on whether said frame memory is to be loaded with incoming display data or downloaded to said spatial light modulator.

5,307,057

FIBER OPTIC DISPLAY SYSTEM UTILIZING A DUAL LIGHT SOURCE

Kenneth J. Cook; Thomas E. Stack, both of Troy; Jeffry B. Stout, Dearborn; Donald J. Davis, Pontiac, and Anwar Bawadekji, Rochester Hills, all of Mich., assignors to Vultron, Inc., Rochester Hills, Mich.

Filed Aug. 29, 1991, Ser. No. 751,194
Int. Cl.[5] G08B 5/00; G09F 19/12
U.S. Cl. 340—815.42 8 Claims



1. A fiber optic display device comprising:

a plurality of fiber optic cables for transmitting light, each of said cables having an end face for receiving light and an end face for emitting light, said light receiving end faces of said fiber optic cables being positioned in close proximity with each other to form a light receiving surface;

a light source assembly moveable with respect to said light receiving surface, said light source assembly comprising a primary light source and a secondary light source each adapted to illuminate said light receiving surface when aligned therewith, said light source assembly being alternatively moveable to a first position at which said primary light source is aligned with said light receiving surface or a second position at which said secondary light source is aligned with said light receiving surface;

a switch for alternatively energizing said primary and secondary light sources to illuminate said primary and secondary light sources;

electrical circuitry for detecting current loss through said primary light source and for providing an electrical signal in response thereto; and

a solenoid having a plunger mechanically connected with said light source assembly for moving said light source assembly from said first position to said second position and for energizing said secondary light source in response to said electrical signal, said solenoid being electrically connected to said current loss detection circuitry.

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5,307,058

REMOTE SUPERVISORY AND CONTROLLING SYSTEM

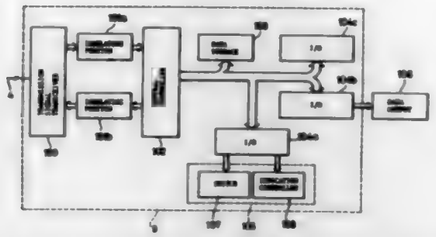
Toshiaki Tokizane; Yoshiharu Ito; Osamu Yamada; Toshiyuki Maeoda, and Mitsunobu Kuroda, all of Osaka, Japan, assignors to Matsushita Electric Works Ltd., Osaka, Japan

Continuation of Ser. No. 569,725, Aug. 21, 1990, abandoned, which is a continuation of Ser. No. 379,464, Jul. 13, 1989, abandoned, which is a division of Ser. No. 218,176, Jul. 13, 1988, abandoned. This application May 22, 1991, Ser. No. 703,719

Claims priority, application Japan, Oct. 27, 1987, 62-271061; Nov. 26, 1987, 62-298738

Int. Cl.[5] G08C *19/00*

U.S. Cl. 340—825.070 **4 Claims**



1. A remote supervisory and controlling system comprising:

a central control unit;

a plurality of terminal units, said plurality of terminal units being connected to said central control unit through a two-wire signal line and said central control unit sends out a transmission signal including an address data signal for calling each of said terminal units, a control data signal for controlling a separate load coupled to each of said terminal units, a return wait signal for setting a period of returning a monitor data signal from each of said terminal units thereby to perform time-divisional multiplex transmission of monitor data and control data between said central control unit and each of said terminal units; and

a pattern setting terminal unit for setting a pattern of operational states for a plurality of loads and provided with a data input/output section for transmitting pattern control data directly to said central control unit via said two-wire signal line to be stored in said central control unit and applied by said central control unit to control operational states of said loads, said pattern setting terminal unit comprising setting means for setting said pattern control data for said loads to be controlled, said central control unit controlling said plurality of loads collectively based on said pattern control data set by said setting means and in response to an operation of a pattern control switch, and wherein said central control unit comprises control error checking and preventing means for checking and preventing a control error of a load common to a plurality of pattern controlling operations.

5,307,059

SELECTIVE CALL RECEIVER HAVING CUSTOMIZED VOICE ALERTS

Gregg M. Connary, and Tom Nolan, both of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 499,223, Mar. 26, 1990, abandoned. This application Apr. 18, 1991, Ser. No. 686,850

Int. Cl.[5] G08B *5/22;* **H04Q** *7/00*

U.S. Cl. 340—825.44 **2 Claims**

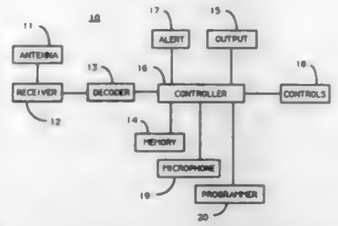
1. A selective call receiver capable of generating at least one user-created voice alert, comprising:

receiver means for receiving a signal;

processing means for processing the received signal to detect an address code and a message therein;

microphone means for receiving the at least one user-created voice alert;

storage means for storing the at least one user-created voice alert prior to receiving the signal; and



control means coupled to the storage means for presenting the at least one user-created voice alerts when the address code is detected.

5,307,060

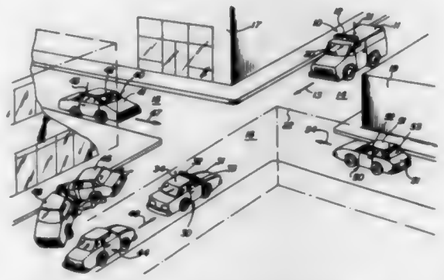
EMERGENCY VEHICLE ALERT SYSTEM

Sy Prevulsky, 16 Deer Creek Ln., Laguna Hills, Calif. 92653, and Tony Griego, 4500 Campus Dr., Ste. 131, Newport Beach, Calif. 92660

Filed Mar. 17, 1992, Ser. No. 852,312

Int. Cl.[5] G08G *7/00*

U.S. Cl. 340—902 **3 Claims**



1. An emergency vehicle alert system comprising:

a transceiver having transmission means for transmitting an alert signal including an emergency vehicle type signal;

a receiver having means for storing a set of vehicle type signals, reception means for receiving a transmitted alert signal from a second transceiver having a second emergency vehicle type signal therein, and processor means for comparing said second emergency vehicle type signal to said stored set of vehicle type signals and producing a vehicle type indication;

alternating means for alternating the operation of said transmission means and said reception means;

means for initiating a transmission request, means for operating said alternating means in response to said transmission request, and means for operating said reception means in the absence of said transmission request; and

interrupt means independent of said alternating means for periodically interrupting said means for transmitting and operating said reception means, said interrupt means overriding said means for initiating a transmission request.

5,307,061

ABSOLUTE VALUE CIRCUIT

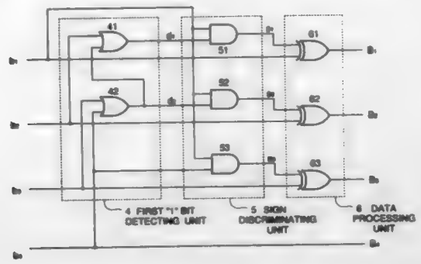
Makoto Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,587

Claims priority, application Japan, Sep. 19, 1991, 3-238534

Int. Cl.[5] H03M *7/00*

U.S. Cl. 341—93 **3 Claims**



1. An absolute value circuit for converting N-bit data expressed in the form of a 2's complement (N is positive integer) into an absolute value data, comprising a first "1" bit detecting unit receiving said N-bit data and sequentially searching said N-bit data from the least significant bit toward the most significant bit so as to detect a first occurring "1" bit in said N-bit data; a sign discriminating unit receiving said N-bit data for discriminating the polarity of said N-bit data; and a processing unit receiving said N-bit data and an output of said sign discriminating unit for outputting said N-bit data without modification when said sign discriminating unit discriminates that said N-bit data is positive, said data processing unit also operating, when said sign discriminating unit discriminates that said N-bit data is negative, to output data composed of bits from the least significant bit of said N-bit data to said first occurring "1" bit detected by said first "1" bit detecting unit, and an inverted bit or bits of a bit or bits of said N-bit data more significant than said first occurring "1" bit.

5,307,062

CODING SYSTEM

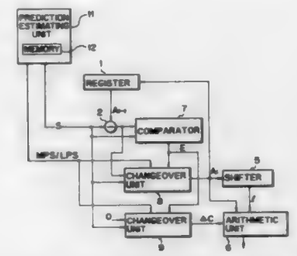
Fumitaka Ono; Tomohiro Kimura; Masayuki Yoshida, and Shigenori Kino, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 660,693, Feb. 25, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 990,377

Claims priority, application Japan, Feb. 26, 1990, 2-46275

Int. Cl.[5] H03M *7/00*

U.S. Cl. 341—107 **3 Claims**



1. An apparatus for coding a sequence of input symbols generated by a binary Markov information source to generate compressed encoded output symbols, wherein each input symbol is a More Probability Symbol or a Less Probability Symbol, and each generation of an input symbol in the sequence of input symbols by the binary Markov information source is associated with a different Markov state, comprising:

means for storing a table of constant range values, each range value corresponding with a probability of occurrence of the Less Probability Symbol at a Markov state, and each range value expressing a magnitude of a corresponding range on a number line to be assigned to the Less Probability Symbol;

means for processing the sequence of input symbols to produce encoded output symbols, said output symbols being encoded as binary-represented coordinates of a representative point within a range that is recursively divided on the number line according to the sequence of input symbols, and a magnitude of the range is indicative of a probability of occurrence of the sequence of input symbols, said means for processing including

a means for making a judgment of whether each input symbol in the sequence of input symbols is the More Probability Symbol, exhibiting a higher probability of occurrence, or the Less Probability Symbol, exhibiting a lower probability of occurrence in a current Markov state;

a means for selecting a range value S from the table in said means for storing the table for the current Markov state, wherein S is indicative of the probability of occurrence of the Less Probability Symbol for the associated Markov state;

a subtractor for generating and outputting a range value ($A_{i-1}-S$) to be assigned for the More Probability Symbol for the current Markov state, wherein $A_{i-1}-S$ is indicative of the probability of occurrence of the More Probability Symbol for the associated Markov state and wherein, for an i-th input symbol in the sequence, A_{i-1} is a range value for a first $i-1$ input symbols in the sequence;

a comparator for comparing a magnitude of said range value S with the output value ($A_{i-1}-S$) from said subtractor;

a changeover unit for changing over the judgment by the means for making a judgment that the current input symbol is the More Probability Symbol to a judgment that the current input symbol is the Less Probability Symbol or the judgment that the current input symbol is the Less Probability Symbol to a judgment that the current input symbol is the More Probability Symbol when said range ($A_{i-1}-S$) originally assigned to the More Probability Symbol, is smaller than the range S originally assigned to the Less Probability Symbol; and

coding means for encoding the input symbol sequence to generate output symbols, comprising

means for encoding an input symbol using the range value S when the input symbol is judged to be the Less Probability Symbol after the operations in the changeover unit;

means for encoding an input symbol using the range value $A_{i-1}-S$ when the input symbol is judged to be the More Probability Symbol after the operations in the changeover unit.

5,307,063

SUPERCONDUCTING A/D CONVERTER

Harald Kratz, Tettnang, and Wolfgang Ludwig, Trägerwilen, both of Fed. Rep. of Germany, assignors to Dornier GmbH, Fed. Rep. of Germany

Filed Sep. 30, 1991, Ser. No. 767,782

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1990, 4030988

Int. Cl.[5] H03M *1/12*

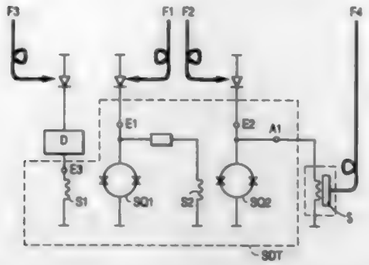
U.S. Cl. 341—133 **4 Claims**

1. Superconducting A/D converter apparatus comprising:

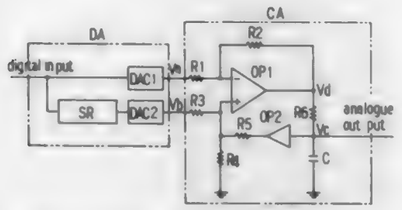
a superconducting A/D converter of the type having at least one input adapted to receive an electrical input signal, and

VOL 1161 ISS 4 APR 26 1994

at least one output adapted to generate an electrical output signal;
at least one input light guide for providing an input analog signal;
at least one output light guide for providing an output digital signal that varies according to said input analog signal;
at least one optoelectronic transducer having an input coupled to at least one input light guide of said superconducting A/D converter and an output coupled to said input of said superconducting A/D converter;
at least one magneto-optical transducer coupled to an output of said superconducting A/D converter and an output coupled to said output light guide;
whereby the input and output light guides are utilized to reduce thermal losses in the superconducting A/D converter apparatus.

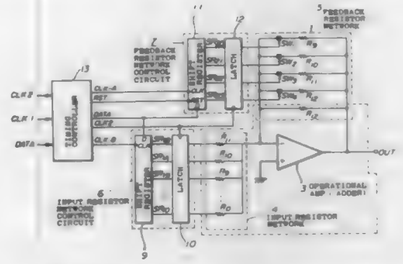


5,307,064
DIGITAL-TO-ANALOG CONVERTER CAPABLE OF REDUCING LOAD OF LOW-PASS FILTER
Youichi Kudoh, Ichinomiya, Japan, assignor to Tekuno Esu Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 9, 1992, Ser. No. 942,236
Claims priority, application Japan, Sep. 9, 1991, 3-258434
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—144 6 Claims



1. A digital-to-analog converter comprising:
(a) a binary digital-to-analog (D/A) converting circuit for outputting an analog output signal value, as a first analog output signal value, corresponding to each sampling point of a digital signal, and for outputting an analog output signal value, as a second analog output signal value, produced by delaying the first analog output signal value by only a 1 sampling period; and
(b) a calculation processing circuit for inputting therein the analog signal values derived from the binary D/A converting circuit, said calculation processing circuit being arranged by a difference calculating unit for calculating a difference value between a first analog input signal value corresponding to said first analog output signal value and a second analog input signal value corresponding to said second analog output signal value, an integrating unit for integrating a difference value obtained from the difference calculating unit, and also an adding unit for adding an output value of the integrating unit with said second analog input signal value, whereby the output value of said integrating unit is outputted as an analog output value.

5,307,065
DIGITAL-TO-ANALOG CONVERTER
Noriyuki Tokuhiro, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
PCT No. PCT/JP90/01055, § 371 Date Apr. 19, 1991, § 102(e) Date Apr. 19, 1991, PCT Pub. No. WO91/03105, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 20, 1990, Ser. No. 674,332
Claims priority, application Japan, Aug. 21, 1989, 1-214299
Int. Cl.[5] H03M *1/80, 1/66*
U.S. Cl. 341—153 18 Claims

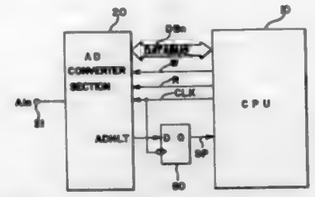


1. A digital-to-analog converter of a current addition type having weighted resistors, comprising:
input resistor network means for receiving a digital input signal having a predetermined number of bits, and having a resistance dependent on the digital input signal;
addition means having a first input terminal coupled to said input resistor network means and a second input terminal connectable to receive a reference potential and an output terminal, for adding a signal obtained from said first input terminal and the reference potential and for providing on said output terminal a result of the adding operation as an analog signal corresponding to the digital input signal;
input resistor network means comprising a smaller number of resistors than the predetermined number of bits of the digital input signal; and
control means for applying a voltage dependent on a magnitude of the digital input signal to one end of each of said resistors, said control means including
first means for holding zeros of the digital input signal successively obtained starting from a most significant bit of the digital input signal; and
second means for varying the voltage applied to said one end of each of said resistors based on a number of the zeros successively obtained.

5,307,066
MICROPROCESSOR CONTROLLED CONVERTER HAVING REDUCED NOISE INTERFERENCE AND METHOD OF OPERATING SAME
Jiro Kobayashi; Satoru Suwabe, and Syunji Abe, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 27, 1992, Ser. No. 834,579
Claims priority, application Japan, Jun. 11, 1990, 1-151813
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—155 15 Claims

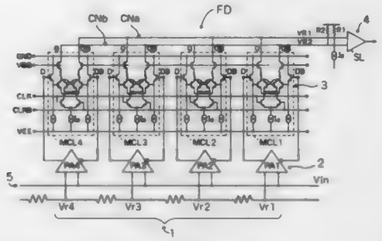
1. A microcomputer having a central processing unit to process digital signals under control of program instructions and an analog to digital (A/D) converter to perform conversion between analog and digital signals, comprising:
a first node to receive analog signals;
a second node to receive a reference voltage;

a counter responsive to a clock signal to define a first period and a second period after said first period;
a first switch to apply said analog signals received at said first node to said A/D converter during said first period;
a second switch to apply said reference voltage received at said second node to said A/D converter during said second period; and



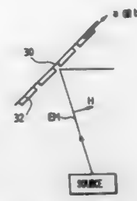
a halting circuit to interrupt operation of said central processing unit during a third period, the third period including an end of said first period and being shorter than said first period, said halting circuit further interrupting the operation of said central processing unit during a fourth period, the fourth period including an end of said second period and being shorter than said second period.

5,307,067
FOLDING CIRCUIT AND ANALOG-TO-DIGITAL CONVERTER
Hiroshi Kimura, Hyogo, and Akira Matsuzawa, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 19, 1993, Ser. No. 47,480
Claims priority, application Japan, Apr. 20, 1992, 4-099235
Int. Cl.[5] H03M *1/36*
U.S. Cl. 341—159 13 Claims



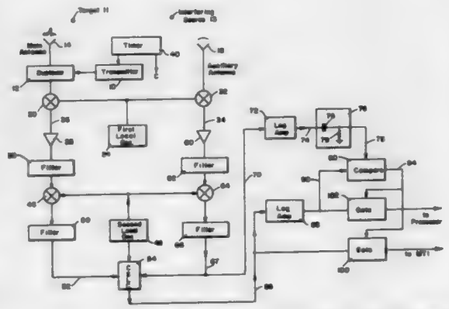
1. A folding circuit which comprises:
a plurality of comparator latches each having a pair of inputs, which are fed common analog input voltage signals through one input and different reference voltages sequentially set at predetermined intervals through the other input, each of said comparator latches making a comparison between an analog input voltage signal and a reference voltage during a comparison mode, providing a positive feedback to difference voltages resulting from the comparison and performing latch action during a latch mode, and outputting currents as a non-inverted output and an inverted output from a pair of outputs of each comparator latch,
a load element which is simultaneously fed differential current outputs of each of said comparator latches through a pair of inputs thereof, and
a pair of wiring means through which the non-inverted outputs and the inverted outputs of each of said comparator latches, drawn alternately in the order of magnitude of the reference voltages inputted to each of said comparator latches and superimposed, are connected to the pair of inputs of the load element,
whereby the analog input voltage signals are converted into folded signals at each of said reference voltage intervals.

5,307,068
TUNABLE HIGH-FREQUENCY DEVICES
Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Puteaux, France
Filed May 23, 1991, Ser. No. 704,936
Claims priority, application France, Jun. 1, 1990, 90 06877
Int. Cl.[5] H01Q *17/00*
U.S. Cl. 342—1 12 Claims



1. A tunable high-frequency device comprising:
at least one superconductive thin layer, positioned on a first dielectric layer;
means for applying a first magnetic field wherein the length of penetration λ_L of said first magnetic field is less than the thickness of said superconductive thin layer;
means for varying the density of Cooper pairs of said superconductive thin film layer wherein said means for making variations is independent of said first magnetic field and wherein said means for making variations is one of a means for applying a current for the polarization of said superconductive thin film, a means for applying a second magnetic field to said superconductive layer, and a means for applying an optic radiation to said superconductive thin layer.

5,307,069
IMPROVED RADAR RECEIVER SYSTEM
Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 2, 1973, Ser. No. 412,217
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—19 7 Claims



1. A radar receiver having a main channel and an auxiliary channel and receiving jamming, interfering pulses and target pulses comprising:
coherent cancelling means coupled to said main channel and to said auxiliary channel for cancelling jamming signals and having an output terminal, said coherent cancelling means having a predetermined response time,
circuit means coupled to said auxiliary channel for providing

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a decreasing voltage representation of a fast time constant to signals received from said auxiliary channel, said circuit means having said time constant selected to be substantially equal to the response time of said coherent cancelling means,

comparison means coupled to said circuit means and to the output terminal of said coherent cancelling means for providing a blanking signal in response to a predetermined comparison signal from said auxiliary channel and said output terminal, and

gating means coupled to the output terminal of said coherent cancelling means and to said comparison means for being blanked in response to a blanking signal.

5,307,070

METHOD FOR RESOLVING AMBIGUITY IN THE DETERMINATION OF ANTENNA ANGLE OF VIEW AND DOPPLER FREQUENCY IN SYNTHETIC APERTURE RADAR

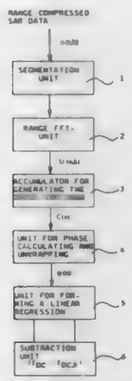
Hartmut Runge, Seefeld, and Richard Bamler, Gilching, both of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fur Luft-und Raumfahrt, Köln, Fed. Rep. of Germany

Filed Aug. 23, 1991, Ser. No. 749,080

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1990, 4026874

Int. Cl.[5] G01S *13/90*

U.S. Cl. 342—25 **9 Claims**



1. A method for resolving ambiguity, caused by sampling with a pulse repetition frequency, in the determination of antenna angle of view and Doppler frequency in synthetic aperture radar (SAR) comprising

utilizing that linear dependence of the Doppler frequency on a transmitting frequency is unambiguous;

and estimating the linear dependence of the Doppler frequency on the transmitting frequency from radar data.

5,307,071

LOW NOISE FREQUENCY SYNTHESIZER USING HALF INTEGER DIVIDERS AND ANALOG GAIN COMPENSATION

Keith P. Arnold, Canoga Park, and Joel C. Blumke, Chatsworth, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 17, 1992, Ser. No. 870,077

Int. Cl.[5] G01S *7/03*; H03L *7/08*

U.S. Cl. 342—103 **20 Claims**

15. A missile radar system comprising:

a transmitter coupled by way of a circulator to an antenna;

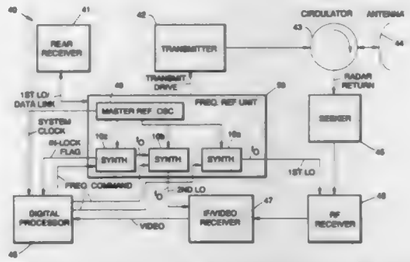
a radio frequency receiver coupled by way of a seeker and the circulator to the antenna; and

a digital processor coupled to the radio frequency receiver by way of a video receiver;

a frequency reference unit comprising a crystal oscillator for providing system clock signals to the digital processor, a first synthesizer for providing a first local oscillator signal to the radio frequency receiver for downconverting radar return signals to intermediate frequency signals, and second and third frequency synthesizers for providing a second local oscillator signal to the video receiver to downconvert the intermediate frequency signals for processing by the digital processor, wherein the third frequency synthesizer provides in-lock signals to the digital processor, and wherein the digital processor provides frequency command signals to the third synthesizer;

wherein at least one frequency synthesizer comprises:

a first divider for receiving an input signal (f_I) and providing a first reference frequency signal (f_R) that is equal to



the value of the input signal divided by a first divide number N;

a voltage controlled oscillator (VCO) that provides an output signal (f_O) of the frequency synthesizer;

a second divider for receiving the output signal (f_O) of the frequency synthesizer, for providing a second reference frequency signal (f_C) that is equal to the value of the output signal (f_O) divided by a second divide number M;

phase/frequency detector means for comparing the first and second reference frequency signals f_R, f_C and for providing a phase error output signal, and wherein a gain (K_D) of the phase/frequency detector is controlled by the gain control output voltage signal (G_C) of a digital to analog converter; and

digital controller means for adjusting the gain of the phase detector means to compensate for varying divide numbers, and for selecting the first and second divide numbers.

5,307,072

NON-CONCENTRICITY COMPENSATION IN POSITION AND ORIENTATION MEASUREMENT SYSTEMS

Herbert R. Jones, Jr., Williston, Vt., assignor to Polhemus Incorporated, Colchester, Vt.

Filed Jul. 9, 1992, Ser. No. 911,204

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—147 **21 Claims**

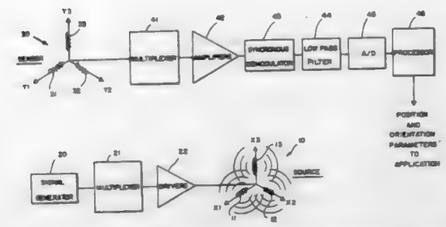
1. An apparatus for determining the position and orientation of a remote object relative to a reference coordinate frame comprising:

a source having a plurality of field-generating elements for generating electromagnetic fields, said generating elements having spatially independent components defining a source reference coordinate frame;

a driver for applying to said plurality of field-generating elements signals which generate a plurality of electromagnetic fields, said electromagnetic fields being distinguishable from one another;

a remote sensor having a plurality of field-sensing elements for sensing said generated electromagnetic fields, said sensor being disposed on a remote object and said field-sensing elements having spatially independent components for detecting each of said generated electromagnetic fields and defining a sensor reference coordinate frame; and

a processor for processing the outputs of said field-sensing elements into remote object position and orientation relative to said source reference coordinate frame, wherein said processor compensates said position and orientation as a function of displacement of said spatially independent components of said field-generating elements from said source reference coordinate frame or of said spatially independent components of said field-sensing elements from said sensor reference coordinate frame.



5,307,073

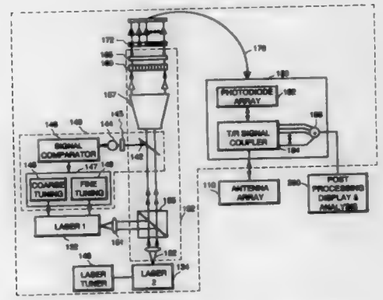
OPTICALLY CONTROLLED PHASED ARRAY RADAR

Nabeel A. Riza, Clifton Park, N.Y., assignor to General Electric Co., Moorestown, N.J.

Filed Nov. 13, 1992, Ser. No. 976,019

Int. Cl.[5] H01Q *3/22*; H04B *10/00*; G02F *2/00*; G02B *26/06*

U.S. Cl. 342—372 **40 Claims**



1. An optical signal processing system comprising:

a laser assembly comprising first and second lasers capable of generating respective pluralities of phase-synchronized first and second light beams, and further comprising means for selectively controlling a frequency difference between the respective pluralities of first and second light beams;

means coupled to said laser assembly for combining along respective collinear paths respective ones of said first and second light beams, each of the combined beams comprising respective ones of said first and second light beams superposed on one another and that are respectively orthogonally linearly polarized;

at least one optical phase modulation device disposed so that at least one of said pluralities of first and second light beams having a selected linear polarization pass therethrough, said at least one optical phase modulating device comprising selectively controllable means for adjusting the phase of respective ones of the light beams passing therethrough having said selected linear polarization; and

heterodyne means for detecting optical interference between respective ones of said constituent light beams in respective combined beams.

5,307,074

COLLISION AVOIDANCE SYSTEM FOR SEA NAVIGATION

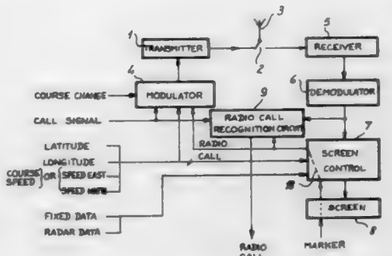
Albert Janex, Cachan, France, assignor to LMT Radio Professionnelle, Boulogne Billancourt, France

Continuation of Ser. No. 758,216, Sep. 12, 1991, abandoned, which is a continuation of Ser. No. 641,804, Jan. 16, 1991, abandoned, which is a continuation of Ser. No. 498,446, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 167,475, Apr. 25, 1988, abandoned. This application Apr. 19, 1993, Ser. No. 47,356

Claims priority, application France, Jul. 4, 1986, 8609763

Int. Cl.[5] G01S *13/00, 13/74, 3/02*

U.S. Cl. 342—41 **8 Claims**



1. A collision-avoiding navigational method for an equipped sea-going vessel, comprising the steps of:

automatically and continuously transmitting a periodic encoded data signal by said equipped sea-going vessel relating to said vessel's absolute geographic position, course and speed, wherein the periodic encoded data signal has a random periodicity;

receiving encoded data signals from other equipped sea-going vessels related to said other vessels' absolute geographic position, course and speed, said other equipped sea-going vessels being within a predetermined radial distance from said equipped sea-going vessel;

detecting a geographic position of not equipped sea-going vessels by radar;

detecting fixed obstacles by radar;

displaying information contained in the encoded data signals received from said other equipped sea-going vessels on a panoramic type of screen, said information being visualized by symbols corresponding to each of said other equipped sea-going vessels;

displaying a position of said equipped sea-going vessel with a first symbol on the panoramic type of screen;

displaying said other equipped sea-going vessel's absolute geographic position with second symbols on said panoramic type of screen;

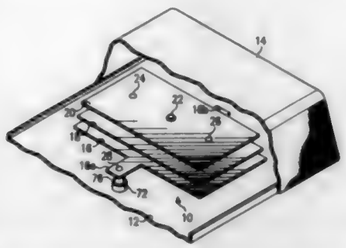
displaying said not equipped sea-going vessels geographic position, as detected by said radar, with third symbols on said panoramic type of screen;

displaying the course and speed of said other equipped sea-going vessels symbolically on said panoramic type of screen; and

displaying the fixed obstacles on said panoramic type of screen.

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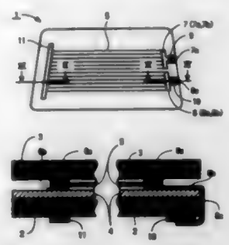
5,307,075
DIRECTIONAL MICROSTRIP ANTENNA WITH STACKED PLANAR ELEMENTS
Tan D. Huynh, Arlington, Tex., assignor to Allen Telecom Group, Inc., Dallas, Tex.
Continuation of Ser. No. 806,733, Dec. 12, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,335
Int. Cl.[5] H01Q 1/38
U.S. Cl. 343—700 MS 61 Claims



1. A directional antenna for producing a linearly polarized signal, comprising:
a ground plane,
a planar, rectangular driven element offset from said ground plane, said driven element having first and second pairs of opposed sides, the length of said first pair of opposed sides being less than the length of said second pair of opposed sides;
a first planar, rectangular director element, said first director element being positioned offset from said driven element on the opposite side thereof from said ground plane, said first director element having first and second pairs of opposed sides, the length of said first pair of opposed sides being less than the length of said second pair of opposed sides, the length of the first pair of opposed sides of said first director element being less than the length of said first pair of opposed sides of said driven element,
a second planar, rectangular director element, said second director element being positioned offset from said first director element on the opposite side thereof from said driven element, said second director element having first and second pairs of opposed sides, the length of said first pair of opposed sides being less than the length of said second pair of opposed sides, the length of the first pair of opposed sides of said second director element being less than the length of said first pair of opposed sides of said driven element, and
an RF feed line connected to one side of said second pair of opposed sides of said driven element.

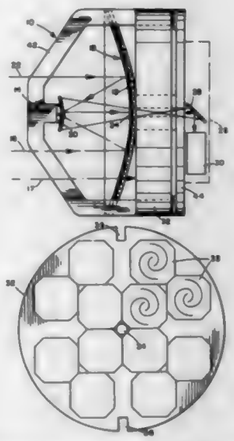
5,307,076
WINDOW GLASS ANTENNA DEVICE
Harunori Murakami, and Yuji Baba, both of Ibaraki, Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan
Filed Nov. 4, 1992, Ser. No. 971,456
Claims priority, application Japan, Nov. 5, 1991, 3-99101
Int. Cl.[5] H01Q 1/02, 1/32
U.S. Cl. 343—704 13 Claims

1. A window glass antenna device electrically connected both to a power supply and to a radio receiver, comprising:
a laminated window glass panel having layers with opposite sides;
a plurality of defroster heater wires disposed between said layers;
means for connecting said defroster heater wires to said power supply; and
a capacitor electrically connected to said defroster heater wires and said radio receiver, said capacitor including a bus bar interconnecting said wires on one side of one of said layers of said glass panel and an electrode on an opposite side of said one of said layers, said electrode



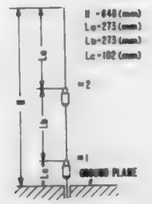
being disposed in an aligned, confronting relationship to said bus bar.

5,307,077
MULTI-SPECTRAL SEEKER ANTENNA
John T. Branigan, Claremont; Henry T. Killackey, Covina, and Richard M. Pietrasz, Rancho Cucamonga, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 627,276, Dec. 14, 1990, abandoned. This application Mar. 18, 1992, Ser. No. 854,356
Int. Cl.[5] H01Q 21/280; G01S 13/000
U.S. Cl. 343—720 15 Claims



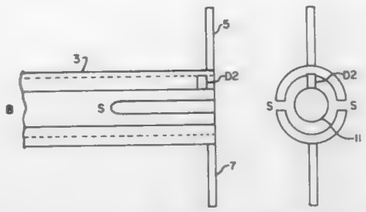
1. A multi-spectral seeker system for detecting radiation within a plurality of frequency bands throughout the electromagnetic spectrum, a first band being in the ultraviolet-through-infrared portion and at least two additional bands being in the remaining lower frequency portion of said spectrum, comprising:
a first dichroic energy collection means, being transparent to radiant energy in said additional bands and having a first boresight axis, for collecting energy in said first band;
first conversion means for converting radiant energy collected in said first band to an electrical signal;
a second dichroic energy collection means, being transparent to radiant energy in all but the first of said additional bands and having a second boresight axis, for collecting energy in said first additional band;
second conversion means for converting radiant energy collected in said first additional band to an electrical signal;
at least one third energy collection means, having a third boresight axis, for collecting energy in the second of said additional bands and for converting that energy to an electrical signal; and
phase compensation means for correcting phase error in said second additional band introduced by said first dichroic energy collection means;
wherein said first and second dichroic energy collection means are located coaxially one behind the other and said at least one third energy collection means are located behind and coaxially with said first and second dichroic energy collection means.

5,307,078
AM-FM-CELLULAR MOBILE TELEPHONE TRI-BAND ANTENNA WITH DOUBLE SLEEVES
Takayuki Tanaka; Shigeru Egashira; Akihide Sakitani, all of Saga; Kazuhisa Yoshiki, Osaka, and Yoshimi Egashira, Kanagawa, all of Japan, assignors to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 26, 1992, Ser. No. 857,979
Int. Cl.[5] H01Q 9/38
U.S. Cl. 343—791 2 Claims



1. A tri-band antenna for AM/FM broadcast bands and cellular telephone band comprising:
a center conductor having a length of an approximately λ/4 at a reception frequency of an FM broadcast band;
a first double sleeve surrounding said center conductor, a top end of said first double sleeve being provided at a position N (N=an integer greater than 1) λ/4 at a transmission frequency of said cellular telephone band below a top end of said center conductor; and
a second double sleeve surrounding said center conductor, a top end of said second double sleeve being provided at a position N. λ/4 at said transmission frequency of said cellular telephone band below said top end of said first double sleeve and at a position λ/4 at the transmission frequency of said cellular telephone band above a ground plane; and
each of said first and second double sleeves having a length of an approximately N. λ/4 at said transmission frequency of said cellular telephone band and comprising an inner pipe, an outer pipe coaxially surrounding said inner pipe and an insulator provided between said inner and outer pipes, thus shortening the electrical length of said outer pipe; and
said first and second double sleeves being coaxially provided with said center conductor with upper ends of said double sleeves opened and lower ends of said inner and outer pipes of the inner and outer pipes electrically shorted together and electrically connected to said center conductor.

5,307,079
SHORT PULSE MICROWAVE SOURCE WITH A HIGH PRF AND LOW POWER DRAIN
Gerald F. Ross, Longboat Key, Fla.; Richard M. Mara, Tewksbury, and Kenneth W. Rollins, North Reading, both of Mass., assignors to Anro Engineering, Inc., Lexington, Mass.
Division of Ser. No. 715,546, Jun. 14, 1991, Pat. No. 5,216,695.
This application Jan. 21, 1993, Ser. No. 7,332
Int. Cl.[5] H01Q 9/16
U.S. Cl. 343—822 3 Claims



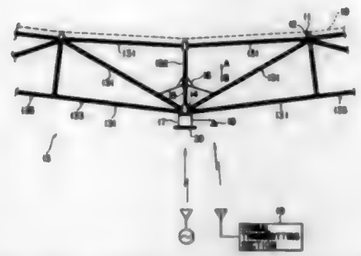
1. Balun apparatus for matching a coaxial line to a balanced dipole and providing a wideband matching circuit to minimize microwave pulse packet dispersion comprising:
an avalanche diode to provide a step function transition necessary for efficient short pulse radiation;
an elongated, generally cylindrical, outer conductor having an inner diameter and an outer diameter about a longitudinal axis, said outer conductor having two slots parallel to and opposite each other and parallel to said longitudinal axis, each of said slots having an opening at a terminal end and each having a length of one quarter wave length at a nominal spectral centroid of the transmission, a centroid frequency may be varied by simply changing the antenna balun dimensions;
an elongated, generally cylindrical, inner conductor having an outer diameter smaller than said inner diameter of said outer conductor, said inner conductor coaxial to said outer conductor, said avalanche diode being directly connected between said inner conductor at said terminal end and said outer conductor at said terminal end, equally distant between said slots; and
a dipole connected to said outer conductor at said terminal end midway between said slots and connected to said avalanche diode for filtering a slower nanosecond rise time excitation pulse from a fast radiated signal caused by said avalanche diode.

5,307,080
EXPANSIBLE ANTENNA APPARATUS
Minoru Okumura, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 26, 1992, Ser. No. 966,406
Claims priority, application Japan, Oct. 31, 1991, 3-286236
Int. Cl.[5] H01Q 15/20
U.S. Cl. 343—915 9 Claims

1. An expansible antenna apparatus comprising:
a foldable/unfoldable antenna reflection mirror;
a foldable/unfoldable mirror-supporting mechanism for supporting said foldable/unfoldable antenna reflection mirror;
a folding/unfolding actuator for folding/unfolding said foldable/unfoldable mirror-supporting mechanism to fold/unfold said foldable/unfoldable antenna reflection mirror;
power converting means, including a reception section which receives externally-transmitted microwaves, for converting energy of said microwaves received at said reception section into electrical power and for supplying

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said electrical power to said folding/unfolding actuator; and



control means for driving said folding/unfolding actuator in response to a command signal to fold/unfold said foldable/unfoldable mirror-supporting mechanism.

5,307,081

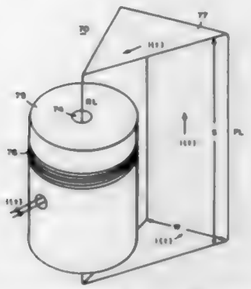
RADIATOR FOR SLOWLY VARYING ELECTROMAGNETIC WAVES

Henry F. Harmuth, Potomac, Md., assignor to Geophysical Survey Systems, Inc., North Salem, N.H.

Continuation of Ser. No. 618,715, Nov. 27, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 924,368

Int. Cl.[5] H01Q *11/040, 17/000, 1/040*

U.S. Cl. 343—842 **24 Claims**



1. A non-resonant antenna for non-sinusoidal very low frequency (vlf) electromagnetic waves comprising relatively long pulses on the order of 10 ms in duration, comprising:

first electrically conductive means formed to cover a first surface area having a predetermined length;

second electrically conductive means formed to cover a second surface area which is substantially smaller than the first surface area, electrically connected in series with the first electrically conductive means having the predetermined length; and

shield means disposed substantially between the first electrically conductive means and the second electrically conductive means, including a pair of apertures through which said first conductive means and said second conductive means are serially connected so that the current in the first conductive means is equal to the current in the second conductive means, and wherein said shield means electromagnetically separates said first conductive means from said second conductive means, so that any electromagnetic energy radiated or received by the first conductive means is not radiated or received by the second conductive means, shield means having a first surface facing the first electrically conductive means and being made substantially of electromagnetically reflective material for reflecting, back towards the first conductive means, the electromagnetic energy incident on it from the first electrically conductive means.

5,307,082

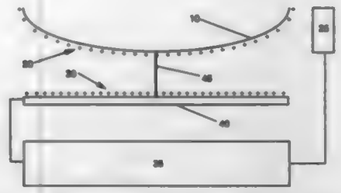
ELECTROSTATICALLY SHAPED MEMBRANES

Larry M. Silverberg, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Oct. 28, 1992, Ser. No. 968,050

Int. Cl.[5] H01Q *15/20;* **G02B** *7/18*

U.S. Cl. 343—915 **20 Claims**



1. An electrostatically shaped membrane comprising:

an electrically conductive thin membrane wherein the periphery of said membrane is free to move in at least one direction;

first charge means for producing an electrical charge on said electrically conductive thin membrane to electrostatically stiffen said membrane,

second charge means for producing a second electrical charge which shapes said electrostatically stiffened thin membrane; and

restraint means operably associated with said second charge means and said thin membrane for limiting the movement of at least one point of said thin membrane relative to said second charge means.

5,307,083

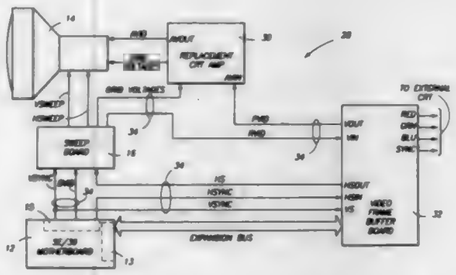
GRAYSCALE VIDEO CONVERSION SYSTEM

Chuck Snodgrass; Tom Stamm, and Greg Blodgett, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Sep. 30, 1992, Ser. No. 954,977

Int. Cl.[5] G09G *1/00*

U.S. Cl. 345—1 **13 Claims**



1. A multi-shade video conversion system for adding to a computer to display multi-shade images, the computer having a microprocessor motherboard, an expansion slot, and an internal CRT; the microprocessor motherboard having integrated thereon a two-state video driver which generates a binary video signal; the computer also having an internal CRT amplifier apart from the motherboard which normally receives and responds to the binary video signal to drive a cathode of the internal CRT, the conversion system comprising:

a video frame buffer expansion board adapted to mount in the computer expansion slot; wherein the expansion board receives signals from the microcomputer motherboard through the expansion slot and in response thereto generates an analog video signal; and wherein the expansion board has a primary video output at which a primary video signal is provided;

an analog replacement CRT amplifier adapted to replace the computer's internal CRT amplifier and to drive the internal CRT to display multiple shades on the internal CRT;

replacement cabling adapted to communicate the primary video signal from the expansion board primary video output to the replacement CRT amplifier to make the computer's internal CRT responsive to the primary video signal; and

wherein the expansion board has a primary video switch which selectably produces either the binary video signal or the analog video signal at the primary video output to form the primary video signal and to drive the computer's internal CRT with a selected one of said two video signals.

5,307,084

METHOD AND APPARATUS FOR DRIVING A LIQUID CRYSTAL DISPLAY PANEL

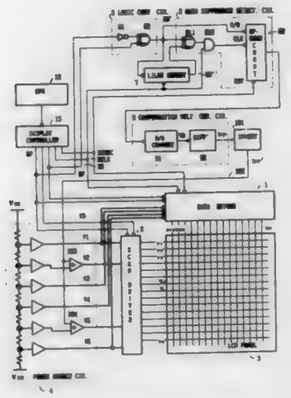
Hisashi Yamaguchi, Atsugi; Yoshiya Kaneko, Tokyo; Munehiro Haraguchi, Hadano; Hiroshi Murakami, Atsugi; Takayuki Hoshiya, Atsugi; Tetsuya Kobayashi, Sagamihara, and Kazuhiro Takahara, Atsugi, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 453,514, Dec. 20, 1989, abandoned. This application Apr. 3, 1992, Ser. No. 863,379

Claims priority, application Japan, Dec. 23, 1988, 63-327287; Dec. 29, 1988, 63-331477; Feb. 15, 1989, 1-36977; Jun. 19, 1989, 1-157535

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—58 **8 Claims**



1. A liquid crystal display device for displaying an image of a display data signal, comprising:

a liquid crystal display including a plurality of data electrodes, a plurality of scan electrodes, and a plurality of liquid crystal cells arranged in a matrix between said plurality of data electrodes and said plurality of scan electrodes, the data electrodes and the scan electrodes extending transversely to each other; each of said plurality of liquid crystal cells having an ON-STATE and an OFF-STATE each determined by a magnitude of cell voltage applied thereto, said cell voltage applied to each of said plurality of liquid crystal cells being controlled by voltages of an adjacent one of said data electrodes and a traversing one of said scan electrodes at said cell; said cell voltage being in a first polarity during a first voltage application mode and being in a second polarity opposite to said first polarity during a second voltage application mode;

mode selecting means for outputting a mode selecting signal which alternately selects one of said first and second voltage application modes, so as to cyclically switch between said first and second voltage application modes;

power source means for supplying selecting voltages to select said ON-STATE for said first and second voltage application modes, respectively, and for supplying unselective voltages to select said OFF-STATE for said first and second voltage application modes, respectively;

scan driver means receiving a scan signal of said display data signal and said mode selecting signal, for selectively applying said selective and unselective voltages to each of said scan electrodes, to select said selective and unselective voltages in synchronization to said scan signal, polarity of said applied voltage being dependent upon said mode selecting signal;

data driver means receiving said display data signal and said mode selecting signal, for selectively applying said selective and unselective voltages output from said power source means to said data electrodes, to select said selective and unselective voltages according to said display data signal, polarity of said applied voltage being in response to said mode selecting signal;

determining means for determining an induced voltage on unselected ones of said plurality of scan electrodes;

compensation voltage generating means for generating a compensation voltage having a magnitude approximately equal to the induced voltage; and

feedback means for inverting and superposing said compensation voltage onto voltages to be supplied via said scan driver to the unselected ones of said plurality of scan electrodes, and said feedback means including adding circuit means for adding the inverted compensation voltage to said unselective voltage applied by said scan driver means to the unselected ones of said plurality of scan electrodes.

5,307,085

DISPLAY APPARATUS HAVING SHIFT REGISTER OF REDUCED OPERATING FREQUENCY

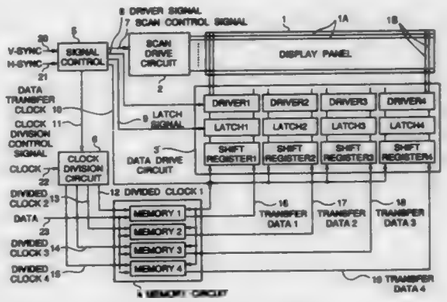
Tadashi Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,256

Claims priority, application Japan, Oct. 8, 1991, 3-260188

Int. Cl.[5] G09G *3/00*

U.S. Cl. 345—99 **3 Claims**



1. A matrix display apparatus comprising:

a display panel having a number of scan electrodes, a number of data electrodes and a number of display cells formed at intersections between said scan electrodes and said data electrodes;

scan drive means receiving a vertical synchronizing signal

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and a horizontal synchronizing signal for sequentially driving said scan electrodes;

data drive means including at least shift register means and driving said data electrodes on the basis of a content of said shift register means, said shift register means including a plurality of shift registers each of which has a serial data input;

memory means including a corresponding number of memories each of which has a data input receiving a data signal in common and a data output connected to said serial data input of a corresponding one of said shift registers; and

control means receiving a clock signal for controlling said memories and said shift registers so that said data signal is sequentially distributed to said memories and the respective data signals stored in said memories are simultaneously supplied to all said shift registers,

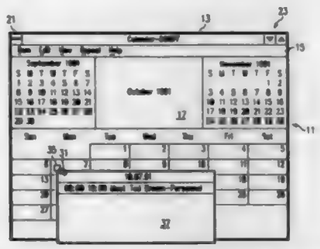
wherein said control means includes a signal control circuit receiving said vertical synchronizing signal and said horizontal synchronizing signal for generating a data transfer signal which is supplied in parallel to all said shift registers as a write control signal and is also supplied in parallel to said memories as a read control signal, and a clock division circuit receiving said clock signal for generating a corresponding number of frequency-divided clocks which are different in phase from one another and each of which is supplied to a corresponding one of said memories as a write control signal.

5,307,056

METHOD OF IMPLEMENTING A PREVIEW WINDOW IN AN OBJECT ORIENTED PROGRAMMING SYSTEM

David L. Griffin, Keller, and Patrick J. Keane, Grapevine, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1991, Ser. No. 772,801
Int. Cl.[5] G09G *5/14*
U.S. Cl. 345—146 **5 Claims**



1. In a computer system including a display screen, a user operable pointing device and a user operable selection device, a method of viewing underlying information in an application including at least a first panel and a second panel, each of said panels being selectively separately displayable on said screen, said second panel displaying said underlying information and said first panel displaying an abbreviated representation of said underlying information, which comprises the steps of:

displaying said first panel on said display screen;

opening a preview window on said display screen, while continuing to display said first panel, in response to operating said user operable selection device; and,

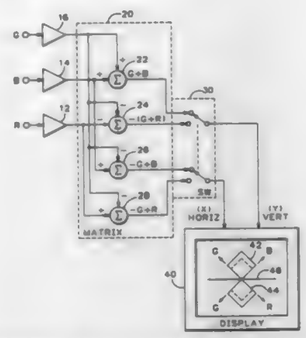
displaying said underlying information from said second panel in said preview window.

5,307,087

THREE-DIMENSIONAL RGB COMPONENT VECTOR DISPLAY

Daniel G. Baker, Aloha, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 13, 1993, Ser. No. 3,907
Int. Cl.[5] H04N *17/02*
U.S. Cl. 345—150 **3 Claims**



1. An apparatus for characterizing red, green and blue components of a video signal comprising:

means for generating from the red, green and blue components two pairs of combination signals that represent a first component of the components with another of the components as a common component in one pair and a second component of the components with the common component in the other pair; and

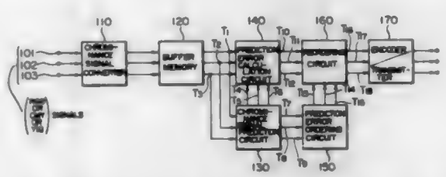
means for switching between the pairs of combination signals at the inputs of a vector display device at a rate to provide a symmetrical display of the two pairs of combination signals about an axis of symmetry such that characteristics of the first component appear in one half of the symmetrical display, characteristics of the second component appear in the other half of the symmetrical display, and characteristics of the common component appear in both halves of the symmetrical display.

5,307,086

METHOD AND APPARATUS OF ENCODING COLOR IMAGE INFORMATION

Tatsuki Inuzuka, Hitachi; Kiyohiko Tanno, Katsuta, and Yasuyuki Kozima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 598,757, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 243,143, Sep. 9, 1988, abandoned, Continuation of Ser. No. 713,858, Mar. 19, 1985, abandoned. This application Jun. 21, 1993, Ser. No. 78,777
Claims priority, application Japan, Mar. 21, 1984, 59-52169
Int. Cl.[5] G09G *5/04*
U.S. Cl. 345—153 **4 Claims**



1. A method of encoding three chrominance signals representative of a color of each pixel constituting a color image, said method comprising the steps of:

(a) converting values of three input chrominance signals to three corresponding other values of different types of chrominance signals, said other values representing a position on a uniform color space;

(b) temporarily storing said corresponding other values;

(c) determining a value of each of the three converted chrominance signals on the uniform color space to be next encoded of a pixel under consideration by utilizing as a reference signal a stored converted value of each of the chrominance signals, on the uniform color space, which corresponds to adjacent pixels of the pixel under consideration so as to provide estimation chrominance signals with respect to the pixel under consideration;

(d) calculating, with respect to each pixel under consideration, the difference between said estimation chrominance signals obtained according to step (c) and said converted chrominance signals taken from actual converted chrominance signals temporarily stored, to be encoded and which correspond to signals on the uniform color space, to produce a prediction error signal;

(e) determining values indicative of an order of occurrence of said estimation chrominance signals, using positions on said uniform color space, based on the possibilities of occurrence of errors specific to each of said estimation chrominance signals produced;

(f) rearranging the order of occurrences of the calculated prediction error signals to an order corresponding to the order determined according to step (e), and

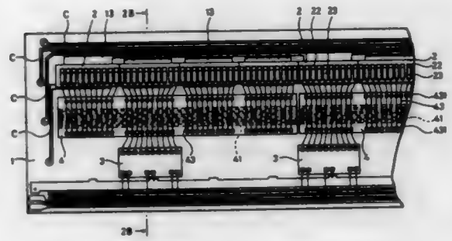
(g) encoding the rearranged order of occurrences of the calculated prediction error signals for transmission therefor.

5,307,089

OPTICAL PRINTING HEAD

Hiromi Takasu, and Masaharu Inaba, both of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 31, 1990, Ser. No. 560,596
Claims priority, application Japan, Aug. 7, 1989, 1-204471; Mar. 12, 1990, 2-60410
Int. Cl.[5] B41J *2/45*
U.S. Cl. 346—107 R **9 Claims**



1. An optical printing head comprising:

a head substrate,

a plurality of elongated LED blocks each having a first side and second opposing side and being arranged end to end along a scanning direction on said head substrate, each of said LED blocks having a plurality of LED elements arranged thereon which are to be selectively energized along said scanning direction,

a plurality of elongated wiring blocks on said substrate each having a first side and an opposing second side, said wiring blocks each having said first side adjacent said second side of at least two of said plurality of LED blocks, said, wiring blocks having a plurality of selecting signal lines, of a number at least equal to a number of said plurality of LED elements on each of said LED blocks to be selectively energized, formed thereon along the length of said wiring blocks and spanning the length of said plurality of LED blocks,

a data driver means on said substrate adjacent said second side of said wiring blocks for selectively energizing each of said LED elements of each of said plurality of LED blocks,

first wiring means for connecting a group of LED elements, formed by one of said LED elements of each of said plurality of LED blocks, to an identical selecting signal line on said wiring blocks, each of said LED elements of each of said plurality of LED blocks being part of a separate group connected to the one selecting signal line, and

second writing means for connecting each of said selecting signal lines to said data driver means, said data driver means selectively causing the energization of the LED elements of each of said plurality of LED blocks through said second wiring means, a selecting signal line, and said first wiring means,

wherein the LED elements are divided into a plurality of groups which are to be driven in time division, at least one of said groups including at least one of said LED elements of each of said LED blocks, said plurality of wiring blocks being arranged alongside and adjacent to, said plurality of LED blocks,

at least one of said wiring blocks having a length at least equal to the length of two LED blocks and said plurality of selecting signal lines of said at least one of said wiring blocks including

(i) a plurality of bridging lines formed in parallel with each other on said at least one of said wiring blocks and having a length of substantially two LED blocks, and

(ii) a plurality of selecting lead lines crossing said bridging lines and connected to a corresponding bridging line; and

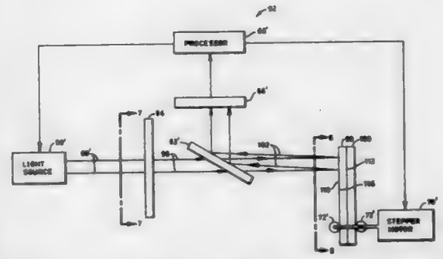
said plurality of bridging lines being electrically connected in one-to-one correspondence between at least two of said wiring blocks.

5,307,090

LIGHT BEAM POSITION DETECTION AND CONTROL APPARATUS EMPLOYING DIFFRACTION PATTERNS

Paul F. Sullivan, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

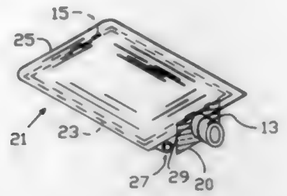
Filed Oct. 15, 1991, Ser. No. 776,565
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 **44 Claims**



1. An image recording medium for use with an electronic image printing apparatus of the type having a light beam that can be scanned to produce a two dimensional image exposure on the image recording medium, the image recording medium comprising a light sensitive image recording layer and, a plurality of different diffraction grating patterns disposed in an adjacent relationship with each other so as to form a diffraction grid disposed in a corresponding relationship with at least a portion of the light sensitive image recording layer so that when the light beam of the electronic image printing apparatus is radiated onto the diffraction grid at least a portion of the light beam is diffracted from the grid into a diffracted beam which is representative of the position of the light beam on the diffraction grid.

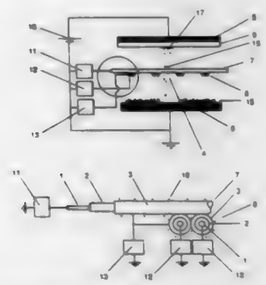
VOL 1161 ISS 4 AP 26 1994 UMI

5,307,091
JET INK REFILL SUPPLY
Charles L. DeCoste, Jr., Richmond, Ky., assignor to Lexmark International, Inc., Greenwich, Conn.
Filed Mar. 16, 1992, Ser. No. 852,452
Int. Cl.[5] B41J *2/175*
U.S. Cl. 346—140 R **5 Claims**



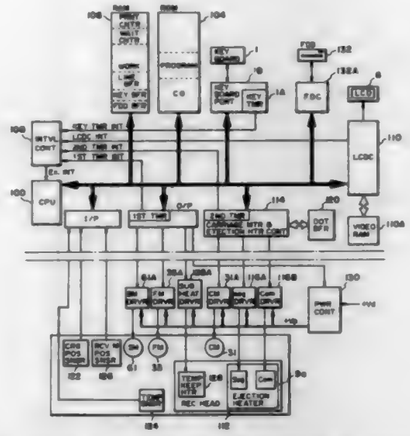
1. A refill ink supply for a printer comprising an inner bag to hold ink and to be connected to said printer, an absorbent material external to said inner bag, and an outer bag positioned around said inner bag and said absorbent material, said outer bag having an opening to receive ink from said printer and being of compliant material, said opening being formed by said outer bag being sealed around a thin, rigid closed member, said inner bag having an edge at which a plug is located.

5,307,092
IMAGE FORMING DEVICE
Ove Larson, Västra Frölunda, Sweden, assignor to Array Printers AB, Sweden
PCT No. PCT/SE90/00611, § 371 Date Mar. 25, 1992, § 102(e) Date Mar. 25, 1992, PCT Pub. No. WO91/04863, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 25, 1990, Ser. No. 842,357
Claims priority, application Sweden, Sep. 26, 1989, 8903617-8
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—154 **15 Claims**



1. An image forming device for an electrographical printer, having an electrode unit which comprises a screen or grid of electrodes with a plurality of apertures, wherein the aperture electrostatically control transmission of pigment particles to an information carrier, comprising:
- antistatic coating material at surfaces of the device which are contacted by said pigment particles, wherein the electrodes are coated by said antistatic coating material, said antistatic coating material being galvanically separated from the electrodes by an isolation layer; and
- means for removing tribo friction charges which are produced between said pigment particles and said surfaces,
- wherein said antistatic coating material transports said tribo charges to said removing means.

5,307,093
INK JET RECORDING METHOD AND APPARATUS IN WHICH THE TEMPERATURE OF AN INK JET RECORDING HEAT IS CONTROLLED
Naohisa Suzuki, Yokohama, and Kazuhisa Kawakami, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 13, 1991, Ser. No. 744,704
Claims priority, application Japan, Aug. 14, 1990, 2-214646; Aug. 14, 1990, 2-214647; Aug. 14, 1990, 2-214648; Aug. 14, 1990, 2-214649
Int. Cl.[5] B41J *2/01, 29/38, 2/195*
U.S. Cl. 346—1.1 **60 Claims**

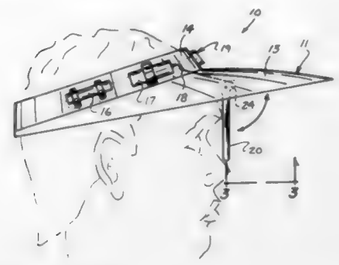


50. A ink jet recording method using a recording head ejecting ink, the method comprising the steps of:
- detecting an ambient temperature of the recording head;
- a first heating step of heating the recording head at first intervals with energy in accordance with the temperature detected after each recording operation of the recording head;
- a second heating step of heating the recording head at second intervals in accordance with the detected temperature after a predetermined period elapses after an end of the recording operation, with energy larger than the energy in said first heating step; and
- a recording step of driving the recording head after said first or second heating step.

5,307,094
SUNGLASS RAISING AND LOWERING APPARATUS
Danny Gonzalez, 107 Oxford St., San Francisco, Calif. 94134
Filed Mar. 29, 1993, Ser. No. 38,821
Int. Cl.[5] G02C *3/02;* **A61F** *9/00*
U.S. Cl. 351—59 **4 Claims**

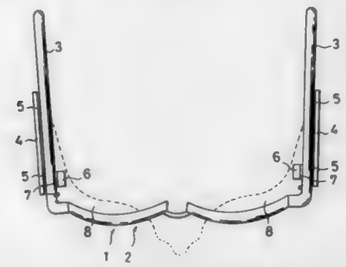
1. A sunglass raising and lowering apparatus, comprising in combination,
- a sun visor, the sun visor having a visor concave bottom surface coextensive with a visor convex top surface, and
- a continuous annular band mounted to the visor for securement about an individual's head portion, and
- a battery member arranged for securement relative to the band, and
- a solenoid in electrical communication with the battery mounted to the band, with the solenoid having a solenoid link extending through the visor, and
- a sunglass set mounted to the visor in adjacency to the visor concave bottom surface, said sunglass set including a sunglass frame leg, the sunglass frame leg including a cam plate fixedly and orthogonally mounted to the frame leg,

with the solenoid link secured to the cam plate to effect rotation of the cam plate and the sunglass set from a first



position in adjacency to the visor concave bottom surface to a second position displaced relative to the visor concave bottom surface.

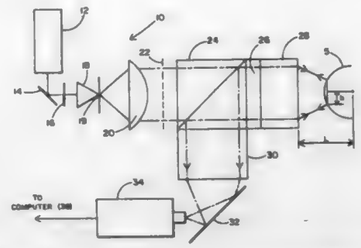
5,307,095
EYE-MOISTENING DEVICE
Nobunori Ogura, Tokyo, Japan, assignor to Rainbow Optical Laboratory Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 638,490, Jan. 8, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 956,731
Int. Cl.[5] G02C *5/14*
U.S. Cl. 351—111 **5 Claims**



1. An eye moistening device in combination with spectacles of the type having a frame including support means for a lens system including a pair of arms for engaging the head of a wearer, said device including a side cover comprising a wall member mounted on each said head engaging arm of said frame adjacent to said lens system, said device including a liquid absorbing block having in cross-section a triangular shape including an apex at one end and base at an opposite end, attachment means carried on each arm removably attaching said liquid absorbing block to a said respective arm with a said base of each said liquid absorbing block being located adjacent said lens system to supply moisture by evaporation to the eye of a wearer.

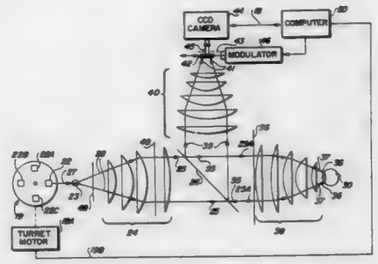
5,307,096
COMPUTER DRIVEN OPTICAL KERATOMETER AND METHOD OF EVALUATING THE SHAPE OF THE CORNEA
Edmund C. Baroth, Granada Hills, and Samih A. Mouneimme, La Canada, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed Mar. 17, 1988, Ser. No. 170,215
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—212 **16 Claims**

1. An apparatus for measuring the shape of a cornea, the apparatus of the type having a source of light and an optical assembly for focusing said light onto the cornea and for directing reflected light from the cornea onto an imaging device; the apparatus comprising:
- a single reticule for interrupting a portion of said light to form a selected pattern on the cornea, said pattern being deformable by an irregularly shaped cornea as said pattern is reflected by the cornea and appears on said imaging device; and,



means for measuring the deformation of said reflected patern and for determining the shape of the cornea therefrom, said measuring and determining means comprising a digital computer programmed to compare said reflected pattern with a reference pattern stored in said computer, said programmed digital computer automatically aligning said reflected pattern with said reference pattern prior to calculating differences therebetween for quantitatively characterizing said shape of said cornea.

5,307,097
CORNEAL TOPOGRAPHY SYSTEM INCLUDING SINGLE-DIRECTION SHEARING OF HOLOGRAPH GRATING IN ORTHOGONAL DIRECTIONS
Philip A. Baker, Orinda, Calif., assignor to Kera-Metrics, Inc., Solana Beach, Calif.
Filed Nov. 5, 1992, Ser. No. 972,374
Int. Cl.[5] A61B *3/10, 3/00;* **G01B** *9/02*
U.S. Cl. 351—212 **15 Claims**



9. A device for producing a three-dimensional image of a surface, comprising in combination:
- (a) a laser providing a first beam having a first wavelength;
- (b) a first lens through which the first beam passes, the first lens diverging the first beam;
- (c) a second lens collimating the first beam to produce a second beam;
- (d) a beam splitter through which a portion of the second beam passes;
- (e) a third lens through which the portion of the second beam passes, the third lens focusing the portion of the second beam onto the surface, the surface reflecting a fourth beam back through the third lens to produce a fifth beam which is reflected by the beamsplitter to produce a sixth beam;
- (f) a dual phase plate having first and second periodic dif-

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fracting features along first and second directions, respectively, in a plane of the dual phase plate;

(g) a fourth lens through which the sixth beam passes to produce a seventh beam which diverges and passes through the dual phase plate;

(h) a modulator coupled to the dual phase plate and shifting the dual phase plate in a third direction to simultaneously shear the phase of the seventh beam in both the first and second directions, producing an eighth beam containing phase shear in the first and second directions;

(i), an array of photosensitive detector elements receiving the eighth beam and means for digitizing light intensity signals produced by the array at each pixel of the image represented by the light intensity signals; and

(j) means for computing the relative height of each pixel of the surface from the digitized light intensity signals.

5,307,098

PROJECTION INSPECTING MACHINE

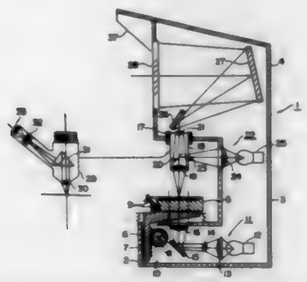
Yukio Okita, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

PCT No. PCT/JP91/00631, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/21057, PCT Pub. Date Nov. 26, 1992

PCT Filed May 14, 1991, Ser. No. 961,725

Int. Cl.[5] G02B *21/36*; G03B *21/08*

U.S. Cl. 353—63 **1 Claim**



1. A projection inspecting machine comprising a table capable of moving two-dimensionally and adapted to support an object to be measured, and a projection lens mount attaching base constituting a part of a projection optical system, disposed above the table and adapted to serve as a base to which a projection lens is to be attached, an observation inspection being carried out by observing an image of the object to be measured, the object projected onto a screen by means of emission of an illumination light through the projection optical system, wherein a projection lens is removably attached so as to be exchanged by a microscope mount including an ocular optical system, a reference target being provided within a view field of the ocular optical system, the table being provided with a moving amount indicating portion capable of indicating a moving amount thereof.

5,307,099

FILM CARTRIDGE ACCOMODATING DEVICE WHICH PREVENTS PREVIOUSLY USED CARTRIDGES FROM BEING EMPLOYED IN A CAMERA OR THE LIKE

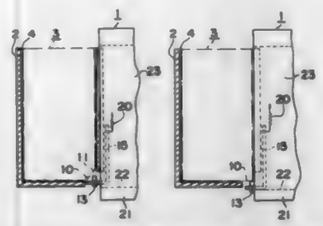
Kunio Kawamura, Kawachinagano; Shuji Izumi; Hiroyuki Okada, both of Sakai; Masaaki Chikasaki, Toyonaka; Michihiro Iwata, Sakai, and Sadafusa Tsuji, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 797,947

Claims priority, application Japan, Nov. 30, 1990, 2-338973; Dec. 26, 1990, 2-416774; Dec. 27, 1990, 2-416833

Int. Cl.[5] G03B *17/02, 17/26*

U.S. Cl. 354—21 **6 Claims**



2. A camera for use with a film cartridge of the type including a state indicating means which is set at different indications to distinguish between an unused state and a used state of the film cartridge, said camera comprising;

a film cartridge accommodating portion, which can be selectively inserted into and drawn out from a body of said camera, for removably accommodating said film cartridge therein, and

an engaging member for allowing said film cartridge accommodating portion to be inserted into said camera body when the indication by said state indicating means shows the unused state, and prohibiting said film cartridge accommodating portion from being inserted into the camera body when the indication by said state indicating means shows the used state.

5,307,100

MAGNETIC RECORDING/REPRODUCING APPARATUS FOR A CAMERA HAVING PRESSURE ROLLER

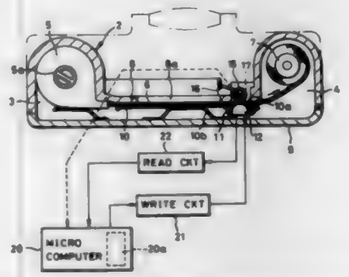
Takashi Kubo, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 761,145, Sep. 17, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 75,913

Claims priority, application Japan, Sep. 17, 1990, 2-97314[U]; May 21, 1991, 3-45571[U]

Int. Cl.[5] G03B *17/24*; G11B *15/60*

U.S. Cl. 354—105 **14 Claims**



5. A camera having a magnetic head for magnetically reading and writing information while an arcuate head surface of said magnetic head is in contact with a magnetic recording layer of a photographic film, said camera comprising:

a cassette housing chamber defined in said camera and adapted to receiving a cassette containing the said photographic film;

a film take-up chamber defined in said camera and adapted to receiving portions of said photographic film which have been pulled out of said cassette;

a film passageway defined in said camera and extending between said cassette housing chamber and said film take-up chamber;

an exposure aperture formed in said camera so as to communicate with said film passageway;

a film pressure plate disposed in said film passageway and in opposition to said exposure aperture, said photographic film being supported on said film pressure plate, said magnetic head being mounted on said film pressure plate;

at least one pressure roller disposed in opposition to said magnetic head so as to press said magnetic recording layer into contact with said head surface, the centerline of said magnetic head being offset, in the direction of advancement of said photographic film, with respect to the centerline of said pressure roller;

said camera being configured so as to satisfy the following equations;

$$10\ \text{mm} \leqq Rh \leqq 15\ \text{mm},$$

$$5\ \text{mm} \leqq Rr \leqq 12\ \text{mm},$$

$$-0.2\ \text{mm} \leqq L \leqq 1.0\ \text{mm}$$

(wherein + corresponds to a position in the downstream direction with respect to the direction of advancement of said photographic film and − corresponds to an upstream direction),and

$$10\ \text{g} \leqq P \leqq 100\ \text{g},$$

wherein Rh is the radius of curvature of said head surface, Rr is the diameter of said pressure roller, P is a pressure at which said pressure roller is placed in contact with said head surface and L is a distance of displacement, in the direction of advancement of the photographic film, between the centerline of said magnetic head and the centerline of said pressure roller.

5,307,101

CAMERA USING FILM CARTRIDGE

Junichi Tanii, Izumi; Masaaki Chikasaki, Toyonaka; Nobuya Miki, Nara; Akira Yamanaka; Ikushi Nakamura, both of Sakai, and Masayoshi Horikawa, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 12, 1991, Ser. No. 684,267

Claims priority, application Japan, Apr. 16, 1990, 2-99973; Apr. 18, 1990, 2-102030; Jul. 6, 1990, 2-179789

Int. Cl.[5] G03B *1/18*

U.S. Cl. 354—173.1 **5 Claims**

1. A device using a film cartridge in which a film, wound by a winding shaft provided in the film cartridge, can be contained intercepting light coming from outside of the film cartridge, comprising:

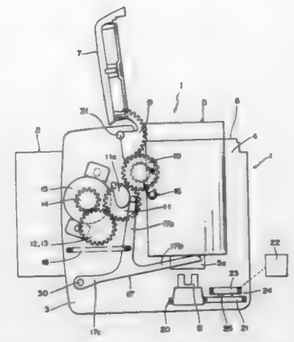
a cartridge chamber for accommodating the film cartridge;

a driving means, engaging the shaft of the film cartridge accommodated in the cartridge chamber, for rotating the shaft in a film unwinding direction to remove the film from the film cartridge;

a driving source means for generating force for driving the driving means;

transmitting means, provided between the driving source means and the driving means, for transmitting the force generated by the driving source means to the driving means; and

disengaging means, provided in the transmitting means, for disengaging the force to be transmitted to the driving means for feeding the film in the film unwinding direction



when a load applied to said driving means exceeds a predetermined magnitude.

5,307,102

DRIVING MECHANISM OF CAMERA

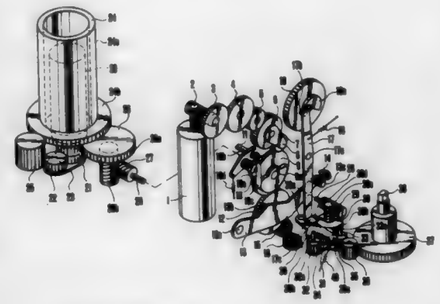
Tsunemasa Ohara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,841

Claims priority, application Japan, Jan. 8, 1992, 4-001755

Int. Cl.[5] G03B *1/12*

U.S. Cl. 354—173.1 **18 Claims**



1. A camera comprising

a) a first motor;

b) a second motor which differs in driving characteristic from said first motor;

c) a first transmission mechanism arranged to transmit a rotation output in a first direction of said first motor to a driving system for film winding;

d) a second transmission mechanism arranged to transmit a rotation output in a first direction of said second motor to another driving system for taking shots; and

e) a changeover mechanism arranged to switch the transmission of a rotation output in a second direction of said first motor selectively to a driving system for film rewinding or to said another driving system on a basis of a rotation output in a second direction of said second motor.

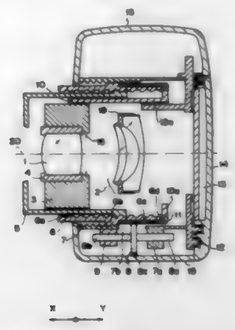
VOL 1161 ISS 4 APR 26 1994

5,307,103

LENS BARREL

Kiyosada Machida, Urawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,903
Claims priority, application Japan, Sep. 4, 1992, 4-263144
Int. Cl.[5] G03B *1/18, 17/04*
U.S. Cl. 354—195.1 3 Claims



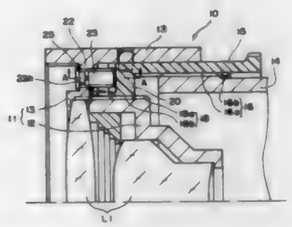
1. A lens barrel comprising:
a fixed cylinder;
a driving gear which is rotated by the rotational driving force from a driving means and which moves forward and backward, according to the directions of its rotation, in the direction of an optical axis;
a rotary cylinder which has an external gear formed around its outer periphery to be engaged with said driving gear, and which is rotated by said driving gear to shift with the driving gear forward and backward, according to the directions of its rotation, with respect to said fixed cylinder in the direction of the optical axis; and
a lens holding cylinder for holding a photographing lens which is engaged with said rotary cylinder and shift forward and backward, according to the directions of rotation of said rotary cylinder, in the direction of the optical axis.

5,307,104

DEVICE FOR ADJUSTING AXIAL POSITION OF LENS

Takaji Hamasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,367
Claims priority, application Japan, May 20, 1991, 3-214849
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—286 8 Claims



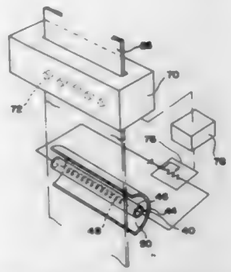
1. A device for adjusting an optical axial position of a lens, comprising:
a lens frame for mounting at least one lens;
a lens frame supporting member having opposite ends, said lens frame supporting member rotatably and adjustably coupled at one of said opposite ends to a stationary member and rotatably and threadably coupled to said lens frame at the other of said opposite ends, for supporting said lens frame in such a way that said lens frame is threadably rotatable relative to said lens frame supporting member for adjusting the optical axial position of the lens relative to said lens frame supporting member; and
means for selectively locking said lens frame to said lens frame supporting member at one of a plurality of stepwise, predetermined relative angular positions between said lens frame and said lens frame supporting member after the optical axial position of the lens has been adjusted relative to said lens frame supporting member,
wherein said selective locking means comprises a plurality of recesses formed at regular angular intervals along a circumference of said lens frame supporting member, a plurality of first tapped holes formed at other regular angular intervals along a circumference of said lens frame, and at least one set screw engageable through one of said tapped holes with any one of said recesses which is located in the closest association with the tapped hole at the adjusted position for locking said lens frame to said lens frame supporting member at any one of said plurality of stepwise, predetermined, relative angular positions.

5,307,105

PHOTOSENSITIVE MATERIAL DRYING DEVICE

Shigeru Saotome, and Ichizo Toya, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 6, 1992, Ser. No. 956,971
Claims priority, application Japan, Oct. 8, 1991, 3-260862
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—298 9 Claims



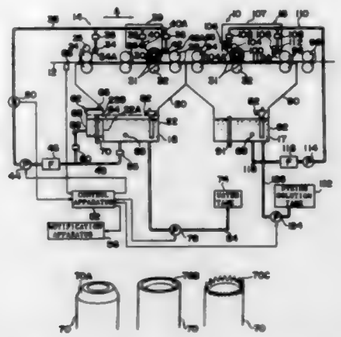
1. A photosensitive material drying device, for drying a wet-processed, exposed photosensitive material, comprising:
a means for heating the wet-processed, exposed photosensitive material, said means for heating disposed in facing relationship to said wet-processed, exposed photosensitive material;
a means for measuring a density of said wet-processed, exposed photosensitive material before heating the wet-processed, exposed photosensitive material by said heating means; and
a means for varying the amount of heat applied to said wet-processed, exposed photosensitive material and which is connected to the means for measuring the density, wherein the heat applied to the wet-processed, exposed photosensitive material varies in accordance with the density of the wet-processed, exposed photosensitive material.

5,307,106

WASTE SOLUTION DISCHARGING APPARATUS FOR WATERLESS LITHOGRAPHIC PRINTING PLATES

Seiji Shigetaka, and Susumu Yoshida, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 11, 1992, Ser. No. 897,016
Claims priority, application Japan, Jun. 14, 1991, 3-143113
Int. Cl.[5] G03D *5/00*
U.S. Cl. 354—317 24 Claims



1. A waste solution discharging apparatus for waterless lithographic printing plates which is used in a waterless lithographic printing plate developing apparatus, in which a waterless lithographic printing plate is developed while processing solution inside an accommodating tank is pumped out by a circulating pump, supplied to the waterless lithographic printing plate, and recovered in said accommodating tank and replenishing solution is replenished periodically, said waste solution discharging apparatus for waterless lithographic printing plates discharging the processing solution, which is within said accommodating tank and which contains scrapings generated after development, as waste solution, comprising:
an inflow portion positioned within said accommodating tank and having an opening into which processing solution of a surface portion which includes floating scrapings flows as waste solution, wherein the material forming at least a part of said opening of said inflow portion has low surface tension so that a resistance when the scrapings flow into said opening is reduced; and
a discharge portion communicating with said inflow portion and discharging the processing solution, flowing in said inflow portion, to an exterior of said accommodating tank.

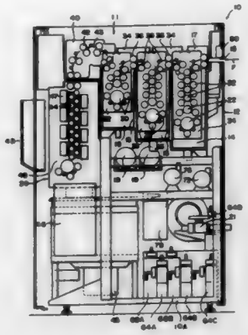
5,307,107

REPLENISHER SUPPLYING APPARATUS FOR PHOTOGRAPHIC PROCESSOR

Ryouci Nozawa, and Akira Sugiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 21, 1992, Ser. No. 822,808
Claims priority, application Japan, Jan. 18, 1991, 3-004672
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 20 Claims

1. A replenisher supplying apparatus for use in a photographic processor having a processing tank to which pieces of a photosensitive material are consecutively transported, and for supplying replenishers respectively stored in a plurality of stock tanks to said processing tank, said replenisher supplying apparatus comprising:
a plurality of level sensors respectively disposed in said plurality of stock tanks for respectively detecting liquid levels of the replenishers in said plurality of stock tanks;
a plurality of pumps disposed in correspondence with said plurality of stock tanks for supplying the replenishers from said plurality of stock tanks to said processing tank;
control means for controlling said plurality of pumps in such a manner as to supply a predetermined amount of each of the replenishers in correspondence with an amount of the photosensitive material processed, said control means being so arranged that when any of said plurality of level sensors has detected the liquid level being at a predetermined level or below, said control means stops the driving of said pump provided in said stock tank whose level sensor has detected the level being at the predetermined level or below, and said control means controls said pumps corresponding to said stock tanks in which remaining ones of said level sensors are disposed, in such a manner as to continuously drive latter-mentioned said pumps until the remaining ones of said level sensors detect a drop in the level to the predetermined level or below; and
correcting means for correcting the flow rates of said pumps by measuring the amount of each of the replenishers supplied by said pumps during each of the continuous driving operations of said pumps and by acting on said control means on the basis of the measured amount of each of the replenishers.

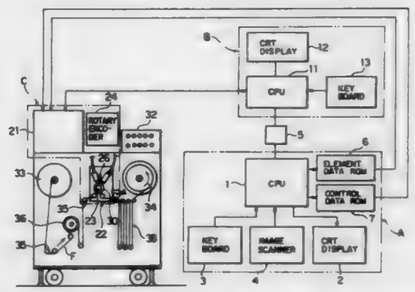


5,307,108

FILM DATA EXPOSURE DEVICE

Kenji Yamanouchi; Masao Nakamura, and Makoto Ikeda, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,913
Claims priority, application Japan, Jun. 8, 1990, 2-150718; Jul. 24, 1990, 2-195888; Jul. 24, 1990, 2-195889; Jul. 31, 1990, 2-203405; Jul. 31, 1990, 2-203406
Int. Cl.[5] G03B *19/00*
U.S. Cl. 354—354 8 Claims



1. An apparatus for exposing a plurality of types of unexposed films, each having a predetermined length, to dot patterns corresponding to film and exposure designation data, to form latent dot image designation markings on said unexposed film, said apparatus comprising;

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a first memory for storing a library of dot patterns corresponding to designation data for all types of unexposed films to be used in said apparatus,

a second memory for storing arrangement data for each type of unexposed film, said arrangement data indicating sequence positions of each of said latent dot image designation markings to be formed from the leading edge to the trailing edge on said unexposed film;

an input control for inputting information corresponding to the actual type of film being used in said apparatus;

a pattern setting control for selecting relevant data patterns from said first memory based on the inputted data, selecting relevant arrangement data from said second memory, and sequencing said dot patterns into a series of dot pattern data corresponding to said actual type of film, whereby each dot image has an address corresponding to a predetermined position on said film;

a third memory for storing the sequence of dot pattern data of said actual type of film, with corresponding addresses, as set by said pattern setting control, upon storage of said sequence of dot pattern data, any previous dot pattern data being erased from said third memory,

an exposure device for exposing the film being used;

a conveyor for conveying said film being used to said exposure device at a preset speed,

a position signal generator for generating position signals indicating a position on said film being used in synchronization with conveyance of said film being used; whereby

said exposure device exposes a series of latent dot images corresponding to said sequence of dot pattern data in said third memory onto the unexposed film being used in response to said position signals, during conveyance of said film being used by said conveyor.

5,307,109

METHOD AND APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

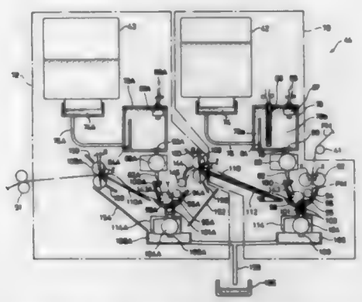
Eiji Miyasaka; Masayuki Handa; Morihiro Takeda, and Hiroyuki Tsujino, all of Hikone, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Oct. 22, 1991, Ser. No. 780,766

Claims priority, application Japan, Oct. 23, 1990, 2-285179; Oct. 25, 1990, 2-290292; Nov. 27, 1990, 2-327325; Nov. 27, 1990, 2-327326; Nov. 27, 1990, 2-327327; Nov. 27, 1990, 2-327328; Mar. 29, 1991, 3-093671

Int. Cl.[5] G03D *3/02*

U.S. Cl. 354—320 **20 Claims**



1. An apparatus for processing a succession of silver salt photosensitive materials such as printing paper or photosensitive paper or film for direct plate making, comprising:

a process tank for storing processing solution for said photosensitive materials;

feed-in means for conveying said succession of photosensitive material into the processing solution stored in said process tank; and

first means disposed in the vicinity of an inlet of said photosensitive material in said process tank for supplying new processing solution and distributing same across the width of each of said succession of photosensitive materials.

5,307,110

PULSE-CONTROLLED CAMERA, METHOD FOR SETTING CONTROL REFERENCE POSITION THEREOF, AND METHOD FOR ADJUSTING MECHANICAL ERRORS IN PRODUCTION THEREOF

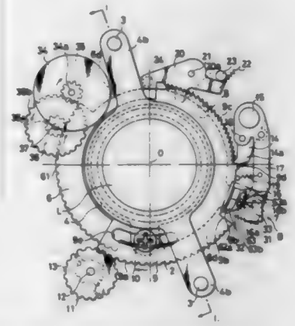
Kousaku Sawabe, Ichikawa; Daisuke Hata, Funabashi, and Kenji Koyama, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,163

Claims priority, application Japan, Feb. 21, 1992, 4-70273

Int. Cl.[5] G03B *9/08, 13/36*

U.S. Cl. 354—400 **19 Claims**



1. A pulse-controlled camera comprising:

a basic reciprocating member driven by a pulse motor such that said reciprocating member moves in a forward direction from a control reference position by an amount corresponding to a measured distance to a subject and thereafter returns to said control reference position and then that said reciprocating member moves in a backward direction from said control reference position and thereafter returns to said control reference position;

a distance setting member arranged such that when said basic reciprocating member is driven in the forward direction from said control reference position, said distance setting member is driven in dependence on an amount by which said reciprocating member is driven in the forward direction from said control reference position against a biasing force provided on itself and has a photo-taking lens displaced in a direction of an optical axis thereof by an amount corresponding to said measured distance from a feeding start reference position;

backstop means urged with an urging force to make an engagement with said distance setting member to prevent said distance setting member from being driven by said biasing force in the backward direction, but pressed by said basic reciprocating member against said urging force for engagement to release said engagement with said distance setting member only when said basic reciprocating member returns to said control reference position from a position to which said basic reciprocating member is driven in the backward direction;

shutter opening and closing means operated to open a shutter blade of aperture and shutter means when said basic reciprocating member is driven in the backward direction from said control reference position and operated to close said shutter blade when said basic reciprocating member returns to said control reference position from the position to which said basic reciprocating member is driven in the backward direction; and

photoelectric detection means disposed in parallel with the optical axis of said photo-taking lens to detect a position of said basic reciprocating member.

5,307,111

OBJECT DISTANCE MEASURING APPARATUS OF CAMERA

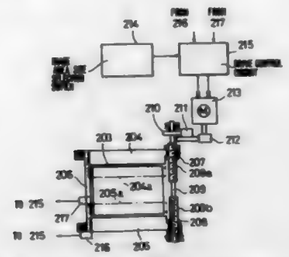
Hiroshi Kurei, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,653

Claims priority, application Japan, Apr. 9, 1991, 3-161972

Int. Cl.[5] G03B *3/00, 37/00*

U.S. Cl. 354—402 **13 Claims**



1. An object distance measuring apparatus of a camera, comprising:

image area size varying means for varying a size of an image area;

multi-point measuring means having a plurality of object distance measuring elements for measuring object distances of an object in a large image area at different measuring points; and

calculating means for calculating the object distance in accordance with the object distance data from the object distance measuring elements, which are contained in the small image area, and excluding the outputs of the object distance measuring elements, which protrude from the small image area, from a calculation of the object distance,

wherein, when a small image area is selected by the image area size varying means, at least a part of at least one of the object distance measuring elements protrudes from the small image area.

5,307,112

FOCUS DETECTING DEVICE FOR DETECTING FOCUS TO A PLURALITY OF DIFFERENT AREAS

Keisuke Aoyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 641,526, Jan. 15, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 905,233

Claims priority, application Japan, Jan. 17, 1990, 2-8707; Jan. 17, 1990, 2-8708

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—406 **17 Claims**

1. A camera provided with a focus detecting device for independently detecting focus states relative to a plurality of different areas of a scene, said camera comprising:

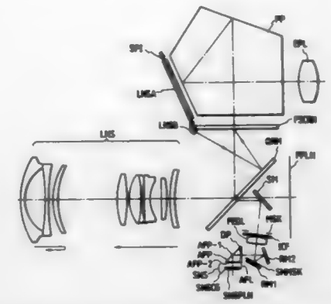
an indicator provided inside a finder for indicating each of said different areas;

a shutter release operation member;

a designating circuit for designating a predetermined one of said different areas;

a focus detection control circuit for causing the focus detecting device to start a focus detection operation after operation of said shutter release operation member; and

an indicator control circuit for causing said indicator to indicate the area designated by said designating circuit prior to the focus detection operation performed by the focus detecting device and upon operation of said shutter release operation member, for causing said indication to stop during said focus detection operation, and for causing said indication to resume after said focus detection operation.



5,307,113

IMAGING APPARATUS WITH MEANS FOR DETECTING AND PREVENTING HAND SHAKE

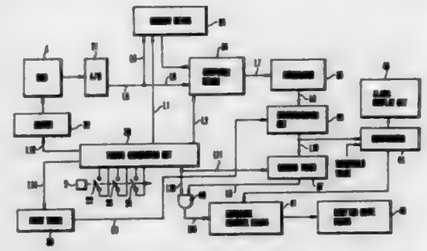
Akira Egawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 581,687, Sep. 13, 1990, abandoned, which is a continuation of Ser. No. 501,378, Mar. 29, 1990, abandoned, which is a continuation of Ser. No. 392,266, Aug. 10, 1989, abandoned, which is a continuation of Ser. No. 316,580, Feb. 28, 1989, abandoned, which is a continuation of Ser. No. 232,547, Aug. 12, 1988, abandoned, which is a continuation of Ser. No. 121,686, Nov. 17, 1987, abandoned. This application Sep. 3, 1992, Ser. No. 939,412

Claims priority, application Japan, Nov. 20, 1986, 61-275437; Nov. 20, 1986, 61-275438; Nov. 20, 1986, 61-275439; Nov. 20, 1986, 61-275440

Int. Cl.[5] G03B *17/40*

U.S. Cl. 354—430 **49 Claims**



1. An imaging apparatus comprising:

(A) actuating means for starting picking-up of an image;

(B) image blur detecting means responsive to the operation of said actuating means for detecting the blurring state of the image; and

(C) setting means responsive to the output of said image blur detecting means for setting a time which lasts until the start of an image recording.

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5,307,114

APPARATUS FOR MAKING PRINTS OF EXPOSED AND DEVELOPED PHOTOGRAPHIC FILMS

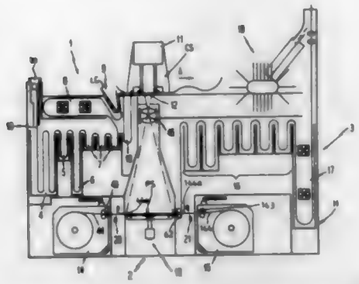
Wilhelm Nitsch, Munich, and Erich Nagel, Aazing, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 29, 1992, Ser. No. 922,049

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 4126578

Int. Cl.[5] G03B *29/00, 27/60*

U.S. Cl. 355—29 22 Claims



1. Apparatus for making copies of photographic films on discrete sheets of photosensitive material, comprising means for positioning films at a copying station; means for locating discrete sheets at a printing station, said locating means defining a predetermined plane for a sheet at said printing station; means for imaging a film at said copying station onto a sheet at said printing station; and means for changing the orientation of a sheet at said printing station, said orientation changing means including means for turning a sheet at said printing station at said plane in or at least close to said plane.

5,307,115

FILM END HOLDER FOR PHOTOGRAPHIC PRINTER

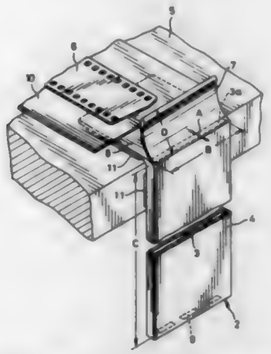
Satoru Horiuchi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 36,865

Claims priority, application Japan, Mar. 25, 1992, 4-067590

Int. Cl.[5] G03B *27/62*

U.S. Cl. 355—75 20 Claims



1. A film end holder to be used in a photographic printer having a work table and a film carrier disposed on said work table, a developed photographic film being threaded through said film carrier for printing, said film end holder comprising;

a main body having an inlet and a thin cavity formed therein, said thin cavity being connected to said inlet for removably receiving an end portion of said developed photographic film through said inlet, said photographic film being stocked in a loop form between said main body and said film carrier when said end portion of said photographic film is inserted in said cavity;

mounting means for attaching said main body to a side of said work table such that said inlet corresponds with an upper surface of said work table; and

a guide plate extending from said main body for guiding said end portion of said photographic film having been advanced from said film carrier over said work table into said inlet.

5,307,116

IMAGE FORMING APPARATUS PROVIDED WITH UNIT LOCKING MEANS

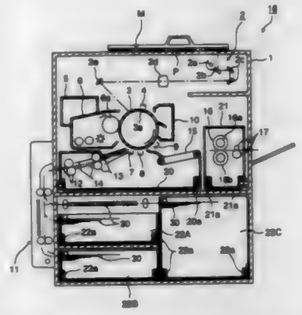
Yoshikazu Ikunami; Susumu Okui; Kazunobu Miura; Takao Shiozawa; Hiroaki Ura, and Masaru Ushio, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 19, 1993, Ser. No. 94,617

Claims priority, application Japan, Aug. 11, 1992, 4-214217; Oct. 22, 1992, 4-284478

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—207 9 Claims



1. An image forming apparatus for forming an image on a recording paper, comprising:

a paper feed tray for holding said recording paper;

means, having a first unit body, for conveying said recording paper from said paper feed tray;

means for forming a toner image onto said recording paper;

means, having a second unit body, for fixing said toner image on said recording paper;

means for detecting a paper jam between said first unit body and said second unit body, and for generating a detection signal;

means for locking said first unit body and said second unit body;

means for controlling said locking means according to said detection signal so that said first unit body and said second unit body are resisted from being removed separately when said paper jam occurs between said first unit body and said second unit body.

5,307,117

PROTECTIVE SHIPPING COVER FOR CRU

Andrij Harlan, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1992, Ser. No. 986,659

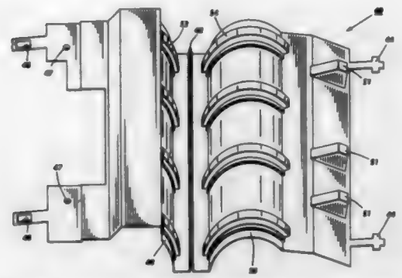
Int. Cl.[5] G03G *15/00*; B65D *43/14*

U.S. Cl. 355—200 7 Claims

1. An apparatus for protecting an image forming cartridge having a sensitive member therein during the shipment thereof, comprising:

a sheetlike member having substantially semi-rigid portions, said sheetlike member being wrapped around the cartridge to protect at least the sensitive member;

means, integral with said sheetlike member, for locating said member in a selected orientation on said cartridge, said locating means comprises protrusions extending outwardly from said sheet like member and being adapted to



mate with corresponding apertures in the cartridge so as to accurately locate said sheet like member about the cartridge and maintain the orientation thereof; and

means, integral with said sheetlike member, for removably attaching said sheetlike member to the cartridge so as to allow said member to be reused.

5,307,118

ELECTROPHOTOGRAPHIC PROCESS CONTROL DEVICE USING FUZZY LOGIC

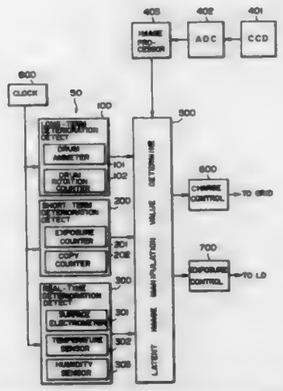
Tetsuya Morita, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,891

Claims priority, application Japan, Mar. 20, 1991, 3-57251; Mar. 20, 1991, 3-57252; Feb. 20, 1992, 4-33714

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 15 Claims



1. In an electrophotographic process control device, a control means for controlling a grid voltage and a duration of exposure of a light source, said control means comprising:

means for, from among characteristics of a photoconductive drum used for an electrophotographic process including an amount of wear of said photoconductive drum, electrostatic fatigue of said photoconductive drum, fatigue due to exposure of said photoconductive drum, a degree of continuous use of said photoconductive drum, a total number of rotations of said photoconductive drum, a total amount of passed charge passed by said photoconductive drum, a total duration of exposure of said photoconductive drum and a number of copies per unit time of said photoconductive drum, defining for each characteristic a membership function, said means for defining providing a factor series as an output; and

means for determining a successor portion, comprising fuzzy rules having two or more of the factor series as an antecedent portion and having said grid voltage and said duration of exposure of said light source as the successor portion, wherein control is effected with non-fuzzy values resulting from inference using said fuzzy rules.

5,307,119

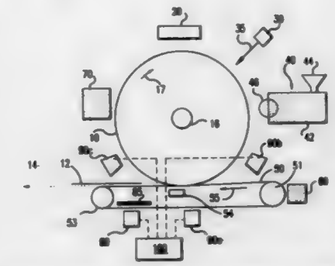
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING A TONER IMAGE FORMATION PROCESS

Jeffrey J. Folkins, Rochester, and Cyril G. Edmunds, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 31, 1992, Ser. No. 999,349

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 47 Claims



1. A method for monitoring a toner image formation process performed by a printing machine having a chargeable imaging member, means for forming toner images on the imaging member, and an endless transfer member for transferring the toner images from the imaging member to a receiving member, said method comprising the steps of:

forming a toner patch on the imaging member with said means for forming toner images;

transferring said toner patch from said imaging member to said endless transfer member; and

measuring a voltage potential of said toner patch located on said endless transfer member and measuring a mass of said toner patch.

5,307,120

METHOD FOR MEASURING ELECTROSTATIC POTENTIAL

Takahiro Ogawa, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 28, 1992, Ser. No. 826,783

Claims priority, application Japan, Jan. 29, 1991, 3-6850

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—219 2 Claims

1. In an electrophotographic apparatus for forming an image using a rotatable, photosensitive drum having drum surface, a method for measuring an electrostatic potential associated with the drum surface, the method comprising;

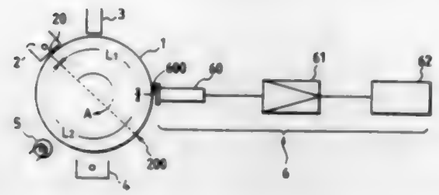
providing, in spaced relationship with the drum surface, a device for affecting the electrostatic potential of the drum surface,

providing, in spaced relationship with the drum surface, a device for measuring the electrostatic potential of the drum surface, the device for affecting the electrostatic potential of the drum surface and the device for measuring the electrostatic potential of the drum surface being in mutually spaced relationship,

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activating the device for affecting the electrostatic potential of the drum surface for a fixed period of time during which the drum is not rotated,

rotating the drum after activating the device for affecting the electrostatic potential of the drum surface, and



initiating the measurement of an electrostatic potential distribution of the drum surface by the electrostatic potential measuring means,

whereby a substantially continuous distribution of the electrostatic potential of the drum along at least a portion of the peripheral surface of the drum is obtained.

5,307,121

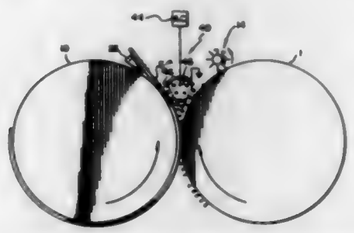
BI-FUNCTIONAL CHARGE NEUTRALIZER FOR ELECTROSTATOGRAPHIC COPIER/PRINTER

Kevin M. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1992, Ser. No. 980,083

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—219 **17 Claims**



1. In an electrostatographic image recording apparatus of a type which includes an image recording element on which electrostatically charged marking particles are imagewise deposited to form a transferrable image, and a transfer mechanism for transferring such transferrable image on the image recording element to an image receiving member, the improvement comprising:

charge-neutralizing means for simultaneouly reducing (i) any residual electrostatic charge on the image receiving member following image transfer, and (ii) reducing any electrostatic attraction between the image recording element and any marking particles remaining thereon following image transfer.

5,307,122

IMAGE FORMING APPARATUS APPARATUS UNIT FACSIMILE APPARATUS AND DEVELOPER COMPRISING HYDROPHOBIC SILICA FINE POWDER FOR DEVELOPING ELECTROSTATIC IMAGES

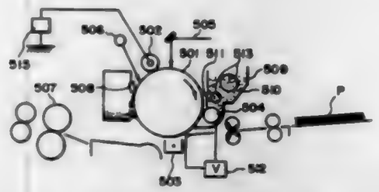
Masaba Ohno; Hisayuki Ochi; Tetsuhito Kuwashima; Hiroyuki Suematsu, all of Yokohama; Eiichi Imai, Narashino; Tsuyoshi Takiguchi, Yokohama; Koichi Tomiyama, Kawasaki; Tsutomu Kukimoto, Tokyo, and Hiroshi Yusa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1990, Ser. No. 558,097

Claims priority, application Japan, Jul. 28, 1989, 1-194015; Jul. 28, 1989, 1-194016; Jul. 28, 1989, 1-194026; Jul. 28, 1989, 1-194028; Dec. 22, 1989, 1-331299

Int. Cl.[5] G03G *15/08*

U.S. Cl. 355—245 **75 Claims**



1. An image forming apparatus, comprising:

a member to be charged for carrying an electrostatic image,

a contact-charging means for charging the member to be charged in contact with the member to be charged, and

a developing means for developing the electrostatic image carried on the member to be charged, wherein the developing means includes a developer for developing the electrostatic image comprising a toner and hydrophobic inorganic fine powder, wherein said toner comprises a binder resin composition which contains 10–70 wt. % of a THF (tetrahydrofuran)-insoluble content and the remainder of a THF-soluble content including a component with a molecular weight of 10,000 or below on a GPC (gel permeation chromatography) chromatogram of the THF-soluble content constituting 10–50 wt. % of the binder resin.

5,307,123

DEVELOPING UNIT HAVING CAPABILITY OF PREVENTING DEVELOPING POWDER FROM BEING JAMMED AROUND EXHAUST OUTLET

Toyoka Aimoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1992, Ser. No. 918,498

Claims priority, application Japan, Dec. 2, 1991, 3-317981

Int. Cl.[5] G03G *15/08*

U.S. Cl. 355—245 **11 Claims**

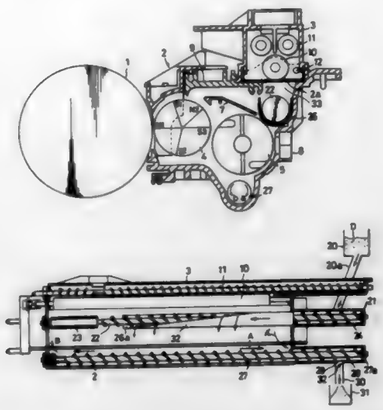
1. A developing device for use in an image forming apparatus, the device comprising:

a developing bath for containing a developing powder;

a stirring roller disposed in said developing bath for development;

a rotary body disposed in said developing bath for exhausting the developing powder out of said developing bath to an exhaust outlet; and

means for driving said rotary body to rotate in one direction for conveying the developing powder away from the exhaust outlet in the case of developing an image and in an opposite direction for exhausting the developing powder to prevent the jamming of the developing powder at the exhaust outlet upon the development.



5,307,124

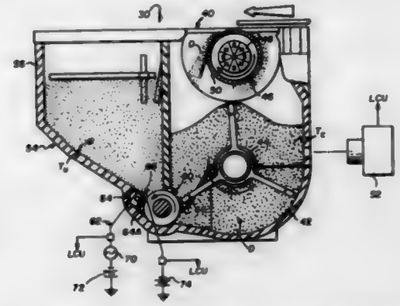
DEVELOPMENT METHOD AND APPARATUS INCLUDING TONER PRE-CHARGING CAPABILITY

Eric C. Stelter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,676

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—246 **14 Claims**



1. A development apparatus for developing latent images using toner particles contained in a multiple-component developer material of toner particles and carrier particles, the development apparatus comprising:

(a) a housing including a sump portion for holding the developer material containing toner particles at a desired concentration level;

(b) triboelectric charging means located within said sump portion for moving, mixing and triboelectrically charging the toner particles and carrier particles in said sump portion for a necessary time interval and to a desired charge level;

(c) a development roller for transporting the triboelectrically charged developer material particles from said sump portion into an image development relationship with latent images to be developed using the charged toner particles; and

(d) a replenishment assembly for selectively supplying fresh toner particles to said sump portion to replace charged toner particles used up from said transported developer material in image development, said replenishment assembly having a hopper portion for holding a supply of said uncharged fresh toner particles, metering means for metering a quantity of said toner particles from said hopper portion into said sump portion, and electrical pre-charging means for electrically pre-charging said metered toner particles to a pre-charge level, thereby preventing poorly charged toner particles from being transported into image development relationship in the development apparatus, and thereby reducing the time necessary for moving, mixing and triboelectrically charging the metered toner particles and carrier particles in said sump portion to said desired charge level.

5,307,125

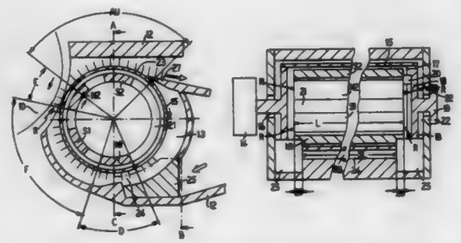
DEVELOPMENT STATION FOR AN ELECTROPHOTOGRAPHIC PRINTING OR COPYING STATION HAVING A MEANS FOR PREVENTING THE DISCHARGE OF THE MIXTURE

Josef Knott, Tutzing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 576,407, Aug. 31, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,938

Int. Cl.[5] G03G *15/09*

U.S. Cl. 355—251 **6 Claims**



1. A development station for applying toner from a toner delivery region to a charge image carrier of an electrophotographic printing or copying apparatus, comprising:

a development drum mounted so that an outer surface thereof lies adjacent the charge image carrier to define a development gap between said development drum and the charge image carrier at a development region, said development drum having a portion thereof at the toner delivery region for receiving toner so that the toner is carried to the development region when said development drum is rotated being hollow;

means for rotating said development drum in said predetermined direction; and

a plurality of elongated magnets mounted within said development drum extending generally in a direction of the axis of said development drum for attracting toner to said outer surface of said development drum, a first magnet of said plurality of magnets being mounted preceding the development region in the predetermined direction, a second magnet of the plurality of magnets being mounted generally at the development region for the transfer of the toner to the charge image carrier at the development gap, said first magnet being shorter than said second magnet and being mounted so that toner attracted to said outer surface by said first magnet at the toner delivery region is of a limited axial extent and so that the toner spreads in an axial direction as rotation of said development drum carries the toner to said development region to substantially prevent toner at the development gap from reaching non-uniform magnetic fields at ends of said second magnet.

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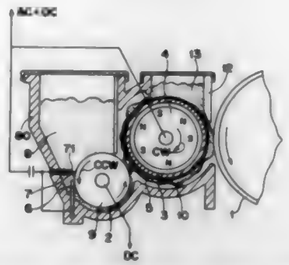
VOL 1161 ISS 4 AP 26 1994 UMI

5,307,126

MAGNETIC BRUSH DEVELOPING APPARATUS

Takaji Kurita, Sayama, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1992, Ser. No. 967,026
Claims priority, application Japan, Oct. 28, 1991, 3-280252
Int. Cl.[5] G03G *15/09*
U.S. Cl. 355—251 **10 Claims**



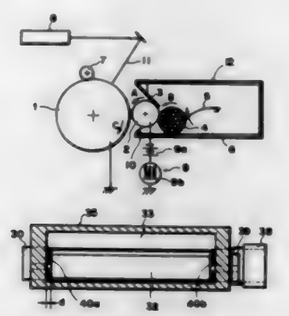
1. A developing sleeve rotary type magnetic brush developing apparatus which comprises a developing sleeve having a magnet member with magnetic poles therein, an insulative layer provided on the surface of said developing sleeve for obstructing dissipation of a countercharge, and a toner supply roll disposed for rotation in the vicinity of said developing sleeve, said toner supply roll being arranged to be formed with a thin charged toner layer on its surface, with an A.C. voltage of 0.5 to 3 kV, and 50 Hz to 3 KHz being impressed between said toner supply roll and said developing sleeve.

5,307,127

DEVELOPING APPARATUS USING ONE COMPONENT TONER WITH IMPROVED FLOWABILITY

Tetsuya Kobayashi, Kawasaki; Haruo Fujii; Motoi Katoh, both of Yokohama; Tatsuya Kobayashi, Tokyo; Toshiaki Miyashiro, Ichikawa; Naoki Enomoto; Akihiko Uchiyama, both of Yokohama, and Yoshiro Saito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 22,698
Claims priority, application Japan, Feb. 28, 1992, 4-078659; Jun. 30, 1992, 4-197774
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—259 **20 Claims**



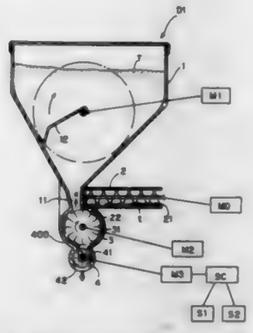
1. A developing apparatus comprising:
a developer carrying member for supplying a developer to an image bearing member, wherein the developer is a one component developer, and has a flowability index of 5–30%; and
developing bias voltage application means for applying a developing bias to said developer carrying member;
wherein said developing bias application means applies an oscillating bias voltage including a first peak voltage, for an application period T1, for forming an electric field for urging the developer from said developer carrying member to said image bearing member, and a second peak voltage, for an application period T2, for forming an electric field for urging the developer from said image bearing member to said developer carrying member, wherein T1:T2 satisfies 1:2–1:10.

5,307,128

TONER SUPPLYING DEVICE

Hiroshi Murasaki, Ibaragi, and Masanori Fujiwara, Izumiotsu, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1991, Ser. No. 750,533
Claims priority, application Japan, Aug. 28, 1990, 2-227245
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **28 Claims**



1. In an image forming apparatus, a toner supplying device for supplying toner to developing means which forms a toner image on an image carrying member during operation of said image forming apparatus comprising::
a toner agitating chamber;
toner collecting means for collecting residual toner on said image carrying member and for feeding the collected toner to said toner agitating chamber during said operation of said image forming apparatus;
toner containing means for containing new toner and for also feeding the new toner to said toner agitating chamber during said operation of said image forming apparatus;
toner agitating means disposed in said toner agitating chamber for agitating said new toner fed from said toner containing means and collected toner fed from said toner collecting means; and
toner feeding means, separately provided from said toner agitating means, for feeding mixture of said toner agitated and mixed in said toner agitating chamber to the developing means.

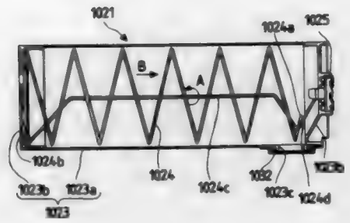
5,307,129

IMAGE PROCESSING APPARATUS

Kaenori Miura; Shiro Suzuki; Yasuhito Takahashi, and Masaru Ono, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,539
Claims priority, application Japan, Oct. 1, 1990, 2-263443; Oct. 1, 1990, 2-263444; Oct. 3, 1990, 2-265694
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **8 Claims**

1. A toner cartridge for a toner supply device of an image forming apparatus, comprising:
a tubular main body having a tubular portion, end walls and a toner supply port;
a spiral agitator, disposed within the main body, having a free end that does not contact an inner surface of either of the end walls of the main body;
drive means for rotating said spiral agitator;
a drive force transmission shaft, integrally formed with the spiral agitator, having a first end connected to an end of the spiral agitator opposite to the free end and having a second end coupled to said drive means, for transmitting a rotating drive force from the drive means to the spiral agitator; and



a crushing member for crushing lumps of toner formed as a portion of the drive force transmission shaft near the toner supply port;
wherein said toner cartridge is removably set to the toner supply device and provides toner to the toner device while being set to the toner supply device, and
wherein the free end of the spiral agitator is located near the toner supply port and the second end of the drive force transmission shaft, and the end of the spiral agitator opposite to the free end is rotatably supported by the inner surface of one of the end walls of the main body.

5,307,130

Patent Not Issued For This Number

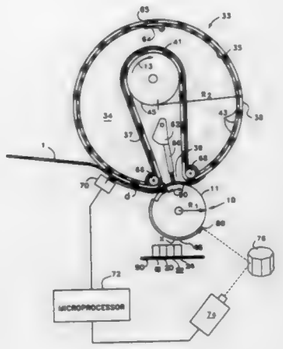
5,307,131

COLOR IMAGE REGISTRATION SYSTEM USING VACUUM TRANSFER DRUM

Stephen Borostyan, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,851
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—272 **13 Claims**

1. Apparatus for transferring successive toner images from a rotatable photoconductive member to a sheet at a transfer zone where toner images are transferred to the sheet, comprising:
a generally cylindrical member having a circumferential surface adjacent the photoconductive member at the transfer zone;
means for moving the sheet around the circumferential surface of the generally cylindrical member in a recirculating path;
means for transferring the sheet from the cylindrical member to the photoconductive member at the transfer zone, including a conductive fiber brush within an opening in the cylindrical member and means for moving the conductive fiber brush into and out of engagement with the back of the sheet;



means for detecting when a lead edge of the sheet carried by the sheet moving means if a first predetermined distance from the transfer zone; and
means, responsive to the detecting means, for forming a latent image on the photoconductive member at an imaging point which is a second predetermined distance from the transfer zone when the detecting means detects the lead edge of the sheet, the second predetermined distance not exceeding the first predetermined distance.

5,307,132

IMAGE FORMING APPARATUS HAVING A CONTROLLER FOR DISCHARGING AIR IN RESPONSE TO A HEATING CONDITION OF AN IMAGE FIXING DEVICE

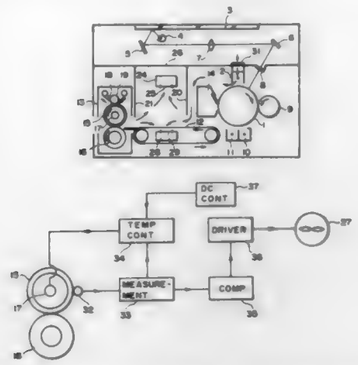
Hiroaki Tsuchiya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 477,170, Feb. 8, 1990, abandoned, which is a continuation of Ser. No. 269,701, Nov. 10, 1988, abandoned. This application Feb. 3, 1992, Ser. No. 829,573
Claims priority, application Japan, Nov. 12, 1987, 62-286084
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—284 **12 Claims**

1. An image forming apparatus comprising:
image forming means for forming toner image on a recording material, aid image forming means including electrical discharging means;
fixing means for fixing the toner image, said fixing means including a rotatable heating member heated by heating means, a temperature detecting element contacting a sur-

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face of the rotatable heating member to detect and output a surface temperature, power supply control means for controlling a power supplied to said heating means in accordance with the output of said temperature detecting element, and applying means for applying a parting agent to the surface of said rotatable member;



air discharging means for discharging air between said electrical discharging means and said fixing means; and

drive control means for controlling said air discharging means in accordance with the output of said temperature detecting element.

5,307,133

IMAGE FIXING APPARATUS WITH MEANS FOR PREVENTING MOISTURE DEW ON FILM

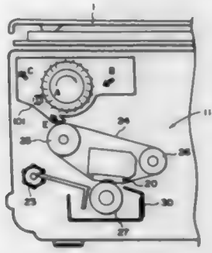
Yoshiyuki Koshimizu, Abiko; Tsunetoshi Nagata, Yokohama, and Masamutsu Azuma, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1990, Ser. No. 547,246

Claims priority, application Japan, Jul. 7, 1989, 1-176618; Feb. 6, 1990, 2-027654; Feb. 9, 1990, 2-030647

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 22 Claims



1. An image fixing apparatus, comprising:

a heater;

an endless film contacted to said heater and movable with a recording material, wherein a visualized image on the recording material is heated by heat from said heater through said film;

a driving rotatable member for driving said film, said member located separate from said heater; and

cooling means for cooling said driving rotatable member.

5,307,134

ELECTROPHOTOGRAPHIC APPARATUS

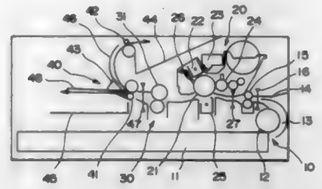
Shigeki Nakajima, and Koji Morimoto, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,050

Claims priority, application Japan, Nov. 21, 1991, 3-305776

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 8 Claims



1. An electrophotographic apparatus for providing a thermally fixed toner image on a recording medium, comprising:

an image forming unit for forming a toner image to be printed and for then transferring the toner image onto a recording medium;

a feed mechanism for feeding a recording medium supplied via one of at least a first guide path and a second guide path to said image forming unit, said feed mechanism having a feed roller for supplying recording media to said first guide path from a supply tray, and means for driving said feed roller;

a sensor disposed between said image forming unit and said first and second guide paths for detecting the presence of a recording medium supplied via either of said first and second guide paths and for producing a corresponding output signal;

a fixing unit for thermally fixing the transferred toner image on the recording medium;

a temperature control unit for setting a fixing temperature for said fixing unit; and

a controller for controlling said driving means to drive said feed roller, for determining the one of said first and second guide paths along which the recording medium was supplied in accordance with a combination of the output signal from said sensor and a driven state of said feed roller, and for commanding the temperature control unit to set a fixing temperature in accordance with the determined guide path.

5,307,135

COLOR IMAGE FORMING APPARATUS HAVING MONO-COLOR IMAGE FORMING FUNCTION

Katsumi Amakawa, Nara; Haruo Yamamoto, and Shuji Hayashi, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Feb. 28, 1992, Ser. No. 843,277

Claims priority, application Japan, Mar. 9, 1991, 3-068808

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—326 10 Claims

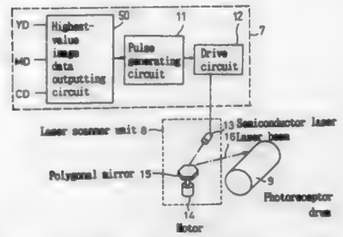
1. A color image forming apparatus for forming a mono-color image based on full-color image data which includes color image data representative of three primary colors, said apparatus comprising:

highest-value image data outputting means for comparing, with one another, values of color image data representative of said three primary colors and providing a color image data value which is a highest value among said values of said color image data of said three primary colors as an output value,

said three primary colors being yellow, magenta and cyan, said highest-value image data outputting means comprising

a first comparator for comparing values of color image data for two of said three primary colors to determine a higher value, and

a second comparator for comparing a higher value determined by said first comparator and a value of color image



data of the primary color other than said two primary colors; and

mono-color image forming means for forming a mono-color image based on the color image data value provided by said highest-value image data outputting means.

5,307,136

DISTANCE DETECTION SYSTEM FOR VEHICLES

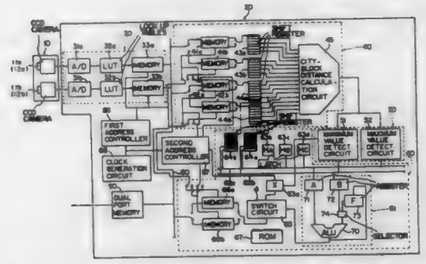
Keiji Saneyoshi, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,688

Claims priority, application Japan, Oct. 22, 1991, 3-274315

Int. Cl.[5] G01C *3/00*; B60T *7/16*

U.S. Cl. 356—1 22 Claims



1. A distance detection system for an automobile, having an imaging system for imaging external objects in a required range from a plurality of different directions and for obtaining a plurality of pictures corresponding to said different directions, and a picture processing unit for processing said pictures and for outputting a distance distribution in an entire image of said required range, the picture processing unit comprising:

coincidence calculation means for dividing said pictures of said required range into a plurality of small regions and for performing a calculation of the coincidence between each of said plurality of small regions in one of said pictures and at least one region in at least one of the other pictures;

discrepancy amount determination means for determining discrepancy amounts at corresponding small regions over an entire picture on the basis of a maximum value of the degree of coincidence corresponding to said regions.

5,307,137

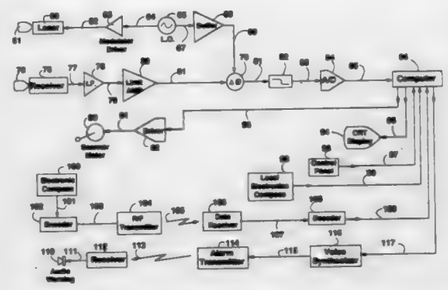
TERRAIN IMAGING APPARATUS AND METHOD

Mark F. Jones, 6310 Rustling Way, San Antonio, Tex. 78249, and James C. Lyman, Pipe Creek, Tex., assignors to Mark F. Jones, San Antonio, Tex.

Filed Mar. 16, 1992, Ser. No. 851,870

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 8 Claims



1. A method for imaging the terrain in an area surveyed by the user, comprising the steps of:

transmitting a coherent radiation beam to near objects and receiving the coherent radiation beam reflected from the objects;

measuring the distances to the objects from the transmitting and receiving means and the direction in which the beam is directed and synthesizing a vector field image of the terrain based on a set of direction measurements and corresponding range measurements to establish a reference point;

continually synthesizing vector field images of the terrain based on a set of direction measurements and corresponding range measurements and comparing each synthesize vector field image with the reference to determine those objects which are in motion and automatically selecting and tracking those objects which are indicated to be in motion to predict the near future positions of those moving objects;

continually determining the degree of threat which each moving object presents to the user, based on the distance of the moving object from the user, the direction of movement that each moving object has relative to the position of the user, and the direction that the user is facing and the velocity that each moving object is experiencing;

grading and ranking of multiple moving objects as to the degree of a threat each moving object presents to the user and determining which moving object presents the greatest and most immediate degree of a threat for the user; and

communicating the direction and distance of objects moving in that field relative to the user, calculating the distances to the objects from the transmitting and receiving means and the direction in which the beam is directed and synthesizing a vector field image of the terrain based on a set of direction measurements and corresponding range measurements to indicate the direction the user is facing relative to the terrain image.

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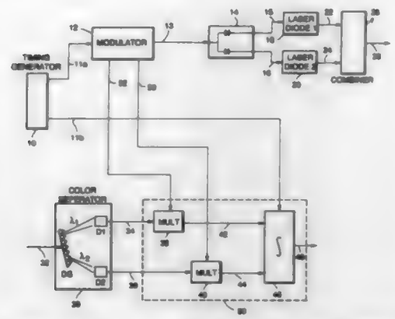
ENERGY EFFICIENT MODULATION-DEMODULATION OPTICAL SYSTEM

Frederik Weindling, Bridgewater, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 1, 1992, Ser. No. 877,637

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 **10 Claims**



1. Apparatus for transmitting an optical signal, comprising:

transmitter means for transmitting a burst of optical radiation, the burst including first periods of optical radiation having a first wavelength (λ_1) in response to a portion of a carrier signal having a first polarity and second periods of optical radiation having a second wavelength (λ_2) in response to a portion of said carrier signal having a second polarity, the first and second periods alternating with one another for a duration of the burst, each of said periods beginning with substantially zero transmitted power, increasing to a maximum transmitted power, and decreasing to substantially zero power.

5,307,139

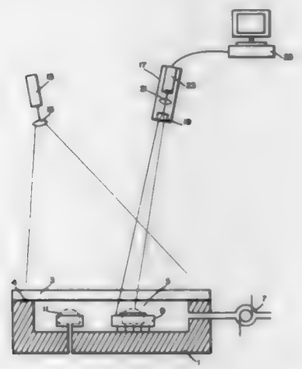
APPARATUS AND METHOD FOR DETECTING LEAKS IN PACKAGES

John Tyson, II, Wayne, and John W. Newman, Berwyn, both of Pa., assignors to Laser Technology, Inc., Norristown, Pa.

Continuation-in-part of Ser. No. 574,809, Aug. 30, 1990, Pat. No. 5,082,366. This application Jan. 15, 1992, Ser. No. 820,403

Int. Cl.[5] G01L *1/24*

U.S. Cl. 356—35.5 **29 Claims**



1. A method of inspecting a package for gross leaks, the method comprising the steps of:

a) placing the package in a chamber,

b) varying the pressure in the chamber by an amount sufficient to deform a surface of the package by a small integral number of wavelengths of light,

c) recording an interferometric image of the surface of the package,

d) waiting for an interval of several seconds,

e) varying the pressure in the chamber at a known rate, while simultaneously recording a series of second interferometric images of the surface observed in step (c),

f) comparing the second images with the image of step (c) to determine whether the surface has moved during the interval of step (d), and

g) determining whether the package is leaking by analyzing movement of said surface.

5,307,140

OPTICAL TIME DOMAIN REFLECTOMETER WITH IMPROVED SIDELOBE SUPPRESSION

Meirion F. Lewis, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

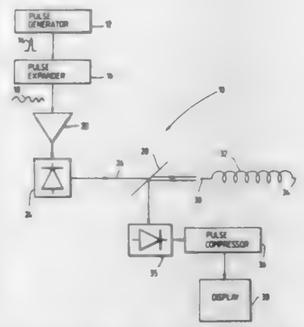
PCT No. PCT/GB90/02007, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/10121, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 21, 1990, Ser. No. 862,756

Claims priority, application United Kingdom, Dec. 28, 1989, 8929158

Int. Cl.[5] G01N *21/88*

U.S. Cl. 356—73.1 **8 Claims**



1. An optical time domain reflectometer including:

(i) generating means for generating a light beam modulated by a large bandwidth, frequency dispersed compressible pulse;

(ii) detecting means for detecting the light beam and its pulse modulation: and

(iii) a surface acoustic wave (SAW) pulse compressing filtering means for receiving the pulse modulation from the detecting means and for producing a compressed pulse, said filtering means and said generating means comprising in combination a means for providing sidelobe suppression in the compressed pulse.

5,307,141

REFRACTIVE CHARACTERISTICS MEASURING APPARATUS FOR MEASURING THE REFRACTIVE CHARACTERISTICS OF A LENS

Masano Fujieda, Aichi, Japan, assignor to Nidek Co., Ltd., Aichi, Japan

Filed Nov. 23, 1992, Ser. No. 980,292

Claims priority, application Japan, Nov. 30, 1991, 3-342186

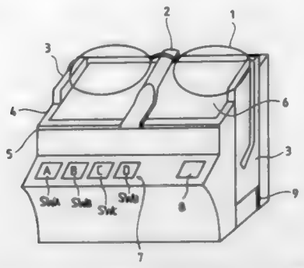
Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—124 **8 Claims**

1. A refractive characteristics measuring apparatus for measuring the refractive characteristics of a lens through the observation of the distribution of refractive power in a lens, said apparatus comprising:

selector switches including a pattern selector switch to be operated for selecting a geometrical test pattern to be used for the observation of the distribution of refractive power, among a plurality of geometrical test patterns;

a pattern generating means for generating data representing



a geometrical test pattern selected by operating the pattern selector switch and storing the same in a memory;

a display means for displaying the selected geometrical test pattern represented by the data generated by the pattern generating means; and

a support means for supporting the lens between the display means and an examiner for the observation of the distribution of refractive power in the lens.

5,307,142

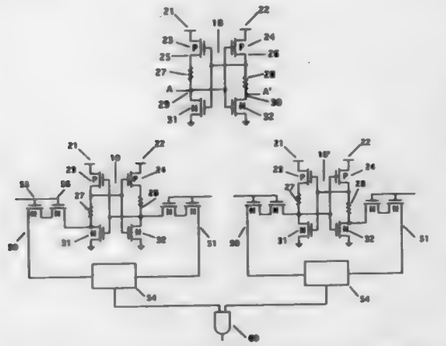
HIGH PERFORMANCE STATIC LATCHES WITH COMPLETE SINGLE EVENT UPSET IMMUNITY

Wayne T. Corbett, and Harry T. Weaver, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 15, 1991, Ser. No. 793,084

Int. Cl.[5] G11C *11/00, 29/00*

U.S. Cl. 365—156 **9 Claims**



1. A bi-stable asymmetric response latch, consisting essentially of:

(a) a first and a second inverter, each of said inverters having a p-channel transistor and a n-channel transistor, said inverters cross-coupled so that a source/drain of said n-channel transistor of said first inverter is cross-coupled to a gate of said p-channel transistor of said second inverter at a first coupling node, and a source/drain of said p-channel transistor of said second inverter is cross-coupled to a gate of said n-channel transistor of said first inverter at a second coupling node; wherein one of said inverters has a single hardened logic state and the other of said inverters has a soft logic state;

(b) a first voltage dividing means interposed between said p-channel source/drain of said first inverter and said first cross-coupling node wherein the logic state of said first inverter can only be changed by an ion strike when the voltage level at said first coupling node is low;

(c) a second voltage dividing means interposed between said second coupling node and a n-channel source/drain of said second inverter wherein the logic state of said second inverter can only be changed by an ion strike when the voltage level at said second coupling node is high.

5,307,143

METHOD AND CIRCUIT FOR TRANSMITTING A DIRECT CURRENT COMPONENT OF A COLOR SIGNAL

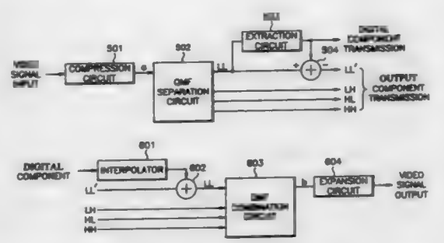
Hun-Seok Oh, Osan-City, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 17, 1991, Ser. No. 808,775

Claims priority, application Rep. of Korea, Jan. 11, 1991, 307-1991

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—458 **20 Claims**



1. A method of processing a color signal of a high definition television, said color signal being sampled vertically, horizontally and temporally, and a given band of said color signal being separated into a plurality of analog sub-bands, said method comprising the steps of:

extracting a digital direct current component signal from a first sub-band having vertical and horizontal low frequency components;

adding said digital direct current signal to said first sub-band to generate a digital differential signal;

transmitting digital signals of a second sub-band and said digital differential signal as output signals, and transmitting said output signals together with said digital direct current component signal, said second sub-band occupying all area of said given band except for an area occupied by said first sub-band;

receiving and interpolating said digital direct current component signal to produce an interpolated digital direct current component signal;

adding said interpolated digital direct current component signal to said digital differential signal to produce an added direct current signal; and

vertically and horizontally interpolating said added direct current signal and said digital signals of said second sub-band to produce a combined signal.

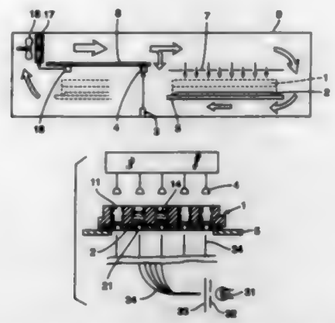
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5,307,144

PHOTOMETER

Tamura Hiroshi, and Tanaka Shigenori, both of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 984,535
Claims priority, application Japan, Dec. 2, 1991, 3-341787
Int. Cl.[5] G01N *21/27, 21/01*
U.S. Cl. 356—244 2 Claims



1. A photometer for transmitting monochromatic light with various wavelengths through test samples in a plurality of wells in a microplate for measuring the absorbance of the test samples,

characterized in comprising a metal plate with good heat conductivity disposed substantially in contact with the bottom surface of each well of said microplate, a board having a plurality of openings therein and disposed with an air space over said microplate at a starting position thereof, air circulation means for enforcedly circulating air, and heating means to heat the air wherein said microplate, said metal plate and said board are disposed in a chamber,

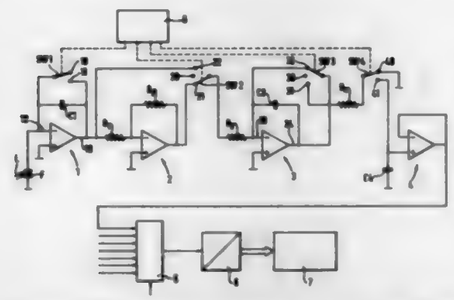
wherein air is blown onto the upper surface of said microplate by way of said board having openings and is circulate along said metal plate with good heat conductivity.

5,307,145

PROCESS AND APPARATUS FOR MEASURING SMALL QUANTITIES OF LIGHT

Paul Schenkel, Watt, and Beat Frick, Buchs, both of Switzerland, assignors to Gretag Imaging, AG, Altharstrasse, Switzerland

Filed Aug. 13, 1992, Ser. No. 928,729
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1991, 9181046U
Int. Cl.[5] G01J *1/44*
U.S. Cl. 356—215 18 Claims



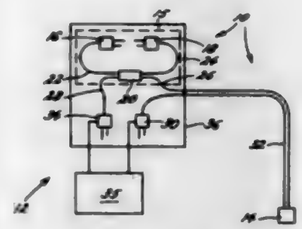
1. Process for the measurement of small quantities of light, whereby the light quantity to be measured is received and converted into an electrical signal that is integrated during a measuring interval into a measuring signal, comprising the steps of forming a first mean value signal in a first time segment of the measuring interval, said first mean value signal corresponding to a mean value of the measuring signal over said first time segment; forming a second mean value signal in a second time segment of a same duration as said first time segment of said measuring interval corresponding to a mean value of the measuring signal over said second time segment; forming a difference signal corresponding to a difference of said first and second mean value signals as a measure of a quantity of light; and passing this difference signal on to further signal processing.

5,307,146

DUAL-WAVELENGTH PHOTOMETER AND FIBER OPTIC SENSOR PROBE

Marc D. Porter, Ames, Iowa; Thomas P. Jones, Waukesha, Wis., and Shelley J. Coldiron, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 761,684, Sep. 18, 1991, abandoned. This application Oct. 16, 1992, Ser. No. 962,394
Int. Cl.[5] G01J *3/427*; G01N *21/31*
U.S. Cl. 356—320 34 Claims



1. A dual wavelength optical sensor for measuring chemical properties of a particular quantity comprising:

a sensor probe including a thin sensing film whose optical characteristics are responsive to the chemical properties of the quantity at at least two distinct wavelengths of light in such a way that when the responses to the at least two distinct wavelengths are combined, a self-calibrated measurement of the measured chemical properties is provided;

light source means for generating the at least two distinct wavelengths of light, and a single optical fiber for carrying the light from the light source means to the sensor probe;

sample detecting means receiving the light from the sensor probe after it has passed to and from the thin sensing film and producing light intensity readings for the at least two distinct wavelengths of light; and

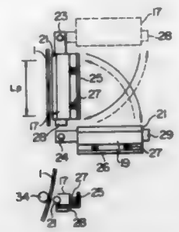
output means for combining the light intensity readings from the sample detecting means to produce the self-calibrated measurement which accounts for changes in the optical characteristics of the thin sensing film that otherwise contribute to instability in the sensor response.

5,307,147

ELECTROPHOTOGRAPHIC RECORDING APPARATUS HAVING A PLURALITY OF DEVELOPING DEVICES WHICH CAN BE CHANGED OVER

Takao Kumasaka; Yuzuru Simazaki; Kunio Satoh, all of Hitachi; Tomio Sugaya, Katsuta, and Youji Hirose, Mito, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 945,190
Claims priority, application Japan, Sep. 18, 1991, 3-265423
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 27 Claims



1. An electrophotographic recording apparatus having a plurality of developing devices which are movably supported in the electrophotographic recording apparatus, comprising:

a photosensitive member which moves at a predetermined speed;

an exposure device for exposing said photosensitive member;

a developing unit for developing an electrostatic latent image obtained by said exposure; and

a transferring device for transferring a developed visible image to a recording paper sheet or the like, wherein

said developing unit includes two developing devices, a plurality of supporting members for supporting said two developing devices and means for rotating said supporting members, and

said means for rotating said supporting members providing, for each developing device, a supporting point adjacent to a widthwise directional end of said photosensitive member and moving a developing device in a range from a state where the surface of said photosensitive member and the surface of a developing roller of said developing device run parallel to each other to a state where they are positioned substantially perpendicular to each other.

5,307,148

FLUORESCENCE DETECTION TYPE ELECTROPHORESIS APPARATUS

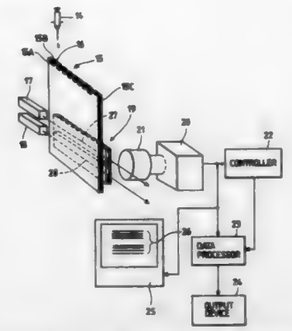
Hideki Kambara, Hachiouji; Keiichi Nagai, Higashiyamato; Tamotu Simada, Akishima; Tetsuo Nishikawa, Itabashi, and Tomoaki Sumitani, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 505,323, Apr. 5, 1990, abandoned. This application Apr. 12, 1991, Ser. No. 684,113
Claims priority, application Japan, Apr. 12, 1990, 2-95063
Int. Cl.[5] G01N *21/64*
U.S. Cl. 356—344 13 Claims

1. A multicolor fluorescence detection type electrophoresis apparatus, comprising in combination:

electrophoretic means having a plurality of migration lanes for which fragment groups specifically labeled with a plurality of fluorophores of different light emission peak wavelengths migrate electrophoretically in one direction,

exciting means for simultaneously irradiating a plurality of light beams of different wavelengths to a plurality of irradiation positions in the migration lane to excite the fluorophores, said exciting means simultaneously irradiating all of said plurality of migration lanes at said plurality of irradiation positions, said plurality of irradiation positions being spaced apart in the migration direction, the fragment groups being excited at each of said plurality of irradiation positions, and



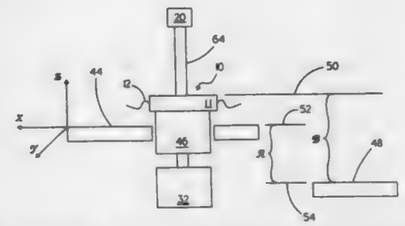
light detection means for identifying the detecting lights emitted from the fluorophores excited at the plurality of irradiation positions at each of said irradiation positions.

5,307,149

METHOD AND APPARATUS FOR ZERO FORCE PART PLACEMENT

Steven G. Palm, Minneapolis, Minn., and Elwin M. Beaty, 13529 Arthur St., Minnetonka, Minn. 55305, assignors to Elwin M. Beaty and Elaine E. Beaty, Minnetonka, Minn.

Filed Aug. 14, 1992, Ser. No. 929,939
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—375 16 Claims



1. A method for measuring the position of a part having a plurality of leads defining a seating plane and a body having a top, the method comprising the steps of:

(a) placing the body on a platform in an up position wherein the plurality of leads are suspended;

(b) probing the top of the body;

(c) measuring a first height of the top of the body;

(d) moving the platform to a down position until the part is seated on the plurality of leads on a reference plane;

(e) probing the top of the body for a second time; and

(f) measuring a second height of the top of the body in the down position.

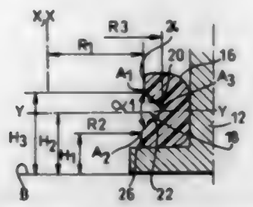
VOL 1161 ISS 4 AP 26 1994 UMI

5,307,150

APPARATUS FOR AUTOMATICALLY TAKING A READING OF THE SHAPE AND/OR THE PROFILE OF THE INNER CONTOUR OF A FRAME RIM OF GLASSES

Michel J. M. Lecerf, La Saussaye, and Jean-Pierre M. F. Langlois, Rouen, both of France, assignors to Buchmann Optical Engineering, Ypres, Belgium

Filed Jul. 20, 1992, Ser. No. 916,526
Claims priority, application France, Jul. 29, 1991, 91 09595
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—376 **10 Claims**



1. Apparatus for automatically taking readings of the shape and profile of the inner contour of a frame rim of glasses, said apparatus comprising in combination:

optical means for sensing image characteristic points of the inner contour of the frame rim;

means for analyzing the sensed images of said characteristic points for determining spatial coordinates of the characteristic points;

calculating means for reconstituting the shape and profile of the contour of said glasses frame rim from said spatial coordinates, wherein said frame rim lies in a general plane and said image-sensing means comprises at least one source of illumination of said inner contour of said frame rim and which produces a planar parallel beam of light extending in a direction substantially perpendicular to said general plane; and

optical recording means for recording rays of the incident beams reflected by said characteristic points, and wherein said frame rim has a profile having in section substantially the shape of a V having a median axis which extends in a direction substantially parallel to said general plane, said characteristic points comprising a series of three points corresponding to an inner end point of said V and to two points each pertaining to one of two branches of said V, the images of which points are sensed in succession for a series of cross-sections of said contour angularly distributed along said inner contour of said frame rim.

5,307,151

METHOD AND APPARATUS FOR THREE-DIMENSIONAL OPTICAL MEASUREMENT OF OBJECT SURFACES

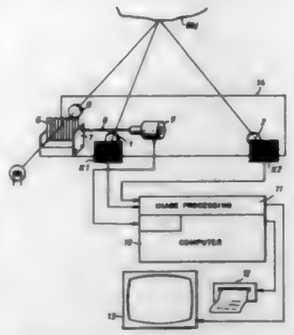
Albrecht Hof, Aalen, and Adalbert Hanssen, Koulgbronn, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Jul. 30, 1992, Ser. No. 923,105
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1991, 4130237
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—376 **27 Claims**

7. In apparatus for three-dimensional measurement of object surfaces including a grating projector for the projection of grating patterns on the object surface, at least a first and a second video camera for recording video images of said grating pattern projected on the object surface, and an analytical computer connected with the video cameras for computation of the topography of the object surface, the improvement comprising:

positioning said cameras and said projector being positioned relative to each other so that

the lens of said first camera is located at a predetermined distance from the lens of the projector, said predetermined distance being substantially smaller than the distance



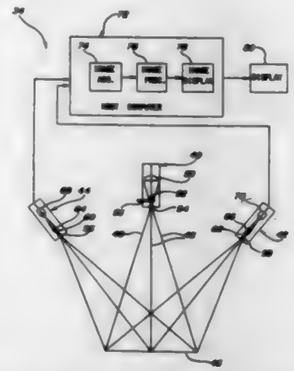
between the lens of said second camera and the lens of said projector.

5,307,152

MOIRE INSPECTION SYSTEM

Albert Boehnlein, Ypsilanti, and Kevin Harding, Ann Arbor, both of Mich., assignors to Industrial Technology Institute, Ann Arbor, Mich.

Filed Sep. 29, 1992, Ser. No. 954,761
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—376 **24 Claims**



1. A moire interferometry system for measuring the shape of a contoured surface, said system comprising:

a projection system including a light source and a master grating, said projection system projecting the lines of said grating onto said surface;

a viewing system including a means for recording individuals pixels of an image of said surface, and a submaster grating, said means for recording disposed so as to view said master grating lines on said surface through said submaster grating, the intersection of said projected lines of said surface and said lines on said submaster grating producing moire fringes;

means for introducing a phase shift in said moire fringes;

means for producing a phase map of said surface using a plurality of sets of said phase shifted moire fringes;

means for normalizing said phase map by subtracting a reference phase map from said phase map;

means for performing a derivative operation on said image and producing a derivative image; and

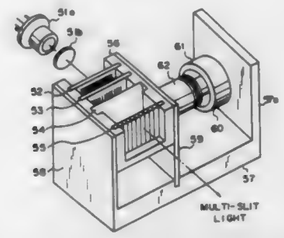
means for thresholding said derivative image, wherein pixels in said derivative image exceeding said threshold are identified as having the largest change in contour.

5,307,153

THREE-DIMENSIONAL MEASURING APPARATUS

Tsugito Maruyama, Machida; Shinji Kanda, Yokohama, and Jun Wakitani, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 717,905, Jun. 19, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 113,745
Claims priority, application Japan, Jun. 19, 1990, 2-158799; Jun. 26, 1990, 2-165560; Oct. 18, 1990, 2-277660
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—376 **7 Claims**



1. A three-dimensional measuring apparatus for measuring the distance from an observation point to a slit light irradiated point based on a triangulation by projecting multi-slit lights onto said object, composed of a multi-slit projector for projecting the multi-slit lights, said multi-slit projector comprising:

a light source for emitting parallel light;

first and second diffraction gratings for receiving said parallel light from said light source and for diffracting said parallel light in diffractive directions perpendicular to each other;

a cylindrical lens on which output light diffracted by said first and second diffraction gratings are incident and which produces a plurality of parallel slit lights dispersed in the diffractive direction of either one of said first and second diffraction gratings;

a shutter array for obstructing predetermined slit lights among the parallel slit lights from said cylindrical lens, to thereby form a code; and

an actuator for displacing, in order to increase the resolution of the three-dimensional measurement, a configuration including a combination of at least one of said first and second diffraction gratings, said cylindrical lens and said shutter array by a minute distance in the direction perpendicular to said parallel slit lights.

5,307,154

SEMICONDUCTOR CHIP POSITION DETECTOR

Junichi Naemura; Mamoru Okanishi, and Masao Yamazaki, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1991, Ser. No. 812,023
Claims priority, application Japan, Dec. 27, 1990, 2-408063
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—400 **10 Claims**

1. A semiconductor chip position detector comprising:

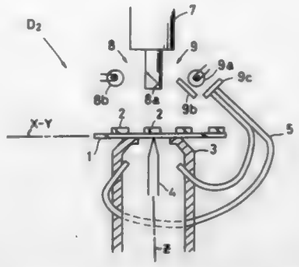
means for carrying a transparent film upon which semiconductor chips are placed;

a light source;

an optical fiber cable having one end connected to the light source and another end opened at a position on a second side of the transparent film so as to radiate a light beam from the optical fiber cable on the semiconductor chips through the transparent film; and

position recognition means provided on a first side of the transparent film for recognizing positions of the semiconductor chips based on shadow shapes thereof;

wherein the light source is positioned above the film carrying means and provided with two shutter means, one of



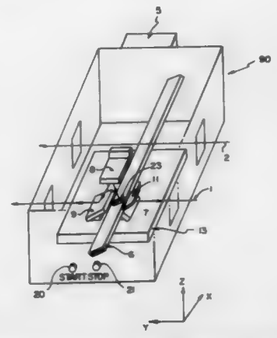
which is interposed between the light source and the optical fiber cable and another one of which is interposed between the light source and the film carrying means, thereby radiating a light beam above and below the semiconductor chip in selective fashion.

5,307,155

SAMPLE CHAMBER FOR A SPECTRO PHOTOMETER

Osamu Ando, and Katsumi Harada, both of Kyoto, Japan, assignors to Shimadzu Corp., Kyoto, Japan

Filed Jan. 31, 1992, Ser. No. 830,364
Claims priority, application Japan, Jan. 31, 1991, 3-010264
Int. Cl.[5] G01N *21/01*
U.S. Cl. 356—430 **9 Claims**



1. A spectro photometer with a sample chamber of a type having a measuring beam and a reference beam, comprising:

said measuring beam having a first initial direction and a first final direction;

said a reference beam having a second initial direction and a second final direction;

said second said initial direction being generally parallel with said first initial direction;

a sample guide adapted for guiding a long flat sample to be measured;

means for redirecting one of said measuring beam and said reference beam out of a respective one of said first and second initial direction;

said means for recdirecting including means for permitting said measuring beam to pass through said object without blocking said reference beam with said object;

said sample guide including means for passing light therethrough;

said means for passing light including an opening;

said measuring beam having a cross-sectional expanse;

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a first axis of said opening and a second axis of said cross-sectional expanse of said measuring beam being disposed in a common direction to minimize degradation of a signal to noise ratio; and

means for directing the redirected one of said measuring beam and said reference beam in a respective one of said first and second final direction.

5,307,156

TELEVISION SIGNAL CONVERTING APPARATUS

Toshinori Yamamoto, and Hisashi Ishikawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

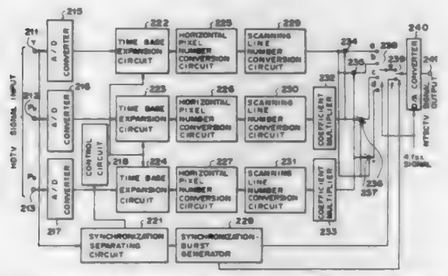
Continuation of Ser. No. 4,225, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 690,500, Apr. 24, 1991, abandoned.

This application Jul. 16, 1993, Ser. No. 92,763

Claims priority, application Japan, Apr. 26, 1990, 2-108910; Apr. 26, 1990, 2-108911

Int. Cl.[5] H04N *7/01*

U.S. Cl. 358—11 **38 Claims**



1. A television format converting apparatus for converting a first television signal of a first aspect ratio, which includes a luminance signal and first and second color difference signals, into a second television signal of a second aspect ratio, which includes a luminance signal component and color signal component, comprising:

a) analog-digital converter means for digitizing said first television signal and outputting a digitized first television signal;

b) luminance signal converting means for converting the digitized luminance signal contained in the digitized first television signal output from said analog-digital converter means into a luminance signal corresponding to said second television signal;

c) first color difference signal converter means for converting the digitized first color difference signal contained in the digitized first television signal output from said analog-digital converter means into a first color difference signal corresponding to said second television signal;

d) second color difference signal converter means for converting the digitized second color difference signal contained in the digitized first television signal output from said analog-digital converter means into a second color difference signal corresponding to said second television signal;

e) first adder means for adding the luminance signal output from said luminance signal converter means and the first color difference signal output from said first color difference signal converter means;

f) second adder means for adding the luminance signal output from said luminance signal converter means and the second color difference signal output from said second color difference signal converter means;

g) first subtractor means for subtracting the first color difference signal output from said first color difference signal converter means, from the luminance signal output from said luminance signal converter means;

h) second subtractor means for subtracting the second color difference signal output from said second color difference signal converter means from the luminance signal output from said luminance signal converter means; and

i) output switching means for outputting, in succession, the signal from said first adder means, that from said second adder means, that from said first subtractor means and that from said second subtractor means, in synchronization with a frequency of four times the color sub carrier frequency of said second television signal; and

j) digital-analog converter means for converting a signal output from said output switching means into an analog signal in synchronization with a frequency of four times the color sub carrier frequency of said second television signal.

5,307,157

DIGITAL VIDEO SIGNAL PROCESSING APPARATUS FOR DATA RATE DOWN-CONVERSION WITH HALF-B AND FILTERING AND MODULAR DESIGN

Nobuyoshi Kobayashi, Tokyo, and Hisanori Kominami, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 796,378, Nov. 22, 1991, abandoned.

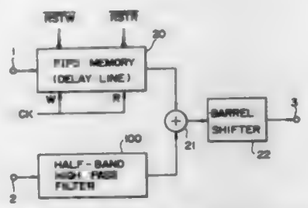
This application Feb. 23, 1993, Ser. No. 21,521

Claims priority, application Japan, Nov. 30, 1990, 2-338349

The portion of the term of this patent subsequent to Mar. 16, 2000, has been disclaimed.

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—708 **12 Claims**



1. A digital video signal processing apparatus receiving an input signal which has a predetermined data rate and is composed of a pair of multiplexed signals each of which includes a first video signal component and a second video signal component, said apparatus comprising:

a half-band high pass filter having a coefficient profile equivalent to that obtained by setting a center coefficient of a half-band low pass filter to zero, and which is connected to an input terminal for receiving one of said pair of multiplexed signals, said half-band high pass filter consisting of a single unitary circuit including one coefficient ROM, and a plurality of circuits each including two coefficient ROMs in which mutually different coefficients are stored;

delay means supplied with the other of said pair of multiplexed signals, for delaying said other signal by a predetermined delay time corresponding to a delay provided by said half-band high pass filter; and

addition means for adding the output of said half-band high pass filter to the output of said delay means and outputting a multiplexed signal which includes said first and second video signal components and which has a data rate that is lower than said data rate of said input signal.

5,307,158

VIDEO CAMERA

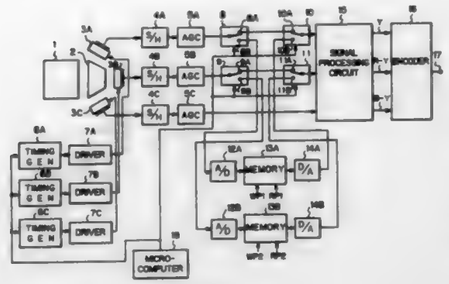
Masaaki Tsuruta; Ryuji Shiono, and Minoru Morio, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,655

Claims priority, application Japan, Mar. 31, 1992, 4-108815

Int. Cl.[5] H04N *9/04, 9/07*

U.S. Cl. 348—265 **5 Claims**



1. A video camera comprising:

a plurality of image pickup devices which can simultaneously receive an object image light;

timing setting means for setting an individual exposure timing for each of said plurality of image pickup devices;

a signal processing circuit to form a multiplexed exposure signal from output signals of said plurality of image pickup devices;

multiplex exposure photographing mode setting means for setting said individual exposure timings of said plurality of image pickup devices to be different from each other and for synchronizing said output signals of said plurality of image pickup devices with each other; and

a multiplexed exposure signal formed by synthesizing said output signals without interpolating said output signals.

5,307,159

COLOR IMAGE SENSING SYSTEM

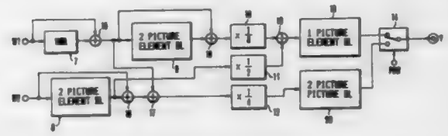
Teruo Hieda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 584,360, Sep. 18, 1990, abandoned. This application Aug. 17, 1993, Ser. No. 108,183

Claims priority, application Japan, Sep. 28, 1989, 01-250690

Int. Cl.[5] H04N *9/07, 9/04*

U.S. Cl. 348—235 **36 Claims**



1. An image sensing system comprising:

a) image sensing means having picture elements arranged in columns and rows;

b) color separation filter means including first color filters which allow a luminance component to pass and are arranged for every other picture element both in the directions of columns and rows and at least second color filters which are arranged for remaining picture elements in a predetermined repetitive pattern; and

c) luminance signal forming means for forming a luminance signal, said luminance signal forming means being arranged such that, in forming said luminance signal corresponding to a specific first one of picture elements which are provided with said first color filters, the luminance signal is formed by using at least signals of a plurality of picture elements located obliquely adjacent to said specific first picture element and a signal of said specific first picture element and, in forming said luminance signal corresponding to a specific second one of picture elements which are provided with said second color filters, the luminance signal is formed by using signals of a plurality of picture elements located adjacent to said specific second picture element in the vertical and horizontal directions.

5,307,160

APPARATUS FOR STILL IMAGE REPRODUCTION WHICH INCLUDES PLURAL IMAGE BUSSES

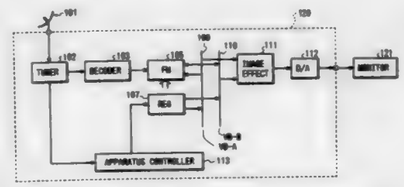
Masahiko Enari, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 548,834, Jul. 6, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,329

Claims priority, application Japan, Jul. 6, 1989, 1-174964

Int. Cl.[5] H04N *1/46, 1/41*

U.S. Cl. 358—500 **10 Claims**



1. An apparatus comprising:

receiving means for receiving compressed image data;

expansion means for expanding received compressed image data;

a memory for storing the image data for one frame expanded by said expansion means;

generation means for generating predetermined display image data;

first means for connecting said memory, a first image bus, and a second image bus; and

second means for connecting said generation means, said first image bus, and said second image bus;

wherein said generation means writes the predetermined display image data in said memory through said first image bus.

5,307,161

BIOLOGICAL SAMPLE OBSERVATION SYSTEM USING A SOLID STATE IMAGING DEVICE

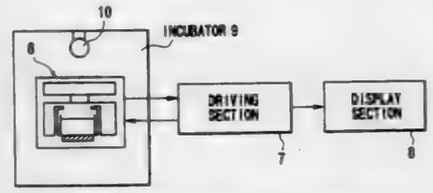
Shigeyuki Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 9, 1992, Ser. No. 866,008

Claims priority, application Japan, Apr. 12, 1991, 3-106471

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—79 **2 Claims**



1. A biological sample observation system comprising:

at least one biological sample observation apparatus including a solid-state area image sensor element, or converting

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an optical image of an observation target sample to image signals for electronically displaying said optical image,

a control chamber for housing said biological sample observation apparatus and controlling at least one of an internal temperature, humidity, and gas concentration,

a holding member for holding an observation target sample on an upper portion of a light-receiving portion of said solid-state area image sensor element, at a predetermined distance therefrom, without an optical lens system between the holding member and the image sensor element, said solid-state area image sensor element and said holding member being supported in a non-movable relationship with respect to each other;

driving means for driving said solid-state area image sensor element in said biological sample observation apparatus to perform a reading operation; and

display means for displaying an image of said observation target sample in accordance with an output signal from said solid-state area image sensor element.

5,307,162

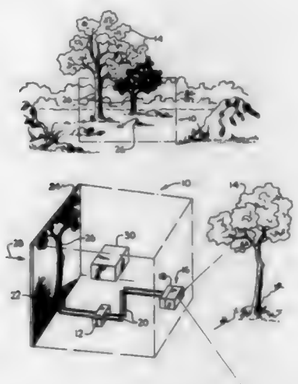
CLOAKING SYSTEM USING OPTOELECTRONICALLY CONTROLLED CAMOUFLAGE

Richard N. Schowengerdt, 3145 Kerry La., Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 682,945, Apr. 10, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 977,192

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—122 **10 Claims**



1. A system for concealing an object from view by an observer through use of a background scene and comprising:

means for sensing a background scene and for generating a video image signal therefrom;

means for creating a processed image of said background video image signal for display purposes; and

means for displaying an image represented by said processed image signal, the generated image being part of the sensed field of view, the object located between the means for sensing and the means for displaying, the object thereby being substantially camouflaged by the image displayed.

5,307,163

CODING APPARATUS

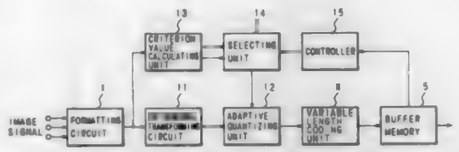
Yoshiko Hatano; Yoshinori Asamura, and Ken Onishi, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 631,796, Dec. 21, 1990, abandoned. This application Mar. 11, 1993, Ser. No. 31,031

Claims priority, application Japan, Dec. 25, 1989, 1-335487; Feb. 6, 1990, 2-26587; Apr. 18, 1990, 2-100354; Apr. 18, 1990, 2-100355; Jul. 4, 1990, 2-179121

Int. Cl.[5] H04N *7/12*

U.S. Cl. 348—415 **42 Claims**



1. A coding apparatus for reducing a digital image signal, comprising:

block formatting means for dividing said digital image signal into blocks of plurality of picture elements;

orthogonal transforming means for performing orthogonal transform on the formatted image signal;

quantizing means for quantizing coefficients obtained through the orthogonal transform with a quantization table;

means for dividing each block of the image signal outputted from said block formatting means into a plurality of sub-blocks and obtaining criterion values from the absolute value sum of difference of image signal level between adjacent picture elements in said each sub-block; and

deciding means for deciding the quantization table on the basis of said criterion values.

5,307,164

INTERPOLATION AND SCANNING LINE CONVERTING CIRCUIT

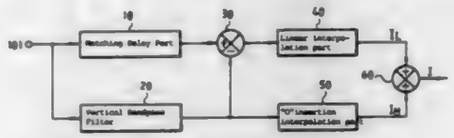
Song Dong-Il, Suwon-shi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 16, 1992, Ser. No. 821,584

Claims priority, application Rep. of Korea, Jan. 22, 1991, 91-1025

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—448 **34 Claims**



1. An interpolation circuit, comprising:

vertical bandpass filter means for extracting a vertical direction highpass signal from an input image signal;

matching delay means for delaying the input image signal for a delay period to provide a delayed image signal;

subtractor means for extracting a vertical direction lowpass signal by subtracting the vertical direction highpass signal from the delayed image signal;

linear interpolation means for generating a lowpass interpolation signal by linear-interpolating between horizontal lines of the vertical direction lowpass signal;

"0" insertion interpolation means for generating a highpass interpolation signal by inserting "0" between vertical lines of the vertical direction highpass signal; and

first adder means for generating an interpolation signal by adding the lowpass interpolation signal to the highpass interpolation signal.

5,307,165

TELEVISION SIGNAL KIND DISCRIMINATING APPARATUS

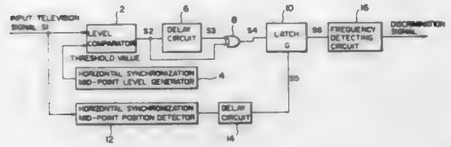
Hiroyuki Kawashima, Tokyo, and Yuji Okumura, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,342

Claims priority, application Japan, Mar. 17, 1992, 4-091681

Int. Cl.[5] H04N *5/46*

U.S. Cl. 348—441 **20 Claims**



1. A television signal kind discriminating apparatus for discriminating an input television signal between a first television signal wherein a horizontal synchronizing signal has a signal portion of a first polarity, another signal portion having a second polarity opposite to the first polarity, and a further signal portion having a level intermediate between the first and second polarities, and a second television signal wherein a horizontal synchronizing signal consists only of signals of the first polarity, comprising:

level comparison means for converting the input television signal into a binary signal using a value between the first and second polarity signal portions of the horizontal synchronizing signal of the first television signal as a threshold value;

delay means for delaying the binary signal outputted from said level comparison means by a predetermined time;

exclusive OR gate means for outputting an exclusive OR signal between the binary signal outputted from said level comparison means and the binary signal outputted from said delay means;

mid-point position detection means for detecting a temporal position of a mid point of the horizontal synchronizing signal of the input television signal; and

discriminating means for discriminating, based on the output of said exclusive OR gate means within the predetermined time after the temporal position of the mid point of the horizontal synchronizing signal detected by said mid-point position detecting means, which one of the first and second television signals the input television signal is.

5,307,166

AUTOMATIC IMAGE-TONE CONTROL CIRCUIT AND METHOD FOR CONTROLLING BRIGHTNESS OF IMAGE

Hideaki Sadamatsu, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 10, 1992, Ser. No. 973,917

Claims priority, application Japan, Jan. 14, 1992, 4-004603

Int. Cl.[5] H04N *5/14, 5/202*

U.S. Cl. 348—687 **13 Claims**

1. An automatic tone control circuit comprising:

a plurality of brightness frequency detection means for detecting respective frequencies of predetermined brightness ranges of luminance signals;

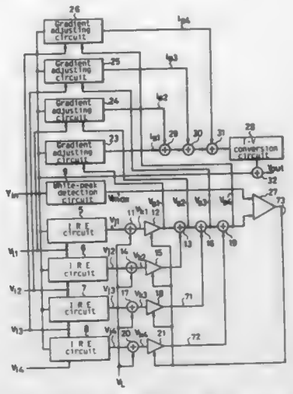
a plurality of first adding means for adding a predetermined signal to respective output signals of said brightness frequency detection means;

a plurality of amplifying means for amplifying respective output signals of said first adding means;

a plurality of second adding means for adding up output signals of said amplifying means in accordance with a predetermined order;

maximum voltage signal detection means for detecting a maximum voltage signal contained in said luminance signals;

feedback control means for controlling said amplifying



means to equalize a final adding-up output signal of said second adding means with said maximum voltage signal; and

a plurality of gradient adjusting means for adjusting respective gradients of input-output characteristic of the automatic tone control circuit at said every predetermined brightness ranges in response to plural output signals which are an output signal of first one of said amplifying means and respective output signals of said second adding means.

5,307,167

DIGITAL ZOOMING SYSTEM UTILIZING IMAGE BUFFERS AND EMPLOYING AN APPROXIMATED BILINEAR INTERPOLATION METHOD

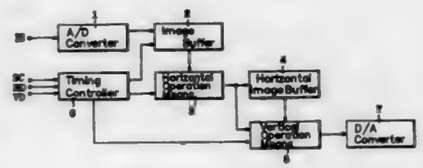
Sung-Wook Park, and Joon-Ki Paik, both of Buchon-shi, Rep. of Korea, assignors to SamSung Electronics Co, Ltd., Suwon, Rep. of Korea

Filed Mar. 16, 1992, Ser. No. 851,498

Claims priority, application Rep. of Korea, Jun. 21, 1991, 91-10353

Int. Cl.[5] H04N *3/223, 5/14*

U.S. Cl. 348—704 **24 Claims**



1. A zoom system utilizing image buffers and an approximated bilinear interpolation method, comprising:

first converter means for converting an analog image signal into a digital image signal;

image buffer means for storing said digital image signal on a field-by-field basis;

horizontal operation means for interpolating each field of said digital image signal stored in said image buffer means

individually in a horizontal direction to provide a horizontally interpolated image signal;
vertical operation means for interpolating each field of said horizontally interpolated image signal in a vertical direction to provide a vertically and horizontally interpolated image signal;
timing controller means for controlling said image buffer means, said horizontal and vertical operation means in dependence upon a selected zoom ratio; and
second converter means for converting said vertically and horizontally interpolated image signal into the analog image signal.

5,307,168

METHOD AND APPARATUS FOR SYNCHRONIZING TWO CAMERAS

Atsushi Tashiro, Washington Township, Bergen County, N.J., assignor to Sony ELectronics, Inc., Park Ridge, N.J.

Continuation of Ser. No. 677,657, Mar. 29, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,385
Int. Cl.[5] H04N *5/30, 5/225*
U.S. Cl. 348—64 **36 Claims**



1. Apparatus for synchronizing the imaging of a scene by first and second cameras having respective shutters wherein said shutters may exhibit different shutter release delays τ_1 and τ_2, respectively, from the time that trigger signals are supplied to the respective cameras until the shutters arrive at their respective fully open positions, said apparatus comprising:
release means operable to initiate triggering of the shutters in said first and second cameras;
drive signal generating means for initiating a drive signal at a time t_d synchronized with the arrival of a storage medium of at least one of the cameras at a reference position for recording an image of the scene on said storage medium;
first and second trigger means synchronized in accordance with said drive signal for producing first and second trigger signals to release the shutters of said first and second cameras, respectively, such that the shutters arrive at their fully open positions at times t_x and t_y following said first and second trigger signals, respectively; and
delay means for delaying one of said trigger signals with respect to the other by a delay amount ΔT substantially equal to the difference in the shutter release delays of said cameras $\Delta T=\tau_1-\tau_2$ so that the shutters of said first and second cameras arrive at their fully open positions at substantially the same time t, where $t=t_d+\tau_1=t_d+\Delta T+\tau_2$.

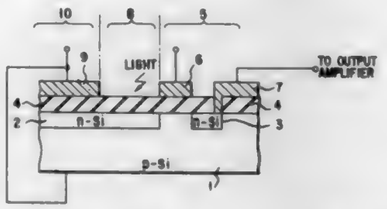
5,307,169

SOLID-STATE IMAGING DEVICE USING HIGH RELATIVE DIELECTRIC CONSTANT MATERIAL AS INSULATING FILM

Tatsuo Nagasaki, Yokohama; Takeshi Mori, Tokyo, and Hideo Adachi, Iruma, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,855
Claims priority, application Japan, May 7, 1991, 3-101579; Oct. 25, 1991, 3-279661
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—307 **26 Claims**

1. A solid-state imaging device comprising:
a semiconductor substrate;
a plurality of pixels formed on said semiconductor substrate and generating pixel signals; and
output amplifier means for amplifying a pixel signal generated in each of said pixels to produce an imaging signal, and for outputting said imaging signal;
said pixels each including:
(a) a photoelectric converting portion for generating a charge in accordance with an amount of received light, said photoelectric converting portion comprising:
said semiconductor substrate;
an n-type source region formed on said substrate; and an insulating film formed on an upper surface of said source region, said insulating film being made of a high dielectric material having a high relative dielectric constant;
(b) a capacitor for storing the charge generated from said photoelectric converting portion, said capacitor comprising;
a storing region formed on at least one region of a part of said photoelectric converting portion or on adjacent portions of said photoelectric converting portion;



a capacitor insulating film formed on an upper surface of said storing region, said capacitor insulating film being made of a high dielectric material having a high relative dielectric constant; and
a capacitor electrode contacting said capacitor insulating film; and
(c) a switching portion or reading out the charge stored in said capacitor as said pixel signal, said switching portion comprising:
said semiconductor substrate;
a further insulating film formed on an upper surface of said substrate and made of a high dielectric constant material having a high relative dielectric constant; and
a switching electrode formed on said further insulating film and having two electrodes, for reading out a charge stored in said capacitor as said pixel signal;
wherein said high relative dielectric constant of all of said insulating films is substantially higher than the relative dielectric constant of SiO_2.

5,307,170

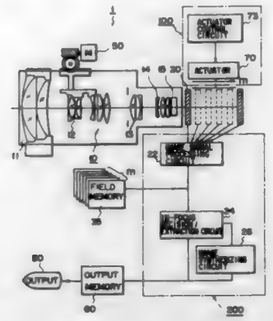
VIDEO CAMERA HAVING A VIBRATING IMAGE-PROCESSING OPERATION

Kazuhiro Itsumi, Yokohama; Mamoru Izumi, and Mutsumi Watanabe, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1991, Ser. No. 784,586
Claims priority, application Japan, Oct. 29, 1990, 2-292574; Sep. 27, 1991, 3-249476
Int. Cl.[5] H04N *5/232*
U.S. Cl. 348—219 **4 Claims**

1. A video camera comprising:
an image pickup element for receiving optical information of an object to be photographed after the optical information passes through a lens system, and performing an image pickup operation;
vibration generating means, coupled to said image pickup element, for applying a vibration to said image pickup element with a predetermined stroke (amplitude) in the direction of the optical axis;
sampling means for extracting image signals at predetermined time intervals from a plurality of image signals of

different focal positions obtained from said image pickup element at a plurality of arbitrary positions within the stroke;
image memory means for time-serially storing sampling images acquired from said image pickup element; and



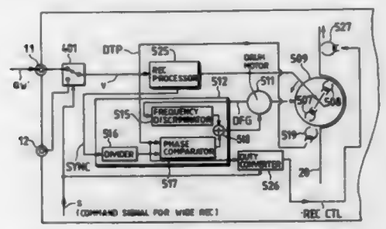
in-focus decision extracting means for extracting a high-frequency component from an image signal of the sampling image, detecting a focal point evaluation value for evaluating a degree of focusing upon integrating processing, comparing the focal point evaluation values of the plurality of images, and selecting a sampling image having a largest focusing precision value.

5,307,171

VIDEO TAPE RECORDER/PLAYER

Nobuo Azuma, Yokohama; Yoshizumi Watatani, Fujisawa; Atsushi Yoshioka, Ebina; Shuichi Matsuo, Tokyo, and Tadasu Otsubo, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1990, Ser. No. 556,578
Claims priority, application Japan, Jul. 24, 1989, 1-188953; Sep. 8, 1989, 1-231627
Int. Cl.[5] H04N *5/78, 5/783*
U.S. Cl. 358—335 **16 Claims**



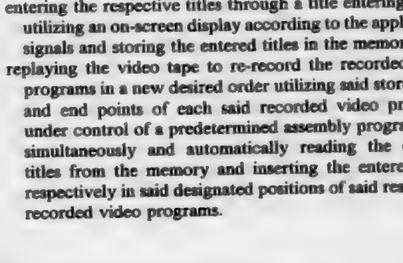
5. A video tape recorder comprising:
a magnetic recording circuit capable of operating in a first recording mode for recording a first video signal for forming a picture of a first aspect ratio in a first frequency band on a magnetic tape or in a second recording mode for recording the first video signal in a second frequency band wider than the first frequency band on the magnetic tape, wherein the first video signal includes a horizontal synchronizing signal having a predetermined frequency;
a recording mode setting circuit for causing the magnetic recording circuit to operate in the second recording mode for recording a second video signal for forming a picture of a second aspect ratio different from the first aspect ratio on the magnetic tape, wherein the second video signal includes a horizontal synchronizing signal having the predetermined frequency; and
an identification signal recording circuit for recording a first identification signal on the magnetic tape when the video signal to be recorded is the first video signal and for recording a second identification signal on the magnetic tape when the video signal to be recorded is the second video signal, together with the video signal to be recorded.

5,307,172

METHOD AND APPARATUS FOR AUTOMATICALLY INSERTING TITLES FOR VIDEO PROGRAMS ON VIDEO TAPE

Young G. Oh, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 24, 1991, Ser. No. 718,355
Int. Cl.[5] H04N *5/782*
U.S. Cl. 358—335 **8 Claims**



1. A method for automatically inserting titles in a plurality of video programs recorded on a video tape for a video cassette recorder (VCR), said VCR including a timer microprocessor, a system control unit connected to said timer microprocessor, a VCR mechanism connected to said system control unit and the timer microprocessor, said VCR mechanism generating one of capstan frequency signals and reel pulses, a VCR servo system connected to said system control unit for controlling said VCR mechanism, a memory connected to the timer microprocessor, and a key input unit for applying the key signals to said timer microprocessor, said timer microprocessor continuously receiving and counting one of said capstan frequency signals and said reel pulses as counted values to reference desired points in the recorded video programs, said system control unit communicating with said timer microprocessor by transmitting signals and producing control signals to control the VCR servo system and the VCR mechanism, the method comprising the steps of:
playing the video tape to play back the plurality of video programs recorded on the video tape according to an original recording order;
assigning start and end points of the respective recorded video programs according to the counted values from the timer microprocessor and to the key signals applied to the timer microprocessor from the key input unit during the playback;
designating positions in said recorded video programs where respective titles are to be inserted and storing the designated positions in the memory;
entering the respective titles through a title entering means utilizing an on-screen display according to the applied key signals and storing the entered titles in the memory; and
replaying the video tape to re-record the recorded video programs in a new desired order utilizing said stored start and end points of each said recorded video programs under control of a predetermined assembly program, and simultaneously and automatically reading the entered titles from the memory and inserting the entered titles respectively in said designated positions of said respective recorded video programs.

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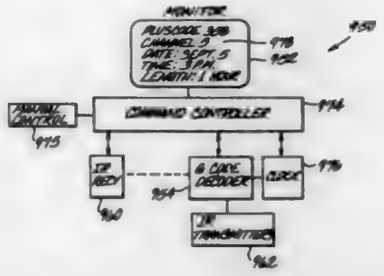
APPARATUS AND METHOD USING COMPRESSED CODES FOR TELEVISION PROGRAM RECORD SCHEDULING

Henry C. Yuen, Redondo Beach, and Daniel S. Kwoh, Rolling Hills Estates, both of Calif., assignors to Gemstar Development Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 767,323, Sep. 30, 1991, which is a continuation-in-part of Ser. No. 676,934, Mar. 27, 1991, which is a continuation-in-part of Ser. No. 371,054, Jun. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,369, Dec. 23, 1988, abandoned. This application Feb. 3, 1992, Ser. No. 829,412

Int. Cl.[5] H04N 5/76

U.S. Cl. 358—335 118 Claims



1. An apparatus for using compressed codes for recorder preprogramming that comprises:

a television receiver;

means for entering into said television receiver compressed codes each having at least one digit and each representative of, and compressed in length from, the combination of channel, time-of-day, date and length commands for a programs;

said television receiver comprising:

means for decoding each compressed code into the combination of channel, date, time-of-day and length commands,

means for storing said combination of channel, date, time-of-day and length commands,

a clock with an output as a function of time,

means for reordering said combinations of channel, time-of-day, date and length commands in said means for storing into temporal order, and

means for comparing the date and time-of-day commands of the temporally earliest in time combination in said means for storing to the output of the clock for a predetermined relation;

means for recording;

means for transmitting record on commands to said means for recording after the predetermined relation is found to exist according to the date and time-of-day commands of said temporally earliest in time combination, wherein said means for transmitting is compounded to said television receiver;

means for channel selection;

wherein said means for transmitting transmit channel select commands to said means for channel selection after the predetermined relation is found to exist according to the channel command of said temporally earliest in time combination wherein said means for transmitting is coupled to said television receiver; and

wherein said means for transmitting transmit record off commands to said means for recording following an elapsed time interval corresponding to the length command of said temporally earliest in time combination.

5,307,174

HIGH EFFICIENCY FACSIMILE TRANSMISSION APPARATUS

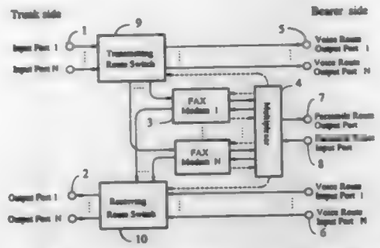
Kazuo Saito, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 813,643

Claims priority, application Japan, Jan. 11, 1991, 3-002143

Int. Cl.[5] H04N 1/00

U.S. Cl. 358—400 3 Claims



1. A high efficiency facsimile transmission apparatus for a digital public telephone circuit which includes a facsimile and voice signal capability comprising:

a transmitting route switch for switching an input signal received at the trunk side input port for transmission as facsimile signals and voice signals, said input signals being continuously connected to be sent to facsimile modems, and said voice signals being connected to be transmitted directly to a bearer side voice route output port;

a plurality of facsimile modems equal in number to the number of trunk side input channels for demodulating and discriminating said facsimile signals received from said transmitting route switch and modulating the signals received from a bearer side;

a multiplexer connected to said facsimile modems for multiplexing a plurality of demodulated facsimile signals and transmitting them directly to the bearer side facsimile route output port, for controlling said transmitting route switch responsive to the discrimination by said facsimile modems and for preventing transmission of said voice signal when switched to the facsimile route line, for setting up a clear channel on a bearer side facsimile route on the basis of 64 kbit/s on-demand clear channel setting function of CCITT Recommendation Q.50 signalling system, for transmitting a control signal to the facsimile route output port, and for receiving a control signal from the remote side multiplexer and for deriving the multiplexed facsimile signal and sending it to the modem which is assigned by the multiplexer to respond; and

a receiving route switch for switching the signals received from said facsimile modems and the input voice signal received from the bearer route, and for sending said switched signal to the trunk side output port.

5,307,175

OPTICAL IMAGE DEFOCUS CORRECTION

Ned J. Seachman, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 27, 1992, Ser. No. 858,828

Int. Cl.[5] H04N 3/08

U.S. Cl. 358—401 18 Claims

1. Image scanning apparatus comprising:

an image support;

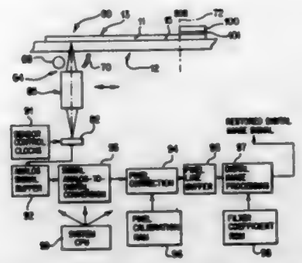
a scanner for scanning an image on the image support, said scanner comprising an optical element for receiving optical image data from an image on the image support and a photoreceptor for receiving optical image data from the optical element and converting the optical data to an electrical data signal;

restoring means for providing a plurality of sets of image restoration data, each set of image restoration data representative of a different one of a plurality of defocus states of the optical element throughout an expected range of focal errors;

determining means for determining at least one defocus state of the scanner;

selecting means for selecting at least one of the sets of image restoration data provided by the restoring means based on the at least one defocus state determined by the determining means;

signal processing means for receiving the electrical data signal from the photoreceptor and the image restoration data from the selecting means and modifying the electrical data signal in accordance with the image restoration data received from the selecting means.



5,307,176

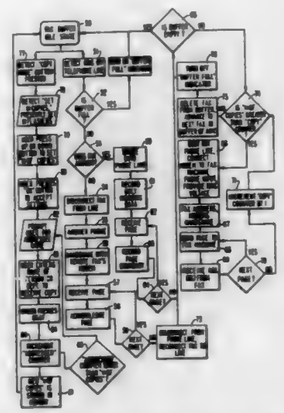
SYSTEM FOR STORING AND RETRIEVING DUPLICATE FASCIMILE INFORMATION

Mark Dweck, 20 Old Colony La., Great Neck, N.Y. 12020, and David Lerner, New York, N.Y., assignors to Mark Dweck, Great Neck, N.Y.

Continuation of Ser. No. 627,012, Dec. 13, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 983,891

Int. Cl.[5] A04N 1/00

U.S. Cl. 358—403 8 Claims



1. A system for producing multiple paper copies of a facsimile message received while said system is unattended at a facsimile location, said system comprising a modular facsimile data storage and retrieval unit adapted to be connected between an external phone line and a facsimile machine, wherein said facsimile data storage and retrieval unit comprises means to store received facsimile signals, said modular facsimile data storage and retrieval unit further comprising means for manually setting at said facsimile location a set number of copies an operator desires to make of received facsimile signals, means responsive to both said means for manually setting and to the reception of facsimile signals to produce said set number of copies of received facsimile signals, and means to cause the automatic unattended printing of said set number of copies of the same received facsimile signals to produce said set number of facsimile paper copies of the same facsimile message, whereby facsimile messages received while said system is unattended are produced in multiple copies and made available for distribution when one retrieves the facsimile messages which were received during the period when the facsimile machine operator unattended to receive messages.

5,307,177

HIGH-EFFICIENCY CODING APPARATUS FOR COMPRESSING A DIGITAL VIDEO SIGNAL WHILE CONTROLLING THE CODING BIT RATE OF THE COMPRESSED DIGITAL DATA SO AS TO KEEP IT CONSTANT

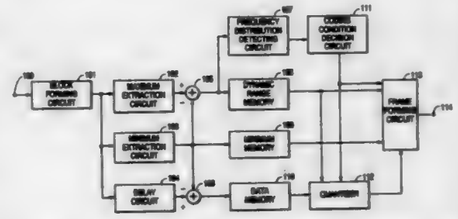
Hideaki Shibata, Osaka, and Tatsushi Bannai, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 19, 1991, Ser. No. 794,218

Claims priority, application Japan, Nov. 20, 1990, 2-317206

Int. Cl.[5] H04N 1/417, 1/415, 7/12

U.S. Cl. 358—430 2 Claims



1. An apparatus for high-efficiency coding of a digital video image, comprising:

a means for dividing a digital video signal into a plurality of blocks each composed of a plurality of pixel values;

a means for extracting a minimum value and a maximum value of the pixel values in each of the plurality of blocks;

a means for subtracting the minimum value from each of the pixel values in each block to obtain difference values;

a means for calculating a dynamic range of each block from the maximum and minimum values;

a first memory means for storing the difference values of each block;

a second memory means for storing the dynamic range of each block;

a third memory means for storing the minimum value of each block;

a means for detecting a frequency distribution of dynamic ranges of the plurality of blocks;

a means having N kinds of first characteristic tables each having as a parameter a decoded image quality visually observed which are equal in loss of picture quality and showing a relationship between the dynamic range and distortion caused by encoding, and a second characteristic table having a quantization width as a parameter and showing a relationship between the dynamic range and distortion caused by encoding;

a means for calculating a total amount of coded data from the detected frequency distribution of dynamic ranges and quantization widths determined by a combination of each of the N kinds of first characteristic tables and the second characteristic table to obtain N kinds of total amount values corresponding to the N kinds of characteristic tables, respectively, and for comparing each of the N

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kinds of total amount values with a predetermined value, and for selecting one of the N kinds of total amount values which is smaller than the predetermined value and closest to the predetermined value, and outputting a table number indicating one of the N kinds of first characteristic tables which gives the selected total amount value;

a means for encoding the difference values of each block stored in the first memory means by using the dynamic range stored in the second memory and the quantization widths determined by a combination of the selected first characteristic table indicated by the table number and the second characteristic table to obtain coded data; and

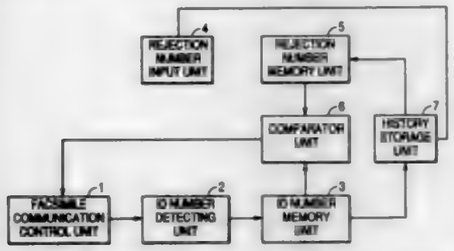
a means for outputting the minimum value stored in the third memory, the dynamic range stored in the second memory and the coded data together with the table number.

5,307,178

FACSIMILE TERMINAL EQUIPMENT

Noboru Yoneda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 13, 1990, Ser. No. 626,765
Claims priority, application Japan, Dec. 18, 1989, 1-326069
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—440 **3 Claims**



1. Facsimile terminal equipment, comprising:

facsimile communication control means for controlling facsimile communication;

ID number detecting means for detecting a first ID number of a transmitting facsimile terminal from a received signal;

ID number memory means for storing first data including the first ID number;

history storage means for storing previously received ID numbers;

rejection number input means for selecting and inputting a second ID number to be rejected from the previously received ID numbers stored in said history storage means;

rejection number memory means for storing second data including the second ID number selected by said rejection number input means; and

comparator means for permitting said facsimile communication control means to transmit a disconnect command to said transmitting facsimile terminal when the first data stored in said ID number memory means is included in the second data stored in said rejection number memory means.

5,307,179

FACSIMILE APPARATUS, AND METHOD OF COMMUNICATION

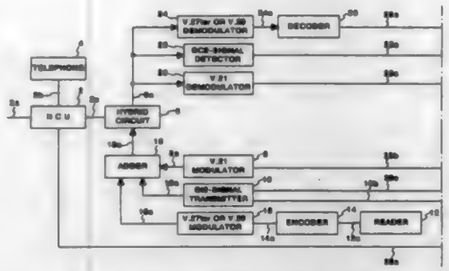
Takehiro Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,090
Claims priority, application Japan, Oct. 15, 1990, 2-273242
Int. Cl.[5] G06F *3/14*
U.S. Cl. 358—440 **5 Claims**

1. A facsimile apparatus having a plurality of communication modes, in which reception from parties other than specific parties can be refused, comprising:

setting means for setting whether reception from a party other than a specific party is to be refused;

discriminating means for discriminating the communication mode of the communicating party by exchanging selected initial identification signals, which are for identifying individual communication modes, with the communicating party, wherein said discriminating means selects an initial identification signal in accordance with the setting of said setting means; and



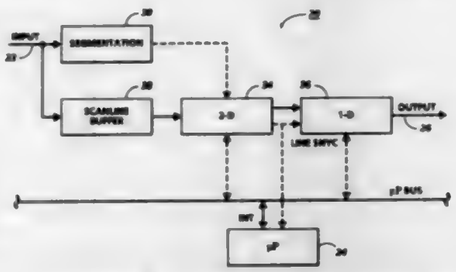
control means for controlling communication based upon results of discrimination performed by said discriminating means.

5,307,180

METHOD AND APPARATUS FOR CONTROLLING THE PROCESSING OF DIGITAL IMAGE SIGNALS

Leon C. Williams, Walworth; Francis K. Tse, Rochester, and Robert F. Buchheit, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1991, Ser. No. 809,807
Int. Cl.[5] H04N *1/40, 1/387*; G06K *9/36*
U.S. Cl. 358—448 **21 Claims**



1. An apparatus for processing video input signals of an image to produce modified video signals, comprising:

means for identifying each video signal in a non-overlapping tile region within the image, including

memory having a plurality of contiguous dimension storage locations suitable for storage of a dimensional value therein, and a plurality of associated pointer storage locations, each pointer storage location being suitable for the storage of a pointer value uniquely associated with one of said dimension storage locations,

first indexing means for identifying, within said memory, the dimension storage location containing a length of the tile region,

second indexing means for identifying, within said memory, the dimension storage location containing a height of the tile region, and

control means for regulating the advancement of said first and second indexing means as a function of the position of the video signal within the image;

means for designating at least one image processing operation to be applied to each video input signal within the boundaries of the non-overlapping tile region; and

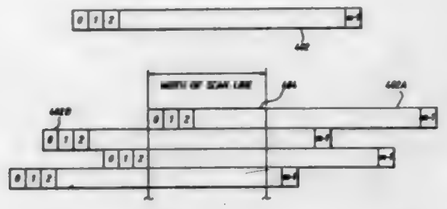
image processing means, responsive to the designating means, for processing each video input signal in accordance with the designated image processing operation to produce the modified video signals.

5,307,181

SCREEN GENERATION FOR HALFTONE SCREENING OF IMAGES USING SCAN LINE SEGMENTS OF OVERSIZED SCREEN SCAN LINES

Raphael L. Levien, P.O. Box 31, McDowell, Va. 24458

Continuation-in-part of Ser. No. 753,893, Sep. 3, 1991. This application Sep. 27, 1991, Ser. No. 768,135
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **26 Claims**



1. A method for generating a halftone screened image from an halftone screen original image, said method comprising:

storing an oversized strip, said oversized strip representing a portion of an ideal angled screen pattern having a width greater than the width of said original image;

selecting scan line segments of said oversized strip, the length of each of said selected scan line segments being substantially equal to said width of said original image;

assembling said selected scan line segments of said oversized strip in a sequence of scan lines forming a generated screen pattern; and

screening said original image with said generated screen pattern to form said halftone screened image.

5,307,182

METHODS AND APPARATUS FOR MULTIGENERATION COLOR IMAGE PROCESSING

Martin S. Maltz, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

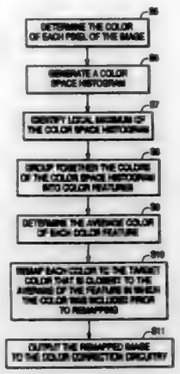
Filed Dec. 30, 1991, Ser. No. 814,170
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—518 **27 Claims**

1. An image processing method, the method performed by a data processing system having a memory, and comprising the steps of:

(a) grouping colors of a multi-pixel image stored in the memory and having a color composition into sets of colors;

(b) determining the average color of each set of colors;

(c) selecting a target color, for each set of colors, from a plurality of predetermined target colors, the selected target color being the predetermined target color that is closest to the average color of the set; and



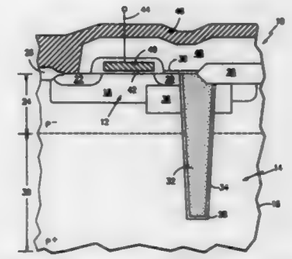
(d) remapping the color of each pixel of the image stored in the memory to the target color selected for the set including the pixel.

5,307,183

APPARATUS AND METHOD FOR FABRICATING A CURVED GRATING IN A SURFACE EMITTING DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER DIODE DEVICE

Steven H. Macomber, Bethel, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 12, 1992, Ser. No. 975,303
Int. Cl.[5] G02B *5/32, 27/44*; G03H *1/04*; H01S *3/08*
U.S. Cl. 359—11 **24 Claims**



19. A method for fabricating a curved grating in a material surface, said method comprising the steps of:

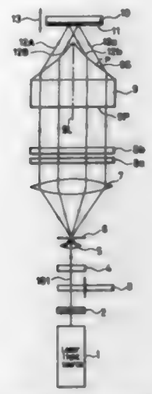
irradiating a first area of a hypotenuse face of a right angle prism with a planar wavefront;

irradiating a second area of said hypotenuse face of a right angle prism with a multiple cylindrical wavefront; and

optically contacting said material surface to an adjacent face of said right angle prism, such that a curved grating pattern is formed from a destructive interference between said planar wavefront and said multiple cylindrical wavefront and projected onto said material surface.

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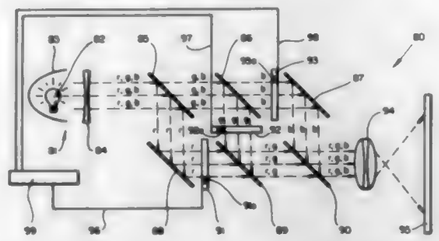
5,307,184
EXPOSURE APPARATUS
Seiji Nishiwaki, Osaka; Junichi Asada, Ibaraki, and Shinji Uchida, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 846,807, Mar. 5, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 47,349
Claims priority, application Japan, Mar. 13, 1991, 3-047878
Int. Cl.[5] G03H *1/04*; G02B *27/42*
U.S. Cl. 359—30 14 Claims



1. An exposure apparatus comprising:
a laser light source for generating laser light having an optical axis,
a refractive body for letting said laser light transmit therethrough and refract, the refractive body having a refracting surface,
a photosensitive film formed on a flat plane which is substantially perpendicular to the optical axis of said laser light,
wherein the refracting surface of said refractive body is a surface of revolution having the optical axis as its axis of revolution and a curved generatrix, and
wherein light flux refracted at respective paired diagonal generatrices of said refracting surface intersect with each other in the vicinity of the optical axis to thereby interfere to form a fringe pattern having concentric circular periodic bright and dark parts to which said photosensitive film is exposed.

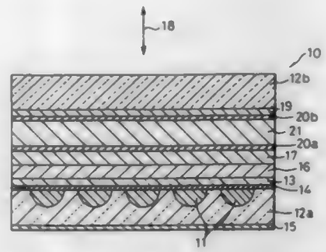
5,307,185
LIQUID CRYSTAL PROJECTION DISPLAY WITH COMPLEMENTARY COLOR DYE ADDED TO LONGEST WAVELENGTH IMAGING ELEMENT
Philip J. Jones, Menlo Park; Wayne Montoya, Newark; Hundi P. Kamath, Los Altos, and Akira Tomita, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed May 19, 1992, Ser. No. 886,003
Int. Cl.[5] G02F *1/1333*; H04N *9/31*
U.S. Cl. 359—41 11 Claims

1. A liquid crystal projection display, comprising
(a) light source means for producing light of at least two different primary colors;
(b) an image forming means corresponding to each primary color light produced by the light source means, each image forming means comprising plural pixel elements, each pixel element comprising liquid crystal composition dispersed in plural volumes in a containment medium and being independently addressable to primarily scatter light incident thereon in the absence of a sufficient electric field and to primarily transmit light incident thereon in the presence of a sufficient electric field; and
(c) lens means for projecting light transmitted by each image forming means onto a screen;
the liquid crystal composition in the pixel elements of the image forming means corresponding to the primary color light of longest wavelength including a pleochroic dye of a color



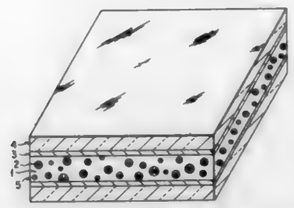
complementary to the primary color light of longest wavelength, which pleochroic dye preferentially absorbs incident light which has not been scattered by the liquid crystal material in the absence of the sufficient electric field and transmits incident light in the presence of the sufficient electric field.

5,307,186
LIQUID CRYSTAL LIGHT VALVE HAVING CAPABILITY OF PROVIDING HIGH-CONTRAST IMAGE
Yoshihiro Izumi, Kashihara; Tsuyoshi Okazaki; Hidehiko Yamashita, both of Tenri, and Akitsugu Hatano, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 31, 1992, Ser. No. 922,607
Claims priority, application Japan, Aug. 9, 1991, 3-200550; Dec. 27, 1991, 3-347205
Int. Cl.[5] G02F *1/1335*, *1/135*
U.S. Cl. 359—42 15 Claims



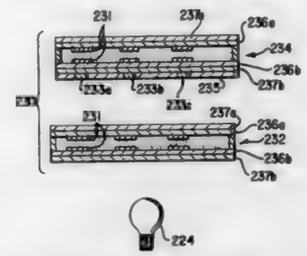
1. A liquid crystal light valve for forming an image according to data signals applied exterior thereof, comprising
a first substrate having a first transparent electrode formed thereon;
a second substrate having a plurality of second transparent electrodes formed thereon in a striped manner and extending along one direction, said data signals being applied to said second electrodes;
a liquid crystal provided between said first and second substrates;
a photoconductive layer formed between said liquid crystal layer and said first substrate, said photoconductive layer being adapted to change impedance thereof in response to an incident ray of light thereto; and
a plurality of light waveguides disposed in a first substrate side with respect to said liquid crystal for emitting scanning light signals to said photoconductive layer, said light waveguides being formed in a striped manner and extending along another direction intersecting said one direction.

5,307,187
LIQUID CRYSTAL ELEMENT WITH HIGHER RESISTIVITY IN THE ENCAPSULATION MEDIUM THAN IN THE LIQUID CRYSTAL
Kazuyuki Sunohara, Yokohama; Koichiro Shirota, Kawasaki, and Kenji Sano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 26, 1992, Ser. No. 904,680
Claims priority, application Japan, Jun. 28, 1991, 3-158462
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—51 11 Claims



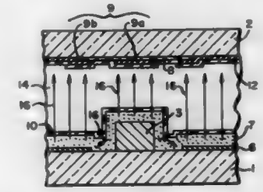
1. A liquid crystal display element, comprising a pair of substrates and a film held between the substrates, said film being prepared by dispersing liquid crystal material in a polymer matrix material having a resistivity of not greater than $10^{10}\Omega$-cm, and a ratio ρ_{LC}/ρ_p, in which ρ_{LC} denotes a resistivity (Ω-cm) of the liquid crystal material and ρ_p represents a resistivity (Ω-cm) of the polymer matrix material, falling within a range of between 1 and 10^5, ($1 \leqq \rho_{LC}/\rho_p \leqq 10^5$).

5,307,188
COLOR LIQUID CRYSTAL DISPLAY WITH DEAD FRONT APPEARANCE HAVING OPAQUE MASK FORMED ON THE PRIMARY DISPLAY
Richard B. Dingwall, Rochester; Lowell W. Knapp, Victor; John H. Steele, Spencerport; James S. Celebi, Holcomb, and Virgil J. Hull, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 755,967, Sep. 6, 1991, Pat. No. 5,220,442.
This application Feb. 2, 1993, Ser. No. 12,491
Int. Cl.[5] G02F *1/133*, *1/137*
U.S. Cl. 359—53 17 Claims



1. A liquid crystal display unit comprising:
a primary liquid crystal display including one or more light shutters and a pair of polarizers arranged on each side of said one or more light shutters, each light shutter including a liquid crystal material disposed between two opposed electrodes.
a secondary liquid crystal display having an identical structure and identical materials as those of said primary liquid crystal display, said secondary liquid crystal display having a quality of optical characteristics being less than that of said primary liquid crystal;
said primary and secondary liquid crystal displays being superposed on each other so that the light shutters of said primary and secondary liquid crystal displays are in series;
each light shutter of said primary liquid crystal display having a color patch located thereon;
an opaque mask also located on said primary liquid crystal display in all areas between light shutters, and partially overlapping each light shutter so as to define an image pattern to be projected through each light shutter; and
a light source located adjacent to said secondary liquid crystal display for emitting light through the light shutters of the secondary and primary liquid crystal displays when said light shutters are in an open state.

5,307,189
ACTIVE-MATRIX-ADDRESSED LIQUID CRYSTAL WITH CONDUCTOR COLLECTING LINES OF FORCE EMANATING FROM DATA ELECTRODE
Akihiko Nishiki; Shigeki Ogura; Kayo Yoshizawa, and Tsutomu Nomoto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 4, 1992, Ser. No. 845,683
Claims priority, application Japan, Mar. 5, 1991, 3-037652; Mar. 28, 1991, 3-064584
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—59 11 Claims



1. A twisted nematic type of active-matrix-addressed liquid crystal display comprising:
an active-matrix substrate having data line conductors and an array of pixel electrodes formed thereon;
an array of driver transistors provided on said active-matrix substrate, each of said driver transistors being operably connected to an associated one of said pixel electrodes to drive said associated pixel electrode;
an opposing electrode substrate having opposing electrodes formed thereon; and
a liquid crystal secured in a space formed between said active-matrix substrate and said opposing electrode substrate;
each one of said opposing electrodes being formed in an assembly of a stripe electrode and a display electrode, said stripe electrode collecting lines of electric force emanating from an associated one of said data line conductors, and said display electrode being provided correspondingly to associated ones of said pixel electrodes, said stripe electrode being connected to an associated one of said display electrodes.

5,307,190
FERROELECTRIC LIQUID CRYSTAL PANEL AND METHOD OF MANUFACTURING SAME
Naohide Wakita, Osaka, and Tsuyoshi Uemura, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 19, 1992, Ser. No. 931,992
Claims priority, application Japan, Aug. 19, 1991, 3-206698; Jan. 28, 1992, 4-012748
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—82 14 Claims

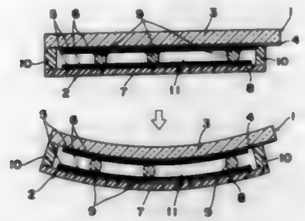
1. A ferroelectric liquid crystal panel comprising:
a first substrate having a first substrate surface;

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a second substrate having a second substrate surface opposed to and spaced from said first substrate; and

a ferroelectric liquid crystal interposed between said first and second substrates and having a given layer structure,

wherein said second substrate expands and contracts in a direction normal to said layer structure of said liquid



crystal according to deformation of said substrate, and wherein when a pressure of a value corresponding to the pressure applied to said liquid crystal panel during normal use is applied to said liquid crystal panel, a maximum deviation between said first substrate surface and said second substrate surface is less than 0.6 microns in said direction.

5,307,191

COMMUNICATIONS METHOD AND NETWORK WITH FREQUENCY ALLOCATION

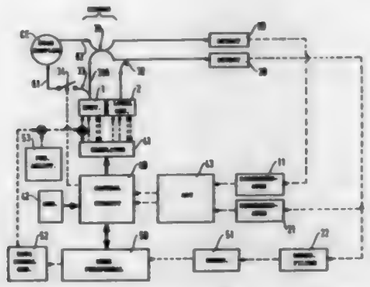
Olivier Audouin, Savigny sur Orge; Jean-Michael Gabriagues, Le Val Saint-Germain, and Michel Sotom, Villebon sur Yvette, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jan. 24, 1992, Ser. No. 825,143

Claims priority, application France, Jan. 24, 1991, 91 00794

Int. Cl.[5] H04B *10/20*; H04J *14/02*

U.S. Cl. 359—125 **6 Claims**



1. A communications method with frequency allocation in which calls are made between terminals each in the form of information-carrying modulation applied to a respective emission wave transmitted from a respective one of the terminals to all of the terminals, center frequencies of said emission waves constituting emission frequencies, each call using a respective initial emission frequency which is allocated to that call when that call is set up and which is reserved for that call, wherein a marking emission wave is transmitted to all of the terminals having an associated center frequency with a predetermined relationship to a respective marked frequency to thereby mark said respective marked frequency, said respective marked frequency constituting during the setting up of a new call said initial emission frequency allocated to said new call, with a new marking emission wave marking a new marked frequency being transmitted once said new call has been set up.

5,307,192

PROCESS FOR BIDIRECTIONAL TRANSMISSION OF DATA

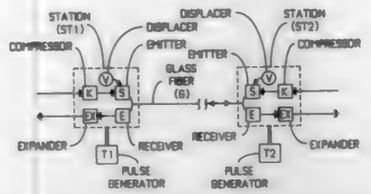
Jürgen Schröder, Springe; Martin Brahms, Hanover, and Ziaedin Chahabadi, Bad Münder, all of Fed. Rep. of Germany, assignors to KE Kommunikations Elektronik GmbH & Co, Hanover, Fed. Rep. of Germany

Filed Apr. 23, 1992, Ser. No. 872,515

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1991, 4113661

Int. Cl.[5] H04J *14/08*; H04B *10/00*

U.S. Cl. 359—135 **6 Claims**



1. A process for the bidirectional transmission of digital data through a glass fiber, whereby the digital data are transmitted by an emitter of a first station, to a receiver of a second station located at opposite ends of the glass fiber, where the digital data to be transmitted are compressed by a factor greater than two into bursts, where the bursts in one direction of transmission are sent by the emitter of the first station through the glass fiber, during pauses between bursts sent by an emitter of the second station in an opposite direction of transmission, and where continuous streams of data are recovered from the bursts received by the receiver of the second station and a receiver of the first station, wherein:

independent, external first and second pulse generators (T1, T2) are used in the respective first and second stations (ST1, ST2) at the opposite ends of the glass fiber (G), which determine transmission rates of the digital data respective first and second directions,

when the frequencies of the first and second pulse generators (T1, T2) deviate from each other, the bursts of the data stream in the first or second direction with a lower transmission rate are displaced, with respect to the bursts of a higher transmission rate data stream in the second or first direction, respectively by a width of one bit of the digital data, and

displacement of the bursts is communicated in the first or second direction, respectively, by at least one information bit, to the respective receiver (E) of the second or first station by a burst preceding a first burst to be displaced.

5,307,193

CONTROL SIGNAL REPEATER SYSTEM

Anthony J. VanZeeland, Mesa, and John R. Berkheimer, Tempe, both of Ariz., assignors to Go-Video Inc., Scottsdale, Ariz.

Continuation of Ser. No. 642,661, Jan. 17, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,941

Int. Cl.[5] H04B *10/00*

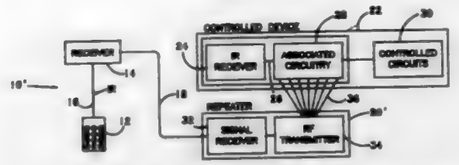
U.S. Cl. 359—145 **18 Claims**

1. A control signal repeater system for receiving infrared (IR) control signals at a first location and for causing duplicate control signals to be output at a second location to an IR-controlled device at a third location which includes an IR detector with connecting wires, without directing a duplicate IR control signal into the IR-controlled device, comprising:

a) receiver means at the first location for receiving the IR control signals and for outputting a first signal containing control information from the IR control signals;

b) signal receiver means at the second location for receiving said first signal from said receiver means and for outputting a second signal containing said control information from the IR control signals;

c) signal transmitter means at the second location for receiving said second signal and for transmitting a non-light energy signal directly into said connecting wires of the IR-controlled device to induce voltage signals therein



containing said control information from the IR control signals whereby said IR detector is bypassed; and wherein,

d) the IR-controlled device at the third location has said connecting wires connecting said IR detector to a control logic which responds to electrical control signals in said connecting wires.

5,307,194

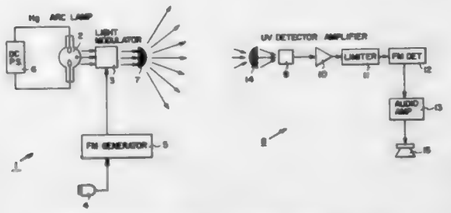
COVERT COMMUNICATION SYSTEM USING ULTRAVIOLET LIGHT

James J. Hatton, Miller Pl., and Saulius Janusas, Seacliff, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 24, 1992, Ser. No. 856,693

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—154 **17 Claims**



1. A communication system, comprising:

UV source means for generating ultraviolet light;

light modulation means for modulating the ultraviolet light generated by said UV source means in order to impress intelligible information on said ultraviolet light;

lens means for transmitting modulated ultraviolet light into space;

line of sight receiving means for detecting transmitted ultraviolet light and for converting detected ultraviolet light into an electrical signal;

demodulator means for demodulating said electrical signal to extract said intelligible information from said signal.

5,307,195

METHOD AND MEANS FOR THE TRANSMISSION OF AN ELECTROMAGNETIC SIGNAL IN AN OPTICAL FIBER

Pierre Nicole, Saint-Cloud, France, assignor to Dassault Electronique, Saint-Cloud, France

Continuation of Ser. No. 605,996, Oct. 30, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 892,621

Claims priority, application France, Nov. 9, 1989, 89 14714

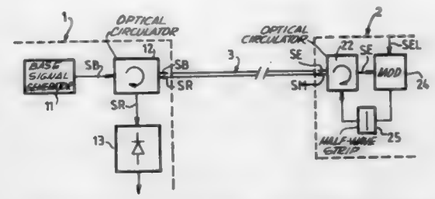
Int. Cl.[5] H04B *10/00, 10/06*

U.S. Cl. 359—156 **14 Claims**

5. A means for retrieval of a microwave signal from a remote location and analyzing the microwave signal, including at a first end of an optical fiber,

a first optical assembly which is arranged to input to said fiber a polarized optical base signal issuing from a generator and which is further arranged to recover from said fiber and to deliver to analysis means, a return optical signal, and at a second end of the fiber for being disposed at the remote location,

a second optical assembly which is arranged in a loop comprising first means for receiving a polarized optical signal emerging from the fiber after the optical base signal has passed therethrough and for delivering said polarized optical signal to processing means which include, in series,



second means for electro-optical modulation of said signal with the microwave signal which is to be transmitted to produce a modulated optical signal, and a third means for optical polarization conversion of said modulated optical signal to produce a converted modulated optical signal, and which is further arranged to pass the converted modulated optical signal to the first means which is adapted for inputting the converted modulated optical signal to said fiber as an optical return signal,

and wherein the arrangement is such that the electro-optical analysis means detects the microwave signal and determines the characteristics of the microwave signal from the optical return signal emerging from the fiber after the processed optical signal has passed therethrough.

5,307,196

OPTICAL RECEIVER

Osamu Kinoshita, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 26, 1992, Ser. No. 887,880

Claims priority, application Japan, Jun. 5, 1991, 3-134190

Int. Cl.[5] H04B *10/06*

U.S. Cl. 359—189 **6 Claims**



5. An optical receiver, which discriminates data by amplifying an output of a photoelectric transfer element in a DC coupling manner and compares the output with a compare reference value, comprising:

a first amplifier amplifying the output of said photoelectric transfer element;

a first filter restricting a frequency band of the output signal of said first amplifier;

a first peak detector detecting a peak value of an output bottom level of said first filter;

a dummy amplifier having the same circuit constant as said first amplifier;

a second filter restricting having the same circuit constant as said first filter, and restricting the output frequency band of said dummy amplifier;

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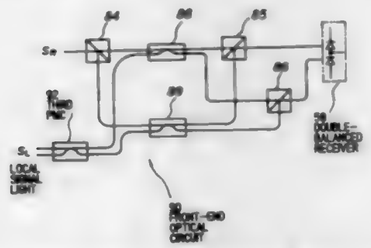
a second peak detector having the same circuit constant as said first peak detector, and detecting a peak value of the bottom level of said second filter;
a differential amplifier extracting a difference between the output of said first peak detector and that of said second peak detector, and amplifying an output;
an offset voltage adder adding a predetermined d.c. voltage to the output of said differential amplifier, and generating said compare reference value; and
a comparator comparing the output signal of said first amplifier with the output signal of said offset voltage adder.

5,307,197

OPTICAL CIRCUIT FOR A POLARIZATION DIVERSITY RECEIVER

Takashi Tanabe, and Haruhito Shimizu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,977
Claims priority, application Japan, Aug. 27, 1991, 3-240632; Aug. 30, 1991, 3-245214
Int. Cl.[5] H04B *10/06*
U.S. Cl. 359—192 **10 Claims**



1. An optical circuit for a polarization diversity receiver, comprising:
a first beam splitter for splitting an input signal light received at a signal input port into two polarization lights having polarization planes orthogonol to each other;
first and second optical couplers for respectively coupling output signal lights of said first beam splitter and two local signal lights having predetermined wavelength differences from said input signal light, and
second and third beam splitters for coupling respective first output signal lights of said first and second optical couplers, and respective second output signal lights thereof to generate first and second intermediate frequency signal lights.

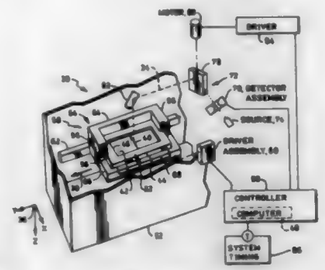
5,307,198

SCANNER WITH COMBINED PREDICTIVE AND DIFFRACTIVE FEEDBACK CONTROL OF BEAM POSITION

Paul F. Sullivan, Westwood, Mass., assignor to Polaroid Corp., Cambridge, Mass.

Filed May 25, 1993, Ser. No. 67,529
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **31 Claims**

1. A scanning system comprising:
a film holder having a support surface for holding film, and optical means for directing a set of beams of light having at least one beam of light toward said support surface, said holder holding the film normal to said beam set, said optical means including scanner means serving to scan said beam set in a scanning direction across the film in a scan line;
a grid disposed in said support surface and normal to said beam, said grid having a periodic array of groups of rulings oriented in differing directions for interaction with said beam set upon propagation of said at least one beam through the film, said groups of rulings diffracting light of said one beam in different directions to provide a pattern of diffracted beams indicative of a location of said one beam;
an optical detector assembly including a plurality of optical detectors arranged in an array and positioned for receiving light of respective ones of said diffracted beams, said detector assembly producing phase signals indicative of a progression of said one beam relative to said groups of rulings;
command means for commanding said scanner means to



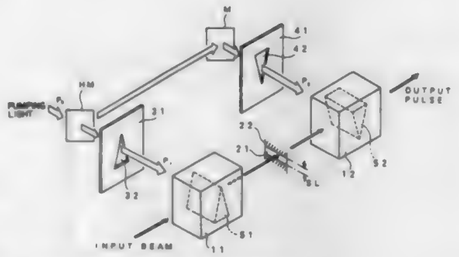
scan said beam set along a succession of pixels of said scan line;
corrector means responsive to signals outputted by said detector assembly over at least a portion of said scan line for correcting the location of said beam set to substantially match the locations of pixels designated by said command means; and
a data memory, said command means addressing said data memory for communicating image data between said data memory and said beam set, a beam of said beam set interacting with the film to provide said image data.

5,307,199

OPTICAL APPARATUS

Tsuneyuki Urakami; Shinichiro Aoshima, and Yutaka Tsuchiya, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jul. 23, 1991, Ser. No. 735,792
Claims priority, application Japan, Jul. 27, 1990, 2-200971; Jul. 27, 1990, 2-200972
Int. Cl.[5] G02F *1/01, 1/03*
U.S. Cl. 359—244 **31 Claims**



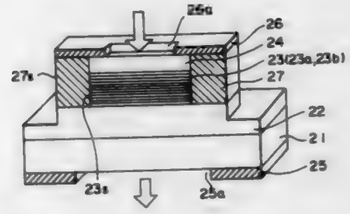
1. An optical apparatus comprising:
a first deflection member formed of a nonlinear optical material having a refractive index which changes based on an intensity of a first control light beam incident thereon, the first deflection member having at least first, second and third sides, and the first side being adapted to receive an input light signal;
a second deflection member formed of a nonlinear optical material having a refractive index which changes based on an intensity of a second control light beam incident thereon, the second deflection member having at least first, second and third sides;
mask means, disposed in an information optical path from the third side of the first deflection member to the first side of second deflection member, for transmitting a predetermined pattern of light emitted from the third side of the first deflection member to the first side of the second deflection member;
first means for emitting the first control light beam on a first region of the first deflection member, the first control light beam being incident on the second side of the first deflection member;
second means for emitting the second control light beam on a second region of the second deflection member, the second control light beam being incident on the second side of the second deflection member, and said second region being defined by 180 degrees rotation of said first region around a predetermined axis, said predetermined axis being on a plane defined by a vector for a path of the input light signal and a vector for a direction of the first control light beam and going through a predetermined point between said first deflection member and said second deflection member; and
control means for controlling intensities of the first and second control light beams.

5,307,200

SEMICONDUCTOR OPTICAL DEVICE HAVING AN OPTICAL CONFINEMENT STRUCTURE

Tomoaki Yoshida, Natori, Japan, assignor to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan

Filed Apr. 13, 1993, Ser. No. 45,201
Claims priority, application Japan, Apr. 14, 1992, 4-094449
Int. Cl.[5] H01L *33/00*
U.S. Cl. 359—248 **13 Claims**



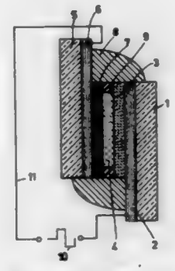
1. A planar semiconductor optical device for modulating an optical beam, comprising:
a substrate of a semiconductor material doped to a first conductivity type and having upper and lower major surfaces;
an active layer having an upper major surface and provided on said upper major surface of said substrate, said active layer having a quantum structure for confining carriers in at least one of three mutually perpendicular directions, such that discrete quantum levels appear in said quantum structure, said active layer being laterally defined by a side wall extending in a direction generally vertical to said upper major surface of said substrate;
a contact layer of a semiconductor material doped to a second, opposite conductivity type and having upper and lower major surfaces and provided on said upper major surface of said active layer;
an optical confinement region provided adjacent to said active layer in intimate contact with said side wall, said optical confinement region having a refractive index smaller than an effective refractive index of said active layer for confining the optical beam in said active layer;
first electrode means provided on said upper major surface of said contact layer for biasing said active layer to induce a change in an optical property therein, said first electrode means being provided with a first passage for an optical beam such that said optical beam can pass through first electrode means freely in a direction substantially perpendicular to said upper major surface of said contact layer; and
second electrode means provided on said lower major surface of said substrate for biasing said active layer together with said first electrode means.

5,307,201

ELECTRODE OF NICKEL OXIDE INTERCALATED WITH LITHIUM IONS AND ELECTROCHROMIC DEVICES WHICH INCORPORATE SUCH AN ELECTRODE

Stefano Passerini, and Lucio De Angelis, both of Rome, Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed May 5, 1992, Ser. No. 879,178
Claims priority, application Italy, May 8, 1991, 91 A/001257
Int. Cl.[5] G02F *1/153, 1/155*
U.S. Cl. 359—270 **11 Claims**



1. An electrode of nickel oxide intercalated with lithium ions, which is prepared by steps of:
(a) depositing on a conductive glass substrate a thin film of nickel oxide having a nickel to oxygen atomic ratio of from 0.7:1 to 0.9:1 and a thickness of up to 100 nm, the deposition being carried out by thermally evaporating nickel oxide (Ni_2O_3); and
(b) activating said thin film of nickel oxide by electrochemical intercalation of an amount of lithium ions which corresponds to a charge level of from 100 to 1,000 C/m^2.

5,307,202

SOFT COPY PORT

Ronald J. Martino, Geneva; Robert T. Shone, Pittsford, and A. Lee Shawcross, Honeoye, all of N.Y., assignors to Image Interpretation Systems Inc., Fairport, N.Y.

Filed Jan. 13, 1993, Ser. No. 3,784
Int. Cl.[5] G02B *21/36, 21/22*
U.S. Cl. 359—363 **22 Claims**

1. In a stereoscope for viewing first and second objects having first and second optical systems with each system having an objective zoom unit, an image rotator and an eyepiece, the improvement comprising softport means, said softport

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means comprising storage means for digitally storing a recorded image, converting means for changing said recorded

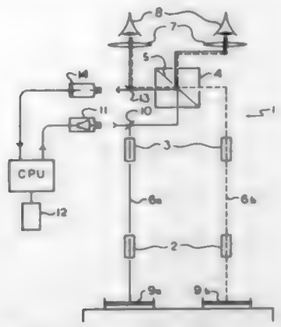
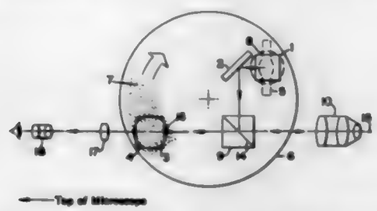


image to a visible image and means for introducing said visible image into one of said optical systems.

5,307,203
CONFOCAL TANDEM SCANNING REFLECTED LIGHT MICROSCOPE

James D. Hill, Mt. Airy, Md., assignor to Tandem Scanning Corporation, Reston, Va.

Filed Dec. 6, 1990, Ser. No. 623,102
Int. Cl.[5] G02B *21/00, 26/02*
U.S. Cl. 359—368 **12 Claims**



1. A tandem scanning confocal reflected light microscope, comprising

a base member,

a scanning disc rotatable about an axis, having a plurality of identical patterns of transparent areas,

a plurality of elements in a light path that directs light from a light source

(1) through an illumination region of the transparent apertures of the disc to

(2) a beamsplitter for directing light passing through the disc to a location wherein a specimen to be analyzed is to be located, and

(3) passing light reflected from a specimen through the beamsplitter to a viewing area on the disc,

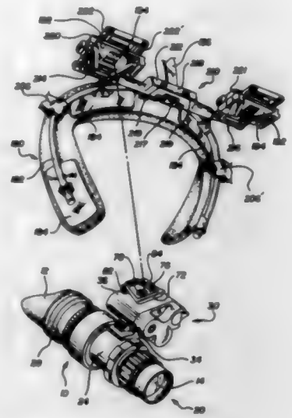
said viewing area having a pattern of transparent areas identical to those of the illuminated region,

said scanning disc having planer opposed surfaces and a light reflective material for causing light impinging on said disc to be subjected to specular reflection so as to produce an image.

5,307,204
DUAL MOUNTING ASSEMBLY FOR NIGHT VISION SYSTEM

Amotz Dor, Scottsdale, Ariz., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 805,187, Dec. 10, 1991. This application Jun. 10, 1992, Ser. No. 896,684
Int. Cl.[5] G02B *27/00*; H01J *40/14*
U.S. Cl. 359—400 **29 Claims**



1. A night vision system, comprising:

an optical portion;

a control housing affixed to said optical portion having a first and a second mounting surface, a first mounting plate affixed to said first surface, and a second mounting plate affixed to said second surface;

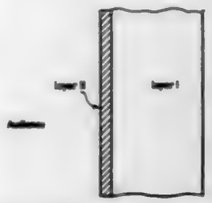
a mounting assembly having a first and a second carriage, each of said carriages being configured to receive a selected one of said mounting plates and means for securing said mounting plate within said carriage; and

means for attaching said mounting assembly to an operator's head.

5,307,205
BILAYER REAR PROJECTION SCREENS

Edward G. Ludwig, Jr., Mouans Sartoux, France; Patricia Maxson, North Wales, and John A. Dorazio, Gwynedd Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 854,179, Mar. 20, 1992, abandoned. This application Dec. 16, 1992, Ser. No. 994,052
Int. Cl.[5] G03B *21/60*
U.S. Cl. 359—453 **12 Claims**

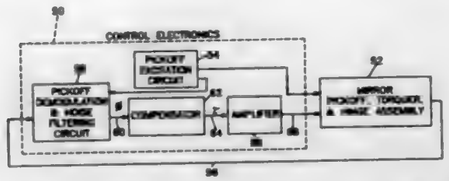


1. An article comprising a bilayer sheet for use as a rear projection screen which comprises a first synthetic resin layer and an adhered synthetic resin layer containing light diffusing polymeric particles, the particles being substantially spherical, having a diameter from about 2 to about 15 microns, and a size distribution such that 90% of the particles are within ±20% of the average particle diameter, the bilayer sheet being formed by the process comprising: co-extruding the first synthetic resin and the second synthetic resin from two extruders simultaneously through the same sheet-forming die in such a manner that they contact to form an adhered bilayer co-extruded sheet.

5,307,206
IMAGE STABILIZATION ASSEMBLY FOR AN OPTICAL SYSTEM

David A. Haessig, Jr., Towaco, N.J., assignor to GEC-Marconi Electronic Systems Corp., Wayne, N.J.

Filed Sep. 30, 1992, Ser. No. 954,525
Int. Cl.[5] G02B *27/64*
U.S. Cl. 359—555 **14 Claims**



1. An assembly for rejecting environmental perturbations in an optical system which tracks a command line of sight, comprising:

a mirror;

a rigid block;

means for flexibly coupling the mirror to the rigid block, the flexible coupling means providing two axes of rotational freedom for the mirror;

torquer means for torquing the mirror about each of said axes;

pickoff means for sensing the angular position of the mirror relative to the rigid block about each of said axes and providing pickoff signals corresponding thereto; and

control means receiving the pickoff signals and utilizing the dynamic properties of the mirror as coupled to the rigid block and the dynamic properties of the rigid block for providing a torquer signal for each of said axes to said torquer means, the control means utilizing the mirror in conjunction with the torquer means and the pickoff means as an inertial sensor to provide a measure of the angular motion of the rigid block, and as a control effector means to isolate the line of sight from unintentional, higher frequency rigid block motion and to cause the optical system line of sight to track intentional, lower frequency rigid block motion.

5,307,207
ILLUMINATING OPTICAL APPARATUS

Yutaka Ichihara, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

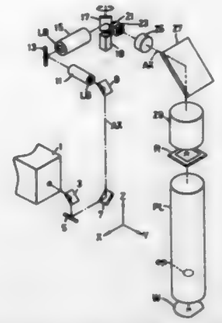
Continuation of Ser. No. 617,267, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 537,008, Jun. 13, 1990, abandoned, which is a continuation of Ser. No. 322,207, Mar. 13, 1989, abandoned. This application Oct. 23, 1991, Ser. No. 780,850
Claims priority, application Japan, Mar. 16, 1988, 63-60299; Apr. 11, 1988, 63-88453
Int. Cl.[5] G02B *27/10*; F21V *5/00*; G03B *21/00*
U.S. Cl. 359—622 **23 Claims**

1. An illuminating optical apparatus comprising:

light source means for emitting a laser beam having a cross section longer in a first direction than in a second direction substantially perpendicular to the first direction;

means for expanding the cross section of said laser beam in said second direction, thereby to modify the cross section of said laser beam;

optical means for receiving the modified cross section laser beam at an entrance side of the optical means and for re-forming the light intensity distribution of the modified cross section laser beam so as to provide at an exit side of said optical means a light intensity distribution that is substantially uniform throughout the modified cross section of the laser beam; and

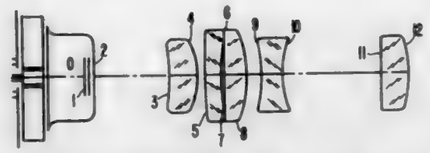


means provided at at least one of the entrance side and the exit side of said optical means for periodically deflecting the path of the laser beam in a direction crossing said first direction.

5,307,208
OPTICAL SYSTEM FOR IMAGING THE LIGHT FROM LIGHT SOURCES

Engelbert Hofbauer, Pfeffenhausen; Ingrid Scheirer; Jakob Bleicher, both of Munich; Siegfried Hetz, Allershausen, and Ulrich Matern, Weilheim, all of Fed. Rep. of Germany, assignors to Optische Werke G. Rodenstock

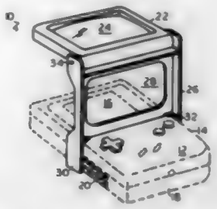
PCT No. PCT/DE90/00285, § 371 Date Nov. 19, 1990, § 102(e) Date Nov. 19, 1990, PCT Pub. No. WO90/13054, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 12, 1990, Ser. No. 613,771
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1989, 3912496; May 22, 1989, 3916658; Japan, May 22, 1989, 3916606; Jun. 14, 1989, 3919484
Int. Cl.[5] G02B *13/18*
U.S. Cl. 359—710 **16 Claims**



1. An optical system for imaging the light from light sources having varying astigmatic difference of focus in different planes, having an optical element component with an astigmatic effect and having an imaging lens system, wherein the optical element component having an astigmatic effect is provided with at least two lens elements, the distance of which in the direction of the optical axis can be adjusted in order to correct at least one of astigmatic differences of focus varying from light source to light source and changing astigmatic differences of focus due to aging.

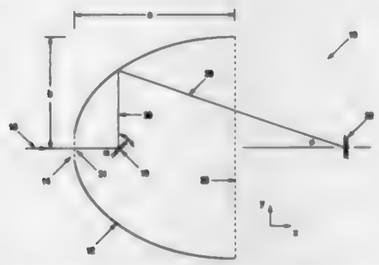
VOL 1161 ISS 4 AP 26 1994 UMI

5,307,209
MAGNIFIER APPARATUS AND METHOD FOR HAND HELD VIDEO DISPLAY
Gregory A. Iaquinto, Keene, N.H., and Louis J. Bakanowsky, III, Fitchburg, Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Continuation-in-part of Ser. No. 639,713, Jan. 8, 1991, Pat. No. D. 334,207. This application Mar. 22, 1993, Ser. No. 34,140
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] G02B 7/02
U.S. Cl. 359—811 10 Claims



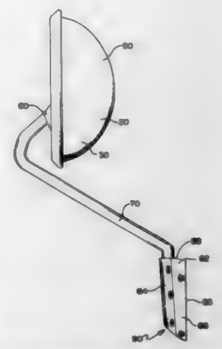
1. A magnifier apparatus for use with a hand-held video display apparatus which video display apparatus has a housing with sides and a video display screen within the housing, the display screen visually observable externally of the housing and which magnifier apparatus comprises:
a) frame means;
b) a magnifying lens supported by the frame means;
c) support means for the frame means, the support means having a one and the other end, the support means adapted at the one end to be mounted in a releasable manner in a generally upright vertical position perpendicular to the plane of the video screen to the housing; and
d) hinge means at the other end of the support means to permit the frame means with the magnifying lens to move between an open, magnifying use position, spaced apart and above and generally parallel to the plane of the video display apparatus and a closed, non-use position generally parallel to the plane of the support means.

5,307,210
BEAM ALIGNMENT DEVICE AND METHOD
Duncan L. MacFarlane, Dallas, and Dale M. Byrne, Arlington, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.
Filed May 3, 1990, Ser. No. 518,456
Int. Cl.[5] G02B 5/10
U.S. Cl. 359—859 10 Claims



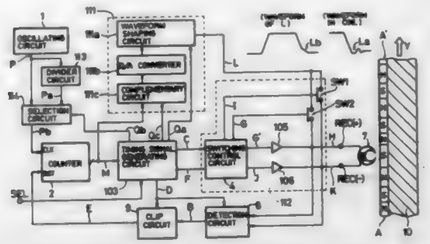
1. A device for aligning optical beams, comprising:
an elliptical mirror having an axis, said elliptical mirror having a first end and a second end, said first end including an aperture with a central axis linearly aligned with the foci of said elliptical mirror, wherein said first end and said second end include sealing means for providing a vacuum sealed chamber;
a rotatable mirror aligned with said axis for reflecting optical beams traveling along said axis to said elliptical mirror, said rotatable mirror being configured at a first focal point of said elliptical mirror; and
a target for receiving reflected beams from said elliptical mirror, whereby each of said reflected beams from said rotatable mirror travel a predetermine distance to the target dependence of an angle of rotation of said rotatable mirror, said target being configured a second focal point of said elliptical mirror.

5,307,211
TRUNCATED CONVEX VEHICULAR MIRROR SURFACE
William P. Schmidt, 21000 Woodruff, Rockwood, Mich. 48173, and Frank D. Hutchinson, 28000 Beel Rd., New Boston, Mich. 48164
Continuation-in-part of Ser. No. 361,334, Jun. 5, 1989, Pat. No. 5,005,963, which is a continuation-in-part of Ser. No. 254,027, Oct. 6, 1988, Pat. No. 4,938,578. This application May 28, 1991, Ser. No. 706,264
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] G02B 5/10, 7/182
U.S. Cl. 359—868 8 Claims



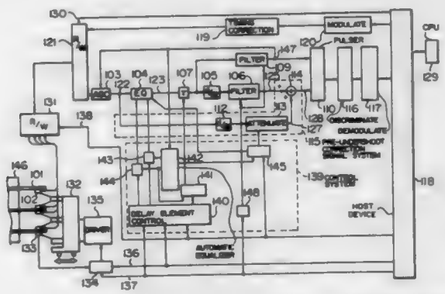
1. A vehicular mirror comprising: a geometric convex quadric reflective surface which is defined by a truncated portion of less than half of an ellipsoid surface;
the quadric surface providing a field-of-view that is greater than the reflective angle of the reflective surface about an axis thereof, and wherein:
the reflective surface has a first radius of curvature and a second radius of curvature, the first radius of curvature being different from the second radius of curvature, and further wherein:
the reflective surface has a viewing center point in general alignment with the geometric center of a part of the quadric surface, the geometric center being defined as the point of intersection on the quadric surface between a first plane containing the first radius of curvature and a second plane containing the second radius of curvature.

5,307,212
TRAPEZOIDAL WAVE GENERATION IN A VIDEO CONTROL SIGNAL WRITE CIRCUIT
Hirokazu Tagiri, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Aug. 20, 1992, Ser. No. 932,677
Claims priority, application Japan, Aug. 22, 1991, 3-235399; Aug. 22, 1991, 3-235400
Int. Cl.[5] G11B 27/02, 5/09
U.S. Cl. 360—14.2 23 Claims



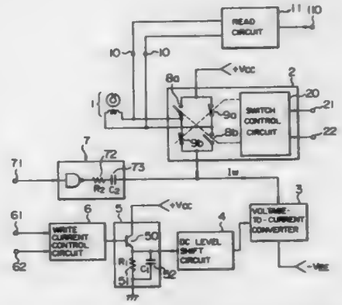
1. A control signal write circuit of a video apparatus wherein the duty ratio of a control signal that has been written by a control head having a coil onto a control track of a video tape is rewritten, said control signal write circuit comprising:
a counter for starting counting clock signals in response to the control signal read by said control head and outputting a count,
a trapezoidal wave generating circuit for generating a trapezoidal wave having linear slopes on both sides, and for sequentially subjecting the count of said counter to D/A conversion to form the trapezoidal wave, and
a write drive circuit receiving a timing signal for rewriting said control signal and said trapezoidal wave for gradually increasing a write current caused to flow through the coil of said control head in accordance with one waveform on one of the linear slopes and thereby raising the write current up to a predetermined current value effective for rewriting, and stopping the write current by gradually decreasing the write current in accordance with the other waveform on the other of the linear slopes.

5,307,213
DATA REPRODUCING APPARATUS FOR ELIMINATING UNDERSHOOTS IN THE VICINITY OF THE OUTER EDGES OF A MAGNETIC POLE
Nobumasa Nishiyama, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 27, 1991, Ser. No. 798,944
Claims priority, application Japan, Nov. 30, 1990, 2-337076
Int. Cl.[5] G11B 5/09, 5/035, 5/02
U.S. Cl. 360—46 12 Claims



1. A system which records and reproduces a digital signal in the form of a magnetic reversal on and from a recording medium, comprising:
a magnetic head for reproducing magnetic reversal data recorded on a recording medium;
an automatic gain control unit for controlling a signal reproduced from said recording medium so as to have a constant amplitude at a first circuit branch point;
an equalizer operably connected to said automatic gain control unit for processing an output waveform from said automatic gain control unit;
a first differentiator operably connected to said equalizer at a second circuit branch point for differentiating an output from said equalizer to produce a first differentiated waveform;
a first low pass filter operably connected to said first differentiator for limiting the signal band of the first differentiated waveform to a first limited band differentiated waveform signal;
a second low pass filter operably connected to said equalizer at said second circuit branch point for limiting the signal band of the equalizer output to a second limited band waveform;
a pulser operably connected to said first and second low pass filters for receiving the second limited band waveform and the first limited band differentiated waveform signal;
a second differentiator operably connected to said automatic gain control unit at said first circuit branch point for receiving an output from said automatic gain control unit and producing a second differentiated signal from the output signal of said automatic gain control unit;
an attenuator operably connected to said second differentiator for attenuating said second differentiated signal; and
waveform processing means operably connected to said attenuator, said pulser and said first low pass filter for adding the attenuated second differentiated signal to the first limited differentiated waveform signal and inputting the resulting signal to said pulser.

5,307,214
MAGNETIC RECORDING APPARATUS
Kanji Kawakami, Mito; Yoshiakira Karakama, Hadano; Masayuki Takagi, Odawara; Takayoshi Ohtsu, Kanagawa; Hisayasu Honma, Hiratsuka; Tetsuo Kobayashi, Kanagawa; Yutaka Sugita, Tokorozawa, and Katsuya Mitsuoka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 9, 1992, Ser. No. 848,137
Claims priority, application Japan, Mar. 13, 1991, 3-072042
Int. Cl.[5] G11B 15/12
U.S. Cl. 360—61 13 Claims



1. A magnetic recording apparatus, for recording information on a magnetic recording medium, said magnetic recording apparatus comprising:
a magnetic head;
recording current means electrically connected to said magnetic head, for providing to said magnetic head a record-

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ing current pulse train having as the last current pulse thereof a pulse with a damped waveform; and

joggle current means for superposing a ripple current on the damped waveform.

5,307,215

METHOD AND DEVICE FOR LOADING TAPE IN MAGNETIC RECORDER

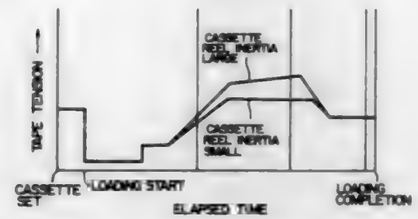
Atsushi Inoue, Chigasaki; Nobuyuki Kaku, Yokohama; Yasuo Inagaki, and Toshihide Murata, both of Katsuta, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed Apr. 11, 1991, Ser. No. 683,875

Claims priority, application Japan, Apr. 13, 1990, 2-96431; Jul. 25, 1990, 2-194889

Int. Cl.[5] G11B *5/027, 15/18*

U.S. Cl. 360—71 17 Claims



1. A method for loading a tape onto a recording drum from a pair of reels on which the tape is wound and between which the tape extends, the method comprising the steps of:

moving the tape between the pair of reels toward the recording drum and applying a first tension to the tape between the pair of reels, and

increasing the tension of the tape between the pair of reels to a second tension when the tape begins to be brought into contact with the recording drum, with the second tension being larger than the first tension.

5,307,216

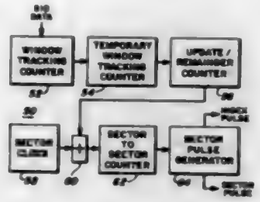
SECTOR IDENTIFICATION METHOD AND APPARATUS FOR A DIRECT ACCESS STORAGE DEVICE

Wesley A. Cook, Stewartville, and Daniel D. Reno, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1991, Ser. No. 754,878

Int. Cl.[5] G11B *21/08*

U.S. Cl. 360—72.1 11 Claims



1. Apparatus for digitally correcting sector pulse placement in a direct access storage device comprising:

clock means for generating a sector clock signal;

means for identifying an individual servo identification field location;

means for comparing said identified individual servo identification field location with an expected location of said individual servo identification field to identify an error value; and

means responsive to said sector clock signal and said identified error value for generating a sector pulse; wherein said means responsive to said sector clock signal and said identified error value for generating a sector pulse includes a combining circuit for modifying said sector clock signal by dropping or adding sector clock pulses corresponding to said error value and a sector to sector counter.

5,307,217

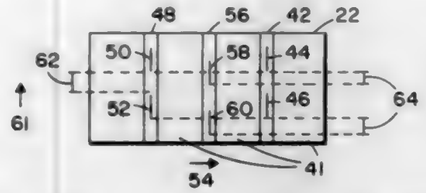
MAGNETIC HEAD FOR VERY HIGH TRACK DENSITY MAGNETIC RECORDING

George A. Saliba, Northboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 24, 1992, Ser. No. 903,694

Int. Cl.[5] G11B *5/265*

U.S. Cl. 360—76 9 Claims



1. A magnetic head for use in connection with recording information on and reading information from a magnetic tape, said magnetic head comprising:

a. a surface;

b. two laterally spaced apart longitudinal head gaps opening onto said surface, said head gaps extending generally parallel to each other; and

c. a third longitudinal head gap opening onto said surface and located between said first two head gaps, said third head gap extending generally parallel to said first two head gaps and being offset in a lengthwise direction from one of said first two head gaps, and generally laterally aligned with or offset in the same said lengthwise direction from the other of said first two head gaps.

5,307,218

MAGNETIC DISK APPARATUS USING BOTH SERVO-SURFACE SERVO AND DATA-SURFACE SERVO

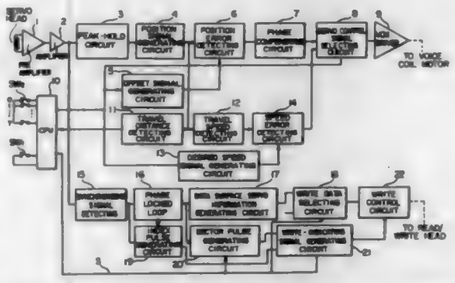
Shunji Kitamura, Saitama, and Tomihisa Ogawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 549,182, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 174,352, Mar. 28, 1988, abandoned. This application Aug. 17, 1993, Ser. No. 107,034

Claims priority, application Japan, Mar. 31, 1987, 62-77866

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.08 8 Claims



5. A method of writing servo information on a data surface of a data disk which is disposed on a rotating axis on which a servo disk is disposed, said servo disk having a servo surface, said data surface having a track, first servo information being recorded on said servo surface, said method comprising the steps of:

inputting a desired number of sectors which divide said track;

generating a second servo information from said first servo information; and

writing said second servo information on said data surface according to said input number of sectors.

5,307,219

TAPE LOADING DEVICE

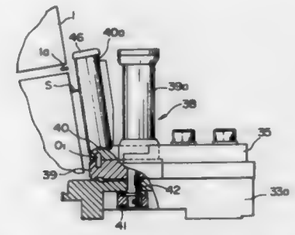
Yoshiaki Haba, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,695

Claims priority, application Japan, Jun. 19, 1991, 3-147028

Int. Cl.[5] G11B *15/00*

U.S. Cl. 360—85 7 Claims



1. A tape loading device for loading a magnetic tape on a head drum, including a movable tape guide assembly for wrapping said magnetic tape between a supply side of said head drum and an opposite take-up side of said head drum around an outer circumferential surface thereof, said movable tape guide assembly comprising:

first tape guide means for guiding said magnetic tape to be wrapped around said outer circumferential surface of said head drum;

holder means supporting said first tape guide means and having a contact portion;

slider means rotatably supporting said holder means and mounted for translation between a tape loading start position and a tape loading end position, said means including a receiving portion;

means for rotatably mounting said holder means on said slider means so that a distance between said first tape guide means and said outer circumferential surface of said head drum is variable; and

means for adjusting a wrapping angle of said magnetic tape with respect to said head drum by rotating said holder means relative to said slider means, wherein said means for adjusting comprises a rod member having a tapering head portion and a barrel portion larger in diameter than said tapering head portion, in which said receiving portion formed on said slider means receives said tapering head portion of said rod member, and said contact portion formed on said holder means contacts said barrel portion of said rod member to be force said holder means to rotate thereby.

5,307,220

A MAGNETIC-TAPE-CASSETTE APPARATUS HAVING IMPROVED TAPE-GUIDE DEVICE

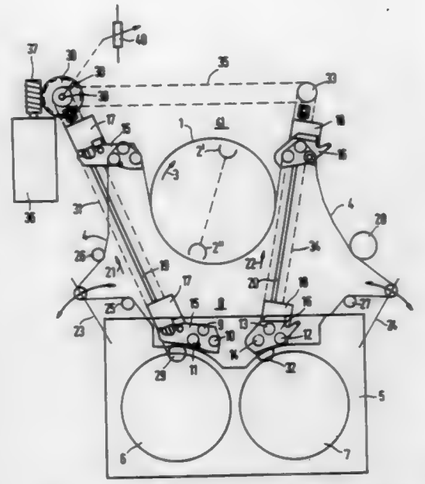
Rainer Kaus, Hochheim; Dieter Gause, Welterstadt; Reinhard Weber, Reinheim, and Werner Maack, Seeheim, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 15, 1992, Ser. No. 914,372

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, 4124957

Int. Cl.[5] G11B *5/027*

U.S. Cl. 360—85 17 Claims



1. A magnetic-tape-cassette apparatus having a drum-shaped scanning device comprising a rotary magnetic head, first and second guides, and a tape-loading device comprising two supports having tape-guide elements engageable behind a magnetic tape accommodated in a magnetic-tape cassette, said supports being longitudinally moveable on said guides to extract the tape from the magnetic-tape cassette and wrap it at least partly around the drum-shaped scanning device, wherein the improvement comprises:

a first traction drive means with positive transmission for moving one of the supports on said first guide, said first drive means comprising a first driving wheel and a first driven wheel arranged at ends of the first guide and a first traction means which is looped about the first driving wheel and the first driven wheel and is positively coupled to the one of the two longitudinally movable supports,

a second traction drive means with positive transmission for moving the other of the supports, said second drive means comprising a second driving wheel and a second driven wheel arranged at the ends of the second guide and a second traction means which is looped about the second driving wheel and the second driven wheel and is positively coupled to the other one of the two longitudinally movable supports, and

a third traction drive means with positive transmission, said third drive means including a third traction means for driving a driving wheel of one of the first and second traction drive means, wherein the first, second, and third traction means are distinct elements independent of one another, and

a motor for transmitting a torque to one of the driving wheels.

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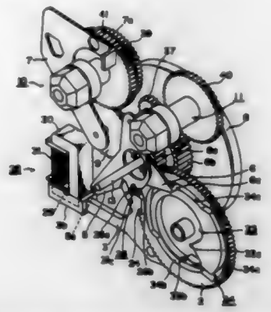
VOL 1161 ISS 4 APR 26 1994 UMI

5,307,221

TAPE RECORDER MODE SWITCH

Akira Mikawa, and Masao Kamijo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Continuation-in-part of Ser. No. 572,389, Aug. 27, 1990, abandoned. This application Aug. 18, 1992, Ser. No. 931,921
Claims priority, application Japan, Sep. 4, 1989, 1-103106
Int. Cl.[5] G11B *15/18, 5/008*
U.S. Cl. 360—96.3 **2 Claims**



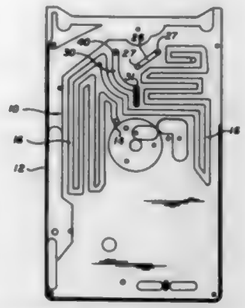
1. A tape recorder having a plurality of selectable modes of operation, comprising:
- a normally de-energized latch-type solenoid;
- a pivotally mounted trigger arm having a first end portion;
- means holding said first end portion of said trigger arm in a first position adjacent said solenoid when the solenoid is deenergized;
- spring means connected to said trigger arm to urge said first end portion away from said solenoid, energization of said solenoid releasing said first end portion of said trigger arm to enable said spring means to cause said trigger arm to pivot;
- an assist gear rotatably mounted adjacent a second end of said trigger arm, said assist gear having first, second and third cam portions, said first cam portion displacing a movable head base plate on which is mounted a magnetic head, said second cam portion displacing a first, rotatably-mounted mode selection lever to positions corresponding to selected modes of operation of the tape recorder, and said third cam portion engaging and pivoting said trigger arm to return said first end portion to said first position;
- a drive gear mounted for rotation;
- motor means connected to said drive gear for rotating said drive gear;
- means responsive to the pivotal motion of said trigger arm for selectively engaging said assist gear with said drive gear, whereby the rotation of said assist gear is controlled by said trigger arm;
- a rotatably-mounted second lever rotating in cooperation with said first lever by an amount greater than the rotation of said first lever and including an engaging portion which is engageable with said trigger arm,
- an elastic body mounted to hold said second lever in a neutral position;
- a mode switching gear mounted on said second lever, rotation of said second lever moving said mode switching gear between a plurality of positions corresponding to selected modes of operation; and
- means for rotating said second lever to selected ones of said plurality of positions, the energization of said solenoid by a first pulse releasing said trigger arm to cause said assist gear to rotate, the rotation of said assist gear displacing said first lever to a p redetermined mode selecting position, subsequent energization of said solenoid by a second pulse releasing said trigger arm again to cause said second lever to engage said trigger arm and to rotate said second lever to move said mode switching gear to a selected one of said plurality of positions.

5,307,222

AIR FILTER AND CIRCULATION SYSTEM FOR A HARD DISK DRIVE

F. Eugene Dion, Longmont, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Nov. 13, 1992, Ser. No. 975,646
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—97.02 **3 Claims**



1. A hard disk drive, comprising:
- a housing that has a venturi portion within an inner cavity, said venturi portion being in fluid communication with a lower recirculation chamber through a lower recirculation opening, said inner cavity being in fluid communication with an upper recirculation chamber through an upper recirculation slot said housing further having a desiccant chamber in fluid communication with a diffusion tube and said venturi portion of said inner cavity, said diffusion tube being coupled to the ambient by a breather port;
- a recirculation filter that separates said upper and lower recirculation chambers;
- a fluid absorbing member within said desiccant chamber;
- a breather filter within said desiccant chamber; and,
- a magnetic disk which rotates within said housing, wherein rotation of said magnetic disk past said venturi portion creates a low pressure in said lower recirculation chamber and a high pressure in said upper recirculation pressure such that air within said inner cavity flows across said recirculation filter from said upper recirculation chamber to said lower recirculation chamber.

5,307,223

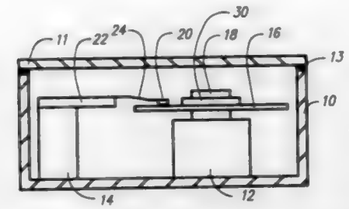
MAGNETIC RECORDING DISK FILE FOR CONTACT RECORDING

Mary F. Doerner, Los Gatos; Dan S. Parker, San Jose; Anthony W. Wu, San Jose, and Tadashi Yogi, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1992, Ser. No. 926,488
Int. Cl.[5] G11B *5.012*
U.S. Cl. 360—97.01 **7 Claims**

1. A magnetic recording disk file for contact recording comprising:
- a magnetic recording disk, the disk further comprising a substrate of an aluminum alloy having a nickel-phosphorous surface coating, a film comprising nickel oxide formed on the nickel-phosphorous coating, an underlayer formed over the nickel oxide film, and a magnetic layer comprising a cobalt-based alloy formed over the underlayer;
- means connected to the disk for rotating the disk;
- a head for reading data to or writing data from the magnetic layer on the disk;

means for supporting the head, the head support means being urged into contact with the disk during read or write operations; and



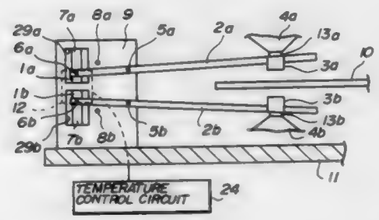
means connected to the head support means for moving the head across the disk.

5,307,224

MAGNETIC DISK STORAGE UNIT WITH MAGNETIC HEAD SEPARATING MECHANISM FOR SEPARATING FLOAT TYPE MAGNETIC HEAD FROM MAGNETIC DISK

Minoru Minase, Tokorozawa, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 784,370
Claims priority, application Japan, Oct. 30, 1990, 2-293442
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—105 **12 Claims**



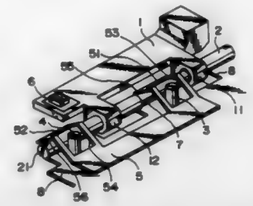
1. A disk storage unit comprising:
- a magnetic disk as a recording medium;
- a float type magnetic head which writes data on said magnetic disk and/or reads data therefrom;
- disk driving means for rotating said magnetic disk:
- a head driving member for driving said magnetic head; and
- a head driving mechanism for driving said head driving member in such a way that an action, by which said disk driving means starts driving said magnetic disk, causes an approaching force to be applied to said magnetic head directed toward said magnetic disk so as to move said magnetic head from a displaced position relative to said disk to an operational position for reading data from said disk and/or writing data thereto which position for reading/writing data said magnetic head reaches as a result of approaching said disk and in such a way that an action, by which said disk driving means stops driving said magnetic disk, causes a moving-away force to be applied to said magnetic head directed away from said magnetic disk, for moving said magnetic disk back to said displaced position.

5,307,225

AZIMUTH REGULATING MECHANISM IN FLOPPY DISC DRIVE

Yoshiyuki Ohishi, Komae; Masao Kita, Higashimurayama; Yoshikazu Matsumura, Shinjuku, and Mamoru Fujisawa, Itabashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,762
Claims priority, application Japan, Jan. 28, 1992, 4-007794[U]
Int. Cl.[5] G11B *5/56*
U.S. Cl. 360—109 **5 Claims**



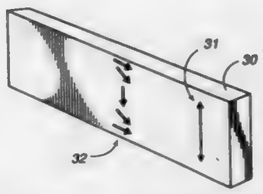
1. A floppy disc drive carriage drive system having guide rail means for moving a carriage with a magnetic head along a magnetic recording medium, said carriage drive system having an azimuth regulating mechanism comprising:
- eccentric means comprising an interior portion of said guide rail means having a cross-section different than the rest of said guide rail means; and
- fixing means for holding said eccentric means when said eccentric means is urged against said fixing means, said guide rail means being rotatable with a predetermined torque.

5,307,226

IMPROVED MAGNETORESISTIVE TRANSDUCER WITH SUBSTANTIALLY PERPENDICULAR EASY AXIS

James A. Brug, Menlo Paark; Thomas C. Anthony, Sunnyvale; Victor W. Hesterman, Los Altos Hills, and Steven Naberhuis, Fremont, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 5, 1992, Ser. No. 894,415
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—113 **2 Claims**



1. A magnetoresistive transducer, comprising:
- a least one magnetoresistive element oriented parallel to a magnetic storage medium surface, said element having a substantially perpendicular easy axis relative to said magnetoresistive element, whereby noise-free transducer operation is provided.

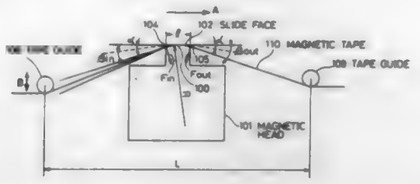
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5,307,227

MAGNETIC RECORDING/REPRODUCING APPARATUS CAPABLE OF HIGH-DENSITY RECORDING ON A MAGNETIC TAPE GUIDED AT HIGH SPEED

Hideo Okada; Hiroaki Takeuchi, and Tohru Okuda, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1992, Ser. No. 855,110
Claims priority, application Japan, Aug. 6, 1991, 3-196511
Int. Cl.[5] G11B 5/187
U.S. Cl. 360—122 7 Claims



1. Magnetic recording/reproducing apparatus including a magnetic head of a cylindrical shape having a magnetic gap on a magnetic tape slide face the length of which in the chordal direction is at most 150 μm and guide means for defining a state in which a magnetic tape is wrapped on said slide face, said magnetic recording/reproducing apparatus being so structured that the following relationship is satisfied:

β_{in} and β_{out} are angles in degrees between a direction of a chord joining both ends of said slide face and movement directions of the magnetic tape coming in and out of contact with said slide face, T(gf/mm) is tension per unit width of said magnetic tape, and θ is an angle which is set according to a distance between said guide means, and

$$\begin{cases} 0.5\{(\beta_{in} - \theta) - \gamma\} \leqq (\beta_{out} - \gamma) \leqq 2\{(\beta_{in} - \theta) - \gamma\} \\ \text{and } (\beta_{in} - \theta) + \beta_{out} \leqq 2\gamma + 4.0^\circ \end{cases}$$

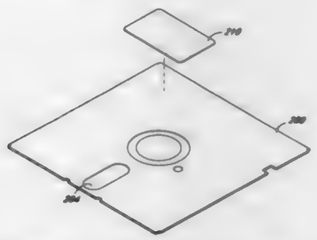
where $\gamma = -0.2$ (deg·mm/gf) × T(gf/mm) + 0.6°.

5,307,228

MAGNETIC FIELD DAMAGE INDICATOR

James S. Grasty, 3941 "B" Bristol St., #442, Santa Ana, Calif. 92704

Continuation of Ser. No. 802,343, Dec. 4, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 93,454
Int. Cl.[5] H01F 10/02
U.S. Cl. 360—132 10 Claims



1. A magnetic storage device for recording and storing electronic data, said device being adapted to detect the presence of an external magnetic field which could destroy some or all of the electronic data stored on said device, said device comprising:

magnetic recording media for recording and storing electronic data;

a housing for receiving said media, said housing having at least one substantially planar surface; and

a magnetic field indicator having a substantially thin, planar configuration and adapted to be mounted on said planar surface of said housing so as to closely conform to said surface, whereby the overall configuration of said magnetic storage device is not altered, said indicator comprising:

a substrate having a lower surface and an upper surface, said lower surface having an adhesive formed thereon for mounting said indicator on said housing; and

a layer of magnetic sensitive material applied to said substrate, said material comprising microencapsulated flakes responsive to an external magnetic field, said flakes having a first orientation in the absence of said external magnetic field but at least some of said flakes assuming a second orientation in the presence of said external magnetic field, said flakes in said second orientation being light-reactive so as to provide an immediate visual indication of the presence of said field,

said flakes having a gradually varying rate of responsiveness to said external magnetic field, whereby some of said flakes are responsive to a field of one strength but other flakes are responsive only to a field of a higher strength, whereby a visual indication of the strength of said field is provided,

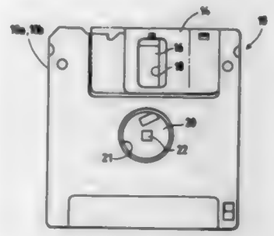
the color of said upper surface of said substrate providing a contrast for the light reaction of said flakes when in said second orientation, whereby said visual indication of said field is enhanced.

5,307,229

MAGNETIC DISK CARTRIDGE AND METHOD OF MANUFACTURING SAME

Tosio Sata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 20, 1991, Ser. No. 718,469
Claims priority, application Japan, Jun. 21, 1990, 2-161437; Jun. 21, 1990, 2-161438
Int. Cl.[5] B29C 45/16, 45/76
U.S. Cl. 360—133 2 Claims



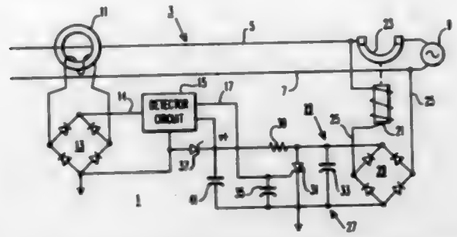
1. A magnetic disk cartridge which is formed by injection molding a molten resin prepared by mixing master batch pellets in which a pigment having a desired color has been mixed, with natural pellets, the improvement wherein said magnetic disk cartridge is formed by injection molding a molten resin prepared by mixing master batch pellets of SAN resin at least 100 gm/10 min in melt flow rate and natural pellets of ABS resin at least 25 gm/10 min in melt flow rate in a ratio in a range of 1:50 to 1:15 by weight.

5,307,230

CIRCUIT BREAKER WITH PROTECTION AGAINST SPUTTERING ARC FAULTS

Raymond W. MacKenzie, Baldwin Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 765,770, Sep. 26, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,271
Int. Cl.[5] H02H 3/26, 9/08
U.S. Cl. 361—96 12 Claims



1. A circuit breaker providing fault protection for an electric circuit, said circuit breaker comprising:

sensing means providing a sensed signal which is representative of the rate of change of current in said electric circuit;

detector means comparing said sensed signal with a plurality of threshold levels ranging from a selected high level to a selected low level;

timer means generating a trip signal when said sensed signal exceeds any one of said threshold levels for an associated timing interval, said threshold levels and associated timing intervals selected to produce a response envelope for generation of said trip signal which approximates, with a selected margin, an exponentially decaying step function; and

trip means responsive to said trip signal opening said electric circuit.

5,307,231

WEATHERPROOF STATION PROTECTION MODULES

Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed Mar. 25, 1992, Ser. No. 857,226
Int. Cl.[5] H02H 1/00
U.S. Cl. 361—127 17 Claims

1. A weatherproof station protector module for communication systems, comprising:

a) a hollow housing having a top surface and an open bottom, said top surface being provided with a pair of terminal receiving means with a centrally disposed through aperture;

b) a pair of weatherproof line terminals disposed in said top surface extending into said hollow housing and a ground terminal extending into said hollow housing, said pair of line terminals including;

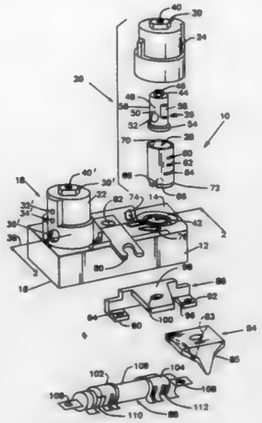
i) an outer insulator member,

ii) an inner insulator member, and

iii) an electrically conductive tubular shaped member in electrically conducting contact with one of said pair of line terminals provided with a plurality of horizontally disposed insulator cutting slots adapted to be retained by said terminal receiving means, said electrically conductive tubular member being adapted to retain said inner insulator member, said outer insulator member being adapted to be retained upon said inner insulator member, said inner insulator member, said outer insulator member and said electrically conductive member being provided with a plurality of through apertures in alignment and adapted to receive a plurality of insulated wires therein; and

c) holding assembly means affixed to said ground terminal within said hollow housing for receiving a surge arrester means;

d) surge arrester means disposed in said holding assembly means having at least a pair of electrodes, one of said electrodes being in electrically conductive contact with said ground terminal, the other of said electrodes being in



electrically conductive contact with one of said pair of line terminals; and

e) means adapted to cooperate with said hollow housing open bottom for sealing said housing;

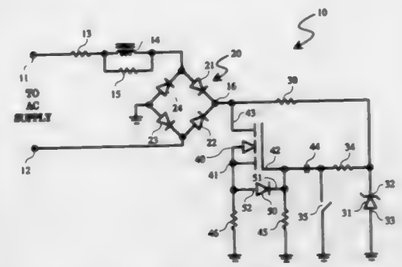
wherein when said outer insulator is rotated relative to said electrically conductive member the insulation of said wires are sheared connecting said wires together.

5,307,232

FAST RESET DEGAUSSING SYSTEM

Hans E. Manske, Addison, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Apr. 21, 1992, Ser. No. 871,452
Int. Cl.[5] H04N 9/29
U.S. Cl. 361—150 11 Claims



1. For use in a cathode ray tube display powered from a source of alternating current power and an on/off switch, a degaussing system comprising:

a degaussing coil having a first end coupled to said source of alternating current power and a second end;

a rectifier circuit coupled to said second end and said source of alternating power and having a rectified voltage output;

signal means for producing a control signal having a maximum initial amplitude followed by a time decay portion thereafter which decreases from said maximum amplitude to a near zero amplitude;

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a variable current element coupled to said rectified voltage output, said variable current element having a current controlling input coupled to said signal means; and

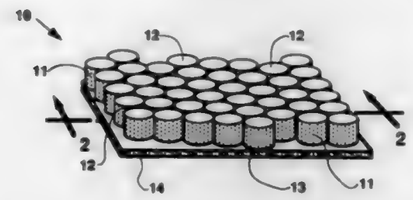
switch means coupled to said on/off switch for operating said signal means each time said on/off switch transitions from off to on.

5,307,233

ELECTRICALLY CONDUCTIVE MATERIAL

John S. Forry, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 28, 1991, Ser. No. 706,358
Int. Cl.[5] H05F 3/00
U.S. Cl. 361—220 9 Claims



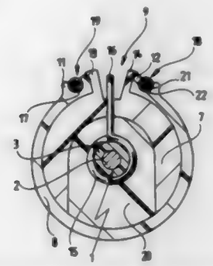
1. Electrically conductive sheeting comprising a plurality of polymeric chips of pre-determined shape, each having an upper surface, a lower surface and at least one vertically disposed edge between said surfaces; an electrically conductive material coating the surface of said vertically disposed edge extending from said upper surface to said lower surface of said chip sufficient to transmit electrostatic charge from the upper surface to the lower surface of the article, said chips arranged as a single layer bonded along the vertically disposed edges to form electrically conductive sheeting.

5,307,234

CORONA DISCHARGER WITH COUNTER ELECTRODE OF WIRE COATED BY CONDUCTIVE PLASTIC

Jürgen Homolka, Stuttgart, Fed. Rep. of Germany, assignor to Haug GmbH & Co. KG, Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed May 23, 1991, Ser. No. 704,775
Claims priority, application Fed. Rep. of Germany, May 26, 1990, 4016997
Int. Cl.[5] H01T 19/00
U.S. Cl. 361—229 3 Claims



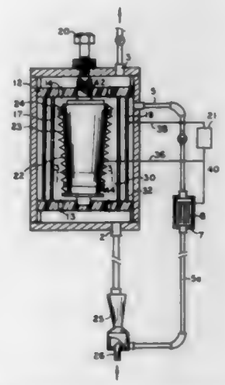
1. Device for generating electrical charges by corona discharge, comprising a high voltage cable surrounded by an insulating casing, said cable extending parallel to the longitudinal axis of the device and adapted to be connected to a high voltage source, also comprising a plurality of needle electrodes connected to high voltage via the high voltage cable and arranged in at least one row along the longitudinal axis of the device, an insulating member accommodating the high voltage cable and the needles and an outer sheath surrounding the insulating member and having a longitudinal slot, the needle electrodes penetrating the longitudinal slot and the edges of the longitudinal slot forming counterelectrodes for the needle electrodes, characterized in that the outer sheath (8) consists of plastic and has grooves (17) at the edges (11, 12) of its longitudinal slot (9) parallel to the row of needle electrodes (16), a metal stranded wire (21) provided with a casing (22) of plastic being inserted into each of the grooves as counterelectrode (18, 19), and that the plastic forming the casing (22) is electrically conductive and in electrically conductive communication with the metal stranded wire (21).

5,307,235

DEVICE FOR ELECTROACTIVIZATION OF FLUIDS

Felix Garunts, Los Angeles, Calif., and Robert Darbinyan, Sundukyanaue, U.S.S.R., assignors to Erik M. Arnhem, Los Angeles, Calif., a part interest

Filed Mar. 23, 1992, Ser. No. 856,408
Claims priority, application U.S.S.R., Apr. 16, 1991, 4924102
Int. Cl.[5] B03C 5/02; H01T 19/04
U.S. Cl. 361—230 9 Claims



1. A device for ionizing fluids, comprising:

a housing;

a porous dielectric partition subdividing said housing into two parts of an ionizing chamber;

an electron source electrode having a multiplicity of sharpened surfaces to promote electron discharge into a fluid flowing through the ionizing chamber in said ionizing chamber arranged at one of the sides of the dielectric partition;

an electron collector electrode arranged at the other side of the dielectric partition;

a fluid inlet duct connected to said ionizing chamber, and means for pumping fluid through said duct;

a first fluid outlet means connected to said ionizing chamber remoted from said inlet duct so that fluid is required to flow through the ionizing chamber to reach said first fluid outlet means adjacent to the electron source electrode;

a second fluid outlet means connected to the ionizing chamber part in which the electron collector electrode is arranged;

a fluid return line operatively connected between said second fluid outlet means and said fluid inlet duct, whereby some of the fluid admitted to said ionizing chamber is recirculated back to the inlet duct;

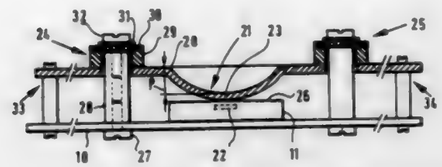
neutralizer electrode means in said fluid return line for generating electrons in the recirculating fluid, to thereby neutralize the effect of said collector electrode on the fluid.

5,307,236

HEATSINK FOR CONTACT WITH MULTIPLE ELECTRONIC COMPONENTS MOUNTED ON A CIRCUIT BOARD

Pascal Rio, Bois Colombes, and Patrick Magnenet, Thorigny-sur-Marne, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Jul. 22, 1992, Ser. No. 917,194
Claims priority, application France, Jul. 23, 1991, 91 09281
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—720 10 Claims



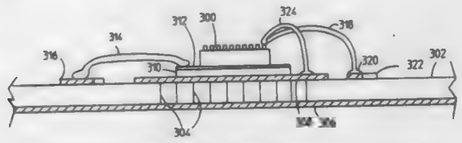
1. A heatsink which removes heat dissipated by at least one electronic component mounted on a circuit board, said heatsink comprising a thermally conductive material plate disposed in parallel to said circuit board over said at least one component and non-movably attached to said circuit board by plural spacers near said at least one component, said plate comprising at least one spherical deformation facing said at least one component and in thermal contact with a heat source of said at least one component.

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INTEGRATED CIRCUIT PACKAGING WITH IMPROVED HEAT TRANSFER AND REDUCED SIGNAL DEGRADATION

Dale D. Walz, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 31, 1992, Ser. No. 938,064
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—718 6 Claims



1. An integrated circuit packaging system comprising:

an integrated circuit die having a back surface and having a plurality of bonding pads;

a first plurality of wires for electrical ground and a second plurality of wires for electrical signals, wherein each wire from the first plurality of wires and the second plurality of wires is bonded to a corresponding pad in the plurality of bonding pads;

a substrate having top and bottom surfaces;

a bottom ground plane substantially covering the substrate bottom surface;

a top ground plane, located on the substrate top surface;

a plurality of vias passing through the substrate from the substrate top surface to the substrate bottom surface, the vias being electrically and thermally conductive, the vias thereby providing heat transfer from the substrate top surface to the substrate bottom surface and high frequency electrical conductivity from the top ground plane to the bottom ground plane;

insulation means for insulating the back surface of the integrated circuit die from the top ground plane, the insulation means located between the back surface of the integrated circuit die and the top ground plane and the insulation means being attached to the back surface of the integrated circuit die and to the top ground plane; and,

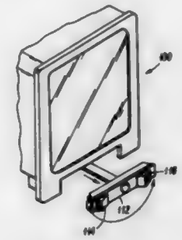
wherein the top ground plane extends beyond the bottom surface of the integrated circuit die, wherein each wire in the first plurality of wires is bonded to the top ground plane, thereby providing a short high frequency ground path for each wire in the first plurality of wires, and wherein each wire in the second plurality of wires passes near the top ground plane, thereby forming a separate microstrip by each wire in the second plurality of wires in conjunction with the top ground plane.

5,307,238

AVIONICS DISPLAYS SYSTEM WITH COLLAPSIBLE MOUNTING HANDLE

Russell D. Marcus, Shellsburg, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 648,454, Jan. 31, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 917,728
Int. Cl.[5] H05K 7/12, 7/14; E05C 5/04
U.S. Cl. 361—681 1 Claim



1. An improved avionics display device comprising:

a container means having a top and a bottom;

a display generating means for displaying visual images in response to an input signal, disposed in said container means;

a bezel disposed on said container means and about said display generating means;

a collapsible handle means coupled with said container means and disposed adjacent said bezel so that said handle means is collapsible in a direction toward said bezel;

a mounting tray detachably coupled with said container means;

said collapsible handle means having a threaded screw thereon;

said handle means further having a first spring latch for cooperating with said bezel and a second said spring latch for cooperating with said bezel;

an internal elongated rod disposed within said handle means; and,

a spring loaded release button coupled with said handle means and said internal elongated rod.

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ELECTROMECHANICAL MODULE WITH SMALL FOOTPRINT AND POST-SOLDER ATTACHABLE/REMOVABLE HEAT SINK FRAME

Paul McCarty, San Diego; Jerry I. Tustaniwskyj, Mission Viejo, and Jon L. Zimmerman, Escondido, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 8, 1992, Ser. No. 958,372
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—704 12 Claims

1. An assembled electro-mechanical module comprising:

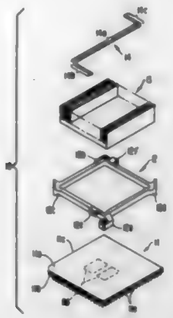
a thin flat packaged electrical part having smooth edges and a top surface which dissipates heat;

a springy frame which overlies and contacts said top surface; said frame including a pair of fasteners and having an un-

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stressed state, when said module is disassembled, in which said fasteners are separated by a distance which prohibits said fasteners from being caught on said smooth edges at two predetermined locations;

said frame being springy and distorted by stress in said assembled module such that said distance is increased and



said fasteners are caught on said smooth edges as said two locations;

a heat sink which rests on said top surface and is removably attached to said frame; and

said heat sink and said frame, except for a portion of said fasteners fitting entirely within the perimeter of said edges.

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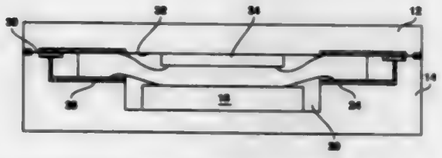
CHIPLID, MULTICHIP SEMICONDUCTOR PACKAGE DESIGN CONCEPT

John F. McMahon, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 2, 1992, Ser. No. 985,209

Int. Cl.[5] H05K *7/00*

U.S. Cl. 361—728 **5 Claims**



1. An electronic package assembly, comprising:

a housing having a first cavity and a plurality of first conductive pads located on a top surface of said housing;

a first electrical device attached to said housing within said first cavity and coupled to said first conductive pads;

a lid attached to said housing so that said fist cavity is encapsulated by said lid and housing, said lid further having a plurality of second conductive pads on a bottom surface of said lid;

a second electrical device attached to said lid and encapsulated by said housing and said lid; and,

a plurality of conductive vias coupled to said first and second pads and encapsulated by a dielectric material which seals said lid to said housing.

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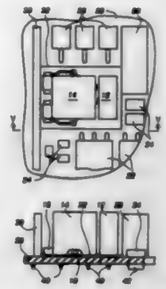
ELECTRONIC CIRCUIT BOARD ARRANGEMENTS INCLUDING MAIN AUXILIARY CIRCUIT BOARDS

Antonio Pistilli, Stittsville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 25, 1993, Ser. No. 37,150

Int. Cl.[5] H05K *1/11*

U.S. Cl. 361—784 **11 Claims**



1. A circuit board arrangement comprising:

a main circuit board for carrying and interconnecting a plurality of components of an electronic circuit;

an auxiliary circuit board having at least a part thereof parallel to and directly adjacent to the main circuit board, the auxiliary circuit board having in said part thereof a plurality of holes aligned with holes in the main circuit board;

a plurality of conductors extending through the aligned holes and making electrical connections with conductive tracks on both the main and the auxiliary circuit boards; and

wherein at least said part of the auxiliary circuit board which is parallel to and directly adjacent to the main circuit board is positioned between the main circuit board and at least one component on the main circuit board, and at least one of said plurality of conductors is constituted by a lead of said at least one component passing through the aligned holes.

5,307,242

DEVICE FOR ELECTRICALLY CONNECTING SHIELDINGS OF MULTI-POLE PLUGS TO THE GROUND LAYER OF A WIRING BOARD

Juergen Seibold, Baierbrunn, and Karl Zell, Niederpoecking, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 525,857, May 21, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,211

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1989, P3114840; Sep. 28, 1989, P3911590

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—816 **22 Claims**

1. Shielding apparatus in combination with a multi-pole plug, a wiring board and a printed circuit board, comprising:

a ground layer carried on said wiring board;

plated-through holes carried on said printed circuit board carrying respective potentials to be employed as shielding potentials;

a plurality of contact blade locations and a plurality of contact blades extending perpendicular from said wiring board arranged spaced apart in at least one row, said contact blades located at respective ends of said at least one row connected to said ground layer and constituting first and second grounded contact blades;

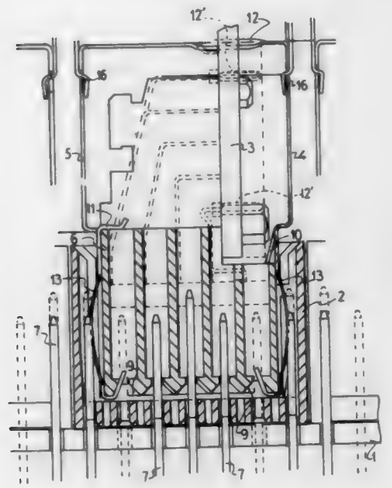
a solder side and a component side on said printed circuit board;

said multi-pole plug comprising an insulating housing including walls defining a plurality of chambers arranged complementary to the arrangement of said contact blades

and each of said chambers including a funnel-shaped opening for receiving a contact blade therethrough;

a plurality of spring contacts individually located in those chambers which do not correspond to said first and second grounded contacts of said at least one row of contact blades for receiving and electrically contacting a respective contact blade, the chambers adjacent the locations of said first and second grounded contacts being vacant, each of said spring contacts connected to a respective location on said printed circuit board and extending thereto on said component side of said printed circuit board;

centering and guide means including a first wall adapted to lie against said wiring board and including a plurality of apertures receiving said contact blades therethrough, and wall means extending perpendicular to said first wall and defining a cavity for receiving the multi-hole plug and, in the plugged condition, spaced from said insulating housing to define first and second spaces therebetween opened by a respective aperture of said first wall to receive said first and second grounded contact blades therein, respectively; and



first and second conductive shields, respectively, for said solder side and said component side of said printed circuit board, each of said shields including a first portion extending perpendicular to and electrically connected to at least one plated-through hole and its potential on said printed circuit board, and a second portion extending at an angle to said first portion and into a respective one of said first and second spaces, said second portion including a digital hook section comprising at least one hook at its distal end engaging in a respective one of said first and second vacant chambers and a spring section adjacent said digital hook section for resiliently engaging and electrically contacting a respective one of said first and second contact blades; wherein said printed circuit board is part of a circuit module; and

a plurality of further shields each including at least one hook; and

at least one aperture in said second portions of each of said first and second shields retaining respective ones of said hooks to connect said further shields to said first and second shields as extensions thereof to provide additional shielding for said module.

5,307,243

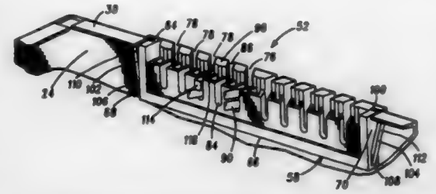
WIRE MANAGEMENT ASSEMBLY FOR AN ELECTRICAL DISTRIBUTION HOUSING

Jeffrey O. Sharp, and Richard Korthauer, both of Lexington, Ky., assignors to Square D Company, Palatine, Ill.

Filed Oct. 30, 1992, Ser. No. 969,643

Int. Cl.[5] H02B *1/20*

U.S. Cl. 361—826 **26 Claims**



1. A wire management assembly for an electrical distribution device housing having a back wall with upstanding side walls formed therewith, the assembly comprising:

a generally flat planar body made of electrically-insulating material, the body defined by two side edges and two end edges with an outer face and an inner face;

at least one slot of a first type having a generally v-shaped length formed at an angle through the cross-section of the body, each such slot having one end open to the inner face of the body and the opposite end open to the outer face, each such slot length being open on one side extending from one open side edge of the body partially across the length of the body towards the opposite side edge, whereby, each such slot is arranged to receive a flexible electrical conductor through one open side edge of the body and guide the conductor entering through the outer face of the body, across the length of each such the slot, and exiting through the inner face of the body into the housing interior, the angle of each such slot being adapted to provide an interference fit with the conductor; and

means for securing the assembly in a position allowing the conductor to enter the housing through the assembly, the securing means adapted to secure to one of the side walls of the housing.

5,307,244

LIGHT-INSULATED LAMP AND ILLUMINATING SYSTEMS

Claude Gaudette, Costa Mesa, Calif., assignor to Matthews Family Revocable Trust, Calif.

Continuation-in-part of Ser. No. 724,221, Jul. 1, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,764

Int. Cl.[5] F21V *9/00*

U.S. Cl. 362—29 **8 Claims**

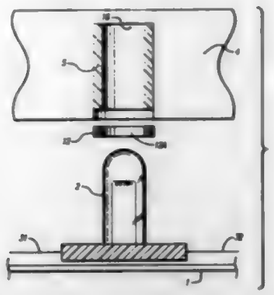
1. A lamp for IR suppression illumination without interference with night goggles operation which comprises:

an envelope means including a base from which leads extend;

said leads further comprising two portions, a first portion inside said envelope and a second portion which remains embedded in the base until it extends out from the base at

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its perimeter and at an angle of about 90° to the first portion; and



opaque means for encapsulating said base so as to render said base light-insulated from IR illumination generated from said lamp.

5,307,245

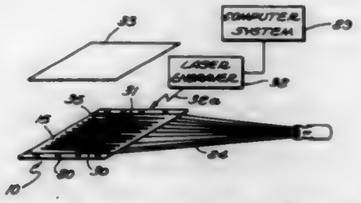
FIBER OPTIC BACKLIGHTING PANEL AND ZIG-ZAG PROCESS FOR MAKING SAME

J. Michael Myers, Newport Beach, and Roger F. Halter, Santa Ana, both of Calif., assignors to Poly-Optical Products, Inc., Irvine, Calif.

Continuation of Ser. No. 926,563, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 722,723, Jun. 27, 1991, abandoned. This application May 21, 1993, Ser. No. 66,324

Int. Cl.[5] F21V *8/00*

U.S. Cl. 362—32 **14 Claims**



1. A method for making a fiber optic backlighting panel to provide efficient and uniform background illumination of a surface comprising the step of:

providing a layer of optical fibers, said optical fibers arranged in proximity to each other; and

cutting through the layer of optical fibers to form cuts at locations corresponding to a predetermined zig-zag pattern so that each fiber is cut through at only one location.

5,307,246

VEHICLE LAMP

Heinrich Schmid, Nürtingen, and Margret Schmock-von-Ohr, Reutlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00427, § 371 Date Jan. 9, 1992, § 102(e) Date Jan. 9, 1992, PCT Pub. No. WO92/00487, PCT Pub. Date Jan. 9, 1992

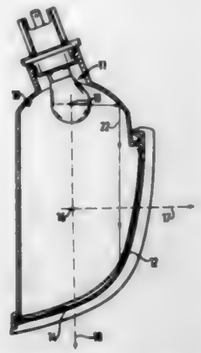
PCT Filed May 23, 1991, Ser. No. 793,336

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1990, 4020081

Int. Cl.[5] B60Q *1/04*

U.S. Cl. 362—61 **7 Claims**

1. A vehicle lamp comprising a reflector; a light source; and a lens plate having an inner surface facing said reflector and provided with a plurality of optical elements for deflecting light beams reflected from said reflector, each of said optical elements being constructed so that the light beams passing therethrough are deflected in each case in at least one direction selected from a horizontal direction and a vertical direction so as to produce a prescribed light distribution identical for all of said optical elements; and



wherein each of said optical elements is subdivided into a plurality of subprisms having flat surfaces extending tangentially to an envelope of an inner surface of the optical element, each of said subprisms being assigned to a region of the light distribution and having a surface determined by an amount of light assigned to the region of the light distribution.

5,307,247

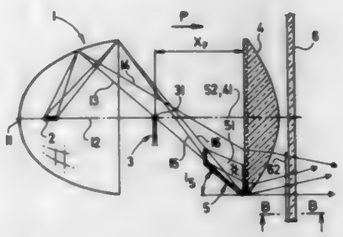
HEADLAMP FOR MOTOR VEHICLES

Milan Cejnek, Novy Jicin, Czechoslovakia, assignor to Autopal, statni podnik, Novy Jicin, Czechoslovakia

Filed Sep. 22, 1992, Ser. No. 948,490

Int. Cl.[5] A60G *1/00*

U.S. Cl. 362—61 **10 Claims**



1. A projection-type headlamp for motor vehicles, comprising:

a concave reflector for light integration;

a light source provided in an interior of the reflector for providing a light beam;

a screen for defining an upper part of the light beam, the screen including a screen surface;

a refractor;

an objective for imaging a contrast of brightness of the screen surface on the reflector background, a first principal plane of the objective being at an edge of the screen;

a reflecting segment having a reflecting surface provided between the screen and the objective, the reflecting segment being provided at a lower side of the objective, the reflecting surface being arranged at an inclination angle (i_5) with respect to a vertical section corresponding to the following equation:

$$i_5 = 0.5 \cdot arctg\ (D/x_F)$$

wherein D is a diameter of the objective, and x_F is a distance between the screen surface and the objective.

5,307,248

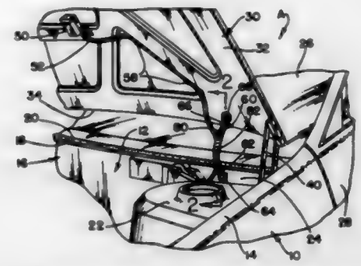
UNDERHOOD LAMP WIRING STRAP

Stanley J. Wenzlick, Chesaning, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 19, 1993, Ser. No. 93,566

Int. Cl.[5] B60Q *3/06*

U.S. Cl. 362—80 **5 Claims**



1. In an automotive vehicle having body structure defining a compartment having an opening, a closure pivotally connected adjacent one end to said body structure for movement between a closed position in which it prevents access to said compartment via said opening and an open position in which it permits access to said compartment via said opening,

a lamp means secured to said closure at its underside,

a flexible electrical cable extending from said compartment to said lamp and secured to the underside of said closure, said cable flexing when said closure is moved between said positions,

the improvement comprising a strap having one end connected to said underside of said closure adjacent said one end thereof and its other end connected to said body structure adjacent its end located adjacent to said one end of said closure, said strap being self-biased to a generally circular loop position located away from said ends of said closure and said body structure,

and means for securing said electrical cable to said strap whereby said cable is at all times biased away from said ends of said closure and body structure so that it cannot be pinched between said ends when the closure is moved to its closed position.

5,307,249

FLUID DISPENSING FLASHLIGHT APPARATUS

Dennis S. Vanwynsberghe, 11630 N. 30th Pl., Phoenix, Ariz. 85028

Filed Jul. 20, 1992, Ser. No. 916,488

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—96 **4 Claims**

1. A fluid dispensing flashlight apparatus, comprising,

an elongate tubular body, the body longitudinally aligned and including at least one battery member, and an illumination bulb operative and in electrical communication through an on/off switch to effect selective illumination of the illumination bulb, and

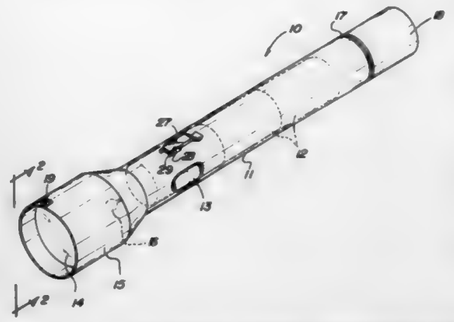
a cylindrical lens housing mounted at a forward end of the tubular body, wherein the lens housing includes a lens housing forward end, and

the tubular body having a body rear end, and an externally threaded body extension projecting rearwardly of the tubular body threadedly receiving a tubular extension housing, and

a fluid container contained within the tubular extension housing, and

fluid dispensing means mounted within the tubular body to effect selective dispensing of fluid from the fluid container forwardly of the lens housing forward end, and

the tubular body rear end includes an externally threaded body extension coaxially aligned with the tubular body extending rearwardly and beyond the tubular body, and the tubular extension housing including an extension housing internally threaded cylindrical receiving cavity to receive the externally threaded body extension therewithin, and the fluid container coaxially aligned within the



tubular extension housing and relative to the tubular body, and the fluid dispensing means including a fluid conduit directed through the tubular body having a first end positioned in adjacency to the cylindrical lens housing forward end, and a conduit second end including a conduit tubular piercing tip extending coaxially and beyond the externally threaded body extension, wherein the fluid container includes a nozzle for receiving the tubular piercing tip of the conduit second end.

5,307,250

LIGHT-UP COASTER FOR BEVERAGE CONTAINERS

Stephen J. Pearson, 34520 N. Hickory Ct., Ingleside, Ill. 60041

Filed May 4, 1993, Ser. No. 57,507

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—101 **19 Claims**



1. A device for supporting a can, mug, bottle, and can comprising:

an outer housing having a hollow interior comprising an annular, side wall-surface, an open upper end, and a bottom;

an inner housing slidably mounted in said outer housing comprising an annular, side wall-surface, and an upper support-surface;

biasing means mounted in said outer housing for upwardly biasing said inner housing in said outer housing;

electrical-circuit means comprising a power source, normally-unactuated output means, and switch means for selectively closing the connection between said power source

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and said output means in order to generate a signal, said switch means comprising means for closing the connection between said output means and said power source in response to the position of said inner housing in said outer housing;

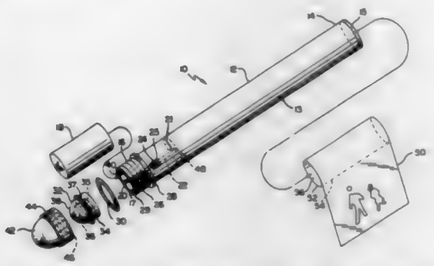
said means for closing the connection between said output means and said power source causing said output means to be actuated when said position of said inner housing is raised a specific distance within said outer housing by said biasing means in response to one of an empty container and near-empty container being supported on said upper support-surface, and causing said output means to be unactuated for all other positions.

5,307,251

PEDESTRIAN CROSSING SAFETY DEVICE

Terry L. Shaffer, 1230 N. Montgomery County Line Rd., Tipp City, Ohio 45371

Filed Oct. 30, 1992, Ser. No. 969,719
Int. Cl.[5] A63B *15/02*
U.S. Cl. 362—102 **3 Claims**



1. A battery powered pedestrian crossing safety device to aid in walking pedestrians across a traffic intersection, comprising:

a light weight elongated tubular member having a first end, a second end, and a surface portion axially spaced from said first end which transversely extends across said tubular member so that said first end forms an inner surface defining shaped to fitably receive a battery therein, wherein said tubular member is of a sufficient length to act as a bar to adjacent pedestrians and wherein said tubular member has a fluorescent outer surface coloring particularly well suited for attracting the attention of an approaching motor vehicle operator;

means for conducting a current from the battery to a high intensity light emitting element, said conducting means connected to said inner surface of said tubular member;

means for switching on and off the current in said conducting means, said switching means sealingly, integrally formed in a portion of said first end of said tubular member;

a light weight sheet-like material slidably connectable to said tubular member having a fluorescent coloration on exposed surfaces thereof, said fluorescent coloration of said sheet-like material being complimentary to said fluorescent coloration of said tubular member; and

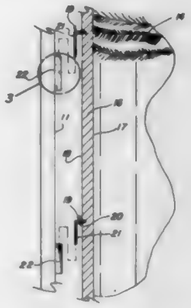
strobe light means operatively associated with said conducting means for emitting a relatively intense wavelength of light in generally all directions, wherein said strobe light means includes a conducting portion positionable within said first end of said tubular member for contacting said conducting means, an intermittent power control unit operatively connected with said conducting portion, said high intensity light emitting element operatively connected to said intermittent power control unit and extending out from said first end, a reflective backing interposed between said light emitting element and both said conducting portion and said intermittent power control unit such that when said conducting portion and said intermittent power control unit are disposed in said first end of said tubular member said reflective backing extends adjacent a plane formed by an outermost portion of said first end of said tubular member, and a substantially translucent hemispherical cover sealingly connectable to said first end of said tubular member and surrounding said light emitting element and cooperative with said reflective backing to substantially allow for a 360° light emission effect and which serves as a beacon for said device and enhances said fluorescent colored elongated tubular member and said fluorescent colored sheet-like material, the combination thereof providing for said pedestrian safety crossing device.

5,307,252

WALL SUPPORTED CHRISTMAS TREE

Marlene B. Croup, and William H. Croup, both of P.O. Box 254, Marlborough, Conn. 06447

Filed Jul. 20, 1992, Ser. No. 916,485
Int. Cl.[5] A47G *33/06*
U.S. Cl. 362—123 **3 Claims**



1. A wall supported Christmas tree, comprising,

a rigid planar wall, the rigid planar wall having a semi-circular tree assembly mounted thereon, wherein said tree assembly includes an illumination light means having a plurality of illumination members for selective illumination of the light members, and

the planar rigid wall includes a front surface spaced from, parallel to, and coextensive with a rear surface, the rear surface including a plurality of L-shaped hooks, and a plurality of wall sockets arranged for securement to a vertical wall, wherein each of the wall sockets includes a wall socket cavity, and each of the L-shaped hooks includes a first hook leg orthogonally and integrally mounted to the rear surface, and a second hook leg orthogonally and integrally mounted to the first hook leg oriented downwardly relative to the first hook leg, wherein the second hook leg is arranged for reception within one of said wall sockets.

5,307,253

STRUCTURE OF LASER POINTER

E. F. Jehn, 10F, No. 185, Yung Chi Rd., Taipei, Taiwan

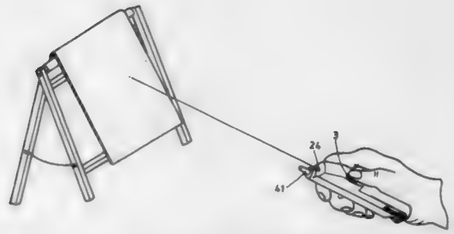
Filed Dec. 9, 1992, Ser. No. 988,047
Int. Cl.[5] F21K *7/00*; B43K *29/10*
U.S. Cl. 362—259 **3 Claims**

1. A laser pointer comprised of a laser module, a housing, a toggle switch, a push button ballpoint pen, a battery set, and a rotary cap, wherein:

said laser module is comprised of a lens assembly, a laser diode, and a laser mechanism, said lens assembly having a plastic lens fastened in a bore by an O-ring behind a front projecting hole, said laser mechanism having a front tube fitted into said bore and stopped at said plastic lens against said O-ring, a laser diode and a trigger circuit board, said laser diode being connected to said trigger circuit board by welding, said trigger circuit board being connected to said toggle switch;

said housing consist of an upper shell and a bottom shell respectively made of a plastic material through the process of injection molding, said upper shell having a peripheral flange inserted in a peripheral groove on said bottom shell and a peripheral welding strip welded to a peripheral welding strip on said bottom shell, said housing comprising a first chamber, which receives said laser module and said battery set, a second chamber, which receives said push button ballpoint pen, a third chamber, which receives said toggle switch, a toggle switch slot in communication with said third chamber, a projecting hole at one end of said first chamber, a screw hole at one end of said second chamber, a rear opening at an opposite end of said second chamber, an end hole at an opposite end of said first chamber into which said rotary cap fits, two opposite grooves inside the end hole through which two opposite lock keys on said rotary cap pass, and a clip slot on said upper shell adjacent to said end hole to hold a clip;

said toggle switch consist of a button, a printed circuit board, and an elongated spring strip, said button having an extension strip at one end for automatic return control,



and a press rod within a bottom hole thereof, said printed circuit board having one end connected to said laser module by a leaf spring and a cable and an opposite end connected to said battery set by said elongated spring strip through said rotary cap;

said push button ballpoint pen is consisted of a front socket, a spring, a reservoir tube, a thrust axle, a sleeve, and a push button, said front socket having a central through hole through its length and an externally threaded stub tube at one end threaded into the screw hole on said housing, said thrust axle having a rotary pawl at one end, which catches said reservoir tube, and a screw rod at an opposite end inserted through said sleeve and threaded into a screw hole on a bottom of said push button, said sleeve having two longitudinal rails on the inside for guiding said thrust axle in moving in longitudinal direction, said push button having a H-shaped flange for positioning, a screw hole into which the screw rod of said thrust axle is threaded, and a flat top end for pressing with the thumb; and

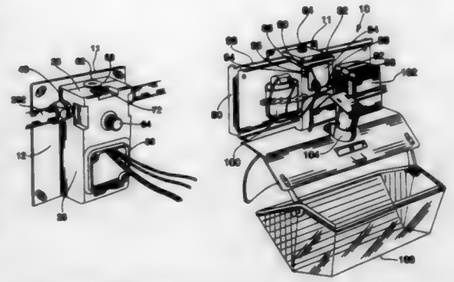
said rotary cap has two opposite lock keys, which pass through the grooves inside said end hole and then are locked inside said end hole through a rotary motion, a contact spring fastened inside a bottom hole thereof, said contact spring being connected to said battery set and having a circular flange disposed in contact with said elongated spring strip of said toggle switch.

5,307,254

LIGHT FIXTURE WITH DETACHABLE REAR MOUNTING BOX

Thomas Russello, Howell, and Richard Sangiamo, Linden, both of N.J., assignors to The Genlyte Group Incorporated, Secaucus, N.J.

Filed Oct. 23, 1992, Ser. No. 965,229
Int. Cl.[5] F21S *1/06*
U.S. Cl. 362—368 **9 Claims**



1. A lighting fixture including:

a mounting box including a planar portion for engaging a mounting surface; sidewalls extending from said planar portion and intersecting with a front wall apart from said planar portion thereby forming a cavity; said cavity including at least one first aperture for receiving electrical wires from an external source and a second aperture for providing the electrical wires to said lighting fixture; and

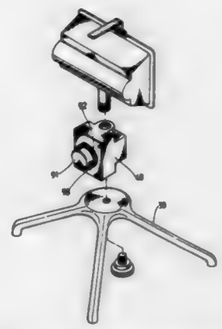
a component assembly, detachable from said mounting box, including a recessed rear portion for engaging said mounting box; a third aperture aligning with said second aperture of said mounting box and receiving the electrical wires therethrough; a detachable cover; and means for securing said component assembly to said mounting box; whereby prior to attachment of said detachable cover but after engagement of said means for securing said component assembly to said mounting box, said second aperture, said third aperture and any electrical wires received therethrough are substantially exposed and accessible.

5,307,255

PORTABLE IMPROVED STRUCTURE OF QUARTZ LAMP

Chi-Lin Chen, P.O. Box 80-20, Taipei, Taiwan

Filed Feb. 2, 1993, Ser. No. 12,384
Int. Cl.[5] F21V *21/06*
U.S. Cl. 362—410 **1 Claim**



1. An improved structure for a portable quartz lamp comprising:

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a lamp housing having a handle and a central post on a bottom of said housing, wherein a connecting piece is provided between a stand and said central post, said connecting piece having a hollowed interior and having an upper axial connecting portion and a lower axial connecting portion, said upper connecting portion being connected via a threaded portion to said central post, and said lower axial portion having a bottom end supported on a top surface of said stand, said lower axial portion being attached to said top surface of said stand by a bolt that is tightened when desired to fix the stand in place;

said connecting piece including a hole through which two polar lines of a power source pass—a first polar line of said two polar lines connects with a first polar line of a light source, and a second polar line of said two polar lines which communicates with an outside control switch; and wherein

a rear surface of said connecting piece is provided with a hollowed case including an outer lid and an inner lid, said connecting piece including a control stud extending outward, said inner lid being connected to said control stud, a waterproof gasket being interposed between a recess provided on the rear surface of said connecting piece and said inner lid, said outer lid being removably connected with said inner lid via a flange and a groove, said outer lid opening to uncover a switch that adjusts the light intensity of the lamp, said outer lid shielding said switch when said lid is closed.

5,307,256

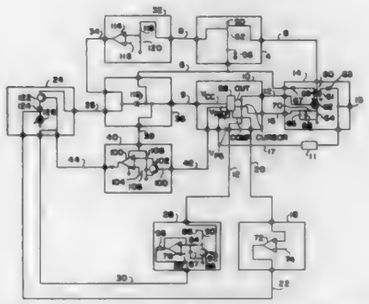
TRICKLE CHARGE CIRCUIT FOR AN OFF-LINE SWITCHING POWER SUPPLY

Robert A. Silverstein, 11 Still Dr., Hudson, Mass. 01749

Filed Dec. 17, 1992, Ser. No. 991,766

Int. Cl.[5] H02H *3/335*

U.S. Cl. 363—21 **7 Claims**



1. A switching power supply for producing an output voltage from a bulk line voltage comprising:

means for providing a primary bias voltage relative to a reference voltage;

means for producing the output voltage coupled to the bulk line voltage;

a control circuit coupled to the primary bias voltage and to the means for producing the output voltage and being effective to control the production of the output voltage when the primary bias voltage is beyond a voltage limit, the control circuit being effective to cease production of the output voltage when the primary bias voltage is within the voltage limit, the reference voltage being within the voltage limit;

means for shutting down the supply of the output voltage by maintaining the primary bias voltage to a voltage within the voltage limit; and

means for providing a trickle voltage effective to maintain the primary bias voltage at a voltage between the reference voltage and the voltage limit while the supply of the output voltage is shutdown.

5,307,257

TRANSFORMERLESS POWER-SUPPLY UNIT FOR SUPPLYING A LOW DC VOLTAGE

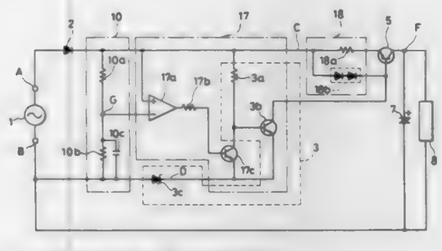
Yoshio Fukushima, Mino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 21, 1993, Ser. No. 839,430

Claims priority, application Japan, Feb. 22, 1991, 3-028540; Feb. 25, 1991, 3-030038; Feb. 26, 1991, 3-030633; Feb. 27, 1991, 3-032664; Jul. 17, 1991, 3-176694

Int. Cl.[5] H02M *7/21, 7/06*

U.S. Cl. 363—53 **11 Claims**



2. A power-supply unit comprising:

a rectifier circuit connected to an A.C. power source;

switching means for opening/closing an electric line which supplies a load circuit with electric power from said A.C. power source via said rectifier circuit;

a first phase-angle voltage generation circuit for generating a first phase-angle voltage which is based on an output voltage of said rectifier circuit and corresponding to a first phase-angle of said A.C. power source, said first phase-angle being a non-zero phase-angle;

a second phase-angle voltage generation circuit for generating a second phase-angle voltage which is based on said output voltage and corresponding to a second phase-angle of said A.C. power source larger than said first phase-angle;

a control circuit for turning said switching means on when said output voltage is in a range between said first phase-angle voltage and said second phase-angle voltage and turning said switching means off when said output voltage is outside said range; and

a capacitor which is charged with electricity by said output voltage when said output voltage is in said range and supplies said load circuit with electric power when said output voltage is outside said range.

5,307,258

PROCESS FOR CONVERTING A FIRST AC SIGNAL INTO A SECOND AC SIGNAL AND A CONVERTER FOR PERFORMING THE PROCESS

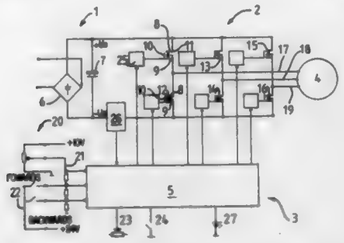
Rolf Schmidhauser, Bahnhofstrasse 10, Egnach, Switzerland CH-9322

Continuation of Ser. No. 528,907, May 29, 1990, abandoned, which is a continuation of Ser. No. 408,952, Sep. 18, 1989, abandoned, which is a continuation of Ser. No. 159,576, Mar. 17, 1988, abandoned. This application Jul. 3, 1991, Ser. No. 726,128

Claims priority, application Switzerland, Jun. 3, 1986, 2240/86

Int. Cl.[5] H02M *7/5387*

U.S. Cl. 363—98 **19 Claims**



1. A process for converting a first alternating current signal into a second alternating current signal using a converter, in which switches are actuated by a computer based upon predetermined values and measurements made during the conversion, said process including the steps of:

updating calculations of a desired frequency and amplitude of the second alternating current signal only at particular time intervals (A);

producing control sequences from the updated calculations based upon at least one of said predetermined values and measurements made during the conversion; and

controlling the switches based upon the control sequences for the duration of the time interval (A) between two consecutive calculations, said control sequences controlling the switches during the time intervals (A) so as to produce the second alternating current signal.

5,307,259

PROCESS FOR COMPENSATING A PHASE AND AMPLITUDE RESPONSE BETWEEN A MULTIPHASE SETPOINT AND ACTUAL VALUE AND CIRCUIT FOR IMPLEMENTING THE PROCESS

Harald Hügel, Herzogenaurach, and Günter Schwesig, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE89/00345, § 371 Date Nov. 27, 1991, § 102(e) Date Nov. 27, 1991, PCT Pub. No. WO90/15472, PCT Pub. Date Dec. 13, 1990

PCT Filed May 31, 1989, Ser. No. 777,418

Int. Cl.[5] H02P *5/40*

U.S. Cl. 364—176 **10 Claims**

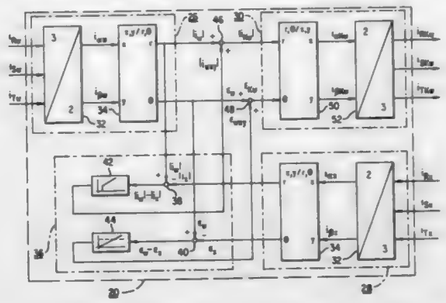
1. A process for compensating a phase and amplitude response of a system between a multiphase setpoint and an actual value (i_{Rw}, i_{Sw}, i_{Tw} and i_{Rx}, i_{Sx}, i_{Tx}) comprising the following process steps:

a) determining a modulus setpoint value ($|i_w|$) and a rotary angular setpoint value (ϵ_w) of a setpoint value vector (i_w) formed from the multiphase setpoint value (i_{Rw}, i_{Sw}, i_{Tw});

b) determining a modulus actual value ($|i_x|$) and a rotary angular actual value (ϵ_x) of an actual value vector (i_x) formed form the multiphase actual value (i_{Rx}, i_{Sx}, i_{Tx});

c) comparing the modulus setpoint value ($|i_w|$) with the modulus actual value ($|i_x|$) and generating a modulus manipulated variable ($|i_{wxp}|$) from a modulus differential value ($|i_w|-|i_x|$) which, when added to the modulus setpoint value ($|i_w|$), produces a compensating modulus setpoint value ($|i_{Kw}|$);

d) comparing the rotary angular setpoint value (ϵ_w) with the rotary angular actual value (ϵ_x) and generating an angular setpoint value (ϵ_{wxp}) from an angular differential value ($\epsilon_w-\epsilon_x$) which, when added to the angular setpoint value (ϵ_w), produces a compensating angular setpoint value (ϵ_{Kw});



e) determining a multiphase compensating setpoint value (i_{RKw}, i_{SKw}, i_{TKw}) of the compensating setpoint value vector (i_k^w) formed from a compensating modulus setpoint value ($|i_{Kw}|$) and the compensating rotary angular setpoint value (ϵ_{Kw}); and

compensating the system based on the multiphase compensating setpoint value determined in step (e).

5,307,260

ORDER ENTRY APPARATUS FOR AUTOMATIC ESTIMATION AND ITS METHOD

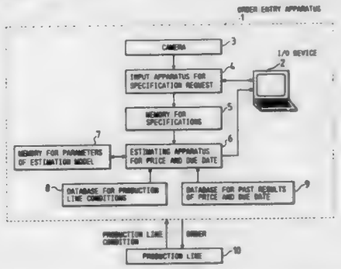
Masahiro Watanabe; Hisashi Onari; Kichie Matsuzaki; Hideaki Matoba, all of Yokohama, and Hidetoshi Inaba, Sapporo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1990, Ser. No. 619,618

Claims priority, application Japan, Nov. 29, 1989, 1-307777

Int. Cl.[5] G06F *15/22, 15/24;* **G06G** *7/52*

U.S. Cl. 364—401 **13 Claims**



1. An order entry apparatus for automatic estimation regarding a specified product, said order entry apparatus comprising:

user input means for entering requested product specifications for said specified product;

memory means for storing parameters of said requested product specifications for inputting to at least a pattern transformation model;

wherein said pattern transformation model comprises data processing cells and weighted parameters interconnecting said data processing cells;

patternizing means for generating a pattern to input to said pattern transformation model, based upon said entered requested product specifications; and

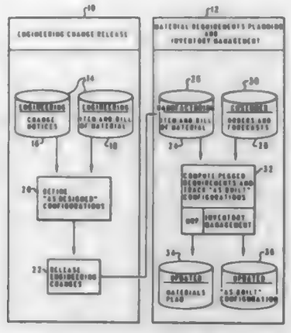
estimating means including said pattern transformation model for deriving an estimate item including a date of production completion for said specified product based upon said generated pattern input to said transformation model.

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5,307,261
METHOD AND SYSTEM FOR PRODUCT CONFIGURATION MANAGEMENT IN A COMPUTER BASED MANUFACTURING SYSTEM

Reino A. Maki, Marietta; Herman Mitchell, Lithonia; Sujan K. Mukherjee, Roswell; Badari N. Panuganti, Mableton, and April D. E. Stiles, Atlanta, all of Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,478
Int. Cl.[5] G06F *7/00, 9/00, 15/00*
U.S. Cl. 364—401 **8 Claims**



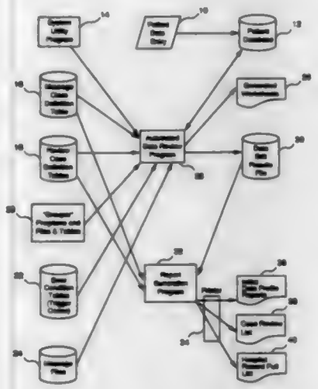
1. A computer based method for product configuration management in the manufacture of a complex product having multiple diverse configurations, said method comprising the steps in a data processing system of:
- creating a plurality of end item configuration lists, each end item configuration list comprising a listing of custom components and variations of standard components utilized for a selected configuration of a complex product;
- creating a basic bill of materials comprising a listing of standard components utilized for all configurations of said complex products;
- establishing a relationship between a selected one of said plurality of end item configuration lists and a customer contract for manufacture of a particular configuration of said complex product;
- retrieving said selected one of said plurality of end item configuration lists and said basic bill of materials; and
- creating a complete bill of material utilizing said selected one of said plurality of end item configuration lists and said basic bill of materials to be utilized in the manufacture of said particular configuration of said complex product.

5,307,262
PATIENT DATA QUALITY REVIEW METHOD AND SYSTEM

Paul Y. Ertel, Chelsea, Mich., assignor to Applied Medical Data, Inc., Ann Arbor, Mich.

Filed Jan. 29, 1992, Ser. No. 827,376
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.01 **77 Claims**

1. In an automated patient data review system including a system memory, a program of instructions stored in the system memory, a processor coupled to the system memory and a system output device coupled to the processor, a method for automatically detecting, analyzing and classifying patient data reported on a plurality of payment claims, the method comprising the steps of:
- storing collections of patient data including patient identifiers and clinical data, misreporting tables and message tables in data files in the system memory;
- storing classification data and case review tables in the data files in the system memory; and
- automatically processing a plurality of patient cases, the step of processing the patient cases being performed by the processor in accordance with the program of instructions and including the steps of:
- determining whether misreporting conditions exist in the stored clinical data, the misreporting conditions including actual or potential non-compliance with federally mandated coding and reporting rules and actual or potential failure to properly report complexities of the case;
- generating at least one data quality message based upon the misreporting tables, the message tables and the determined misreporting conditions;
- classifying the data quality messages generated for a case based upon the probability and relative seriousness or consequences of noncompliance with federal coding and reporting rules or the failure to report case complexities adequately;



- displaying via the system output device the patient data including the patient identifiers and the clinical data;
- displaying via the system output device at least one message based on the determined misreporting conditions in the patient data;
- automatically accumulating aggregate case data and system analysis data on a plurality of patient cases and storing the aggregate case data and system analysis data in system data files in the system memory;
- automatically analyzing the aggregate case data in order to identify patterns of aggregate case data; and
- generating at least one analysis report for a plurality of patient cases based upon the analyzed aggregate case data.

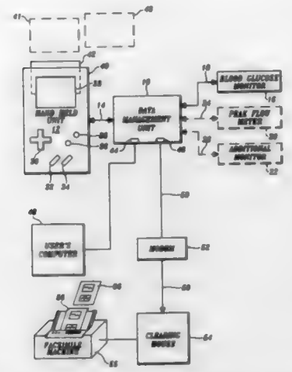
5,307,263
MODULAR MICROPROCESSOR-BASED HEALTH MONITORING SYSTEM

Stephen J. Brown, Palo Alto, Calif., assignor to Raya Systems, Inc., Mountain View, Calif.

Filed Nov. 17, 1992, Ser. No. 977,323
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.09 **12 Claims**

1. A self-care health monitoring system comprising:
- a programmable microprocessor-based unit, said programmable microprocesses-based unit including a display screen and a plurality of switches, said microprocessor-based unit including a receptacle for receiving a program cartridge that includes a memory circuit having stored therein program instructions for controlling the operation of said programmable microprocessor-based unit;
- monitoring means operable for sensing a condition indicative of a person's physical well-being and for producing digitally encoded signals representative of said condition; and

- a microprocessor-based data management unit connectable in signal communication with both said programmable microprocessor-based unit and said monitoring means, said microprocessor-based data management unit including a central processing unit and a memory circuit, said memory circuit for storing program instructions for controlling the operation of said central processing unit, said central processing unit being responsive to program instructions stored in said memory circuit of said microprocessor-based data management unit for processing said

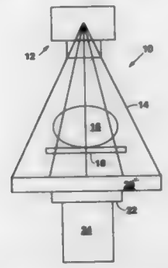


digitally encoded signals supplied by said monitoring means that are representative of said sensed condition, said central processing unit of said data management unit supplying signals representative of said sensed condition to said programmable microprocessor-based unit in response to digitally encoded signals that are supplied to said data management unit by said programmable microprocessor-based unit upon selective operation of at least one of said switches of said programmable microprocessor unit.

5,307,264
METHOD AND APPARATUS FOR COMPUTING TOMOGRAPHIC SCANS

Robert G. Waggener, Lytle, and Jory D. Lange, San Antonio, both of Tex., assignors to W. L. Systems, Inc., San Antonio, Tex.

Division of Ser. No. 391,252, Aug. 9, 1989, Pat. No. 5,128,864.
This application Mar. 11, 1992, Ser. No. 850,346
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.21 **14 Claims**

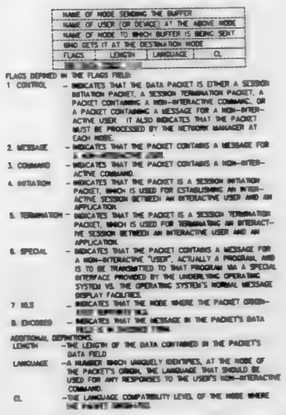


1. A computed tomography apparatus comprising:
- an x-ray radiation therapy simulator including a beam source for producing a width-collimated x-ray fan beam and a table supporting an object in the fan beam produced by the source so that the beam exposes substantially the entirety of the object;
- a detector selectively mountable to said simulator at a location in the fan beam on the opposite side of the table from the beam source and which, when removed therefrom, does not alter the original function of said simulator;
- said detector including a plurality of individual radiation detector elements mounted to said simulator on a line having an axis which is substantially perpendicular to the central axis of the fan beam, each of the detector elements producing an output signal having an amplitude proportional to the intensity of the radiation incident thereon;
- said simulator including means for rotating the beam source together with said detector mounted thereto along a substantially circular arc about a center for taking a plurality of exposures of the object at angular increments along the circular arc; and
- a computer operably connected to said detector programmed for receiving, storing, and processing the output signals of each of the detector elements at each angular increment, calculating the ratio of the output signals from radiation incident upon each of the detector elements traversing the object to the output signal from the same detector element for the same radiation in the absence of a target object, transforming the ratio into the frequency domain for filtering, and convolving the filtered signal to produce a value in the spatial domain representing the output signal of each detector element had the detector element detected a parallel beam of radiation from the source at each angular increment having a central axis which is contiguous and co-linear with the central axis of the fan beam.

5,307,265
COMPUTER METHOD AND SYSTEM FOR COMMUNICATION IN A MULTI-LINGUAL NETWORK

Louis A. Winans, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 291,923, Dec. 29, 1988, abandoned.
This application May 20, 1991, Ser. No. 704,662
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—419.01 **22 Claims**



1. A method of communication in a multilingual network including the steps of:
- determining a set of program messages available in a user's language at the node where said user enters the network,
- identifying said set of program messages to some other node in the network by transmitting identifying information to said other node through the network,
- determining at said other node whether a message to be issued to said user by said other node is included in said set of program messages,

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transmitting a message from said other node to said node where the user entered the network in a standardized program-readable format independent of said user's language,

constructing the message identified in said program-readable format in said user's language at said node where the user entered the network and displaying the constructed message to the user.

5,307,266

INFORMATION PROCESSING SYSTEM AND METHOD FOR PROCESSING DOCUMENT BY USING STRUCTURED KEYWORDS

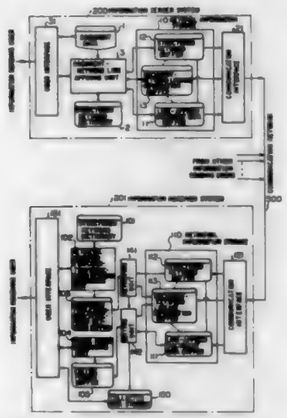
Takehisa Hayashi, Sagamihara; Kouki Noguchi, Kokubunji; Tsuneya Kurihara, Tokyo, and Masahiro Abe, Iruma, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1991, Ser. No. 741,760

Claims priority, application Japan, Aug. 22, 1990, 2-219039

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—419.07 **15 Claims**



1. A document system for accessing desired documents by using structured keywords, comprising a plurality of output systems, a receiver system and a communication network connecting said plurality of output systems and said receiver system,

wherein each of said output systems includes:

a document storage for storing therein an input document;

a first storage for storing first structured keywords among which relations are systematically structured; and

linkage means providing linkage information which indicates correspondences between constituent parts of said input document and said first structured keywords;

wherein said receiver system is operatively connected via said communication network to said plurality of output systems and includes:

a second storage for storing second structured keywords among which relations are systematically structured;

retrieving means responsive to said document and said linkage information for retrieving said document to form data of a predetermined editing format by using second structured keywords read out from said second storage;

editing format storage means for storing said editing format;

editing format designating means connected to said editing format storage means for forming data having said predetermined editing format stored in said editing format storage means in accordance with retrieval data inputted to said receiver system;

said editing format storage means including means for storing data of said predetermined editing format and for supplying said stored data to said editing format designating means in response to an indication given by said retrieval means; and

editing means connected to said editing format storage means and said retrieving means for editing and collecting data contained in said document which are determined by the data of said predetermined editing format.

5,307,267

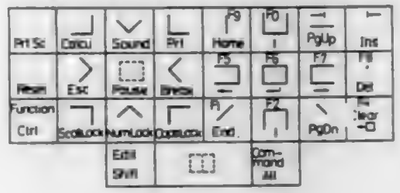
METHOD AND KEYBOARD FOR INPUT OF CHARACTERS VIA USE OF SEPECIFIED SHAPES AND PATTERNS

Gong M. Yang, No. 1-02, First Dong, No. 15, DongTing First Road, Wuchang Wuhan, China

Continuation of Ser. No. 517,250, May 1, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 807,783

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.09 **11 Claims**



1. A keyboard input device for a user to input a plurality of characters and symbols, said characters and symbols each being represented by a combination of pattern elements after being decomposed by the user, comprising:

a plurality of keys for inputting said characters and symbols, said keys including pattern element keys each being tagged with at least one pattern element of a plurality of pattern elements, said plurality of pattern elements including at least

means for converting a selection of keys selected by the user based on said combination of pattern elements into corresponding codes representative of the characters or symbols.

5,307,268

METHOD FOR USING P-S CONVERTED WAVES AS A SUBSALT IMAGING TOOL

Shein S. Wang; David W. Bell; Stephen J. Hill, and Gregory L. Loumos, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 7, 1991, Ser. No. 711,823

Int. Cl.[5] G01V *1/36*

U.S. Cl. 364—420 **14 Claims**

1. A method for imaging reflectors located below a salt wedge comprising the steps of:

receiving original seismic data in time;

determining salt wedge interfaces;

selecting a first velocity of a p-type wave through the layer above the salt wedge;

selecting a second velocity of a p-type seismic wave that is traveling through the salt wedge;

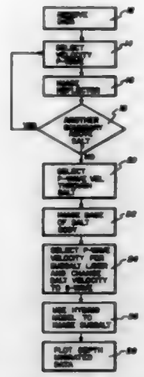
imaging the base of the salt wedge;

changing said second velocity of a p-type seismic wave to a third velocity of an s-type seismic wave;

selecting a fourth velocity for layers below the salt wedge, said fourth velocity of a p-type wave;

using said first velocity in a velocity model used to depth migrate the original data;

using said third velocity selected to determine the true depth of the salt bottom;



using said fourth velocity to determine the depth of the subsalt reflector; and

plotting the depth location of the salt wedge and said subsalt reflector.

5,307,269

METHOD FOR CORRECTING CLUTCH CONTROL DATA IN ACCORDANCE WITH DISK TEMPERATURE

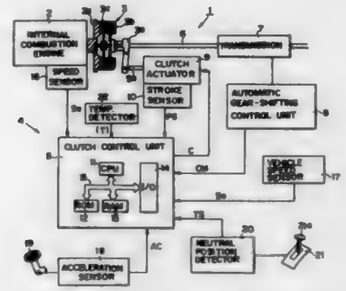
Hiromi Kohno, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 503,975, Apr. 4, 1990, Pat. No. 5,065,849. This application May 30, 1991, Ser. No. 707,814

Claims priority, application Japan, Jun. 6, 1990, 2-148115

Int. Cl.[5] B60K *41/28, 41/08*

U.S. Cl. 364—424.1 **16 Claims**



1. A method for correcting clutch data including meet position data representing a meet position of a friction type clutch connected with an internal combustion engine, said method comprising the steps of:

obtaining temperature data representing a temperature of the clutch;

discriminating whether or not the temperature data is in a prescribed range defined by a predetermined maximum value and a predetermined minimum value;

updating the meet position data by a predetermined learning operation only when the temperature data is in the prescribed range; and,

correcting the clutch data by the use of an updated meet position data obtained in said updating step;

said data obtaining step comprising a preliminary step for discriminating whether or not the clutch is operating in a semi-engaged condition, a step responsive to a result of the discrimination in said preliminary step for incrementing the temperature data by a prescribed amount at prescribed time intervals when the clutch is operating in the semi-engaged condition, and a step responsive to the result of the discrimination in said preliminary step for decrementing the temperature data by a prescribed amount at prescribed time intervals when the clutch is not operating in the semi-engaged condition.

5,307,270

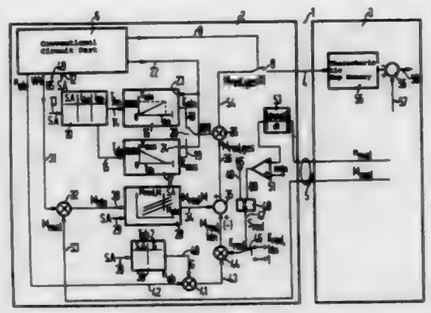
CONTROL SYSTEM FOR A MOTOR VEHICLE DRIVE

Friedrich Graf, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 941,972

Int. Cl.[5] G06F *15/50*; F16D *43/22*; B60K *41/04*

U.S. Cl. 364—424.1 **5 Claims**



1. A control system for a motor vehicle drive, comprising:

an engine control configuration for controlling a variable influencing torque of an engine;

a transmission control configuration for controlling shifting operations of an automatic transmission with a torque converter and for transmitting an intervention signal to said engine control configuration to carry out an intended shifting operation in a jerk-free manner, said transmission control configuration having a circuit configuration with means for determining a fraction by which the engine torque is to be changed for the shifting operation

as a function of a transmission input torque obtained from a converter amplification determined by said transmission control configuration and the engine torque determined by said engine control configuration, and

as a function of the type of shift, said type of shift being defined from information on a new and old gear of an envisaged shift and on whether or not the motor vehicle is in overrun or tractive mode; and

means for transmitting said fraction to said engine control configuration as control information for altering said engine torque.

5,307,271

REFLEXIVE TELEOPERATED CONTROL SYSTEM FOR A REMOTELY CONTROLLED VEHICLE

Hobart R. Everett, Jr., and Gary A. Gilbreath, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1990, Ser. No. 593,418

Int. Cl.[5] G06F *15/50*; B62D *1/24*

U.S. Cl. 364—424.02 **8 Claims**

1. A control system for a remotely controlled vehicle, comprising:

a servo-controlled vehicle;

first means operably disposed to receive supervisory speed

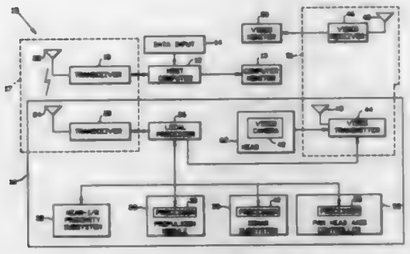
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and heading commands from a human operator and which provides host speed and turn rate commands to said vehicle for directing said vehicle to maneuver at a speed and turn rate in accordance with said supervisory speed and heading commands, said host speed and turn rate commands defining a path;

second means mounted to said vehicle for detecting an obstruction to said path, said second means including multiple sensors for detecting said obstruction; and

third means operably couped to said first and second means, and to said vehicle, said third means for disabling said host speed and turn rate commands in response to said second means detecting said obstruction, for generating obstacle avoidance speed and turn rate commands which are provided to said vehicle for directing said vehicle to travel in



accordance with said obstacle avoidance speed and turn rate commands to avoid said obstruction, and for enabling said host speed and turn rate commands after said obstruction is avoided so that control of said vehicle is returned to said human operator, where:

the magnitude of said obstacle avoidance speed command is proportional to a first distance between one of said sensors detecting said obstruction and said obstruction when said first distance is within a first predetermined limit; and

the magnitude of said turn rate command is inversely proportional to an angle defined between an operator desired vehicle heading and a relative bearing to a detected obstruction, when said detected obstruction is within a second distance from said vehicle.

5,307,272

MINEFIELD RECONNAISSANCE AND DETECTOR SYSTEM

Millard T. Butler; Steven P. Cave; James D. Creager; John B. Mathes; Kirk J. Smith, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 19, 1991, Ser. No. 746,535
Int. Cl.[5] G01V *5/00*
U.S. Cl. 364—424.02 **14 Claims**

5. A mine detection device for detecting the presence of land mines and similar objects, comprising:

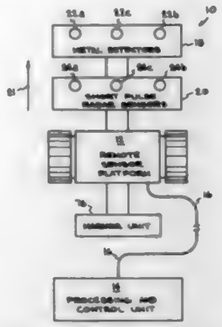
a self propelled mobile platform for propelling, under remote control, a plurality of sensor devices over the surface of the ground;

a control unit from which the mobile platform is remotely steered and controlled and to which a plurality of signals from said sensor devices are provided; and

signal conducting means for conducting signals between said mobile platform and said control unit, wherein;

said plurality of sensor devices is arranged in a plurality of sensor arrays with each of said sensor arrays having therein a like number of said sensors, each of said sensor arrays being a linear array with said linear array positioned perpendicular to a direction of travel of the mobile platform; and

each of said signals from each of said sensors is separately analyzed to determine if it includes an aberration indicative of a mine and a score is established for each of said



signals to indicate the probability of a mine present condition.

5,307,273

APPARATUS AND METHOD FOR RECOGNIZING CARPETS AND STAIRS OF CLEANING ROBOT

Ki Tae Oh, and Jin Seong Hwang, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Yongdungpo-Ku, Rep. of Korea

Filed Aug. 27, 1991, Ser. No. 750,403
Int. Cl.[5] G06F *13/10*; G06G *7/161*
U.S. Cl. 364—424.02 **9 Claims**



1. Apparatus for recognizing the condition of a floor comprising:

(a) first means for transmitting an ultrasonic wave to be reflected off said floor when an actuate signal is provided to said first means; and

(b) an ultrasonic wave receiver comprising second means for generating an ultrasonic wave receipt signal when said ultrasonic wave reflected on said floor is received by said ultrasonic wave receiver; and

(c) computing means for providing said actuate signal to said first means for a first time, and testing if said floor is in one of at least three predefined conditions as a function of said first time and the difference in time between when said ultrasonic wave is transmitted and when it is received; and

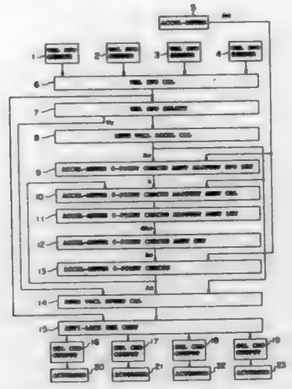
(d) if said one of at least three predefined conditions is not the condition of said floor, third means for eliminating this condition as a possibility so it will not be retested, altering said first time, and repeating the steps performed by said computing means and said third means in (c)–(d) until the condition of said floor is determined.

5,307,274

ZERO-POINT CORRECTION DEVICE FOR A GRAVITY-TYPE ACCELEROMETER

Koji Takata, and Tohru Nakaura, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1991, Ser. No. 811,942
Claims priority, application Japan, Dec. 26, 1990, 2-406743
Int. Cl.[5] G01L *25/00*
U.S. Cl. 364—426.01 **21 Claims**



1. A zero-point correction device for a gravity-type accelerometer employed in a vehicle having a plurality of wheels, comprising:

means for detecting a rotational wheel speed of at least one wheel of said vehicle at each operation cycle; means for calculating an estimated vehicle acceleration Aw from said rotational wheel speed;

means for measuring a gravitationally detected acceleration Am based on said gravity-type accelerometer;

means for producing an adjustment speed k which is between O and 1 based on said estimated vehicle acceleration Aw and said gravitationally detected acceleration Am;

means for subtracting a correction amount Ao obtained each operation cycle from said gravitationally detected acceleration Am to produce a corrected acceleration Ac which is a corrected version of said gravitationally detected acceleration Am;

means for calculating said correction amount Ao for a present operation cycle by adding to said correction amount Ao obtained for a previous operation cycle, a product of said adjustment speed k multiplied by a difference between said corrected acceleration Ac and said estimated vehicle acceleration Aw, and means for utilizing said calculated correction amount Ao for controlling a wheel behavior control system.

5,307,275

ANTI-LOCK BRAKING CONTROL METHOD AND APPARATUS FOR A VEHICLE

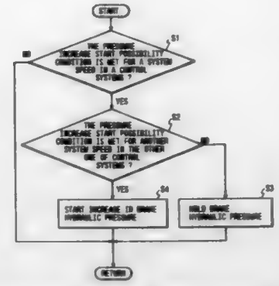
Satoni Okubo, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed May 2, 1991, Ser. No. 694,633
Claims priority, application Japan, May 9, 1990, 2-117685
Int. Cl.[5] B60T *8/66, 8/34*
U.S. Cl. 364—426.02 **3 Claims**

1. An anti-lock brake control method for an automotive vehicle in which a system wheel speed Vs is provided in each one of a plurality of brake control channels, respectively, and a brake hydraulic pressure for each wheel of said vehicle is alternately increased and decreased based on changes detected in said system wheel speed Vs so as to prevent said wheels from locking during braking of said vehicle, said anti-lock control method comprising the steps of:

setting an estimated vehicle speed Vv based on the highest wheel speed VwH selected among all wheel speeds;

presetting a pressure increase start condition relating to a state of recovery of each said system wheel speed Vs after a decrease in said brake hydraulic pressure, wherein said pressure increase start condition is met in a brake control



channel when said system wheel speed Vs in said brake control channel is determined to exceed a speed Vv−ΔVo corresponding to said estimated vehicle speed Vv reduced by a prescribed valve ΔVo;

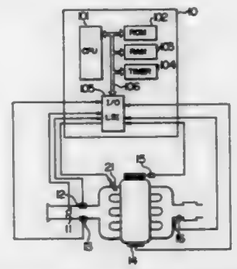
increasing said brake hydraulic pressure in one of said brake control channels when said pressure increase start condition is met for that brake control channel and after said pressure increasing start condition is met in another of said brake control channels.

5,307,276

LEARNING CONTROL METHOD FOR FUEL INJECTION CONTROL SYSTEM OF ENGINE

Shinsuke Takahashi, Yokohama; Teruji Sekozawa, Kawasaki, and Makoto Shioya, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,315
Claims priority, application Japan, Apr. 25, 1991, 3-095489
Int. Cl.[5] G06F *15/48, 15/50*
U.S. Cl. 364—431.05 **22 Claims**



1. A learning control method for an electric engine control system in which (1) engine condition values indicative of an operating state of an engine are detected, (2) an adhesion rate indicative of a rate of adhesion of injected fuel onto a wall surface of an intake manifold and a runaway rate indicative of a rate of carrying away the fuel staying in the intake manifold into a cylinder are calculated in accordance with the detected engine condition values, (3) a target air/fuel ratio is determined from the engine condition values, (4) a fuel injection rate is controlled to bring an actual air/fuel ratio into conformity with the target air/fuel ratio on the basis of the adhesion rate and the runaway rate, said method comprising the steps of:

(a) determining a deviation of the actual air/fuel ratio from

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said target air/fuel ratio at least when the engine changes from a steady state to one of an accelerating state and a decelerating state;

(b) calculating at least an adhesion rate correction factor for said adhesion rate in accordance with at least said deviation of the actual air/fuel ratio from said target air/fuel ratio in accordance with a rule based inference, said rule-based inference using rules including:

(1) in the accelerating state of the engine, in response to the actual air/fuel ratio becoming larger than the target air/fuel ratio, changing the adhesion rate correction factor to make said adhesion rate larger;

(2) in the accelerating state of the engine, in response to the actual air/fuel ratio becoming smaller than the target air/fuel ratio, changing the adhesion rate correction factor to make said adhesion rate smaller;

(3) in the decelerating state of the engine, in response to the actual air/fuel ratio becoming larger than the target air/fuel ratio, changing the adhesion rate correction factor to make said adhesion rate smaller; and,

(4) in the decelerating state of the engine, in response to the actual air/fuel ratio becoming smaller than the target air/fuel ratio, changing said adhesion rate to make said adhesion rate larger;

(c) correcting at least said adhesion rate with said adhesion rate correction factor; and

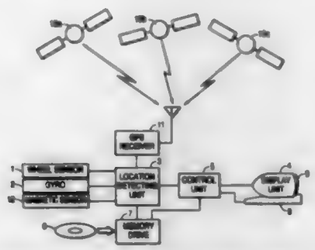
(d) redetermining and controlling said fuel injection rate in accordance with the corrected adhesion rate and the runaway rate.

5,307,277

LOCATION DETECTING APPARATUS

Kazuo Hirano, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 3, 1992, Ser. No. 893,063
Claims priority, application Japan, Jun. 18, 1991, 3-146196
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **2 Claims**



1. A location detecting apparatus comprising:

autonomous location detecting means mounted in a moving body to calculate a distance traveled by said moving body and an estimated heading of said moving body and to detect an estimated location of said moving body on the basis of said distance traveled and said estimated heading;

receiving means for detecting a location of said moving body by receiving waves from satellites circling around the Earth in predetermined orbits and for providing location information corresponding to the detected location;

means to detect a difference of location between said location detected by said receiving means and said estimated location detected by said autonomous location detecting means;

location correcting means which corrects said estimated location to said location detected by said receiving means when said difference of location is more than a first predetermined value;

a magnetic sensor for detecting an heading of said moving body by sensing a geomagnetic field; and

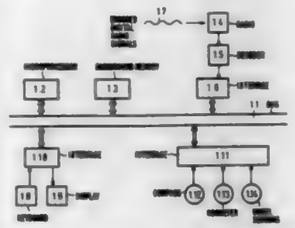
heading correcting means which corrects said estimated heading calculated by said autonomous location detecting means to said heading detected by said magnetic sensor, when said difference of location is more than said first predetermined value after said estimated location was corrected by said location correcting means and before said moving body travels a predetermined distance.

5,307,278

METHOD OF DETERMINING THE POSITION OF A VEHICLE, ARRANGEMENT FOR DETERMINING THE POSITION OF A VEHICLE, AS WELL AS A VEHICLE PROVIDED WITH SUCH AN ARRANGEMENT

Hans G. M. Hermans, Eindhoven, and Willem Van Der Gugten, Amsterdam, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 8, 1991, Ser. No. 742,787
Claims priority, application Netherlands, Aug. 13, 1990, 9001810
Int. Cl.[5] G06F *15/50*; **G08G** *1/123*
U.S. Cl. 364—450 **16 Claims**



1. A method of determining the route traveled by a vehicle comprising:

measuring navigation parameters relating to the movement of the vehicle;

utilizing the navigation parameters to calculate dead reckoning coordinates of the vehicle;

comparing the calculated dead reckoning coordinates to stored global information representing at least one of topographical and traffic technical information for a general area;

selecting from the stored global information local information representing at least one of topographical and traffic technical information for a specific area in which the calculated dead reckoning coordinates lie;

storing the selected local information in a local navigation data base;

selecting from the local information stored in the local navigation data base route segments which are consistent with vehicle positions represented by the calculated dead reckoning coordinates;

storing the selected route segments in a first predefined data structure.

5,307,279

SELF DIAGNOSTIC WHEEL BALANCER

Donald J. Christian, Fremont, Calif., and Steven W. Rogers, Maumelle, Ark., assignors to FMC Corporation, Chicago, Ill.

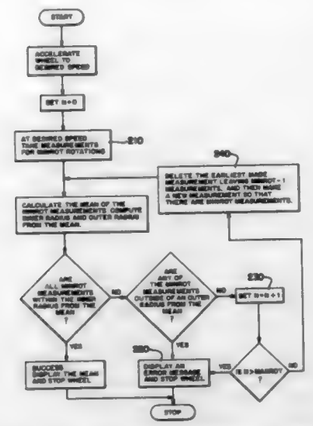
Filed Sep. 20, 1991, Ser. No. 763,042
Int. Cl.[5] G01M *17/02*
U.S. Cl. 364—463 **18 Claims**

1. A self diagnostic wheel balancer for use in balancing a wheel, comprising:

means for rotating the wheel;

means for collecting a set of imbalance measurements with the set comprising at least one imbalance measurement per rotation in a set of at least two rotations;

means for continuously eliminating a value in the set of imbalance measurements and adding a new imbalance measurement to the set of imbalance measurements until any one of the following events is accomplished: the set of imbalance measurements are sufficiently consistent, the set of imbalance measurements are sufficiently inconsistent, and an upper limit of imbalance measurements is reached; and



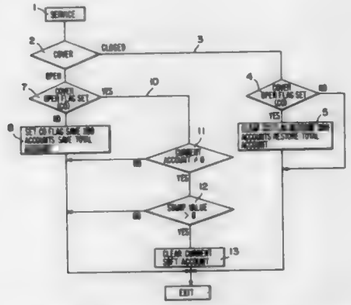
means for displaying a number derived from the set of imbalance measurements indicating how to balance the wheel.

5,307,280

FRANKING MACHINE

Werner Haug, Langnau, Switzerland, assignor to Frama AG, Lauperswil, Switzerland

Filed Sep. 3, 1991, Ser. No. 754,030
Int. Cl.[5] G07B *17/04*
U.S. Cl. 364—464.02 **3 Claims**



1. Apparatus for use in a franking machine of the type having electromechanical servodrives enclosed in a casing for setting the franking value of typewheels mounted on a printing head, electronic value adders for adding in a main memory means the value of each franking operation to a sum amount of the preceding franking operation, and a central processing unit, said apparatus comprising:

signal means for producing an "open" signal when said casing is open and a "closed" signal when said casing is closed;

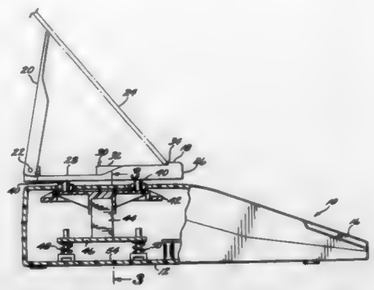
backup memory means for temporarily receiving the contents of said main memory means as a result of said "open" signal and for returning the contents of said backup-memory means to said main memory means responsive to said "closed" signal from said signal means.

5,307,281

DEVICE FOR WEIGHING AND AUTOMATICALLY CALCULATING POSTAGE FOR A MAILING PIECE

Lothar R. Wollmann, 88700 Shoreline Loop, Florence, Oreg. 94739

Filed Jul. 19, 1991, Ser. No. 732,616
Int. Cl.[5] G07B *17/00*
U.S. Cl. 364—464.03 **6 Claims**



1. A device for weighing and automatically computing postage due for a mailing piece comprising:

a main housing having means mounted therein for weighing said mailing piece;

a weighing platform operatively coupled to said weighing means, said platform comprising a lid portion and a base member, said lid portion being pivotably connected to said base member and having first and second positions, said platform forming a substantially rectangular shaped member when said lid is in said first position, the lid portion being in contact with the mailing piece being weighed, said lid portion, when in said second position, forming an angle with said base member, said mailing piece being supported for weighing between an edge formed in said base member and the tip of said lid portion when said lid portion is in said second position;

a microprocessor; and

memory means associated with said microprocessor for providing postal data thereto including postal rates, said memory means being reprogrammable in the event of a postage rate change, said microprocessor calculating the postage due for a mailing piece positioned on said weighing platform.

5,307,282

METHOD OF COMPUTER-AIDED PREDICTION OF COLLISIONS BETWEEN OBJECTS INCLUDING FABRICATION TOOLS AND PARTS TO BE FABRICATED

Scott A. Conradson, Palo Alto, and Lee A. Barford, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 411,344, Sep. 22, 1989. This application Nov. 6, 1989, Ser. No. 431,945
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **5 Claims**

1. A method of using a computer to design mechanical parts, the method comprising:

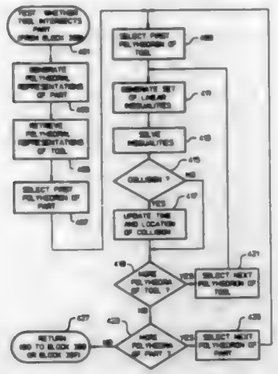
representing a desired mechanical part in the computer in terms of a plurality of convex polyhedra;

representing each of a plurality of fabrication tools in the computer in terms of a plurality of convex polyhedra;

computing a fabrication sequence which could be used to fabricate the part by repeatedly testing whether the part and various ones of the tools would collide if the tools were used in various fabrication steps to make the part, each test being accomplished by solving in the computer a set of linear relations among the polyhedra to determine whether a selected tool would collide with the part during

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relative motion along a predetermined path during a selected fabrication step; and



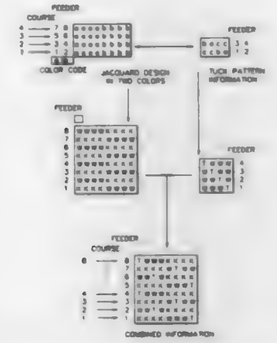
communicating the computed fabrication sequence to the designer.

5,307,283

METHOD OF PREPARING PATTERN INFORMATION FOR JACQUARD FABRIC

Masatoshi Sawazaki, Hyogo, and Takao Shibata, Osaka, both of Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Dec. 5, 1991, Ser. No. 803,139
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—470 **2 Claims**



1. A method of preparing pattern information for a jacquard fabric produced on an electronically controlled knitting machine comprising the steps of

preparing yarn color information to be fed to yarn feeders for determining the particular yarns to be knit in different wales of each course in a knit fabric,

resolving the prepared yarn color information into information to be fed to needle operation mechanisms for determining the knitting and welting positions of the needles as they pass each yarn feeder,

separately preparing information for determining the tucking and welting positions of the needles as they pass each yarn feeder for the differently colored yarns, and

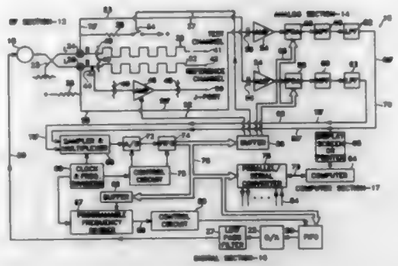
combining the knitting and welting needle position information for each yarn feeder with the separately prepared tucking and welting needle position information to form synthesized pattern information for knitting, tucking and welting.

5,307,284

VECTOR NETWORK ANALYZER

David R. Bronfeldt, and Somnath Mukherjee, both of Lawrence, Kans., assignors to Applied Microwave Corporation, Lawrence, Kans.

Continuation of Ser. No. 441,568, Nov. 24, 1989, abandoned. This application Aug. 27, 1992, Ser. No. 936,924
Int. Cl.[5] G01R *23/00, 23/175*
U.S. Cl. 364—485 **19 Claims**



1. A vector network analyzer comprising:

(a) a radio frequency section having one and only one RF oscillator for generating an output RF sweep frequency signal, means for displaying said RF signal prior to its transmission to a device under test (DUT), and means for mixing a return RF signal from the DUT with the initial RF sweep frequency signal to produce an analog intermediate frequency (IF) signal;

(b) means for converting said analog IF signal to digital signals prior to further processing and analyzing of said analog signals; and

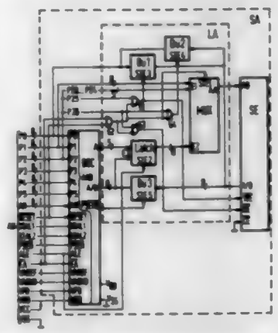
(c) means for processing and analyzing said digital signals to determine a reflection coefficient or a transmission coefficient.

5,307,285

CIRCUIT CONFIGURATION FOR EMULATING A MICROCONTROLLER

Steffen Storandt, Ottobrunn-Riemerling, and Ralf-Johannes Leaninger, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 491,152, Mar. 9, 1990, abandoned. This application Sep. 23, 1992, Ser. No. 949,745
Claims priority, application European Pat. Off., Mar. 9, 1989, 89104192.3
Int. Cl.[5] G06F *13/00, 12/00*
U.S. Cl. 364—489 **13 Claims**



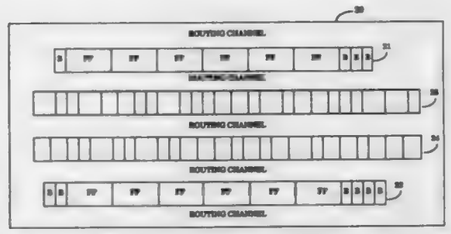
1. Reprogrammable microcontroller, comprising connection terminals, a bond-out chip connected to said connection terminals, a reprogrammable memory device being programmable through said connection terminals, and a logic configuration connected to at least some of said connection terminals and providing direct access from at least some of said connection terminals to said reprogrammable memory device, said logic configuration including means for effecting direct access from said connection terminals to said reprogrammable memory device and for shifting said bond-out chip into a passive state in response to a given logic signal applied to at least one of said connection terminals, and said logic configuration including means for causing the reprogrammable microcontroller to be inaccessible for programming through said terminals and to emulate a ROM-type microcontroller when said given logic signal is not applied to said at least one connection terminal.

5,307,286

METHOD FOR OPTIMIZING AUTOMATIC PLACE AND ROUTE LAYOUT FOR FULL SCAN CIRCUITS

Stefan Rusu, Sunnyvale, and Joseph S. Yang, Freemont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 605,557, Oct. 29, 1990, Pat. No. 5,208,764. This application Dec. 10, 1992, Ser. No. 988,468
Int. Cl.[5] H03K *19/173*
U.S. Cl. 364—490 **9 Claims**



1. An integrated circuit arrangement comprising flip-flop circuits, buffers, and combinatorial circuit elements in which the flip-flop circuits are arranged together in rows with each respective row having a buffer for driving global signals to flip-flop circuits of the respective row, said rows of flip-flop circuits being arranged in separate rows from said combinatorial circuits, said flip-flop circuits each having internal conductors for carrying at least one global signal, said internal conductors of each respective flip-flop circuit having input and output terminals positioned on opposing sides of the respective flip-flop circuit with the input and output terminals of each respective flip-flop circuit arranged to mate with the terminals of adjacent flip-flop circuits.

5,307,287

COMPARATIVE MOLECULAR FIELD ANALYSIS (COMFA)

Richard D. Cramer, III, St. Louis, Mo., and Svante B. Wold, Winchester, Mass., assignors to Tripos Associates, Inc., St. Louis, Mo.

Continuation of Ser. No. 237,491, Aug. 27, 1988, Pat. No. 5,025,388. This application Jun. 17, 1991, Ser. No. 716,824
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—496 **90 Claims**

1. A molecule having an overall structure substantially similar to those of other molecules in a series of molecules known to interact with a common molecule, and having shape determinants which are designed to increase or decrease said molecule's reactivity with said common molecule where a 3-D QSAR indicates that changes in shape determinants are strongly correlated with an increase or decrease in reactivity of the molecules of said series of molecules with said common molecule, said 3-D QSAR being derived by a computer-based method comprising the steps of:

a. aligning each molecule in said series with the common shape elements of all the molecules in said series;

b. defining molecular shape discriptors for each molecule in said series of molecules wherein each molecule is associated with a unique parameter value;



c. correlating the molecular shape descriptors and unique parameter value of each molecule with all the other molecules in said series;

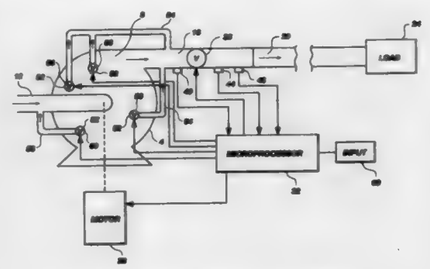
d. visually displaying using computer graphics the correlation among the molecules in said series.

5,307,288

UNITARY FLUID FLOW PRODUCTION AND CONTROL SYSTEM

Lawrence A. Haines, 1000 S. 1000 East, Mapleton, Utah 84664

Filed Jun. 7, 1991, Ser. No. 712,205
Int. Cl.[5] G01F *1/10*
U.S. Cl. 364—510 **19 Claims**



1. A fluid flow production system comprising

(a) a conduit,

(b) a variable speed pump for developing flow of a fluid in the conduit, the rate of said flow being variable in response to a control signal,

(c) means coupled into the flow developing means for selectively varying one or more geometric parameters of the flow developing means in response to a geometry determining signal, capable of independently varying the flow rate and fluid pressure in the conduit,

(d) flow rate sensing means disposed in the conduit for producing a signal representing the flow rate in the conduit,

(e) fluid pressure sensing means disposed in the conduit for producing a signal representing the fluid pressure in the conduit, and

(f) manually settable control means responsive to said flow rate signal and fluid pressure signal for producing a control signal and geometry determining signal for supply to the variable speed pump and geometry varying means respectively to cause development of a desired flow rate and fluid pressure in the conduit.

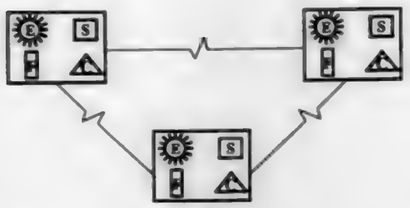
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5,307,289

METHOD AND SYSTEM FOR RELATIVE GEOMETRY TRACKING UTILIZING MULTIPLE DISTRIBUTED EMITTER/DETECTOR LOCAL NODES AND MUTUAL LOCAL NODE TRACKING

James C. Harris, Vienna, Va., assignor to Sesco Corporation, Vienna, Va.

Filed Sep. 12, 1991, Ser. No. 758,782
Int. Cl.[5] G01S 13/06
U.S. Cl. 364—516 27 Claims





1. A method of tracking the relative geometry and relative orientation of two or more tracking stations, and the additional relative geometry of other objects with respect to said tracking stations utilizing at least two tracking stations and at least one fusion center, including the steps of:

sensing, at each tracking station, energy emissions arriving from other tracking stations and other objects, said energy emissions including information relating to the relative geometry of the tracking stations and the other objects;

forwarding sensor data relating to the relative geometry of each tracking station with respect to other tracking stations and with respect to other objects to a means for processing said sensor data, which determines the mutual relative geometry of each tracking station with respect to a second tracking station without utilizing attitude information local to each tracking station;

estimating components of the relative geometry of each tracking station with respect to other tracking stations and other objects, said estimating components step conducted in said processing means;

forwarding information between said means for processing said sensor data and at least one fusion center regarding the relative geometry of each tracking station with respect to other tracking stations and other objects;

estimating the relative orientation of pairs of tracking station Egocentric Coordinate Frames, said estimating step conducted in said means for processing said sensor data; and

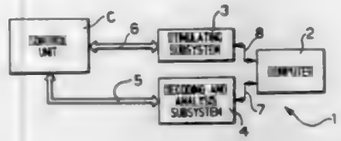
estimating the relative geometry of triplets of two tracking stations and one other object, said estimating step conducted in said means for processing said sensor data.

5,307,290

SYSTEM FOR THE AUTOMATIC TESTING, PREFERABLY ON A BENCH, OF ELECTRONIC CONTROL SYSTEMS WHICH ARE INTENDED TO BE FITTED IN VEHICLES

Cesare Raviglione; Antonino Gallo, and Vincenzo Di Lago, all of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Continuation of Ser. No. 759,184, Sep. 10, 1991, abandoned, which is a continuation of Ser. No. 392,108, Aug. 9, 1989, abandoned. This application Jul. 21, 1993, Ser. No. 95,312
Claims priority, application Italy, Oct. 18, 1988, 67932 A/88
Int. Cl.[5] G06F 15/20
U.S. Cl. 364—551.01 8 Claims



1. A system for bench testing an electronic control system for a motor vehicle in conjunction with a test bench, the system including:

means for generating predetermined signals for stimulating the electronic control system under test;

means for applying the predetermined stimulation signals to the electronic control system on the test bench;

mean for decoding and analyzing the signals output by the electronic control system as a result of the application of the stimulation signals; and

connection means for conveying the stimulation signals to the system under test, which connection means are able to apply to at least one of the stimulation signals, disturbances which correspond to at least one of the following phenomena:

short circuiting to a battery,

short circuiting to earth, and

open circuit.

5,307,291

INSTRUMENT FOR ANALYSIS OF LEVITATION OF RAPIDLY MOVING STRUCTURE SUCH AS A MAGNETIC TAPE ACROSS AN AIR GAP

Hiromi Kita, Kashihara; Hidetoshi Kotera, Toyonaka; Kazuyuki Sakiyama, Moriguchi, and Akira Ahagon, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

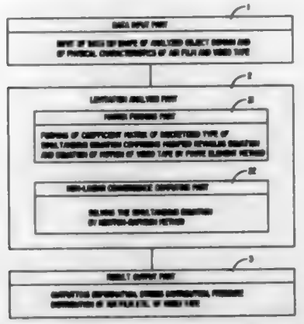
Filed May 16, 1991, Ser. No. 701,214
Claims priority, application Japan, May 16, 1990, 2-127364
Int. Cl.[5] G06F 15/20, 15/324
U.S. Cl. 364—560 13 Claims

1. Apparatus for analyzing levitation of a tape structure moving on a head and cylinder, said apparatus comprising:

data input means for receiving a plurality of data values relating to: physical characteristics of said tape structure, physical characteristics of an air film which applies pressure to said tape structure as said tape structure moves across said head and cylinder, and shape of said tape structure cylinder;

levitation analysis means for receiving said plurality of data values from the data input means, for providing a plurality of simultaneous equations in which ones of said plurality of data values are interrelated, and for solving said plurality of simultaneous equations to provide a further plurality of data values indicative of deformation of said magnetic tape, said levitation analysis means including a computer implemented device for solving said plurality of simultaneous equations; and

output means for generating signals corresponding to said further plurality of data values provided by the levitation



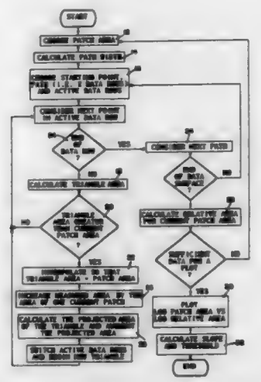
analysis means to adjust at least one physical characteristic relating to one of said head and said cylinder.

5,307,292

METHOD OF QUANTIFYING THE TOPOGRAPHIC STRUCTURE OF A SURFACE

Christopher A. Brown, R.R. 2, Box 35, Norwich, Vt. 05055; William A. Johnsen, Parker, Colo., and Patrick D. Charles, Maynard, Mass., assignors to Christopher A. Brown, Norwich, Vt.

Filed Jun. 24, 1992, Ser. No. 903,355
Int. Cl.[5] G01B 21/20, 21/30
U.S. Cl. 364—564 14 Claims



1. A method of quantifying the topographic structure of a specimen surface having a first horizontal dimension which is parallel with a horizontal X axis, a second horizontal dimension which is parallel to a horizontal Y axis and which is transverse to said X axis, and a variable vertical dimension which is parallel to a vertical Z axis, said method comprising:

(a) obtaining vertical height data for each point of a grid network of data points on said surface, said points being arranged in rows which are parallel to the X axis, said rows being spaced along the Y axis,

(b) selecting a patch area value,

(c) defining substantially the entire surface of said specimen surface with planar triangles which have an area substantially equal to said patch area value by using said data points as reference points for determining the positions of the three vertices of each triangle within said grid network of data points,

(d) calculating the total area of said planar triangles to obtain a measured area value,

(e) calculating the area of said specimen surface in the X-Y plane which is defined by said triangles to obtain a projected area value,

(f) dividing said measured area value by said projected area value to obtain a relative area value,

(g) repeating steps (b) through (f) for a plurality of patch area values to obtain a plurality of relative area value, and

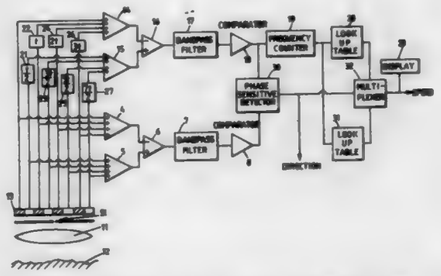
(h) plotting said plurality of relative area values to obtain a slope value and a threshold value which is defined as the point where the relative area value departs significantly from the slope value.

5,307,293

APPARATUS FOR MEASURING SPEED

Izumi Sakai, Solihull, Great Britain, assignor to Lucas Industries Public Limited Company, England

Filed May 12, 1992, Ser. No. 881,838
Claims priority, application United Kingdom, May 31, 1991, 9111702
Int. Cl.[5] G01P 3/36
U.S. Cl. 364—565 19 Claims



1. An apparatus for measuring speed with respect to an object, comprising first and Nth sensors where N is greater than two arranged to be sensitive to energy received from first to Nth consecutive regions, respectively, of the object to form sensor signals, signal delay means for forming delayed signal by delaying the sensor signals from at least said second to Nth sensors such that a time delay for each ith of the sensor signal is greater than a time delay for each (i-1)th of the sensor signals for $1<i\leqq N$, and first difference forming means for forming a difference between a sum of the delayed signals of ever numbered ones of said sensors and a sum of the delayed signals of odd numbered ones of said sensors.

5,307,294

AUTOMATED END TALLY SYSTEM

James A. Aman, 134 Bridle View Way, Souderton, Pa. 18964, and William R. Haller, 425 Brighton St. #403, Bethlehem, Pa. 18015

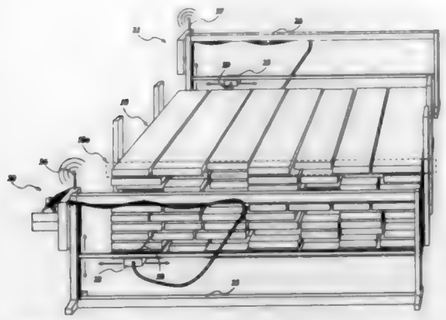
Filed Dec. 22, 1992, Ser. No. 995,024
Int. Cl.[5] G01B 11/02
U.S. Cl. 364—560 36 Claims

1. An automatic means for determining the tally count of a group of objects having substantially similar form, comprising:

means for producing topological information relating to said

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objects comprising at least two orthogonal dimensions, and



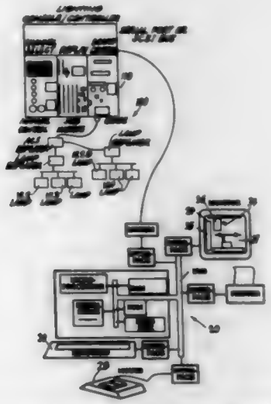
means for determining from said orthogonal dimensions, said tally count.

5,307,295

CREATING AND CONTROLLING LIGHTING DESIGNS

Brooks W. Taylor, and Andrew J. P. Meldrum, both of Dallas, Tex., assignors to Vari-Lite, Inc., Dallas, Tex.

Filed Jan. 14, 1991, Ser. No. 641,031
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—578 **62 Claims**



1. A computer-controller system for modelling a lighting production including characteristics of a production site in which said lighting production is to be performed and lighting scenes produced upon lighting targets, by a lighting console and lighting instruments without requiring access to the site, console or lighting instruments, one or more of said lighting instruments having a plurality of adjustable lighting parameters, said modelling system including:

data entry means adapted to receive:

(1) site data describing relevant characteristics of the lighting site including the location of said lighting targets within said lighting site;

(2) light selection data identifying the selection of the lighting instruments to be operational in the production of said lighting scenes;

(3) instrument data describing relevant characteristics of each of said lighting instruments including the location of said selected lighting instruments within said lighting site; and

(4) parameter data describing values of said lighting parameters associated with each of said selected lighting instruments;

a memory coupled to said data entry means for storing said site, light selection, instrument and parameter data;

a processor coupled to said memory for computing from said stored site, light selection instrument, and parameter data, three dimensional representations of the aggregate lighting scene, said representation including a simulation of one or more of said selected lighting instruments conforming to said associated parameter data; and

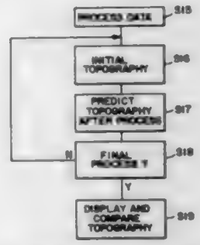
a monitor coupled to said processor for displaying certain of said three dimensional representations.

5,307,296

SEMICONDUCTOR WORKPIECE TOPOGRAPHY PREDICTION METHOD

Tetsuya Uchida, and Masato Fujinaga, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 493,456, Mar. 14, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 771,106
Claims priority, application Japan, Nov. 17, 1989, 1-297474
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—578 **1 Claim**



1. A method of predicting the topography of a semiconductor workpiece after a plurality of manufacturing processes, each process changing the topography of the workpiece, are carried out on the workpiece comprising:

establishing a desired topography for a semiconductor workpiece after sequential performance of a plurality of processes changing the topography of the workpiece are carried out on the workpiece;

specifying, for each process, conditions for performing the respective process;

establishing a plurality of points in a grid in a space including the workpiece;

identifying the materials comprising the workpiece and the concentration of virtual particles representing the topography of the workpiece at each of the points before a first process on the workpiece;

using the modified diffusion model equation to predict the material and concentration of virtual particles at each of the points after the completion of the first process in the sequence of processes;

recording the material and virtual particle concentration for at least some of the points at the completion of the first process as a decimal number including an integer part representing the material and a decimal part representing the concentration of virtual particles;

using the modified diffusion model to predict the materials and concentrations of virtual particles at each point after a second process beginning with the materials and virtual particle concentrations for each point from the prediction of the first process;

repeating the topography prediction for each of the plurality of processes to predict a final topography, each prediction employing as the initial materials and virtual particle concentrations the materials and virtual particle concentrations predicted at the completion of the immediately preceding process;

graphically displaying the final topography and comparing the final topography to the desired topography; and

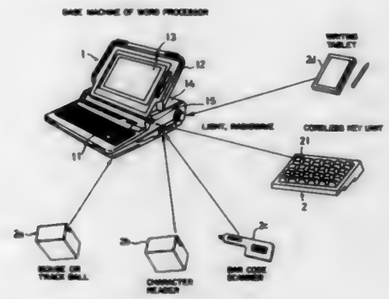
altering the conditions of at least one of the processes and repeating the topography prediction and graphical display steps until the desired topography is obtained for the sequence of processes.

5,307,297

DATA PROCESSOR WITH WIRELESS AUXILIARY INPUT APPARATUS

Shigeki Iguchi, Nara; Yukihiko Ueno, Souraku; Seiichi Senoo, Shiki; Tomoyuki Yano, Yamatokoriyama; Tokuyuki Shirasuka, Nara; Akira Mitarai; Yoshitaka Fukuna, both of Yamatokoriyama; Yoshito Kataoka, Ikoma; Hirofumi Nishikawa, Yao; Yasumasa Yamanaka; Yoshiki Oka, both of Yamatokoriyama; Masashi Hara, and Masaharu Satoh, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 5, 1992, Ser. No. 878,604
Claims priority, application Japan, May 10, 1991, 3-106039
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—708.1 **12 Claims**



1. A data processor system comprising:

a main unit and an auxiliary input apparatus,

the auxiliary input apparatus including signal generating mean for generating wireless signals, a first transmitting means for transmitting the generated signals in one direction outward from the auxiliary input apparatus, and a second transmitting means for transmitting the generated signals in another direction outward from the auxiliary input apparatus,

the main unit including data processing means, a keyboard, a display and a wireless signal receiving means operatively connected with the data processing means together with the keyboard and the display,

the wireless signal receiving means being divided into a first segment positioned on the main unit for receiving the wireless signals from the first transmitting means and a second segment positioned on the main unit for receiving the wireless signals from the second transmitting means.

5,307,298

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE FOR LINEAR QUANTIZATION AND INVERSE QUANTIZATION

Akira Sawada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

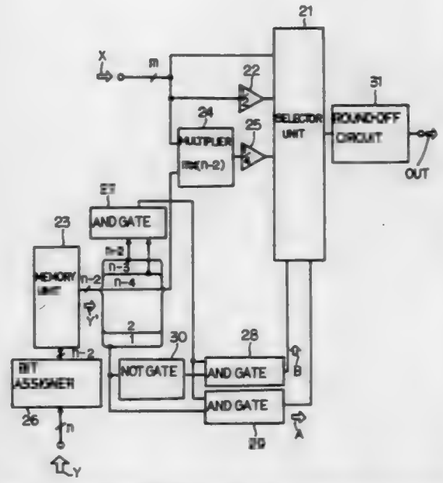
Filed Mar. 1, 1993, Ser. No. 24,081
Claims priority, application Japan, Feb. 28, 1992, 4-42610
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—715.01 **5 Claims**

5. A semiconductor integrated circuit device for a linear quantization and an inverse quantization selectively entering a coding phase and a decoding phase of operation, comprising:

a) a means for assigning bits of an (n+2) bit primary digital code signal indicative of a coefficient to bits of an n-bit secondary digital code signal;

b) a first shifter coupled with a data input port, and operative to divide the value indicated by an m-bit input data signal at said data input port by two for producing a first digital output signal indicative of the half of said value;

c) a multiplier having a first input port supplied with said m-bit input data signal and a second input port supplied with lower (n−2) bits of said n-bit secondary digital code signal, and operative to multiply the value indicated by said m-bit input data signal by a multiplier indicated by said lower (n−2) bits, said n-bit secondary digital code signal in said coding phase being at least two bits wider than a standard digital code signal indicative of a theoretical quantize coefficient used in said decoding phase, higher two bits of said n-bit secondary digital code signal being indicative of "0" in said decoding phase;



d) a second shifter coupled with said multiplier, and operative to divide the product of the multiplication carried out by said multiplier by four for producing a second digital output signal indicative of the quarter of said product;

e) a means for producing a two-bit control signal from the higher two bits of said n-bit secondary digital code signal; and

f) a selector unit having three input ports respectively coupled with said data input port, said first shifter and said second shifter, and responsive to said two-bit control signal for selectively coupling said three input ports with an output port thereof, said selector unit being operative to transfer said m-bit input data signal to said output port when only the higher bit of said two-bit control signal is indicative of "1", said selector unit being operative to transfer said first digital output signal to said output port when only the lower bit of said two-bit control signal is indicative of "1", said selector unit being operative to transfer said second digital output signal to said output port when said two bits of said two-bit control signal are indicative of "0".

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5,307,299

CIRCUIT ARRANGEMENT FOR THE DIGITAL PROCESSING OF SEMICONDUCTOR DETECTOR SIGNALS

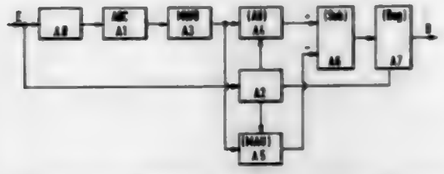
Jürgen Stein, Wuppertal, Fed. Rep. of Germany; Andrey Georgiev, Sofia, Bulgaria; Andree Büchner, Dresden, and Werner Gast, Cologne, both of Fed. Rep. of Germany, assignors to Forschungszentrum Julich GmbH, Julich and Forschungszentrum Rossendorf E.V., Dresden, both of Fed. Rep. of Germany, a part interest

Filed Dec. 9, 1992, Ser. No. 988,095

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140496; Aug. 7, 1992, 4226175

Int. Cl.[5] G06F *15/336*

U.S. Cl. 364—728.01 **12 Claims**



1. A circuit arrangement for digital processing of semi-conductor detector signals and for evaluation of the total charge of a radiation event generated in the detector wherein a charge sensitive preamplifier is connected to the detector, said circuit arrangement comprising:

a fast analog-to-digital converter having an input connected to an output of said charge sensitive preamplifier for sampling and digitalizing of the preamplifier signal received from said preamplifier;

a time detector and control unit connected to said preamplifier for determination of the beginning of a signal to be processed and for generating control signals for said circuit arrangement;

a moving window deconvoluter connected to said fast analog-to-digital converter for numerical deconvolution of a digitalized signal from the fast analog-to-digital converter into which signal a transfer function of the preamplifier and discrete charge distribution functions of radiation events and step noise are convoluted, said moving window deconvoluter having a time window of a width of M sampling intervals and generating a continuous series of deconvolution results spaced apart by one sampling interval, the time window sliding over the sampling values of the digitalized signal so that each new result represents a shift of the time window relative to a preceding result;

means connected to said moving window deconvoluter for determining a total charge of a radiation event from L deconvolution results of a series of said deconvolution results generated by said moving window deconvoluter and which results completely contain the total charge of the same event;

means connected to said moving window deconvoluter for determining a contribution of temporary step noise from N deconvolution results of said series which contain no charge relates to any radiation event; and

a first subtractor connected to said means for determining said total charge and to said means for determining said contribution of temporary step noise for subtracting a value representing said contribution from a value representing said total charge, thereby calculating an end result representing a total charge quantity liberated by a single radiation event in said detector, M being greater by L sampling intervals than a maximum time interval within which a liberation of charge by a single radiation event can occur, N being equal to or greater than L.

5,307,300

HIGH SPEED PROCESSING UNIT

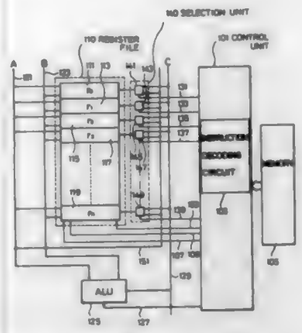
Eiji Komoto, and Kazuhiko Maki, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 825,976

Claims priority, application Japan, Jan. 30, 1991, 3-010023

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—736 **10 Claims**



1. A processing unit comprising:

a register file having a plurality of registers for storing data;

a first data bus coupled to each of said registers for receiving first data from any one of said registers which has been selected as a first source register;

a second data bus coupled to each of said registers for receiving second data from any one of said registers which has been selected as a second source register;

an arithmetic-logic unit coupled to receive said first and second data from said first and second data buses and to perform arithmetic and logic operations thereon to produce third data;

a third data bus coupled to receive said third data from said arithmetic-logic unit;

a selection circuit coupled to the register file and to said first and third buses;

a control circuit controllingly coupled to said register file, said arithmetic-logic unit, and said selection circuit for selecting first and second ones of said registers as said first and second source registers to supply data to said first and second buses, and for selecting a third one of said registers as a first destination register for receiving data via said selection circuit;

said selection circuit being responsively coupled to said control circuit for selecting one of said first bus and said third bus to couple data to said first destination register;

wherein said control circuit also selects a fourth one of said registers as a second destination register for receiving data via said selection circuit; and

said selection circuit also selects either said first bus or said third bus to couple data to said second destination register.

5,307,301

FLOATING POINT SAFE INSTRUCTION RECOGNITION METHOD

Jonathan B. Sweedler, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 896,424, Jun. 10, 1992. This application Apr. 13, 1993, Ser. No. 46,642

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **7 Claims**

1. A method for operating a two-operand arithmetic pipeline in a floating-point processor system incorporating a method for safe instruction recognition for the detection of potential arithmetic overflow and underflow, comprising the steps of:

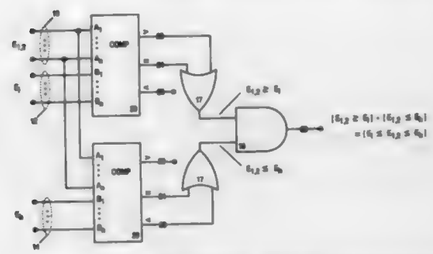
(a) decoding of a current pipeline instruction specifying a current first and second operand and a current arithmetic operation;

(b) fetching the current first and second operand, each of the operands comprising a sign bit, an exponent value, and a fraction value;

(c) processing the current first and second operand exponent values to determine if the prescribed current arithmetic operation is safe by using a method for safe instruction recognition (SIR) comprising the steps of:

(i) first range comparing of the first operand exponent value with a first range of prescribed values, producing a first output true indication if the first exponent value falls within the first prescribed range of values, otherwise producing a first output false indication;

(ii) second range comprising of the second operand exponent value with a second range of prescribed values, producing a second output true indication if the second



exponent value falls within the second prescribed range of values otherwise producing a second output false indication; and

(iii) examining the first and second range comparing outputs, producing a true SIR output indication if both the first an second range comparing outputs are true, otherwise producing a false SIR output indication;

(d) executing the current prescribed arithmetic operation in the two-operand arithmetic pipeline of the floating-point processor system, if step (c) produces a true SIR output indication; and

(e) executing the current prescribed arithmetic operation in the two-operand arithmetic pipeline of the floating-point processor system while stalling the execution of a next arithmetic operation on a pair of next operands in the two-operand arithmetic pipeline of the floating-point processor system until the current prescribed operation is completed, if step (c) produces a false SIR output.

5,307,302

SQUARE ROOT OPERATION DEVICE

Hiraku Nakano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1992, Ser. No. 893,082

Claims priority, application Japan, Jun. 3, 1991, 3-131001

Int. Cl.[5] G06F *7/552*

U.S. Cl. 364—752 **30 Claims**

1. A square root operation device for finding a square root of a fixed-point number input operand comprising:

normalization shift count detecting means for detecting the number of shifts in 2-bit normalizing said input operand,

normalizing means for left-shifting said input operand by the number of shifts detected by said normalization shift count detecting means,

table information storing means for indexing an approximation of square root's reciprocal, taking high-order bits of an output of said normalizing means as an address,

residue holding means for holding a residue in finding the square root by iterating at a time a fixed number of bits from a high-order position downward,

multiplying means, which is supplied with the residue that is output from said residue holding means and serves as a multiplicand and with the approximation of square root's reciprocal that is output from said table information storing means and serves as a multiplier, for carrying out a multiplication to output high-order positions of a resultant product as a pre-correction partial square root value,

constant subtracting means for subtracting "1" from the least significant bit of the pre-correction partial square root value that is output from said multiplying means,

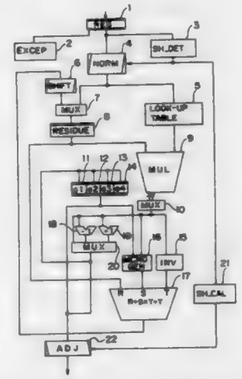
constant adding means for adding "1" to the least significant bit of the pre-correction partial square root value that is output from said multiplying means,

a correction multiplexer, which selects one from among the pre-correction partial square root value output from said multiplying means, an output of said constant subtracting means and an output of said constant adding means, for outputting the selected one as a post-correction partial square root value without a bit overlap,

a plurality of post-correction partial square root value holding means for holding the respective post-correction partial square root values which are output one after another from said correction multiplexer,

inverting means for inverting the pre-correction partial square root value bit by bit output from said multiplying means,

multiplicand generating means, which left-shifts respective outputs of said plurality of post-correction partial square



root value holding means one bit place, for generating a multiplicand in cooperation with the pre-correction partial square root value output from said multiplying means,

complex operation means, which is supplied with a residue, R output from said residue holding means, a multiplicand, S output from said multiplicand generating means and a multiplier, T output from said inverting means,

shifting means for left-shifting an output of said complex operation means by a bit length of a partial square root value,

a hold data switch multiplexer for selecting either an output of said normalizing means or an output of said shifting means, as an input of said residue holding means,

digit adjustment shift count calculating means for calculating from an output of said normalization shift count detecting means the number of right-shifts to be applied to said plurality of post-correction partial square root values, in order to find a final resultant square root, and

digit adjusting means, which right-shifts the post-correction partial square root values output from said post-correction partial square root value holding means and the post-correction partial square root value output from said correction multiplexer, by the number of shifts output from said digit adjustment shift count calculating means, for outputting the final resultant square root.

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5,307,303

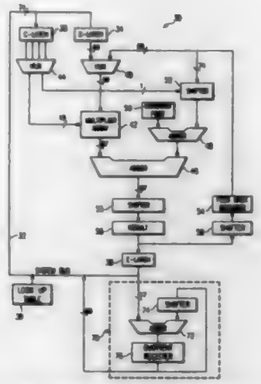
METHOD AND APPARATUS FOR PERFORMING DIVISION USING A RECTANGULAR ASPECT RATIO MULTIPLIER

Willard S. Briggs, and David W. Matula, both of Dallas, Tex., assignors to Cyrix Corporation, Richardson, Tex.

Continuation of Ser. No. 716,537, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 389,051, Aug. 2, 1989, Pat. No. 5,046,038, which is a continuation-in-part of Ser. No. 376,753, Jul. 7, 1989, abandoned. This application Dec. 18, 1991, Ser. No. 810,710

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—765 **27 Claims**



1. A circuit for performing exact division of a dividend by a divisor, comprising:

short reciprocal circuitry for generating GA short reciprocal of said divisor;

quotient digit circuitry coupled to said short reciprocal circuitry for computing a quotient digit value by multiplying said short reciprocal of said divisor by said dividend;

product circuitry coupled to said quotient digit circuitry for generating a product of said divisor and said quotient digit value;

partial remainder circuitry coupled to said product circuitry for computing a partial remainder as the difference between said dividend and said product of said divisor and said quotient digit value;

iterative circuitry coupled to said quotient digit circuitry, said product circuitry, and said partial remainder circuitry, said iterative circuitry operable to generate a desired number of succeeding quotient digit values by substituting a preceding partial remainder for said dividend and repeating said computations, said quotient digit values computed such that all subsequent partial remainders have magnitudes corresponding to less than one unit in the last place of a preceding quotient digit value; and

full precision quotient circuitry coupled to said quotient digit circuitry for appropriately shifting and accumulating said quotient digit values into a full precision quotient.

5,307,304

SEMICONDUCTOR MEMORY DEVICE AND METHOD OF OPERATION THEREOF

Ryuichi Saito; Hidekatsu Onose, both of Hitachi; Yutaka Kobayashi, Katsuta, and Michio Ohno, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,601

Claims priority, application Japan, Aug. 3, 1990, 2-205004

Int. Cl.[5] G11C *11/22*

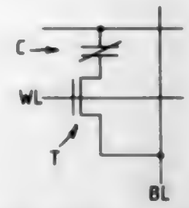
U.S. Cl. 365—145 **12 Claims**

1. A method of operating a semiconductor memory device; said semiconductor memory device having at least one memory cell, said at least one memory cell having at least one ferroelectric capacitive element;

wherein said at least one ferroelectric capacitive element has first and second polarization states and is switchable therebetween by respective first and second voltages;

said method comprising:

applying said first voltage across said ferroelectric capacitive element, thereby to cause said ferroelectric capacitive element to be in said first state;



applying a further voltage across said ferroelectric capacitive element so as to cause said ferroelectric capacitive element to change from said first state to a further state, said further voltage being different from that corresponding to said second state; and

measuring the change of polarization across said at least one ferroelectric capacitive element between said first state and said further state.

5,307,305

SEMICONDUCTOR DEVICE HAVING FIELD EFFECT TRANSISTOR USING FERROELECTRIC FILM AS GATE INSULATION FILM

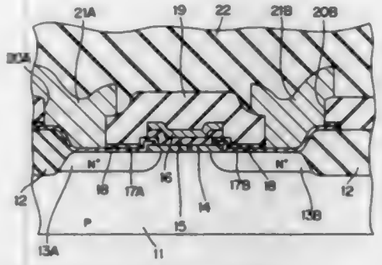
Hideni Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 1, 1992, Ser. No. 984,312

Claims priority, application Japan, Dec. 4, 1991, 3-320708; Dec. 4, 1991, 3-320709

Int. Cl.[5] G11C *11/22*

U.S. Cl. 365—145 **45 Claims**



1. A semiconductor device comprising:

a pair of high concentration impurity regions of a predetermined conductivity type serving as a source region and a drain region formed with predetermined spacing on a semiconductor substrate;

a silicon carbide layer of a conductivity type opposite to that of said pair of high concentration impurity regions formed on the surface of said semiconductor substrate so as to connect said pair of high concentration impurity regions;

a ferroelectric film stacked on said silicon carbide layer; and

a gate electrode formed on said ferroelectric film,

5,307,306

WIDEBAND INTERCORRELATION METHOD AND DEVICE IMPLEMENTING THIS METHOD

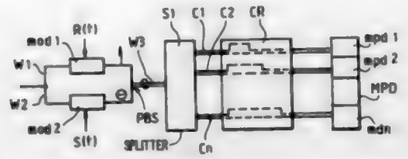
Pierre Tournois, Le Rouret; Daniel Dolfi, Orsay, and Jean-Pierre Huignard, Paris, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Mar. 13, 1992, Ser. No. 850,812

Claims priority, application France, Mar. 19, 1991, 91 03307

Int. Cl.[5] G06E *3/00*

U.S. Cl. 364—822 **18 Claims**



5. A device for the intercorrelation of first and second electrical control signals, said device comprising:

a first electroptical modulator and a second electrooptical modulator respectively receiving said first electrical control signal and said second electrical control signal as well as a respective light wave, with each light wave being modulated by a respective one of said first and second electrical control signals and each light wave being polarized along an appropriate direction of polarization;

a coupling device superimposing the two modulated waves to form a single light beam;

a beam splitter device splitting the single light beam into at lest two channels;

each of said two channels associated with a respective switchable polarization rotation device;

a polarization separation device provided with each polarization rotation device and transmitting a first polarization on a first path and a second polarization on a second path for each channel;

a recombination device for recombining the first and second paths and providing an output to at least one photodetector.

5,307,307

SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED BIT LINE ARRANGEMENT

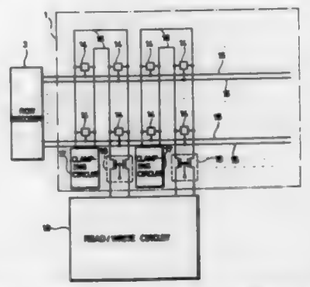
Tomohisa Wada, and Katsuki Ichinose, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 495,037

Claims priority, application Japan, Mar. 20, 1989, 1-68005

Int. Cl.[5] G11C *13/00, 11/00*

U.S. Cl. 365—51 **12 Claims**



1. A semiconductor memory device comprising:

a memory cell array comprising a plurality of memory cells physically arranged two-dimensionally in rows and columns,

a plurality of word lines each connected to memory cells in a respective row;

a plurality of bit lines each being bent at at least one location into substantially the form of a letter U and interconnecting memory cells in two or more columns;

selecting means for selecting one of said memory cells, and means for performing at least reading data out of a selected memory cell; wherein

said bit lines form bit line pairs for respective columns of said memory cells, and wherein the semiconductor memory device further comprises

first circuit means connected to respective one ends of said bit line pairs and having a predetermined function, and

second circuit means connected to the respective other ends of said bit line pairs and having a predetermined function different from that of said first circuit means,

said bit line pairs are bent, each at one location, substantially in the two-dimensional form of a letter U, whereby said first circuit means and said second circuit means are disposed alternately on one straight line.

5,307,308

SEMICONDUCTOR MEMORY DEVICE COMPRISING ONE OR MORE HIGH-RESISTANCE ELEMENTS

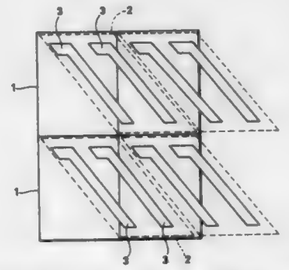
Takeshi Noguchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1991, Ser. No. 746,277

Claims priority, application Japan, Aug. 22, 1990, 2-221862

Int. Cl.[5] G11C *11/00*; H01L *29/04*

U.S. Cl. 365—51 **6 Claims**



1. A semiconductor memory device comprising a plurality of memory cells, each of said memory cells including:

a transistor region having one or more transistors; and

a high-resistance element region associated with the same memory cell as said transistor region in a resistor layer overlying said transistor region and having one or more high-resistance elements;

said high-resistance element region projecting beyond said transistor region and occupying an area not larger than that of said transistor region.

5,307,309

MEMORY MODULE HAVING ON-CHIP SURGE CAPACITORS

Stanley N. Protigal; Web-Foo Chern; Ward D. Parkinson; Leland R. Nevill; Gary M. Johnson; Thomas M. Trent, and Kevin G. Duesman, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 774,121, Oct. 8, 1991, abandoned, which is a continuation of Ser. No. 291,294, Dec. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 200,673, May 31, 1988, abandoned. This application Mar. 19, 1993, Ser. No. 34,001

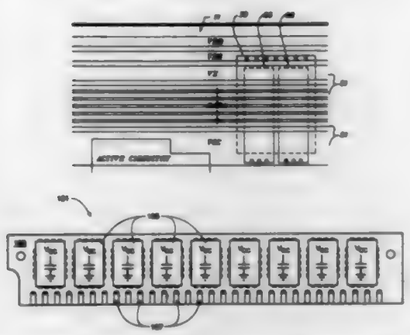
Int. Cl.[5] G11C *5/06, 5/10, 7/02*; H01L *27/02*

U.S. Cl. 365—63 **19 Claims**

1. A memory array including a plurality of semiconductor memory devices arranged in a manner such that memory

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information is obtained by addressing a bit of information from each of a selected number of the memory devices in the array in a format, and the format of bits forms a byte of memory data such that each byte includes a bit from each memory device in said selected number of the memory devices, and wherein the bits are addressed as rows and columns of information in a matrix on each memory device and the plurality of semiconductor memory devices are addressed in said bytes, each memory device including a die having a plurality of active circuit devices arrayed on a semiconductor substrate and a plurality of conductive lines extending along the substrate between the active circuit devices and external connection points on the die, each memory device having:



a capacitor comprising an additional conductive layer, wherein one electrode of the capacitor is formed in an active area of the substrate and a second electrode of the capacitor is formed from the additional conductive layer, each capacitor being in electrical communication with at least one of said conductive lines; and wherein

the capacitors on at least two of the memory devices being connected in parallel with at least one other capacitor on a different one of the memory devices, whereby

the connection of the capacitors in parallel results in electrical decoupling of the memory array from external circuitry.

5,307,310

SEMICONDUCTOR MEMORY HAVING STACKED CAPACITORS AND MOS TRANSISTORS

Kaoru Narita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 743,238

Claims priority, application Japan, Aug. 11, 1990, 2-213238

Int. Cl.[5] H01L *29/78*

U.S. Cl. 365—149 **16 Claims**

1. A semiconductor memory cell comprising:

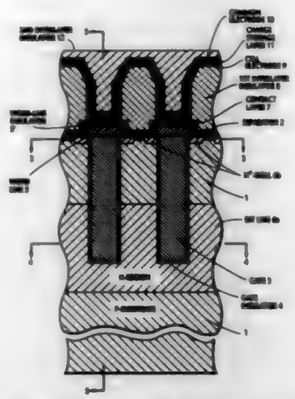
a semiconductor substrate of a first conductivity type, the substrate having a pair of opposed first and second major surfaces;

a first impurity-diffused region of a second conductivity type opposite to said first conductivity type, the first impurity-diffused region being embedded in the substrate and extending along a first axis of the substrate parallel with said first and second major surfaces;

an insulated gate electrode embedded in said substrate, the insulated gate electrode extending along a second axis of the substrate from said first major surface into said first impurity-diffused region, said second axis being perpendicular to said first axis;

a second impurity-diffused region of said second conductivity type embedded in said substrate adjacent to said first major surface and adjacent to the insulated gate electrode; and

a capacitor stacked on the insulated gate electrode, the capacitor having a first electrode electrically coupled to



the second impurity-diffused region, a second electrode and a charge storage layer interposed therebetween.

5,307,311

MICROVIBRATORY MEMORY DEVICE

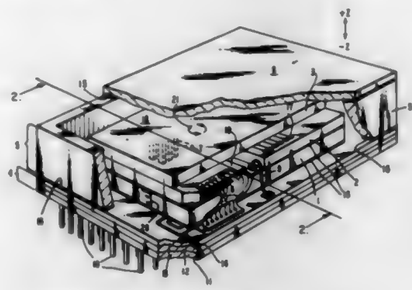
John W. Sliwa, Jr., 601 Coleridge Ave., Palo Alto, Calif. 94301

Continuation of Ser. No. 608,335, Nov. 2, 1990, Pat. No. 5,216,631. This application Feb. 9, 1993, Ser. No. 15,870

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] G11C *11/21*

U.S. Cl. 365—174 **56 Claims**



1. A memory device comprising:

(a) at least one member having at least one surface connected to a support means and at least one surface movable by controlled structural distortion means, said at least one movable surface of said at least one movable member being movable relative to a disposed opposite surface;

(b) at least one bit-array for storing at least one bit of data therein;

(c) at least one read/write tip for reading and writing data to said at least one bit-array;

(d) with said at least one read/write tip disposed either on said movable surface or on said opposite surface and said at least one bit-array disposed on the other so as to provide motion of said at least one tip relative to said at least one bit-array, said at least one read/write tip and said at least one bit-array separated by a gap;

(e) housing means for hermetically sealing groups comprising at least one of said movable members, said at least one read/write tip, and said at least one bit-array from other such groups or from the external environment;

(f) said means of controlled structural distortion providing movement of said movable member surface via the structural distortion of said movable member or of its adjacent support means to thereby permit physical addressing via relative motion between at least one pair of a read/write tip and a mating bit-array;

(g) means for electrically addressing said at least one read/-write tip and its mating bit-array for routing incoming bit-streams to said at least one bit-array or for sensing bit-streams being read from said at least one bit-array through said at least one read/write tip;

(h) means for controlling said gap between said at least one mating tip and bit-array via relative movement of said at least one tip and said at least one bit-array toward or away from each other, wherein said gap control movement is undertaken by said at least one tip, said at least one bit-array, or by both said at least one tip and at least one bit-array and wherein said gap control may include that required for coarse presetting of said gap during manufacture, or for coarse control of said gap during device operation or for fine control of said gap during device operation; and

(i) means for monitoring said gap between said at least one tip and said at least one mating bit-array.

5,307,312

PROCESS FOR OBTAINING AN N-CHANNEL SINGLE POLYSILICON LEVEL EPROM CELL AND CELL OBTAINED WITH SAID PROCESS

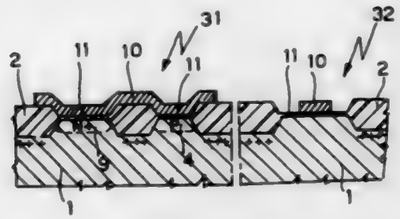
Alfonso Maurelli, Sulbiate, and Carlo Riva, Monza, both of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Milan, Italy

Filed Jul. 24, 1991, Ser. No. 734,907

Claims priority, application European Pat. Off., Jul. 24, 1990, 90830343.1

Int. Cl.[5] H01L *25/04, 27/10*

U.S. Cl. 365—182 **17 Claims**



1. A process for obtaining an N-channel single polysilicon level EPROM cell, characterized in that it comprises:

simultaneous N+ type implantation of semiconductor substrate areas of type P for the formation of a control gate and of highly doped regions of source and drain for the formation of a channel region;

the growth of an oxide on the highly doped areas;

the deposition and definition of a polysilicon layer, one region of which constitutes a floating gate above the control gate and the channel region, the polysilicon layer being partially superimposed above portions of the regions of highly doped regions of the source and drain;

the N-type implantation of portions of the regions of source and drain located at the sides of the floating gate; and

the formation of oxide spacers partially superimposed over the portions of regions of source and drain at the sides of the floating gate.

5,307,313

FLAG CIRCUIT FOR MEMORY

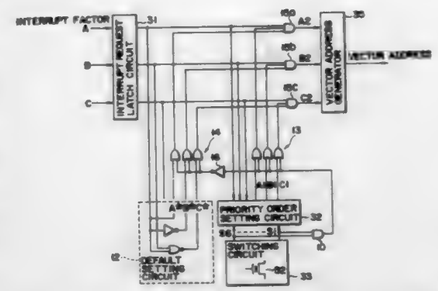
Akihiro Yamazaki, Sagamihara; Tomotaka Saito, and Shuichi Ito, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 22, 1991, Ser. No. 659,506

Claims priority, application Japan, Feb. 23, 1990, 2-40914

Int. Cl.[5] G11C *8/02*

U.S. Cl. 365—189.01 **12 Claims**



1. A semiconductor integrated circuit having non-volatile memory cells for controlling predetermined function, the semiconductor integrated circuit comprising:

a flag circuit, comprising a non-volatile memory cell substantially identical to said non-volatile memory cells, for outputting data indicating a state of said non-volatile memory cells for controlling said predetermined function; and

a function switching circuit for switching said predetermined function between first and second states on the basis of the data output from the flag circuit.

5,307,314

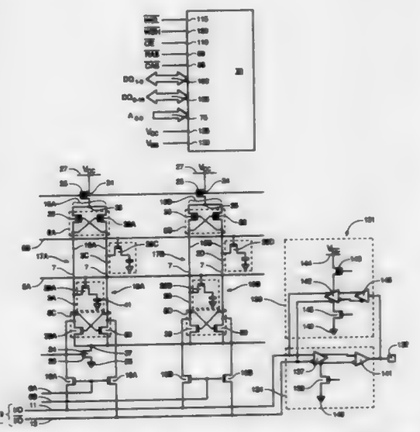
SPLIT READ/WRITE DYNAMIC RANDOM ACCESS MEMORY

Terry R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 15, 1991, Ser. No. 730,367

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.04 **9 Claims**



1. A monolithic random access memory device for storing electrical data, output data retrieved from storage in a read

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operation and input data transmitted to storage in a write operation, comprising:

a) a first external write enable pin for accepting a first external write enable signal;

b) a second external write enable pin for accepting a second external write enable signal;

c) only one output enable pin for accepting an output enable signal;

d) a first bank of memory arrays for storing a first portion of the electrical data;

e) a second bank of memory arrays for storing a second portion of the electrical data;

f) each of said memory arrays of said first bank having a first logic circuit in electrical communication therewith, said first logic circuit responding to a first instruction formulated in response to said first external write enable signal and said output enable signal, said first instruction determining which of the read and the write operations is performed in said first bank;

g) each of said memory arrays of said second bank having a second logic circuit in electrical communication therewith, said second logic circuit responding to a second instruction formulated in response to said second external write enable signal and said output enable signal, said second instruction determining which of the read and the write operations is performed in said second bank; and

wherein

said first instruction enables said first logic circuit to perform the read operation in said first bank of said memory arrays and wherein said second instruction enables said second logic circuit to perform the write operation in said second bank of said memory arrays during a single operation cycle of the random access memory device.

5,307,315

INTEGRATED SEMICONDUCTOR MEMORY WITH INTERNAL VOLTAGE BOOSTER OF LESSER DEPENDENCY ON POWER SUPPLY VOLTAGE

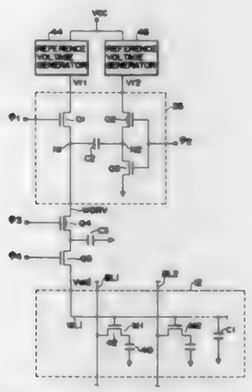
Yukihito Oowaki, Yokohama; Daisaburo Takashima, Kawasaki, and Masako Ohta, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 31, 1991, Ser. No. 708,362

Claims priority, application Japan, Jun. 1, 1990, 2-141686

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.09 **12 Claims**



1. An integrated circuit for use with an array of rows and columns of memory cells associated with bit lines and word lines on a substrate, said circuit comprising:

first voltage generator means for providing a selected one of said word lines with a word-line drive voltage that is potentially high enough to enable write of a digital information of high level;

second voltage generator means connected to said first voltage generator means, for receiving a power supply voltage, and for generating a voltage of a fixed potential which is essentially insensitive to a potential variation in the power supply voltage;

said first voltage generator means generating the drive voltage by performing a capacitive carrier storage using said voltage of fixed potential; and

said second voltage generator means comprising compensator circuit means arranged on said substrate, for individually determining the potential level of the reference voltage, in accordance with resultant physical conditions of actually manufactured memory cells of said semiconductor memory device so as to compensate for potential variations is the work-line drive voltage which may take place due to variations in the physical conditions of the memory cells, and for causing the determined potential level of said reference voltage to be substantially constant or less in gradient than a high level voltage to be applied to said bit lines in an allowable range of the power supply voltage.

5,307,316

SEMICONDUCTOR MEMORY UNIT HAVING REDUNDANT STRUCTURE

Yoshihiro Takemae, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

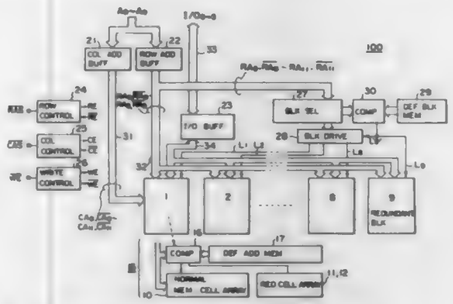
PCT No. PCT/JP91/01406, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO92/07362, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 16, 1991, Ser. No. 861,822

Claims priority, application Japan, Oct. 16, 1990, 2-276889

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **9 Claims**



1. A semiconductor memory device, comprising:

a plurality of main memory blocks on a chip major surface, each block comprising a main memory cell array, peripheral circuit means supplied with first address data for addressing a memory cell in the main memory cell array, a sub-memory cell array that includes memory cells of a number smaller than said main memory cell array, first defect address memory means for storing address data of a defective memory cell that is included in said main memory cell array, first redundancy control means supplied with said first address data for selecting a memory cell in the sub-memory cell array in place of said defective memory cell when said first address data specifies said defective memory cell, and data input/output means for writing and/or reading data to and from said selected memory cell;

block selection means supplied with second address data selectively activating one of said plurality of main memory blocks;

second defect address memory means for storing address data of a defective main memory block that contains a defect that cannot be compensated for by said first redundancy control means;

a redundant memory block provided on said chip major surface and having a construction substantially identical with each of said main memory blocks; and

second redundancy control means supplied with said second address data for selecting said redundant memory block in place of said defective main memory block when said second address data specifies said defective main memory block that contains the defect.

5,307,317

SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED ACCESS TO ADDRESSES

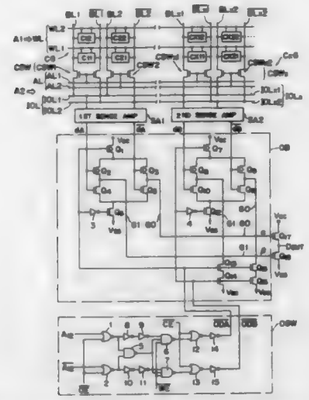
Sumako Shiraishi, Kawasaki, and Youichi Suzuki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 5, 1991, Ser. No. 726,379

Claims priority, application Japan, Jul. 5, 1990, 2-177880

Int. Cl.[5] G11C *7/00, 11/42*

U.S. Cl. 365—205 **4 Claims**



1. A semiconductor memory device comprising:

a plurality of cell groups each including a plurality of columns to which a plurality of cells are connected respectively, said cells of each of said cell groups being selected on the basis of an address designation;

column selection means for selecting corresponding columns of said plurality of cell groups;

a plurality of sense amplifiers provided for said plurality of cell groups for respectively outputting data of selected cells from said cell groups as sense outputs;

selection means for determining data corresponding to any one of the sense outputs to be outputted and for outputting selection signals on the basis of specific address signals; and

output means for selectively outputting one of said sense outputs in response to the selection signals of said selection means.

5,307,318

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING MAIN POWER TERMINAL AND BACKUP POWER TERMINAL INDEPENDENTLY OF EACH OTHER

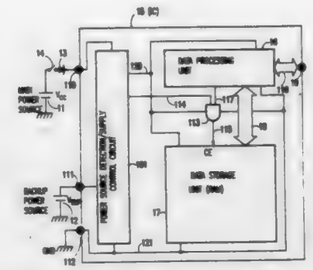
Masahisa Nemoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 657,768

Claims priority, application Japan, Jan. 30, 1990, 2-20581

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—226 **9 Claims**



1. A semiconductor integrated circuit device comprising:

a first power terminal to which a main source voltage is to be applied,

a second power terminal to which a backup voltage is to be applied,

a source line for connecting said first power terminal to an internal circuit,

a transistor connected between said second power terminal and said source line,

comparator means for comparing a voltage relative to the voltage at said first power terminal with a voltage relative to the voltage at said second power terminal to make said transistor non-conductive when the voltage at said first power terminal is higher in absolute value than a predetermined voltage and to make said transistor conductive when the voltage at said first power terminal is not higher in absolute value than said predetermined voltage,

data storage means connected to said source line, and

main source voltage reduction monitor means for inhibiting any data access of said data storage means when the voltage at said first power terminal is lowered to an intermediate value between a regulation voltage and said backup voltage.

5,307,319

INITIALIZATION SETTING CIRCUIT AND SEMICONDUCTOR MEMORY DEVICE USING THE SAME

Takashi Kohketsu, and Teruo Seki, both of Kasugai, Japan, assignors to Fujitsu Limited, Japan

PCT No. PCT/JP91/01143, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/03825, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 28, 1991, Ser. No. 844,659

Claims priority, application Japan, Aug. 28, 1990, 2-227215

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—230.08 **11 Claims**

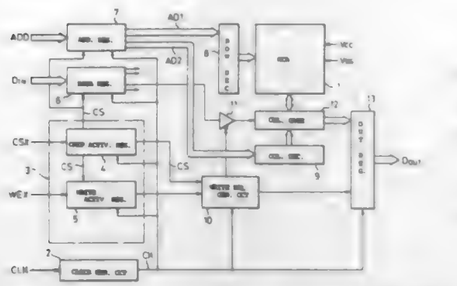
1. An initialization setting circuit for setting an initial state of a latch circuit in a semiconductor device upon ON-set of power supply, comprising:

a detecting circuit active in response to ON-set of power supply for detecting power source voltage reaching a predetermined level; and

an output level controlling circuit responsive to a detecting signal output from said detecting circuit for elevating an output signal of the initialization setting circuit to a high

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potential level, or to pull down the output signal to a low potential level,



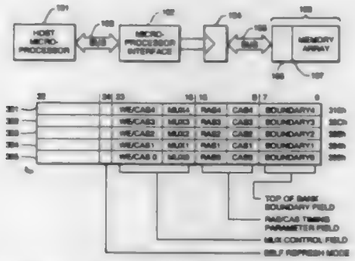
the output signal controlled by said output level controlling circuit being supplied to said latch circuit as the power source voltage.

5,307,320

HIGH INTEGRATION DRAM CONTROLLER

Steven M. Farrer, Santa Clara, and Eugene P. Matter, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 23, 1992, Ser. No. 949,708
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.01 **15 Claims**



1. A memory controller apparatus for providing access to a memory array including at least one dynamic random access memory (DRAM) bank, said apparatus adaptable to various types of DRAM banks, wherein each of said bank types are defined according to their individual access parameters, the apparatus comprising:

at least one programmable storage means, said at least one programmable storage means being associated with said at least one bank, said at least one programmable storage means being programmed to contain access parameters necessary to access its associated bank, wherein a portion of said at least one storage means defines control signals for said at least one DRAM bank such that memory interface circuitry provides the column address strobe (CAS) signals and write enable (WE) signals required to access said at least one bank; and

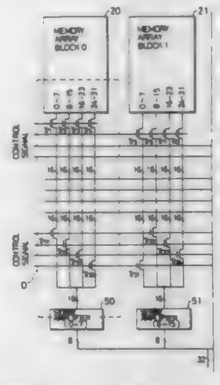
said memory interface circuitry coupled to said storage means and adapted to generating memory control signals with the proper sequence and timing for said at least one bank according to the access parameters in its associated programmable storage means, wherein when said at least one programmable storage means is loaded with a first set of access parameters said memory interface circuitry generates control signals for a first type of DRAM bank and if said at least one programmable storage means is loaded with a second set of access parameters said memory interface circuitry generates control signals for a second type of DRAM bank, such that said memory controller is capable of accommodating DRAM banks of different types in the memory array.

5,307,321

SEMICONDUCTOR MEMORY DEVICE WITH PARTICULAR BANK SELECTOR MEANS

Kiyotaka Sasai, Tokyo, and Tohru Sasaki, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 535,491, May 1, 1990, abandoned. This application Sep. 29, 1992, Ser. No. 953,206
Claims priority, application Japan, May 2, 1989, 1-111978
Int. Cl.[5] G11C *8/02*
U.S. Cl. 365—230.03 **4 Claims**



1. A semiconductor memory device, comprising:

a general data bus;

a memory including a plurality of memory blocks, each of said plurality of memory blocks having a plurality of output lines, said plurality of memory blocks providing memory block data signals on said plurality of output lines;

a column selector coupled to said plurality of output lines of said plurality of memory blocks and coupled to said general data bus, said column selector selecting said plurality of output lines from one of said plurality of memory blocks and providing said memory block data signals from said plurality of output lines from said one of said plurality of memory blocks to said general data bus in response to an external selection control signal;

an aligner coupled to said general data bus, said aligner having a plurality of aligner output lines, said aligner receiving said memory block data signals from said general data bus and arranging said memory block data signals into one of a plurality of arrangements in response to an external alignment control signal and providing said one of said plurality of arrangements of said memory block data signals at said plurality of aligner output lines; and

a sense amplifier having a plurality of input lines coupled to said plurality of aligner output lines.

5,307,322

MEMORY CELL FOR USE IN A MULTI-PORT RAM

Kimiyoshi Usami, and Yukinori Muroya, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 2, 1992, Ser. No. 908,263
Claims priority, application Japan, Jul. 3, 1991, 3-162871
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—230.05 **12 Claims**

8. A memory cell for use in a multi-port RAM which has an address decoder having at least a first and a second read-only port and a write-only port, the cell comprising:

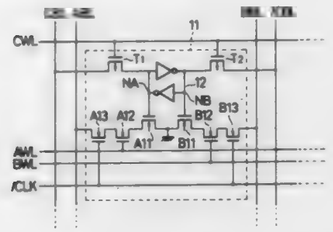
a flip-flop circuit to memorize data;

a first transistor series having first, second, and third field effect transistors which are series connected between a bit line corresponding to said first read-only port and a low electric supply;

a second transistor series having first, second, and third field effect transistors which are series connected between a bit line corresponding to said second read-only port and said low electric supply; and

a first and a second transfer gates for transmitting input data into said flip-flop circuit;

wherein, in said first transistor series, said first transistor being controlled to be conductive in accordance with data stored in said flip-flop circuit;



said second transistor being controlled to be conductive by an address decode signal output from said first read-only port, whenever said data stored in said flip-flop circuit is read out;

and in said second transistor series, said first transistor being controlled to be conductive in accordance with said data stored in said flip-flop circuit in a manner which is opposite to the control of said first transistor series;

said second transistor being controlled to be conductive by an address decode signal output from said second read-only port, whenever said data stored in said flip-flop circuit is read out; and

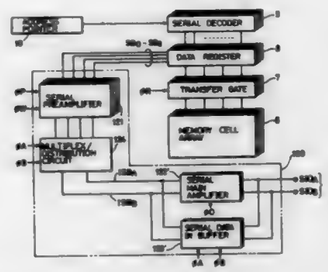
said third transistors in said first and second transistor series being controlled to be conductive respectively by a clock signal which reaches an enable state after said second transistors have become conductive.

5,307,323

DUAL-PORT MEMORY

Hiroyuki Fukuda, and Toshiyuki Ogawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 952,410
Claims priority, application Japan, Oct. 7, 1991, 3-259273
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.05 **3 Claims**



1. A dual-port memory comprising:

a random access memory connected to a first input/output port for random writing and reading of data;

a serial access memory connected to a second input/output port for converting parallel data for n (n is an integer equal to 2 or more) rows simultaneously read out from said random access memory into n pieces of serial data, outputting the same, converting applied n pieces of serial data into parallel data for n rows and applying the same to said random access memory, said second input/output port having m (m<n) serial signal input/output pins;

multiplex/distribution means for multiplexing n pieces of serial data output from said serial access memory into m pieces of serial data, outputting the same to said second input/output port, distributing multiplexed m pieces of serial data input from said second input/output port into n pieces of serial data and applying the same to said random access memory;

m amplification means for output for individually amplifying m pieces of serial data output from said multiplex/distribution means; and

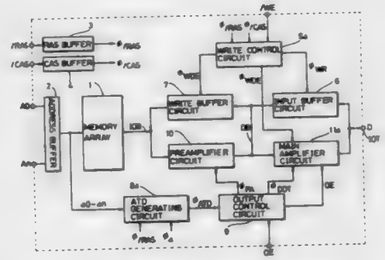
m amplification means for input for individually amplifying m pieces of serial data applied from said second input/output port to said multiplex/distribution means.

5,307,324

SEMICONDUCTOR MEMORY DEVICE INCLUDING ADDRESS TRANSITION DETECTING CIRCUIT

Masaki Nishimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,211
Claims priority, application Japan, Feb. 3, 1992, 4-17662
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—233.5 **11 Claims**



1. A semiconductor memory device comprising:

memory means for storing data;

address signal input means for receiving an externally applied address signal;

a data bus transmitting data to be written in an address of said memory means designated by said address signal, or data read from the address of said memory means designated by said address signal;

input buffer means for receiving externally applied data and applying the data to said data bus;

amplifier means for amplifying and holding the data applied to said data bus;

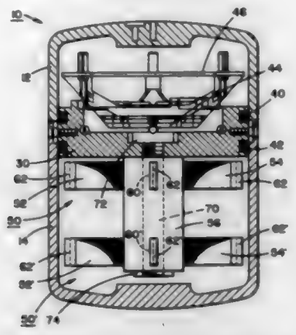
address transition detecting means for detecting a transition of an address signal from said address signal input means to generate a detection signal;

first control means responsive to said detection signal from said address transition detecting means for activating said amplifier means in reading operation; and

second control means for supplying a first signal to said input buffer means along a first signal path for activating said input buffer means and for supplying a second signal to said amplifier means along a second signal path bypassing said address transition detection means.

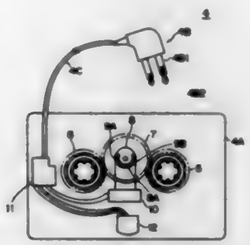
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5,307,325
ACCELEROMETER SENSOR NOISE REDUCTION METHOD AND MEANS
Donald J. Schelber, Columbia City, Ind., assignor to Magnavox Electronic Systems Company, Fort Wayne, Ind.
Filed Aug. 31, 1992, Ser. No. 936,998
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—178 **5 Claims**



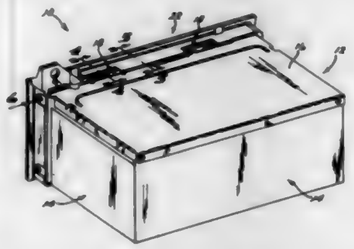
1. An accelerometer sensor system, comprising:
(a) a housing structure;
(b) a first acceleration sensor disposed in said housing structure at a first selected location along the vertical axis of said housing structure, said first acceleration sensor providing a first output;
(c) a second acceleration sensor disposed in said housing structure at a second selected location along said vertical axis, said second acceleration sensor providing a second output; and
(d) means to combine said first and second outputs of said first and second acceleration sensors such as to simulate the output from a virtual acceleration sensor located at any selected location on said vertical axis.

5,307,326
CASSETTE ADAPTER FOR SIGNAL PLAYBACK APPARATUS
Shoichi Ouwa, Chiba, Japan, assignor to Sony Corporation, Japan
Filed Apr. 21, 1992, Ser. No. 871,683
Claims priority, application Japan, Apr. 30, 1991, 3-126926
Int. Cl.[5] H04B *1/20*
U.S. Cl. 369—2 **10 Claims**



1. A cassette adapter for use with a cassette player and an audio signal playback apparatus provided with an audio signal output terminal and an external control terminal comprising:
coupling means for coupling said audio signal playback apparatus with said cassette player and for transferring audio signal therebetween;
signal transferring means for transferring signals between the audio signal playback apparatus and the cassette player;
operation detecting means, including a rotatable hub, for detecting the operation mode of the cassette player; and
control signal generating means, operatively coupled with said operation detecting means, for generating a control signal which is supplied by way of said signal transferring means to the external control terminal of said audio playback apparatus for automatically controlling the operation of said audio signal playback apparatus in synchronization with the operation of said cassette player.

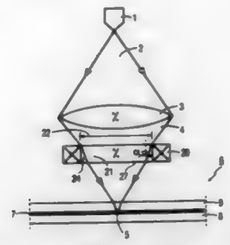
5,307,327
MOUNTING ASSEMBLY FOR AUTOMOTIVE AUDIO COMPONENTS
Dewayne E. Green, Winchester, Tenn., and Steven F. Selby, Huntsville, Ala., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 24, 1992, Ser. No. 998,252
Int. Cl.[5] G11B *33/00*
U.S. Cl. 369—12 **9 Claims**



1. An audio component housing and front cover comprising:
a housing having a box-shape with an open end formed from a plurality of adjoining walls;
said open end having a free edge;
a front cover;
said cover having a lip located along a perimeter of said cover and perpendicular to said cover for positioning said cover onto said open end of said housing; and
said housing having at least one outwardly extending upper tab and at least one outwardly extending lower tab along the free edge of said housing for holding said cover onto said housing.

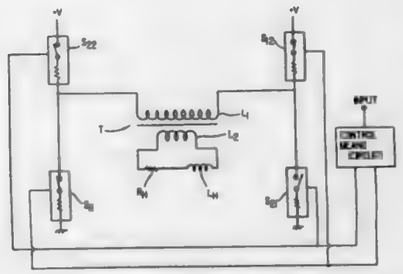
5,307,328
MAGNETO-OPTICAL SCANNING DEVICE WITH SMALL COIL
Bernardus A. J. Jacobs; Petrus A. M. Van Grinsven; Wilfred A. M. Snijders, and Johannes H. M. Spruit, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 23, 1992, Ser. No. 950,107
Claims priority, application European Pat. Off., Dec. 30, 1991, 91203428.7
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 **20 Claims**

1. A device for scanning a magneto-optical recording layer, comprising a radiation source and an objective system for forming a radiation beam which is focused to a scanning spot on the recording layer, a magnet coil comprising a winding with an opening arranged between the objective system and the recording layer for generating a magnetic field at the location of the scanning spot, and a core disposed within said opening,
characterized in that the core comprises a transparent non-magnetic material disposed throughout the height of the winding, said material having an index of refraction such that the vergence of the radiation in the core is smaller than the vergence of the radiation beam in the medium surrounding the coil, and



the coil is arranged to have an opening whose inner diameter has a maximum value substantially equal to the maximum diameter of the radiation beam within the coil opening.

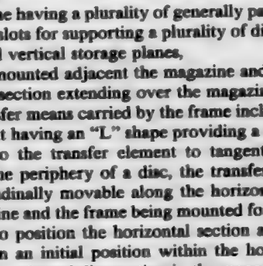
5,307,329
MAGNETO-OPTICAL RECORDING HEAD COMPRISING A STEP-DOWN TRANSFORMER
Gilchi Shibuya, and Takashi Onodera, both of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Nov. 5, 1992, Ser. No. 972,219
Claims priority, application Japan, Nov. 7, 1991, 3-320027
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 **7 Claims**



1. An apparatus for recording on a recording medium in a magnetic field-modulation mode, comprising:
an optical head projecting a laser beam of a fixed strength to the recording medium;
a magnetic head generating a modulated magnetic field; and
a magnetic head driving circuit comprising at the final stage a transformer having a primary winding and a secondary winding and whose secondary winding has less turns than the primary winding.

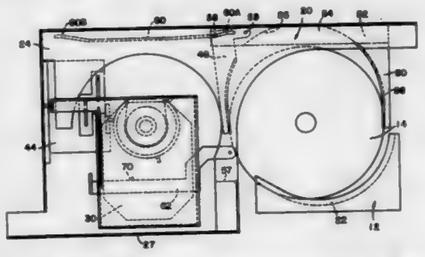
5,307,330
SETTLING MONITOR SYSTEM FOR A FOLLOWING SERVO
Eiji Okamura, Kawasaki, Japan, assignor to Fujitsu Limited, Japan
Filed Feb. 5, 1992, Ser. No. 831,530
Claims priority, application Japan, Feb. 6, 1991, 3-14624
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 **20 Claims**

1. A system for monitoring settling of a transient response of a load controlled by a following controller, said system comprising:
state estimation means for generating a state estimation quantity showing an estimated state of the load;
means, coupled to said load and said state estimation means, for calculating settling monitoring time data based on the state estimation quantity and a control quantity output to the load by the following controller;
timer means for generating time data showing a time elapsed since commencement of supervision of settling;
comparator means, coupled to said calculated settling monitoring time data generating means and said timer means, for comparing said calculated settling monitoring time



data and said time data with each other and for replacing the time data of said timer means with the calculated settling monitoring time data on the basis of a comparison result; and
decision making means, coupled to said timer means, for generating a settling completion signal when the time data shows a predetermined time.

5,307,331
TRANSFER MECHANISM FOR INFORMATION CARRIERS
Stephane M. d'Alayer de Costemore d'Arc, Brussels, Belgium, assignor to Staar S.A., Brussels, Belgium
Filed Sep. 3, 1992, Ser. No. 940,361
Claims priority, application Belgium, Oct. 23, 1991, 91-00983
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—37 **9 Claims**



1. A disc support and transfer mechanism for a disc changer comprising:
a magazine having a plurality of generally parallel upwardly facing slots for supporting a plurality of discs in generally parallel vertical storage planes,
a frame mounted adjacent the magazine and having a horizontal section extending over the magazine,
disc transfer means carried by the frame including a transfer element having an "L" shape providing a vertical portion fixed to the transfer element to tangentially cooperate with the periphery of a disc, the transfer element being longitudinally movable along the horizontal section, the magazine and the frame being mounted for relative movement to position the horizontal section and transfer element in an initial position within the horizontal section above a selected disc resting in the magazine,
a pivotable arm extending vertically down from the transfer element,
said arm being pivotably mounted to the transfer element and being positioned spaced from the fixed vertical por-

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tion of the transfer element when it is in its initial position by a distance greater than the selected disc diameter, so that it does not initially engage the selected disc,

motion producing means on the frame for moving the transfer element longitudinally from and to the initial position to move the fixed vertical portion and the arm back and forth and thereby engage and roll the selected disc between the storage plane and a playback device along an aligned transfer plane,

first control means for pivoting the arm into engagement with the selected disc at its circumferential edge responsive to initial movement of the transfer element, both the fixed vertical portion and the pivotable arm having opposed inner edges between which the selected disc resting in the magazine is trapped at about its horizontal center line when the fixed vertical portion is moved into engagement and the pivotable arm pivots into engagement with the selected disc edge as the transfer element moves longitudinally before the disc is rolled into the transfer plane

means for keeping said engagement during continued longitudinal movement of the transfer element by the motion means, and

second control means for pivoting the arm out of engagement with the selected disc responsive to continued longitudinal movement of the transfer element by the motion producing means after the disc is close to the playback device, whereby the selected disc is freed for rotation,

said first and second control means being elements mounted on the horizontal section of the frame and acting on the pivotable arm.

5,307,332

OPTICAL DISK ARRANGEMENT WITH DIFFRACTIVE TRACKS AND A PHOTOELECTRIC ASSEMBLY PROVIDING POSITIONAL CONTROL INFORMATION

Claude Tinet, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 794,506, Nov. 19, 1991, Pat. No. 5,182,743, which is a continuation of Ser. No. 599,992, Oct. 19, 1990, Pat. No. 5,132,952, which is a continuation of Ser. No. 479,252, Feb. 13, 1990, Pat. No. 4,989,193, which is a continuation of Ser. No. 350,773, May 12, 1989, Pat. No. 5,016,235, which is a continuation of Ser. No. 213,097, Jun. 29, 1988, Pat. No. 5,856,108, which is a division of Ser. No. 96,317, Sep. 9, 1987, Pat. No. 4,868,808, which is a continuation of Ser. No. 925,491, Oct. 29, 1986, abandoned, which is a continuation of Ser. No. 667,100, Nov. 1, 1984, abandoned, which is a division of Ser. No. 545,110, Oct. 25, 1983, Pat. No. 4,491,940, which is a continuation of Ser. No. 108,499, Dec. 31, 1979, abandoned, which is a continuation of Ser. No. 793,270, May 3, 1977, abandoned, which is a continuation of Ser. No. 390,715, Aug. 23, 1973, abandoned. This application Nov. 4, 1992, Ser. No. 971,477

Claims priority, application France, Aug. 25, 1972, 72 30346

The portion of the term of this patent subsequent to Nov. 1, 2002, has been disclaimed.

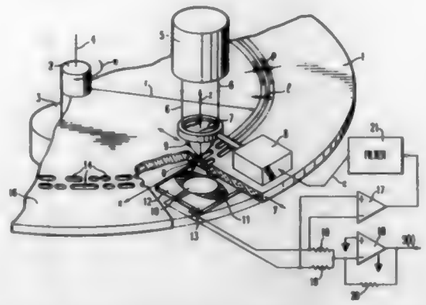
Int. Cl.[5] G11B *7/09*

U.S. Cl. 369—44.26 **4 Claims**

1. An apparatus for reading an optically readable carrier with diffractive tracks, on a substrate, having respective longitudinal axes and including at least longitudinal contours substantially parallel to said respective axes, along which contours there is deviation from a reference surface of said substrate towards zones non coplanar with said reference surface, said tracks being diffractive all along said longitudinal contours for providing diffraction of light of a light spot illuminating one of said tracks and substantially occupying the width of said one track, said contours of said one track providing said diffraction being such that the light emerging from the diffractive track has a spatial distribution representing an amount of track misregistration between the spot and the axis of said one track, said apparatus comprising:

illumination means for projecting said light spot onto said carrier and said tracks,

photoelectric detection means arranged for collecting the radiant energy emerging from the portion of said track illuminated by said spot, and detecting an amount and direction of track axis misregistration from said spatial distribution,



wherein said photoelectric detection means comprises at least one photodetector assembly for sensing the spatial distribution of said radiant energy; and

positional control means for causing said spot to displace with respect to the illuminated track to compensate for any misregistration of the spot and track.

5,307,333

TRACK SERVO PULL-IN METHOD AND APPARATUS FOR AN OPTICAL DISC

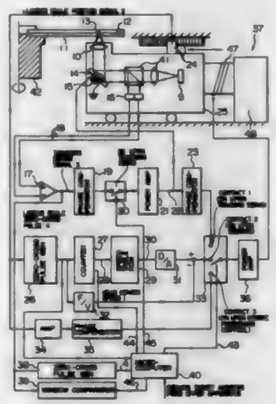
Fumiaki Ikeda, Odawara; Atsushi Saito, Ichikawa, and Takuya Mizokami, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 12, 1991, Ser. No. 757,940

Claims priority, application Japan, Sep. 18, 1990, 2-246076

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—44.280 **3 Claims**



1. An optical information memory apparatus comprising:

a head section for accessing an optical information recording medium by a light spot, for generating a tracking error signal which is obtained when said light spot traverses tracks recorded on the optical information recording medium, and for generating a linear scale position signal indicative of a relative position to a predetermined external linear scale; and

a control section having a zero-cross pulse generator for receiving the tracking error signal and for producing tracking error zero-cross pulses, and a window comparator for receiving the racking error signal and for producing tracking error window pulses which are obtained by slicing the tracking error signal by predetermined binary slice levels of an upper limit and a lower limit, said control section executing a coarse seeking control to move the light spot to a position near a desired seeking target address on the optical information recording medium on the basis of the linear scale position signal generated from the head section, wherein at a time point when a period of time of the low level of the tracking error zero-cross pulse is equal to or larger than a predetermined time interval T_0 and the tracking error window pulse has been set to the low level, a tracking control to pull the light spot into the track near the desired seeking target address is executed.

5,307,334

OPTICAL HEAD CLEANING CARTRIDGE

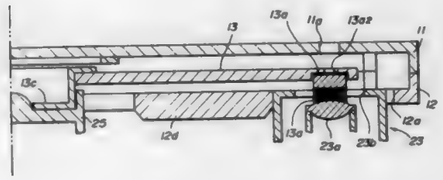
Kenichi Sato, Tokyo, Japan, assignor to TEAC Corporation, Japan

Filed Apr. 27, 1992, Ser. No. 874,618

Claims priority, application Japan, Apr. 30, 1991, 3-30250[U]

Int. Cl.[5] G11B *3/58*

U.S. Cl. 369—71 **11 Claims**



1. An optical head cleaning cartridge adapted for use in an optical disk unit which includes an optical head located at a predetermined position in a specific operation mode of the optical disk unit and which includes a turntable, said optical disk unit using the optical head to record information signals on and/or reproduce information signals from an optical disk which is accommodated within a standard type optical disk cartridge which is in conformance with a predetermined standard and includes a hub which engages the turntable, said optical head cleaning cartridge comprising:

a case having a size and a shape which are approximately the same as those of the optical disk cartridge and having a hub at a position corresponding to the hub of the optical disk cartridge, said case being formed with a first opening confronting the optical head and a second opening confronting the turntable, said case further having a stopper projection formed thereon between the first opening and the second opening, said stopper projection engageable with said optical head and preventing movement of said optical head toward the turntable when said optical head cleaning cartridge is in use in said optical disk unit;

a cleaning element provided at a position of said case to confront the optical head when the optical head cleaning cartridge is loaded into the optical disk unit in the specific operation mode;

a transmitting mechanism; and

a manipulation part coupled to said cleaning element via said transmitting mechanism, said manipulation part projecting outside said case and being located at a position of said case to allow manipulation, said manipulation part being pivotable about the hub of said case,

said cleaning element cleaning the optical head by moving in response to a manipulation of said pivotable manipulation part.

5,307,335

OPTICAL INFORMATION READING APPARATUS WITH MULTI FILM ELEMENTS TO COMPENSATE FOR WAVELENGTH FLUCTUATION

Masaaki Komiya, Akigawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1990, Ser. No. 582,384

Claims priority, application Japan, Sep. 18, 1989, 1-240038

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—112 **14 Claims**



1. An apparatus for Optically reading information recorded on an optical record medium comprising:

a light source means for emitting a light beam;

an incident optical system means for introducing the light beam emitted by the light source means onto the optical record medium;,and

a detecting optical system means disposed in a path of a light beam reflected by the optical record medium, said detecting optical system means including a plurality of reflection surfaces for reflecting a light beam reflected by the optical record medium, at least two of said plurality of reflection surfaces having multi film means for compensating for a phase difference due to a fluctuation in the wavelength of the light beam introduced into the detecting optical system means, and a photodetect for receiving the light beam emanating from the reflection surfaces.

5,307,336

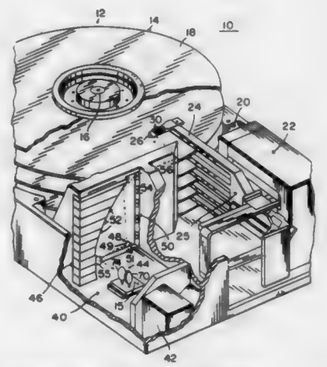
MULTI-DISK OPTICAL STORAGE SYSTEM

Neville K. Lee, Sherbourn; Amit Jain, Marlboro, both of Mass.; Erwin Keppeler, Marktoberdorf, Fed. Rep. of Germany, and Mark Bouchard, South Burlington, Vt., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 6, 1992, Ser. No. 847,116

Int. Cl.[5] G11R *7/085*

U.S. Cl. 369—112 **12 Claims**



1. An optical storage system comprising:

(A) a disk assembly including a plurality of disks axially spaced on a rotatably mounted spindle, said disks config-

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ured to record data on pairs of opposing facing recording surfaces thereof;

(B) an optical assembly including a static optics package for generating a collimated optical beam used to store and retrieve said data from said disks, said optical assembly further comprising a beam distribution system for directing said optical beam to a selected recording disk surface, said beam distribution system comprising (i) a beam steering element configured to rotate about a steering axis thereof to direct said optical beam to a selected objective lens at varying angles relative to the optical axis thereof; (ii) a lens/mirror tower having a plurality of mirror elements and lens elements arranged as sets, each being optically disposed on the path of said beam between said steering element and an associated one of said objective lenses to direct said optical beam to said associated objective lens, each of said lens elements further functioning as an imaging lens to provide substantially at said associated objective lens an image of said beam at said steering axis; and (iii) a deflection mirror tower having a plurality of deflection mirrors optically disposed in the paths between said beam steering element and said lens/mirror sets, said plurality of deflection mirrors having various angular orientations to deflect said optical beam to an associated one of said imaging lens; and

a carriage assembly including a plurality of carriage arms vertically spaced and arranged for insertion between said pair of opposing recording disk surfaces, each of said carriage arms having a pair of head assemblies mounted thereto, each of said head assemblies being arranged in facing relation to said recording disk surfaces and comprising an air bearing slider flexibly connected to a respective carriage arm, said slider including an objective lens having an optical axis passing through a focal point thereof and operating to converge said optical beam received from said beam distribution system to a spot on said disk surface.

5,307,337

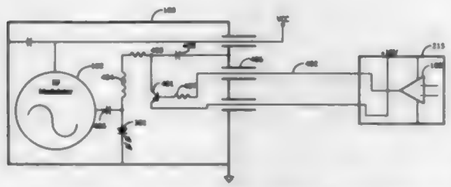
OPTICAL DISK DRIVE HAVING A LOW-EMISSION HIGH-BANDWIDTH LASER DRIVER

Eugeniusz A. Wolaszczuk, San Jose, Calif., assignor to Maxoptix Corporation, San Jose, Calif.

Filed Jul. 17, 1992, Ser. No. 915,422

Int. Cl.[5] G11B *7/12*

U.S. Cl. 369—121 **14 Claims**



1. An optical recording system having a light means for generating a light beam to write data to and read data from a storage medium, a modulating means for suppressing instabilities of said light means, and an apparatus for driving said light means, said apparatus comprising:

a transistor coupled to said light means for supplying current to said light means;

a shielding means enclosing said modulating means and said transistor for containing radio frequency energy emitted from said modulating means;

an amplifier coupled to said transistor for driving a base of said transistor to control a power level of said light means.

5,307,338

APPARATUS FOR RECORDING AND/OR REPRODUCING INFORMATION

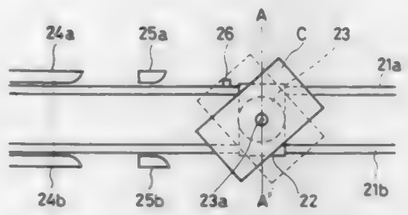
Kazunori Suzuki, Yokohama; Shigeto Kanda, Machida; Tomoyuki Hiroki, Kamakura, and Hideki Hosoya, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 798,364, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 356,898, May 25, 1989, abandoned. This application Jul. 6, 1993, Ser. No. 86,373

Claims priority, application Japan, May 25, 1988, 63-128006; May 22, 1989, 1-129289

Int. Cl.[5] G11B *17/04*

U.S. Cl. 369—191 **10 Claims**



4. An apparatus for effecting at least one of recording of information and reproduction of information, comprising:

a head section for effecting at least one of recording of information and reproduction of information onto/from an information recording medium;

holding means for holding the information recording medium and rotating the medium;

moving means for moving said holding means in a predetermined direction;

detecting means for detecting a rotating position of the information recording medium held to said holding means; and

adjusting means for adjusting the posture of the recording medium in correspondence to an output of said detecting means, wherein when the information recording medium is ejected out of the apparatus, said adjusting means adjusts the posture of the information recording medium.

8. An apparatus for effecting at least one of recording of information and reproduction of information, comprising:

a head section for effecting at least one of recording of information and reproduction of information onto/from an information recording medium;

holding means for holding said information recording medium;

driving means for rotating said holding means; and

means for directing said holding means in a predetermined direction by a magnetic attractive force.

9. A method of information processing for effecting at least one of recording of information and reproduction of information, said method comprising the steps of:

holding an information recording medium to holding means;

rotationally driving the holding means so as to rotate the information recording medium;

effecting at least one of recording of information and reproduction of information onto/from the information recording medium which is rotated;

optically detecting a rotating position of the information recording medium; and

controlling the posture of the information recording medium in correspondence to the detection result by said detecting step when the information recording medium is being released from the holding means.

5,307,339

TRANSLATING APPARATUS FOR AN OPTICAL PICKUP DEVICE

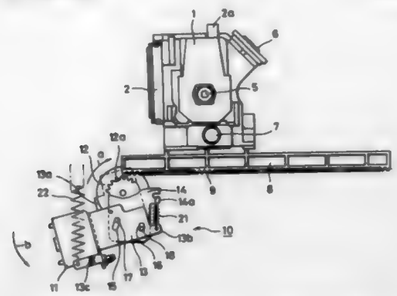
Kazuhiro Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,646

Claims priority, application Japan, Aug. 27, 1991, 3-240356

Int. Cl.[5] G11B *19/00*

U.S. Cl. 369—215 **6 Claims**



1. A translating apparatus for an optical pickup device comprising:

(a) optical pickup means for radiating an optical disc with a light beam;

(b) a rack member attached to said optical pickup means;

(c) supporting means having a guide portion for guiding said optical pickup means along a diametrical direction of the optical disc;

(d) translating means including a gear attached to said supporting means and meshed with said rack member, drive means for rotating said gear and releasing means for releasing said gear and said rack member from being meshed with each other when said optical pickup means is translated beyond a predetermined translating range; and

(e) an attaching member for attaching said translating means to said supporting means so that said translating means become freely rotatable relative to said supporting means and spring-biasing means for spring-biasing said translating means in a direction in which said translating means is engaged with said rack member.

5,307,340

MULTIPATH TRANSMISSION SYSTEM WITH A TROUBLESHOOTING ARRANGEMENT FOR DETECTING FAILURE

Kiyoshi Inoue; Kyosuke Hashimoto; Yutaka Matsuda; Shoji Hara; Kunio Odaka, all of Hiratsuka; Seiji Hirano, Hiroshima; Osamu Michihira, Hiroshima, and Yoshikazu Nobutoki, Higashihiroshima, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 815,922

Claims priority, application Japan, Apr. 2, 1991, 3-070028

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—13 **16 Claims**

1. A multipath transmission system used for multipath transmission of multiplex signals to or from various apparatuses, comprising:

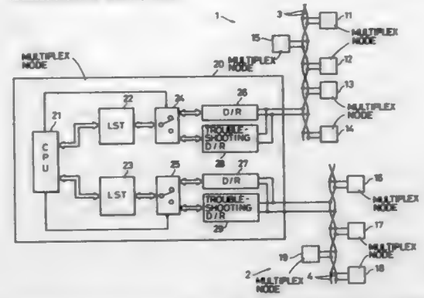
transmission lines constituting at least two networks; and

a plurality of multiplex nodes connected to said transmission lines, each of said plurality of multiplex nodes including communication means for signal transmission through said transmission lines belonging to an identical network of said at least two networks,

at least one specific multiplex node, out of said plurality of multiplex nodes, including communication means connected to said transmission lines constituting at least two networks for relaying signals between said transmission lines of said at least two networks, and troubleshooting means for troubleshooting the connected transmission lines and said plurality of multiplex nodes connected to said transmission lines;

wherein said communication means of said at least one specific multiplex node includes:

a first driver/receiver circuit for communication with the other multiplex nodes in case of a short in the connected transmission lines, and



a second driver/receiver circuit for communication with the other multiplex nodes only when the connected transmission lines are normal; and

wherein said troubleshooting means periodically controls switching between the first driver/receiver circuit and the second driver/receiver circuit, and troubleshoots the connected transmission lines if signal transmission is not allowed when the system is switched to the second driver/receiver circuit.

5,307,341

RANDOM ACCESS MULTIPLE USER COMMUNICATION SYSTEM

Kenneth W. Yates; Terence J. Stevenson, both of Broadway; Terence M. P. Percival, Sydney; Roksana Boreli, Sydney, and Richard A. Z. Simington, Sydney, all of Australia, assignors to OTC Limited, Sydney and University of Technology, Sydney, Broadway, both of Australia

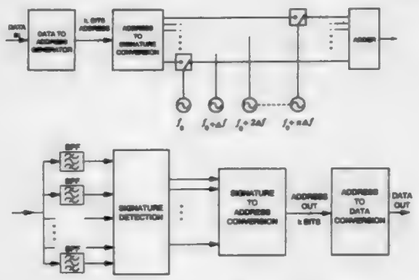
PCT No. PCT/AU90/00429, § 371 Date May 8, 1992, § 102(e) Date May 8, 1992, PCT Pub. No. WO91/04618, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 18, 1990, Ser. No. 842,101

Claims priority, application Australia, Sep. 18, 1989, PJ6416

Int. Cl.[5] H04B *7/216*; H04L *27/28*

U.S. Cl. 370—18 **13 Claims**



1. A multiple access communications system, which enables communications between a plurality of receivers and a plurality of transmitters, wherein communications are comprised of transmissions including combinations of substantially simultaneous signals having different frequencies each said combination addressing a predetermined receiver or receivers, each said combination further corresponding to a predetermined code to a specific message component desired to be sent to said predetermined receiver or receivers.

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5,307,342

HETEROGENEOUS PORTS SWITCH

Christor J. Georigiou, White Plains, and Thor A. Larsen, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1991, Ser. No. 753,281

Int. Cl.[5] H04J *3/00, 14/08;* **H04Q** *11/04*

U.S. Cl. 370—58.1 **22 Claims**

16. A communication switch comprising:

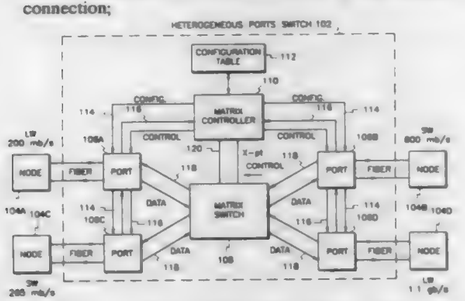
three or more ports capable or transmitting and/or receiving data, including:

a first port, coupled to a source node transmitting said data at a first frequency, for receiving data from said source node, and

a second port, coupled to a destination node receiving said data at a second frequency;

switch means, coupled to said three or more ports, for establishing a physical connection between any two ports of said three or more ports and for switching said physical connection between any combination of two ports of said three or more ports, wherein said combination of two ports are said first port and said second port;

means for serially and asynchronously transmitting said data from said first port to said second port via said physical connection;



a configuration table containing information regarding node connections and node frequencies; and

control means, coupled to said configuration table, for controlling said first port, second port, and switch means;

wherein said first port comprises:

phase locked loop means for extracting said first frequency from said data,

selector means, coupled to said control means, for selecting a data transfer frequency which is equal to, although out of phase with said second frequency,

buffer means coupled to said switch means,

first pacing means for serially clocking said data into said buffer according to said first frequency, and

second pacing means for serially transmitting said data from said buffer to said switch means according to said data transfer frequency.

5,307,343

BASIC ELEMENT FOR THE CONNECTION NETWORK OF A FAST PACKET SWITCHING NODE

Bruno Bostica, Pino; Antonella Daniele, Bareggio, and Vinicio Vercellone, Venaria, all of Italy, assignors to Italtel Societa Italiana Telecommunicazioni s.p.a, Milan, Italy

PCT No. PCT/EP90/02010, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/08633, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 27, 1990, Ser. No. 859,502

Claims priority, application Italy, Nov. 30, 1989, 68059 A/89

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **15 Claims**

1. A basic element for the connection network of a fast packet switching node, for operating on contiguous units of bits called cells having fixed length and formed by an information field and by a header, expressed with a number m of words, comprising:

a plurality of circuits that receive at their input ports serial information streams, made of contiguous cells, and that synchronize each input stream at bit level, to detect the cells' beginning, respectively, and to convert the input streams from serial form to word parallel form;

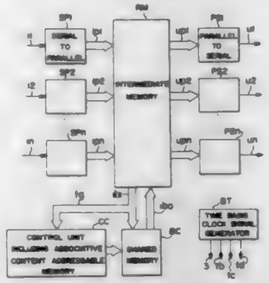
a time basis;

a transformation memory in which incoming cells in the word parallel form are transformed to cell parallel form and in which outgoing cells in cell parallel form are transformed to word parallel form;

a shared memory in which cells are written and read in a shared way, thereby performing a switching function;

a control unit, controlling the reading and writing operations in said shared memory;

a conversion circuit performing the conversion of streams outgoing the memory block in serial streams at a bitrate equal to an incoming bitrate; said memory transformation comprises at least a first and second plane memory, in said



first plane memory are stored word after word in a cell arrival time order, the cells arriving on different instants from said plurality of circuits, and substantially concurrently cells which the first plane memory plan received from the shared memory are discharged through a multiplexer controlled by a single signal, obtaining at an output cells synchronized in time, while substantially in time phase, cells stored in a previous cell time are discharged in cell parallel form from the second plane memory towards the shared memory through the multiplexer and switched cells coming from the shared memory are changed to cell parallel form through a demultiplexer.

5,307,344

METHOD FOR SETTING UP VIRTUAL CONNECTIONS IN PACKET SWITCHING NETWORKS

Bernd-Michael Mueller, Ottobrunn, and Wolfgang Sitter, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 936,636

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128938

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **9 Claims**

1. A method for setting up virtual connections between calling subscriber equipment and called subscriber equipment connected to first and second switching equipment, respectively, of a first packet switching network based on address information indicating the called subscriber equipment, said address information being transmitted in an address field of a call request with which a requested virtual connection proceeding from the calling subscriber equipment is indicated, at least a first network interface location being provided from the first switching equipment of the first packet switching network to a second packet switching network and at least a second network interface location being provided from the second packet switching network to the second switching equipment of the first packet switching network, comprising the steps of:

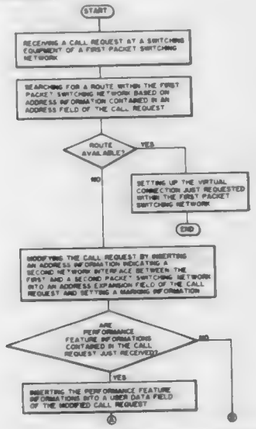
deposition address information indicating the respective second network interface location in each of the switching

equipment connected to the subscriber equipment of the first packet switching network;

implementing, upon appearance of a call request by which a set up of a virtual connection within the first packet switching network is requested by the calling subscriber equipment, a path search for a connecting path within the first packet switching network in the first switching equipment connected to the calling subscriber equipment based on the address information contained int eh address field of the call request;

modifying, when such a connection path is not present, the call request by inserting address information indicating the first network interface location in the address field and address information indicating the second network interface location in an address expansion field and by setting marking information, and transmitting the modified call request to the first network interface location for a call set up via the second packet switching network;

interchanging the address information contained in the address field and in the address expansion field of the modified call request with one another at the first network interface location;



defining a connecting path to the second network interface location within the second packet switching network based on the address information now contained in the address field of the modified call request that indicates the second network interface location and conducting the modified call request thereto;

again interchanging the address information contained in the address field and in address expansion field in the modified call request with one another at the second network interface location on the basis of the marking information set in the modified call request; and

setting up, based on the address information now contained in the address field of the modified call request that indicates the called subscriber equipment, the virtual connection just requested within the first packet switching network to the called subscriber equipment.

5,307,345

METHOD AND APPARATUS FOR CUT-THROUGH DATA PACKET TRANSFER IN A BRIDGE DEVICE

Philip P. Lozowick, Jerusalem, and Siman-Tov Ben-Michael, Girat Zeer, both of Israel, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 25,,1992, Ser. No. 904,221

Int. Cl.[5] H04J *3/22*

U.S. Cl. 370—61 **8 Claims**

1. A method for operating a bridge to facilitate cut-through operation in which a received data packet of unknown length is transmitted while it is still being received, the method comprising:

upon beginning to receive a packet, resetting a receive byte counter to zero;

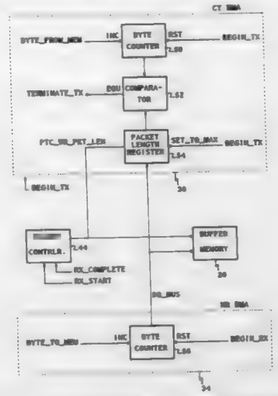
storing each received byte in a buffer memory;

incrementing the receive byte counter by one for each byte of the packet that is received and stored;

after beginning to receive the packet, continually checking to determine whether a transmit operation may be started and, if it may be started, initiating a transmit operation;

upon completion of receiving a packet, saving the receive byte counter;

upon starting a transmit operation, resetting a transmit byte counter to zero and generating a packet length value for



use in the transmit operation, wherein the packet length value is generated at least in part form the receive byte counter;

after starting a transmit operation, retrieving packet data from the buffer memory and transmitting the data byte by byte;

incrementing the transmit byte count of each byte that is retrieved and transmitted; and

terminating the transmit operation when the transmit byte count reaches the packet length value.

5,307,346

NETWORK-FIELD INTERFACE FOR MANUFACTURING SYSTEMS

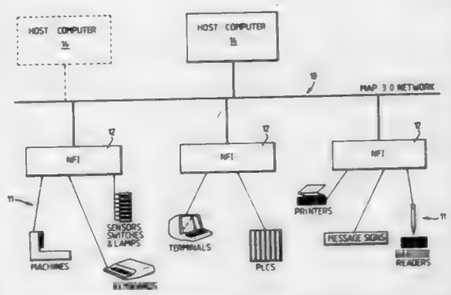
John H. Fieldhouse, Sussex, England, assignor to Reflex Manufacturing Systems Limited, Derby, England

Filed Mar. 19, 1991, Ser. No. 671,441

Claims priority, application United Kingdom, Mar. 24, 1990, 9006661

Int. Cl.[5] H04L *12/40*

U.S. Cl. 370—85.1 **28 Claims**



1. A network-field interface, hereinafter referred to as an NFI, intended for digitally interfacing at least one host computer on a network to at least one field device, the network

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operating with a predetermined communications protocol including READ and WRITE services, the NFI comprising:

(a) I/O port means for connection to the at least one field device and including at least one parallel I/O port and at least one I/O serial port;

(b) communication means to facilitate communication between the network and the interface;

(c) data processing means;

(d) memory means accessible to both the communication means and the data processing means; and

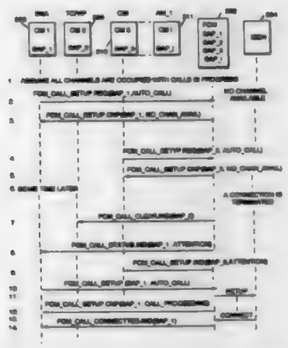
(e) program means resident in the memory means and executable by the data processing means to map the READ and WRITE services onto the I/O port means, said program means including means for creating a respective data set corresponding to said at least one parallel I/O port and a respective data set corresponding to said at least one serial I/O port, the parallel I/O data set including a multi-element array of boolean values corresponding to the parallel I/O port and also including a further boolean variable to indicate whether the connections in its parallel I/O port are inputs or outputs, whereby the host computer is able to READ and WRITE directly to the I/O port means through the communication means.

5,307,347

METHOD AND APPARATUS FOR SHARING A TELECOMMUNICATIONS CHANNEL AMONG MULTIPLE USERS

Maurice Dusnlt, St. Laurent du Var, France; Jeffrey J. Lynch, Apex, and Ramon E. Snyder, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1992, Ser. No. 867,251
Int. Cl.[5] H04J *3/16, 3/12*
U.S. Cl. 370—85.1 22 Claims



1. An apparatus for managing, among multiple users, the use of one or more data communications channels over which said users may communicate with other users, said apparatus comprising means for receiving a request from a user to access a channel of said one or more data communications channels, means for allowing said user to access said channel if said channel is available, and means for informing said user that said channel is unavailable if said channel is unavailable, informing said user that said channel is available when said channel becomes available, determining whether said user still needs access to said channel, and allowing said user to access said channel if said user still needs access to said channel.

5,307,348

SCHEDULING IN A COMMUNICATION SYSTEM

Dale R. Buchholz, Palatine; Brian J. Wesselman, Wood Dale, and Michael P. Nolan, Lake Zurich, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 5, 1990, Ser. No. 608,867
The portion of the term of this patent subsequent to Aug. 24, 2000, has been disclaimed.
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—85.2 38 Claims



1. A control module which schedules access to a plurality of data channels in a radio frequency (RF) time-division multiple access (TDMA) communication system coupled to a plurality of user modules over a RF link, at least first and second user modules having sent a first and second access request command, respectively, to the control module to request access to at least one data channel, the control module comprising:

means for providing repetitive TDM frames including at least a first TDM frame having at least one data channel;

means, coupled to said means for providing, for receiving at least said first and second access request command in at least said first TDM frame;

means, coupled to said means for receiving, for determining which of at least said first access request command and second access request command said means for receiving received first; and

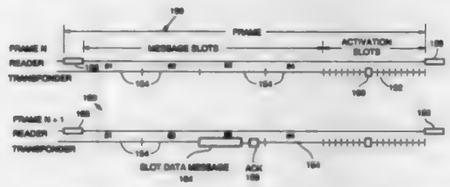
means, coupled to said means for providing repetitive TDM frames and responsive to said means for determining, for scheduling access to said at least one data channel in at least said first TDM frame.

5,307,349

TDMA NETWORK AND PROTOCOL FOR READER-TRANSPONDER COMMUNICATIONS AND METHOD

Peter D. Shloss, Long Beach, and Dale R. Feikema, Chino Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,703
Int. Cl.[5] H04J *3/16;* H04Q *9/00*
U.S. Cl. 370—85.2 11 Claims



1. A method for providing a TDMA network protocol structure for reader-transponder communications, said method comprising the steps of:

providing a plurality of time frames within said protocol structure;

dividing each of said time frames into a plurality of defined time slots;

providing a control message time slot within each of said plurality of defined time slots for interrogating a transponder;

providing a plurality of randomly selected time slots within each of said plurality of defined time slots for transmitting an identification message from the transponder in response to being interrogated and for permitting said transponder to gain admission to a TDMA network; and

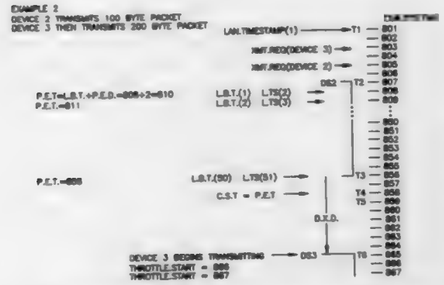
providing a plurality of assigned time slots within each of said plurality of defined time slots, wherein in response to said identification message from said transponder, said transponder is assigned specific assigned time slots within said plurality of assigned time slots for transmitting data messages during said reader-transponder communications.

5,307,350

METHOD FOR COLLISON AVOIDANCE ON A CHARACTER SENSE, MULTIPLE ACCESS LOCAL AREA NETWORK

Keith E. McIntyre, Roseville, Calif., assignor to Veri Fone Inc., Redwood City, Calif.

Filed Aug. 28, 1992, Ser. No. 937,514
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.3 13 Claims



1. A method for data communication between a multiplicity of devices coupled to a LAN bus without collisions between data transmissions from plural devices, said data communication taking place at a preselected baud rate common to each device, each device being assigned a unique device address and each device being assigned a unique device transmit time slot within a LAN transmit window of prearranged length based on said unique device address and each device having a system time clock incrementing a CUR.SYS.TIME parameter at a prearranged common frequency, said method comprising the steps of:

a. responding to each data character received in each receiving device by

a.1. loading a LAN.TIMESTAMP parameter with the value of said CUR.SYS.TIME parameter in said receiving device so that said LAN.TIMESTAMP parameter thereby indicates the time of receipt of the last data character when an incoming data packet terminates and correspondingly the start time of a LAN transmit window,

b. responding to each tick of said system time clock in each receiving device after termination of an incoming data packet by

b.1. determining whether the value of said CUR.SYS.-TIME parameter at said clock tick represents a point in said unique transmit time slot for said receiving device within said LAN transmit window, and

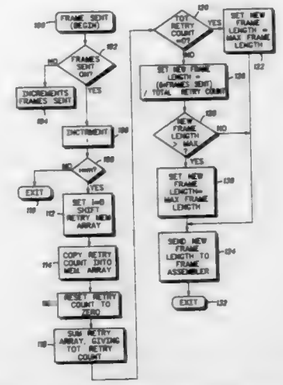
b.2. in response to determining that said value of said CUR.SYS.TIME parameter represents a point in said unique transmit time slot, initiating the transmission of data by said receiving device if a data packet is available for transmission.

5,307,351

DATA COMMUNICATION APPARATUS FOR ADJUSTING FRAME LENGTH AND METHOD OF OPERATING SAME

James M. Webster, Harvest, Ala., assignor to Universal Data Systems, Inc., Huntsville, Ala.

Filed Aug. 26, 1991, Ser. No. 749,835
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—94.1 16 Claims



1. Data communication apparatus DCA, interfaceable with data terminal apparatus and a communication medium for exchanging digital data in the form of data frames between the data terminal apparatus and communication medium, each data frame including data frame overhead, said data communication apparatus comprising:

means for interfacing with said data terminal apparatus to receive data therefrom to be transmitted over said communication medium;

means for assembling said received data to form assembled data frames, each of the assembled data frames having a length that is adjustable;

means for transmitting the assembled data frames over the communication medium;

error determining means coupled to the communication medium for determining an error rate of the communication medium; and

means coupled to the error determining means for adjusting the length of the assembled data frames based on said error rate,

wherein the error determining means includes means for determining a number of unacceptable transmissions of assembled data frames over the communication medium;

and wherein the adjusting means includes means for adjusting the length of the assembled data frames based on said number of unacceptable transmissions of assembled data frames over the communication medium,

and wherein the determining means includes;

means for monitoring the communication medium for a retransmit indication corresponding to said unacceptable assembled data frame transmission, thus forming a number of retransmit inductions, said monitoring means causing the assembling means and transmitting means to retransmit the assembled data frame in response to its associated retransmit indication;

and wherein the adjusting means includes means for adjusting the length of the assembled data frames based on the number of retransmit indications, the number of assembled data frames transmitted and the data frame overhead, and wherein the adjusting means includes:

first counting means responsive to the assembling means for determining the number of assembled data frames assembled for transmission;

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second counting means responsive to the error determining means for determining the number of retransmit indications; and

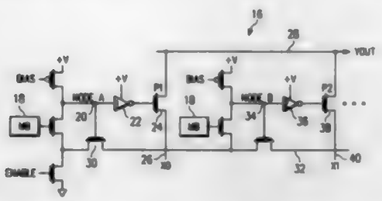
setting means for setting a new assembled data frame length for data transmission based on the number of assembled data frames assembled for transmission and the number of retransmit indications.

5,307,352

SWITCH MATRIX MULTIPLEXERS

Jerry D. Moench, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 1, 1993, Ser. No. 24,521
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—112 **15 Claims**



1. In a multiplexer system wherein a plurality of wide bus lines may be connected to a single bus line, and wherein each of said plurality of wide bus lines is routed through an individual pass gate before connection to said single bus line, an improvement comprising;

means for imposing order consideration of each of said plurality of wide bus lines to determine whether it should be connected to said single bus line, this ordered consideration creating a first and subsequent relationship among said plurality of wide bus lines;

means for enabling connecting of a first one of said plurality of wide bus lines to said single bus line; and

means for disabling possible connection of each said plurality of wide bus lines ordered subsequent to said first one of said plurality of wide bus lines, wherein each of said plurality of wide bus lines has a circuit node associated therewith, said circuit node disposed in circuit between said individual pass gate and a second pass gate in a ground path.

5,307,353

FAULT RECOVERY SYSTEM OF A RING NETWORK

Haruo Yamashita, Yokohama; Yuji Takizawa, Kawasaki, and Kazuo Yamaguchi, Hiratsuka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 7, 1991, Ser. No. 696,742
Claims priority, application Japan, May 9, 1990, 2-119524
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—11.2 **25 Claims**

1. A centralized control type ring network based on a synchronous transport module transmission system, having a fault recovery system for recovering a fault in said centralized control type ring network, said centralized control type ring network comprising:

optical fiber transmission lines including a working line and a protection line running in opposite directions to each other;

a plurality of drop/insert nodes connected to each other through said optical fiber transmission lines;

a supervision node, connected through said optical fiber transmission lines to said drop/insert nodes;

each of said drop/insert nodes having

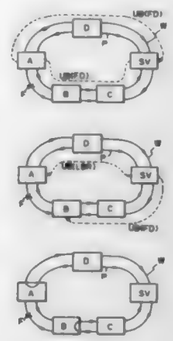
input fault detecting means for detecting an input fault on the working line or the protection line,

fault data writing means for writing, when said input fault is detected by said input fault detecting means, fault data in a predetermined user byte in an overhead of a frame flowing through both of the working line and the protection line, and

user byte passing means for passing said user byte as is through said node, when an input fault is not detected by said input fault detecting means;

said supervision node having

fault data detecting means for detecting the fault data in said user byte transmitted from the node which has detected said input fault through the downstream sides of the working line and the protection line of said node which has detected said input fault;



fault position determining means for determining, based on said fault data detected by said fault data detecting means, a node which has detected said input fault;

writing means for writing, into said user bytes, loopback requests for requesting nodes located immediately downstream and upstream of the fault position and closest to said supervision node, to execute loopback operations; and

sending means for sending said loopback requests through said working line and said protection line to said nodes located downstream and upstream of the fault position, whereby said nodes located immediately downstream and upstream of the fault position and closest to said supervision node execute loopback operations to recover the fault.

5,307,354

METHOD AND APPARATUS FOR REMOTE MAINTENANCE AND ERROR RECOVERY IN DISTRIBUTED DATA PROCESSING NETWORKS

Keith D. Cramer, Rochester, and Frederick H. Keller, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1991, Ser. No. 708,149
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—11.2 **9 Claims**

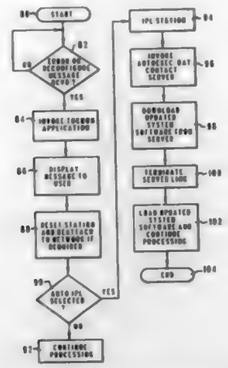
1. A method for automatic error recovery within a network having a plurality of stations each having a network adapter, each of said plurality of stations interconnected utilizing said network adapter into a network system capable of reconfiguring said network upon the occurrence of an error condition within said network, said method comprising the steps of:

establishing a monitor application within a selected station within said network for monitoring error condition signals within said network;

associating a memory address for said monitor application with a selected user appendage provided by said network adapter;

automatically invoking said monitor application at said memory address utilizing said selected user appendage in response to detection of an error condition signal with

respect to said selected station at said network adapter; and



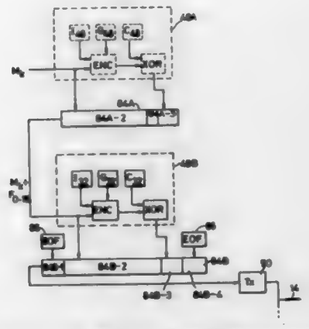
resetting said selected station in response to said invoking of said monitor application.

5,307,355

METHOD AND APPARATUS FOR GENERATING A 48-BIT FRAME CHECK SEQUENCE

Anthony G. Lauck, Wellsley, Mass.; Ian M. C. Shand, Cobham, and John Harper, Reading, both of England, assignors to Digital Equipment International Limited, Fribourg, Sweden

Filed Jan. 30, 1991, Ser. No. 647,959
Claims priority, application United Kingdom, Feb. 6, 1990, 9002643
Int. Cl.[5] G06F *11/10*; H03M *13/00*
U.S. Cl. 371—37.1 **14 Claims**



7. A network node for transmitting digital messages comprising:

means for generating a 48-bit frame check sequence from a message, the message and its appended 48-bit frame check sequence being capable of being checked by a 16-bit receiver encoder unit and by a 32-bit receiver encoder unit;

means for appending the high order 16 bits of the 48-bit frame check sequence to the message;

a transmitter encoder unit effective to operate in accordance with the 32-bit mode of the International Standard Organization (ISO) High-level Data Link Control (HDLC) protocol, the transmitter encoder unit further effective to receive the message and its 16-bit frame check sequence segment and to generate, using standard 32-bit ISO generator codes, a 32-bit frame check sequence therefrom;

means for appending the 32-bit frame check sequence to the 16-bit frame check sequence segment, the combination of the 16-bit frame check sequence segment and appended 32-bit frame check sequence being equal to the 48-bit frame check sequence; and

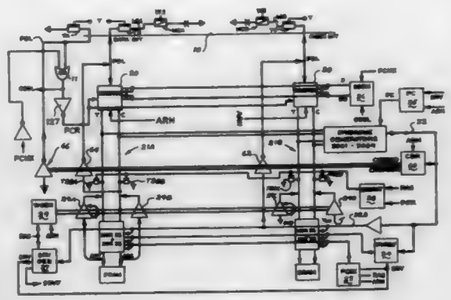
a line driver for transmitting the message, its 16-bit frame check sequence segment, and the appended 32-bit frame check sequence over a communication link.

5,307,356

INTERLOCKED ON-CHIP ECC SYSTEM

John A. Fifield, Underhill, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1990, Ser. No. 517,896
Int. Cl.[5] G11C *29/00*
U.S. Cl. 371—40.1 **29 Claims**



1. A DRAM, comprising:

a plurality of memory cells each being coupled to a respective one of a plurality of word lines and a respective one of a plurality of bit lines;

a plurality of data lines,

first means for coupling selected ones of said plurality of bit lines to said plurality of data lines to read data sensed from a selected one of said plurality of memory cells onto said plurality of data lines;

an ECC block coupled to said data lines; and

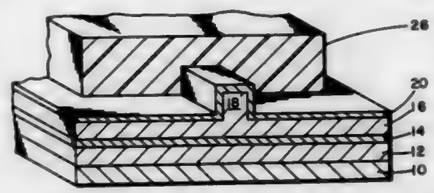
second means for monitoring said plurality of data lines and, as a result of said monitoring, preventing said ECC block from receiving data from said plurality of data lines until such data is valid.

5,307,357

PROTECTION MEANS FOR RIDGE WAVEGUIDE LASER STRUCTURES USING THICK ORGANIC FILMS

Mark E. Jost, Fishkill; Ranee W. Kwong; Abbas Behfar-Rad, both of Wappingers Falls, and Peter P. Kwan, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1992, Ser. No. 972,041
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—7 **5 Claims**

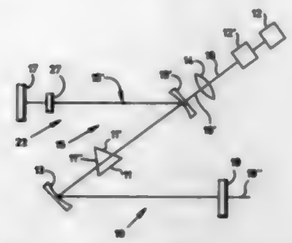


1. A semiconductor ridge waveguide laser structure of the type including an active region layer and a ridge layer disposed on said active region layer wherein said ridge layer includes a ridge portion which protrudes above said active region layer

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and a layer of metal over said ridge layer characterized in having a plurality of separate layers of organic polyimide material disposed on said metal layer over said ridge layer for mechanically protecting said protruding ridge.

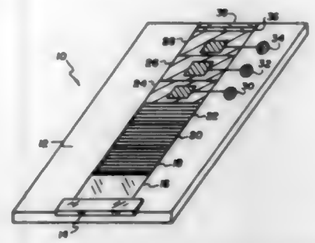
5,307,358
WAVELENGTH DISPERSIVE GAIN ELEMENT FOR A TUNABLE LASER
Richard Schepe, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 20, 1993, Ser. No. 67,504
Int. Cl.[5] H01S 3/10
U.S. Cl. 372—20 **24 Claims**



1. A tunable laser emitting within a preselected range of wavelengths to allow the tuning thereof comprising:
a resonator of said preselected range of wavelengths including a rotatable highly reflective flat element, two highly reflective concave fold mirror elements and an output coupler flat reflective element arranged to form a laser cavity having a reflective path for a resonator mode therebetween, said rotatable highly reflective flat element being selectively rotatable to provide tuning among said preselected range of wavelengths;
a laser gain element disposed in said laser cavity, said laser gain element being fabricated from a material having the properties to produce an optical emission of said resonator mode including said preselected range of wavelengths and to spatially disperse said preselected range of wavelengths therein, said laser gain element being provided with end faces each disposed at Brewster's angle with respect to said resonator mode and each of said end faces being oriented in a separate plane that mutually intersects to assure a spatial dispersion of said preselected range of wavelengths, said laser gain element being located between said two concave fold mirror elements; and
means for optically exciting said laser gain element disposed with respect to said laser gain element in an end pumping mode to assure said optical emission of said resonator mode including said preselected range of wavelengths.

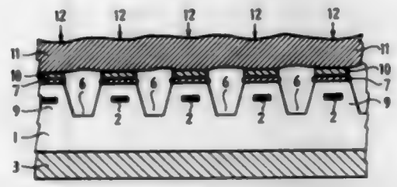
5,307,359
MONOLITHIC SEMI-CONDUCTOR LASER PRODUCING BLUE, GREEN AND RED OUTPUT WAVELENGTHS
Sanwal P. Sarraf, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 21, 1992, Ser. No. 992,305
Int. Cl.[5] H01S 3/10
U.S. Cl. 372—21 **9 Claims**

1. A monolithic multi-color laser comprising:
a substrate,
a semi-conductor laser capable of lightwave generation, mounted on said substrate,
means for exciting said laser,
means mounted on said substrate for generating a second harmonic of at least a portion of said lightwave generated by said laser and optically coupled to the output of said laser to produce output lightwaves having first and second wavelengths, and
an individually controllable frequency matched lightwave



modulator mounted on the substrate and optically coupled to he output of the second harmonic generating means to individually control at least one of said output lightwaves in response to a data signal.

5,307,360
METHOD OF WIRING A ROW OF LASERS AND A ROW OF LASERS WIRED BY THIS METHOD
Pascal Roustin, Clamart, France, assignor to Thomson Hybrides, Puteaux, France
Filed Dec. 15, 1992, Ser. No. 990,509
Claims priority, application France, Dec. 20, 1991, 91 15899
Int. Cl.[5] H01S 3/18
U.S. Cl. 372—43 **18 Claims**

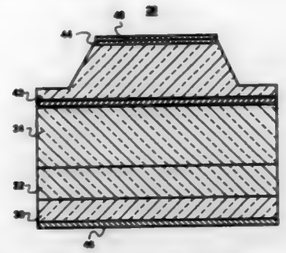


1. A method of wiring a row of semiconductor lasers comprising a substrate supporting a plurality of mesa structures, each mesa structure surrounding a laser cavity, comprising the steps of:
electrolytic plating of the metallized areas which cover the mesas,
thermocompression brazing of a thick metal tape, running the length of the row of lasers, onto the above electrolytic plating.

5,307,361
RIDGE WAVEGUIDE LASER DIODE WITH A DEPRESSED-INDEX CLADDING LAYER
Keith B. Kahen, Rochester; Lingadahalli G. Shantharama, Penfield, and David L. Peterson, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 5, 1992, Ser. No. 971,647
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—48 **7 Claims**

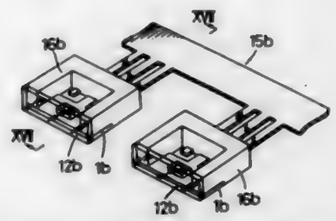
1. A depressed-index cladding ridge waveguide semiconductor laser diode comprising:
(a) a semiconductor substrate of a first conductivity type;
(b) a lower cladding layer of such first conductivity type deposited on the semiconductor substrate;
(c) a depressed-index cladding layer of such first conductivity formed on the lower cladding layer;
(d) a spacer layer of such first conductivity type deposited on the depressed-index cladding layer;
(e) a semiconductor active layer formed on the spacer layer;

(f) an upper cladding layer of a second conductivity type deposited on the semiconductor active layer;
(g) a capping layer of such second conductivity type formed on the upper cladding layer;



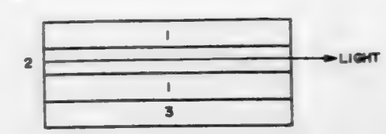
(h) a rib structure etched into the capping and upper cladding layers so as to provide lateral guiding; and
(i) electrically conductive layers formed on the substrate and capping layers.

5,307,362
MOLD-TYPE SEMICONDUCTOR LASER DEVICE
Haruo Tanaka, and Naofumi Aoki, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Nov. 2, 1992, Ser. No. 970,468
Claims priority, application Japan, Nov. 6, 1991, 3-290118; Nov. 6, 1991, 3-290119
Int. Cl.[5] H01S 3/025
U.S. Cl. 372—50 **12 Claims**



5. A mold-type semiconductor laser device comprising:
a metallic support plate;
a semiconductor laser chip carried by the support plate, the laser chip having a front cleavage face for emitting an output laser beam;
a resinous molded body for sealing the laser chip; and
a transparent plate arranged in opposed relation to the front cleavage face of the laser chip;
wherein the support plate has a positioning face which is substantially parallel to the front cleavage face of the laser chip and comes into direct contact with the transparent plate; and
wherein the resinous molded body comprises a frame-like outer molded member surrounding the laser chip but spaced therefrom, the outer molded member opening in a direction away from the support plate, the resinous molded body further comprising an inner molded member formed in the outer molded member for sealing the laser chip.

5,307,363
ORGANIC OPTICAL GAIN DEVICE AND METHOD OF EXCITING THE SAME
Chishio Hosokawa, and Tadashi Kusumoto, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
Filed Mar. 19, 1993, Ser. No. 34,543
Claims priority, application Japan, Mar. 26, 1992, 4-068677
Int. Cl.[5] H01S 3/20
U.S. Cl. 372—53 **14 Claims**



1. An organic optical gain device which comprises an active layer having a film thickness of 1 μm or less, 10% or more by weight of fluorescent organic molecules, and a quantum yield of fluorescence of 0.1 or more, said device being capable of exciting the active layer, and also waveguiding and amplifying the light emitted from the fluorescent organic molecules.

5,307,364
ADDITION OF OXYGEN TO A GAS MIX FOR USE IN AN EXCIMER LASER
Brian A. Turner, Chester, N.J., assignor to Spectra Gases, Inc., Irvington, N.J.
Filed May 24, 1993, Ser. No. 66,541
Int. Cl.[5] H01S 3/22
U.S. Cl. 372—60 **19 Claims**

1. A lasing composition consisting essentially of:
at least one halogen source gas;
at least one rare gas; and
an oxygen containing stabilizer present in an amount sufficient to provide the equivalent of between about 10 and less than about 50 ppm O_2, and optionally at least one inert diluent gas.

5,307,365
CAVITY PUMPED, SOLID STATE LASERS
Eddy A. Stappaerts, Rancho Palos Verdes, and William H. Long, Jr., Torrance, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Continuation of Ser. No. 741,889, Aug. 8, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,748
Int. Cl.[5] H01S 3/093
U.S. Cl. 372—72 **2 Claims**



1. A solid state laser system comprising,
an elongate, solid state laser rod,
means forming a resonant cavity for supporting lasing in said rod,

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means forming an elongate chamber surrounding said rod and including an inwardly facing wall having a highly specularly reflective surface of high reflectivity, said wall and surface being shaped to surround and to focus on said rod so that radiant energy emanating from the region of said rod is redirected by the surface back toward said rod by essentially specular reflection,

means associated with said reflective surface for forming an elongate narrow opening through said surface,

said opening having a tangential extent along the surface and lying in a plane cutting across the elongate dimension of said chamber which is limited so that the area of said opening is, smaller than an amount derived from the condition,

that the ratio of the opening area to the total area of the reflective surface less the area of the opening shall be at least an order of magnitude less than the absorption, per pass, of the rod,

pump means of providing radiant energy capable of pumping said rod by absorption of said energy as it passes through said rod, and

means of causing said pump means to illuminate said rod through said opening,

said rod having diameter which is an order of magnitude smaller than the absorption depth it represents,

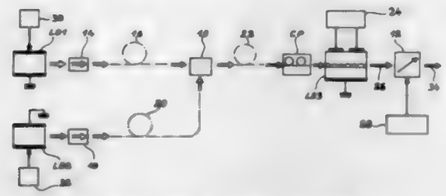
the energy not absorbed by said rod being directed from the rod to the reflective surface of said wall from which it is redirected to the rod for absorption or redirection and reflection until substantially absorbed in the rod.

5,307,366

LOGIC FUNCTION GENERATOR USING AN OPTICAL TRANSPOSITION IN A DISTRIBUTED FEEDBACK LASER DIODE

René Auffret, Perros Guirec; Patrice Pottier; Mouhammad J. Chawki, both of Lannion, and Georges Claveau, Camlez, all of France, assignors to France Telecom Etablissement Autonome de Droit Public, Paris, France

Filed Oct. 1, 1992, Ser. No. 955,024
Claims priority, application France, Oct. 16, 1991, 91 12763
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—96 **6 Claims**



1. Optical logic function generator, comprising:

a plurality of sources of digital optical signals, which are synchronous and have the same rate,

an optical coupler receiving at the input the signals emitted by the sources and which supplies at the output an optical signal resulting from the coupling of said signals emitted by the sources,

a distributed feedback laser diode, into whose active layer is injected the optical signal supplied by the optical coupler,

means for providing constant electrical polarization of said laser diode enabling the latter to supply at the output a signal, whose optical frequency varies as a function of the optical power of the signal injected into the laser diode,

an optical filter, which is frequency tunable and receives at the input the signal supplied by the laser diode and

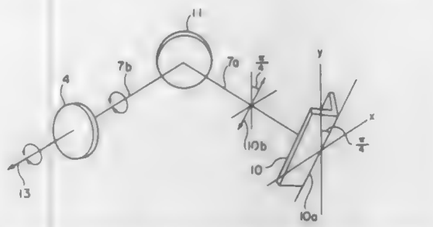
means for the control of the optical filter enabling the latter to select one of the optical frequencies of the output signal of the laser diode and thus supply a digital optical signal, which is a logic function of the signals supplied by the sources.

5,307,367

LASER OSCILLATING APPARATUS

Norio Karube, Machida, Japan, assignor to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP91/00720, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/20114, PCT Pub. Date Dec. 26, 1991
PCT Filed May 28, 1991, Ser. No. 834,524
Claims priority, application Japan, Jun. 11, 1990, 2-152293
The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.
Int. Cl.[5] H01S *3/08*
U.S. Cl. 472—98 **7 Claims**



1. A laser oscillating apparatus for producing a circularly polarized beam from an oscillating beam using a plane produced by two optical axes, comprising:

a rear mirror linearly polarizing the oscillating beam, wherein the rear mirror includes a roof reflector having a ridge set at an angle of $\pi/4$ with respect to the plane produced by the two optical axes; and

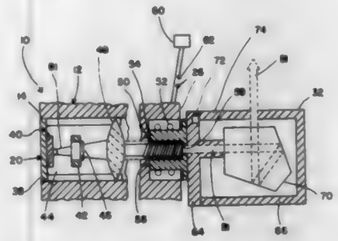
reflecting means for receiving the linearly polarized beam and for converting the linearly polarized beam into the circularly polarized beam, the reflecting means having a $\pi/2$ phase retardation.

5,307,368

LASER APPARATUS FOR SIMULTANEOUSLY GENERATING MUTUALLY PERPENDICULAR PLANES

Martin R. Hamar, 70 Linden Tree Rd., Wilton, Conn. 06897

Filed Sep. 8, 1992, Ser. No. 941,747
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—107 **26 Claims**



1. A laser apparatus comprising:

a housing;

laser generating means mounted in the housing for generating a plurality of laser beams generally perpendicular to one another; and

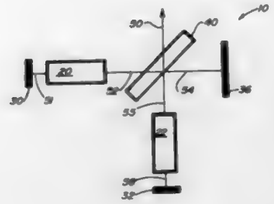
beam adjustment means disposed in alignment with at least one of said laser beams for adjusting alignment of the at least one said laser beam to achieve accurate perpendicularity between said laser beams.

5,307,369

LASER BEAM COMBINATION SYSTEM

Dwight E. Kimberlin, Indianapolis, Ind., assignor to Electrox, Inc., Indianapolis, Ind.

Continuation of Ser. No. 879,756, May 6, 1992, abandoned. This application May 21, 1993, Ser. No. 66,899
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—108 **15 Claims**



1. A common output window assembly for combining a plurality of laser beams into a combined output beam, the laser beams being produced by first and second laser sources each respectively defining an optical axis for coherent light amplification, the common output window comprising

a fully reflecting mirror positioned along the optical axis of the first laser source to reflect coherent light received from the first and second laser sources back toward the laser sources, and

a beam splitter position at an intersection of the optical axes of the first and second laser sources to define an unimpeded optical path between the fully reflecting mirror and the beam splitter, with the beam splitter positioned between the first laser source and the fully reflecting mirror and at an angle with respect to the optical axes of the first and second laser sources, the beam splitter reflecting coherent light from the first laser source into the combined output beam and reflecting coherent light received from the fully reflecting mirror into the second laser source.

5,307,370

SECURE CORDLESS RADIO-TELEPHONE

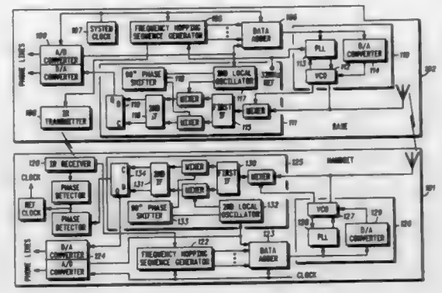
Orville M. Eness, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1991, Ser. No. 709,523
Int. Cl.[5] H04L *27/30*; H04M *11/00*
U.S. Cl. 375—1 **19 Claims**

17. A security apparatus for providing secure transmission of information, via a first communication path, between a handset and an associated base module of a cordless radio-telephone, the security apparatus comprises:

random sequence generation means for generating a random sequence and for producing security information;

addition means, operably coupled to the random sequence generation means, for adding the random sequence to information; and



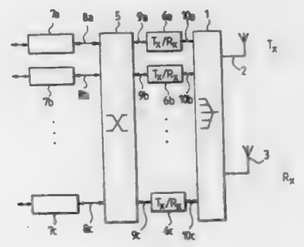
second communication path means, operably associated with the random sequence generation means, for conveying the security information between the associated base module and the handset.

5,307,371

RADIO TRANSCEIVER SYSTEM

Veli Juola, Oulu, Finland, assignor to Telenokia Oy, Espoo, Finland

Filed Sep. 15, 1992, Ser. No. 910,125
Claims priority, application Finland, Nov. 15, 1990, 905666
Int. Cl.[5] H04N *1/00*
U.S. Cl. 375—1 **10 Claims**



1. A radio transceiver system comprising:

at least two radio transceivers, each having a pair of dedicated transmitting and receiving frequencies;

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baseband signal processing means for processing a pair of baseband outbound and inbound signals;

a bidirectional serial digital transmission link between said at least two radio transceivers and said baseband signal processing means, whereby both a baseband inbound signal from each radio transceiver to the baseband signal processing means and a baseband outbound signal from the baseband signal processing means to said each radio transceiver are transferred in a time-division multiplexed manner over said bidirectional serial digital transmission link; and

switching means for controlling said baseband signal processing means in accordance with a predetermined frequency hopping sequence to said each radio transceiver so as to dynamically establish a serial digital signal on said bidirectional digital transmission link.

5,307,372

RADIO TRANSCEIVER FOR TRANSMITTING AND RECEIVING DATA PACKETS

Jonathan F. Sawyer, Golden, and Dennis J. Gardner, Louisville, both of Colo., assignors to CliniCom Incorporated, Boulder, Colo.

Continuation-in-part of Ser. No. 652,976, Feb. 8, 1991, Pat. No. 5,179,569. This application Dec. 15, 1992, Ser. No. 990,568

Int. Cl.[5] H04L *27/30*

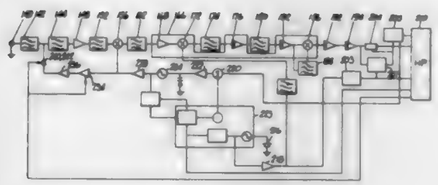
U.S. Cl. 375—1 **14 Claims**

1. A frequency-hopped packet radio transceiver, comprising:

an analog signal processing circuit;

a modular encoder in electrical communication with the analog signal processing circuit for encoding signals for transmission from the transceiver;

a microprocessor in electrical communication with the analog signal processing circuit for processing signals; and



a clock, the clock being in electrical communication with and for synchronizing the analog signal processing circuit and the modular encoder.

5,307,373

Patent Not Issued For This Number

5,307,374

DIGITAL RECEIVER WITH REDUCED MEMORY REQUIREMENT FOR VITERBI EQUALIZATION

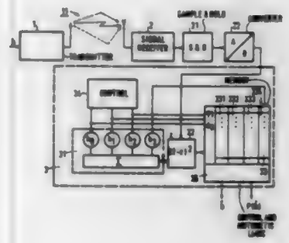
Alfred Baier, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 26, 1991, Ser. No. 797,871

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1990, 4038251

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—11 **20 Claims**



1. A receiver for a digital transmission system using a dispersive transmission channel, wherein the transmission channel has a storage depth of n bits, where n is an integer, said receiver comprising:

means for receiving signals digitally transmitted over said channel, having an analog output,

an analog-to-digital converter receiving said analog output, and having a digitized output, and

an equalizer receiving said digitized output, including a memory having at least one register for storing state transitions and control means for forming estimates of received bits based at least partly on said digitized output and said state transitions,

characterized in that said memory comprises $2^{n'}$ memory locations only for storing state transitions, where $1 \leqq n' < n$ and n' is an integer, and a memory path register for storing at each discrete instant (i) at least n previous bits ($b_{i-1}, \ldots, b_{i-n'}, b_{i-n'-1}, \ldots, b_{i-n}, \ldots$) commencing at a first previous bit (b_{i-1}) for $2^{n'}$ states.

5,307,375

TWO STAGE ACCUMULATOR FOR USE IN UPDATING COEFFICIENTS

Allen Wu, San Diego, and Woo H. Paik, Encinitas, both of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

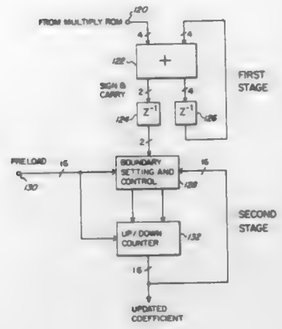
Filed Nov. 19, 1992, Ser. No. 973,430

Int. Cl.[5] H03K *5/159*

U.S. Cl. 375—16 **20 Claims**

1. A two stage accumulator for use in updating coefficients comprising:

a first stage including an adder coupled to receive an error word and an N-bit least significant bit portion of a larger M-bit coefficient to be updated; said first stage outputting sign and carry bits resulting from the addition of said error word and said N-bit least significant bit portion;



a second stage responsive to said sign and carry bits from said first stage for updating the (M-N) most significant bits of said M-bit coefficient; and

means for cyclically providing new error words to said first stage during successive coefficient update cycles.

5,307,376

DEVICE FOR THE COHERENT DEMODULATION OF TIME-FREQUENCY INTERLACED DIGITAL DATA, WITH ESTIMATION OF THE FREQUENCY RESPONSE OF THE TRANSMISSION CHANNEL AND THRESHOLD, AND CORRESPONSING TRANSMITTER

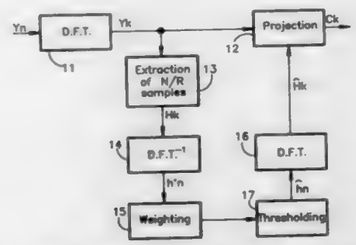
M. Damien Castelain; M. Jean-Francois Helard; M. Bernard Le Floch, and M. Jean-Christophe Rault, all of Rennes, France, assignors to France Telecom, France

Filed Jan. 14, 1992, Ser. No. 820,484

Claims priority, application France, Jan. 17, 1991, 91 00654

Int. Cl.[5] H04K *1/10;* **H04L** *27/28*

U.S. Cl. 375—38 **18 Claims**



3. In a device for the coherent demodulation of a digital signal y_n constituted by digital elements distributed in the time-frequency space and transmitted in the form of successive symbols, each symbol being constituted by a multiplex of N orthogonal carrier frequencies, each carrier frequency being modulated by a set of said digital elements and broadcast simultaneously in a transmission channel, said digital signal further comprising reference elements having a value and a position in said time-frequency space that are known to said demodulation device, said reference elements modulating reference carrier frequencies selected among said multiplex of N orthogonal carrier frequencies at a rate of one reference element for every R carrier frequencies, the demodulation device comprising:

a first transform means for carrying out a Fourier transform on the digital signal y_n to produce a series of N frequency samples Y_k corresponding to said multiplex of N orthogonal frequency carriers,

extraction means coupled to the first transform means for extracting from said series of N frequency samples Y_k N/R reference samples H_k corresponding to a set of said reference elements and inserting (N−N/R) zero fictitious samples between said reference samples H_k, so as to form a reference symbol comprising N samples,

a second transform means coupled to the extraction means for computing a Fourier transform of said reference symbol to provide a series of N temporal values h'_n corresponding to an estimation of the pulse response of the transmission channel,

threshold means coupled to the second transform means &or systematically cancelling from said series of N temporal values h'_n the values which are below a predetermined threshold to provide a series of N threshold temporal values,

weighting means coupled to the threshold means for weighting said series of N threshold temporal values by carrying out a multiplication by 1 of the first N/R thresholded temporal samples and a multiplication by 0 of the remaining thresholded temporal values to provide a series of N weighted temporal values $\hat{h}_n$,

third transform means coupled to the weighting means for computing a Fourier transform, reverse from that computed by said second Fourier transform means, of said series of N weighted temporal values $\hat{h}_n$, to provide a series of N elements forming an estimation $\hat{H}_k$ of the frequency response of the transmission channel, and

projecting means coupled to the first transform means and to the third transform means for projecting said series of N frequency samples Y_k on said estimation $\hat{H}_k$ of the frequency response of the transmission channel to provide N decoded samples $\hat{C}_k$ corresponding to said digital elements.

5,307,377

SYSTEM FOR MODULATING/DEMODULATING DIGITAL SIGNALS TRANSMITTED WITH ENCODED MODULATION

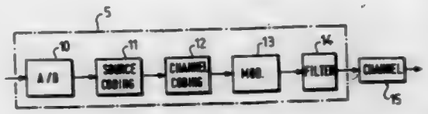
Antoine Chouly, Paris, and Khaled Fazel, Vincennes, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 8, 1991, Ser. No. 774,761

Claims priority, application France, Oct. 9, 1990, 90 12417

Int. Cl.[5] H04L *5/12*

U.S. Cl. 375—39 **8 Claims**



1. A system for modulating digital signals for transmission using encoded modulation via a transmission channel, said system comprising:

I. a channel encoder having an input for receiving said digital signals, said channel encoder comprising:

a) a first encoder coupled to said input, for executing a first

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encoding of said digital signals with a first efficiency so as to form first encoded digital signals;

b) a second encoder coupled to said first encoder so as to receive said first encoded digital signals, said second encoder comprising:

a convolutive encoder which receives said first encoded digital signals and subjects them to a convolutive encoding having a second efficiency so as to form second encoded signals; and

a binary allocation module comprising modulation information; and

II. a modulator coupled to said second encoder for modulating said second encoded signals in accordance with said modulation information;

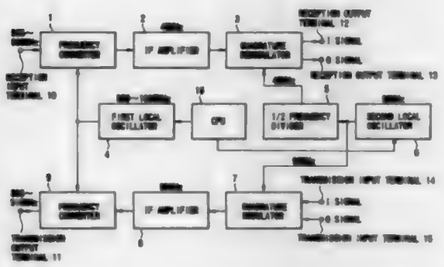
wherein said channel encoder further comprises means for protecting said digital signals by implementing binary redundancy coding in said first and second encoders so as to distribute the binary redundancy between said first and second encoders so as to ensure a third efficiency for the channel encoder equal to the first efficiency multiplied by the second efficiency.

5,307,378

DIGITAL RADIO COMMUNICATION APPARATUS

Hidehiko Norimatsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,229
Claims priority, application Japan, May 31, 1991, 3-155344
Int. Cl.[5] H04B *1/48*
U.S. Cl. 375—39 **4 Claims**



1. A digital radio communication apparatus comprising:

a reception system including a first frequency converter for frequency-converting a reception signal having a predetermined reception frequency and outputting the converted signal as a first IF signal, and a quadrature demodulator for performing quadrature demodulation of the first IF signal; and

a transmission system including a quadrature modulator for performing quadrature modulation of a transmission signal having a predetermined transmission frequency and outputting the modulated signal as second IF signal, and a second frequency converter for frequency-converting the second IF signal and transmitting the converted signal,

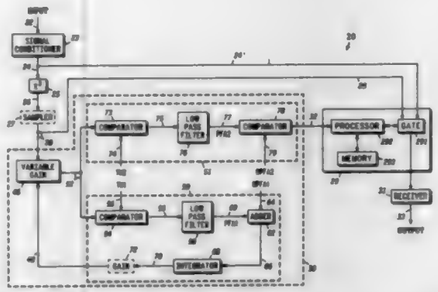
wherein a frequency difference between the first and second IF signals is set to coincide with a frequency interval between the predetermined transmission frequency and the predetermined reception frequency, and frequency of one of the first and second IF signals is set to be an integer multiple of a frequency of the other IF signal.

5,307,379

AUTOMATIC NOISE CHARACTERIZATION FOR OPTIMALLY ENABLING A RECEIVER

Chad S. Bergstrom, Chandler; F. Elvin Krasin, Phoenix, and Sue E. Sprute, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1992, Ser. No. 874,318
Int. Cl.[5] H03K *17/30*
U.S. Cl. 375—76 **18 Claims**



1. An apparatus for receiving an input signal and setting a receiver input threshold level, comprising:

a first circuit for repetitively testing the input signal to determine when the input signal has a predetermined property characteristic of substantially pure noise, and providing an indication thereof; and

a second circuit coupled to the first circuit, for setting the receiver input threshold level when said indication is present; and

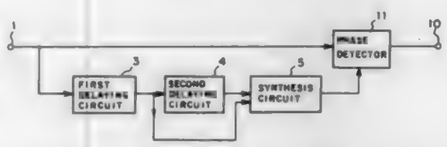
wherein the first circuit further comprises a first sub-circuit for deciding when a measured probability that input signal power exceeds a predetermined power level is not larger than a reference probability that a pure noise signal power exceeds the predetermined power level, and providing said indication based thereon.

5,307,380

DELAYING DETECTION CIRCUIT

Atsuya Kume, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,038
Claims priority, application Japan, Jun. 29, 1990, 2-171541
Int. Cl.[5] H03D *3/02*
U.S. Cl. 375—84 **6 Claims**



1. A delaying detection circuit for time delaying and detecting a phase shift keying modulated digital input signal based on a time delay of the input signal and the comparison of the phase difference between the time delayed input signal with the input signal comprising:

a plurality of delaying circuits connected to receive said digital input signal and including means for effecting the substantially simultaneous time delay of said digital input signal by respectively different delay times and for outputting substantially simultaneously a plurality of time delayed signals representing said input signal delayed by said respectively different delay times;

a synthesis circuit connected to receive the plurality of time delayed output signals of said delaying circuits, and including means for synthesizing the output signals received from said delaying circuits, estimating said input signal before one symbol time based on said output signals received from said delaying circuits, and outputting an estimated delay signal; and

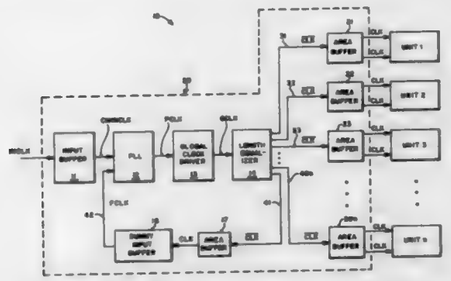
a phase detection circuit connected to receive said input signal and said estimated delay signal and for comparing the phase difference between said input signal and said estimated delay signal and outputting demodulated data corresponding to the phase difference between said estimated delay signal and said input signal.

5,307,381

SKEW-FREE CLOCK SIGNAL DISTRIBUTION NETWORK IN A MICROPROCESSOR

Bhupendra K. Ahuja, Fremont, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1991, Ser. No. 816,385
Int. Cl.[5] H04L *7/00*; H03D *3/24*
U.S. Cl. 375—107 **15 Claims**



1. A clock signal distribution network residing in a microprocessor for distributing a global clock signal to a plurality of units of the microprocesor, comprising:

clock generation means coupled to receive a clock input signal for generating the global clock signal;

clock driving means coupled to receive the global clock signal from the clock generation means for driving the global clock signal to the plurality of units of the microprocessor;

electrical connection means having a plurality of connection lines coupled to receive the global clock signal from the clock driving means for coupling the global clock signal to the plurality of units, wherein each of the plurality of connection lines generates a signal transfer delay to the global clock signal;

length equalizing means coupled between the clock driving means and the electrical connection means for equalizing the signal transfer delay of each of the plurality of connection lines such that the global clock signal reaches each of the plurality of units via each of the plurality of connection lines at the same time; and

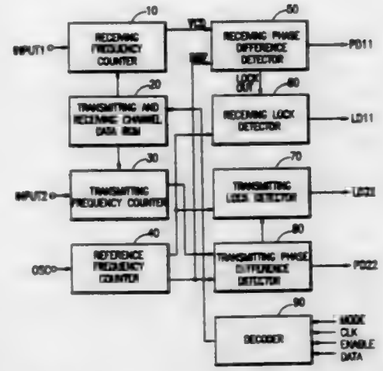
area buffer means in each of the plurality of units coupled to one of the plurality of connection lines for standardizing an input load of each of the plurality of units to the clock driving means, wherein the area buffer means receives the global signal from one of the plurality of connection lines and couples the global clock signal to its respective unit.

5,307,382

LOCK APPARATUS FOR DUAL PHASE LOCKED LOOP

Dai S. Pang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook, Rep. of Korea

Filed May 11, 1992, Ser. No. 880,774
Claims priority, application Rep. of Korea, May 15, 1991, 7868/1991
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 **5 Claims**



1. A lock apparatus for a dual phase locked loop (PLL) comprising:

decoding means being operated by an external enable signal to decode channel select data inputted externally thereto, synchronously with a clock pulse;

means for generating, transmitting and receiving channel data in accordance with transmitting and receiving frequency select data from said decoding means;

transmitting and receiving frequency counting means for determining count values respectively according to the transmitting and receiving channel data from said channel data generating, transmitting and receiving means and for counting, transmitting and receiving frequencies inputted through respective input terminals, respectively, based on the determined count values;

transmitting and receiving phase difference detecting means for comparing the counted transmitting and receiving frequencies from said transmitting and receiving frequency counting means with a reference frequency from a reference frequency counter, respectively, to detect phase differences therebetween and for outputting phase data and locked state signals, respectively, based on the detected phase differences; and

transmit and receive lock detecting means for detecting phase locked states of the transmitting and receiving frequencies, respectively, in response to the locked state signals from said transmitting and receiving phase difference detecting means and for outputting lock data externally, respectively, in accordance with the detected phase locked states, wherein said receive lock detecting means comprises

reset signal generating means for generating a reset signal in response to the receive locked state signal from said receiving phase difference detecting means,

frequency-dividing means for dividing a first predetermined frequency from said reference frequency counter by a given ratio in response to the reset signal from said reset signal generating means, and

a receive lock data output means for outputting the receive lock data in response to an output signal from said frequency-dividing means.

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5,307,383

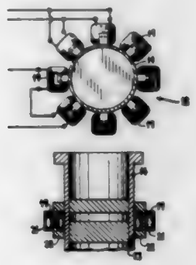
Patent Not Issued For This Number

5,307,384

SEGMENTED COIL ASSEMBLY FOR CONTROL ROD DRIVE

John E. King, Plum Boro; James E. Gillett, Greensburg, and Raymond M. Calfo, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1992, Ser. No. 991,803
Int. Cl.[5] G21C *7/06*
U.S. Cl. 376—228 9 Claims



1. A magnetic jack-type of drive mechanism for moving control rods within a nuclear reactor comprising:

(A) a non-magnetic tubular housing member containing a control rod drive shaft;

(B) a plurality of interactive movable and stationary magnetic discs and associated latches within said housing member adapted to axially move and grip said control rod drive shaft in a number of predetermined positions,

(C) three magnetic coil assemblies spaced axially along the portion of said tubular housing containing said magnetic discs and associated latches, each magnetic coil assembly comprising a plurality of individual magnetic coils spaced equally around and against the outside periphery of said tubular housing member.

5,307,385

METHOD OF AND APPARATUS FOR ESTIMATING REMAINING SERVICE LIFE OF MATERIAL BEING EXPOSED TO RADIANT RAY IRRADIATION

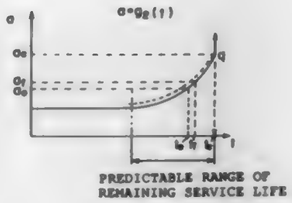
Shizuka Shimanuki, Hitachi; Kiyotomo Nakata, Katsuta; Shizuo Matsuhita, Hitachi; Shigeki Kasahara, Hitachi; Michiyoshi Yamamoto, Hitachi, and Hideya Aazai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 895,049
Claims priority, application Japan, Jun. 6, 1991, 3-135198
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—249 35 Claims

1. A method for estimating a remaining service life of an object which is placed in an environment subjected to exposure to high-energy radiant ray and made of a material which will deteriorate in mechanical properties under the exposure to high-energy radiant ray, comprising:

a first step in which a material having substantially the same composition as said object is subjected to exposure to the high-energy radiant ray under a plurality of exposure conditions to prepare a plurality of model samples, and physical quantities of the respective model samples, indicative of the mechanical properties of the respective samples, are obtained in relation with exposure times to the respective model samples to obtain a relationship between an exposure time and a physical quantity for said object;

a second step for obtaining a critical exposure period of time which will cause unstable fracture in the material of said object from the relationship obtained in the first step;



a third step for placing an actual sample of a material having substantially the same composition as said model samples in said environment where said object is placed and subjected to exposure to the high-energy radiant ray;

a fourth step for measuring a physical quantity of the actual sample after the exposure to the high-energy radiant ray;

a fifth step for obtaining an actual exposure time corresponding to the physical quantity of the actual sample obtained in the fourth step on the basis of the relationship between the physical quantity and the exposure time obtained in the first step to regard said actual exposure time thus obtained as an actual exposure time of said object; and

a sixth step for obtaining a difference between the critical exposure time obtained in the second step and the actual exposure time of said object obtained in the fourth step.

5,307,386

APPARATUS AND METHOD FOR SERVICING AN ELONGATED SUSPENDED PUMP MOTOR IN AN ELECTRIC POWER PLANT WITH LIMITED ACCESS

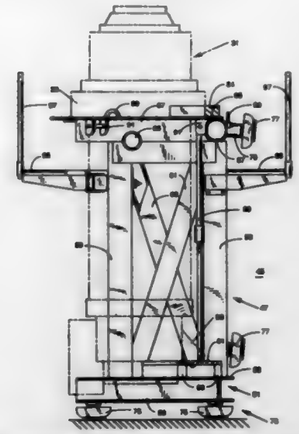
Rosemary V. Chavez, Moaroeville; Douglas E. Ekeroth, Delmont; F. Thomas Johnson, Baldwin Boro, and John M. Matusz, Plum Boro, both of Allegheny Co., all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 24, 1992, Ser. No. 903,633
Int. Cl.[5] G21C *19/10*
U.S. Cl. 376—260 16 Claims

1. A service apparatus for servicing an inverted pump installed above a floor and beneath a steam generator in a power plant with limited access, said pump having a pump casing with a generally downwardly facing pump casing flange, and a depending elongated pump motor having a motor flange secured to said pump casing flange; said service apparatus comprising:

a maintenance cart including:

an elongated frame having a bottom end and elongated sides with an elongated opening along one side within which said elongated pump motor is received;



support means for supporting said pump motor on said frame within said elongated opening with said frame in an upright position, and for supporting said pump motor on said frame within said elongated opening with said elongated frame in a generally horizontal position; and

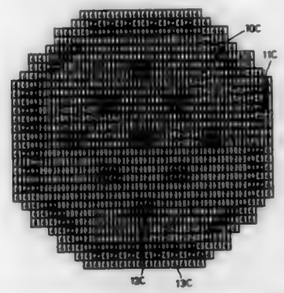
roller means mounted on said cart for translating said frame in said upright position and for translating said frame in said generally horizontal position.

5,307,387

FUEL LOADING METHOD AND REACTOR CORE

Akinobu Nakajima, Hitachi; Motoo Aoyama, Mito, and Kunitoshi Kurihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 918,596
Claims priority, application Japan, Jul. 24, 1991, 3-184867; Mar. 17, 1992, 4-60703
Int. Cl.[5] G21C *19/20, 5/12*
U.S. Cl. 376—267 29 Claims



23. A fuel loading method for a reactor core having a core central zone including a plurality of first fuel assemblies that remain at the same loaded positions for at least two successive cycles, and a core circumferential zone including a plurality of second fuel assemblies that are changed in loaded positions for each of at least two successive cycles, wherein a plurality of first cells each including four fuel assemblies disposed adjacent to each other and a plurality of second cells each including four other fuel assemblies disposed adjacent to each other and having a mean neutron infinite multiplication factor smaller than a mean neutron infinite multiplication factor of said first cells, are arranged in said core central zone, said second cells being control cells, said method comprising:

(a) a first step of moving said second fuel assemblies having resided in said core circumferential zone for three cycles to said control cells; and

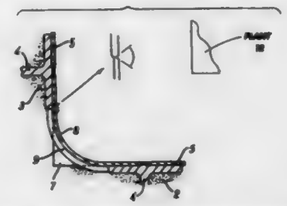
(b) a second step of moving said first fuel assemblies having resided in said core central zone for three cycles to at least a core outermost zone.

5,307,388

CONTAINMENT STRUCTURES

John E. Inkester, Warrington; Leslie Denholm, Sale, and Bruce H. Thurrell, Stockport, all of United Kingdom, assignors to British Nuclear Fuels plc, Cheshire, United Kingdom

Filed May 26, 1992, Ser. No. 888,135
Int. Cl.[5] G21C *13/00*
U.S. Cl. 376—272 7 Claims



1. A containment structure, said structure comprising:

a concrete wall;

a concrete floor; and

a corrosion resistant stainless steel liner fixed to and in contact with said wall and floor except at junctions of the wall and floor at which the liner is curved to provide soft corners to permit movement of the liner relative to the concrete wall and floor, said soft corners including a region providing an empty space between the liner and the concrete wall and floor at the junctions of the wall and floor, wherein the liner comprises sheets fixed to an adjacent concrete wall or floor by bars of T-shape cross-section embedded in the concrete with their head appearing flush with the surface of the concrete.

5,307,389

SYSTEM FOR REMOVING LIQUID WASTE FROM A TANK

Timothy K. Meseely, Penn Hills, and Catherine A. Sherbine, N. Versailles Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1993, Ser. No. 54,507
Int. Cl.[5] G21F *9/22*
U.S. Cl. 376—272 5 Claims

1. A cylindrical tank assembly for nuclear waste applications having an interior portion for containing a liquid, the tank assembly comprising:

a) a tank shell for protectively surrounding the liquid contained therein;

b) an inlet positioned on the tank for passing the liquid into the tank;

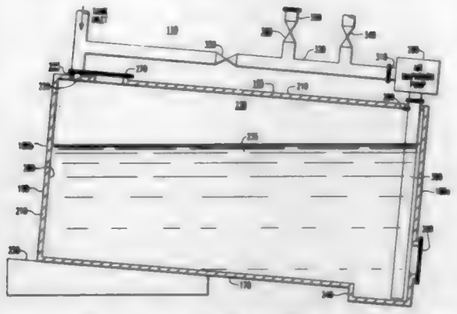
c) a sump positioned in the interior portion of the tank for forming a reservoir of the liquid;

d) a sloped incline for resting the tank thereon and for creating a natural flow of the liquid toward said sump;

e) a pump cooperating with the tank for pumping the liquid;

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f) a pipe attached to said pump and extending into said sump for passing the liquid therethrough; wherein said pump pumps the liquid in said sump through said pipe and into said pump for discharging the liquid out of the tank; and



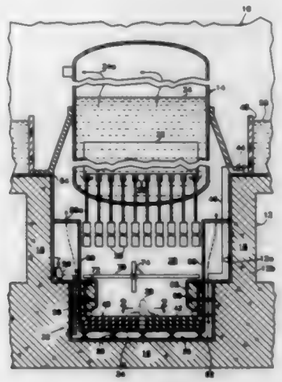
g) a recirculation pipe attached to both said pump and said inlet for recirculating the liquid waste therethrough and including a valve for controlling the flow of the liquid waste therethrough.

5,307,390

CORIUM PROTECTION ASSEMBLY

Perng-Fei Gou, Saratoga; Harold E. Townsend, Campbell, both of Calif., and Giancarlo Barbanti, Sirtori, Italy, assignors to General Electric Company, San Jose, Calif.

Filed Nov. 25, 1992, Ser. No. 981,978
Int. Cl.[5] G21C *9/016*
U.S. Cl. 376—280 14 Claims



1. An assembly for protecting a containment vessel from corium releasable from a nuclear reactor core disposed in a reactor pressure vessel installed inside said containment vessel, comprising:

a perforated base grid disposed below said pressure vessel and spaced vertically above a floor of said containment vessel to define a sump therebetween;

a plurality of layers of laterally adjoining protective blocks disposed on said grid, said blocks being sized and configured for protecting said containment vessel floor from said corium; and

means for selectively flooding said sump with water upon release of said corium from said reactor core for cooling said blocks and said corium,

wherein adjacent ones of said blocks define joints therebetween for allowing liquid flow through said layers and said joints decrease in size from a top layer to a bottom layer of said blocks.

5,307,391

METHOD FOR TREATMENT OF PRIMARY COOLANT MEDIUM OF A PRESSURIZED WATER NUCLEAR REACTOR

Vladimir I. Pasevic, and Dmitrii V. Pasevic, both of Mytisci, U.S.S.R., assignors to Promotech Corporation, Vaduz, Liechtenstein

Filed Aug. 6, 1992, Ser. No. 926,572
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126468
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—306 3 Claims

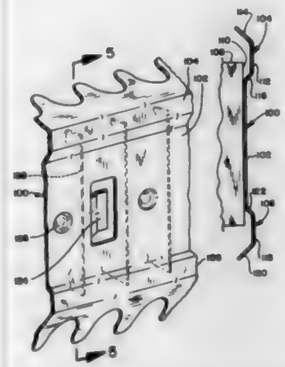
1. Method for treating the primary coolant of a pressurized water nuclear reactor by controlling its efficiency through the H_3BO_3 content in the coolant, which comprises; continuously adding hydrazine hydrate to the coolant of the reactor, which is charged for energy generation, in such amounts that its content is $5 \cdot 10^{-6}$ to $5 \cdot 10^{-2}$ g/kg coolant; and removing excess hydrogen from the coolant leaving a content of no more than 100 n.ml/kg.

5,307,392

ENERGY DISSIPATING OUTER STRIP FOR GRID

William J. Bryan, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 29, 1992, Ser. No. 905,754
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—442 14 Claims



12. A nuclear fuel assembly of the type to be arranged adjacent a plurality of other similar fuel assemblies in the core of a nuclear reactor through which coolant is pumped, each fuel assembly having a plurality of vertically spaced apart grids for supporting fuel rods, wherein each grid comprises:

a plurality of horizontally oriented, orthogonally intersecting metal strips each having vertically oriented side edges, the strips being fixed to each other at the intersections to form a substantially rectangular rigid structure defining a plurality of four-walled cells for receiving respective nuclear fuel rods;

a perimeter plate horizontally spanning each side of the rectangular structure, the plate having a substantially flat central region and vertically upper and lower border regions, the central region being rigidly attached to the side edges of the strips and the border regions having outwardly projecting formations spaced from the side edges of the strips, whereby the outwardly projecting formations are resiliently supported by the central region for absorbing external loads imposed horizontally on the

grid from contact with a confronting perimeter plate of an adjacent fuel assembly;

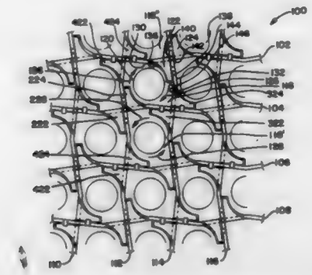
said central region including means projecting into adjacent cells for supporting a fuel rod, and a plurality of orifices spaced from the means for supporting a fuel rod, for restricting flow of coolant through the perimeter plate to induce a hydraulic damping effect as confronting perimeter plates contact each other along the respective border regions.

5,307,393

SPLIT VANE ALTERNATING SWIRL MIXING GRID

Stephen C. Hatfield, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 29, 1992, Ser. No. 905,922
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—442 15 Claims



1. A unitary three dimensional grid strip for a nuclear fuel assembly grid, comprising:

a corrugated body portion having substantially rectangular length and height dimensions as viewed in a first, elevation plane extending in respective X and Y orthogonal dimensions, and a serpentine shape when viewed in a second, edge plane extending in orthogonal X and Z dimensions, the serpentine shape defining alternating convex and concave angels having vertices that project inwardly and outwardly, respectively, along the Z dimensions, the corrugations forming spaced apart bend lines in the Y dimension at said vertices, thereby defining consecutive body panels which alternate generally inwardly and outwardly between consecutive bend lines;

a vertical slot extending in the Y dimension from one of the upper or lower edges into each panel midway between consecutive bend lines;

a cut out in the body portion centered at each bend line and integrally forming a cantilevered spring having a base in one panel and a free end extending across a bend line and over to another panel;

flow deflector means int eh form of adjacent vanes extending from the upper edge of one panel on either side of a vertical extension of the slot in said one panel, one of the vanes bent over inwardly and the other bent over outwardly; and

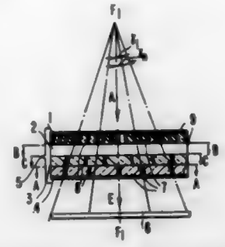
flow confinement means in the form of adjacent tabs extending int he Y direction from the upper edge of an adjacent panel, on either side of a vertical extension of the slot in said adjacent panel, each tab being of substantially the same size as a vane.

5,307,394

DEVICE FOR PRODUCING X-RAY IMAGES ON OBJECTS COMPOSED OF PHOTO OR X-RAY SENSITIVE MATERIALS

Oleg Sokolov, 64-39 98 St., #4B, Rego Park, N.Y. 11374

Filed Jan. 27, 1993, Ser. No. 9,976
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—34 8 Claims



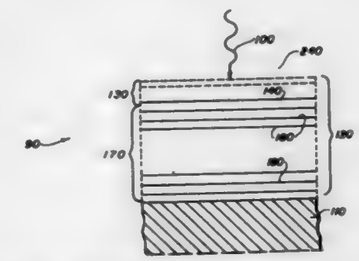
4. A device for forming an X-ray image in objects composed of a photo or an X-ray sensitive material, comprising a plurality of layers each having X-ray non-transmitting areas and X-ray transmitting areas, each of said areas of said layers having transverse sizes corresponding to respective transverse sizes of openings to be formed or an image of partitions between the openings, said X-ray non-transmitting areas of each layer which form the image of the partitions between the openings being located at an angle from zero to 89.99° relative to a central beam of an exposing radiation, said layers having a height such as to provide a ratio of its height not less than 1 with respect to a distance between said non-transmitting areas of each layer, said X-ray non-transmitting areas and said X-ray transmitting areas of each of said layers extending only in one direction, said layers being arranged over one another so that said X-ray non-transmitting areas and said X-ray transmitting areas of said layers extend transversely to each other when said layers are arranged over one another so as to form together a final image of the openings and the partitions.

5,307,395

LOW-DAMAGE MULTILAYER MIRROR FOR THE SOFT X-RAY REGION

John F. Seely, Lorton, and William R. Hunter, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 953,697
Int. Cl.[5] G21K *1/06*
U.S. Cl. 378—84 32 Claims



2. A mirror for reflecting radiation at a desired wavelength in the soft x-ray region, the mirror comprising a substrate and a coating on the substrate, said coating comprising:

(a) a first section comprising at least one layer, said layer comprising at least a spacer sublayer and a nodal sublayer, the optical thickness of each spacer sublayer being se-

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lected so that upon application of the radiation of desired wavelength, the mirror generates a standing wave having a node in the middle of each nodal sublayer; and

(b) a second section disposed between said substrate and said first section, said second section comprising a plurality of optically absorptive layers.

5,307,396

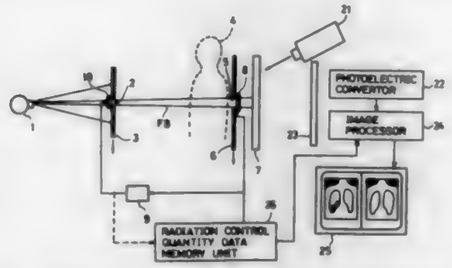
RADIATION IMAGE PICKUP METHOD AND APPARATUS

Hisanori Tsuchino, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 727,570, Jul. 9, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 982,781

Int. Cl.[5] **G21K** *5/10*

U.S. Cl. 378—146 **20 Claims**



1. An apparatus for detecting an X-ray image comprising:

a source of X-rays adapted to scan an irradiation target;

a first collimator between said source and said target, said first collimator being movable in a scanning direction, and at least one opening wherein a first radiation beam is formed and is directed to said target in said scanning direction, and said opening having a diaphragm forming a second radiation beam;

a detector for detecting said first radiation beam transmitted through said target, and outputting a strength signal based thereon;

a controller for adjusting said diaphragm to form said second radiation beam based on said strength signal, and outputting an adjusting value of said diaphragm;

an image pickup for receiving said second radiation beam after passage through said target;

a first device for producing a first original image based on said first radiation beam and said second radiation beam transmitted through said target; and

a second device for reproducing a second processed image based on said first original image formed by said image pickup and said adjusting value of said diaphragm, wherein said second processed image is formed based on said first radiation beam.

5,307,397

FILM CASSETTE HAVING MARKER FOR IDENTIFYING THE EXPOSURE SIDE OF A MEDICAL RADIOGRAPH

Carl E. Fabian, 577 NE. 96th St., Miami Shores, Fla. 33138

Continuation-in-part of Ser. No. 791,778, Nov. 4, 1991, Pat. No. 5,189,689, which is a continuation of Ser. No. 572,392, Aug. 27, 1990, Pat. No. 5,077,778. This application Jul. 20, 1992, Ser. No. 915,242

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] **H05G** *1/28*

U.S. Cl. 378—162 **17 Claims**

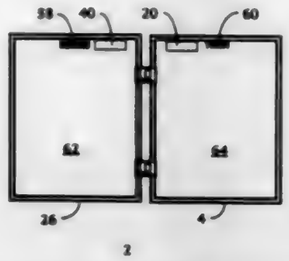
1. A radiographic film cassette for exposing a sheet of film to X rays projected along an X ray path by an X ray tube, comprising:

(a) a cover having an inner surface defining a recess for receiving said film sheet;

(b) a base having an inner surface adapted to close upon said cover for securing said film sheet;

(c) a first intensifying screen immovably disposed within said recess between said film sheet and the inner surface of said cover;

(d) a first marker permanently fixed to said first intensifying screen and adjacent to said film for intersecting a first



portion of said X ray path during exposure, said marker being light-opaque and chirally asymmetric;

(e) a second intensifying screen immovably disposed between said film sheet and the inner surface of said base;

(f) a second marker permanently fixed to said second intensifying screen adjacent to said film for intersecting a second portion of said X ray path during exposure, said marker being light-opaque;

said film sheet, upon exposure, bearing a composite image of each of said markers.

5,307,398

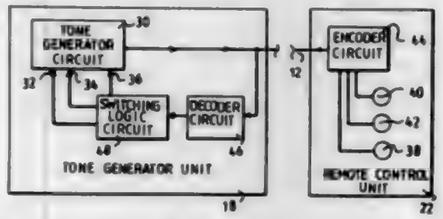
REMOTE CONTROLLED TONE GENERATOR SYSTEM

Joseph Contonzo, 63 Chestnut La., Levittown, N.Y. 11756; John M. Cannata, 1875 W. 7 St., Brooklyn, N.Y. 11223, and Gil D'Orazio, 1619 Stevens Ave., Merrick, N.Y. 11566

Filed Mar. 18, 1992, Ser. No. 853,571

Int. Cl.[5] **H04M** *1/24;* **H04B** *3/46*

U.S. Cl. 379—21 **6 Claims**



1. A communication line testing system for testing a single one of a multiple communication line network including a main cable feeder unit comprising:

a remotely controlled tone generator, said tone generator including attachable and detachable connection means for the removable connection of said tone generator with a single communication line to be tested;

a tone generation controller, said controller being connected to said communication line to be tested at a distance from said tone generator, said controller including an encoding and transmitting circuit connected to a plurality of push-buttons such that when a button is pressed, one of a number of predetermined and specific encoded controller signals is transmitted through said communication line to be tested;

a tone generation circuit included within said tone generator, said tone generation circuit being capable of outputting a multiplicity of test signals on said communication line to be tested;

a decoding and logic output circuit connected to both the communication line to be tested and the tone generation circuit such that when one of said predetermined encoded controller signals is received, said decoding logic output circuit activates the tone generation circuit to output a desired test signal; whereby

said tone generator is controlled remotely from said tone generator controller located at a distance from said tone generator and both the tone generator and the tone generator controller are located a distance from, and on the same side of, the main cable feeder unit.

5,307,399

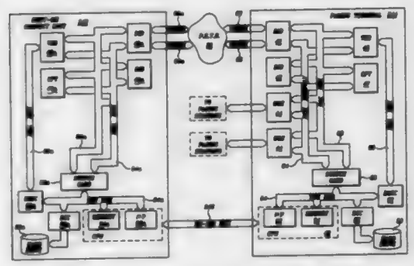
PAGING SYSTEM THAT ALLOWS CALLER/SUBSCRIBER INTERCONNECTION

Susan W. S. Dai, Richmond; Donald W. Gayton, North Vancouver; Brian G. Laird, Vancouver, and Randy T. Tkatch, Burnaby, all of Canada, assignors to Glenayre Electronics, Inc., Charlotte, N.C.

Filed Mar. 6, 1992, Ser. No. 848,413

Int. Cl.[5] **H04M** *11/00*

U.S. Cl. 379—57 **37 Claims**



36. A meet-me unit connected to a publicly switched telephone network for receiving telephone calls to meet-me page subscribers and for receiving telephone calls from the meet-me page subscribers, and further connected to a paging terminal, said unit comprising:

a first processing unit capable of distinguishing between calls to the meet-me page subscribers and calls from the meet-me page subscribers and in response to an incoming call for a specific meet-me page subscriber, generating a meet-me page request, forwarding said page request to the paging terminal, and parking the incoming call; and

a second processing unit connected to said first processing unit for determining from which meet-me page subscriber a call is received, determining if said parked call is for the meet-me page subscriber unless a predefined number of incoming lines are busy, where said predefined number is substantially less than a maximum available of the number of incoming line; and, if said parked call is for the meet-me page subscriber who is calling, establishing a signal link between said parked call and the call from the meet-me page system subscriber who is calling.

5,307,400

CALL ROUTING IN MOBILE TELEPHONE SYSTEMS

Francois Sawyer, Hubert, Canada, and Christer Palmgren, Karlskrona, Sweden, assignors to Telefonaktiebolaget L M. Ericsson, Stockholm, Sweden

Filed Nov. 25, 1991, Ser. No. 797,548

Int. Cl.[5] **H04M** *11/00*

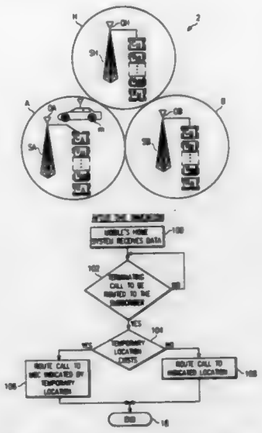
U.S. Cl. 379—59 **20 Claims**

1. A method for providing continuous location data for a mobile radio telephone as said mobile phone enters visited cellular networks, said method comprising the steps of:

receiving an access signal transmitted by said mobile phone;

determining if said access signal is a registration access or a call access;

determining if said access signal is a call release signal from said mobile phone;



storing registration access information from said mobile phone;

saving call access information from said mobile phone;

communicating registration access information to said mobile phone's home network; and

ordering said home network to store a temporary location indication for said mobile phone if said access signal is a call access.

5,307,401

CELLULAR TELEPHONE WITH MICROPHONE EXTENDER

Hari Matsuda, Evanston, Ill., assignor to Mitsubishi International Corporation, Wood Dale, Ill.

Continuation of Ser. No. 661,388, Feb. 26, 1991. This application Feb. 26, 1993, Ser. No. 24,095

Int. Cl.[5] **H04M** *11/00*

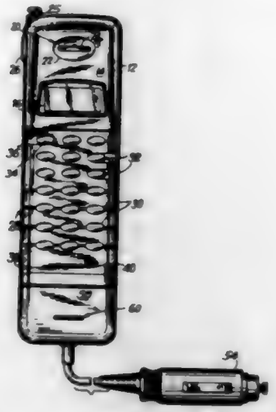
U.S. Cl. 379—59 **14 Claims**

12. A cellular telephone comprising a body having a substantially rectangular shape, said body includes an earphone located at one end of the body and a microphone located at the opposite end, an extender means detachably coupled to the body which includes a microphone, and wherein when the extender means is coupled with the body, the microphone in

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the extender means is activated with the microphone in the body deactivated with the extender means positioning its microphone in closer proximity to a user's mouth than that of the microphone in the body.



5,307,402

REDUCED TIME REMOTE ACCESS METHOD

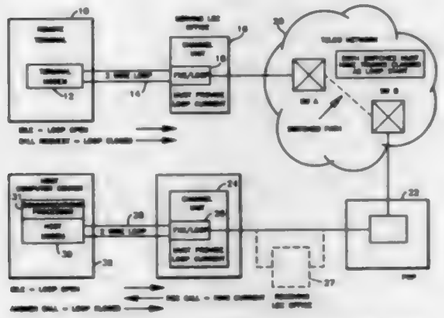
Christophe K. Cooper, Kingwood, Tex., assignor to Exxon Research and Engineering Company, Houston, Tex.

Continuation-in-part of Ser. No. 615,931, Nov. 19, 1990, Pat. No. 5,144,651. This application Apr. 16, 1992, Ser. No. 860,497

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—98 **7 Claims**



1. A method of transmitting confidential data between a particular remote modem of a plurality of remote modems and a host computer having a host modem capable of being connected to any of the plurality of remote modems, comprising the steps of:

the particular remote modem seizing a telephone line;

determining the seizure of the telephone lien by the particular remote modem and initiating a secure telephone connection sequence to the host modem, said sequence being completed only if the remote modem has been previously authorized to be connected to the host modem, said sequence being concluded by providing a ring signal to the host modem;

the host modem seizing the telephone line and providing an answer tone upon receipt of the ring signal;

the particular remote and host modems completing a baud rate determination after the answer tone is provided;

providing indication from the host modem to the host computer that communication has been established and establishing a link between the host modem and the host computer;

transmitting a transaction commence signal to the particular remote modem, said transaction commence signal being transmitted without a login procedure being performed; and

transmitting confidential data between the particular remote modem and the host modem.

5,307,403

TELEPHONE BRANCH LINE TRANSMISSION CIRCUIT WITH BLOCKING CAPACITOR

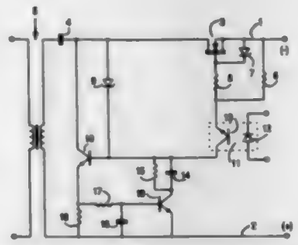
Ingo Reichelt, Schwabach, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1992, Ser. No. 989,623

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4140904

Int. Cl.[5] H04M *3/22*

U.S. Cl. 379—286 **5 Claims**



1. A telephone branch line transmission circuit comprising first and second switching devices for connection between a first and second branch line to a telephone exchange, a control device for controlling said switching devices in accordance with dial pulses received by said control device from the exchange, and a blocking capacitor for coupling the first branch line to a telephone terminal; characterized in that:

the first switching device comprises a transistor (3) coupled in series between the blocking capacitor (4) and the first branch line and having a control terminal coupled to the control device (11), said transistor (3) being turned on by said control device (11) when a dial pulse is received and being turned off by said control device (11) upon termination of a received dial pulse;

the second switching device comprises a first bipolar transistor (10) having an emitter coupled to the second branch line by a resistor, a collector coupled to the connection node between blocking capacitor (4) and the first switching device transistor (3), and a base which is also coupled to said connection node;

a storage capacitor (14) coupled to the base of the first bipolar transistor (10); and

a second bipolar transistor (19) having a base coupled to the emitter of the first bipolar transistor (10), an emitter coupled to the second branch line, and a collector coupled directly or by intermediate coupling means to said capacitor (14); turn-on of the second bipolar transistor (19) being produced by said first bipolar transistor (10) after a delay interval following turn-on of said first bipolar transistor (10), said storage capacitor (14) being charged by current initiated by turn-on of said second bipolar transistor (19);

whereby turn-on of said first switching device in response to a received dial pulse causes turn-on of said bipolar transistor (10) to thereby produce a low impedance between said branch lines, and charging of said storage capacitor (14) after said delay interval following turn-on of said second bipolar transistor (19) produces a high impedance between said branch lines.

5,307,404

SIGNAL DETECTING DEVICE

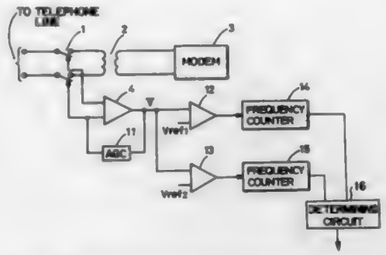
Kenroh Yatsunami, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1991, Ser. No. 723,254

Claims priority, application Japan, Jun. 28, 1990, 2-172053

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—386 **5 Claims**



1. A signal detecting device employed in a communication apparatus comprising an automatically dialling transmitting function, the signal detection device detecting a tone signal which is a composite wave of n types of frequencies (n being a positive integer) sent from an exchange system via a telephone line, said signal detecting device comprising:

comparator means for comparing the level of the tone signal transmitted through said telephone line with a plurality of predetermined threshold values to generate comparator output signals, said threshold values comprises n values each of a different level, the comparator means comprises n comparators for comparing the signal transmitted values individually through said telephone line with n threshold values individually,

counter means comprising n counters for counting for a predetermined constant time period the number of pulses included in the comparator output signals of said comparator means and generating count values, and

determining means for making determination that the signal transmitted through said telephone line is said tone signal when the count values of said counting means are within a predetermined given range.

5,307,405

NETWORK ECHO CANCELLER

Gilbert C. Sih, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Sep. 25, 1992, Ser. No. 951,074

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—410 **20 Claims**

1. An echo canceller for cancelling in a return channel signal an echoed receive channel signal where the echoed receive channel signal is combined by an echo channel with an input return channel signal, the echo canceller comprising:.

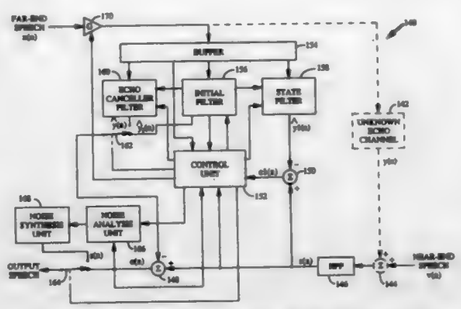
first filter means for generating first filter coefficients, generating a first echo estimate signal with the first filter coefficients and a receive channel signal, and updating the first filter coefficients in response to a first filter control signal;

first summing means for subtracting the first echo estimate signal from a combined return channel and echo receive channel signal to generate a first echo residual signal;

second filter means for generating second filter coefficients, generating a second echo estimate signal with the second filter coefficients and said receive channel signal, and updating the second filter coefficients in response to a second filter control signal;

second summing means for subtracting the second echo estimate signal from the combined signal to generate a second echo residual signal, and providing upon the return channel the second echo residual signal; and

control means for determining from the receive channel signal, the combined signal, and the first and second echo residual signals, one of a plurality of control states wherein a first control state is indicative of a receive channel signal above a first predetermined energy level, wherein when the control means is in the first control state generating the first control signal and generating the second control signal when at least one of a first energy ratio of the first echo residual signal and the combined signal and a second energy ratio of the second echo residual signal and the combined signal exceed a first predetermined level.



5,307,406

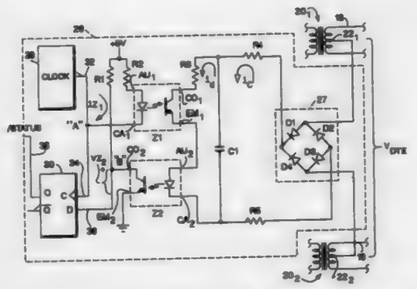
ISDN POWER SOURCE DETECTION CIRCUIT

Timothy W. Gee, Cary; James W. Sylivant, Apex; Larry S. Shannon, Jr., Raleigh, all of N.C.; Alan M. Bentley; Randall S. Nelson, both of Rochester, Minn.; Ray A. Luechtefeld, and Thanh T. Nguyen, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1991, Ser. No. 810,733

Int. Cl.[5] H04M *19/00*

U.S. Cl. 379—413 **6 Claims**



1. For use in an integrated services digital network (ISDN) having a power source, at least one data terminal equipment which is to receive power from the power source and four conductors, two transmit conductors and two receive conductors, for connecting the power source to the data terminal equipment, the data terminal equipment having first and second transformers for being connected to the two transmit conductors and two receive conductors, respectively, each transformer having a center tap for being connected to a bipolar power sensor circuit for being used at the data terminal equipment comprising:

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means for connecting to the center tap of the first and second transformers;

energy storage means connected to the transformer center tap connecting means for accumulating either positively charged or negatively charged energy delivered from the power source;

means for periodically interrogating the energy storage means to produce an output signal, the interrogating means comprising first and second bi-directional opto-couplers connected to the energy storage means for selectively allowing the positively or negatively charged accumulated energy to discharge therethrough thereby forming a discharge path for the positively or negatively charged accumulated energy, the first bi-directional opto-coupler comprising a metal oxide semiconductor field effect transistor (MOSFET) so that current from the positively or negatively charged accumulated energy may flow therethrough in either direction; and

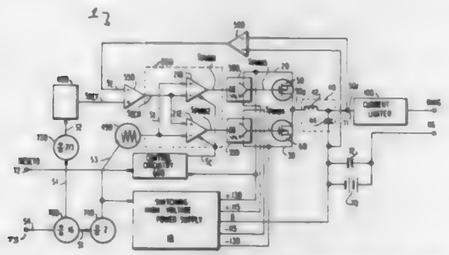
means responsive to the output signal level for generating a status signal indicating the presence of power delivered from the power source when the output signal level exceeds a predetermined minimum, the status signal generating means being connected to the MOSFET bi-directional opto-coupler and the second bi-directional opto-coupler.

5,307,407

20 HZ RING GENERATOR USING HIGH FREQUENCY PWM CONTROL

Rolf H. G. Weadt, Beaverton, and Steven E. Hosmer, Hillsboro, both of Oreg., assignors to Nec America, Inc., Melville, N.Y.

Filed Dec. 19, 1991, Ser. No. 808,873
Int. Cl.[5] H04M *3/02*
U.S. Cl. 379—418 **20 Claims**



1. A ring signal generator producing a high voltage sinusoidal waveform at a predetermined frequency from first and second rails providing high DC voltages of opposite polarity, said ring signal generator comprising:

first and second switch elements commonly connected to a low pass filter and connected to the first and second rails, respectively;

first and second opto-isolators coupled to said first and second switch elements, respectively, for allowing operation of said first and second switch elements responsive to first and second pulse modulated signals transmitted by said first and second opto-isolators, respectively;

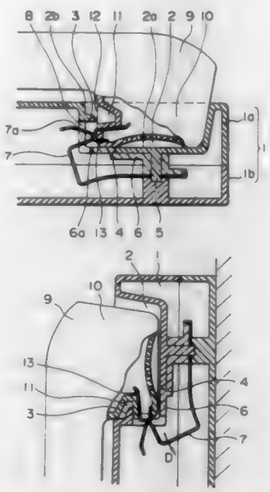
first and second comparators respectively coupled to said first and second opto-isolators for generating said first and second pulse modulated signals, respectively, based on an error signal and a second signal, wherein the operating frequency of said second signal is significantly higher than the frequency of said error signal and wherein said error signal is based on a difference between a reference signal having a frequency substantially equal to said frequency of said error signal and a feedback signal corresponding to an output signal of said low pass filter.

5,307,408

HANDSET SUPPORTING DEVICE

Tuyoshi Kobayashi, and Fumio Hashimoto, both of Machida, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 749,104, Aug. 23, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,569
Claims priority, application Japan, Sep. 28, 1990, 2-260987
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—435 **3 Claims**



1. A telephone handset supporting device, comprising:

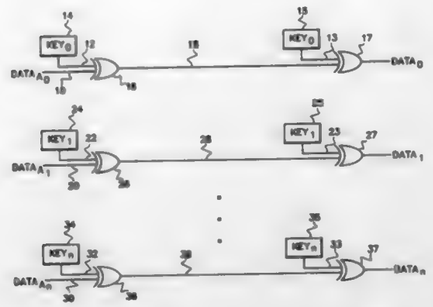
a base including a receiver setting recess, a receiver engaging projection integrally formed on an inner side surface of said receiver setting recess for engaging with an engagement recess formed in a receiver section of a handset when said receiver section is inserted into said receiver setting recess and moved in a direction in which said receiver section approaches said projection, and a biasing means for applying a biasing force, when said receiving section is inserted into said receiver setting recess so as to come close to said projection, against said receiver section in a direction so as to move said receiver section away from said projection, said inner side surface of said receiver setting recess having a throughhole, said biasing means being secured relative to said base and having a portion projecting into said receiving setting recess through said throughhole such that said portion of said biasing means is disposed closer than said receiver engaging projection to a bottom surface of said receiver setting recess, whereby when said supporting device is used for a desk-top type horizontal telephone, said receiver section is moved away from said projection due to the urging force of said biasing means so as to prevent said engagement recess formed in said receiver section from engaging with said projection, and, when said supporting device is used for a wall-hang type vertical telephone, said engagement recess formed in said receiver section is made to engage with said projection due to the weight of said handset itself against the urging force of said biasing means, such that no alteration of said biasing means relative to said base is needed when said supporting device is switched between use as a desk-top type horizontal telephone and use as a wall-hang type vertical telephone, wherein said biasing means comprises charging terminals for contacting charging terminals of the handset.

5,307,409

APPARATUS AND METHOD FOR FAULT DETECTION ON REDUNDANT SIGNAL LINES VIA ENCRYPTION

Kevin R. Driscoll, Maple Grove, Minn., assignor to Honeywell Inc, Minneapolis, Minn.

Filed Dec. 22, 1992, Ser. No. 995,107
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—2 **13 Claims**



1. A fault detection apparatus for use in transmitting a first set of multiple redundant digital data signals over a plurality of signal lines comprising:

a plurality of sending exclusive OR gate means, each for receiving as inputs one of said first set of multiple redundant digital data signals and a unique key signal corresponding to one of said plurality of signal lines, the output of each of which is coupled to said one of said plurality of signal lines;

a plurality of receiving exclusive OR gate means, each of which is coupled to one of said plurality of signal lines and is for receiving as inputs the signal on said one of said plurality of signal lines and said unique key signal corresponding to said one of said signal lines; and

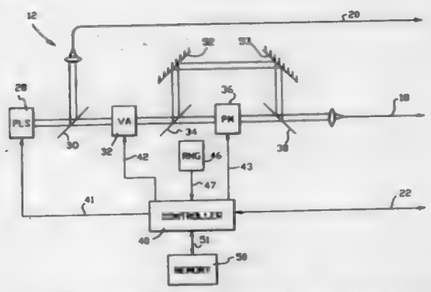
comparison means for comparing the outputs of said receiving exclusive OR gate means.

5,307,410

INTERFEROMETRIC QUANTUM CRYPTOGRAPHIC KEY DISTRIBUTION SYSTEM

Charles H. Bennett, Croton-On-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1993, Ser. No. 66,743
Int. Cl.[5] H04L *9/08, 9/22;* H04B *10/18, 10/20*
U.S. Cl. 380—21 **10 Claims**



1. A secure communication network for sending messages unintelligible to an eavesdropper comprising:

a plurality of communication nodes, each having a first, second and third port,

a first quantum channel for conveying dim and reference light pulses connected to said first port of said plurality of communication nodes,

a second timing channel for conveying timing signals connected to said second port of said plurality of communication nodes,

a third message channel for conveying information selected from the group consisting of plain text and encrypted text connected to said third port of said plurality of communication nodes,

at least one of said communication nodes including

first means for sending a plurality of dim light pulses of coherent light of an intensity less than 1 expected photon per dim pulse spaced apart in time over said first quantum channel,

second means for sending a plurality of reference light pulses of coherent light positioned in time with respect to said plurality of dim light pulses over said first quantum channel,

a random number generator for generating random numbers,

a phase modulator coupled to said first means and to said random number generator for setting the phase of said plurality of dim light pulses, said phase of each said dim light pulse chosen randomly from a plurality of predetermined values in response to said random numbers,

third means for recording the phases of said plurality of dim light pulses sent over said first quantum channel,

fourth means for sending timing signals over said second timing channel, and

fifth means for sending and receiving information over said third message channel,

at least another one of said communication nodes including

sixth means connected to said first quantum channel for receiving and detecting at least some of said dim light pulses and their respective phase relative to the phase of respective ones of said plurality of reference pulses as a function of time,

seventh means for recording the phases of said plurality of dim light pulses received over said quantum channel as a function of time, and

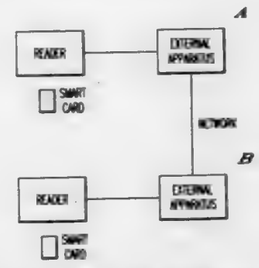
eighth means for sending and receiving information over said third message channel.

5,307,411

MEANS FOR IDENTIFICATION AND EXCHANGE OF ENCRYPTION KEYS

Lena Anvret, Upplands Väsby, Sweden, and László Mersich, Madrid, Spain, assignors to Televerket, Farsta, Sweden

Filed Sep. 11, 1992, Ser. No. 943,671
Claims priority, application Sweden, Sep. 12, 1991, 91026419
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—25 **7 Claims**



1. A method of confirming the identity of and the exchange of encryption keys for a communication link between two communication apparatus each having a smart card reader for reading a first smart card at said first smart card reader and a second smart card at said second smart card reader wherein said first smart card reader is operatively coupled to a first communication apparatus and said second smart card reader is

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operatively coupled to said second communication apparatus comprising the steps of:

performing a read of a secure secret key from a first of said cards;

generating from inside said first smart card an encryption key for said communication link in response to said secure secret key;

providing an authenticating key from a precomputed and prestored value, stored within said first smart card a validation key based upon a secured common authority data base which at one time was common to said first and second smart cards;

authenticating the identity of said first communication apparatus by said second reader by virtue of said authentication key without transmitting the secret key based upon a calculation of said authentication key and information in said second smart card as to a key from said common authority data base;

reversing said performing, generating, providing and authenticating steps to establish the identify and key of said second communication apparatus with said first apparatus;

transmitting the encryption keys after the authentiticy of said first communication apparatus has been established with said second communication apparatus and vice versa; and

establishing a public key/private key communication link based upon the exchanged keys.

5,307,412

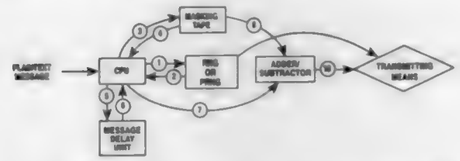
RANDOM CODING CIPHER SYSTEM AND METHOD

Arnold R. Vobach, 11114 Ashcroft, Houston, Tex. 77096

Filed Sep. 30, 1992, Ser. No. 953,521

Int. Cl.[5] H04L *9/02*

U.S. Cl. 380—42 **53 Claims**



1. A cipher system for use by a sender and a receiver, comprising:

a. a source of plaintext alphabet characters;

b. a sender central processing unit to receive a plaintext message of plaintext alphabet characters from the source and to encode each character by one of a set of numerical synonyms, the sender central processing unit including a memory to store the numerical synonyms.

c. a receiver central processing unit to receive a stream of ciphertext message characters and to decode each character by said one of a set of numerical synonyms, the receiver central processing unit including a memory to store the numerical synonyms, the set of numerical synonyms comprising a collection of non-negative integers of common length extracted from a string of digits accessible to both sender and receiver by the sender or receiver central processing unit;

d. a random or pseudo-random number generator to develop an initializing integer that determines the set of numerical synonym integers;

e. the sender central processing unit further developing a concatenation of the numerical synonyms, comprising a plaintext message string integer corresponding to a plaintext message;

f. a message delay unit for each of the sender and receiver central processing units to buffer characters received by the central processing units; and

g. a masking tape memory to store a masking tape string integer comprising a sequence of digits extracted from a string of digits accessible to both sender and receiver, and added to the plaintext message string to form a ciphertext string.

5,307,413

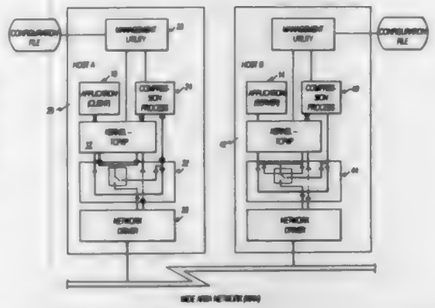
METHOD AND APPARATUS FOR ADDING DATA COMPRESSION AND OTHER SERVICES IN A COMPUTER NETWORK

Philip C. Denzer, Wellesley, Mass., assignor to Process Software Corporation, Framingham, Mass.

Filed Jul. 19, 1991, Ser. No. 733,104

Int. Cl.[5] H04B *1/66;* **H04L** *9/00*

U.S. Cl. 380—49 **19 Claims**



1. An apparatus for integrating services between protocol layers in a computer system having layered network protocols, comprising:

a first network layer having a first interface, and a second interface and operating according to a first protocol, and a second network layer having a first interface, and a second interface and operating according to a second protocol;

a switch driver responsive to said second interface of said first layer that receives a plurality of signal groups therefrom, said switch driver being configurable for routing at least some of said plurality of signal groups through at least one of a first path and a second path to said first interface of said second layer; and

at least one service module responsive to said switch driver for receiving at least some of said plurality of signal groups through said first path and that performs an operation on said at least some of said plurality of signal groups from said first path to form a plurality of modified signal groups,

wherein said at least one service module transmits said plurality of modified signal groups to said first interface of said first layer and said switch driver receives said plurality of modified signal groups.

5,307,414

ENCRYPTION TEMPLATE

Gera J. Roth, 155 Dell Park Ave., North York, Ontario, Canada M6B 2V4

Filed Dec. 22, 1992, Ser. No. 995,259

Int. Cl.[5] G09C *1/02*

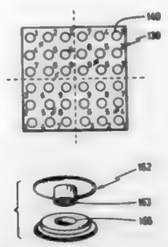
U.S. Cl. 380—56 **14 Claims**

1. An encryption board having a grid of openings therethrough, each said opening having a size to permit a writing instrument to be inserted therethrough for the purpose of writing a character on an underlaying substrate;

said openings forming N identical arrays, where N is a small integer greater than two, said grid having a geometrical axis of rotation about which said arrays are perfectly symmetrical; and

reusable means selected from the group consisting of

(a) means for independently selectively marking (N−1)/N of said openings, and



(b) means for independently selectively marking 1/N of said openings.

5,307,415

SURROUND PROCESSOR WITH ANTIPHASE BLENDING AND PANORAMA CONTROL CIRCUITRY

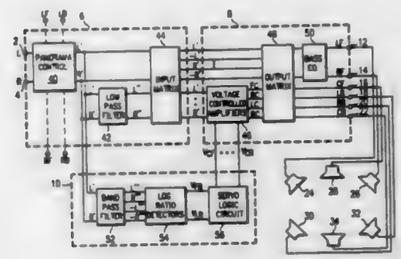
James W. Fosgate, 4750 E. 1200 South, Heber City, Utah 84032

Division of Ser. No. 533,091, Jun. 6, 1990, Pat. No. 5,172,415.

This application Oct. 28, 1992, Ser. No. 967,446

Int. Cl.[5] H04R *5/00;* **H03G** *3/00*

U.S. Cl. 381—22 **11 Claims**



1. Apparatus for a periphonic reproduction of sound on a plurality of loudspeakers derived from left and right audio input signals comprising left and right channel information respectively, said audio signals containing variable directional information, the apparatus comprising:

user-variable control circuitry for deriving from said left and right audio input signals first and third audio signals comprising left channel information and having a user adjustable level difference therebetween, and for deriving second and fourth audio signals comprising right channel information, a level difference therebetween the second and fourth audio signals is corresponding to the level difference between said first and third audio signals;

panorama circuitry connected to said user-variable control circuitry for combining said first, second, third and fourth audio input signals to provide first and second variably cross-blended audio signals, such that said first variably cross-blended audio signal comprises left channel information mixed together with a variable proportion of right channel information and said second variably cross-blended audio signal comprises right channel information mixed together with the same variable proportion of left channel information, and such that said variable proportion is adjustable by said user-variable control circuitry to provide a desired amount of blending either in phase or in antiphase of said left and right channel information in each of said first and second variably cross-blended audio signals, thereby modifying the directional information contained therein derived from said variable directional information contained in said left and right channel information;

input matrix circuitry connected to said panorama circuitry for providing a plurality of combination signals from said first and second variably cross-blended audio signals;

variable matrixing circuitry connected to said input matrix circuitry, said variable matrixing circuitry responsive to said modified directional information contained in said combination audio signals to produce a plurality of output signals corresponding to said plurality of loudspeakers for said reproduction of sound, said combination audio signals being recombined in fixed and varying proportions with said varying proportions being varied in response to one or more control voltage signals; and

circuitry connected to said panorama circuitry and said variable matrixing circuitry, said circuitry for generating said control voltage signals from directional information contained in said variably cross-blended audio signals.

5,307,416

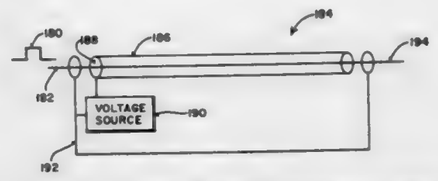
BIAS CIRCUIT FOR CABLE INTERCONNECTS

Demian T. Martin, San Jose, Calif., assignor to Gerald M. Crosby, Los Altos, Calif.

Filed Mar. 18, 1992, Ser. No. 853,125

Int. Cl.[5] H04B *3/00*

U.S. Cl. 381—77 **5 Claims**



1. A circuit apparatus for improved accuracy of communication of a voltage varying digital signal through a cable connectable between a first electrical device having a output connection and a second electrical device having an input connection, the cable having a first and a second conductor, said digital signal being supplied from the first electrical device to the second electrical device, comprising:

first isolation means for isolating the output of the first electrical device from the bias voltage, said first isolation means including a first digital gate having an input coupled to receive the digital signal from the first electrical device;

biasing means for supplying a bias voltage across the first and the second conductor of the cable, said biasing means including means for biasing the output of the first digital gate to the bias voltage so that a biased output of the first gate is provided, said bias voltage being preselected so that it biases the biased digital signal above ground so that the low voltage of the biased digital signal will be at least one-half of the peak-to-peak voltage swing of the biased digital signal;

second isolation means for isolating the input of the second electrical device from the bias voltage, said second isolation means including a second digital gate having an input connected to the biased output of the first digital gate;

means for biasing the input of the second digital gate to said bias voltage; and

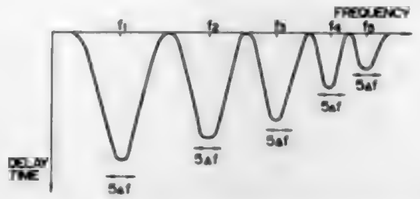
an output line from said second digital gate for outputting an unbiased digital signal.

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5,307,417
SOUND SYSTEM WITH HOWLING-PREVENTION FUNCTION

Yoshinobu Takamura; Kazunaga Ida, and Fumio Matsushita, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 561,433, Aug. 1, 1990, abandoned. This application Dec. 31, 1992, Ser. No. 999,544
Claims priority, application Japan, Jan. 16, 1990, 2-7998; Mar. 27, 1990, 2-78478
Int. Cl.[5] H04R *27/00*
U.S. Cl. 381—83 **15 Claims**



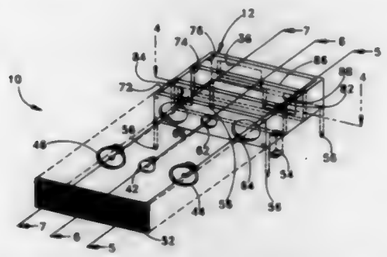
1. A sound system with a howling-prevention function, for inputting an audio signal issued from a microphone thereto, said system comprising:

an all-pass filter which separates the input audio signal into multiple frequency bands, each of which has a center frequency and a group delay characteristic, said all-pass filter being provided on a line used for the transmission of said audio signal, said all-pass filter periodically varying said center frequency of each of said frequency bands independently of one another by a predetermined frequency width by periodically varying each of said group delay characteristics based on an elapsed time.

5,307,418
CENTER CHANNEL SPEAKER HAVING MULTIPLE INTERCONNECTED BACKLOAD AMPLIFYING CHAMBERS FOR SURROUND SOUND STEREO AUDIO SYSTEMS

Yoichiro Sumitani, Rancho Palos Verdes, Calif., assignor to Calver Electronic Sales, Inc., Gardena, Calif.

Filed Oct. 30, 1992, Ser. No. 969,389
Int. Cl.[5] H04R *25/00, 5/00*; H05K *5/00*; A47B *81/06*
U.S. Cl. 381—159 **21 Claims**



18. A speaker for an audio system having four stereo surround sound channels including a right front channel, a left front channel, a rear surround channel and a center channel, the speaker comprising:

a. a cabinet having a multiplicity of hollow chambers interconnected in series such that the respective volumes of the series of interconnected chambers are proportionally increased;

b. at least one mid or full range frequency driver installed in the first one of said series of interconnected chambers;

c. a crossover network for connecting said at least one mid or full range frequency driver with said center channel; and

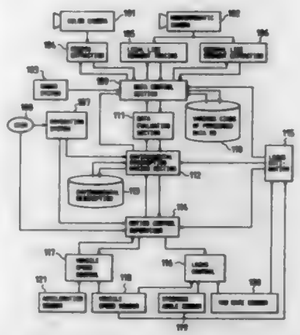
d. the last one of said series of interconnected chambers having a vent opened to the outside of said cabinet, which makes said series of interconnected chambers a bass-reflex enclosure, the adjacent ones of said series of interconnected chambers are divided by a respective partition wall and interconnected by a respective interconnecting opening on the respective partition wall such that the areas of the interconnecting openings of said series of interconnected chambers are gradually increased;

e. whereby said at least one mid or full range frequency driver can produce sound effects of said center channel of said audio system, and said multiplicity of chambers amplify the backload of said at least one mid or full range frequency driver to produce lower frequency sound effects of said center channel of said audio system.

5,307,419
CONTROL DEVICE OF AN AUTONOMOUSLY MOVING BODY AND EVALUATION METHOD FOR DATA THEREOF

Hiroshi Tsujino, Iruma; Hiroshi Hasegawa, Niiza; Yoshiaki Sakagami, Kodaira, and Hirokazu Yamashita, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,708
Claims priority, application Japan, Nov. 30, 1990, 2-335731; Nov. 30, 1990, 2-335732
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **5 Claims**



1. A control system for an autonomously moving body comprising:

a plurality of data accumulation and processing means for generating a plurality of data sets descriptive of a travel area in a direction of movement of said autonomously moving body;

data control means coupled to said plurality of data accumulation and processing means, said data control means including at least one data base for storing said data sets descriptive of said travel area and including means for transforming and synchronizing said data sets such that said data sets represent said travel area and a position of said autonomously moving body at a selected moment in time;

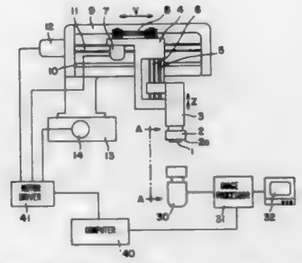
data evaluation means coupled to said data control means for integrating said transformed data sets into a single data set descriptive of said travel area and verifying that said data sets include data descriptive of a travel path along which said autonomously moving body is travelling; and

motion control means coupled to said data evaluation means for controlling the motion of said autonomously moving body such that said autonomously moving body is capable of moving along said travel path.

5,307,420
METHOD AND APPARATUS FOR MONITORING PLATES IN MARKING DEVICE

Noboru Fujino; Tohru Takamura, and Nobuyuki Aoyagi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Continuation of Ser. No. 556,037, Jul. 20, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,486
Claims priority, application Japan, Jul. 22, 1989, 1-189226
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **2 Claims**



1. A method for monitoring a condition of a printing plate during a printing process in a marking device for marking semiconductor devices characterized in that a camera is installed with its photographing side facing up at a position away from a workpiece carrying table which positions and carries a workpiece that is to be printed, a printing plate which is attached to a plate holder is moved to a point above said camera, and said printing plate is periodically displayed on a monitor during the printing process and a condition of said printing plate is periodically checked by means of said monitor during the printing process.

5,307,421
PROCESS FOR PRODUCING A SYNTHESIZED REFERENCE IMAGE FOR THE INSPECTION OF OBJECTS AND APPARATUS FOR PERFORMING THE SAME

Michel Darboux, Grenoble, and Rosolino Lionti, Seyssins, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 14, 1992, Ser. No. 960,685
Int. Cl.[5] G06K *9/60*
U.S. Cl. 382—8 **10 Claims**

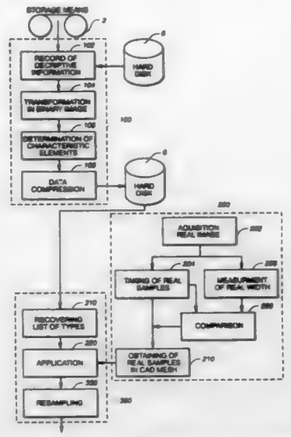
1. A process for producing a reference image of objects to be inspected, this reference image being synthesized from image processing means (1) and imaging means (13), using a database description of these objects to be inspected, and a corresponding real object used as a model of these objects, comprising the steps of:

a) determining from the database description (100) characteristic elements of the objects to be inspected,

b) determining from the database description position information pertaining to said characteristic elements in the database description using image processing means,

c) acquiring (200) using imaging means, a real image of a field of the model object, said real image incorporating at least the real image of a characteristic element, this step being repeated so as to obtain all the real images of the characteristic elements,

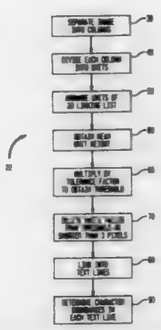
d) using the image processing means, placing the real images of the characteristic elements in accordance with position information determined in step (b), the image obtained constituting the reference image.



5,307,422
METHOD AND SYSTEM FOR IDENTIFYING LINES OF TEXT IN A DOCUMENT

Jar-Long Wang, Kaoshiung, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 25, 1991, Ser. No. 720,236
Int. Cl.[5] G06K *9/34, 9/20*
U.S. Cl. 382—9 **2 Claims**



1. A document processing method which is capable of processing complex documents comprising regions of text and graphics comprising the steps of

scanning a document utilizing a scanner to form a digital image of the document,

transmitting the digital image of the document to a recognition engine,

electronically processing said digital image at said recognition engine by:

vertically dividing said digital image into columns of uniform width,

identifying vertical transitions between substantially blank and substantially non-blank portions within each uniform width column based solely on the corresponding portion of said digital image within each respective column, and

horizontally dividing each uniform width column at said

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vertical transitions between substantially blank and substantially non-blank portions of each column to form uniform width units which units each contains one substantially non-blank portion of each column, said units being vertically separated from each other by said substantially blank portions of said columns,

identifying units containing portions of text by eliminating units which have a height in pixels below a minimum threshold or a height above a maximum threshold,

utilizing said recognition engine to link units from adjacent columns which overlap vertically to identify lines of text, and

utilizing said recognition engine to arrange said units in a two dimensional array and storing in a memory associated with said recognition engine the height of each unit and information indicating the horizontal extend of each unit,

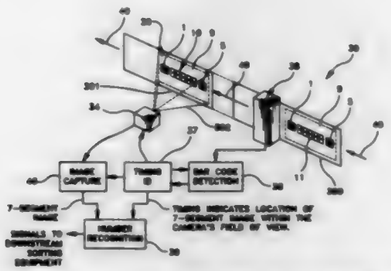
wherein said step of eliminating units whose height is above a maximum threshold comprises utilizing said recognition engine to determine the average height of the units and multiplying by a tolerance factor to obtain said maximum threshold.

5,307,423

MACHINE RECOGNITION OF HANDWRITTEN CHARACTER STRINGS SUCH AS POSTAL ZIP CODES OR DOLLAR AMOUNT ON BANK CHECKS

Om P. Gupta, Ithaca; Jack F. Bailey, Endwell, and David E. Bulatek, Ithaca, all of N.Y., assignors to Digicomp Research Corporation, Ithaca, N.Y.

Filed Jan. 4, 1992, Ser. No. 893,301
Int. Cl.[5] G06K *9/18*
U.S. Cl. 382—11 **23 Claims**



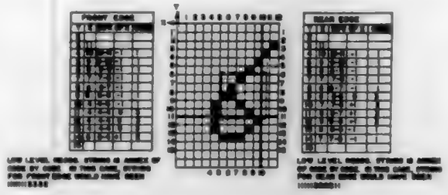
1. An item having identification means for accepting handwritten or printed characters, said identification means including a plurality of entry guide outlines forming a string and disposed upon a surface of said item in a random location thereon, with respect to said string, the identification means comprising means disposed in each of aid plurality of entry guide outlines that includes a pattern that is not machine-readable, said pattern having line segments for receiving a hand or printed inscription upon at least one of said line segments in at least one entry guide outline of said identification means, said inscription providing a machine-readable, as well as manually-readable, pattern representing identification information such as a letter, number or symbol, whereby said item containing said identification means has an increased facility to be automatically processed, each of said plurality of entry guide outlines in said string providing means to enter any numeral from zero to nine, a symbol or letter within the respective entry guide outline segments of said string, whereby a code, an identification or value can be entered.

5,307,424

CHARACTER RECOGNITION SYSTEM

Eberhard Kaehl, Solzing St., No. 8, Munich 8000, Fed. Rep. of Germany

Filed Dec. 12, 1990, Ser. No. 626,517
Int. Cl.[5] G06K *9/48, 9/46, 9/44*
U.S. Cl. 382—21 **28 Claims**



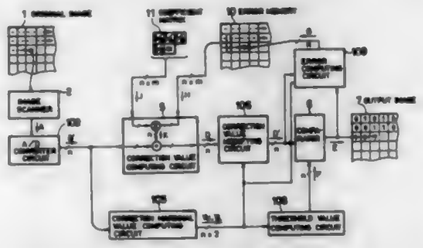
1. The method of character recognition of characters in a set of characters in which a pattern of pixels in adjacent rows corresponding to the character is provided, which method comprises the steps of encoding the pattern of pixels into a plurality of first strings of digital signals having values dependent upon the shape of a pattern in accordance with the movement of edges of the pattern measured by the relative displacement of the pixels in the adjacent rows to each other to represent the spatial relationship including the connectivity and direction of neighboring ones of said pixels as viewed from a plurality of aspects, translating said first strings into a plurality of second strings of digital signals each representing a different aspect of the different characters in said set such that variations in the shape of the pattern of the same character are included in said second strings, and recognizing the pattern as representing a character in the set when said second strings constitute a combination of second strings corresponding to that character.

5,307,425

BI-LEVEL HALFTONE PROCESSING CIRCUIT AND IMAGE PROCESSING APPARATUS USING THE SAME

Itsuro Otsuka, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 1, 1992, Ser. No. 938,609
Claims priority, application Japan, Sep. 2, 1991, 3-248287; Sep. 2, 1991, 3-248288; Sep. 2, 1991, 3-248289; Sep. 2, 1991, 3-248290
Int. Cl.[5] G06K *9/38;* **H04N** *1/04, 1/40*
U.S. Cl. 382—50 **11 Claims**



1. A bi-level halftone processing circuit comprising an A/D converter circuit for converting the value of an analog signal of indicating a density of an image to a digital value and an error memory for storing a binary error, wherein said digital value is corrected with the value obtained by multiplying the binary error already computed and stored in said error memory by a predetermined coefficient and wherein the value thus corrected is compared with a threshold value and output in the

form of a binary value, said bi-level halftone processing circuit further comprising:

a correction marginal value generating circuit for generating an upper limit value and a lower limit value which said correction value may take in conformity with said digital value, said correction value being obtainable in conformity with the density value resulting from converting the density value of an object pixel of an original image in accordance with either an exponential function or the approximate function of it,

a threshold value generating circuit for dynamically generating said threshold value in accordance with said upper and lower limit values, and

a correction value modifying circuit for modifying said correction value to what ranges between said upper and lower limit values,

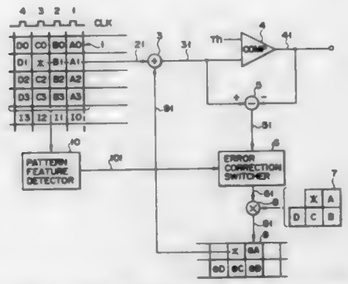
an output circuit for outputting the binary value obtained by comparing said modified value with said threshold value and for outputting, in accordance with this binary value, one of the differences between said modified value and said upper limit value and between said modified value and said lower limit value for storing in said error memory as said binary error.

5,307,426

IMAGE PROCESSING APPARATUS WITH IMPROVED DITHERING SCHEME

Hiroki Kanno, Yokohama, and Hitoshi Yoneda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 756,630, Sep. 9, 1991, abandoned. This application May 24, 1993, Ser. No. 64,791
Claims priority, application Japan, Sep. 11, 1990, 2-238901
Int. Cl.[5] G06K *9/38*
U.S. Cl. 382—50 **11 Claims**



1. An image processing apparatus for processing image information having a plurality of pixel data of n bits which represent a contrast of the pixel data, where n denotes a natural number of more than two, said image processing apparatus comprising:

extracting means for sequentially extracting from the image information a window containing target pixel data and peripheral pixel data of the target pixel data;

means for providing feature data having a value corresponding to a contrast with respect to pixel data of the window extracted by said extracting means;

means for converting the target pixel data into pixel data of m bits, to provide converted pixel data, where m denotes a natural number less than n;

means for detecting error data representing a difference between the target pixel data and the converted pixel data;

means for correcting the error data on the basis of the feature data to provide corrected error data, including means for comparing the feature data with a predetermined reference value so as to output a comparison result representing the error data when the value of the feature data is smaller than the reference value, and to output another comparison result having a predetermined value when the value of the feature data is larger than said reference value, and;

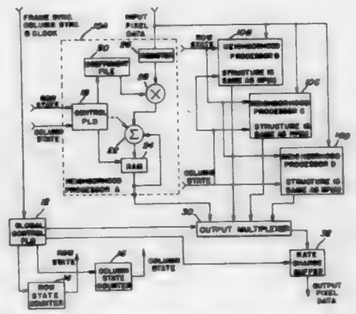
means for diffusing the corrected error data into the pixel data of said window, so that pixel data to be converted by said converting means is modified by the corrected error data.

5,307,427

NON-INTEGRAL PIXEL COMPRESSION FOR SECOND GENERATION FLIR SENSORS

John G. Romanski, Annapolis, and Eliot M. Glaser, Catonsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 4, 1991, Ser. No. 754,776
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **16 Claims**



1. A preprocessing device for real-time pixel compression, comprising:

a plurality of neighborhood processors, each when selected, for producing data of an output pixel of a different output pixel type predetermined by a preselected input-to-output pixel compression ratio, from a plurality of predetermined weighed pixel portions of a plurality of adjacent input pixels, predetermined based upon each output pixel type; and

a control device for sequentially determining the output pixel type, for data of each sequential output pixel, based upon the preselected input-to-output pixel compression ratio, and for sequentially selecting one of said plurality of neighborhood processors corresponding to the determined output pixel type to sequentially control the plurality of neighborhood processors to produce data of a plurality of compressed output pixels from data of a plurality of input pixels in real-time.

5,307,428

OPTICAL DOMAIN DIGITAL PULSE SWITCHING

Keith J. Blow; Nicholas J. Doran, and Brian P. Nelson, all of Suffolk, England, assignors to British Telecommunications public limited company, London, England

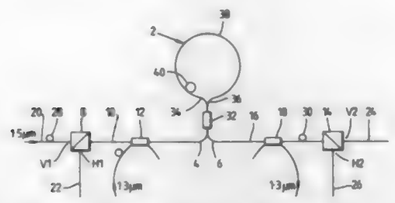
PCT No. PCT/GB91/00453, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/14963, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 26, 1991, Ser. No. 949,888
Claims priority, application United Kingdom, Mar. 26, 1990, 9006675
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—11 **10 Claims**

1. An optical apparatus comprising:

a first optical coupling means having first and a second pairs of optical communication ports, in which substantially equal portions of an optical signal received at a port of one pair of ports are coupled to each port of the other pair of ports;

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an optical waveguide means optically coupling the second pair of ports such that an optical signal at a first wavelength leaving either one of the second pair of ports in a first polarization state arrives at the other port of that pair in a second polarization state substantially orthogonal to the first polarization state;



a second optical coupling means for coupling an optical signal at a second wavelength to the optical waveguide so as to propagate along at least a portion of it in one direction only; and

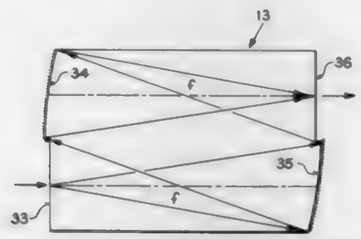
first and second polarizing beam splitters, each of which is optically coupled to a respective one of the first pair of ports.

5,307,429

TEMPERATURE-INDEPENDENT OPTICAL COUPLER

John G. Kepros; Eldon N. Okazaki, both of Sunnyvale, and Linda C. Chin, Monterey, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed May 4, 1993, Ser. No. 55,893
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—15 **8 Claims**



1. An apparatus for coupling an optical signal of specified wavelength from a first device to a second device, said coupling apparatus comprising a monolithic structure made of a material that is substantially transparent to electromagnetic radiation of said specified wavelength, said coupling apparatus being of generally parallelopipedal configuration with a pair of opposite sides disposed to extend transversely with respect to a direction of propagation of said optical signal, a first one of said pair of opposite sides of said coupling apparatus having:

a) a substantially planar surface portion through which said optical signal can enter into said coupling apparatus, and

b) a generally conicoidal surface portion covered with a material that substantially reflects electromagnetic radiation of said specified wavelength,

a second one of said pair of opposite sides of said coupling apparatus having:

a) a generally conicoidal surface portion covered with a material that substantially reflects electromagnetic radiation of said specified wavelength, and

b) a substantially planar surface portion through which said optical signal can exit from said coupling apparatus,

said planar and conicoidal surface portions of said opposite sides of said coupling apparatus being configured and positioned with respect to each other so that said optical signal entering into said coupling apparatus through said planar surface portion of said first one of said opposite sides is:

(i) reflected internally within said coupling apparatus from said conicoidal surface portion of said second one of said opposite sides to said conicoidal surface portion of said first one of said opposite sides, and is thereupon

(ii) reflected internally within said coupling apparatus from said conicoidal surface portion of said first one of said opposite sides to said planar surface portion of said second one of said opposite sides,

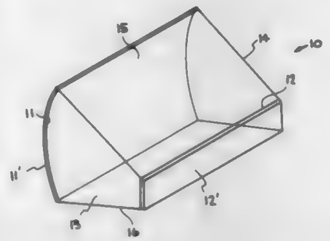
said optical signal exiting from said coupling apparatus through said planar surface portion of said second one of said opposite sides, said coupling apparatus undergoing substantially uniformly distributed expansions and contractions in response to fluctuations in temperature.

5,307,430

LENSING DUCT

Beach, Raymond J., and William J. Benett, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1992, Ser. No. 983,350
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—31 **20 Claims**



1. Means for intensifying a light beam by front surface lensing and reflective waveguiding comprising:

a lensing duct constructed of a material which is optically transparent and can be polished;

said lensing duct including an input end, an output end, and a plurality of continuously extending flat sides interconnecting said input and output ends;

said input end being of a greater cross-section than said output end and including a coating of antireflective material; and

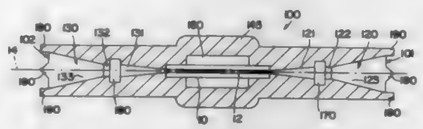
said plurality of sides being uncoated and preventing light from escaping by reflective waveguiding due to internal reflection of the light beam.

5,307,431

OVERMOLDED FERRULE FOR CONNECTING FIBERS AND A METHOD FOR PREPARING THE SAME

Kada Mehadji, and André Mathern, both of Lannion, France, assignors to France Telecom, France

Filed Oct. 2, 1992, Ser. No. 955,836
Claims priority, application France, Oct. 4, 1991, 91 12232
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—72 **30 Claims**



1. A device for connecting optical fibers comprising:

a ferrule in form of a cylindrical rectilinear sleeve possessing a central and rectilinear capillary channel of cylindrical section having a diameter which is complementary to the diameter of the outside surface of optical fibers to be connected and that is suitable for receiving the respective ends of two optical fibers; and

a thermoplastic body overmolded on the ferrule and defining two entry cones centered on the capillary channel and opening out respectively into the two axial ends of the capillary channel with a diameter equal to the diameter of said capillary channel.

5,307,432

CRIMPED LIGHT SOURCE TERMINATIONS

Noelle S. Chin, Shrewsbury, Mass., and James A. Heywood, Bristol, Pa., assignors to Luxtec Corporation, Worcester, Mass.

Filed Oct. 9, 1992, Ser. No. 958,905
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—81 **18 Claims**



1. A system for providing a crimp fit of standardized adapters to a fiber-optic cable, comprising:

a length of fiber-optic cable having a plurality of optical fibers surrounded by a sheath and terminating in an end fitting, wherein said end fitting defines a first passage therethrough surrounding said plurality of optical fibers out to a light emitting end, a securing portion adapted to receive and secure an end of said cable to said sheath thereof, a first cylindrical outer or inner surface for forced mating with a second cylindrical, inner or outer, surface, respectively, of an adapter adapted to mate with a light source or a light utilization device, and a circumferential groove engagable with a crimping tool;

said adapter comprising a passage adapted to receive said portion of said end fitting having said light emitting end of said plurality of optical fibers, said second cylindrical surface adapted to receive said first cylindrical surface of said end fitting in a forced fit, and a connector portion adapted to connect said adapter to said light source or said light utilization device with said light emitting end positioned for light transmission with said light source of said light utilization device; and

a crimping tool for forcibly fitting said first cylindrical surface of said end fitting against said second cylindrical surface of said adapter, said crimping tool comprising:

a retainer for holding said second cylindrical surface of said adapter and said first cylindrical surface of said end fitting in alignment; and

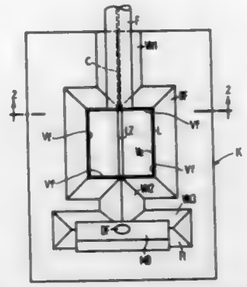
a pusher for axially pushing together said end fitting and said adapter with respect to each other so as to cause said first cylindrical surface and said second cylindrical surface to be forcibly crimped into fixed positions together.

5,307,433

OPTICAL CONNECTION MEMBER OF SILICON AND METHOD FOR THE MANUFACTURE THEREOF

Karl-Ulrich Stein, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 574,795, Aug. 30, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 21,660
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 3932654; European Pat. Off., Jun. 13, 1990, 90111215
Int. Cl.[5] G02B *6/30*
U.S. Cl. 385—88 **10 Claims**



1. A member of crystalline silicon, comprising:

two wafers of single-crystal silicon of different crystal orientations joined together in a connection area, a first wafer of said wafers having a V-shaped trench for fixation of an optical fiber, a second wafer of said wafers having a depression having boundry planes being oriented orthogonically to one another and to said connection area for reception of an opto-electronic device;

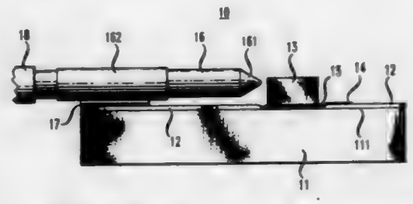
said crystal orientations being chosen so that boundry planes of said V-shaped trench are oriented conformably to said crystal orientation in said first wafer and thus being adapted to production by anisotropic etching, and said boundry planes of said depression are oriented conformably to said crystal orientation in said second wafer and thus being adapted to production by anisotropic etching.

5,307,434

ARTICLE THAT COMPRISES A LASER COUPLED TO AN OPTICAL FIBER

Greg E. Blonder, Summit, and William M. MacDonald, Stockton, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1992, Ser. No. 914,782
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—91 **9 Claims**



1. An article comprising an optical fiber laser transmitter that comprises

a) a substrate;

b) a semiconductor laser attached to the substrate;

c) contact means that are adapted for flowing an electrical current through the laser such that the laser emits electromagnetic radiation of predetermined wavelength;

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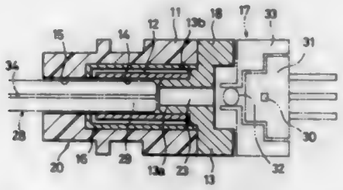
d) a length of optical fiber, with an end of said fiber attached to said substrate by bonding means, with said end positioned such that electromagnetic radiation emitted from the laser is received by the optical fiber; and
e) resistive heating means adapted for melting at least a part of said bonding means; characterized in that
f) the substrate is a unitary body having a major surface, with at least a part of the major surface covered with a first dielectric layer;
g) the laser is attached to a part of said surface that is not covered by the first dielectric layer;
h) said heating means comprise a first patterned metal layer that is disposed on the first dielectric layer, and comprises heater contact means that facilitate flowing an electrical current through said first metal layer;
i) a bonding layer is disposed on said first metal layer; and
j) the thickness of the first dielectric layer is selected such that a temperature difference of at least 50° C. exists between the first metal layer and the substrate when the heating means are melting at least a portion of the bonding layer.

5,307,435

PHOTOSEMICONDUCTOR DEVICE MOUNTING RECEPTACLE

Eiji Chihara, Adachi, Japan, assignor to Adamant Kogyo Company Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,019
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—92 **5 Claims**



1. A photosemiconductor device mounting receptor, comprising
a sleeve (12) having an optical connector insertion hole (14),
a sleeve supporter (13) for supporting securely said sleeve (12), and
a main body (11) of a synthetic resin, formed around the (12) sleeve by molding and connected integrally to said sleeve supporter (13), said main body being provided with an insert hole (15) in communication with the optical connector insertion hole (14) of the sleeve (12).

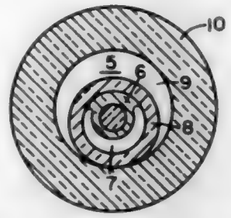
5,307,436

PARTIALLY DETACHED CORE OPTICAL WAVEGUIDE

George E. Berkey, Pine City, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Apr. 20, 1993, Ser. No. 50,509
Int. Cl.[5] G02B *6/00, 6/22*
U.S. Cl. 385—123 **19 Claims**

1. An optical waveguide fiber comprising:
a core member, comprising a central region and an integral surrounding region, wherein said central region has a higher refractive index than said surrounding region; and
a clad member disposed about and joined to the length of said core member along a segment of the periphery of said core member, thereby leaving a gap between said core member and said clad member along the length of said optical waveguide fiber wherein said segment of the periphery of said core member along which said clad member and said core member are joined, is less than about



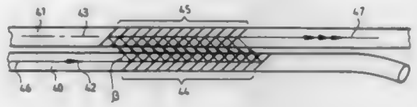
50% and more than about 0.1% of said periphery in axial cross section.

5,307,437

OPTICAL FIBRE INCORPORATING A BRAGG LATTICE AND ITS APPLICATION

Paul Facq, Panazol; Philippe Di Bin, Limoges, and Paul-Hubert Zongo, Couzeix, all of France, assignors to Gaz de France, Paris, France

Filed Mar. 26, 1992, Ser. No. 858,009
Claims priority, application France, Mar. 29, 1991, 91 03902
Int. Cl.[5] G02B *6/02*
U.S. Cl. 385—124 **8 Claims**



1. An optical sensor comprising:
an optical fiber having a sheath extending along an axis of the fiber and an axially extending interior core;
an axial section of the fiber having variations of refractive index disposed in strata which are parallel to one another and periodic;
a normal to the strata forming a non-zero angle with the axis of the fiber;
the strata being inclined in relation to said axis;
an optical reflecting system having an inner reflecting surface adapted for at least partially surrounding the fiber, said optical system and said fiber being adapted for having different possible relative positions;
the reflecting optical system having a section in the form of at least a circular arc;
one of said relative positions between said optical system and said fiber corresponding to a position where the optical fiber is located, in that axial section where it has variations of refractive index, at the center of the optical system, for reflecting towards an axial end of the fiber a luminous flux injected at the axial end, a portion of the luminous flux deflected by the strata and reflected back to said fiber by the inner reflection surface of the optical system.

5,307,438

INDEX MATCHING COMPOSITIONS WITH IMPROVED DNG/DT

Zayn Bilkadi, Mahtomedi; Marc D. Radcliffe, Woodbury, and Novack James C., St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 13, 1992, Ser. No. 929,091
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—141 **32 Claims**

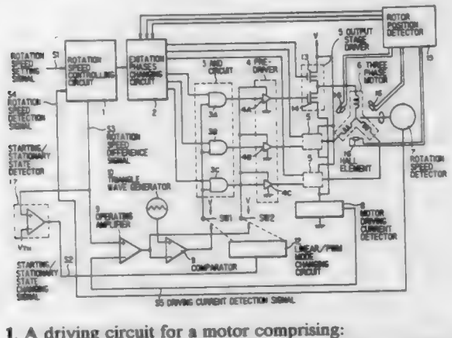
1. An optical system comprising:
a. a first and second optical element,
b. means for constraining said elements in a predetermined spatial arrangement, and
c. an index matching composition, said composition comprising a gel having a dn_g/dT which is smaller in magnitude than 3.5×10^{-4}/°C.,
wherein, at least one of said elements is coated with a layer of said composition and joined to the other of said elements in said predetermined spatial arrangement.

5,307,439

DRIVING CIRCUIT FOR CONTROLLING THE SPEED OF A MOTOR IN PWM AND LINEAR MODES

Hiroyuki Enami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 832,051
Claims priority, application Japan, Feb. 6, 1991, 3-015045
Int. Cl.[5] H02P *5/17*
U.S. Cl. 388—811 **15 Claims**



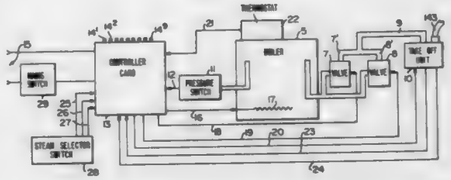
1. A driving circuit for a motor comprising:
means for driving a motor by supplying said motor with a driving current having different phases;
means for supplying a phase change signal to said driving means so that said driving current is supplied to rotate said motor at a predetermined rotation speed;
means for controlling a rotation speed of said motor by supplying a control signal to said supplying means in accordance with a rotation speed setting signal which determines said predetermined rotation speed; and
means for keeping said rotation speed of said motor at said predetermined rotation speed by controlling said driving current of said driving means, said driving current being controlled in an off-and-on way in a starting state with a predetermined duty cycle and controlled linearly in a constant rotation state;
wherein said keeping means comprises:
first means for detecting said rotation speed of said motor to generate a rotation speed detection signal;
second means for detecting said driving current of said driving means to generate a driving current detection signal;
third means for detecting a position of a rotor of said motor to supply a rotor position detection signal to said supplying means;
means for making a difference between said rotation speed setting signal and said rotation speed detection signal to generate a rotation speed difference signal;
means for amplifying a difference between said rotation speed difference signal and said driving current detection signal to generate a linear mode control signal;
first means for comparing said linear mode control signal with a standard voltage to generate a pulse width modulation signal;
means for making a logic AND signal of said phase change signal and said pulse width modulation signal;
means for amplifying said logic AND signal to supply a driving control signal to said driving means;
a first switch selectively connecting one of inputs of said logic AND signal making means with a terminal selected from a power supply terminal and the pulse width modulation signal;
a second switch selectively connecting a power supply terminal of said logic AND signal amplifying means with a terminal selected from said power supply terminal and the linear mode control signal; and
second means for comparing said rotation speed difference signal with a threshold voltage to detect either said starting state or said constant rotation state;
wherein said first switch connects said one of inputs of said logic AND signal making means with the pulse width modulation signal and said second switch connects said power supply terminal with said power supply terminal of said logic AND signal amplifying means at said starting state to supply said driving means with said driving control signal which is a pulse width modulation signal to make said driving current flow in an off-and-on way; and
said first switch connects said one of inputs of said logic AND signal making means with said power supply terminal and said second switch connects said power supply terminal of said logic AND signal amplifying means with said linear mode control signal at said constant rotation state to supply said driving means with said driving control signal which is a linear signal to make said driving current change linearly.

5,307,440

ELECTRICALLY HEATED STEAM GENERATOR WITH A PROPORTIONALLY CONTROLLED STEAM AND POWER TAKE-OFF FOR SUPPLYING STEAM AND ELECTRIC POWER TO AN EXTERNAL USER

Emanuel Carretto, Bergamo, Italy, assignor to S.T.E.M. S.R.L., Bergamo, Italy

Continuation-in-part of Ser. No. 664,772, Mar. 5, 1991, abandoned. This application Jun. 15, 1992, Ser. No. 899,675
Int. Cl.[5] H05B *1/02;* **D06F** *75/10;* **F22B** *1/28*
U.S. Cl. 392—402 **1 Claim**



1. A steam generator appliance, for domestic and industrial use, for supplying steam and electrical power to an external user item, said steam generator appliance comprising:
a boiler provided with a resistance heater element coupled to a source of electrical power for heating water in said boiler, thereby generating steam;
a steam and electrical power take-off unit coupled to said boiler and to said source of electrical power for supplying the external user item with steam from said boiler and power from said electrical power source;
at least two solenoid valves including a first solenoid valve for passing steam from said boiler to said take-off unit, when activated, at a first rate, and second solenoid valve for passing steam from said boiler to said take-off unit, when activated, at a second rate greater than said first rate, said first and second solenoid valves being connected between said boiler and said take-off unit;
switch means on said take-off unit for selectively activating said solenoid valves to develop four output steam rates from said take-off unit, depending upon whether neither,

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one of said solenoid valves, the other of said solenoid valves, or both of said solenoid valves are activated; and

an electronic controller coupled to said resistance heater element, said steam and electrical power take-off unit, said electrical power source, said solenoid valves and said switch means for controlling the activation of said solenoid valves and for automatically and proportionally exchanging electrical power applied to said resistance element with electrical power applied to the external user item, thereby effectively exchanging the amount of steam available for use by, and the electrical power applied to, the external user item.

5,307,441

WEAR-TOLL QUALITY 4.8 KBPS SPEECH CODEC

Forrest F.-T. Tzeng, Rockville, Md., assignor to Comsat Corporation, Bethesda, Md.

Filed Nov. 29, 1989, Ser. No. 442,830
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.31 **42 Claims**



1. An apparatus for encoding an input speech signal into a plurality of coded signal portions, said apparatus including first means responsive to said input speech signal for generating at least a first coded signal portion of said plurality of coded signal portions and second means responsive to said input speech signal and to at least said first coded signal portion for generating at least a second coded signal portion of said plurality of coded signal portions, said first means comprising iterative optimization means for

(1) determining an optimum value for said first coded signal portion assuming no excitation signal, and providing a corresponding first output,

(2) determining an optimum value for said second coded signal portion based on said first output and providing a corresponding second output,

(3) determining a new optimum value for said first coded signal portion assuming said second output as an excitation signal, and providing a corresponding new first output,

(4) determining a new optimum value for said second coded value based on said new first output, and providing a corresponding new second output, and

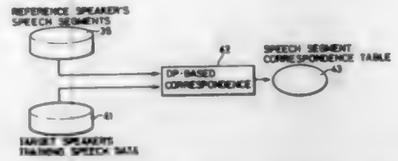
(5) repeating steps (3) and (4) until said first and second coded signal portions are optimized.

5,307,442

METHOD AND APPARATUS FOR SPEAKER INDIVIDUALITY CONVERSION

Masanobu Abe, Kanagawa, and Shigeki Sagayama, Kyoto, both of Japan, assignors to ATR Interpreting Telephony Research Laboratories, Kyoto, Japan

Filed Sep. 17, 1991, Ser. No. 761,155
Claims priority, application Japan, Oct. 22, 1990, 2-284965
Int. Cl.[5] G10L *9/06*
U.S. Cl. 395—2.79 **13 Claims**



1. A speaker individuality conversion method for converting speaker individuality of speech by digitizing speech data, then extracting parameters and controlling the extracted parameters, comprising:

a first step of making correspondence of parameters between a reference speaker and a target speaker, using speech segments as units,

said first step including the steps of:

analyzing speech data of said reference speaker, to create a phonemic model for each phoneme,

making a segmentation in accordance with a predetermined algorithm by using said created phonemic model, to create speech segments,

mixing a correspondence between said obtained speech segments of said reference speaker and the speech data of said target speaker by dynamic programming (DP) matching; and

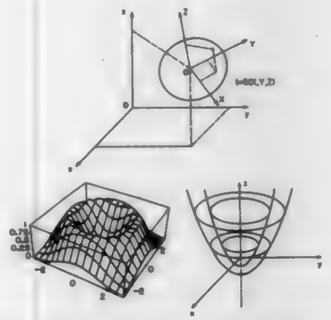
a second step of making a speaker individuality conversion in accordance with said parameter correspondence.

5,307,443

APPARATUS FOR PROCESSING INFORMATION BASED ON FUZZY LOGIC

Masato Tanaka, 1-24-1-132, Seya, Seya-ku, Yokohama-City Kanagawa, Japan

Filed Oct. 11, 1991, Ser. No. 775,123
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—3 **5 Claims**



1. An apparatus for generating multi-dimensional membership functions comprising:

a membership function memory for storing equations for multi-dimensional membership functions;

a membership function parameter memory for storing the individual multi-dimensional membership functions and the value of parameters of said multi-dimensional membership functions;

a mode selector for selecting one of two modes, one of said modes being a writing execution mode for loading the value of parameters into said membership function parameter memory and the other of said modes being a calculation mode for calculating a grade of membership;

a parameter input for entering the value of parameters for the multi-dimensional membership functions when said writing execution mode is selected by said mode selector;

a membership function selector for selecting a multi-dimensional membership function defining the values of parameters for equations stored in said membership function memory in said writing execution mode, and to select values of parameters stored in said membership function parameter memory for equations stored in said membership function memory in said calculation mode;

a parameter writing execution controller to write the value of parameters from said parameter input to said membership function parameter memory for a selected multi-dimensional membership function;

a mode controller for controlling said parameter input, said membership function selector and said parameter writing execution controller in response to an output from said mode selector, such that said mode controller activates said parameter input, said membership function selector and said parameter writing execution controller in said writing execution mode and said mode controller activates said membership function selector in said calculation mode;

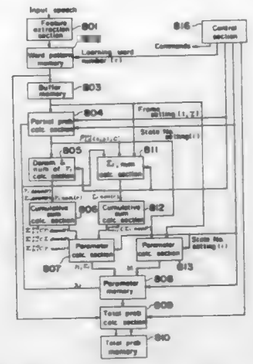
a coordinate transformation calculator for determining transformed parameters for said selected multi-dimensional membership function by a transformation selected from the group consisting of parallel displacement, rotation, deformation and combinations of said transformations;

a grade calculator for calculating the grade of membership for said selected multi-dimensional membership function, using said transformed parameters from said coordinate transformation calculator; and

an output means for generating an output representing the grade of membership calculated by said grade calculator.

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a second calculation means for calculating a generation likelihood of said error vector using a predetermined



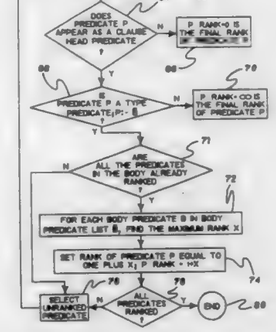
probability distribution of the error vector according to which said error vector is generated.

5,307,445

QUERY OPTIMIZATION BY TYPE LATTICES IN OBJECT-ORIENTED LOGIC PROGRAMS AND DEDUCTIVE DATABASES

Mukesh Dalal, Piscataway, N.J., and Dipayan Gangopadhyay, Brewster, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,323
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—66 **21 Claims**



1. In an object-oriented logic programming language, a method for executing queries on a program having taxonomy classifications definitive of a class/subclass level hierarchy of predicates and clauses, said query executing method comprising the steps of:

pre-assigning rankings to the predicates and clauses of said program based upon said class/subclass level hierarchy; and

query searching said program using said pre-assigned predicate and clause rankings, said program query being executed such that class level searching of predicates/clauses takes precedence over subclass level searching of predicates/clauses and class/subclass level searching of predica-

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5,307,444

VOICE ANALYZING SYSTEM USING HIDDEN MARKOV MODEL AND HAVING PLURAL NEURAL NETWORK PREDICTORS

Eiichi Tsuboka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1990, Ser. No. 626,300
Claims priority, application Japan, Dec. 12, 1989, 1-322148
Int. Cl.[5] G10L *5/00, 7/08*
U.S. Cl. 395—22 **5 Claims**

1. An analyzing system for analyzing object signals, comprising voice signals, by estimating a generation likelihood of an observation vector sequence being a time series of feature vectors X (=$x_1, \ldots, x_T$; T is a total number of frames) with use of a Markov model having a plurality of states i (i=1, . . . , N; N is a total number of states) and given transition probabilities from state i to state j (i, j=1, . . . , N), comprising:

feature extraction means for converting the object signals into the time series of feature vectors X;

a state designation means for determining a state i at a time t stochastically using said Markov model;

a plurality of predictors each of which is composed of a neural network and is provided per each state of said Markov model for generating a predictional vector $g_i(t)$ of said feature vector x_t in said state i at the time t based on values of the feature vectors other than said feature vector x_t;

a first calculation means for calculating an error vector of said predictional vector $g_i(t)$ to said feature vector x_T; and

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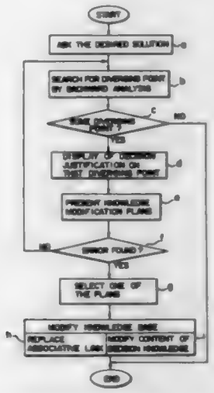
tes/clauses takes precedence over instance level searching of predicates/clauses.

5,307,446

KNOWLEDGE ACQUISITION SYSTEM

Dai Araki, Yokohama, and Shoichi Kojima, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 22, 1991, Ser. No. 733,820
Claims priority, application Japan, Jul. 23, 1990, 2-193160
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—77 4 Claims



3. A method of acquiring knowledge in a diagnostic expert system using, as part of a knowledge base, an associative network consisting of nodes representing events and links each showing the relation between two nodes, said method comprising the steps of:

asking human experts a desired solution, when an incorrect diagnostic answer has been obtained by said diagnostic expert system;

analyzing the associative network from a node presenting a desired solution in a first direction opposite to a second direction in which the network is traced in said diagnostic expert system, and retrieving a diverging point at which a first-direction analyzing route meets a second-direction analyzing route along which the incorrect diagnosis has been obtained in said diagnostic expert system;

showing a decision justification why such direction was selected at the diverging point;

proposing a knowledge modification plan to correct a diagnostic trace as the direction toward the node presenting the desired solution;

asking a human expert whether the decision justification is correct or not;

selecting the knowledge modification plan if it is necessary to modify a knowledge applied at the diverging point;

modifying one of the associative links and the contents of decision knowledge in accordance with the selected modification plan; and

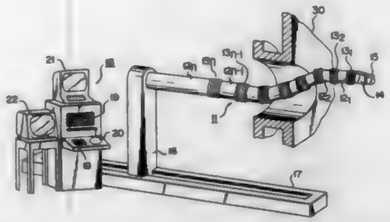
displaying the associative network.

5,307,447

CONTROL SYSTEM OF MULTI-JOINT ARM ROBOT APPARATUS

Kuniji Asano, Tokyo; Yoshiaki Arimura, Yokohama; Masao Obama, Yokosuka; Yutaka Hitomi, and Mitsunori Kondoh, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 667,487, Mar. 11, 1991, Pat. No. 5,165,841, which is a continuation of Ser. No. 382,030, Jul. 19, 1989, Pat. No. 5,049,028, which is a continuation of Ser. No. 32,282, Mar. 31, 1987, abandoned, which is a division of Ser. No. 545,275, Oct. 25, 1983, abandoned. This application Jul. 23, 1992, Ser. No. 917,399
Claims priority, application Japan, Oct. 29, 1982, 57-189083
Int. Cl.[5] G06F *15/46*
U.S. Cl. 395—90 2 Claims



1. In a control system for a multi-joint arm robot apparatus including a multi-joint arm having a plurality of unit arms coupled in tandem with each other through joints, said multi-joint arm having first motor means for controlling a joint angle of each of said joints, and first detecting means for detecting the joint angle of each of said joints in accordance with the rotation angle of said first motor means; and a movable support for supporting a proximal portion of said multi-joint arm, said movable support having second motor means for moving said movable support so as to move said multi-joint arm, and second detecting means for detecting the rotation angle of said second motor means;

said control system comprising:

first distance measuring means for measuring the distance to a front obstacle with respect to a leading unit arm of said multi-joint arm, and second distance measuring means for measuring distances to obstacles in a plurality of side directions; and

controlling means responsive to distance data from said first and second distance measuring means, for permitting said multi-joint arm to move to an advancable direction when there is no contact with the obstacle, and for moving said movable support by a unit distance to move a leading end of said multi-joint arm in the advancable direction, and controlling the joint angle of each of said joints.

5,307,448

ELECTRONIC APPARATUS WITH DISPLAY DEVICE

Shigeru Matsuyama, Yokohama, Japan, assignor to Canon Kabushiki Kaihsa, Tokyo, Japan

Continuation of Ser. No. 554,157, Jul. 19, 1990, abandoned, which is a continuation of Ser. No. 862,627, May 13, 1986, abandoned. This application May 11, 1992, Ser. No. 882,750
Claims priority, application Japan, May 24, 1985, 60-110148; May 24, 1985, 60-110149; May 24, 1985, 60-110150
Int. Cl.[5] G06F *3/12*
U.S. Cl. 395—112 14 Claims

1. An electronic apparatus comprising:

input means for inputting character data and mode information;

first memory means for storing the character data input by said input means;

mode memory means for storing the mode information input by said input means;

second memory means for storing the character data stored in said first memory means;

display means for displaying the character data stored in said second memory means;

printing means for printing character data stored in said first memory means; and



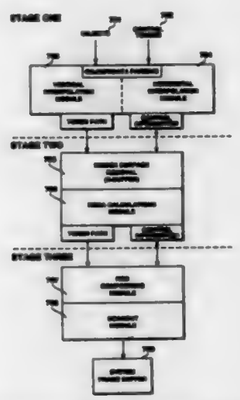
control means for controlling the mode information to store the mode information in said second memory means, and for controlling said display means to display the mode information, when said first memory means contains no character data to be printed.

5,307,449

METHOD AND APPARATUS FOR SIMULTANEOUSLY RENDERING MULTIPLE SCANLINES

Michael Kelley, San Mateo, and Stephanie Winner, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Capertino, Calif.

Filed Dec. 20, 1991, Ser. No. 811,570
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—119 7 Claims



1. A rendering device for simultaneously generating a plurality of scanlines of pixel values, said rendering device coupled to a computer controlled display, said rendering device having a plurality of rendering pipelines, each of said rendering pipelines comprised of:

input means for receiving one or more graphical objects which are visible on a scanline being rendered, said one or more graphical objects representing an image to be displayed, each of said one or more graphical objects defined by a set of location points and parameter values;

means for identifying a horizontal set of pixel locations for a graphical object coupled to said input means;

pixel filtering means for determining which of said pixels in said horizontal set of pixel locations may be shaded, said pixel filtering means coupled to said means for identifying a horizontal set of pixel locations; and

shading means coupled to said pixel filtering means, said shading means for shading pixels;

said means for identifying a horizontal set of pixel locations for a graphical object further comprised of:

a first processing means for determining a first edge of said graphical object intersecting a scanline being rendered and a second edge of said graphical object intersecting a scanline being rendered;

a second processing means coupled to said first processing means, said second processing means for determining an interpolation value for each of said first edge and said second edge, said interpolation value defining an X-coordinate constant between points on an edge of said graphical object; and

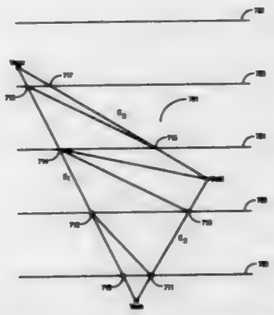
a third processing means coupled to said second processing means, said third processing means for identifying dimensional coordinates of endpoints of said horizontal set of pixel locations.

5,307,450

Z-SUBDIVISION FOR IMPROVED TEXTURE MAPPING

Mark S. Grossman, Mountain View, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 657,325, Feb. 19, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 128,063
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—123 22 Claims



1. A graphical display system for texture mapping and for visibly displaying objects, comprising:

means for decomposing a displayable object into a set of primitives;

means for generating an array of at least three Z planes;

means for creating a set of component portions of each primitive of said set of primitives, each portion of said set of component portions being intersected, if at all, by no more than two Z planes of said array of Z planes;

said means for creating a set of component portions utilizing said array of at least three Z planes in creating all component portions for said displayable object;

means for mapping a texture onto a portion of said set of portions; and

means for rendering said portion on a display device such that said set of portions display said object as a seamless complete object.

5,307,451

METHOD AND APPARATUS FOR GENERATING AND MANIPULATING GRAPHICAL DATA FOR DISPLAY ON A COMPUTER OUTPUT DEVICE

Cary Clark, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

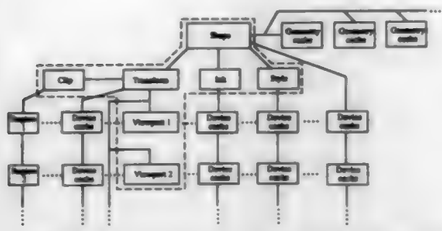
Filed May 12, 1992, Ser. No. 881,880
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—127 15 Claims

1. A method for generating and manipulating graphical data for display on a computer output device, said method comprising the steps of:

defining a first geometric object in a local geometry space;

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performing all geometric manipulations to said first geometric object to generate results in said local geometry space;
selectively caching the results of said geometric manipulations for later reference;
defining a first shape based on said cached results of said geometric manipulations to said first geometric object;
translating geometrical information of said first shape from said local geometry space to a global view space for output to one or more viewports and caching the results of the translation, said translating step comprising the steps of:



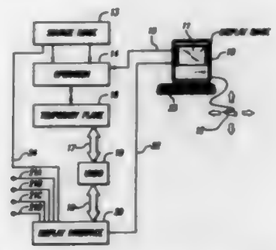
defining for said one or more viewports a mapping and clipping characteristic; and
applying said viewport mapping and clipping characteristic to the transformed shape information in said local geometry space to yield the graphical data for the global space; and
rendering an image of said first shape from said local geometry space to one or more device spaces for outputting a graphical representation of said graphical information on a computer display device and caching the graphical information for rendering said image to said one or more device spaces.

5,307,452

METHOD AND APPARATUS FOR CREATING, MANIPULATING AND DISPLAYING IMAGES

Tom Hahn, and Ken Fishkin, both of Berkeley, Calif., assignors to Pixar, Richmond, Calif.

Filed Sep. 21, 1990, Ser. No. 586,341
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—132 **19 Claims**



1. A method of executing operations on images in a computer system comprising the steps of:
storing a source image having color and opacity values in a storage means in said computer system;
storing a temporary image of the cumulative effect of all prior operations in said storage means;
selecting in said computer system a first operation for manipulating an image;
executing in said computer system said first operation on said temporary image to generate a modified temporary image;
combining in said computer system said modified temporary image and said source image into a combined image and displaying said combined image;
selecting in said computer system a second operation for manipulating an image;
executing in said computer system said first operation on said source image when said second operation is selected;
preventing execution in said computer system of said first operation on said source image when an undo operation is selected.

5,307,453

GRAPHIC DATA PROCESSING SYSTEM

Hiroaki Takashiro, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1991, Ser. No. 770,483
Claims priority, application Japan, Dec. 12, 1990, 2-401694
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—133 **5 Claims**



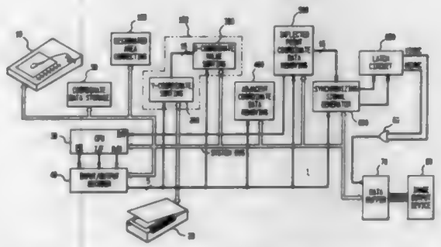
1. A graphic data processing system comprising:
entering means for entering a two-dimensional polygon;
means for copying the two-dimensional polygon to another location in two-dimensional space separated from an original location by a prescribed distance; and
means for connecting vertexes at the two-dimensional polygon and corresponding vertexes of the two-dimensional polygon, forming a prismatic figure.

5,307,454

APPARATUS FOR EXTRACTING LOCAL IMAGE FROM ORIGINAL IMAGE

Jae-Sub Shin, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Nov. 25, 1992, Ser. No. 982,386
Claims priority, application Rep. of Korea, Apr. 28, 1992, 92-7152
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—133 **13 Claims**



13. An apparatus for extracting a local image from an original image which is supplied by an image input unit, said local image corresponding to a local area designated by a coordinate data input unit and being supplied to an image output unit, the apparatus comprising:
a system control program stored in said apparatus to generate control signals for said apparatus;

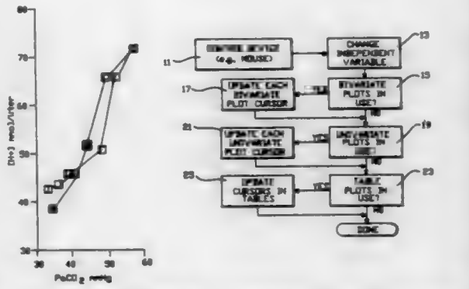
a central processing unit to operate said system control program;
a decoder responsive to said control signals to indicate a beginning and an end of an image extraction process;
storage means for storing coordinate data of boundary pixels positioned at boundary lines between said local image and another portion of said original image;
correcting means for correcting designated error from uncorrected designation of said local image, such that said coordinate data can be stored in said storage means, wherein said correcting means is adapted to sequentially receive said coordinate data of said boundary pixels from said storage means, and check said coordinate data to determine whether an area of said local image is designated correctly;
sorting means for sorting in ascending order said coordinate data stored in said storage means as x-coordinate data and y-coordinate data with respect to x-y coordinates, said sorting means including a frequency divider for dividing a clock signal applied externally, a first address generator for generating first predetermined address signals to access said coordinate date stored in said storage means, a first memory for sorting a minimum coordinate data of said coordinate data, and a first comparator for comparing said coordinate data supplied from said storage means with data supplied from said first memory, wherein when said coordinate data from said storage means is less than said data from said first memory, said data from said first memory is stored in said storage means and said coordinate data is stored in said first memory as said minimum coordinate data;
first detecting means for detecting a plurality of pixels having continuously varying values of x-coordinate with respect to a constant value of y-coordinate, wherein said first detecting means removes other varying values except a minimum value of said continuously varying values, and includes a second address generator for generating second predetermined address signals to access said coordinate data stored in said storage means, second and third memories for storing the minimum value of said continuously varying values, an adder means for adding "1" to data supplied from said second memory, a second comparator for comparing output signals of said adder means with said coordinate data of said storage means, control means for selectively controlling said second and third memories to store said coordinate data from said storage means in said third memory, and a third address generator for generating third predetermined address signals to access data stored is said third memory;
second detecting means for detecting data corresponding to maximum and minimum inflected points of said x-y coordinates from coordinate data, wherein said data corresponding to said maximum and minimum inflected points is removed;
generating means for generating horizontal and vertical synchronizing signals which control said image input unit to provide said local image, said local image being extractable by said central processing unit and based upon data unremoved from said coordinate data and supplied to said image input unit, wherein said generating means includes a selector for selecting and controlling reading operation of said third memory in synchronization with said externally applied clock signal, a fourth address generator for generating fourth predetermined address signals to access data stored in said third memory, a third comparator for comparing said y-coordinate data of said data stored in said third memory with said y-coordinate data of said image, a fourth comparator for comparing said x-coordinate data of said data stored in said third memory with said x-coordinate data of said local image, and flip-flop circuit means for synchronizing said horizontal and vertical synchronizing signals with each signal from said third and fourth comparators;
a latch circuit adapted to temporarily latch said synchronizing signals supplied from said generating means;
an OR gate circuit adapted to logically OR said synchronizing signals supplied from said latch circuit and provide an output signal; and
a data buffer circuit adapted to temporarily store said coordinate data corresponding to said local image in accordance with said output signal of said OR gate circuit.

5,307,455

DISPLAY OF MULTIPLE VARIABLE RELATIONSHIPS

Michael C. Higgins, Palo Alto, and James M. Lindauer, San Francisco, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Apr. 11, 1990, Ser. No. 508,220
Int. Cl.[5] G06F *3/14, 7/00*
U.S. Cl. 395—140 **14 Claims**



1. A method for graphically displaying at least a first and a second independent physical relationship characterized by a common parameter, wherein the common parameter is defined at N values, the method comprising the steps of:
superimposing a two-dimensional Cartesian coordinate system on a graphical display, wherein a first axis corresponds to the first relationship and a second axis corresponds to the second relationship;
evaluating the first and second relationships at each of the N common parameter values, wherein corresponding evaluations form a location coordinate at each of the common parameter values and the N location coordinates form a set of display points;
labelling each display point on the display monitor, wherein the common parameter value is indicated for each display point and the first and second independent physical relationships are characterized by the set of display points; and
positioning a first cursor on the display monitor at a selected common parameter value.

5,307,456

INTEGRATED MULTI-MEDIA PRODUCTION AND AUTHORING SYSTEM

Michael T. MacKay, Vallejo, Calif., assignor to Sony Electronics, Inc., Park Ridge, N.J.

Continuation-in-part of Ser. No. 661,694, Feb. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 622,821, Dec. 4, 1990. This application Jan. 28, 1992, Ser. No. 827,009
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—154 **34 Claims**

1. An integrated multi-media production and authoring system, said system comprising:
a digital communications network for carrying a plurality of addressed messages such that communication on the digital communications network takes place in real-time;
a plurality of workstations comprising digital computers

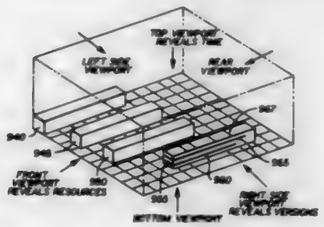
VOL 1161 ISS 4 AP 26 1994 UMI

coupled to said digital communications network, said workstations transmitting and receiving said plurality of addressed messages over said digital communications network; and

a plurality of production resources including audio and video production and editing devices, said production resources coupled to said digital communications network, said production resources transmitting and receiving said plurality of addressed messages on said digital communications network such that a user working with any of said plurality of workstations may access any of said plurality of production resources coupled to said digital communications network to create and edit a multimedia work;

said plurality of workstations including a display system having a display and user input means, said display system comprising:

a user interface for display on said display, said user interface displaying representations of said production re-



sources coupled to said digital communications network with which a user interacts using said user input means;

said representations of said production resources comprising at least three dimensions and being arranged in a venue of at least three dimensions, each of said dimensions corresponding to an attribute of said production resources which may be viewed using said user interface from a plurality of view ports, such that viewing said representations of said production resources from different view ports results in the display of different attributes of said production resources;

said representations of said production resources being arranged in said venue such that each of said production resources is disposed relative to one another in time and space within said venue;

manipulation means coupled to said user input means for selectively positioning said representations of said production resources within said venue.

5,307,457

TRIGGER FIELD DISPLAY SELECTION

Bradley J. Beitel, Woodside, and Peter C. Yanker, Portola Valley, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 367,406, Jun. 16, 1989, abandoned.
This application Jan. 25, 1993, Ser. No. 8,259
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—161 **10 Claims**

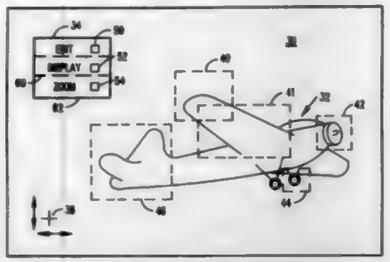
1. In an apparatus including storage means for storing an image and a trigger field, a display screen means for indicating a cursor, said trigger field comprising data defining a geometric pattern that is user-positionable to define an area on said display screen means, said geometric pattern placeable at any arbitrary location on said display screen means independent of image placement, means to alter said cursor between at least two configurations, and means for moving said cursor, a method for enabling a user to identify an invisible trigger field, comprising the steps of:

(a) positioning plural trigger fields at locations on said display screen, said locations user-choosable independent of whether or not said image or a portion of said image is present at said locations;

(b) inhibiting display of said plural trigger fields;

(c) displaying said image;

(d) moving said cursor about said display screen means to bring said cursor into first locations of said display screen means where said image is displayed and into second



locations of said display screen means substantially removed from where said image is displayed; and

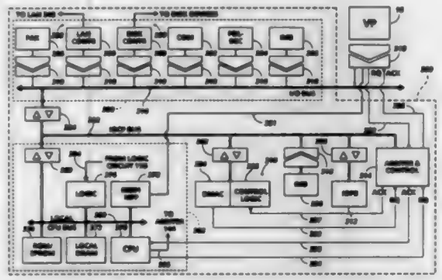
(e) altering said cursor on said display means from one said configuration to another said configuration upon said cursor being moved into a said non-displayed trigger field, to thereby indicate to the user the presence of the trigger field in either a said first location or a second second location of said display screen means.

5,307,458

INPUT/OUTPUT COPROCESSOR FOR PRINTING MACHINE

Joseph A. Freiburg, Rochester, and Isaak Rivshin, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,314
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **2 Claims**



1. A method of processing first and second sets of image data, comprising the steps of:

processing the first set of image data in a video processing section with a first memory;

transmitting the second set of image data in a coprocessing section, at a first data transfer rate, from an input/output device to a second memory for storage therein, the transmission step being concurrent with the processing step;

accessing the video processing section with the coprocessing section, for a selected time interval, to transmit the second set of image data from the second memory to the first memory;

transmitting the second set of image data at a second data transfer rate from the second memory to the first memory, the second data transfer rate being substantially greater

than the first data transfer rate wherein the selected time interval during which the coprocessing section accesses the video processing section for transferring the second set of image data to the first memory is minimized; and

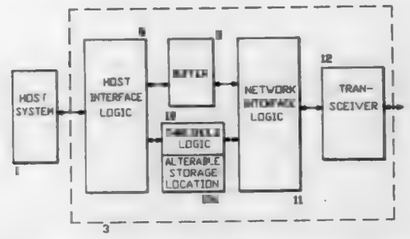
periodically allocating time intervals during which the coprocessing section accesses the video processor.

5,307,459

NETWORK ADAPTER WITH HOST INDICATION OPTIMIZATION

Brian Petersen, Los Altos; W. Paul Sherer, Sunnyvale; David R. Brown, San Jose, and Lai-Chin Lo, Campbell, all of Calif., assignors to 3Com Corporation, Santa Clara, Calif.

Filed Jul. 28, 1992, Ser. No. 920,898
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **53 Claims**



1. An apparatus for transferring a data frame between a network transceiver, coupled with a network, and a host system which includes a host processor and host memory, the apparatus generating an indication signal to the host processor responsive to the transfer of the data frame, with the host processor responding to the indication signal after a period of time, comprising:

a buffer memory for storing the data frame;

network interface logic for transferring the data frame between the network transceiver and the buffer memory;

host interface logic for transferring the data frame between the host system and the buffer memory;

threshold logic for allowing the period of time for the host processor to respond to the indication signal to occur during the transferring of the data frame, wherein the threshold logic includes,

a counter, coupled to the buffer memory, for counting the amount of data transferred to or from the buffer memory;

an alterable storage location containing a threshold value; and

means for comparing the counter to the threshold value in the alterable storage location and generating an indication signal to the host processor responsive to a comparison of the counter and the alterable storage location.

5,307,460

METHOD AND APPARATUS FOR DETERMINING THE EXCITATION SIGNAL IN VSELP CODERS

Haim Garten, Haifa, Israel, assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 14, 1992, Ser. No. 835,883
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.28 **10 Claims**

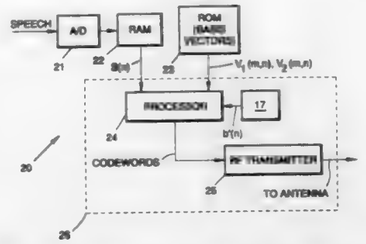
1. A vector sum excited linear prediction coder, said coder comprising:

an analog-to-digital converter for converting analog audio input signals into digital audio signals;

a first memory coupled to the analog-to-digital converter for storing the digital audio signals;

a second memory for storing a plurality of predefined sets of basis vector signals; and

a signal processor coupled to the first and second memories for generating a plurality of codewords derived from the digital audio signals and the plurality of predefined sets of basis signals, wherein the codewords are representative of respective binary weightings of the plurality of sets of



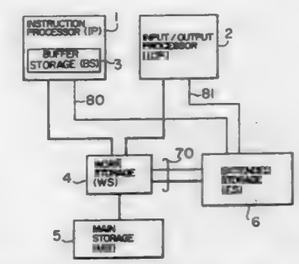
basis vector signals, and wherein the respective binary weightings are determined by the sign of predetermined equations which employ a predetermined switching convolution theorem.

5,307,461

MULTIPLE RANK HIERARCHICAL DATA STORAGE SYSTEM WITH DATA COHERENCE

Yoshio Kiriu, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 313,721, Feb. 21, 1989, abandoned.
This application Sep. 24, 1992, Ser. No. 950,745
Claims priority, application Japan, Feb. 22, 1988, 63-37437
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—250 **35 Claims**



1. An extended storage system employing hierarchical data storage areas comprising:

(a) an instruction processor;

(b) a main storage;

(c) a buffer storage connected to said instruction processor for holding parts of contents of said main storage and has a function of being accessed faster than said main storage;

(d) at least one work storage which is connected between said main storage and said buffer storage and has a function of being accessed at an intermediate access speed between access speeds of said main storage and buffer storage, said work storage being controlled in store-in mode for said main storage;

(e) an extended storage which is connected to said work storage through a transfer path and has a storage capacity for supplementing the storage capacity of said main storage, said extended storage having an address space which is different from the address space of said main storage, and the extended storage having a larger capacity and being slower than the main storage:

(f) the instruction processor issuing data transfer request which includes main storage address and extended storage address;

(g) means coupled to the work storage and responsive to

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data transfer request issued from the instruction processor for detecting whether the work storage stores data designated by requested main storage address;

(h) means coupled to the work storage and responsive to the detection for transmitting, via the path, data read out from the work storage to the extended storage; and

(i) means coupled to the extended storage and responsive to requested extended storage address for writing data transferred via the path in an area of the extended storage specified by the requested extended storage address.

5,307,462

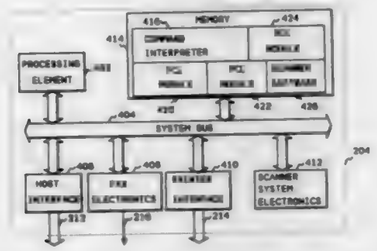
SWITCH FOR SHARING A PERIPHERAL DEVICE

Brian I. Hastings, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 589,949, Sep. 28, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,573

Int. Cl.[5] G06F *13/12*

U.S. Cl. 395—275 **22 Claims**



1. A switch for sharing a peripheral device between a plurality of systems, said switch comprising:

a plurality of first transfer means for receiving data and commands from said plurality of systems;

a plurality of peripheral state storage areas contained within said switch, one said peripheral state storage area connected to each of said plurality of first transfer means;

a second transfer means for transferring data and commands from said switch to said peripheral device

means for selectively connecting one of said first transfer means to said second transfer means comprising

means for coupling said selected first transfer means to said second transfer means whereby data and commands received on said selected first transfer means are sent to said second transfer means, and

means for transferring a state previously stored in said peripheral state storage area connected to said selected first transfer means to said second transfer means whereby said state is transferred to said peripheral device; and

means for monitoring commands received on said selected first transfer means and for storing state changes in said connected peripheral state storage area.

5,307,463

PROGRAMMABLE CONTROLLER COMMUNICATION MODULE

Craig S. Hyatt, Pewaukee, and Emmanuel G. D. Hostria, Mukwonago, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation of Ser. No. 490,907, Mar. 8, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,104

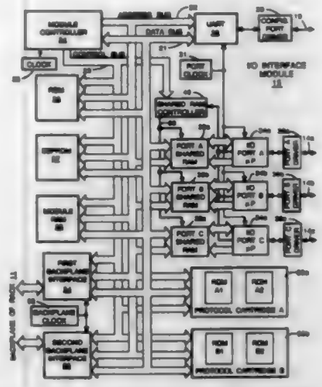
Int. Cl.[5] G06F *13/12*

U.S. Cl. 395—275 **8 Claims**

1. In a programmable controller having a processor module and a number of functional modules located in a rack and electrically interconnected by a backplane of the rack; a communication module for interfacing the programmable controller to external devices via a plurality of communication links, said communication module comprising:

a plurality of ports including a plurality of link ports with each link port coupling one of the communication links to the communication module, and a backplane port coupling the communication module to the backplane of the rack;

a mechanism separate from the programmable controller, by



which a user of the programmable controller is able to provide for each link port a designation of one or more of said plurality of ports to which messages are to be sent;

a first memory means, connected to said mechanism, for storing the designation for each link port; and

means for transferring the messages received through a given link port to one or more ports as defined by the designation stored in said first memory means for that given link port.

5,307,464

MICROPROCESSOR AND METHOD FOR SETTING UP ITS PERIPHERAL FUNCTIONS

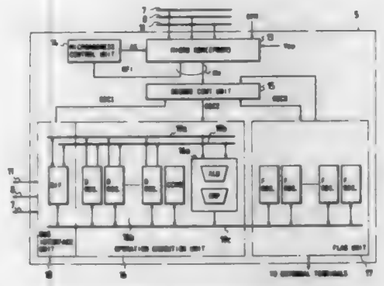
Yasushi Akao, Kokubunji; Shiro Baba, Tokorozawa; Yoshiyuki Miwa, Kawasaki; Terumi Sawase, Hannou; Yuji Sato, Kokubunji, and Shigeki Masamura, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., Tokyo, Japan

Filed Dec. 3, 1990, Ser. No. 621,641

Claims priority, application Japan, Dec. 7, 1989, 1-318573; Jan. 29, 1990, 2-15991; Mar. 12, 1990, 2-57953; Mar. 16, 1990, 2-64251; Nov. 26, 1990, 2-321649

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **13 Claims**



1. A method of setting peripheral functions of a microprocessor using a computer system, the method comprising the steps of:

displaying a menu of functions for information provided in advance for defining peripheral functions implementable by a peripheral function implementing means in the microprocessor on a display screen of the computer system;

retrieving the information for defining a peripheral function corresponding to a function selected from the menu of functions from storage media of the computer system; and

transmitting the retrieved information from the computer system to a writing apparatus for programming electrically writable non-volatile memory elements of said peripheral function implementing means.

5,307,465

SYSTEM FOR UPDATING NETWORK TOPOLOGY BASED ON CONFIGURATION OBTAINED FROM SUBSET CONFIGURATION COMPOSITION MATRIX AND SWITCHING NODE CONNECTION MATRIX FOR THE SUBSET CONFIGURATION

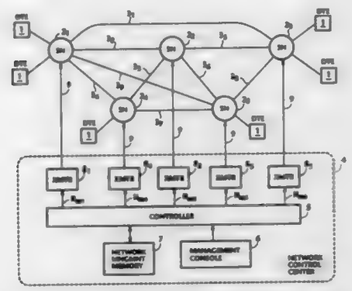
Naohiro Iki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 676,971

Claims priority, application Japan, Mar. 29, 1990, 2-82641

Int. Cl.[5] H04Q *3/58;* **G06F** *13/14*

U.S. Cl. 395—325 **4 Claims**



1. In a communications network having a plurality of switching nodes, each being capable of establishing and removing relatively static connections between transmission links in response to network configuration signals from a network controller and of establishing relatively dynamic connections through the established static connections in response to information pertaining to call-by-call connection requests from user terminals connected to said switching nodes, said network controller comprising:

memory means for storing circuit status bits in a first matrix pattern of rows associated respectively with predefined network configurations and columns associated respectively with predefined circuit configurations, said circuit status bits indicating whether each circuit configuration partially constitutes each network configuration, and for storing multi-bit destination status codes in a second matrix pattern of rows associated respectively with said circuit configurations and columns associated respectively with said switching nodes, each of said circuit configurations comprising one or more transmission links, each of the circuit status bits stored in each column of the first matrix pattern indicating the presence or absence of the circuit configuration associated with the column of the first matrix pattern, and each of said destination status codes indicating the presence or absence of transmission links from each switching node to possible destination nodes;

control means for retrieving said circuit status bits from one of the rows of said first matrix pattern and retrieving said destination status codes from each column of said second matrix pattern, respectively multiplying the binary values of the retrieved circuit status bits and binary values of the retrieved destination status codes, summing the multiplied binary values to derive first network configuration data representing an existing network configuration, storing said network configuration data into said memory means, said control means being responsive to a reconfiguration command signal for retrieving said circuit status bits from one of the rows of said first matrix pattern and retrieving said destination status codes from each column of said second matrix pattern, respectively multiplying binary values of the retrieved circuit status bits and binary values of the retrieved destination status codes, summing the multiplied binary values to derive second network configuration data representing a new network configuration, and detecting a difference between the binary values of the first network configuration data stored in said memory means and the binary values of the second network configuration data; and

means for transmitting said difference as said network configuration signals to said switching nodes, whereby said existing network configuration is reconfigured to said new network configuration.

5,307,466

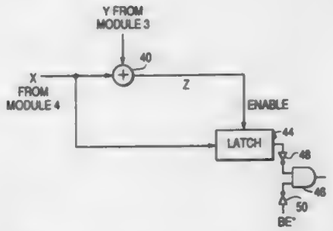
DISTRIBUTED PROGRAMMABLE PRIORITY ARBITRATION

Robert W. Chang, Oakton, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,239

Int. Cl.[5] G06F *13/374*

U.S. Cl. 395—325 **3 Claims**



1. In a system including a common bus and a plurality of users connected to said common bus, and in which each user of said plurality of users includes means for providing a request signal indicating that said user is a requesting user requiring access to said common bus, a method of determining priority comprising the steps of:

each user requiring access to the bus sending a bus request signal;

each user requesting access to the bus sending its priority level bits to each other requesting user during successive clock cycles starting with the most significant priority bits;

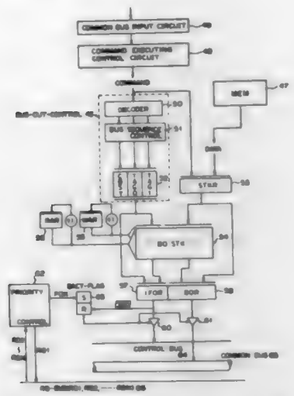
each requesting user comparing by exclusive ORing its priority level bits to the priority bits of each other requesting user and storing the resulting value in a priority latch;

each requesting user determining from the value stored in the priority latch its priority in relation to each other requesting user; and

the requesting user with the highest priority level receiving access to the bus when next available.

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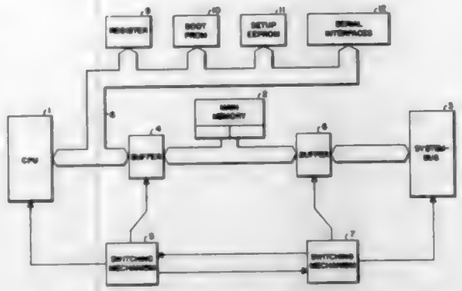
5,307,467
STACK SYSTEM
Masahiro Kitazawa, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 408,371, Sep. 18, 1989, abandoned. This application May 11, 1992, Ser. No. 884,240
Claims priority, application Japan, Sep. 20, 1988, 63-233504
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 **18 Claims**



1. A stacking system connectable to a general bus, including a common bus and a control bus, to transmit and receive data and a command through said general bus, comprising:
bus output controlling means for decoding the command to provide a bus output control signal,
bus output stacking means, operatively connected to an output of said bus output controlling means and to said general bus, for storing said bus output control signal, the command and the data when said general bus is busy, and
but outputting means, operatively connected to said bus output stacking means and to said general bus, for immediately outputting to said general bus, when said general bus is available for use, output information comprising said bus output control signal, the command and the data either directly or from said bus output stacking means if the output information was previously stored in said bus output stacking means.

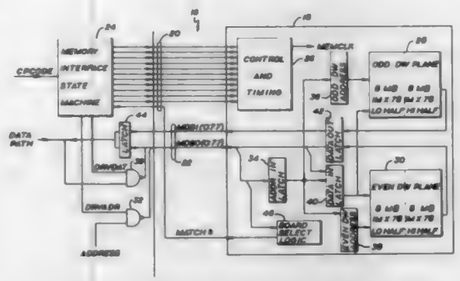
5,307,468
DATA PROCESSING SYSTEM AND METHOD FOR CONTROLLING THE LATTER AS WELL AS A CPU BOARD
Thomas Schlage, Waldshut-Tiengen, Fed. Rep. of Germany, assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 684,890, Apr. 23, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 20,002
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 8910102[U]
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 **10 Claims**

1. An apparatus comprising:
a central processing unit (CPU);
a main memory coupled to said CPU, said main memory having a total access time, a portion of said total access time including a data transfer period;
a system bus coupled between said main memory and a plurality of functional units;
first means for providing exclusive access by said CPU to said main memory during said data transfer period of said main memory and for allowing said system bus to access said main memory in a remaining portion of said total access time of said main memory;
second means for providing exclusive access by said system bus to said main memory during said data transfer period of said main memory, and for allowing access by said CPU in said remaining portion of said total access time of said main memory; and



means, coupled between said first means and said second means, for transmitting between said first means and said second means, signals corresponding to whether said exclusive access is between the system bus and the main memory or is between the CPU and the main memory.

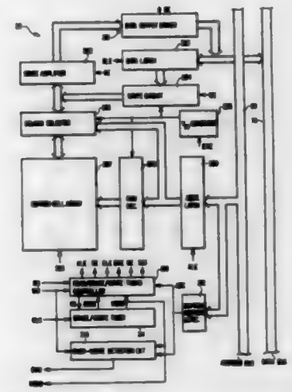
5,307,469
MULTIPLE MODE MEMORY MODULE
Edward D. Maan, Methuen, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.
Filed May 5, 1989, Ser. No. 348,318
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **15 Claims**



1. A memory unit for storing information units, comprising:
memory storage means for storing information units at locations specified by memory addresses, organized as a first memory storage means and as a second memory storage means,
means for coupling to a memory bus having a plurality of signal lines, the memory bus being coupled during use to either a first type of memory control unit means or to a second type of memory control unit means, said coupling means including means for receiving a memory address over the memory bus from the memory control unit means, said receiving means having an output coupled to said memory storage means for applying the received address to the memory storage means, said coupling means further including means for receiving over the memory bus from the memory control unit means an information unit for storage at a location specified by a received memory address, said coupling means further including means for transmitting to the memory control unit means, over the memory bus, an information unit read from a location specified by a received memory address;

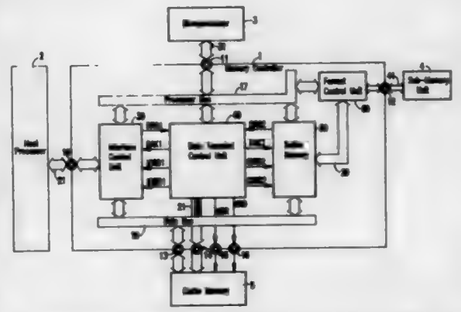
first address generation means having a plurality of outputs coupled to the first memory storage means;
second address generation means having a plurality of outputs coupled to the second memory storage means; wherein:
each of the first and the second address generation means comprise counter means coupled to the memory address receiving means, each of the counter means including means for storing a portion of the received memory address and means for incrementing the stored memory address for consecutively accessing a plurality of associated memory storage means storage locations; and
means, responsive to a first state of a first memory bus input signal line and having an output coupled to said transmitting means, for controlling said transmitting means to (a) transmit in parallel a plurality of information units to a plurality (x) of memory bus signal lines that are coupled during use to the first type of memory control unit means, the first type of memory control unit means having an (x)-bit interface that is coupled to the memory bus for receiving information units from the memory unit, and (b) responsive to a second state of said first memory bus input signal line, for controlling said transmitting means to sequentially transmit individual ones of a plurality of information units to a plurality (y) of memory bus signal lines that are coupled during use to the second type of memory control unit means, the second type of memory control unit means having a (y)-bit interface that is coupled to the memory bus for receiving information units from the memory unit, wherein (x) is greater than (y).

5,307,470
MICROCOMPUTER HAVING EEPROM PROVIDED WITH DETECTOR FOR DETECTING DATA WRITE REQUEST ISSUED BEFORE DATA WRITE OPERATION RESPONSIVE TO PRECEDING DATA WRITE REQUEST IS COMPLETED
Toshiyuki Katsuka, and Kazutoshi Yoshizawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Nov. 27, 1989, Ser. No. 441,739
Claims priority, application Japan, Nov. 25, 1988, 63-298518
Int. Cl.[5] G06F *13/16*; G11C *7/00*
U.S. Cl. 395—425 **10 Claims**



1. A microcomputer comprising an electrically erasable and programmable nonvolatile memory unit and a central processing unit executing a program and issuing a data write request to said memory unit,
said memory unit including:
write control means responsive to said data write request issued by said central processing unit for performing a data write processing operation in which data in a predetermined address of said memory unit is erased and thereafter new data is written into said predetermined address of said memory unit; and
detection means for detecting issuance by aid central processing unit of another data write request to said memory unit while said write control means is performing said data write processing operation, and supplying said central processing unit with a detection signal representing that said central processing unit has issued said other data write request before said data writing processing operation is complete,
said central processing unit being allowed to proceed to execute an instruction after issuing said data write request.

5,307,471
MEMORY CONTROLLER FOR SUB-MEMORY UNIT SUCH AS DISK DRIVES
Yutaka Ishikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 31, 1991, Ser. No. 648,168
Claims priority, application Japan, Jan. 31, 1990, 2-22644; Feb. 20, 1990, 2-40145
Int. Cl.[5] G06F *13/00, 13/42*
U.S. Cl. 395—425 **3 Claims**



1. A controller coupled to a host system, an external storage unit and a temporary memory for performing a data transfer thereamong, said controller comprising:
an interface unit coupled to said host system,
a buffer memory coupled to said external storage unit,
a data transfer control unit coupled to said interface unit and said buffer memory,
a bus for interconnecting said interface unit, said buffer memory and said temporary memory to one another,
a microprocessor connected to said interface unit, said data transfer control unit and said buffer memory by a second bus,
said data transfer control unit including sequencing means for generating first and second enable-signals substantially simultaneously and then generating one of first and second read signals and one of second and first write signals while instructing said temporary memory to fetch data onto said bus, and wherein said sequencing means comprises:
a first parameter register storing data from said microprocessor defining transfer direction and transfer-enable information,
a first data transfer sequencer connected to said first parameter register and responsive to a data request signal from said interface unit to generate said first enable-signal, said first read signal and said first write signal, said first data transfer sequencer generating instruction signals to said temporary memory to fetch data onto said first bus,
a first address counter set by said microprocessor with a data transfer start address for said temporary memory, said first data transfer sequencer updating said first address counter when data is transferred between said first bus and said temporary memory,

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a second parameter register storing data from said microprocessor defining transfer direction and transfer-enable information,

a second data transfer sequencer connected to said second parameter register and responsive to a data request signal from said buffer memory to generate said second enable-signal, said second read signal and said second write signal, said second data transfer sequencer generating instruction signals to said temporary memory to fetch data onto said first bus, and

a second address counter set by said microprocessor with a data transfer start address for said temporary memory, said second data transfer sequencer updating said second address counter when data is transferred between said first bus and said temporary memory,

said interface unit being supplied with said first enable-signal, said first read signal and said first write signal from said sequencing means for outputting data therein onto said bus in response to said first read signal while receiving said first enable-signal and for fetching data on said bus in response to said first write signal while receiving said first enable-signal, and

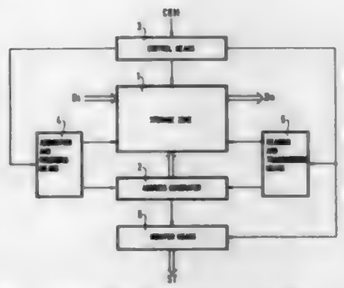
said buffer memory being supplied with said second enable-signal, said second read signal and said second write signal from said sequencing means for outputting data therein onto said bus in response to said second read signal while receiving said second enable-signal and for fetching data on said bus in response to said second write signal while receiving said second enable-signal.

5,307,472

DATA TRANSFER INTERFACE MODULE

Alain Chateau, Herblay, and Emmanuel Rousseau, Paris, both of France, assignors to Alcatel Radiotelephone, Paris, France

Filed Jul. 2, 1991, Ser. No. 724,629
Claims priority, application France, Jul. 2, 1990, 90 08338
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 **3 Claims**



1. A data transfer interface module comprising:

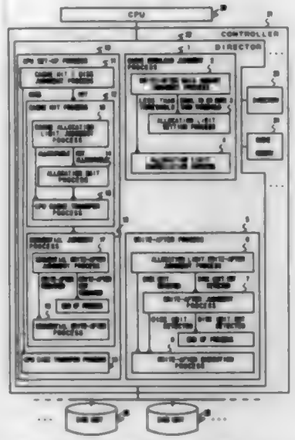
data acquisition means, means for storing the acquired data in a storage zone at locations identified by respective addresses delivered by an address generator, means for reading said data from the locations in said storage zone, means for transmitting said data, control means which, during successive acquisition and transmission phase acquires and stores data in a determined number of locations, then reads and transmits said data, said address generator generating an incrementing sequence of addresses from a starting address to an end address during said acquisition stage, and then generating a decrementing sequence of addresses from said end address to said starting address during said transmission stage, wherein the module also includes monitor means for verifying that said address generator returns to said starting address after one of said acquisition stages and one of said transmission stages have succeeded each other, and which then generates a status word indicating the result of the verification.

5,307,473

CONTROLLER FOR STORAGE UNIT AND METHOD OF CONTROLLING STORAGE UNIT

Toshiaki Tsuboi, Kawasaki; Akira Yamamoto, Sagamihara; Shigeo Honma, Odawara; Yoshihiro Asaka, Odawara; Koji Ozawa, Hiratsuka; Hiroyuki Kitajima, Yokohama, and Michio Miyazaki, Odawara, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System Ltd., both of Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 833,129
Claims priority, application Japan, Feb. 20, 1991, 3-025994
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **10 Claims**



1. A controller for controlling a plurality of storage units in an information processing system having a central processing unit, the plurality of storage units, comprising:

a cache memory connected between said central processing unit and the plurality of storage units, for storing part of data stored in the plurality of storage units, said part of data including data to be written back to at least one storage unit in order to keep consistency of data between said cache memory and the storage units, and for executing data transfer to/from said central processing unit and the plurality of storage units;

a directory for storing management information of the plurality of storage units and said cache memory; and

a director for controlling the operation of said cache memory, managing said directory, and controlling data transfer between said cache memory and the plurality of storage units,

wherein said director includes:

means for judging whether the amount of data within said cache memory before being written in the plurality of storage units is equal to or more than a first threshold value or less than a second threshold value;

means for setting an allocation limit data amount of said cache memory to each of the plurality of storage units, if said judging means judges that said amount of data is equal to or more than said first threshold value;

means for canceling said allocation limit data amount of said cache memory set to each of the plurality of storage units, if said judging means judges that said amount of data is less than said second threshold value;

means responsive to a request from said central processing unit requiring an allocation of said cache memory equal to or more than said allocation limit data amount, for holding in a wait state said request for writing data from said central processing unit to said cache memory; and

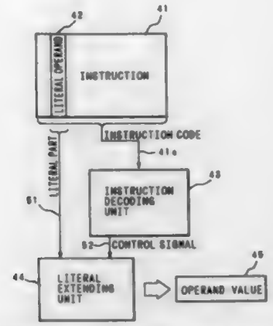
means for writing data within said cache memory still not written in the plurality of storage units, into one of the plurality of storage units.

5,307,474

APPARATUS AND METHOD FOR PROCESSING LITERAL OPERAND COMPUTER INSTRUCTIONS

Ken Sakamura, Tokyo, and Jiro Korematsu, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 560,253, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 172,630, Mar. 24, 1988, abandoned. This application May 11, 1992, Ser. No. 882,743
Claims priority, application Japan, Sep. 30, 1987, 62-246623
Int. Cl.[5] G06F *12/10*
U.S. Cl. 395—425 **6 Claims**



1. In a computer having an ALU and an instruction register, apparatus for processing a plurality of computer instructions stored in a computer memory, including at least a first computer instruction and a second computer instruction said first computer instruction and said second computer instruction both being part of said plurality of computer instructions, said first computer instruction having an operation code and at least a first field for holding a literal operand having a binary value, said literal operand which is held in said first field in said first computer instruction being a first of a plurality of kinds of literal operands, each of said plurality of kinds of literal operands having a range of permissible values different from the range of all others of said plurality of kinds of literal operands said second computer instruction having an operation code and at least a first field for holding a literal operand having a binary value, said literal operand which is held in said first field in said second computer instruction being a second of said plurality of kinds of literal operands the contents of said first field of said first computer instruction being identical to the contents of said first field of said second computer instruction, the operation code of said second computer instruction being different from the operation code of said first computer instruction, the apparatus comprising:

an instruction decoding means for sequentially receiving said first computer instruction and said second computer instruction and sequentially outputting to a first signal line for control of a literal operand extension, a first signal indicating the kind of literal operand held in said first field of said first instruction and a second signal indicating the kind of literal operand held in said first field of said second instruction;

literal operand extension means, coupled to said instruction decoding means, to sequentially receive said first and second signals from said instruction decoding means and coupled to the instruction register to sequentially receive contents of said first literal operand field obtained from said first computer instruction and said first literal operand field obtained from said second computer instruction, said literal operand extension means being a means for selectively changing the values of said received first and second literal operand fields and sequentially outputting a first and second extended operand to a second signal line, said first extended operand being output in response to said first signal and said contents of said first literal operand field obtained from said first instruction having a first operation code, said first extended operand being different from said second extended operand;

said first and second extended operands being output by said literal operand extension means for receipt by the ALU for execution of said first instruction operating on said first extended literal operand and for execution of said second instruction operating on said second extended literal operand; and

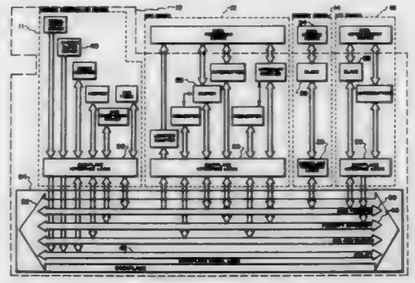
means, coupled to said literal operand extension means, for transferring contents of said first field of said first computer instruction to said literal extension means when said first computer instruction is transferred into said instruction decode unit, for extension of the contents of said literal operand field.

5,307,475

SLAVE CONTROLLER UTILIZING EIGHT LEAST/MOST SIGNIFICANT BITS FOR ACCESSING SIXTEEN BIT DATA WORDS

Nelson D. Lau, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1992, Ser. No. 907,759
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—425 **3 Claims**



1. A slave controller for connecting a memory to a VMEbus, said VMEbus providing a plurality of control signals, said slave controller responsive to said control signals effecting a transfer of sixteen bit data words between said VMEbus and said memory and a storage of said sixteen bit data words in said memory and a retrieval of said sixteen bit data words from said memory, each of said sixteen bit data words consisting of eight least significant bits and eight most significant bits, said control signals provided by said VMEbus including an address strobe, an interrupt acknowledge, a clock signal, a first write signal and a plurality of addresses, each of said addresses having a first address bit, a second address bit and a third address bit, said slave controller comprising:

a first inverter having an input and an output, the input of said first inverter being connected to said VMEbus to receive said address strobe from said VMEbus, said first inverter inverting said address strobe providing at the output of said first inverter an inverted address strobe;

an eight bit latch having a clock input connected to the output of said first inverter to receive said inverted address strobe from said first inverter, eight data inputs and eight data outputs, four of the data inputs of said latch being connected to ground and four of the data inputs of said latch being connected to said VMEbus to receive from said VMEbus said interrupt acknowledge and the

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first address bit, the second address bit and the third address bit of each of said addresses;

an eight bit binary comparator having eight comparison inputs, eight data inputs and an output, the eight comparison inputs of said comparator receiving a predetermined binary number, each of the eight data inputs of said comparator being connected to one of the data outputs of said latch to receive from said latch said interrupt acknowledge and the first address bit, the second address bit and the third address bit of each of said addresses, the output of said comparator providing a first enable signal when a binary number occurring at the eight data inputs of said comparator is equal to the predetermined binary number occurring at the eight comparison inputs of said comparator;

a second inverter having an input connected to the output of said comparator to receive said first enable signal from said comparator and an output, said second inverter inverting said first enable signal providing at the output of said second inverter an inverted first enable signal;

a third inverter having an input and an output, the input of said third inverter being connected to said VMEbus to receive said first write signal, said third inverter inverting said first write signal providing at the output of said third inverter an inverted first write signal;

a first transceiver having eight data inputs, eight data outputs, a direction control input connected to the output of said third inverter to receive said inverted first write signal from said third inverter and an enable input connected to the output of said comparator to receive said first enable signal from said comparator, the eight data inputs of said first transceiver being connected to said VMEbus to receive from and transmit to said VMEbus the eight least significant bits of said sixteen bit data words and the eight data outputs of said first transceiver being connected to said memory to receive from and transmit to said memory the eight least significant bits of said sixteen bit data words;

a second transceiver having eight data inputs, eight data outputs, a direction control input connected to the output of said third inverter to receive said inverted first write signal from said third inverter and an enable input connected to the output of said comparator to receive said first enable signal from said comparator, the eight data inputs of said second transceiver being connected to said VMEbus to receive from and transmit to said VMEbus the eight most significant bits of said sixteen bit data words and the eight data outputs of said second transceiver being connected to said memory to receive from and transmit to said memory the eight most significant bits of said sixteen bit data words;

a programmable array logic device having an enable input connected to the output of said second inverter to receive from said second inverter said inverted first enable signal, a clock input connected to said VMEbus to receive from said VMEbus said clock signal, a write input connected to said VMEbus to receive from said VMEbus said first write signal and an interrupt acknowledge input connected to said VMEbus to receive from said VMEbus said interrupt acknowledge;

said programmable array logic device responsive to said first write signal, said inverted first enable signal, said interrupt acknowledge and said clock signal generating a second write signal, a data acknowledge signal and a second enable signal;

said programmable array logic device having an enable output, a write output and an acknowledge output, the enable output of said logic device being connected to said memory to provide said second enable signal to said memory and enable said memory and the write output of said logic device being connected to said memory to provide said second write signal to said memory and effect the storage of said sixteen bit data words in said memory and the retrieval of said sixteen bit data words from said memory; and

and AND gate having a pair of inputs connected to the acknowledge output of said programmable array logic device, the inputs of said AND gate receiving said data acknowledge signal from said programmable array logic device;

said AND gate having an output connected to said VMEbus, the output of said AND gate providing said data acknowledge signal to said VMEbus.

5,307,476

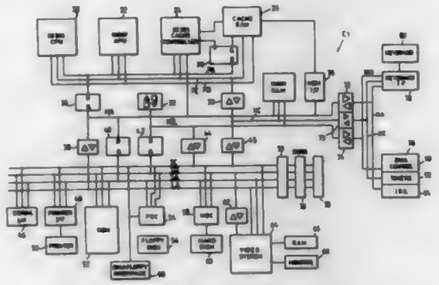
FLOPPY DISK CONTROLLER WITH DMA VERIFY OPERATIONS

Timothy K. Waldrop, Houston, and Paul R. Culley, Cypress, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 431,667, Nov. 3, 1989, abandoned. This application Dec. 29, 1992, Ser. No. 999,470

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 395—425 **3 Claims**



1. A system for transferring data, comprising:

a direct memory access controller which produces a first control signal relating to data transfer during operations of a first type and does not produce said first control signal during operations of a second type, and wherein said direct memory access controller produces a second control signal and does not produce said first control signal during operations of a third type;

a data transfer device which transfers data responsive to the receipt of a data transfer signal;

means for producing a replica signal of said first control signal when said direct memory access controller is performing operations of the second type and for combining said replica signal with said first control signal to produce a combined signal, said combined signal being connected to said data transfer device as said data transfer signal, and wherein said replica producing means does not produce said replica signal when said direct memory access controller is performing operations of the third type.

5,307,477

TWO-LEVEL CACHE MEMORY SYSTEM

George S. Taylor, Menlo Park; P. Michael Farmwald, Berkeley; Timothy P. Layman, San Carlos; Huy X. Ngo, Santa Clara, and Allen W. Roberts, Union City, all of Calif., assignors to Mips Computer Systems, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 444,660, Dec. 1, 1989, abandoned. This application May 10, 1993, Ser. No. 59,715

Int. Cl.[5] **G06F** *12/08*

U.S. Cl. 395—425 **5 Claims**

1. A cache memory system comprising:

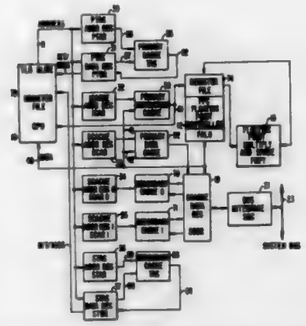
processing means for generating a virtual address;

a primary cache memory, comprising:

primary cache tag means containing a plurality of primary virtual tags, the primary cache tag means connected to receive at least a portion of the virtual address from the processing means and supply in response a corresponding primary cache virtual tag to the processing means;

primary instruction cache means containing a plurality of instructions and a first plurality of virtual tags, the primary instructions and a first plurality of virtual tags, the primary instruction cache means connected to receive at least a portion of the virtual address from the processing means and supply in response a corresponding instruction from the plurality of instructions to the processing means; and

primary data cache means containing a second plurality of primary virtual tags and a plurality of data units, the primary data cache means also connected to receive at least a portion of the virtual address from the processing means and in response to supply a corresponding data unit from the plurality of data units to the processing means;



translation means connected to receive the virtual address form the processing and translate the virtual address into a physical address; and

a secondary cache memory, comprising:

secondary cache tag means containing a plurality of secondary virtual tags, the secondary cache tag means connected to receive at least a portion of the physical address from the translation means and supply in response a corresponding secondary virtual tag to the processing means; and

secondary cache means containing a plurality of instructions and data units, the secondary cache means connected to receive at least a portion of the physical address from the translation means and supply in response a corresponding instruction or data unit from the plurality of instructions and data to the processing means;

wherein the primary cache memory employs a virtual addressing scheme, thereby eliminating the need for address translation to access the primary cache memory.

5,307,478

METHOD FOR INSERTING A PATH INSTRUCTION DURING COMPLIATION OF COMUTER PROGRAMS FOR PROCESSORS HAVING MULTIPLE FUNCTIONAL UNITS

James C. Rasbold, Livermore, and Don A. Van Dyke, Pleasanton, both of Calif., assignors to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

Division of Ser. No. 896,895, Jun. 10, 1992, Pat. No. 5,202,975, which is a continuation-in-part of Ser. No. 537,466, Jun. 11, 1990, Pat. No. 5,179,702. This application Oct. 29, 1992, Ser. No. 969,789

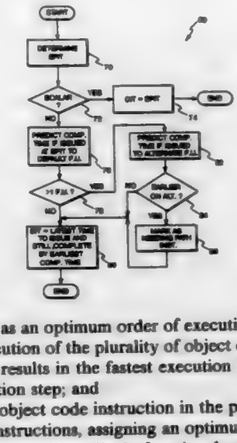
Int. Cl.[5] **G06F** *9/45, 9/455*

U.S. Cl. 395—500 **1 Claim**

1. In a computer that compiles or assembles a source code program to produce a plurality of object code instructions for execution on a target computer having multiple functional units capable of performing similar types of object code operations, a method of determining in which of a plurality of the functional units that an object code instruction should execute. the method comprising the computer-implemented steps of:

during the compilation or assembly of the source code program to produce the plurality of object code instructions, determining an optimum path of execution for the object code instruction among all available functional units in the target computer in which the object code instruction could execute by performing the steps of

simulating various sequences of execution of a plurality of object code instructions within a basic block of object code instructions that could be executed next for all combinations of available functional units in the target computer;



selecting as an optimum order of execution that sequence of execution of the plurality of object code instructions which results in the fastest execution speed during the simulation step; and

for each object code instruction in the plurality of object code instructions, assigning an optimum path of execution among all available functional units in the target computer in which the object code instruction could execute based on the optimum order of execution; and

if the optimum path of execution for the object code instruction is different than a preselected default path of execution for an object code instruction for a similar type of object code operation, inserting a path instruction prior to the execution of the object code instruction directing that the next object code instruction be executed in the target computer according to the optimum path of execution for the object code instruction.

5,307,479

METHOD FOR MULTI-DOMAIN AND MULTI-DIMENSIONAL CONCURRENT SIMULATION USING A DIGITAL COMPUTER

Ernst G. Ulrich, Bedford, and Karen P. Lentz, Andover, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 649,402, Feb. 1, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,878

Int. Cl.[5] **G06F** *9/455*

U.S. Cl. 395—500 **4 Claims**

1. A method for conducting a plurality of simulations on a computer system comprises the steps of:

providing the plurality of simulations to execute in the computer system with each simulation including a corresponding plurality of experiments executed in the computer system with each experiment having associated therewith a plurality of values for each parameter of the corresponding experiment;

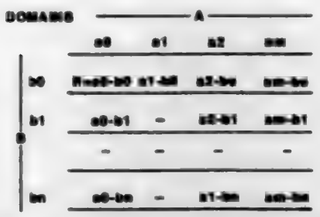
selecting as a reference experiment a first value for each parameter of a first one of the plurality of experiments for

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each one of the plurality of simulations in the computer system;

determining a first value difference between a first reference experiment and a corresponding subsequent one of the plurality of experiments associated with a first one of the plurality of simulations in the computer system and a second value difference between a second reference experiment and a corresponding subsequent one of the plurality of experiments associated with a second one of the plurality of simulations in the computer system; and

forming an interaction experiment to execute in the computer system if the first value and the second value are different, the step of forming the interaction step further comprising the steps of;



providing a first subsequent value difference between the first reference experiment and a corresponding subsequent one of the plurality of experiments associated with the first one of the plurality of simulations in the computer system;

providing a second subsequent value difference between the second reference experiment and a corresponding subsequent one of the plurality of experiments associated with the second one of the plurality of simulations in the computer system;

comparing the first subsequent value difference and the second subsequent value difference; and

forming a subsequent interaction experiment if the first subsequent value and the second subsequent value are different.

5,307,480

METHOD FOR REPORTING POWER FAIL IN A COMMUNICATION SYSTEM

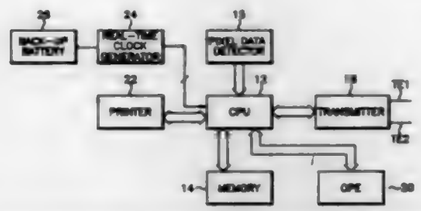
Hyo-Hyeon Hwang, Kyounggi, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 31, 1990, Ser. No. 606,739

Claims priority, application Rep. of Korea, Apr. 20, 1990, 1990-5585

Int. Cl.[5] G06F *11/00*; H03M *13/00*

U.S. Cl. 395—575 **8 Claims**



6. A communication device having a real-time clock generator with a backup battery for generating real-time data, and comprising:

a nonvolatile memory having reservation registering area for storing reservation data of a registered job, said reservation data comprising communication data and data indicative of designated destinations and corresponding programmable time for enabling transmission of said communication data to said designated destinations;

control means for reporting status of said registered jobs stored in said nonvolatile memory after a power failure of said communication device by:

storing and updating real-time data from said real-time clock generator into said nonvolatile memory at a predetermined time interval;

searching said reservation registering area for an unperformed registered job upon initialization of said communication device after said power failure; and

reading said reservation data of said registered job.

5,307,481

HIGHLY RELIABLE ONLINE SYSTEM

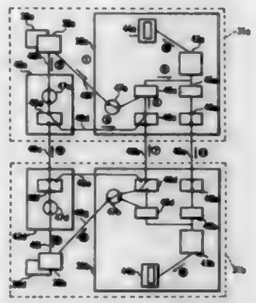
Hiroyuki Shimazaki, Tokyo; Masamichi Misoguchi, Yokohama; Hajime Yamasaki, Kawasaki; Kazuaki Ogawa, Osaka; Shinji Tanaka, Tokyo; Tatsuhi Yano, Ahiko; Takatoshi Shimizu, Kawasaki; Yukio Kouguchi, Tokyo; Tetsuo Yamashita, Matsudo; Satoshi Murabayashi, Yokohama; Nobuyuki Suzuki, Yokohama; Yoshikuni Watanabe, Yokohama; Koichi Nakagawa, Yokohama; Daisuke Fukagawa, Kashiwa, and Kouji Ogino, Ichihara, all of Japan, assignors to Hitachi, Ltd. and The Sanwa Bank Limited, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 660,633

Claims priority, application Japan, Feb. 28, 1990, 2-045443; Mar. 7, 1990, 2-053695; Mar. 7, 1990, 2-053696; Mar. 7, 1990, 2-053697

Int. Cl.[5] G06F *15/21*

U.S. Cl. 395—575 **1 Claim**



1. A database management method for integrating a sub-database into a main database after said main database and said sub-database, initially having had the same contents, were separately updated by different contents wherein said main database and said sub-database are connected with a main online system and a sub-online system, respectively, comprising the steps of:

providing each database record with a main database update sequence number and a sub-database update sequence number wherein each sequence number represents a number incremented each time the database record is updated;

transmitting database update information as well as both update sequence numbers from said sub-online system to said main online system wherein said update information and update sequence numbers are produced on the basis of the updated sub-database control;

comparing each update sequence number attached with the transmitted information to examine whether the main database record and a corresponding sub-database record have been both updated or only the corresponding sub-database record has been updated; and,

updating the main database record by transmitted corresponding update information if only the corresponding sub-database records have been updated, while updating the main database record by reprocessing related input transactions keeping the update order of the database records if the main database record and the corresponding sub-database record have been both updated.

5,307,482

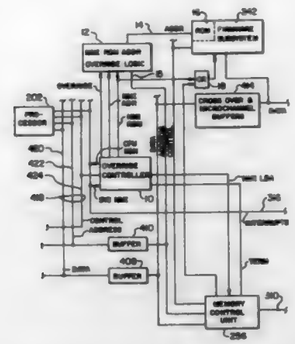
COMPUTER, NON-MASKABLE INTERRUPT TRACE ROUTINE OVERRIDE

Richard Bealkowski, Delray; Ralph M. Begun, and Michael R. Turner, both of Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 28, 1992, Ser. No. 826,733

Int. Cl.[5] G06F *11/08*

U.S. Cl. 395—575 **20 Claims**



1. In a computing system having a processor, means for generating non-maskable interrupts (NMI's), the processor responsive to an NMI for generating a fetch code for fetching an existing NMI fault tracing routine for use by the processor, apparatus responsive to NMI's for adding system specific NMI routines to the system wherein the system specific NMI routines are fault tracing routines for new function or new hardware in the system or for enhancement of the fault tracing capability of the existing fault tracing routine, said apparatus comprising:

first means for storing the existing NMI routine;

second means for storing the system specific NMI routine;

address logic means for generating addresses to fetch the system specific NMI routine from said second storing means;

override control means responsive to an NMI for controlling said first storing means to ignore fetch codes from the processor and for invoking said address logic means;

said address logic means responsive to said override control means and to fetch codes from said processor for generating the address in said second storing means for fetching and passing the system specific NMI routine to the processor whereby the processor executes the system specific NMI routine.

5,307,483

SYNCHRONIZATION INSTRUCTION FOR MULTIPLE PROCESSOR NETWORK

Diane L. Knipfer; Lynn A. McMahon, both of Rochester, and Charlotte B. Metzger, Elgin, all of Minn., assignors to International Business Machines Corp., Rochester, Minn.

Continuation of Ser. No. 466,538, Jan. 17, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 20,880

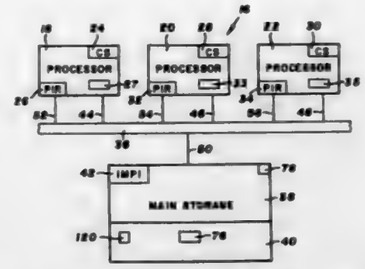
Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **17 Claims**

1. In a data processing network including a plurality of processing devices for executing computer program instructions in the form of computer program instruction streams to manipulate bit-encoded data, said processing devices executing different corresponding ones of the instruction streams, a shared resource for receiving and transmitting bit-encoded data, and an interface connected to the processors and to the shared resource for transmitting bit-encoded data between the processing devices and the shared resource; said system further including a serializing means for resolving contentions for control of the shared resource among the processing devices; a process for synchronizing the execution, by the processing devices, of their respective corresponding instruction streams to test the serializing means, including the steps of:

(a) setting a limit representing one less than the number of the processing devices to be synchronized;

(b) after setting the limit, causing a number of the processing devices equal to said limit, to enter a hold condition in which the processing device temporarily is prevented from executing computer program instructions, while remaining capable of sending and receiving bit-encoded



data in the form of messages, all of said number of the processing devices being designated as slave devices;

(c) with all said slave devices in the hold condition, using one of the processing devices other than the slave devices, designated as the master device, to maintain the slave devices in the hold condition and to force itself into the hold condition while the slave devices are in the hold condition, and then using the master device to simultaneously release itself and the slave devices from the hold condition, enabling all of the processing devices to resume executing their corresponding ones of the computer program instruction streams.

5,307,484

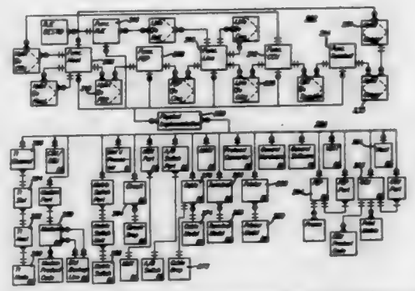
RELATIONAL DATA BASE REPOSITORY SYSTEM FOR MANAGING FUNCTIONAL AND PHYSICAL DATA STRUCTURES OF NODES AND LINKS OF MULTIPLE COMPUTER NETWORKS

John D. Baker, Troy; Michael J. Cannon, Sterling Heights; Kenneth E. Demski, Livonia; Norman F. Kent, Highland, and David H. Myers, East Detroit, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 6, 1991, Ser. No. 665,105

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—600 **7 Claims**



1. A relational data base (RDB) system for managing a data communications network by searching, addressing, retrieving and manipulating records of tables containing information concerning the network stored in a central repository, said data communication network comprising network nodes and

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links defined by functional and physical entities and attributes, said system comprising:

(a) means for arranging names of functional entities along with functional attributes of the functional entities in a first set of relational database (RDB) tables, said set of RDB tables related in a manner that models the architectural configuration of said network and wherein said first set of RDB tables include a plurality of parent tables and a plurality of associative tables which are dependent tables with respect to said parent tables, wherein said parent tables contain a primary key for each record listed therein and wherein said associative tables contain at least a pair of conventional foreign keys for each record listed therein, said pair of foreign keys pointing to two parent tables of said first set of RDB tables;

(b) means for arranging names of physical entities along with physical attributes of said physical entities in a second set of RDB tables;

(c) means for forming a physical implementation RDB table which relates said first set of RDB tables to said second set of RDB tables, said physical implementation RDB table employing a chosen form of reference that associates specific functional entity names and attributes recorded in said first set of RDB tables with specific physical entity names and attributes recorded in said second set of RDB tables;

(d) storage means for containing said functional, physical and physical implementation RDB tables in a manner forming a tabular repository of named entities and attributes of said network; and

(e) computer means programmed to permit using information in said functional, physical and physical implementation RDB tables stored in said repository to determine interconnections and attributes of the network nodes and links and to determine how to arrange the network nodes and links to reestablish lost functions and/or to configure the network nodes and links to a different form.

5,307,485

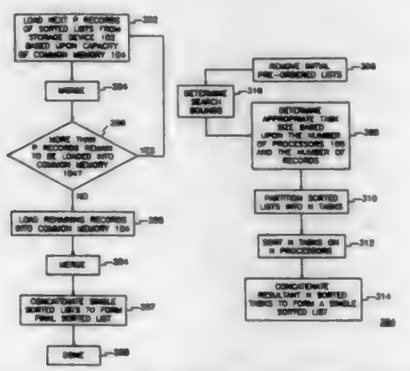
METHOD AND APPARATUS FOR MERGING SORTED LISTS IN A MULTIPROCESSOR SHARED MEMORY SYSTEM

Frank G. Bordonaro, Kingston; Glen A. Brent, Red Hook; Roger J. Edwards, Woodstock; Joel Goldman, Kingston, all of N.Y.; David B. Lindquist, Raleigh, N.C.; Kushal A. Patel, Lake Katrine, N.Y., and Peyton R. Williams, Jr., Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1991, Ser. No. 708,610

Int. Cl.[5] G06F *7/16, 15/16*

U.S. Cl. 395—600 **11 Claims**



1. A method of merging a plurality of original lists of sorted records using a plurality of independently operating processors and a common memory having a limited capacity, comprising the steps of:

(1) selecting a portion of the original lists based on the limited capacity of the common memory;

(2) storing in the common memory the records of the selected portion to form selected sorted lists;

(3) determining whether any one of the selected sorted lists stored in the common memory is a pre-ordered sorted list and if so:

(a) removing the pre-ordered sorted list from the common memory,

(b) replacing the removed pre-ordered sorted list by storing in the common memory more records from the original lists to form another selected sorted list, and

(c) repeating step (3) until all pre-ordered sorted lists have been removed from the common memory;

(4) determining a task size based upon the number of records in the selected sorted lists stored in the common memory and the number of said processors;

(5) dividing the selected sorted lists stored in the common memory into a plurality of independent tasks equal in number to the number of said processors such that the records of any one of the tasks are either all greater than or equal in value to each record in an other one of the tasks or all less than or equal in value to each record in the other task;

(6) sorting the records in each task in parallel by said processors to create sorted task lists;

(7) concatenating the sorted task lists with each other and with any removed pre-ordered sorted lists to create a single sorted list;

(8) re-executing steps (1) through (7) for remaining records of the original lists until all records of the original lists have been sorted into single sorted lists; and

(9) concatenating the single sorted lists to form a final sorted list.

5,307,486

METHOD FOR UPDATING AN INDEX TREE STRUCTURE OF DATA BASED ON NODE SIZES

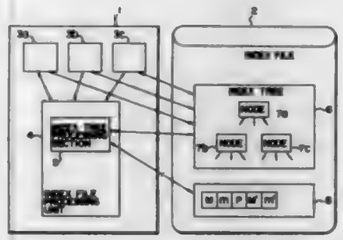
Tomoki Nakamigawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 434,025, Nov. 9, 1989, abandoned. This application Jul. 7, 1992, Ser. No. 908,880

Claims priority, application Japan, Nov. 11, 1988, 63-285516

Int. Cl.[5] G06F *7/00, 7/14, 7/24, 12/08*

U.S. Cl. 395—600 **6 Claims**



3. A method for updating an index tree structure in a data processing apparatus which can retrieve, add, or delete records arranged in the index tree structure in which a plurality of nodes are hierarchically arranged, each of the plurality of nodes including a plurality of records sorted in ascending or descending order in accordance with a key value, the method comprising the steps of:

a) setting a maximum size M for storing the records in a target node, and a size M' which is smaller than both M and the potential maximum capacity of an adjacent node for storing the records in the adjacent node thereto, using data processing means;

b) determining if a number of records which exist after an insertion of at lest one of the records in the target one exceeds the maximum size M, using said data processing means;

c) inserting the at lest one record in the target node when it is determined in said step b) that the insertion of the at least one record in the target node does not cause the number of records in the target node to exceed the maximum size M, using said data processing means;

d) determining if a number of records in the adjacent node to the target node exceeds the size M' when it is determined in said step b) that the insertion of the at least one record in the target node causes the number of records in the target node to exceed the maximum size M, using said data processing means;

e) performing an overflow process such that the records, including the at least one record to be inserted, in the target node and the records in the adjacent node are uniformly rearranged in both nodes, when it is determined in said step d) that the number of records in the adjacent node does not exceed the size M', using said data processing means;

f) performing a node split process such that a new node is prepared and the records, including the at least one record to be inserted, in the target node and the records in the adjacent node are rearranged among the target node, the adjacent node and the newly prepared node, when it is determined in said step d) that the number of records int he adjacent node exceeds the size M', using said data processing means; and

g) recording and updating a record position within the index tree structure.

5,307,487

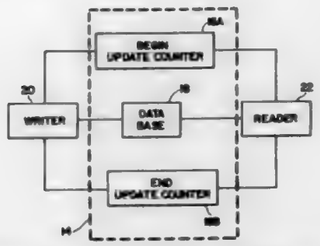
METHOD OF DATABASE SYNCHRONIZATION WITH CONSISTENCY DETERMINED BY ENTRY AND EXIT COUNTERS USED ON BOTH UPDATE AND RETRIEVAL

Carlos M. Tavares, Somerset; Durval M. Tavares, Dighton, both of Mass.; Donald R. Caron, Bristol, and John B. Bagley, Portsmouth, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1991, Ser. No. 770,208

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—650 **3 Claims**



1. A method of providing synchronization in data structures, by use of a computer, comprising the steps of:

incrementing a first counter within RAM by means of a first application process;

updating at least one data base record within RAM by means of said first application process;

incrementing a second counter within RAM by means of said first application process after completion of updating of said at least one data base record within RAM;

comparing the values of said first and second counters within RAM for equality by means of a second application process;

defering further processing of said second application process if values of said first and second counters within RAM differ;

sampling and retaining by means of said second application process the value within RAM of one of said first and second counters within RAM if said first and second counters have equal values;

accessing by means of said second application process at least one data base record within RAM if said first and second counters within RAM have equal values;

comparing by means of said second application process the said retained value within RAM and the value of the said first counter within RAM following the completion of accessing said at least one data base record within RAM; and

indicating by means of said second application process indicate if the value of said retained value within RAM and said first counter within RAM are equal.

5,307,488

SYSTEM INTERRUPTION APPARATUS

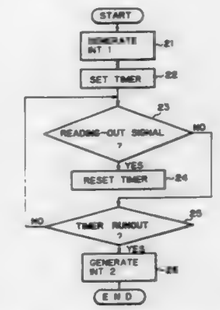
Toshio Nakai, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,846

Claims priority, application Japan, Mar. 15, 1991, 3-76746

Int. Cl.[5] B06F *9/46*

U.S. Cl. 395—650 **10 Claims**



1. An apparatus for sending interruption signals to a central processing unit executing a software program, the central processing unit outputting a response signal indicative of executing an interrupt routine in response to the interruption, comprising:

means for sending a first interruption signal to the central processing unit;

first means for detecting a response signal in response to the first interruption signal, within a first time interval; and

means, operatively connected to the first means for detecting, for sending a second interruption signal to the central processing unit if the first detecting means does not detect the response signal within the first time interval.

5,307,489

SEEK SYSTEM FOR A MAGNETIC DISK APPARATUS

Shigeo Yamazaki, Ibaragi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,186

Claims priority, application Japan, Mar. 26, 1991, 3-061716

Int. Cl.[5] G06F *13/10, 11/30*

U.S. Cl. 395—650 **4 Claims**

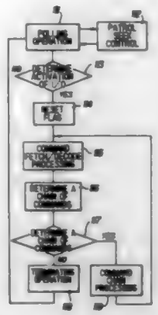
1. A method for controlling a magnetic disk apparatus having a patrol seek function to issue a command thereto to shift a magnetic head at predetermined time and distance intervals independently of a software command, said method comprising the steps of:

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monitoring a condition of the magnetic disk and controlling a timer for patrol seeking to execute a polling operation;

controlling a patrol for each predetermined period of time set by a timer set by said polling operation;

performing an I/O activation determining operation to determine whether or not an I/O activation, which is an instruction for executing a chain of software commands, is present;



initializing a flag indicating a condition in which a seek command is executed prior to execution of said I/O activation;

carrying out a fetch/decode operation of a software command according to determined results of said I/O activation determining operation; and

executing an actual software command decoded by said fetch/decode operation.

5,307,490

METHOD AND SYSTEM FOR IMPLEMENTING REMOTE PROCEDURE CALLS IN A DISTRIBUTED COMPUTER SYSTEM

Thomas J. Davidson, and Michael T. Kelley, both of Austin, Tex., assignors to Tandem Computers, Inc., Cupertino, Calif.

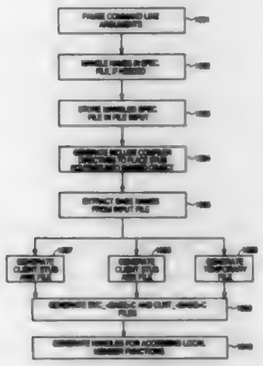
Filed Aug. 28, 1992, Ser. No. 938,102

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—650 **20 Claims**

MICROFICHE APPENDIX INCLUDED

(247 Microfiche, 4 Pages)



1. A structure for sharing data objects in application programs of a distributed computer system, said distributed computer system comprising first and second computers, said structure comprising:

a first application level interface, in said first computer, to a first remote procedure call mechanism;

a second application level interface, in said second computer, to a second remote procedure call mechanism;

means, in said first and second computers, for coupling said first and said second remote procedure call mechanisms, for transporting data between said first and second computers;

first means, coupled to said first application level interface, for providing a data structure representing a base class of sharable objects, each sharable object being accessible by processes in said first and second computers;

second means, coupled to said second application level interface, for providing said data structure representing said base class of sharable objects;

first means, coupled to said first application level interface, for providing data structures representing a plurality of classes of sharable objects each derived, in accordance with a hierarchy of classes, from said base class, each sharable object in each of said plurality of classes of sharable objects being accessible by processes in said first and second computers;

second means, coupled to said second application level interface, for providing said data structures representing said plurality of classes of sharable objects;

first means, in said first computer, for constructing an inheritance tree rooted in a data structure representing said base class, said inheritance tree having data structures representing relationships among said classes of sharable objects and said base class, in accordance with said hierarchy of classes;

second means, in said second computer, for constructing said inheritance tree in said second computer;

first means, in said first computer, for traversing said inheritance tree to construct a data structure representing a relationship between a first object and a second object in said first computer, said first object being specified in a machine-independent format by a process in said second computer via said first and second remote procedure call mechanisms; and

second means, in said second computer, for traversing said inheritance tree to construct a data structure representing a relationship between a first object and a second object in said second computer, said first object being specified by a process in said first computer, via said first and second remote procedure call mechanisms.

5,307,491

LAYERED SCSI DEVICE DRIVER WITH ERROR HANDLING CIRCUIT PROVIDING SENSE DATA FROM DEVICE DIRECTLY TO THE DRIVER ON THE OCCURRENCE OF AN ERROR

Dan Trotter Feriozi, Pompano Beach, and Bharat Khatri, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1991, Ser. No. 654,441

Int. Cl.[5] G06F *13/00, 11/00*

U.S. Cl. 395—700 **4 Claims**

1. A data processing system comprising:

at least one SCSI device of a type within a predetermined SCSI device-class;

a SCSI adapter connected to control said SCSI device, said adapter being operable upon receiving a subsystem control block (SCB) to access said device, said SCB containing information affording access to said device and including an access command;

a read only memory for storing a SCSI advanced basic I/O system (ABIOS) program, said SCSI ABIOS program being operable to control access to said device in response to receiving an ABIOS request block, which includes said SCB;

a main memory for storing a multitasking operating system, and at least one application program;

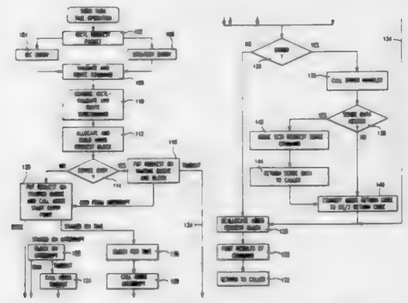
a processor for executing said application program and operating said data processing system under control of said operating system whereby said operating system creates a system request packet for accessing said SCSI device in response to receiving an I/O request from said application program;

a device driver system functionally layered between said operating system and said SCSI ABIOS program for translating said system request packet from said operating system into said SCB, said device driver system comprising a plurality of SCSI device class driver (SDCD) means each providing driver functions common to a different class of SCSI devices, and a SCSI generic device driver (SGDD) means providing driver functions used in common by all of said SDCD means;

said SDCD means being functionally layered beneath said operating system and communicating therewith through a first interface through which said system request packet is transmitted by said operating system, said SDCD means comprising

first means for constructing said SCB and a first request block in response to receiving said system request packet from said operating system;

said SGDD means being functionally layered between said SDCD means and said SCSI ABIOS program, said SGDD means communicating with said SDCD means by a second interface through which said first request block



is passed, said SGDD means communicating with said SCSI ABIOS program through a third interface, said SGDD means comprising

second means for constructing an ABIOS request block in response to receiving said first request block from said SDCD means, and

third means for calling said SCSI ABIOS program and passing said ABIOS request block through said third interface to said SCSI ABIOS program;

said SCSI ABIOS program being operative to transmit said SCB to said SCSI adapter for accessing said SCSI device and to generate and transmit to said SGDD means, a first return code when said SCSI device is successfully accessed and a second return code when a error occurs while accessing said SCSI device, which error is accompanied by sense data being generated by said SCSI device indicating the nature of said error; and

said SGDD means further comprising fourth means for automatically furnishing sense data directly from said SCSI device to said SDCD means in response to said SGDD means receiving said second return code, wherein said fourth means comprises:

fifth means for determining that sense data is needed;

sixth means for requesting said SCSI device to furnish said sense data directly to said SDCD means; and

seventh means for notifying said SDCD means that valid sense data is available.

5,307,492

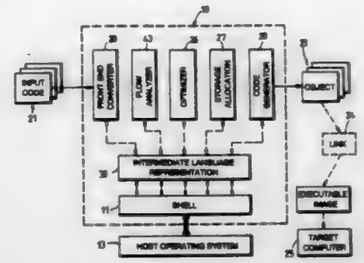
MAPPING ASSEMBLY LANGUAGE ARGUMENT LIST REFERENCES IN TRANSLATING CODE FOR DIFFERENT MACHINE ARCHITECTURES

Thomas R. Benson, Hollis, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 7, 1991, Ser. No. 666,085

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—700 **16 Claims**



1. A method executed by a computer for translating first computer code written for a first computer architecture to second computer code for a second computer architecture, wherein said first computer architecture uses a stack referenced by an argument pointer to pass arguments in procedure calls, and wherein said second computer architecture uses registers to pass arguments in procedure calls, comprising the steps of:

accessing said first computer code and converting it to generate a flow graph in an intermediate language from said first computer code, the flow graph being composed of blocks, and the blocks being composed of intermediate-language elements, where each element represents a single expression in said code, and where each block represents a sequence of one or more elements;

tracing said elements by sequentially examining said elements to find a first element corresponding to a memory reference defined by said argument pointer and an offset to an argument,

changing said offset in said first element to an index giving the number of said argument,

changing said memory reference of said first element to a register reference;

compiling said flow graph by accessing said elements and generating said second computer code to produce object code for said second computer architecture.

5,307,493

"C" PROGRAM SOURCE BLOCKER

Delmar J. Gusenius, 3743 W. Yorkshire Dr., Glendale, Ariz. 85308

Continuation of Ser. No. 793,228, Nov. 8, 1991, abandoned, which is a continuation of Ser. No. 328,650, Mar. 27, 1989, abandoned. This application Sep. 10, 1992, Ser. No. 943,104

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—700 **4 Claims**

1. A method for annotating a computer program having nested blocks of source code, with each block of source code of the program to be annotated including one or more lines of the source code, each line of the source code having an end and a right margin, the end of a line of the source code and its right margin defining a white space therebetween, the right margins of the lines of the source code being aligned vertically; and each block of the source code of the program to be annotated having a beginning and an ending, said program to be annotated being written in a computer programming language which includes characters, with the beginning of each block of source code to be annotated being identified by a first unique character and the ending of each block of source code being

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identified by a second unique character, said method being executed by a digital computer system controlled by a stored program; said method comprising the digital computer system under the control of said stored program performing the steps of:

A) appending a special tabbing character and an outbound arrow within the white space of each line of the source code which includes one of said first unique characters, and appending the special tabbing character and an inbound arrow within the white space of each line of the source code listing which includes one of said second unique characters, a line of the source code to which an arrow is appended in Step A), hereafter identified as an arrowed line; and appending neither a special tabbing character nor an inbound or an outboard arrow to a line of the source code listing which includes both of said unique characters, nor to a line of the source that does not contain either one of said first or second unique characters; a line of the source code to which neither a special tabbing character nor an arrow is appended in step A), hereafter being identified as an intermediate line;

B) moving the special tabbing characters and inbound and outbound arrows of the arrowed lines into vertical alignment;

C) appending a depth number within said white space of each arrowed line of the source code adjacent is arrow, and vertically aligning said depth numbers, the value of each depth number being determined as follows;

1) the first arrowed line having an outbound arrow being assigned a depth number of one;



2) the depth number of an arrowed line having an outbound arrow which is below an arrowed line having an outbound arrow being assigned the depth number of the first arrowed line having an outbound arrow above it, incremented by one;

3) the depth number of an arrowed line having an inbound arrow which is below an arrowed line having an outbound arrow being assigned the depth number of the first arrowed line having an outbound arrow above it;

4) the depth number of an arrowed line having an inbound arrow which is below an arrowed line having an inbound arrow being assigned the depth number of the first arrowed line having an inbound arrow above it, decremented by one; or

5) the depth number of an arrowed line having an outbound arrow which is below an arrowed line having an inbound arrow being assigned the depth number of the first arrowed line having an inbound arrow above it,

D) examining each line of said source code listing and appending uniformly spaced apart vertical line segment characters to each arrowed line beginning at the right margin of said line, the number of vertical line segments appended to each such arrowed line equaling the depth number appended thereto in Step C); each intermediate line below an arrowed line having an outbound arrow, having appended thereto, beginning at the right margin thereof, the number of vertical line segments appended to the first arrowed line having an outbound arrow thereabove; and each intermediate line of the source code listing below an arrowed line having an inbound arrow, having appended thereto, beginning at the right margin thereof, the number of vertical lines segments appended to the first arrowed line having an inbound arrow immediately thereabove decremented by one;

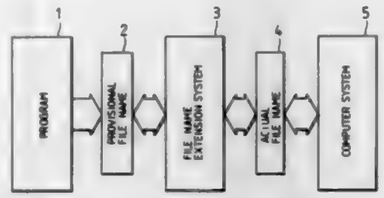
E) appending horizontal line segment characters between the depth number of an arrowed line and the nearest vertical line segment character appended to said line in step D).

5,307,494

FILE NAME LENGTH AUGMENTATION METHOD

Kazuki Yasumatsu, and Toshihide Satoh, both of Tokyo, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 739,720, Jul. 30, 1991, abandoned, which is a continuation of Ser. No. 228,650, Aug. 5, 1988, abandoned. This application Feb. 26, 1993, Ser. No. 26,193
Claims priority, application Japan, Aug. 5, 1987, 62-197221
Int. Cl.[5] G06F *7/10*
U.S. Cl. 395—600 **2 Claims**



1. A file name length augmentation and file accessing computer system having a basic system and file name augmentation means, wherein said basic system includes processing means for performing processes which include processes of both creating and accessing a file with respect to a file name in accordance with a plurality of instructions that contain the file name, and a management means for managing the created file through use of a file name management table containing the file name, said file name augmentation means comprising:

converting means for converting a provisional file name having a number of characters exceeding a limit value into an actual file name having a number of characters less than or equal to the limit value by calculating a hash value and using the hash value as part of the actual file name;

first requirement means for supplying to said processing means instructions to create a new file having the actual file name converted by said converting means and instructions to write the provisional file name as initial data in the new file when the new file is created;

second requirement means for supplying access instructions including the actual file name converted by said converting means to said processing means when the new file is to be accessed; and

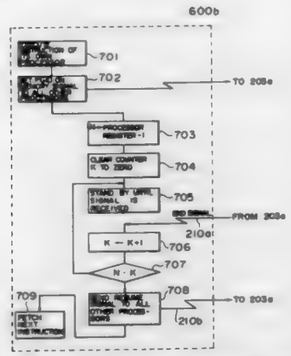
determination means for determining a desired actual file name to be accessed by comparing a requested provisional file name with a provisional file name in a file having a particular actual file name, said particular actual file name having been obtained by supplying to said processing means the access instructions from the second requirement means including the particular actual file name converted from the requested provisional file name by said converting means, in accordance with the file name management table associated with said management means, and supplying the desired actual name to be accessed to the process means when the new file is to be accessed.

5,307,495

MULTIPROCESSOR SYSTEM STATICALLY DIVIDING PROCESSORS INTO GROUPS ALLOWING PROCESSOR OF SELECTED GROUP TO SEND TASK REQUESTS ONLY TO PROCESSORS OF SELECTED GROUP

Satoshi Seino, Fukushima; Hidenori Umeno, Kanagawa; Kiyoshi Ogawa, Yokohama, and Katsumi Takeda, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 260,783, Oct. 21, 1988, abandoned. This application Jul. 29, 1991, Ser. No. 735,674
Claims priority, application Japan, Oct. 23, 1987, 62-266355
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—650 **36 Claims**



1. In a multiprocessor system having a plurality of processors which are tightly coupled to each other and a main storage shared by the processors, a method for executing an instruction requiring synchronization among said processors, said method comprising the steps of:

statically providing to every one of the plurality of processors, regardless of tasks to be processed, group identification information for grouping the plurality of processors into a plurality of groups in accordance with a desired configuration condition, each of the groups of processors being provided with the same group identification information comprising at least one, wherein at least one of the groups comprises at least two processors processor;

storing parameter information related to an instruction originally requiring synchronization among the plurality of processors in the main storage;

sending request information for synchronous execution of the instruction from a processor of a particular group of said plurality of processors, serving as an instruction issuing processor, to receiving processors of said particular group of the plurality of processors when said particular group processes one of the tasks, said request information including group identification information of said particular group;

comparing, in each of said receiving processors, the group identification information provided to each of said receiving processors to the group identification information included in the sent request information;

reading out the parameter information from the main storage to execute the instruction in accordance with the read out parameter information in each processor of said particular group of said receiving processors, in which coincidence was found between group identification information provided to each of said receiving processors and group identification included in the sent request information according to said comparing step;

invalidating the sent request information in each of said receiving processors except for processors included in said particular group of processors for which the instruction was intended;

generating end information in each processor of said particular group of processors when the processor completes processing of the instruction; and

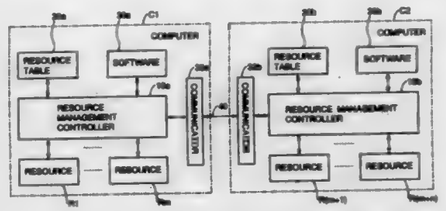
waiting, in said instruction issuing processor, for the end information from each processor of said particular group having processed the instruction, except for said instruction issuing processor, to detect termination of the synchronous execution of the instruction.

5,307,496

MULTIPROCESSOR COMPUTING APPARATUS FOR UTILIZING RESOURCES

Akira Ichinose, Tokyo; Yoshinori Wakimoto, Ichikawa, and Mitsuru Yanagisawa, Narashino, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Kawasaki Steel Systems R&D Corporation, Tokyo, both of Japan

Filed Dec. 22, 1992, Ser. No. 994,887
Claims priority, application Japan, Dec. 24, 1991, 3-356172
Int. Cl.[5] G06F *13/10*
U.S. Cl. 395—650 **9 Claims**



1. A multiprocessor computing apparatus comprising a plurality of computers, each computer comprising:

a processor capable of executing an application program, the application program using at least one resource, the application program generating requests for resources;

communication means for communicating with other ones of the plurality of computers, wherein the processors of the plurality of computers operate the respective communication means to place the plurality of computers into a daisy chain configuration, the daisy chain configuration comprising linking the communication means of each computer with at least one of the communication means of a preceding computer and the communication means of a succeeding computer, wherein the resource request passes from a request originating computer to subsequent computers serially in a first direction;

a resource table listing resources available in the computer;

first memory means for storing said resource table;

resource supply judging means for determining, in response to a resource request, whether the computer is capable of supplying the requested resource based on the available resources listed in the resource table, the request received from one of the preceding computer and the application program;

resource supply means for allocating the requested resource when the resource supply judging means determines that the computer is capable of supplying the requested resource; and

resource request transmission means for transmitting said resource request to the succeeding computer in the daisy chain configuration when the resource supply judging means determines that the computer is unable to supply the requested resource.

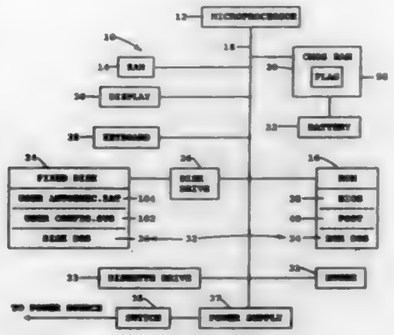
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5,307,497

DISK OPERATING SYSTEM LOADABLE FROM READ ONLY MEMORY USING INSTALLABLE FILE SYSTEM INTERFACE

Barry A. Feigenbaum, Boca Raton, Fla., and Rodney P. Springhetti, Toronto, Canada, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 25, 1990, Ser. No. 543,274
Int. Cl.[5] G06F 9/445, 9/44
U.S. Cl. 395—700 **17 Claims**



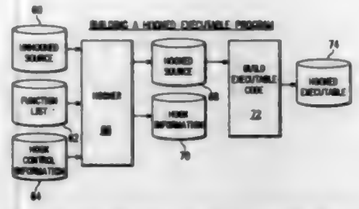
1. A personal computer comprising:
a disk drive for storing files in clusters of sectors, said disk drive haivng a disk based file system that comprises a file allocation table (FAT) and directory means for locating and accessing said files;
a microprocessor that operates in a real mode and in a protected mode;
a memory system comprising a random access memory (RAM), a first read only memory (ROM), and a second ROM, said memory system having a memory address space including a first region, which is accessible when said microprocessor operates in either one of said modes, and a second region which is accessible only when said microprocessor operates in said protected mode;
said first ROM and said RAM are located in said first region, and said second ROM is located in said second region, of said memory address space;
said first ROM storing a power-on self test (POST) program;
said second ROM storing a ROM disk operating system (DOS) comprising
DOS kernal programs for providing minimum operating system support for operating said personal computer, said DOS kernal programs further comprising initialization code for setting up said personal computer and a RAM loader program for loading programs from said second ROM into said RAM,
additional DOS programs for providing, in conjunction with said DOS kernel programs, full operating system support for operation of said personal computer, and
a bootstrap record containing information for accessing said DOS programs in said second ROM, and a ROM-BOOT program for loading said DOS kernel; and
boot-up means, including said microprocessor, for booting said personal computer in response to said personal computer being powered on, said boot-up means being operative to execute said POST program to thereby test said personal computer, to load said bootstrap record from said second ROM into said RAM, to execute said ROM-BOOT program and load said DOS kernel programs into said RAM from said second ROM, and to execute said initialization code to thereby set up said personal computer for further operation under said ROM DOS.

5,307,498

AUTOMATED METHOD FOR ADDING HOOKS TO SOFTWARE

Ivan R. Eisen, Flower Mound; Stephen W. Murphrey, Highland Village, both of Tex., and Don Zagorski, Kent, Wash., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 986,165
Int. Cl.[5] G06F 9/00
U.S. Cl. 395—700 **2 Claims**



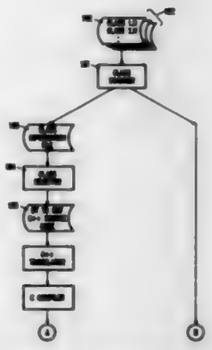
2. A computer implemented method of capturing data generated by a computer running a computer program thereon for evaluation by an evaluator, comprising the steps of:
loading a list of predetermined functions of the program which require data evaluation into the computer;
automatically renaming each of said predetermined functions from a first naming statement to a second naming statement;
automatically writing subsequent to each of said renamed functions a hooking function to hook each of said renamed functions, said hooking function comprising at least:
a function statement comprising said first naming statement,
a statement to call said renamed function, and
a statement to exit said renamed function and return data; and
capturing for display and evaluation by the evaluator the data generated by the computer upon running the program containing said renamed functions and said hooking functions.

5,307,499

INTERPRETIVE OBJECT-ORIENTED FACILITY WHICH CAN ACCESS PRE-COMPILED CLASSES

Feng K. Yin, Singapore, Singapore, assignor to Singapore Computer Systems Limited, Singapore

Continuation of Ser. No. 621,748, Nov. 30, 1990. This application May 20, 1993, Ser. No. 65,457
Int. Cl.[5] G06F 9/44
U.S. Cl. 395—700 **30 Claims**



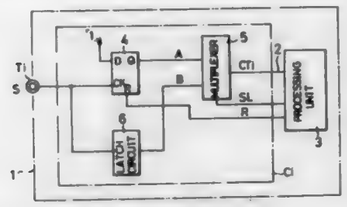
1. A method implemented by a computer system to cause said computer system to execute an object-oriented source code of an object-oriented language, comprising the steps of:
writing a plurality of classes using object-oriented source code of said object-oriented language;
scanning said class library containing said compiled classes to determine class definition information;
using said class definition information to produce object manipulation functions that allow said computer system to access the methods and attributes of said compiled classes to manipulate the objects of said compiled classes;
using said class definition information to produce dispatch tables containing addresses to said object manipulation functions;
interpreting a source code written using said object-oriented language, said source code including statements seeking access to one or more of said compiled classes within said class library; and
invoking previously written object entry functions which provide entry into said dispatch tables to activate said object manipulation functions during said step of said computer system interpreting said source code, at references within said source code to said compiled classes, thereby causing said computer system to use said object-oriented source code to access said compiled classes.

5,307,500

INTEGRATED CIRCUIT DEVICE WITH STAND-BY CANCELLATION

Yukio Oshiba, Soraku, and Yasushi Okino, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 23, 1991, Ser. No. 644,334
Claims priority, application Japan, Feb. 30, 1990, 1-21438
Int. Cl.[5] G06F 3/02
U.S. Cl. 395—800 **3 Claims**



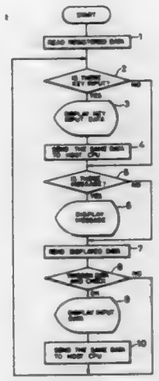
1. An integrated circuit device comprising:
a processing unit which selectively enters a stand-by mode, the processing unit having a plurality of processing unit terminals
for sending a turning off signal to each of a plurality of control signal generating circuits;
for receiving a pulse-like cancellation control signal when the stand-by mode of the processing unit is to be canceled; and
for receiving data from at least one of said plurality of control signal generating circuits;
a plurality of device input terminals each for receiving a unique cancellation request signal requesting cancellation of the stand-by mode;
the plurality of control signal generating circuits each having an input connected to a corresponding one of said device input terminals and an output connected to a corresponding one of said processing unit input terminals of said processing unit, each of said control signal generating circuits having
means for, on receiving a cancellation request signal, providing a cancellation control signal for the processing unit to cancel the stand-by mode;
means for turning off said cancellation control signal in response to said turning off signal from said processing unit;
means for sending said cancellation control signal to said processing unit;
means for receiving data from one of said device input terminals; and
means for sending said data to said processing unit;
wherein said processing unit determines which of a plurality of operations are to be performed thereby after cancellation of the stand-by mode in accordance with which of its processing unit input terminals receives the cancellation request signal;
wherein at least one of said control signal generating circuits includes a multivibrator having a clock terminal connected to a corresponding device input terminal, a latch circuit having an input connected to said corresponding device input terminal, and a multiplexer for connecting a selected one of:
(1) an output of said multivibrator;
(2) an output of said latch circuit to a corresponding one of the processing unit input terminals.

5,307,501

INSURING DATA SECURITY AND REQUIRING ONLY THE MINIMUM NECESSARY INPUT OPERATIONS

Kazuo Yuge, Yachiyo, Japan, assignor to Hitachi Keiyo Engineering Co., Ltd., Narashino and Hitachi, Ltd., Tokyo, both of Japan

Continuation of Ser. No. 423,630, Oct. 13, 1989, abandoned, which is a continuation of Ser. No. 37,845, Apr. 13, 1987, abandoned. This application Jul. 30, 1992, Ser. No. 921,387
Claims priority, application Japan, Apr. 11, 1986, 61-82115
Int. Cl.[5] G06F 13/00
U.S. Cl. 395—800 **9 Claims**



1. A data processor comprising:
an input device for inputting information;
a central processing unit for executing predetermined processes in accordance with said information input by said input device and generating messages related to said predetermined processes;
a display memory for storing display data corresponding to said messages generated by said central processing unit;
a display device for displaying said display data stored in said display memory;
input data memory means for storing trigger data and input data corresponding to said trigger data, said input data corresponding to said predetermined processes performed by said central processing unit and said trigger data includes position data indicative of a specific position on said display device and data to be displayed at said specific position;
judgements means for judging whether display data corresponding to said messages stored in said display memory

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satisfies a predetermined relationship to said trigger data; and

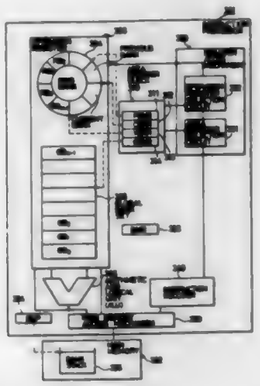
output means for sending input data corresponding to said trigger data from said input data memory means to said central processing unit when said predetermined relationship is judged to be satisfied by a judgement operation performed by said judgement means.

5,307,502

DATA PROCESSING SYSTEM HAVING MULTIPLE REGISTER MANAGEMENT FOR CALL AND RETURN OPERATIONS

Tan Watanabe, Yokohama; Keiichi Kurakazu, Tokyo; Yuge Kashiwagi, Tokyo; Keisuke Toyama, Tokyo, and Tohru Nojiri, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 37,843, Apr. 13, 1987, Pat. No. 5,214,786. This application Sep. 17, 1992, Ser. No. 945,930
Claims priority, application Japan, Apr. 14, 1986, 61-85442
Int. Cl.[5] G06F *9/40*
U.S. Cl. 395—800 **4 Claims**



1. A processor system, comprising:

first means for decoding instructions of a program, wherein said instructions have an operation code and an operand part including a register designating part, and wherein said program contains a plurality of subprograms;

a plurality of first registers which are allocated to said program, one first group of said first registers being employed in the execution of said plurality of programs, and at least one second group of said first registers forming a plurality of multi-register areas, each of which is selectively allocated to said subprograms;

a second register storing information which identifies one of said multi-register areas allocated to one of said subprograms and the content of which is controlled by the operation code of instructions decoded by said first means, wherein one of the registers in said multi-register area identified by said second register is specified by said register designating part of an instruction; and

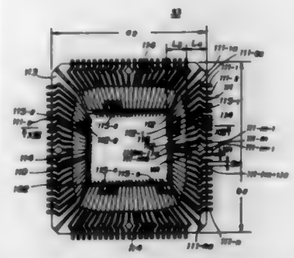
processing means for processing instructions according to decoded operation codes and the content of registers in the multi-register area identified by said second register and specified by decoded register designating parts, wherein the operation codes of some instructions indicate that the content of said second register is advanced or retracted and the operation codes of other instructions indicate that a subprogram to be allocated to a multi-register area is to be called from a current subprogram without advancement of the contents of said second register or that the current subprogram is to be returned to a previous subprogram without retraction of the contents of said second register.

5,307,503

SHIELDED CIRCUIT MODULE WITH TERMINAL PINS ARRAYED ON FOUR SIDES FOR CONNECTION TO A COMPUTER BOARD

Isao Okada; Yoshiyuki Kato, both of Atsugi; Koji Ide; Toshihiko Yasuma, both of Fujisawa, all of Japan; Richard G. Geiger, Saratoga; Akio Tanaka, Burlingame, both of Calif.; Ryuichi Sada, Yamato, and Mikito Baba, Yokohama, both of Japan, assignors to Mitsumi Electric Co., Ltd., Japan

Filed Jun. 27, 1990, Ser. No. 544,605
Claims priority, application Japan, Jul. 3, 1989, 1-171715
Int. Cl.[5] G06F *1/16, 1/18*
U.S. Cl. 395—800 **4 Claims**



1. A circuit module connectable to a board in a computer comprising:

at least one semiconductor part;

a substrate having a rectangular shape, said semiconductor part being mounted on said substrate;

terminals arranged on an outer periphery of said substrate along four sides of said substrate;

a case, having a case portion and a lid portion, for accommodating and shielding said substrate, one of said case portion and said lid portion having elongated openings for exposing said terminals; and wherein:

said semiconductor part includes a central processing unit, a memory circuit part, and a control circuit part, said semiconductor part being mounted on at least one of top and bottom surfaces of said substrate;

said semiconductor part includes a semiconductor chip, leads arranged radially around said semiconductor chip, wires connecting said semiconductor chip and said leads, and a synthetic resin package portion for sealing said semiconductor chip, said leads and said wires substantially within the periphery thereof, said leads and said wires having approximately the same length, said lead having a total length extending substantially within the periphery of said package portion and an approximately constant width over said total length thereof, the leads located at the centers of the sides of said semiconductor chip having diamond-shaped portions, respectively, and the other leads having V-shaped portions, respectively, said V-shaped portions being formed with bending angles so as to bend in conformity with bent outlines of said diamond-shaped portions, respectively, such that said bending angles of said V-shaped portions are substantially identical, said leads being coupled to said terminals;

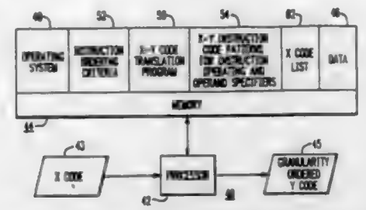
said terminals comprise fixed terminal pins projecting from one of the top and bottom surfaces of said substrate and extending generally in one direction, so that said circuit module is electrically and mechanically connectable to the board of the computer by said fixed terminal pins.

5,307,504

SYSTEM AND METHOD FOR PRESERVING INSTRUCTION GRANULARITY WHEN TRANSLATING PROGRAM CODE FROM A COMPUTER HAVING A FIRST ARCHITECTURE TO A COMPUTER HAVING A SECOND REDUCED ARCHITECTURE DURING THE OCCURRENCE OF INTERRUPTS DUE TO ASYNCHRONOUS EVENTS

Scott G. Robinson, Tyngsboro, and Richard L. Sites, Boylston, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 7, 1991, Ser. No. 666,025
Int. Cl.[5] G06F *5/00*
U.S. Cl. 395—800 **45 Claims**



1. A method for translating a first program code to a second program code and for executing the second program code while preserving instruction granularity of the first program code when processing interrupts in response to asynchronous events, the first program code being executable on a computer having a first architecture adapted to a first instruction set and the second program code being executable on a computer having a memory and register state and a second architecture adapted to a second instruction set that is reduced relative to the first instruction set, said method comprising the steps of:

(a) operating a first computer to translate each first code instruction to a corresponding granular sequence of second code instructions wherein said second code instructions include at least two groups of said second code instructions, said two groups including a first group and a second group, said first group including second code instructions other than state update instructions which can be aborted during execution without risking a state error, said second group including all state update instructions, and wherein every second group instruction follows every first group instruction in each granular sequence of second code instructions;

(b) operating a second computer system adapted with the second architecture to execute the second program code; and in response to each asynchronous event during second code execution, interrupting execution of a current granular second code instruction sequence in order to perform asynchronous event processing for said each asynchronous event by

(i) aborting for a retry said current second code granular instruction sequence when said execution of said current granular second code instruction sequence is interrupted either before every first group instruction in said current granular second code instruction sequence has been executed, or, after all first group instructions in said current granular second code instruction sequence have been executed but before execution of any second group instruction that is in said current granular second code instruction sequence and is subject to a possible exception; and

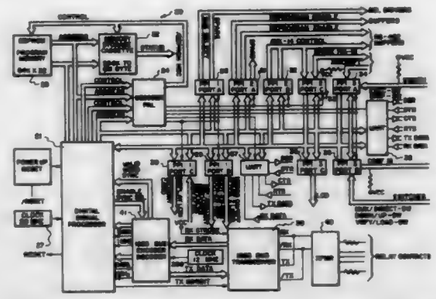
(ii) delaying said asynchronous event processing for said each asynchronous event, in order to execute any unexecuted second code instructions in said current granular second code instruction sequence, when said execution of said current granular second code instruction sequence is interrupted after execution of all state update instructions that are in said current granular second code instruction sequence, that are in said second group, and that are subject to a possible exception.

5,307,505

RAPID REPROGRAMMING TERMINAL

Christian L. Houlberg, Ventura, Calif., and George B. Brown, Stafford, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1992, Ser. No. 878,704
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 **14 Claims**



1. An apparatus for reprogramming a plurality of remote terminals and a plurality of bus controllers connected to a first communications bus, said first communications bus being a command/response time division multiplex data bus, said reprogramming apparatus being adapted to interface with a second communications bus, said reprogramming apparatus comprising:

an integrated circuit memory card;

first transceiver means for receiving data from said second communications bus or transmitting data to said second communications bus, said first transceiver means formatting the data received thereby to a digital format, the data received from said second communications bus being used to reprogram said remote terminals and said bus controllers connected to said first communications bus;

digital signal processor means for providing a plurality of data transfer control signals, a plurality of address signals, a plurality of enable signals and a plurality of data bytes;

said digital signal processor means having direct access to said integrated circuit memory card such that data to or from said second communications bus is transferred between said integrated circuit memory card and said second communications bus via said first transceiver means and said digital signal processor means and data to or from said first communications bus is transferred between said integrated circuit memory card and said first communications bus via said digital signal processor means;

programmable array logic means for receiving said plurality of data transfer control signals and for decoding said data transfer control signals so as to control the transfer of said data between said second communications bus and said integrated circuit memory card, said integrated circuit memory card being adapted to store said data therein;

said programmable array logic means upon decoding said data transfer control signals generating at least one read signal and at least one write signal;

memory means electrically coupled to said digital signal processor means, said memory means containing software for said digital signal processor means, said software controlling the handling and interpretation of data to and from said first and second communications buses by enabling the operation of said digital signal processor means to accommodate the use of said digital signal processor means with the bus standards, data protocols and formats of said first and second communications buses;

programmable interface means for receiving said address

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signals, said enable signals and said data bytes from said digital signal processor means and for receiving said read signal and said write signal from said programmable array logic means;

said programmable interface means in response to said address signals, said enable signals, said data bytes and said read and write signals selectively enabling either one of said remote terminals or one of said bus controllers for reprogramming so as to allow said digital signal processor means to control the transfer of reprogramming data from said integrated circuit memory card to said remote terminal or said bus controller being reprogrammed; and

means for providing an interface between said digital signal processor means and said first communications bus, said interface means being adapted to format the reprogramming data being supplied to said remote terminal or said bus controller being reprogrammed in accordance with the bus standards, data protocols and formats of said first communications bus.

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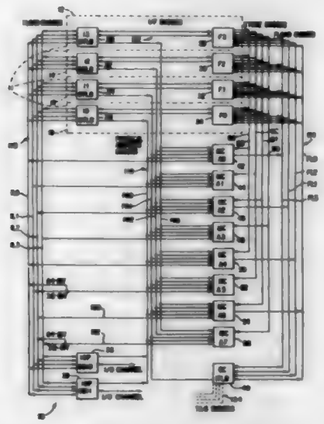
HIGH BANDWIDTH MULTIPLE COMPUTER BUS APPARATUS

Robert P. Colwell; John O'Donnell; David B. Papworth, all of Guilford, and Paul K. Rodman, Madison, all of Conn., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 517,424, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 40,985, Apr. 20, 1987, abandoned. This application Sep. 16, 1992, Ser. No. 945,571

Int. Cl.[5] G06F *13/40*

U.S. Cl. 395—800 **13 Claims**



1. A parallel data processor, comprising:

a pluraiity of memory controller elements, each element controlling access to at least one bank of memory;

global controller circuitry for controlling processing;

a plurality of central processing unit clusters, each comprising an integer processor and a floating point processor;

a plurality of first communications buses, each being connected, within one of the central processing unit clusters, to an integer processor and a floating point processor for providing communications between the integer processor and the floating point processor, the plurality of first communications buses enabling simultaneous communications of different information between the integer processors and the floating point processors of the plurality of central processing unit clusters;

a plurality of second communications buses, each being connected to the integer processors of the central processing unit clusters and to at least one of the memory controllers and providing communications from such memory controllers to at least one of the integer processor and between the integer processors, the plurality of second communications buses enabling simultaneous communications of different information between the memory controllers and the integer processors and between the integer processors;

a plurality of third communications buses, each being connected to the floating point processors of the central processing unit clusters, to the global controller circuitry, and to at least one of the memory controllers and providing communications from the memory controllers to the floating point processors, from the memory controllers to the global controller circuitry, between the floating point processors, and between the global controller circuitry and the floating point processors, the plurality of third communications buses enabling simultaneous communications of different information between the memory controllers and the floating point processors, between the memory controllers and the global controller circuitry, between the floating point processors, and between the global controller circuitry and the floating point processors;

a plurality of fourth communications buses, each being connected to each of the memory controllers and to at least one of the integer processors and providing communications from the integer processors to the memory controllers, and at least one of the fourth communications buses being connected to the global controller circuitry and providing communications from the global controller circuitry to the memory controllers, the plurality of fourth communications buses enabling simultaneous communications of different information from the integer processors to the memory controllers and from the global controller circuitry to the memory controllers; and

a plurality of fifth communications buses, each being connected to the floating point processors of the central processing unit clusters and to at least one of the memory controllers and providing communications from the floating point processors to the memory controllers, the plurality of fifth communications buses enabling simultaneous communications of different information from the floating point processors to the memory controllers.

5,307,507

ANTENNA ARRANGEMENT SYSTEM CAPABLE OF REDUCING CO-CHANNEL INTERFERENCE

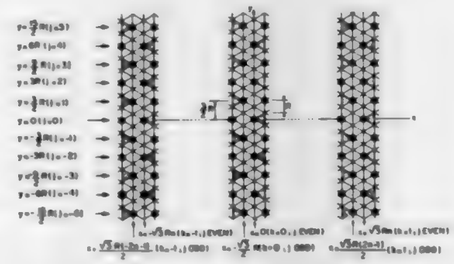
Toshihito Kanai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1990, Ser. No. 636,864

Claims priority, application Japan, Dec. 28, 1989, 1-340305; Dec. 28, 1989, 1-340307; Apr. 27, 1990, 2-114584; Apr. 27, 1990, 2-114585; Jun. 11, 1990, 2-152410

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—33.1 **3 Claims**



1. An antenna arrangement system for use in a cellular system which comprises a plurality of radio base stations dispersed in a service area which is defined by an orthogonal coordinate system having an x-axis extended from a negative direction towards a positive direction and a y-axis which is orthogonal to the x-axis and which is also extended from a negative direction towards a positive direction, the radio base stations having cells approximately specified by regular hexagonal configurations, respectively, and being located at x- and y-axis positions which are specified by i, j, and r, where i and j are integers determined along the x- and the y-axes, respectively, and R is representative of a length of each side of the regular hexagonal configurations, the x- and the y-axis positions of the respective radio base stations being given by:

$$x = \sqrt{3}\,Ri \text{ (when } j \text{ is an even number) or}$$

$$\sqrt{3}\,R(2i-1)/2 \text{ (when } j \text{ is an odd number), and}$$

$$y = 3Rj/2,$$

each of said radio base stations having a set of six directional antennae which have different frequency channels assigned thereto and including a first antenna which has directivity directed towards an angle of 0 degrees with respect to the positive direction of a selected one of the x- and y-axes and a second antenna which has directivity directed towards an angle of 180 degrees with respect to the positive direction of the selected one of the x- and the y-axes,

the plurality of the radio base stations including first and second selected base stations which have sectors determined by the first and the second antennae directed towards the angles of 0 and 180 degrees opposite to each other, respectively, and which have a common one of the frequency channels that is assigned to the sectors which are determined by the first and the second antennae and which are laid in directions of the angles of 0 and 180 degrees relative to the selected one of the x- and y-axes,

the first and the second selected base stations being located in said coordinate system at the first and the second coordinate positions specified by an even number and an odd number of j, respectively, the selected one of the x- and the y-axes being the x-axis,

the first coordinate positions being given by ($\sqrt{3}$ RnK, 3Rj/2) where j takes an even number; n, a natural number; and k, an integer, while the second coordinate positions are given by $\sqrt{3}$ R(2nk−1)/2, 3Rj/2 where j takes an odd number.

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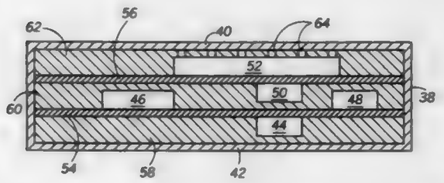
SHOCK ISOLATION FOR SELECTIVE CALL RECEIVERS

Thomas J. Rollins, Boca Raton; Charles W. Mooney, Lake Worth, and Irving H. Holden, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 13, 1991, Ser. No. 698,880

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—38.1 **6 Claims**



1. A selective call receiver of the type which alerts the user of said receiver that a transmitted address matches an address stored in said receiver, comprising:

a housing;

a printed circuit board within said housing;

electronic circuitry for receiving and decoding said transmitted address to determine if said transmitted address matches the stored address, at least a portion of said circuitry mounted on said printed circuit board;

alert means for generating an alert when transmitted address matched the stored address; and

shock isolation means within said housing for substantially increasing the natural frequency of vibration of said printed circuit board and said housing, wherein said natural frequency of vibration varies across said printed circuit board and said housing, said shock isolation means having at least one component receiving aperture for receiving at least one of said portion of electronic circuitry such that said aperture provides isolation between at least one of said portion of electronic circuitry in five planes and at least one other portion of electronic circuitry, said shock isolation means comprising a body of elastomeric material having a damping of at least 25% and a durometer of between 50 and 70.

5,307,509

METHOD FOR THE TRANSMISSION OF DATA AMONG MOBILE BODIES OR AUTONOMOUS VEHICLES

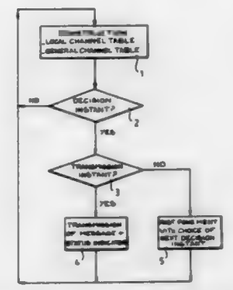
Gilles Michalon, Courbevoie, and Gérard Auger, Champagne sur Oise, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 13, 1991, Ser. No. 791,161

Claims priority, application France, Nov. 14, 1990, 90 14148

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—54.1 **5 Claims**



1. A method for the transmission of data among mobile bodies or autonomous vehicles communicating with one another by radio link on a single radio channel with a limited range of transmission and a recurrence period, T, of transmission, comprising the steps of:

constructing, in a transmitter/receiver of each of the mobile bodies or vehicles, information tables recording changes undergone by the radio channel by memorizing, during consecutive time intervals I of a determined duration dT that are smaller than the recurrence period T, of statuses of the radio channel, selected from a group of the statuses including "in collision", "busy" and "free";

setting fixed transmission instants in each of said transmitter/receivers, said fixed transmission instants being temporarily spaced out at intervals equal to the recurrence period T;

predicting the status of the channel for each of said fixed transmission instants as a function of the status of the channel memorized at an instant preceding said each of said fixed transmission instants with a temporal shift equal to the recurrence period T; and

deciding to transmit at one of said fixed transmission instants if the predicted status of the channel is not a status of collision or to transmit at an instant deferred with respect to said one of said fixed transmission instants if the predicted status of the channel is busy or free.

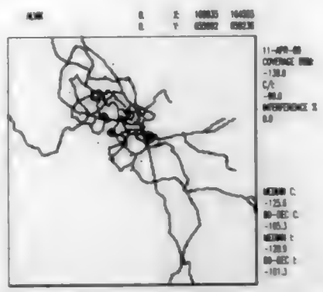
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5,307,510

METHOD FOR DETERMINING THE DEGREE OF COVERAGE IN A MOBILE RADIO SYSTEM

Krister Gunnar, and Ulf Tegth, both of Haninge, Sweden, assignors to Televerket, Farsta, Sweden

Continuation of Ser. No. 591,466, Oct. 1, 1990, abandoned. This application Dec. 24, 1992, Ser. No. 995,552
Claims priority, application Sweden, Sep. 29, 1989, 8903208
Int. Cl.[5] H04B *17/02;* **H04Q** *7/00*
U.S. Cl. 455—67.1 **1 Claim**



1. A method for checking the degree of coverage in a mobile radio system having a plurality of base stations which emit radio signals in associated individual coverage areas and a plurality of mobile stations, said method comprising the steps of:

producing a radio signal at each of said plurality of base stations;

measuring field strengths of the produced radio signals from each of said plurality of base stations along all important traffic routes located within the mobile radio system;

assigning a numerical value to the measured field strength values and relating said measured field strength values to geographical coordinates in the individual coverage areas;

comparing the field strength values from said plurality of base stations for each of said geographical coordinates and determining a highest value of said field strength values and storing said highest value for each of said geographical coordinates;

comparing the highest value stored for each of said geographic coordinates with a predetermined coverage limit value; and

producing a first graphical display image of the field strength values for each of said geographical coordinates of those coordinates which have said stored highest value lower than said predetermined coverage limit value for determining holes in the coverage areas and producing a second graphical display of those coordinates having said stored highest value higher than the predetermined coverage limit value.

5,307,511

ANTI-FALL STRUCTURE FOR BATTERY COVER OF RADIO COMMUNICATION APPARATUS OR SIMILAR APPARATUS

Makoto Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,628
Claims priority, application Japan, Jan. 30, 1991, 3-002638[U]
Int. Cl.[5] H04B *1/08*
U.S. Cl. 455—90 **4 Claims**

1. A structure for preventing a battery cover from coming off a casing of a battery-powered apparatus, comprising:

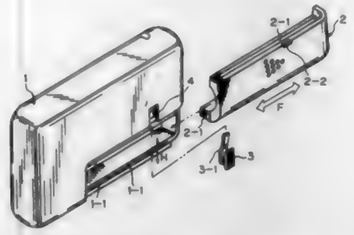
a battery housing section provided on one side of said casing;

a battery cover slidably engageable with said casing for covering said battery housing section;

a notch provided on one side of said battery cover;

a slide notch formed in a portion of said casing which aligns with said notch of said battery cover when said battery cover is fully attached to said casing;

a thumb piece being retained by said slide notch and being slidable, via said slide notch in a direction substantially perpendicular to a direction in which said battery cover is slidable, between a first position where said thumb piece is engaged with said notch of said battery cover and a second position where said thumb piece is disengaged from said notch, said thumb piece including a locking member,



said locking member including a flexible hook portion with a catch at one end of said locking member and lugs at the other end of said locking member, said flexible hook portion aiding in preventing removal of said thumb piece from said slide notch of said casing; and

holding means provided on said casing for holding said thumb piece in each of said first and second positions via said catch of said flexible hook portion,

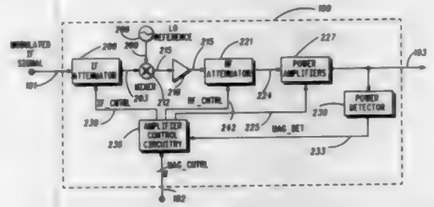
wherein said thumb piece sandwiches said casing and said battery cover.

5,307,512

POWER CONTROL CIRCUITRY FOR ACHIEVING WIDE DYNAMIC RANGE IN A TRANSMITTER

James E. Mitzlaff, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1991, Ser. No. 709,459
Int. Cl.[5] H04B *1/04*
U.S. Cl. 455—126 **28 Claims**



1. Control circuitry for adjusting the level of an output signal comprising:

first means for adjusting a priori the level of a signal having a first frequency to produce an adjusted signal having a first frequency;

means, coupled to said first means for adjusting, for translating said adjusted signal having a first frequency to a translated signal having a second frequency;

second means, coupled to said means for translating, for adjusting a priori the level of said translated signal having a second frequency to produce the adjusted output signal having a second frequency;

means, coupled to said second means for adjusting, for amplifying said adjusted output signal having a second frequency to produce an amplified adjusted output signal having a second frequency;

means, coupled to said means for amplifying, for detecting a magnitude of said amplified adjusted output signal having a second frequency to produce a magnitude detection signal; and

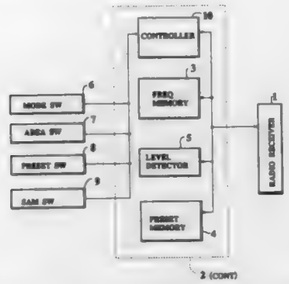
means for controlling said first and second means for adjusting and said means for amplifying based on input from at least said magnitude detection signal and an adjustment control signal.

5,307,513

CHANNEL FREQUENCY STORING METHOD FOR A VEHICLE RADIO

Hiroshi Harada, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 27, 1991, Ser. No. 766,072
Claims priority, application Japan, Sep. 27, 1990, 2-255219
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—186.1 **8 Claims**



1. A method of storing channel frequencies in a vehicle radio receiver in a vehicle, said vehicle radio receiver having a resetable preset memory, said resetable preset memory having channel memory spaces classified for plural broadcasting areas, each of said plural broadcasting areas corresponding to a different geographic area, said method comprising the steps of:

(a) determining in which of said plural broadcasting areas said vehicle is currently travelling;

(b) tuning said radio receiver to a first channel frequency in the current broadcasting area;

(c) checking whether another channel frequency is previously stored for any other broadcasting area in said preset memory;

(d) if said another channel frequency is not stored in any other broadcasting area in said preset memory storing said first channel frequency in first channel memory spaces for all broadcasting areas of said preset memory as a first tuned channel frequency;

(e) if said channel frequency is stored, in any other broadcasting area in said preset memory storing said firs channel frequency at only a first channel memory space for said current broadcasting area in said preset memory as said first tuned channel frequency, without erasing channel frequency data already stored in said preset memory for said any other broadcasting areas in said preset memory; and

(f) repeating above steps (b) to (e) to store plural channel frequencies in plural channel memory spaces for plural broadcasting areas in said preset memory for enabling one-touch channel selection.

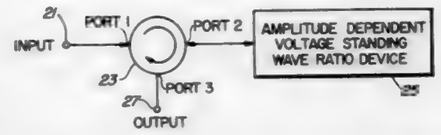
5,307,514

FREQUENCY INDEPENDENT STRONG SIGNAL SUPPRESSOR

André Gagnon, Hull, Canada, assignor to Telemus Electronic Systems Inc., Ottawa, Canada

Filed Aug. 30, 1991, Ser. No. 753,353
Int. Cl.[5] G01S *7/36*
U.S. Cl. 455—281 **20 Claims**

1. A frequency independent strong signal suppressor, comprised of an amplitude dependent voltage standing wave ratio device for receiving and substantially absorbing incident radio frequency signals characterized by amplitudes greater than a predetermined threshold and substantially reflecting signals characterized by amplitudes less than said threshold, and



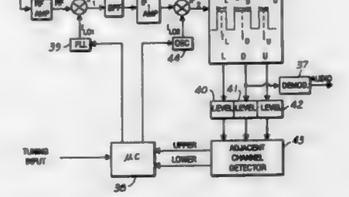
means for extracting said reflected signals for processing by an external signal processing device, such that strong signals are absorbed and thereby suppressed while weak signals are reflected and extracted for processing by said signal processing device.

5,307,515

ADJACENT CHANNEL CONTROLLER FOR RADIO RECEIVER

Yao H. Kuo, Canton, and John F. Kennedy, Garden City, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 5, 1991, Ser. No. 740,172
Int. Cl.[5] H04B *1/14*
U.S. Cl. 455—295 **16 Claims**



1. An adjacent channel detector for a radio broadcast receiver comprising:

tri-band filter means for receiving radio broadcast signals and for tri-band filtering said radio broadcast signals to derive a lower channel signal, a desired channel signal, and an upper channel signal;

tri-band level detecting means coupled to said tri-band filter means for level detecting said lower channel signal, said desired channel signal, and said upper channel signal to produce a lower channel level, a desired channel level, and an upper channel level, respectively; and

comparator means coupled to said tri-band level detecting means for generating a first detection signal when the ratio of said upper channel level to said desired channel level is greater than a first predetermined proportion and the ratio of said lower channel level to said desired channel level is less than a second predetermined proportion, and for generating a second detection signal when the ratio of said lower channel level to said desired channel level is greater than said first predetermined proportion and the ratio of said upper channel level to said desired channel level is less than said second predetermined proportion.

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5,307,516

MAGNETOSTATIC WAVE S/N ENHANCER AND RECEIVING APPARATUS OF FM OR PM SIGNAL USING THE SAME

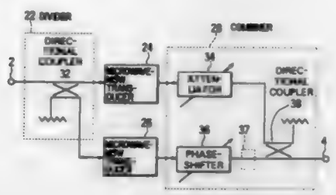
Toshihiro Nomoto, Machida, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 760,070

Claims priority, application Japan, Sep. 14, 1990, 2-242741; Sep. 14, 1990, 2-242742

Int. Cl.[5] H04B *1/26*

U.S. Cl. 455—304 **38 Claims**



38. A method for improving an S/N of an input FM signal or PM signal comprising the steps of:

dividing the input signal into first and second path signals; said input signal containing desired signal components and a noise component, a level of the first path signal noise component is lower than a threshold power level;

saturating said first path signal in frequency-selective saturation based on said threshold power level; and

combining said first path signal in saturation and said second path signal in opposite phase to each other to obtain a difference between the signals.

5,307,517

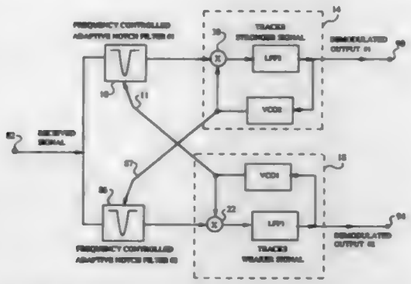
ADAPTIVE NOTCH FILTER FOR FM INTERFERENCE CANCELLATION

David A. Rich, 845 Woodmere Ct., Woodmere, N.Y. 11598

Filed Oct. 17, 1991, Ser. No. 778,501

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—306 **10 Claims**



2. An FM interference cancellation system comprising:

an input signal terminal for receiving an input signal;

first and second adaptive notch filters for filtering said input signal coupled to said input signal terminal, in accordance with respective input control signals, and having respective output terminals, each of said first and second adaptive notch filters comprising:

means for translating said input signal to form a translated input signal in the frequency domain in accordance with said respective input control signal;

means for baseband filtering said translated input signal between DC and a given baseband frequency, and to remove the DC component, to form a baseband filtered signal to remove a band of baseband signal frequencies; and

means for translating said baseband filtered signal in the frequency domain in accordance with said respective input control signal;

a first phase locked loop coupled to said output terminal of said second adaptive notch filter for tracking the frequency of a first FM signal, said first phase locked loop providing an output frequency control signal coupled to said input control signal of said first adaptive notch filter; and

a second phase locked loop coupled to said output terminal of said first adaptive notch filter for tracking the frequency of a second FM signal, said second phase locked loop providing an output frequency control signal coupled to said input control signal of said second adaptive notch filter, said second FM signal being stronger than said first FM signal,

whereby interference caused by said first FM signal to said second FM signal is substantially canceled by said first adaptive notch filter, and interference caused by said second FM signal to said first FM signal is substantially canceled by said second adaptive notch filter.

5,307,518

DOUBLE-BALANCED MIXER

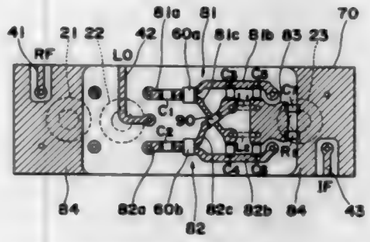
Youji Maeda, Matto; Wataru Takegawa, Komatsu; Yoshikuni Higashikawa, Matto, and Akimasa Matsushima, Kaga, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 463,999, Jan. 12, 1990, abandoned. This application May 29, 1992, Ser. No. 892,729

Claims priority, application Japan, Jan. 13, 1989, 1-007389

Int. Cl.[5] H04B *1/26;* **H03D** *7/14*

U.S. Cl. 455—326 **14 Claims**



1. A double-balanced mixer comprising:

a printed circuit board having opposite first and second surfaces;

circuit means for frequency converting a first signal into a second signal;

said circuit means including first and second twin-diodes each having first, second and third terminal leads and each fixed to said first surface of said printed circuit board, said first twin-diode including first and second diodes formed on a single first semiconductor chip, said second twin-diode including third and fourth diodes formed on a single second semiconductor chip;

first and second conductor patterns disposed on said first surface of said printed circuit board, said first and second conductor patterns being generally symmetrical to each other and each generally defining a Y-shaped pattern having first, second and third legs;

wherein said second legs of said first and second conductor patterns cross each other at a crossing point and are electrically isolated from each other at said crossing point;

wherein said first terminal lead extends from a first side of opposite first and second sides of said first and second twin-diodes and is in contact with said first leg of said first and second conductor patterns, respectively;

wherein said second terminal lead extends from said second side of said opposite first and second sides of said first and second twin-diodes and is in contact with said second leg of said first and second conductor patterns, respectively;

wherein said third terminal lead extends from said second side of said opposite first and second sides of said first and second twin-diodes and is in contact with said third leg of said first and second conductor patterns, respectively;

wherein each of said first and second diodes has first and second poles of respective opposite polarities, and wherein said first pole of said first diode and said second pole of said second diode are connected to said first terminal lead, and wherein said second pole of said first diode is connected to said third terminal lead, and wherein said first pole of said second diode is connected to said second terminal lead;

wherein each of said third and fourth diodes has third and fourth poles of respective opposite polarities, and wherein said third pole of said third diode and said fourth pole of said fourth diode are connected to said first terminal lead, and wherein said fourth pole of said third diode is connected to said second terminal lead, and wherein said third pole of said fourth diode is connected to said third terminal lead; and,

wherein an arranged order of said second and third terminal leads along said second side of said first twin-diode is opposite an arranged order of said second and third terminal leads along said second side of said second twin-diode.

5,307,519

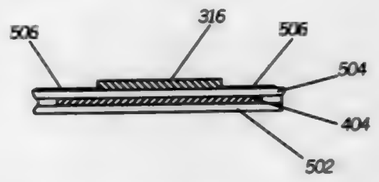
CIRCUIT WITH BUILT-IN HEAT SINK

Alay M. Mehta, and Venus D. Desai, both of Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,035

Int. Cl.[5] H04B *1/16;* **H01M** *10/50*

U.S. Cl. 455—343 **12 Claims**



1. A circuit assembly, comprising:

a flexible circuit carrier having first and second layers, each of the first and second layers formed of a same material;

a current-limiting device coupled to the flexible circuit carrier;

a heat sink placed between the first and second layers of the circuit carrier in thermal proximity to the current-limiting device; and

the flexible circuit carrier has a section cut surrounding the current-limiting device so that a portion of the flexible circuit carrier is folded over the current-limiting device.

5,307,520

WATCH TYPE PAGING RECEIVER

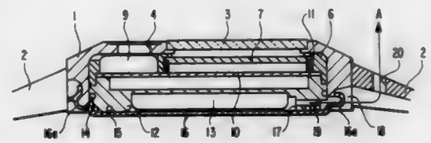
Takashi Oyamada, Tokyo, and Masahiro Wada, Chiba, both of Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,003

Claims priority, application Japan, Nov. 30, 1990, 2-336544

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—347 **4 Claims**



1. A watch type paging receiver comprising:

electronic components for operating said watch type paging receiver;

a body casing having an opened bottom portion defining an internal space therein, said electronic components being disposed in said internal space;

an air cell for electrically operating said electronic components;

a battery casing disposed in the internal space of said body casing together with said electronic components, said battery casing accommodating said air cell therein;

a rear cover for enclosing the opened bottom portion of said body casing;

a band joined to said body casing and adapted to be fastened on a person's wrist; and

air ventilating means for ventilating said battery casing in said internal space, said ventilating means extending from said internal space to the outside of said band via said battery casing, said body casing and said band.

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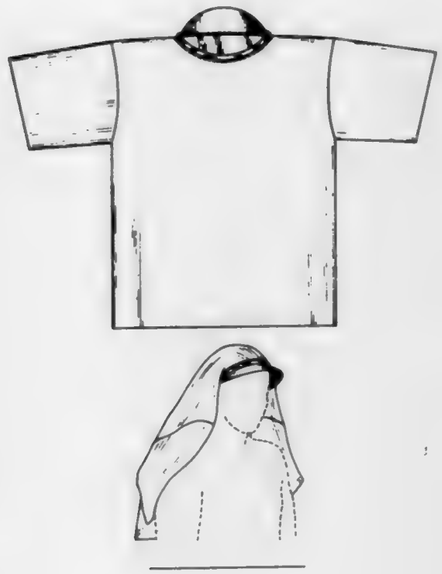
UMI

346,267
SHIRT

Russell J. Kennedy, Lower Templestowe, Australia, assignor to That Pty. Ltd., Melbourne, Australia

Filed Sep. 15, 1992, Ser. No. 948,871
Claims priority, application Australia, Mar. 16, 1992, 660/92
Term of patent 14 years

U.S. Cl. D2—717

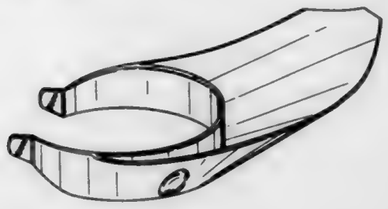


346,268
BIB

Gary F. Loranger, 15150 Pleasant Dr., Rockwood, Mich. 48173

Filed Sep. 17, 1992, Ser. No. 948,831
Term of patent 14 years

U.S. Cl. D2—864



346,269
SHOE HEEL

Noroullah Irvani-Pour, 43 Berwick Mews, Lymington Road, London NW6 2NR, Great Britain

Filed Dec. 4, 1991, Ser. No. 802,422
Claims priority, application United Kingdom, Jun. 7, 1991, 2015218
Term of patent 14 years

U.S. Cl. D2—965



346,270
NECKTIE

William J. Just, Suite 200, 91 West Wieuca Rd., Atlanta, Ga. 30342

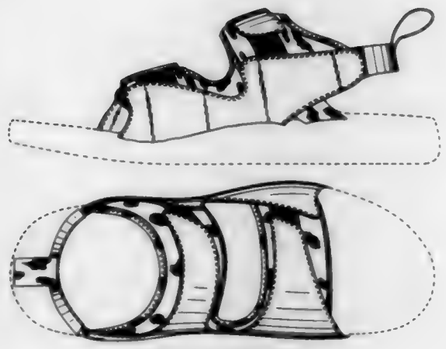
Filed Sep. 10, 1992, Ser. No. 941,645
Term of patent 14 years

U.S. Cl. D2—608



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346,271
SHOE UPPER
Steven C. McDonald, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 13, 1993, Ser. No. 14,114
Term of patent 14 years
U.S. Cl. D2—969



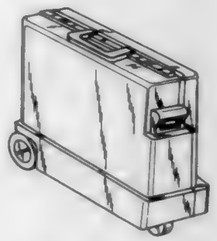
346,272
SHOE UPPER
Susan D. Censor, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,622
Term of patent 14 years
U.S. Cl. D2—970



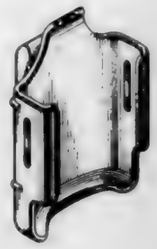
346,273
TOTE BAG
Robert A. Lucas, 12513 Sherwood, Leawood, Kans. 66209
Filed Feb. 13, 1992, Ser. No. 834,702
Term of patent 14 years
U.S. Cl. D3—271



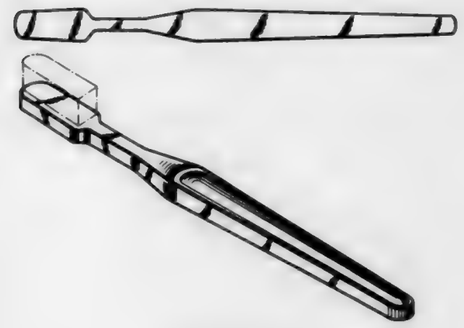
346,274
PORTABLE MOTORIZED SUITCASE
Sidney R. Good, Cleveland, Ohio, assignor to Good Marketing, Inc., Cleveland, Ohio
Filed Jul. 22, 1992, Ser. No. 919,109
Term of patent 14 years
U.S. Cl. D3—279



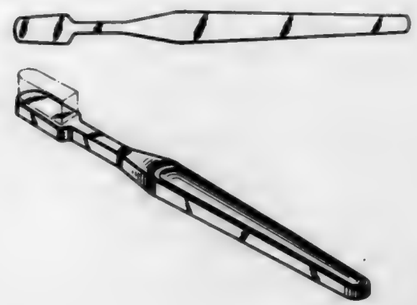
346,275
HOLDER FOR A PAGER RECEIVER
Sigeki Hayasaka, and Toshiaki Mizushima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed May 7, 1992, Ser. No. 879,316
Claims priority, application Japan, Nov. 7, 1991, 3-33458
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—218



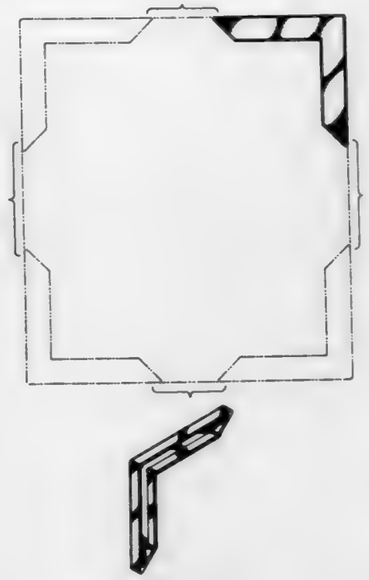
346,276
TOOTHBRUSH HANDLE
Adam Sherman, Brooklyn, N.N.Y., and Peter M. Stagl, Morris Plains, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 8, 1991, Ser. No. 666,412
Term of patent 14 years
U.S. Cl. D4—104



346,277
TOOTHBRUSH HANDLE
Adam Sherman, Brooklyn, N.Y., and Peter M. Stagl, Morris Plains, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 8, 1991, Ser. No. 667,097
Term of patent 14 years
U.S. Cl. D4—104



346,278
FRAME CORNER
Ronald G. Pritchett, #119, 15215 Victory Blvd., Van Nuys, Calif. 91411
Filed Aug. 14, 1992, Ser. No. 930,220
Term of patent 14 years
U.S. Cl. D6—300



346,279
CHAIR
William E. Stumpf; Rodney C. Schoenfelder, both of Minneapolis, Minn.; Donald Chadwick, Los Angeles, Calif., and Carolyn Keller, Holland, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Jun. 15, 1992, Ser. No. 898,899
Term of patent 14 years
U.S. Cl. D6—366



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346,280
SPORTS SEAT
Eugene A. Metter, 10713 St. Francis La., St. Ann, Mo. 63074
Filed Jul. 14, 1992, Ser. No. 912,646
Term of patent 14 years
U.S. Cl. D6—368



346,281
BAR CHAIR
Salvador Vidal, 235 SW. Le Jeune Rd., Miami, Fla. 33134
Filed Jul. 13, 1992, Ser. No. 912,632
Term of patent 14 years
U.S. Cl. D6—370



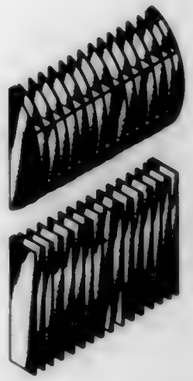
346,282
SIDE CHAIR
Jeffrey S. Wilcox, East Grand Rapids; Keith A. McDowell, Belmont, both of Mich.; Donald T. Chadwick, Los Angeles, Calif., and Peter F. Bemis, Sheboygan, Wis., assignors to American Seating Company, Grand Rapids, Mich.
Continuation-in-part of Ser. No. 558,983, Jul. 25, 1990, abandoned. This application Mar. 17, 1992, Ser. No. 852,472
Term of patent 14 years
U.S. Cl. D6—372



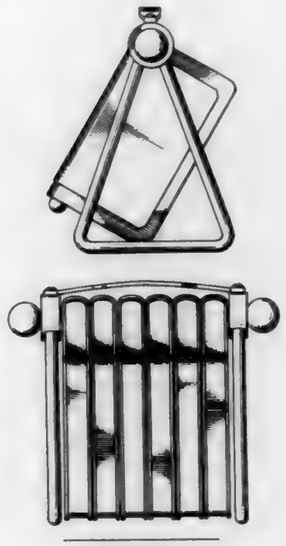
346,283
CHAIR
Justus Kolberg, Selk, Fed. Rep. of Germany, assignor to Tecno S.p.A. Mobili e Forniture per Arredamento, Milan, Italy
Filed Mar. 12, 1992, Ser. No. 850,075
Claims priority, application World Int. Prop. O., Sep. 17, 1991, DMA/001591
Term of patent 14 years
U.S. Cl. D6—374



346,284
RACK FOR COMPACT DISKS OR CASSETTES
Michael Lazarovic, 184 Lexington Ave. - No. 15E, New York, N.Y. 10016
Filed Mar. 11, 1992, Ser. No. 850,052
Term of patent 14 years
U.S. Cl. D6—407



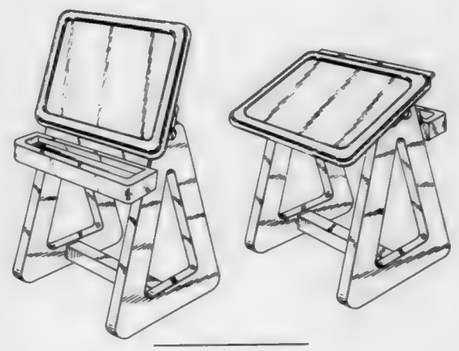
346,285
VIDEO CASSETTE HOLDER
Edgar R. Benveniste; Gloria Benveniste, both of 101 Udine Way, Los Angeles, Calif. 90077; Harold Goodman, Beverly Hills, and Kenneth A. Tarlow, Manhattan Beach, both of Calif., assignors to Edgar R. Benveniste and Gloria Benveniste, Los Angeles, Calif.
Filed Jun. 17, 1992, Ser. No. 900,255
Term of patent 14 years
U.S. Cl. D6—631



346,286
ELECTRONIC MUSIC STAND
David G. Caponigro, and Jean Caponigro, both of 6 Cherry Tree La., Groveland, Mass. 01834
Filed Apr. 12, 1991, Ser. No. 684,562
Term of patent 14 years
U.S. Cl. D6—419



346,287
CONVERTIBLE EASEL
Lawrence Rosen, Meadam, N.J., assignor to Rose Art Industries, Inc., Orange, N.J.
Filed May 7, 1992, Ser. No. 856,922
Term of patent 14 years
U.S. Cl. D6—429



346,288
CHEST
Gerald M. Black, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Sep. 5, 1991, Ser. No. 756,120
Term of patent 14 years
U.S. Cl. D6—445



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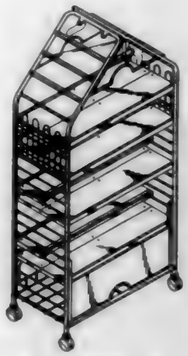
346,289
CEILING FAN PULL DISPLAY RACK
Alvin E. Todd, P.O. Box 924, Pigeon Forge, Tenn. 37868-0924
Continuation-in-part of Ser. No. 426,070, Oct. 24, 1989, Pat. No. Des. 328,204. This application May 22, 1992, Ser. No. 887,335
Term of patent 14 years
U.S. Cl. D6—457



346,290
ARTWORK SUPPORT STAND
Michael Cifra, 4041 Pedley Rd. #17, Riverside, Calif. 92509
Filed Mar. 10, 1992, Ser. No. 849,324
Term of patent 14 years
U.S. Cl. D6—467

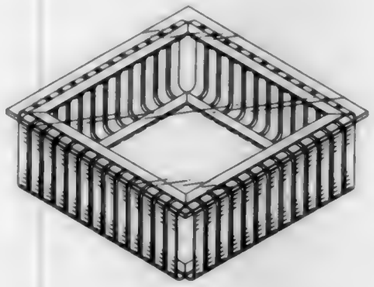


346,291
DISPLAY RACK
Wei-Seng Chi, 3F, No. 12, Alley 26, Lane 300, Sec. 4, Jen-Ai Rd., Taipei, Taiwan
Filed Jan. 26, 1993, Ser. No. 4,075
Term of patent 14 years
U.S. Cl. D6—479

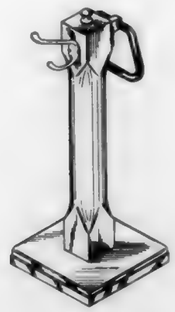


346,292
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 884,588
Term of patent 14 years
U.S. Cl. D6—480

346,293
COFFEE TABLE
Frank O. Gehry, Santa Monica, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 12, 1992, Ser. No. 1,451
Term of patent 14 years
U.S. Cl. D6—486



346,294
TOWEL RING STAND
Alvin C. Wilson, and Helen K. Wilson, both of 6862 Frying Pan Rd., Boulder, Colo. 80301
Filed Sep. 18, 1992, Ser. No. 948,973
Term of patent 14 years
U.S. Cl. D6—546



346,295
TOWEL RING STAND
Alvin C. Wilson, and Helen K. Wilson, both of 6862 Frying Pan Rd., Boulder, Colo. 80301
Filed Sep. 18, 1992, Ser. No. 948,980
Term of patent 14 years
U.S. Cl. D6—546



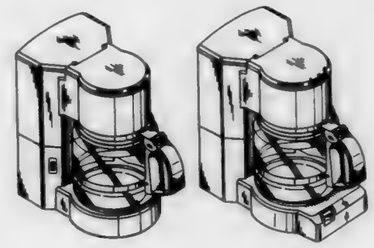
346,296
FLUID CUSHION
Joel L. Sereboff, 2215 Millridge Rd., Owings Mills, Md. 21117
Filed Apr. 3, 1991, Ser. No. 679,581
Term of patent 14 years
U.S. Cl. D6—601



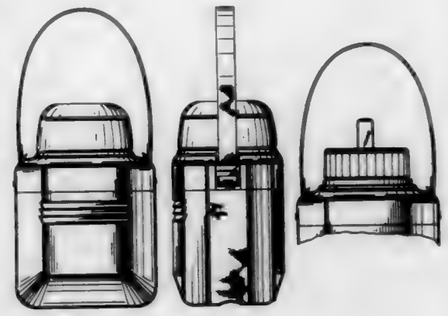
346,297
COVER FOR A TELEPHONE HANDSET
R. Vincent Capriotti, 2150 Turk Rd., Doylestown, Pa. 18901
Filed Jan. 8, 1991, Ser. No. 638,662
Term of patent 14 years
U.S. Cl. D6—610



346,298
COFFEE MAKER
Martin Brady, Richmond; Dean C. Warner, Glen Allen, and Stephen D. Beverley, Midlothian, all of Va., assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Apr. 21, 1992, Ser. No. 871,662
Term of patent 14 years
U.S. Cl. D7—309



346,299
JUG
Andrew Covault; Timothy M. Holub; Regis Schulte, and Mick Whelan, all of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Nov. 6, 1992, Ser. No. 923
Term of patent 14 years
U.S. Cl. D7—312



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346,300
VACUUM JUG
David Morgan, London, England, assignor to Chia Jung Co., Ltd., Taipei, Taiwan
Filed Jul. 27, 1992, Ser. No. 919,573
Term of patent 14 years
U.S. Cl. D7—318



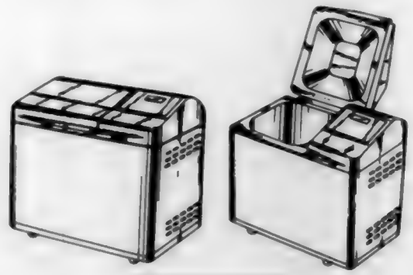
346,301
VACUUM JUG
David Morgan, London, England, assignor to Chia Jung Co., Ltd., Taipei, Taiwan
Filed Jul. 27, 1992, Ser. No. 919,572
Term of patent 14 years
U.S. Cl. D7—319



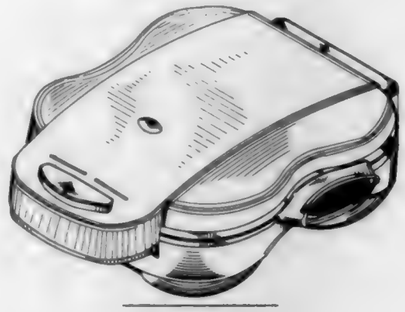
346,302
VACUUM JUG
David Morgan, London, England, assignor to Chia Jung Co., Ltd., Taipei, Taiwan
Filed Jul. 27, 1992, Ser. No. 919,577
Term of patent 14 years
U.S. Cl. D7—319



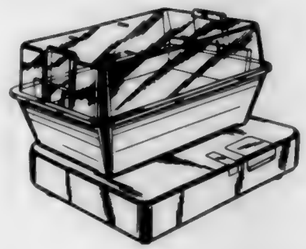
346,303
ELECTRIC BREADMAKER
Takuji Kaneko, Osaka, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan
Filed May 13, 1992, Ser. No. 882,639
Claims priority, application Japan, Nov. 14, 1991, 3-34425
Term of patent 14 years
U.S. Cl. D7—350



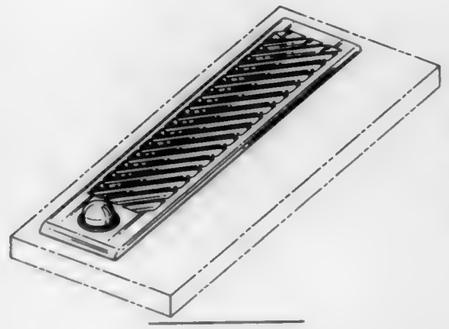
346,304
FOOD COOKING APPARATUS
Stuart Naft, Fairfield, and Richard Carbone, Southbury, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Mar. 11, 1993, Ser. No. 7,191
Term of patent 14 years
U.S. Cl. D7—352



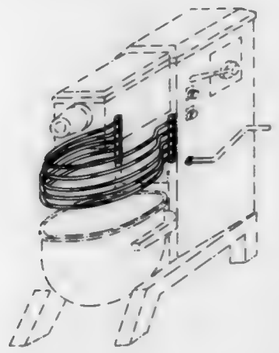
346,305
ALL-PURPOSE FOOD STEAMER
Paul E. Breeka, Southborough, Mass., assignor to Creative Technologies Corp., Brooklyn, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,812
The portion of the term of this patent subsequent to Jan. 28, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—357



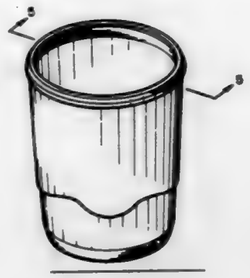
346,306
DOWNDRAFT VENT UNIT FOR A COOKTOP
Donald G. Falk, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sep. 9, 1991, Ser. No. 756,132
Term of patent 14 years
U.S. Cl. D7—407



346,307
SAFETY GUARD FOR MIXER
Phillip M. Pappas, Jr., Danville, N.H., assignor to Univex Corporation, Salem, N.H.
Filed Jul. 24, 1992, Ser. No. 919,117
Term of patent 14 years
U.S. Cl. D7—412



346,308
DRINKING TUMBLER
Victor J. J. Cautereels, Borsbeek, Belgium, and Ian Ferris, Berkshire, United Kingdom, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 20, 1992, Ser. No. 932,841
Term of patent 14 years
U.S. Cl. D7—509



346,309
DRINKING CONTAINER
Alfonso B. Ocampo, 2935 Briarcliff, Ann Arbor, Mich. 48105
Filed May 11, 1992, Ser. No. 881,243
Term of patent 14 years
U.S. Cl. D7—515

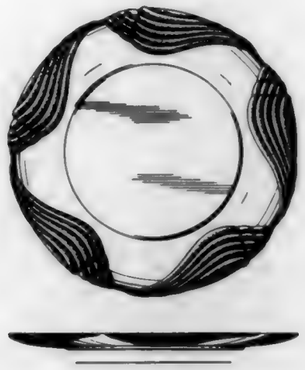


346,310
WEARER ATTACHABLE PORTABLE SNACK TRAY
Robert G. Schlesier, 1441 S. Chambers Cr., Aurora, Colo. 80012, and Howard J. Tye, 4035 W. Breckenridge, Beverly Hills, Fla. 23665
Filed Sep. 4, 1991, Ser. No. 754,718
Term of patent 14 years
U.S. Cl. D7—551

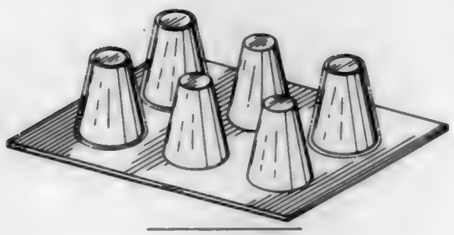


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346,311
PLATE
Ricardo Boysen, San Isidro, Argentina, assignor to Cristalux S.A., Avellaneda, Argentina
Filed Sep. 19, 1991, Ser. No. 762,225
Term of patent 14 years
U.S. Cl. D7—570



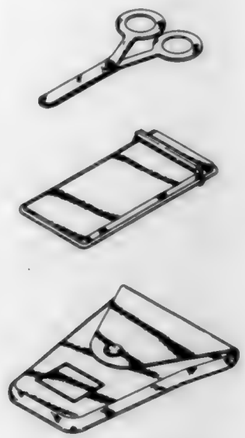
346,312
RACK FOR DRINKING GLASSES
Barbara J. Spiersch, 1445 Earl Dr., Reno, Nev. 89503
Filed Oct. 23, 1992, Ser. No. 716
Term of patent 14 years
U.S. Cl. D32—58



346,313
HOLDER
Donald J. Sothman, W162 N8483 Fleet Ave., Menomonee Falls, Wis. 53051
Filed Aug. 10, 1992, Ser. No. 926,413
Term of patent 14 years
U.S. Cl. D7—686



346,314
KIT FOR HANDLING COLLAPSIBLE FOOD CONTAINERS
Buddy Careri, and Kim Careri, both of 12510 SW. 11th Ct., Davie, Fla. 33325
Filed Oct. 18, 1991, Ser. No. 779,647
Term of patent 14 years
U.S. Cl. D8—14



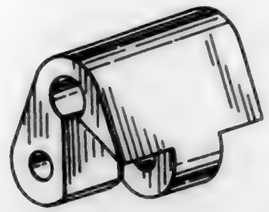
346,315
PICK UP TOOL
Harry Bentz, P.O. Box 43, Claremore, Okla. 74018
Filed Sep. 14, 1992, Ser. No. 944,642
Term of patent 14 years
U.S. Cl. D8—14



346,316
CRIMPING TOOL
Hakan Bergkvist, Bromma, and Mikael Nilsson, Älvdalen, both of Sweden, assignors to Pressmaster Tool AB, Alvdalen, Sweden
Filed Oct. 5, 1992, Ser. No. 4
Claims priority, application Sweden, Apr. 3, 1992, 920773
Term of patent 14 years
U.S. Cl. D8—52



346,317
CHUCK KEY HOLDER
Bobby C. Throneberry, 8603 E. 81st St., Raytown, Mo. 64138
Filed Feb. 1, 1993, Ser. No. 4,300
Term of patent 14 years
U.S. Cl. D8—71



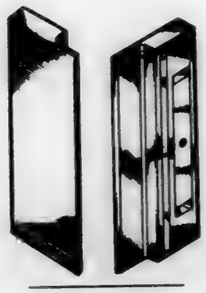
346,318
SAGITTAL SAW BLADE BASE
James A. Evans, Kalamazoo, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.
Continuation of Ser. No. 669,310, Mar. 13, 1991. This application Jan. 21, 1993, Ser. No. 7,111
Term of patent 14 years
U.S. Cl. D8—71



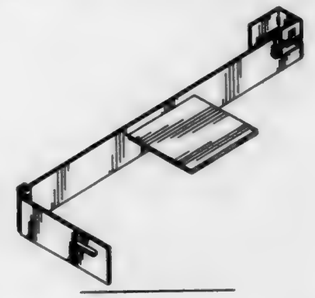
346,319
RAZOR BLADE SCRAPER
Leon E. Lavallee, Southbridge; Robert T. Howitt, Leominster, both of Mass.; Paul D. Cotnoir, Putnam, Conn.; R. Kurt Heinzmann, Paxton, and Andre G. Beaupre, Worcester, both of Mass., assignors to Hyde Manufacturing Company, Southbridge, Mass.
Filed Jan. 6, 1992, Ser. No. 817,144
Term of patent 14 years
U.S. Cl. D8—99



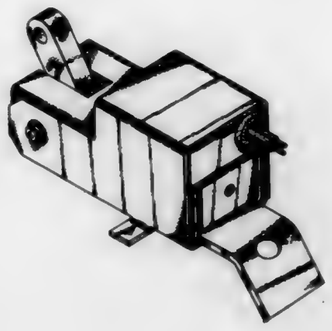
346,320
ELECTRONIC SECURITY LOCK DOOR HANDLE
John R. Fitzpatrick, 80 Midland St., Cold Spring Harbor, N.Y. 11724
Filed Feb. 26, 1990, Ser. No. 484,653
Term of patent 14 years
U.S. Cl. D8—314



346,321
POOL TABLE SECURITY BAR
Stanley W. Pearson, Rte. 1 Box 654-A, Beaufort, N.C. 28516
Filed Feb. 1, 1993, Ser. No. 4,326
Term of patent 14 years
U.S. Cl. D8—346

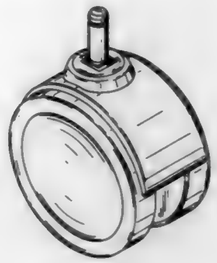


346,322
ELECTRICALLY MONITORED COUPLING DEVICE
Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 3 Brook La., both of Yardley, Pa. 19067
Filed Jan. 24, 1993, Ser. No. 9,891
Term of patent 14 years
U.S. Cl. D8—349

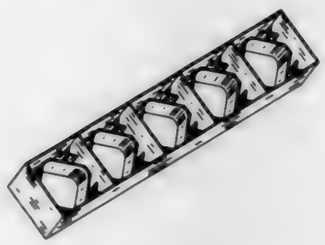


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346,323
DOUBLE WHEEL CASTER
Kozo Morooka, Osaka, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan
Filed Dec. 30, 1991, Ser. No. 814,687
Term of patent 14 years
U.S. Cl. D8—375



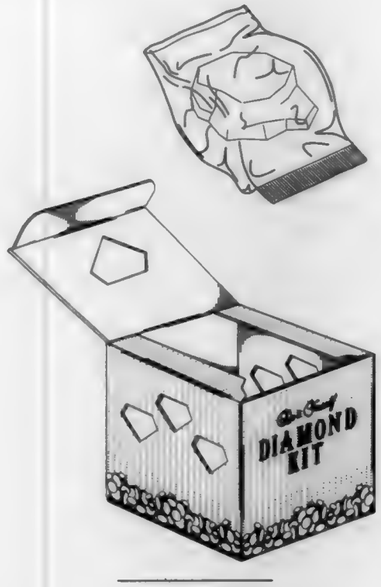
346,324
INCUBATOR EGG TRAY
Steve R. Warren, 925 N. Ocean St., Jacksonville, Fla. 32202
Filed Jun. 17, 1992, Ser. No. 900,738
Term of patent 14 years
U.S. Cl. D9—456



346,325
COMBINED CONTAINER AND PERFUME BOTTLE
Serge Mansau, Boulogne, France, assignor to Kenzo, Paris, France
Filed Dec. 4, 1992, Ser. No. 2,125
Claims priority, application World Int. Prop. O., Jun. 11, 1992, DM/023 059
Term of patent 14 years
U.S. Cl. D9—335



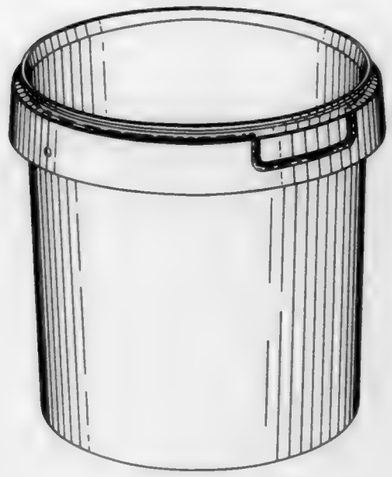
346,326
DIAMOND KIT
Leonard H. Price, Sr., and Loretta J. Price, both of 4432 Windchime Way, Kennesaw, Ga. 30144
Filed Nov. 12, 1992, Ser. No. 1,445
Term of patent 14 years
U.S. Cl. D9—337



346,327
PERFUME BOTTLE WAND
Craig Berkeley, 1382 Kelton Ave., Apt. 106, Los Angeles, Calif. 90024
Division of Ser. No. 782,461, Oct. 25, 1991, Pat. No. Des. 331,217. This application May 7, 1993, Ser. No. 8,024
Term of patent 14 years
U.S. Cl. D9—441



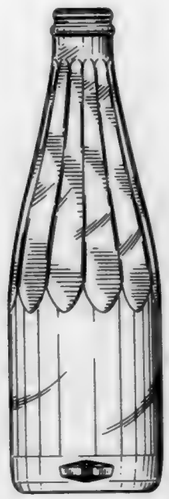
346,328
CONTAINER
Sylvain Labrie, Charny, Canada, assignor to Ipl Inc., St. Damien, Canada
Filed May 5, 1992, Ser. No. 878,892
Term of patent 14 years
U.S. Cl. D9—500



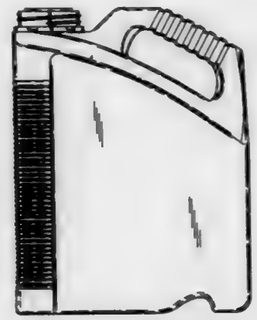
346,329
BOTTLE
Frederick Biesecker, II, Boyertown, Pa., assignor to Drug Plastics and Glass Company, Inc., Boyertown, Pa.
Filed Apr. 30, 1992, Ser. No. 877,013
Term of patent 14 years
U.S. Cl. D9—502



346,330
BOTTLE
Lars Hall, c/o Hall & Cederquist Kaptensgatan 6, S-114 84 Stockholm, Sweden
Filed Apr. 25, 1991, Ser. No. 691,099
Claims priority, application Sweden, Oct. 25, 1990, 902296
Term of patent 14 years
U.S. Cl. D9—520

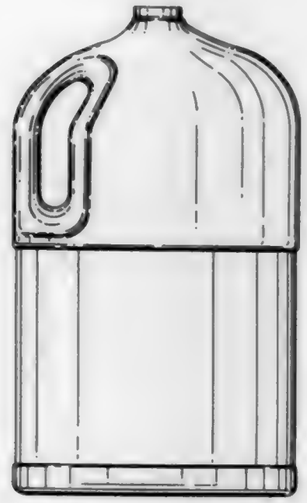


346,331
FLUID-DISPENSING CONTAINER
Luis G. Jaramillo, Paris, France, assignor to Societe Anonyme: Total, Puteaux, France
Filed Aug. 19, 1992, Ser. No. 932,030
Claims priority, application France, Feb. 19, 1992, 92 1044
Term of patent 14 years
U.S. Cl. D9—520

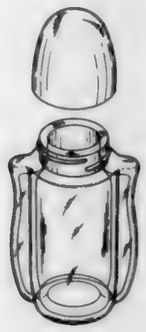


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346,332
CONTAINER
Joseph S. Kanfer, and Thomas Kearnes, both of Richfield, Ohio, assignors to GOJO Industries, Inc., Cuyahoga Falls, Ohio
Filed Jan. 25, 1993, Ser. No. 4,141
Term of patent 14 years
U.S. Cl. D9—531



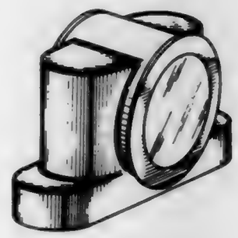
346,333
BOTTLE AND CAP
Pater Bertolini, Shelton, and James Turbett, Stamford, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Sep. 3, 1992, Ser. No. 939,648
Term of patent 14 years
U.S. Cl. D9—542



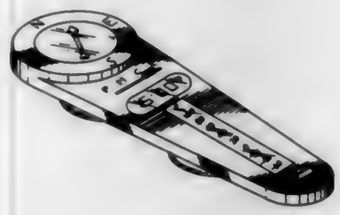
346,334
BOTTLE
Holger Ahlsvik, Täby, Switzerland, assignor to Artemisia Trade AB, Täby, Switzerland
Filed Sep. 26, 1990, Ser. No. 588,205
Claims priority, application Switzerland, Mar. 27, 1990, 90-0705
Term of patent 14 years
U.S. Cl. D9—548



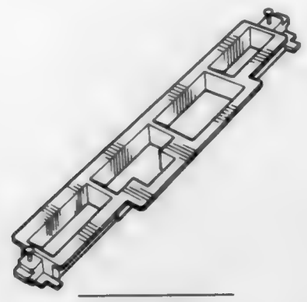
346,335
CLOCK
Francois Bonnot, Geneva, Switzerland, assignor to Ebel, S.A., Switzerland
Filed Dec. 17, 1991, Ser. No. 810,763
Claims priority, application Hague, Jun. 19, 1991, DM/019928
Term of patent 14 years
U.S. Cl. D10—28



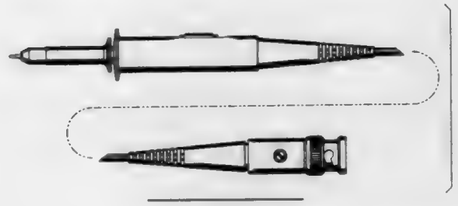
346,336
COMBINED COMPASS, THERMOMETER, TIME ZONE AND CLOCK
Jim A. Meyers, 6007 Raven Ct., El Paso, Tex. 79924
Filed Dec. 11, 1992, Ser. No. 2,390
Term of patent 14 years
U.S. Cl. D10—53



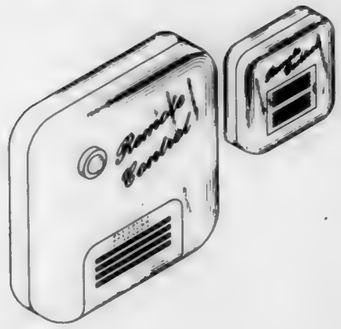
346,337
ROUTER TEMPLATE FOR LATCH AND STRIKER PLATE
John Carey, 1996 Milford Pl., El Cajon, Calif. 92020
Filed May 14, 1993, Ser. No. 8,357
Term of patent 14 years
U.S. Cl. D10—64



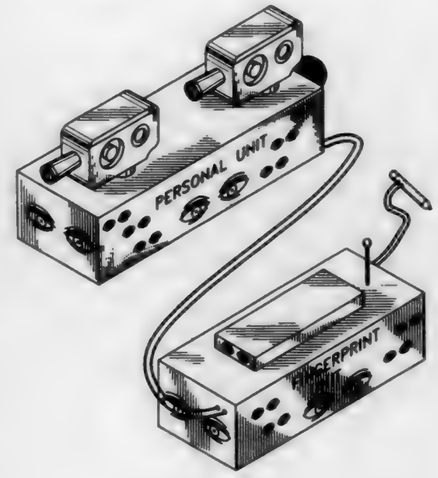
346,338
ELECTRICAL TEST PROBE
Mark W. Nightingale, Washougal, Wash., and Jonathan E. Myers, Aloha, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Feb. 26, 1993, Ser. No. 5,220
Term of patent 14 years
U.S. Cl. D10—78



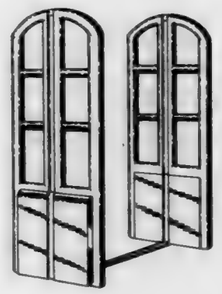
346,339
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING A LOST REMOTE CONTROL UNIT
Ronald D. Lintick, #2 Bingham Drive, Winnipeg, Manitoba, Canada 3R3 3C3
Filed May 10, 1993, Ser. No. 8,096
Term of patent 14 years
U.S. Cl. D10—104



346,340
COMBINED SURVEILLANCE SYSTEM AND FINGER PRINT UNIT FOR AIDING IN THE IDENTIFICATION OF SUSPECTS IN VEHICLES
John K. Cayton, 1124 Briarwood Rd., Garland, Tex. 75041, and Patti K. Watson, 300 N. Cottonwood St., Richardson, Tex. 75090
Filed Dec. 9, 1991, Ser. No. 804,178
Term of patent 14 years
U.S. Cl. D10—106

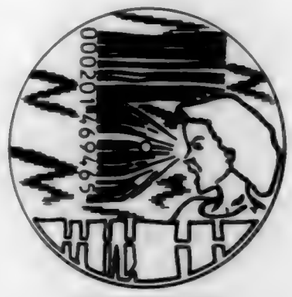


346,341
ELECTRONIC ARTICLE SURVEILLANCE INTERROGATION PANEL UNIT
Roger K. Westerberg, Cottage Grove; John E. Nelson, Woodbury, both of Minn.; Roland W. Rubertus, Hudson, Wis., and Alan E. Smither, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 29, 1993, Ser. No. 7,744
Term of patent 14 years
U.S. Cl. D10—106



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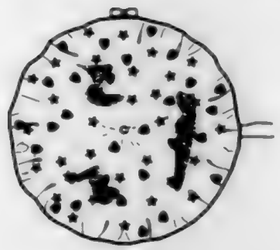
346,342
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,136
Term of patent 14 years
U.S. Cl. D10—126



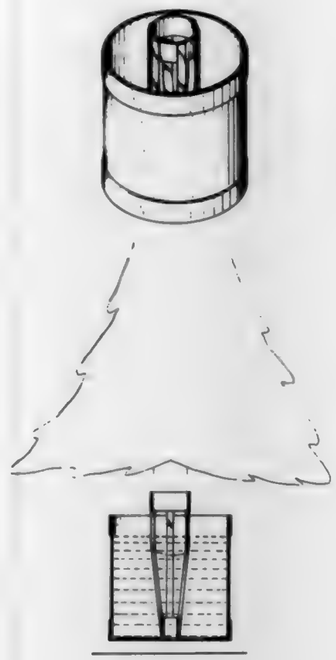
346,343
GOLF TEE EARRING
Gretchen S. Haugh, 3708 E. 47th Pl., Tulsa, Okla. 74135
Filed Oct. 13, 1992, Ser. No. 295
Term of patent 14 years
U.S. Cl. D11—44



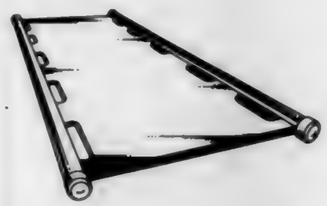
346,344
TREE SKIRT AND STORAGE WRAPPER
Robert C. Vincent, 104 Rose Twig La., North Wales, Pa. 19454-1157
Filed Aug. 19, 1991, Ser. No. 747,247
Term of patent 14 years
U.S. Cl. D11—130



346,345
SUPPORTING VESSEL FOR A CHRISTMAS TREE
Pi-Shiun Lan, No. 100, Ta Feng Rd., Shen Kang Hsiang, Tai-chung Hsien, Taiwan
Filed Mar. 12, 1993, Ser. No. 5,922
Term of patent 14 years
U.S. Cl. D11—130.1



346,346
STRETCHER
H. Clayton Johnson, 101 Chaparral Cir., Madison, Ala. 35758, and Thomas M. Dempsey, 1409 Wellman Ave., Huntsville, Ala. 35801
Filed Aug. 27, 1992, Ser. No. 935,738
Term of patent 14 years
U.S. Cl. D12—128



346,347
AUTOMOBILE TIRE
Yasuo Himuro, and Toru Fuknoka, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Oct. 22, 1992, Ser. No. 723
Claims priority, application Japan, Apr. 23, 1992, 4-11913
Term of patent 14 years
U.S. Cl. D12—147



346,348
TIRE TREAD
André E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 13, 1992, Ser. No. 913,072
Claims priority, application Luxembourg, Mar. 25, 1992, 67512-00
Term of patent 14 years
U.S. Cl. D12—143



346,349
AUTOMOBILE TIRE
Yasuo Himuro, and Masaharu Kimura, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Mar. 30, 1992, Ser. No. 859,552
Claims priority, application Japan, Sep. 30, 1991, 3-29072
Term of patent 14 years
U.S. Cl. D12—147



346,350
AUTOMOBILE TIRE
Yasuo Himuro, and Masayuki Tokutake, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 29, 1992, Ser. No. 3,131
Claims priority, application Japan, Jun. 30, 1992, 4-19282
Term of patent 14 years
U.S. Cl. D12—147



346,351
MOTORCYCLE TIRE
Shigehiko Suzuki, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Oct. 5, 1992, Ser. No. 23
Claims priority, application Japan, Apr. 3, 1992, 4-9968
Term of patent 14 years
U.S. Cl. D12—151



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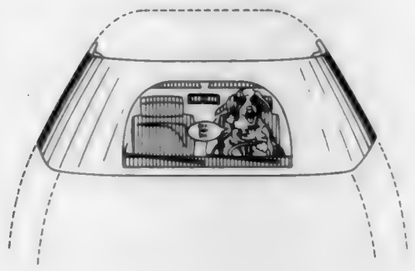
346,352
MOTORCYCLE TIRE
Shigehiko Suzuki, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Oct. 5, 1992, Ser. No. 99
Claims priority, application Japan, Apr. 3, 1992, 4-9967
Term of patent 14 years
U.S. Cl. D12—151



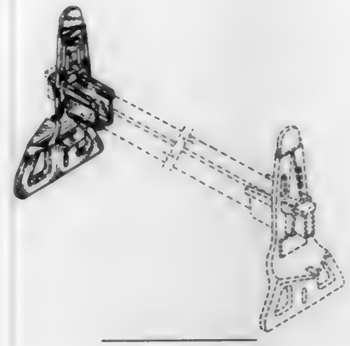
346,353
ANTI-SKID TIRE TRACTION UNIT
Masao Hori, Osaka, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan
Filed Mar. 23, 1992, Ser. No. 855,937
Term of patent 14 years
U.S. Cl. D12—154



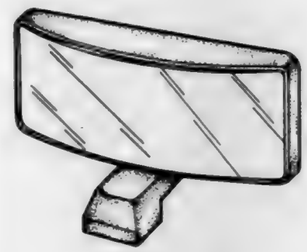
346,354
WRAPAROUND AUTOSHADE
Ezra D. Eskandry, 1925 Brickell Ave., D901, Miami, Fla. 33129
Filed Jan. 15, 1992, Ser. No. 821,592
Term of patent 14 years
U.S. Cl. D12—401



346,355
LADDER RACK SUPPORT
Kenneth F. Weger, Jr., Cary; Freddie C. Webb, Wauconda, and Stephen J. Moore, Cary, all of Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.
Filed Mar. 13, 1992, Ser. No. 850,790
Term of patent 14 years
U.S. Cl. D12—412



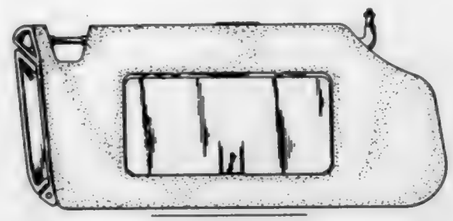
346,356
MINI WIDE-ANGLE REARVIEW MIRROR
Carl W. Leu, Miami, Fla., assignor to Poli-Auto, Inc., Miami, Fla.
Filed Oct. 23, 1992, Ser. No. 718
Term of patent 14 years
U.S. Cl. D12—187



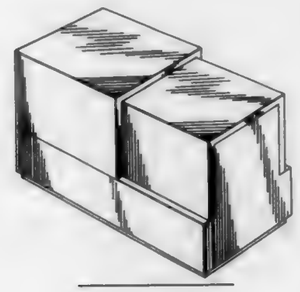
346,357
AUTOMOTIVE MIRROR
Sol Englander, Flushing, N.Y., assignor to Rosco, Inc., Jamaica, N.Y.
Filed Apr. 14, 1992, Ser. No. 868,538
Term of patent 14 years
U.S. Cl. D12—189



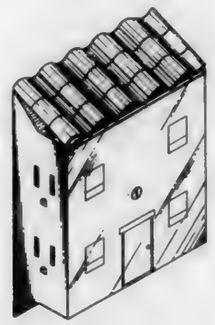
346,358
SUN VISOR
Don M. Peterson, Quincy, Mich., assignor to Crotty Corporation, Quincy, Mich.
Continuation of Ser. No. 868,945, Apr. 15, 1992. This application Jul. 19, 1993, Ser. No. 10,800
Term of patent 14 years
U.S. Cl. D12—191



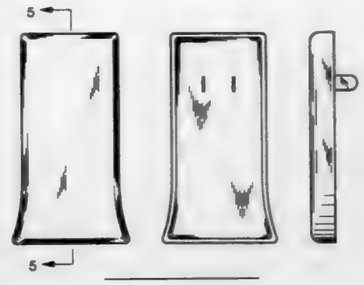
346,359
COGENERATION SYSTEM HOUSING
Craig L. Linden, Alpine, and Michael R. Volcknert, Tracy, both of Calif., assignors to Micro Cogen, Inc., Alpine, Calif.
Filed Aug. 4, 1992, Ser. No. 924,819
Term of patent 14 years
U.S. Cl. D13—114



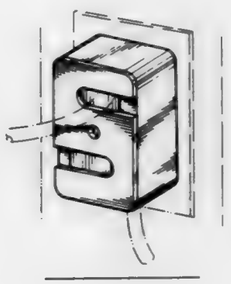
346,360
SIDE PLUG-IN OUTLET
Richard Kiegler, Box 60, Culebra Island, P.R. 00775
Filed Feb. 20, 1992, Ser. No. 838,079
Term of patent 14 years
U.S. Cl. D13—143



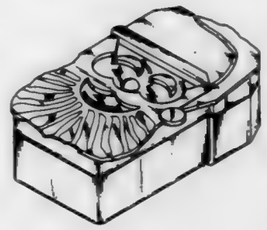
346,361
ELECTRICAL OUTLET COVER
Leonard W. Richey, and Sharon H. Richey, both of 440 W. 73rd St., Indianapolis, Ind. 46260
Filed Mar. 5, 1992, Ser. No. 846,413
Term of patent 14 years
U.S. Cl. D13—156



346,362
ELECTRICAL OUTLET PROTECTOR
Roger R. Bouley, Rte. No. 2, Box 2245, Litchfield, Me. 04350
Filed Apr. 28, 1992, Ser. No. 875,108
Term of patent 14 years
U.S. Cl. D13—156



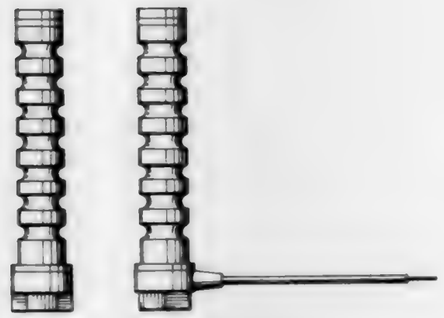
346,363
CONTROLLER BOX FOR DECORATIVE LIGHTS
Shuan-Guan Tuao, No. 61-10,, Ta-Tuao, Ta-Tuao Li, Chunan, Miaoli, Taiwan
Filed Jan. 22, 1993, Ser. No. 3,955
Term of patent 14 years
U.S. Cl. D13—162



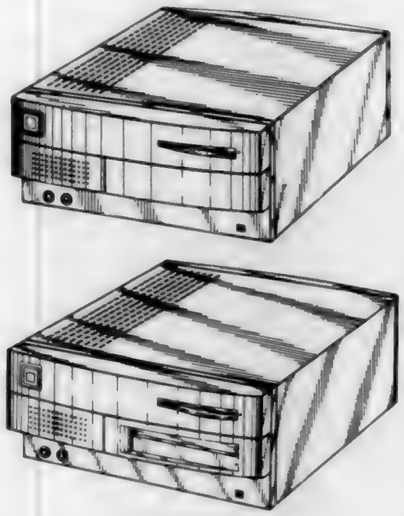
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346,364
PIEZOELECTRIC ACTUATOR
Takayuki Inoi; Kazumasa Ohya, and Kiyotak Hamada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Aug. 17, 1992, Ser. No. 930,304
Claims priority, application Japan, Feb. 17, 1992, 4-3973; Feb. 17, 1992, 4-3974; Feb. 17, 1992, 4-3975; Feb. 17, 1992, 4-3976; Feb. 17, 1992, 4-3977
The portion of the term of this patent subsequent to Oct. 20, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—174

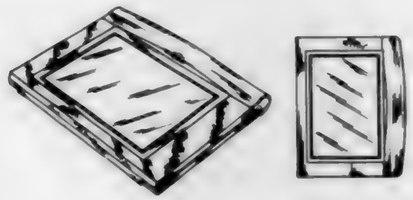


346,367
ENCLOSURE FOR A COMPUTER
Tim Parsey, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Sep. 11, 1992, Ser. No. 948,697
Term of patent 14 years
U.S. Cl. D14—100

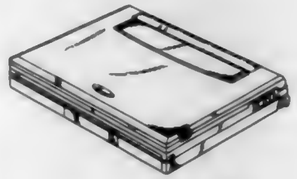


D346,365
Patent Not Issued For This Number

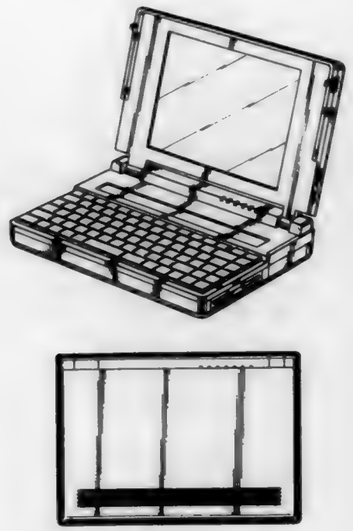
346,366
COMBINED PEN AND DATABASE COMPUTER
Jin H. Kim, Beaverton; Christopher Rosebrugh, Lake Oswego; Eng-Koe Kwang, Beaverton, all of Oreg., and Dean Bidwell, Auburn, Wash., assignors to PI Systems Corporation, Portland, Oreg.
Filed Aug. 28, 1992, Ser. No. 937,483
Term of patent 14 years
U.S. Cl. D14—100



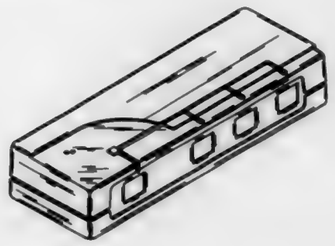
346,368
NOTEBOOK COMPUTER
Kazuhiro Miyashita, Saitama, Japan, and Chu-Chai Tsai, Taipei, Taiwan, assignors to Acer Incorporated, Taipei, Taiwan
Filed Apr. 15, 1992, Ser. No. 685,483
Term of patent 14 years
U.S. Cl. D14—106



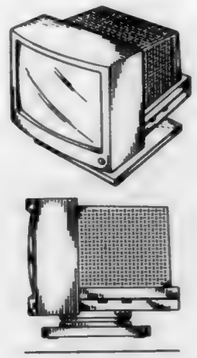
346,369
ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Feb. 28, 1992, Ser. No. 844,685
Claims priority, application Japan, Aug. 30, 1991, 3-25833
Term of patent 14 years
U.S. Cl. D14—106



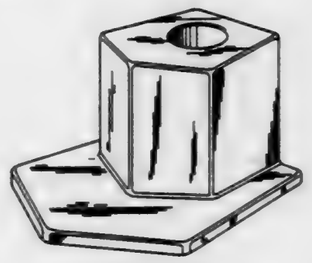
346,370
NETWORK MULTIPLEXOR FOR AN OFFICE ENVIRONMENT
Margaret L. Hetfield, Arlington, and Stuart K. Morgan, Westford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Oct. 15, 1991, Ser. No. 776,733
Term of patent 14 years
U.S. Cl. D14—107



346,371
DISPLAY FOR COMPUTER
Jae-heaun Oh, Kyunggi, and Sang-hyun Lee, Seoul, both of Rep. of Korea, assignors to TriGem Computer, Inc., Kyunggi, Rep. of Korea
Filed Dec. 11, 1991, Ser. No. 806,922
Claims priority, application Korea, Jun. 21,1991, 91-8899
Term of patent 14 years
U.S. Cl. D14—113



346,372
LOCK
Grantley G. Abbott, 19B/50 Whaling Road, North Sydney, New South Wales, 2060, Australia
Filed Sep. 3, 1992, Ser. No. 940,172
Claims priority, application Australia, Mar. 13, 1992, 626/92
Term of patent 14 years
U.S. Cl. D14—114



346,373
COMBINED TRACKBALL AND MOUSE
Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20815
Filed Sep. 4, 1992, Ser. No. 941,194
Term of patent 14 years
U.S. Cl. D14—114

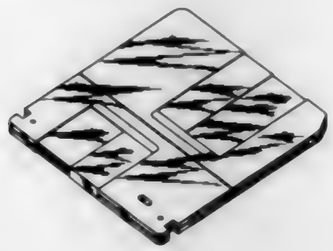


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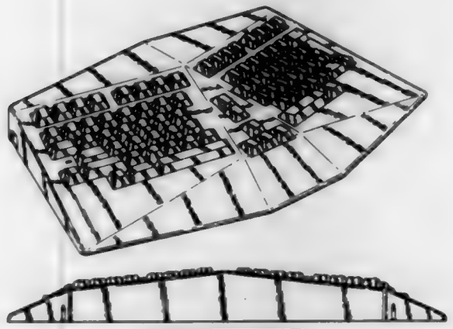
346,374
OPTICAL DISK CARTRIDGE
Benichi Miyazaki, Osaka, and Yukio Nishino, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 5, 1992, Ser. No. 1,181
Claims priority, application Japan, Jun. 11, 1992, 4-17432
Term of patent 14 years
U.S. Cl. D14—114



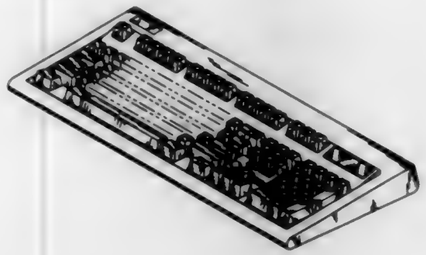
346,375
OPTICAL DISK CARTRIDGE
Benichi Miyazaki, Osaka, and Yukio Nishino, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 1, 1992, Ser. No. 2,054
Claims priority, application Japan, Jun. 11, 1992, 4-17421
Term of patent 14 years
U.S. Cl. D14—114



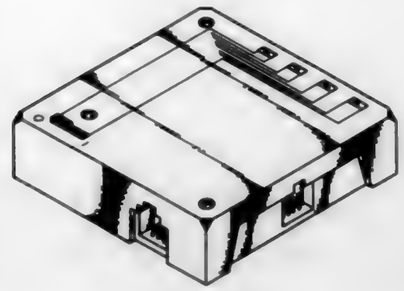
346,376
KEYBOARD
Kai-Uwe Marquardt, Tuttlingen, and Ralf Sauer, Wurmlingen, both of Fed. Rep. of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim, Fed. Rep. of Germany
Filed Sep. 30, 1992, Ser. No. 953,598
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1992, M 92 02 703.2
Term of patent 14 years
U.S. Cl. D14—115



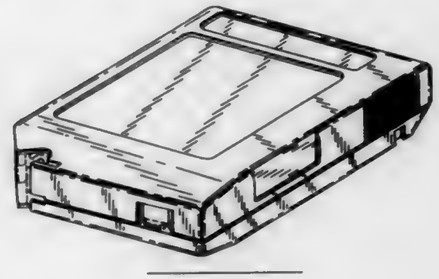
346,377
KEYBOARD
Kenneth H. Mimlitch, and Thomas E. Pangburn, both of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Oct. 9, 1992, Ser. No. 247
Term of patent 14 years
U.S. Cl. D14—115



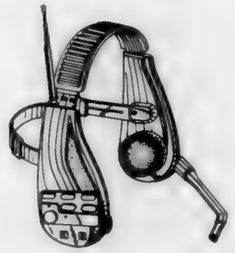
346,378
REMOTE FACSIMILE MACHINE MONITOR
Jack W. Smylie, 23241 Purdue, Farmington Hills, Mich. 48336
Filed Apr. 24, 1992, Ser. No. 873,052
Term of patent 14 years
U.S. Cl. D14—118



346,379
HOUSING FOR A SINGLE REEL TAPE CARTRIDGE
Navnit C. Patel, Wahpeton, N. Dak., and Charles M. Tischler, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 6, 1991, Ser. No. 756,083
Term of patent 14 years
U.S. Cl. D14—121



346,380
CORDLESS TELEPHONE HEADSET
Robert Fitzgerald, 12055C E. 49th Ave., Denver, Colo. 80239
Continuation-in-part of Ser. No. 578,884, Sep. 4, 1990, Pat. No. 5,113,428. This application Jun. 24, 1991, Ser. No. 719,522
Term of patent 14 years
U.S. Cl. D14—138



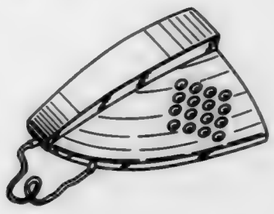
346,381
PORTABLE RADIO TELEPHONE
Seiji Namba, Kobayashi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 14, 1992, Ser. No. 944,276
Claims priority, application Japan, Jun. 10, 1992, 4-16953
Term of patent 14 years
U.S. Cl. D14—138



346,382
PORTABLE RADIO TELEPHONE
Takaharu Ando, Ryugasaki; Tadao Nakamura, Yokohama; Masahiko Happo, and Tomiaki Shirakawa, Takaidohigashi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 945,351
Term of patent 14 years
U.S. Cl. D14—138

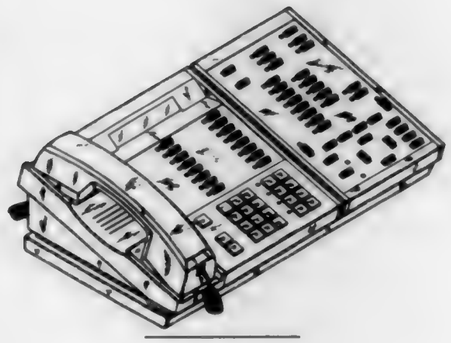


346,383
TELEPHONE
Mojca Mehle-Hohnjec, Tržič, and Seša Machtig, Ljubljana, both of Slovenia, assignors to Iskra Terminali, Slovenia
Filed Oct. 7, 1992, Ser. No. 192
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1992, M9202897.7
Term of patent 14 years
U.S. Cl. D14—150

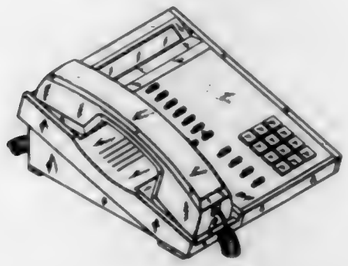


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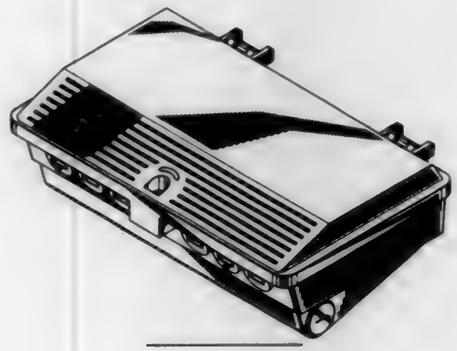
346,384
TELEPHONE SET
Gordon D. Ford, Round Rock, and Daniel F. Marshall, Manchaca, both of Tex., assignors to ROLM Company, Santa Clara, Calif.
Filed Mar. 10, 1992, Ser. No. 848,798
Term of patent 14 years
U.S. Cl. D14—151



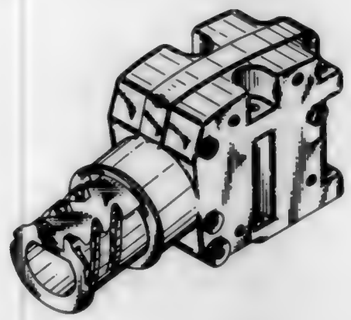
346,385
TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; David Bynat, Austin, Tex.; William McRight, Round Rock, Tex., and Pearce Jones, Austin, Tex., assignors to Rolm Company, Santa Clara, Calif.
Filed Jan. 22, 1992, Ser. No. 901,902
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—151



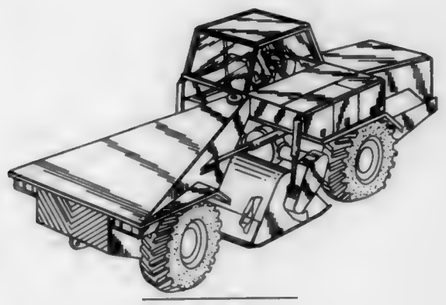
346,386
ENCLOSURE FOR TELEPHONE CABLE ELECTRICAL CONNECTORS
Alan W. Brownlie, Skaneateles, N.Y.; Scott S. Duesterhoeft, Etters, Pa.; James W. Robertson, Oberlin, Pa., and Francis J. Shay, Palmyra, Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 18, 1993, Ser. No. 6,036
Term of patent 14 years
U.S. Cl. D14—240



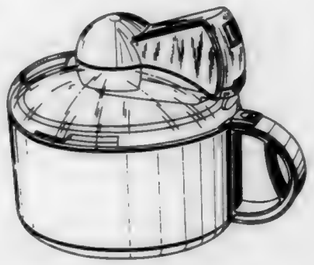
346,387
EXHAUST MANIFOLD RISER FOR MARINE ENGINES
Thomas R. Cooper, Bryn Athyn, Pa., assignor to Osco Motors Corporation, Hatfield, Pa.
Filed Dec. 27, 1991, Ser. No. 813,401
Term of patent 14 years
U.S. Cl. D15—4



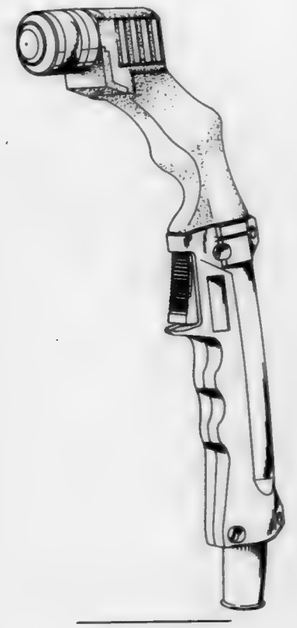
346,388
ARTICULATED SELF-PROPELLED BI-DIRECTIONAL SOIL STABILIZER ROAD RECLAIMER MACHINE
Frederick J. Silbernagel, 4007 Fontana Dr., Oklahoma City, Okla. 73116
Filed Dec. 16, 1991, Ser. No. 808,446
Term of patent 14 years
U.S. Cl. D15—22



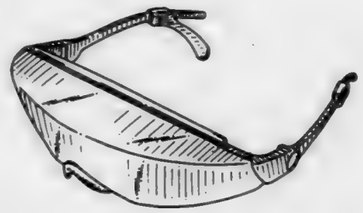
346,389
ICE-CREAM MAKER
Jon W. Lindholm, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 23, 1992, Ser. No. 824,783
Claims priority, application World Int. Prop. O., Sep. 6, 1991, DM/020,607
Term of patent 14 years
U.S. Cl. D15—82



346,390
WELDING TORCH
Hermann Sperling, Gau-Bischofsheim, and Axel Bode, Ortenberg, both of Fed. Rep. of Germany, assignors to Alexander Binzel GmbH & Co. KG, Fed. Rep. of Germany
Filed Apr. 9, 1992, Ser. No. 866,535
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 9107110
Term of patent 14 years
U.S. Cl. D15—144

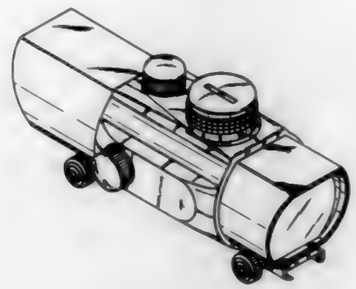


346,391
SUNGLASSES
Yoshiaki Iida, Katano, Japan, assignor to Cateye Co., Ltd., Osaka, Japan
Filed Mar. 12, 1993, Ser. No. 5,839
Claims priority, application Japan, Sep. 16, 1992, 4-27345
Term of patent 14 years
U.S. Cl. D16—112



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346,392
SIGHT SCOPE
Saburo Tomita, Fujimi, Japan, assignor to Asia Optical Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1992, Ser. No. 842,594
Claims priority, application Japan, Jan. 22, 1992, 4-1416
Term of patent 14 years
U.S. Cl. D16—132

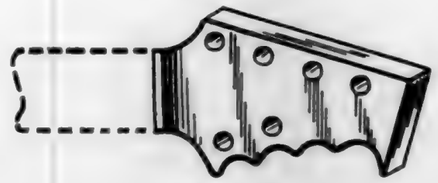


346,393
Patent Not Issued For This Number

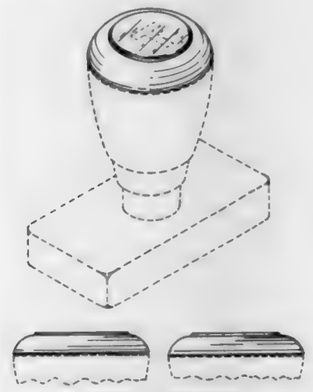
346,394
PIANO
Gianni Cattaneo, Marignano, Italy, assignor to General Electro Music Corp., Bensenville, Ill.
Filed Jun. 27, 1991, Ser. No. 722,276
Term of patent 14 years
U.S. Cl. D17—7



346,395
GUITAR HEAD STOCK
Joel M. Harriott, P.O. Box 542, Minneapolis, Minn. 55458
Filed Dec. 11, 1989, Ser. No. 448,567
Term of patent 14 years
U.S. Cl. D17—20



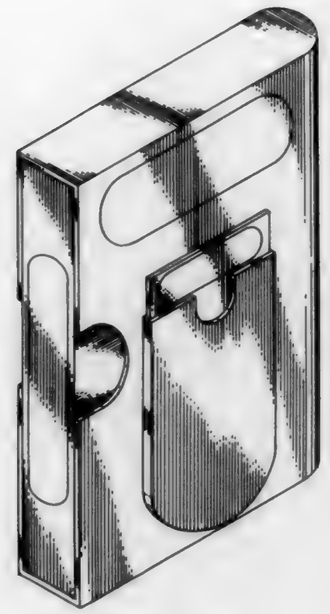
346,396
HAND STAMP HANDLE TOP
Steven J. Sculler, Manalapan, N.J., assignor to M & R Marking Systems, Inc., Piscataway, N.J.
Filed Oct. 2, 1991, Ser. No. 770,952
Term of patent 14 years
U.S. Cl. D18—18



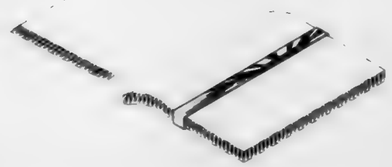
346,397
GRAVURE ROLL
Takashi Iwasaki, and Yoshinari Yasui, both of Ebina, Japan, assignors to Yasui Seiki Co., Ltd., Tokyo, Japan
Filed Jun. 30, 1988, Ser. No. 214,102
Claims priority, application Japan, Jan. 5, 1988, 63-7
Term of patent 14 years
U.S. Cl. D18—58



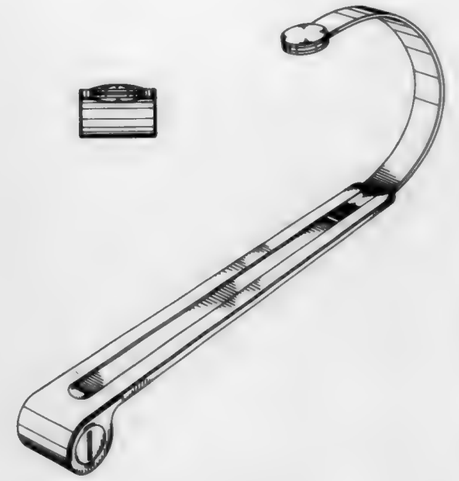
346,398
CONTAINER CASE FOR TIME CARD AND NOTEBOOK
Donald R. Flanagan, 201 Lamar St., #2, Cleveland, Miss. 38732
Filed Mar. 6, 1992, Ser. No. 846,442
Term of patent 14 years
U.S. Cl. D19—26



346,399
STRETCHABLE ADJUSTABLE BOOK MARKER
Kenneth E. Schad, and Gladys Quintana, both of 1843 W. 50th St. Rear, Cleveland, Ohio 44102
Filed Jun. 8, 1992, Ser. No. 894,199
Term of patent 14 years
U.S. Cl. D19—34



346,400
BOOKMARK LIGHT
John B. Hartley, and Belton A. Copp, both of Providence, R.I., assignors to Eye Design, Inc., Providence, R.I.
Filed Oct. 30, 1992, Ser. No. 983
Term of patent 14 years
U.S. Cl. D19—34

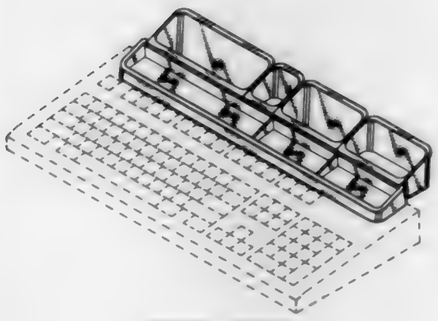


346,401
MECHANICAL PENCIL
Makoto Sakuno, Tokyo, Japan, assignor to Kabushiki Kaisha Pilot, Tokyo, Japan
Filed Jun. 1, 1992, Ser. No. 891,471
Term of patent 14 years
U.S. Cl. D19—48

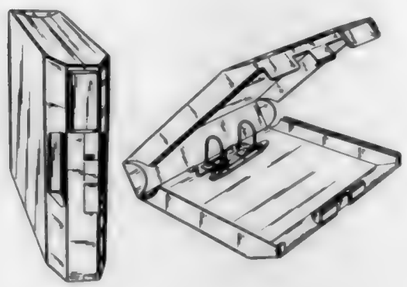


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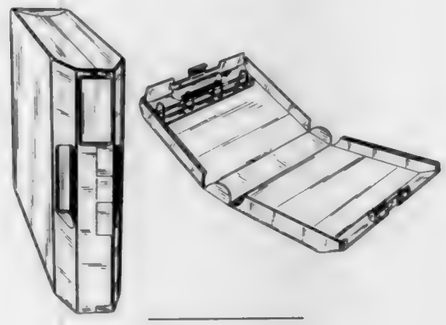
346,402
COMPARTMENTED TRAY FOR ATTACHMENT TO A COMPUTER KEYBOARD
H. Charles Hassel, and Michael J. Rocha, both of Los Angeles, Calif., assignors to MicroComputer Accessories, Inc., Los Angeles, Calif.
Filed Apr. 15, 1991, Ser. No. 685,029
Term of patent 14 years
U.S. Cl. D19—75



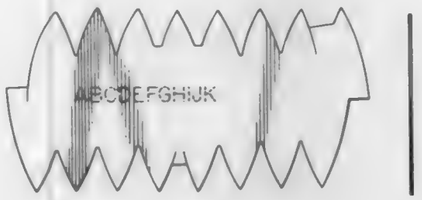
346,403
FILING CASE
Johannes F. Ros, Paris, France, assignor to Office Data Europe B.V., Netherlands
Filed Apr. 15, 1991, Ser. No. 685,482
Claims priority, application Int'l Pat. Institute, Oct. 15, 1990, DM/01 7848
Term of patent 14 years
U.S. Cl. D19—75



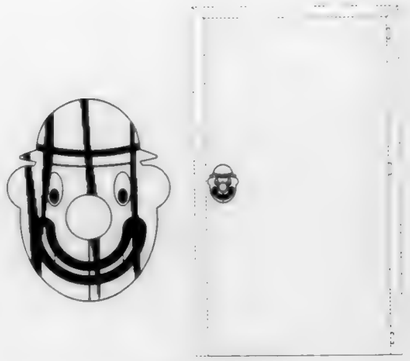
346,404
FILING CASE
Johannes F. Ros, Paris, France, assignor to Office Data Europe B.V., Netherlands
Filed Apr. 15, 1991, Ser. No. 685,558
Claims priority, application Int'l Pat. Institute, Oct. 15, 1990, DM/017848
Term of patent 14 years
U.S. Cl. D19—75



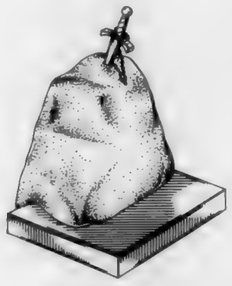
346,405
LABEL
Jeffrey L. Clifford, Gilbert, Ariz., assignor to Pro Glow Sports, Inc., Mesa, Ariz.
Filed Mar. 29, 1993, Ser. No. 6,414
Term of patent 14 years
U.S. Cl. D20—11



346,406
LUMINESCENT DOOR KNOB INDICATOR
Brian P. Pennington, 709 Camp St., Sulphur Springs, Tex. 75482
Filed Jan. 8, 1993, Ser. No. 3,383
Term of patent 14 years
U.S. Cl. D20—42



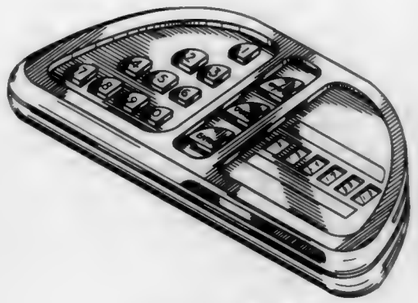
346,407
MEDIEVAL SWORD IN STONE GAME
M. Linton Herbert, 216 Harbor View La., and Greg Lightbourn, 1242 Markley Dr., both of Largo, Fla. 34640
Filed Mar. 9, 1992, Ser. No. 847,226
Term of patent 14 years
U.S. Cl. D21—1



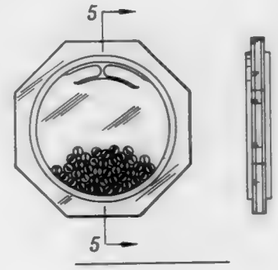
346,408
HAND-HELD ELECTRONIC GAME
Chung-Wing Lee, Shatin, Hong Kong, assignor to Fixtron Limited, Tortola, British Virgin Isls.
Filed Sep. 2, 1992, Ser. No. 939,368
Term of patent 14 years
U.S. Cl. D21—13



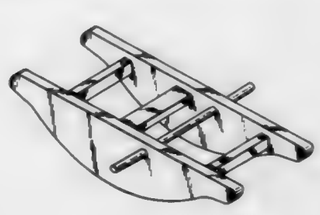
346,409
LOTTERY TICKET CHECKING MACHINE
Alan Erlich, 122 Garfield Ave., Toronto, Ontario, Canada M4T 1G1
Filed Jul. 20, 1992, Ser. No. 914,700
Term of patent 14 years
U.S. Cl. D21—37



346,410
COMBINED COASTER AND DUAL TRAP LOTTERY PICKER
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Oct. 18, 1993, Ser. No. 14,246
Term of patent 14 years
U.S. Cl. D21—37

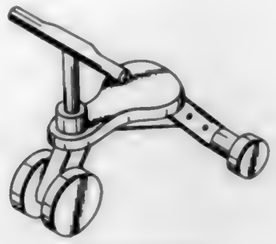


346,411
ROCKING BASE FOR A CHILD'S TOY
Rose G. Glenn, and John P. Glenn, both of Westminster, Colo., assignors to Rock 'N' Roll Farm Inc., Arvada, Colo.
Filed Dec. 2, 1992, Ser. No. 2,108
Term of patent 14 years
U.S. Cl. D21—66



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346,412
TOY CAR
Yu K. Chou, No. 2, Alley 1, Lane 233, Da Ping Street, Taoyuan, Taiwan
Filed May 28, 1993, Ser. No. 8,879
Term of patent 14 years
U.S. Cl. D21—71



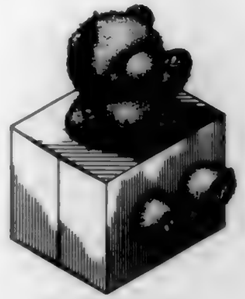
346,413
TOY DISCUS
Lee H. Hellerman, New York, N.Y., assignor to Marvico, Inc., N. Lindenhurst, N.Y.
Filed Oct. 2, 1992, Ser. No. 114
Term of patent 14 years
U.S. Cl. D21—86



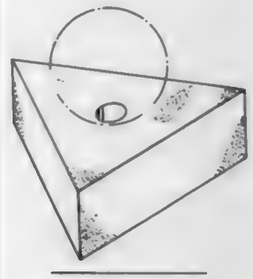
346,414
TOY MOTORCYCLE WITH RIDER
Chi P. Wong, Chai Wan, Hong Kong, assignor to Lun Cheung Enterprises Limited, Chia Wan, Hong Kong
Filed Oct. 5, 1992, Ser. No. 22
Claims priority, application United Kingdom, Apr. 29, 1992, 2022610
Term of patent 14 years
U.S. Cl. D21—134



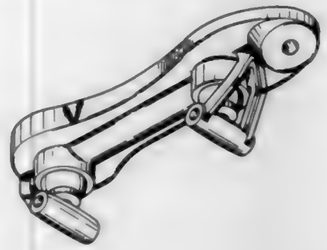
346,415
COMBINED TOY BEAR AND BOX
Colleen T. Olson-Bauman, 3506 Mary Ave., Baltimore, Md. 21214
Filed Jun. 26, 1992, Ser. No. 904,874
Term of patent 14 years
U.S. Cl. D21—159



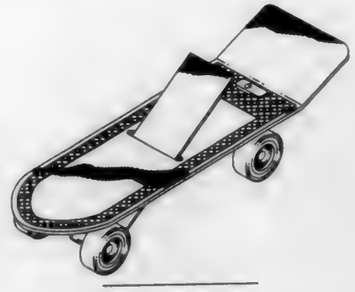
346,416
GOLF TEE
Robert M. Cassidy, P.O. Box 270888, Dallas, Tex. 75227-9998
Filed Oct. 20, 1989, Ser. No. 424,571
Term of patent 14 years
U.S. Cl. D21—208



346,417
ROLLER SKATE BASE PLATE
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed May 28, 1992, Ser. No. 889,313
Term of patent 14 years
U.S. Cl. D21—226



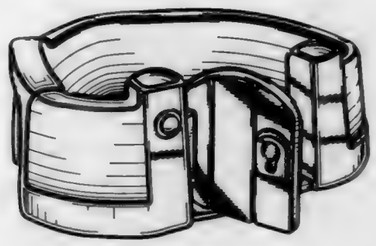
346,418
SKATEBOARD
Rainer W. Fischbach, 86 Kellogg Hill Rd., Weston, Conn. 06883
Continuation-in-part of Ser. No. 560,558, Jul. 30, 1990, abandoned. This application Aug. 19, 1991, Ser. No. 746,582
Term of patent 14 years
U.S. Cl. D21—227



346,419
SNOWBOARD HIGHBACK BINDING
Jake B. Carpenter, Manchester Center, Vt., assignor to Burton Corporation USA, Burlington, Vt.
Filed Jan. 28, 1992, Ser. No. 825,729
Term of patent 14 years
U.S. Cl. D21—230



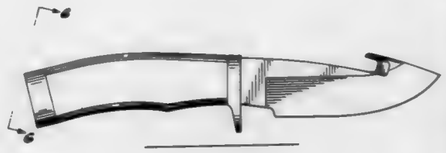
346,420
TOY PLAY GARDEN
Joseph C. Cacciola, and Jeffery G. Martin, both of Hudson, Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Feb. 4, 1993, Ser. No. 4,431
Term of patent 14 years
U.S. Cl. D21—242



346,421
SANDBOX
Jeffery G. Martin, Hudson; John R. Nottingham, Chagrin Falls, and John W. Spirk, Jr., Moreland Hills, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Feb. 1, 1993, Ser. No. 4,274
Term of patent 14 years
U.S. Cl. D21—252



346,422
KNIFE WITH CUTTING HOOK
Brett P. Seber, Escondido; Randolph J. Morton, Lakeside; William H. Keys, El Cajon; Patrick W. Kraft; William R. Bates, Jr., both of Santee, and Marlow D. Hussey, Alpine, all of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.
Filed Aug. 13, 1992, Ser. No. 929,724
Term of patent 14 years
U.S. Cl. D22—118

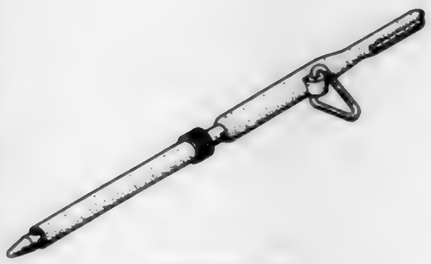


346,423
FISHING TACKLE SWIVEL
Yasuhiro Kitagawa, Takeo, Japan, assignor to Kabushiki-Kaisha Yo-Zuri, Takeo, Japan
Filed Nov. 13, 1992, Ser. No. 1,466
Term of patent 14 years
U.S. Cl. D22—134



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346,424
FISHERMAN'S KNOT TYING TOOL
John W. Ruxtowicz, 5602 Belle River Rd., Attica, Mich. 48412
Filed Mar. 24, 1992, Ser. No. 857,293
Term of patent 14 years
U.S. Cl. D22—149



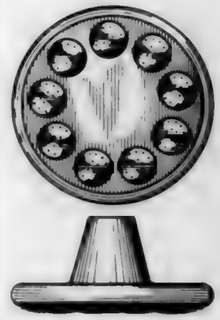
346,425
FERTILIZER DISPENSER
Gregory L. Hamlett, 1313 Aspen Ave., Lovington, N. Mex. 88260
Filed Mar. 6, 1992, Ser. No. 846,434
Term of patent 14 years
U.S. Cl. D23—207



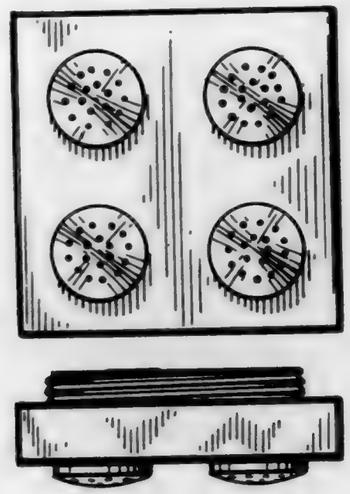
346,426
HAND HELD SHOWER
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,988
Term of patent 14 years
U.S. Cl. D23—213



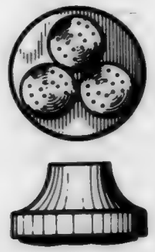
346,427
SHOWER HEAD
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,995
Term of patent 14 years
U.S. Cl. D23—213



346,428
SHOWER HEAD FACE
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,996
Term of patent 14 years
U.S. Cl. D23—213



346,429
SHOWER HEAD
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,997
Term of patent 14 years
U.S. Cl. D23—213



346,430
HAND HELD SHOWER HEAD
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,999
Term of patent 14 years
U.S. Cl. D23—213

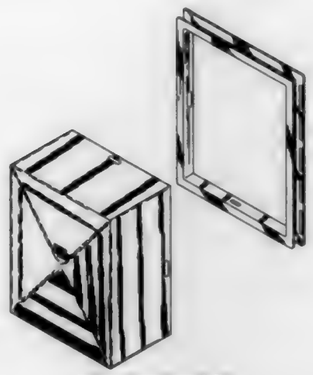


346,431
FLOAT-CONTROLLED ROTARY VALVE FOR FLOODING A RICE PADDY TO A PREDETERMINEI DEPTH
Daryl D. Alberico, Rte. 2, Box 219-A, Willows, Calif. 95988
Filed Jun. 26, 1992, Ser. No. 903,197
Term of patent 14 years
U.S. Cl. D23—236

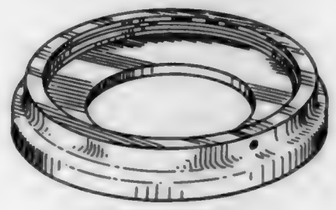


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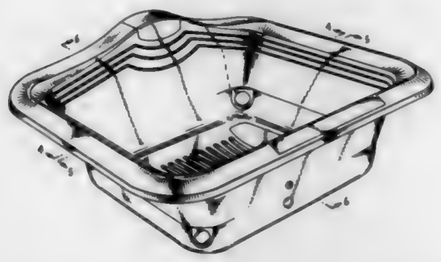
346,432
INSULATED HOUSING FOR OUTSIDE WATER FAUCET
Joseph R. Van Meter, 11715 237th Ave. Ct. East, Buckley, Wash. 98321
Filed Aug. 14, 1991, Ser. No. 745,105
Term of patent 14 years
U.S. Cl. D23—249



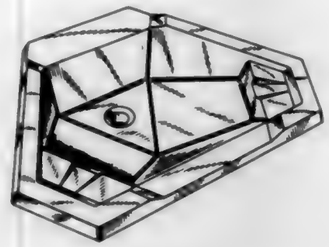
346,433
FIRE HYDRANT ADAPTER RING
Glyde J. Cooper, 3280 Colorado La., Costa Mesa, Calif. 92626
Filed Apr. 29, 1991, Ser. No. 692,501
Term of patent 14 years
U.S. Cl. D23—259



346,434
WHIRLPOOL BATH
Darrell M. Hunger; Roy A. Jacuzzi, both of Lafayette, and Ralph D'Innocenta, Benecia, all of Calif., assignors to Jacuzzi, Inc., Walnut Creek, Calif.
Filed Jan. 17, 1992, Ser. No. 822,575
Term of patent 14 years
U.S. Cl. D23—281



346,435
LAVATORY BASIN
George S. Gruber, Canyon Country, Calif., assignor to Six Eleven Limited, North Hollywood, Calif.
Filed Jun. 20, 1991, Ser. No. 721,355
Term of patent 14 years
U.S. Cl. D23—294



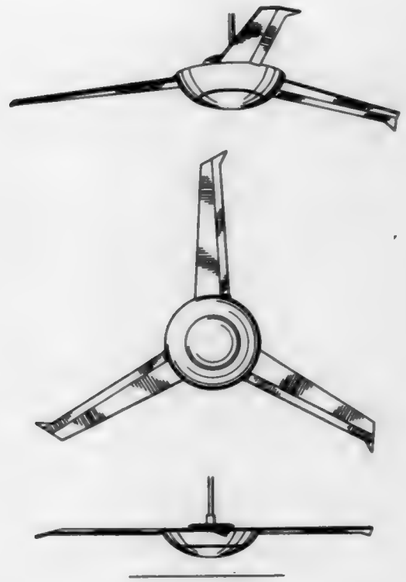
346,436
INFANT'S COMMODE SEAT
Jtonia L. Wilks, 3520 Fremont St., Columbus, Ohio 43204
Filed May 28, 1991, Ser. No. 706,103
Term of patent 14 years
U.S. Cl. D23—312



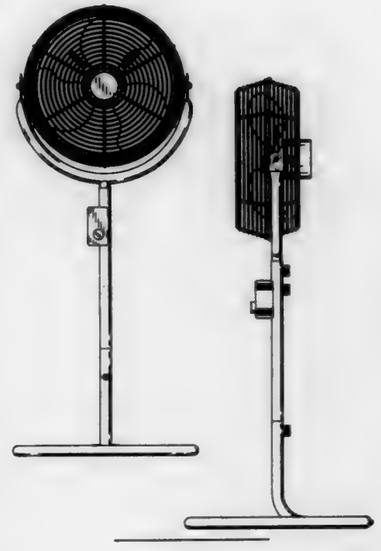
346,437
FUME HOOD
Rudolph Poblete, and Kurt Rindoks, Cornelius, both of N.C., assignors to Kewaunee Scientific Corporation, Statesville, N.C.
Filed May 11, 1993, Ser. No. 8,205
Term of patent 14 years
U.S. Cl. D23—371



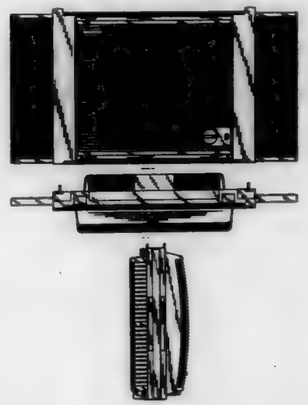
346,438
COMBINED CEILING FAN WIH BLADE TIP AND ILLUMINABLE ATTACHMENT
John Caldwell, 901 El Centro St., South Pasadena, Calif. 91030
Continuation of Ser. No. 3,463, Jan. 7, 1993. This application Jun. 17, 1993, Ser. No. 9,698
Term of patent 14 years
U.S. Cl. D23—377



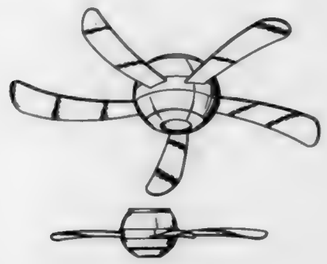
346,440
PORTABLE FAN
Bernard Chiu, Ashland, Mass., and Jui-Shang Wang, Taipei, Taiwan, assignors to Duracraft Corporation, Whitinsville, Mass.
Filed Mar. 4, 1993, Ser. No. 5,424
Term of patent 14 years
U.S. Cl. D23—378



346,441
EXPANDABLE WINDOW FAN
Jui-Shang Wang, Taipei, Taiwan, assignor to Duracraft Corporation, Whitinsville, Mass.
Filed Mar. 29, 1993, Ser. No. 6,440
Term of patent 14 years
U.S. Cl. D23—381

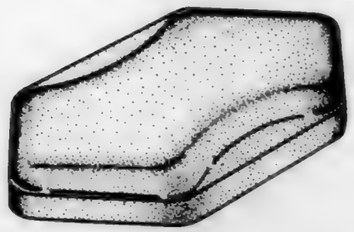


346,439
CEILING FAN
Chen-Tse Liu, Feng Yuan, Taiwan, assignor to Pan Air Electric Co., Ltd., Feng Yuan, Taiwan
Filed Sep. 13, 1993, Ser. No. 12,862
Term of patent 14 years
U.S. Cl. D23—377



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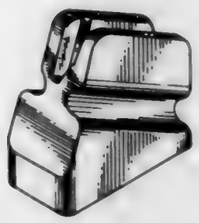
346,442
PHARMACEUTICAL TABLET
Kenneth A. Kramer, Green Lane, and Ashok V. Katadare, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Sep. 29, 1992, Ser. No. 953,579
Term of patent 14 years
U.S. Cl. D24—101



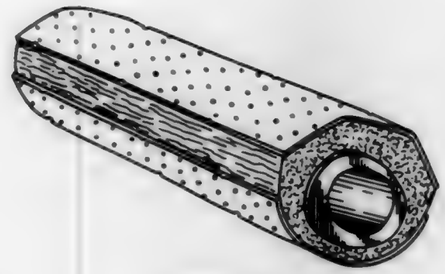
346,443
PIERCED EAR CLEANER
Flonnoya J. Franklin, 2425 Inglenook Pl., Youngstown, Ohio 44511
Filed Jan. 16, 1990, Ser. No. 464,765
Term of patent 14 years
U.S. Cl. D24—119



346,444
COMBINED NEEDLE CAP REMOVER AND HOLDER
Steven E. Wade, Winona, W. Va., assignor to Medical Safety Solutions, Inc., Warminster, Pa.
Filed Jun. 5, 1992, Ser. No. 894,630
Term of patent 14 years
U.S. Cl. D24—130



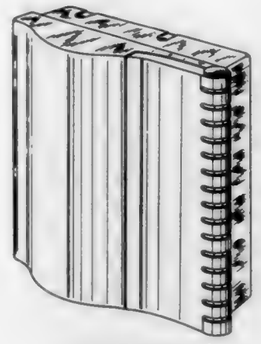
346,445
PRACTICE MODEL FOR A TRACHEOSTOMY
James D. Weinstein, 1109 Woodland Dr., Bridgeport, W. Va. 26330
Filed Nov. 1, 1991, Ser. No. 786,358
Term of patent 14 years
U.S. Cl. D24—155



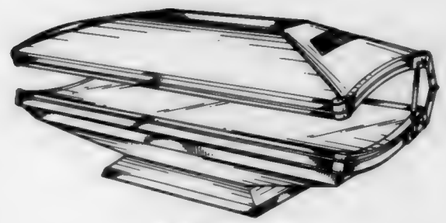
346,446
HEAD FOR A GUM MASSAGER
Robert P. Linzey, 3129 Rosalie Ave., Baltimore, Md. 21234
Continuation-in-part of Ser. No. 533,865, Jun. 6, 1990, Pat. No. 5,027,796, which is a continuation-in-part of Ser. No. 533,909, Jun. 6, 1990, Pat. No. Des. 332,177, which is a continuation-in-part of Ser. No. 409,719, Sep. 20, 1989, abandoned. This application May 3, 1991, Ser. No. 695,707
The portion of the term of this patent subsequent to Jan. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—200



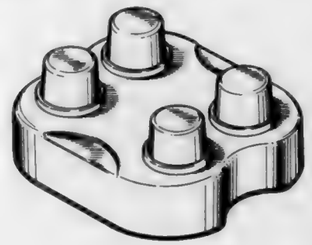
346,447
CONTROL UNIT FOR HYDRO-MASSAGE MAT
Marten F. Elkerbout, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 12, 1992, Ser. No. 849,930
Claims priority, application World Int. Prop. O., Oct. 17, 1991, DM/020.926
Term of patent 14 years
U.S. Cl. D24—201



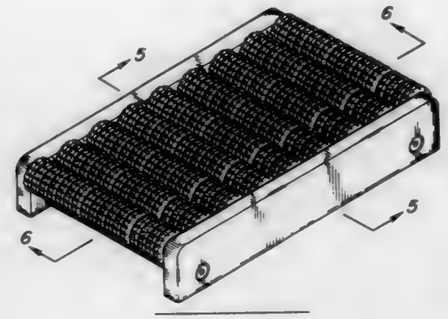
346,448
SOLARIUM BED
Urban Hödlund, Stavby, S-74050 Alunda, Sweden
Filed Jun. 9, 1992, Ser. No. 895,873
Term of patent 14 years
U.S. Cl. D24—209



346,449
MASSAGER
Tzu-Keng Cheng, 197 Shin-Sheng St., Chung-Ho City, Taipei, Taiwan
Filed Apr. 23, 1992, Ser. No. 872,425
Term of patent 14 years
U.S. Cl. D24—211



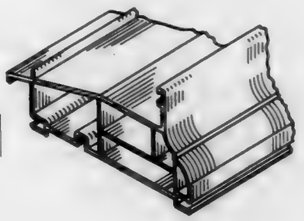
346,450
FOOT MASSAGE ROLLER
John P. Bruno, 11 Marlyn Ter., Millville, N.J. 08332
Filed Sep. 21, 1992, Ser. No. 949,009
Term of patent 14 years
U.S. Cl. D24—212



346,451
STORE FRONT
Joel Brand, Houston, Tex., assignor to Ethan Allen Inc., Danbury, Conn.
Filed Jun. 1, 1992, Ser. No. 892,514
Term of patent 14 years
U.S. Cl. D25—59

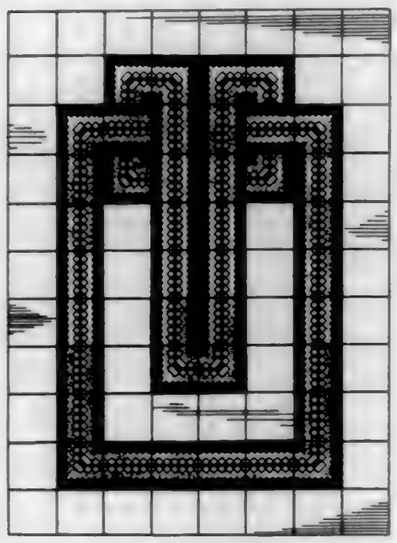


346,452
FRAME SILL
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,834
Term of patent 14 years
U.S. Cl. D25—124

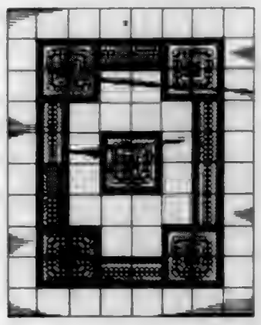


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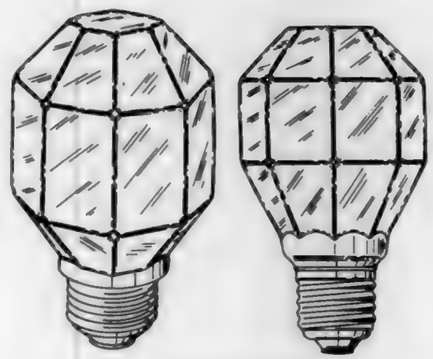
346,453
CERAMIC TILE UNIT FOR A FLOOR OR A WALL
Besavent Adrian, Nules, Spain, assignor to Gres De nules, S.A.-Gresnul, Nules, Spain
Filed Apr. 17, 1991, Ser. No. 686,536
Claims priority, application Spain, Oct. 18, 1990, 21.183
Term of patent 14 years
U.S. Cl. D25—138



346,454
CERAMIC TILE UNIT FOR A FLOOR OR A WALL
Jose Beauvent Adrian, Nules, Spain, assignor to Gres De Nules, S.A. Gresaul, Nules, Spain
Filed Apr. 17, 1991, Ser. No. 686,537
Claims priority, application Spain, Oct. 18, 1990, 21.183
Term of patent 14 years
U.S. Cl. D25—138



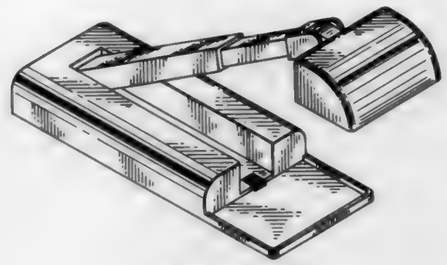
346,455
LAMP
Reinhard Mayr, Vorchdorf, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 942,483, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 490,161, Mar. 5, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,135
Claims priority, application Hague, Sep. 11, 1989, DM/014.544
The portion of the term of this patent subsequent to Jun. 11, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—2



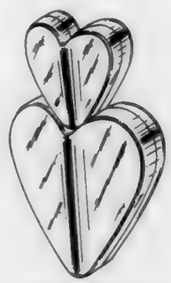
346,456
SELF-BALLASTED COMPACT FLUORESCENT LAMP
Takeshi Matsumura, and Tsunetaka Araki, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan
Filed Mar. 31, 1993, Ser. No. 6,554
Claims priority, application Japan, Nov. 16, 1992, 4-33811
Term of patent 14 years
U.S. Cl. D26—3



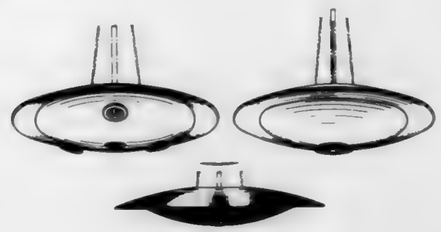
346,457
PORTABLE DESK LIGHT
Arthur S. Friedman, 2144 Seneca West, P.O. Box 625, Merrick, N.Y. 11566
Filed May 8, 1992, Ser. No. 880,706
Term of patent 14 years
U.S. Cl. D26—43



346,458
LIGHTED DISPLAY ARTICLE
Michael L. Ferrante, 27282 Eastridge, El Toro, Calif. 92630
Filed Jan. 21, 1993, Ser. No. 3,835
Term of patent 14 years
U.S. Cl. D26—47



346,459
INTERIOR SUSPENSION LAMP
Nick A. King, 215 S. Governor St., Iowa City, Iowa 52240
Filed Sep. 30, 1991, Ser. No. 767,937
Term of patent 14 years
U.S. Cl. D26—84



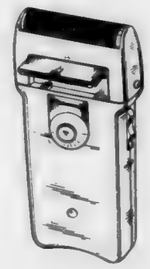
346,460
POCKET COMB
Aaron Zutler, 19 Clearmeadow La., Woodbury, N.Y. 11797
Filed Aug. 30, 1990, Ser. No. 574,934
Term of patent 14 years
U.S. Cl. D28—22



346,461
TRAVEL SAFETY RAZOR
Larry J. Reno, Scottsdale, Ariz., assignor to World Harbors, Inc., Scottsdale, Ariz.
Filed Jan. 30, 1992, Ser. No. 828,489
Term of patent 14 years
U.S. Cl. D28—46

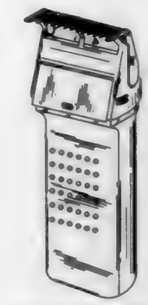


346,462
COMBINED ELECTRIC SHAVER AND TRIMMER
Yousuke Tanaka, Hyogo, and Kazuo Takada, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 29, 1992, Ser. No. 876,210
Claims priority, application Japan, Nov. 6, 1991, 3-33666
Term of patent 14 years
U.S. Cl. D28—51

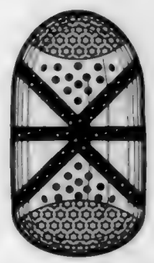


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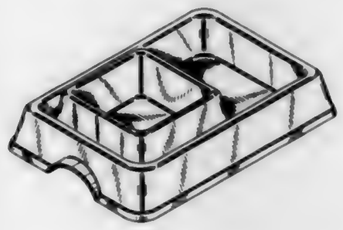
346,463
ELECTRIC HAIR CLIPPER
Yoshiyuki Nakashima; Shinji Yamamoto, both of Osaka, Japan, and Florian Seiffert, Lauzastrasse, Fed. Rep. of Germany, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 12, 1991, Ser. No. 714,057
Claims priority, application Japan, Dec. 18, 1990, 2-42263
Term of patent 14 years
U.S. Cl. D28—53



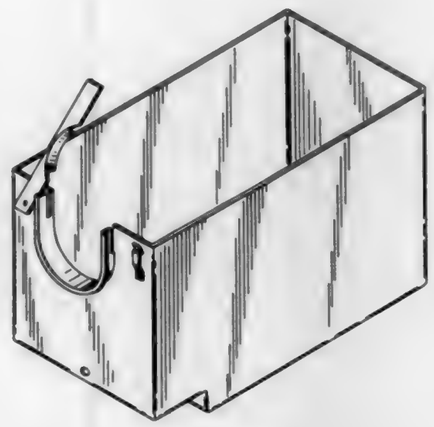
346,464
ARTIFICIAL FINGERNAIL
Bernarda M. Romano, 616 W. 137th St., Apt. 5A, New York, N.Y. 10031
Filed Oct. 7, 1991, Ser. No. 772,020
Term of patent 14 years
U.S. Cl. D28—56



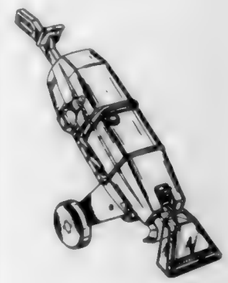
346,465
PET FOOD AND WATER BOWL
David Russell, and Cherie Russell, both of 3550 Iris Cir., Seal Beach, Calif. 90740
Filed Sep. 14, 1992, Ser. No. 948,724
Term of patent 14 years
U.S. Cl. D30—130



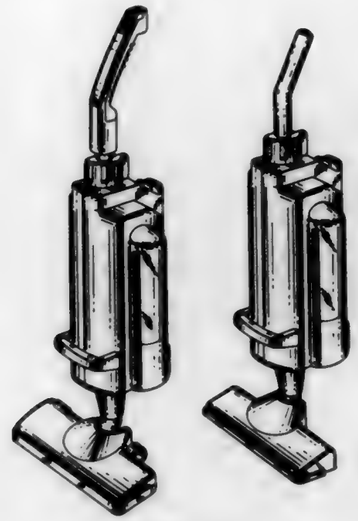
346,466
CONTAINER FOR TREATING ANIMALS
Edward M. Puntervold, Sr., 1730 NW. 118 Ave., Pembroke Pines, Fla. 33026
Filed Apr. 20, 1992, Ser. No. 872,684
Term of patent 14 years
U.S. Cl. D30—158



346,467
CLEANING DEVICE
Kent J. Furcron; Gary A. Miller, both of Bristol, Va.; Ricky A. Owens, Bristol, Tenn.; John W. Walch, Abingdon, Va., and Mark D. Dzierak, Simsbury, Conn., assignors to TRC Acquisition Corporation, Atlanta, Ga.
Filed Jul. 15, 1991, Ser. No. 730,297
The portion of the term of this patent subsequent to Apr. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—22



346,468
ELECTRIC BROOM
William L. Dusinberre, Bluff City, Tenn.; Robert H. Bruno, Avon, Conn., and Linda C. Hotz, Rahway, N.Y., assignors to TRC Acquisition Corporation, Atlanta, Ga.
Filed Jan. 10, 1992, Ser. No. 818,961
Term of patent 14 years
U.S. Cl. D32—22



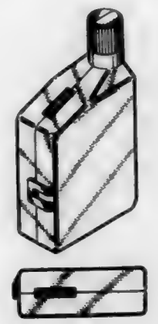
346,469
UPRIGHT VACUUM CLEANER
Kent J. Furcron, Blountville, Tenn., and Mark D. Dzierak, Simsbury, Conn., assignors to TRC Acquisiton Corporation, Atlanta, Ga.
Filed Jan. 10, 1992, Ser. No. 819,501
Term of patent 14 years
U.S. Cl. D32—22



346,470
CARPET SWEEPER
Terry L. Zahuranec, Hudson, and Craig M. Saunders, Rocky River, both of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio
Filed Jul. 17, 1991, Ser. No. 731,704
Term of patent 14 years
U.S. Cl. D32—38

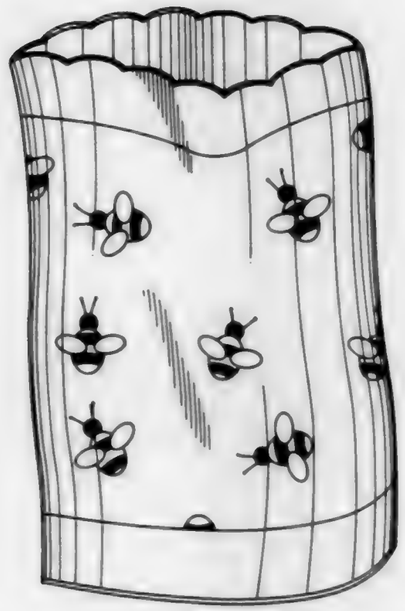


346,471
DIPSTICK WIPER
Jeffrey L. Cross, 2216 Center Ave., Martinez, Calif. 94553
Filed Jun. 8, 1992, Ser. No. 893,363
Term of patent 14 years
U.S. Cl. D32—43



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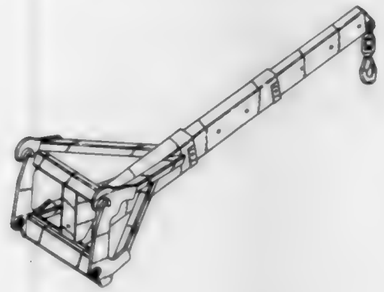
346,472
INSECT REPELLANT TRASH CAN LINERS
Tracy D. Boebe, R.D. 3 #3168, Fleetwood, Pa. 19522
Filed Apr. 25, 1991, Ser. No. 691,107
Term of patent 14 years
U.S. Cl. D34—10



346,473
SHOPPING CART
Kenneth W. Hubble, P.O. Box 307, Shelbyville, Tex. 75973
Filed Sep. 16, 1992, Ser. No. 945,350
Term of patent 14 years
U.S. Cl. D34—19



346,474
DETACHABLE GOODS LIFTING ARM
Gunnar Lindgren, Eskilstuna, Sweden, assignor to VME Industries Sweden AB, Eskilstuna, Sweden
Filed Dec. 22, 1992, Ser. No. 2,856
Claims priority, application Sweden, Jun. 22, 1992, 92-1348
Term of patent 14 years
U.S. Cl. D34—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF APRIL, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Meinander, Paul O., 5,306,394, Cl. 162-209.000.

Aas, Eric F.: *See*—
McConica, Charles H.; Aas, Eric F.; Kochis, Richard L.; Dalton, Dan L.; and Miksch, Eugene A., 5,306,908, Cl. 250-234.000.

AB SKF: *See*—
Lagergvist, Conny, 5,306,454, Cl. 264-135.000.

AB Volvo: *See*—
Harde, Bo, 5,305,903, Cl. 220-86.200.

Abat, Fernand, to Societe Logistel. Screened cable branch connection device. 5,306,870, Cl. 174-65.00R.

Abbott, Joe L., to Enviro Pak International. Method for two-stage pressurization of dispensing container. 5,305,582, Cl. 53-470.000.

Abbott Laboratories: *See*—
Illes, Kenneth E., 5,306,469, Cl. 422-104.000.
Joyce, Thomas P.; and Ziegler, John S., 5,306,242, Cl. 604-82.000.
Mazer, Terrence B.; Nardelli, Christy A.; Hogarth, Arthur J. C. L.; and Daab-Krzykowski, Andre, 5,306,810, Cl. 530-372.000.

Abbott, Ronald G.: *See*—
Eastman, Alan D.; Abbott, Ronald G.; and Eldridge, Robert B., 5,306,859, Cl. 585-724.000.

Abe, Hiroshi, to Asahi Seiko Kabushiki Kaisha. Coin feeding device. 5,306,206, Cl. 453-32.000.

Abe, Hiroshi: *See*—
Harada, Shoichiro; Isayama, Yasutoshi; Fukushima, Tetsuaki; Morii, Masayoshi; Kitagawa, Hiroshi; and Abe, Hiroshi, 5,306,735, Cl. 521-78.000.

Abe, Masahiro: *See*—
Hayashi, Takehisa; Noguchi, Kouki; Kurihara, Tsuneya; and Abe, Masahiro, 5,307,266, Cl. 364-419.070.

Abe, Masanobu; and Sagayama, Shigeki, to ATR Interpreting Telephony Research Laboratories. Method and apparatus for speaker individuality conversion. 5,307,442, Cl. 395-2.790.

Abe, Syunji: *See*—
Kobayashi, Jiro; Suwabe, Satoru; and Abe, Syunji, 5,307,066, Cl. 341-155.000.

Abe, Yuji; and Tokuda, Yasunori, to Mitsubishi Denki Kabushiki Kaisha. Nonlinear optical element and method of using the same. 5,306,925, Cl. 257-21.000.

Abel, Gunther. Heating systems. 5,305,954, Cl. 237-55.000.

Aberkane, Ourida: *See*—
Bora, Maurice; Aberkane, Ourida; Mieloszynski, Jean-Luc; Paquer, Daniel; and Parc, Guy, 5,306,436, Cl. 252-32.70E.

Abrahams, Graham N., to Clampi Corporation CC. Clamp. 5,305,502, Cl. 24-517.000.

Abumehdi, Cyrus, to Neopost Limited. Franking machine with carriage mounted resilient pressure roller. 5,305,690, Cl. 101-269.000.

Accraply, Inc.: *See*—
Leonard, Robin G., 5,306,375, Cl. 156-249.000.

Ace Medical Company: *See*—
Dahl, Mark T.; and Clewett, Richard H., 5,306,278, Cl. 606-96.000.

Achia, Biddanda U.: *See*—
Schorfheide, James J.; and Achia, Biddanda U., 5,306,681, Cl. 502-22.000.

Acorn, Russell G.; and Hasebroek, Gary M., to Medical Graphics Corporation. Patient valve incorporating one-way check valves for infection control. 5,305,762, Cl. 128-716.000.

Adachi, Etsushi: *See*—
Adachi, Hiroshi; Kanegae, Hirozoh; Mochizuki, Hiroshi; Obata, Masanori; Endoh, Takemi; Hagi, Kimio; Harada, Shigeru; Matsukawa, Kazuhito; Ohhira, Akira; and Adachi, Etsushi, 5,306,947, Cl. 257-642.000.

Adachi, Hideo: *See*—
Nagasaki, Tatsuo; Mori, Takeshi; and Adachi, Hideo, 5,307,169, Cl. 348-307.000.

Adachi, Hiroshi; Kanegae, Hirozoh; Mochizuki, Hiroshi; Obata, Masanori; Endoh, Takemi; Hagi, Kimio; Harada, Shigeru; Matsukawa, Kazuhito; Ohhira, Akira; and Adachi, Etsushi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and manufacturing method thereof. 5,306,947, Cl. 257-642.000.

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Ueda, Masaaki; Murakami, Teruo; Shibata, Shunji; Hirabayashi, Kazuo; Kondoh, Tadami; Adachi, Kohji; Hoshino, Nobuko; and Inoue, Shinichi, 5,306,682, Cl. 502-52.000.

Adachi, Takakatsu, to Nisshin Steel Co., Ltd.; and Chugai Ro Co., Ltd. Method of blackening treating a stainless steel strip surface. 5,306,354, Cl. 148-235.000.

Adam, Friedhelm; Durckheimer, Walter; Fischer, Gerd; Mencke, Burkhard; Seibert, Gerhard; Isert, Dieter; and Kiesel, Norbert, to Hoechst Aktiengesellschaft. Cephalosporin derivatives. 5,306,717, Cl. 514-202.000.

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Chihara, Eiji, 5,307,435, Cl. 385-92.000.

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Faust, Howard C.; Adams, Nicholas; and Kegerise, Wesley R., II, 5,306,868, Cl. 174-23.00R.

Adams, Theodore P.: *See*—
Kroll, Mark W.; Adams, Theodore P.; and Supino, Charles G., 5,306,291, Cl. 607-5.000.

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Adamski, Robert P.: *See*—
Beshouri, Sharon M.; and Adamski, Robert P., 5,306,831, Cl. 549-478.000.

Adda, Michel; Eidelman, Chaim; and Shorr, Leonard, to Bromine Compounds Ltd. Process for the manufacture of substituted maleimides. 5,306,828, Cl. 548-548.000.

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Moench, Jerry D., 5,307,352, Cl. 370-112.000.

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Heaven, Malcolm D., 5,306,245, Cl. 604-95.000.

Advanced Technology Laboratories, Inc.: *See*—
Entrekin, Robert R.; Robinson, Brent S.; and Keller, Philip, 5,305,756, Cl. 128-660.090.

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Tani, Mitsuaki, 5,307,011, Cl. 324-158.00F.

AER Energy Resources, Inc.: *See*—
Shepard, V. Roger, Jr.; Smalley, Yardlyne G.; and Bentz, R. Dennis, 5,306,579, Cl. 429-40.000.

Afeyan, Noubar B., to Perseptive Biosystems, Inc. Method for detecting trace contaminants. 5,306,426, Cl. 210-635.000.

AFP Imaging Corporation: *See*—
Vozick, David, 5,305,902, Cl. 220-23.400.

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Agee, John M.; King, Francis; Romanko, Kimberly A.; Flor, Lawrence A.; Turgeon, Thomas A.; and Mittelstadt, William A., 5,306,284, Cl. 606-170.000.

Agee, John M.; King, Francis; Romanko, Kimberly A.; Flor, Lawrence A.; Turgeon, Thomas A.; and Mittelstadt, William A., to Agee, John; and Minnesota Mining & Mfg. Co. Surgical instrument. 5,306,284, Cl. 606-170.000.

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Hong, Seong-Hyeon; Kang, Suk-Joong L.; Yoon, Duk Yong; and Baek, Woon-Hyung, 5,306,364, Cl. 148-673.000.

Agency of Industrial Science & Technology: *See*—
Shioyama, Hiroshi; Souma, Isao; Tatsumi, Kuniaki; and Nariswa, Masaki, 5,306,563, Cl. 428-408.000.

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Terrell, David R.; De Schryver, Frans C.; Geelen, Carine; Monbaliu, Marcel J.; De Meutter, Stefaan K.; Van der Auweraer, Mark G.; and Verbeek, Guy P., 5,306,587, Cl. 430-58.000.

Agricultural Genetics Company Limited: *See*—
Hilder, Vaughan A.; Gatehouser, Angharad M. R.; Gatehouse, John A.; Boulter, Donald; Barker, Richard F.; and Bevan, Michael, 5,306,863, Cl. 800-205.000.

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Kita, Hiromi; Kotera, Hidetoshi; Sakiyama, Razuyuki; and Ahagon, Akira, 5,307,291, Cl. 364-560.000.

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Ahuja, Bhupendra K., to Intel Corporation. Skew-free clock signal distribution network in a microprocessor. 5,307,381, Cl. 375-107.000.

Aihara, Shinichi: *See*—
Fukushima, Minoru; and Aihara, Shinichi, 5,306,182, Cl. 439-857.000.

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Bennett, Douglas L.; Ludwig, Keith A.; and Weimer, Robert F., 5,305,610, Cl. 62-5.000.
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Ajinomoto Co., Inc.: *See*—
Koike, Toshio; Mochizuki, Toshiyuki; and Gondo, Keiko, 5,305,650, Cl. 73-864.210.

Akahori, Kingo; Washimi, Takeshi; Omura, Takashi; and Fujita, Mahito, to Sumitomo Chemical Company, Limited. Bisazo compounds having sulfophenylazonaphtylazophenylamino-s-triazinyl group and use thereof for dyeing or printing fiber materials. 5,306,814, Cl. 534-642.000.

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Akao, Yasushi; Baba, Shiro; Miwa, Yoshiyuki; Sawase, Terumi; Sato, Yuji; and Masumura, Shigeki, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Microprocessor and method for setting up its peripheral functions. 5,307,464, Cl. 395-325.000.

Akazawa, Moriaki: *See*—
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Akutagawa, Hitoshi; Okita, Junichi; Kameda, Osamu; Hasetoh, Sakumi; and Tanaka, Yoshimichi, to Mazda Motor Corporation. Automobile powertrain structure including automatic transmission for transverse engine. 5,305,848, Cl. 180-292.000.

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Albrecht, Leonard N., to Deep Root Partners, L.P. Method and apparatus for deflecting tree roots, and combination of the apparatus with tree and static structure. 5,305,549, Cl. 47-33.000.

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D'Andrade, Bruce M. Action figure with the ability to shoot water. 5,305,918, Cl. 222-78.000.

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Danielsson, Curt; and Andersson, Olle. Connector for sections. 5,306,094, Cl. 403-11.000.

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Darago, Gilles, to Solvay (Societe Anonyme). Purification process for a hydrofluoroalkane. 5,306,850, Cl. 570-178.000.

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Davis, Leo W. Liquid spring having improved damper valve structure. 5,305,859, Cl. 188-282.000.

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Debush, George, to ReSeal International Limited Partnership. One-way valve assembly. 5,305,786, Cl. 137-512.300.

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Dennig, Helmut, to P & D Systemtechnik GmbH. Large-scale container, preferably transportable and closable by a fireproof sliding door. 5,305,901, Cl. 220-1.500.

Denzer, Philip C., to Process Software Corporation. Method and apparatus for adding data compression and other services in a computer network. 5,307,413, Cl. 380-49.000.

de Oca-Luna, Roberto M.: *See*—
Lupeki, James R.; Patel, Pragna I.; de Oca-Luna, Roberto M.; and Cardenas, Odila S., 5,306,616, Cl. 435-6.000.

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Depping, Carl L. Shoe cleat guard having a spring biased securing device. 5,305,536, Cl. 36-135.000.

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Deutsche Aerospace Airbus GmbH: *See*—
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Deutsche Forschungsanstalt fuer-Luft und Raumfahrt e.V.: *See*—
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Dewert Antriebs-und Systemtechnik GmbH & Co KG: *See*—
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Diablo Research Corporation: *See*—
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Diekhans, Norbert; and Behnke, Willi, to Claas Ohg. V-belt drive. 5,305,648, Cl. 73-862.191.

Dieperink, Willem; and Croisier, Claude, to Beyeler Raskin S.A. Tooling for folding press for air folding. 5,305,659, Cl. 72-389.000.

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Dietrich, Klaus; and Winkler, Roland, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.v. Drum with plug. 5,305,906, Cl. 220-288.000.

Dietz, Dennis R.; and Busse, Lawrence J., to Tetrad Corporation. Ultrasonic apparatus for use in obtaining blood flow information. 5,305,758, Cl. 128-662.060.

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Colwell, Robert P.; O'Donnell, John; Papworth, David B.; and Paul K. Rodman, 5,307,506, Cl. 395-800.000.
Lee, Neville K.; Jain, Amit; Keppeler, Erwin; and Bouchard, Mark, 5,307,336, Cl. 369-112.000.
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Robinson, Scott G.; and Sites, Richard L., 5,307,504, Cl. 395-800.000.
Saliba, George A., 5,307,217, Cl. 360-76.000.
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Digital Equipment International Limited: *See*—
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Digital Instruments, Inc.: *See*—
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DiMaio, Anthony; Duffy, Richard J.; and Sessa, Eugene, to Nylok Fastener Corporation. Apparatus for coating fasteners. 5,306,346, Cl. 118-308.000.

Dimensions Unlimited, Inc.: *See*—
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Dingeman, David L.; and Skagerberg, William E., to Oriox Technologies, Inc. Modified native starch base binder for pelletizing mineral material. 5,306,327, Cl. 75-313.000.

Dingwall, Richard B.; Knapp, Lowell W.; Steele, John H.; Celebi, James S.; and Hull, Virgil J., to Xerox Corporation. Color liquid

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crystal display with dead frost appearance having opaque mask formed on the primary display. 5,307,188, Cl. 359-53.000.

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Dinnan, Joseph A.: *See*—
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Donaldson Company, Inc.: *See*—
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Douche, Alain; and Isambourg, Patrick, to Societe Nationale Elf Aquitaine. Scleroglucan-based compositions and their use as a cementation spacer. 5,306,340, Cl. 106-208.000.

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Douglass, Charles L.; and Mertz, Bruce A. Flagging apparatus and method. 5,305,975, Cl. 246-477.000.

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Driscoll, Kevin R., to Honeywell Inc. Apparatus and method for fault detection on redundant signal lines via encryption. 5,307,409, Cl. 380-2.000.

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Kaga, Kouichi, to Toyoda Gosei Co., Ltd. Steering wheel with an air bag unit and method of manufactures. 5,305,655, Cl. 74-552.000.
Kageyama, Shuhei; Anzai, Shoji; and Mitsuya, Yoshihide, to Kotobuki & Co., Ltd. Twin-type stick-shaped material extending container. 5,306,107, Cl. 401-29.000.
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Kaneko, Junya, to SMC Corporation. Piping and wiring lead-out mechanism for rodless cylinder. 5,305,682, Cl. 92-5.00R.
Kaneko, Mamoru; Kami, Kuniaki; Gotanda, Masakazu; Takayam, Shuichi; Nakamura, Ichiro; Nakamura, Kazunari; Fuse, Eiichi; Takahashi, Susumu; Kosaka, Yoshihiro; and Suzuki, Hiromasa, to Olympus Optical Co., Ltd. Examined body interior information observing apparatus by using photo-pulses controlling gains for depths. 5,305,759, Cl. 128-665.000.
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Kaneko, Takehira; Suzuki, Hirofumi; Matsui, Nobuo; Yagihara, Tomio; Higashida, Shiro; Nakada, Akira; Matsumoto, Hitoshi; and Shimizu, Takeo, to Nippon Soda Co., Ltd. Method for the preparation of conductive polymer film. 5,306,443, Cl. 252-518.000.
Kaneko, Tetsuya: *See*—
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Kaneko, Yuji; and Nishimura, Hideo, to Sodick Co., Ltd. Wire cut electrical discharge machining apparatus. 5,306,889, Cl. 219-69.120.

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Suetsugu, Keiko; Ogata, Kazumi; Yoshida, Kenichi; Uehara, Keiichi; and Tomita, Kenichi, to Shiseido Company Ltd.; and Senju Pharmaceutical Co, Ltd. Highly active antioxidant of tocopheryl ascorbyl phosphate. 5,306,713, Cl. 514-100.000.

Sueyoshi, Masaaki: *See*—
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Suga, Chouji: *See*—
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Suga, Shigeo: *See*—
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Suga, Shigeru; Suga, Shigeo; and Natori, Etsuji, to Suga Test Instruments Co. Ltd. Weathering test method and sample holder used therein. 5,305,634, Cl. 73-86.000.

Suga Test Instruments Co. Ltd.: *See*—
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Sugano, Yoshiharu: *See*—
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Sugaya, Tomio: *See*—
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Sugihashi, Atsushi: *See*—
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Sugimoto, Hachiro; Nakamura, Takaharu; Tsuchiya, Yutaka; Sugumi, Hiroyuki; Higurashi, Kunizou; Karibe, Norio; Yamanishi, Yoshiharu; Ogura, Hiroo; Araki, Shin; Kubota, Atsuhiko; Ohtake, Michiko; and Tamatsu, Kiyomi, to Eisai Co., Ltd. Piperidine derivative and pharmaceutical composition. 5,306,720, Cl. 514-259.000.

Sugimura, Toshikazu; and Narita, Maki, to Nec Corporation. Cathode impregnated by an electron emissive substance comprising (PBAO.Q-CAO).NBAA1204, where P>1, Q>0, N>1. 5,306,189, Cl. 445-50.000.

Sugita, Yutaka: *See*—
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Suhadolnik, Joseph; Botkin, James H.; and Hendricks, Carmen, to Cibe-Geigy Corporation. Preparing laminated thermoplastics stabilized with bisbenzophenones. 5,306,456, Cl. 264-171.000.

Sukegawa, Naozumi: *See*—
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Sullivan, Michael J., to Lisco, Inc. Improved golf ball cover compositions containing high levels of fatty acid salts. 5,306,760, Cl. 524-400.000.

Sullivan, Paul F., to Polaroid Corporation. Light beam position detection and control apparatus employing diffraction patterns. 5,307,090, Cl. 346-108.000.

Sullivan, Paul F., to Polaroid Corp. Scanner with combined predictive and diffractive feedback control of beam position. 5,307,198, Cl. 359-196.000.

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Sumiden Opcom, Ltd.: *See*—
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Sumitani, Shigeto: *See*—
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Suzuki, Makoto, to NEC Corporation. Absolute value circuit. 5,307,061, Cl. 341-93.000.

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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Iwasaki Electronics Co. Ltd.: *See*—
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Morse, Ronald W.: *See*—
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Silicon Systems: *See*—
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Stoloff, Alfred; and Williams, Anthony L., to M&T Chemicals Inc. Lubricant composition for halogen-containing polymers. B1 4,203,880, 4-26-94, Cl. 524-182.000.

Uetsuhara, Tokio, to Mitsubishi Mining & Cement; and Iwasaki Electronics Co. Ltd. Electromagnetic actuator. B1 4,859,975, 4-26-94, Cl. 335-230.000.

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Nakashima, Yoshiyuki; Yamamoto, Shinji; and Seiffert, Florian, 346,463, Cl. D28-53.000.
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Cesarini, Joseph: *See*—
Devine, William, 8,703, Cl. 53.200.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 26, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

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832 5,305,523
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852 5,305,519
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900.07 5,305,525

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[illegible] 5,305,532

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540 5,306,461

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32 B 5,305,999
32.5 5,306,000
65 B 5,306,001
5,306,002
67 A 5,306,003
73 C 5,306,004
5,306,005
157 R 5,306,006
161 5,306,007
164.1 5,306,008
181 F 5,306,009
184 A 5,306,013
186.2 5,306,010
187 A 5,306,011
187 R 5,306,012
191 5,306,014
242 5,306,015
258 5,306,016
281 5,306,017
327 5,306,018
416 5,306,019
5,306,020

CLASS 277

188 R 5,306,021
192 5,306,022
235 B 5,306,023
5,306,024

CLASS 279

90 5,306,025

CLASS 280

18 5,306,026
30 5,306,027
5,306,029
33.992 5,306,033
47.35 5,306,028
112.2 5,306,034
250.1 5,306,035
282 5,306,030
284 5,306,036
495 5,306,037
688 5,306,031
5,306,038
728 A 5,306,039
728 B 5,306,040
5,306,042
732 5,306,043
741 5,306,041
775 5,306,032
801.1 5,306,044
808 5,306,045
819 5,306,046

CLASS 281

21.1 5,306,047

CLASS 283

35 5,306,048
74 5,306,049

CLASS 285

119 5,306,050
149 5,306,051
328 5,306,052

CLASS 292

259 5,306,057
278 5,306,053
307 R 5,306,054
320 5,306,055

CLASS 293

121 5,306,056
154 5,306,058

CLASS 294

1.1 5,305,960
89 5,306,061
81.21 5,306,062
87.2 5,306,060
143 5,306,063

CLASS 296

24.1 5,306,064
97.6 5,306,065
146.6 5,306,066
5,306,067
189 5,306,068
217 5,306,069
222 5,306,070

CLASS 297

192 5,306,071
232 5,306,072
362.14 5,306,073
423.31 5,306,074

CLASS 303

10 5,306,075
118.1 5,306,076

CLASS 307

10.1 5,306,953
110 5,306,954
116 5,306,955
125 5,306,956
141 5,306,957
268 5,306,958
269 5,306,959
5,306,962
296.1 5,306,960
296.5 5,306,961
443 5,306,963
446 5,306,964
448 5,306,965
463 5,306,966
482.1 5,306,967
494 5,306,968
529 5,306,969
530 5,306,970
803 5,306,971

CLASS 310

58 5,306,972
88 C 5,306,973
88 R 5,306,974
90.5 5,306,975
215 5,306,976
263 5,306,977
313 C 5,306,978
328 5,306,979
333 5,306,980
348 5,306,981

CLASS 312

7.1 5,306,078
122 5,306,077
223.2 5,306,079
334.44 5,306,081
334.5 5,306,080
405 5,306,082

CLASS 313

413 5,306,982
482 5,306,983
484 5,306,984

CLASS 315

111.41 5,306,985
248 5,306,986
5,306,987

CLASS 318

254 5,306,988
372 5,306,989
434 5,306,990
443 5,306,991
483 5,306,992
561 5,306,993
5,306,994
5,306,995
716 5,306,996
721 5,306,997
806 5,306,998

CLASS 320

2 5,306,999
14 5,307,000
30 5,307,001
39 5,307,002

CLASS 323

222 5,307,003
5,307,004

5,307,005
313 5,307,006
5,307,007
357 5,307,008

CLASS 324

142 5,307,009
158 F 5,307,011
5,307,012
158 R 5,307,010
207.2 5,307,013
306 5,307,014
309 5,307,015
320 5,307,016
402 5,307,017
537 5,307,018
713 5,307,019

CLASS 328

133 5,307,020

CLASS 329

308 5,307,021

CLASS 330

52 5,307,022
257 5,307,023
259 5,307,024
267 5,307,025
283 5,307,026
288 5,307,027

CLASS 331

1A 5,307,028
37 5,307,029
177 R B1 4,803,445

CLASS 333

24 R 5,307,030
28 R 5,307,031
101 5,307,032
161 5,307,033
187 5,307,034
193 5,307,035
202 5,307,036

CLASS 335

216 5,307,037
230 B1 4,859,975
296 5,307,038

CLASS 336

73 5,307,040
83 5,307,041
84 C 5,307,042
174 5,307,043
198 5,307,044
200 5,307,045

CLASS 338

21 5,307,046

CLASS 340

189 5,307,056
384.4 5,307,047
426 5,307,048
507 5,307,049
517 5,307,050
573 5,307,051
5,307,052
5,307,053
686 5,307,054
815.42 5,307,057
825.070 5,307,058
825.44 5,307,059
901 5,307,060

CLASS 341

93 5,307,061
107 5,307,062
133 5,307,063
144 5,307,064
153 5,307,065
155 5,307,066
159 5,307,067

CLASS 342

1 5,307,068
19 5,307,069
25 5,307,070
41 5,307,074
103 5,307,071
147 5,307,072
372 5,307,073

CLASS 343

700 MS 5,307,075
704 5,307,076
720 5,307,077
791 5,307,078
823 5,307,079
842 5,307,081
915 5,307,080
5,307,082

CLASS 345

1 5,307,055
5,307,083
58 5,307,084
99 5,307,085
144 5,307,086
150 5,307,087
153 5,307,088

CLASS 346

1.1 5,307,093
107 R 5,307,089
108 5,307,090
140 R 5,307,091
154 5,307,092

CLASS 348

66 5,307,168
79 5,307,161
122 5,307,162
219 5,307,170
233 5,307,159
265 5,307,158
307 5,307,169
415 5,307,163
441 5,307,165
448 5,307,164
458 5,307,143
687 5,307,166
704 5,307,167
708 5,307,157

CLASS 351

59 5,307,094
111 5,307,095
212 5,307,096
5,307,097

CLASS 353

63 5,307,098

CLASS 354

11 5,307,099
105 5,307,100
173.1 5,307,101
5,307,102
195.1 5,307,103
286 5,307,104
298 5,307,105
317 5,307,106
330 5,307,109
324 5,307,107
354 5,307,108
400 5,307,110
402 5,307,111
406 5,307,112
430 5,307,113

CLASS 355

29 5,307,114
75 5,307,115
200 5,307,117
207 5,307,116
208 5,307,118
219 5,307,119
5,307,120
5,307,121
245 5,307,122
5,307,123
246 5,307,124
251 5,307,125
5,307,126
259 5,307,127
260 5,307,128
5,307,129
5,307,130
272 5,307,131
284 5,307,132
285 5,307,133
5,307,134
299 5,307,039
326 5,307,135
326 R 5,307,147

CLASS 356

1 5,307,136
5 5,307,137
5,307,138
5,307,139
35.5 5,307,140
73.1 5,307,141
124 5,307,145
215 5,307,144
244 5,307,146
320 5,307,148
344 5,307,149
375 5,307,150
376 5,307,151
5,307,152
5,307,153
5,307,154
400 5,307,155
430

CLASS 358

11 5,307,156
335 5,307,171
5,307,172
5,307,173
400 5,307,174
401 5,307,175
403 5,307,176
430 5,307,177
440 5,307,178
5,307,179
448 5,307,180
456 5,307,181
500 5,307,160
518 5,307,182

CLASS 359

11 5,307,183
30 5,307,184
41 5,307,185
42 5,307,186
51 5,307,187
53 5,307,188
59 5,307,189
82 5,307,190
125 5,307,191
135 5,307,192
145 5,307,193
154 5,307,194
156 5,307,195
189 5,307,196
192 5,307,197
196 5,307,198
244 5,307,199
248 5,307,200
270 5,307,201
363 5,307,202
368 5,307,203
400 5,307,204
453 5,307,205
555 5,307,206
622 5,307,207
710 5,307,208
811 5,307,209
859 5,307,210
868 5,307,211

CLASS 360

14.2 5,307,212
46 5,307,213
61 5,307,214
71 5,307,215
72.1 5,307,216
76 5,307,217
77.08 5,307,218
83 5,307,219
5,307,220
96.3 5,307,221
97.01 5,307,223
97.02 5,307,222
105 5,307,224
109 5,307,225
113 5,307,226
121 5,307,227
132 5,307,228
133 5,307,229

CLASS 361

96 5,307,230
127 5,307,231
150 5,307,232
220 5,307,233
229 5,307,234
230 5,307,235
681 5,307,238
704 5,307,239
718 5,307,237
720 5,307,236
728 5,307,240
784 5,307,241
816 5,307,242
826 5,307,243

CLASS 362

29 5,307,244
32 5,307,245
61 5,307,246
5,307,247
80 5,307,248
96 5,307,249
101 5,307,250
102 5,307,251
123 5,307,252
259 5,307,253
368 5,307,254
410 5,307,255

CLASS 363

21 5,307,256
53 5,307,257
98 5,307,258

CLASS 364

176 5,307,259
401 5,307,260
5,307,261
413.01 5,307,262
413.09 5,307,263
413.21 5,307,264
419.01 5,307,265
419.07 5,307,266
419.09 5,307,267
420 5,307,268
424.02 5,307,271
5,307,272
424.1 5,307,269
5,307,270
426.01 5,307,274
426.02 5,307,275
431.05 5,307,276
449 5,307,277
450 5,307,278
463 5,307,279
464.02 5,307,280
464.03 5,307,281
468 5,307,282
470 5,307,283
485 5,307,284
489 5,307,285
490 5,307,286
496 5,307,287
510 5,307,288
516 5,307,289
551.01 5,307,290
560 5,307,291
5,307,294
564 5,307,292
565 5,307,293
578 5,307,295
5,307,296
708.1 5,307,297
715.01 5,307,298
728.01 5,307,299
736 5,307,300
748 5,307,301
752 5,307,302
765 5,307,303
822 5,307,306

CLASS 365

51 5,307,307
5,307,308
63 5,307,309
145 5,307,304
5,307,305
149 5,307,310
156 5,307,142
174 5,307,311
182 5,307,312
189.01 5,307,313
189.04 5,307,314
189.09 5,307,315
200 5,307,316
205 5,307,317
226 5,307,318
230.01 5,307,320
230.03 5,307,321
230.05 5,307,322
5,307,323
230.08 5,307,319
233.5 5,307,324

CLASS 366

347 5,306,083

CLASS 367

178 5,307,325

CLASS 368

2 5,307,326
12 5,307,327
13 5,307,328
5,307,329
32 5,307,330
37 5,307,331
44.26 5,307,332
44.280 5,307,333
71 5,307,334
112 5,307,335
5,307,336
121 5,307,337
191 5,307,338
215 5,307,339

CLASS 370

13 5,307,340
18 5,307,341
58.1 5,307,342
60 5,307,343
5,307,344
61 5,307,345
85.1 5,307,346
5,307,347
85.2 5,307,348
5,307,349
85.3 5,307,350
94.1 5,307,351
112 5,307,352

CLASS 371

11.2 5,307,353
5,307,354
37.1 5,307,355
40.1 5,307,356

CLASS 372

7 5,307,357
20 5,307,358
21 5,307,359
43 5,307,360
48 5,307,361
50 5,307,362
53 5,307,363
60 5,307,364
72 5,307,365
96 5,307,366
107 5,307,368
108 5,307,369

CLASS 374

14 5,306,087
131 5,306,088

CLASS 375

1 5,307,370
5,307,371
5,307,372
5,307,373
11 5,307,374
16 5,307,375
38 5,307,376
39 5,307,377
5,307,378
76 5,307,379
84 5,307,380
107 5,307,381
120 5,307,382

CLASS 376

173 5,307,383
228 5,307,384
249 5,307,385
260 5,307,386
267 5,307,387
272 5,307,388
5,307,389
280 5,307,390
306 5,307,391
442 5,307,392
5,307,393

CLASS 378

34 5,307,394
84 5,307,395
146 5,307,396
162 5,307,397

CLASS 379

11 5,307,398
57 5,307,399
59 5,307,400
5,307,401
98 5,307,402
286 5,307,403
386 5,307,404
410 5,307,405
413 5,307,406
418 5,307,407
435 5,307,408

CLASS 380

2 5,307,409
21 5,307,410
25 5,307,411
42 5,307,412
49 5,307,413
56 5,307,414

CLASS 381

12 5,307,415
77 5,307,416
83 5,307,417
159 5,307,418

CLASS 382

1 5,307,419
8 5,307,420
5,307,421
9 5,307,422
11 5,307,423
21 5,307,424
50 5,307,425
5,307,426
56 5,307,427

CLASS 384

45 5,306,089
91 5,306,090

CLASS 385

11 5,307,428
15 5,307,429
31 5,307,430
72 5,307,431
81 5,307,432
88 5,307,433
91 5,307,434
92 5,307,435
123 5,307,436
124 5,307,437
141 5,307,438

CLASS 388

811 5,307,439

CLASS 392

402 5,307,440

CLASS 395

2.28 5,307,460
2.31 5,307,441
2.79 5,307,442
3 5,307,443
22 5,307,444
66 5,307,445
77 5,307,446
90 5,307,447
112 5,307,448
119 5,307,449
123 5,307,450
127 5,307,451
132 5,307,452
133 5,307,453
5,307,454
180 5,307,455
154 5,307,456
161 5,307,457
182 5,307,458
200 5,307,459
250 5,307,461
275 5,307,462
5,307,463
325 5,307,464
5,307,465
5,307,466
5,307,467
5,307,468
425 5,307,469
5,307,470
5,307,471
5,307,472
5,307,473
5,307,474
5,307,475
5,307,476
5,307,477
5,307,478
800 5,307,479
575 5,307,480
5,307,481
5,307,482
5,307,483
660 5,307,484
5,307,485
5,307,486
5,307,494
650 5,307,487
5,307,488
5,307,489
5,307,490
5,307,495
5,307,496
700 5,307,491
5,307,492
5,307,493
5,307,497
5,307,498
800 5,307,499
5,307,500
5,307,501
5,307,502
5,307,503
5,307,504
5,307,505
5,307,506

CLASS 400

76 5,306,102
120 5,306,097
279 5,306,084

CLASS 401

29 5,306,085
5,306,107
47 5,306,092

CLASS 402

30 Re.34,593

CLASS 403

11 5,306,094
259 5,306,093
290 5,306,095
344 5,306,096

CLASS 404

6 5,306,106
12 5,306,105

CLASS 405

154 5,306,101
263 5,306,104
282 5,306,103
299 5,306,099

CLASS 410

154 5,306,100

CLASS 411

175 5,306,091
369 5,306,108
510 5,306,098

CLASS 414

343 5,306,109
416 5,306,111

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424 5,306,110
490 5,306,112
498 5,306,114
537 5,306,113
797.9 5,306,115

CLASS 413

27 5,306,116
142 5,306,117
146 5,306,118

CLASS 416

168 R 5,306,119
224 5,306,120

CLASS 417

363 5,306,121
383 5,306,122
406 5,306,124
A 423.7 5,306,123
1& 472 5,306,125

CLASS 418

1 5,306,126
21 5,306,127
270 5,306,128

CLASS 419

24 5,306,462
44 5,306,463

CLASS 420

49 5,306,464
492 5,306,465

CLASS 422

50 5,306,768
58 5,306,466
65 5,306,510
99 5,306,467
101 5,306,468
104 5,306,469
174 5,306,470
186.19 5,306,471
211 5,306,472
245 5,306,699
248 5,306,473
249 5,306,474

CLASS 423

210 5,306,475
220 5,306,476
279 5,306,478
522 5,306,477
593 5,306,479
625 5,306,480
652 5,306,481

CLASS 424

1.37 5,306,482
45 5,306,483
47 5,306,484
59 5,306,485
5,306,486
71 5,306,488
5,306,489
76.6 5,306,487
78.35 5,306,490
88 5,306,492
89 5,306,493
93 L 5,306,494
117 5,306,496
195.1 5,306,497
401 5,306,498
405 5,306,499
422 5,306,500
423 5,306,501
443 5,306,502
449 5,306,503
5,306,504
464 5,306,505
466 5,306,506
493 5,306,507
5,306,508
616 5,306,509
851 5,306,491

CLASS 425

3 5,306,129
6 5,306,617
17 5,306,130
201 5,306,131
203 5,306,132
217 5,306,133
408 5,306,564
566 5,306,134
569 5,306,135
593 5,306,136
595 5,306,137

CLASS 426

66 5,306,511
107 5,306,512
139 5,306,513
531 5,306,514
5,306,515
5,306,516
602 5,306,517
622 5,306,518
658 5,306,519

CLASS 427

7 5,306,520
82 5,306,521
126.3 5,306,522
129 5,306,523
216 5,306,524
259 5,306,525
309 5,306,526
420 5,306,527
5,306,528
526 5,306,529
533 5,306,530
569 5,306,531

CLASS 428

33 5,306,532
34.2 5,306,533
35.2 5,306,534
5,306,535
91 5,306,536
141 5,306,537
5,306,538
186 5,306,539
172 5,306,540
192 5,306,541
5,306,542
195 5,306,543
5,306,544
198 5,306,545
210 5,306,546
213 5,306,547
215 5,306,548
220 5,306,549
229 5,306,551
251 5,306,552
283 5,306,553
5,306,554
288 5,306,550
289 5,306,555
293 5,306,556
304.4 5,306,557
331 5,306,558
349 5,306,559
379 5,306,560
422 5,306,561
5,306,562
408 5,306,563
432 5,306,565
461 5,306,566
482 5,306,567
548 5,306,568
589 5,306,569
608 5,306,571
614 5,306,570
690 5,306,572
692 5,306,573

CLASS 429

13 5,306,574
16 5,306,575
17 5,306,577
27 5,306,578
40 5,306,579
98 5,306,576
175 5,306,580
181 5,306,581
185 5,306,582
223 5,306,583

CLASS 430

5 5,306,584
5,306,585
58 5,306,586
5,306,587
110 5,306,588
111 5,306,589
115 5,306,590
5,306,591
137 5,306,592
5,306,593
165 5,306,594
191 5,306,595
192 5,306,596
203 5,306,597
266 5,306,598
270 5,306,599
281 5,306,600
296 5,306,601
314 5,306,602
359 5,306,603
376 5,306,604
509 5,306,605
533 5,306,606
544 5,306,607
547 5,306,608
557 5,306,609
558 5,306,610
567 5,306,611
572 5,306,612
680 5,306,613

CLASS 431

5 5,306,138
328 5,306,140

CLASS 432

225 5,306,139

CLASS 433

1 5,306,141
12 5,306,142
29 5,306,143
5,306,144
34 5,306,145
85 5,306,146
90 5,306,147
116 5,306,148
173 5,306,149
5,306,150
216 5,306,151

CLASS 434

114 5,306,152
170 5,306,153
218 5,306,154
410 5,306,155

CLASS 435

5 5,306,614
6 5,306,615
5,306,616
5,306,618
5,306,619
7.21 5,306,620
7.91 5,306,621
7.92 5,306,622
14 5,306,623
39 5,306,624
41 5,306,625
69.1 5,306,626
89.5 5,306,627
89.7 5,306,628
87 5,306,629
122 5,306,630
172.3 5,306,631
185 5,306,632
200 5,306,633
232 5,306,634
340.2 5,306,635
252.3 5,306,636
259 5,306,637
280 5,306,638
320.1 5,306,639

CLASS 436

29 5,306,640
85 5,306,641
106 5,306,642
140 5,306,643
199 5,306,644
162 5,306,645

CLASS 437

2 5,306,646
5,306,647
5,306,648
31 5,306,649
39 5,306,650
40 5,306,651
5,306,652
5,306,653
41 5,306,654
44 5,306,655
5,306,656
51 5,306,657
5,306,658
64 5,306,659
81 5,306,660
90 5,306,661
107 5,306,662
173 5,306,663
183 5,306,664
189 5,306,665
192 5,306,666
195 5,306,667
5,306,668
209 5,306,669
5,306,670
225 5,306,671
5,306,672

CLASS 439

34 5,306,156
52 5,306,157
59 5,306,158
81 5,306,159
62 5,306,160
66 5,306,161
67 5,306,162
74 5,306,163
5,306,170
103 5,306,164
115 5,306,165
180 5,306,166
226 5,306,167
248 5,306,168
5,306,169
284 5,306,171
299 5,306,172
336 5,306,173
341 5,306,174
362 5,306,175
367 5,306,176
395 5,305,547
5,306,177
536 5,306,178
587 5,306,195
607 5,306,196
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	5,308,865		5,306,862		5,305,943		5,306,245		5,306,902		5,307,046
	5,307,000		5,306,995		5,305,977		5,306,264		5,306,931		5,307,251
	5,307,053		5,307,091		5,305,992		5,306,280		5,306,955	40 :	5,305,542
	5,307,261		5,307,243		5,306,029		5,306,281		5,307,005		5,305,575
15 :	5,305,572	22 :	5,305,512		5,306,043		5,306,416		5,307,039		5,305,775
	[illegible]		5,305,530		5,306,044		5,306,418		5,307,073		5,305,837
16 :	5,305,642		5,305,780		5,306,045		5,306,452		5,307,117		5,306,263
	5,305,779		5,305,788		5,306,053		5,306,453		5,307,119		5,306,685
	5,306,133		5,305,844		5,306,058		5,306,483		5,307,121		5,306,775
	5,306,267		5,306,681		5,306,066		5,306,489		5,307,124		5,306,859
	5,306,945		[illegible]		5,306,067		5,306,504		5,307,131		5,307,268
	5,306,951	24 :	5,305,704		5,306,073		5,306,513		5,307,175	41 :	5,305,480
	5,307,006		5,305,740		5,306,074		5,306,534		5,307,176		5,305,621
	5,307,083		5,305,774		5,306,086		5,306,708		5,307,180		5,305,857
	5,307,309		5,305,979		5,306,091		5,306,716		5,307,182		5,305,872
	5,307,314		5,306,051		5,306,095		5,306,795		5,307,188		5,305,891
17 :	5,305,531		5,306,222		5,306,098		5,306,800		5,307,194		5,305,894
	5,305,657		5,306,259		5,306,126		5,306,817		5,307,202		5,306,020
	5,305,661		5,306,271		5,306,134		5,306,837		5,307,231		5,306,060
	5,305,681		5,306,417		5,306,199		5,306,851		5,307,265		5,306,093
	5,305,685		5,306,429		5,306,344		5,306,868		5,307,342		5,306,479
	5,305,694		5,306,481		5,306,455		5,306,879		5,307,357		5,306,964
	5,305,787		5,306,661		5,306,470		5,307,014		5,307,359		5,307,024
	5,305,860		5,306,700		5,306,501		5,307,023		5,307,361		5,307,087
	5,305,865		5,306,893		5,306,537		5,307,033		5,307,373		5,307,281
	5,305,877		5,306,953		5,306,718		5,307,168		5,307,394		5,307,407
	5,305,899		5,307,081		5,306,822		5,307,206		5,307,398	42 :	5,305,488
	5,305,907		5,307,203		5,306,979		5,307,254		5,307,410		5,305,505
	5,305,915		5,307,427		5,307,057		5,307,364		5,307,423		5,305,610
	5,305,917		5,307,441		5,307,152		5,307,434		5,307,436		5,305,712
	5,305,938		4,938,363		5,307,211		5,307,445		5,307,458		5,305,728
	5,305,946	25 :	5,305,496		5,307,248		4,203,880		5,307,485		5,305,769
	5,305,951		5,305,544		5,307,262	35 :	5,305,569		5,307,517		5,305,805
	5,306,062		5,305,567		5,307,484		5,305,622		4,789,360		5,305,825
	5,306,177		5,305,595		5,307,515		5,306,007	37 :	5,305,541		5,305,881
	5,306,223		5,305,615	27 :	5,305,555		5,306,445		5,305,578		5,305,908
	5,306,242		5,305,639		5,305,560		5,307,142		5,305,591		5,305,974
	5,306,257		5,305,644		5,305,587		5,307,272		5,305,708		5,306,034
	5,306,299		5,305,670		5,305,762	36 :	Re. 34,593		5,305,849		5,306,110
	5,306,332		5,305,674		[illegible]		5,305,523		5,306,009		5,306,112
	5,306,383		5,305,678		5,306,278		5,305,558		5,306,011		5,306,171
	5,306,434		5,305,746		5,306,291		5,305,611		5,306,078		5,306,175
	5,306,459		5,305,812		5,306,319		5,305,658		5,306,114		5,306,203
	5,306,512		5,305,882		5,306,321		5,305,668		5,306,116		5,306,254
	5,306,519		5,305,939		5,306,327		5,305,748		5,306,161		5,306,307
	5,306,539		5,306,019		5,306,359		5,305,767		5,306,235		5,306,329
	5,306,575		5,306,033		5,306,361		5,305,770		5,306,286		5,306,331
	5,306,615		5,306,106		5,306,375		5,305,771		5,306,312		5,306,365
	5,306,683		5,306,239		5,306,405		5,305,843		5,306,345		5,306,391
	5,306,724		5,306,244		5,306,562		5,305,880		5,306,372		5,306,427
	5,306,864		5,306,246		5,306,581		5,305,886		5,306,393		5,306,439
	5,306,891		5,306,248		5,306,612		5,305,897		5,306,438		5,306,441
	5,307,022		5,306,290		5,306,642		5,305,902		5,306,461		5,306,462
	5,307,232		5,306,305		5,306,758		5,305,933		5,306,536		5,306,509
	5,307,250		5,306,343		5,306,885		5,305,959		5,306,694		5,306,524
	5,307,348		5,306,347		5,307,001		5,305,960		5,306,756		5,306,526
	5,307,370		5,306,382		5,307,050		5,305,980		5,306,930		5,306,574
	5,307,401		5,306,389		5,307,149		5,305,982		5,306,939		5,306,621
	5,307,512		5,306,422		5,307,216		5,306,004		5,307,082		5,306,635
[illegible] :	5,305,525		5,306,426		5,307,354		5,306,076		5,307,406		5,306,643
	5,305,628		5,306,467		5,307,409		5,306,082	39 :	5,305,481		5,306,674
	5,305,705		5,306,476		5,307,438		5,306,101		5,305,550		5,306,709
	5,305,730		5,306,543		5,307,483		5,306,123		5,305,564		5,306,744
	5,305,875		5,306,565	29 :	5,305,479		5,306,151		5,305,574		5,306,780
	5,305,953		5,306,729		5,305,636		5,306,155		5,305,588		5,306,821
	[illegible]		5,306,731		5,305,733		5,306,157		5,305,597		5,306,827
	5,306,121		5,306,742		5,305,806		5,306,191		5,305,616		5,306,972
	5,306,142		5,306,755		5,306,028		5,306,194		5,305,671		5,307,139
	5,306,237		5,306,760		5,306,057		5,306,219		5,305,686		5,307,230
	5,306,250		5,306,910		5,306,220		5,306,231		5,305,713		5,307,233
	5,306,276		5,306,922		5,306,334		5,306,236		5,305,784		5,307,294
	5,306,277		5,306,948		5,306,336		5,306,261		[illegible]		5,307,384
	5,306,325		5,307,019		5,306,357		5,306,313		5,305,911		5,307,386
	5,306,358		5,307,042		5,306,464		5,306,348		5,305,920		5,307,389
	5,306,376		5,307,090		5,306,507		5,306,366		5,305,921	43 :	5,306,262
	5,306,637		5,307,198		5,306,876		5,306,370		5,305,931	44 :	5,305,582
	5,306,785		5,307,217		5,307,287		5,306,421		5,306,030		5,306,298
	5,306,960		5,307,256	30 :	5,306,497		5,306,456		5,306,042		5,306,594
	5,306,973		5,307,336	31 :	5,305,958		5,306,457		5,306,059	45 :	5,305,494
	5,306,976		5,307,355	32 :	5,305,696		5,306,527		5,306,083		5,305,504
	5,307,325		5,307,413		5,305,725		5,306,528		5,306,179		5,305,528
	5,307,369		5,307,432		5,306,146		5,306,530		5,306,241		5,306,138
19 :	Re. 34,594		5,307,469		5,306,880		5,306,561		5,306,266		5,306,227

	5,306,415		5,305,687		5,306,186		5,307,210		5,306,017		5,305,754
	5,306,745		5,305,697		5,306,207		5,307,264		5,306,031		5,305,756
	5,306,762		5,305,702		5,306,240		5,307,295		5,306,061		5,305,850
	5,306,793		5,305,760		5,306,385		5,307,303		5,306,100		5,305,969
	5,307,037		5,305,781		5,306,410		5,307,352		5,306,200	54 :	5,305,851
47 :	5,305,646		5,305,796		5,306,419		5,307,402		5,306,300		5,306,350
	5,305,692		5,305,828		5,306,447		5,307,412		5,306,371	55 :	5,305,475
	5,305,773		5,305,831		5,306,557		5,307,476		5,306,551		5,305,478
	5,305,785		5,305,832		5,306,584		5,307,490		5,306,711		5,305,533
	5,305,798		5,305,833		5,306,616		5,307,498		5,306,784		5,305,538
	5,306,145		5,305,836		5,306,640		4,986,435		5,306,836		5,305,590
	5,306,403		5,305,839		5,306,652	49 :	5,305,586		5,306,846		5,305,741
	5,306,567		5,305,840		5,306,658		5,306,040		5,306,884		5,305,913
	5,306,646		5,305,854		5,306,670		5,306,253		5,307,048		5,305,926
	5,306,887		5,305,859		5,306,697		5,306,275		5,307,052		5,305,945
	5,306,985		5,305,904		5,306,733		5,306,295		5,307,181		5,306,131
	5,307,327		5,305,905		5,306,734		5,307,288		5,307,289		5,306,185
[illegible] :	Re. 34,590		5,305,937		5,306,831		5,307,415		5,307,395		5,306,234
	5,305,543		5,305,985		5,306,869	50 :	5,306,346		5,307,466		5,306,268
	5,305,554		5,305,986		5,306,905		5,307,072	52 :	5,306,153		5,306,301
	5,305,571		5,305,988		5,306,935		5,307,292	53 :	5,305,471		5,306,303
	5,305,581		5,306,016		5,306,961		5,307,356		5,305,492		5,306,306
	5,305,607		5,306,021		5,306,980	51 :	5,305,568		5,305,527		5,306,428
	5,305,614		5,306,050		5,307,010		5,305,593		5,305,536		5,306,432
	5,305,640		5,306,104		5,307,056		5,305,645		5,305,548		5,306,446
	5,305,647		5,306,150		5,307,075		5,305,835		5,305,627		5,306,564
	5,305,649		5,306,162		5,307,086		5,305,910		5,305,706		5,306,989
	5,305,677		5,306,176		5,307,137		5,306,006		5,305,739		5,307,463

DESIGN PATENTS

01 :	346,346		346,295	23 :	346,362	29 :	346,280	37 :	346,288		346,442
04 :	346,405		346,310	24 :	346,296		346,317		346,321		346,472
	346,461		346,380		346,373	32 :	346,312		346,437	43 :	346,360
06 :	346,278		346,411		346,415	33 :	346,307	[illegible] :	346,379	44 :	346,400
	346,285	09 :	346,304		346,446	34 :	346,287	39 :	346,274	45 :	346,292
	346,290		346,333	25 :	346,286		346,396		346,332	47 :	346,289
	346,293		346,418		346,305		346,450		346,399		346,468
	346,327	12 :	346,281		346,319	35 :	346,425		346,420		346,469
	346,337		346,314		346,370	36 :	346,276		346,421	48 :	346,336
	346,359		346,324		346,440		346,277		346,436		346,340
	346,367		346,354	[illegible] :	346,268		346,284		346,443		346,384
	346,385		346,356		346,282		346,320		346,470		346,406
	346,402		346,407		346,309		346,357	40 :	346,315		346,416
	346,422		346,466		346,318		346,386		346,343		346,451
	346,431	13 :	346,270		346,358		346,413		346,388		346,473
	346,433		346,326		346,378		346,426	41 :	346,271	50 :	346,419
	346,434	17 :	346,355		346,410		346,427		346,272	51 :	346,298
	346,435	[illegible] :	346,361		346,424		346,428		346,366		346,467
	346,438	19 :	346,459	27 :	346,279		346,429	42 :	346,297	53 :	346,338
	346,458	[illegible] :	346,273		346,341		346,430		346,322		346,432
	346,465		346,299		346,395		346,457		346,329	54 :	346,444
	346,471	21 :	346,306	28 :	346,398		346,460		346,344		346,445
[illegible] :	346,294		346,377		346,452		346,464		346,387	55 :	346,313

PLANT PATENTS

[illegible] :	8,700	24 :	8,703	26 :	8,701	53 :	8,705		

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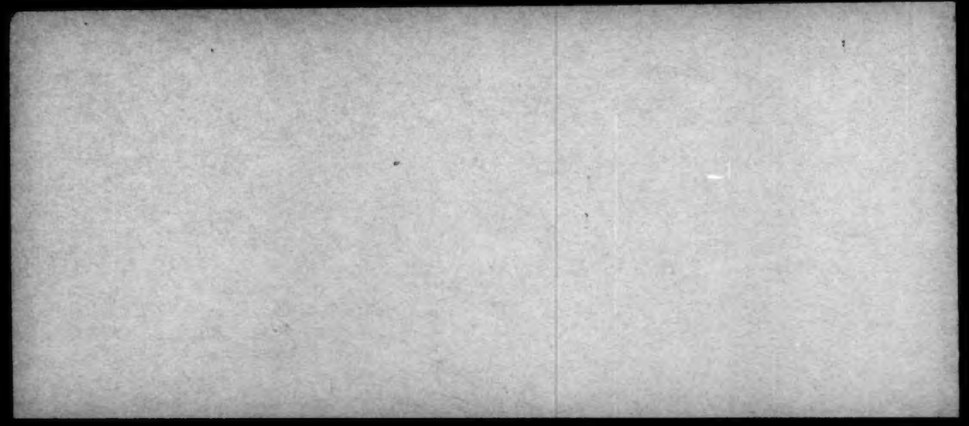
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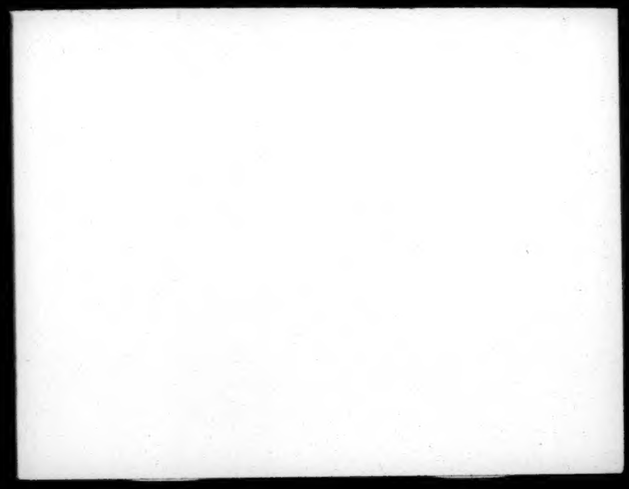
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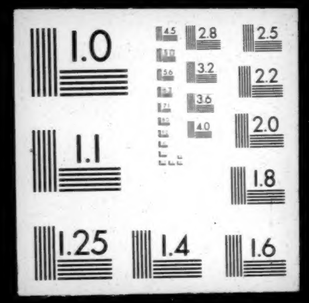
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